BRIDGE AND GRADING

PROJECT NO. BROS-9024(30)--5F-24

CRAWFORD COUNTY

LETTING DATE : MAY 3, 1994

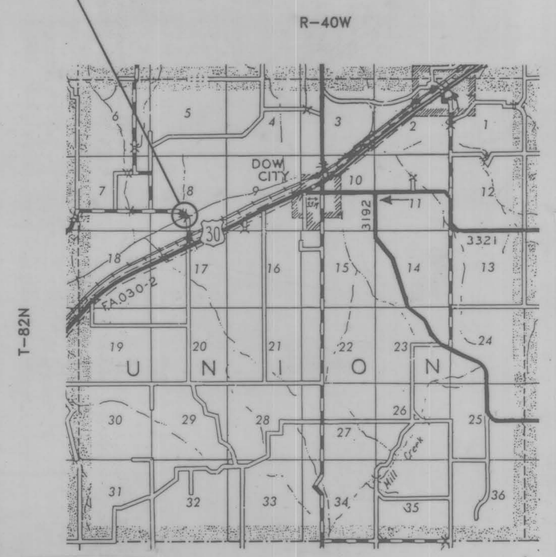
5294

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-65	1-7-92	RH-51	3-29-94
RE-2A	2-17-87	RE-68	8-8-89	RH-52	3-29-94
RE-2B	10-22-93	RE-69	10-22-93	RL-1	4-23-82
RE-7	4-28-92	RF-5	3-31-87	RL-3	10-2-90
RE-12A	10-11-88	RF-19E	3-29-94	RL-7	7-16-91
RE-12B	1-9-90	RF-30A	1-9-90	RL-11	10-11-88
RE-47	11-10-87	RF-30B	7-21-87	RP-1	5-13-86
RE-48A	6-15-93	RF-32	1-9-90		
RE-52	10-22-93	RH-50	6-15-93		

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, 1992 SPECIFICATIONS PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS. TRAFFIC CONTROL DEVICES, PROCEDURES AND LAYOUTS SHALL BE AS PROVIDED FOR BY SUPPLEMENTAL SPECIFICATIONS FOR TRAFFIC CONTROLS FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS, SPECIFICATION 5055 AND THE IOWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

DESIGN NO. 5294
STATION 15+10
PROPOSED 243'-0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE, 5°30' SKEW, LT. AHEAD



PROJECT LOCATION
SCALE 1" = 1 MILE

IOWA DEPARTMENT OF TRANSPORTATION

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

FARM TO MARKET SYSTEM

CRAWFORD COUNTY

BRIDGE (AND GRADING)

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

DIVISION I – BRIDGE

DIVISION II – GRADING

PROJECT NO. BROS-9024(30)--5F-24
FHWA NO. 126930

INDEX OF SHEETS

MILEAGE SUMMARY			
DIV.	LOCATION	LIN.FT.	MILES
I	STA. 7+84.81 TO 28+08.13	2023.32	0.3832
	BRIDGE AT STA. 15+10	246.03	0.0466
II	TOTAL NET LENGTH OF PROJECT (GRADING)	1777.29	0.3366

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 65859
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.

-150-

THIS PROJECT (COE NO. 272530) IS COVERED BY THE CORPS OF ENGINEERS NATIONWIDE 404 PERMIT NO. 14 & 33

IA DEPT. OF NATURAL RESOURCES PERMIT NO. FP 91-257, DATED 11-27-91

1984, TRAFFIC COUNT = 220 V.P.D.

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: James L Muetzel
NAME: JAMES L. MUETZEL
DATE: 12/29/93 REG. NO. 12104
MY REGISTRATION EXPIRES DECEMBER 31, 1994
BRIDGE

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
DATE: 12-29-93 REG. NO. 11455
MY REGISTRATION EXPIRES DECEMBER 31, 1994
GRADING

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ADMINISTRATOR DATE

APPROVED
H. Dale Wright 1-4-94
CRAWFORD COUNTY ENGINEER DATE

Virgil D Anderson
LeRoy A. Hanrahan
John P. Lawler
Eileen Sikes
1-4-94
BOARD OF SUPERVISORS DATE

DEPARTMENT OF TRANSPORTATION IOWA — Highway Division
AUTHORIZED FOR LETTING
George P. Isaacson 3-3-94
DEPUTY CHIEF ENGINEER DATE

IOWA DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
ACCEPTED FOR LETTING
DISTRICT LOCAL SYSTEMS ENGR. DATE

SHEET 1 OF 26

CALHOUN-BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224-4344

JOB NO. 8190

DESIGNED BY : JLM
DRAWN BY : YCK
CHECKED BY : GEB

DESIGN NO. 5294 CRAWFORD COUNTY WRS 2/16/94 PROJECT NO. BROS-9024(30)--5F-24 FILE NO. 54659

108 RRB

TOTAL ESTIMATED QUANTITIES : DIV.I 243'–0 x 30' P.P.C.B. BRIDGE

NO.	ITEM	UNIT	2ABUTS.	2PIERS	SUPERST.	TOTAL
1	CONCRETE, STRUCTURAL	CU.YDS.	39.4	194.9	260.7	495.0
2	STEEL, REINFORCING – UNCOATED	LBS.	2,619	27,224	1,804	31,647
3	STEEL, REINFORCING – EPOXY COATED	LBS.	2,405	–	70,941	73,346
4	BEAMS, PRETENSIONED PRESTRESSED CONCRETE LXC80	ONLY	–	–	15	15
5	PILING, STEEL BEARING – FURNISH	L.F.	6 @65' 6 @65'	22 @40' 22 @40'	–	2,540
6	HP 10 x 42 PILING – DRIVE	L.F.	6 @65' 6 @65'	22 @40' 22 @40'	–	2,540
7	EXCAVATION, CLASS 10, CHANNEL	CU.YDS.	–	–	–	5,005
8	EXCAVATION, CLASS 20	CU.YDS.	89	–	–	89
9	EXCAVATION CLASS 21	CU.YDS.	–	192	–	192
10	PREBORED HOLES, AS PER PLAN 12 @ 8'	L.F.	96	–	–	96
11	REVETMENT, CLASS E' RIP–RAP	TONS	–	–	–	721
12	FABRIC, ENGINEERING	SQ.YDS.	–	–	–	995
13	RAIL, OPEN CONCRETE	L.F.	–	–	520.08	520.08
14	REMOVAL OF EXISTING STRUCTURES	L.S.	–	–	–	LUMP SUM
15	TRAFFIC CONTROL	L.S.	–	–	–	LUMP SUM
16	MOBILIZATION	L.S.	–	–	–	LUMP SUM
31	Safety Closure	ONLY				2

ITEM NO. ESTIMATE REFERENCE INFORMATION

1 INCLUDES THE COST OF FURNISHING AND PLACING SUBDRAIN, INCLUDING EXCAVATION, GRANULAR BACKFILL AND POROUS BACKFILL AT ABUTMENTS. ALL STRUCTURAL CONCRETE IS TO BE CLASS "C". CLASS "D" WILL NOT BE ALLOWED.

4 INCLUDES COST OF BEARING MATERIAL AND COIL RODS.

7 SUITABLE CLASS 10 CHANNEL EXCAVATION SHALL BE USED TO CONSTRUCT APPROACH FILLS. COST OF PLACING EXCAVATION AS APPROACH FILLS IS TO BE INCLUDED IN THE COST OF CLASS 10, CHANNEL EXCAVATION.

8 SUITABLE CLASS 20 CHANNEL EXCAVATION SHALL BE USED TO CONSTRUCT APPROACH FILLS. COST OF PLACING EXCAVATION AS APPROACH FILLS IS TO BE INCLUDED IN THE COST OF CLASS 20, EXCAVATION.

11 RIP-RAP IS TO BE PLACED AT A THICKNESS OF 1'-6.

13 SEE SHEETS 17 & 18.

14 SEE GENERAL NOTES, SHEET 5.

15 SEE SHEETS 1, 3 AND 19.

TOTAL ESTIMATED QUANTITIES : DIV.II – GRADING

NO.	ITEM	UNIT	TOTAL
17	EXCAVATION, CLASS 10, ROADWAY & BORROW	CU. YDS.	20977
18	SURFACE, GRANULAR, CLASS A CRUSHED STONE – ROADWAY	TONS	592
19	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24 IN. DIA	LIN. FT.	164
20	APRONS, METAL, 24 IN. DIA.	ONLY	6
21	SILT FENCE FOR DITCH CHECKS	LIN. FT.	200
22	CLEARING & GRUBBING	ACRES	1.1
23	SEEDING, FERTILIZING AND MULCHING	ACRES	7.1
24	GUARDRAIL FORMED STEEL THRIE BEAM	LIN. FT.	125
25	GUARDRAIL FORMED STEEL BEAM	LIN. FT.	150
26	GUARDRAIL, POST, BEAM	ONLY	48
27	GUARDRAIL, END ANCHORAGES, BEAM RE–52	ONLY	4
28	GUARDRAIL, END ANCHORAGES, BEAM RE–69	ONLY	4
29	OBJECT MARKERS, TYPE 3	ONLY	4
30	OBJECT MARKERS, Type2	ONLY	8

ITEM NO. ESTIMATE REFERENCE INFORMATION

17 SEE SHEET 21 FOR BREAKDOWN OF EXCAVATION QUANTITIES. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED. INCLUDES MATERIAL FOR BRIDGE APPROACHES.

18 THE SURFACING SHALL BE FURNISHED AND PLACED BY THE CONTRACTOR IN TWO PASSES (1200 AND 600 TONS PER MILE).

19 - 20 SEE STANDARD ROAD PLANS AND TABULATION, SHEET 20. ALL PIPE IS TO BE STANDARD CORRUGATIONS. NO HELICALLY CORRUGATED PIPE WILL BE ALLOWED. ALL CONNECTING BANDS TO BE 24" WIDE.

21 SEE TABULATION, SHEET 20.

23 RURAL MIXTURES FOR PERMANENT SEEDING WILL BE USED AS DESIGNATED BY THE ENGINEER IN ACCORDANCE WITH SECTION 2601 OF THE IDOT STANDARD SPECIFICATIONS.

24 - 30 SEE TABULATIONS, SHEET 20.

QUANTITY SUMMARY

CRAWFORD COUNTY, IOWA

CALHOUN–BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224–4344

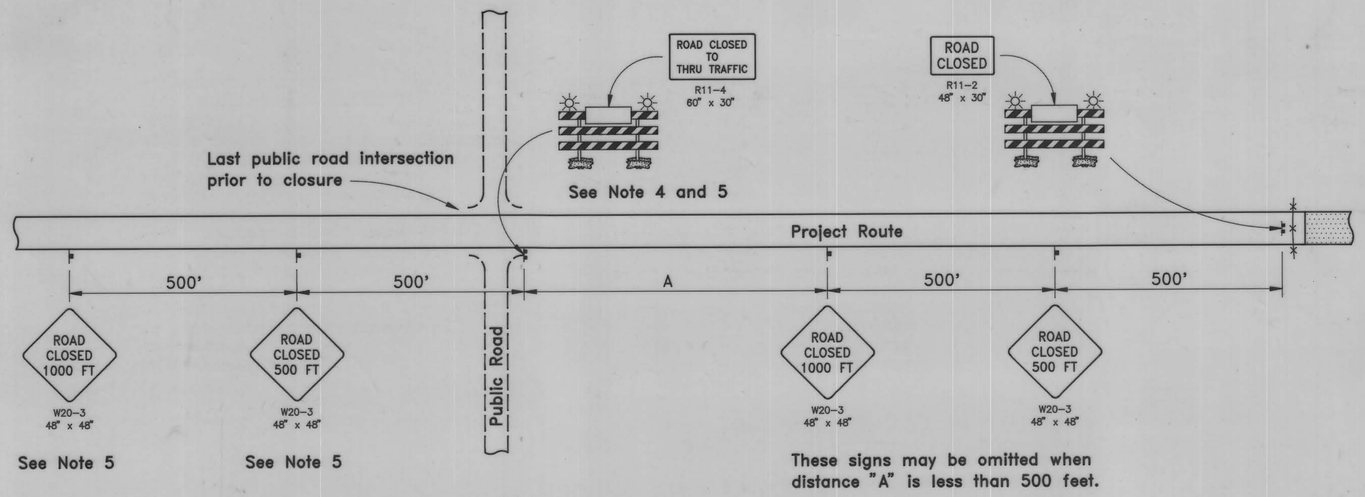
JOB NO. 8190

DESIGNED BY : JLM
DRAWN BY : RPV
CHECKED BY : GEB

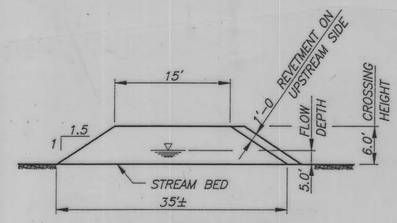
DESIGN NO. 5294

CRAWFORD COUNTY

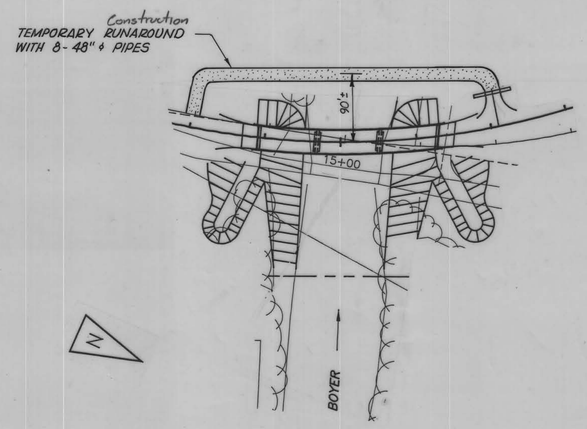
FILE NO. 54659



PROJECT ROUTE CLOSURE



TYPICAL SECTION THROUGH TEMPORARY CROSSING



TEMPORARY Construction RUNAROUND DETAIL

LEGEND

- Traffic Sign
- Type III Barricade (Type "A" Low Intensity Flashing Warning Light Required for Nighttime Use)
- Type "A" Low Intensity Flashing Warning Light
- Work Area
- Slat Fence Barricade or Orange Plastic Safety Fence

GENERAL NOTES

1. This layout illustrates traffic control necessary to close the project route.
2. All "Stop" and other regulatory signs on the sideroads are not to be disturbed. If a "Stop" or other regulatory sign must be removed, it will be relocated by the Contracting Authority.
3. This layout dose not include all barricades as may be required by Section 2518 of the Standard Specifications.
4. When distance "A" is less than 500 feet the barricade should be placed in the middle of the traffic lane approaching the work area. In this case, Type 'A' Flashing Warning Lights shall be visible to both directions of traffic. The barricade may be omitted if the distance to the work area is less than 250 feet.
5. If the intersection is the beginning of a marked detour, these two signs and barricade will become the responsibility of the contracting authority and may be modified by the contracting authority to fit detour signing.

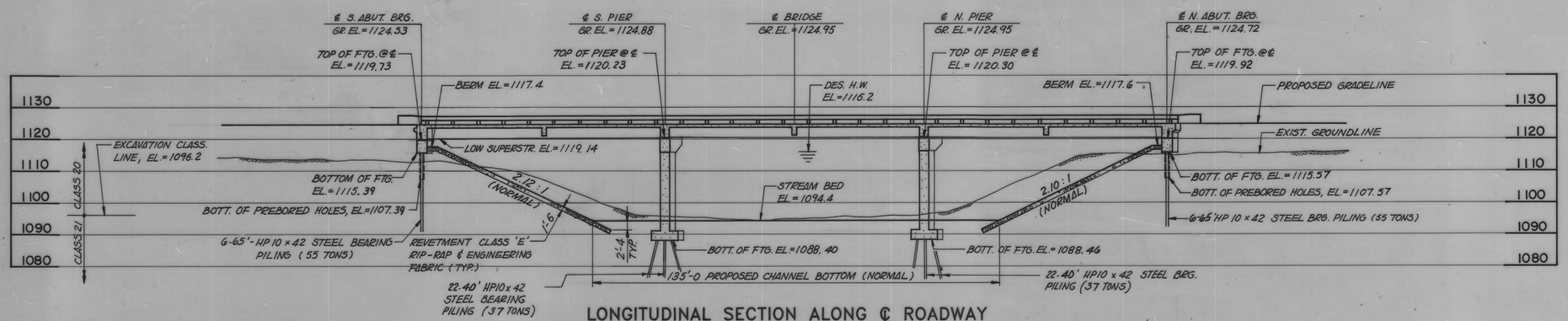
IOWA D.O.T. STANDARD DETAIL SHEET 520-27

TRAFFIC CONTROL LAYOUT FOR TEMPORARY ROAD CLOSURES AT BRIDGES AND SPOT LOCATIONS (RURAL AREAS)

CRAWFORD COUNTY, IOWA

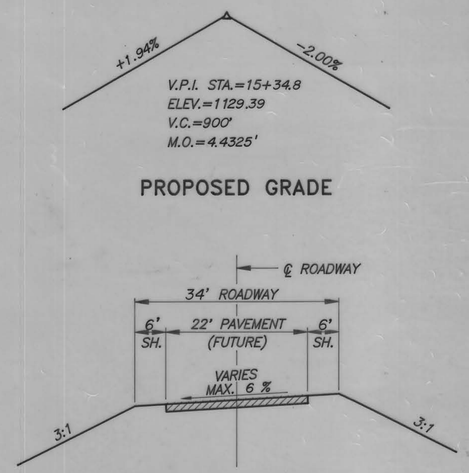
CALHOUN-BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224-4344
JOB NO. 8190
DESIGNED BY : JLM
DRAWN BY : LB
CHECKED BY : GEB
DESIGN NO. 5294
CRAWFORD COUNTY
FILE NO. 54659

BENCH MARK NO.2 : SPIKE IN FENCE POST, STA. 33+48, 104' RT., EL.= 1115.98

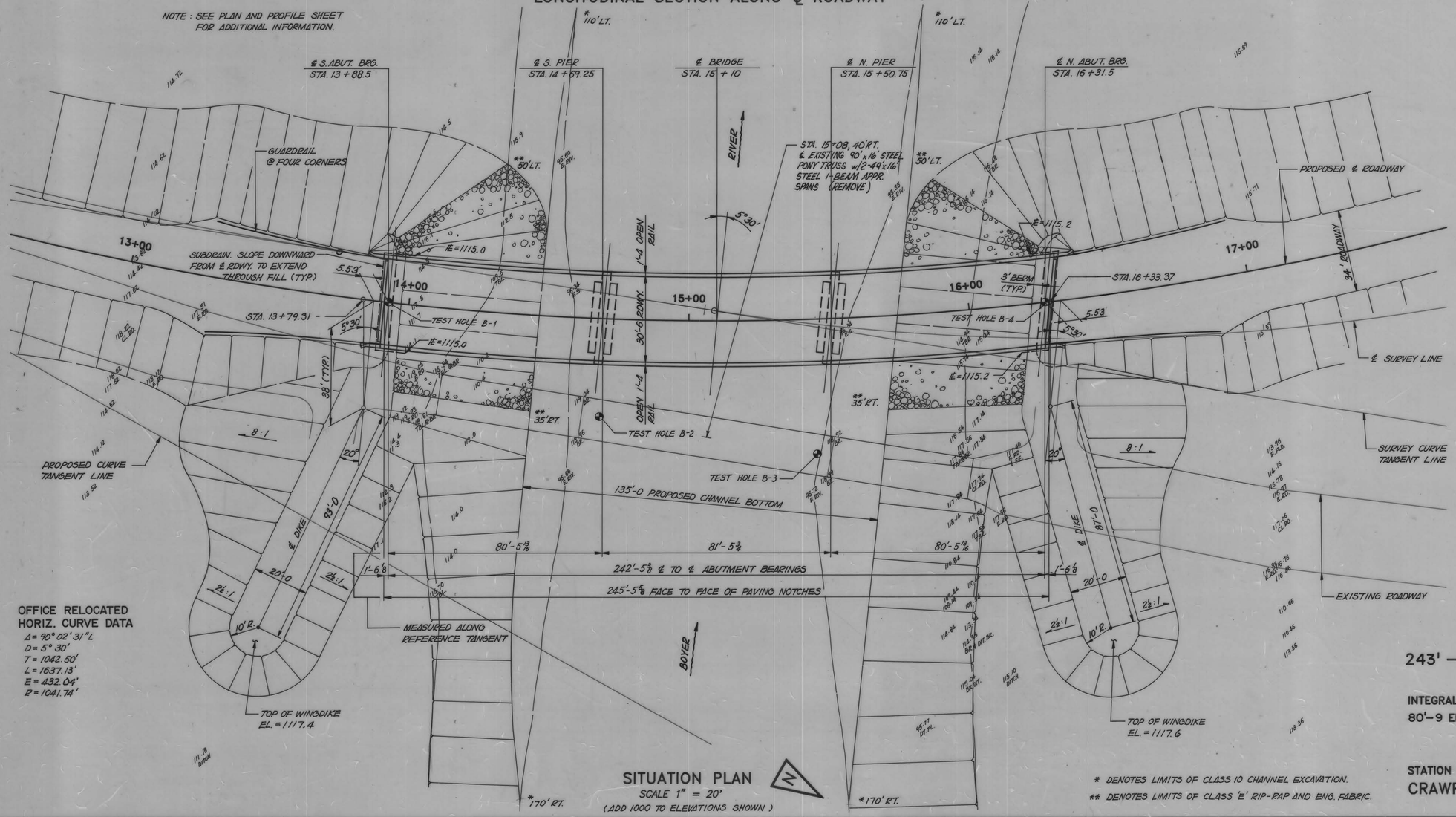


LONGITUDINAL SECTION ALONG ℄ ROADWAY

NOTE : SEE PLAN AND PROFILE SHEET FOR ADDITIONAL INFORMATION.



TYPICAL APPROACH SECTION
(LOOKING NORTH)



SITUATION PLAN
SCALE 1" = 20'
(ADD 1000 TO ELEVATIONS SHOWN)

OFFICE RELOCATED HORIZ. CURVE DATA
Δ = 90° 02' 31" L
D = 5° 30'
T = 1042.50'
L = 1637.13'
E = 432.04'
R = 1041.74'

* DENOTES LIMITS OF CLASS 10 CHANNEL EXCAVATION.
** DENOTES LIMITS OF CLASS 'E' RIP-RAP AND ENG. FABRIC.

