

106  
6/4/24

BRIDGE REPLACEMENT CCS  
PROJECT NO: L-B(J178)--73-97

**SECTION 404 PERMIT AND CONDITIONS**  
CONSTRUCT THIS PROJECT ACCORDING TO THE REQUIREMENTS OF THE U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NO 14. A COPY OF THIS PERMIT IS AVAILABLE FROM THE IOWA DOT WEBSITE (<http://envpermits.iowadot.gov/>) THE US ARMY CORPS OF ENGINEERS RESERVES THE RIGHT TO VISIT THE SITE WITHOUT PRIOR NOTICE.

**IOWA**  
**DEPARTMENT OF TRANSPORTATION**  
Highway Division  
PLANS OF PROPOSED IMPROVEMENT ON THE  
**SECONDARY ROAD SYSTEM**  
**WOODBURY COUNTY**  
**BRIDGE REPLACEMENT - C.C.S.**  
**PROJECT NO. L-B(J178)--73-97**

**UTILITY CONTACTS**  
WESTERN IOWA TELEPHONE, 202 CEDAR STREET  
LAWTON, IA 51030 - 712-944-5711 - ERIN NELSON

**TRAFFIC CONTROL PLAN**  
THIS ROAD WILL BE CLOSED TO THROUGH TRAFFIC DURING CONSTRUCTION. LOCAL TRAFFIC TO ADJACENT PROPERTIES WILL BE MAINTAINED AS PROVIDED FOR IN ARTICLE 1107.08 OF THE CURRENT STANDARD SPECIFICATIONS. TRAFFIC CONTROL DEVICES, PROCEDURES, LAYOUTS, AND SIGNING INSTALLED WITHIN THE LIMITS OF THIS PROJECT SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AS ADOPTED BY THE DEPARTMENT PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC) CHAPTER 130.

ALL SAFETY CLOSURES SHALL BE FURNISHED, ERECTED, MAINTAINED AND REMOVED BY THE CONTRACTOR.

MAINTENANCE OF SIGNS, BARRICADES AND SAFETY CLOSURES AS STATED IN ARTICLE 1107.09 SHALL APPLY ON THIS PROJECT.

ROAD CLOSURES ON THIS PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE IN ACCORDANCE WITH ROAD STANDARD TC-252. GUARDRAIL INSTALLATION MUST BE COMPLETE BEFORE THE ROAD IS OPENED TO TRAFFIC.

The Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, series of 2015, plus current Supplemental Specifications and Special Provisions shall apply to construction work on this project.  
**Plus Current Special Provisions and Supplemental Specifications**

On Jewell Ave., Over Wolf Creek, from 170th St. South 0.3 Miles on E. Line Section 8, T88N R44W

Project Number: L-B(J178)--73-97

INDEX OF SHEETS	
No.	Description
1	TITLE SHEET
2	LOCATION PLAN
3	ESTIMATE OF QUANTITIES
4	ESTIMATE REFERENCE INFORMATION
5	GENERAL NOTES
6	FABRICATIONS
7	DROP INTAKE / TRASH RACK DETAILS
8	PLAN VIEW
9	PROFILE
10	BORING LOGS
11	SITUATION PLAN
12	TOP OF SLAB ELEVATIONS
13-24	ROADWAY CROSS SECTIONS
25-28	STREAM CHANNEL CROSS SECTIONS

ROAD STANDARD PLANS					
The following Standard Plans shall be considered applicable to construction work on this project:					
Identification	Date	Identification	Date	Identification	Date
BA-200	04-20-21	EW-301	04-19-24		
BA-202	04-16-24	SI-173	04-19-16		
BA-221	10-18-22	S-211	10-18-22		
BA-225	10-17-23	TC-252	04-21-20		
LS-635	10-18-22				

BRIDGE STANDARDS					
The following Standard Plans shall be considered applicable to construction work on this project:					
Identification	Date	Identification	Date	Identification	Date
P10L	03-22	J30-21-06	09-20	J30-43-06	09-20
J30-01-06	09-20	J30-23-06	09-20	J30-44-06	09-20
J30-01A-06	09-20	J30-24-06	09-20	J30-45-06	09-20
J30-06E-06	09-20	J30-35-06	09-20	J30-46-06	09-20
J30-07E-06	09-20	J30-39-06	09-20	J30-46-06	09-20
J30-20-06	09-20	J30-42-06	09-20		

**WOODBURY COUNTY**  
Letting Date JULY 9, 2024

<i>Mark J. Nahra</i>
<i>[Signature]</i>
<i>[Signature]</i>
Approved
Board of Supervisors

	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.  <i>Mark J. Nahra</i> 6/4/2024 Mark Nahra Date
	Iowa Registration Number 11452 Expiration Date 12/31/2024
	Pages or sheets covered by this seal: Pages 1 - 28
	2019 AADT <u>40</u> V.P.D.



WOODBURY COUNTY  
ENGINEERS OFFICE

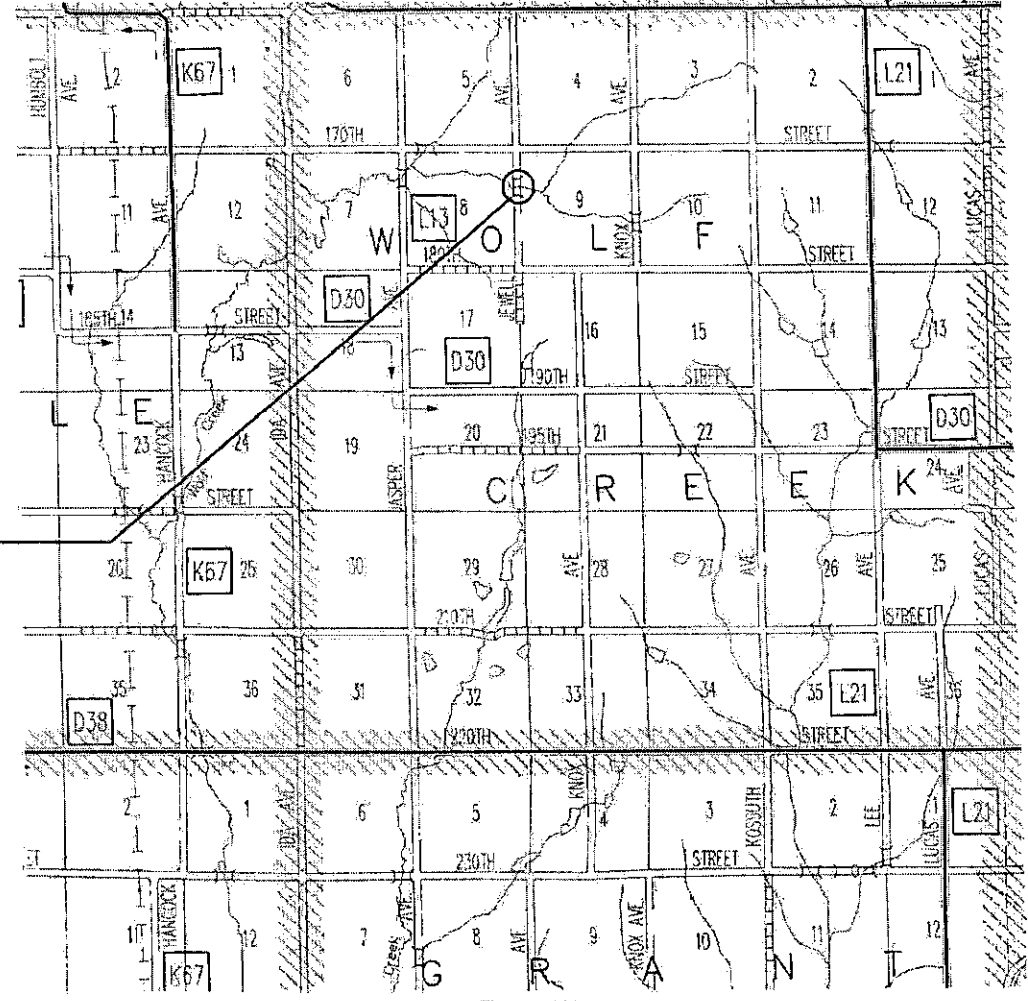
DATE	REVISION

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON JEWELL AVENUE  
SEC. 8-T88N-R44W WOLF CREEK TOWNSHIP

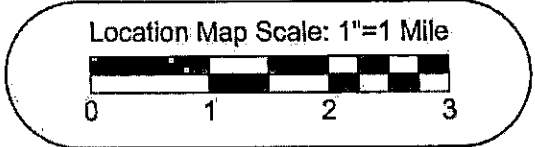
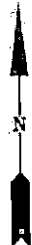
SHEET DESCRIPTION: LOCATION MAP

