

### SECTION 404 PERMIT AND CONDITIONS

Construct this project according to the requirements of U.S. Army Corps of Engineers Nationwide Permit No. 14. A Copy of this permit is available from the Iowa DOT website at (<http://envpermits.iowadot.gov/CMEPortalENV/Home.aspx>). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

### UTILITY CONTACTS

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East Buchanan Telephone Coop  
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# IOWA DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION PLANS OF PROPOSED IMPROVEMENTS ON THE FARM-TO-MARKET SYSTEM FAYETTE COUNTY BRIDGE REPLACEMENT - CCS

Refer to the Proposal Form for list of applicable Specifications.

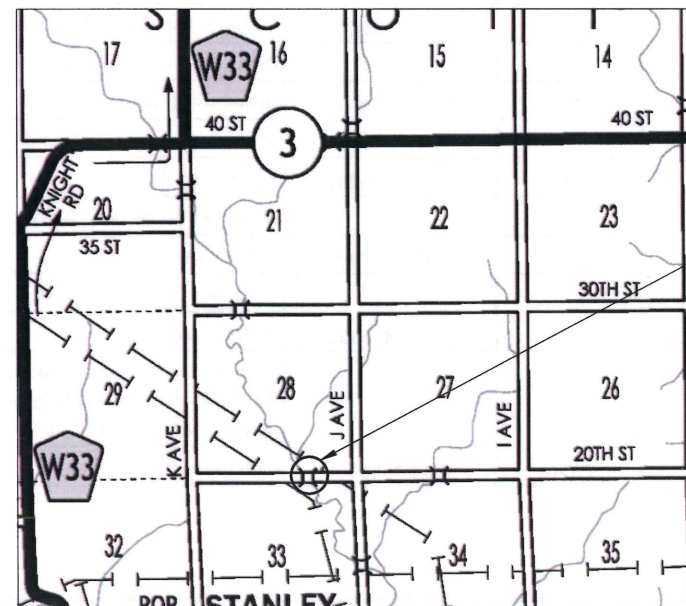
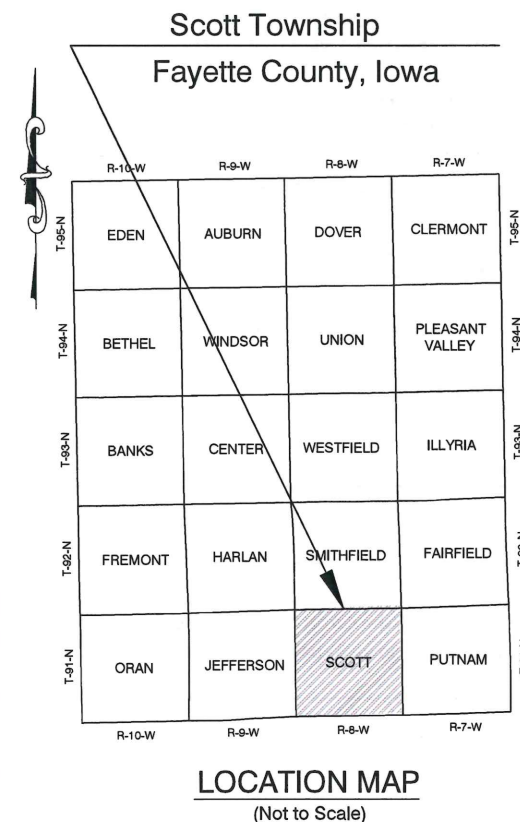
See Sheet C.2 for applicable Standard Plans.

Scales: As Noted

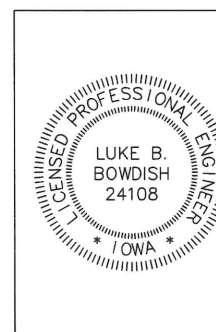
HDP-CO33(177)--6B-33

70' x 30'-6" CCS Bridge  
15° Skew Rt. Ahead

On 20TH ST, Over E BUFFALO CREEK  
S33 T91N R08W



STA. 37+10.00  
PROPOSED 70'x30'-6" CCS BRIDGE  
15° SKEW, RT. AHEAD  
FHWA NO. 149570



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

LUKE B. BOWDISH Lic. No. 24108

Date

My license renewal date is December 31, 2026

Pages or sheets covered by this seal:

ALL - SEE INDEX OF SHEETS

Project Number: HDP-CO33(177)--6B-33

### INDEX OF SHEETS

(7 Sheets)

No.	Description
A.1	Title Sheet, Location Map and Mileage Summary
C.1-C.2	Estimated Project Quantities and Estimate Reference Notes
D.1	Plan and Profile
Q.1	Soil Borings
V.1	Bridge Plan and Hydraulic Data
V.2	Slab Elevation Sheet

### MILEAGE SUMMARY

Div.	Location	Lin. Feet	Miles
1	Station 34+00.00 to 40+00.00	600.00	0.114
	TOTAL	600.00	0.114

