

BRIDGE REPLACEMENT AND APPROACHES - CCS
LETTING DATE: NOVEMBER 24, 2020

PROJECT NO. L-B(K46)--73-97

WOODBURY COUNTY

TOTAL SHEETS
28

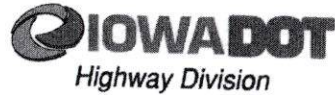
STANDARD ROAD PLANS
STANDARD ROAD PLANS ARE LISTED ON SHEET C.2.

SECTION 404 PERMIT AND CONDITIONS
281-1
10-18-16
CONSTRUCT THIS PROJECT ACCORDING TO THE REQUIREMENTS OF U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT 14, PERMIT NO. 2019-1342. A COPY OF THIS PERMIT IS AVAILABLE UPON REQUEST. THE U.S. ARMY CORPS OF ENGINEERS RESERVES THE RIGHT TO VISIT THE SITE WITHOUT PRIOR NOTICE.

THIS PROJECT IS COVERED BY IOWA DNR FLOODPLAIN CONSTRUCTION PERMIT NO. FP 2019-144, DATED: 08-01-2019

INDEX OF SEALS

SHEET NO.	NAME	TYPE
-	-	-



PLANS OF PROPOSED IMPROVEMENT ON THE
SECONDARY ROAD SYSTEM
WOODBURY COUNTY
PROJECT NO. L-B(K46)--73-97
BRIDGE REPLACEMENT AND APPROACHES - CCS
ON MASON AVE, OVER LITTLE SIOUX RIVER, S21 T88 R43

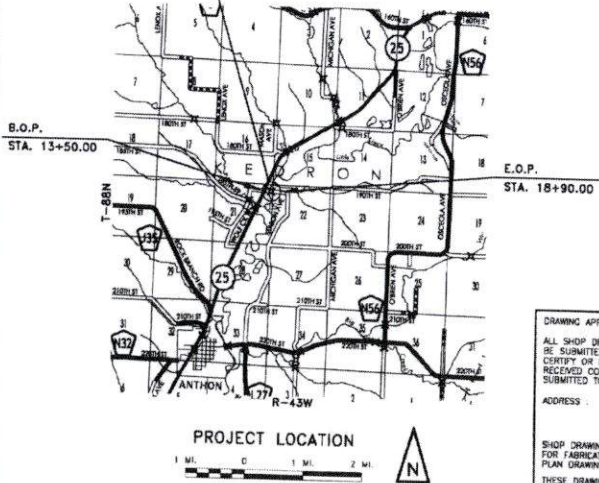
REFER TO THE PROPOSAL FORM FOR LIST OF APPLICABLE SPECIFICATIONS.

THIS PROJECT IS COVERED BY THE IOWA DEPARTMENT OF NATURAL RESOURCES NPDES GENERAL PERMIT NO. 2. THE CONTRACTOR SHALL CARRY OUT THE TERMS AND CONDITIONS OF GENERAL PERMIT NO. 2 AND THE STORM WATER POLLUTION PREVENTION PLAN WHICH IS A PART OF THESE CONTRACT DOCUMENTS. REFER TO SECTION 2802 OF THE STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION.

INDEX OF SHEETS

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B.O.P. STA. 13+50.00
E.O.P. STA. 18+90.00
STATION 15+95.00
PROPOSED 209'-0" x 24'-0" CONTINUOUS CONCRETE SLAB BRIDGE 0" SKEW

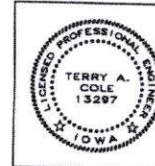


MILEAGE SUMMARY
STA. 13+50.00 TO STA. 18+90.00 = 540.00 LIN. FT. = 0.1023 MILES

2015, TRAFFIC COUNT = 20 V.P.D.

UTILITY CONTACTS

COMPANY	UTILITY	CONTACT	PHONE #
WOODBURY REC	ELECTRIC	NATE BAUER	712-870-1031
-	-	-	-
-	-	-	-



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.
Terry A. Cole DATE: 10/26/20
TERRY A. COLE, P.E.
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2020.
PAGES OR SHEETS COVERED BY THIS SEAL:
A.1, C.1 - C.2, D.1 - D.3, V.1 - V.15, W.1



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.
Mark J. Nahra DATE: 11/3/2020
MARK J. NAHRA, P.E.
MY LICENSE RENEWAL DATE IS DECEMBER 31, 2020.
PAGES OR SHEETS COVERED BY THIS SEAL:
X.1 - X.5

DRAWING APPROVAL
ALL SHOP DRAWINGS AND FALSEWORK DRAWINGS THAT REQUIRE APPROVAL SHALL BE SUBMITTED TO AND APPROVED BY THE CONTRACTOR, WHO SHALL STAMP, CERTIFY OR PROVIDE OTHER SUCH EVIDENCE ON THE DRAWINGS THAT THEY HAVE RECEIVED CONTRACTOR APPROVAL. THE APPROVED DRAWINGS SHALL THEN BE SUBMITTED TO CALHOUN-BURNS AND ASSOCIATES, INC. FOR REVIEW AND APPROVAL.
ADDRESS: 1500 30TH STREET WEST DES MOINES, IOWA 50266 TELEPHONE: (515) 224-4344 FAX: (515) 224-1385
SHOP DRAWINGS SHALL BE INDIVIDUALLY DIMENSIONED FOR FABRICATION OF INDIVIDUAL PIECES OF EACH COMPONENT. PHOTOCOPIES OF PLAN DRAWINGS AND NON-CONTRACTOR APPROVED PLANS WILL BE REJECTED. THESE DRAWINGS SHALL NOT BE SENT TO IOWA D.O.T. OFFICE OF BRIDGES AND STRUCTURES



APPROVED
Mark J. Nahra 11/3/2020
WOODBURY COUNTY ENGINEER DATE

[Signature]
[Signature]
[Signature]
BOARD OF SUPERVISORS DATE: 11/3/2020

CALHOUN-BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50266 (515)224-4344

JOB NO. 2019109

DESIGNED BY: JCS
DRAWN BY: JCS
CHECKED BY: JCS

WOODBURY COUNTY

PROJECT NO. L-B(K46)--73-97

SHEET A.1

TOTAL ESTIMATED QUANTITIES: 209'-0 x 24'-0 C.C.S. BRIDGE

REF. NO.	CODE NO.	ITEM	UNIT	2 ABUTS	3 PIERS	SUPER	TOTAL
1	2101-0850001	CLEARING AND GRUBBING	ACRE	-	-	-	0.7
2	2102-2625000	EMBANKMENT-IN-PLACE	CY	-	-	-	620
3	2102-2710070	EXCAVATION, CLASS 19, ROADWAY AND BORROW	CY	-	-	-	133
4	2104-2710030	EXCAVATION, CLASS 10, CHANNEL	CY	-	-	-	3,775
5	2312-8380310	GRAVEL SURFACING ON ROAD, CRUSHED CONCRETE	TON	-	-	-	130
6	2401-8745825	REMOVAL OF EXISTING BRIDGE	LS	-	-	-	1
7	2402-2720000	EXCAVATION, CLASS 20	CY	110	278	-	388
8	2402-2721000	EXCAVATION, CLASS 21	CY	-	644	-	644
9	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	20.4	270.3	431.0	721.7
10	2404-7775000	REINFORCING STEEL	LD	3,130	40,181	106,382	149,693
11	2414-8424124	CONCRETE OPEN RAILING, TL-4	LF	-	-	-	130
12	2501-0201042	PILES, STEEL, HP 10 X 42 : 12 @ 80'	LF	960	-	-	960
13	2501-0201057	PILES, STEEL, HP 10 X 37 : 34 @ 65' @ 18 @ 70'	LF	-	-	-	1,600
14	2501-8335018	PREDRILLED HOLES : 12 @ 10'	LF	120	-	-	120
15	2505-4008420	STEEL BEAM GUARDRAIL, BARRIER TRANSITION SECTION, BA-221	EACH	-	-	-	4
16	2505-4021010	STEEL BEAM GUARDRAIL, END ANCHOR, BOLTED	EACH	-	-	-	4
17	2505-4021222	STEEL BEAM GUARDRAIL, TANGENT END TERMINAL, BA-223	EACH	-	-	-	4
18	2507-7838630	BRIDGE WING ARMORING - EROSION STONE	SY	-	-	-	36
19	2507-3250005	ENGINEERING FABRIC	SY	-	-	-	2,600
20	2507-6800031	REVESTMENT, CLASS B	TON	-	-	-	6,400
21	2507-6800061	REVESTMENT, CLASS E	TON	-	-	-	2,400
22	2507-6875002	REVESTMENT, REMOVE AND REPLACE	CY	-	-	-	139
23	2518-3516000	SAFETY CLOSURE	EACH	-	-	-	2
24	2578-8445110	TRAFFIC CONTROL	LS	-	-	-	1
25	2533-4595005	MEGALON	LS	-	-	-	7
26	2535-8745045	REMOVAL OF ASBESTOS	LS	-	-	-	1
27	2595-8999010	SALVAGED TRUSS PIN ASSEMBLY	LS	-	-	-	1
28	2601-2834100	MULCHING	ACRE	-	-	-	0.4
29	2601-2836043	SEEDING AND FERTILIZING (RURAL)	ACRE	-	-	-	0.6

