

BRIDGE - REPLACEMENT

PROJECT NO. BROS-9024(32)--5F-24

CRAWFORD COUNTY

LETTING DATE : JANUARY 14, 1997

STANDARD ROAD PLANS					
THE FOLLOWING STANDARD ROAD PLANS SHALL BE CONSIDERED APPLICABLE TO CONSTRUCTION WORK ON THIS PROJECT.					
IDENT.	DATE	IDENT.	DATE	IDENT.	DATE
RC-16	4-28-92	RE-69	12-3-96	RL-1A	12-3-96
RE-2A	10-31-95	RE-70(1)	12-3-96	RL-10	12-3-96
RE-2B	10-22-93	RE-70(2)	12-3-96	RL-7	12-3-96
RE-12A	12-3-96	RE-70(3)	12-3-96	RL-14	3-26-96
RE-12B	12-3-96				
RE-47	11-10-87	RF-5	3-28-95	RT-1	5-13-86
RE-48A	12-8-95	RT-30A	3-28-95		
RE-55	10-31-95	RF-30B	3-28-95	RS-26A	8-20-96
RE-68	12-3-96	RF-32	3-28-95		

IOWA  
DEPARTMENT OF TRANSPORTATION  
*Project Development Division*  
PLANS OF PROPOSED IMPROVEMENT ON THE  
FARM TO MARKET SYSTEM  
**CRAWFORD COUNTY**  
BRIDGE - REPLACEMENT

THE STANDARD SPECIFICATIONS, SERIES OF 1992, OF THE IOWA DEPARTMENT OF TRANSPORTATION, PLUS CURRENT SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS, SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT

DIVISION I - BRIDGE  
DIVISION II - GRADING

PROJECT NO. BROS-9024(32)--5F-24  
FHWA NO. 126870

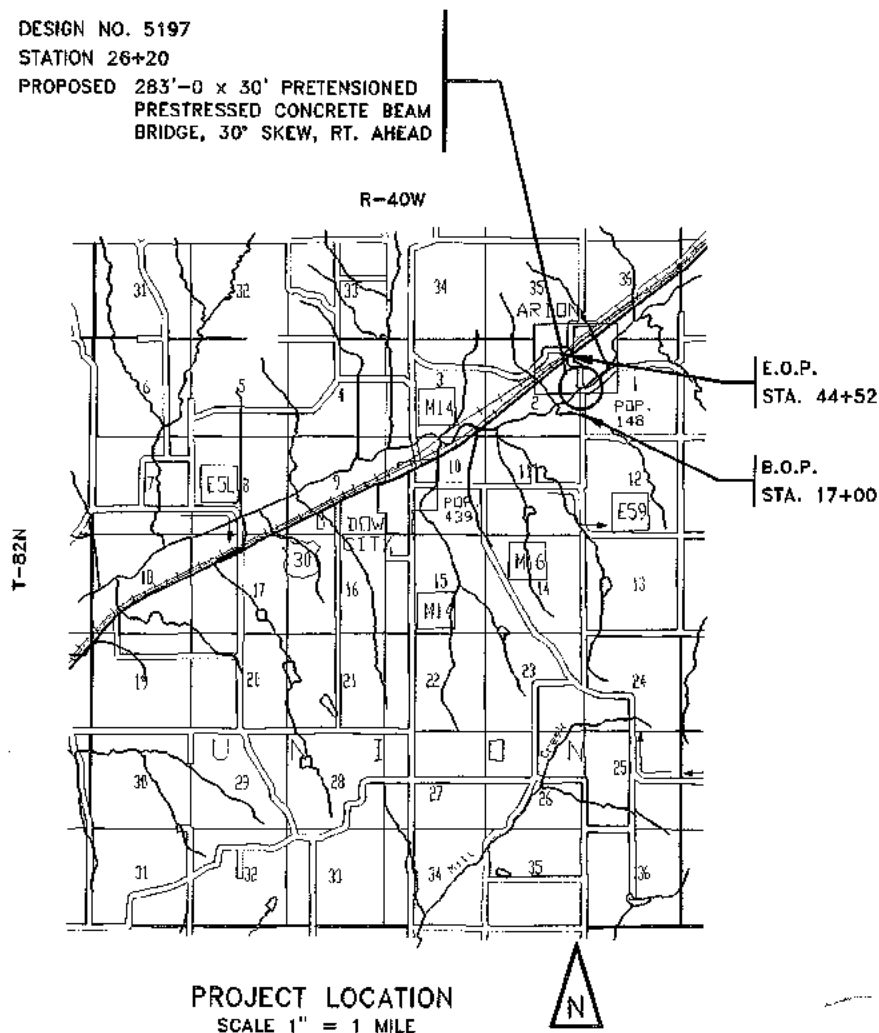
INDEX OF SHEETS

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(CROSS-SECTIONS MAY BE OBTAINED FROM THE COUNTY ENGINEER'S OFFICE)

PROJECT 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, AND LAYOUTS SHALL BE AS PER PART VI OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) REVISION 3, DATED SEPTEMBER 3, 1993.

THIS PROJECT (COE #319560) IS COVERED BY THE CORPS OF ENGINEERS NATIONWIDE 404 PERMIT #13 & #14.

DESIGN NO. 5197  
STATION 26+20  
PROPOSED 283'-0" x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE, 30° SKEW, RT. AHEAD



PROJECT LOCATION  
SCALE 1" = 1 MILE

MILEAGE SUMMARY			
DIV.	LOCATION	LIN. FT.	MILES
I	BRIDGE AT STA. 26+20	286.46	0.0543
II	MAINLINE STA. 17+00 TO STA. 44+52.22	2752.22	0.5213
II	SIDEROAD STA. 1023+90 TO STA. 1028+45.72	455.72	0.0863
II	TOTAL NET LENGTH OF GRADING	2921.48	0.5533

DRAWING APPROVAL  
ALL SHOP DRAWINGS AND FALSEWORK DRAWINGS THAT REQUIRE APPROVAL SHALL BE APPROVED BY CALHOUN-BURNS AND ASSOCIATES, INC.  
ADDRESS : 1801 FULLER ROAD, P.O. BOX 69800  
WEST DES MOINES, IOWA 50265  
TELEPHONE : (515) 224-4344  
THESE SHOP DRAWINGS SHALL NOT BE SENT TO IOWA D.O.T. OFFICE OF BRIDGE DESIGN.

IOWA DEPARTMENT OF NATURAL RESOURCES PERMIT NO. FP 96-186; DATED; 9-11-96

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED UNDER MY SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.  
SIGNATURE: *Terry A. Cole*  
NAME: TERRY A. COLE, P.E.  
DATE: 10/2/96 REG. NO. 13297  
MY REGISTRATION EXPIRES DECEMBER 31, 1996

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED UNDER MY SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.  
SIGNATURE: *Steven B. Reneker*  
NAME: STEVEN B. RENEKER, P.E.  
DATE: 10-2-96 REG. NO. 11455  
MY REGISTRATION EXPIRES DECEMBER 31, 1996

APPROVED  
*T. Dale Wright* 9-24-96  
CRAWFORD COUNTY ENGINEER

*Michael J. ...*  
*Robert D. Schumann*  
*H. Dean ...*  
*Lynell E. ...*  
*John P. Lawler*  
BOARD OF SUPERVISORS DATE

Iowa Department of Transportation  
Project Development Division  
ACCEPTED FOR LETTING  
SECONDARY ROADS ENGINEER DATE

1984, TRAFFIC COUNT = 85 V.P.D.

126871

TOTAL ESTIMATED QUANTITIES : DIV. I - 283'-0 x 30' P.P.C.B. BRIDGE							
REF. NO.	CODE NO.	ITEM	UNIT	2 ABUTS.	2 PIERS	SUPERSTR.	TOTAL
1	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CU.YDS.	-	-	-	2,452
2	2401-0745050	REMOVAL OF EXISTING STRUCTURES	L.S.	-	-	-	1
3	2402-2720000	EXCAVATION, CLASS 20	CU.YDS.	92	-	-	92
4	2402-2721000	EXCAVATION, CLASS 21	CU.YDS.	-	61	-	61
5	2403-0900000	CONCRETE, STRUCTURAL	CU.YDS.	45.7	151.4	301.3	498.4
6	2404-7775000	STEEL REINFORCING	LBS.	2,306	11,144	1,761	15,214
7	2404-7775005	STEEL REINFORCING, EPOXY COATED	LBS.	6,376	-	89,067	95,443
8	2407-0580485	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, LXD85	EACH	-	-	10	10
9	2407-0580510	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, LXD110	EACH	-	-	5	5
10	2408-7800000	STEEL, STRUCTURAL	LBS.	-	-	3,369	3,369
11	2414-6424120	RAIL, CONCRETE OPEN	LIN.FT.	-	-	620.9	620.9
12	2501-5425012	PILING, DRIVE, STEEL BEARING, HP10x42; 11 @ 70'; 11 @ 68'	LIN.FT.	1,518	-	-	1,518
13	2501-5425057	PILING, DRIVE, STEEL BEARING, HP10x57; 14 @ 68'; 14 @ 76'	LIN.FT.	-	2,916	-	2,916
14	2501-5550042	PILING, FURNISH, STEEL BEARING, HP10x42; 11 @ 70'; 11 @ 68'	LIN.FT.	1,518	-	-	1,518
15	2501-5550057	PILING, FURNISH, STEEL BEARING, HP10x57; 14 @ 68'; 14 @ 76'	LIN.FT.	-	2,916	-	2,916
16	2501-6335010	PREBORED HOLES, AS PER PLAN	LIN.FT.	176	-	-	176
17	2507-3250005	FABRIC, ENGINEERING	SQ.YDS.	-	-	-	650
18	2507-6800000	RECYCLMENT, CLASS 'E', RIPRAP	TONS	-	-	-	616
19	2533-4980005	MOBILIZATION	L.S.	-	-	-	1

ITEM NO.	ESTIMATE REFERENCE INFORMATION
1 & 2.	SEE SITUATION PLAN AND GENERAL NOTES.
8 & 9.	INCLUDES COST OF COIL TIES, COIL RODS, PREFORMED JOINT FILLER, AND ALL BEARING MATERIALS.
18.	TO BE PLACED AT A THICKNESS OF 1'-6.

TOTAL ESTIMATED QUANTITIES: DIV.II - GRADING				
REF. NO.	CODE NO.	ITEM	UNIT	TOTAL
20	2101-0850001	CLEARING & GRUBBING	ACRES	0.80
21	2101-0850002	CLEARING & GRUBBING	UNITS	75
22	2102-2710070	EXCAVATION, CLASS 10, ROADWAY & BORROW	CU. YDS.	27,578
23	2312-8250051	GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE	TONS	1129
24	2402-2720100	EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERTS	C.Y.	225
25	2417-1040924	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24 IN. DIA.	LIN. FT.	82
26	2417-1040936	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 36 IN. DIA.	LIN. FT.	74
27	2417-1060036	CULVERT, CORRUGATED METAL ROADWAY PIPE, 36 IN. DIA.	LIN. FT.	62
28	2417-0225024	APRONS, METAL, 24 IN. DIA.	ONLY	6
29	2417-0225036	APRONS, METAL, 36 IN. DIA.	ONLY	6
30	2505-4020170	GUARDRAIL, END ANCHORAGES, BEAM RE-70	ONLY	4
31	2505-4020250	GUARDRAIL FORMED STEEL BEAM	LIN. FT.	150
32	2505-4020251	GUARDRAIL FORMED STEEL THREE BEAM	LIN. FT.	125
33	2505-4020400	GUARDRAIL, POST, BEAM	ONLY	44
34	2505-4021690	GUARDRAIL, END ANCHORAGES, BEAM RE-69	ONLY	4
35	2518-6910000	SAFETY CLOSURES	ONLY	3
36	2524-9220020	OBJECT MARKERS, TYPE 2	ONLY	8
37	2524-9220030	OBJECT MARKERS, TYPE 3	ONLY	4
38	2525-2638031	SHI FENCE FOR DITCH CHECKS	LIN. FT.	200
39	2526-8445110	TRAFFIC CONTROL	L.S.	1
40	2601-2634100	MULCHING	ACRES	9.5
41	2601-2636043	SEEDING, AND FERTILIZING (RURAL)	ACRES	9.5

ITEM NO. ESTIMATE REFERENCE INFORMATION

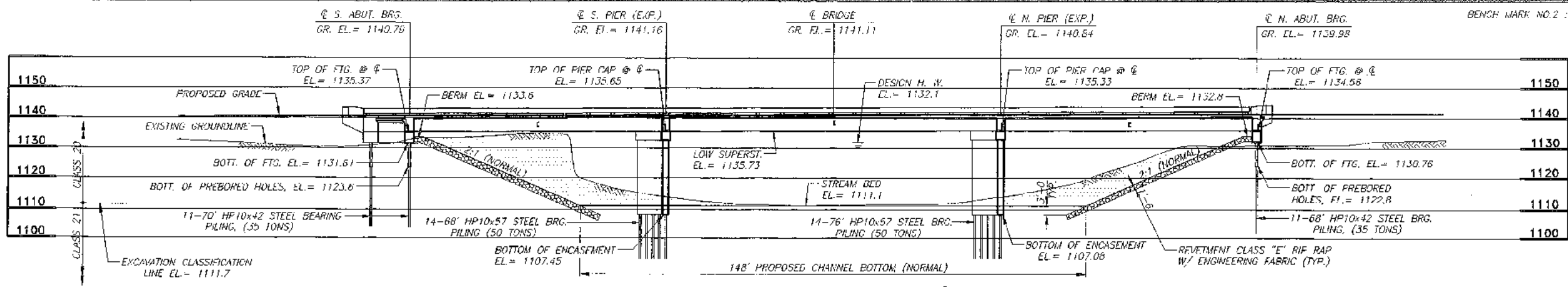
20-21	QUANTITY SHOWN IS AN APPROXIMATION. ACTUAL MEASUREMENTS WILL BE MADE AT THE TIME OF CONSTRUCTION.
22	TYPE 'A' COMPACTION WILL BE REQUIRED. SEE TABULATION, SHEET AND PLAN AND PROFILE SHEET, FOR BREAKDOWN OF EXCAVATION QUANTITIES. INCLUDES MATERIAL FOR BRIDGE APPROACHES & ENTRANCES. NO PAYMENT WILL BE MADE FOR OVER-HAUL.
23	SURFACING SHALL BE FURNISHED AND PLACED BY THE CONTRACTOR IN TWO PASSES (1-60 AND 600 TONS/MILE). INCLUDES 10 TONS FOR ENTRANCES.
25-29	SEE TABULATION SHEET 21, ALL PIPES ARE TO BE STANDARD CORRUGATIONS. NO HEAVILY CORRUGATED PIPE WILL BE ALLOWED. ALL CONNECTING BENDS ARE TO BE 24" WIDE.
30-37	SEE TABULATIONS, SHEET 21.
38	SEE TABULATION, SHEET 21.
39	SEE SHEETS 1, AND 19.
40-41	SEEDING SHALL BE COMPLETED IN ACCORDANCE WITH ARTICLE 2601.04 OF THE STANDARD SPECIFICATIONS.

283'-0 x 30'-0 PRETENSIONED PRESTRESSED  
CONCRETE BEAM BRIDGE  
INTEGRAL ABUTMENTS                      SINGLE ROW ENCASED PIERS  
85'-9 END SPANS                                      111'-6 INTERIOR SPAN

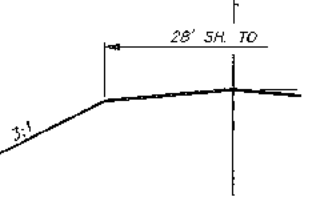
QUANTITY SUMMARY

STATION 26+20                                      30' SKEW, RT. AHEAD  
CRAWFORD COUNTY,                                      IOWA

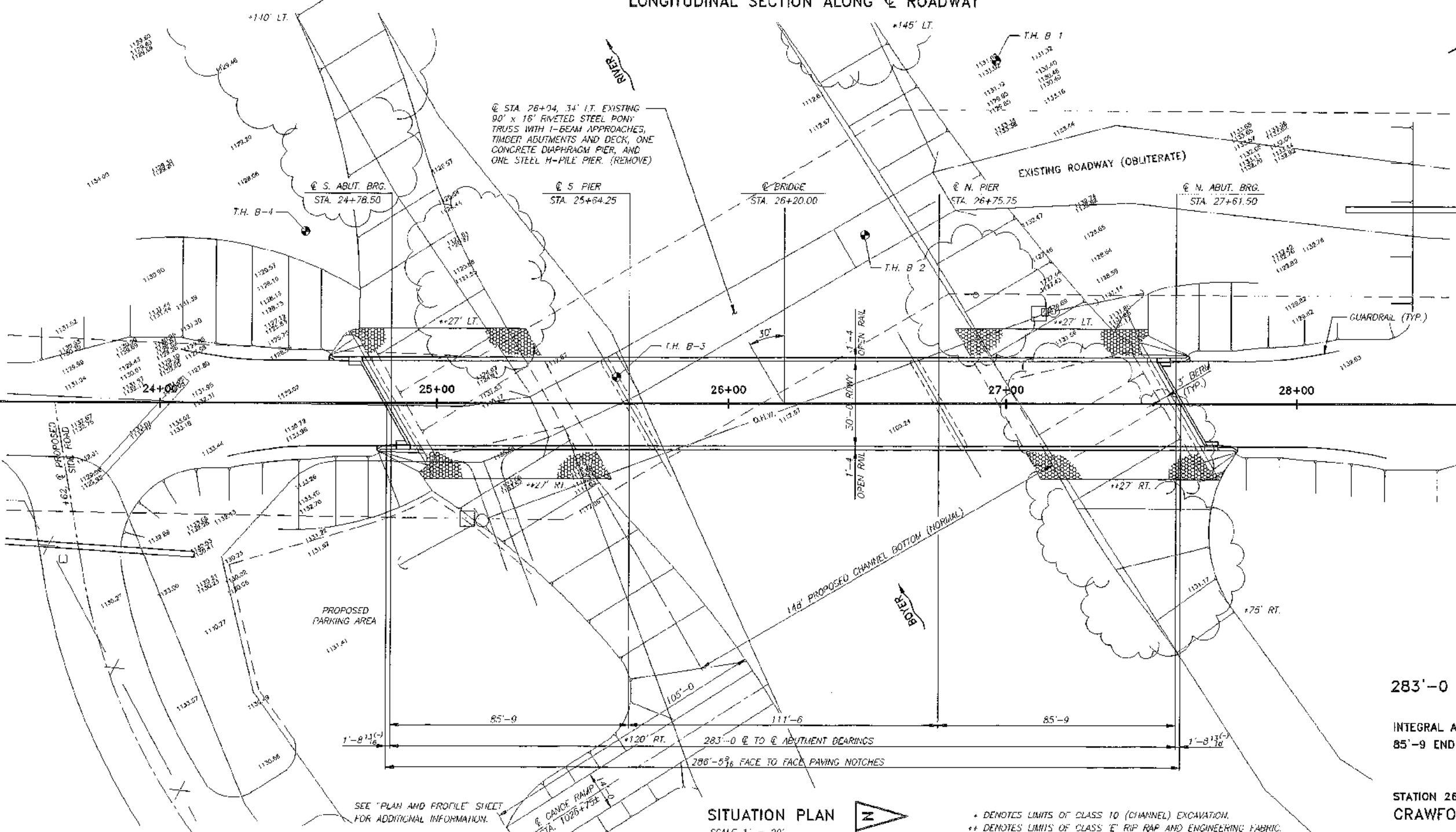
SHEET 2 OF 33



PRG



TYPICAL APPROACH SECTION



LOCATION

CRAWFORD COUNTY  
T-82N, R-40W  
SECTION 2  
UNION TOWNSHIP  
OVER BOYER RIVER

HYDRAULIC DATA

DRAINAGE AREA = 575 SQ.MI.  
DESIGN DISCHARGE = 23,000 C.F.S.  
DESIGN HIGH WATER EL. = 1,132.1  
MANNING SLOPE = 0.000676 FT./F.  
BRIDGE WATERWAY AREA = 3,913 S  
DESIGN VELOCITY = 5.9 F.F.S.  
OSD = 23,000 C.F.S. STAGE EL. =  
G100 = 27,000 C.F.S. STAGE EL. =  
C OVERTOP = 33,400 C.F.S. STAG  
EXT. H.W. EL. = UNKNOWN

283'-0 x 30'-0 PRETENSIONED PRE  
CONCRETE BEAM BRIDGE  
INTEGRAL ABUTMENTS SINGLE ROW E  
85'-9 END SPANS 111'-6 I

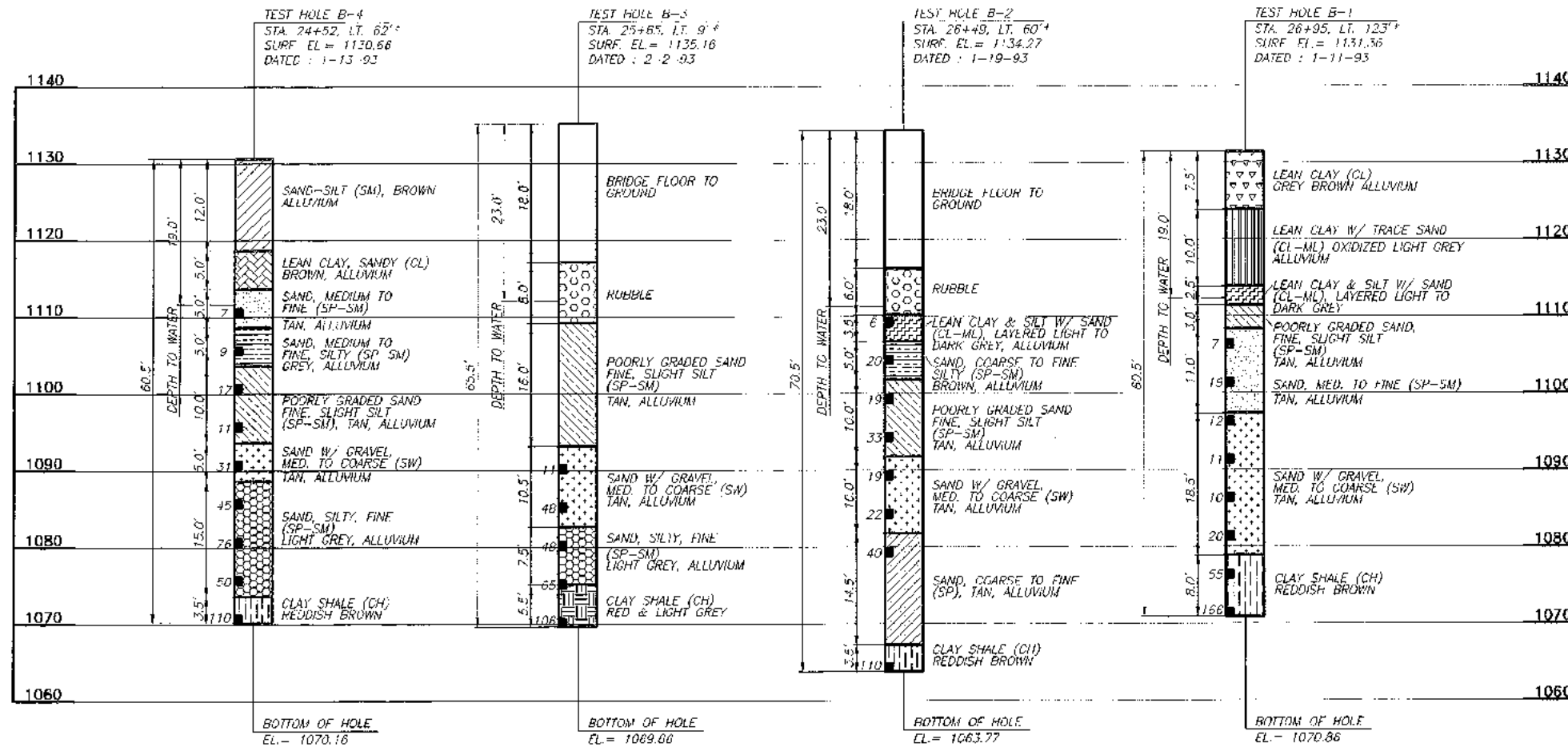
SITUATION PLAN

STATION 26+20 30' SKE  
CRAWFORD COUNTY,

SHEET

SITUATION PLAN  
SCALE 1" = 20'

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



**SOUNDING DATA**  
SCALE 1" = 10'  
+ APPROXIMATE LOCATION  
■ INDICATES BLOWS PER FOOT.

**SPECIFICATIONS**

DESIGN: AASHTO SERIES OF 1992.  
CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, PROJECT DEVELOPMENT DIVISION, SERIES OF 1992, PLUS CURRENT SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.

**DESIGN STRESSES**

DESIGN STRESSES FOR THE FOLLOWING MATERIAL ARE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1992.

CONCRETE	SECTION 8 f <sub>c</sub> = 3,500 PSI
REINFORCING STEEL	SECTION 8
ASTM A615	GRADE 60, f <sub>s</sub> = 24,000 PSI
PRESTRESSING STEEL	SEE SHEETS 13, 14 & 15
PRESTRESSED CONCRETE	SEE SHEETS 13, 14, & 15
STRUCTURAL STEEL	SECTION 10
ASTM A36	f <sub>y</sub> = 20,000 PSI

**GENERAL NOTES**

THIS BRIDGE IS DESIGNED FOR HS20-44 LIVE LOAD PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.  
THE BRIDGE SITS ON A ROADWAY RELOCATION. APPROACH ROADWAY CONSTRUCTION WILL BE DONE SIMULTANEOUSLY WITH THE BRIDGE CONSTRUCTION. THE CONTRACTORS INVOLVED WILL BE EXPECTED TO COORDINATE THE WORK FOR THE EXPEDITIOUS COMPLETION OF THE PROJECT.  
THE EXISTING BRIDGE IS A 90' X 16'-0" RIVETED STEEL PONY TRUSS BRIDGE WITH ONE 40.5' X 16'-0" AND ONE 23.5' X 16'-0" STEEL I-BEAM APPROACH SPAN. HIGH TIMBER ABUTMENTS, ONE CONCRETE DIAPHRAGM PIER AND ONE STEEL I-PILE PIER. THE LUMP SUM BID FOR 'REMOVAL OF EXISTING STRUCTURES' SHALL INCLUDE REMOVAL AND DISPOSAL OF THE EXISTING STRUCTURE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS. ANY MATERIAL NOT DESIGNATED AS SALVAGEABLE FOR THE COUNTY SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE BY HIM. ANY MATERIAL CONSIDERED REUSABLE BY THE COUNTY SHALL BE REMOVED BY THE CONTRACTOR AND RETAINED BY THE COUNTY. MATERIALS TO BE SALVAGED BY THE COUNTY SHALL BE STACKED NEATLY WITHIN THE RIGHT-OF-WAY BY THE CONTRACTOR. THE EXISTING STRUCTURE SHALL BE REMOVED TO AN ELEVATION AT LEAST 1'-6" BELOW FINISHED GROUNDLINE AND TO THE EXTENT THAT IT WILL NOT INTERFERE WITH THE NEW CONSTRUCTION.

THE BRIDGE CONTRACTOR IS TO CLEAR THE CHANNEL TO THE SHAPE, DEPTH, AND EXTENT SHOWN IN THE "LONGITUDINAL SECTION ALONG CENTERLINE OF ROADWAY" AND THE LIMITS SHOWN ON THE "SITUATION PLAN". THIS WORK WILL BE PAID FOR AS "CLASS 10 CHANNEL EXCAVATION".

SUITABLE CLASS 10 CHANNEL EXCAVATION AND CLASS 20 EXCAVATION, AS DIRECTED BY THE ENGINEER, SHALL BE USED FOR CONSTRUCTION OF APPROACH FILLS. COST OF PLACEMENT SHALL BE INCIDENTAL TO THE RESPECTIVE BID ITEM. ANY UNSUITABLE MATERIAL SHALL BE WASTED AS DIRECTED BY THE ENGINEER, *WASTED CIV. P.E.*  
THE APPROACH FILLS SHALL BE BUILT TO THE CONSTRUCTION LIMITS SHOWN AND SHALL BE IN PLACE BEFORE ABUTMENT AND PIER PILES ARE DRIVEN. THE CONTRACTOR SHALL LEVEL AND SHAPE THE BERMS TO THE ELEVATIONS AND DIMENSIONS SHOWN. DRESSING OF SLOPES OUTSIDE THE BRIDGE AREA, NOT DISTURBED BY THE CONTRACTOR, WILL BE PAID AS EXTRA WORK.

THE CONTRACTOR SHALL PREBORE HOLES FOR ABUTMENT PILES. MINIMUM DIAMETER OF THE HOLES SHALL BE 18 INCHES. HOLES SHALL BE BORED TO ELEVATIONS SHOWN ON THE "LONGITUDINAL SECTION ALONG CENTERLINE" ON SHEET 3. HOLES SHALL BE FILLED WITH A NATURAL BENTONITE SLURRY. PILES SHALL BE DRIVEN THROUGH THE HOLES TO AT LEAST THE SPECIFIED DESIGN BEARING. FOR HOLES DRILLED IN NONCOLLAPSING SOILS THE BENTONITE SLURRY MAY BE PLACED AFTER PILES ARE DRIVEN. IN COLLAPSING SOILS THE BENTONITE SLURRY SHALL BE PLACED AT THE TIME THE HOLE IS DRILLED. THE COST OF FURNISHING AND PLACING THE BENTONITE SLURRY SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "PREBORED HOLES, AS PER PLAN".

CLASS 20 AND CLASS 21 EXCAVATION QUANTITIES ARE BASED ON THE ASSUMPTION THAT THE APPROACH FILLS ARE IN PLACE AND THAT THE CHANNEL EXCAVATION HAS BEEN COMPLETED.

ALL REINFORCING SHALL BE GRADE 60.  
THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT MANY OF THE REINFORCING BARS IN THE SLAB CONCRETE RAIL AND BOTH ABUTMENTS ARE TO BE EPOXY COATED. SEE RESPECTIVE REINFORCING BAR LISTS ON DESIGN SHEETS. EPOXY COATING SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARD SPECIFICATIONS OF THE IOWA DOT, HIGHWAY DIVISION.

THE CONTRACTOR IS ENCOURAGED TO CONDUCT CONSTRUCTION ACTIVITIES DURING A PERIOD OF LOW FLOW. ANY TEMPORARY CROSSINGS SHALL INCLUDE ENOUGH CULVERTS TO ACCOMMODATE LOW FLOWS AND MUST BE REMOVED AFTER COMPLETION OF WORK ON THIS PROJECT. THE CONTRACTOR IS REQUIRED TO REMOVE ALL FILL-MATERIAL USED AS A TEMPORARY CROSSING TO AN UPLAND, NON-WETLAND SITE, TO SEED ALL DISTURBED AREAS WITH NATIVE GRASSES AND TO IMPLEMENT APPROPRIATE MEASURES TO INSURE SEDIMENTS ARE NOT INTRODUCED INTO WATERS OF THE UNITED STATES DURING CONSTRUCTION OF THIS PROJECT. THE COST OF INSTALLATION, MAINTENANCE AND REMOVAL OF TEMPORARY CROSSINGS, INCLUDING CULVERTS, SHALL BE INCIDENTAL TO THE PROJECT.

