LETTING DATE
11-15-2022

WAPELLO Co. RECONSTRUCTION - BRIDGE WIDENING
BRF-063-2(161)--38-90

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

WAPELLO COUNTY

RECONSTRUCTION - BRIDGE WIDENING

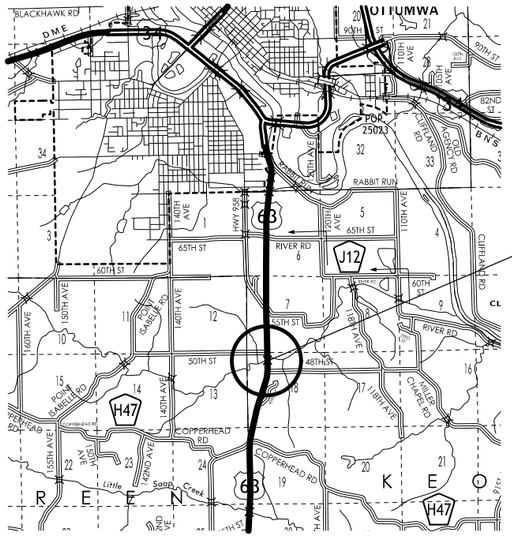
Village Creek 3.1 mi S of US 34

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.



PROJECT LOCATION
REF. LOC 30.64
MAINT. 9030.6S063
FHWA #50610

REVISIONS

	TOTAL
	18
PROJECT IDENTIFICATION NUMBER	
15-90-063-010	
PROJECT NUMBER	
BRF-063-2(161)--38-90	
R.O.W. PROJECT NUMBER	
NHSN-063-2(162)-2R-90	

INDEX OF SHEETS

D4 PLAN – Date: 07/19/2022

DESIGN DATA RURAL

2019 AADT	6,100	V.P.D.
2039 AADT	6,800	V.P.D.
20 DHV		V.P.H.
TRUCKS	11	%
Total Design ESALs		

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Paul Flattery	Primary Signature Block

PRELIMINARY PLANS

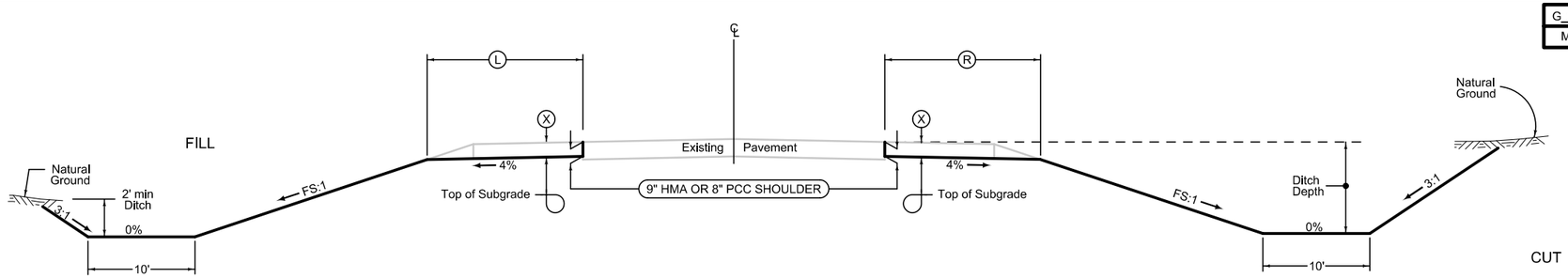
Subject to change by final design.

D5 PLAN – Date: 11/20/2020

FILE NO. 0323	ENGLISH	DESIGN TEAM Flattery \ Bell \ Carlson	WAPELLO COUNTY	PROJECT NUMBER BRF-063-2(161)--38-90	SHEET NUMBER A.1

11:28:50 AM 11/18/2020 pcarls2 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\90063010l5\Design\CADD_Files\Sheet_Files\90063161_A01.dgn

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	FS
	752+40.33	752+77.33	0	11.7	6.0	3
US 63	752+77.33	753+12.42	11.7	11.7	6.0	3
US 63	756+20.38	756+86.71	11.7	11.7	6.0	3
	756+86.71	756+92.36	11.7	0	6.0	3

