

PLAN

[illegible]

SCALE: $\frac{3''}{16} = 1' - 0''$

IN 147 SHEETS SHEET NO. 118 SCALE: 1" = 50'

SUBMITTED: Wm. O. Lewis APPROVED: [Signature]

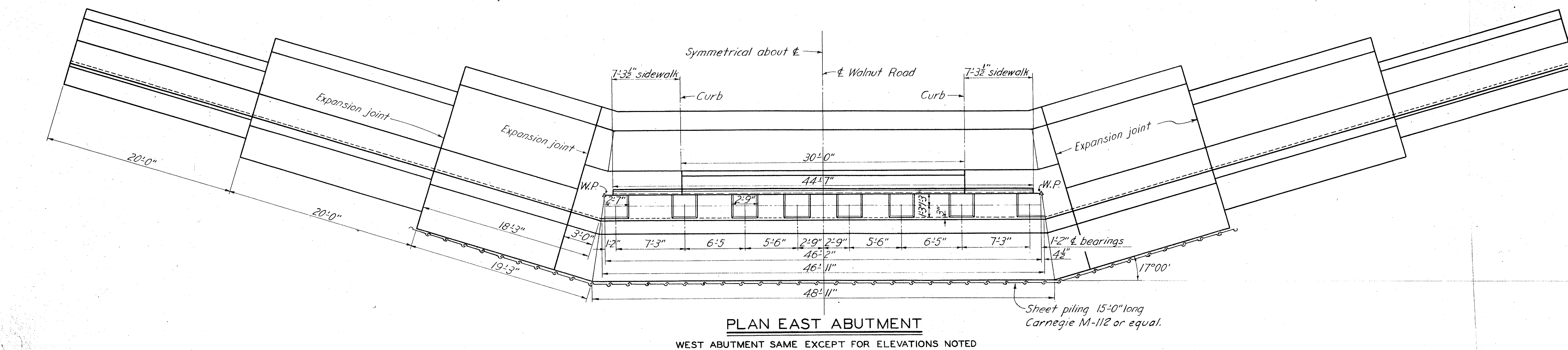
DRAWN BY W. B. S. TRANSMITTED WITH LETTER
 TRACED BY W. B. S.
 CHECKED BY D. G. J. FILE NO 027i-PM-68/36 DATED

BY	DATE	CHARACTER
R E V I S I O N S		

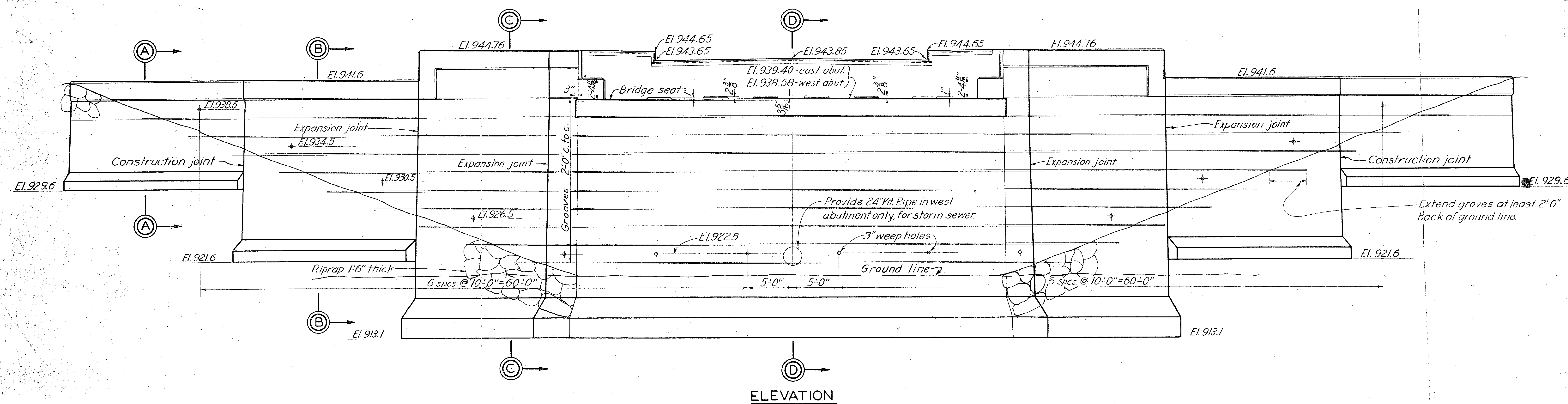
REINFORCING SCHEDULE

MARK	SIZE	LGTH.	BENDING DIAGRAMS	NO.	UNIT WT.	TOTAL WT.
414	1" ϕ	3'-6"		56	2.34	131
417B	1" ϕ	4'-3"		80	2.84	227
478	1" ϕ	19'-6"		20	13.03	261
517	3/8" ϕ	4'-3"		126	4.43	558
524B	3/8" ϕ	6'-0"		80	6.26	501
559	3/8" ϕ	14'-9"		16	15.38	247
5110	3/8" ϕ	27'-6"		8	28.68	229
624	3/8" ϕ	6'-0"		118	9.01	1063
836B	1" ϕ	9'-0"		174	24.03	4181
Total						7498

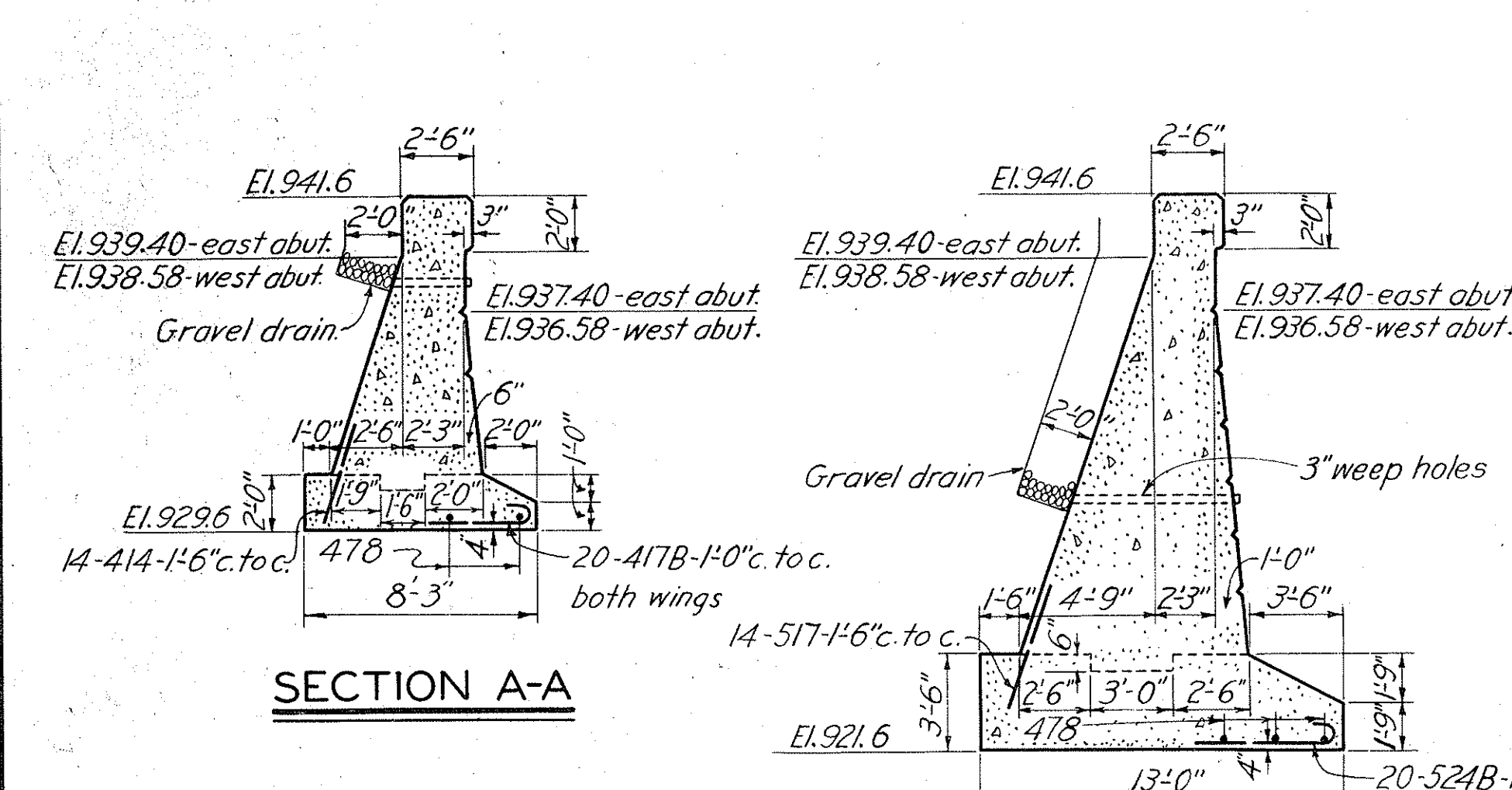
Note: Reinforcing bars for two abutments.



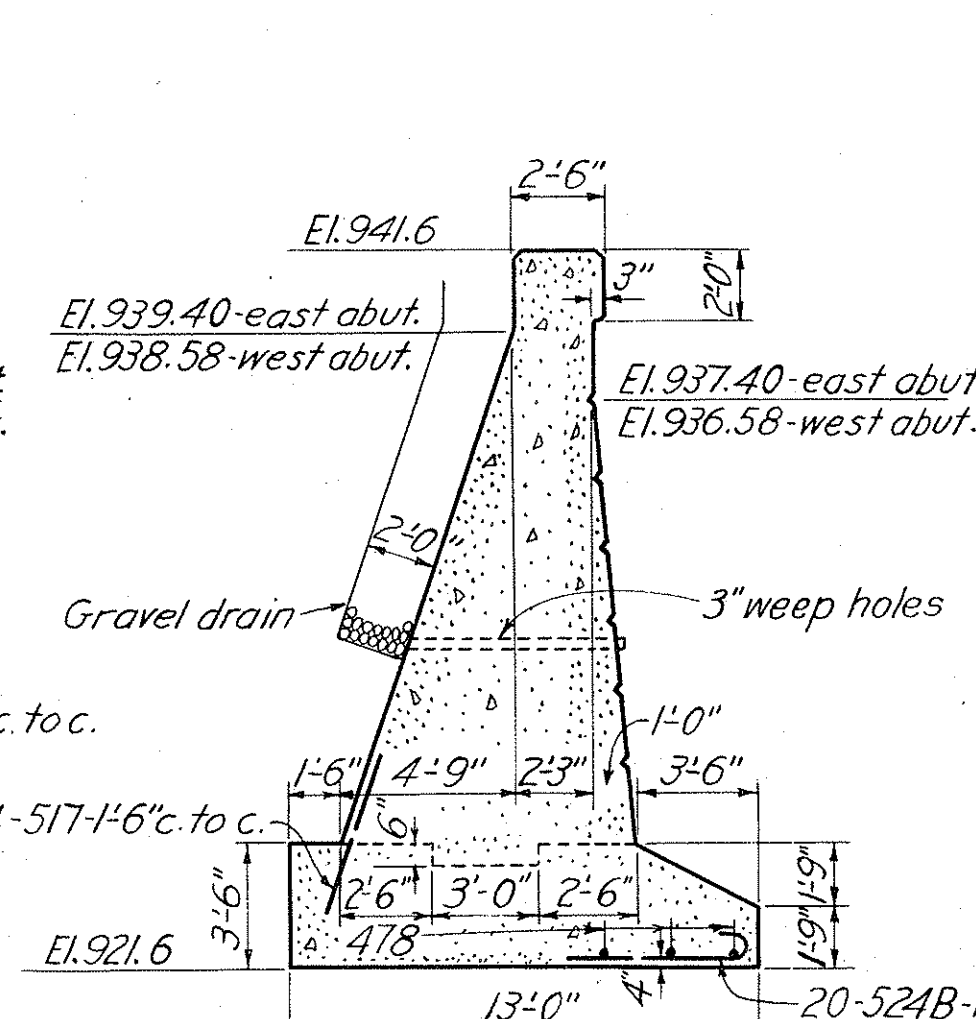
PLAN EAST ABUTMENT
WEST ABUTMENT SAME EXCEPT FOR ELEVATIONS NOTED



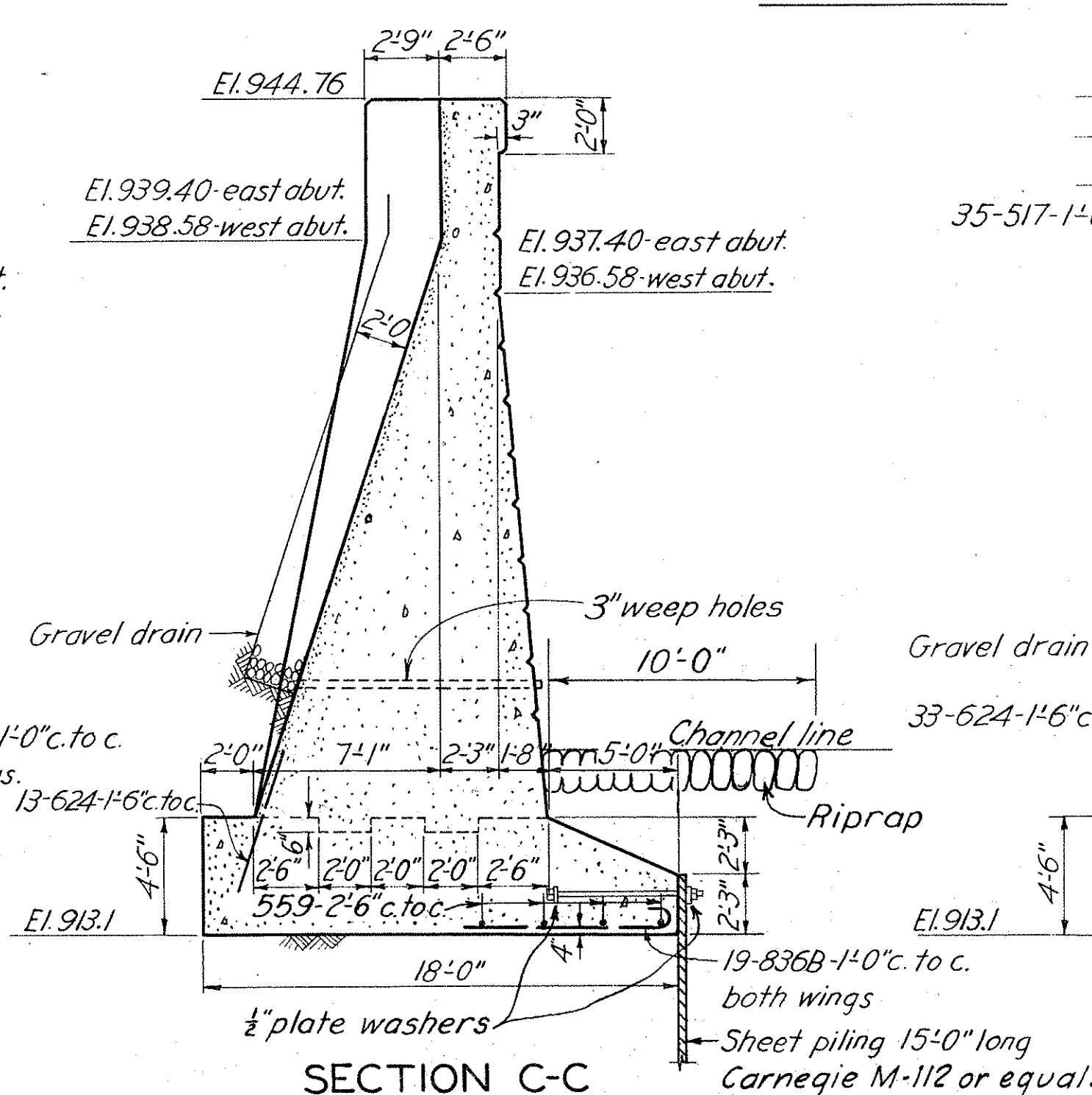
ELEVATION



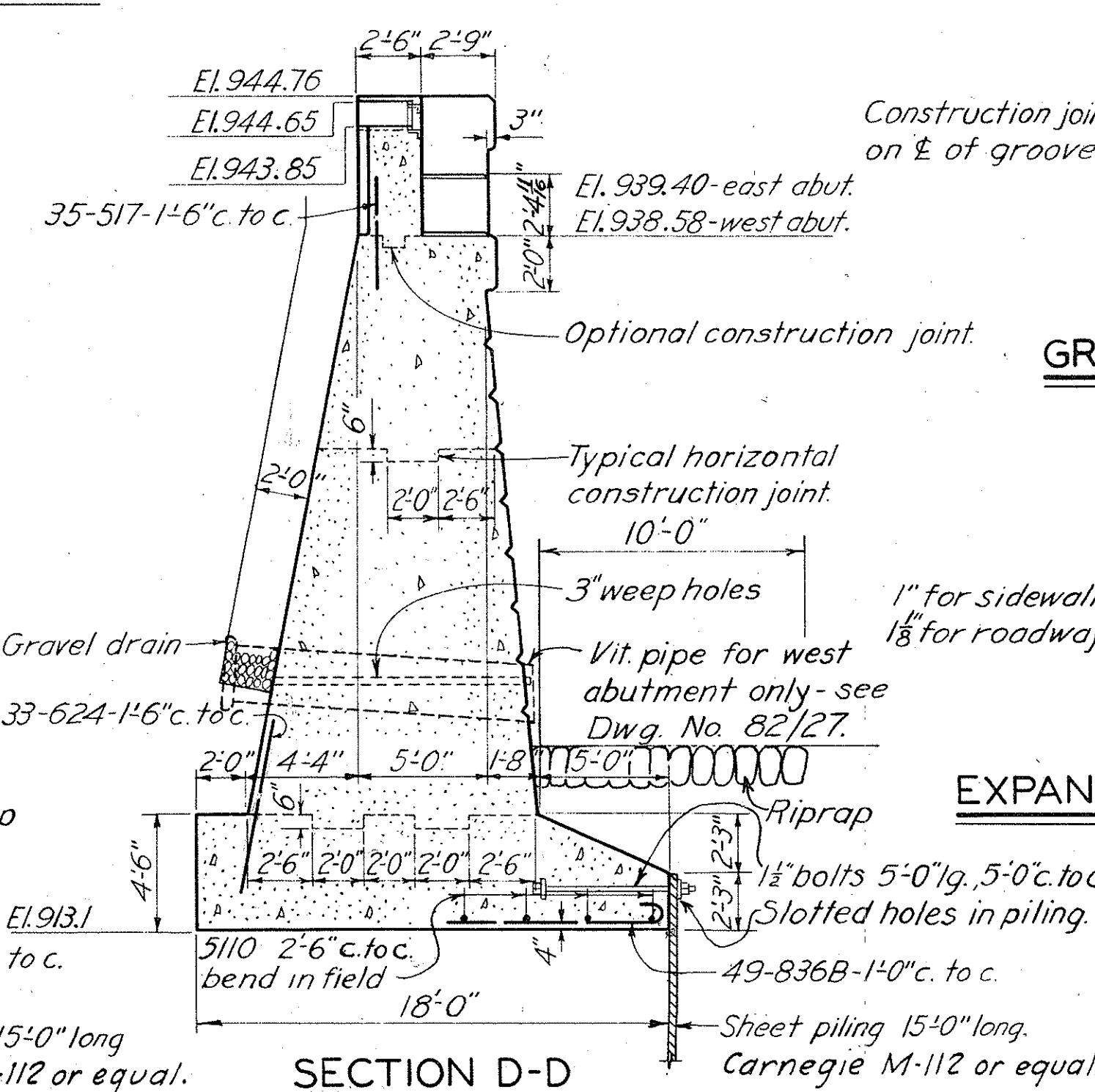
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

GROOVE DETAIL

SCALE: 3"=1'-0"

EXPANSION PLATE DETAIL

SCALE: 1"=1'-0"

NOTES

Character all exposed edges 1" unless otherwise indicated.

Concrete to be Class "B".

