BRIDGE REPLACEMENT
BRFN-010-2(33)--39-71

LETTING DATE
10-18-2022

O'BRIEN 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 - 3	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	IA 10
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	Staging Notes Stage
* J.2	Detour Plan Map
V Sheets	**Bridge and Culvert Situation Plans**
* V.1 - 2	Bridge and Culvert Situation Plans
W Sheets	**Mainline Cross Sections**
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 8	Mainline Cross Sections
	* Color Plan Sheets

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

O'BRIEN COUNTY

BRIDGE REPLACEMENT

IA 10 bridge over Mud Creek 1.9 miles west of County Road L48

SCALES: As Noted

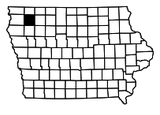
Refer to the Proposal Form for list of applicable specifications.

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.

REVISIONS

TOTAL
24
PROJECT IDENTIFICATION NUMBER
16-71-010-010
PROJECT NUMBER
BRFN-010-2(33)--39-71
R.O.W. PROJECT NUMBER
STPN-010-2(34)--2J-71



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

DESIGN DATA RURAL		
2021 AADT	2,200	V.P.D.
2041 AADT	2,700	V.P.D.
20-- DHV	--	V.P.H.
TRUCKS	18	%
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 – Date: June 20, 2022
D5 PLAN – Date: Sept 4, 2020

PRELIMINARY PLANS

Subject to change by final design.

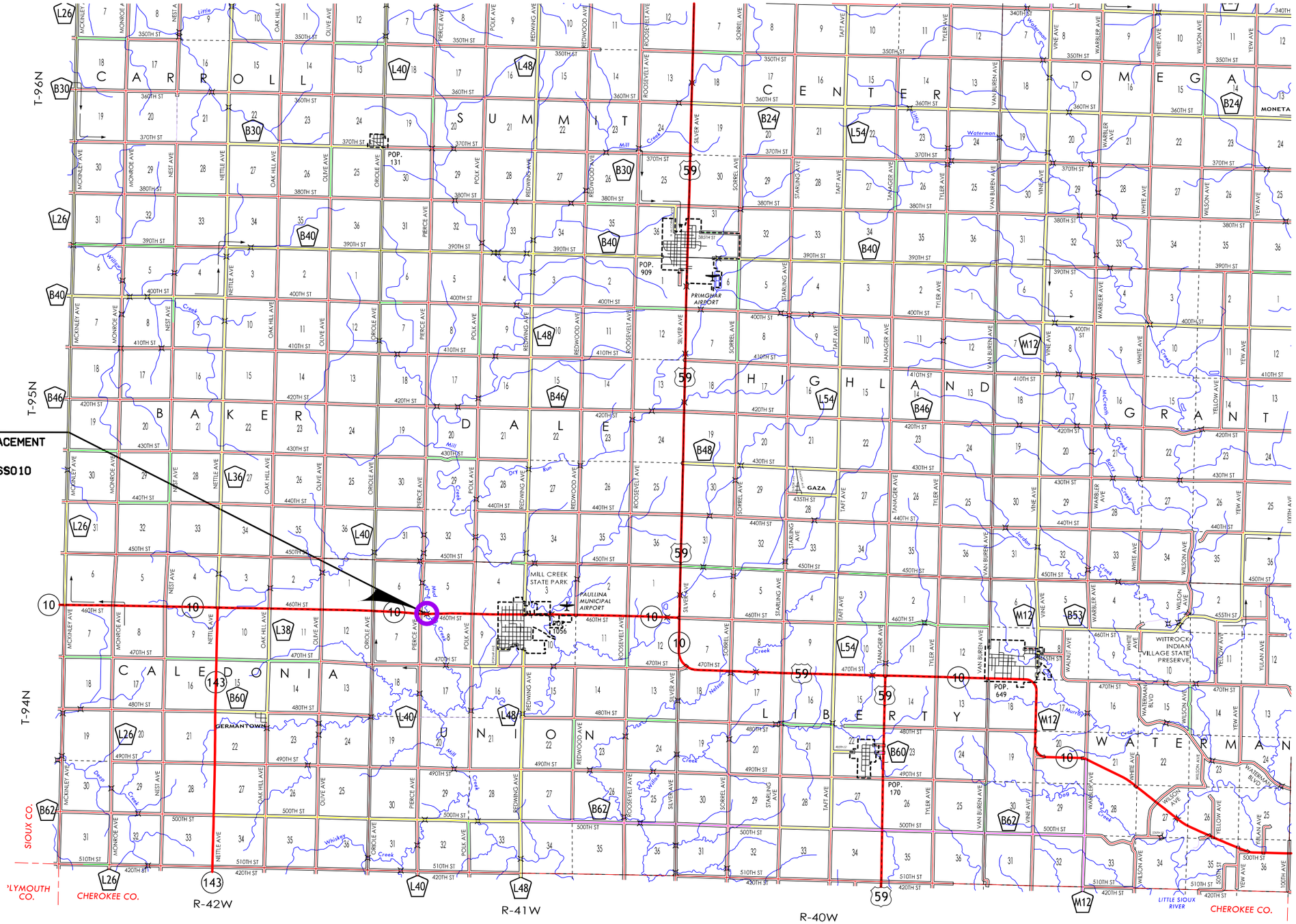
D3 PLAN – Date: April 10, 2020

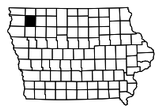
FILE NO. 31432	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER A.1

12:35:36 PM 3/31/2020 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7101001016\Design\SHT_71010033_A1.sht

PROJECT LOCATION

IA 10 BRIDGE REPLACEMENT
STA.: 371+60
FHWA NO.: 38350
MAINT. NO.: 7143.6S010
MP: 43.6





LOCATION MAP SCALE
0 1 2 3
Miles

FILE NO. 31432	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER A.2

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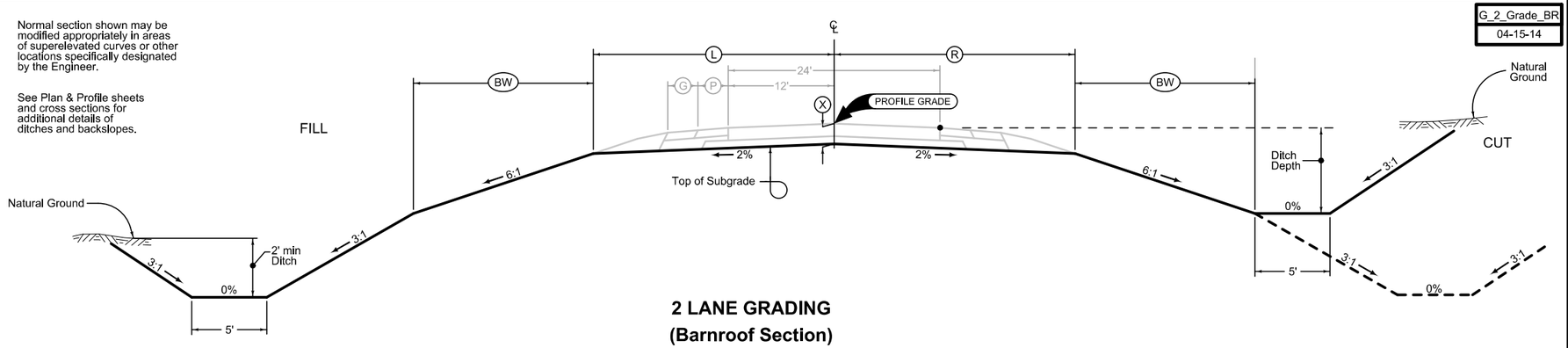
LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(BW) Feet
IA 10	369+81.27	373+38.50	33.82	33.82	21	8.18

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)

