IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District # 6

DATE: June 4, 2019

ATTENTION: Jim Schnoebelen

REF.: Jones County
Project # BRFN-136-2(35)—39-53
PIN: 17-53-136-020

FROM: Jenifer Bates

OFFICE: Shive-Hattery

SUBJECT: Field Exam Review (D-2)

Project Description:

Please find the meeting minutes for the May 28, 2019 field exam for the bridge replacement on IA 136.

Those present for the field exam included the following: Roger Walton from District 6, Mark Sloppy and Emily Perrott from the Location and Environment Bureau, Steven Schroder from the Program Management Office, and Jenifer Bates, Joe Appel, Mark Harpole, and Mike Janechek from Shive-Hattery.

This project involves the replacement of the IA 136 bridge (Maint. No. 5347.3S136) over a stream located 0.2 miles north of County Road E45. The bridge is to be replaced with a twin 12'x12' RCB culvert.

IA 136 has a projected 2021 ADT is estimated to be 700 vpd with 14% trucks. The 2041 ADT is estimated to 800 vpd with 14% trucks.

The proposed project will replace the existing 30'x 34' concrete arch bridge with a twin 12'x12' RCB culvert on a 25-degree skew. The typical cross section adjacent to the bridge will consist of a 24 ft. roadway with 6 ft. effective shoulders (2 ft. paved and 4 ft. granular) and 6:1 foreslopes to clear zone to 3:1. This project will be reconstructing the existing approach area. The district did not want to increase foreslopes rates for bringing in the grading limits.

The culvert will be constructed on the existing vertical and horizontal alignment. One entrance is impacted by the bridge replacement. This entrance is located on the southeast quadrant. The entrance may be able to shift slightly to the south but must tie into the road perpendicularly. The District requested that the entrance pipe be replaced with HDPE due to the material requiring little maintenance. Ditching will need to be added on the north side so that the existing ditches will route to the culvert inlet. There is a steep drop off on the north edge of the entrance into the drainage channel. An existing tributary is located on the west side of the road. Currently the grading does not impact this tributary. It was noted that impacts to the tributary should be avoided.

Traffic Control/Staging:
The bridge removal and culvert placement will be constructed using on off-site detour. A detour plan will be included with the project plans. It was noted that construction survey and a field office will also need to be included with the project.

Right of Way:
A temporary construction easement will most likely be necessary to provide room to grade both sides of the roadway and place the culvert. Permanent right-of-way acquisitions will be necessary on both sides of the roadway to accommodate the new ditching and culvert.

Current Schedule:
D3 date is June 21, 2019
D5 date is November 1, 2019.
B1 date is September 20, 2019.

Access Control:
Access will remain for the most part unchanged. An existing field entrance on the east side of the road may shift slightly south.

Utilities:
Utility relocations may be required. There is an overhead electric line and utility poles that are in the area of the west side of the culvert. These may require temporary or permanent relocation due to the close proximity to the culvert. An existing fiber line is located on the east side of the road. The fiber is below ground up to the channel and then converts to overhead with poles as it crosses the channel to the other side, where it then converts back to underground. This fiber line will require relocation as part of the project.

Project Schedule and Cost:
This project is currently scheduled for a November 16, 2021 letting. The current estimated cost of construction remains what was shown in the final concept at $1,149,600.

cc:

M. J. Sankey	S. J. Gent	M. J. Kennerly
W.A. Sorenson	E. C. Wright	T. Nicholson
K. D. Nicholson	D. Newell	K. K. Patel
K. Brink	J. E. Laaser-Webb	T. Crouch
V. A. Brewer	D. R. Tebben	S. Godbold
N. L. Cuva	M. A. Swenson	C. B. Brakke
D. E. Sprengeler	J.S. Nelson	D. A. Popp
A. Shell	G. A. Novey	D. R. Claman
J. McCollough	S. P. Anderson	B. Hofer
J. Garton	P. C. Keen	E. D. Gansen
J. Vortherms	M. K. Solberg	S. J. Megivern
D. T. Ta	J. E. Bartholomew	J. Schnoebelen
K. Yanna	R. Walton	S. Flockhart
D. McDonald	M. Sloppy	E. Perrot
S. Schroder	J. Appel (SH)	J. Bates (SH)
M. Janechek (S-H)	M. Harpole (S-H)	

LETTING DATE
XX-XX-XXXX

RCB CULVERT REPLACEMENT
BRFN-136-2(35)--39-53
JONES Co.

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	**Title Sheets**
* A.1	Title Sheet
* A.2	Location Map Sheet
A.3 - 4	Design Criteria (Temporary)
A.4 - 7	Concept Statement (Temporary)
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	Standard Road Plans
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	IA 136
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	Staging Notes Stage
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 - 5	Mainline Cross Sections
	* Color Plan Sheets

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

JONES COUNTY

RCB CULVERT REPLACEMENT

IA 136 bridge over stream 0.2 miles north of County Road E45

SCALES: As Noted

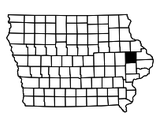
Refer to the Proposal Form for list of applicable specifications.

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	
17-53-136-020	
PROJECT NUMBER	
BRFN-136-2(35)--39-53	
R.O.W. PROJECT NUMBER	



DESIGN DATA RURAL		
2021 AADT	700	V.P.D.
2041 AADT	800	V.P.D.
2041 DHV	80	V.P.H.
TRUCKS	14	%
Total Design ESALs	--	

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Michael J. Janechek	Primary Signature Block

D3 PLAN – Date: June 21, 2019
D4 PLAN – Date: July 20, 2021
D5 PLAN – Date: Nov 1, 2019

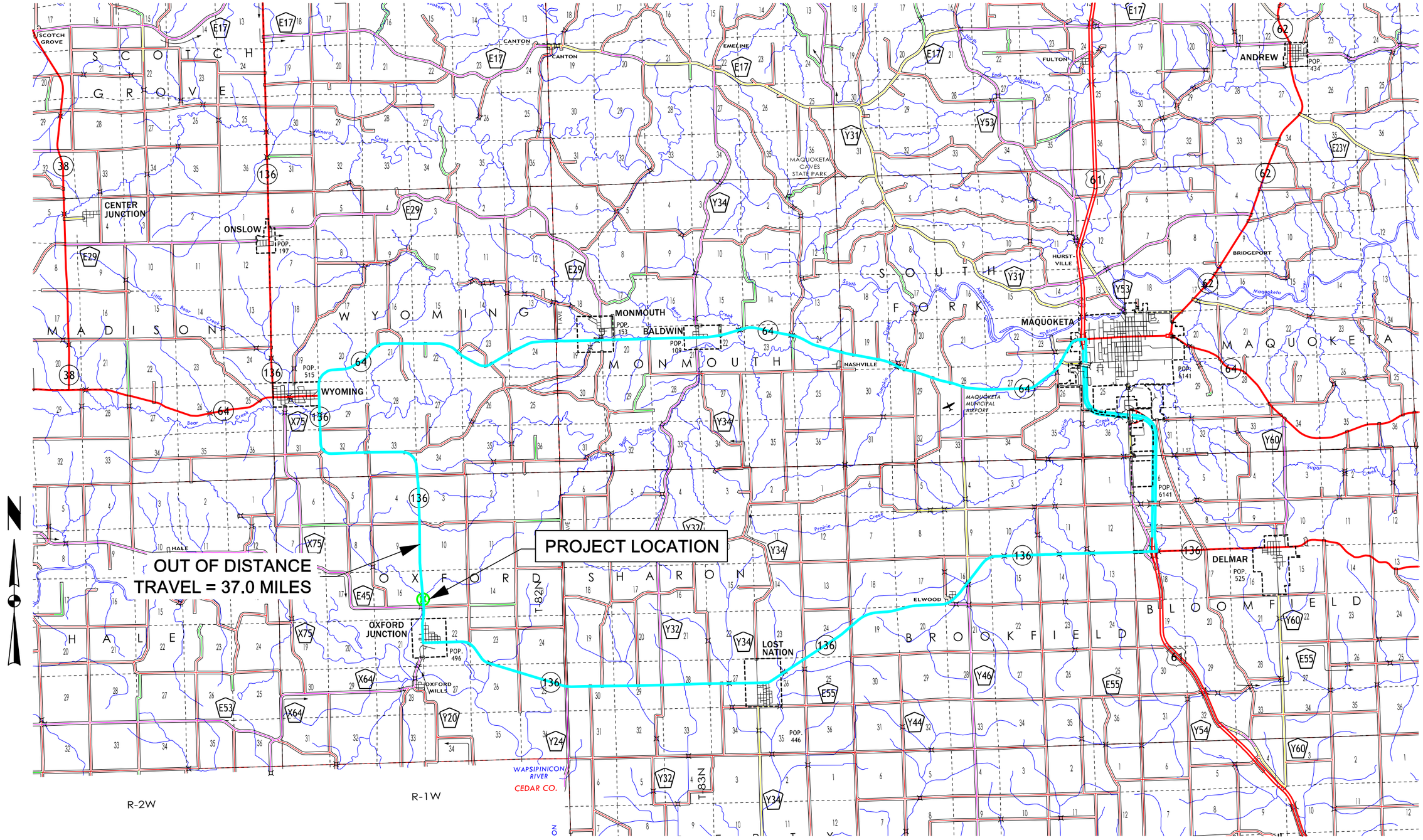
PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN – Date: May 24, 2019

FILE NO.	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	JONES COUNTY	PROJECT NUMBER BRFN-136-2(35)--39-53	SHEET NUMBER A.1

10:39:25 AM 5/21/2019 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5313602017\Design\SHT_53136035_A1.sht



