

ARKANSAS STATE HIGHWAY COMMISSION
JOB NO. 11631
MISSISSIPPI STATE HIGHWAY DEPARTMENT

MISSISSIPPI RIVER BRIDGE

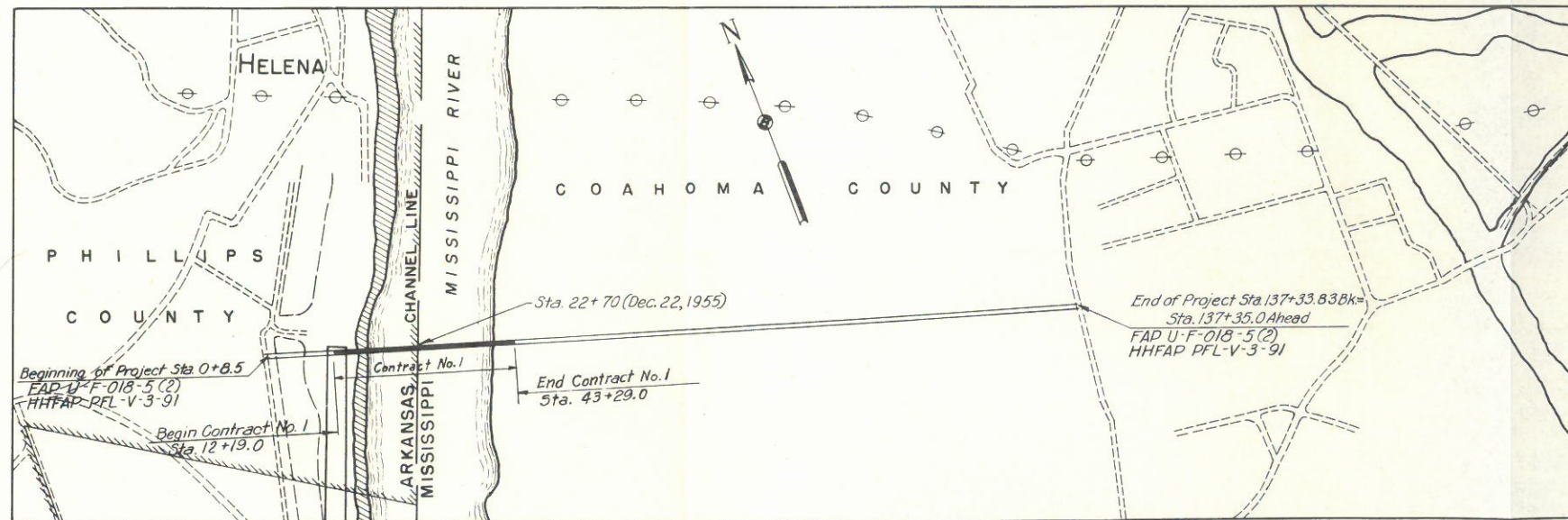
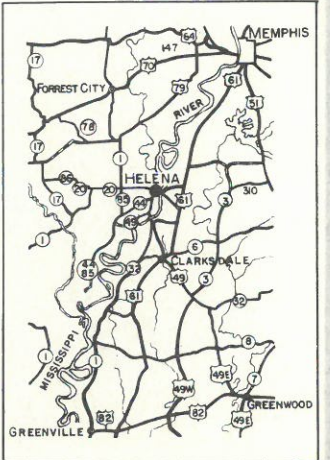
FEDERAL AID PROJECT U-F-018-5 (2) HOUSING AND HOME FINANCE AGENCY PROJECT PFL-V-3-91

NEAR HELENA ARKANSAS

PHILLIPS COUNTY, ARKANSAS

COAHOMA COUNTY, MISSISSIPPI

CONTRACT NO. 1 RIVER BRIDGE SUBSTRUCTURE
(PIERS 10 THROUGH 15)



CONVENTIONAL SIGNS

COUNTY LINE	---
DISTRICT LINE	---
TOWN CORPORATION LINE	---
SECTION LINE	---
PROPERTY LINE	---
BARBED WIRE FENCE	---x---
PICKET FENCE	---A---
RAIL FENCE	--- ---
ROAD OR TRAVELED WAY	---
RAILROAD	---+---
BUILDINGS	---[]---
RIGHT OF WAY	---[]---
SURVEY LINE	---o---
CULVERTS	---[]---
BRIDGES	---[]---
TELEPHONE LINE	---o---
POWER TRANSMISSION LINE	---o---
BENCH MARKS	---B.M.---
PROJECT MARKERS	---[]---
R.O.W. MARKERS	---[]---
TELEGRAPH LINE	---[]---
MANHOLES	---[]---
SPILLWAYS	---[]---
INLETS	---[]---
CATCH BASINS	---[]---
GUARD RAIL	---[]---
FIRE PLUG	---[]---
URBAN BOUNDARY	---[]---

LAYOUT

Scale: 1" = 1500'

GROSS LENGTH OF PROJECT	13725.05 FEET OR 2.599 MILES
NET LENGTH OF PROJECT	13725.05 FEET OR 2.599 MILES
ROADWAY	0.00 " " 0.000 "
BRIDGES	3110.00 " " 0.589 "
CONTRACT NO. 1	3110.00 " " 0.589 "

LIST OF DRAWINGS

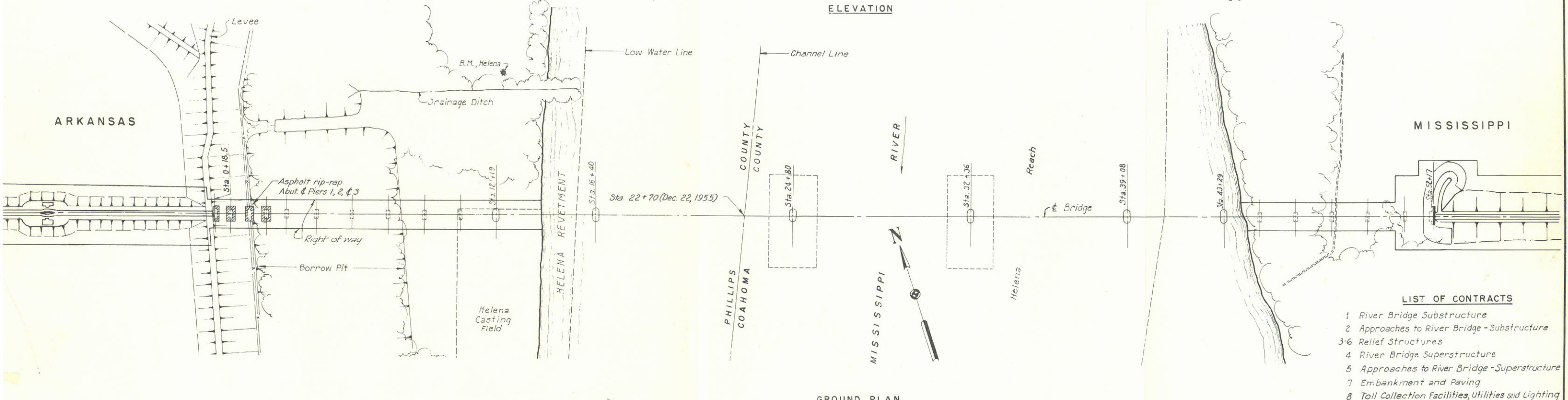
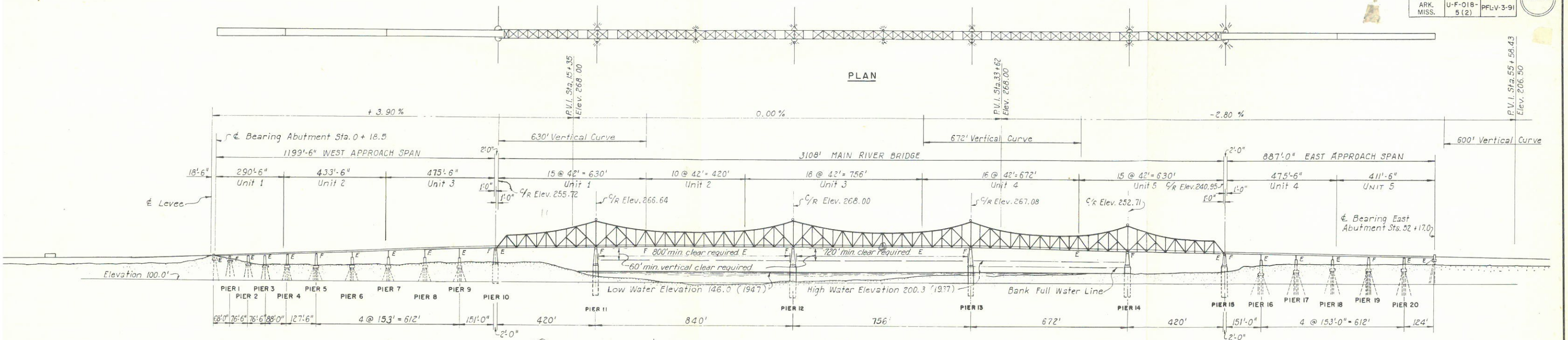
- 1.01 COVER SHEET
- 1.02 GENERAL PLAN AND ELEVATION
- 1.03 RIVER STAGES AND QUANTITIES
- 1.04 BORINGS
- 1.05 MATTRESS DETAILS
- 1.06 GENERAL VIEWS PIERS 10, 11, 12
- 1.07 GENERAL VIEWS PIERS 13, 14, 15
- 1.08, 1.09, 1.10 PIER 10
- 1.11, 1.12, 1.13 PIER 11
- 1.14, 1.15, 1.16 PIER 12
- 1.17, 1.18, 1.19 PIER 13
- 1.20, 1.21, 1.22 PIER 14
- 1.23, 1.24, 1.25, 1.26 PIER 15
- 1.27 LADDERS
- 1.28 MISCELLANEOUS DETAILS

ACCEPTED KANSAS CITY BRIDGE CO. AND GUY H. JAMES CONSTRUCTION CO.
CONTRACTOR - CITY AND STATE
DATE 4-21-59 BY J. H. Hailand, VICE PRESIDENT
TITLE KANSAS CITY BRIDGE CO.

APPROVED [Signature]
DATE 8-28-58 ENGINEERING BRANCH - HOUSING AND HOME FINANCE AGENCY
APPROVED [Signature]
DATE 8-28-58 REGIONAL COUNCIL - HOUSING AND HOME FINANCE AGENCY
APPROVED [Signature]
DATE 8-14-58 CHIEF ENGINEER - ARKANSAS STATE HIGHWAY COMMISSION
APPROVED [Signature]
DATE 8-14-58 DIRECTOR - MISSISSIPPI STATE HIGHWAY DEPARTMENT
APPROVED [Signature]
DATE 1-1-59 DIVISION ENGINEER - BUREAU OF PUBLIC ROADS

PREPARED AND RECOMMENDED BY
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS

KANSAS CITY CLEVELAND NEW YORK



LIST OF CONTRACTS

- 1 River Bridge Substructure
- 2 Approaches to River Bridge - Substructure
- 3-6 Relief Structures
- 4 River Bridge Superstructure
- 5 Approaches to River Bridge - Superstructure
- 7 Embankment and Paving
- 8 Toll Collection Facilities, Utilities and Lighting

1. Design specifications: A.A.S.H.O. 1953 with tentative revisions of 1954 and 1955. Live load to be H20-S16-44. Dead load has a provision for 15 lb. per sq. ft. future wearing surface.
2. Unless otherwise shown, all dimensions are measured at 60° F.
3. Electrical ground wires are provided at piers with fixed shoes. These grounds shall be securely brazed or bolted to the superstructure steel work so that all spans are thoroughly grounded.
4. Bench marks are referred to mean sea level, and are based on U.S. Coast and Geodetic Survey, 1929 general adjustment.
5. Bench mark Helena - U.S. Engineers B.M. marked 182+00 at River mile 658.3 in lower edge of open field, 180 feet back from top bank of river Elev. 181.09.
6. T.B.M. 1 - Spike in revetment asphalt 3 feet north of & Station 14+30. Metal tag on spike stamped "R-188 D-200" Elev. 178.92.
7. B.M. Igimus (CE) 135.3 feet south of Sta. 50+00. Located

- 0.2 miles below Y. and M.V. R.R. incline opposite Helena, Arkansas. 500 feet back of top bank (1952) in open field. Pipe and tile stamped "B.M. Igimus 1933"; 40 feet D.S. of D.S. fork of cultivated field; in small timber 65 feet back of 40" Pecan. Elev. 188.02.
8. All concrete in pier bases and shafts shall have a minimum strength 3000 psi at 28 days. See Specifications.
9. Reinforcing steel shall be spliced as shown or as approved by the Engineer. Lap all bars 30 diameters at splices. All bars must be placed 3" clear from the face of concrete. Bends shall conform to A.C.I. standards. Reinforcing steel to be billet steel (intermediate or hard grade) or rail steel, with a design tensile stress of 20,000 p.s.i. One grade or type of reinforcing steel shall be used exclusively in any one structural component, caisson, shaft, etc. All bar sizes are designated on the plans by number; the first digit of the bar mark, (in the case of 3 digits, and first 2 digits in the case of 4), indicates the size of the bar.

10. All welding shall conform to the American Welding Society Specifications for welded Highway and Railroad Bridges.
11. Elevations of ground surface and of various sub-surface strata shown on this and accompanying drawings are based on the best information presently available but must be considered as approximate only. See the Specifications.
12. All steel not otherwise shown shall be carbon structural steel A.S.T.M. A7-55T. Manganese steel is modified A242. On sheets with both carbon and manganese steel specified, each is identified by the letters "C" for carbon structural steel and "A" for manganese steel. See the specifications.

13. Carbon steel pins are to be A235-54 T (Class 1) or Class A108-54T steel, or as provided in A.A.S.H.O. revisions T1 (55).
14. Unless otherwise noted, all rivets shall be 3/8" diameter.
15. Rivet spacing shall conform to the requirements of the design specifications.
16. All surfaces which will be inaccessible after erection shall be field painted or metallized in shop.
17. Light-weight aggregate shall be used in roadway slab and safety walks for truss spans, making a finished concrete weighing less than 105 #/cu. ft. It shall have a finished strength of 3000 p.s.i. at 28 days. See Specifications.

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ARKANSAS STATE HIGHWAY COMMISSION
MISSISSIPPI STATE HIGHWAY DEPARTMENT
MISSISSIPPI RIVER BRIDGE
NEAR HELENA, ARKANSAS

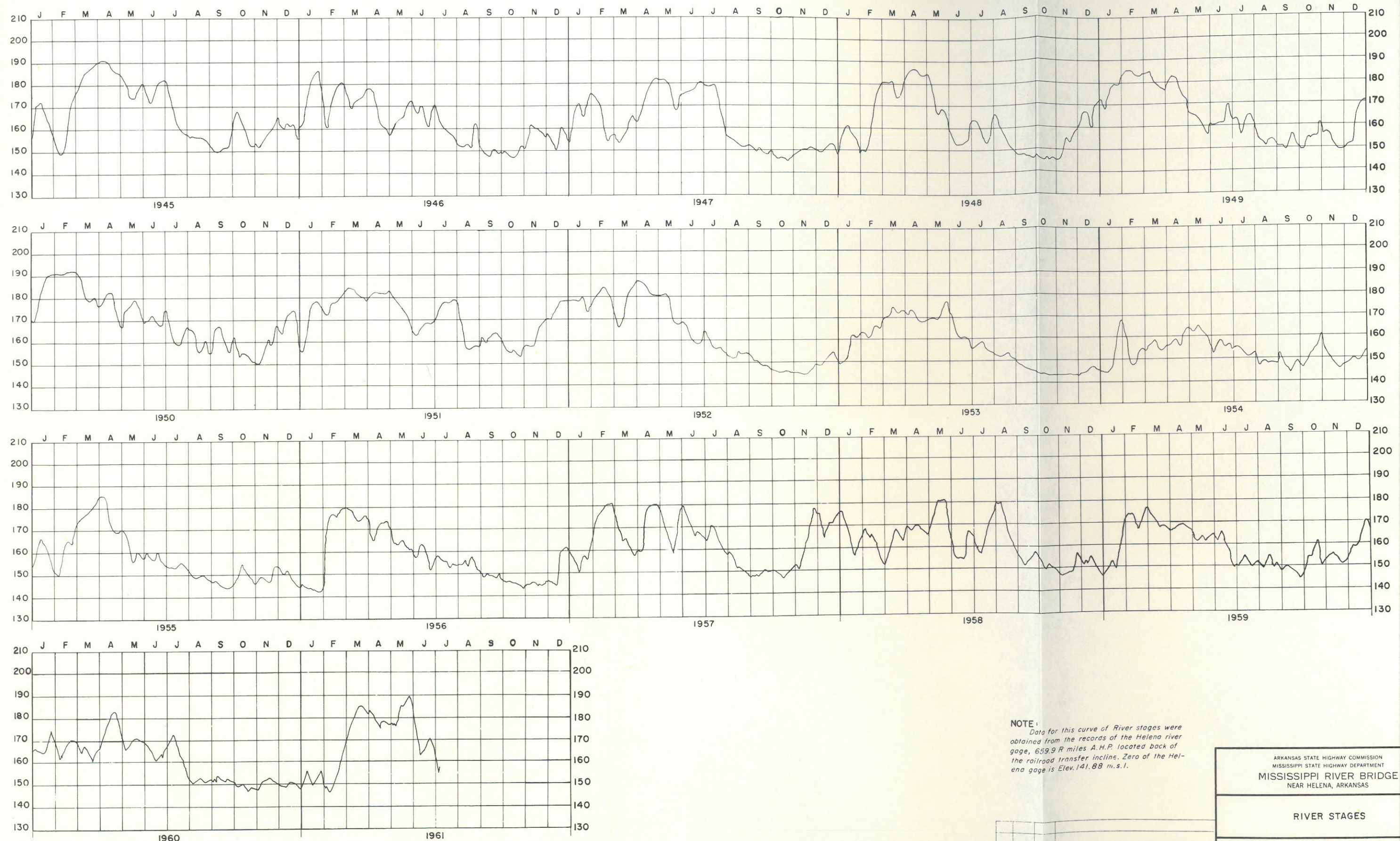
GENERAL PLAN AND ELEVATION

SCALE 1"=200'

