

Project Number: BROS-C097(150)--8J-97

BRIDGE REPLACEMENT PPCB

**SECTION 404 PERMIT AND CONDITIONS**  
 CONSTRUCT THIS PROJECT ACCORDING TO THE REQUIREMENTS OF THE U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NO 2023-0733FP-01. 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.

Project Development Division  
 PLANS OF PROPOSED IMPROVEMENT ON THE  
**SECONDARY ROAD SYSTEM  
 WOODBURY COUNTY  
 BRIDGE REPLACEMENT PPCB  
 PROJECT NO: BROS-C097(150)--8J-97**

UTILITY CONTACTS

None Present

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.

WOODBURY COUNTY WILL BE RESPONSIBLE FOR DETOUR ROUTE

REFER TO THE PROPOSAL FORM FOR LIST OF APPLICABLE SPECIFICATIONS.

ON K67 OVER WOLF CREEK FROM  
 280TH STREET S 0.7 MILES IN  
 SECTION 1, T86N, R45W

REFER TO SHEET 2 FOR LOCATION MAP

Daniel A. Bittner II
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>	10/2/2024
	Signature	Date
	Mark J. Nahra	
Printed or Typed Name		
My license renewal date is December 31, 2024		
Pages or sheets covered by this seal:		
Pages 1, thru 32		

INDEX OF SHEETS			
No.	Description		
1	TITLE SHEET	14-26	ROADWAY CROSS SECTIONS
2	LOCATION PLAN	27-32	CHANNEL CROSS SECTIONS
3	ESTIMATE OF QUANTITIES		
4	ESTIMATE REFERENCE INFORMATION		
5	GENERAL NOTES		
6	TABULATIONS		
7	PLAN VIEW		
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9	BORING LOGS		
10	SITUATION PLAN		
11	BRIDGE DETAILS		
12	PIER LAYOUT		
13	TOP OF SLAB ELEVATIONS		

ROAD STANDARD PLANS					
The following Bridge Standards shall be considered applicable to construction work on this project.					
Identification	Date	Identification	Date	Identification	Date
BA-200	04-20-21	EW-101	10-17-17		
BA-202	10-15-24	EW-301	04-16-24		
BA-221	10-18-22	SI-172	04-19-16		
BA-225	10-17-23	SI-173	04-19-16		
BA-260	04-20-21	SI-211	10-18-22		
EC-201	04-20-21	TC-252	04-21-20		

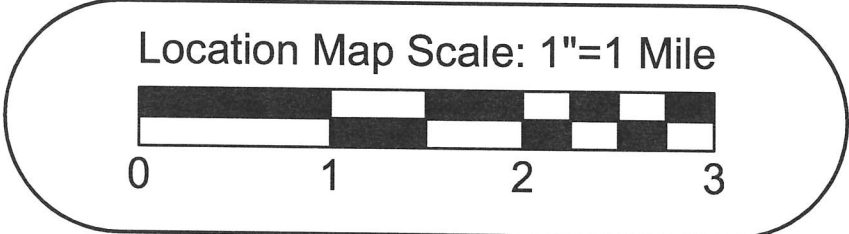
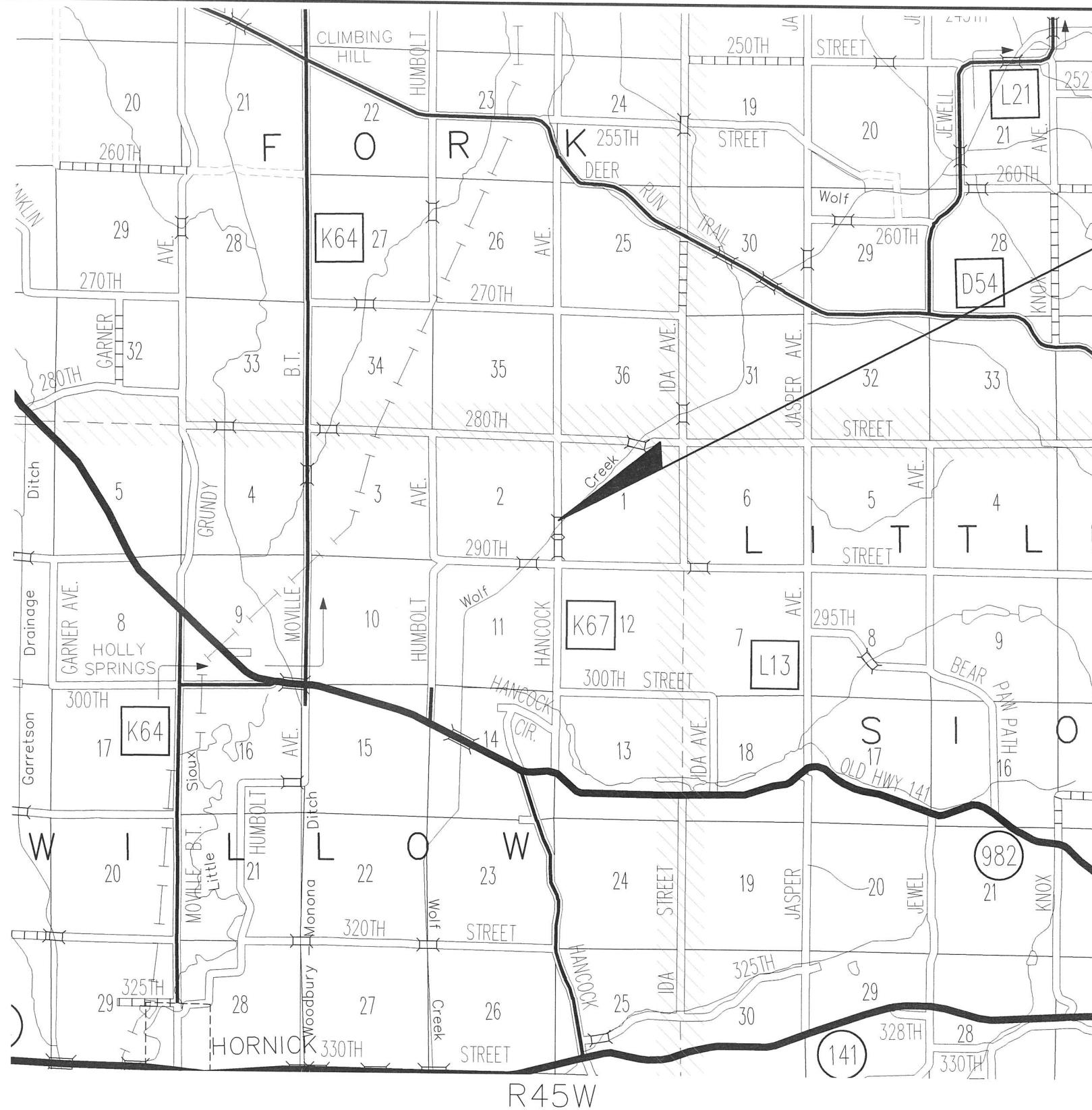
BRIDGE STANDARDS					
The following Standard Plans shall be considered applicable to construction work on this project.					
Identification	Date	Identification	Date	Identification	Date
H30-01-06	04-13	H30-30-06	05-11	H30-86-06	09-14
H30-01A-06	04-13	H30-34-06	07-10	H30-89-06	09-14
H30-02-06	04-13	H30-35-06	07-10		
H30-03-06	06-12	H30-38-06	07-10		
H30-04-06	06-12	H30-42-06	07-10		
H30-25-06	04-13	H30-43-06	05-11		
H30-27-06	07-10	H30-44-06	09-12		
H30-29-06	07-15	H30-85-06	07-10		



**WOODBURY COUNTY**

PROJECT NO: BROS-C097(150)--8J-97

Letting Date JANUARY 22, 2025



BROS-C097(150)--8J-97  
BRIDGE REPLACEMENT  
FHWA #350910  
STA. 2+81.10 TO  
STA. 9+10.80

WOODBURY COUNTY  
ENGINEERS OFFICE

BSB	DATE:	REVISION	DATE:
DRAWN BY:			
BK			
DESIGNED BY:			
MJN			
APPROVED BY:			

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON K67 (HANCOCK AVE)  
WEST LINE SEC. 1 T86N R45W WILLOW TWP.