REF. NO. ESTIMATE REFERENCE INFORMATION

- SELECTIVE CLEARING WILL BE REQUIRED ON THIS PROJECT. ALL DESIRABLE TREES OUTSIDE THE CONSTRUCTION AREA WILL BE SAVED. TREES AND SHRUBS WITHIN THE CONSTRUCTION LIMITS THAT DO NOT HINDER CONSTRUCTION SHALL BE SAVED UNLESS DIRECTED BY THE ENGINEER TO BE REMOVED. ANY LIVING, DEAD, CUT OR FALLEN MATERIAL OF THE ASH (FRAXINUS SP.) INCLUDING TREES, NURSERY STOCK, LOGS, FIREWOOD, STUMPS, ROOTS, BRANCHES, AND COMPOSTED OR UNCOMPOSTED ASH CHIPS CAN BE FREELY MOVED WITHIN THE YELLOW AREAS OF THE MOST RECENT FEDERAL EAS QUARANTINE & ALTHOUGH TRANSPORTATION INFORMATION. FOR MORE INFORMATION, VISIT http://www.aphis.usda.gov/animal_health/qa_information/qas_information_eas.pdf. OBTAIN APPROPRIATE COMPLIANCE AGREEMENTS FROM USDA APHIS PPD PRIOR TO MOVING ANY OF THE ABOVE LISTED ASH ARTICLES TO AREAS OUTSIDE THE YELLOW ZONE ON THE MAP. FOR QUESTIONS, CONCERNS, AND GENERAL ASSISTANCE, CONTACT: USDA APHIS PPD, IOWA OFFICE, 515-414-3235 OR IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP, 515-725-1470, Engagement@iowadep.state.gov.
- TYPE "A" COMPACTION WILL BE REQUIRED. QUANTITY DOES NOT COMPENSATE FOR SHRINKAGE. AFTER ALL AVAILABLE ON-SITE MATERIAL HAS BEEN DEPLETED, THE CONTRACTOR SHALL PURCHASE ALL REMAINING MATERIAL REQUIRED. THE CONTRACTOR SHALL FURNISH HIS OWN SECONDARY MATERIAL FOR EMBANKMENT SURFACE. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH PROVISIONS OF IOWA LAWS AS IT APPLIES TO REMOVAL AND REPLACEMENT OF TOPSOIL ON BORROW AREAS. NO PAYMENT FOR OVERHAUL SHALL BE MADE ON THIS PROJECT.
- INCLUDES COSTS TO EXCAVATE MATERIAL FOR KEY PORTIONS OF THE TIE-BACKS AND FOR KEY C. THIS MATERIAL TO BE USED TO FILL KEY SECTIONS SHOWN ON SHEET V-1.
- INCLUDES COSTS TO CLEAR THE CHANNEL TO THE SHARP, DEPTH, AND EXTENT SHOWN IN THE "LONGITUDINAL SECTION ALONG CENTERLINE OF ROADWAY" AND THE LIMITS SHOWN ON THE SITUATION PLAN, SHEET V-1; AND EXCAVATED MATERIAL TO CONSTRUCT STONE TOE AS SHOWN ON SHEET V-1. INCLUDES COST OF USING SUITABLE MATERIAL FOR CONSTRUCTION ELSEWHERE ON THIS PROJECT. SUITABLE SOILS SHALL BE AS DEFINED BY ARTICLE 2102.02, D, 2 OF THE STANDARD SPECIFICATIONS. INCLUDES 2270 CUBIC YARDS FOR STREAMBANK ALIGNMENT. SEE SHEET W-1 FOR DETAILS.
- SHALL BE PLACED IN 2'-3" LIFTS AND ROLLED WITH A SMOOTH DRUM ROLLER. THE FIRST 3' LIFT SHALL BE SCARIFIED INTO THE BASE WITH MOISTURE ADDED IF NEEDED.
- THE EXISTING BRIDGE AT STATION 15+90 IS A 110' x 15.9' STEEL HIGH TRUSS BRIDGE WITH 4-18.9' TYPICAL STRINGER APPROACHES WITH HIGH-TIMBER ABUTMENTS, TWO CONCRETE PIEDestal PIERS, TWO TIMBER PILE PIERS AND A TIMBER DECK BUILT IN 1918. THE STRUCTURE HAS BEEN CLOSED SINCE JULY 2018 DUE TO SUPERSTRUCTURE DAMAGE CAUSED BY A FLOOD EVENT. THE LUMP SUM BID FOR REMOVAL OF EXISTING BRIDGE SHALL INCLUDE REMOVAL AND DISPOSAL OF THE EXISTING STRUCTURE. THE SALVAGED TRUSS PIN ASSEMBLY SHALL REMAIN THE PROPERTY OF THE COUNTY AND THE CONTRACTOR SHALL CAREFULLY REMOVE AND NEATLY STACK THIS ITEM WITHIN THE RIGHT-OF-WAY. ALL REMAINING SALVAGEABLE MATERIAL AND UNSALVAGEABLE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR. THE EXISTING STRUCTURE SHALL BE REMOVED TO AN ELEVATION AT LEAST 1 FOOT BELOW FINISHED GRADELINE AND TO THE EXTENT THAT IT WILL NOT INTERFERE WITH THE NEW CONSTRUCTION. BROKEN CONCRETE FROM THE EXISTING BRIDGE WITH SIMILAR GRADATION TO CLASS "E" REVESTMENT MAY BE PLACED ON THE BANKS OUTSIDE THE LIMITS SHOWN FOR CLASS "E" REVESTMENT, AS DIRECTED BY THE ENGINEER. ALL REINFORCING SHALL BE CUT OFF FLUSH WITH THE CONCRETE. ALL A.M.A. MATERIAL IS SPECIFICALLY EXCLUDED. ALTERNATELY, THE CONTRACTOR MAY DISPOSE OF THE BROKEN CONCRETE OFF-SITE AT A LOCATION PROVIDED BY THE CONTRACTOR AND NOTED TO THE ENGINEER. SEE HAZARDOUS MATERIALS NOTES ON SHEET V-2 FOR PAINT SCRAPER SAMPLE RESULTS.
- QUANTITY IS BASED ON THE ASSUMPTION THAT CHANNEL EXCAVATION AND NECESSARY BERM CONSTRUCTION HAVE BEEN COMPLETED. INCLUDES COST OF USING SUITABLE MATERIAL FOR CONSTRUCTION ELSEWHERE ON THIS PROJECT. SUITABLE SOILS SHALL BE AS DEFINED BY ARTICLE 2102.02, D, 2 OF THE STANDARD SPECIFICATIONS.
- QUANTITY IS BASED ON THE ASSUMPTION THAT CHANNEL EXCAVATION AND NECESSARY BERM CONSTRUCTION HAVE BEEN COMPLETED.

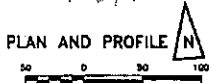
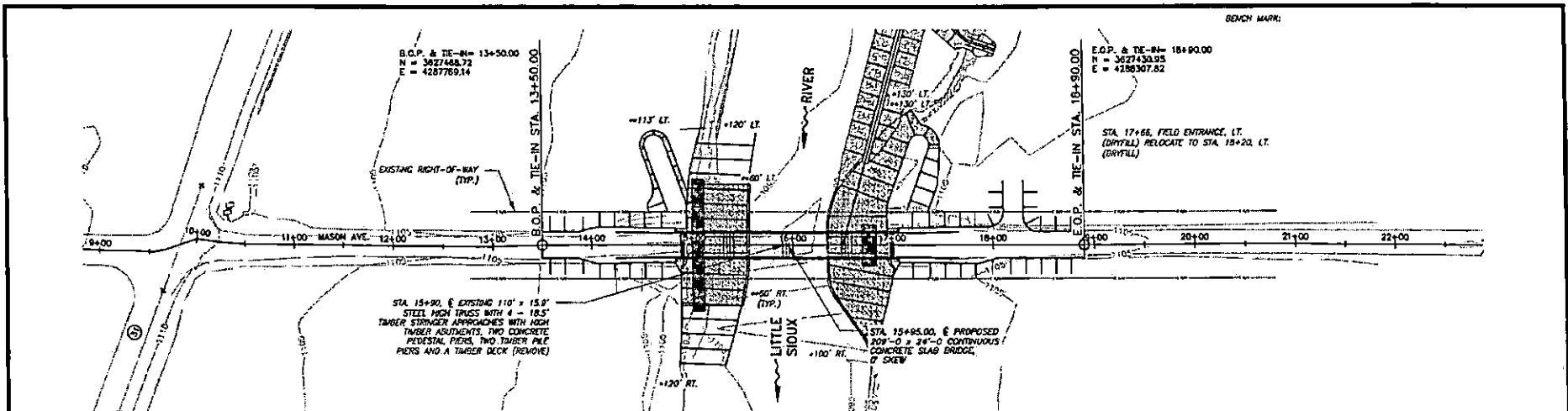
- INCLUDES COST OF TAP PAPER AND PREFORMED JOINT MATERIAL. NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR HEATINGS AND PROTECTION OF CONCRETE, IF NECESSARY. CRATIFIED PLANT INSPECTION IS REQUIRED. ARTICLE 2428 REGARDING BRIDGE DECK SMOOTHNESS DOES NOT APPLY TO THIS PROJECT.
- ALL REINFORCING SHALL BE GRADE 60.
- CERTIFIED PLANT INSPECTION IS REQUIRED. ALL STRUCTURAL CONCRETE FOR THE RAIL IS TO BE CLASS C. SUBSTITUTION OF CLASS D CONCRETE IS NOT ALLOWED. NO ADDITIONAL PAYMENT WILL BE ALLOWED FOR HEATING AND PROTECTION OF CONCRETE, IF NECESSARY.
- SEE PILE NOTES ON SHEET V-2. PILE POINTS SHALL NOT BE USED FOR THIS PROJECT.
- THE BRIDGE CONTRACTOR SHALL PREDRILL HOLES FOR ABUTMENT PILES. HOLES SHALL BE BORED TO THE ELEVATIONS SHOWN ON THE "LONGITUDINAL SECTION ALONG CENTERLINE ROADWAY" ON THE SITUATION PLAN. PILES SHALL BE DRIVEN THROUGH THE HOLES TO AT LEAST THE SPECIFIED DESIGN BEARINGS.
- SEE TABULATIONS 106-8A AND 107-23 ON SHEET C-2.
- SEE SHEET V-14 FOR DETAILS. QUANTITY INCLUDES EROSION STONE ON THE BERMS.
- SEE SITUATION PLAN, SHEET V-1, FOR LIMITS. IF THE ENGINEERING FABRIC IS LAPPED, THE LAPS SHALL BE A MINIMUM OF TWO FEET IN LENGTH, SPINOLE FASHION WITH UP-SLOPE LAP. PIECE ON TOP. THE CONTRACTOR SHALL PROVIDE A MEANS TO SECURE THE LAP DURING THE PLACEMENT OF THE REVESTMENT.
- THIS ITEM SHALL CONSIST OF FURNISHING AND PLACING REVESTMENT STONE, COMPLETE IN PLACE AS SHOWN ON THE DRAWINGS. REFER TO DETAILS ON SHEET W-1. DETAILING REQUIRED TO INSTALL REVESTMENT SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR THIS ITEM.
- REVESTMENT IS TO BE PLACED AT A THICKNESS OF 2'-0". SEE SITUATION PLAN, SHEET V-1, FOR LIMITS.
- THE UNIT PRICE BID FOR REVESTMENT, REMOVE AND REPLACE SHALL INCLUDE THE COST OF LABOR, EQUIPMENT AND MATERIALS REQUIRED TO REMOVE REVESTMENT FROM THE EXISTING BANKS, STOCKPILE IT IF NECESSARY, AND PLACE THE REVESTMENT ON THE BANKS OUTSIDE THE LIMITS SHOWN FOR CLASS E REVESTMENT. ANY PRICE GREATER THAN 3 FEET IN ANY DIRECTION SHALL BE BROKEN UP SUCH THAT ITS SIZE IS REDUCED TO LESS THAN 3 FEET IN ANY DIRECTION. NO MATERIAL SHALL NOT BE PLACED WITHIN THE FLOODPLAIN. ANY REINFORCING SHALL BE CUT OFF FLUSH OR REMOVED. MATERIAL IS TO BE PLACED AT A THICKNESS OF 2'-0". SEE SITUATION PLAN, SHEET V-1, FOR LIMITS. THE METHOD OF MEASUREMENT AND BASIS OF PAYMENT SHALL BE BY CUBIC YARD. PLAN QUANTITY WILL BE PAY QUANTITY.
- SEE TRAFFIC CONTROL PLAN ON SHEET C-2.
- AN INSPECTION FOR THE PRESENCE OF ASBESTOS CONTAINING MATERIALS WAS COMPLETED. THE ABUTMENT AND PIER PILE TOPS WERE FOUND TO CONTAIN ASBESTOS. ASBESTOS MATERIAL SHALL BE REMOVED PRIOR TO BRIDGE DEMOLITION OPERATIONS. THE LUMP SUM BID FOR "REMOVAL OF ASBESTOS" SHALL INCLUDE REMOVAL AND DISPOSAL OF THE ASBESTOS CONTAINING MATERIAL. A COMPLETE REPORT OF MATERIALS TESTED CAN BE OBTAINED UPON REQUEST. IF ADDITIONAL MATERIALS SUSPECTED OF CONTAINING ASBESTOS ARE DISCOVERED DURING DEMOLITION OF THE BRIDGE, WORK SHALL BE STOPPED IMMEDIATELY AND THE ENGINEER NOTIFIED.
- SEE SHEET V-15 FOR DETAILS. THE CONTRACTOR SHALL COORDINATE WITH THE COUNTY ENGINEER PRIOR TO SALVAGING OF TRUSS PIN ASSEMBLY. INCLUDES LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO CAREFULLY REMOVE THE TRUSS PIN ASSEMBLY AND NEATLY STACK IT WITHIN RIGHT-OF-WAY.
- THE CONTRACTOR IS TO RESHAP, FERTILIZE, SEED AND MULCH ANY AREAS DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION. THIS SHALL BE INCLUDED IN THE PRICES BID FOR "MULCHING" AND "SEEDING AND FERTILIZING (RURAL)".

209'-0 x 24'-0 CONTINUOUS CONCRETE SLAB BRIDGE

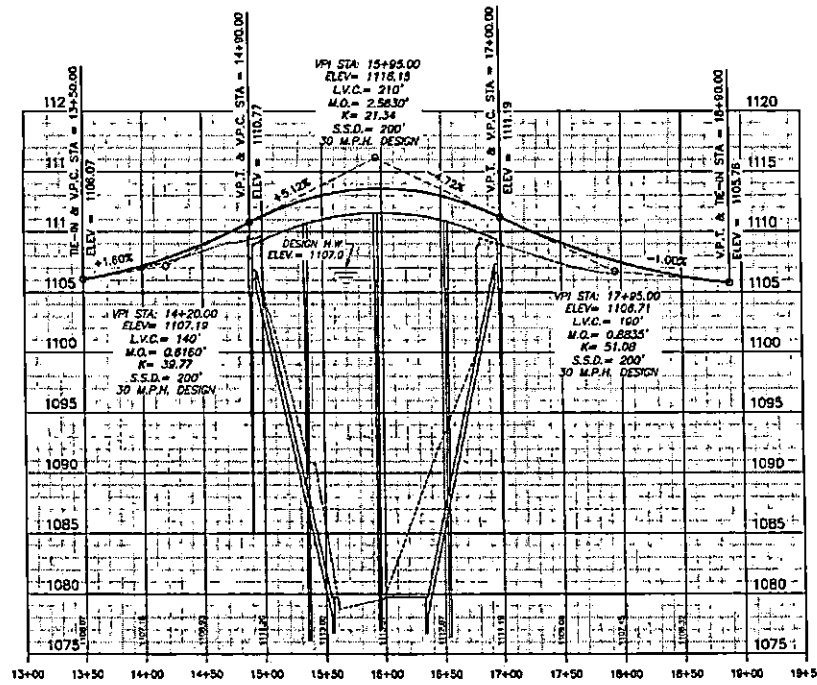
INTEGRAL ABUTMENTS	TEE PIERS
45'-6 END SPANS	59'-0 INTERIOR SPANS

QUANTITY SUMMARY

STATION 15+05.00	0' SKEW
WOODBURY COUNTY,	IOWA



* DENOTES LIMITS OF CLASS 12 (CHANNEL) EXCAVATION.
 ** DENOTES LIMITS OF CLASS "E" RETEMENT AND ENGINEERING FABRIC.



