BRIDGE REPLACEMENT
BRFN-169-1(46)--39-80

LETTING DATE
10-18-2022

RINGGOLD Co.

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	**Title Sheets**
* A.1	Title Sheet
* A.2	Location Map Sheet
B Sheets	**Typical Cross Sections and Details**
B.1 - 2	Typical Cross Sections and Details
C Sheets	**Quantities and General Information**
C.1	Project Description
C.1	Estimated Project Quantities
C.1	Estimate Reference Information
C.1	Standard Road Plans
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	US 169
G Sheets	**Survey Sheets**
G.1 - 3	Reference Ties and Bench Marks
G.4	Horizontal Control Tab. & Super for all Alignments
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
* J.2	Detour Map
V Sheets	**Bridge and Culvert Situation Plans**
* V.1	Bridge and Culvert Situation Plans
W Sheets	**Mainline Cross Sections**
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 4	Mainline Cross Sections
	* Color Plan Sheets

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

RINGGOLD COUNTY

BRIDGE REPLACEMENT

Stream 0.1 M1 N of Missouri, D4

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

REVISIONS

TOTAL
18
PROJECT IDENTIFICATION NUMBER
18-80-169-010
PROJECT NUMBER
BRFN-169-1(46)--39-80
R.O.W. PROJECT NUMBER
STPN-169-1(47)--2J-80

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

DESIGN DATA RURAL		
2022 AADT	600	V.P.D.
2042 AADT	700	V.P.D.
2042 DHV	70	V.P.H.
TRUCKS	15	%
Total Design ESALs	--	

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Michael J. Janechek	Primary Signature Block
V.1	Phillip M. Harpole	Hydraulic Design

D4 PLAN – June 21, 2022

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN – October 16, 2020

FILE NO. 31707	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	RINGGOLD COUNTY	PROJECT NUMBER BRFN-169-1(46)--39-80	SHEET NUMBER A.1

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T-68N

T-67N

TAYLOR CO.

DECATUR CO.

WORTH CO.

HARRISON CO.

R-31W

R-30W

R-29W

R-28W

M I S S O U R I

W A U B O N S I E

B E N T O N

R I C E

P O E

A T H E N S

C L I N T O N

M I D D L E F O R K

L O T T S C R E E K

R I L E Y

I S A D O R A

I R E N A

S T A N T O N

G R A N T C I T Y

A L L E N D A L E

POP. 41

POP. 29

POP. 25

POP. 82

POP. 1691

POP. 315

MOUNT AYR MUNICIPAL AIRPORT

STATE LINE ROAD

PROJECT LOCATION

US 169 BRIDGE REPLACEMENT
STA.: 417+43.30
EXISTING FHWA NO.: 46240
MAINT. NO.: 8000.1S169
MP: 0.1

LOCATION MAP SCALE
0 1 2 3
Miles

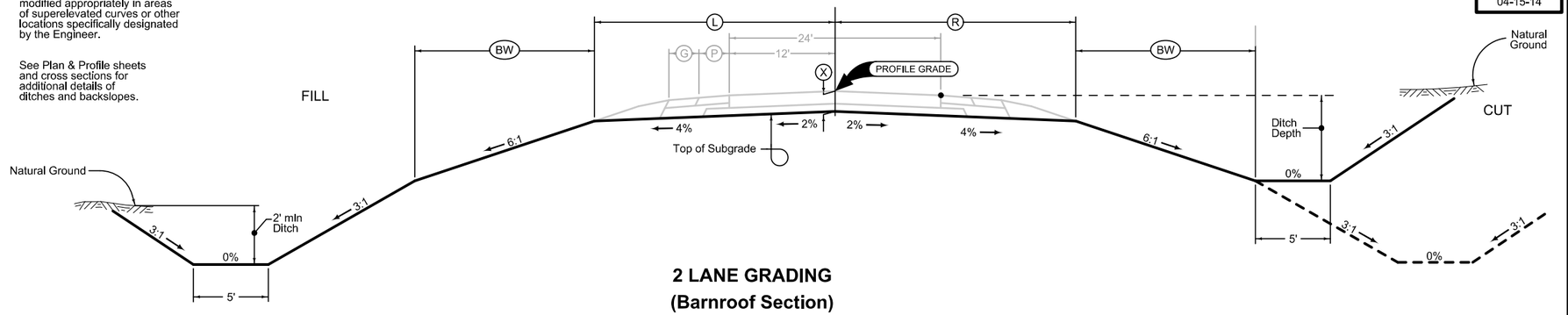
RINGGOLD COUNTY

FILE NO.	31707	ENGLISH	DESIGN TEAM	Iowa DOT \ Shive-Hattery	RINGGOLD COUNTY	PROJECT NUMBER	BRFN-169-1(46)--39-80	SHEET NUMBER	A.2

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(BW) Feet
US 169	6+15.37	7+42.64	29.13	29.13	16	12.87

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

See Plan & Profile sheets and cross sections for additional details of ditches and backslopes.



2 LANE GRADING
(Barnroof Section)

FILE NO. 31707	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	RINGGOLD COUNTY	PROJECT NUMBER BRFN-169-1(46)--39-80	SHEET NUMBER B.1

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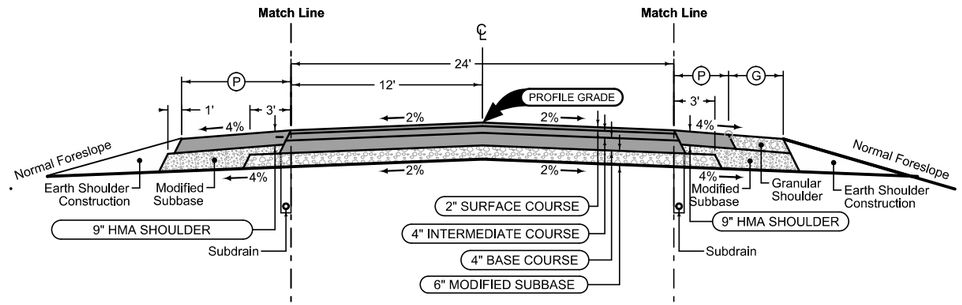
Paved Shoulder

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_ 10-17-17		
STATION TO STATION		(P) Feet
5+15.00	8+44.00	8



2H_ 04-21-20	
STATION TO STATION	
6+15.37	7+42.64

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

2_C_ 10-15-13			
STATION TO STATION		(P) Feet	(G) Feet
6+15.37	7+42.64	4	4

See Tab 100-24 or 100-25 for pavement quantities.
See Tab 112-9 for shoulder quantities.

