

**STATE OF IOWA**  
**STATE HIGHWAY COMMISSION**  
 DESIGN FOR  
**TWO 50' X 20' I-BEAM BRIDGES**  
 SECONDARY ROAD SYSTEM      S. PROJECT NO. 964 (1)  
**CRAWFORD COUNTY**  
 FEBRUARY 1950



DESIGN	LOCATION			DESCRIPTION	ESTIMATED QUANTITIES					EXCAVATION CU. YDS.			REMOVAL	
	STA.	TOWNSHIP	SEC.		SIZE & TYPE	CONCRETE CU.YDS	REINFORCING STEEL LBS.	STRUCTURAL STEEL LBS.	TREATED LUMBER FBM	TREATED PILES, LIN.FT.	HARDWARE LBS.	CLASS 10		CLASS 20
449	55+00	Willow	29-30	50' x 20' I-Beam Span Bridge	42.4	7569	29449	7126	890	246	1100	325	14	50' x 16' Parry Truss
549	173+25	Willow	17-18	50' x 20' " " "	42.4	7569	29449	6480	920	224	850	255	16	38' x 16' I-Beam 25' x 16' wood Bridge
Total of Bridges					84.8	15138	58898	13606	1810	470	1950	580	30	

\* Design 449 Includes 10 over size piles 45' long.  
 " 549 " 10 " " " 50' "

Mileage Summary: Design 449 Bridge at Sta. 55+00 = 53.750' = .01017 mile.  
 Design 549 Bridge at Sta. 173+25 = 53.750' = .01017 mile.

Specifications:  
 Design: A.A.S.H.O. 1949, H-15 loading.  
 Construction: Standard Specifications of the Iowa State Highway Commission, Series 1948.

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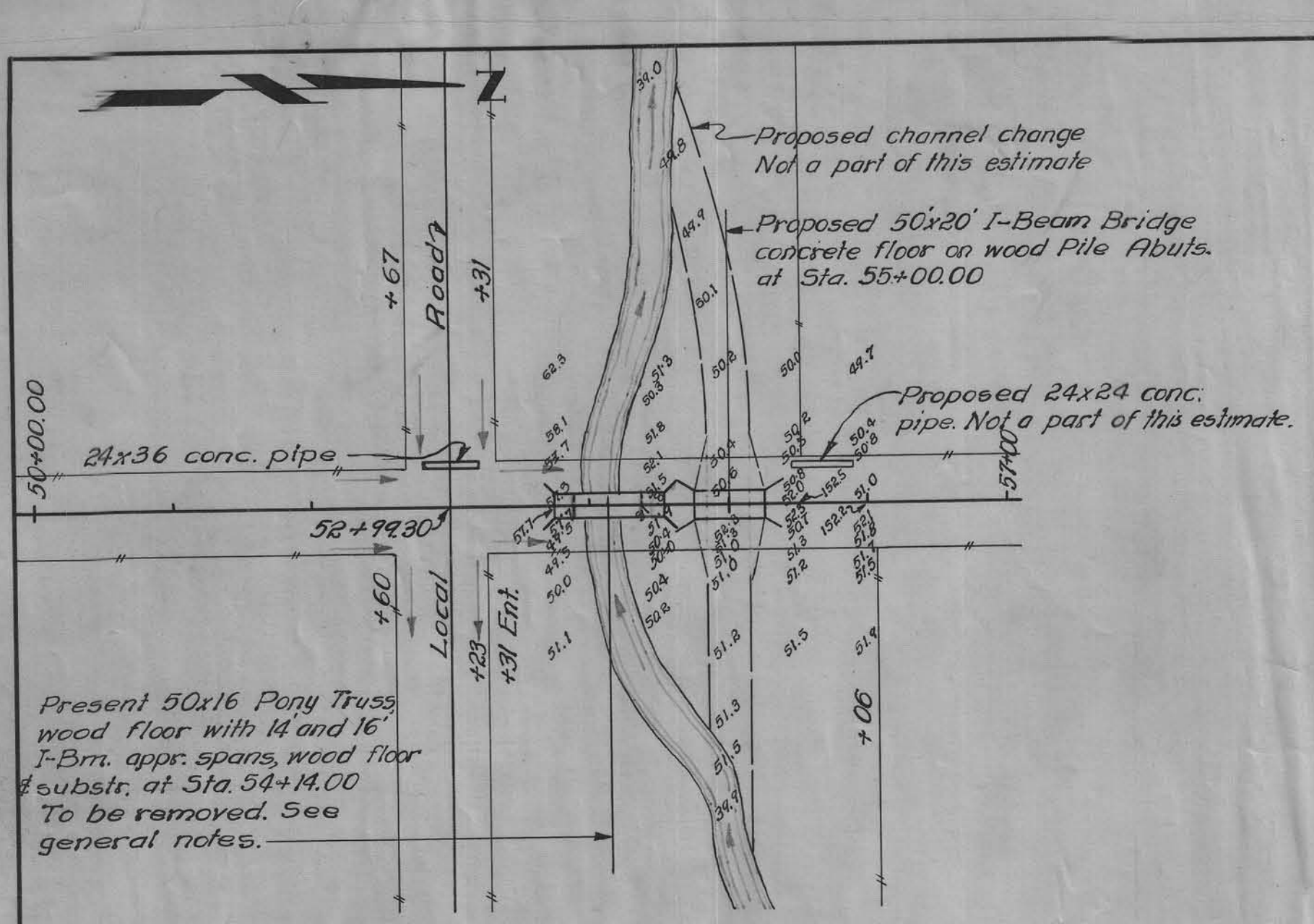
BOARD OF SUPERVISORS

APPROVED  
 CHIEF ENGINEER  
 IOWA HIGHWAY COMMISSION

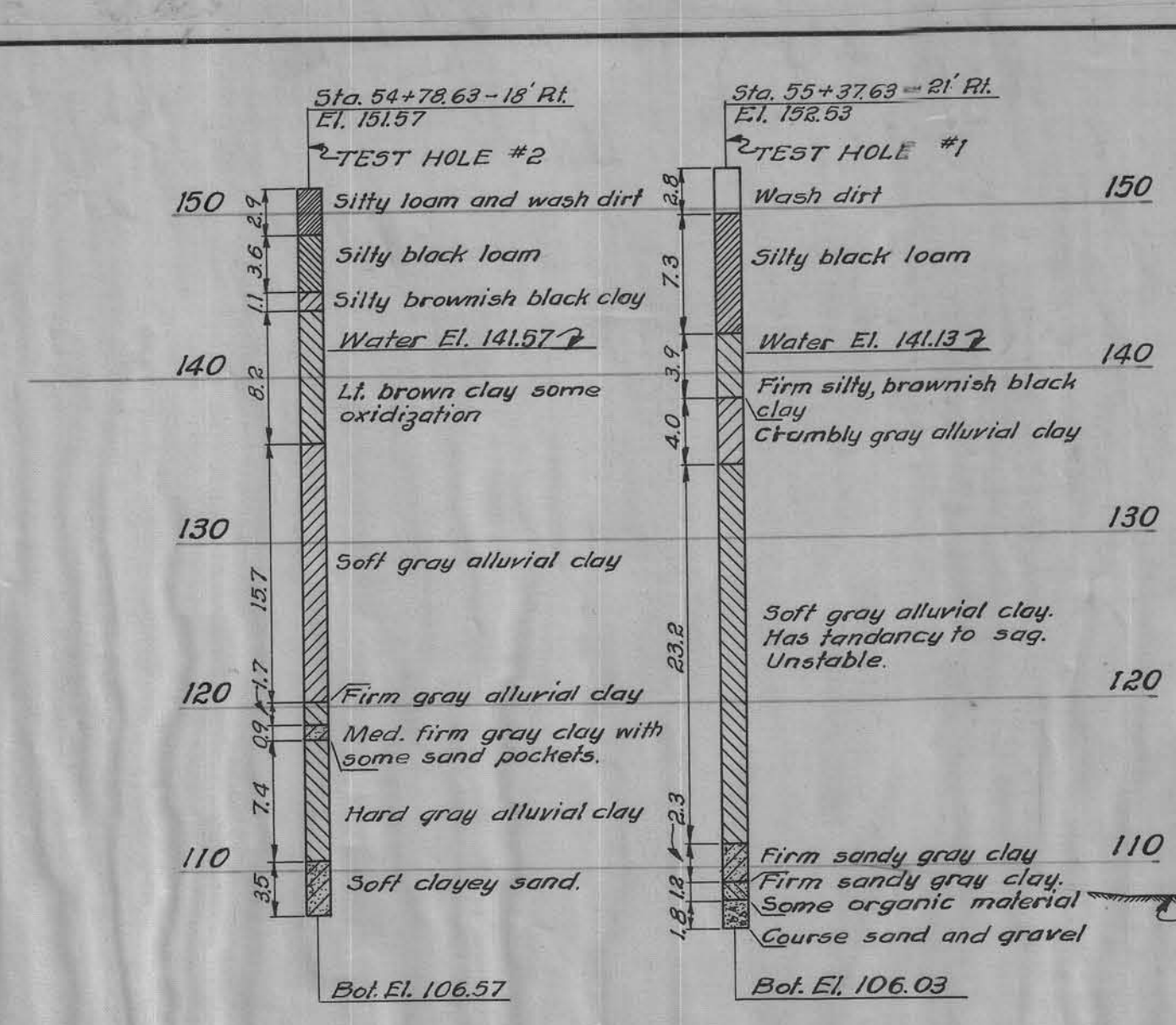
RECOMMENDED FOR APPROVAL  
 DISTRICT ENGINEER  
 DEPARTMENT OF COMMERCE  
 BUREAU OF PUBLIC ROADS