SEE SHEET X.1 FOR R.O.W. INFORMATION.

THE PROPOSED BRIDGE HAS BEEN DESIGNED BASED ON ROADWAY OVERFLOW OF THE EXISTING PROFILE FOR Q25 AND GREATER FLOOD EVENTS. ANY FUTURE GRADE RAISE NEEDS TO BE ANALYZED TO DETERMINE THE HYDRAULIC IMPACT TO THIS SITE.

209'-0" x 24'-0" CONTINUOUS CONCRETE SLAB BRIDGE

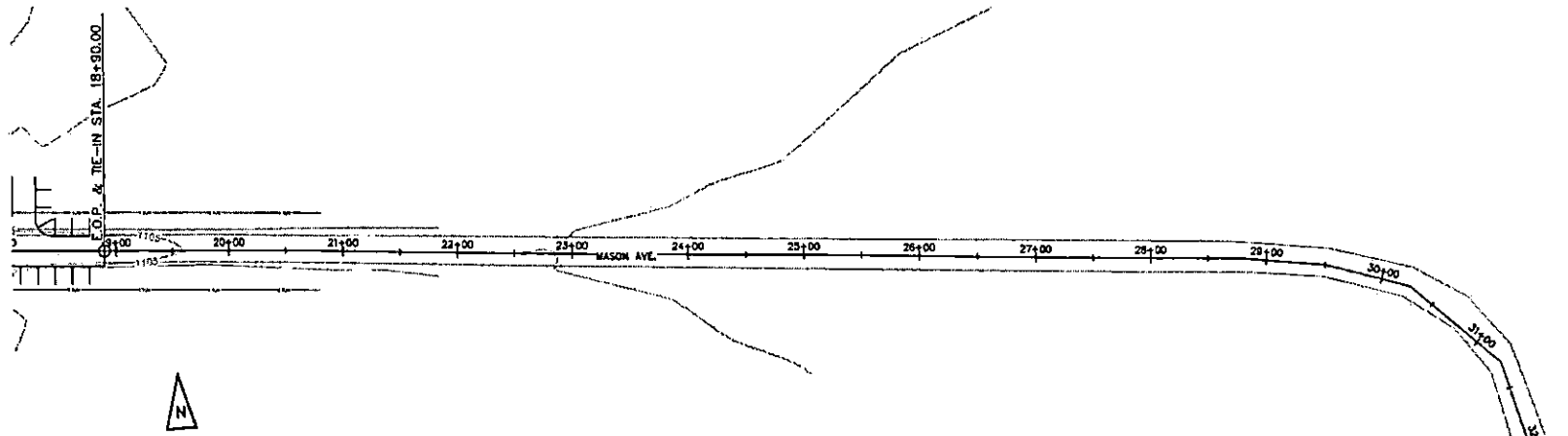
INTEGRAL ABUTMENTS 45'-6" END SPANS TEE PIERS 59'-0" INTERIOR SPANS

PLAN AND PROFILE

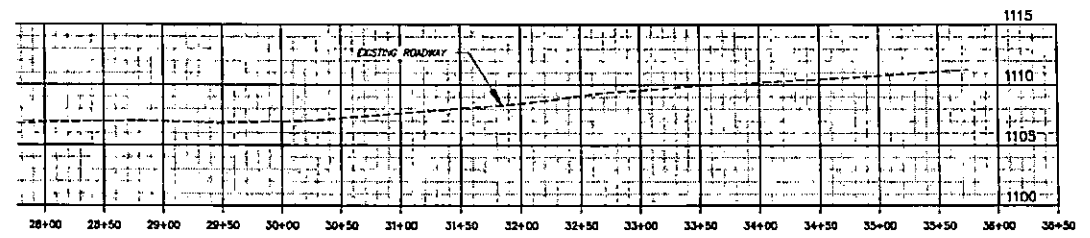
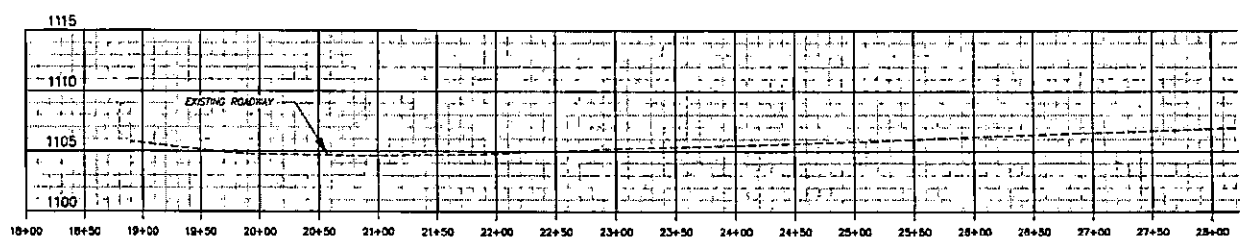
STATION 15+95.00
 WOODBURY COUNTY, IOWA

0' SKEW

BENCH MARK



FOR REFERENCE ONLY



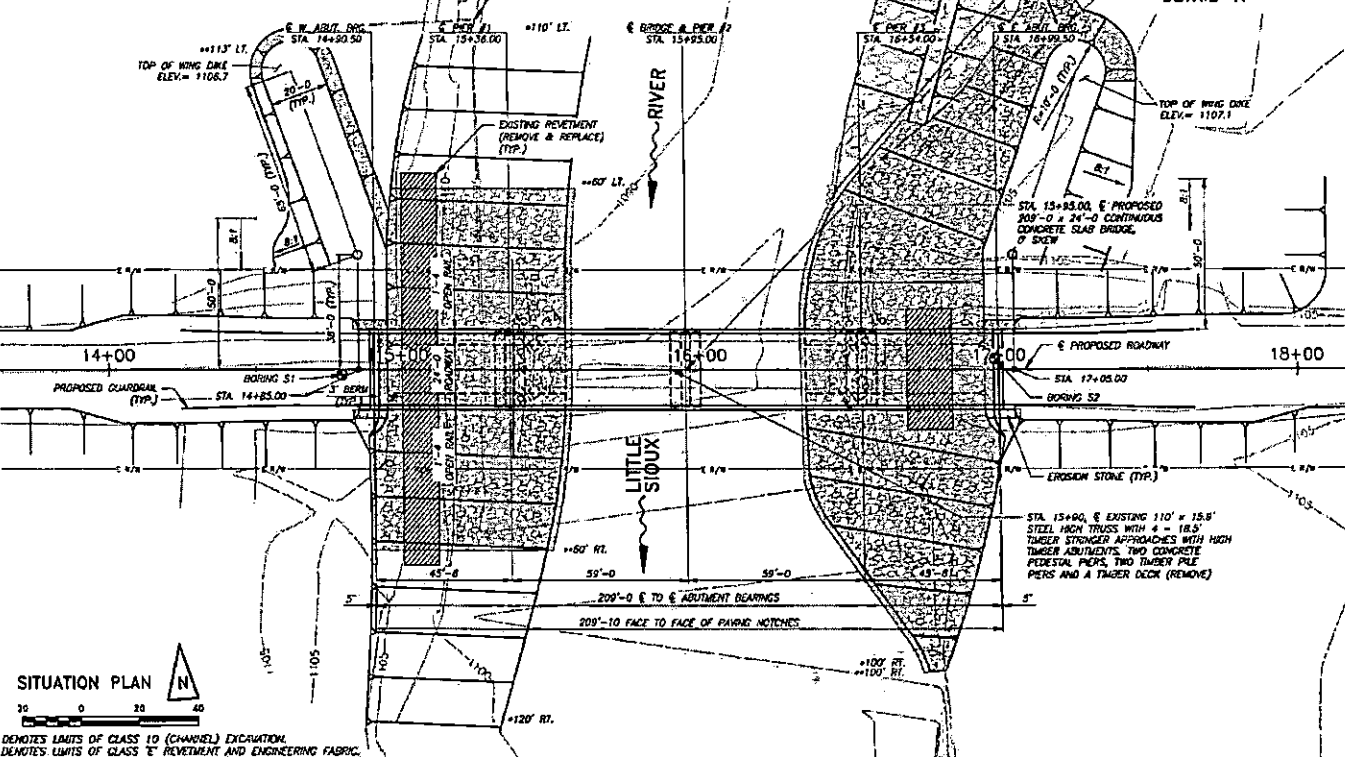
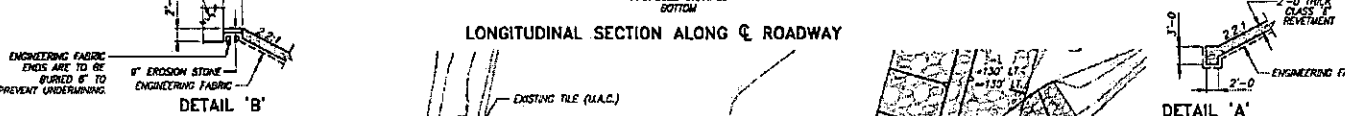
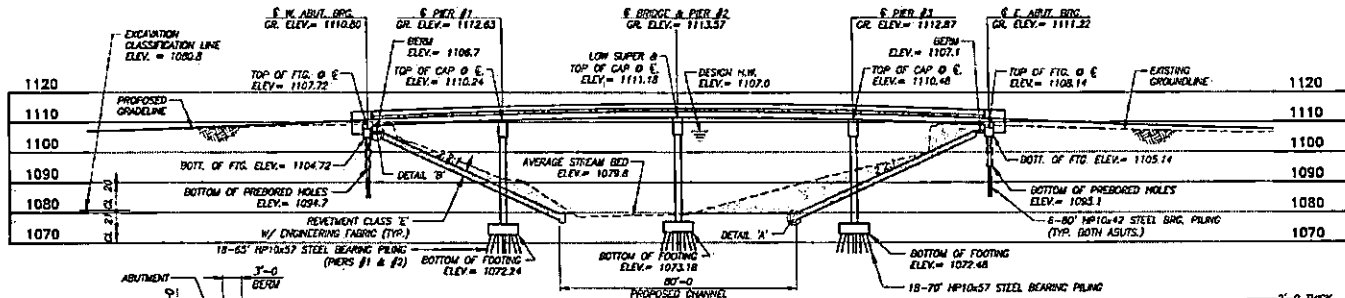
THE PROPOSED BRIDGE HAS BEEN DESIGNED BASED ON ROADWAY OVERFLOW OF THE EXISTING PROFILE FOR Q25 AND GREATER FLOOD EVENTS. ANY FUTURE GRADE PAUSE NEEDS TO BE ANALYZED TO DETERMINE THE HYDRAULIC IMPACT TO THIS SITE.

209'-0" x 24'-0" CONTINUOUS CONCRETE SLAB BRIDGE

INTEGRAL ABUTMENTS 45'-8" END SPANS TEE PIERS 59'-0" INTERIOR SPANS

PLAN AND PROFILE

STATION 15+95.00 0° SKEW
WOODBURY COUNTY, IOWA



* DENOTES LIMITS OF CLASS 10 (CHANNEL) EXCAVATION.
 ** DENOTES LIMITS OF CLASS 'E' RETEVMENT AND ENGINEERING FABRIC.