PROJECT NO.  
LB(J178)-73-97  
SHEET  
2

T-89N



L-B(J178)--73-97  
BRIDGE REPLACEMENT,  
FWHA #353490  
STA. 6+50 TO  
STA. 11+00



### ESTIMATED QUANTITIES

No.	ITEM CODE	ITEM	UNIT	TOTAL
1.	2101-0850001	CLEARING AND GRUBBING	ACRE	0.2
2.	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	C.Y.	111
3.	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	C.Y.	1058
4.	2312-8260310	GRANULAR SURFACING ON ROAD, CRUSHED CONCRETE	TON	188
5.	2401-8745625	REMOVAL OF EXISTING BRIDGE	LUMP SUM	1
6.	2402-2720000	EXCAVATION, CLASS 20	C.Y.	643
7.	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	C.Y.	200.1
8.	2404-7775000	REINFORCING STEEL	LB.	102.0
9.	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB.	58,841
10.	2414-6424124	CONCRETE OPEN RAILING, TL-4	LIN. FT.	202.2
11.	2417-1060024	CULVERT, CORRUGATED METAL ROADWAY PIPE, 24 IN. DIA	LIN. FT.	236
12.	2501-0201042	PILES, STEEL, HP 10x42	LIN. FT.	1825
13.	2501-5478042	CONCRETE ENCASEMENT OF STEEL H PILES, HP 10x42 (P10L TYPE 3)	LIN. FT.	376
14.	2505-4008420	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-221	EACH	4
15.	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4
16.	2505-4021722	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-225	EACH	4
17.	2507-3260005	ENGINEERING FABRIC	S.Y.	835
18.	2507-9800081	REVTMENT, CLASS E	TON	730
19.	2528-2518000	SAFETY CLOSURE	EACH	2
20.	2528-8445110	TRAFFIC CONTROL	LUMP SUM	1
21.	2533-4980005	MOBILIZATION	LUMP SUM	1
22.	2599-9999005	CORRUGATED METAL PIPE, DROP INLET	EACH	2
23.	2599-9999010	REMOVAL OF CAR BODIES IN STREAM BANK	LUMP SUM	1
24.	2601-2634100	MULCHING	ACRE	0.5
25.	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	0.5

WOOD-100 SUMMARY OF EARTHWORK QUANTITIES							
EXCAVATION TYPE	RAW CUT	RAW FILL	WASTE *****	USABLE CUT	SHRINKAGE FACTOR	FILL + 40% SHRINKAGE	PAYMENT QUANTITY
	CY	CY	CY	CY		CY	CY
CLASS 10, RDWY & BORROW	111	613	0	111	40%	858	111
CLASS 10, CHANNEL	1058	448	200	858	40%	627	1058
CLASS 20	643	0	0	643	40%	0	643
<b>TOTALS</b>	<b>1,812</b>	<b>1,115</b>	<b>200</b>	<b>1,612</b>		<b>1,485</b>	<b>1,812</b>
EMBANKMENT-IN-PLACE (EIP)	EIP = (1,485-1,812)/1.40 SHRINK= LESS THAN 0 DOES NOT APPLY						

### SUMMARY OF BRIDGE QUANTITIES

ITEM	UNITS	SUPER-STRUCTURE	ABUT. NO. 1 FOOTING	PIER NO. 1	PIER NO. 2	ABUT. NO. 2 FOOTING	TOTALS
EXCAVATION CLASS 20	C.Y.		70			127	197
STRUCTURAL CONCRETE (BRIDGE)	C.Y.	177.1	11.5			11.5	200.1
REINFORCING STEEL	LBS		51.0			51.0	102.0
REINFORCING STEEL, EPOXY COATED	LBS	49,455	1,528.0			1,528.0	62,511
CONCRETE OPEN RAILING, TL-4	LF	202.2					202.2
HP 10x42 STEEL FRICTION PILING	LF		5 AT 60 = 300	8 AT 75 = 600	8 AT 75 = 600	5 AT 65 = 325	1825
CONCRETE ENCASEMENT OF STEEL "H" PILES, HP 10x42 (P10A TYPE 3)	LF			8 AT 24 = 192	8 AT 23 = 184		376

\* NOTE - INCLUDES ABUTMENT WINGS & PAVING BLOCKS

WOODBURY COUNTY  
ENGINEERS OFFICE

DRAWN BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_  
 MAIN APPROVED BY: \_\_\_\_\_  
 REVISION: \_\_\_\_\_

PROJECT DESCRIPTION: BRIDGE REPLACEMENT WEST LINE  
 SEC. 8-T88N-R44W WOLF CREEK TOWNSHIP  
 SHEET DESCRIPTION: ESTIMATE OF QUANTITIES

