

ARKANSAS STATE HIGHWAY COMMISSION

DWIGHT H. BLACKWOOD

CHAIRMAN

JUSTIN MATTHEWS J. LAN WILLIAMS

J. S. PARKS SAM J. WILSON

COMMISSIONERS

HIGHWAY BRIDGE OVER RED RIVER

AT

GARLAND CITY, ARKANSAS

(LAFAYETTE & MILLER COUNTIES)

C. S. CHRISTIAN
HIGHWAY ENGINEER

JOB NO. 3112

IRA G. HEDRICK INC.
CONSULTING ENGINEERS
HOT SPRINGS, ARKANSAS.

N. B. GARVER
BRIDGE ENGINEER

U.S.R.-82

S-1&2

INDEX


TITLE SHEET	
PLAN AND PROFILE OF TOLL BRIDGE & APPROACHES	
PLAN AND PROFILE OF TOLL BRIDGE & APPROACHES	
PLAN AND PROFILE OF BRIDGE	
MAP OF BRIDGE SITE AND PROFILE OF BORINGS	
STRESSES AND SECTIONS- 300'-0" SIDE SPANS	
STRESSES AND SECTIONS- 300'-0" CENTER SPAN	
DETAILS, MAIN MEMBERS 300'-0" TRUSS L ₁ L ₂	
DETAILS, MAIN MEMBERS 300'-0" TRUSS L ₃ L ₄	
DETAILS OF PIERS FOR STEEL SPANS	
CAISSON DETAILS	
DETAILS OF APPROACH GIRDER SPANS	
RETAINING WALLS, COLUMNS, AND FOOTINGS	
HYDROGRAPH, RIVER STAGES AT FULTON A.P.K. 1917 TO 1927 INCL.	
DETAILS OF GAS PIPE SUPPORTS	
PILE RECORD	
BANK PROTECTION ON RED RIVER AT GARLAND CITY	

SHEET DRWG.	
NO.	NO.
1	4998
2	4999
3	5000
4	5001
5	5002
6	5003
7	5004
8	5005
9	5006
10	5007
11	5008
12&13	5009&10
14	5011
15	4926
16	5012
17	5013
18	5014

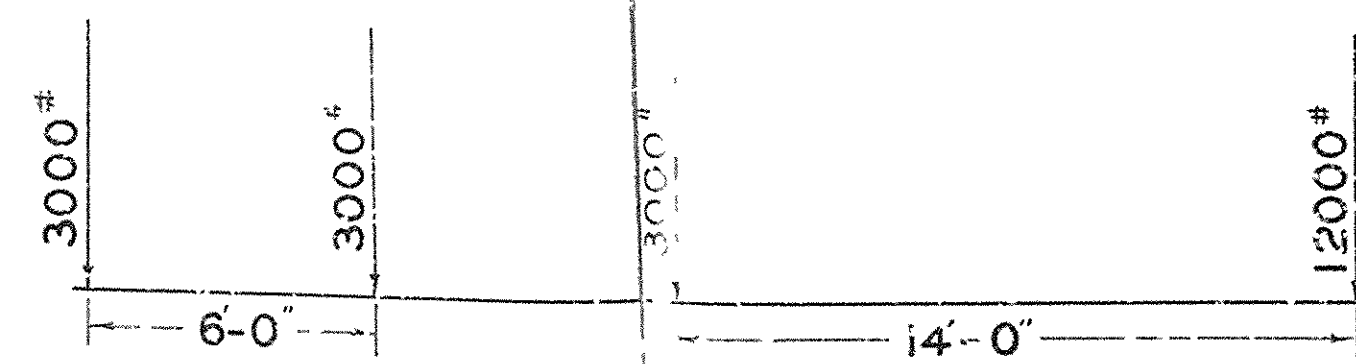
CONSTANTS

	CONCRETE 1-1-2 MIX	STEEL
FLOORSLABS CROSS GIRDERS GIRDERS ETC.	975# PER SQ. IN.	
BEAMS CONTINUOUS OVER SUPPORTS: AT CENTER OF BEAMS	975#	" " "
BOND FOR STEEL IN CONCRETE OVER SUPPORTS	1125#	" " "
COLUMNS DIRECT COMPRESSION	150#	" " "
NOTE: FOR 1-2-4 CONCRETE DECREASE ABOVE STRESSES 33 1/3%		
TENSION NET SECTION		16000# PER SQ.
COMP. IN COLS. & OTHER COMP MEMBERS FIXED ENDS	900 - $\frac{22.5L}{D}$	" " "
MODULI OF ELASTICITY STEEL		30000000# " "
" " " CONCRETE 1-2-4	2000000#	" " "
" " " " 1-1-2	3000000#	" " "
VARIATION IN TEMPERATURE	± 50°	
COEFFICIENT OF EXPANSION	.0000055	.0000067

GENERAL NOTES

All hooks on reinforcing bars to have a radius of 4d and a return of 12d where d = diameter of round bar or side of square bar. Lengths of hooked bars are given to starting point of hook, thus: 
All bends such as on girder bars must have a radius of not less than 12d.
Centers of bars in floor slab to be not less than 1 1/2" from face of concrete.
Centers of bars to be 4" from face of concrete on piers & abutment shafts, and 3" on girders and columns unless otherwise noted.
Chamfers to be 2" throughout unless otherwise noted.

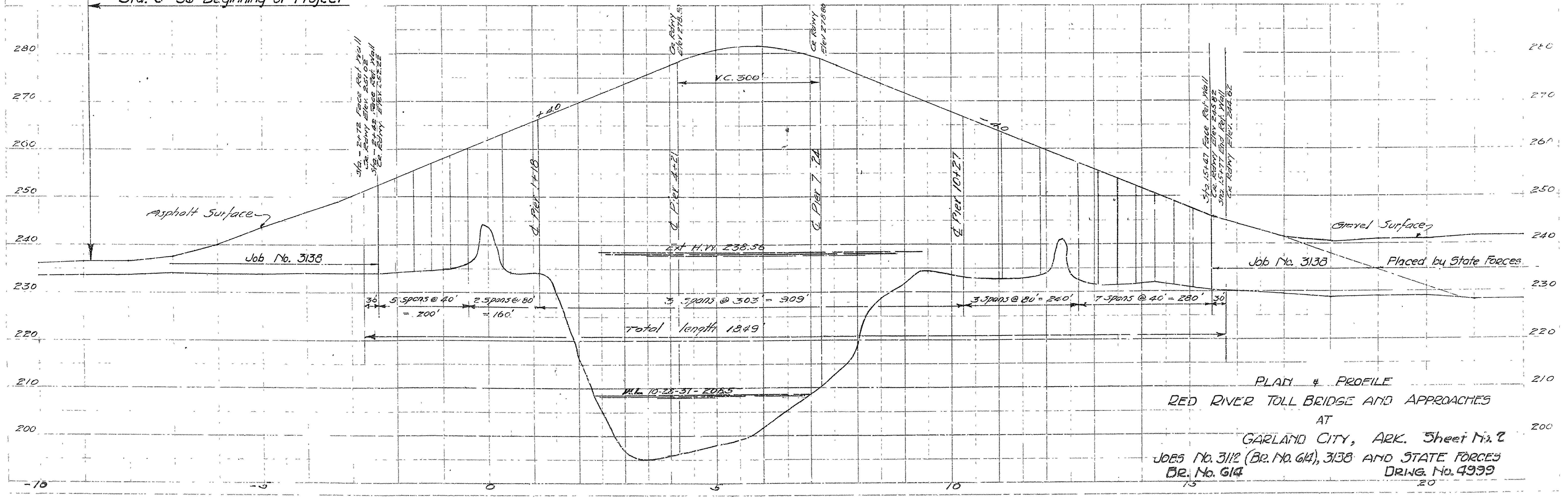
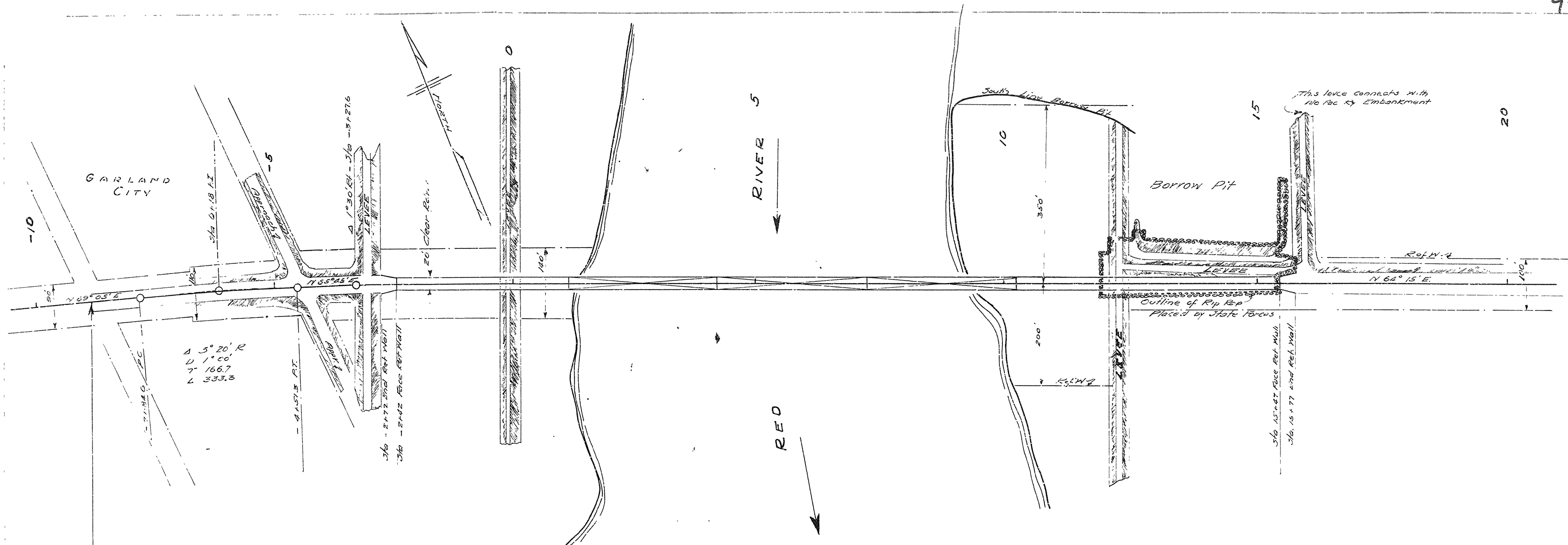
WHEEL CONCENTRATIONS, CLASS A LOADING

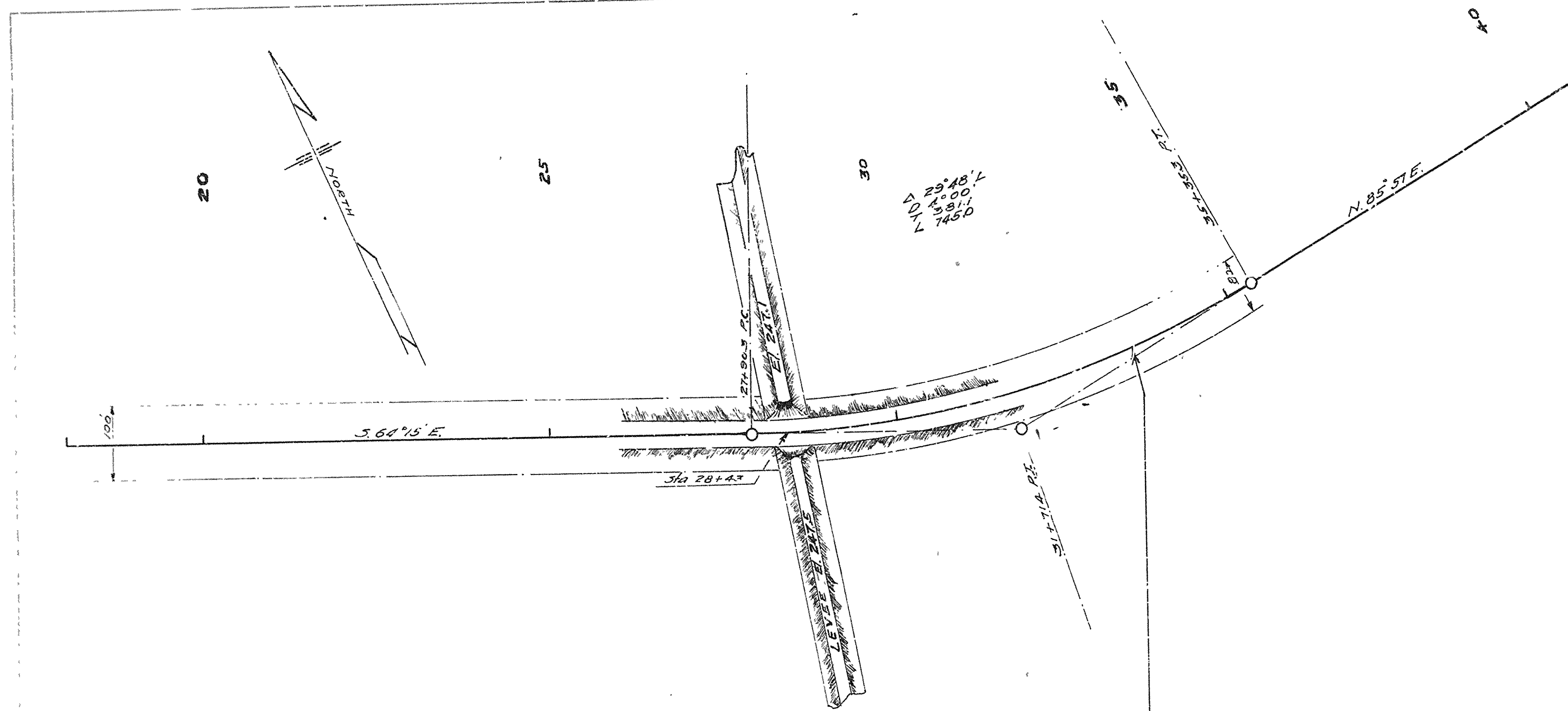


2-15 TON TRUCKS

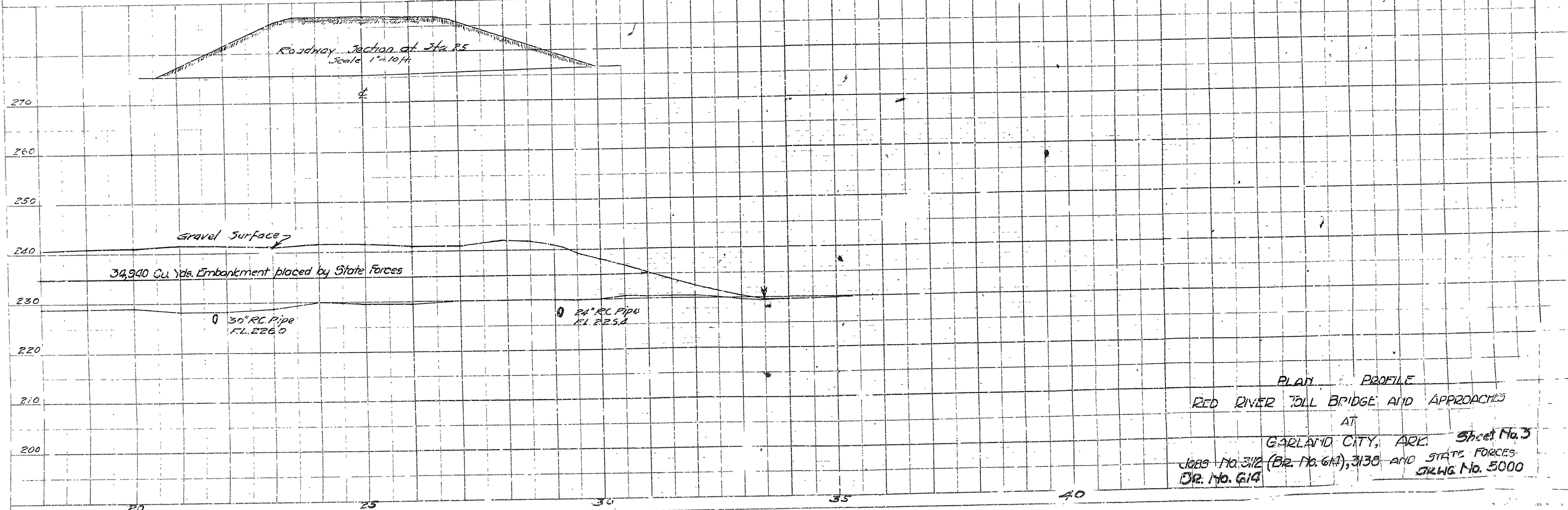
SPAN LENGTH	LOAD
50' TO 100'	130# PER SQ. FT.
100' TO 200'	80# " " "
200' AND OVER	64# " " "
IMPACT	25% CONCRETE.
	$\frac{100}{L+300}$ - STEEL.

EQUIVALENT UNIFORM LIVE LOADS





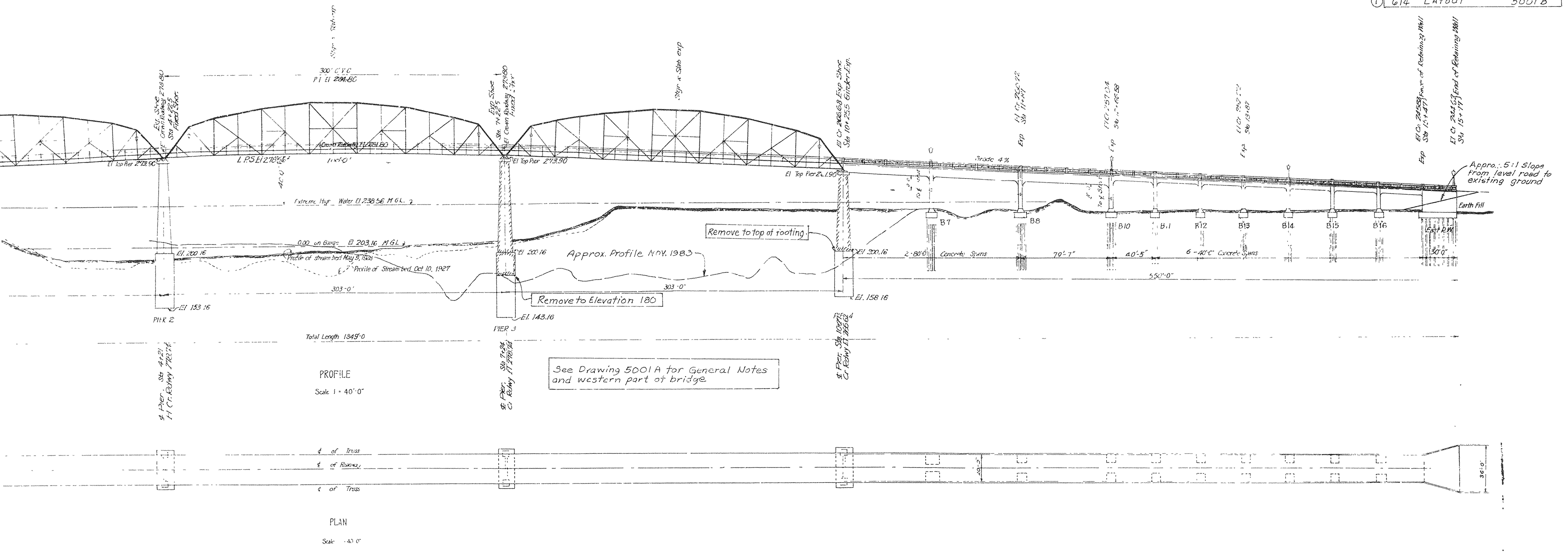
Sta. 33+50 End of Project



PLAN PROFILE
 RED RIVER TOLL BRIDGE AND APPROACHES
 AT
 GARLAND CITY, ARK. Sheet No. 3
 JOB NO. 312 (DR. NO. 617), 3130 AND STATE FORCES
 DR. NO. 614 DRWG. No. 5000

DATE	REVISION
6-27-91	

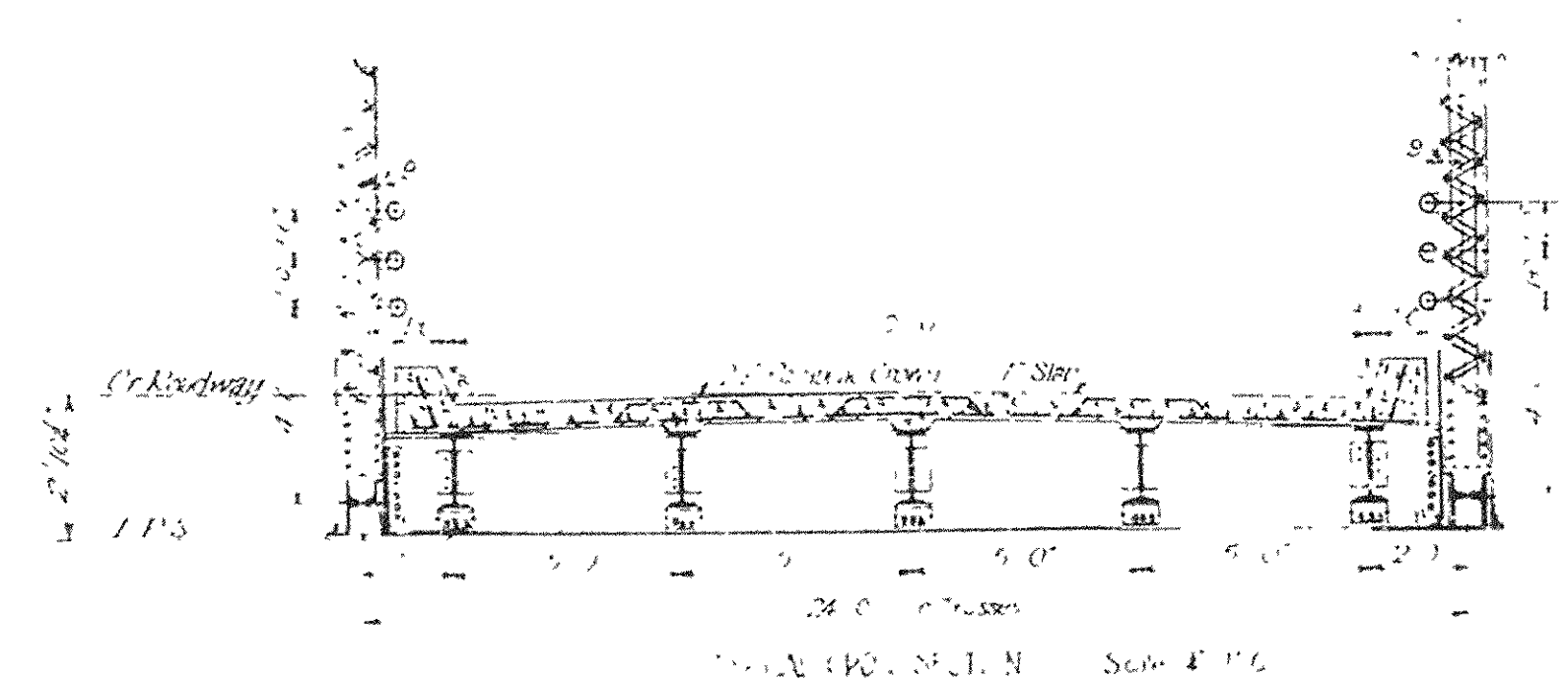
1658 5 13
 ① 614 LAYOUT 5001B



PROFILE
 Scale 1" = 40'-0"

PLAN
 Scale 1" = 40'-0"

See Drawing 5001A for General Notes and western part of bridge



Cross Section Scale 1" = 10'-0"

West Retaining Wall, top of Base El. 229.57
 Bents 1 to 5 incl., top of cap El. 235.07
 Bents 6 to 16 incl., top of cap El. 232.77
 East Retaining Wall, top of base El. 229.87
 REVISED: OCT. 29, 29
 Revised: Sept. 30, 1929
 Revised: Sept. 16, 1929

ARKANSAS STATE HIGHWAY COMMISSION
HIGHWAY BRIDGE OVER RED RIVER
 AT
 GARLAND CITY, ARKANSAS
 ROUTE NO. 91, SECT. 1
PLAN AND PROFILE OF BRIDGE
 AS SHOWN

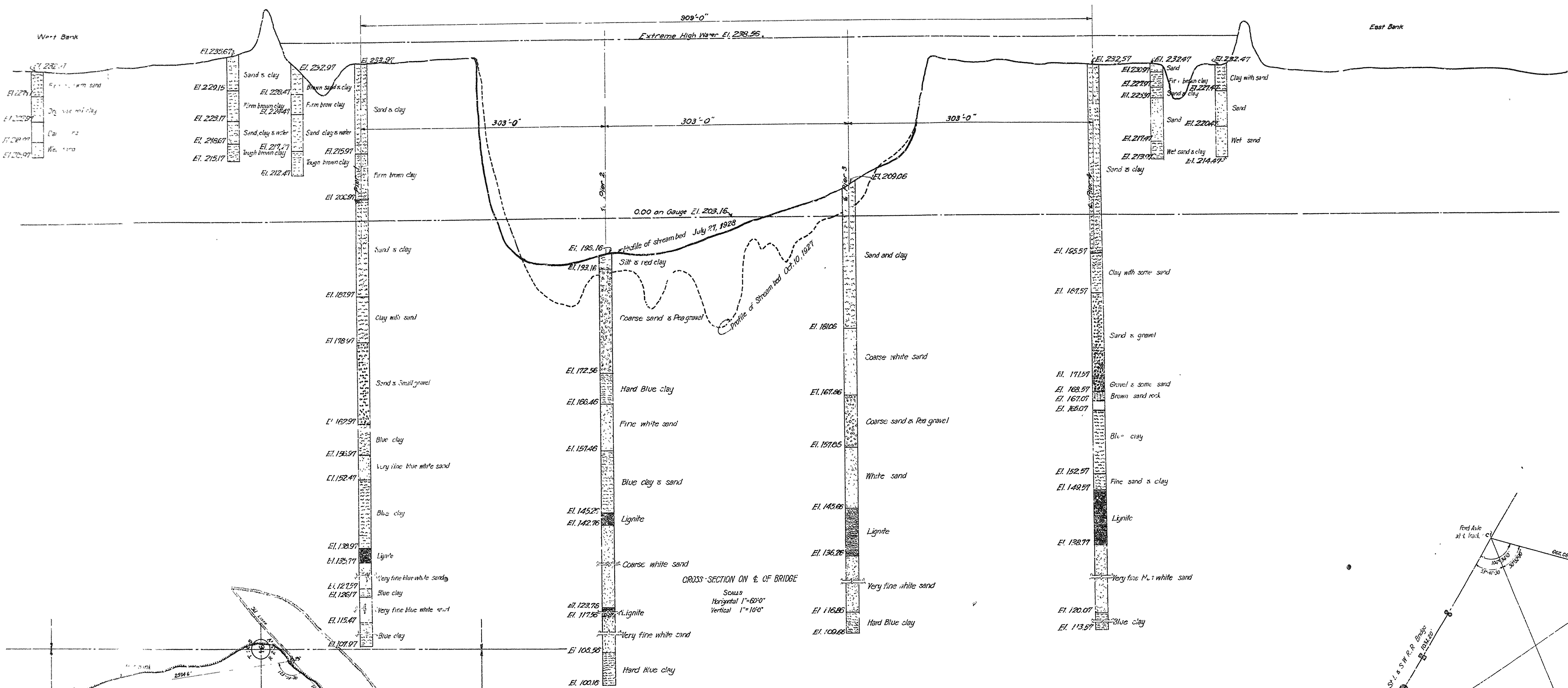
MADE BY G. H. HEDRICK, INC.
 CHECKED BY N. F. HEDRICK, INC.
 TRACED BY K. F. HEDRICK, INC.
 CHECKED BY B. V. HEDRICK, INC.