LOCATION
CRAWFORD COUNTY
T-82N, R-40W
SECTION 8
UNION TOWNSHIP
OVER BOYER RIVER

HYDRAULIC DATA
DRAINAGE AREA = 630 SQ. MI.
DESIGN DISCHARGE = 22,570 C.F.S.
DESIGN HIGH WATER EL. = 1116.2
MANNING SLOPE = 0.0007 FT./FT.
BRIDGE WATERWAY AREA = 3,824 SQ. FT.
DESIGN VELOCITY = 5.9 F.P.S.
Q25 = 19,230 C.F.S. STAGE EL. = 1114.9
Q50 = 22,570 C.F.S. STAGE EL. = 1116.2 (DESIGN)
Q100 = 25,920 C.F.S. STAGE EL. = 1117.2
Q500 = 31,600 C.F.S. STAGE EL. = 1118.5
EXT. H.W. EL. = UNKNOWN

243'-0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS
80'-9 END SPANS — 81'-6 INTERIOR SPAN

SITUATION PLAN

STATION 15+10 — 5° 30' SKEW LT. AHEAD
CRAWFORD COUNTY — IOWA
SHEET 4 OF 26

CALHOUN-BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224-4344
JOB NO. 8190
DESIGNED BY : J.L.M.
DRAWN BY : L.B.
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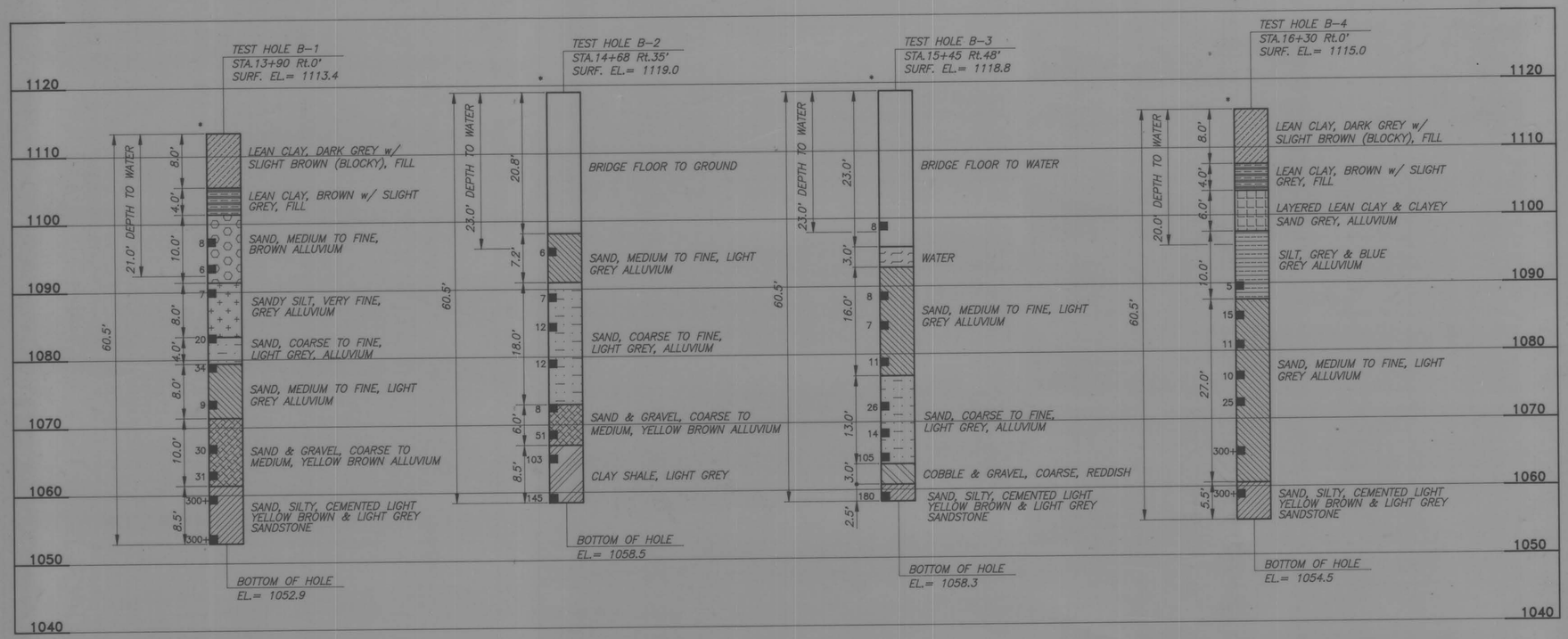
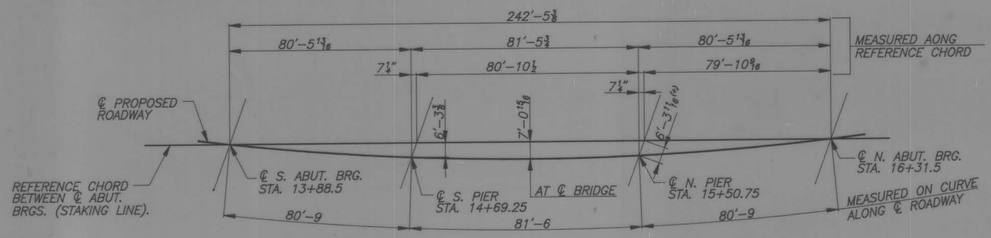


SOUNDING DATA

SCALE : 1" = 10'
BORING NO. 1 & 4, DATED 1/6/93
BORING NO. 2 & 3, DATED 1/7/93
* INDICATES No. OF BLOWS PER FT.



OFFICE RELOCATED HORIZ. CURVE DATA

I = 90°02'31" L
Da = 5°30'00"
T = 1042.50'
R = 1041.74'
L = 1637.13'
E = 432.04'

STAKING DIAGRAM

SPECIFICATIONS

DESIGN: AASHTO SERIES OF 1992.
CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, HIGHWAY 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'c = 3,500 PSI
REINFORCING STEEL	SECTION 8
ASTM A615	GRADE 60, fs = 24,000 PSI
PRESTRESSING STEEL	SEE SHEET 16
PRESTRESSED CONCRETE	SEE SHEET 16

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 SITE IS 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 EXPEDIENT COMPLETION OF THE PROJECT.

THE EXISTING BRIDGE IS A 90' X 16-0' RIVETED STEEL PONY TRUSS BRIDGE WITH TWO 49' X 16'-0 STEEL I-BEAM APPROACH SPANS, HIGH TIMBER ABUTMENTS AND CONCRETE DIAPHRAGM PIERS. THE LUMP SUM BID FOR "REMOVAL OF EXISTING STRUCTURES" SHALL INCLUDE REMOVAL 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'± 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.

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.

GENERAL NOTES – CONT'D

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 4. 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".

ALL BACKFILL BEHIND THE ABUTMENT BETWEEN THE WINGS SHALL BE POROUS AND GRANULAR BACKFILL AS SHOWN. THE REMAINDER OF THE ABUTMENT EXCAVATION SHALL BE BACKFILLED WITH SOIL.

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 BRIDGE CONTRACTOR IS TO INSTALL SUBDRAINS BEHIND THE ABUTMENTS AS DETAILED. THE SUBDRAINS SHALL MEET THE REQUIREMENTS FOR TYPES PERMITTED IN SECTION 4143.01C. WHEN THE SUBDRAINS ARE INSTALLED USING FLEXIBLE TUBING OR SHORT LENGTHS OF CONCRETE OR CLAY TILE, THE ENDS SHALL CONSIST OF 6' LENGTHS OF CORRUGATED METAL PIPE (CMP) THAT PROTRUDE A MINIMUM THROUGH THE FORESLOPE. THE CONNECTION BETWEEN THE FLEXIBLE TUBING OR TILE AND THE CMP CAN BE MADE WITH A REDUCER COUPLING OR BY EXTENDING THE FLEXIBLE TUBING OR TILE INTO THE CMP A MINIMUM OF 6 INCHES AND PACKING THE OPEN SPACE BETWEEN THE PIPES WITH GROUT. A REMOVABLE 3/8" MESH GALVANIZED SCREEN, OR OTHER APPROVED RODENT GUARD, IS TO BE FASTENED TO THE END OF EACH OUTLET PIPE. ALL MATERIAL, LABOR AND EXCAVATION NECESSARY FOR SUBDRAIN INSTALLATION IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE".

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 "REVETMENT, CLASS E, RIP-RAP" SHALL INCLUDE COST OF LABOR, EQUIPMENT AND MATERIALS REQUIRED TO PLACE CLASS E REVETMENT STONE ON BOTH BANKS OF THE CHANNEL TO THE EXTENT SHOWN ON SHEET 4 IN ACCORDANCE WITH SECTION 4130 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 DISPOSED OF OFF THE HIGHWAY RIGHT-OF-WAY ON 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 - 515/239-1528.

THE COUNTY, THE CONTRACTOR AND ANY SUBCONTRACTORS ARE HEREIN ADVISED THAT THE PAINT SYSTEM APPLIED TO THE EXISTING STRUCTURAL STEEL CONTAINS HAZARDOUS MATERIALS IN THE AMOUNTS OF 260,000 PPM LEAD AND 2,300 PPM CHROMIUM, AS DETERMINED BY A PAINT SCRATCH TEST AND LABORATORY ANALYSIS. APPROPRIATE PROTECTIVE MEASURES SHOULD BE TAKEN WHEN HANDLING THIS MATERIAL TO SAFEGUARD HEALTH AND ENVIRONMENT. THESE AND ALL JOBSITE SAFETY AND HEALTH MEASURES ARE THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR WHO SHALL INDEMNIFY THE COUNTY AND ITS CONSULTING ENGINEER FOR THE DURATION OF THE CONSTRUCTION CONTRACT.

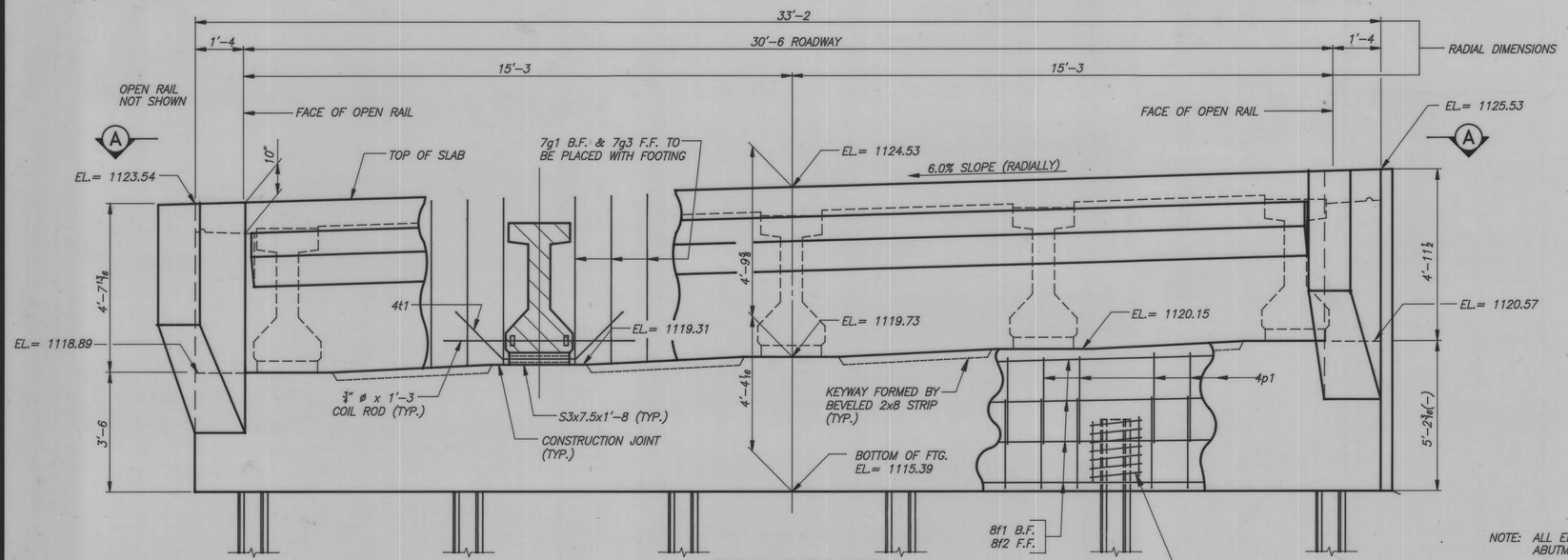
243'–0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS
80'–9 END SPANS — 81'–6 INTERIOR SPAN

SOUNDING DATA AND GENERAL NOTES

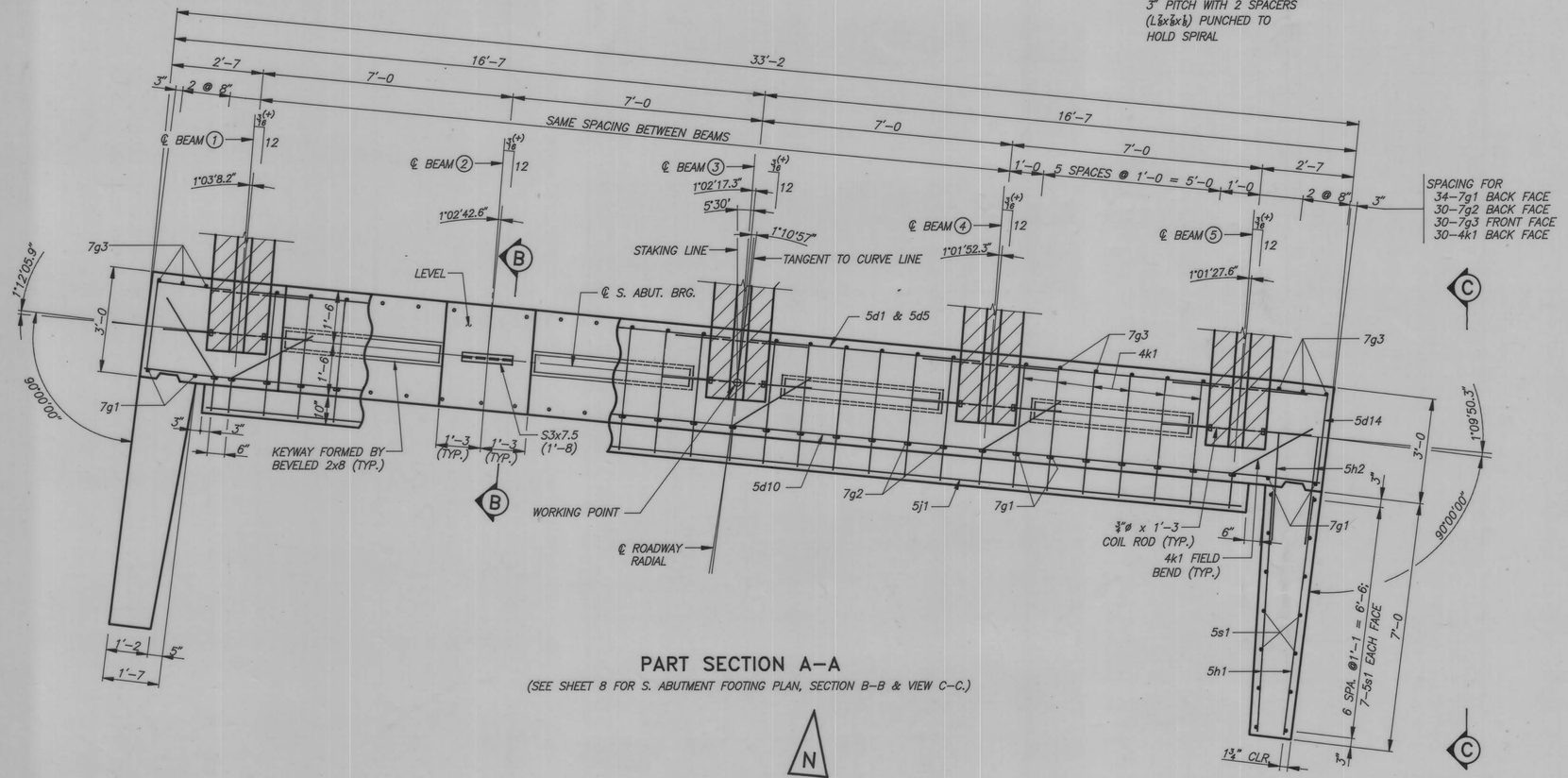
STATION 15+10 — 5° 30' SKEW, LT. AHEAD
CRAWFORD COUNTY, IOWA

CALHOUN–BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224–4344
JOB NO. 8190
DESIGNED BY : JLM
DRAWN BY : BPV
CHECKED BY : GEB
DESIGN NO. 5294
CRAWFORD COUNTY
FILE NO. 54659



REAR ELEVATION
(LOOKING NORTH)

NOTE: ALL ELEVATIONS AT ℄ ABUTMENT BEARING.



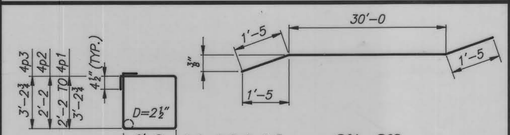
PART SECTION A-A
(SEE SHEET 8 FOR S. ABUTMENT FOOTING PLAN, SECTION B-B & VIEW C-C.)

BENCH MARK NO. 2: SPIKE IN FENCE POST, STA. 33+48, 104' Rt. EL.=1115.98

REINFORCING BAR LIST - S. ABUTMENT

	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
△	8f1	ABUT. FOOTING, LONGIT., B.F.		4	32'-10	351
	8f2	ABUT. FOOTING, LONGIT., F.F.		5	32'-10	438
△	7g1	ABUT. VERTICAL, BACK FACE		34	6'-8	464
	7g3	ABUT. VERTICAL, FRONT FACE		30	6'-8	409
	5h1	ABUT. WING, HORIZONTAL		24	6'-8	167
	5h2	ABUT. TO WING, DOWELS		24	3'-0	75
△	4p1	ABUT. HOOPS		50	VARIES	384
	4p2	ABUT. HOOPS, LOW END		2	10'-5	14
	4p3	ABUT. HOOPS, HIGH END		2	12'-7	17
	5s1	ABUT. WING, VERTICAL		28	SHOWN	131
	#2	PILE SPIRAL		6	38'-6	39
		L 7/8x7/8x1/8 SPIRAL SPACERS		12	1'-10	15
			UNCOATED TOTAL (LBS.)			1,305
△	EPOXY COATED BARS		EPOXY COATED TOTAL (LBS.)			1,199

BENT BAR DETAILS



4p1, 4p2 &4p3

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

CONCRETE PLACEMENT QUANT. - S. ABUT.

LOCATION	UNIT	QUANTITY
FOOTING AND STEPS	CU.YDS.	16.0
WINGS 2 @ 1.75	CU.YDS.	3.5
TOTAL	CU.YDS.	19.5

ESTIMATED QUANTITIES - S. ABUTMENT

ITEM		UNIT	QUANTITY
STRUCTURAL CONCRETE - CLASS "C"		CU.YDS.	19.5
REINFORCING STEEL - UNCOATED		LBS.	1,305
REINFORCING STEEL - EPOXY COATED		LBS.	1,199
HP 10x42 STEEL	FURNISH 6 @ 65'	L.F.	390
BEARING PILING	DRIVE 6 @ 65'	L.F.	390
EXCAVATION, CLASS 20		CU.YDS.	43

243'-0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS

80'-9 END SPANS — 81'-6 INTERIOR SPAN

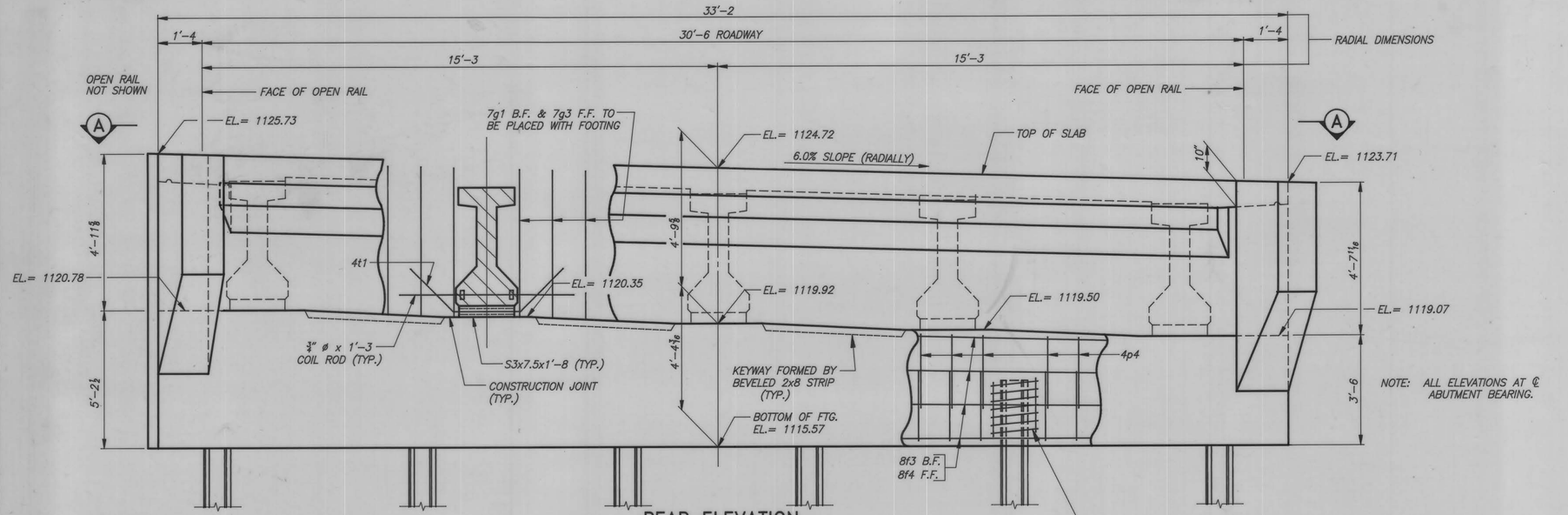
SOUTH ABUTMENT DETAILS

STATION 15+10 — 5° 30' SKEW, LT. AHEAD

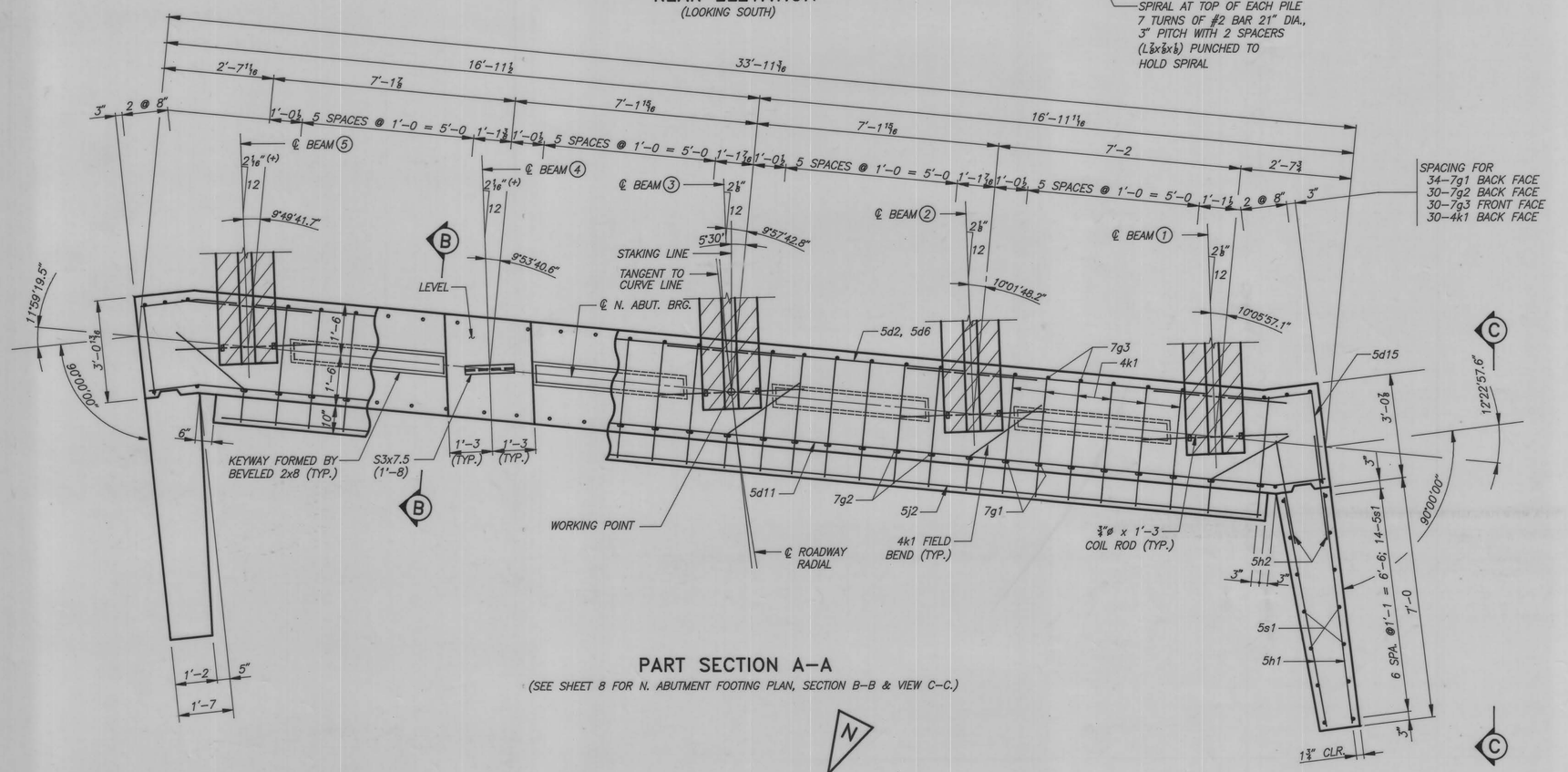
CRAWFORD COUNTY, IOWA

SHEET 6 OF 26

BENCH MARK NO. 2: SPIKE IN FENCE POST, STA. 33+48, 104' Rt. EL.=1115.98



REAR ELEVATION
(LOOKING SOUTH)



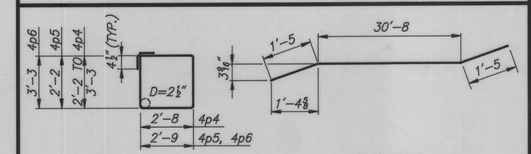
PART SECTION A-A
(SEE SHEET 8 FOR N. ABUTMENT FOOTING PLAN, SECTION B-B & VIEW C-C.)