THE UNIT PRICE BID FOR "REVEGETATION, CLASS B, RIP-RAP" SHALL INCLUDE COST OF LABOR, EQUIPMENT AND MATERIALS REQUIRED TO PLACE CLASS B REVEGETATION STONE ON BOTH BANKS OF THE CHANNEL TO THE EXTENT SHOWN ON SHEET 3 IN ACCORDANCE WITH SECTION 4109 OF THE STANDARD SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL VISIT THE CONSTRUCTION SITE TO ENSURE THAT HE IS FAMILIAR WITH THE EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. SHOULD ANY UTILITIES BE FOUND, THEY SHALL BE PROTECTED IN PLACE AND THE ENGINEER IMMEDIATELY NOTIFIED. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES.

UTILITY COMPANIES WHOSE FACILITIES ARE KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

ALL UNSALVAGEABLE MATERIAL AND RUBBLE GENERATED DURING THIS PROJECT SHALL BE REMOVED FROM THE HIGHWAY RIGHT-OF-WAY TO A WASTE AREA PROVIDED BY THE BRIDGE CONTRACTOR. THE WASTE MATERIAL MUST NOT CREATE AN UNSIGHTLY CONDITION WHEN VIEWED FROM PUBLIC HIGHWAYS. THE COST OF WASTING THIS MATERIAL IS TO BE INCLUDED IN THE PRICE BID FOR "EXCAVATION, CLASS 10 CHANNEL". NO PAYMENT WILL BE MADE FOR OVERHAUL.

CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED. COST OF TRAFFIC CONTROL MEASURES REQUIRED OF THE CONTRACTOR SHALL BE INCLUDED IN THE LUMP SUM BID FOR "TRAFFIC CONTROL".

IF ARCHAEOLOGICAL MATERIALS ARE ENCOUNTERED DURING THE CONSTRUCTION PHASE OF THIS PROJECT, THE OFFICE OF PROJECT PLANNING AND/OR THE OFFICE OF LOCAL SYSTEMS (IOWA DOT) MUST BE CONTACTED IMMEDIATELY SO THE PROPER AUTHORITIES CAN BE NOTIFIED ACCORDING TO THE EXISTING FEDERAL REGULATIONS AND STATE PROCEDURES. ADDITIONALLY, IT SHOULD BE NOTED THAT FINDINGS AND RECOMMENDATIONS FOR CLEARANCE OR FURTHER TESTING CANNOT BE CONSIDERED FINAL UNTIL CONCURRENCE IS RECEIVED FROM THE STATE HISTORIC PRESERVATION OFFICER. PHONE: OFFICE OF PROJECT PLANNING - 515/239-1225; OFFICE OF LOCAL SYSTEMS - 515/239-1338.

SEEDING, FERTILIZING, AND MULCHING OF ALL DISTURBED AREAS WITH AN APPROVED RURAL MIXTURE FOLLOWING THE COMPLETION OF WORK ON THIS PROJECT SHALL BE DONE AS DIRECTED BY THE ENGINEER. THE PREPARATION OF THE SEEDBED AND THE FURNISHING AND APPLICATION OF SEED AND FERTILIZER TO ALL DISTURBED AREAS ON THIS PROJECT SHALL BE INCLUDED IN THE PRICE BID FOR "SEEDING, FERTILIZING AND MULCHING".

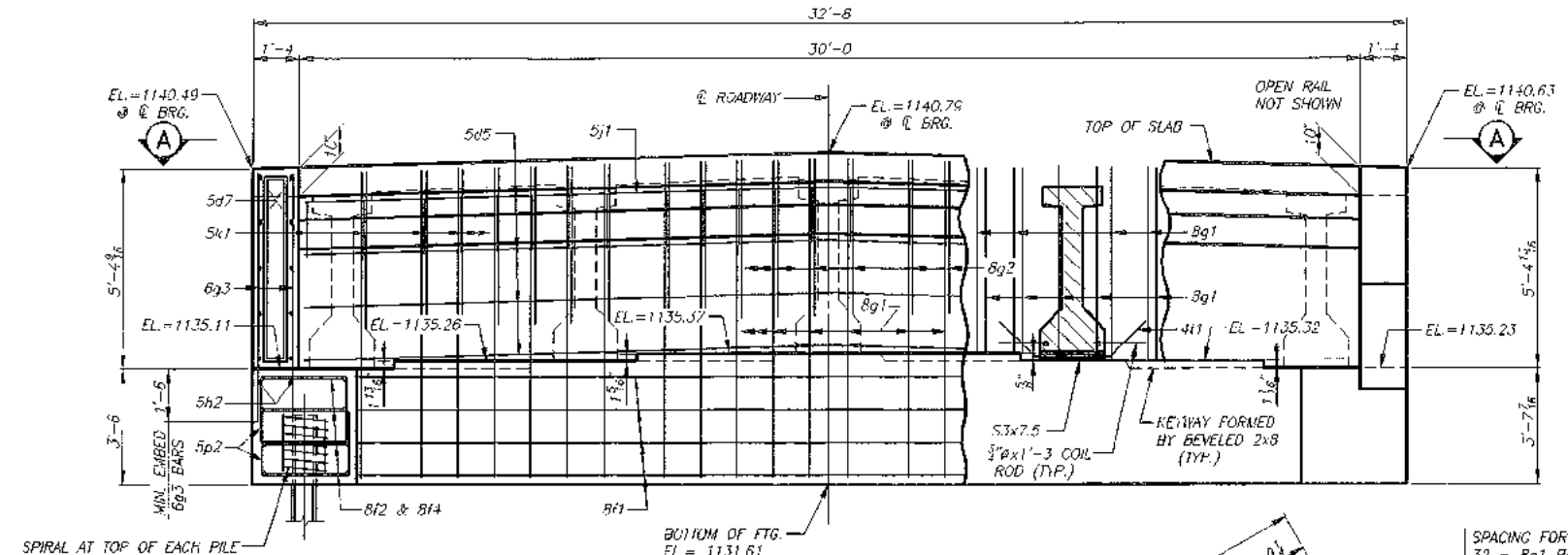
SCRAPE SAMPLES FROM THIS BRIDGE WERE TAKEN TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL CHROMIUM AND TOTAL LEAD. THE ANALYSIS OF TOTAL CHROMIUM IN THESE SAMPLES WAS 0.038 PART PER MILLION (PPM). THE ANALYSIS OF TOTAL LEAD IN THESE SAMPLES WAS 222 PPM. THE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. THE LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER SUBSTANCES WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE CONTRACTING AUTHORITY'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF TOXIC CONSTITUENTS.

283'-0 x 30'-0 PRETENSIONED PRESTRESSED  
CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS SINGLE ROW ENCASED PIERS  
85'-9 END SPANS 111'-6 INTERIOR SPAN

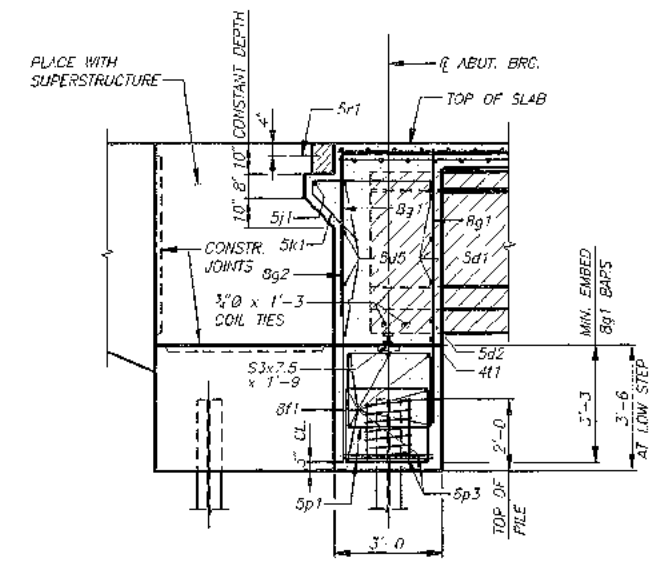
**SOUNDING DATA & GENERAL NOTES**

STATION 26+20 30' SKEW, RT. AHEAD  
CRAWFORD COUNTY, IOWA  
SHEET 4 OF 33

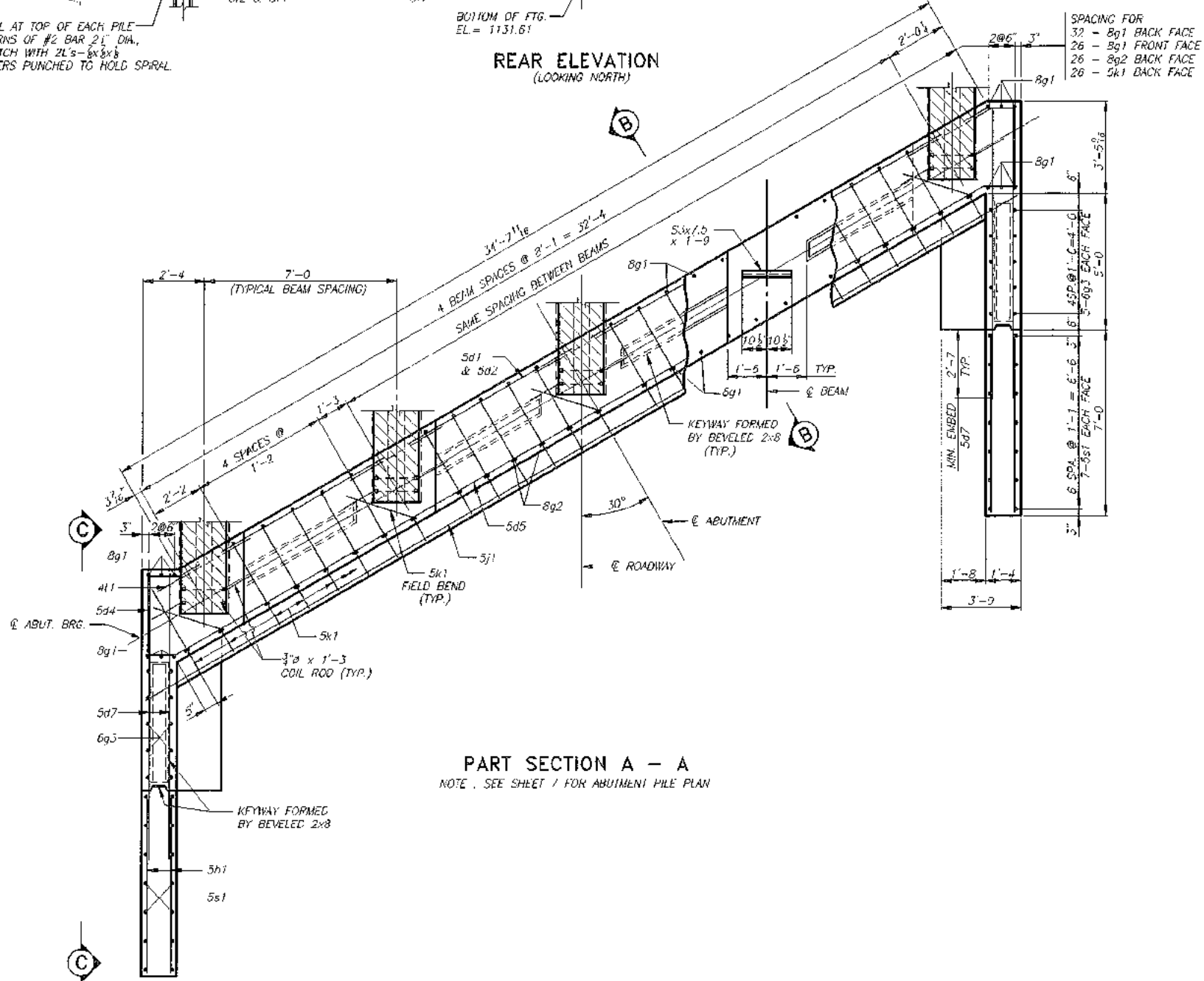


SPIRAL AT TOP OF EACH PILE  
7 TURNS OF #2 BAR 21" DIA.  
3" PITCH WITH 2L's - 6x8x8  
SPACERS PUNCHED TO HOLD SPIRAL

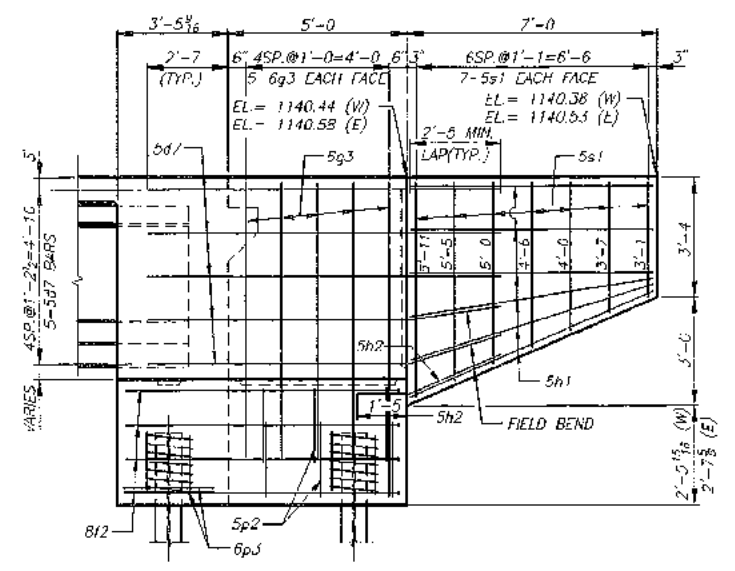
REAR ELEVATION  
(LOOKING NORTH)



SECTION B - B



PART SECTION A - A  
NOTE: SEE SHEET 1 FOR ABUTMENT PILE PLAN

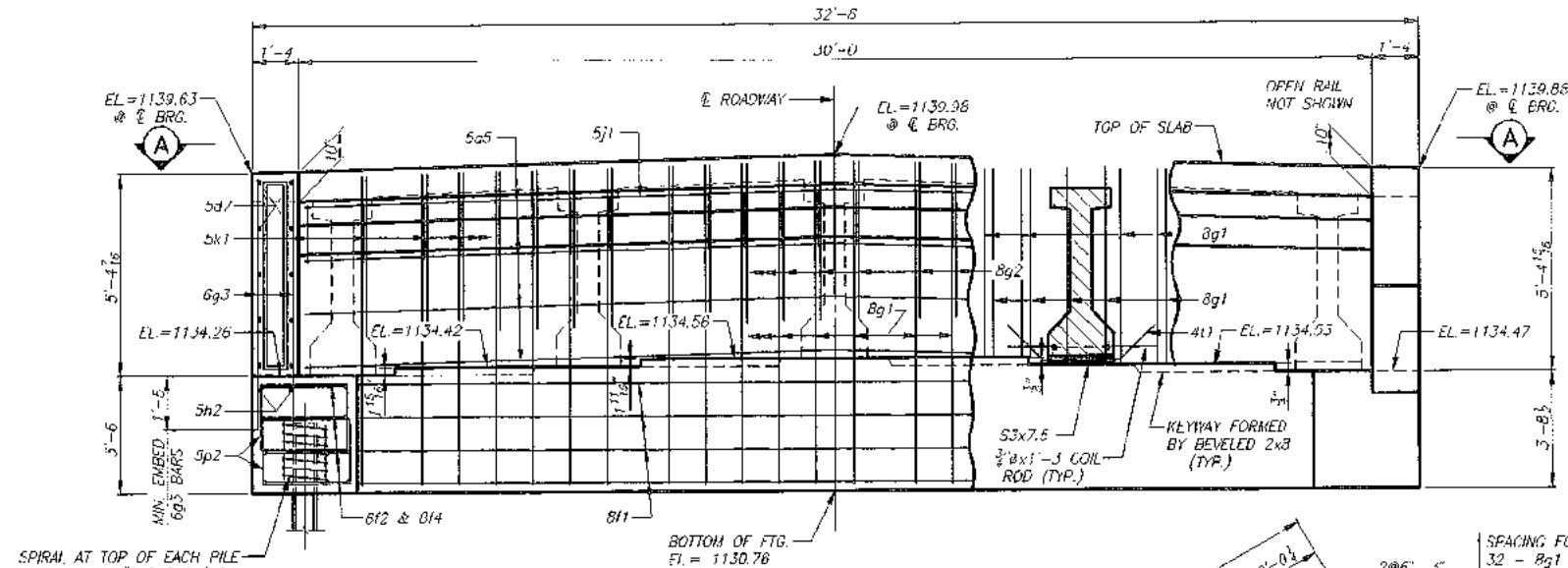


VIEW C - C

NOTE: ELEVATIONS AND VERTICAL DIMENSIONS SHOWN ARE AT OUTSIDE FACE.

283'-0 x 30'-0 PRETENSIONED PRESTRESSED  
CONCRETE BEAM BRIDGE  
INTEGRAL ABUTMENTS SINGLE ROW ENCASED PIERS  
85'-9 END SPANS 111'-6 INTERIOR SPAN

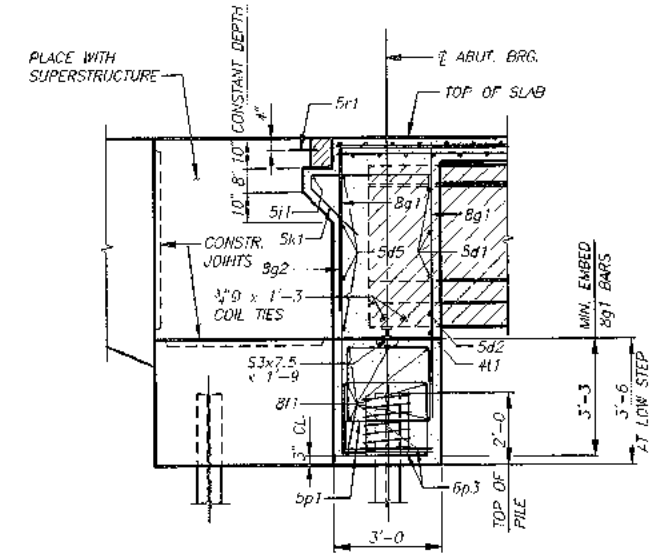
SOUTH ABUTMENT DETAILS  
STATION 26+20 30' SKEW, RT. AHEAD  
CRAWFORD COUNTY, IOWA  
SHEET 5 OF 33



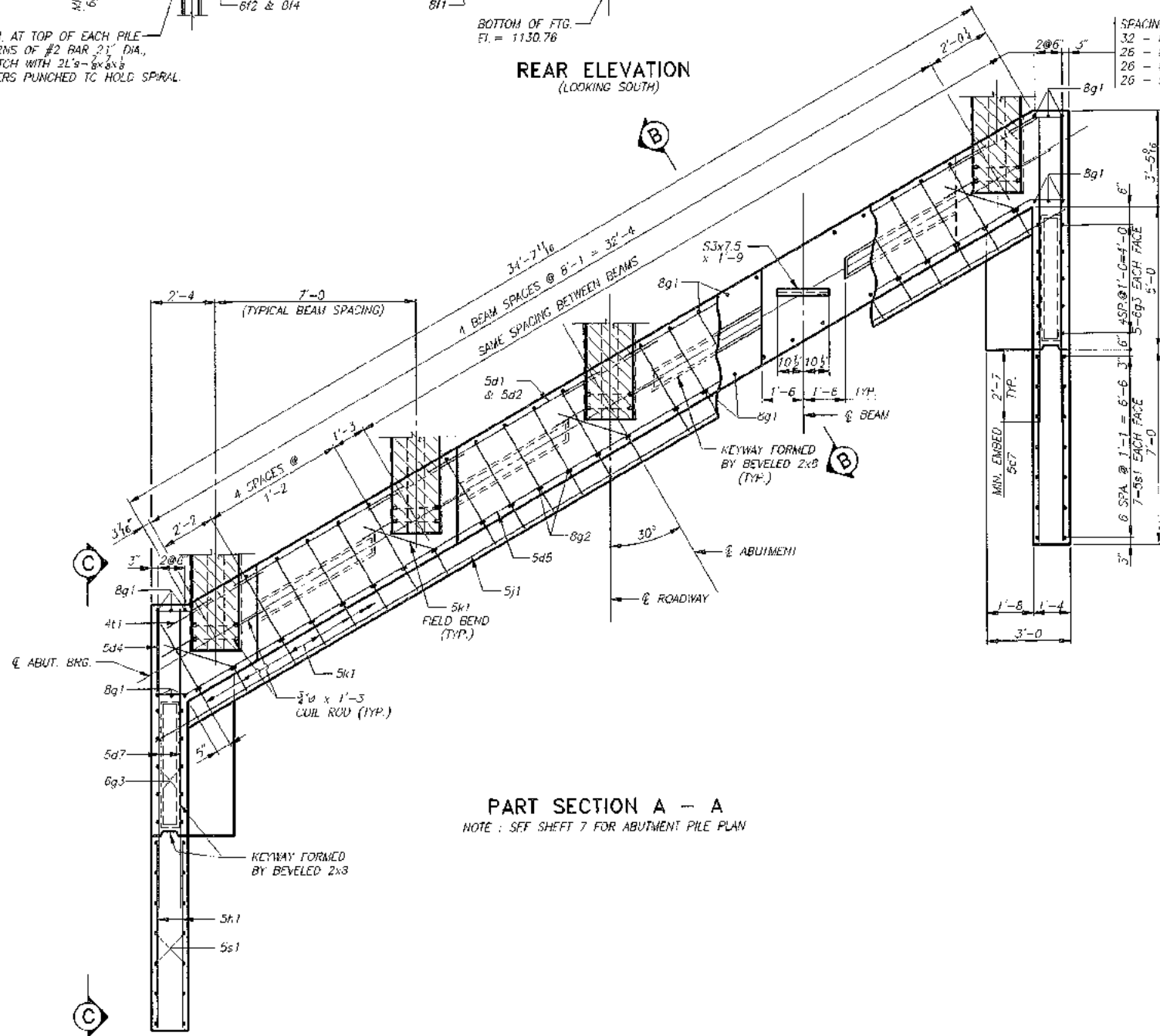
SPIRAL AT TOP OF EACH PILE  
7 THIRDS OF #2 BAR 2 1/2\"/>

**REAR ELEVATION**  
(LOOKING SOUTH)

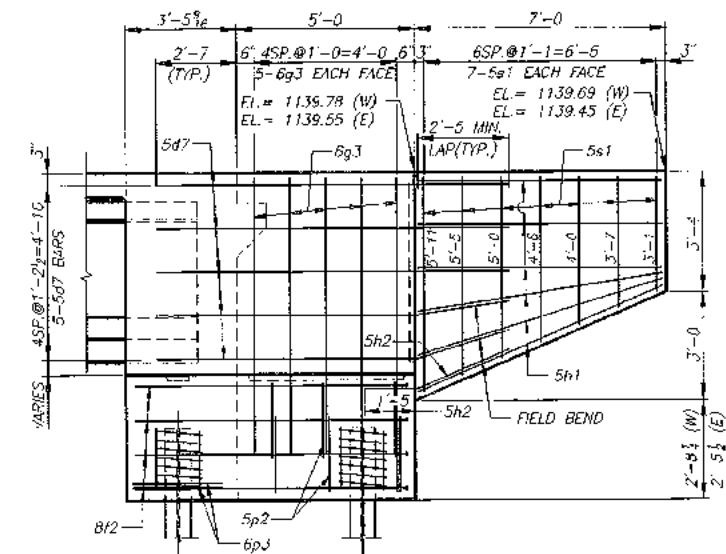
SPACING FOR  
32 - 8g1 BACK FACE  
26 - 8g1 FRONT FACE  
26 - 8g2 BACK FACE  
26 - 5h1 BACK FACE



**SECTION B - B**



**PART SECTION A - A**  
NOTE: SEE SHEET 7 FOR ABUTMENT PILE PLAN



**VIEW C - C**

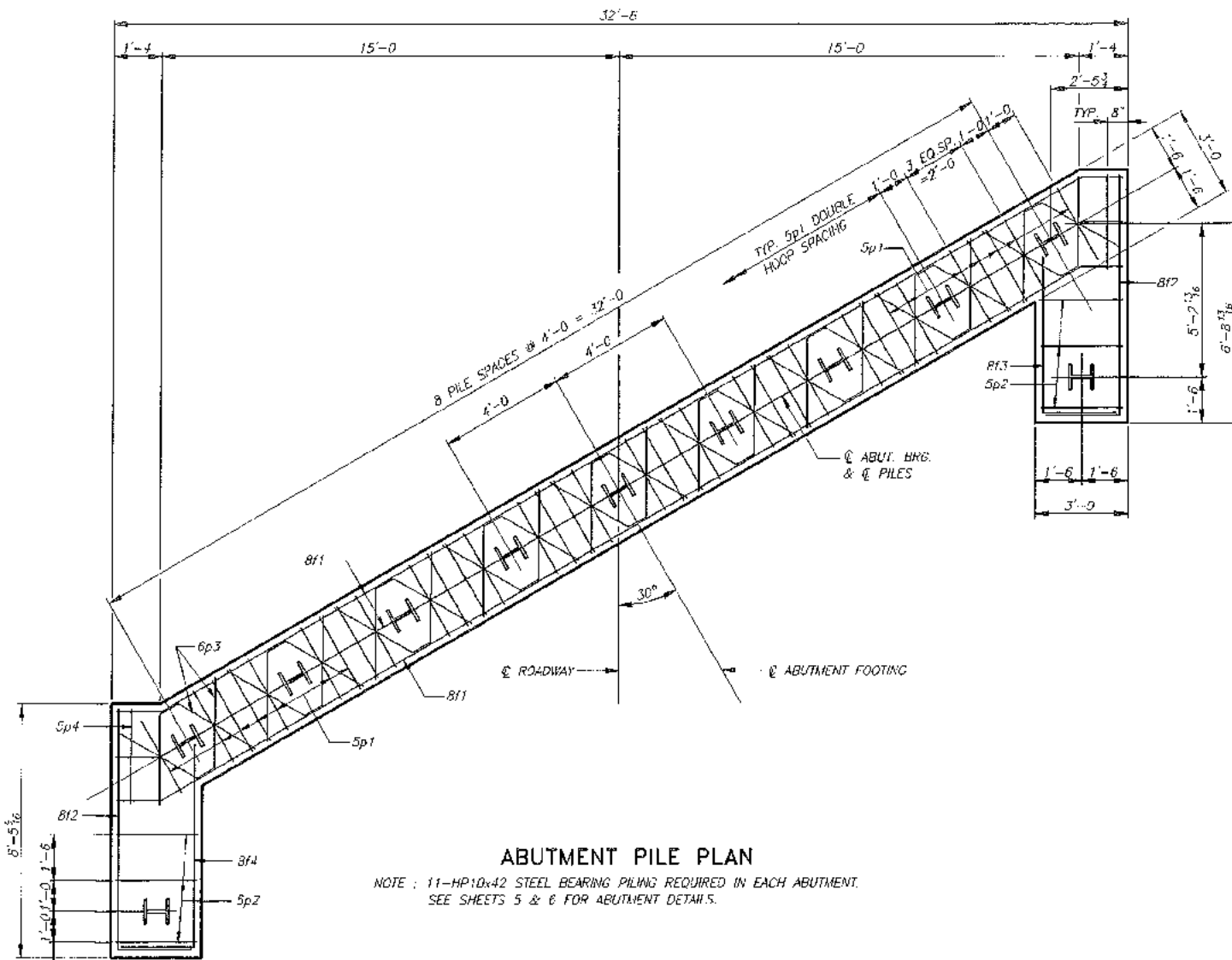
NOTE: ELEVATIONS AND VERTICAL DIMENSIONS SHOWN ARE AT OUTSIDE FACE.

**283'-0 x 30'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE**

INTEGRAL ABUTMENTS SINGLE ROW ENCASED PIERS  
85'-9 END SPANS 111'-6 INTERIOR SPAN

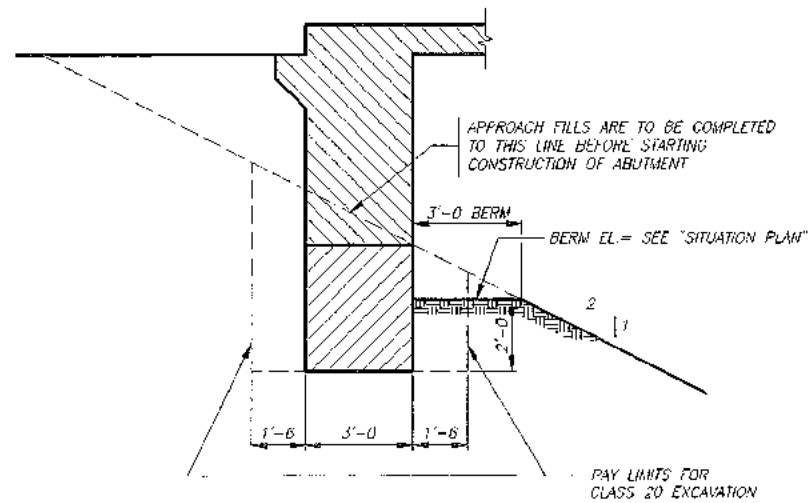
**NORTH ABUTMENT DETAILS**

STATION 26+20 CRAWFORD COUNTY, IOWA  
30' SKEW, RT. AHEAD



**ABUTMENT PILE PLAN**

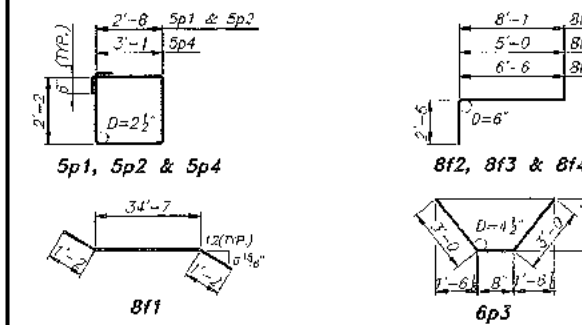
NOTE : 11-HP10x42 STEEL BEARING PILING REQUIRED IN EACH ABUTMENT. SEE SHEETS 5 & 6 FOR ABUTMENT DETAILS.



**ABUTMENT EXCAVATION DETAIL**

REINFORCING BAR LIST - S. ABUTMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8f1	ABUT. FOOTING, LONGITUDINAL	—	9	36'-11"	887
8f2	ABUT. EXTENSION, LONGITUDINAL	—	8	10'-7"	226
8f3	ABUT. EXTENSION, LONGITUDINAL	—	4	7'-6"	80
8f4	ABUT. EXTENSION, LONGITUDINAL	—	4	8'-0"	96
8g1	ABUT. VERTICAL, F.F. & B.F.	—	58	8'-6"	1,316
8g3	ABUT. DIAPHRAGM, WING EXT., VERT.	—	20	6'-9"	203
5h1	ABUT. WING, HORIZONTAL	—	24	6'-8"	187
5h2	ABUT. TO WING, DOWNELS	—	4	4'-0"	17
5p1	ABUT. HOOPS	□	68	10'-8"	757
5p2	ABUT. EXTENSION, HOOPS	□	12	10'-8"	134
6p3	ABUT. BOTTOM, AT PILES	—	18	6'-8"	180
5p4	ABUT. HOOPS, ENDS	□	4	11'-6"	48
5s1	WING, VERTICAL	—	28	SHOWN	131
	PILE SPIRAL - #2 BAR	—	11	38'-6"	71
	SPIRAL SPACERS - Lx6x6	—	22	1'-10"	28
UNCOATED TOTAL (LBS.)					1,153
EPOXY COATED BARS					3,188

**BENT BAR DETAILS**



ALL BAR DIMENSIONS ARE CUT TO OUT. D = PIN DIAMETER.

