

STATE OF IOWA
STATE HIGHWAY COMMISSION
DESIGN FOR
180'x20' PRE-STRESSED CONCRETE BEAM BRIDGE
SECONDARY ROAD SYSTEM PROJ. S-1305(2)
CRAWFORD COUNTY
MAY 1957.

MILEAGE SUMMARY := 182'-4" = 0.0345 MILES.

SPECIFICATIONS:
 Design: A.A.S.H.O. Series of 1953.
 Construction: Standard Specifications of the Iowa State Highway Commission, Series of 1956, plus Current Special Provisions except as noted.

In Letting of June 25th 1957

DESIGN 157 SOLDIER TWP. CRAWFORD COUNTY. SEC. 17-20 STA. 25+48.5 OVER SOLDIER RIVER.				
180'x20' PRESTRESSED CONCRETE BEAM BRIDGE.				
DESCRIPTION.	PIERS	ABUTS.	SUP' STRUCT.	TOTAL
CONCRETE Class-"C"		160 C.Y.		160 C.Y.
" Class-"A"	17.60 C.Y.	42.20 C.Y.	100.30 C.Y.	160.10 C.Y.
REINFORCING STEEL	2722 Lbs.	2292 Lbs.	21,905 Lbs.	26,919 Lbs.
STRUCTURAL STEEL			3,292 Lbs.	3,292 Lbs.
TREATED PILING		720 L.F.		720 L.F.
PRECAST CONC. PILING	560 L.F.			560 L.F.
PRE-STRESSED CONG. BEAMS			10-55'-0" (b)	10@55'-0 (b)
" "			5-67'-6" (b)	5@67'-6 (b)
HANDRAIL			364'-8" (c)	364'-8 (c)
EXCAVATION Class "20"			99 C.Y.	99 C.Y.
EXCAVATION " "10"			651 C.Y.	651 C.Y.
REMOVAL OF OLD STRUCTURE				LUMP SUM.

NOTE: Crawford County will furnish and place Bridge Sign Assemblies to conform with S&T instruction No-11, revised March 1, 1956.

APPROVED

[Redacted Signature]

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BOARD OF SUPERVISORS DATE

APPROVED

CHIEF ENGINEER DATE
 IOWA HIGHWAY COMMISSION

DEPARTMENT OF COMMERCE
 BUREAU OF PUBLIC ROADS.

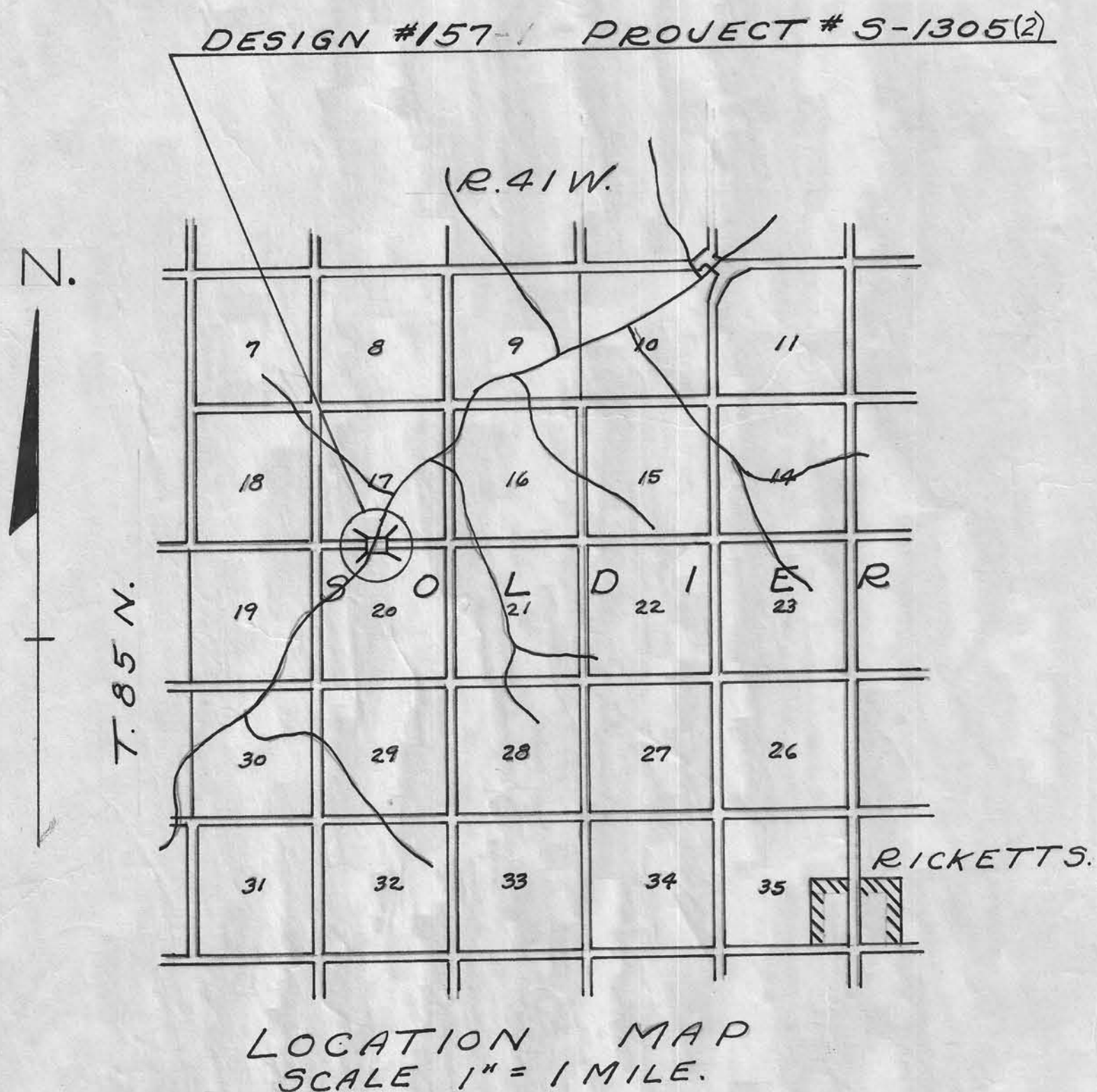
RECOMMENDED FOR APPROVAL

DISTRICT ENGINEER DATE

APPROVED.

DIVISION ENGINEER. DATE

1/4



SOLDIER TOWNSHIP
T. 85N. R. 41W.
SEC. -17.

Cultivated.

Pasture

Sta. -25+52.0, E of 144'x18'
Combination, 24' Wood, 90' Low
Truss, 30' I-Beam x 18' Bridge.
Condition Poor. D.A. = 118
Sq. Miles. County to
~~remove present~~
~~bridge~~

Proposed 180'x20' Pre-
Tensioned - Pre-stressed
Concrete Beam Bridge.
Concrete Floor & Sub-
Structure. Sta. 25+48.5
Formed Type "C"
Steel Hand Rails.

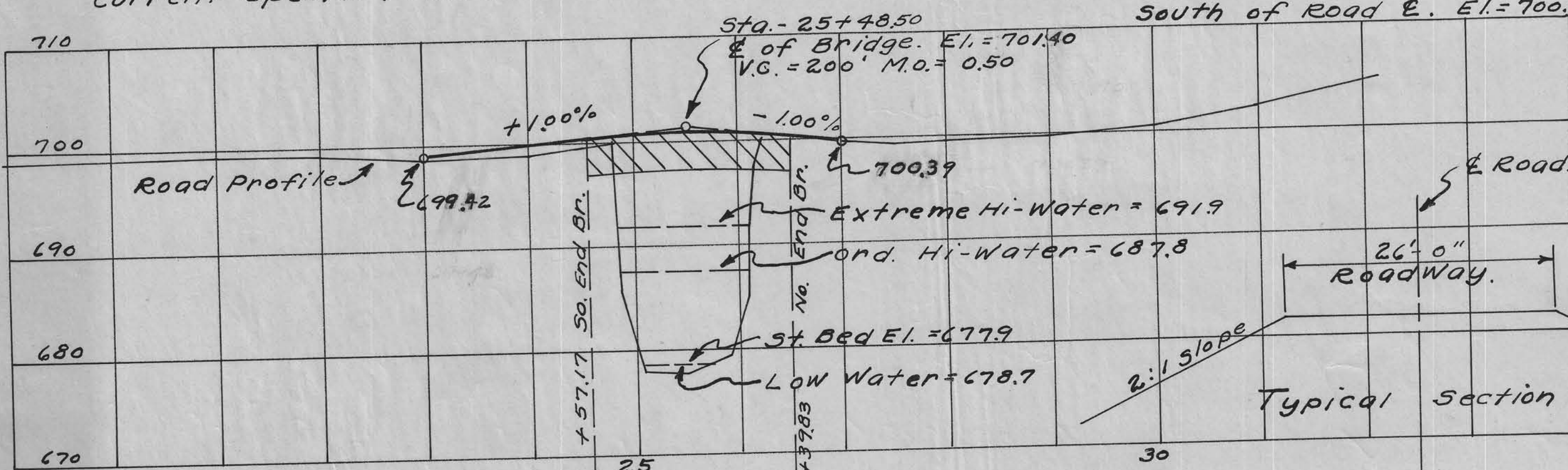
Cultivated

SEC. -20.

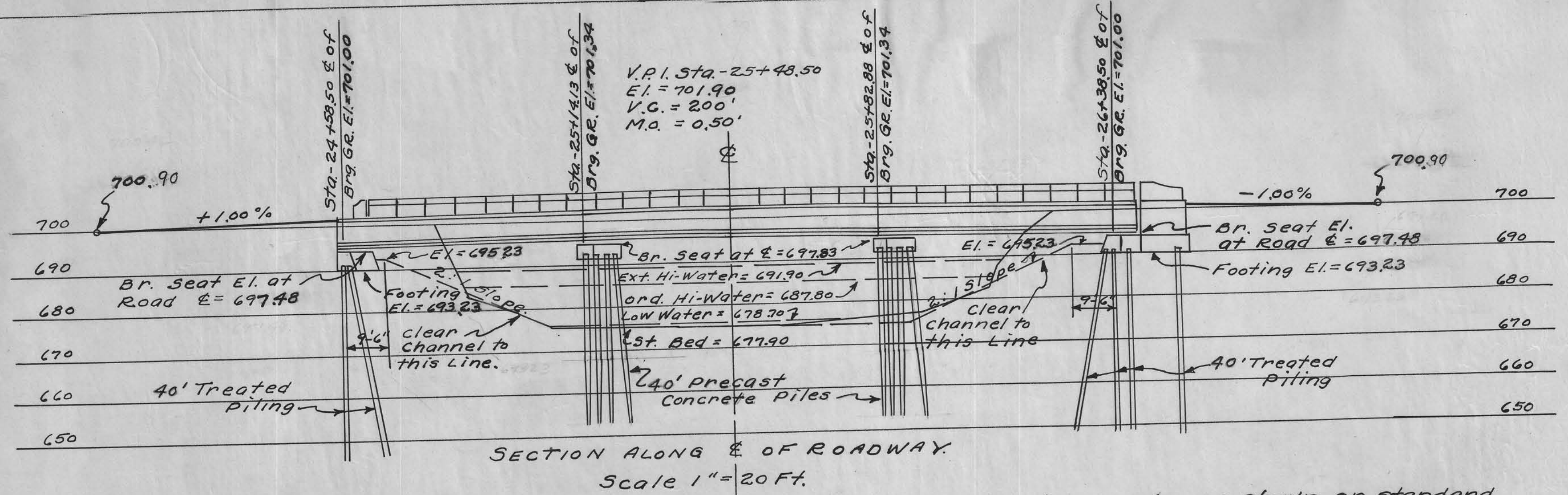
GENERAL PLAN.
SCALE 1" = 100 FT.

GENERAL NOTES:

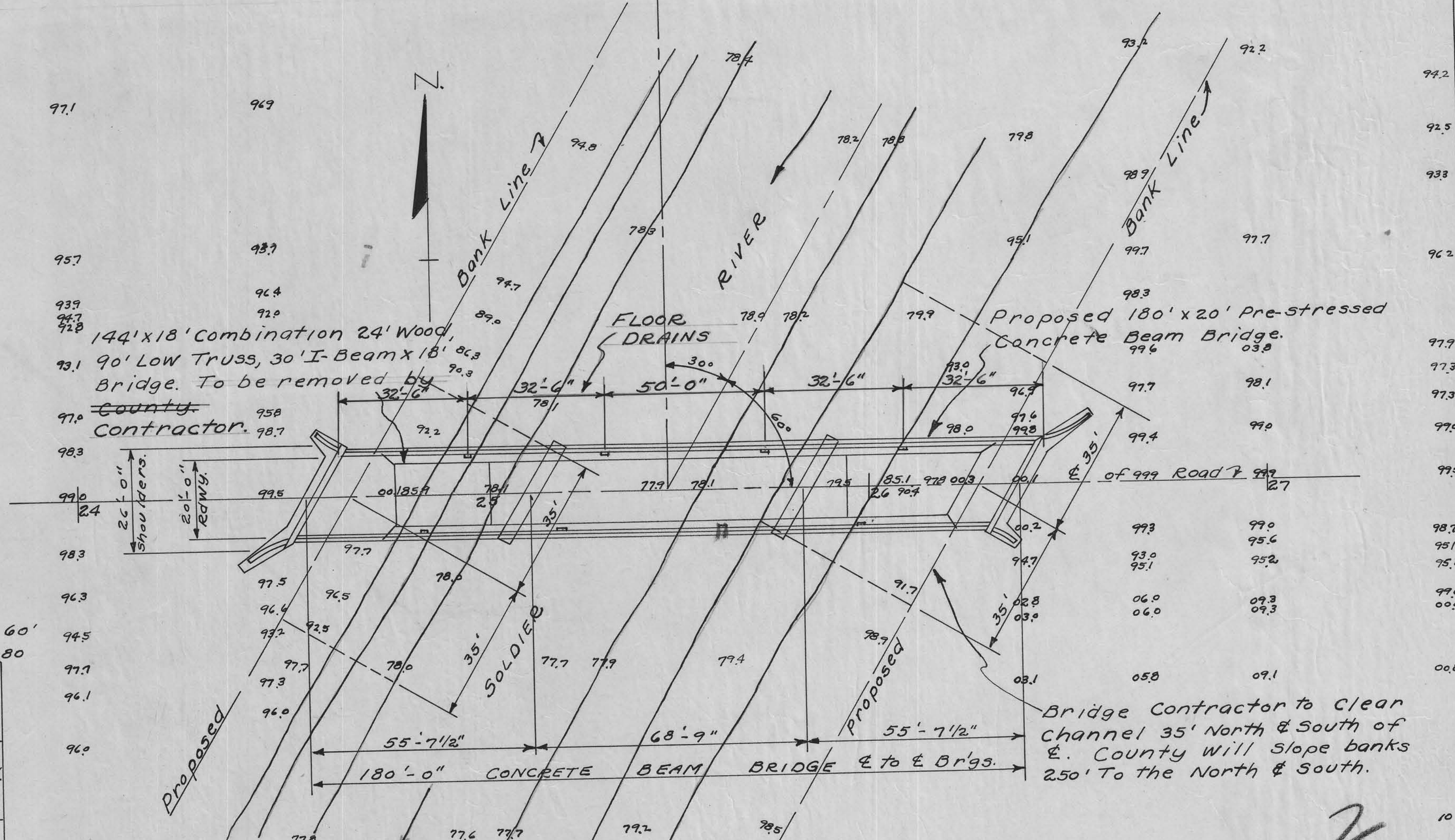
All exposed corners of 90° or sharper are to be filleted 3/4". All reinforcing bars are to be securely wired in place and adequately supported on bar chairs before concrete is placed. Forms for slab are to be supported by the prestressed beams. Bridge seats of both abutments & piers are to be stepped as shown to provide for crown of roadway. For details of Super-structure refer to Sheet PC-5 with modifications necessary for skewing of spans. For details of sub-structure refer to Standard P-10, for Piers and H10-3 for Abutments. With modifications shown on sheet - 4. All construction to be in accordance with the Iowa Highway Commission's Standards, Series of 1956 plus current special provisions as noted.



ROAD PROFILE
HORIZ. 1" = 100 FT.
SCALE VERT. 1" = 10 FT.



ADDITIONAL GENERAL NOTES: Rail to be anchored into concrete wing posts as shown on standard H10-3. The floor slab is to be thickened over the piers & abutments to compensate for the natural camber of the pre-stressed beams. Shots should be taken after the beams are in place but before the slab is poured, and a new grade laid over the bridge. This will usually revise the grade a fraction of an inch. An allowance should be made for the deflection of the beams due to the weight of the slab: approx. 3/8" @ E of 55'-0" beams and 1/4" @ E of 67'-6" beams.



SITUATION PLAN
SCALE 1" = 20 FT.

DESIGN FOR 30° SKEW

180'x20' PRE-STRESSED CONCRETE BEAM BRIDGE
CONCRETE FLOOR - STEEL HANDRAIL

Location
Section 17-20
Soldier Twp.
T. 85N. R. 41W.
Over Soldier River.

STA. 25+48.5

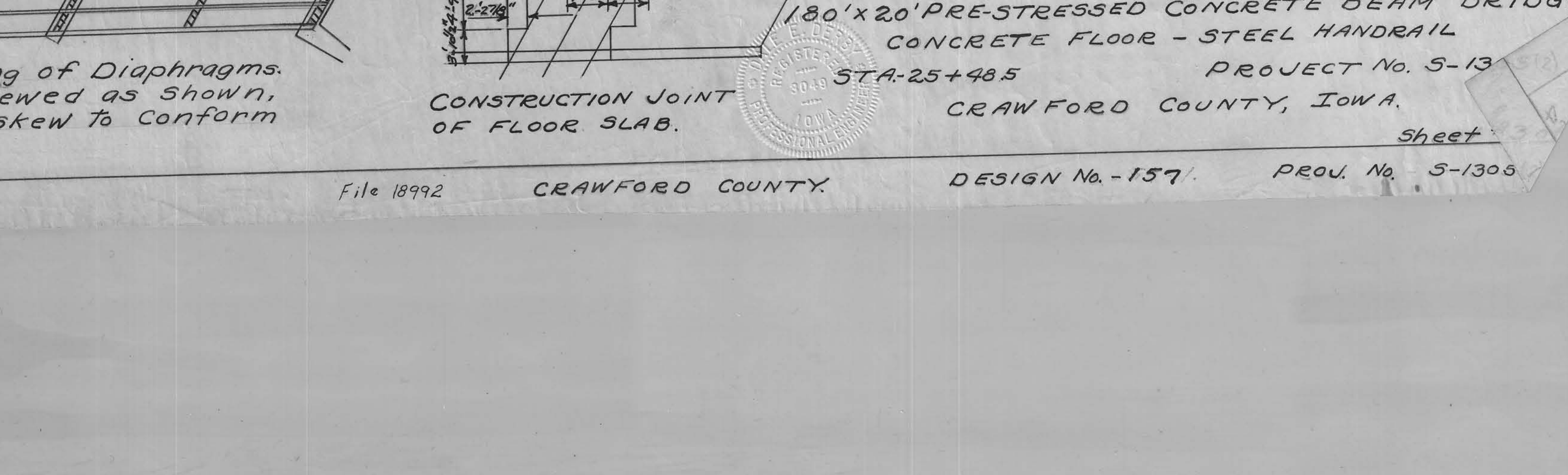
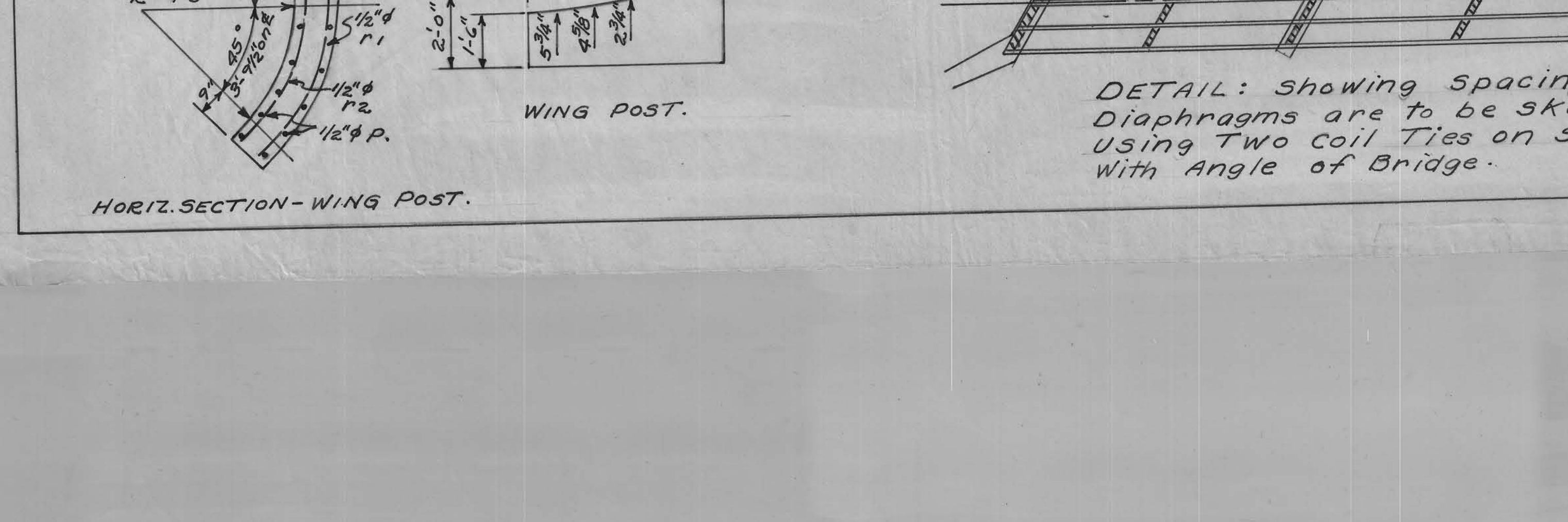
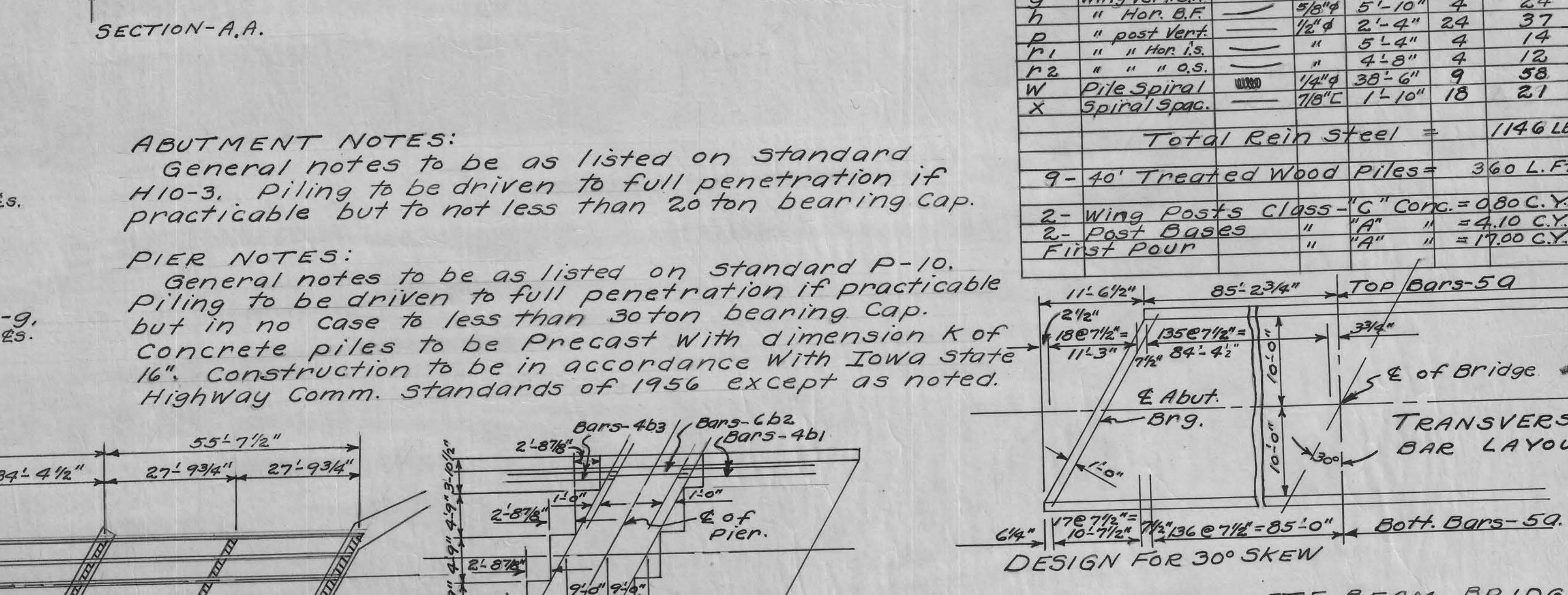
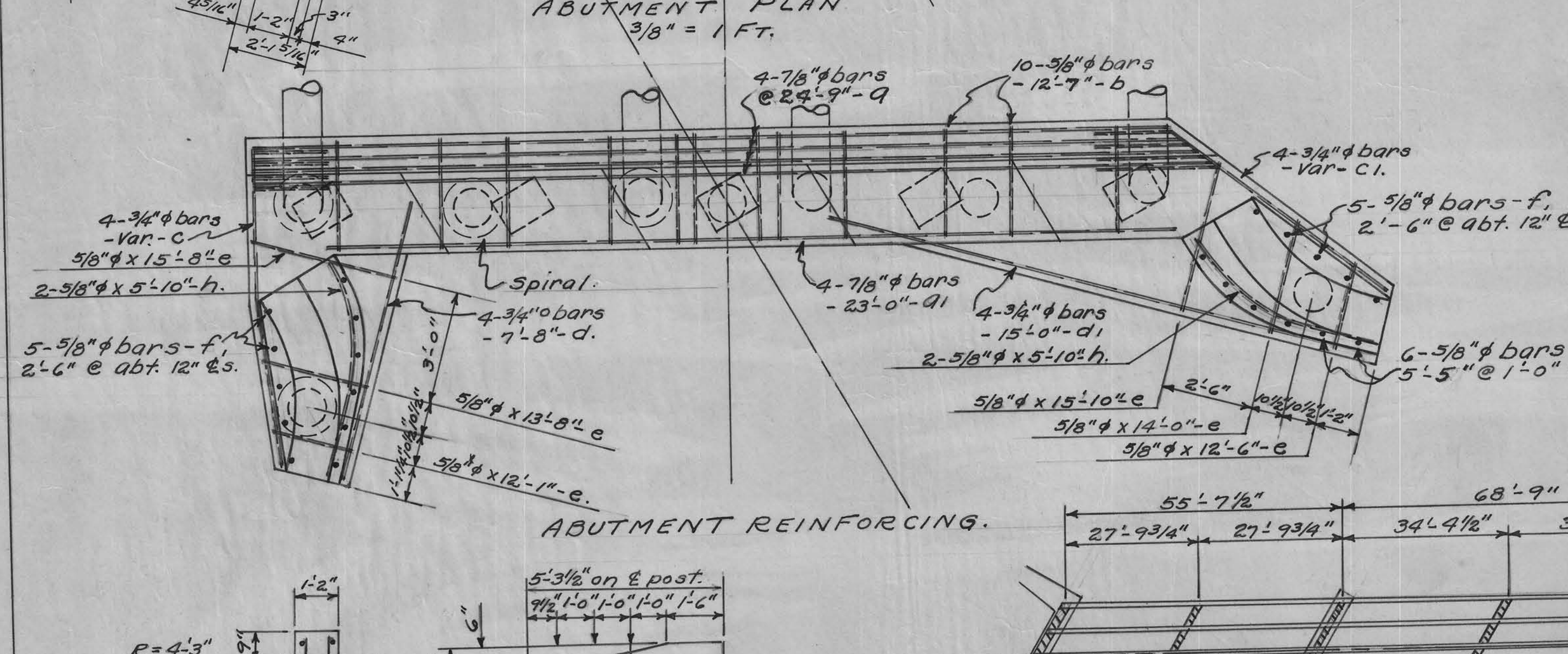
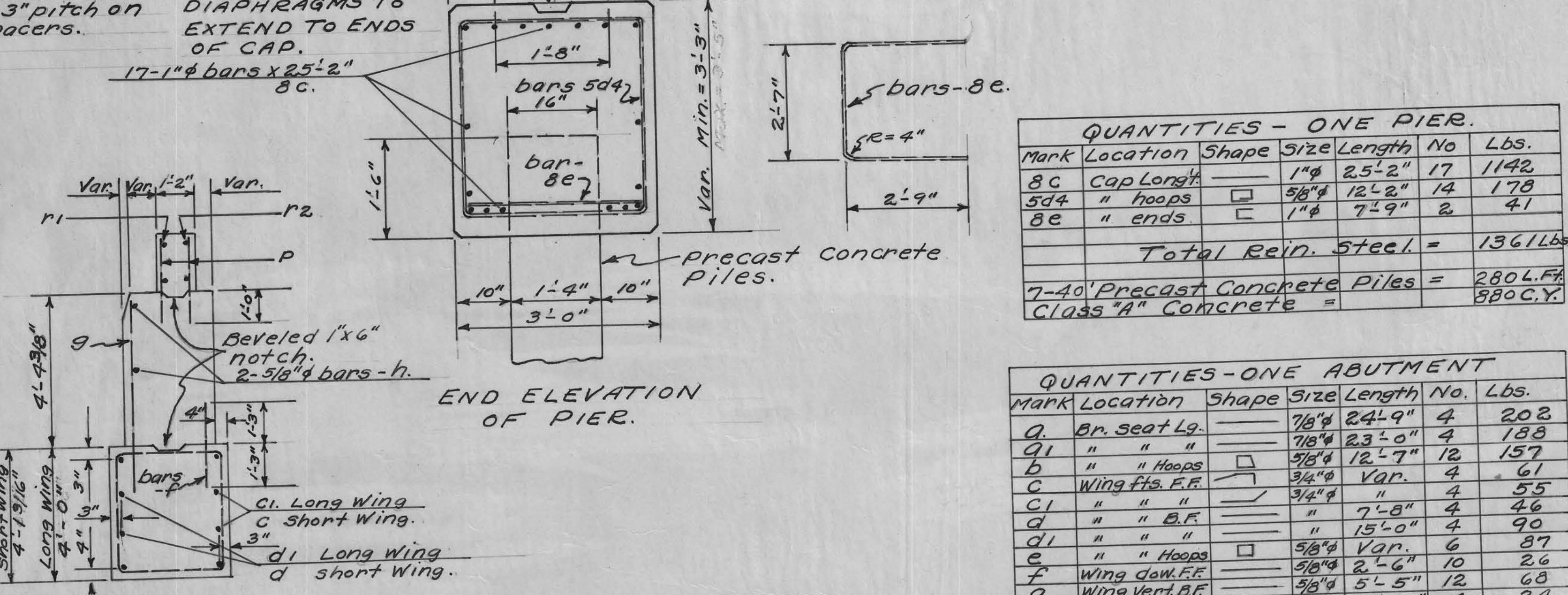
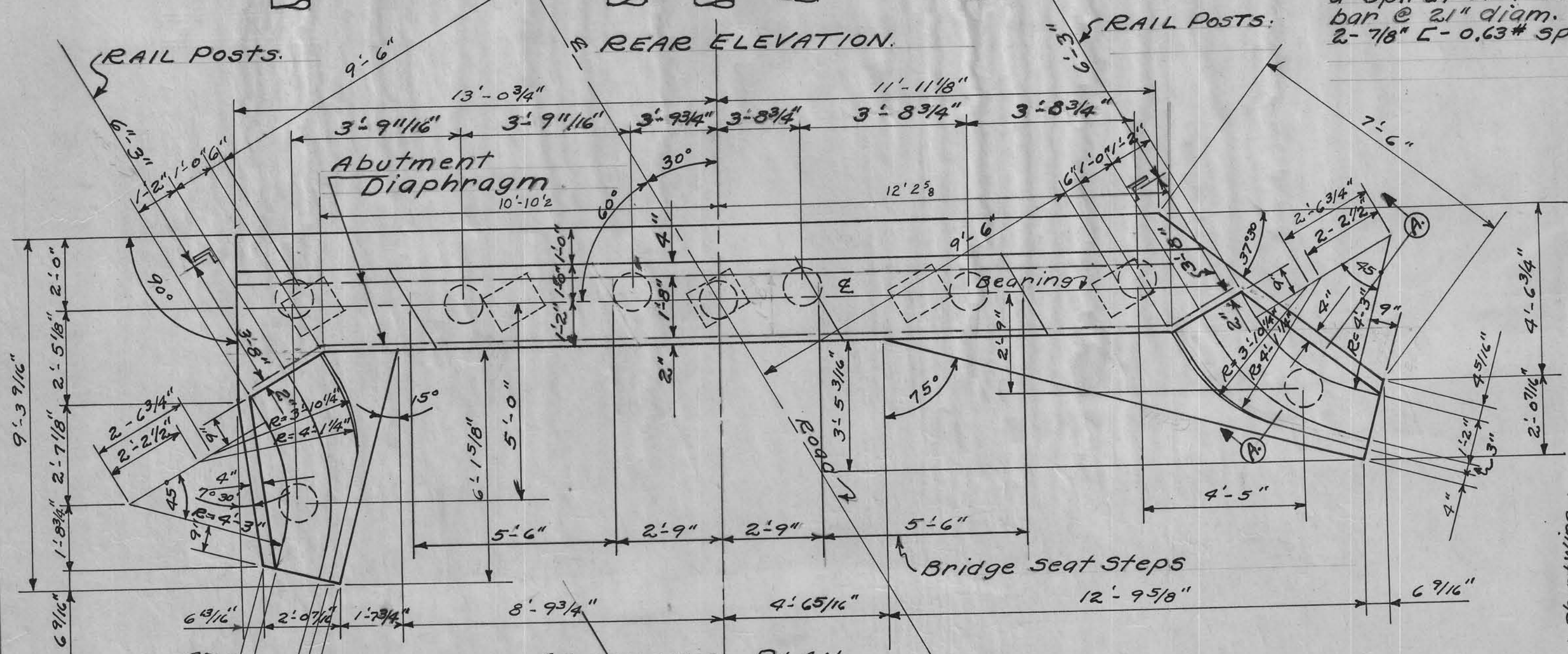
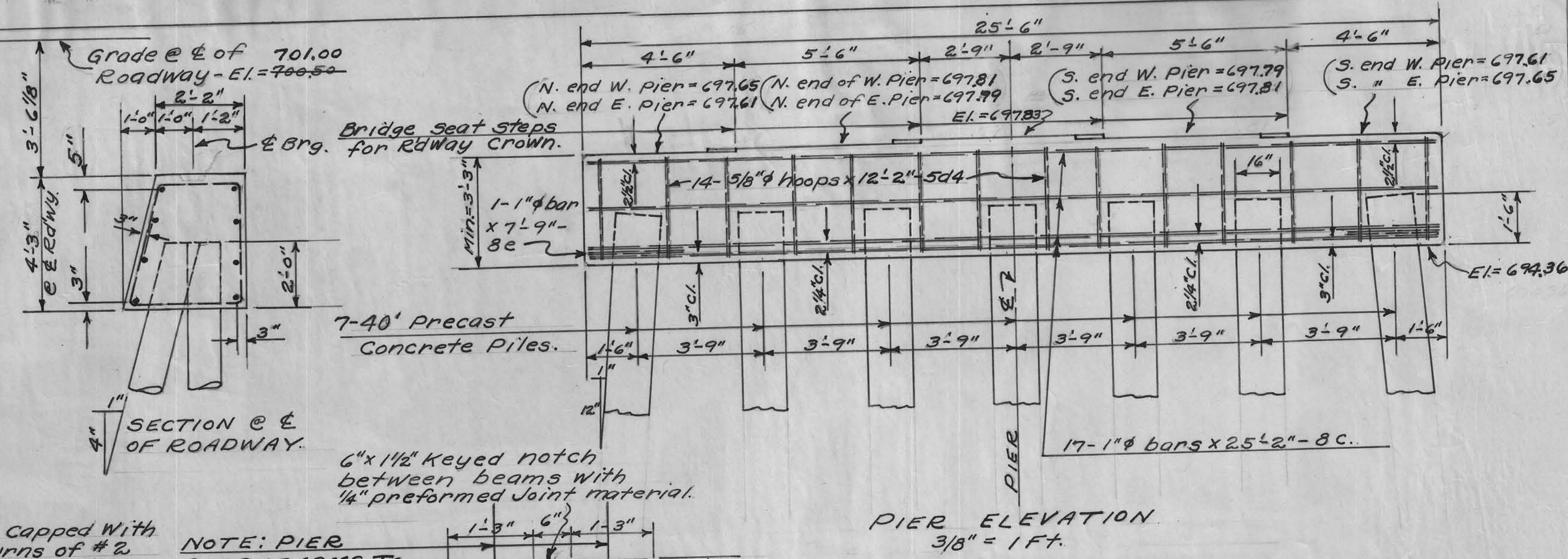
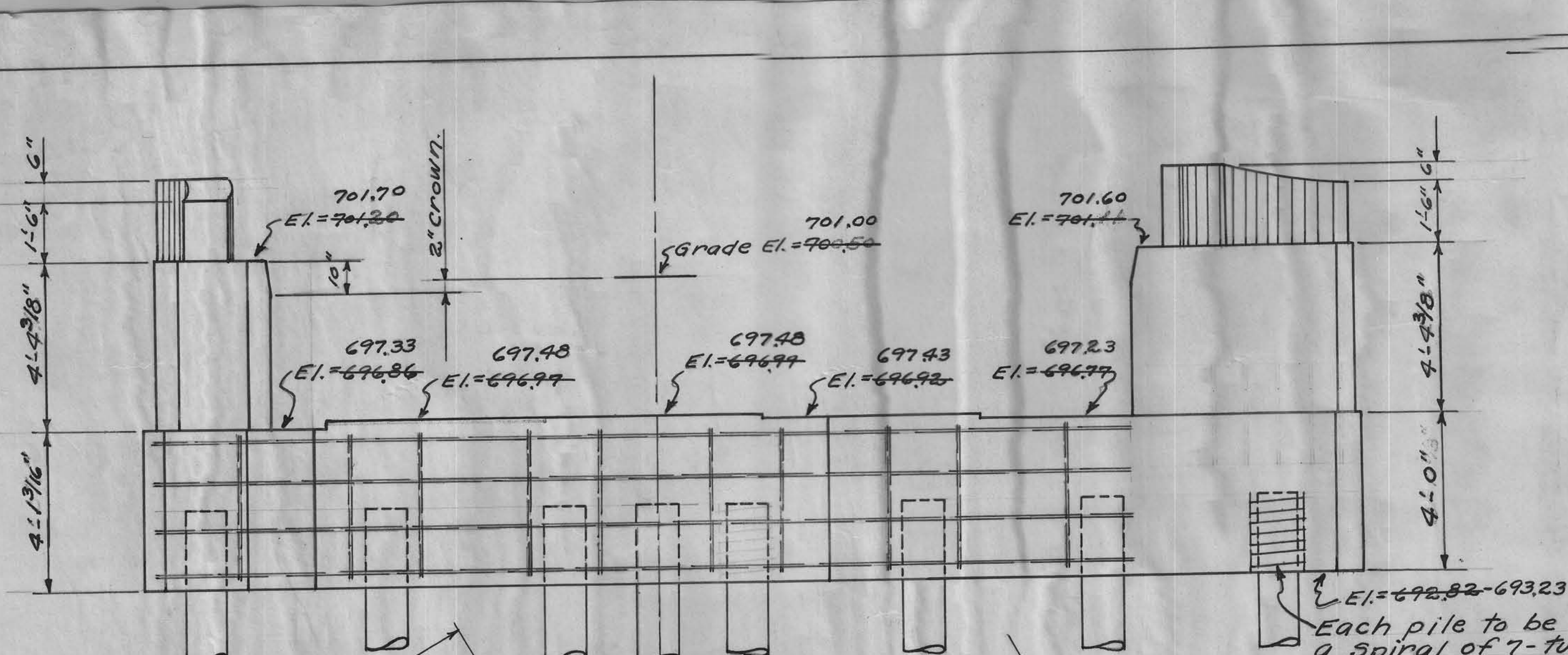
CRAWFORD COUNTY, IOWA.

