LETTING DATE 10-15-2024

Bridge Replacement
BRF-005-4(78)--38-91

WARREN COUNTY

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	**Title Sheets**
* A.1	Title Sheet/Location Map
* A.2 - 3	Location Map Sheet
* A.4	Design Critiera
* A.5 - 7	Project Concept
* A.8	Bridge 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 - 6	IA 5
G Sheets	**Survey Sheets**
G.1	Survey Information
G.2	Control Vicinity Map
G.3	Horizontal and Vertical Control Coordinate Listing
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
J.1	Staging Notes
W sheets	* Color Plan Sheets

Need cross-sections

IOWA DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

WARREN COUNTY

Bridge Replacement

South River 0.2 mi N of Co Rd S31 (NB)

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

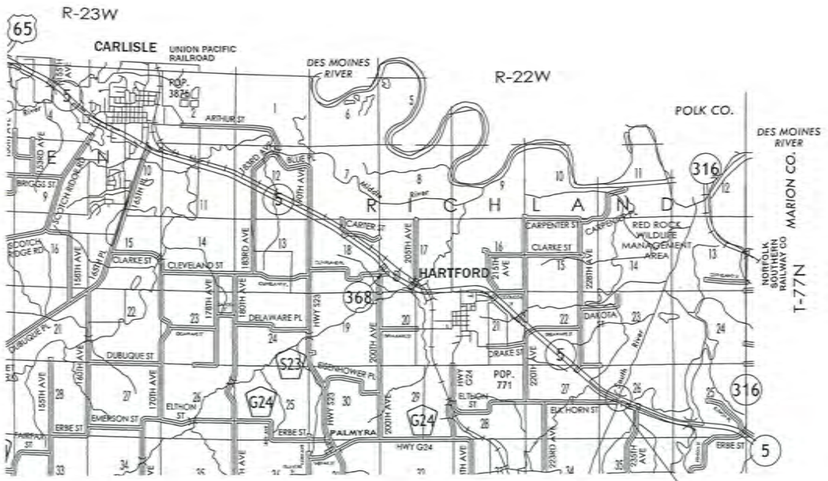
Value Engineering Saves. Refer to Article 1105.14 of the Specifications.

IOWA ONE CALL
1-800-292-8989 | 811
www.iowaonecall.com

REVISIONS	TOTAL 20
	PROJECT IDENTIFICATION NUMBER
	19-91-005-030
	PROJECT NUMBER
	BRF-005-4(78)--38-91
	R.O.W. PROJECT NUMBER
	NHSN-005-4(79)--2R-91

DZ 4/11/22 Attendees

Jim Ellis, Asher Jobson } BSB
Brandy Beavers, LEB
Frank Leong, Grimes RCE
Matt Vais, John Narigon } Dist. 1



Project Location
RL 79.9

DESIGN DATA RURAL		
2025 AADT	9,700	V.P.D.
2045 AADT	12,500	V.P.D.
20 -- DHV	--	V.P.H.
TRUCKS	8	%
Total Design ESALs	3,296,199	

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Allison Smyth	Primary Signature Block

D02	04/15/2022
D03	05/20/2022
B01	08/19/2022
D05	09/16/2022
S04	05/05/2023
D04	06/18/2024

PRELIMINARY PLANS

Subject to change by final design.

FILE NO.	ENGLISH	DESIGN TEAM Smyth\Narigon\Vais	WARREN COUNTY	PROJECT NUMBER BRF-005-4(78)--38-91	SHEET NUMBER A.1

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FIELD EXAM CHECKLIST

1 - Duration of project?
1 year

2 - Speed Limit
~~55 mph~~ 65mph

3 - Speed Limit during construction
65mph

4 - Is sight distance a problem?
No

5 - Patching quantities-full depth, partial depth, and surface.
N/A

6 - Does patching need to be done in the project area or do the construction limits need to be extended? Who will provide locations of patches by milepost?
N/A

7 - Are rumble strips going to be placed with this project or a separate project?
N/A

8 - Leveling and strengthening locations and lengths (i.e. station to station).
N/A

9 - Areas of haul-outs.
NB lane closed to traffic, Construction access both ends

10 - Any survey needed? (culvert extensions, safety dikes,right turn lanes,horizontal curves, ext..)
No

11 - Do any of the utilities need to be relocated (power/telephone poles) either permanently or temporarily for construction?
Yes, bridge mounted needs moved

12 - Names and addresses of affected utility companies.
See D.1

13 - Locations of entrances to be reshaped.
N/A

14 - Are there existing drainage problems?
None evident

FIELD EXAM CHECKLIST

15 - Note any special features not shown on plan.
None

16 - Note condition of existing culverts.
None in project area

17 - Names of affected special events.
list will be provided prior to final plans

18 - Locations of mailboxes to be relocated to a minimum of 8' from the pavement edge.
N/A

19 - Number and location of EF joints.
4 in pavement removal area

20 - Disposition of bridge handrail and guardrail, including posts.
Carlisle shop given option on G.R.

21 - Inventory of existing guardrail.

22 - Remove & Reinstall Signs - District Maintenance or by the Contractor?
N/A

23 - Longitudinal joint repair locations (station to station).
N/A

24 - Locations and quantities of engineering fabric to be placed over random cracks.
N/A

25 - Tabulation of adjustment of fixtures.
N/A

26 - Clearing and grubbing quantities - by unit or by area?
By area - will base on need lines

27 - Resurfacing Projects - is District Survey able to preserve Section Corners & Points? If "no", then add these items under Construction Survey.

FIELD EXAM CHECKLIST

Contractor furnish borrow? (Yes) (No)

Full depth patches to be PCC? (Yes) / (No)

N/A

Full depth PCC patches to be doweled? (Yes) / (No)

N/A

Soils to determine and provide tabulation of subdrains? (Yes) / (No)

N/A

Pollution Prevention Plan required? (Yes) / (No)

TBD

Field Office? (Yes) / (No)

Construction Survey and or Point Preservation by DOT or Contractor? See Dist. 1 Surveyor for this (DOT) / (Contractor).