SHEET DESCRIPTION: LOCATION PLAN

PROJECT NO.  
BROS-C097(150)-8J-97  
SHEET  
2



### ESTIMATED QUANTITIES

No.	ITEM CODE	ITEM	UNIT	TOTAL
1.	2101-0850001	CLEARING AND GRUBBING	ACRE	0.60
2.	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	C.Y.	53
3.	2102-2713090	EXCAVATION, CLASS 13, WASTE	C.Y.	249
4.	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	C.Y.	4392
5.	2312-8260310	GRANULAR SURFACING ON ROAD, CRUSHED CONCRETE	TON	266
6.	2401-6745625	REMOVAL OF EXISTING BRIDGE	LUMP SUM	1
7.	2402-2720000	EXCAVATION, CLASS 20	C.Y.	592
8.	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	C.Y.	410.5
9.	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB.	8,773
10.	2407-0551259	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, B59	EACH	10
11.	2407-0551267	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, B67	EACH	5
12.	2408-7800000	STRUCTURAL STEEL	LB.	992
13.	2414-6424124	CONCRETE OPEN RAILING, TL-4	LIN. FT.	414.2
14.	2417-1040036	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 36 IN. DIA.	LIN. FT.	218
15.	2501-0201057	PILES, STEEL, HP 10 X 57	LIN. FT.	3420
16.	2501-6335010	PREBORED HOLES	LIN. FT.	120
17.	2505-4008420	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-221	EACH	4
18.	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4
19.	2505-4021722	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-225	EACH	4
20.	2507-3250005	ENGINEERING FABRIC	S.Y.	1566
21.	2507-6800061	REVTMENT, CLASS E	TON	1645
22.	2528-2518000	SAFETY CLOSURE	EACH	2
23.	2528-8445110	TRAFFIC CONTROL	LUMP SUM	1
24.	2533-4980005	MOBILIZATION	LUMP SUM	1
25.	2601-2634100	MULCHING	ACRE	0.60
26.	2601-2642100	STABILIZING CROP - SEEDING AND FERTILIZING	ACRE	0.60

### 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
EXCAVATION 10 ROADWAY AND BORROW	53	1800	0	53	40%	2520	53
EXCAVATION 10 CHANNEL	4392	62	928	3464	40%	87	4392
EXCAVATION 20	592	0	0	592	40%	0	592
<b>TOTALS</b>	<b>5037</b>	<b>1862</b>	<b>928</b>	<b>4109</b>	<b>40%</b>	<b>2607</b>	<b>5037</b>
EMBANKMENT IN PLACE (EIP)      EIP = (2607-4109)/1.40 SHRINK = LESS THAN 0 DOES NOT APPLY							

### SUMMARY OF BRIDGE QUANTITIES

ITEM	UNITS	SUPER STRUCTURE	ABUT. NO. 1 FOOTING	ENCASED PIER NO. 1	ENCASED PIER NO. 2	ABUT. NO. 2 FOOTING	TOTALS
EXCAVATION CLASS 20	C.Y.	275				237	512
STRUCTURAL CONCRETE (BRIDGE)	C.Y.	*246.9	19.0			19.0	284.9
STRUCTURAL STEEL	LBS			496	496		992
REINFORCING STEEL, EPOXY COATED	LBS	69,001		4,386.5	4,386.5		8,773
CONCRETE OPEN RAILING, TL-4	LF	414.2					414.2
HP10x57 STEEL FRICTION PILING	LF		6 AT 105	9 AT 120	9 AT 120	6 AT 105	3420
CONCRETE ENCASEMENT OF STEEL "H" PILES, HP10x57	C.Y.			62.80	62.80		125.6
BEAMS, PRETENSIONED PRESTRESSED CONCRETE, B59	EACH	10					
BEAMS, PRETENSIONED PRESTRESSED CONCRETE, B67	EACH	5					

\* NOTE - INCLUDES ABUTMENT WINGS AND PAVING BLOCKS

BSB DRAWN BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 BK DESIGNED BY: \_\_\_\_\_ REVISION: \_\_\_\_\_  
 M/J/N APPROVED BY: \_\_\_\_\_

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON K67 (HANCOCK AVE)  
 WEST LINE SEC. 1 T86N R45W WILLOW TWP.  
 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 249 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 4641 C.Y. LIMITS OF THIS ITEM ARE SHOWN ON SHEET 8 AND CROSS SECTIONS ON SHEETS 18-22.
5	2312-8260310	<b>GRANULAR SURFACING ON THE 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.
6	2401-6745625	<b>REMOVAL OF EXISTING BRIDGE</b> BID ITEM SHALL INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING BRIDGE AT STA. 5+80 (FHWA STR. NO. 350910). THE BRIDGE IS A HIGH TRUSS BRIDGE 151' X 17.2'. 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.
7	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.
8	2403-0100010	<b>STRUCTURAL CONCRETE (BRIDGE)</b> INCLUDES COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL AND POROUS 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	2416-1160036	<b>CULVERT, CORRUGATED METAL ENTRANCE PIPE, 36 IN. DIA.</b> CULVERT SHALL BE INSTALLED AT STA. 3+48 LT TO STA. 5+66 LT. THE CULVERT SHALL BE RIVETED AND 12 GAUGE.

ESTIMATE REFERENCE INFORMATION		
ITEM NO.	ITEM CODE	DESCRIPTION
15	2501-0201057	<b>PILES, STEEL 10 X 57</b>
16	2501-6335010	<b>PREBORE HOLES</b> HOLES SHALL BE BORED TO THE ELEVATIONS FOUND ON SHEET 10. PILES SHALL BE DRIVEN THROUGH THE HOLES TO THE DESIGN BEARING. BENTONITE SHALL BE USED TO MAINTAIN THE HOLE OPENING.
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.
20	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.
21	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.
22	2528-2518000	<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.
23	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.
25	2601-2634100	<b>MULCHING</b>
26	2601-2642100	<b>STABILIZING CROP-SEEDING AND FERTILIZING</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 25 & 26. 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: BRIDGE REPLACEMENT ON K67 (HANCOCK AVE) WEST LINE SEC. 1 T86N R45W WILLOW TWP.	SHEET DESCRIPTION: ESTIMATE REFERENCE INFORMATION
BSB DRAWN BY: _____ BK DESIGNED BY: _____ MJN APPROVED BY: _____ DATE: _____	REVISION: _____ DATE: _____
PROJECT NO. BROS-CO97(150)-8J-97	
SHEET 4	



GENERAL NOTES:

THIS DESIGN IS FOR A 188'-10" x 30'-6" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE ON K67 (HANCOCK 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 EROSIVENESS 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 STORGAE 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 IDOT CURRENT SPECIFICATIONS.  
FERTILIZER:  
17 LBS. OF 13-13-13 (OR EQUIVALENT) COMMERCIAL FERTILIZER PER 1000 SQ. FT.

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

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

271-9  
09-27-94

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 IN A RANGE OF 0 TO 170,000 PPM. ANALYSIS OF TOTAL CHROMIUM ON THESE SAMPLES WERE IN A RANGE OF 0 TO 4,300 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.

