BRIDGE REPLACEMENT
BRFN-093-2(22)--39-33

LETTING DATE 12-19-2023

FAYETTE Co.

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	**Title Sheets**
* A.1	Title Sheet
* A.2	Location Map Sheet
* A.3 - 7	Criteria and Concept
B Sheets	**Typical Cross Sections and Details**
B.1 - 2	Typical Cross Sections and Details
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	IA 93
G Sheets	**Survey Sheets**
G.1 - 3	Reference Ties and Bench Marks
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
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

FAYETTE COUNTY

BRIDGE REPLACEMENT

IA 93 - Stream 0.7 mi W of Co Rd V68

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

FIELD EXAM MARK-UP

TOTAL 20
PROJECT IDENTIFICATION NUMBER
19-33-093-010
PROJECT NUMBER
BRFN-093-2(22)--39-33
R.O.W. PROJECT NUMBER

Field Exam held virtually on 6/14/21
Meeting Attendees:
Tracy Meise (IDOT)
Steven Schroder (IDOT)
Kevin Smith (IDOT)
Matt Erickson (IDOT)
Gabriel Zittergruen (IDOT)
Ron Loecher (IDOT)
Jenifer Bates (Shive-Hattery)
Joe Appel (Shive-Hattery)
Mike Janechek (Shive-Hattery)
Dan Jensen (Shive-Hattery)

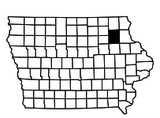
D3 PLAN – Date: July 16, 2021
D5 PLAN – Date: November 19, 2021
D4 PLAN – Date: August 22, 2023

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN – Date: June 18, 2021

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



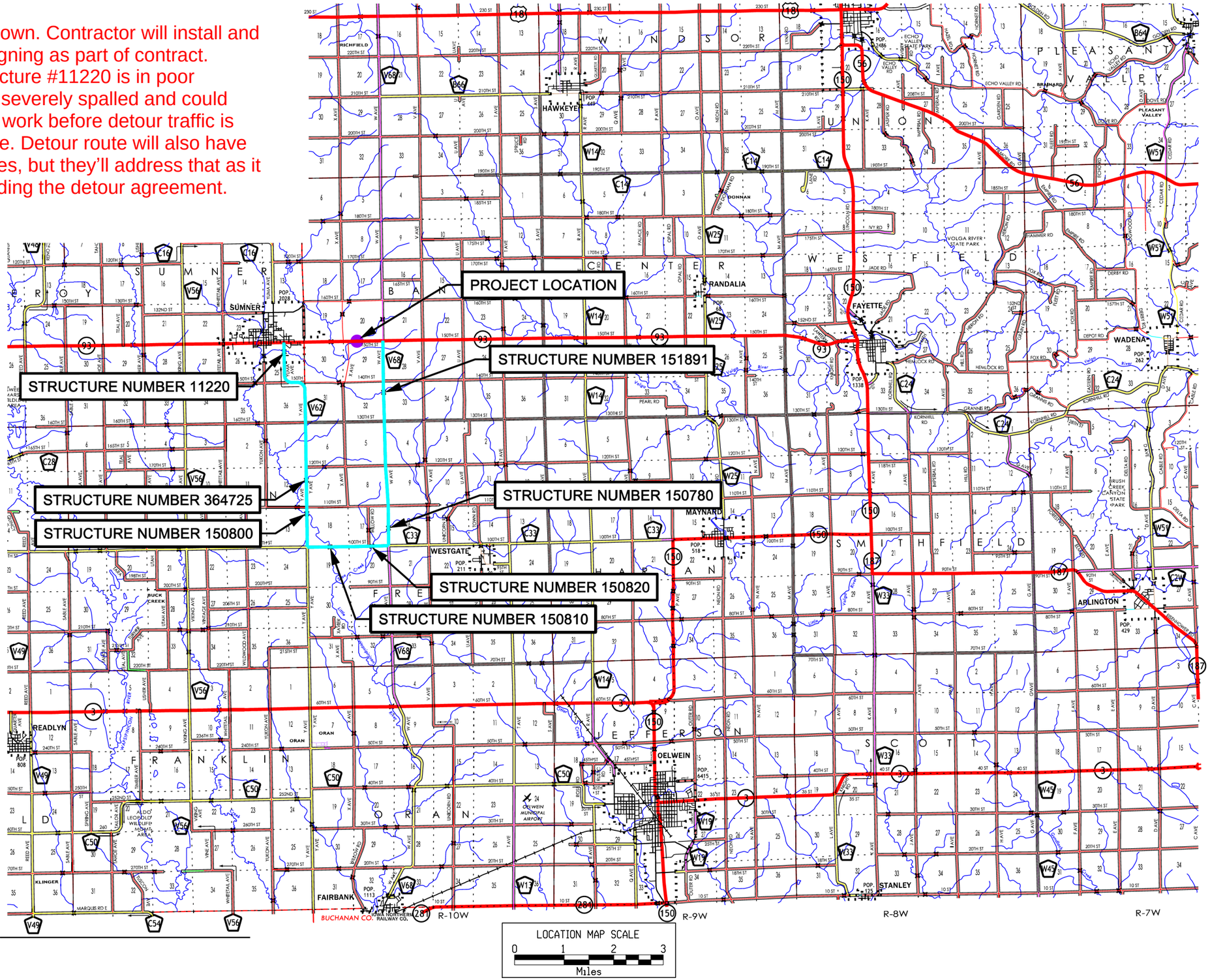
DESIGN DATA RURAL		
2024 AADT	1,600	V.P.D.
2044 AADT	1,700	V.P.D.
2044 DHV	170	V.P.H.
TRUCKS	11	%
Total Design ESALs	--	

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

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	FAYETTE COUNTY	PROJECT NUMBER BRFN-093-2(22)--39-33	SHEET NUMBER A.1

10:54:29 AM 6/2/2021 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\3309301019\Design\SHT_33093022_A01.dgn

Detour okay as shown. Contractor will install and maintain detour signing as part of contract. District stated structure #11220 is in poor condition. Deck is severely spalled and could use some surface work before detour traffic is placed on the route. Detour route will also have a few sign upgrades, but they'll address that as it gets closer to needing the detour agreement.



FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	FAYETTE COUNTY	PROJECT NUMBER BRFN-093-2(22)--39-33	SHEET NUMBER A.2

10:54:31 AM 6/2/2021 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\3309301019\Design\SHT_33093022_A01.dgn

Roadway				
PIN Number	19-33-093-010		**Submittal Date**	5/22/2020
Project Number	BRFN-093-2(22)--39-33			**Approval Date**
District	District 2	**Assistant District Engineer**	Nick Humpal	
County	FAYETTE		**or**	
Route	IA 93	**Office Director**		
Location	Stream 0.7 mi W of Co Rd V68			
Work Type	Bridge Replacement			
Segment Manager	John Bartholomew			
Designer	Jenifer Bates			

Design Manual Section 1C-1
Last Updated: 04-29-19

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)		12	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%
	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	10:1 for 4' then 6:1
	Beyond standard ditch depth and design clear zone	3.5:1	3:1	3.5:1
	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	8:1
	w/o drainage structures	10:1	6:1	10:1
Ditches (Refer to Section 3G-1)	Outside ditch (depth x width) (ft)	5 x 10	--	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	40'
Bridge width—existing*		design lane widths + no less than 2 ft left and right	design lane widths + 2 ft. offset left and right	N/A
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	B

*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 = 1600

Design Manual Section 1C-1
Last Updated: 04-29-19

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	0*	Effective = 8' Paved = 0'
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	0*	
On all other NHS	10	6				
On non-NHS routes with design year ADT > 3000	10	6	Design year ADT < 400 vpd	4	0*	
On non-NHS routes with design year ADT < 3000	8	0*				

*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:

Requires safety edge

Roadway Design Speed (mph) = 60

Design Manual Section 1C-1
Last Updated: 04-29-19

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	136
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						30'

SHIVEHATTERY
ARCHITECTURE + ENGINEERING

IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 2

DATE: September 8, 2020

ATTENTION: E. Jon Ranney

PROJECT: Fayette County
BRFN-093-2(22)--39-33
PIN: 19-33-093-010

FROM: Jenifer Bates

OFFICE: Shive-Hattery

SUBJECT: Project Concept Statement; (Final, D0)

This project involves the replacement of the IA 93 bridge (Maint. No 3317.1S093) over stream 0.7 mi W of County Road V68.

A concept review was held virtually on July 23, 2020. Those present included Nick Humpal and Randy Taylor from District 2; Steven Schroder, David Claman, Matt Erickson from the Iowa DOT and Jenifer Bates, Joe Appel, Mike Janechek, and Mark Harpole from Shive-Hattery.

One alternative was considered:
1) Replace the existing structure with a twin 12' x 11' x 90' reinforced concrete box (RCB) placed at a 15 degree left ahead skew and 15 degree bend) at an estimated cost of $835,000 (see attached concept for details). Additional right of way does look like it will be required. Traffic will be maintained using a detour.

Alternative 1 is the preferred alternative due to the site topography, low traffic volumes, safety considerations, and availability of a suitable detour route.

The Draft Project Concept Statement was sent out for review and comment with concerns to be resolved by September 4, 2020. Comments received during the review period have been considered and resolved.

This project is recommended for construction in FY 2024. The Bridges and Structures Bureau will coordinate the plan preparation with the assistance of the Design Bureau and Shive-Hattery.

Cc:
C. Purcell, S. J. Megivern, M. Nop, K. Brink, W. A. Sorenson, M. E. Ross, C. C. Poole, B. D. Hofer, S. Anderson, S. Godbold, A. Abu-Hawash, S. Neubauer, B. Dolan, M. K. Solberg, R. Gelhaus, S. Majors
M. J. Kennerly, J. S. Nelson, M. A. Swenson, D. L. Newell, D. E. Sprengeler, A. A. Welch, B. Bradley, T. D. Crouch, J. Selmer, D. R. Claman, M. E. Khoda, T. Abbett, P. Hjelmstad, G. Pavelka, J. Bartholomew
K. D. Nicholson, B. Walls, R. A. Younie, J. W. Laaser-Webb, E. C. Wright, N. M. Miller, B. E. Azeltine, S. J. Gent, K. K. Patel, J. Hauber, K. Olson, M. Kelly, N. Humpal, R. Loecher, D. Stokes

SH Project #4202370

SHIVEHATTERY
ARCHITECTURE + ENGINEERING

FINAL PROJECT CONCEPT STATEMENT

IA 93 Bridge over stream 0.7 mi W of Co Rd V68

Fayette County
Proj. # BRFN-093-2(22)--39-33
PIN: 19-33-093-010
Maint. No. 3317.1S093
FHWA No. 24580

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

September 8, 2020

I. STUDY AREA

A. Project Description

This project involves the replacement of the IA 93 bridge (Maint. No 3317.1S093) over stream 0.7 mi W of Co Rd V68.

The alternative considered was:
1. Replace the existing structure with a twin 12' x 11' x 90' reinforced concrete box (RCB) placed at a 15-degree left ahead skew and 15 degree bend.

Alternative 1 is the preferred alternative due to the site topography, low traffic volumes, safety considerations, and availability of a suitable detour route.

Traffic will be maintained by an off-site detour.

The preliminary project cost is $835,000. (This does not include costs associated with detour.)

B. Need for Project

This bridge is a 30' x 30' steel beam bridge constructed in 1949. The bridge deck is near the end of its useful life and needs replaced. There are areas of section loss at the ends of the steel girders. This type of superstructure is vulnerable to fatigue cracking in the vicinity of the welded cover plates. Due to the extent of these deficiencies and section loss, the bridge should be replaced.