G_2_Grade_BR
04-15-14

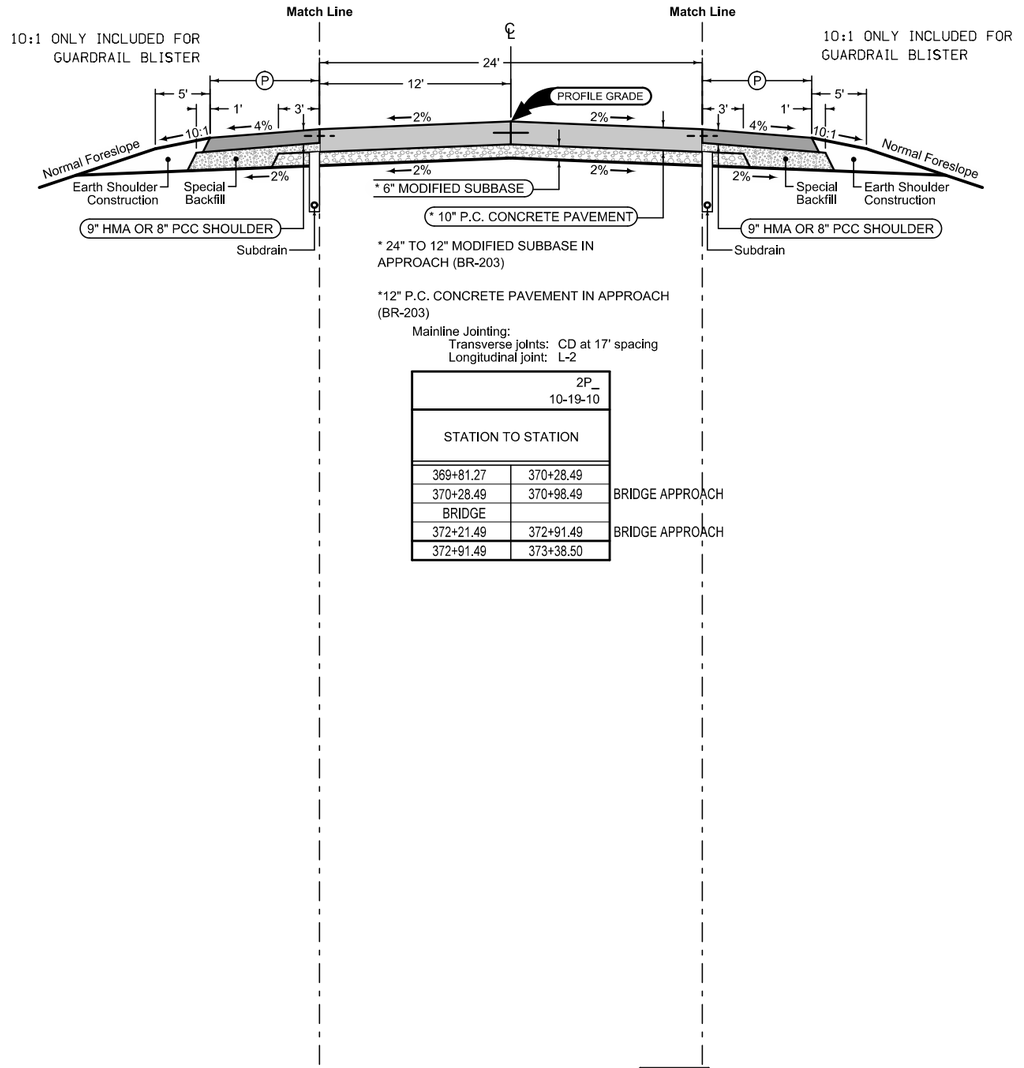
FILE NO. 31432	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER B.1

12:52:19 PM 3/17/2020 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7101001016\Design\SHT_71010033_B1.sht

Paved Shoulder at Guardrail

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
369+81.27	370+08.31	11.26
370+08.31	370+49.40	11.26-9.58
370+49.40	370+98.49	9.58
372+21.49	372+81.10	9.58
372+81.10	373+05.64	9.58-11.96
373+05.64	373+38.50	11.96-13.37



* 24" TO 12" MODIFIED SUBBASE IN APPROACH (BR-203)

*12" P.C. CONCRETE PAVEMENT IN APPROACH (BR-203)

Mainline Jointing:
Transverse joints: CD at 17' spacing
Longitudinal joint: L-2

2P_ 10-19-10		
STATION TO STATION		
369+81.27	370+28.49	
370+28.49	370+98.49	BRIDGE APPROACH
BRIDGE		
372+21.49	372+91.49	BRIDGE APPROACH
372+91.49	373+38.50	

2E_ 10-19-10

Paved Shoulder at Guardrail

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
369+81.27	370+14.14	13.28-11.99
370+14.14	370+38.18	11.99-9.58
370+38.18	370+98.49	9.58
372+21.49	372+71.90	9.58
372+71.90	373+11.75	9.58-11.23
373+11.75	373+38.50	11.23

Paved Shoulder at Guardrail

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
373+38.50	373+46.42	13.37-13.63
373+46.42	373+76.61	13.63

Paved Shoulder at Guardrail

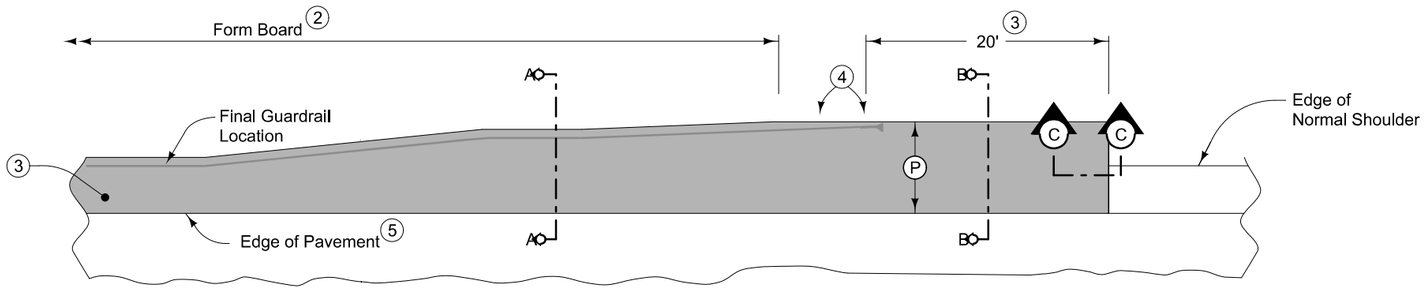
PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

2_P_Guard_ 10-17-17		
STATION TO STATION		(P) Feet
369+44.25	369+72.81	13.63
369+72.81	369+81.27	13.63-13.28

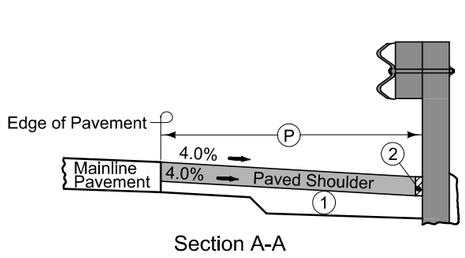
See Tab 100-24 or 100-25 for pavement quantities.

See Tab 112-9 for shoulder quantities.

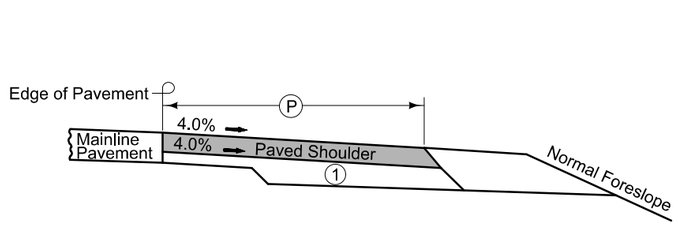
IA 2



PLAN VIEW

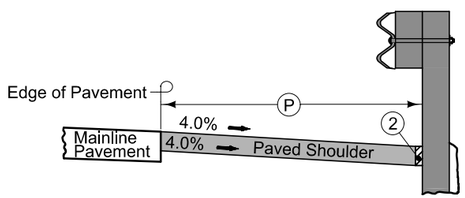


Section A-A

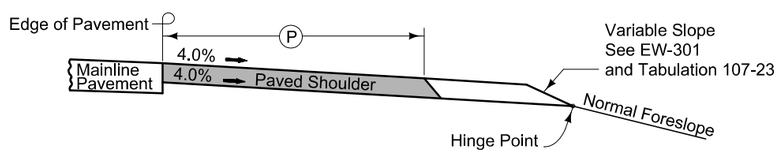


Section B-B

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.