PILE NOTES

SOUTH ABUTMENT

THE CONTRACT LENGTH OF 105 FEET FOR THE SOUTH ABUTMENT PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 146 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 SOUTH ABUTMENT PILES IS 112 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.

SOUTH PIER

THE CONTRACT LENGTH OF 120 FEET FOR THE SOUTH PIER PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 169 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 SOUTH PIER PILES IS 130 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.

NORTH PIER

THE CONTRACT LENGTH OF 120 FEET FOR THE NORTH PIER PILES IS BASED ON A COHESIVE SOIL CLASSIFICATION, A TOTAL FACTORED AXIAL LOAD PER PILE (PU) OF 169 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.

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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

BSB DRAWN BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
BK DESIGNED BY: \_\_\_\_\_ REVISION \_\_\_\_\_  
MJN APPROVED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON K67(HANCOCK AVE)  
WEST LINE SEC. 1 T86N R45W WILLOW TWP.

SHEET DESCRIPTION: GENERAL NOTES

PROJECT NO.  
BROS-C097(150)-84-97

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 quardrail installation.

No.	Direction of Traffic	Location		Layout Lengths				Long-Span System		Delineators and Object Markers ②				Bid Items										Remarks				
		①	Side	Station	Offset	BA-250, BA-260, LS-630, OR LS-635				SI-211	Object Marker SI-173			Bolted End Anchor	Post Adapter	Steel Beam Guardrail	Barrier Transition Section	BA-250 or LS-630				BA-260 or LS-635						
						VT1	VF	VT2	ET		Type 1	Type 2	Type 3					End Terminal				Barrier Transition Section	End Terminal					
						Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.		Lin. Ft.	White	OM2-2					OM-3L	OM-3R	BA-202	BA-210	BA-200	BA-201		BA-205	BA-206	LS-625	LS-626
1	W	0	4+84	15.62' LT.	25.00	-	-	35.17	-	-	3	-	-	1	-	A	1	-	-	-	-	-	-	-	-	-	1	1
2	E	0	4+84	15.62' RT.	25.00	-	-	35.17	-	-	3	-	-	-	1	A	1	-	-	-	-	-	-	-	-	-	1	1
1	W	0	6+78	15.62' LT.	25.00	-	-	35.17	-	-	3	-	-	1	-	A	1	-	-	-	-	-	-	-	-	-	1	1
2	E	0	6+78	15.62' RT.	25.00	-	-	35.17	-	-	3	-	-	-	1	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		
0+00	1.0			
17+00	1.0			
Totals	2.0			

MDJ  
DRAWN BY: \_\_\_\_\_  
BK  
DESIGNED BY: \_\_\_\_\_  
MJN  
APPROVED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION \_\_\_\_\_

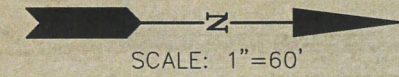
PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON K67 (HANCOCK AVE)  
WEST LINE SEC. 1 T86N R45W WILLOW TWP.  
SHEET DESCRIPTION: TABULATIONS



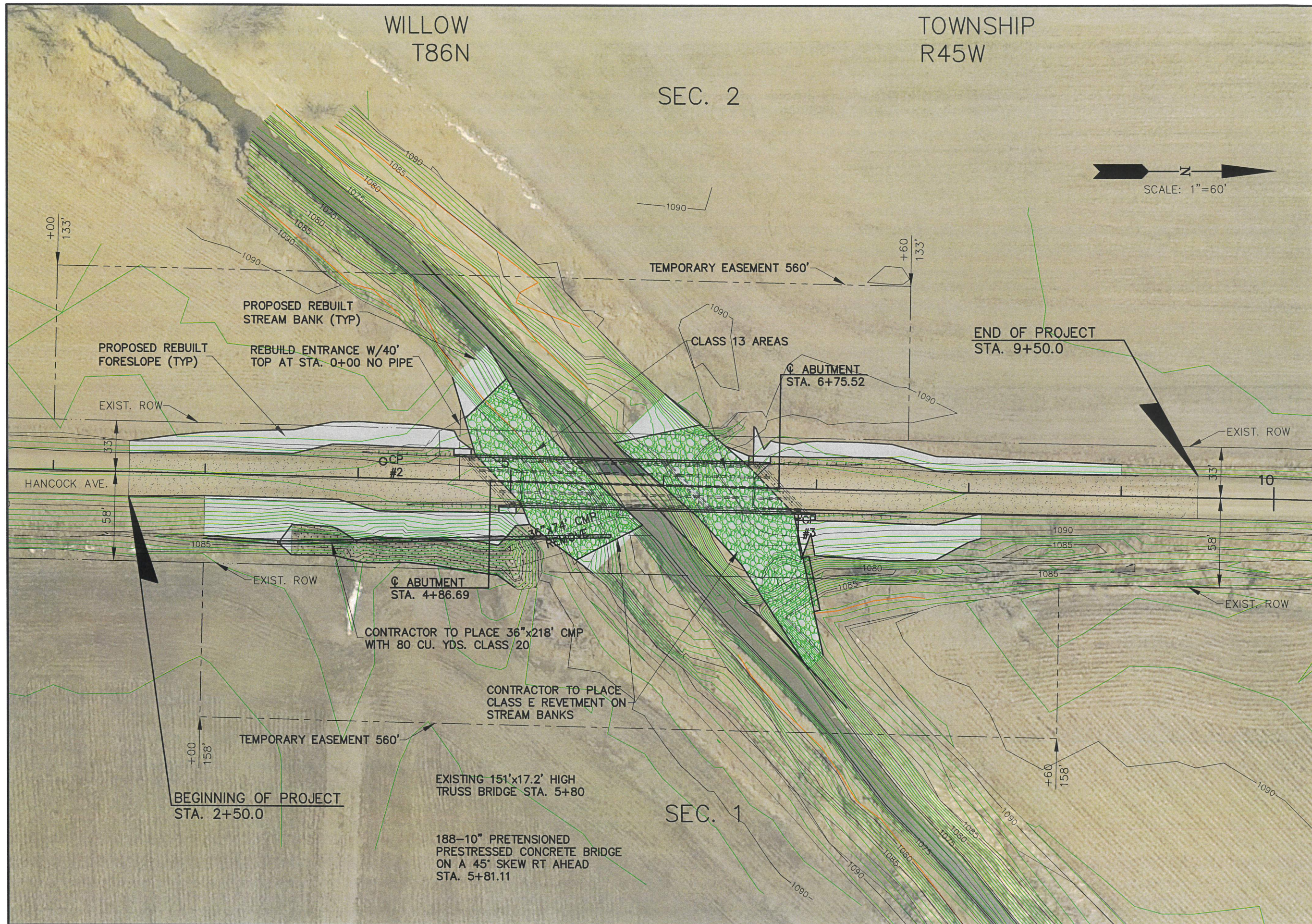
WILLOW  
T86N

TOWNSHIP  
R45W

SEC. 2



SCALE: 1"=60'