CALHOUN-BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
 WEST DES MOINES, IOWA 50266 (515) 274-4344

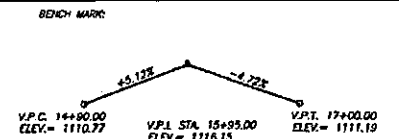
JOB NO. 2019109

DESIGNED BY: JAC
 DRAWN BY: JAC
 CHECKED BY: JAC

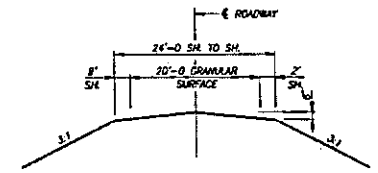
WOODBURY COUNTY

PROJECT NO. L-(K48)--73-97

SHEET V.1



PROPOSED GRADE



TYPICAL APPROACH SECTION

LOCATION

WOODBURY COUNTY
 T-28N, R-43W
 SECTION 21
 KEDRON TOWNSHIP
 OVER LITTLE SIOUX RIVER

SEE SHEET #1 FOR P.O.W. INFORMATION

THE PROPOSED BRIDGE HAS BEEN DESIGNED BASED ON ROADWAY
 OVERFLOW OF THE EXISTING PROFILE FOR Q25 AND GREATER
 FLOOD EVENTS. ANY FUTURE GRADE RAISE HELDS TO BE
 ANALYZED TO DETERMINE THE HYDRAULIC IMPACT TO THIS SITE.

HYDRAULIC DATA

DRAINAGE AREA = 2,554 SQ. MI.
 ROAD GRADE OVERFLOW @ 050 = 4,159 C.F.S.
 DISCHARGE THRU BRIDGE @ 050 = 26,601 C.F.S.
 DESIGN DISCHARGE = 30,800 C.F.S.
 DESIGN HIGH WATER ELEV. = 1107.0
 WARNING SLOPE = 0.00038 FT./FT.
 BRIDGE WATERWAY AREA = 3,614 SQ. FT.
 DESIGN VELOCITY = 7.4 F.P.S.
 Q25 = 25,100 C.F.S. STAGE ELEV. = 1105.4
 Q50 = 30,800 C.F.S. STAGE ELEV. = 1107.0 (DESIGN)
 Q100 = 38,300 C.F.S. STAGE ELEV. = 1108.1
 Q200 = 43,000 C.F.S. STAGE ELEV. = 1108.3
 Q500 = 49,500 C.F.S. STAGE ELEV. = 1110.3
 EXT. H.W. ELEV. = UNKNOWN
 ANTICIPATED Q200 SCOUR ELEV. = 1069.4
 ANTICIPATED Q500 SCOUR ELEV. = 1069.5

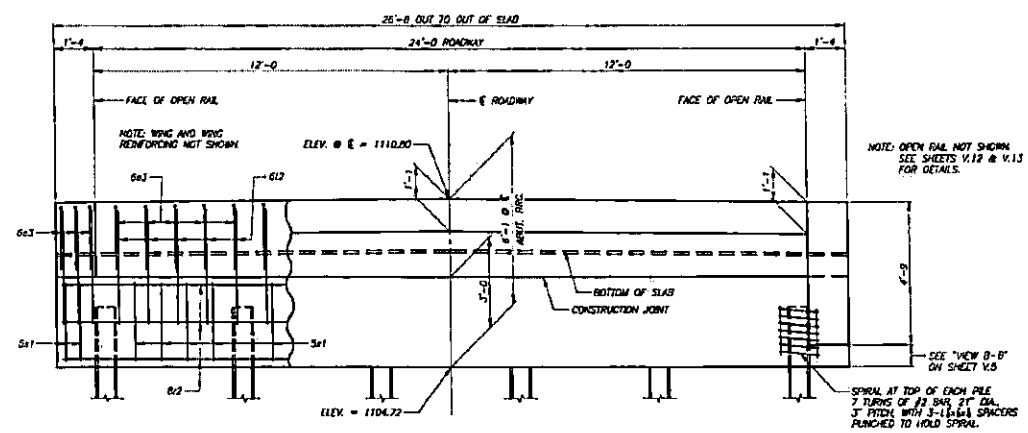
209'-0" x 24'-0" CONTINUOUS CONCRETE
 SLAB BRIDGE

INTEGRAL ABUTMENTS TEE PIERS
 45'-6" END SPANS 59'-0" INTERIOR SPANS

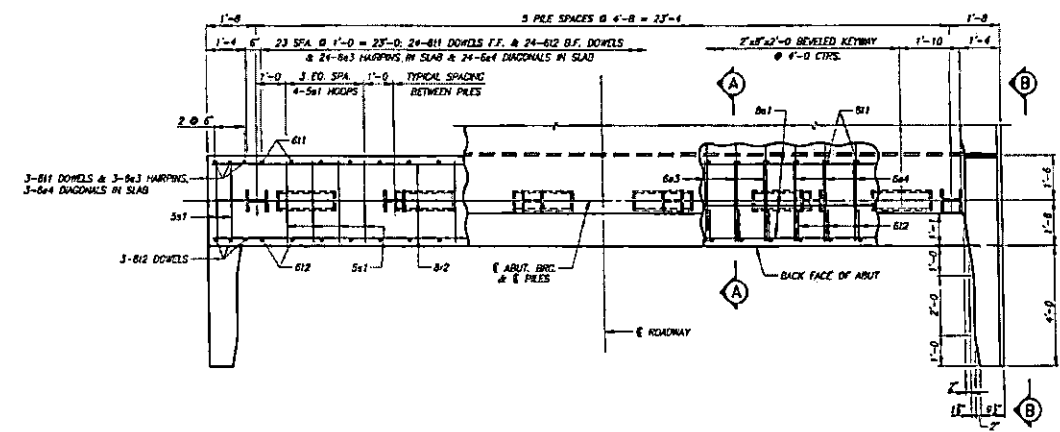
SITUATION PLAN

STATION 15+93.00 0' SKEW
 WOODBURY COUNTY, IOWA

BENCH MARK



REAR ELEVATION
(LOOKING EAST)



PLAN VIEW

NOTE: SEE SHEET V.3 FOR SECTION A-A AND VIEW B-B

NOTE: SEE SHEET V.3 FOR WING REINFORCING DETAILS.

209'-0" x 24'-0" CONTINUOUS CONCRETE
SLAB BRIDGE

INTEGRAL ABUTMENTS TEE PIERS
45'-0" END SPANS 59'-0" INTERIOR SPANS

WEST ABUTMENT DETAILS

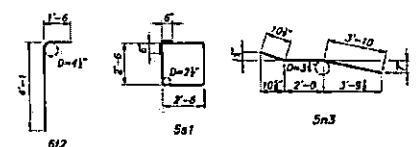
STATION 15+95.00
WOODBURY COUNTY,

0° SKEW
IOWA

BENCH MARK

REINFORCING BAR LIST - ONE ABUTMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
S ₁	WING VERTICAL	—	20	4'-3"	92
S ₁	WING HORIZONTAL BACK FACE	—	12	8'-8"	63
S ₃	WING HORIZONTAL TRAFFIC FACE	—	12	8'-9"	84
B ₂	ABUT. FOOTING LONGITUDINAL	—	7	25'-4"	492
S ₆	ABUT. FOOTING HOOPS	□	24	11'-0"	275
B ₁	ABUT. FOOTING TO SLAB DOWELS	—	30	5'-0"	225
B ₂	ABUT. FOOTING TO SLAB DOWELS	—	30	5'-7"	232
	PILE SPIRAL - #2 BAR	—	8	30'-0"	33
	SPIRAL SPACERS - #3 @ 12" O.C.	—	18	1'-10"	23
TOTAL (LBS.)					1,963

BENT BAR DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT. Ø = PIN DIAMETER

CONCRETE PLACEMENT QUANT.- ONE ABUT.

LOCATION	UNIT	QUANTITY
ABUTMENT FOOTING	CU YDS.	2.9
WINGS: 2 @ 0.67 C.Y.	CU YDS.	1.3
TOTAL	CU YDS.	10.2

ESTIMATED QUANTITIES - TWO ABUTMENTS

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (BRIDGE)	CU YDS.	20.4
REINFORCING STEEL	LBS.	3,130
#10 @ 2 STEEL BRG. PILING, 12 @ 80'	L.F.	960
EXCAVATION, CLASS 20: 2 @ 25 C.Y.	CU YDS.	110
PRESORED HOLES (12 @ 10')	L.F.	120

ABUTMENT NOTES

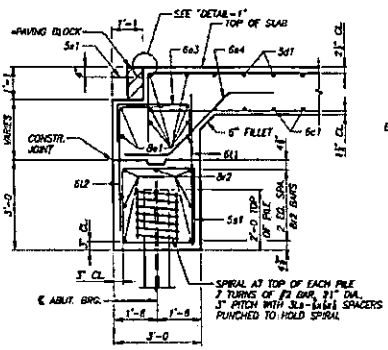
- MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCED BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR KNOWN.
- ALL REINFORCING STEEL TO BE SECURELY WIRED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS POURED.
- ALL REINFORCING STEEL IS TO BE GRADE 60.
- ALL EXPOSED CORNERS OR SHARPEN ARE TO BE FILLETED WITH A 1" RADIUS AND BEVELED STRIP.
- CONSTRUCTION JOINT KEYWAYS ARE TO BE FORMED WITH BEVELED 2" R.S. SEE PILE NOTES ON SHEET V.2 FOR ADDITIONAL INFORMATION.

209'-0 x 24'-0 CONTINUOUS CONCRETE SLAB BRIDGE

INTEGRAL ABUTMENTS TEE PIERS
 45'-8 END SPANS 59'-0 INTERIOR SPANS

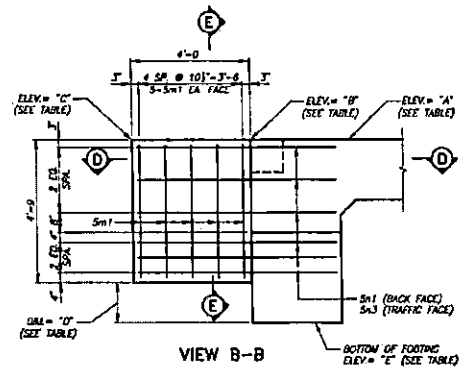
ABUTMENT DETAILS

STATION 15+95.00 0° SKEW
 WOODBURY COUNTY, IOWA



SECTION A-A
 * LINE NOTCH WITH TAR PAPER BEFORE PLACING PAVING BLOCK.

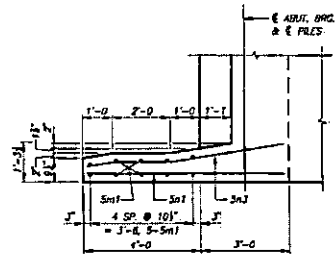
NOTE: SEE SHEETS V.3 - V.4 FOR LOCATION OF SECTION A-A AND VIEW B-B.



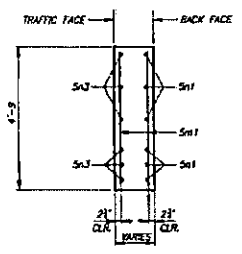
NOTE: ELEVATIONS AND DIMENSIONS SHOWN ARE AT OUTSIDE FACE.

