

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.		CONCRETE CU. YDS.	REINFORCING STEEL LBS.	STRUCTURAL STEEL LBS.	TREATED LUMBER FBM	TREATED PILES, LINFT.	HARDWARE LBS.	CLASS 10	CLASS 20	CLASS 21	
449	55+00	Willow	29-30	50' x 20' I-Beam Span Bridge	42.4	7569	29449	7126	12633 - 890	246	1100	325	14	50' x 16' Porty Truss
549	173+25	Willow	17-18	50' x 20' " " " "	42.4	7569	29449	6480	12633 - 920	224	850	255	16	38' x 16' I-Beam, 25' x 16' Wood Bridge.
<i>Total of Bridges</i>					84.8	15138	58898	13606	1810	470	1950	580	30	

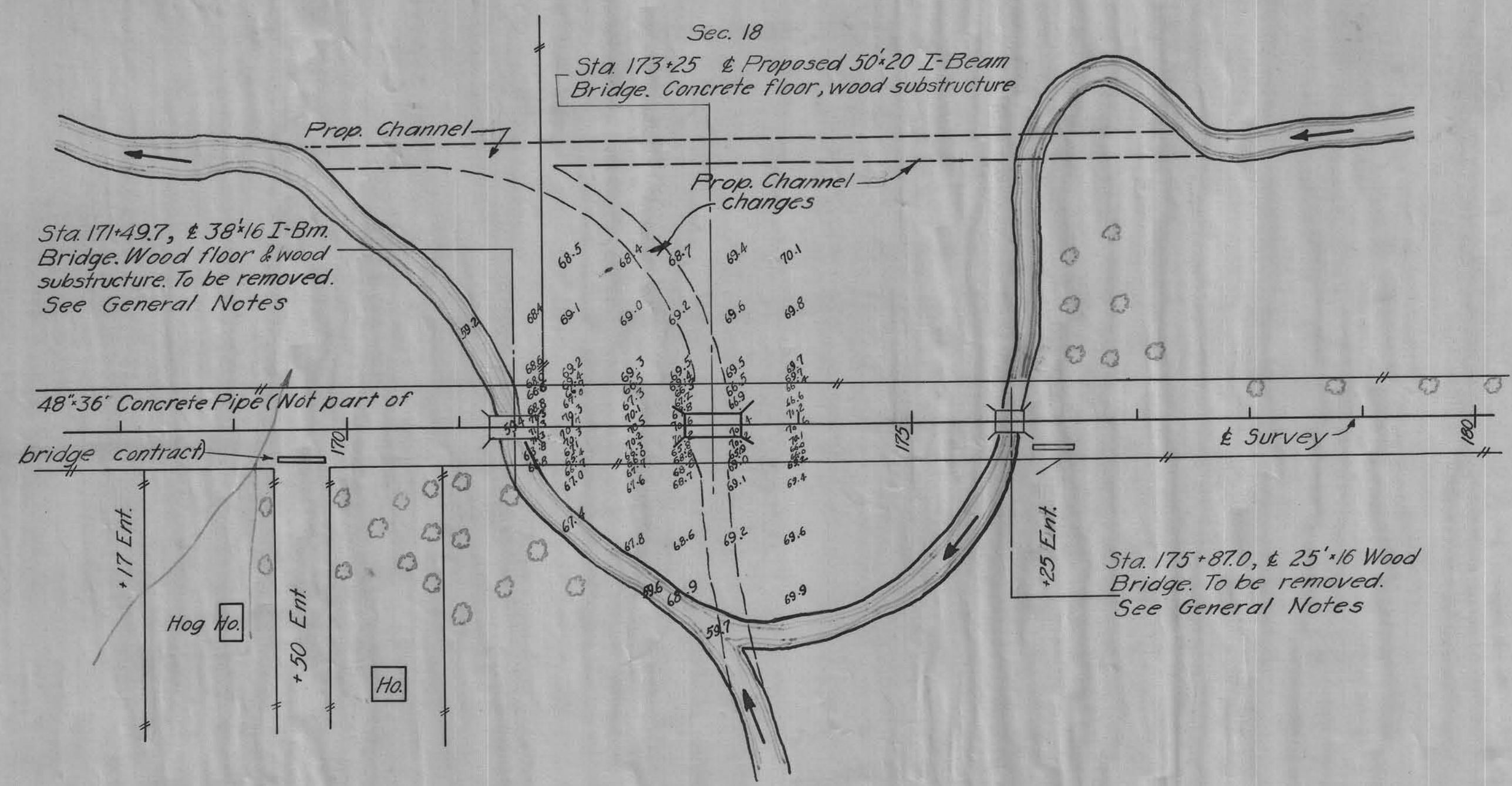
* Design 449 Includes 10 over size piles 45' long.
 " 549 " 10 " " " 50' "

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.