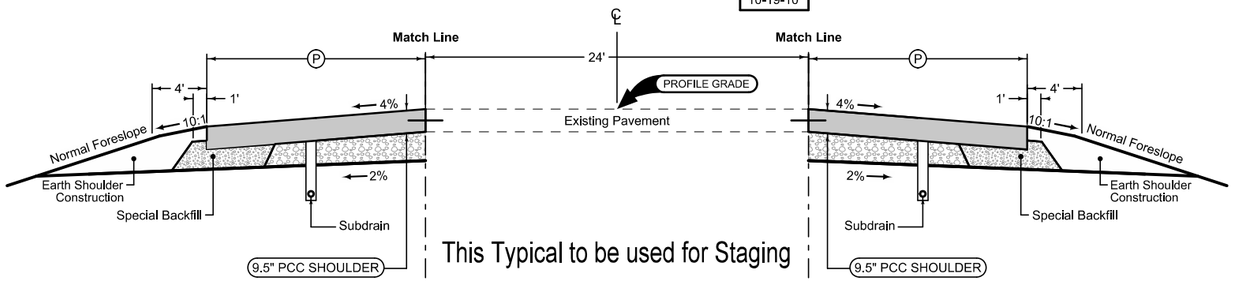


Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

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

SHOULDER-ONLY GRADING

2E_
10-19-10

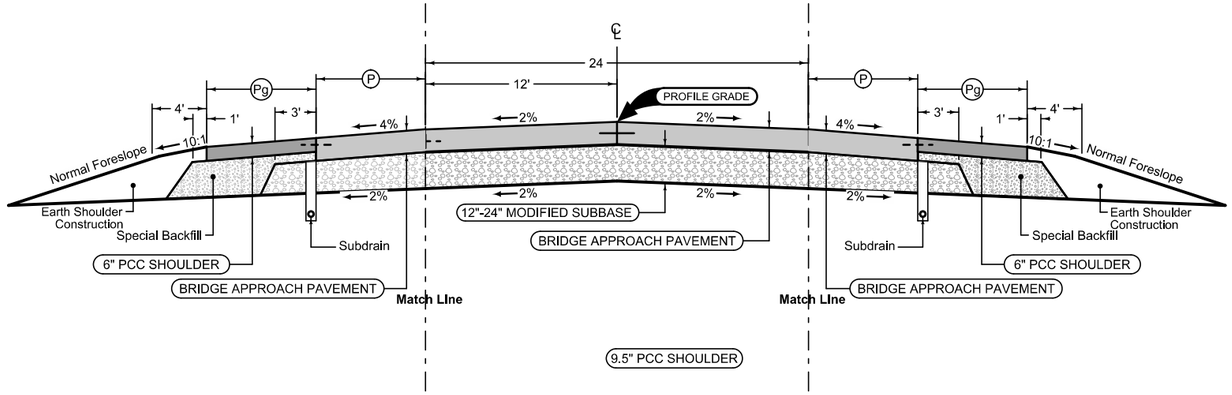


This Typical to be used for Staging

PCC Shoulder at Guardrail

Full-Depth Shoulder Jointing:
Longitudinal joint: L-2 or KT-2
Transverse joints: C at 17' spacing
6" Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing

Direction of Travel	STATION TO STATION		(P) Feet



PCC Shoulder at Guardrail

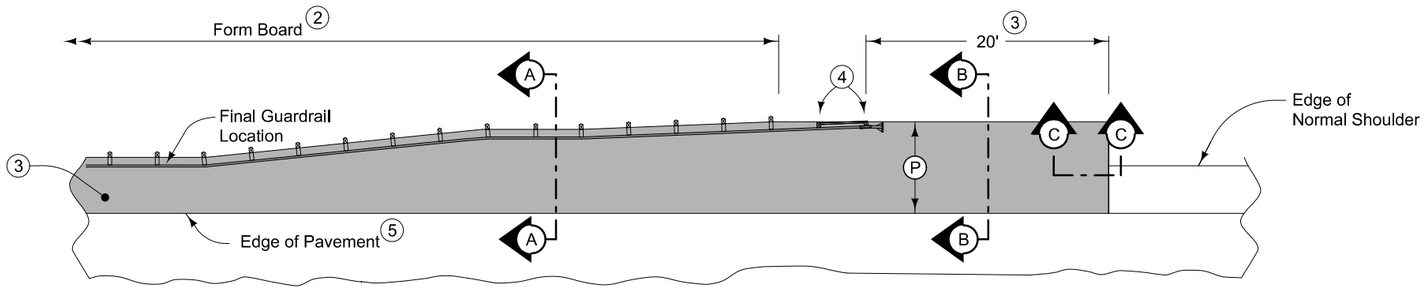
Full-Depth Shoulder Jointing:
Longitudinal joint: L-2 or KT-2
Transverse joints: C at 17' spacing
6" Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing

Direction of Travel	STATION TO STATION		(P) Feet	(Pg) Feet
SB	752+40.33	752+70.38	0	13.2
SB	752+70.38	753+10.49	0	13.2-11.6
SB	753+10.49	753+12.42	0	11.6
SB	753+12.42	756+63.00	10	1.6
	Bridge			
SB	755+51.58	756+03.85	10	1.8
SB	756+03.85	756+16.22	10	1.8-3.04
SB	756+16.22	756+20.38	10	3.04-3.2
SB	756+20.38	756+55.06	0	13.2-14.6
SB	756+55.06	756+86.71	0	14.6

PCC Shoulder at Guardrail

Full-Depth Shoulder Jointing:
Longitudinal joint: L-2 or KT-2
Transverse joints: C at 17' spacing
6" Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing

Direction of Travel	STATION TO STATION		(P) Feet	(Pg) Feet
NB	752+45.68	752+77.33	0	14.3
NB	752+77.33	753+12.42	0	14.3-12.9
NB	752+12.42	753+16.16	10	2.9-2.7
NB	753+16.16	753+80.81	10	2.7
	Bridge			
NB	755+69.69	756+20.38	10	1.3
NB	756+20.38	756+22.20	0	11.3
NB	756+22.20	756+62.30	0	11.3-12.9

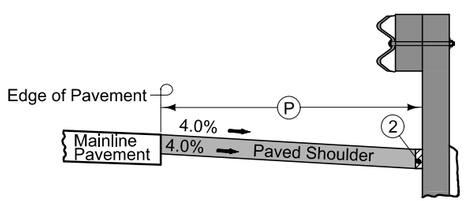


PLAN VIEW

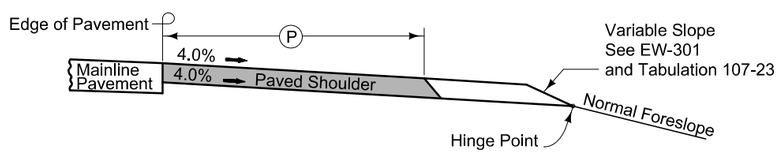
Section A-A

Section B-B

NEW CONSTRUCTION



Section A-A



Section B-B

EXISTING SHOULDER

DESIGNER INFO

7156
04-18-17

9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

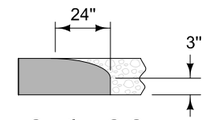
(1) For subgrade treatment, refer to other details in the plan.

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

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

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

(5) 'KT-1 joint for PCC shoulder.
'B' joint for HMA shoulder.



