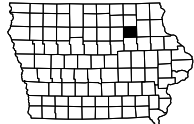


BREMER COUNTY

BRIDGE REPLACEMENT-CCS
BRF-093-1(030)--38-09

LETTING DATE
12-21-2027



INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
A.2	Location Map Sheet
A.3 - 10	Concept
A.11	Questions
B Sheets	Typical Cross Sections and Details
* B.1	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
G.4	Horizontal Control Tab. & Super for all Alignments
J Sheets	Traffic Control and Staging Sheets
J.1 - 2	Traffic Control Plan
U Sheets	500 Series, Mod.Stds. and Detail Sheets
* U.1	500 Series, Modified Standards and Detail Sheets
V Sheets	Bridge and Culvert Situation Plans
* V.1	Bridge and Culvert Situation Plans
W Sheets	Mainline Cross Sections
* W.1	Cross Section Legend
* W.2 - 5	Mainline Cross Sections
* Color Plan Sheets	



PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

BREMER COUNTY

BRIDGE REPLACEMENT-CCS

Stream 0.7 mi W of Co Rd V62 in Sumner

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



REVISIONS

TOTAL	
27	
PROJECT IDENTIFICATION NUMBER	
23-09-093-010	
PROJECT NUMBER	
BRF-093-1(030)--38-09	
R.O.W. PROJECT NUMBER	
STPN-093-1(031)--2J-09	
--	
--	

D05 - 10-17-2025
D04 - 08-04-2027

DESIGN DATA URBAN			
2028	AADT	4300	V.P.D.
2048	AADT	4600	V.P.D.
2048	DHV	480	V.P.H.
TRUCKS		4	%
Total			
Design ESALs		-	

INDEX OF SEALS			
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	X	Primary Signature Block	X
X	X	X	X

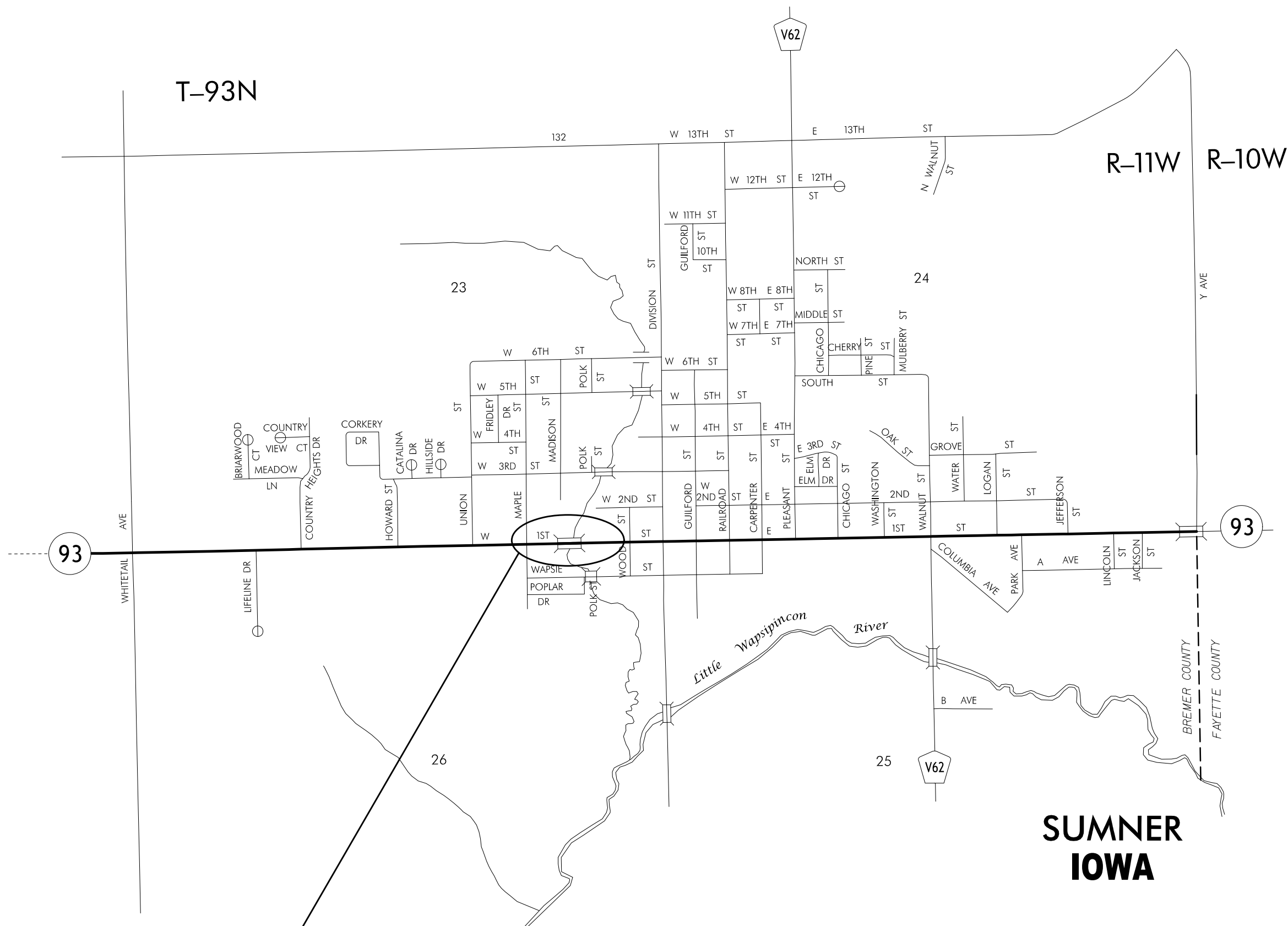
PRELIMINARY PLANS

Subject to change by final design.

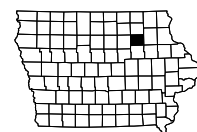
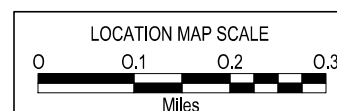
D2/D3 PLAN - Date: 07/02/2025

T-93N

R-11W R-10W



PROJECT LOCATION
Ref. Loc. 14.5
FHWA No. 015740



IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE:

District 2

DATE:

September 12, 2024

ATTENTION:

Nick Humpal

PROJECT:

Bremer County
BRF-093-1(030)--38-09
PIN: 23-09-093-010

FROM:

John E. Bartholomew

BUREAU:

Design

SUBJECT:

Project Concept Statement; (Final, D0)

This project involves the replacement of the IA 93 bridge (0914.5S093) over a stream.

A concept review was held on July 23, 2024. Those present included Dusten Rolando, Tyler Kubik and Ron Loecher from the District 2 Office; Jim Ellis and Matt Erickson from the Bridges and Structures Bureau; Jeff Bacon, Brock Struecker, Brandon Walls and Beth Kramer from the Location and Environment Bureau; and John Bartholomew and Joe Adams from the Design Bureau.

The three alternatives considered were:

1. Replace the existing 63’ x 48’ Continuous Steel I Beam Bridge with a 110’ x 48’ Continuous Concrete Slab Bridge (CCS). **Estimated cost \$1,834,700.**
2. Replace the existing 63’ x 48’ Continuous Steel I Beam Bridge with a Pretensioned Prestressed Concrete Beam Bridge (PPCB). This was dismissed due to a deeper superstructure and decreased freeboard.
3. Replace the existing 63’ x 48’ Continuous Steel I Beam Bridge with a Reinforced Concrete Box Culvert (RCB). This was dismissed due to increased water surface and backwater.

Alternative 1 is the preferred alternative due to increased freeboard and a reduced superstructure depth. Traffic will be maintained by an offsite detour.

The Draft Project Concept Statement was sent out for review and comment with concerns to be resolved by Monday, September 9, 2024. Comments received during the review period have been considered and resolved.

JEB:jaa
Attach.
cc:

FINAL PROJECT CONCEPT STATEMENT

IA 93 Bridge over a Stream 0.7 mi W of Co Rd V62 in Sumner

Bremer County
BRF-093-1(030)--38-09
PIN: 23-09-093-010
Maint. No. 0914.5S093
FHWA No. 15740

Highway Division
Design Bureau

John Bartholomew, P.E.
515-239-1540

September 12, 2024

I. STUDY AREA

A. Project Description

This project involves the replacement of the IA 93 bridge (Maint. No 0914.5S093) over a Stream 0.7 mi W of Co Rd V62 in Sumner.