MADE E.F.C. DATE 3-8-56
TRCD. A.H. DATE 6-25-56
CKD. G.R. DATE 9-6-56

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

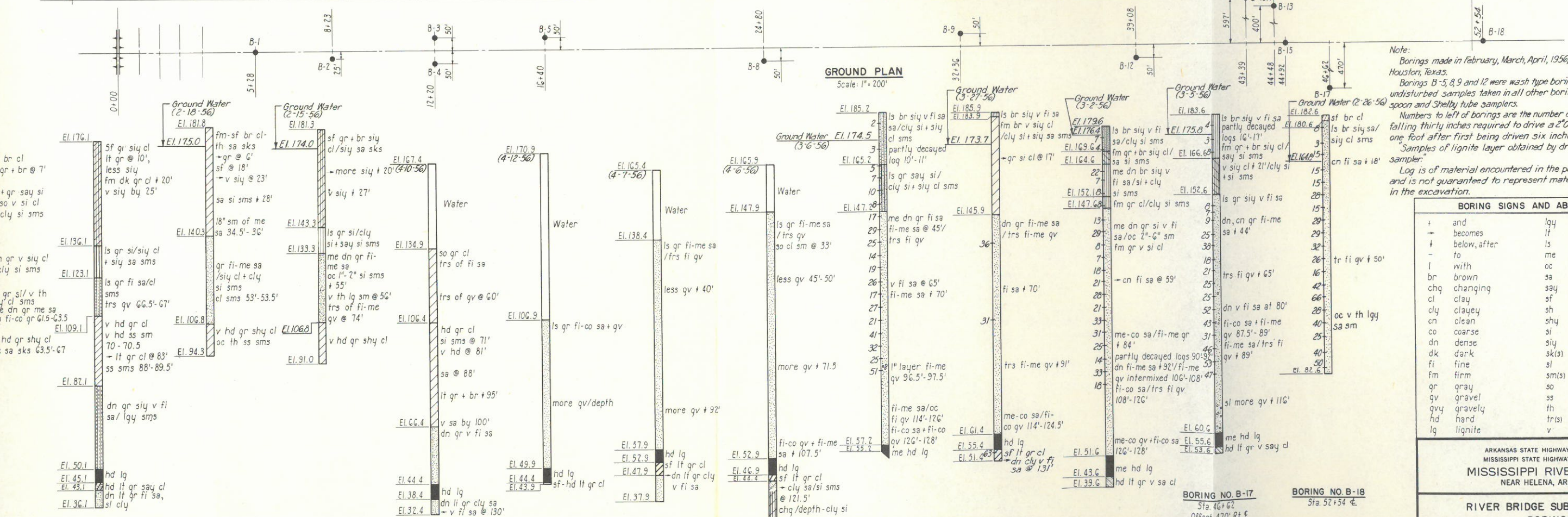
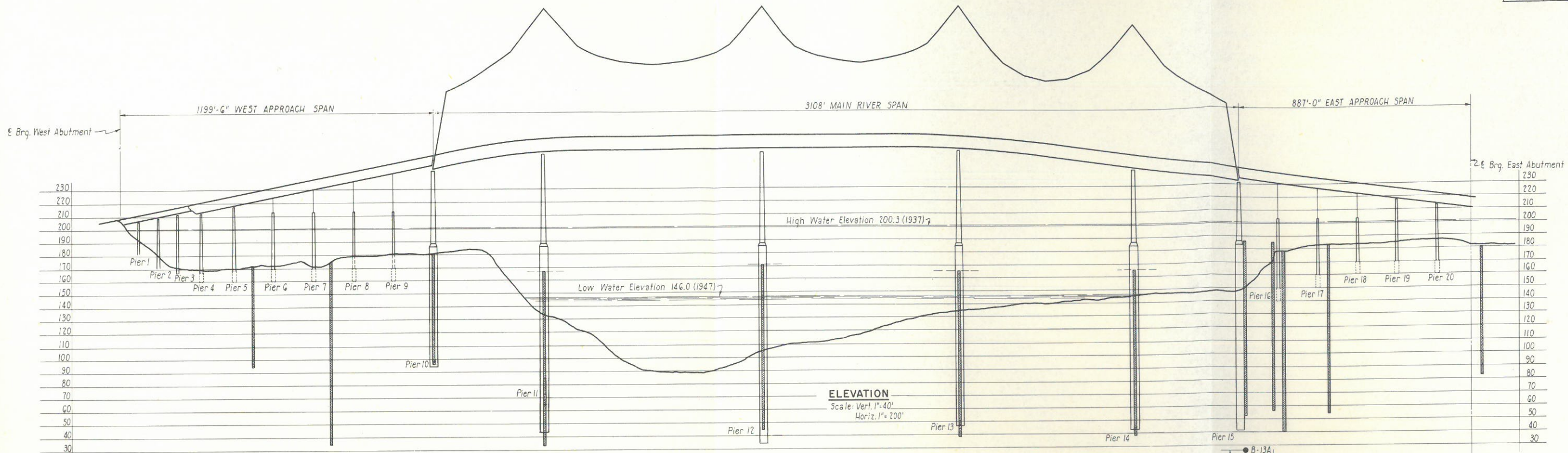
984 SHEET- 1.02



NOTE:
Data for this curve of River stages were obtained from the records of the Helena river gage, 639.9 R miles A.H.P. located back of the railroad transfer incline. Zero of the Helena gage is Elev. 141.88 m.s.l.

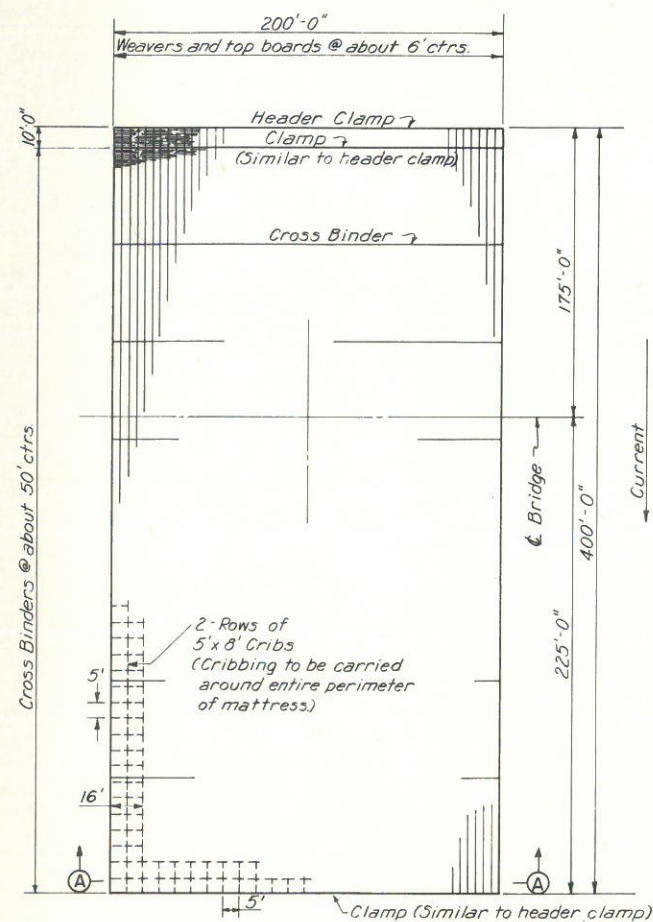
ARKANSAS STATE HIGHWAY COMMISSION MISSISSIPPI STATE HIGHWAY DEPARTMENT	
MISSISSIPPI RIVER BRIDGE NEAR HELENA, ARKANSAS	
RIVER STAGES	
SCALE 1" = 20'-0"	HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK
MADE J.L.U. DATE 2-15-56	984 SHEET- 1.03
TRCD. A.H. DATE 4-10-56	
CKD. E.P.C. DATE 4-15-56	

NO.	MADE	DATE	REVISION
1	M.A.C.	10-27-61	AS BUILT

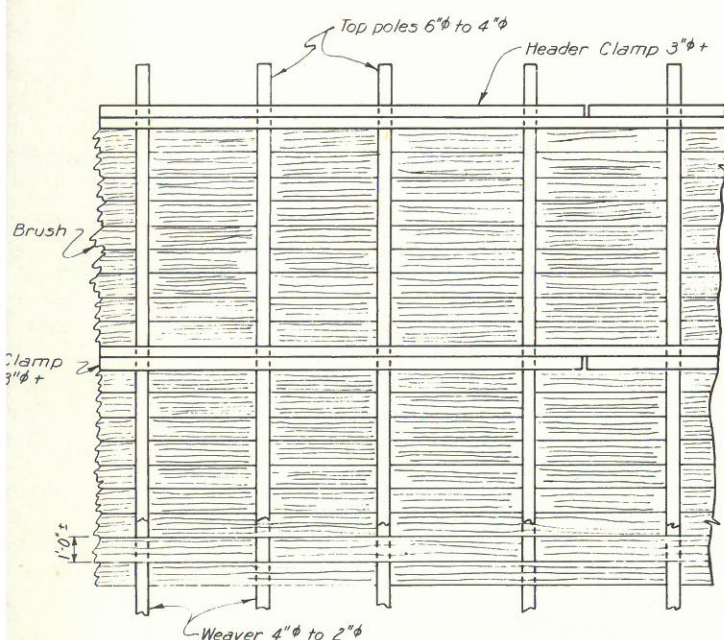


Note:
Borings made in February, March, April, 1956, by National Soil Services, Houston, Texas.
Borings B-5, 8, 9 and 12 were wash type borings. Cores and/or semi-undisturbed samples taken in all other borings with 2" O.D. Split-spoon and Shelby tube samplers.
Numbers to left of borings are the number of blows of a 140" hammer falling thirty inches required to drive a 2" O.D. Split-spoon sampler one foot after first being driven six inches.
Samples of lignite layer obtained by driving 3" Shelby Tube sampler.
Log is of material encountered in the particular hole bored and is not guaranteed to represent material actually encountered in the excavation.

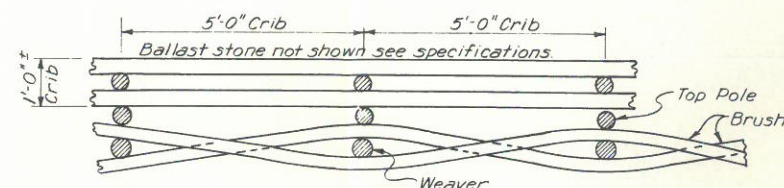
BORING SIGNS AND ABBREVIATIONS			
+	and	lgy	lignitic
→	becomes	lt	light
↓	below, after	ls	loose
-	to	me	medium
l	with	oc	occasional, some
br	brown	sa	sand
chg	changing	say	sandy
cl	clay	sf	stiff
clay	clayey	sh	shale
cn	clean	shy	shaley
co	coarse	sl	silt
dn	dense	siy	silty
dk	dark	sk(s)	streak(s)
fi	fine	sl	slightly
fm	firm	sm(s)	seam(s)
gr	gray	so	soft
gv	gravel	ss	siltstone
gvq	gravelly	th	thin
hd	hard	tr(s)	trace(s)
lg	lignite	v	very



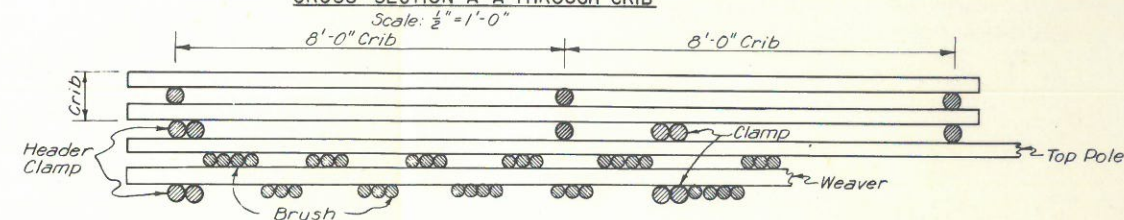
GENERAL PLAN
Scale: 1" = 50'



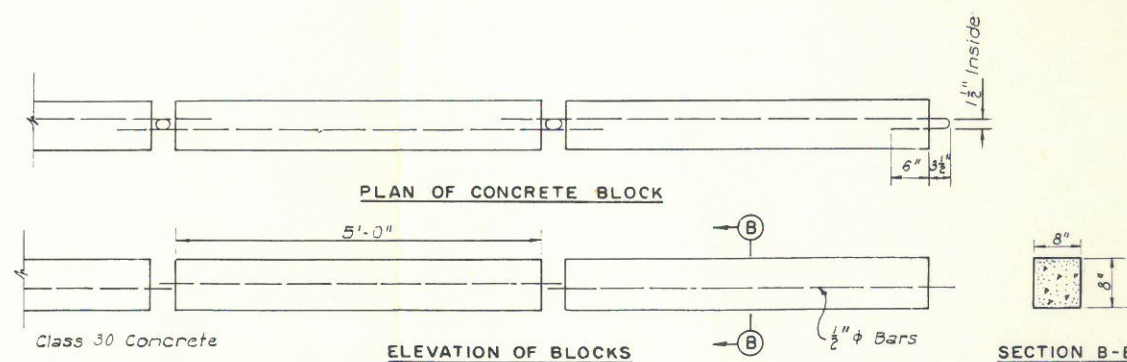
GENERAL PLAN OF CORNER
Scale: 1" = 1'-0"
Cribbing, Ballast Stone and Concrete blocks not shown



CROSS-SECTION A-A THROUGH CRIB



TYPICAL LONGITUDINAL SECTION
Scale: 1/2" = 1'-0"



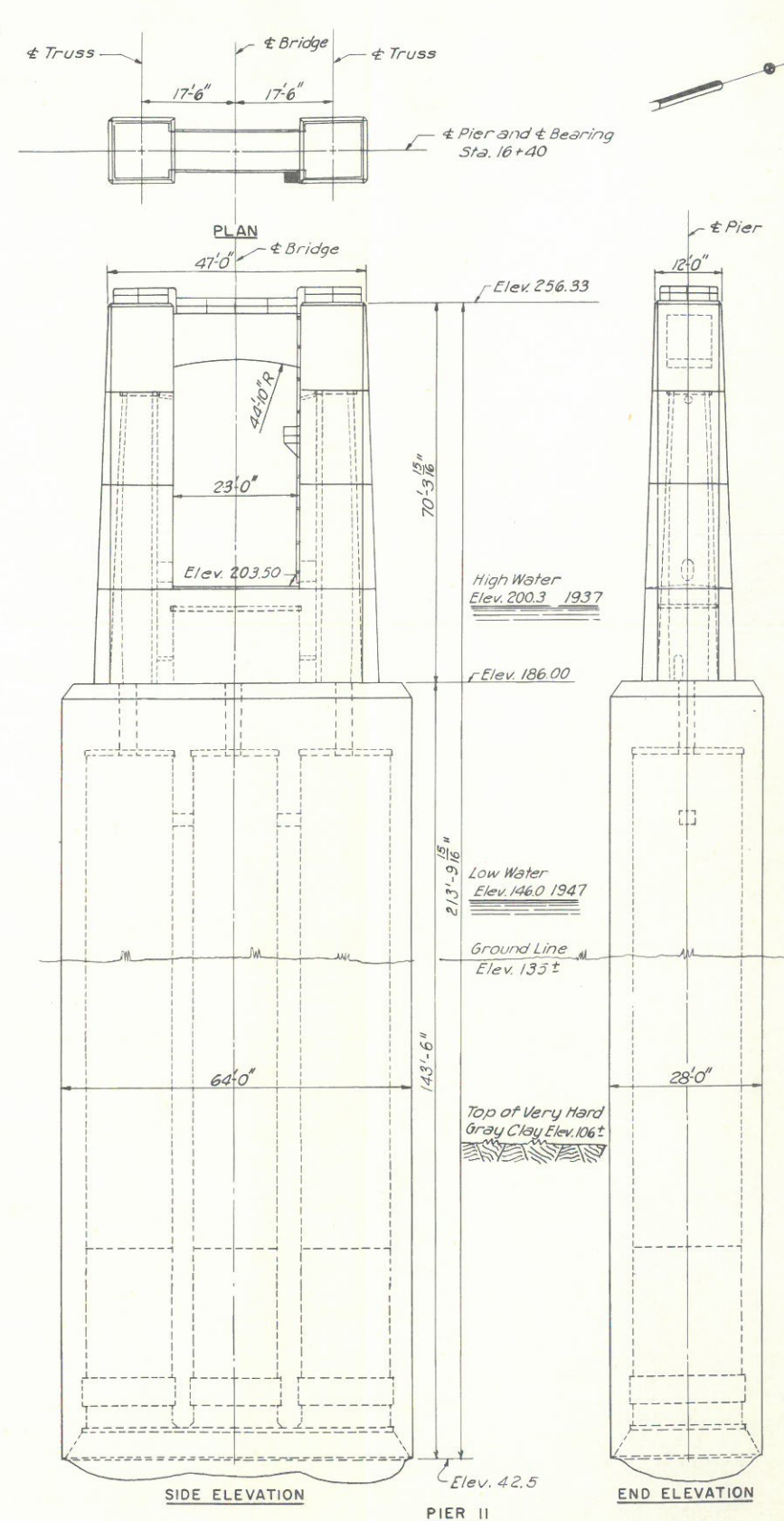
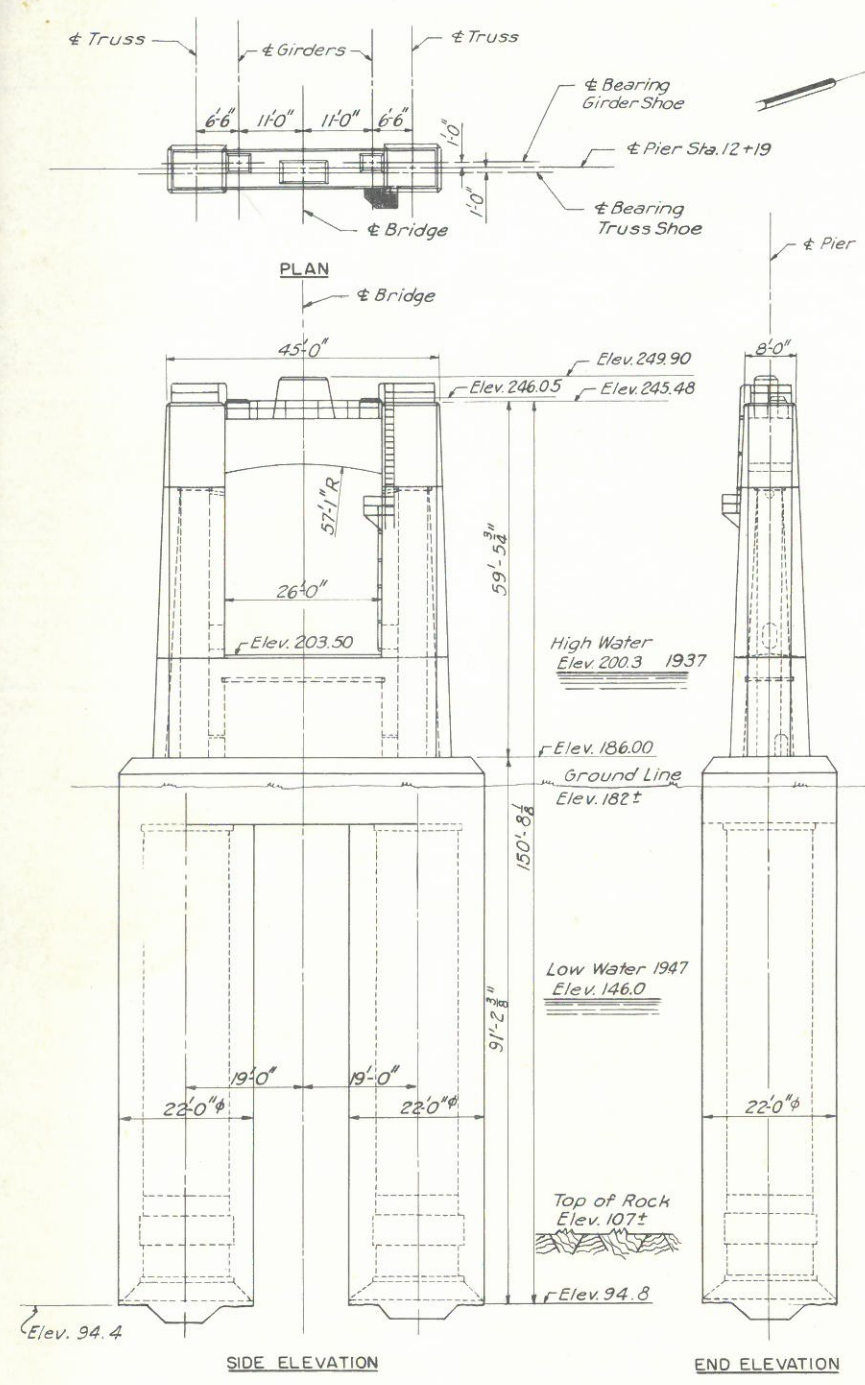
CONCRETE BLOCKS FOR MATTRESSES

These blocks shall be laid on top of mattresses along upstream edge and 100 ft. down each side from upstream edge. Blocks to be laid close and to be fastened to mattresses by two turns of 4 No. 14 wires passing thru the two overlapping loops of adjacent blocks and around headers, weavers, and top poles of mattresses.

