

OCT 15 1957

STATE OF IOWA
 STATE HIGHWAY COMMISSION
 DESIGN FOR
67'-6" x 24' PRE-STRESSED CONCRETE BEAM BRIDGE
 SECONDARY ROAD SYSTEM PROJ. S-1097(1)
 CRAWFORD COUNTY
 AUGUST 1957.

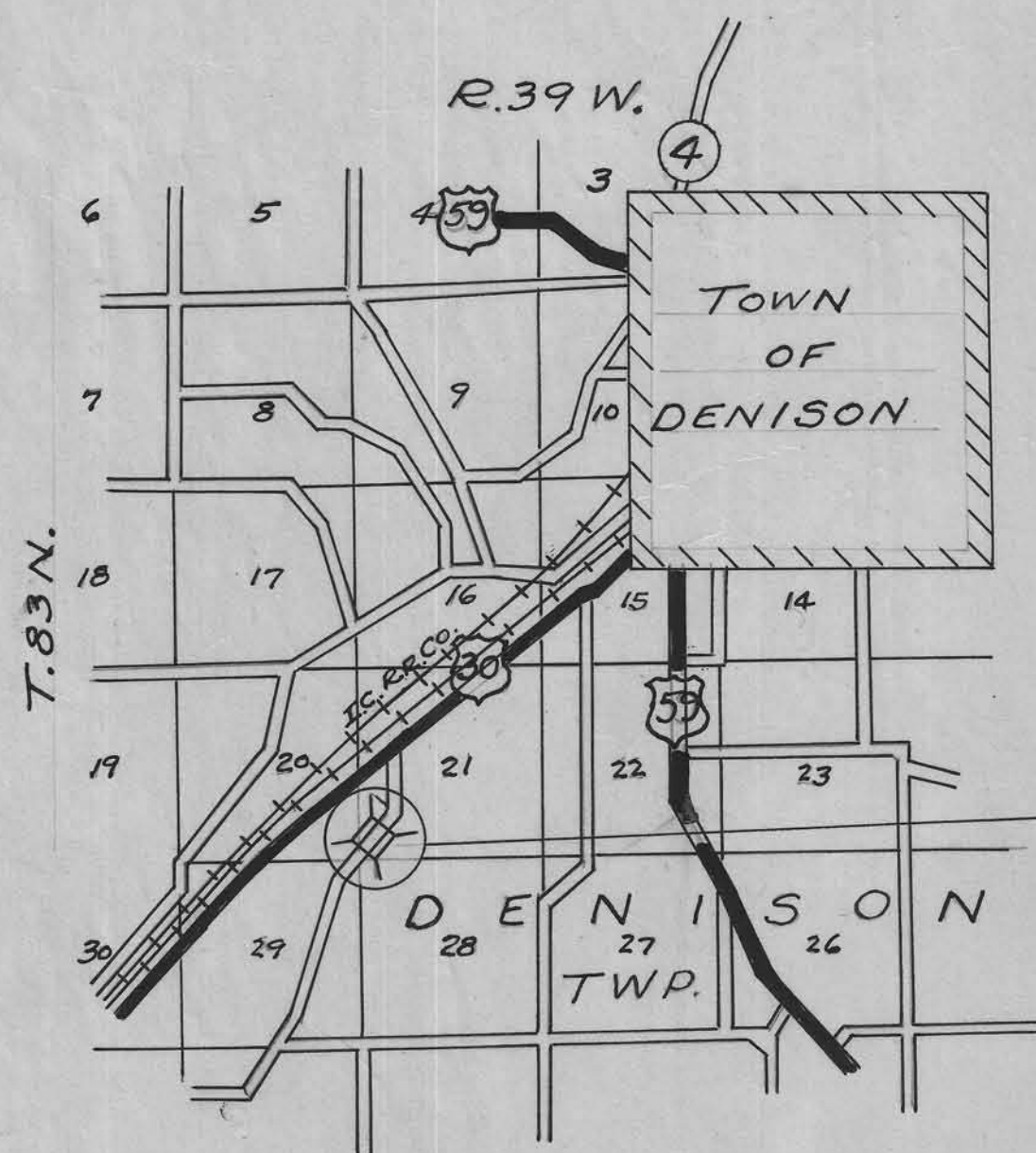
MILEAGE SUMMARY: = 69'-6" = 0.01316 MILES.

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.

DESIGN-457, DENISON TWP. CRAWFORD COUNTY SEC. 21, STA. 231+46.75 OVER LOCAL CREEK.					
67'-6" x 24' PRESTRESSED CONCRETE BEAM BRIDGE					
DESCRIPTION.	ABUTMENTS		SUPERSTRUCT.		TOTAL.
CONCRETE CLASS - "A"	16.54	C.Y.	43.20	C.Y.	59.70 C.Y.
REIN. STEEL	1620	LBS.	9001	LBS.	10,621 LBS.
STRUCT. STEEL	5292.	"	1268	"	6,560 "
PRE-STRESSED BEAMS			6- 67'-6"		6- 67'-6"
HANDRAIL			155'-0"	L.F.	155'-0" L.F.
" TERMINALS			4		4
WOOD RAIL POSTS 8"x6'			4		4
TREATED WOOD PILING	1070 *	L.F.			1070 L.F.
TREATED LUMBER	6960	F.B.M.			6960 F.B.M.
GALVANIZED HARDWARE	180	LBS.			180 LBS.
EXCAVATION Class #20	535	C.Y.			535 C.Y.
" Class #10	222	C.Y.			222 C.Y.
REMOVAL OF OLD STRUCTURE					LUMP SUM.
EXCAVATION Class # 21	19	C.Y.			19 C.Y.

* 14 @ 45'-0"
 (Oversize)
 8-25'-0"
 8-30'-0"

NOTE: Crawford County Will furnish and place Bridge Sign Assemblies as Specified in S&T Instruction No.-11, revised March 1, 1956.



LOCATION MAP
 SCALE 1" = 1 MILE.

DESIGN No. -457
 PROJECT No. S-1097(1)

APPROVED

[Redacted Signature]

[Redacted Signature]

[Redacted Signature]

[Redacted Signature]

[Redacted Signature]

BOARD OF SUPERVISORS DATE

APPROVED

[Redacted Signature]
 CHIEF ENGINEER DATE
 IOWA HIGHWAY COMMISSION.

DEPARTMENT OF COMMERCE
 BUREAU OF PUBLIC ROADS.

RECOMMENDED FOR APPROVAL

DISTRICT ENGINEER DATE

APPROVED.

DIVISION ENGINEER DATE



4117 Oct 16/57 Sheet 1 of 4.

CRAWFORD COUNTY. Design-457 Proj. S-1097(1)

File 19161

Cultivated

Cultivated.

$D = 3^{\circ} 00'$
 $T = 508.2'$
 $L = 993.3'$
 $R = 1910.0'$
 $E = 66.5'$

$P.I. - 230 + 45.6$
 $\Delta = 29^{\circ} 48' R$
 $D = 18^{\circ}$

Sta. - 231 + 72.7, E of 16' I-40'
Low Truss - 16' I-Beam x 16'
Comb. Bridge. Wood Floor & Abuts.
Boiler Pipe piers. Replace with
67-6" x 24' Pre-stressed Conc. Beam
Bridge. Conc. Floor, Treated Wood
Abutments. Steel Handrail. D.A. = 9750 Ac.

Present Bridge to be removed
by Contractor; match marked & piled
within 300' North of Bridge site as directed
by the Engineer.

Cultivated.

PROPOSED CONSTRUCTION
LINE. Bridge to be constructed
on this line.

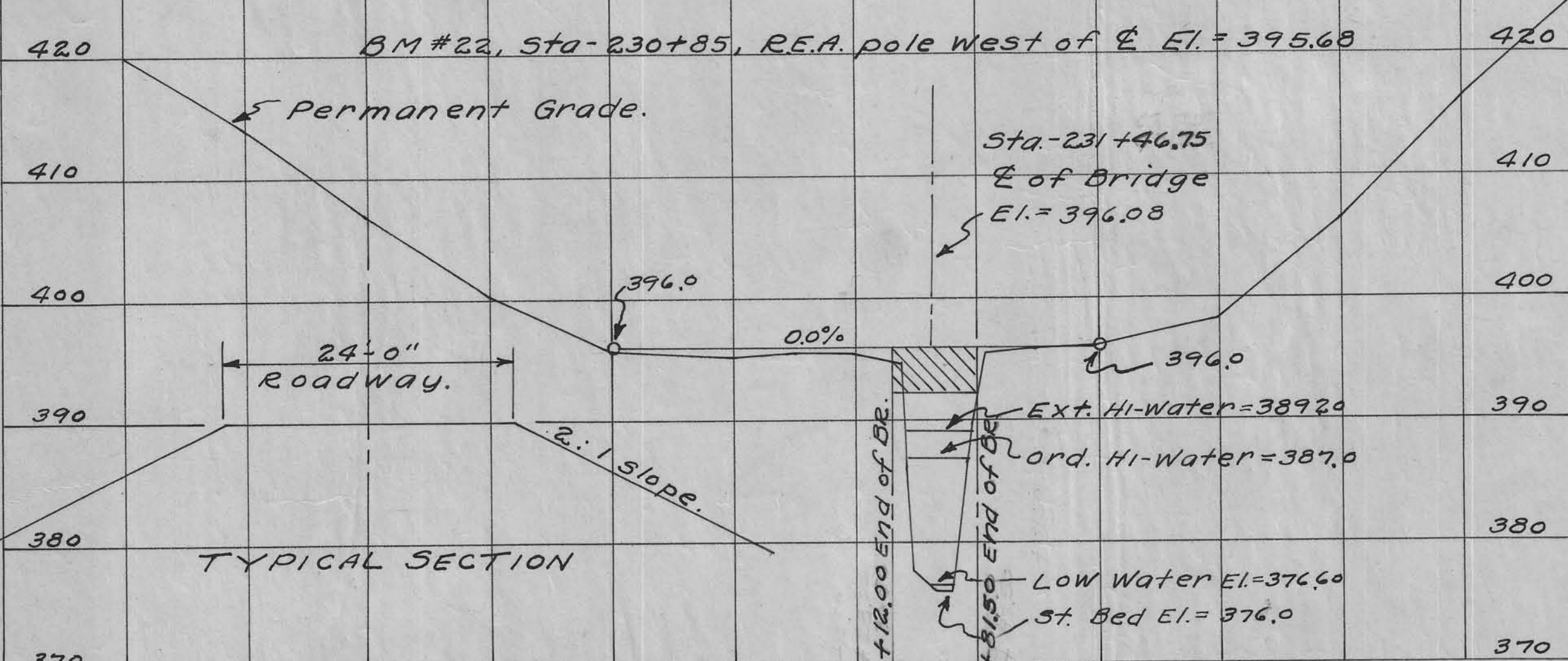
SEC. - 21.

