

Project Number: BRS-CO97(147)-60-97

BRIDGE REPLACEMENT C.C.S.

SECTION 404 PERMIT AND CONDITIONS

CONSTRUCT THIS PROJECT ACCORDING TO THE REQUIREMENTS OF THE U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NO 14 CEMR-RD-2021-1344. A COPY OF THIS PERMIT IS AVAILABLE FROM THE IOWA DOT WEBSITE (https://wwwpermits.iowadot.gov/) THE U.S ARMY CORPS OF ENGINEERS RESERVES THE RIGHT TO VISIT THE SITE WITHOUT PRIOR NOTICE.

Project Development Division  
PLANS OF PROPOSED IMPROVEMENT ON THE

**FARM-TO-MARKET SYSTEM  
WOODBURY COUNTY  
BRIDGE REPLACEMENT C.C.S.  
PROJECT NO: BRS-CO97(147)-60-97**

UTILITY CONTACTS

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

WOODBURY COUNTY REC, 1488 HUABOLT AVE  
MAYVILLE, IA 51099 • 712-870-1031 • NATE BAUER

REFER TO THE PROPOSAL FORM FOR LIST OF APPLICABLE SPECIFICATIONS.

ON D 12 OVER PIERSON CREEK 0.8 MILES  
TO MICHIGAN AVE S 9, T89, R42

REFER TO SHEET 2 FOR LOCATION MAP

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 TO-252. GUARDRAIL INSTALLATION MUST BE COMPLETE BEFORE THE ROAD IS OPENED TO TRAFFIC.

WOODBURY COUNTY WILL BE RESPONSIBLE FOR DETOUR ROUTE

Approval signature lines for Board of Supervisors.

Professional Engineer certification block including signature of Mark J. Nahra, date 12/8/2022, and printed name.

INDEX OF SHEETS table with columns: No., Description. Lists items 1-22 including Title Sheet, Location Map, Estimate of Quantities, etc.

ROAD STANDARD PLANS table with columns: Identification, Date, Identification, Date, Identification, Date. Lists standards like BA-200, BA-202, BA-221, etc.

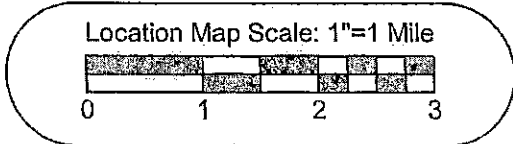
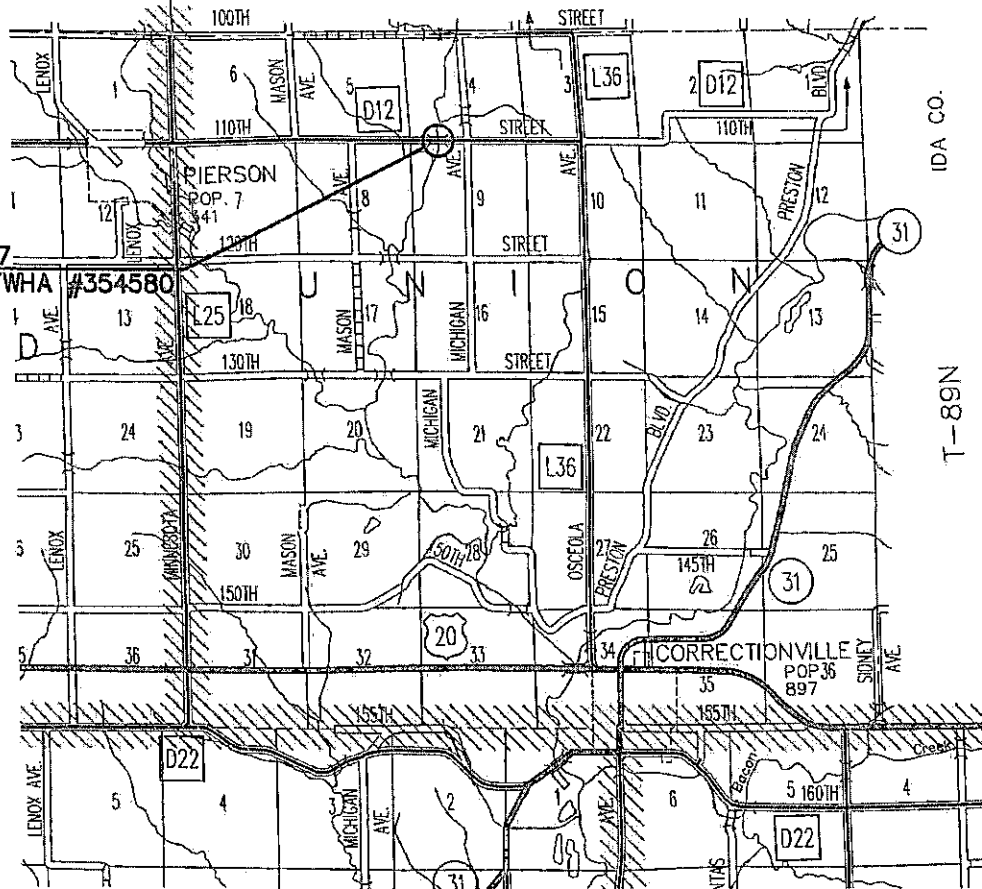
BRIDGE STANDARDS table with columns: Identification, Date, Identification, Date, Identification, Date. Lists standards like JSO-01-06, JSO-01A-06, etc.

WOODBURY COUNTY  
Letting Date MARCH 21, 2023  
PROJECT NO: BRS-CO97(147)-60-97



MOUTH CO. | CHEROKEE CO. R-42W CHEROKEE CO.