The three alternatives considered were:

1. Replace the existing 63’ x 48’ Continuous Steel I Beam Bridge with a 110’ x 48’ Continuous Concrete Slab Bridge (CCS). **Estimated cost \$1,834,700.**
2. Replace the existing 63’ x 48’ Continuous Steel I Beam Bridge with a Pretensioned Prestressed Concrete Beam Bridge (PPCB). This was dismissed due to a deeper superstructure and decreased freeboard.
3. Replace the existing 63’ x 48’ Continuous Steel I Beam Bridge with a Reinforced Concrete Box Culvert (RCB). This was dismissed due to increased water surface and backwater.

Alternative 1 is the preferred alternative due to increased freeboard and a reduced superstructure depth.

B. Need for Project

This is a 63’ x 48’ steel beam bridge that was built in 1936 and reconstructed in 1959. An overlay was added in 2009 and is near the end of its useful life. The top of the deck has hollows, and the bottom of the deck has several cracks with leaching and spalls

with exposed steel. The abutments have several hollow areas and spalls with exposed steel and leaching cracks. The girders have pack rust. The bridge was designed for live loads below the current standards. Due to its condition, the bridge should be replaced.



With Route



Against Route



Profile Left



Profile Right

C. Present Facility

The existing structure is a 61'-6" x 48', Steel I Beam bridge constructed in 1936 and reconstructed in 1959, an overlay was added in 2009.

IA 93 in the project area is 45' wide HMA pavement with PCC curb and gutter with no foreslope grass medians with PCC sidewalks, constructed in 2009. HMA resurfacing was accomplished in 2020.

D. Traffic Estimates

The 2028 construction year and 2048 design year average daily traffic estimates are 4300 ADT with 4 % trucks and 4500 ADT with 4 % trucks, respectively.

E. Sufficiency Ratings

IA 93 is classified as an Access route and is a maintenance service level "C" roadway. The Bridge Condition Index is 54.0 and the Bridge Condition Rating is "Fair".

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2019 through December 31, 2023, there were no crashes.

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace with a bridge

The existing 63' x 48', Continuous Steel I beam bridge will be replaced with a 3 span, 110' x 48', Continuous Concrete Slab bridge.

The typical cross section adjacent to the bridge approach will consist of a 45' roadway with curb, no foreslopes and 5' sidewalks.

This bridge will be constructed on the existing vertical and horizontal alignment. New bridge approaches will be constructed. Class E revetment will be placed under the bridge for slope protection.

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

It appears that right of way will be required for this project.

Traffic will be maintained by an off-site detour.

Due to lower speed limits and the urban setting, tapered end sections will be used in lieu of guardrail.

Sidewalks will be removed and replaced to the ends of the bridge approach sections.

Bridge Items	Estimated Costs
New Bridge	\$ 973,000
Bridge Removal	37,500
Coffer dam	50,000
Revetment	40,000
Aesthetics – 3%	29,200
Mobilization - 10%	108,000
M & C - 20%	237,500
Bridge Costs	\$ 1,425,200
Roadway Items	
Clearing and Grubbing	\$5,400
Excavation Class 13 Waste	29,200
Modified Subbase	18,400
Bridge Approaches	167,100
Removal of Pavement	18,200
Removal of Sidewalk	3,600
Sidewalk, PCC 4”	13,100
Conc Barrier, Tapered end,BA-108	11,500
Erosion Control	50,000
Seeding and Fertilizing	1,000
Right of Way	10,000
Traffic Control - 5%	20,500
Mobilization - 5%	20,500
M & C - 10%	41,000
Roadway costs	\$ 409,500
Project Total	\$1,834,700

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 180 days. The detour would follow County road V56 south at the intersection of IA 93 and County road V56 to County Road C33, then east on County Road C33 to County Road V62, then north to the intersection of IA 93 and County road V62. Out of distance travel is 10.6 miles. The total distance user cost is anticipated to be \$1,661,391. The cost for county road maintenance will be \$76,731 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.

E. ADA Accommodations

There are sidewalks adjacent to IA 93; therefore, 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 24 is less than the first stage filter threshold of 50, therefore this bridge will not be considered further as a candidate for ABC construction.

Waterway is not on a state water trail or paddling route.

Right of Way appears to be required for this project.

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

G. Program Status

Site data has been developed by the Design Bureau. This project is listed in the 2024-2028 Iowa Transportation Improvement Program, with \$10,000 programmed for right of way in FY 2028, and \$1,870,000 for replacement in FY 2028. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

Bremer County
BRF-093-1(030)--38-09
PIN: 23-09-093-010
Page 6

JEB:jaa

C. Purcell
M. Dell
M. A. Swenson
S. Majors
D. L. Newell
W. A. Sorenson
A. A. Welch
B. Hofer
T. Jerman
P. Leanos
M. Todsen
M. Solberg
C. Brakke
B. Walls
P. Hjelmstad
K. Billhorn
A. Johnson

M. J. Kennerly
J. S. Nelson
D. E. Sprengeler
A. Poole
B. Bradley
E. C. Wright
J. Harris
G. Karssen
S. Anderson
K. K. Patel
B. Dolan
T. Gustafson
A. Buss
R. Gelhaus
M. Kelly
B. Struecker
FHWA

K. D. Nicholson
M. Nop
C. C. Poole
K. Brink
J. W. Laaser-Webb
M. E. Ross
M. Van Dyke
B. E. Azeltine
D. Stokes
R. Harris
T. Lovan
A. Swisher
D. Zeimen
J. Bacon
D. Erickson
R. Loecher

BREMER COUNTY

PROJECT LOC
MILEPOST 14.5



On IA 93, Stream 0.7 mi W of Co Rd V62 in Sumner
BRF-093-1(030)--38-09
PIN: 23-09-093-010



Bridge Bureau Attachment for Concept Statement

Date: July, 2024
By: Matt Erickson
Location: IA 93 over unnamed stream, 0.7 mi. W of Jct. SR V62

County: Bremer
Project Code: 23-09-093-010
Phase Number: BRF-093-1(030)--38-09
Project Directory: 0909301023

1. Regulatory/Coordination
 - a. Iowa DNR Flood Plain permit = Yes
 - b. Iowa DNR Sovereign Lands permit = No
 - c. Local Record of Coordination = No
 - d. Flood Insurance Study = Yes, non-detailed, Zone A, panel 19017C0226E, effective 01-29-2021
 - e. Drainage District = No
 - 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 = No
 - j. USGS or Iowa Flood Center (IFC) gage or sensor impacted? No
2. Hydrologic/Hydraulic Analysis/RIDB Dataset
 - a. Design discharges determined = Yes, 2013-5086 SRRE
 - b. Hydraulic analysis done = Partial,1D HEC-RAS with Lidar. Update / verify with survey.
 - c. If DA > 10 sq. mi. Riverine Infrastructure Database (RIDB) dataset is required with B1 submittal = No.
 - i. Location: LittleWapsipiniconR_Buch_Trib35_0.63
3. Structure/Roadway Layout Considerations
 - a. Roadway profile grade raise not feasible due to highly developed area.
 - b. Sight distance for the barrier rail will need to be checked by Design Bureau.
4. Special construction issues
 - a. Known utility conflicts
 - i. Sanitary sewer
 - ii. Water main
 - iii. Manholes
5. Special survey = Yes
6. Aesthetic enhancements = Yes
7. Other
 - a. Maintenance of Traffic - Off site detour

Special Survey:

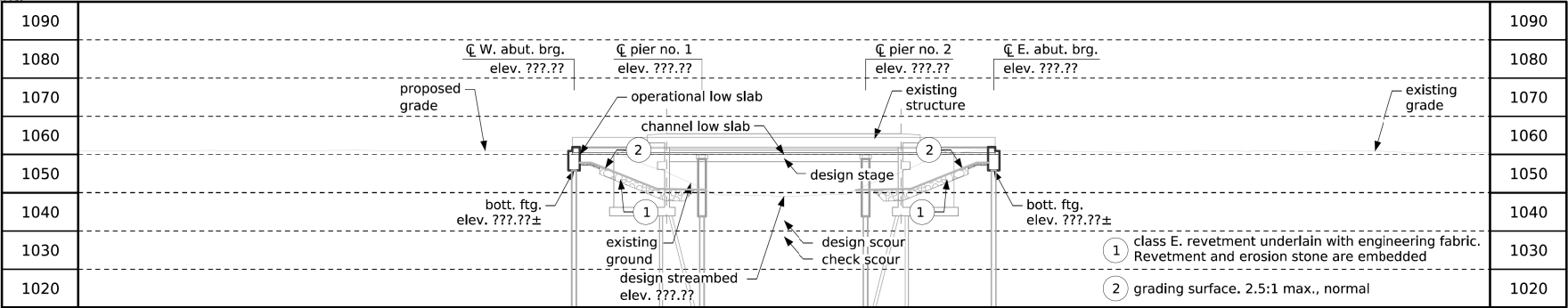
For correlating LiDAR to project survey, 3-5 shots approximately 20 feet apart along the flat pavement surface within a lane on IA 93 near the bridge (FHWA 15740) replacement.