DATE August 7, 1929

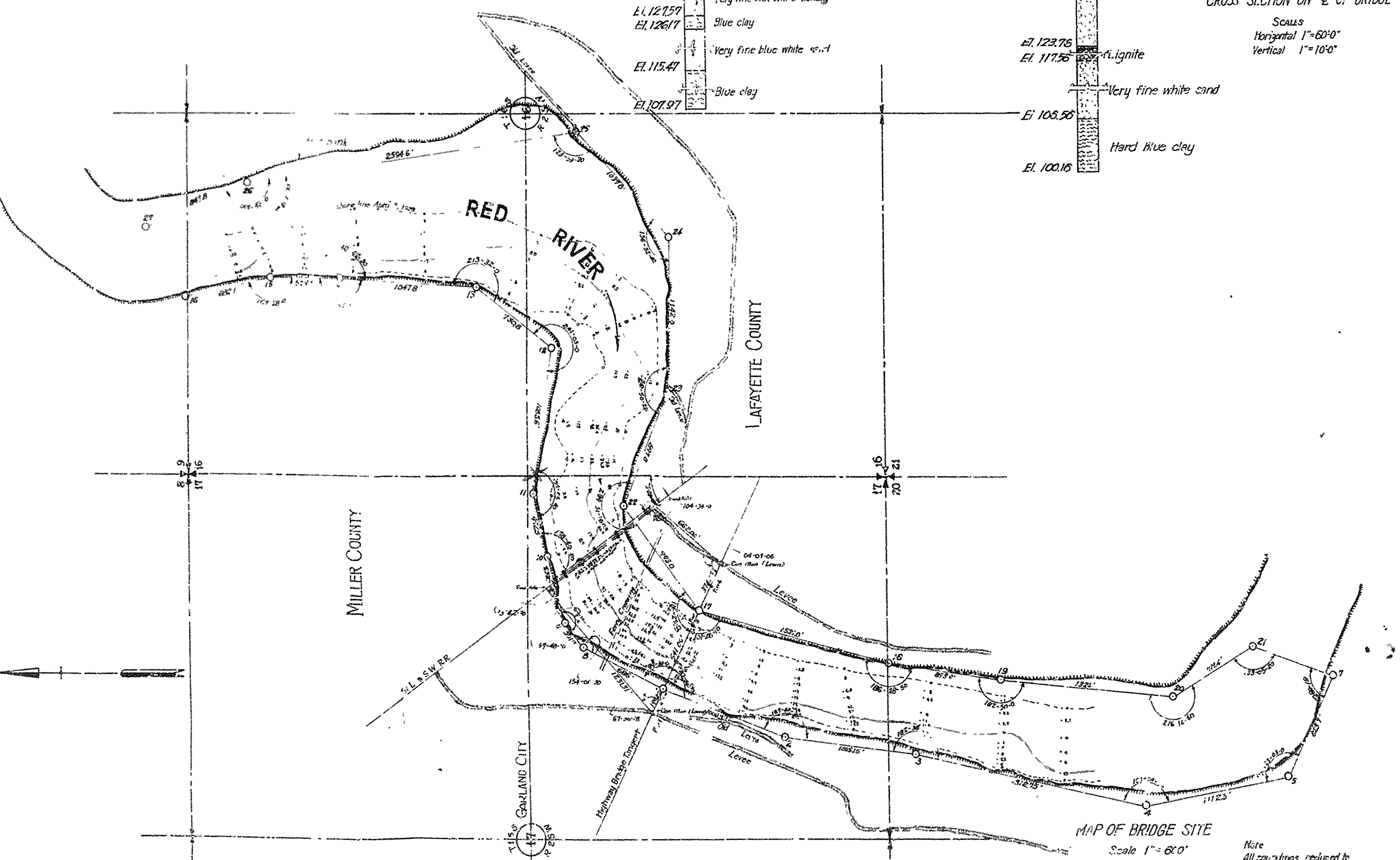
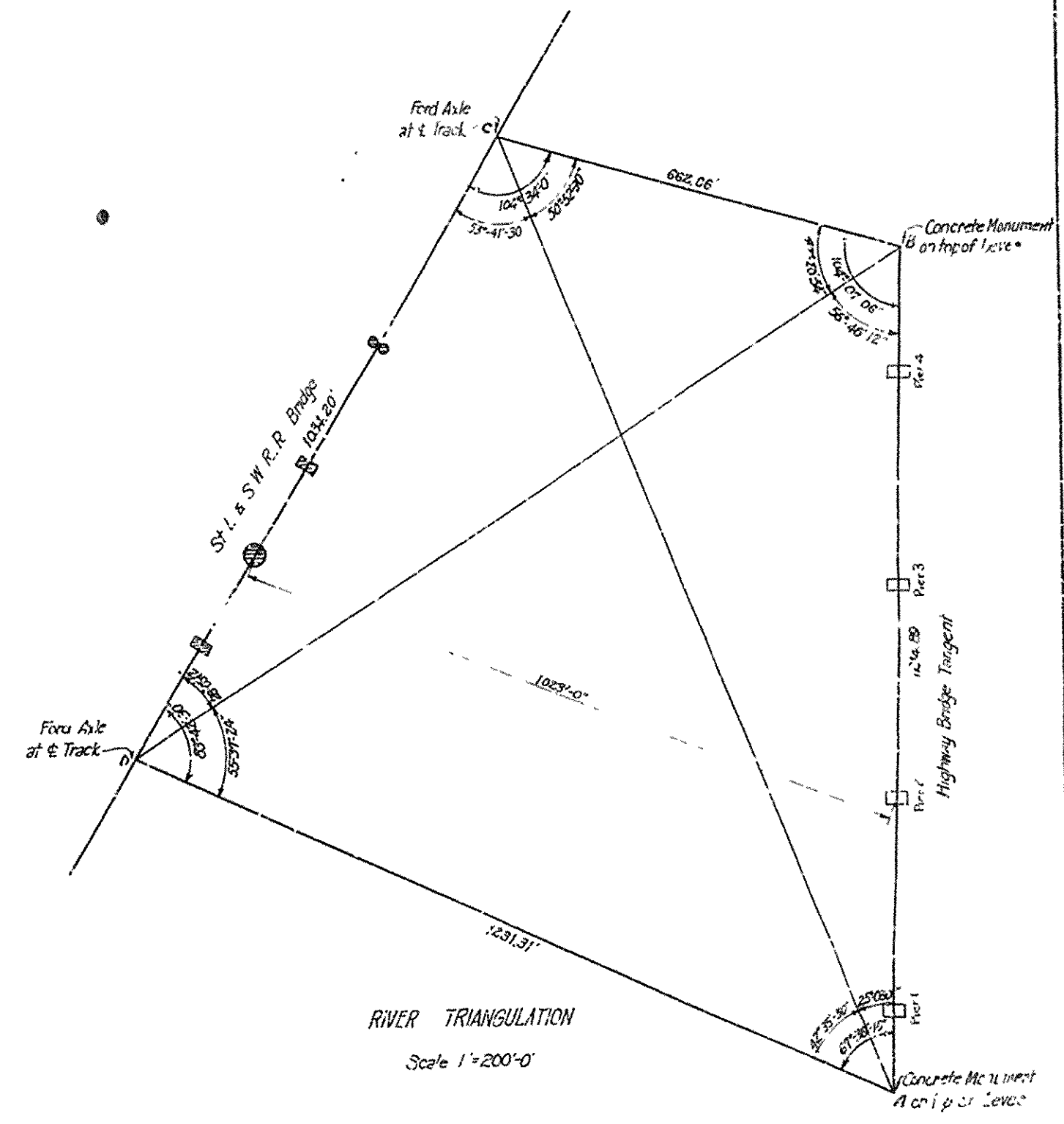
SHEET NO. 4

Dr. No. 614

DRWG. No. 5001 B



CROSS SECTION ON E. OF BRIDGE
 Scale: Horizontal 1"=50'0", Vertical 1"=10'0"

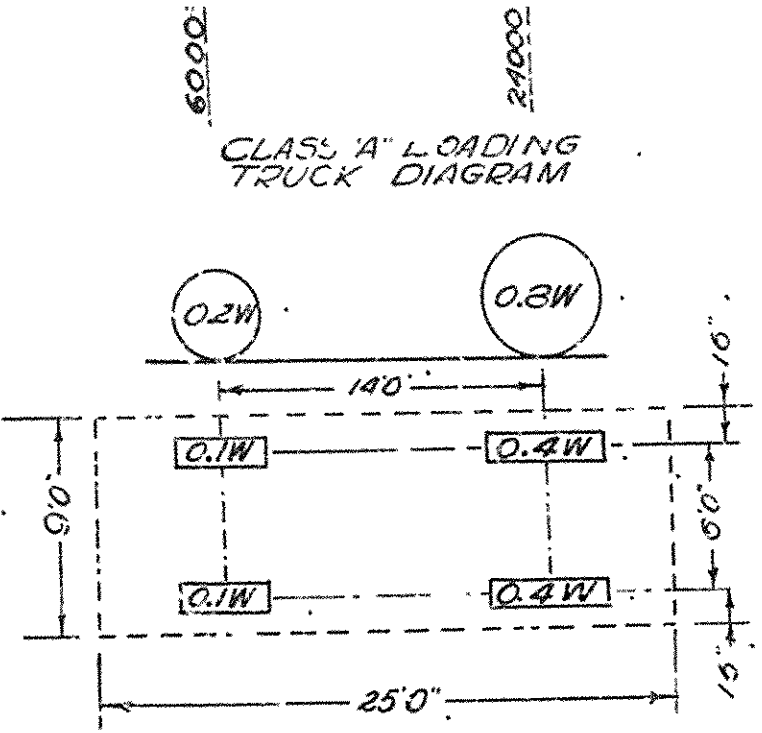
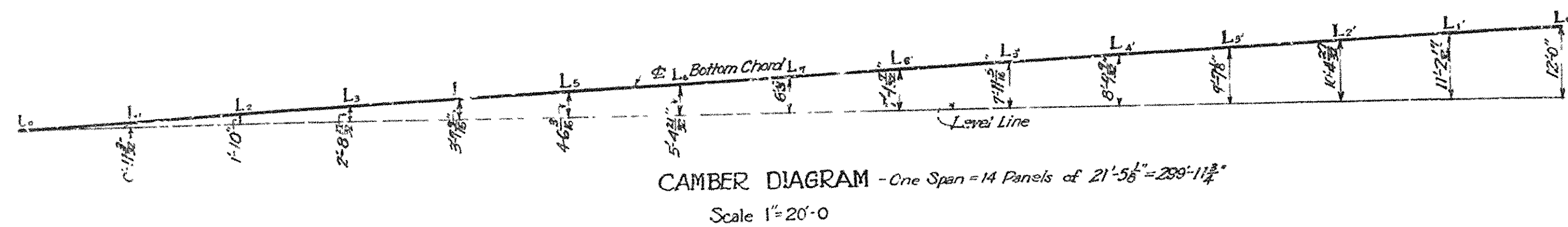


ARKANSAS STATE HIGHWAY COMMISSION
 HIGHWAY BRIDGE OVER RED RIVER
 AT
 GARLAND CITY ARKANSAS
 MAP OF BRIDGE SITE & PROFILE OF BORINGS
 SCALES AS SHOWN

Made by K.F.
 Checked by K.F.
 Traced by K.F.
 Checked by G.V. & K.F.
 Date Sept. 23, 1928

IRA G. HEDRICK, INC.
 Consulting Engineers
 Shreveport, La.

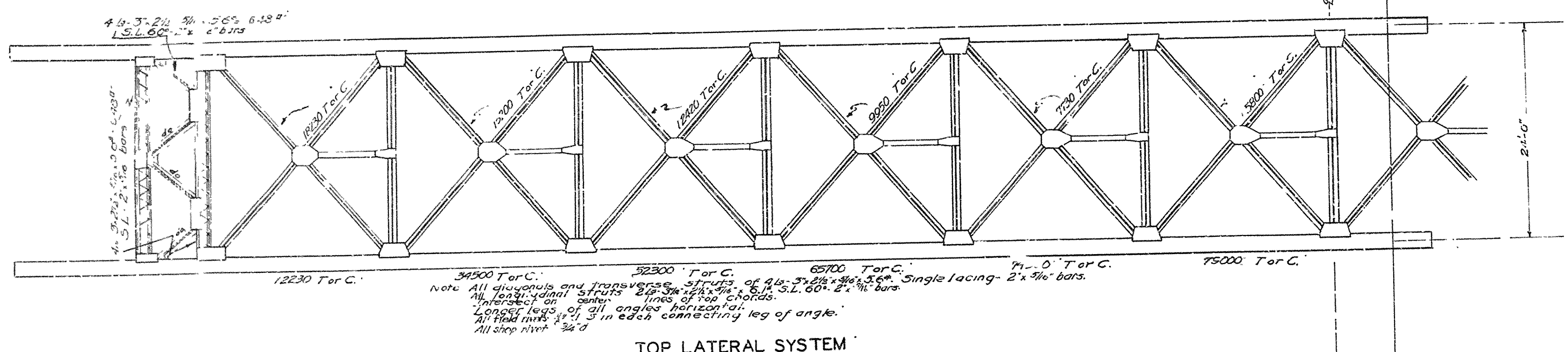
Sheet No. 5



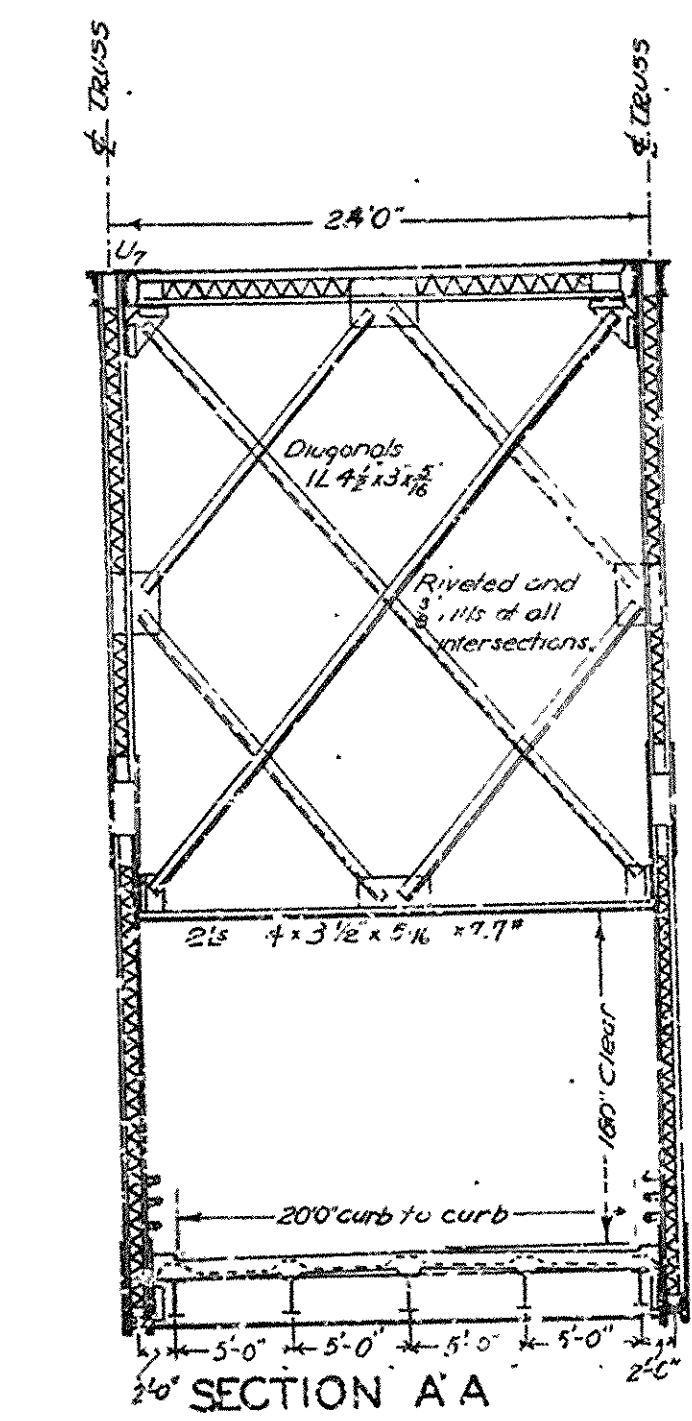
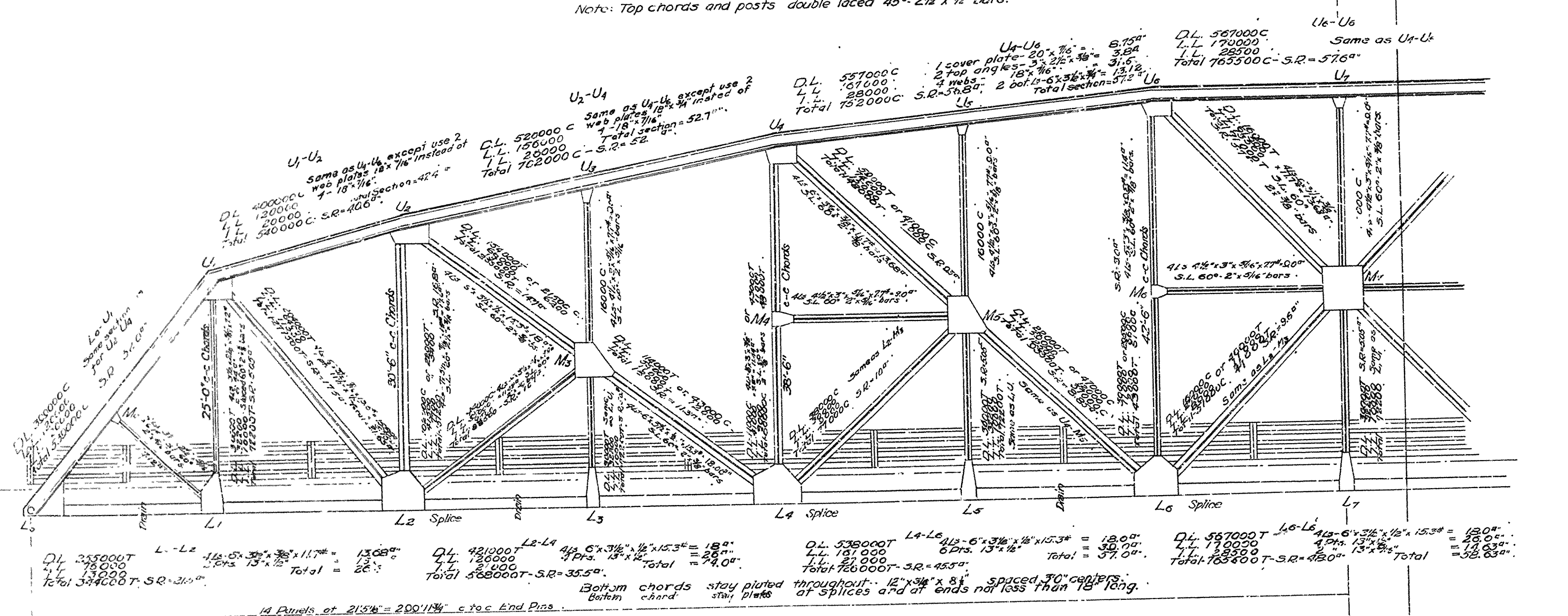
UNIFORM LIVE LOAD PER SQUARE FOOT OF FLOOR

SPAN LENGTH	LOAD
50 FEET	130 LBS.
100	60
200	OVER 64

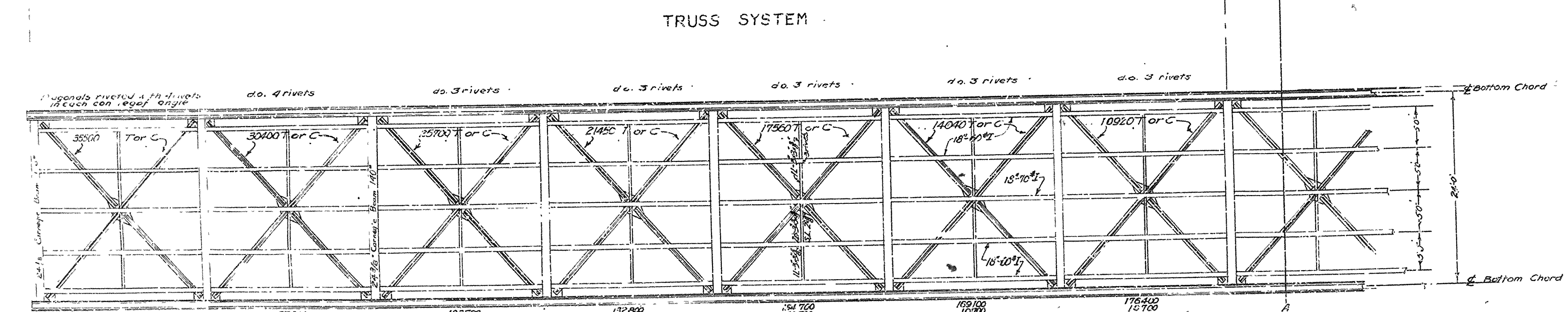
IMPACT
I = 188R
I = IMPACT ALLOWANCE
L = LOADED LENGTH OF SPAN



Note: Top chords and posts double laced 45° 2 1/2" x 1/2" bars.



Sway Bracings at other panel points, see sheet no. 4



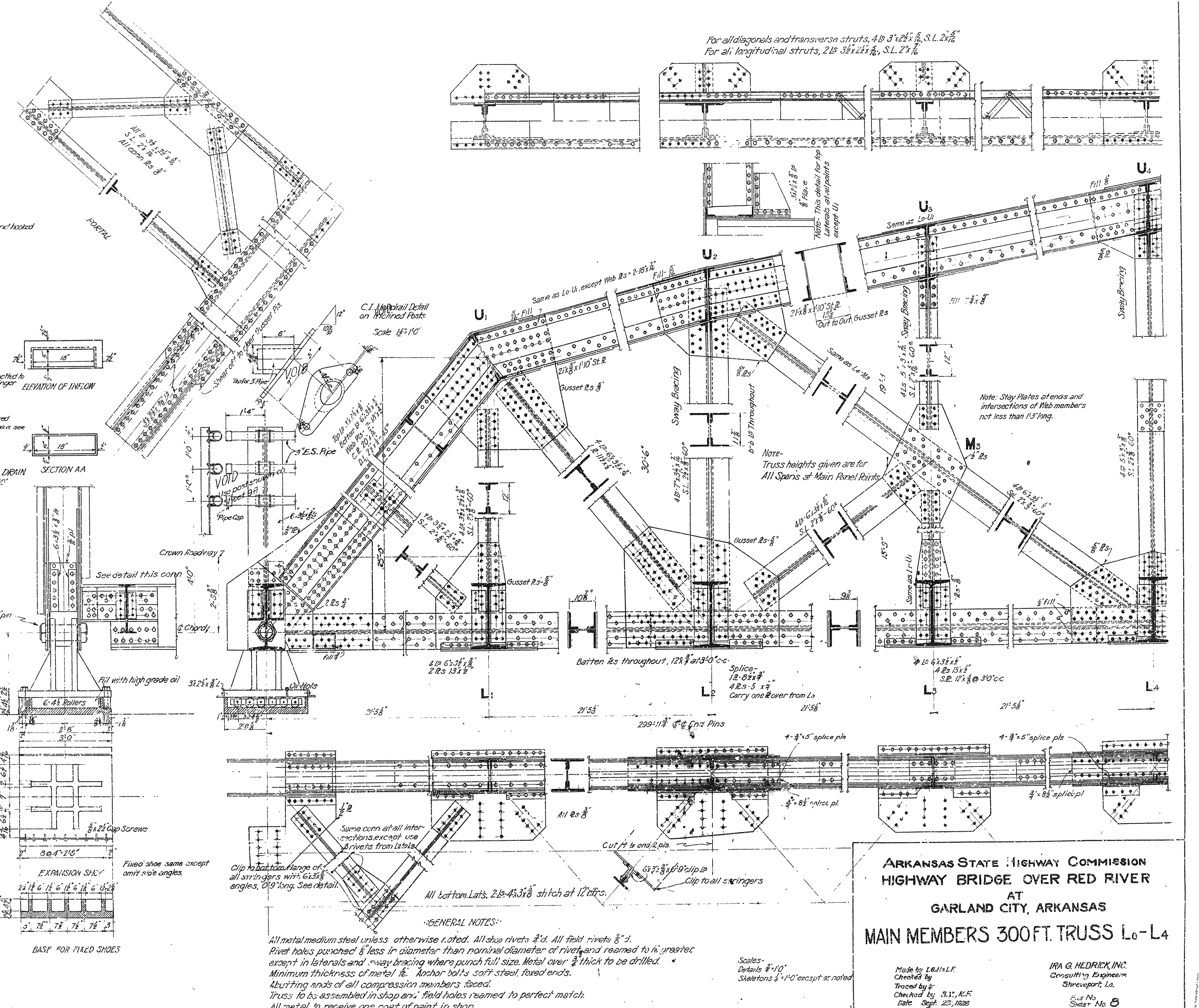
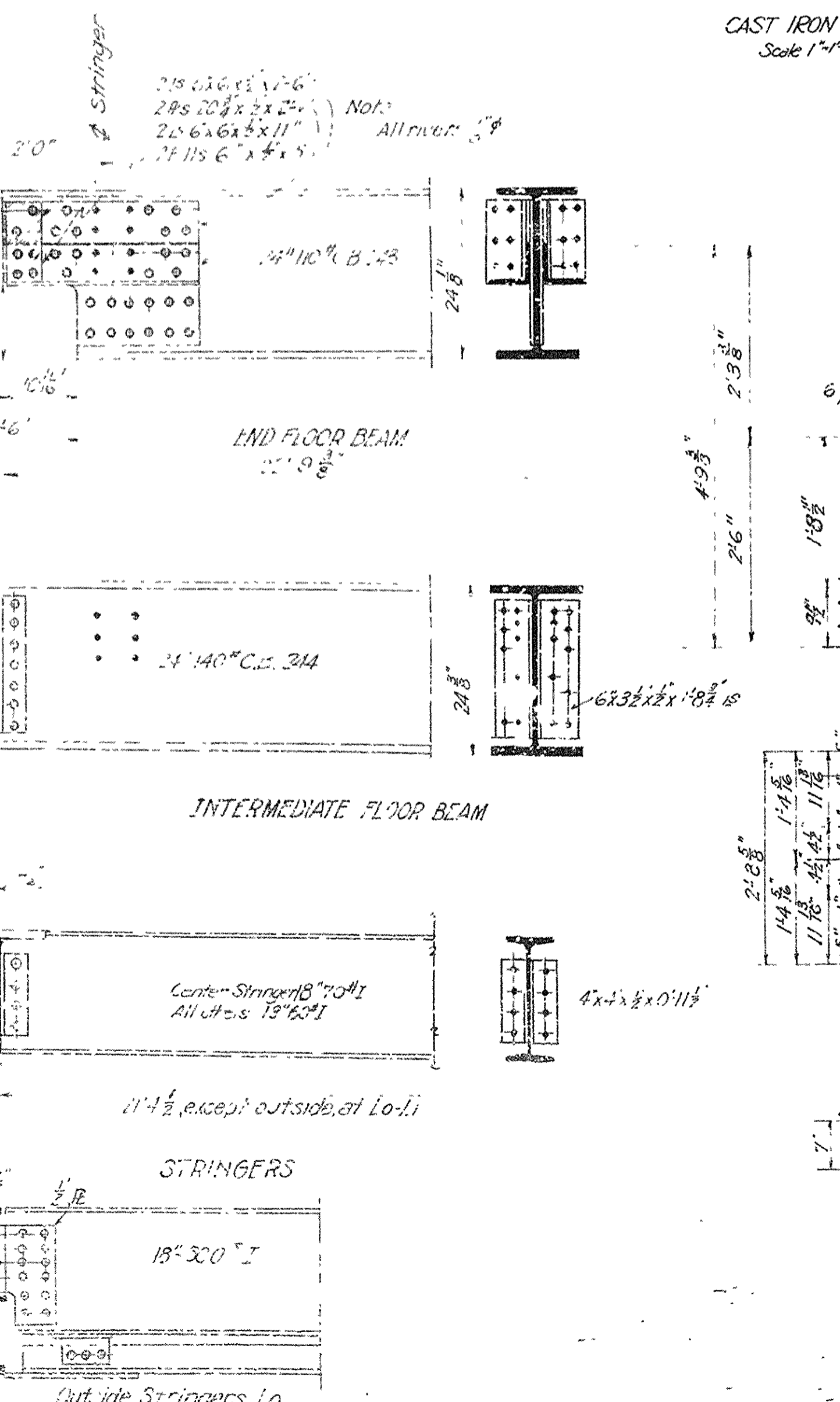
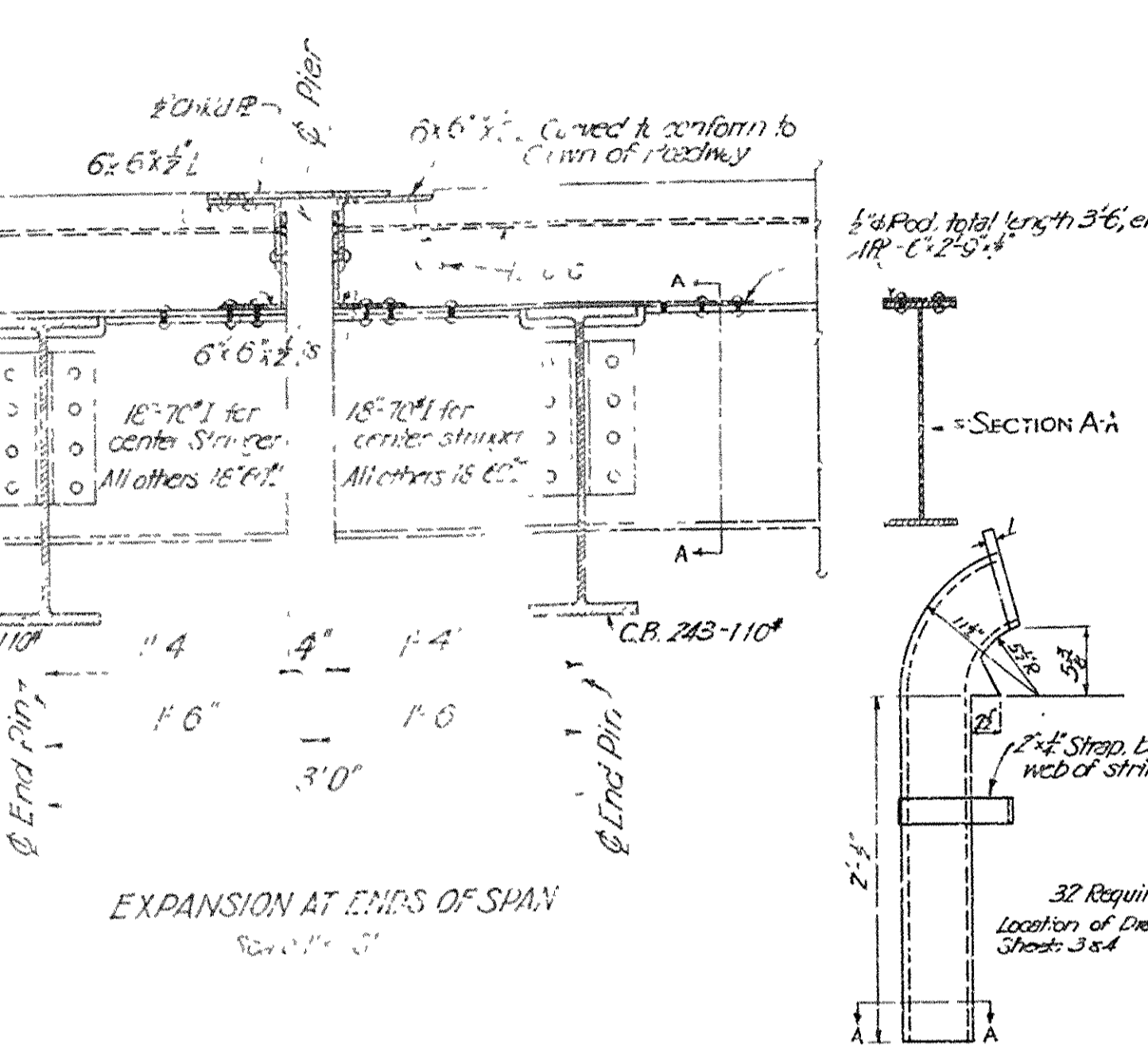
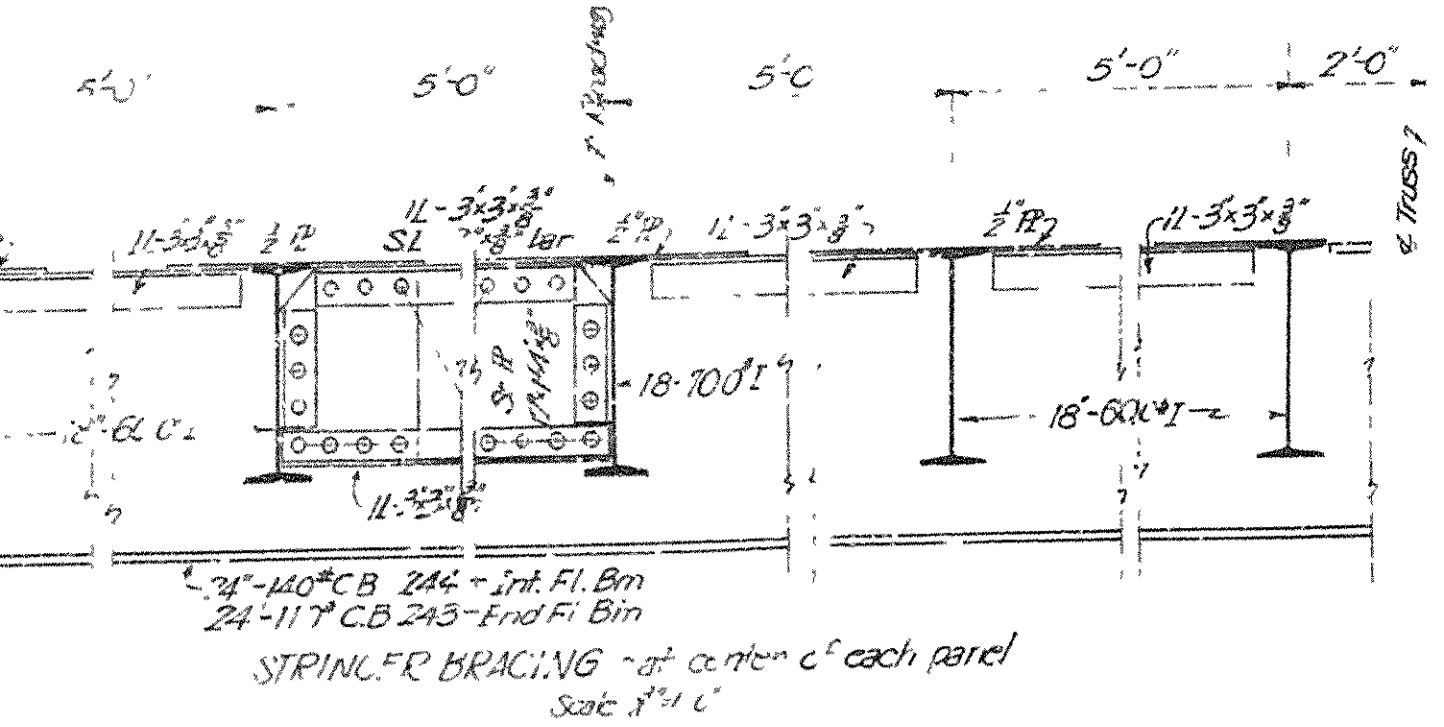
Note: Intersections of lower lateral diagonals at chord points must be concentric with center lines of bottom chords and floor beams.
All bottom lateral diagonals of 2 1/2" x 3/4" x 5/16" - Bottoms of angles in plane of bottom of bottom chords - stiffened riveted 12" dia.
All shop rivets 3/4" diameter
All field rivets 1/2" diameter