Approved by the Fayette County Board of Supervisors

*Alex Popukhina*  
*[Signature]*  
*[Signature]*

101-4 DESIGN DATA RURAL		
2022 AADT	25	VPD
2044 AADT	30	VPD
Trucks		%

ESTIMATED QUANTITIES					
70'-0 x 30'-6 CCS					
Item No.	Item Code	Item	Unit	Total	As Built Qty
0010	2401-6745625	Removal of Existing Bridge	LS	1	
0020	2402-2720000	Excavation, Class 20	CY	100	
0030	2403-0100010	Structural Concrete (Bridge)	CY	154.9	
0040	2404-7775005	Reinforcing Steel, Epoxy Coated	LB	40,881	
0050	2414-6424124	Concrete Open Railing, TL-4	LF	162.2	
0060	2501-0201042	Piles, Steel, HP 10x42	LF	1,280	
0070	2501-5478042	Concrete Encasement of Steel H-Piles, HP 10x42 (P10L Type 3)	LF	182	
0080	2507-3250005	Engineering Fabric	SY	144	
0090	2507-6800061	Revetment, Class E	TON	160	
0100	2528-2518000	Safety Closures	EACH	4	
0110	2528-8445110	Traffic Control	LS	1	
0120	2533-4980005	Mobilization	LS	1	

GENERAL NOTES

1. Abutment excavation to specified elevations shall be performed to dimensions and elevations shown prior to installation of abutment piles.
2. Test boring data shown on the plans were accumulated for design and estimating purposes only. Their appearance on the plan does not constitute a guarantee that conditions other than those indicated will not be encountered.
3. This project uses the Load and Resistance Factor Design (LRFD) methodology for determining pile contract length and nominal axial bearing resistance. Nominal axial bearing resistances will be larger than bearing values in the past, but construction control blow counts will be approximately the same. Fayette County will manage construction control with the Iowa DOT ENR formula that gives the relationship between required nominal axial bearing resistance and blow count.
4. It is the Contractor's responsibility to provide waste areas or disposal sites for material(s) which are not desirable for incorporation in the project. Contractor provided waste areas or disposal sites shall not impact wetlands or "Waters of the United States". No payment for overhaul will be allowed for material(s) hauled to these sites. No material(s) will be placed within the Right-of-Way unless specifically stated on the plans or approved by the Engineer. Final cleanup of the construction area shall be in accordance with Section 1104.08 of IDOT Standard Specifications.
5. The Contractor shall use caution when working over and around tile lines. Breaks in a tile due to Contractor's carelessness will be replaced at the Contractor's expense. Any tile line disturbed or broken due to cuts will be replaced as directed by the Engineer and paid as extra work.
6. Contractor is to use due caution when working around ROW pins and survey control points which are marked with an oak hub and crossing lathe. Any pins disturbed by the Contractor will be replaced at the Contractor's expense.
7. Fayette County will perform all earthwork (except class 20), seeding and mulching, granular surfacing, erosion control, and construction staking for use by Contractor.
8. The Contractor shall confine all work to within the ROW as shown on the project plans. If the Contractor obtains permission from property owners for storage of equipment and/or materials on private property, copies of written agreements with the property owners will be provided to the Engineer for approval.
9. The Contractor will use caution when working over, under, or around existing utilities. It is the Contractor's responsibility to coordinate all utility relocation work with the respective utility companies in order to avoid unnecessary delays to the project.