WOODBURY COUNTY  
ENGINEERS OFFICE

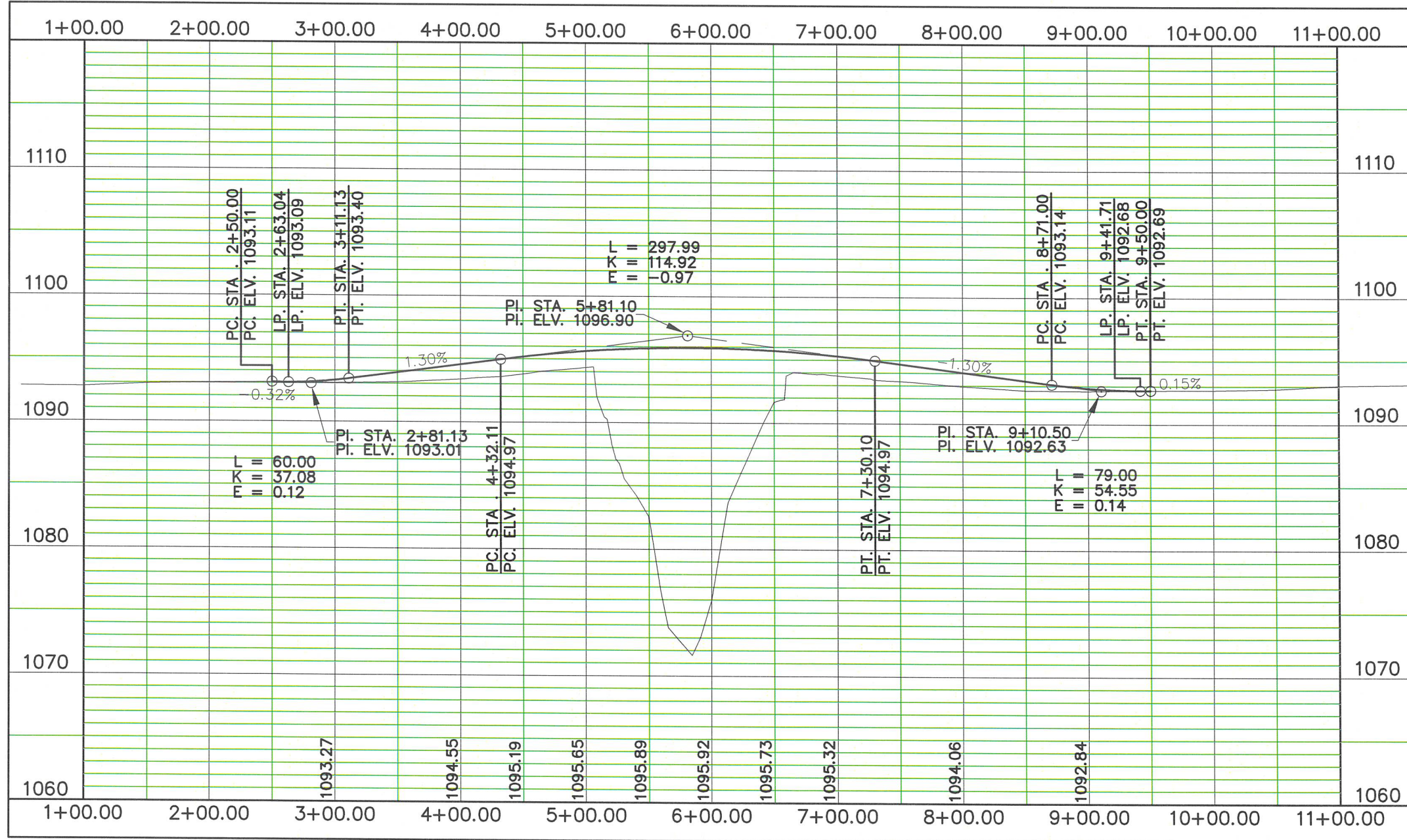
BSB	DRAWN BY:	
BK	DESIGNED BY:	
MJN	APPROVED BY:	
DATE:	REVISION	DATE:

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON K67 (HANCOCK AVE)  
WEST LINE SEC. 1 T86N R45W WILLOW TWP.

SHEET DESCRIPTION: PLAN VIEW

PROJECT NO.  
BROS-C097(150)-8J-97  
SHEET  
7





PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON K67 (HANCOCK AVE)  
 WEST LINE SEC. 1 T86N R45W WILLOW TWP.

SHEET DESCRIPTION: PROFILE VIEW

PROJECT NO.  
 BROS-CO97(150)-8J-97  
 SHEET  
**8**

WOODBURY COUNTY  
 ENGINEERS OFFICE

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



**LOG OF EXPLORATORY BORING**

Sheet 1 of 1

Job Number: G7183  
 Project: Bridge Replacement U-138  
 Date Started: 10/4/23  
 Date Completed: 10/4/23  
 Boring No.: S-1  
 Boring Location: Woodbury Co., IA  
 Drill Type: Hollow Stem  
 Ground Elev.: 1094.0

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	USCS	Blow Counts SPT (N) Blows/Foot	Moisture Content, %	Dry Density (PCF)	% Saturation	Hand Penetrometer (TSF)	Unconfined Comp. Strength (TSF)	Liquid Limit %	Plastic Limit %	Plasticity Index %	Cone Penetrometer (Blows/ 1-3/4")
0-5	6-Inch Gravel Layer		Stiff Silty Clay, Medium Brown to Dark Gray, Fill		4-3-2 N= 5									
5-10					4-3-3 N= 6									
10-15			Soft Silty Clay, Dark Gray to Gray Brown	CL	3-1-2 N= 3									
15-20					1-2-2 N= 4									
20-25			Stiff Silty Clay, Dark Gray	CL	1-2-3 N= 5									
25-30			(Medium Gray and Gray Brown, Oxidized)		2-2-3 N= 5									
30-35			Soft Silty Clay, Dark Gray	CL	1-1-1 N= 2									
35-40			Stiff Silty Clay, Dark Gray	CL	1-2-3 N= 5									
40-45			(Medium Gray)		1-2-3 N= 5									
45-50			Soft Silty Clay, Medium Gray	CL	1-1-2 N= 3									
50-55			Gravelly Sand, Brownish Gray	SW	2-2-3 N= 5									
55-60			(Gravel/Cobbles)		5-8-10 N= 18									
60-65			(Cobbles/Possible Boulders)		5-12-50 N= 62									
65-70					19-15-19 N= 34									
70-75			Granular Material, Medium Gray	SW	17-21-23 N= 44									
75-80			Cohesive Material, Medium Gray	CH	17-22-37 N= 59									
80			END OF BORING AT 80 FEET FREE WATER WAS ENCOUNTERED AT 35 FEET AT TIME OF DRILLING AND AT 14.1 FEET 24-HOURS AFTER DRILLING		19-17-22 N= 39									

LOG OF BORING G7183.GPJ CERTIFIED TESTING.GDT 10/16/23

**LOG OF EXPLORATORY BORING**

Sheet 1 of 1

Job Number: G7183  
 Project: Bridge Replacement U-138  
 Date Started: 10/5/23  
 Date Completed: 10/5/23  
 Boring No.: S-2  
 Boring Location: Woodbury Co., IA  
 Drill Type: Hollow Stem  
 Ground Elev.: 1094.4

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	USCS	Blow Counts SPT (N) Blows/Foot	Moisture Content, %	Dry Density (PCF)	% Saturation	Hand Penetrometer (TSF)	Unconfined Comp. Strength (TSF)	Liquid Limit %	Plastic Limit %	Plasticity Index %	Cone Penetrometer (Blows/ 1-3/4")
0-5	6-Inch Gravel Layer		Stiff Silty Clay, Dark Brown and Dark Gray, Fill		5-5-4 N= 9									
5-10					2-3-3 N= 6									
10-15			Soft Silty Clay, Grayish Yellow Brown	CL	2-1-1 N= 2									
15-20					3-2-2 N= 4									
20-25			(Medium Gray)		2-1-3 N= 4									
25-30					2-1-2 N= 3									
30-35			Soft Silty Clay, Dark Gray	CL	1-2-1 N= 3									
35-40			Stiff Silty Clay, Dark Gray	CL	1-2-3 N= 5									
40-45			(Medium Gray)		1-2-3 N= 5									
45-50			Soft Silty Clay, Dark Gray	CL	1-1-2 N= 3									
50-55			Gravelly Sand, Dark Gray	SW	1-2-15 N= 17									
55-60			(Yellow Brown)		3-3-5 N= 8									
60-65					9-11-14 N= 25									
65-70			(Grayish Yellow Brown)		9-13-15 N= 28									
70-75			Cohesive Material, Medium Gray, Oxidized	CH	10-14-19 N= 33									
75-80			Clayey Sand, Medium Gray, Oxidized	SC	6-4-8 N= 12									
80			Cohesive Material, Medium Gray, Oxidized	CH	50-50-50 N= 100									
80			END OF BORING AT 80 FEET FREE WATER WAS ENCOUNTERED AT 25 FEET AT TIME OF DRILLING AND AT 15.3 FEET 24-HOURS AFTER DRILLING											