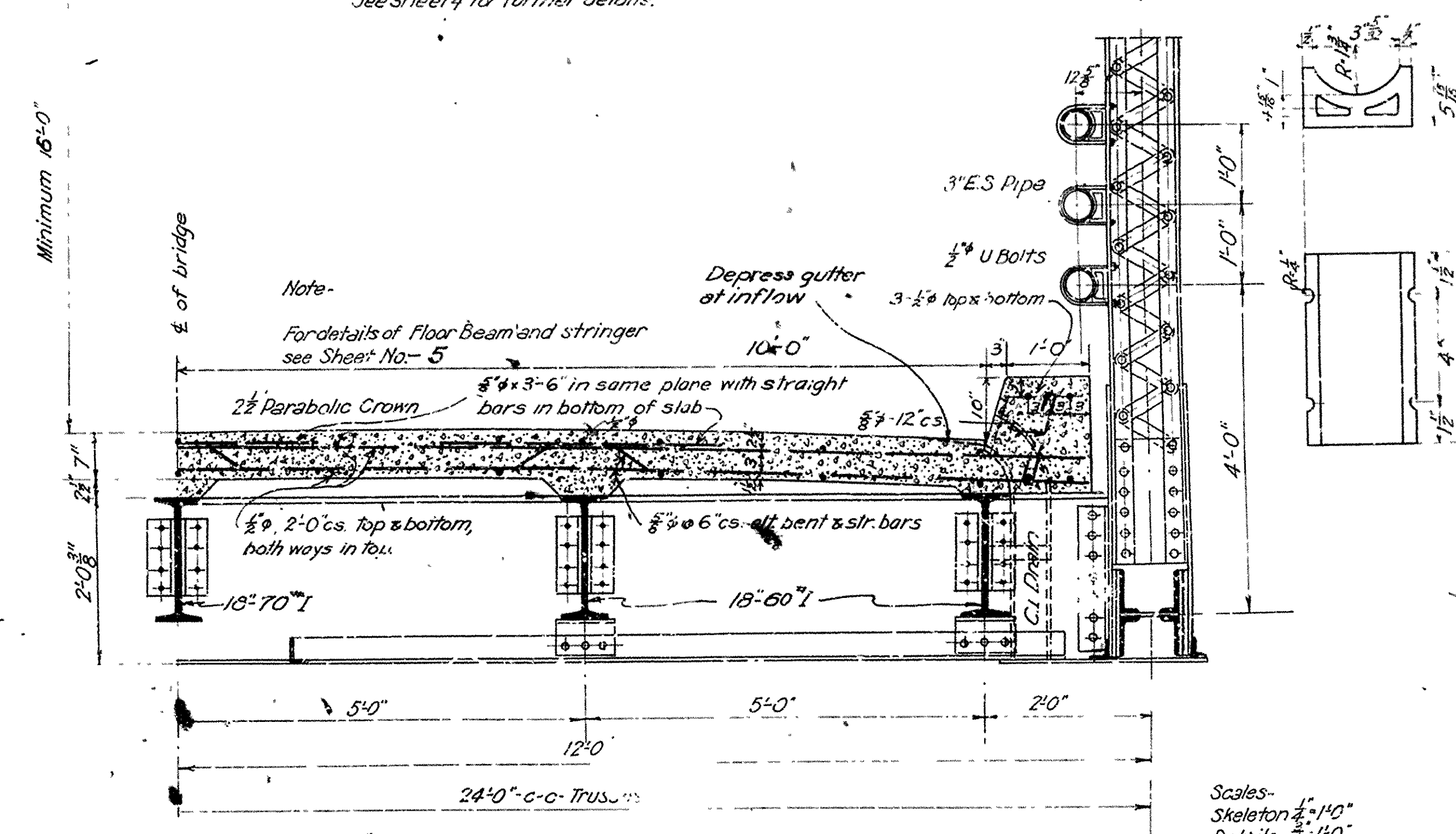
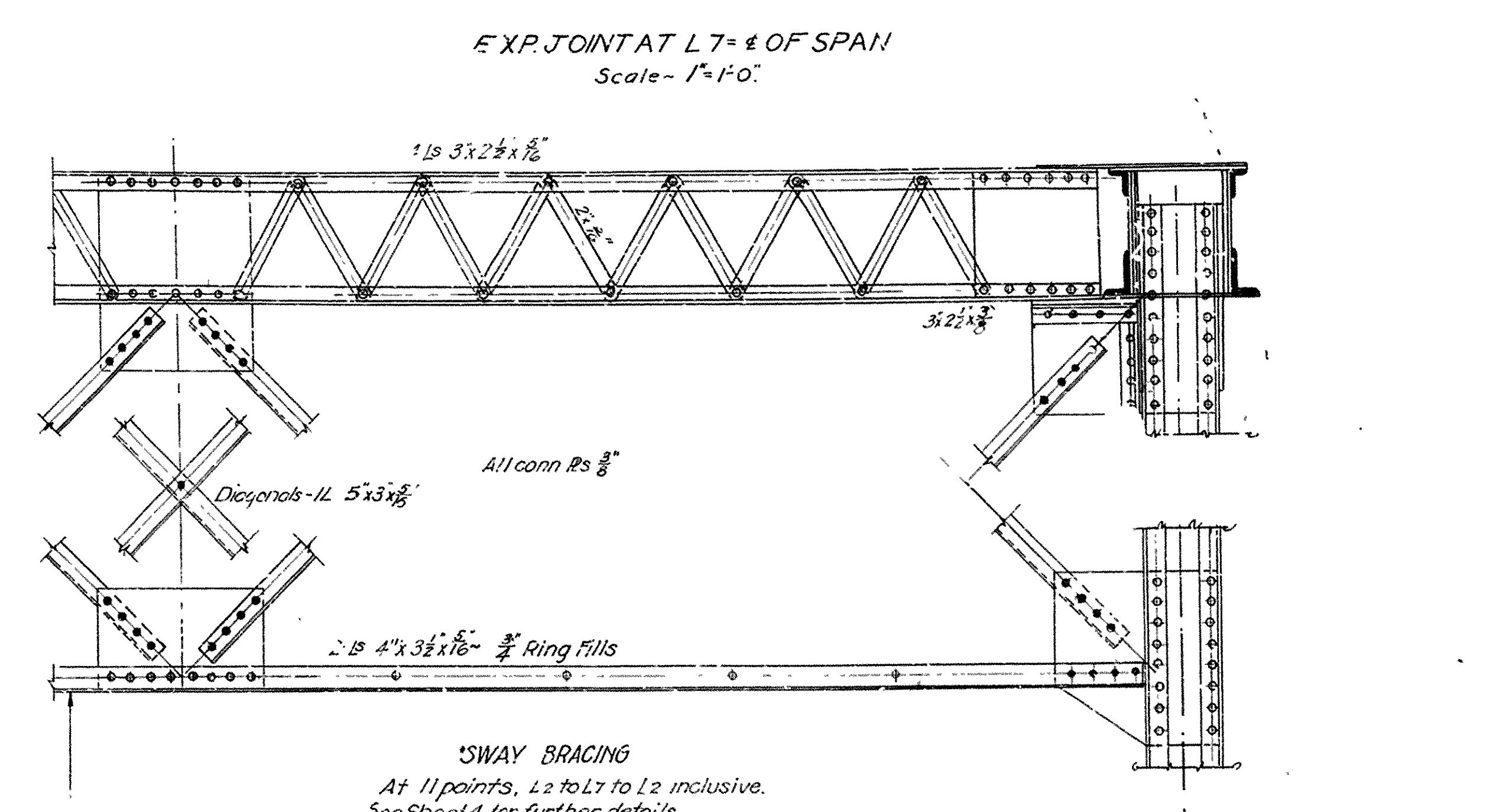
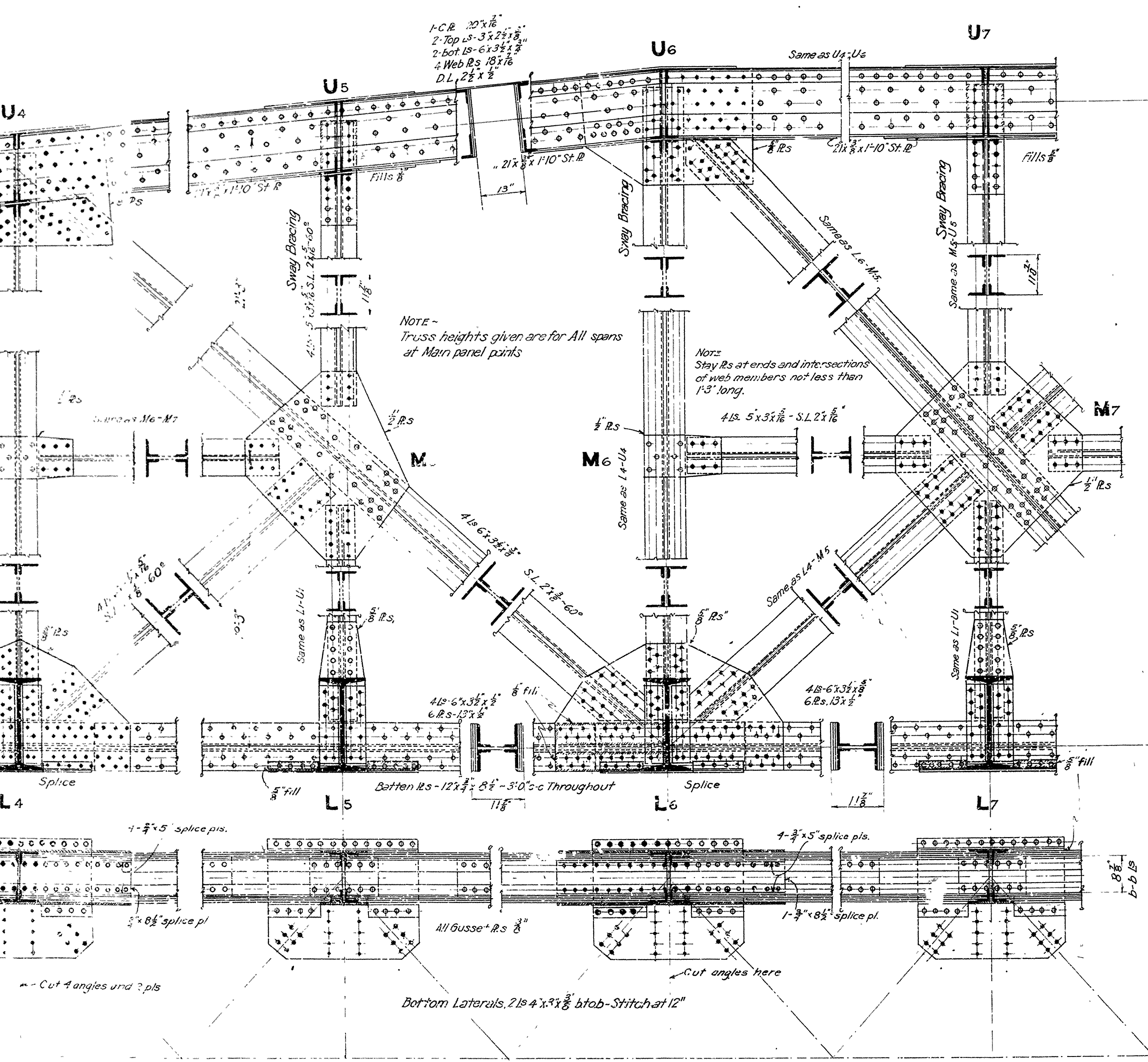
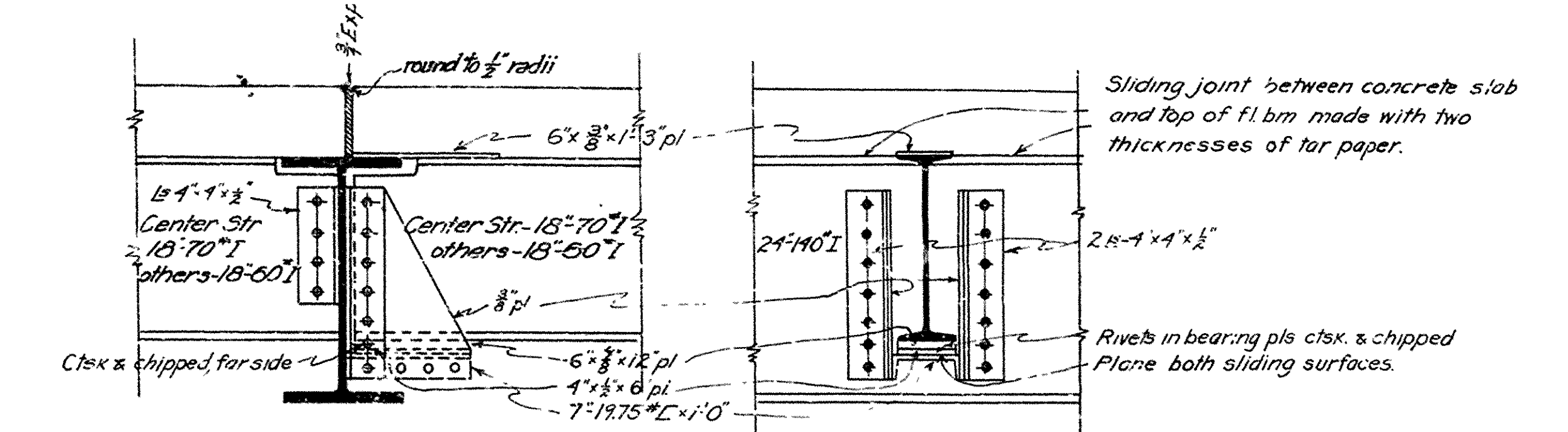
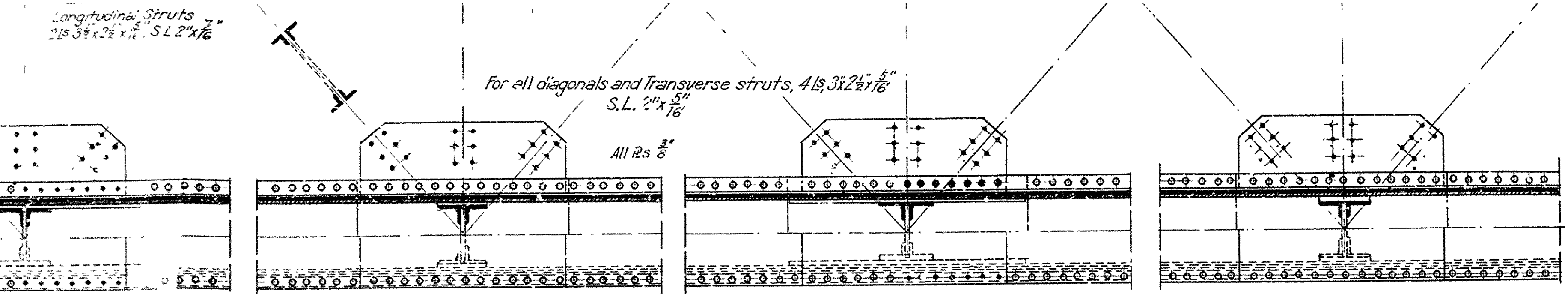
ARKANSAS STATE HIGHWAY COMMISSION
BRIDGE OVER RED RIVER
AT
GARLAND CITY, ARKANSAS
HIGH BRIDGE STEEL SPANS
STRESSES AND SECTIONS
300' SIDE SPANS
IRA G. HEDRICK INC.
CONSULTING ENGINEERS
SHREVEPORT LA

Made by - G.H.W.
Checked by - R.F.
SCALE 1/8" = 1'-0"
DATE SEPT. 25, 1928
SHEET NO. 6
Revised Aug. 27, 1929

Br. No. 617

Draw. No. 5003





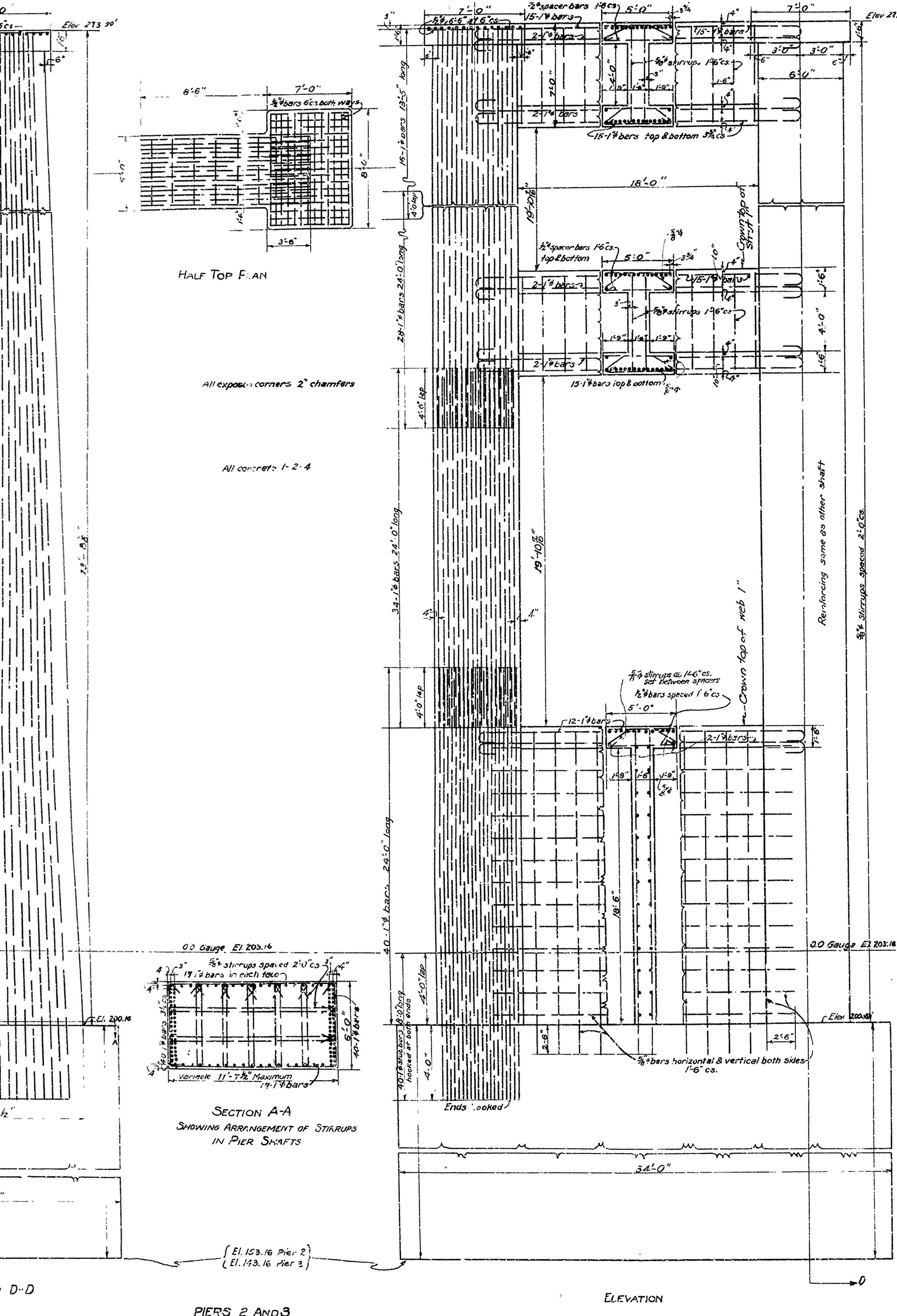
GENERAL NOTES:
 All field rivets 3/4" d. All shop rivets 3/8" d.
 All metal medium steel, unless other wise noted.
 Rivet holes punched 1/8" less in diameter than nominal diameter of rivet, and reamed to 1/16" greater, except in laterals and sway bracing, punch full size. Metal over 1/4" thick to be drilled.
 Minimum thickness of metal 1/4"
 Abutting ends of all compression members faced.
 Anchor bolts soft steel, fixed ends.
 All metal to receive one coat of paint in shop.
 Truss to be assembled in shop and field holes reamed to perfect match

ARKANSAS STATE HIGHWAY COMMISSION
HIGHWAY BRIDGE OVER RED RIVER
 AT GARLAND CITY, ARKANSAS
MAIN MEMBERS 300 FT. TRUSS L4-L7

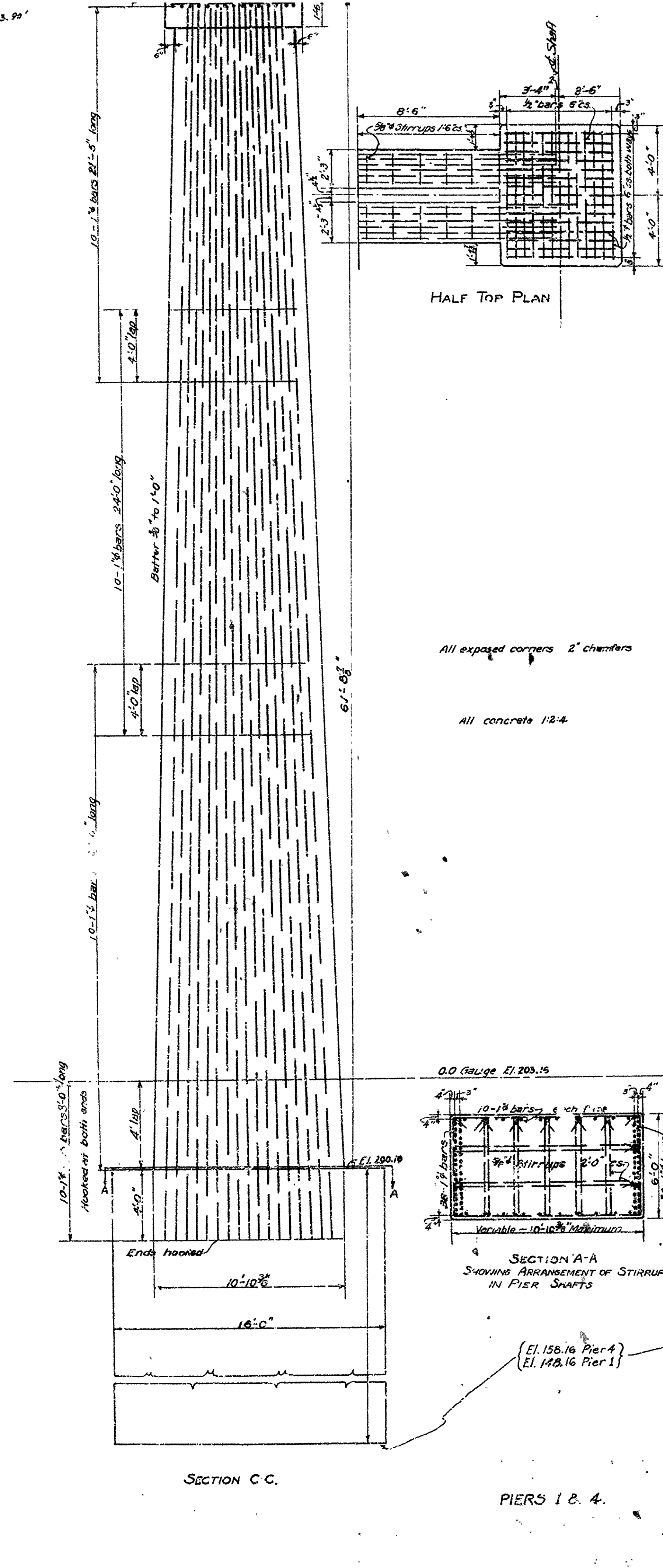
Made by I.G.H. & L.F.
 Checked by L.F.
 Traced by L.F.
 Checked by B.V. K.F.
 Date Sept. 25, 1928

IRA G. HEDRICK, INC.
 Consulting Engineers
 Shreveport, La.
 File No.
 Sheet No. 9

Revised: Aug. 24, 1929

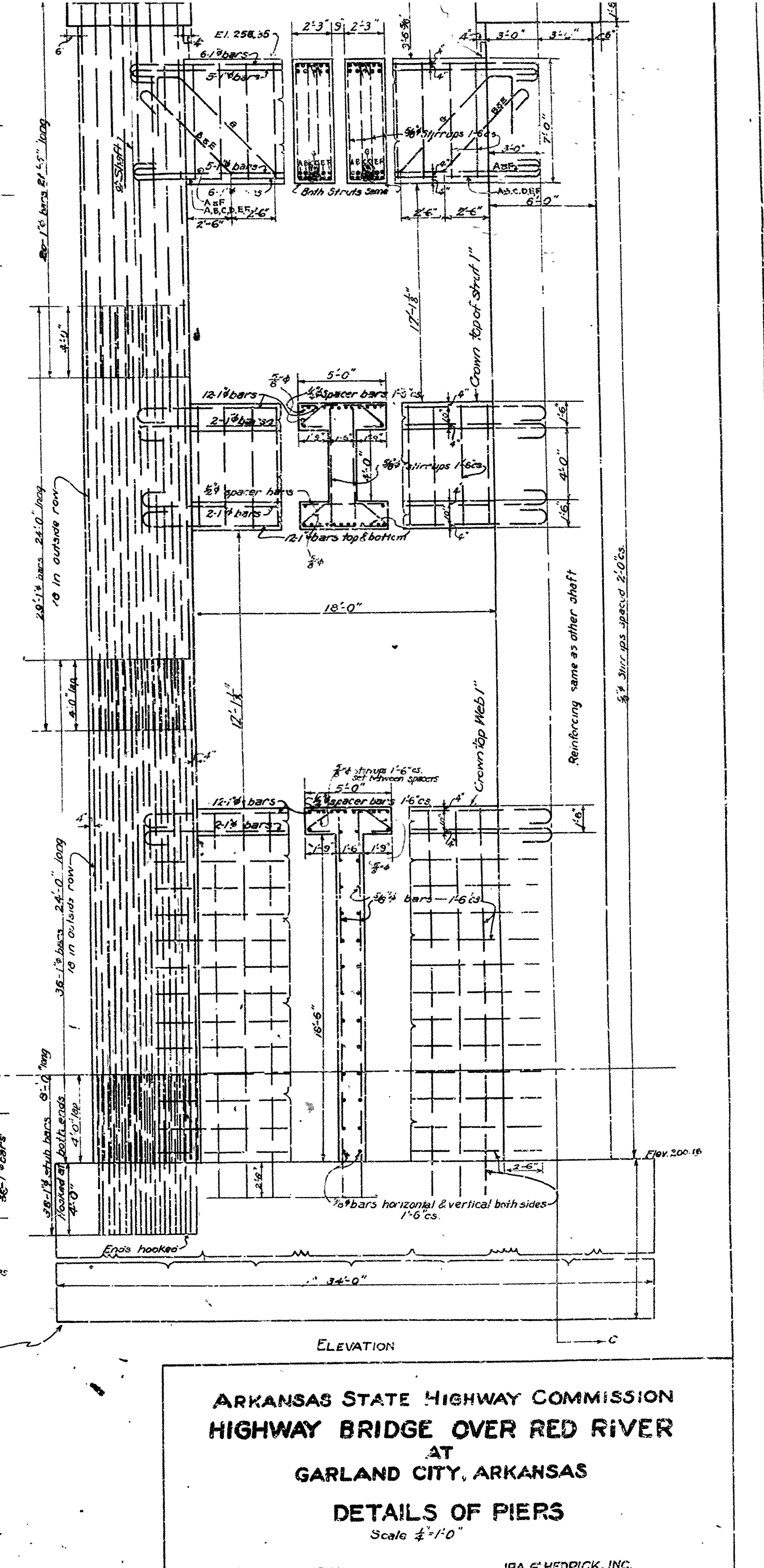


PIERS 2 AND 3



SECTION C.C.

PIERS 1 & 4.



ARKANSAS STATE HIGHWAY COMMISSION
 HIGHWAY BRIDGE OVER RED RIVER
 AT
 GARLAND CITY, ARKANSAS
 DETAILS OF PIERS
 Scale 1/4"=1'-0"

Made by J.S.W.
 Checked by J.S.W.
 Traced by J.S.W.
 Checked by B.V. & K.F.
 Date Sept. 28, 1928.

