

Standard Road Plans

Standard Road Plans are listed on tied Grading Project No.

Design Data Rural		
20?? AADT	_____	V.P.D.
20?? AADT	_____	V.P.D.
20?? DHV	_____	V.P.H.
TRUCKS	_____	%
Total Design ESALs	_____	

Index of Seals		
Sheet No.	Name	Type
A.1	Mark C. Currie	Structural Design

Structural Design

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

Signature Mark C. Currie XX-XX-XXXX Date

Printed or Typed Name

My license renewal date is December 31, 2025

Pages or sheets covered by this seal: XXXX



PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM HARRISON COUNTY

Bridge Replacement

On US 30 over Youngs Ditch
0.8 mi. E of SR K-45
Location

Refer to the Plan Sheets for list of applicable specifications.

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

Field Exam Notes:

Design Number and File Number provided during D2 Field Exam:

Design No. 129 Harrison County
File No. 32871

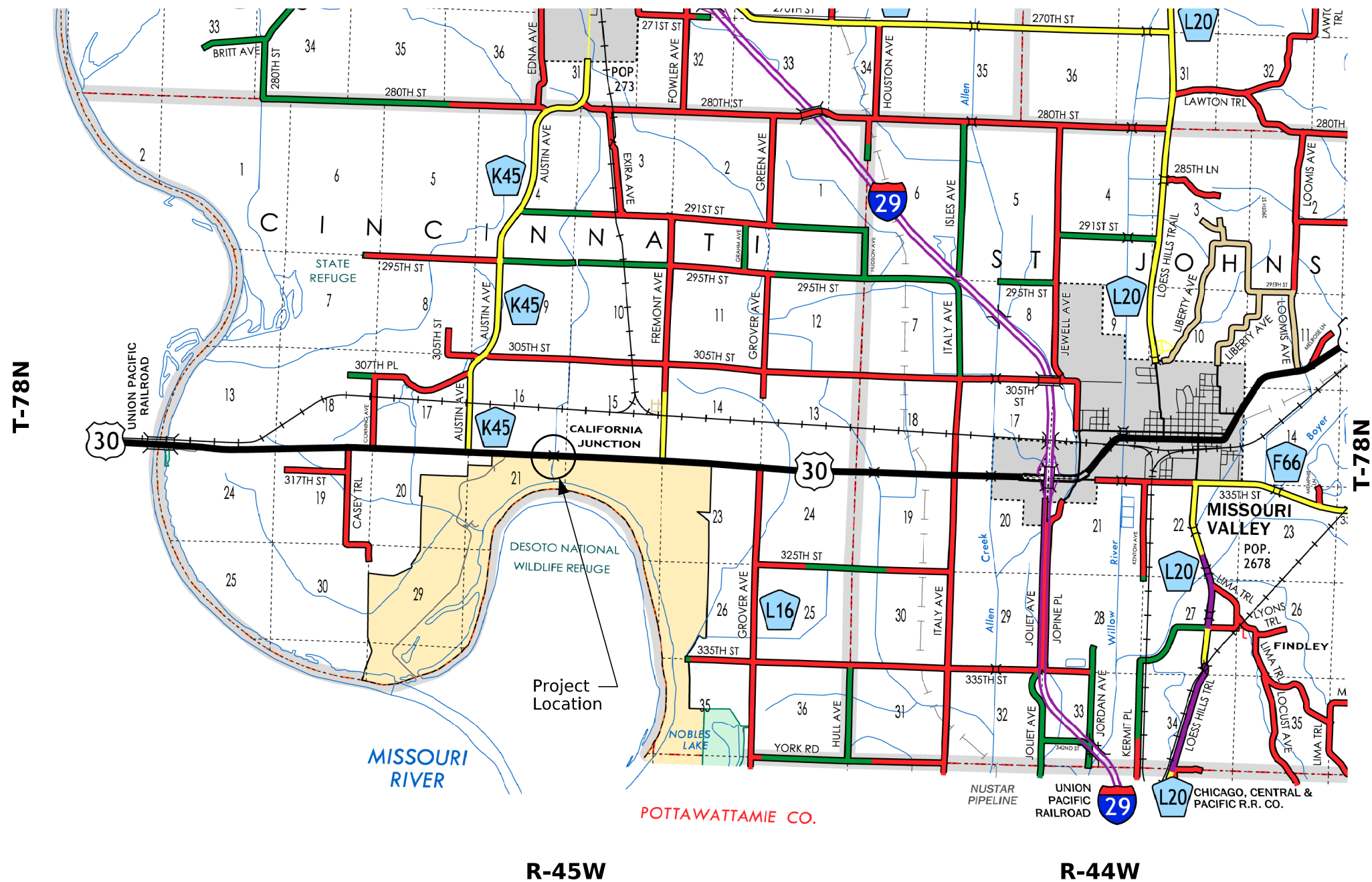
Designer to verify Lat./Long. to request FHWA number and send in so correct file naming, etc. can be included in draft B01 submittal.

Revisions

	TOTAL
	XX
PROJECT IDENTIFICATION NUMBER	
24-43-030-040	
PROJECT NUMBER	
BRF-030-1(211)--38-43	
R.O.W. PROJECT NUMBER	
-	
PROJECT DIRECTORY NUMBER	
4303004024	

Preliminary
Not For Construction

Revisions to this Design Plan and/or Project Specifications should be submitted by _____



LEGEND

INTERSTATE HIGHWAY

PRIMARY HIGHWAY-DIVIDED

PRIMARY HIGHWAY

PORTLAND CEMENT CONCRETE ROAD

ASPHALT ROAD

BITUMINOUS ROAD

GRAVEL ROAD

EARTHEN ROAD

INTERSTATE HIGHWAY

UNITED STATES HIGHWAY

STATE HIGHWAY

COUNTY HIGHWAY

RAILROAD

PIPELINE

AIRPORT

HYDROLOGY

BRIDGE

STATE BOUNDARY

COUNTY BOUNDARY

CORPORATE BOUNDARY

TOWNSHIP LINE

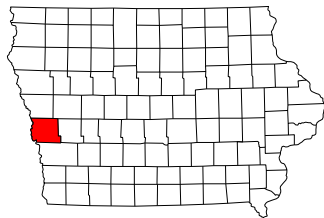
SECTION LINE

ROAD NAMES

UNINCORPORATED PLACE

Abbey Road

Elwood



R-45W

R-44W

Harrison County Location Map

Not To Scale

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.3	Index of Sheets
* A.4 - A.16	Project Concept
A.17 - A.20	Field Exam Notes
B Sheets	Typical Cross Sections and Details
B.1 - B.2	Typical Cross Sections and Details
C Sheets	Quantities and General Information
C.1	Project Description
G Sheets	Survey Sheets
G.1	Survey Information
* G.2	Control Point Vicinity Map
G.3	Horizontal and Vertical Project Control Coordinate Listing
J Sheets	Traffic Control and Staging Sheets
* J.1	Bridge Staging Sheet
U Sheets	500 Series, Mod.Stds. and Detail Sheets
* U.1	Modified BR-211
* U.2 - U.4	Modified BR-203
V Sheets	Bridge and Culvert Situation Plans
* V.1	Situation Plan
* V.2	Site Plan
	 * Color Plan Sheets



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IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE: District 4 DATE: April 8, 2025

ATTENTION: Scott Schram PROJECT: Harrison County
BRF-030-1(211)--38-43
PIN: 24-43-030-040

FROM: Mark Currie

OFFICE: Veenstra & Kimm, Inc.

SUBJECT: Project Concept Statement; (Final, DO)

This project involves the replacement of the US 30 bridge (Maint. No. 4303.8S030) over Youngs Ditch, 0.8 mi E of SR K-45.

The Draft Concept Statement was sent out for review on March 11, 2025, and a concept review was held on March 31, 2025. Those present included Luka Arroyo, Jimmy Ellis, Tom Lovan, John Bartholomew, Jeremy Harris, Nicole Cuva, Patricia Schwarz, Christine Schwienebart, and Claire Asberry from the Iowa DOT; and Mark Currie and Edward Gapatan from Veenstra & Kimm, Inc.

Comments received from the Draft Concept Statement, as well as from the concept review meeting, have been considered and resolved.

It is recommended to remove the bridge and replace it with 130' x 44' CCS at 0 degree skew and reconstruct the roadway with a typical 44' section, with traffic maintained using staged construction, at an estimated cost of \$2,653,563. No additional right of way/right of entry will be required.

This project is recommended for construction in FY 2029. Veenstra & Kimm will coordinate the plan preparation with the assistance of the Project Management Bureau, Bridges and Structures Bureau, and Design Bureau.

- Cc: K. Nicholson
M. Nop
M. Swenson
W. Sorenson
C. Poole
D. Sprengeler
M. Dell
B. Bradley
M. Van Dyke
D. Blue
B. Worrel
J. Holst
W. Mayberry
N. Epperson
O. Lechnowsky
C. Duncan
C. Schwienebart
- C. Brakke
J. Ellis
D. Stokes
E. Wright
J. Laaser-Webb
N. Cuva
R. Harris
B. Smith
D. Heeren
S. Cook
R. Meyer
P. Flattery
S. Schram
D. Redmond
J. Kohl
C. Asberry
- J. Nelson
S. Majors
B. Hofer
K. Brink
S. Anderson
J. Bartholomew
N. Pohlen
D. Ta
G. Cagle
B. Hucker
A. Buss
Y. Jia
D. Dorsett
J. Sallach
J. Woodcock
D. Newell

FINAL PROJECT CONCEPT STATEMENT

US 30 – Bridge over Youngs Ditch, 0.8 mi E of SR K-45
Harrison County
BRF-030-1(211)--38-43
PIN: 24-43-030-040
Maint. No. 4303.8S030
FHWA No. 27350

Mark C. Currie, P.E., S.E.
515-225-8000

April 8, 2025

I. STUDY AREA

A. Project Description

This project involves the replacement of the US 30 bridge (Maint. No. 4303.8S030) over Youngs Ditch, 0.8 mi E of SR K-45.

One alternative was considered:

1. Remove bridge and replace with 130' x 44' CCS at 0 degree skew.

Alternative 1 is the preferred alternative due to proximity of the project with the Missouri river and consideration of the 10-Yr Missouri river flood stage. The preferred alternative satisfies both backwater and freeboard requirements of the DOT and DNR.

Traffic will be maintained via staged construction with traffic reduced to one lane via the use of temporary traffic signals.

The preliminary project cost is \$2,653,563.

B. Need for Project

The existing structure is a 194' x 28' continuous concrete slab bridge built in 1953 and overlaid in 2012 and is near the end of its useful life. The bridge was designed for H20 design load.



Looking East along US 30



Looking North at Existing Bridge

C. Present Facility

US 30 is a two-lane roadway. The existing structure is a five span, 194' long x 28' wide continuous concrete slab (CCS) bridge constructed in 1953.