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

PAVED SHOULDER AT GUARDRAIL

SURVEY SYMBOLS

- Guard Rail Steel
- Centerline BL of Road (ML or SR)
- Wire Fence
- Centerline Draw or Stream (Down)
- Centerline Draw or Stream (Up)
- Stream Bank
- Edge of Water
- SIGN Sign
- Centerline BL of Entrance
- Tree Line
- Unpaved Shoulder
- W Water Line
- Tree Deciduous

UTILITY LEGEND

Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

- FO Centurylink - Quality D
- FO2 Iowa Communications Network - Quality D
- W Wapello Rural Water Association - Quality D
- Southern Iowa Electric Cooperative
- ITC

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

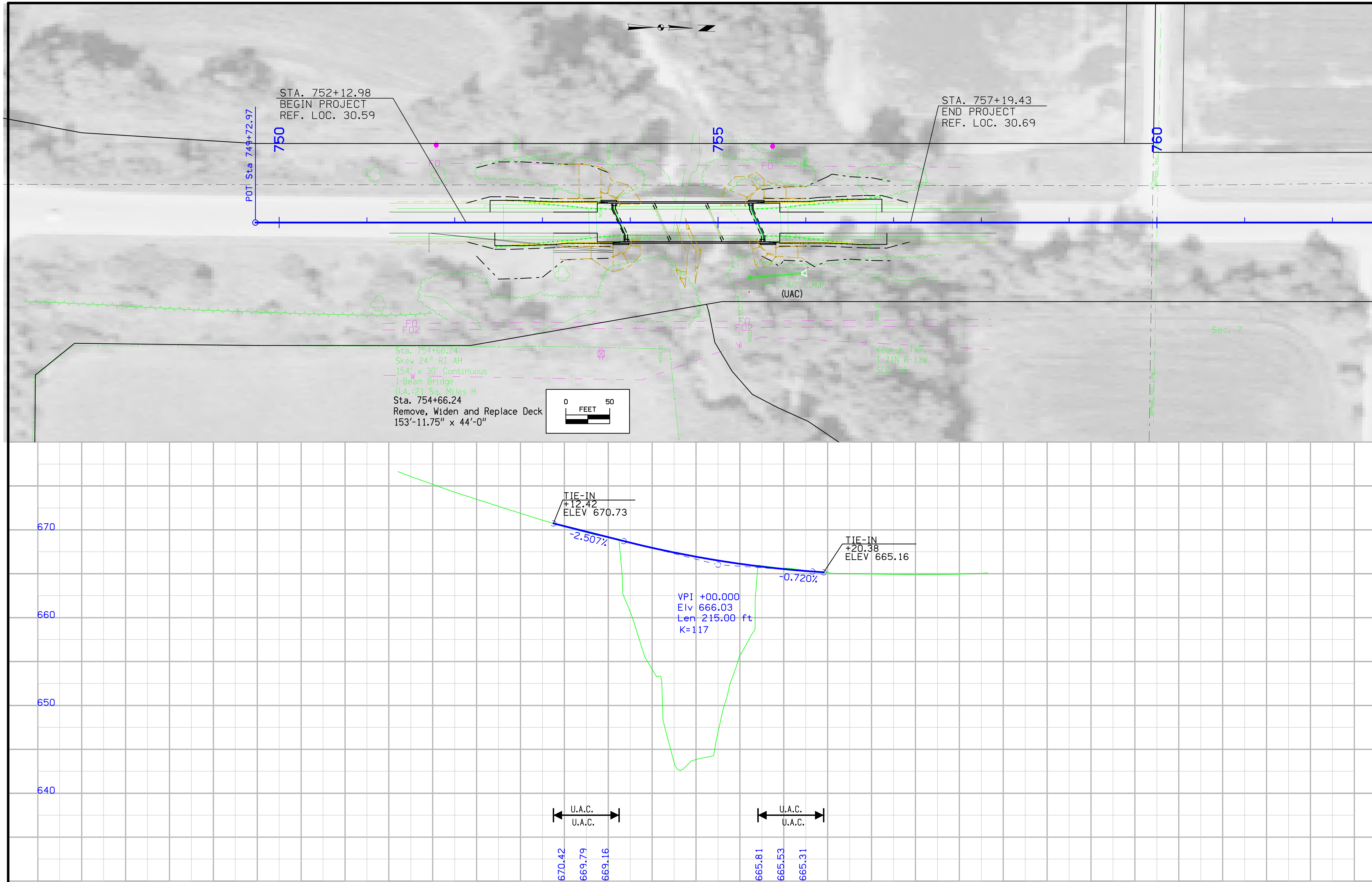
- Proposed Right-of-Way
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- C/A Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO. 0323	ENGLISH	DESIGN TEAM Flattery \ Bell \ Carlson	WAPELLO COUNTY	PROJECT NUMBER BRF-063-2(161)--38-90	SHEET NUMBER D.1

3:08:30 PM 7/10/2020 pcarls2 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\9006301015\Design\CADD_Files\Sheet_Files\90063161_LGD.dgn



STA. 752+12.98
BEGIN PROJECT
REF. LOC. 30.59
STA. 757+19.43
END PROJECT
REF. LOC. 30.69
POT Sta 749+72.97
750
755
760
(UAC)
Sta. 754+66.24
Skew 24° RT AH
154' x 30' Continuous
I-Beam Bridge
Sta. 754+66.24
Remove, Widen and Replace Deck
153'-11.75" x 44'-0"
0 FEET 50
Keokuk Twp.
Sec. 7
TIE-IN
+12.42
ELEV 670.73
-2.507%
TIE-IN
+20.38
ELEV 665.16
-0.720%
VPI +00.000
Elv 666.03
Len 215.00 ft
K=117
670
660
650
640
U.A.C.
U.A.C.
U.A.C.
U.A.C.
670.42
669.79
669.16
665.81
665.53
665.31
750
755
760

FILE NO. 0323	ENGLISH	DESIGN TEAM Flattery \ Bell \ Carlson	WAPELLO COUNTY	PROJECT NUMBER BRF-063-2(161)--38-90	SHEET NUMBER D.2