**CONCRETE PLACEMENT QUANT. - S. ABUT.**

LOCATION	UNIT	QUANTITY
FOOTING AND STEPS	CU.YDS.	19.4
WINGS 2 @ 1.07	CU.YDS.	3.3
TOTAL	CU.YDS.	22.7

**ESTIMATED QUANTITIES - S. ABUTMENT**

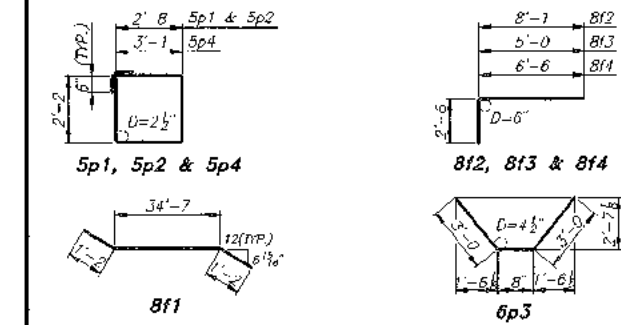
ITEM	UNIT	QUANTITY	
CONCRETE, STRUCTURAL	CU.YDS.	22.7	
STEEL, REINFORCING	LBS.	1,153	
STEEL, REINFORCING - EPOXY COATED	LBS.	3,188	
PILING, HP 10 x 42	FURNISH 11 @ 70'	L.F.	770
STEEL BEARING	URIVE 11 @ 70'	L.F.	170
EXCAVATION, CLASS 20	CU.YDS.	46	
PREBORED HOLES, AS PER PLAN 11 @ 8'	L.F.	88	

**ABUTMENT NOTES**

A.1. EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.  
 MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.  
 HP10x42 STEEL BEARING PILING SHALL BE DRIVEN TO A MINIMUM OF 35 TONS BEARING

REINFORCING BAR LIST - N. ABUTMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8f1	ABUT. FOOTING, LONGITUDINAL	—	9	36'-11"	887
8f2	ABUT. EXTENSION, LONGITUDINAL	—	8	10'-7"	226
8f3	ABUT. EXTENSION, LONGITUDINAL	—	4	7'-6"	80
8f4	ABUT. EXTENSION, LONGITUDINAL	—	4	8'-0"	96
8g1	ABUT. VERTICAL, F.F. & B.F.	—	58	8'-6"	1,316
8g3	ABUT. DIAPHRAGM, WING EXT., VERT.	—	20	6'-9"	203
5h1	ABUT. WING, HORIZONTAL	—	24	6'-8"	187
5h2	ABUT. TO WING, DOWNELS	—	4	4'-0"	17
5p1	ABUT. HOOPS	□	68	10'-8"	757
5p2	ABUT. EXTENSION, HOOPS	□	12	10'-8"	134
6p3	ABUT. BOTTOM, AT PILES	—	18	6'-8"	180
5p4	ABUT. HOOPS, ENDS	□	4	11'-6"	48
5s1	WING, VERTICAL	—	28	SHOWN	131
	PILE SPIRAL - #2 BAR	—	11	38'-6"	71
	SPIRAL SPACERS - Lx6x6	—	22	1'-10"	28
UNCOATED TOTAL (LBS.)					1,153
EPOXY COATED BARS					3,188

**BENT BAR DETAILS**



ALL BAR DIMENSIONS ARE CUT TO OUT. D = PIN DIAMETER.

**CONCRETE PLACEMENT QUANT. - N. ABUT.**

LOCATION	UNIT	QUANTITY
FOOTING AND STEPS	CU.YDS.	19.7
WINGS 2 @ 1.67	CU.YDS.	3.3
TOTAL	CU.YDS.	23.0

**ESTIMATED QUANTITIES - N. ABUTMENT**

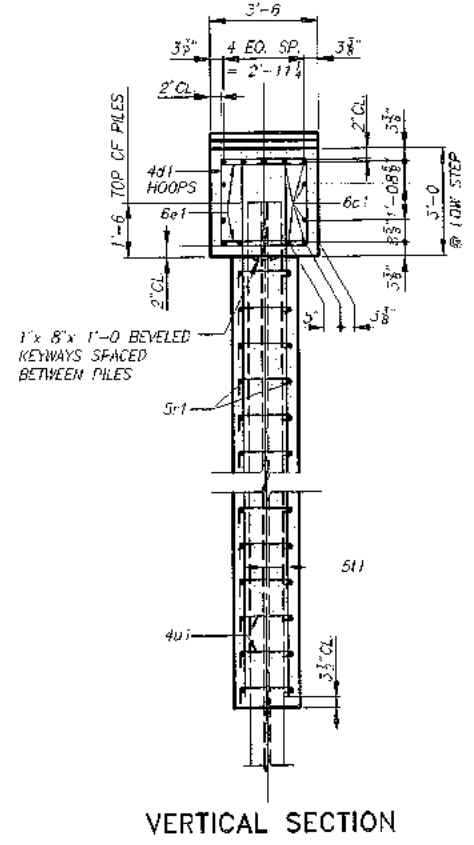
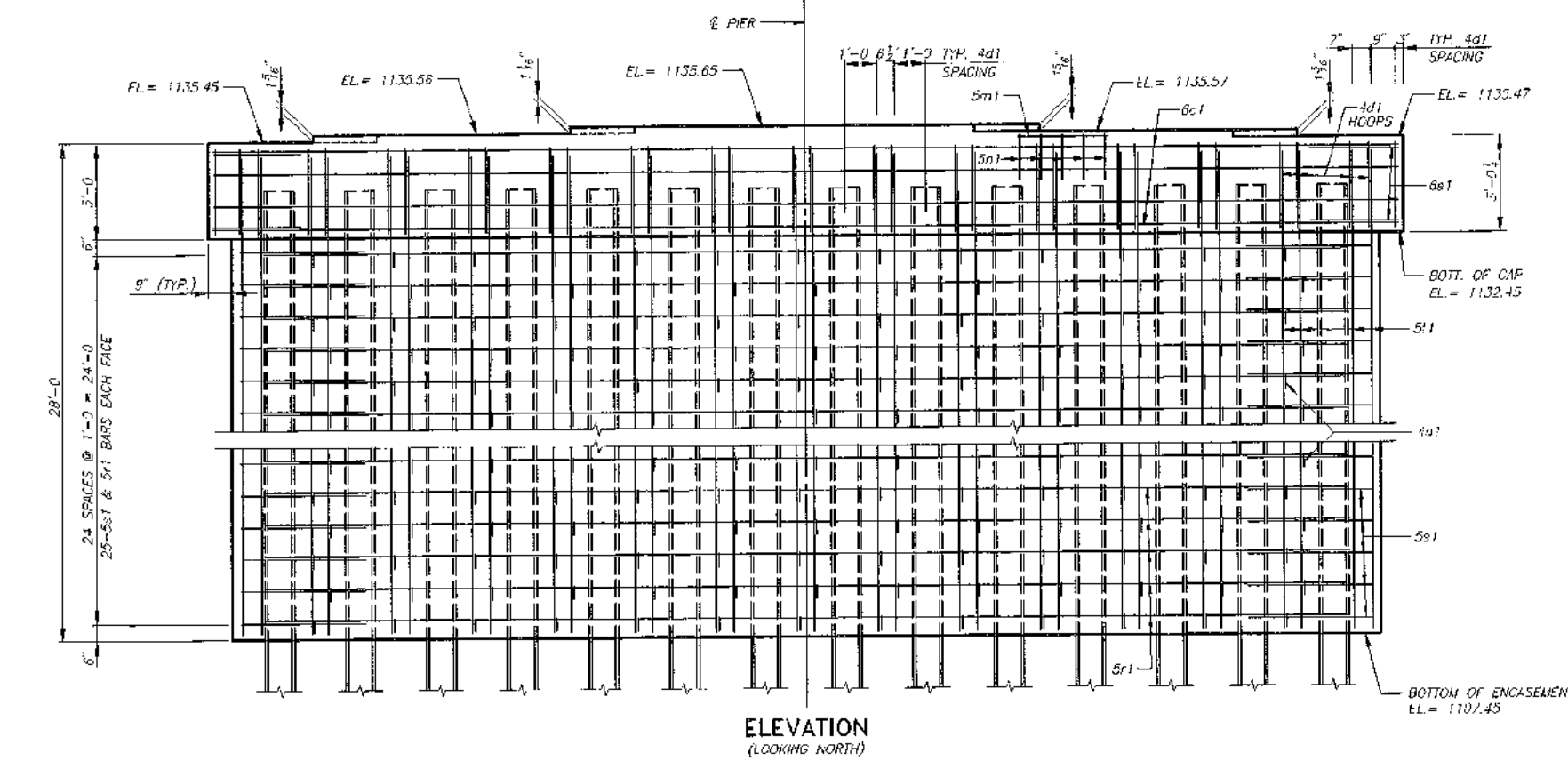
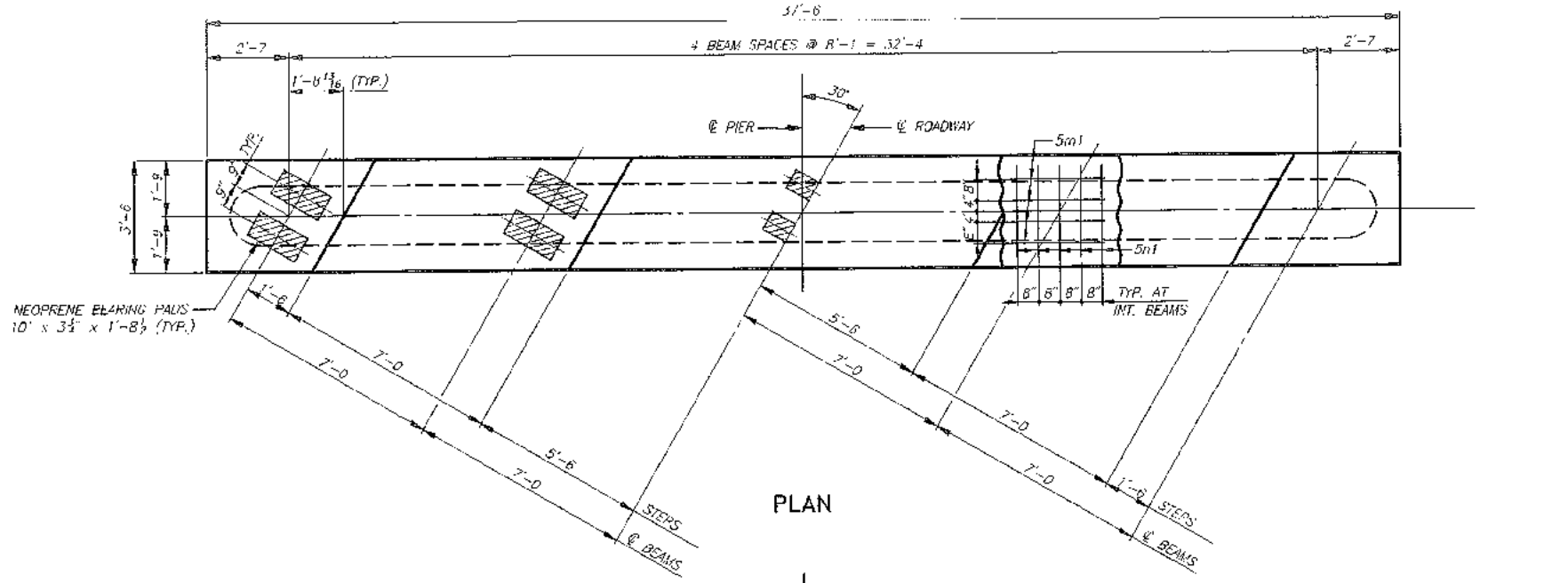
ITEM	UNIT	QUANTITY	
CONCRETE, STRUCTURAL	CU.YDS.	23.0	
STEEL, REINFORCING	LBS.	1,153	
STEEL, REINFORCING - EPOXY COATED	LBS.	3,188	
PILING, HP 10 x 42	FURNISH 11 @ 68'	L.F.	748
STEEL BEARING	DRIVE 11 @ 68'	L.F.	748
EXCAVATION, CLASS 20	CU.YDS.	46	
PREBORED HOLES, AS PER PLAN 11 @ 8'	L.F.	88	

**283'-0" x 30'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE**

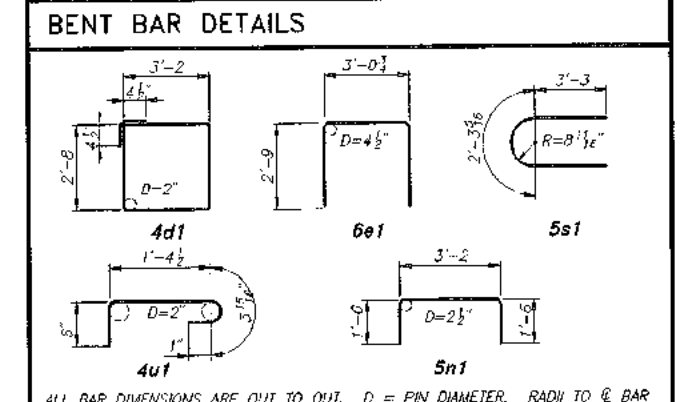
INTEGRAL ABUTMENTS SINGLE ROW ENCASED PIERS  
 85'-9" END SPANS 111'-6" INTERIOR SPAN

**ABUTMENT DETAILS**

STATION 26+20 30' SKEW, RT. AHEAD  
 CRAWFORD COUNTY, IOWA



BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6e1	PIER CAP, LONGITUDINAL	[Symbol]	13	37'-2"	726
4d1	PIER CAP, HOOPS	[Symbol]	32	12'-5"	265
6e1	PIER CAP, ENDS	[Symbol]	4	8'-7"	52
5s1	PIER CAP, STEP, LONGIT.	[Symbol]	13	2'-10"	35
5s1	PIER CAP, STEP, TRANSV.	[Symbol]	15	6'-2"	97
5s1	PIER WALL, HORIZONTAL	[Symbol]	50	34'-2"	1,782
5s1	PIER WALL, ENDS	[Symbol]	50	8'-10"	481
5s1	PIER WALL, VERTICAL	[Symbol]	58	27'-3"	1,648
4u1	PIER WALL, TIES	[Symbol]	325	2'-4"	506
TOTAL (LBS.)					5,572



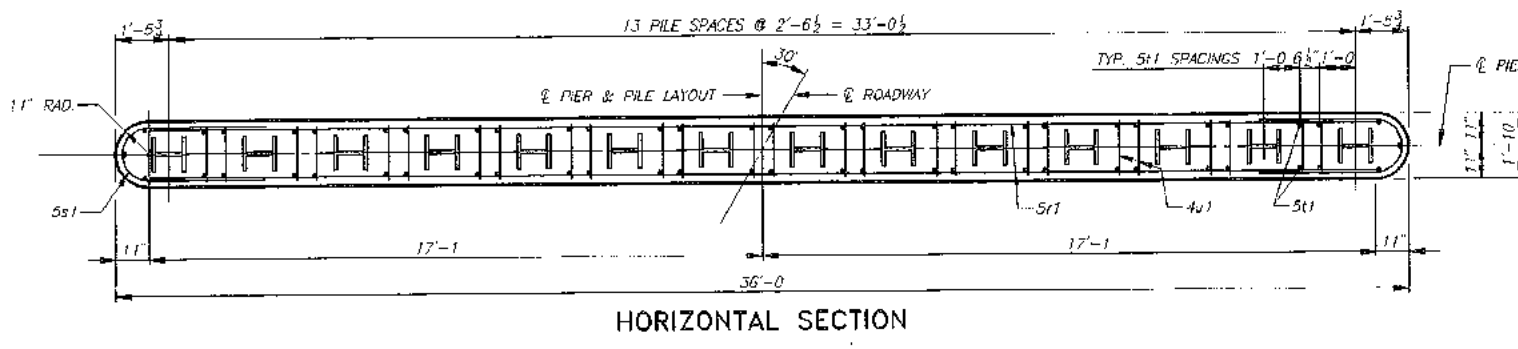
LOCATION	UNIT	QUANTITY
PIER CAP	CU. YDS.	15.2
PIER WALL	CU. YDS.	60.4
TOTAL	CU. YDS.	75.6

ITEM	UNIT	QUANTITY	
CONCRETE, STRUCTURAL	CU. YDS.	75.6	
STEEL, REINFORCING	LBS.	5,572	
PILE, HP 10x57	FURNISH 14 @ 68'	L.F.	952
	DRIVE 14 @ 68'	L.F.	952
EXCAVATION, CLASS 21	CU. YDS.	29	

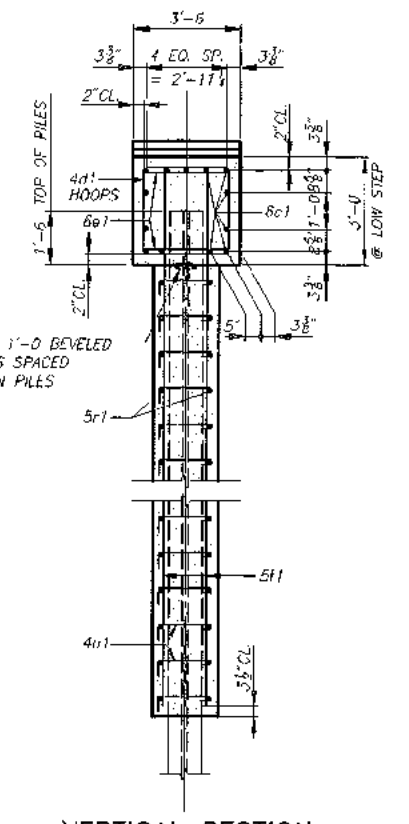
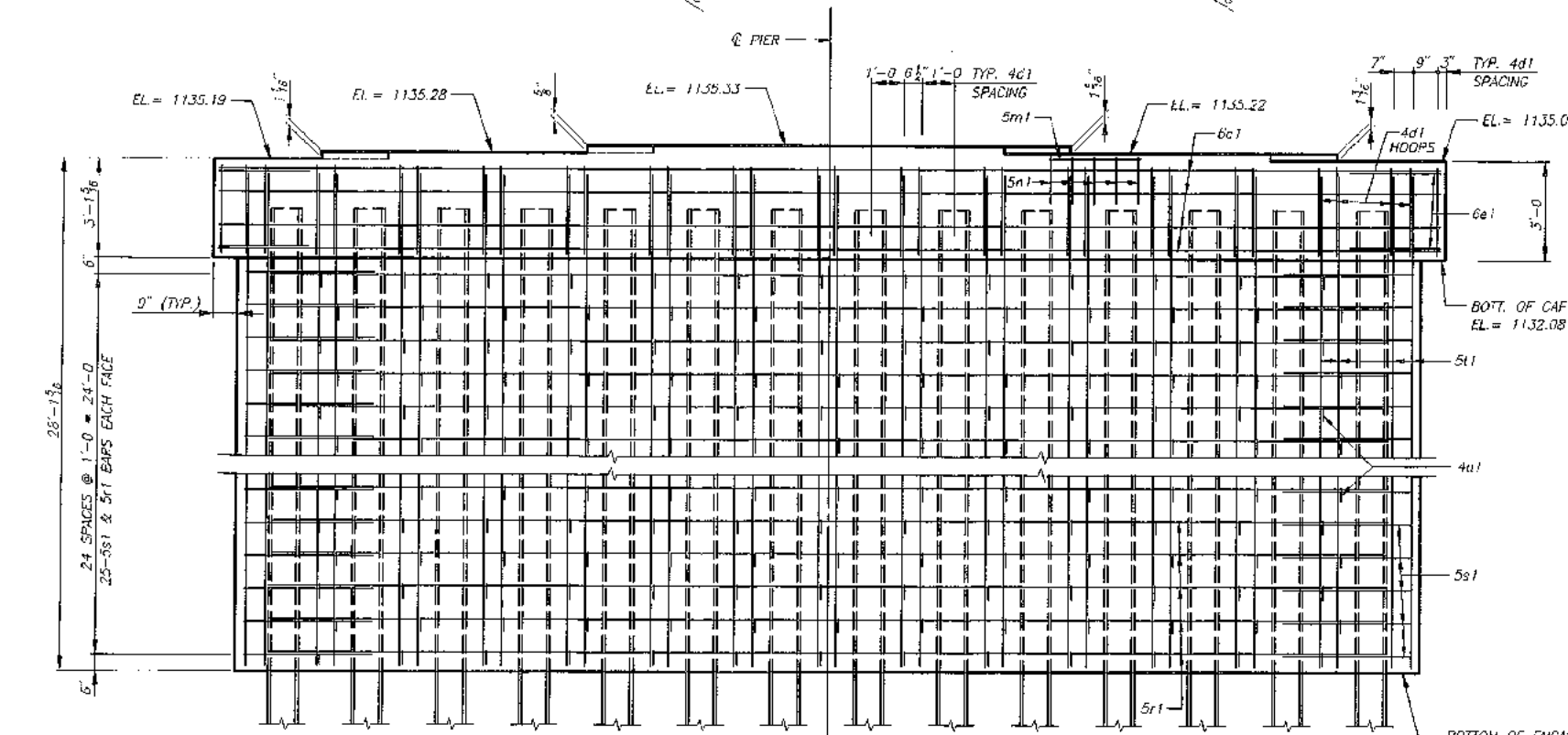
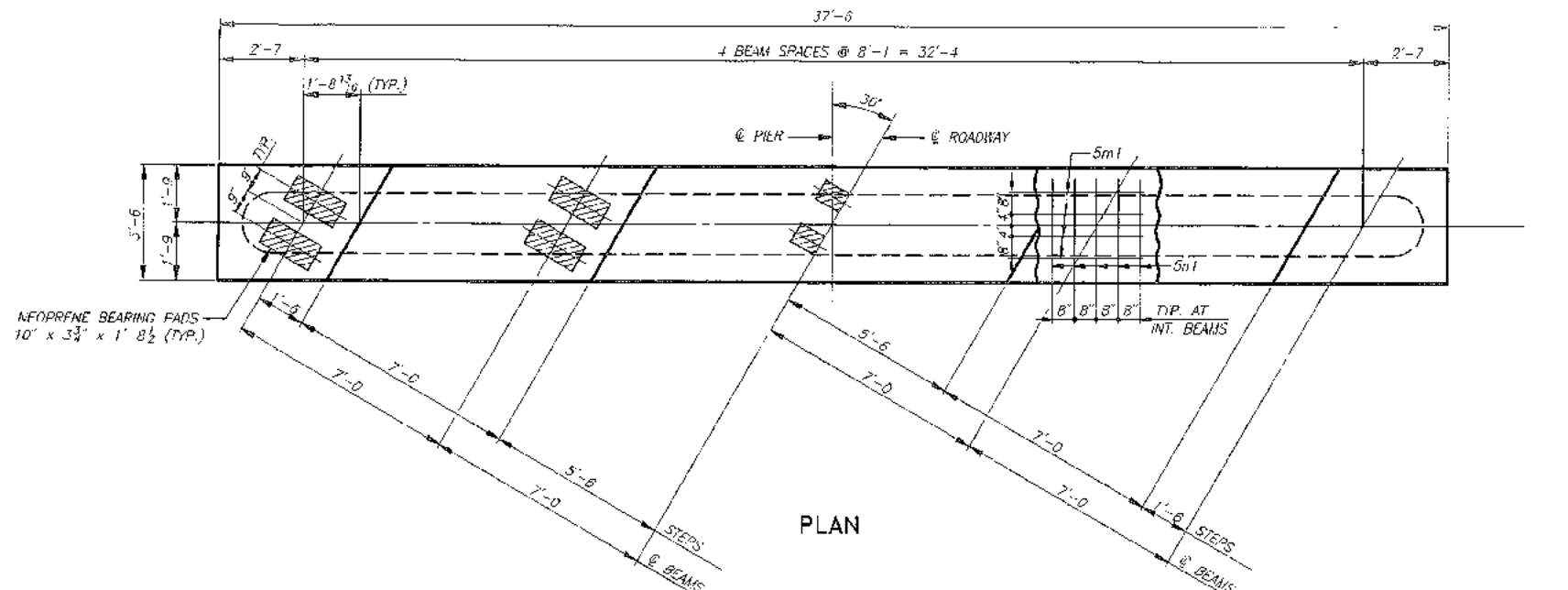
**SOUTH PIER NOTES**  
 MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.  
 ALL EXPOSED CORNERS 90 DEGREES OR SHARPER ARE TO BE FILLETED WITH 3/8 INCH DRESSED AND BEVELED STRIP.  
 REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.  
 ALL REINFORCING SHALL BE GRADE 60.  
 HP10x57 STEEL BEARING PILING SHALL BE DRIVEN TO A MINIMUM OF 50 TONS BEARING.

**283'-0 x 30'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE**  
 INTEGRAL ABUTMENTS SINGLE ROW ENCASED PIERS  
 85'-9 END SPANS 111'-6 INTERIOR SPAN

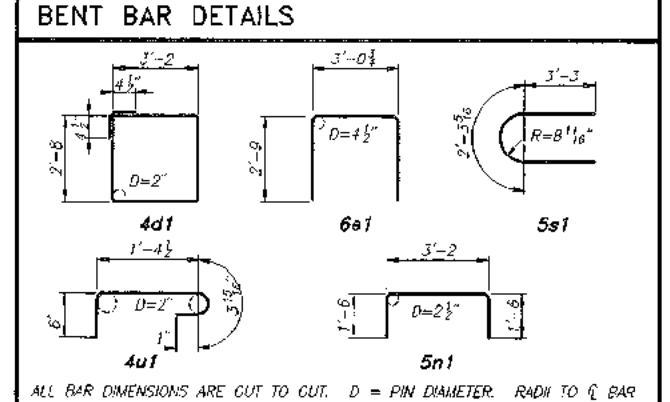
**SOUTH PIER DETAILS**  
 STATION 26+20 30' SKEW, RT. AHEAD  
 CRAWFORD COUNTY, IOWA  
 SHEET 8 OF 33







REINFORCING BAR LIST - NORTH PIER					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c1	PIER CAP, LONGITUDINAL	[Shape]	13	37'-2"	726
4d1	PIER CAP, HOOPS	[Shape]	32	12'-5"	265
6e1	PIER CAP, ENDS	[Shape]	4	8'-7"	52
5m1	PIER CAP, STEP, LONGIT.	[Shape]	12	2'-10"	35
5n1	PIER CAP, STEP, TRANSV.	[Shape]	15	6'-2"	97
5r1	PIER WALL, HORIZONTAL	[Shape]	50	34'-2"	1,782
5s1	PIER WALL, ENDS	[Shape]	50	8'-10"	461
5t1	PIER WALL, VERTICAL	[Shape]	58	27'-3"	1,048
4u1	PIER WALL, TIES	[Shape]	325	2'-4"	506
				TOTAL (LBS.)	5,572

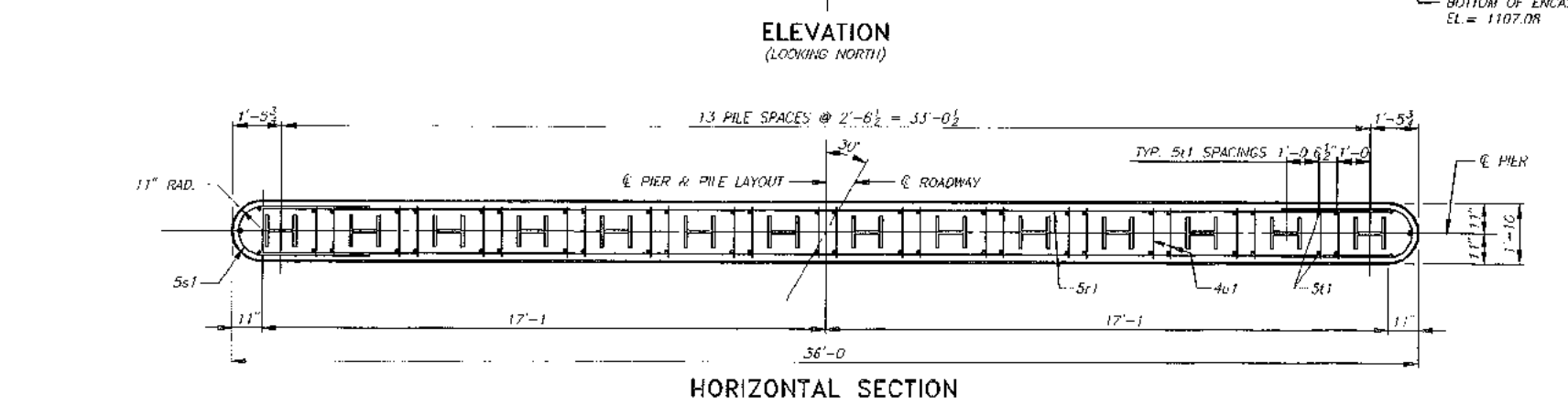


CONCRETE PLACEMENT QUANT. - N. PIER		
LOCATION	UNIT	QUANTITY
PIER CAP	CU. YDS.	15.4
PIER WALL	CU. YDS.	60.4
TOTAL	CU. YDS.	75.8

ESTIMATED QUANTITIES - NORTH PIER			
ITEM	UNIT	QUANTITY	
CONCRETE, STRUCTURAL	CU. YDS.	75.8	
STEEL, REINFORCING	(LBS.)	5,572	
PILING, HP 10x57	FURNISH 14 @ 76'	L.F.	1,064
	DRIVE 14 @ 76'	L.F.	1,064
EXCAVATION, CLASS 21	CU. YDS.	32	

**NORTH PIER NOTES**

- MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
- ALL EXPOSED CORNERS 90 DEGREES OR SHARPER ARE TO BE FILLETED WITH 3/8" DRESSED AND BEVELED STRIP.
- REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.
- ALL REINFORCING SHALL BE GRADE 60.
- HP10x57 STEEL BEARING PILING SHALL BE DRIVEN TO A MINIMUM OF 50 TONS BEARING.