**TUSCARAWAS RIVER
LOCAL PROTECTION PROJECT
MASSILLON, OHIO
WALNUT ROAD BRIDGE
ABUTMENTS**

IN 147 SHEETS

SHEET NO 119

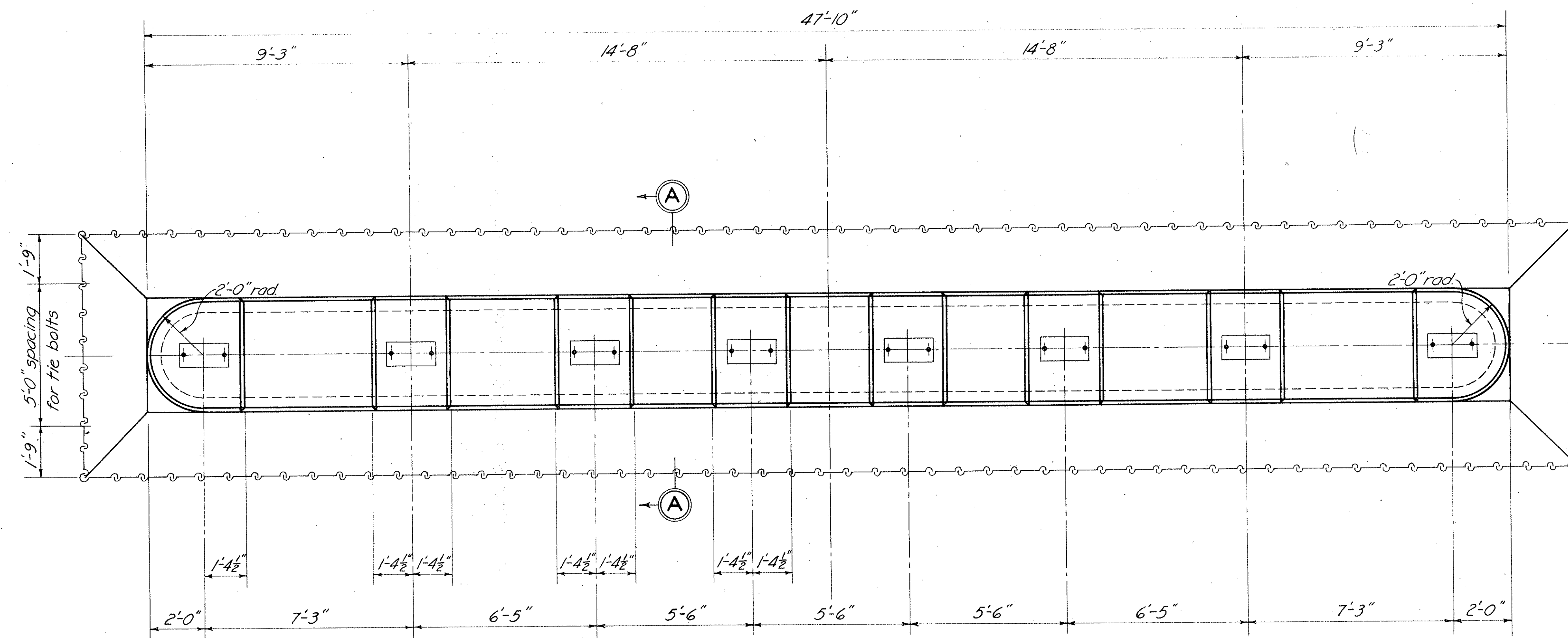
SCALE: 1/8"=1'-0"

U. S. ENGINEER OFFICE, HUNTINGTON, W. VA. SEPT. 1940

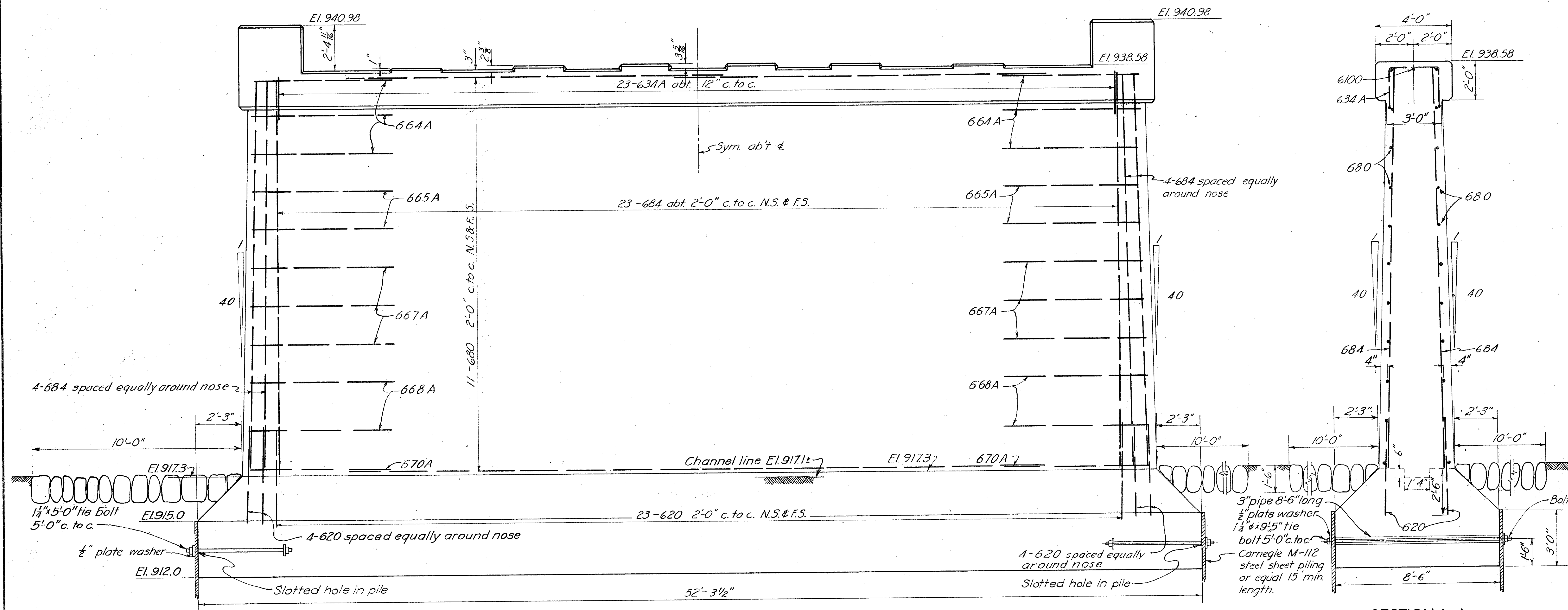
SUBMITTED BY: *Ray Jones* PRINCIPAL ENGINEER APPROVED: *W. H. N.W.D.* LT. COL., CORPS OF ENGINEERS

DRAWN BY: J.E.H. CHECKED BY: E.K. FILE NO 0271-PM-68/37 DATED

BY	DATE	CHARACTER
		REVISIONS



PLAN



ELEVATION

SECTION A-A

REINFORCING SCHEDULE

MARK	SIZE	L'GTH	BENDING DIAGRAM	NO.	UNIT WT.	TOTAL WT.
620	3/4"	5'-0"		54	7.51	406
634A	3/4"	8'-6"		23	12.71	294
664A	3/4"	16'-0"		6	24.03	144
665A	3/4"	16'-3"		1	24.41	98
667A	3/4"	16'-9"		6	25.16	151
668A	3/4"	17'-0"		4	25.53	102
670A	3/4"	17'-6"		2	26.29	53
680	3/4"	20'-0"		14	30.04	420
684	3/4"	21'-0"		54	31.54	1703
6100	3/4"	25'-0"		2	37.55	75
Total						4,348

Note: Quantities shown are for one pier.

NOTES

Chamfer all exposed edges 1", unless otherwise noted.
All concrete to be Class B.
For groove details, see Dwg. No. 68/3.

**TUSCARAWAS RIVER
LOCAL PROTECTION PROJECT
MASSILLON OHIO
WALNUT ROAD BRIDGE
PIERS**

IN 147 SHEETS SHEET NO. 120 SCALE: 3/8" = 1'-0"

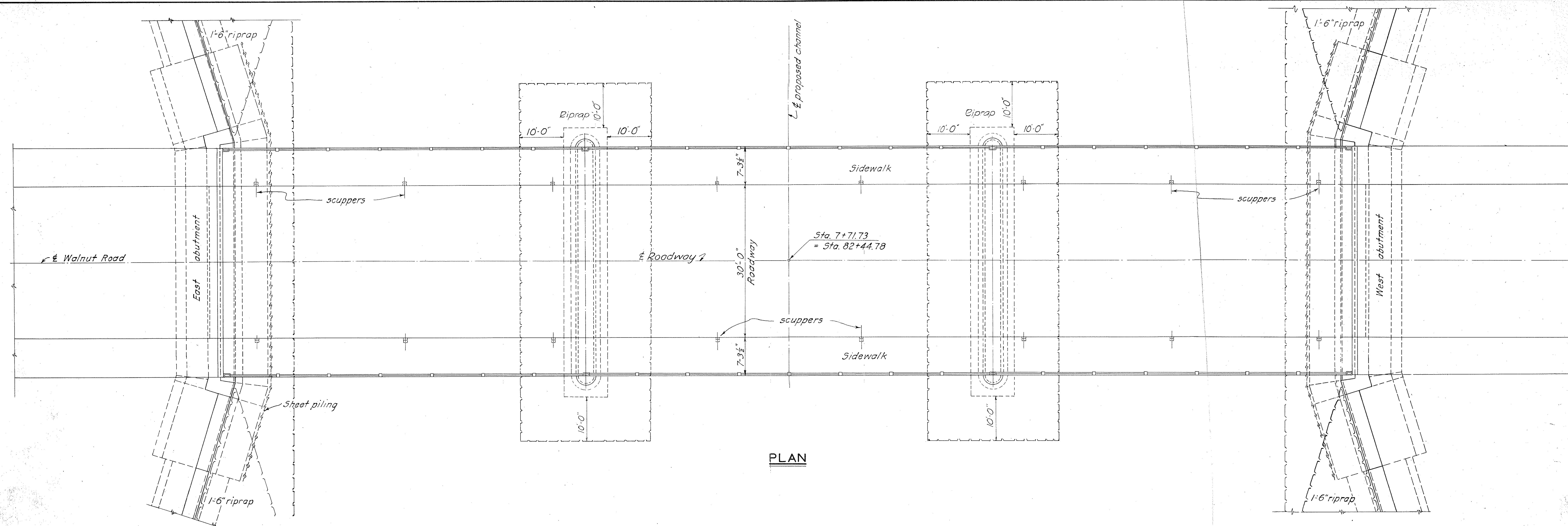
U. S. ENGINEER OFFICE. HUNTINGTON, W. VA., JAN. 1941

SUBMITTED: *[Signature]* APPROVED: *[Signature]*
PRINCIPAL ENGINEER CAPT., CORPS OF ENGINEERS

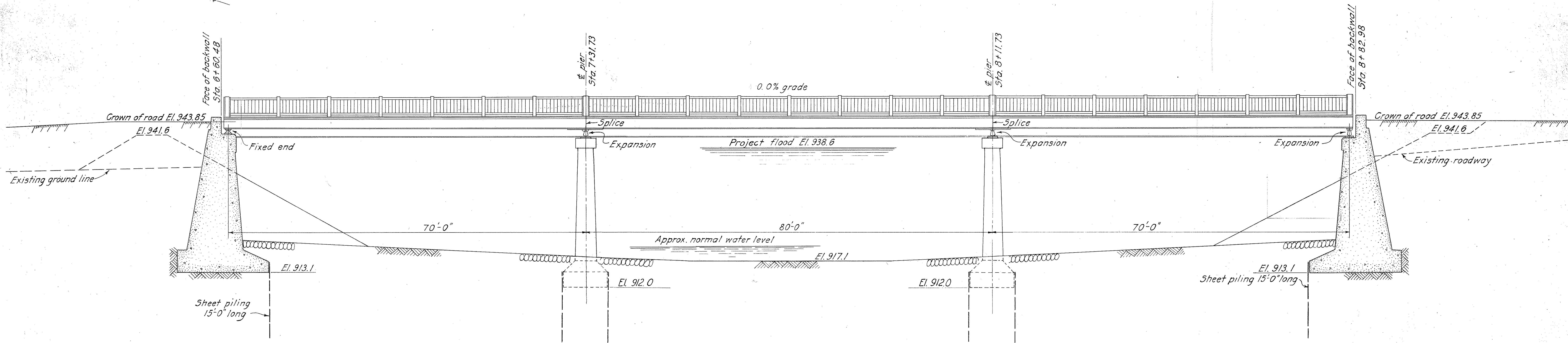
DRAWN BY: J.E.M. TRACED BY: S.S.H. CHECKED BY: D.G.J. TRANSMITTED WITH LETTER

FILE NO. O-27i-PM68/38 DATED

AWM	3-10-41	REVISED BATTER ON PIERS
BY	DATE	CHARACTER
REVISIONS		



PLAN



UPSTREAM ELEVATION

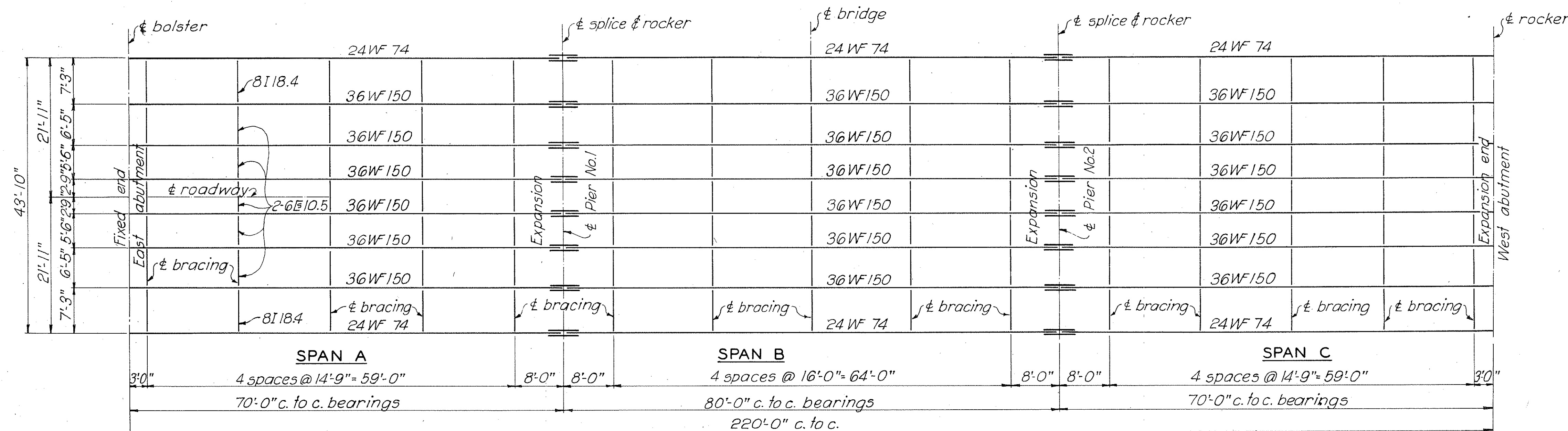
**TUSCARAWAS RIVER
LOCAL PROTECTION PROJECT
MASSILLON, OHIO
WALNUT ROAD BRIDGE
PLAN & ELEVATION**

IN 147 SHEETS SHEET NO. 121 SCALE: 1" = 1'-0"

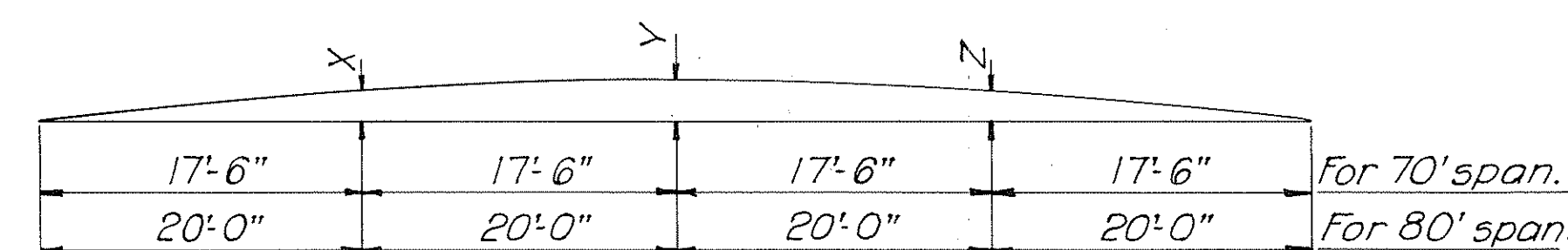
U. S. ENGINEER OFFICE, HUNTINGTON, W. VA. SEPT. 1940

SUBMITTED: *[Signature]* APPROVED: *[Signature]*
DRAWN BY: H.S.M. TRACED BY: V.S.V. CHECKED BY: H.U.B. FILE NO. 027i-PM-68/39 DATED

AR N. 3-10-41	REVISED PIERS
BY DATE	CHARACTER
	REVISIONS



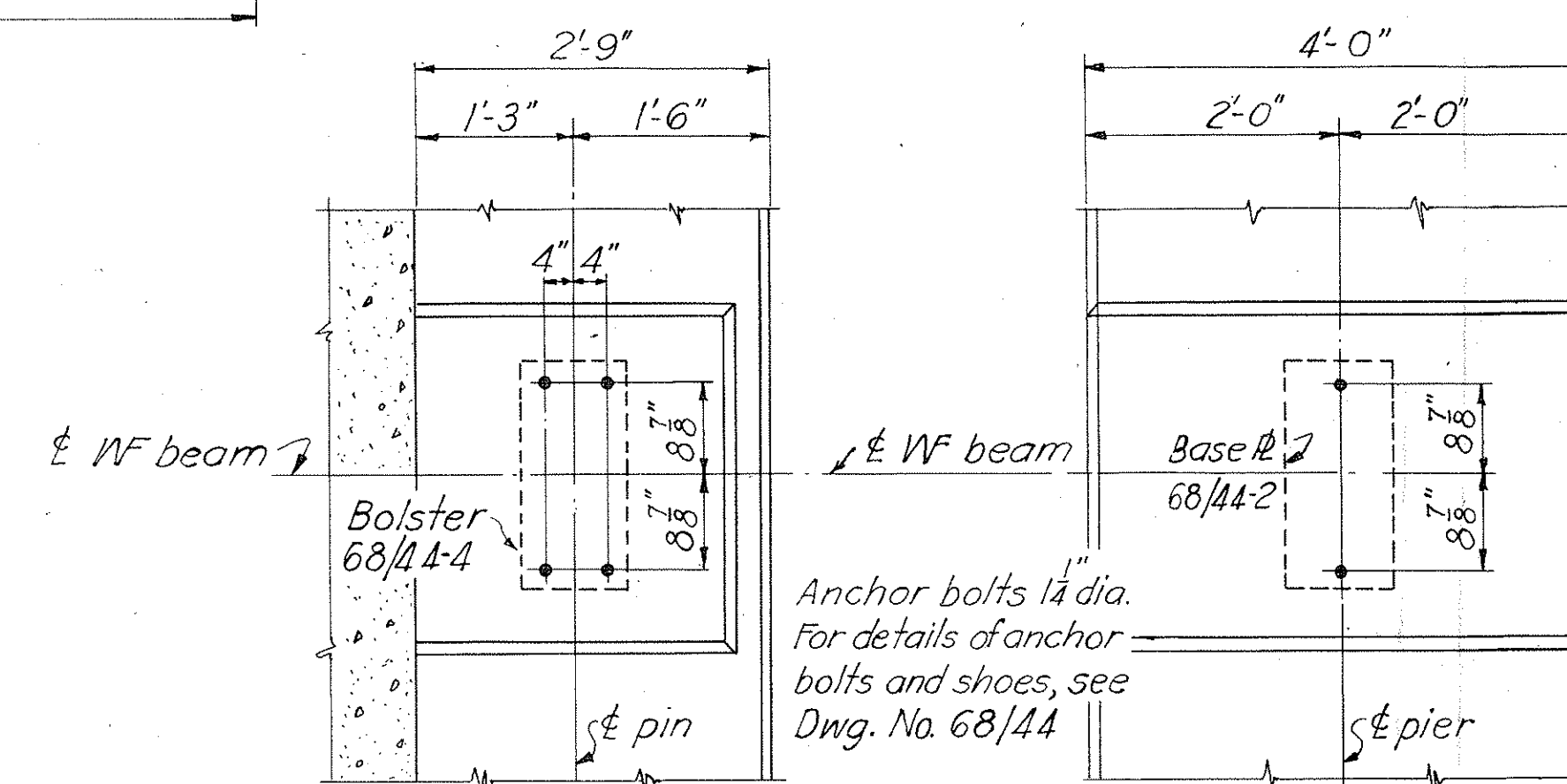
SUPERSTRUCTURE LAYOUT



CAMBER DIAGRAM

NOT TO SCALE

CAMBER						
SPAN	36WF 150			24WF 74		
	X	Y	Z	X	Y	Z
70'	5"	8"	11"	15"	14"	15"
80'	11"	8"	11"	18"	12"	18"



TYPICAL ANCHOR BOLT LAYOUT

EAST ABUTMENT

SCALE: $\frac{3}{4}$ " = 1'-0"

PIERS

SCALE: $\frac{3}{4}$ " = 1'-0"WEST ABUTMENT SIMILAR EXCEPT USE BASE PLATE
INSTEAD OF BOLSTER

TABLE OF MOMENTS									
LOADS	MOMENTS IN FOOT POUNDS								
	POSITIVE MOMENTS IN SPANS A & C			NEGATIVE MOMENTS OVER PIERS NOS. 1 & 2			POSITIVE MOMENTS IN SPAN B		
	INTERIOR BEAM	CURB BEAM	HANDRAIL BEAM	INTERIOR BEAM	CURB BEAM	HANDRAIL BEAM	INTERIOR BEAM	CURB BEAM	HANDRAIL BEAM
DEAD LOAD	229,000	220,000	97,000	215,000	201,000	81,000	213,000	207,000	94,200
LIVE LOAD	415,000	278,000		449,000	303,000		386,000	260,000	
IMPACT	105,000	71,000		82,000	55,000		94,000	63,000	
SIDEWALK L.L.		99,000	103,500		129,000	134,000		93,000	96,800
TOTAL	749,000	668,000	200,500	746,000	688,000	215,000	693,000	623,000	191,000

TABLE OF REACTIONS						
LOADS	REACTIONS IN POUNDS					
	ABUTMENTS			PIERS NOS. 1 & 2		
	INTERIOR BEAM	CURB BEAM	HANDRAIL BEAM	INTERIOR BEAM	CURB BEAM	HANDRAIL BEAM
DEAD LOAD	15,470	14,800	6,440	42,950	40,850	17,450
LIVE LOAD	31,900	20,100		36,000	22,800	
IMPACT	8,100	5,100		9,100	5,900	
SIDEWALK L.L.		6,050	6,330		17,700	18,500
TOTAL	55,470	46,050	12,770	88,050	87,250	35,950