US 169

100-1D
10-18-05

PROJECT DESCRIPTION

This project involves the replacement of the US 169 bridge over a stream 0.1 miles North of Missouri D-4 with a single 14'x14' RCB culvert.

100-0A
10-28-97

ESTIMATED ROADWAY QUANTITIES
(1 DIVISION PROJECT)

Item No.	Item Code	Item	Unit	Total	As Built Qty.

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.

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-305	04-17-18	Subdrain Outlets (standard Subdrain, Pressure Release and Special)
EC-201	10-16-18	Silt Fence
EC-202	10-21-14	Floating Silt Curtain
EC-204	04-18-17	Perimeter and Slope Sediment Control Devices
EC-301	10-18-16	Rock Erosion Control (REC)
EW-101	10-17-17	Embankment and Rebuilding Embankments
EW-102	10-20-15	Allowable Placement of Unsuitable Soil in Embankments
PM-110	10-16-18	Line Types
PM-420	04-19-11	Two-Lane Roadway with no Turn Lanes (One-Way Stop Condition)
PV-101	10-16-18	Joints
TC-1	04-16-13	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-202	04-21-15	Work Within 15 ft of Traveled Way
TC-252	04-19-16	Routes Closed to Traffic

SURVEY SYMBOLS

- CP Control Point
- BM Bench Mark
- PCT Photo Control Target
- EP Edge of Paved Roads (ML or SR)
- TOP Top of Bridge Pier
- BBB Bottom of Bridge Beam
- BLS Bridge Low Steel
- GR Ground Shot
- BL Topo Breakline
- DU Centerline Draw or Stream (Up)
- WL1D Water Line Co. 1 - Quality D
- PIP Pipe Culvert
- D Centerline Draw or Stream (Down)
- TW Top of Water
- BD Bridge Deck
- EG Edge of Gravel Road
- SI Sign
- C Centerline BL of Road (ML or SR)
- FW Wire Fence
- BRG Bridge
- RET Retaining Walls
- GDL Guard Rail Steel
- BCL Bridge Centerline
- FO1B Fiber Optic Co. 1 - Quality B
- TPD Telephone Pedestal
- WL2D Water Line Co. 2 - Quality D
- PCP Photo Control Point
- PLG Location of General Photo
- SBR Size of Bridge

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.

Remark Abbreviations
QLA Quality Level A Highest guideline quality level
QLD Quality Level D Lowest guideline quality level

- WL1D Water Line Co. 1 - Quality D
- PIP Pipe Culvert
- FO1B Fiber Optic Co. 1 - Quality B
- TPD Telephone Pedestal
- WL2D Water Line Co. 2 - 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.**	
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. 31707	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	RINGGOLD COUNTY	PROJECT NUMBER BRFN-169-1(46)---39-80	SHEET NUMBER D.1

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CLINTON TOWNSHIP
T-67N R-31W
SEC. 26

Sta:6+78.4
86'X26' Continuous
Conc Slab Bridge
Design #6651
DA=1100 Acres
REMOVE
Build 14'x14'x115' RCB
Skew = 10° Rt. Ahd.
F.L. = Lt. 1009.20
Rt. 1007.00
Design No. 123
Sta 6+78.92

SECT. NO. 26

BEGIN ROADWAY
STA: 6+15.37

BEGIN PROJECT
STA: 5+15.00

POT Sta 2+67.74

PI Sta 4+80.82

5

STREAM

PI Sta 6+04.91

PC Sta 6+78.70

INSTALL TRM ALONG LOW SIDE SHOULDER

END ROADWAY
STA: 7+42.64

END PROJECT
STA: 8+44.00

10

PT Sta 10+16.03

POT Sta 10+27.93

EXISTING ROW

24" C.M.P. (UAC)

169

PI Sta 8+48.44

EXISTING ROW

SECT. NO. 26

APROX 25' TRANSITION TO TIE GRADING INTO EXISTING (TYP. ALL QUADRANTS)

Curve Data
Δ = 11° 36' 30.66" (LT)
T = 168.74
L = 336.33
R = 1,660.00
E = 8.55

0 50 FEET

1,034.47

1,033.44

-0.803%

Tie In
Sta. 6+15.37
Elv. 1,034.47

Tie In
Sta. 7+42.64
Elv. 1,033.44

+00 Lt. 1019.45
+25 Lt. 1015.29
+25 Rt. 1014.65
+50 Lt. 1011.18
+90 Rt. 1014.70
+65 Rt. 1012.19
+25 Rt. 1021.00
+25 Lt. 1021.12

1040 1035 1030 1025 1020 1015 1010 1005 1000 995 990 985

Lt UAC
Rt UAC

UAC DG Culv. DG UAC
UAC DG Culv. DG UAC

1,034.39 1,034.19 1,033.99 1,033.79 1,033.59

+50 1 +50 2 +50 3 +50 4 +50 5 +50 6 +50 7 +50 8 +50 9 +50 10 +50 11 +50 12

FILE NO. 31707	ENGLISH	DESIGN TEAM Iowa DOT / Shive-Hattery	RINGGOLD COUNTY	PROJECT NUMBER BRFN-169-1(46)--39-80	SHEET NUMBER D.2

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Survey Information

Ringgold County
BRFN-169-1(46)39-80
Hwy 169 over Stream 0.1 mi N. of Missouri
PIN 18-80-169-010
Sap-0200.3

Party Personnel

Murray Berting- Party Chief
Derek Alleman- Assistant Survey Party Chief
Oscar Contreras- Assistant Survey Party Chief
Grant Hemphill- Assistant Survey Party Chief

Date(s) of Survey

Begin Date	05/23/2019
End Date	06/06/2019

General Information

Measurement units for this survey are US survey feet. This survey is for proposed Bridge reconstruction and reconstruction of US 169 over stream. Project datum and control information is provided by Shive-Hattery, Inc. This project is a Full DTM with Photo control. This survey request was for the US 169 Corridor and stream reconstruction.

Vertical Control

IARTN
Vertical datum for this survey is NAVD88 (Computed using Geoid12A). Additional benchmarks were placed throughout the project using a Total Station setup relative to Point 1 and Point 2. Vertical control was verified between control points with check shots by Total Station through multiple setup from various occupation points with a vertical error of less than 0.05 feet.