APPROVED

Bench Mark: Sta. 70+95 60' Tree 48 East El. 174.78

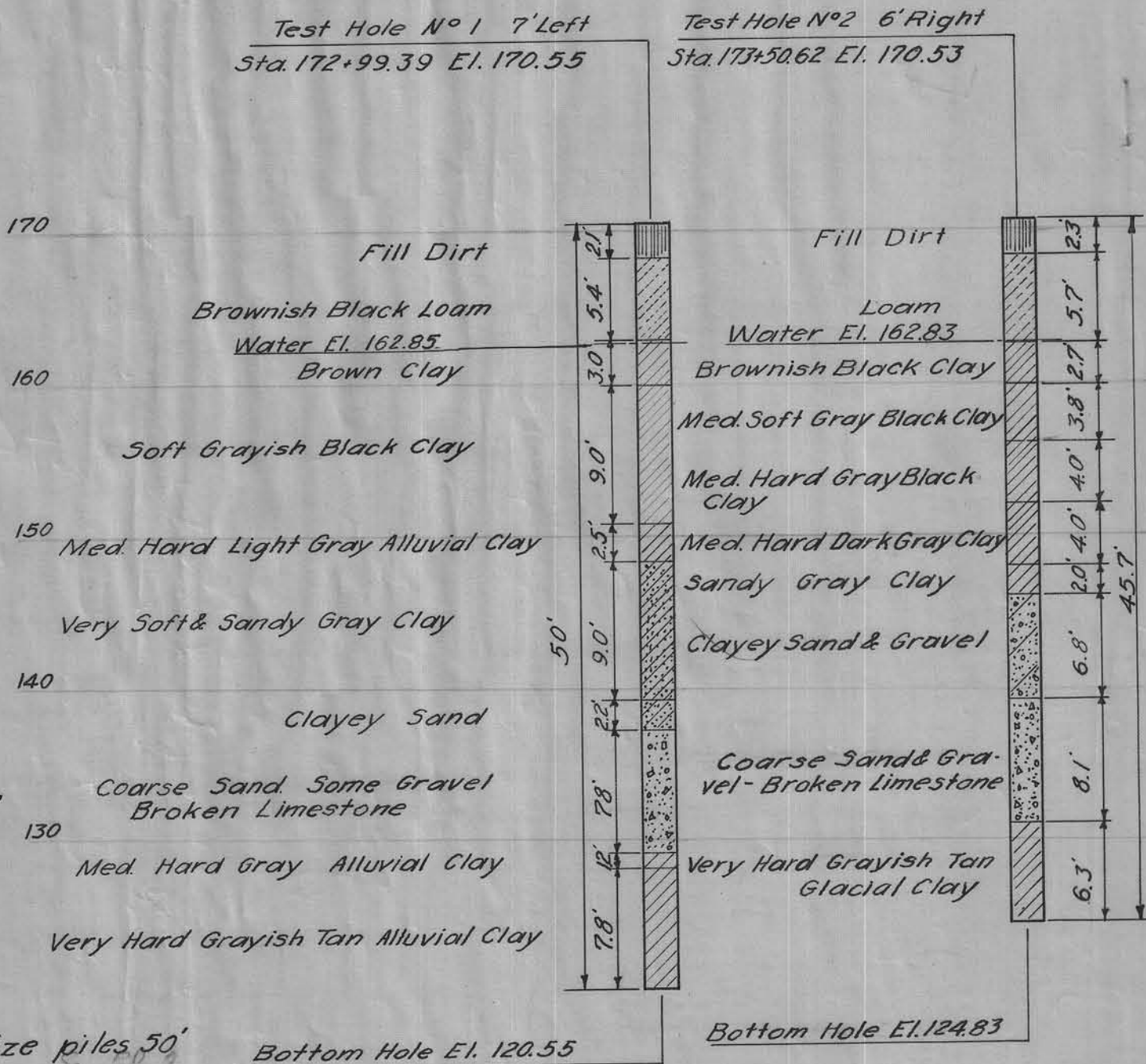


Sec. 17
GENERAL PLAN
Scale 1"=100'
DA. 5760 ac.
Rolling to Hilly

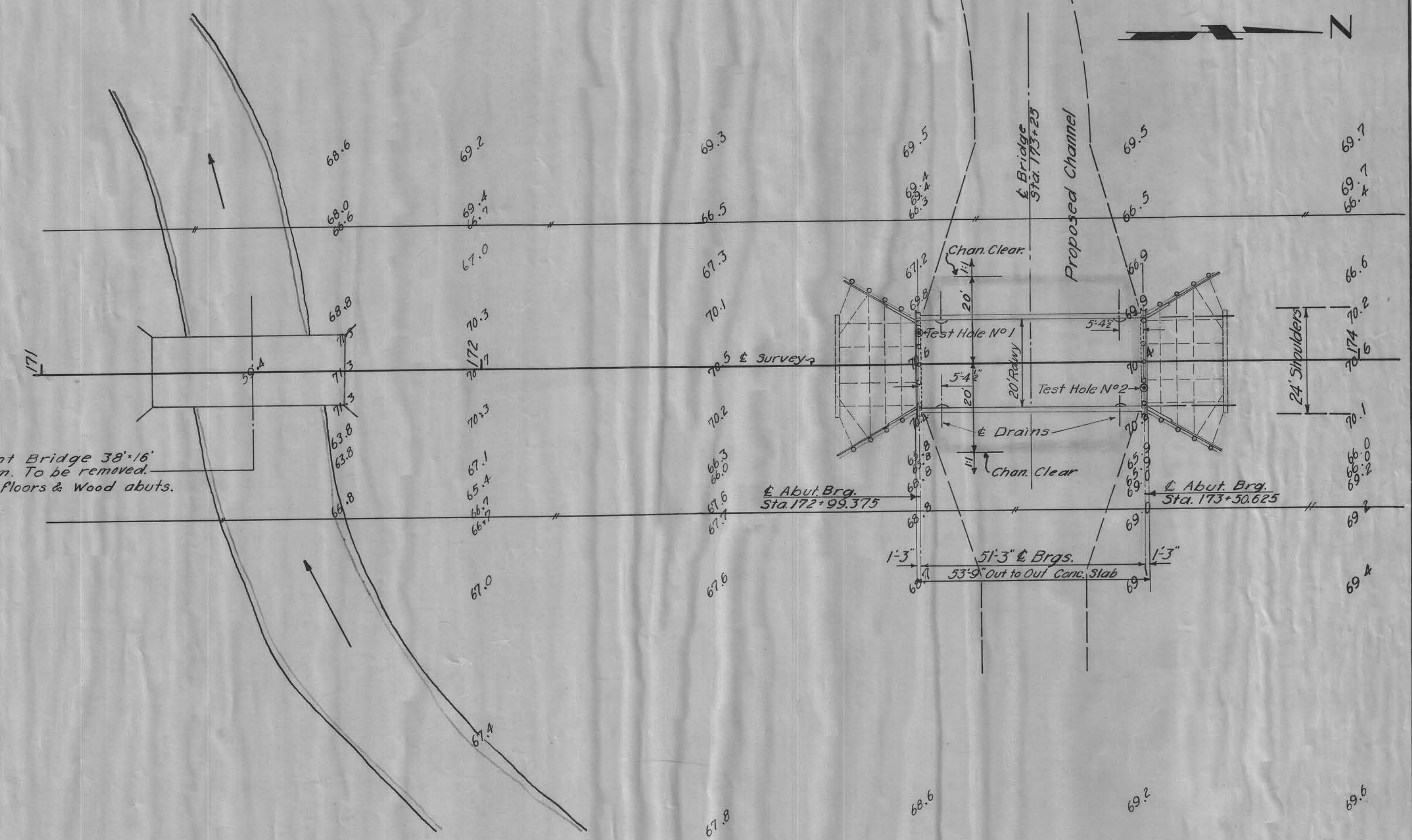
GENERAL NOTES
This bridge is designed for Single Lane H-15 loading with modifications shown on Sheet 3.
Bridge Contractor is to clear channel under bridge for distance of 20' each side of centerline of roadway as shown by shaded areas in Situation Plan and Section.
Red lines on tracing or faint lines on a print indicates parts of present construction.
Bridge Contractor is to remove present bridges (See General Plan) and pile all material neatly within 200' of site. Pile substructure need not be removed. If a run around detour is used, these present bridges are not to be removed until proposed bridge is open for traffic.

SPECIFICATIONS
Design: AASHO Series 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. 4135.04A"

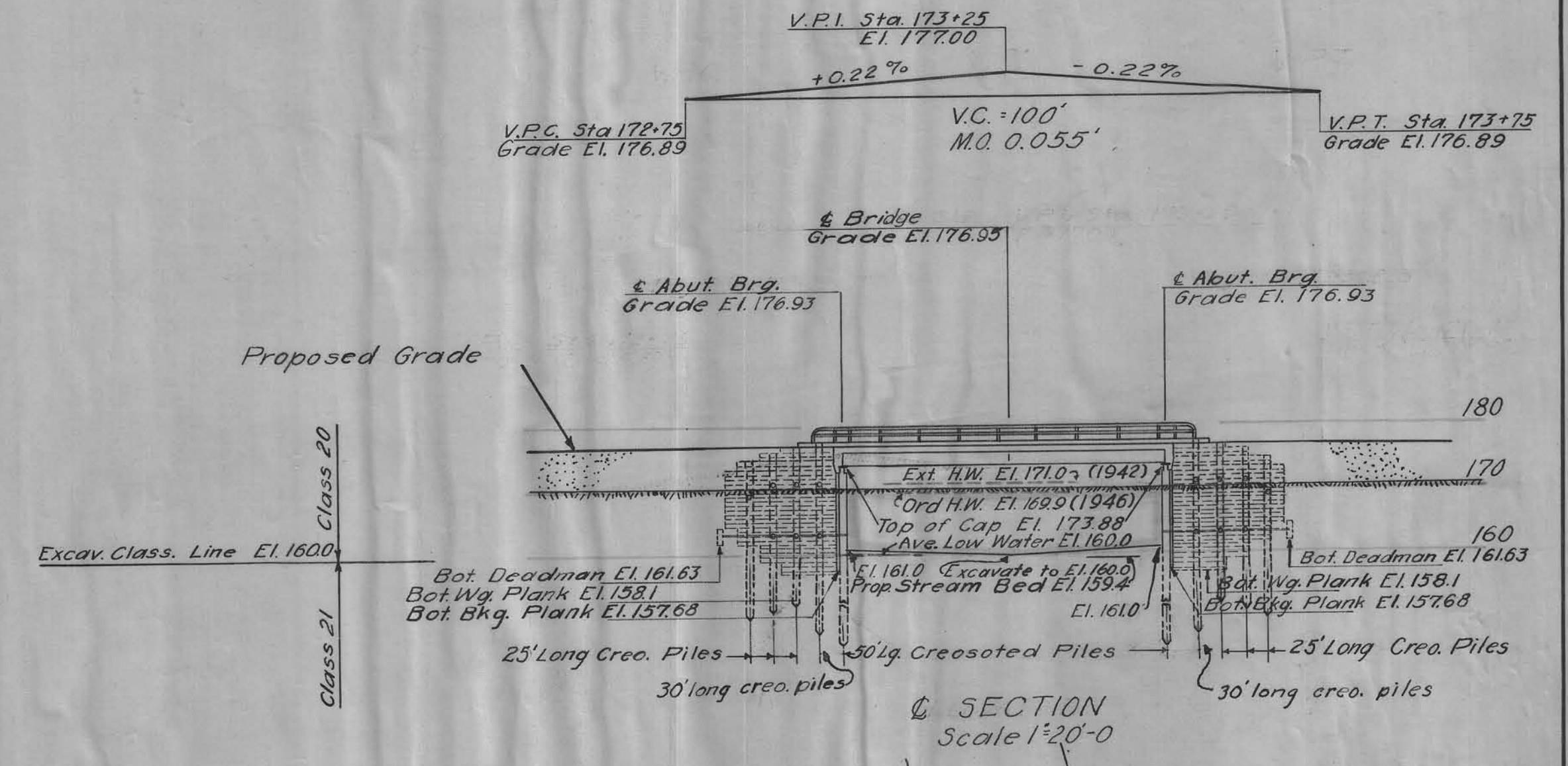
ESTIMATED TOTAL QUANTITIES		
Part	Superstr.	2-Abuts. Totals
Concrete	37.3	5.1 42.4 cy
Reinforcing Steel	7094	475 7569 lb
Creosoted Lumber		6480 6480 FBM
" Piles		920 Linft
Structural Steel	21975	7474 29449 lbs
Hardware		224 224 lbs
Cl. 20 Excav.		255 255 cy
Cl. 21 "		15.7 15.7 cy
Cl. 10 (Channel Excav.)		8.50 cy
Removal of 2 Bridges		Lump Sum



SOUNDING DATA
Scale 1"=10'



SITUATION PLAN
Scale 1"=20'