PROJECT NO.  
L-8(178)-73-97

SHEET  
3

ESTIMATE REFERENCE INFORMATION		
ITEM NO.	ITEM CODE	DESCRIPTION
1	2101-0850001	<b>CLEARING AND GRUBBING</b> CLEAR AND GRUB SHALL CONSIST OF REMOVAL OF ALL VEGETATION IN THE CONSTRUCTION LIMITS. ALL MATERIALS BRUSH, TREES, ETC. SHALL BE DISPOSED OF OFF OF THE PROJECTS LIMITS. NO BURNING WITHIN THE PROJECT LIMITS ALLOWED. IF THE CONTRACTOR WANTS TO BURN ON PRIVATE PROPERTY ADJACENT TO THE PROJECT THEY WILL SUPPLY THE PROJECT ENGINEER WITH A LETTER SIGNED BY THE LAND OWNER ALLOWING THE BURNING.
2	2102-2710070	<b>EXCAVATION, CLASS 10, ROADWAY AND BORROW</b> MATERIAL SHALL BE FREE FROM FOREIGN MATERIAL AND HAVE ADEQUATE MOISTURE TO ALLOW COMPACTION AT THE CONTRACTOR'S EXPENSE IF NECESSARY TO COMPLETE COMPACTION. ROADWAY PORTION OF CLASS 10 SHALL BE COMPACTED USING A VIBRATORY ROLLER. FILL CALCULATIONS INCLUDE A 4% SHRINKAGE FACTOR. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED. THE APPROACH BERMS SHALL BE BUILT TO THE CONSTRUCTION LIMITS PRIOR TO THE ABUTMENT PILE BEING PLACED. MATERIAL FROM ITEM 3 MAY BE USED FOR BORROW MATERIAL IF SUITABLE.  858 C.Y. (FILL+40%) - 111 C.Y. CUT = 747 C.Y. BORROW TO BE SUPPLIED BY ITEM 3 AND 6.
3	2104-2710020	<b>EXCAVATION, CLASS 10 CHANNEL</b> QUANTITY OF EXCAVATION IS 1058 C.Y. (CUT) AND 627 C.Y. (FILL + 40%). EXCESS MATERIAL MAY BE USED AS ROADWAY BORROW IF DEEMED SUITABLE BY THE ENGINEER. UNUSED MATERIAL OR MATERIAL DEEMED UNSUITABLE SHALL BE DISPOSED OF OFF THE PROJECT SITE ACCORDING TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
4	2312-8260310	<b>GRANULAR SURFACING ON ROAD, CRUSHED CONCRETE</b> GRANULAR SURFACING SHALL BE PLACED IN TWO (2), 2 INCH LIFTS. THE FIRST LIFT SHALL BE SCARIFIED INTO THE ROADWAY AND ROLLED WITH A SMOOTH DRUM ROLLER. THE SECOND LIFT SHALL BE PLACED AND BLADED TO THE CORRECT CROWN
5	2401-6745625	<b>REMOVAL OF EXISTING BRIDGE</b> BID ITEM SHALL INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING BRIDGE (FHWA STR. NO. 353490). THE BRIDGE IS A 70' LONG AND 17.5' WIDE 2 SPAN I-BEAM BRIDGE WITH TIMBER PILE, BACKING PLANK AND PILE CAPS. THE SUBSTRUCTURE SHALL BE REMOVED TO A DEPTH OF 3 FEET BELOW STREAM BED. I-BEAMS AND BRIDGE DECK PLANK WILL REMAIN THE PROPERTY OF WOODBURY COUNTY. CARE SHALL BE TAKEN IN THE I-BEAM REMOVAL AS NOT TO DAMAGE THEM. THE BEAMS AND PLANK SHALL BE STOCKPILED ON SITE. REMAINING ITEMS SHALL BE DISPOSED OF OFF OF THE PROJECT LIMITS ACCORDING TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
6	2402-2720000	<b>EXCAVATION, CLASS 20</b> BID ITEM IS FOR EXCAVATION REQUIRED FOR CONSTRUCTION OF THE ABUTMENT FOOTINGS. SEE "SUMMARY OF BRIDGE QUANTITIES" TABLE ON SHEET 3 FOR EXCAVATION QUANTITY AT EACH ABUTMENT. BID ITEM ALSO INCLUDES 448 C.Y. CLASS 20 FOR ENTRANCE PIPE SEE SHEET 7 FOR PLACEMENT
7	2403-0100010	<b>STRUCTURAL CONCRETE (BRIDGE)</b> INCLUDES COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL AND POROUS BACKFILL AT ABUTMENTS.
11	2417-1040024	<b>CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24IN. DIA.</b> CULVERT SHALL BE INSTALLED AT STA. 8+72.9± 27' LT. TO STA. 10+00 27' LT. AND STA. 8+84.9± 26' RT. TO STA. 10+00. 26' RT. THE CULVERTS SHALL BE RIVETED AND 12 GAUGE.

ESTIMATE REFERENCE INFORMATION		
ITEM NO.	ITEM CODE	DESCRIPTION
17	2507-3250005	<b>ENGINEERING FABRIC</b> ENGINEERING FABRIC SHALL BE PLACED UNDERNEATH AND AT THE LIMITS OF THE CLASS "E" REVETMENT.
18	2507-6800061	<b>REVETMENT, CLASS E</b> REVETMENT SHALL BE PLACED AT A THICKNESS OF APPROXIMATELY 2', SEE THE PLAN VIEW ON SHEET 8 FOR PLACEMENT LIMITS.
19	2518-6910000	<b>SAFETY CLOSURE</b> THIS ITEM SHALL INCLUDE PROVIDING, INSTALLING, MAINTAINING AND REMOVING SAFETY CLOSURES ACCORDING TO IDOT STANDARD SPECIFICATIONS AT THE LOCATIONS INDICATED IN THE TABLE ON SHEET 6.
20	2528-8445110	<b>TRAFFIC CONTROL</b> THIS ITEM SHALL INCLUDE FURNISHING, INSTALLING, MAINTAINING AND REMOVING SIGNING AS PER THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AS ADOPTED BY THE DEPARTMENT PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC) CHAPTER 130. AND STANDARD ROAD PLAN TC-252.
22	2599-9999005	<b>CORRUGATED METAL PIPE DROP INLET 36" ON 24"</b> THIS ITEM SHALL INCLUDE FURNISHING AND INSTALLING 2-36" DROP INLETS WITH A 2' STUB. INSTALLATION AS PER SHEET 8 AND DETAIL "A" ON SHEET 8. DROP INLET AND STUB SHALL BE 12 GAUGE AND COME WITH A 24" X 24" BAND FOR THE STUB CONNECTION. THE 0.52 C.Y. OF CONCRETE BALLAST MATERIAL SHALL BE INCIDENTAL TO THIS BID ITEM IS THE CONSTRUCTION AND PLACEMENT OF THE TRASH RACK AS ILLUSTRATED ON SHEET 7. THE TRASH RACK MAY BE FIELD WELDED INSTEAD OF BDLTS AT THE CONTRACTORS DISCRETION.
22	2599-9999010	<b>REMOVAL OF CAR BODIES IN STREAM BANK</b> THIS ITEM SHALL INCLUDE THE REMOVAL OF 2 CAR BODIES ON THE SOUTH STREAM BANK. THE VOID CREATED BY REMOVING THE CAR BODIES FROM THE STREAM BANK SHALL BE FILLED WITH 78 CY OF SUITABLE MATERIAL INCIDENTAL TO THIS ITEM.
24	2601-2634100	<b>MULCHING</b>
25	2601-2636043	<b>SEEDING AND FERTILIZING (RURAL)</b> THE CONTRACTOR IS TO RESHAPE, FERTILIZE AND MULCH AREAS DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION. THIS SHALL BE INCLUDED IN THE PRICE BID FOR ITEMS 24 & 25. THE CONTRACTOR SHALL VERIFY WITH THE ENGINEER ALL AREAS TO BE SEEDED PRIOR TO COMMENCING ANY WORK ON THIS ITEM.

WOODBURY COUNTY ENGINEERS OFFICE	
PROJECT DESCRIPTION: <b>BRIDGE REPLACEMENT WEST LINE          SEC. 8-T88N-R44W-WOLF CREEK TOWNSHIP</b>	SHEET DESCRIPTION: <b>ESTIMATE REFERENCE INFORMATION</b>
PROJECT NO. L-6(178)-73-97	
SHEET 4	

**GENERAL NOTES:**

THIS DESIGN IS FOR A 60' x 30'-6" CONTINUOUS CONCRETE SLAB BRIDGE ON JEWELL AVE. OVER WOLF CREEK IN WOODBURY COUNTY. THIS BRIDGE IS DESIGNED FOR HL-93 LOADING. ACCESS SHALL BE MAINTAINED TO INDIVIDUAL PROPERTIES DURING CONSTRUCTION AND SHALL BE CONSIDERED INCIDENTAL TO THIS PROJECT. THE PRIME CONTRACTOR SHALL EMPLOY CONTROLS TO REDUCE THE EROSION OF LAND ADJACENT TO SURFACE WATERS AND WETLANDS, INCLUDING ESTABLISHMENT AND MAINTENANCE OF EROSION CONTROL DURING AND AFTER CONSTRUCTION AND REVEGETATION OF ALL DISTURBED AREAS UPON PROJECT COMPLETION. THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF ALL EROSION CONTROL MEASURES.

SEE SECTION 1107.15 OF STANDARD SPECIFICATION REGARDING UTILITY COORDINATION. ALL RUBBLE FROM THE REMOVAL OF EXISTING STRUCTURE SHALL BE DISPOSED OF BY THE CONTRACTOR IN COMPLIANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS. RUBBLE SHALL BE REMOVED FROM THE PROJECT SITE.