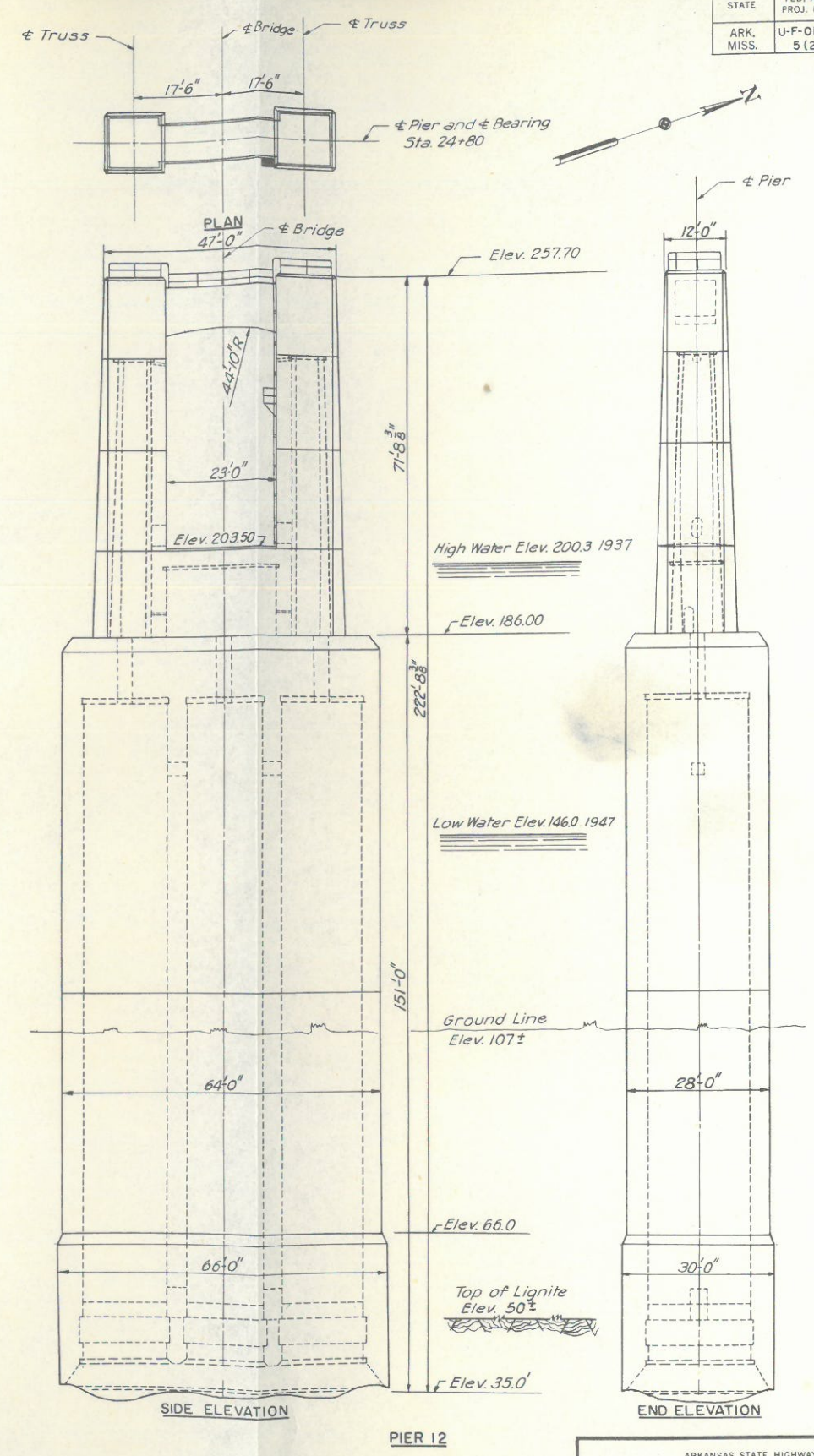
ARKANSAS STATE HIGHWAY COMMISSION
MISSISSIPPI STATE HIGHWAY DEPARTMENT
MISSISSIPPI RIVER BRIDGE
NEAR HELENA, ARKANSAS

**RIVER BRIDGE SUBSTRUCTURE
MATTRESS DETAILS**

2	GA	1-29-52	As Built
1	C.E.D.	10-30-58	Added Concrete Block Details
NO.	MADE	DATE	REVISION
SCALE As Shown MADE DER DATE 4-26-57 TRCD, GJK DATE 4-30-57 CKD, GJK DATE 5-14-57 HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY NEW YORK 984 SHEET 1.05			



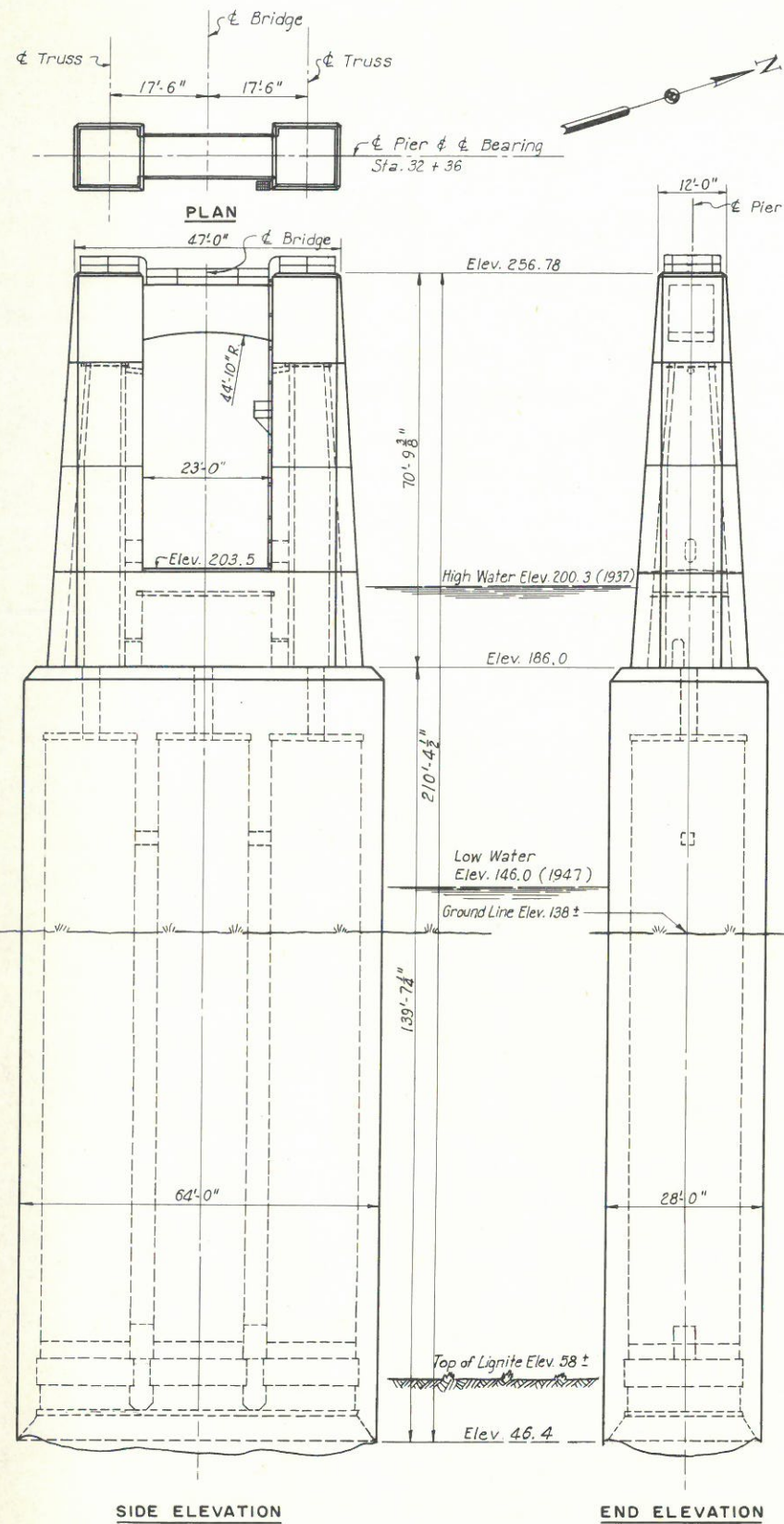
Note:
Braze one #0 copper ground wire to cutting edge, run along vertical reinforcement bar, supporting wire at 2'-0"± ctrs. Extend wire out of top of pier and braze to bottom shoe casting. On Pier 10 wire to be brazed to bottom casting of girder shoe.



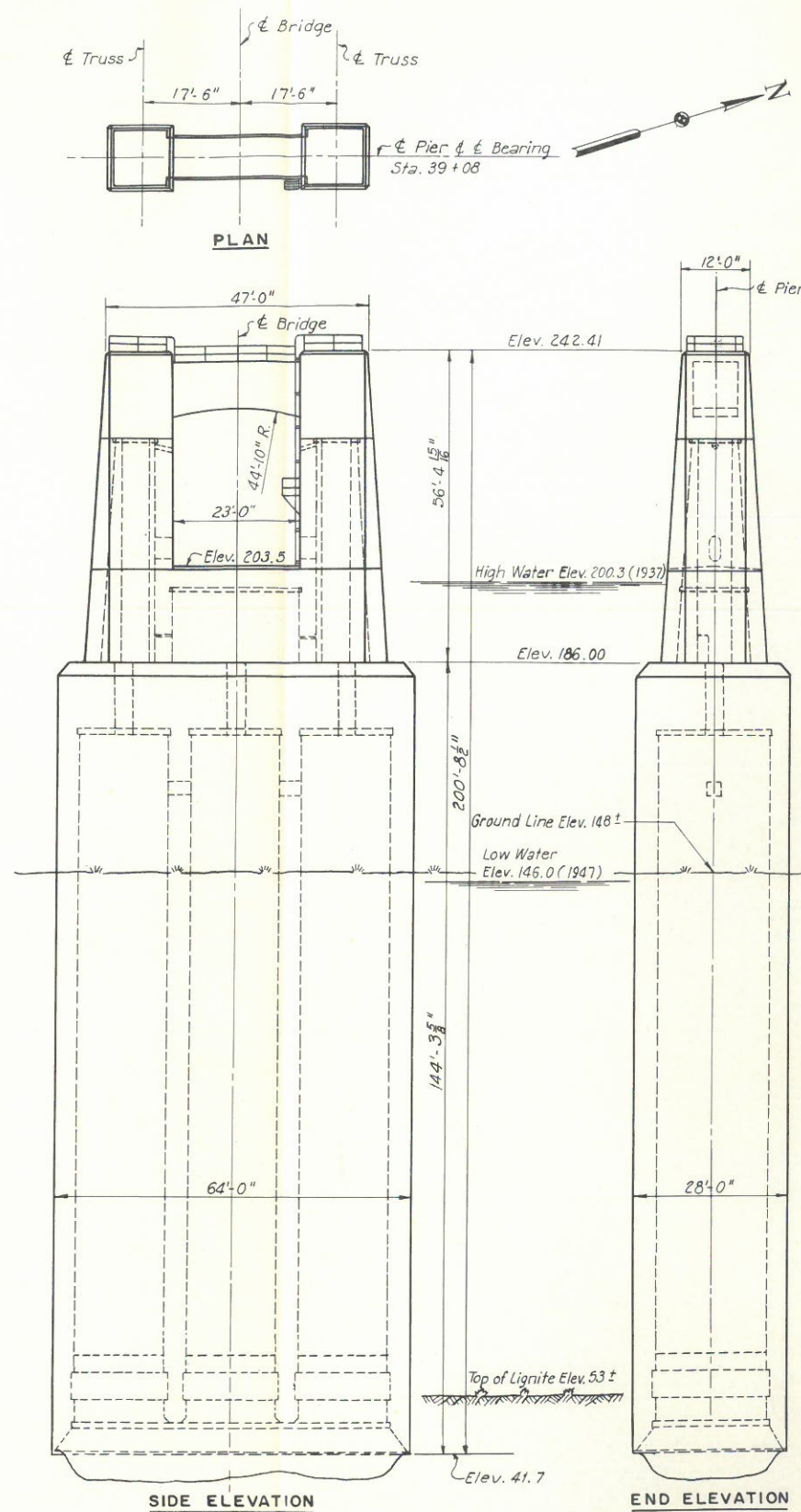
ARKANSAS STATE HIGHWAY COMMISSION
MISSISSIPPI STATE HIGHWAY DEPARTMENT
MISSISSIPPI RIVER BRIDGE
NEAR HELENA, ARKANSAS

RIVER BRIDGE SUBSTRUCTURE
GENERAL VIEWS PIERS 10, 11 AND 12

SCALE 1/16" = 1'-0"		HOWARD, NEEDLES, TAMMEN & BERGENDOFF	
MADE P.T.E. DATE 7-23-56		CONSULTING ENGINEERS	
TRCD. DATE 8-14-56		KANSAS CITY CLEVELAND NEW YORK	
CKD. DATE 8-17-56		984 SHEET- 1.06	
NO.	MADE	DATE	REVISION
1	GA	11-9-62	As Built

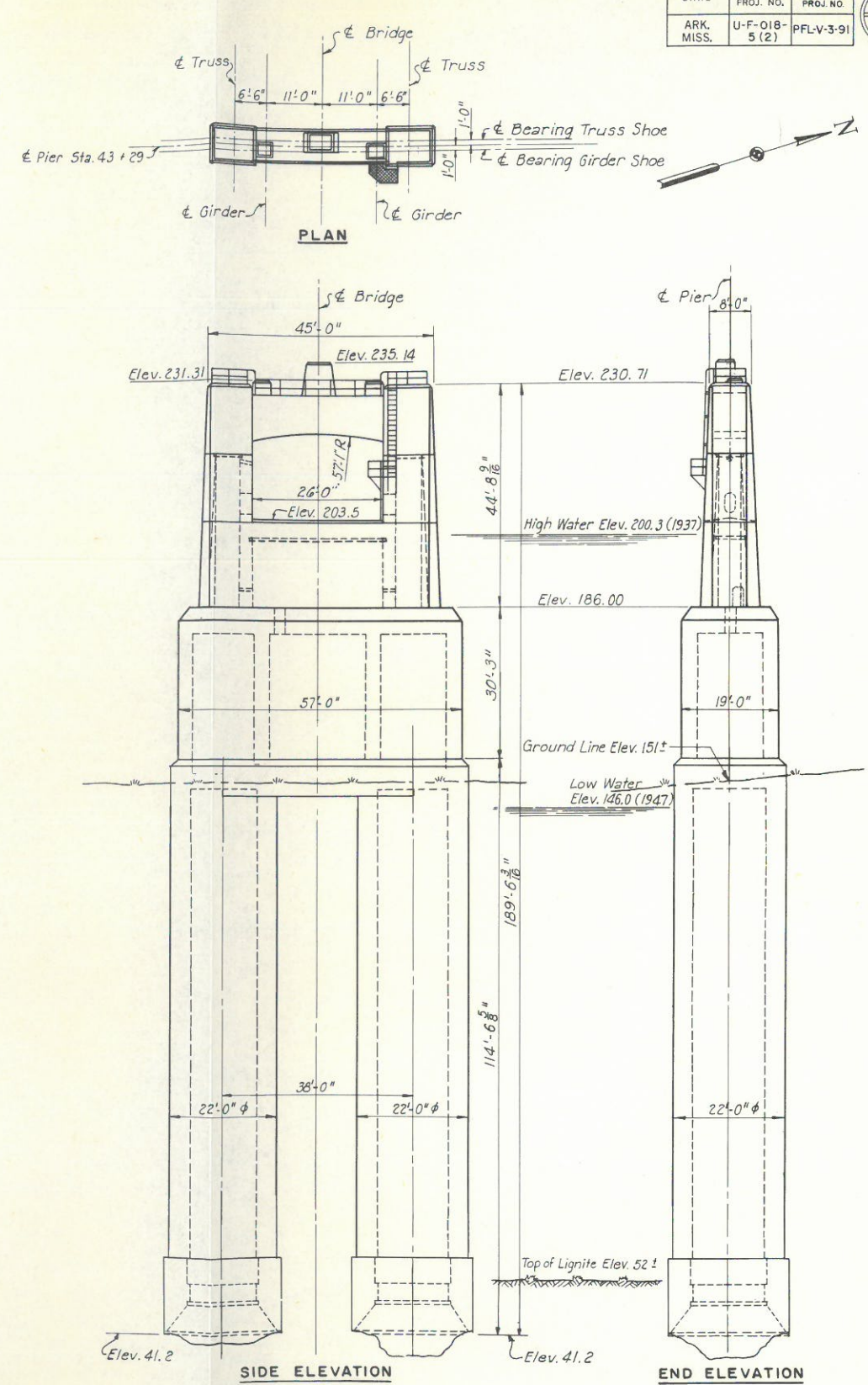


PIER 13



PIER 14

Note:
 Braze one # 0 copper ground wire to cutting edge, run along vertical reinforcement bar, supporting wire at 2'-0" ± ctrs. Extend wire out of top of pier and braze to bottom shoe casting. On Pier 15 wire to be brazed to bottom casting of girder shoe.