APPROVED  
 DIVISION ENGINEER  
 DEPARTMENT OF COMMERCE  
 BUREAU OF PUBLIC ROADS

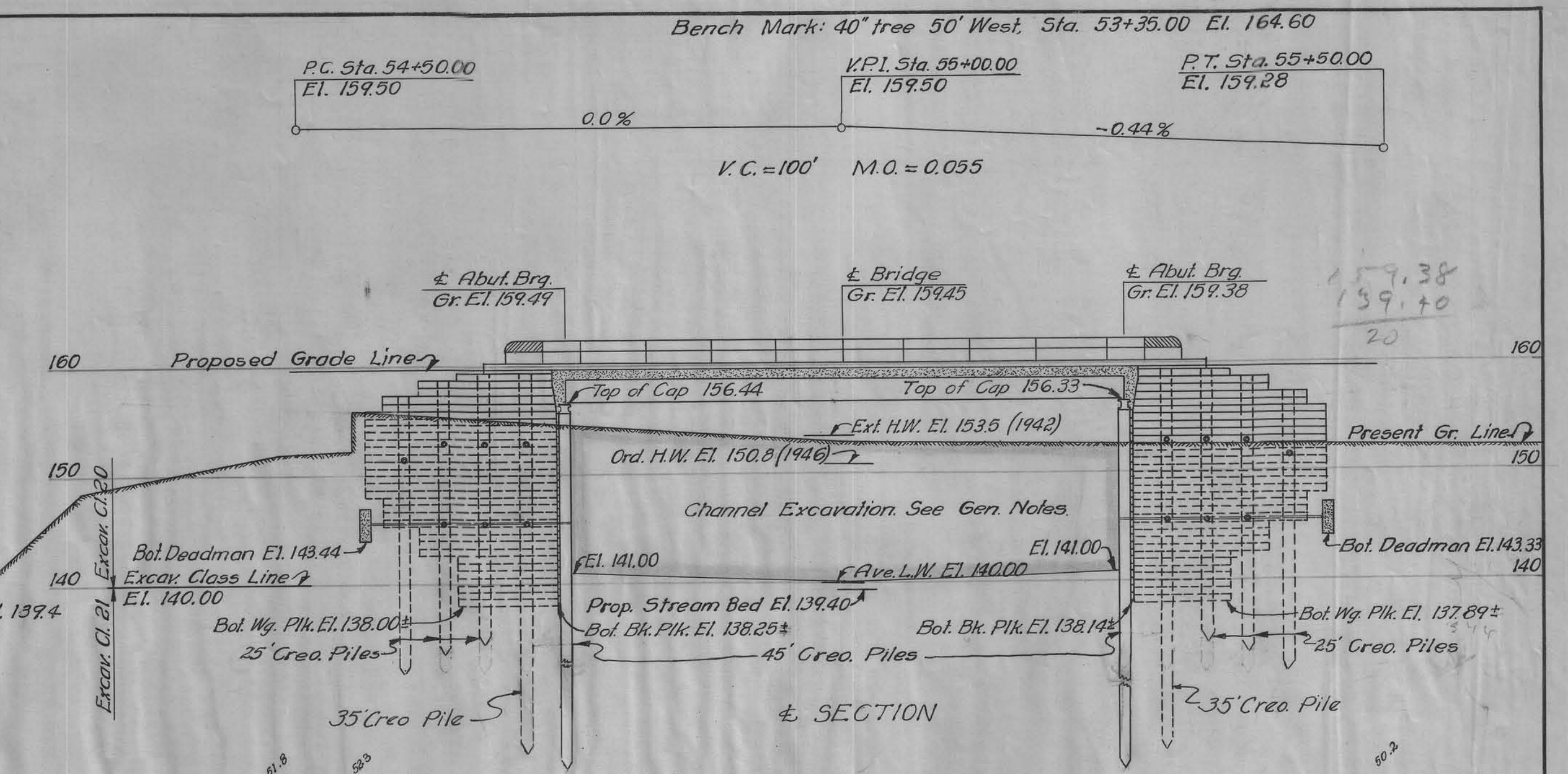




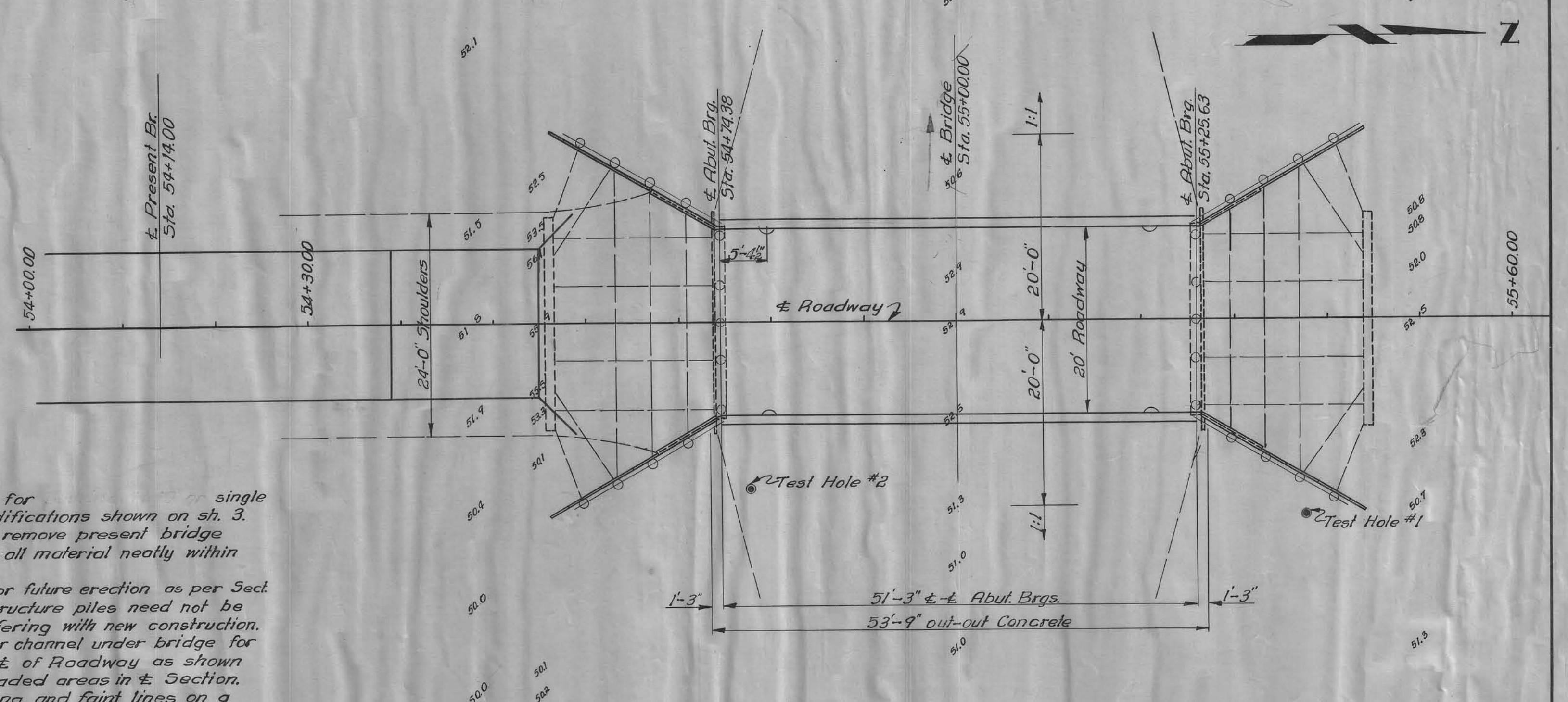
GENERAL PLAN  
Scale 1"=100'  
DA-5500 Ac. Rolling to Hilly



SOUNDING DATA  
Scale 1"=10'



SECTION



SITUATION PLAN  
Scale 1"=10'