Yes Likely not needed

Survey by Office of Design? (Yes) / (No)

completed

Pavement markings for turn lanes as determined by the District? (Yes) / (No)

N/A

Any RWIS or Traffic Recorder Sites within project limits? (Yes) / (No)

Roadway				
PIN Number	19-91-005-030		**Submittal Date**	
Project Number	BRF-005-4(78)--38-91			**Approval Date**
District	District 1	**Assistant District Engineer**	Allison Smyth	
County	WARREN	**or**		
Route	IA 5	**Office Director**		
Location	South River			
Work Type	Bridge Replacement			
Segment Manager				
Designer	Matt Vais			

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

Rural Expressways (Rural Arterials)

Design Element		Preferred	Acceptable Criteria	Project Values
Design speed (mph)		70	50	65
Maximum superelevation rate (Refer to Section 2A-2)		6%	8%	N/A
Design lane width (ft)		12	12	12'
Full depth paved width (ft)	Outside lane	12'	12	12'
	Inside lane(s)	12	12	12'
Right turn lane or an auxiliary lane (ft)		12	10	N/A
Left turn lane (ft)		12	10	N/A
Pavement cross-slope (on tangent sections)	Through lanes	2%, However, when adjacent lanes slope in the same direction, increase slope by 0.5% per lane up to 3%	1.5% minimum, 3% maximum	2%
	Auxiliary and turn lanes	3%	3% maximum	N/A
	Crown break at centerline	4%	4% maximum	4%
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	N/A
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	--	N/A
	Median ditch depth (ft)	4	2	4'
Median width (ft) (Refer to Section 3E-1)		64	50	67.8
Bridge width—new*	Bridge length ≤ 200 ft	design lane widths + effective shoulder widths	design lane widths + effective shoulder widths	N/A
	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 left and right of the design lane widths	30'
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 crossings	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 criteria is not met on the NHS system (No formal design exception required)

FINAL PROJECT CONCEPT STATEMENT

South River 0.2 mi N of CO RD S31 (NB)

Warren County
BRF-005-4(78)--38-91
PIN: 19-91-005-030
Maintenance No. 9180.5R005
FHWA No. 50990

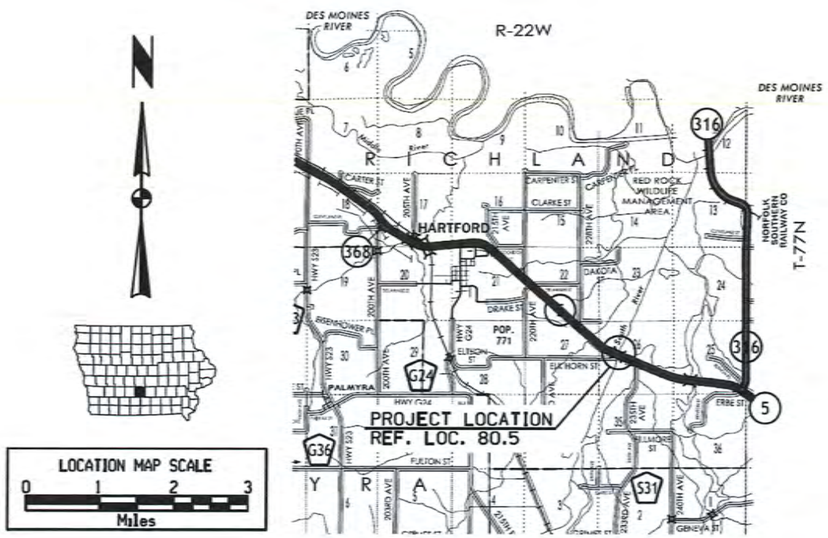
Field Operations
District 1

John Narigon, P.E.
515-986-5471

January 12, 2022

I. STUDY AREA

A. Project Map



B. Project Description

This project involves the replacement of the IA 5 bridge (Maint No. 9180.5R005) over the South River, 0.2 miles north of County Road S31.

The existing 385'-0 x 30'-0 continuous welded girder and floorbeam system (CWG) bridge will be replaced with a pretensioned prestressed concrete beam (PPCB) bridge.

Additional right of way/right of entry will not be required. Traffic will be maintained utilizing two-lane, two-way traffic in the southbound lanes and crossovers. Stage construction is not an option for this project due to the two-girder superstructure and the frame piers. The lack of a convenient route and out-of-distance user costs rules out the use of a detour.

C. Need for Project

This bridge is a 30' wide continuous welded girder bridge which was constructed in 1966. The bridge is functionally obsolete due to inadequate width. The overlay was placed in 1988 and is reaching the end of its service life. This is a narrow bridge on the NHS that is not practicable to widen because of the structure type and has condition problems that are not practicable to repair; therefore, this bridge needs to be replaced.


Looking Southeast


Deck

D. Present Facility

The existing structure is a 385' x 30' continuous welded girder bridge constructed in 1966.

IA 5 is a four-lane divided facility at this location, consisting of two 12-foot lanes in each direction and a 67.8-foot (20.8-meter) width median. The northbound lanes were originally constructed in 1966 and the southbound lanes were added in 2002. Shoulder widths are 6-foot inside and 10-outside.

E. Traffic Estimates

The 2025 and 2045 average daily traffic (bi-directional) estimates are 9,700 ADT with 8% trucks and 12,500 ADT with 8% trucks, respectively.

F. Sufficiency Ratings

IA 5 is on the National Highway System, classified as an Area Development Route and is a maintenance service level "B" road. The federal bridge sufficiency rating is 78.4 and the bridge condition index is 54.2.

G. Access Control

Access rights will not be acquired for this project.

H. Crash History

During the five-year study period from January 1, 2016 through December 31, 2020, there were four crashes within a half-mile of the bridge. One, with a major cause of run off road -right, involved striking the bridge/ bridge rail parapet.

II. PROJECT CONCEPT

A. Feasible Alternative

Alternative #1 - Replace with a bridge

Replace the existing 385'-0 x 30'-0 continuous welded girder (CWG) bridge with a 3 span, 404' x 40', Pretensioned Prestressed Concrete Beam (PCCB) bridge. Type BTE beams are proposed. The length of this bridge was chosen to minimize backwater to the greatest extent practical and to avoid conflicts between the new piers\abutments and existing bridge foundations.

The typical cross section adjacent to the bridge will consist of a 24 ft. roadway with 10-foot outside and 6-foot inside shoulders and 6:1/3:1 foreslopes with a preferred clearzone of 34 feet.

This bridge will be constructed on the existing vertical and horizontal alignment. Construct new bridge approaches. Replace the existing guardrail with new guardrail and pave the shoulders 20 ft. beyond the ends of the guardrail. Class 10 will be necessary to flatten the existing foreslopes and to construct the new guardrail blisters.

Place Class E revetment for slope protection under the bridge. Construct 2 bridge end drains on each end of the bridge.

The existing topsoil will be stripped, salvaged and replaced. Rural seeding and fertilizing will be applied to all disturbed areas.

It appears that no right of way will be required for this project.

Due to the presence of the Des Moines River, the available off-site detour would require 15 miles out-of-distance travel. Due to the excessive distance, traffic will be maintained utilizing two-lane, two-way traffic in the southbound lanes and crossovers.