This survey found a local control benchmark monument (benchmark plug on bridge abutment in SE corner bridge). No vertical information was available at the time field work was completed.

Horizontal Control

(Project Coordinates from Redundant IaRTN Observations)
The project coordinate system is Iowa Regional Coordinate System Zone 12 (U.S. Survey Feet This survey control is relative to the IaRTN reference stations. IaRTN Reference Station coordinates are relative to the National Reference Station network datum: NAD83 (2011) for Epoch 2010.00. Coordinates were determined by IaRTN observations with appropriate occupation times. Additional control points were placed throughout the project using a Total Station setup relative to Point 1 and Point 2.

Alignment Information

The horizontal alignment for this survey is a retrace of As-built Plans No. F.931(I). Survey stationing was equated to the plan PI at STA 12+04.7 and run back and ahead without equation throughout the survey.

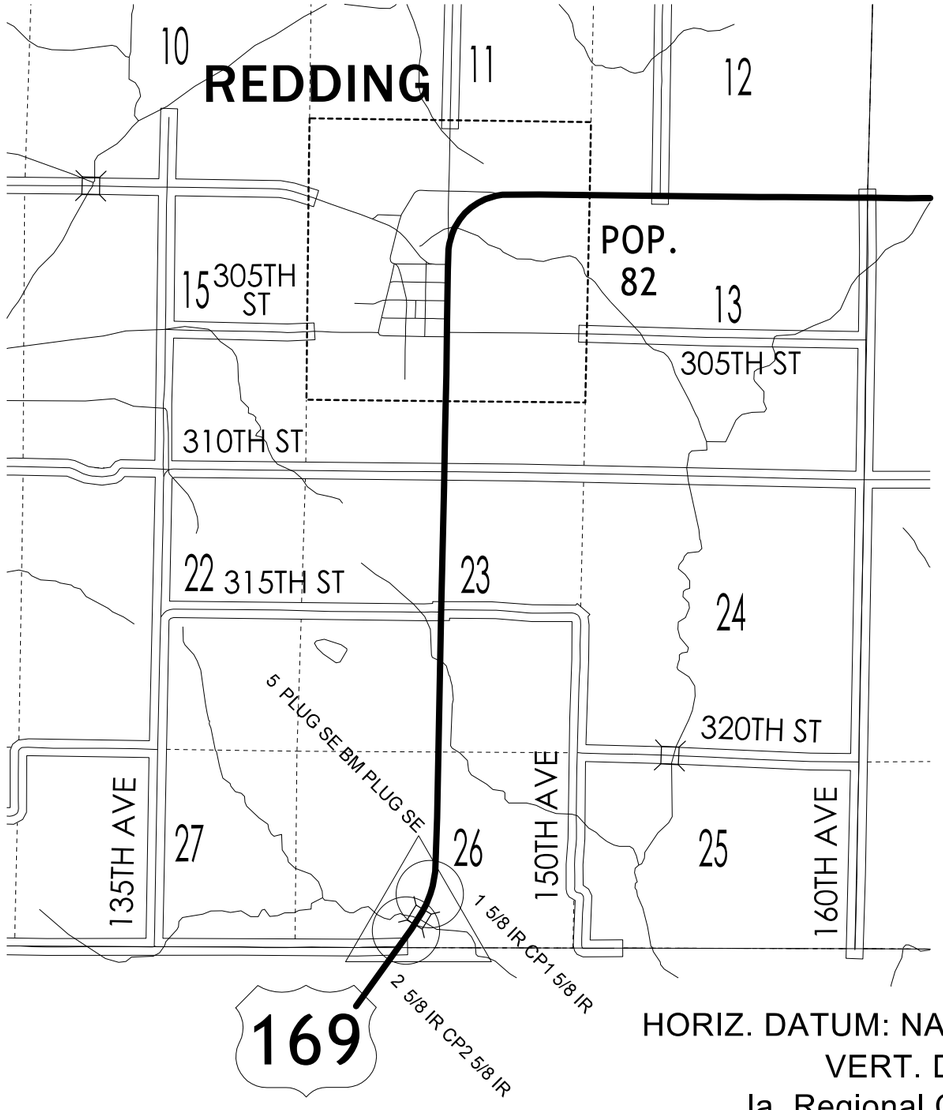
Survey stationing relates to as built plan stationing as follows:

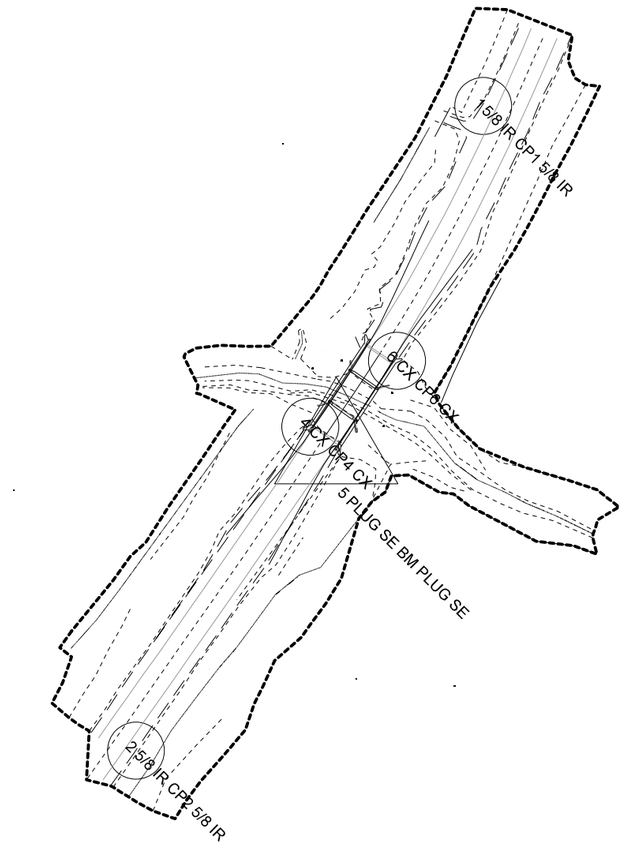
PI Sta. 12+04.7 As-built Plans Project No. F.931(I)
Survey PI Sta: 12+04.7