ESTIMATED REFERENCE INFORMATION		
Item No.	Item Code	Description
0010	2401-6745625	Removal of Existing Bridge
		Removal included in the contract consists of removing the existing 2-span 62'x20' precast channel beam bridge with timber pier and abutment piling encased in concrete. Contractor is responsible for disposal of demolition materials. Broken concrete from existing bridge meeting Specification 4310.02.C may be used as Class E Revetment. There was no suspect asbestos or lead detected on this structure.
0020	2402-2720000	Excavation, Class 20
		Excess materials to be wasted on site. No payment for overhaul or fuel adjustments shall be made on this project.
0030	2403-0100010	Structural Concrete (Bridge)
		All concrete shall consist of a Class "C" mix. The Contractor shall provide certified plant inspection.
0040	2404-7775005	Reinforcing Steel, Epoxy Coated
0050	2414-6424124	Concrete Open Railing, TL-4
		The Contractor shall provide certified plant inspection.
0060	2501-0201042	Piles, Steel, HP 10x42
		The Contract length of 45 feet for the West abutment piles is based on a cohesive soil classification, a total factored axial load per pile (pu) of 76 kips, and a geotechnical resistance factor (phi) of 0.6 for soil. The required nominal axial bearing resistance for the West abutment piles is 69 tons at end of drive or retap. The pile contract length shall be driven as per plan unless piles reach refusal. Construction control requires a modified Iowa DOT ENR formula. The Contract length of 55 feet for the West pier piles is based on a cohesive soil classification, a total factored axial load per pile (pu) of 90 kips, and a geotechnical resistance factor (phi) of 0.6 for soil. The required nominal axial bearing resistance for the North abutment piles is 82 tons at end of drive or retap. The pile contract length shall be driven as per plan unless piles reach refusal. Construction control requires a modified Iowa DOT ENR formula. The Contract length of 60 feet for the East pier piles is based on a cohesive soil classification, a total factored axial load per pile (pu) of 90 kips, and a geotechnical resistance factor (phi) of 0.6 for soil. The required nominal axial bearing resistance for the South abutment piles is 82 tons at end of drive or retap. The pile contract length shall be driven as per plan unless piles reach refusal. Construction control requires a modified Iowa DOT ENR formula or Wave Equation. The Contract length of 50 feet for the East abutment piles is based on a mixed soil classification, a total factored axial load per pile (pu) of 76 kips, and a geotechnical resistance factor (phi) of 0.6 for soil. The required axial bearing resistance for the East abutment piles is 69 tons at end of drive or retap. The pile contract length shall be driven as per plan unless piles reach refusal. Construction control requires a modified Iowa DOT ENR formula or Wave Equation. See sheet V.1 for details.
0070	2501-5478042	Concrete Encasement of Steel H-Piles, HP 10x42 (P10L Type 3)
		The Contractor shall provide certified plant inspection. See Sheet V.1 for details.
0080	2507-3250005	Engineering Fabric
		See Sheet V.1 for details and sheet C.2 for tabulation.
0090	2507-6800061	Revetment, Class E
		See sheet V.1 for details and sheet C.2 for tabulation. Quantity estimated at 120 pcf.
0100	2528-2518000	Safety Closure
		See sheet C.2 for tabulation.
0110	2528-8445110	Traffic Control
		All traffic control devices shall be in accordance with the current Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways as adopted by the Iowa Department of Transportation per 761 of the Iowa Administrative Code (IAC), Chapter 130.
0120	2533-4980005	Mobilization

SUMMARY OF FOUNDATIONS					
Location	Substructure Type	Foundation Type	Number	Length (LF)	Total (LF)
West Abutment	Integral Abutment	HP 10x42	5	45	225
West Pier	Pile Bent	HP 10x42	7	55	385
East Pier	Pile Bent	HP 10x42	7	60	420
East Abutment	Integral Abutment	HP 10x42	5	50	250
				Total	1280

SUMMARY OF REINFORCING STEEL	
Location	Reinforcing Steel (LB)
Bridge Deck, Monolithic Pier Caps, Abutment Wings, Open Railing	37,723.00
West Abutment Footing	1,579.00
East Abutment Footing	1,579.00
Total (LBS)	40,881.00

SUMMARY OF CONCRETE QUANTITIES	
Location	Structural Concrete (CY)
West Abutment Footing	11.5
East Abutment Footing	11.5
Bridge Deck, Monolithic Pier Caps, Abutment Wings (4 @ 0.68 Each)	131.9
Total (CY)	154.9