SH Project #4202370

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

C. Present Facility

The existing structure is a 30' x 30' steel beam bridge constructed in 1949.

IA 93 in the project area is 24' wide ACC pavement with 6' wide granular shoulders and 3:1 foreslopes, constructed in 1950. ACC resurfacing was accomplished in 1971 and 2004.

D. Traffic Estimates

The 2024 construction year and 2044 design year average daily traffic estimates are 1,600 ADT with 11 % trucks and 1,700 ADT with 11 % trucks, respectively.

E. Sufficiency Ratings

IA 93 is classified as an access route and is a maintenance service level C roadway. The federal bridge sufficiency rating is 81.5.

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2015 through December 31,2019, there were 2 crashes including, 2 personal injury crashes.

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace with a culvert

The existing 30' x 30' steel beam bridge will be replaced with a twin 12' x 11' x 90' reinforced concrete box (RCB) placed at a 15-degree left ahead skew and 15 degree bend.

The typical cross section over the culvert will consist of a 24' roadway with 8' effective shoulders (8' granular so requires safety edge) and 10:1 for 4' then 6:1/3.5:1 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.

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

Right of way does appear to be required for this project.

Traffic will be maintained by an off-site detour.

Bridge Items	Estimated Costs
New Culvert	$378,200
Bridge Removal	$10,400
Revetment	$16,600
Engineer Fabric	$1,200

Mobilization - 10%	$40,600
Contingency - 20%	$89,400
Bridge Costs	**$ 536,400**
Roadway Items	
Clearing and Grubbing	$5,000
Embankment in place, contractor furnished	$50,000
Excavation Class 10	$2,000
Modified Subbase	$3,800
Granular Shoulder	$5,400
PCC Pavement	$29,500
Flooded Backfill	$13,200
Excavation Class 20	$29,000
Removal of Pavement	$5,100
Erosion Control	$50,000
Right of Way	$20,000
Traffic Control - 5%	$10,700
Mobilization - 5%	$10,700
M & C - 30%	$64,200
Roadway costs	**$ 298,600**
Project Total	**$835,000**

B. Detour Analysis

IA 93 will be closed and an offsite detour will be utilized. It is anticipated the detour will be in place for approximately 75 days. The detour would follow Co Rd V68 from its junction with IA 93 south to the junction of Co Rd V68 and Co Rd C33, then west on Co Rd C33 to its junction with V62, then north on Co Rd V62 to its junction with IA 93 in the town of Sumner, IA. Out of distance travel is 10 miles. The total distance user cost is anticipated to be $295,600. The cost for county road maintenance will be $15,300 as calculated by the Gas Tax Method. Detour signing costs will be $10,000.

C. Recommendations

It is recommended that the present structure be replaced as described in Alternative No. 1.

D. Construction Sequence

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

E. ADA Accommodations

There are no bike paths or sidewalks adjacent to IA 93; therefore, no ADA accommodations are planned in conjunction with this project.

F. Special Considerations

This will not be a traffic critical project.

The ABC Rating Score of 30 is less than the first stage filter threshold of 50, therefore no further evaluation is considered.

No additional survey is requested at this time.

Right of Way does appear to be required for this project.

Once the Location and Environment Bureau has completed their review, comments will be incorporated into the final concept statement.

F. Program Status

Site data has been developed by Shive-Hattery. This project is listed in the 2020-2024 Iowa Transportation Improvement Program, with $900,000 programmed for replacement in FY 2024. 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 showing the location of the project area and the anticipated detour route.

Attachment A - Utilities

Attachment A

Jenifer J. Bates

From: ia@occinc.com
Sent: Wednesday, July 22, 2020 6:35 AM
To: Page, Jason
Subject: Design Information Results for Ticket # 552004883

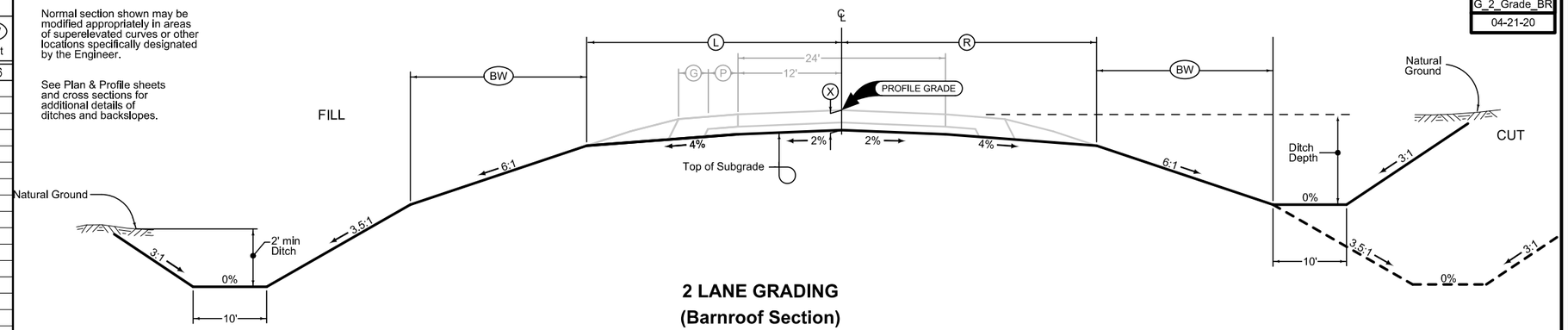
(P11) BLACK HILLS ENERGY DECORAH
Contact Name : Jan Krueger
Contact Phone : 5633820953
Contact Email : jan.krueger@blackhillscorp.com
Locate Requested: N

(WINIA) WINDSTREAM COMMUNICATIONS
Contact Name : LOCATE DESK
Contact Phone : 8002891901
Contact Email : LOCATE.DESK@WINDSTREAM.COM
Locate Requested: N

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(BW) Feet
IA 93	69+00.00	70+65.00	30.84	30.84	20	11.16

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.