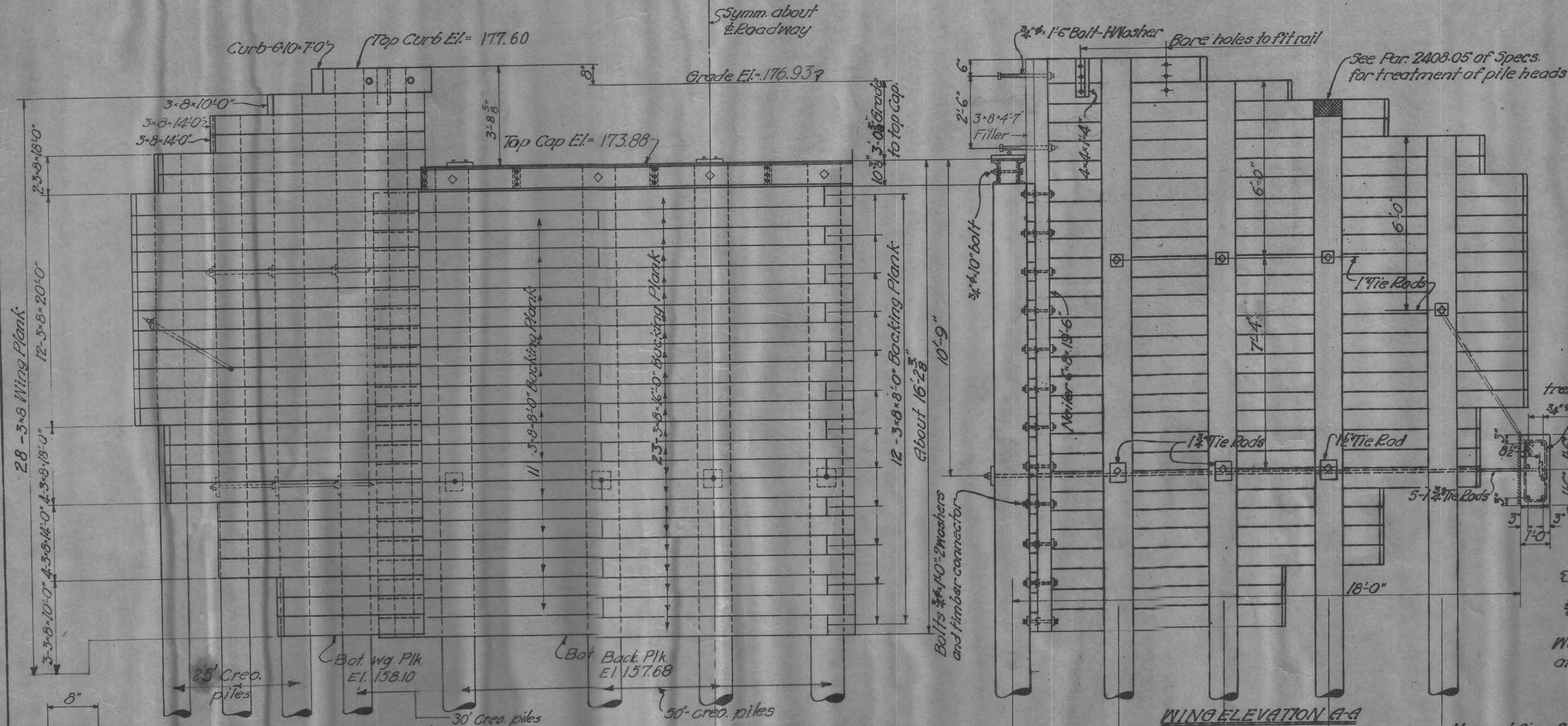
SECTION
Scale 1"=20'

Present Bridge 38'x16' I-Beam. To be removed. Wood floors & Wood abuts.

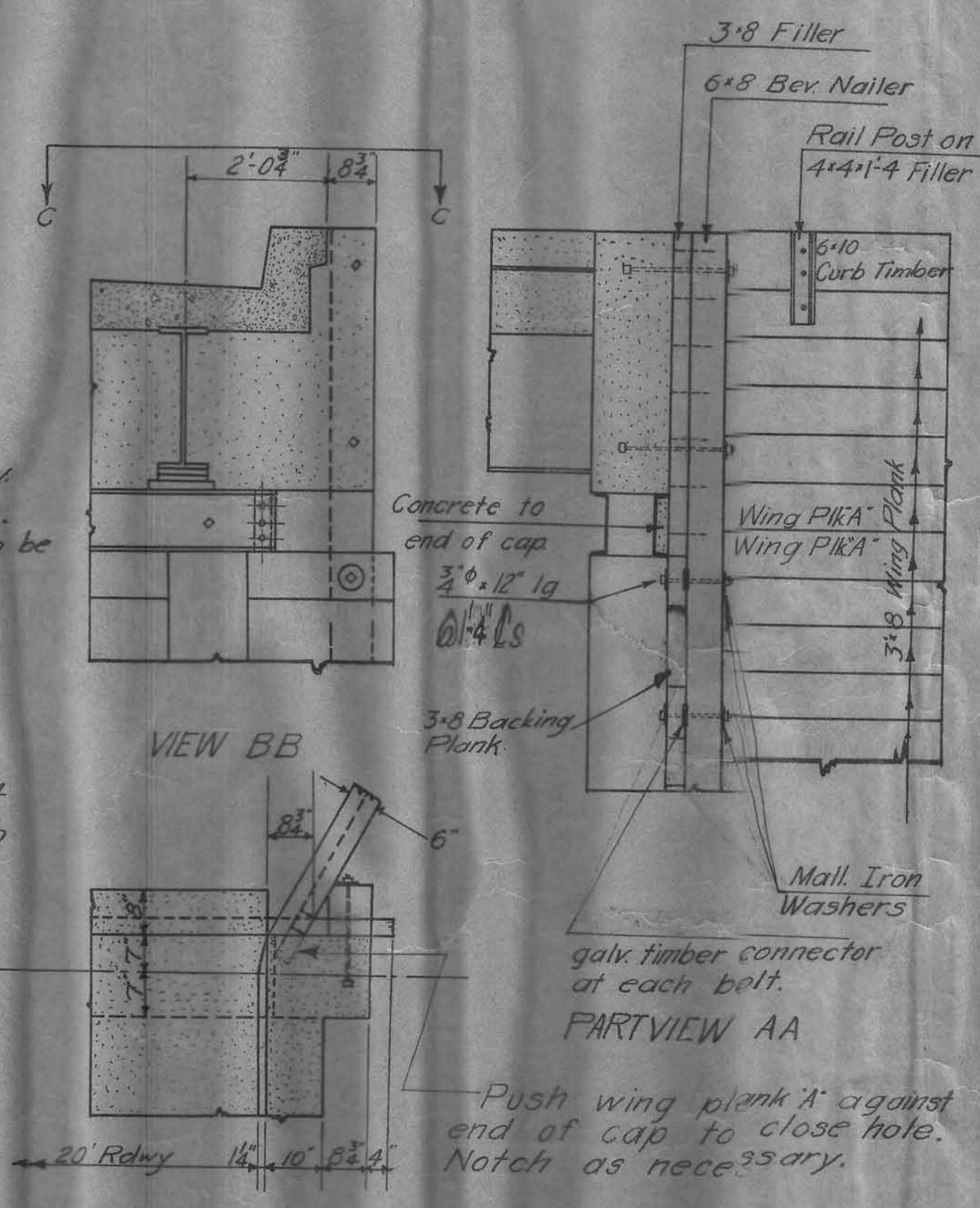
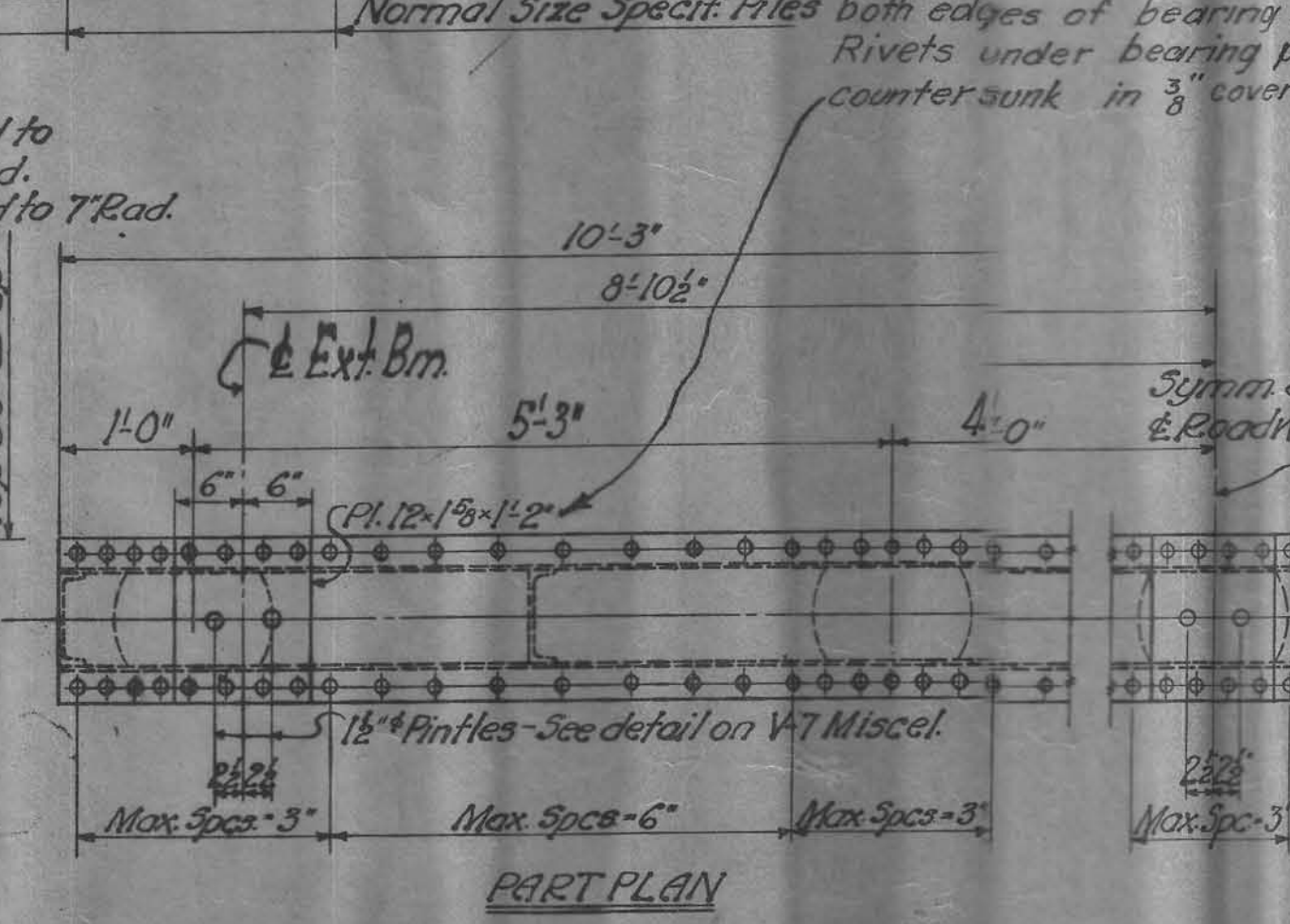
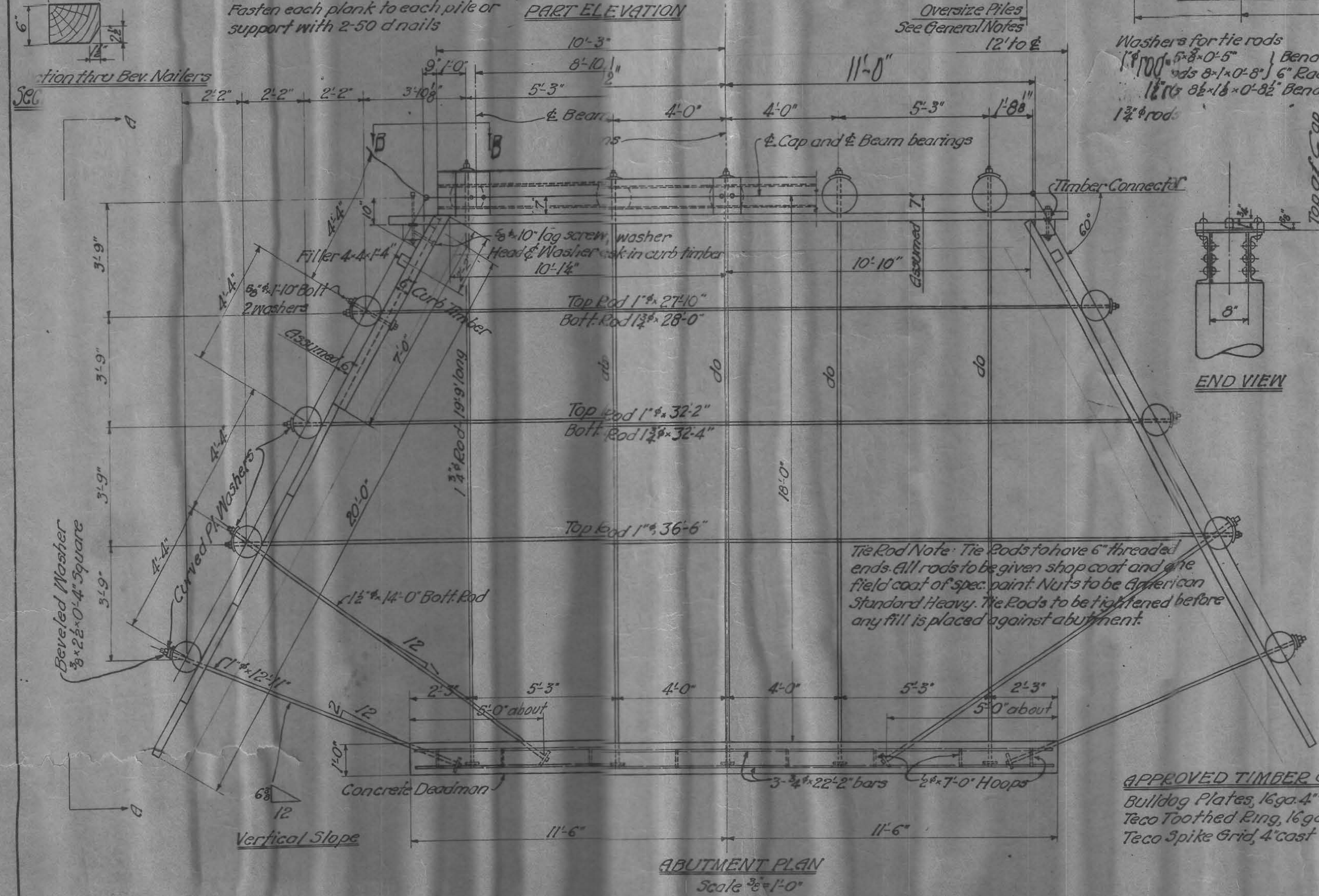
Location:
Over Willow Creek
Sections 17-18
Willow Twp.
Crawford Co.