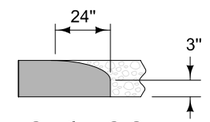
(1) For subgrade treatment, refer to other details in the plan.

(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

100-1D
10-18-05

PROJECT DESCRIPTION

This project involves the replacement of the IA 10 bridge over Mud Creek, 1.9 miles West of Co Rd L48.

100-0A
10-28-97

ESTIMATED ROADWAY QUANTITIES
(1 DIVISION PROJECT)

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

105-4
10-18-11

STANDARD ROAD PLANS

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

Number	Date	Title
BA-200	10-18-16	Steel Beam Guardrail Components
BA-201	04-18-17	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	10-20-15	Steel Beam Guardrail Bolted End Anchor
BA-205	04-19-16	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-250	10-18-16	Steel Beam Guardrail Installation at Concrete Barrier on Bridge End Post (MASH TL-3)
BR-203	10-17-17	Double Reinforced 12" Approach
DR-303	10-17-17	Subdrains (Longitudinal)
DR-305	04-17-18	Subdrain Outlets (standard Subdrain, Pressure Release and Special)
DR-402	04-17-18	Rock Flume for Bridge End Drain
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
EW-201	04-19-16	Bridge Berm Grading without Recoverable Slope (Barnroof Section)
EW-301	10-20-15	Guardrail Grading
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
SI-173	04-19-16	Object Markers
SI-211	10-18-16	Object Markers and Delineater Placement with Guardrail
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
- EP Edge of Paved Roads (ML or SR)
- GR Ground Shot
- EG Edge of Gravel Road
- GDL Guard Rail Steel
- SIGN SI Sign
- BL Topo Breakline
- BD Bridge Deck
- RET Retaining Walls
- BM Bench Mark
- BRG Bridge
- BBB Bottom of Bridge Beam
- OUT Tile Outlet
- FW Wire Fence
- TL1C Telephone Line Co. 1 - Quality C
- TW Top of Water
- D Centerline Draw or Stream (Down)
- TP TPD Telephone Pedestal
- PPA Power Pole Co. 1

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

- FO(C) Windstream Communication - Quality C
  800-289-1901
  Locatedesk@windstream.com
- FO Windstream Communication - Quality D
- TP TPD Telephone Pedestal
- PPA Power Pole

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)

STA. 369+81.27
BEGIN ROADWAY PAVING

STA. 369+44.25
BEGIN PAVED SHOULDER

STA. 370+28.49
BEGIN APPROACH PAVING

Sta. 371+70
Skew 0°
26.0'x120.0'
Continuos I-Beam Bridge
D.A.=16.5 ac A=R
REMOVE

Sta 371+60.00
Skew 0°
120' x 40'
Design No. 120
PPCB Bridge

STA. 372+91.49
END APPROACH PAVING

STA. 373+76.61
END PAVED SHOULDER

Sect. No. 5

STA. 373+38.50
END ROADWAY PAVING

EXISTING ROW

368 | 369 | PI Sta 369+81.81 | 370 | PI Sta 370+07.78 | 371 | 372 | 373 | PI Sta 373+16.11 | 374

3:1

10

IA 10

SIGN

4" HDPE OUTLET

T1(C)

TP

0 20 FEET

Union TWP.
T-94N R-41W
SEC. 8

VPI +31.269
Elv 1,368.00

-1.628%

Tie To Existing
Sta: 369+81.27
Elv.: 1368.00

-1.450%

VPI +09.558
Elv 1,366.14
K = 162
Len 165.00 ft

-0.432%

-0.432%

VPI +90.000
Elv 1,365.36
K = 155
Len 90.00 ft

+0.148%

VPI +38.500
Elv 1,365.43

+0.006%

Tie To Existing
Sta: 373+38.50
Elv.: 1365.43

1374 1372 1370 1368 1366 1364 1362 1360 1358 1356 1354 1352 1350 1348 1346 1344 1342 1340

Lt U.A.C. (No Ditch)
Rt U.A.C. (No Ditch)

Bridge

Lt U.A.C. (No Ditch)
Rt U.A.C. (No Ditch)

1,369.00 1,368.67 1,368.35 1,368.02 1,367.73 1,367.44 1,367.15 1,366.89 1,366.66 1,366.44 1,366.26 1,366.09 1,365.95 1,365.84 1,365.75 1,365.66 1,365.58 1,365.50 1,365.44 1,365.42 1,365.41 1,365.43 1,365.44

368 +20 +40 +60 +80 369 +20 +40 +60 +80 370 +20 +40 +60 +80 371 +20 +40 +60 +80 372 +20 +40 +60 +80 373 +20 +40 +60 +80 374

FILE NO. 31432	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER D.2

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Survey Information

O'Brien County
BRFN-010-2(33)-39-71
IA 10 Bridge over Mud Creek
1.9 mi W of Co Rd L48
PIN 16-71-010-010
Sap-0889.0

General Information

Measurement units for this survey are US survey feet. This survey is for proposed Bridge reconstruction and reconstruction of IA 10 over Mud Creek. Project datum and control information is provided by Shive-Hattery inc. This project is a Full DTM Preliminary Survey and no Photogrammetry was used. This survey request was for the IA 10 corridor, Bridge and Mud Creek.

Vertical Control

IARTN
Vertical datum for this survey is NAVD88 (Computed using Geoid12A). GRS80 Ellipsoidal Height was computed at project Pt. 2, by averaging a minimum of five observations with appropriate time spans between from nearby Iowa RTN reference stations. The vertical standard deviation of these observations were less than 0.050 ft. at 95% confidence level (2 sigma). Additional benchmarks were established with a level loop relative with Pt. 2. The loop error met 3rd Order accuracy and the error was distributed proportionately among the project bench marks.

Horizontal Control

(Project Coordinates from Redundant IaRTN Observations)
The project coordinate system is modified Iowa Regional Coordinate System Zone 1 (U.S. Survey Feet) scaled around Pt. 2 at 9521015.751 N, 11374207.682 E, 1365.076 EL. Horizontal datum is NAD83 (2011) for Epoch 2010.00. Coordinates were determined by averaging a minimum of five IaRTN observations with appropriate time spans between. The horizontal standard deviation of these observations was less than 0.032 ft. at 95% confidence level (2 sigma). Additional control points were placed throughout the project using a GNSS Base-Rover setup relative to Pt. 2. A minimum of three observations with appropriate time spans between were averaged. The horizontal standard deviation of these observations was less than 0. 032 ft. at 95% confidence level (2 sigma).

1/Combined Scale Factor of project= 1.0000520000

The 1/Combined Scale Factor, scaled about Pt. 2, may be used for GNSS stakeout and location to survey in the Project Coordinate system. A scale factor of 1 should be used with total station stakeout.

Alignment Information

The horizontal alignment for this survey is a retrace of As-built Plans No. F 986 (1). Survey stationing was equated to the plan centerline of bridge at STA 383+78.00 and run back and ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PC Sta. 357+73.70 As-built Project No. F 986 (1).
Survey PC Sta. 357+73.70