GENERAL PLAN
Scale 1" = 100 Ft.

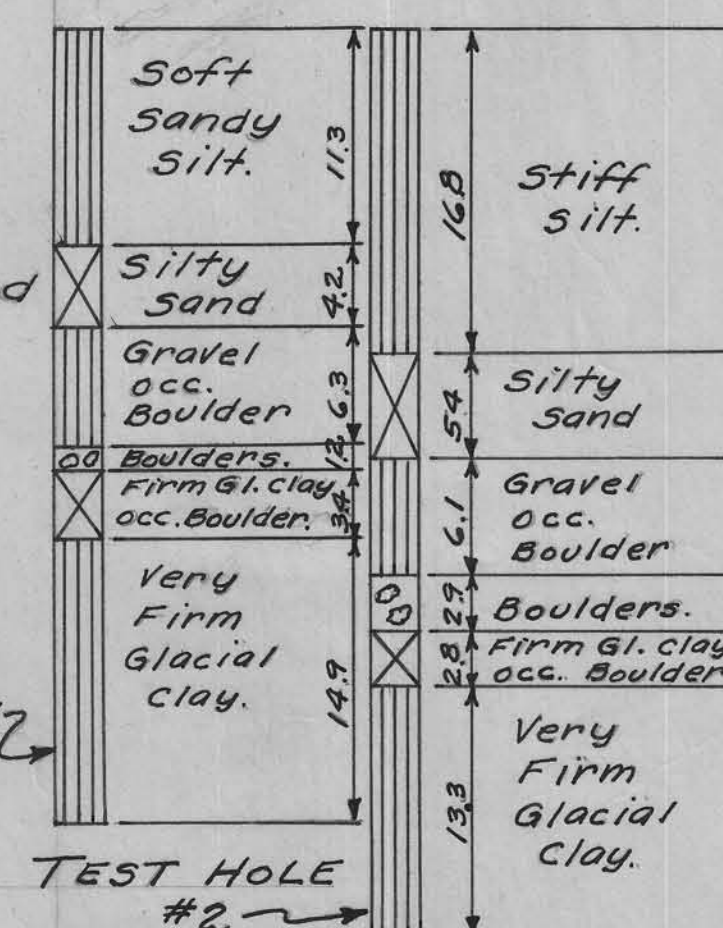
GENERAL NOTES:

All Lumber is to be creosoted. Backing & Wing plank in 10" & 12" widths may be substituted for 8" plank shown but payment will be made on basis of quantities shown. All piling are to be creosoted & are to comply with the specifications for Treated Timber Trestle Piles. All hardware is to be galvanized. C.I. ogee or malleable washers are to be used under all heads & nuts bearing on wood. All bolts to have square heads & nuts. For details of Super-structure refer to Iowa Highway Commission Standard PC-5 and for details of Abutments refer to Standard H10-2A with further details on sheet # 4. of these plans.

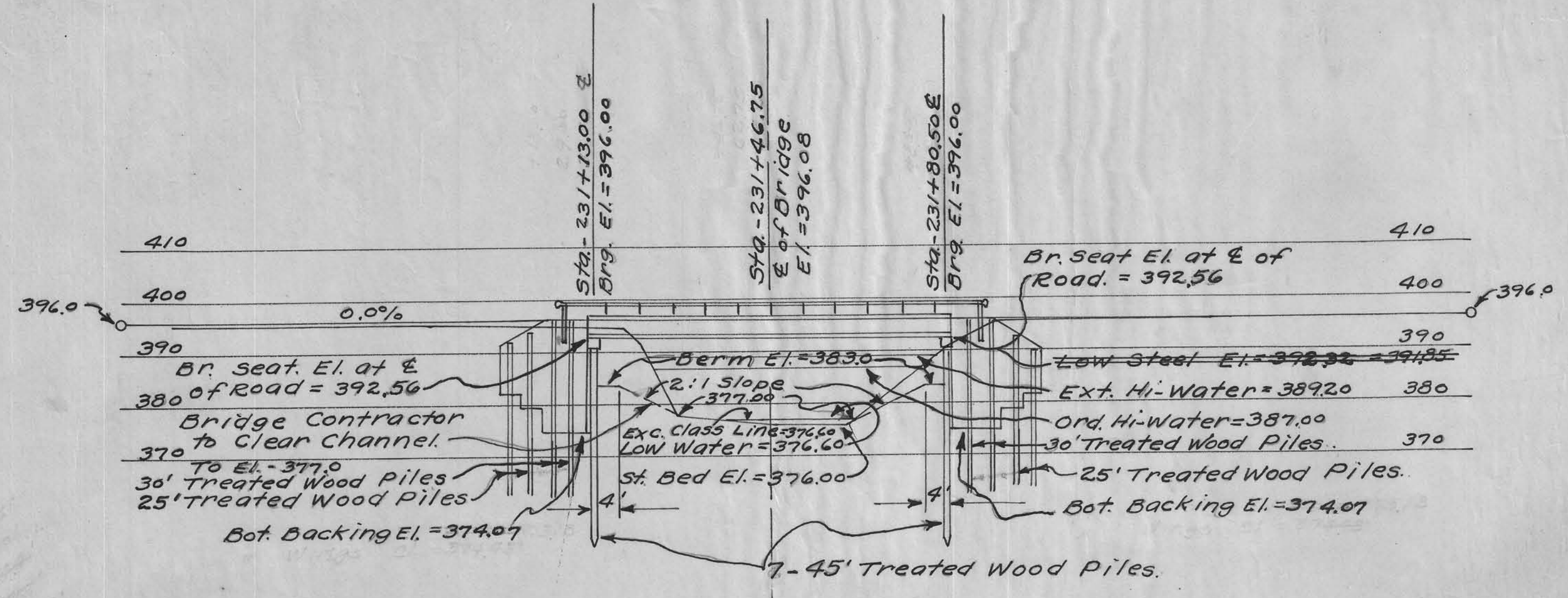
All materials & construction to conform with the Iowa Highway Commission Standard Specifications, Series of 1956.



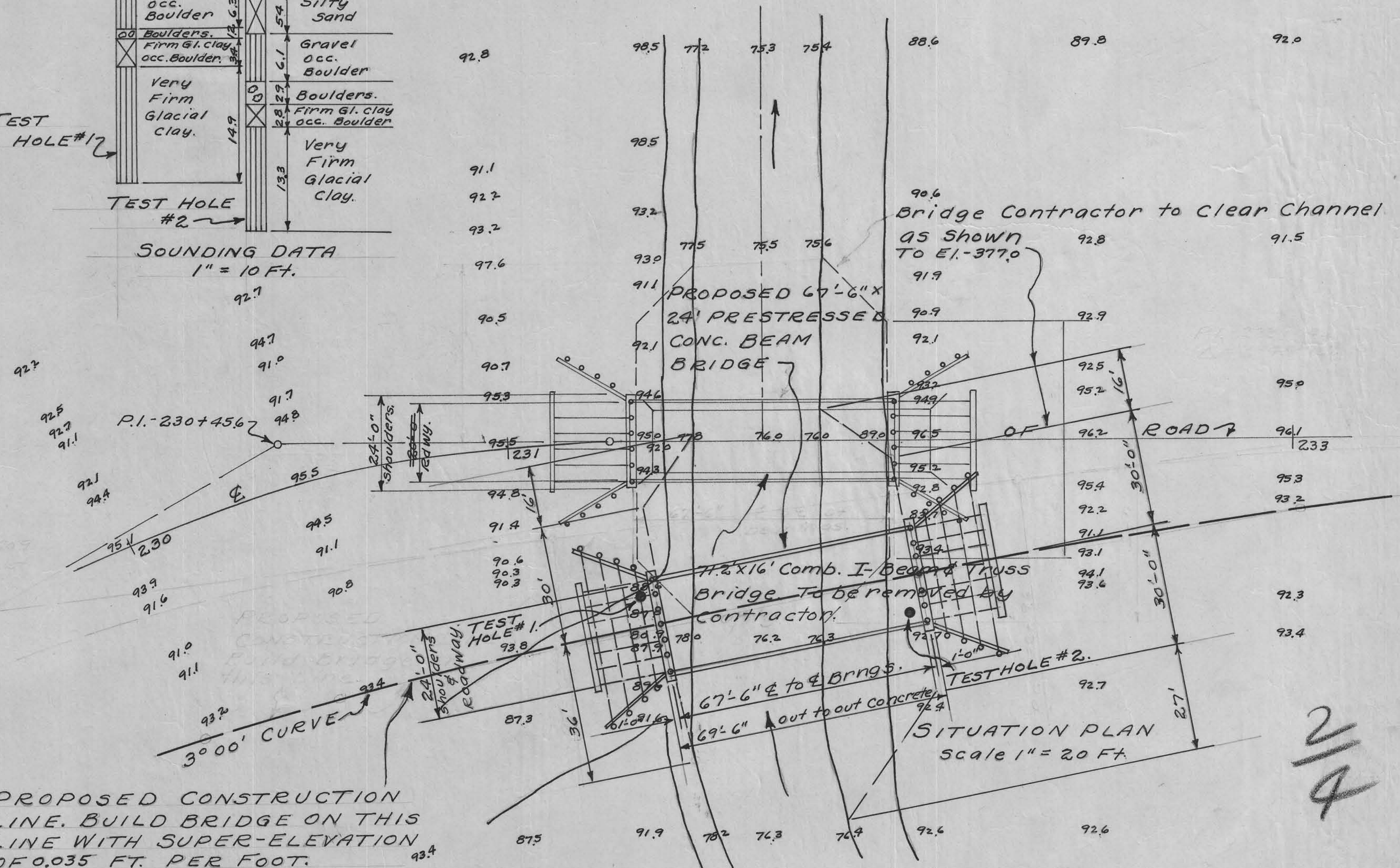
ROAD PROFILE
Scale Vert: 1" = 10 Ft.
Horiz: 1" = 100 Ft.