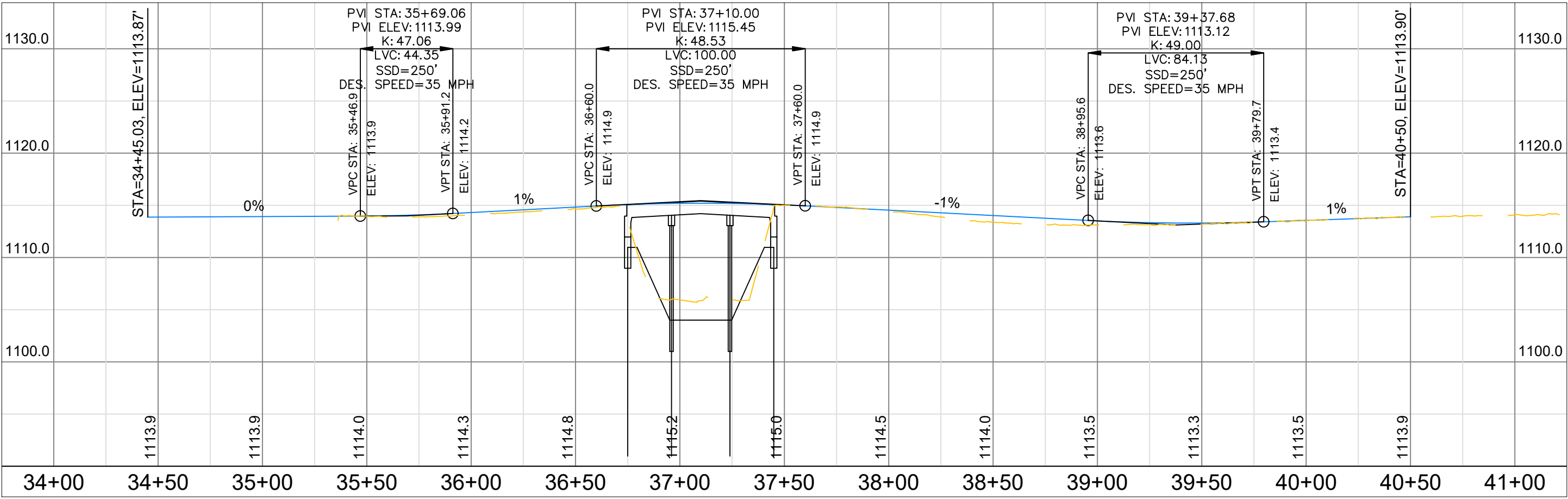
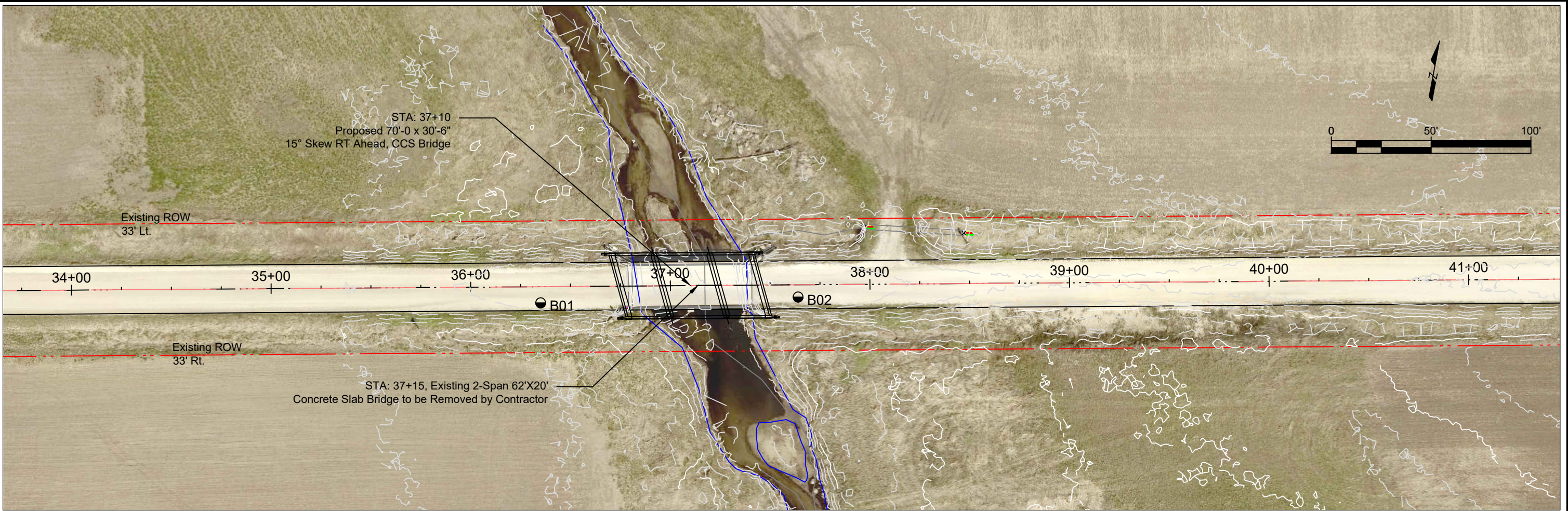
SUMMARY OF REVETMENT QUANTITIES		
Revetment Type - Location	Revetment Class E (TON)	Engineering Fabric (SY)
Berm Lining - West Abutment	80	72
Berm Lining - East Abutment	80	72
Total	160	144

IOWA DEPT. OF TRANSPORTATION BRIDGE STANDARDS						
(May be obtained at the Iowa Department of Transportation Electronic Reference Library)						
Standard	Date Issued	Latest Revision		Standard	Date Issued	Latest Revision
J30-01-06	November 2006	September 2020		J30-35-06	November 2006	September 2020
J30-01A-06	November 2006	September 2020		J30-39-06	November 2006	September 2020
J30-02E-06	November 2006	September 2020		J30-43-06	November 2006	September 2020
J30-03E-06	November 2006	September 2020		J30-44-06	November 2006	September 2020
J30-20-06	November 2006	September 2020		J30-45-06	November 2006	September 2020
J30-21-06	November 2006	September 2020		J30-48-06	December, 2008	September 2020
J30-23-06	November 2006	September 2020		P10L		June 2025
J30-24-06	November 2006	September 2020				

STANDARD ROAD PLANS		
The following Standard Road Plans apply to construction work on this project.		
Number	Date	Title
TC-252	10-21-25	Routes Closed to Traffic

SAFETY CLOSURES			
Station	Closure Type		Remarks
	Road Qty.	Hazard Qty.	
1+00	1		West End
35+00		1	West End of Bridge
38+00		1	East End of Bridge
52+00	1		East End
TOTALS	2	2	Locations to be Field Verified