Design for
50'x20' SINGLE SPAN I-BEAM BRIDGE
Concrete Floor Wood Substructure
GENERAL AND SITUATION PLANS
Station 173+25 Project No. 5-964(1)
CRAWFORD COUNTY
Iowa State Highway Commission
December 1949 Sheet 1 of 3

Design: 549 Crawford Co. File No. 14324
Design by RPD Traced by JPA Checked by DB + JRS



PART	No.	SIZE	LENGTH	FB.M.
Backing Plank	23	3x8	16'-0"	736
"	23	3x8	8'-0"	368
Wing Plank	24	3x8	20'-0"	960
"	12	3x8	18'-0"	432
"	12	3x8	14'-0"	336
"	8	3x8	10'-0"	160
Curb Timber	2	6x10	7'-0"	70
Beveled Nailor	2	6x8	19'-6"	156
Filler (Nailor)	2	3x8	4'-7"	18
Filler (Wing Rail)	2	4x4	1'-4"	4
All Creos. Lbr. Class D			TOTAL	3240



See Backfill Note below. Line trench with tar paper before concrete is placed.

Welding of Pls. to Beds of Deadman.

ALTERNATE DETAIL
Weld to cover pl. with 3/8" c.w. both edges of bearing pl. Rivets under bearing pl. to be countersunk in 3/8" cover pl.

- ABUT. CAP MATERIAL**
- Cov. PL 1/2" x 20'-6"
 - 2-10 LB 20'-20'-6"
 - 6-8 LB 11'-5'-0'-10"
 - 3-Pls. 12'-1/8"-1'-2"
 - 5-3/4" x 10" Bolts
 - 6-1 1/2" x 0-1 1/2" Pintles
 - 3/4" Rivets

GENERAL NOTES

All piles to be driven for full penetration if practicable. Required bearing value of main abutment piles equals 11 tons.

In place of 3x8 planks shown, 3x12 or 3x10 planks may be substituted provided that at least the wall height shown is maintained.

Section 4.4.2 of Standard Specifications applies to all creosoted piles, except that the five oversize piles under each abut. cap shall have a minimum diam. 3" from butt of 14" and min. tip diam. of 10"

All timber and piles to be creosoted. Curb timbers to be given two coats of aluminum paint.

Hardware includes all bolts, M.I. washers, nuts, lag screws and timber connectors.

Tie rods, plate washers and nuts for tie rods are included in structural steel estimate.

Standard Specifications Iowa State Highway Commission Series 1949.

PART	2 ABUT.
Concrete	5.1 cu
Reinf. Steel	475 lbs
Structural Steel	7474 lbs
Creosoted Lumber	6450 FB.M.
Creosoted Piles	10 @ 50'
	4 @ 30'
	12 @ 25'
Hardware	224 lbs
Cl. 20 Excav.	255 cu
Cl. 21 Excav.	159 cu

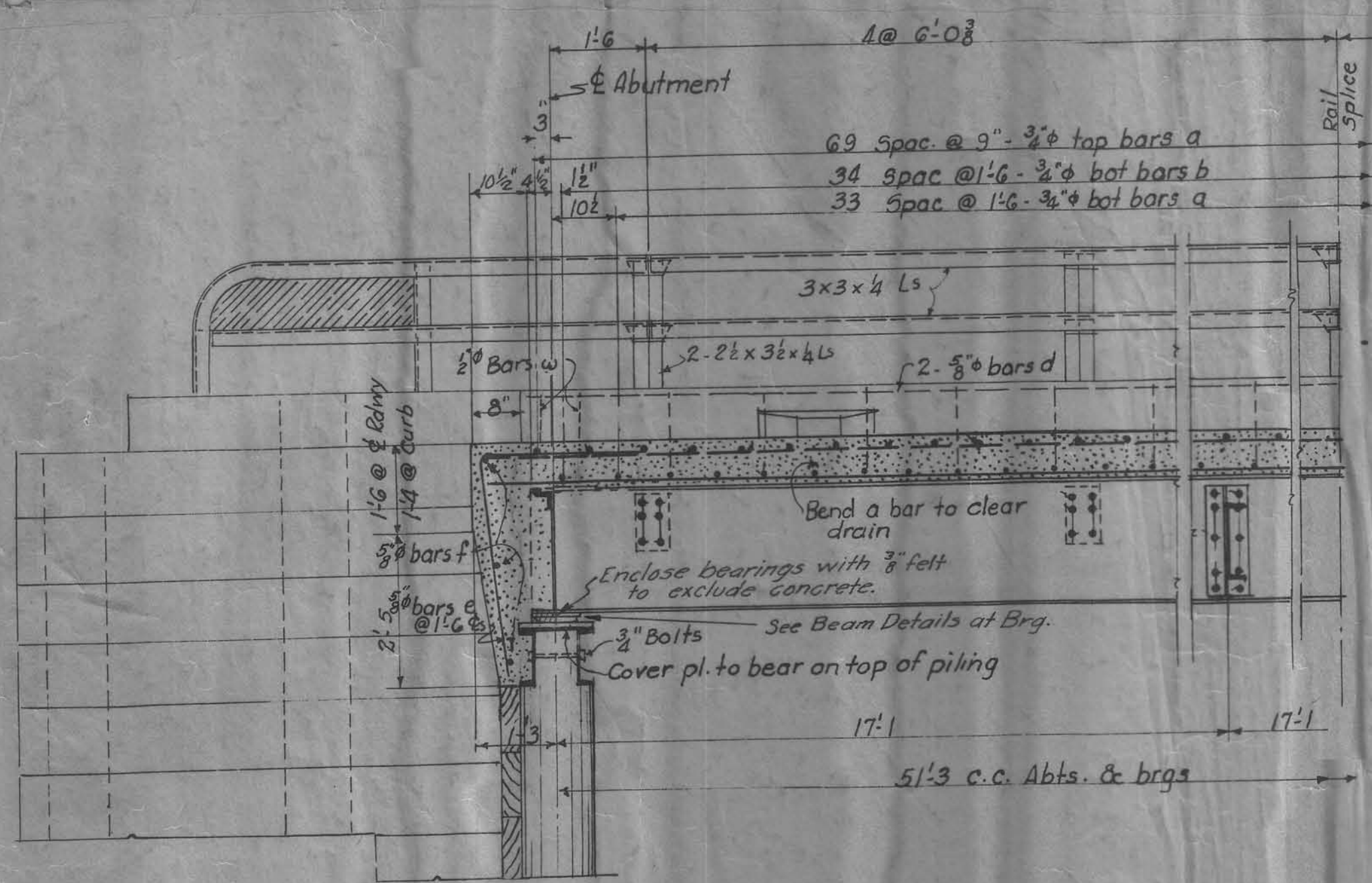
APPROVED TIMBER CONNECTORS

- Building Plates, 16ga. 4"x4"
- Teco Toothed Ring, 16ga. 3 3/8"x4"
- Teco Spike Grid, 4" cast