Bridge Items	Estimated Costs
New Bridge	$ 1,846,200
Bridge Removal	140,800
Erosion Stone	12.500
Revetment	75,000
Cofferdams	25,000
Mobilization - 10%	210,000
Contingency - 20%	461,900
Bridge Costs	**$2,771,400**

Roadway Items	
Detour Pavement (Cross-overs)	$275,000
Bridge Approaches	$136,000
Removal of Pavement	45,000
Guardrail (Includes Removal)	14,000
Paved Shoulders for Guardrail	8,000
Bridge End Drains	11,500
Seeding and Fertilizing	3000
Erosion Control	17,000
Traffic Control	30,000
Pavement Markings	24,000
Mobilization	50,000
M & C - 30%	254,500
Roadway costs	**$ 868,000**
Project Total	**$3,639,400**

B. Recommendations

It is recommended that the present structure be replaced.

C. Construction Sequence

It is anticipated that all work on this project will be awarded to one prime contractor. The Office of Bridges and Structures will coordinate the plan preparation with assistance from District 1.

D. Maintenance of Traffic During Construction

Traffic will be maintained by placing both directions of traffic on the southbound roadway via high-speed crossovers. 235th Avenue (Co. Rd. S31) falls within the limits of the two-lane, two-way traffic. Appropriate routing and traffic control requirements for this location will be discussed with the Transportation Development Division Subject Matter Experts and further detailed during preliminary design.

A detour was considered; the detour for NB IA 5 would follow IA 316 to north Runnells, SE 116th St north to IA 163, IA 163 to US65 and US 65 back to IA 5. It is anticipated the entire construction season would be required for construction of this bridge and the detour would be in place 200 days. Out of distance travel is 15 miles. The total out of distance user cost is anticipated to be $3,165,000.

A detour is not feasible due to the amount of out-of-distance travel and the impact of routing the additional vehicles though Runnels.

MOT meeting 4/8/22
235th to be R1/R0 during TLTWT operations.
Keep left lane SB closed, open for u-turn traffic
700' in advance of paved ⌀ median crossing to south.

E. ADA Accommodations

There are no bike paths or sidewalks adjacent to IA 5; therefore, no ADA accommodations are planned in conjunction with this project.

F Special Considerations

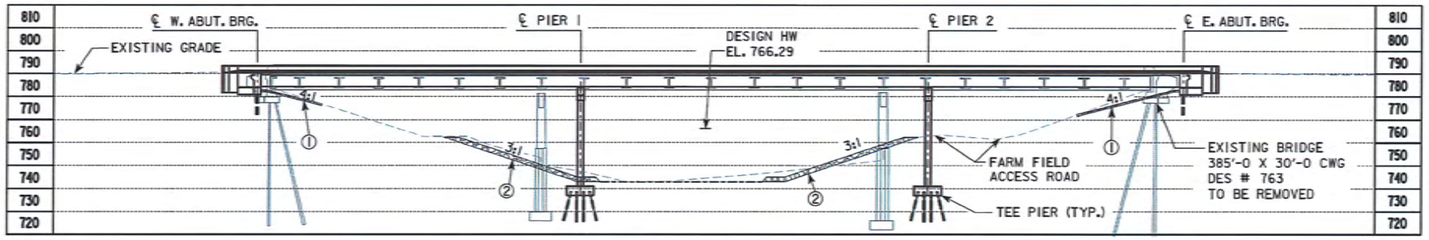
Accelerated Bridge Construction (ABC) rating of 21 does not pass the first stage filter threshold of 50.

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

Right of Way will not be required for this project.

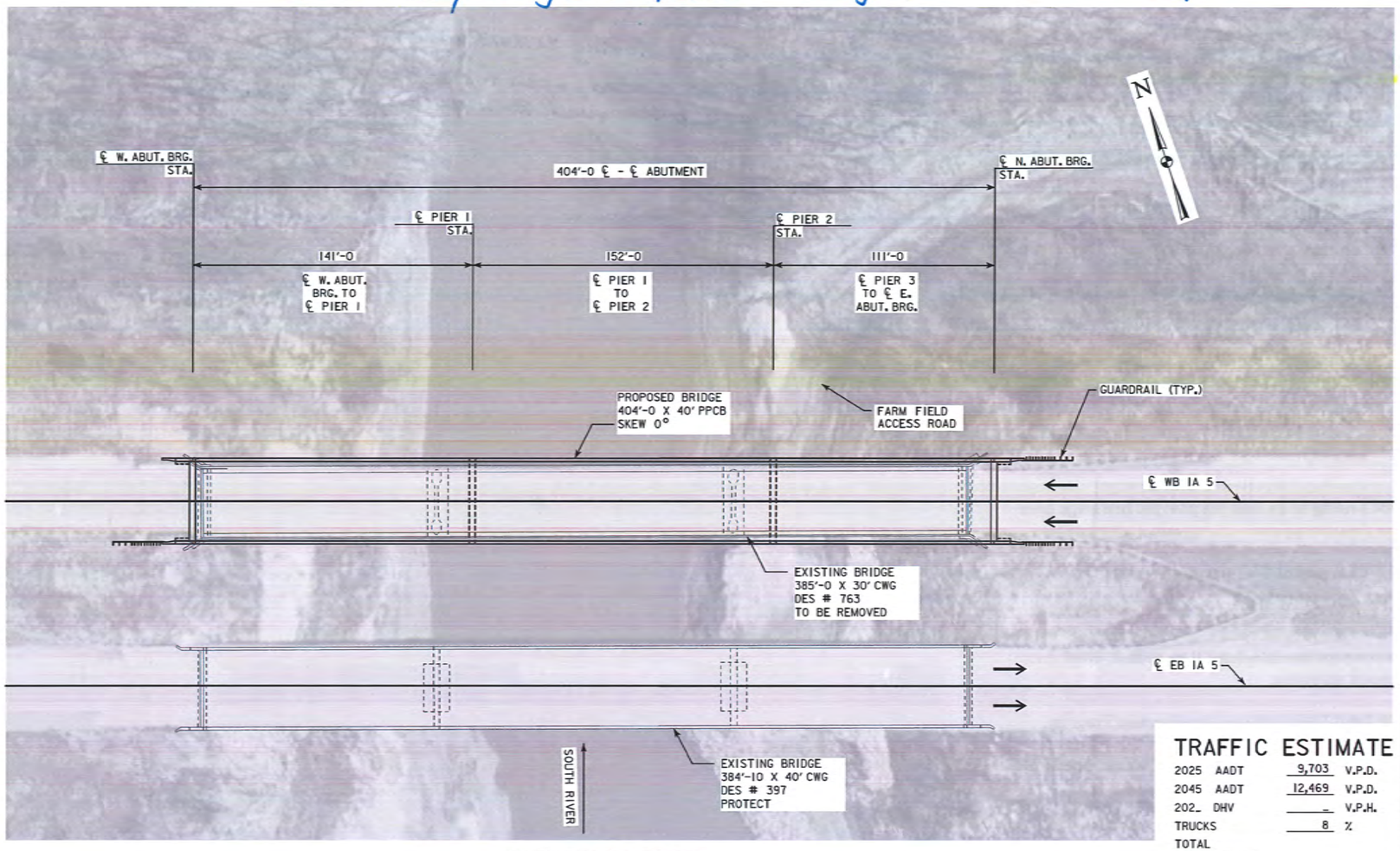
Once the Office of Location and Environment has completed their review, comments will be incorporated into the final concept statement.