Flowline elevations, wall locations, top of roadway, and low structure elevations for the downstream Wapsie Street RCB (FHWA 502241).

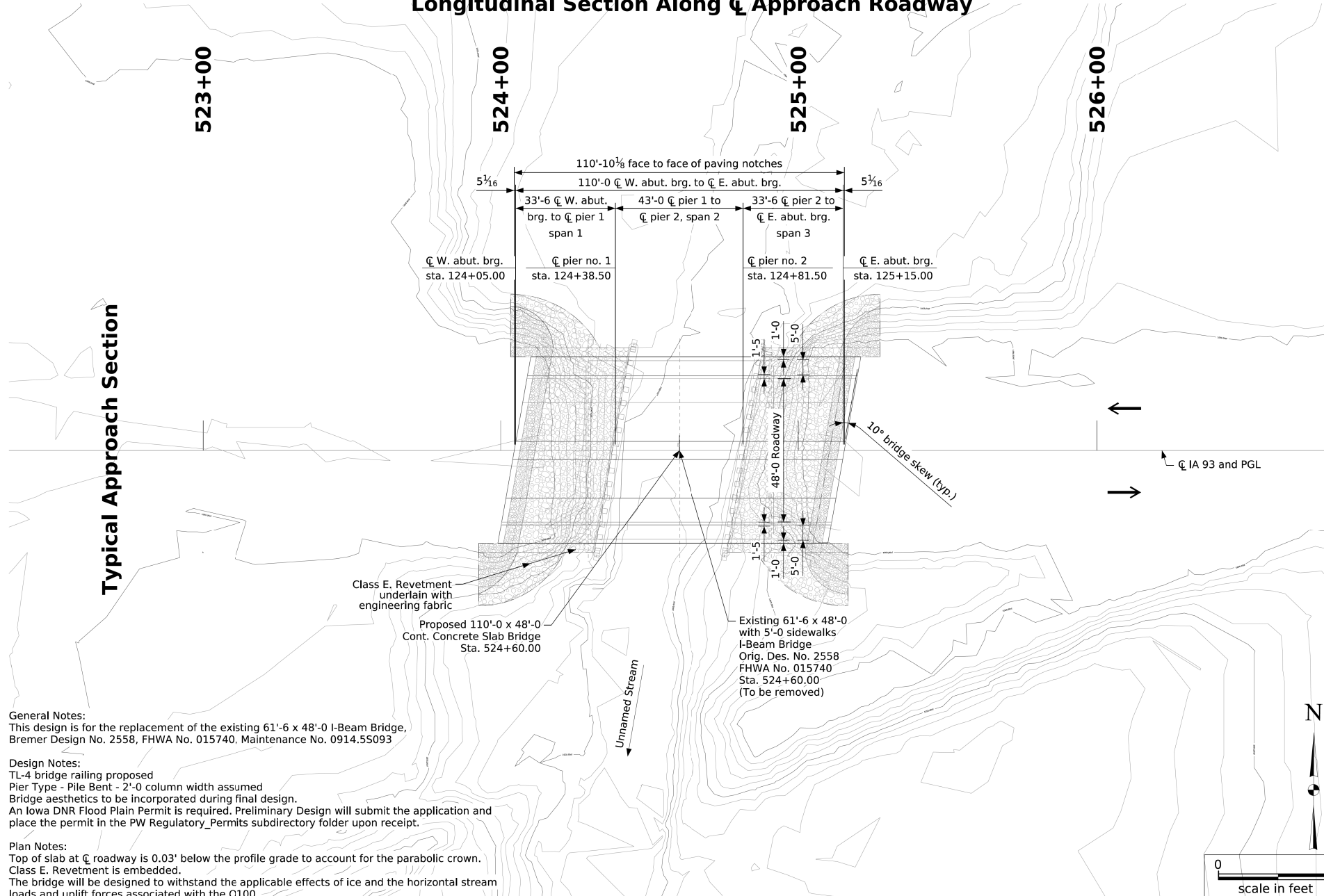
Low beam elevations, abutment and pier locations, low roadway elevations of upstream W. 3rd street and W. 5th street bridges. (FHWA 11190 and FHWA 11200).

Lowest ground floor elevations for structures in the floodplain (see attached map).

Control Point:



Longitudinal Section Along ☐ Approach Roadway



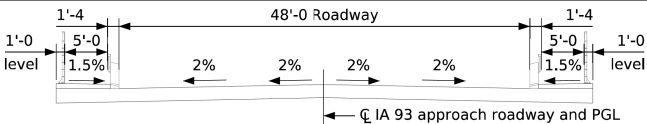
Typical Approach Section

General Notes:
This design is for the replacement of the existing 61'-6 x 48'-0 I-Beam Bridge, Bremer Design No. 2558, FHWA No. 015740, Maintenance No. 0914.5S093

Design Notes:
TL-4 bridge railing proposed
Pier Type - Pile Bent - 2'-0 column width assumed
Bridge aesthetics to be incorporated during final design.
An Iowa DNR Flood Plain Permit is required. Preliminary Design will submit the application and place the permit in the PW Regulatory_Permits subdirectory folder upon receipt.

Plan Notes:
Top of slab at ☐ roadway is 0.03' below the profile grade to account for the parabolic crown.
Class E. Revetment is embedded.
The bridge will be designed to withstand the applicable effects of ice and the horizontal stream loads and uplift forces associated with the Q100.

Situation Plan



Typical Bridge Section

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

General Utility Symbols:

- E - Electric Line
- G - Gas Line
- SAN. - Sanitary Sewer
- T - Telephone Line
- W - Water Line
- FO - Fiber Optic Line
- GHP - Gas High Pressure
- ST S - Storm Sewer
- TV - TV
- - Power Poles

Hydraulic Data

RIDB: LittleWapsipiniconR_Buch_Trib35_0.63
Drainage Area = 5.3 Sq. Mi.
Stream Slope (HGL) = ??? ft./Mi.
Avg. Low Water Stage = ???.

Operational low slab = 1059.0
Channel low slab = 1059.0

Q₂₅ = 1,380 cfs
Stage = 1056.7

Q₅₀ = 2,620 cfs
Stage = 1057.6
Operational Freeboard = 1.4 ft.
Avg. Bridge Velocity = 4.1 fps

Q₁₀₀ = 3,220 cfs (design)
Stage = 1058.3
Operational Freeboard = 0.7 ft.
Backwater = 0.57 ft.
Avg. Bridge Velocity = 4.5 fps

Q₂₀₀ = 3,830 cfs
Stage = 1059.1
Calculated Design Scour = ???.

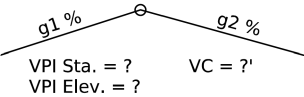
Q Overlap = ??? cfs
Avg. Bridge Velocity = ??? fps
Calculated Check Scour = ???.

Q₅₀₀ = 4,660 cfs
Channel Freeboard = ?? ft.

Roadway Overlap ???.
Sta. ???+??