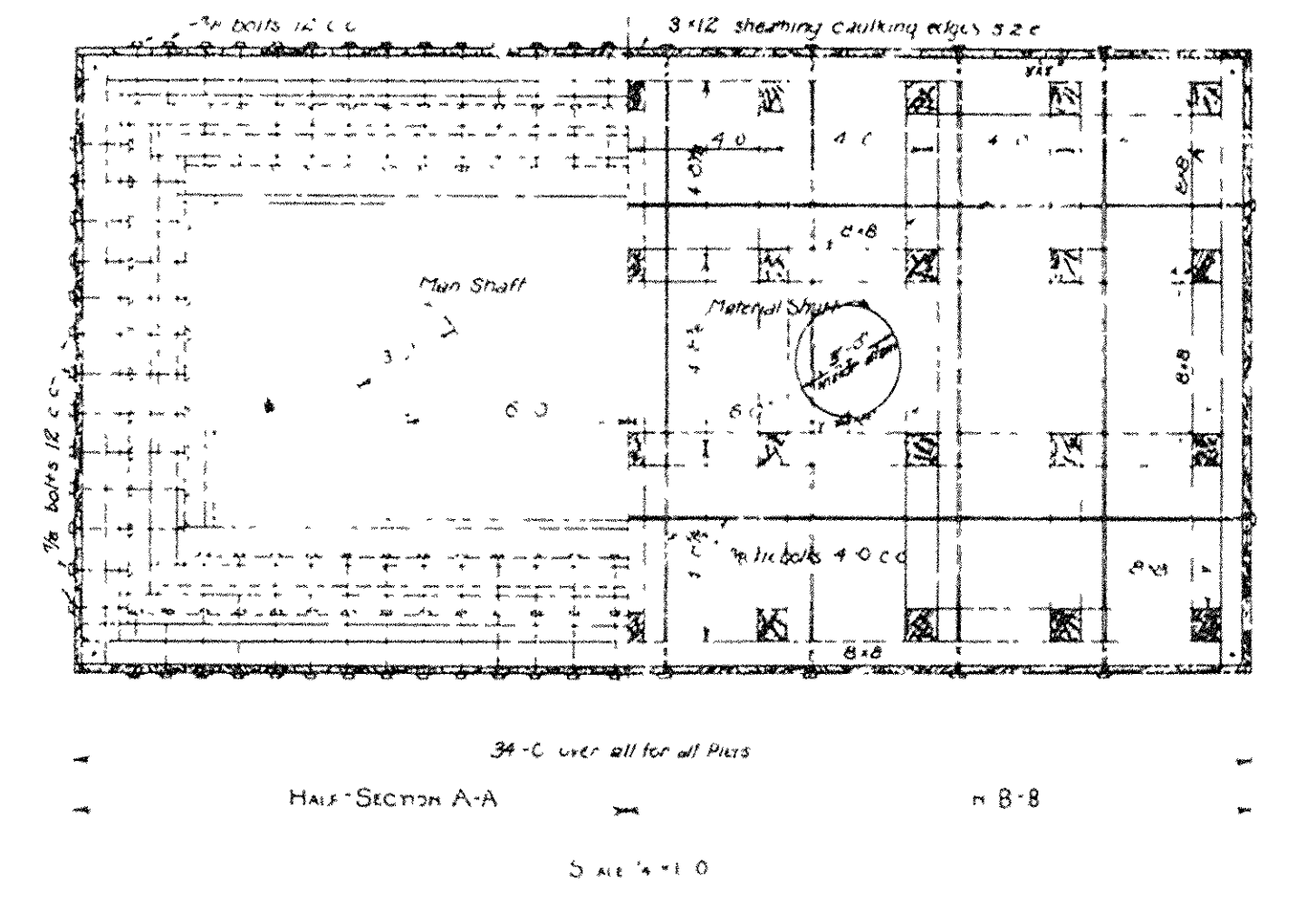
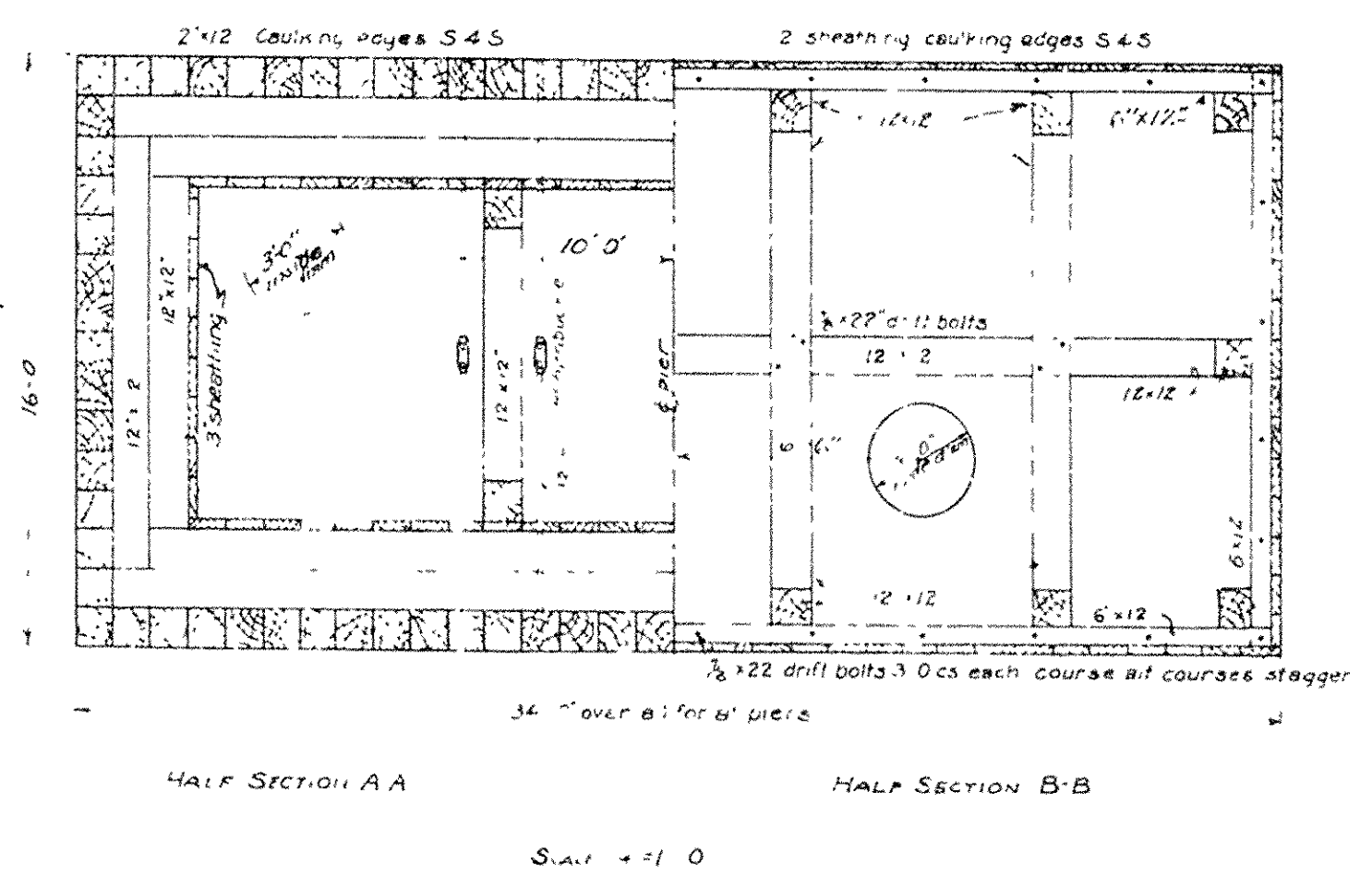
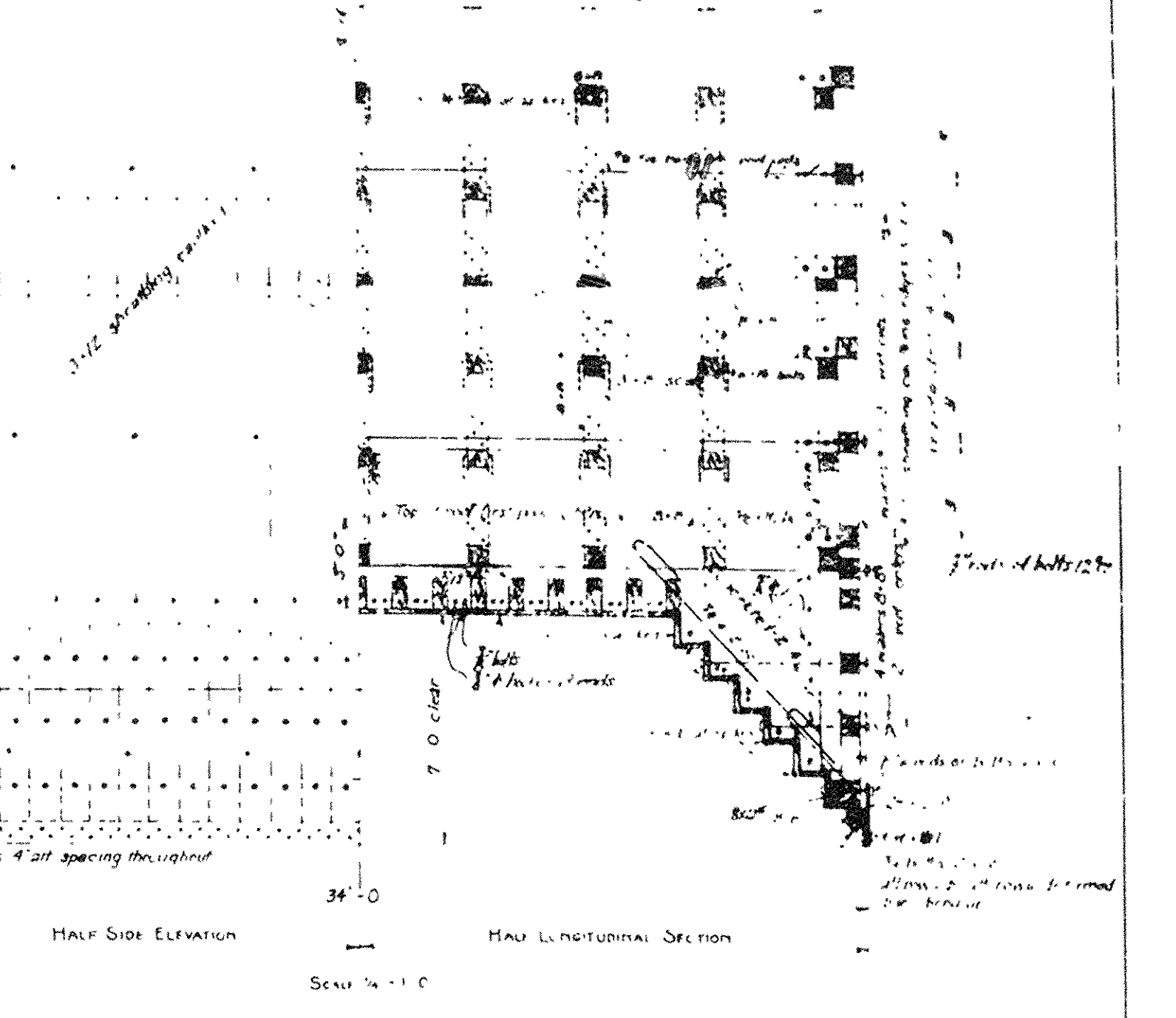
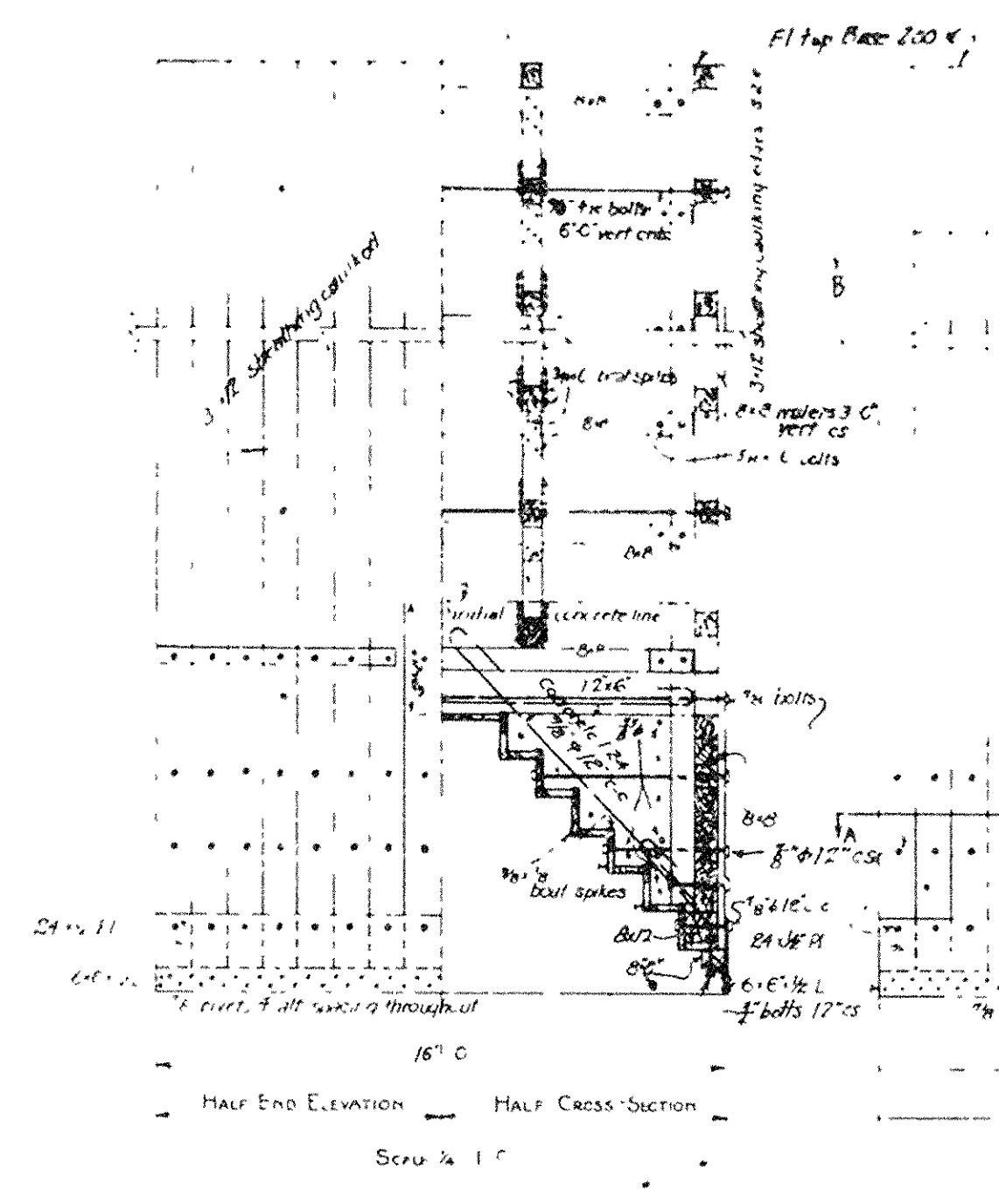
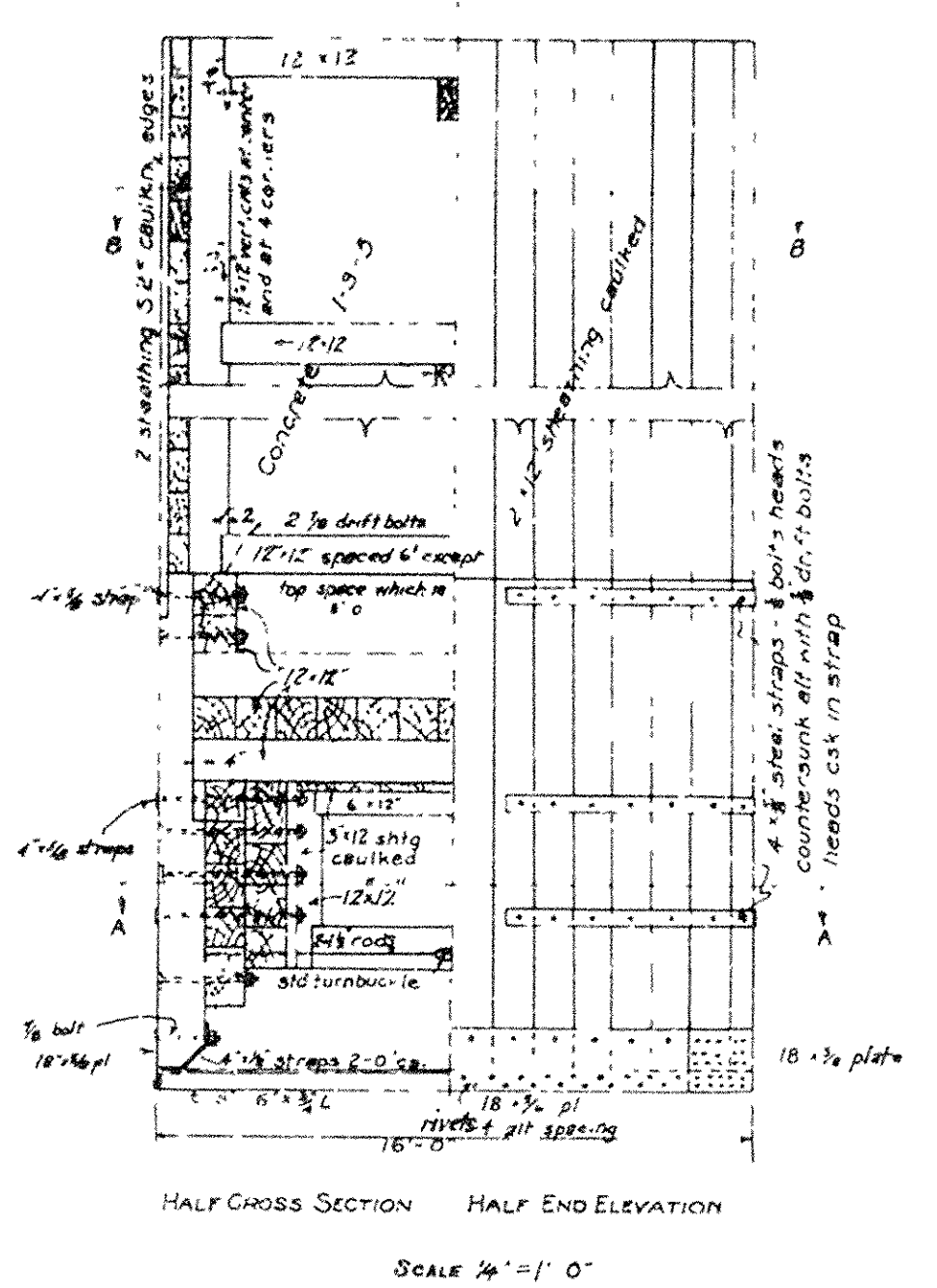
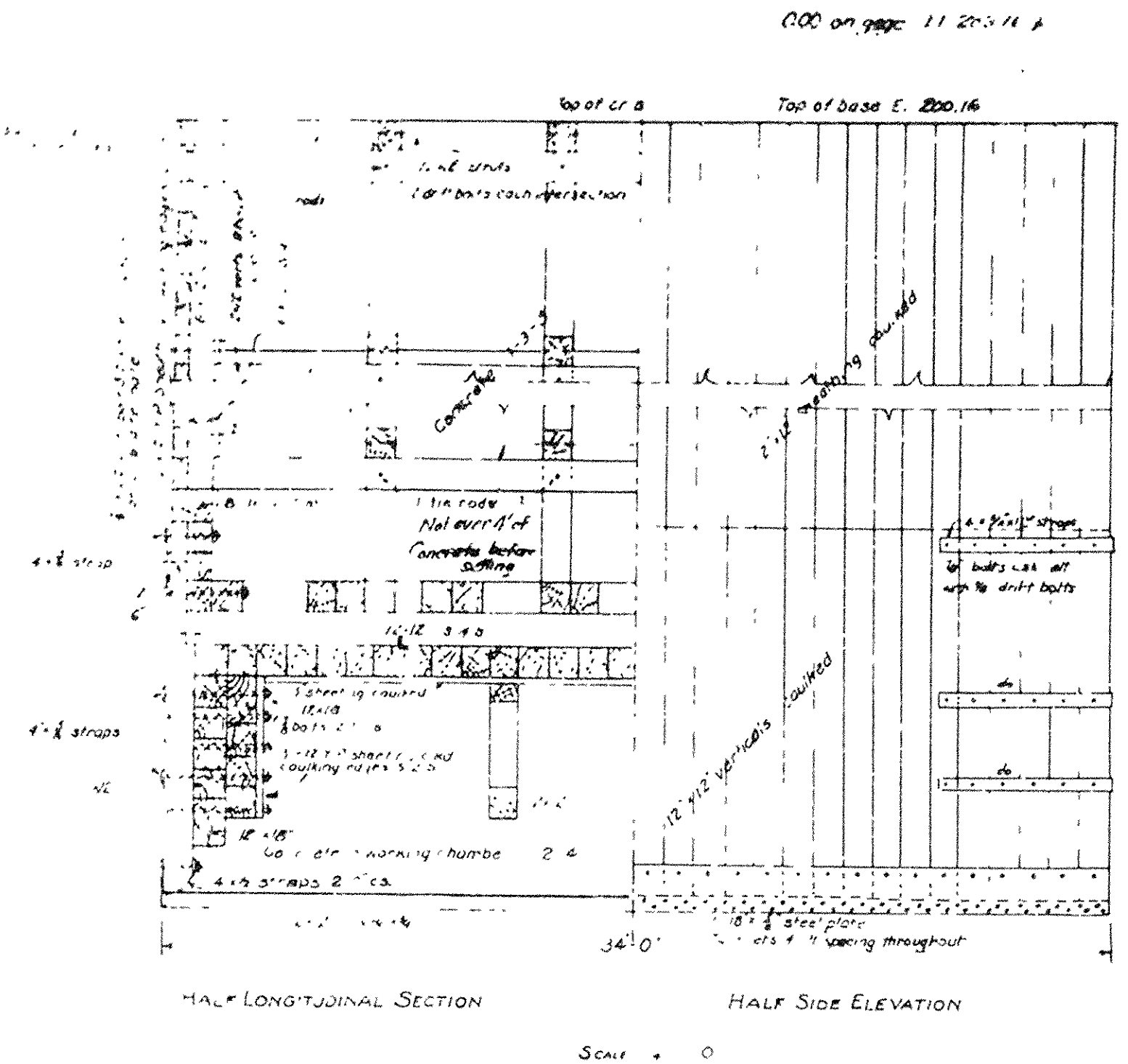
IRA G. HEDRICK, INC.
 Consulting Engineers.
 Hot Springs, Ark.

FILE No.
 SHEET No. 10

REVISED Oct. 24, 29.

DR. No. 614

DRWG. No. 5007

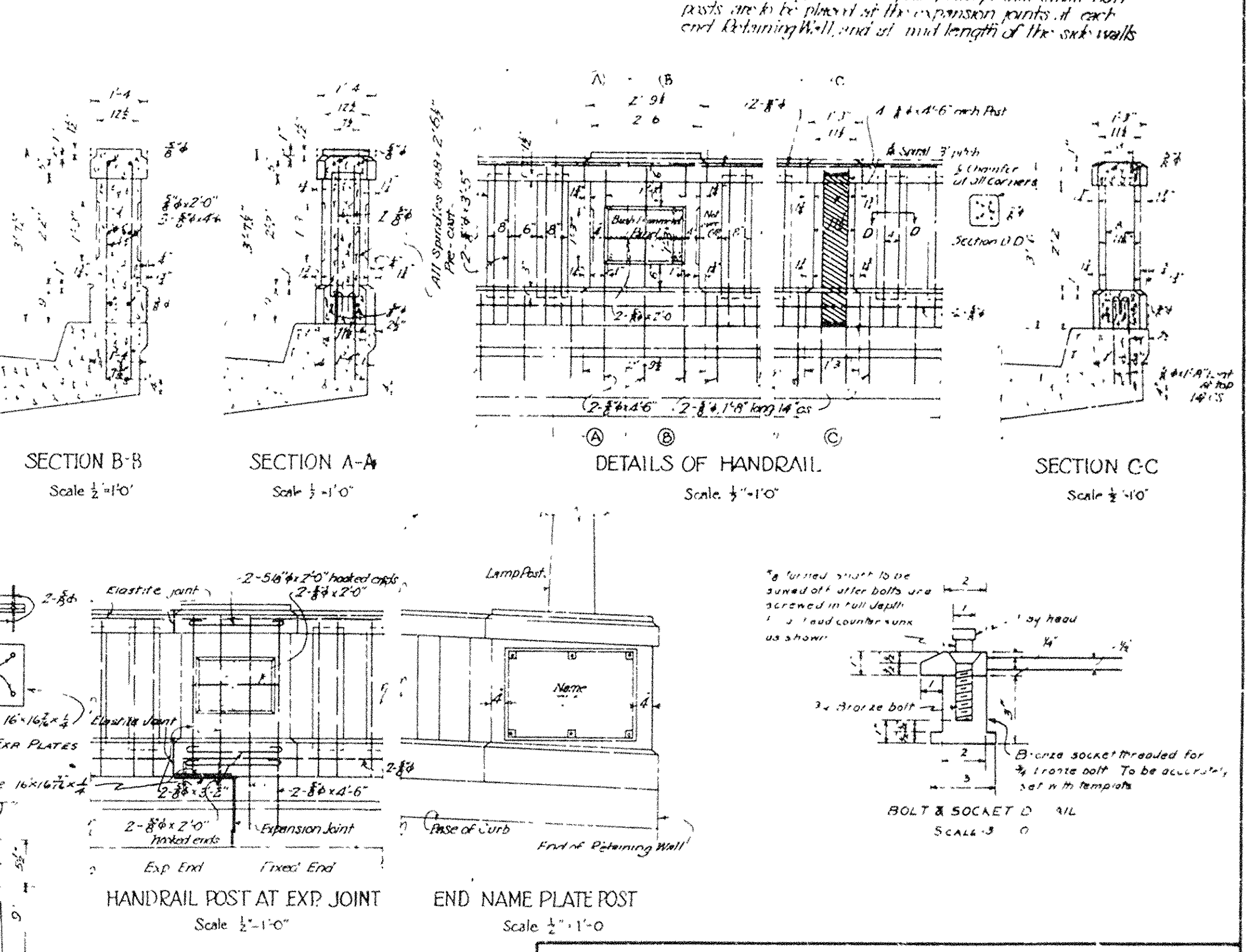
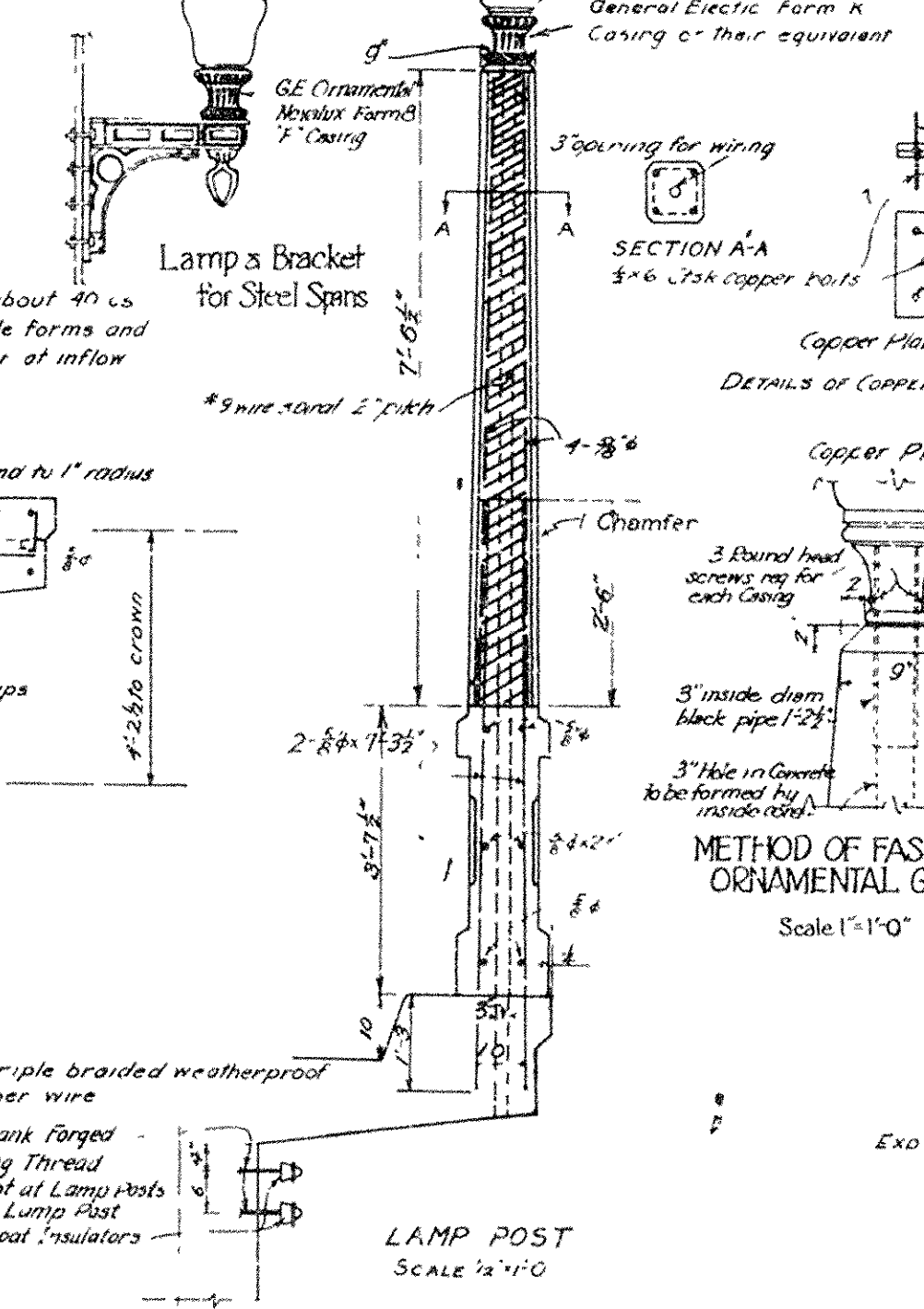
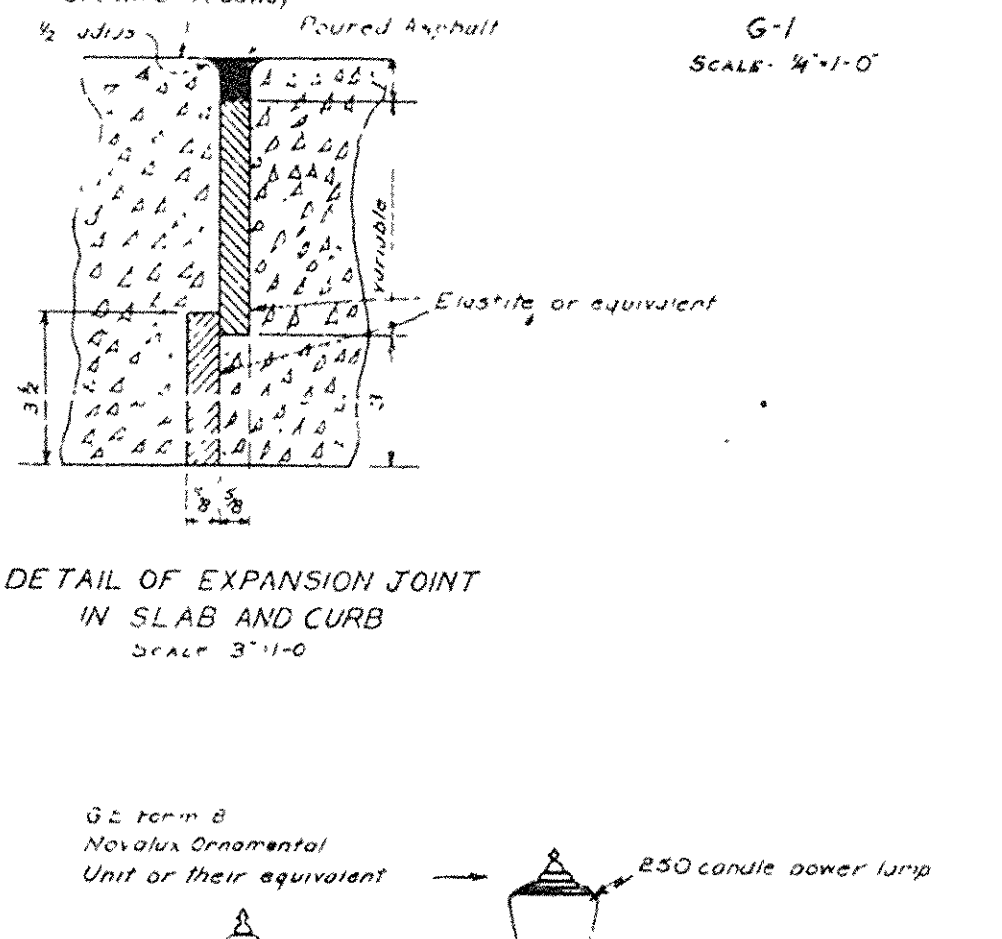
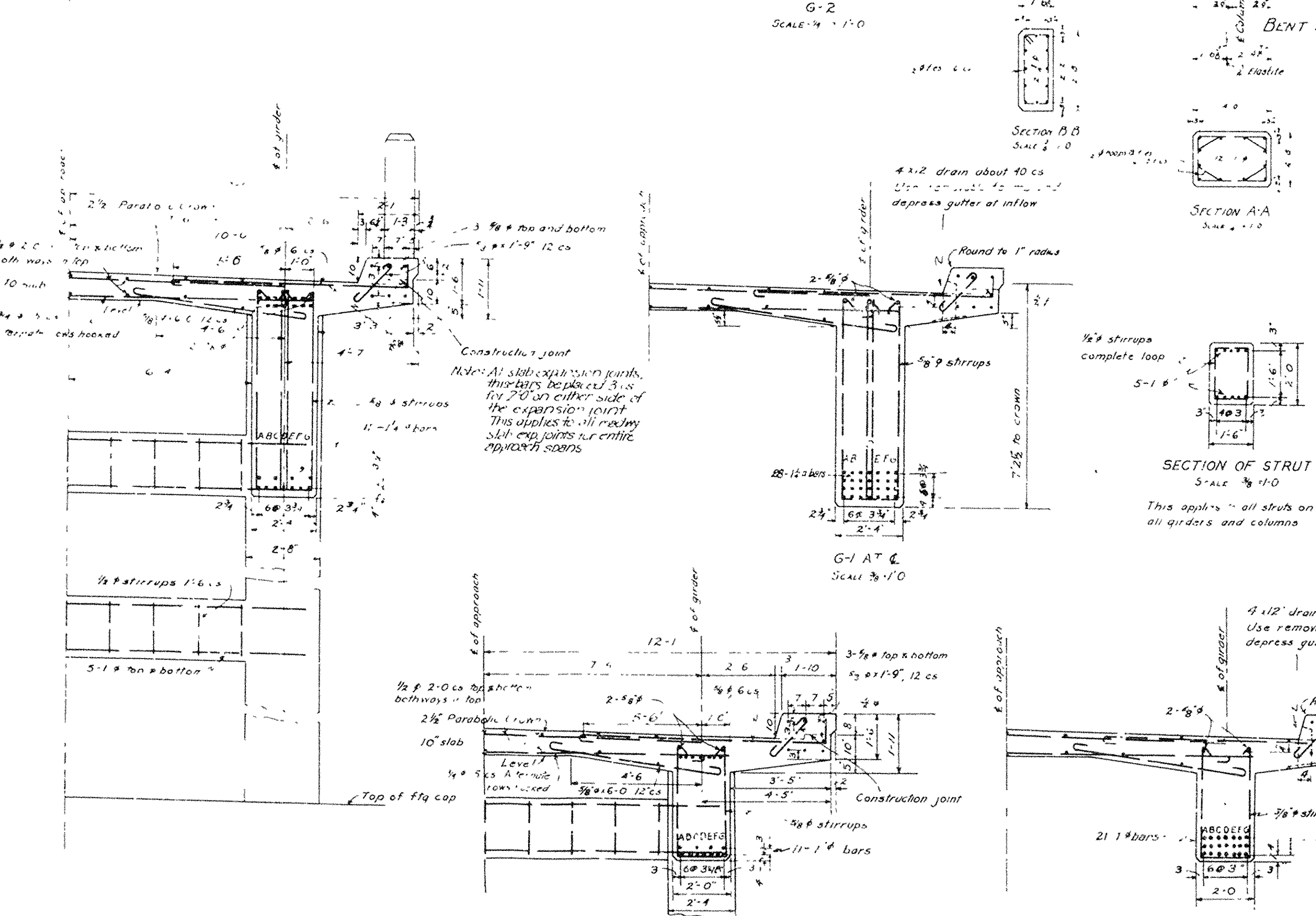
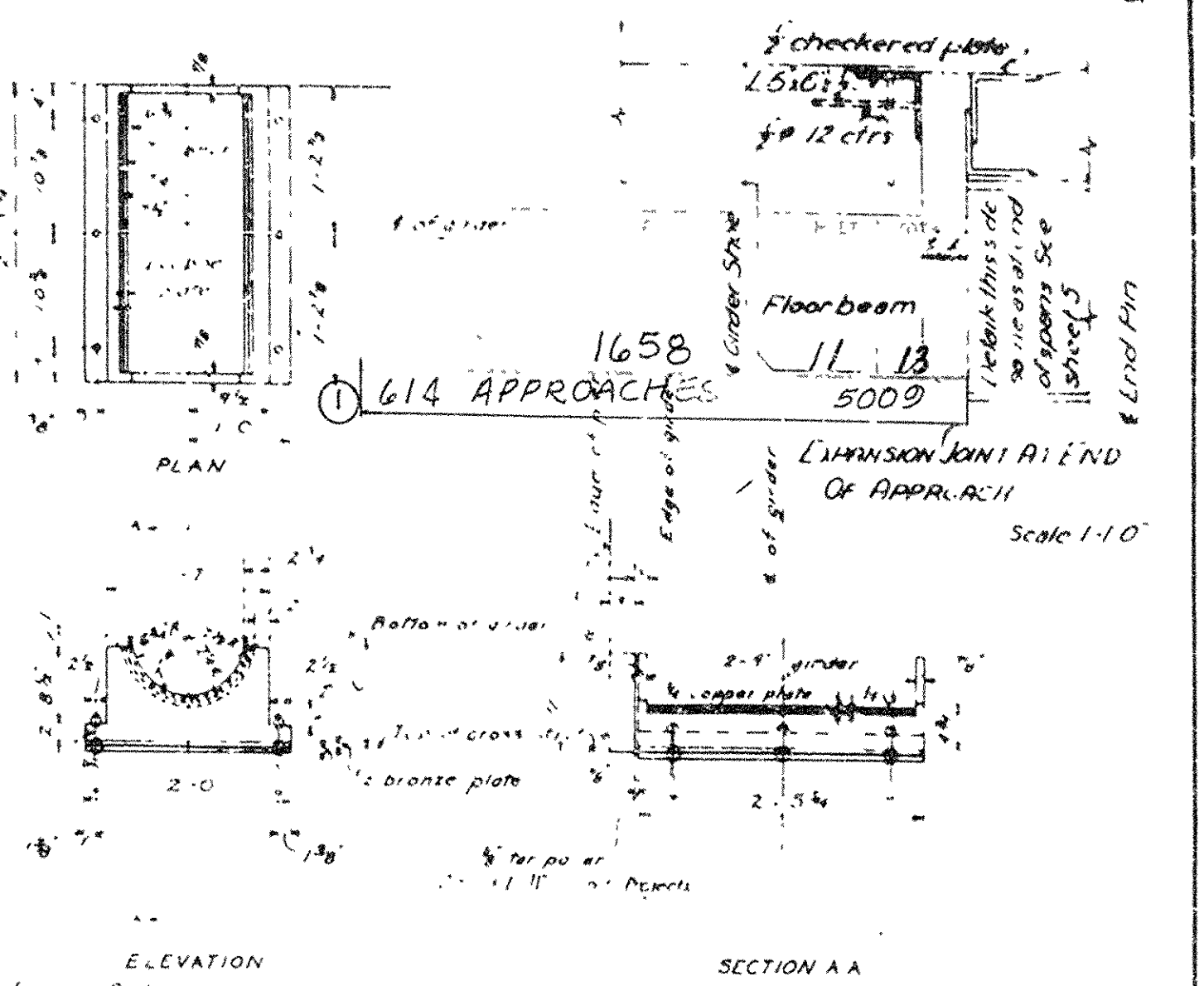
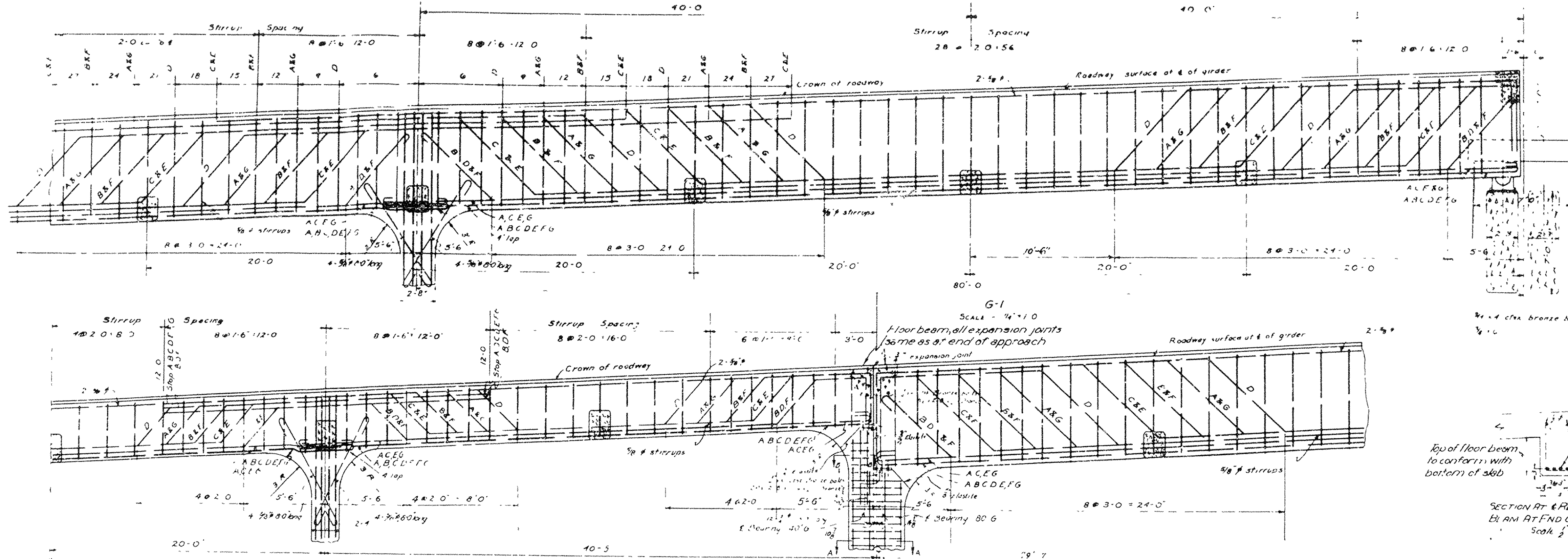