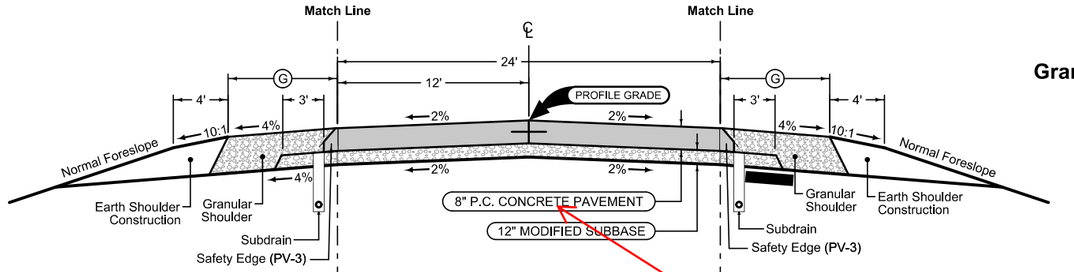
2 LANE GRADING
(Barnroof Section)

G_2_Grade_BR
04-21-20

District's comment: Rather than fully updating the short section of foreslopes to accommodate the RCB, I'd recommend more closely mimicking the existing conditions. Perhaps the foreslopes can be 4:1 rather than the barn roof currently shown. (This will be reviewed and incorporated into the D3 submittal.)

Granular Shoulder with Safety Edge

2_G_ 04-21-20		
STATION TO STATION		Ⓖ Feet
69+00.00	70+65.00	8



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

2P_ 04-21-20	
STATION TO STATION	
69+00.00	70+65.00

Use 10" PCC as per concept. Will update for D3 submittal.

Granular Shoulder with Safety Edge

2_G_ 04-21-20		
STATION TO STATION		Ⓖ Feet
69+00.00	70+65.00	8

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

See Tab 112-9 for shoulder quantities.

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	FAYETTE COUNTY	PROJECT NUMBER BRFN-093-2(22)--39-33	SHEET NUMBER B.2

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SURVEY SYMBOLS

- PI Tangent Point
- SCR Section Corner
- CP Control Point
- WC Wild Card (Misc. Field Shot)
- BM Bench Mark
- BNK Stream Bank
- TW Top of Water
- SBR Size of Bridge
- BL Topo Breakline
- D Centerline Draw or Stream (Down)
- FW Wire Fence
- GR Ground Shot
- ENU Edge Unpaved Entrance & Parking
- PIP Pipe Culvert
- PLG Location of General Photo
- PPA Power Pole Co. 1
- ENT Centerline BL of Entrance
- DU Centerline Draw or Stream (Up)
- SNP Unpaved Shoulder
- EP Edge of Paved Roads (ML or SR)
- C Centerline BL of Road (ML or SR)
- TP TPD Telephone Pedestal
- ROW Right of Way Mark
- OUT Tile Outlet
- GDL Guard Rail Steel
- BD Bridge Deck
- BRG Bridge
- CON Concrete or A/C Slab
- RIP Rip-Rap
- BLD Building or Foundation
- FWD Wood Fence
- EW Edge of Water
- BLS Bridge Low Steel
- BCL Bridge Centerline
- FO FO1D Fiber Optic Co. 1 - Quality D
- G GL1D Gas Line Co. 1 - Quality D

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

PPA Power Pole Black Hills Energy
Jan Krueger
563-382-0953
jan.krueger@blackhillscorp.com

FO - Windstream Communications - Quality D
800-289-1901
LOCATE.DESK@WINDSTREAM.COM

GL Gas Line - Black Hills Energy - Quality D
Jan Krueger
563-382-0953
jan.krueger@blackhillscorp.com

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	FAYETTE COUNTY	PROJECT NUMBER BRFN-093-2(22)--39-33	SHEET NUMBER D.1

10:55:26 AM 6/2/2021 mjanechek pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\3309301019\Design\SHT_33093022_LGD.dgn

Banks TWP.
T-93N R-10W
SEC. 20

STA. 69+00.00
BEGIN ROADWAY

STA. 70+65.77
END ROADWAY

As per District review: west end of entrance pipe needs one section reset, east end needs one section replaced and aprons need added to both sides.

ENT +91.53
(U.A.C.)

ENT +37.16
(U.A.C.)

30" x 25'
Conc. Pipe
(U.A.C.)

POT Sta 67+37.87

PI Sta 68+38.64

PI Sta 71+34.88

POT Sta 76+71.95

65

70

75

93

93

FO

APPROX. SEC. LINE

Sta. 69+85.0
30'x30'
I-Beam Bridge
D.A.=1486 A-R (Per Plan F-380(8))
REMOVE
Install Twin 12'x11'x90' RCB
Sta. 69+73.85
Skew = 15° Lt. Ahd.
F.L. = Lt. 1069.80
Rt. 1069.30

Sect. No. 29

District to coordinate with utilities potentially in conflict with culvert construction.

N

0 FEET 50

1,085.94

-0.546%

1,085.04

1,085.81
1,085.67
1,085.53
1,085.40
1,085.26
1,085.12

1110
1105
1100
1095
1090
1085
1080
1075
1070
1065
1060
1055

Lt
Rt

63 +50 64 +50 65 +50 66 +50 67 +50 68 +50 69 +50 70 +50 71 +50 72 +50 73 +50 74 +50 75 +50 76 +50 77 +50 78

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT / Shive-Hattery	FAYETTE COUNTY	PROJECT NUMBER BRFN-093-2(22)--39-33	SHEET NUMBER D.2

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Survey Information

Fayette County
BRFN-093-2(22)—39-33
Stream 0.7 mi W of Co Rd V68
Bridge-Unspecified
PIN 19-33-093-010
Sap-958.0

General Information

Measurement units for this survey are US survey feet. This survey is for proposed Bridge replacement. Project datum and control information is provided by Design Survey Office. This project is a Full Field concept survey. This survey request was for the Iowa Hwy. 93 corridor only.

Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12b). GRS80 Ellipsoidal Height was computed at project control Pts. 341, 93168, 93175, J 38 RESET, and JOHNSON by conducting two concurrent six-hour static observations. Additional benchmarks were placed throughout the project using a GNSS Base-Rover setup relative to Pt. 93168 and Pt. 93175. Two observations with a minimum of four-hours between were collected and used in a weighted average.

This survey observed 1 NGS Control Monument with published NAVD88 height to compare to local ground control:

NGS 3rd. order mark designated J 38 RESET has a published Elev. Of 1071.8
Survey Elev. = 1071.67

This survey observed 1 local area county Control Monument with published NAVD88 height to compare to local ground control:

Fayette County GPS Control Pt 341 has a published Elev. of 1165.00
Survey Elev. = 1164.89

This survey observed 1 As-Built plan benchmark to compare to local ground control:

BM 6A As-built Plans Project No. F-380(8) Elev. 1077.50
Survey Elev. = 1077.17

Survey elevations obtained on the bridge seats have a close vertical difference relationship with the plan bridge seat elevations as follows:

As-built Plan FA-380(8) Bridges and Culverts Design No. 1048

West abutment bridge seat plan elev. = 1082.89
Survey elev. = 1082.58

East abutment bridge seat plan elev. = 1082.78
Survey elev. = 1082.49

The average vertical difference of the As-built plan benchmark and the As-built plan bridge seat elevations is -0.31 to be applied to as built elevations.

Horizontal Control

The project coordinate system for this survey is Iowa RCS Zone 5 (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 conducting two concurrent six-hour static observations at project control Pts. 341, 93168, 93175, J 38 RESET, and JOHNSON.

Alignment Information

The horizontal alignment for this survey is a retrace of As-built Plans Project No. F-380(8) Grading and Surfacing. Survey stationing was equated to the plan PI at Sta. 77+16.2 and run back and ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

PI Sta. 50+37.5 As-built Plans Project No. F-380(8)
Survey PI Sta. 50+37.94

PI Sta. 77+16.2 As-built Plans Project No. F-380(8)
Survey PI Sta. 77+16.20

POT Sta. 103+85.5 As-built Plans Project No. F-380(8)
Survey POT Sta. 103+85.58

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 5

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

FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	FAYETTE COUNTY	PROJECT NUMBER BRFN-093-2(22)--39-33	SHEET NUMBER G.2	X

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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 5

Point Name	Northing	Easting	Elevation	Code - Description
341	8977390.543	15560825.317	1164.892	BM FD FAYETTE CO GPS CONTROL POINT 341_28 FT NORTH OF 160TH ST AND 33 FT WEST OF V AVE
J38 RESET	8966691.288	15548226.786	1071.670	BM FD NGS THIRD ORDER BENCH MARK J 38 RESET 160 FT EAST OF OLD RR GRADE TOP EAST END OF SOUTH HDWLL 4X6 RCB AND 17 FT SOUTH OF 140TH ST
JOHNSON	8972208.660	15560924.846	1178.429	BM FD NGS SECOND ORDER TRIANGULATION STATION JOHNSON 140 FT NORTH OF IA HWY 93 AND 40 FT EAST OF V AVE
93168	8972086.448	15550427.922	1076.226	BM FD ROW RAIL DRILL HOLE IN BALL 82 FEET EAST OF X AVE AND 58 FEET NORTH OF IA HWY 93
93175	8972110.745	15554220.381	1092.081	BM FD ROW RAIL DRILL HOLE IN BALL 60 FEET NORTH OF IA HWY 93 AND 40 FEET SOUTH OF ROW RAIL

108-23A
08-01-08

TRAFFIC CONTROL PLAN

1) While existing bridge is removed and replaced with a RCB, IA 93 traffic shall be maintained via off-site detour as shown on sheet A.2.

108-25
10-21-14

511 TRAVEL RESTRICTIONS

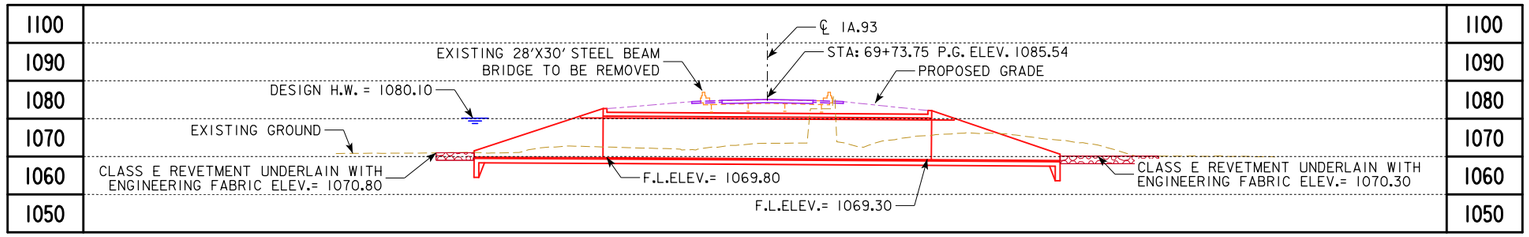
Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
IA 93	Both	Fayette	0.7 Miles West of Co. Rd. V68	Stream			None					