Bridge Sta 6+78.4 Project No. F.931(I)
Survey Bridge STA 6+78.4

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

Point Name	Northing	Easting	Elevation	Feature Definition	Description
1	6075660.01	22322895.11	1034.28	CP1	5/8" Iron Rod
2	6075094.34	22322590.35	1039.98	CP2	5/8" Iron Rod
4	6075378.62	22322743.41	1034.47	CP4	"X" Cut in Concrete
5	6075359.66	22322766.17	1037.74	BM	Plug on Soiutheast Bridge Abutment
6	6075436.46	22322819.40	1033.52	CP6	"X" Cut in Concrete

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)
ML1691		2+67.74	6,075,068.88	22,322,547.04															
ML1693		4+80.82	6,075,243.12	22,322,669.68															
ML1695		6+04.91	6,075,345.67	22,322,739.56															
ML169_7								6+79.70	6,075,407.64	22,322,781.43	8+48.44	6,075,547.46	22,322,875.89	10+16.03	6,075,703.43	22,322,940.30			
ML1699		10+27.93	6,075,714.43	22,322,944.84															

SPIRAL OR CIRCULAR CURVE DATA

101-17
04-19-11

Name	Location	Δ_{scs}	Horizontal Alignment Data													Remarks
			Spiral Data								Curve Data					
			θs	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	Δ_c	T	L	R	E	
ML169_7											11° 36′ 30.66″ LT	168.74′	336.33′	1,660.00′	8.55′	

Ringgold	ROW: STPN-169-1(47)--2J-80				PIN	18-80-169-010														
	Stream 0.1 mi N of Missouri																			
		STATE			COUNTY			CITY				TEMP EASE		BORROW						
PARCEL NO.	OWNER NAME	FEE	EASE		FEE	EASE		FEE	EASE		EXCESS			FEE	T.E.	MITIGATION	OTHER	HOUSE	BUILDING(S)	A/C ONLY	TOTAL ACQ.
1	David Hunt - Fee		0.18 AC																	
2	Paul David Maudlin - Fee		0.17 AC																	
2 Parcels	"TOTALS	0 AC	0.35 AC		0 AC	0 AC		0 AC	0 AC		0 AC	0 AC		0 AC	0 AC	0 AC				
		0 SF		0 SF	0 SF		0 SF	0 SF		0 SF	0 SF		0 SF							

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.

FILE NO.	ENGLISH	DESIGN TEAM	IOWA DOT * OFFICE OF ROW	COUNTY	PROJECT NUMBER	SHEET NUMBER	

CLINTON TOWNSHIP
T-67N R-31W
SEC. 26

Sta:6+78.4
86'X26' Continuous
Conc Slab Bridge
Design #6651
DA=1100 Acres

1

DAVID HUNT

5+82
℄135'

6+40
℄141'

5+35
℄83'±EX.R/W

7+48
℄69'±EX.R/W

W

FO

24"
C.M.P.

10

IOWA – MISSOURI STATE LINE

5+85
℄80'±EX.R/W

7+51
℄65'±EX.R/W

6+50
℄137'

7+05
℄137'

NE 1/4 SW 1/4
T-67N R-31W
SEC. 26

NW 1/4 SE 1/4
T-67N R-31W
SEC. 26

SE 1/4 SW 1/4
T-67N R-31W
SEC. 26

SW 1/4 SE 1/4
T-67N R-31W
SEC. 26

2

PAUL DAVID MAUDLIN

Sta:6+78.4
86'X26' Continuous
Conc Slab Bridge
Design #6651
DA=1100 Acres

Right of Way Design Information
THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: Larson / Hughes
ROW #: STPN-169-1(47)--2J-80
Plan Date: 12-1-2020
Color Legend:
Property Lines
Temporary Easement
Permanent Acquisition

0 100
FEET

FILE NO. 31707	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	RINGGOLD COUNTY	PROJECT NUMBER BRFN-169-1(46)--39-80	SHEET NUMBER H.1

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108-26A
08-01-08

STAGING NOTES

Stage 1:
Traffic shall be maintained on US 169 while culvert is being constructed below existing bridge structure.

Stage 2:
Detour traffic, remove existing superstructure, backfill and reconstruct pavement.

Reopen to normal traffic operations.

108-23A
08-01-08

TRAFFIC CONTROL PLAN

1) Maintain traffic on US 169 during culvert construction.

2) Detour traffic during roadway reconstruction and superstructure removal. (See sheet J.2 for detour route). Iowa DOT to coordinate detour with Missouri DOT.