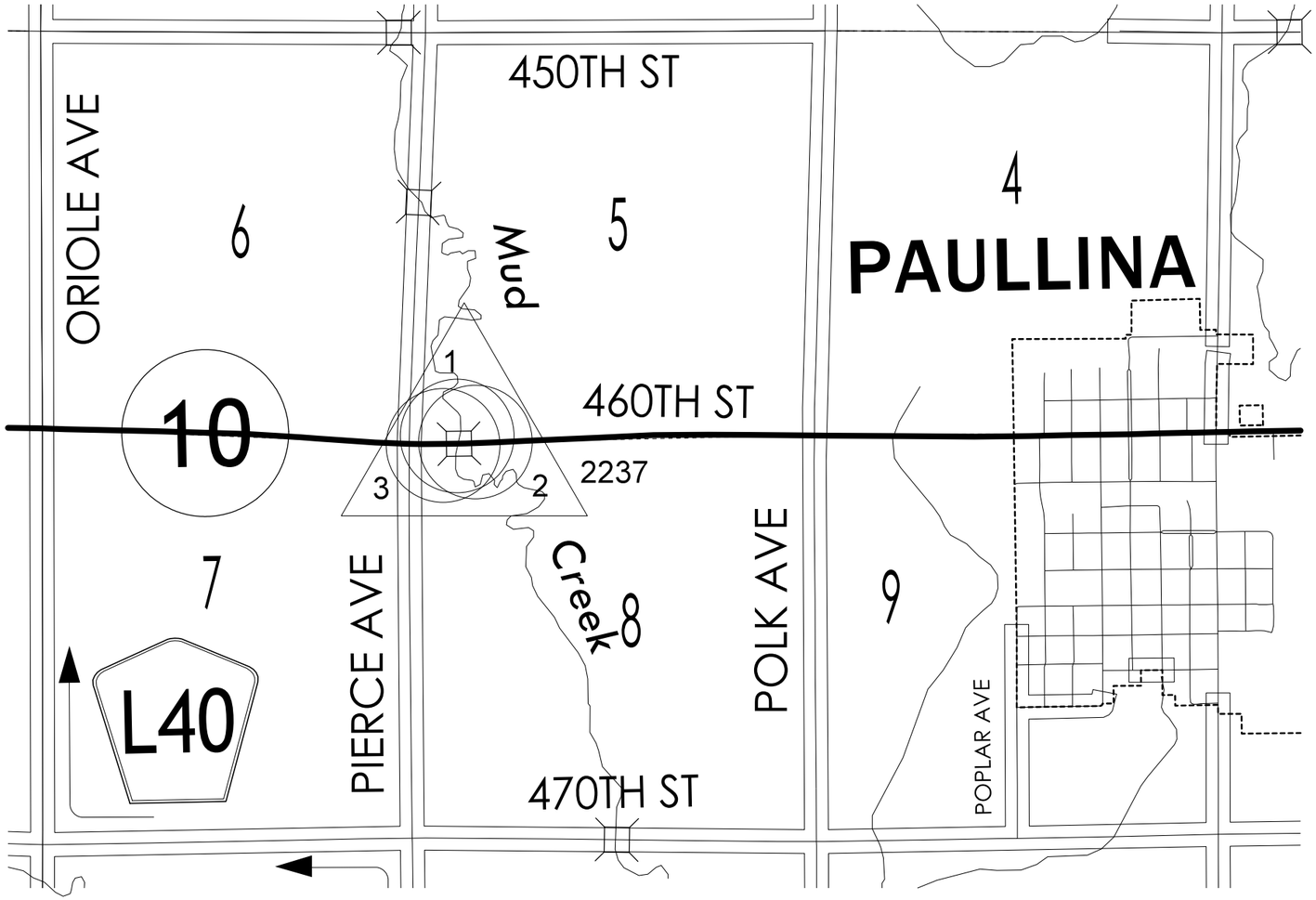
PI Sta. 366+15.70 As-built Project No. F 986 (1).
Survey PI Sta. 366+15.74

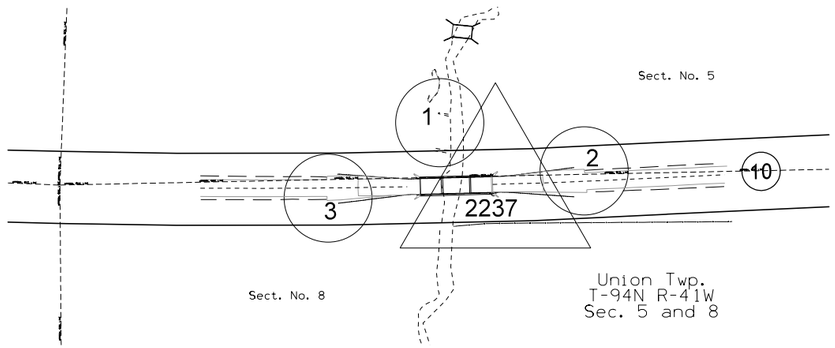
PT Sta. 374+55.70 As-built Project No. F 986 (1)
Survey PT Sta. 374+55.67

As-built Project No. F 986 (1)	Survey
Δ = 7°00'30" Lt.	Δ = 7°00'27.7" Lt.
D = 0°25'	D = 0°24'59.9"'
T = 842.0'	T = 842.035'
L = 1682.0'	L = 1680.922'
E = 25.8'	E = 25.755'
R = 13,752.0'	R = 13,752.0'

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 1

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

FILE NO. 31432	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER G.2

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HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 1

Point	Northing	Easting	Elevation	Feature Definition	Description
1	9521095.946	11373967.171	1353.583	CP1	NAIL
2	9521015.751	11374207.682	1365.076	CP2	PK NAIL
3	9520970.267	11373781.168	1367.990	CP3	PK NAIL
2237	9520978.794	11374059.870	1368.306	BM	BM-PLUG

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)
ML0101		367+45.22	9,520,986.73	11,373,568.45															
ML0103		369+01.81	9,520,986.60	11,373,725.04															
ML0105		370+07.78	9,520,987.86	11,373,831.00															
ML0107		373+16.11	9,520,995.54	11,374,139.24															
ML0108		376+18.34	9,521,009.08	11,374,441.16															

108-23A
08-01-08

TRAFFIC CONTROL PLAN

1) While bridge and approaches are being removed and replaced, traffic shall be maintained via an off-site detour.

2) Detour signage shall be installed, maintained, and removed by Iowa DOT District 3. Road closure signage and devices shall be furnished, installed, maintained, and removed by Contractor. See sheet J.2 for proposed detour. Detour pavement markings shall be painted by the contractor.

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
IA 10	Both	O'Brien	No Restrictions Anticipated	None - - Detour								

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	

PROJECT LOCATION

T-96N
T-95N
T-94N

R-42W
R-41W
R-40W

CARROLL
SUMMIT
CENTER
OMEGA
BAKER
DALE
HIGHLAND
GRANT
CALEDONIA
UNION
LIBERTY
WATERMAN

POP. 131
POP. 909
PRIMGHAR AIRPORT
MILL CREEK STATE PARK
PAULLINA MUNICIPAL AIRPORT
POP. 1056
GAZA
POP. 649
POP. 170
WITTROCK INDIAN VILLAGE STATE PRESERVE
GERMANTOWN
MONETA

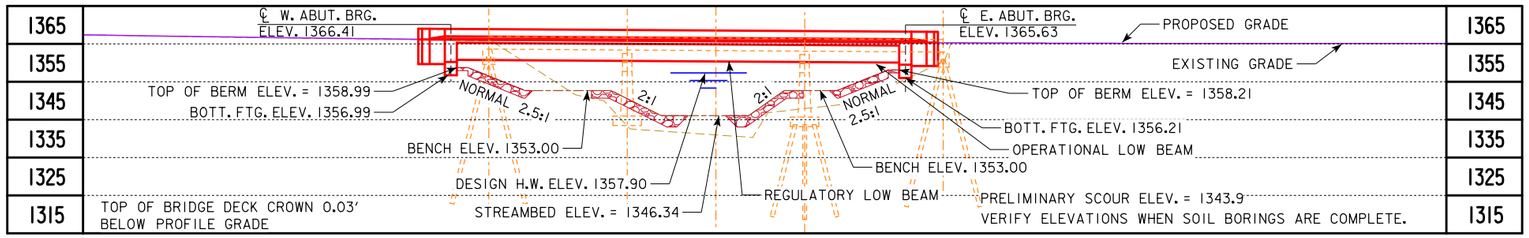
SIOUX CO.
PLYMOUTH CO.
CHEROKEE CO.
CHEROKEE CO.
LITTLE SIOUX RIVER

LOCATION MAP SCALE
0 1 2 3
Miles

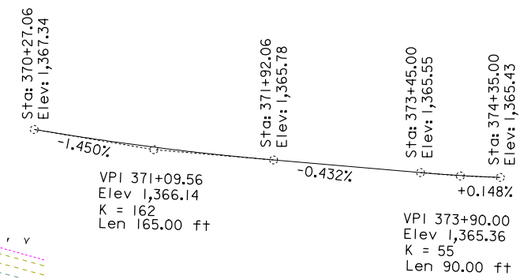
DETOUR ROUTE
(PROVIDED BY DISTRICT)