10:05:33 AM 11/18/2020 pcarls2 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\9006301015\Design\CADD_Files\Sheet_Files\90063161_D02.dgn

Survey Information

Wapello County
BRF-063-2(161)--38-90
Village Creek 3.1 mi S of US 34
Reconstruction - Bridge Widening
15-90-063-010
Sap-230.5

Party Personnel

Mike Rummelhart- Party Chief

Date(s) of Survey

Begin Date	05/14/2020
End Date	06/22/2020

General Information

Measurement units for this survey are US survey feet. This survey is for proposed Reconstruction - Bridge Widening of the U.S. Hwy 63 bridge over Village Creek 3.9 miles South of US Hwy 34. Project datum and control information is provided by Design Survey Office. Hard surfaces were resurveyed in June 2020. The stream and banks were resurveyed June 2020. Other supplemental ground locations were extracted from an aerial survey tin to create a survey terrain covering the area requested by Kelly Bell May 11,2020.

Vertical Control

Vertical Control on this project was established on 3 points by transferring elevation from BM # 76 project # NHS 28(26)2c26. Vertical datum for this survey is relative to NAVD88. This survey observed 1 As-Built plan bench marks and a AB plan bridge pier elevation to compare to local ground control:

BM # 76 AB Plans Project # NHS 28(26)2c26 Elevation 666.44
= BM # 500 Survey Elev. = 666.44

Horizontal Control

The project coordinate system for this survey is Iowa RCS Zone 12 (U.S. Survey Feet).
Control point G046 coordinates converted from a previous project to Zone 12. Other control points were observed and established relative to G046.

Alignment Information

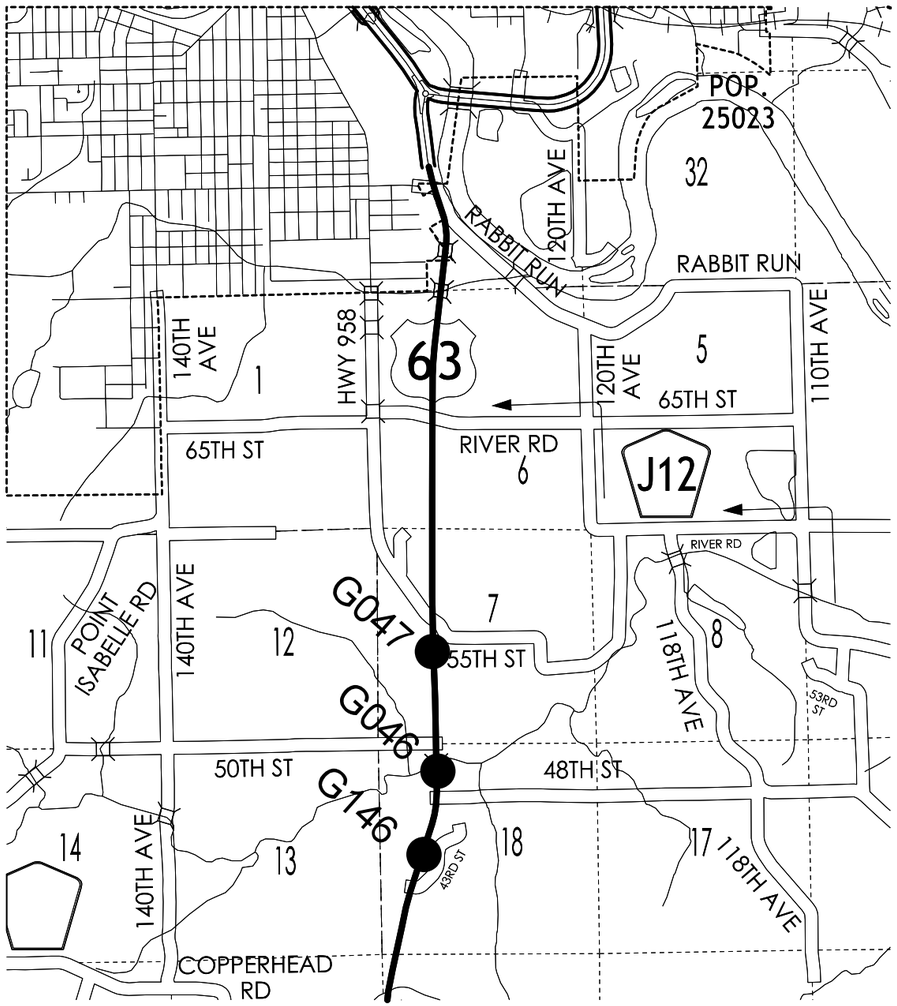
The horizontal alignment for this survey is created from Project alignment (surcl). Survey stationing was equated to the ST Sta. 749+72.97 and run ahead without equation throughout the survey.

Survey stationing relates to Project stationing as follows:
ST Sta. 749+72.97 Project Alignment (surcl)
= ST Sta. 202+54.97 AB Plans Project # FN-FGN-42
= ST Sta. 749+72.97 this survey

PI Sta. 768+29.65 Project Alignment (surcl)
= PI Sta. 221+27.72 AB Plans Project # FN-FGN-42
=PI Sta. 768+29.68 this survey

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

Name	Northing	Easting	Elevation	Feature	Description
G146	6214782.4	22871348.68	752.17	CP	Mark is 243 ft. northeast of entrance & US Hwy 63 @ 4486 US Hwy 63, 27 ft. southeast of US Hwy 63, 12 ft. northwest of a Station Sign 185. A Feno Monument stamped IOWA DEPT OF TRANS SURVEY MARKER, .6 ft. below ground near the east shoulder of US Hwy 63.
G046	6216843.67	22871691.77	669.57	CP	Mark is 76 ft. south of southeast corner of bridge floor over Village Creek, 73 ft. south of south end of east guardrail, south of bridge,21 ft. east of centerline US Hwy 63, 1 ft. east of guardrail. A rebar .6 ft. below ground near the east shoulder of US Hwy 63.
G047	6219800.93	22871557.34	759.54	CP	Mark is 117 ft. northwest of Station Sign 235, 91 ft. southeast of power pole, 71 ft. west of Station Sign 275, 62 ft. east of conc monument , 24 ft. west of centerline US Hwy 63. A rebar .6 ft. below ground near the west shoulder of US Hwy 63.