US 30 in the project area was originally constructed in 1937 as an 18' PCC road. US 30 was then widened to 24' and resurfaced with HMA in 1966, then resurfaced again in 1983, then widened to 28' of pavement and resurfaced in 2001 and in 2021. US 30 has 6' wide granular shoulders with 3:1 foreslopes.

D. Traffic Estimates

The 2029 construction year and 2049 design year average daily traffic estimates are 4,900 ADT with 24% trucks and 5,400 ADT with 24% trucks, respectively.

E. Sufficiency Ratings

US 30 is classified as a Rural Principal Arterial route and is a maintenance service level "B" road. The federal bridge sufficiency rating is 66.1.

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from 2020 through 2025, there was one single-car crash with one occupant that had no reported injuries. Cause of the accident was listed as driving too fast for conditions. Property damage totaling \$8,173 was reported.

II. PROJECT CONCEPT

A. Project Description

Alternative #1 – Replace with a 130’ CCS

Remove the existing 194’ x 28’ CCS bridge and replace with a standard three-span 130’ x 44’ Continuous Concrete Slab (CCS) bridge with 0-degree skew. The typical cross section will consist of a 24’ roadway with 10’ effective shoulders (4’ paved and 6’ granular) and 3:1 foreslopes.

The existing CCS bridge replaced a much smaller 24’ x 24’ I-beam bridge that was wiped out during historic 1952 Missouri river flooding. Since then, the Missouri river has been rerouted by the Army Corps of Engineers, resulting in the creation of DeSoto Lake and Desoto National Wildlife Refuge. Several levees were also constructed around the project area. The current bridge was not inundated during the major 2011 and 2019 Missouri River flood events.

Preliminary sizing of the replacement structure indicated a 120’ CCS bridge could accommodate the design discharge; however, the interior span length of 47’ for a standard 120’ CCS poses a foundation conflict with the existing pier battered piles. Therefore, a 130’ CCS bridge was selected, as it provided a clearance of approximately 2’ between the existing pier and proposed abutment piles.

The 130’ CCS bridge was then evaluated using 1D HEC RAS to determine if the proposed 130’ bridge meets the desired freeboard and backwater criteria of DOT and DNR. Two cases were considered, including 1) Youngs Ditch alone, and 2) Youngs Ditch with 10-year Missouri River water surface elevation as a boundary condition. While the replacement structure has a smaller opening than the existing bridge, it has sufficient opening to carry the design discharge for Youngs Ditch, and the thinner superstructure of the CCS allows it to achieve the desired freeboard of 3’.

The roadway will be reconstructed on the existing vertical and horizontal alignment. Since the proposed bridge will be shorter, fill will be required to extend the typical approach section and to build the new abutments and berms. The proposed channel width will meet or exceed the existing channel width, and a maximum abutment berm slope of 2.5:1 will be used.

Proposed berm revetment limits will extend to within 5’ of the Right-of-Way on both sides of the bridge and will have key-in detail on upstream and downstream ends. The toe of the revetment will be keyed-in assuming a 10’ width, down on

a 1:1 slope to a minimum depth of 3’. Class E will be used for the revetment and erosion stone will be used for flat 3’ at top of berm.

The removal of the existing bridge, full bridge approach pavement and guardrail will require the construction of 70’ of standard BR-203 bridge approach pavement on each end, 30’ of new 10” PCC pavement beyond each new approach, and installation of new guardrail, guardrail grading, and pavement shoulder next to the guardrail. Erosion control and rural seeding and fertilizing will be performed on all disturbed areas.

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

A former field entrance is located on the north side of US 30 just west of the bridge that is blocked by the guardrail. An existing 36” CMP, parallel with US 30, is located under the entrance that drains the ditch into Youngs Ditch just upstream of the bridge. Removal of this field entrance and CMP will be reviewed during preliminary design to ensure it removal does not impact the Drainage District negatively.

One lane of traffic in each direction will be maintained via staged construction utilizing temporary traffic signals. The traffic control staging will be similar to the recently completed US 30 over Wilsons Ditch bridge replacement, located 2 miles east of the Youngs Ditch bridge.

During stage one, a 12 ft. wide traffic lane on the north side will be provided with a horizontal clearance width of 13’-6” between barriers, while 17’-7” (including 1’-7” barrier) of the CCS is being constructed on the south side. Similarly, in stage two, a 12 ft. wide traffic lane will be provided with a horizontal clearance width of 13’-6” between barriers on the completed south side while the remainder of the CCS bridge is constructed on the north side. A 4’ gap will be maintained between the existing and proposed bridge to accommodate staged construction. Temporary longitudinal sheet piling will be required to construct the abutments and abutment berms.

During Stage 1 construction, it is recommended that at least 4 piles support each new abutment for stability/redundancy purposes. This requirement should be evaluated during Preliminary Design.

Due to scour concerns, unsupported pile lengths should be evaluated during Preliminary Design. An alternative pier foundation may be necessary.

BRIDGE ESTIMATE:				
Item	Quantity	Unit	Rate	Amount
Bridge Removal	6810	SF	\$20	\$136,200
130' x 44' CCS Bridge	6171	SF	\$145	\$894,795
Engineering Fabric	453	SY	\$4	\$1,812
Revetment	1800	TON	\$50	\$90,000
Erosion Stone	36	SY	\$50	\$1,800
Soil Remediation - Rammed Agg. Piers	1	LS	\$450,000	\$450,000
Staged Construction	1	LS	15%	\$236,191
Mobilization	1	LS	10%	\$181,080
	Base Cost:		\$1,991,878	
	Contingency:		20%	\$398,376
	0 Years Inflation:		4.5%	
	BRIDGE TOTAL:		\$2,390,254	
ROADWAY ESTIMATE:				
Item	Quantity	Unit	Rate	Amount
Removal of Pavement	880	SY	\$12	\$10,560
Embankment in Place, Contractor Furnished	2456	CY	\$10	\$24,560
Modified Subbase	400	CY	\$50	\$20,000
PCC Pavement	1200	SY	\$60	\$72,000
Erosion Control	1	LS	\$10,000	\$10,000
Traffic Control	1	LS	10%	\$13,712
Additional Roadway Items	1	LS	15%	\$22,625
Staged Construction	1	LS	15%	\$26,019
Mobilization	1	LS	10%	\$19,948
	Base Cost:		\$219,424	
	Contingency:		20%	\$43,885
	0 Years Inflation:		4.5%	
	ROADWAY TOTAL:		\$263,309	
PROJECT TOTAL:			\$2,653,563	

Other Alternatives Considered

An RCB culvert alternative was dismissed due to excessive settlement experienced at a nearby RCB culvert project. The recently completed RCB culvert replacement project along US 30 over Wilsons Ditch (NHSX-030-1(190)—3H-43) replaced a similar 194’ long x 28’ wide CCS in 2022, just two miles east of the Youngs Ditch bridge. The roadway at this culvert has been overlayed due to excessive settlement issues. District staff noted multiple other culvert projects in this region have also experienced excessive settlement, likely due to poor soils that are expensive to mitigate, and they prefer to replace the bridge with a bridge and not a culvert.

A 105’ x 44’ PPCB bridge with BTC beams, constructed using staged construction, was also evaluated. However, the low beam elevation of the PPCB option does not meet the desired freeboard of 3’ in consideration of the 10-year Missouri River water surface elevation. While the shorter length of the PPCB superstructure would reduce the cost of the bridge, the beams would need to be vented and the abutment designed for hydrostatic and buoyant forces associated with the Missouri River. In addition, staged construction of the bridge would likely require a 7-beam configuration instead of a standard 6-beam configuration, thereby not fully utilizing the beams’ capacity. If a 6-beam configuration is used, an alignment shift would likely be necessary to provide the minimum gap for staged construction, which would extend the length of approach roadway and pavement replacement significantly.

A bridge (CCS or PPCB) with an on-site run-around option north of the bridge was discussed with the DOT. Significant fill and an additional channel crossing (temporary bridge or multiple pipes) would be required to the north of the bridge to fill the 15-20’ difference between stream bed and road profile without having a significant sag curve in the vertical profile of the roadway. The alignment shift and ditch grades along the run-around also pose a safety concern due to the high traffic volumes on US 30. An additional easement would also be required north of the bridge to accommodate the run-around. This option was not advanced due to cost, safety, environmental impacts to the nearby Wildlife Refuge, and maintenance required.

A 130’ x 44’ CCS with 7.5 degree skew was considered to align the substructure units with Youngs Ditch, but the pile layout at the proposed pier conflicts with the existing pier battered piles. Since the proposed channel width using the 0 degree skew is wide enough to accommodate the slight skew of the ditch, the 7.5 degree skew alternative was not advanced.

- B.

Detour Analysis

An off-site detour was considered but dismissed due to lack of an acceptable route that would support the traffic volumes and loads. Traffic will be maintained via staged construction with traffic reduced to one lane via the use of temporary traffic signals.
- Coordination with the Missouri Valley Bypass Project, tentatively scheduled for construction in 2027, will be required if project schedules overlap.
- C.

Recommendations

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

Construction Sequence

It is anticipated all work on this project will be awarded to one prime contractor. Veenstra & Kimm, Inc. will coordinate the plan preparation with the assistance of the Project Management Bureau, the Design Bureau, and the Bridges and Structures Bureau.
- E.

ADA Accommodations

There are no bike paths or sidewalks adjacent to US 30; therefore, no ADA accommodations are planned in conjunction with this project.
- F.

Special Considerations

This will not be a traffic critical project.
- The Accelerated Bridge Construction (ABC) Rating Score of 9 using staged construction and 33 for an off-site detour with 7 miles out-of-distance travel, both of which are less than the first stage filter threshold of 50, therefore no further evaluation is considered.
- Due to settlement concerns, areas of proposed abutments and new approach fill areas will likely require soil remediation. Terracon anticipates IFIs (rammed aggregate piers) at 5’ spacing to depths of 15’ will be required in these areas, but they will evaluate the site further once soils information is obtained.
- The existing drainage ditch geometry was not able to be located by the County Drainage Clerk or the Drainage District Review Engineer (Troy Growth – Sundquist Engineering). The Review Engineer noted the ditch was likely constructed with 1:1 side slopes on an assumed elevation since no benchmarks were convenient at the time of construction (1910s-1920s). Coordination with

the drainage district is necessary during Preliminary Design to confirm the original channel geometry and to review the proposed channel under the bridge.

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

Standard survey coverage will be required.

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.

G.

Program Status

Site data has been developed by Veenstra & Kimm, Inc. This project is listed in the 2025-2029 Iowa Transportation Improvement Program with \$3,250,000 for replacement in FY 2029. A schedule of events will be developed following approval of the Project Concept.

A map of Harrison County and the proposed Detour Route is attached.