LOG OF BORING

CHOSEN VALLEY TESTING



PROJECT: 24832D.25.IAM Design Phase Geotechnical Evaluation Proposed 20th Street Bridge Replacement 20th Street over East Branch Buffalo Creek Scott Township, Fayette County, Iowa				BORING: <b>B-01</b>		
				LOCATION: See attached sketch		
				DATE: 3/6/2025	SCALE: 1" = 11'	
Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
98.6	0.0					
97.9	0.7	CL	<b>8" AGGREGATE BASE</b>			Benchmark: The southeast wing wall. Assigned elevation of 100.0 feet.
			<b>SANDY LEAN CLAY</b> trace of gravel, black, wet, rather stiff.	11		PP = 3.0 tsf
92.1	6.5		(Fill)	10		PP = 2.5 tsf, MC = 18.2%
		SP	(IADOT: Firm Silty Clay)	7	▽	Water encountered at about 8 feet during drilling.
			<b>POORLY-GRADED SAND with SANDY LEAN CLAY</b> mostly medium grained, black, moist to waterbearing, loose.	9		PP = 1.5 tsf, MC = 25.1%
87.1	11.5	CL	(Alluvium)	6		PP = 1.0 tsf, MC = 25.0%
			(IADOT: Clayey Sand)	10		
			<b>LEAN CLAY</b> trace of sand, trace of iron staining to about 14 feet, dark grey to black, wet, medium to rather stiff.	9		PP = 2.0 tsf, MC = 19.6%
76.6	22.0	SC	(Alluvium)			
		CL	(IADOT: Firm Silty Clay)	8		
72.6	26.0	CL	<b>CLAYEY SAND to SANDY LEAN CLAY</b> mostly medium grained, dark grey, moist, loose. (Glacial Till)			
			(IADOT: Firm Glacial Clay)	20		PP > 4.5 tsf, MC = 11.3%
			<b>SANDY LEAN CLAY</b> trace of gravel, brown to grey to dark grey, wet, very stiff to hard. (Glacial Till)	21		PP = 1.0 tsf
			(IADOT: Very Firm Sandy Glacial Clay)	25		PP > 4.5 tsf, MC = 12.0%
				27		PP = 2.75 tsf
				22		PP > 4.5 tsf, MC = 11.7%
				42		PP > 4.5 tsf
				42		PP > 4.5 tsf, MC = 14.9%
				45		PP > 4.5 tsf
				40		PP > 4.5 tsf, MC = 13.8%
				43		PP > 4.5 tsf
17.6	81.0			44		PP > 4.5 tsf, MC = 15.0%
			End of boring. Boring sealed upon completion.			