SCOUNDING AND TEST BORING DATA SHOWN ON THE PLANS WERE ACCUMULATED FOR DESIGNING AND ESTIMATING PURPOSES. THEIR APPEARANCE ON THE PLANS DOES NOT CONSTITUTE A GUARANTEE THAT CONDITIONS OTHER THAN THOSE INDICATED WILL NOT BE ENCOUNTERED.

**SCHEDULE OF OPERATION**

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER, PRIOR TO THE PRECONSTRUCTION CONFERENCE, A WRITTEN SCHEDULE FOR PERFORMANCE OF THE WORK ITEMS. THE SCHEDULE SHALL BE IN THE FORM OF A BAR GRAPH OR CHART SHOWING STARTING AND COMPLETION DATES FOR THE ITEMS. THE CONTRACTOR SHALL THEN MAKE EVERY EFFORT TO CONFORM TO THE ACCEPTED SCHEDULE.

**CONTRACTORS WORK AREA**

THE CONTRACTOR'S WORK AND MATERIAL STORAGE AREA SHALL BE DEFINED BY THE CONTRACTOR AND NOTED TO THE ENGINEER. THE CONTRACTOR SHALL SHAPE, FERTILIZE AND SEED THIS CONTRACTORS AREA IN ORDER TO RETURN IT TO ITS ORIGINAL CONDITION.

**DEMOLITION  
(BRIDGE REMOVAL)**

A SCRAPE SAMPLE WAS TAKEN FROM TWO AREAS OF THIS BRIDGE TO GET AN INDICATION OF THE EXISTENCE OF THE LEVEL OF TOTAL CHROMIUM AND TOTAL LEAD. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WERE 130,000 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THESE SAMPLES WERE 4.9 PPM. THESE ANALYSIS SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE DEPARTMENT'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. AN ASBESTOS INSPECTION WAS CONDUCTED AND THE RESULTS WERE NEGATIVE.

**DRIVEN PILE NOTES:**

THIS PROJECT USES THE LOAD AND RESISTANCE FACTOR DESIGN (LRFD) METHODOLOGY FOR DETERMINING PILE CONTRACT LENGTH AND NOMINAL AXIAL BEARING RESISTANCE.

**SOUTH ABUTMENT**

THE CONTRACT LENGTH OF 60 FEET FOR THE SOUTH ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 84 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE SOUTH ABUTMENT PILES IS 66 TON AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

**SOUTH PIER**

THE CONTRACT LENGTH OF 75 FEET FOR THE SOUTH PIER PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 83 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF ENCASEMENT.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE SOUTH PIER PILES IS 68 TON AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

**NORTH PIER**

THE CONTRACT LENGTH OF 75 FEET FOR THE NORTH PIER PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 97 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF ENCASEMENT.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE NORTH PIER PILES IS 78 TON AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

**NORTH ABUTMENT**

THE CONTRACT LENGTH OF 65 FEET FOR THE NORTH ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 88 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65.

THE NOMINAL AXIAL BEARING RESISTANCE FOR CONSTRUCTION CONTROL WAS DETERMINED FROM A COHESIVE SOIL CLASSIFICATION AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65. PILES ARE ASSUMED TO BE DRIVEN FROM A START ELEVATION AT THE BOTTOM OF FOOTING.

THE REQUIRED NOMINAL AXIAL BEARING RESISTANCE FOR THE NORTH ABUTMENT PILES IS 69 TON AT END OF DRIVE OR RETAP. THE PILE CONTRACT LENGTH SHALL BE DRIVEN AS PER PLAN UNLESS PILES REACH REFUSAL. CONSTRUCTION CONTROL REQUIRES A WEAP ANALYSIS WITH BEARING GRAPH.

**DESIGN STRESSES:**

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 3rd Ed. SERIES OF 2004, with Interim 2005.

REINFORCING STEEL IN ACCORDANCE WITH LRFD AASHTO SECTION 5.1 GRADE 60 CONCRETE IN ACCORDANCE WITH LRFD AASHTO SECTION 5.1.1.1  $f_c = 4.0$  KSI.

**SPECIFICATIONS:**

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

WOODBURY COUNTY  
ENGINEERS OFFICE

DATE	
REVISION	
APPROVED BY	
MAIN	
DESIGNED BY	
NSC	
DRAWN BY	
NSC	

BRIDGE REPLACEMENT WEST LINE  
SEC. 8-T86N-R44W WOLF CREEK TOWNSHIP

GENERAL NOTES

PROJECT NO.  
L-B-17176-73-97

SHEET  
5

**STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION**

Possible Standards: BA-200, BA-201, BA-202, BA-205, BA-206, BA-211, BA-221, BA-225, BA-250, BA-260, LS-625, LS-626, LS-630, LS-635, SI-172, SI-173 and SI-211.

108-8A  
10-16-18

- ① Lane(s) to which the obstacle is adjacent.
- ② Not a bid item, incidental to guardrail installation.

No.	Direction of Traffic O = Outside M = Median	Side	Location		Layout Lengths				Long-Span System		Delimiters and Object Markers ②				Bid Items										Remarks			
			Station	Offset	BA-250, BA-260, LS-630, OR LS-635				Type	Type	SI-211	Delineator SI-172	Object Marker SI-173:			Balled End Anchor	Post Adapter	Steel Beam Guardrail	Barrier Transition Section	End Terminal				Barrier Transition Section		End Terminal		
					VT1	VF	VT2	ET					Type 1	Type 2	Type 3					Tangent	Flared	Tangent	Flared					
					FL	Lin. Ft.	Lin. Ft.	Lin. Ft.					Lin. Ft.	White	OM-2					OM-3L	OM-3R	BA-202	BA-210				BA-200	BA-201
1	W	O	13+00	15.62' LT.	25.00	-	-	35.17	-	-	3	-	-	1	-	A	1	-	-	-	-	-	-	-	-	-	1	1
2	E	O	13+00	15.62' RT.	25.00	-	-	35.17	-	-	3	-	-	-	T	A	1	-	-	-	-	-	-	-	-	-	1	1
1	W	O	13+90	15.62' LT.	25.00	-	-	35.17	-	-	3	-	-	1	-	A	1	-	-	-	-	-	-	-	-	-	1	1
2	E	O	13+90	15.62' RT.	25.00	-	-	35.17	-	-	3	-	-	-	T	A	1	-	-	-	-	-	-	-	-	-	1	1

TABULATION OF SAFETY CLOSURES			
108-13A 08-01-08			
Refer to Section 2518 of the Standard Specifications			
Station	Closure Type		Remarks
	Road Quantity	Hazard Quantity	
-27+21	1.0		
25+63	1.0		
Totals	2.0		

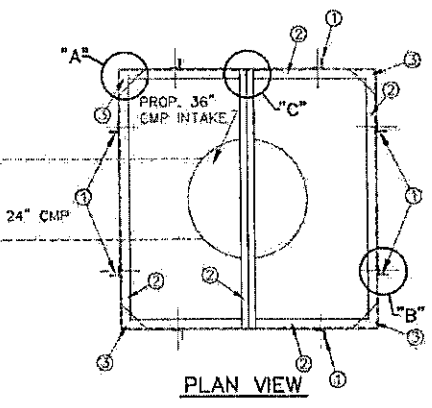
DATE: \_\_\_\_\_  
 REVISION: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_  
 MAIN: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_

PROJECT DESCRIPTION: BRIDGE REPLACEMENT WEST LINE  
 SEC. 8-T88N-R44W WOLF CREEK TOWNSHIP  
 SHEET DESCRIPTION: TABULATIONS