108-25
10-21-14

511 TRAVEL RESTRICTIONS

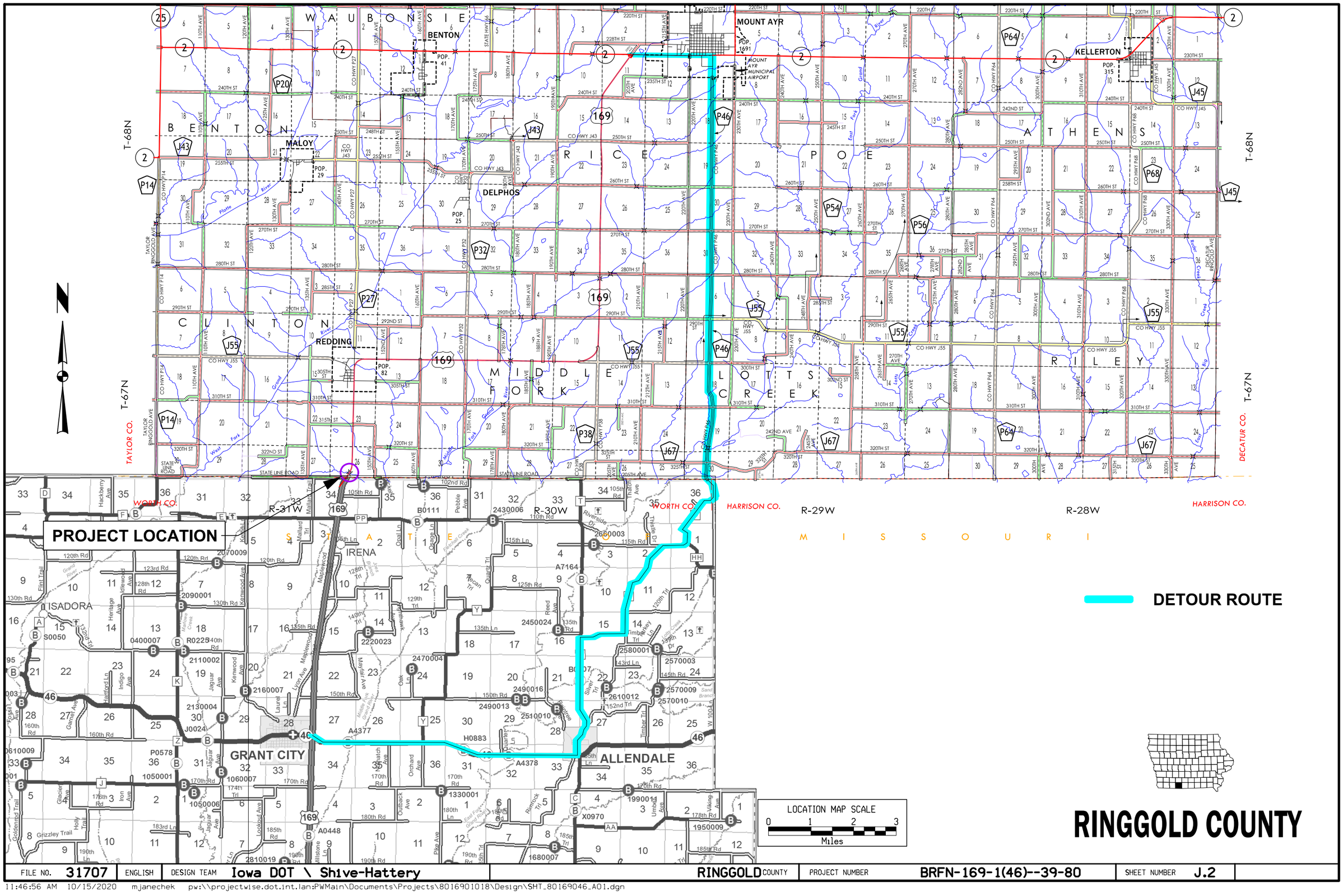
Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
			No Travel Restrictions Expected									

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 Provided	



FILE NO.	31707	ENGLISH	DESIGN TEAM	Iowa DOT \ Shive-Hattery	RINGGOLD COUNTY	PROJECT NUMBER	BRFN-169-1(46)--39-80	SHEET NUMBER	J.2

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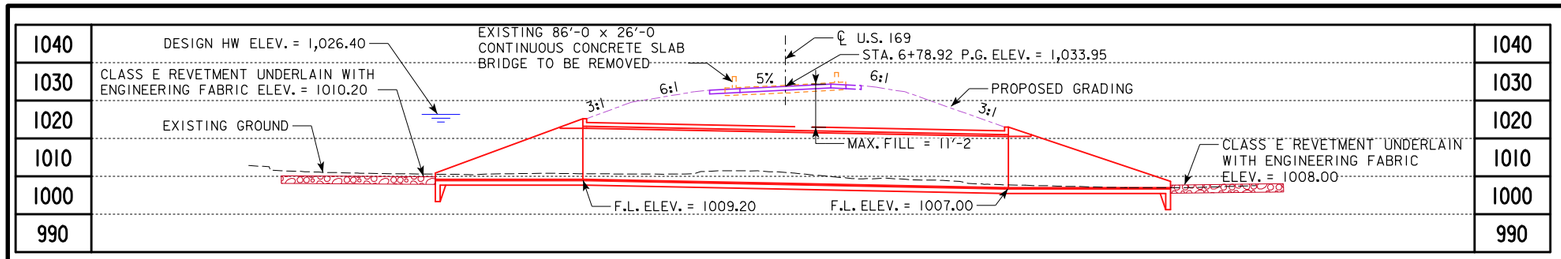
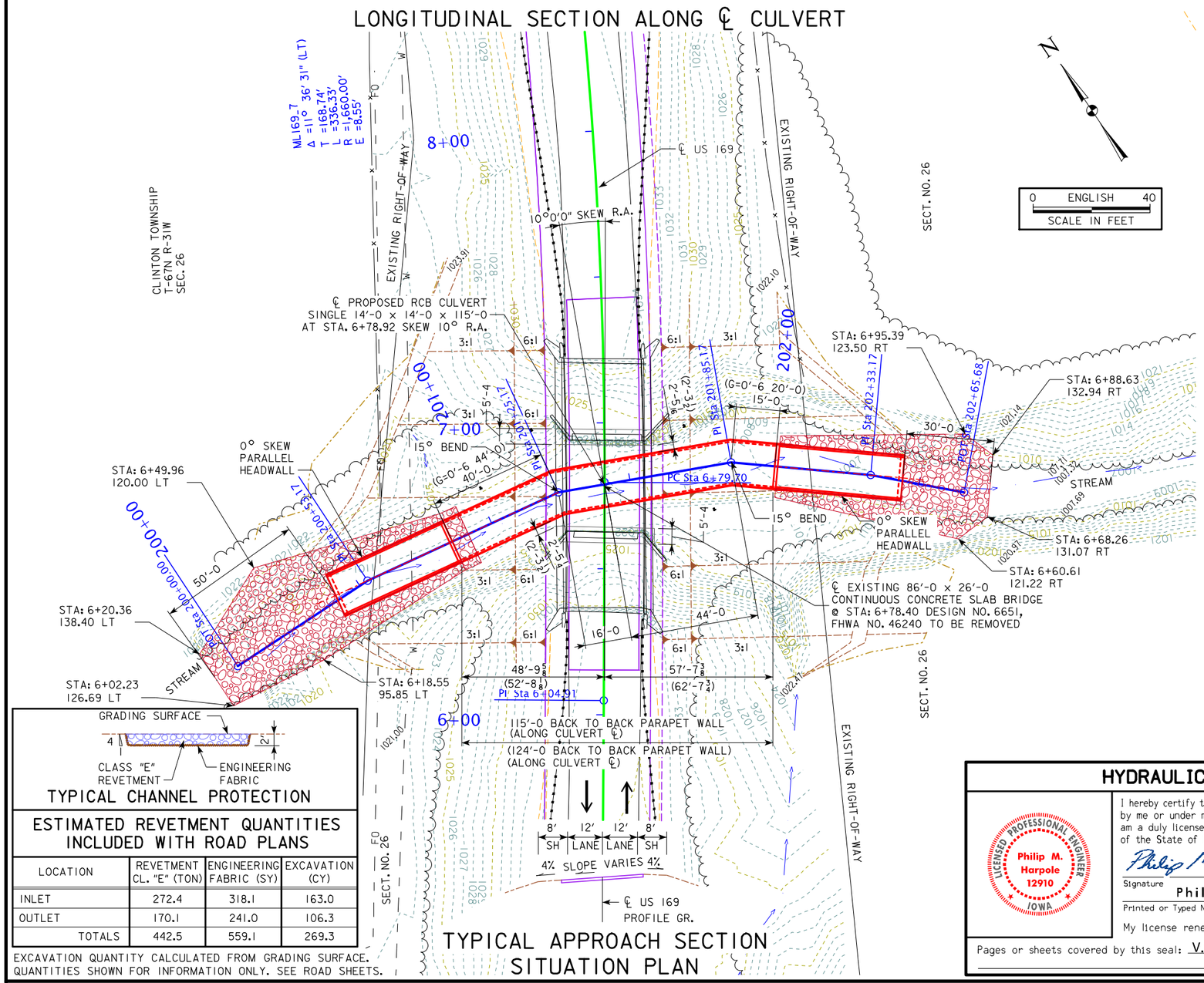