FILE NO.	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER J.2

12:35:40 PM 3/31/2020 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7101001016\Design\SHT_71010033_A1.sht

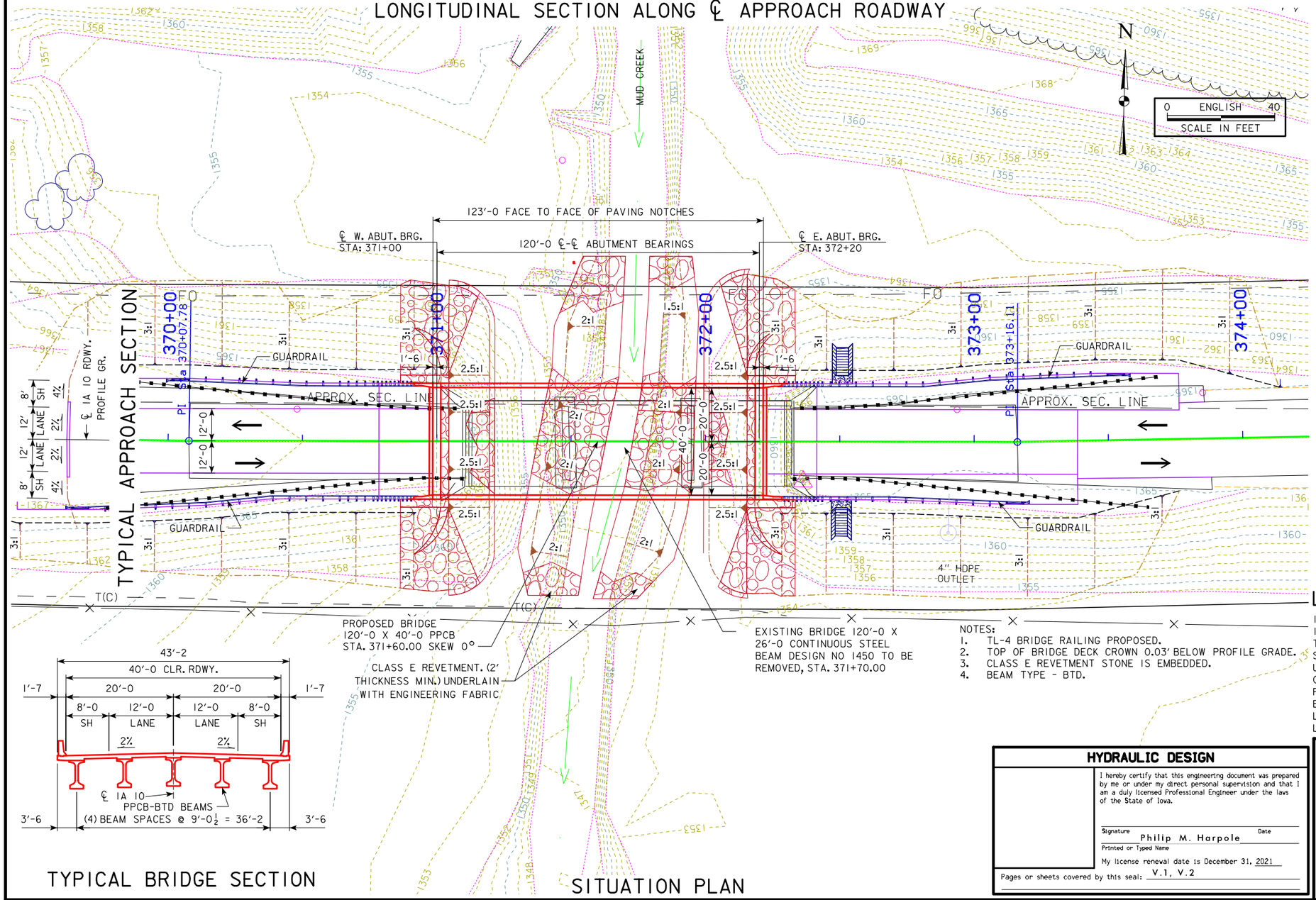


BENCH MARK NO. 2237 PLUG IN SE BRIDGE WING WALL ELEV: 1368.31



PROPOSED PROFILE GRADE IA IO

LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY



TYPICAL APPROACH SECTION

TYPICAL BRIDGE SECTION

SITUATION PLAN

NOTES:
1. TL-4 BRIDGE RAILING PROPOSED.
2. TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE.
3. CLASS E REVETMENT STONE IS EMBEDDED.
4. BEAM TYPE - BTD.

HYDRAULIC DATA

DRAINAGE AREA = 17.1 SQ. MI.
STREAM SLOPE = 7.33 FT./MI.
AVG. LOW WATER STAGE = 1348.00

Q_{50} = 4090 CFS
STAGE = 1357.90
REGULATORY LOW BEAM = 1360.35
BACKWATER = 0.9 FT.
AVG. BRIDGE VELOCITY = 8.0 FPS

Q_{100} = 4850 CFS
STAGE = 1358.40 FT.
OPERATIONAL LOW BEAM = 1359.96
BACKWATER = 1.1 FT.
AVG. BRIDGE VELOCITY = 8.9 FPS

Q_{200} = 6060 CFS
STAGE = 1359.20
CALCULATED DESIGN SCOUR = 1343.90

Q_{500} = 6442.00 CFS
STAGE = 1359.80
CALCULATED CHECK SCOUR =

ROADWAY OVERTOP = 1365.38
STA. 373+03.00 1342.80

UTILITIES LEGEND:

— T(C) — TELEPHONE
— FO — FIBER OPTIC

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

LOCATION

IA IO BRIDGE OVER MUD CREEK
1.9MI W CO.RD.L48
T-94N R-41W
SECTION 8
UNION TOWNSHIP
O'BRIEN COUNTY
FHWA NO. 38351
BRIDGE MAINT. NO. 7143.6S010
LATITUDE 42.982271°
LONGITUDE -95.720891°

TRAFFIC ESTIMATE

2021 AADT	2200	V.P.D.
2041 AADT	2700	V.P.D.
2041 DHV	270	V.P.H.
TRUCKS	18	%
TOTAL DESIGN ESALs	_____	

PRELIMINARY

HYDRAULIC DESIGN

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

Signature Philip M. Harpole Date

Printed or Typed Name

My license renewal date is December 31, 2021

Pages or sheets covered by this seal: V.1, V.2

DESIGN FOR 0° SKEW

120'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

120'-0" SINGLE SPAN

SITUATION PLAN

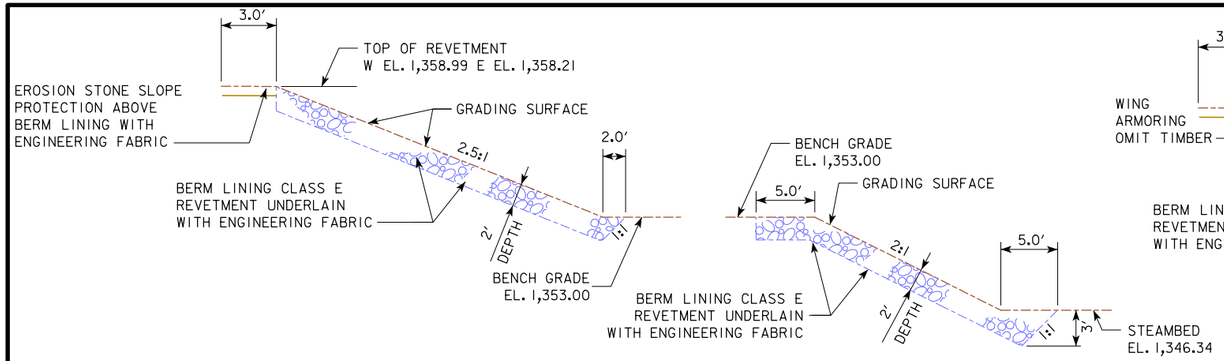
STATION 371+60.00 (IA IO) APRIL 2020

O'BRIEN COUNTY

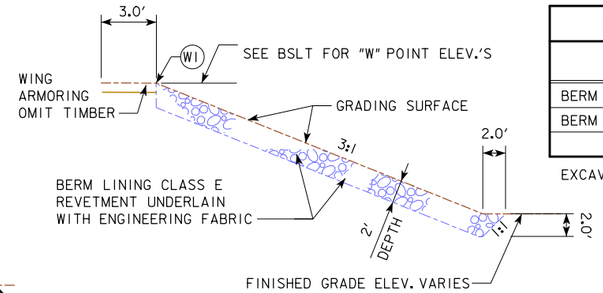
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 2 FILE NO. 31432 DESIGN NO. 120