Attachment A - utilities

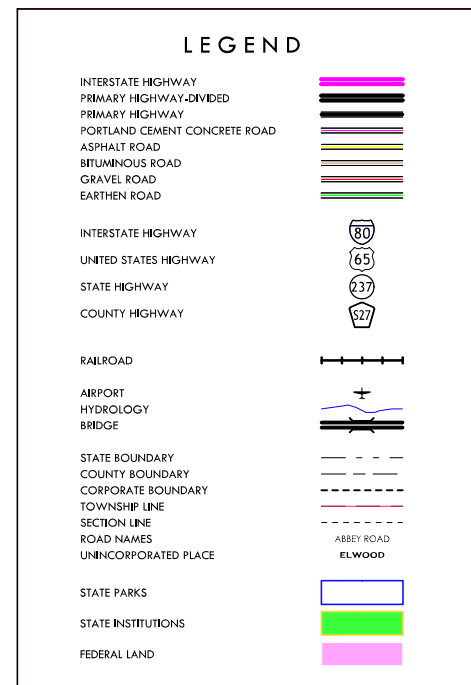
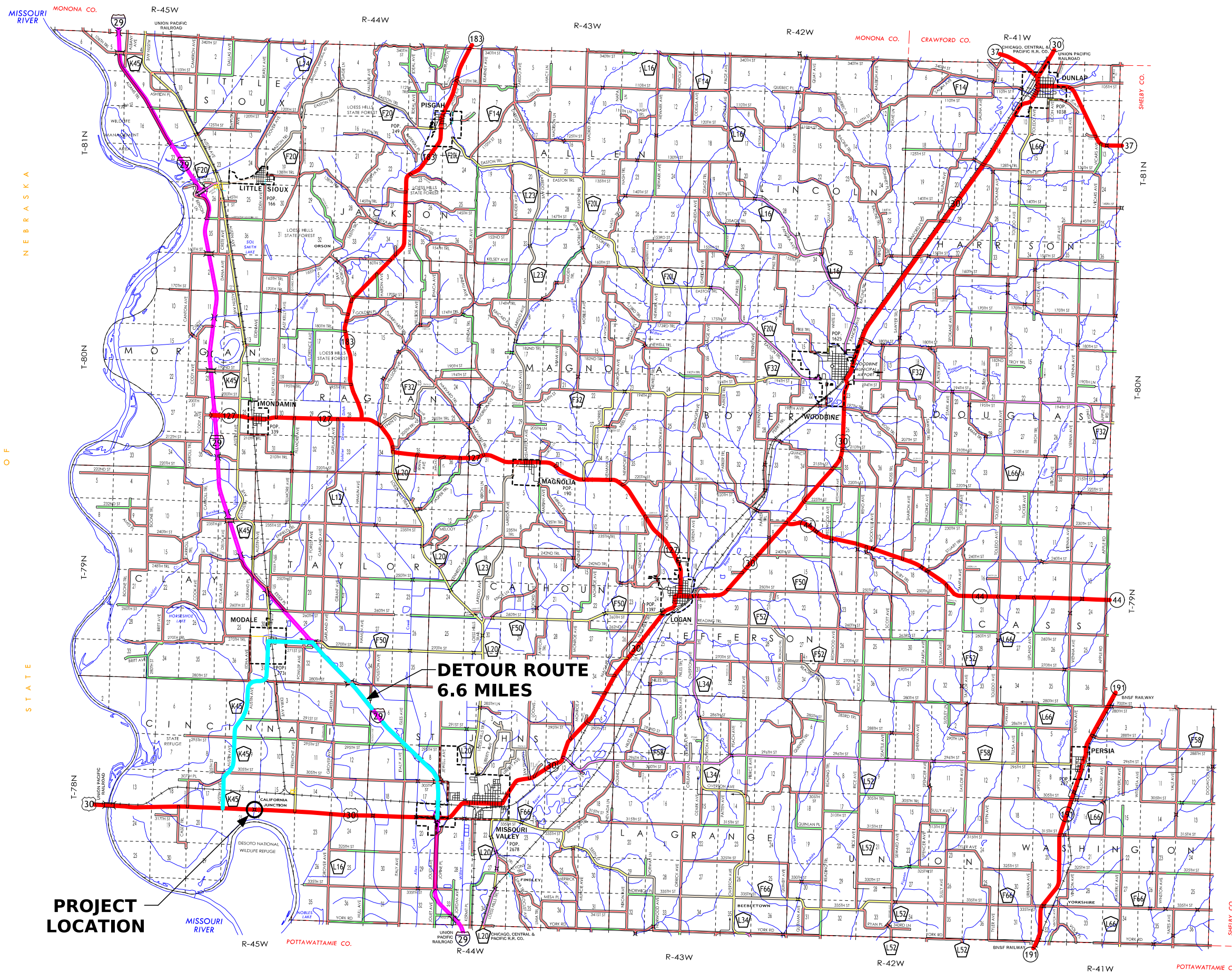
ATTACHMENT A

HARRISON COUNTY

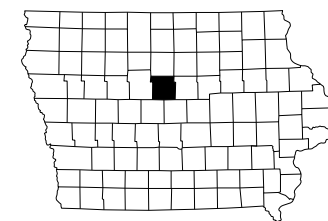
(CTLIA01) CENTURYLINK
Company name : CENTURYLINK
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DETOUR ROUTE



Harrison County Map

Not To Scale

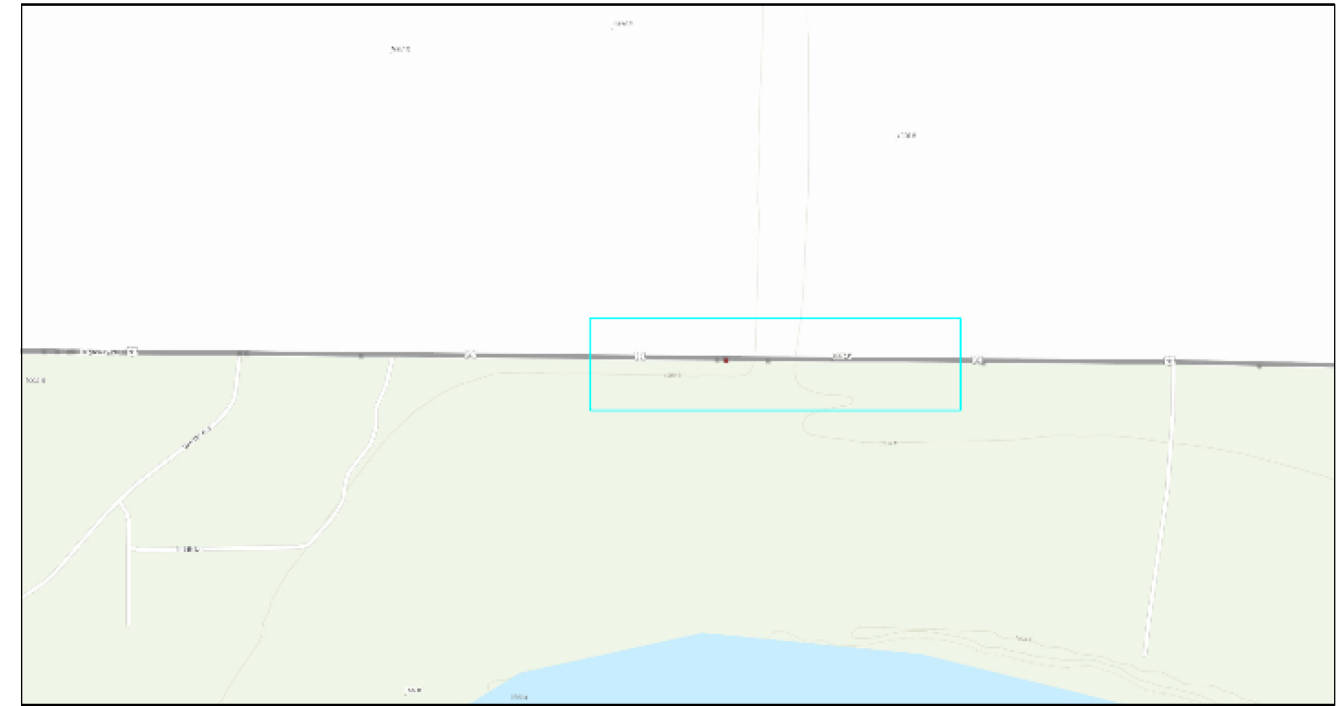
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Iowa Crash Analysis Tool
Quick Report
2020-2025

Crash Severity	1	Injury Status Summary	0
Fatal Crash	0	Fatalities	0
Suspected Serious Injury Crash	0	Suspected serious/incapacitating	0
Suspected Minor Injury Crash	0	Suspected minor/non-incapacitating	0
Possible/Unknown Injury Crash	0	Possible (complaint of pain/injury)	0
Property Damage Only	1	Uninjured	0
		Unknown	0
		Not Reported	0

Property/Vehicles/Occupants		Average Severity	
Property Damage Total (dollars):	8,173.00	Fatalities/Fatal Crash:	0.00
Average (per crash dollars):	8,173.00	Fatalities/Crash:	0.00
Total Vehicles:	1.00	Injuries/Crash:	0.00
Average (per crash):	1.00	Major Injuries/Crash:	0.00
Total Occupants:	1.00	Minor Injuries/Crash:	0.00
Average (per crash):	1.00	Possible/Unknown Injuries/Crash:	0.00



01/13/2025

1 of 7



Iowa Crash Analysis Tool
Quick Report
2020-2025

Major Cause	1
Animal	0
Ran stop sign	0
FTYROW: At uncontrolled intersection	0
FTYROW: From stop sign	0
FTYROW: Making left turn	0
FTYROW: From parked position	0
FTYROW: Other	0
Disregarded RR Signal	0
Crossed median (divided)	0
Aggressive driving/road rage	0
Exceeded authorized speed	0
Operating vehicle in an reckless/erratic/care...	0
Passing: On wrong side	0
Passing: With insufficient distance/inadequa...	0
Passing: Other passing	0
Driver Distraction: Manual operation of an e...	0
Driver Distraction: Talking on a hands free ...	0
Driver Distraction: Other electronic device ...	0
Driver Distraction: Unrestrained animal	0
Driver Distraction: Inattentive/lost in thou...	0
Driver Distraction: Exterior distraction	0
Ran off road - straight	0
Lost control	0
Over correcting/over steering	0
Failure to signal intentions	0
Vehicle stopped on railroad tracks	0
Other: Improper operation	0
Other: Disregarded signs/road markings	0
Downhill runaway	0
Towing improperly	0
Equipment failure	0
Other: Getting off/out of vehicle	0
Improper backing	0
Illegally parked/unattended	0
Operator inexperience	0
Unknown	0
Other: No improper action	0
Ran traffic signal	0
Failed to yield to emergency vehicle	0
FTYROW: Making right turn on red signal	0
FTYROW: From yield sign	0
FTYROW: From driveway	0
FTYROW: To pedestrian	0
Drove around RR grade crossing gates	0
Crossed centerline (undivided)	0
Traveling wrong way or on wrong side of road	0
Driving too fast for conditions	1
Improper or erratic lane changing	0
Followed too close	0
Passing: Where prohibited by signs/markings	0
Passing: Through/around barrier	0
Made improper turn	0
Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Passenger	0
Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Other interior distracti...	0
Ran off road - right	0
Ran off road - left	0
Swerving/Evasive Action	0
Failed to keep in proper lane	0
Traveling on prohibited traffic way	0
Other: Vision obstructed	0
Other: Disregarded warning sign	0
Other: Illegal off-road driving	0
Separation of units	0
Cargo/equipment loss or shift	0
Oversized load/vehicle	0
Failure to dim lights/have lights on	0
Improper starting	0
Driving less than the posted speed limit	0
Other	0
Not reported	0