Location

IA 93 over unnamed stream
In City of Sumner
T-93N R-11W
Sections 23 and 26
Sumner Township
Bremer County
FHWA No. 015740 (exist.)
FHWA No. 0157xx (prop.)
Bridge Maint. No. 0914.5S093
Latitude 42.847451° (SIA)
Longitude -92.104989° (SIA)



Proposed Profile
Grade IA 93

Traffic Estimate

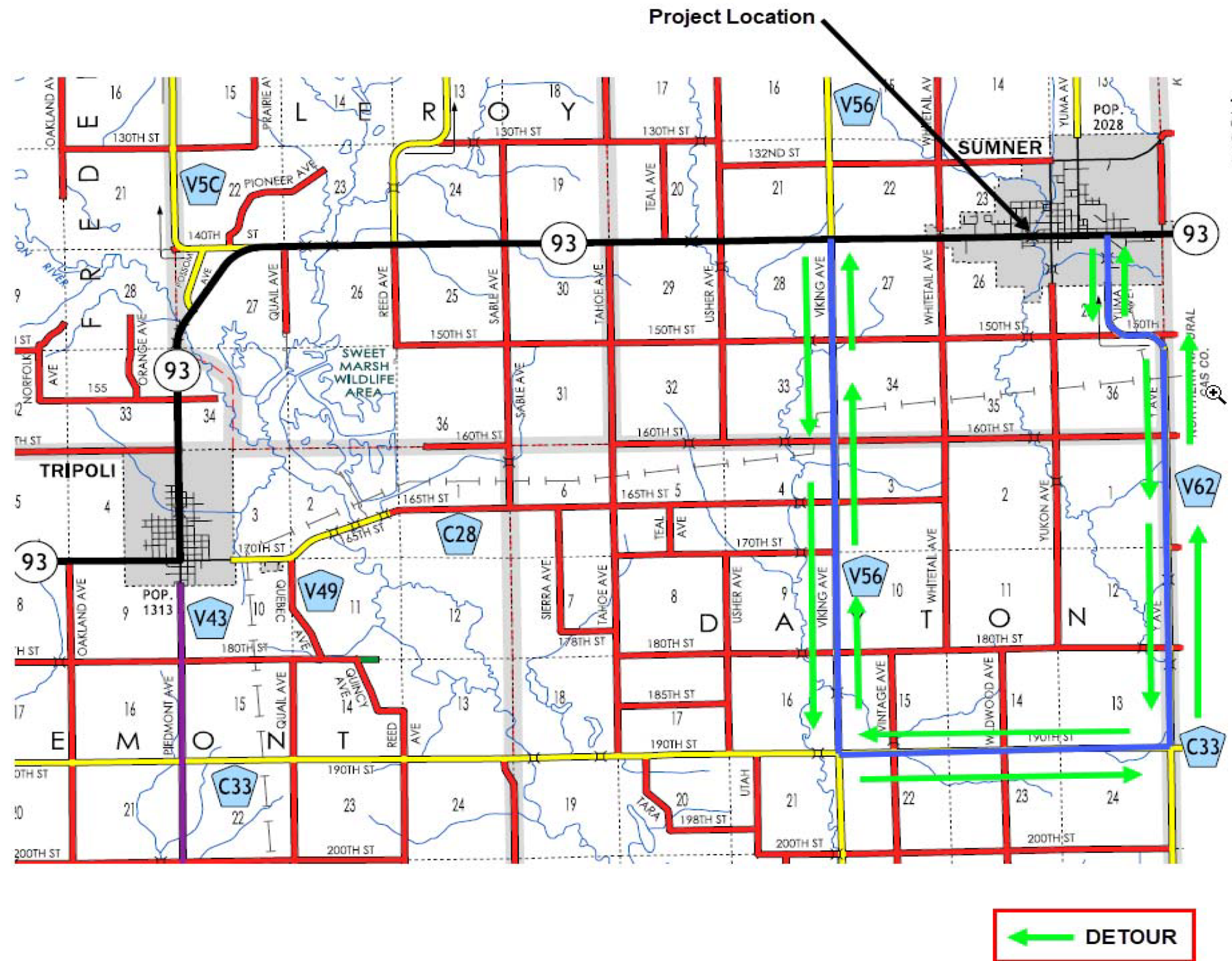
20?? AADT	???	V.P.D.
20?? AADT	???	V.P.D.
20?? DHV	???	V.P.H.
TRUCKS	??	%
Total	???	
Design ESALS	???	

Design For 10° skew left ahead
**110'-0 x 48'-0 Continuous Concrete
Slab Bridge with 5'-0 Sidewalks**
33'-6 End Spans 43'-0 Interior Span

Situation Plan - Concept

Sta. 524+60 (☐ IA 93)
Bremer County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 0228 Design Sheet No. 1 of 1 FHWA No. 0157xx
TSL Date: July 2024

FILE NO. 32610	ENGLISH	DESIGN TEAM mje	BREMER COUNTY	PROJECT NUMBER BRF-093-1(030)--38-09	SHEET NUMBER V.1
12:34:32 PM	7/12/2024	mericks	pw:\NTPwint1.dot.int.lan:PWMain\Documents\Projects\0909301023\Bridge Replacement - CCS\SHT_09093030_DOT_0228_FHWA_Z05.dgn		



Bremer County

Stream 0.7 mi West of Co Rd V62 in Sumner

BRF-093-1(030)--38-09

PIN: 23-09-093-010

9

Utilities

Community Digital Wireless LLC
Clinton Watts
manager@readlyntelco.com
319.961.8362

Black Hills Energy Decorah
Brian McWilliams
Brian.mcwilliams@blackhillscorp.com
563.927.1017

Sumner Municipal Light Plant
Gary Bock
GARY@SUMNERLP.COM
563.578.5611

MEDIACOM
Jason Chicken
jchicken@mediacomcc.com
845.867.0932

(WINIA) Windstream Communications
LOCATE DESK
LOCATE.DESK@WINDSTREAM.COM
800.289.1901

Questions

**1. What is the preferred jointing layout for the bridge approaches? (Existing joints @ centerline, 12' from centerline)
(Existing roadway is a 3-way roadway converted from a 4-way roadway.)**

Move forward with current layout.

2. Currently the bridge approaches are designed using BR-211. The bridge on this project is a Slab Bridge, should we use BR-205 instead?

Move forward with BR-211. Final bridge designer may choose to switch approach type.

3. The barriers on the bridge look to be pedestrian barriers instead of standard barriers. Does bridge plan on designing a rolldown for final design?

Bridge will design rolldown for final design.

4. The existing sidewalk in the Northwest quadrant of the bridge looks to be built outside of existing ROW.

Curbed Shoulder

Shoulder Jointing:
Longitudinal joint not required when distance from back of
curb to nearest joint is less than 15':

Single pour: L-2
Staged : BT-2
Transverse: C at 17' spacing

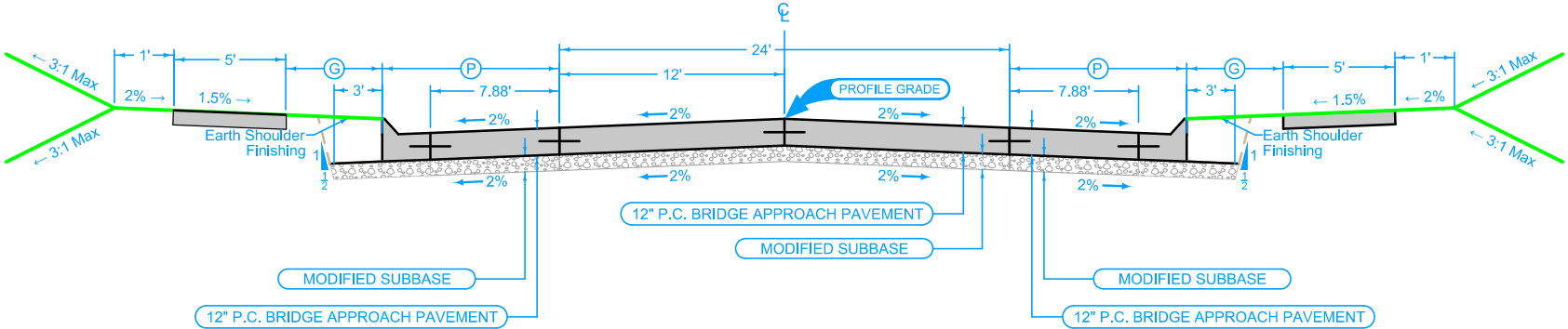
2_Curb_ Modified			
STATION TO STATION		G Feet	Curb Type See PV-102
523+33.58	523+55.01	4.7	6" STA
523+55.01	523+73.58	4.7-0	6" STA
525+44.42	525+75.08	0-3.7	6" STA
525+75.08	525+84.42	3.7	6" STA