ALIGNMENT COORDINATES

101-16
10-20-09

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	ML063	749+72.97 R1	6216496.74	22871676.41															
2	ML063	768+29.68 R1	6218353.14	22871642.65															

FILE NO. 0323	ENGLISH	DESIGN TEAM Flattery \ Bell \ Carlson	WAPELLO COUNTY	PROJECT NUMBER BRF-063-2(161)--38-90	SHEET NUMBER G.4	

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Temporary signals will be utilized to maintain one lane of traffic at a time on the bridge during construction.
Advance signing shall be required for detouring of wide loads

108-26A
08-01-08

STAGING NOTES

Stage 1
During the first stage, an 18 ft. travel lane will be provided

Stage 2
During the second stage, an 11 ft. 3 in. lane will be provided

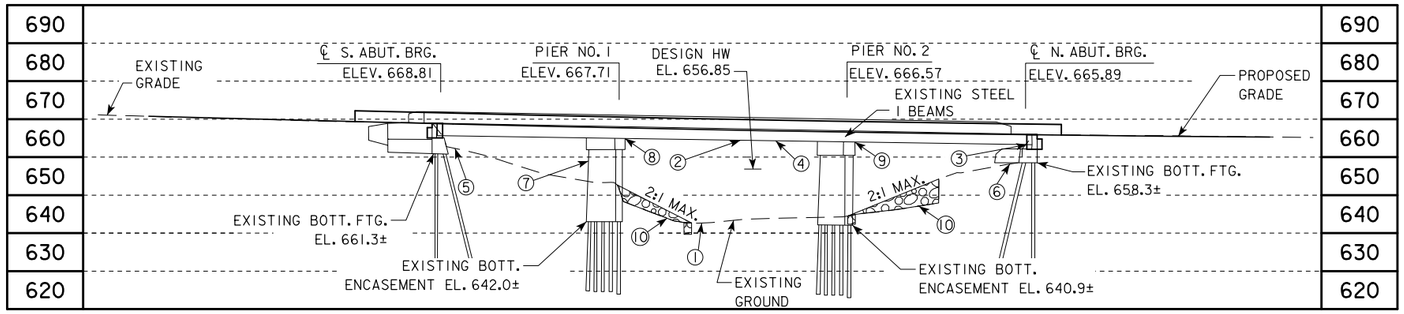
111-01
04-17-12

COORDINATED OPERATIONS

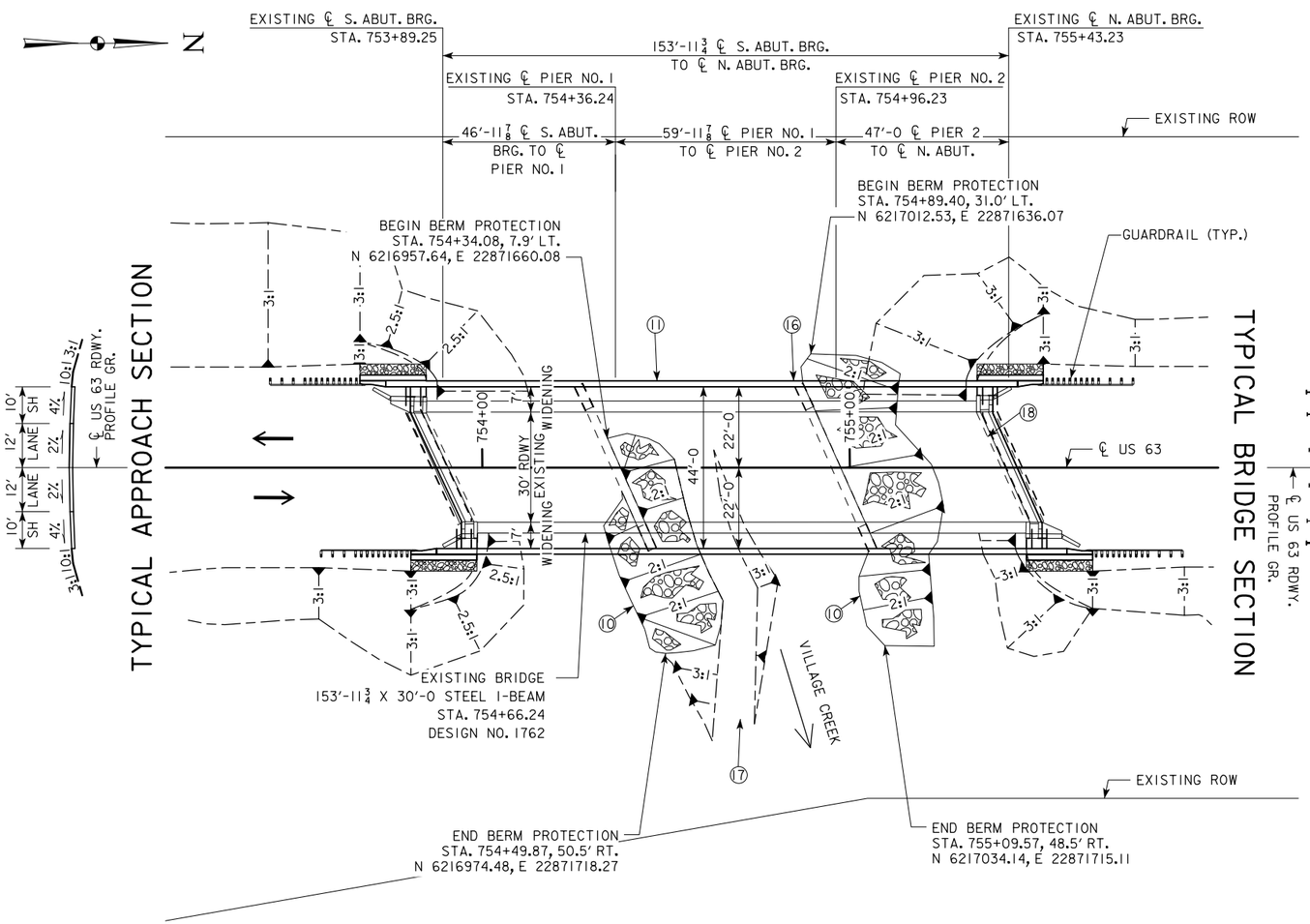
Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
NHSX-36-2(137)--3H-90 Little Soap Creek project	Bridge (Coordinate work so wide loads are not detoured for two consecutive years.)