LOG OF BORING G7183.GPJ CERTIFIED TESTING.GDT 10/16/23

**WOODBURY COUNTY**  
ENGINEERS OFFICE

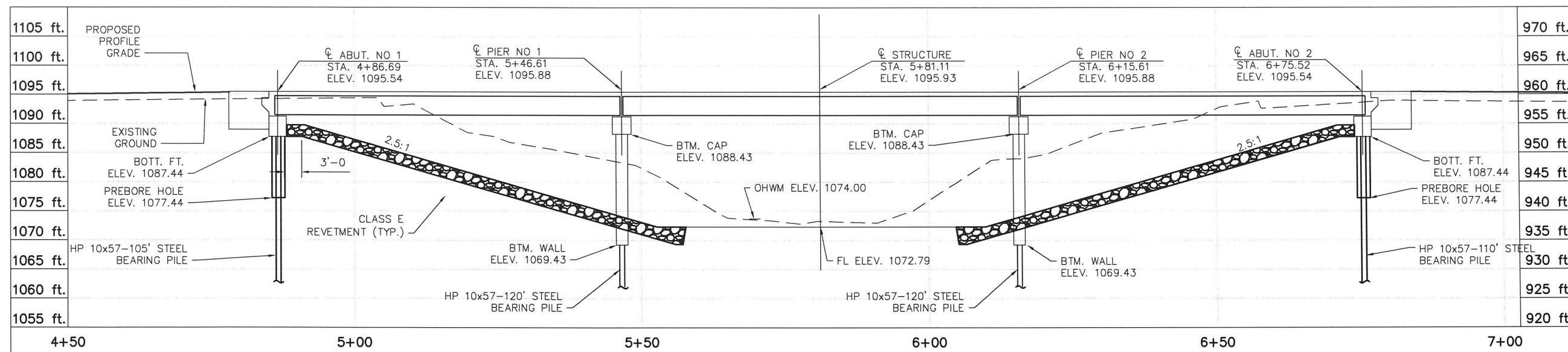
MDJ  
 DRAWN BY: \_\_\_\_\_  
 BK  
 DESIGNED BY: \_\_\_\_\_  
 MJN  
 APPROVED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON K67 (HANCOCK AVE)  
 WEST LINE SEC. 1 T86N R45W WILLOW TWP.  
 SHEET DESCRIPTION: BORING LOGS

PROJECT NO.  
 BROS-CO97(105)-8J-97

**HYDRAULIC DATA:**

970 ft.	DRAINAGE AREA	105 SQ. MI.
965 ft.	DESIGN DISCHARGE	12,589 CFS (Q50)
960 ft.	DESIGN H.W. ELEV.	1088.49 FT
955 ft.	SLOPE	0.0023 FT/FT
950 ft.	BRIDGE WATERWAY AREA	26977 SQ. FT.
945 ft.	DESIGN VELOCITY	8.4 FT/S
940 ft.	Q10	7,173 CFS
935 ft.	STAGE	1086.86 FT
930 ft.	BACKWATER	0.11 FT
925 ft.	AVG. BRIDGE VELOCITY	5.5 FT/S
920 ft.	Q25	10,436 CFS
	STAGE	1088.00 FT
	BACKWATER	0.50 FT
	AVG. BRIDGE VELOCITY	7.3 FT/S
	Q50	12,589 CFS
	STAGE	1088.49 FT
	BACKWATER	0.94 FT
	AVG. BRIDGE VELOCITY	8.4 FT/S
	FREEBOARD	3.00 FT
	Q100	14,700 CFS
	STAGE	1088.94 FT
	BACKWATER	1.45 FT
	AVG. BRIDGE VELOCITY	9.5 FT/S
	FREEBOARD	2.55 FT
	Q200	18,553 CFS
	Q500	20,235 CFS
	DESIGN SCOUR ELEV. (Q50)	= 931.1 FT
	CHECK SCOUR ELEV. (Q100)	= 931.0 FT

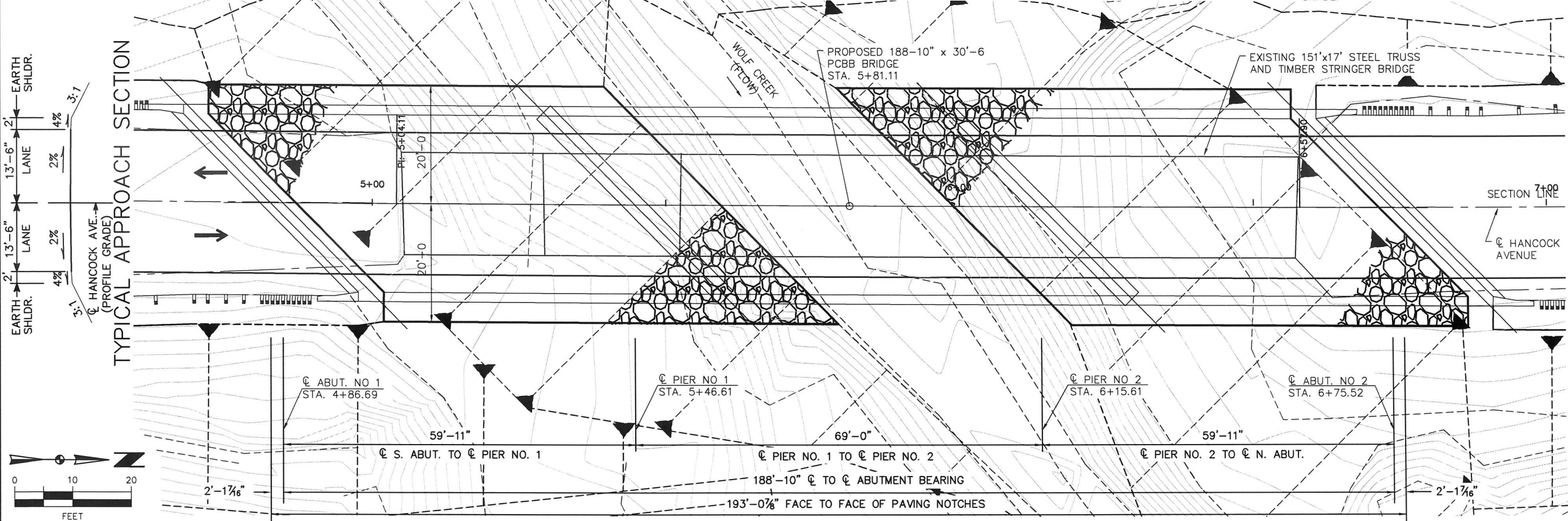


**LONGITUDINAL SECTION ALONG CENTERLINE OF ROADWAY**

NOTE: TOP OF BRIDGE DECK CROWN 0.03' BELOW PROFILE GRADE.