01/13/2025

2 of 7



Iowa Crash Analysis Tool
Quick Report
2020-2025

Time of Day/Day of Week															
	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported		
Day of Week														Total	
Sunday	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	1	0	0	0	0	0	0	0	0	0	0	1	

Manner of Crash Collision	1	Surface Conditions	1
Non-collision (single vehicle)	1	Dry	0
Head-on (front to front)	0	Wet	0
Rear-end (front to rear)	0	Ice/frost	0
Angle (oncoming left turn)	0	Snow	1
Broadside (front to side)	0	Slush	0
Sideswipe (same direction)	0	Mud/dirt	0
Sideswipe (opposite direction)	0	Water (standing or moving)	0
Rear to rear	0	Sand	0
Rear to side	0	Oil	0
Not reported	0	Gravel	0
Other	0	Not reported	0
Unknown	0	Other	0
		Unknown	0

Fixed Object Struck			1
Bridge overhead structure	0	Bridge pier or support	0
Bridge/bridge rail parapet	0	Curb/island/raised median	0
Ditch	0	Embankment	0
Ground	0	Culvert/pipe opening	0
Guardrail - face	1	Guardrail - end	0
Concrete traffic barrier (median or right side)	0	Other traffic barrier	0
Cable barrier	0	Impact attenuator/crash cushion	0
Utility pole/light support	0	Traffic sign support	0
Traffic signal support	0	Other post/pole/support	0
Fire hydrant	0	Mailbox	0
Tree	0	Landscape/shrubbery	0
Snow bank	0	Fence	0
Wall	0	Building	0
Other fixed object	0	None (no fixed object struck)	0



Iowa Crash Analysis Tool
Quick Report
2020-2025

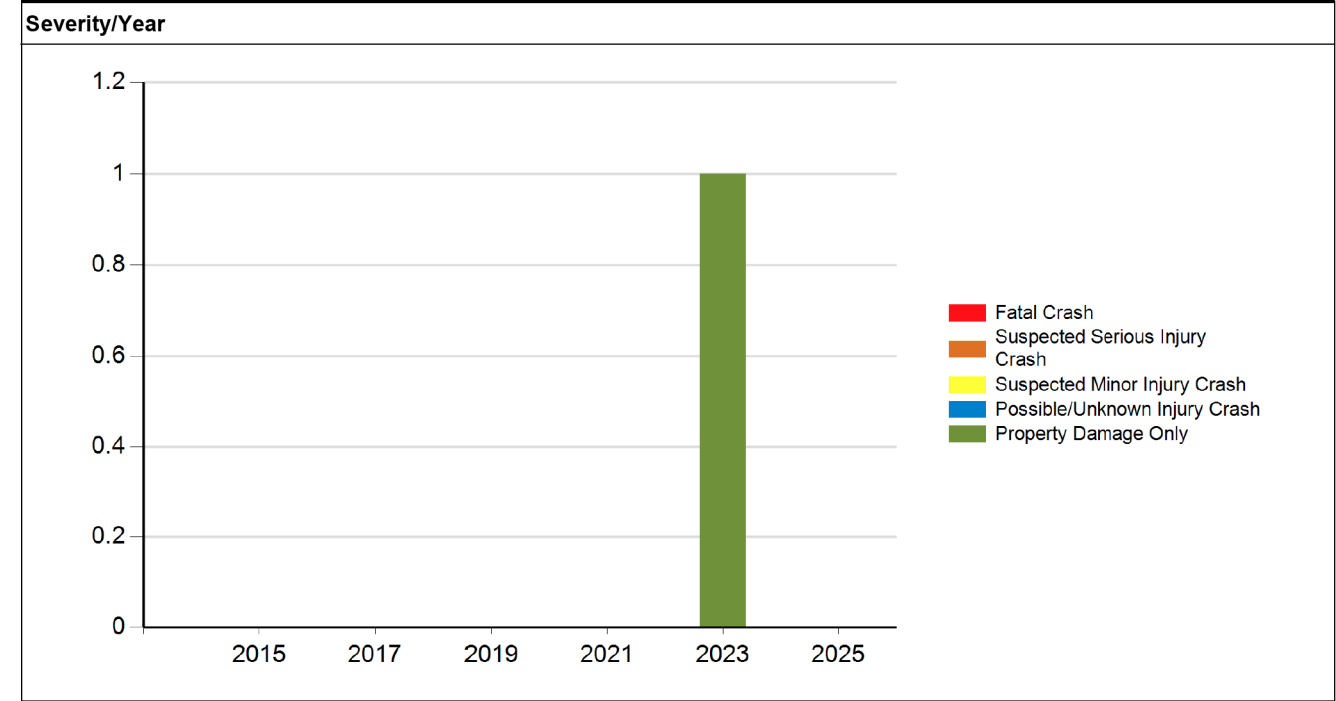
Driver Age/Driver Gender						Alcohol Test Given		1
Driver Age - 5 year Bins	Not				Total			
	Female	Male	reported	Unknown				
< 14	0	0	0	0	0	None		1
= 14	0	0	0	0	0	Blood		0
= 15	0	0	0	0	0	Urine		0
= 16	0	0	0	0	0	Breath		0
= 17	0	0	0	0	0	Vitreous		0
= 18	0	0	0	0	0	Refused		0
= 19	0	0	0	0	0	Not reported		0
= 20	0	0	0	0	0			
>= 21 and <= 24	0	0	0	0	0	Drug Test Given		
>= 25 and <= 29	0	0	0	0	0	None		1
>= 30 and <= 34	1	0	0	0	1	Blood		0
>= 35 and <= 39	0	0	0	0	0	Urine		0
>= 40 and <= 44	0	0	0	0	0	Breath		0
>= 45 and <= 49	0	0	0	0	0	Vitreous		0
>= 50 and <= 54	0	0	0	0	0	Refused		0
>= 55 and <= 59	0	0	0	0	0	Not reported		0
>= 60 and <= 64	0	0	0	0	0			
>= 65 and <= 69	0	0	0	0	0	Drug Test Result		
>= 70 and <= 74	0	0	0	0	0	Negative		0
>= 75 and <= 79	0	0	0	0	0	Cannabis		0
>= 80 and <= 84	0	0	0	0	0	Central Nervous System depressants		0
>= 85 and <= 89	0	0	0	0	0	Central Nervous System stimulants		0
>= 90 and <= 94	0	0	0	0	0	Hallucinogens		0
>= 95	0	0	0	0	0	Inhalants		0
Not reported	0	0	0	0	0	Narcotic Analgesics		0
Unknown	0	0	0	0	0	Dissociative Anesthetic (PCP)		0
Total	1	0	0	0	1	Prescription Drug		0
						Not reported		1
						Other		0

Drug/Alcohol Related		1
Drug		0
Alcohol (< Statutory)		0
Alcohol (Statutory)		0
Drug and Alcohol (< Statutory)		0
Drug and Alcohol (Statutory)		0
Refused		0
Under Influence of Alcohol/Drugs/Medications		0
None Indicated		1



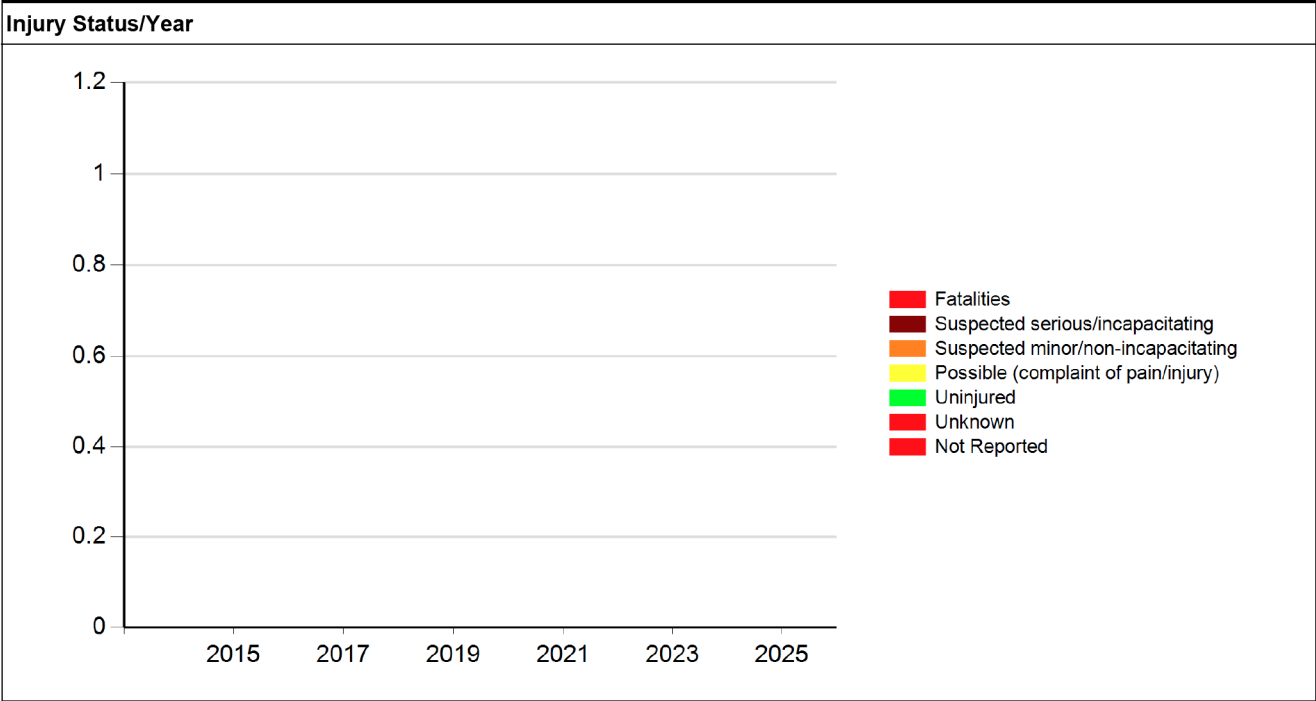
Iowa Crash Analysis Tool
Quick Report
2020-2025

Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	1	1
2024	0	0	0	0	0	0
2025	0	0	0	0	0	0
Total	0	0	0	0	1	1



Iowa Crash Analysis Tool
Quick Report
2020-2025

Injury Status - Annual							
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Uninjured	Unknown	Not Reported
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0





Meeting the following criteria
Jurisdiction: Counties (Harrison) Year: 2020, 2021, 2022, 2023, 2024, 2025 Map Selection: Yes Filter: None

Analyst Information
US 30 over Youngs Ditch

General input	
FHWA or Structure Number	27350
PIN Number	24-43-030-040
Project Number	BRF-030-1(211)--38-43
Design Number	TBD
County Name	Harrison
Route Carried	US 30
Feature Crossed	Youngs Ditch
Location Description	0.8 mi. E of SR K-45

Required SI&A Input for Calculation of ABC Rating Score			
SI&A Item No.	SI&A Item	SI&A Item Value	SI&A Units
5B	Route Signing Prefix	2	
19	Bypass, Detour Length	0	miles
29	Average Daily Traffic (On)	4,900	
29	Average Daily Traffic (Under)	0	
45	Number of Spans in Main Unit	3	
46	Number of Approach Spans	0	
109	Average Daily Truck Traffic	24	%

Note: If the ABC Rating Score is less than 50 and the structure is an interstate bridge or the detour is greater than or equal to 30 miles then the score is set to 50.