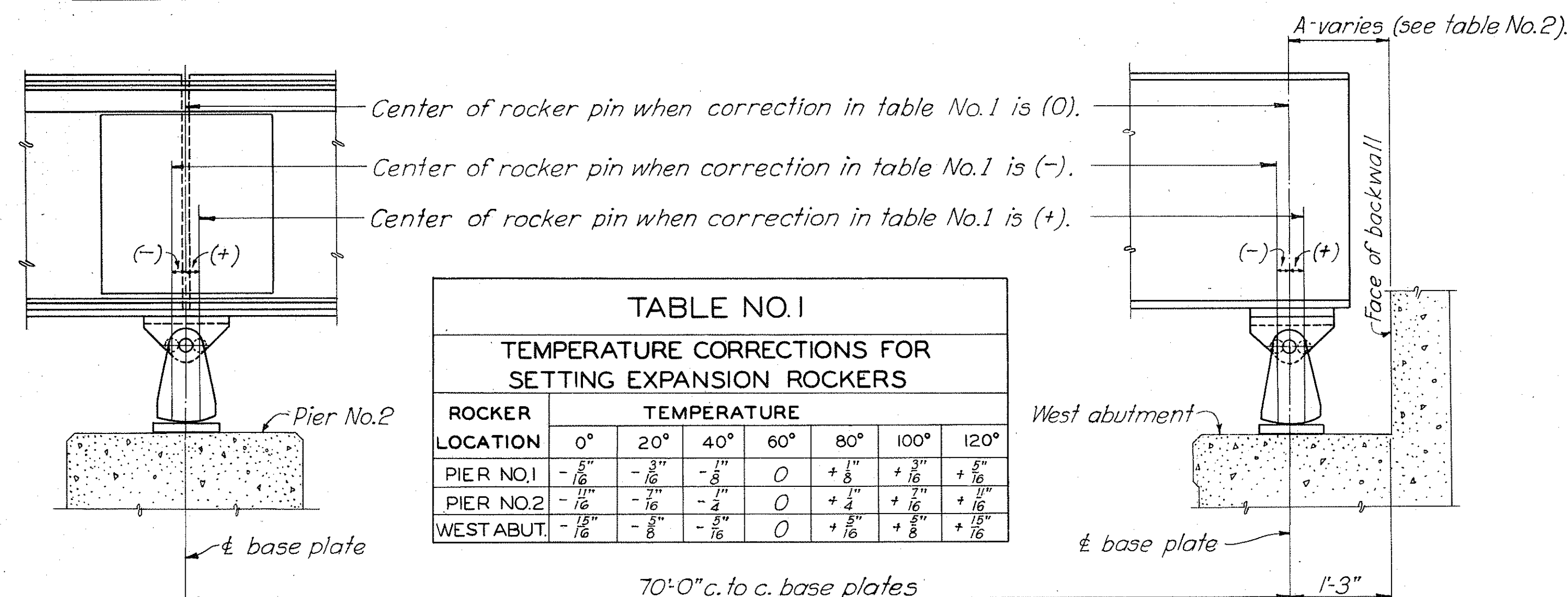


TABLE NO. 1							
TEMPERATURE CORRECTIONS FOR SETTING EXPANSION ROCKERS							
ROCKER LOCATION	TEMPERATURE						
	0°	20°	40°	60°	80°	100°	120°
PIER NO. 1	- $\frac{1}{16}$ "	- $\frac{3}{16}$ "	- $\frac{1}{2}$ "	0	+ $\frac{1}{2}$ "	+ $\frac{3}{16}$ "	+ $\frac{1}{16}$ "
PIER NO. 2	- $\frac{1}{16}$ "	- $\frac{3}{16}$ "	- $\frac{1}{2}$ "	0	+ $\frac{1}{2}$ "	+ $\frac{3}{16}$ "	+ $\frac{1}{16}$ "
WEST ABUT.	- $\frac{1}{16}$ "	- $\frac{3}{16}$ "	- $\frac{1}{2}$ "	0	+ $\frac{1}{2}$ "	+ $\frac{3}{16}$ "	+ $\frac{1}{16}$ "

TABLE NO. 2							
DISTANCE "A" FOR ROCKER ON WEST ABUTMENT							
TEMPERATURE							
	0°	20°	40°	60°	80°	100°	120°
	1'-3 $\frac{1}{2}$ "	1'-3 $\frac{3}{4}$ "	1'-3 $\frac{1}{2}$ "	1'-3"	1'-2 $\frac{1}{2}$ "	1'-2 $\frac{3}{4}$ "	1'-2 $\frac{1}{2}$ "

ROCKER SETTING

SCALE: $\frac{3}{4}$ " = 1'-0"

DESIGN DATA

Dead Load = Actual weight plus $10 \frac{1}{2}$ lb/sq ft for future asphalt surface.
Live Load = H20-33 loading: (See Ohio State Highway Specifications, 1933.)
Truck wheel loading or traffic lane loading used, whichever gives greater stress. More than one span loaded when it causes maximum stress. Minimum clearance between trucks equals 30 feet. Not more than one truck per span used.
Impact = $\frac{50}{L+125} \times$ live load; where L = loaded length of span in feet.
 $M_2 = \frac{2}{3} M_1$ = Bending moment in interior beams due to lateral distribution of wheel loads; where M_1 = bending moment due to one line of wheels and s = beam spacing in feet.

Unit Stresses

Tension
Axial tension, net section ----- 18,000
Bending on extreme fiber ----- 20,000
Compression in flanges ----- 18,000
but not to exceed ----- $\frac{20,000}{1 + \frac{b}{2000}}$
where L = length in inches of the unsupported flange.
b = flange width, in inches
Shear
Girder webs, gross section ----- 12,000
Pins and shop driven rivets ----- 13,500
Power driven field rivets and turned bolts ----- 12,000
Bearing
Pins and shop driven rivets in double shear ----- 27,000
Shop driven rivets in single shear and power driven field rivets and turned bolts in double shear ----- 24,000
Power driven field rivets and turned bolts in single shear ----- 20,000

**TUSCARAWAS RIVER
LOCAL PROTECTION PROJECT
MASSILLON, OHIO
WALNUT ROAD BRIDGE
DESIGN & ERECTION DATA**

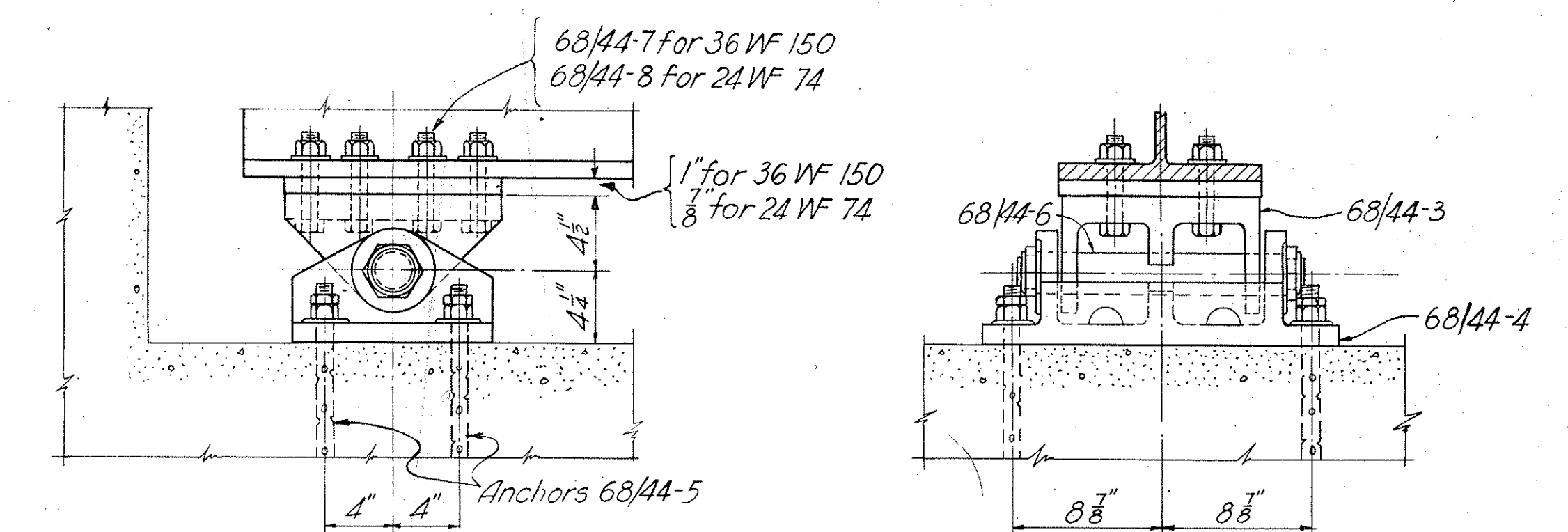
IN 147 SHEETS SHEET NO. 122 SCALE: $\frac{3}{8}$ " = 1'-0"

U. S. ENGINEER OFFICE. HUNTINGTON, W. VA. SEPT. 1940

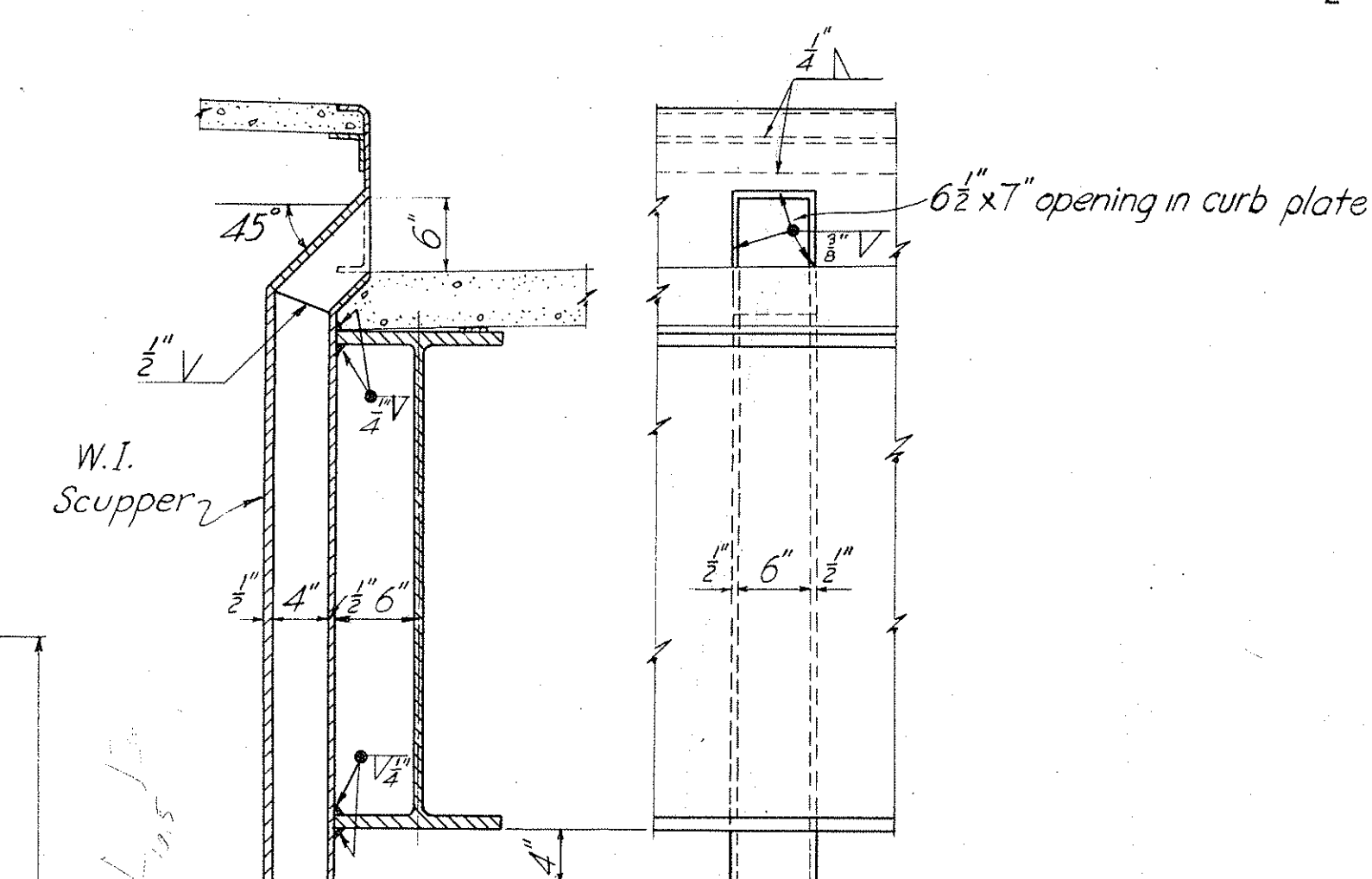
SUBMITTED: *[Signature]* PRINCIPAL ENGINEER APPROVED: *[Signature]* LT. COL. CORPS OF ENGINEERS

DRAWN BY S. B. TRACED BY H. E. C. CHECKED BY A. R. N. FILE NO. 0271-PM-68/40 TRANSMITTED WITH LETTERS GATED

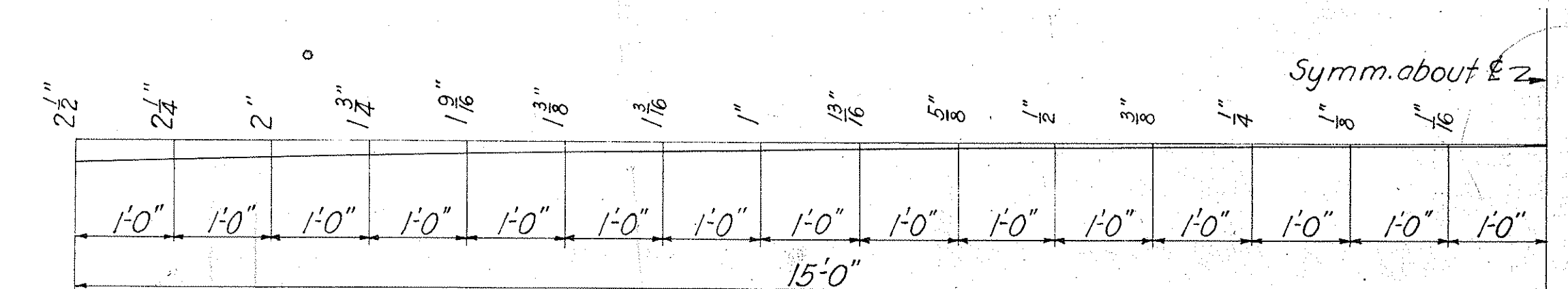
BY	DATE	CHARACTER
		REVISIONS



EAST ABUTMENT
BOLSTER ASSEMBLY
SCALE: $1\frac{1}{2}'' = 1'-0''$



DETAIL OF SCUPPER
SCALE: 1" = 1'-0"



CROWN OF ROADWAY



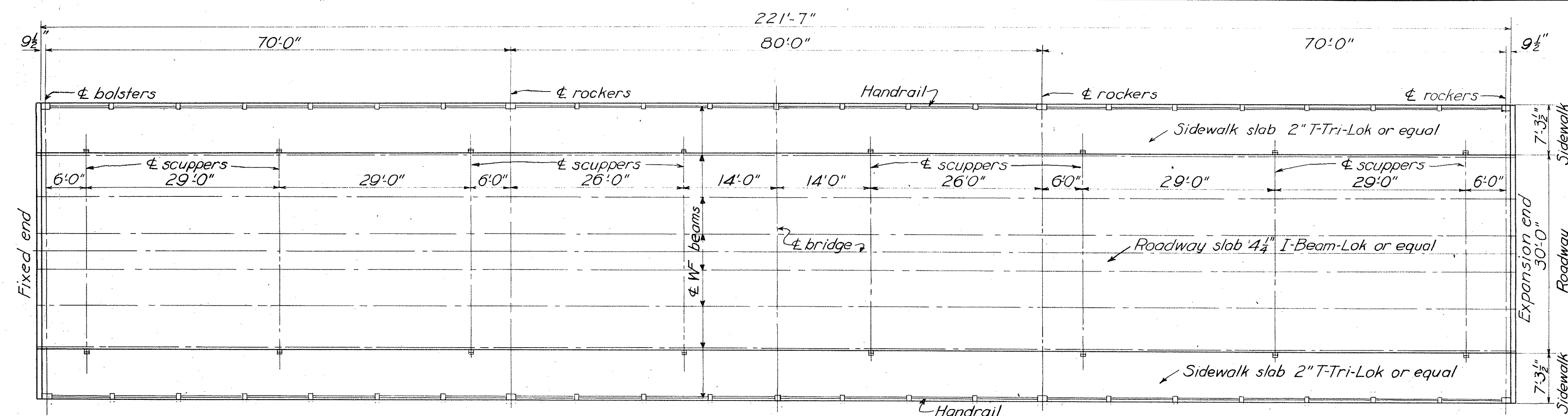
CROSS SECTION AT EAST ABUTMENT
SCALE: $\frac{3}{4}" = 1' - 0"$

IN 147 SHEETS SHEET NO. 123 SCALE: $\frac{3''}{32} = 1'-0''$

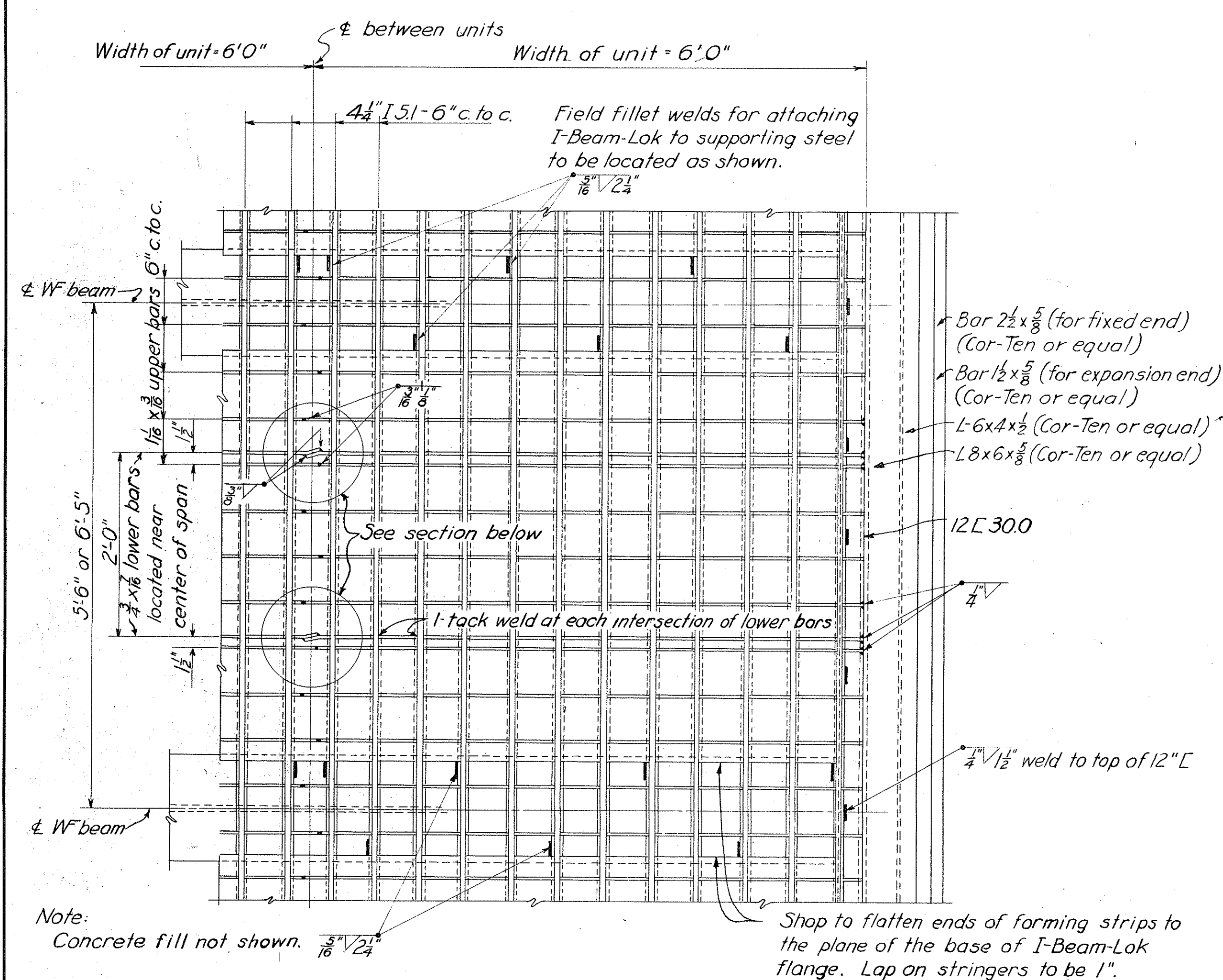
SUBMITTED: Ray Perkins APPROVED: [Signature]

