

April 29/58 Lett

STATE OF IOWA
STATE HIGHWAY COMMISSION
DESIGN FOR
67'-6" x 20' PRE-STRESSED CONCRETE BEAM BRIDGE
SECONDARY ROAD SYSTEM PROJ. S-2766 (1)
CRAWFORD COUNTY
DECEMBER 1957.

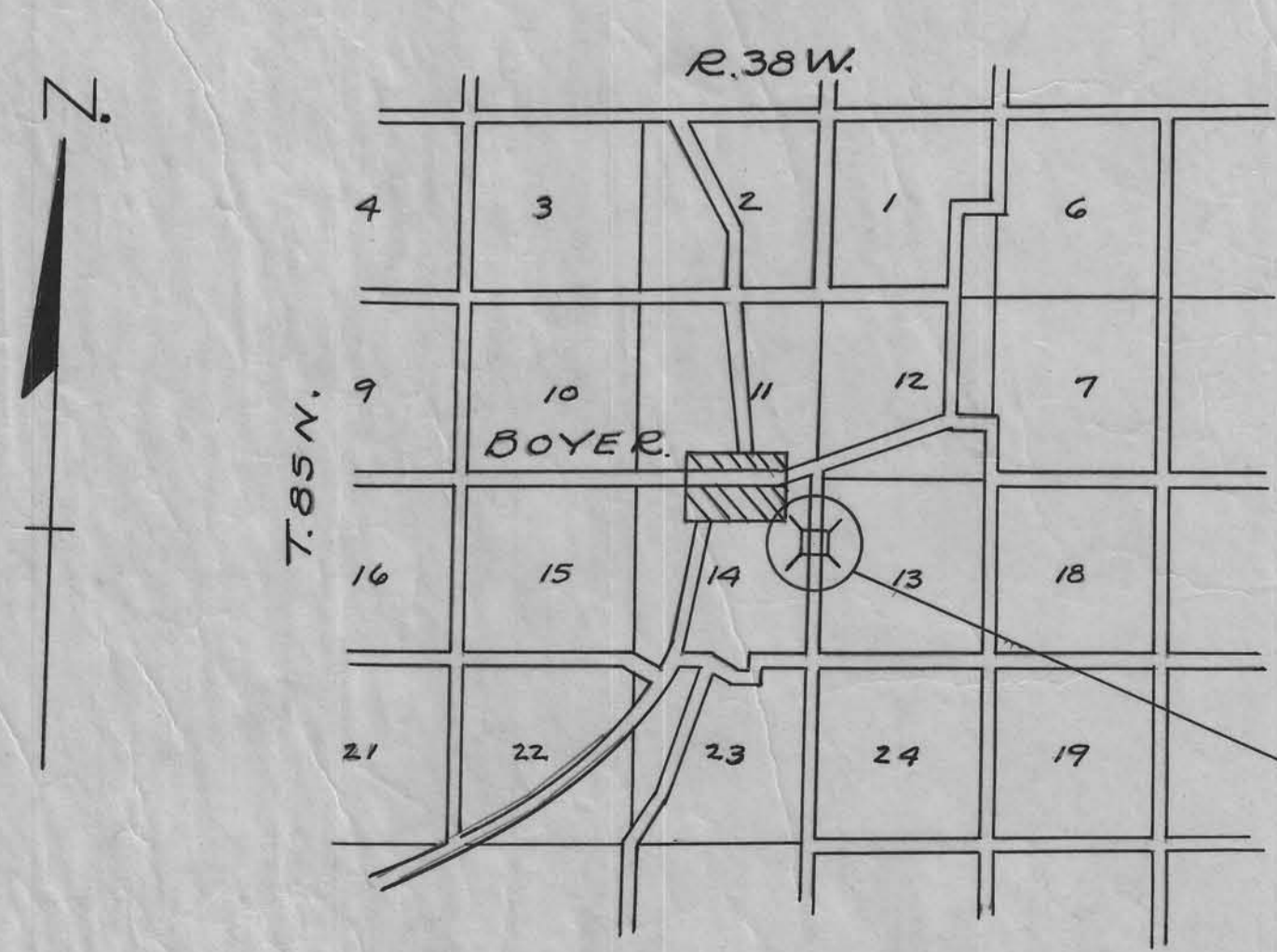
MILEAGE SUMMARY: = 67'-6" = 0.01316 MILES.

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-258 STOCKHOLM TWP. CRAWFORD COUNTY,
SEC. 13-14, STA. 35+81.0 OVER TRINKLE CREEK
67'-6" x 20' PRESTRESSED CONCRETE BEAM BRIDGE.**

DESCRIPTION	ABUTMENTS	SUPERSTRUCT.	TOTAL
CONCRETE CLASS-"A"	12.20 C.Y.	36.80 C.Y.	49.00 C.Y.
REIN. STEEL	1318 LBS.	7613 LBS.	8931 LBS.
STRUCT. STEEL	4638 "	1268 "	5906 "
PRE-STRESSED BEAMS. CONC.		5 @ 67'-6"	5 @ 67'-6"
HANDRAIL		155'-0" L.F.	155'-0" L.F.
WOOD RAIL POSTS 8"x6'		4	4
TREATED WOOD TREESTLE PILING	12-45' = 540 16-30' = 480 L.F.		1020 L.F.
TREATED LUMBER	6536 F.B.M.		6536 F.B.M.
GALVANIZED HARDWARE	180 LBS.		180 LBS.
EXCAVATION CLASS # 20	370 C.Y.		370 C.Y.
" CLASS # 10	412 C.Y.		412 C.Y.
" CLASS # 21	14 C.Y.		14 C.Y.
REMOVAL OF OLD STRUCTURE			LUMP SUM.

In Letting April 29, 1958



NOTE: Bridge Sign Assemblies will be furnished & placed by Crawford County to conform with S & T Instruction No. 11, revised March-1, 1956.

DESIGN # 258
PROJECT # S-2766 (1)

APPROVED

BOARD OF SUPERVISORS. DATE

APPROVED.

CHIEF ENGINEER. DATE

IOWA HIGHWAY COMMISSION

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS.