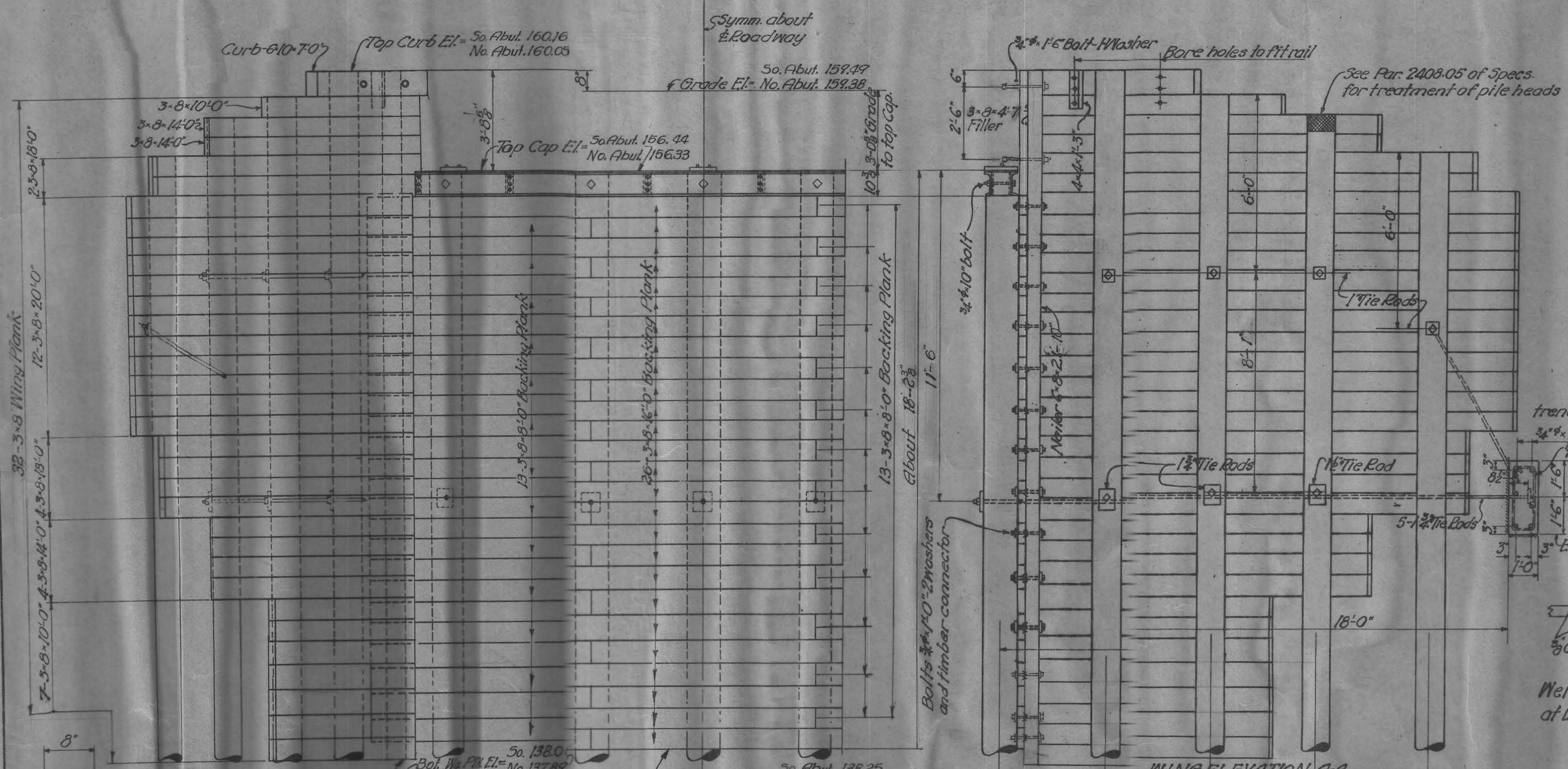
**General Notes:**  
This bridge is designed for single lane H-15 loading with modifications shown on sh. 3.  
Bridge contractor is to remove present bridge (see general plan) and pile all material neatly within 200' of site.  
Truss to be removed for future erection as per Sect. 2401 of Spec. Present substructure piles need not be removed except where interfering with new construction.  
Bridge Contractor to clear channel under bridge for distance of 20' each side of  $\pm$  of Roadway as shown in Situation Plan and by shaded areas in  $\pm$  Section.  
Red lines on the tracing and faint lines on a print indicate parts of present bridge.

**Specifications:**  
Design: AASHTO Series of 1949.  
Construction: Iowa Highway Commission Series of 1948 with the following modification:  
On Rail Surfaces visible from the Roadway, the first and second field coats shall be white paint conforming to Par. 4135.04 'A'.

ESTIMATED QUANTITIES			
Part	Superst. 2 Abuts	Total	
Concrete	37.3	5.1	42.4 c.y.
Reinforcing Steel	7094	475	7569 lbs.
Structural Steel	21975	7474	29449 lbs.
Creosoted Lumber	7126	7126	7126 LB.
Creosoted Piles	890	890	890 Lin.Ft.
Hardware	246	246	lbs.
Cl. 20 Excavation	325		325 c.y.
Cl. 21 "	14		14 c.y.
Cl. 10 Chan. Excav.		1100	c.y.
Removal Pres. Br.			Lump Sum

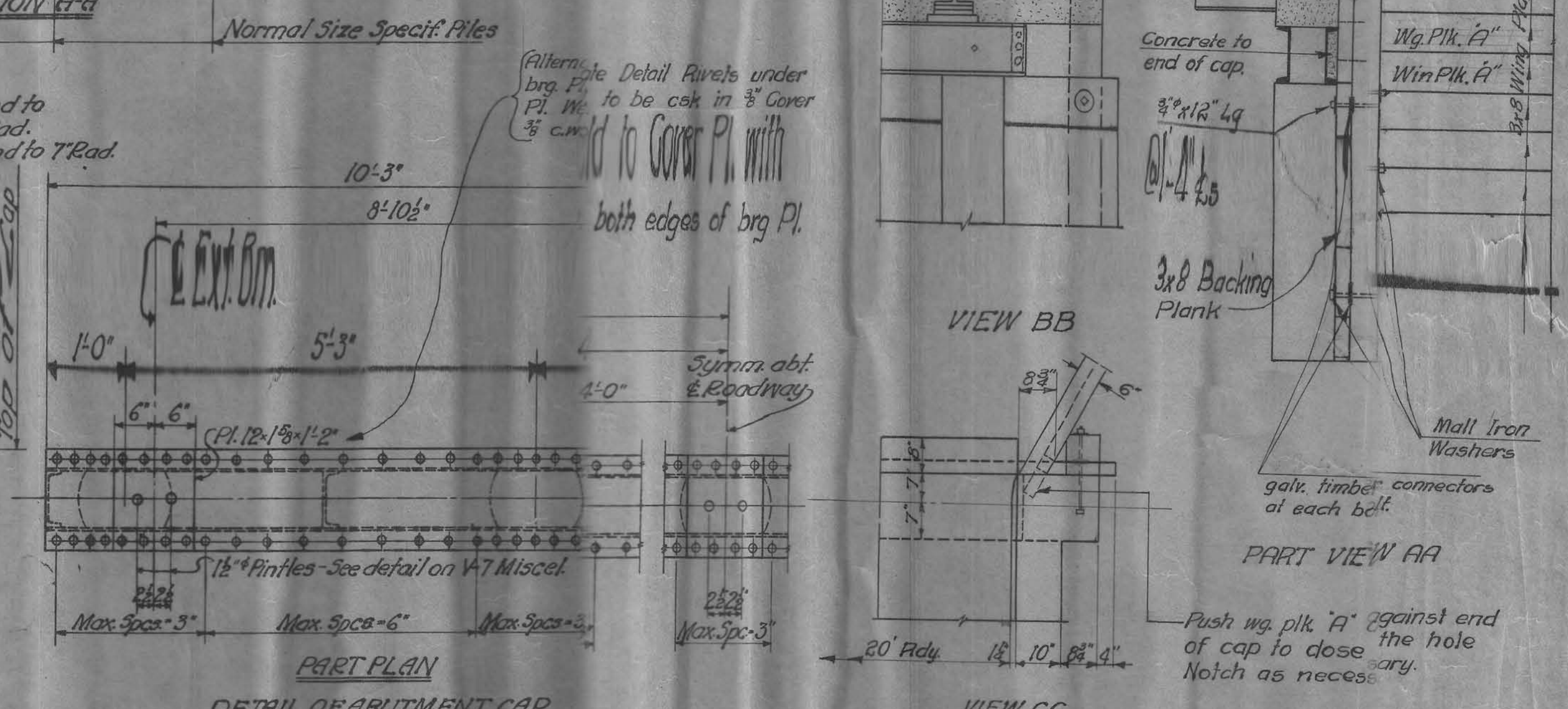
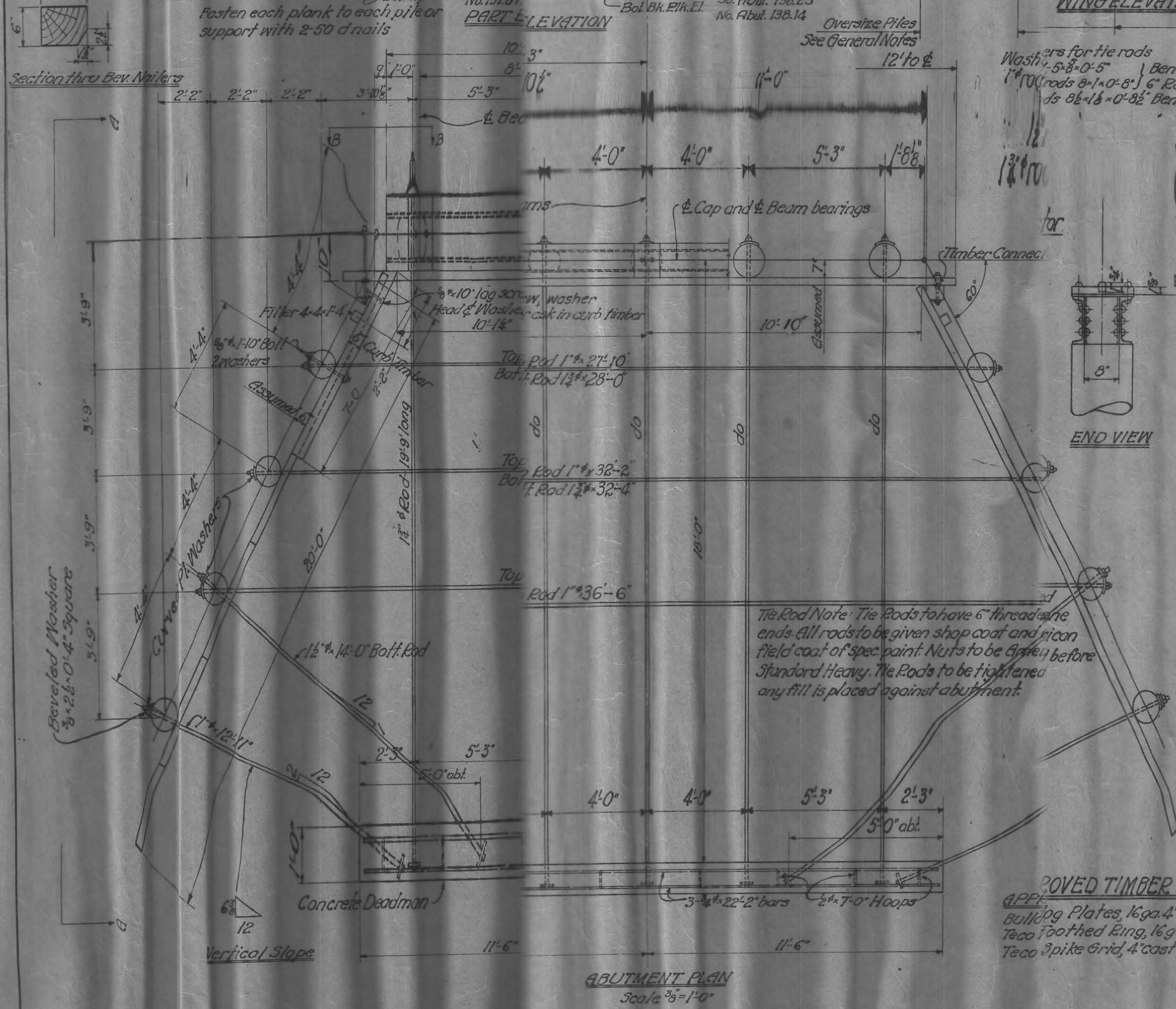
Design For  
50x20 I-BEAM SPAN  
Concrete Floor, Wood Substructure  
GENERAL & SITUATION PLAN  
Sta. 55+00.00 Proj 5-964(1)  
CRAWFORD COUNTY  
Iowa State Highway Commission  
Nov. 1949 Sheet 1 of 3