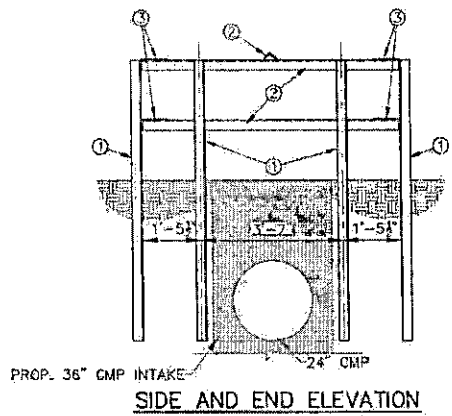
DATE	
DESIGNED BY	
APPROVED BY	
BY	

PROJECT DESCRIPTION: BRIDGE REPLACEMENT WEST LINE  
SEC. 8-T88N-R44W WOLF CREEK TOWNSHIP  
SHEET DESCRIPTION: DROP INTAKE TRASH RACK DETAILS

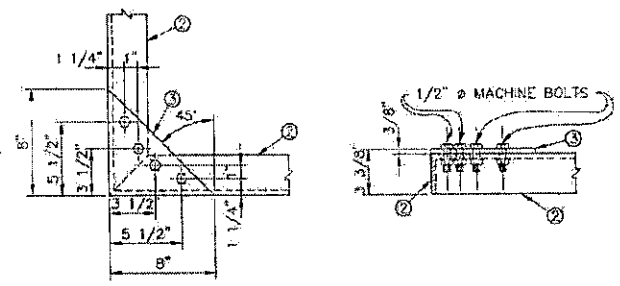
PROJECT NO.  
L-8(178)-73-07  
SHEET  
7



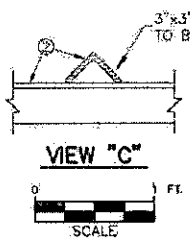
PLAN VIEW



SIDE AND END ELEVATION



PLAN  
VIEW "A" - GUSSET PLATE DETAILS



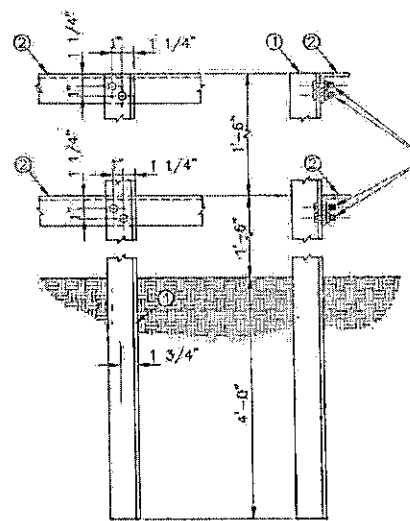
VIEW "C"

CONSTRUCTION NOTES

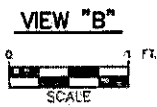
TRASH RACK TO BE FABRICATED OF 3"x3"x3/8" STEEL ANGLES BOLTED TOGETHER WITH 1/2" Ø MACHINE BOLTS. ALL HOLES FOR BOLTS SHALL BE 1/16" LARGER THAN BOLT DIAMETER.

ALL CUTS SHALL BE SAW CUTS.

TRASH RACK MATERIALS, CONSTRUCTION AND INSTALLATION SHALL BE INCIDENTAL TO BID ITEM NO. 22 ON SHEET 4.



FRONT ELEV. SIDE ELEV.



VIEW "B"

BILL OF MATERIALS FOR TRASH RACK			
MARK	QUAN.	ITEM	LENGTH
1	8	3"x3"x3/8" ANGLE IRON	7'-0"
2	9	3"x3"x3/8" ANGLE IRON	6'-5"
3	8	6.8"x8"x3/8" GUSSET PLATE	-
-	64	1/2" Ø MACH. BOLTS W/LOCK WASHERS	1 3/4"



WOLF CREEK T88N TOWNSHIP R44W

SEC 8

SEC 9

WOODBURY COUNTY  
ENGINEERS OFFICE

DATE	
REVISION	
DESIGNED BY:	
DRAWN BY:	
APPROVED BY:	
M.A.K.	

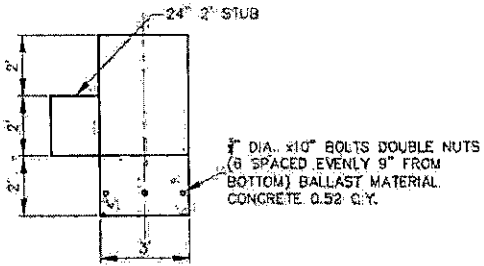
PROJECT DESCRIPTION: BRIDGE REPLACEMENT WEST LINE  
SEC. 8-T88N-R44W WOLF CREEK TOWNSHIP

SHEET DESCRIPTION: PLAN VIEW

PROJECT NO.  
L-6(176)-73-87

SHEET  
8

**DROP INTAKE DETAIL "A"**  
2 DROP INTAKES:  
STA. 10+00 27' LT. AND 26'  
RT.



STA. 10+00, 27' LT.  
OF C 124'x24" CMP & A 36"x6" CMP  
DROP INLET W/A 2" 24" STUB  
CLASS 20 = 259 C.Y.  
INLET EL. 1272.93  
OUTLET EL. 1271.92