Concept Measure Scores	
Concept Measure	Score
Average Annual Daily Traffic Combined value of 100% on and 25% under = 4,900	1 0 No traffic impacts 1 Less than 5000 2 5000 to less than 10,000 3 10,000 to less than 15,000 4 15,000 to less than 20,000 5 20,000 or more
Out of Distance Travel Value in miles = 0	0 0 No detour 1 Less than 5 2 5 to less than 10 3 10 to less than 15 4 15 to less than 20 5 20 or more
User Costs Value in \$ = \$0.00	0 0 No user costs 1 Less than \$10,000 2 \$10,000 to less than \$50,000 3 \$50,000 to less than \$75,000 4 \$75,000 to less than \$100,000 5 \$100,000 or more
Economy of Scale Value is total number of spans = 3	1 0 1 span 1 2 or 3 spans 2 4 or 5 spans 3 6 spans or more

ABC Rating Score Factors and Weights					
Concept Measure	Score	Weight Factor	Adjusted Score	Maximum Score	Adjusted Score
Average Annual Daily Traffic	1	10	10	5	50
Out of Distance Travel	0	10	0	5	50
User Costs	0	10	0	5	50
Economy of Scale	1	5	5	3	15
Total Score			15	Max. Score	165
Calculated ABC Rating Score			9		
ABC Rating Score			9		

Bridge Bureau Attachment for Concept Statement

Date: April 8, 2025
By: Veenstra & Kimm, Inc.
Location: US 30 over Youngs Ditch

County: Harrison County
Phase No.: BRFN-030-1(211)--38-43
Project Code: 24-43-030-040

1. Regulatory/Coordination
 - a. Iowa DNR Flood Plain permit = Yes, likely for misc. fill
 - b. Iowa DNR Sovereign Lands permit = No
 - c. Local Record of Coordination = No
 - d. Flood Insurance Study = Yes, Zone AE, Panel 19085C0295C, Jan 29, 2021
 - e. Drainage District = Yes, Young D.D. #58
 - f. Corps of Engineers Section 408 = No
 - g. State Water Trail or Paddling Route = No
 - h. Historic Structure = No
 - i. Federally owned land in vicinity = Yes, DeSoto National Wildlife Refuge
 - j. USGS or Iowa Flood Center (IFC) gage or sensor impacted? No
 - k. Obstruction Evaluation/Airport Airspace Analysis per FAA website = No
2. Hydrologic/Hydraulic Analysis/RIDB Dataset
 - a. Design discharge methodology = TR-55
 - b. Hydraulic analysis done = Yes, preliminary 1D HEC RAS using LIDAR, Missouri River Backwater effects elevations.
 - c. If DA > 10 sq. mi. Riverine Infrastructure Database (RIDB) dataset is required with B1 submittal = No
 - d. Coordinate flowlines and berm slopes with drainage district during the B01 phase of the project.
 - e. NOAA Atlas 15 may be available during the B01 phase of the project. If so, the design discharge should be reviewed. It is not anticipated that an increase in discharge would impact the design of the replacement structure, as the bridge has excess hydraulic capacity.
3. Structure/Roadway Layout Considerations
 - a. A roadway profile grade raise is not anticipated.
 - b. The existing drainage ditch geometry was not able to be located by the County Drainage Clerk or the Drainage District Review Engineer (Troy Growth - Sundquist Engineering). The Review Engineer noted the ditch was likely constructed with 1:1 side slopes on an assumed elevation since no benchmarks were convenient at the time of construction (1910s-1920s).
 - c. Proposed berm revetment limits will extend to within 5' of the Right-of-Way on both sides of the bridge and will have key-in detail on upstream and downstream ends. The toe of the revetment will be keyed-in assuming a 10' width, down on a 1:1 slope to a minimum depth of 3'. Class E will be used for the revetment and erosion stone will be used for flat 3' at top of berm.

~ 1 ~

4. Special construction issues
 - a. It is desirable for new structure foundations to avoid existing foundations.
 - b. Due to settlement concerns, areas of proposed abutments and new approach fill areas will likely require soil remediation. Terracon anticipates IFIs (rammed aggregate piers) at 5' spacing to depths of 15' will be required in these areas, but they will evaluate the site further once soils information is obtained.
 - c. Unsupported pile lengths should be evaluated during Preliminary Design. An alternative pier foundation could be considered.
 - d. A field entrance is located on the north side of US 30 approximately 250' east of the bridge.
 - e. A former field entrance is located on the north side of US 30 just west of the bridge that is blocked by the guardrail. An existing 36" CMP, parallel with US 30, is located under the entrance that drains the ditch into Youngs Ditch just upstream of the bridge. Removal of this field entrance and CMP will be reviewed during preliminary design to ensure it removal does not impact the Drainage District negatively.
5. Special survey = No
6. Aesthetic enhancements = No
7. Other
 - a. Maintenance of Traffic - Staged Construction
 - b. Coordination with the Missouri Valley Bypass Project, tentatively scheduled for construction in 2027, will be required if project schedules overlap.

Special Survey:

None.

Field Exam Notes

-Concept and B01 should be transmitted to Drainage District reviewer for coordination.

-Pipe and driveway/dike removal should be brought to the attention of the Drainage District Review Engineer.

-LEB commented on DeSoto Wildlife Refuge impact, and they resonded they have Federal concurrence on No-Use.

-DNR Floodplain/Miscellaneous Fill permitting coordination is required to confirm approach that is to be taken. Patricia Schwarz provided guidance for alternative approaches after the Field Exam.

~ 2 ~

D2 virtual field exam meeting was held on October 22, 2025. Those present included Luka Arroyo, Jimmy Ellis, Tom Lovan, John Bartholomew, Christian Kennel, Nicole Cuva, Patricia Schwarz, Mohammad Dokmak, Trisha Miller, Austin Yates from DOT, Deeann Newell, Christine Schwienebart from NEPA; Jacob Woodcock, Chelsea Duncan and Claire Asberry from the LEB; Wes Mayberry and Orest Lechnowsky from Iowa DOT District 4, and Mark Currie, Edward Gapatan and Russ Lemke from Veenstra & Kimm, Inc.

Mark discussed the concept, detour considered, and proposed staging concept. John B noted in regards of the staging that special signal timing is required given that 2029 AADT is 4900 vpd and soft cap for standard signal timing is 3000 vpd.

- John B noted and Wes concurred to pave the shoulder 300’ beyond end of approach for staging/shifting traffic and future maintenance. Full depth – 10’ wide. Jim E. added that 300’ is dictated by maintenance requirement and not by traffic control.
- Jim E. asked Wes regarding the condition of the existing roadway in consideration of paving the shoulder 300’ from the ends. Will it take wear and tear of the mainline pavement? Wes said we don’t need to replace the pavement and that he will do a work order if needed.

Mark continued with proposed plans for the field entrances. Field Entrance northeast of the bridge to remain (it was confirmed that there is an existing pipe under it), field entrance immediately northwest of the bridge is intended to be removed including the existing pipe culvert. Additional field entrance further to the west to remain. Any ditching or grading should consider the two pipes under the field entrances that are to remain. Patricia noted access pipes are not part of B02. Jim to remove B02 event after meeting.

- In line with the proposal to remove the field entrance and the pipe culvert immediately northwest of the bridge, it was clarified by Patricia that coordination with Drainage District is required but not local record of coordination as required by DOT since we plan to apply for DNR permit for Miscellaneous fill.
- Concept and B01 should go to Drainage District for coordination. Patricia noted hopefully they got a copy of the Concept. Mark will make another effort to distribute concept and B01.
 - Patricia noted we do need to coordinate with Drainage District representative regarding dike system. Use the As-Built Plan sheet that shows both the dikes but the one on the east doesn’t appear to be there. Our intent is to remove the pipe, grade the ditch, armor, and possibly put a rock let down. On the bottom of the as-built sheet it does have commentary on the dike. We could put a date on there, e.g., “If you have concerns please respond within 30-60 days”.

- Discussion continued with the revetment and revetment limits. To the north we are proposing limits extending to 5’ from the ROW. To the south we will limit the extent of revetment to minimize disturbance to the nearby DeSoto Wildlife refuge.
- Per DeSoto Wildlife Refuge impact, LEB was asked to comment on this - we are close but as long as we stick within ROW are we OK? LEB responded Yes and that they actually already have Federal concurrence on No-Use.
 - Jim and Patricia noted that heavy revetments proposed in the concept concur with overflow structures.
 - Patricia commented on possible transitioning challenges of the revetments. Patricia suggested to consider benching to aid with keeping stream in the center. We could also put A points a little higher and have it sloping down.

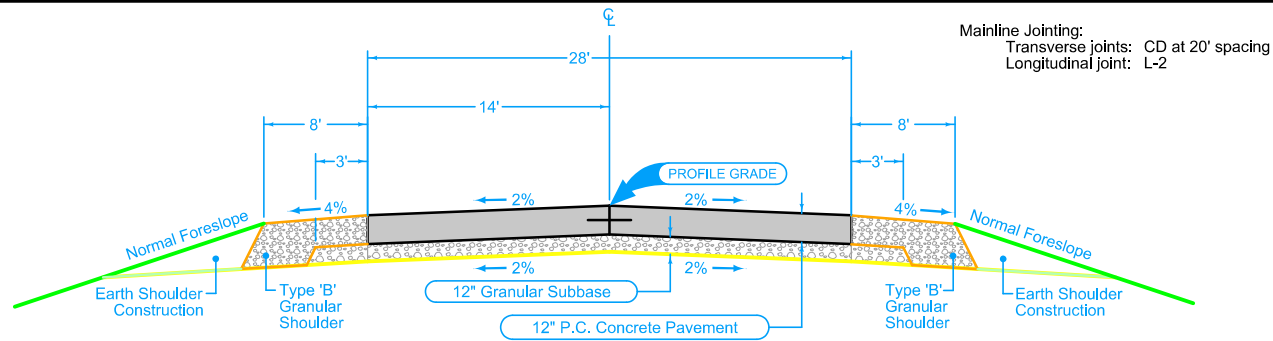
V&K is doing B01. Patricia confirmed that V&K would include submittal of DNR Permit as part of prelim bridge design. Patricia will be the reviewer. Patricia has a few minor comments she will send after meeting. Patricia clarified her comments will be for B01.