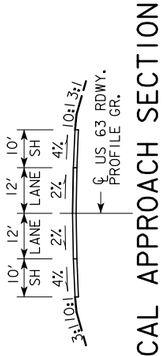
CONTROL POINT NO. G046: N 6216843.67, E 2287169l.77; MARK IS 76' SOUTH OF SE CORNER OF BRIDGE OVER VILLAGE CREEK, 73' SOUTH OF SOUTH END OF EAST GUARDRAIL, SOUTH OF BRIDGE, 21' EAST OF CENTERLINE OF US 63 EAST OF GUARDRAIL, l' EAST OF GUARDRAIL. A REBAR 0.5' BELOW GROUND NEAR THE EAST SHOULDER OF US 63. ELEVATION 669.57



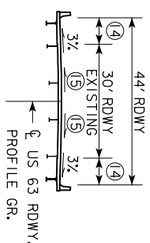
LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY



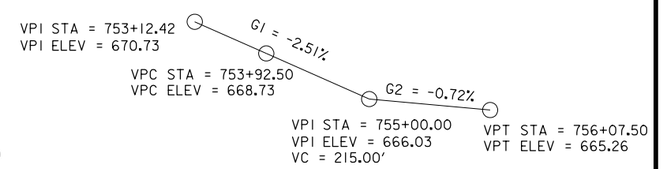
TYPICAL APPROACH SECTION



TYPICAL BRIDGE SECTION



① STREAMBED EL. 642.6
② REGULATORY LOW BEAM
③ OPERATIONAL LOW BEAM
④ EXISTING BRIDGE
154'-0 x 30'-0 STEEL I BEAM
STA. 754+66.24
DESIGN NO. 1762
⑤ EXISTING TOP OF BERM EL. 664.30
⑥ EXISTING TOP OF BERM NW CORNER EL. 660.00
EXISTING TOP OF BERM NE CORNER EL. 661.00
⑦ EXISTING ENCASED PILE BENT PIER (TYP.)
⑧ PIER CAP
EXISTING STEP ELEVATIONS
WEST ELEV. 664.15
EAST ELEV. 663.90 (LOW)
⑨ PIER CAP
EXISTING STEP ELEVATIONS
WEST ELEV. 663.04
EAST ELEV. 662.83 (LOW)
⑩ CLASS E REVETMENT WEDGE UNDERLAIN W\ ENGR. FABRIC
⑪ PROPOSED BRIDGE
REPLACE EXISTING DECK AND WIDEN FROM 30'-0 TO 44'-0
⑫ TL-4 BRIDGE RAILING PROPOSED
⑬ UAC EXISTING BERM GRADE UNDER EXISTING BRIDGE
⑭ 7' WIDENING
⑮ 12' PARABOLIC CROWN; SEE DESIGN 1762 PLANS FOR DETAILS
⑯ REMOVE TIMBER DEBRIS FROM PIER; INCLUDE COST IN REVETMENT BID ITEM
⑰ LOW FLOW CHANNEL GRADING; SEE SHEET V.2 FOR DETAILS
⑱ FILL VOID UNDER ABUTMENT WITH FLOWABLE MORTAR; SEE SHEET V.2 FOR DETAILS
⑲ SEE SHEET V.2 FOR BERM PROTECTION DETAILS



PROPOSED PROFILE GRADE US 63

NOTE TO FINAL DESIGNER
SEMI INTEGRAL ABUTMENTS ASSUMED FOR WIDENING AND ASSUMED EXISTING STUB ABUTMENTS WILL BE CONVERTED TO SEMI INTEGRAL. INFORM PRELIM DESIGN IF FINAL ABUTMENT TYPE NOT SEMI INTEGRAL.
ASSUMED LENGTH OF ABUTMENT WINGS BASED ON PRELIMINARY STANDARDS; INFORM PRELIM DESIGN IF LENGTH CHANGES.

UTILITIES LEGEND:

FO - FIBER OPTIC - CENTURY LINK
FO2 - FIBER OPTIC - ICN
W - WATER - WAPELLO RURAL WATER
- ELECTRIC - SOUTHERN IOWA ELECTRIC COOP

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

TRAFFIC ESTIMATE

2019 AADT	6,100	V.P.D.
2039 AADT	6,800	V.P.D.
20-- DHV		V.P.H.
TRUCKS	11	%
TOTAL DESIGN ESALs	-	

0 ENGLISH 40
SCALE IN FEET

HYDRAULIC DATA

DRAINAGE AREA = 22.7 SQ. MI.
STREAM SLOPE = 12.7 FT./MI.
AVG. LOW WATER STAGE = 644.0

Q_{50} = 7,110 CFS
STAGE = 656.85
REGULATORY LOW BEAM = 663.42
BACKWATER = 0.05 FT.
AVG. BRIDGE VELOCITY = 7.9 FPS

Q_{100} = 8,570 CFS
STAGE = 657.97
OPERATIONAL LOW BEAM = 661.95
BACKWATER = 0.08 FT.
AVG. BRIDGE VELOCITY = 8.3 FPS

Q_{200} = 10,100 CFS
STAGE = 658.99
CALCULATED DESIGN SCOUR = 638.6

Q_{500} = 11,900 CFS
STAGE = 659.92
AVG. BRIDGE VELOCITY = 9.3 FPS
CALCULATED CHECK SCOUR = 638.6

ROADWAY OVERTOP 664.88
STA. 757+25.66

LOCATION

US 63 OVER VILLAGE CREEK
T-71N R-13W
SECTION 18
KEOKUK TOWNSHIP
WAPELLO COUNTY
FHWA NO. 50610
BRIDGE MAINT. NO. 9030.6S063
LATITUDE 40.955451°
LONGITUDE -92.404445°