BRS-C097(147)--50-97  
 BRIDGE REPLACEMENT, FWHA #354580  
 STA. 12+50.00 TO  
 STA. 16+50.00



WOODBURY COUNTY  
 ENGINEERS OFFICE

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

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON D12 NORTH LINE  
 SEC. 9-T89N-R42W UNION TOWNSHIP

SHEET DESCRIPTION: LOCATION MAP

PROJECT NO.  
 BRS-C097(147)-50-97  
 SHEET  
 2

**ESTIMATED QUANTITIES**

No.	ITEM CODE	ITEM	UNIT	TOTAL
1.	2101-0850001	CLEARING AND GRUBBING	ACRE	.24
2.	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	C.Y.	650
3.	2102-2713090	EXCAVATION, CLASS 13, WASTE	C.Y.	240
4.	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	C.Y.	1,278
5.	2116-0100000	MODIFIED SUBBASE	C.Y.	51.83
6.	2121-7425020	GRANULAR SHOULDERS TYPE B	TON	90
7.	2301-0680210	BRIDGE APPROACH, TWO LANE	S.Y.	391.1
8.	2301-1033090	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 9 INCH	S.Y.	315.77
9.	2401-6745825	REMOVAL OF EXISTING BRIDGE	LUMP SUM	1
10.	2402-2720000	EXCAVATION, CLASS 20	C.Y.	249
11.	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	C.Y.	328.7
12.	2404-7775000	REINFORCING STEEL	LB.	124
13.	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB.	79,115
14.	2414-8424124	CONCRETE OPEN RAILING, TL-4	LIN. FT.	282
15.	2501-0201042	PILES, STEEL, HP 10x42	LIN. FT.	750
16.	2501-0201253	PILES, STEEL, HP 12x53	LIN. FT.	1,680
17.	2501-6476053	CONCRETE ENCASEMENT OF STEEL H PILES, HP 12x53 (P10L TYPE 3)	LIN. FT.	552
18.	2505-4038420	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-221	EACH	4
19.	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4
20.	2505-4021722	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-225	EACH	4
21.	2507-3250005	ENGINEERING FABRIC	S.Y.	806
22.	2507-6800061	REVTMENT, CLASS E	TON	845
23.	2510-6745850	REMOVAL OF PAVEMENT	S.Y.	668.64
24.	2527-8269109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT BASED	STA.	9
25.	2528-2516000	SAFETY CLOSURE	EACH	2
26.	2528-8445110	TRAFFIC CONTROL	LUMP SUM	1
27.	2633-4980005	MOBILIZATION	LUMP SUM	1
28.	2601-2634100	MULCHING	ACRE	0.4
29.	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	0.4

**SUMMARY OF EARTHWORK QUANTITIES** Wood-103

EXCAVATION TYPE	RAW CUT CY	RAW FILL CY	WASTE ***** CY	USABLE CUT CY	SHRINKAGE FACTOR	FILL + 40% SHRINKAGE CY	PAYMENT QUANTITY CY
EXCAVATION 10 ROADWAY AND BORROW	650	443	0	890	40%	620	850
EXCAVATION 10 CHANNEL	1,278	0	200	1,078	40%	0	1,278
EXCAVATION 20	249	0	100	149	40%	0	249
TOTALS				2,077	40%	885	
EMBANKMENT IN PLACE (EIP)	EIP = (855 - 2,077) / 1.40				SHRINK =		0

**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.		125			124	249
STRUCTURAL CONCRETE (BRIDGE)	C.Y.	308.5	11.1			11.1	328.7
REINFORCING STEEL	LBS		62.0			62.0	124.0
REINFORCING STEEL, EPOXY COATED	LBS	76,077	1,519.0			1,519.0	79,115
CONCRETE OPEN RAILING, TL-4	LF	282.0					282.0
HP10x42 STEEL FRICTION PILING	LF		9 AT 80 = 360			6 AT 65 = 390	750
HP12x53 STEEL FRICTION PILING	LF			12 AT 70 = 840	12 AT 70 = 840		1,680
CONCRETE ENCASEMENT OF STEEL "H" PILES, HP 12x53 (P10A TYPE 3)	LF			12 AT 23 = 276	12 AT 23 = 276		552

\* NOTE - INCLUDES ABUTMENT WINGS

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

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON D12 LINE SEC. 9-T89N-R42W UNION TOWNSHIP  
 SHEET DESCRIPTION: ESTIMATE OF QUANTITIES