Curbed Shoulder

Shoulder Jointing:
Longitudinal joint not required when distance from back of
curb to nearest joint is less than 15':

Single pour: L-2
Staged : BT-2
Transverse: C at 17' spacing

2_Curb_ Modified			
STATION TO STATION		G Feet	Curb Type See PV-102
523+33.58	523+55.01	4.7	6" STA
523+55.01	523+73.58	4.7-0	6" STA
525+44.42	525+72.75	0-6.0	6" STA
525+72.75	525+84.42	6.0	6" STA



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

Full Depth PCC Bridge Approach

Shoulder Jointing:
Longitudinal joint: BT-2, or L-2
Transverse joints: C at 17' spacing

2_P_FullPCC_ Modified		
STATION TO STATION		P Feet
523+33.58	523+45.25	10.5
523+45.25	523+73.58	10.5-13.3
523+73.58	524+08.05	13.3
525+18.88	525+44.22	13.3
525+44.22	525+72.77	13.3-10.5
525+72.77	525+84.42	10.5

2P_ 04-21-20	
STATION TO STATION	
523+33.58	524+06.74
525+11.24	525+84.22

Full Depth PCC Bridge Approach

Shoulder Jointing:
Longitudinal joint: BT-2, or L-2
Transverse joints: C at 17' spacing

2_P_FullPCC_ Modified		
STATION TO STATION		P Feet
523+33.58	523+45.25	10.5
523+45.25	523+73.58	10.5-13.3
523+73.58	523+99.12	13.3
525+09.95	525+44.22	13.3
525+44.22	525+72.77	13.3-10.5
525+72.77	525+84.42	10.5

SURVEY SYMBOLS

	AST, Above Ground Storage Tank
	BB, Billboard
	BBB, Bottom of Bridge Beam
	BCL, Bridge Centerline
	BD, Bridge Deck
	BIN, Grain Bin
	BL, Topo Breakline
	BLD, Building or Foundation
	BLS, Bridge Low Steel
	BM, Bench Mark
	BNK, Stream Bank
	BRG, Bridge
	C, Centerline BL of Road -ML or SR
	CAV, Cave
	CEL, Cell Phone Tower
	CIS, Cistern
	CON, Concrete or A/C Slab
	CP, Control Point
	CRP, Corporation Line
	CS, Curve Point
	CU, Back of Curb
	CUL, Culvert
	D, Centerline Draw or Stream -Down
	DAB, Drainage Area Boundary
	DIK, Centerline of Dike or Dam
	DTM, Photogrammetry Elv Control Check
	DU, Centerline Draw or Stream -Up
	EB, Electrical Box
	EG, Edge of Gravel Road
	ENP, Edge Paved Entrance and Park Lot
	ENT, Centerline BL of Entrance
	ENU, Edge Unpaved Entrance and Parking
	EP, Edge of Paved Roads -ML or SR
	EW, Edge of Water
	FCL, Chain Link and Security Fence
	FENO, FENO Monument
	FHD, Fire Hydrants
	FLG, Flag Poles
	FP, Filler Pipe
	FW, Wire Fence
	FWD, Wood Fence
	GDC, Guard Rail Cable
	GDL, Guard Rail Steel
	GP, Guard Post -Less Than 4 Posts
	GPR, Guard Post -4 or More Posts
	GR, Ground Shot
	GRV, Grave
	GU, Gutter In Front of Curb
	GV, Gas Valve
	HDG, Hedge Row
	HS, Hydric Soil -Wetlands
	HT, Electrical Highline Tower
	IN, Storm Sewer Intake
	INB, Storm Sewer Beehive Intake
	LC, Lot Corner
	LIN, Miscellaneous Line
	LP, L.P. Tank
	LUM, Luminaire
	MH, Utility Access -Manhole
	MIS, Miscellaneous
	MM, Mile Marker Post
	OUT, Tile Outlet
	PC, Curve Point
	PCP, Photo Control Point
	PCT, Photo Control Target
	PI, Tangent Point
	PIP, Pipe Culvert
	PL, Location of Photo -Wetlands
	PLG, Location of General Photo
	POC, Curve Point
	POST, Spiral Point

	PR, Electric Riser Pole
	PRO, Profile Shot
	PT, Curve Point
	REF, Reference Tie Point
	RET, Retaining Walls
	RIP, Rip-Rap
	ROC, Rock Outcropping
	ROW, Right of Way Mark
	RR, Centerline of Railroad Tracks
	RRB, Railroad Signal Box
	RRF, Railroad Frog
	RRR, Railroad Rail
	RRS, Railroad Signal
	RRW, Railroad Switch
	RT, Radio Tower
	S, Soil Sampling Site -Wetlands
	SBR, Size of Bridge
	SC, Spiral Point
	SCR, Section Corner
	SEP, Septic Tank
	SF, Silt Fence -Wetlands
	SG, Staff Gauge -Wetlands
	SH, Paved Shoulder
	SHR, Shrub
	SI, Sign
	SL, Speed Limit Sign
	SLN, Section Line
	SLO, Silo
	SNK, Sink Hole
	SNP, Unpaved Shoulder
	SP, Stream Profile
	STP, Stump
	SWK, Sidewalk
	SWP, Swamp or Marsh
	TA, Tower Anchor
	TBO, Telephone Booth
	TCB, Traffic Signal Box
	TDC, Tree Deciduous
	TDL, Traffic Detection Loop
	TER, Terrace
	TEV, Evergreen Tree
	TFR, Tree Fruit
	TGP, Telegraph Pole
	TIL, Tile Line
	TLNL, Tree Line Left
	TLNR, Tree Line Right
	TOP, Top of Bridge Pier
	TPA, Telephone Pole Co. 1
	TPB, Telephone Pole Co. 2
	TPC, Telephone Pole Co. 3
	TR, Telephone Riser Pole
	TRL, Trail
	TS, Spiral Point
	TSB, Telephone Switch Box
	TSG, Traffic Signal
	TSL, Traffic Signal and Luminaire
	TV, Satellite TV Dish
	TVP, TV Pedestal
	TW, Top of Water
	UB, Utility Box
	UE, Utility Elevation
	UPH, Utility Pot Hole - Quality A
	UST, Underground Tank
	UV, Underground Utility Vault
	VS, Channel Cross Section
	WC, Wild Card -Misc. Field Shot
	WEL, Well
	WHD, Water Hydrant
	WHU, RV Water Hook Up
	WM, Wind Mill
	WND, Wind Turbine
	WV, Water Valve

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

	F01D, Fiber Optic Windstream - Quality D Dan Hogan (563) 920 2428 Dan.Hogan@windstream.com
	TL1D, Telephone Line Windstream - Quality D Dan Hogan (563) 920 2428 Dan.Hogan@windstream.com
	Steve Kness (319) 538 1985 stephen.kness@windstream.com
	F02D, Fiber Optic Community Digital Network - Quality D Matt Leisinger (319) 509 1106 mleisinger@cdwwireless.com
	Sharon Huck (319) 961 8362 readlyn@netins.net
	GL1D, Gas Line Black Hills Energy - Quality D
	SA1D, Sanitary Sewer City of Sumner- Quality D
	ST1D, Storm Sewer City of Sumner - Quality D
	TV1D, TV Cable Mediacom - Quality D
	WL1D, Water Line City of Sumner - Quality D
	PPA, Power Pole Windstream

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.		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%

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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	