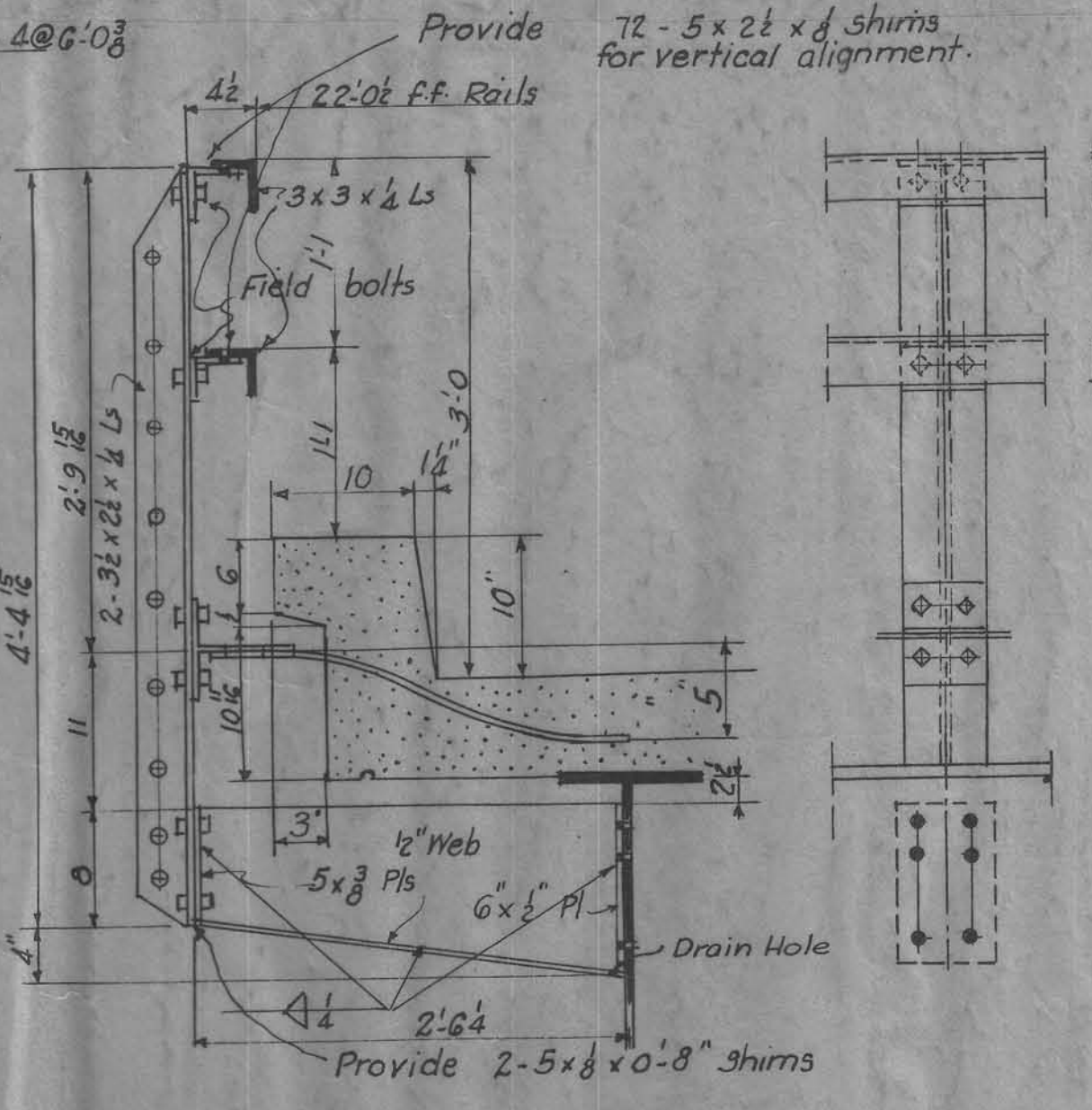
Backfill Note

Bridge contractor to backfill all material excavated in building abutments and anchorages. All backfilling to be thoroughly compacted by mechanical tamping except area within 6' distance from backwall and wings to be hand tamped.

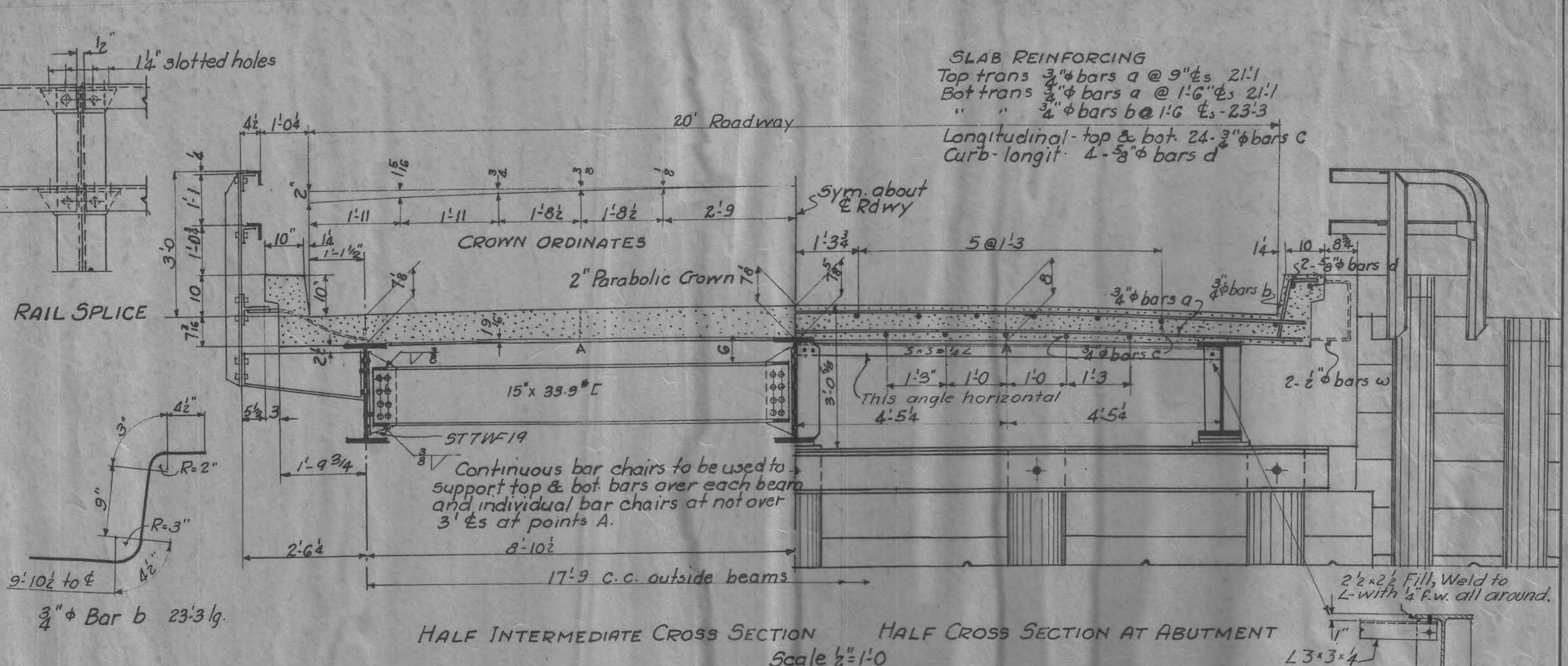
Design for 50 x 20' SINGLE SPAN I-BEAM BRIDGE
Concrete Floor Wood Substructure
SUBSTRUCTURE DETAILS
Station 173+25 Project No. 5-964(1)
CRAWFORD COUNTY
Iowa State Highway Commission
Dec. 1949 Sheet 2 of 3



PART LONGITUDINAL SECTION NEAR CURB
Scale 1/2"=1'-0"



RAIL POST DETAILS
Scale 1 1/2"=1'-0"