SOUNDING DATA
1" = 10 Ft.



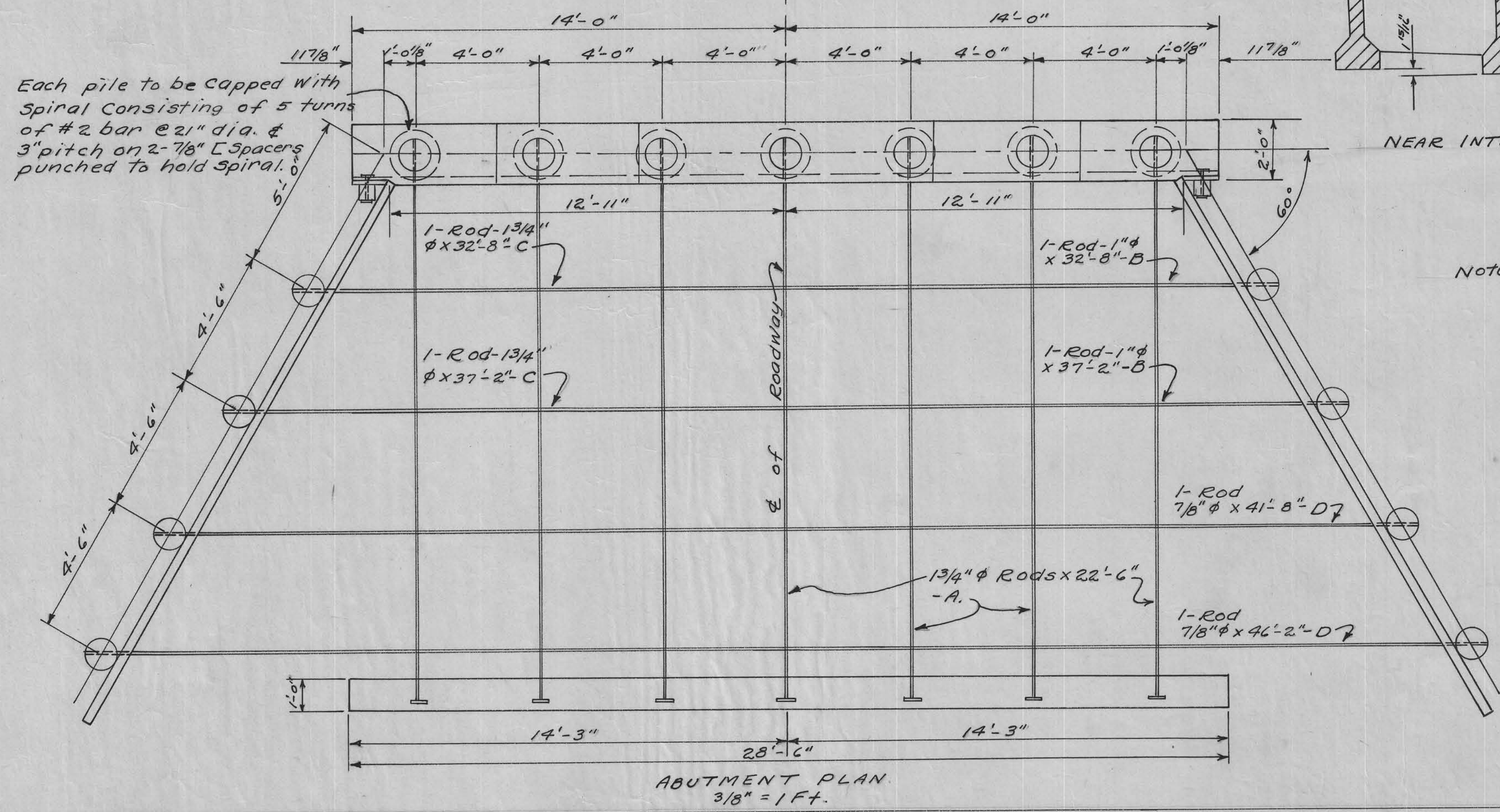
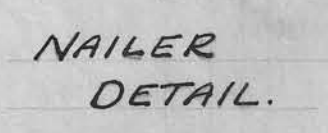
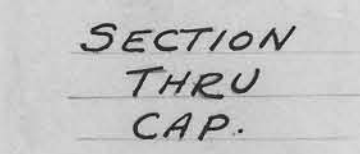
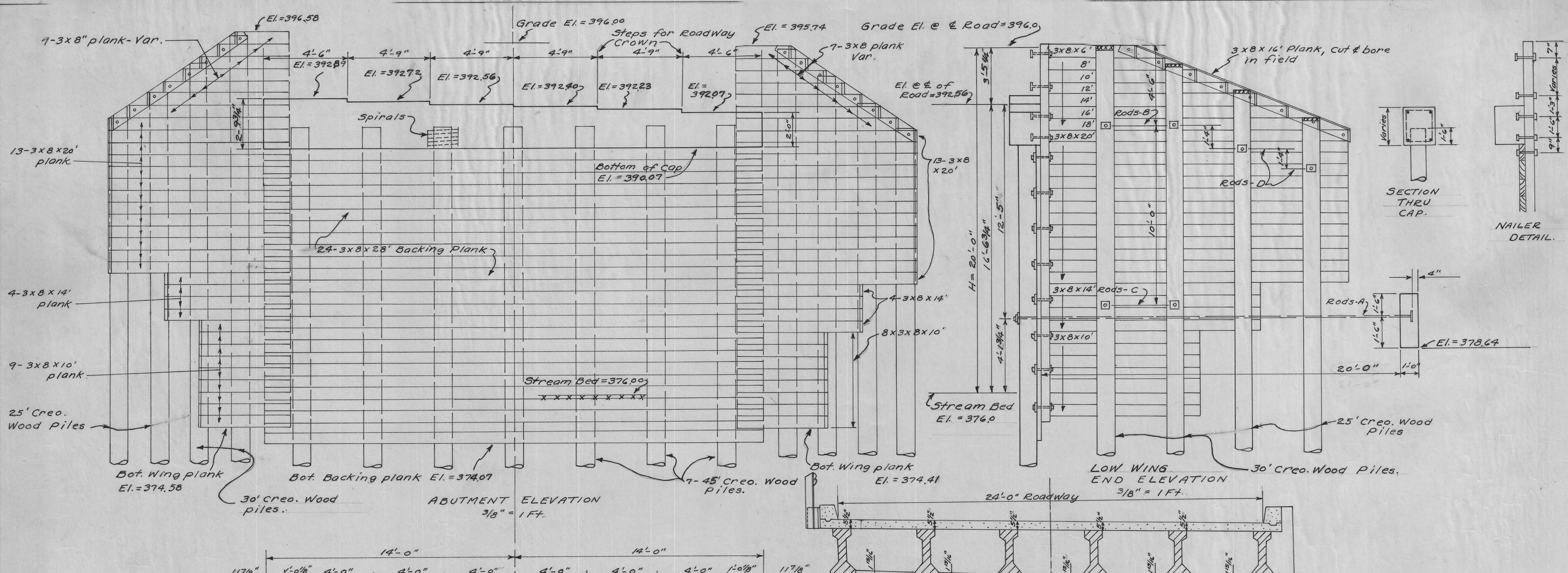
SECTION ALONG E OF ROADWAY.
Scale 1" = 20 Ft.



PROPOSED CONSTRUCTION
LINE. BUILD BRIDGE ON THIS
LINE WITH SUPER-ELEVATION
OF 0.035 FT. PER FOOT.

DESIGN FOR
67-6" x 24' PRE-STRESSED CONCRETE BEAM BRIDGE
CONCRETE FLOOR - STEEL HANDRAIL

Location:
Section - 21
STA. - 231 + 46.75
T.83 N. R.39 W.
PROJECT No. S-1097(1)
CRAWFORD COUNTY, IOWA.



Each pile to be capped with Spiral consisting of 5 turns of #2 bar @ 21" dia. & 3" pitch on 2-7/8" L Spacers punched to hold spiral.