RECOMMENDED FOR APPROVAL

DISTRICT ENGINEER. DATE

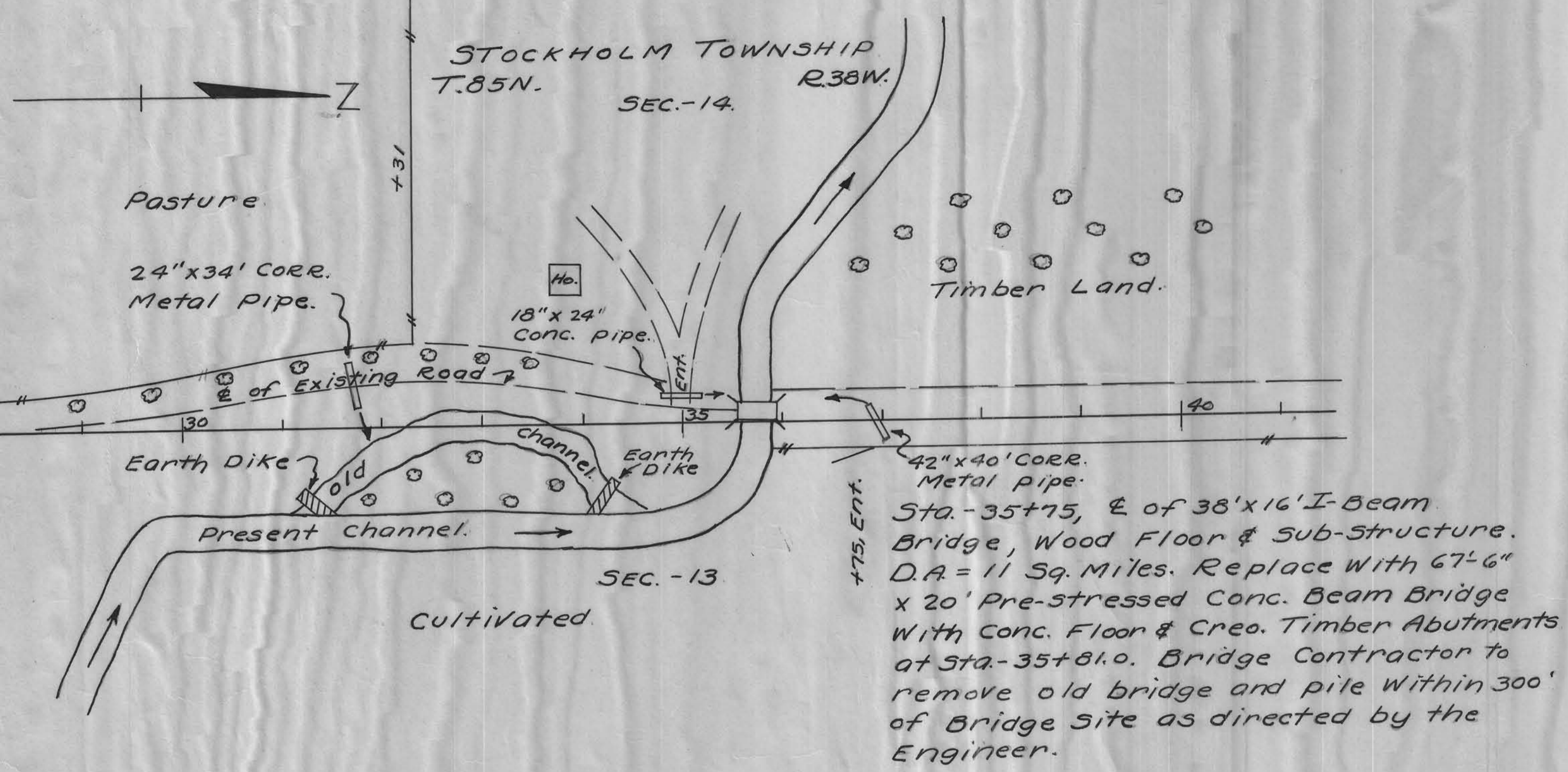
APPROVED

DIVISION ENGINEER.

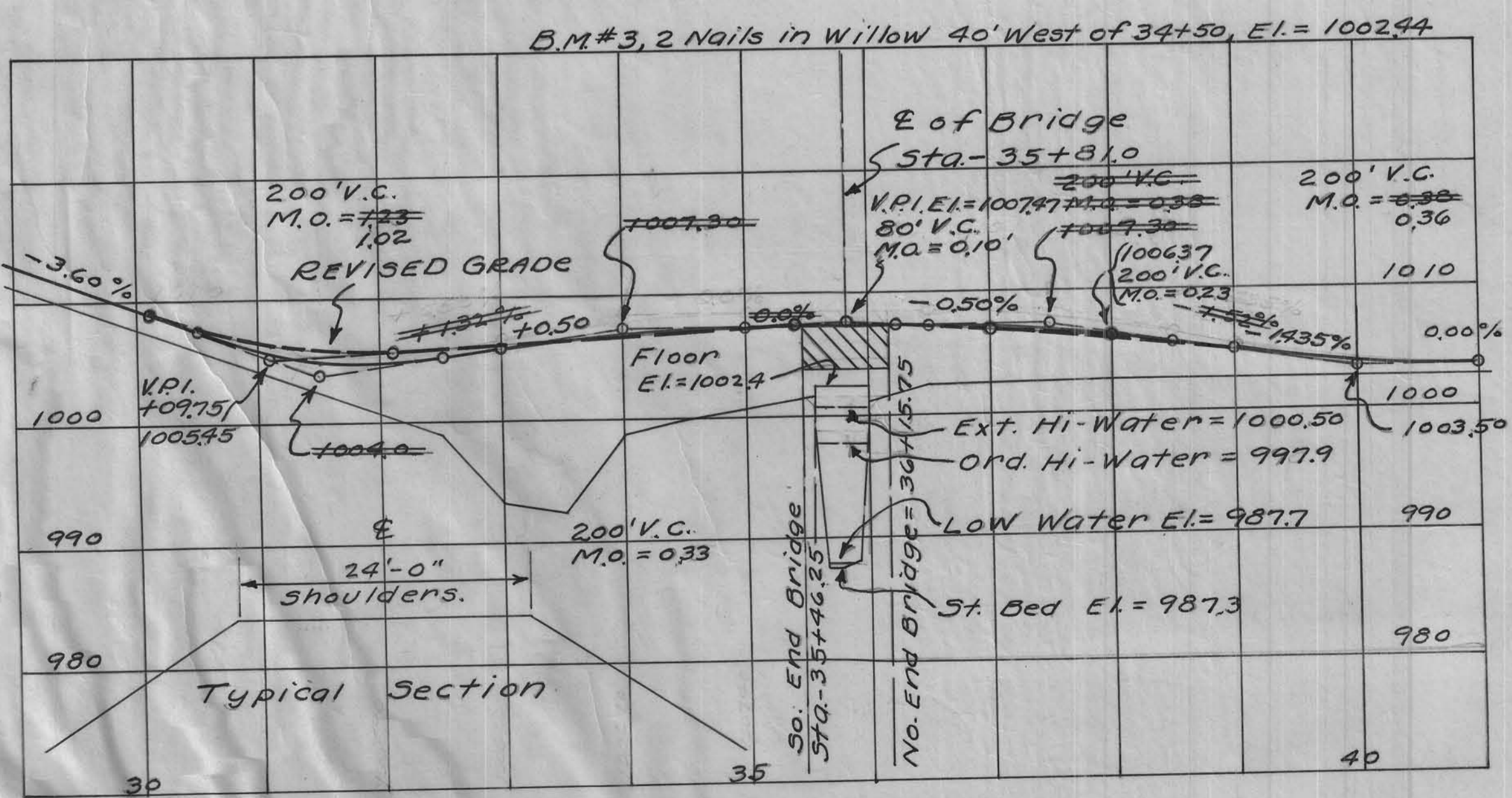
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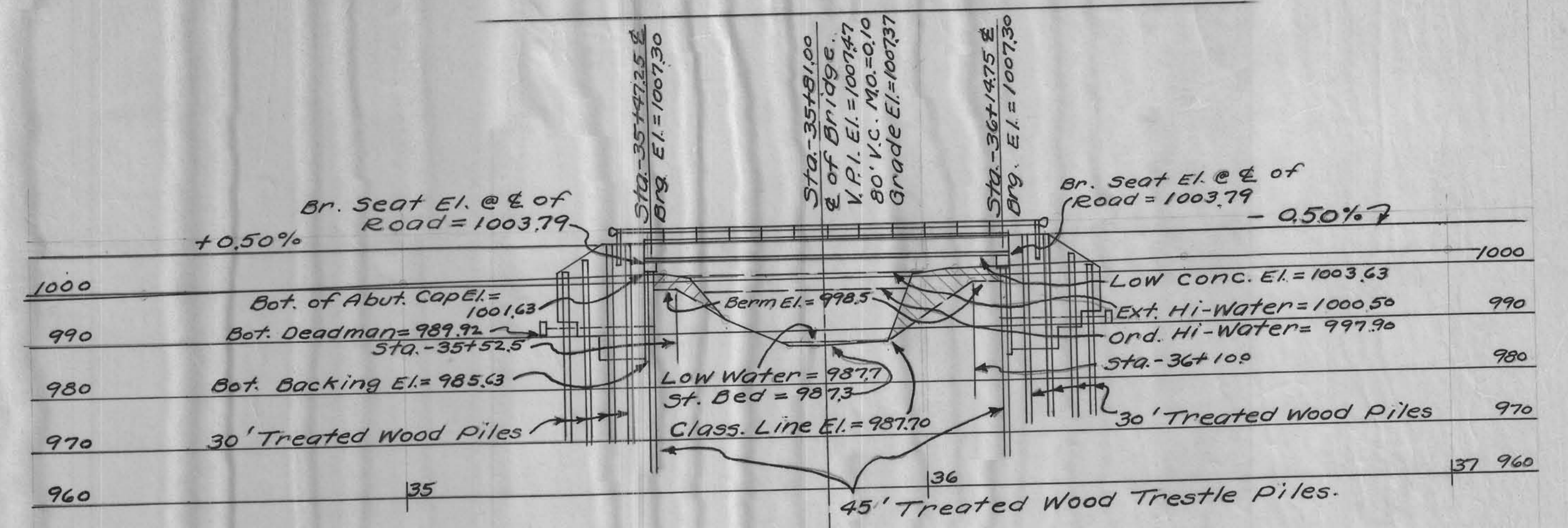
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CRAWFORD COUNTY. Design-258 PROJ. S-