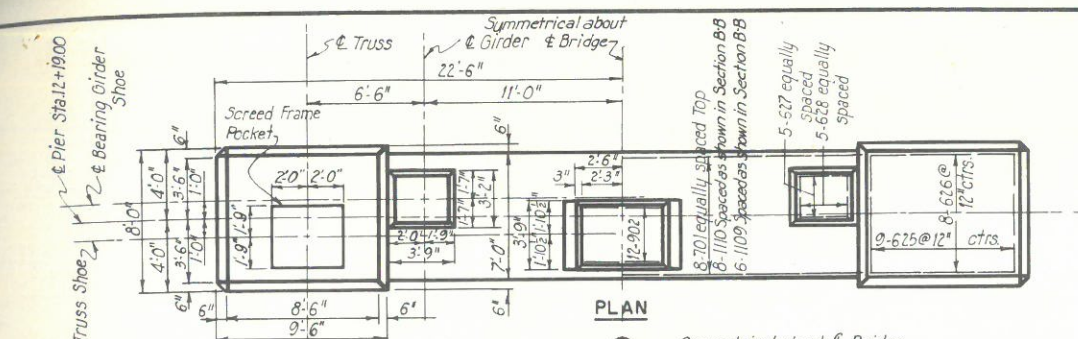
PIER 15

ARKANSAS STATE HIGHWAY COMMISSION
 MISSISSIPPI STATE HIGHWAY DEPARTMENT
 MISSISSIPPI RIVER BRIDGE
 NEAR HELENA, ARKANSAS

RIVER BRIDGE SUBSTRUCTURE
 GENERAL VIEWS PIERS 13, 14 AND 15

SCALE 1/8" = 1'-0"
 MADE D.L.C. DATE 7-23-56 HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 TRCD. A.H. DATE 7-30-56 CONSULTING ENGINEERS
 CKD. R.C. DATE 7-30-56 KANSAS CITY CLEVELAND NEW YORK
 984 SHEET- 1.07

NO.	MADE	DATE	REVISION
1	G.A.	1-19-62	As Built

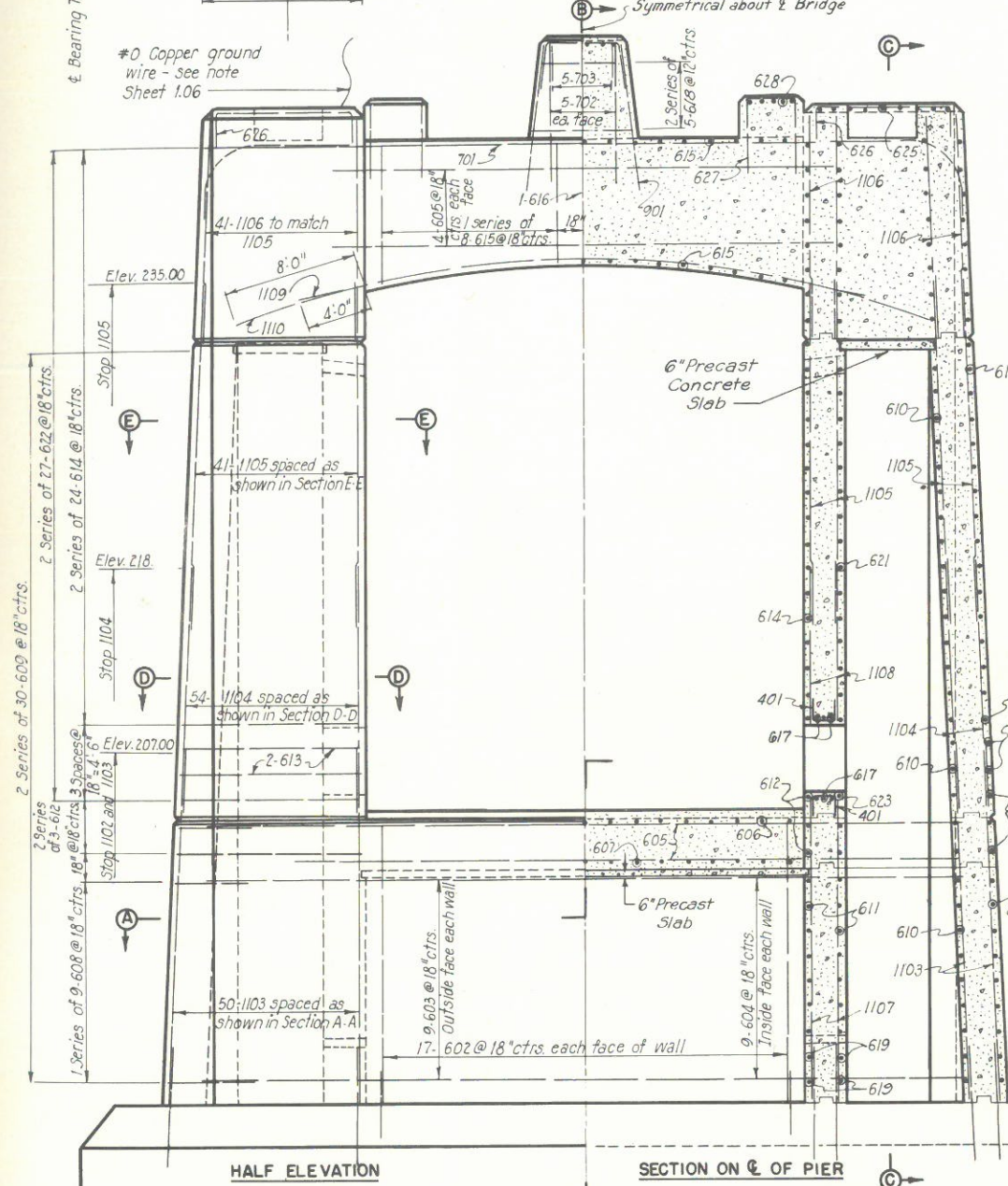


PLAN

GIRDER SHOE ANCHOR

BOLT PLAN

Scale: 3/8" = 1'-0"



HALF ELEVATION

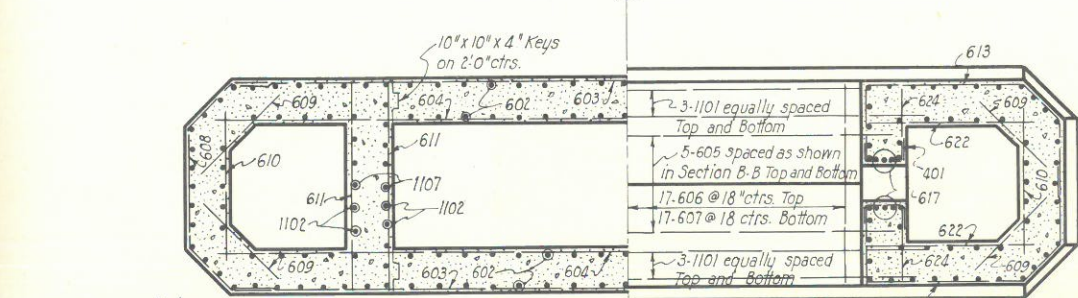
SECTION ON C OF PIER

SECTION B-B

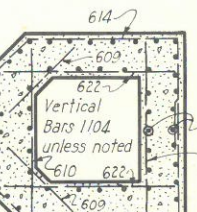
SECTION C-C

HALF ELEVATION

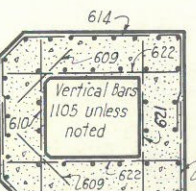
SECTION ON C BRIDGE



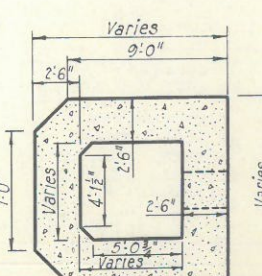
SECTION A-A



SECTION D-D



SECTION E-E



SECTION G-G

Notes:
 For details of caissons, see Sheet 1.09.
 For reinforcement schedule, see Sheet 1.10.
 For details of screed frames, access doors, handrail and rustication at construction joints see Sheet 1.28.
 For location of ladders, see Sheet 1.06.
 For details of ladders and platforms see Sheets 1.27 and 1.28.

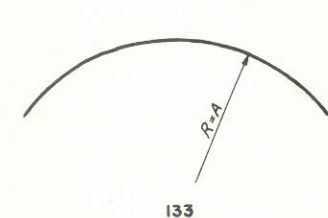
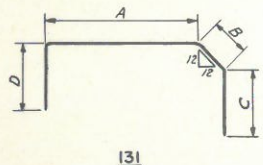
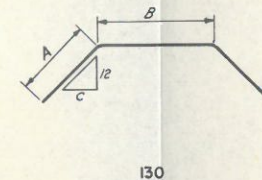
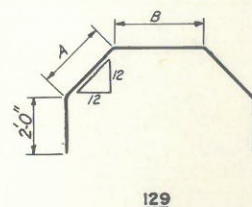
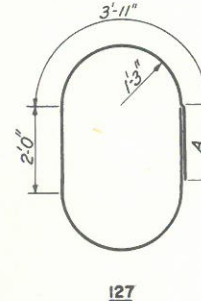
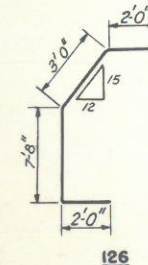
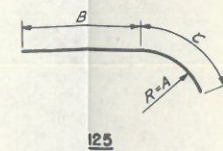
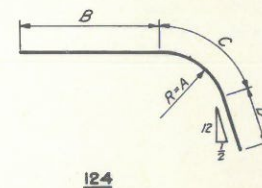
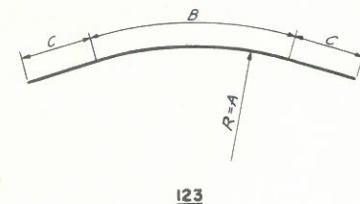
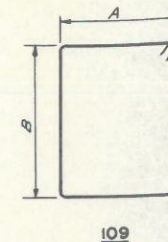
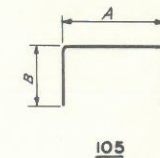
ARKANSAS STATE HIGHWAY COMMISSION MISSISSIPPI STATE HIGHWAY DEPARTMENT MISSISSIPPI RIVER BRIDGE NEAR HELENA, ARKANSAS	
RIVER BRIDGE SUBSTRUCTURE PIER 10 SHAFT DETAILS	
SCALE 3/8" = 1'-0"	HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK
MADE 12-6-56 TRCD ALG. DATE 8-23-56 CKD. G.A.C. DATE 7-24-56	984 SHEET-1.08

NO.	MADE	DATE	REVISION
GA	12562	As Built	

SHAFT							
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
401	24	4'-8"	105	2'-2"	1'-3"		
601	12	5'-0"	Str.				
602	68	16'-9"	Str.				
603	18	43'-6"	Str.				
604	18	45'-0"	Str.				
605	18	29'-9"	Str.				
606	17	15'-1"	130	11'-1"	2'-0"	1/2	
607	17	11'-3"	Str.				
608	2 Series of 9	17'-2" to 18'-4"	129	3'-2" to 3'-3"	6'-10"		
609	4 Series of 30	5'-9" to 6'-9"	Str.				
610	76	8'-0"	Str.				
611	4 Series of 9	11'-3" to 12'-3"	Str.				
612	4 Series of 3	23'-2" to 23'-8"	131	8'-9"	2'-9" to 3'-0"	4'-4"	7'-4" to 7'-7"
613	8	20'-3"	131	8'-9"	2'-11"	4'-4"	4'-3"
614	4 Series of 24	19'-5" to 23'-1"	131	8'-9"	0'-7" to 0'-9"	4'-4"	5'-2" to 5'-3"
615	2 Series of 8	28'-8" to 31'-2"	109	6'-8"	7'-2" to 8'-5"		
616	1	28'-8"	109	6'-8"	7'-2"		
617	6	13'-9"	127	1'-11"			
618	2 Series of 5	10'-6" to 11'-6"	105	5'-0" to 6'-0"	2'-9"		
619	8	7'-0"	Str.				
620	8	2'-6"	Str.				
621	2 Series of 24	7'-0" to 9'-10"	Str.				
622	4 Series of 27	8'-5" to 10'-2"	Str.				
623	2	10'-9"	Str.				
624	8	4'-0"	Str.				
625	18	12'-2"	105	8'-2"	2'-0"		
626	16	10'-8"	105	6'-8"	2'-0"		
627	10	11'-9"	105	2'-11"	4'-5"		
628	10	11'-2"	105	2'-4"	4'-5"		
701	16	28'-5"	124	3'-0"	2'-7"	4'-7"	2'-3"
702	10	8'-6"	Str.				
703	5	7'-11"	105	3'-5"	2'-3"		
901	24	9'-0"	Str.				
902	12	10'-4"	130	2'-10"	4'-8"	1 1/2	
1101	12	33'-0"	Str.				
1102	8	16'-3"	Str.				
1103	100	21'-0"	Str.				
1104	108	14'-6"	Str.				
1105	82	20'-6"	Str.				
1106	82	14'-0"	Str.				
1107	4	18'-3"	Str.				
1108	4	9'-3"	Str.				
1109	6	34'-4"	123	57'-4"	26'-4"	4'-0"	
1110	8	42'-4"	123	57'-4"	26'-4"	8'-0"	

CAISSON							
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
601	2	16'-0"	Str.				
602	2	12'-9"	Str.				
603	10	20'-8"	133	10'-9"			
604	68	3'-9"	Str.				
605	4	26'-9"	125	8'-9"	20'-0"	6'-11"	
606	2	17'-6"	133	8'-9"			
607	4 Series of 3	25'-7" to 27'-9"	Str.				
608	10	28'-9"	Str.				
609	4	27'-8"	125	9'-9"	20'-0"	7'-8"	
610	2	19'-2"	133	9'-9"			
611	20	28'-5"	125	10'-9"	20'-0"	8'-5"	
612	96	14'-8"	126				
613	26	21'-6"	Str.				
614	26	17'-6"	Str.				
615	2	17'-3"	Str.				
616	2	21'-3"	Str.				
617	2	16'-6"	Str.				
618	2	20'-9"	Str.				
619	2	15'-3"	Str.				
620	2	19'-9"	Str.				
621	2	13'-3"	Str.				
622	2	18'-3"	Str.				
623	2	10'-0"	Str.				
701	912	18'-6"	Str.				
704	324	24'-9"	133	10'-8"			
705	324	17'-9"	133	7'-4"			
901	134	5'-3"	125	6'-0"	0'-9"	4'-6"	
902	94	12'-9"	125	7'-6"	1'-9"	11'-0"	
903	134	16'-6"	Str.				
904	94	10'-9"	Str.				
905	6	22'-9"	133	9'-6"			
906	6	20'-10"	133	8'-7"			
907	6	19'-8"	133	8'-0"			
908	6	18'-11"	133	7'-8"			
909	6	18'-7"	133	7'-6"			
910	30	18'-1"	133	7'-4"			
911	6	18'-8"	133	7'-7"			
912	36	19'-3"	133	7'-10"			
913	102	25'-3"	133	10'-9"			
1101	102	7'-0"	Str.				
1102	8	7'-9"	Str.				
1103	4	29'-3"	125	10'-9"	20'-9"	8'-6"	
1104	4 Series of 5	25'-5" to 29'-4"	Str.				
1105	4 Series of 5	29'-10" to 31'-3"	Str.				
1106	14	31'-6"	Str.				
1107	2	24'-0"	133	10'-9"			