DRAWN BY A.W.S. TRANSMITTED WITH LETTER
 TRACED BY A.F.
 CHECKED BY H.U.B. DATED
 FILE NO 027i-PM-68/41

BY	DATE	CHARACTER
REVISIONS		

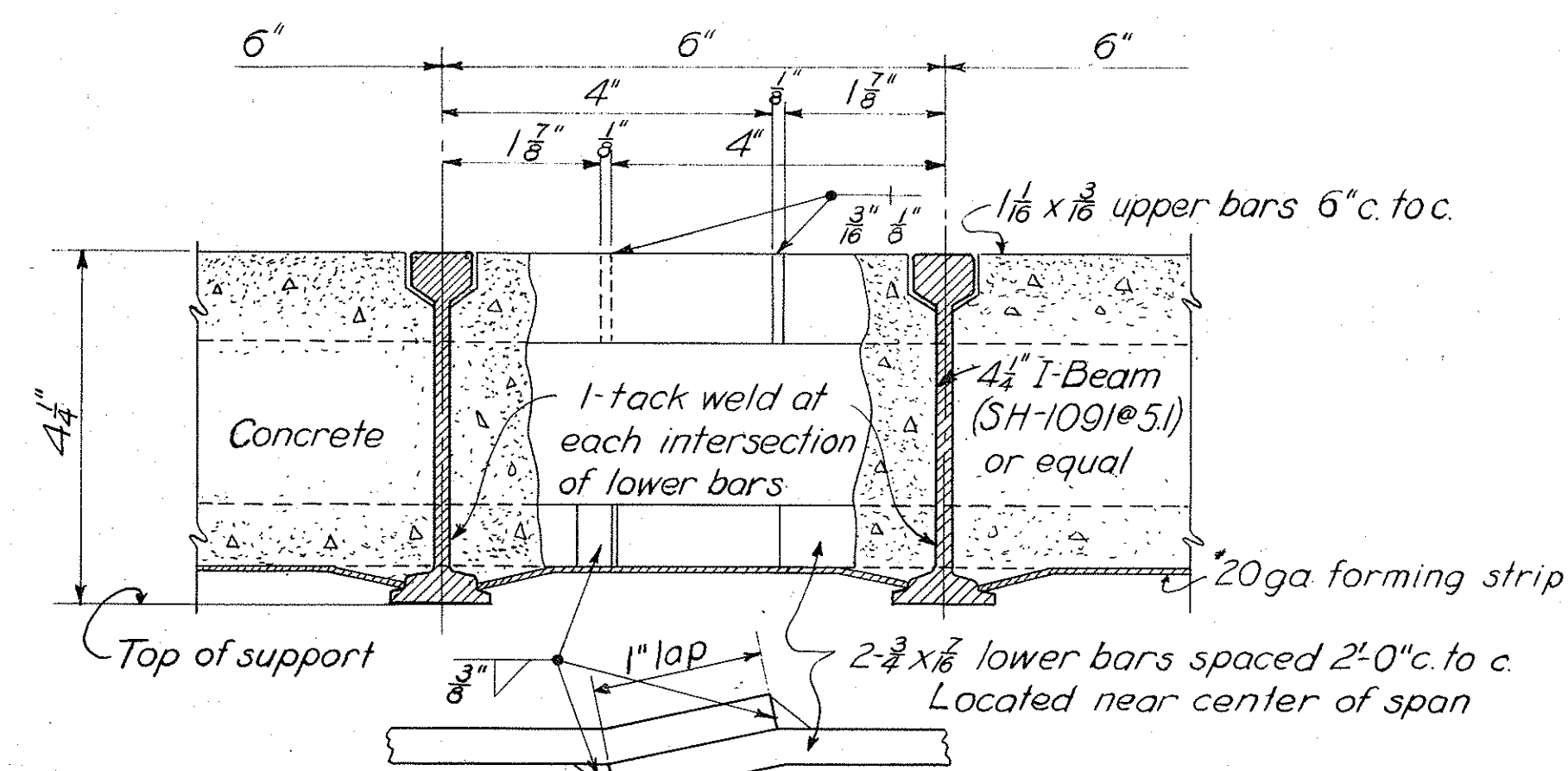


SUPERSTRUCTURE PLAN



ROADWAY PLAN

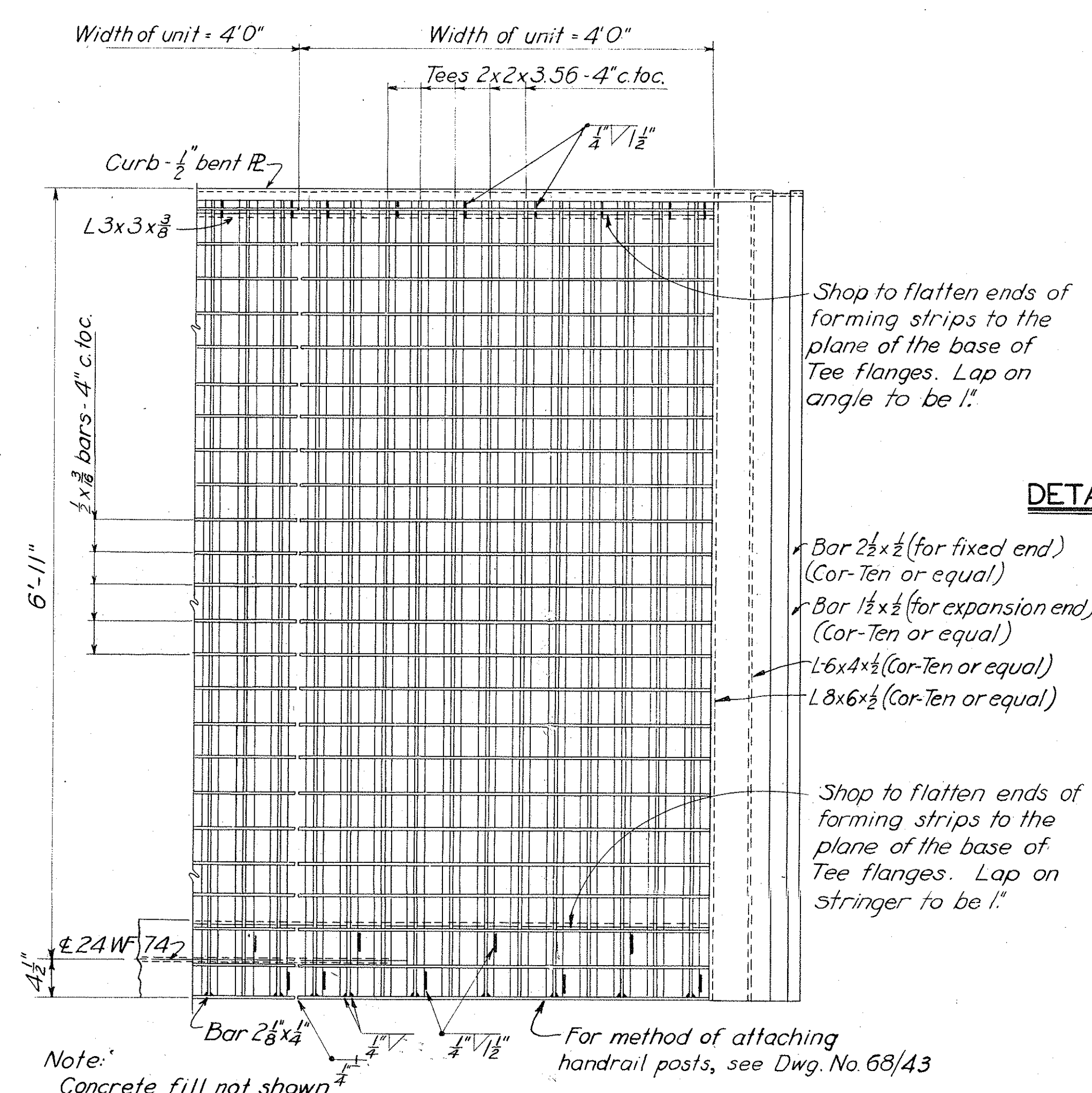
SCALE: 1" = 1'-0"



SECTION

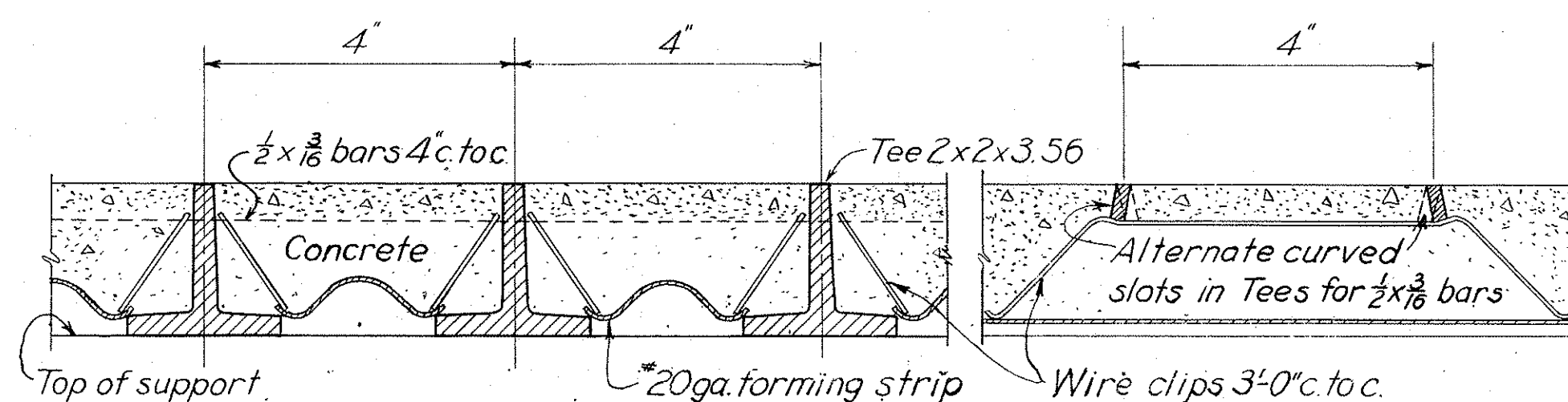
SCALE: 6" = 1'-0"

DETAILS OF ROADWAY SLAB



SIDEWALK PLAN

SCALE: 1" = 1'-0"



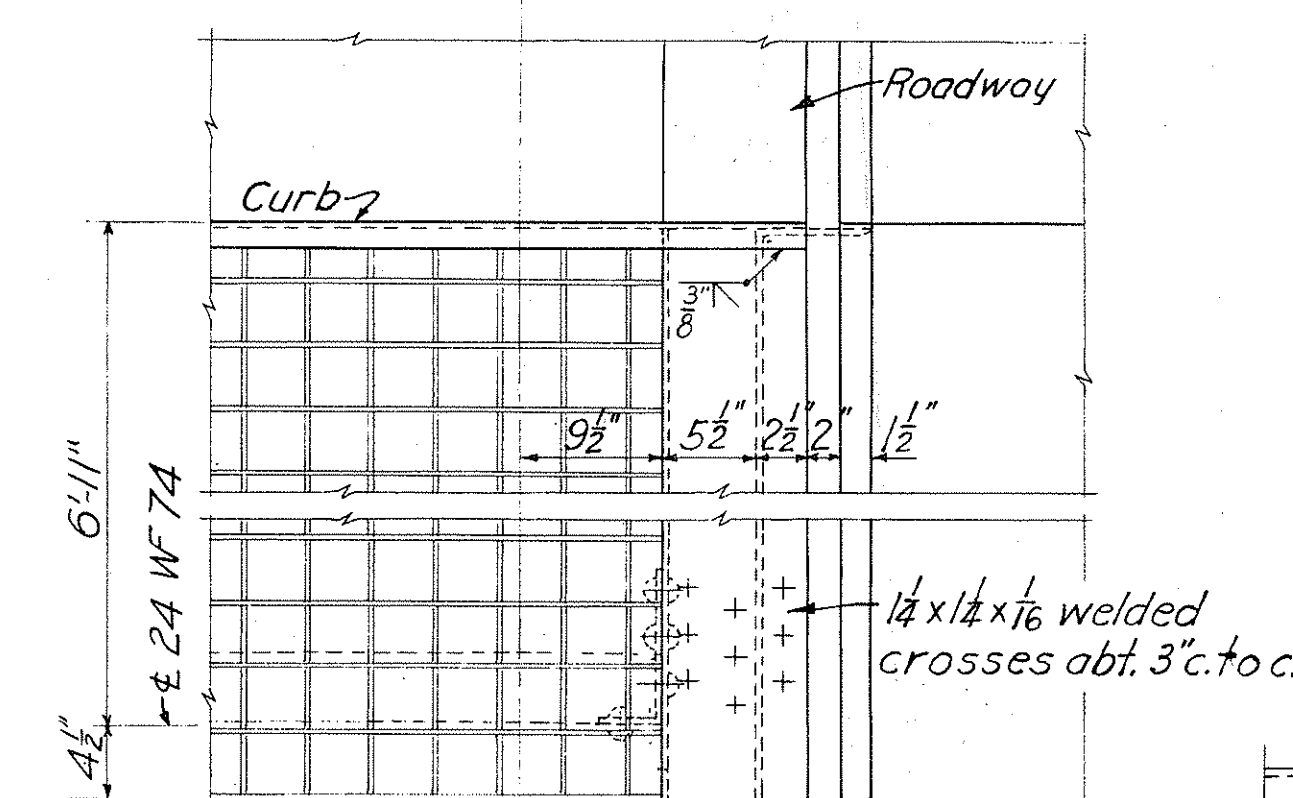
CROSS SECTION

SCALE: 6" = 1'-0"

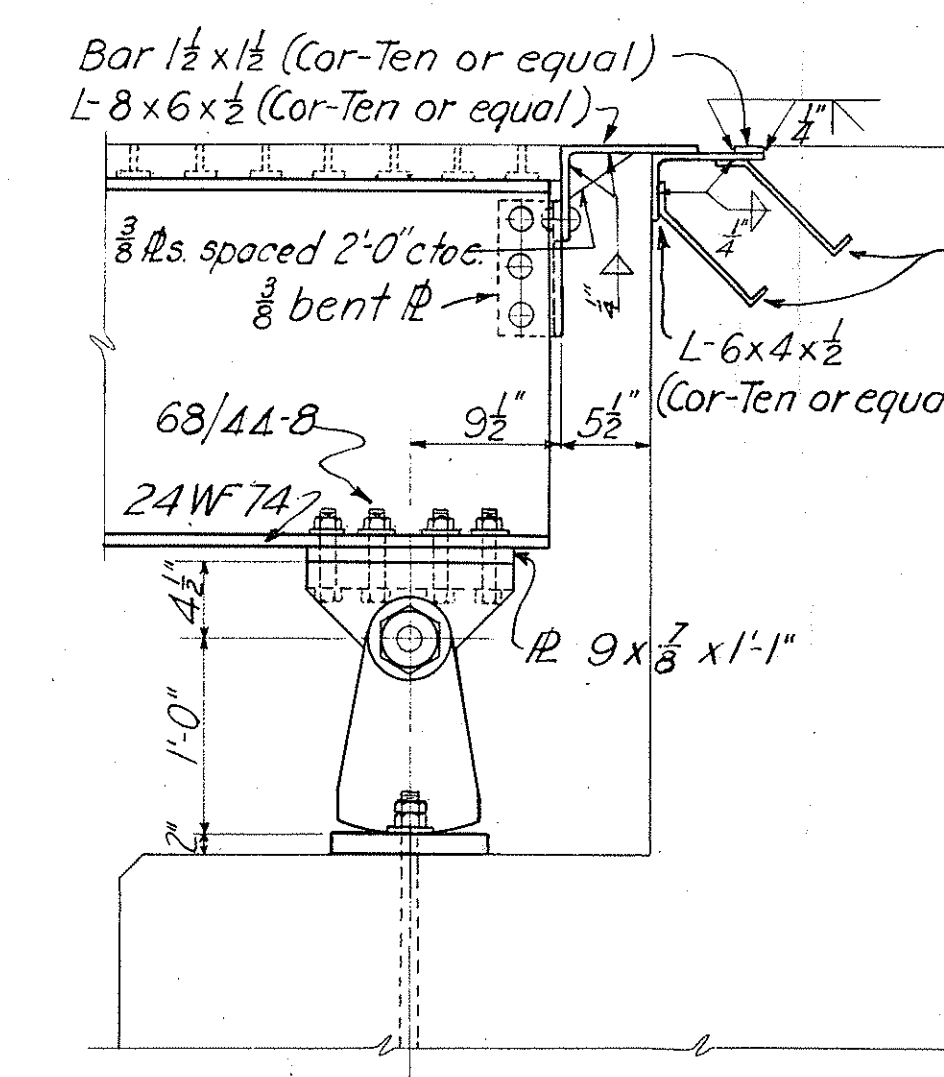
DETAILS OF SIDEWALK SLAB

LONGITUDINAL SECTION

SCALE: 6" = 1'-0"



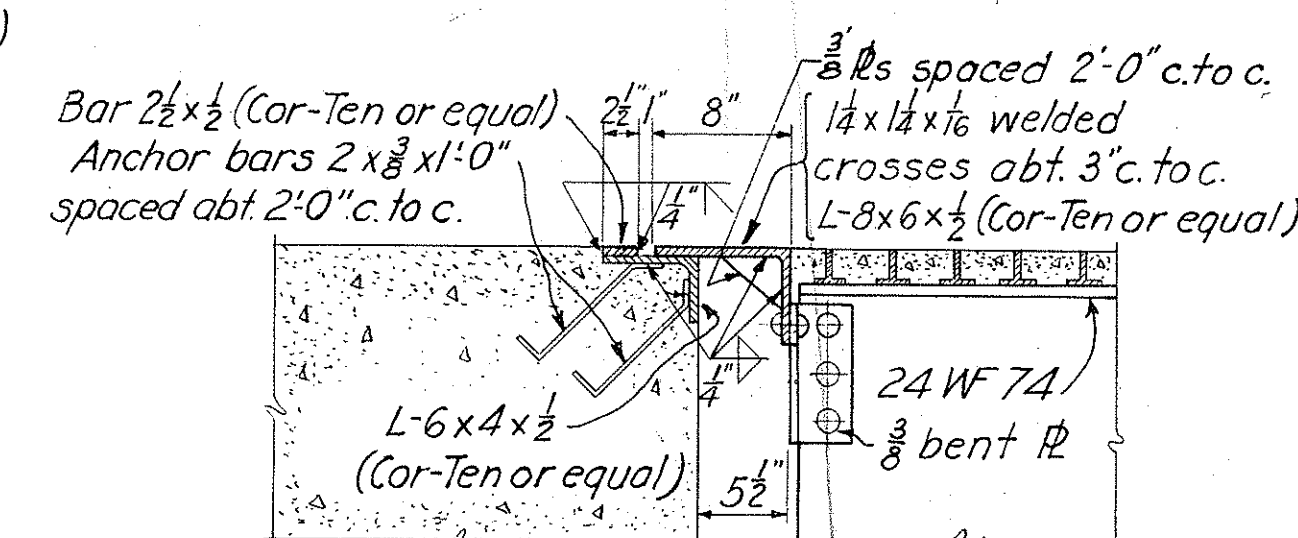
PLAN



ELEVATION

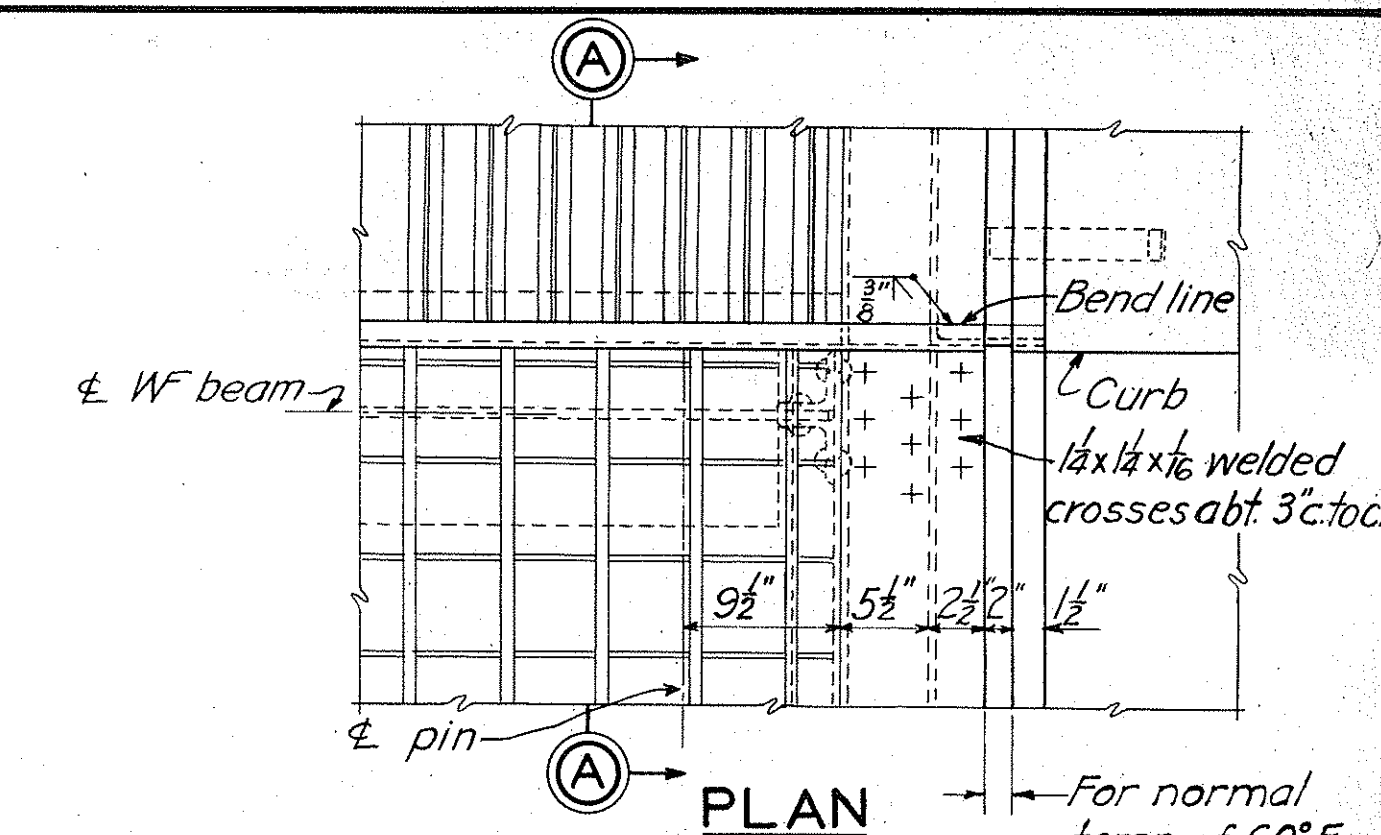
SCALE: 1" = 1'-0"