Sheet #2 of 4

CRAWFORD COUNTY.

DESIGN No. - 157.

PROJ. No. - 5-1305(2) File 18792



QUANTITIES - ONE PIER.						
Mark	Location	Shape	Size	Length	No.	Lbs.
8c	Cap Long	□	1"φ	25'-2"	17	1142
5d4	" Hoops	□	5/8"φ	12'-2"	14	178
8e	" ends	□	1"φ	7'-9"	2	41
Total Rein. Steel =						1361 Lbs.
7-40' Precast Concrete Piles =						280 L.Ft.
Class "A" Concrete =						880 C.Y.

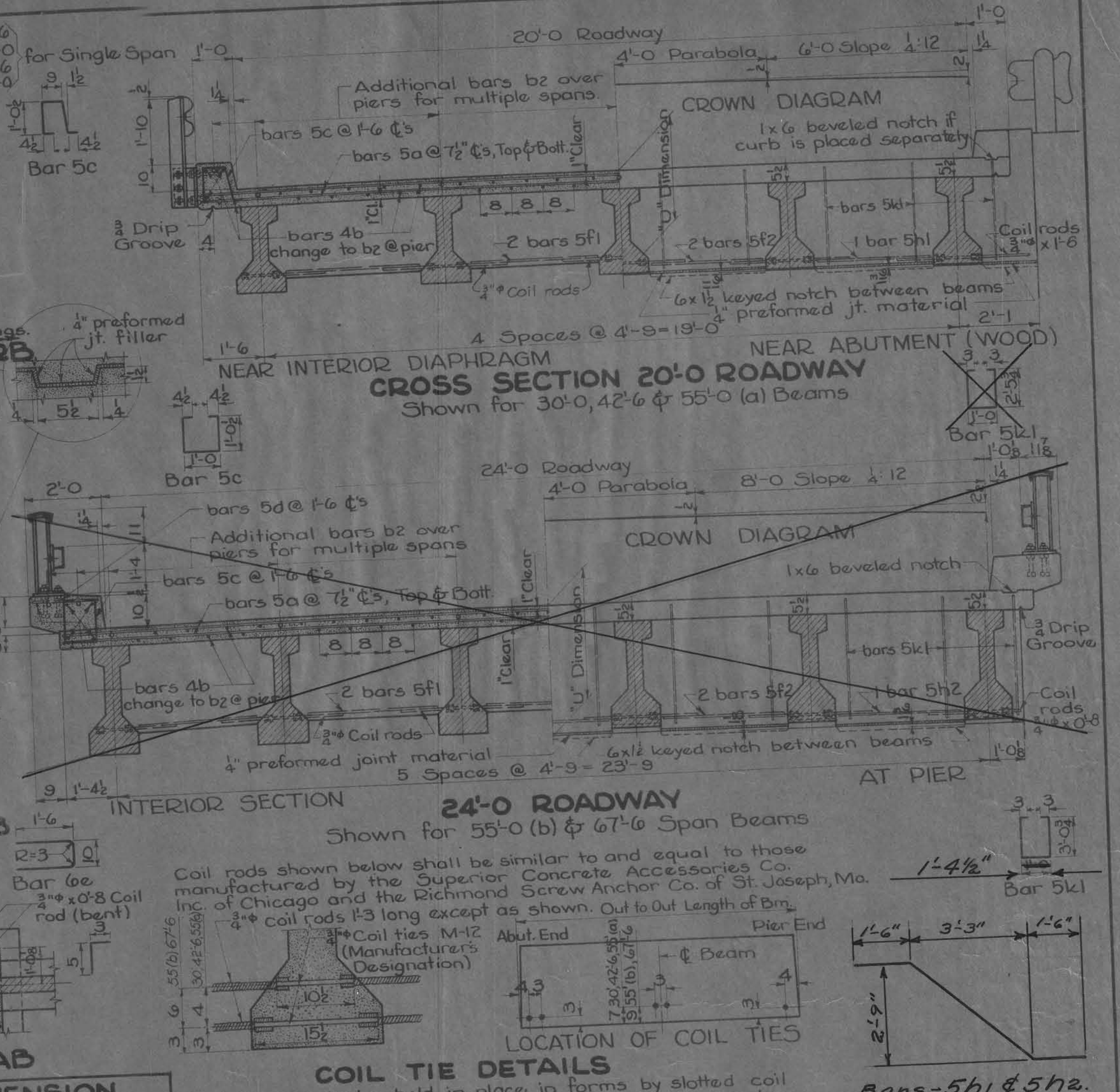
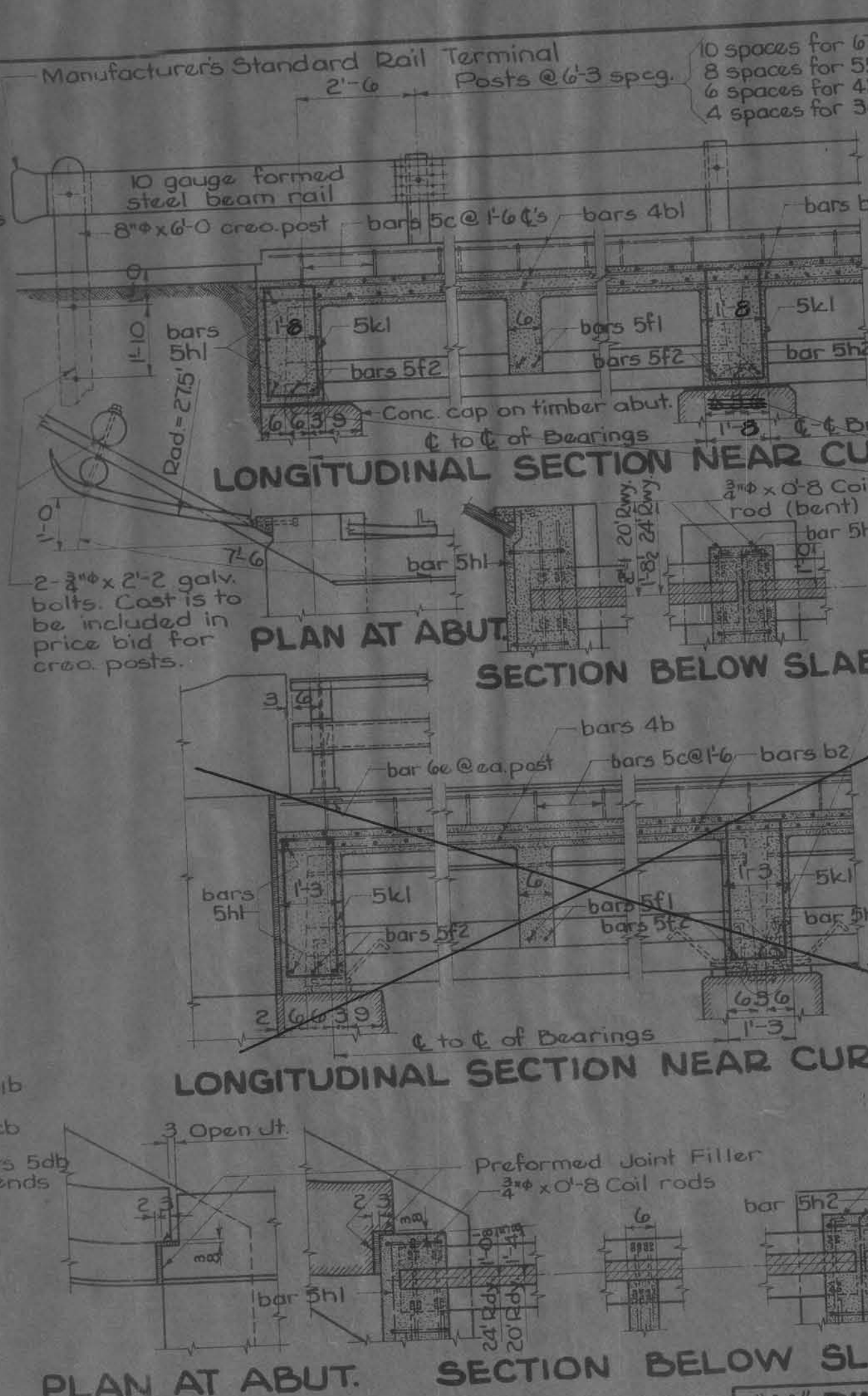
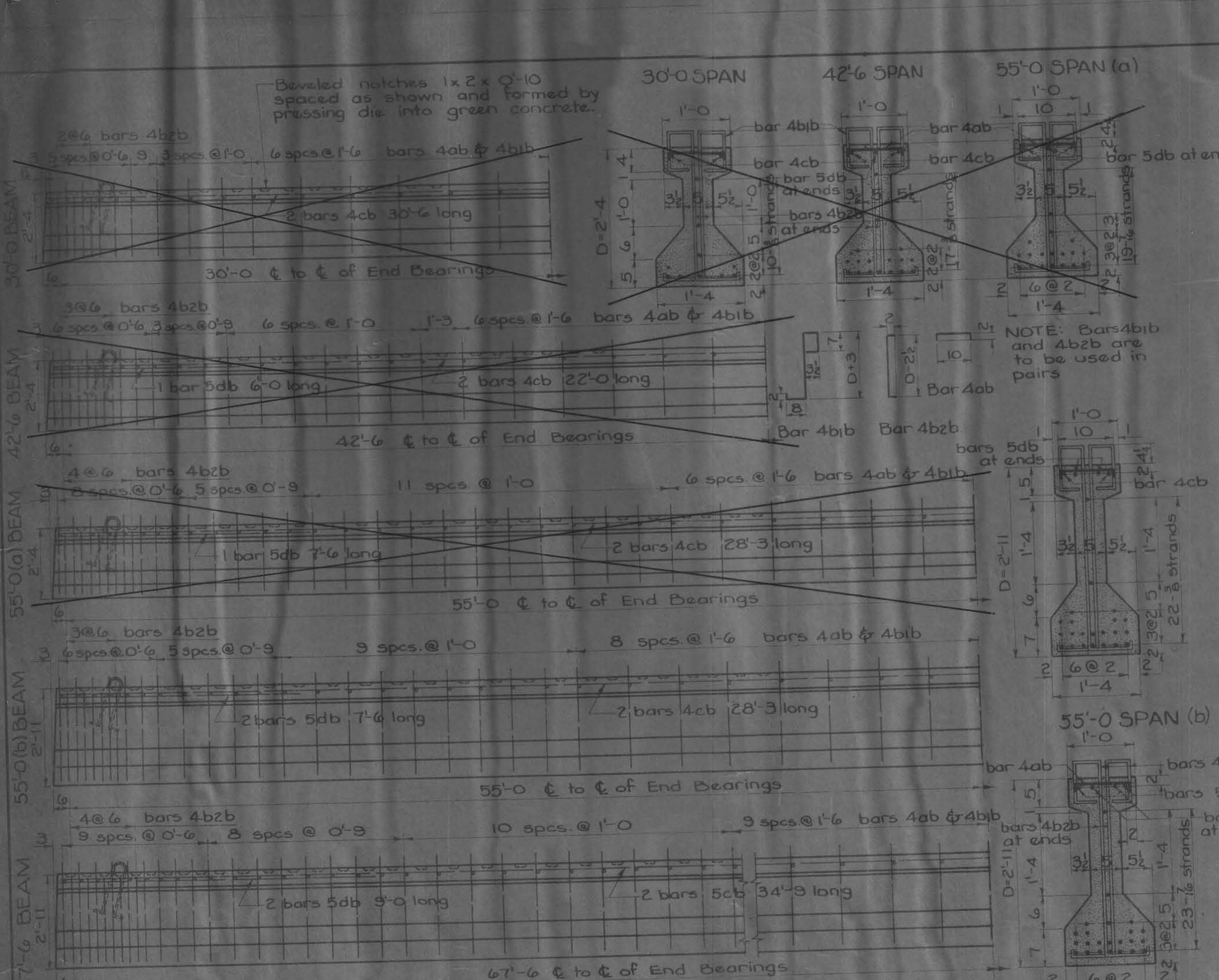
QUANTITIES - ONE ABUTMENT						
Mark	Location	Shape	Size	Length	No.	Lbs.
a	Br. seat Lg.	—	7/8"φ	24'-9"	4	202
a1	" " "	—	7/8"φ	23'-0"	4	188
b	" " Hoops	□	5/8"φ	12'-7"	12	157
c	Wing fls. E.E.	—	3/4"φ	Var.	4	61
c1	" " "	—	3/4"φ	"	4	55
d	" " B.F.	—	"	7'-8"	4	46
d1	" " "	—	"	15'-0"	4	90
e	" " Hoops	□	5/8"φ	Var.	6	87
f	Wing dow. E.F.	—	5/8"φ	2'-6"	10	26
g	Wing Vert. B.F.	—	5/8"φ	5'-5"	12	68
g	" Hor. B.F.	—	5/8"φ	5'-10"	4	24
h	" post Vert.	—	1/2"φ	2'-4"	24	37
p1	" " Hor. Is.	—	"	5'-4"	4	14
p2	" " " S.S.	—	"	4'-8"	4	12
w	Pile Spiral	—	1/4"φ	38'-6"	9	58
x	Spiral Spac.	—	7/8"φ	1'-10"	18	21
Total Rein. Steel =						1146 Lbs.
9-40' Treated Wood Piles =						360 L.Ft.
2-Wing Posts Class - "C" Conc. =						0.80 C.Y.
2-Post Bases " " " =						4.10 C.Y.
First Pour " " " =						17.00 C.Y.

ABUTMENT NOTES:
 General notes to be as listed on standard H10-3, piling to be driven to full penetration if practicable but to not less than 20 ton bearing Cap.

PIER NOTES:
 General notes to be as listed on standard P-10, piling to be driven to full penetration if practicable but in no case to be less than 30 ton bearing Cap. Concrete piles to be Precast with dimension K of 16". Construction to be in accordance with Iowa state Highway Comm. standards of 1956 except as noted.

DETAIL: showing Spacing of Diaphragms. Diaphragms are to be skewed as shown, Using Two coil Ties on skew to Conform with Angle of Bridge.

180' x 20' PRE-STRESSED CONCRETE BEAM BRIDGE
 CONCRETE FLOOR - STEEL HANDRAIL
 STA. 25+48.5 PROJECT No. 5-13
 CRAWFORD COUNTY, IOWA
 Sheet



DETAILS OF BEAMS
Scale: 3/4" = 1'-0"

MULTIPLE SPAN COMBINATIONS

Span	Depth	Strands	Conc. Cyl.	Steel lbs.	Initial Stress	Span	Depth	Strands	Conc. Cyl.	Steel lbs.	Initial Stress
30'-0"	2'-4"	10-3/8	2.04	242	140 k	30'-0"	2'-4"	10-3/8	2.04	242	140 k
30'-0"	2'-4"	17-3/8	2.90	393	238 k	42'-6"	2'-4"	17-3/8	2.90	393	238 k
42'-6"	2'-4"	19-1/8	3.73	524	360 k	55'-0"(a)	2'-4"	19-1/8	3.73	524	360 k
55'-0"(a)	2'-4"	22-3/8	4.66	557	398 k	55'-0"(b)	2'-11"	22-3/8	4.66	557	398 k
67'-6"	2'-11"	23-1/8	5.70	759	434 k						

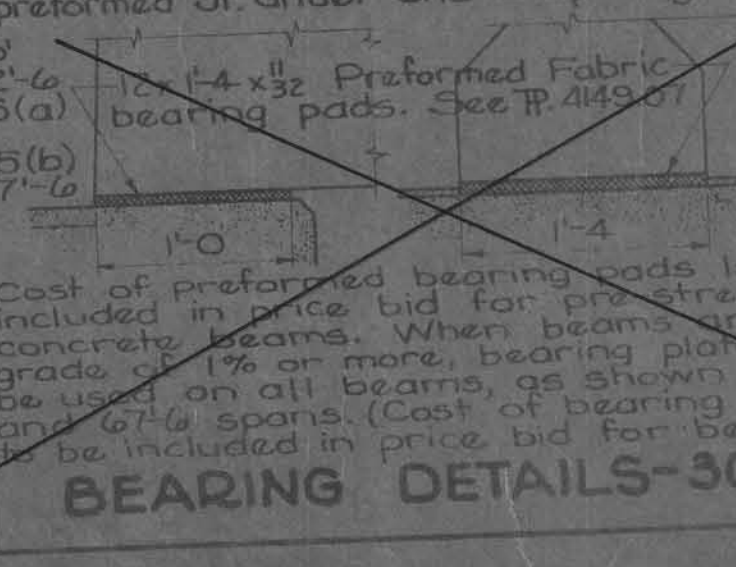
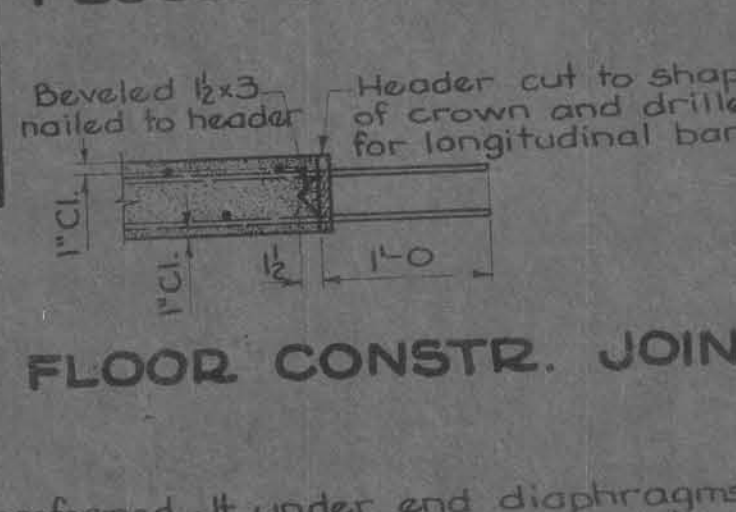
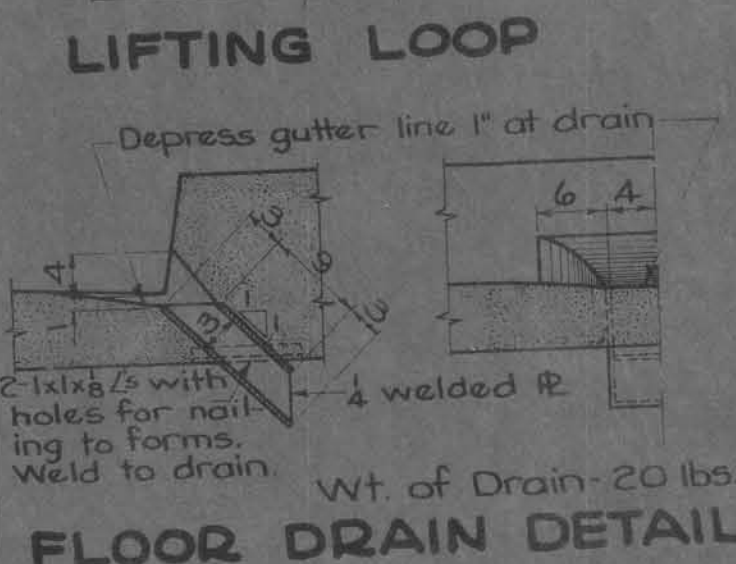
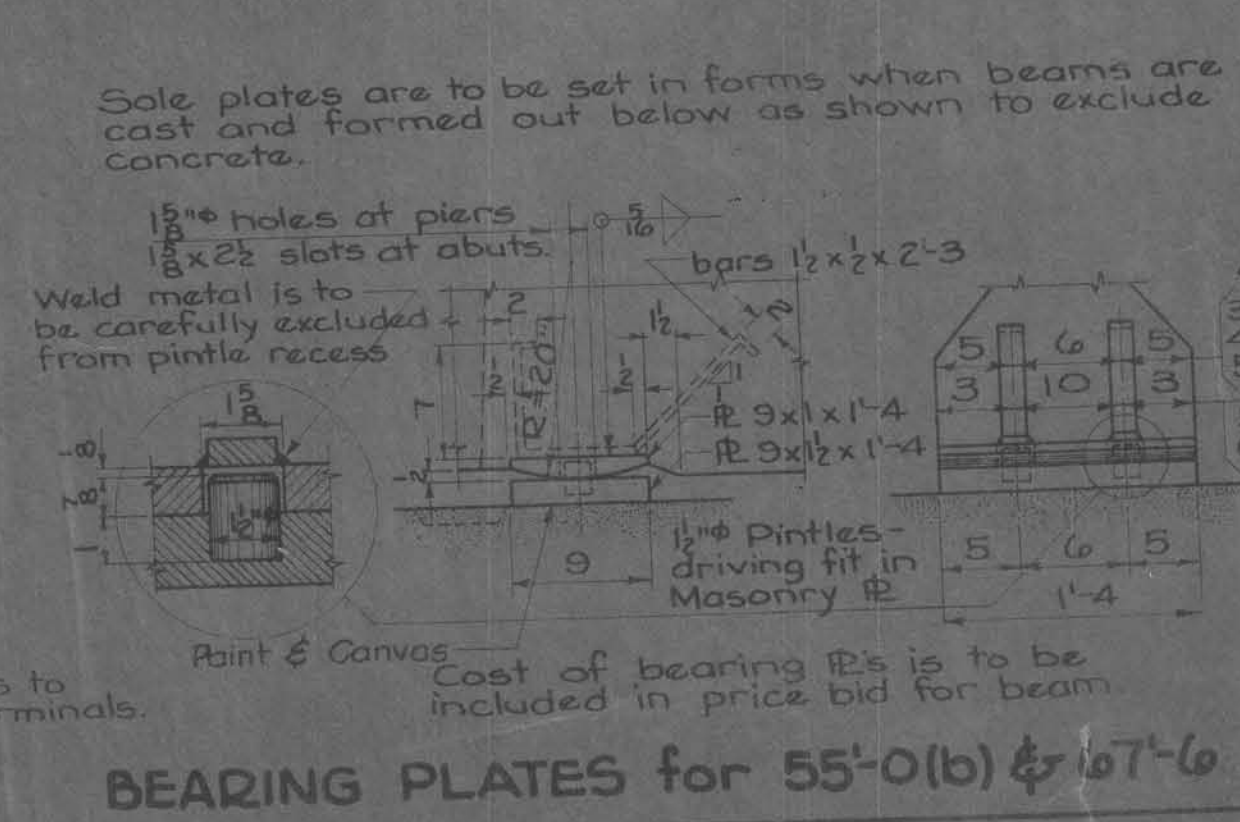
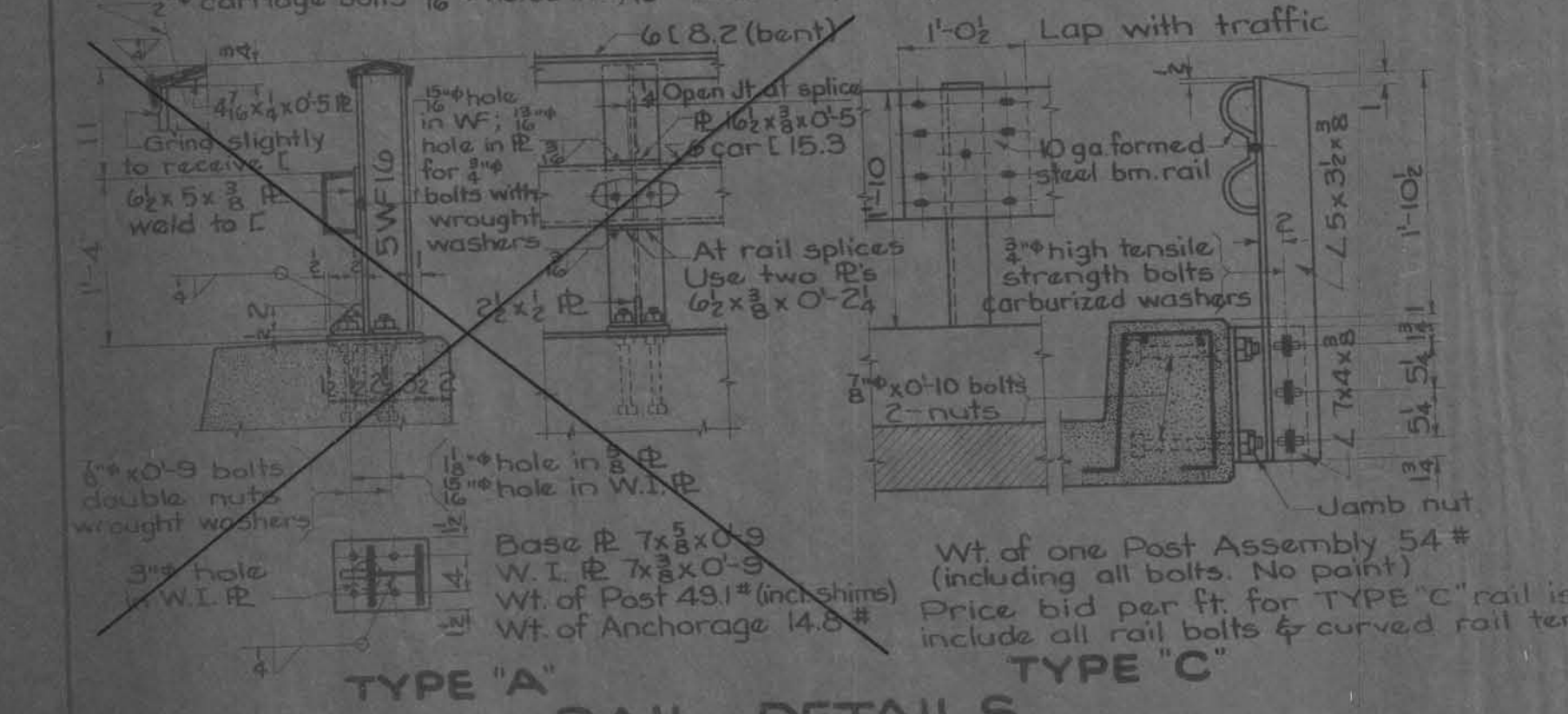
BEAM DATA