N

REINFORCING BAR LIST – N. ABUTMENT

	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
△	8f3	ABUT. FOOTING, LONGIT., B.F.		4	33'-6	358
	8f4	ABUT. FOOTING, LONGIT., F.F.		5	33'-6	447
△	7g1	ABUT. VERTICAL, BACK FACE		34	6'-8	464
	7g3	ABUT. VERTICAL, FRONT FACE		30	6'-8	409
	5h1	ABUT. WING, HORIZONTAL		24	6'-8	167
	5h2	ABUT. TO WING, DOWELS		24	3'-0	75
△	4p4	ABUT. HOOPS		50	VARIES	384
	4p5	ABUT. HOOPS, ENDS		2	10'-8	14
	4p6	ABUT. HOOPS, ENDS		2	12'-9	17
	5s1	ABUT. WING, VERTICAL		28	SHOWN	131
	#2	PILE SPIRAL			38'-6	39
		L⅞"x⅞"x1'-8 SPIRAL SPACERS			1'-10	15
				UNCOATED TOTAL (LBS.)		1,314
△	EPOXY COATED BARS			EPOXY COATED TOTAL (LBS.)		1,206

BENT BAR DETAILS



4p4, 4p5 & 4p6 **8f3, 8f4**

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

CONCRETE PLACEMENT QUANT. – N. ABUT.

LOCATION	UNIT	QUANTITY
FOOTING AND STEPS	CU.YDS.	16.4
WINGS 2 @ 1.75	CU.YDS.	3.5
TOTAL	CU.YDS.	19.9

ESTIMATED QUANTITIES – N. ABUTMENT

ITEM		UNIT	QUANTITY
STRUCTURAL CONCRETE – CLASS "C"		CU.YDS.	19.9
REINFORCING STEEL – UNCOATED		LBS.	1,314
REINFORCING STEEL – EPOXY COATED		LBS.	1,206
HP 10x42 STEEL BEARING PILING	FURNISH 6 @ 65'	L.F.	390
	DRIVE 6 @ 65'	L.F.	390
EXCAVATION, CLASS 20		CU.YDS.	46

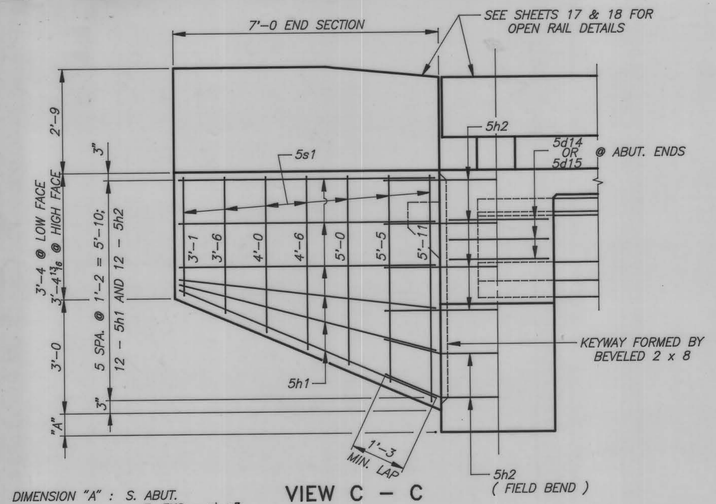
243'-0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS
80'-9 END SPANS — 81'-6 INTERIOR SPAN

NORTH ABUTMENT DETAILS

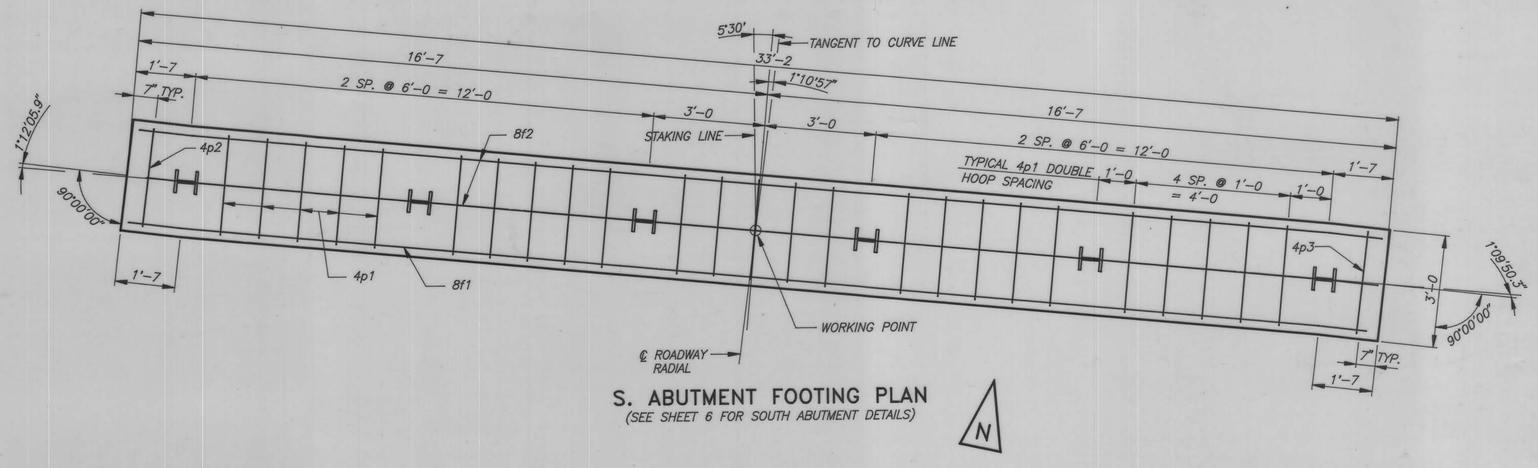
STATION 15+10 — 5° 30' SKEW, LT. AHEAD
CRAWFORD COUNTY, IOWA

SHEET 7 OF 26

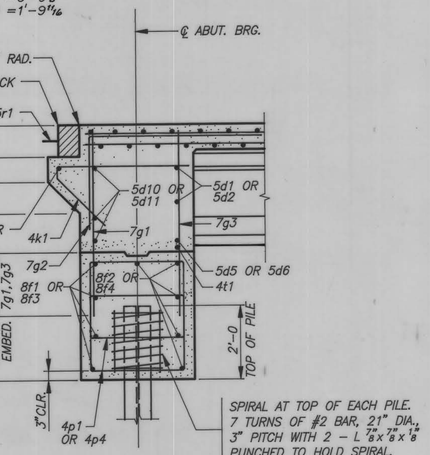


DIMENSION "A" : S. ABUT.
E. END = 3'-8 7/8
W. END = 1'-9 9/16
N. ABUT.
E. END = 3'-9 1/8
W. END = 1'-9 11/16

VIEW C – C
(SEE SHEETS 6 & 7)

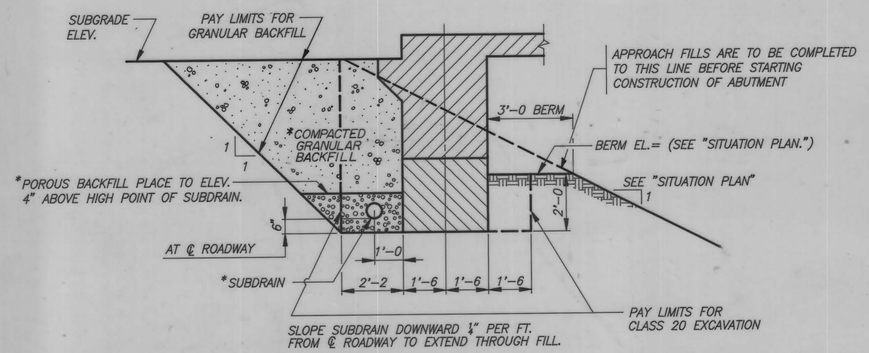


S. ABUTMENT FOOTING PLAN
(SEE SHEET 6 FOR SOUTH ABUTMENT DETAILS)



SECTION B – B
(SEE SHEETS 6 & 7)

N. ABUTMENT FOOTING PLAN
(SEE SHEET 7 FOR NORTH ABUTMENT DETAILS)



GRANULAR BACKFILL DETAIL
(SEE SITUATION PLAN SHEET 4 FOR LAYOUT OF SUBDRAIN.)
*INCLUDE IN COST OF "CONCRETE, STRUCTURAL."

ABUTMENT NOTES

ALL EXPOSED CORNERS 90 DEGREES 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.

ALL BACKFILL BEHIND THE ABUTMENT BETWEEN WINGS IS TO BE GRANULAR AND POROUS BACKFILL AS SHOWN ON SHEET 8. THE REMAINDER OF THE ABUTMENT EXCAVATION IS TO BE BACKFILLED WITH SOIL.

THE HP10X42 STEEL BEARING PILING SHALL BE DRIVEN TO FULL PENETRATION WHERE PRACTICABLE. THE DESIGN BEARING FOR THE HP10X42 ABUTMENT PILES IS 55 TONS.

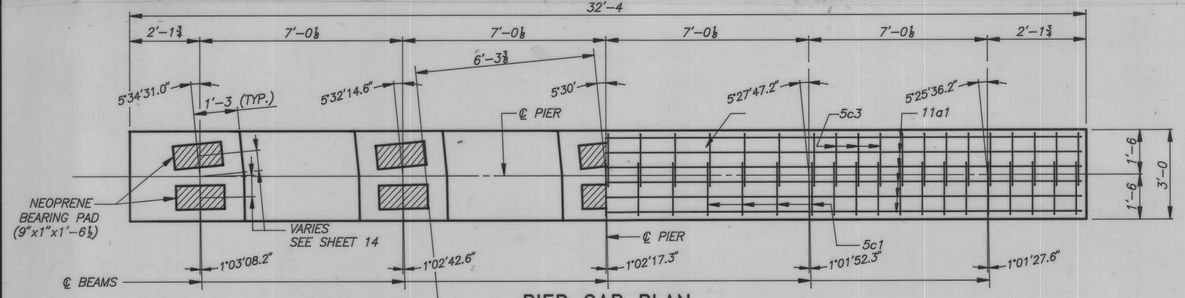
REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.

243'–0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

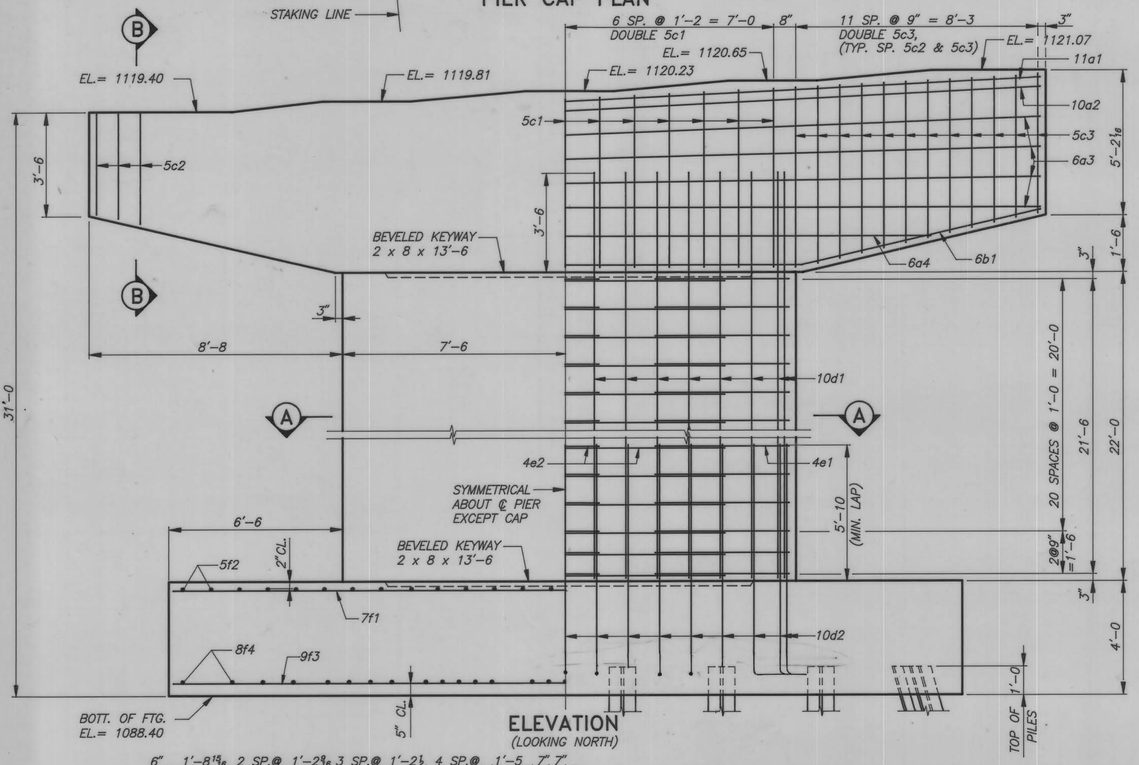
INTEGRAL ABUTMENTS — TEE PIERS
80'–9 END SPANS — 81'–6 INTERIOR SPAN

ABUTMENT DETAILS

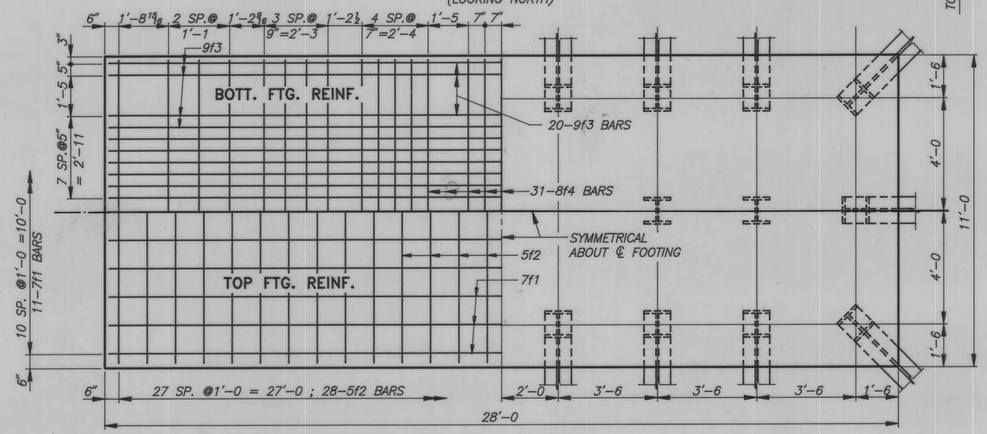
STATION 15+10 — 5° 30' SKEW, LT. AHEAD
CRAWFORD COUNTY, IOWA
SHEET 8 OF 26



PIER CAP PLAN

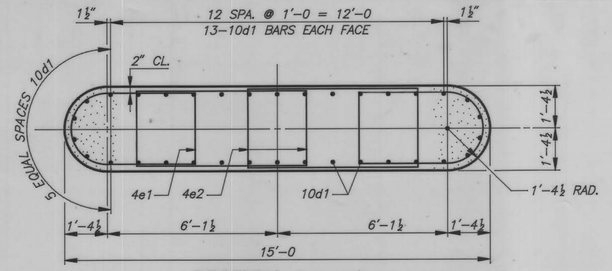


ELEVATION (LOOKING NORTH)

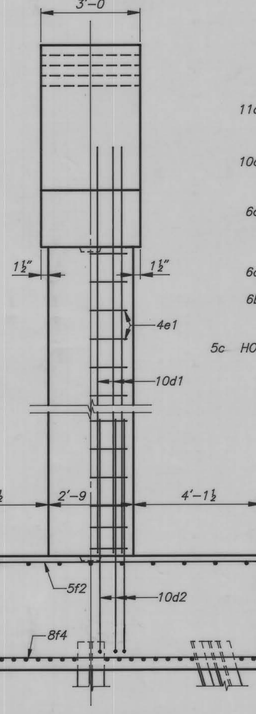


FOOTING PLAN

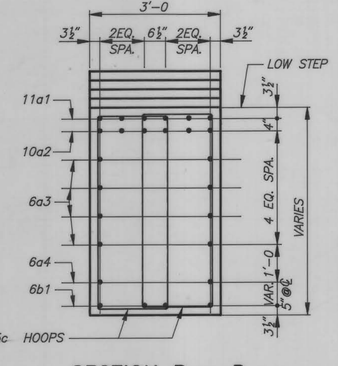
BATTER OUTSIDE PILES 1:4 IN DIRECTION SHOWN



SECTION A – A



END ELEVATION



SECTION B – B

PIER NOTES

ALL EXPOSED CORNERS 90 DEGREES OR SHARPER ARE TO BE FILLETED WITH 3/4 INCH DRESSED AND BEVELED STRIP.

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

THE HP10X42 STEEL BEARING PILING SHALL BE DRIVEN TO FULL PENETRATION WHERE PRACTICABLE. THE DESIGN BEARING FOR THE PIER PILES IS 37 TONS PER PILE.

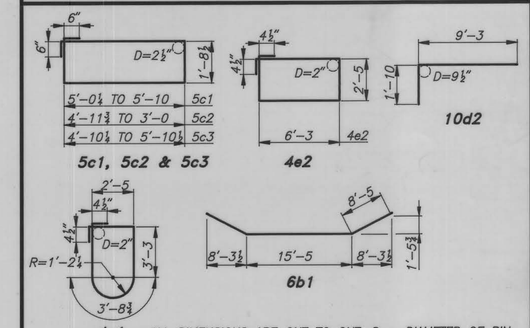
REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.

BENCH MARK NO.2 : SPIKE IN FENCE POST, STA.33+48, 104' RT., EL.= 1115.98

REINFORCING BAR LIST – SOUTH PIER

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, LONGITUDINAL, TOP	——	6	32'–0	1,020
10a2	CAP, LONGITUDINAL, TOP	——	6	32'–0	826
6a3	CAP, LONGITUDINAL, SIDES	——	8	32'–0	385
6a4	CAP, LONGITUDINAL, SIDES	——	2	21'–7	65
6b1	CAP, LONGITUDINAL, BOTTOM	◡	4	32'–3	194
5c1	CAP, HOOPS	▭	26	VARIES	414
5c2	CAP, HOOPS, LOW END	▭	24	VARIES	310
5c3	CAP, HOOPS, HIGH END	▭	24	VARIES	379
10d1	COLUMN, VERTICAL	——	34	25'–6	3,731
10d2	COLUMN, VERTICAL, DOWELS	⌐	34	11'–1	1,621
4e1	COLUMN, HOOPS	▭	46	13'–5	412
4e2	COLUMN, HOOPS	▭	46	18'–1	556
7f1	FOOTING, LONGITUDINAL, TOP	——	11	27'–8	622
5f2	FOOTING, TRANSVERSE, TOP	——	28	10'–8	312
9f3	FOOTING, LONGITUDINAL, BOTTOM	——	20	27'–8	1,882
8f4	FOOTING, TRANSVERSE, BOTTOM	——	31	10'–8	883
			TOTAL (LBS.)		13,612

BENT BAR DETAILS



ALL DIMENSIONS ARE OUT TO OUT. D = DIAMETER OF PIN RADII ARE TO ℄ BAR.

CONCRETE PLACEMENT QUANT. – S. PIER

LOCATION	QUANTITY
FOOTING	45.6
COLUMN	32.3
CAP	19.5
TOTAL (CU.YDS.)	97.4

ESTIMATED QUANTITIES – SOUTH PIER

ITEM		UNIT	QUANTITY
CONCRETE, STRUCTURAL, CLASS "C"		CU.YDS.	97.4
STEEL, REINFORCING		LBS.	13,612
HP 10 x 42 STEEL BEARING PILING	FURNISH 22 @ 40'	L.F.	880
	DRIVE 22 @ 40'	L.F.	880
EXCAVATION, CLASS 21		CU.YDS.	96

243' –0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS

80'–9 END SPANS — 81'–6 INTERIOR SPAN

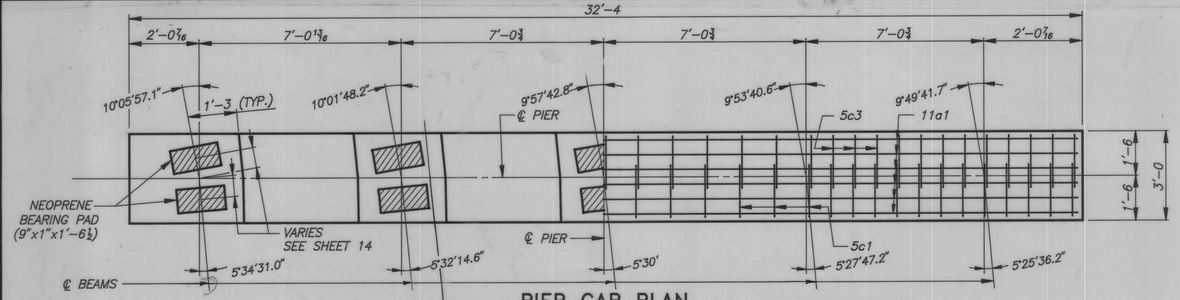
SOUTH PIER DETAILS

STATION 15+10 — 5° 30' SKEW, LT. AHEAD

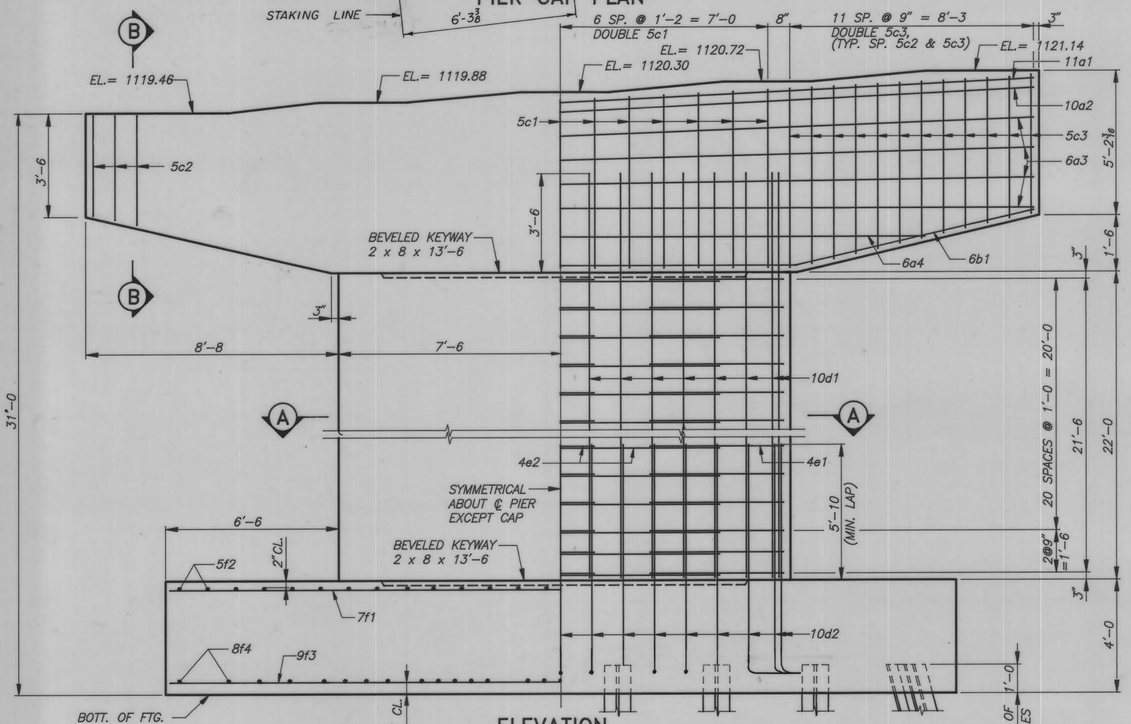
CRAWFORD COUNTY, IOWA

SHEET 9 OF 26

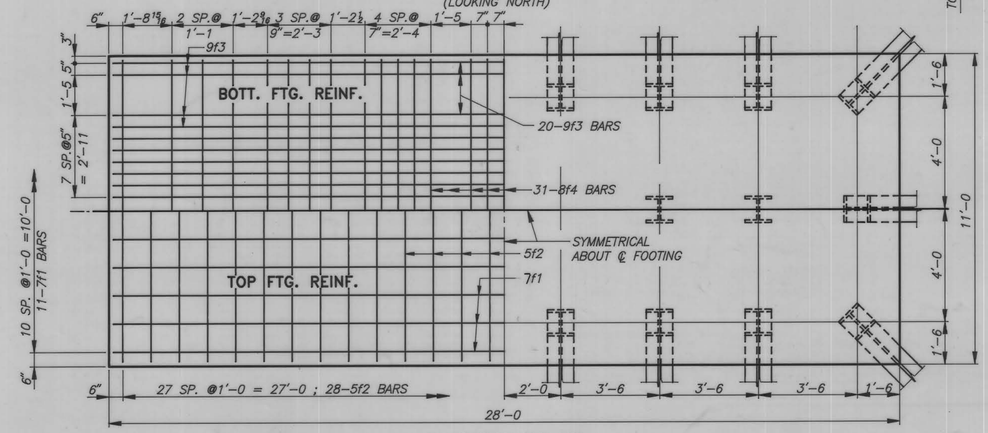
BENCH MARK NO.2 : SPIKE IN FENCE POST, STA.33+48, 104' RT., EL.= 1115.98