NEAR INTERIOR DIAPHRAGM NEAR ABUTMENT

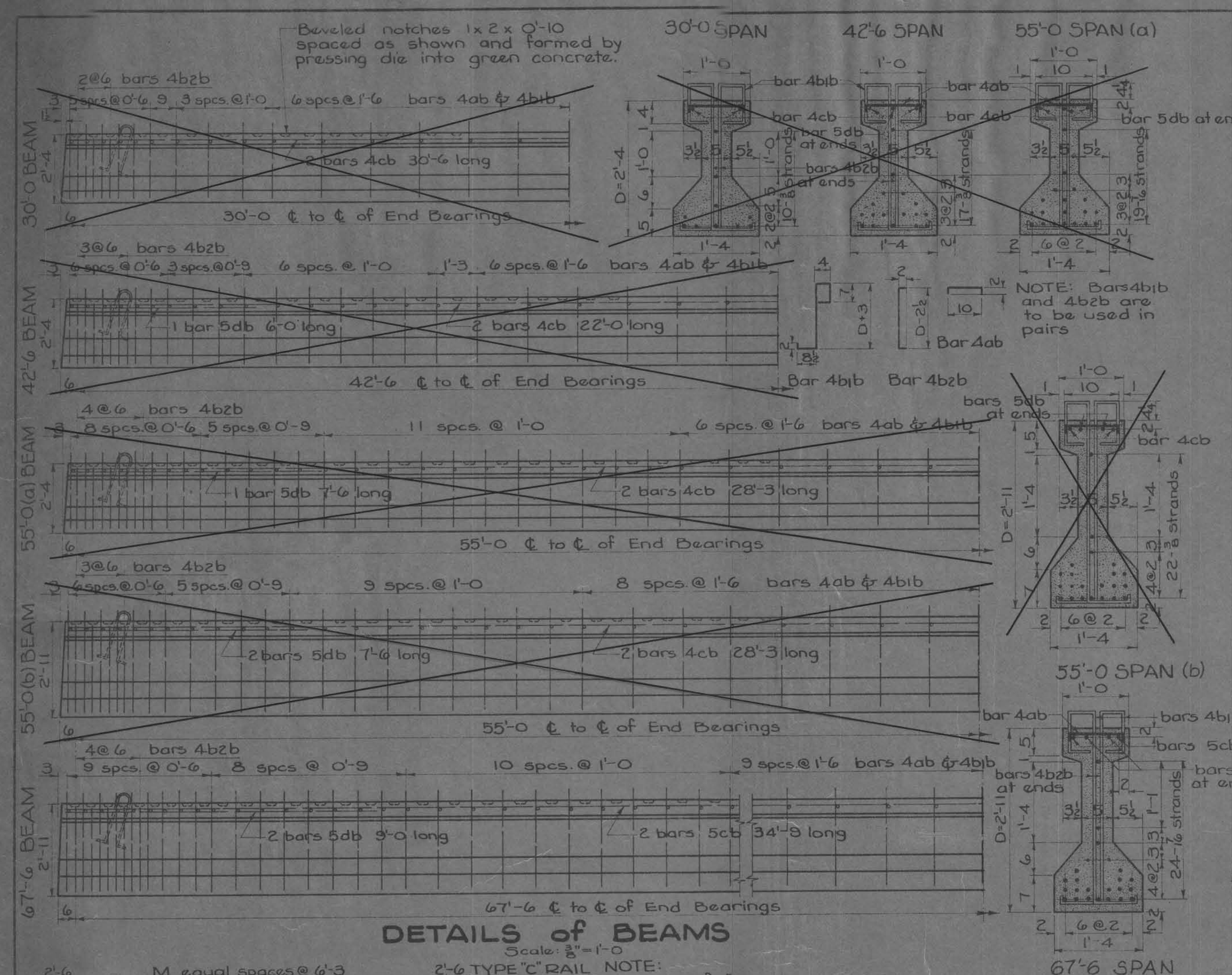
CROSS SECTION
Scale 3/8" = 1'-0"

Note: For details not shown, See sheet PC-5.

GENERAL NOTE:
For construction details not shown hereon refer to Iowa Highway Commission Standard H10-2, H=20'. All bearing piling to be driven to full penetration if practicable but to not less than 18 tons bearing value.

QUANTITIES - ONE ABUTMENT						
Mark	Description	Shape	Size	Length	No	Quant
	Wing Piles			45'-0"	7	315 LF.
	Brg. Piles*			45'-0"	7	315 LF.
						Total Piling = 535 LF.
	Backing Plank	3x8	10'-0"	24	480 FBM	
	"	"	18'-0"	24	864	
	Wing Plank	"	6'-0"	2	24	
	"	"	8'-0"	2	32	
	"	"	10'-0"	19	380	
	"	"	12'-0"	2	48	
	"	"	14'-0"	10	280	
	"	"	16'-0"	2	64	
	"	"	18'-0"	2	72	
	"	"	20'-0"	26	1040	
	" Slope	"	16'-0"	2	64	
	Nailers	Cx6	22'-0"	2	132	
						Total Creosoted Lumber = 3480 FBM
	Struct. Steel					2646 lbs.
	Concrete - Deadman					3/4 CY.
	" - Abutment Cap.					5.10 "
	" Total Concrete					8.27 CY
	Rein. Steel - Deadman					325 lbs.
	" - Abutment Cap.					485 "
	" Total Rein. Steel					810 lbs.
	Galvanized Hardware					90 lbs.
						* OVERSIZE

ABUTMENT PLAN FOR
67'-6"x24' PRE-STRESSED CONCRETE BEAM BRIDGE
CONCRETE FLOOR - STEEL HANDRAIL
Location Section-21 STA. 231+46.75 PROJECT No. S-1097(1)
Denison TWP. CRAWFORD COUNTY, IOWA.
T83 N. R.39 W. Sheet #3 of 4

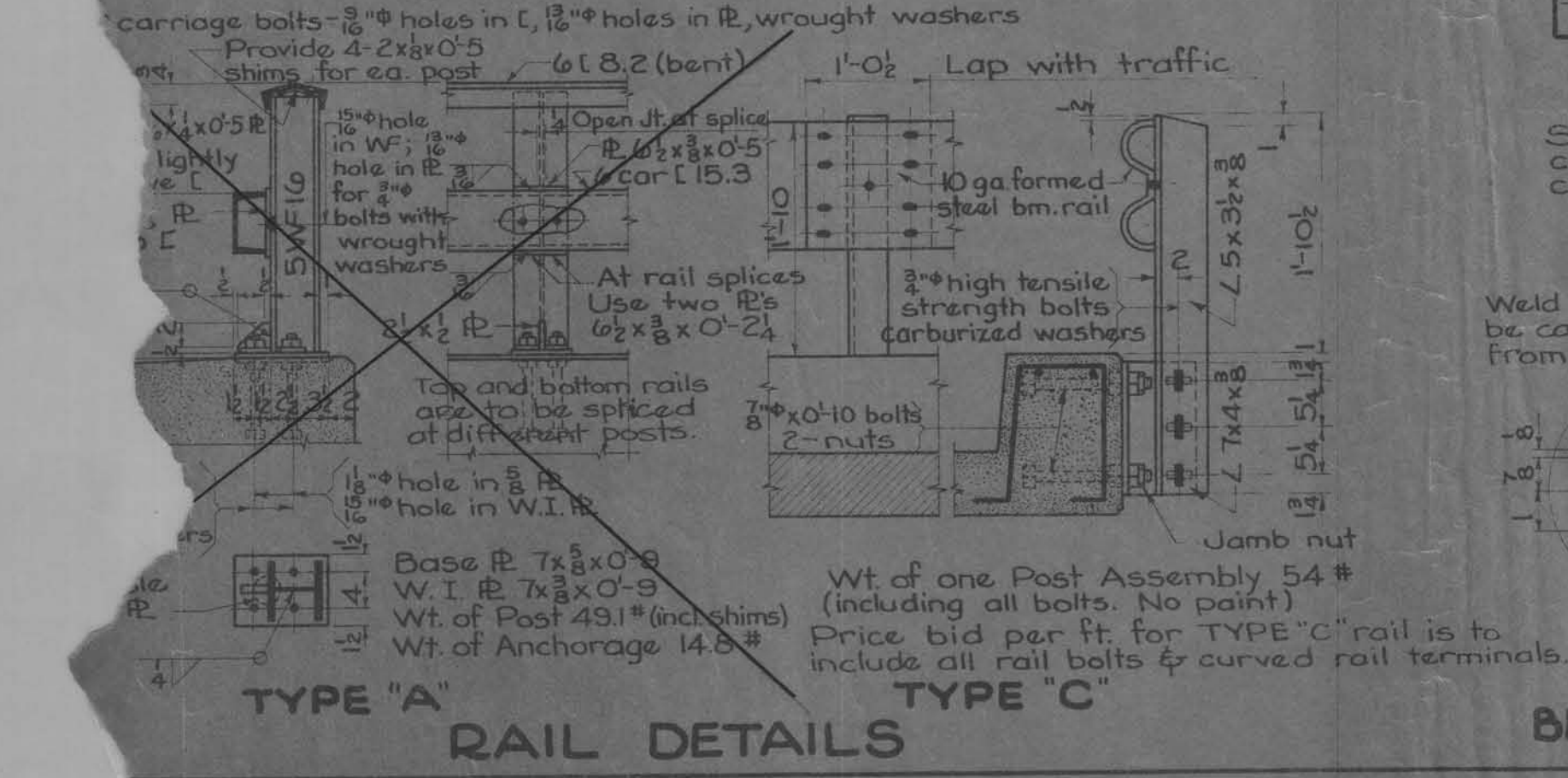


DETAILS OF BEAMS
Scale: 3/8"=1'-0"