SPAN	DEPTH	STRANDS	CONC. CYL.	REINF. STEEL LBS.	STRUCT. STEEL LBS.	INITIAL PRE-STRESS	CAMBER AS SLAB IN PLACE
30'-0"	2'-4"	10-3/8	2.04	242	140 k	1/8"	1/8"
42'-6"	2'-4"	17-3/8	2.90	393	238 k	1/8"	1/8"
55'-0"(a)	2'-4"	19-1/8	3.73	524	360 k	1/8"	1/8"
55'-0"(b)	2'-11"	22-3/8	4.66	557	398 k	1/8"	1/8"
67'-6"	2'-11"	23-1/8	5.70	759	434 k	1/8"	1/8"

NOTES ON PRESTRESSED BEAMS:
Concrete in beams shall have a 28 day crushing strength of 5000 psi and a minimum of 4500 p.s.i. when stress is released. It shall contain no Class V aggregate. The maximum size of coarse aggregate shall be 1". Prestressing tendons shall be 7 wire strands of high strength uncoated wire, stress relieved after stranding with a modulus of elasticity of about 25,000,000, ultimate breaking strength of 27,000 lbs. for 1/2 strands and 20,000 lbs. for 3/8 strands, yield strength (0.2% offset) of 85% of the ultimate and minimum elongation in 10' of 4%. Strands are to be initially stressed to 70% of the ultimate 18,300 for 1/2 and 14,000 for 3/8. Stress is to be determined by the measured elongation and checked by gauges on calibrated jacks. After release of stress, beams are to be supported at all times near ends and handled by means of lifting loops near ends of beams. * carriage bolts - 1/2" holes in I, 3/4" holes in R, wrought washers

BILL OF REINF. STEEL FOR ONE BEAM

BAR SHAPE	30'-0"	42'-6"	55'-0"(a)	55'-0"(b)	67'-6"
4ab	31 1'-2"	45 1'-2"	61 1'-2"	57 1'-2"	73 1'-2"
4b1b	62 4'-4"	90 4'-4"	122 4'-4"	114 4'-4"	146 4'-4"
4b2b	12 2'-5"	16 2'-5"	20 2'-5"	16 3'-0"	20 3'-0"
cb	4 2'-0"	4 2'-0"	4 2'-0"	4 2'-0"	4 2'-0"
5db	2 6'-0"	2 6'-0"	2 7'-6"	4 7'-6"	4 9'-0"
TOTAL WT.	262	393	524	557	759



"U" DIMENSION

SPAN	20'-0" Rdy	24'-0" Rdy
30'-0"	2'-9 3/8"	2'-10"
42'-6"	2'-9 3/8"	2'-10"
55'-0"(a)	2'-9 3/8"	2'-10"
55'-0"(b)	3'-6 3/8"	3'-6 3/8"
67'-6"	3'-6 3/8"	3'-6 3/8"

GENERAL NOTES:
These bridges are designed for H15-44 loading. The two types of rail and curb shown may be used interchangeably on the 20'-0" and 24'-0" roadways. All spans may be used with timber abutments similar to Standard H10-2 concrete abutments similar to Standard H10-3, or other types of rigid concrete abutments. When used in multiples as shown they should be set on flexible type piers. Slab concrete is to have a 28 day crushing strength of 3500 psi and is to contain no Class V aggregate. It is to be placed as dry as practicable to reduce shrinkage to a minimum and special precautions are to be taken to secure complete bond between slab and beams. Exposed corners of 90° or sharper are to be filled with 1:2:4 concrete. All reinforcing bars are to be securely wired in place and adequately supported on bar chairs before concrete is placed. Forms for slab are to be supported by the prestressed beams. For number and spacing of floor drains, see Situation Plan. Bridge seats of both abutments and piers are to be stepped as shown due to crown of roadway. All beams are to be set vertical. Intermediate diaphragms are located at center of beams.

SPECIFICATIONS:
Design A.A.S.H.O., Series of 1953, and United States Bureau of Public Roads Design Criteria for Prestressed Concrete Bridges, 1955. Construction Standard Specifications of the Iowa State Highway Commission, Series of 1936, plus current Special Provisions, except as noted.

Coil rods shown below shall be similar to and equal to those manufactured by the Superior Concrete Accessories Co., Inc. of Chicago and the Richmond Screw Anchor Co. of St. Joseph, Mo. * coil rods 1/2" long except as shown. Out to Out Length of Bar. * Coil ties M-12 (Manufacturer's Designation)

COIL TIE DETAILS
Coil ties are to be held in place in forms by slotted coil setting studs projecting through forms. Studs are to be left in place until beams are erected when they are to be replaced with coil rods. Cost of coil ties and rods is to be included in price bid for beams.

LOCATION OF COIL TIES
Diagram showing the location of coil ties along the length of the beam, with dimensions for placement.

LOCATION OF COIL TIES
Diagram showing the location of coil ties along the length of the beam, with dimensions for placement.

BILL OF REINF. STEEL-SUPERSTRUCTURE

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5a	Slab Transverse	5/8	192	13'-0"	13,168
4b1	Slab Longitudinal	1/2	248	24'-8"	2,900
5b2	Slab Longt. Over Piers	1/2	102	17'-8"	2,707
4b3	Slab Longitudinal	5/8	88	26'-0"	15,777
5c	Curb Dowels	1/2	242	3'-3"	820
5d	Curb Transv. (Type A Rail)				
6e	Rail Post Anchor (Type A Rail)				
5f1	Intermediate Diaphragm		24	4'-1"	102
5f2	Abut. & Pier Diaphragm Short		32	3'-9"	125
5h1	Abutment Diaphragm Long		16	7'-5"	124
5h2	Pier Diaphragms Long		8	7'-5"	62
5k1	Abutment & Pier Hoops	1/2	40	7'-8"	320
TOTAL STEEL =					21,905

ESTIMATED QUANTITIES-SUPERSTRUCTURE

ITEM	UNIT	QUANTITY
Concrete	cuyd	100.30
Reinforcing Steel	lbs.	21,905
Structural Steel	lbs.	3,292
Pre-stressed Conc. Beams	Beam	10-55'-0"(b)
Pre-stressed Conc. Beams	Beam	5-67'-6"(c)
Formed Steel Beam Rail	L.F.	364'-8"(c)
Crested Wood Rail Posts	5"x6'-0" Post	

PRE-TENSIONED PRE-STRESSED CONCRETE BEAM BRIDGES
30'-0", 42'-6", 55'-0" & 67'-6" SPANS
20'-0" AND 24'-0" ROADWAYS
H15-44 LOADING
180'x20' CONCRETE BEAM BRIDGE
STA. -25+48.5 PROJ. No. S-1305(2)
Iowa State Highway Commission
December 1956
File 18992
Sheet # 4 of 4

Design # 157. CRAWFORD COUNTY. Proj. # S-1305(2) Sheet # 4 of 4. Designed by: Traced by: Checked by:

IOWA DEPARTMENT OF TRANSPORTATION

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE FARM TO MARKET SYSTEM CRAWFORD COUNTY BRIDGE WIDENING

INDEX OF SHEETS

1. TITLE SHEET
2. SITUATION PLAN
3. GENERAL NOTES, AND TABULATIONS
4. ABUTMENT DETAILS
5. PIER DETAILS
6. SUPERSTRUCTURE DETAILS
7. SUPERSTRUCTURE DETAILS
8. SUPERSTRUCTURE DETAILS
9. SUPERSTRUCTURE DETAILS
10. BEAM DETAILS
11. CONCRETE OPEN RAIL DETAILS
12. DETAIL SHEET, 520-26.
13. TRAFFIC CONTROL PLAN W/MARKED DETOUR.

THE STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, SERIES OF 1984, PLUS CURRENT SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS, SHALL APPLY TO WORK ON THIS PROJECT.

STANDARD ROAD PLANS					
THE FOLLOWING STANDARD ROAD PLANS SHALL BE CONSIDERED APPLICABLE TO CONSTRUCTION WORK ON THIS PROJECT.					
IDENT.	DATE	IDENT.	DATE	IDENT.	DATE
RE-2B	4-4-89	RE-12A	10-11-88		
RE-12B	10-11-88	RH-2A	4-4-89		
RE-69	4-4-89	RH-2B	2-28-89		
RE-47	11-10-87	RH-3TD	3-31-87		
RE-48A	8-20-85	RE-65	7-7-89		
RE-52	5-10-88	RK-19A	2-28-89		
		RK-19C	2-28-89		
RE-7	5-13-86	RE-6B	4-4-89		
RE-2A	2-17-87	RL-11	10-11-88		
RF-19E	2-17-87				

MILEAGE SUMMARY: 182.3 LIN. FT. = .0345 MILES

ESTIMATE OF QUANTITIES CONTINUED					
NO.	ITEM	UNIT	TWO ABUTS	TWO PIERS	TOTALS
32.	GUARDRAIL, END ANCHORAGES, BEAM, RE-69	No.			4

IOWA DEPARTMENT OF TRANSPORTATION STANDARDS REQUIRED		
STANDARD	DATE ISSUED	LATEST REVISION
PICA	5-19-84	11-1-84

-150-

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED:

DIVISION ADMINISTRATOR DATE

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE DESIGN WERE MADE BY ME OR BY OTHER DULY REGISTERED PROFESSIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA.
Robert A. Pison
IOWA REGISTRATION NUMBER 7602 DATE 11/4/88

APPROVED
H. Dale Wright 1-12-89
COUNTY ENGINEER DATE

Highway Division

DEPARTMENT OF TRANSPORTATION
IOWA

AUTHORIZED FOR LETTING
S. C. Anderson 2-1-89
DEPUTY CHIEF ENGINEER DATE

Jim Jensen
LeRoy Hanson
Thos. Anderson
John P. Lawler
Eileen Verden
BOARD OF SUPERVISORS DATE

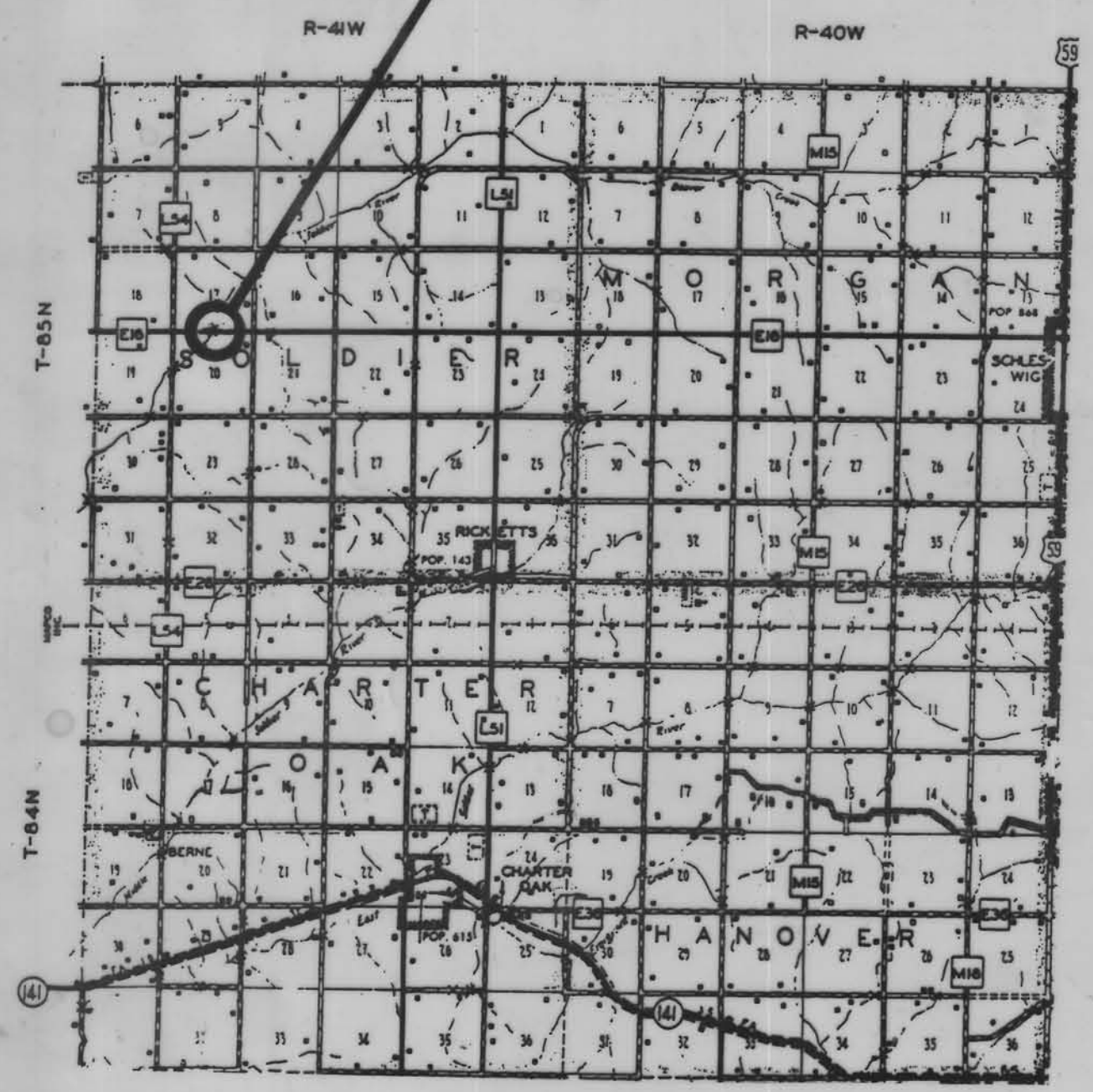
IOWA DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
APPROVED

DISTRICT LOCAL SYSTEMS ENGR. DATE

DESIGN NO. 5587		OVER SOLDIER RIVER		STA. 25+48.5	
SECTION 17/20		CRAWFORD COUNTY		SOLDIER TWP.	
		T-85N, R-41W			
DESIGN FOR 180'-0" x 20' PRESTRESSED CONCRETE BEAM BRIDGE WIDENING TO 30' ROADWAY					
ESTIMATE OF QUANTITIES					
NO.	ITEM	UNIT	TWO ABUTS	TWO PIERS	TOTALS
1.	STRUCTURAL CONCRETE	CU. YDS.	20.6	7.2	143.8
2.	REINFORCING STEEL (EPOXY COATED)	LBS.	958		39,713
3.	REINFORCING STEEL	LBS.	1,672	1,234	385
4.	PRETENSIONED PRESTRESSED CONCRETE BEAMS	NO.			4
					4
5.	HP12 x 53 STEEL	FURNISH	4 @ 55'		2
6.	BEARING PILING	DRIVE	4 @ 55'		220
7.	HP14 x 89 STEEL	FURNISH	4 @ 85'		340
8.	BEARING PILING	DRIVE	4 @ 85'		340
9.		ENCASE	4 @ 23'		92
10.					92
11.	CONCRETE OPEN RAIL	LIN. FT.			393.4
12.	SUBDRAIN, AS PER PLAN	LIN. FT.	134		134
13.	REINFORCED BRIDGE APPROACH SECTION, AS PER PLAN	SQ. YDS.			231.1
14.	CLASS 20 EXCAVATION	CU. YDS.	100		100
15.	CLASS 10 EXCAVATION, ROADWAY & BORROW	CU. YDS.			240
16.	FORMED STEEL BEAM GUARDRAIL	LIN. FT.			150
17.	BEAM GUARDRAIL POSTS	NO.			48
18.	RE-52 BEAM GUARDRAIL END ANCHORAGES	NO.			4
19.	REMOVAL OF PAVEMENT	SQ. YDS.			197.0
20.	TRAFFIC CONTROL (SEE SHEET NO. 13)	L.S.			LUMP SUM
21.	BARRICADES	NO.			2
22.	PAVEMENT MARKINGS	STA.			6.0
23.	TYPE 3 OBJECT MARKERS	NO.			4
24.	SINGLE WHITE DELINEATORS	NO.			14
25.	TRIPLE YELLOW OBJECT MARKERS	NO.			8
26.	GRANULAR SHOULDERS, TYPE A	TONS			105
27.	8-IN. STANDARD OR SLIP FORM P.C. CONC. PAVEMENT, CLASS "C" Omit	SQ. YDS.			97.8
28.	SPECIAL BACKFILL	TONS			270
29.	REMOVAL OF EXISTING STRUCTURES	L.S.			LUMP SUM
30.	MOBILIZATION	L.S.			LUMP SUM
31.	GUARDRAIL, FORMED STEEL THRIE BEAM	LIN. FT.			125

1. INCLUDES 143.8 CU. YDS. OF STRUCTURAL CONCRETE CLASS "D" IN THE SUPERSTRUCTURE AND 27.8 CU. YDS. OF CLASS "C" IN THE SUBSTRUCTURE.
2. INCLUDES 3,561 LIN. FT. #3 BAR, 231 LIN. FT. #4 BAR, 29,280 LIN. FT. #5 BAR, 2,386 LIN. FT. #6 BAR, 2,205 LIN. FT. #7 BAR, AND 205 LIN. FT. #8 BAR.
3. INCLUDES LABOR AND MATERIALS NECESSARY FOR SUBDRAIN INSTALLATION AND POROUS BACKFILL.
4. SEE TABULATION 107-23 ON SHEET 3. SUITABLE CLASS 20 EXCAVATION (100 CU. YDS.) AND PAVEMENT APPROACH EXCAVATION (155 CU. YDS.) SHALL BE USED FOR GRADING OF GUARDRAIL INSTALLATIONS AND EARTH SHOULDER FILL.
5. SEE TABULATION 108-8 ON SHEET 3.
6. INCLUDES 44 LIN. FT. OF SAW CUTS.
7. INCLUDES 0.7 STA. OF YELLOW CENTERLINE, AND 5.3 STA. OF WHITE EDGE LINES.
8. SEE TABULATION 108-17 ON SHEET 3.
9. SEE TABULATION ON SHEET NO. 3.
10. USE CLASS 2 AGGREGATE.

DESIGN NO. 5587
STATION: 25+48.50
PROPOSED: 180'-0" x 20' PRESTRESSED CONCRETE BEAM BRIDGE WIDENING TO 30' ROADWAY



PROJECT LOCATION
SCALE: 1" = 2 MI.

BRITSON CONSULTANTS INC.
STRUCTURAL ENGINEERS
890593
003968 118/268

B.C.I. NO. 15486

TRAFFIC COUNT = 345 VPD, 1980

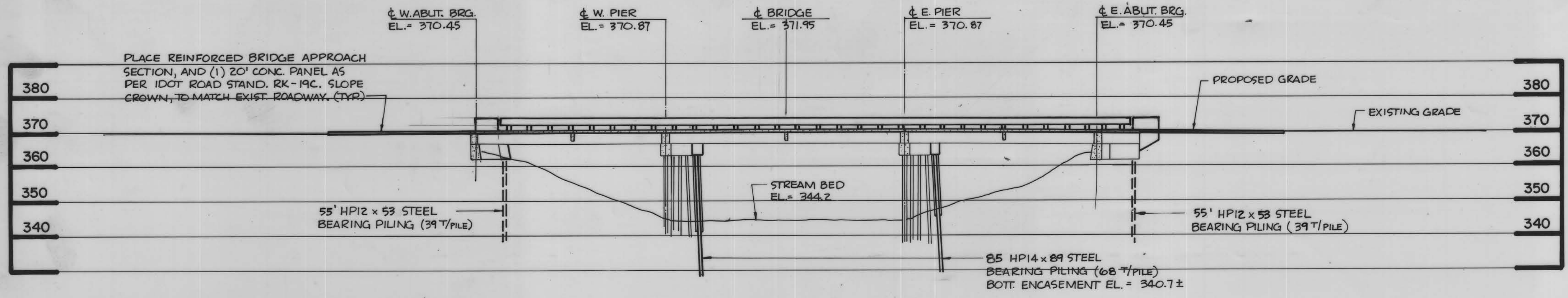
DESIGN NO. 5587

CRAWFORD COUNTY

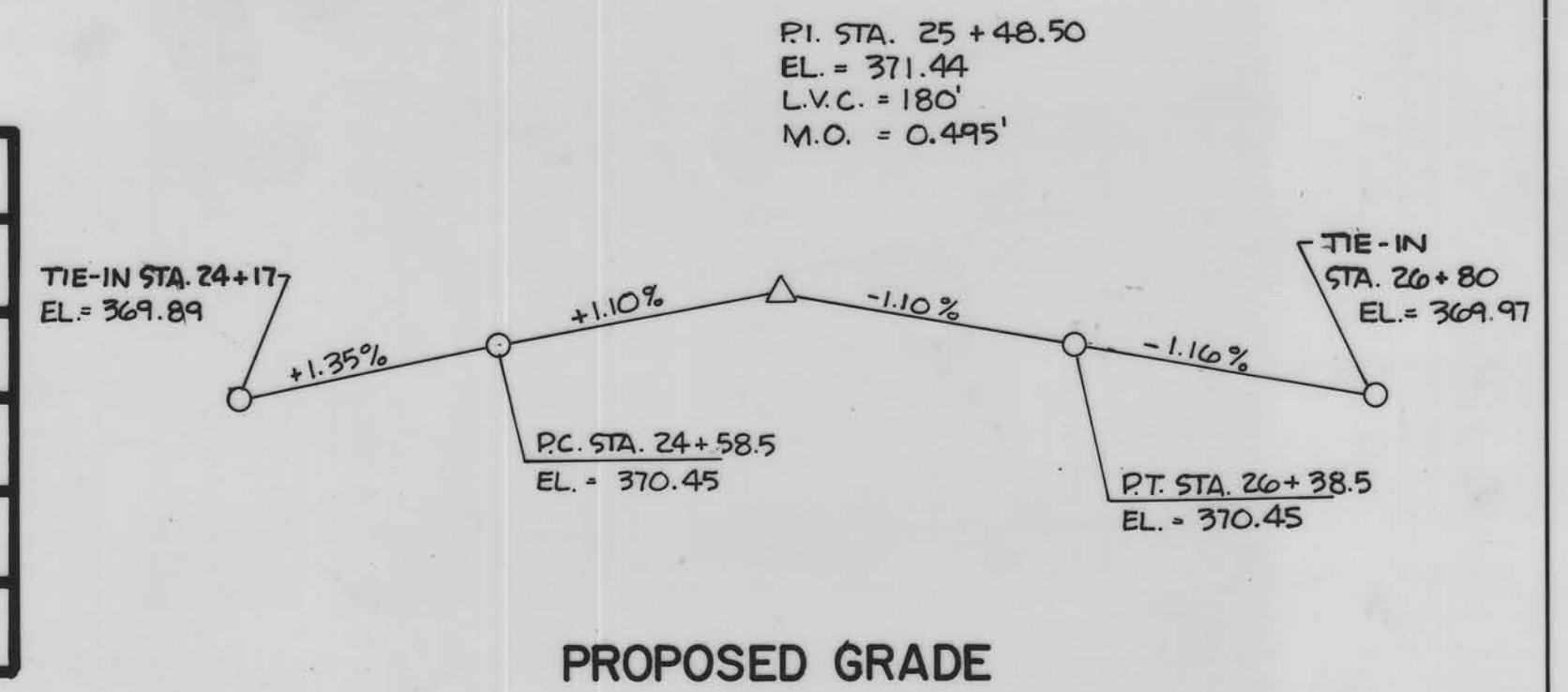
PROJECT NO. BHS - 3225(4)--63-24

SHEET 1 OF 13
FILE NO. 53643

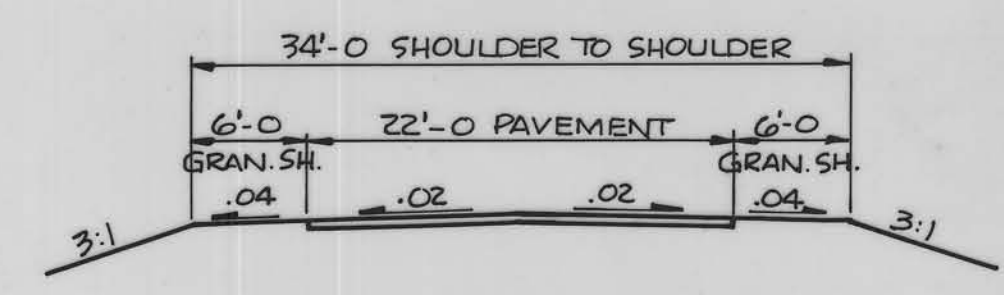
BRIDGE WIDENING
PROJECT NO. BHS - 3225(4)--63-24
LETTING DATE: April 4, 1989
CRAWFORD COUNTY