FILE NO.	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	JONES COUNTY	PROJECT NUMBER BRFN-136-2(35)--39-53	SHEET NUMBER A.2

10:39:28 AM 5/21/2019 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5313602017\Design\SHT_53136035_A1.sht

Roadway	**IA 136**			
PIN Number	17-53-136-020		**Submittal Date**	01/21/19
Project Number	BRFN-136-2(35)--39-53			**Approval Date**
District	District 6	**Assistant District Engineer**	Ken Yanna	
County	JONES		**or**	
Route	IA 136	**Office Director**		
Location	Bridge over a small natural stream 0.2 mi North of SR E-45			
Work Type	Bridge Replacement			
Segment Manager	Ken Yanna			
Designer	Jenifer Bates			

Design Manual Section 1C-1
Last Updated: 05-26-17

Rural Two-Lane Highways (Rural Arterials)

Design Element		Preferred	Acceptable	Project Values
Design speed (mph)		60	50	60
Maximum superelevation rate (Refer to Section 2A-2)		6%	8%	6%
Design lane width (ft)		12	12	12
Full depth paved width (ft)		14	12	12
Right turn lane (ft)		12	10	N/A
Climbing Lane (ft)		12	12	N/A
Left turn lane (ft)		12	10	N/A
Pavement cross-slope (on tangent sections)	Through lanes	2%	1.5% minimum, 2% maximum	2% min/3% max
	Auxiliary and turn lanes	3%	3% maximum	N/A
	Crown break at centerline	4%	4% maximum	N/A
Shoulder cross-slope (on tangent sections)		4%	Shoulder cross-slope cannot be less than the adjacent lane, 6% max for paved or granular shoulders, 8% max for earth shoulders	4%
Curb type (Refer to Section 3C-2)	Design speed = 50 or 55 mph	6-inch sloped	6-inch standard	N/A
	Design speed ≥ 60 mph	4-inch sloped	6-inch sloped	N/A
Foreslope (For fill areas greater than 40 ft, contact the Soils Design Section for assistance)	Adjacent to shoulder	10:1 for 4' then 6:1	3:1	6:1
	Beyond standard ditch depth and design clear zone	3.5:1	3:1	3:1
	Curbed roadways	2%	not steeper than 3:1	N/A
Backslope (For cut areas greater than 25 feet, contact the Soils Design Section for assistance with backslope benches.)		3:1	2.5:1	3:1
Transverse Slopes	w/ drainage structures	8:1	6:1	N/A
	w/o drainage structures	10:1	6:1	N/A
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	40'
	Bridge length > 200 ft	design lane widths + effective shoulder widths	design lane width + 4' right and left of the design lane widths	N/A
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right	34'
Vertical clearance (ft) (above lanes, shoulders and 25 feet left and right of the center of railroad tracks)	Over primary	16.5	16	N/A
	Over non-primary	16.5 at interchange locations, 15 at all other locations	14	N/A
	Over railroad	23.3	23.3	N/A
	Sign trusses and pedestrian bridges	17.5	17	N/A
Structural Capacity		Contact Office of Bridges and Structures	Contact Office of Bridges and Structures	
Level of Service		B	B	N/A

*FHWA notification via email is required if acceptable critera is not met on the NHS system (No formal design exeption is required)

Design year ADT =	800

Design Manual Section 1C-1
Last Updated: 05-26-17

Effective Shoulder Width and Type for Two-Lane Highways

Preferred (values shown in feet)			Acceptable (values shown in feet)			Project Values
	Rural Roadways	Urban Roadways		Rural Roadways	Urban Roadways	
Turn lanes with shoulders	6	6	Turn lanes with shoulders	6	0	N/A
Turn lanes with curbs	6	See Section 3C-2	Turn lanes with curbs	6	0	N/A
	Effective Shoulder Width	Paved Width		Effective Shoulder Width	Paved Width	
Climbing Lanes	6	4	Climbing Lanes	4	0	N/A
Two-Lane Highways	Effective Shoulder Width	Paved Width	Two-Lane Highways	Effective Shoulder Width	Paved Width	
Routes where bicycles are to be accommodated	10	10	Design year ADT > 2000 vpd	8	2*	Effective = 6' Paved = 2'
On roadways approaching urban areas (due to increased bike traffic)	10	10				
On all curves with a superelevation rate of 7.0% or greater	10	10				
On roadways with design year ADT > 5000	10	6	Design year ADT between 400 - 2000 vpd	6	2*	
On all other NHS	10	4				
On non-NHS routes with design year ADT > 3000	10	4	Design year ADT < 400 vpd	4	2*	
On non-NHS routes with design year ADT < 3000	8	2*				

*Requires safety edge-Refer to Section 3C-6

Curbs should be located beyond the outer edge of the effective shoulder width in rural areas

Refer to Section 3C-2 for curb offsets in urban areas

Notes:

Used preferred values for clear zone calculations.

Used 6' effective shoulders with 2' paved shoulders as per discussions with Kenneth Yanna and Kevin Patel.

Roadway Design Speed (mph) =	60

Design Manual Section 1C-1
Last Updated: 05-26-17

Design Criteria for High Speed Roadways

Design Element			Preferred Criteria Design Speed, mph						Acceptable Criteria Design Speed, mph						Project Values
			50	55	60	65	70	75	50	55	60	65	70	75	
Stopping sight distance (ft) (Refer to Section 6D-1)			425	495	570	645	730	820	425	495	570	645	730	820	570
Minimum horizontal curve radius (ft) (Refer to Sections 2A-2 and 2A-3)	Method 5 superelevation and side friction distribution	e_{max} = 6%	833	1060	1330	1660	2040	2500	833	1060	1330	1660	2040	2500	1330
		e_{max} = 8%	--	--	--	--	--	--	758	960	1200	1480	1810	2210	N/A
Minimum vertical curve length (ft) (Refer to Section 2B-1)			150	165	180	195	210	225	150	165	180	195	210	225	180
Minimum rate of vertical curvature (K) (Refer to Section 2B-1)	crest vertical curves		84	114	151	193	247	312	84	114	151	193	247	312	151
	sag vertical curves	roadways without fixed-source lighting	96	115	136	157	181	206	96	115	136	157	181	206	136
		roadways with fixed-source lighting	96	115	136	157	181	206	54	66	78	91	106	121	
Minimum gradient (%)	(Refer to Section 2B-1)		0.5						0.3% with a curb, 0.0% without a curb						0.5
Maximum gradient (%)	(Refer to Section 2B-1)	Urban roadways	4		3				7	6	6	–	–	–	
		Rural roadways							5	5	4	4	4	4	3
		Interstates							5	5	4	4	4	4	
Clear zone			See "Preferred Clear Zone" table in Section 8A-2						See "Acceptable Clear Zone" table in Section 8A-2						24'

SHIVEHATTERY
ARCHITECTURE + ENGINEERING

IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 6

ATTENTION: Jim Schnoebelen

FROM: Jenifer Bates

OFFICE: Shive-Hattery

SUBJECT: Project Concept Statement; (Final, D0)

DATE: February 1, 2019

PROJECT: Jones County
BRFN-136-2(35)--39-53
PIN: 17-53-136-020

This project involves the replacement of the IA 136 bridge (Maint. No. 5347.3S136) over stream, 0.2 miles north of Co Rd E45.

A concept review was held on November 1, 2018. Those present included Steven Schroder, Patricia Schwarz, Steve Seivert and Matthew Erickson from the Iowa DOT and Jenifer Bates, Joe Appel and Mark Harpole from Shive-Hattery.

Two alternatives were considered.
1) Replace the existing structure with a twin 12' x 12' x 166' RCB using a detour at an estimated cost of $1,149,600.
2) Replace the existing structure with a twin 12' x 12' x 166' RCB using a detour with a limited closure period at an estimated cost of $1,264,600.

Alternative 2 is the preferred alternative due to safety considerations, life of structure, maintenance benefits, reduced traffic impacts during construction, and the adjacent field entrance as discussed in the concept.

The Draft Project Concept Statement was sent out for review and comment with concerns to be resolved by Monday, November 26, 2018. Comments received during the review period have been considered and resolved.

This project is recommended for construction in FY 2023. The Office of Bridges and Structures will coordinate plan preparation with assistance from the Office of Design and Shive-Hattery.

Cc:
C. Purcell, S. J. Megivern, G. A. Novey, D. R. Tebben, J. W. Laaser-Webb, E. C. Wright, N. M. Miller, B. E. Azeltine, S. J. Gent, J. Selmer, D. R. Claman, M. E. Khoda, N. M. Abuissa, M. J. Donovan, M. K. Solberg, R. R. Walton, J. Bartholomew
M. J. Kennerly, J. S. Nelson, M. A. Swenson, K. Brink, W. A. Sorenson, M. E. Ross, C. C. Poole, B. D. Hofer, S. Anderson, K. K. Patel, J. Hauber, K. Olson, V. A. Brewer, S. W. Flockhart, T. M. Storey, K. A. Yanna
K. D. Nicholson, B. Walls, R. A. Younie, D. L. Newell, D. E. Sprengeler, A. A. Welch, M. J. Sankey, T. D. Crouch, P. C. Keen, S. Godbold, A. Abu-Hawash, S. Neubauer, C. L. Cutler, D. McDonald, J. J. Tjaden, M. Sloppy

SH Project #4172083

SHIVEHATTERY
ARCHITECTURE + ENGINEERING

DRAFT PROJECT CONCEPT STATEMENT

IA 136 – Bridge over stream, 0.2 miles north of Co Rd E45

Jones County
BRFN-136-2(35)--39-53
PIN: 17-53-136-020
Maint No. 5347.3S136
FHWA No. 32500

Jenifer J. Bates, P.E.
515-223-8104

February 1, 2019

I. STUDY AREA

A. Project Description

This project involves the replacement of the IA 136 bridge (Maint. No. 5347.3S136) over stream, 0.2 miles north of Co Rd E45.