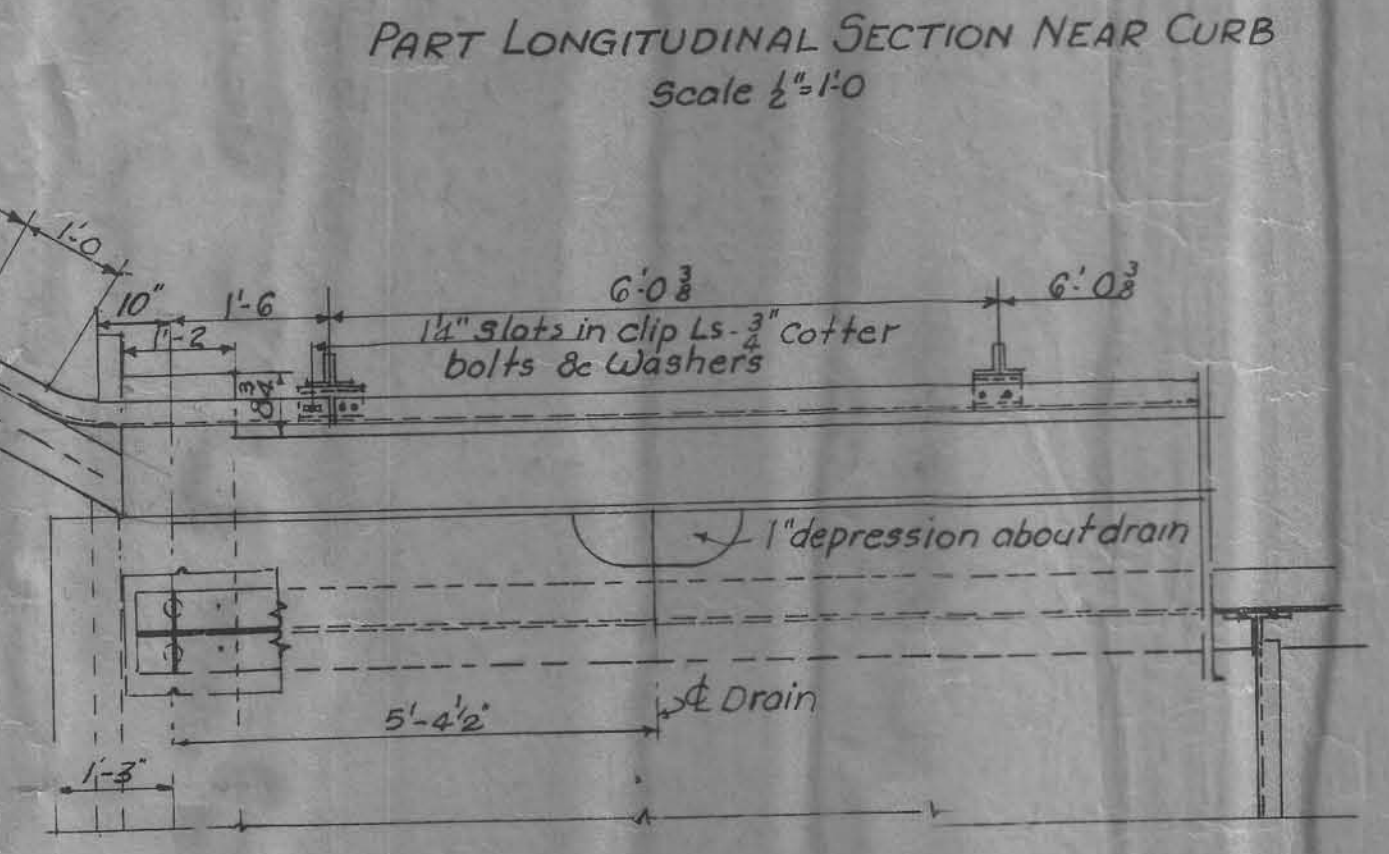
HALF INTERMEDIATE CROSS SECTION
Scale 1/2"=1'-0"

SLAB REINFORCING
Top trans 3/4" bars a @ 9" Es 21'-1"
Bot trans 3/4" bars a @ 1'-6" Es 21'-1"
" " 3/4" bars b @ 1'-6" Es 23'-3"
Longitudinal top & bot 24-3/4" bars c
Curb-longit 4-3/4" bars d

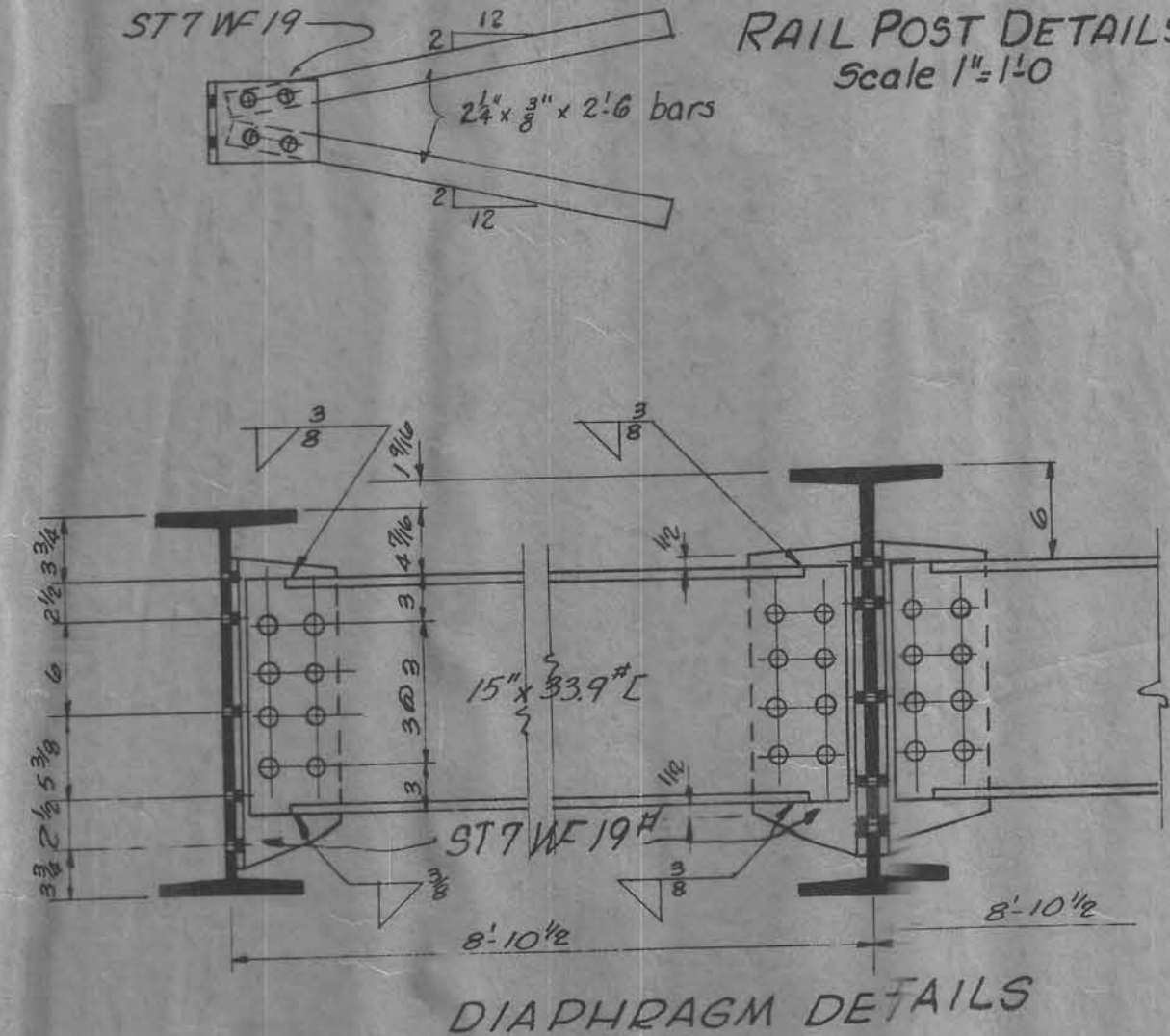
MAXIMUM BEAM MOMENTS

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

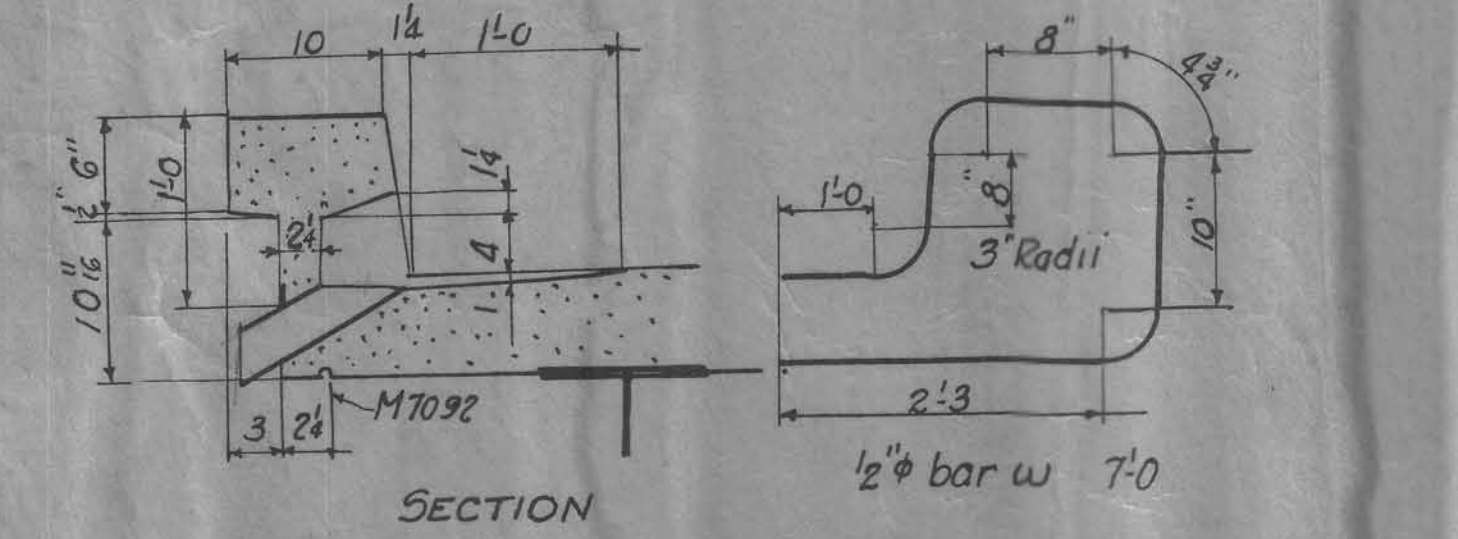
* Taken by Composite Beam Action



PART PLAN
Scale 1/2"=1'-0"