**BILL OF CREOSOLITE ABUTMENT**

PART	No.	SIZE	LENGTH	F.S.M.
Backing Plank	26	3x8	16'-0"	832
"	26	3x8	8'-0"	416
Wing Plank	24	3x8	20'-0"	960
"	12	3x8	18'-0"	432
"	12	3x8	14'-0"	336
"	16	3x8	10'-0"	320
Curb Timber	2	6x10	7'-0"	70
Beveled Nailor	2	6x8	21'-10"	175
Filler Nailor	2	3x8	4'-7"	18
Filler (Wing Rail)	2	4x4	1'-4"	4
All Creos. Lbr. Class D			TOTAL	3563



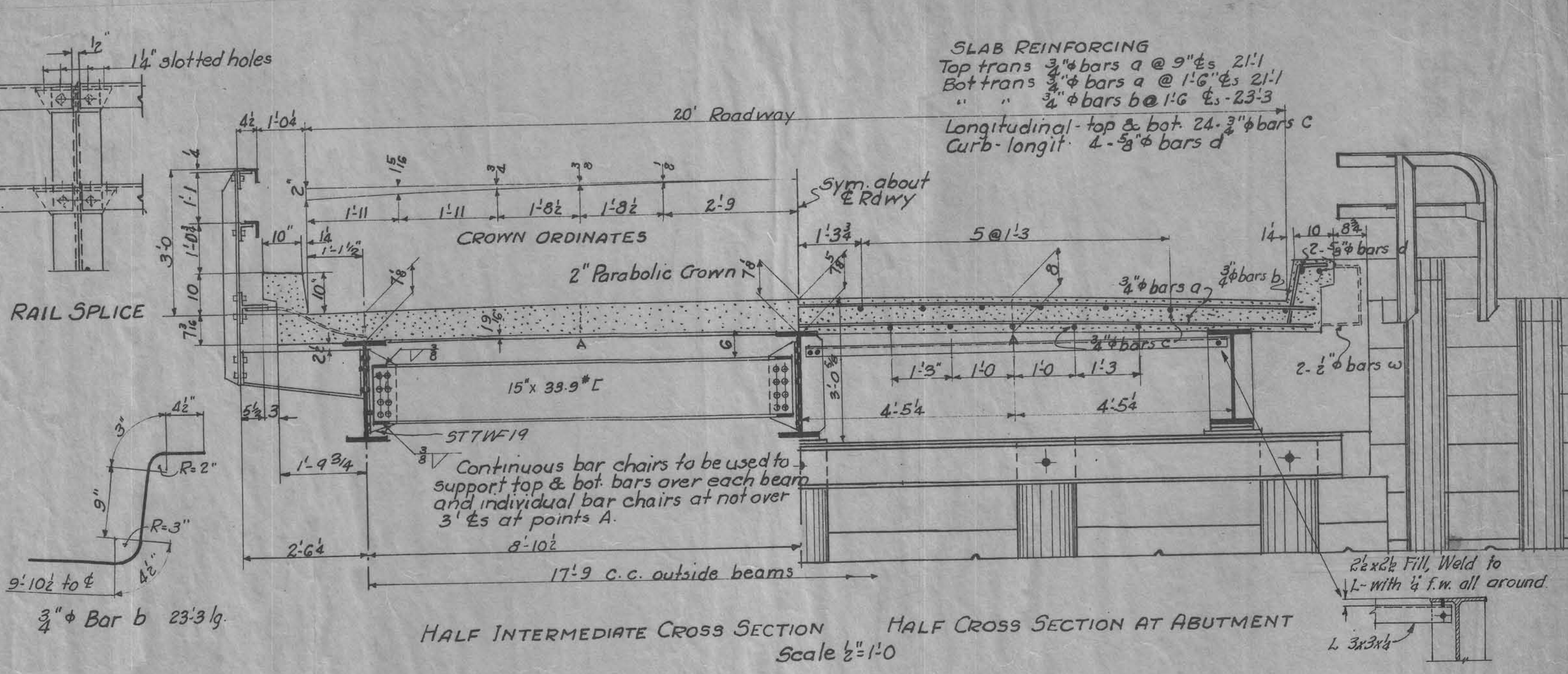
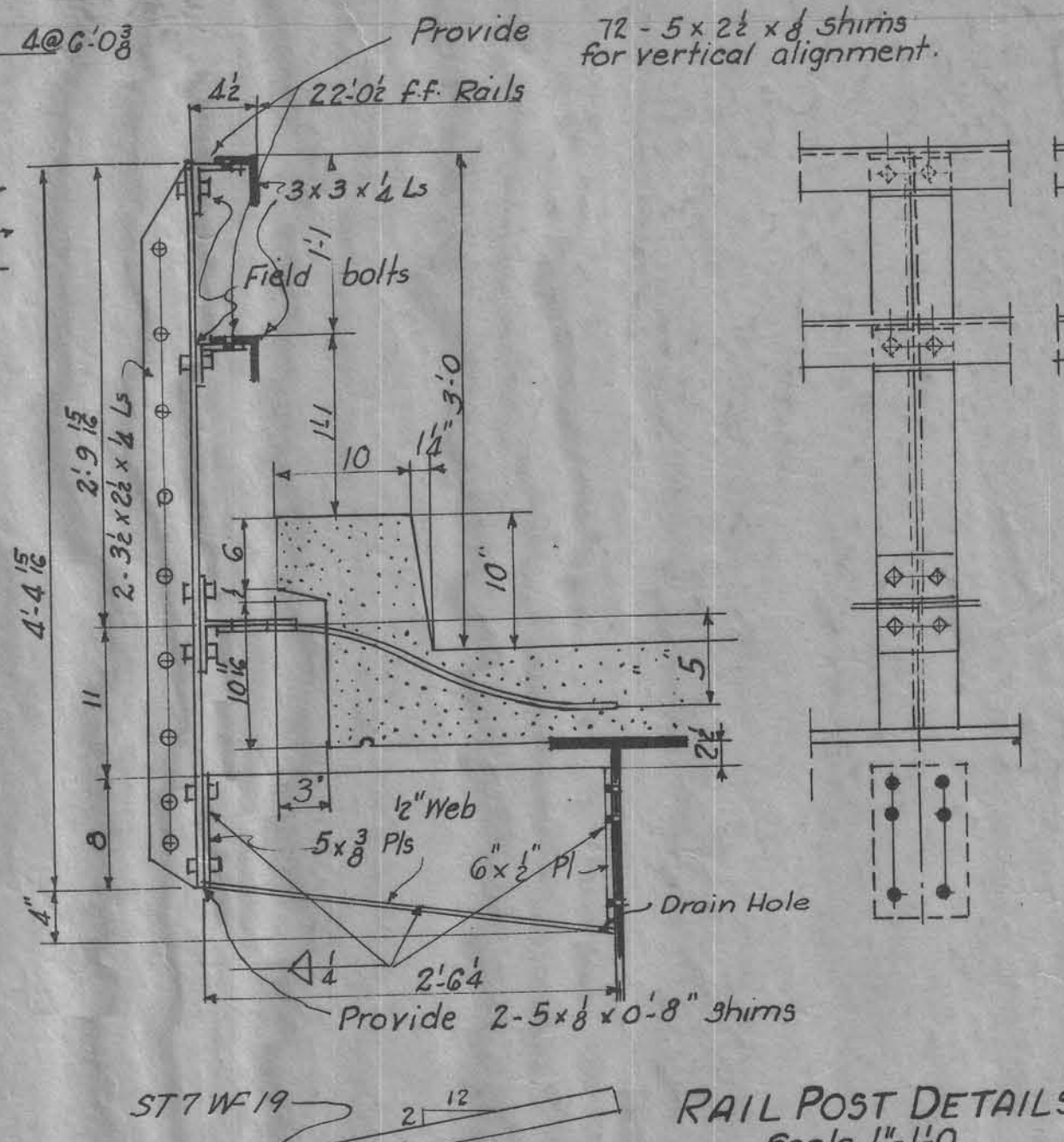
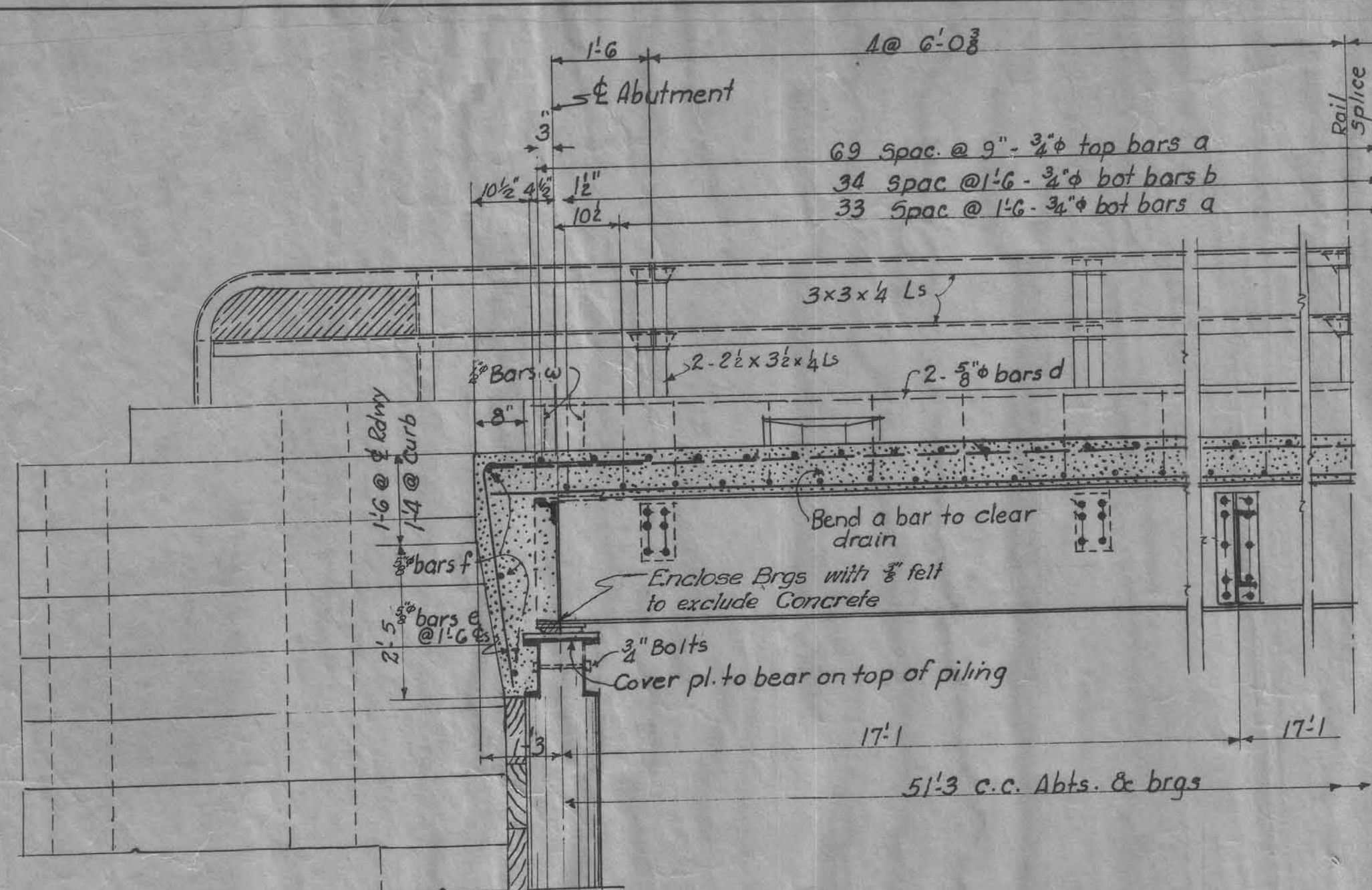
**ABUT CAP MATERIAL**  
 Cov. Pl. 1/4" x 20'-6"  
 2-10" x 20'-20'-6"  
 6-8" x 11.5'-0'-10"  
 3-Pls. 12'-1 1/2'-1'-2"  
 5-3/4" x 10" Bolts  
 6-1 1/2" x 0'-1 1/2" Pinfles  
 3/4" Rivets

**GENERAL NOTES**  
 All piles to be driven to full penetration if practicable. Required bearing value of main abutment piles equals 11 Tons.  
 In place of 3-8 planks substituted provided thickness shown, 3-12 or 3-10 planks may be substituted provided that the floor height shown is maintained. Piles except that the floor specifications applies to all creosolite piles have a minimum diameter of 14" and min. tip diam. of 10". Curb timbers to piles to be creosolite.  
 All timber and 3" from butt of 4" and min. tip diam. of 10".  
 Hardware included: nuts, lag screws and washers as all bolts, M.I. washers, tie rods, plate washers, rods are included in timber connectors.  
 Standard specifications for structural steel estimate.

**ESTIMATED QUANTITIES**

PART	QUANTITY
Concrete	5.5 lbs
Reinf. Steel	47.5 lbs
Structural Steel	747.5 FBM
Creosolite Lumber	7120
Creosolite Piles	10 @ 45
Hardware	246 cu.
Excav. Cl. 20	325 cu.
" Cl. 21	14 @ 45