Two alternatives were considered.
1. Replace existing structure with a twin 12' x 12' x 166' RCB using a detour.
2. Replace existing structure with a twin 12' x 12' x 166' RCB using a detour with a limited closure period.

Alternative 2 is the preferred alternative due to safety considerations, life of structure, maintenance benefits, reduced traffic impacts during construction, and the adjacent field entrance as discussed below.

Traffic will be maintained with a detour.

The preliminary project cost is $1,264,600.

B. Need for Project

The existing structure is a 30' long by 34' wide concrete arch bridge built in 1929 and is near the end of its useful life. The bridge was designed for H15 design load.

Looking south at existing bridge

Looking west at existing bridge

SH Project #4172083

Shive-Hattery | 4125 Westown Parkway | Suite 100 | West Des Moines, IA 50266 | 515.223.8104 | shive-hattery.com

C. Present Facility

IA 136 is a two lane roadway. The existing structure is a one span, 30' long by 34' wide concrete arch bridge constructed in 1929.

IA 136 in the project area was originally constructed in 1971 as a 22 ft. ACC road. IA 136 was then resurfaced with HMA in 1995 and 2001. It was then widened to 27 ft. and HMA resurfaced in 2009. IA 136 has 5 ft. wide granular shoulders with 3:1 foreslopes.

D. Traffic Estimates

The 2021 construction year and 2041 design year average daily traffic estimates are 700 ADT with 14% trucks and 800 ADT with 14% trucks, respectively.

E. Sufficiency Ratings

IA 136 is classified as an access route and is a maintenance service level "C" road. The federal bridge sufficiency rating is 67.2.

F. Access Control

Access rights will be acquired for this project.

G. Crash History

During the five-year study period from 2013 through 2017, there was one crash that was a personal property crash. There were no reported injuries and the cause of the accident was listed as over correcting/oversteering.

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace with a culvert – offsite detour

The existing 30' x 34' bridge will be replaced with a twin 12' x 12' x 166' reinforced concrete box (RCB) on a 45 degrees skew. Culvert minimum cover is met and profile grade will not need to be adjusted. The typical cross section will consist of a 24' roadway with 6' effective shoulders (2' paved and 4' granular) and 6:1/3:1 foreslopes.

The roadway will be reconstructed on the existing vertical and horizontal alignment. The flow line of the box will be buried 1' below the existing flow line in the channel. This will allow the bottom of the box to silt in and provide a natural bottom for fish passage. The existing ditches will need to be relocated to meet the inlet and outlet flowlines of the new RCB. Class E revetment will be placed at the ends of the RCB.

The removal of the existing bridge and bridge approach pavement will require approximately 195 ft. of new 9 in. PCC pavement over 12 in. of modified subbase, including the installation of subdrains.

There is an existing field entrance just south of the bridge on the east side of the roadway. This field entrance may be impacted by the culvert design and will need to be checked closely during design. If it needs to be relocated, there is a large hill south of the bridge that will greatly complicate the relocation.

There is an adjacent stream on the north downstream side that may conflict with a standard headwall wing. This stream outlet location will be verified after the survey is completed.

SHIVEHATTERY
ARCHITECTURE + ENGINEERING

Jones County
BRFN-136-2(35)--39-53
PIN: 17-53-136-020
Page 3 of 5

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

Right of way appears to be required for this project.

Traffic will be maintained by an off-site detour for approximately 75 days.

Culvert Items	Estimated Costs
New Culvert Twin 12' x 12' x 166'	$403,700
Headwalls 45 deg	$179,500
Engineering Fabric	$900
Revetment	$17,100
Remove Existing Structure	$14,200
Mobilization – 10%	$61,500
Contingency – 20%	$135,400
Culvert Costs	**$812,300**

Roadway Items	
Removal of Pavement	$6,100
PCC Pavement, 9"	$33,550
Modified Subbase	$11,250
Granular Shoulder	$2,050
Embankment in place, contractor furnished	$42,000
Clearing and Grubbing	$25,000
Erosion Control	$50,000
Right of Way	$20,000
Wetland Mitigation	$50,000
Traffic Control - 5%	$10,000
Mobilization - 5%	$10,000
M & C - 30%	$77,350
Roadway Costs	**$ 337,300**
Project Total	**$1,149,600**

Alternative #2 - Replace with a culvert – with offsite detour, incentive/disincentive offered

This alternative is like Alternate #1 except for the contractor will be offered an incentive/disincentive to reduce the closure period of the detour. A 30 day closure is recommended.

It is anticipated that the incentive/disincentive option will add 10% to the total project cost shown in Alternative #1.

Alternative #1 Costs	**$1,149,600**
Incentive/Disincentive Costs – 10%	$115,000
Project Total	**$1,264,600**

SH Project 4172083 | February 1, 2019

SHIVEHATTERY
ARCHITECTURE + ENGINEERING

Other Alternatives Considered

A bridge option was discussed during the site visit, but the culvert option was preferred by the Iowa DOT bridge design office due to the safety considerations, life of structure and maintenance benefits. Since a culvert can accommodate the flows and the complications with the field entrance mentioned above that would be in direct conflict with the bridge guardrail, it was determined to not develop a bridge option.

Flowable mortar is not an option due to the proposed RCB not fitting within the existing arch opening. Stage construction would be difficult with an arch bridge due to retaining fill during construction. Close proximity power lines, low traffic volumes, and large grade differentials make this not a good candidate for a runaround.

B. Detour Analysis

IA 136 will be closed and an offsite detour will be utilized. The detour is along Primary Routes and will follow IA 136 east of Oxford Junction to the junction with US 61, then north on US 61 to its junction with IA 64, then west IA 64 to IA 136. Out of distance travel is 37 miles.

In working with Jones County, potential local routes were ruled out for a variety of reasons (pavement condition, roadway geometrics, bridge conditions, etc). Due to the length of the detour and cumulative user costs, an alternative to accelerate construction time has been considered.

Costs	Alternate #1	Alternate #2
Closure Duration	75 days	30 days
User Costs	$466,200	$186,500
County Road Maint.	$0	$0
Detour Signing	$20,000	$20,000
Incentive/Disincentive Cost	$0	$115,000
Cost Summary	$486,200	$321,500

Accelerating construction results in a $164,700 savings in detour costs.

It is recommended to offer the incentive/disincentive with a 30 day closure period as per Alternative #2.

C. Recommendations

It is recommended that the present structure be replaced as described in Alternative #2.

D. Construction Sequence

It is anticipated all work on this project will be awarded to one prime contractor. The Office of Bridges and Structures will coordinate the plan preparation with the assistance of the Office of Design and Shive-Hattery.

E. ADA Accommodations

There are no bike paths or sidewalks adjacent to IA 136; therefore no ADA accommodations are planned in conjunction with this project.

SHIVEHATTERY
ARCHITECTURE+ENGINEERING

F. Special Considerations

This will not be a traffic critical project.

The Accelerated Bridge Construction (ABC) Rating Score of 52 is greater than the first stage filter threshold of 50. The Concept Team requested consideration of an option with a reduced closure duration, therefore, an accelerated construction alternative was reviewed. It is recommended to use an incentive/disincentive and a 30 day closure as per Alternative #2.

No bike path or sidewalk will be required as part of this project.

Standard survey coverage will be required.

Right-of-Way will be required for this project.
A listing of existing utilities present within the project limits are shown in Attachment A.

The District cultural resources manager has not yet completed a cultural resources review on this project.

The Office of Location and Environment has reviewed this project and based on preliminary desktop observations, has determined that a Section 404 Permit will be required. It is expected that the work will be covered by Nationwide Permit 14.

G. Program Status

Site data has been developed by Shive-Hattery. This project is listed in the 2019-2023 Iowa Transportation Improvement Program with $690,000 for replacement in FY 2022. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

Following page has a map of the county and location of project area.

Attachment A - utilities

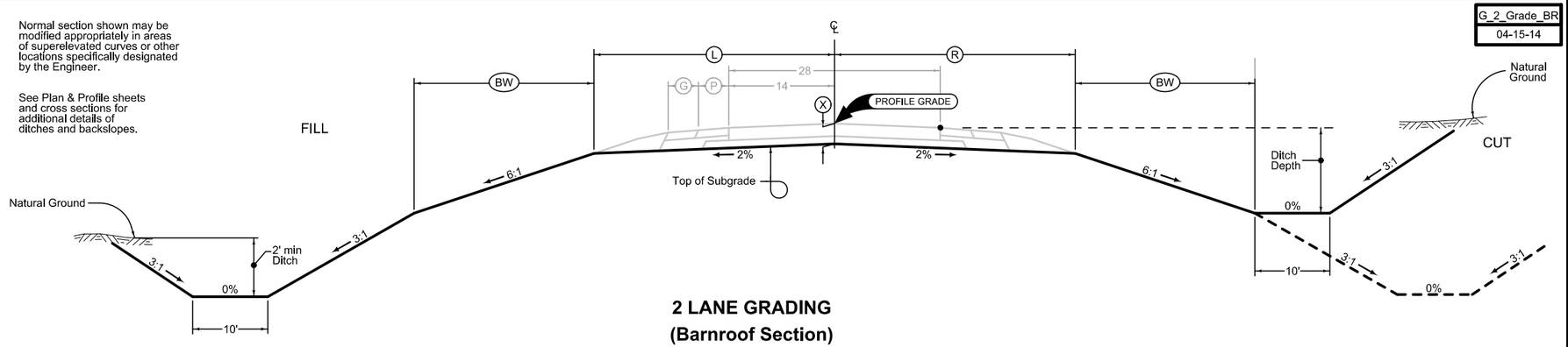
SH Project 4172083 | February 1, 2019

SHIVEHATTERY
ARCHITECTURE+ENGINEERING

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(BW) Feet
IA 136	2+33.62	4+28.64	31.82	31.82	17.0	4.18

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.