- NOTES
1. All 3 in. x 4 in. and sheathing to be caulked in all joints.
 2. All edges of sheathing and other joints to be caulked are to be provided with caulking edges.
 3. All timber in caissons and cribs is to be of Yellow Pine or its equals.
 4. All 12x12 wgs to be drift bolted at intervals of 3.0.
 5. All drift bolts to have swelled heads.
 6. All drift bolts for 12x12-6x12 on ea. 22' long.
 7. All bolts to be 1/2 in. outside heads counter sunk.
 8. All roof timbers to be drift bolted at all intersections.
 9. All concrete in crib is to be mixed 1-3-5.
 10. All concrete in sealing marking chamber 1-2-4.
 11. All splices in crib timbers to be made at centers of 12x12 wgs.
 12. All 12x12 timbers in sides and roof of caissons to be cut full length no splices.
 13. Use malleable washers for bolts to bear on timbers.

ARKANSAS STATE HIGHWAY COMMISSION
 HIGHWAY BRIDGE OVER RED RIVER
 AT
 GARLAND CITY, ARKANSAS
 CAISSON DETAILS
 SCALES AS SHOWN

Made by B.V. & K.F.
 Checked by B.V. & K.F.
 Traced by B.V. & K.F.
 Date Sept. 25, 1928

IRA G HEORICK, INC.
 Consulting Engineers
 Shreveport, La.
 File No.
 Sheet No. 11



SECTION OF ROADWAY SLAB SHOWING G-1 AT SUPPORT. SCALE 3/8"=1'-0"

SECTION OF ROADWAY SLAB SHOWING G-2 AT SUPPORT. SCALE 3/8"=1'-0"

G-2 AT E. SCALE 3/8"=1'-0"

181030
RED RIVER BRIDGE
ARKANSAS HIGHWAY COMMISSION
DWIGHT H. BLACKWOOD
JUSTIN W. THREMS
J. S. PARKS
J. L. WILLIAMS
SAM J. WILSON
CONTRACTORS
C. S. CHRISTIAN
STATE HIGHWAY ENGR.
I. P. G. HEDRICK, INC.
CONSULTING ENGRS.
CONTRACTOR

**ARKANSAS STATE HIGHWAY COMMISSION
HIGHWAY BRIDGE OVER RED RIVER
AT
GARLAND CITY, ARKANSAS
DETAILS OF APPROACH GIRDER SPANS**

SCALES AS SHOWN

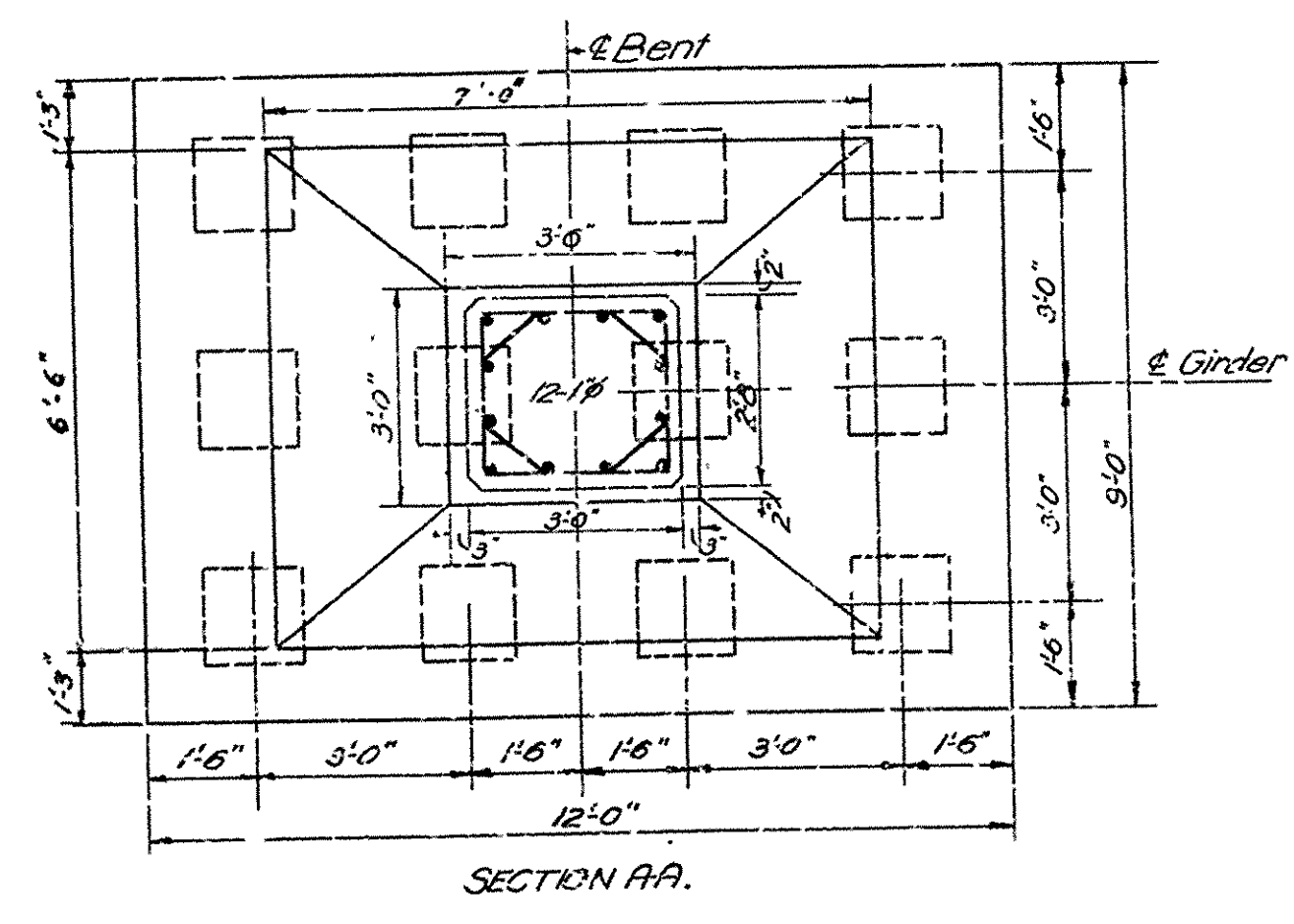
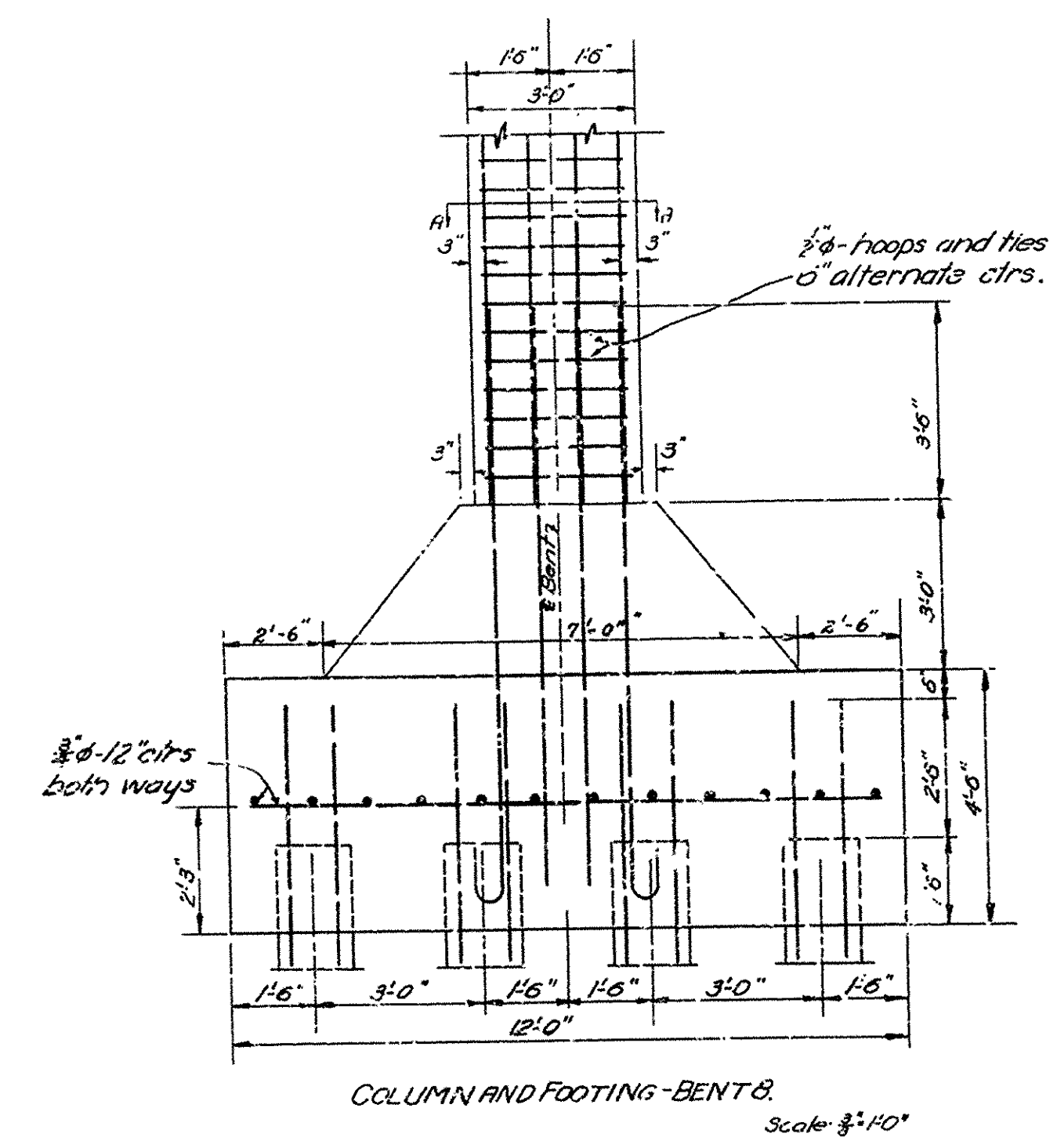
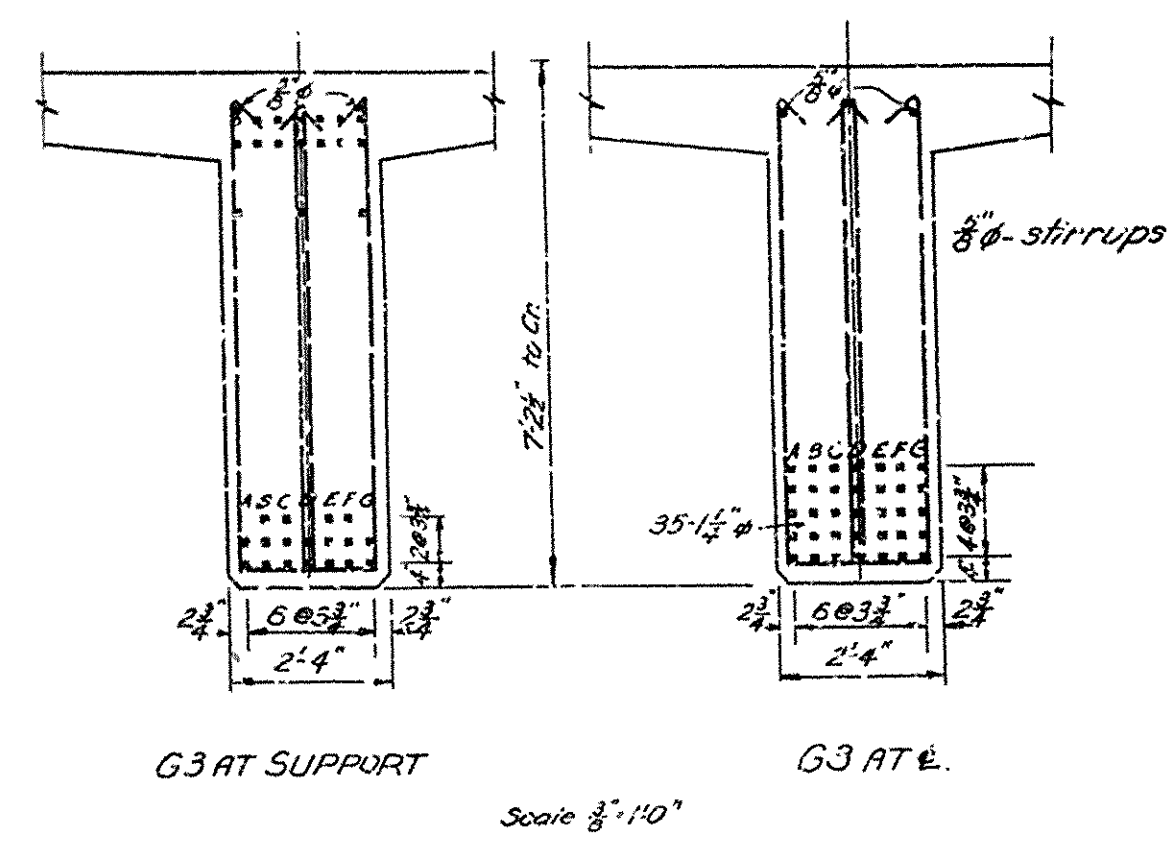
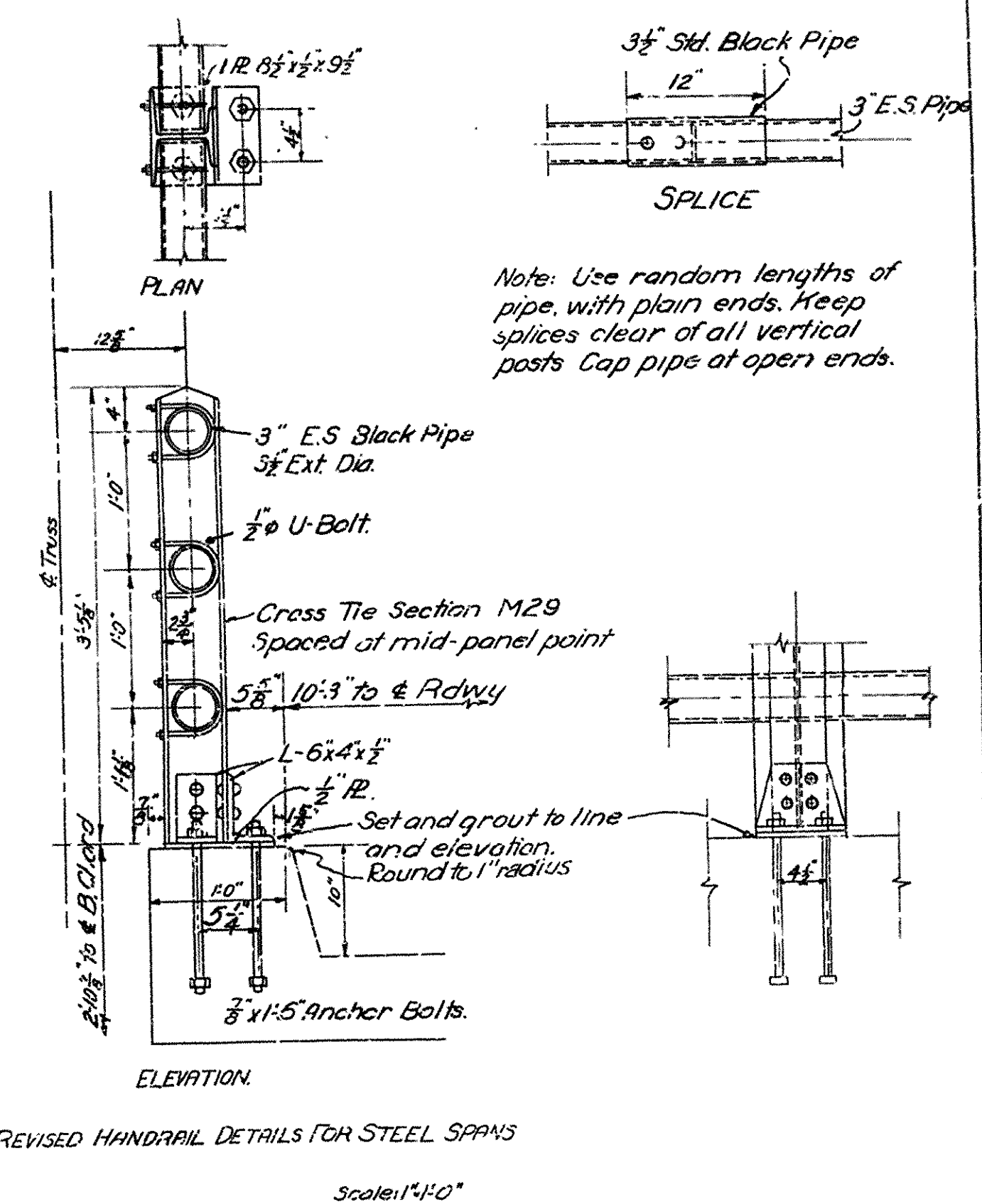
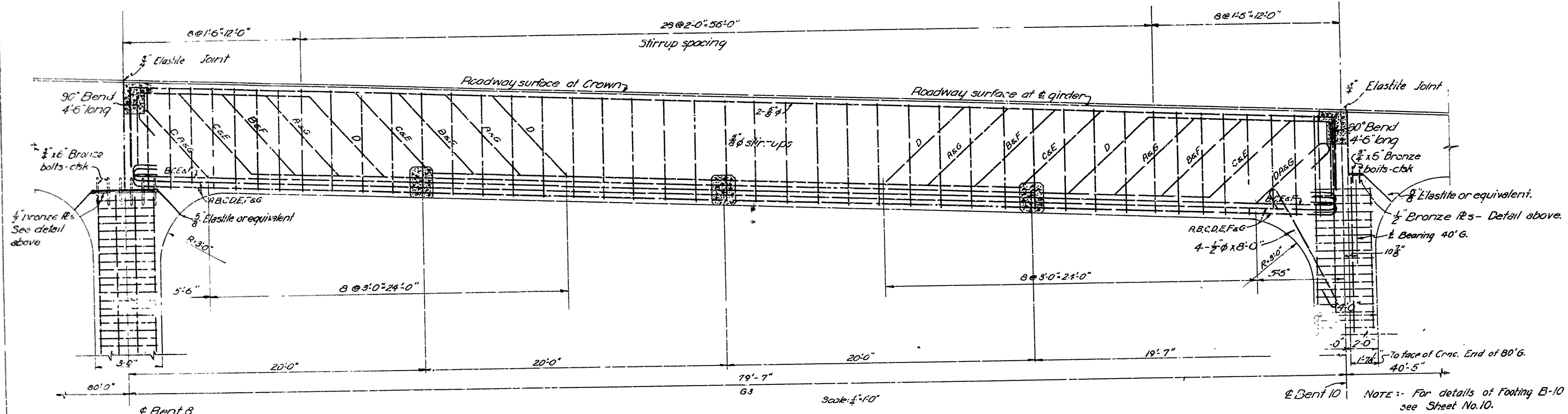
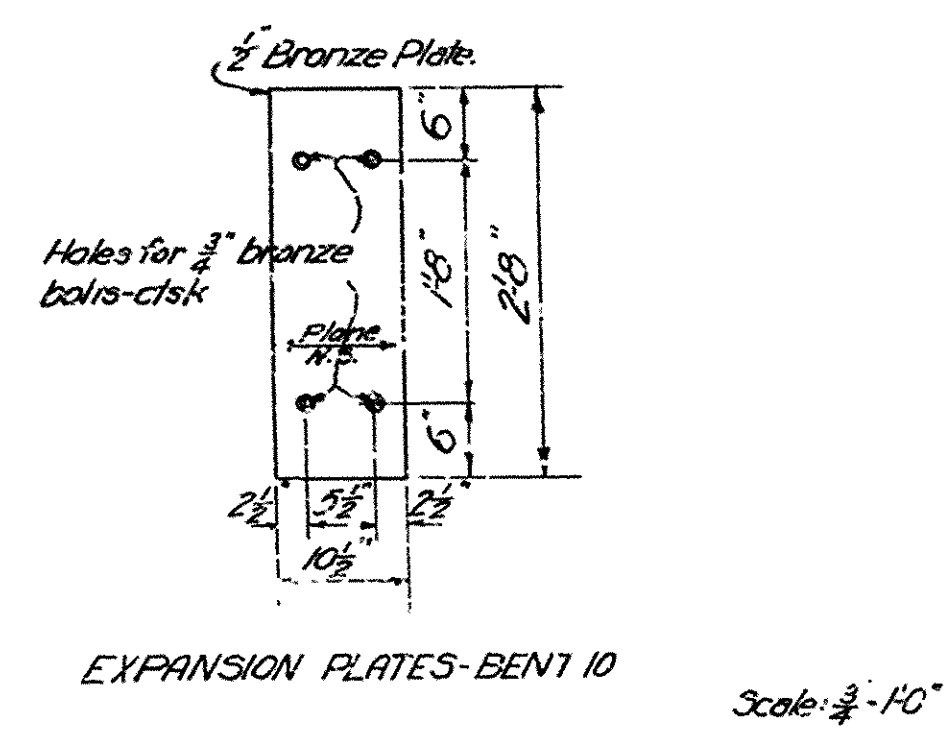
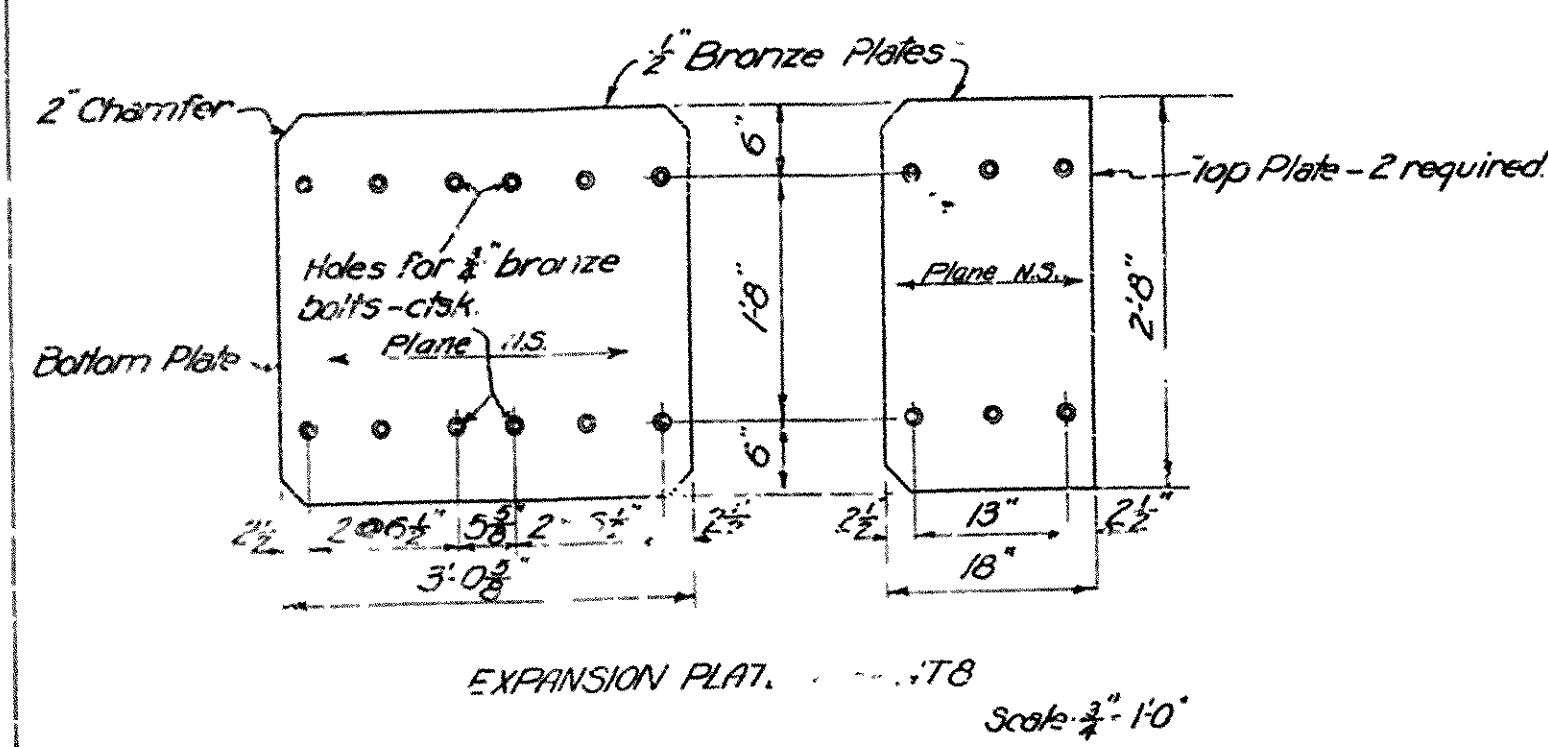
Made by BV & KF
Checked by
Traced by BV & KF
Checked by BV & KF
Date Sept 25, 1926

IRA G. HEDRICK, INC.
Consulting Engineers
Hot Springs, Ark.