**ESTIMATE REFERENCE INFORMATION**

ITEM NO.	ITEM CODE	DESCRIPTION
1	2101-0850001	<b>CLEARING AND GRUBBING</b> CLEAR AND GRUBB 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 40% 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 4 and 6 MAY BE USED FOR BORROW MATERIAL IF SUITABLE. QUANTITY CUT AND FILLS ARE TABULATED ON SHEET 3 FOR USE IN DETERMINING NEED.
3	2102-2713090	<b>EXCAVATION, CLASS 13 WASTE</b> QUANTITY OF EXCAVATION IS 240 C.Y. MATERIAL MAY BE USED IN THE DITCH ON THE NORTHWEST CORNER OF THE BRIDGE AND UPSTREAM OF OF CLASS E REVETMENT PLACEMENT LIMITS. UNUSED MATERIAL SHALL BE DISPOSED OF OFF THE PROJECT SITE ACCORDING TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS. LOCATION OF THE MATERIAL SHOWN ON SHEET 8.
4	2104-2710020	<b>EXCAVATION, CLASS 10 CHANNEL</b> QUANTITY OF EXCAVATION IS 249 C.Y. LIMITS OF THIS ITEM ARE SHOWN ON SHEET 8 AND CROSS SECTIONS ON SHEETS 18-22.
5	2115-0100000	<b>MODIFIED SUBBASE</b> THIS MATERIAL SHALL BE PLACED APPROXIMATELY 5 INCHES THICK UNDER THE PAVEMENT IN ITEM 8.
6	2121-7425020	<b>GRANULAR SHOULDERS</b> SEE SHEET 6 FOR PLACEMENT DETAILS AND TABULATION.
7	2301-0690210	<b>BRIDGE APPROACH, TWO LANE</b> SEE SHEET 6 FOR TABULATION. BRIDGE APPROACH SHALL BE ACCORDING TO BR-103. THE CONTRACTOR SHALL SUPPLY CERTIFIED PLANT INSPECTION FOR THIS ITEM.
8	2301-1033090	<b>STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT CLASS C, CLASS 3 DURABILITY, 9 INCH.</b> CERTIFIED PLANT INSPECTION IS REQUIRED AND INCIDENTAL TO THIS ITEM. CD BASKETS REQUIRED AS ILLUSTRATION ON SHEET 6 AND SHALL BE HAVE A JOINT SPACING OF 20'
9	2401-6745825	<b>REMOVAL OF EXISTING BRIDGE</b> BID ITEM SHALL INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING BRIDGE AT STA. 14+50 (FHWA STR. NO. 354580). THE BRIDGE IS A 3-SPAN CONTINUOUS CONCRETE SLAB BRIDGE 128 X 22.5'. THE SUB STRUCTURE SHALL BE REMOVED TO A DEPTH OF 3 FEET BELOW STREAM BED. IF THE STRUCTURE INTERFERES WITH THE CONSTRUCTION OF THE NEW BRIDGE ALL OF THE SUBSTRUCTURE SHALL BE REMOVED AS PART OF THIS ITEM. ALL MATERIALS SHALL BE DISPOSED OF OFF OF THE PROJECT LIMITS ACCORDING TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS. LABORATORY RESULTS SHOW NO TRACES OF ASBESTOS.
10	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.

**ESTIMATE REFERENCE INFORMATION**

ITEM NO.	ITEM CODE	DESCRIPTION
11	2403-0100010	<b>STRUCTURAL CONCRETE (BRIDGE)</b> INCLUDES COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL AND PCROUS BACKFILL AT ABUTMENTS. THE CONTRACTOR SHALL PROVIDE CERTIFIED PLANT INSPECTION FOR THE CONCRETE USED IN THE BRIDGE CONSTRUCTION. THE COST OF THIS INSPECTION SHALL BE INCIDENTAL TO THIS ITEM.
14	2414-6424124	<b>CONCRETE OPEN RAILING, TL-4</b> THE CONTRACTOR SHALL SUPPLY CERTIFIED PLANT INSPECTION FOR THIS ITEM.
17	2414-5478053	<b>CONCRETE ENCASEMENT OF STEEL H PILES, HP 12X53 (P10L TYPE 3)</b> THE CONTRACTOR SHALL SUPPLY CERTIFIED PLANT INSPECTION FOR THIS ITEM.
21	2507-3250005	<b>ENGINEERING FABRIC</b> ENGINEERING FABRIC SHALL BE PLACED UNDERNEATH AND AT THE LIMITS OF THE CLASS "E" REVETMENT. SEE SHEET 7 FOR DETAILS.
22	2507-6800061	<b>REVETMENT, CLASS E</b> REVETMENT SHALL BE PLACED AT A THICKNESS OF APPROXIMATELY 2'. SEE THE PLAN VIEW ON SHEET 7 FOR PLACEMENT LIMITS.
23	2510-6745850	<b>REMOVAL OF PAVEMENT</b> EXISTING PAVEMENT IS 6-8 INCHES OF HMA PAVEMENT. SAW CUTS SHALL BE MADE AT THE STATION INDICATED OR AS DIRECTED BY THE ENGINEER.
25	2528-2516000	<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.
28	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.
28	2601-2634100	<b>MULCHING</b>
29	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 PRICES BID FOR ITEMS 28 & 29. THE CONTRACTOR SHALL VERIFY WITH THE ENGINEER ALL AREAS TO BE SEEDED PRIOR TO COMMENCING ANY WORK ON THIS ITEM.

WOODBURY COUNTY  
ENGINEERS OFFICE

BSB DRAWN BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 BJK DESIGNED BY: \_\_\_\_\_  
 M/JN APPROVED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON 200TH ST NORTH  
 LINE SEC. 9-T87N-R42W UNION TOWNSHIP

SHEET DESCRIPTION: ESTIMATE REFERENCE INFORMATION

PROJECT NO.  
BSB-C007147-047

SHEET  
4

**GENERAL NOTES:**

THIS DESIGN IS FOR A 130' x 30'-6" CONTINUOUS CONCRETE SLAB BRIDGE ON D12 OVER PETERSON 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 EROSIONNESS 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.

SOUNDING 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.

**EROSION CONTROL  
(RURAL SEEDING)**

FOLLOWING THE COMPLETION OF WORK, PLACE SEED, FERTILIZER, AND MULCH ON THE PORTION OF THE AREA LYING WITHIN THE COUNTY RIGHT OF WAY AS FOLLOWS:

SEEDING:  
 PERMANENT SEEDING FOR RURAL AREA AS PER THE 2007 CURRENT SPECIFICATIONS.  
 FERTILIZER:  
 17 LBS. OF 13-13-13 (OR EQUIVALENT) COMMERCIAL FERTILIZER PER 1000 SQ. FT.

MULCH:  
 70 LBS. OF DRY ORGANIC STRAW PER 1000 SQ. FT. CONSOLIDATE ALL MULCH INTO THE SOIL USING A MULCH STABILIZER.

PREPARING THE SEEDBED AND FURROWING AND APPLYING SEED, FERTILIZER, AND MULCH IS ESSENTIAL TO MOBILIZATION. NO EXTRA COMPENSATION WILL BE ALLOWED.