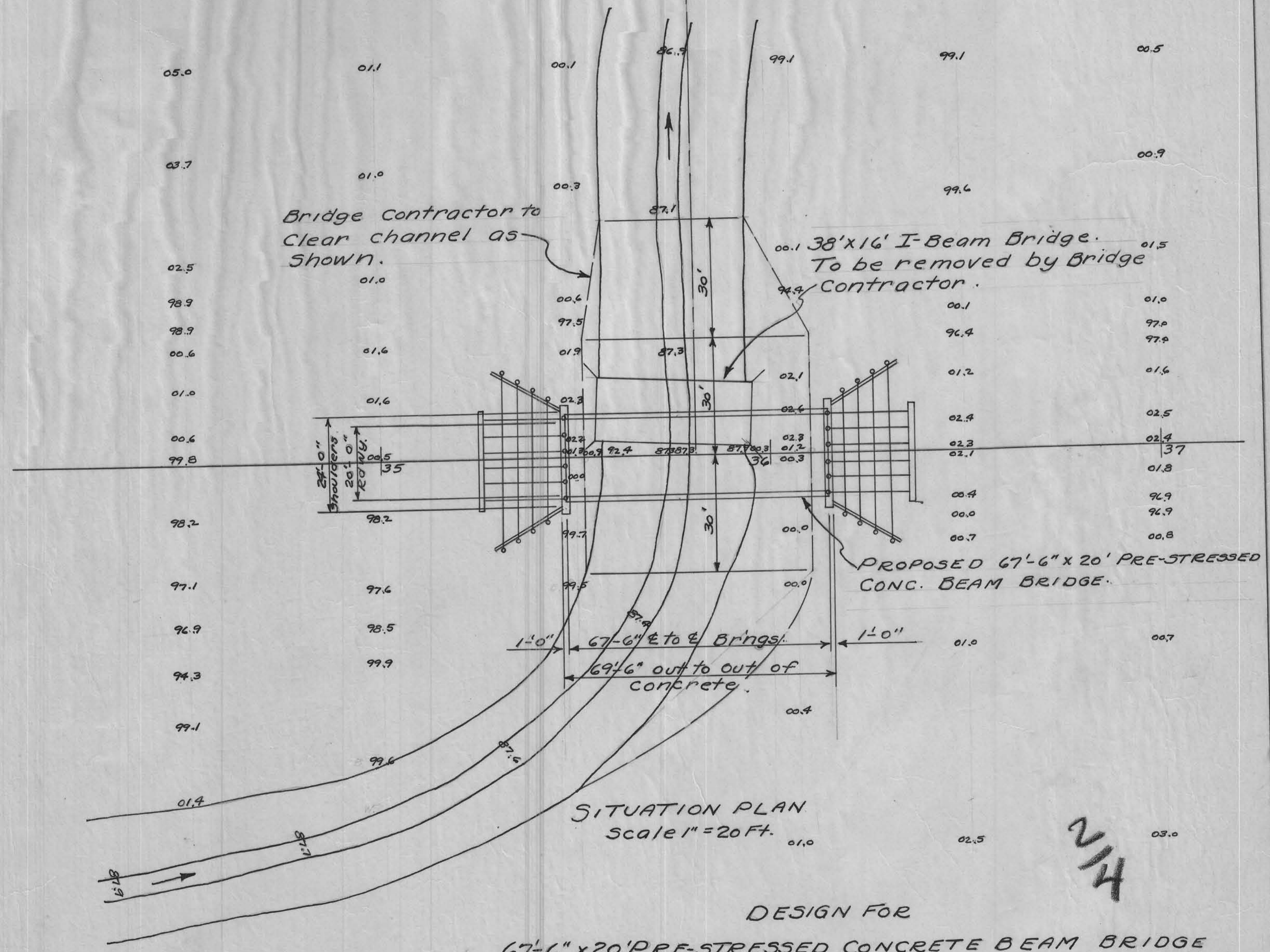
GENERAL NOTES:
 All Lumber is to be creosoted. Backing & Wing plank in 10" & 12" widths may be substituted for 8" plank shown but payment will be made on basis of quantities shown. All piling are to be creosoted & are to comply with the specifications for Treated Timber Trestle piles. All hardware is 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 P.C-5, and for details of Abutments refer to Standard H-10-2. With further details on Sheet #3 of these plans. All materials & construction to conform with the Iowa Highway Commission Standard Specifications, Series of 1956.