File No.
SHEET No. 12

NAME PLATE
4R required
SCALE 1"=1'-0"

Revised Oct 29, 1929
Revised Aug 29, 1925



ARKANSAS STATE HIGHWAY COMMISSION
BRIDGE OVER RED RIVER
NEAR GARLAND CITY, ARKANSAS.
DETAILS OF GIRDER,
FOOTING AND HANDRAIL

MADE BY: E.S.
TRACED BY: E.S.
CHECKED BY: H.W.S.
DATE: Oct. 2, 1929

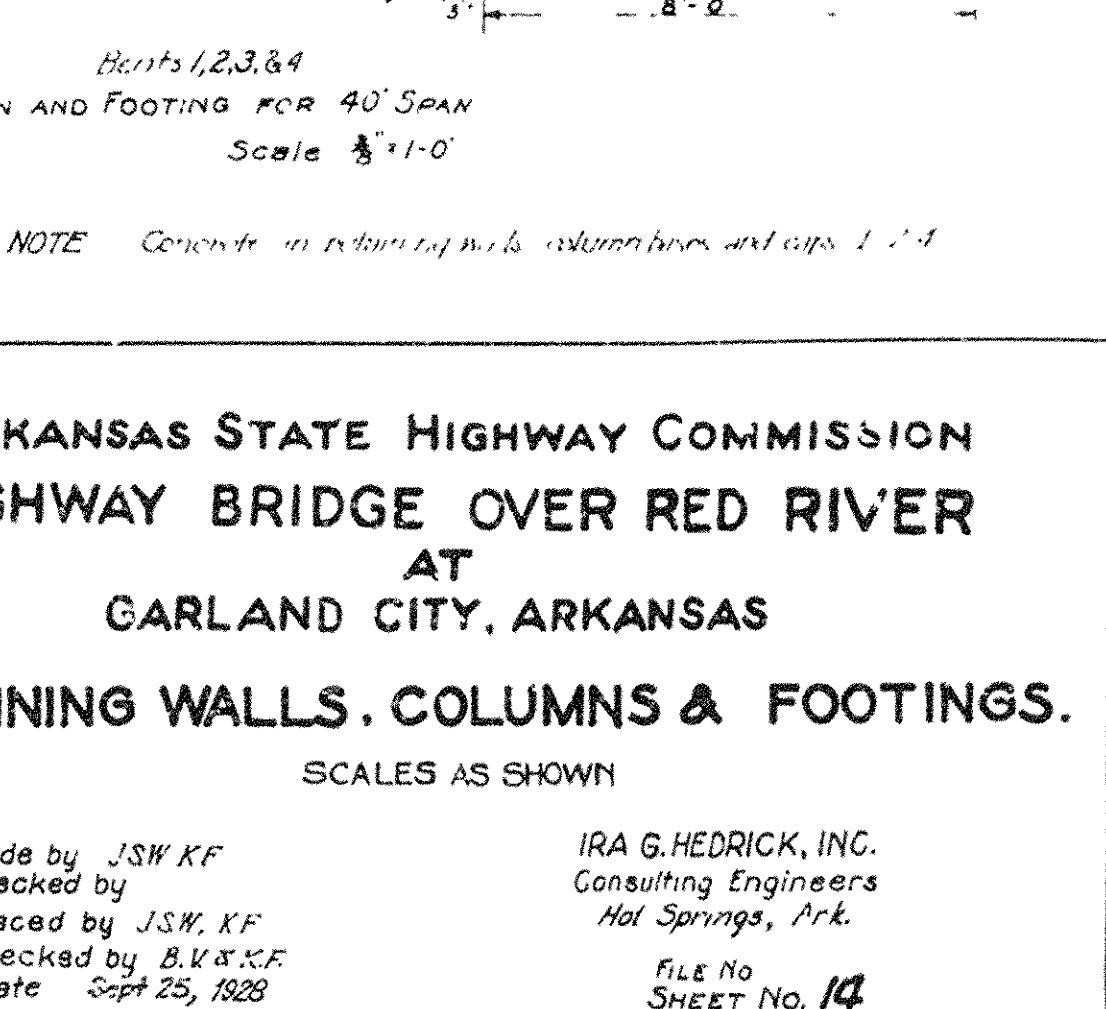
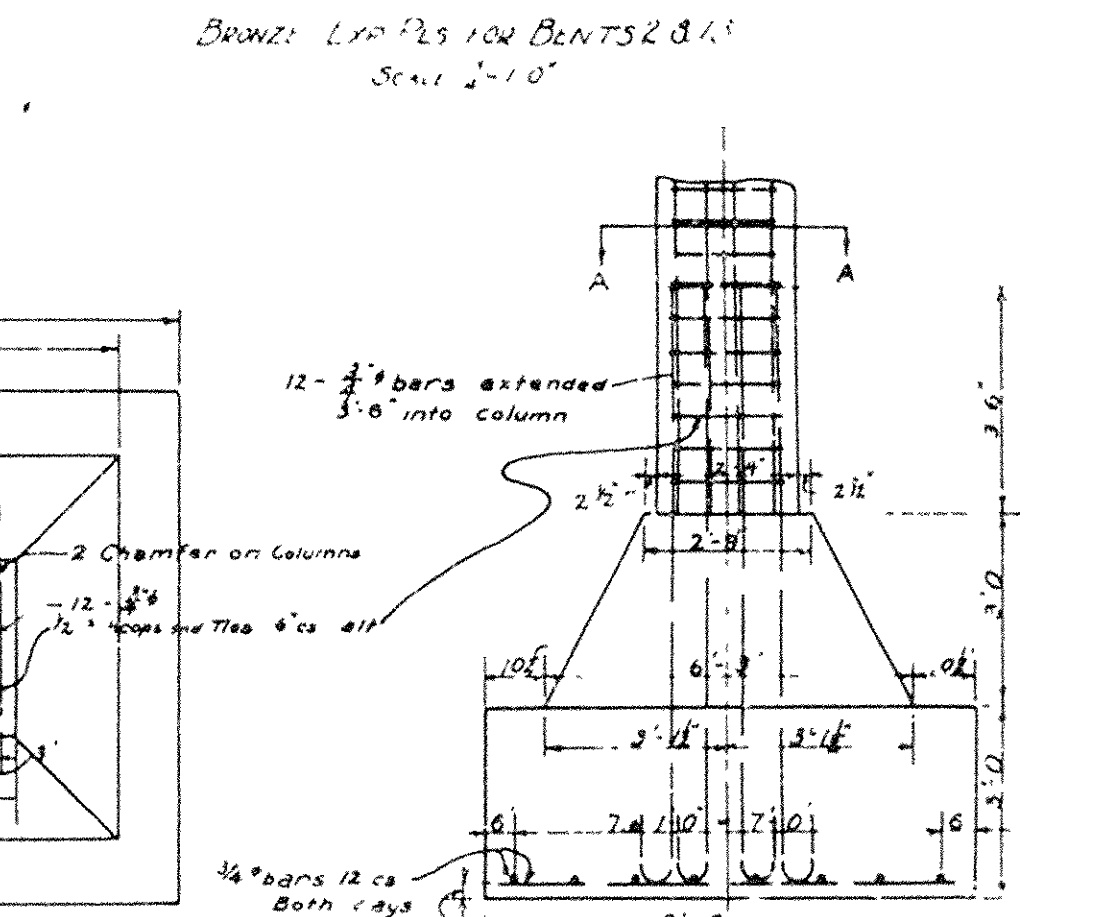
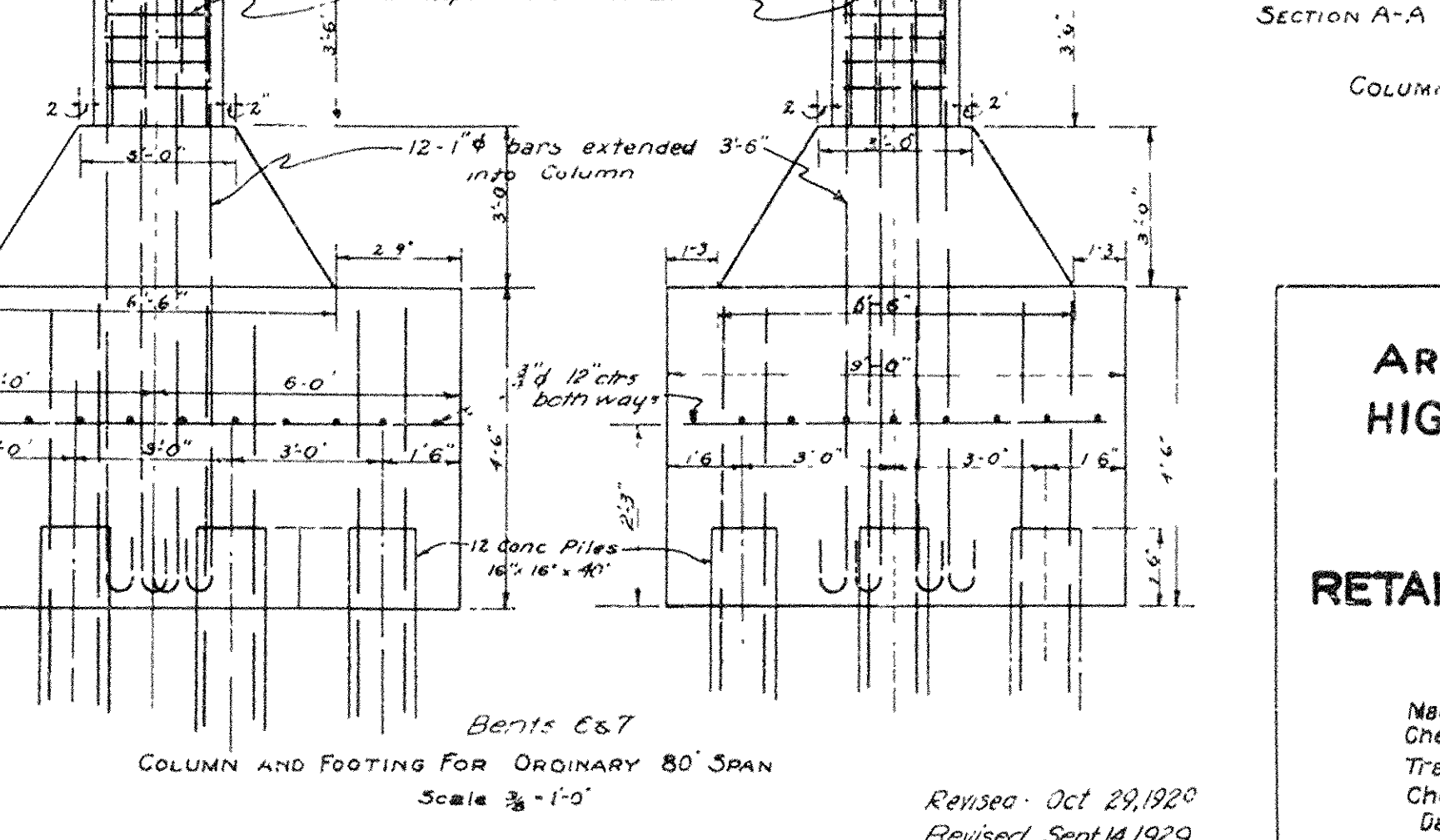
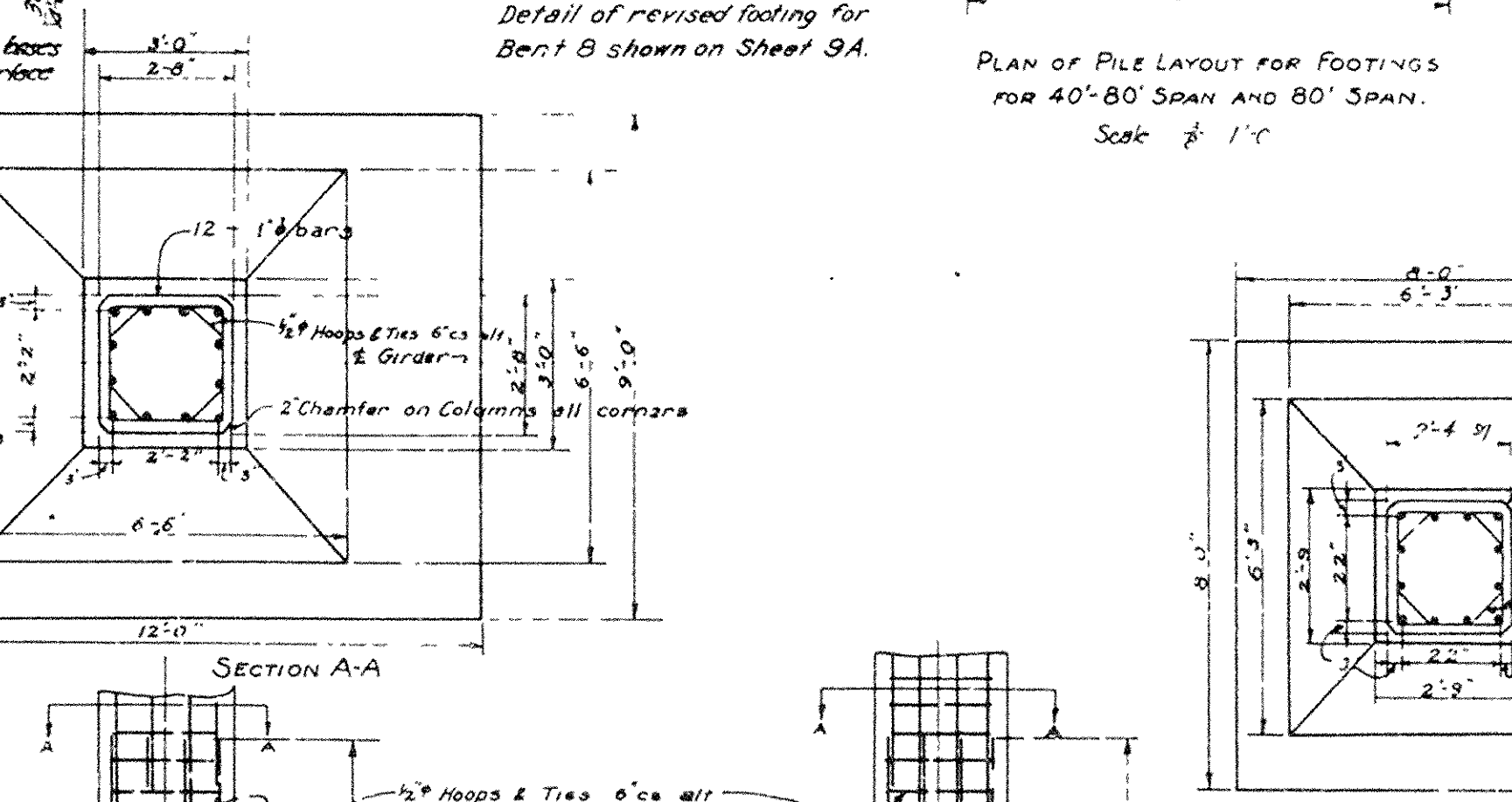
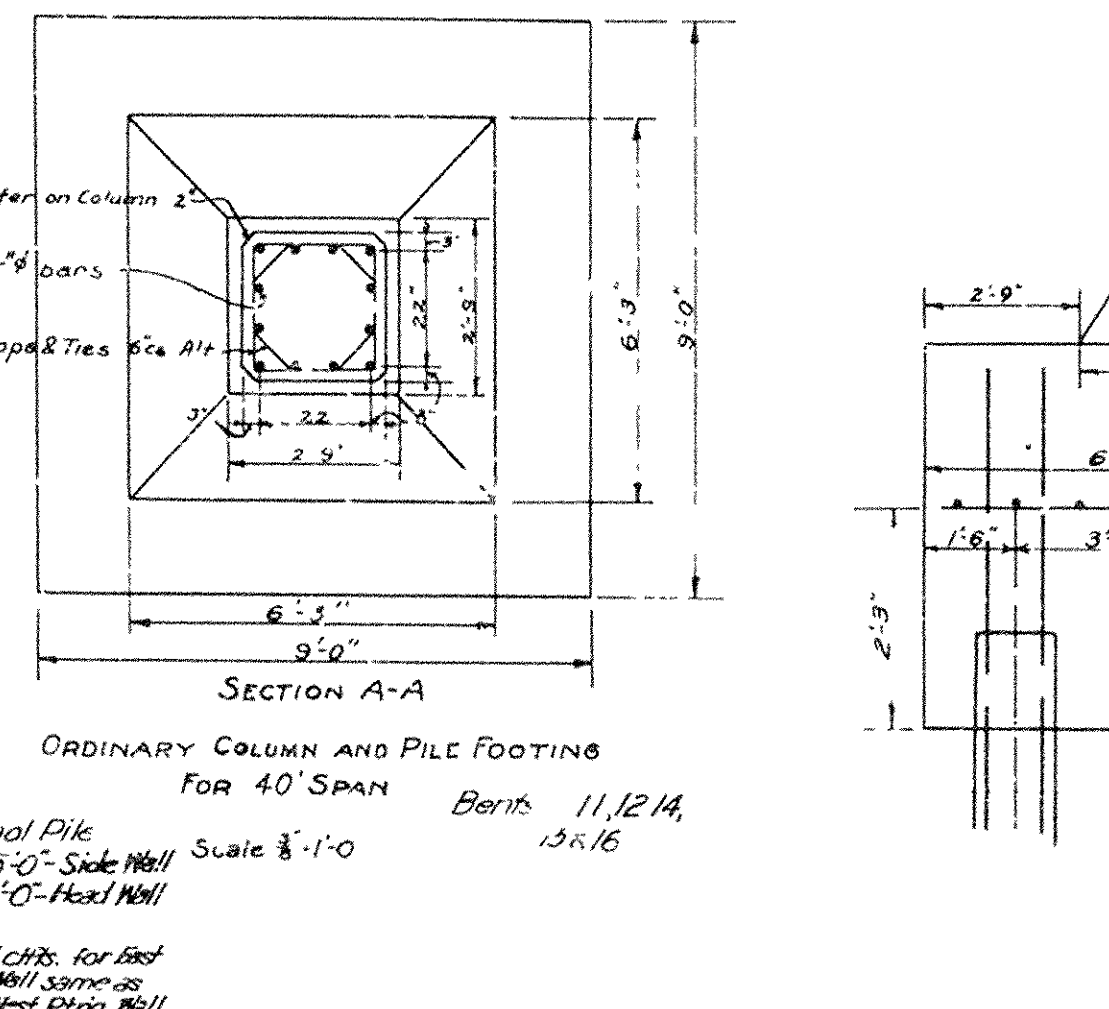
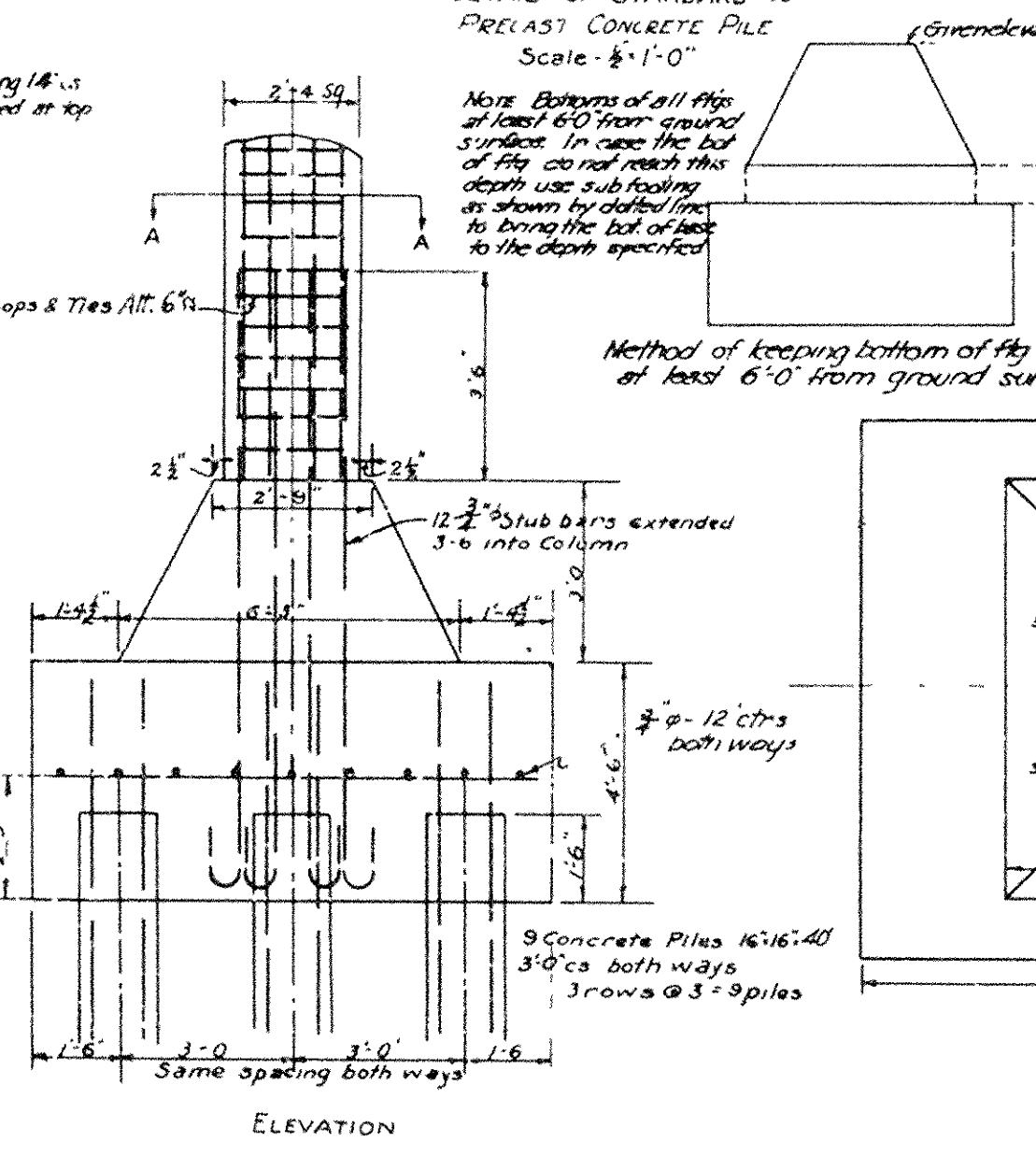
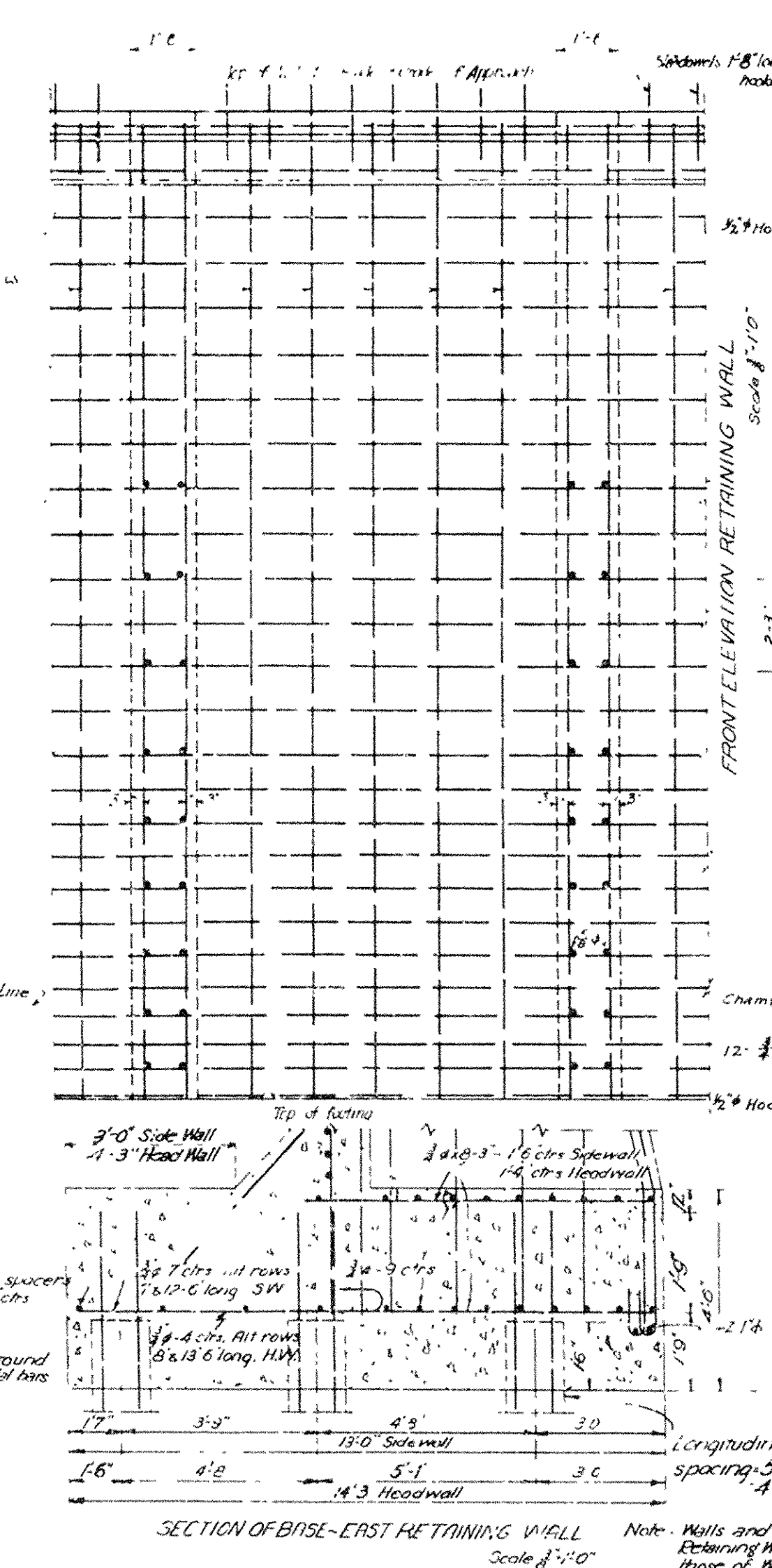
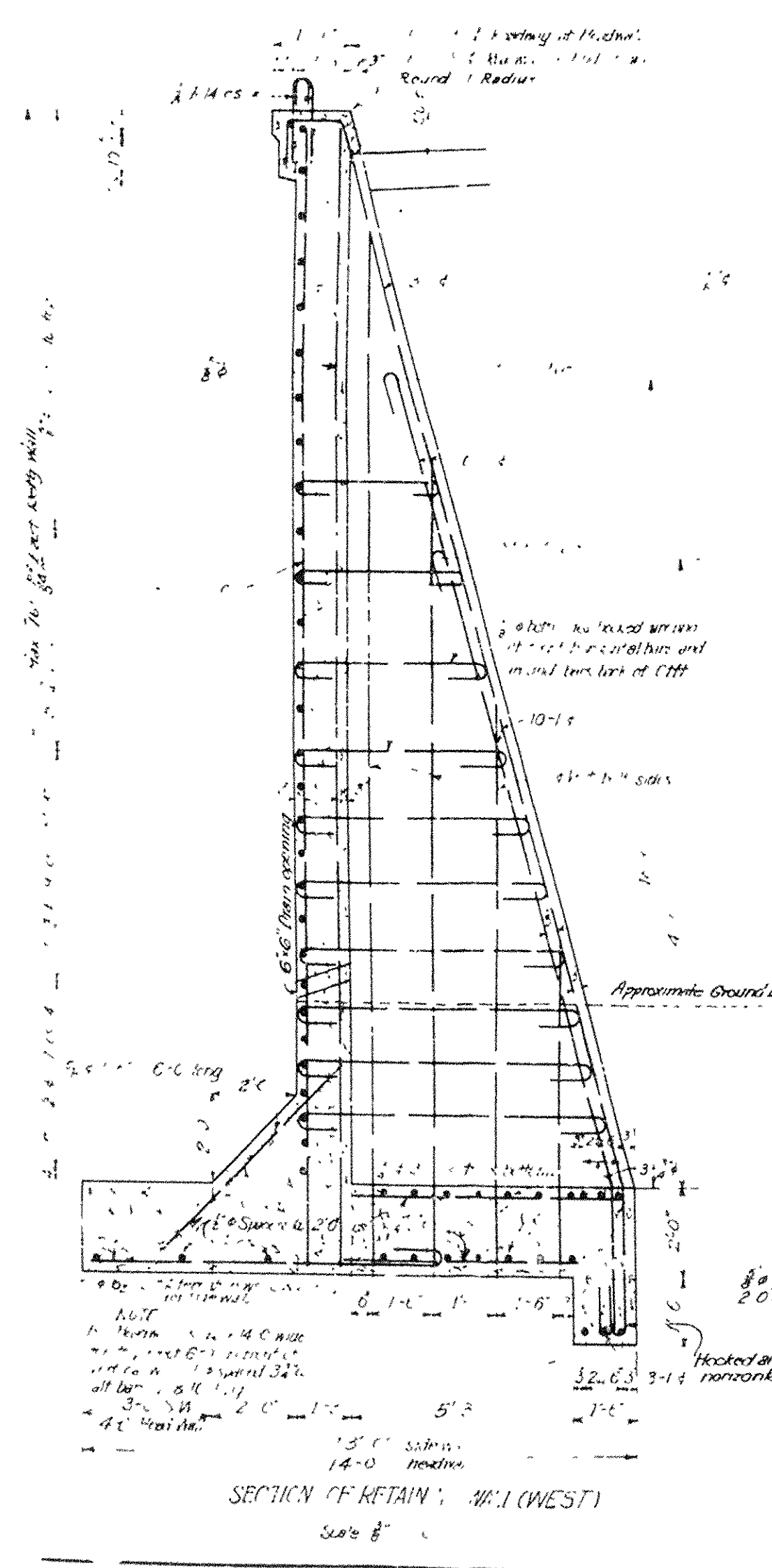
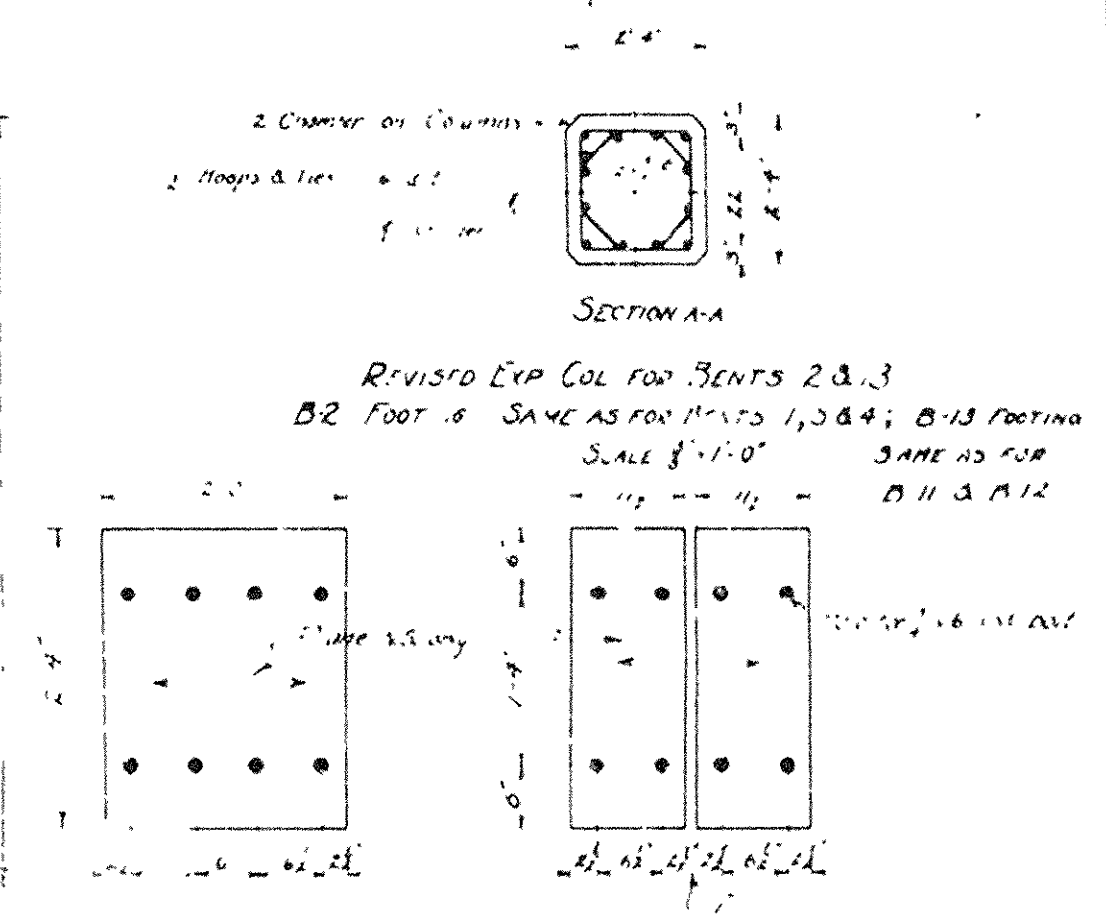
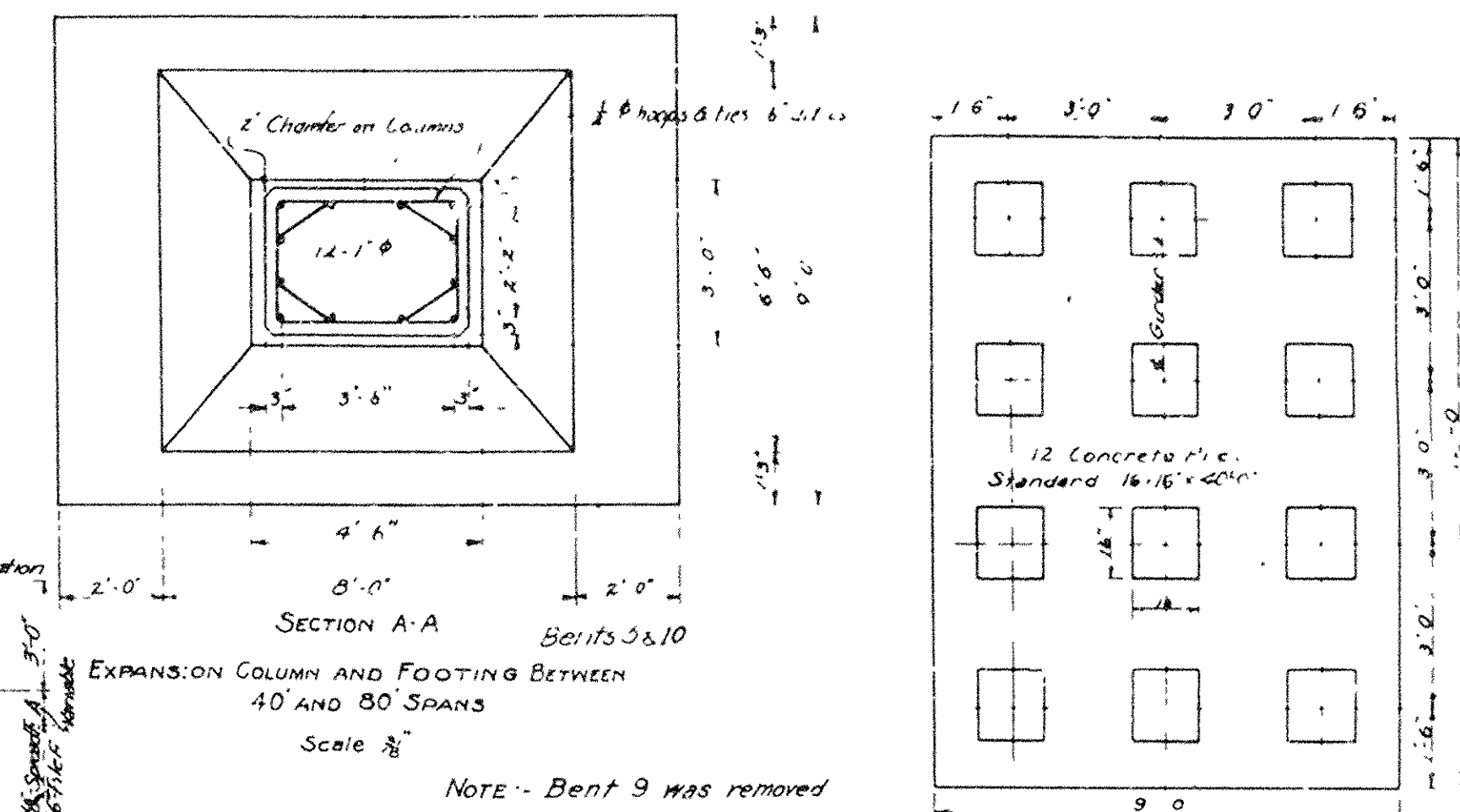
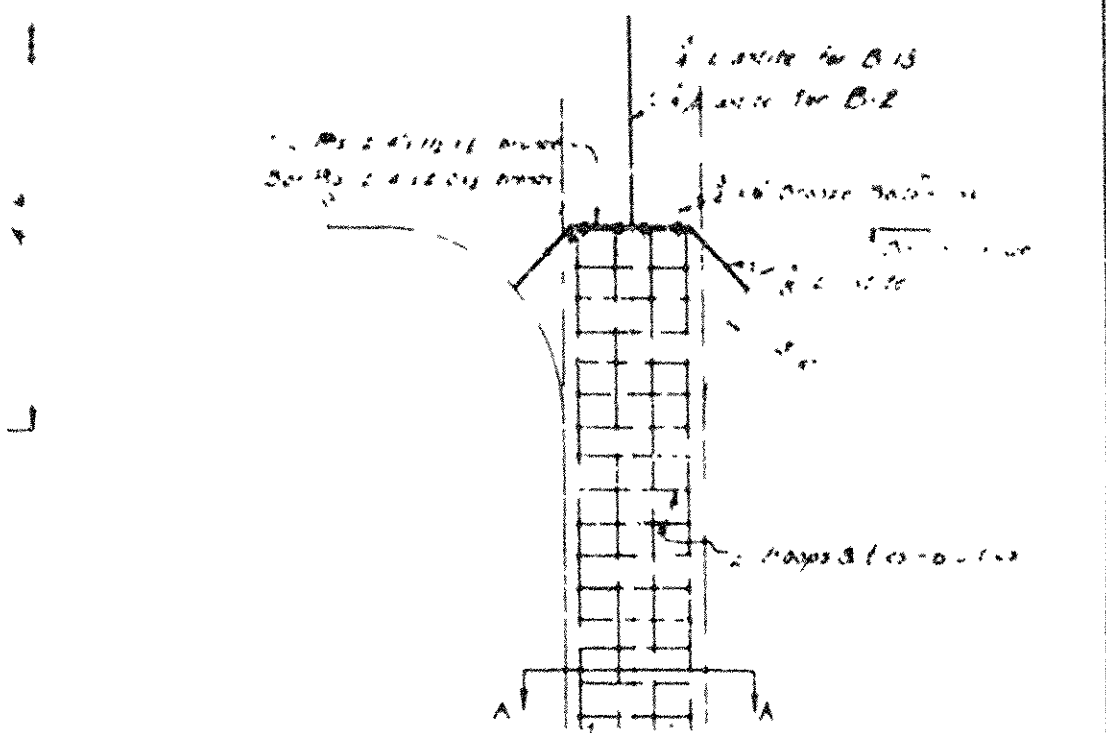
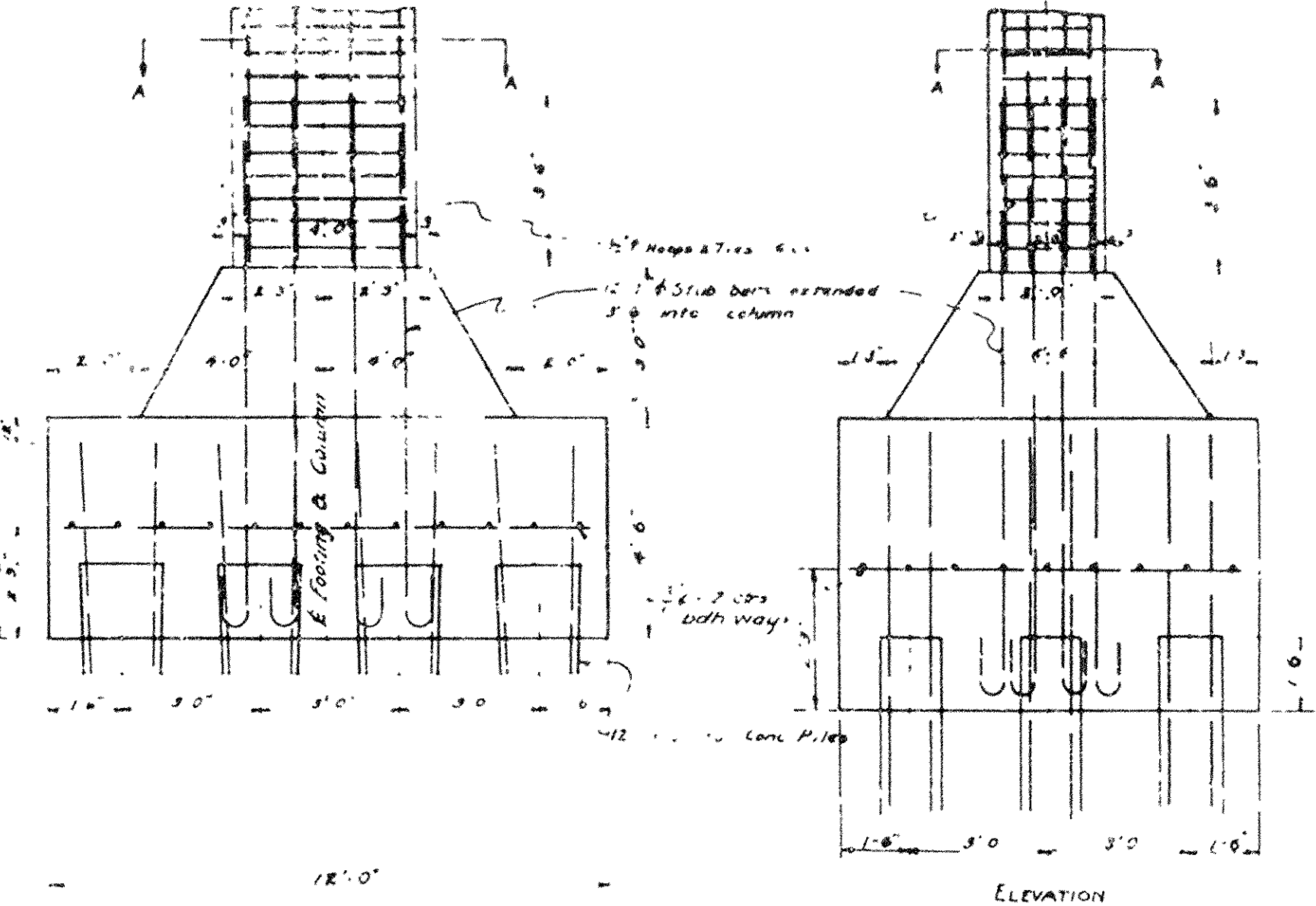
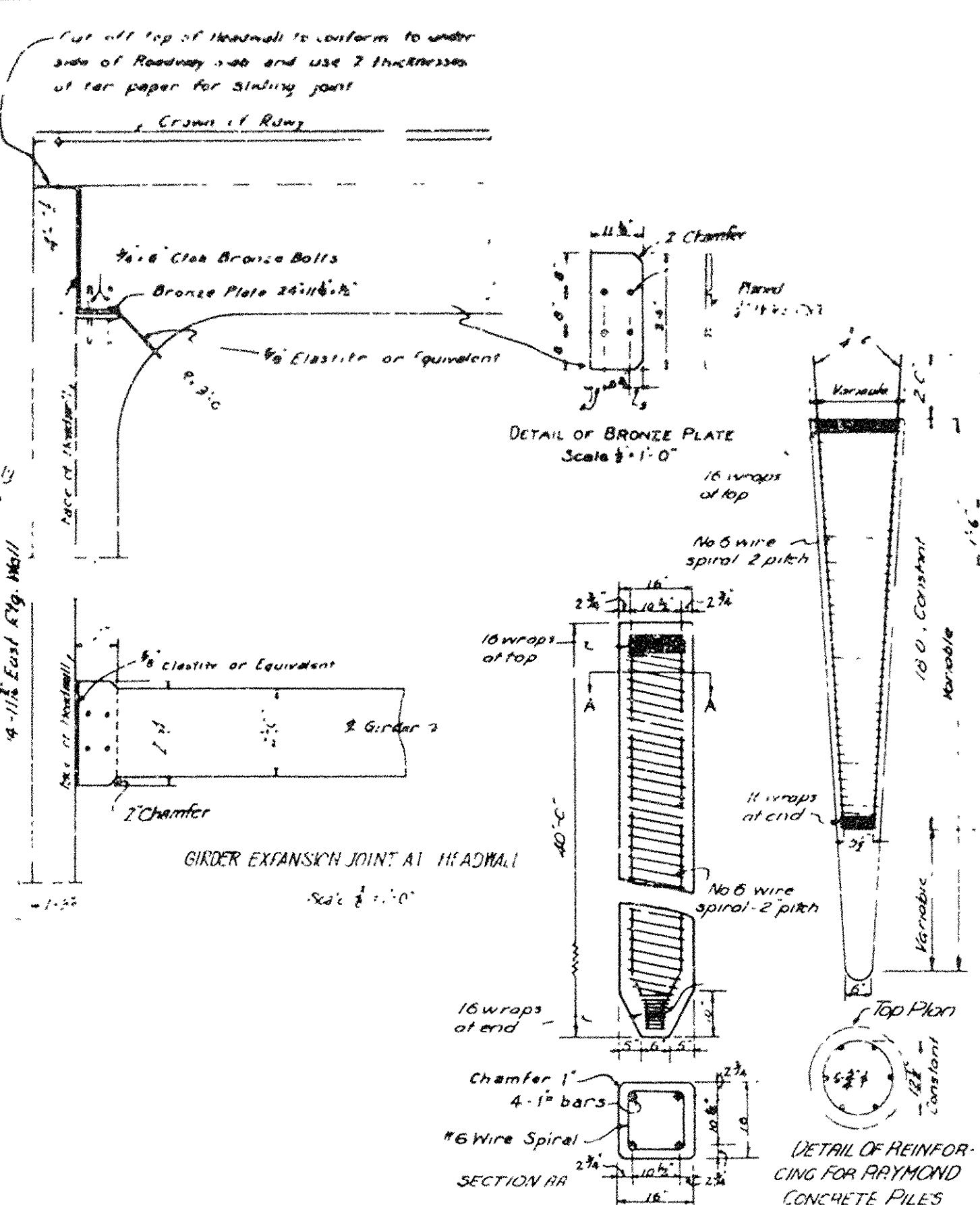
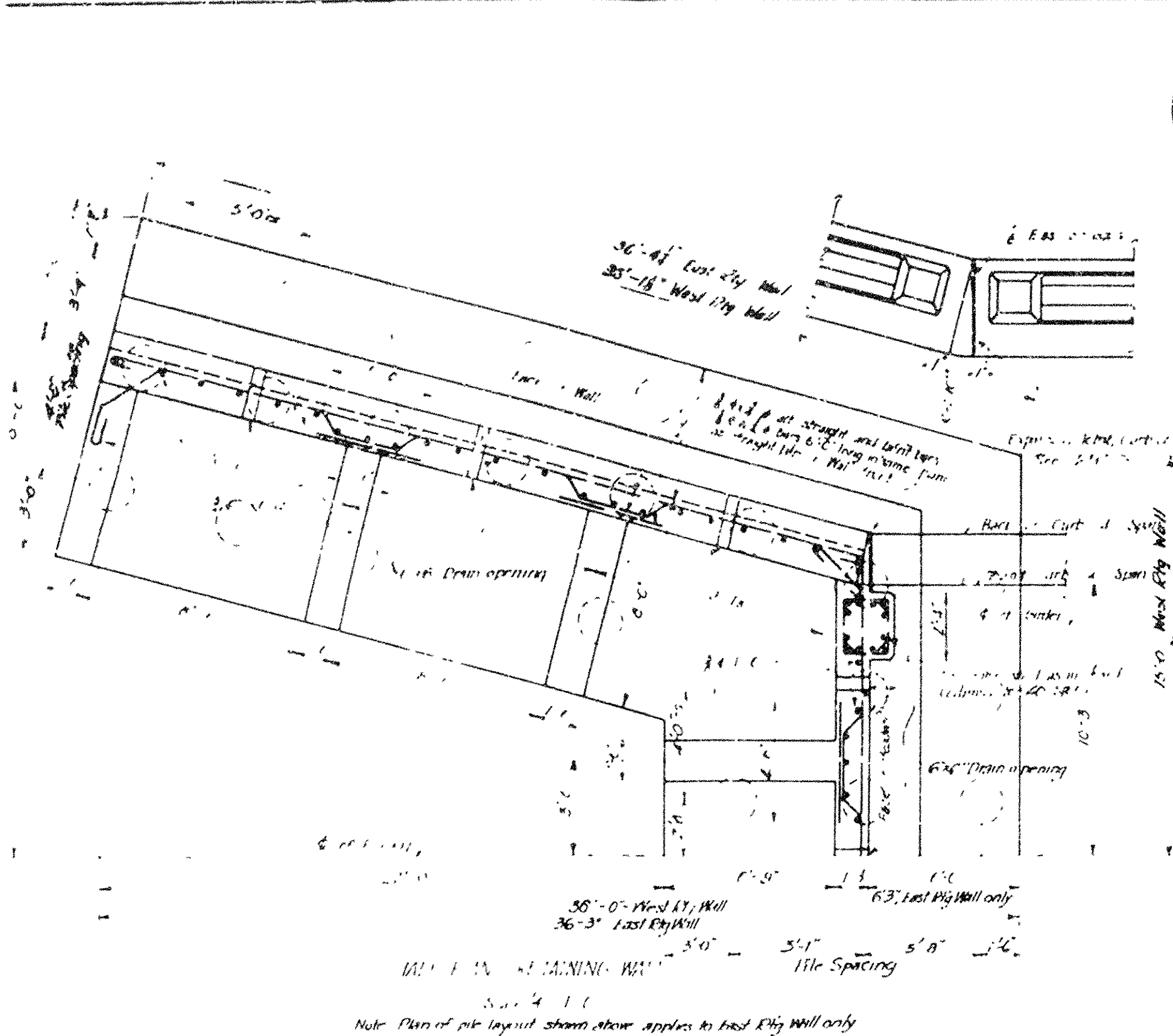
IRA G. HEDRICK, INC.,
CONSULTING ENGINEERS,
HOT SPRINGS, ARKANSAS.