MULTIPLE SPAN COMBINATIONS

Span	End Brngs	X	M	N	bars b2		
30'-7 1/2	31'-3	30'-7 1/2	92'-6	4	14	12 @ 7'-8"	4b2
30'-7 1/2	43'-9	30'-7 1/2	105'-0	5	16	13 @ 8'-0"	4b2
43'-1 1/2	43'-9	43'-1 1/2	130'-0	6	20	16 @ 8'-1 1/2"	4b2
43'-1 1/2	56'-3 (a)	43'-1 1/2	142'-6	7	22	18 @ 7'-11"	5b2
55'-7 1/2 (a)	56'-3 (a)	55'-7 1/2 (a)	167'-6	8	26	21 @ 7'-11"	5b2
55'-7 1/2 (b)	68'-9	55'-7 1/2 (b)	180'-0	9	28	23 @ 7'-9"	6b2
68'-1 1/2	68'-9	68'-1 1/2	205'-0	9	32	26 @ 7'-4"	6b2

NOTES ON PRESTRESSED BEAMS:
Concrete in beams shall have a 28 day crushing strength of 5000 and a minimum of 4500 p.s.i. when stress is released. It shall contain 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 25,000,000, ultimate breaking strength of 27,000 lbs. for 3/8 strands and 10 lbs. for 3/4 strands, yield strength (0.2% offset) of 85% of the ultimate minimum elongation in 10" of 4%. Strands are to be initially stressed to the ultimate - 18,900 for 3/8 and 14,000 for 3/4. Stress is to be determined by the measured elongation and checked by gauges on calibrated beams.
After release of strands, beams are to be supported at all times near ends and handled by means of lifting loops near ends of beams.



TYPE "A" RAIL DETAILS

TYPE "C" RAIL DETAILS

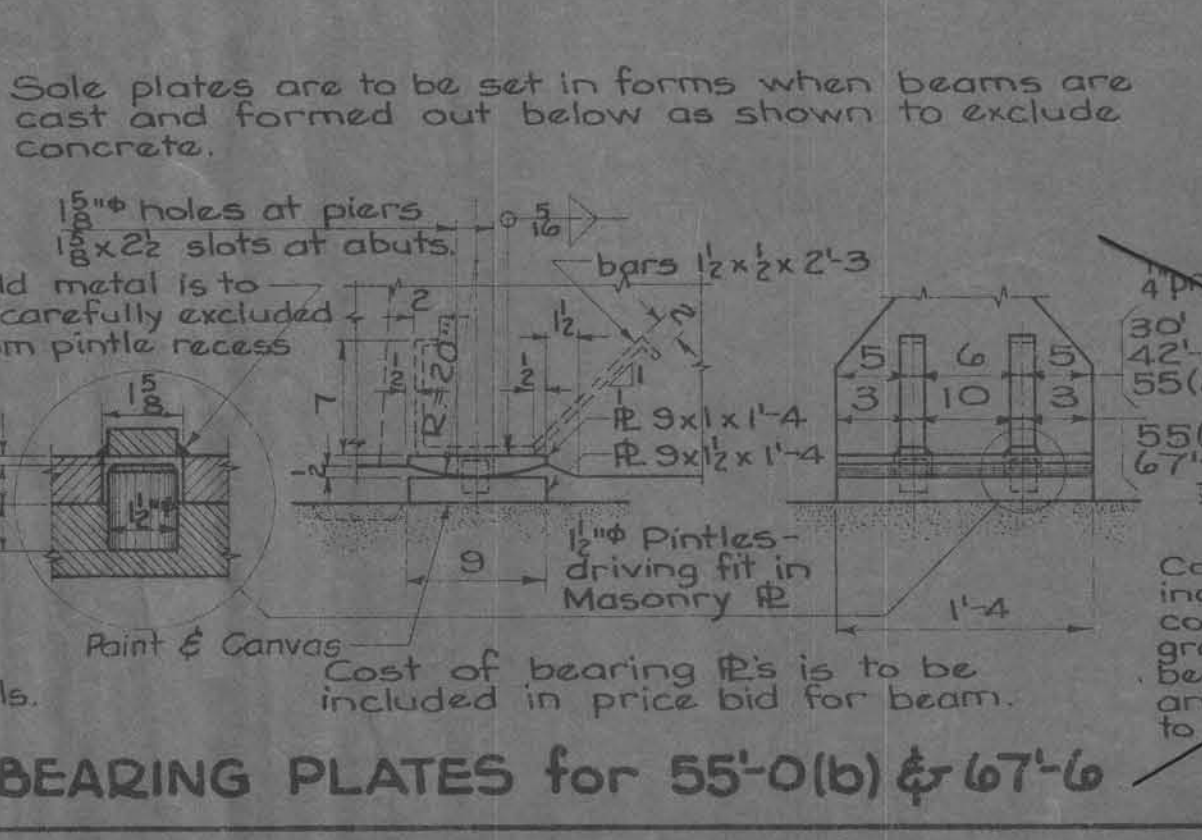
BEAM DATA

SPAN	DEPTH	STRANDS	CONC. c.y.	REINF. STEEL lbs.	STRUCT. STEEL lbs.	INITIAL PRE-STRESS lbs.	CAMBER AS Laid IN PLACE
30'-0	2'-4	10-3/8	2.06	262	*217	140 k	1/8"
42'-6	2'-4	17-3/8	2.90	393	*217	238 k	1/8"
55'-0(a)	2'-4	19-7/8	3.73	524	*217	360 k	1/8"
55'-0(b)	2'-11	22-3/8	4.66	557	217	308 k	7/16"
67'-6	2'-11	24-1/8	5.70	759	217	453 k	1/2"