24832D.25.IAM

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LOG OF BORING

CHOSEN VALLEY TESTING

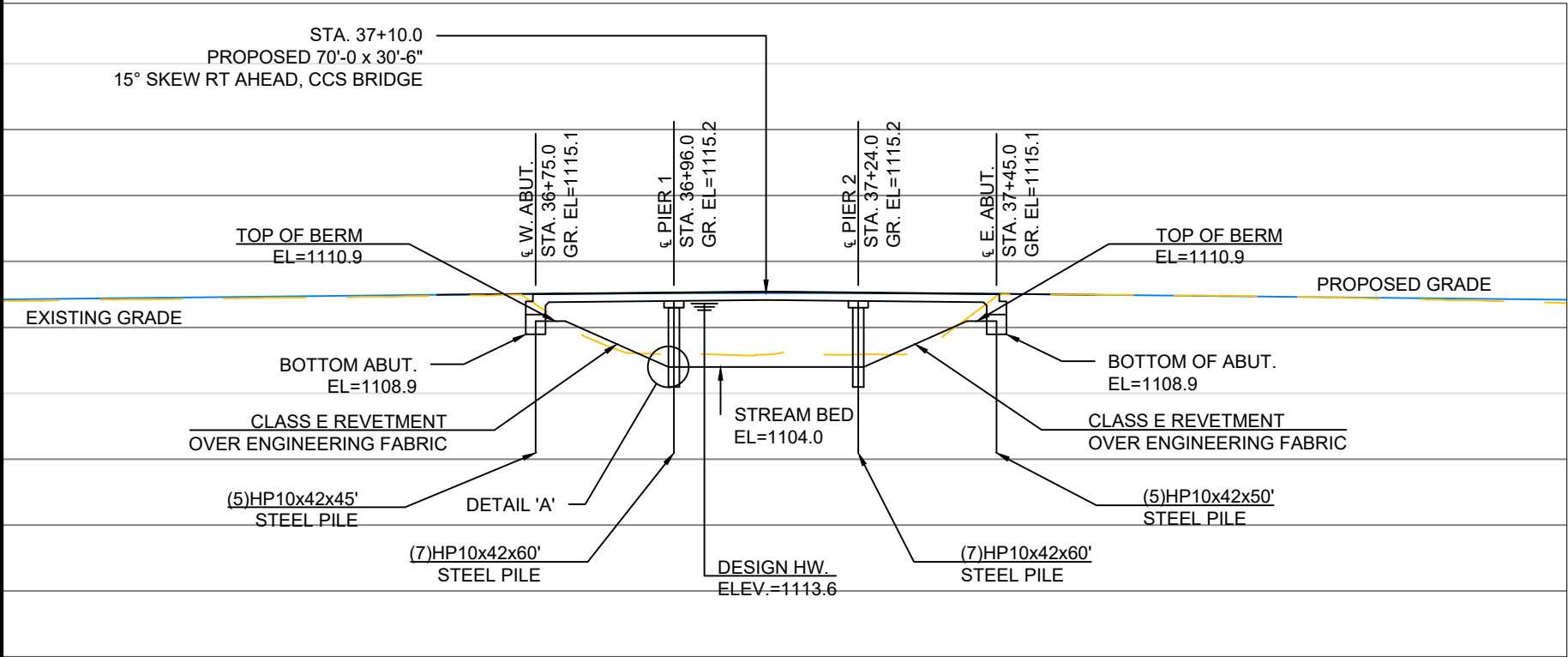


PROJECT: 24832D.25.IAM Design Phase Geotechnical Evaluation Proposed 20th Street Bridge Replacement 20th Street over East Branch Buffalo Creek Scott Township, Fayette County, Iowa				BORING: <b>B-02</b>		
				LOCATION: See attached sketch		
				DATE: 3/6/2025	SCALE: 1" = 11'	
Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
99.1	0.0					
98.4	0.7	CL	<b>8" AGGREGATE BASE</b>			Benchmark: The southeast wing wall. Assigned elevation of 100.0 feet.
			<b>SANDY LEAN CLAY</b> trace of gravel, brown to grey to black, wet, medium to rather stiff.	9		PP = 2.5 tsf
92.6	6.5		(Fill)	8		PP = 3.5 tsf, MC = 14.7%
		CL	(IADOT: Firm Silty Clay)	6		PP = 2.0 tsf
88.6	10.5		<b>SANDY LEAN CLAY</b> trace of gravel, black, wet, medium.	8	▽	Water encountered at about 10.5 feet during drilling.
85.1	14.0	SP	(B-Horizon)	9		
		CL	(IADOT: Stiff Silty Clay)	9		
		SP	<b>POORLY-GRADED SAND with LEAN CLAY</b> mostly medium grained, trace of gravel, grey to black, moist, loose.			
81.1	18.0	CL	(Alluvium)	9		PP = 2.0 tsf, MC = 17.5%
			(IADOT: Clayey Sand)			
			<b>POORLY-GRADED SAND</b> mostly medium grained, trace of gravel, brown, waterbearing, loose.	5		PP = 1.75 tsf, MC = 29.5%
			(Alluvium)			
			(IADOT: Fine Sand)			
			<b>SANDY LEAN CLAY</b> trace of gravel, grey, wet, rather soft to rather stiff.	5		PP = 1.5 tsf, MC = 20.8%
67.1	32.0	CL	(Alluvium)			
			(IADOT: Stiff Silty Clay)	79		PP = 1.0 tsf
			<b>SANDY LEAN CLAY</b> trace of gravel, grey, wet, very stiff to hard.			
			(Glacial Till)	29		
			(Very Firm Sandy Glacial Clay)	29		PP > 4.5 tsf, MC = 14.2%
				30		PP > 4.5 tsf, MC = 13.6%
				36		PP > 4.5 tsf
				38		PP = 3.25 tsf, MC = 15.9%
				41		PP = 4.0 tsf
				36		PP > 4.5 tsf, MC = 16.2%
				45		
18.1	81.0			41		PP = 1.5 tsf, MC = 15.7%
End of boring. Boring sealed upon completion.						