FILENAME: U:\County Secondary Roads\Jacob G\138760722\_SHEETS.dwg DATE PLOTTED: 12/5/2023 10:10 AM PLOTTED BY: Ben Kusler PLOT SCALE: 1:2

**TYPICAL APPROACH SECTION**

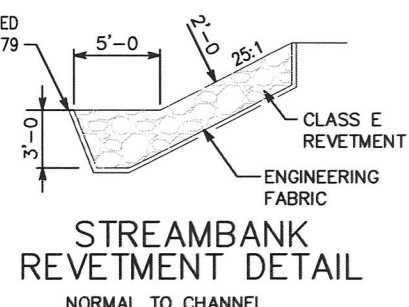


**SITUATION PLAN**

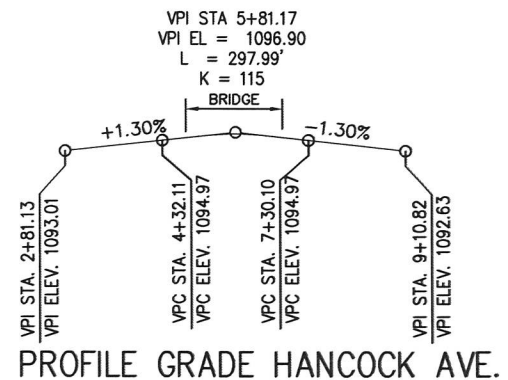
**BENCHMARKS:**

- CP#1 - Sta. (-)1+81.87, 10.44' Rt.  
Elevation = 1091.80  
N - 3577902.8690  
E - 4234428.3230
- CP#2 - Sta. 4+14.29, 12.76' Lt.  
Elevation = 1092.56  
N - 3578499.3400  
E - 4234418.4110
- CP#3 - Sta. 6+86.27, 16.11' Rt.  
Elevation = 1093.56  
N - 3578770.6100  
E - 4234452.8380
- CP#4 - Sta. 14+00.24, 10.94' Lt.  
Elevation = 1094.14  
N - 3579484.9890  
E - 4234440.4110

NOTE: ALL DIMENSIONS ON THESE PLANS ARE IN FEET UNLESS OTHERWISE NOTED. ALL STATIONS AND ELEVATIONS ARE IN FEET.



**STREAMBANK REVETMENT DETAIL**



**PROFILE GRADE HANCOCK AVE.**

**LOCATION:**  
HANCOCK AVENUE  
OVER WOLF CREEK  
T86N-R45W  
SECTION 1,  
WILLOW TOWNSHIP,  
WOODBURY COUNTY,  
FHWA NO. 350910  
LATITUDE: 42.288990,  
LONGITUDE: -96.038700

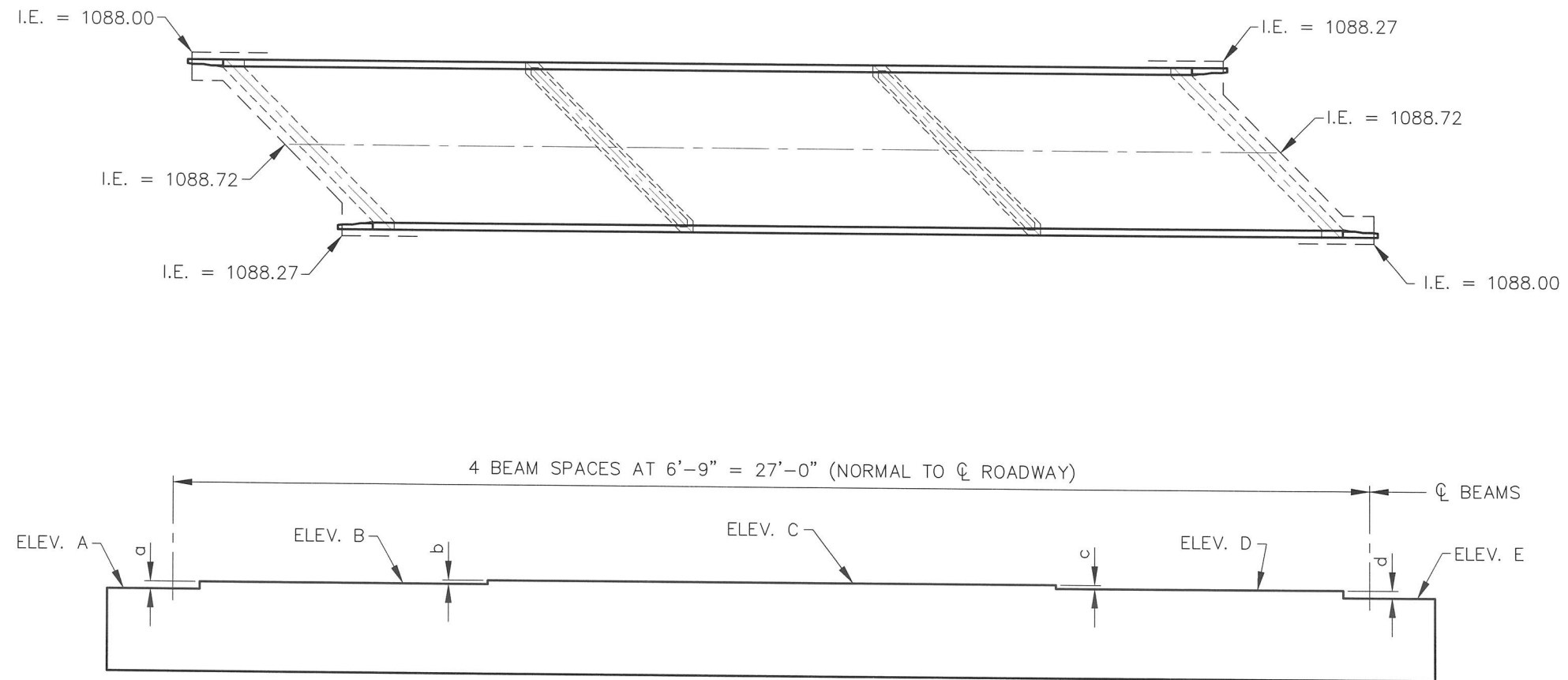
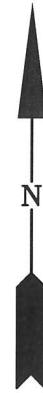
DESIGN FOR 45' SKEW R.A.  
**188'-10" x 30'-6" PRETENSIONED  
PRESTRESSED CONC. BEAM BRIDGE**  
END SPANS OF 59'-11" INTERIOR SPAN OF 69'-0"

**SITUATION PLAN**

STATION: 5+81.11 APR., 2023

**WOODBURY COUNTY**





### ABUTMENT AND PIER STEP DIAGRAM

(LOOKING UPSTREAM)  
NO SCALE

(BEAM LINE LABEL CORRESPONDS WITH ELEVATION POINT LABEL. REFER TO "TABLE OF ABUTMENT AND PIER SEAT ELEVATIONS" FOR ELEVATION POINT VALUES.)