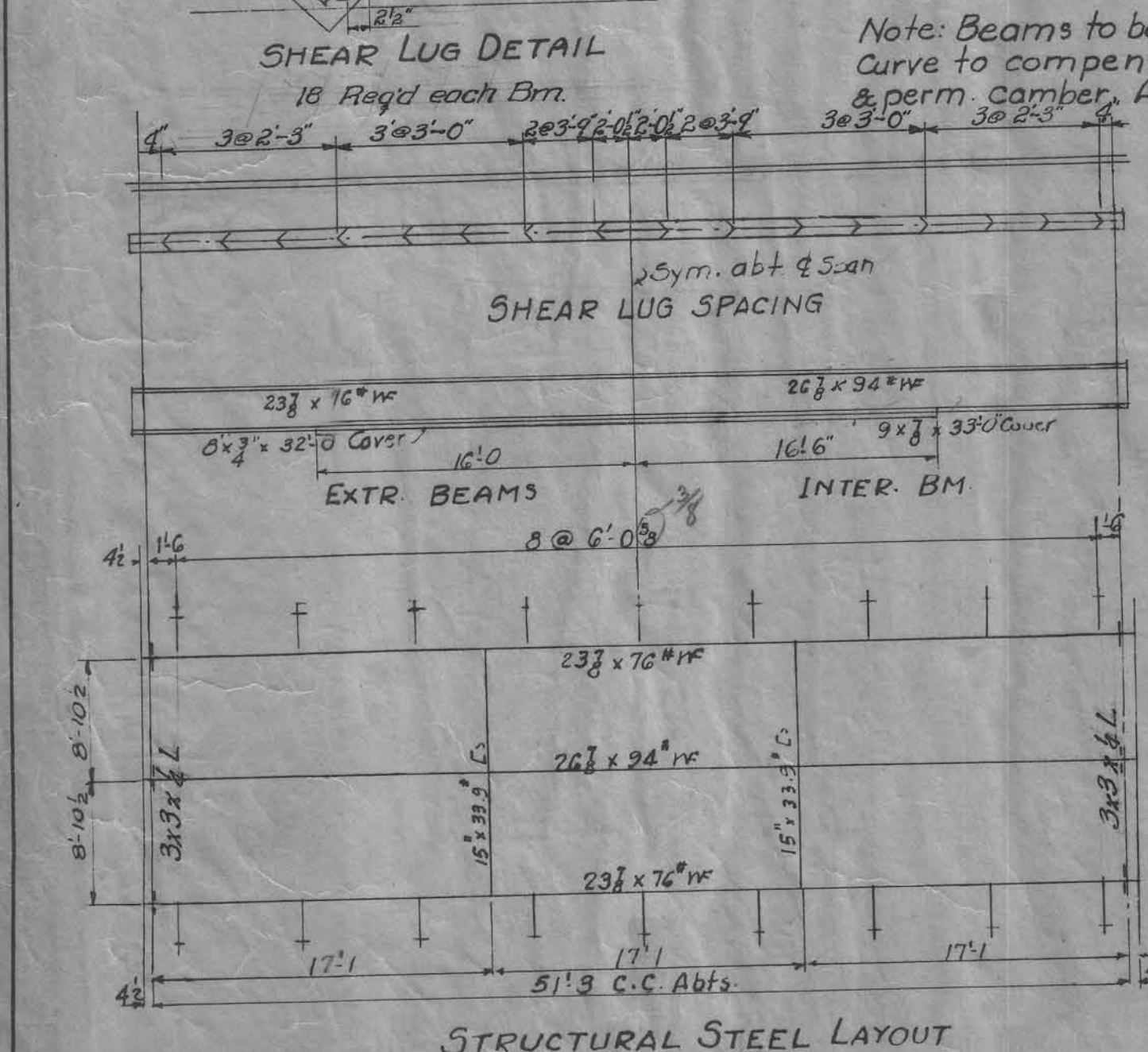
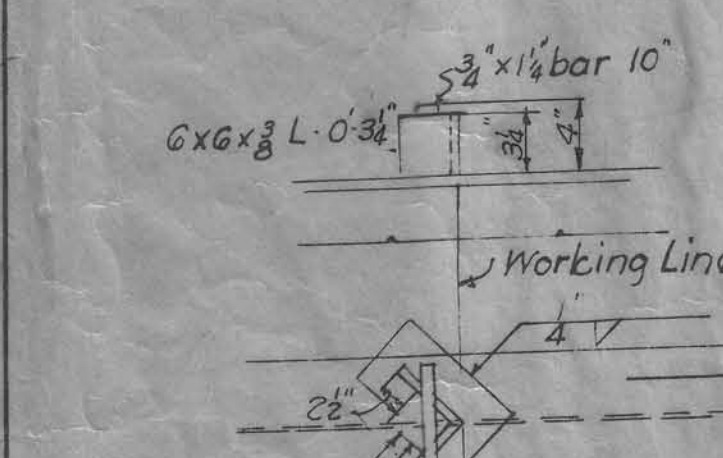
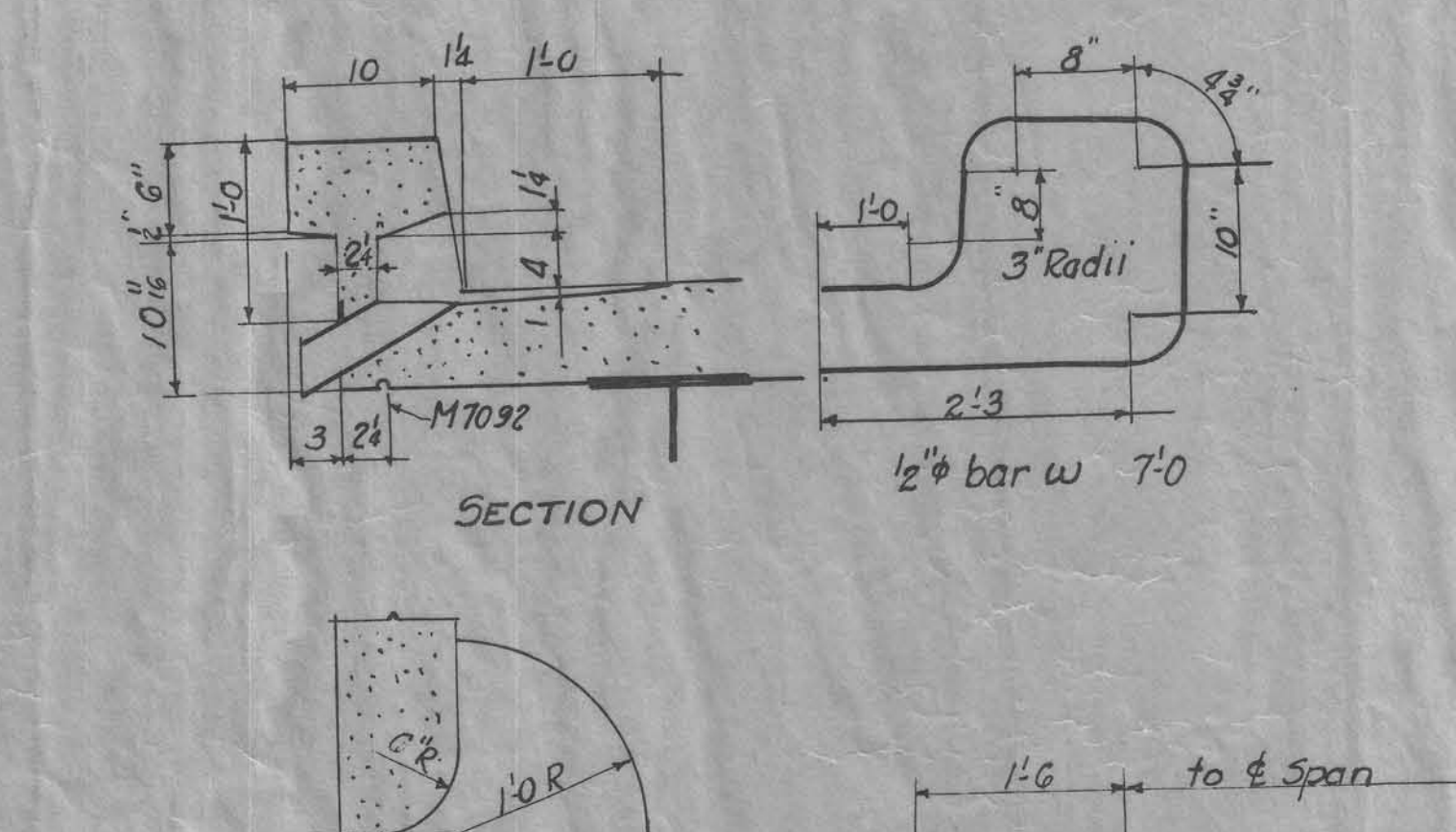