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

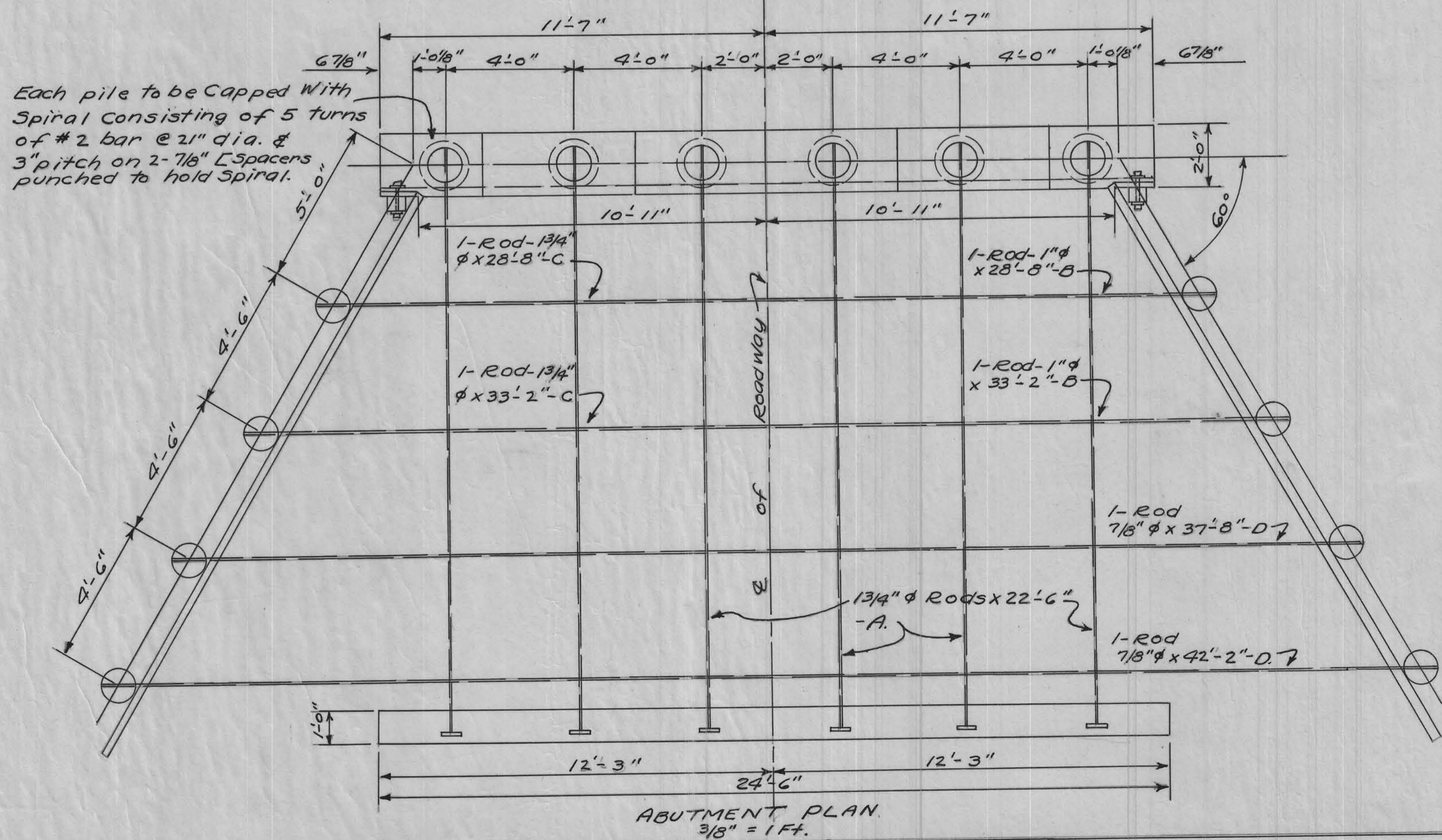