DETAILS OF SIDEWALK EXPANSION JOINT



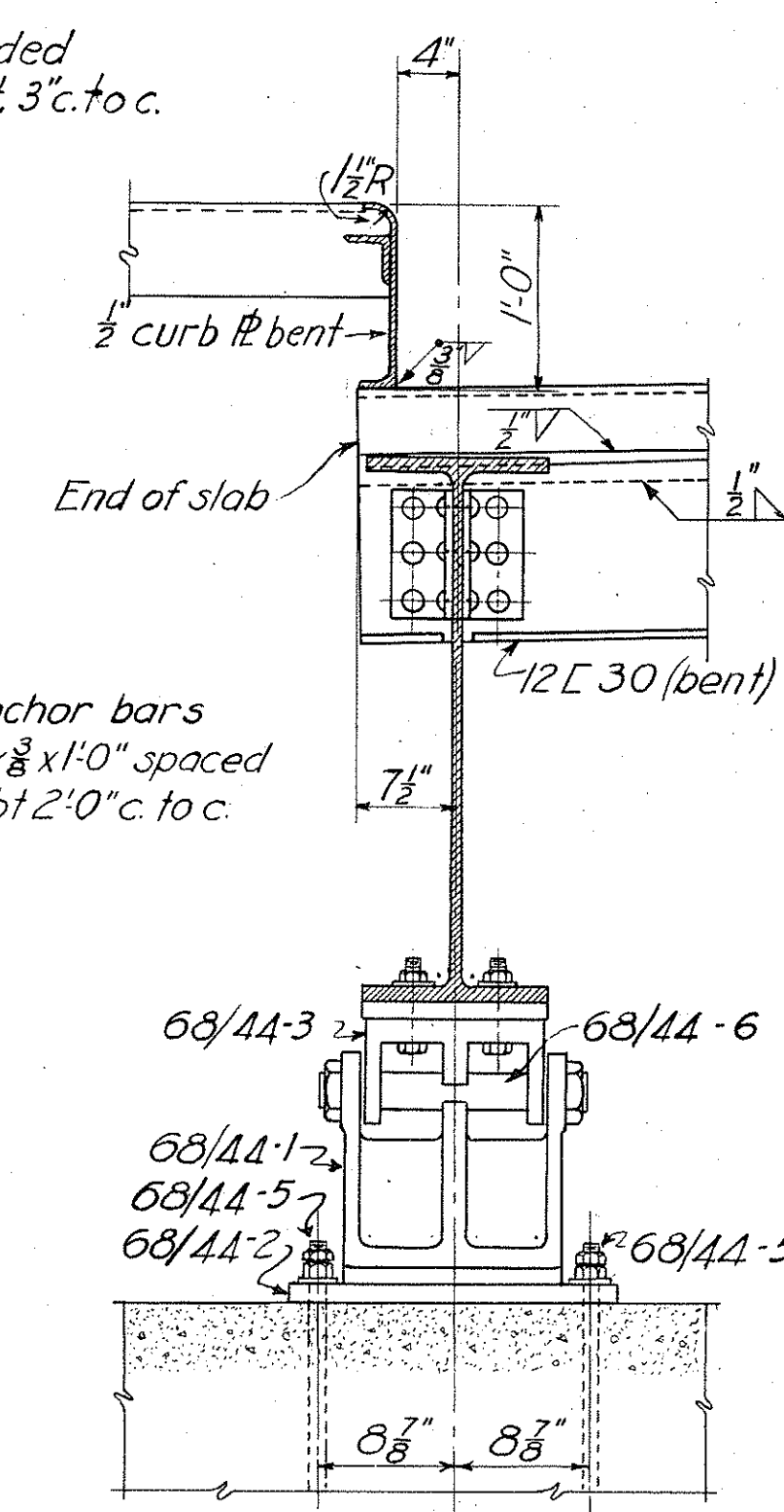
DETAILS OF SIDEWALK JOINT - FIXED END

SCALE: 1" = 1'-0"



PLAN

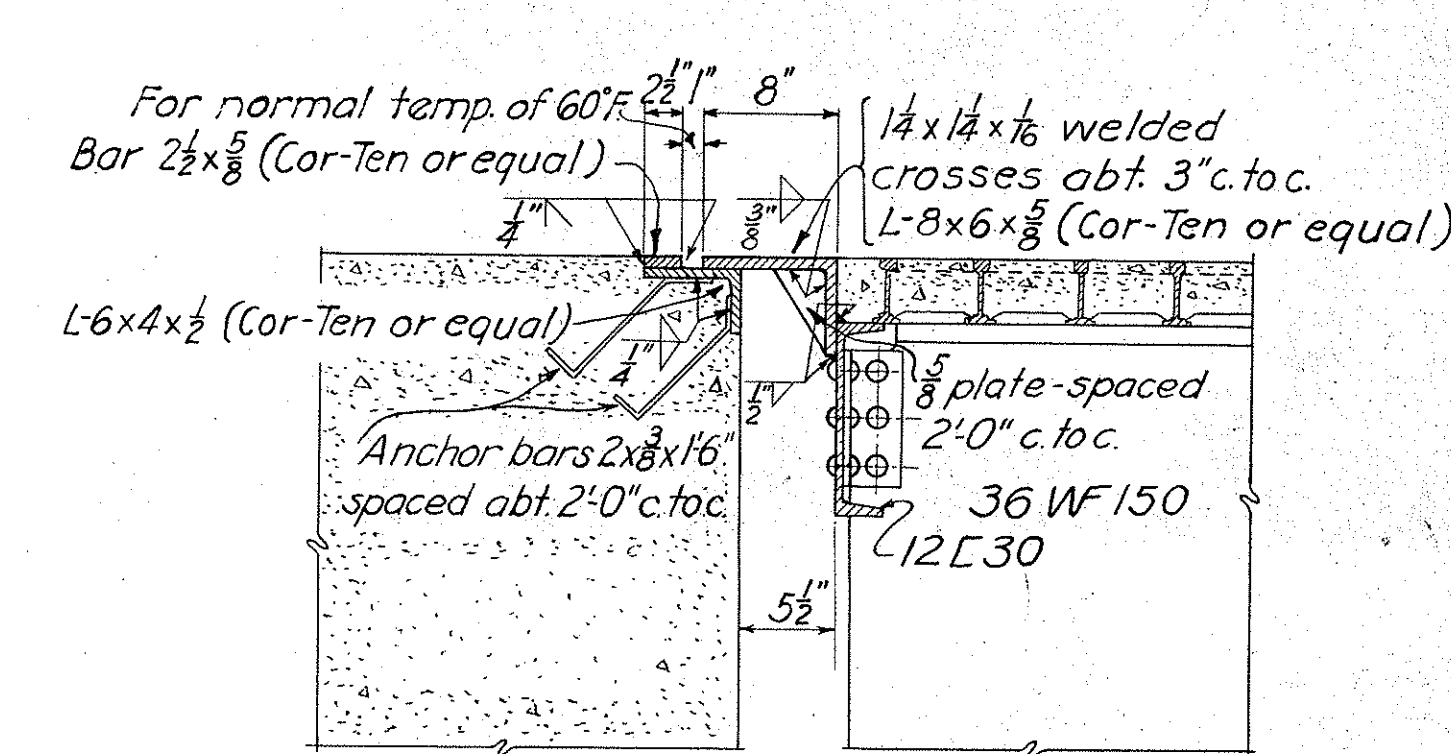
For normal temp. of 60°F.



SECTION A-A

DETAILS OF ROADWAY EXPANSION JOINT

SCALE: 1" = 1'-0"



DETAILS OF ROADWAY JOINT - FIXED END

SCALE: 1" = 1'-0"

NOTES

Expansion and fixed joints to be bent to match roadway.
Concrete for road surfacing and sidewalks to be Class "A".
Rivets 5/8".

**TUSCARAWAS RIVER
LOCAL PROTECTION PROJECT
MASSILLON, OHIO
WALNUT ROAD BRIDGE
FLOOR PLAN & DETAILS**

IN 147 SHEETS

SHEET NO. 124

SCALE: 3/32" = 1'-0"

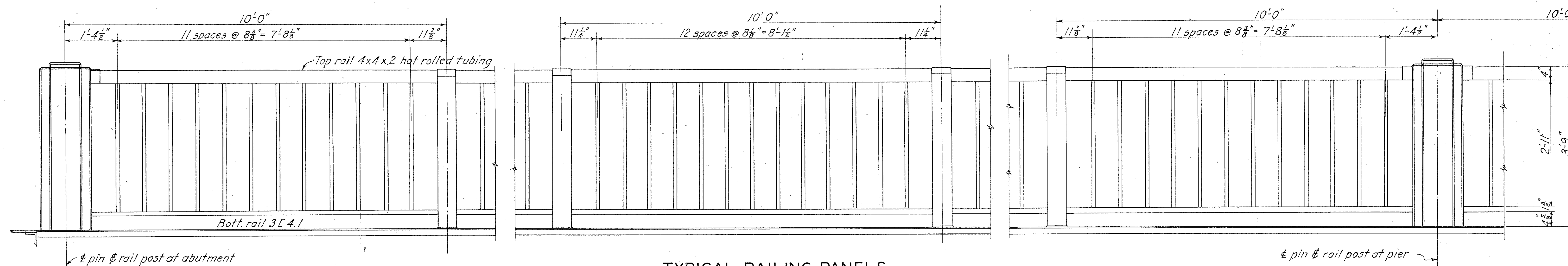
U. S. ENGINEER OFFICE: HUNTINGTON, W. VA. SEPT. 1940

SUBMITTED: [Signature] PRINCIPAL ENGINEER APPROVED: [Signature] CHIEF, CORPS OF ENGINEERS

DRAWN BY: H. S. M. TRANSMITTED WITH LETTER

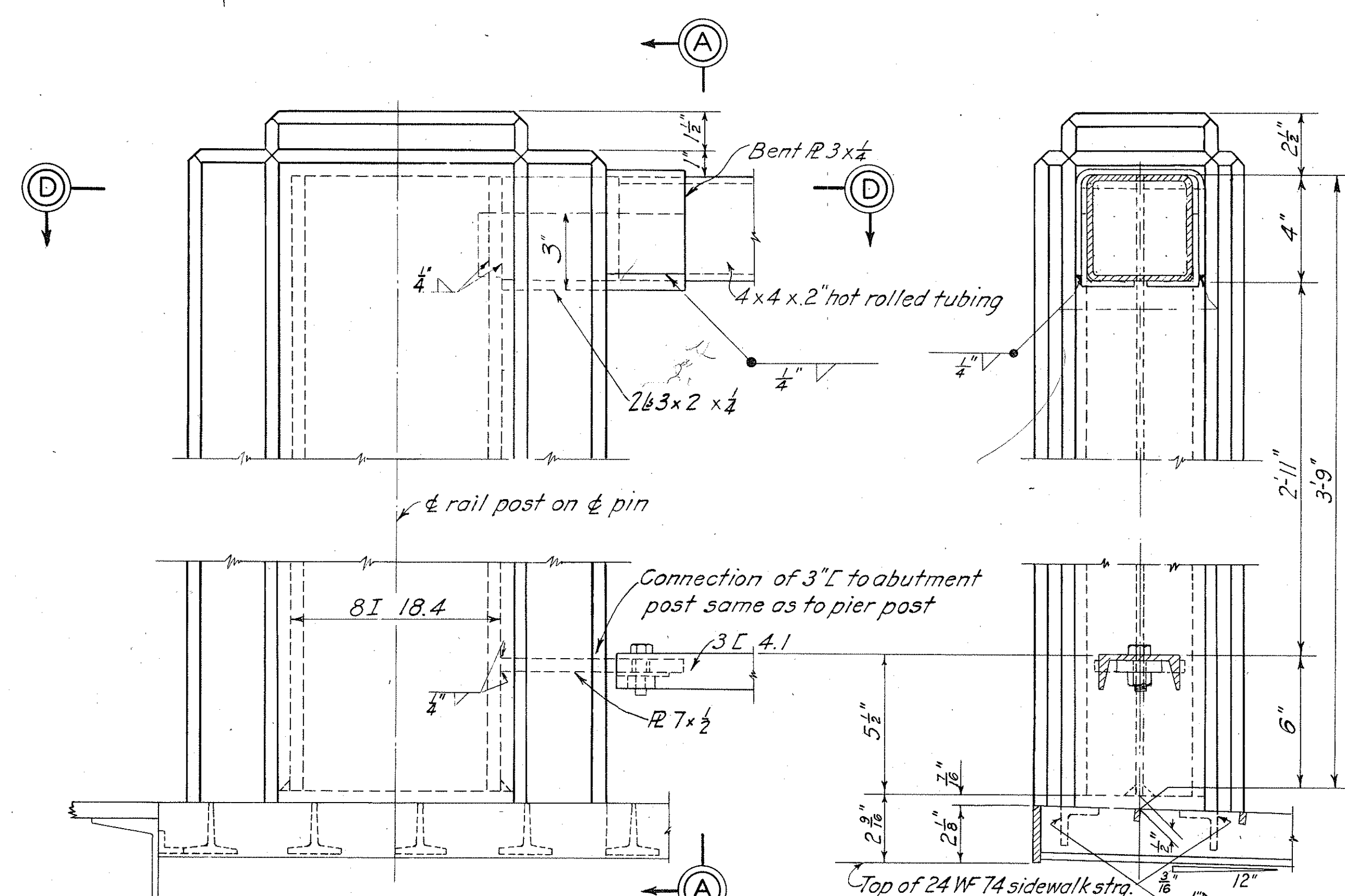
CHECKED BY: R. C. H. FILE NO. 0271-PM-68/42 DATED

BY	DATE	CHARACTER
		REVISIONS



TYPICAL RAILING PANELS

SCALE: 3/4" = 1'-0"

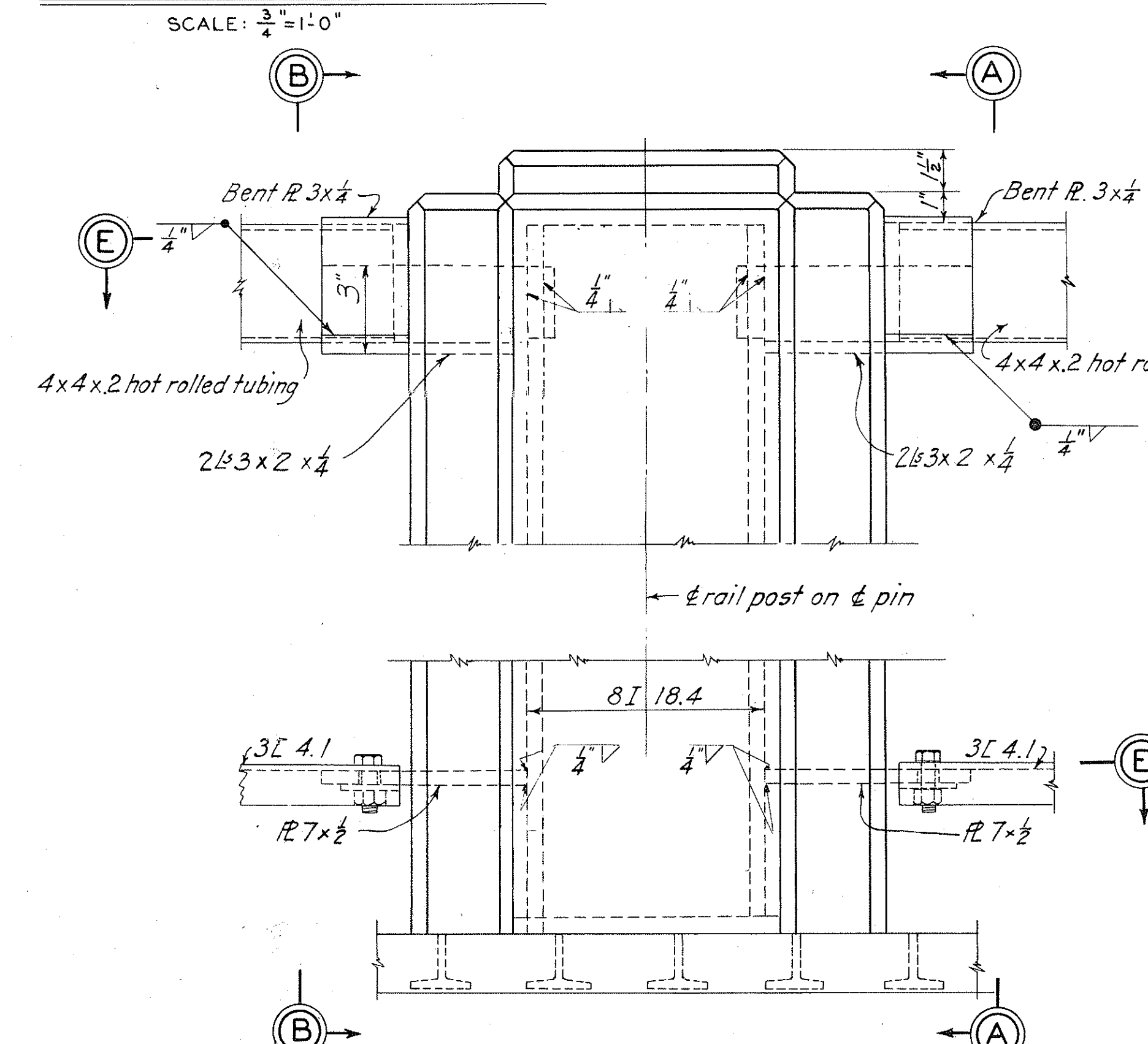


DETAILS AT ABUTMENT RAIL POST

SCALE: 3/4" = 1'-0"

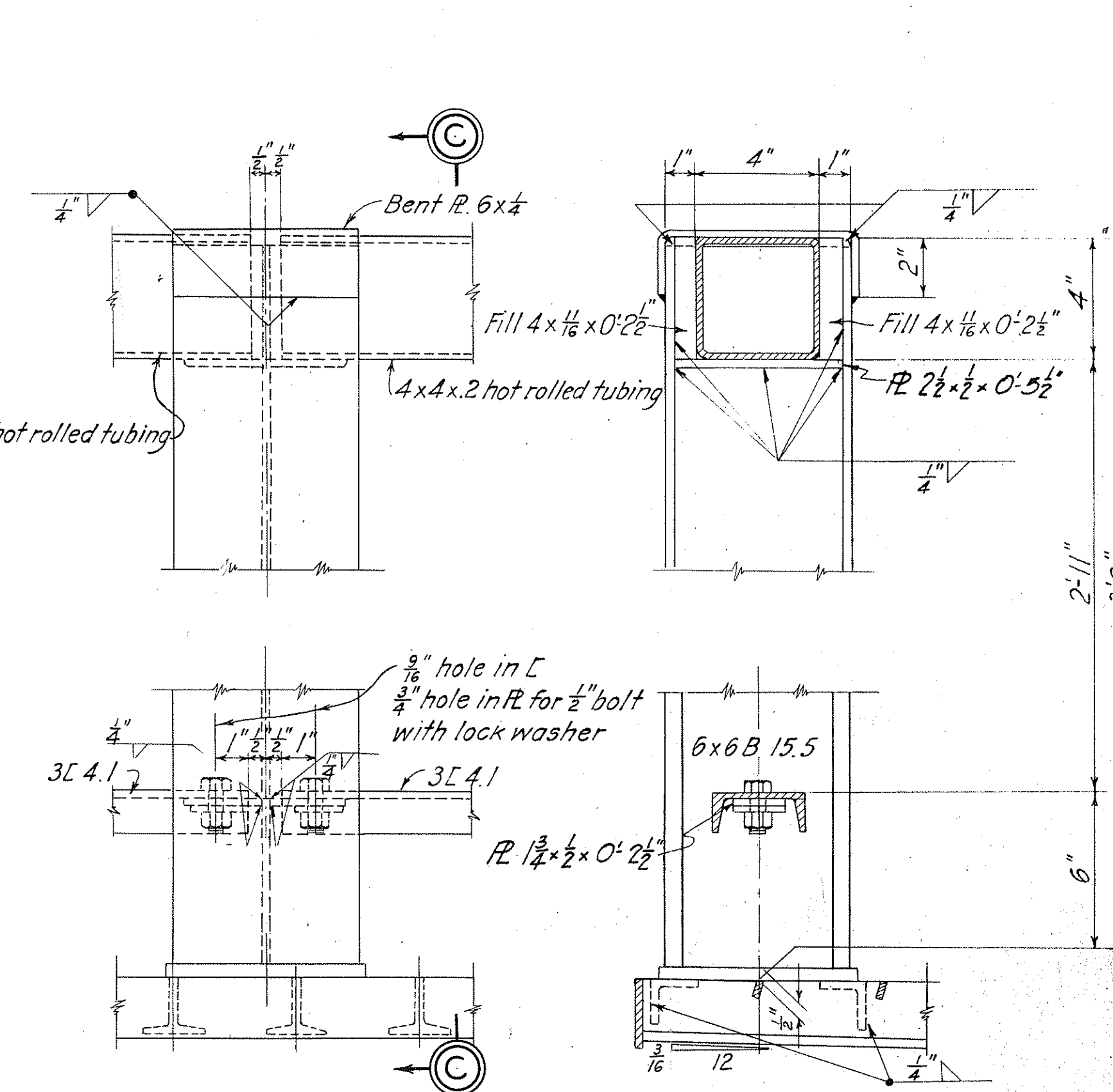
SECTION A-A AS SHOWN

SECTION B-B OPP. HAND



DETAILS AT PIER RAIL POST

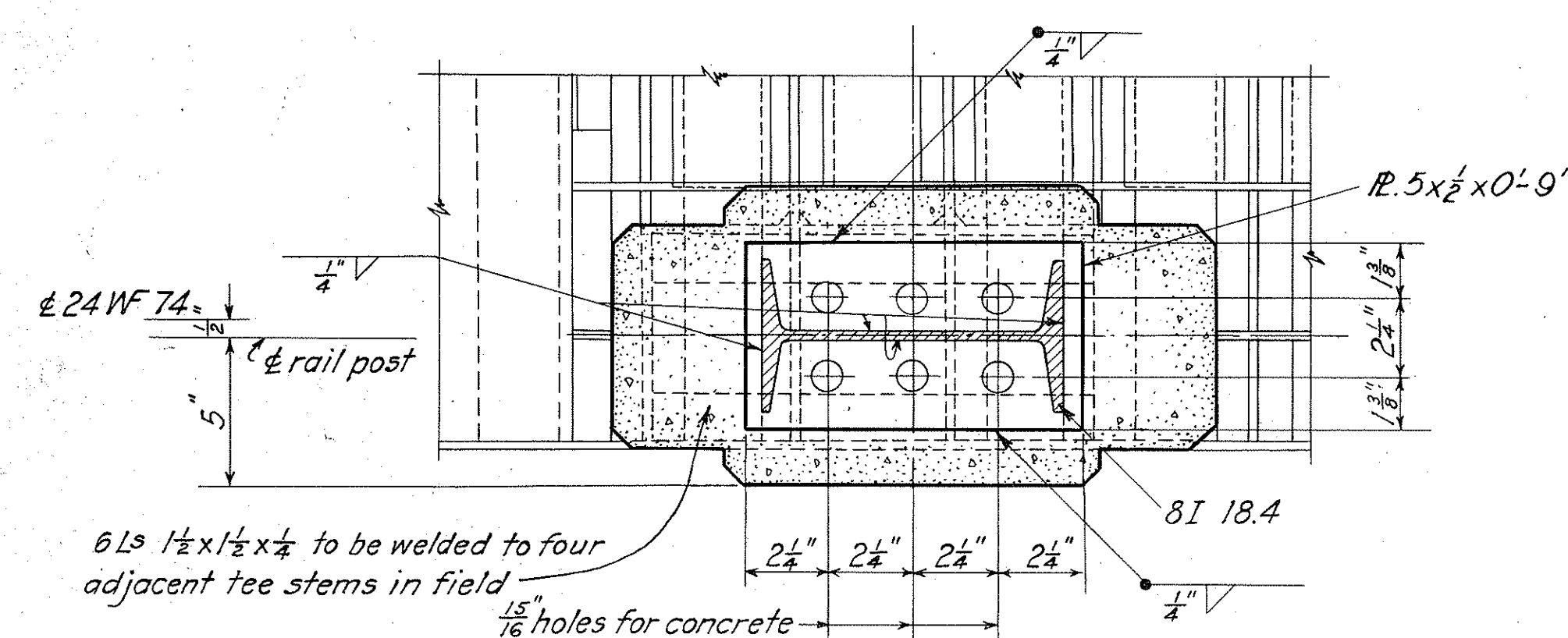
SCALE: 3/4" = 1'-0"