**283'-0" x 30'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE**

INTEGRAL ABUTMENTS                  SINGLE ROW ENCASED PIERS

85'-9" END SPANS                                  111'-6" INTERIOR SPAN

**NORTH PIER DETAILS**

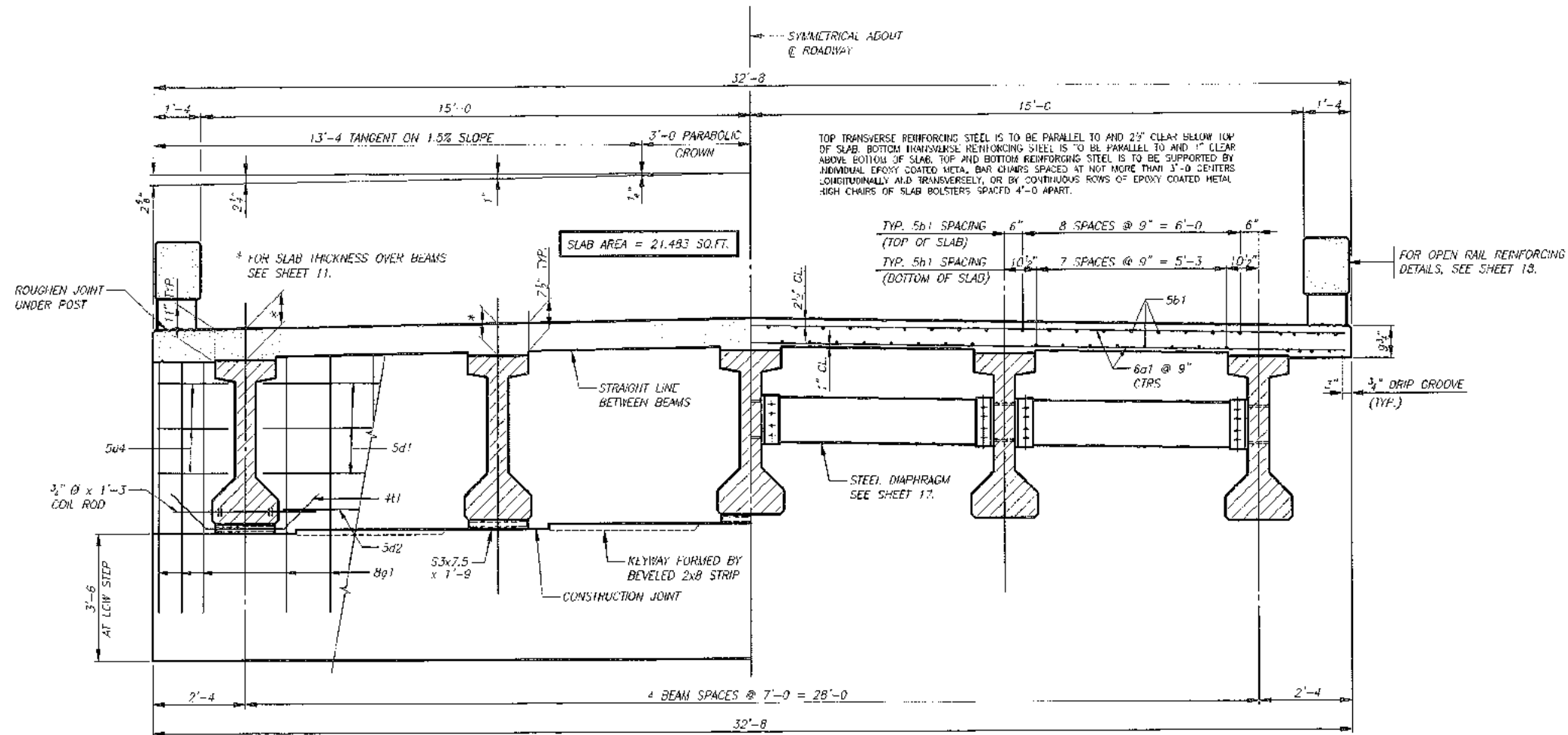
STATION 26+20    30' SKEW, RT. AHEAD

CRAWFORD COUNTY,    IOWA

   SHEET 9 OF 33

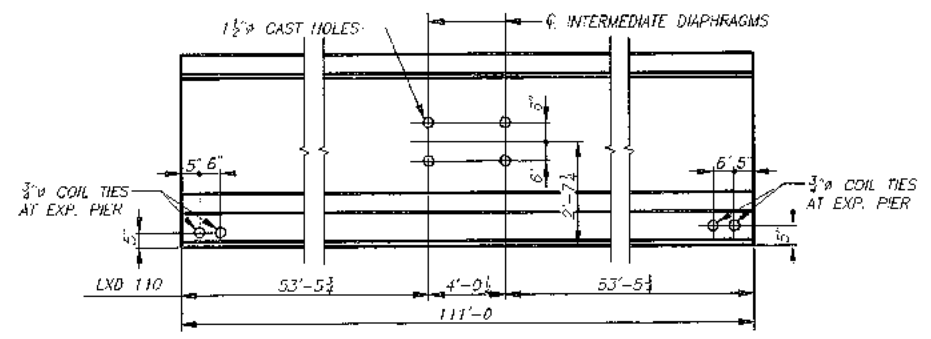
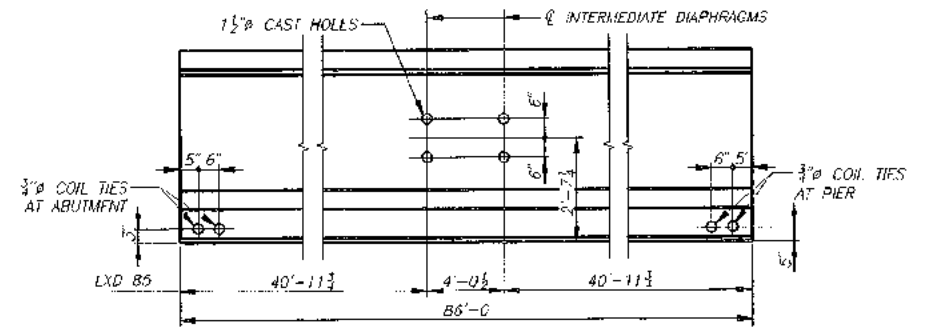
**SUPERSTRUCTURE NOTES**

THIS BRIDGE IS DESIGNED FOR HS20-44 LOADING PLUS 20 LBS. FLK SQ. FT. OF ROADWAY FOR FUTURE WEARING SURFACE.  
 SLAB THICKNESS INCLUDES 1/2" INTEGRAL WEARING SURFACE.  
 ALL EXPOSED CORNERS OF 90 DEGREES OR SHARPER ARE TO BE FORMED WITH A 3/4" DRESSED AND BEVELLED STRIP. CLEAR DISTANCE FROM FACE OF CONCRETE TO REAR REINFORCING BAR SHALL BE 2" UNLESS OTHERWISE NOTED OR SHOWN. ALL REINFORCING BARS ARE TO BE SECURELY TIED IN PLACE.  
 ALL BEAMS ARE TO BE SET VERTICAL.  
 FORMS FOR THE SLAB AND RAIL ARE TO BE SUPPORTED BY THE PRESTRESSED BEAMS. BEARING LATERAL COIL RODS AND COIL TIES ARE INCIDENTAL TO THE COST OF "PRESTRESSED CONCRETE BEAMS".  
 THE PIER AND ABUTMENT DIAPHRAGM CONCRETE IS TO BE PLACED MONOLITHIC WITH THE FLOOR SLAB AS SHOWN.  
 EXCEPT FOR PRESTRESSED CONCRETE BEAMS, ALL REINFORCING IS TO BE GRADE 60. SLAB REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL EPOXY COATED METAL BAR CHAIRS SPACED AT NOT MORE THAN 3'-0" CENTERS LONGITUDINALLY AND TRANSVERSELY, OR BY CONTINUOUS ROWS OF EPOXY COATED METAL BAR CHAIRS OR SLAB BOLSTERS SPACED 4'-0" APART.  
 THE EPOXY COATING OF CERTAIN REINFORCING BARS, AS DESIGNED ON THE PLANS, SHALL BE IN ACCORDANCE WITH ARTICLE 415I.03B OF THE STANDARD SPECIFICATIONS OF THE IOWA D.O.T. - PROJECT DEVELOPMENT DIVISION.  
 THE BRIDGE SLAB SHALL BE PLACED IN SECTIONS AND IN THE SEQUENCE INDICATED BY CIRCLED NUMBERS ON SLAB PLAN SHEETS. ALTERNATE PROCEDURES FOR PLACING CONCRETE MAY BE SUBMITTED FOR APPROVAL TOGETHER WITH A STATEMENT OF THE PROPOSED METHODS AND EVIDENCE THAT THE CONTRACTOR POSSESSES THE NECESSARY EQUIPMENT AND FACILITIES TO ACCOMPLISH THE REQUIRED RESULTS. ABUTMENT AND PIER DIAPHRAGMS SHALL BE PLACED MONOLITHICALLY WITH APPROPRIATE SLAB SECTIONS.



HALF SECTION NEAR ABUTMENT

HALF SECTION NEAR MID SPAN



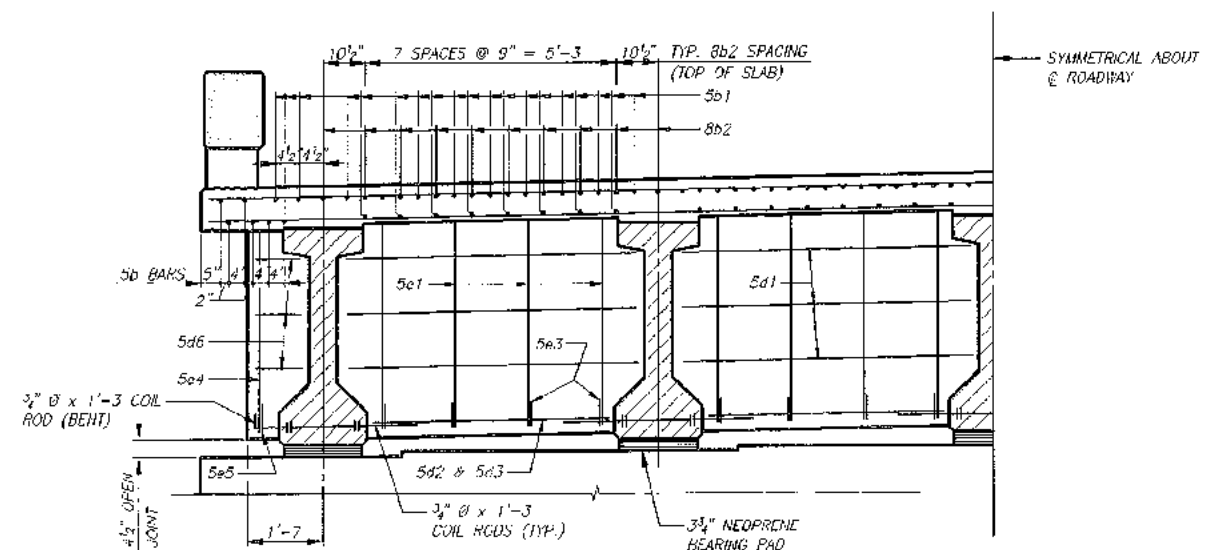
**BEAM COIL TIE AND BOLT HOLE LOCATIONS**

**283'-0 x 30'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE**

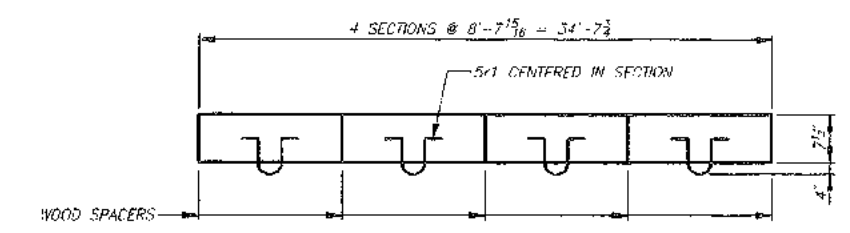
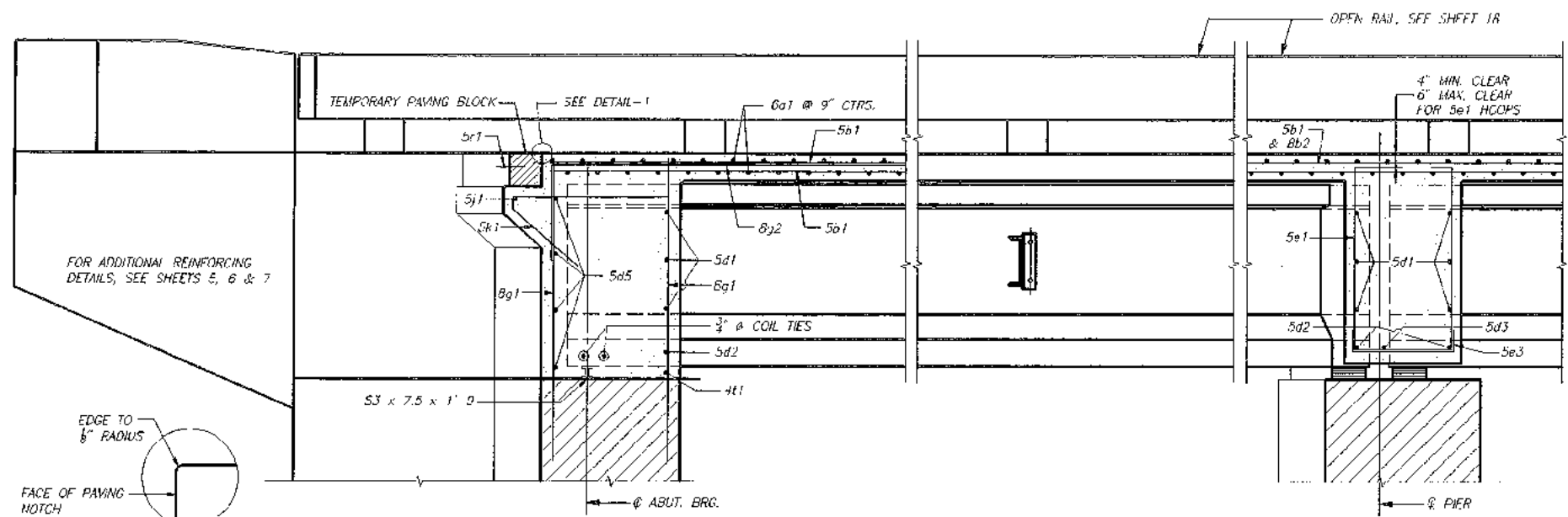
INTEGRAL ABUTMENTS      SINGLE ROW ENCASED PIERS  
 85'-9 END SPANS      111'-6 INTERIOR SPAN

**SUPERSTRUCTURE DETAILS**

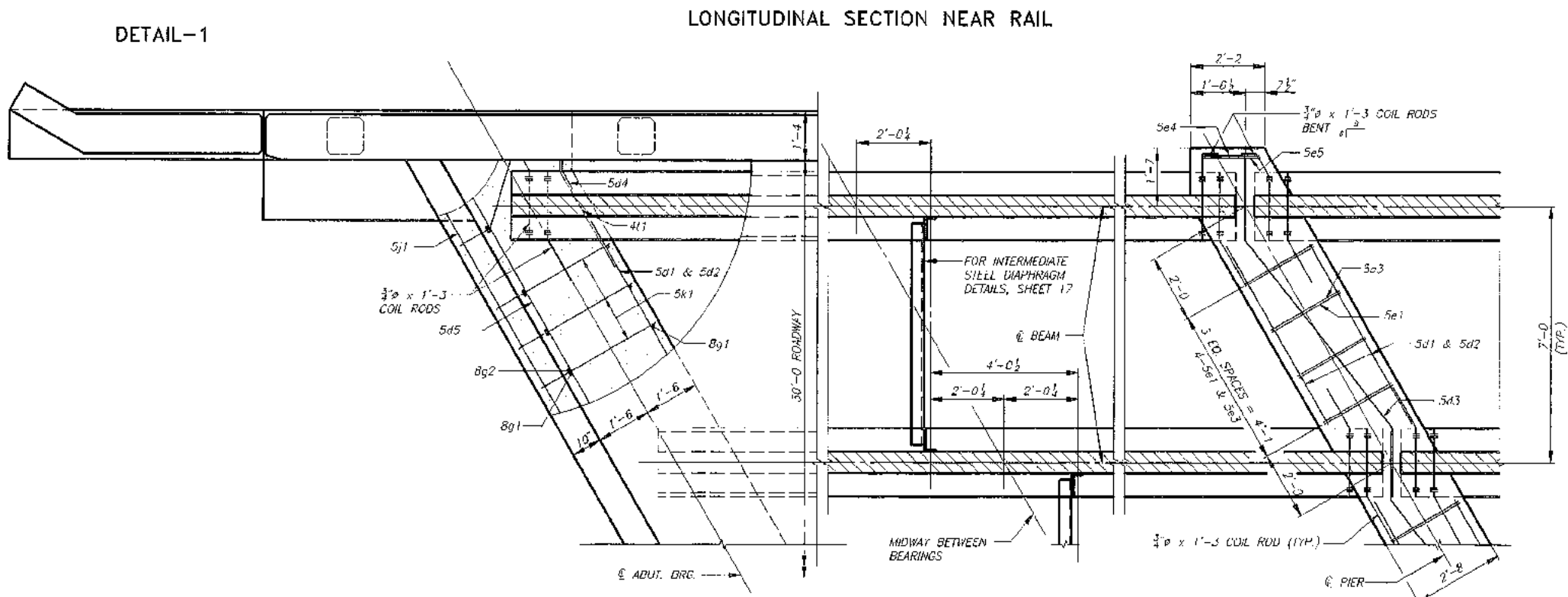
STATION 26+20      30' SKEW, RT. AHEAD  
 CRAWFORD COUNTY, IOWA  
 SHEET 10 OF 33



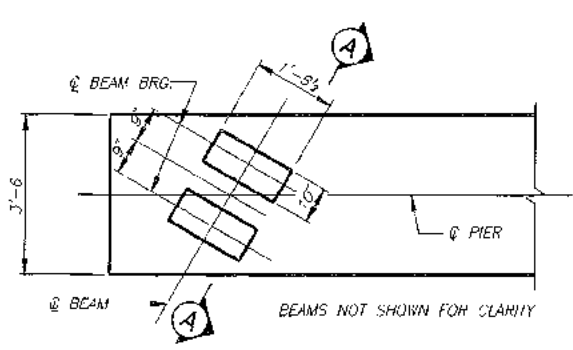
HALF SECTION NEAR PIER



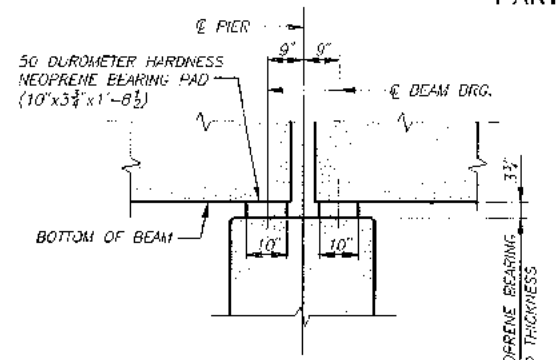
PLAN OF TEMPORARY PAVING BLOCK  
NOTE: LINE PAVING NOTCH WITH TAR PAPER BEFORE PLACING THE TEMPORARY PAVING BLOCK.



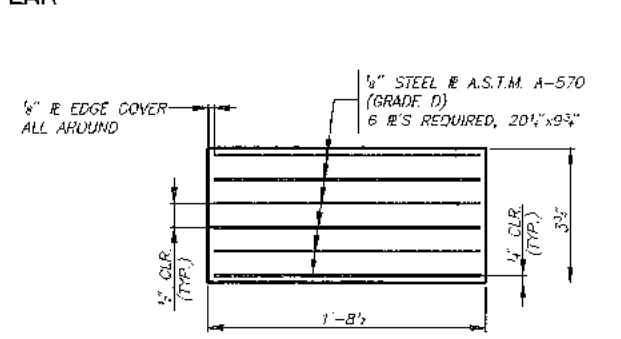
PART PLAN



PART PLAN - BOTH PIERS (EXP.)



SECTION A-A



NEOPRENE BEARING PAD ELEVATION - BOTH PIERS (EXP.)  
(20 REQUIRED)

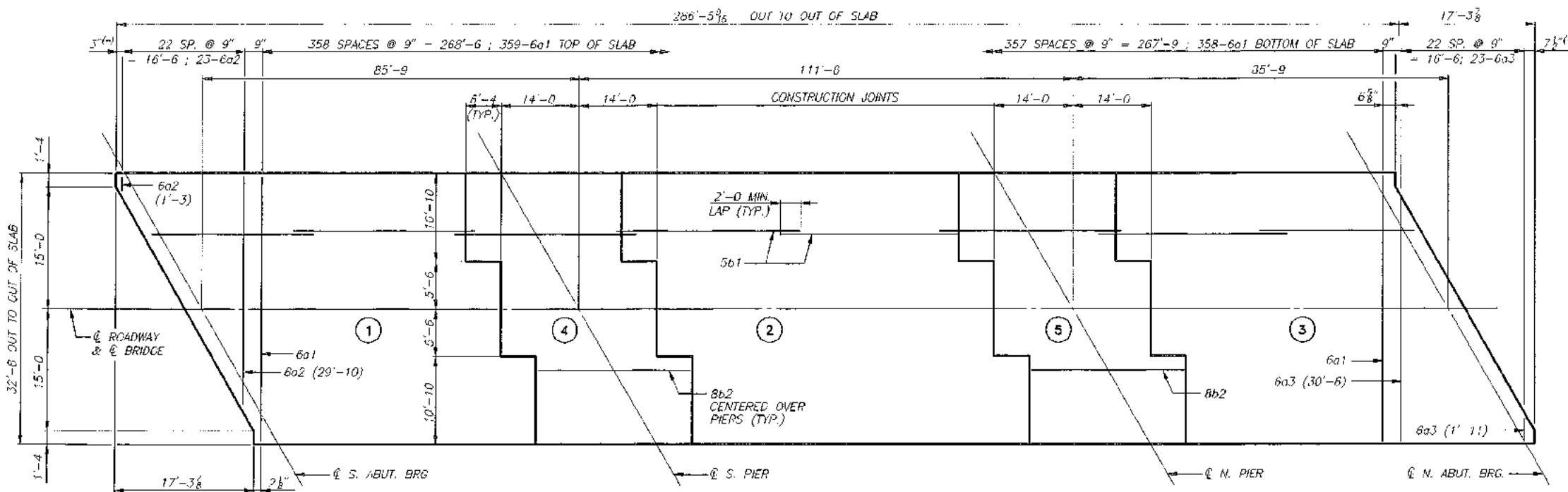
283'-0 x 30'-0 PRETENSIONED PRESTRESSED  
CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS                      SINGLE ROW ENCASED PIERS  
85'-9 END SPANS                              111'-6 INTERIOR SPAN

SUPERSTRUCTURE DETAILS

STATION 26+20  
CRAWFORD COUNTY, IOWA

30' SKEW, RT. AHEAD  
SHEET 11 OF 33



**CONCRETE PLACEMENT DIAGRAM AND SLAB REINFORCING LAYOUT**

ROADWAY SLAB SHALL BE PLACED IN SECTIONS AND IN SEQUENCE INDICATED. ALTERNATE PROCEDURES FOR PLACING SLAB CONCRETE MAY BE SUBMITTED FOR APPROVAL TOGETHER WITH A STATEMENT OF THE PROPOSED METHOD AND EVIDENCE THAT THE CONTRACTOR POSSESSES THE NECESSARY EQUIPMENT AND FACILITIES TO ACCOMPLISH THE REQUIRED RESULT.

**REINFORCING BAR LIST - SUPERSTRUCTURE**

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1	SLAB, TRANSVERSE, TOP & BOTT.	—	717	32'-4	34,821
6a2	SLAB, TRANSVERSE, TOP	—	46	VARIES	1,074
6a3	SLAB, TRANSVERSE, BOTTOM	—	46	VARIES	1,120
5b1	SLAB, LONGIT. TOP & BOTTOM	—	672	37'-7	28,342
8b2	SLAB, LONGITUDINAL, OVER PIERS	—	74	27'-8	5,467
5d1	DIAPHRAGMS, LONGITUDINAL	—	72	7'-0	526
5d2	ABUT. & PIER DIAPHRAGM, LONGIT.	—	24	5'-7	140
5d3	PIER DIAPHRAGM, LONGITUDINAL	—	8	10'-3	80
5d4	ABUTMENT DIAPHRAGM, ENDS	—	12	4'-11	62
5d5	ABUTMENT DIAPHRAGM, LONGIT.	—	8	36'-11	308
5d6	PIER DIAPHRAGM, ENDS	—	12	4'-7	52
5d7	ABUT. DIAPH. WING EXT., LONGIT.	—	40	10'-2	424
5e1	PIER DIAPHRAGM, HOOPS	—	32	12'-6	417
5e3	PIER DIAPHRAGM, TIES	—	32	3'-5	114
5e4	PIER DIAPHRAGM, HOOPS, ENDS	—	4	12'-4	51
5e5	PIER DIAPHRAGM, TIES, ENDS	—	4	3'-3	14
8g2	ABUTMENT, VERTICAL, BACK FACE	—	52	18'-4	2,545
5j1	PAVING NOTCH, LONGITUDINAL	—	2	37'-4	78
5k1	ABUTMENT, HOOPS	—	52	6'-1	330
5r1	PAVING BLOCK LIFTING HOOPS	—	8	7'-10	24
4l1	ABUT. DIAPH. HORIZ. FRONT FACE	—	10	4'-11	33
	OPEN RAIL, SEE SHEET 17				16,803
				UNCOATED TOTAL (LBS.)	1,764
				EPOXY COATED TOTAL (LBS.)	89,067

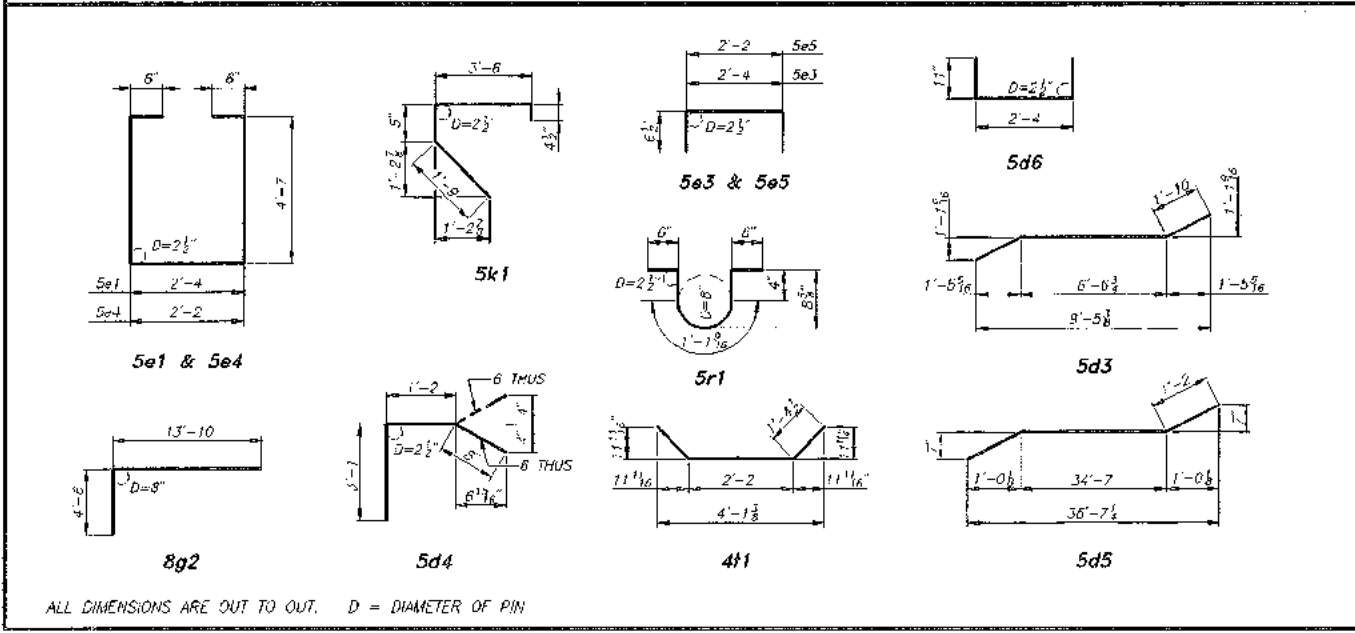
**CONCRETE PLACEMENT QUANT. - SUPERSTR.**

LOCATION	QUANTITY	
SLAB AND DIAPHRAGM, SECTION (1)	80.7	
SLAB, SECTION (2)	66.8	
SLAB AND DIAPHRAGM, SECTION (3)	80.7	
SLAB AND DIAPHRAGM, SECTION (4)	35.9	
SLAB AND DIAPHRAGM, SECTION (5)	35.9	
PAVING BLOCK, 2 @ 0.67 C.Y.	1.3	
<b>TOTAL (CU.YDS.)</b>		<b>301.3</b>

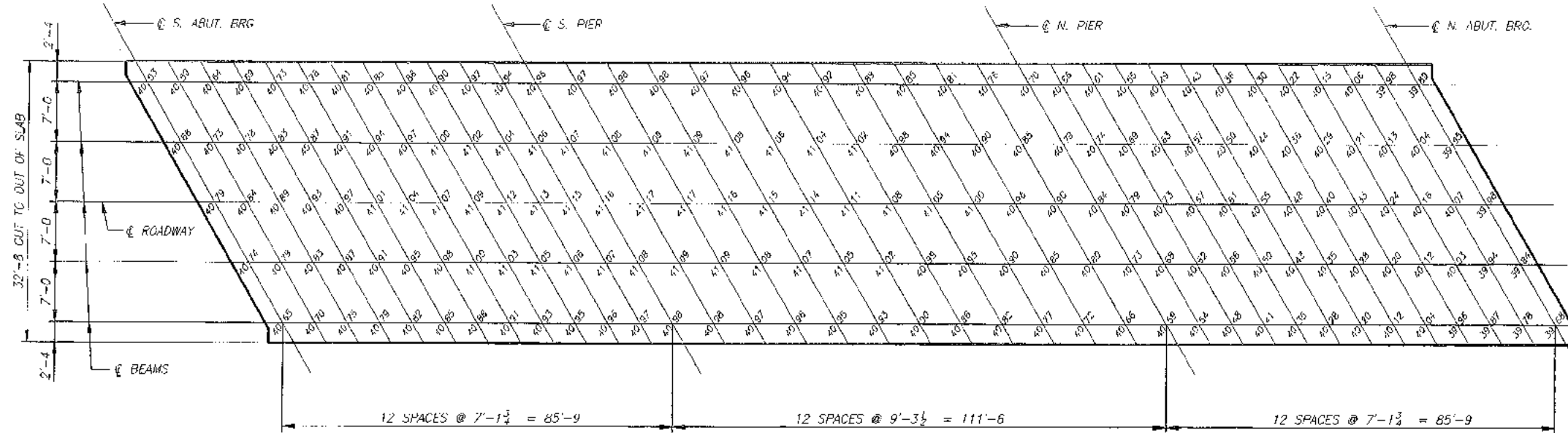
**ESTIMATED QUANTITIES - SUPERSTRUCTURE**

ITEM	UNIT	QUANTITY
CONCRETE, STRUCTURAL	CU.YDS.	301.3
STEEL, REINFORCING	LBS.	1,764
STEEL, REINFORCING - EPOXY COATED	LBS.	89,067
STEEL, STRUCTURAL	LBS.	3,369
BEAMS, PRETENSIONED	LXDB5	ONLY 10
PRESTRESSED CONCRETE	LXD110	ONLY 5

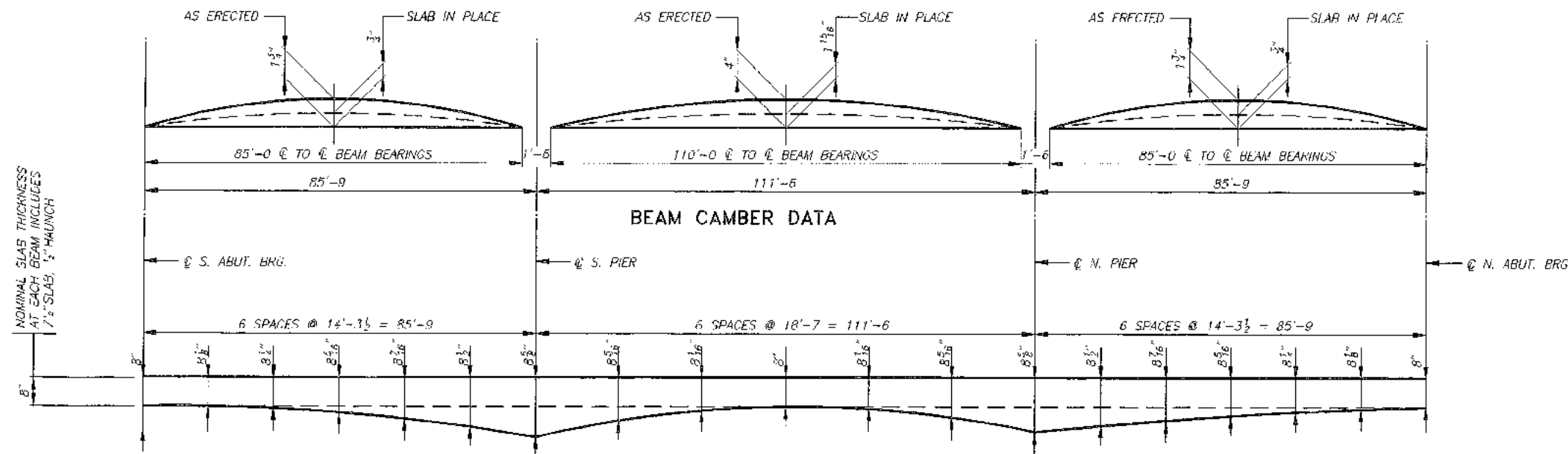
**BENT BAR DETAILS**



283'-0 x 30'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE  
 INTEGRAL ABUTMENTS SINGLE ROW ENCASED PIERS  
 85'-9 END SPANS 111'-6 INTERIOR SPAN  
 SUPERSTRUCTURE DETAILS  
 STATION 26+20 30' SKEW, RT. AHEAD  
 CRAWFORD COUNTY, IOWA  
 SHEET 12 OF 33

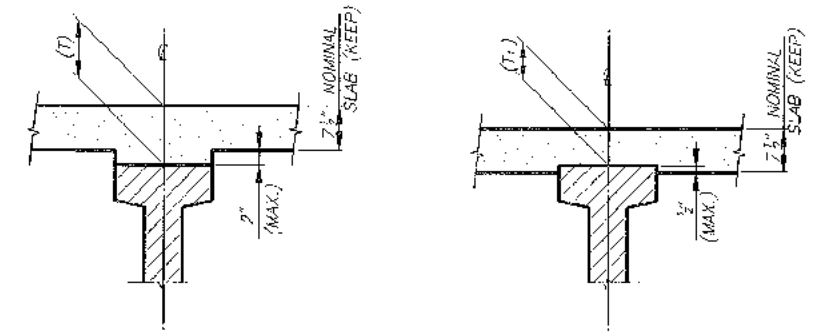


**TOP OF SLAB ELEVATIONS**  
ADD 1100.00 TO ABOVE ELEVATIONS



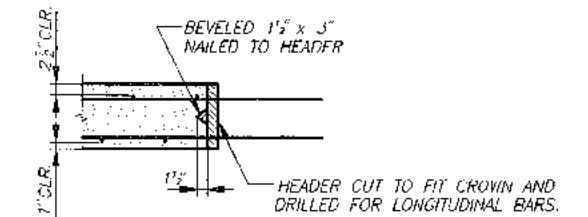
**HAUNCH DIAGRAM AND SLAB THICKNESS AT BEAM (T)**

NOTE : HAUNCH THICKNESSES ARE SHOWN FOR ESTIMATING ONLY AND ARE NOT GUARANTEED FOR CONSTRUCTION.