She is working to include Design number, file number, etc. and requested the lat and long for FHWA #. (When they put in the lat/long shown on the Draft Plans, Google Earth shows it on the west end of the bridge). After the meeting V&K checked and revised the lat long as follows: Latitude 41.551202°, Longitude -96.016691°

- Regarding constructability, Jim noted the following:
- We need to pin/anchor the TBR since we don’t have the width. Jim says it is not ideal but unavoidable.
 - Make sure there is a note to make sure the forms remain on for Stage 1 when building pouring Stage 2.
 - Jim said his preference is for fully-encased piles at the piers. Fully encasing Stage 1 or Stage 2 piles or alternative encasement layout should be considered this during final design.

FIELD EXAM NOTES

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



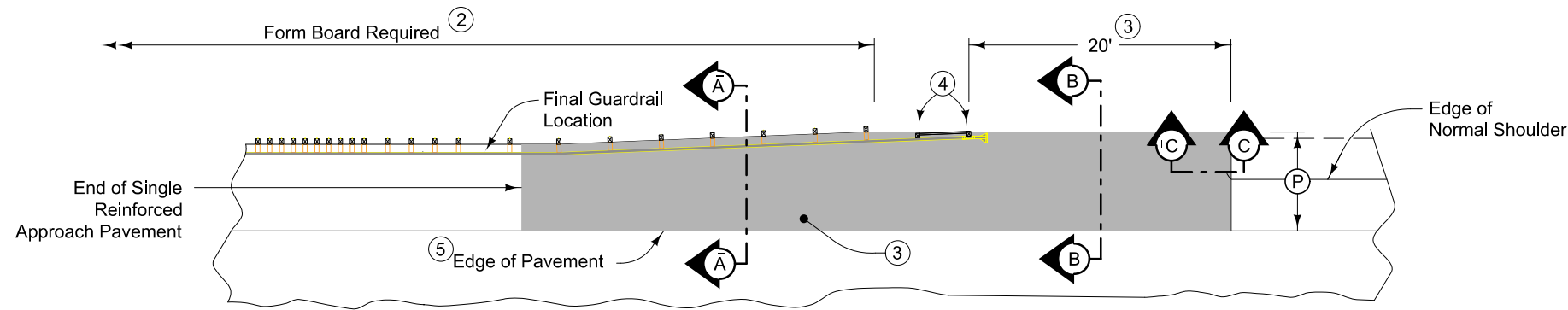
Mainline Jointing:
Transverse joints: CD at 20' spacing
Longitudinal joint: L-2

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

NOTE: See Paved Shoulder at Guardrail Typical
for Additional Information on Shoulders.

LOCATION		
ROAD IDENTIFICATION	STATION TO STATION	

TYPICAL SECTION



Plan View

Field Exam Notes

-Full-width (10'), full-depth paved shoulders should extend 300' beyond approach pavement for traffic staging and future maintenance.

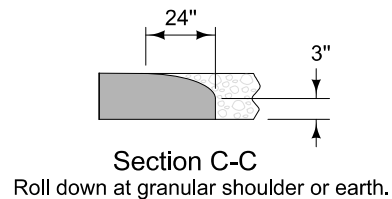
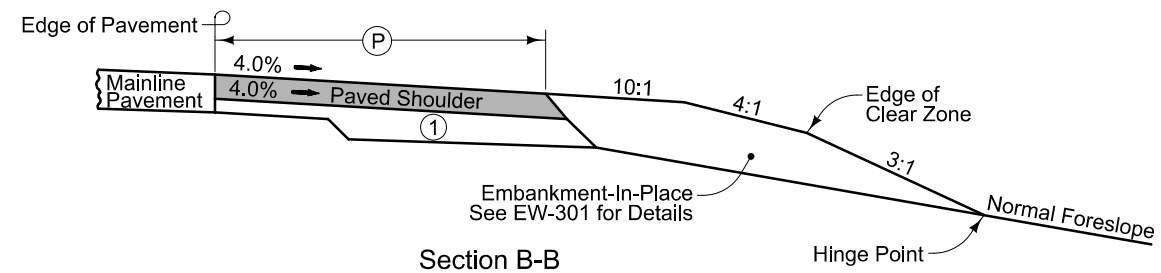
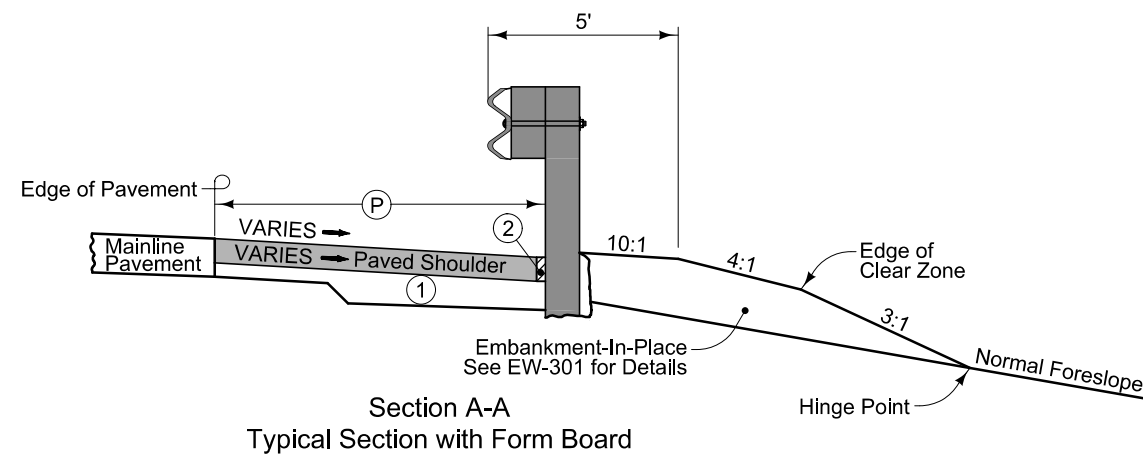
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

- ① For subgrade treatment, refer to other details in the plan.
- ② PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown. Refer to note 4 for final 2 posts.
- ③ Continue paved shoulder to existing paved shoulder or 20 feet beyond the center of the first post.
- ④ Shoulder may be notched for final 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
- ⑤ 'KT-1 joint for PCC shoulder.
'B' joint for HMA shoulder.



PAVED SHOULDER AT GUARDRAIL

	Interstate Highway Symbol		Septic Tank
	U.S. Highway Symbol		Cistern
	Iowa Highway Symbol		L.P. Gas Tank (No Footing)
	County Road Highway Symbol		Underground Storage Tank
	Evergreen Tree		Latrine
	Deciduous Tree		Satellite TV Dish
	Fruit Tree		Water Hook Up
	Shrub (Bushes)		Radio Tower
	Timber		Tower Anchor
	Hedge		Guardrail (Beam or Cable)
	Stump		Guard Post (one or two)
	Swamp		Guard Post (over two)
	Rock Outcrop		Filler Pipe
	Broken Concrete		Gas Valve
	Revetment (Rip Rap)		Water Valve
	Cemetery		Speed Limit Sign
	Grave		Mile Marker Post
	Cave		SIGN Sign
	Sink Hole		Traffic Signal Control Box
	Board Fence		Rail Road Signal Control Box
	Chain Link or Security Fence		Telephone Switch Box
	Wire Fence		Electric Box
	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		
	Water Hydrant (Rural)		

Sl. No.	Name of the Candidate	Roll No.	Grade	Subject	Score	Remarks
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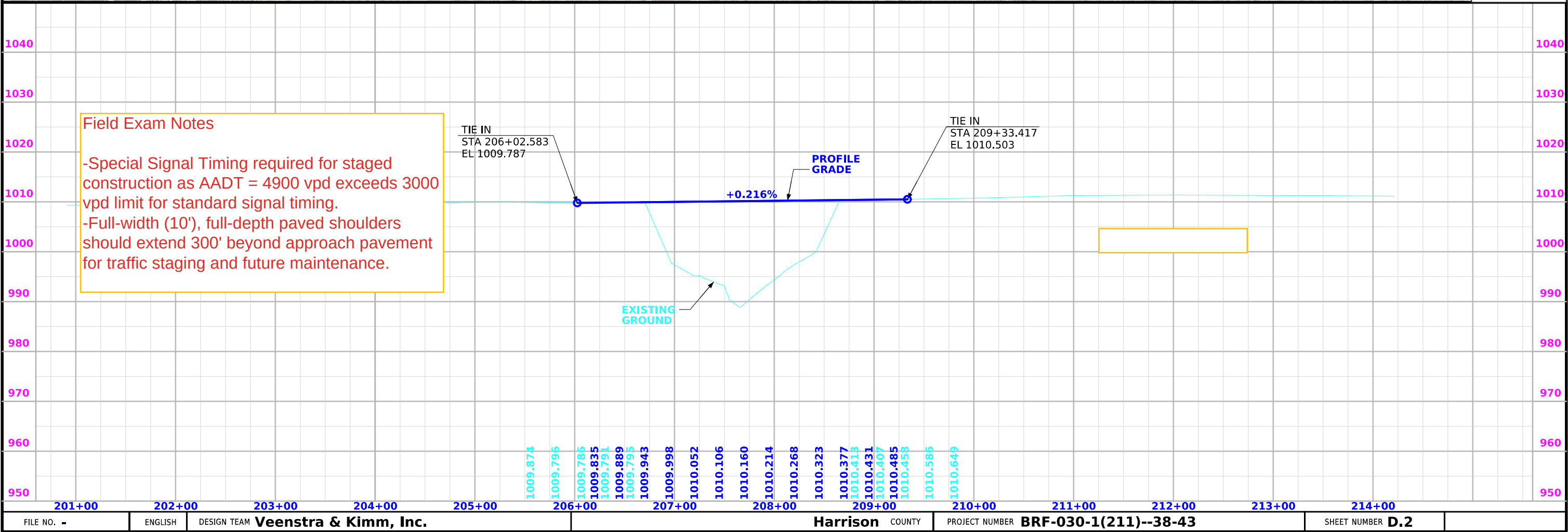
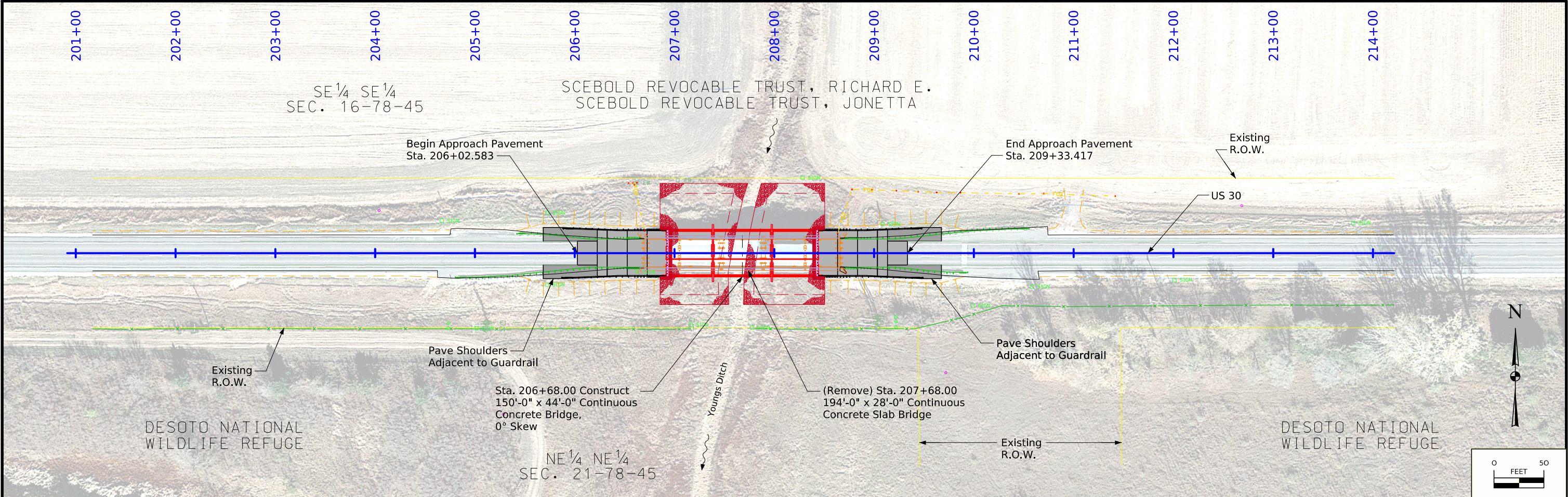
LINEWORK		Design Color No.		
Green	(2)		Existing Topographic Features and Labels	
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation	
Magenta	(5)		Existing Utilities	
SHADING		Design Color No.	Transparency	
Pink, Dark	(13)		Temporary Pavement Shading	50%
Yellow	(4)		Proposed Pavement Shading	50%
Orange	(6)		Proposed Granular Shading	50%
Orange	(70)		Proposed Shoulder Granular Shading	50%
Yellow	(68)		Proposed Shoulder Paved Full Depth Shading	50%
Yellow	(132)		Proposed Shoulder Paved Partial Depth Shading	50%
Brown, Light	(236)		Grading Shading	50%
Orange, Light	(134)		Proposed Granular Entrance Shading	50%
Yellow	(220)		Proposed Paved Entrance Shading	50%
Tan	(8)		Proposed Sidewalk Shading	50%
Blue, Light	(230)		Proposed Sidewalk Landing Shading	50%
Pink	(11)		Proposed Sidewalk Ramp Shading	50%
Red	(3)		Proposed Structure Shading	50%
Red	(3)		Delineates Restricted Areas	0%