371-9  
 08-27-04

**DEMOLITION  
(BRIDGE REMOVAL)**

A SOIL 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 NEGATIVE. ANALYSIS OF TOTAL CHROMIUM ON THESE SAMPLES WERE IN A RANGE OF 0 TO 400 PPM. THESE ANALYSES 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.

**PILE NOTES**

**WEST ABUTMENT**

THE CONTRACT LENGTH OF 60 FEET FOR THE WEST ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 94 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL.

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 WEST ABUTMENT PILES IS 72 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 WEAP ANALYSIS WITH BEARING GRAPH.

**WEST PIER**

THE CONTRACT LENGTH OF 70 FEET FOR THE WEST PIER PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 95 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL.

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 WEST PIER PILES IS 73 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 WEAP ANALYSIS WITH BEARING GRAPH.

**EAST PIER**

THE CONTRACT LENGTH OF 70 FEET FOR THE EAST PIER PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 95 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL.

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 EAST PIER PILES IS 73 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 WEAP ANALYSIS WITH BEARING GRAPH.

**EAST ABUTMENT**

THE CONTRACT LENGTH OF 65 FEET FOR THE EAST ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 94 KIPS, AND A GEOTECHNICAL RESISTANCE FACTOR (PHI) OF 0.65 FOR SOIL.

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 EAST ABUTMENT PILES IS 72 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 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, GRADE 60. CONCRETE IN ACCORDANCE WITH LRFD AASHTO SECTION 5,  $f_c = 4.0$  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: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 MAIN: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_  
 TITLE: \_\_\_\_\_

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON 200TH ST NORTH  
 LINE SEC. 9-T86N-R42W UNION TOWNSHIP  
 SHEET DESCRIPTION: GENERAL NOTES

PROJECT NO.  
 BR-007(47)-00-07  
 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.

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

No.	Direction of Traffic Q = Outside M = Median	Station	Offset	Layout Lengths					Delimiters and Object Markers ②				Bid Items										Remarks		
				BA-250, BA-260, LS-630, OR LS-635					Long-Span System	SI-211	Object Marker SI-173			Bolted End Anchor	Post Adapter	Steel Beam Guardrail	BA-250 or LS-630				BA-260 or LS-635				
				VT1	VF	VT2	ET	Type			Type 3						End Terminal				Barrier Transition Section	Barrier Transition Section		End Terminal	
											White	OM2-2	OM-3L				OM-3R	BA-202	BA-210	BA-200					BA-201
Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Station	Type	Type	Each	Each	Each	Each	Type	Each	Each	Ln. Ft.	Each	Each	Each	Each	Each	Each	Each	Each		
1	W	13+80	15.62' LT.	25.00	-	-	35.17	-	-	2	-	3	1	-	A	1	-	-	-	-	-	-	-	1	1
2	E	15+20	15.82' RT.	25.00	-	-	35.17	-	-	2	-	3	1	-	A	1	-	-	-	-	-	-	-	1	1
3	W	13+80	15.62' LT.	25.00	-	-	35.17	-	-	2	-	3	1	-	A	1	-	-	-	-	-	-	-	1	1
4	E	15+20	15.82' RT.	25.00	-	-	35.17	-	-	2	-	3	1	-	A	1	-	-	-	-	-	-	-	1	1

#### BRIDGE APPROACH SECTION

Refer to the BR Series.

Location		Approach Pavement						Standard Road Plans BR Series			Subdrain				Remarks			
Bridge Station	End	Skew Ahead		Thickness	Pay Length	Non-Reinf. Pavement Area	Single-Reinf. Pavement Area	Double-Reinf. Pavement Area	Approach	Fixed or Movable Abutment	Abutting Pavement	Perforated Subdrain 4"			Class "A" Crushed Stone Backfill	Modified Subbase	Polymer Grid	Remarks
		degrees	degrees									LF	STA	Side				
		LEFT	RIGHT	Inches	FT	SY	SY	SY										
13+14.58-13+84.58	W	0	0	10	70	122.22	73.33		BR-102	F	PCC	31	7+74.58	LT	2		201	229
15+15.42-15+85.42	E	0	0	10	70	122.22	73.33		BR-102	F	PCC	31	10+23.42	LT	2		201	229
TOTAL						244.44	146.66											

#### TABULATION OF PAVEMENT MARKINGS

LOCATION	SIDE	LENGTH IN STATIONS			TOTAL
		SOLID WHITE EDGE LINE	YELLOW CENTER LINE BROKEN	YELLOW CENTER LINE SOLID	
STATION TO STATION	LT. RT.				
STA. 12+50 TO 16+50	X	4.0			
STA. 12+50 TO 16+50	X	4.0			
STA. 12+50 TO 16+50			1.0		
TOTALS		8.0	1.0		9.0

#### TABULATION OF SAFETY CLOSURES

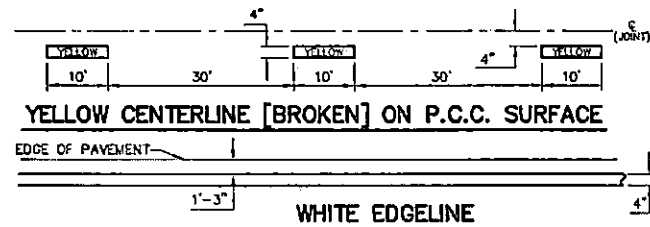
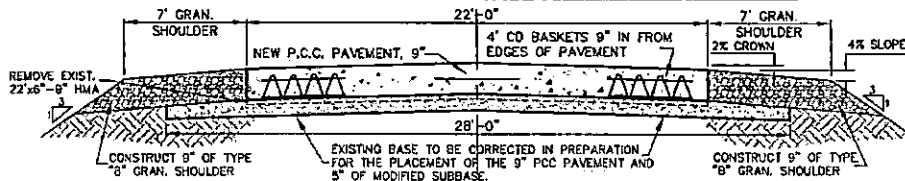
Refer to Section 2518 of the Standard Specifications