**SLAB THICKNESS DETAILS**

NOTE : THE SLAB THICKNESS (T) AT BEAMS IS BASED ON THE ANTICIPATED FFAN CAMBER REMAINING AFTER PLACING THE SLAB, BUT IS NOT GUARANTEED FOR CONSTRUCTION. IF BEAM IS UNDER CAMBERED, INCREASE SLAB THICKNESS (T) AT BEAMS TO COMPENSATE. IF BEAM IS OVER CAMBERED, THE SLAB THICKNESS (T) MAY BE DECREASED A MAXIMUM OF 1/2" EMBEDMENT AT THE BEAM (T). IF MORE THAN 1/2" EMBEDMENT IS REQUIRED, OR IF THE HAUNCH EXCEEDS 2", THE GRADE LINE IS TO BE REVISED. THE ABOVE DIAGRAMS DO NOT APPLY TO THE CANTILEVERED SLAB SIDE OF THE EXTERIOR BEAM.



**SLAB CONSTRUCTION JOINT DETAIL**

**283'-0 x 30'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE**

INTEGRAL ABUTMENTS 85'-9 END SPANS  
SINGLE ROW ENCASED PIERS 111'-6 INTERIOR SPAN

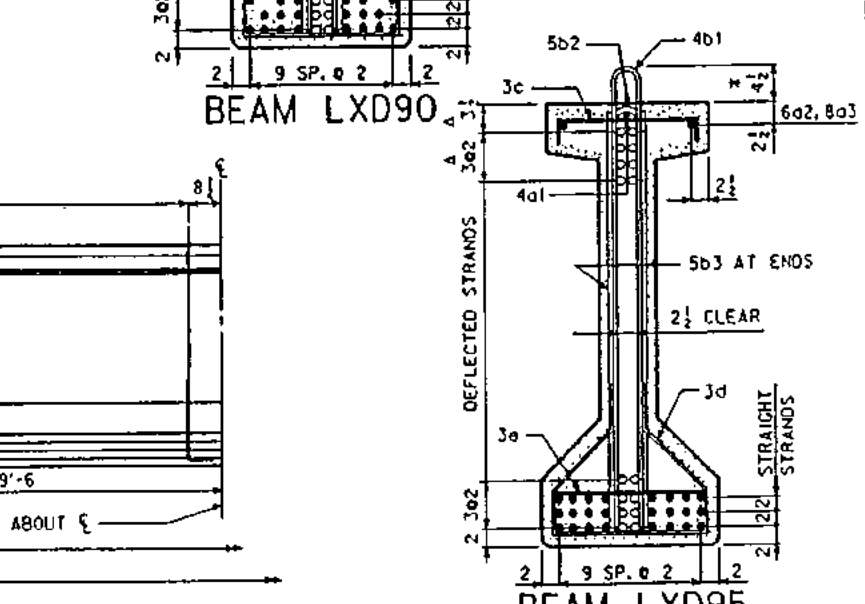
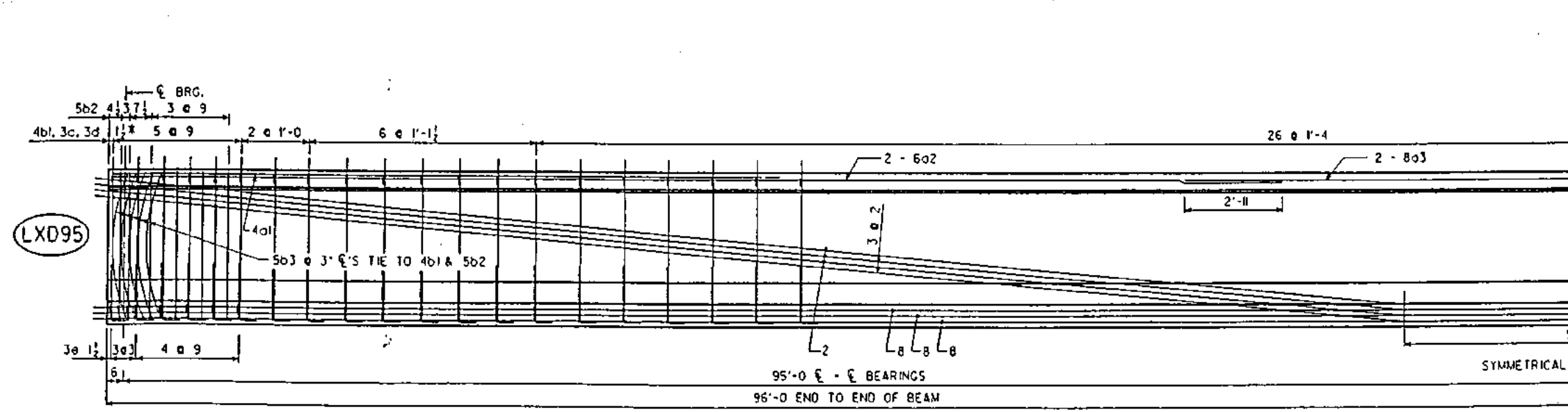
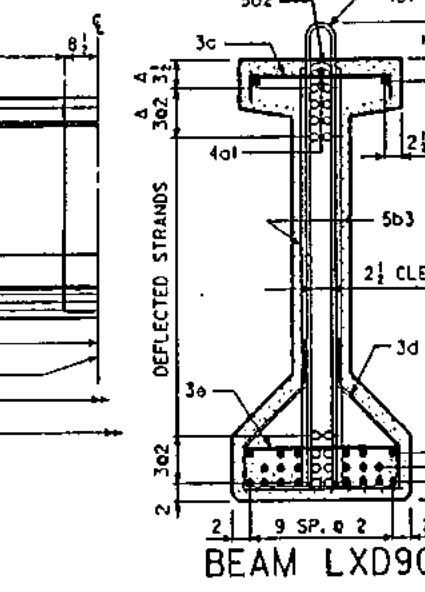
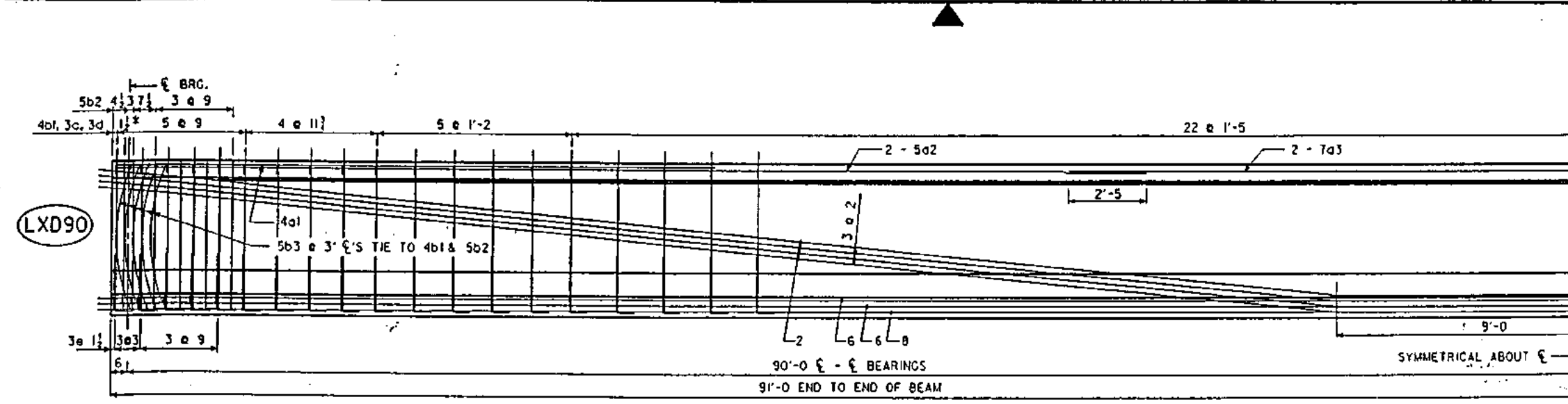
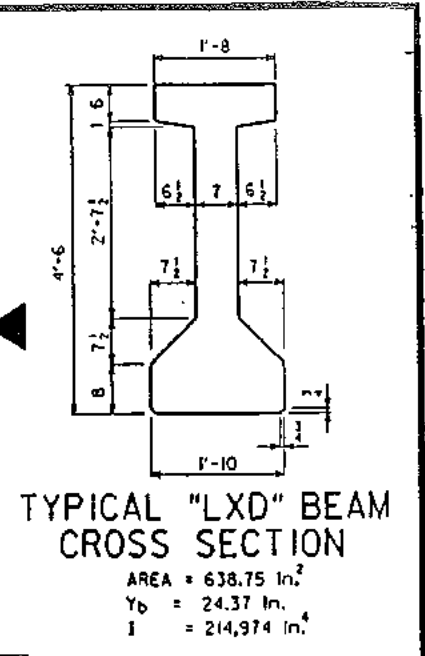
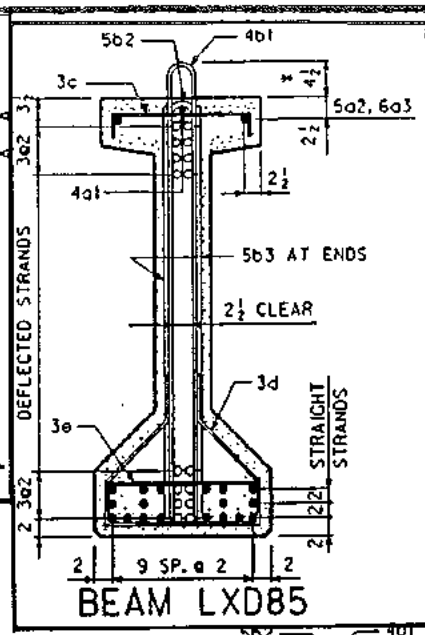
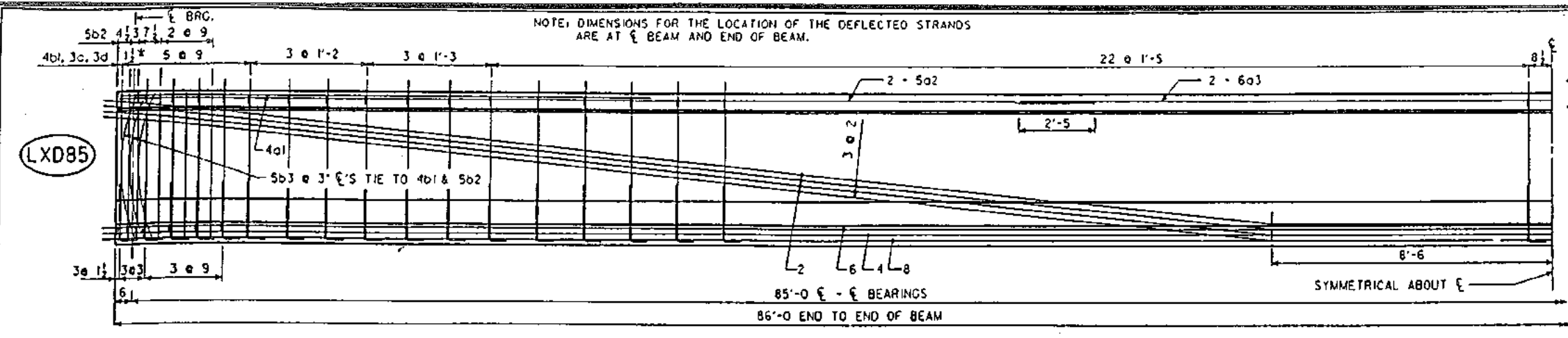
**SUPERSTRUCTURE DETAILS**

STATION 26+20  
CRAWFORD COUNTY,

30' SKEW, RT. AHEAD  
IOWA

SHEET 13 OF 33





283'-0 x 30'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

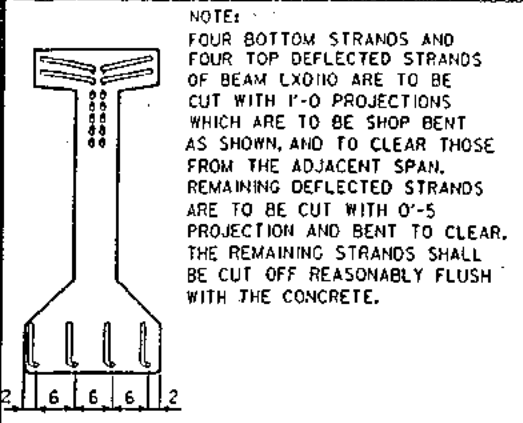
INTEGRAL ABUTMENTS  
85'-9 END SPANS

SINGLE ROW ENCASED PIERS  
111'-6 INTERIOR SPAN

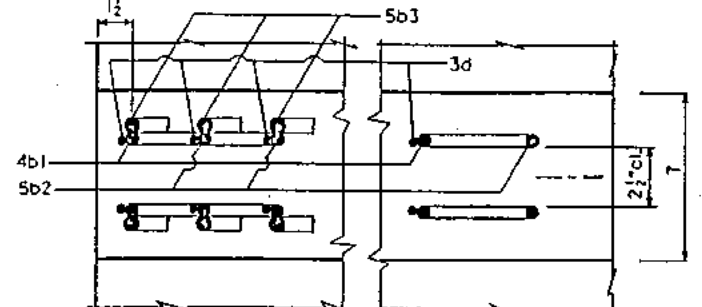
- DEFLECTED STRANDS
- \* KEEP
- △ DIMENSIONS AT END OF BEAM

STATION 26+20  
CRAWFORD COUNTY, IOWA

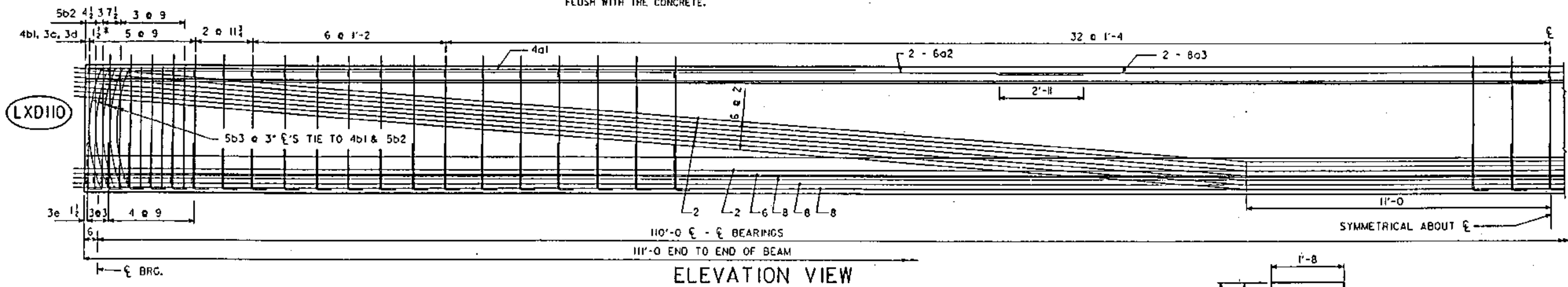
30' SKEW, RT. AHEAD



STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS

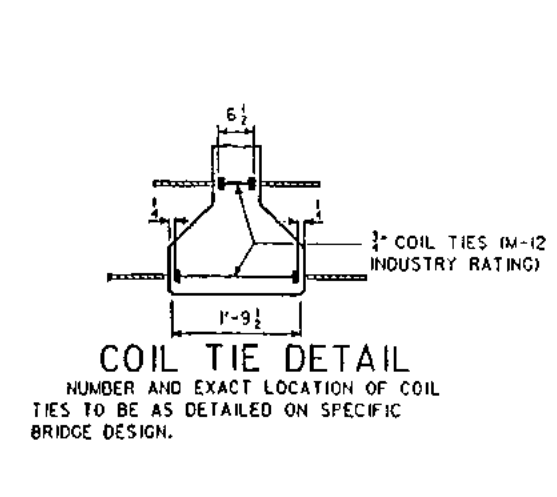


PART SECTION A-A SHOWING PLACEMENT OF STIRRUPS NEAR END OF BEAM



ELEVATION VIEW

REINFORCING BAR LIST BEAM LXDIIO			
BAR	SHAPE	NO.	LENGTH
4a1	—	2	26'-6"
6a2	—	4	38'-4"
8a3	—	2	40'-0"
4b1	—	91	10'-4"
5b2	—	12	8'-8"
5b3	—	20	4'-4"
3c	—	91	2'-1"
3d	—	91	5'-7"
3e	—	16	2'-3"



COIL TIE DETAIL

**SPECIFICATIONS:**

CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, CURRENT SERIES, WITH CURRENT APPLICABLE SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.

DESIGN: A.A.S.H.T.O., SERIES OF 1989, WITH MINOR MODIFICATIONS.

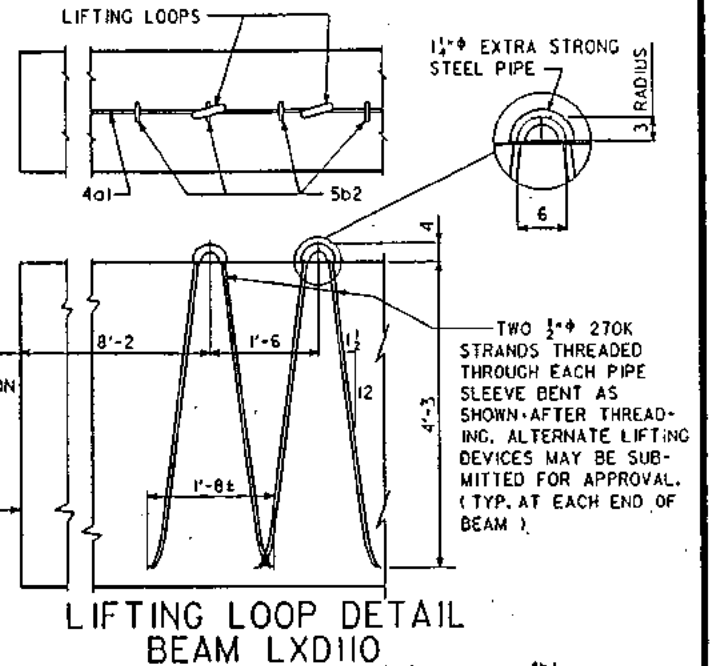
**DESIGN STRESSES:**

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE TO BE IN ACCORDANCE WITH A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1989:  
 REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.  
 CONCRETE IN ACCORDANCE WITH SECTION 9.  
 MINIMUM CONCRETE  $f'_c$  (AT 28 DAYS) SHALL BE 7000 psi.  
 MINIMUM  $f'_{ci}$  AT RELEASE SHALL BE 6000 psi.  
 PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 9.  
 $f'_s = 270,000$  psi.

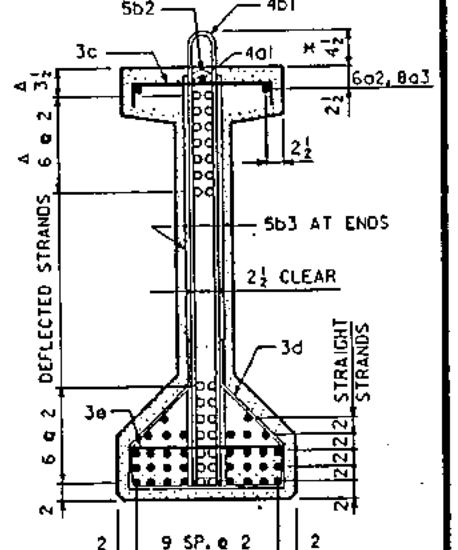
**LXDIIO BEAM DATA**

BEAM	SPAN LENGTH @ BEARING	OVERALL BEAM LENGTH (L)	STRAND SIZE	NO. OF STRANDS		TOTAL INITIAL PRESTRESS KIPS	HOLD DOWN FORCE-KIPS	CAMBER (in.)		DEFLECTION (in.) $\Delta_0$				PERMISSIBLE SPACING		WEIGHT (TONS)	CONCRETE (C.Y.)	REINFORCING STEEL (lbs.)
				STRAIGHT	DEFLECTED			AT RELEASE	AFTER LOSSES	IMMEDIATE (ELASTIC) $\Delta_1$		TIME (PLASTIC) $\Delta_1$		HS20 LOADING				
										CONC. DIAPH.	STEEL DIAPH.	CONC. DIAPH.	STEEL DIAPH.	CONC. DIAPH.	STEEL DIAPH.			
LXDIIO	110'-0"	111'-0"	1/2"	32	14	1424	33.7	2.29	4.02	2.25	2.13	0.56	0.53	7'-6"	7'-6"	35.9	18.2	1581

- ① DEFLECTIONS AT MID-SPAN DUE TO WEIGHT OF SLAB AND DIAPHRAGM. THE DEFLECTIONS SHOWN ARE FOR A SLAB WEIGHT OF 760 #/FT. (8" SLAB AND 7'-6" BEAM SPACING) AND ONE CONCRETE DIAPHRAGM (3191 #) OR ONE STEEL DIAPHRAGM (285 #) AT  $\frac{1}{2}$  OF SPAN, FOR DIFFERENT SLAB AND DIAPHRAGM WEIGHTS, DEFLECTIONS WILL BE DIRECTLY PROPORTIONAL.
- ② DEFLECTIONS DUE TO THE COMBINED EFFECT OF CREEP DUE TO WEIGHT OF SLAB AND SHRINKAGE OF SLAB.  
 TOTAL BEAM DEFLECTIONS AT  $\frac{1}{2}$  OF SPAN,  $\Delta_0$ , DUE TO WEIGHT OF SLAB AND DIAPHRAGMS FOR DETAILING PURPOSE:  
 (A)  $\Delta_0 = \Delta_1 + \Delta_2$  FOR SIMPLE SPAN,  
 (B)  $\Delta_0 = \Delta_1 + \frac{1}{2}\Delta_2$  FOR END SPANS OF CONTINUOUS BRIDGE,  
 (C)  $\Delta_0 = \Delta_1 + \frac{1}{4}\Delta_2$  FOR INTERIOR SPANS OF CONTINUOUS BRIDGE.
- ③ TOTAL INITIAL PRESTRESS FOR LXDIIO IS BASED ON 75%  $F_{su}$ .  
 $F_{su} = 270$  ksi AND  $A_s = 0.153$  sq. in.



LIFTING LOOP DETAIL BEAM LXDIIO



BEAM LXDIIO

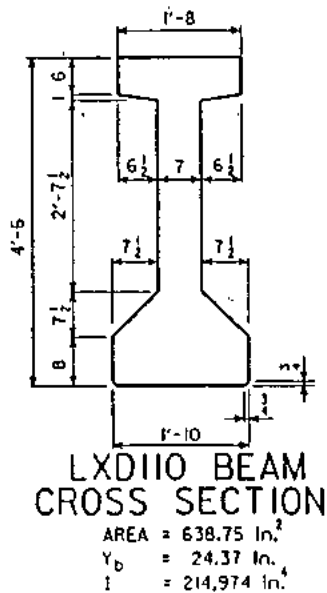
NOTE: DIMENSIONS FOR THE LOCATION OF THE DEFLECTED STRANDS ARE AT  $\frac{1}{2}$  BEAM AND END OF BEAM.  
 \* DEFLECTED STRANDS  
 o KEEP  
 Δ DIMENSIONS AT END OF BEAM

283'-0" x 30'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS SINGLE ROW ENCASED PIERS  
 85'-9" END SPANS 111'-6" INTERIOR SPAN

**BEAM DETAILS**

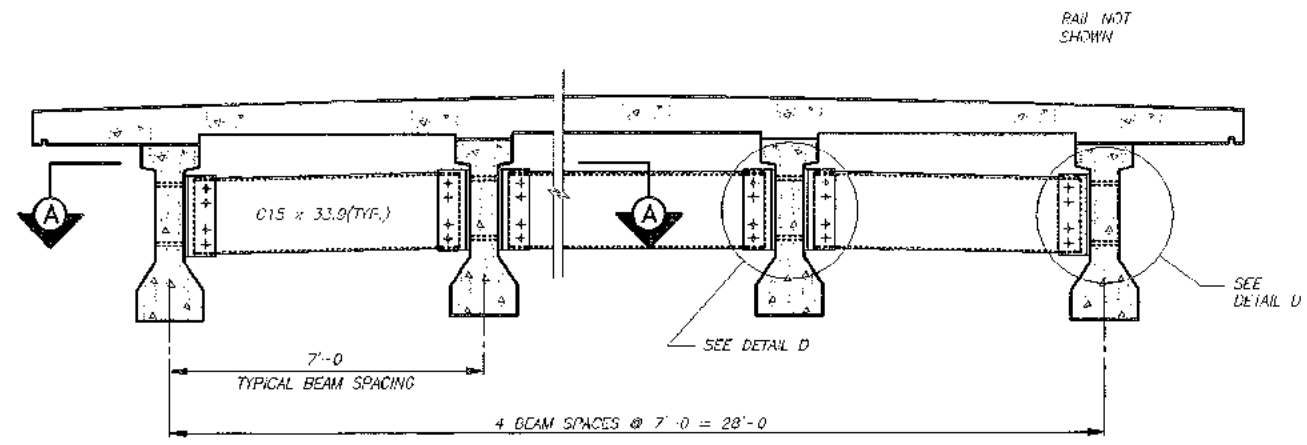
STATION 26+20 CRAWFORD COUNTY, IOWA  
 30' SKEW, RT. AHEAD  
 SHEET 16 OF 33



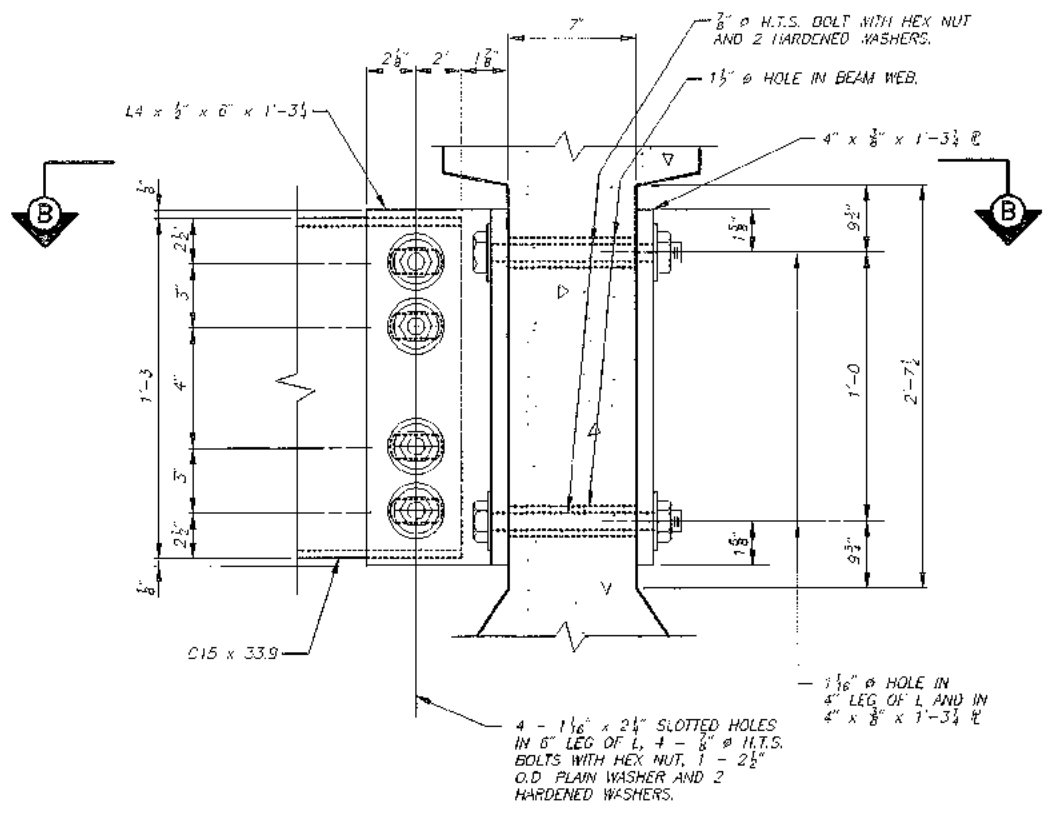
LXDIIO BEAM CROSS SECTION

AREA = 638.75 in.<sup>2</sup>  
 $Y_b = 24.37$  in.  
 $I = 214,974$  in.<sup>4</sup>