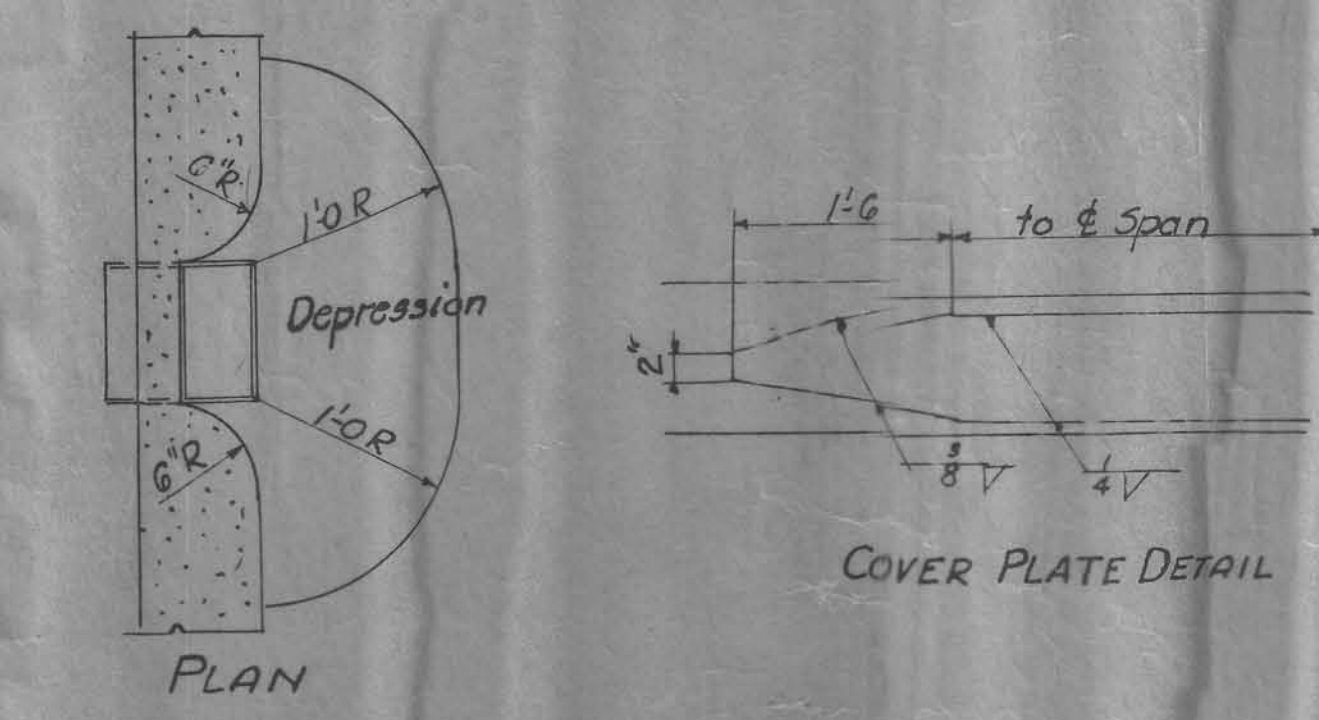


DIAPHRAGM DETAILS
Scale 1 1/2"=1'-0"



SECTION

COVER PLATE DETAIL

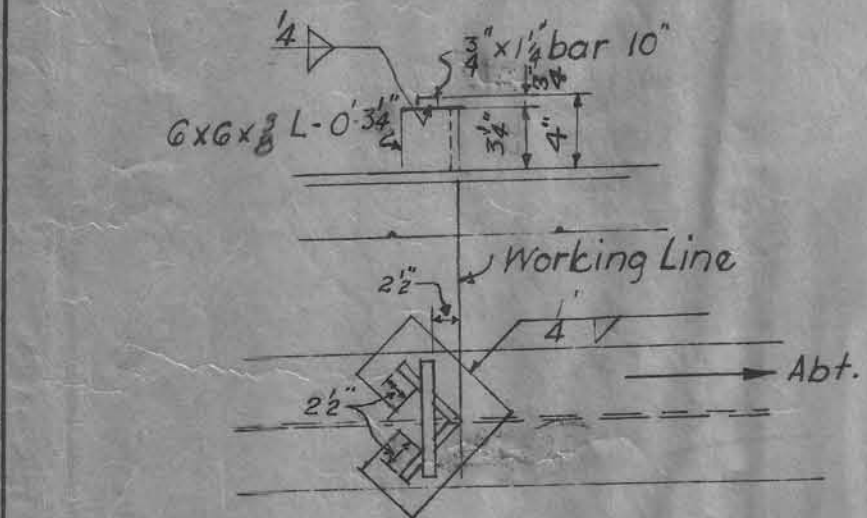


CURB & DRAIN DETAILS
Scale 1"=1'-0"

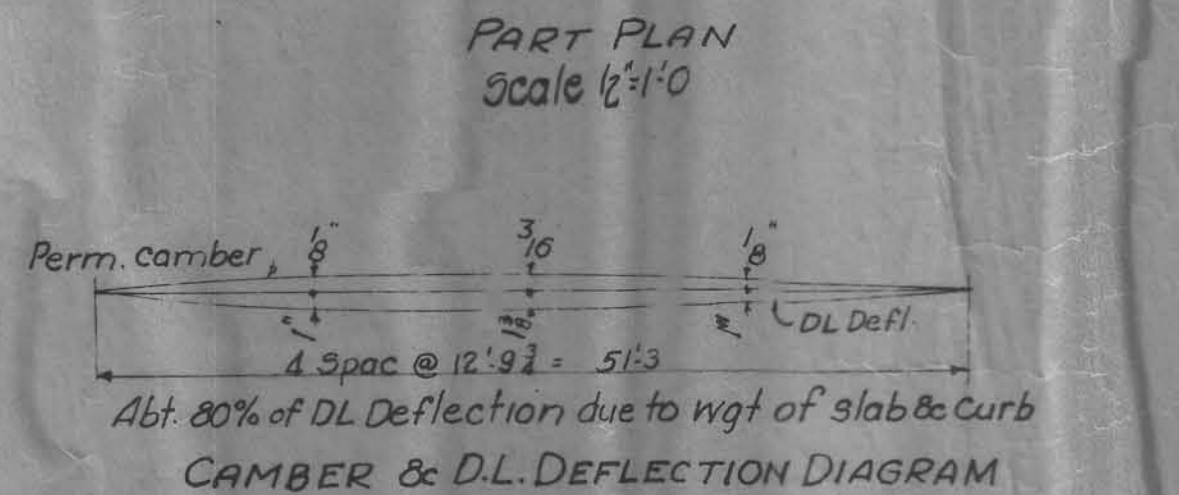
REINFORCING STEEL SCHEDULE - ESTIMATE

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

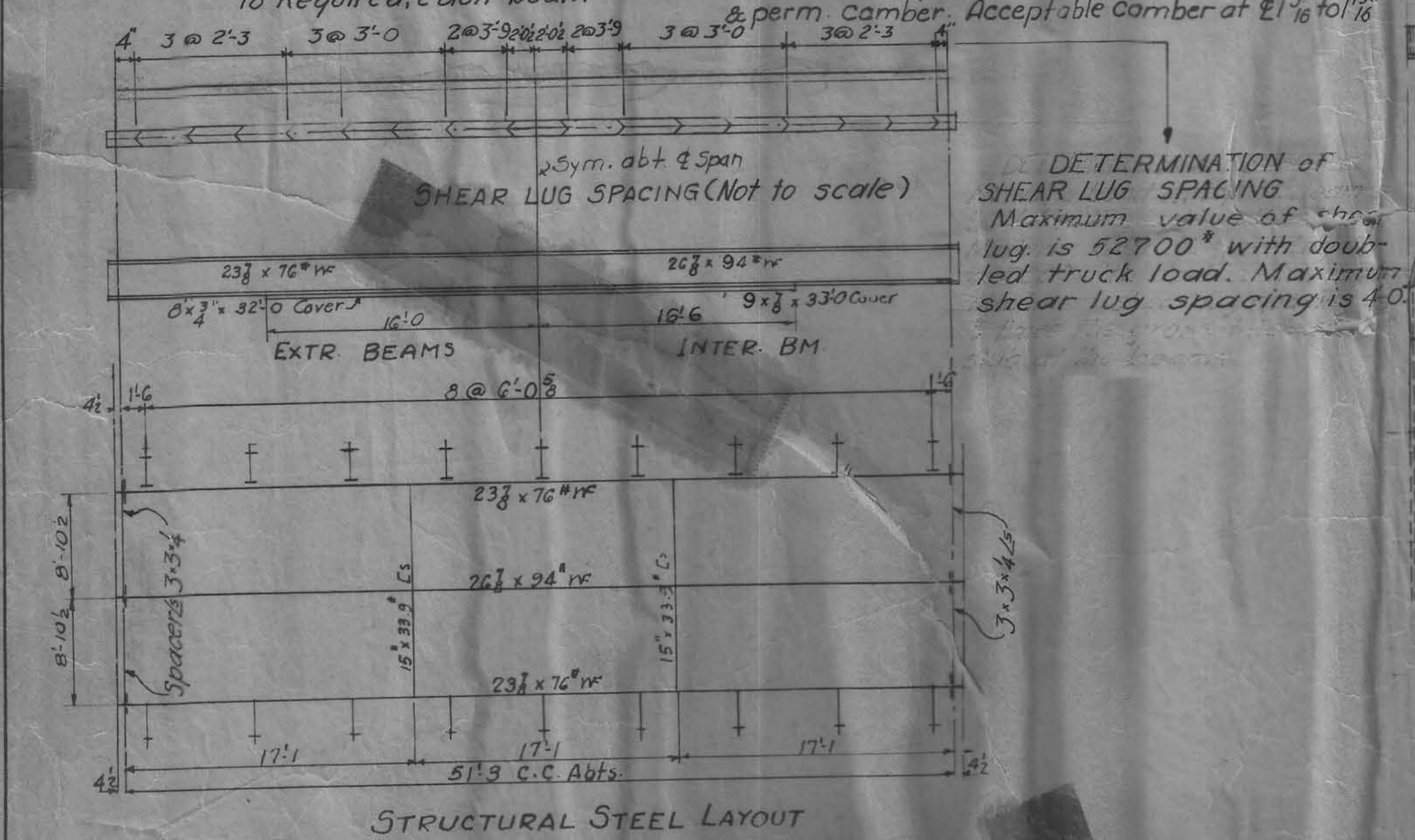
General Notes:
Bridge designed for H-15 loading (single lane) Slab as detailed includes 1/2" wearing surface.
All field connections to be bolted. Rivets & bolts to be 3/4" - Open holes 1/16".
Paint to be omitted from top of top flanges of beams and shear lugs.
Forms for curb and floor to be supported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