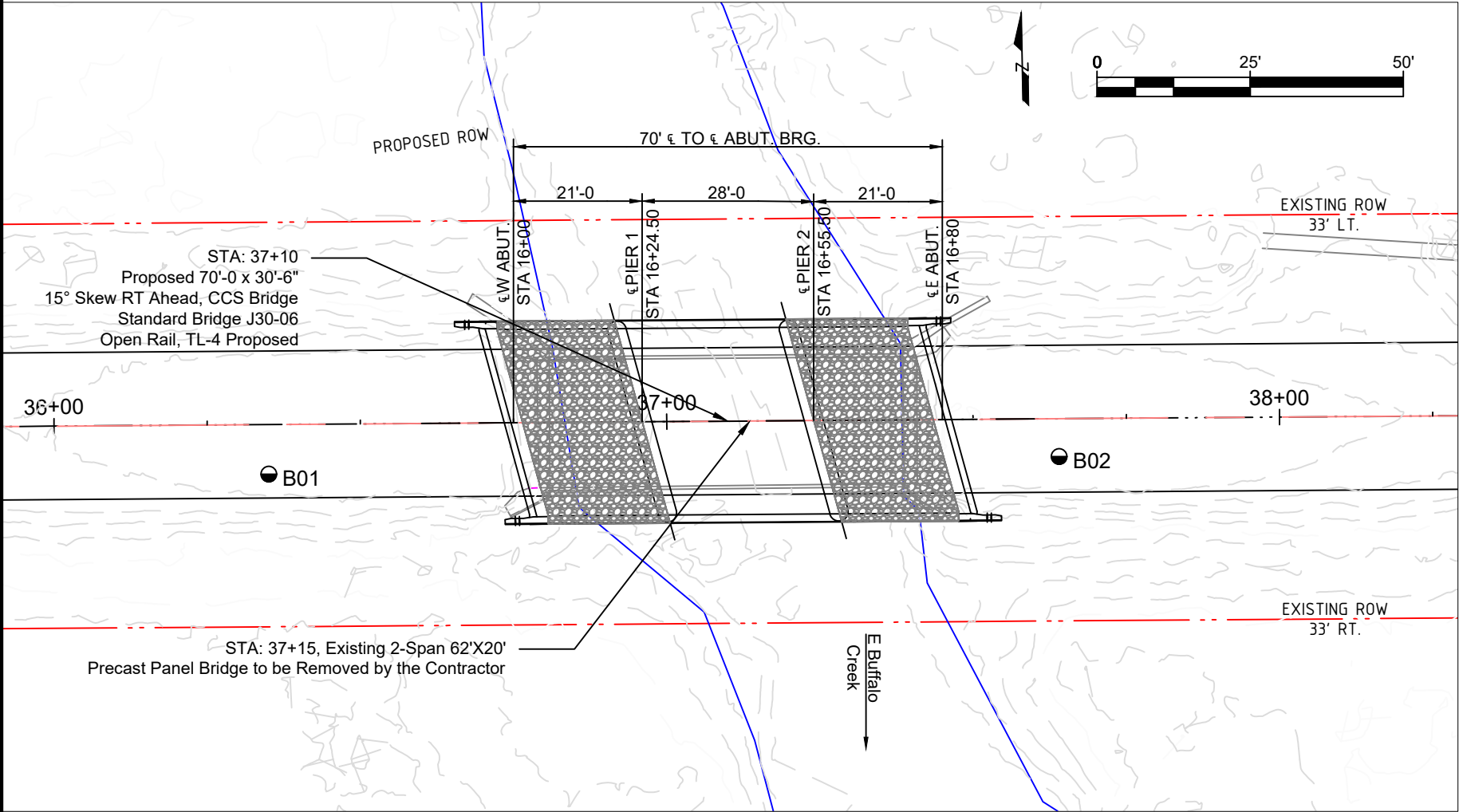
24832D.25.IAM

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BENCH MARK: TO BE SET AT CONTRACTOR'S DESIRED LOCATION PRIOR TO CONSTRUCTION



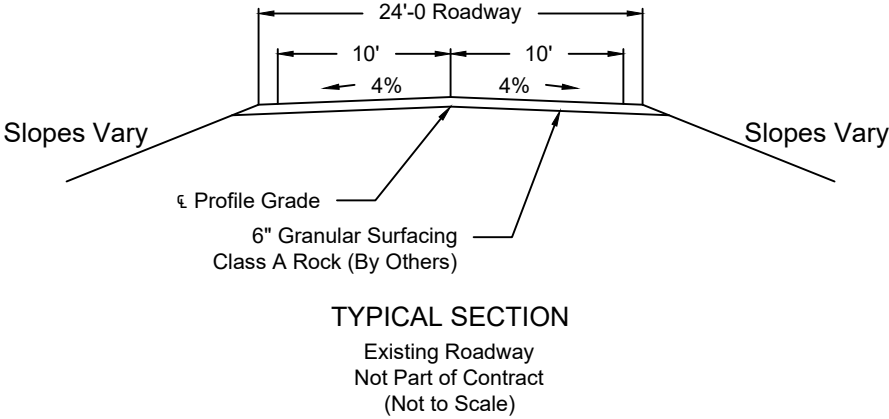
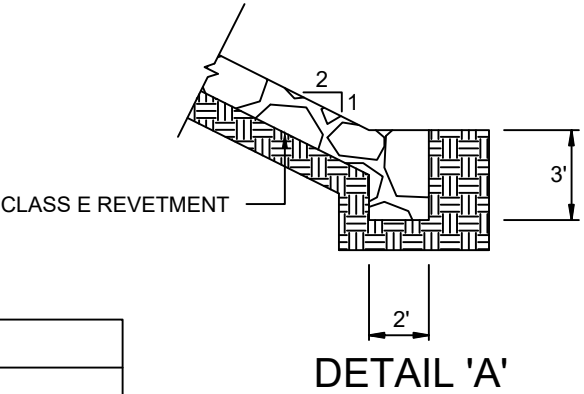
LONGITUDINAL SECTION ALONG  $\epsilon$  BRIDGE