This project is listed in the 2022-2026 Iowa Transportation Improvement Program, with $3,807,000 programmed for replacement in FY 2025. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.



LONGITUDINAL SECTION ALONG ℄ APPROACH ROADWAY

Preliminary Bridge to review configuration - concern w/ pier in River.



SITUATION PLAN

① BERM PROTECTION
EROSION STONE (0-9 THICK. MIN.)
UNDERLAIN W/ ENGR. FABRIC

② BERM PROTECTION
CLASS E REVET. (2' THICK. MIN.)
UNDERLAIN W/ ENGR. FABRIC

HYDRAULIC DATA

DRAINAGE AREA = 511 SQ. MI.
STREAM SLOPE = ??.? FT./MI.
AVG. LOW WATER STAGE = ???.?

Q_{25} = CFS
STAGE = ???.?

Q_{50} = 34,900 CFS
STAGE = 766.29
REGULATORY LOW BEAM = ???.?
BACKWATER = 1.96 FT.
AVG. BRIDGE VELOCITY = 6.2 FPS

Q_{100} = 39,100 CFS
STAGE = 766.73
OPERATIONAL LOW BEAM = ???.?
BACKWATER = 2.32 FT.
AVG. BRIDGE VELOCITY = 6.8 FPS

Q_{200} = 45,100 CFS
STAGE = ???.?
CALCULATED DESIGN SCOUR = ???.?

Q_{500} = 49,600 CFS
STAGE = ???.?
AVG. BRIDGE VELOCITY = ?.? FPS
CALCULATED CHECK SCOUR = ???.?

ROADWAY OVERTOP ???.?
STA. ???+??

EXTREME HW STAGE = ???.?
DATE = ????

LOCATION

WB IA 5 OVER THE SOUTH RIVER
T-77N R-22W
SECTION 26
RICHLAND TOWNSHIP
WARREN COUNTY
BRIDGE MAINT. NO. 9180.5R005
FHWA NO.
LATITUDE °
LONGITUDE °

TRAFFIC ESTIMATE

2025 AADT	9,703	V.P.D.
2045 AADT	12,469	V.P.D.
202_ DHV	_	V.P.H.
TRUCKS	8	%
TOTAL DESIGN ESALs	_	

0 ENGLISH 60
SCALE IN FEET

CONCEPT

DESIGN FOR 0° SKEW

404'-0 X 40'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

SITUATION PLAN

STATION BTE BEAMS APRIL 2020

WARREN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ___ OF ? FILE NO. ? DESIGN NO. ?

DESIGN TEAM | WARREN COUNTY | PROJECT NUMBER BRF-005-4(78)--38-91 | SHEET NUMBER ??

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FILE NO. | ENGLISH | DESIGN TEAM Smyth\Narigon\Vais | WARREN COUNTY | PROJECT NUMBER BRF-005-4(78)--38-91 | SHEET NUMBER A.8

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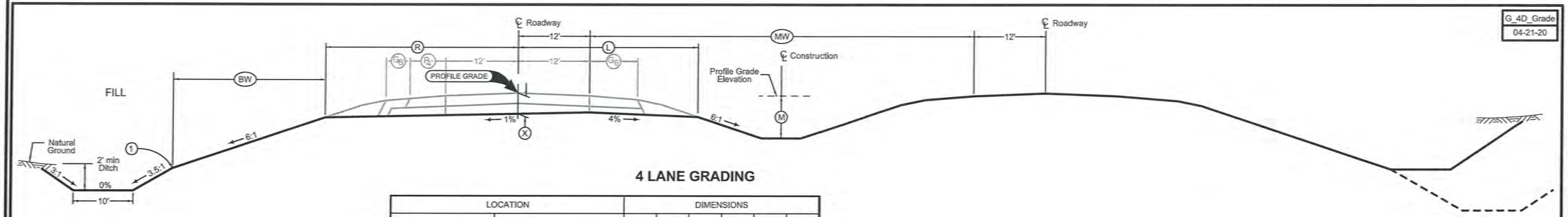
04-21-20



4 LANE GRADING

LOCATION			DIMENSIONS					
ROAD IDENTIFICATION	STATION TO STATION		(L) Feet	(R) Feet	(X) Inches	(BW) Feet	(MW) Feet	(M) Feet
IA 5	495+90	496+64.21			18		67.8	
IA 5	500+71.50	502+00			18		67.8	

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.

(1) Refer to project plan and cross sections for specific location of foreslope change.