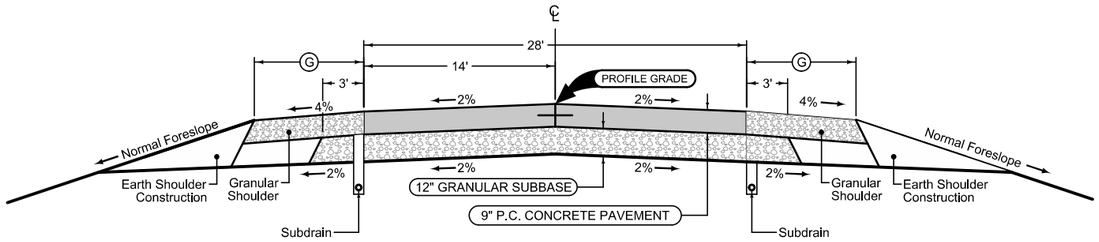
2 LANE GRADING
(Barnroof Section)

Granular Shoulder

		2_G_SR_ 10-19-10
STATION TO STATION		(G) Feet
2+33.62	4+28.64	4

Granular Shoulder

		2_G_SR_ 10-19-10
STATION TO STATION		(G) Feet
2+33.62	4+28.64	4



Mainline Jointing:
Transverse joints: CD at 20' spacing
Longitudinal joint: L-2

	2P_ 10-19-10
STATION TO STATION	
2+33.62	4+28.64

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

See Tab 112-9 for shoulder quantities.

IA 136

100-1D
10-18-05

PROJECT DESCRIPTION

This project involves the replacement of the IA 136 bridge over over a stream 0.2 miles West of County Road L48 with a with a twin 12' x 12' RCB culvert.

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
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

- BBB Bottom of Bridge Beam
- BL Topo Breakline
- C Centerline BL of Road (ML or SR)
- CP Control Point
- CUL Culvert
- EG Edge of Gravel Road
- EP Edge of Paved Roads (ML or SR)
- FO1B Fiber Optic Co. 1 - Quality B
- FW Wire Fence
- GR Ground Shot
- LC Lot Corner
- MH Utility Access (Manhole)
- MIS Miscellaneous
- PIP Pipe Culvert
- PPA Power Pole Co. 1
- RET Retaining Walls
- ROW Right of Way Mark
- SIGN SI Sign
- SIGN SL Speed Limit Sign
- TDC Tree Deciduous
- TL1B Telephone Line Co. 1 - Quality B
- TLNR Tree Line Right
- TW Top of Water
- WC Wild Card (Misc. Field Shot)
- WV WV Water Valve
- EL1B Electric Line Co. 1 - Quality B
- TPA Power Pole Co. 1

UTILITY LEGEND

- TP TPD Telephone Pedestal
- PPA Power Pole Alliant Energy
- Alliant Energy - Quality B
- TPA Power Pole Lost Nation-Elwood Telephone
- Lost Nation-Elwood Telephone - Quality B
- Lost Nation-Elwood Telephone - Quality C
- WV WV Water Valve

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.	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	JONES COUNTY	PROJECT NUMBER BRFN-136-2(35)--39-53	SHEET NUMBER D.1

11:15:03 AM 5/21/2019 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5313602017\Design\SHT_53136035_LGD.sht

Sect. No. 16

EXISTING ROW

EXISTING ROW

EXISTING ROW

EXISTING ROW

POT Sta 41+77.17

PI Sta 46+51.60

POT Sta 49+08.26

45

3:1

6:1

6:1

136

136

E1

E1

E1

SIDE

SIDE

SIDE

SIDE

SIDE

SIDE

SIDE

MIN

MIN

MIN

MIN

ENT
+75
U.A.C.

18"
C.M.P.
U.A.C.

STA. 44+10.79
BEGIN PROJECT

POSSIBLE PIPE EXTENSION OR ADJUSTMENT
MODIFY GRADING FOR ENTRANCE PIPE OUTLET

Sta. 3+38.83
Skew 31° LT AH
30.0'x61.75'
Arch Bridge
REMOVE

Build TWIN 12'x12' RCB Culvert
Skew 45°LT AH
Design No. 0122
Sta 45+11

STA. 46+05.81
END PROJECT

0 FEET 50

Sect. No. 15

Oxford TWP.
T-83N R-1W
SEC. 15 and SEC. 16

Tie In
Sta. 44+10.79
Elv. 753.67

Tie In
Sta. 46+05.81
Elv. 749.37

753.67

-2.203%

749.37

-2.203%

775 770 765 760 755 750 745 740 735 730 725 720

Lt

Rt

753.36 752.81 752.26 751.71 751.15 750.60 750.05 749.50

42 +50 43 +50 44 +50 45 +50 46 +50 47 +50 48 +50 49

FILE NO.	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	JONES COUNTY	PROJECT NUMBER BRFN-136-2(35)--39-53	SHEET NUMBER D.2

1:12:02 PM 5/22/2019 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5313602017\Design\53136035D2.dgn

Jones County
BRFN-136-2(35)-39-53
Bridge on Hwy 136
0.2mi N of Co Rd E45
PIN 17-53-136-020
Sap-07621

General Information

Measurement units for this survey are US survey feet. This survey is for proposed Bridge reconstruction and reconstruction of State Highway 136 over Stream 0.2 Miles north of County Road E45. 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 E45 corridor and the Stream information.

Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12A). Additional benchmarks were placed throughout the project using a Total Station setup relative to Pt. 12 and Pt. 11.

This survey observed 4 local area county Control Monuments with published NAVD88 heights to compare to local ground control:

Jones County Control mark GPS 61 has a published Elev. of 868.70
Survey Elev. = 868.87

Jones County Control mark GPS 70 has a published Elev. of 819.78
Survey Elev. = 819.80

Jones County Control mark GPS 69 has a published Elev. of 879.73
Survey Elev. = 879.78

Jones County Control mark GPS 60 has a published Elev. of 743.59

Horizontal Control

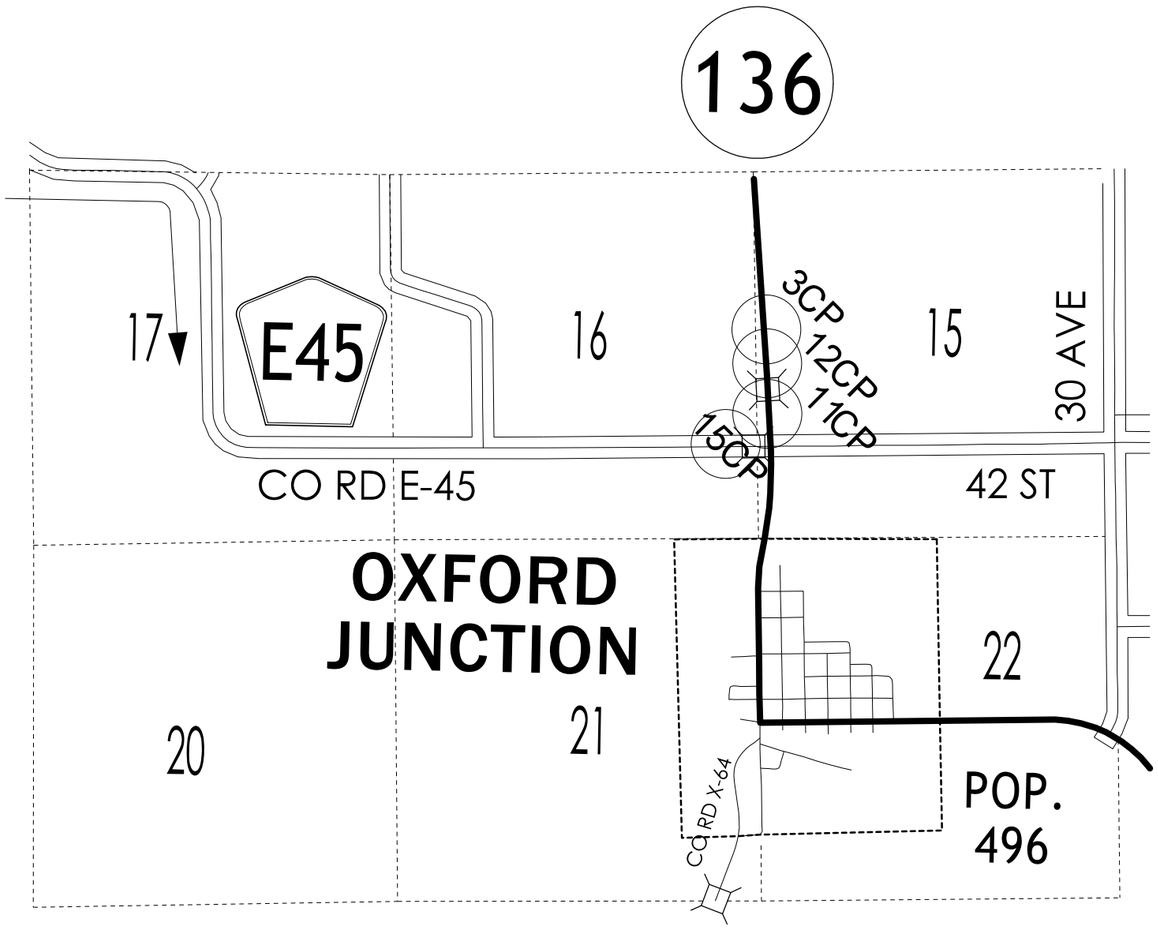
(State Plane Coordinates)
The project coordinate system for this survey is Iowa Regional Coordinate System - Zone 10 (U.S. Survey Feet). This survey control is relative to IaRTN reference stations. IaRTN Reference Station coordinates are relative to the National Reference Station network datum: NAD83 (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 Pt. 12 and Pt. 11.