BAR BENDING DIAGRAMS

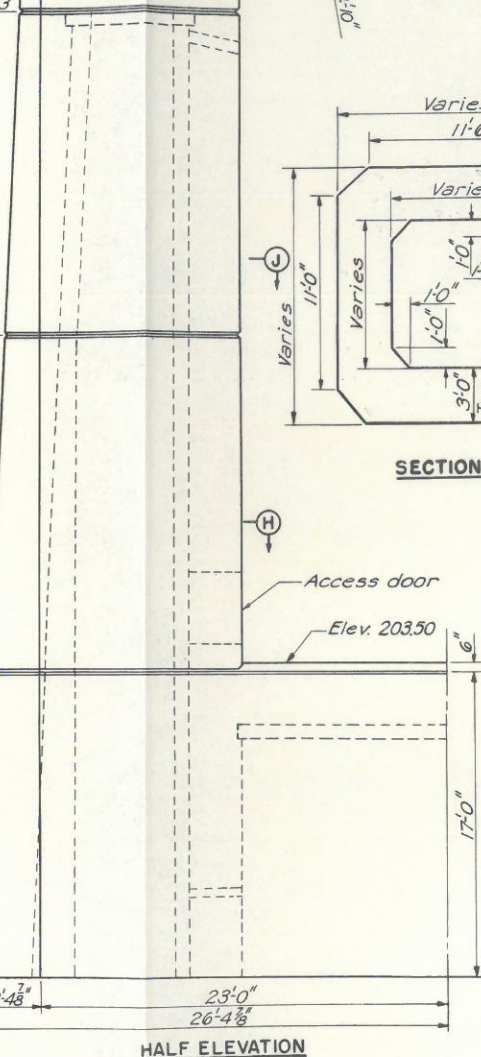
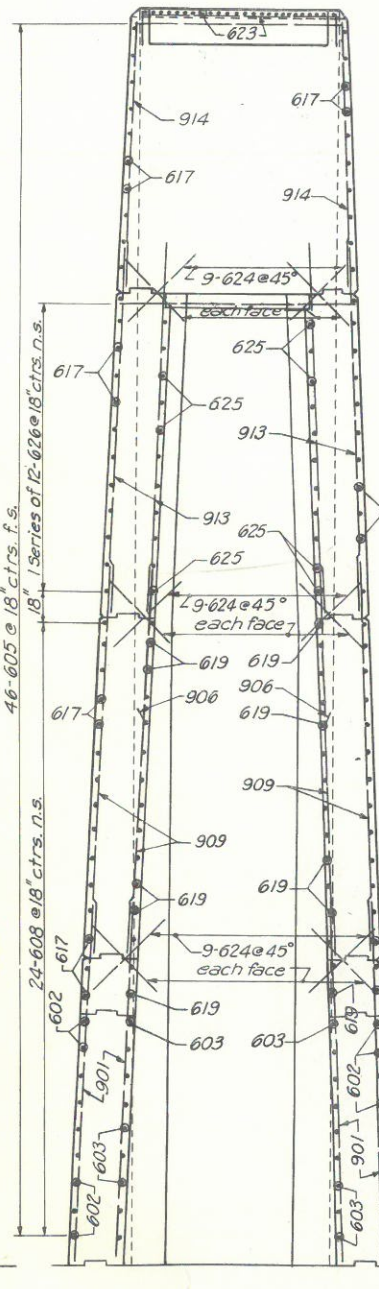
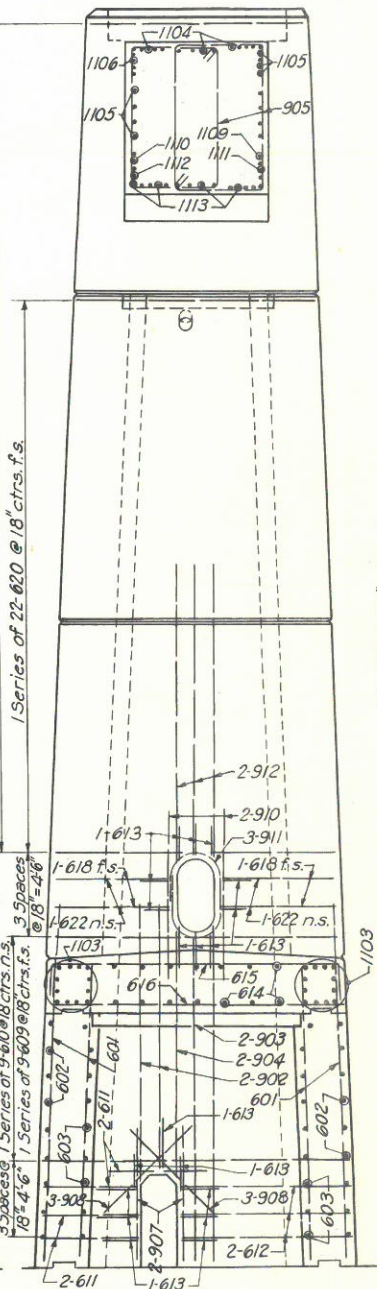
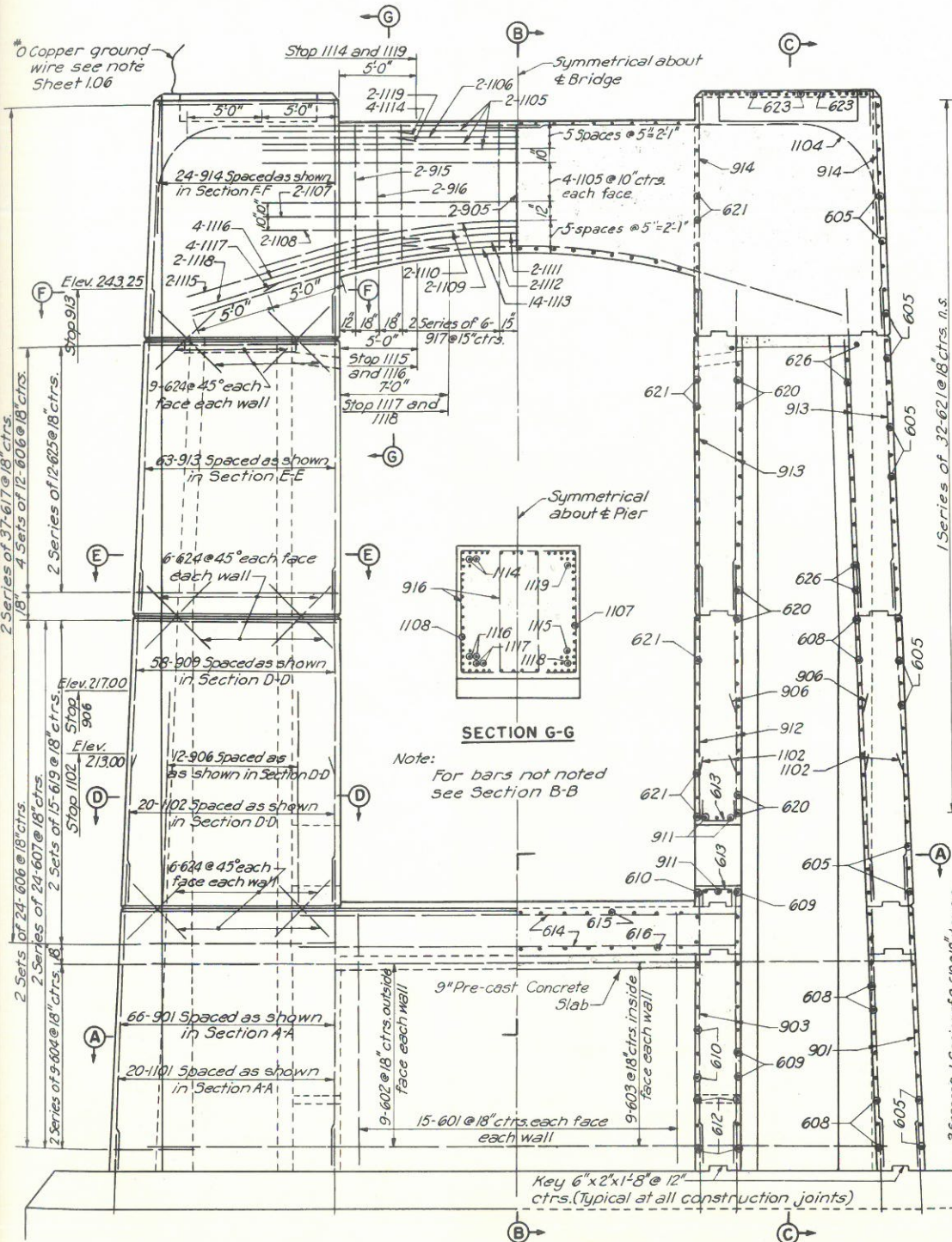
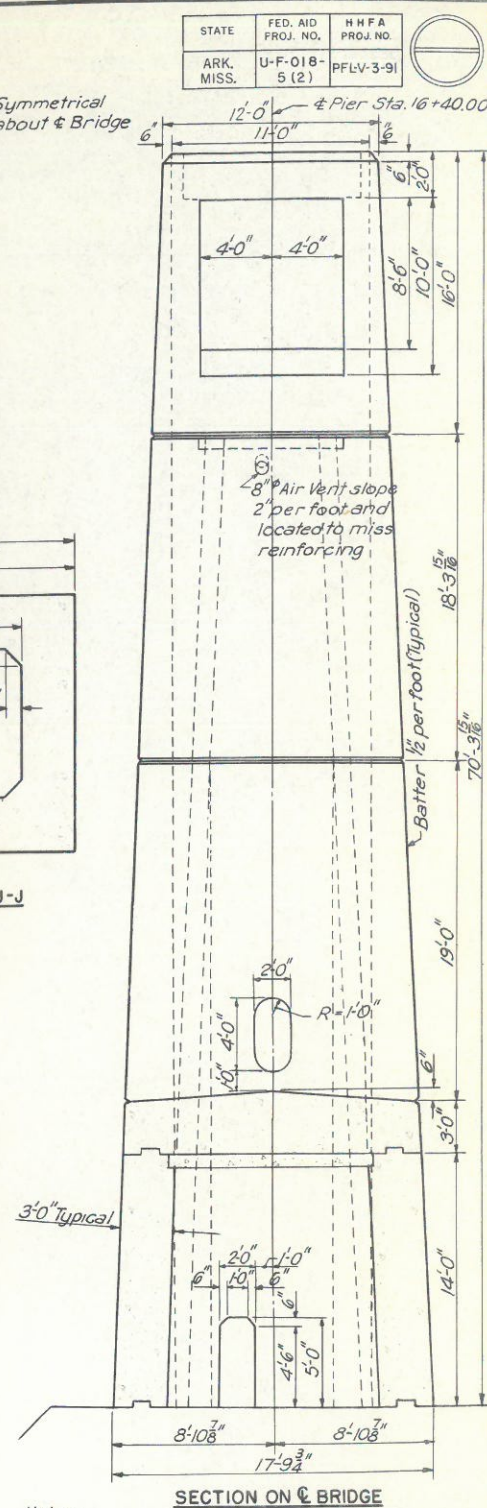
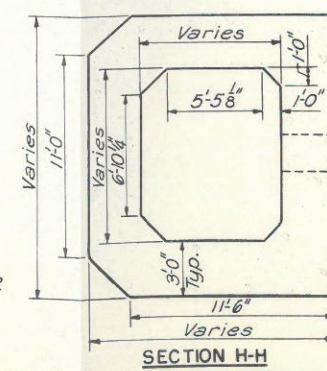
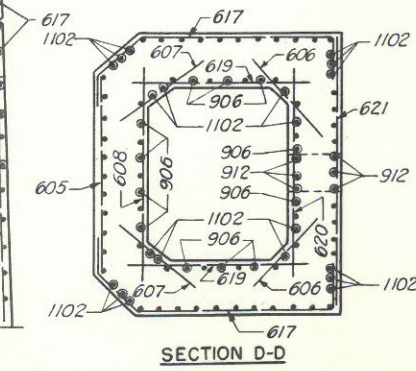
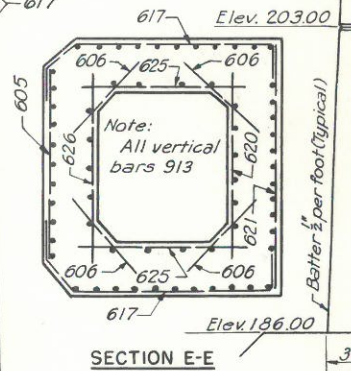
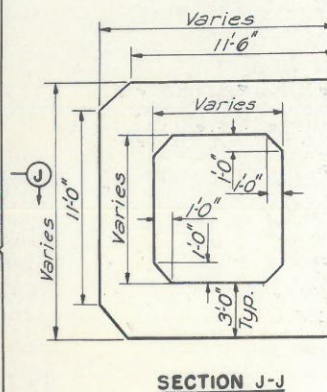
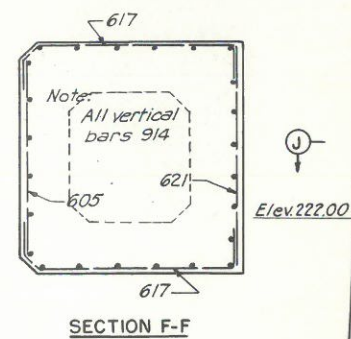
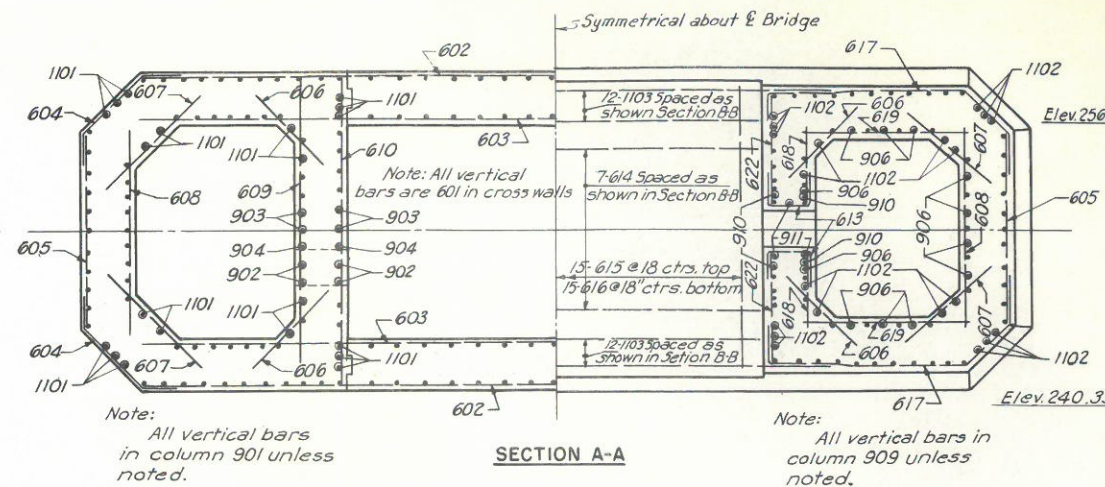
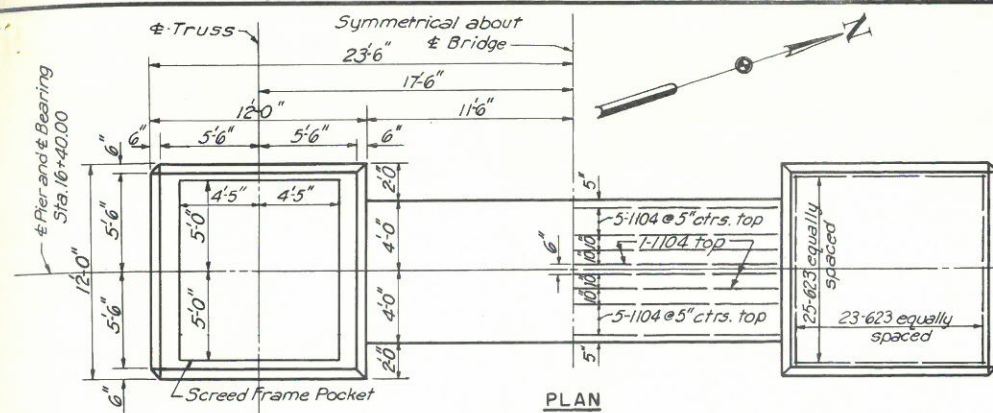


ARKANSAS STATE HIGHWAY COMMISSION
MISSISSIPPI STATE HIGHWAY DEPARTMENT
MISSISSIPPI RIVER BRIDGE
NEAR HELENA, ARKANSAS

RIVER BRIDGE SUBSTRUCTURE
PIER 10 REINFORCEMENT SCHEDULE

SCALE: No Scale
MADE: D.L.C. DATE 9-6-56
TRCD, C.T.H. DATE 9-27-56
CKD, G.R.C. DATE 9-29-56
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
984 SHEET- 1.10

NO.	MADE	DATE	REVISION
GA	1-25-62	As Built	



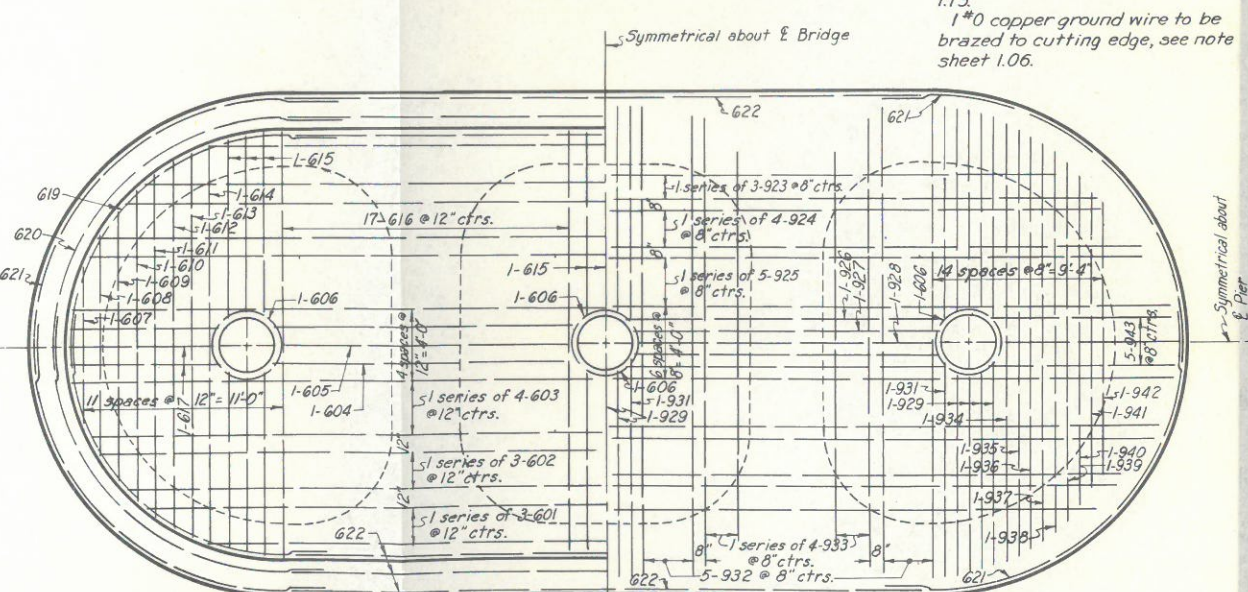
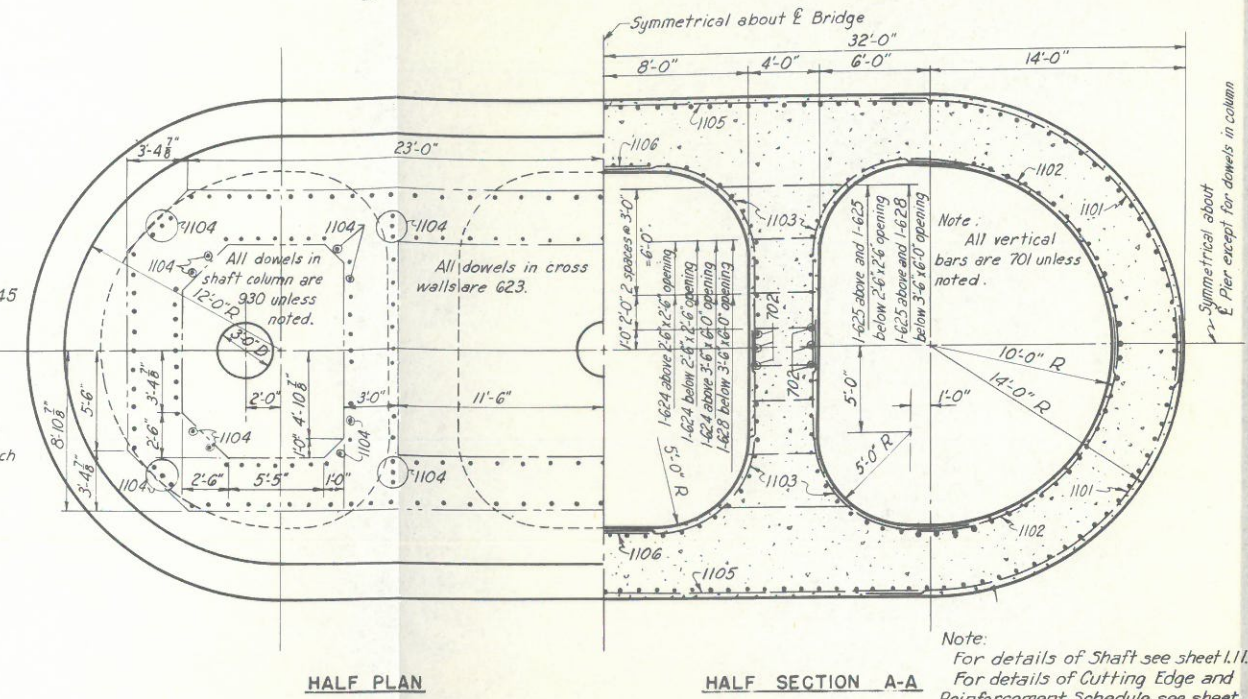
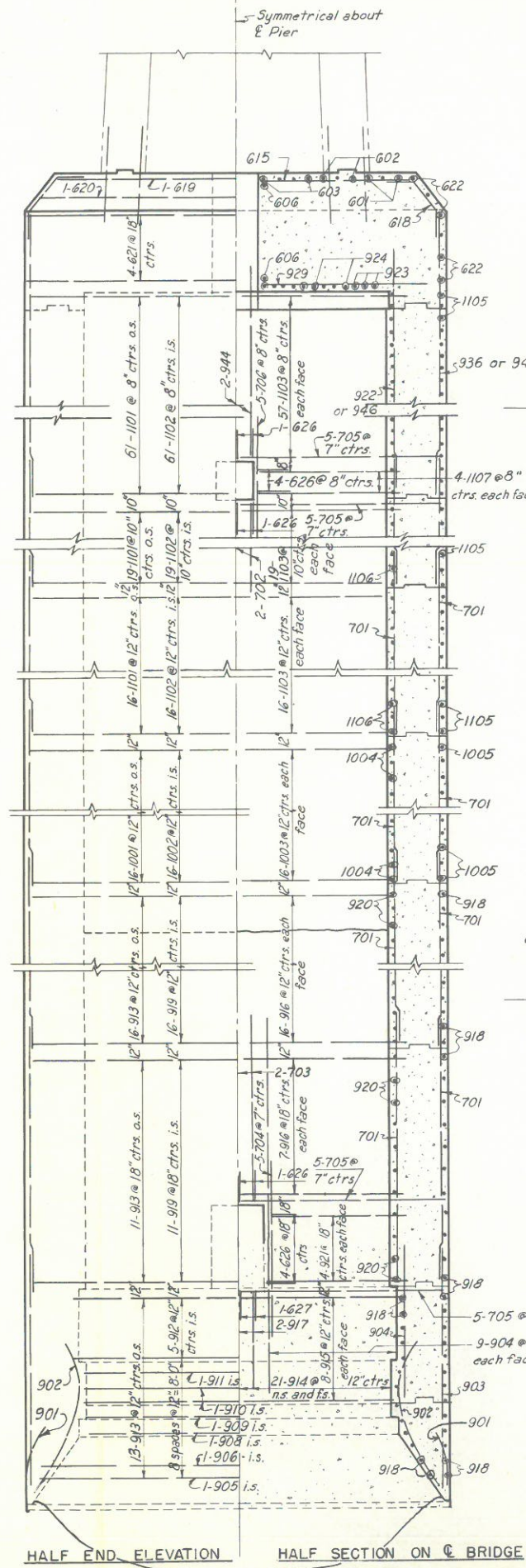
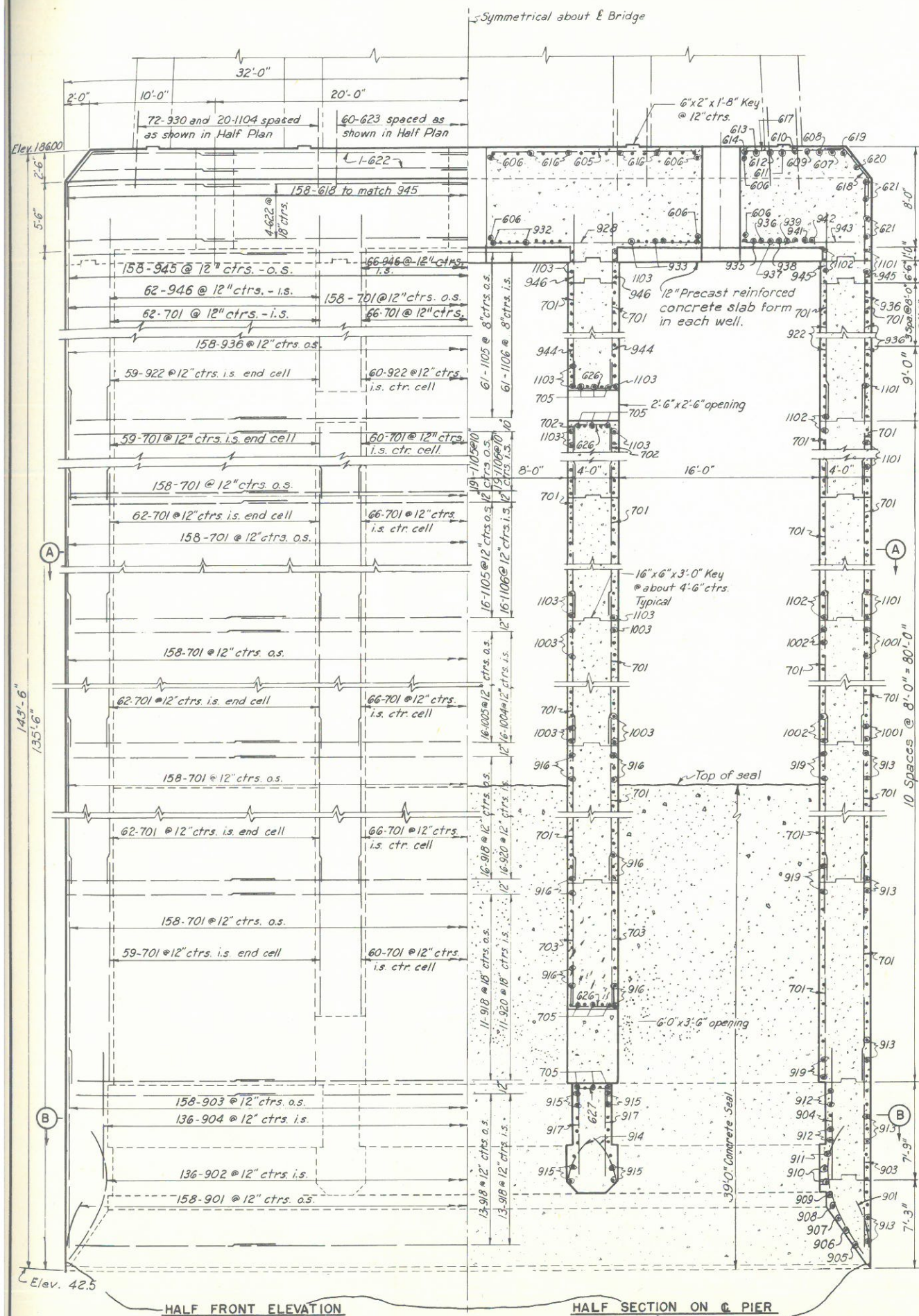
Notes:
For reinforcement schedule see Sheet 125.
For details of screed frames, access doors, handrail, and rustication and keys at construction joints see Sheet 128.
For detail of ladders and platforms see Sheets 127 and 128.
For location of ladders see Sheet 107.