Note: 10" of PCC and 8" of Granular Subbase

Paving limits to change to
locate tie-ins mid-panel existing pavement

FILE NO.	ENGLISH	DESIGN TEAM Smyth\Narigon\Vais	WARREN COUNTY	PROJECT NUMBER BRF-005-4(78)--38-91	SHEET NUMBER B.1

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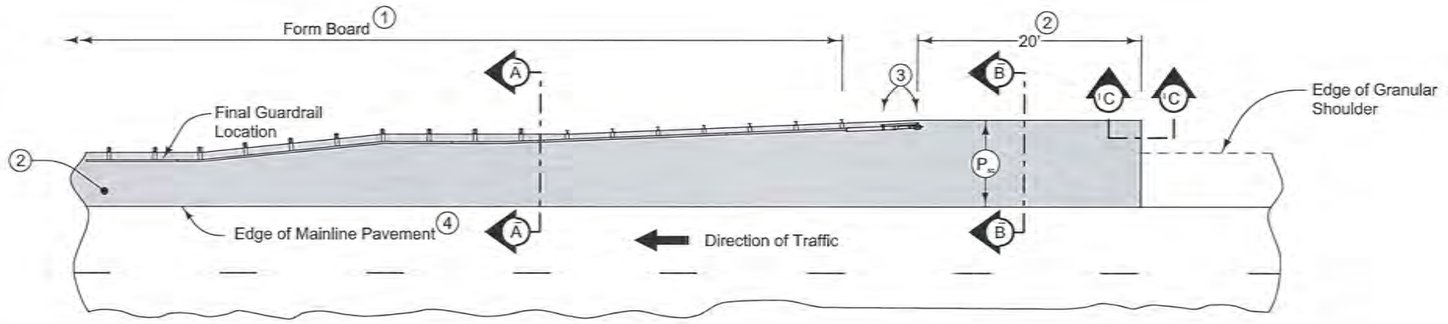
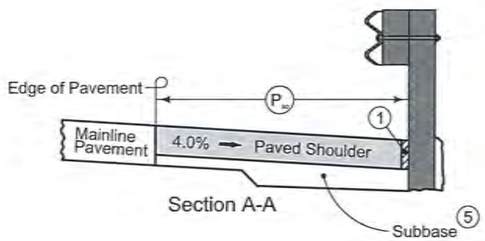
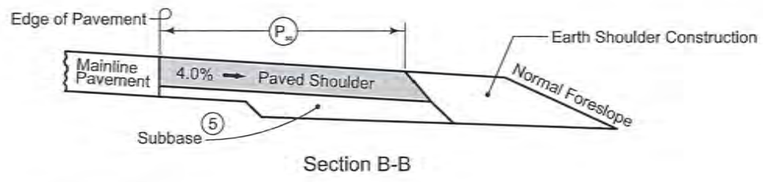


PLAN VIEW

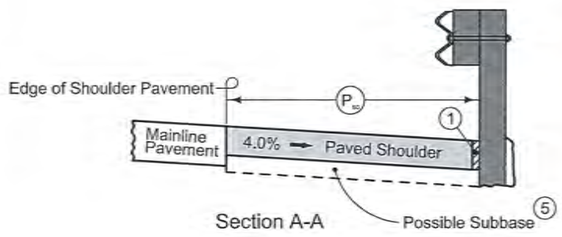


Section A-A

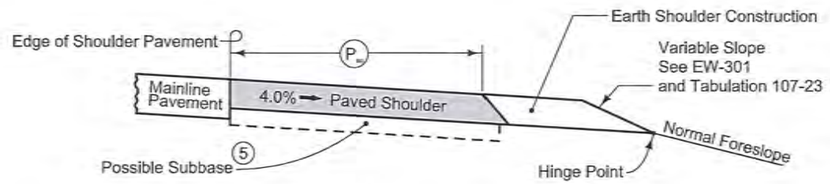


Section B-B

NEW CONSTRUCTION



Section A-A



Section B-B

EXISTING SHOULDER

DESIGNER INFO

7156
10-19-21

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.

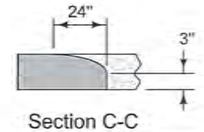
(1) PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.

(2) Continue paved shoulder 20 feet beyond the center of the first post.

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

(4) 'KT' joint (per PV-101) for PCC shoulder.
'B' joint (per PV-101) for HMA shoulder.

(5) Refer to other details in the plan.



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

PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)

SURVEY SYMBOLS

- Interstate Highway Symbol
- U.S. Highway Symbol
- Iowa Highway Symbol
- County Road Highway Symbol
- Evergreen Tree
- Deciduous Tree
- Fruit Tree
- Shrub (Bushes)
- Timber
- Hedge
- Stump
- Swamp
- Rock Outcrop
- Broken Concrete
- Revetment (Rip Rap)
- Cemetery
- Grave
- Cave
- Sink Hole
- Board Fence
- Chain Link or Security Fence
- Wire Fence
- Terrace
- Earth Dam or Dike (Existing)
- Tile Outlet
- Edge of Water
- Existing Drainage
- Right of Way Rail or Lot Corner
- Concrete Monument
- Well
- Windmill
- Beehive Intake
- Existing Intake
- Existing Utility Access (Manhole)
- Fire Hydrant
- WH Water Hydrant (Rural)
- Septic Tank
- Cistern
- L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box

UTILITY LEGEND

--E1--

Jordan Hohensee
Customer Project Coordinator
MidAmerican Energy Company
(Electric Transmission)
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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.**	
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
- FARM — 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 Smyth\Narigon\Vais	WARREN COUNTY	PROJECT NUMBER BRF-005-4(78)--38-91	SHEET NUMBER D.1

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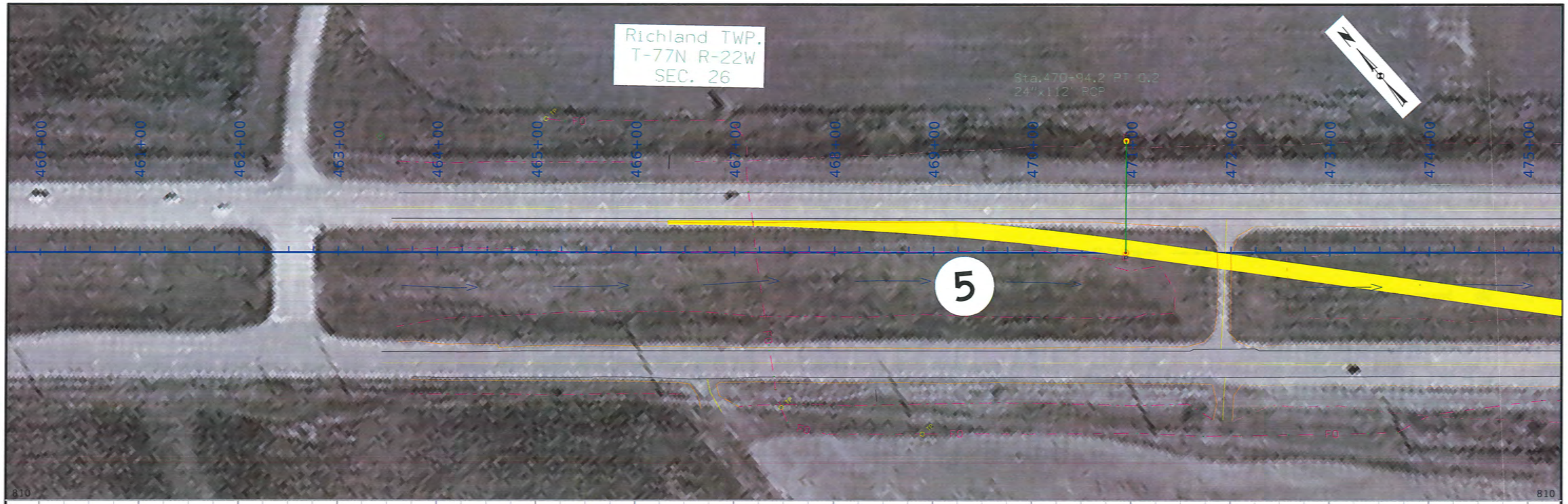