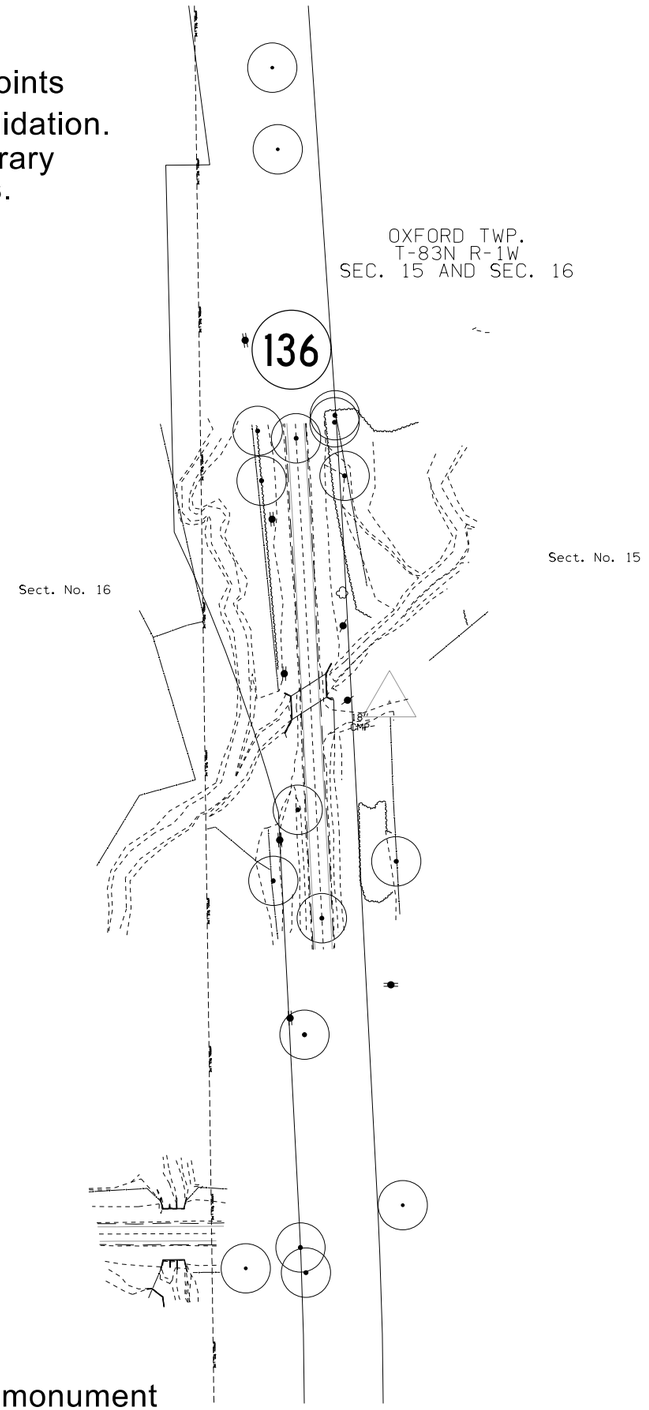
Alignment Information

The horizontal alignment for this survey is a retrace of As-built Plans Design 1129 Jones County, Preliminary Road Project No. 581. Survey stationing was equated to the plan centerline of culvert at STA 45+16.00 and run back and ahead without equation throughout the survey. No other information was legible to establish the alignment.

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 10

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 10

Point Name	Northing	Easting	Elevation	Feature Definition	Description
3	8060979.396	20693223.130	738.419	CP	CP
11	8059755.042	20693236.910	754.664	CP	CP
12	8060486.680	20693234.890	744.410	CP	CP
13	8059255.116	20693223.910	745.481	LC	IR 5/8 CAP
14	8059319.453	20693379.560	743.654	LC	IR COUNTY MONUMENT
15	8059316.110	20692631.840	740.620	CP	CP-15
2254	8060063.317	20693188.620	734.244	CP	CP TEMP
2304	8059823.063	20693006.290	735.420	CP	CP TEMP
2327	8059216.920	20693232.330	0.000	LC	IR PK
2328	8059223.501	20693140.680	0.000	LC	IR PK
3153	8060428.925	20693291.120	737.510	LC	IRF 1/2 CONCMON
3214	8060521.050	20693276.350	737.987	LC	IR RAIL
3215	8060510.344	20693275.910	736.802	LC	IRF 1/2 CONCMON
3221	8060486.061	20693217.400	745.098	LC	IR PK
3222	8060925.634	20693189.510	745.097	LC	IR PK
3223	8061049.846	20693181.030	745.187	LC	IR PK
3235	8060497.282	20693158.840	738.427	LC	IRF 1/2 CONCMON
3238	8060421.547	20693164.720	738.583	LC	IRF 1/2 CONCMON
3294	8059756.018	20693256.540	756.025	LC	IR PK
3295	8059920.916	20693219.950	0.000	LC	IR PK
3296	8059578.825	20693230.150	0.000	LC	IR PK
3298	8060124.419	20693254.170	750.299	CP	CP TEMP
3299	8060077.808	20693222.080	750.940	CP	CP TEMP
3300	8060178.595	20693301.380	735.035	CP	CP TEMP
10060	8059842.531	20693369.700	783.167	LC	IR CONC MON
10135	8060085.792	20693359.330	758.463	ROW	ROWR
10167	8059812.812	20693182.630	763.342	LC	IR CONC MON

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)
ML136 (IA 136)																			
ML1361		0+00.00	8,059,756.02	20,693,256.54															
ML1363		4+74.43	8,060,229.82	20,693,231.99															
ML1364		7+31.09	8,060,486.06	20,693,217.40															

FILE NO.	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	JONES COUNTY	PROJECT NUMBER BRFN-136-2(35)--39-53	SHEET NUMBER G.4

108-26A
08-01-08

STAGING NOTES

Stage 1:
With traffic using detour, remove and replace bridge over the stream with a culvert.

Stage 2:
Reopen IA 136 to normal traffic pattern, using flaggers when needed.

108-23A
08-01-08

TRAFFIC CONTROL PLAN

1) While bridge and approaches are being removed and replaced with RCB culvert, traffic shall be maintained via an off-site detour. Detours are furnished, maintained and removed by the Contractor.

2) Contractor will furnish, install, maintain, and remove detour signs. All existing signs that conflict with detour shall be covered. These functions shall be included in the Traffic Control Bid Item.

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									

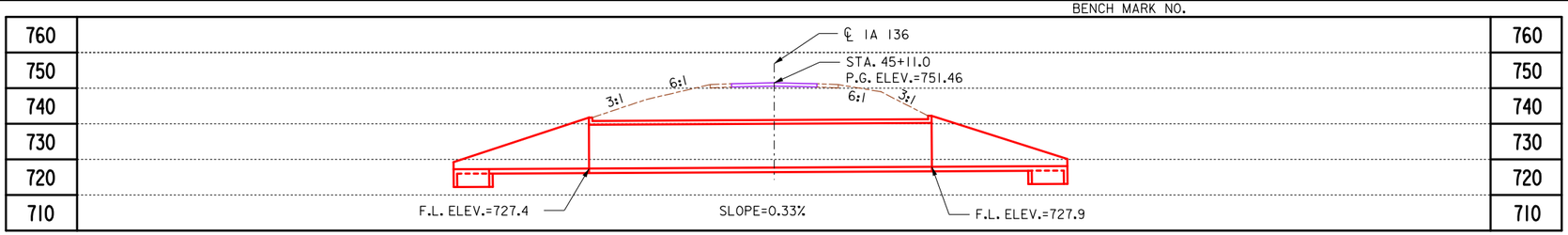
111-01
04-17-12

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	

BENCH MARK NO.