This Sheet For Information Only

PRELIMINARY
DESIGN FOR DECK REPLACEMENT AND WIDENING EXISTING 24° R.A. SKEW BRIDGE TO A

153'-11¾ X 44'-0 CONTINUOUS STEEL I-BEAM BRIDGE

46'-11⅞ END SPAN 59'-11⅞ CENTER SPAN 47'-0 END SPAN

SITUATION PLAN

STATION 754+66.24 SEPTEMBER 2020

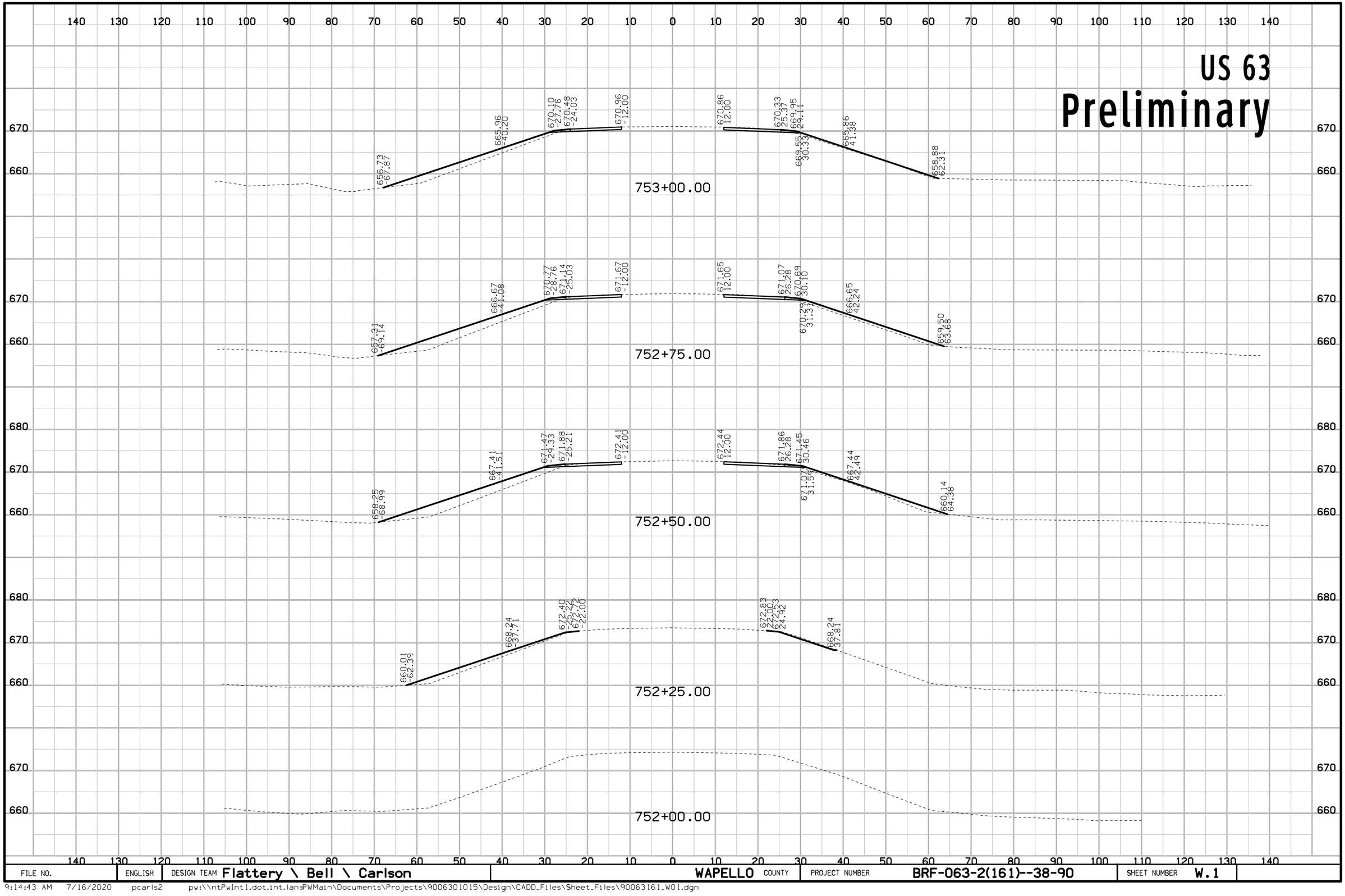
WAPELLO COUNTY

SITUATION PLAN

FILE NO. 0323	ENGLISH	DESIGN TEAM Flattery \ Bell \ Carlson	WAPELLO COUNTY	PROJECT NUMBER BRF-063-2(161)--38-90	SHEET NUMBER V.1	V.1

US 63

Preliminary



FILE NO.	ENGLISH	DESIGN TEAM Flattery \ Bell \ Carlson	WAPELLO COUNTY	PROJECT NUMBER BRF-063-2(161)--38-90	SHEET NUMBER W.1

9:14:43 AM 7/16/2020 pcarls2 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\9006301015\Design\CADD_Files\Sheet_Files\90063161_W01.dgn