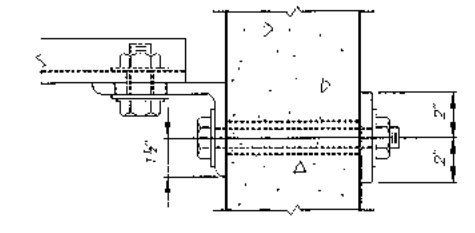




SECTION SHOWING INTERMEDIATE DIAPHRAGMS



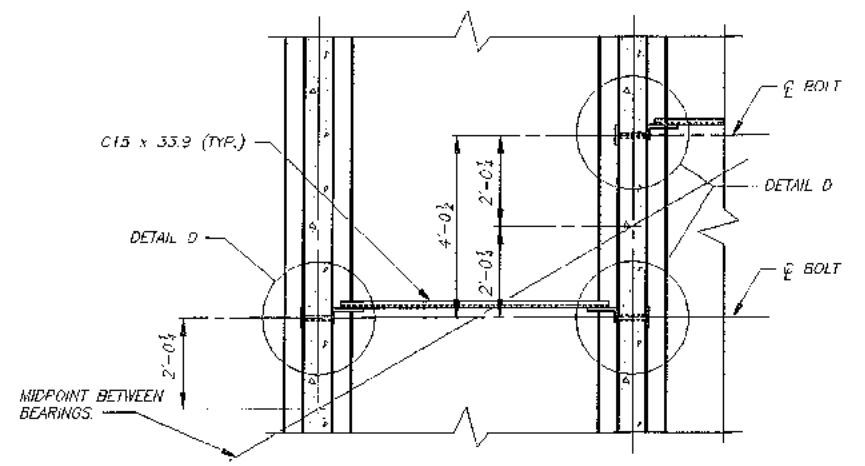
DETAIL D



SECTION B-B

LENGTH OF 7/8" H.T.S. BOLTS THRU WEB	
WEB THICKNESS (INCHES)	BOLT LENGTH (INCHES)
7	10

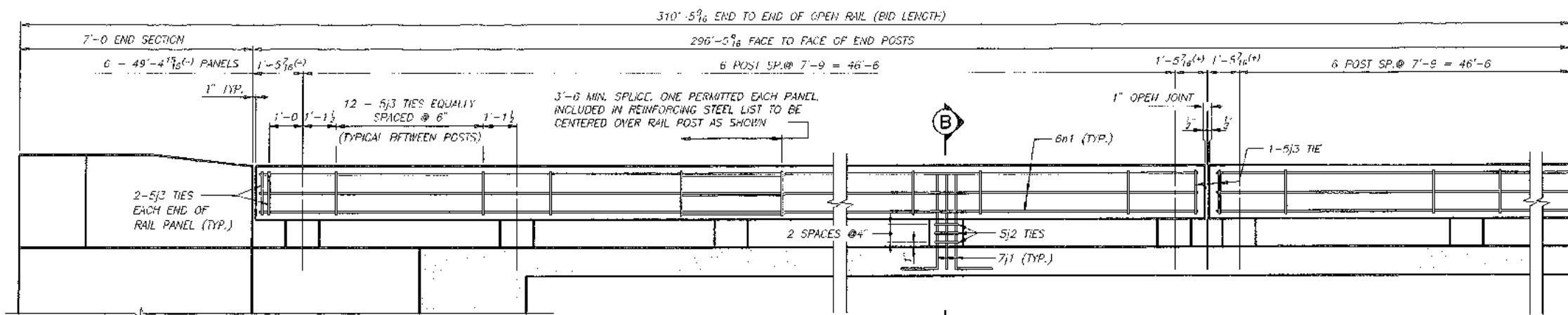
NOTE: THREAD LENGTH: MIN. 3"  
MAX. 4"



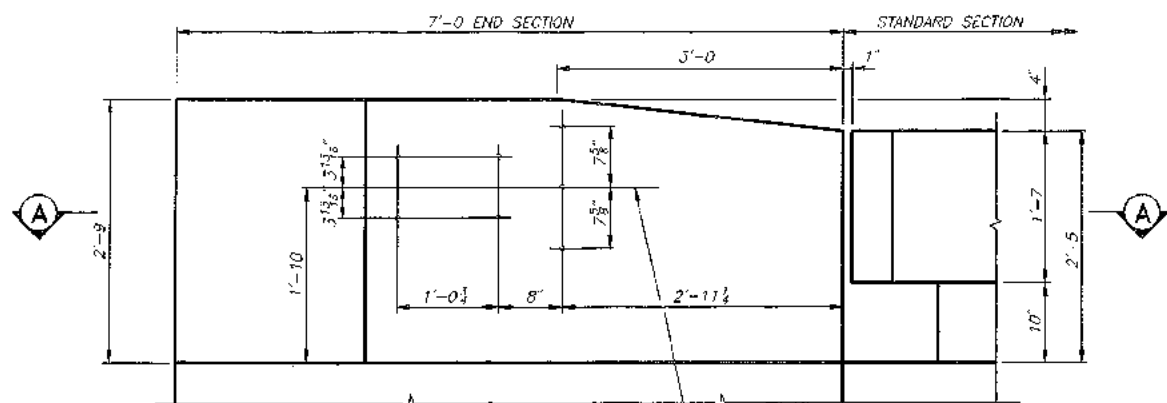
SECTION A-A  
FOR BRIDGE SKEW > 0'

**NOTES:**  
 ALL DIAPHRAGM MATERIALS, INCLUDING NUTS, AND WASHERS SHALL BE GALVANIZED.  
 SHOP DRAWINGS SHOWING LAYOUT AND DETAILS OF THE DIAPHRAGMS SHALL BE SUBMITTED FOR APPROVAL.  
 THE 1 1/2" Holes SHALL BE CAST INTO THE WEB. DRILLING IS NOT ALLOWED.  
 THE 2 1/2" O.D. PLAIN WASHERS SHALL MEET THE DIMENSIONAL REQUIREMENTS OF A.H.S.I. B18.22.1, TYPE A PLAIN WASHERS.

283'-0 x 30'-0 PRETENSIONED PRESTRESSED  
 CONCRETE BEAM BRIDGE  
 INTEGRAL ABUTMENTS SINGLE ROW ENCASED PIERS  
 85'-9 END SPANS 111'-6 INTERIOR SPAN  
 STEEL DIAPHRAGM DETAILS  
 STATION 26+20 30' SKEW, RT. AHEAD  
 CRAWFORD COUNTY, IOWA  
 SHEET 17 OF 33

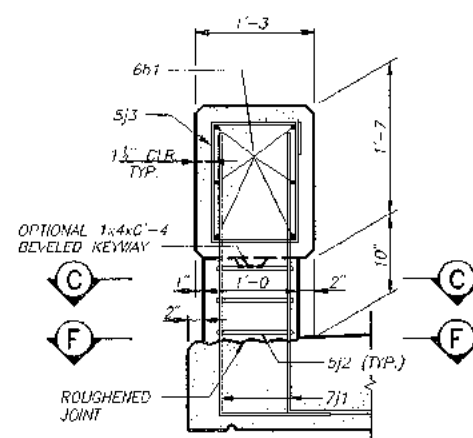


ELEVATION OF OPEN RAIL

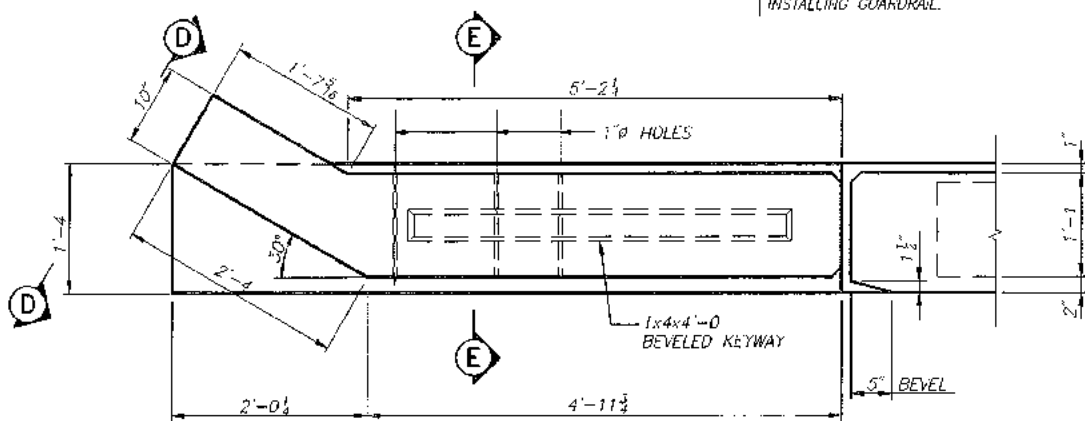


PART ELEVATION VIEW

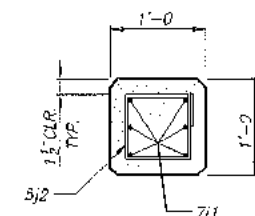
HOLES FOR 7/8" BOLTS ARE TO BE FORMED WITH 1" (NOMINAL I.D.) PLASTIC CONDUIT SLEEVES. THE SLEEVES SHALL BE SECURELY FIXED IN EXACT LOCATION AS SHOWN BEFORE CONCRETE IS POURED. COST OF SLEEVES TO BE INCLUDED IN PRICE BID FOR "STRUCTURAL CONCRETE". BOLTS AND WASHERS TO BE FURNISHED BY CONTRACTOR INSTALLING GUARDRAIL.



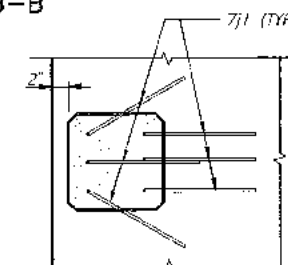
PART SECTION B-B



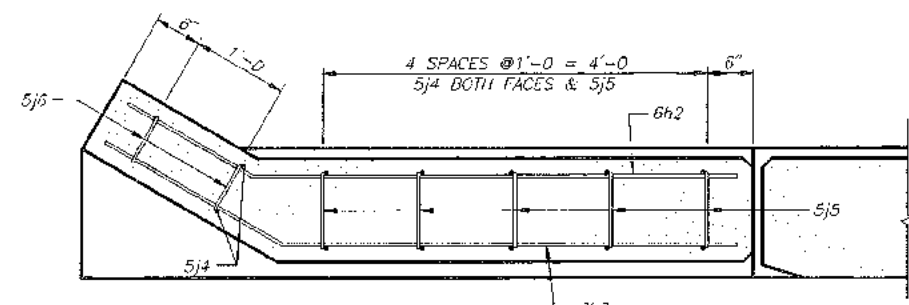
PART PLAN VIEW



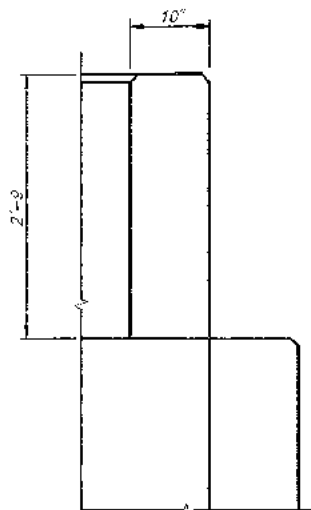
PART PLAN C-C



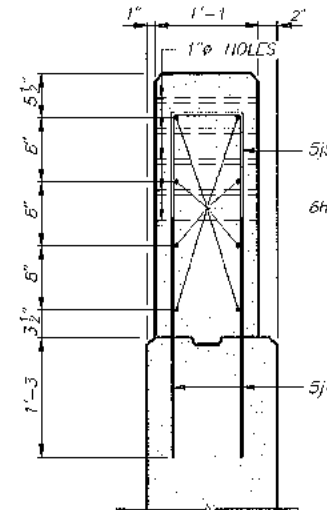
PART PLAN F-F



PART PLAN A-A

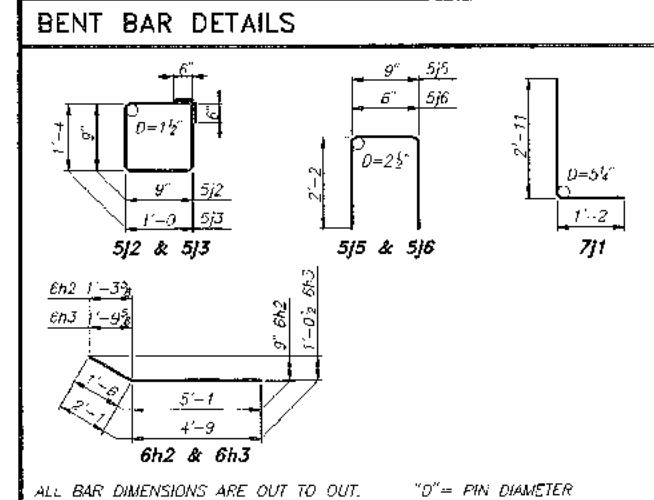


END VIEW D-D



PART SECTION E-E

REINFORCING BAR LIST - TWO RAILS							
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	
STANDARD SECTION	7j1	RAIL POST, VERTICAL	□	504	4'-1"	4,206	
	5j2	RAIL POST, TIES	□	252	4'-0"	1,051	
	5j3	RAIL, TIES	□	892	5'-8"	5,275	
	6h1	RAIL, LONGITUDINAL	—	72	52'-9"	5,678	
* LENGTH INCLUDES LAP SPLICE							
4 END SECTIONS	5j4	ANCHOR TO SLAB	—	48	2'-6"	125	
	5j5	VERTICAL	□	20	5'-1"	106	
	5j6	VERTICAL	□	8	4'-10"	40	
	6h2	LONGITUDINAL	—	16	6'-7"	158	
	6h3	LONGITUDINAL	—	16	6'-10"	164	
INCLUDE WITH SUPERSTRUCTURE REINFORCING						TOTAL (LBS.)	16,803



ALL BAR DIMENSIONS ARE OUT TO OUT. "O" = PIN DIAMETER

CONCRETE PLACEMENT SUMMARY		
SECTION		TOTAL
STANDARD SECTION	12 @ 3.83 C.Y.	46.1
END SECTIONS	4 @ 0.7 C.Y.	2.8
TOTAL (C.Y.)		48.9

CONCRETE OPEN RAIL QUANTITIES		
ITEM	UNIT	QUANTITY
CONCRETE OPEN RAIL	L.F.	620.9

**OPEN RAIL NOTES**  
 MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.  
 ALL OPEN RAIL CONCRETE IS TO BE CLASS D.  
 THE CONCRETE OPEN RAIL IS TO BE BID ON A LINEAL FOOT BASIS MEASURED FROM END TO END OF RAIL. THE NUMBER OF LINEAL FEET OF OPEN RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT. PRICE BID FOR CONCRETE OPEN RAIL SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.  
 ALL OPEN RAIL REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.  
 ALL EXPOSED CORNERS OF 90° OR SHARPER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.  
 ALL REINFORCING STEEL IS TO BE GRADE 60 AND EPOXY COATED.

**283'-0" x 30'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE**  
 INTEGRAL ABUTMENTS SINGLE ROW ENCASED PIERS  
 85'-9" END SPANS 111'-6" INTERIOR SPAN  
**OPEN RAIL DETAILS**  
 STATION 26+20 30' SKEW, RT. AHEAD  
 CRAWFORD COUNTY, IOWA  
 SHEET 18 OF 33

**TOTAL ESTIMATED QUANTITIES: DIV.II - GRADING**

REF. NO.	CODE NO.	ITEM	UNIT	TOTAL
20	2101-0850001	CLEARING & GRUBBING	ACRES	6.89
21	2101-0850002	CLEARING & GRUBBING	UNITS	75
22	2102-2710070	EXCAVATION, CLASS 10, ROADWAY & BORROW	CU. YDS.	27,578
23	2312-0260051	GRANULAR SURFACING ON ROAD, CLASS A CRUSHED STONE	TONS	1129
24	2402-2720100	EXCAVATION, CLASS 20, FOR ROADWAY PIPE CULVERTS	C.Y.	225
25	2417-1040024	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24 IN. DIA.	LIN. FT.	82
26	2417-1040036	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 36 IN. DIA.	LIN. FT.	74
27	2417-1060036	CULVERT, CORRUGATED METAL ROADWAY PIPE, 36 IN. DIA.	LIN. FT.	82
28	2417-0225024	APRONS, METAL, 24 IN. DIA.	ONLY	6
29	2417-0225036	APRONS, METAL, 36 IN. DIA.	ONLY	6
30	2505-4020170	GUARDRAIL, END ANCHORAGES, BEAM RE-70	ONLY	4
31	2505-4020250	GUARDRAIL FORMED STEEL DEAM	LIN. FT.	150
32	2505-4020251	GUARDRAIL FORMED STEEL THRIE BEAM	LIN. FT.	125
33	2505-4020400	GUARDRAIL, POST, BEAM	ONLY	44
34	2505-4021690	GUARDRAIL, END ANCHORAGES, BEAM RE-69	ONLY	4
35	2518-0910000	SAFETY CLOSURES	ONLY	3
36	2524-9229020	OBJECT MARKERS, TYPE 2	ONLY	8
37	2524-9229030	OBJECT MARKERS, TYPE 3	ONLY	1
38	2525-2638031	SILT FENCE FOR DITCH CHECKS	LIN. FT.	200
39	2528-8445110	TRAFFIC CONTROL	L.S.	1
40	2601-2634100	MULCHING	ACRES	9.5
41	2601-2639043	SEEDING, AND FERTILIZING (RURAL)	ACRES	9.5

**ITEM NO. ESTIMATE REFERENCE INFORMATION**

- 20-21 QUANTITY SHOWN IS AN APPROXIMATION. ACTUAL MEASUREMENTS WILL BE MADE AT THE TIME OF CONSTRUCTION.
- 22 TYPE "A" COMPACTION WILL BE REQUIRED. SEE TABULATION, SHEET AND PLAN AND PROFILE SHEET, FOR BREAKDOWN OF EXCAVATION QUANTITIES. INCLUDES MATERIAL FOR BRIDGE APPROACHES & ENTRANCES. NO PAYMENT WILL BE MADE FOR OVERHAUL.
- 23 SURFACING SHALL BE FURNISHED AND PLACED BY THE CONTRACTOR IN TWO PASSES (1400 AND 600 TONS/MI/IN). INCLUDES 15 TONS FOR ENTRANCES.
- 25-29 SEE TABULATION SHEET 21. ALL PIPES ARE TO BE STANDARD CORRUGATIONS. NO HELICALLY CORRUGATED PIPE WILL BE ALLOWED. ALL CONNECTING BENDS ARE TO BE 24" WIDE.
- 30-37 SEE TABULATIONS, SHEET 21.
- 38 SEE TABULATION, SHEET 21.
- 39 SEE SHEETS 1, AND 19.
- 40-41 SEEDING SHALL BE COMPLETED IN ACCORDANCE WITH ARTICLE 2601.04 OF THE STANDARD SPECIFICATIONS.

**GENERAL NOTES**

PLAN AND PROFILE SHEETS INCORPORATED IN THE PROJECT ARE FOR PURPOSE OF ALIGNMENT, LOCATION AND SPECIAL DIRECTION FOR THE WORK TO BE PERFORMED UNDER THIS CONTRACT. IRRELEVANT DATA ON THESE SHEETS IS NOT TO BE CONSIDERED A PART OF THIS CONTRACT. ACCESS SHALL BE MAINTAINED TO INDIVIDUAL PROPERTIES DURING CONSTRUCTION. ACCESS SHALL ALSO BE MAINTAINED FOR LOCAL LANDOWNERS TO CROSS THE CREEK EITHER ON THE EXISTING BRIDGE OR ON THE PROPOSED BRIDGE DURING ALL PHASES OF CONSTRUCTION. IF RELOCATED ACCESS CANNOT BE COMPLETED TO INDIVIDUAL PROPERTIES PRIOR TO REMOVAL OF EXISTING ACCESS, AN ALTERNATE ACCESS SHALL BE PROVIDED AND MAINTAINED. THIS WORK WILL BE CONSIDERED INCIDENTAL TO THE PROJECT.

THE CONTRACTOR IS TO PROVIDE HIS OWN BORROW FOR CLASS 10, ROADWAY AND BORROW, EXCAVATION. NO PAYMENT FOR OVERHAUL WILL BE MADE. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH PROVISIONS OF IOWA LAW AS IT APPLIES TO REMOVAL AND REPLACEMENT OF TOPSOIL ON BORROW AREAS.

A WASTE AREA SHALL BE PROVIDED BY THE CONTRACTOR FOR WASTE MATERIAL REMOVED FROM THE PROJECT SITE. THE SITE SHALL BE APPROVED BY THE ENGINEER. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

WHERE PUBLIC UTILITY FIXTURES ARE SHOWN AS EXISTING ON THE PLANS OR ENCOUNTERED WITHIN THE CONSTRUCTION AREA, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE OWNERS OF THOSE UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION. ACCESS SHALL BE AFFORDED TO THESE FACILITIES FOR NECESSARY MODIFICATION OF SERVICES, UNDERGROUND FACILITIES, STRUCTURES, AND THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATELY ONLY. IT'S POSSIBLE THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS NOT PRESENTLY KNOWN OR SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR EXISTENCE AND EXACT LOCATION AND AVOID DAMAGE THEREOF. NO CLAIMS FOR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR INTERFERENCE OR DELAY CAUSED BY SUCH WORK.

UTILITY RELOCATIONS SHALL BE COORDINATED WITH WORK ON THIS PROJECT. BOTH REMOVAL AND RELOCATION WILL REQUIRE ASSISTANCE. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO OTHER WORK ON THIS PROJECT.

DUE CAUTION IS TO BE USED IN WORKING OVER AND AROUND ALL THE LINES. BREAKS IN THE TILE LINE DUE TO THE CONTRACTOR'S CARELESSNESS ARE TO BE REPLACED AT HIS EXPENSE WITHOUT COST TO THE OWNER. ANY TILE LINES BROKEN OR DISTURBED BY OUR CUT LINES WILL BE REPLACED AS DIRECTED BY THE ENGINEER IN CHARGE OF CONSTRUCTION AND AT THE OWNER'S EXPENSE.

EXCEPT WHERE NOTED OTHERWISE ON THE PLANS, ALL ENTRANCE AND ROADWAY CULVERTS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.

STANDARD ROAD PLANS ARE AVAILABLE FROM THE IOWA DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION, AMES, IOWA.

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.

**TRAFFIC CONTROL PLAN**

THE PROJECT ROUTE WILL BE CLOSED TO TRAFFIC. TRAFFIC CONTROL ON THIS PROJECT SHALL BE IN ACCORDANCE WITH ROAD STANDARD RS-27. FOR ADDITIONAL COMPLIMENTARY INFORMATION, REFER TO SUPPLEMENTAL SPECIFICATION 5055 AND THE IOWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED AND REMOVED BY THE CONTRACTOR.

SLAT FENCE BARRICADES OR PLASTIC SAFETY FENCE SHALL BE PLACED ON BOTH SIDES OF THE BRIDGE SITE. IN ADDITION, A TYPE III BARRICADE SHALL BE PLACED IN ADVANCE OF THE SLAT FENCE OR PLASTIC SAFETY FENCE. A "ROAD CLOSED" SIGN (R-11-2, 48" X 30") SHALL BE PLACED ON EACH TYPE III BARRICADE ALONG WITH TWO TYPE "A" LOW INTENSITY FLASHING WARNING LIGHTS. THE "ROAD CLOSED" SIGN SHALL BE MOUNTED SUCH THAT NO PART OF THE BARRICADE IS COVERED.

CRAWFORD COUNTY MAINTENANCE SHALL SALVAGE ALL ROAD MARKERS AFTER ROAD IS CLOSED.

THE BID ITEM "TRAFFIC CONTROL" SHALL INCLUDE THE COST FOR ALL TRAFFIC CONTROL MEASURES REQUIRED OF THE CONTRACTOR EXCEPT FOR THOSE WHICH ARE SEPARATE BID ITEMS OR ARE INCIDENTAL TO OTHER BID ITEMS.

THE GUARDRAIL INSTALLATION MUST BE COMPLETED BEFORE THE ROAD IS OPENED TO TRAFFIC.

ALL CONTRACTOR FURNISHED TRAFFIC CONTROL AND FIXED, POST MOUNTED, TRAFFIC CONTROL SIGNS USED ON THIS PROJECT SHALL BE SHIELDED WITH ENCAPSULATED LENS SHEETING.

TYPE C STEADY BURN WARNING LIGHTS ARE NOT REQUIRED FOR VERTICAL PANELS, BARRICADES, AND DRUMS WHEN THESE TRAFFIC CONTROL DEVICES ARE SHIELDED WITH ENCAPSULATED LENS SHEETING.

QUANTITIES AND NOTES

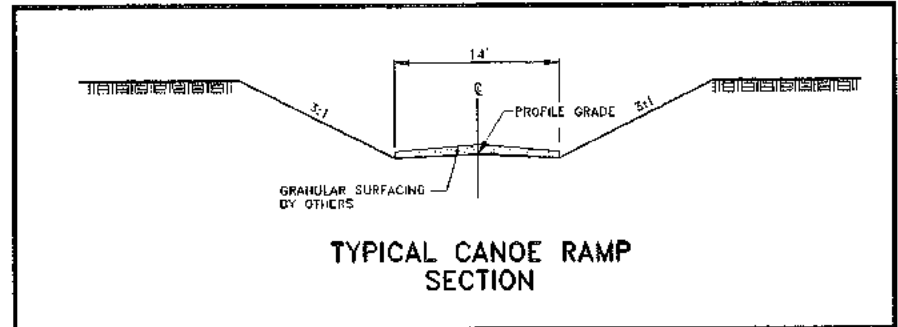
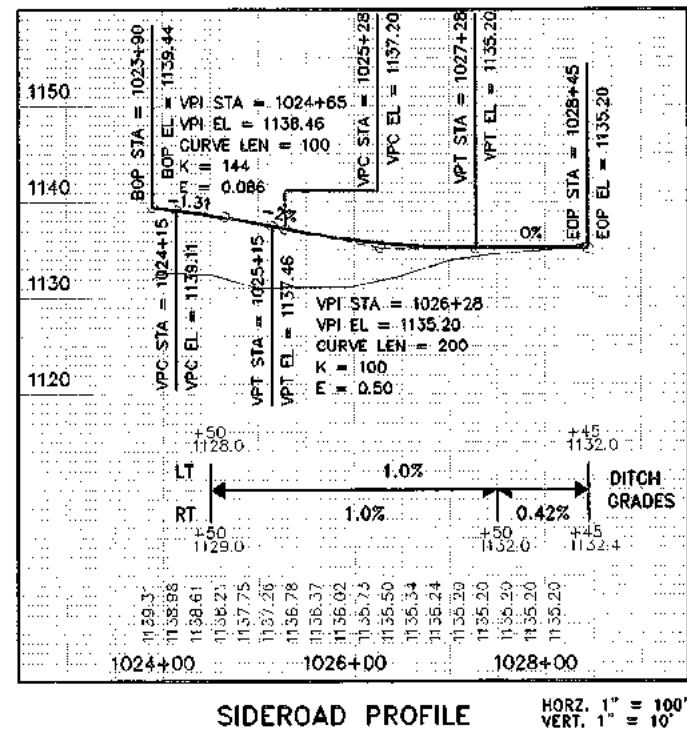
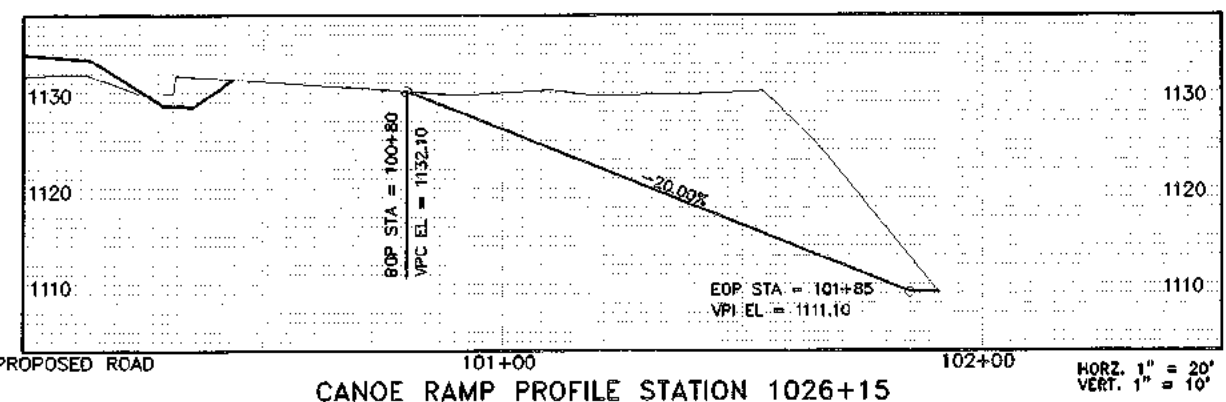
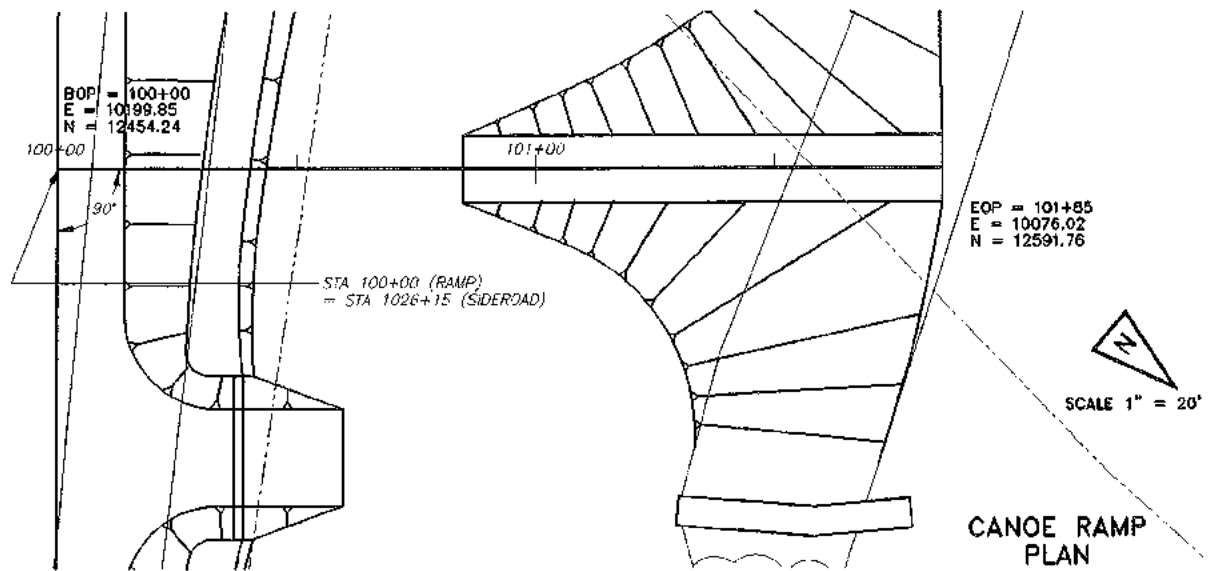
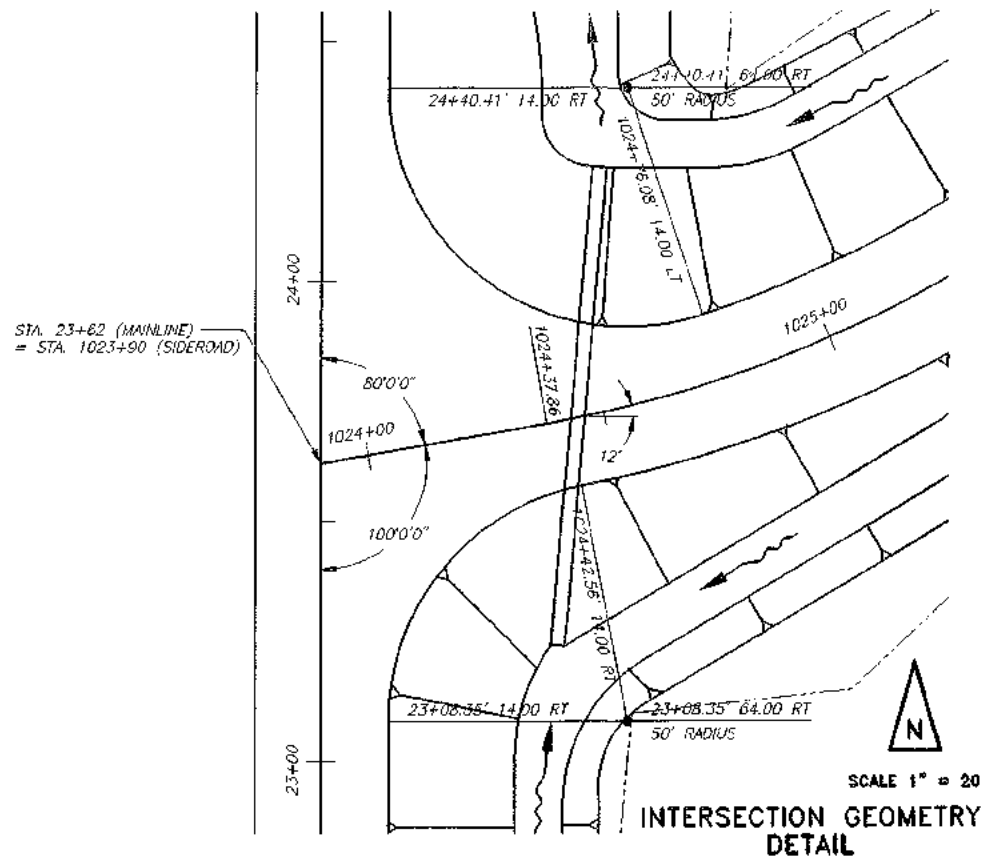
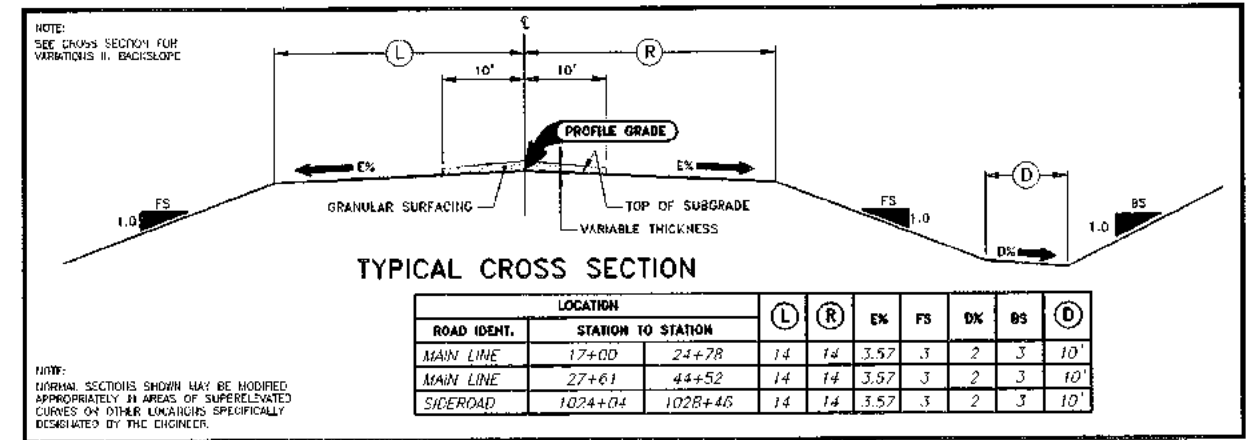
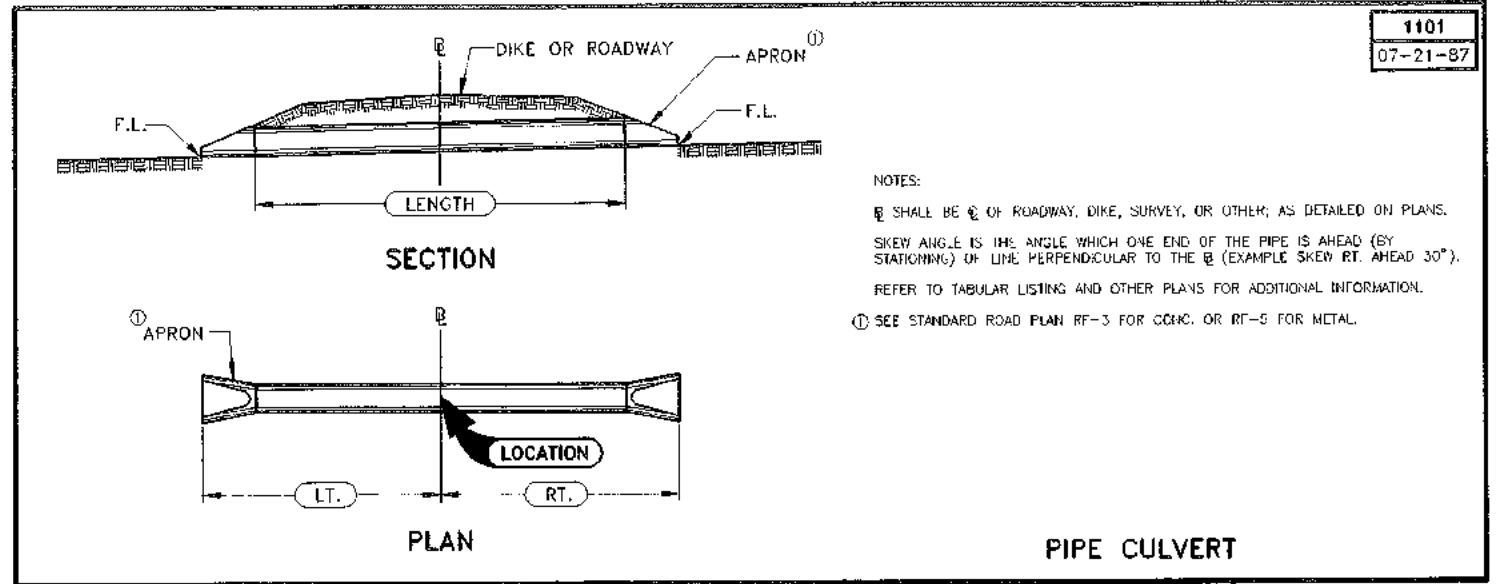
CRAWFORD COUNTY