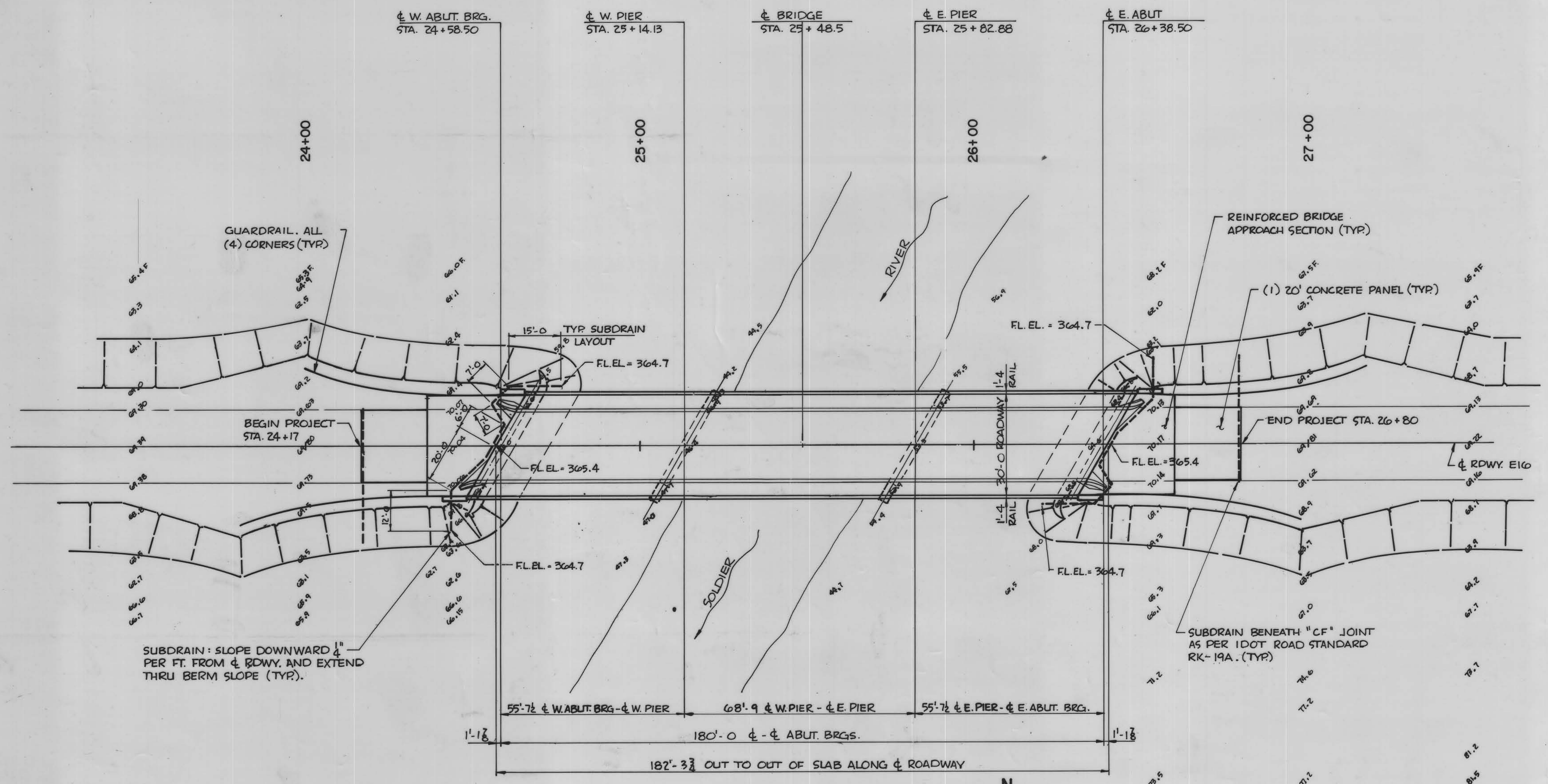
LONGITUDINAL SECTION ALONG ROADWAY



PROPOSED GRADE



TYPICAL APPROACH SECTION



SITUATION PLAN
SCALE: 1"=20'

LOCATION
CRAWFORD COUNTY
R-41W T-85N
SECTION 17/20
SOLDIER TWP
OVER SOLDIER RIVER

180'-0" x 20' PRESTRESSED CONCRETE BEAM
BRIDGE WIDENING TO 30' ROADWAY
STUB ABUTMENTS 55'-7 1/2" END SPANS
PIOA PIERS 68'-9" INTERIOR SPAN

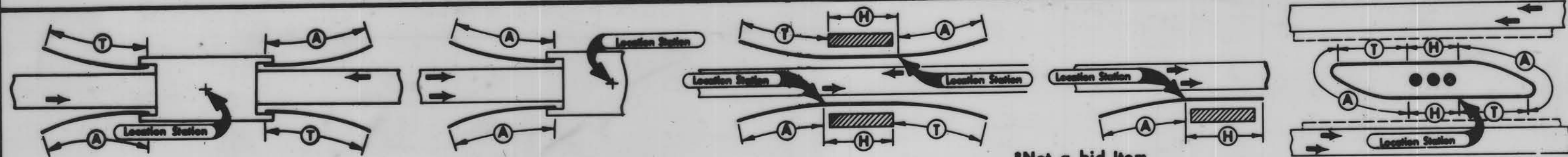
SITUATION PLAN

CRAWFORD COUNTY 30° SKEW LT. AHEAD IOWA
SHEET 2 OF 13

TABULATION OF BEAM GUARDRAIL INSTALLATIONS

(Refer to appropriate Standard Road Plans)

108-8
1-23-85



*Not a bid item

NO.	STATION	LOCATION ROAD PLAN	STANDARD CASE	FORMED STEEL				BEAM GUARDRAIL				BEAM GUARDRAIL POSTS				BEAM GUARDRAIL END ANCHORAGE				REMARKS
				(Foot)	(Lin. Ft.)	(Lin. Ft.)	(Lin. Ft.)	(Lin. Ft.)	(Lin. Ft.)	10"x10" SINGLE SPACER	8"x8" SINGLE SPACER	8"x8" NO SPACER	6"x8" NO SPACER	BRIDGE RE-26 RE-28	END RE-33 RE-52, RE-53	RE-27° RE-62° RE-49° RE-55° Special	Type	No.	Type	
1.	25 + 48.5	RE-65	U	56.25	—	—	68.75	3	7	—	2	—	—	RE-52	1	RE-69	1	N.E. CORNER		
2.	25 + 48.5	RE-65	U	—	—	56.25	68.75	3	7	—	2	—	—	RE-52	1	RE-69	1	S.E. CORNER		
3.	25 + 48.5	RE-65	U	56.25	—	—	68.75	3	7	—	2	—	—	RE-52	1	RE-69	1	S.W. CORNER		
4.	25 + 48.5	RE-65	U	—	—	56.25	68.75	3	7	—	2	—	—	RE-52	1	RE-69	1	N.W. CORNER		

SPECIFICATIONS

DESIGN: AASHTO SERIES OF 1983.
CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION, SERIES OF 1984, 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 1983.

CONCRETE REINFORCING STEEL ASTM A615	SECTION 8 f'c = 3,500 PSI
PRESTRESSING STEEL	SECTION 8
PRESTRESSED CONCRETE	GRADE 60, f _s = 24,000 PSI
STRUCTURAL STEEL ASTM A36	SEE BEAM DETAIL SHEET
	SECTION 10 f _s = 20,000 PSI

GENERAL NOTES

THIS DESIGN IS FOR REPLACING AND WIDENING THE DECK OF THE EXISTING 180' x 20' PRESTRESSED CONCRETE BEAM BRIDGE TO A 180' x 30' BRIDGE. PLANS OF THE EXISTING STRUCTURE (DESIGN NO. 157, CRAWFORD COUNTY) MAY BE OBTAINED AT THE AMES OFFICE OF THE HIGHWAY DIVISION, BRIDGE DESIGN.

THIS BRIDGE WIDENING IS DESIGNED FOR H20-44 LOADING AND NO ALLOWANCE FOR A FUTURE WEARING SURFACE. THE EXISTING BRIDGE CONSISTS OF: (2) 55'-7" END SPANS AND (1) 68'-9" CENTER SPAN, CONCRETE DECK WITH STEEL RAIL POSTS AND BEAM RAILS, AND CONCRETE STUB ABUTMENTS AND CONCRETE PILE BENT PIERS.

THE LUMP SUM BID FOR "REMOVAL OF EXISTING STRUCTURES" SHALL INCLUDE THE REMOVAL AND DISPOSAL OF DESIGNATED PORTIONS OF THE EXISTING STRUCTURES IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS. DESIGNATED PORTIONS OF THE EXISTING BRIDGE INCLUDE: THE EXISTING CONCRETE DECK AND STEEL HANDRAILS, PORTIONS OF THE EXISTING ABUTMENTS, AND ANY OTHER BRIDGE APPURTENANCE AS NOTED OR SHOWN IN THESE PLANS.

PAVEMENT REMOVAL FOR THE PROPOSED REINFORCED BRIDGE APPROACH SECTIONS SHALL BE INITIATED WITH SAWCUTS. THE UNIT PRICE BID FOR "REMOVAL OF PAVEMENT" SHALL INCLUDE REMOVAL AND DISPOSAL OF EXISTING PAVEMENT AT BOTH ENDS OF THE BRIDGE IN ACCORDANCE WITH SECTION 2301.08 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR IS TO INSTALL SUBDRAINS BEHIND THE ABUTMENTS AS DETAILED. THE SUBDRAIN SHALL MEET THE REQUIREMENTS FOR THE TYPES PERMITTED IN SECTION 4143.01C AND SHALL BE AT LEAST 4" IN DIAMETER. WHEN THE SUBDRAINS ARE INSTALLED WITH CORRUGATED PE TUBING, THEY ARE TO BE 4" DIA. WITH THE ENDS MADE OF 6" LENGTHS OF CORRUGATED METAL PIPE (CMP) THAT PROTRUDES A MINIMUM THROUGH THE EXISTING FORESLOPE. THE CONNECTION BETWEEN THE PE TUBING AND THE CMP CAN BE MADE WITH A REDUCER COUPLING OR BY EXTENDING THE PE TUBING INTO THE CMP WITH A MINIMUM OF ONE FOOT AND PACKING THE OPEN SPACE BETWEEN THE TUBING WITH GROUT. A REMOVABLE 1/2" MESH GALVANIZED SCREEN, OR OTHER APPROVED RODENT GUARD, IS TO BE FASTENED TO THE END OF EACH OUTLET PIPE. THE PRICE BID FOR "SUBDRAINS" IS TO INCLUDE ALL MATERIAL, LABOR, AND EXCAVATION NECESSARY FOR THE INSTALLATION.

ALL BACKFILL BEHIND THE ABUTMENTS BETWEEN THE WINGS SHALL BE POROUS AND SPECIAL BACKFILL AS SHOWN IN "GRANULAR BACKFILL DETAIL" ON "SUPERSTRUCTURE DETAILS" SHEET AND ROAD STANDARD RK-19C.

ALL REINFORCING STEEL SHALL BE GRADE 60.

THE EXISTING CONCRETE DECK SHALL BE COMPLETELY REMOVED. PORTIONS OF THE EXISTING CONCRETE ABUTMENT SHALL BE CAREFULLY REMOVED TO THE REMOVAL LIMITS SHOWN. CONCRETE REMOVAL SHALL BE DONE IN SUCH A MANNER SO AS TO PROTECT ADJACENT CONCRETE AND P.P.C. BEAMS THAT ARE TO REMAIN IN PLACE. CONCRETE REMOVALS AT THE EXISTING ABUTMENTS SHALL BE TO NEAT SAWCUTS TO PROVIDE CLEAN STRAIGHT INTERFACES BETWEEN NEW CONCRETE AND REMAINING CONCRETE.

THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE HE CAUSES, AND SHALL REPAIR ANY DAMAGED AREA TO ITS ORIGINAL CONDITION, AS DIRECTED BY THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.

BONDING OF NEW CONCRETE TO OLD SHALL BE DONE AS SPECIFIED IN ARTICLE 2403.15 OF THE STANDARD SPECIFICATIONS, EXCEPT AS PROVIDED ELSEWHERE FOR EPOXY AND DOWEL BONDING OF NEW CONCRETE TO THE EXISTING ABUTMENTS. DOWELS SHALL BE INSTALLED ACCORDING TO THE PROCEDURE IN "DRILLED-IN DOWELS" NOTES. IN ADDITION, ALL SURFACES TO WHICH STRUCTURAL CONCRETE IS TO BE BONDED SHALL BE BLAST CLEANED AND EPOXY COATED ACCORDING TO "EPOXY BONDING-CONCRETE" NOTES.

THE LENGTHS SHOWN FOR "HP STEEL BEARING PILING" ARE FOR BID PURPOSES ONLY AND ARE NOT GUARANTEED FOR CONSTRUCTION. PRIOR TO ORDERING FINAL PILE LENGTHS, THE CONTRACTOR SHALL DRIVE (1) PILE AT THE W. ABUTMENT AND (1) PILE AT THE W. PIER TO VERIFY REQUIRED PILE LENGTHS. THE DATA COLLECTED DURING PILE DRIVING SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW AND FINAL PILE LENGTH DETERMINATION. PAYMENT FOR THE ACTUAL LENGTH FURNISHED AND DRIVEN SHALL BE BASED ON THE CONTRACT PRICE BID PER FOOT IN ACCORDANCE WITH ARTICLE 2501.22 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR SHALL LEVEL AND SHAPE THE FORESLOPES AROUND THE NEW ABUTMENT EXTENSIONS TO MATCH EXISTING FORESLOPES.

THE ROADWAY WILL BE CLOSED DURING CONSTRUCTION. THE CONTRACTOR IS TO COORDINATE TRAFFIC CONTROL AND PROVIDE SUFFICIENT ADVANCE NOTICE TO THE COUNTY TO ALLOW FOR DETOUR SIGNING PRIOR TO CLOSING COUNTY ROAD E-16.

FIELD VERIFY EXISTING DIMENSIONS PRIOR TO CONSTRUCTION.

FAINT LINES INDICATE EXISTING CONSTRUCTION. HEAVY LINES INDICATE NEW CONSTRUCTION.

EPOXY BONDING - CONCRETE

NEW CONCRETE SHALL BE BONDED TO EXISTING CONCRETE WITH SIKA-DUR "HI-MOD" #370 EPOXY BONDING AGENT.

EPOXY BONDING AGENT SHALL BE APPLIED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. EPOXY SHALL NOT BE APPLIED BY SPRAY METHODS, AND NO SOLVENTS SHALL BE ADDED TO THE EPOXY ADHESIVE.

THE SUPPLIER OF THE ADHESIVE SHALL SUBMIT TO THE ENGINEER A CERTIFIED TEST REPORT COVERING EACH LOT OF THE ADHESIVE SHIPPED TO THE PROJECT. THE TEST REPORT SHALL CERTIFY THAT THE COMPOSITION AND PROPERTIES OF THE ADHESIVE ARE IN ACCORDANCE WITH THESE PLANS AND IT SHALL GIVE THE ACTUAL VALUES OF THE MECHANICAL PROPERTIES OF THE MATERIAL IN THE PARTICULAR LOT.

THE SURFACE OF THE OLD CONCRETE TO WHICH NEW CONCRETE IS TO BE BONDED SHALL BE CLEANED BY SANDBLASTING, AFTER REMOVAL OF CONCRETE AS SHOWN ON THE PLANS, SO THAT ALL FOREIGN MATERIAL, LOOSE AND UNSOUND CONCRETE IS REMOVED AND ONLY SOUND CONCRETE REMAINS. WASHING WITH FRESH WATER WILL BE REQUIRED AS NECESSARY TO REMOVE DUST AND SMALL PARTICLES NOT REMOVED BY OTHER CLEANING METHODS.

WHEN ALL FREE WATER HAS DRIED FROM THE AREA TO BE BONDED, EPOXY ADHESIVE SHALL BE APPLIED BY BRUSH TO A 20 MIL THICKNESS MINIMUM. THE EPOXY SURFACE SHALL APPEAR SHINY AND SHALL BE TACKY JUST BEFORE NEW CONCRETE IS PLACED AGAINST IT. IF THE CONCRETE HAS ABSORBED THE ADHESIVE, AS EVIDENCED BY A DULL APPEARANCE, APPLY ANOTHER COAT. THE NEW CONCRETE SHALL THEN BE PLACED WHILE THE EPOXY REMAINS TACKY.

THE EPOXY BONDING AGENT IS TO BE APPLIED TO CONCRETE THAT IS FREE OF ALL DUST, OIL, DEBRIS OR OTHER FOREIGN MATERIAL. ANY MATERIAL THAT INHIBITS THE ABILITY TO BOND SHALL BE REMOVED BY OIL-FREE AIR COMPRESSORS OR LIGHT SANDBLASTING PRIOR TO PLACEMENT OF EPOXY BONDING AGENT. STANDING WATER POUDLES ARE TO BE REMOVED. A DAMP CONDITION OF SURFACE IS ACCEPTABLE PRIOR TO APPLICATION.

SIKA-DUR #370 EPOXY BONDING AGENT SHALL BE APPLIED BY HEAVY DUTY BRUSHES. SIKA-DUR #370 EPOXY BONDING AGENT SHALL BE APPLIED AT A RATE OF 7 SQUARE YARDS PER GALLON (APPROXIMATELY 60 SQUARE FEET/GALLON). THE MINIMUM BUILDUP IS TO BE 20 MIL.

PRIOR TO PLACING THE EPOXY, THE INSPECTOR, CONTRACTOR AND SIKA REPRESENTATIVE SHALL MEET TO DETERMINE THE FINAL RATE OF APPLICATION. A WET FILM THICKNESS GAUGE SHALL BE EMPLOYED AT RANDOM INTERVALS TO ENSURE A MINIMUM BUILDUP OF 20 MILS.

SIKA-DUR "HI-MOD" #370 WILL LOSE TACK AFTER APPROXIMATELY 3 HOURS AT 70 F. COST OF LABOR AND MATERIALS TO APPLY EPOXY BONDING AGENT WILL BE INCLUDED IN PRICE BID FOR "STRUCTURAL CONCRETE" AND NO SEPARATE PAYMENT WILL BE MADE.

TABULATION OF GRADING FOR GUARDRAIL INSTALLATIONS

107-23
1-23-85

*Refer to RL-11 or Typical 4303 and 4306

HAZARD LOCATION (Station)	LOCATION POINT (Station)	INSTAL-LATION (Type)	DIMENSIONS*			CLASS 10 EXCAVATION (Cu. Yds.)	PIPE			REMARKS
			(A) (Lin. Ft.)	(Y) (Lin. Ft.)	(Z) (Lin. Ft.)		Size (Inches)	Type	Length (Lin. Ft.)	
25+48.5	27+15.0	1	56.25	8.8	33	120	—	—	—	N.E. CORNER
25+48.5	26+97.7	1	56.25	8.8	33	120	—	—	—	S.E. CORNER
25+48.5	23+82.0	1	56.25	8.8	33	120	—	—	—	S.W. CORNER
25+48.5	23+99.3	1	56.25	8.8	33	120	—	—	—	N.W. CORNER

TABULATION OF BARRICADES

108-13A
6-25-76

(Refer to Section 2518 of the St'd. Spec's.)

NO.	STATION
1	23 + 00 ± W. APPROACH
1	28 + 00 ± E. APPROACH

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 STATION	DELINEATOR TYPE*	OBJECT MARKER				REMARKS	
		SINGLE WHITE D-1W NO.	TRIPLE YELLOW OM2-3YV NO.	TYPE 3			OFFSET BRACKETS **
				OM-3L NO.	OM-3R NO.		
25 + 48.5	1	7	4	1	1	@ W. APPR.	
25 + 48.5	1	7	4	1	1	@ E. APPR.	

TABULATION OF BRIDGE APPROACH SECTION

* NOT A BID ITEM

(REFER TO STANDARD ROAD PLAN RK-19A, RK-19C & RF-19E)

Road Ident.	Bridge Station	End	Case	APPROACH PAVEMENT		SUBDRAIN				APPROACH SUBGRADE		REMARKS	
				(P) for case 'C'	(T) Thick-ness (Inches)	Reinf. Pave. Area (Sq. Yds.)	4" Perforated Subdrain (Lin. Ft.)	Subdrain Outlet Station	Porous Backfill (Cu. Yds.)	Class "A" Crushed Stone Backfill (Cu. Yds.)	Special Backfill Tons		Engineering Fabric (Sq. Yds.)
E16	25+48.5	WEST	A	—	8	66.67	40	24 + 17 ± RT.	2	.2	135	135	(1) 20' PANEL REQ'D.
E16	25+48.5	EAST	A	—	8	66.67	40	26 + 80 ± LT.	2	.2	135	135	(1) 20' PANEL REQ'D.

TABULATION OF SHOULDER LOCATIONS

SEE STANDARD RH-31D

ROAD IDENT.	STATION TO STATION	T	W	SIDE	RATE	FILL
CO. RD. E16	23 + 45	24 + 37.3	6"	6'-0"	BOTH	27.91 TONS 4 C.Y.
CO. RD. E16	26 + 59.7	27 + 55	6"	6'-0"	BOTH	27.91 TONS 4 C.Y.

* GRANULAR RATE LISTED IS FOR ONE SHOULDER PER STATION.
Δ EARTH SHOULDER FILLED. FOR ONE SHOULDER PER STATION. 60% SHRINKAGE.

REMOVAL OF PAVEMENT

110-1
6-22-84

STATION TO STATION	AREA SQ. YDS.	REMARKS
24 + 17	24 + 57.3	98.5 W. APPROACH
26 + 39.7	26 + 80	98.5 E. APPROACH

EROSION CONTROL: SEEDING, FERTILIZING, AND MULCHING OF ALL DISTURBED AREAS FOLLOWING THE WORK ON THIS PROJECT, AND AS DIRECTED BY THE ENGINEER, SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 2601 OF THE STANDARD SPECIFICATIONS AND AS FOLLOWS:

SEED MIXTURE:	25 LBS. PER ACRE
PESCUE, KENTUCKY 31	8 LBS. PER ACRE
SWITCHGRASS (BLACKWELL)	5 LBS. PER ACRE
ALFALFA (NORTHERN GROWN)	4 LBS. PER ACRE
BIRDSFOOT TREFLOID (EMPIRE)	4 LBS. PER ACRE
ALSIKE CLOVER	4 LBS. PER ACRE

FERTILIZER: RATE - 650 LBS. OF 15-15-15 OR EQUIVALENT CHEMICALLY COMBINED COMMERCIAL FERTILIZER PER ACRE. THE PREPARATION OF THE SEEDBED, FURNISHING AND APPLICATION OF SEED, FERTILIZER, AND MULCHING TO ALL DISTURBED AREAS ON THIS PROJECT SHALL BE CONSIDERED INCIDENTAL TO WORK ON THIS PROJECT AND NO EXTRA COMPENSATION WILL BE ALLOWED.

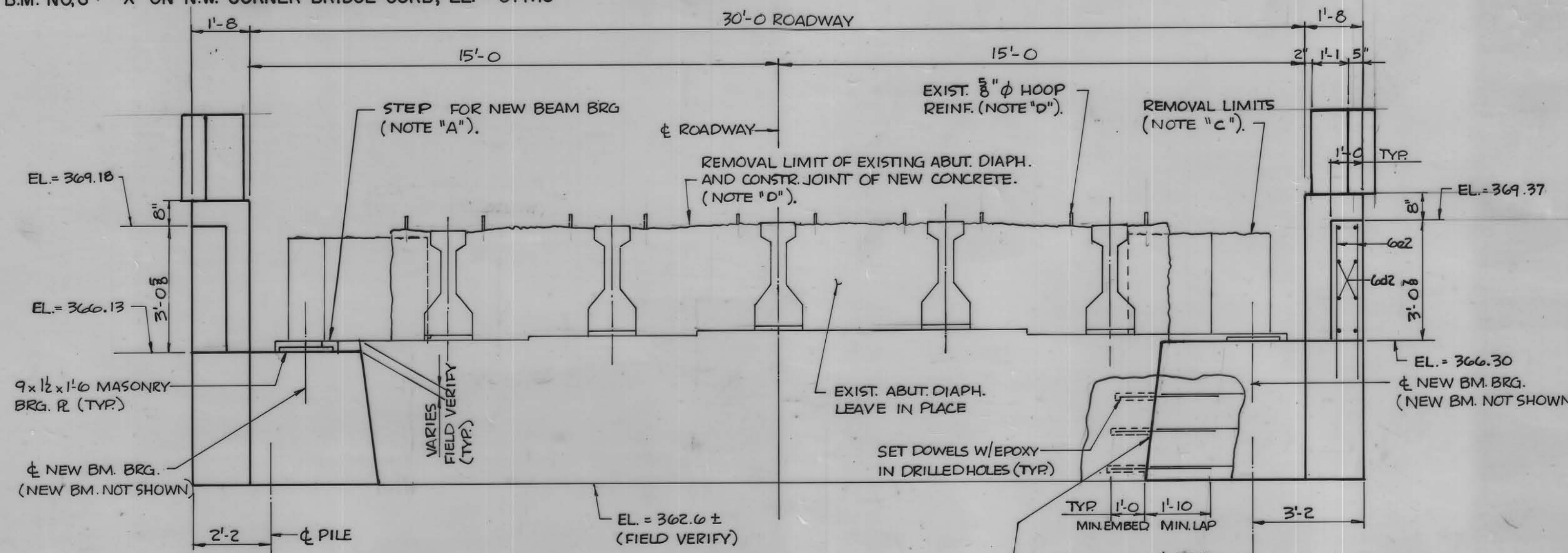
180'-0 x 20' PRESTRESSED CONCRETE BEAM BRIDGE WIDENING TO 30' ROADWAY

STUB ABUTMENTS 55'-7 1/2 END SPANS P10A PIERS 68'-9 CENTER SPAN

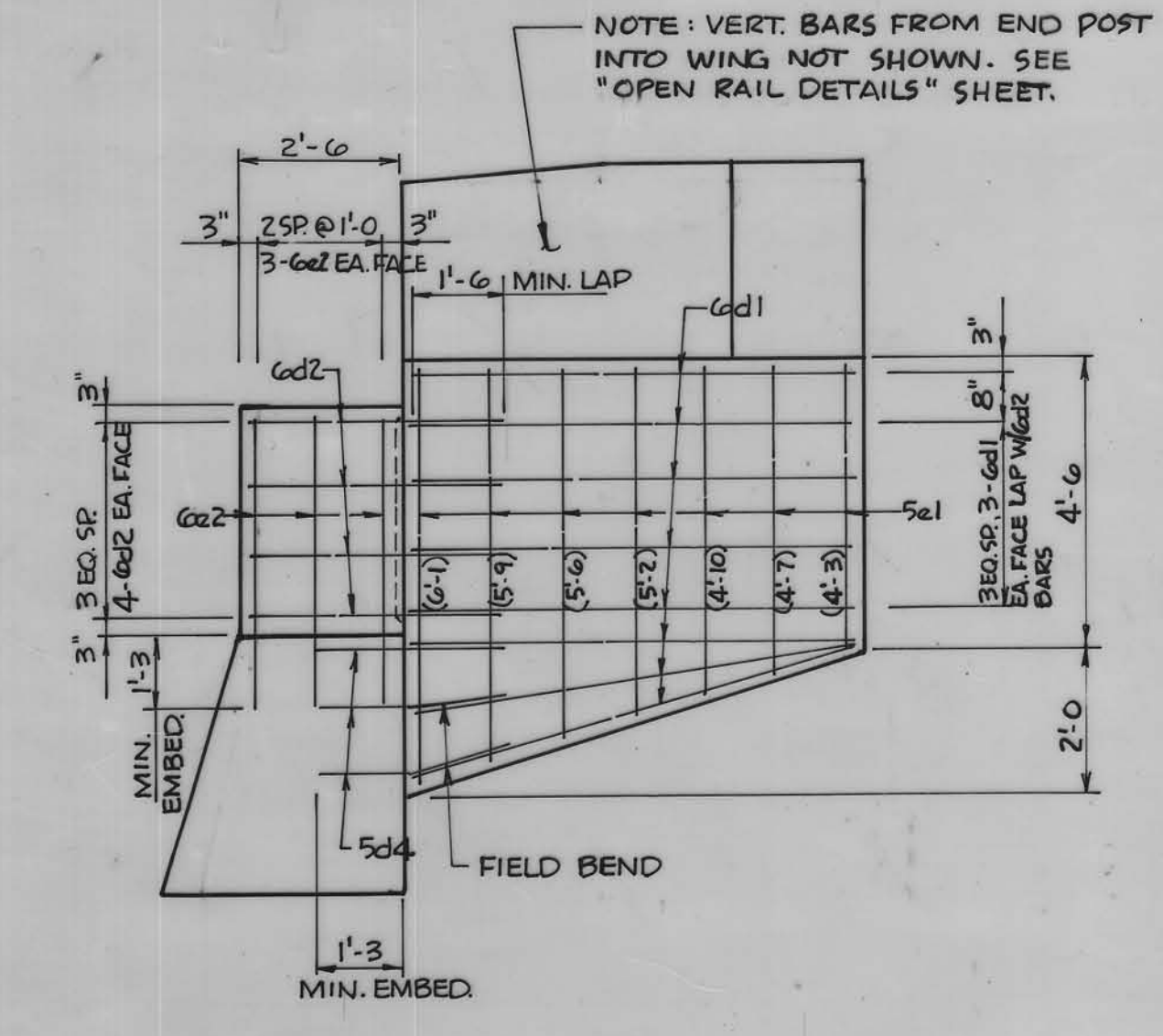
GENERAL NOTES AND TABULATIONS

30° SKEW LT. AHEAD
CRAWFORD COUNTY IOWA
SHEET 3 OF 13

B.M. NO. 6: "X" ON N.W. CORNER BRIDGE CURB, EL. = 371.18

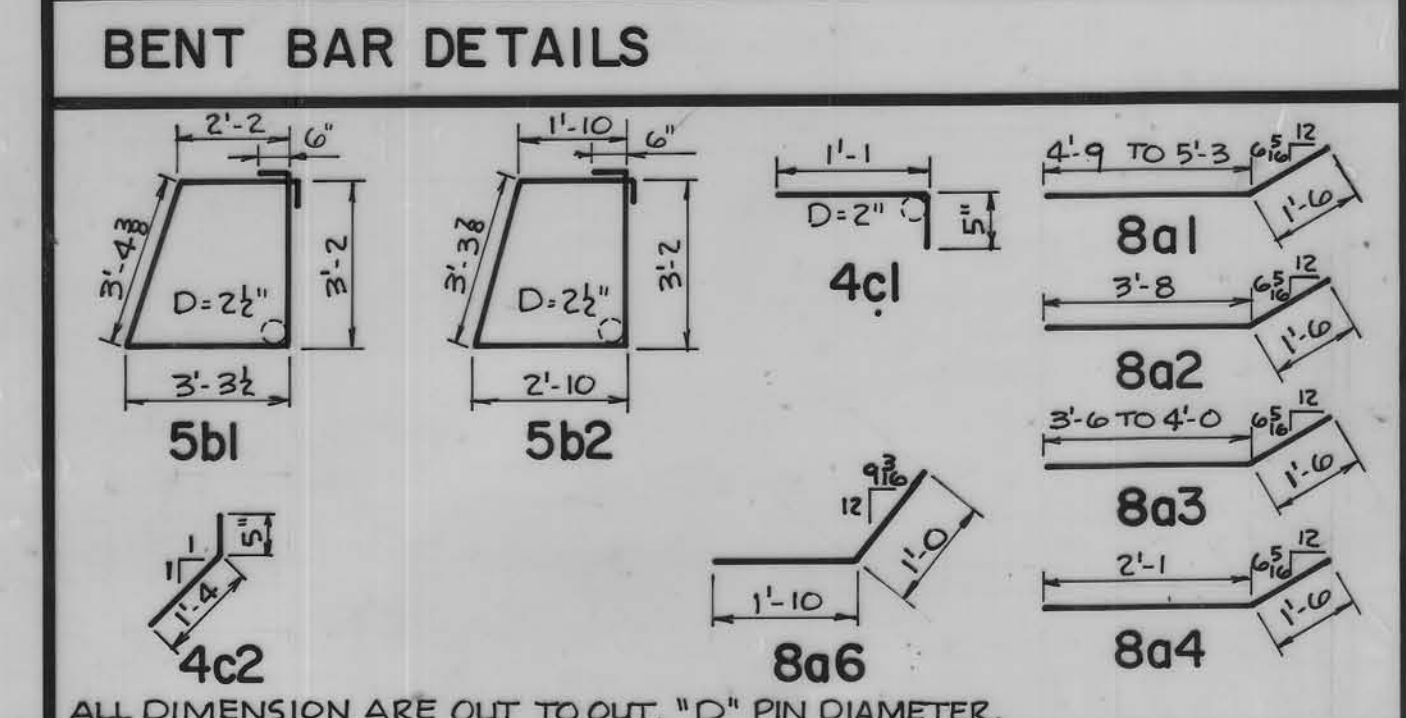


FRONT ELEVATION
(W. ABUT. LOOKING WEST)
(E. ABUT. LOOKING EAST)



END ELEVATION

REINFORCING BAR LIST - ONE ABUT.					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
* 8a1	FOOTING, LONGITUDINAL		5	VARIES	87
* 8a2	"		5	5'-2"	69
* 8a3	"		5	VARIES	70
* 8a4	FOOTING, LONGITUDINAL		5	3'-7"	48
* 8a5	FTG. EXTEN. TO EXIST. FTG., DOWELS		10	2'-10"	76
* 8a6	FTG. EXTEN. TO EXIST. FTG., DOWELS		10	2'-10"	76
* 5b1	FOOTING, HOOPS, ENDS		4	13'-0"	54
* 5b2	FOOTING, HOOPS		4	12'-2"	51
* 4c1	PAVING NOTCH, VERTICAL		22	1'-6"	22
* 4c2	PAVING NOTCH, VERTICAL		22	1'-9"	26
* 5c3	PAVING NOTCH, DOWELS		11	2'-0"	23
* 6d1	WING, HORIZONTAL		32	6'-8"	320
* 6d2	MASKWALL, HORIZONTAL		16	4'-0"	96
* 4d3	PAVING NOTCH, HORIZONTAL		2	2'-8"	29
* 5d4	WING TO FOOTING, DOWELS		12	2'-11"	37
5e1	WING, VERTICAL		28	VARIES	151
6e2	MASKWALL, VERTICAL		12	4'-5"	80
* REINFORCING STEEL (EPOXY COATED)			TOTAL (LBS.)		479
REINFORCING STEEL			TOTAL (LBS.)		836



BENT BAR DETAILS
ALL DIMENSIONS ARE OUT TO OUT. "D" PIN DIAMETER.