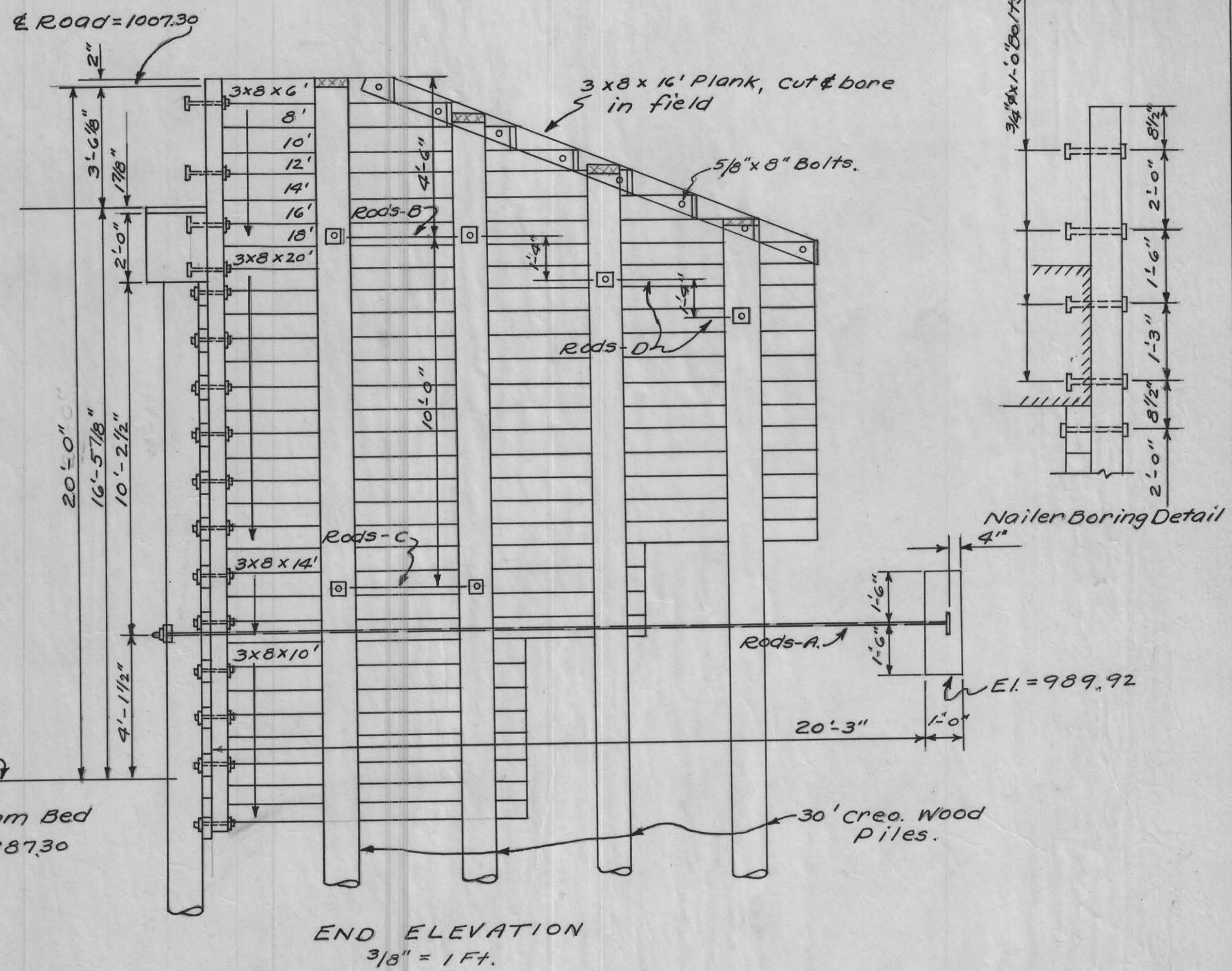
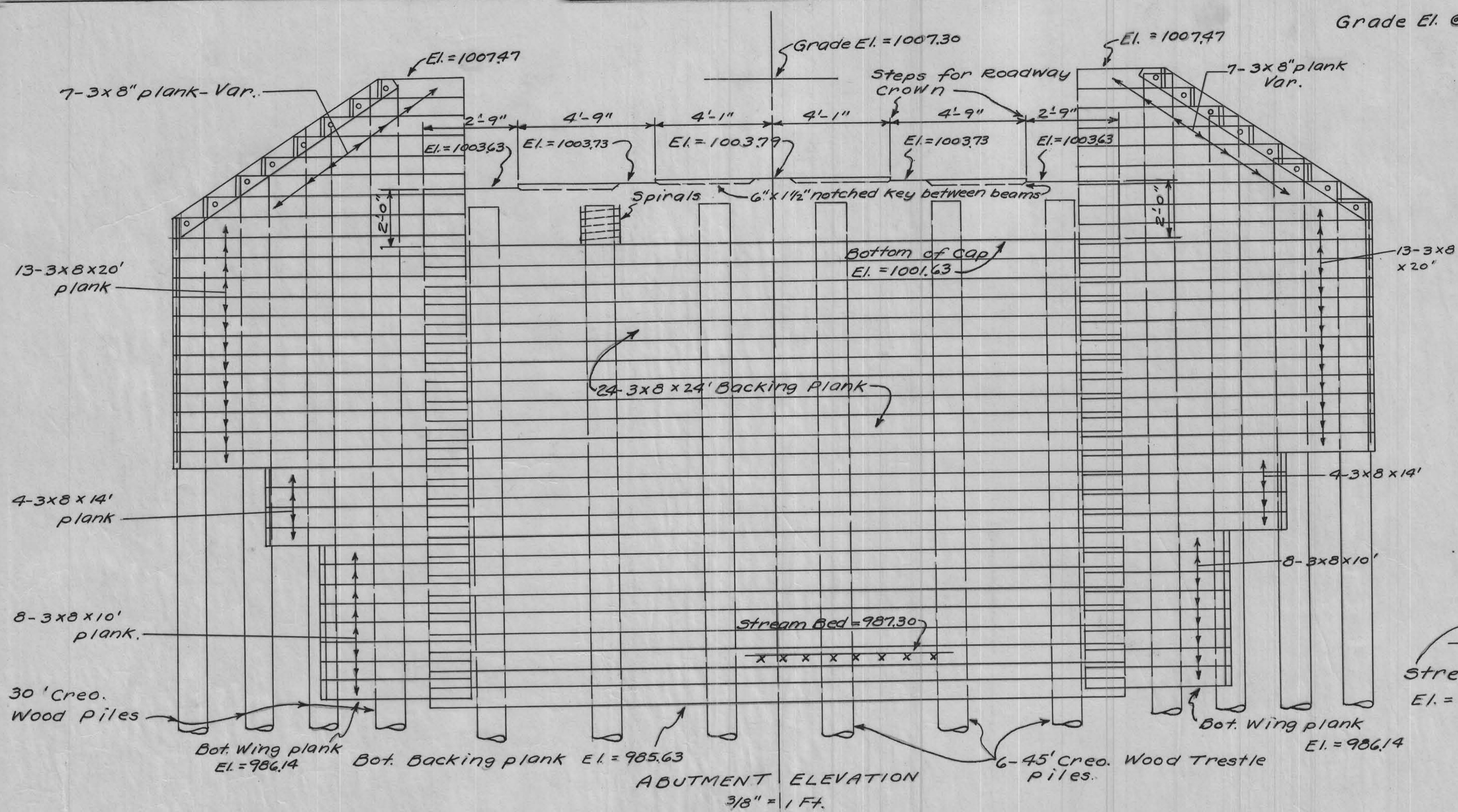