WING WALL DIMENSION AND ELEVATION TABLE

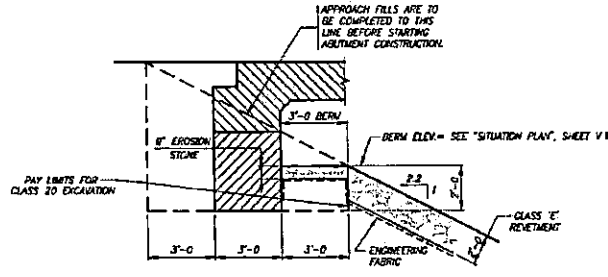
LOCATION	ELEV. "A"	ELEV. "B"	ELEV. "C"	DIM. "D"	ELEV. "E"
N.W.	1110.64	1110.48	1110.36	1'-01	1104.72
S.W.	1110.64	1110.48	1110.29	1'-03	1104.72
N.E.	1111.08	1110.91	1110.72	1'-01	1108.14
S.E.	1111.08	1110.91	1110.72	1'-01	1108.14



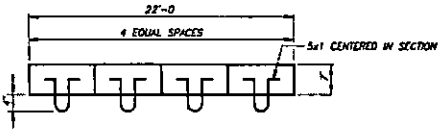
SECTION D-D



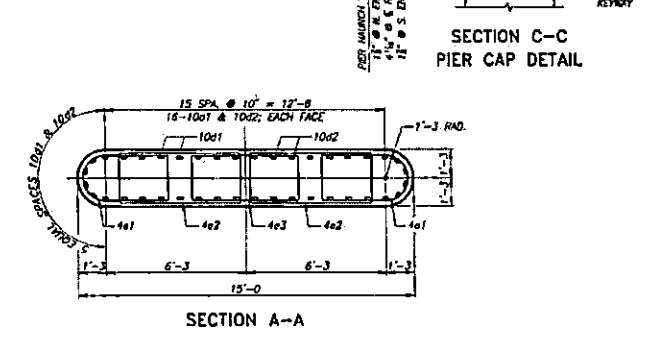
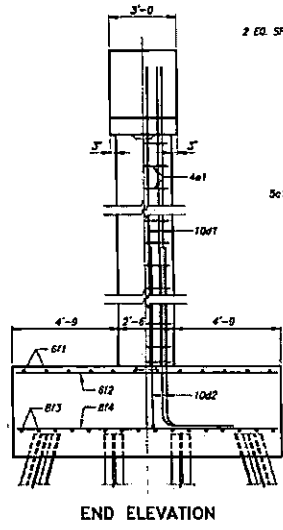
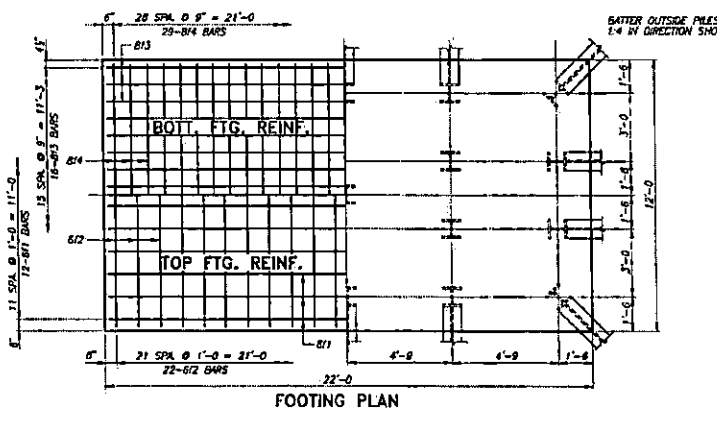
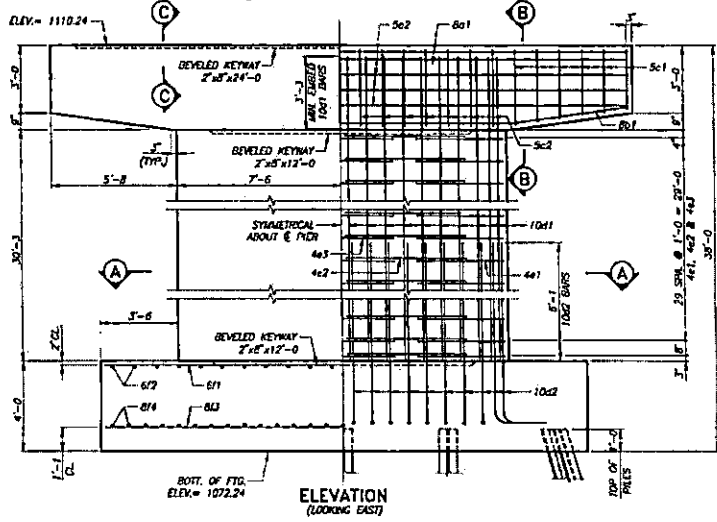
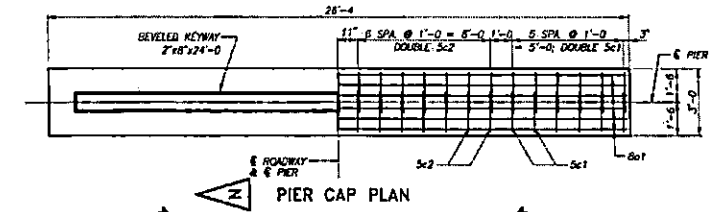
SECTION E-E



ABUTMENT EXCAVATION DETAIL



PAVING BLOCK DETAIL
 NOTE: LINE NOTCH WITH TAR PAPER BEFORE PLACING PAVING BLOCK.



PIER NO. 1 NOTES
 MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
 ALL REINFORCING STEEL TO BE DELICATELY HANDLED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS POURED.
 ALL REINFORCING STEEL IS TO BE GRADE 60.
 ALL EXPOSED CORNERS OR 90° SHARPEN ARE TO BE FILLETED WITH A 1/4" DRESSED AND BEVELED 8" RDP.
 CONSTRUCTION JOINT KEYWAYS ARE TO BE FORMED WITH BEVELED 2 x 8S.
 FORMS FOR PIER CAPS MAY BE REMOVED WITH THE APPROVAL OF THE ENGINEER WHEN THE FOLLOWING TWO CONDITIONS HAVE BEEN MET:
 1. PIER CAP CONCRETE HAS BEEN IN PLACE FOR A MINIMUM OF 3 CALENDAR DAYS EXCLUDING DAYS THAT THE CONCRETE SURFACE IS SUBJECTED TO TEMPERATURES AT OR BELOW 40° F AND
 2. THE PIER CAP CONCRETE STRENGTH IS AT LEAST 250 KSI.
 CONCRETE STRENGTH SHALL BE VERIFIED BY FLEXURAL STRENGTH ACCORDING TO MATERIAL M. 318 WITH A MINIMUM FLEXURAL STRENGTH OF 0.343 C/G OR BY THE MATURITY METHOD ACCORDING TO MATERIAL M. 309. CURVES OF PIER CAP CONCRETE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. PIER CAP CONCRETE SHALL ATTAIN A MINIMUM CONCRETE STRENGTH OF 400 KSI BEFORE BEING SUBJECTED TO EXTERNAL LOADS. PIER CAP CONCRETE SHALL BE SUBJECTED TO EXTERNAL LOADS IN ACCORDANCE WITH ARTICLE 240.02. N, OF THE STANDARD SPECIFICATIONS.
 BATTER PILES IN EITHER DIRECTION 1:4 IN DIRECTION SHOWN. ALL BATTERED PILE SHALL BE THROWN TO A HORIZONTAL LINE TO AID IN THE PLACEMENT OF REINFORCING.
 DIMENSIONS SHOWN ON FOOTING PLAN ARE AT BOTTOM OF FOOTING.
 SEE PILE NOTES ON SHEET V-3 FOR ADDITIONAL INFORMATION.

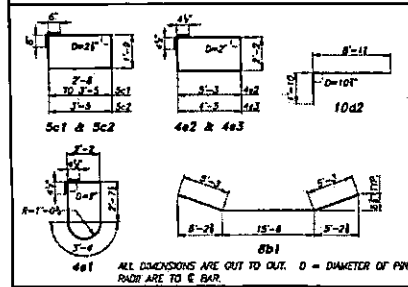
SECTION B-B

SECTION C-C
PIER CAP DETAIL

BENCH MARK:

REINFORCING BAR LIST - PIER NO. 1					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	CAP, LONGITUDINAL, TOP	10	70	28'-0"	694
8a2	CAP, LONGITUDINAL, SIDES	8	8	26'-0"	163
8b1	CAP, LONGITUDINAL, BOTTOM	4	4	26'-0"	278
8c1	CAP, HOOPS, ENDS	24	VARIABLES		263
8c2	CAP, HOOPS	30		11'-4"	353
10a1	COLUMN, VERTICAL	40	33	3'-8"	3,768
10a2	COLUMN, VERTICAL, DOWELS	40	10	10'-0"	1,650
4a1	COLUMN, HOOPS, ENDS	62	11	6"	476
4a2	COLUMN, HOOPS	62	15	7"	843
4a3	COLUMN, HOOPS	31	13	11"	285
8f1	FOOTING, LONGITUDINAL, TOP	11	21	8"	391
8f2	FOOTING, TRANSVERSE, TOP	22	11	8"	368
8f3	FOOTING, LONGITUDINAL, BOTTOM	18	21	8"	928
8f4	FOOTING, TRANSVERSE, BOTTOM	29	11	8"	904
				TOTAL (LBS.)	13,387

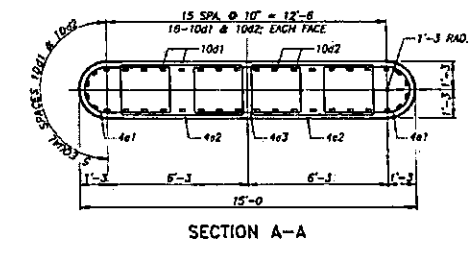
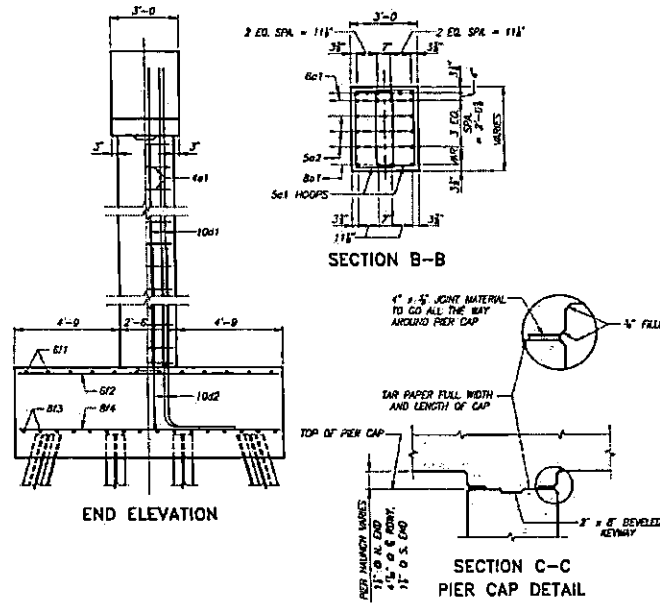
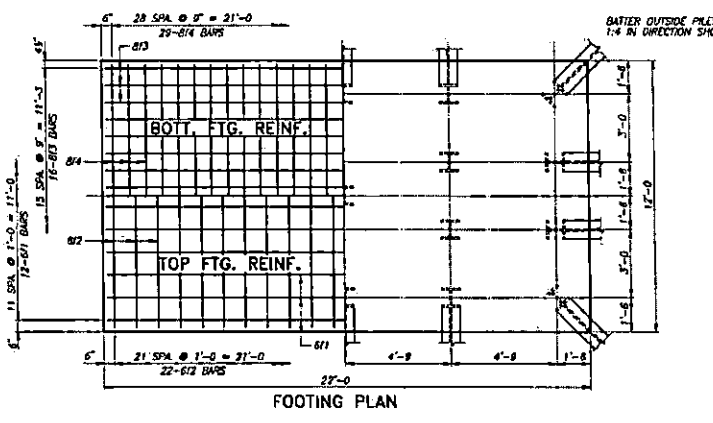
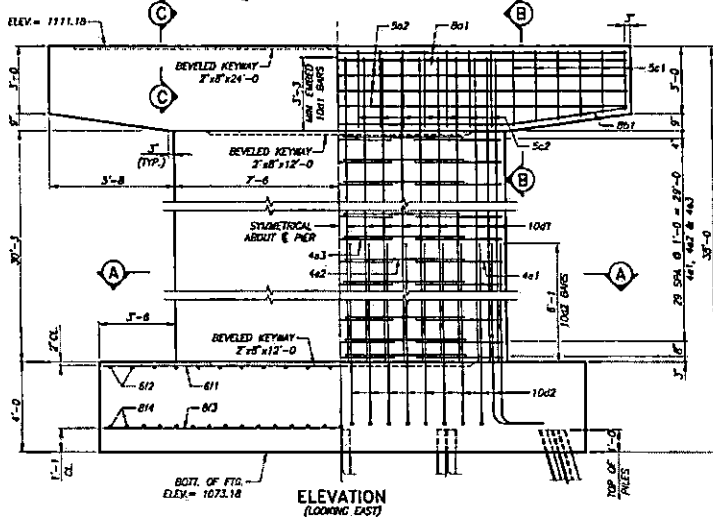
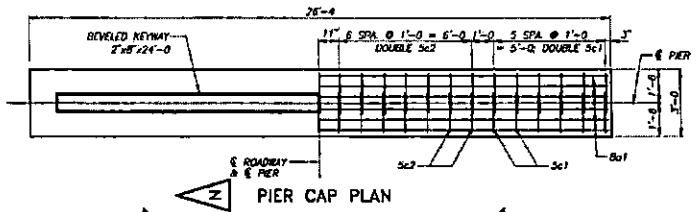
BENT BAR DETAILS



CONCRETE PLACEMENT QUANT. - PIER NO. 1		
LOCATION	UNIT	QUANTITY
FOOTING	CU.YDS.	39.1
COLUMN	CU.YDS.	60.5
CAP	CU.YDS.	10.5
TOTAL (CU.YDS.)		110.1