BENCH MARK: 5 BM PLUG ON SOUTHEAST BRIDGE ABUTMENT ELEVATION = 1037.74

LONGITUDINAL SECTION ALONG ℄ CULVERT



TYPICAL APPROACH SECTION SITUATION PLAN

TYPICAL CHANNEL PROTECTION

ESTIMATED REVETMENT QUANTITIES INCLUDED WITH ROAD PLANS

LOCATION	REVETMENT CL. "E" (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	272.4	318.1	163.0
OUTLET	170.1	241.0	106.3
TOTALS	442.5	559.1	269.3

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.
QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.

PROPOSED PROFILE GRADE U.S. 169

NOTES:

1. EXISTING 86'-0 x 26'-0 CONTINUOUS CONCRETE SLAB BRIDGE DESIGN NO. 6651 TO BE REMOVED
2. DRAINAGE THROUGH EXISTING CULVERT/CHANNEL MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.
3. FLOW LINE OF CULVERT NOMINALLY BURIED 1.0 FOOT.
4. RCB WILL BE CONSTRUCTED UNDER THE EXISTING BRIDGE BEFORE CLOSING ANY LANES AND BEFORE REMOVING ANY OF THE EXISTING BRIDGE.
5. DIMENSIONS IN PARENTHESES ARE FOR PRECAST RCB WHERE THEY ARE DIFFERENT THAN THE CAST IN PLACE.

HYDRAULIC DATA

DRAINAGE AREA = 1.76 SQ. MI.
Q_{50} = 2180 CFS
HW ELEV. = 1026.40
STREAM SLOPE = 66.6 FT./MI.
Q_{100} = 2680 CFS HW ELEV. 1028.80
Q_{500} = 3860 CFS HW ELEV. = 1034.40

UTILITIES LEGEND:

— W —RURAL WATER LINE
— FO —FIBER OPTIC LINE

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

LOCATION

US 169 OVER STREAM
T-67N R-31W
SECTION 26
CLINTON TOWNSHIP
RINGGOLD COUNTY
FHWA NO. N/A
BRIDGE MAINT. NO. 8000.IS169
LATITUDE 40.572933°
LONGITUDE -94.387891°

TRAFFIC ESTIMATE

2022	AADT	600	V.P.D.
2042	AADT	700	V.P.D.
2042	DHV	70	V.P.H.
TRUCKS		15	%

PRELIMINARY

HYDRAULIC DESIGN

LICENSED PROFESSIONAL ENGINEER — Philip M. Harpole 12910 — 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.

Philip M. Harpole — 08-14-2020
Signature — Date

Philip M Harpole
Printed or Typed Name

My license renewal date is December 31, 2021

Pages or sheets covered by this seal: V.1

DESIGN FOR 10° SKEW R.A.

SINGLE 14'-0 X 14'-0 X 115'-0 CAST IN PLACE CONCRETE CULVERT SITUATION PLAN

STATION 6+78.92 — AUGUST 2020

RINGGOLD COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 1 FILE NO. 31707 DESIGN NO. 123

DESIGN TEAM SHIVE-HATTERY INC. | RINGGOLD COUNTY | PROJECT NUMBER BRFN-169-1(46)--39-80 | SHEET NUMBER V.1

LINE STYLE LEGEND OF CROSS SECTION SHEETS (ROAD)

- Existing Ground Line
- Proposed Template
- Proposed Topsoil Placement
- Additional Topsoil Removal
- Subgrade Treatment
- Granular Shoulder
- Pavement
- Existing Pipe\RCB
- Proposed Pipe\RCB
- Proposed Dike
- All Elements Associated with Proposed Entrances

LINE STYLE LEGEND OF CROSS SECTION SHEETS (SOILS)

- Topsoil (Class 10)
- Slope Dressing Only
- Class 10 Materials
- Select Loams And Clay-Loams
- Select Sand
- Unsuitable Type A Disposal
- Unsuitable Type B Disposal
- Unsuitable Type C Disposal
- Shale
- Waste
- Broken and Weathered Rock
- Solid Rock
- Boulders

Note: All layer lines and descriptions identify layers above the line.

Note: Vertical or near vertical lines connecting soil layers at edges of cross sections are only for the purpose of calculating template quantities and do not depict soil stratification.

SYMBOL LEGEND OF CROSS SECTION SHEETS

Existing ROW — Existing Right-of-Way Limit

Proposed ROW — Proposed Right-of-Way Limit

Temporary ROW — Temporary Right-of-Way Limit

CROSS SECTION LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES W, X, Y, & Z)

FILE NO. 31707	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	RINGGOLD COUNTY	PROJECT NUMBER BRFN-169-1(46)---39-80	SHEET NUMBER W.1