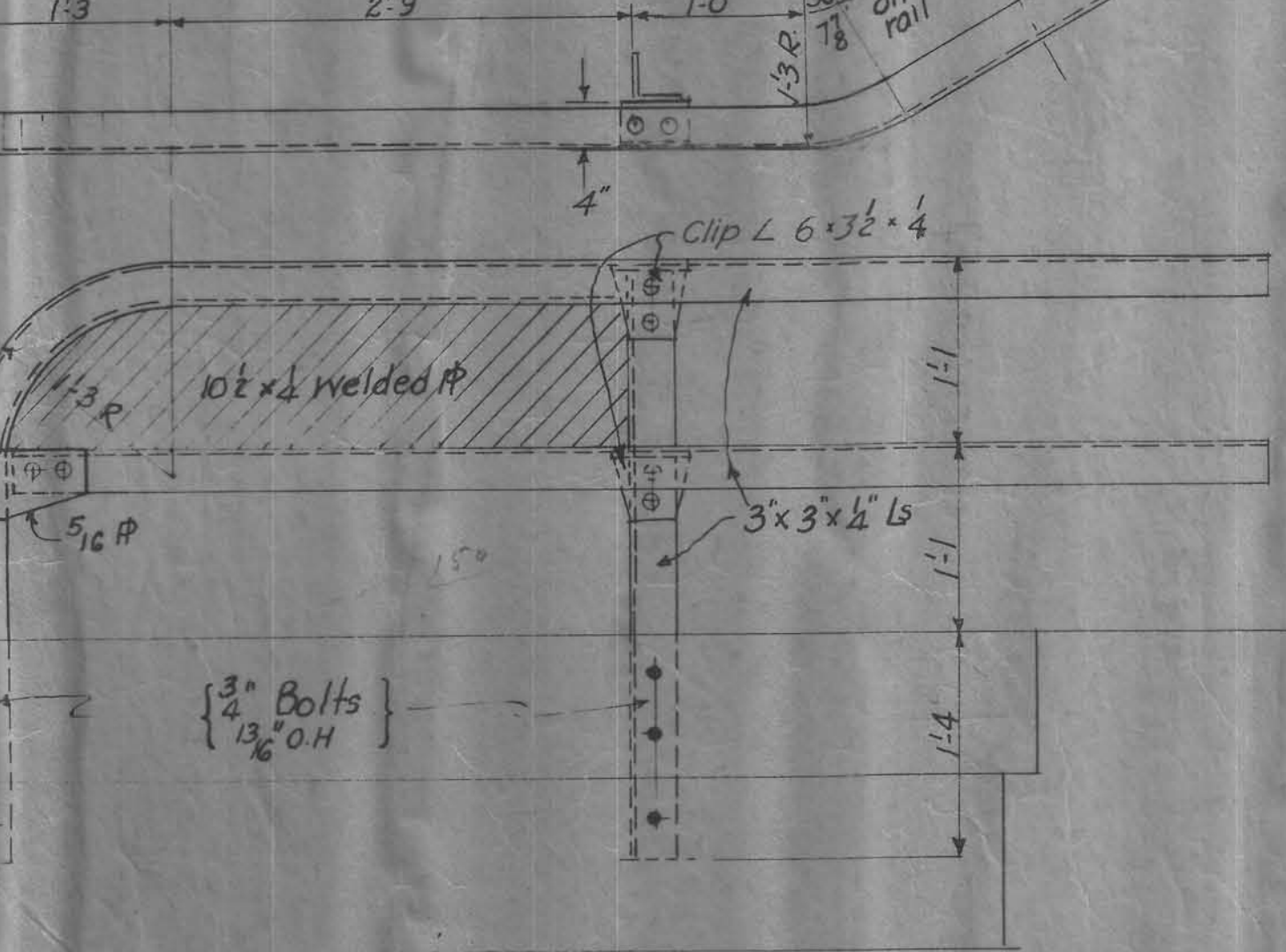
SHEAR LUG DETAIL
18 Required, each beam



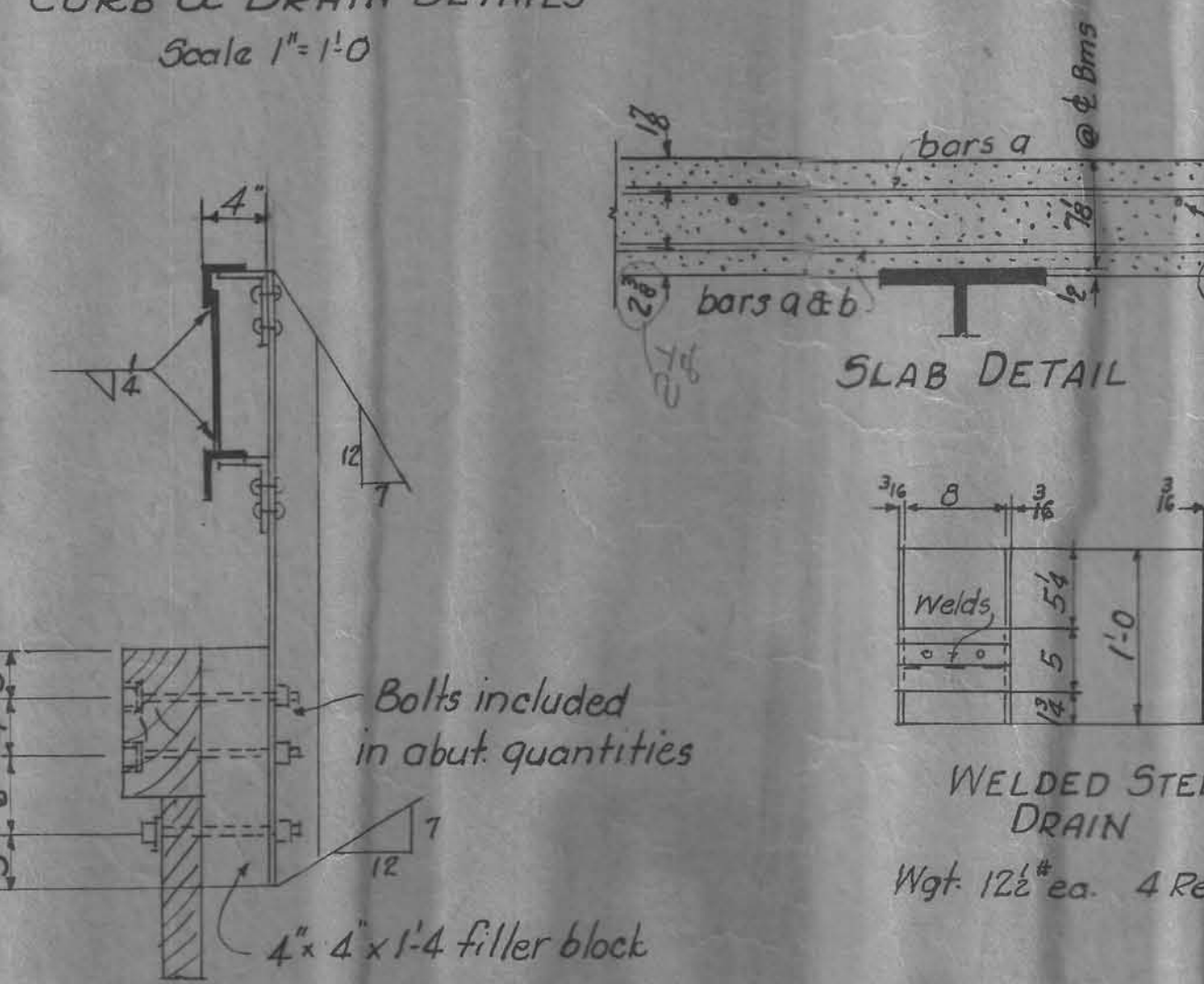
CAMBER & D.L. DEFLECTION DIAGRAM



STRUCTURAL STEEL LAYOUT



WING RAIL DETAILS
Scale 1"=1'-0"



SLAB DETAIL

WELDED STEEL DRAIN

BEAM DETAILS AT BEARING

Design for
50'x20' I-BEAM SPAN
Concrete Floor - Crea Pile Substructure
SUPERSTRUCTURE DETAILS
Station 173+25 Project No. S-964(1)
CRAWFORD COUNTY
Iowa State Highway Commission
December 1949 Sheet 3 of 3