ESTIMATED QUANTITIES - PIER NO. 1		
ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (BRIDGE)	CU.YDS.	110.1
REINFORCING STEEL	LBS.	13,387
PILES, STEEL, HP10x37 (18 @ 65')	LINE FT.	1,170
EXCAVATION CLASS 20	CU.YDS.	134
EXCAVATION CLASS 21	CU.YDS.	180

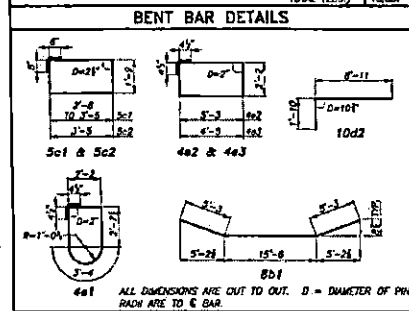
209'-0" x 24'-0" CONTINUOUS CONCRETE SLAB BRIDGE
 INTEGRAL ABUTMENTS 45'-6" END SPANS TEE PIERS 59'-0" INTERIOR SPANS
 PIER NO. 1 DETAILS
 STATION 15+95.00 OF SKEW
 WOODBURY COUNTY, IOWA



PIER NO. 2 NOTES
 MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
 ALL REINFORCING STEEL TO BE SECURELY WIRED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS POURED.
 ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A 1/4" DRESSED AND BEVELED STRIP.
 CONSTRUCTION JOINT KEYWAYS ARE TO BE FORMED WITH BEVELED 2" x 8" FORMS FOR PIER CAPS MAY BE REMOVED WITH THE APPROVAL OF THE ENGINEER WHEN THE FOLLOWING TWO CONDITIONS HAVE BEEN MET:
 - PIER CAP CONCRETE HAS BEEN IN PLACE FOR A MINIMUM OF 7 CALENDAR DAYS EXCLUDING DAYS THAT THE CONCRETE SURFACE IS SUBJECTED TO TEMPERATURES AT OR BELOW 40° F AND
 - THE PIER CAP CONCRETE STRENGTH IS AT LEAST 70% OF THE SPECIFIED STRENGTH OR THE CONCRETE STRENGTH SHALL BE VERIFIED BY FLEXURAL STRENGTH ACCORDING TO MATERIALS 1M. 315 WITH A MINIMUM FLEXURAL STRENGTH OF 0.240 KSI OR BY THE MATURITY METHOD ACCORDING TO MATERIALS 1M. 307. CURING OF PIER CAP CONCRETE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. PIER CAP CONCRETE SHALL ATTAIN A MINIMUM CONCRETE STRENGTH OF 4,000 PSI BEFORE BEING SUBJECTED TO EXTERIOR LOADS. PIER CAP CONCRETE SHALL BE SUBJECTED TO EXTERIOR LOADS IN ACCORDANCE WITH ARTICLE 2403.02, N. OF THE STANDARD SPECIFICATIONS.
 BATTER PILES IN EXTERIOR ROWS 1/4 IN DIRECTION SHOWN. ALL BATTERED PILES SHALL BE TRIMMED TO A HORIZONTAL LINE TO AD IN THE PLACEMENT OF REINFORCING DIMENSIONS SHOWN ON FOOTING PLAN ARE AT BOTTOM OF FOOTING.
 SEE PILE NOTES ON SHEET V.1 FOR ADDITIONAL INFORMATION.

REINFORCING BAR LIST - PIER NO. 2

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	CAP LONGITUDINAL TOP	—	10	26'-0"	694
5c2	CAP LONGITUDINAL SIDES	—	8	26'-0"	183
8a1	CAP LONGITUDINAL BOTTOM	—	4	26'-0"	278
5c1	CAP HOOPS ENDS	—	24	VARIES	283
5c2	CAP HOOPS	—	30	17'-4"	353
1001	COLUMN VERTICAL	—	40	33'-8"	5,766
1002	COLUMN VERTICAL DOWNELS	—	40	10'-9"	1,850
4e1	COLUMN HOOPS ENDS	—	62	17'-8"	476
4e2	COLUMN HOOPS	—	62	15'-7"	643
4e3	COLUMN HOOPS	—	31	13'-11"	788
8b1	FOOTING LONGITUDINAL TOP	—	12	21'-8"	391
8b2	FOOTING TRANSVERSE TOP	—	22	11'-8"	308
8b3	FOOTING LONGITUDINAL BOTTOM	—	18	21'-8"	926
8b4	FOOTING TRANSVERSE BOTTOM	—	29	11'-8"	904
				TOTAL (LBS.)	13,387



CONCRETE PLACEMENT QUANT. - PIER NO. 2

LOCATION	QUANTITY
FOOTING	38.1
COLUMN	40.5
CAP	10.5
TOTAL (CU YDS.)	
	90.1

ESTIMATED QUANTITIES - PIER NO. 2

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (BRIDGE)	CU YDS.	90.1
REINFORCING STEEL	LBS.	13,387
PILES, STEEL (10x57 (10 @ 65'))	LINE FT.	1,170
EXCAVATION, CLASS 21	CU YDS.	124

209'-0" x 24'-0" CONTINUOUS CONCRETE SLAB BRIDGE

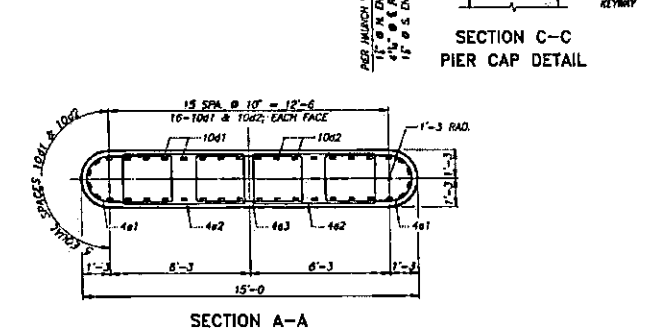
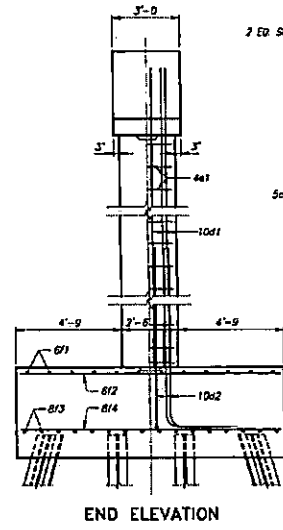
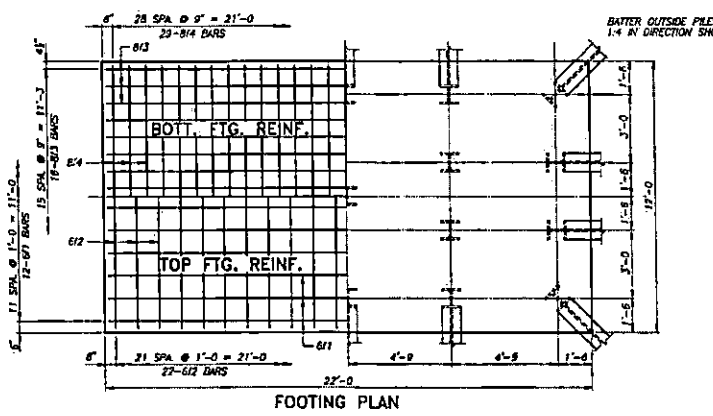
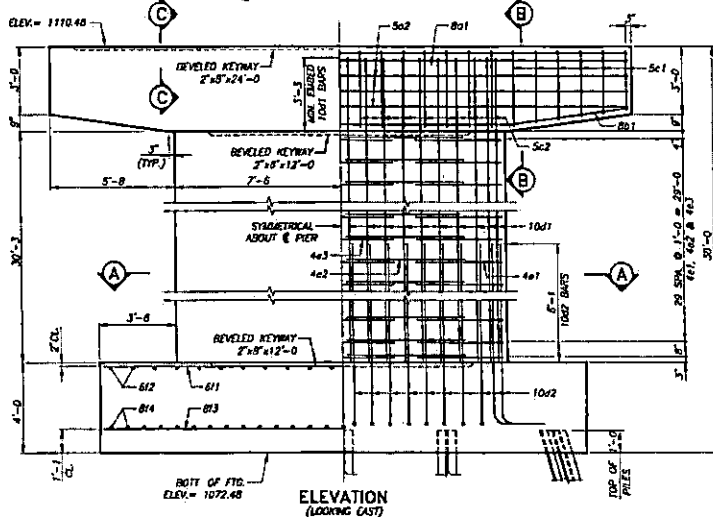
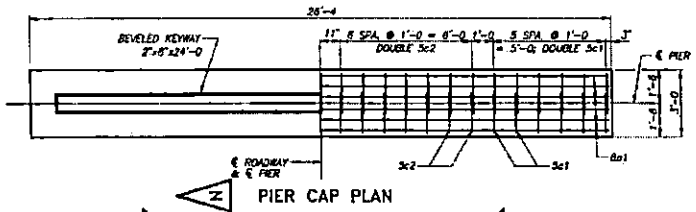
INTEGRAL ABUTMENTS
 45'-6" END SPANS
 59'-0" INTERIOR SPANS

TEC PIERS
 59'-0" INTERIOR SPANS

PIER NO. 2 DETAILS

STATION 15+95.00
 WOODBURY COUNTY,

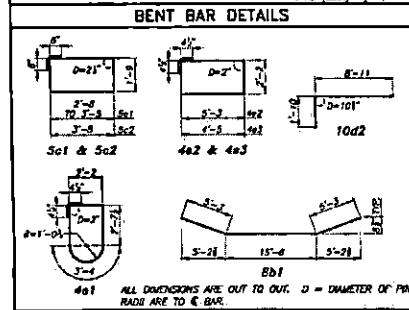
0° SKEW
 IOWA



PIER NO. 3 NOTES
 MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BARS IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
 ALL REINFORCING STEEL TO BE SECURELY TIED IN PLACE AND ADEQUATELY SUPPORTED BEFORE CONCRETE IS POURED.
 ALL REINFORCING STEEL IS TO BE GRADE 60.
 ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.
 CONSTRUCTION JOINT KEYWAYS ARE TO BE FORMED WITH BEVELED 2 x 8S.
 FORMS FOR PIER CAPS MAY BE REMOVED WITH THE APPROVAL OF THE ENGINEER WHEN THE FOLLOWING TWO CONDITIONS HAVE BEEN MET:
 1. PIER CAP CONCRETE HAS BEEN IN PLACE FOR A MINIMUM OF 2 CALENDAR DAYS EXCLUDING DAYS THAT THE CONCRETE SURFACE IS SUBJECTED TO TEMPERATURES AT OR BELOW 40° F AND
 2. THE PIER CAP CONCRETE STRENGTH IS AT LEAST 2500 KSI.
 CONCRETE STRENGTH SHALL BE VERIFIED BY FLEXURAL STRENGTH TESTING ACCORDING TO MATERIALS IN 318 WITH A MINIMUM FLEXURAL STRENGTH OF 0.840 PSI OR BY THE MATURETY METHOD ACCORDING TO MATERIALS IN 318. CURING OF PIER CAP CONCRETE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. PIER CAP CONCRETE SHALL ATTAIN A MINIMUM CONCRETE STRENGTH OF 4000 PSI BEFORE BEING SUBJECTED TO EXTERIOR LOADS. PIER CAP CONCRETE SHALL BE SUBJECTED TO EXTERIOR LOADS IN ACCORDANCE WITH ARTICLE 840.03, H. OF THE STANDARD SPECIFICATIONS.
 BATTER PILES IN EXTENSION FROM 1:4 IN DIRECTION SHOWN. ALL BATTERED PILES SHALL BE TRIMMED TO A HORIZONTAL LINE TO AID IN THE PLACEMENT OF REINFORCING. DIMENSIONS SHOWN ON FOOTING PLAN ARE AT BOTTOM OF FOOTING.
 SEE PLE NOTES ON SHEET V.2 FOR ADDITIONAL INFORMATION.