DETAILS AT INTERMEDIATE RAIL POST

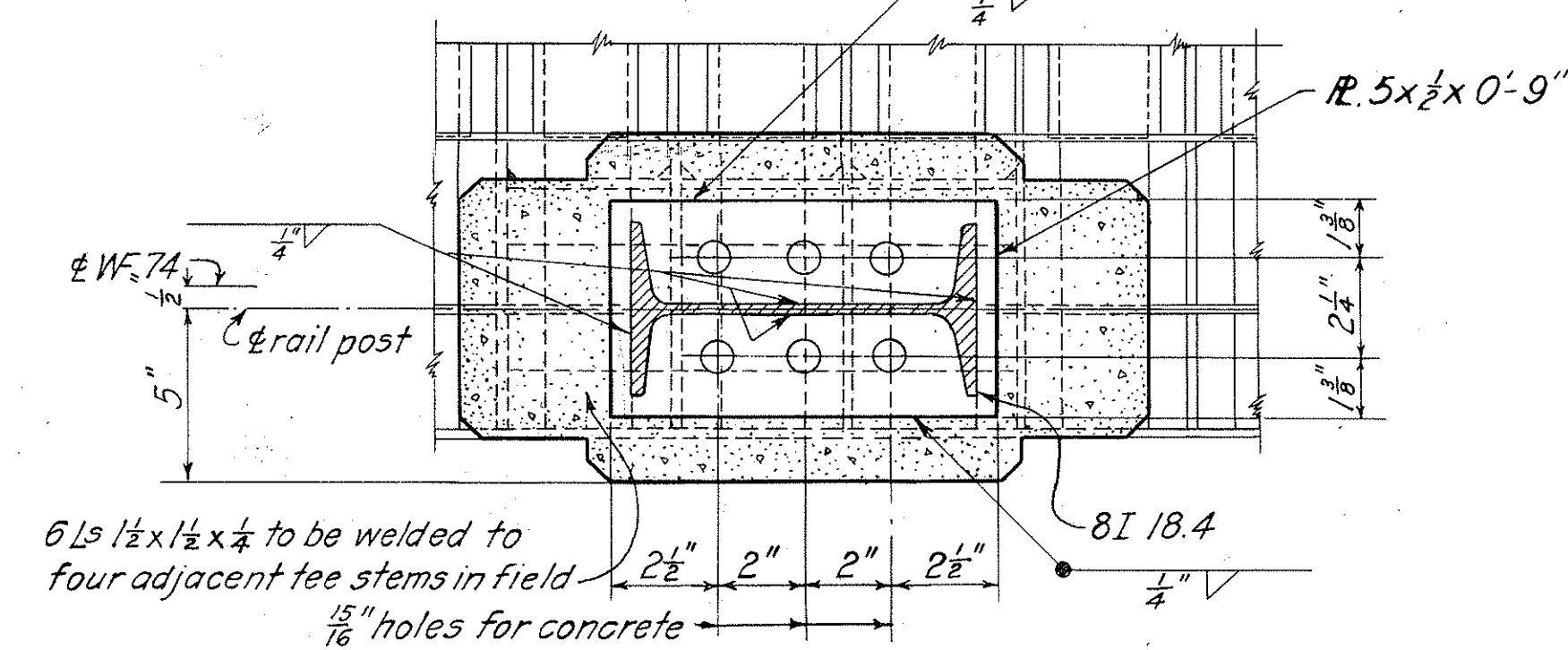
SCALE: 3/4" = 1'-0"

SECTION C-C



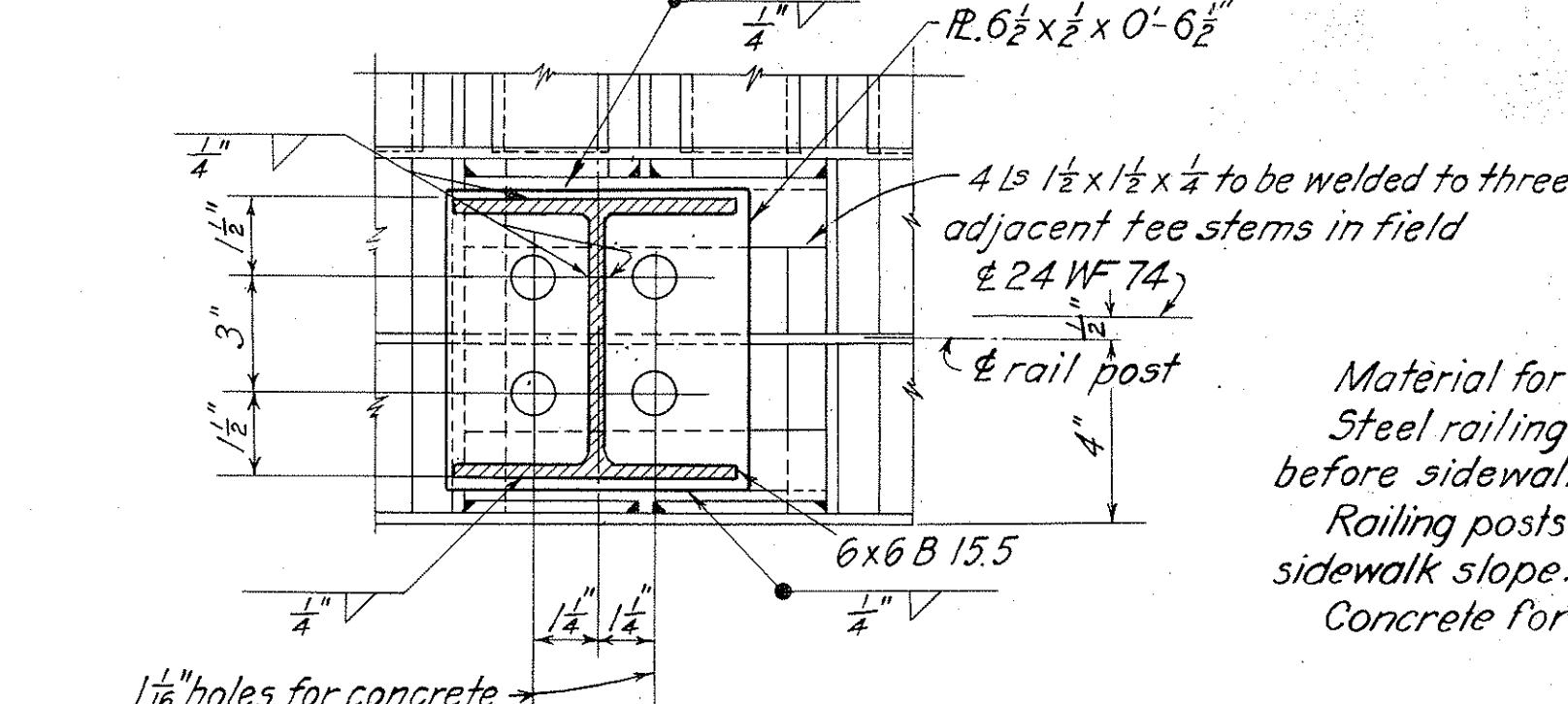
BASE DETAIL OF ABUTMENT RAIL POST

SCALE: 3/4" = 1'-0"



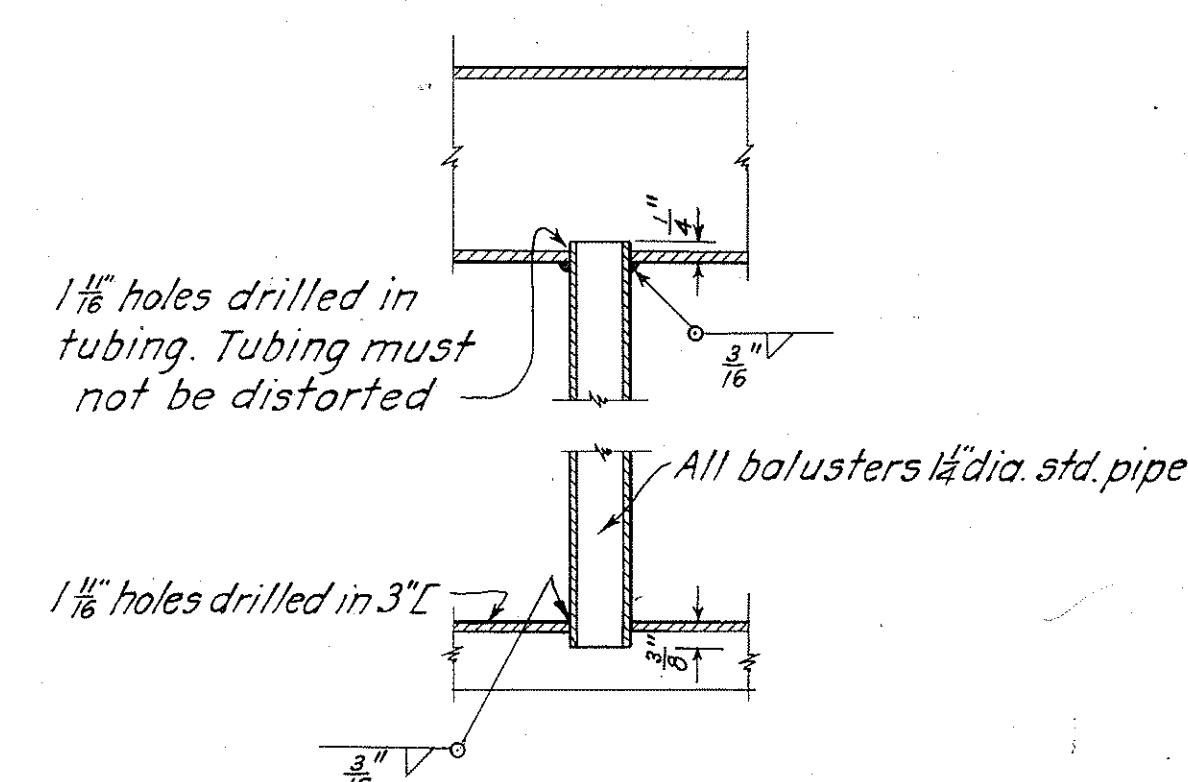
BASE DETAIL OF PIER RAIL POST

SCALE: 3/4" = 1'-0"



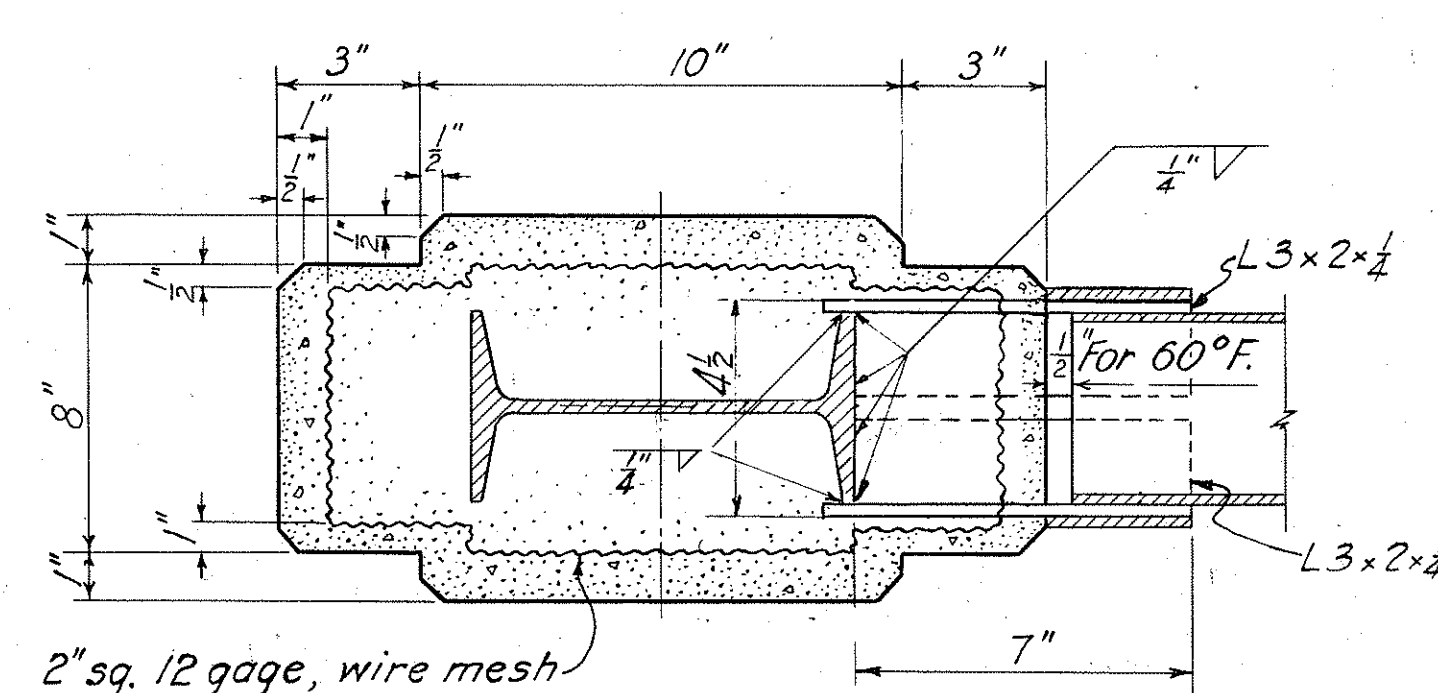
BASE DETAIL OF INTERMEDIATE RAIL POST

SCALE: 3/4" = 1'-0"

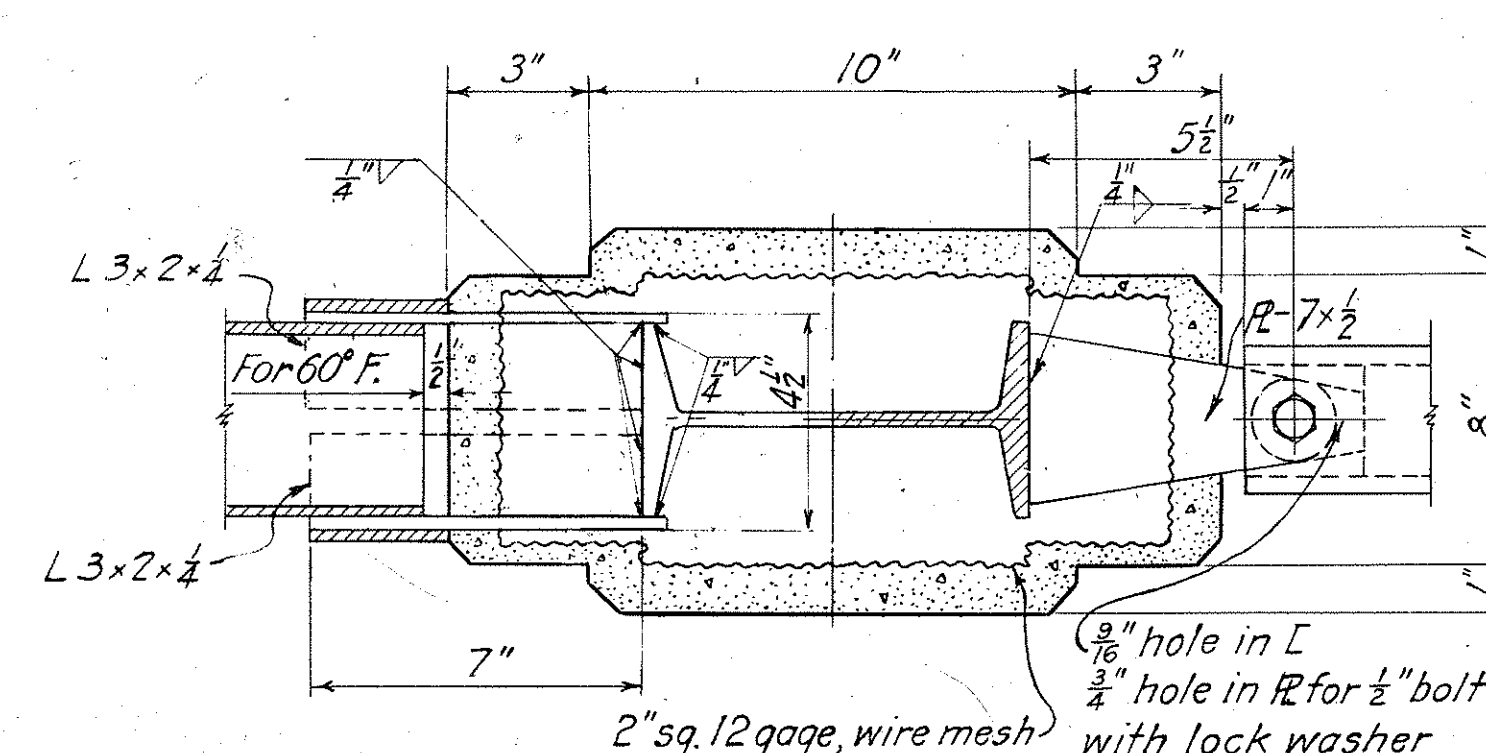


DETAIL OF BALUSTERS

SCALE: 3/4" = 1'-0"



SECTION D-D



SECTION E-E

NOTES

Material for railing to be structural steel.
Steel railing posts are to be welded in place
before sidewalk slab is poured.
Railing posts to be beveled to take care of
sidewalk slope.
Concrete for railing posts to be Class "A"

**TUSCARAWAS RIVER
LOCAL PROTECTION PROJECT
MASSILLON, OHIO
WALNUT ROAD BRIDGE
RAILING DETAILS**

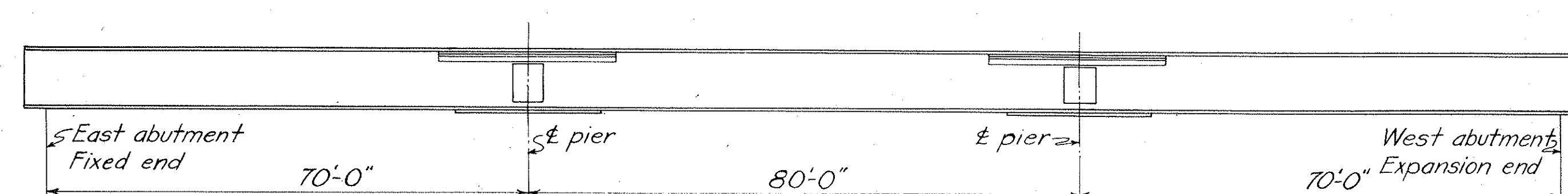
IN 147 SHEETS SHEET NO. 125 SCALE: 3/4" = 1'-0"