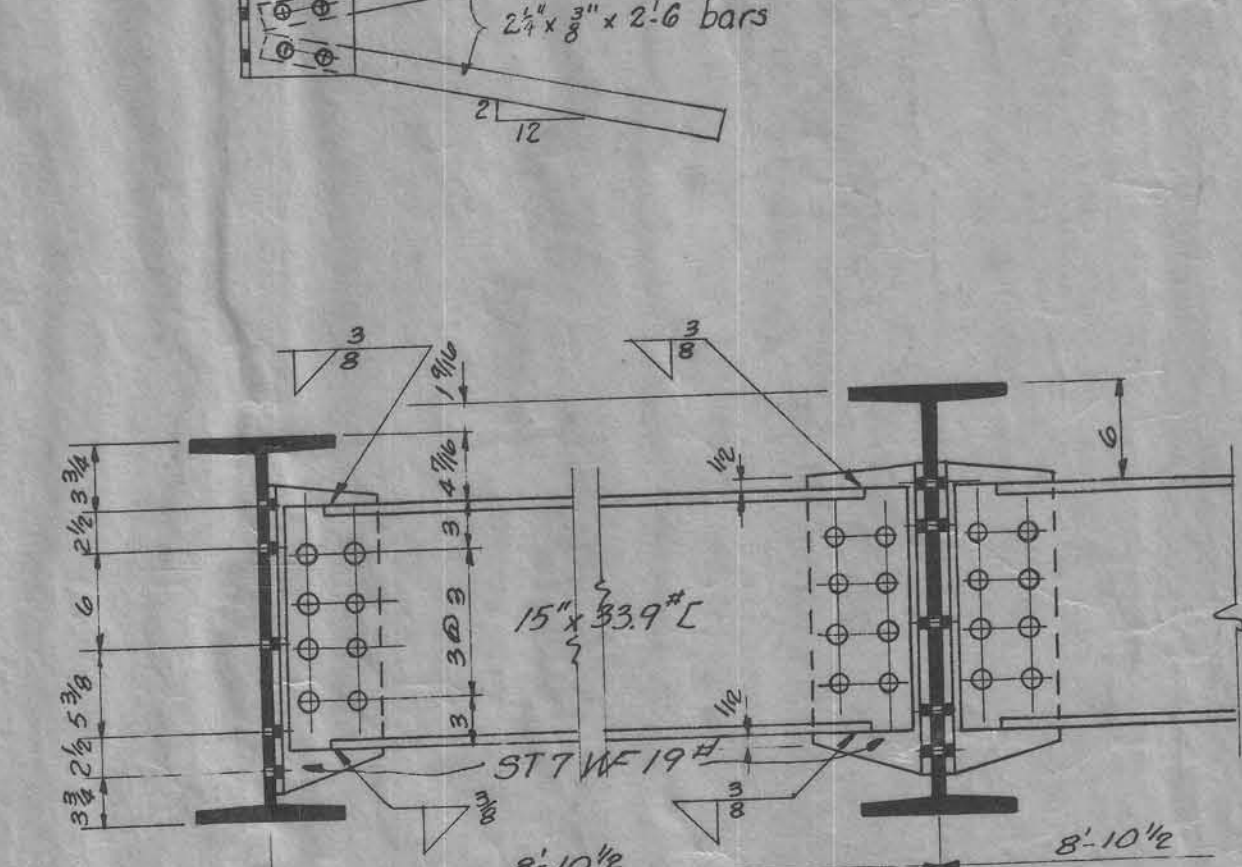
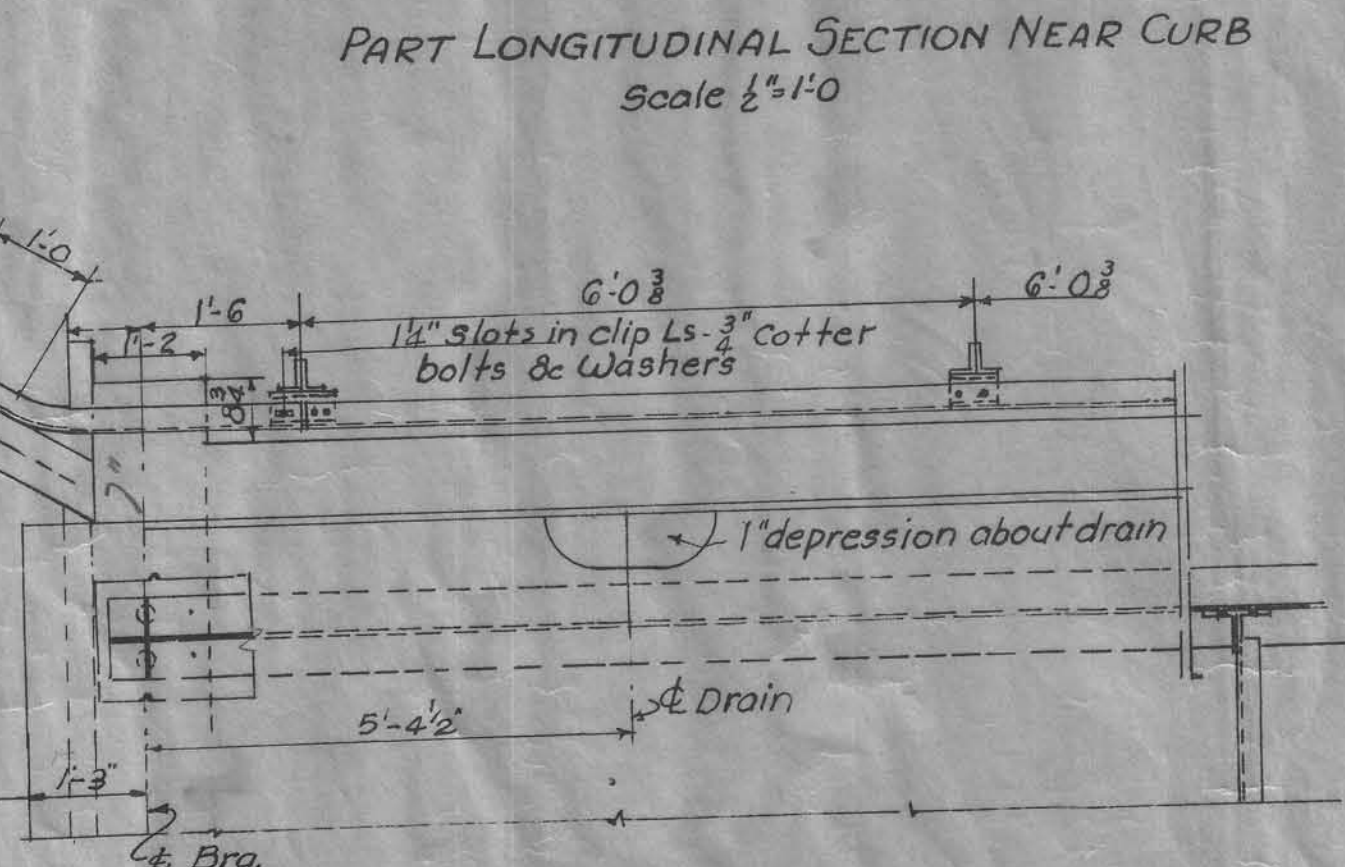
**REINFORCING STEEL SCHEDULE - ESTIMATE**