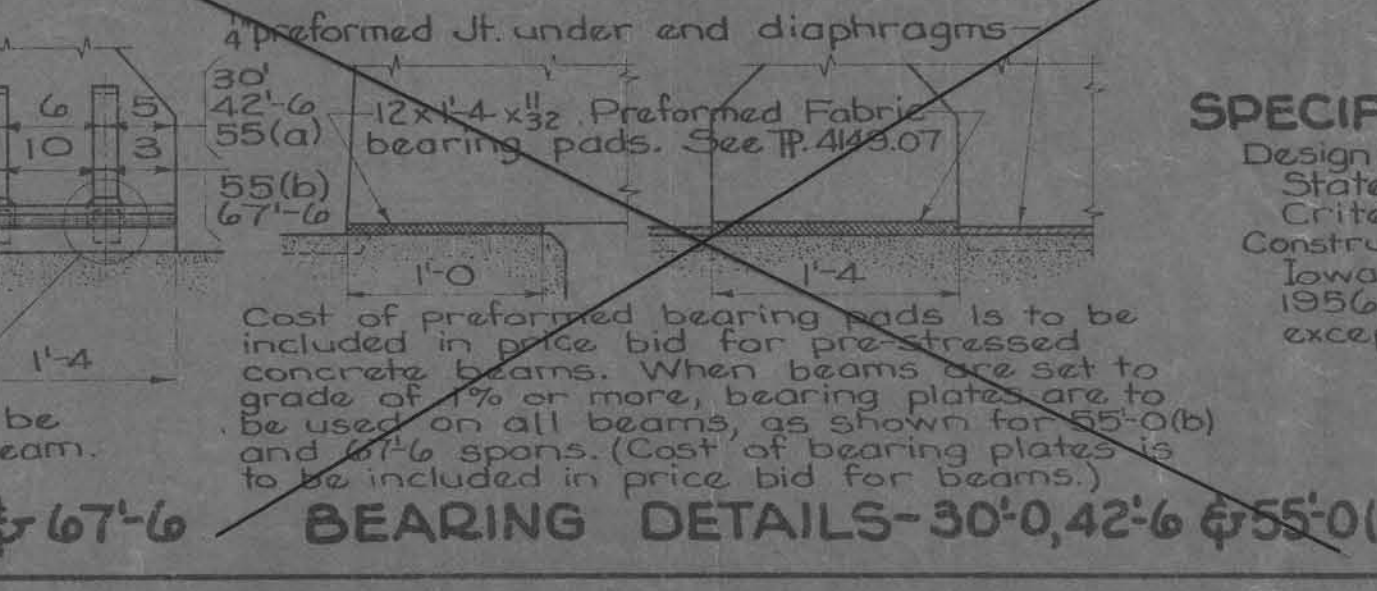
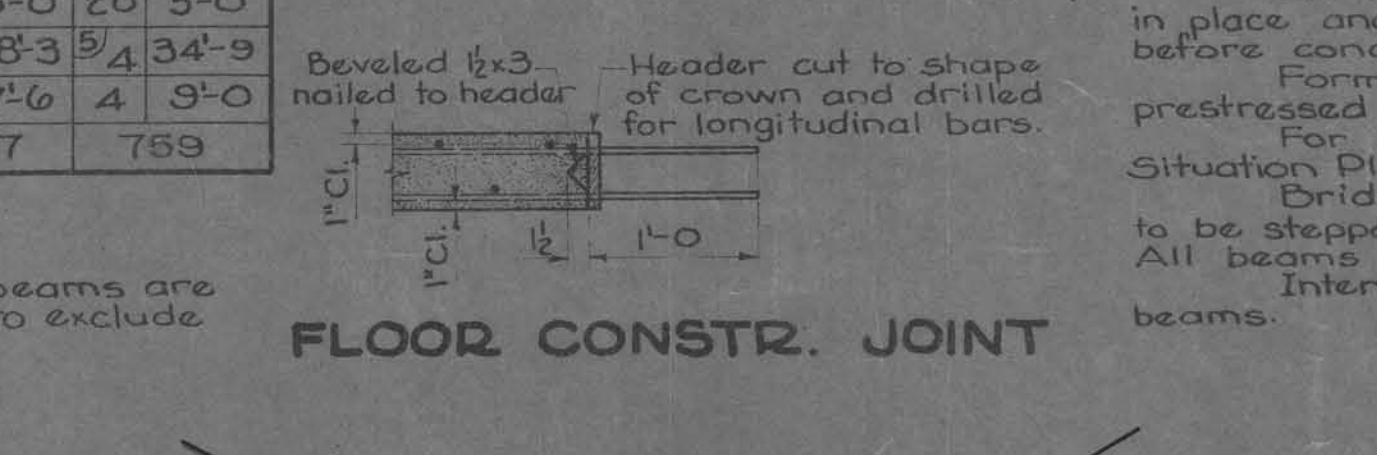
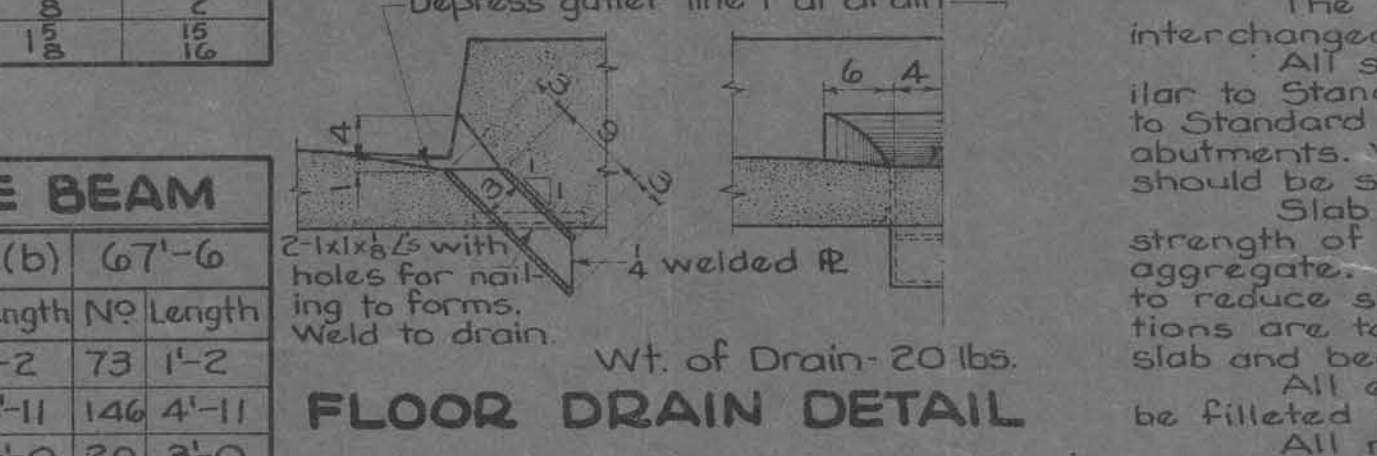
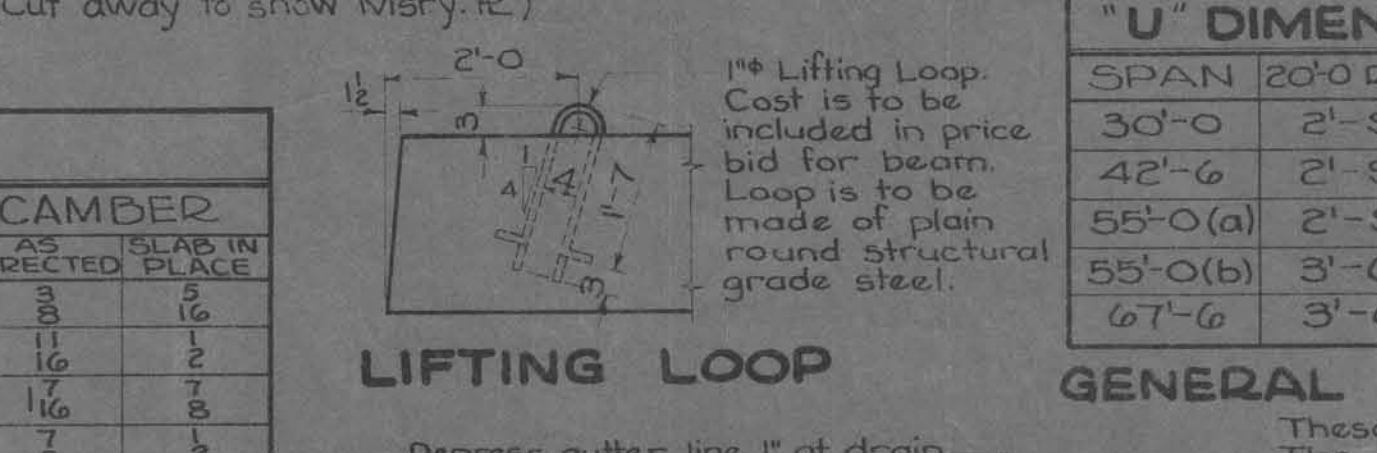