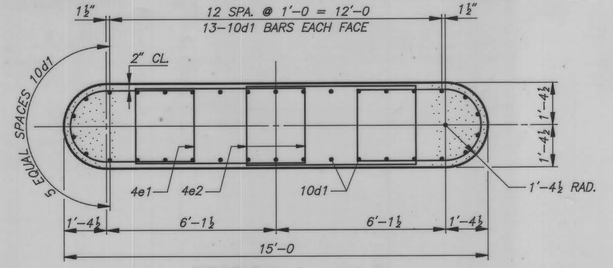
PIER CAP PLAN



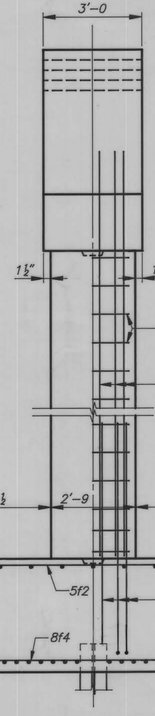
ELEVATION
(LOOKING NORTH)



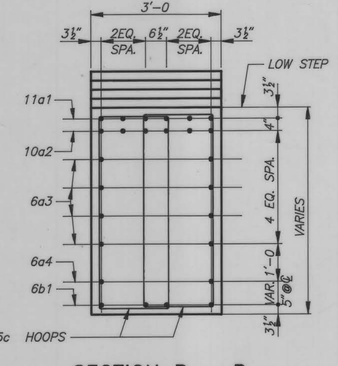
FOOTING PLAN



SECTION A – A



END ELEVATION



SECTION B – B

PIER NOTES

ALL EXPOSED CORNERS 90 DEGREES OR SHARPER ARE TO BE FILLETED WITH 3/4 INCH DRESSED AND BEVELED STRIP.

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

THE HP10X42 STEEL BEARING PILING SHALL BE DRIVEN TO FULL PENETRATION WHERE PRACTICABLE. THE DESIGN BEARING FOR THE PIER PILES IS 37 TONS PER PILE.

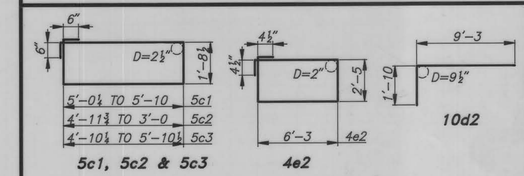
REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.

BATTER OUTSIDE PILES 1:4 IN DIRECTION SHOWN

REINFORCING BAR LIST – NORTH PIER

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, LONGITUDINAL, TOP	——	6	32'–0	1,020
10a2	CAP, LONGITUDINAL, TOP	——	6	32'–0	826
6a3	CAP, LONGITUDINAL, SIDES	——	8	32'–0	385
6a4	CAP, LONGITUDINAL, SIDES	——	2	21'–7	65
6b1	CAP, LONGITUDINAL, BOTTOM	⌒	4	32'–3	194
5c1	CAP, HOOPS	▭	26	VARIES	414
5c2	CAP, HOOPS, LOW END	▭	24	VARIES	310
5c3	CAP, HOOPS, HIGH END	▭	24	VARIES	379
10d1	COLUMN, VERTICAL	——	34	25'–6	3,731
10d2	COLUMN, VERTICAL, DOWELS	⌐	34	11'–1	1,621
4e1	COLUMN, HOOPS	▭	46	13'–5	412
4e2	COLUMN, HOOPS	▭	46	18'–1	556
7f1	FOOTING, LONGITUDINAL, TOP	——	11	27'–8	622
5f2	FOOTING, TRANSVERSE, TOP	——	28	10'–8	312
9f3	FOOTING, LONGITUDINAL, BOTTOM	——	20	27'–8	1,882
8f4	FOOTING, TRANSVERSE, BOTTOM	——	31	10'–8	883
				TOTAL (LBS.)	13,612

BENT BAR DETAILS



ALL DIMENSIONS ARE OUT TO OUT. D = DIAMETER OF PIN RADII ARE TO ℄ BAR.

CONCRETE PLACEMENT QUANT. – N. PIER

LOCATION	QUANTITY
FOOTING	45.6
COLUMN	32.3
CAP	19.6
TOTAL (CU.YDS.)	97.5

ESTIMATED QUANTITIES – NORTH PIER

ITEM		UNIT	QUANTITY
CONCRETE, STRUCTURAL, CLASS "C"		CU.YDS.	97.5
STEEL, REINFORCING		LBS.	13,612
HP 10 x 42 STEEL BEARING PILING	FURNISH 22 @ 40'	L.F.	880
	DRIVE 22 @ 40'	L.F.	880
EXCAVATION, CLASS 21		CU.YDS.	96

243' –0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS

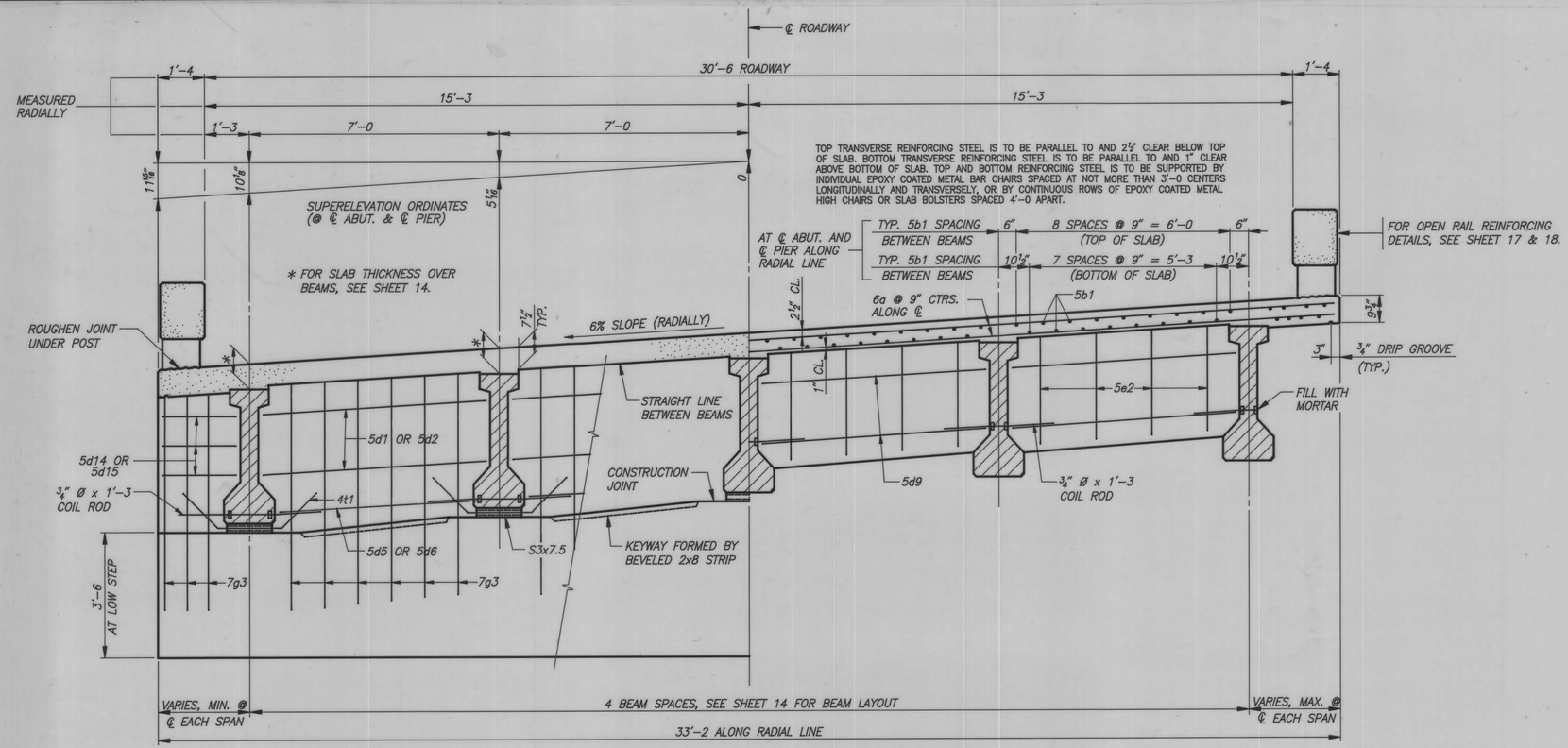
80'–9 END SPANS — 81'–6 INTERIOR SPAN

NORTH PIER DETAILS

STATION 15+10 — 5° 30' SKEW, LT. AHEAD

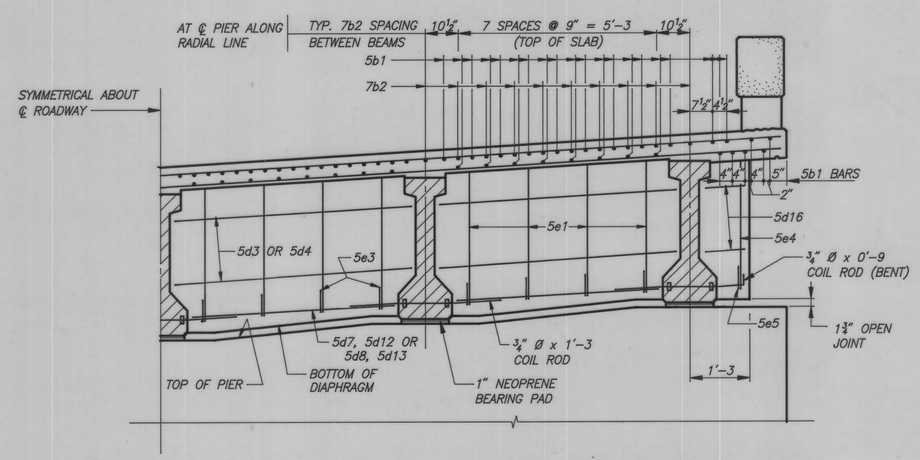
CRAWFORD COUNTY, IOWA

SHEET 10 OF 26



HALF SECTION NEAR ABUTMENT

HALF SECTION NEAR MID SPAN



HALF SECTION NEAR PIER

SUPERSTRUCTURE NOTES

THIS BRIDGE IS DESIGNED FOR HS20-44 LOADING PLUS 20 LBS. PER 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 BEVELED STRIP. CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 2" UNLESS OTHERWISE NOTED OR SHOWN. ALL REINFORCING BARS ARE TO BE SECURELY WIRED IN PLACE.

ALL BEAMS ARE TO BE SET VERTICAL.

FORMS FOR THE SLAB AND RAIL ARE TO BE SUPPORTED BY THE PRESTRESSED BEAMS.

BEARING MATERIAL, COIL RODS AND COIL TIES ARE INCIDENTAL TO THE COST OF "PRETENSIONED PRESTRESSED CONCRETE BEAMS".

THE PIER AND ABUTMENT DIAPHRAGM CONCRETE IS TO BE PLACED MONOLITHIC WITH THE FLOOR SLAB AS SHOWN.

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 HIGH CHAIRS OR SLAB BOLSTERS SPACED 4'-0 APART.

CONTRACTOR NOTE: THE OPTIONAL STEEL DIAPHRAGMS WILL NOT BE ALLOWED AS AN ALTERNATE METHOD OF CONSTRUCTION.

243'-0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS

80'-9 END SPANS — 81'-6 INTERIOR SPAN

SUPERSTRUCTURE DETAILS

STATION 15 + 10 — 5° 30' SKEW, LT. AHEAD

CRAWFORD COUNTY, IOWA

CALHOUN-BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224-4344

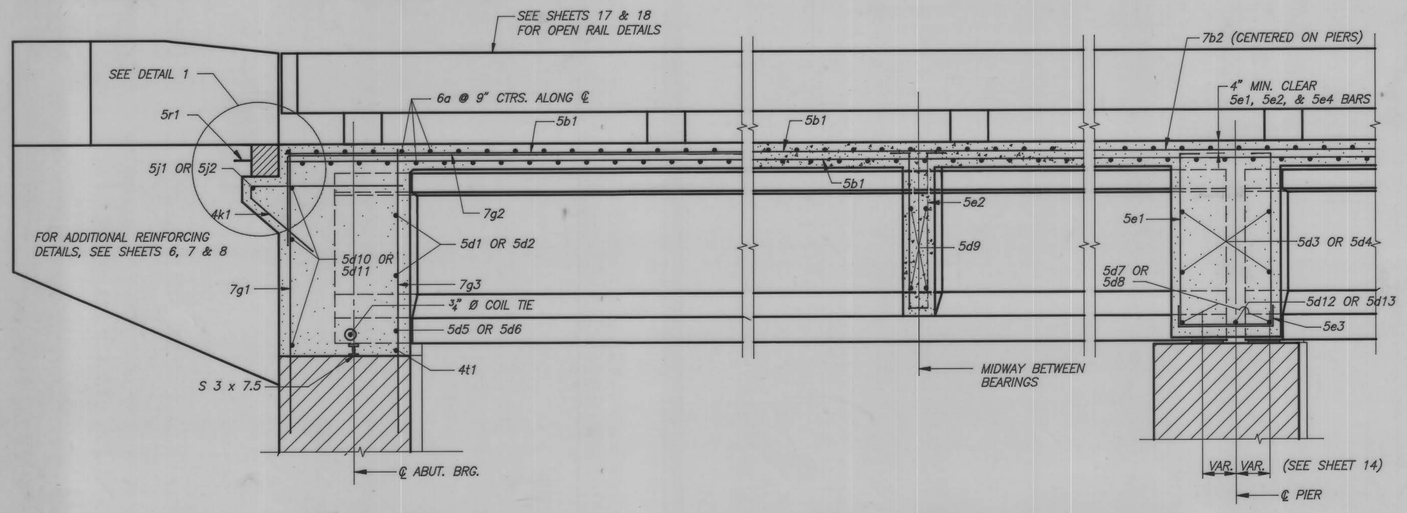
JOB NO. 8190

DESIGNED BY : JLM
DRAWN BY : RPV
CHECKED BY : GEB

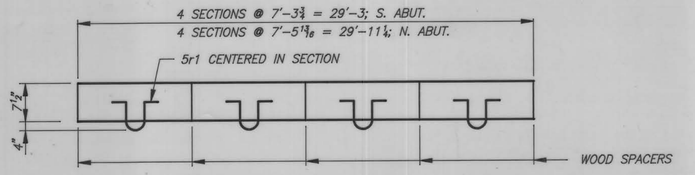
DESIGN NO. 5294

CRAWFORD COUNTY

FILE NO. 54659

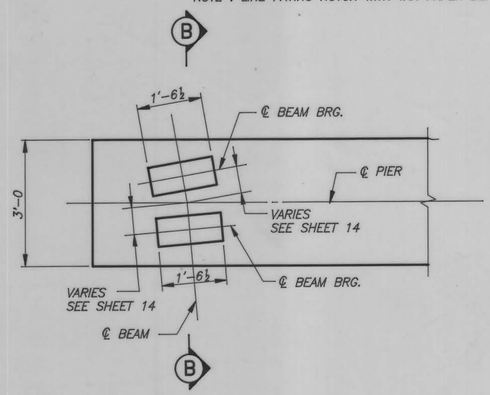


LONGITUDINAL SECTION NEAR RAIL

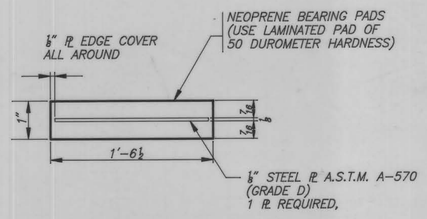


PLAN OF TEMPORARY PAVING BLOCK

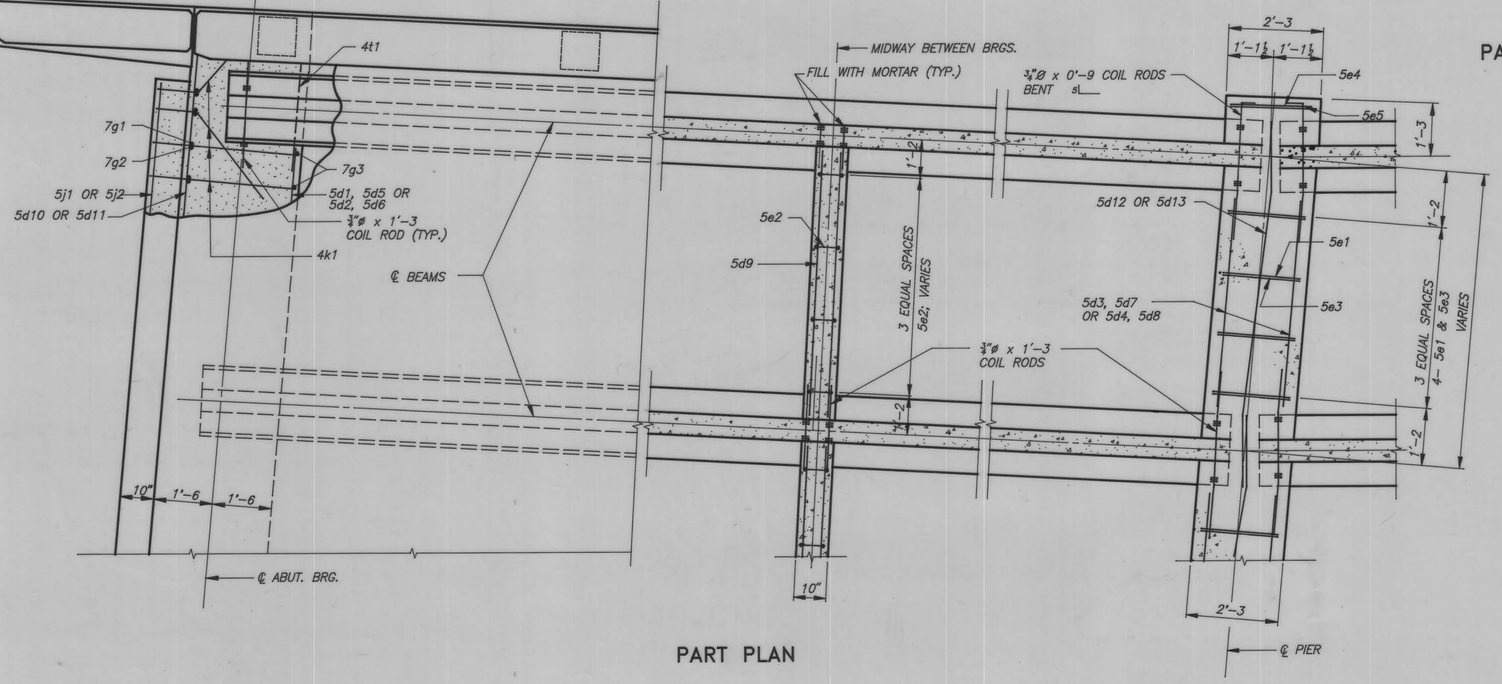
NOTE : LINE PAVING NOTCH WITH TAR PAPER BEFORE PLACING THE TEMPORARY PAVING BLOCK.