CONCRETE PLACEMENT QUANT. - ONE ABUT.		
LOCATION		QUANT.
FOOTING EXTENSIONS	(1) @ 2.4 & (1) @ 1.8	4.2
MASKWALLS	(2) @ 0.3	0.6
PAVING NOTCH		0.7
WINGS	(2) @ 2.4	4.8
TOTAL (CU. YDS.)		10.3

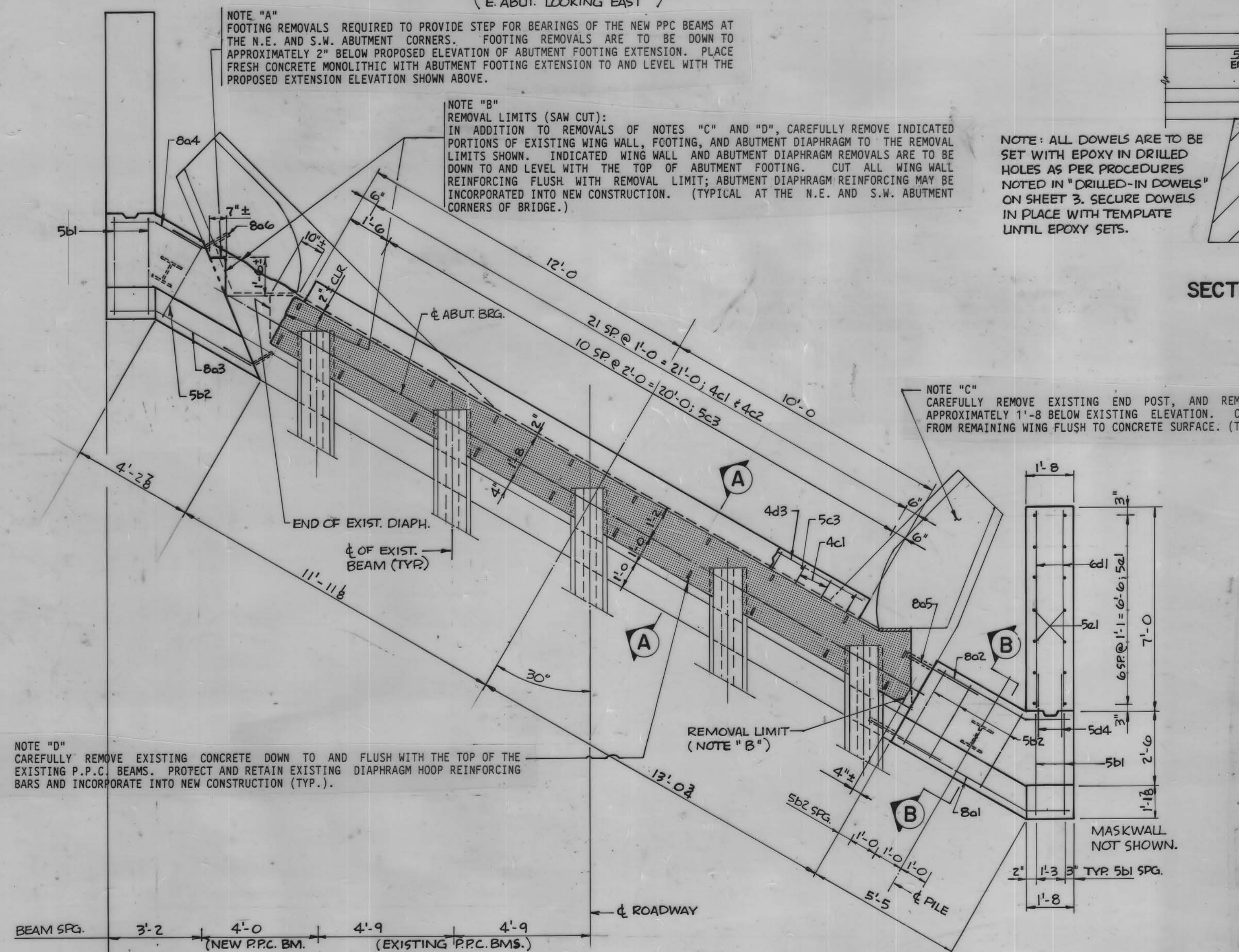
ESTIMATED QUANTITIES - TWO ABUTMENTS			
ITEM	UNIT	QUANT.	
STRUCTURAL CONCRETE, CLASS "C"	CU. YDS.	20.6	
REINFORCING STEEL (EPOXY COATED)	LBS.	958	
REINFORCING STEEL	LBS.	1,672	
HP12 x 53 STEEL	FURNISH 4 @ 55'	LIN. FT.	220
BEARING PILING	DRIVE 4 @ 55'	LIN. FT.	220
CLASS 20 EXCAVATION	CU. YDS.	100	
SUBDRAIN, AS PER PLAN	LIN. FT.	134	

* DENOTES EPOXY COATED REINFORCING STEEL.

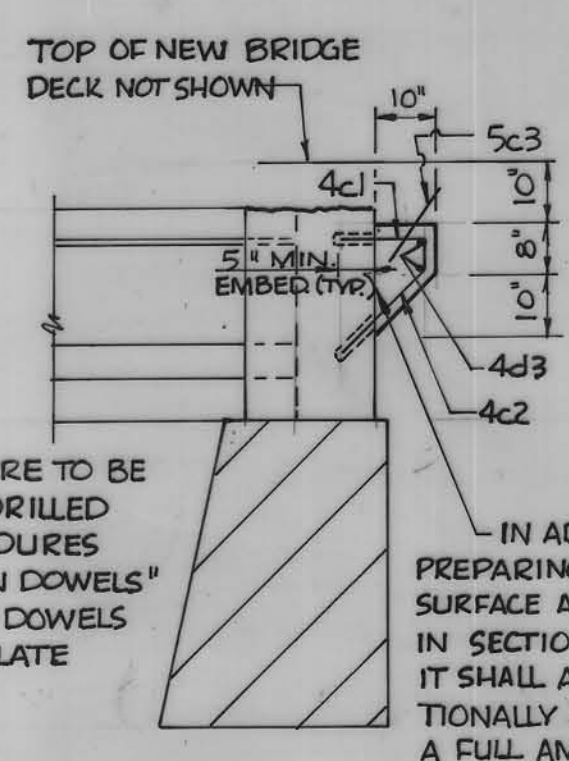
180'-0" x 20' PRESTRESSED CONCRETE BEAM
BRIDGE WIDENING TO 30' ROADWAY
STUB ABUTMENTS 55'-7 1/2" END SPANS
PIOA PIERS 68'-9" CENTER SPAN

ABUTMENT DETAILS

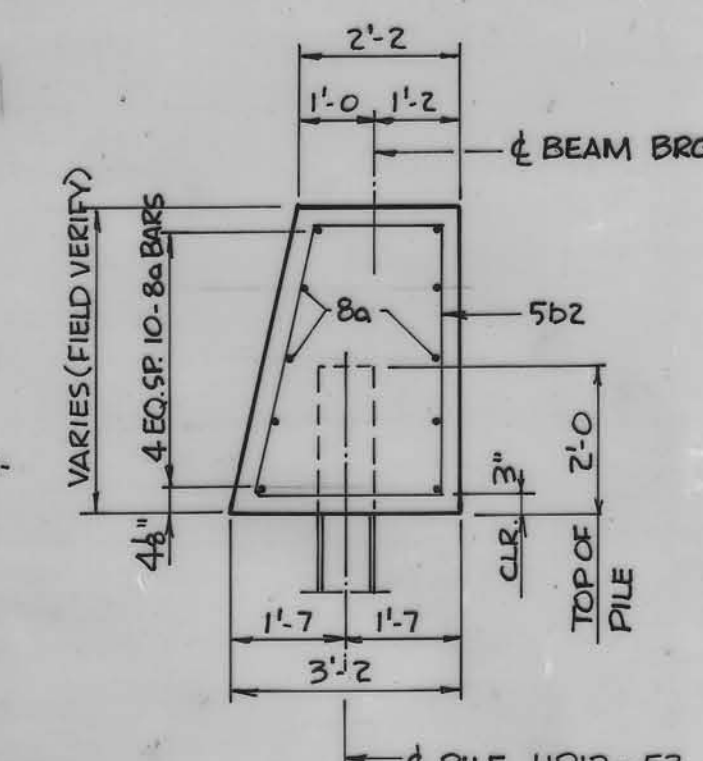
CRAWFORD COUNTY 30° SKEW LT. AHEAD IOWA
SHEET 4 OF 13



PLAN VIEW



SECTION A-A



SECTION B-B

NOTE "A"
FOOTING REMOVALS REQUIRED TO PROVIDE STEP FOR BEARINGS OF THE NEW PPC BEAMS AT THE N.E. AND S.W. ABUTMENT CORNERS. FOOTING REMOVALS ARE TO BE DOWN TO APPROXIMATELY 2" BELOW PROPOSED ELEVATION OF ABUTMENT FOOTING EXTENSION. PLACE FRESH CONCRETE MONOLITHIC WITH ABUTMENT FOOTING EXTENSION TO AND LEVEL WITH THE PROPOSED EXTENSION ELEVATION SHOWN ABOVE.

NOTE "B"
REMOVAL LIMITS (SAW CUT):
IN ADDITION TO REMOVALS OF NOTES "C" AND "D", CAREFULLY REMOVE INDICATED PORTIONS OF EXISTING WING WALL, FOOTING, AND ABUTMENT DIAPHRAGM TO THE REMOVAL LIMITS SHOWN. INDICATED WING WALL AND ABUTMENT DIAPHRAGM REMOVALS ARE TO BE DOWN TO AND LEVEL WITH THE TOP OF ABUTMENT FOOTING. CUT ALL WING WALL REINFORCING FLUSH WITH REMOVAL LIMIT; ABUTMENT DIAPHRAGM REINFORCING MAY BE INCORPORATED INTO NEW CONSTRUCTION. (TYPICAL AT THE N.E. AND S.W. ABUTMENT CORNERS OF BRIDGE.)

NOTE: ALL DOWELS ARE TO BE SET WITH EPOXY IN DRILLED HOLES AS PER PROCEDURES NOTED IN "DRILLED-IN DOWELS" ON SHEET 3. SECURE DOWELS IN PLACE WITH TEMPLATE UNTIL EPOXY SETS.

NOTE "C"
CAREFULLY REMOVE EXISTING END POST, AND REMOVE EXISTING WING WALL DOWN APPROXIMATELY 1'-8" BELOW EXISTING ELEVATION. CUT ALL REINFORCING PROTRUDING FROM REMAINING WING FLUSH TO CONCRETE SURFACE. (TYPICAL BOTH ABUTMENTS.)

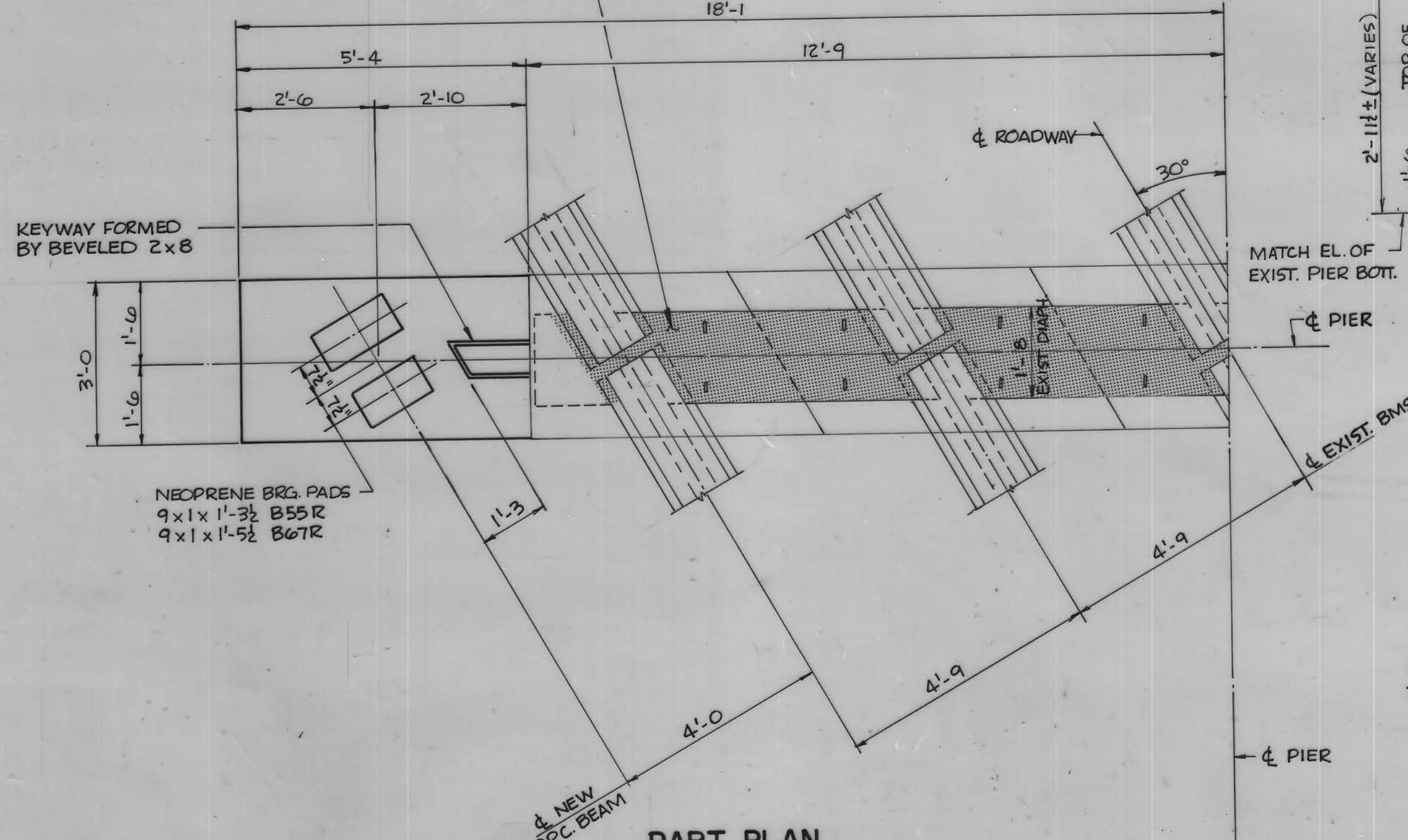
NOTE "D"
CAREFULLY REMOVE EXISTING CONCRETE DOWN TO AND FLUSH WITH THE TOP OF THE EXISTING P.P.C. BEAMS. PROTECT AND RETAIN EXISTING DIAPHRAGM HOOP REINFORCING BARS AND INCORPORATE INTO NEW CONSTRUCTION (TYP.).

ABUTMENT NOTES

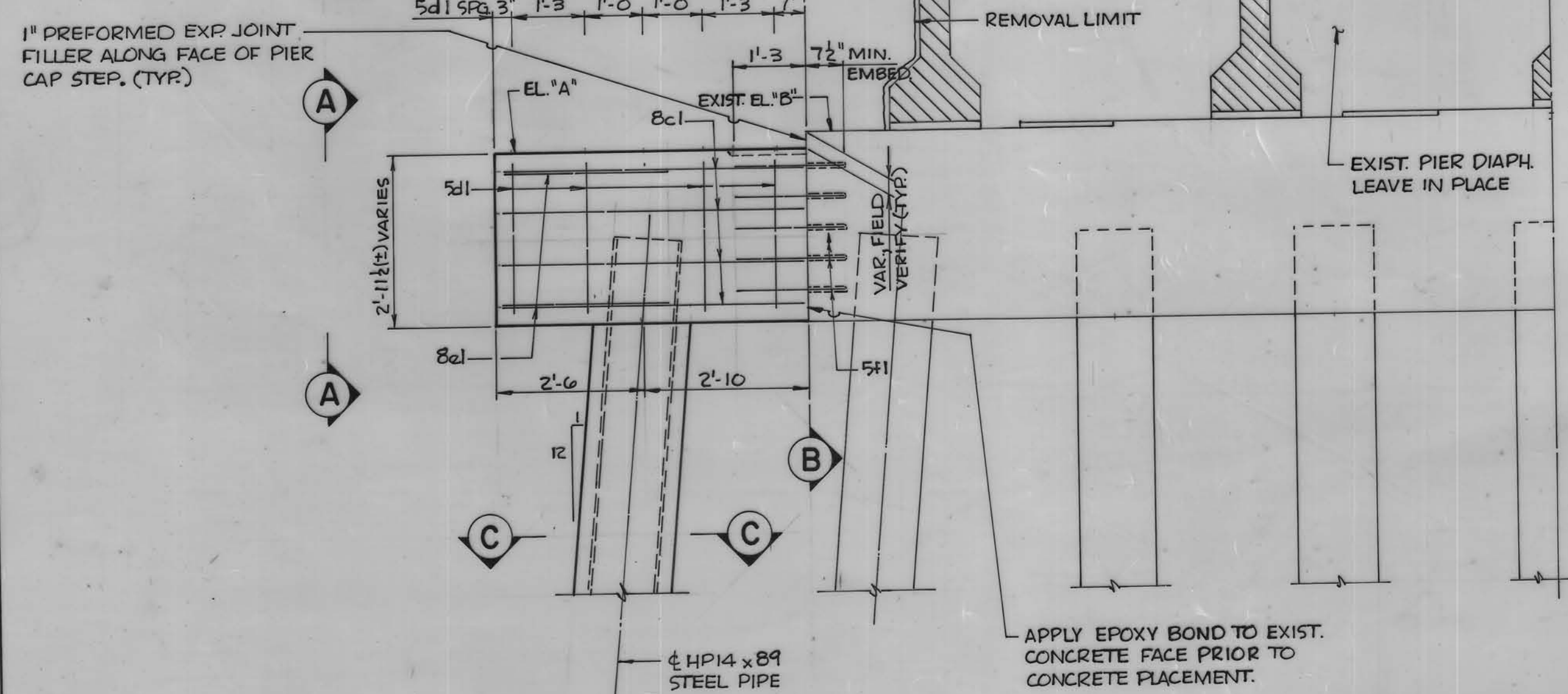
ALL EXPOSED CORNERS OF 90 DEGREES OR SHARPER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.
MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED.
ALL REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.
COST OF PREFORMED EXPANSION JOINT FILLER IS TO BE INCLUDED IN PRICE BID FOR STRUCTURAL CONCRETE.
THE MASKWALL IS TO BE POURED BEFORE THE SUPERSTRUCTURE SLAB IS POURED.
CONSTRUCTION JOINT KEYWAYS ARE TO BE FORMED WITH BEVELED 2 x 6'S.
BONDING OF NEW CONCRETE TO OLD SHALL BE DONE AS SPECIFIED IN ARTICLE 2403.15 OF THE STANDARD SPECIFICATIONS UNLESS NOTED OR SHOWN OTHERWISE.
COST OF EPOXY BONDING AGENT AND ALL OTHER MATERIALS, EQUIPMENT AND LABOR REQUIRED TO BOND NEW CONCRETE TO OLD SHALL BE INCLUDED IN PRICE BID FOR STRUCTURAL CONCRETE.
DOWELS ARE TO BE SET WITH EPOXY IN DRILLED HOLES AS PER PROCEDURES NOTED IN "DRILLED-IN DOWELS" ON SHEET 3. SECURE DOWEL IN PLACE WITH TEMPLATE UNTIL EPOXY SETS.
EXISTING CONCRETE SHALL BE CAREFULLY REMOVED FROM THE ABUTMENT TO THE REMOVAL LIMITS SHOWN OR AS NOTED. CONCRETE REMOVAL SHALL BE DONE IN SUCH A MANNER SO AS TO PROTECT ADJACENT CONCRETE THAT IS TO REMAIN IN PLACE. IN ADDITION, REINFORCING HOOPS IN SUPERSTRUCTURE DIAPHRAGMS AND P.P.C. BEAM SHEAR HOOPS ARE TO BE PROTECTED AND RETAINED, AND INCORPORATED INTO NEW CONSTRUCTION.
THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE HE CAUSES, AND SHALL REPAIR ANY DAMAGED AREA TO ITS ORIGINAL CONDITION, AS DIRECTED BY THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.
EXCAVATION FOR ABUTMENT EXTENSIONS AND BACKFILLING TO ORIGINAL GROUND LINE AFTER CONSTRUCTION OF THE ABUTMENT EXTENSIONS SHALL BE INCLUDED IN THE PRICE BID FOR CLASS 20 EXCAVATION.
PILES SHALL BE DRIVEN TO FULL PENETRATION IF PRACTICABLE BUT TO NOT LESS THAN 39 TONS PER PILE.
VERIFY EXISTING DIMENSIONS PRIOR TO CONSTRUCTION.

NOTE "A"
CAREFULLY REMOVE EXISTING CONCRETE DOWN TO AND FLUSH WITH THE TOP OF THE EXISTING P.P.C. BEAMS. PROTECT AND RETAIN EXISTING 5/8" DIAMETER HOOP REINFORCING BARS AND INCORPORATE INTO NEW CONSTRUCTION (TYP.).

SYMMETRICAL ABOUT ϕ PIER EXCEPT FOR STEP ELEVATIONS

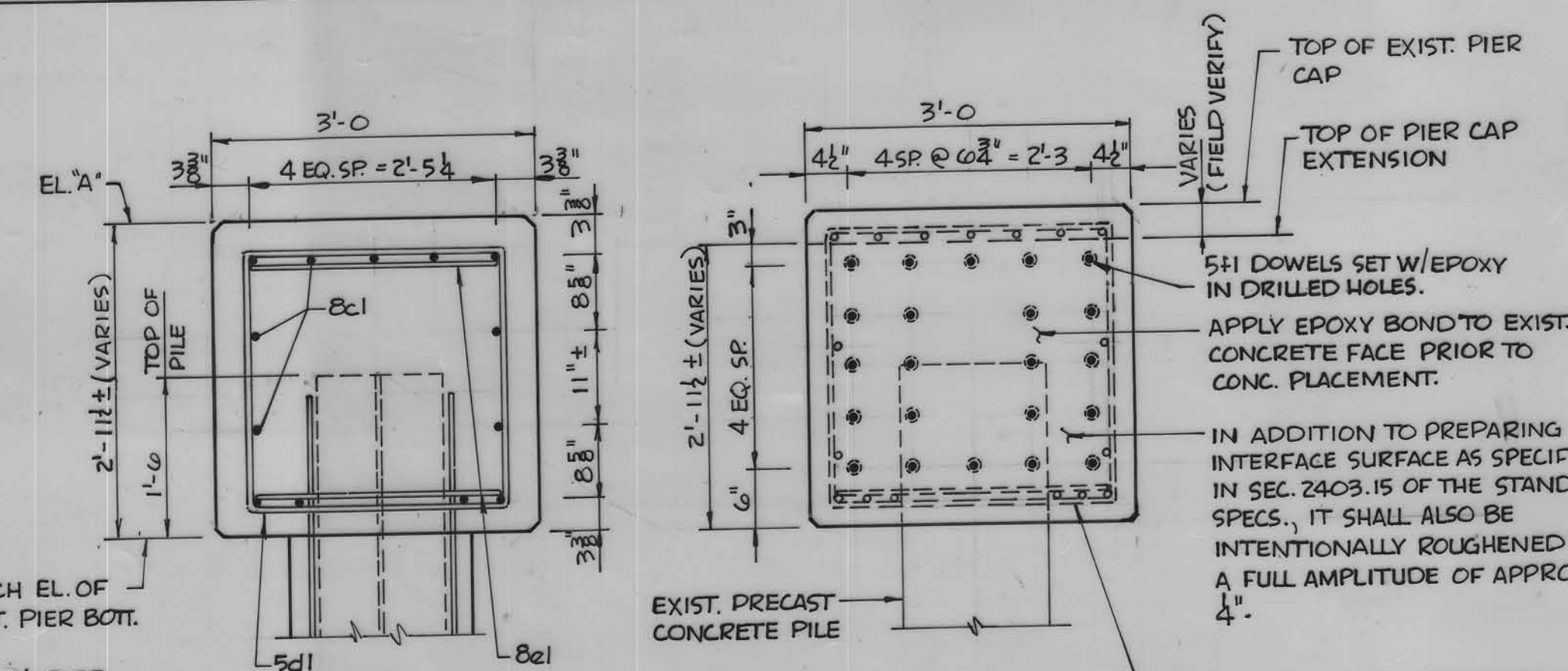


CAREFULLY REMOVE ENDS OF EXISTING CAP DIAPHRAGMS TO WITHIN 1"± OF EXISTING P.P.C. BEAMS. HAND METHODS ARE TO BE USED TO REMOVE THE FINAL 3"± OF CONCRETE TO ENSURE NO DAMAGE TO EXISTING P.P.C. BEAMS. PROTECT AND RETAIN EXISTING 3/4" DIAMETER COIL RODS AND INCORPORATE INTO NEW CONSTRUCTION (TYP.).



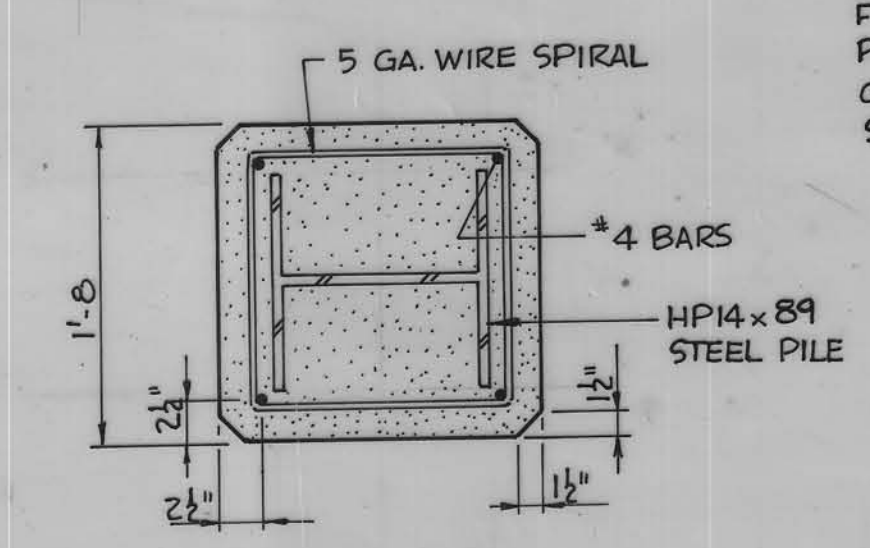
LOCATIONS	EL. "A"	EL. "B"
W. PIER - N. EXTENSION	366.73	367.09
W. PIER - S. EXTENSION	366.67	367.02
E. PIER - N. EXTENSION	366.67	366.96
E. PIER - S. EXTENSION	366.73	367.01

PART ELEVATION



VIEW A-A

SECTION B-B



SECTION C-C

KEYED NOTCH DETAIL

NOTE: ADDITIONAL DETAILS AND NOTES FOR CONCRETE ENCASED STEEL PILES ARE AS PER TYPE 3 PILES ON IDOT P10A STANDARD DRAWING.