BENCH MARK

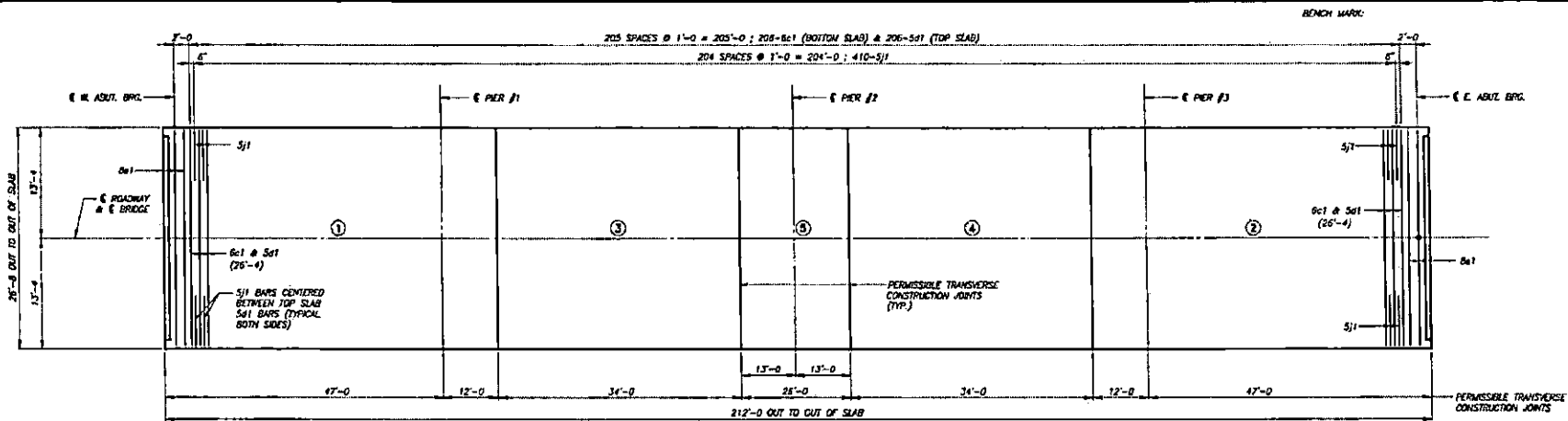
REINFORCING BAR LIST - PIER NO. 3				
BAR	LOCATION	SHAPE NO.	LENGTH	WEIGHT
8a1	CAP, LONGITUDINAL, TOP	10	28'-0"	694
5c2	CAP, LONGITUDINAL, SIDES	8	28'-0"	163
8a2	CAP, LONGITUDINAL, BOTTOM	4	28'-0"	278
5c1	CAP, HOOPS, ENDS	24	VARIABLES	265
5c2	CAP, HOOPS	30	11'-8"	359
10d1	COLUMN, VERTICAL	40	33'-6"	5,766
10d2	COLUMN, VERTICAL, DOWELS	40	10'-0"	1,850
4e1	COLUMN, HOOPS, ENDS	62	11'-8"	478
4e2	COLUMN, HOOPS	62	15'-7"	645
4e3	COLUMN, HOOPS	31	13'-11"	288
6b1	FOOTING, LONGITUDINAL, TOP	12	21'-8"	391
6b2	FOOTING, TRANSVERSE, TOP	22	11'-8"	389
6b3	FOOTING, LONGITUDINAL, BOTTOM	18	21'-8"	926
6b4	FOOTING, TRANSVERSE, BOTTOM	29	11'-8"	964
TOTAL (LBS.)				13,387



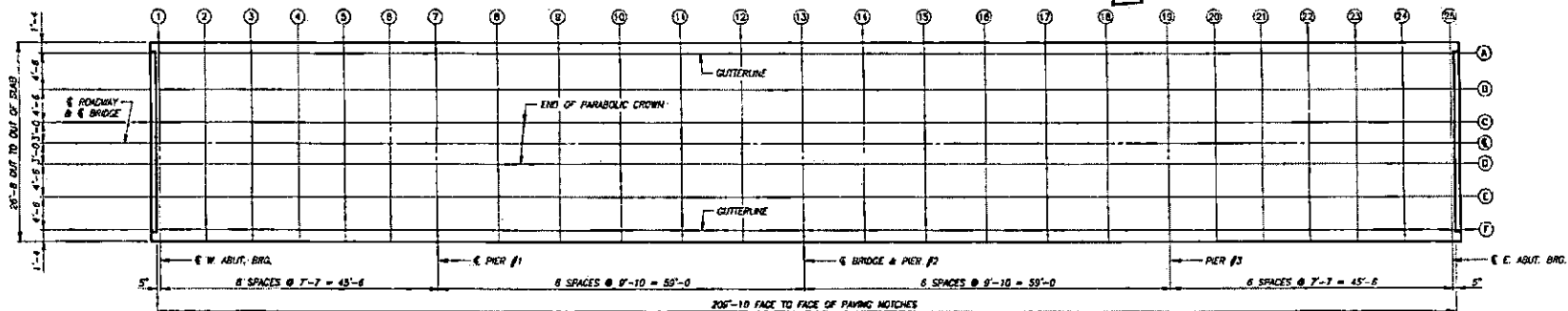
CONCRETE PLACEMENT QUANT. - PIER NO. 3	
LOCATION	QUANTITY
FOOTING	39.7
COLUMN	46.5
CAP	10.5
TOTAL (CU.YDS.)	
	96.7

ESTIMATED QUANTITIES - PIER NO. 3		
ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (BRIDGE)	CU.YDS.	90.1
REINFORCING STEEL	LBS.	13,387
PILES, STEEL, HP10x57 (10 @ 70')	LINE FT.	1,280
EXCAVATION, CLASS 20	CU.YDS.	144
EXCAVATION, CLASS 21	CU.YDS.	160

209'-0" x 24'-0" CONTINUOUS CONCRETE SLAB BRIDGE
 INTEGRAL ABUTMENTS 45'-6" END SPANS TEE PILES 59'-0" INTERIOR SPANS
 PIER NO. 3 DETAILS
 STATION 15+95.00 0° SKEW
 WOODBURY COUNTY, IOWA

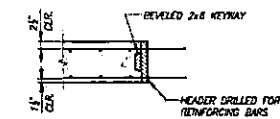


CONCRETE PLACEMENT DIAGRAM AND TRANSVERSE REINFORCING LAYOUT



TOP OF SLAB ELEVATIONS

LOCATION	E. W. ABUT. BRG.		B.RG. PIER 1					B.RG. PIER 2					B.RG. PIER 3					E. ABUT. BRG.							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
A	1110.59	1110.96	1111.31	1111.63	1111.82	1112.19	1112.42	1112.69	1112.92	1113.09	1113.23	1113.31	1113.38	1113.35	1113.31	1113.21	1113.07	1112.89	1112.66	1112.45	1112.22	1111.93	1111.67	1111.35	1111.01
B	1110.68	1111.05	1111.40	1111.72	1112.01	1112.28	1112.51	1112.78	1113.01	1113.18	1113.32	1113.40	1113.45	1113.44	1113.40	1113.30	1113.16	1112.98	1112.75	1112.54	1112.31	1112.04	1111.76	1111.44	1111.10
C	1110.77	1111.14	1111.49	1111.81	1112.10	1112.37	1112.60	1112.87	1113.10	1113.27	1113.41	1113.49	1113.54	1113.53	1113.49	1113.39	1113.25	1113.07	1112.84	1112.63	1112.40	1112.13	1111.85	1111.53	1111.19
D	1110.80	1111.17	1111.52	1111.84	1112.13	1112.40	1112.63	1112.90	1113.13	1113.30	1113.44	1113.52	1113.57	1113.56	1113.52	1113.42	1113.28	1113.10	1112.87	1112.66	1112.43	1112.16	1111.88	1111.56	1111.22
E	1110.77	1111.14	1111.49	1111.81	1112.10	1112.37	1112.60	1112.87	1113.10	1113.27	1113.41	1113.49	1113.54	1113.53	1113.49	1113.39	1113.25	1113.07	1112.84	1112.63	1112.40	1112.13	1111.85	1111.53	1111.19
F	1110.68	1111.05	1111.40	1111.72	1112.01	1112.28	1112.51	1112.78	1113.01	1113.18	1113.32	1113.40	1113.45	1113.44	1113.40	1113.30	1113.16	1112.98	1112.75	1112.54	1112.31	1112.04	1111.76	1111.44	1111.10
G	1110.59	1110.96	1111.31	1111.63	1111.82	1112.19	1112.42	1112.69	1112.92	1113.09	1113.23	1113.31	1113.38	1113.35	1113.31	1113.21	1113.07	1112.89	1112.66	1112.45	1112.22	1111.93	1111.67	1111.35	1111.01



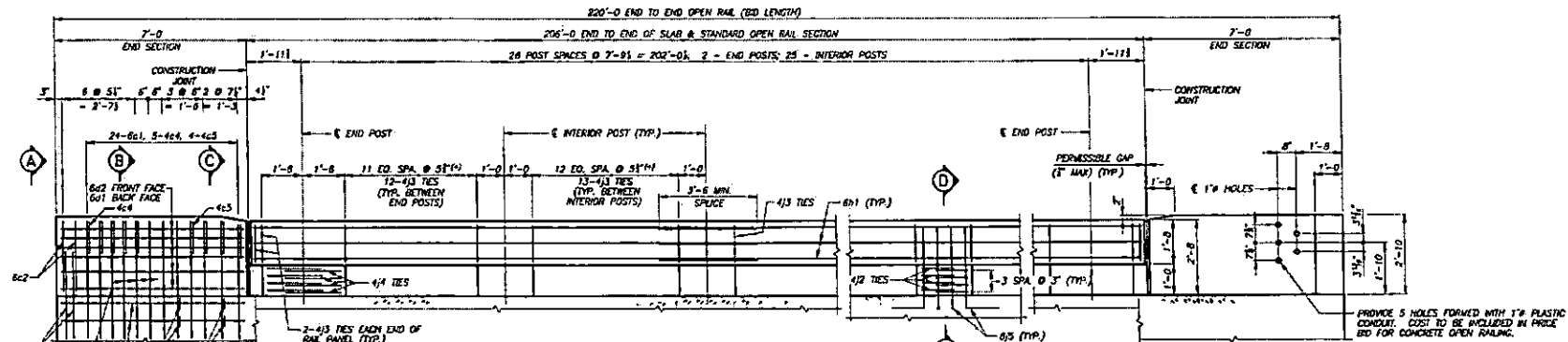
TRANSVERSE CONSTRUCTION JOINT DETAIL
209'-0" x 24'-0" CONTINUOUS CONCRETE SLAB BRIDGE

INTEGRAL ABUTMENTS 45'-6" END SPANS TEE PIERS 59'-0" INTERIOR SPANS

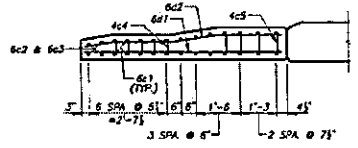
SUPERSTRUCTURE DETAILS

STATION 15+95.00
WOODBURY COUNTY,

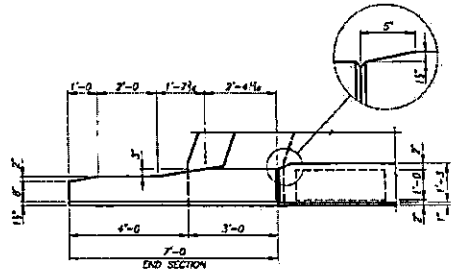
O. SKEW
IOWA



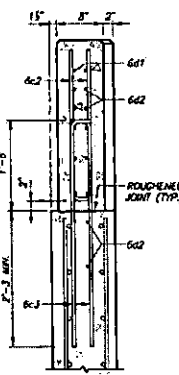
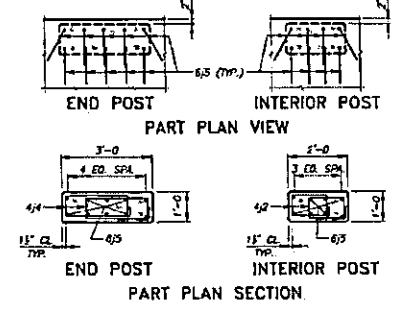
ELEVATION OF OPEN RAIL LAYOUT