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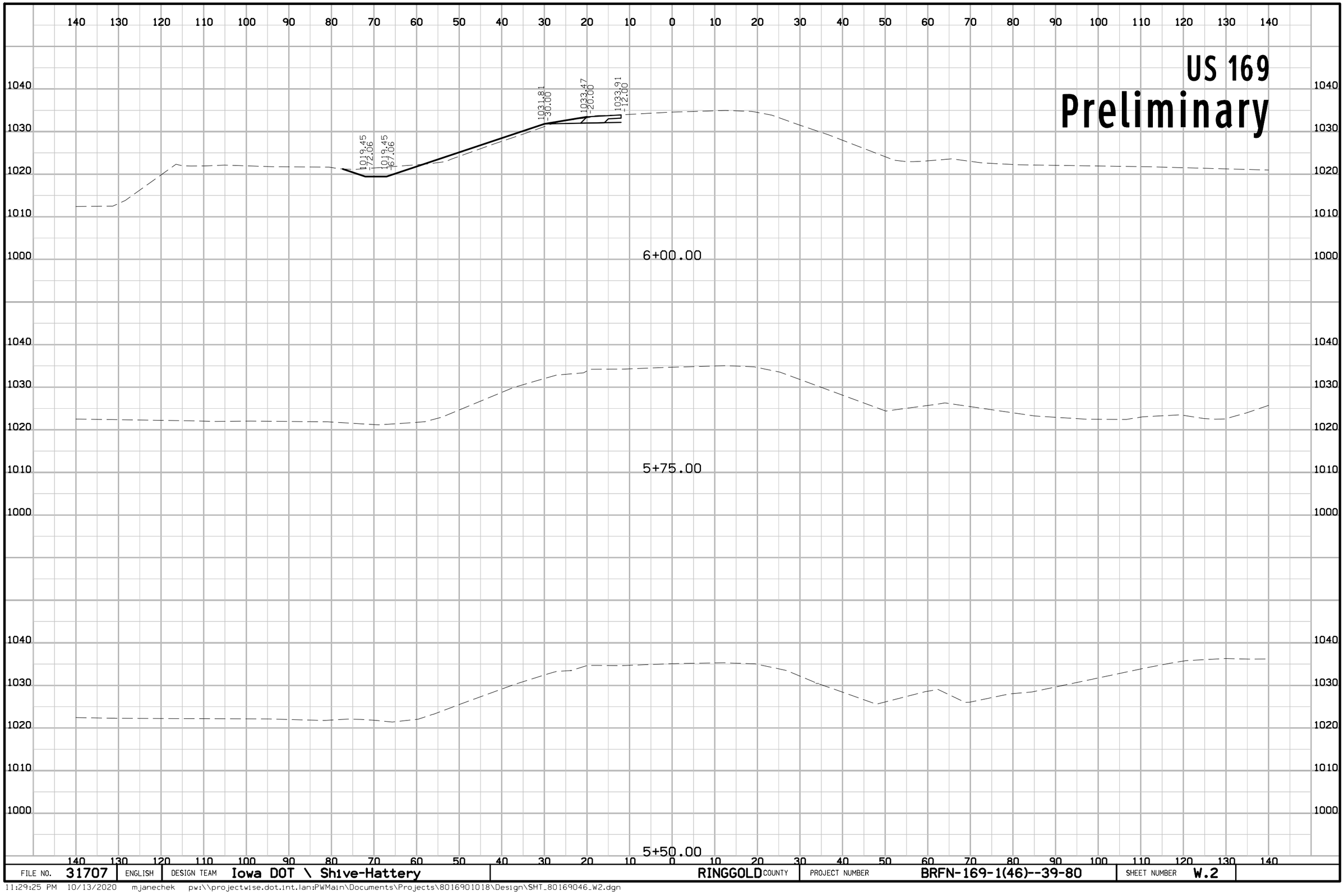
US 169

Preliminary



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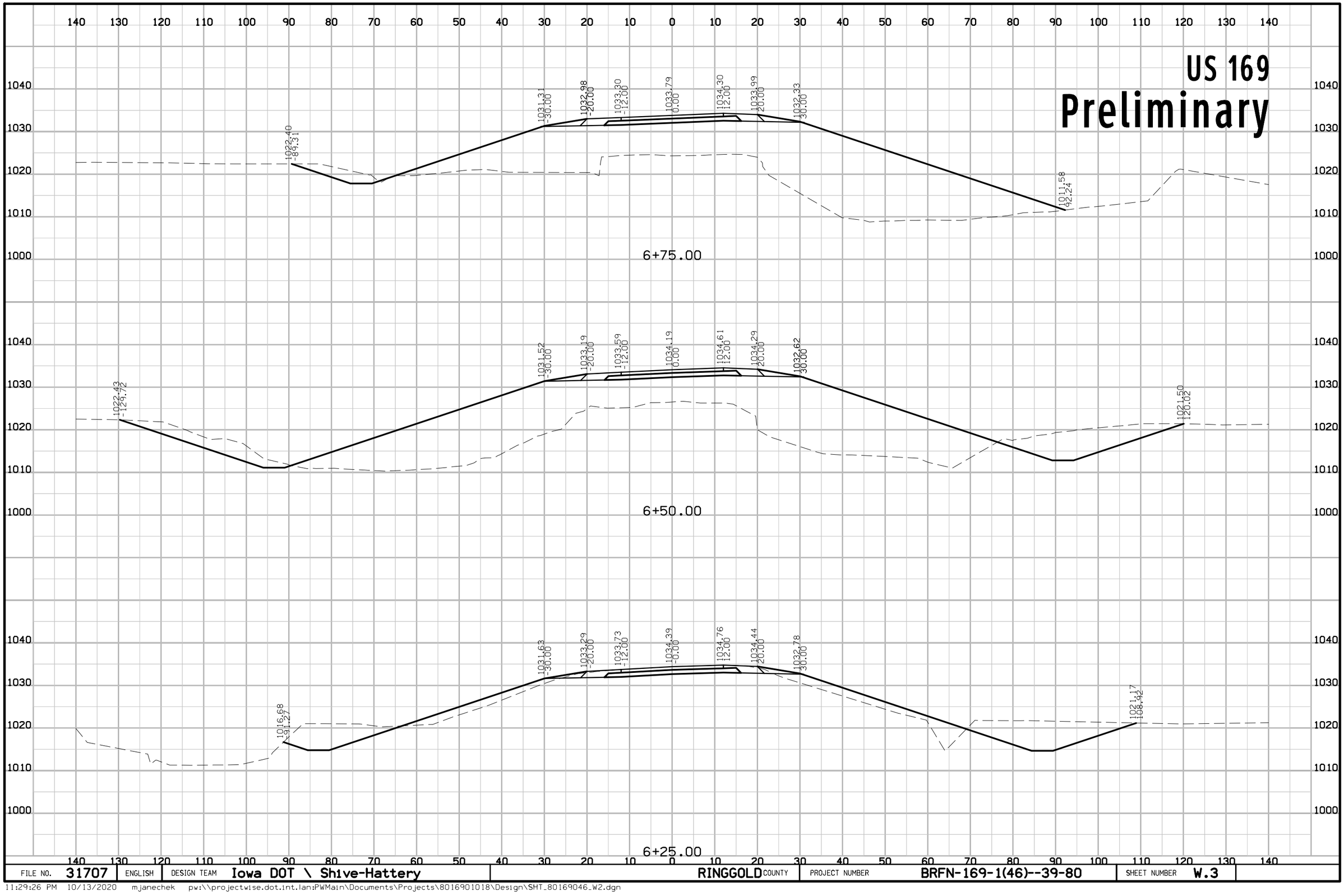
US 169
Preliminary