DESIGN TEAM	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER V.1



SECTION THRU EMBEDDED REVETMENT BERM



SECTION THRU EMBEDDED REVETMENT NORMAL TO BRIDGE WING AT W POINT

ESTIMATED BERM ARMORING QUANTITIES

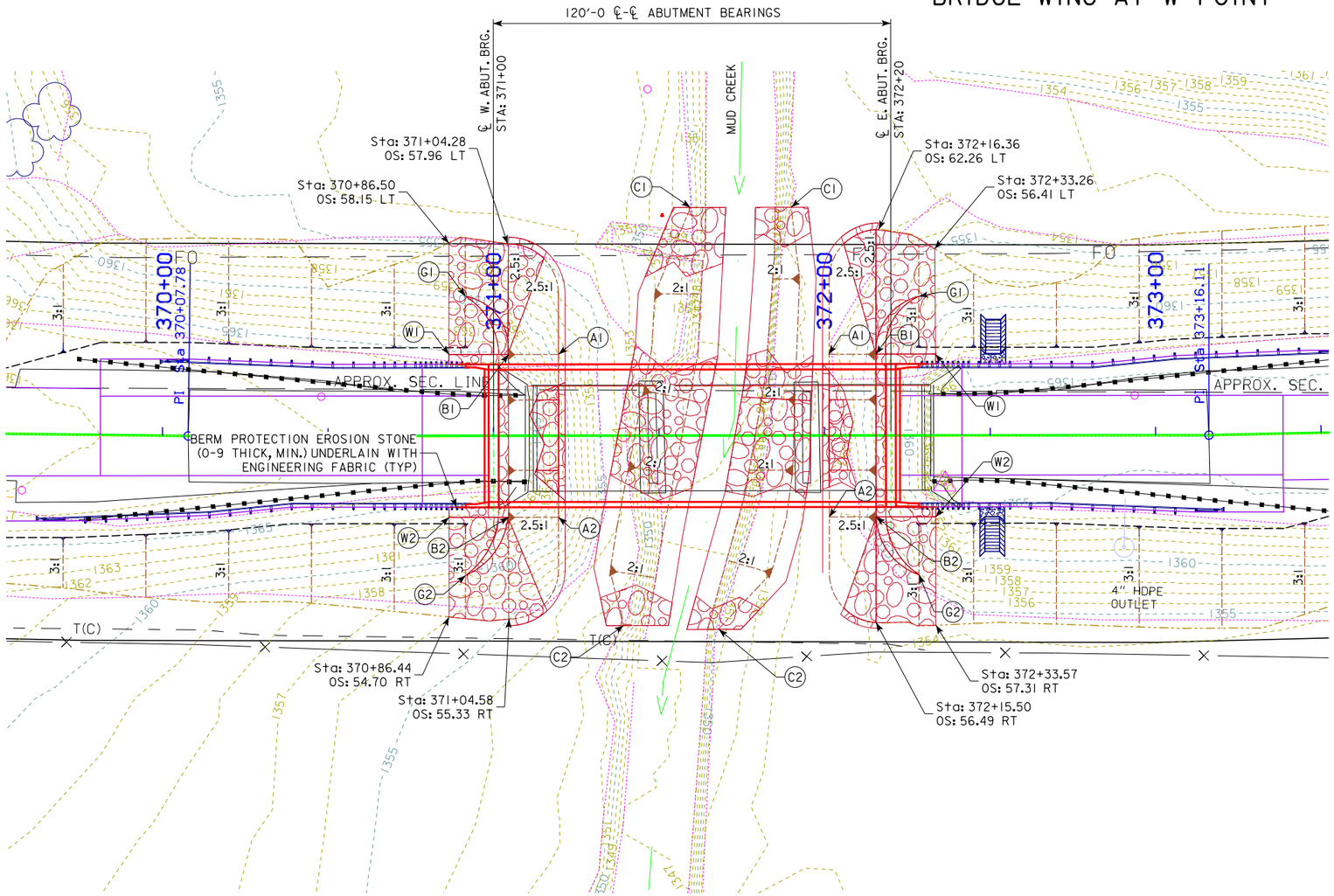
LOCATION	REVETMENT CL. E (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
BERM LINING - WEST ABUTMENT	756.5	11.1	737.7	614.5
BERM LINING - EAST ABUTMENT	728.1	11.1	710.9	267.2
TOTALS	1484.6	22.2	1448.6	881.7

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

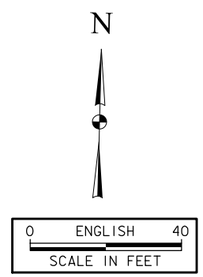
BERM SLOPE LOCATION TABLE

POINTS	WEST ABUTMENT			EAST ABUTMENT		
	STATION	OFFSET	ELEV.	STATION	OFFSET	ELEV.
A1	371+19.58	24.58 LT	1,353.00	372+01.36	24.58 LT	1,353.00
A2	371+19.58	24.58 RT	1,353.00	372+01.36	24.58 RT	1,353.00
B1	371+04.50	24.58 LT	1,358.99	372+15.50	24.58 LT	1,358.21
B2	371+04.50	24.58 RT	1,358.99	372+15.50	24.58 RT	1,358.21
C1	371+59.52	68.96 LT	1,353.00	371+89.93	68.96 LT	1,353.00
C2	371+39.06	57.33 RT	1,353.00	371+67.76	58.51 RT	1,353.00
G1	370+91.51	42.19 LT	1,358.99	372+28.51	42.07 LT	1,358.21
G2	371+28.51	42.07 RT	1,358.99	371+28.51	42.07 RT	1,358.21
W1	370+86.50	24.58 LT	1,365.52	372+33.50	24.58 LT	1,364.55
W2	370+86.50	24.58 RT	1,365.52	372+33.50	24.58 RT	1,364.55

BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE



SITE PLAN



PRELIMINARY

DESIGN FOR 0° SKEW

120'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

120'-0" SINGLE SPAN

SITE PLAN

STATION 371+60.00 (1A 10) APRIL 2020

O'BRIEN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 2 FILE NO. 31432 DESIGN NO. 120

DESIGN TEAM | O'BRIEN COUNTY | PROJECT NUMBER BRFN-010-2(33)--39-71 | SHEET NUMBER V.2

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)

- TS — Topsoil (Class 10)
- SLOPE DRESSING — Slope Dressing Only
- CL 10 — Class 10 Materials
- SEL LO — Select Loams And Clay-Loams
- SEL SA — Select Sand
- UNS A — Unsuitable Type A Disposal
- UNS B — Unsuitable Type B Disposal
- UNS C — Unsuitable Type C Disposal
- SHALE — Shale
- WASTE — Waste
- B&W LS — Broken and Weathered Rock
- 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. 31432	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER W.1

10:05:57 AM 3/17/2020 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7101001016\Design\SHT_71010033_LGD.sht