Mark	Location	Shape	Size	No	Length	Weight
a	Slab - Top & bot. tran		3/4"φ	104	21'-1"	3295
b	" - Bot. trans		3/4"φ	35	23'-3"	1224
c	" - Top & bot. long		3/4"φ	48	28'-0"	2020
d	Curb - long		5/8"φ	8	27'-0"	225
e	Backwall vert		5/8"φ	28	5'-10"	170
f	Backwall horiz.		5/8"φ	6	19'-8"	123
w	Backwall - ends		1/2"φ	8	7'-0"	37
Total Reinf. Steel						7094 #
Structural Steel						21975 #
Concrete - Class A						37.3 CY

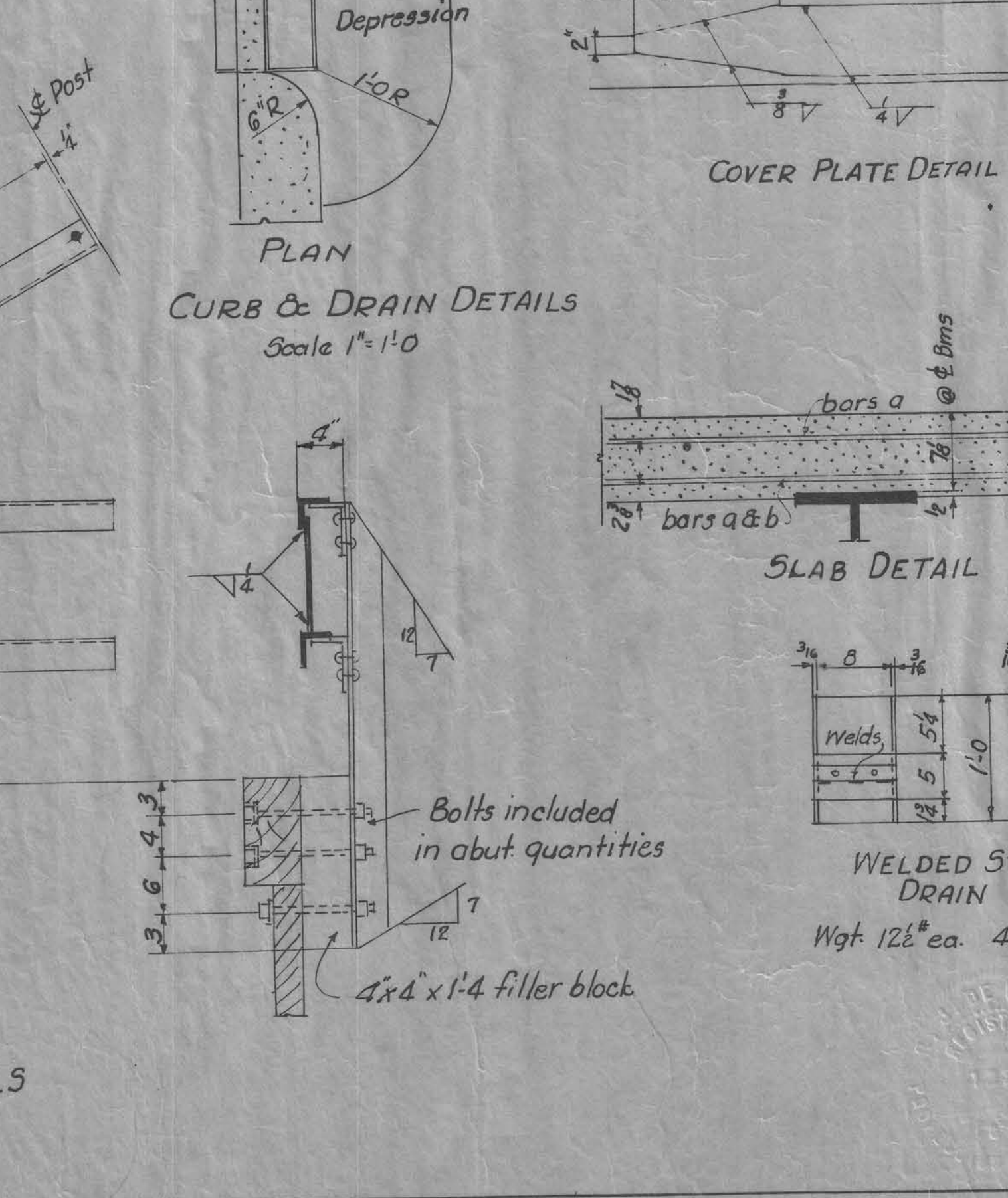
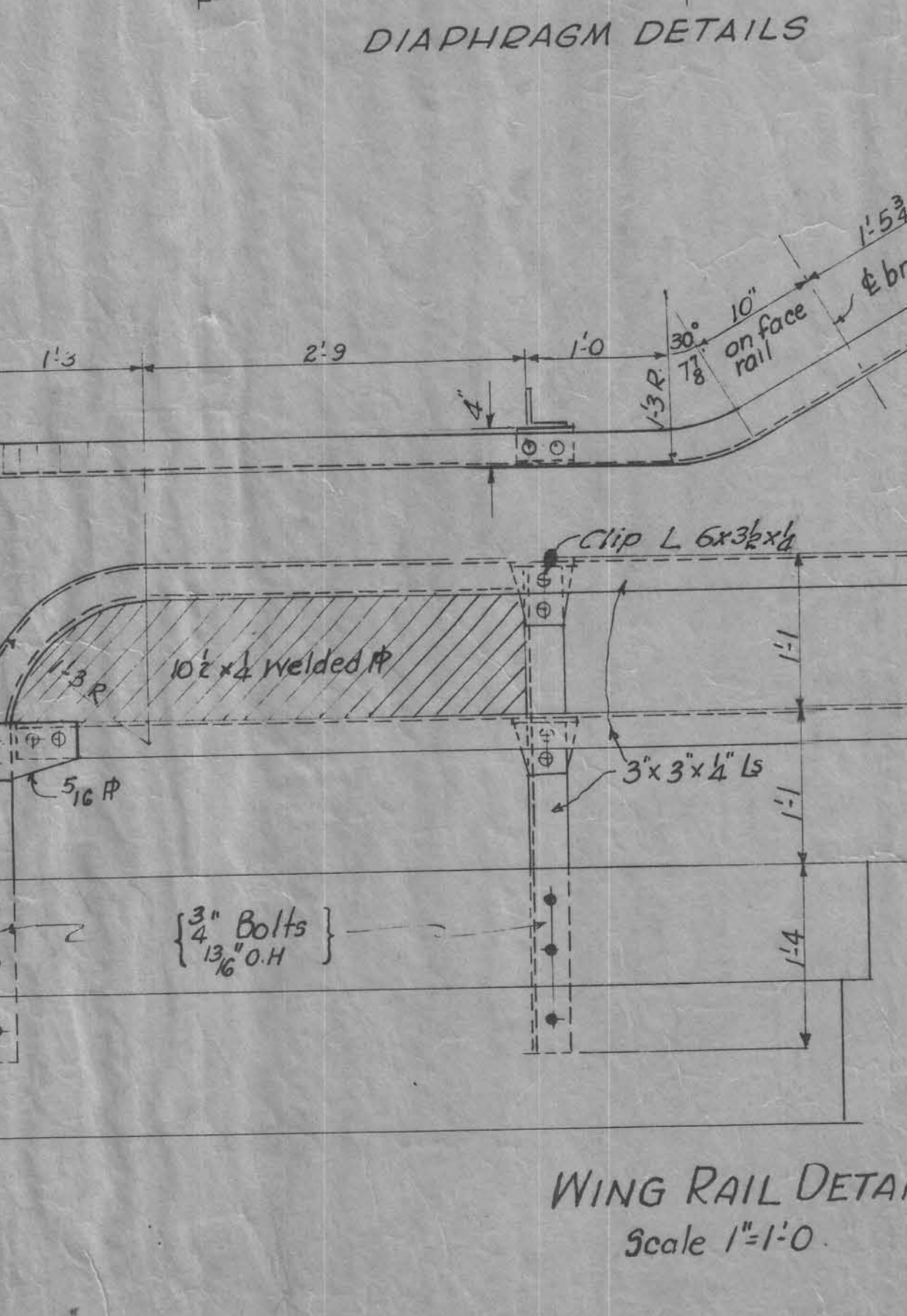
**MAXIMUM BEAM MOMENTS**

Load	Intr. Bm.	Extr. Bm.
Dead Load	361.5	258.1
* Live Load	238.5	193.4
* Impact	67.5	54.7
Total	667.5	506.2

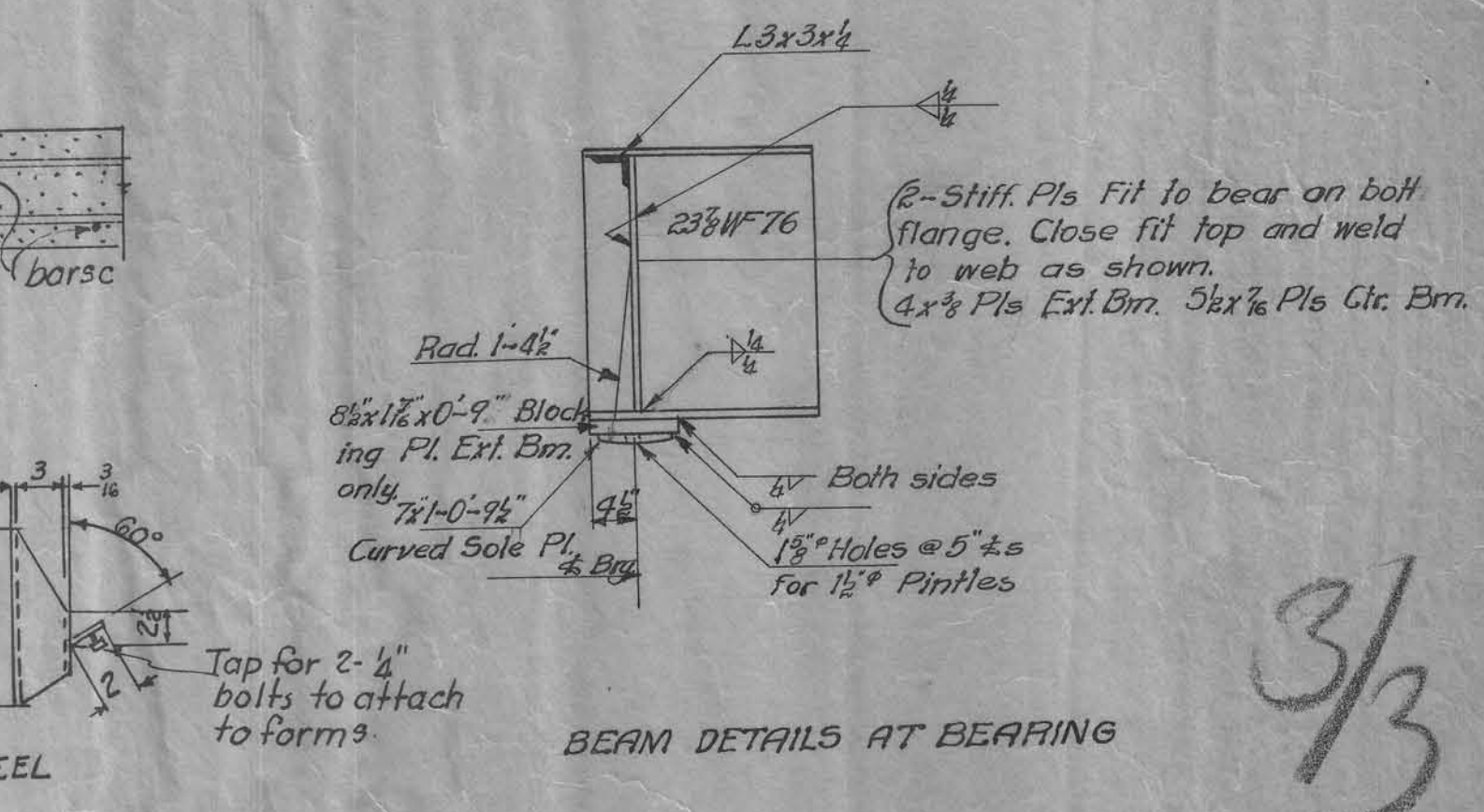
\* Taken by Composite Beam Action



**DETERMINATION OF SHEAR LUG SPACING**  
 Maximum value of shear lug is 52700" with doubled truck load. Maximum shear lug spacing is 4'-0".



**General Notes:**  
 Bridge designed for H-15 loading (single lane) Slab as detailed includes 1/2" wearing surface.  
 All field connections to be bolted. Rivets & bolts to be 3/4" - Open holes 1 1/16".  
 Paint to be omitted from top of top flanges of beams and shear lugs.  
 Forms for curb and floor to be supported by beams.  
 Specifications: AASHTO. Std. Spec. 1949 edition for design.  
 Std. Spec. of Iowa State Highway Commission, 1948 series for construction.



**50' x 20' I-BEAM SPAN**  
 Concrete Floor - Creo Pile Substructure  
**SUPERSTRUCTURE DETAILS**  
 Station 56+00.00 Project No. 5-964(1)  
**CRAWFORD COUNTY**  
 Iowa State Highway Commission  
 Dec. 1949 Sheet 3 of 3