FILE NO. 31707	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	RINGGOLD COUNTY	PROJECT NUMBER BRFN-169-1(46)--39-80	SHEET NUMBER W.3

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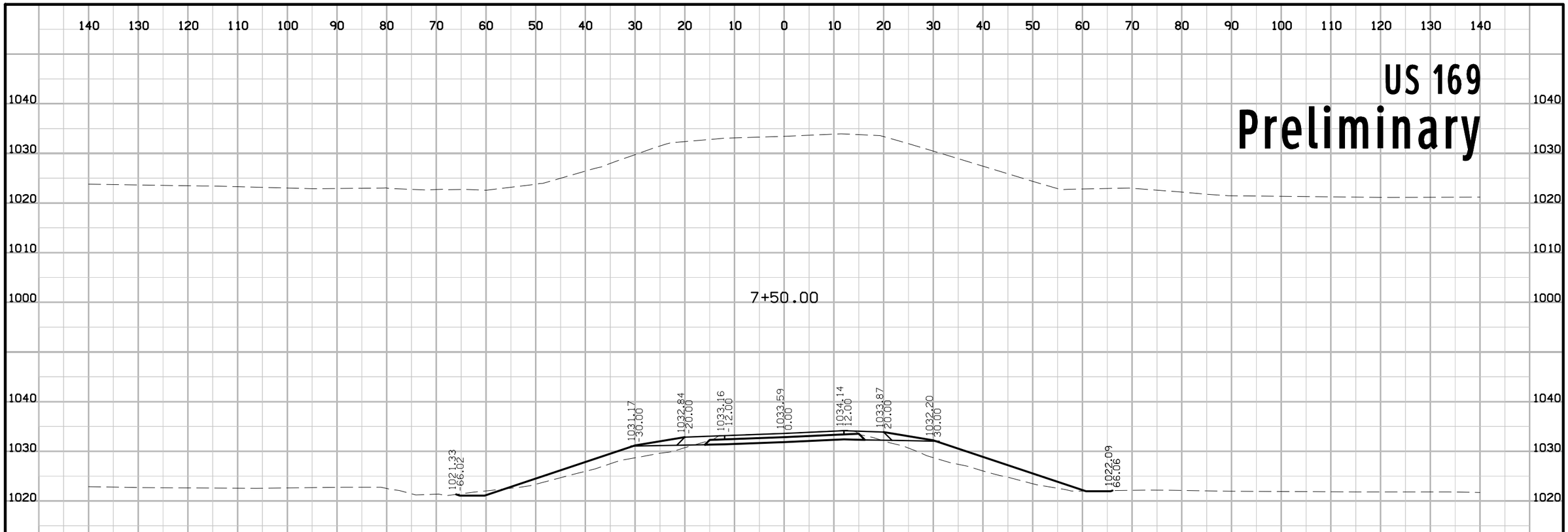
US 169
Preliminary

7+50.00



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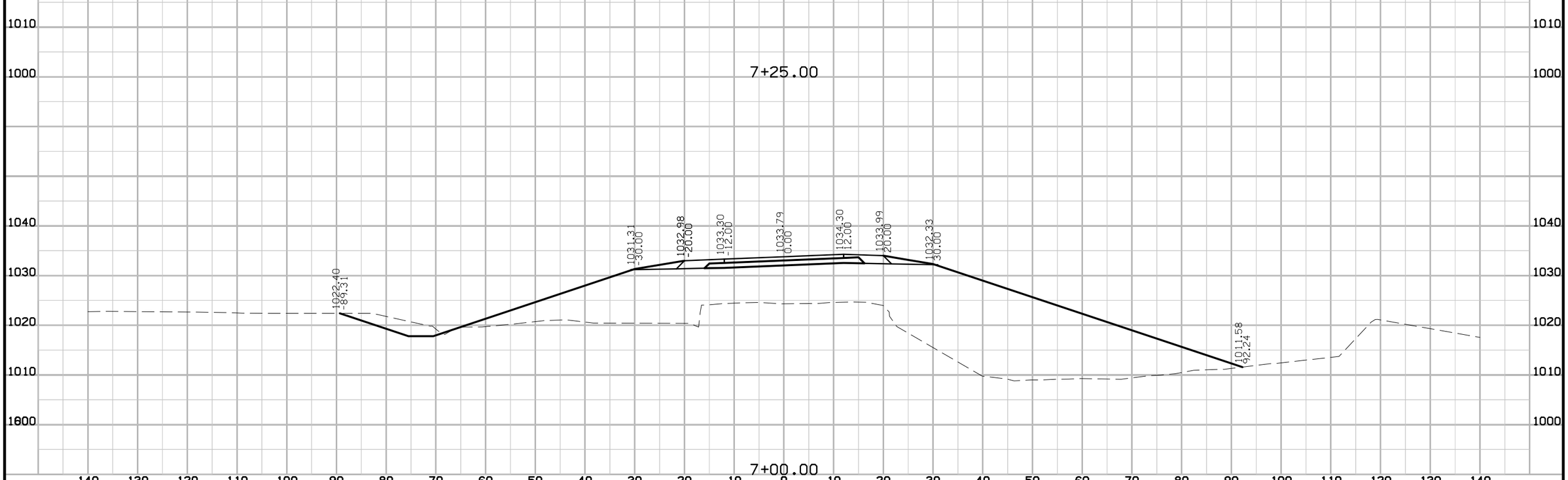

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FILE NO. 31707	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	RINGGOLD COUNTY	PROJECT NUMBER BRFN-169-1(46)--39-80	SHEET NUMBER W.4

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