ARKANSAS STATE HIGHWAY COMMISSION
MISSISSIPPI STATE HIGHWAY DEPARTMENT
MISSISSIPPI RIVER BRIDGE
NEAR HELENA, ARKANSAS

RIVER BRIDGE SUBSTRUCTURE
PIER II SHAFT DETAILS

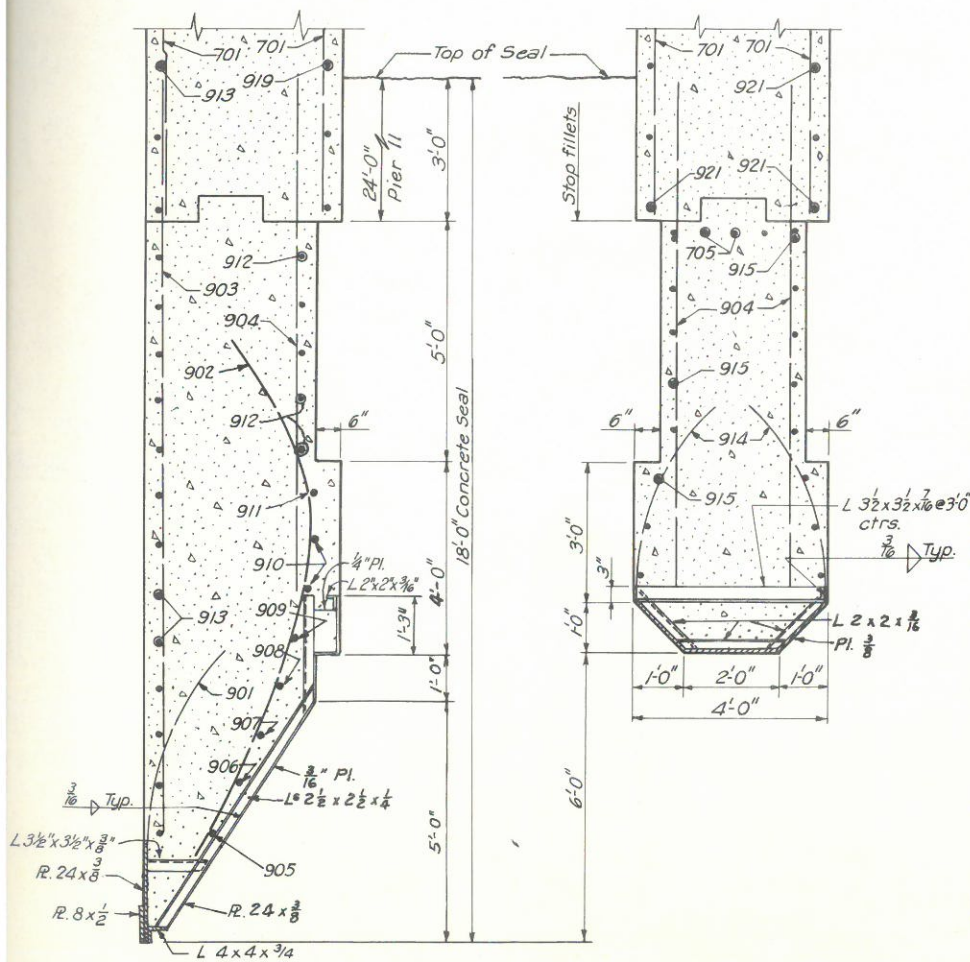
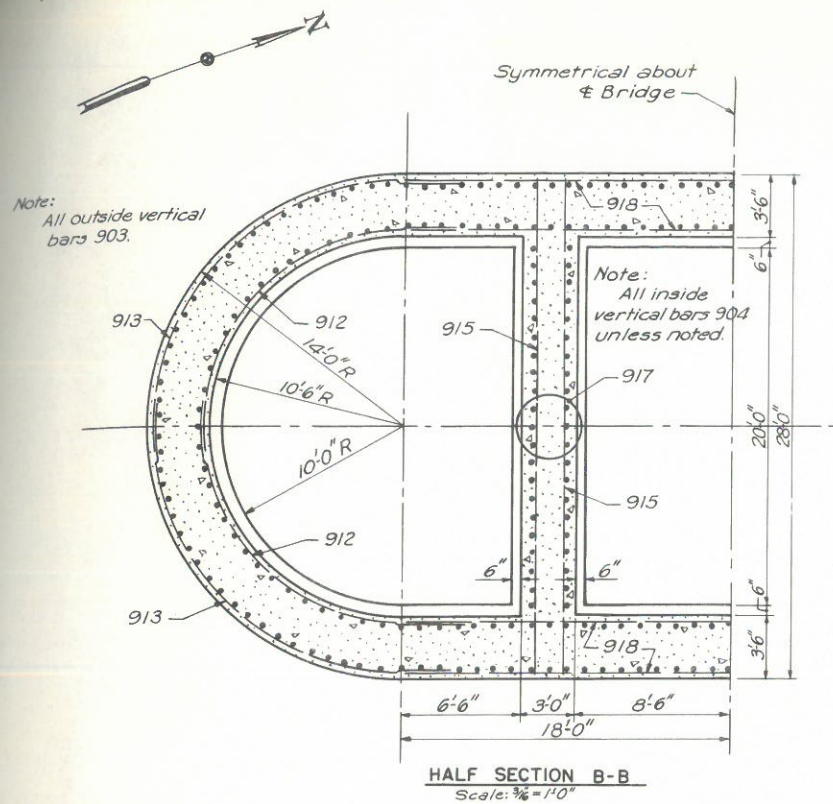
SCALE $\frac{3}{16} = 1'-0"$
MADE P.T.E. DATE 8-2-56
TRCD. C.T.H. DATE 10-6-56
CKD. F.G.S. DATE 10-16-56

HOWARD, NEEDLES, TAMMEN & BERGENDTOP
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
984 SHEET. I.11



Unit Pressure on Soil at Elev. 42.49
Cutting Edge at Elev. 42.49 Water at Elev. 14.6

Item	Type of load	Max. load tons per sq. ft.
1	Superstructure and Substructure	8.9
2	Live Load	0.4
3	Water in well and on cap	1.4
4	Present earth and water loads	5.9
5	Buoyancy	3.2
6	30% Transverse wind	2.4
7	50% Transverse wind	4.0
8	Total DL Item 1 and 3	10.3
9	Total DL+LL Item 1, 2 and 3	10.7
10	Net excess load Item 9-4	4.8
11	Net excess load (30% wind) Item 10+6	7.2
12	Net excess load (50% wind) Item 8-4+7	8.4

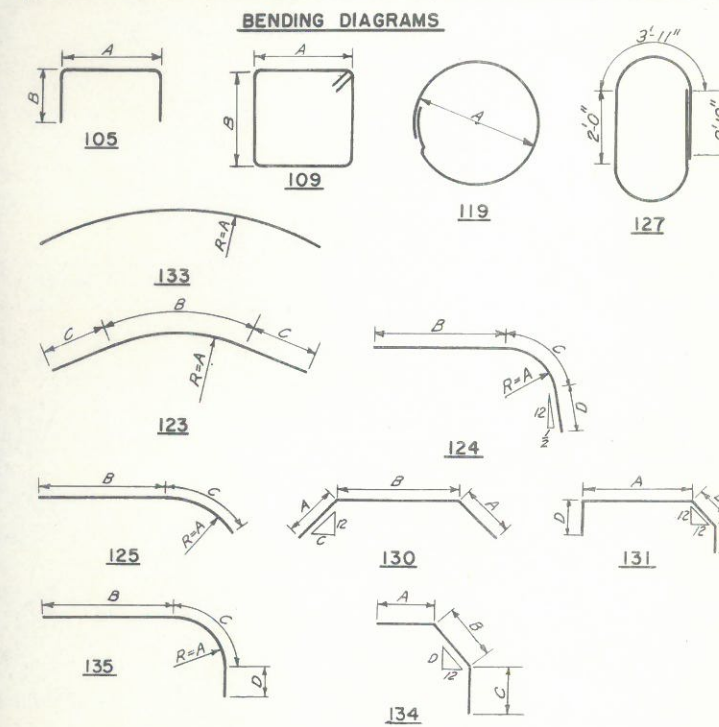


CUTTING EDGE DETAILS
Scale: 1/4" = 1'-0"

SHAFT					DIMENSIONS			
MARK	NUMBER	LENGTH	TYPE		A	B	C	D
601	60	16'-9"	Str.					
602	36	24'-0"	Str.					
603	36	23'-9"	Str.					
604	4 Series of 9	7'-10" to 8'-6"	130	2'-0"	3'-10"	4'-2"	12	
605	92	11'-0"	Str.					
606	192	5'-6"	Str.					
607	4 Series of 24	5'-6" to 7'-6"	Str.					
608	48	11'-0"	Str.					
609	2 Series of 9	12'-6" to 13'-6"	Str.					
610	2 Series of 9	16'-0" to 17'-3"	Str.					
611	16	5'-6"	Str.					
612	12	9'-6"	Str.					
613	38	6'-6"	105	2'-8"	1'-11"			
614	14	27'-0"	Str.					
615	15	20'-0"	130	16'-2"	1'-11"	1/2		
616	15	16'-3"	Str.					
617	4 Series of 37	15'-8" to 18'-11"	131	11'-3"	0'-7 7/8"	3'-10"	1'-11"	1'-11"
618	8	4'-9"	Str.					
619	60	9'-3"	Str.					
620	2 Series of 22	9'-3" to 11'-9"	Str.					
621	2 Series of 32	11'-9" to 15'-6"	Str.					
622	8	6'-9"	Str.					
623	96	14'-8"	105	10'-10"	1'-11"			
624	552	5'-0"	Str.					
625	4 Series of 12	8'-6" to 9'-3"	Str.					
626	2 Series of 12	9'-3" to 10'-9"	Str.					
901	132	19'-9"	Str.					
902	8	14'-9"	Str.					
903	8	18'-3"	Str.					
904	4	13'-6"	Str.					
905	2	31'-6"	109	4'-10"	8'-1"			
906	24	14'-0"	Str.					
907	8	8'-0"	Str.					
908	12	6'-0"	Str.					
909	116	21'-9"	Str.					
910	8	10'-0"	Str.					
911	6	14'-8"	127					
912	12	16'-0"	Str.					
913	126	21'-3"	Str.					
914	48	15'-6"	Str.					
915	4	34'-2"	109	4'-10"	9'-5"			
916	4	33'-6"	109	4'-10"	9'-1"			
917	4 Series of 6	31'-8" to 32'-10"	109	4'-10"	8'-1 7/8"	8'-3"		
1101	40	20'-6"	Str.					
1102	40	10'-0"	Str.					
1103	24	30'-0"	Str.					
1104	28	32'-0"	124	5'-0"	20'-10"	7'-8"	3'-6"	
1105	14	33'-0"	Str.					
1106	2	43'-0"	Str.					
1107	4	12'-0"	Str.					
1108	4	7'-0"	Str.					
1109	2	33'-4"	123	46'-11"	23'-4"	5'-0"		
1110	2	43'-4"	123	46'-6"	23'-4"	10'-0"		
1111	2	33'-4"	123	46'-1"	23'-4"	5'-0"		
1112	2	43'-4"	123	45'-8"	23'-4"	10'-0"		
1113	14	43'-4"	123	45'-3"	23'-4"	10'-0"		
1114	8	10'-0"	Str.					
1115	4	15'-1"	125	46'-6"	10'-0"	5'-1"		
1116	8	10'-1"	125	46'-1"	5'-0"	5'-1"		
1117	8	12'-2"	125	45'-8"	5'-0"	7'-2"		
1118	4	17'-2"	125	45'-8"	10'-0"	7'-2"		
1119	4	15'-0"	Str.					

CAISSON					DIMENSIONS			
MARK	NUMBER	LENGTH	TYPE		A	B	C	D
601	4 Series of 3	23'-3" to 26'-6"	Str.					
602	4 Series of 3	27'-9" to 29'-3"	Str.					
603	4 Series of 4	29'-9" to 30'-9"	Str.					
604	4	17'-3"	Str.					
605	2	16'-6"	Str.					
606	6	12'-11"	119	3'-6"				
607	2	8'-6"	Str.					
608	2	12'-6"	Str.					
609	2	15'-0"	Str.					
610	2	17'-0"	Str.					
611	2	18'-9"	Str.					
612	2	20'-0"	Str.					
613	2	21'-3"	Str.					
614	2	22'-3"	Str.					
615	18	9'-9"	Str.					
616	34	23'-9"	Str.					
617	6	8'-0"	Str.					
618	158	6'-10"	134	1'-11"	3'-0"	1'-11"	15	
619	4	21'-5"	125	11'-9"	1'-11"	19'-6"		
620	4	22'-11"	125	12'-9"	1'-11"	21'-0"		
621	16	24'-7"	125	13'-9"	1'-11"	22'-8"		
622	12	36'-0"	Str.					
623	60	4'-0"	Str.					
624	24	3'-6"	Str.					
625	12	7'-6"	Str.					
626	50	7'-4"	105	3'-6"	1'-11"			
627	6	6'-4"	105	2'-6"	1'-11"			
628	12	2'-6"	Str.					
701	2064	18'-3"	Str.					
702	12	15'-9"	Str.					
703	12	12'-0"	Str.					
704	20	11'-0"	Str.					
705	40	27'-6"	Str.					
706	20	7'-6"	Str.					
901	158	5'-3"	125	6'-0"	0'-9"	4'-6"		
902	136	12'-9"	125	7'-6"	1'-9"	11'-0"		
903	158	16'-6"	Str.					
904	208	10'-9"	Str.					
905	4	23'-11"	125	12'-6"	2'-10"	21'-4"		
906	4	22'-6"	125	11'-7"	2'-10"	19'-8"		
907	4	21'-7"	125	11'-0"	2'-10"	18'-9"		
908	4	21'-0"	125	10'-8"	2'-10"	18'-2"		
909	4	20'-9"	125	10'-6"	2'-10"	17'-11"		
910	8	20'-6"	125	10'-4"	2'-10"	17'-8"		
911	4	20'-11"	125	10'-7"	2'-10"	18'-1"		
912	20	21'-3"	125	10'-10"	2'-10"	18'-5"		
913	160	25'-11"	125	13'-9"	2'-10"	23'-1"		
914	84	4'-9"	133	5'-3"				
915	32	26'-9"	Str.					
916	184	17'-6"	135	5'-3"	6'-5"	8'-3"	2'-10"	
917	12	7'-9"	Str.					
918	106	36'-0"	Str.					
919	108	18'-8"	125	10'-4"	1'-0"	17'-8"		
920	54	6'-0"	Str.					
921	32	14'-11"	135	5'-3"	3'-0"	8'-3"	2'-10"	
922	178	21'-0"	Str.					
923	4 Series of 3	26'-0" to 28'-3"	Str.					
924	4 Series of 4	28'-3" to 31'-0"	Str.					
925	4 Series of 5	31'-4" to 32'-6"	Str.					
926	4	17'-9"	Str.					
927	4	16'-9"	Str.					
928	2	16'-6"	Str.					
929	22	11'-6"	Str.					
930	144	5'-9"	Str.					
931	8	12'-0"	Str.					
932	20	26'-3"	Str.					
933	4 Series of 4	21'-0" to 25'-9"	Str.					
934	2	24'-9"	Str.					