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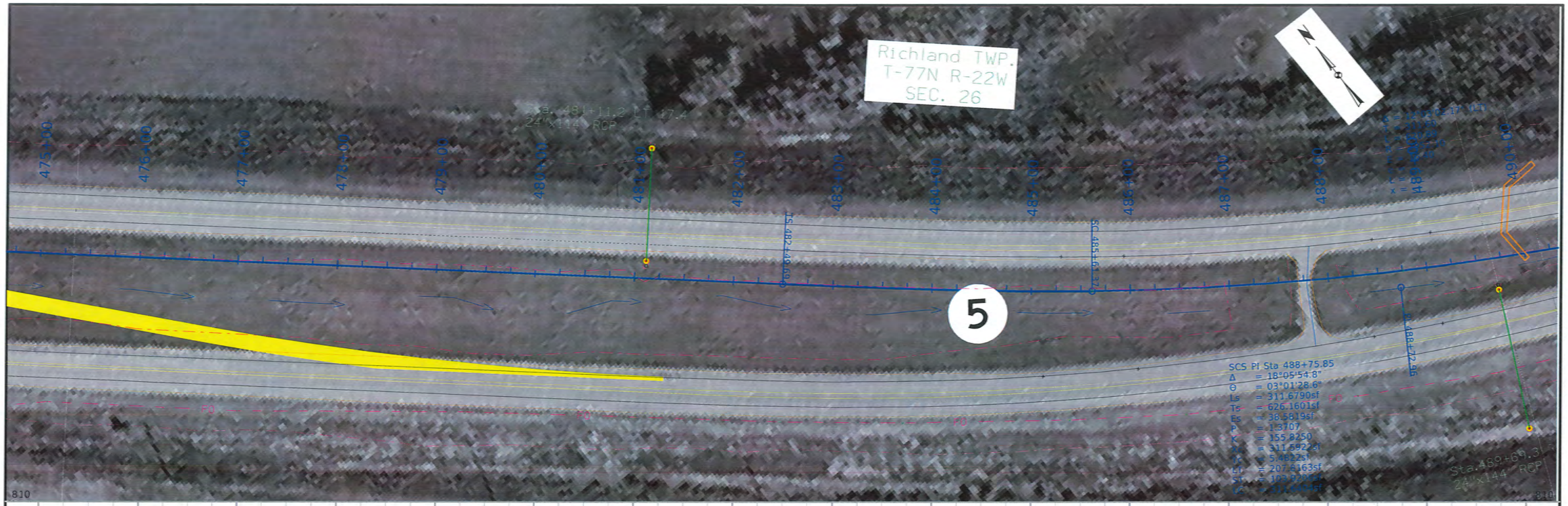

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		Smyth\Narigon\Vais	WARREN COUNTY		BRF-005-4(78)--38-91	D.3

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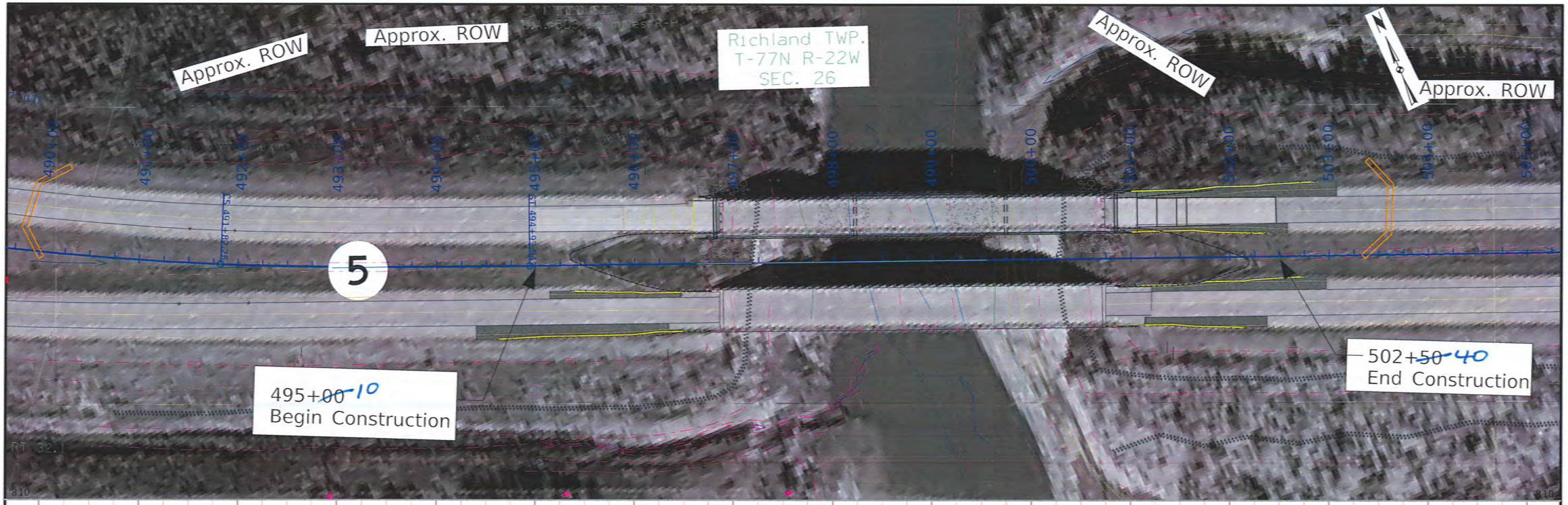

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FILE NO.	ENGLISH	DESIGN TEAM Smyth\Narigon\Vais	WARREN COUNTY	PROJECT NUMBER BRF-005-4(78)--38-91	SHEET NUMBER D.5