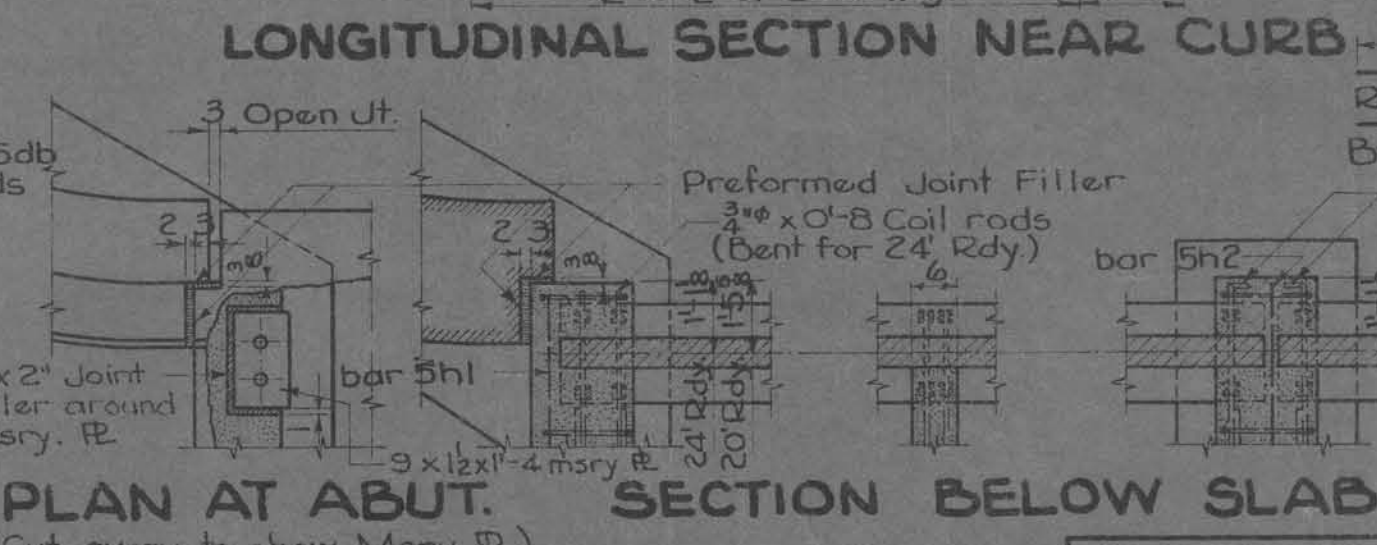
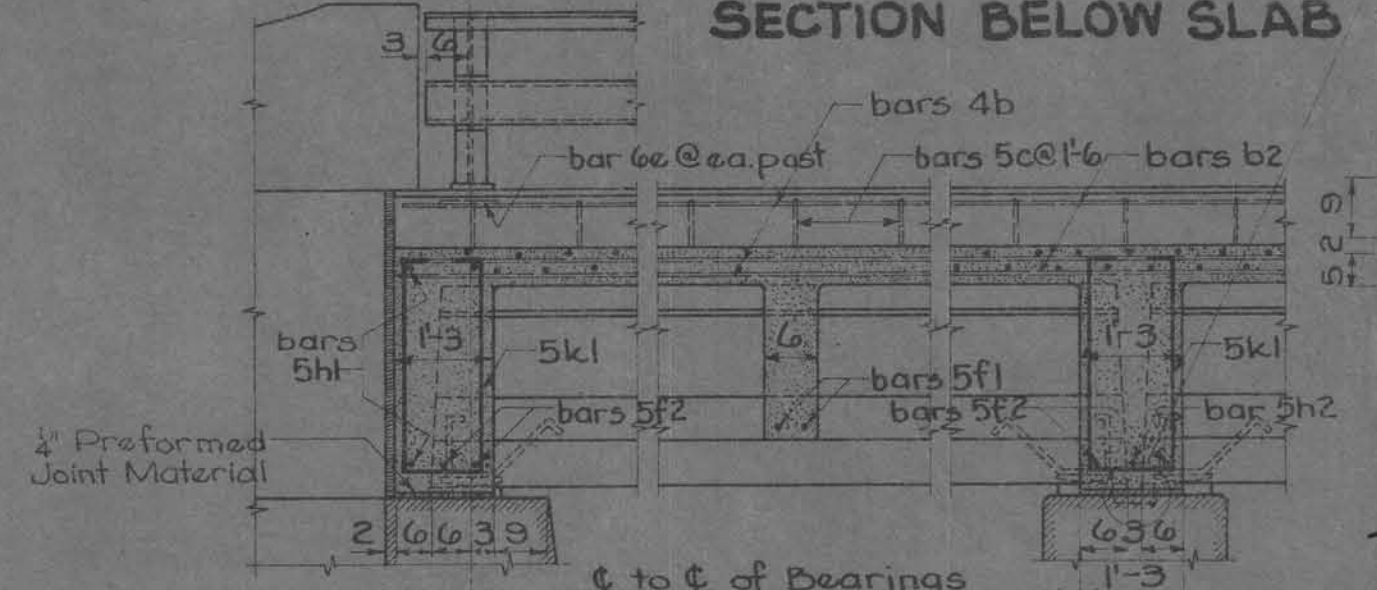
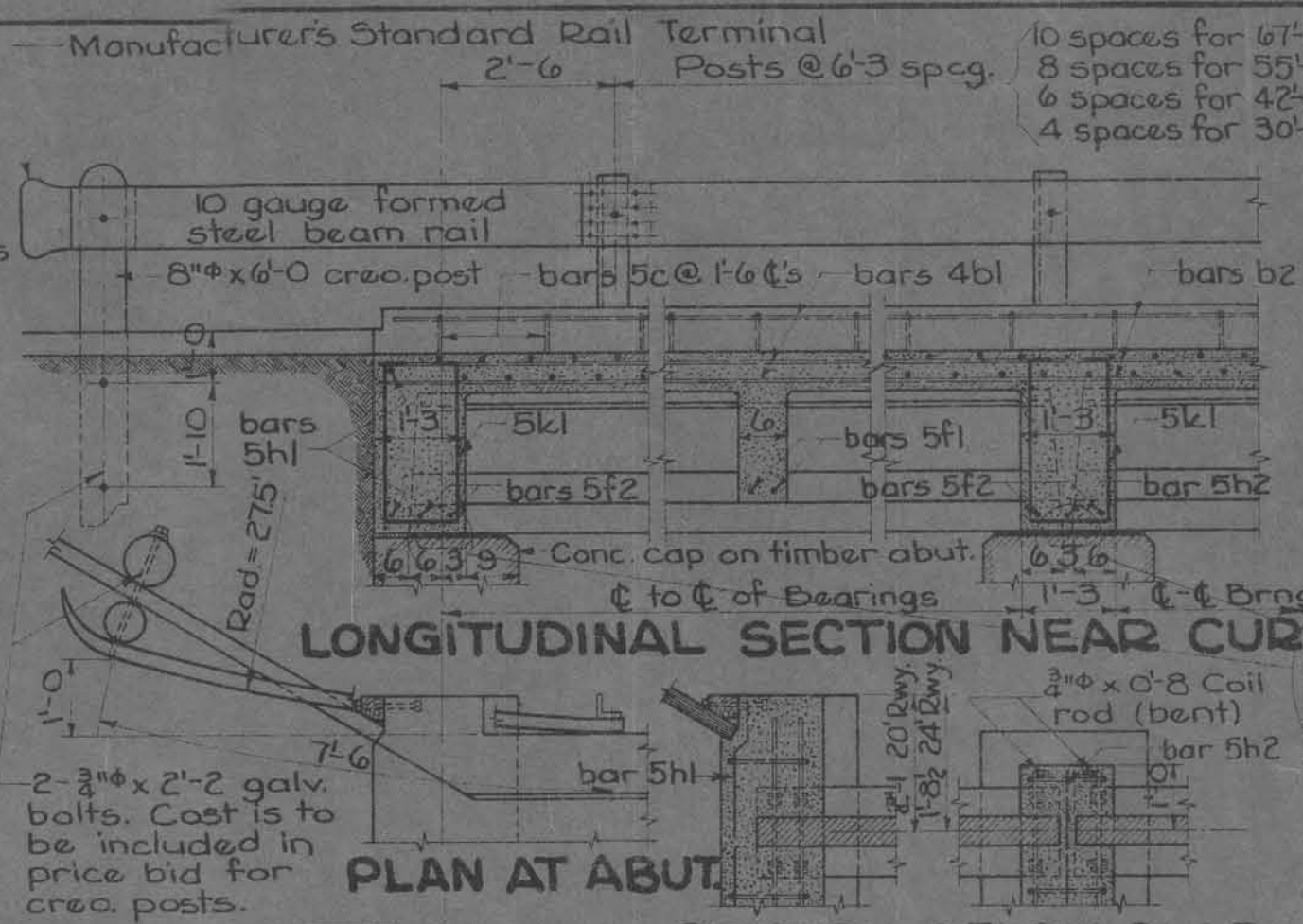
* If required.