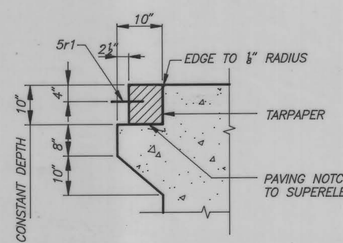
PART PLAN – PIER



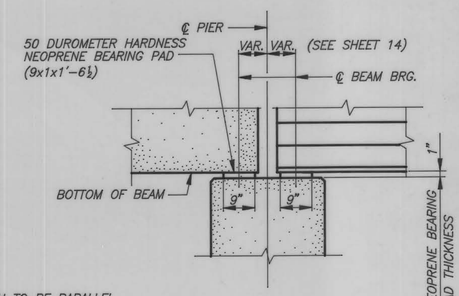
NEOPRENE BEARING PAD
ELEVATION– BOTH PIERS
(20 REQUIRED)



PART PLAN



DETAIL–1



SECTION B – B

243' –0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS

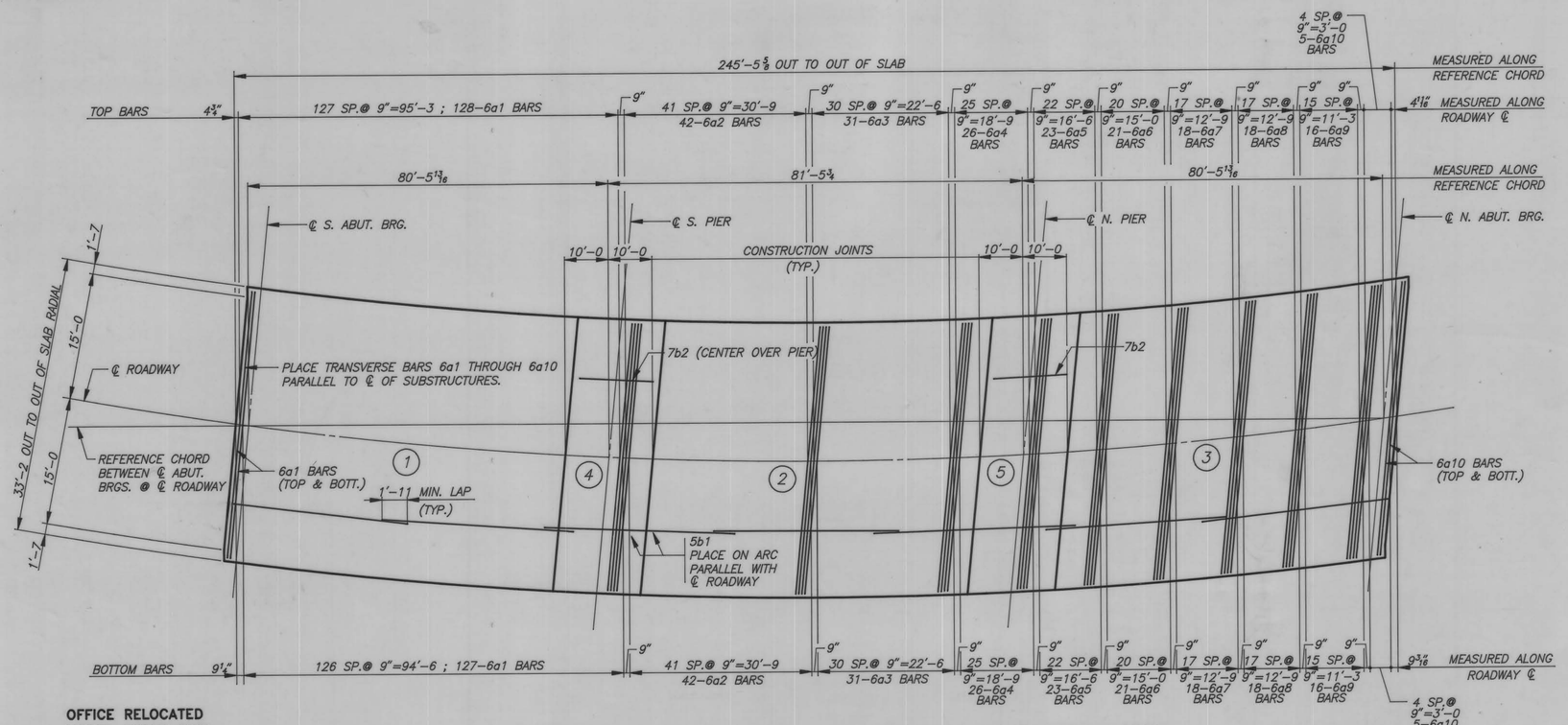
80'–9 END SPANS — 81'–6 INTERIOR SPAN

SUPERSTRUCTURE DETAILS

STATION 15+10 — 5° 30' SKEW LT. AHEAD

CRAWFORD COUNTY, IOWA

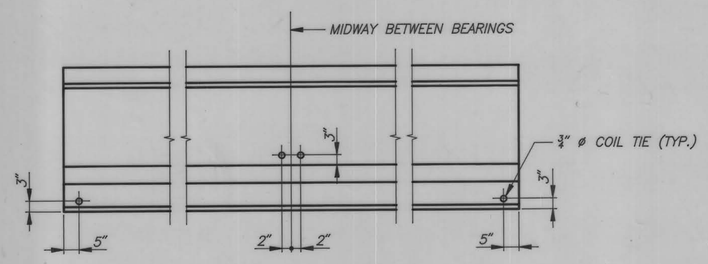
SHEET 12 OF 26



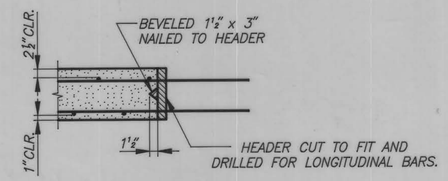
OFFICE RELOCATED
HORIZ. CURVE DATA
P.I. STA.20+20.91
Δ = 90° 02' 31" L
D = 5° 30' 00"
R = 1041.74'
T = 1042.50'
L = 1637.13
E = 432.04'

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.

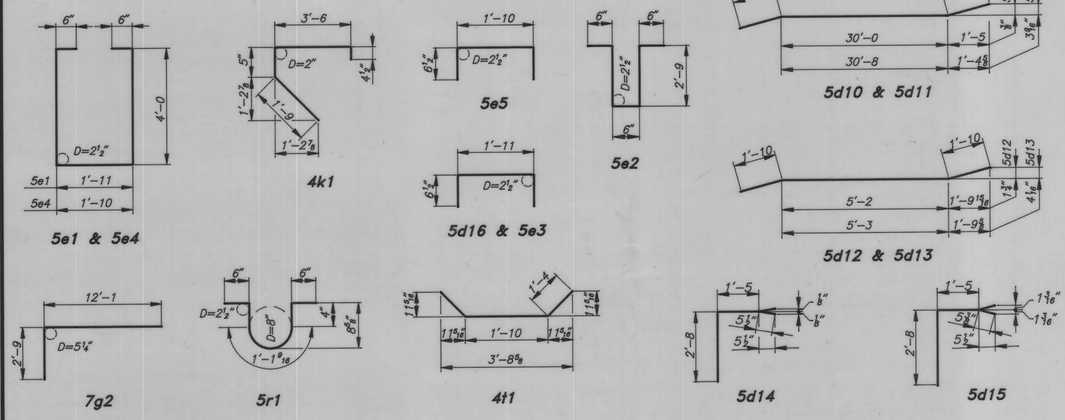


LOCATION OF BEAM COIL TIES



SLAB CONSTRUCTION JOINT DETAIL

BENT BAR DETAILS



ALL DIMENSIONS ARE OUT TO OUT. D = DIAMETER OF PIN

REINFORCING BAR LIST – SUPERSTRUCTURE

	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
Δ	6a1	SLAB, TRANSVERSE, TOP & BOTT.	——	255	32'-10	12,575
Δ	6a2	SLAB, TRANSVERSE, TOP & BOTT.	——	84	32'-11	4,153
Δ	6a3	SLAB, TRANSVERSE, TOP & BOTT.	——	62	33'-0	3,073
Δ	6a4	SLAB, TRANSVERSE, TOP & BOTT.	——	52	33'-1	2,584
Δ	6a5	SLAB, TRANSVERSE, TOP & BOTT.	——	46	33'-2	2,292
Δ	6a6	SLAB, TRANSVERSE, TOP & BOTT.	——	42	33'-3	2,098
Δ	6a7	SLAB, TRANSVERSE, TOP & BOTT.	——	36	33'-4	1,802
Δ	6a8	SLAB, TRANSVERSE, TOP & BOTT.	——	36	33'-5	1,807
Δ	6a9	SLAB, TRANSVERSE, TOP & BOTT.	——	32	33'-6	1,610
Δ	6a10	SLAB, TRANSVERSE, TOP & BOTT.	——	10	33'-7	504
Δ	5b1	SLAB, LONGIT., TOP & BOTTOM	——	588	36'-9	22,538
Δ	7b2	SLAB, LONGITUDINAL, OVER PIERS	——	74	19'-8	2,975
	5d1	S. ABUTMENT DIAPHRAGM, LONGIT.	——	8	5'-11	49
	5d2	N. ABUTMENT DIAPHRAGM, LONGIT.	——	8	6'-1	51
	5d3	S. PIER DIAPHRAGM, LONGIT.	——	16	5'-11	99
	5d4	N. PIER DIAPHRAGM, LONGIT.	——	16	6'-0	100
	5d5	S. ABUTMENT DIAPHRAGM, LONGIT.	——	4	5'-0	21
	5d6	N. ABUTMENT DIAPHRAGM, LONGIT.	——	4	5'-2	22
	5d7	S. PIER DIAPHRAGM, LONGIT.	——	8	5'-0	42
	5d8	N. PIER DIAPHRAGM, LONGIT.	——	8	5'-1	42
	5d9	INTERMEDIATE DIAPHRAGM, LONGIT.	——	48	5'-11	296
Δ	5d10	S. ABUTMENT DIAPHRAGM, LONGIT.	⌒	3	32'-10	103
Δ	5d11	N. ABUTMENT DIAPHRAGM, LONGIT.	⌒	3	33'-6	105
	5d12	S. PIER DIAPHRAGM, LONGIT.	⌒	4	8'-10	37
	5d13	N. PIER DIAPHRAGM, LONGIT.	⌒	4	8'-11	37
	5d14	S. ABUTMENT DIAPHRAGM ENDS	⌐	6	4'-7	29
	5d15	N. ABUTMENT DIAPHRAGM ENDS	⌐	6	4'-8	29
	5d16	PIER DIAPHRAGM, ENDS	⌐	8	3'-0	25
	5e1	PIER DIAPHRAGM, HOOPS	⊓	32	10'-11	364
	5e2	INTERMADIATE DIAPHRAGM, HOOPS	⊓	48	7'-0	350
	5e3	PIER DIAPHRAGM, TIES	⊓	32	3'-0	100
	5e4	PIER DIAPHRAGM, HOOPS, ENDS	⊓	4	10'-10	45
	5e5	PIER DIAPHRAGM, TIES, ENDS	⊓	4	2'-11	12
Δ	7g2	ABUTMENT, VERTICAL, BACK FACE	⊓	60	14'-10	1,819
Δ	5j1	S. PAVING NOTCH, LONGITUDINAL	——	1	28'-11	30
Δ	5j2	N. PAVING NOTCH, LONGITUDINAL	——	1	29'-7	31
Δ	4k1	ABUTMENT, HOOPS	⊓	60	6'-1	244
	5r1	PAVING BLOCK LIFTING HOOPS	⊔	8	2'-10	24
	4t1	ABUT.,DIAPH.,HORIZ.,FRONT FACE	⌒	10	4'-6	30
Δ		OPEN RAIL, SEE SHEETS 17 & 18				10,598
				UNCOATED TOTAL (LBS.)		1,804
	Δ EPOXY COATED			EPOXY COATED TOTAL (LBS.)		70,941

CONCRETE PLACEMENT QUANT.–SUPERSTR.

LOCATION	QUANTITY
SLAB AND DIAPHRAGM, SECTION (1)	77.5
SLAB AND DIAPHRAGM, SECTION (2)	53.7
SLAB AND DIAPHRAGM, SECTION (3)	77.8
SLAB AND DIAPHRAGM, SECTION (4)	25.2
SLAB AND DIAPHRAGM, SECTION (5)	25.3
PAVING BLOCK 2 @ .58	1.2
TOTAL (CU.YDS.)	260.7

ESTIMATED QUANTITIES – SUPERSTRUCTURE

ITEM	UNIT	QUANTITY
CONCRETE, STRUCTURAL	CU.YDS.	260.7
STEEL, REINFORCING – UNCOATED	LBS.	1,804
STEEL, REINFORCING – EPOXY COATED	LBS.	70,941
BEAMS, PRET. PREST. CONC. (LXC80)	NO.	15

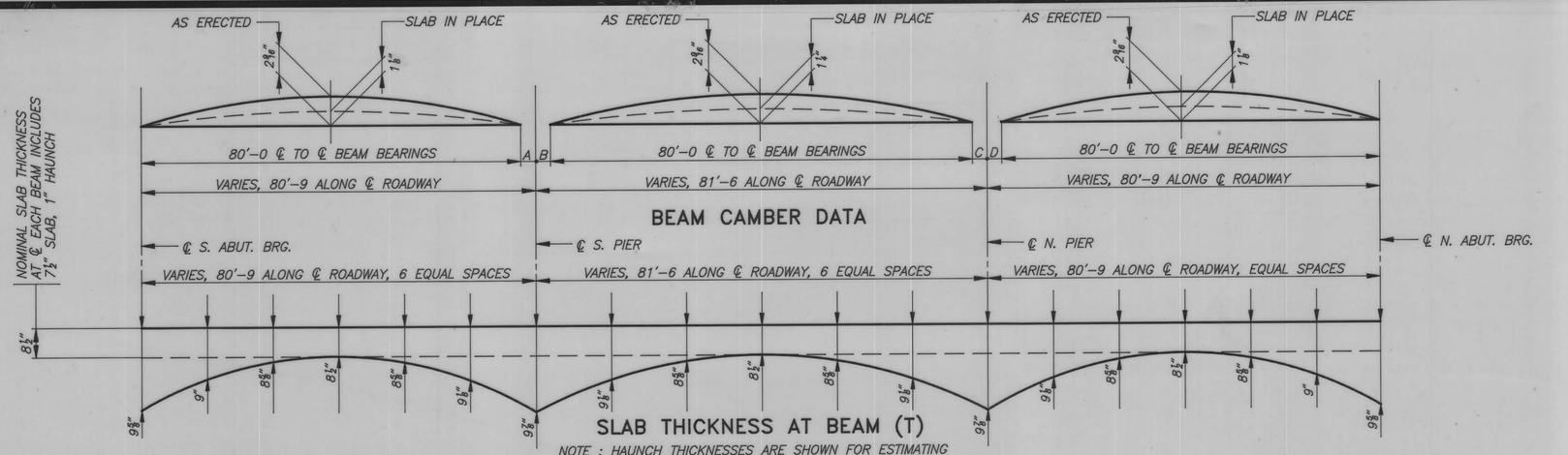
243'-0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS
80'-9 END SPANS — 81'-6 INTERIOR SPAN

SUPERSTRUCTURE DETAILS

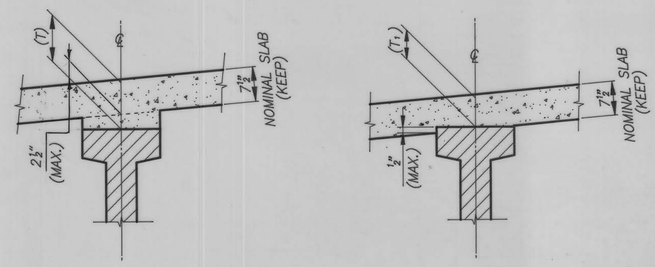
STATION 15+10 — 5° 30' SKEW LT. AHEAD
CRAWFORD COUNTY — IOWA
SHEET 13 OF 26

BENCH MARK NO. 2: SPIKE IN FENCE POST, STA. 33+48, 104' Rt. EL.=1115.98



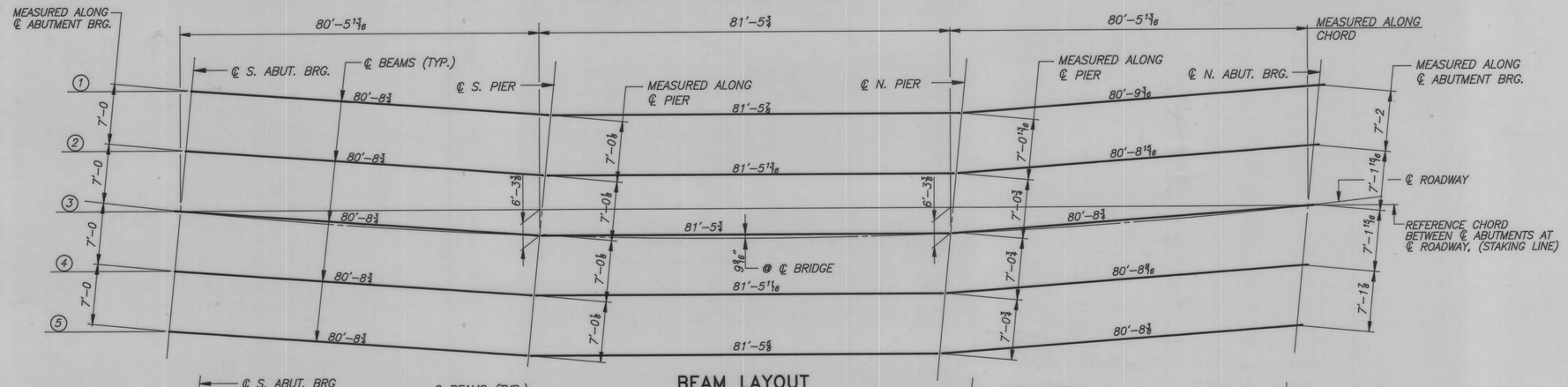
SLAB THICKNESS AT BEAM (T)

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

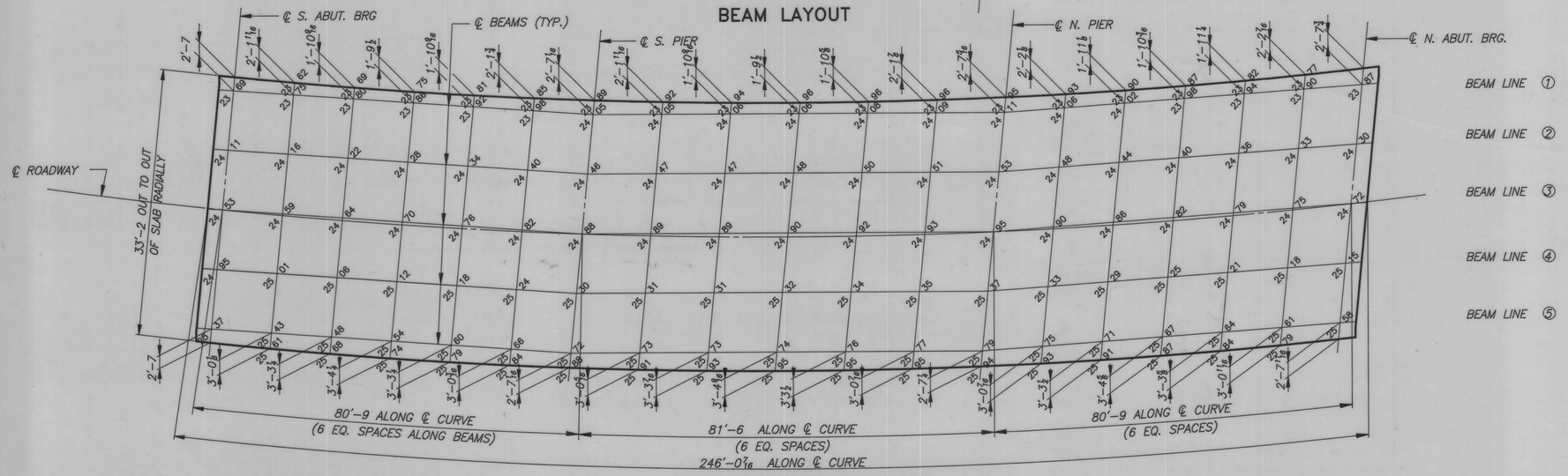


SLAB THICKNESS DETAILS

NOTE : THE SLAB THICKNESS (T) AT BEAMS IS BASED ON THE ANTICIPATED BEAM 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 (T1). IF MORE THAN 1/2" EMBEDMENT IS REQUIRED, OR IF THE HAUNCH EXCEEDS 2½" AT BEAM ℄, THE GRADE LINE IS TO BE REVISED. THE ABOVE DIAGRAMS DO NOT APPLY TO THE CANTILEVERED SLAB SIDE OF THE EXTERIOR BEAM.



BEAM LAYOUT



TOP OF SLAB ELEVATIONS

ADD 1100.00 TO ABOVE ELEVATIONS.
NOTE: ELEVATIONS SHOWN ARE ALONG ℄ BEAM LINES, AND ALONG EDGE OF SLAB.

BEAM LINE	A	B	C	D
1	8¾	8 15/16	8 15/16	9 3/16
2	8¾	8 7/8(+)	8 7/8(+)	8 15/16
3	8¾	8⅞	8⅞	8¾
4	8¾	8 13/16(+)	8 13/16(+)	8 9/16
5	8¾	8 13/16	8 13/16	8⅜

243'–0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS
80'–9 END SPANS — 81'–6 INTERIOR SPAN

SUPERSTRUCTURE DETAILS

STATION 15+10 — 5° 30' SKEW LT. AHEAD
CRAWFORD COUNTY — IOWA
SHEET 14 OF 26

CALHOUN–BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224–4344

JOB NO. 8190

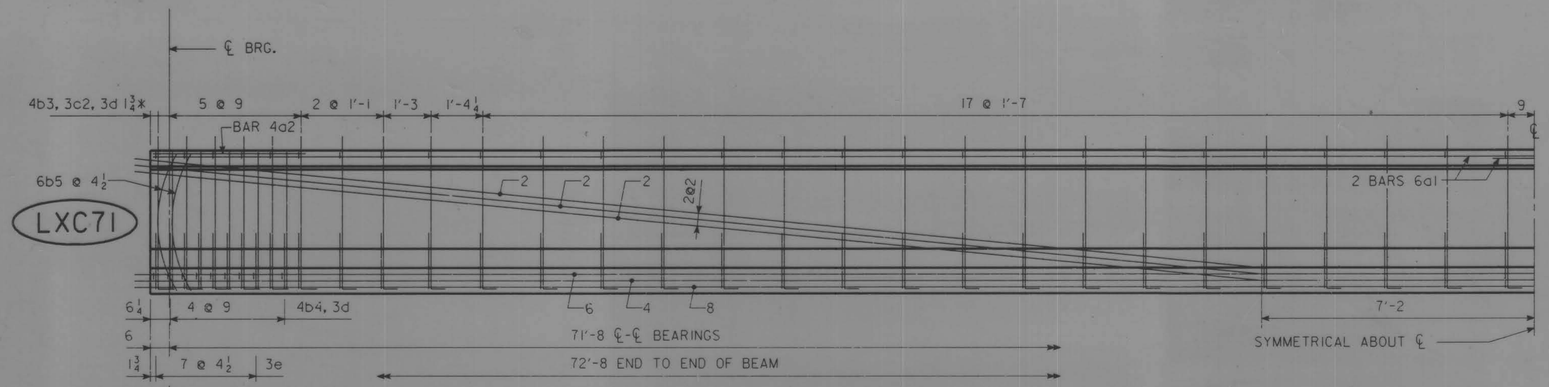
DESIGNED BY : JLM
DRAWN BY : BPV
CHECKED BY : GEP

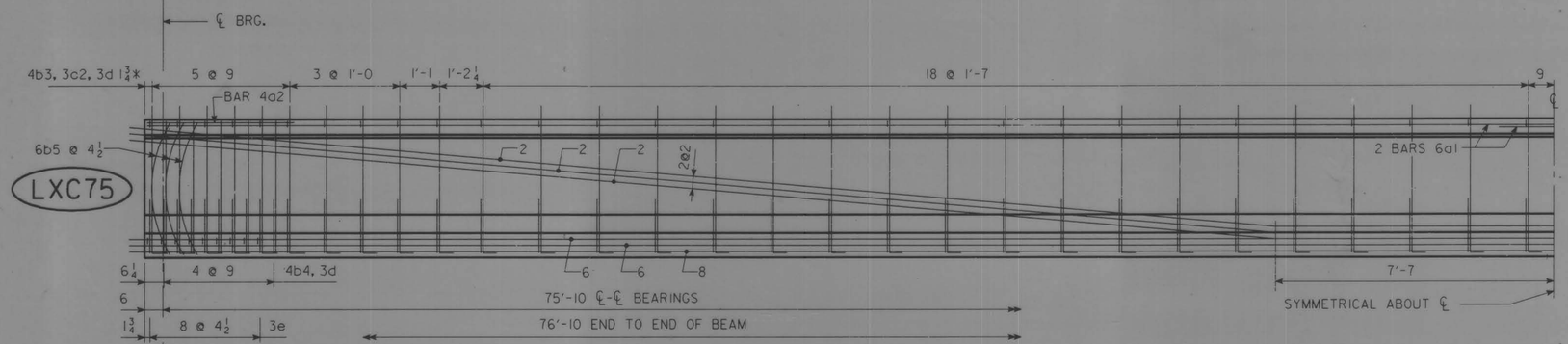
DESIGN NO. 5294

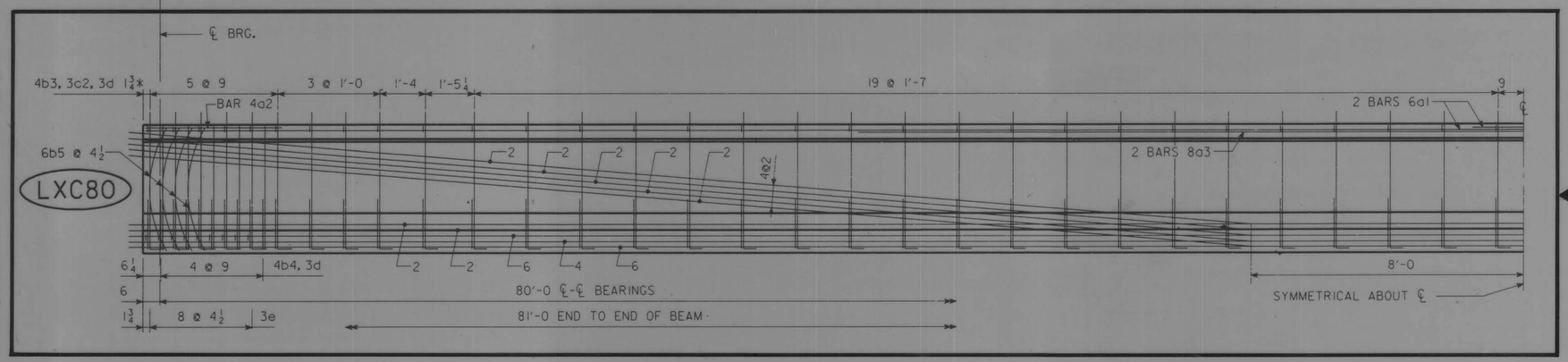
CRAWFORD COUNTY

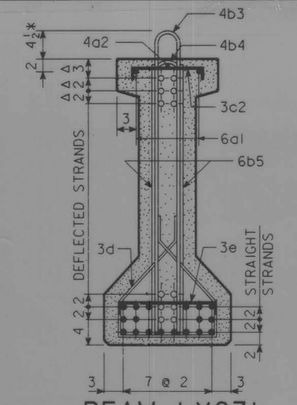
FILE NO. 54659

NOTE: DIMENSIONS FOR THE LOCATION OF THE DEFLECTED STRANDS ARE AT ℄ BEAM AND END OF BEAM.