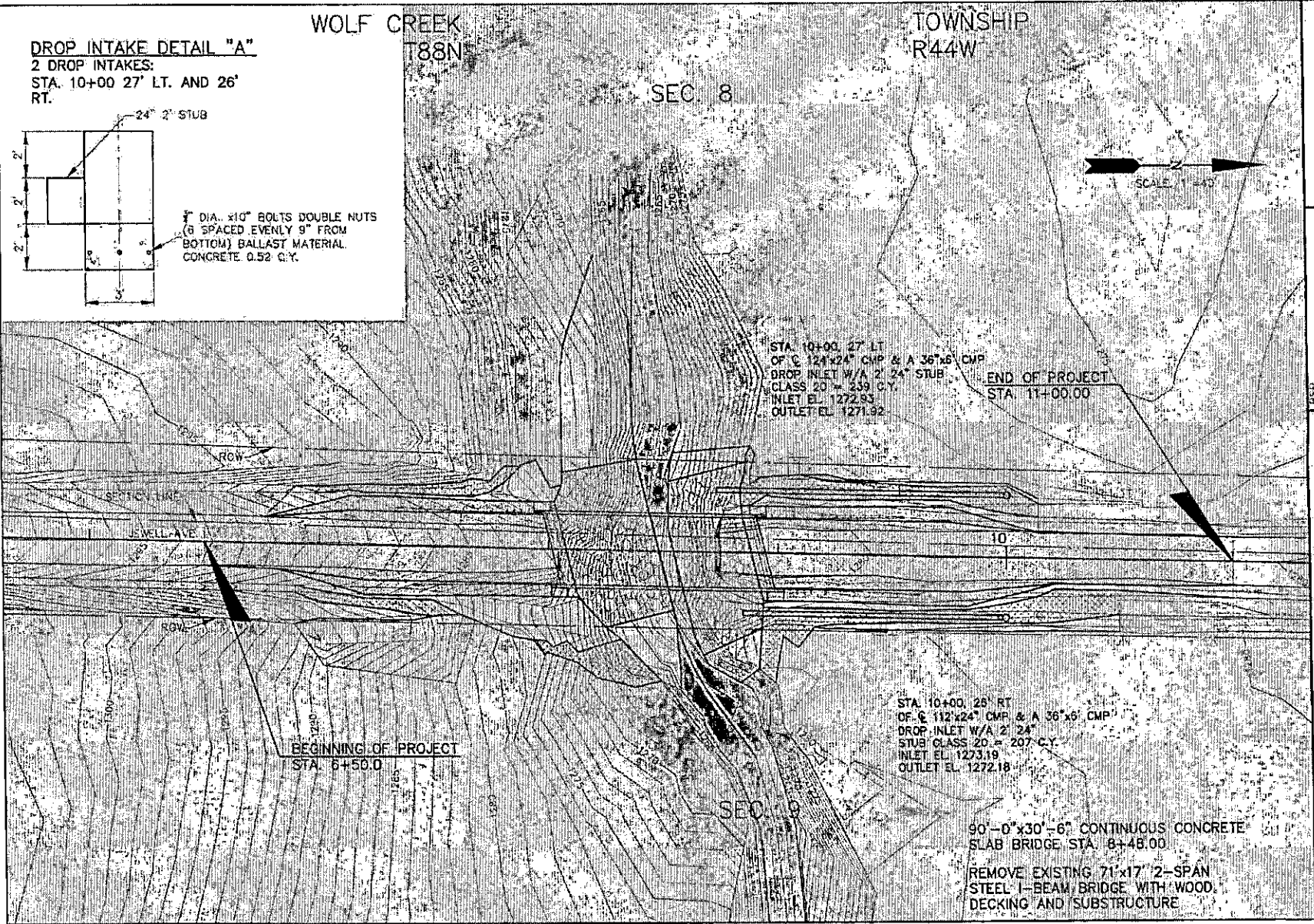
END OF PROJECT  
STA. 11+00.00

BEGINNING OF PROJECT  
STA. 6+50.0

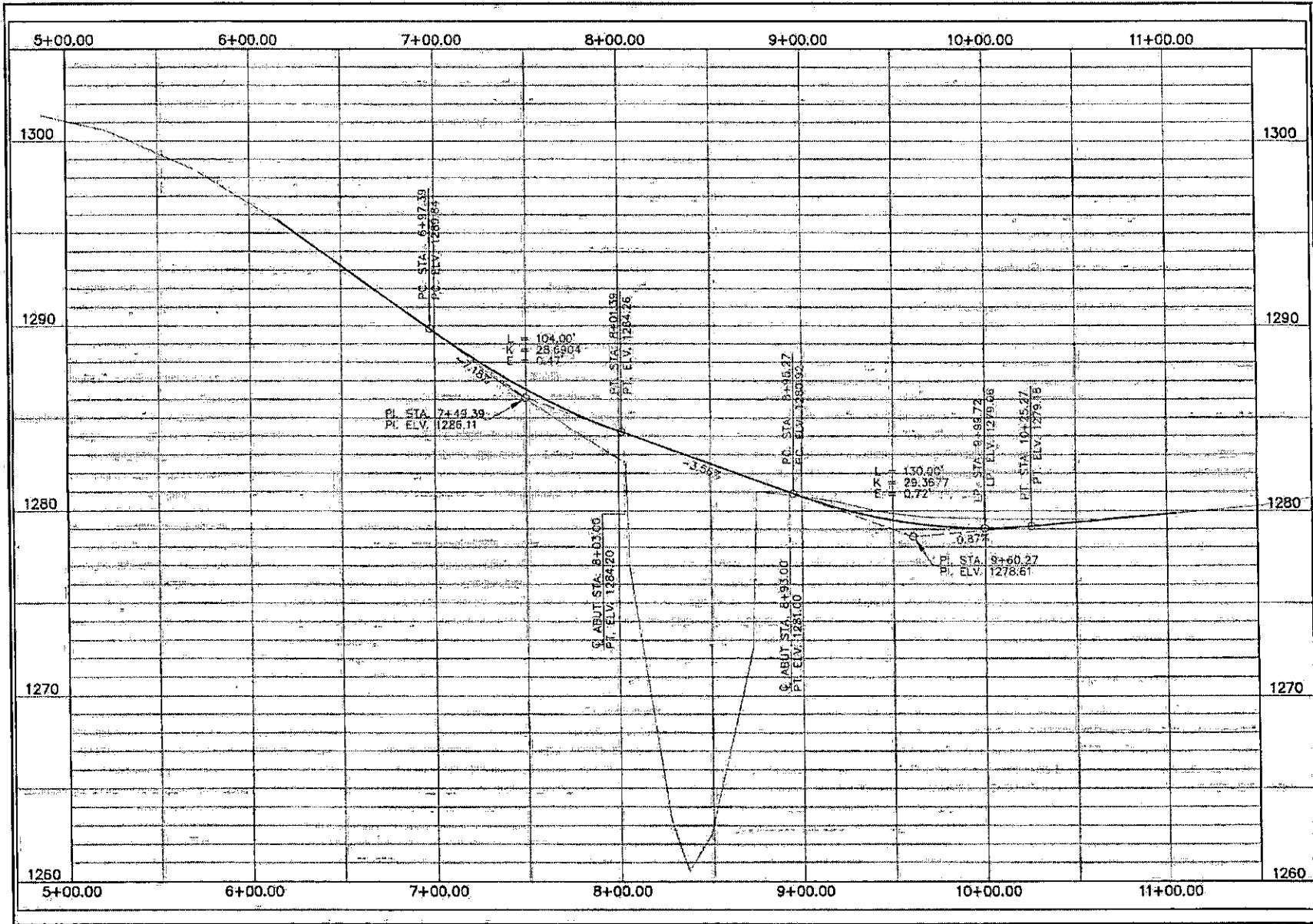
STA. 10+00, 26' RT.  
OF C 112'x24" CMP & A 36"x6" CMP  
DROP INLET W/A 2" 24"  
STUB CLASS 20 = 207 C.Y.  
INLET EL. 1273.19  
OUTLET EL. 1272.18

90'-0" x 30'-6" CONTINUOUS CONCRETE  
SLAB BRIDGE STA. 8+48.00

REMOVE EXISTING 71'x17' 2-SPAN  
STEEL I-BEAM BRIDGE WITH WOOD  
DECKING AND SUBSTRUCTURE







**WOODBURY COUNTY**  
ENGINEERS OFFICE

---

PROJECT DESCRIPTION: BRIDGE REPLACEMENT WEST LINE  
SEC. 8-T88N-R44W WOLF CREEK TOWNSHIP

SHEET DESCRIPTION: PROFILE VIEW

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PROJECT NO.: L-B(178)-73-97  
SHEET 9

---

DATE: \_\_\_\_\_ REVISION: \_\_\_\_\_

DESIGNED BY: \_\_\_\_\_  
APPROVED BY: \_\_\_\_\_

LOG OF EXPLORATORY BORING

Sheet 1 of 1

Job Number: G7339 Boring No.: S-1  
 Project: Bridge Replacement, J-178 Boring Location: Woodbury Co. IA  
 Date Started: 4/3/24 Drill Type: Hollow Stem  
 Date Completed: 4/3/24 Ground Elev.: 1280.7