SECTION ALONG E of ROADWAY
 Scale 1" = 20 Ft.



DESIGN FOR
 67'-6" x 20' PRE-STRESSED CONCRETE BEAM BRIDGE
 CONCRETE FLOOR - STEEL HANDRAIL TYPE "C"
 PROJECT No. S-2766 (1)
 CRAWFORD COUNTY, IOWA.

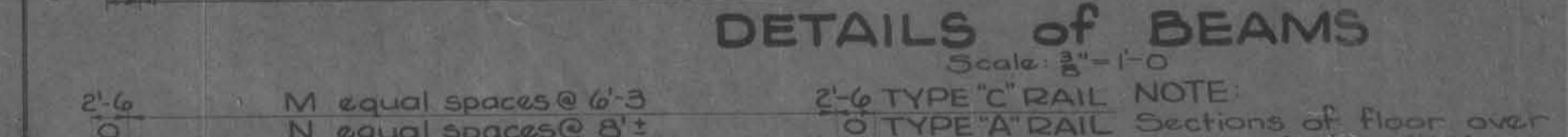
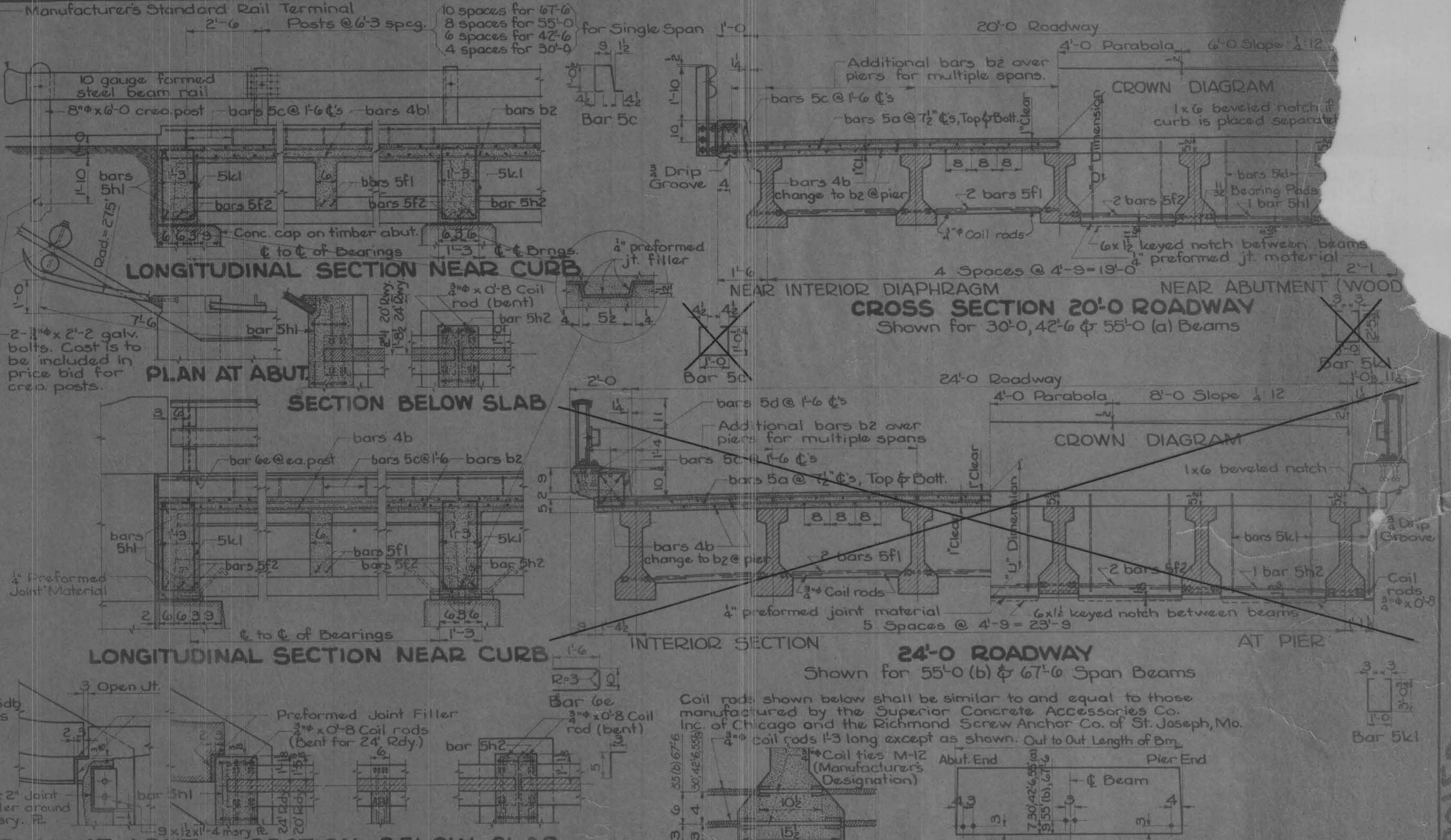
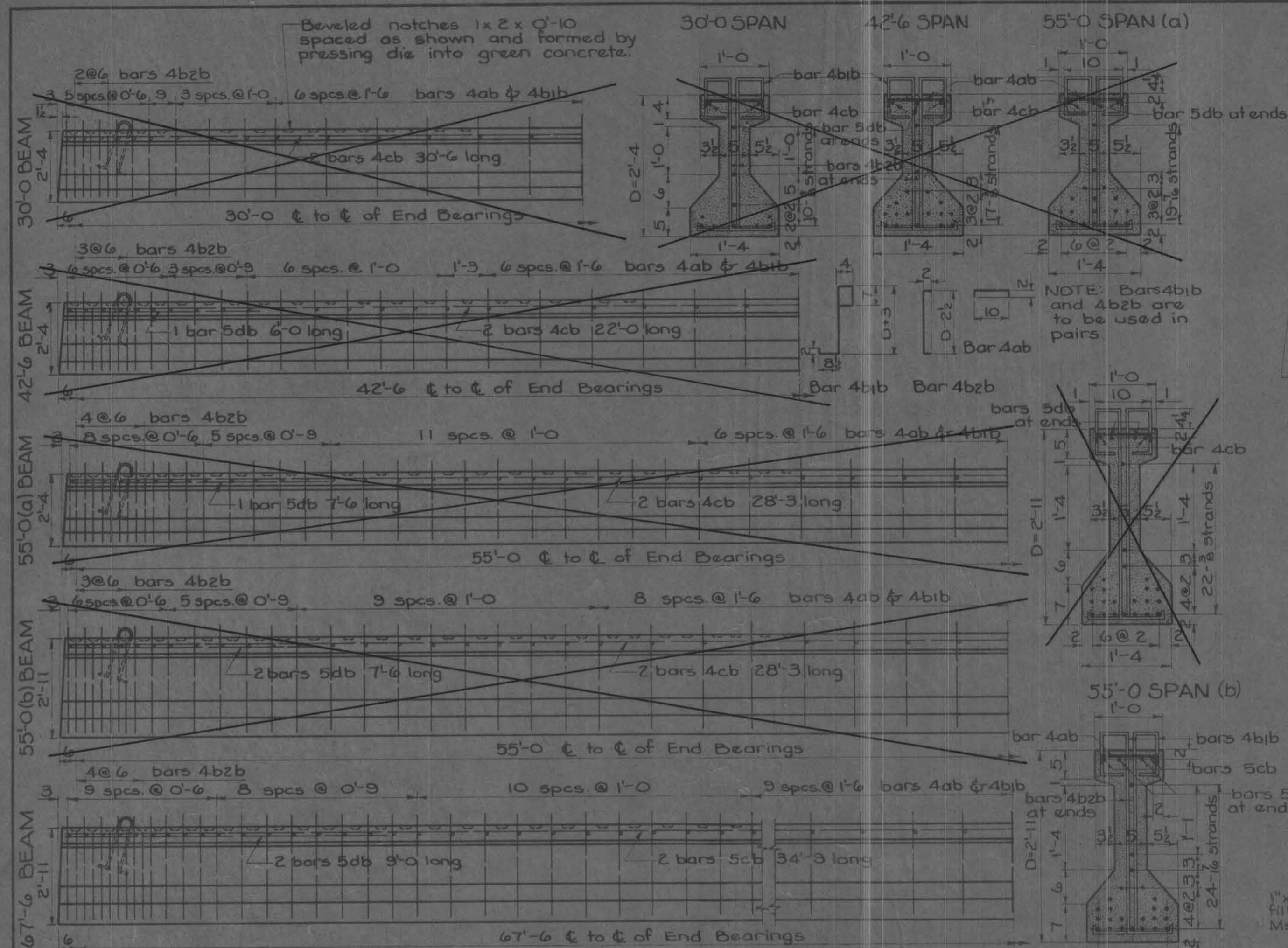
Location:
 Sec. 13-14
 Stockholm Twp.
 T.85N. R.38W.



QUANTITIES - ONE ABUTMENT					
Mark.	Description	Shape	Size	Length	No. Quant.
	Wing Piles			30'-0"	8 240 LF.
	Brg. Piles			45'-0"	6 270 "
				Total Piling	510 LF.
	Backing Plank	3x8	24'-0"	24	1152 FBM
	Wing plank		3x8 6'-0"	2	24 "
	"		" 8'-0"	2	32 "
	"		" 10'-0"	18	360 "
	"		" 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	6x6	22'-0"	2	132 "
				Total Creosoted Lumber =	3268 FBM
	Struct. Steel				2319 Lbs.
	Concrete - Deadman				2.73 C.Y.
	" - Abutment Cap				3.36 "
				Total concrete	6.09 C.Y.
	Rein. Steel - Deadman				2.78 Lbs.
	" - Abutment Cap				381 "
				Total Rein. Steel =	659 Lbs.
	Galvanized Hardware				90 Lbs.

GENERAL NOTE:
For construction details not shown hereon refer to Iowa Highway Commission Standard H10-2.

DESIGN FOR
67'-6" x 20' PRE-STRESSED CONCRETE BEAM BRIDGE
CONCRETE FLOOR - STEEL HANDRAIL TYPE "C"
Location: Sec. 13-14, Stockholm Twp., T.85N., R.38W., CRAWFORD COUNTY, IOWA.
STA-35+81.0 PROJECT No. 5-2766(1)



BEAM DATA

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

* If required.