111-01
04-17-12

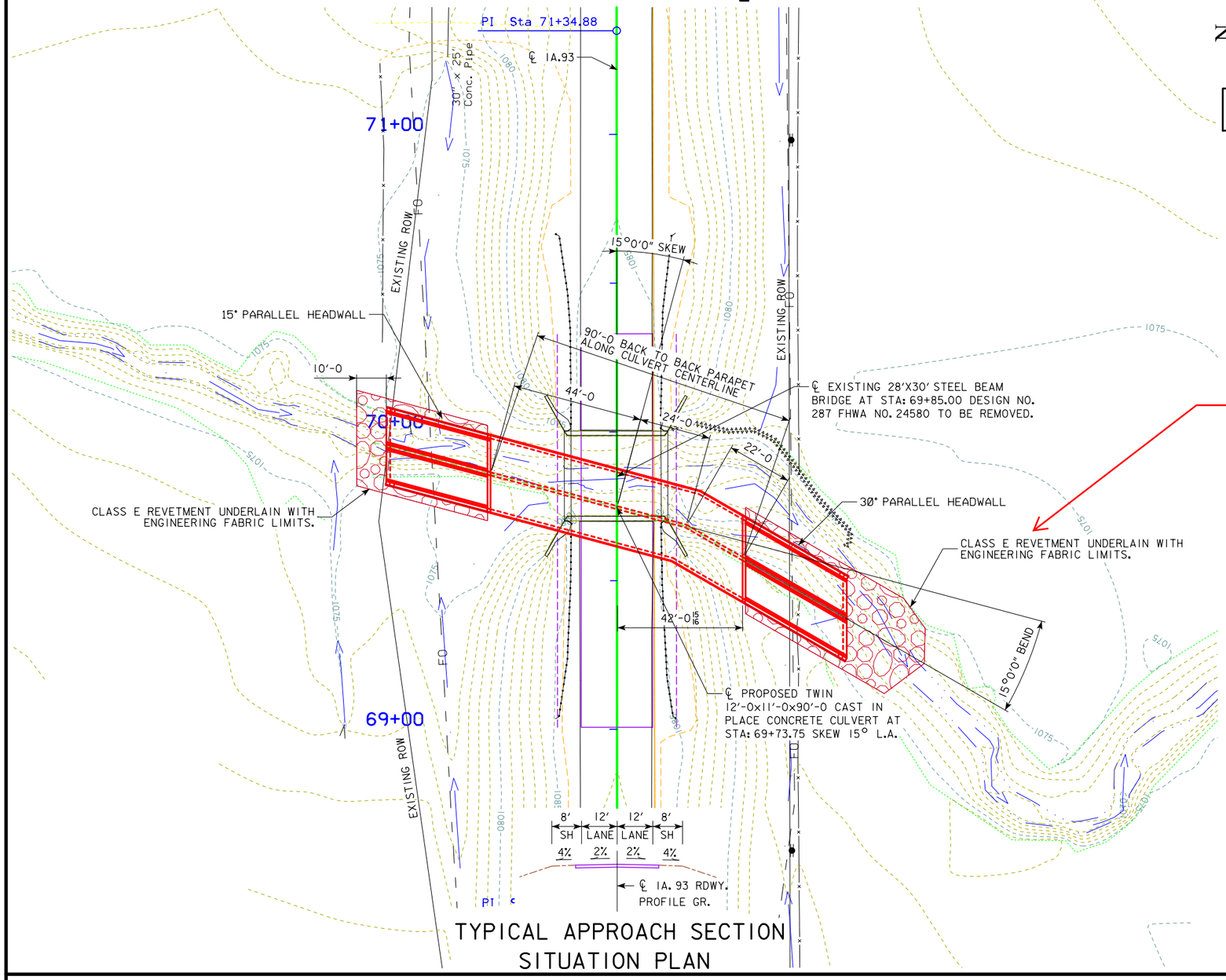
COORDINATED OPERATIONS

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	

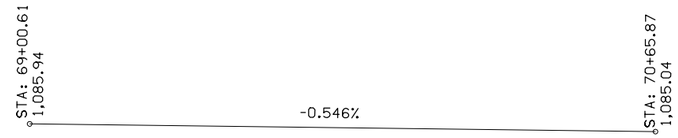


LONGITUDINAL SECTION ALONG ℄ CULVERT



TYPICAL APPROACH SECTION SITUATION PLAN

BENCH MARK NO.



PROPOSED PROFILE GRADE IA 93

N

0 ENGLISH 40
SCALE IN FEET

Use Class B Revetment due to high flow velocities

NOTES:

1. EXISTING 28'x30' STEEL BEAM BRIDGE DESIGN NO. 287 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. BURIED AND OVERHEAD UTILITIES TO BE RELOCATED TEMPORALLY OR PERMANENTLY AS REQUIRED FOR CONSTRUCTION.

HYDRAULIC DATA

DRAINAGE AREA = 2.43 ACRES
Q_{50} = 1,740 CFS
HW ELEV. = 1080.10
STREAM SLOPE = 30.60 FT./MI.

UTILITIES LEGEND:

PPA Power Pole Black Hills Energy
FO FO - Windstream Communications - Quality D
G GL Gas Line Black Hills Energy - Quality D

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

LOCATION

IA. 93 OVER STREAM
T-93N R-10W
SECTION 20 - 29
BANKS TOWNSHIP
FAYETTE COUNTY
FHWA NO. ?
BRIDGE MAINT. NO.3317.1S093
LATITUDE 42.847486°
LONGITUDE -92.055557°

TRAFFIC ESTIMATE

2024 AADT	1600	V.P.D.
2044 AADT	1700	V.P.D.
2044 DHV	170	V.P.H.
TRUCKS	11	%
TOTAL DESIGN ESALs	-	

PRELIMINARY

DESIGN FOR 15° SKEW L.A.