ABUTMENT WING ELEVATIONS		
LOCATION	ELEVATION "A"	ELEVATION "B"
NW ABUTMENT	1095.34	1095.27
SW ABUTMENT	1095.09	1095.00
NE ABUTMENT	1095.09	1095.00
SE ABUTMENT	1095.34	1095.27

TABLE OF ABUTMENT AND PIER SEAT ELEVATIONS					
LOCATION	ELEVATION "A" BEAM A	ELEVATION "B" BEAM B	ELEVATION "C" BEAM C	ELEVATION "D" BEAM D	ELEVATION "E" BEAM E
ABUTMENT NO. 1	1090.94	1091.13	1091.30	1091.24	1091.16
PIER NO. 1	1091.43	1091.59	1091.72	1091.63	1091.51
PIER NO. 2	1091.51	1091.63	1091.72	1091.59	1091.43
ABUTMENT NO. 2	1091.16	1091.24	1091.30	1091.13	1090.94

WOODBURY COUNTY  
ENGINEERS OFFICE

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

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON K67 (HANCOCK AVE)  
WEST LINE SEC. 1 T86N R45W WILLOW TWP.  
SHEET DESCRIPTION: BRIDGE DETAILS

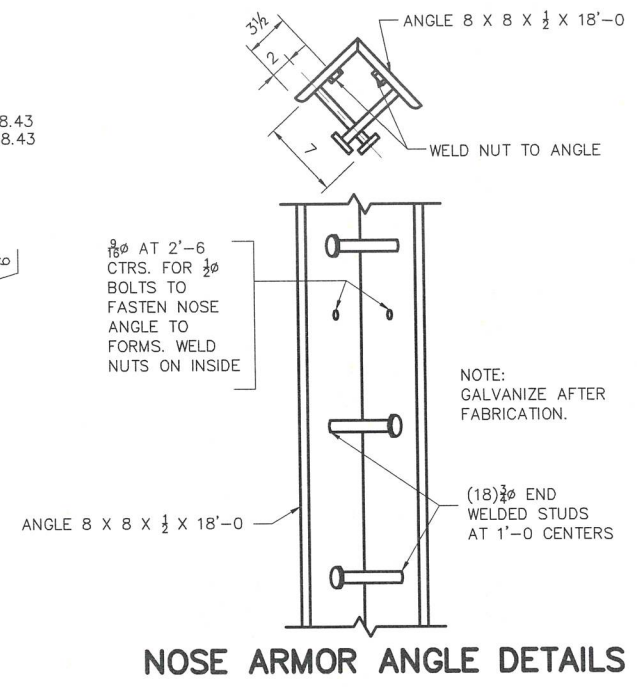
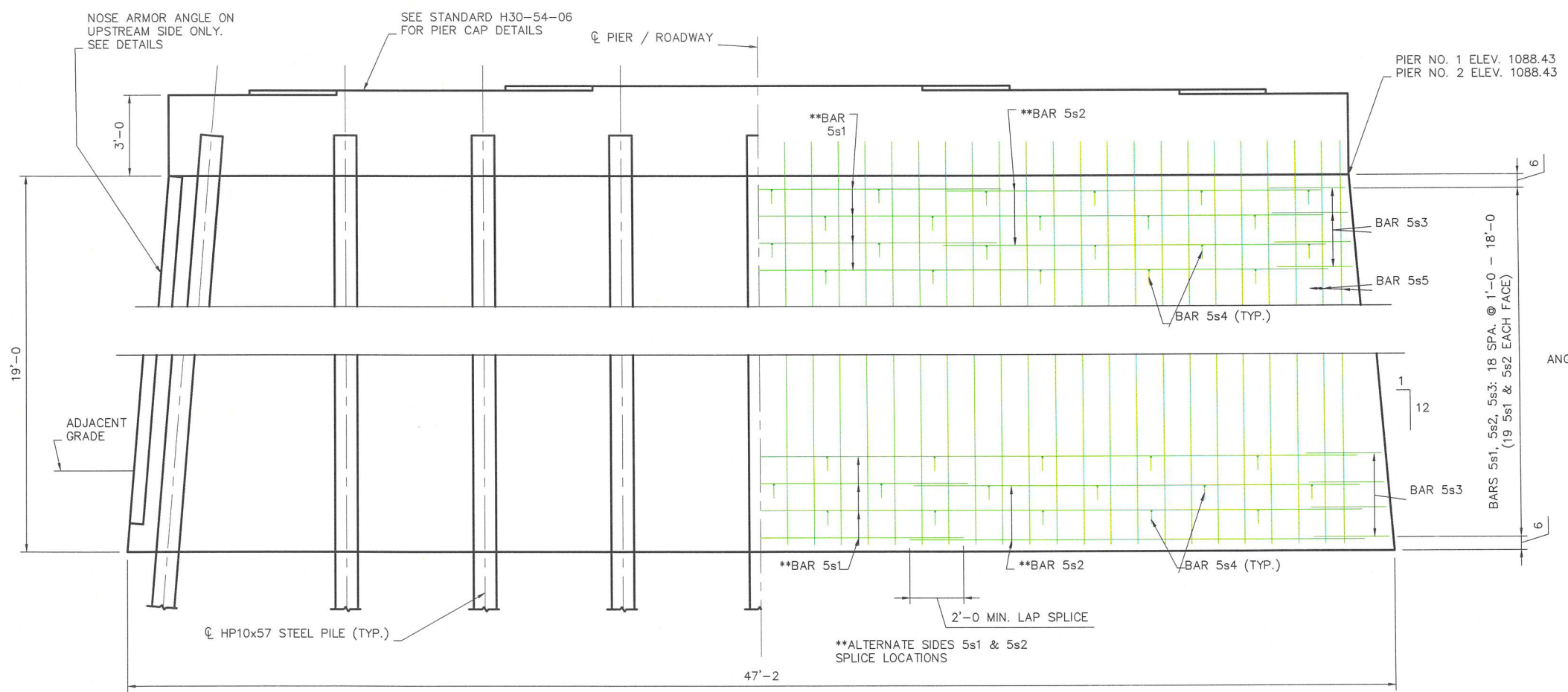
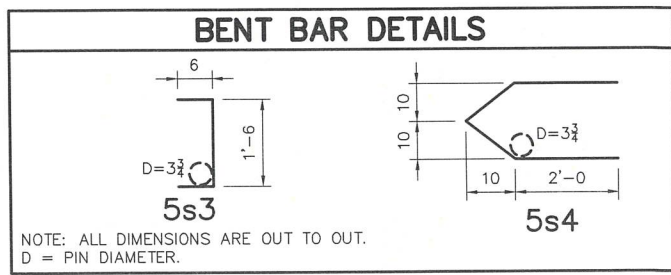
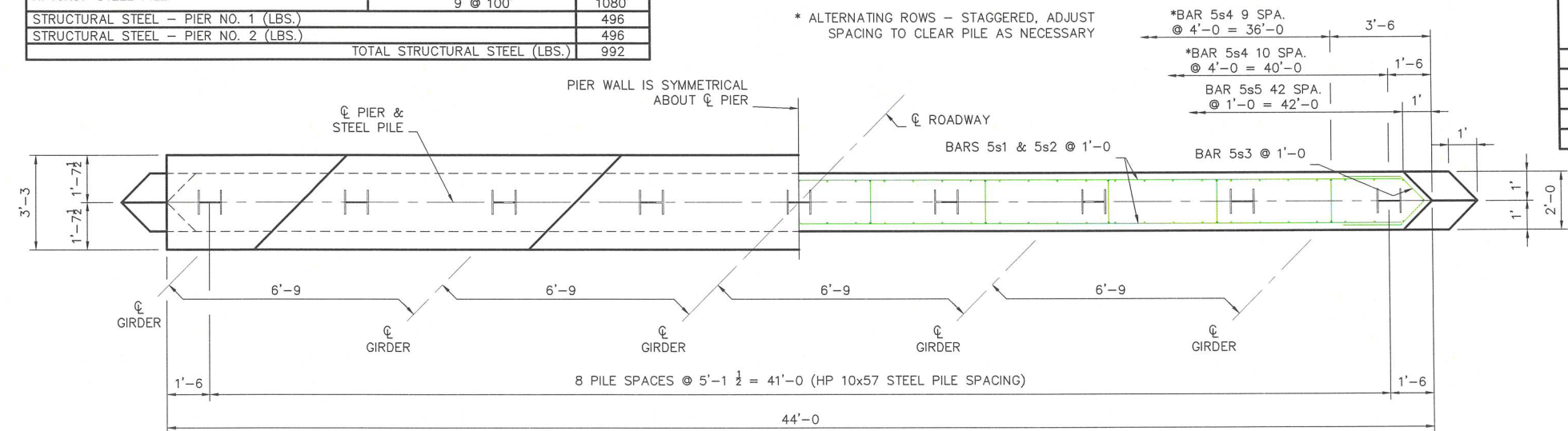
PROJECT NO.  
BROS-C097(105)-8J-97  
SHEET