SITUATION PLAN

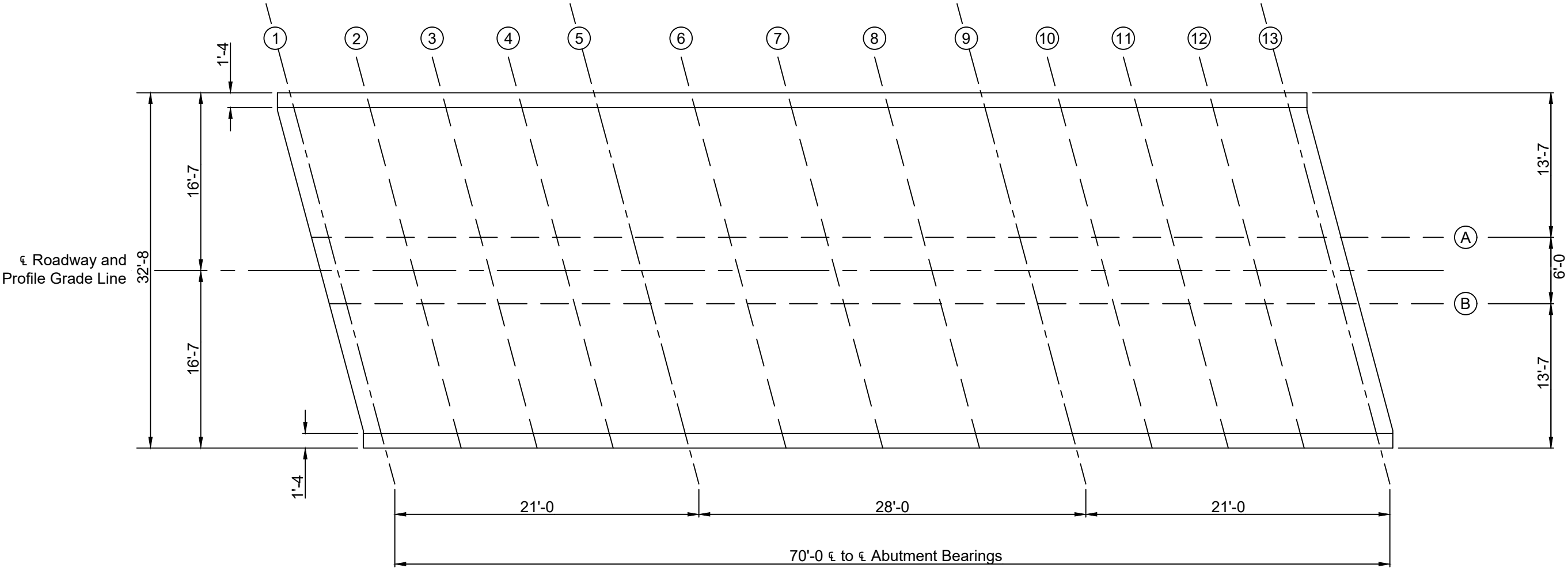
LOCATION
FAYETTE COUNTY T-91N, R-8W SECTION 33 SCOTT TOWNSHIP OVER E. BUFFALO CREEK FHWA # 149570

HYDRAULIC DATA
DRAINAGE AREA = 4.6 SQ. MI. DESIGN DISCHARGE (Q25) = 1,875 CFS DESIGN HIGH WATER ELEV. (Q25) = 1,113.6 SITE SLOPE = 9.0 FT./MILE PROPOSED WATERWAY AREA = 488 SQ. FT. DESIGN VELOCITY = 3.9 F.P.S. Q25 = 1,875 C.F.S.      STAGE ELEV. = 1,113.6 Q50 = 2,079 C.F.S.      STAGE ELEV. = 1,114.6 Q100 = 2,387 C.F.S.      STAGE ELEV. = 1,115.6 Q200 = 3,750 C.F.S.      STAGE ELEV. = 1,117.4



TRAFFIC ESTIMATE
2022 ADT, 25 VPD 2042 ADT, 30 VPD
UTILITIES
IOWA ONE CALL
POWER POLE

DESIGN FOR 70'-0 x 30'-6" 15° SKEW RT AHEAD, CCS 20TH ST OVER E. BUFFALO CREEK 21'-0" END SPANS      28'-0 CENTER SPAN SITUATION PLAN STA. 37+10.00      JULY 2026 FAYETTE COUNTY IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
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TOP OF SLAB ELEVATIONS													
LOCATION	C.L. W. ABUT. BRG.				C.L. PIER #1				C.L. PIER #2				C.L. E. ABUT. BRG.
	LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	LINE 6	LINE 7	LINE 8	LINE 9	LINE 10	LINE 11	LINE 12	LINE 13
West Edge of Deck	1094.4	1094.5	1094.5	1094.6	1094.6	1094.7	1094.8	1094.8	1094.9	1094.9	1095.0	1095.1	1095.1
Intermediate Line A	1094.6	1094.6	1094.7	1094.7	1094.8	1094.9	1094.9	1095.0	1095.1	1095.1	1095.2	1095.2	1095.3
CL Approach Roadway	1094.8	1094.8	1094.9	1094.9	1095.0	1095.1	1095.1	1095.2	1095.3	1095.3	1095.4	1095.4	1095.5
Intermediate Line B	1094.6	1094.7	1094.7	1094.8	1094.8	1094.9	1095.0	1095.0	1095.1	1095.1	1095.2	1095.3	1095.3
East Edge of Deck	1094.5	1094.5	1094.6	1094.6	1094.7	1094.8	1094.8	1094.9	1095.0	1095.0	1095.1	1095.1	1095.2