LINEWORK		Design Color No.
Green	(10)	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	Survey Line
	Station	Section Corner
		Ground Line Intercept
		Saw Cut
		Guardrail
		Trench Drain
		High Tension Cable Guardrail
		Sheet Pile
	Pavement Removal	Clearing & Grubbing Area

- Proposed Right-of-Way Symbol
- Proposed Right-of-Way Line
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary) Symbol
- Easement (Temporary) Line
- Easement
- Access Control
- Property Line Symbol
- Property Line

(COVERS SHEET SERIES D, E, F, & K)



Survey Information

SURVEY INDEX

County: Harrison
PIN: 24-43-030-040
Project Number: BRF-03-1(211)—38-43
Location: Harrison County Bridge – US 30 over Youngs Ditch, 0.8 mi E of SR K-45
Type of Work: Bridge Replacement
Project Directory: 4303004024

Survey Personnel

Jerett Still– Survey Party Chief
TJ Coyle – Assistant Survey Party Chief

Date(s) of Survey

Begin Date 12/05/2024
End Date 05/07/2025

General Information

This survey is for Harrison County Bridge – US 30 over Youngs Ditch, 0.8 mi E of SR K-45. This survey request was for the Iowa DOT. This project is a Full Field DTM survey. This project is a Partial Field DTM with Photo control.

Utility Information

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

Project Control

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on primary project control points. Three five-minute observations were taken with a minimum two-hour time span between and used in a weighted average to obtain final coordinate values. Vertical for control was determined by leveling from BM1. For additional details of the control survey, contact the Preliminary Survey department.

VERTICAL DATUM: NAVD88
GEOID MODEL: 2018

Vertical Control

Vertical control was established by verifying two NGS monuments. Vertical datum for this survey is relative to NAVD88. Geoid 2018 was used in processing. The height was computed at GNS 43 58 & GNS RV 111. Vertical control was checked with IARTN checks.
This survey observed GNS 43 58 & GNS RV 111:
GNS 43 58 – survey disk set in prefabricated concrete post imbedded in ground flush
Elevation = 1004.40
GNS RV 111 – standard monel metal rivet set in top of the south ball wall of east abutment
Elevation = 1036.88

Horizontal Control

The project coordinate system for this survey is Iowa RCS zone 06 (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). Coordinates were determined conducting a 5-minute observation in the morning, afternoon, and evening. Coordinates were then averaged between the three to determine final coordinate.

Alignment Information

The horizontal alignment for Harrison Co. US 30 is a retrace of As-built Plans No. ERF-30(2). Survey stationing was equated to the plan PI at Sta. 207+68.00 and carried back and ahead with/without equation throughout the survey.

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 - GeoID Model: 2018

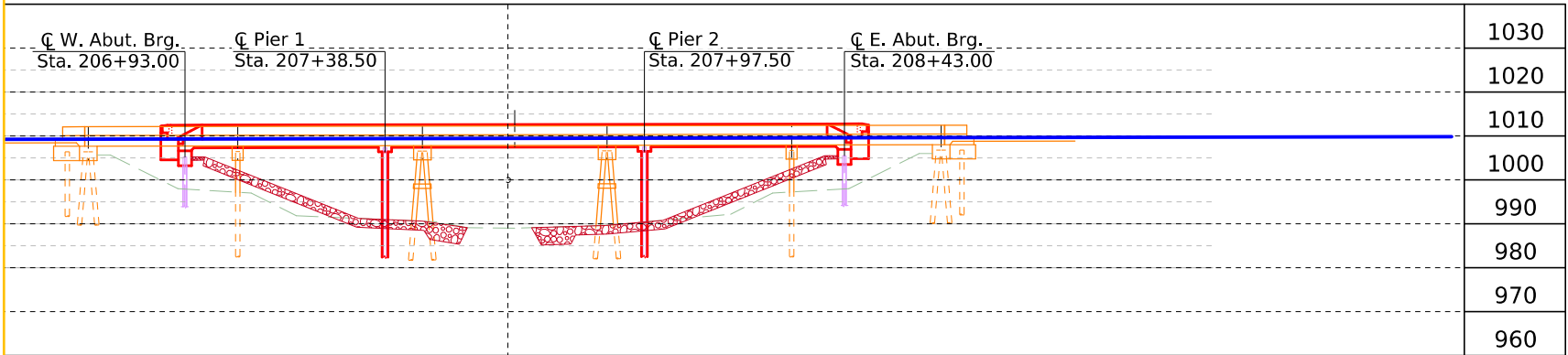
Coordinate listing from next sheet will be used with laRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING
HORIZ. DATUM: NAD83(2011) EPOCH 2010.00
IA. Regional Coordinate System Zone 06
VERT. DATUM: NAVD88
GEOID MODEL: 2018

Point Name	Northing	Easting	Elevation	Code - Description
CP-103	7074107.153	16422638.4	1003.63	CP103 3/4" rebar, .8' deep, 120.05' E of BRG, Sta. 209+71.99, 119.86' Rt. of CL
CP-104	7074270.826	16422937.16	1004.78	CP104 3/4" rebar, .8' deep, 380.56' E of BRG, Sta. 212+68.65, 47.59' Lt. of CL
CP-105	7074276.929	16422072.75	1001.54	CP105 3/4" rebar, .8' deep, 260.30' W of BRG, Sta. 204+04.23, 42.72' Lt. of CL
CP-106	7074071.129	16422194.63	999.08	CP106 3/4" rebar, .8' deep, 134.04' W of BRG, Sta. 205+28.71, 161.52' Rt. of CL

Field Exam Notes

- Preferred that Wing Armoring quantities not included in berm armoring table on TSL, but do include top of berm erosion stone.
- Add Designer Note to B01 Plans to recommend fully encased pile bent piers.
- Use updated Hydraulic Data Block cell listing channel low beam, as well as other updates.
- Bridge berm grading should tie-in to existing ground at grading limits. Small height bench or slightly sloped area under bridge should be considered to keep the channel on a more defined alignment and transition between up and downstream contours through the bridge.
- Removal of NW corner pipe and driveway/ditch is recommended but should be confirmed with Drainage District engineering reviewer.
- Add Ditch #58 to location block.



Longitudinal Section

Hydraulic Data shown is for 130' bridge from concept. This will be updated for 150' bridge in Preliminary Design.

0.216%
VPI Sta. = 206+02.583 VPI Elev. = 1009.787
VPI Sta. = 209+33.417 VPI Elev. = 1010.503

Proposed Profile
Grade US 30

Hydraulic Data

RIDB: Not Applicable
Drainage Area = 5.55 Sq. Mi.
Stream Slope (HGL) = 2.76 Ft./Mi.
Avg. Low Water Stage = ????

Q₅₀ = 2,356 cfs
Stage = 1003.4
Regulatory Low Beam = 1007.2
Avg. Bridge Velocity = 5.4 fps

Q₁₀₀ = 2,805 cfs
Stage = 1003.5
Operational Low Beam = 1007.2
Backwater = 0.5 Ft.
Avg. Bridge Velocity = 5.8 fps

Q₂₀₀ = 3,294 cfs
Stage = ????.?
Calculated Design Scour = ???.

Q₅₀₀ = 4,009 cfs
Stage = 1003.8
Avg. Bridge Velocity = 6.9 fps
Calculated Check Scour = ???.

Extreme HW Stage = ???.
Date = ????

Location

On US 30 over Youngs Ditch
T-78N R-45W
Section 16 & 21
Cincinnati Township
Harrison County
FHWA No. 27350
Bridge Maint. No. 4303.8S030
Latitude 41.551198°
Longitude -96.017066°

Traffic Estimate

2029 AADT	4,900	V.P.D.
2049 AADT	5,400	V.P.D.
2049 DHV	560	V.P.H.
Trucks	24	%

General Notes:

This design is for the replacement of the existing 194'-0" x 28'-0" CCS Bridge, Harrison Co. Design 952, FHWA No. 27350, Maint. No. 4303.8S030.

Design Notes:

TSS TL-4 bridge railing is proposed.

Plan Notes:

Top of bridge deck at centerline roadway is 0.03' below the profile grade to account for slab cross slope and parabolic crown.