TWIN 12'-0x11'-0x90'-0 CAST IN PLACE CONCRETE CULVERT

SITUATION PLAN

STATION 69+73.85 JUNE 2021

FAYETTE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 1 FILE NO. 31934 DESIGN NO. 124

DESIGN TEAM SHIVE-HATTERY INC | FAYETTE COUNTY | PROJECT NUMBER BRFN-093-2(22)--39-33 | 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.	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	FAYETTE COUNTY	PROJECT NUMBER BRFN-093-2(22)--39-33	SHEET NUMBER W.1

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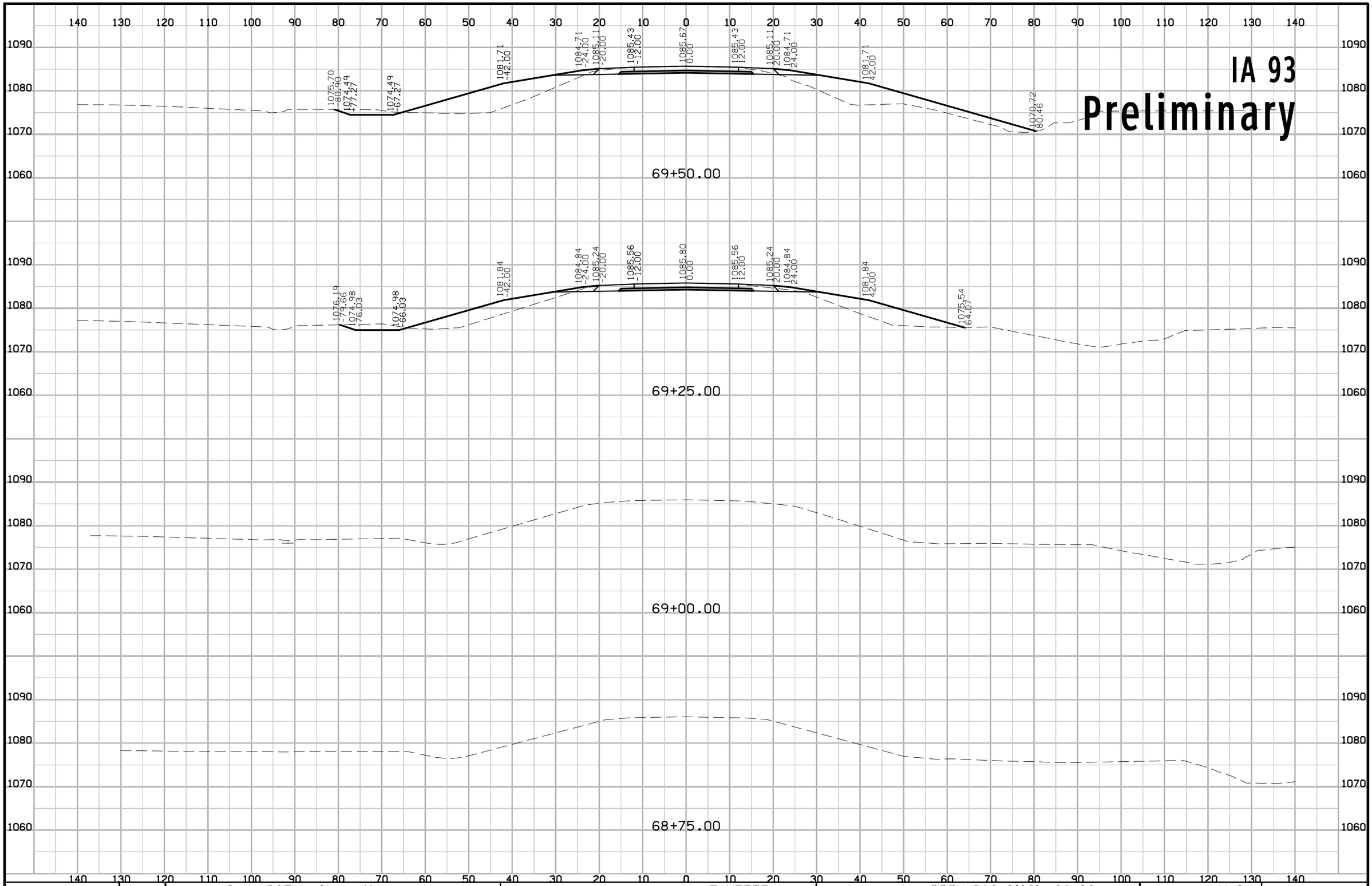
IA 93

Preliminary



FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	FAYETTE COUNTY	PROJECT NUMBER BRFN-093-2(22)--39-33	SHEET NUMBER W.2	

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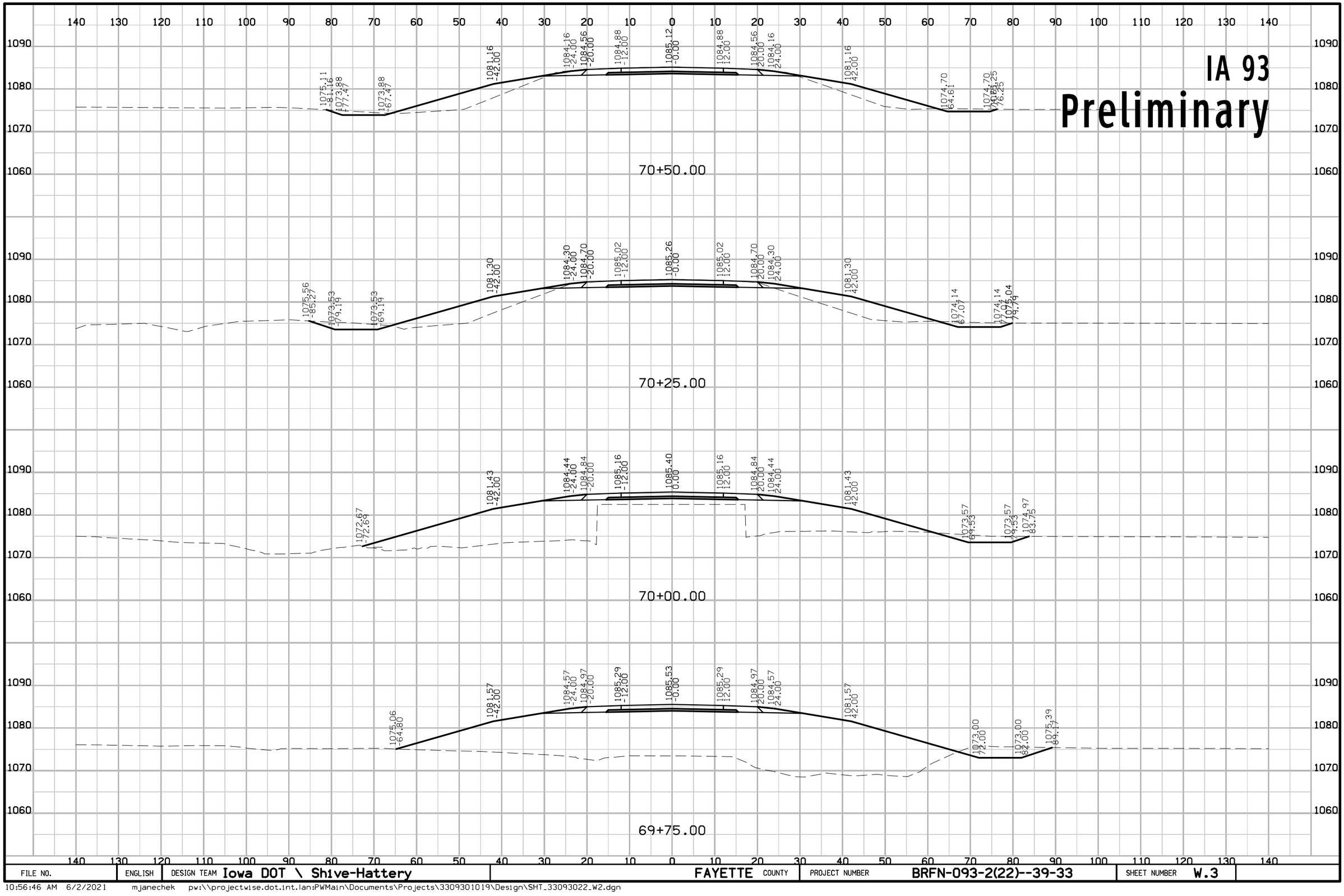
IA 93