Station	Closure Type		Remarks
	Road Quantity	Hazard Quantity	
12+00	1.0		
17+00	1.0		
Total	2.0		

#### REMOVAL OF PAVEMENT

Begin Station	End Station	Side	Pavement Type	Area SY	Saw Cut LF	Remarks
12+50	13+86.73	LT	PCC	167.11	11	See Cross Section this sheet
12+50	13+86.73	RT	PCC	167.11	11	See Cross Section this sheet
15+13.19	16+50	LT	PCC	167.21	11	See Cross Section this sheet
15+13.19	16+50	RT	PCC	167.21	11	See Cross Section this sheet

#### TYPICAL CROSS SECTION FOR CLASS "C" CONCRETE STA. 12+50 TO 13+14.58 AND STA. 15+85.42 TO 16+50



WOODBURY COUNTY ENGINEERS OFFICE

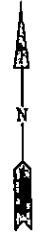
PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON D12 LINE SEC. 9-T89N-R42W KEDRON TOWNSHIP  
SHEET DESCRIPTION: TABULATIONS

PROJECT NO. BRG-CO#(147)-6047  
SHEET 6

UNION  
T89N

TOWNSHIP  
R42W

SEC. 4

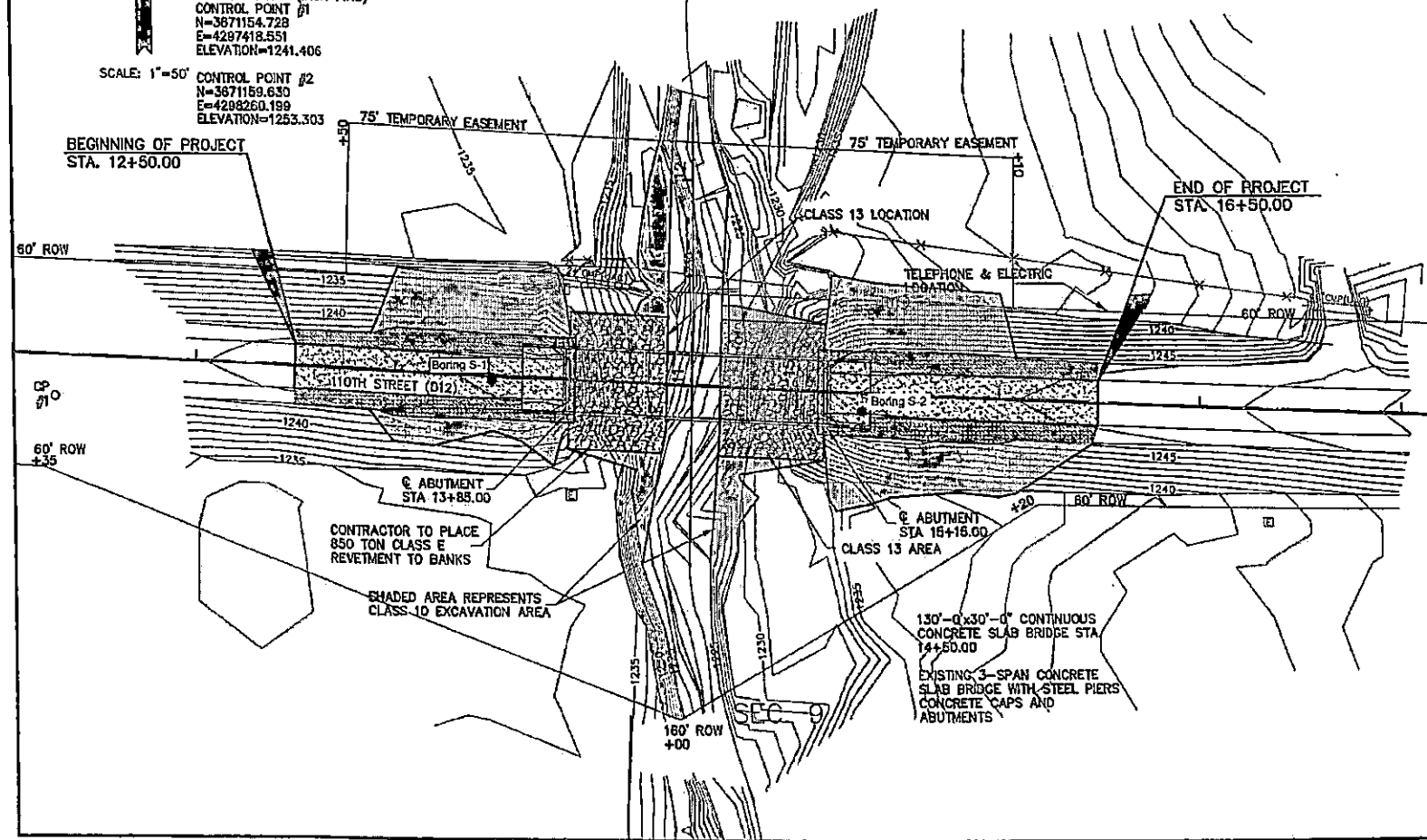


BENCH MARKS (IRON PINS)  
CONTROL POINT #1  
N=3671154.728  
E=4297418.551  
ELEVATION=1241.406

SCALE: 1"=50'  
CONTROL POINT #2  
N=3671159.630  
E=4298260.199  
ELEVATION=1253.303

BEGINNING OF PROJECT  
STA. 12+50.00