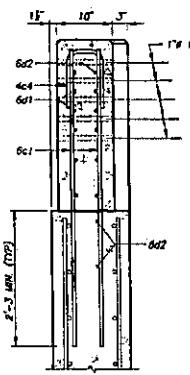
PART PLAN SECTION



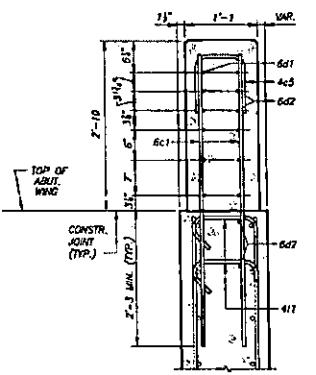
PART PLAN VIEW



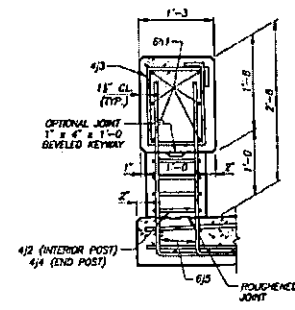
VIEW A-A



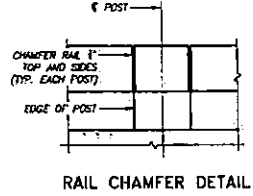
SECTION B-B



SECTION C-C



PART SECTION D-D



209'-0" x 24'-0" CONTINUOUS CONCRETE SLAB BRIDGE

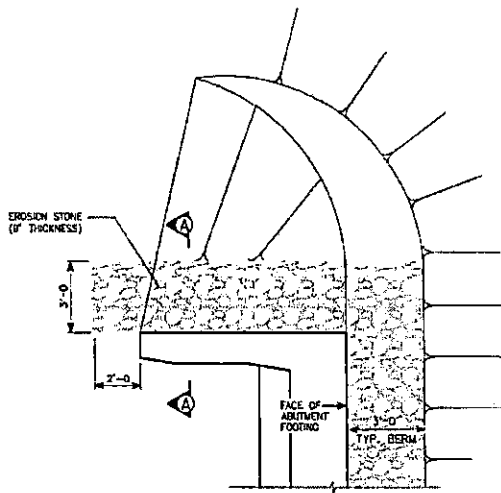
INTEGRAL ABUTMENTS 45'-6" END SPANS TEE PIERS 59'-0" INTERIOR SPANS

OPEN RAIL DETAILS (TL-4)

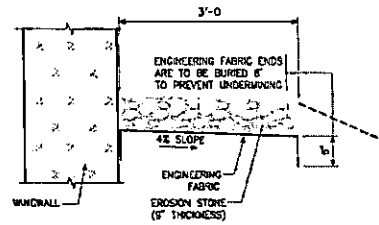
STATION 15+85.00 WOODBURY COUNTY, IOWA

0' SKEW IOWA

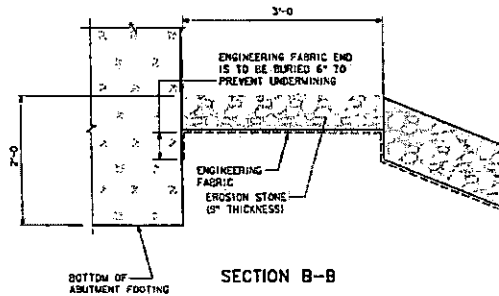
NOTE: SEE ABUTMENT DETAILS FOR ADDITIONAL WING REINFORCING.



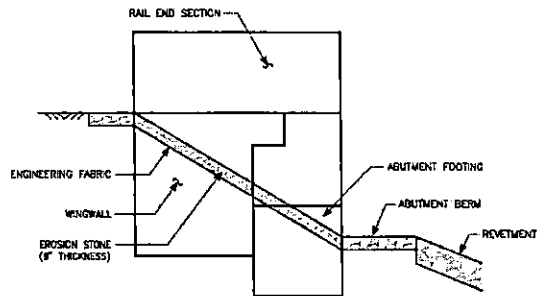
TOP VIEW OF WING ARMORING



SECTION A-A



SECTION B-B



PROFILE VIEW OF WING ARMORING

WING ARMORING NOTES:

EROSION STONE SHALL BE PLACED ALONG THE SIDE OF THE WINGS AND ABUTMENT FOOTINGS AS SHOWN IN SECTION A-A. THIS IS TYPICAL AT EACH CORNER OF THE BRIDGE UNLESS OTHERWISE NOTED IN THE PLANS. THE EROSION STONE AT THESE LOCATIONS SHALL BE UNDERLAYERED WITH ENGINEERING FABRIC IN ACCORDANCE WITH ARTICLE 4190D1, B. 3, OF THE STANDARD SPECIFICATIONS.

THE EROSION STONE SHALL BE IN ACCORDANCE WITH SECTION 4130, OF THE STANDARD SPECIFICATIONS. MATERIAL PASSING THE 3 INCH SCREEN BUT 100% RETAINED ON A 1 INCH SCREEN MAY BE USED AS CHICK STONE.

THE EROSION STONE SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

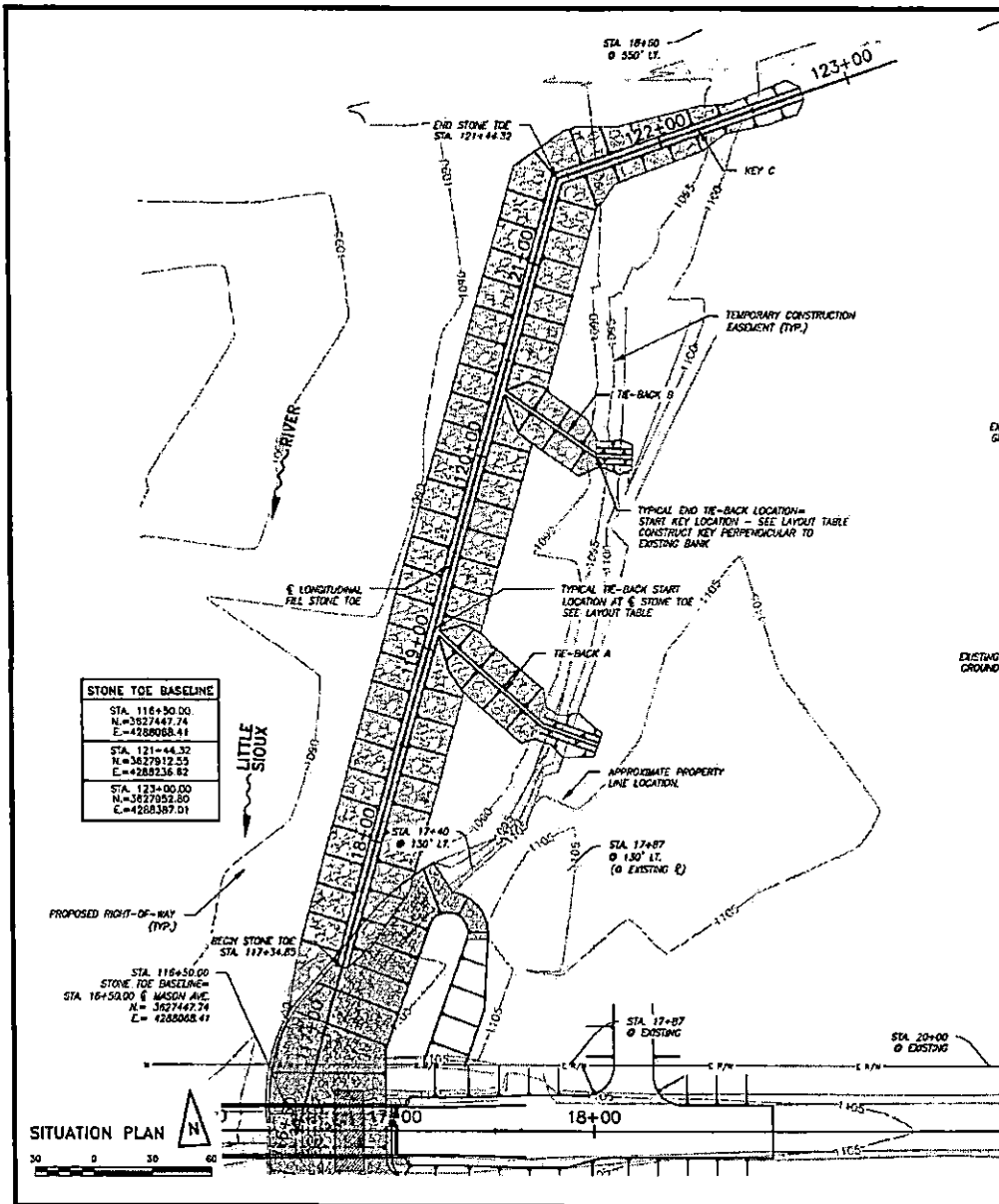
PAYMENT FOR THE BRIDGE WING ARMORING WILL BE BID PER SQUARE YARD. COST WILL INCLUDE ENGINEERING FABRIC, EROSION STONE, EXCAVATION, SHAPING AND COMPACTION TO DIMENSIONS SHOWN IN THESE PLANS. BID ITEM SHALL BE "BRIDGE WING ARMORING - EROSION STONE".

209'-0 x 24'-0 CONTINUOUS CONCRETE
SLAB BRIDGE

INTEGRAL ABUTMENTS TEE PIERS
45'-0 END SPANS 99'-0 INTERIOR SPANS

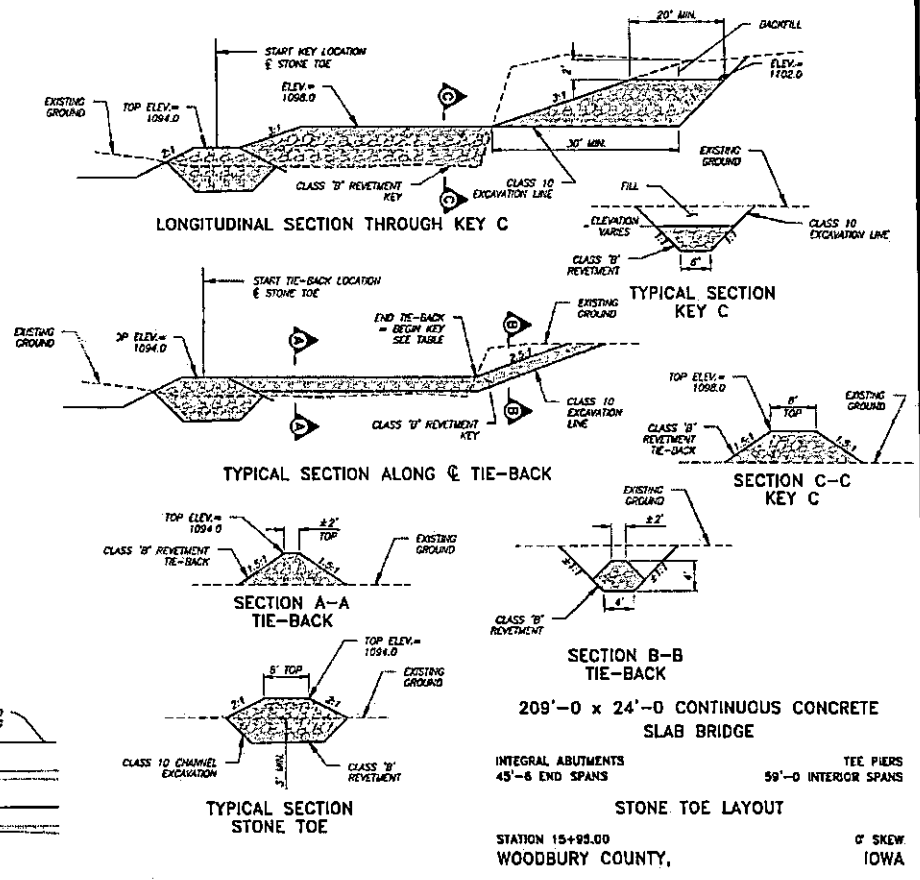
WING ARMORING DETAILS

STATION 15+95.00 0° SKEW
WOODBURY COUNTY, IOWA



BENCH MARK

LAYOUT-REVETMENT/GRADING QUANTITIES					
ELEMENT	START LOCATION	END LOCATION	CLASS 10 EXCAVATION (CY.)	CLASS 10 CHANNEL EXCAVATION (CY.)	REVETMENT CLASS 'B' (TON)
TI-E-BACK A	119+10.35 N=3627692.55 E=4286157.00	118+79.13, OFFSET 65.45 FT. N=3627640.94 E=4286207.83	80	--	320
TI-E-BACK B	120+35.10 N=3627809.88 E=4286199.46	120+18.43, OFFSET 55.85 FT. N=3627773.38 E=4286245.43	30	--	250
KEY C	121+44.32 N=3627912.55 E=4286236.82	121+38.00 N=3627948.59 E=4286393.83	45	--	430
STONE TOE	117+34.85 N=3627327.52 E=4286097.28	121+44.32 N=3627912.55 E=4286236.82	--	1500	9400
TOTALS			135	1500	6400



KEDRON
T88N

TOWNSHIP
R43W