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 A 3/4" DRESSED AND BEVELED STRIP.
REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.
PILES ARE TO BE DRIVEN TO FULL PENETRATION IF PRACTICABLE BUT TO NOT LESS THAN 68 TONS BEARING VALUE PER PILE.
COST OF EXCAVATION FOR PIER PILE ENCASEMENTS SHALL BE INCLUDED IN PRICE BID FOR ENCASEMENT.
COST OF ALL PREFORMED JOINT MATERIAL IS TO BE INCLUDED IN PRICE BID FOR STRUCTURAL CONCRETE.
FOR ADDITIONAL DETAILS OF CONCRETE-ENCASED STEEL PILES, SEE TYPE 3 PILES ON IDOT P10A STANDARD DRAWING.
5/8" DOWELS ARE TO BE SET WITH EPOXY IN DRILLED HOLES AS PER PROCEDURES NOTED IN "DRILLED-IN DOWELS" ON SHEET 3. SECURE DOWEL IN PLACE WITH TEMPLATE UNTIL EPOXY SETS.
BONDING OF NEW CONCRETE TO OLD SHALL BE DONE AS SPECIFIED IN ARTICLE 2403.15 OF THE STANDARD SPECIFICATIONS UNLESS NOTED OR SHOWN OTHERWISE.
COST OF EPOXY BONDING AGENT AND ALL OTHER MATERIALS, EQUIPMENT AND LABOR REQUIRED TO BOND NEW CONCRETE TO OLD SHALL BE INCLUDED IN PRICE BID FOR STRUCTURAL CONCRETE.
EXISTING CONCRETE SHALL BE CAREFULLY REMOVED FROM THE PIER DIAPHRAGM TO THE REMOVAL LIMITS SHOWN AND AS NOTED. CONCRETE REMOVAL SHALL BE DONE IN SUCH A MANNER SO AS TO PROTECT ADJACENT CONCRETE THAT IS TO REMAIN IN PLACE.
THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE HE CAUSES, AND SHALL REPAIR ANY DAMAGED AREA TO ITS ORIGINAL CONDITION, AS DIRECTED BY THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.
VERIFY EXISTING DIMENSIONS PRIOR TO CONSTRUCTION.
BATTER PILES 1:12 IN DIRECTION SHOWN.

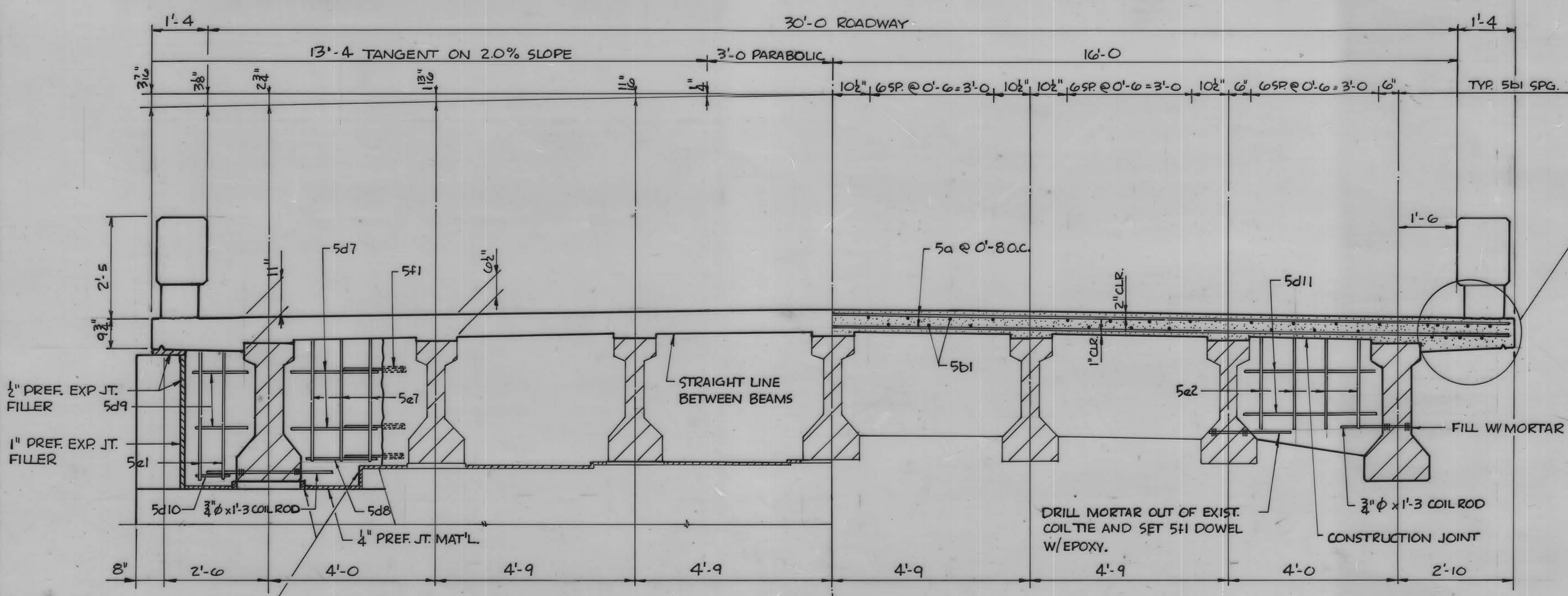
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8c1	CAP, EXTENSION, HORIZONTAL	—	26	5'-0"	347
5d1	CAP, EXTENSION, HOOPS	□	8	11'-6"	96
8e1	CAP, EXTENSION, ENDS	□	4	8'-1"	86
5f1	CAP EXTEN. TO EXIST. CAP, DOWELS	—	44	1'-11"	88
TOTAL (LBS.)					617

<p>5d1</p>	<p>8e1</p>
ALL DIMENSIONS ARE OUT TO OUT. "D" = PIN DIAMETER.	

LOCATION	QUANT.
CAP EXTENSIONS 2 ENDS @ 1.8 EA.	3.6
TOTAL (CU.YDS.)	3.6

ITEM	UNIT	QUANT.
STRUCTURAL CONCRETE, CLASS "C"	CU. YDS.	7.2
REINFORCING STEEL	LBS.	1,234
HP14x89 STEEL	FURNISH 4 @ 85'	LIN. FT. 340
BEARING PILING	DRIVE 4 @ 85'	LIN. FT. 340
	ENCASE 4 @ 73'	LIN. FT. 92

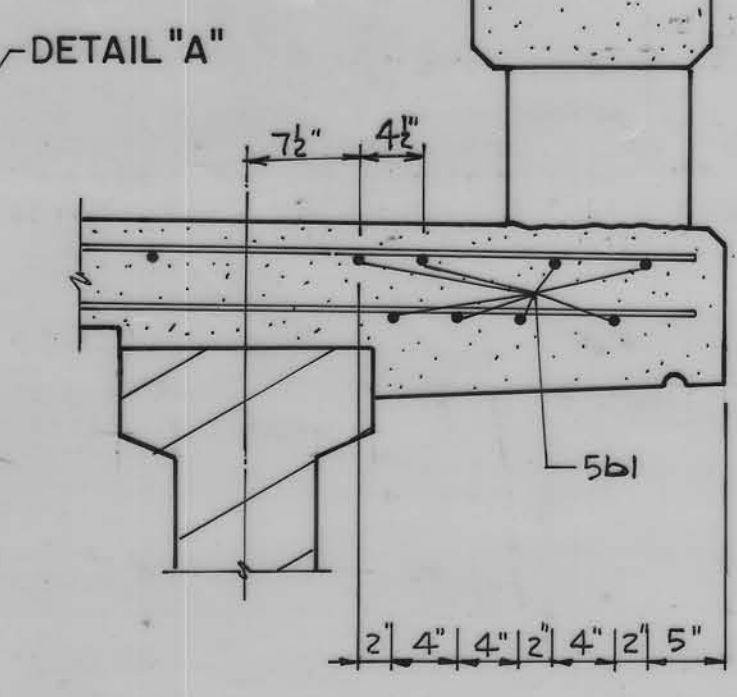
180'-0" x 20' PRESTRESSED CONCRETE BEAM
BRIDGE WIDENING TO 30' ROADWAY
STUB ABUTMENTS 55'-7 1/2' END SPANS
PIOA PIERS 68'-9" CENTER SPAN
PIER DETAILS
30° SKEW LT. AHEAD
CRAWFORD COUNTY IOWA
SHEET 5 OF 13
FILE NO. 53643



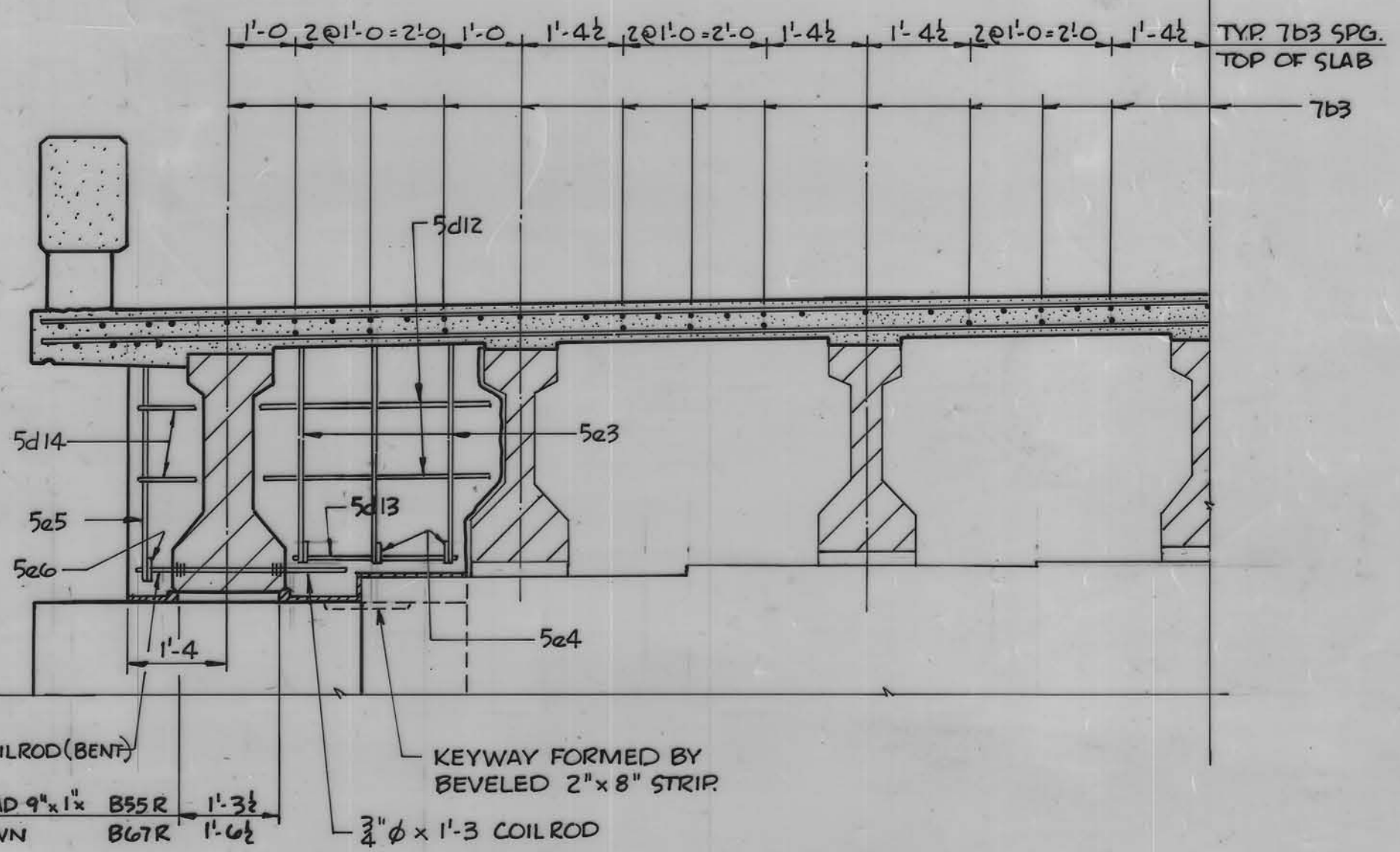
PLACE 1" THICK STRIPS OF PREF. EXPAN. JT. FILLER AROUND BRGS. AND FACE OF EXIST. ABUT. FTG. (TYP.)

HALF SECTION NEAR ABUTMENT
 SHOWN FOR N.E. AND S.W. CORNERS OF BRIDGE. SIMILAR FOR N.W. AND S.E. CORNERS; SEE PART PLAN DETAIL ON "SUPERSTRUCTURE DETAILS" SHT. FOR ADDITIONAL DETAILS.

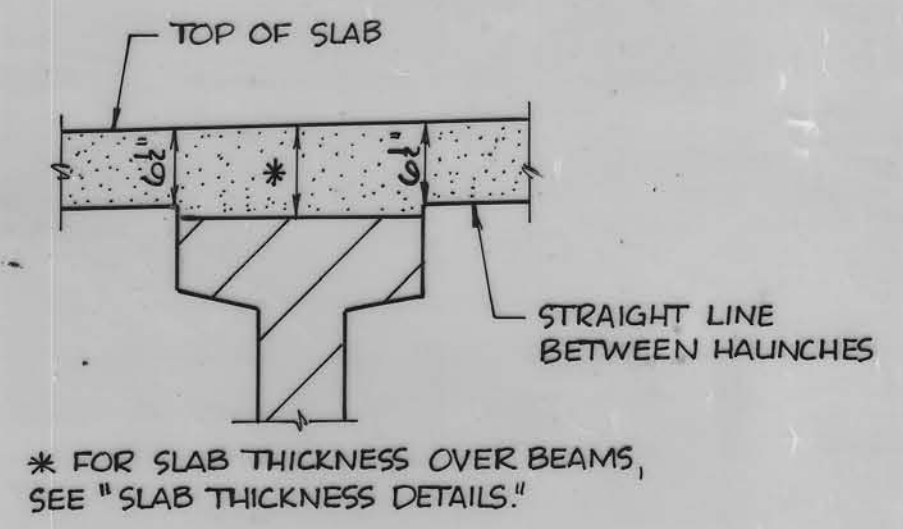
HALF SECTION NEAR MIDSPAN
 SYMMETRICAL ABOUT 1/2 ROADWAY EXCEPT AS NOTED.



DETAIL "A"



HALF SECTION NEAR PIER



TYPICAL SLAB AND HAUNCH DETAIL
 FOR THICKNESS AT EXTERIOR BEAM SEE "HALF SECTION NEAR ABUTMENT"

SUPERSTRUCTURE NOTES

THIS BRIDGE WIDENING IS DESIGNED FOR H20-44 LOADING WITH NO ALLOWANCE FOR A 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 AND ADEQUATELY SUPPORTED ON BAR CHAIRS BEFORE CONCRETE IS PLACED.

ALL SUPERSTRUCTURE REINFORCING BARS ARE TO BE EPOXY-COATED. THE EPOXY COATING SHALL BE IN ACCORDANCE WITH CURRENT SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS OF THE IOWA D.O.T. - HIGHWAY DIVISION.

TOP TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 2" CLEAR BELOW TOP OF SLAB. BOTTOM TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 1" CLEAR ABOVE BOTTOM OF SLAB. TOP AND BOTTOM REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL METAL BAR CHAIRS SPACED AT NOT MORE THAN 3'-0 CENTERS LONGITUDINALLY OR TRANSVERSELY, OR BY CONTINUOUS ROWS OF METAL HIGH CHAIRS OR SLAB BOLSTERS SPACED AT 4'-0 APART.

BEAMS ARE TO BE SET VERTICAL.

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

ALL BACKFILL BEHIND THE ABUTMENTS BETWEEN THE WINGS IS TO BE POROUS AND SPECIAL BACKFILL AS DETAILED ON "GRANULAR BACKFILL DETAIL". THE REMAINDER OF THE ABUTMENT EXCAVATION IS TO BE BACKFILLED WITH SOIL.

COIL RODS AND COIL TIES ARE INCIDENTAL TO THE COST OF PRETENSIONED PRESTRESSED CONCRETE BEAMS.

COST OF ALL PREFORMED EXPANSION JOINT MATERIAL IS TO BE INCLUDED IN PRICE BID FOR CONCRETE.

NEOPRENE BEARING PADS AT PIERS AND SOLE PLATES AT THE ABUTMENT BEARINGS ARE TO BE INCLUDED IN PRICE BID FOR THE PRETENSIONED PRESTRESSED CONCRETE BEAMS.

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

COST OF STRUCTURAL STEEL FOR THE ABUTMENT BEARINGS SHALL BE INCLUDED IN THE PRICE BID FOR CONCRETE.

EXISTING CONCRETE SHALL BE CAREFULLY REMOVED TO THE REMOVAL LIMITS SHOWN ON THESE PLANS. CONCRETE REMOVAL SHALL BE DONE IN SUCH A MANNER SO AS TO PROTECT ADJACENT CONCRETE THAT IS TO REMAIN IN PLACE. IN ADDITION, HOOP REINFORCING BARS IN ALL SUPERSTRUCTURE DIAPHRAGMS AND P.P.C. BEAM SHEAR HOOPS ARE TO BE PROTECTED AND RETAINED, AND INCORPORATED INTO NEW CONSTRUCTION.

THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE HE CAUSES, AND SHALL REPAIR ANY DAMAGED AREA TO ITS ORIGINAL CONDITION, AS DIRECTED BY THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.

BONDING OF NEW CONCRETE TO OLD SHALL BE DONE AS SPECIFIED IN ARTICLE 2403.15 OF THE STANDARD SPECIFICATIONS UNLESS NOTED OR SHOWN OTHERWISE.

VERIFY EXISTING DIMENSIONS PRIOR TO CONSTRUCTION.

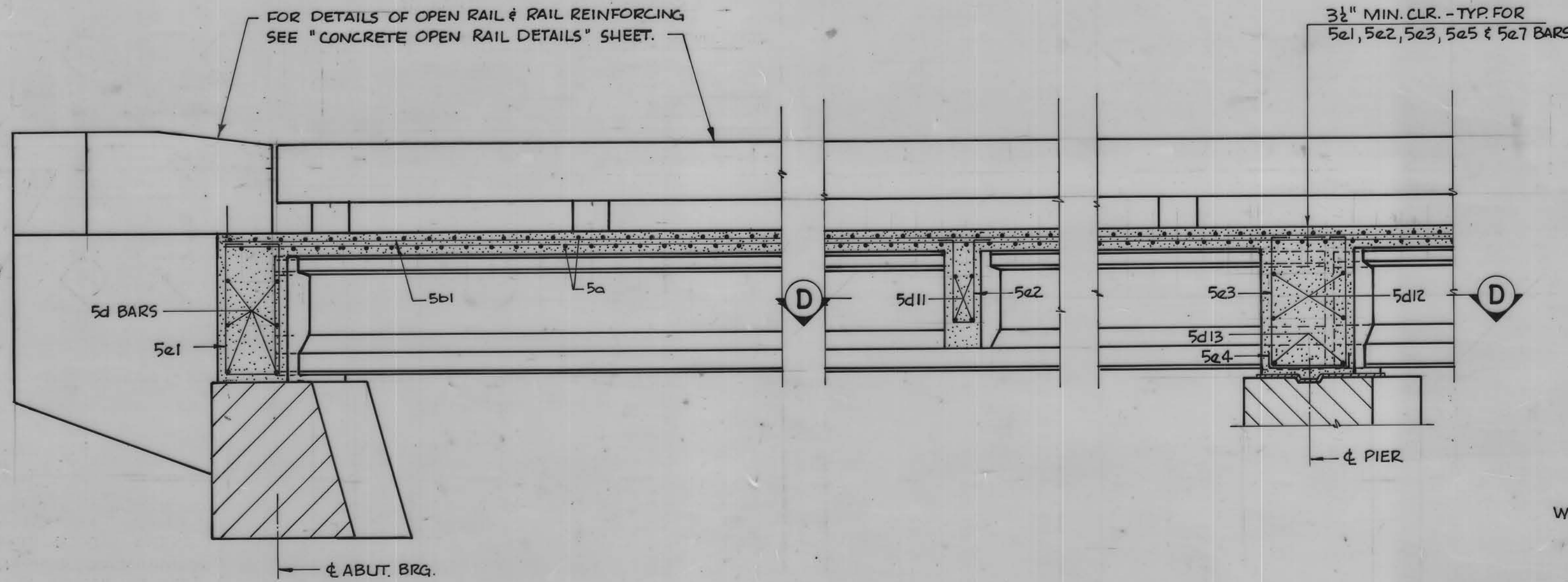
180'-0 x 20' PRESTRESSED CONCRETE BEAM
 BRIDGE WIDENING TO 30' ROADWAY

STUB ABUTMENTS 55'-7 1/2 END SPANS

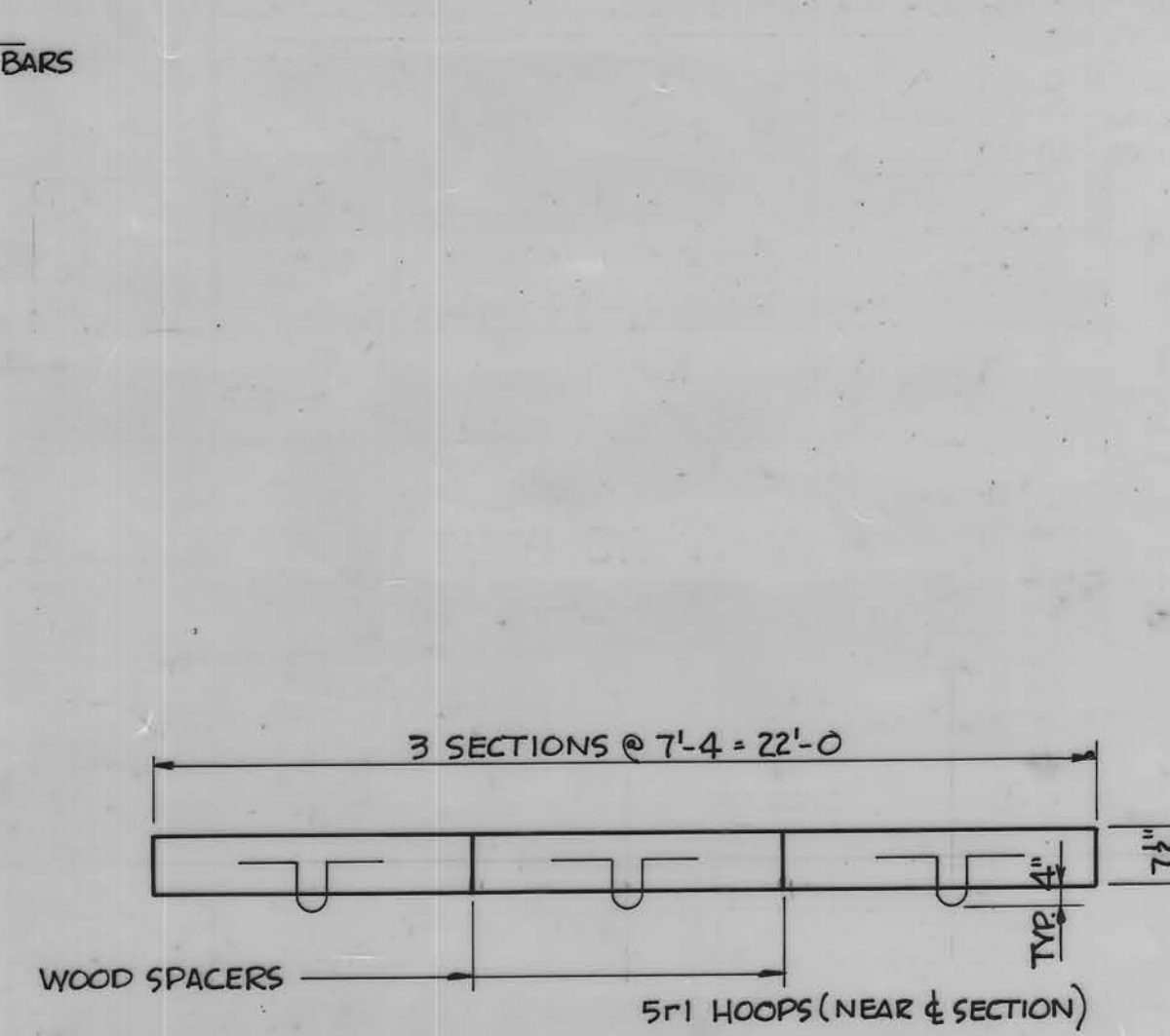
PIOA PIERS 68'-9 CENTER SPAN

SUPERSTRUCTURE DETAILS

BRIDGE APPROACH SECTION NOT SHOWN

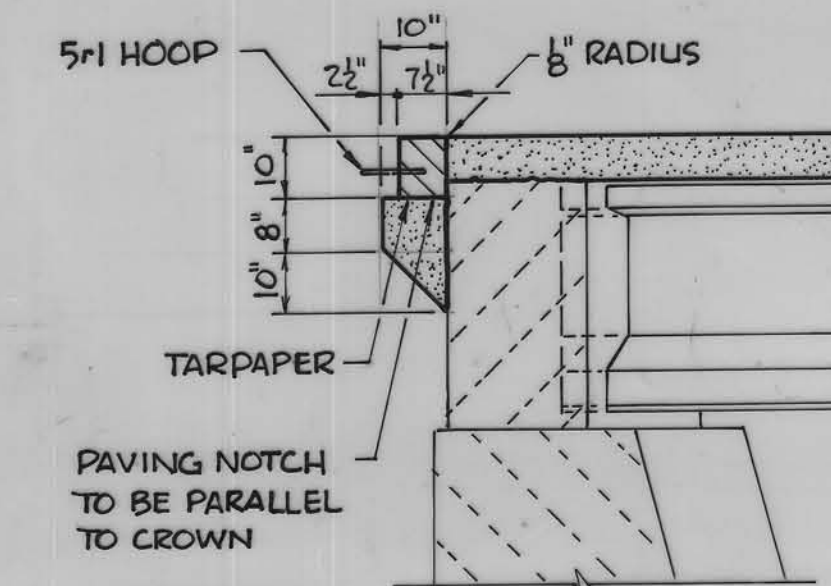


PART LONGITUDINAL SECTION NEAR CURB

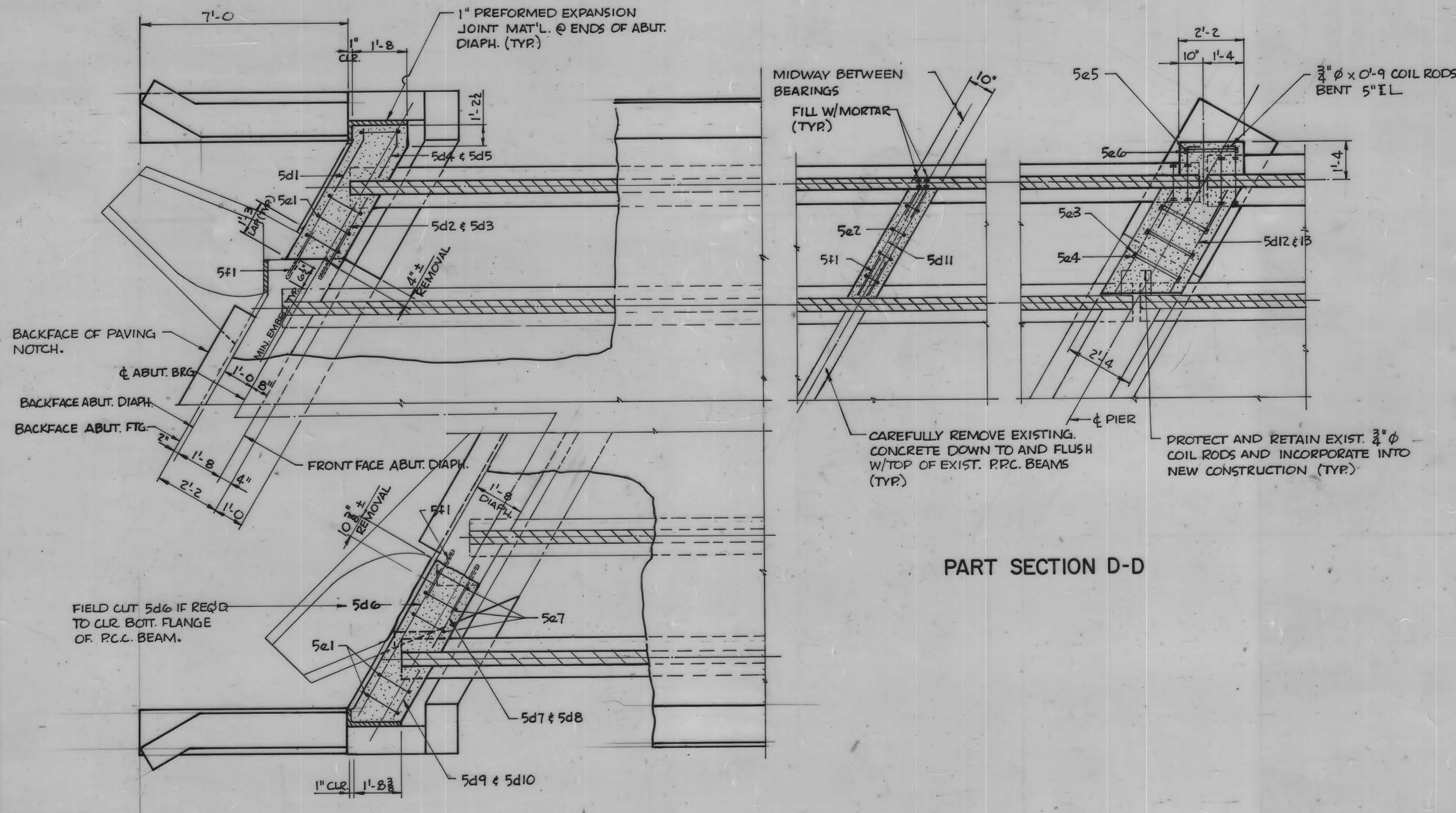


TEMPORARY PAVING BLOCK

BEFORE THE CONCRETE PAVING BLOCK IS POURED, BEND DOWN 5c DOWELS (STRUCTURAL GRADE) AND LINE THE NOTCH WITH TARPAPER TO PREVENT BOND. BLOCK IS TO BE REMOVED AND BARS STRAIGHTENED BEFORE PAVEMENT IS PLACED. PAVING BLOCK MAY BE MADE OF CLASS "C" OR CLASS "D" CONCRETE.