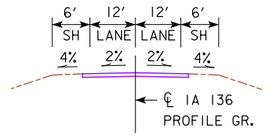


VPI STA. 44+10.79
VPI ELEV. 753.67

-2.20%

VPI STA. 46+05.81
VPI ELEV. 749.37

PROPOSED PROFILE GRADE IA 136



TYPICAL APPROACH SECTION

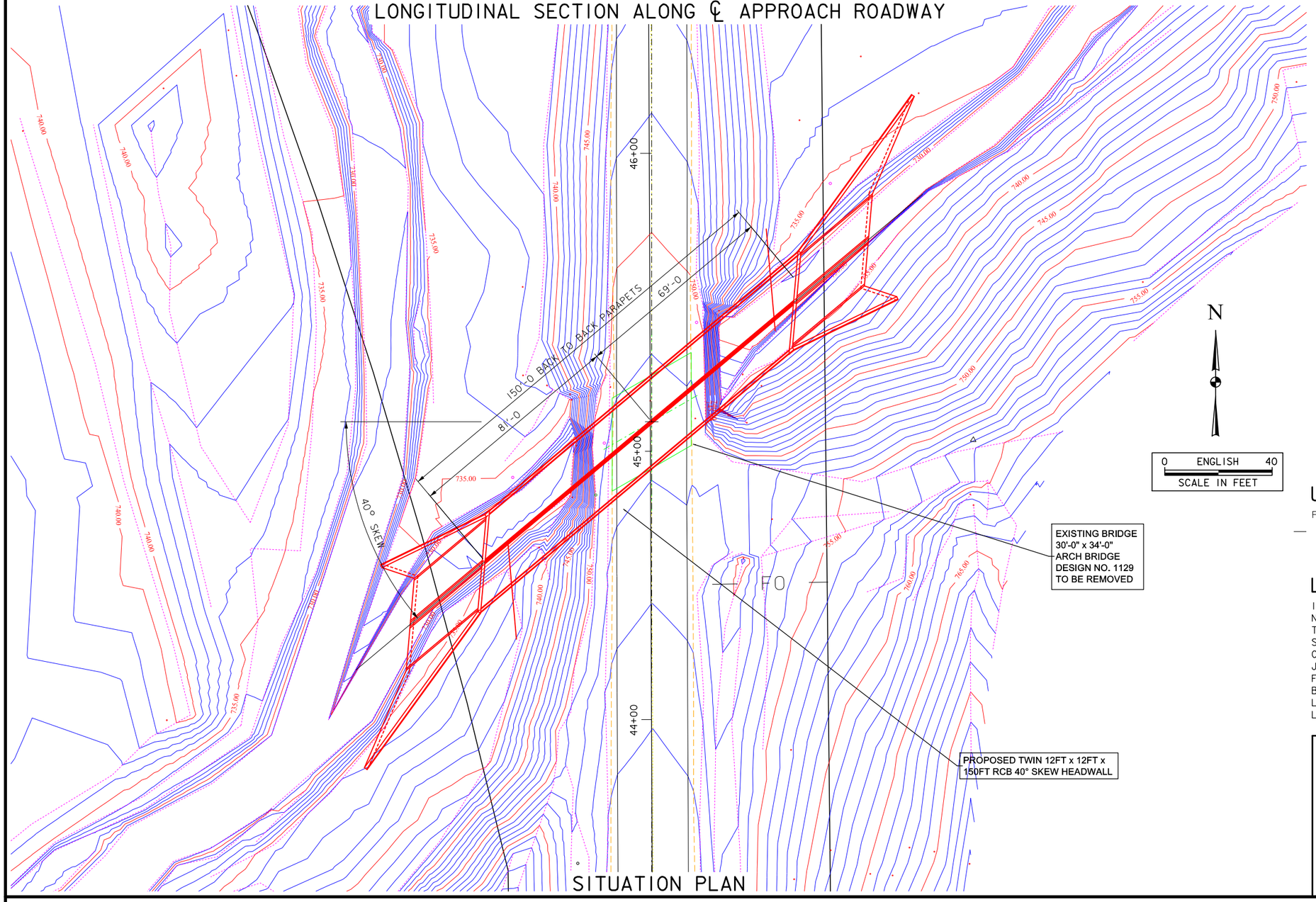
PLAN NOTES:

1. EXISTING 30′ x 34′ ARCH BRIDGE DESIGN NO 1129.
2. DRAINAGE THROUGH EXISTING CULVERT/CHANNEL MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.
3. FLOW LINE OF CULVERT NOMINALLY BURRIED 1′.

HYDRAULIC DATA

DRAINAGE AREA = 2.89 SQ. MI.
Q_{50} = 1,970 CFS
HW ELEV. = 739.6
STREAM SLOPE = 35.8 FT./MI.

LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY



N

0 ENGLISH 40
SCALE IN FEET

SITUATION PLAN

UTILITIES LEGEND:

FO(B)	FIBER OPTIC LINE	MEDIACOM
— E —	OVERHEAD ELECTRIC	ALLIANT ENERGY

LOCATION

IA 136 OVER STREAM 0.2MI
N. CO RD E45
T-83N R-1W
SECTION 15
OXFORD TOWNSHIP
JONES COUNTY
FHWA NO. 32500
BRIDGE MAINT. NO. 5347.3S136
LATITUDE 41.996030°
LONGITUDE -90.955796°

TRAFFIC ESTIMATE

2021 AADT	700	V.P.D.
2041 AADT	800	V.P.D.
2041 DHV	80	V.P.H.
TRUCKS	14	%
TOTAL DESIGN ESALs	-	

DESIGN FOR 40° SKEW R.A.

TWIN 12′ x 12′ x 150′ C.I.P. CULVERT REPLACEMENT

SITUATION PLAN

STATION 45+11.00 MAY 2019

JONES COUNTY

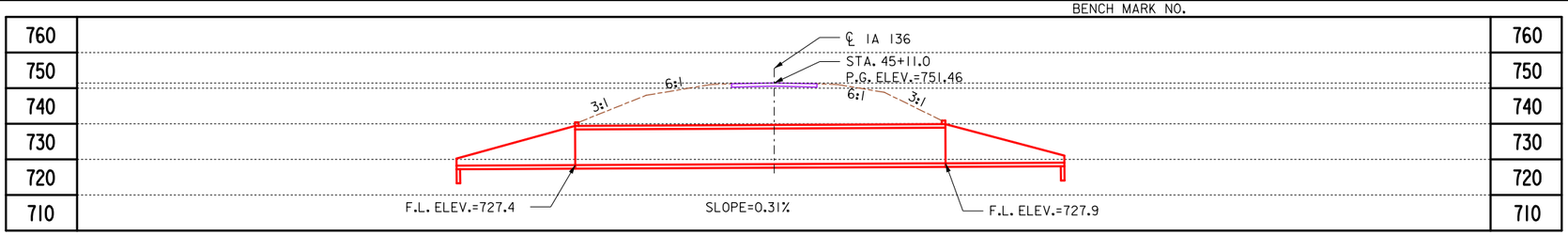
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF 1 FILE NO. 31696 DESIGN NO. 122

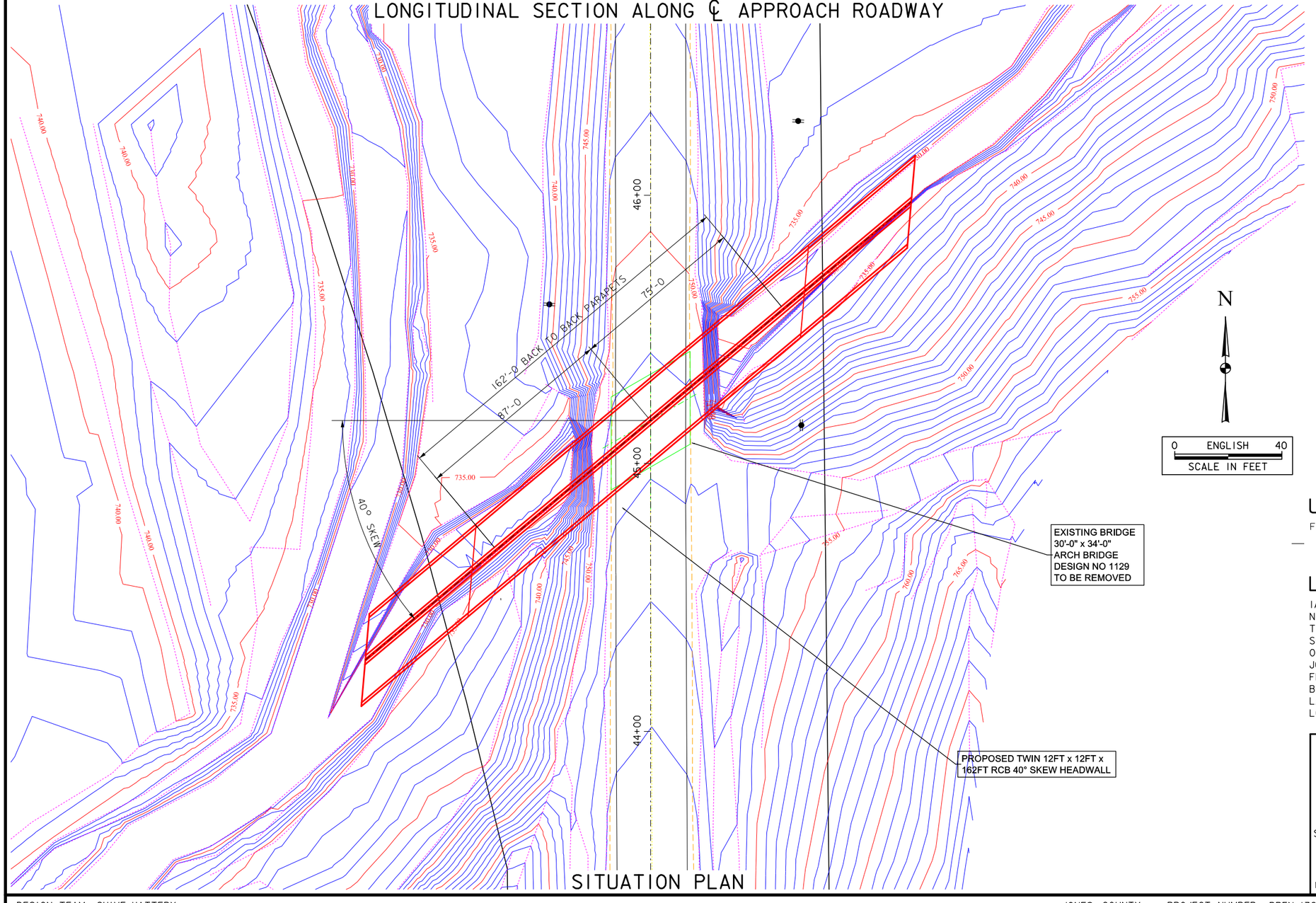
DESIGN TEAM SHIVE-HATTERY | JONES COUNTY | PROJECT NUMBER BRFN-136-2(35)--39-53 | SHEET NUMBER V.1

5/22/2019 3:53:08 PM bborder pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5313602017\BRPrelim\ShiveHattery\STR_53136035_SH_Z10.dgn TSL_53_1129 (50 Scale) 11x17_pdf.pltcfg

BENCH MARK NO.



LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY



SITUATION PLAN

N

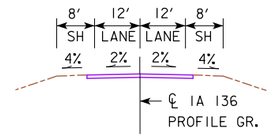
0 ENGLISH 40
SCALE IN FEET

VPI STA. 44+10.79
VPI ELEV. 753.67

-2.20%

VPI STA. 46+05.81
VPI ELEV. 749.37

PROPOSED PROFILE GRADE IA 136



TYPICAL APPROACH SECTION

PLAN NOTES:

1. EXISTING 30' x 34' ARCH BRIDGE DESIGN NO 1129.
2. DRAINAGE THROUGH EXISTING CULVERT/CHANNEL MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.
3. FLOW LINE OF CULVERT NOMINALLY BURRIED 1'.

HYDRAULIC DATA

DRAINAGE AREA = 2.89 SQ. MI.
Q_{50} = 1,970 CFS
HW ELEV. = 739.6
STREAM SLOPE = 35.8 FT./MI.

UTILITIES LEGEND:

FO(B)	FIBER OPTIC LINE	MEDIACOM
— E —	OVERHEAD ELECTRIC	ALLIANT ENERGY

LOCATION

IA 136 OVER STREAM 0.2MI
N. CO RD E45
T-83N R-1W
SECTION 15
OXFORD TOWNSHIP
JONES COUNTY
FHWA NO. 32500
BRIDGE MAINT. NO. 5347.3S136
LATITUDE 41.996030°
LONGITUDE -90.955796°

TRAFFIC ESTIMATE

2021 AADT	700	V.P.D.
2041 AADT	800	V.P.D.
2041 DHV	80	V.P.H.
TRUCKS	14	%
TOTAL DESIGN ESALs	-	

DESIGN FOR 40° SKEW L.A.

TWIN 12' x 12' x 162' PRECAST R.C.B. CULVERT REPLACEMENT

SITUATION PLAN

STATION 45+11.00 MAY 2019

JONES COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF 2 FILE NO. 31696 DESIGN NO. 122

DESIGN TEAM SHIVE-HATTERY | JONES COUNTY | PROJECT NUMBER BRFN-136-2(35)--39-53 | 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

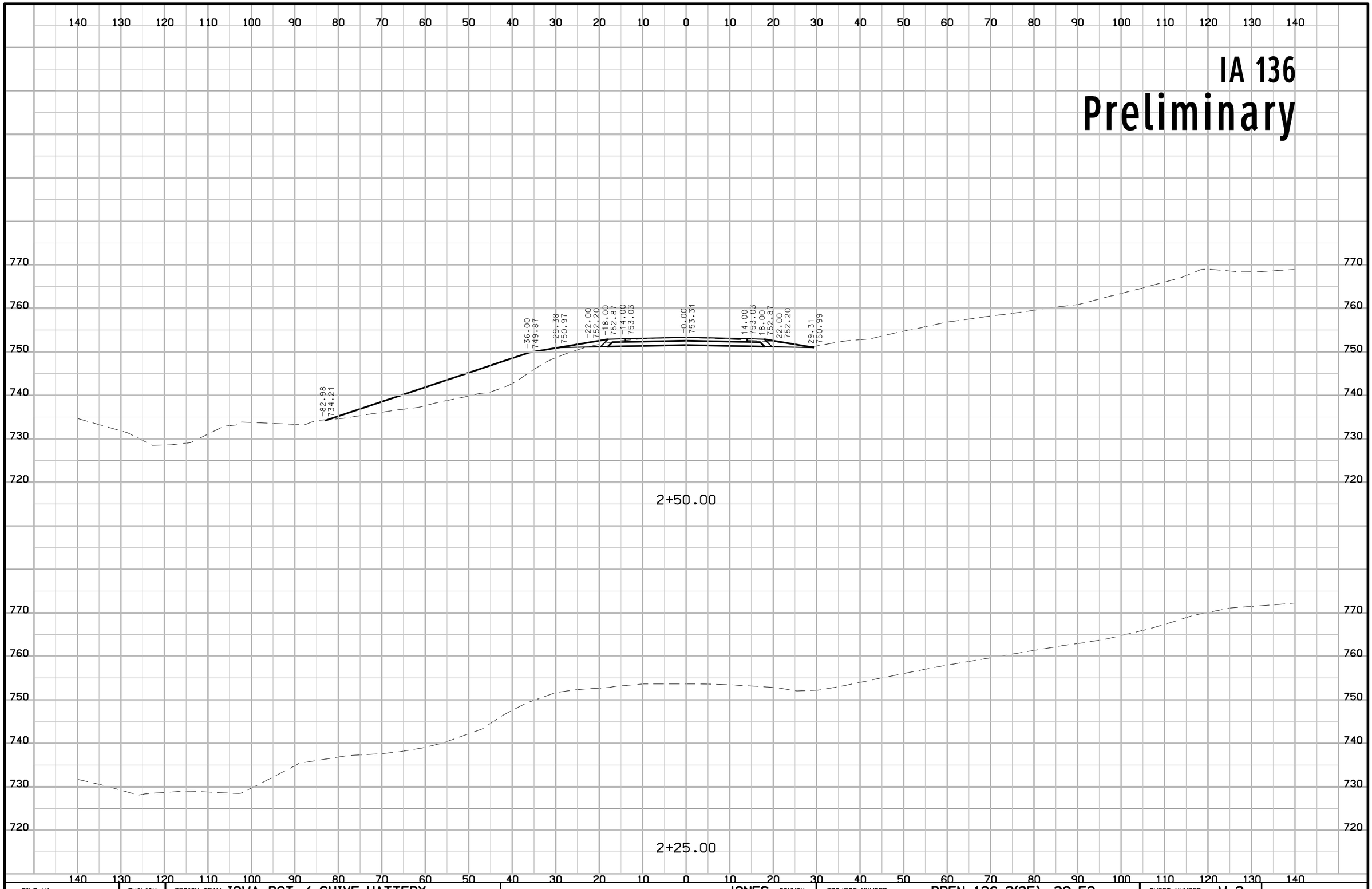
CROSS SECTION LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO.	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	JONES COUNTY	PROJECT NUMBER BRFN-136-2(35)--39-53	SHEET NUMBER W.1

10:41:33 AM 5/21/2019 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5313602017\Design\SHT_53136035_LGD.sht

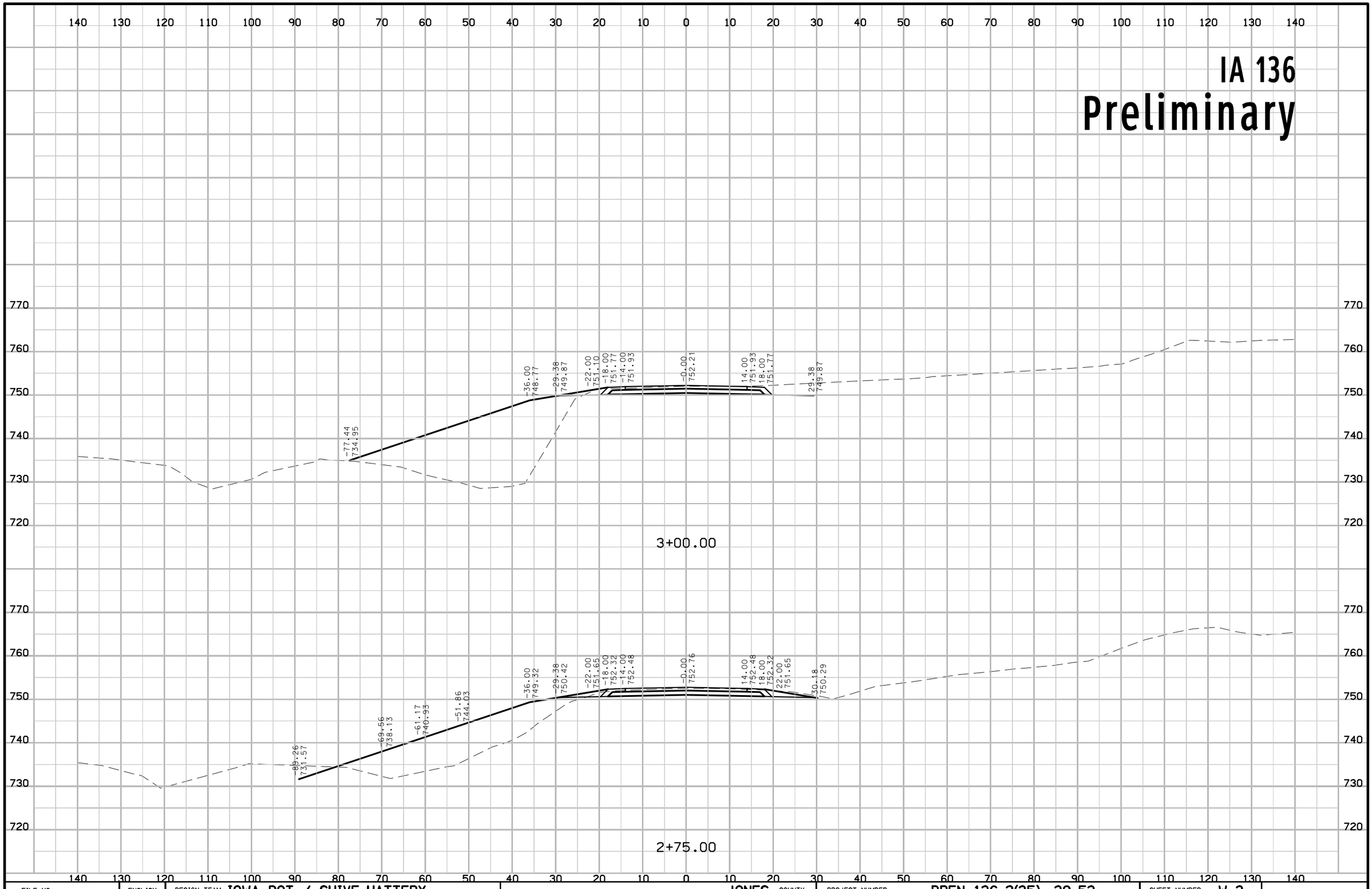
IA 136
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	JONES COUNTY	PROJECT NUMBER BRFN-136-2(35)--39-53	SHEET NUMBER W.2