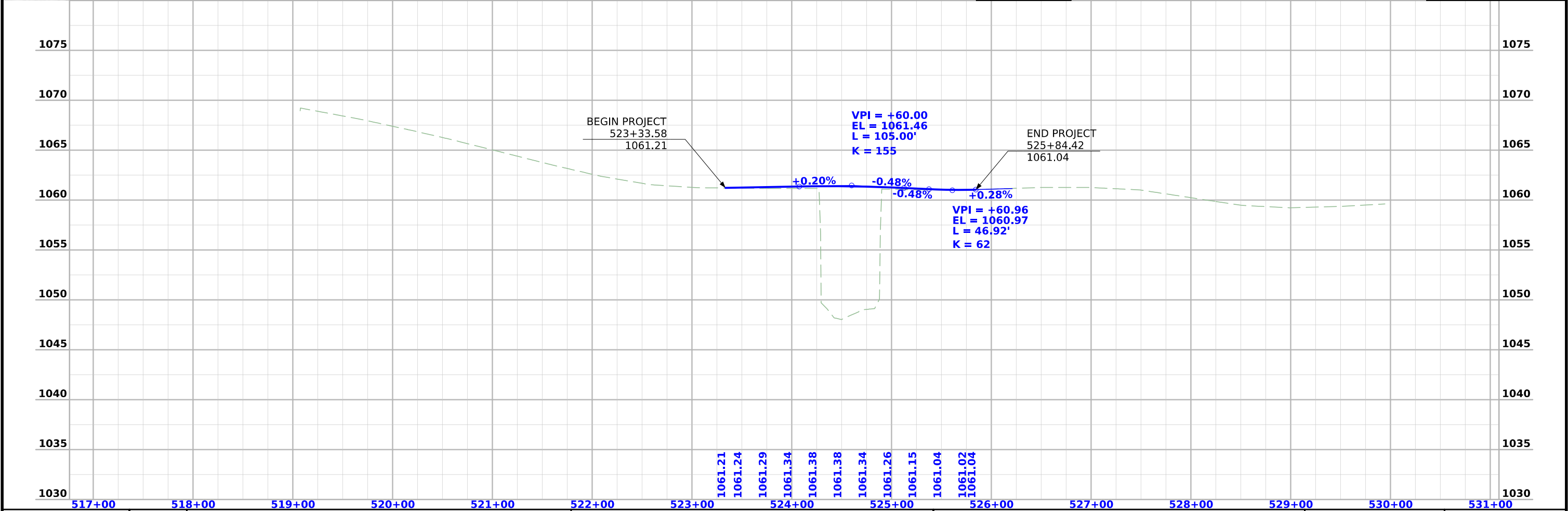
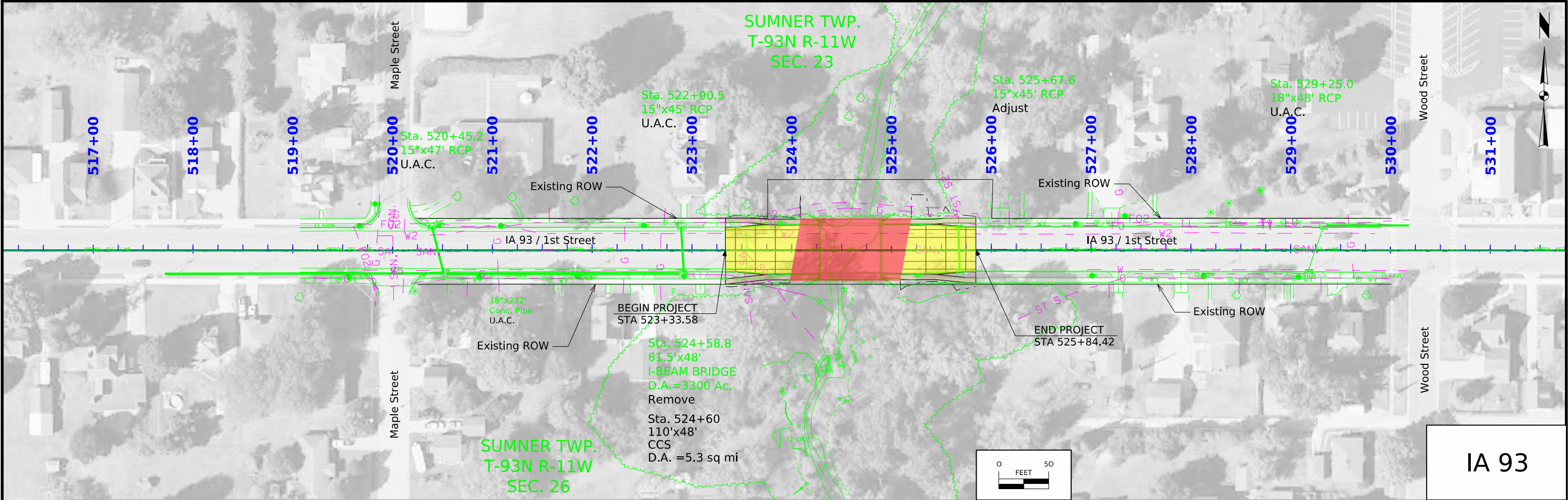
	Reference Point	
	Station	Survey Line
	Section Corner	
	Ground Line Intercept	
	Saw Cut	
	Guardrail	
	Trench Drain	
	HighTension Cable Guardrail	
	Sheet Pile	
	Pavement Removal	
	Clearing & Grubbing Area	

RIGHT-OF-WAY LEGEND

	Proposed Right-of-Way 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
	C/A Access Control
	Property Line Symbol
	Property Line

PLAN AND PROFILE
LEGEND AND SYMBOL
INFORMATION SHEET

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



Survey Information

SURVEY INDEX

County: Bremer
Project Code: 23-09-093-010
Phase Number: BRF-093-1(030)--38-09
Location: Stream 0.7 mi W of Co Rd V62 in Sumner
Type of Work: Bridge-Unspecified
Project Directory: 0909301023

Survey Personnel

John Hahn – Survey Party Chief

Date(s) of Survey

Begin Date 10/21/2024
End Date 03/10/2025

General Information

This survey is for IA Highway 93 bridge replacement .7 miles west of County Road V62 in the town of Sumner. This project is a Full Field DTM survey.

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

Coordinates were determined for primary project control points by conducting concurrent six-hour static observations. Post processing is constrained to nearby Iowa Real Time Network reference stations. For additional details of the control survey, contact the Preliminary Survey department.

PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 5
(U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u3

Alignment Information

The horizontal alignment for Iowa. Hwy 93 this survey was provided by IDOT District 2 ROW 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) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 5 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u3

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) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 5 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u3

Point Name	Northing	Easting	Elevation	Code/Description
29	8976948.29	15545120.23	1081.17	CP FND BREMER CO GPS CONTROL POINT AS DESCRIBED IN GOOD CONDITION
CPE	8971953.35	15540876.59	1061.05	CP SET FENO MONUMENT
CPS	8971598.97	15539050.28	1055.36	CP SET FENO MONUMENT
CPW	8971936.18	15535626.49	1084.35	CP SET FENO MONUMENT
J38	8966691.27	15548226.77	1071.71	CP FND NGS THIRD ORDER BENCH MARK J 38 RESET AS DESCRIBED IN GOOD CONDITION

101_16 10/25/24																				
ALIGNMENT COORDINATES																				
Line No.	Name	Location	Point on Tangent Station	Point on Tangent Y Northing	Point on Tangent X Easting	Begin Spiral Station	Begin Spiral Y Northing	Begin Spiral X Easting	Begin Curve Station	Begin Curve Y Northing	Begin Curve X Easting	Simple Curve PI or Master PI Station	Simple Curve PI or Master PI Y Northing	Simple Curve PI or Master PI X Easting	End Curve Station	End Curve Y Northing	End Curve X Easting	End Spiral Station	End Spiral Y Northing	End Spiral X Easting
1.0		SURMLA093	507+15.81	8971981.82	15537182.12															
2.0		SURMLA093	527+27.60	8971997.62	15539193.85															
3.0		SURMLA093	533+64.31	8971999.73	15539830.55															