Depth in Feet	Graphic Log	Sample Type	Soil Description		USCS	Blow Counts SPT (60) Blows/foot	Moisture Content, %	Dry Density (pcf)	* Saturation	Hard Penetration (PSF)	Unconfined Comp. Strength (PSF)	Liquid Limit %	Plastic Limit %	Plasticity Index %	Cone Penetrometer (Blows/1-3/4")
			Shelby Tube	Standard Split Spoon											
0-2			8-Inch Gravel Layer		6-4-2										
2-2			Clayey Sand, Light Brown, Fill		2-2-2										
2-4			Stiff Silty Clay, Dark Brown and Light Brown, Fill		2-2-2										
4-4			(Dark Gray)		2-2-2										
4-7			Soft Silty Clay, Medium Gray		2-3-4										
7-11			Fine Sand, Grayish Yellow Brown		1-9-11										
11-20			Clayey Sand, Grayish Yellow Brown		8-5-9										
20-20			(Gravel)		6-9-11										
20-16			(Gravel/Cobbles)		5-7-9										
16-9			Gravelly Sand, Grayish Yellow Brown		5-11-18										
9-9			Firm-Very Firm Glacial Clay, Dark Gray		6-6-8										
8-17					6-7-10										
17-17			Very Firm Glacial Clay, Dark Gray		9-12-17										
17-19					6-7-12										
19-16					8-7-9										
16-13			Very Firm Sandy Glacial Clay, Dark Gray		13-16-17										
13-30					9-15-24										
30-30			Granular Material, Light Gray		17-34-48										
34-48					17-34-48										
48-52			END OF BORING AT 51.5 FEET FREE WATER WAS ENCOUNTERED AT 19.5 FEET AT TIME OF DRILLING AND AT 17.5 FEET 24-HOURS AFTER DRILLING		17-34-48										

LOG OF EXPLORATORY BORING

Sheet 1 of 1

Job Number: G7339 Boring No.: S-2  
 Project: Bridge Replacement J-178 Boring Location: Woodbury Co. IA  
 Date Started: 4/8/24 Drill Type: Hollow Stem  
 Date Completed: 4/8/24 Ground Elev.: 1283.1

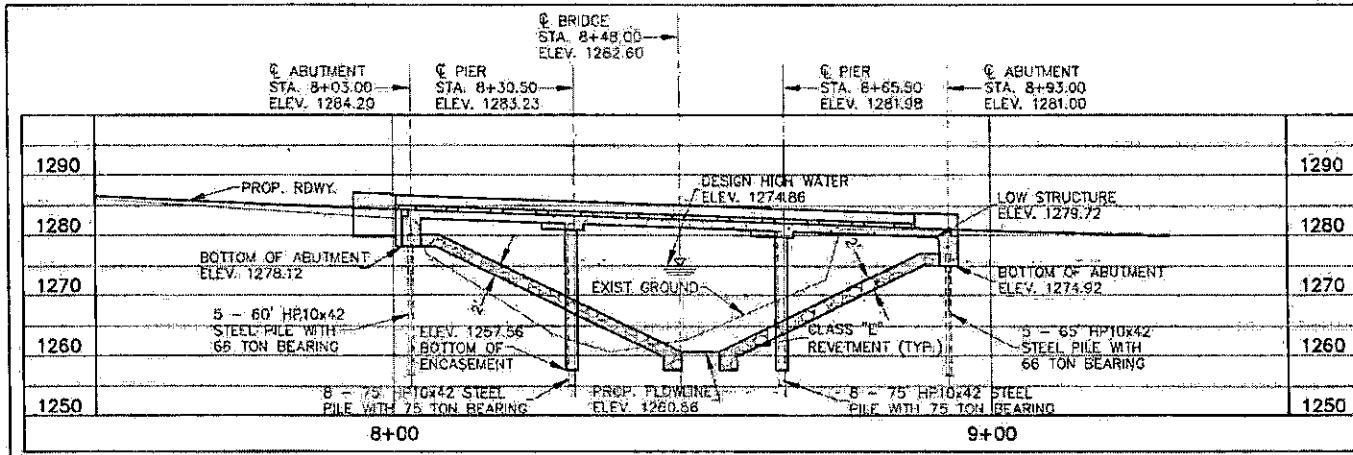
Depth in Feet	Graphic Log	Sample Type	Soil Description		USCS	Blow Counts SPT (60) Blows/foot	Moisture Content, %	Dry Density (pcf)	* Saturation	Hard Penetration (PSF)	Unconfined Comp. Strength (PSF)	Liquid Limit %	Plastic Limit %	Plasticity Index %	Cone Penetrometer (Blows/1-3/4")
			Shelby Tube	Standard Split Spoon											
0-2			8-Inch Gravel Layer		3-5-3										
2-2			Stiff Silty Clay, Dark Brown and Light Brown, Fill		3-4-4										
4-4			(Dark Brownish Gray)		3-3-4										
4-5			(Light Brown, Dark Gray and Brownish Gray)		3-2-3										
5-16			Coarse Sand, Grayish Yellow Brown		3-12-16										
16-20			Clayey Sand, Grayish Yellow Brown		5-3-4										
20-16			(Gravel)		4-6-10										
16-9			(Gravel/Cobbles)		9-13-16										
9-9			Very Firm Glacial Clay, Dark Gray		4-6-9										
8-23					7-13-10										
13-14			Firm-Very Firm Glacial Clay, Dark Gray		4-5-8										
14-18					4-8-10										
18-19					13-8-11										
19-18					4-7-11										
18-24			Very Firm Sandy Glacial Clay, Light Gray		4-10-14										
24-20					4-8-12										
20-25					14-22-33										
25-52			Granular Material, Light Gray		14-22-33										
52-52			END OF BORING AT 60 FEET FREE WATER WAS ENCOUNTERED AT 25 FEET AT TIME OF DRILLING AND AT 18.4 FEET 24-HOURS AFTER DRILLING		14-22-33										

WOODBURY COUNTY  
ENGINEERS OFFICE

DATE: \_\_\_\_\_  
 DESIGNED BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_  
 REVISION: \_\_\_\_\_

PROJECT DESCRIPTION: BRIDGE REPLACEMENT WEST LINE  
 SEC. 8-T88N-R44W WOLF CREEK TOWNSHIP  
 SHEET DESCRIPTION: BORING LOGS

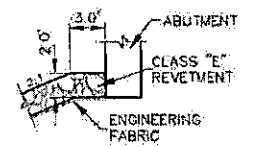
PROJECT NO.: L-BU(178)-73-97  
 SHEET 10



**HYDRAULIC DATA**  
 FWA #353490  
 Q10 1,300 STAGE ELEV. 1271.76  
 Q25 2,010 STAGE ELEV. 1273.77  
 Q50 2,500 STAGE ELEV. 1274.86  
 Q100 2,990 STAGE ELEV. 1275.77  
 BRIDGE VELOCITY: 5.04 FT./SEC.  
 FREEBOARD: 5.18'  
 DRAINAGE AREA: 4.14 SQUARE MILES