SCALE: As shown
SHEET NO. 13

Dr. No. G14 Drwg. No. 5010

Revised Nov. 4, 1929

1658 13 13
G14 APPROACHES 5011



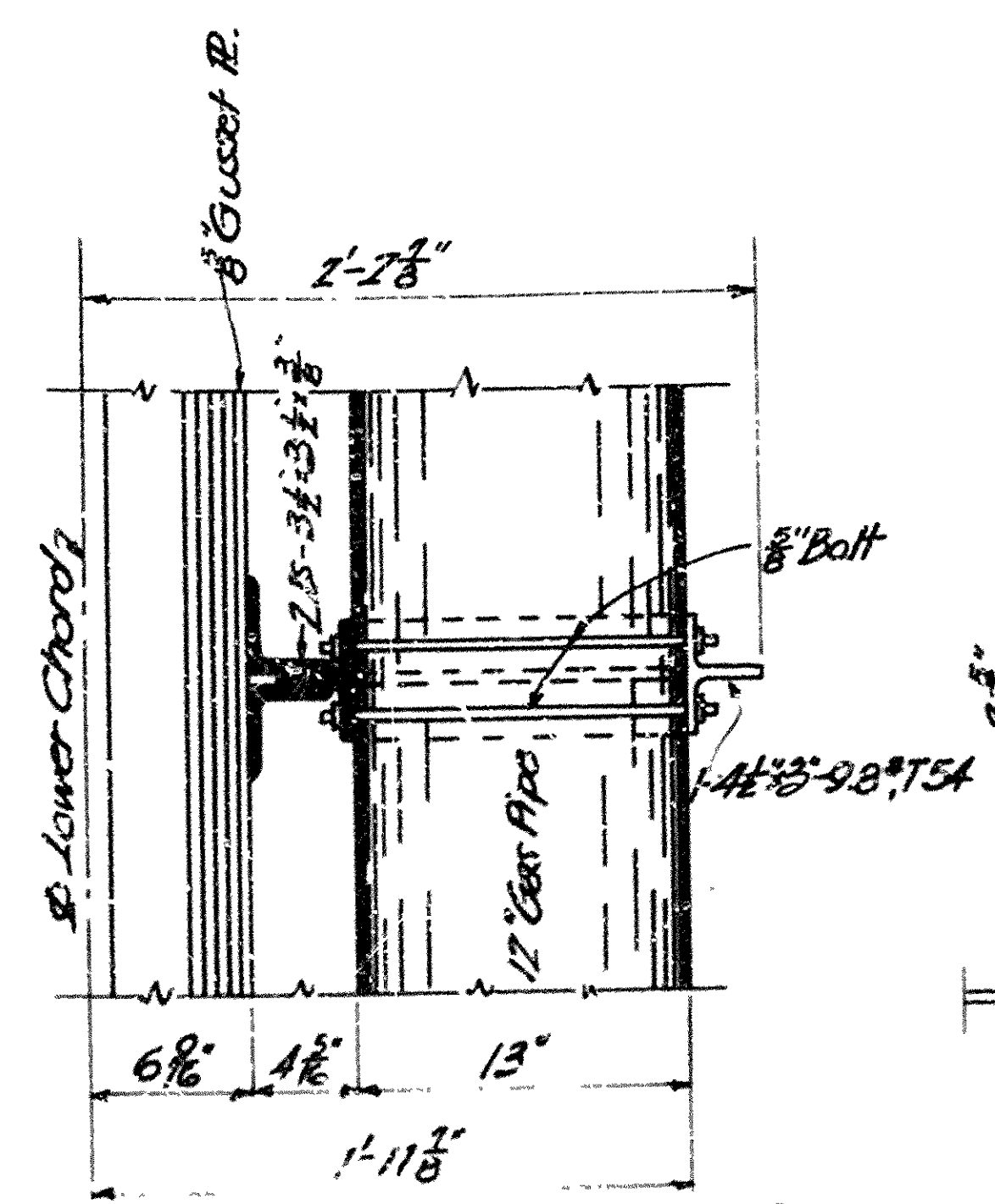
ARKANSAS STATE HIGHWAY COMMISSION
HIGHWAY BRIDGE OVER RED RIVER
AT GARLAND CITY, ARKANSAS
RETAINING WALLS, COLUMNS & FOOTINGS.
 SCALES AS SHOWN

Made by J.S.W. KF
 Checked by J.S.W. KF
 Traced by J.S.W. KF
 Checked by B.V.S.C.F.
 Date Sept 25, 1928

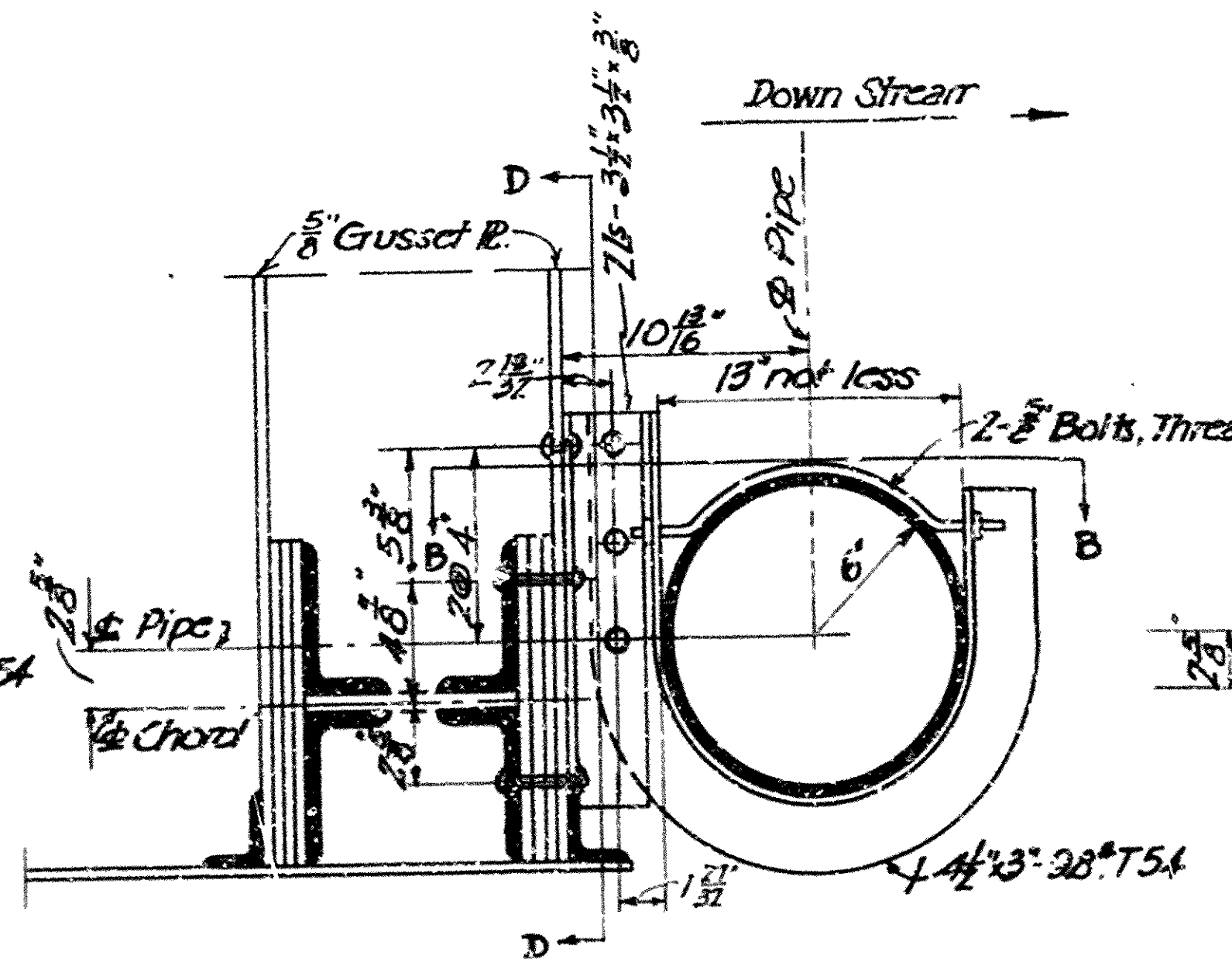
IRA G. HEDRICK, INC.
 Consulting Engineers
 Hot Springs, Ark.
 FILE NO. 14
 SHEET NO. 14

DR. No. G14
 DRWG. No. 5011

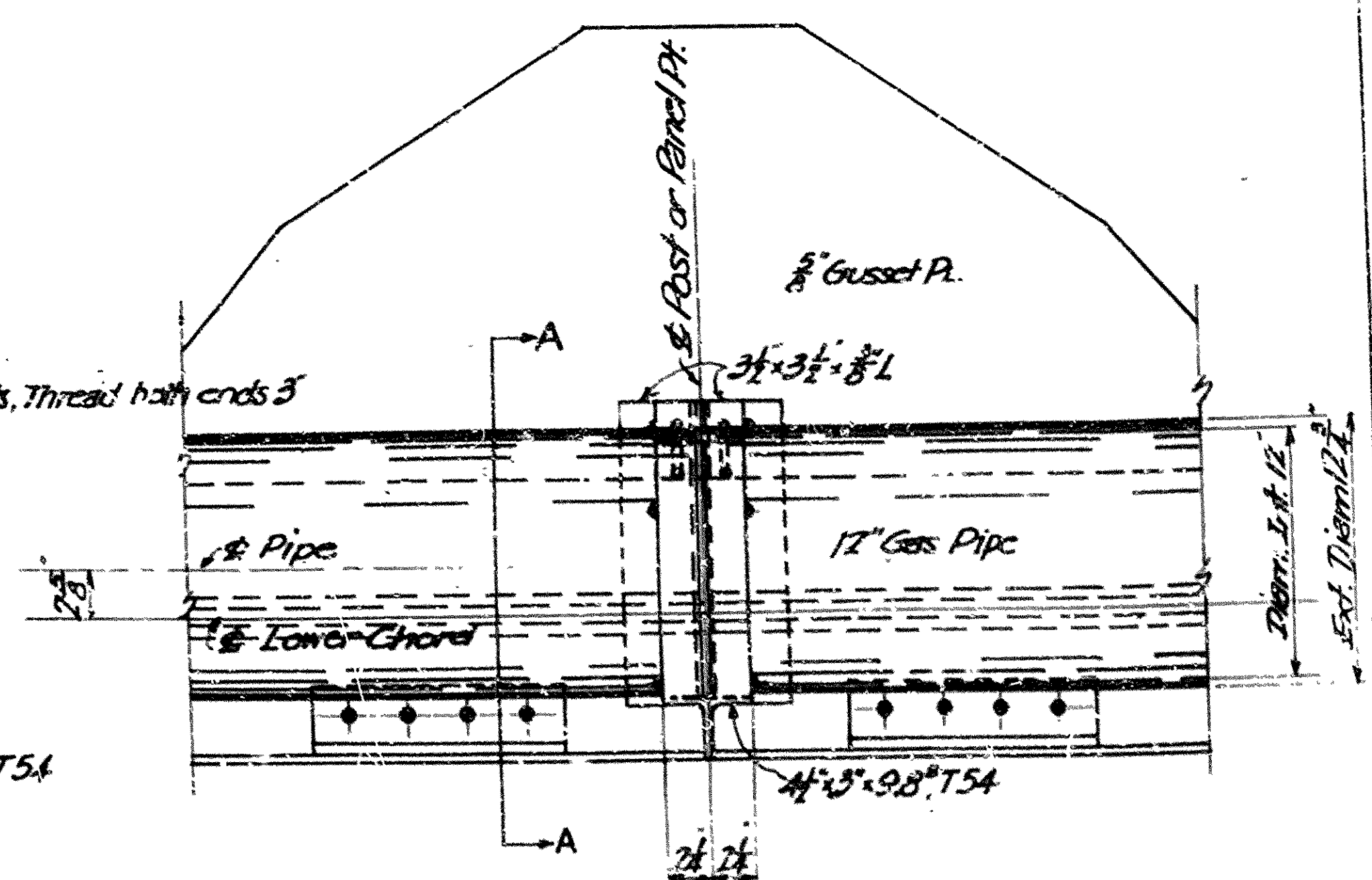
Revised - Oct 29, 1920
Revised Sept 14, 1929