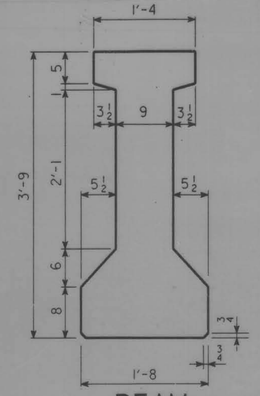




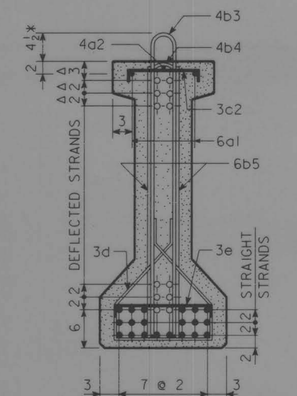




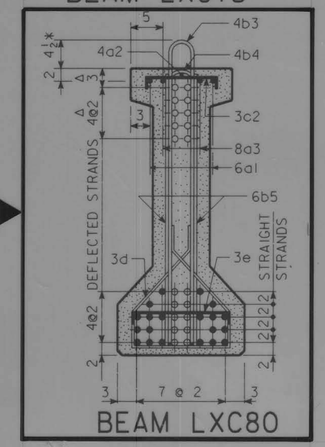
BEAM LXC71



BEAM
LXC71 - LXC80
A = 564.5 in.²
Y_b = 20.23 in.
I = 116,354 in.⁴



BEAM LXC75



BEAM LXC80

NOTE: BARS 6b5 AND 3d ARE TO BE PLACED IN PAIRS.

○ DEFLECTED STRANDS
* KEEP
Δ DIMENSIONS AT END OF BEAM.

243'-0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS
80'-9 END SPANS — 81'-6 INTERIOR SPAN

BEAM DETAILS

STATION 15+10 — 5° 30' SKEW, LT. AHEAD
CRAWFORD COUNTY, IOWA

CALHOUN-BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224-4344
JOB NO. 8190
DESIGNED BY : JLM
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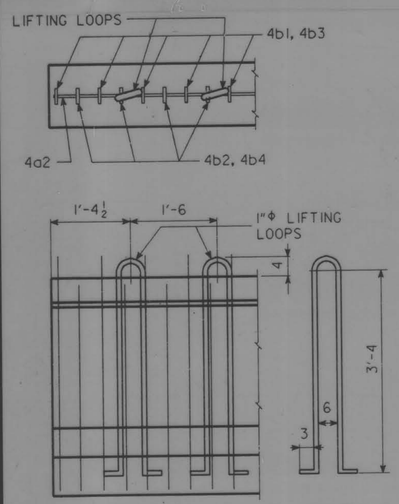
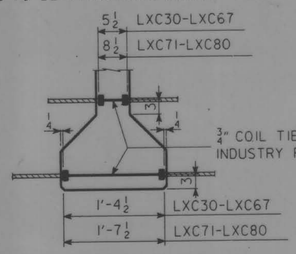
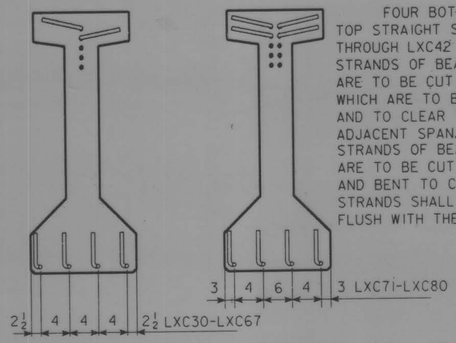


LIFTING LOOP DETAIL

ALTERNATE TYPES MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER. LIFTING LOOPS ARE TO BE STRUCTURAL GRADE.

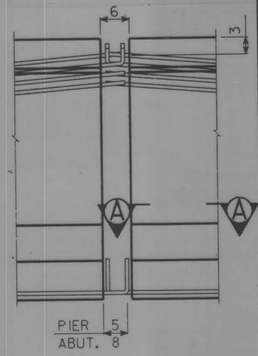


COIL TIE DETAIL

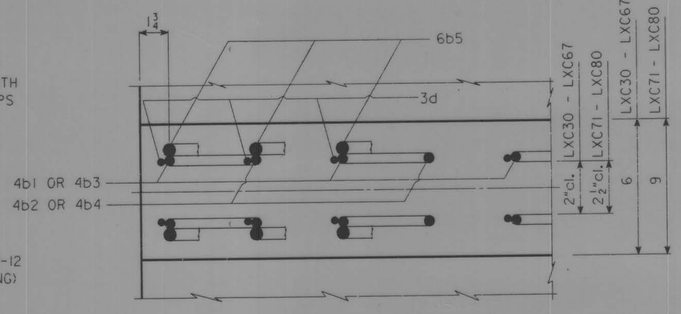


FOUR BOTTOM STRANDS, ALL TOP STRAIGHT STRANDS OF BEAMS LXC30 THROUGH LXC42 AND "N" TOP DEFLECTED STRANDS OF BEAMS LXC46 THROUGH LXC80 ARE TO BE CUT WITH 1'-0 PROJECTIONS WHICH ARE TO BE SHOP BENT AS SHOWN AND TO CLEAR THOSE FROM THE ADJACENT SPAN. REMAINING DEFLECTED STRANDS OF BEAMS LXC46 THROUGH LXC80 ARE TO BE CUT WITH 0'-5 PROJECTION AND BENT TO CLEAR. THE REMAINING STRANDS SHALL BE CUT OFF REASONABLY FLUSH WITH THE CONCRETE.

BEAM	"N"
LXC46-LXC55	3
LXC59-LXC80	4



STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS



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

LXC BEAM DATA

BEAM	SPAN LENGTH ℄-℄ BEARING	OVERALL BEAM LENGTH (L)	STRAND SIZE	NO. OF STRANDS		TOTAL INITIAL PRESTRESS ③ KIPS	HOLD DOWN FORCE-KIPS	CAMBER (In.)		DEFLECTION (In.) Δ_D				PERMISSIBLE SPACING				WEIGHT (TONS)		CONCRETE (C. Y.)	REINFORCING STEEL-(lb)
				STRAIGHT	DEFLECTED			AT RELEASE	AFTER LOSSES	IMMEDIATE ① (ELASTIC) Δ_I		TIME ② (PLASTIC) Δ_T		HS20 LOADING							
										CONC. DIAPH.	STEEL DIAPH.	CONC. DIAPH.	STEEL DIAPH.	CONC. DIAPH.	STEEL DIAPH.						
LXC30	30'-0	31'-0	½"Φ	10	—	300	—	0.08	0.15	0.04	0.03	0.01	0.01			7'-6	7'-6	7.0		3.43	321
LXG34	34'-2	35'-2	½"Φ	10	—	300	—	0.10	0.18	0.06	0.06	0.02	0.02			7'-6	7'-6	7.9		3.89	350
LXC38	38'-4	39'-4	½"Φ	11	—	330	—	0.14	0.24	0.10	0.09	0.03	0.02			7'-6	7'-6	8.8		4.35	411
LXC42	42'-6	43'-6	½"Φ	13	—	390	—	0.21	0.38	0.15	0.13	0.04	0.03			7'-6	7'-6	9.8		4.82	451
LXC46	46'-8	47'-8	½"Φ	8	3	330	16.3	0.32	0.57	0.22	0.20	0.06	0.05			7'-6	7'-6	10.7		5.27	481
LXC50	50'-10	51'-10	½"Φ	10	3	390	15.0	0.47	0.83	0.30	0.27	0.08	0.07			7'-6	7'-6	11.6		5.74	541
LXC55	55'-0	56'-0	½"Φ	11	3	420	13.1	0.56	1.00	0.41	0.38	0.10	0.10			7'-6	7'-6	12.5		6.19	573
LXC59	59'-2	60'-2	½"Φ	14	3	510	11.5	0.66	1.18	0.55	0.50	0.14	0.13			7'-6	7'-6	13.5		6.65	622
LXC63	63'-4	64'-4	½"Φ	14	5	570	17.9	0.80	1.42	0.71	0.66	0.18	0.17			7'-6	7'-6	14.4		7.11	665
LXC67	67'-6	68'-6	½"Φ	16	5	630	15.8	1.02	1.81	0.91	0.85	0.23	0.21			7'-6	7'-6	15.3		7.57	713
LXC71	71'-8	72'-8	½"Φ	18	6	720	21.4	1.14	2.01	0.91	0.86	0.23	0.22			7'-6	7'-6	21.4		10.55	828
LXC75	75'-10	76'-10	½"Φ	20	6	805.1	18.6	1.32	2.34	1.14	1.07	0.29	0.27			7'-6	7'-6	22.6		11.16	901
▶LXC80	80'-0	81'-0	½"Φ	20	10	928.9	29.4	1.46	2.58	1.38	1.31	0.35	0.33			7'-6	7'-6	23.8		11.76	1167

① DEFLECTIONS AT MID-SPAN DUE TO WEIGHT OF SLAB AND DIAPHRAGM. THE DEFLECTIONS SHOWN ARE FOR A SLAB WEIGHT OF 757 #/FT. (8" SLAB AND 7'-6 BEAM SPACING) AND ONE CONCRETE DIAPHRAGM (2635 #) OR ONE STEEL DIAPHRAGM (285 #) AT ℄ 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 ℄ OF SPAN, Δ_D, DUE TO WEIGHT OF SLAB AND DIAPHRAGMS FOR DETAILING PURPOSE:
(A) $\Delta_D = \Delta_I + \Delta_T$ FOR SIMPLE SPAN.
(B) $\Delta_D = \Delta_I + \frac{3}{4}\Delta_T$ FOR END SPANS OF CONTINUOUS BRIDGE.
(C) $\Delta_D = \Delta_I + \frac{1}{2}\Delta_T$ FOR INTERIOR SPANS OF CONTINUOUS BRIDGE.

③ TOTAL INITIAL PRESTRESS FOR LXC30 THRU LXC71 INCLUSIVE IS BASED ON 72.664% Fsu, AND FOR LXC75 AND LXC80 ON 75% Fsu. Fsu = 270 ksi AND As = 0.153 sq. in.

NOTES:

THESE BEAMS ARE DESIGNED FOR AASHTO LIVE LOADS AS INDICATED IN ABOVE TABLE WITH AN ALLOWANCE OF 20 lb. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

HOLD DOWN POINTS FOR DEFLECTED STRANDS MAY BE MOVED TOWARD ENDS OF BEAM A DISTANCE OF 0.05 L MAXIMUM AT PRODUCER'S OPTION.

ALL PRESTRESSING STRANDS SHALL CONFORM TO ASTM A416 GRADE 270 LOW RELAXATION STRANDS.

TOPS OF BEAMS ARE TO BE STRUCK OFF LEVEL AND GIVEN A WOOD FLOAT FINISH.

BEARINGS SHALL BE AS DETAILED ON OTHER DESIGN SHEETS.

BEAMS TO BE USED IN BRIDGES MADE CONTINUOUS BY THE POURED IN PLACE FLOOR, ARE TO BE AT LEAST 28 DAYS OLD BEFORE THE FLOOR IS PLACED UNLESS A SHORTER CURING TIME IS APPROVED BY THE BRIDGE ENGINEER.

THE PORTIONS OF THE PRESTRESS BEAMS THAT ARE TO BE EMBEDDED IN THE ABUTMENT AND PIER DIAPHRAGMS SHALL BE ROUGHENED FOR A DISTANCE OF 10" FROM THE BEAM END BY SANDBLASTING OR OTHER APPROVED METHODS TO PROVIDE SUITABLE BOND BETWEEN THE BEAM AND THE DIAPHRAGM IN ACCORDANCE WITH ARTICLE 2403.15 OF THE SPECIFICATIONS.

UNLESS OTHERWISE NOTED ALL BEAMS ARE TO BE INCREASED IN LENGTH BY .0005L TO COMPENSATE FOR ELASTIC SHORTENING, CREEP AND SHRINKAGE.

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.

* WHERE DEFLECTING STRANDS INTERFERE WITH PLACEMENT, SOME IN-PLACE BENDING MAY BE NECESSARY.

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:

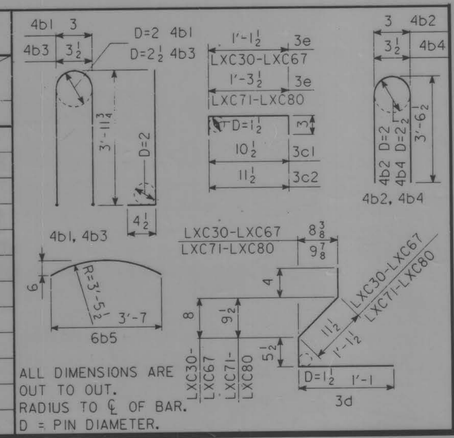
REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.

CONCRETE IN ACCORDANCE WITH SECTION 9, f'_C =5000 psi.

PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 9, f'_S = 270,000 psi.

REINFORCING BAR LIST

BEAM / SPAN		LXC30 30'-0		LXC34 34'-2		LXC38 38'-4		LXC42 42'-6		LXC46 46'-8		LXC50 50'-10		LXC55 55'-0		LXC59 59'-2		LXC63 63'-4		LXC67 67'-6		LXC71 71'-8		LXC75 75'-10		LXC80 80'-0	
BAR	SHAPE	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH
6a1	——	2	30'-9	2	34'-11	2	39'-1	4	23'-1	4	25'-2	4	27'-3	4	29'-4	4	31'-5	4	33'-6	4	35'-7	4	37'-8	4	39'-9	4	41'-10
4a2	——	2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	4'-0
8a3	——	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	40'-0
4b1	⊂⊃	24	8'-10	26	8'-10	30	8'-10	32	8'-10	34	8'-10	38	8'-10	40	8'-10	44	8'-10	46	8'-10	48	8'-10	—	—	—	—	—	—
4b2	⊂⊃	2	7'-2	2	7'-2	4	7'-2	4	7'-2	4	7'-2	6	7'-2	6	7'-2	6	7'-2	8	7'-2	10	7'-2	—	—	—	—	—	—
4b3	⊂⊃	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	54	8'-10	58	8'-10	60	8'-10
4b4	⊂⊃	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	7'-2	10	7'-2	10	7'-2
6b5	⌒	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	3'-9	12	3'-9	16	3'-9
3c1	⊓	24	1'-5	26	1'-5	30	1'-5	32	1'-5	34	1'-5	38	1'-5	40	1'-5	44	1'-5	46	1'-5	48	1'-5	—	—	—	—	—	—
3c2	⊓	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	54	1'-6	58	1'-6	60	1'-6
*3d	∠	52	2'-10	56	2'-10	68	2'-10	72	2'-10	76	2'-10	88	2'-10	92	2'-10	100	2'-10	108	2'-10	116	2'-10	128	3'-0	136	3'-0	140	3'-0
3e	⊓	6	1'-8	6	1'-8	6	1'-8	8	1'-8	8	1'-8	8	1'-8	12	1'-8	14	1'-8	14	1'-8	18	1'-8	16	1'-10	18	1'-10	18	1'-10



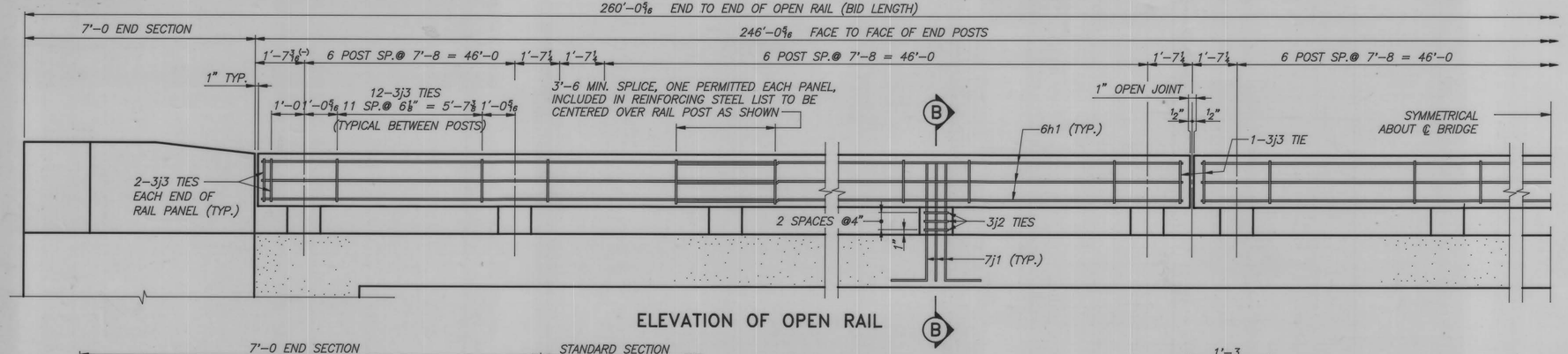
ALL DIMENSIONS ARE OUT TO OUT.
RADIUS TO ℄ OF BAR.
D = PIN DIAMETER.

243'-0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

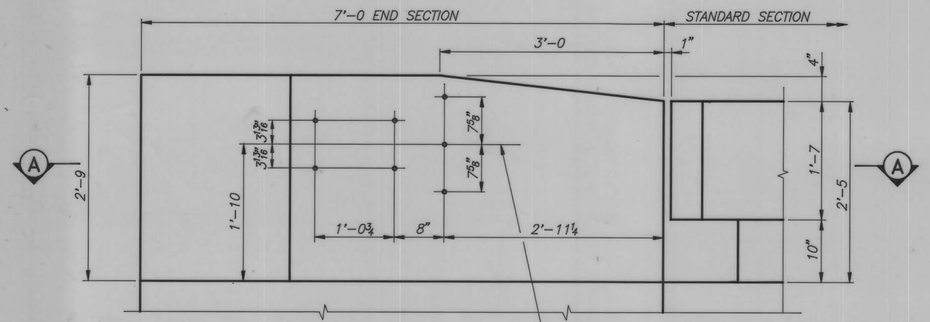
INTEGRAL ABUTMENTS — TEE PIERS
80'-9 END SPANS — 81'-6 INTERIOR SPAN

BEAM DETAILS

STATION 15+10 — 5° 30' SKEW, LT. AHEAD
CRAWFORD COUNTY, IOWA
SHEET 16 OF 26



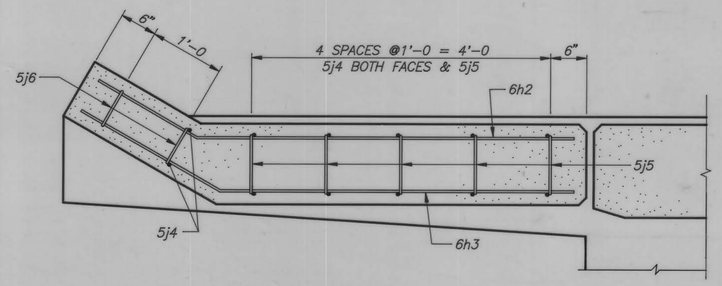
ELEVATION OF OPEN RAIL



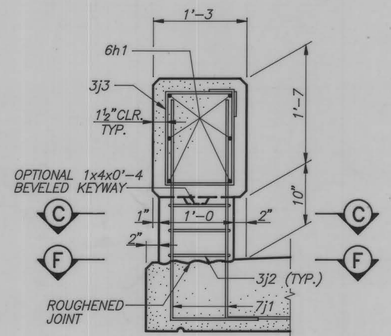
PART ELEVATION VIEW

HOLES FOR 7/8"Ø BOLTS ARE TO BE FORMED WITH 1"Ø (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.

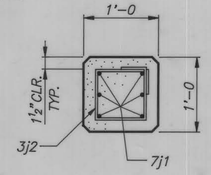
PART PLAN VIEW



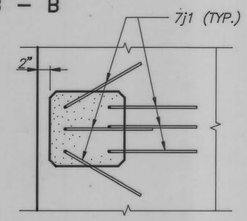
PART SECTION A – A



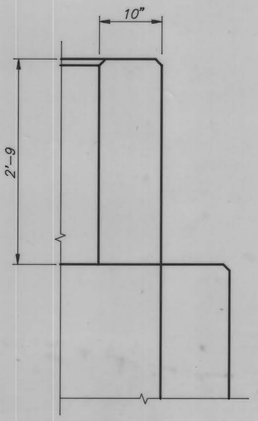
PART SECTION B – B



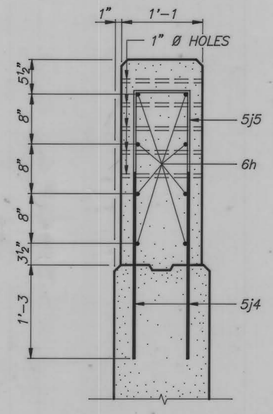
PART SECTION C – C



PART PLAN F – F



END VIEW D – D

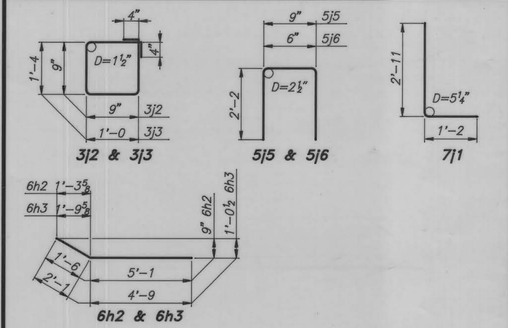


PART SECTION E – E

REINFORCING BAR LIST – WEST RAIL

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	7j1	RAIL POST, VERTICAL		210	4'-1	1,753
	3j2	RAIL POST, TIES		105	3'-8	145
	3j3	RAIL, TIES		372	5'-4	746
	*6h1	RAIL, LONGITUDINAL		30	52'-4	2,358
	* LENGTH INCLUDES LAP SPLICE					
2 END SECTIONS	5j4	ANCHOR TO SLAB		24	2'-6	63
	5j5	VERTICAL		10	5'-1	53
	5j6	VERTICAL		4	4'-10	20
	6h2	LONGITUDINAL		8	6'-7	79
	6h3	LONGITUDINAL		8	6'-10	82
INCLUDE WITH SUPERSTRUCTURE REINFORCING			TOTAL (LBS.)			5,299

BENT BAR DETAILS



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

CONCRETE PLACEMENT SUMMARY – W. RAIL

SECTION		TOTAL
STANDARD SECTION	5 @ 3.82	19.1
END SECTIONS	2 @ 0.70	1.4
	TOTAL (C.Y.)	20.5

CONCRETE OPEN RAIL QUANTITIES – W. RAIL

ITEM	UNIT	QUANTITY
CONCRETE OPEN RAIL	L.F.	260.03

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.