END OF PROJECT  
STA. 16+50.00



CONTRACTOR TO PLACE  
850 TON CLASS E  
REVEIMENT TO BANKS

SHADED AREA REPRESENTS  
CLASS 10 EXCAVATION AREA

130'-0"x30'-0" CONTINUOUS  
CONCRETE SLAB BRIDGE STA  
14+50.00

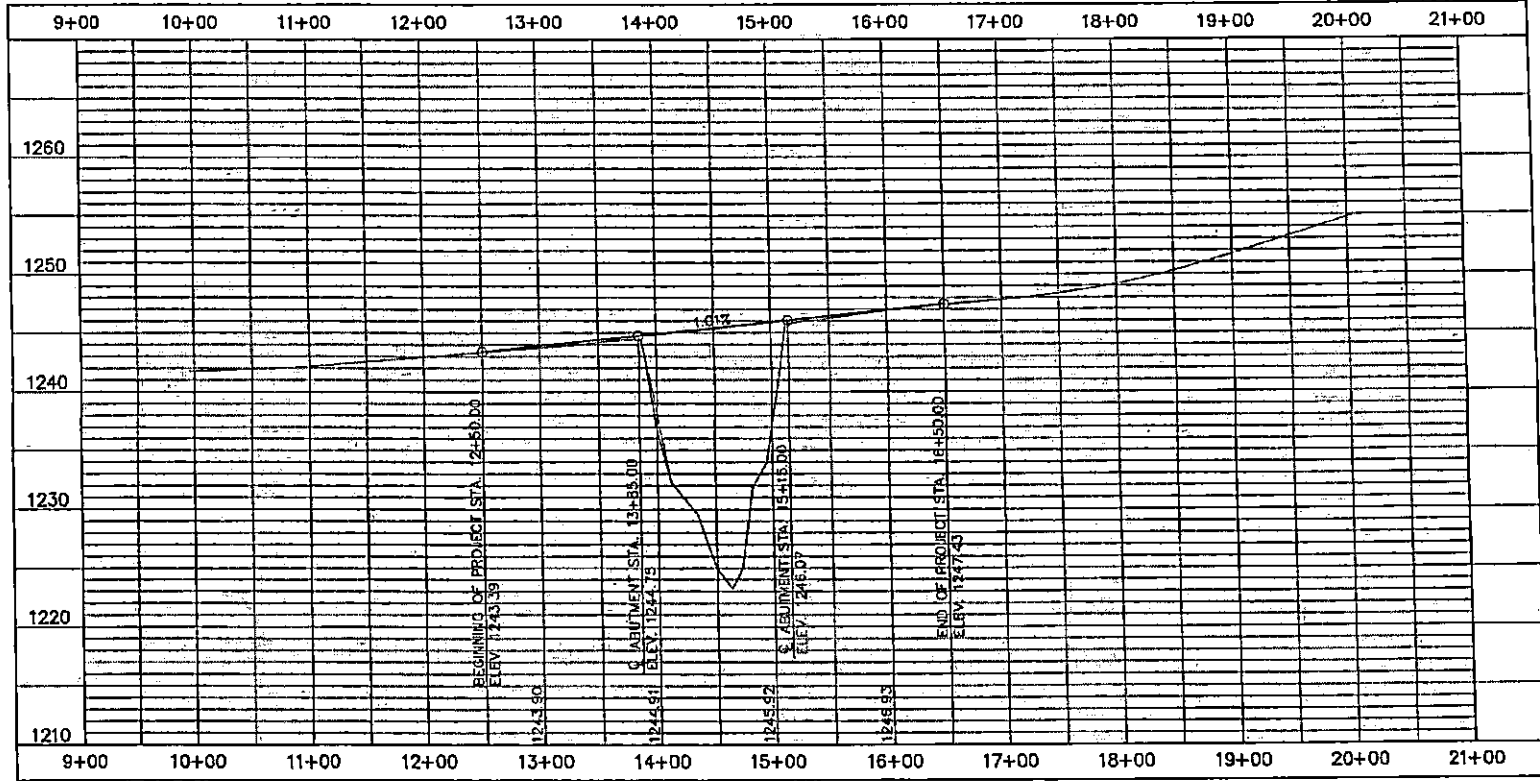
EXISTING 3-SPAN CONCRETE  
SLAB BRIDGE WITH STEEL PIERS  
CONCRETE CAPS AND  
ABUTMENTS

WOODBURY COUNTY  
ENGINEERS OFFICE

DESIGNED BY	DATE
DRAWN BY	REVISION
CHECKED BY	
APPROVED BY	

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON D12 NORTH LINE  
SEC. 9-T89N-R42W UNION TOWNSHIP  
SHEET DESCRIPTION: PLAN VIEW

PROJECT NO.  
BRS-COST(147)-80-67  
SHEET



WOODBURY COUNTY  
ENGINEERS OFFICE

1958  
 DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON D12 NORTH LINE  
 SEC. 9-T89N-R42W UNION TOWNSHIP  
 SHEET DESCRIPTION: PROFILE

PROJECT NO.  
 BR3-C097(147)-80-97  
 SHEET  
 8



LOG OF EXPLORATORY BORING

Sheet 1 of 1

Job Number: G6441  
 Project: 110th Street and Michigan Bridge  
 Date Started: 9/7/21  
 Date Completed: 9/7/21  
 Boring No.: S-1  
 Boring Location: Woodbury County  
 Drill Type: Hollow Stem  
 Ground Elev.: 1244.1