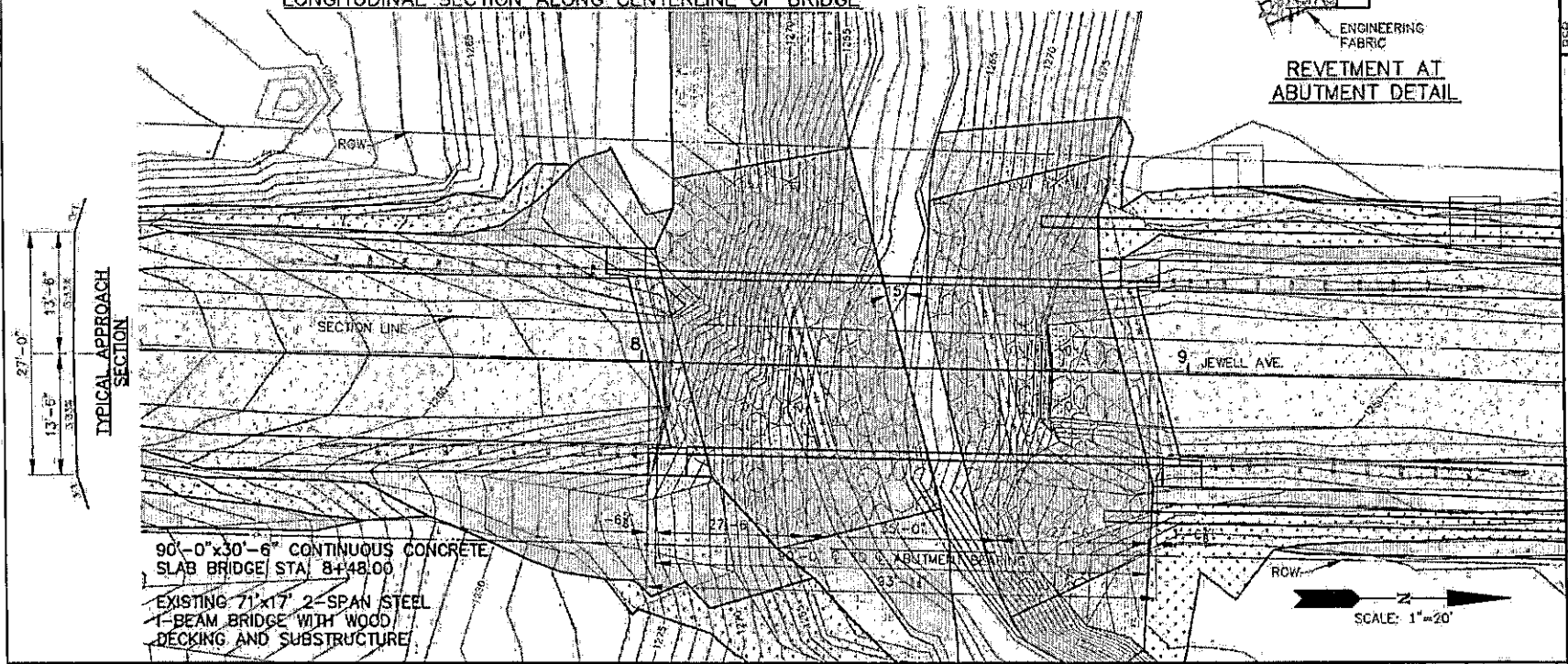


REVIEMENT TOE DETAIL



REVIEMENT AT ABUTMENT DETAIL

LONGITUDINAL SECTION ALONG CENTERLINE OF BRIDGE

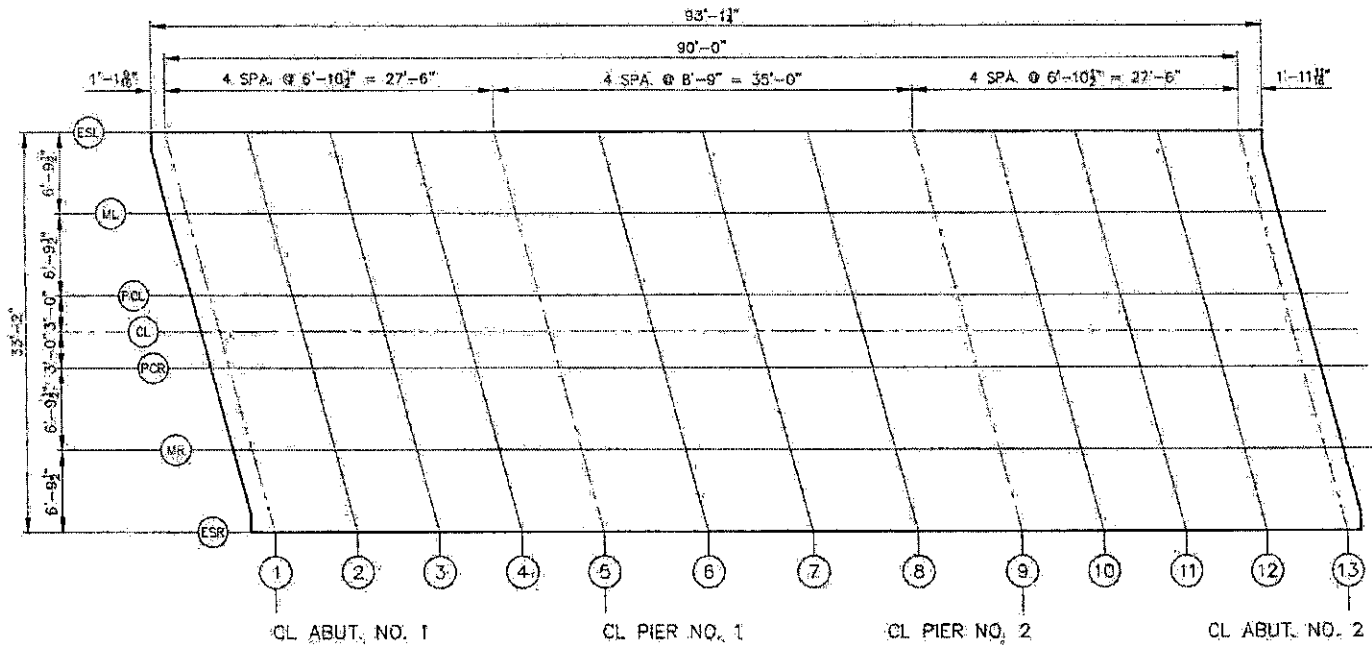


WOODBURY COUNTY  
ENGINEERS OFFICE

DESIGNED BY:	DATE:
DRAWN BY:	REVISION:
APPROVED BY:	

PROJECT DESCRIPTION: BRIDGE REPLACEMENT WEST LINE SEC. 8-188N-R44W WOLF CREEK TOWNSHIP  
 SHEET DESCRIPTION: SITUATION PLAN

TOP OF SLAB ELEVATIONS													
LOCATION	☉ WEST ABUTMENT BEARING				☉ PIER 1				☉ PIER 2				☉ EAST ABUTMENT BEARING
	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
ESL (EDGE OF SLAB LEFT)	1284.06	1283.81	1283.57	1283.32	1283.08	1282.77	1282.45	1282.14	1281.83	1281.59	1281.34	1281.10	1280.85
ML (MIDPOINT LEFT)	1284.13	1283.88	1283.64	1283.39	1283.15	1282.84	1282.53	1282.21	1281.90	1281.66	1281.41	1281.17	1280.93
PCL (PARABOLIC CROWN LEFT)	1284.20	1283.95	1283.71	1283.46	1283.22	1282.91	1282.60	1282.29	1281.97	1281.73	1281.49	1281.24	1281.00
☉ (☉ BRIDGE & ROADWAY)	1284.20	1283.96	1283.71	1283.47	1283.22	1282.91	1282.60	1282.29	1281.98	1281.73	1281.49	1281.24	1281.00
PCR (PARABOLIC CROWN RIGHT)	1284.14	1283.90	1283.65	1283.41	1283.16	1282.85	1282.54	1282.23	1281.92	1281.67	1281.43	1281.18	1280.94
MR (MIDPOINT RIGHT)	1283.94	1283.70	1283.45	1283.21	1282.96	1282.65	1282.34	1282.03	1281.72	1281.47	1281.23	1280.98	1280.74
ESR (EDGE OF SLAB RIGHT)	1283.74	1283.49	1283.25	1283.01	1282.76	1282.45	1282.14	1281.83	1281.52	1281.27	1281.03	1280.78	1280.54



LOCATIONS FOR TOP OF SLAB ELEVATIONS  
NO SCALE

NOTE:  
Slab elevations do not include form  
camber required for slab replacement.  
See IDOT Bridge Standard J30-Q6E-06  
for details

DESIGNED BY	DATE
APPROVED BY	DATE
PROJECT NO.	
SHEET	

PROJECT DESCRIPTION: BRIDGE REPLACEMENT WEST LINE  
SEC. 8-T86N-R44W WOLF CREEK TOWNSHIP  
SHEET DESCRIPTION: TOP OF SLAB ELEVATIONS

PROJECT NO.  
L-8(J178)-73-97  
SHEET