243'-0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS

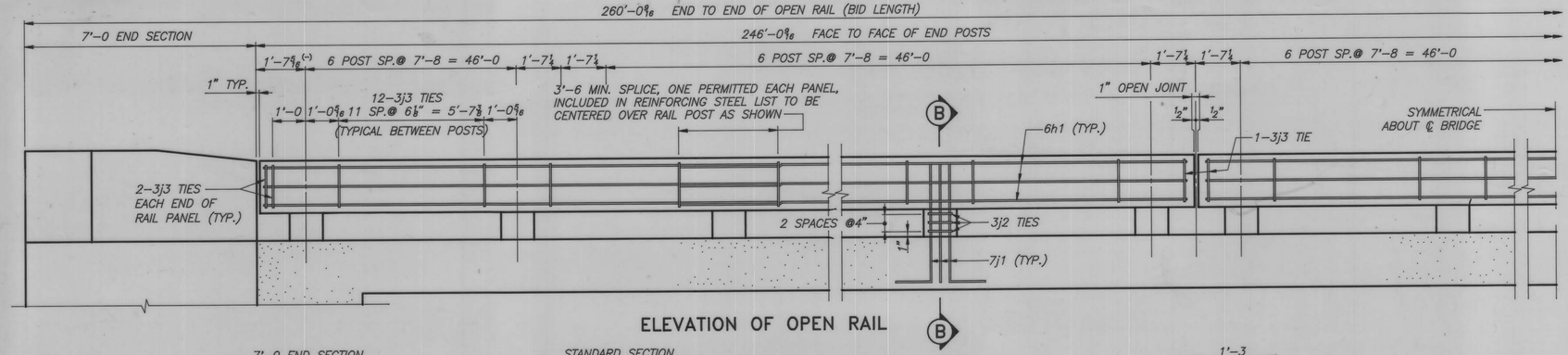
80'-9 END SPANS — 81'-6 INTERIOR SPAN

WEST OPEN RAIL DETAILS

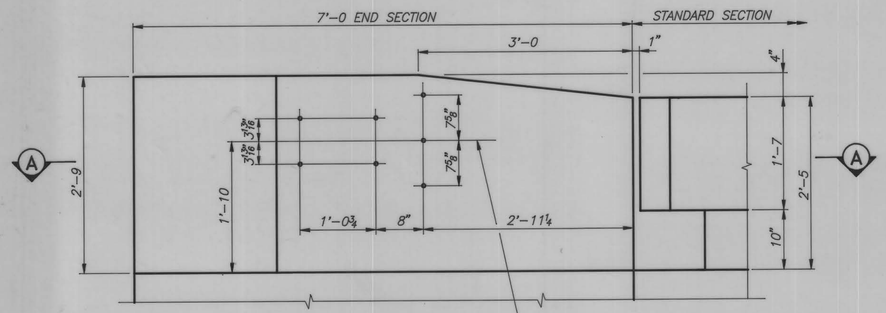
STATION 15+10 — 5 °30' SKEW, RT. AHEAD

CRAWFORD COUNTY, IOWA

SHEET 17 OF 26

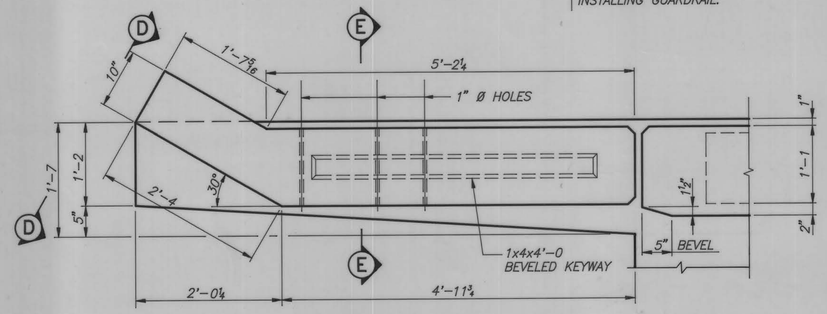


ELEVATION OF OPEN RAIL

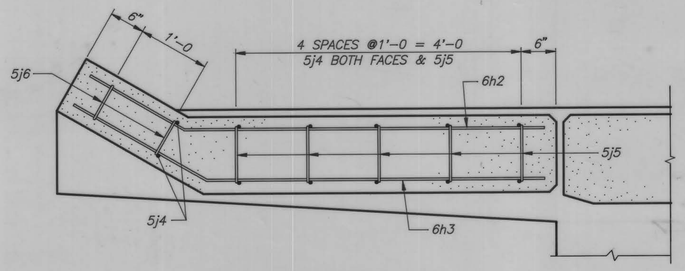


PART ELEVATION VIEW

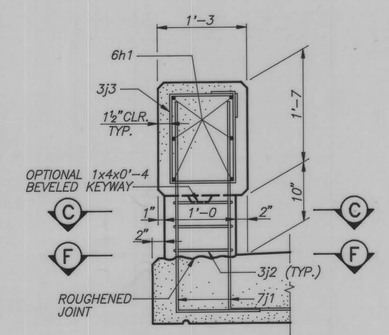
HOLES FOR 7/8"Ø BOLTS ARE TO BE FORMED WITH 1"Ø (NOMINAL I.D.) PLASTIC CONDUIT SLEEVES. THE SLEEVES SHALL BE SECURELY FIXED IN EXACT LOCATION AS SHOWN BEFORE CONCRETE IS POURED. COST OF SLEEVES TO BE INCLUDED IN PRICE BID FOR "STRUCTURAL CONCRETE". BOLTS AND WASHERS TO BE FURNISHED BY CONTRACTOR INSTALLING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



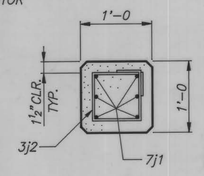
PART PLAN VIEW



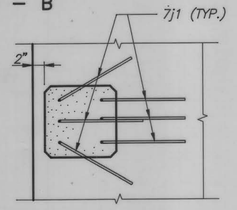
PART SECTION A – A



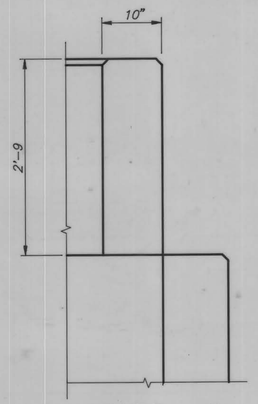
PART SECTION B – B



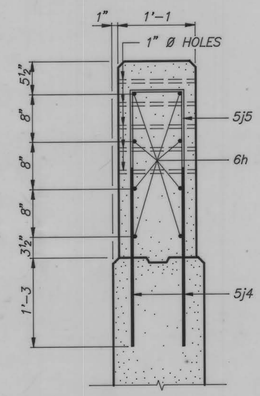
PART SECTION C – C



PART PLAN F – F



END VIEW D – D

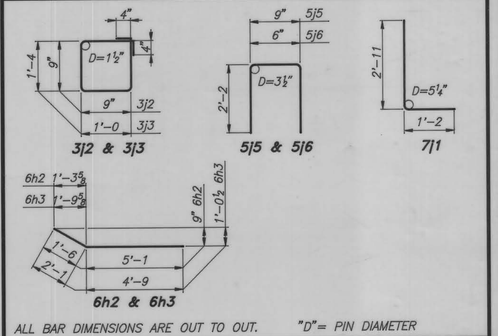


PART SECTION E – E

REINFORCING BAR LIST – EAST RAIL

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	7j1	RAIL POST, VERTICAL	⌊	210	4'-1	1,753
	3j2	RAIL POST, TIES	□	105	3'-8	145
	3j3	RAIL, TIES	□	372	5'-4	746
	*6h1	RAIL, LONGITUDINAL	—	30	52'-4	2,358
	* LENGTH INCLUDES LAP SPLICE					
2 END SECTIONS	5j4	ANCHOR TO SLAB	—	24	2'-6	63
	5j5	VERTICAL	⌐¬	10	5'-1	53
	5j6	VERTICAL	⌐¬	4	4'-10	20
	6h2	LONGITUDINAL	⌐	8	6'-7	79
	6h3	LONGITUDINAL	⌐	8	6'-10	82
INCLUDE WITH SUPERSTRUCTURE REINFORCING			TOTAL (LBS.)			5,299

BENT BAR DETAILS



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

CONCRETE PLACEMENT SUMMARY – E.

SECTION		TOTAL
STANDARD SECTION	5 @ 3.82	19.1
END SECTIONS	2 @ 0.70	1.4
	TOTAL (C.Y.)	20.5

CONCRETE OPEN RAIL QUANTITIES – E.

ITEM	UNIT	QUANTITY
CONCRETE OPEN RAIL	L.F.	260.05

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 EPOXY COATED AND EPOXY COATED.

243'-0 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

INTEGRAL ABUTMENTS — TEE PIERS

80'-9 END SPANS — 81'-6 INTERIOR SPAN

EAST OPEN RAIL DETAILS

STATION 15+10 — 10°30' SKEW, RT. AHEAD

CRAWFORD COUNTY, IOWA

SHEET 18 OF 26

TOTAL ESTIMATED QUANTITIES: DIV.II – GRADING

NO.	ITEM	UNIT	TOTAL
17	EXCAVATION, CLASS 10, ROADWAY & BORROW	CU. YDS.	20977
18	SURFACE, GRANULAR, CLASS A CRUSHED STONE – ROADWAY	TONS	592
19	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 24 IN. DIA	LIN. FT.	164
20	APRONS, METAL, 24 IN. DIA.	ONLY	6
21	SILT FENCE FOR DITCH CHECKS	LIN. FT.	200
22	CLEARING & GRUBBING	ACRES	1.1
23	SEEDING, FERTILIZING AND MULCHING	ACRES	7.1
24	GUARDRAIL FORMED STEEL THRIE BEAM	LIN. FT.	125
25	GUARDRAIL FORMED STEEL BEAM	LIN. FT.	150
26	GUARDRAIL, POST, BEAM	ONLY	48
27	GUARDRAIL, END ANCHORAGES, BEAM RE–52	ONLY	4
28	GUARDRAIL, END ANCHORAGES, BEAM RE–69	ONLY	4
29	OBJECT MARKERS, TYPE 3	ONLY	4
30	OBJECT MARKERS, TYPE 2	ONLY	8

ITEM NO. ESTIMATE REFERENCE INFORMATION

17 SEE SHEET 21 FOR BREAKDOWN OF EXCAVATION QUANTITIES. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED. INCLUDES MATERIAL FOR BRIDGE APPROACHES.

18 THE SURFACING SHALL BE FURNISHED AND PLACED BY THE CONTRACTOR IN TWO PASSES (1200 AND 600 TONS PER MILE).

19 - 20 SEE STANDARD ROAD PLANS AND TABULATION, SHEET 20. ALL PIPE IS TO BE STANDARD CORRUGATIONS. NO HELICALLY CORRUGATED PIPE WILL BE ALLOWED. ALL CONNECTING BANDS TO BE 24" WIDE.

21 SEE TABULATION, SHEET 20.

23 RURAL MIXTURES FOR PERMANENT SEEDING WILL BE USED AS DESIGNATED BY THE ENGINEER IN ACCORDANCE WITH SECTION 2601 OF THE IDOT STANDARD SPECIFICATIONS.

24 - 30 SEE TABULATIONS, SHEET 20.

GENERAL NOTES

PLAN AND PROFILE SHEETS INCLUDED 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.

A WASTE AREA SHALL BE PROVIDED 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 THERETO. 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 TILE 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.

THE QUANTITY SHOWN FOR "EXCAVATION, CLASS 10 ROADWAY AND BORROW" WILL BE FINAL PAY QUANTITY. NO PAYMENT FOR OVERHAUL SHALL BE MADE ON THIS PROJECT.

TRAFFIC CONTROL PLAN

THE PROJECT ROUTE WILL BE CLOSED TO TRAFFIC. TRAFFIC CONTROL ON THIS PROJECT SHALL BE IN ACCORDANCE WITH DETAIL SHEET 520–27. 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.

THE EXISTING STRUCTURE IS TO REMAIN IN SERVICE DURING BRIDGE CONSTRUCTION. THE ROAD MAY BE CLOSED TO COMPLETE THE APPROACH GRADING.

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

QUANTITIES AND NOTES

CRAWFORD COUNTY IOWA

CALHOUN–BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224–4344

JOB NO. 8190

DESIGN BY: RKH
DRAWN BY: RCV
CHECK BY: SBK

DESIGN NO. 5294

CRAWFORD COUNTY

FILE NO. 54659

TABULATION OF DELINEATORS AND OBJECT MARKERS

108-17
11-10-83

Refer to Standard Road Plan RE-48A-B and RE-29C **Not a Bid Item

LOCATION		DELINEATOR	OBJECT MARKER				REMARKS
STATION	TYPE	SINGLE WHITE D-1W	TRIPLE YELLOW OM2-3YV	TYPE 3		** OFFSET BRACKETS	
				OM-3L	OM-3R		
		NO.	NO.	NO.	NO.	NO.	
15+10	1	–	4	1	1	–	S. END
15+10	1	–	4	1	1	–	N. END

TABULATION OF GRADING FOR GUARDRAIL INSTALLATIONS

107-23
02-28-89

*Refer to Standard Road Plan RL-11 or Typicals 4303 and 4306

LOCATION POINT		TYPE	*DIMENSIONS			CLASS 10 EXCAV.△	EMBANK. IN PLACE	PIPE			REMARKS
No.	Station		Ⓐ/Ⓣ	Ⓨ	Ⓩ			SIZE	TYPE	LENGTH	
			Lin.Ft.	Lin.Ft.	Lin.Ft.	Cu.Yds.	Cu.Yds.	Inches		Lin.Ft.	
1	13+26.41	1	56.25	7.9	30	30	—	—	—	—	S. END, RT.
2	13+25.75	1	56.25	7.9	30	30	—	—	—	—	S. END, LT.
3	16+97.26	1	56.25	7.9	30	30	—	—	—	—	N. END, RT.
4	16+90.74	1	56.25	7.9	30	30	—	—	—	—	N. END, LT.

△ INCLUDES 35% FOR SHRINKAGE

TABULATION OF SILT FENCES FOR DITCH CHECKS

LOCATION STATION	SIDE	LIN. FT.
10+00	L/R	20/20
13+70	L/R	20/20
17+75	L/R	20/20
20+50	L/R	20/20
24+00	L/R	20/20

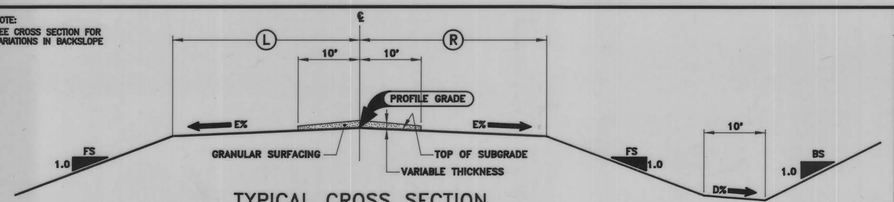
REMOVAL OF EXISTING STRUCTURES

110-2
10-13-72

LOCATION	DESCRIPTION	REMARKS
15+00, RT.	17' X 90' PONY TRUSS	BRIDGE
20+00, RT.	24" C.M.P.	F.E. (1)

(1) INCIDENTAL TO CLASS 10 ROADWAY & BORROW

NOTE:
SEE CROSS SECTION FOR VARIATIONS IN BACKSLOPE

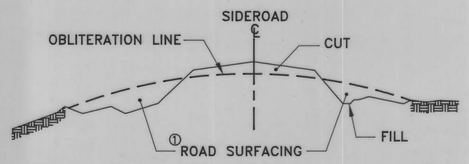


TYPICAL CROSS SECTION

LOCATION			Ⓛ	Ⓡ	E%	FS	D%	BS
ROAD IDENT.	STATION TO STATION							
MAIN LINE	7+84.81	13+79	17	17	2.9	3	2	3
MAIN LINE	16+41	28+08.13	17	17	2.9	3	2	3

NOTE:
NORMAL SECTIONS SHOWN MAY BE MODIFIED APPROPRIATELY IN AREAS OF SUPERELEVATION CURVES OR OTHER LOCATIONS SPECIFICALLY DESIGNATED BY THE ENGINEER.

4302
12-13-74



FILL SECTION

① EXISTING ROAD SURFACING (GRANULAR MATERIAL) SHALL BE PLACED AS SHOWN UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR PROVIDED FOR IN THE DETAIL PROJECT PLANS.

NOTE:
THE WORK OF OBLITERATING OR RESHAPING OLD ROADBEDS SHALL BE DONE AT THE DIRECTION OF THE ENGINEER. ANY SUCH WORK SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED INCIDENTAL TO OTHER WORK ON THE PROJECT.

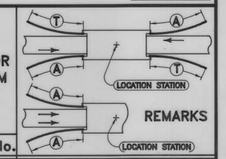
TYPICAL DETAILS FOR OBLITERATION EXISTING ROADBED

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

108-8A
01-07-92

*Include 2 – 12.5' Thrie Beam Sections and 1 – 6.25' "W" to Thrie Beam Transition Section

LOCATION		STANDARD ROAD PLAN	CASE	FORMED STEEL BEAM GUARDRAIL							BEAM GUARDRAIL POSTS			POST & ADAPTOR	ANCHOR SYSTEM		REMARKS
				Ⓐ		Ⓗ	Ⓣ				WITH 8" x 8" SPACER BLOCKS		WITHOUT SPACER BLOCKS				
NO.	STATION			"W" BEAM	STS* THRIE BEAM 31.25'	THRIE BEAM	STS* THRIE BEAM 31.25'	"W" BEAM	TOTAL "W" BEAM	TOTAL THRIE BEAM	10"x10" x6'-0	8"x8" x6'-0	6"x8" x6'-0	RE-37	Type	No.	
				Lin.Ft.	Lin.Ft.	Lin.Ft.	Lin.Ft.	Lin.Ft.	Lin.Ft.	Lin.Ft.	No.	No.	No.	No.			
1	15+10	RE-65	U	37.5				–	37.5			5	7	—	RE-52	1	S. END RT.
					31.25	–	–			31.25	3			—	RE-69	1	
2	15+10	RE-65	U	–				37.5	37.5			5	7	—	RE-52	1	S. END LT.
					–	–	31.25			31.25	3			—	RE-69	1	
3	15+10	RE-65	U	–				37.5	37.5			5	7	—	RE-52	1	N. END RT.
					–	–	31.25			31.25	3			—	RE-69	1	
4	15+10	RE-65	U	37.5				–	37.5			5	7	—	RE-52	1	N. END LT.
					31.25	–	–			31.25	3			—	RE-69	1	



REMARKS

TABULATION OF BRIDGE APPROACH SECTION

① Not a bid item

112-6
08-08-89

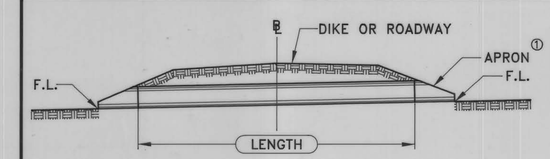
Refer to Standard Road Plan RF-19D,RF-19E,RK-16,RK-19A,RK-19B,RK-19C,RK-19D,RK-19E,RK-19F,RK-19G,RK-19H, or RK-19J

LOCATION		APPROACH PAVEMENT					SUBDRAIN					APPROACH SUBGRADE		
BRIDGE STATION	END	CASE	(PN) FOR CASE "2"	Ⓣ THICK-NESS	NON-REINF. PAVE. AREA	REINF. PAVE. AREA	① PERFORATED SUBDRAIN 4"	① SUBDRAIN OUTLET		① POROUS BACKFILL	① CLASS 'A' CRUSHED STONE BACKFILL	① SPECIAL BACKFILL	① ENGINEERING FABRIC	REMARKS
								STATION	SIDE					
				Inches	Sq.Yds.	Sq.Yds.	Lin.Ft.			Cu.Yds.	Cu.Yds.	Tons	Sq.Yds.	
15+10	S	1	–	8	–	68.1	40	13+69	L	2	–	55	74	S. END
15+10	N	1	–	8	–	68.1	40	16+55	L	2	–	55	74	N. END

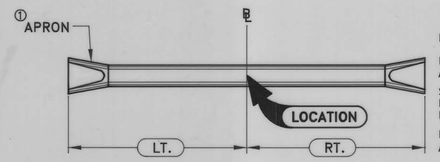
DRAINAGE STRUCTURES

LOCATION	TYPE	SIZE	KIND	DIMENSIONS—Lin. Ft.			APRON NO.	BED CLASS	COVER (FT.)	FLOW LINE ELEV.	
				LT.	RT.	LENGTH				INLET	OUTLET
11+00, RT.	1101	24"	2⅔x1½	25.5	23.5	36	2	C	4	1112.5	1111.6
17+20, LT.	1101	24"	2⅔x1½	43.5	41.5	72	2	C	9	1106.9	1106.4
20+00, RT.	1101	24"	2⅔x1½	34.5	34.5	56	2	C	7	1108.3	1108.0

1101
07-21-87



SECTION



PLAN

NOTES:

℄ SHALL BE ℄ OF ROADWAY, DIKE, SURVEY, OR OTHER; AS DETAILED ON PLANS.

SKEW ANGLE IS THE ANGLE WHICH ONE END OF THE PIPE IS AHEAD (BY STATIONING) OF LINE PERPENDICULAR TO THE ℄ (EXAMPLE SKEW RT. AHEAD 30).

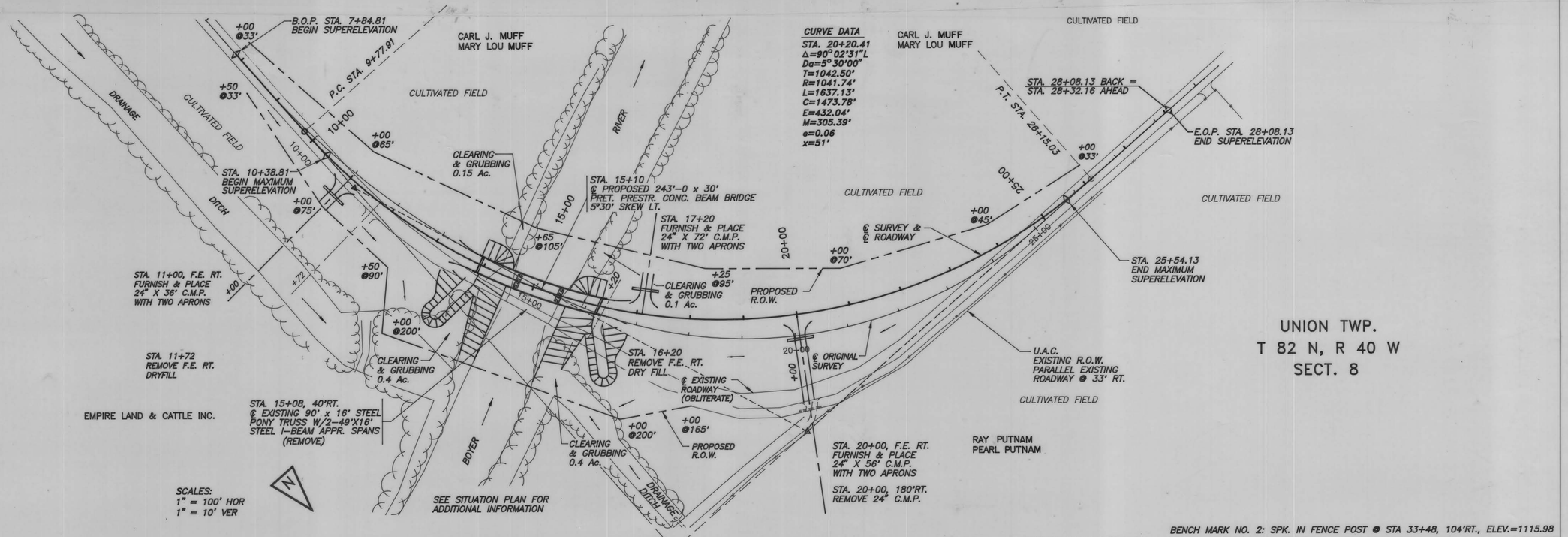
REFER TO TABULAR LISTING AND OTHER PLANS FOR ADDITIONAL INFORMATION.