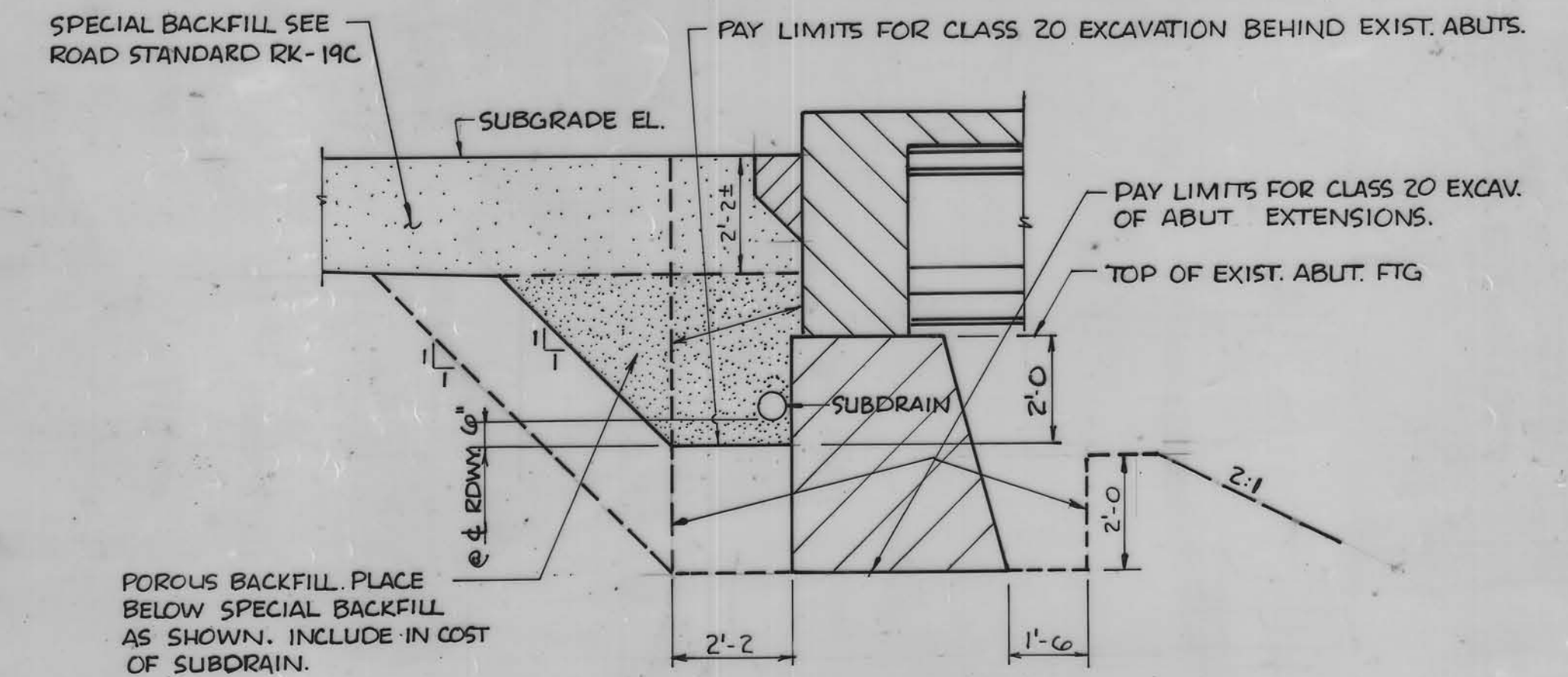


PART SECTION (SHOWING TEMPORARY PAVING BLOCK)



PART SECTION D-D

PART PLAN



GRANULAR BACKFILL DETAIL

SEE "SITUATION PLAN" SHEET FOR LAYOUT OF SUBDRAIN. SLOPE SUBDRAIN DOWN 1/4" PER FOOT FROM & ROADWAY AND EXTEND THROUGH EXISTING FORESLOPES.

180'-0" x 20' PRESTRESSED CONCRETE BEAM
BRIDGE WIDENING TO 30' ROADWAY

STUB ABUTMENTS
55'-7 1/2' END SPANS

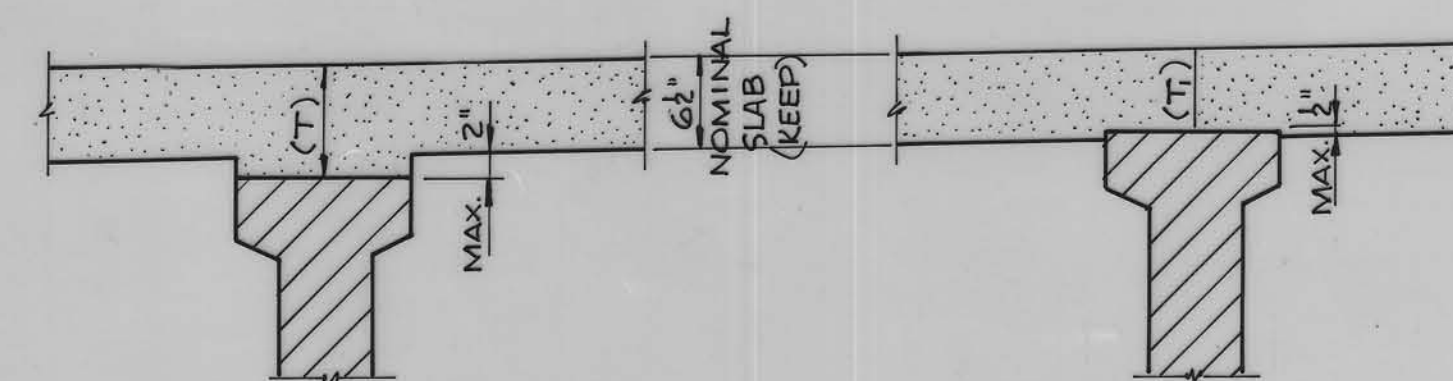
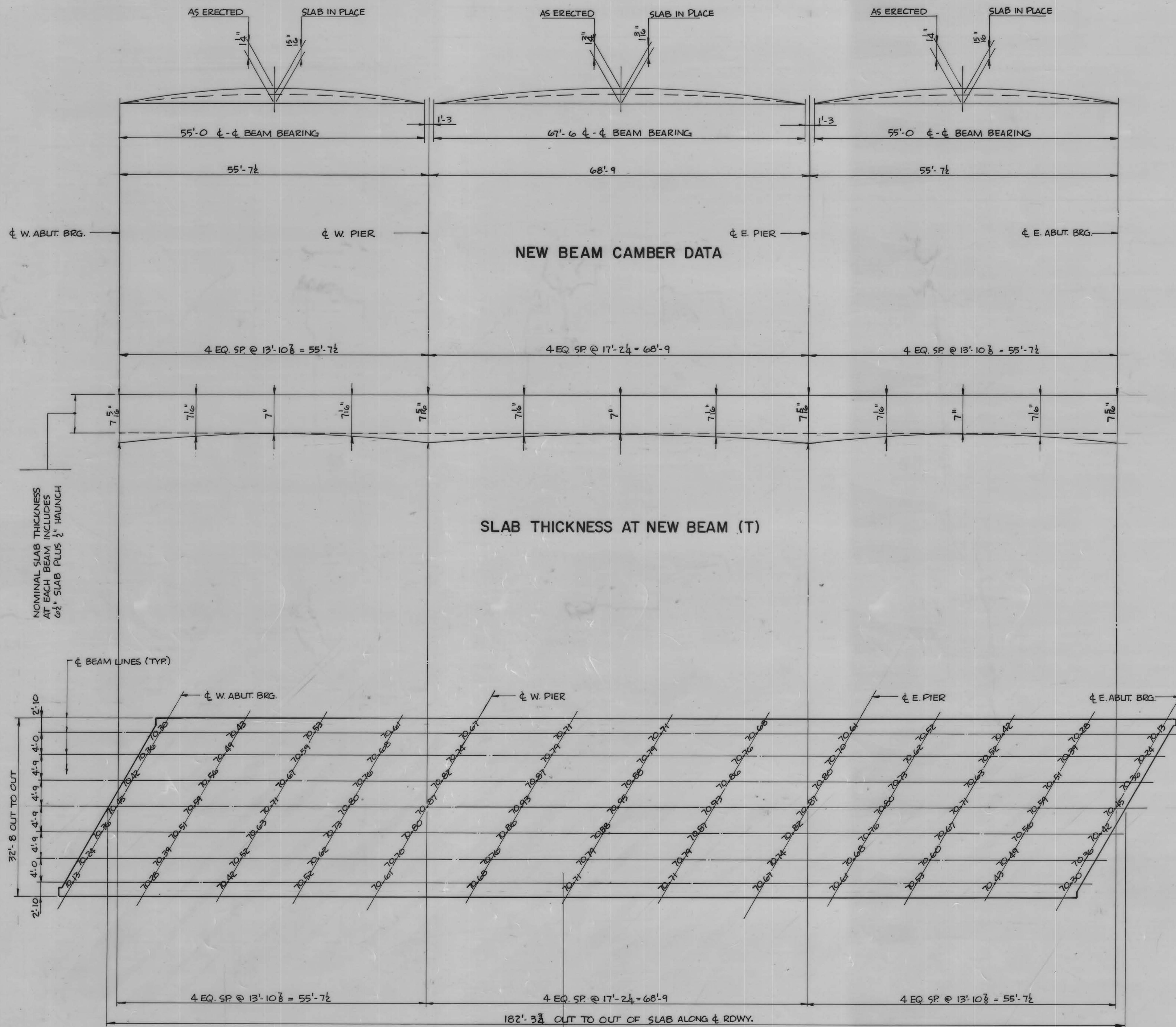
PIOA PIERS
68'-9' CENTER SPAN

SUPERSTRUCTURE DETAILS

CRAWFORD COUNTY

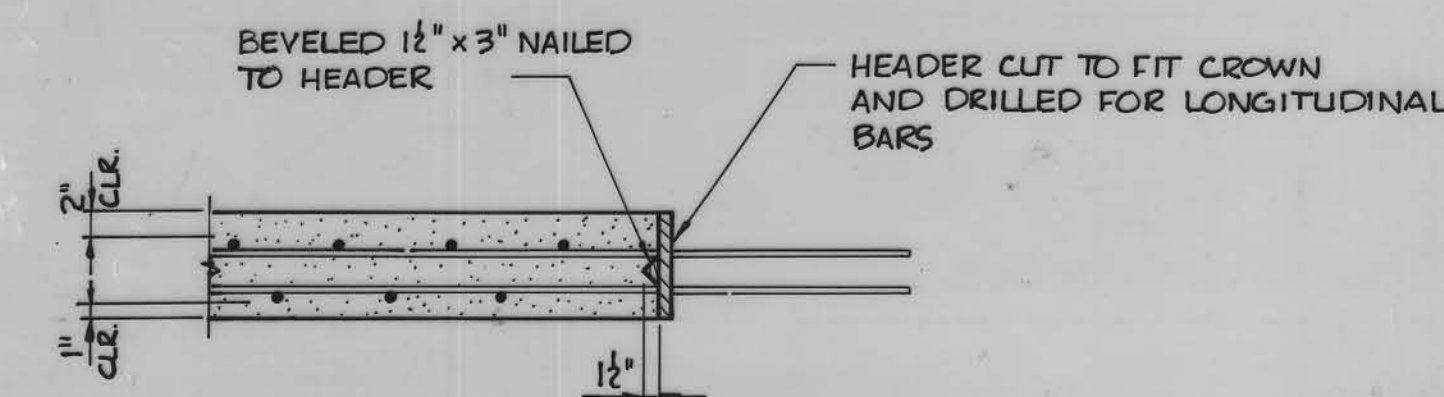
30° SKEW LT. AHEAD
IOWA

SHEET 7 OF 13



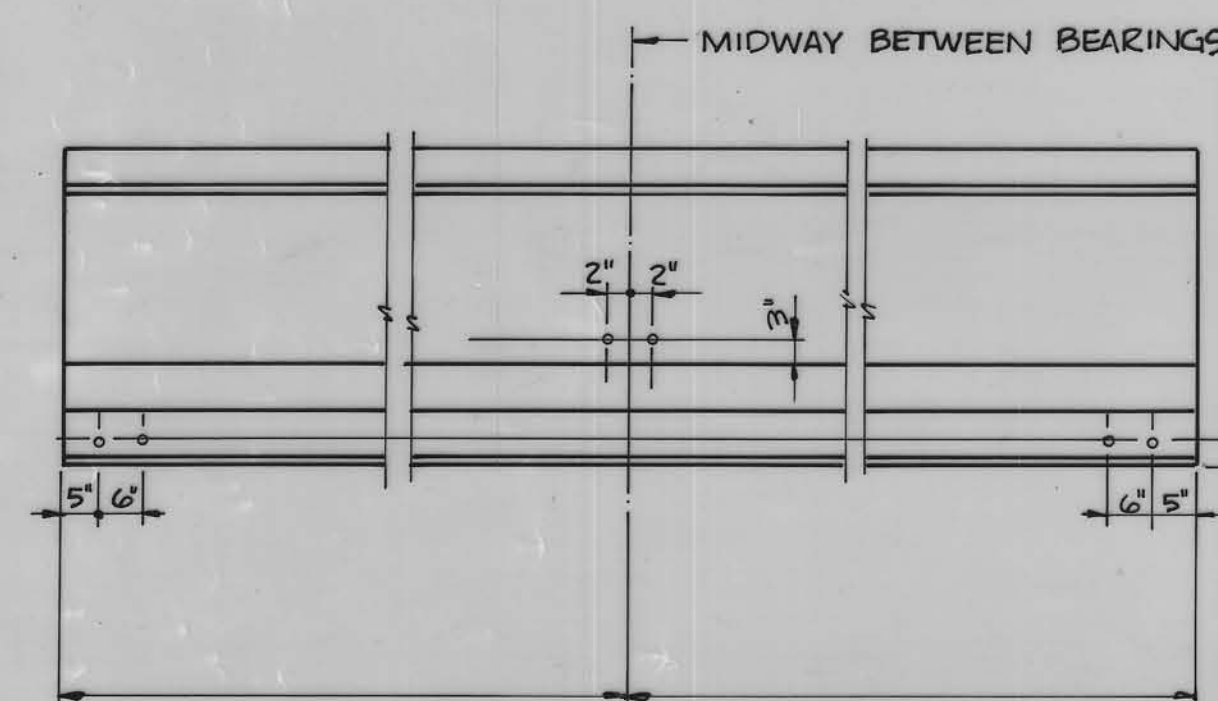
SLAB THICKNESS DETAILS

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 TO A MAXIMUM OF 1/2" EMBEDMENT AT THE BEAM (T). IF MORE THAN 1/2" IS REQUIRED, OR IF THE HAUNCH EXCEEDS 2", THE GRADE LINE IS TO BE REVISED.

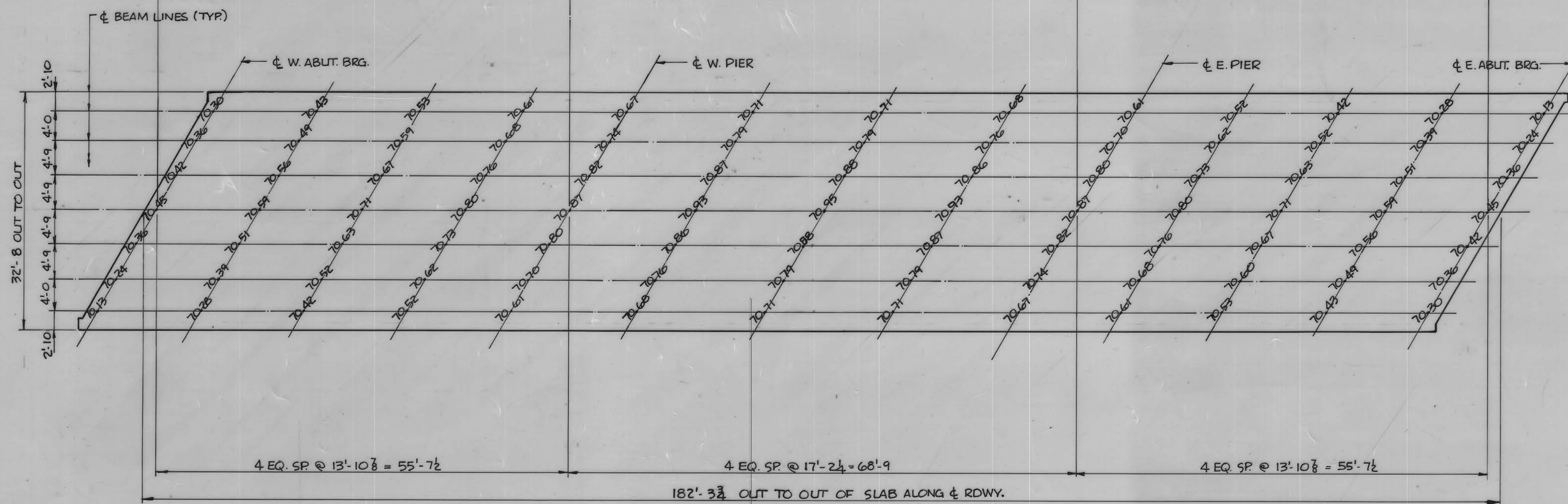


TRANSVERSE FLOOR CONSTRUCTION JOINT

(LONGITUDINAL FLOOR CONSTRUCTION JOINT SIMILAR.)



BEAM COIL TIE LOCATIONS



**180'-0 x 20' PRESTRESSED CONCRETE BEAM
BRIDGE WIDENING TO 30' ROADWAY**

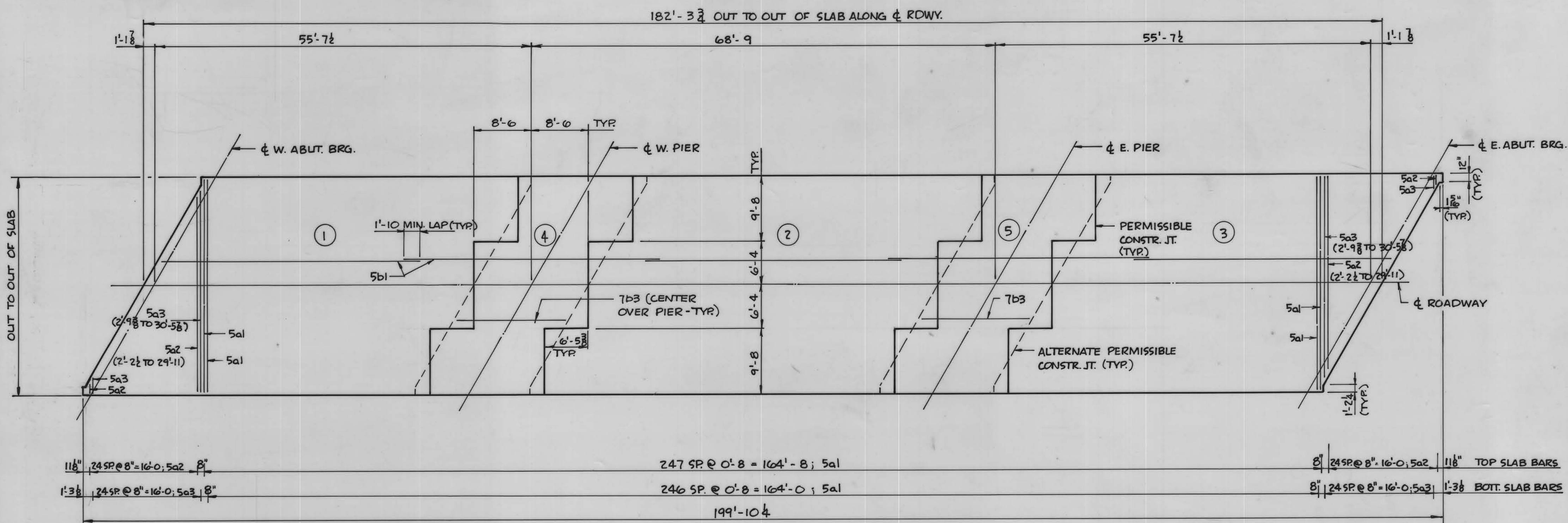
STUB ABUTMENTS 55'-7 1/2 END SPANS
PIOA PIERS 68'-9 CENTER SPAN

SUPERSTRUCTURE DETAILS

CRAWFORD COUNTY

30° SKEW LT. AHEAD IOWA

SHEET 8 OF 13



CONCRETE PLACEMENT DIAGRAM AND SLAB REINFORCING

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 RESULTS.



REINFORCING BAR LIST - SUPERSTRUCT.					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
* 5a1	SLAB, TRANSV., TOP & BOT.	—	495	32'-4"	16,693
* 5a2	" " " ENDS, TOP	—	50	VARIES	837
* 5a3	SLAB, TRANSV., ENDS, BOT.	—	50	VARIES	867
* 5b1	SLAB, LONGIT.	—	280	37'-11"	11,073
* 7b3	SLAB, LONGIT., OVER PIERS	—	50	16'-8"	1,703
* 5d1	ABUT. DIAPH., LONGIT., B.F.	—	6	4'-11"	31
5d2	" " " " " F.F.	—	4	2'-2"	9
5d3	" " " " " "	—	2	1'-9"	4
5d4	" " " " " "	—	4	1'-8"	7
5d5	" " " " " F.F.	—	2	1'-0"	2
* 5d6	" " " " " B.F.	—	6	5'-8"	35
5d7	" " " " " F.F.	—	4	2'-5"	10
5d8	" " " " " "	—	2	1'-11"	4
5d9	" " " " " "	—	4	1'-9"	7
5d10	ABUT. " " " " F.F.	—	2	1'-3"	3
5d11	INTERM. " " " "	—	24	3'-8"	92
5d12	PIER " " " "	—	16	3'-8"	61
5d13	PIER DIAPH., LONGIT.	—	8	2'-8"	22
5d14	PIER DIAPH., ENDS	—	8	3'-1"	26
* 5e1	ABUT. DIAPH., HOOPS	—	12	9'-2"	115
* 5e2	INTERM. " " " "	—	24	6'-0"	150
* 5e3	PIER " " " HOOPS	—	12	9'-4"	117
5e4	" " " " TIES	—	12	3'-1"	39
* 5e5	" " " " HOOPS	—	4	9'-7"	40
5e6	PIER " " " TIES	—	4	2'-10"	12
* 5e7	ABUT. DIAPH. HOOPS	—	6	8'-8"	54
5f1	ABUT. & INTERM. DIAPH. DOWELS	—	36	1'-10"	69
5r1	PAVING BLOCK LIFTING HOOPS	—	6	2'-10"	18
* CONCRETE OPEN RAIL					7,998
* REINFORCING STEEL (EPOXY COATED)			TOTAL (LBS.)	39,713	
REINFORCING STEEL			TOTAL (LBS.)	385	

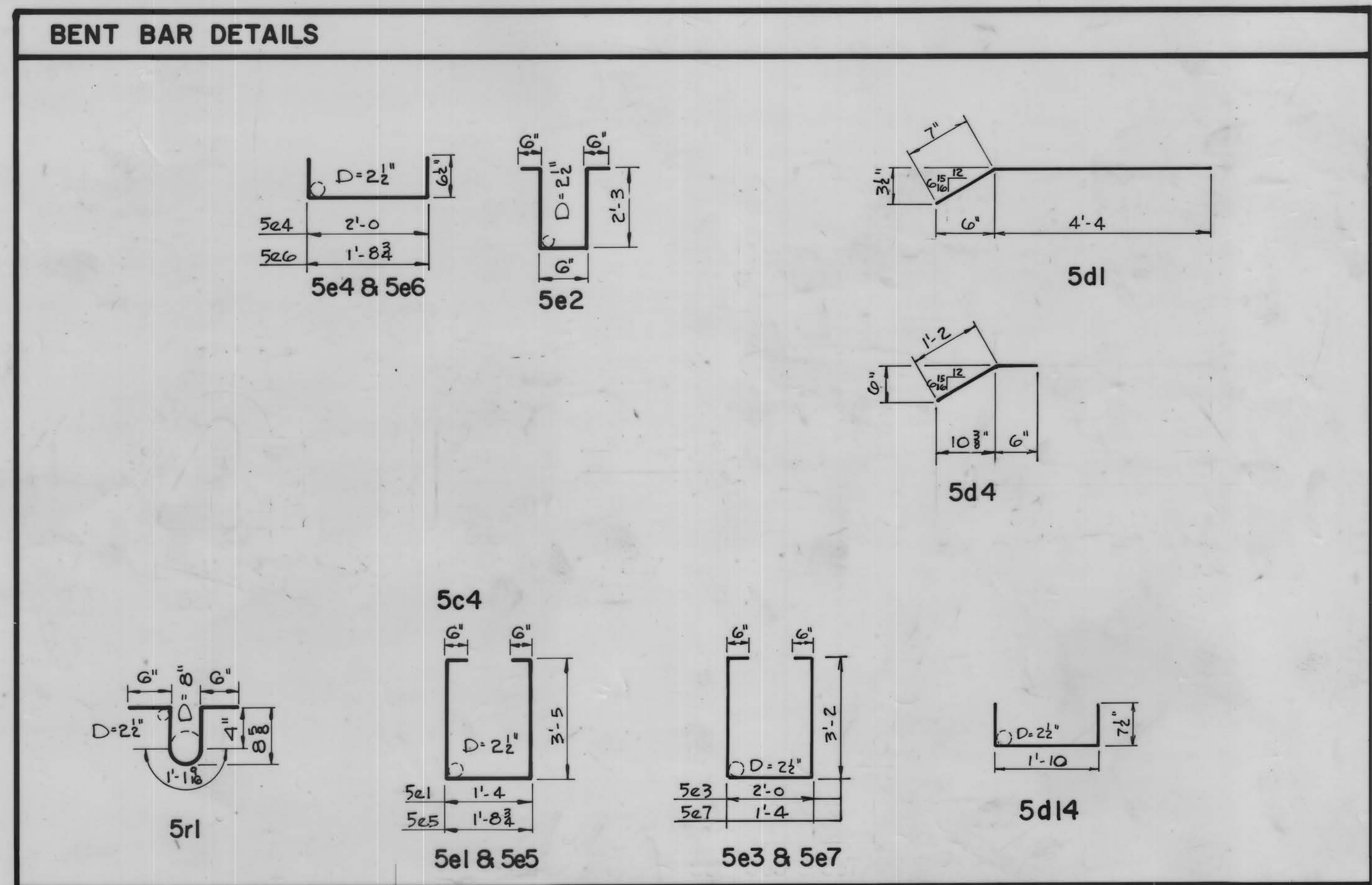
CONCRETE PLACEMENT QUANT. - SUPERSTR.		
LOCATION	QUANTITIES	
SLAB AND DIAPHRAGM, SECTIONS ① & ③	2 @ 37.5	75.0
SLAB AND DIAPHRAGM, SECTIONS ②		38.0
SLAB AND DIAPHRAGM, SECTIONS ④ & ⑤	2 @ 15.0	30.0
PAVING BLOCK	2 @ .4	.8
TOTAL (CU. YDS.)		143.8

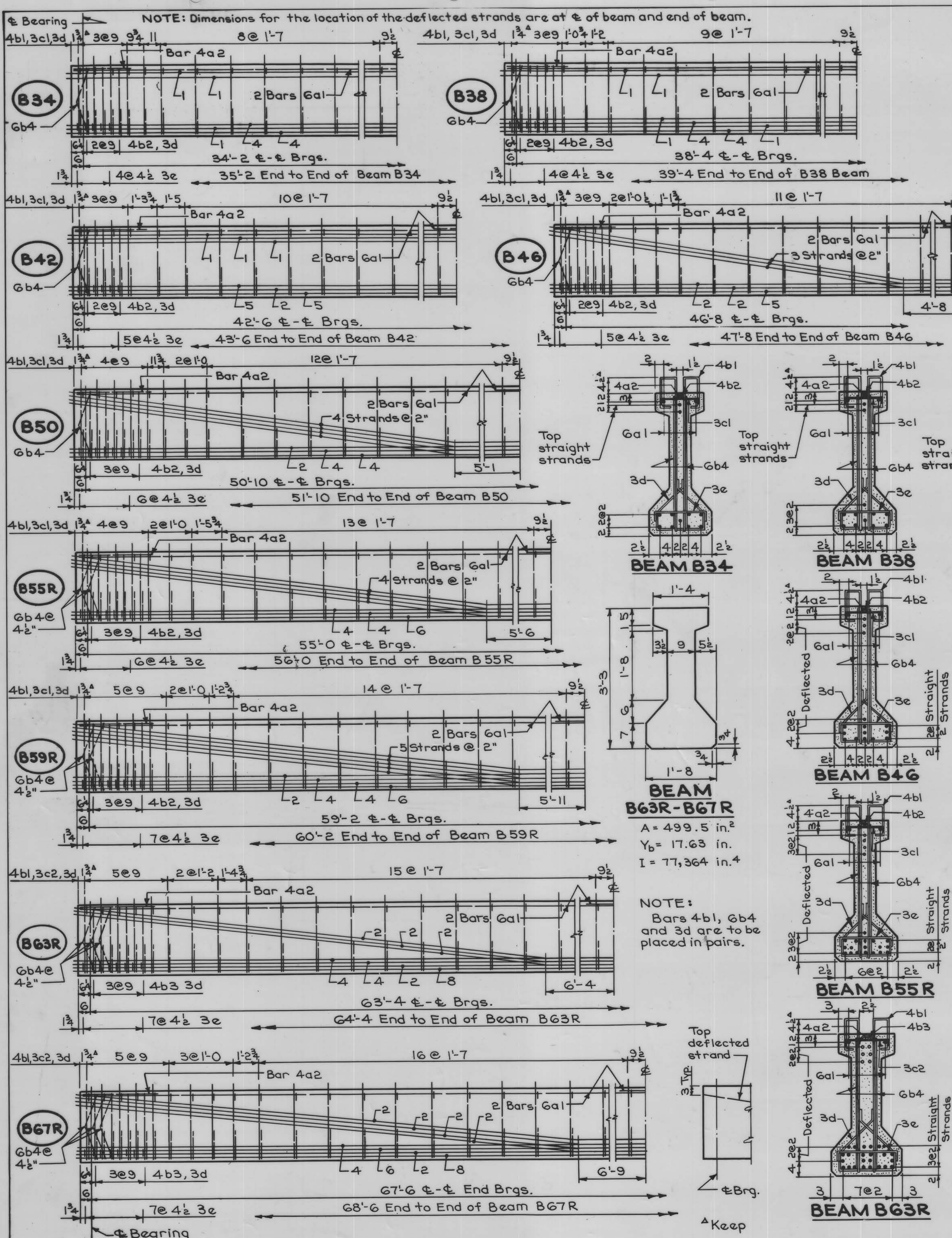
ESTIMATED QUANTITIES - SUPERSTR.		
ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE, CLASS "D"	CU. YDS.	143.8
REINFORCING STEEL (EPOXY COATED)	LBS.	39,713
REINFORCING STEEL	LBS.	385
PRETENSIONED PRESTRESSED CONCRETE BEAMS	B55R	NO. 4
	B67R	NO. 2

* DENOTES EPOXY COATED REINFORCING STEEL.