CAISSON					DIMENSIONS			
MARK	NUMBER	LENGTH	TYPE		A	B	C	D
935	2	24'-0"	Str.					
936	160	23'-6"	Str.					
937	2	22'-6"	Str.					
938	2	21'-6"	Str.					
939	2	19'-9"	Str.					
940	2	17'-6"	Str.					
941	2	16'-0"	Str.					
942	2	12'-6"	Str.					
943	10	9'-9"	Str.					
944	12	18'-3"	Str.					
945	158	13'-0"	Str.					
946	190	10'-6"	Str.					
1001	64	26'-5"	125	13'-9"	3'-2"	23'-3"		
1002	64	18'-10"	125	10'-4"	1'-0"	17'-10"		
1003	128	18'-0"	135	5'-3"	6'-7"	8'-3"	3'-2"	
1004	32	6'-6"	Str.					
1005	32	36'-0"	Str.					
1101	384	26'-11"	125	13'-9"	3'-6"	23'-5"		
1102	384	19'-0"	125	10'-4"	1'-0"	18'-0"		
1103	736	18'-6"	135	5'-3"	6'-9"	8'-3"	3'-6"	
1104	40	7'-0"	Str.					
1105	192	36'-0"	Str.					
1106	192	7'-0"	Str.					
1107	32	15'-3"	135	5'-3"	3'-6"	8'-3"	3'-6"	



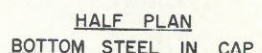
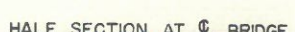
ARKANSAS STATE HIGHWAY COMMISSION
MISSISSIPPI STATE HIGHWAY DEPARTMENT
MISSISSIPPI RIVER BRIDGE
NEAR HELENA, ARKANSAS

RIVER BRIDGE SUBSTRUCTURE
PIER II
REINFORCEMENT SCHEDULE & CUTTING EDGE

SCALE: As Shown
MADE: D.L.E. DATE: 9-12-56
TRCD: 2-2-56 DATE: 10-2-56
CKD: F.C.S. DATE: 10-2-56
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
984 SHEET-113

G.A. 12262 As Built
NO. MADE DATE

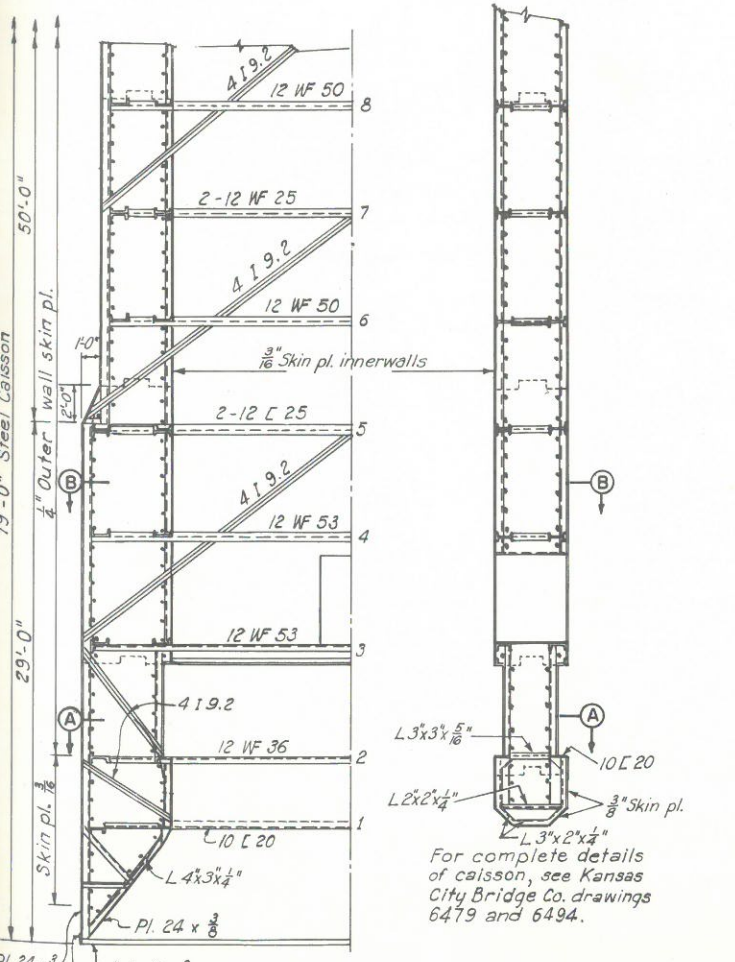
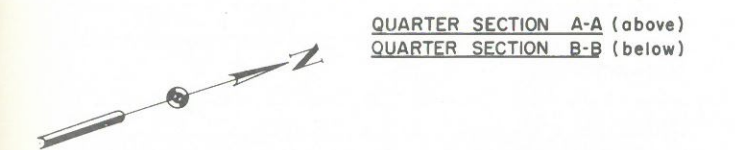
REVISION



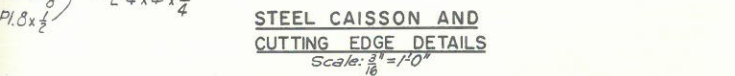
Note:
For details of keys at top of
caisson cap see Sheet 1.28.
For details of manhole frame
and cover see Sheet 1.29

RIVER BRIDGE SUBSTRUCTURE
PIER 12 CAISSON DETAILS

1	GA. 1227-G	As built
NO.	MADE	DATE
		REVISION

[illegible]

QUARTER SECTION A-A (above)
QUARTER SECTION B-B (below)

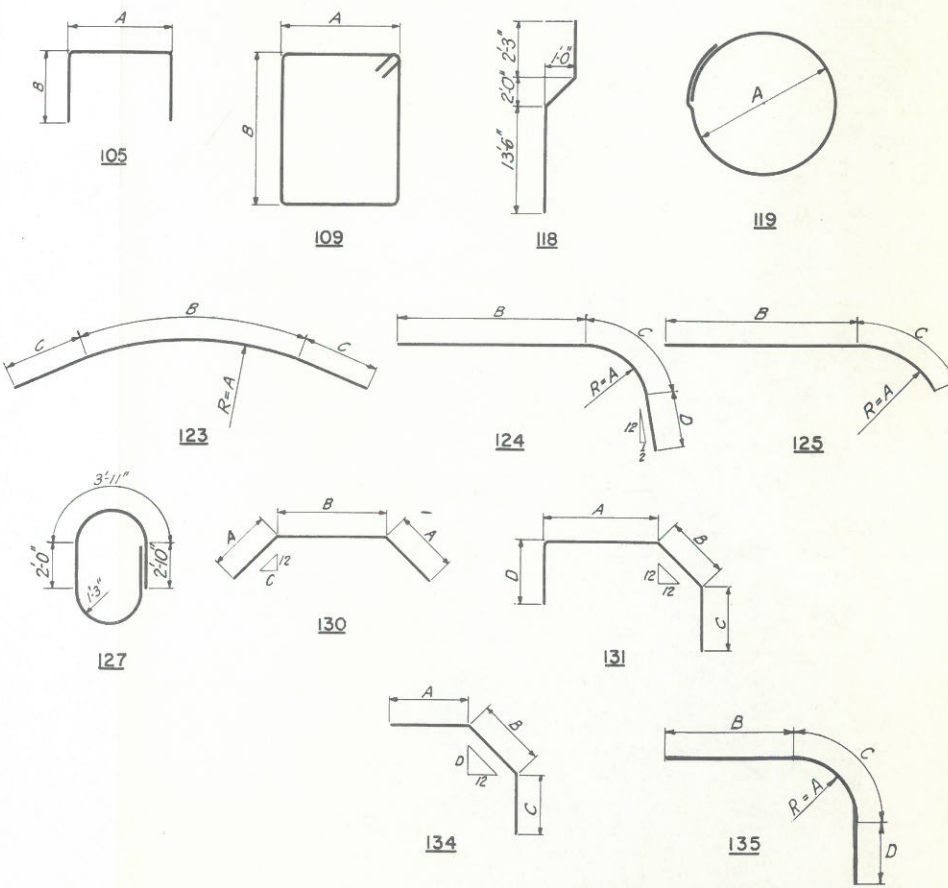


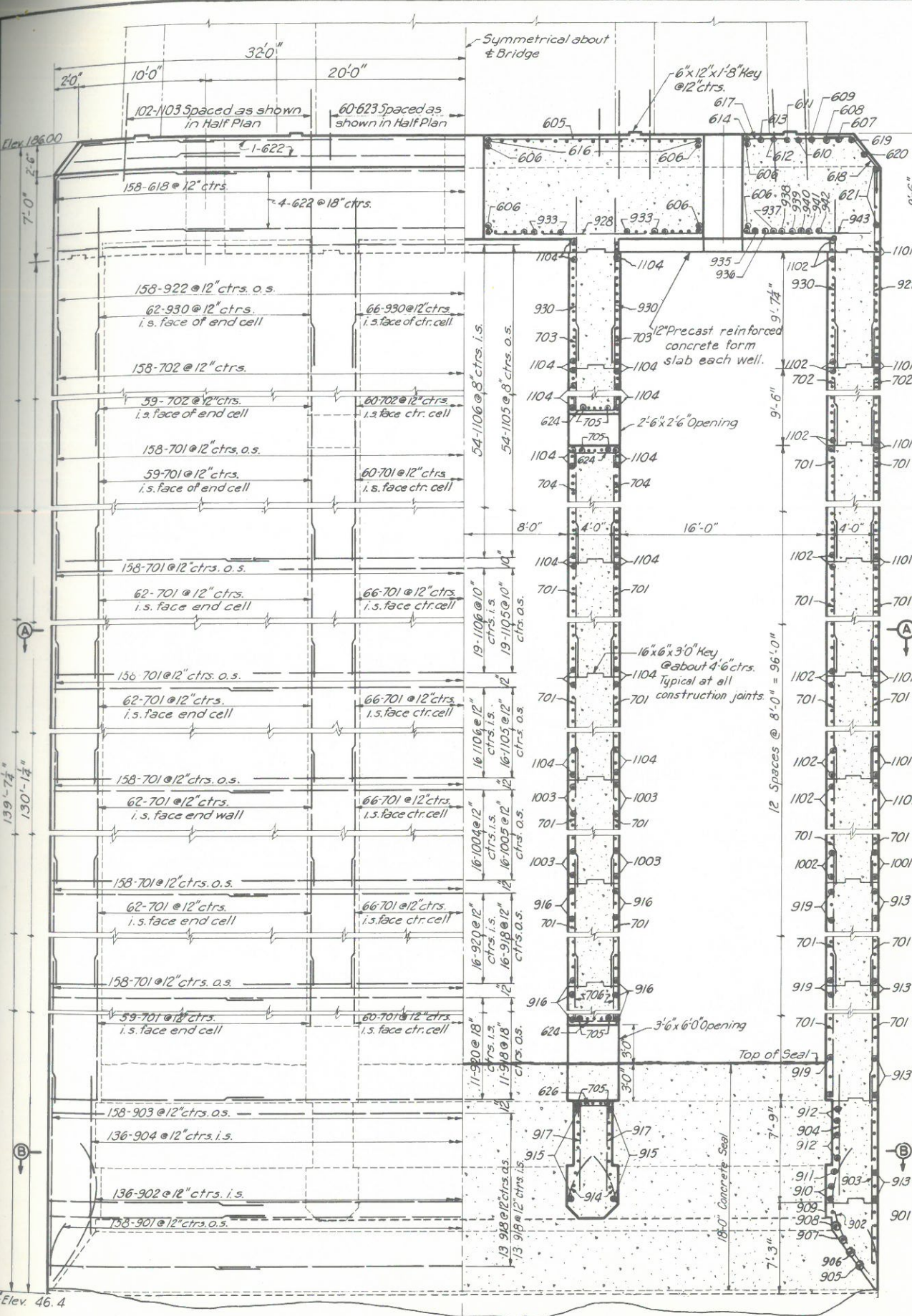
SHAFT							
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
601	60	16'9"	Str.				
602	72	24'0"	Str.				
603	96	5'6"	Str.				
604	4Series of 9	7'6" to 8'7"	130	1'11"	3'3" to 4'9"	12	
605	15	20'0"	130	16'2"	1'11"	1/2	
606	15	16'3"	Str.				
607	14	27'0"	Str.				
608	48	10'9"	Str.				
609	6	9'6"	Str.				
610	6	6'9"	Str.				
611	6	5'9"	Str.				
612	6	3'9"	Str.				
613	96	14'8"	105	10'10"	1'11"		
614	448	5'0"	Str.				
615	38	6'6"	105	2'-8"	1'-11"		
616	2Series of 9	16'3" to 17'0"	Str.				
617	2Series of 9	12'9" to 13'6"	Str.				
618	48	11'0"	Str.				
619	4Series of 15	17'7" to 18'4"	131	11'3"	2'6" to 3'3"	1'11"	1-11
620	60	9'6"	Str.				
621	8	5'6"	Str.				
622	4Series of 24	5'6" to 7'6"	Str.				
623	2Series of 10	11'0" to 12'3"	Str.				
624	8	6'6"	Str.				
625	2Series of 10	14'6" to 15'9"	Str.				
801	4Series of 23	16'9" to 18'7"	131	11'2"	0'11" to 2'-5"	2'6"	2'6"
802	4Series of 14	10'3" to 11'10"	Str.				
803	46	10'9"	Str.				
804	4Series of 14	9'6" to 10'4"	Str.				
805	2Series of 23	11'9" to 14'6"	Str.				
806	112	6'6"	Str.				
901	164	19'9"	Str.				
902	8	14'9"	Str.				
903	4	14'3"	Str.				
904	8	18'3"	Str.				
905	116	22'9"	Str.				
906	28	10'0"	Str.				
907	28	14'0"	Str.				
908	12	17'9"	Str.				
909	48	15'6"	Str.				
910	6	14'8"	Str.				
911	172	6'0"	Str.				
912	126	21'6"	Str.				
913	8	9'9"	Str.				
1001	4	35'0"	109	5'0"	9'4"		
1002	4	34'6"	109	5'0"	9'1"		
1003	4Series of 8	32'0" to 34'2"	109	5'0"	8'3" to 9'11"		
1004	2	32'8"	109	5'0"	8'2"		
1101	24	30'0"	Str.				
1102	28	31'5"	124	5'0"	20'3"	7'8"	3'6"
1103	14	33'0"	Str.				
1104	2	33'4"	123	46'1"	23'4"	5'0"	
1105	14	43'4"	123	45'3"	23'4"	10'0"	
1106	2	43'0"	Str.				
1107	4	10'0"	Str.				
1108	8	10'1"	125	46'1"	5'0"	5'1"	
1109	8	12'2"	125	45'8"	5'0"	7'2"	
1110	4	17'3"	125	45'8"	10'0"	7'2"	
1111	4	12'0"	Str.				
1112	4	7'0"	Str.				
1113	2	43'4"	123	45'8"	23'4"	10'0"	
1114	2	43'4"	123	46'6"	23'4"	10'0"	
1115	2	33'4"	123	46'11"	23'4"	5'0"	
			</				

CAISSON							
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
601	4Series of 3	23'3" to 26'6"	Str.				
602	4Series of 3	27'9" to 29'3"	Str.				
603	4Series of 4	29'9" to 30'9"	Str.				
604	4	17'3"	Str.				
605	2	16'6"	Str.				
606	6	12'11"	119	3'-6"			
607	2	8'6"	Str.				
608	2	12'6"	Str.				
609	2	15'0"	Str.				
610	2	17'0"	Str.				
611	2	18'9"	Str.				
612	2	20'0"	Str.				
613	2	21'3"	Str.				
614	2	22'3"	Str.				
615	18	9'9"	Str.				
616	34	23'9"	Str.				
617	18	8'0"	Str.				
618	158	6'10"	134	1'11"	3'0"	1'11"	15
619	4	21'5"	125	11'9"	1'11"	19'6"	
620	4	22'11"	125	12'9"	1'11"	21'0"	
621	16	24'7"	125	13'9"	1'11"	22'8"	
622	12	36'0"	Str.				
623	60	4'0"	Str.				
624	24	3'6"	Str.				
625	12	2'6"	Str.				
626	28	7'6"	105	3'6"	2'0"		
628	184	36'0"	Str.				
629	116	25'9"	125	14'6"	2'0"	23'1'9"	
630	192	24'3"	125	13'6"	2'0"	22'3"	
631	124	6'0"	Str.				
632	252	18'4"	125	10'4 1/2"	1'0"	17'4"	
633	456	16'6"	135	5'4 1/2"	6'0"	8'6"	2'-0"
634	40	13'6"	135	5'4 1/2"	3'0"	8'6"	2'-0"
635	4	25'0"	125	14'0"	2'0"	23'0"	
636	4	24'0"	125	13'3"	2'0"	22'0"	
637	4	22'9"	125	12'6"	2'0"	20'9"	
638	4	21'6"	125	11'9"	2'0"	19'6"	
639	24	20'3"	125	11'0"	2'0"	18'3"	
640	8	19'9"	125	10'6"	2'0"	17'9"	
641	8	19'6"	125	10'6"	2'0"	17'6"	
701	1044	18'3"	Str.				
702	158	18'0"	118				
703	186	17'9"	Str.				
706	12	11'6"	Str.				
708	158	16'3"	Str.				
					</		

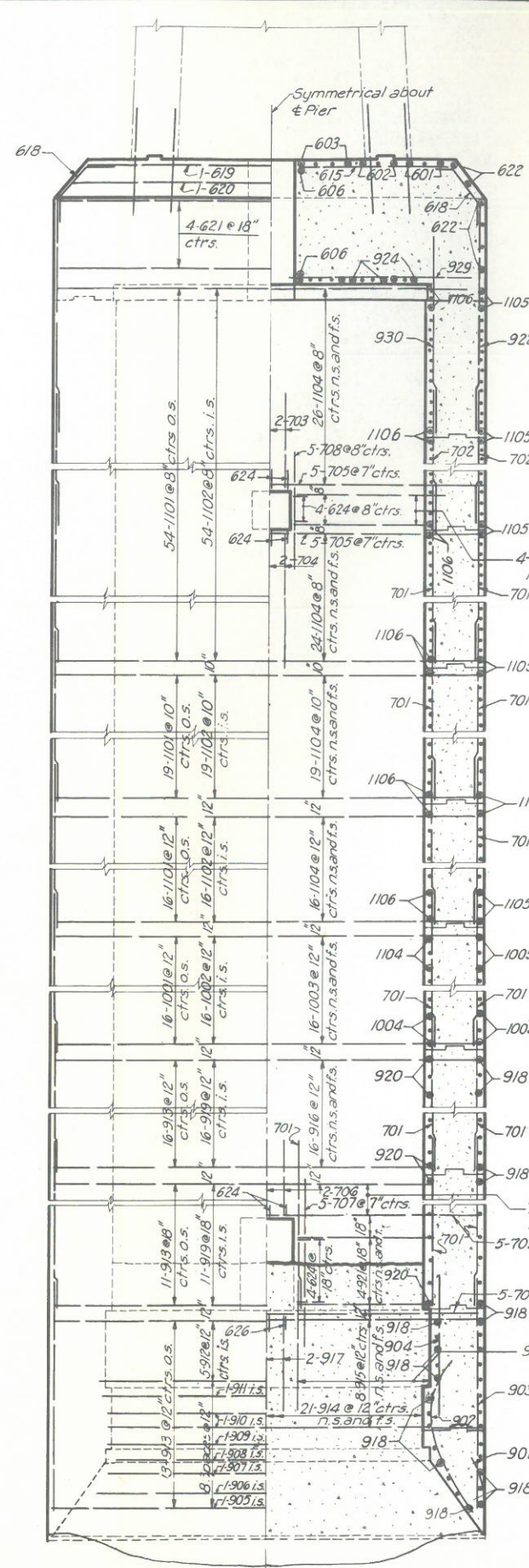
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BENDING DIAGRAMS