① SEE STANDARD ROAD PLAN RF-3 FOR CONC. OR RF-5 FOR METAL.

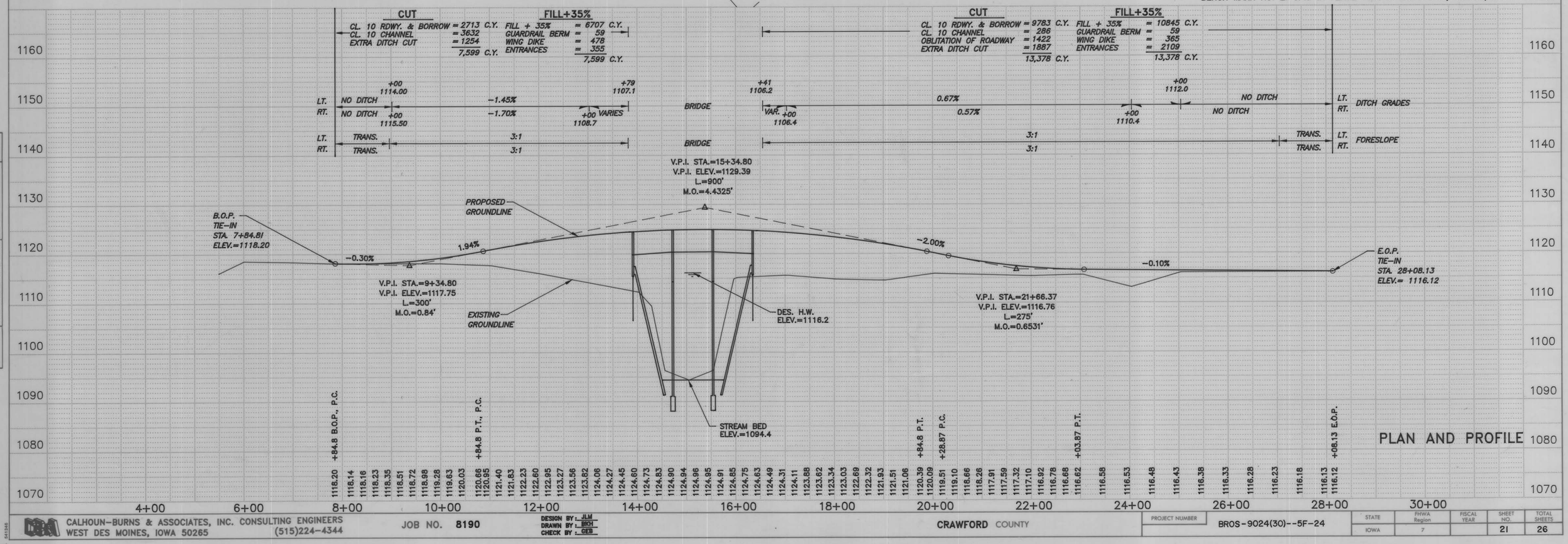
TYPICAL SECTIONS & TABULATIONS

CRAWFORD COUNTY, IOWA

SHEET 20 OF 26



BENCH MARK NO. 2: SPK. IN FENCE POST @ STA 33+48, 104'RT., ELEV.=1115.98



PLAN AND PROFILE

CALHOUN-BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224-4344

JOB NO. 8190

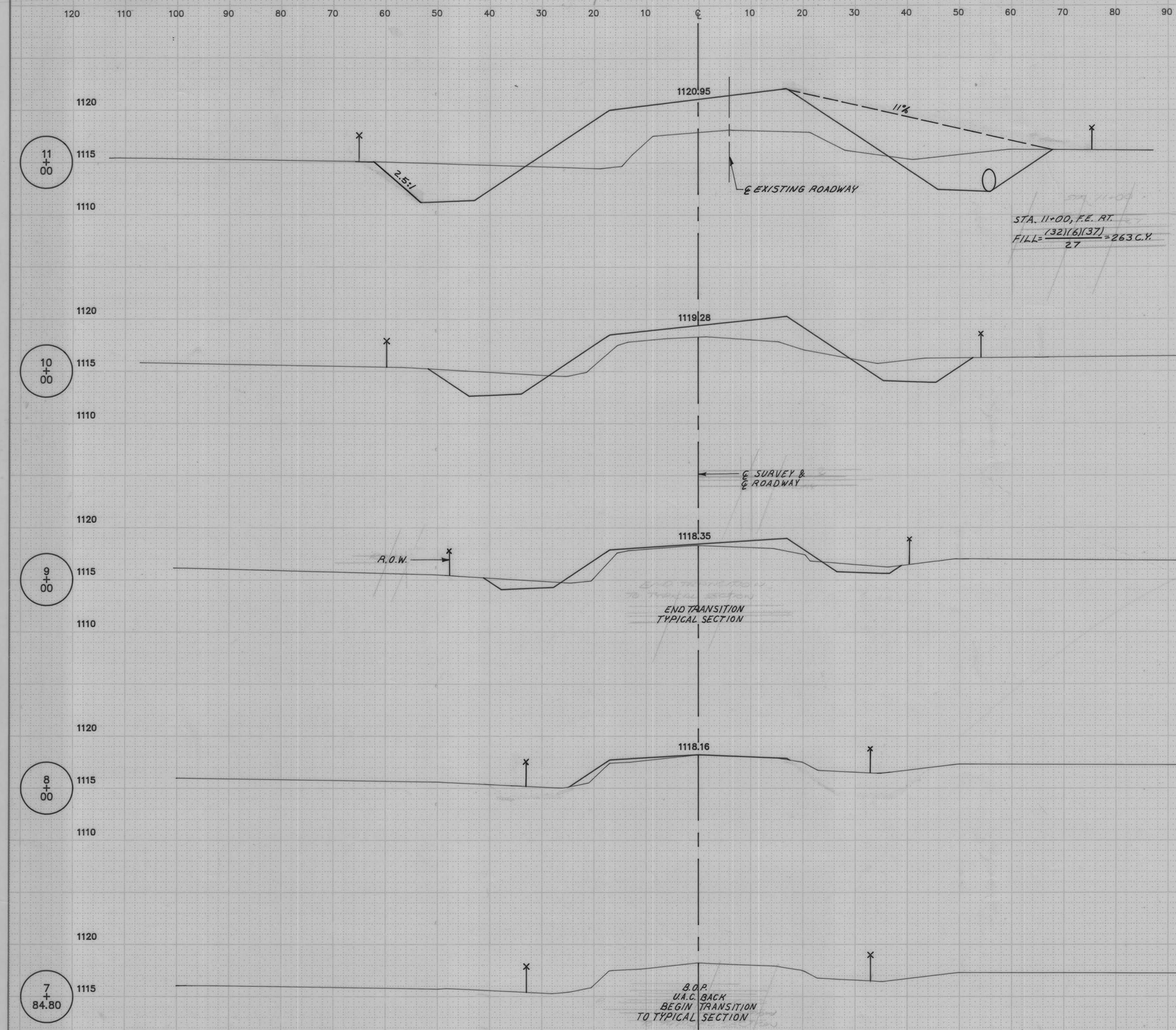
DESIGN BY :- JLM
DRAWN BY :- BKH
CHECK BY :- GEB

CRAWFORD COUNTY

PROJECT NUMBER	STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
BROS-9024(30)--5F-24	IOWA	7		21	26

PLAN — SURVEYED, PLOTTED, ALIGNMENT CHECKED, RT. OF WAY CHECKED, NOTE BOOK NO., BY, DATE

PROFILE — SURVEYED, PLOTTED, GRADES CHECKED, B. M.+ NOTED, STRUCTURE NOTATNS CHKD, NOTE BOOK NO., BY, DATE



	C	F
11 + 00	147	211
10 + 00	70	81
9 + 00	19	29
8 + 00	0	8
7 + 84.80		

	C	F
	718	1040
		+263
	402	541
	165	209
	35	68
	0	2

MAINLINE
CROSS SECTIONS

CALHOUN–BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224–4344

JOB NO. 8190

DESIGN BY : BKH
DRAWN BY : BKH
CHECK BY : SKR

CRAWFORD COUNTY

PROJECT NUMBER

STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		22	26

541908

DITCH CUT - STA. 16+41 TO OUTLET
$CUT = \frac{(39)(9.5)(30)}{27} = 412$ C.Y.

N. BRIDGE BERM
$FILL = \frac{(60)(9)(10)}{27} = 200$ C.Y.

GUARDRAIL BERM
$FILL = \frac{7.9(5.3)(1/2)(56.25+29)}{3(27)}(2) = 44$ C.Y.

STA. 16+33.83, WING DIKE
$FILL = \frac{(23.5)(1.3)(21)}{27} + \frac{(197.5)(33.8)}{27} = 270$ CU. YDS.

GUARDRAIL BERM
$FILL = \frac{7.9(5.3)(1/2)(56.25+29)}{3(27)}(2) = 44$ C.Y.

STA. 13+79.25, WING DIKE
$FILL = \frac{(4)(190)(30)}{27} = 400$ CU. YDS.

S. BRIDGE BERM
$FILL = \frac{(60)(8)(10)}{27} = 178$ C.Y.

DITCH CUT - STA. 13+77 TO OUTLET
$CUT = \frac{(32.5)(7.2)(50)}{27} = 433$ CU. YDS.

DITCH CUT - STA. 12+00 TO OUTLET
$CUT = \frac{(28)(4.41)(80)}{27} = 821$ C.Y.

END BRIDGE
RESUME QUANTITIES

BEGIN BRIDGE
END QUANTITIES

WING DIKE

R.O.W.

℄ EXISTING ROADWAY

℄ SURVEY & ℄ ROADWAY

3:1 NORMAL

10' NORMAL

2.5:1

	C	F
16+41	378	538
13+79	240	621
13+00	198	468
12+00	241	352

C	F
890	1197
+412	+44
	+200
	+270
	+44
	+178
	+400
+433	
+821	
601	1599
792	1514

MAINLINE CROSS SECTIONS

CALHOUN-BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224-4344

JOB NO. 8190

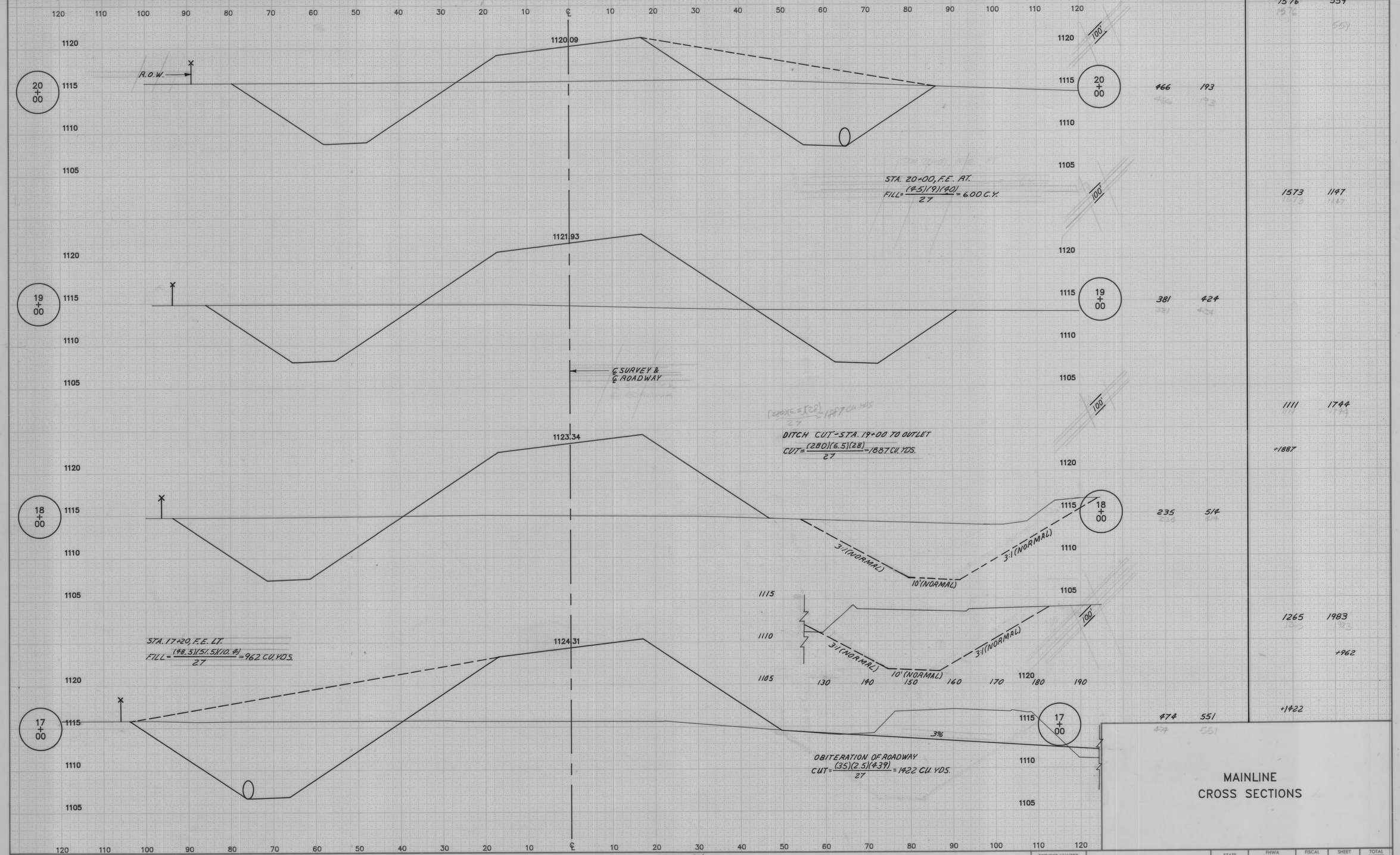
DESIGN BY : BKH
DRAWN BY : BKH
CHECK BY : SBR

CRAWFORD COUNTY

PROJECT NUMBER

STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7	—	23	26

541908



	C	F
20 + 00	466	193
19 + 00	381	424
18 + 00	235	514
17 + 00	474	551

	C	F
	1576	559
	1573	1197
	1111	1744
	+1887	
	1265	1983
	+962	
	+1422	

MAINLINE CROSS SECTIONS

CALHOUN–BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224-4344

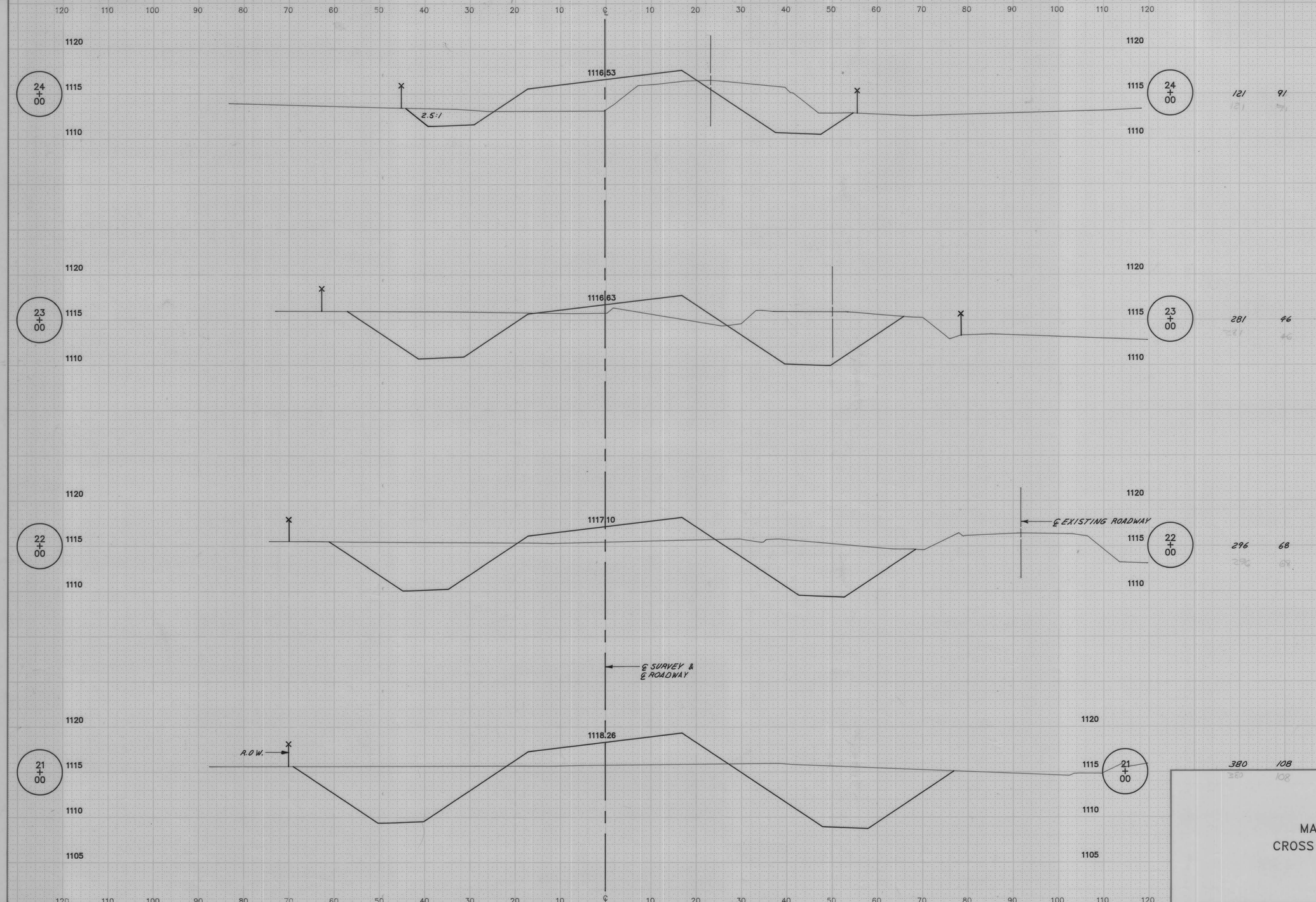
JOB NO. 8190

DESIGN BY : BCW
DRAWN BY : RCG
CHECK BY : SBL

CRAWFORD COUNTY

PROJECT NUMBER

STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		24	26



	C	F
24 + 00	121	91
23 + 00	281	46
22 + 00	296	68
21 + 00	380	108

	C	F
	252	248
	753	255
	1076	213
	1261	328

MAINLINE CROSS SECTIONS

CALHOUN–BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224–4344

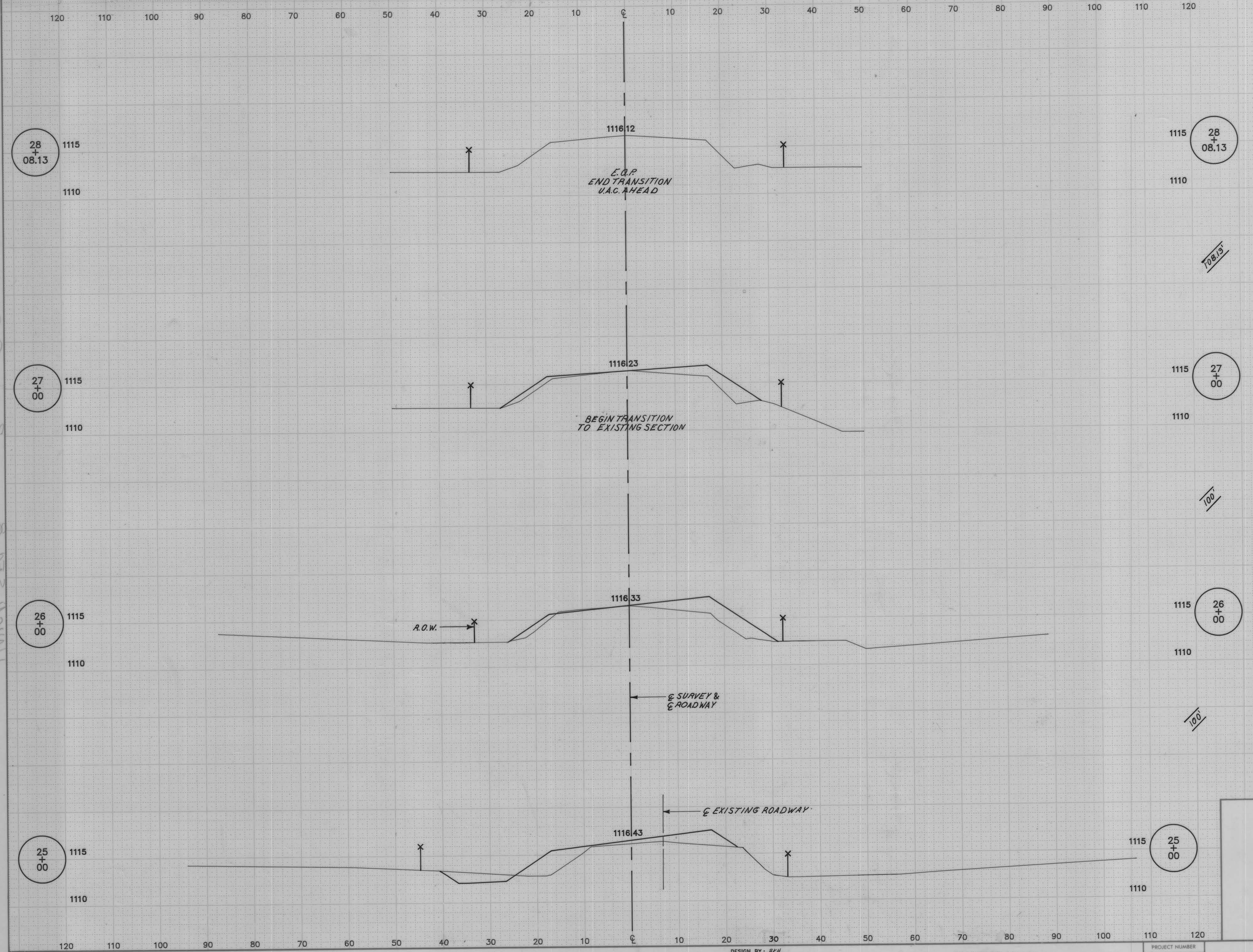
JOB NO. 8190

DESIGN BY : BCH
DRAWN BY : BCH
CHECK BY : SBK

CRAWFORD COUNTY

PROJECT NUMBER

STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		25	26



Station	C	F	Between stations	C	F
28+08.13	0	0			
			108.13'	0	65
27+00	0	33			
			100'	2	137
26+00	1	41			
			100'	24	157
25+00	12	43			

MAINLINE CROSS SECTIONS

CALHOUN-BURNS & ASSOCIATES, INC. CONSULTING ENGINEERS
WEST DES MOINES, IOWA 50265 (515)224-4344

JOB NO. 8190

DESIGN BY: BCH
DRAWN BY: BCH
CHECK BY: JBK

CRAWFORD COUNTY

PROJECT NUMBER

STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		26	26