180'-0 x 20' PRESTRESSED CONCRETE BEAM
 BRIDGE WIDENING TO 30' ROADWAY
 STUB ABUTMENTS 55'-7 1/2' END SPANS
 P10A PIERS 68'-9' CENTER SPAN

SUPERSTRUCTURE DETAILS
 CRAWFORD COUNTY
 30° SKEW LT. AHEAD IOWA
 SHEET 9 OF 13
 FILE NO. 53643





REINFORCING BAR LIST

Beam	B34	B38	B42	B46	B50	B55R	B59R	B63R	B67R
Span	34'-2"	38'-4"	42'-6"	46'-8"	50'-10"	55'-0"	59'-2"	63'-4"	67'-6"
Bar Shape	No Length	No Length	No Length	No Length	No Length	No Length	No Length	No Length	No Length
6a1	2 34'-11"	2 39'-1"	4 22'-7"	4 24'-8"	4 26'-9"	4 28'-10"	4 30'-11"	4 33'-0"	4 35'-1"
4a2	2 2'-6"	2 2'-6"	2 2'-6"	2 2'-6"	2 3'-3"	2 3'-3"	2 3'-3"	2 3'-3"	2 3'-3"
4b1	56 4'-11"	60 4'-11"	64 4'-11"	72 4'-11"	80 4'-11"	84 4'-11"	92 4'-11"	96 4'-11"	104 4'-11"
4b2	6 6'-3"	6 6'-3"	6 6'-3"	6 6'-3"	8 6'-3"	8 6'-3"	8 6'-3"	8 6'-3"	8 6'-3"
4b3	-	-	-	-	-	-	-	8 6'-4"	8 6'-4"
6b4	4 3'-3"	4 3'-3"	4 3'-3"	4 3'-3"	4 3'-3"	8 3'-3"	8 3'-3"	12 3'-3"	12 3'-3"
3c1	28 1'-3"	30 1'-3"	32 1'-3"	36 1'-3"	40 1'-3"	42 1'-3"	46 1'-3"	-	-
3c2	-	-	-	-	-	-	-	48 1'-4"	52 1'-4"
3d	68 2'-10"	72 2'-10"	76 2'-10"	84 2'-10"	96 2'-10"	100 2'-10"	108 2'-10"	112 3'-0"	120 3'-0"
3e	10 1'-6"	10 1'-6"	12 1'-6"	12 1'-6"	14 1'-6"	14 1'-6"	16 1'-6"	16 1'-8"	16 1'-8"

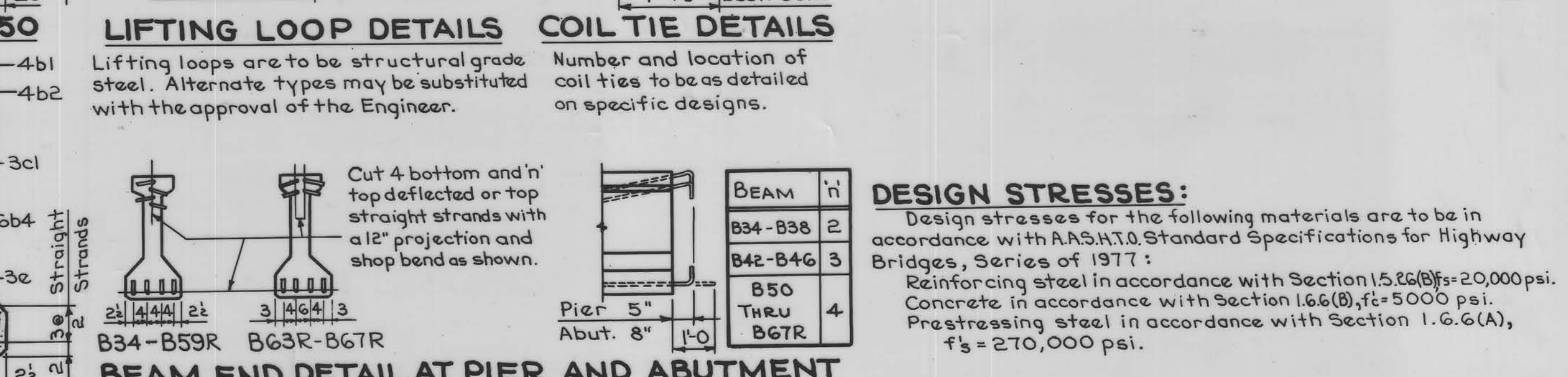
BEAM DATA

Beam	B34	B38	B42	B46	B50	B55R	B59R	B63R	B67R
Span	34'-2"	38'-4"	42'-6"	46'-8"	50'-10"	55'-0"	59'-2"	63'-4"	67'-6"
Initial Prestress	Kips 318	347	434	347	405	520	607	694	809
Size Strands	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Straight Strands	11	12	15	9	10	14	16	18	20
Deflected Strands	-	-	-	3	4	4	5	6	8
Hold Down Force	Kips -	-	-	11.2	13.8	12.7	13.7	16.8	19.5
Camber @	.14	.19	.19	.25	.26	.35	.42	.58	.77
① D.L. Deflection @ in. (7'-6" Spcg.)	.09	.02	.14	.04	.21	.05	.31	.08	.43
① D.L. Deflection @ in. (8'-0" Spcg.)	.10	.02	.15	.04	.23	.06	.33	.08	.46
① D.L. Deflection @ in. (8'-6" Spcg.)	.11	.03	.16	.04	.24	.06	.35	.09	.49
Reinforcing Steel	lb. 4.28	4.59	4.97	5.45	6.10	6.60	7.10	7.70	8.21
Concrete	cy. 3.47	3.87	4.28	4.69	5.10	5.51	5.92	6.27	6.80

① Due to weight of 8" slab and diaphragms.
 ② Upper figure is the beam camber at release. Lower figure is the beam camber just before slab is placed.
 ③ Upper figure is the elastic deflection of beam due to weight of 8" slab. Lower figure is the deflection due to the combined effect of creep due to weight of slab and shrinkage of slab. Total deflection of the beam is upper figure + 75% of lower figure for end spans and upper figure + 50% of lower figure for interior spans.

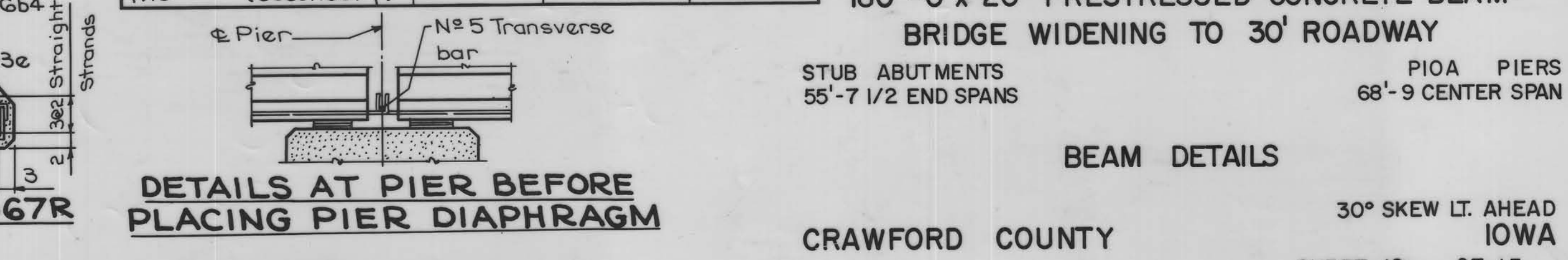
NOTES:

Unless otherwise noted lengths of all beams shall be increased .0005L to compensate for creep shrinkage and elastic shortening. All deflected strands are to be held down at 4 points except that the hold down point may be moved toward the end of the beam a distance not to exceed .05 span at the producer's option. Tops of beams are to be struck off level and artificially roughened in accordance with the IDOT Materials Department recommendations. Bearing details will be as detailed on the Bridge Design sheets. All strands are to be 1/2" ϕ 270-kip grade. Beams for continuous bridges shall be at least 4 weeks old before the slab is placed except as otherwise approved by the 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 sand blasting or other approved methods to provide suitable bond between the beam and the diaphragm in accordance with Article 2403.15 of the specifications.

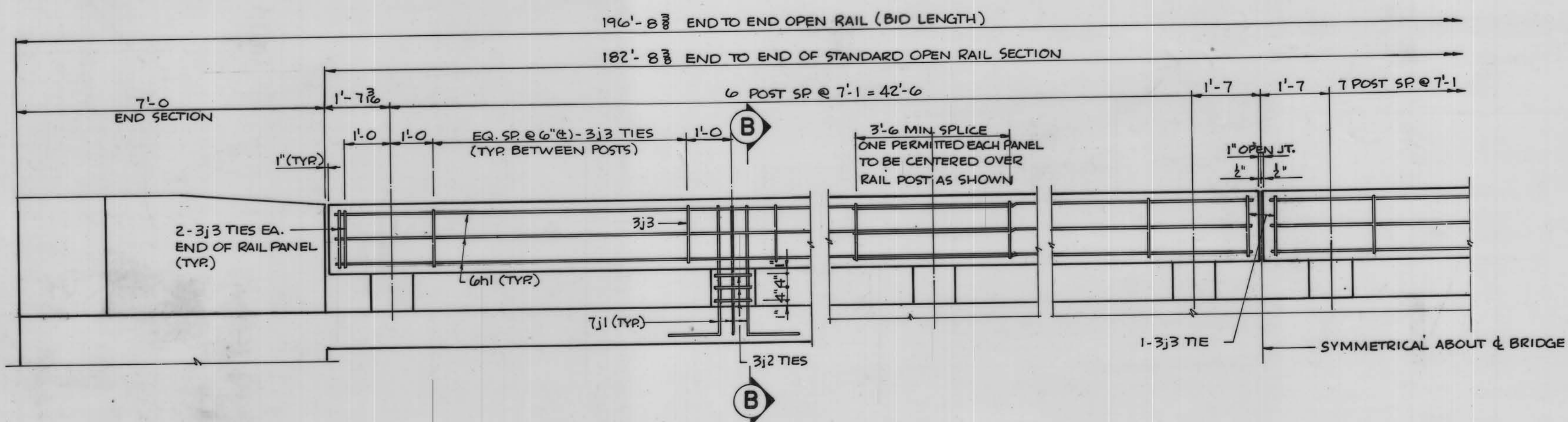


BEAM END DETAIL AT PIER AND ABUTMENT

Beam	n
B34-B38	2
B42-B46	3
B50 THRU B67R	4



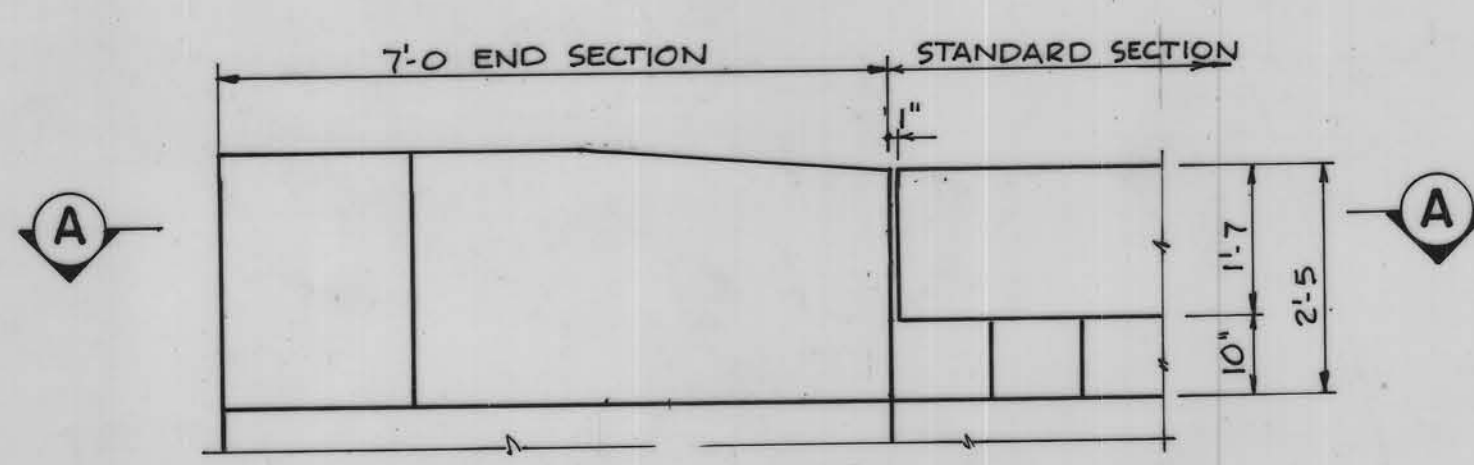
180'-0" x 20' PRESTRESSED CONCRETE BEAM
 BRIDGE WIDENING TO 30' ROADWAY
 STUB ABUTMENTS 55'-7 1/2" END SPANS
 PIER PIERS 68'-9" CENTER SPAN
 BEAM DETAILS
 30° SKEW LT. AHEAD
 CRAWFORD COUNTY IOWA
 SHEET 10 OF 13



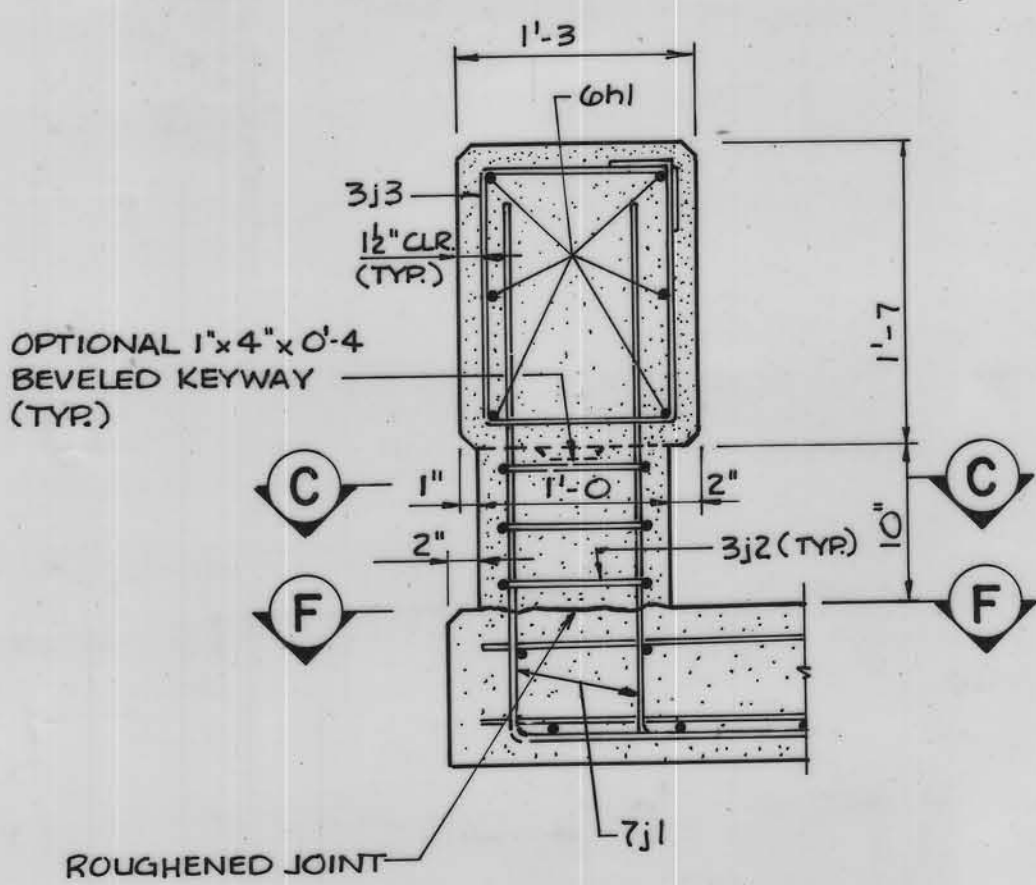
ELEVATION OF CONCRETE OPEN RAIL

* 6h1 LENGTH BASED ON NO SPLICES. MAY BE SPLICED WITH ONE LAP AS SHOWN WITH NO ADDITIONAL PAYMENT FOR SPLICES

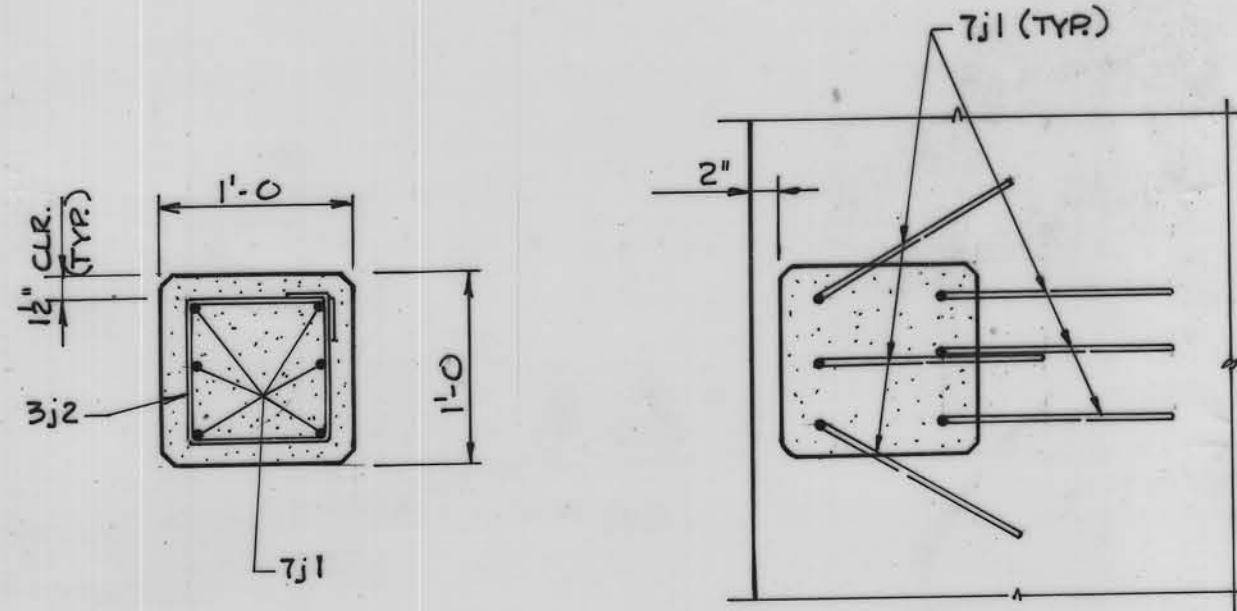
REINFORCING BAR LIST (ONE BRIDGE)						
SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	6h1	RAIL LONGIT.	—	48	45'-3"	3,262
	7j1	RAIL POST VERT.	—	336	4'-1"	2,804
	3j2	RAIL POST TIES	—	168	3'-8"	232
	3j3	RAIL TIES	—	552	5'-4"	1,107
4 END SECTIONS	6h2	LONGIT.	—	16	6'-7"	158
	6h3	LONGIT.	—	16	6'-10"	164
	5j4	ANCHOR TO SLAB	—	48	2'-6"	125
	5j5	VERTICAL	—	20	5'-1"	106
	5j6	VERTICAL	—	8	4'-10"	40
	(INCLUDE WITH SUPERSTRUCTURE REINFORCING) TOTAL (LBS.)					



PART ELEVATION VIEW



SECTION B-B



SECTION C-C

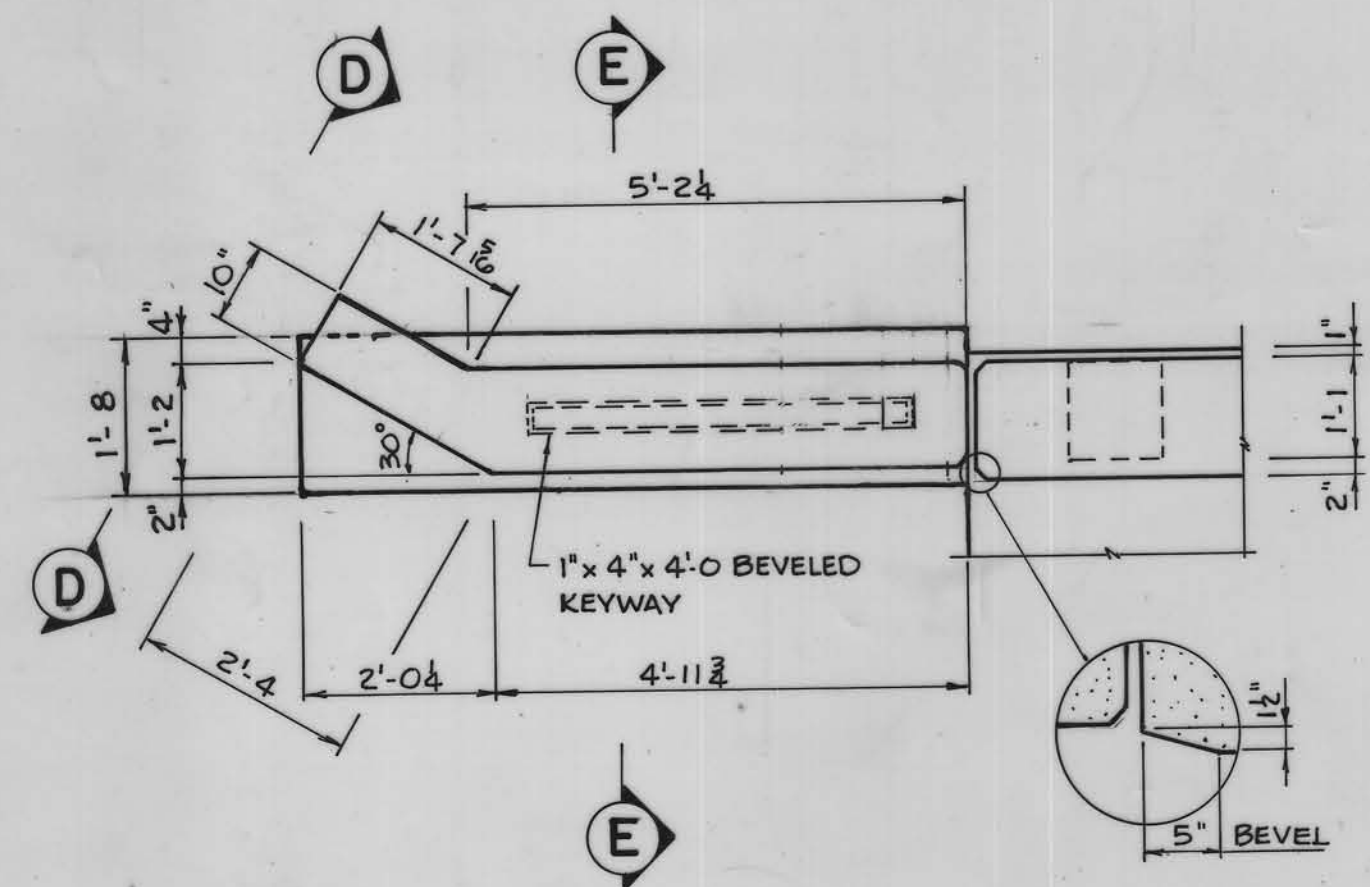
SECTION F-F

BENT BAR LIST	
	7j1
	6h2 & 6h3
	3j2 & 3j3
	5j5 & 5j6

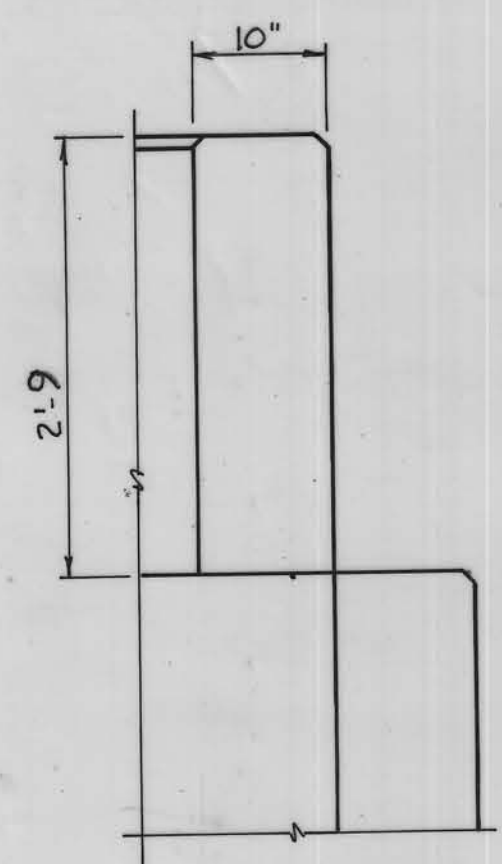
NOTE: ALL DIMENSIONS ARE OUT TO OUT. D: PIN DIAMETER.

CONCRETE PLACEMENT QUANT. (ONE BRIDGE)		
SECTION	TOTAL	
STANDARD RAIL SECTION	28.5	
END SECTION	4 @ 0.71	
TOTAL (CU. YDS.)		31.3

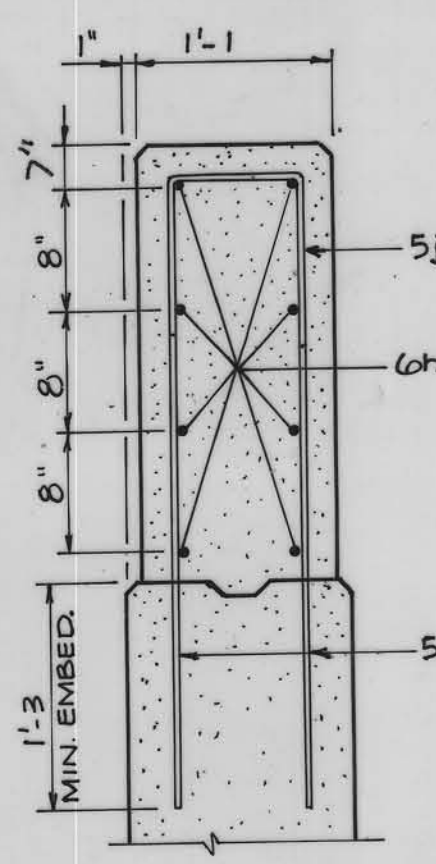
OPEN CONCRETE RAIL QUANT.		
ITEM	UNIT	QUANT.
CONCRETE OPEN RAIL	2 @ 196.7	LIN. FT. 393.4



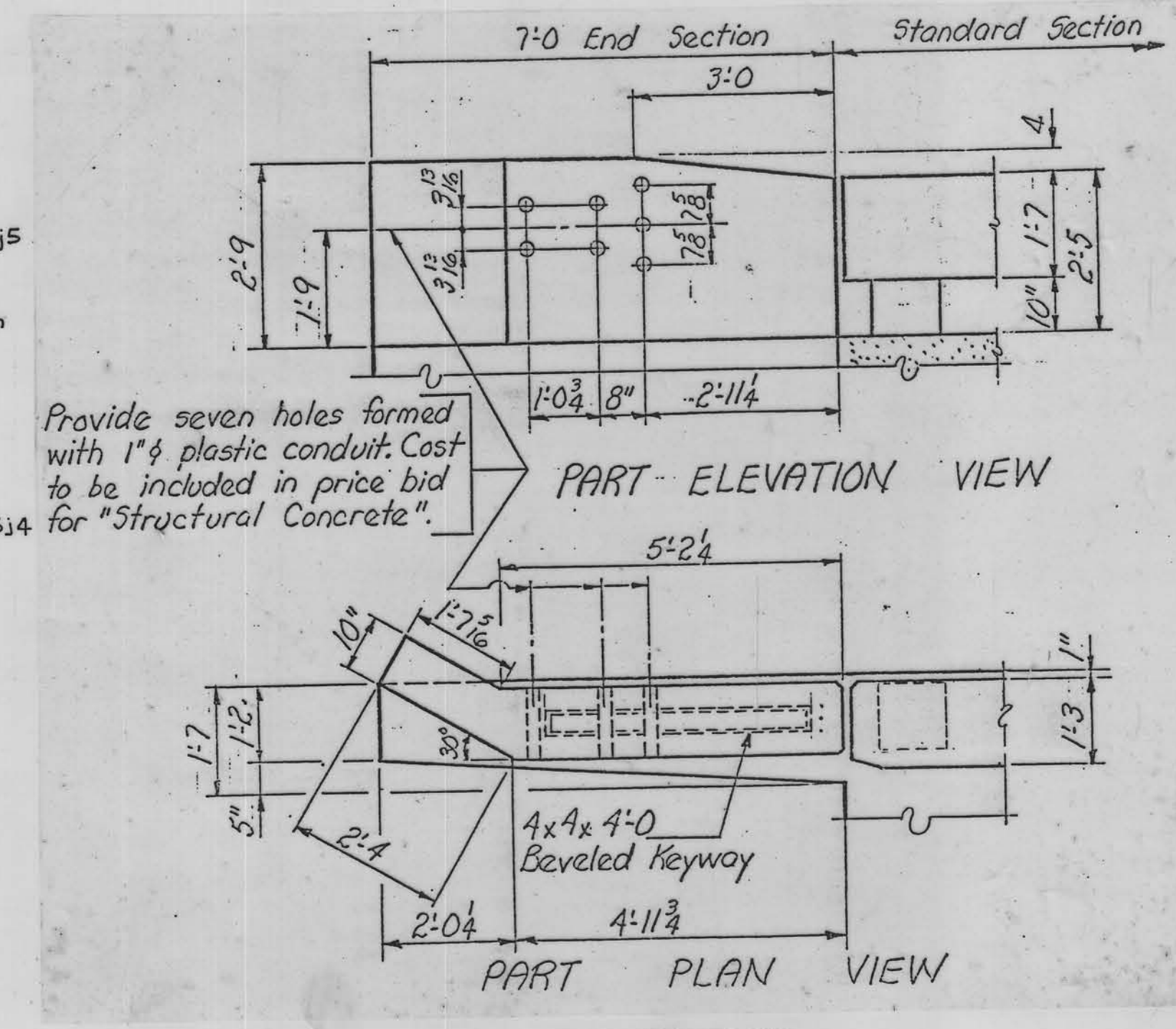
PART PLAN VIEW



VIEW D-D NOT TO SCALE



SECTION E-E



END SECTION

CONCRETE 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 DEGREES OR SHARPER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.

ALL REINFORCING STEEL IS TO BE GRADE 60.

180'-0" x 20' PRESTRESSED CONCRETE BEAM
BRIDGE WIDENING TO 30' ROADWAY

STUB ABUTMENTS 55'-7 1/2" END SPANS
 PIOA PIERS 68'-9" CENTER SPAN

CONCRETE OPEN RAIL DETAILS

30° SKEW LT. AHEAD IOWA

CRAWFORD COUNTY

SHEET 11 OF 13