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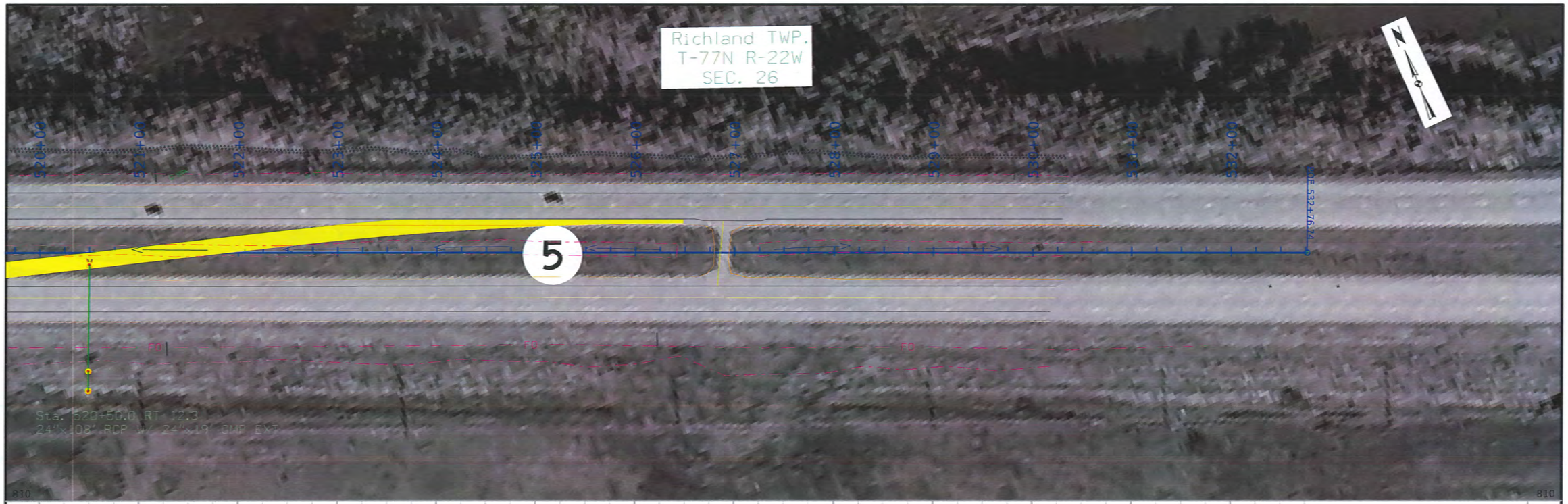

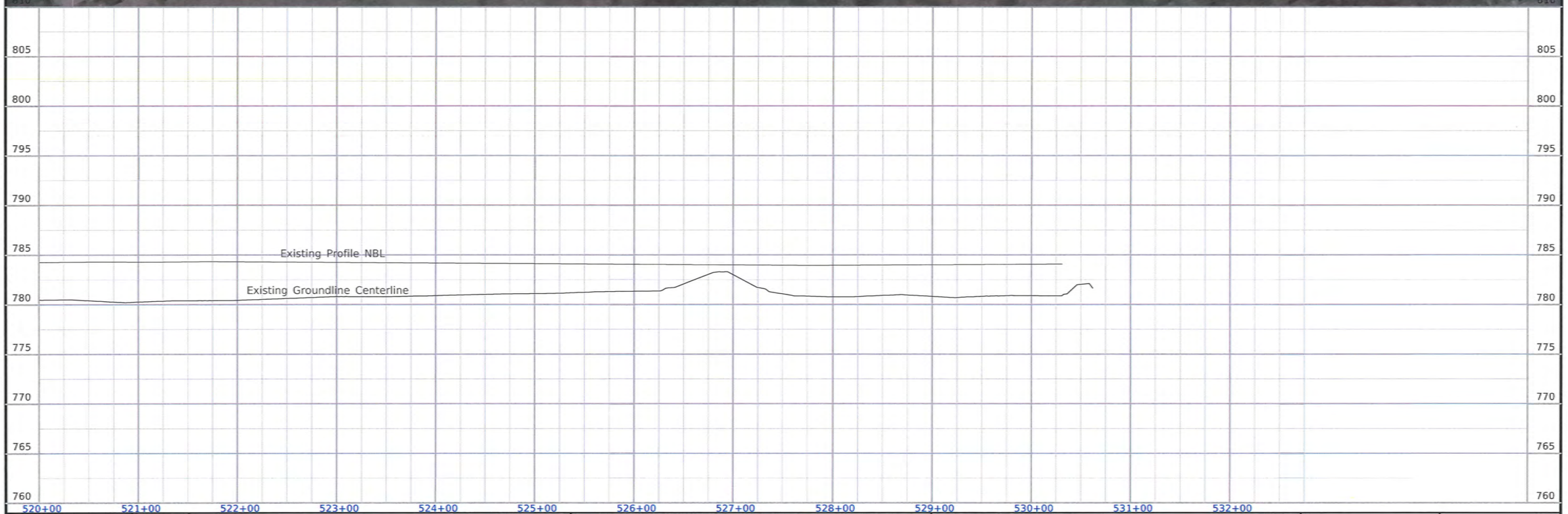

FILE NO.	ENGLISH	DESIGN TEAM Smyth\Narigon\Vais	WARREN COUNTY	PROJECT NUMBER BRF-005-4(78)--38-91	SHEET NUMBER D.6

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County: Warren
PIN: 19-91-005-030
Project Number: BRF-005-4(78)—38-91
Location: South River 0.2 mi N of Co Rd S31 (NB)
Type of Work: Bridge Unspecified
Project Directory: 9100503019

Survey Personnel

Paul Harry – Survey Party Chief
Bob Fredrickson – Assistant Survey Party Chief
Dan Duncan – Assistant Survey Party Chief

Date(s) of Survey

Begin Date	12/14/2021
End Date	02/16/2022

General Information

Measurement units for this survey are US survey feet. This survey is for Hwy 5 NB over South river.

Project Control

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on primary project control points. Two or more five-minute observations were taken with appropriate time spans between and used in a weighted average to obtain final coordinate values. For additional details of the control survey, contact the Preliminary Survey department.

PROJECT DATUM: NAD83(2011) EPOCH 2010.00
VERTICAL DATUM: NAVD88
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 8
GEOID MODEL: 2012bu3

Alignment Information

Main line Hwy 5 alignment SURMLA005
The horizontal alignment for this survey is a retrace of Metric As-built Plans No. STPN-5-4(30)—2J-91. The plan metric stationing was converted to English As-built Plans P-1114(4) stationing at Bridge Sta. 498+80.0 and run back and ahead without equation throughout the survey.

Survey stationing relates to As-built plan stationing as follows:

ST Sta. 84+21.373 As-built Plans Project No. STPN-5-4(30)—2J-91
Metric Survey ST Sta. 84+21.373 = English Survey ST Sta. 494+93.94

East Bound Hwy 5 alignment SURMLB005
The horizontal alignment for this survey is a retrace of Metric As-built Plans No. STPN-5-4(30)—2J-91. Survey stationing was equated at POT Sta. 2184+21.373 EBL (BK) 14.000m Rt. ST Sta. 84+21.373 Construction CL (AH) and run back without equation throughout the survey. The plan metric stationing was converted to English As-built Plans P-1114(4) stationing.