10:41:56 AM 5/21/2019 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5313602017\Design\SHT_53136035_W2.sht

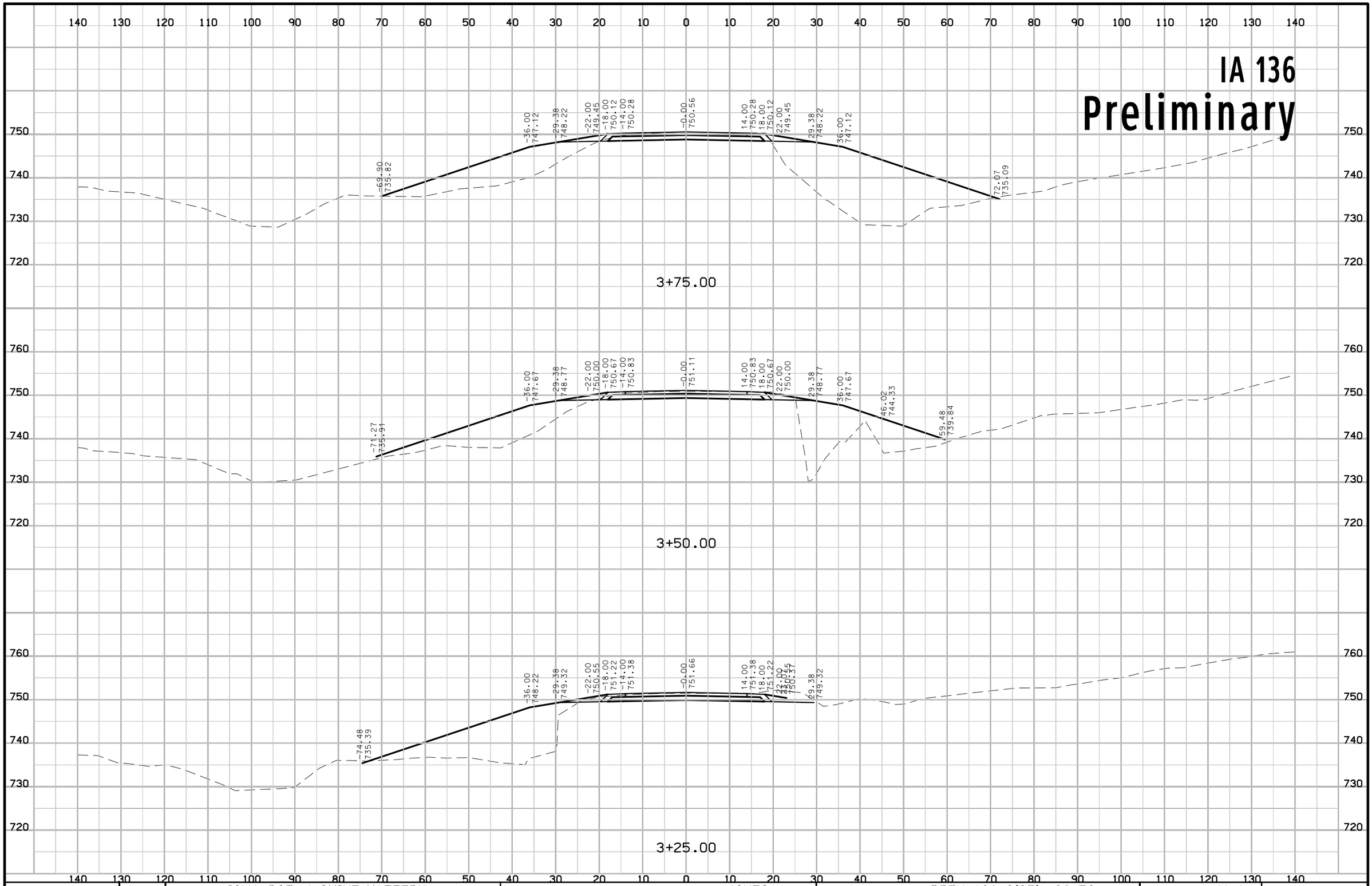
IA 136
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	JONES COUNTY	PROJECT NUMBER BRFN-136-2(35)--39-53	SHEET NUMBER W.3

10:41:57 AM 5/21/2019 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5313602017\Design\SHT_53136035_W2.sht

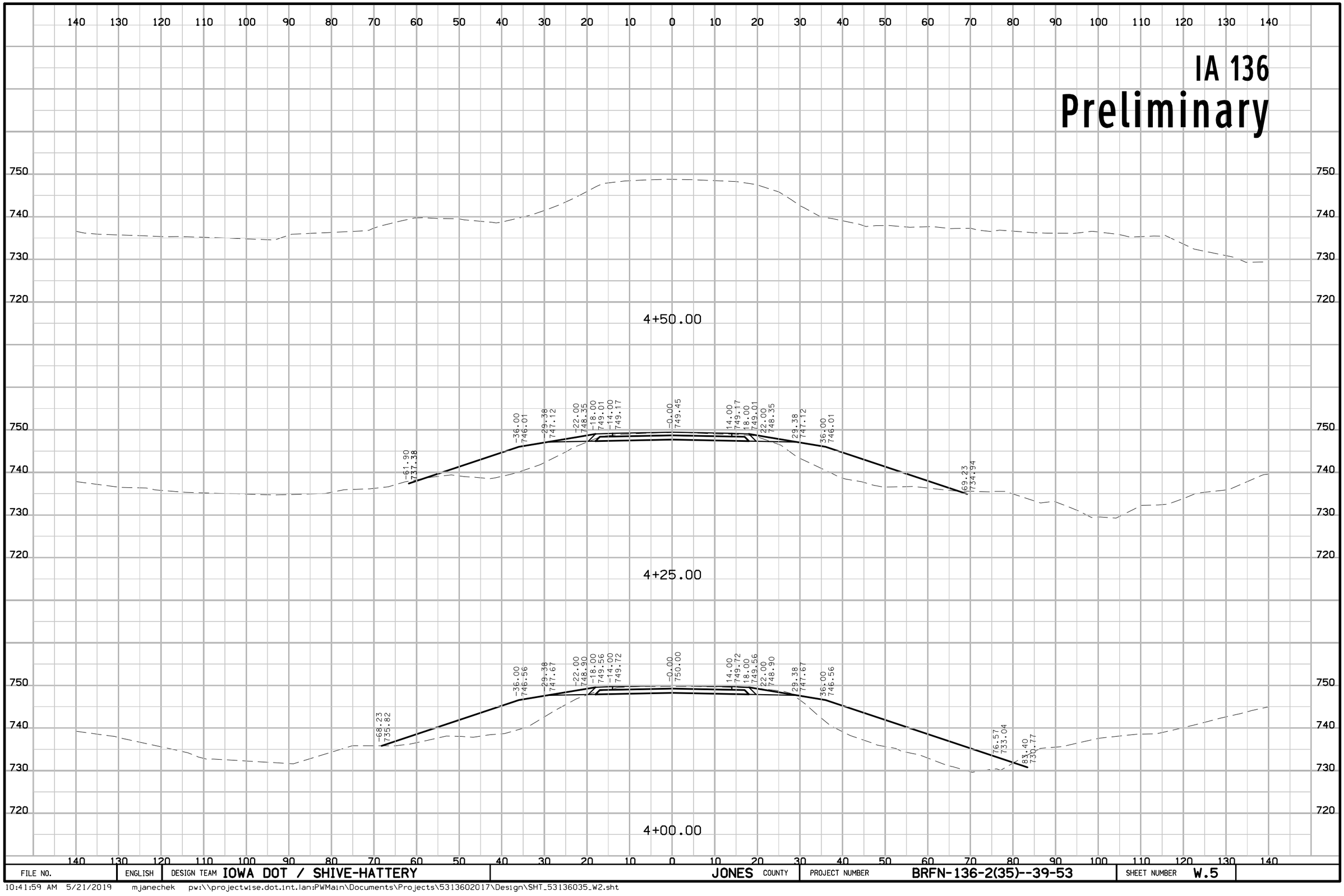
IA 136
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	JONES COUNTY	PROJECT NUMBER BRFN-136-2(35)--39-53	SHEET NUMBER W.4

10:41:58 AM 5/21/2019 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5313602017\Design\SHT_53136035_W2.sht

IA 136
Preliminary



FILE NO.	ENGLISH	DESIGN TEAM IOWA DOT / SHIVE-HATTERY	JONES COUNTY	PROJECT NUMBER BRFN-136-2(35)--39-53	SHEET NUMBER W.5

10:41:59 AM 5/21/2019 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5313602017\Design\SHT_53136035_W2.sht