BILL OF REINF. STEEL for ONE BEAM

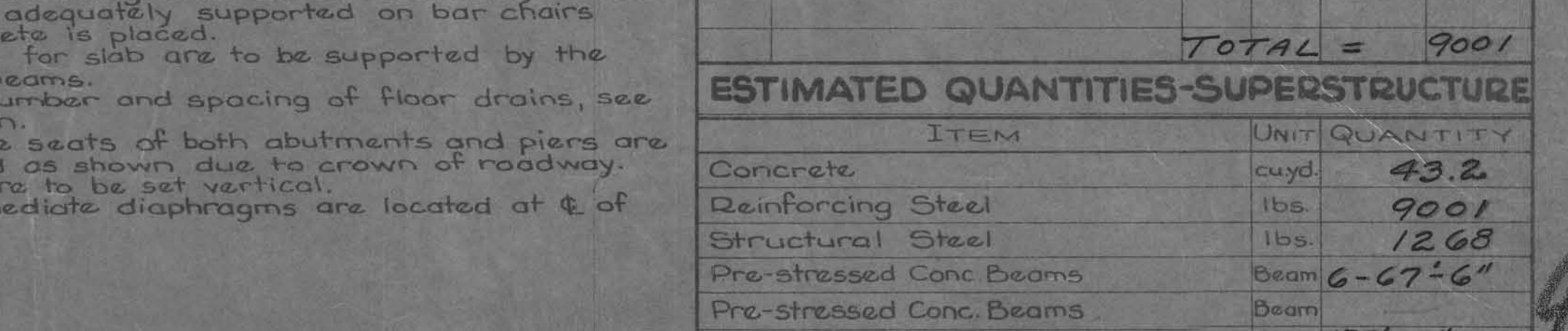
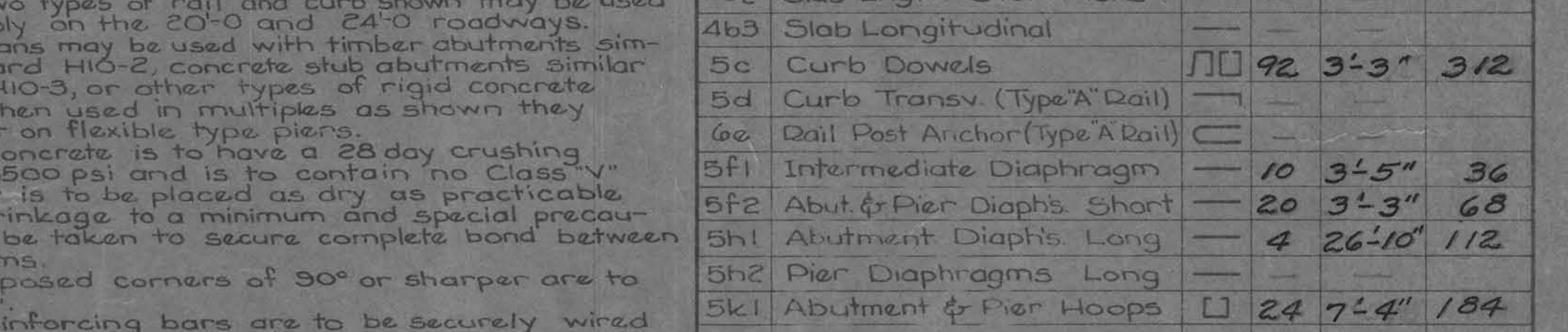
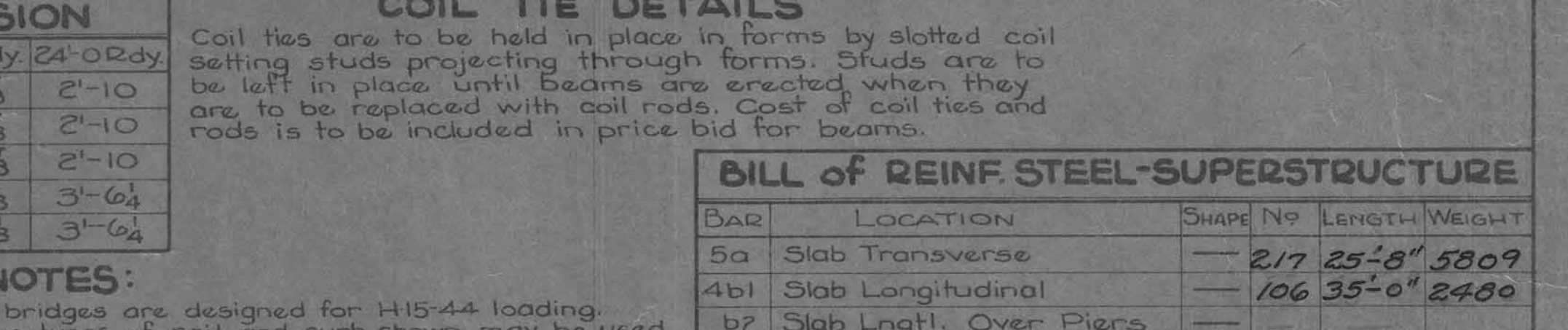
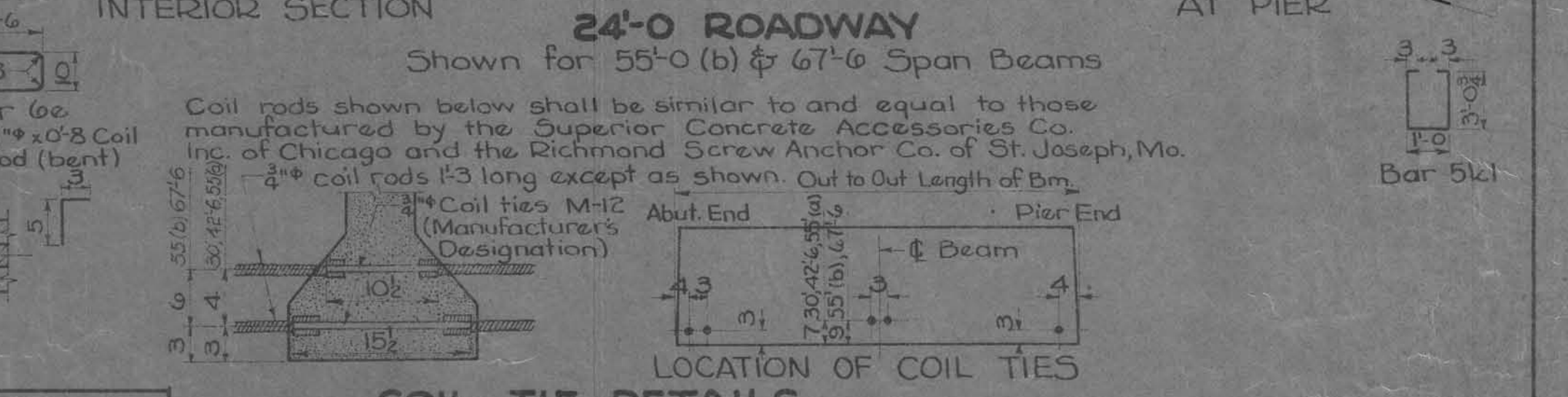
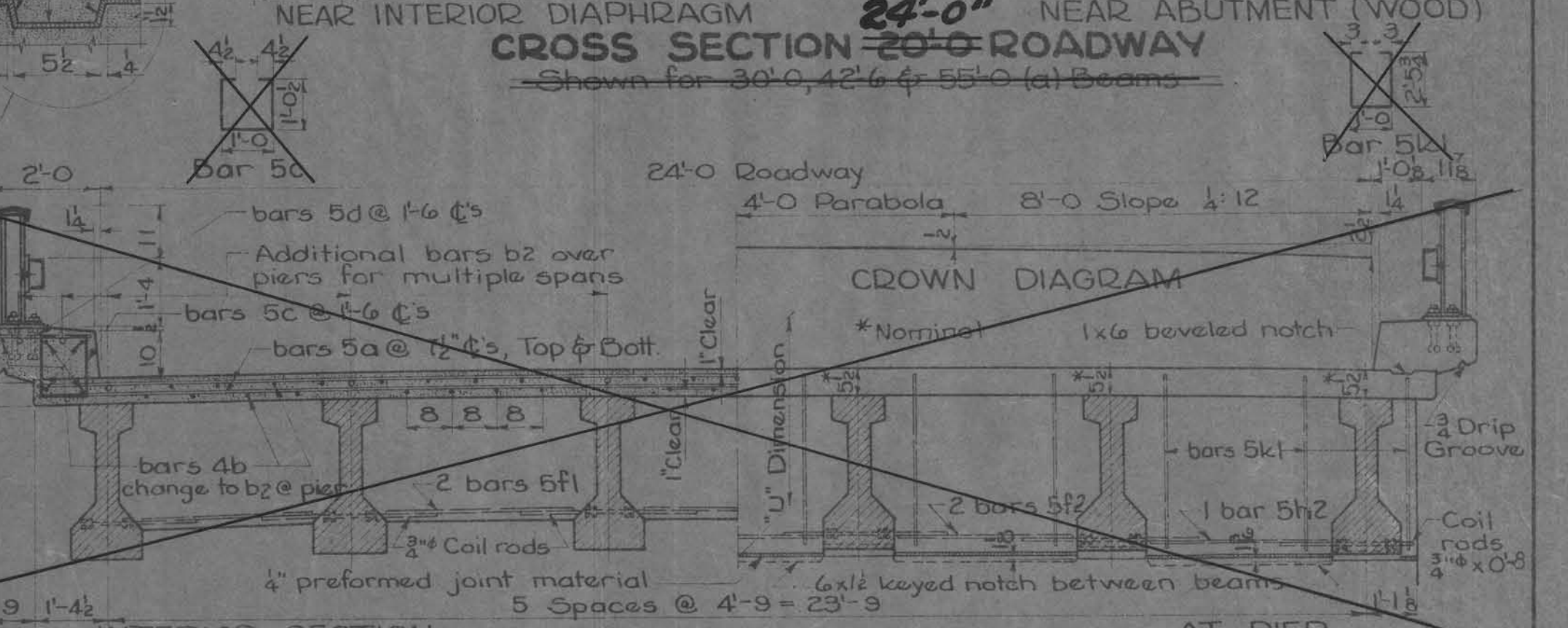
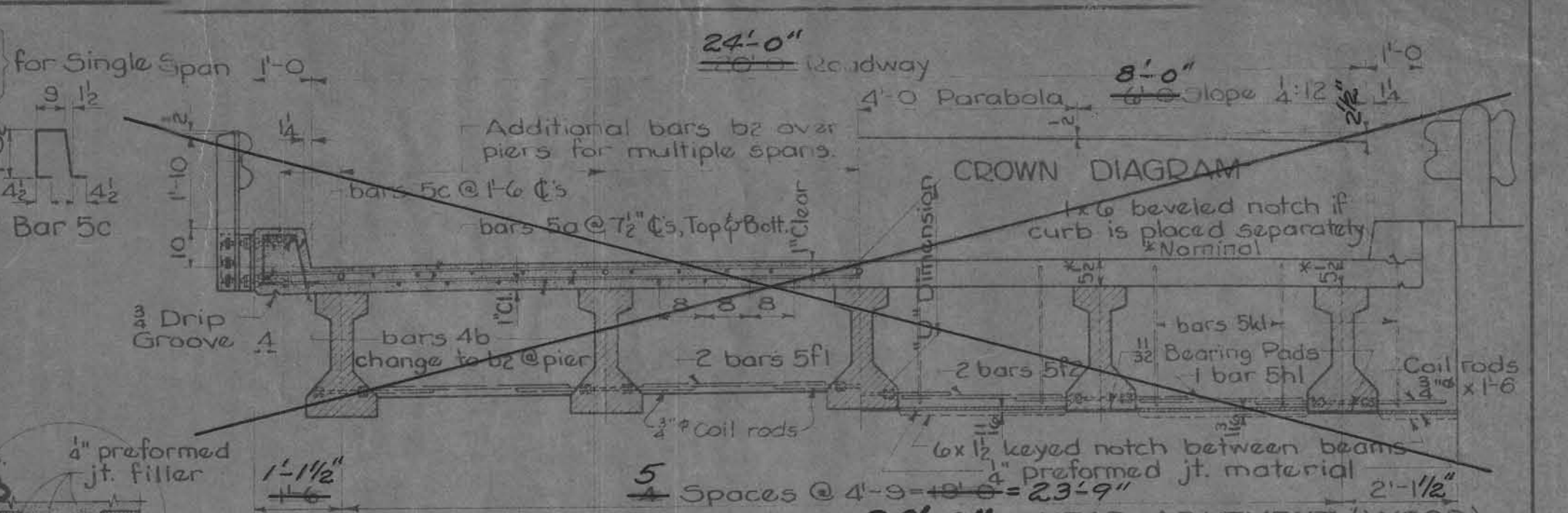
BAR SHAPE	30'-0	42'-6	55'-0(a)	55'-0(b)	67'-6
4ab	31	1-2 45	1-2 61	1-2 57	1-2 73
4bib	62	4-4 90	4-4 122	4-4 114	4-4 146
4b2b	12	2-5 16	2-5 20	2-5 16	3-0 20
cb	4	2 30-6 4	2 22-0 4	2 28-3 4	2 28-3 5 4
5db	-	2	6-0 2	7-6 4	7-6 4
TOTAL WT.	262	393	524	557	759



BEARING PLATES for 55'-0(b) & 67'-6



BEARING DETAILS-30'-0, 42'-6 & 55'-0(a)



BILL OF REINF. STEEL-SUPERSTRUCTURE

BAR	LOCATION	SHAPE	Nº	LENGTH	WEIGHT
5a	Slab Transverse	-	217	25'-8"	5809
4b1	Slab Longitudinal	-	106	35'-0"	2480
b2	Slab Longit. Over Piers	-	-	-	-
4b3	Slab Longitudinal	-	-	-	-
5c	Curb Dowels	□	92	3'-3"	312
5d	Curb Transv. (Type "A" Rail)	-	-	-	-
6c	Rail Post Anchor (Type "A" Rail)	-	-	-	-
5f1	Intermediate Diaphragm	-	10	3'-5"	36
5f2	Abut. & Pier Diaphragm Short	-	20	3'-3"	68
5h1	Abutment Diaphragm Long	-	4	26'-10"	112
5h2	Pier Diaphragms Long	-	-	-	-
5kl	Abutment & Pier Hoops	□	24	7'-4"	184
TOTAL =					9001

ESTIMATED QUANTITIES-SUPERSTRUCTURE

ITEM	UNIT	QUANTITY
Concrete	cuyd.	43.2
Reinforcing Steel	lbs.	9001
Structural Steel	lbs.	1268
Pre-stressed Conc. Beams	Beam	6-67'-6"
Pre-stressed Conc. Beams	Beam	4-24'-0"
Formed Steel Beam Rail	L.F.	155'-0"
Crescoted Wood Rail Posts 8"x6'-0"	Post	4