IA 10

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

1380
1370
1360

369+50.00

369+25.00

369+00.00

FILE NO. 31432	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER W.2

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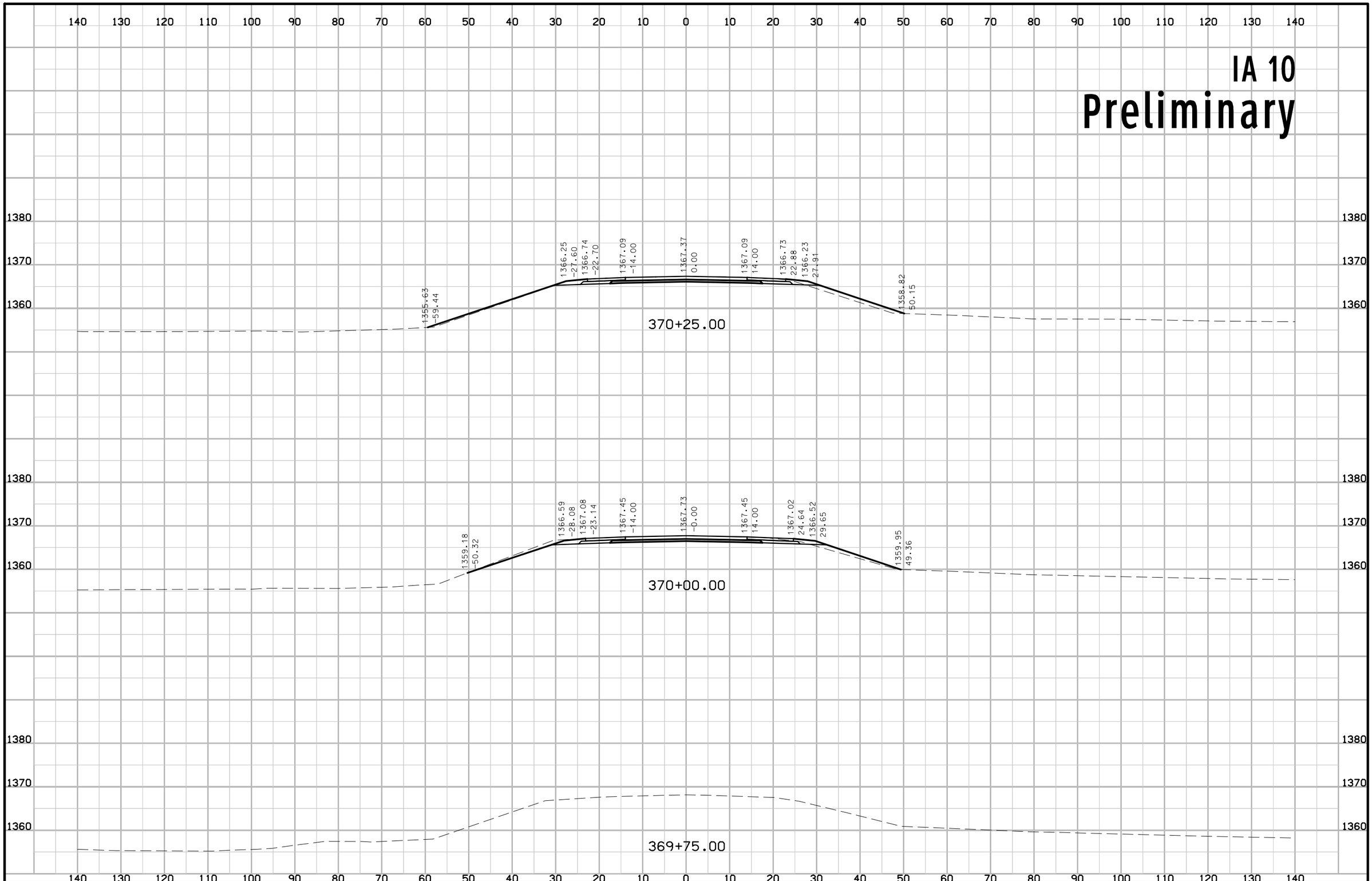
IA 10
Preliminary



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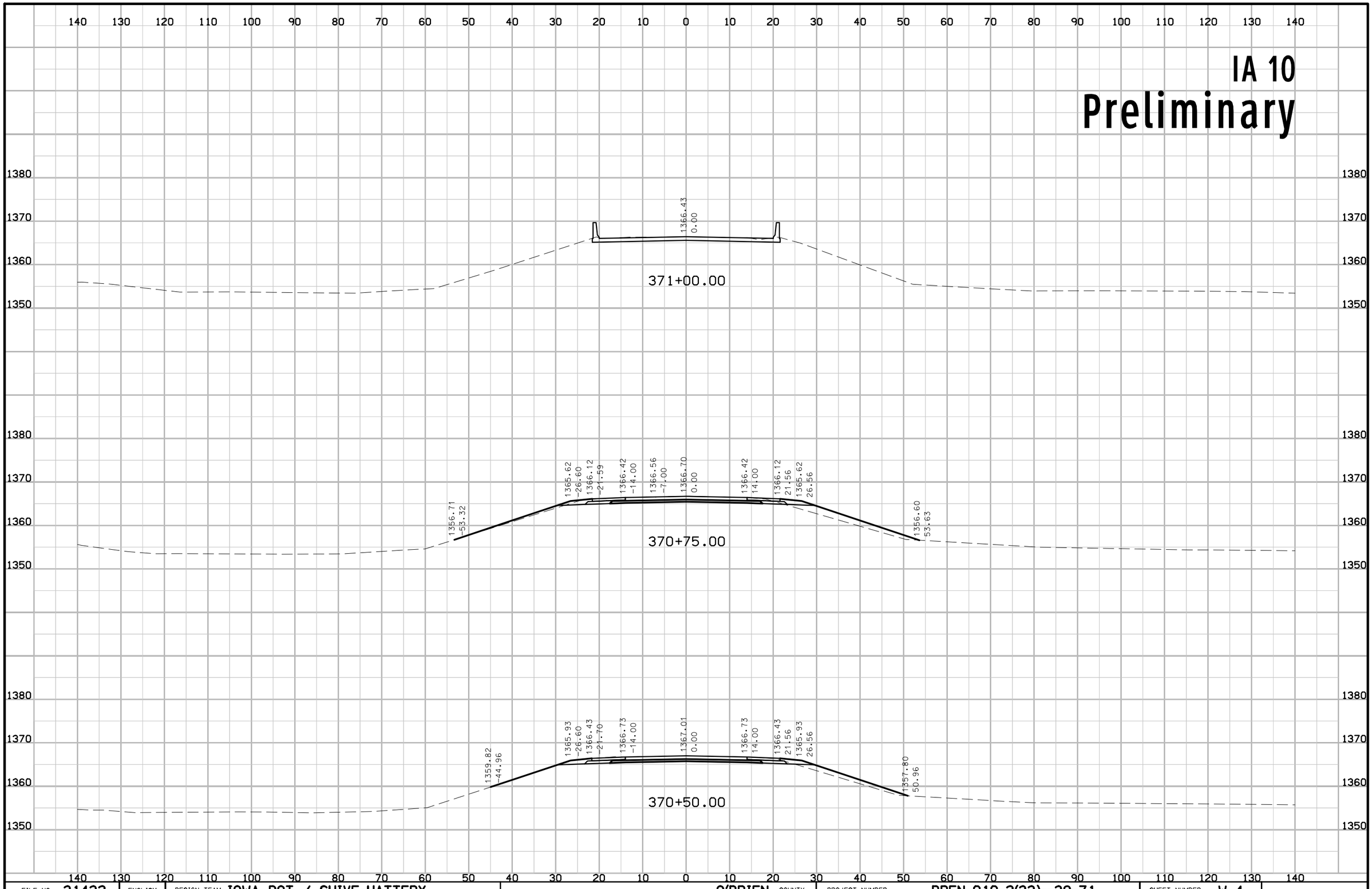
IA 10
Preliminary



FILE NO. 31432	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER W.4

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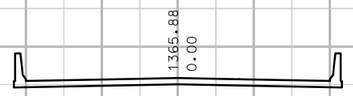
IA 10
Preliminary

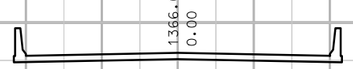
140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

1380
1370
1360
1350



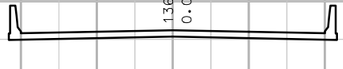
371+75.00

1380
1370
1360
1350



371+50.00

1380
1370
1360
1350



371+25.00

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. 31432	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER W.5