108_23A
8/15/22

TRAFFIC CONTROL PLAN

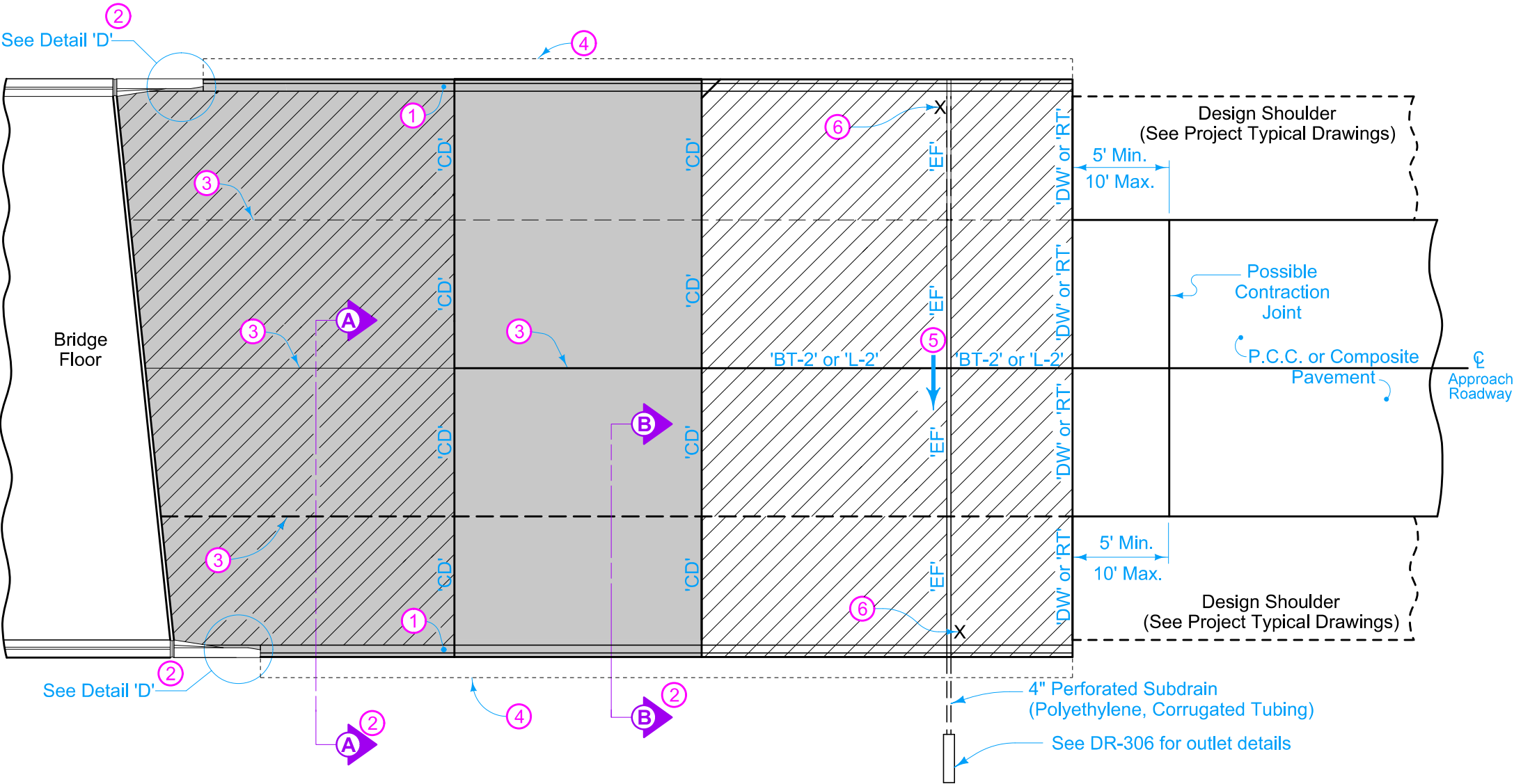
IA 93 will be closed to traffic.

511 TRAVEL RESTRICTIONS

Line No.	Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No. or Structure ID or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
1.0	IA 93	Both	Bremer	IA 93 Detour Route	Stream	Bridge	197	Weight	80,000 Lbs				56,000 Lbs for Straight Truck

For joint details, see PV-101.

- 1 Build 4 inch Sloped Curb to end of Double Reinforced Section. Refer to PV-102 for curb and runout details.
- 2 See BR-201, BR-202, BR-203, or BR-204.
- 3 Longitudinal Joint (PV-101):
Single Pour - Saw cut joint per Detail B .
Two Pours - Use 'BT-2' joint
- 4 Polymer Grid and excavation limits of Modified Subbase 2 feet outside of pavement edge. See BR-201, BR-202, BR-203, or BR-204.
- 5 Slope subdrain to drain.
- 6 Place an "X" in the plastic concrete near the 'EF' joint at the outside edge of pavement.



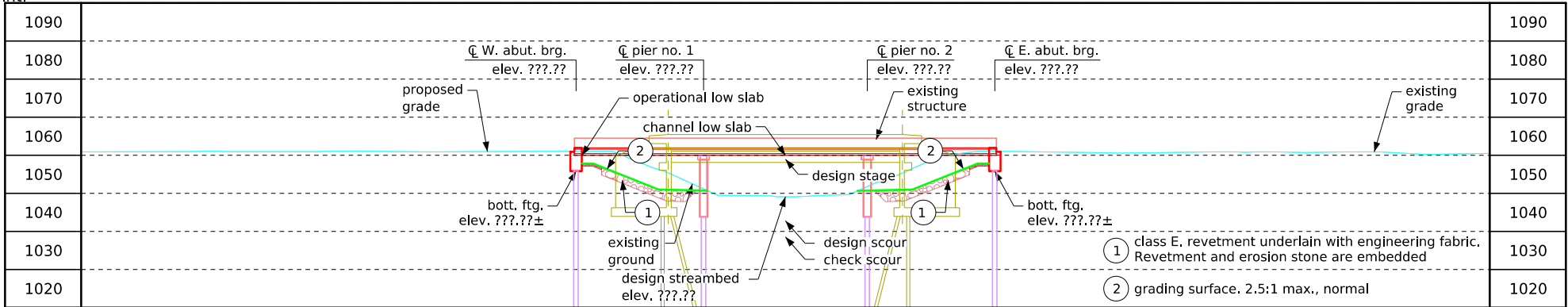
PLAN VIEW

Pay limits for contract item include the following areas:

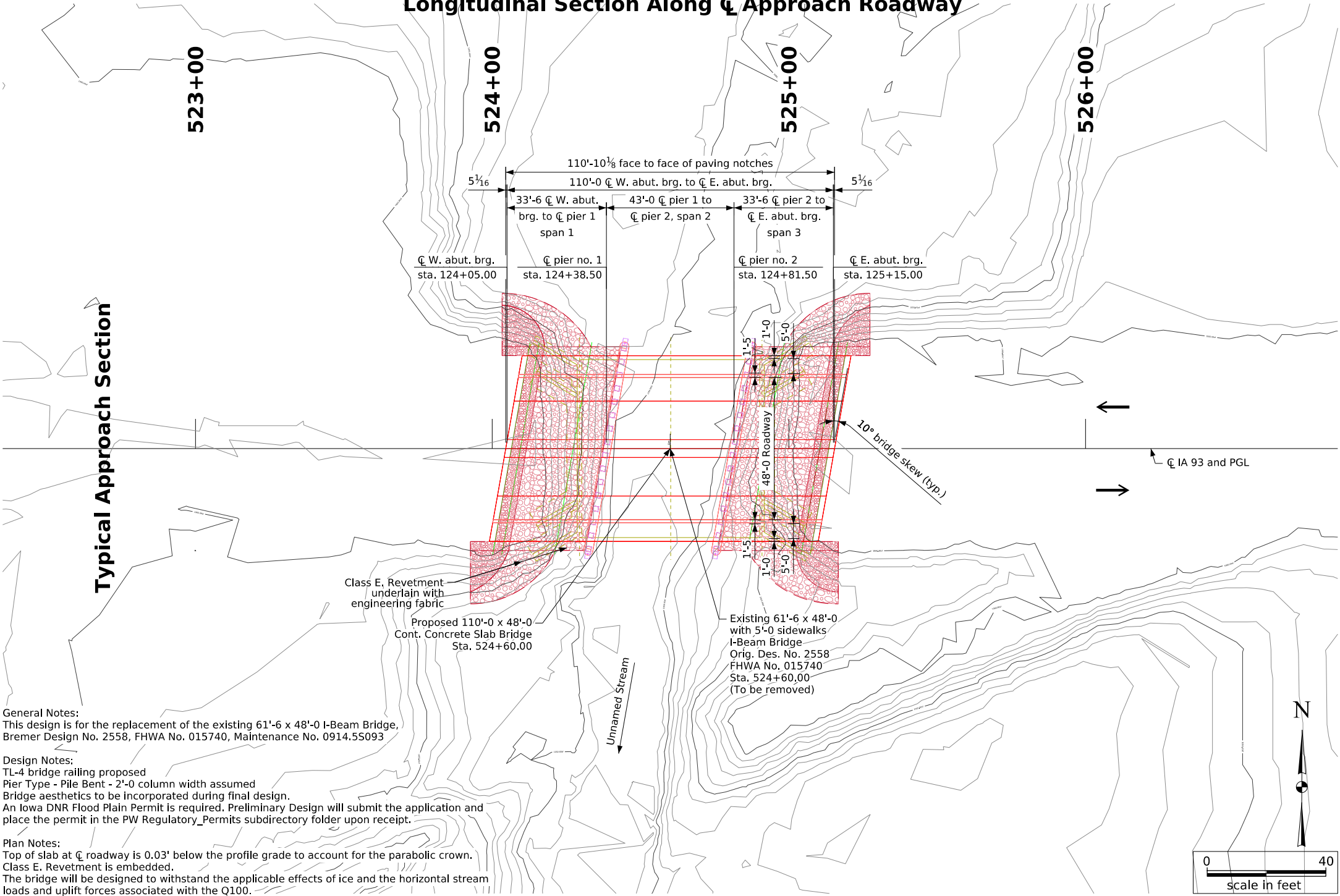
- Double Reinforced Section
- Single Reinforced Section
- Non-Reinforced Section