Survey stationing relates to As-built plan stationing as follows:

POT Sta. 2184+21.373 EBL (BK) 14.000m Rt. ST Sta. 84+21.373 Construction CL (AH)
As-built Plans Project No. STPN-5-4(30)—2J-91
Metric Survey POT Sta. 2184+21.373 = English Survey POT Sta. 2494+93.94

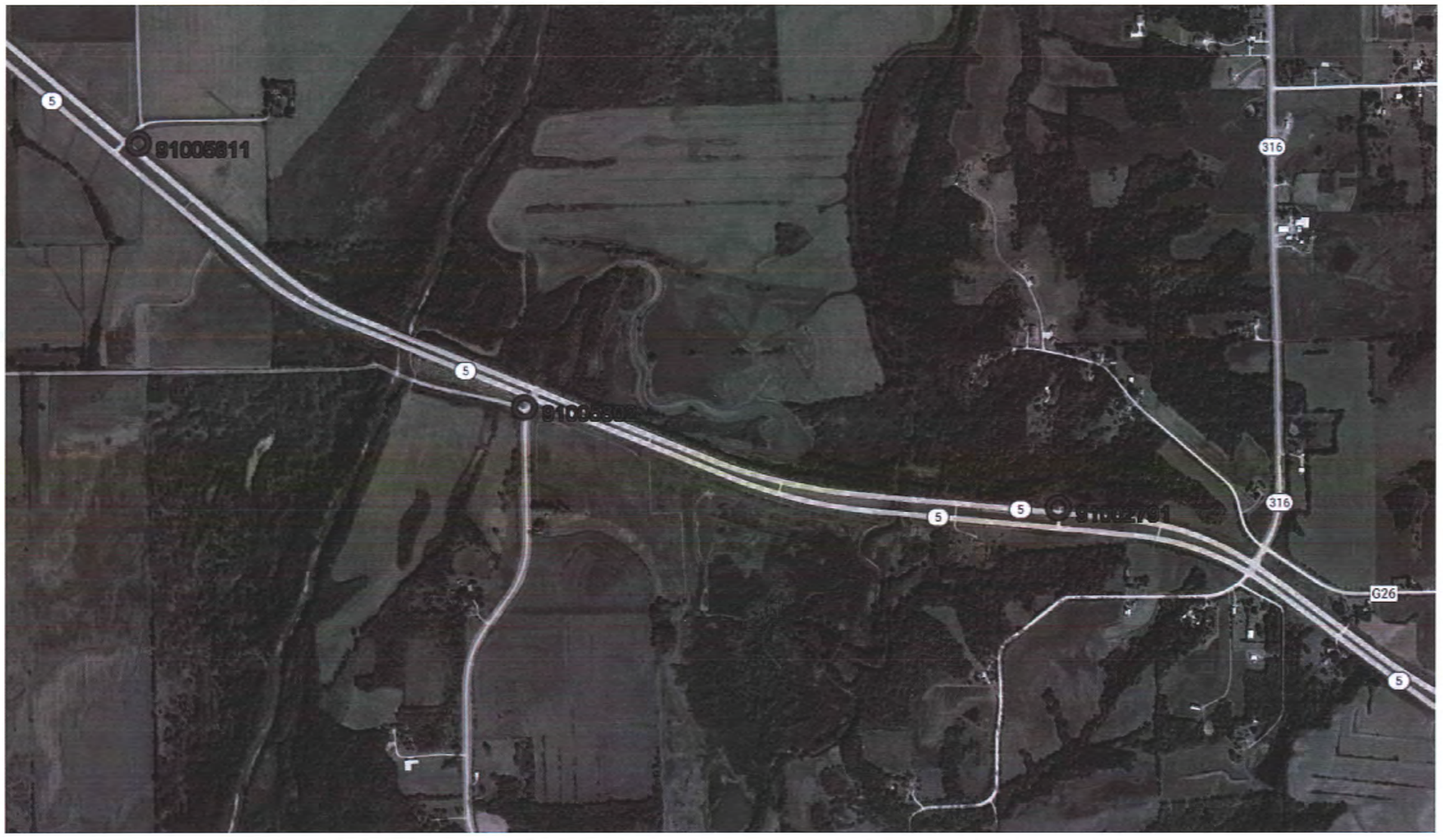
ST Sta. 2183+55.301 As-built Plans Project No. STPN-5-4(30)—2J-91
Metric Survey ST Sta. 2183+55.618 = English Survey ST Sta. 2492+78.21

Utility Information

For logging data and other utility details see Utility Survey and Ownership Report in the Utility folder of the PrelimSurvey project directory.

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 - Ia. RCS Zone 08
VERT. DATUM: NAVD88 - Geoid Model BU3

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
Ia. Regional Coordinate System Zone 08

VERT. DATUM: NAVD88
Geoid Model BU3
Project Control Marks are Bench Marks

Point Name	Northing	Easting	Elevation	Feature Definition-Description
91005811	7437335.746	18594565.43	805.459	FENO SET IOWA DOT FENO MONUMENT 0.3FT DEEP NEAR THE INTERSECTION OF HWY 5 AND 228TH AVE IN WARREN CO MONUMENT IS 80FT SE OF CL 228TH AVE 70FT NE OF CL HWY 5 NB AND 58.6FT NE STA STAMP 74+60
91005802	7434477.029	18598609.73	783.663	FENO SET IOWA DOT FENO MONUMENT 0.3FT DEEP NEAR THE INTERSECTION OF HWY 5 AND CO RD S31 IN WARREN CO MONUMENT IS 50FT W OF CL S31 32FT N OF CL ELK HORN ST AND 42FT SW OF LUM POLE
91005791	7433331.045	18604187.48	852.682	FENO SET IOWA DOT FENO MONUMENT 0.3FT DEEP MONUMENT IS 0.4 MILES W ALONG HWY 5 FROM THE INTERSECTION OF HWY 5 AND HWY 316 IN WARREN CO 39FT N OF EDGE HMA PVMT NB HWY 5 18FT W OF CL PCC ENT AND 8FT W OF NEAR EDGE PCC ENT

NOTE:
The first two digits in the control point name refer to the county number.
The next 3 digits refer to the highway number.
The next 3 digits refer to the highway milepost.
The last digit refers to the distance from the referenced milepost to the nearest tenth of a mile.

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic on IA 5 shall be maintained utilizing two-lane, two-way traffic in the southbound lanes and crossovers.

108-26A
08-01-08

STAGING NOTES

Stage 1: Build crossovers closing both inside lanes NB and SB. Remove bullnose guardrail with inside lanes closed NB and SB. Install crash cushion on inside barrier to NB bridge using inside lane closure. Install guardrail on all four corners of SB bridge using single lane closures.
Stage 2: Shift traffic to SB lanes. Complete bridge demolition and reconstruction.

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 restrictions expected.									

102-15
08-01-08

TABULATION OF SPECIAL EVENTS

Event	Location	Date
4th of July Parade	Grinnell	07/04/22
Iowa Hawkeye Football	Iowa City	9/1/2022-11/30/2022
Iowa State Football	Ames	9/1/2022-11/30/2022