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION		USCS	Blow Counts SPT (N) Blows/Feet	Moisture Content, %	Dry Density (pcf)	% Saturation	Hardness Penetration (AST)	Unconfined Comp. Strength (PSF)	Liquid Limit %	Plastic Limit %	Plasticity Index %	Cone Penetration (Blows/1-3/4")
			Shelby Tube	Standard Split Spoon											
0-1			10-inch Asphalt Layer			15-6-4									
1-2			9-inch Gravel Layer			10-10									
2-4			FIRM SILTY CLAY, Dark Brownish Gray, Fill		CL	8-4-4									
4-8			STIFF SILTY CLAY, Dark Gray, Fill		CL	4-2-4									
8-10						3-2-2									
10-20			FIRM SILTY CLAY, Dark Gray, Fill		CL	3-6-4									
20-23			FIRM SANDY GLACIAL CLAY, Dark Gray (Cobbles)		CL	5-4-5									
23-30			(Cobbles/Possible Boulder)			50-50-50									
30-35						10-100									
35-40			VERY FIRM GLACIAL CLAY, Dark Gray		CL	8-8-11									
40-43			FIRM GLACIAL CLAY, Dark Gray		CL	4-3-4									
43-45			FIRM - VERY FIRM GLACIAL CLAY, Dark Brownish Gray		CL	4-5-7									
45-50			VERY FIRM GLACIAL CLAY, Dark Gray		CL	6-7-11									
50-55						7-10-15									
55-60			FIRM - VERY FIRM GLACIAL CLAY, Dark Gray		CL	3-6-8									
60-65						4-6-8									
65-70			VERY FIRM GLACIAL CLAY, Dark Gray		CL	6-7-11									
70-73						8-11-13									
73-81.5			END OF SOUNDING AT 81.5 FEET FREE WATER WAS ENCOUNTERED AT 12.4 FEET AT 24-HOURS AFTER DRILLING			6-7-13									

LOG OF EXPLORATORY BORING

Sheet 1 of 1

Job Number: G6441  
 Project: 110th Street and Michigan Bridge  
 Date Started: 9/7/21  
 Date Completed: 9/7/21  
 Boring No.: S-2  
 Boring Location: Woodbury County  
 Drill Type: Hollow Stem  
 Ground Elev.: 1248.0

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION		USCS	Blow Counts SPT (N) Blows/Feet	Moisture Content, %	Dry Density (pcf)	% Saturation	Hardness Penetration (AST)	Unconfined Comp. Strength (PSF)	Liquid Limit %	Plastic Limit %	Plasticity Index %	Cone Penetration (Blows/1-3/4")
			Shelby Tube	Standard Split Spoon											
0-1			5-inch Asphalt Layer			25-21-15									
1-2			GRANULAR MATERIAL, Gray Brown, Fill			15-48									
2-3			SOFT SILTY CLAY, Dark Gray, Fill		OL	1-1-1									
3-5						2-2-2									
5-10			STIFF SILTY CLAY, Dark Brown and Light Gray, Fill		CL	3-3-3									
10-15						3-3-3									
15-20						3-3-3									
20-25						3-3-3									
25-30			CLAYEY SAND, Medium Gray (Gravel)		SO	4-4-10									
30-35						11-18									
35-45			FIRM SANDY GLACIAL CLAY, Dark Gray		CL	7-1-8									
45-50						7-1-8									
50-55						4-7-8									
55-60						7-15									
60-65						4-5-7									
65-70						7-12									
70-75			FIRM - VERY FIRM GLACIAL CLAY, Dark Gray (Cobble)		CL	6-11-11									
75-80						10-22									
80-85						4-8-8									
85-90						7-8-8									
90-95						3-8-7									
95-100						7-15									
100-105						3-8-7									
105-110						7-15									
110-115						3-8-7									
115-120						7-15									
120-125						3-8-7									
125-130						7-15									
130-132			VERY FIRM GLACIAL CLAY, Dark Gray		CL	9-11-15									
132-135						7-24									
135-140						9-10-20									
140-145						7-12-10									
145-150						7-22									
150-155						4-8-8									
155-160						7-18									
160-165			FIRM - VERY FIRM GLACIAL CLAY, Dark Gray		CL	6-7-11									
165-170						8-11-13									
170-180			END OF SOUNDING AT 80 FEET FREE WATER WAS ENCOUNTERED AT 26 FEET AT TIME OF DRILLING AND CAVE-IN WAS ENCOUNTERED AT 13.2 FEET AT 24-HOURS AFTER DRILLING			6-7-13									

WOODBURY COUNTY  
ENGINEERS OFFICE

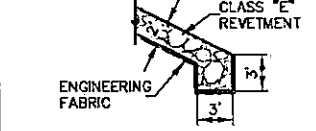
DESIGNED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_  
 M.L.K.

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON D12 NORTH LINE  
 SEC. 9-T89N-R42W UNION TOWNSHIP  
 SHEET DESCRIPTION: SOIL BORING LOGS

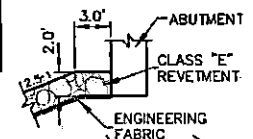
PROJECT NO. BRS-C097(147)-60-87  
 SHEET.

**HYDRAULIC DATA**

FWHA #354580  
 Q25 4,710 STAGE ELEV. 1239.35  
 Q50 5,760 STAGE ELEV. 1240.51  
 Q100 6,790 STAGE ELEV. 1241.58  
 Q200 8,760 STAGE ELEV. 1243.45  
 Q500 9,560 STAGE ELEV. 1244.17  
 BRIDGE VELOCITY: 4.18 FT./SEC.  
 FREEBOARD: 3.49' DRAINAGE AREA:  
 23.6 SQUARE MILES  
 CALCULATED DESIGN SCOUR = 2.3'  
 CLASS "E" REVETMENT