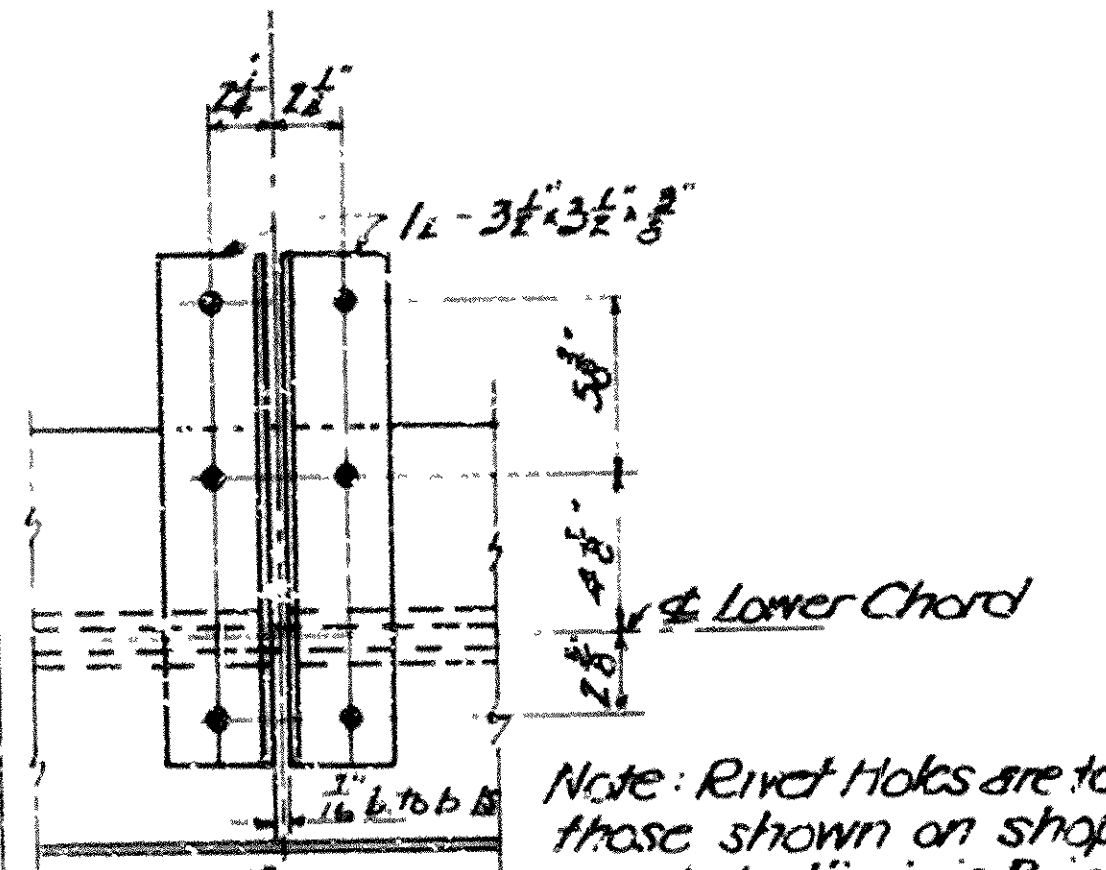
SECTION B-B



SECTION AA

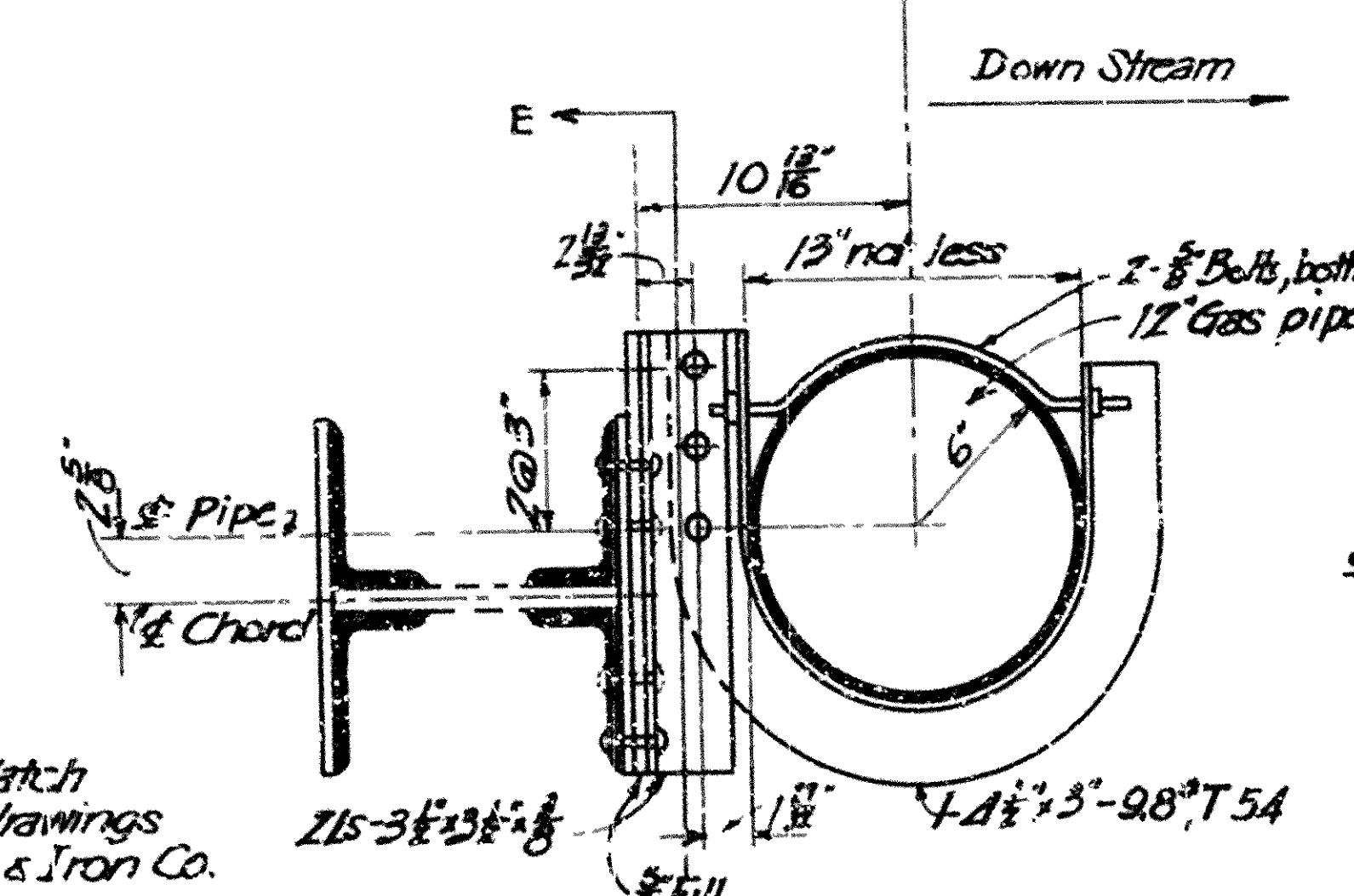


DETAILS FOR CARRYING GAS PIPE ALONG LOWER CHORD AT PANEL PTS. L₁ TO L₂ INCL.

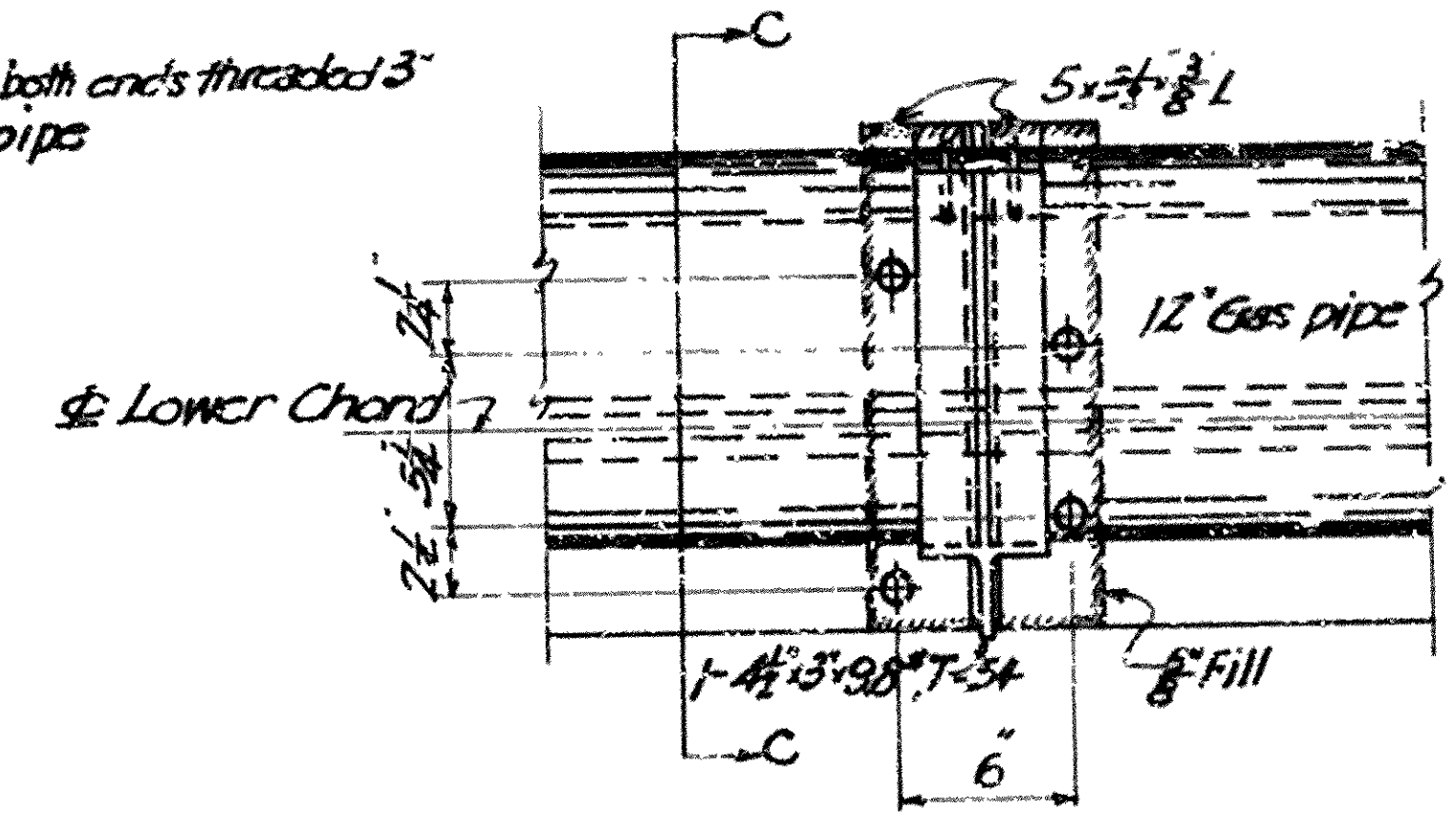


SECTION D-D

Note: Rivet Holes are to Match those shown on shop drawings made by Virginia Bridge & Iron Co.

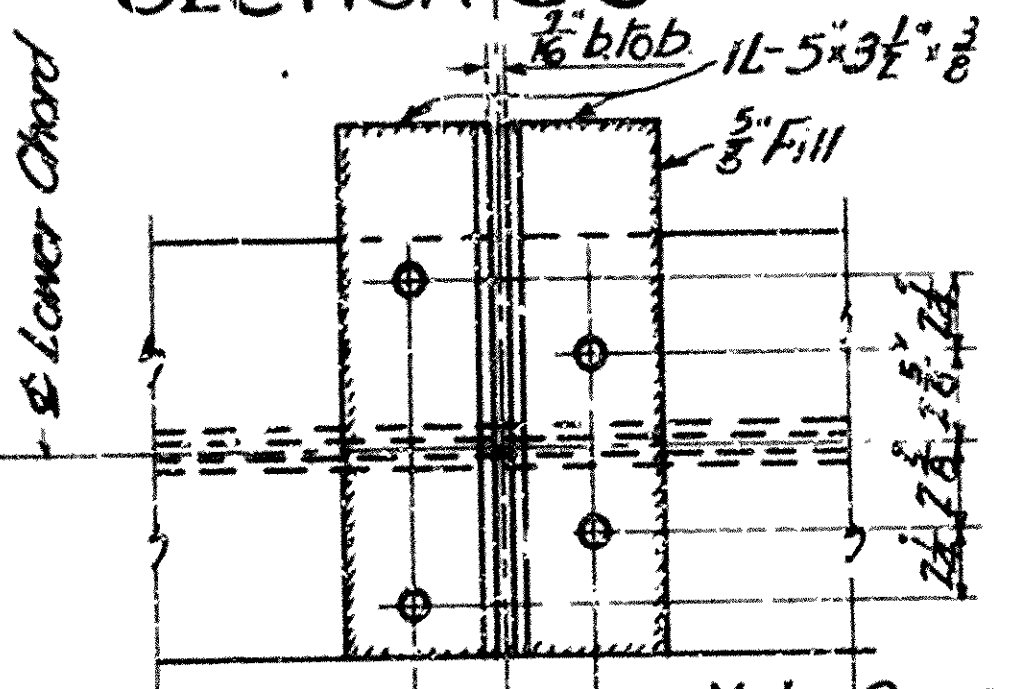


SECTION C-C



DETAILS FOR ABOVE AT MID PANEL POINT BETWEEN L₂-L₃ & L₃-L₄

Notes
Gas pipe is to be supported at all panel points except at L₁ & L₂ and carried over the shoes at Piers 2 & 3 by supports at mid-panel pt. between L₂-L₃ & L₃-L₄. Expansion joints are to be provided for the pipe at each pier.
All rivets 5/8"
Pipe & Supports to be painted same as the rest of the structure.



SECTION E-E

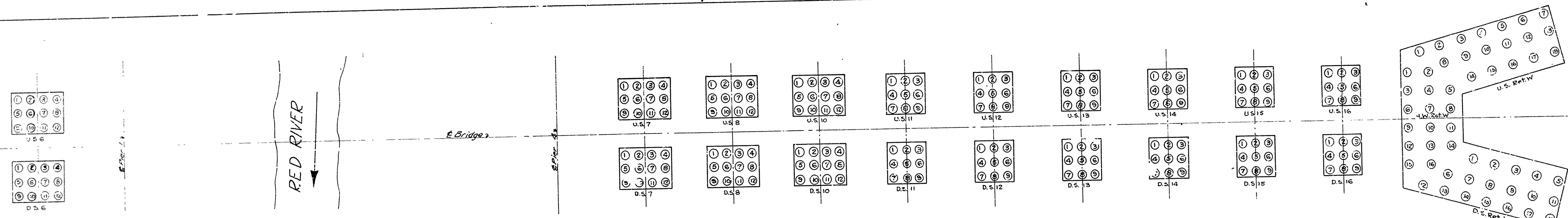
Scales 1"=1'-0"

Note: See note for Section D-D

ARKANSAS STATE HIGHWAY COMMISSION
BRIDGE OVER RED RIVER
AT
GARLAND, ARKANSAS
DETAILS OF GAS PIPE SUPPORT
BR. No. 614
Made by: K.F.

IRA G. HEDRICK, INC.
CONSULTING ENGINEERS
DATE: JAN. 20, 1930

DRWG. No. 5012
SHEET NO. 16



U.S. 6		U.S. 7		U.S. 8		U.S. 10		U.S. 11		U.S. 12		U.S. 13		U.S. 14		U.S. 15		U.S. 16		U.S. Ref. W		H.W. Ref. W	
Length of Pile	S	Length of Pile	S	Length of Pile	S	Length of Pile	S	Length of Pile	S	Length of Pile	S	Length of Pile	S	Length of Pile	S	Length of Pile	S	Length of Pile	S	Length	S	Length	S
22'-0"	.176	22'-0"	.176	22'-0"	.176	22'-0"	.176	22'-0"	.176	22'-0"	.176	22'-0"	.176	22'-0"	.176	22'-0"	.176	22'-0"	.176	22'-0"	.176	22'-0"	.176
100,000	176	100,000	176	100,000	176	100,000	176	100,000	176	100,000	176	100,000	176	100,000	176	100,000	176	100,000	176	100,000	176	100,000	176

ENGINEERING NEWS RECORD FORMULA FOR CALCULATING BEARINGS
 $L = \frac{2WH}{S+0.1}$ where
 L: safe bearing load in pounds
 W: weight of falling parts in pounds
 H: depth of fall or length of stroke in feet
 S: final penetration per blow in inches

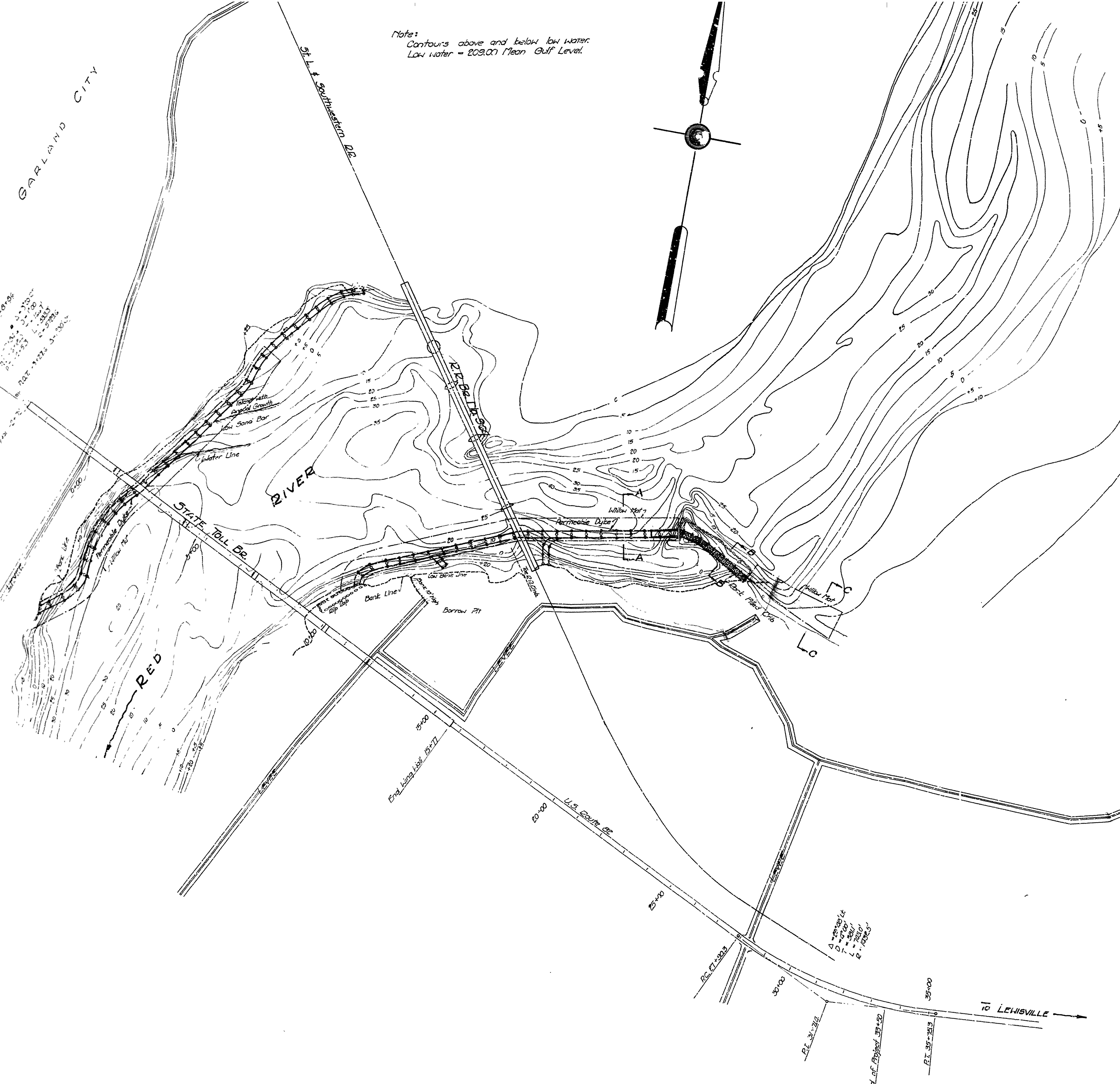
TOTAL LENGTH OF PILES
 6,817'-11" lin. ft.

BUILT FOR
 ARKANSAS STATE HIGHWAY COMMISSION
 STATE PROJ. 3112
 IRA G. HEDRICK, INC.
 CONSULTING ENGINEERS
 HOT SPRINGS, ARKANSAS

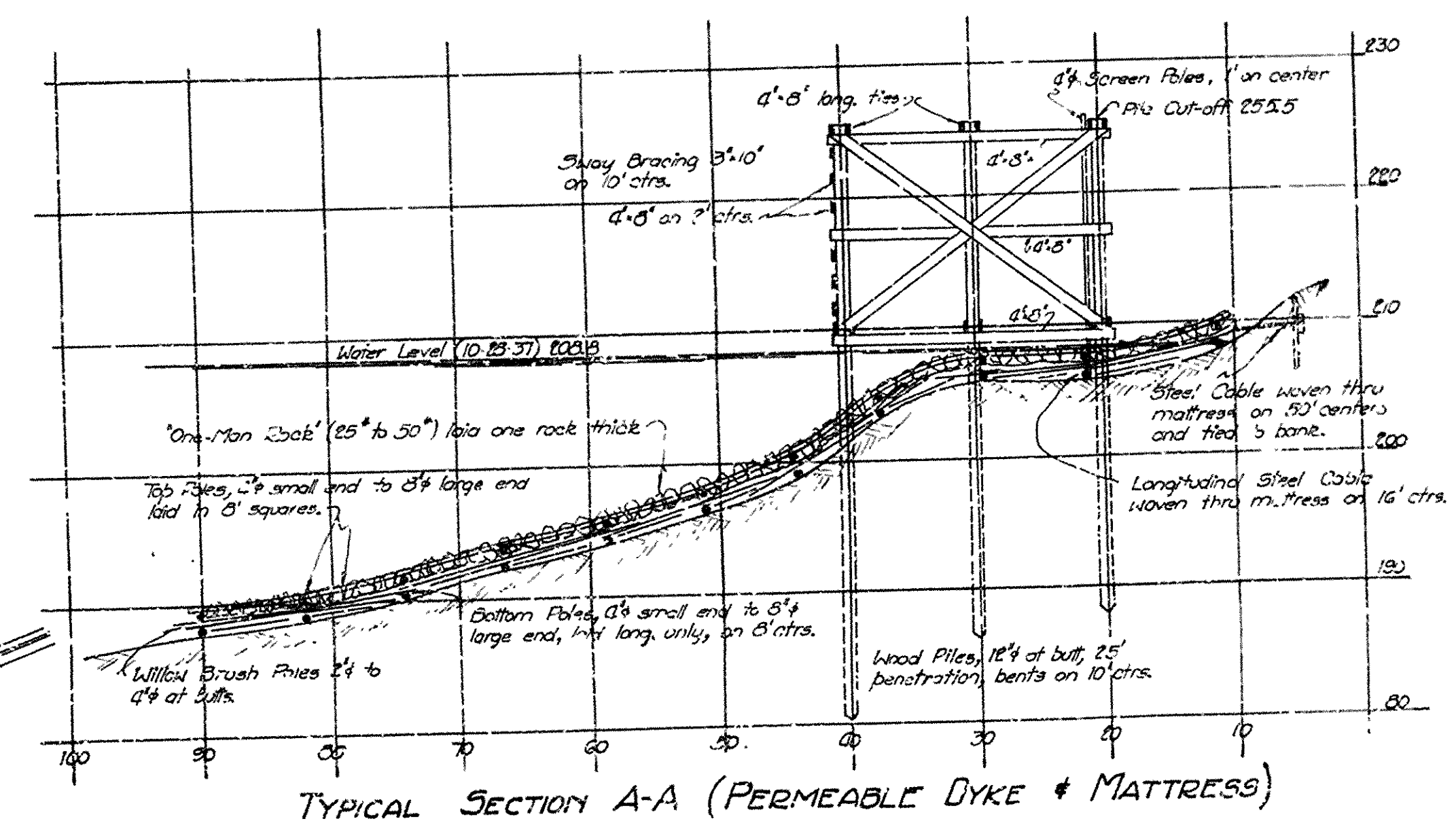
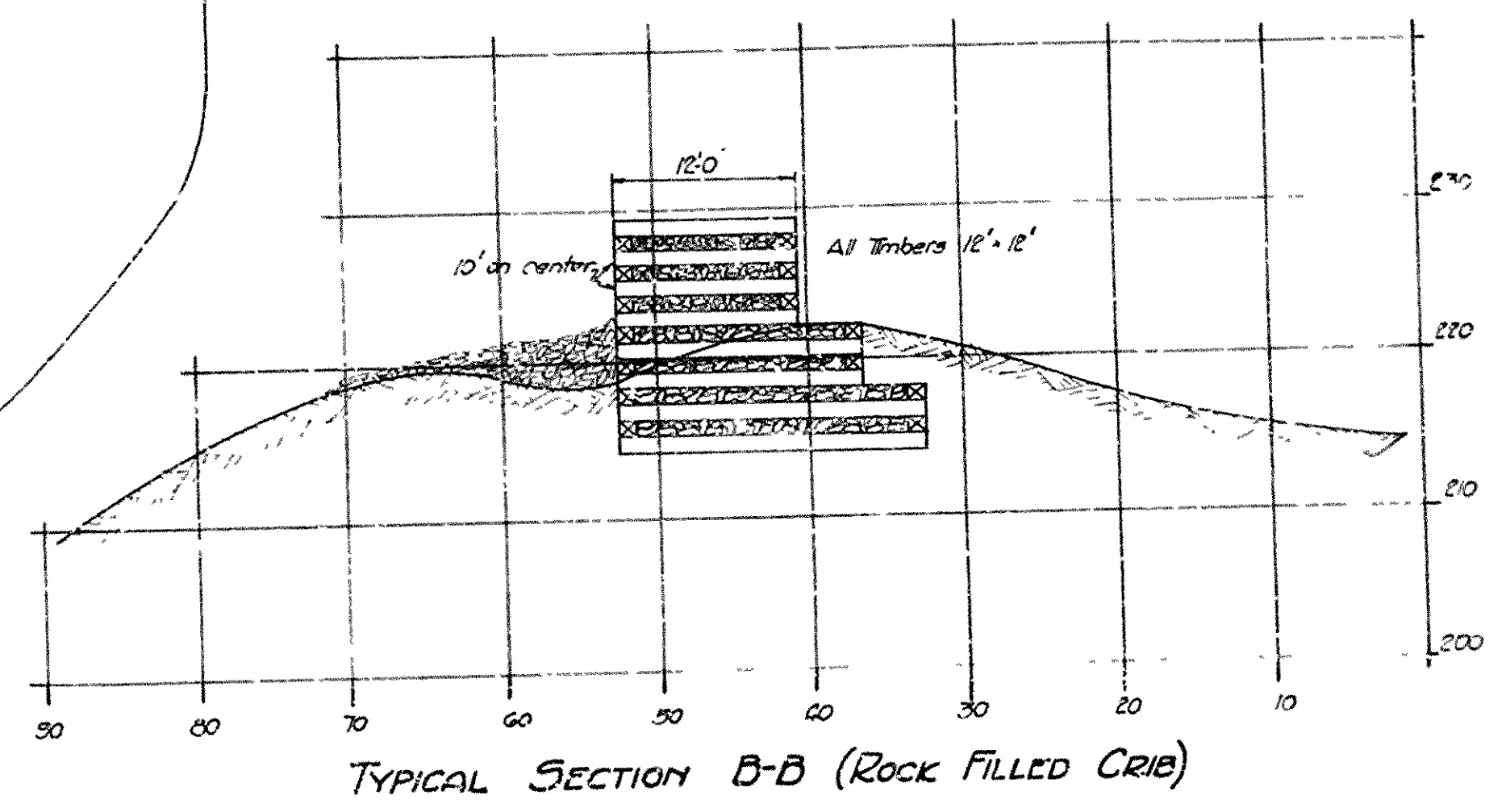
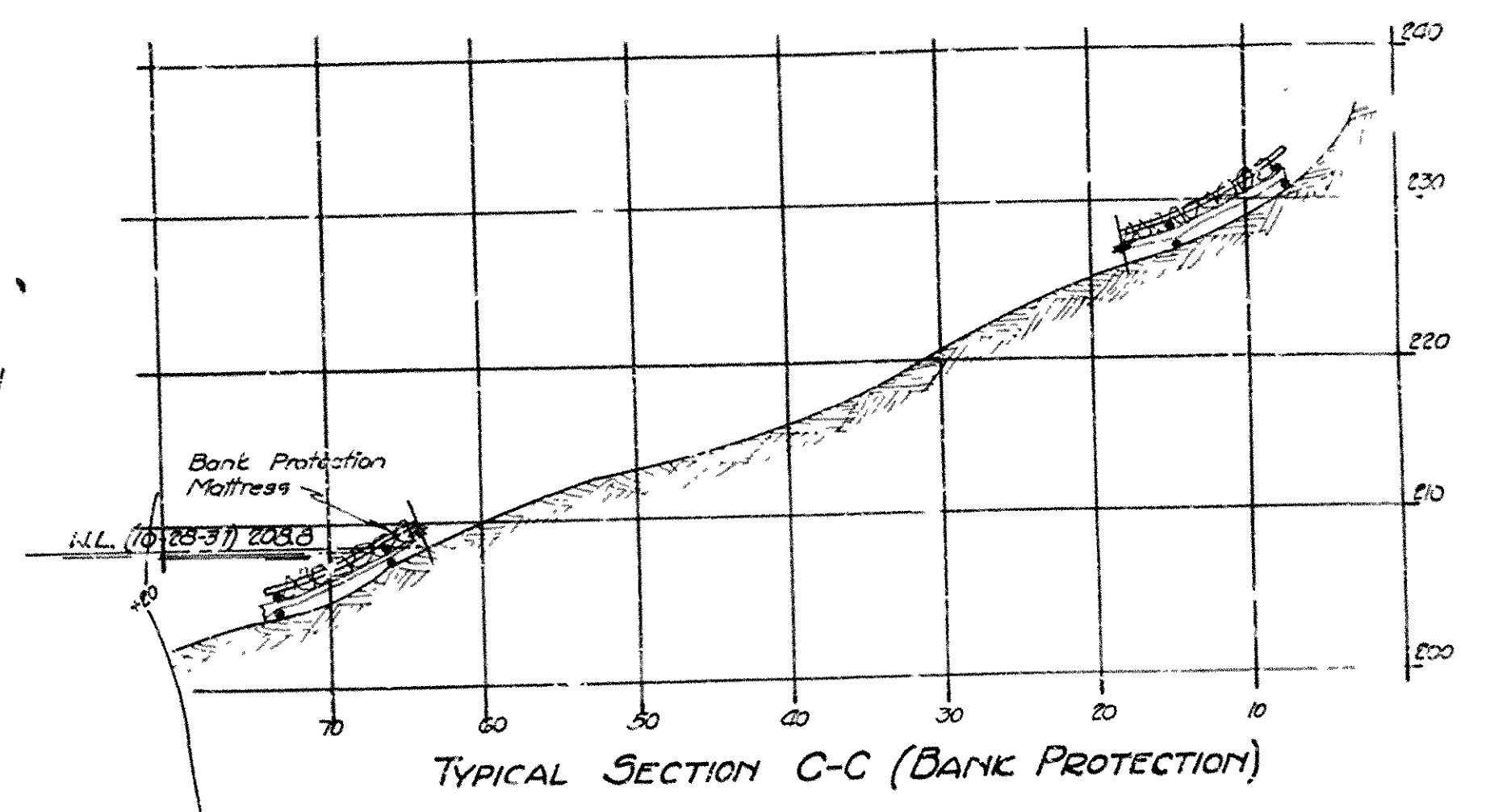
PILE RECORD
 BRIDGE OVER RED RIVER
 AT
 GARLAND, ARK
 RAYMOND CONCRETE PILE CO.
 SUB CONTRACTORS
 OCT 22, 1929 Sheet No. 17 J.G.M.

Dr. No. 614

DRWG. No. 5013



Notes:
Contours above and below low water.
Low water = 209.00 Mean Gulf Level.



BANK PROTECTION ON RED RIVER
AT GARLAND CITY - ARK.
BRIDGES, CONTOURS & LEVEES FROM DRWG. FILE 149/25
U.S. ENGINEERS OFFICE, VICKSBURG, MISS.
BALANCE OF INFORMATION FROM SURVEY BY ARKANSAS
HIGHWAY DEPT. ON OCTOBER 23, 1937
Scale: 1" = 2000' except as shown
BRIDGE DEPT., 11-9-37 BR. No. 614 DRWG. No. 5014