U. S. ENGINEER OFFICE, HUNTINGTON, W. VA. SEPT. 1940

SUBMITTED BY: [Signature] APPROVED: [Signature] CH. COL. CORPS OF ENGINEERS

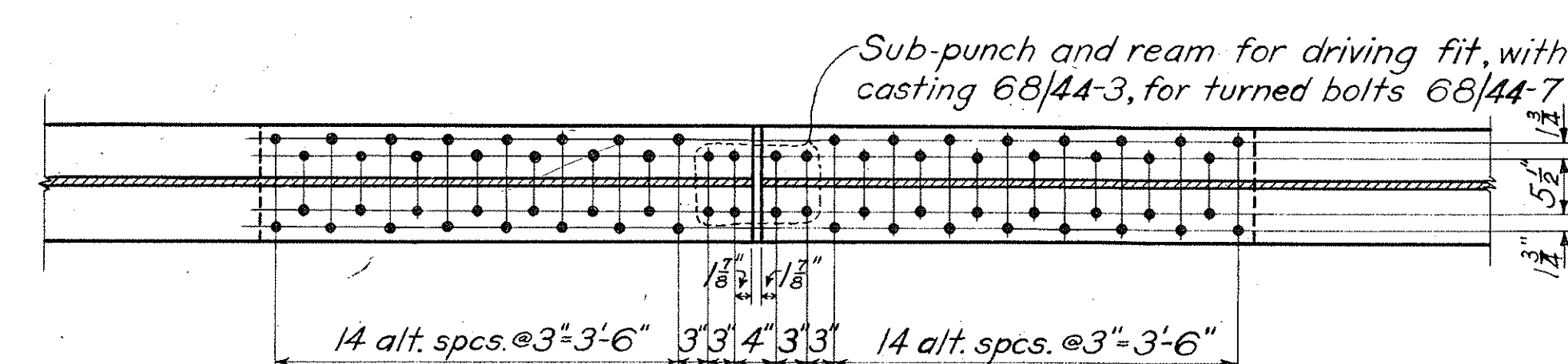
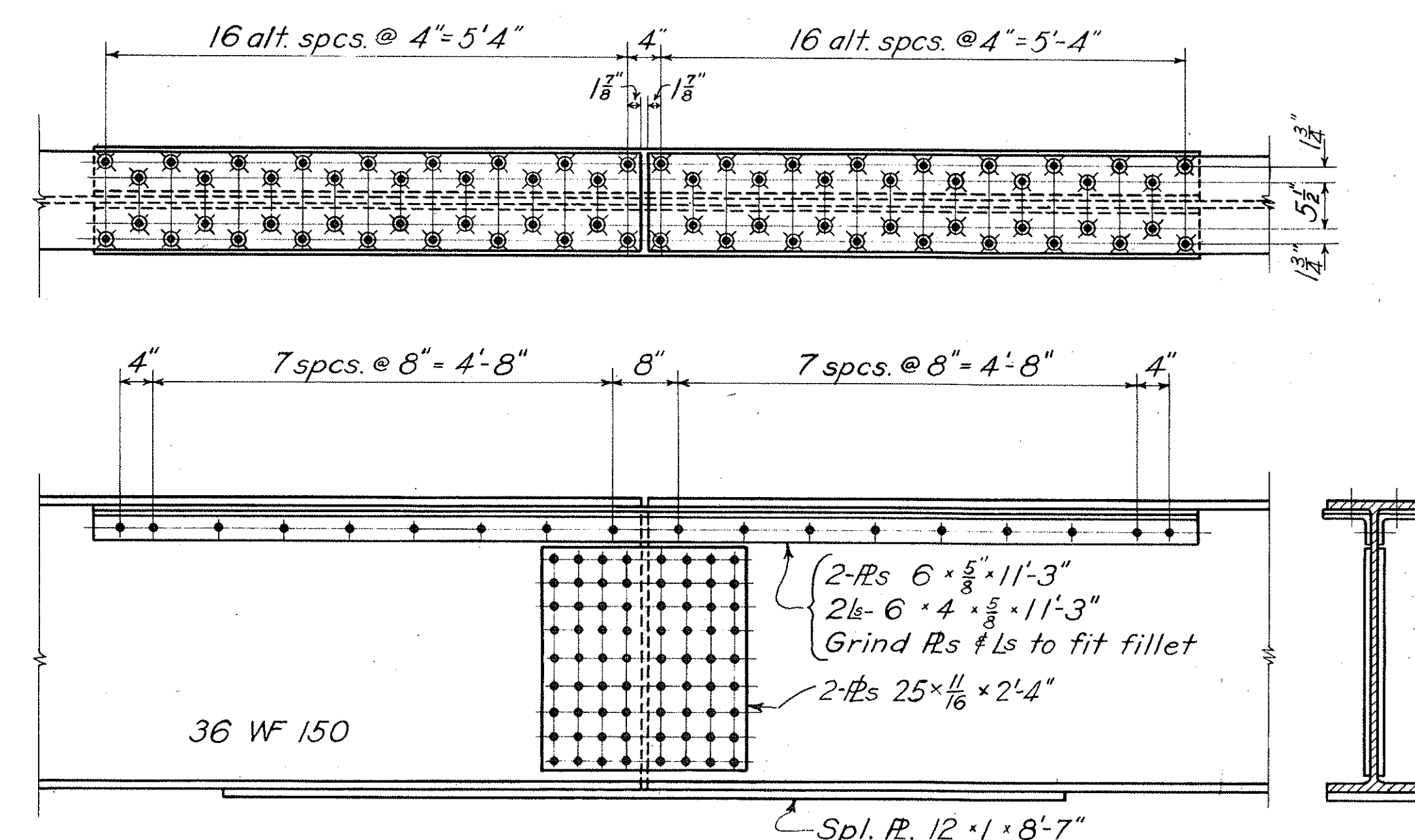
DRAWN BY: A. W. S. TRACED BY: V. S. V. CHECKED BY: H. U. B. FILE NO. 0271-PM-6843 DATED

BY	DATE	CHARACTER
		REVISIONS



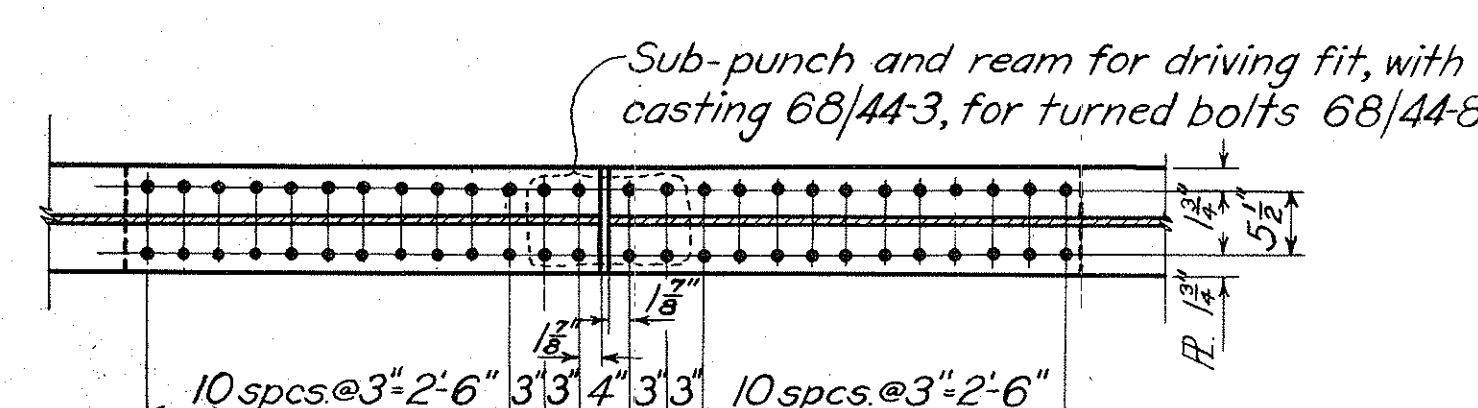
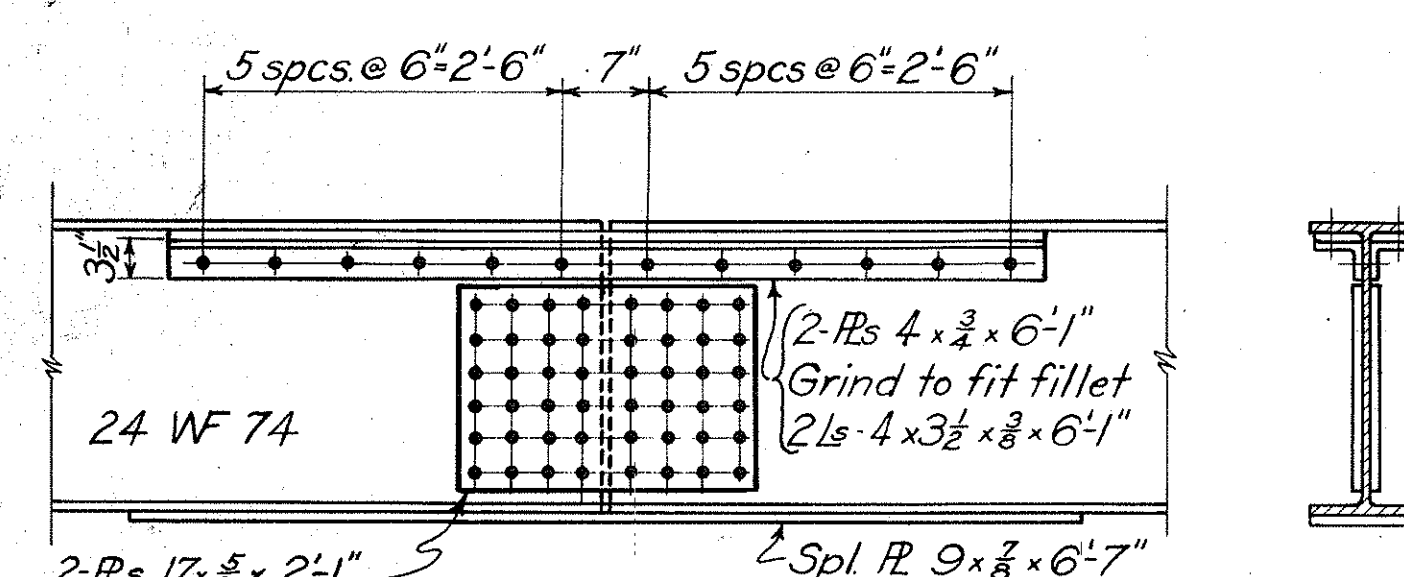
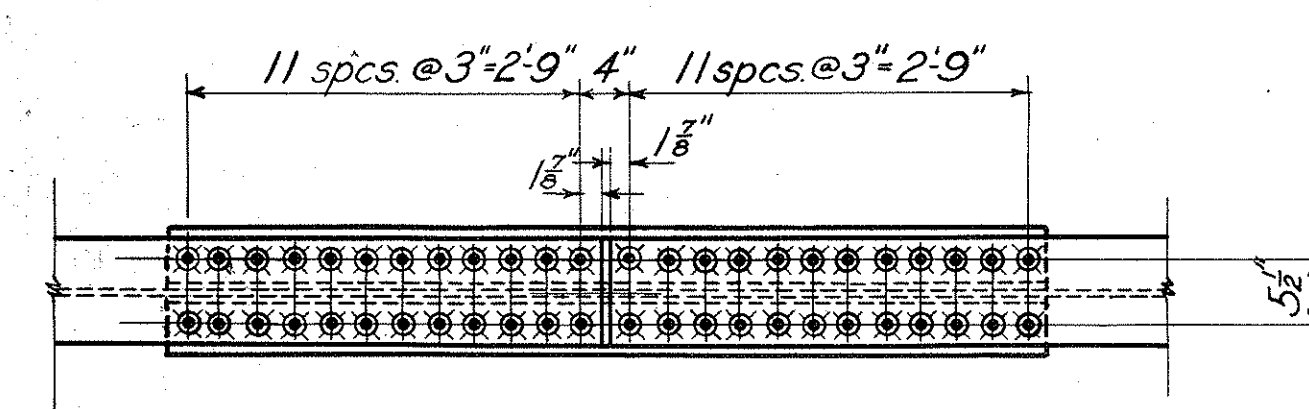
SPLICE DIAGRAM

NOT TO SCALE



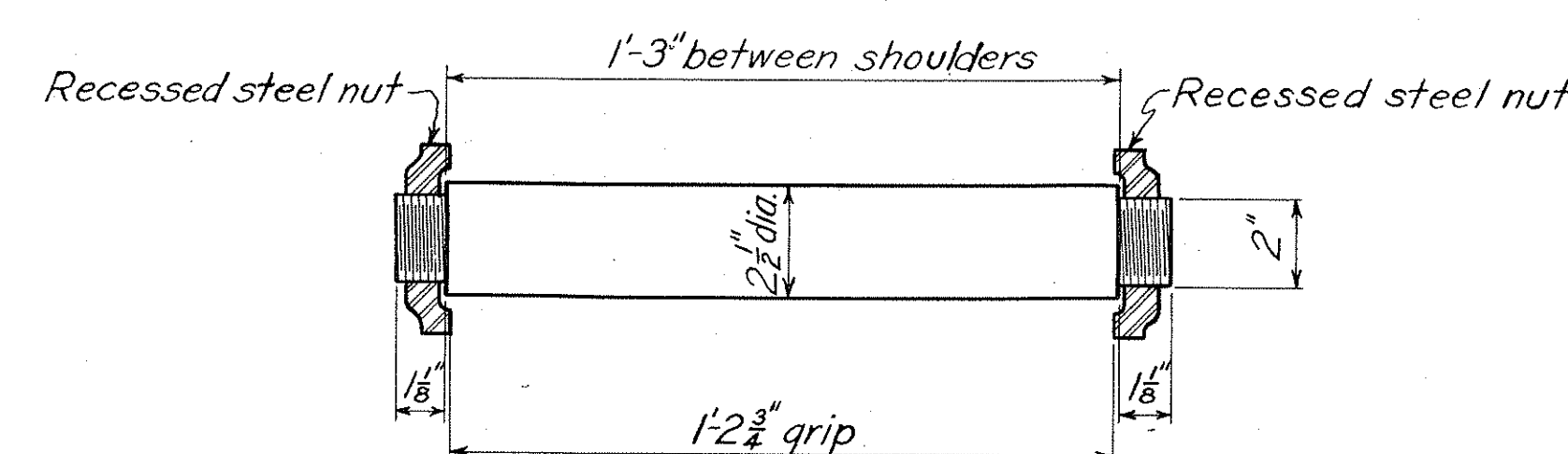
SPLICE FOR ROADWAY STRINGERS

SCALE: 3/4" = 1'-0"

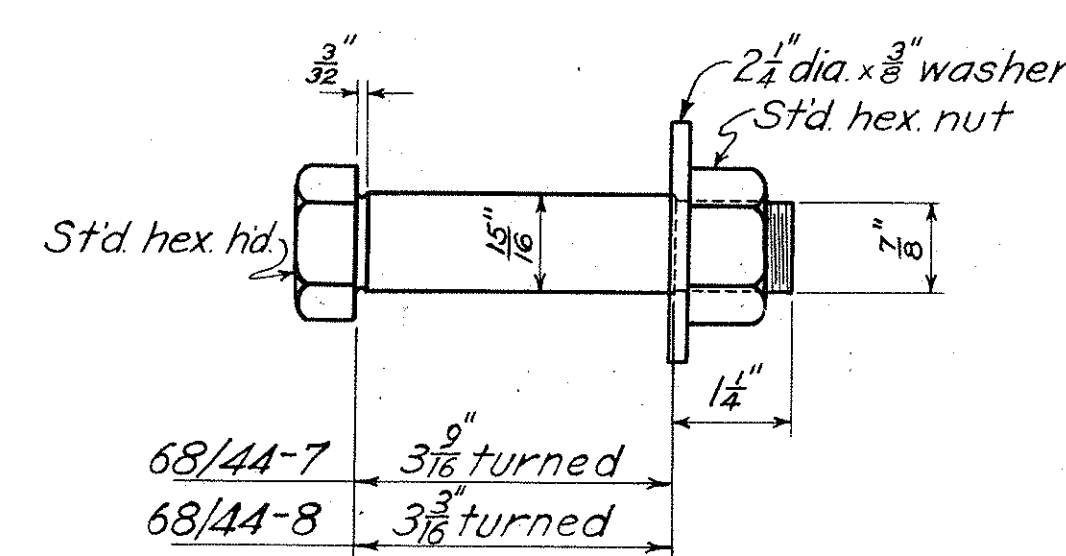


SPLICE FOR SIDEWALK STRINGERS

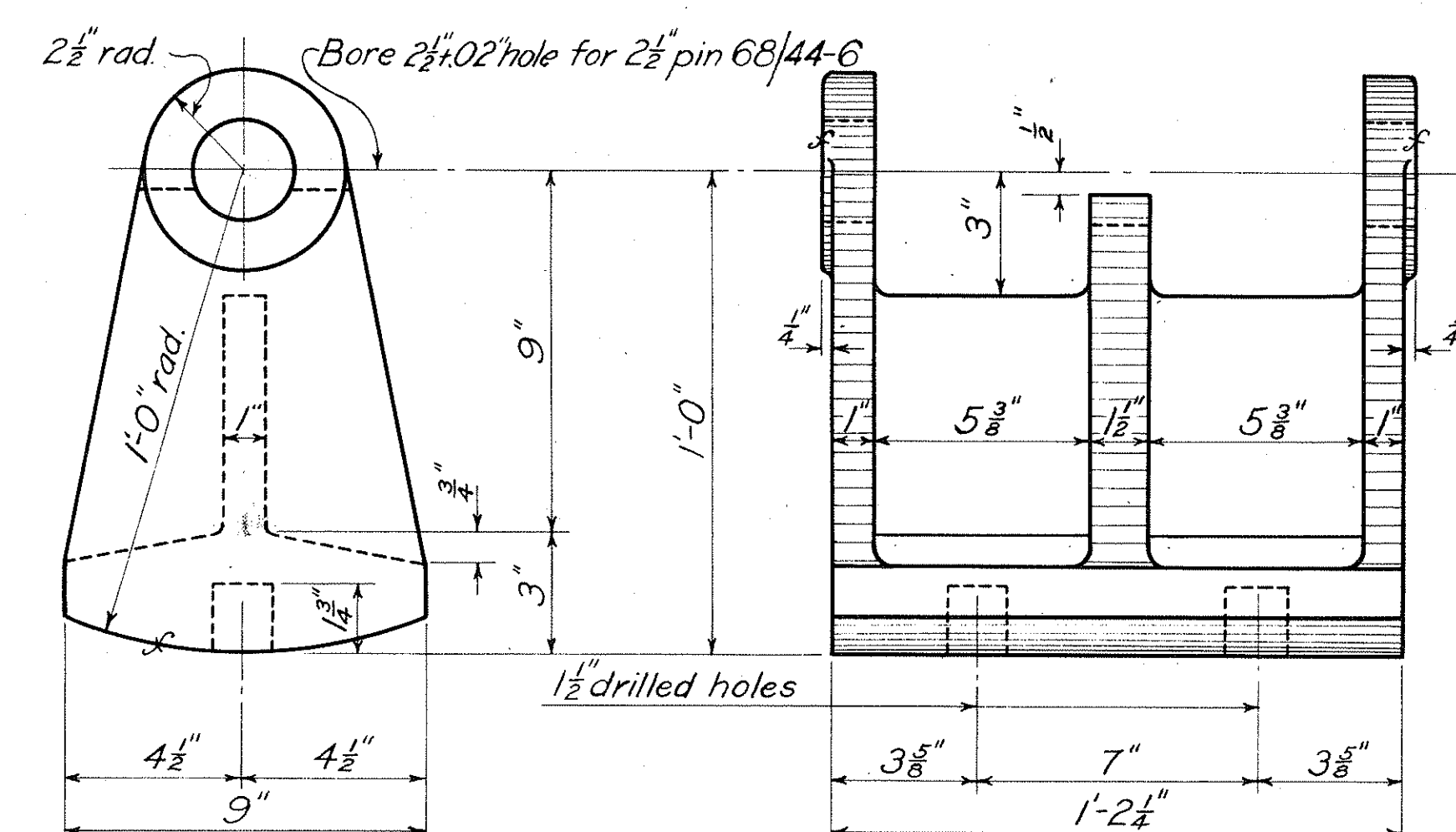
SCALE: 3/4" = 1'-0"



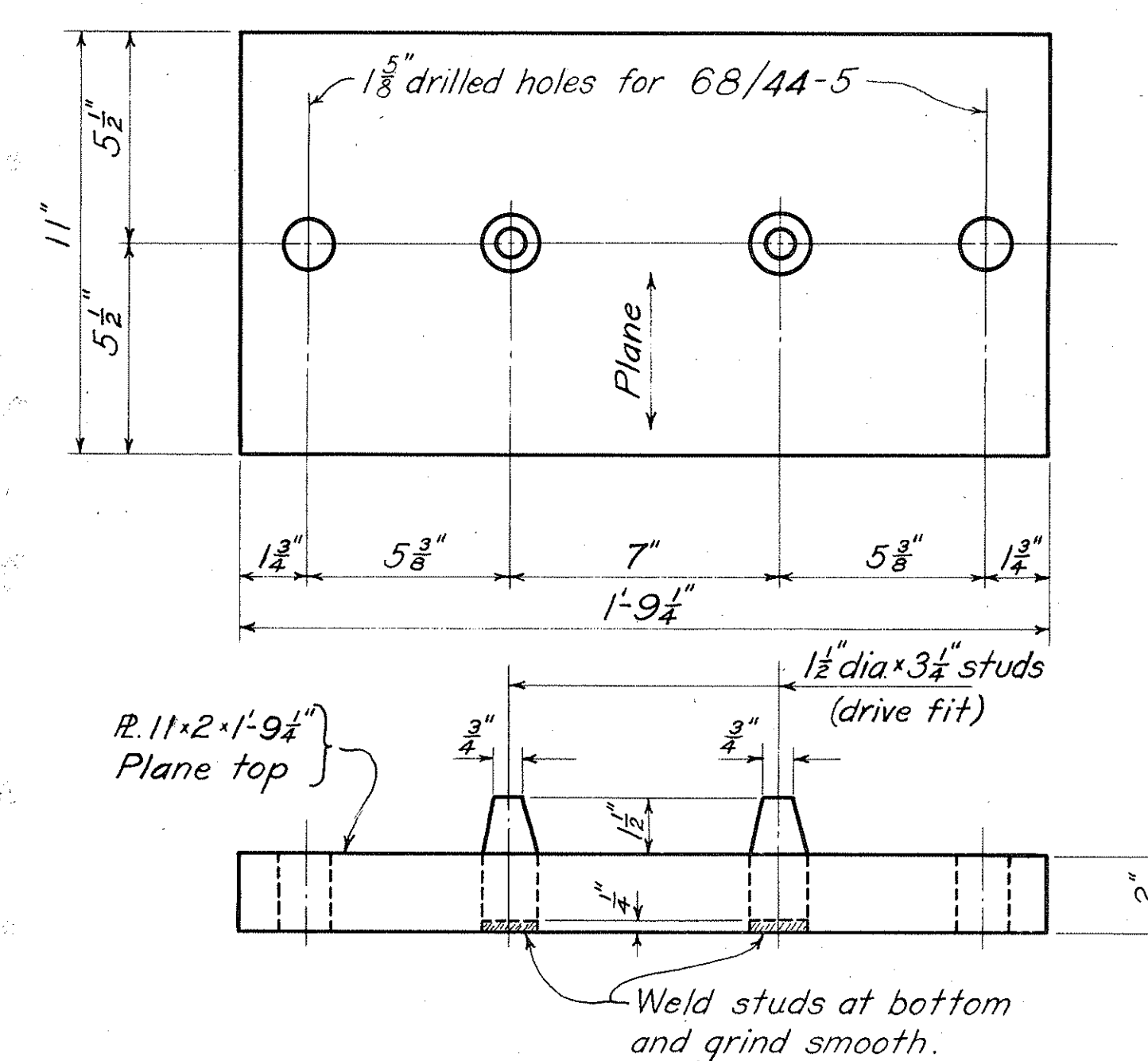
DETAIL OF PIN

COLD ROLLED STEEL WITH RECESSED STEEL NUT
MARK 68/44-6 COLD ROLLED STEEL WT. 26.9 LBS.
MAKE 32 RECESSED STEEL NUTS WT. 4.0 LBS.