Situation Plan



Utilities Note:

Utilities shown on this sheet are for information only. See Road Design sheets for utility information.

General Utility Symbols:

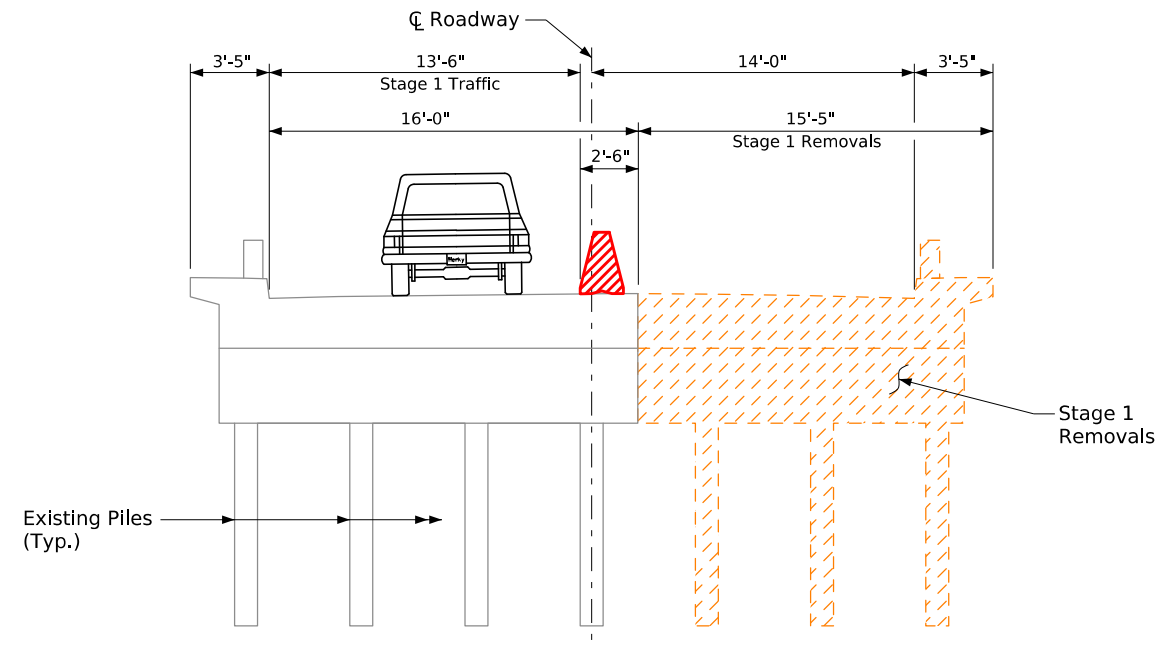
E1 - Electrical FO2 - Fiber Optic

Design For 0 degrees
150'-0" x 44'-0" Continuous
Concrete Slab Bridge
39'-6" End Spans 51'-0" Interior Span
Concept Situation Plan
STA. 207+68.00 (US 30) Turn-in Date: -

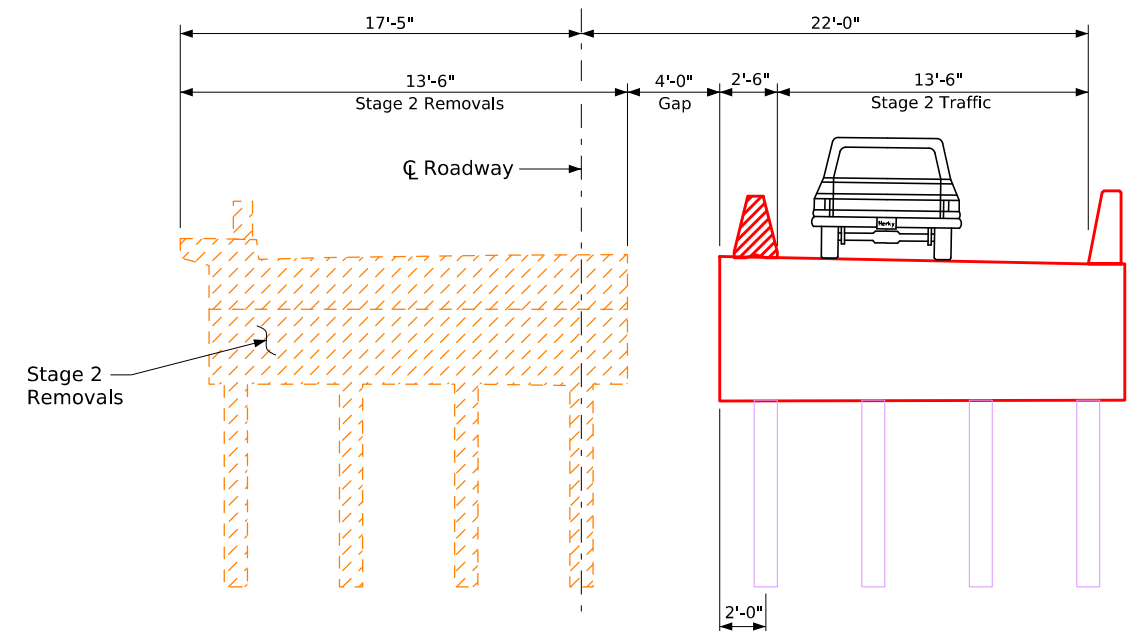
Harrison County

IOWA DEPARTMENT OF TRANSPORTATION

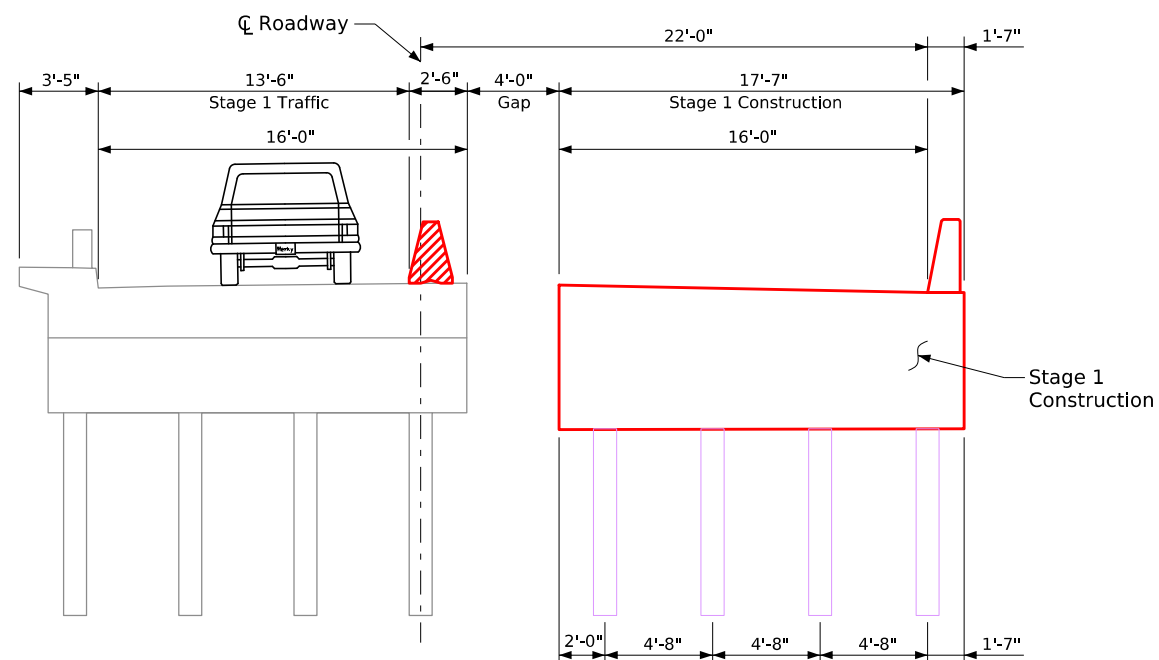
Design No. - Design Sheet No. 1 of 1 FHWA No. 27350



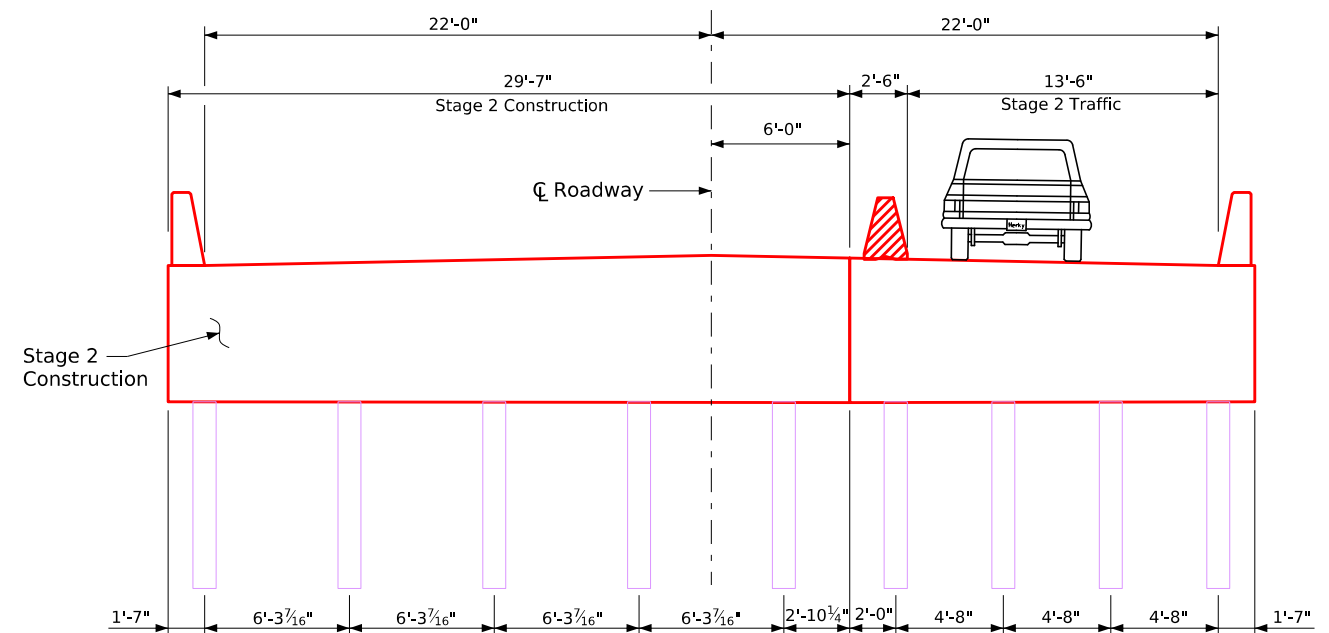
Stage 1 Removals



Stage 2 Removals



Stage 1 Construction



Stage 2 Construction

Field Exam Notes

- TBR should be pinned/anchored to the deck due to the limited width available.
- Fully-encased pier piles should be considered during final design.
- Add Designer Note to TSL to make sure forms from Stage 1 remain on for Stage 2 to limit deflection.

Bridge Staging Sheet