MULTIPLE SPAN COMBINATIONS

Span	Span	Span	Span	Span	Span	Span	Span	Span	Span
30'-0	31'-3	30'-0	32'-6	4'	14	12	7	4b2	
30'-0	43'-9	30'-0	105'-0	5'	16	15	8	4b2	
42'-6	43'-9	42'-6	130'-0	6'	20	16	8	4b2	
42'-6	55'-0	42'-6	142'-6	7'	22	18	7	5b2	
55'-0(a)	55'-0	55'-0	167'-6	8'	26	21	7	5b2	
55'-0(b)	68'-9	55'-0	180'-0	9'	28	23	7	6b2	
67'-6	68'-9	67'-6	205'-0	9'	32	26	7	6b2	

NOTES ON PRESTRESSED BEAMS:

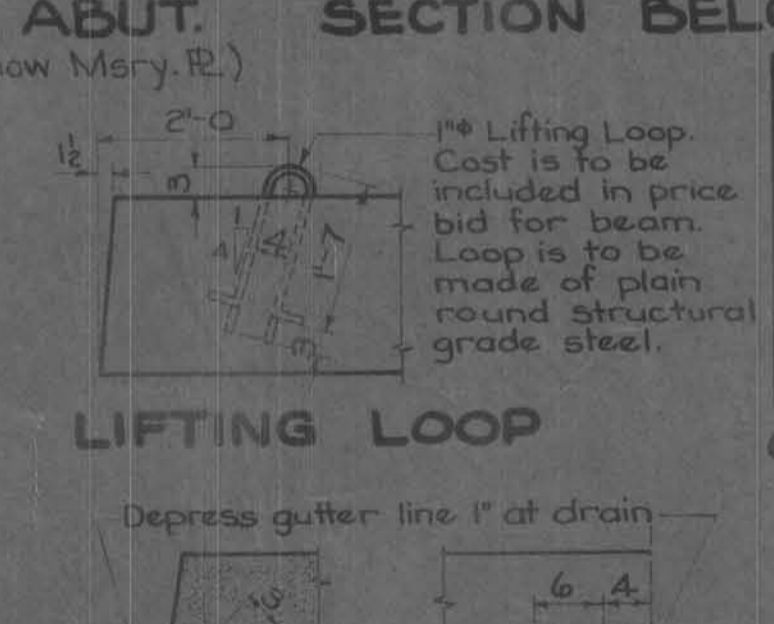
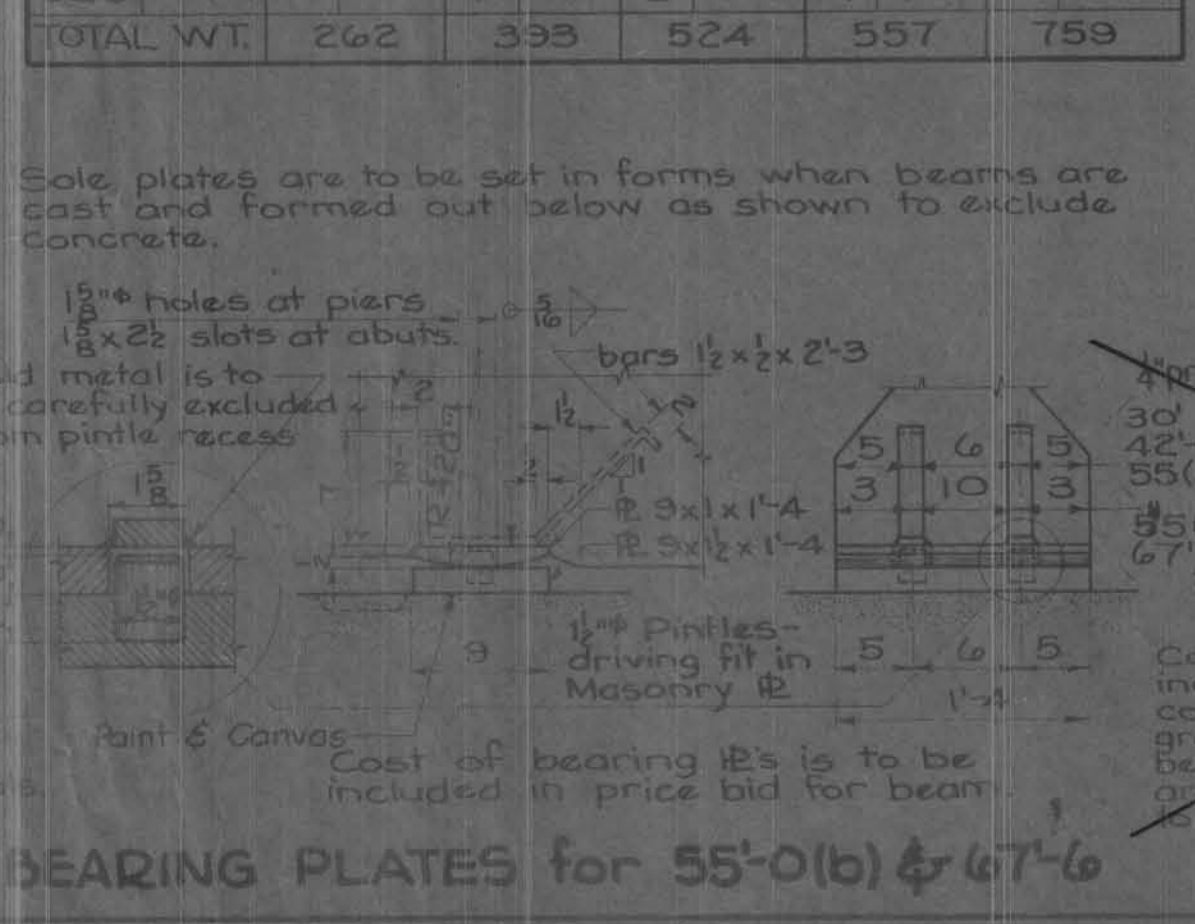
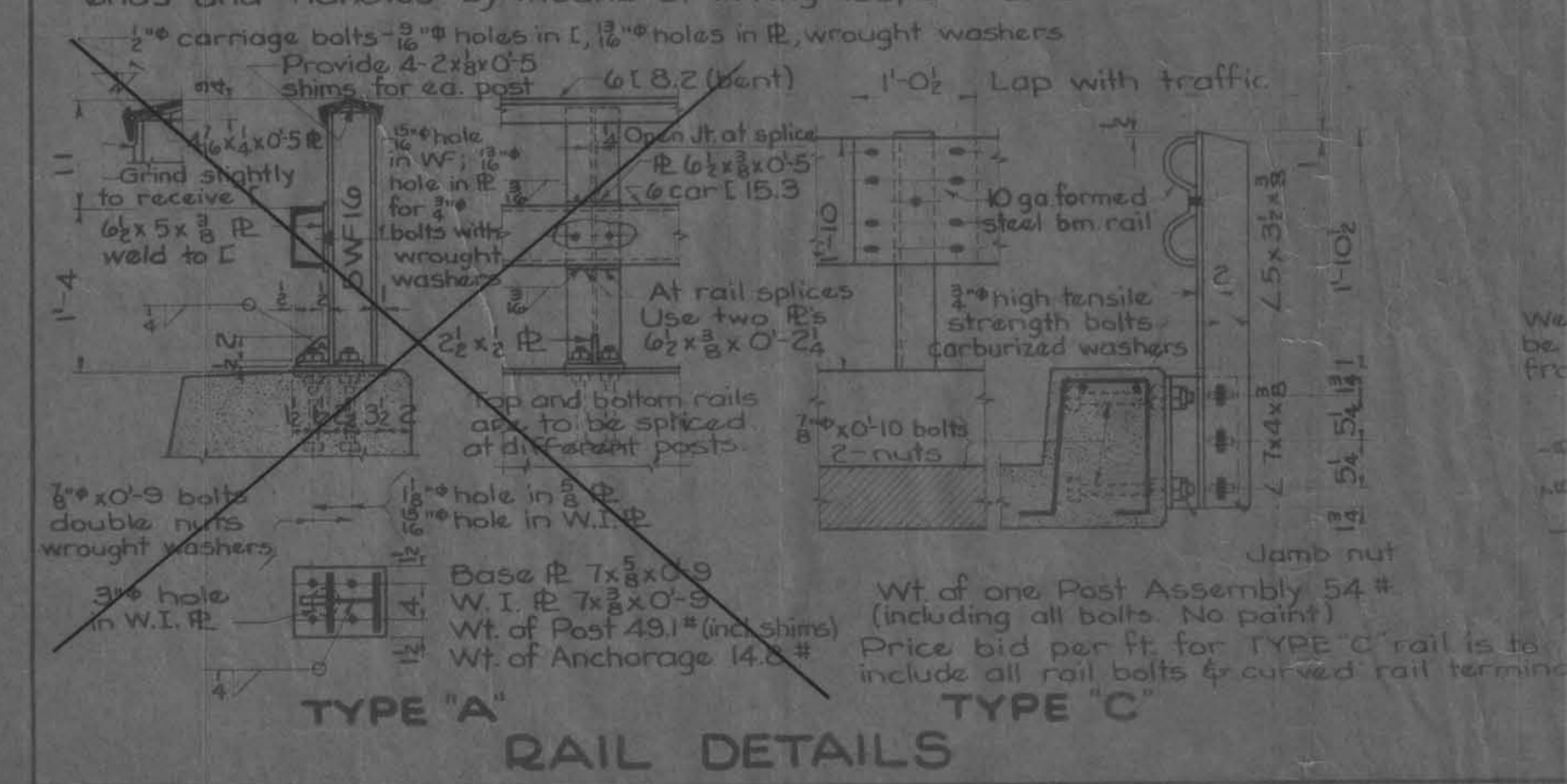
Concrete in beams shall have a 28 day crushing strength of 5000 psi and a minimum of 4500 p.s.i. when stress is released. It shall contain no Class-V aggregate. The maximum size of coarse aggregate shall be 1".