**CONCRETE AND MISC. QUANTITIES: TWO PIER WALLS**

PIER WALL CONCRETE - PIER NO. 1	62.8
PIER WALL CONCRETE - PIER NO. 2	62.8
TOTAL CONCRETE (C.Y.)	125.6
HP10x57 STEEL PILE	9 @ 100'
STRUCTURAL STEEL - PIER NO. 1 (LBS.)	1080'
STRUCTURAL STEEL - PIER NO. 2 (LBS.)	1080'
TOTAL STRUCTURAL STEEL (LBS.)	992

**REINFORCING BAR LIST - TWO PIER WALLS**

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5s1	WALL, HORIZONTAL	—	76	30'-0"	2,378
5s2	WALL, HORIZONTAL	—	76	VARIES 4 SETS OF 19 @ 14'-0" TO 17'-0"	1,229
5s3	WALL, ENDS	—	76	6'-5"	509
5s4	WALL, TIES	—	378	2'-6"	986
5s5	WALL, VERTICAL	—	176	20'-0"	3,671
				TOTAL WEIGHT (LBS.)	8,773

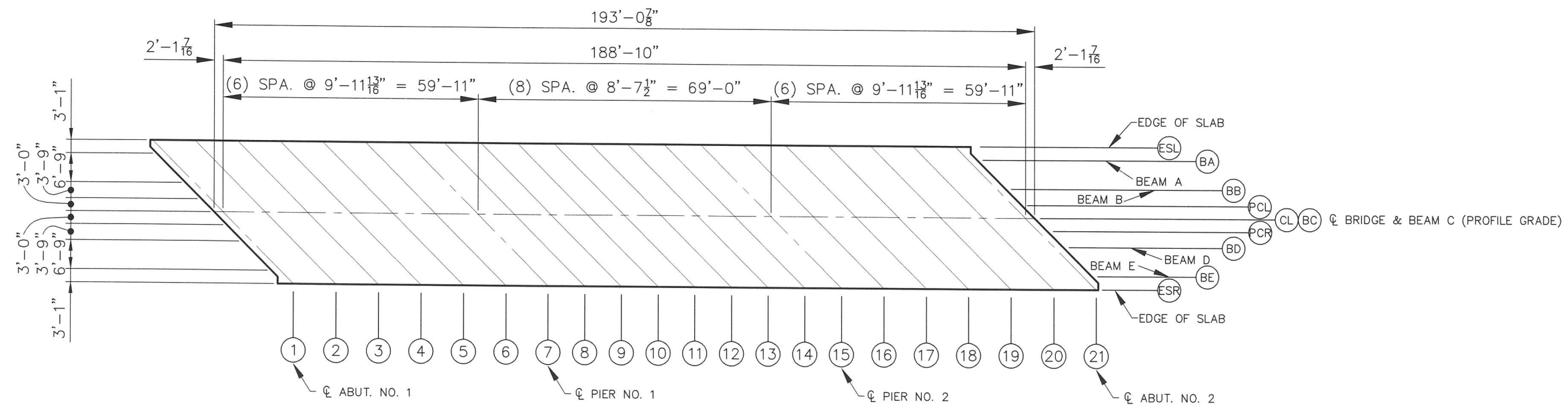


**WOODBURY COUNTY ENGINEERS OFFICE**  
 PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON K67 (HANCOCK AVE) WEST LINE SEC. 1 T86N R45W WILLOW TWP.  
 SHEET DESCRIPTION: PIER LAYOUT  
 PROJECT NO. BROS-C097(105)-8J-97  
 SHEET 12  
 DRAWN BY: BSB  
 DESIGNED BY: BK  
 MUJ  
 APPROVED BY: MUJ  
 DATE: \_\_\_\_\_  
 REVISION: \_\_\_\_\_



TOP OF SLAB ELEVATIONS

POINT	☉ SOUTH ABUTMENT BEARING						☉ SOUTH PIER BEARING						☉ NORTH PIER BEARING						☉ NORTH 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	LINE 14	LINE 15	LINE 16	LINE 17	LINE 18	LINE 19	LINE 20	LINE 21
ESL (EDGE OF SLAB LEFT)	1095.10	1095.19	1095.27	1095.35	1095.41	1095.47	1095.52	1095.55	1095.58	1095.61	1095.62	1095.63	1095.63	1095.63	1095.62	1095.60	1095.57	1095.53	1095.49	1095.43	1095.37
BA (BEAM A)	1095.19	1095.28	1095.36	1095.43	1095.49	1095.55	1095.59	1095.63	1095.65	1095.67	1095.69	1095.69	1095.69	1095.69	1095.68	1095.65	1095.62	1095.58	1095.53	1095.48	1095.41
BB (BEAM B)	1095.38	1095.47	1095.54	1095.61	1095.67	1095.72	1095.76	1095.78	1095.80	1095.82	1095.83	1095.83	1095.83	1095.81	1095.80	1095.77	1095.73	1095.68	1095.63	1095.57	1095.49
PCL (PARABOLIC CROWN LEFT)	1095.49	1095.57	1095.64	1095.71	1095.76	1095.81	1095.84	1095.87	1095.89	1095.90	1095.90	1095.90	1095.90	1095.88	1095.86	1095.83	1095.79	1095.74	1095.68	1095.62	1095.54
☉ & BC (☉ BRIDGE & BEAM C)	1095.55	1095.63	1095.69	1095.76	1095.81	1095.85	1095.88	1095.91	1095.92	1095.93	1095.94	1095.93	1095.92	1095.91	1095.88	1095.85	1095.81	1095.75	1095.69	1095.63	1095.54
PCR (PARABOLIC CROWN RIGHT)	1095.54	1095.62	1095.68	1095.74	1095.79	1095.83	1095.86	1095.88	1095.90	1095.90	1095.90	1095.90	1095.89	1095.87	1095.84	1095.81	1095.76	1095.71	1095.64	1095.57	1095.49
BD (BEAM D)	1095.49	1095.57	1095.63	1095.68	1095.73	1095.77	1095.80	1095.81	1095.83	1095.83	1095.83	1095.83	1095.82	1095.80	1095.78	1095.76	1095.72	1095.67	1095.61	1095.54	1095.47
BE (BEAM E)	1095.41	1095.48	1095.53	1095.58	1095.62	1095.65	1095.68	1095.69	1095.69	1095.69	1095.69	1095.67	1095.65	1095.63	1095.59	1095.55	1095.49	1095.43	1095.36	1095.28	1095.19
ESR (EDGE OF SLAB RIGHT)	1095.37	1095.43	1095.49	1095.53	1095.57	1095.60	1095.62	1095.63	1095.63	1095.63	1095.62	1095.61	1095.58	1095.55	1095.52	1095.47	1095.41	1095.35	1095.27	1095.19	1095.10



BSB  
DRAWN BY: \_\_\_\_\_  
BK  
DESIGNED BY: \_\_\_\_\_  
MJN  
APPROVED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_

PROJECT DESCRIPTION: BRIDGE REPLACEMENT ON K67 (HANCOCK AVE)  
WEST LINE SEC. 1 T86N R45W WILLOW TWP.

SHEET DESCRIPTION: TOP OF SLAB ELEVATIONS