US 63
Preliminary

754+50.00

754+25.00

754+00.00

753+75.00

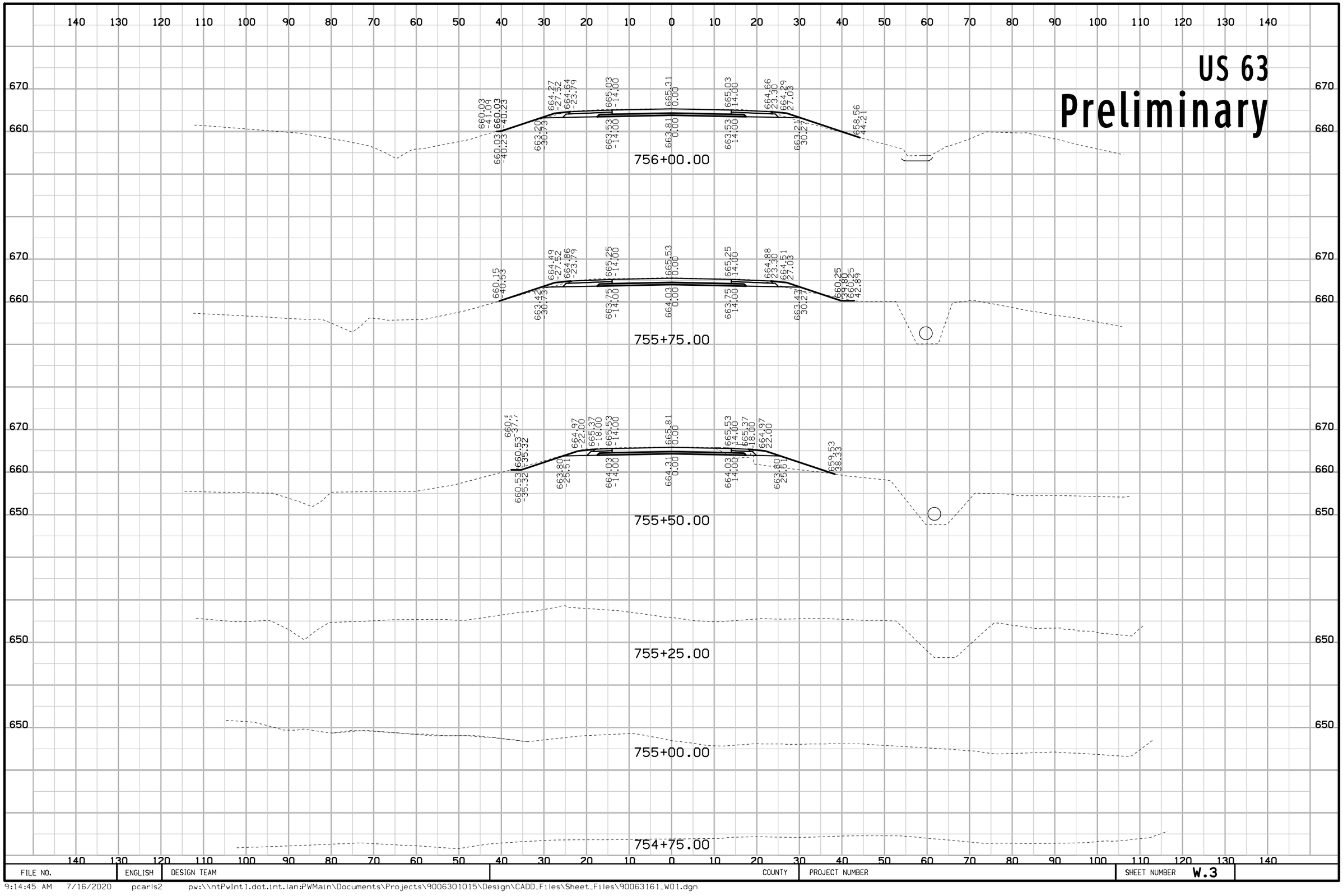
753+50.00

753+25.00

FILE NO.	ENGLISH	DESIGN TEAM	COUNTY	PROJECT NUMBER	SHEET NUMBER W.2

9:14:44 AM 7/16/2020 pcarls2 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\9006301015\Design\CADD_Files\Sheet_Files\90063161_W01.dgn

US 63
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM	COUNTY	PROJECT NUMBER	SHEET NUMBER W.3

9:14:45 AM 7/16/2020 pcarls2 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\9006301015\Design\CADD_Files\Sheet_Files\90063161_W01.dgn

US 63
Preliminary

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

660 670 660

757+25.00

657.30
-46.24
659.68
-39.09
663.64
-27.21
664.16
-22.00
664.26
22.00
663.77
26.97
659.68
39.24
659.68
43.64

757+00.00

670 660

670 660

756+75.00

657.07
-51.01
659.82
-42.76
663.44
-31.90
663.82
-30.77
664.23
-26.59
664.82
12.00
664.72
12.00
664.20
24.00
663.79
29.02
663.41
30.17
659.72
41.24
659.72
43.18

670 660

756+50.00

656.54
-52.24
659.86
-42.27
663.50
-31.34
663.91
-30.12
664.29
-26.39
664.86
12.00
664.76
12.00
664.26
24.41
663.89
28.14
663.48
29.37
659.76
40.54
659.76
41.66

670 660

756+25.00

656.39
-52.17
659.98
-41.39
663.67
-30.34
664.08
-29.12
664.45
-25.39
664.98
12.00
664.88
12.00
664.42
23.41
664.05
27.15
663.64
28.37
658.60
43.50

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

FILE NO.	ENGLISH	DESIGN TEAM	COUNTY	PROJECT NUMBER	SHEET NUMBER W.4

9:14:46 AM 7/16/2020 pcarls2 pw:\\ntPwInt1.dot.int.lan:PWMain\Documents\Projects\9006301015\Design\CADD_Files\Sheet_Files\90063161_W01.dgn