MODIFIED STANDARD ROAD PLAN	REVISION	
	4	MODIFIED
BR-211		
SHEET 1 of 1		
MODIFICATIONS: Extended Curb to the End of Non Reinforced Section		
APPROVED BY DESIGN METHODS ENGINEER		
BRIDGE APPROACH (ABUTTING PCC OR COMPOSITE PAVEMENT)		

Control Point:



Longitudinal Section Along Approach Roadway

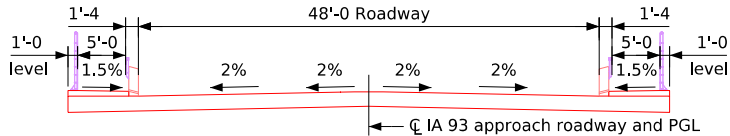


General Notes:
This design is for the replacement of the existing 61'-6 x 48'-0 I-Beam Bridge, Bremer Design No. 2558, FHWA No. 015740, Maintenance No. 0914.55093

Design Notes:
TL-4 bridge railing proposed
Pier Type - Pile Bent - 2'-0 column width assumed
Bridge aesthetics to be incorporated during final design.
An Iowa DNR Flood Plain Permit is required. Preliminary Design will submit the application and place the permit in the PW Regulatory_Permits subdirectory folder upon receipt.

Plan Notes:
Top of slab at approach roadway is 0.03' below the profile grade to account for the parabolic crown.
Class E, Revetment is embedded.
The bridge will be designed to withstand the applicable effects of ice and the horizontal stream loads and uplift forces associated with the Q100.

Situation Plan



Typical Bridge Section

Utilities Note:

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

General Utility Symbols:

- | | |
|-----------------------|-------------------------|
| E - Electric Line | FO - Fiber Optic Line |
| G - Gas Line | GHP - Gas High Pressure |
| SAN. - Sanitary Sewer | ST S - Storm Sewer |
| T - Telephone Line | TV - TV |
| W - Water Line | ● - Power Poles |

Hydraulic Data

RIDB: LittleWapsipiniconR_Buch_Trib35_0.63
Drainage Area = 5.3 Sq. Mi.
Stream Slope (HGL) = ??? ft./Mi.
Avg. Low Water Stage = ???.

Operational low slab = 1059.0
Channel low slab = 1059.0

Q₂₅ = 1,380 cfs
Stage = 1056.7

Q₅₀ = 2,620 cfs
Stage = 1057.6
Operational Freeboard = 1.4 ft.
Avg. Bridge Velocity = 4.1 fps

Q₁₀₀ = 3,220 cfs (design)
Stage = 1058.3
Operational Freeboard = 0.7 ft.
Backwater = 0.57 ft.
Avg. Bridge Velocity = 4.5 fps

Q₂₀₀ = 3,830 cfs
Stage = 1059.1
Calculated Design Scour = ???.

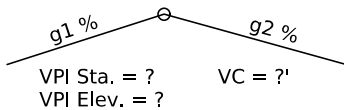
Q Overtop = ??? cfs
Avg. Bridge Velocity = ?? fps
Calculated Check Scour = ???.

Q₅₀₀ = 4,660 cfs
Channel Freeboard = ?? ft.

Roadway Overtop ???.
Sta. ???+??

Location

IA 93 over unnamed stream
In City of Sumner
T-93N R-11W
Sections 23 and 26
Sumner Township
Bremer County
FHWA No. 015740 (exist.)
FHWA No. 0157xx (prop.)
Bridge Maint. No. 0914.55093
Latitude 42.847451° (SIA)
Longitude -92.104989° (SIA)



Proposed Profile Grade IA 93

Traffic Estimate

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

Preliminary - Concept

Design For 10° skew left ahead

110'-0 x 48'-0 Continuous Concrete Slab Bridge with 5'-0 Sidewalks

33'-6 End Spans 43'-0 Interior Span

Situation Plan - Concept

Sta. 524+60 (Approach Roadway)

Bremer County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0228 Design Sheet No. 1 of 1 FHWA No. 0157xx

TSL Date: July 2024

CROSS SECTION VIEW COLOR LEGEND			
Design Color No.	Feature	Design Color No.	Feature
Aggregate		Grading	
(64)	Choke Stone	(8)	Behind Curb Cut
(42)	Engineering Fabric	(6)	Granular
(8)	Flooded Backfill	(13)	Granular Back Fill
(92)	Macadam Stone	(48)	Rock Undercut
(20)	Modified	(8)	Shoulder Earth Fill
(12)	Plowing Shaping	(2)	Side Slopes
(14)	Porous Backfill	(226)	Side Slopes Dressing
(8)	Revetment Class A	Substrata	
(6)	Revetment Class B	(128)	Boulder
(62)	Revetment Class C	(209)	Boulder Removed
(188)	Revetment Class D	(48)	Broken Weathered
(28)	Revetment Class E	(210)	Broken Weathered Removed
(12)	Shoulder Special Backfill	(3)	Core Out
(12)	Special Backfill	(115)	Core Out Remove Only
(20)	Subbase	(195)	Core Out Remove and Replace
(20)	Subbase Lower	(203)	Existing Pavement
(20)	Subbase Upper	(184)	Existing Pavement Remove Only
(118)	Subgrade Treatment	(200)	Existing Pavement Remove and Replace
Asphalt		(6)	Loam
(207)	HMA Base Course	(211)	Loam Removed
(207)	HMA Interim Course	(80)	Rock
(207)	HMA Surface Course	(212)	Rock Removed
Bridge		(4)	Select Sand
(0)	Bridge	(214)	Select Sand Removed
Concrete		(3)	Shale
(0)	Barrier Concrete	(215)	Shale Removed
(0)	Barrier Concrete Footing	(10)	Topsoil
(0)	Curb Gutter	(2)	Topsoil Remove Only
(48)	Flowable Mortar	(4)	Topsoil Remove and Replace
(0)	Median Concrete	Unsuitable / Waste	
(0)	PCC Pavement	(3)	Unsuitable Type A
(0)	Sidewalk	(216)	Unsuitable Type A Removed
Existing		(13)	Unsuitable Type B
(0)	Existing Pavement	(217)	Unsuitable Type B Removed
Shoulder		(11)	Unsuitable Type C
(209)	Shoulder HMA	(218)	Unsuitable Type C Removed
(0)	Shoulder PCC	(3)	Waste
(6)	Shoulder Granular	(219)	Waste Removed
Structural			
(112)	Noise Wall		
(112)	Noise Wall Footing		
(112)	Retaining Wall Back		
(112)	Retaining Wall Back Excavate		
(112)	Retaining Wall Face		
(112)	Retaining Wall Front Excavate		
(112)	Retaining Wall Front Footing		
(112)	Retaining Wall MSE Gutter		
(112)	Retaining Wall Reinforced Earth		

NOTES:

Text

NOTES:

Text

CROSS SECTIONS
LEGEND AND INFORMATION SHEET

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