IOWA

SHEET 19 OF 33



1101  
07-21-87



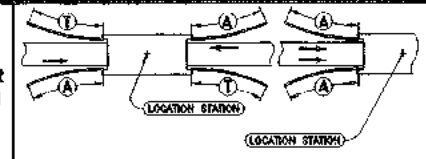
**TYPICAL SECTIONS AND DETAILS**  
CRAWFORD COUNTY

① Includes 2-12.5" Thrie Beam Sections and  
1 - 6.25" "W" to Thrie Beam Transition Section  
② Not a Bid Item

TABULATION OF STEEL BEAM GUARDRAIL FOR STANDARD ROAD PLANS RE-63, RE-65

108-8A  
03-26-96

NO.	STATION	STANDARD ROAD PLAN	CASE	FORMED STEEL BEAM GUARDRAIL					BEAM GUARDRAIL POSTS				POST & ADAPTOR RE-37	ANCHOR SYSTEM	REMARKS		
				'W' BEAM	① (STS) ①		THRIE BEAM	TOTAL 'W' BEAM	TOTAL THRIE BEAM	WITH 8" x 8" SPACER BLOCKS						TERMINAL ②	
					THRIE BEAM	THRIE BEAM				10' x 10' x 6'	8' x 8' x 6'	CRT 6" x 8' x 6'					
1	26+20	RE-65	U		31.25'		37.5	37.5					2		RE-70	1	S. END, LT.
2	26+20	RE-65	U	37.5				37.5					2		RE-70	1	S. END, RT.
3	26+20	RE-65	U	37.5	31.25				31.25				2		RE-70	1	N. END, LT.
4	26+20	RE-65	U		31.25			37.5	37.5				2		RE-70	1	N. END, RT.



**TABULATION OF DELINEATORS AND OBJECT MARKERS**  
Refer to Standard Road Plan RE-48A-B and RE-28C \*\*Not a Bid Item

LOCATION	STATION	TYPE	DELINEATOR		OBJECT MARKER			REMARKS
			SINGLE WHITE D-1W	TYP. 2 OM2-3YV	TYPE 3		** OFFSET BRACKETS	
					OM-3L	OM-3R		
	26+20	3	—	—	1	1	—	S. END
	26+20	3	—	—	1	1	—	N. END

**POINTS OF ACCESS (RL-7)**  
\*\* (RF-30A, 30B) Refer to Detail Cross Sections  
\* When allowed Polyethylene pipe may be used for these diameter pipes.

LOCATION (RL-7)	STATION	SIDE	W	TYPE	PIPE CULVERT **				APRONS NO.	SURFACE MATERIAL TONS		
					Lineal Feet							
					18"	24"	36"	LT. RT.				
	18+00	LT.	20	C	—	—	—	—	—	15		
	18+00	RT.	20	C	—	—	—	—	—	15		
	26+50	LT.	29	C	16.0	—	—	54	37.25	35.25	2	—
	34+00	RT.	20	C	4.0	—	—	28.5	30.5	2	—	—
	41+00	LT.	29	C	1.5	—	—	20	19.25	19.25	2	—
	41+00	RT.	29	C	1.0	—	—	20	16.5	16.5	2	—
	1026+75	LT.	29	C	1.0	—	—	14.5	14.5	2	—	30

**TABULATION OF GRADING FOR GUARDRAIL INSTALLATIONS**  
\*Refer to Standard Road Plan RL-11 or Typical 4303 and 4306

LOCATION POINT	No.	Station	TYPE	*DIMENSIONS			CLASS 10 EXCAV. Cu.Yds.	EMBANK. IN PLACE Cu.Yds.	PIPE			REMARKS
				A/T	Y	Z			SIZE	TYPE	LENGTH	
	1	24+02.19	1	56.25	10.4	59	—	—	—	—	—	S. END, LT.
	2	24+19.51	1	56.25	10.4	59	—	—	—	—	—	S. END, RT.
	3	28+20.49	1	56.25	10.4	59	—	—	—	—	—	N. END, LT.
	4	28+37.81	1	56.25	10.4	59	—	—	—	—	—	N. END, RT.

**DRAINAGE STRUCTURES**

LOCATION	TYPE	SIZE	KIND	DIMENSIONS—Lin. Ft.			APRON NO.	BED CLASS	COVER (FT.)	FLOW LINE ELEV.		CLASS 20 CU. YD.
				LT.	RT.	TOTAL				INLET	OUTLET	
1024+48	1101	36	2 1/2 x 1/2	44	40	62	2	C	10.0	1126.0	1128.0	225

**TABULATION OF SAFETY CLOSURES**

NO.	STATION	REMARKS
1	15+50	S. END, MAINLINE
1	44+52	N. END, MAINLINE
1	1030+00	E. END, SIDEROAD

**REMOVAL OF EXISTING STRUCTURES**

LOCATION	DESCRIPTION	REMARKS
26+04, 34' LT.	154' x 16' BRIDGE	
23+94, RT.	36" C.M.P.	(1)

(1) INCIDENTAL PER SECT. 1104.06 OF THE STANDARD SPECIFICATIONS.

**TABULATION OF SILT FENCES FOR DITCH CHECKS**

LOCATION STATION	SIDE	LIN. FT.	LOCATION STATION	SIDE	LIN. FT.
20+00	LT.	20	38+00	RT.	20
22+50	RT.	20	37+00	LT.	20
24+00	LT.	20	41+50	LT.	20
29+00	LT.	20	41+50	RT.	20
29+50	RT.	20			
33+00	LT.	20	1024+70	RT.	20
34+50	RT.	20			

**SUMMARY OF EARTHWORK**

STATION	AREAS IN SQ. FT.		VOLUMES IN CU. YDS.					
	CUT	FILL	CUT	ADD'L CUT	FILL	ADD'L FILL	FILL+35%	ORDINATE
17+00	0	0	42.21		137.92	96	316	-274
18+00	22.75	74.49	70.36		386.03		521	-724
19+00	14.99	133.92	47.42		510		688	-1365
20+00	10.34	141.32	97.64		566.15		764	-2032
21+00	42.88	164.22	247.1		728.09		983	-2768
22+00	90.56	228.95	420.52		1006.39		1369	-3706
23+00	136.53	314.5	468.92	1883 *	804.01	2032 *	3828	-5202
23+62	271.68	385.77	359.52		556.12		853	-5696
24+00	239.02	404.5	434.98	7544	900.02	790	2282	2
24+50	230.76	567.52	0	-1147	0	342	463	-1608
27+75	533.12	479.83	598.99		423.34	76	674	-1683
28+00	710.7	434.57	1235.74		641.49	1012	2232	-2680
29+50	523.9	258.24	1228.36		427.71		577	-2028
29+00	703.83	203.69	2168.16		943.07		1273	-1133
30+00	456.99	305.57	1667.13		963.32		1300	-766
31+00	433.26	214.62	1539.95		730.62		986	-213
32+00	398.31	179.91	1362.55		652.32		881	269
33+00	337.47	172.34	1106.42		619.18	201	1107	269
34+00	260	162.02	795.29		428.46		578	485
35+00	169.45	69.35	776.69		396.72		536	727
36+00	249.96	144.88	655.43		553.5		747	936
37+00	265.98	154.01	907.67		582.14		745	1097
38+00	224.16	144.15	751.53		510.7		689	1159
39+00	181.66	131.83	492.57		367.79		487	1155
40+00	34.32	68.97	356.53		390.86	84	641	871
41+00	108.2	144.09	446.95		489.87		634	683
42+00	133.15	109.64	470.06		452.42		611	543
43+00	120.69	134.86	253.41		427.98	80	578	218
44+00	16.16	96.43	15.62		93.26		234	0
44+52.22	0	0	19320.48	8260	15641.4	4789		
TOTALS:	0	0						
1024+04	0	0	0		0	120	162	-162
1024+45	180.11	265.98	136.76		201.95		273	-298
1025+00	123.68	225.05	309.4		500.12		675	-664
1026+00	94.04	113.97	404.82		627.81		848	-1106
1026+75	74.95	78.44	235.96	572	267.23		0	-534
1027+00	57.1	56.62	61.13		62.53	81	470	-769
1028+00	13.92	24.61	131.52		150.43		84	-792
1028+45.72	0	0	11.79		20.83		203	-863
TOTALS:	0	0	1291.38	572	1830.89	201	28	-880

\* SIDEROAD TOTALS  
TABULATIONS  
CRAWFORD COUNTY IOWA  
SHEET 21 OF 33

UNION TWP.  
T 82 N, R 40 W  
SECT. 2

UNION TWP.  
T 82 N, R 40 W  
SECT. 1

BOP = 17+00  
E = 10000.00  
N = 11700.00

KATHLEEN HOULIHAN  
EDWARD HOULIHAN  
JEAN HOULIHAN  
MARTIN HOULIHAN

STA. 18+00  
CONSTRUCT ENT. LT.  
CONSTRUCT DRYFILL

STA. 23+62 (MAINLINE)  
-STA. 1023+90 (SIDEROAD)  
E = 10000.00  
N = 12362.00

STA. 1024+46, 12' LT. AHEAD  
FURNISH & PLACE  
36' x 32' CMP W/APPROXS

PI STA = 1025+13  
E = 10121.13  
N = 12383.36  
I = 32°00'00"

Dc = 21°51'54"  
Dc = 22°00'00"  
T = 75.14  
R = 262.04  
L = 146.35  
C = 144.46  
E = 10.56  
M = 10.15

STA. 1026+75  
CONSTRUCT ACCESS  
DRIVE, LT.  
FURNISH & PLACE  
24' x 16' CMP W/APPROXS

PI STA = 1027+77.07  
E = 10320.29  
N = 12562.69  
I = 3°33'31"

Dc = 2°44'15"  
Dc = 2°44'15"  
T = 65.02  
R = 2093.09  
L = 130.00  
C = 129.98  
E = 1.01  
M = 1.01

CLEARING & GRUBBING 0.30 ACRES  
TEMPORARY CONSTRUCTION EASEMENT

STA. 25+95, 34' LT.  
90'x16' RIVETED STEEL  
PONY TRUSS W/I BEAM  
APPROACHES (REMOVE)

CLEARING & GRUBBING  
0.15 ACRES

STA. 28+50  
CONSTRUCT ENT. LT.  
FURNISH & PLACE  
36' x 54' CMP W/APPROXS

PI STA = 34+58.00  
E = 10000.00  
N = 13458.00  
I = 38°09'10"

Dc = 5' 45' 00"  
T = 344.59'  
R = 996.45'  
L = 663.53'  
C = 651.34'  
E = 57.90'  
M = 54.72'  
x = 45'  
I = 140'  
e = 6%

STA. 41+00  
CONSTRUCT FE. LT.  
FURNISH & PLACE  
24' x 20' W/APPROXS

EOP = 44+52.22  
E = 9370.95  
N = 14260.00

SHAPE HWY 30  
DITCH TO DRAIN  
FROM 24' RCP  
TO NEW  
ROADWAY DITCH

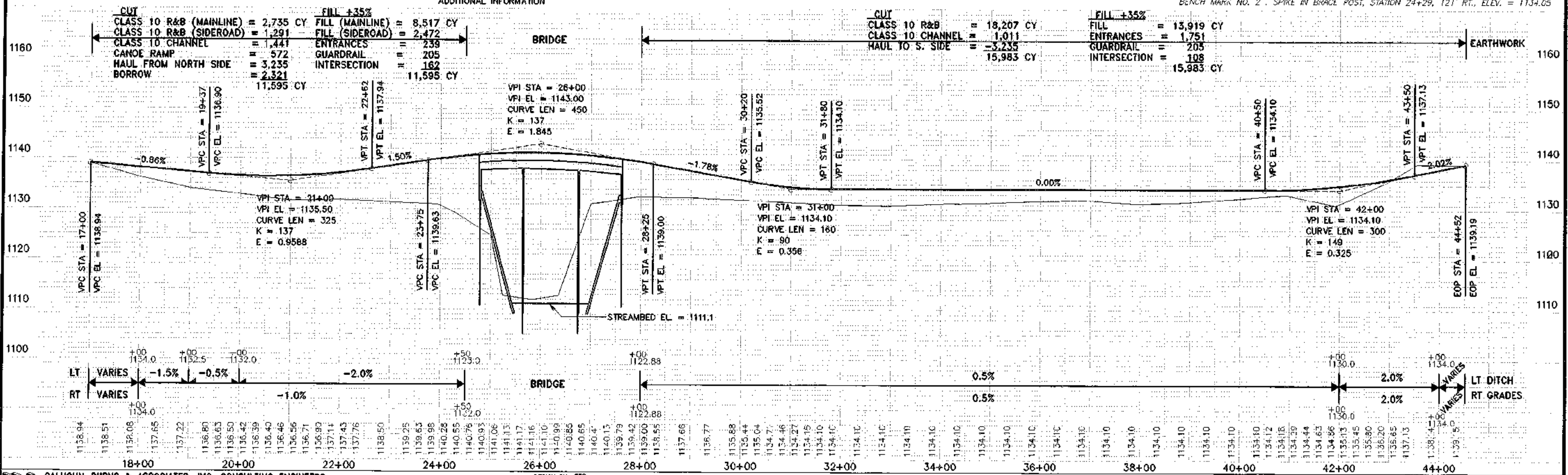
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	NOTED	BY:
	PLOTTED	DATE:
	CHECKED	BY:
	REVISIONS	NO.
	DATE	
	BY	
	NO.	

SCALES:  
1" = 100' HOR  
1" = 10' VER

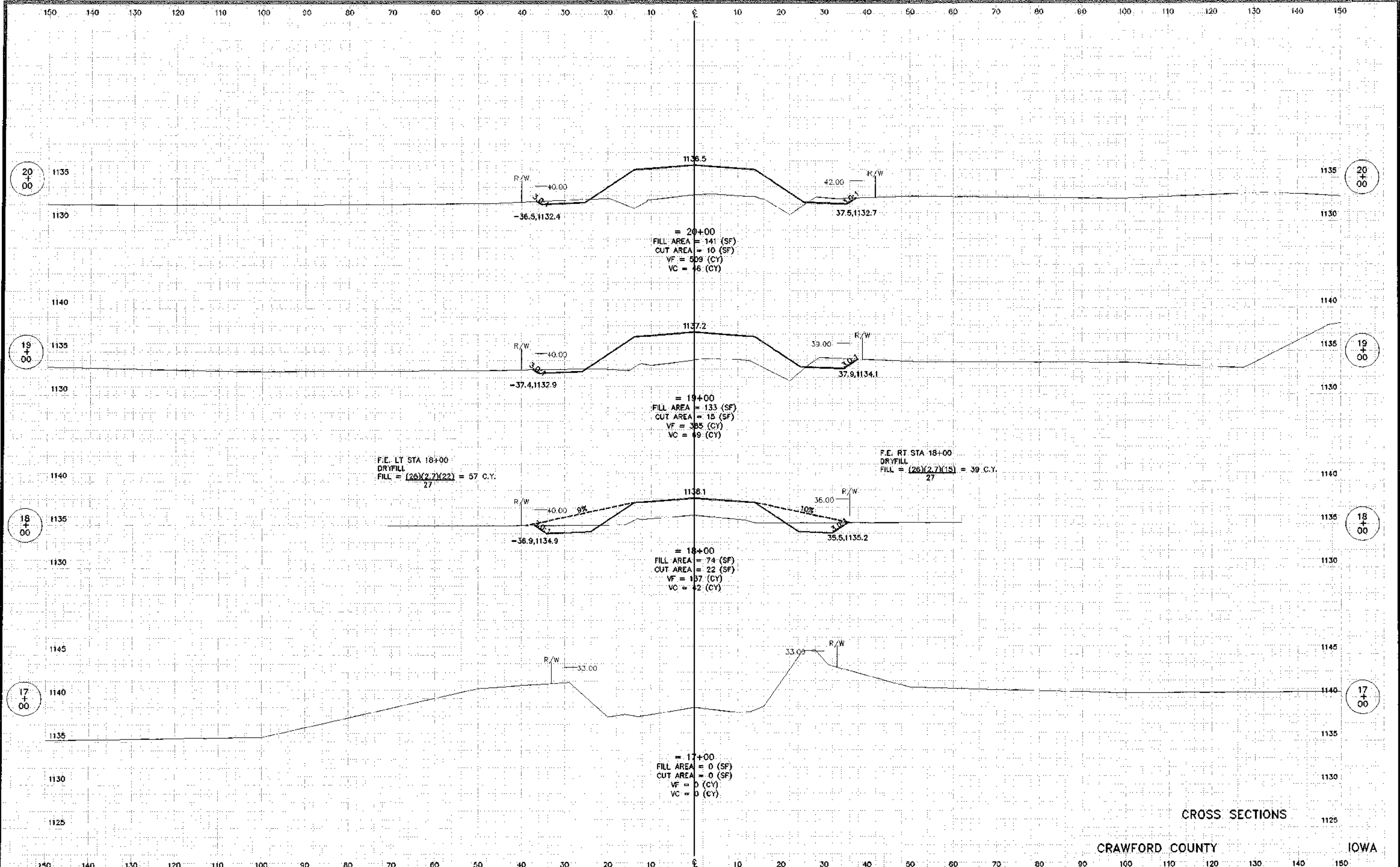
SEE SHEET 20  
FOR SIDEROAD PROFILE

SEE SITUATION PLAN FOR  
ADDITIONAL INFORMATION

BENCH MARK NO. 2, SPIKE IN BRACE POST, STATION 24+29, 121' RT., ELEV. = 1134.05

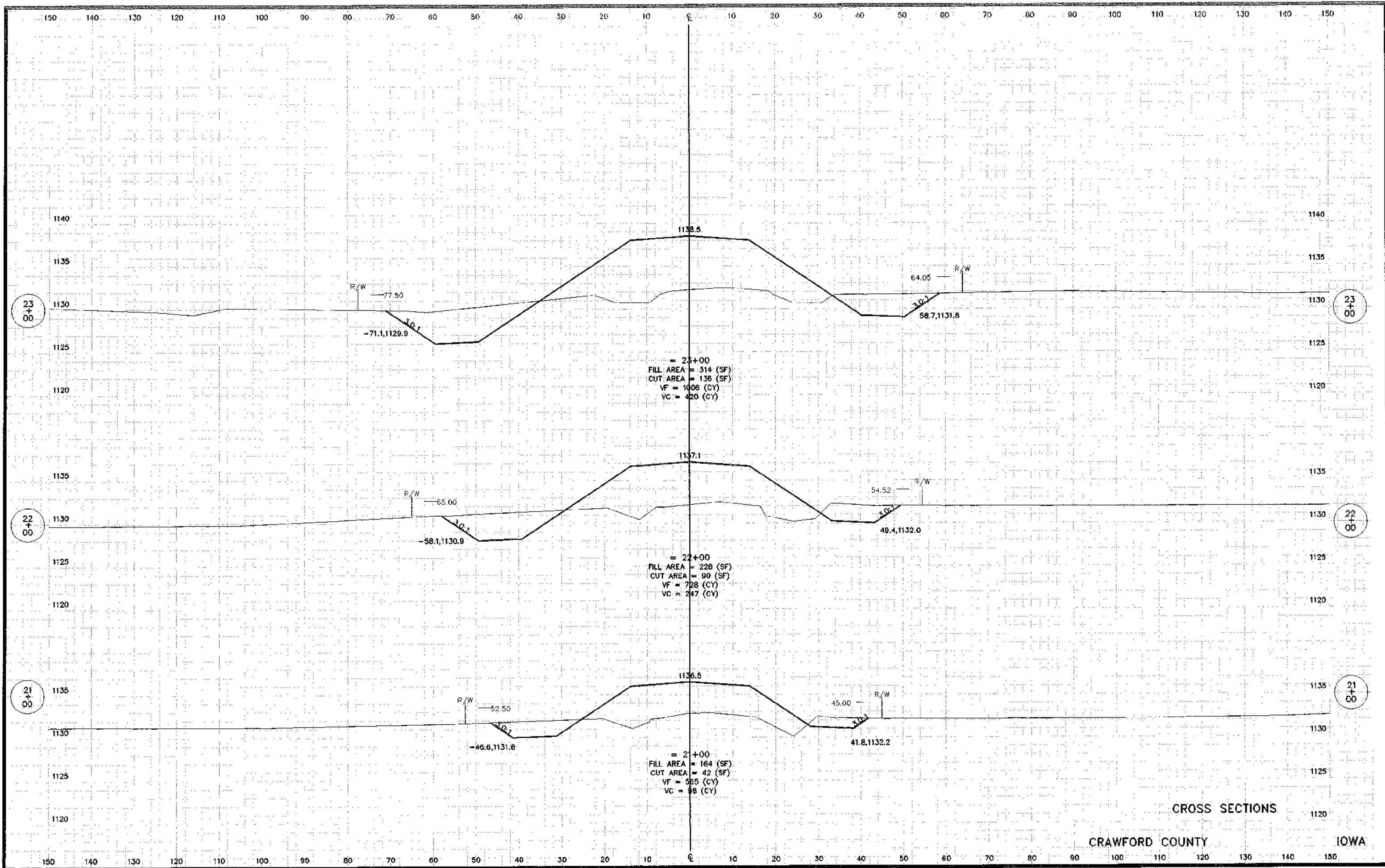


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CROSS SECTIONS

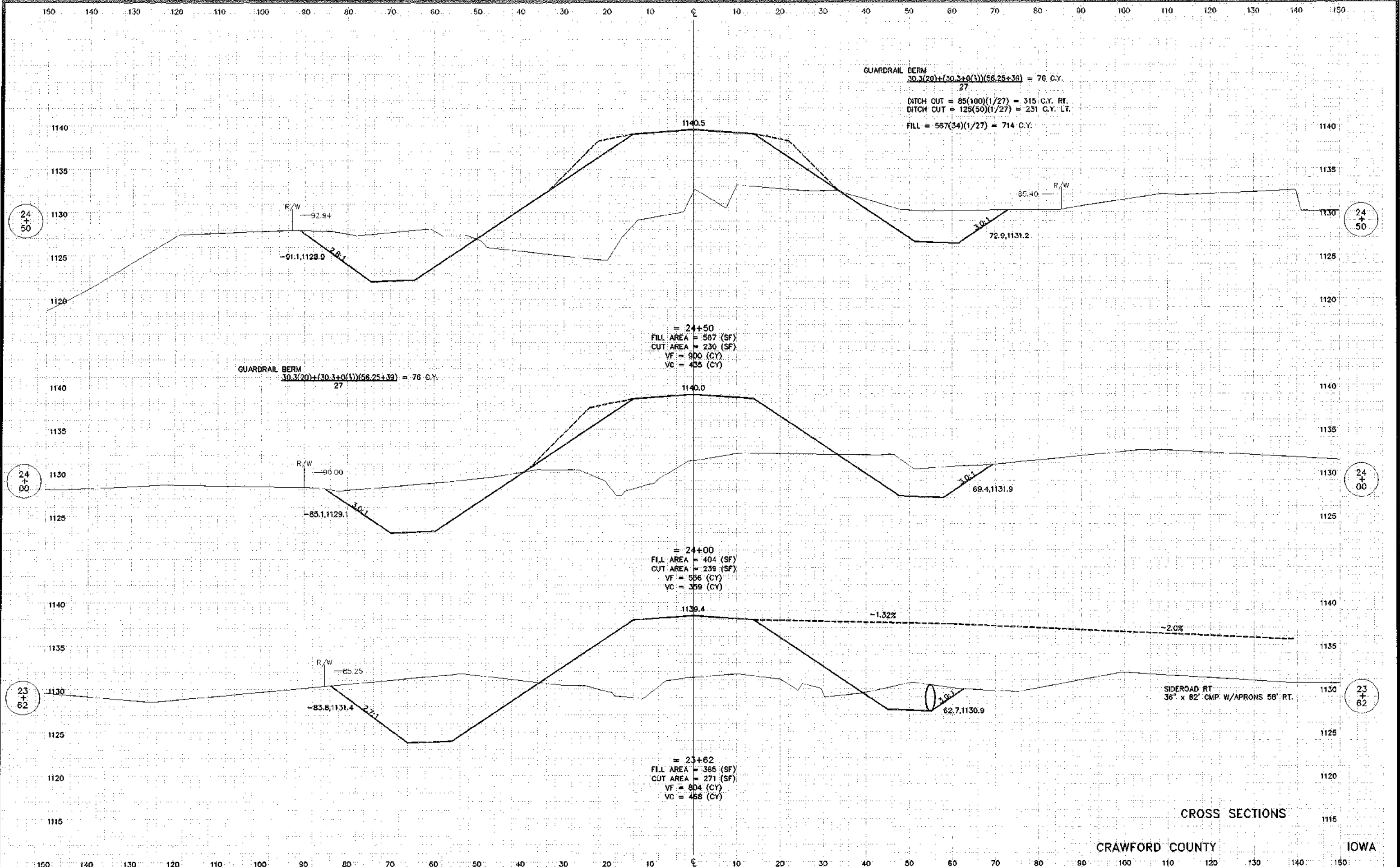
CRAWFORD COUNTY IOWA



CROSS SECTIONS

CRAWFORD COUNTY IOWA





GUARDRAIL BERM  
 $\frac{30.3(20) + (30.3 + 0(1))(56.25 + 39)}{27} = 76 \text{ C.Y.}$   
 DITCH CUT =  $85(100)(1/27) = 315 \text{ C.Y. RT.}$   
 DITCH CUT =  $125(50)(1/27) = 231 \text{ C.Y. LT.}$   
 FILL =  $567(34)(1/27) = 714 \text{ C.Y.}$

GUARDRAIL BERM  
 $\frac{30.3(20) + (30.3 + 0(1))(56.25 + 39)}{27} = 76 \text{ C.Y.}$