**REVELMENT TOE DETAIL**



**REVELMENT AT ABUTMENT DETAIL**

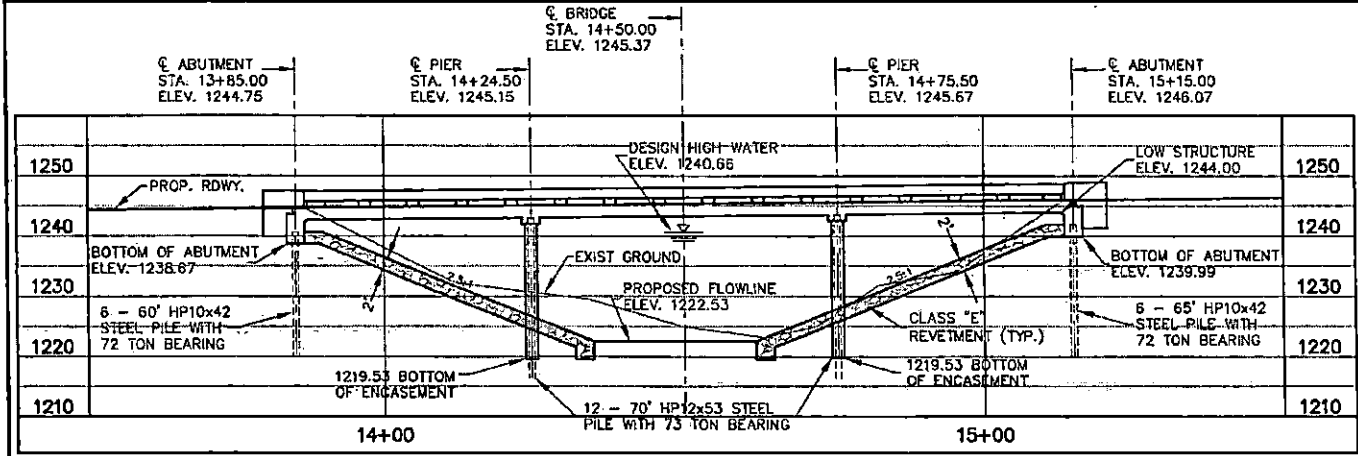
**WOODBURY COUNTY**  
 ENGINEERS OFFICE

DATE	
REVISION	
APPROVED BY:	
DESIGNED BY:	
DRAWN BY:	

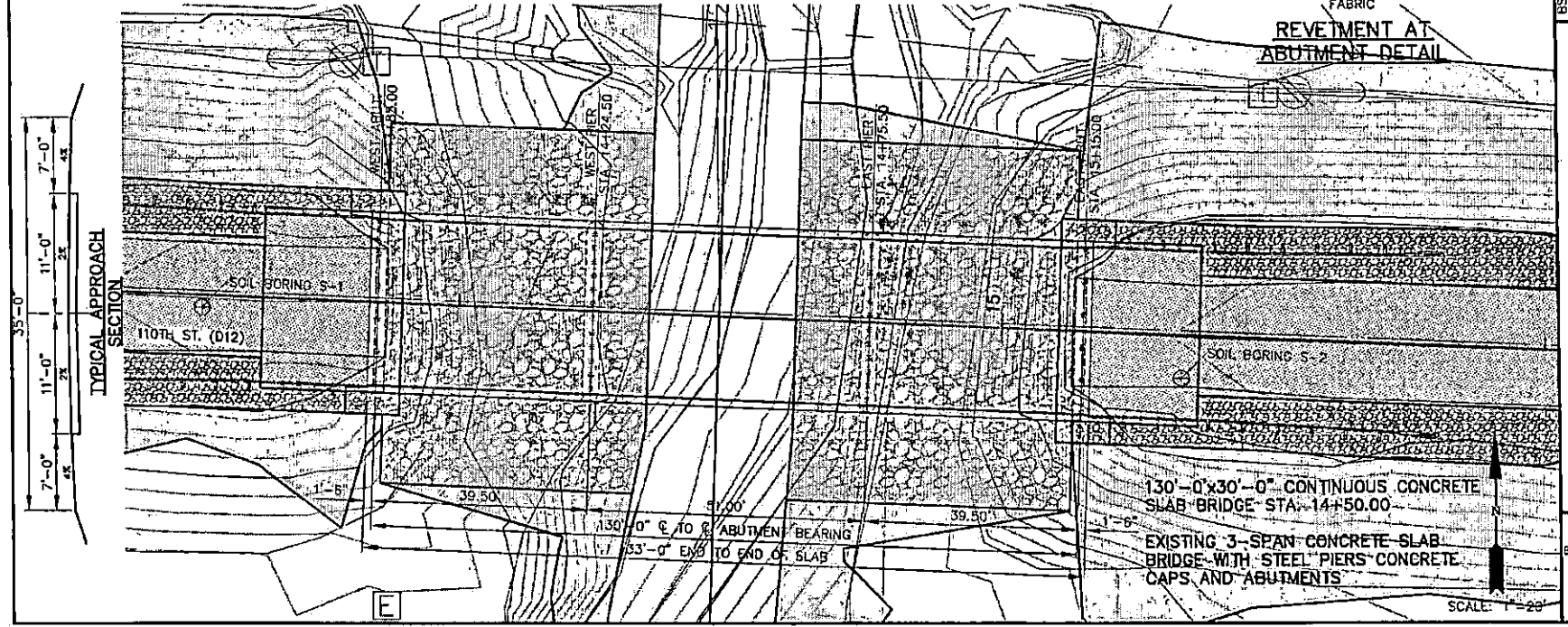
PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON D12 NORTH LINE  
 SEC. 9-T89N-R42W UNION TOWNSHIP

SHEET DESCRIPTION: PLAN VIEW

PROJECT NO.  
 GRS-C097(147)-50-97  
 SHEET



**LONGITUDINAL SECTION ALONG CENTERLINE OF BRIDGE**



**TYPICAL APPROACH SECTION**