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 - 18,900 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 strands beams are to be supported at all times near ends and handled by means of lifting loops near ends of beams.

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
4b2b	62	4'-4 90	4'-4 122	4'-4 114	4'-4 146
5b1	12	2-5 16	2-5 20	2-5 16	3-0 20
5b2	3	30'-6 4	22'-0 4	28'-3 4	28'-3 4
5b3	2	2	2	2	2
TOTAL WT.	262	333	524	557	759



"U" DIMENSION

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

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 H10-3, 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.

All exposed corners of 90° or sharper are to be filleted.

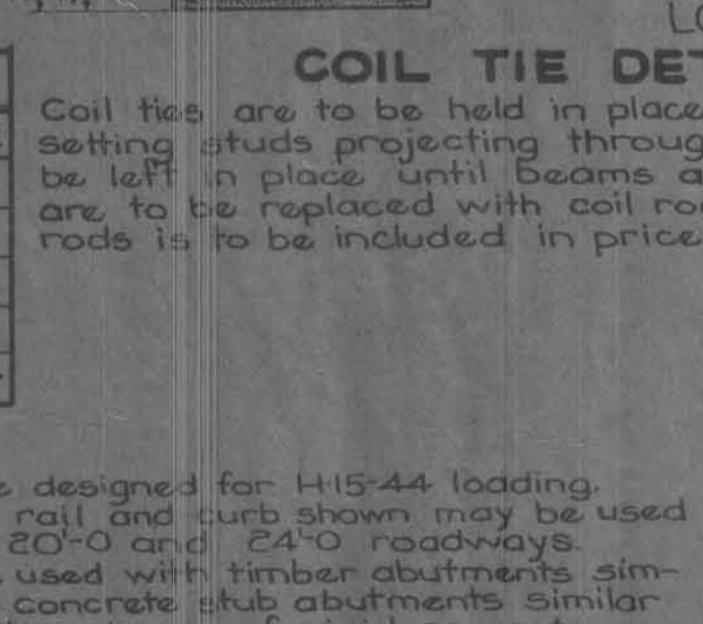
All reinforcing bars are to be securely wired in place and adequately supported on bar chairs before concrete is placed.

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, also the crown of roadway. All beams are to be set vertically.

Intermediate diaphragms are located at center of beams.



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.

BILL OF REINF. STEEL-SUPERSTRUCTURE

BAR	LOCATION	SHAPE	Nº	LENGTH	WEIGHT
5a	Slab Transverse	2/7	21	8"	4705
4b1	Slab Longitudinal	3/4	30	6"	2068
b2	Slab Longitudinal	1/2	18	7"	1268
4b3	Slab Longitudinal	1/2	18	7"	1268
5c	Curb Dowels	1/2	92	3'-3"	312
5d	Curb Transv. (Type A Rail)	1/2	92	3'-3"	312
6e	Rail Post Anchor (Type A Rail)	1/2	92	3'-3"	312
5f1	Intermediate Diaphragm	8	3	5"	28
5f2	Abut & Pier Diaphs. Short	16	3	3"	54
5h1	Abutment Diaphs. Long	4	22	10"	95
5h2	Pier Diaphragms Long	4	22	10"	95
5k1	Abutment & Pier Hoops	1	20	7'-3"	151
* Includes 20 dia. splice.					Total = 7613

ESTIMATED QUANTITIES-SUPERSTRUCTURE

ITEM	UNIT	QUANTITY
Concrete	cuyd	36.80
Reinforcing Steel	lbs	7613
Structural Steel	lbs	1268
Pre-stressed Conc Beams	Beam	5 @ 67'-6"
Pre-stressed Conc Beams	Beam	5 @ 67'-6"
Formed Steel Beam Rail	L.F.	155'-0"
Crescated Wood Rail Posts 8"x6'-0" Post		4

SPECIFICATIONS:

Design: A.A.S.H.O. Series of 1953, and United States Bureau of Public Roads Design Criteria for Pre-stressed Concrete Bridges, 1955. Construction: Standard Specifications of the Iowa State Highway Commission, Series of 1956, plus current Special Provisions except as noted.

Location:
Sec. 13-14
Stockholm Twp.
T.85N. R.38W.

Cost of prestressed bearing pads is to be included in price bid for prestressed concrete beams. When beams are set to grade 1/2" or more, bearing plates are to be used on all beams, as shown for 30'-0 or 42'-6 spans. Cost of bearing plates is to be included in price bid for beams.