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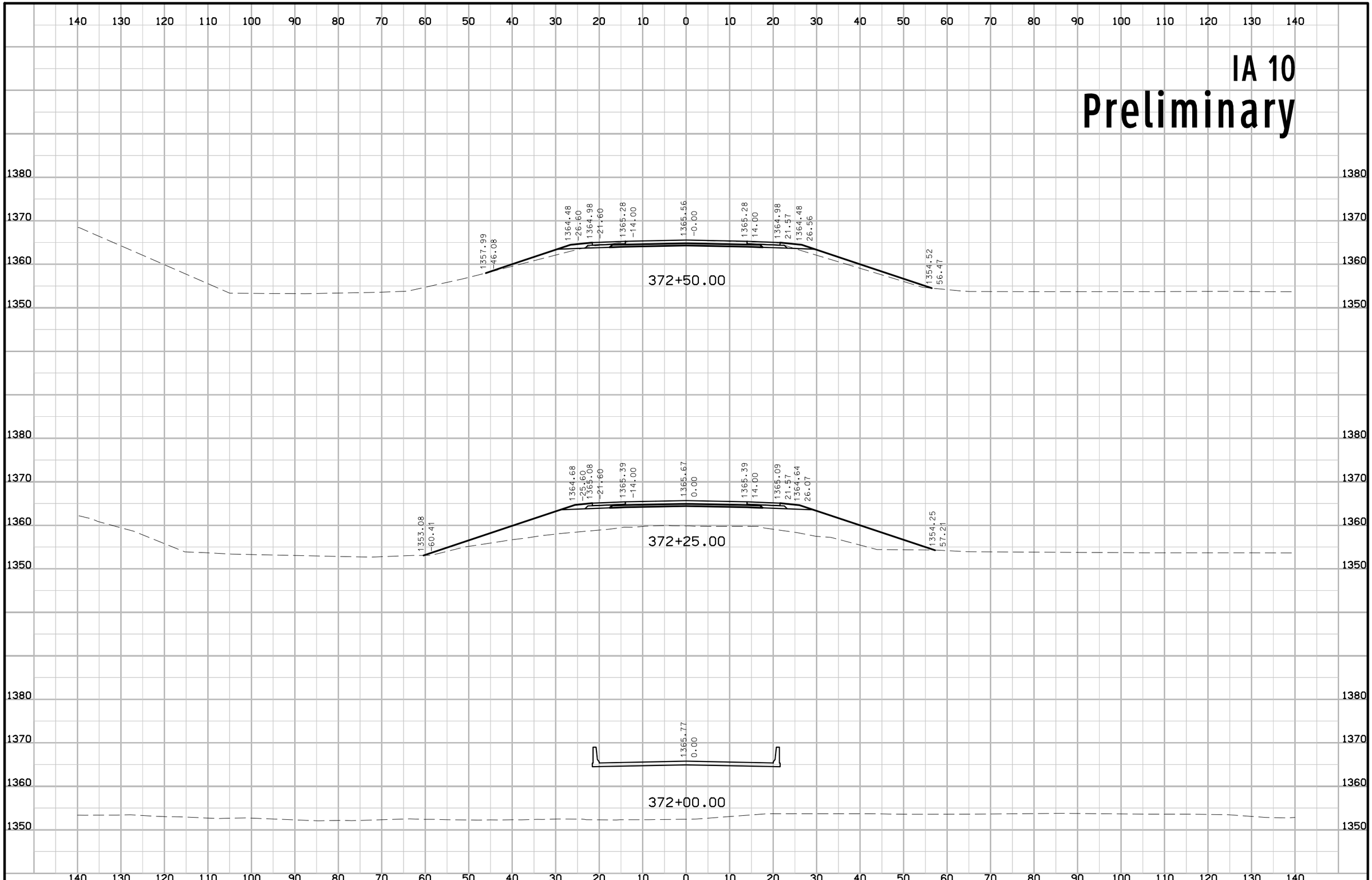
IA 10
Preliminary



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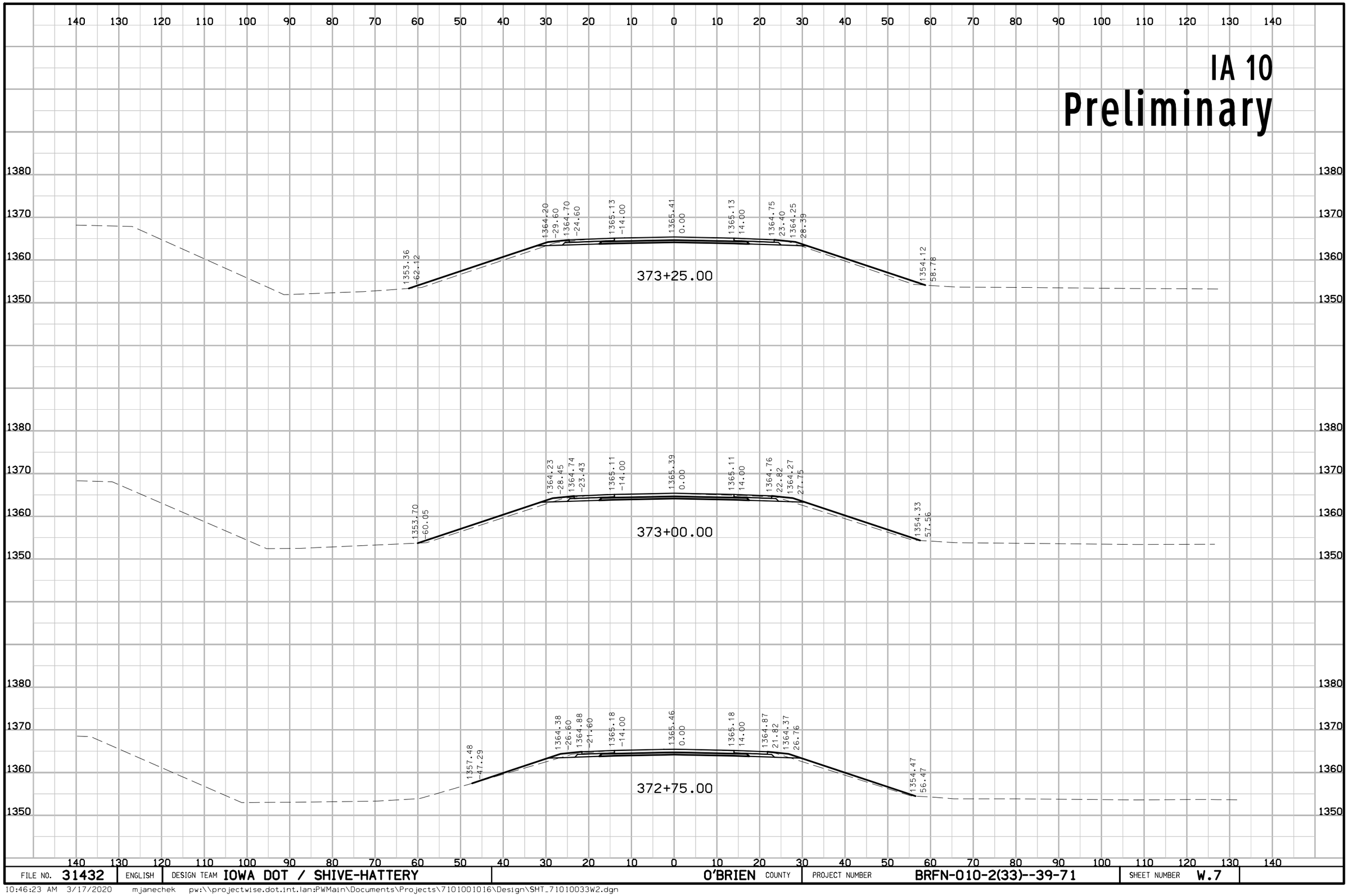
IA 10

Preliminary



FILE NO. 31432	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER W.7

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IA 10

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

1380
1370
1360
1350

374+00.00

373+75.00

373+50.00

FILE NO. 31432	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	O'BRIEN COUNTY	PROJECT NUMBER BRFN-010-2(33)--39-71	SHEET NUMBER W.8

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