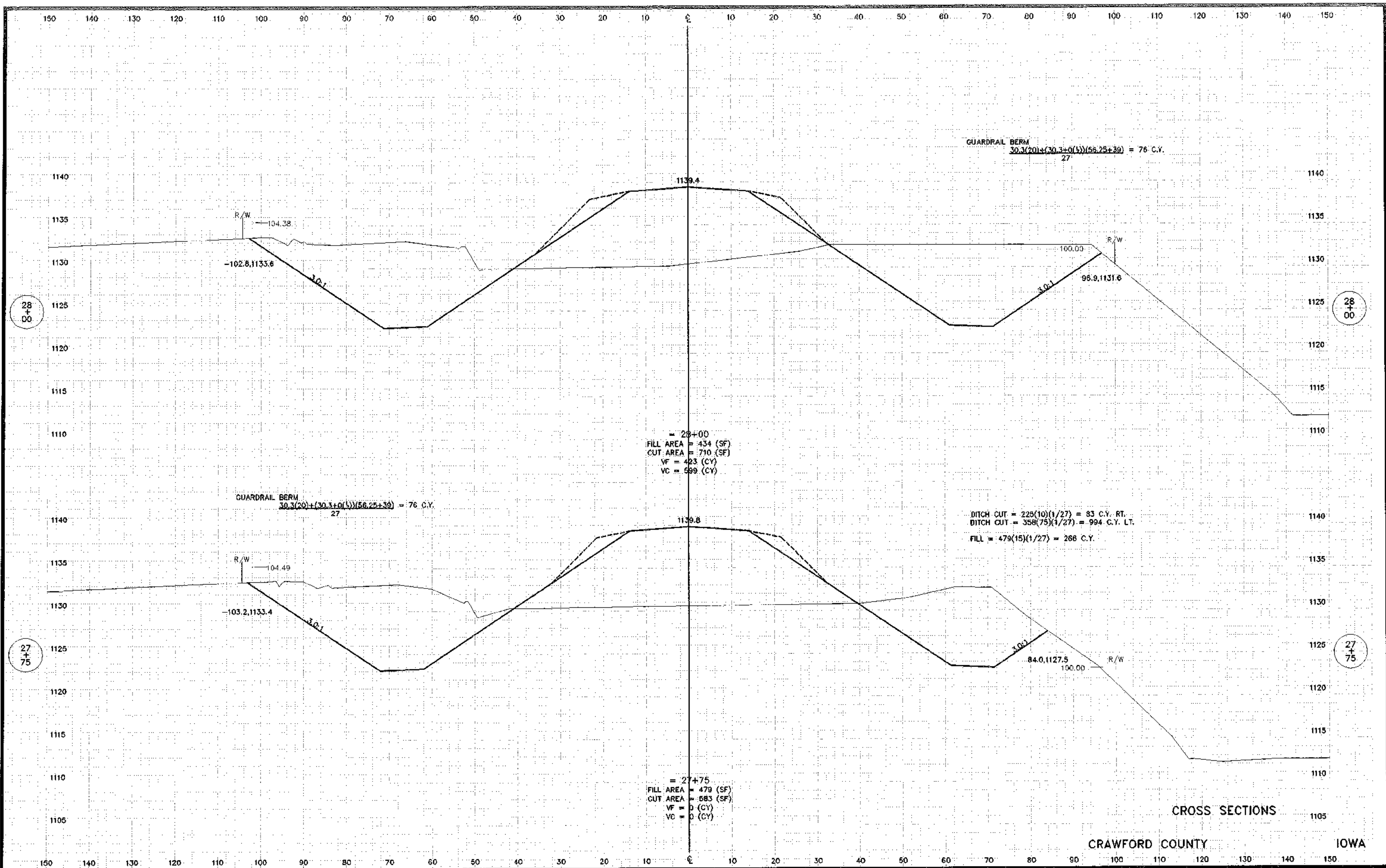
= 24+50  
 FILL AREA = 587 (SF)  
 CUT AREA = 230 (SF)  
 VF = 900 (CY)  
 VC = 435 (CY)

= 24+00  
 FILL AREA = 404 (SF)  
 CUT AREA = 238 (SF)  
 VF = 586 (CY)  
 VC = 359 (CY)

= 23+62  
 FILL AREA = 385 (SF)  
 CUT AREA = 271 (SF)  
 VF = 804 (CY)  
 VC = 458 (CY)

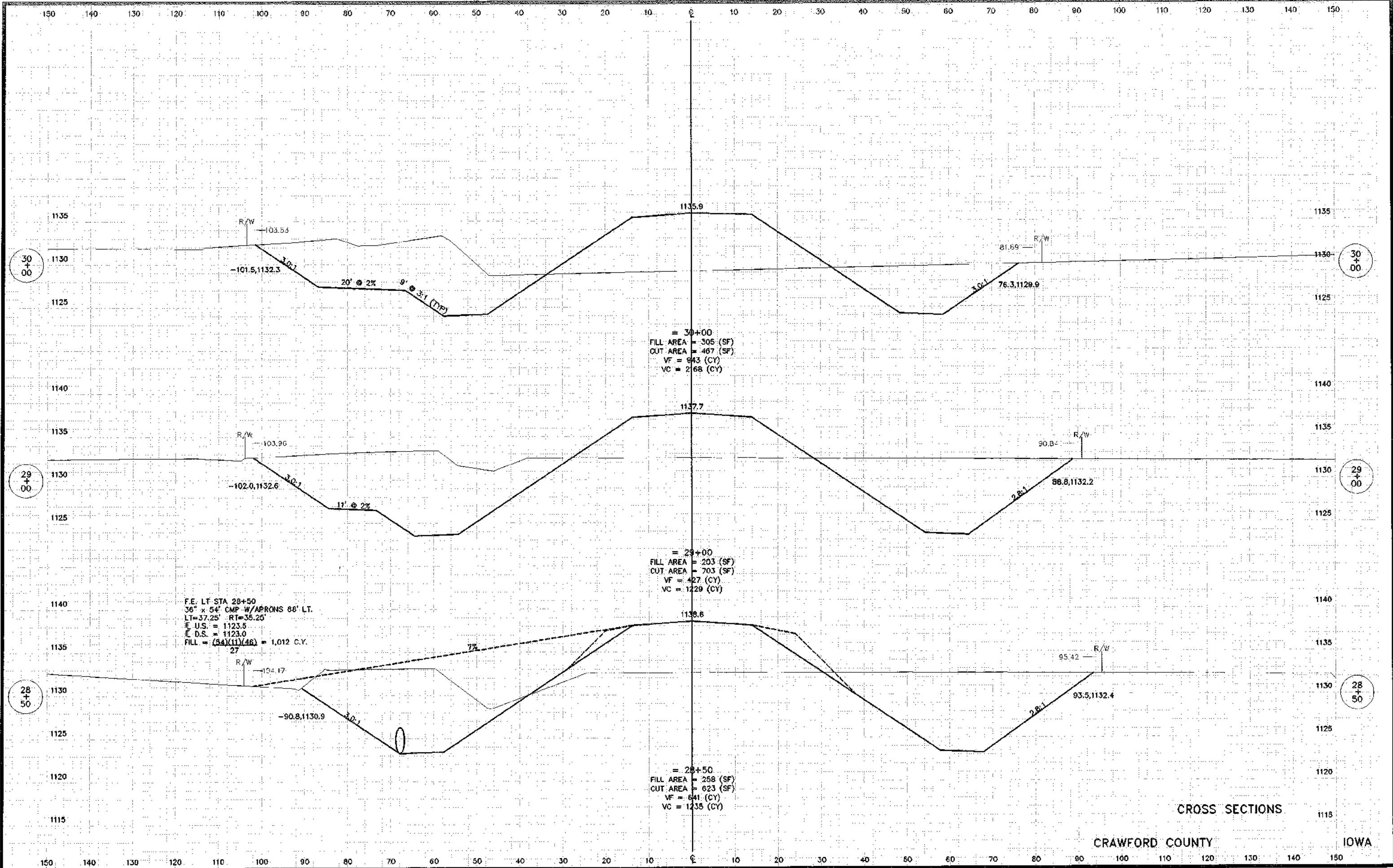
CROSS SECTIONS

CRAWFORD COUNTY IOWA



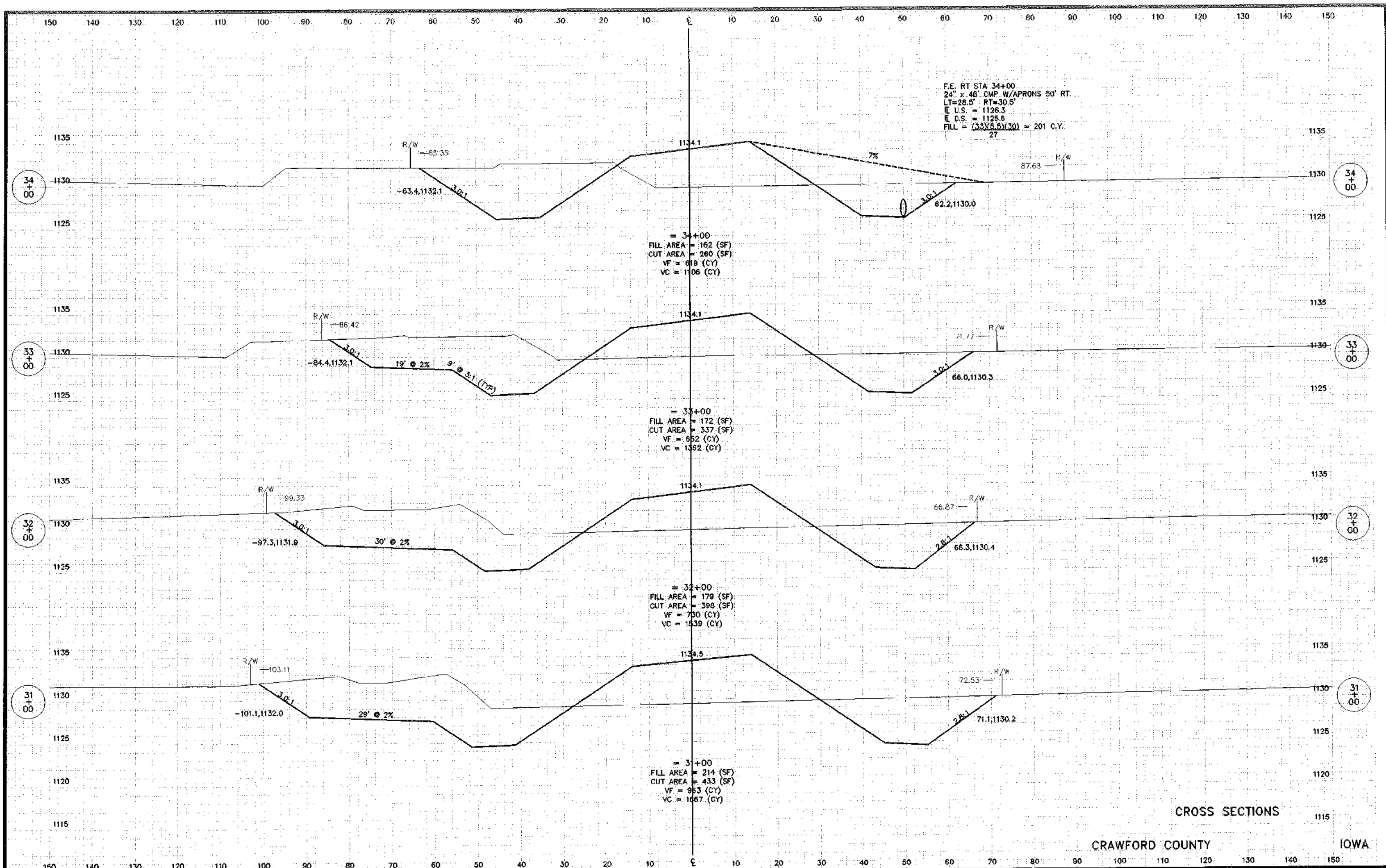
CROSS SECTIONS

CRAWFORD COUNTY IOWA



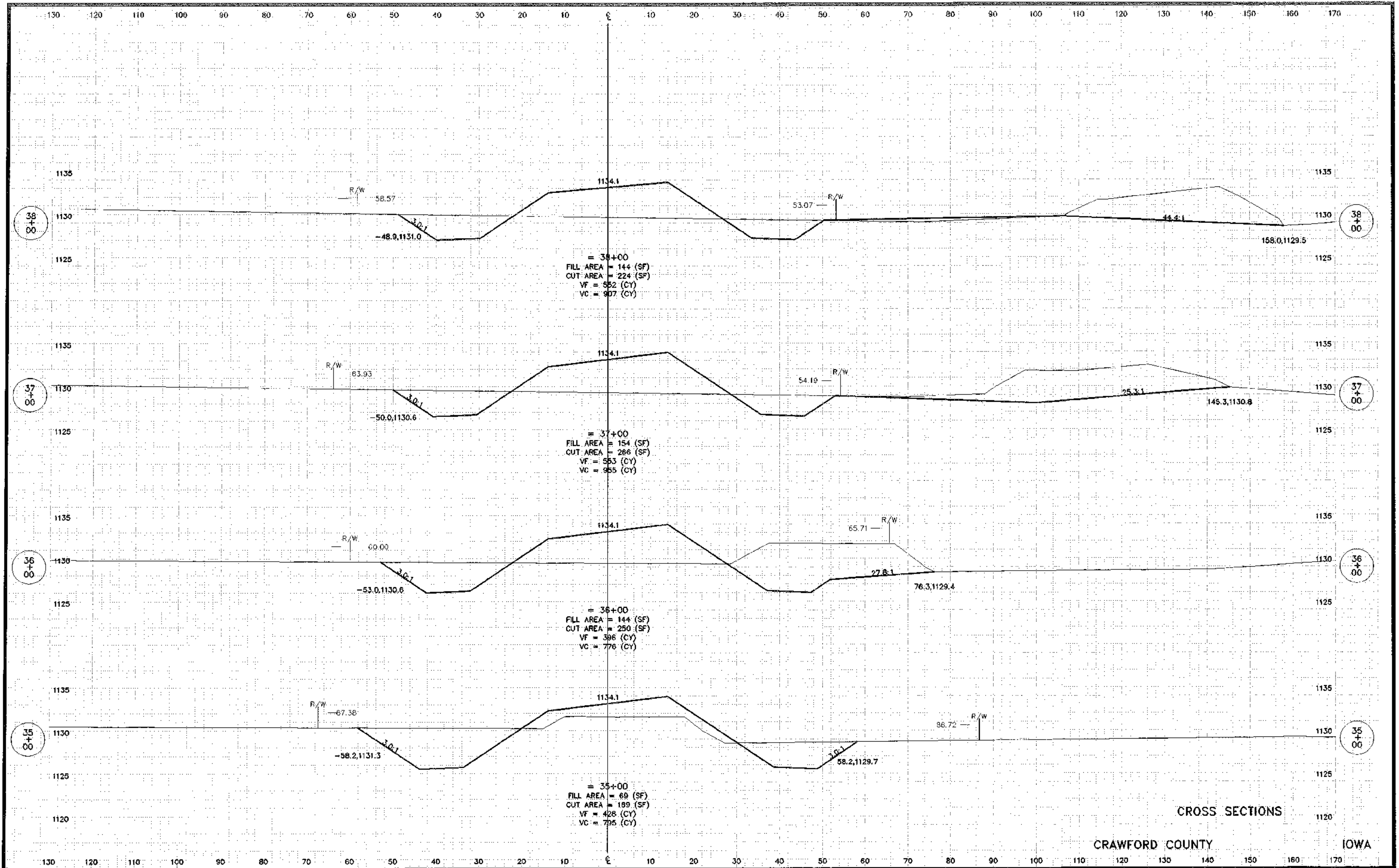
CROSS SECTIONS

CRAWFORD COUNTY IOWA



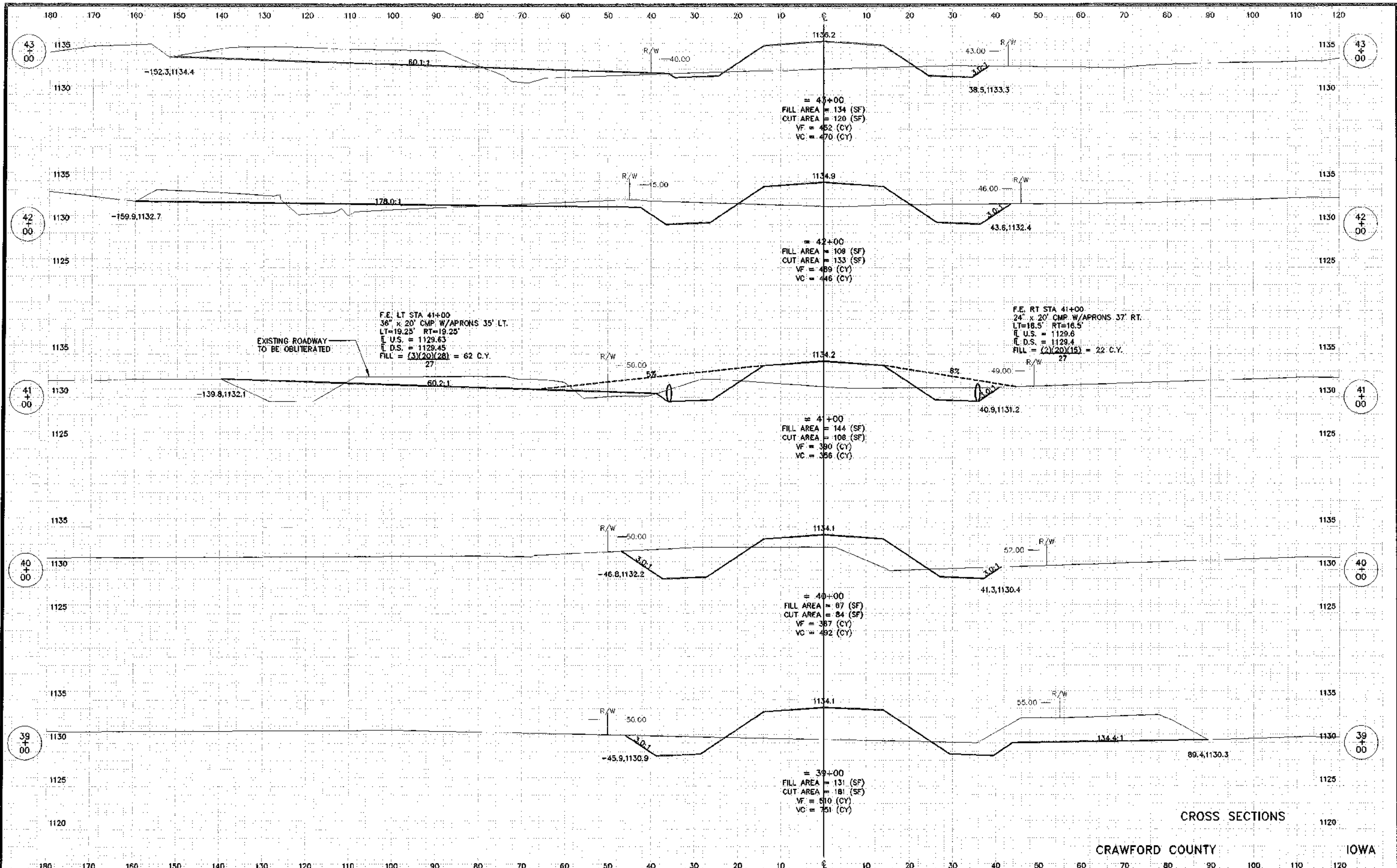
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CRAWFORD COUNTY IOWA



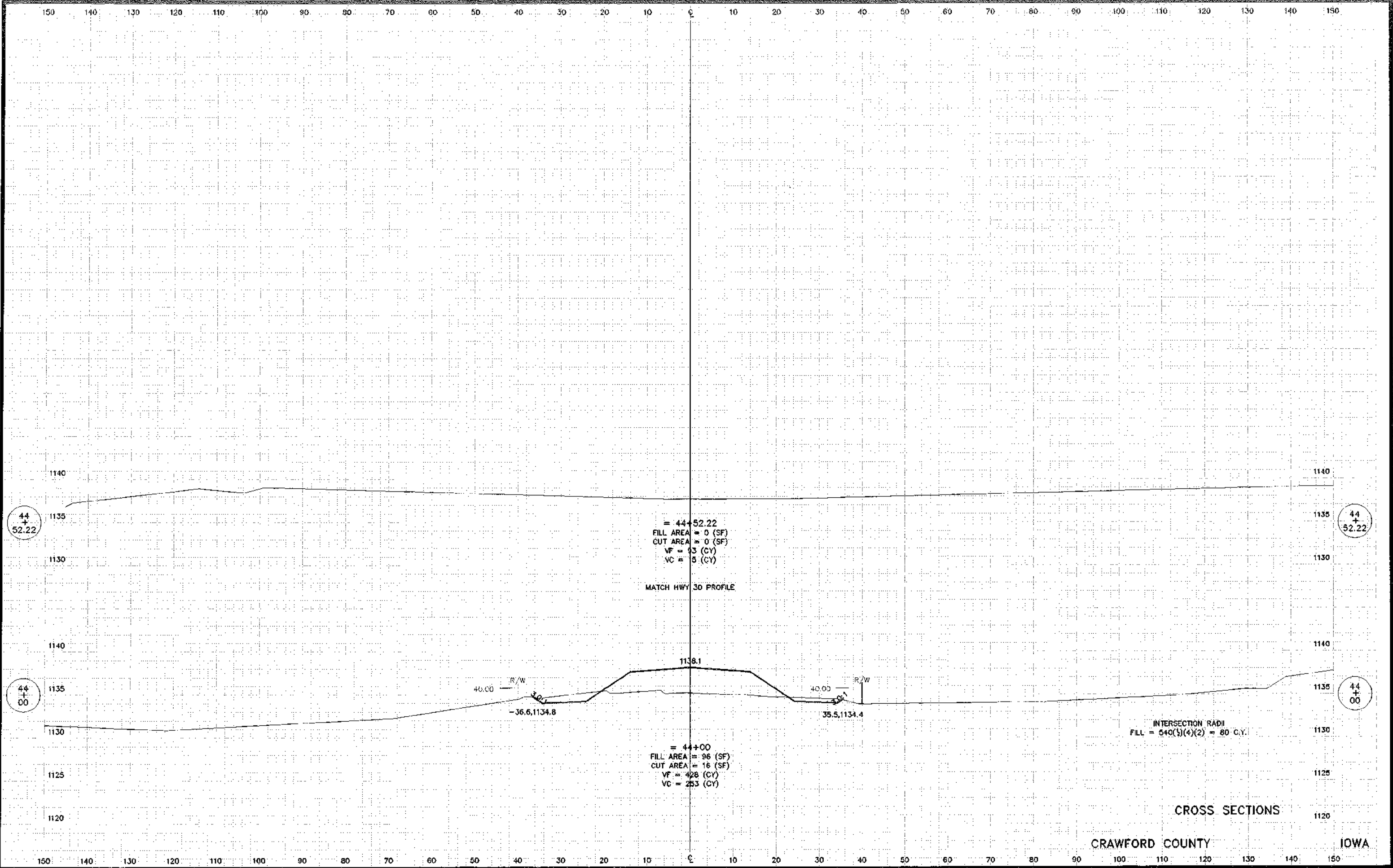
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CRAWFORD COUNTY IOWA



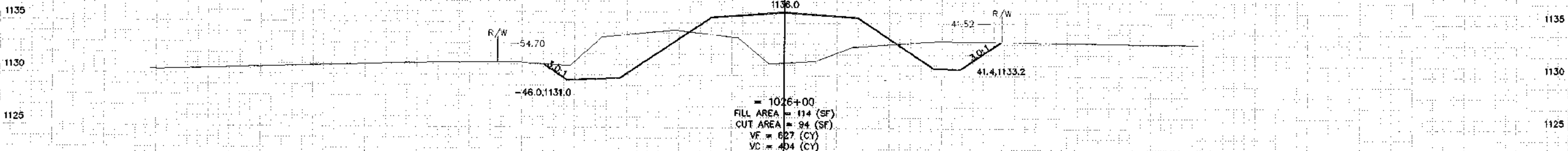
CROSS SECTIONS

CRAWFORD COUNTY IOWA

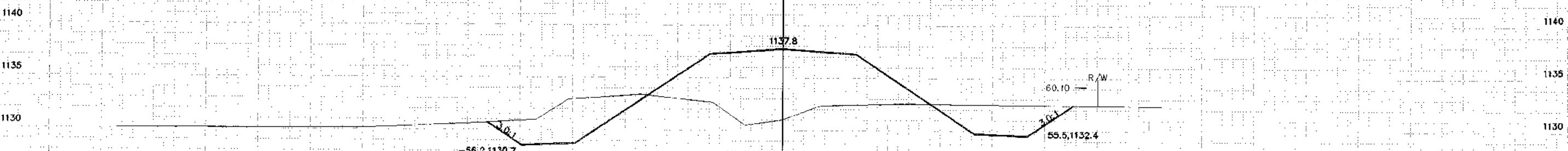


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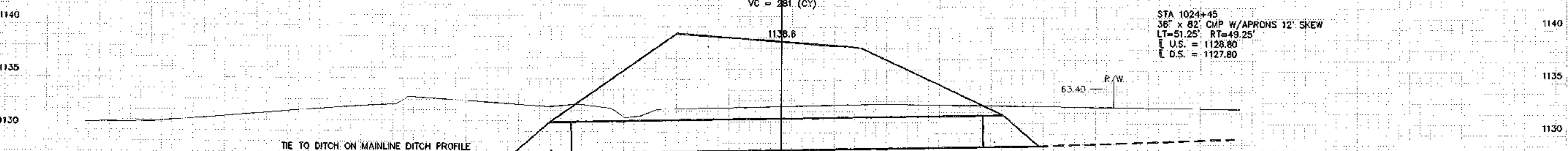
CANOE RAMP  
CUT =  $[650(14) + (650+0)(1)(39)(2)] / 27 = 572$  CY



= 1026+00  
FILL AREA = 114 (SF)  
CUT AREA = 94 (SF)  
VF = 627 (CY)  
VC = 404 (CY)



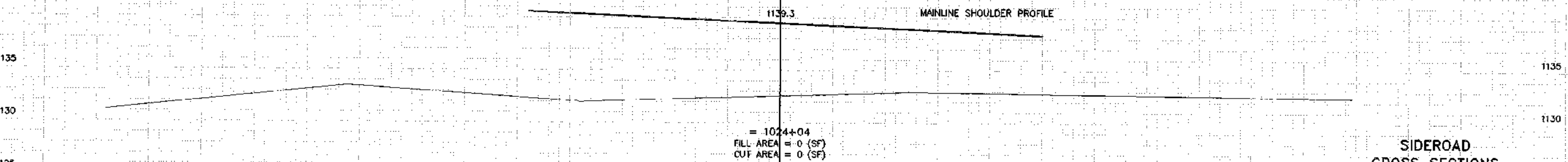
= 1025+00  
FILL AREA = 225 (SF)  
CUT AREA = 123 (SF)  
VF = 454 (CY)  
VC = 281 (CY)



= 1024+45  
12' SKEW L.A.  
FOR REFERENCE ONLY

STA 1024+45  
36' x 82' CMP W/APRONS 12' SKEW  
LT=51.25' RT=49.25'  
E U.S. = 1128.80  
E D.S. = 1127.80

INTERSECTION RADI:  
FILL =  $540(1)(6)(1/27)(2) = 120$  CY

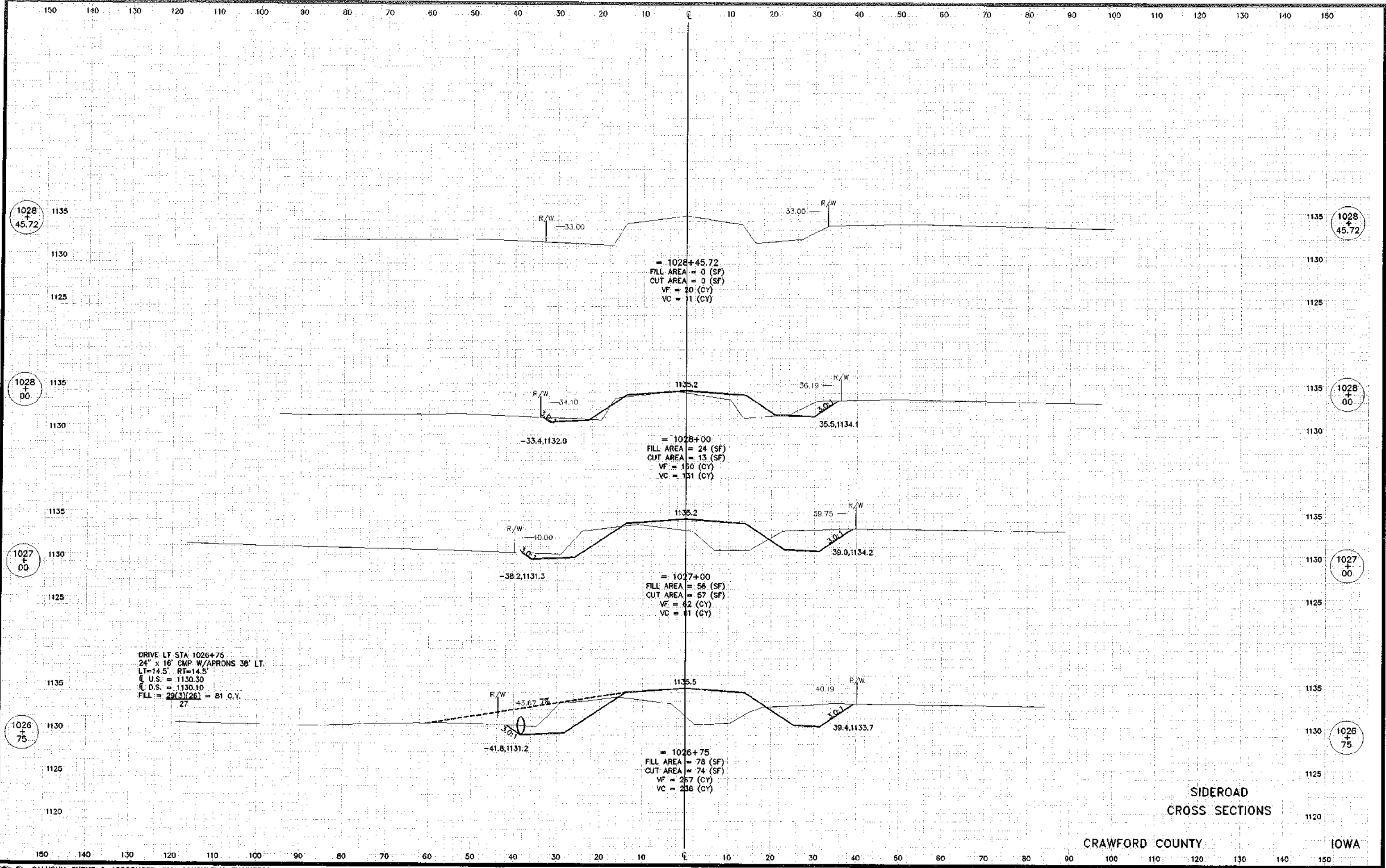


= 1024+04  
FILL AREA = 0 (SF)  
CUT AREA = 0 (SF)

SIDEROAD  
CROSS SECTIONS

CRAWFORD COUNTY IOWA





DRIVE LT STA: 1026+75  
 24' x 16' CMP W/APRONS 36' LT.  
 LT=14.5' RT=14.5'  
 U.S. = 1130.30  
 D.S. = 1130.10  
 FILL = 29(3)(26) = 81 C.Y.  
 27

SIDEROAD  
CROSS SECTIONS

CRAWFORD COUNTY IOWA