Preliminary



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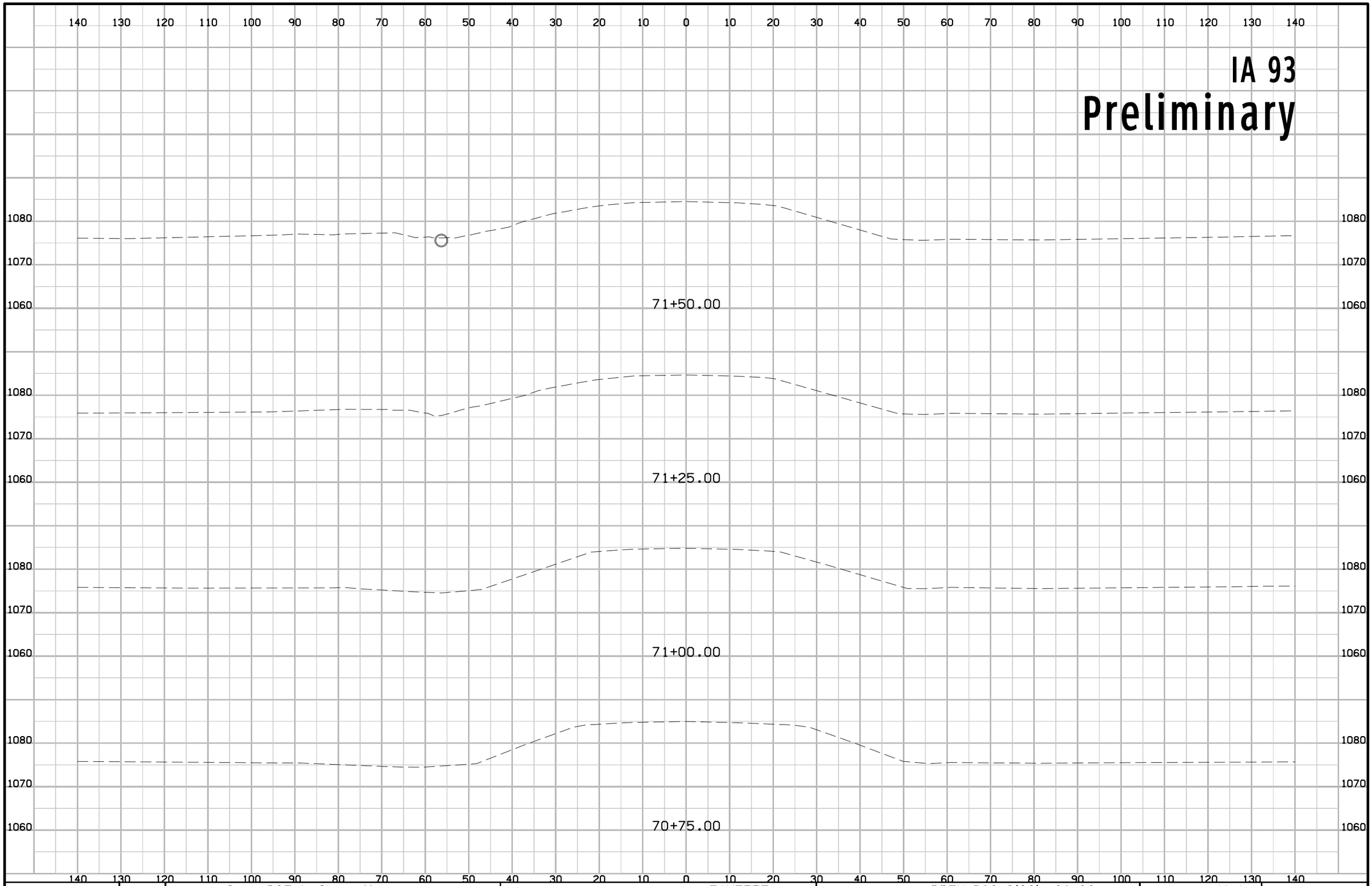
IA 93

Preliminary



FILE NO.	ENGLISH	DESIGN TEAM Iowa DOT \ Shive-Hattery	FAYETTE COUNTY	PROJECT NUMBER BRFN-093-2(22)--39-33	SHEET NUMBER W.4

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