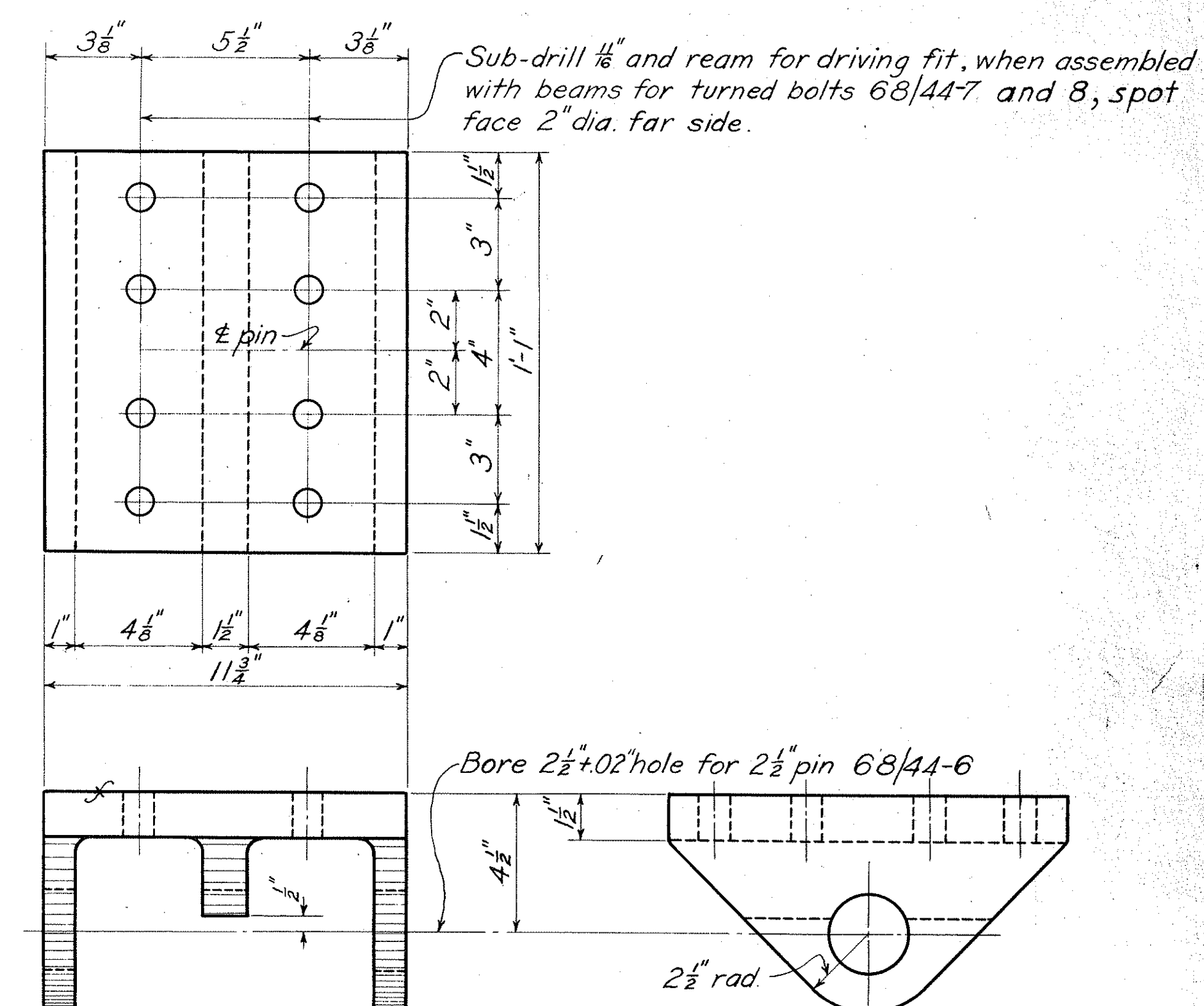
DETAIL OF TURNED BOLT

STRUCTURAL STEEL
MARK 68/44-7 MAKE 192 WT. 1.80 LBS.
MARK 68/44-8 MAKE 64 WT. 1.72 LBS.
SCALE 6" = 1'-0"

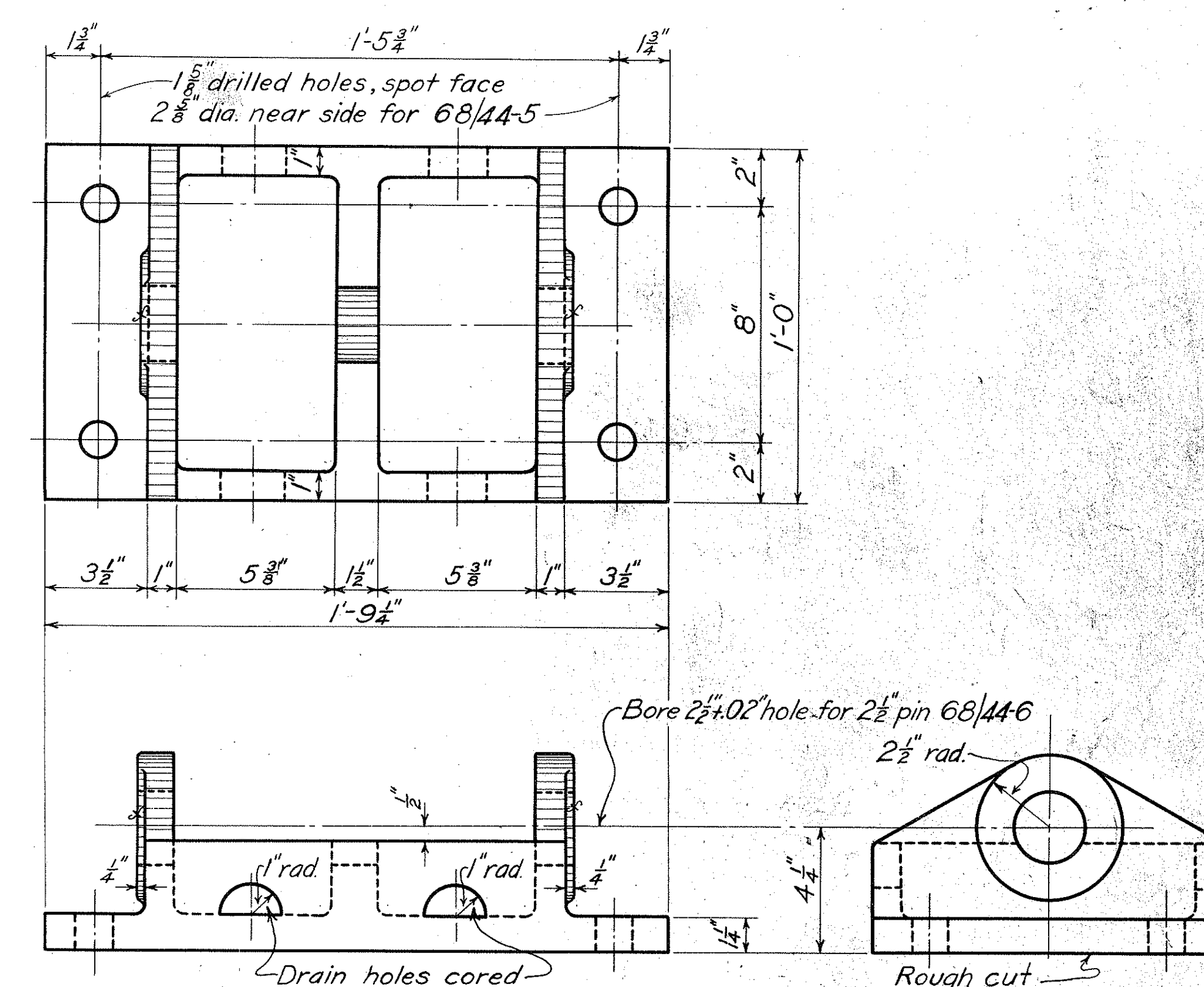
DETAIL OF ROCKER

CAST STEEL CLASS 2 MARK 68/44-1
MAKE 24 WT. 173.0 LBS.

DETAIL OF BASE PLATE

STRUCTURAL STEEL MARK 68/44-2
MAKE 24 WT. 131.0 LBS.

DETAIL OF UPPER SHOE

CAST STEEL CLASS 2 MARK 68/44-3
MAKE 32 WT. 95.0 LBS.

DETAIL OF BOLSTER

CAST STEEL CLASS 2 MARK 68/44-4
MAKE 8 WT. 145.0 LBS.

NOTES

3/8" rivets for girder splices.
Casting fillets are 3/4" rad. unless noted.TUSCARAWAS RIVER
LOCAL PROTECTION PROJECT
MASSILLON, OHIO
WALNUT ROAD BRIDGE
CASTINGS & SPLICES

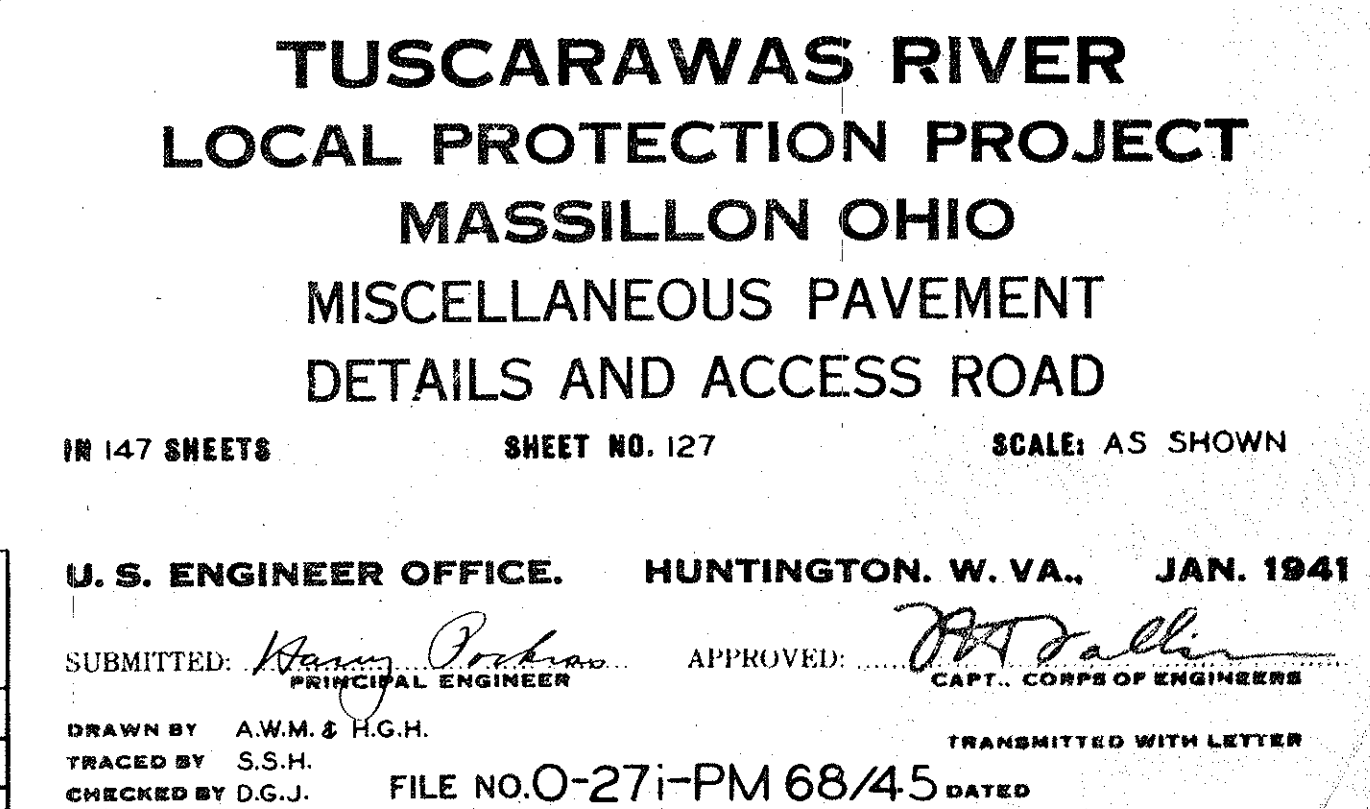
IN 147 SHEETS SHEET NO. 126 SCALE: 3/4" = 1'-0"

U. S. ENGINEER OFFICE. HUNTINGTON, W. VA. SEPT. 1940

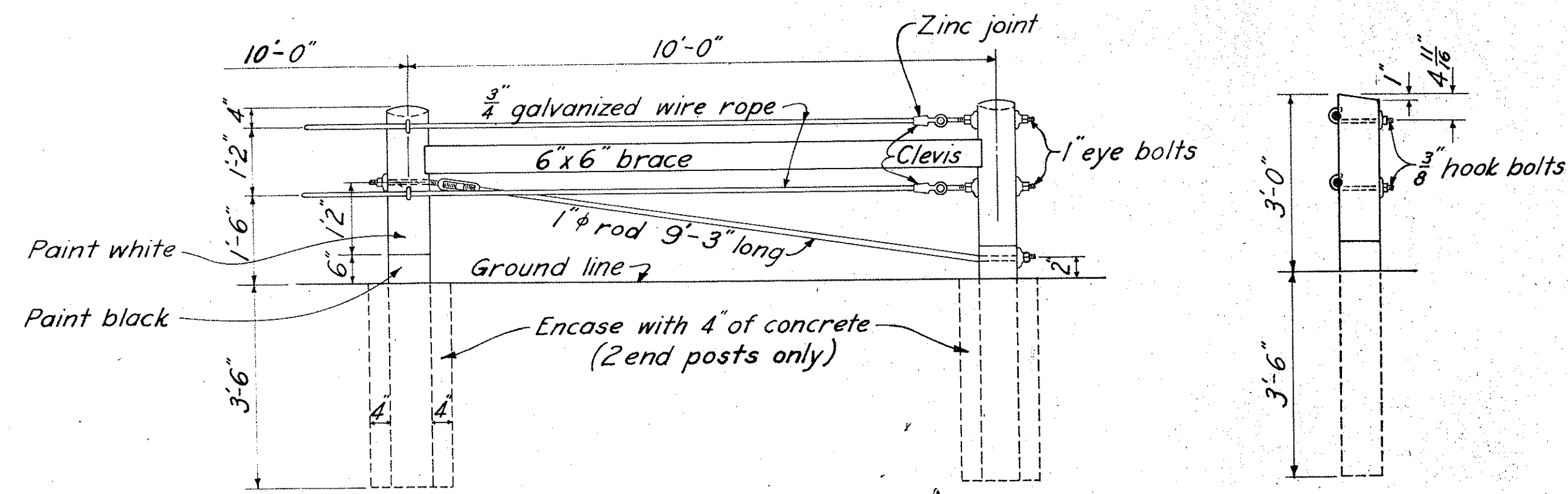
SUBMITTED BY: [Signature] APPROVED BY: [Signature]

DRAWN BY: A.W.S. CHECKED BY: H.U.B. FILE NO. 0271-PM-68/44

BY	DATE	CHARACTER
		REVISIONS

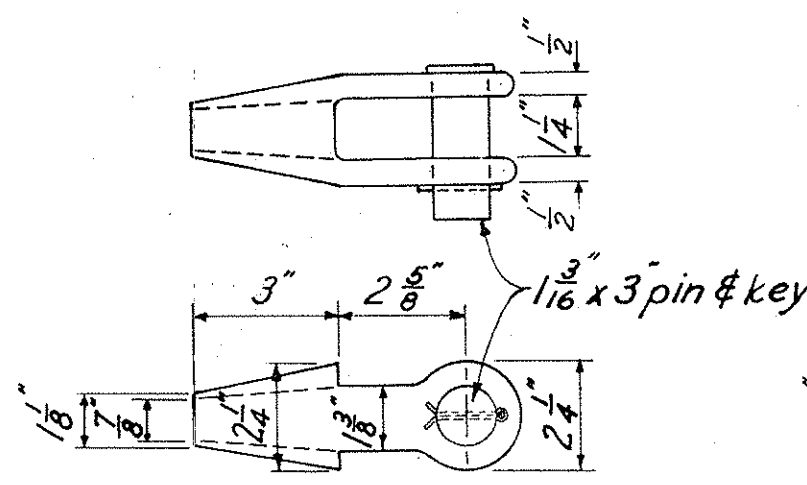


PE-17-24



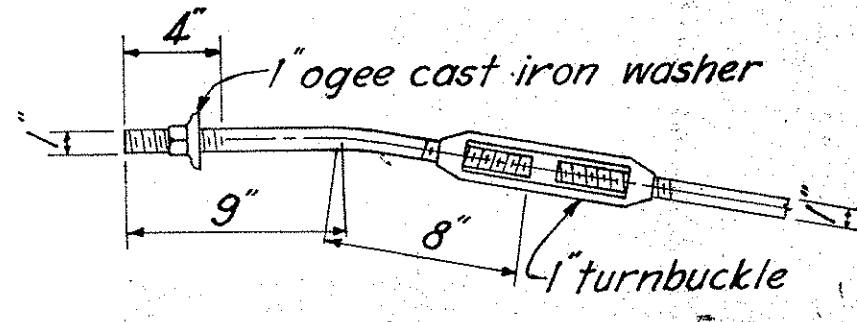
INTERMEDIATE POST

SCALE: $\frac{1"}{2} = 1'-0"$



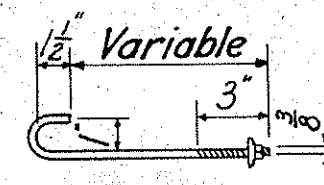
DETAIL OF EYE BOLT

SCALE: $1\frac{1}{2}'' = 1' - 0''$



DETAIL OF TIE ROD FITTING

SCALE: $1\frac{1}{2}'' = 1' - 0''$



DETAIL OF HOOK BOLT

SCALE: $1\frac{1}{2}'' = 1'-0''$

3'x6" timber

3'x6" timber

3'x8" timber & track

3'x8" timber

3'x6" timber

3'x6" timber

3'x6" timber

3'x8" timber & track

3'x8" timber

3'x6" timber

37'±

14'-0"

5'x6" timber

Bituminous bound crushed stone surfacing.
Not less than 6" thick.

Crushed stone

Cleat

Ballast

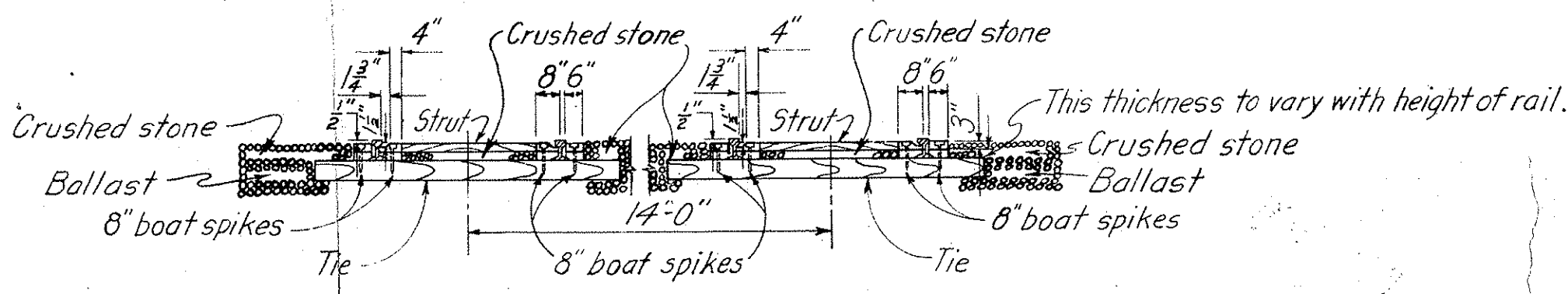
DETAILED

SCALE: 1"=1'-0"

DETAIL

SCALE: $1'' = 1' - 0''$

SCALE: $\frac{1}{4}'' = 1'-0''$



CROSS SECTION

SCALE: $\frac{1}{4}'' = 1' - 0''$

APPROACHES TO FIFTH STREET
AND B. & O. FREIGHT HOUSE DRIVE

SCALE : 1" = 20'

LEGEND

Expansion joint
Longitudinal joint

LAYOUT OF APPROACHES

H.O.W.	6-20-47	REVISED TO AGREE WITH ADDENDUM NO. 1	
BY	DATE	CHARACTER	
R E V I S I O N S			

**TUSCARAWAS RIVER
LOCAL PROTECTION PROJECT
MASSILLON, OHIO**

SECTION 2 - UNIT 1

MISCELLANEOUS PAVEMENT

DETAILS AND ACCESS ROAD

IN 37 SHEETS SHEET NO. 30 SCALE: AS SHOWN

HUNTINGTON DISTRICT, CORPS OF ENGINEERS, WAR D

SUBMITTED	RECOMMENDED FOR APPROVAL	APPROVED
<i>B. M. Lutz</i>	<i>R. C. Vickers</i>	<i>J. M. Deaton</i>
ENGINEER	TECHNICAL ASSISTANT	COLONEL, CORPS OF ENG

DRAWN BY E. W. H. TRANSMITTED WITH
TRACED BY E. W. H.
CHECKED BY H. O. W. FILE NO 027i-PM2-68/45 DATED