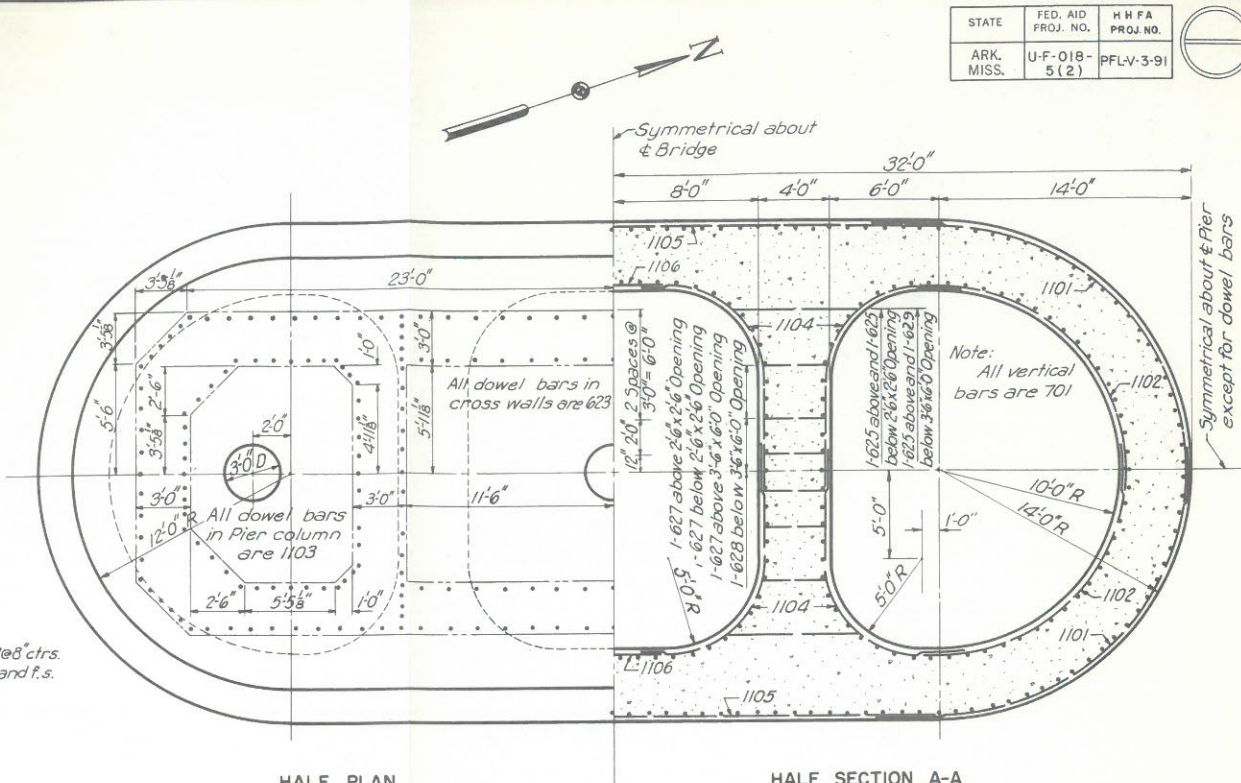




HALF FRONT ELEVATION

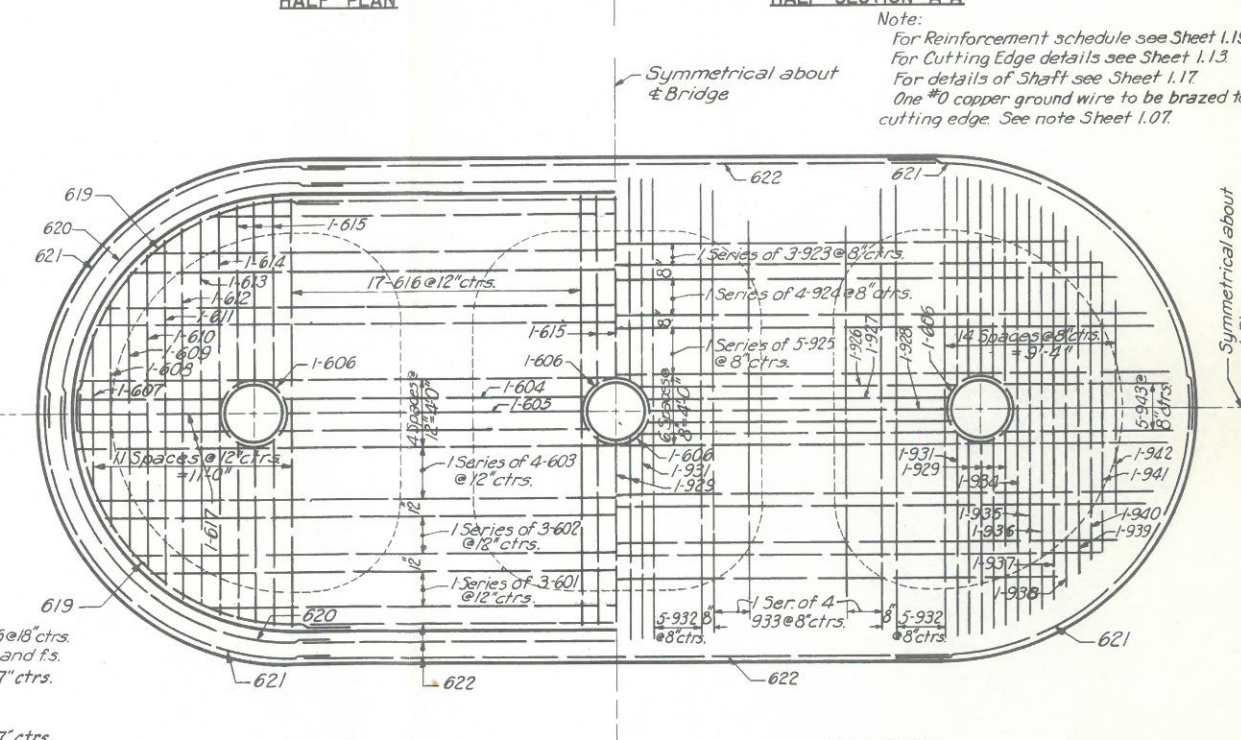


HALF END ELEVATION HALF SECTION ON BRIDGE



HALF PLAN

HALF SECTION A-A



HALF PLAN TOP STEEL IN CAP

HALF PLAN BOTTOM STEEL IN CAP

Unit Pressure on Soil at Elev. 46.44
Cutting Edge at Elev. 46.44 Water at Elev. 14.6

Item	Type of Load	Max. load Tons per sq. ft.
1	Superstructure and Substructure	8.5
2	Live Load	0.4
3	Water in well and on cap	1.3
4	Present earth and water loads	5.8
5	Buoyancy	1.8
6	30% Transverse wind	2.1
7	50% Transverse wind	3.6
8	Total DL Item 1 and 3	9.8
9	Total DL+LL Item 1, 2 and 3	10.2
10	Net excess load Item 9-4	4.4
11	Net excess load (30% wind) Item 10+6	6.5
12	Net excess load (50% wind) Item 8-4+7	7.6

Note:
For details of manhole frames and covers see Sheet 1.28.
For Section B-B see Sheet 1.13.
For detail of keys at top of Caisson Cap see Sheet 1.28.

ARKANSAS STATE HIGHWAY COMMISSION
MISSISSIPPI STATE HIGHWAY DEPARTMENT
MISSISSIPPI RIVER BRIDGE
NEAR HELENA, ARKANSAS

**RIVER BRIDGE SUBSTRUCTURE
PIER 13 CAISSON DETAILS**

SHAFT							
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
601	92	5'-6"	Str.				
602	4 ser. of 23	5'-3" to 7'-3"	Str.				
603	4 ser. of 14	17'-9" to 19'-0"	131	11'-3"	2'-6" to 3'-9"	2'-0"	2'-0"
604	46	11'-0"	Str.				
605	8	6'-6"	Str.				
606	8	4'-6"	Str.				
607	56	9'-3"	Str.				
608	46	10'-9"	Str.				
609	452	5'-0"	Str.				
610	2 ser. of 9	12'-3" to 13'-3"	Str.				
611	2 ser. of 9	16'-0" to 17'-0"	Str.				
612	4 ser. of 9	7'-10" to 8'-6"	130	2'-0"	3'-10" to 4'-6"	12	
613	72	24'-0"	Str.				
614	6	3'-9"	Str.				
615	60	16'-9"	Str.				
616	14	28'-6"	Str.				
617	15	20'-1"	130	2'-0"	16'-1"	$\frac{1}{2}$	
618	15	16'-3"	Str.				
619	6	7'-9"	Str.				
620	34	6'-8"	105	2'-8"	2'-0"		
621	6	9'-3"	Str.				
622	96	14'-10"	105	10'-10"	2'-0"		
623	2 ser. of 9	10'-10" to 11'-10"	Str.				
624	2 ser. of 9	14'-6" to 15'-6"	Str.				
625	6	6'-6"	Str.				
801	4 ser. of 13	9'-8" to 10'-5"	Str.				
802	4 ser. of 13	10'-4" to 11'-10"	Str.				
803	104	6'-6"	Str.				
804	4 ser. of 23	16'-9" to 18'-7"	131	11'-2"	0'-7" to 2'-5"	2'-6"	2'-6"
805	2 ser. of 23	11'-9" to 14'-6"	Str.				
806	46	10'-9"	Str.				
901	126	21'-6"	Str.				
902	172	6'-0"	Str.				
903	6	14'-8"	127				
904	48	15'-6"	Str.				
1001	4 ser. of 5	32'-6" to 33'-8"	109	5'-0"	8'-0" to 8'-7"		
1002	4	35'-2"	109	5'-0"	9'-4"		
1003	4	34'-2"	109	5'-0"	8'-10"		
1004	8	32'-2"	109	5'-0"	7'-10"		
1101	24	30'-0"	Str.				
1102	192	20'-6"	Str.				
1103	28	10'-0"	Str.				
1104	52	16'-6"	Str.				
1105	116	22'-6"	Str.				
1106	14	33'-0"	Str.				
1107	28	32'-0"	124	5'-0"	20'-10"	7'-8"	3'-6"
1108	2	43'-0"	Str.				
1109	2	33'-4"	123	46'-11"	23'-4"	5'-0"	
1110	8	12'-2"	125	45'-8"	5'-0"	7'-2"	
1111	8	15'-0"	Str.				
1112	14	43'-4"	123	45'-3"	23'-4"	10'-0"	
1113	4	12'-0"	Str.				
1114	4	17'-2"	125	45'-8"	10'-0"	7'-2"	
1115	2	4'-9"	Str.				
1116	8	10'-1"	125	46'-6"	5'-0"	5'-1"	
1117	8	12'-0"	Str.				
1118	12	18'-0"	Str.				
1119	4	15'-9"	Str.				
1120	10	17'-3"	Str.				
1121	12	10'-1"	125	46'-1"	5'-1"	5'-0"	
1122	2	43'-4"	123	46'-6"	23'-4"	10'-0"	
1123	2	33'-4"	123	46'-1"	23'-4"	5'-0"	
1124	2	43'-4"	123	45'-8"	23'-4"	10'-0"	
1125	4	7'-0"	Str.				

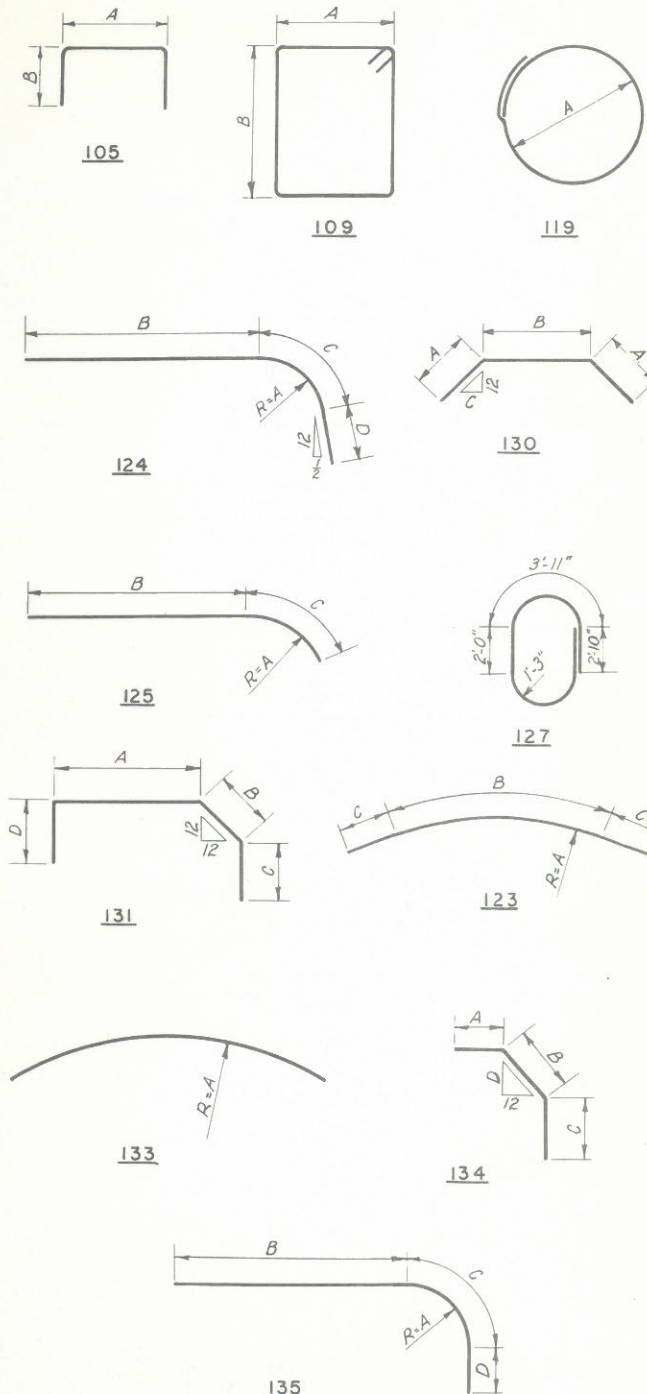
CAISSON							
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
601	4 ser. of 3	23'-3" to 26'-6"	Str.				
602	4 ser. of 3	27'-9" to 29'-3"	Str.				
603	4 ser. of 4	29'-9" to 30'-9"	Str.				
604	4	17'-3"	Str.				
605	2	16'-6"	Str.				
606	6	12'-11"	119	3'-6"			
607	2	8'-6"	Str.				
608	2	12'-6"	Str.				
609	2	15'-0"	Str.				
610	2	17'-0"	Str.				
611	2	18'-9"	Str.				
612	2	20'-0"	Str.				
613	2	21'-3"	Str.				
614	2	22'-3"	Str.				
615	18	9'-9"	Str.				
616	34	23'-9"	Str.				
617	6	8'-0"	Str.				
618	158	6'-10"	134	1'-11"	3'-0"	1'-11"	15
619	4	21'-5"	125	11'-9"	1'-11"	19'-6"	
620	4	22'-11"	125	12'-9"	1'-11"	21'-0"	
621	16	24'-7"	125	13'-9"	1'-11"	22'-8"	
622	12	36'-0"	Str.				
623	60	4'-0"	Str.				
624	50	7'-4"	105	3'-6"	1'-11"		
625	12	7'-6"	Str.				
626	6	6'-4"	105	2'-6"	1'-11"		
627	36	3'-6"	Str.				
628	12	2'-6"	Str.				
629	4	6'-6"	Str.				
701	2064	18'-3"	Str.				
702	336	12'-3"	Str.				
703	12	9'-6"	Str.				
704	12	15'-9"	Str.				
705	40	27'-6"	Str.				
706	12	12'-0"	Str.				
707	20	11'-0"	Str.				
708	20	7'-6"	Str.				
901	158	5'-3"	125	6'-0"	0'-9"	4'-6"	
902	136	12'-9"	125	7'-6"	1'-9"	11'-0"	
903	158	16'-6"	Str.				
904	208	10'-9"	Str.				
905	4	23'-11"	125	12'-6"	2'-10"	21'-1"	
906	4	22'-6"	125	11'-7"	2'-10"	19'-8"	
907	4	21'-7"	125	11'-0"	2'-10"	18'-9"	
908	4	21'-0"	125	10'-8"	2'-10"	18'-2"	
909	4	20'-9"	125	10'-6"	2'-10"	17'-11"	
910	8	20'-6"	125	10'-4"	2'-10"	17'-8"	
911	4	20'-11"	125	10'-7"	2'-10"	18'-1"	
912	20	21'-3"	125	10'-10"	2'-10"	18'-5"	
913	160	25'-11"	125	13'-9"	2'-10"	23'-1"	
914	84	4'-9"	133	5'-3"			
915	32	26'-9"	Str.				
916	184	17'-6"	135	5'-3"	6'-5"	8'-3"	2'-10"
917	12	7'-9"	Str.				
918	106	36'-0"	Str.				
919	108	18'-8"	125	10'-4"	1'-0"	17'-8"	
920	54	6'-0"	Str.				
921	32	14'-1"	135	5'-3"	3'-0"	8'-3"	2'-10"
922	158	15'-6"	Str.				
923	4 ser. of 3	26'-0" to 28'-3"	Str.				
924	4 ser. of 4	29'-3" to 31'-0"	Str.				
925	4 ser. of 5	31'-4" to 32'-6"	Str.				
926	4	17'-9"	Str.				
927	4	16'-9"	Str.				
928	2	16'-6"	Str.				
929	22	11'-6"	Str.				
930	190	13'-0"	Str.				
931	8	12'-0"	Str.				
932	20	26'-3"	Str.				
933	4 ser. of 4	21'-0" to 25'-9"	Str.				
934	2	24'-9"	Str.				
935	2	24'-0"	Str.				

CAISSON							
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
936	2	23'-6"	Str.				
937	2	22'-6"	Str.				
938	2	21'-6"	Str.				
939	2	19'-9"	Str.				
940	2	17'-6"	Str.				
941	2	16'-0"	Str.				
942	2	12'-6"	Str.				
943	10	9'-9"	Str.				
1001	64	26'-5"	125	13'-9"	3'-2"	23'-3"	
1002	64	18'-10"	125	10'-4"	1'-0"	17'-10"	
1003	128	18'-0"	135	5'-3"	6'-7"	8'-3"	3'-2"
1004	32	6'-6"	Str.				
1005	32	36'-0"	Str.				
1101	356	26'-11"	125	13'-9"	3'-6"	23'-5"	
1102	356	19'-0"	125	10'-4"	1'-0"	18'-0"	
1103	204	7'-0"	Str.				
1104	680	18'-6"	135	5'-3"	6'-9"	8'-3"	3'-6"
1105	178	36'-0"	Str.				
1106	178	7'-0"	Str.				
1107	32	15'-3"	135	5'-3"	3'-6"	8'-3"	3'-6"

STATE	FED. AID PROJ. NO.	H H F A PROJ. NO.
ARK. MISS.	U-F-018-5(2)	PFL-V-3-91



BENDING DIAGRAMS

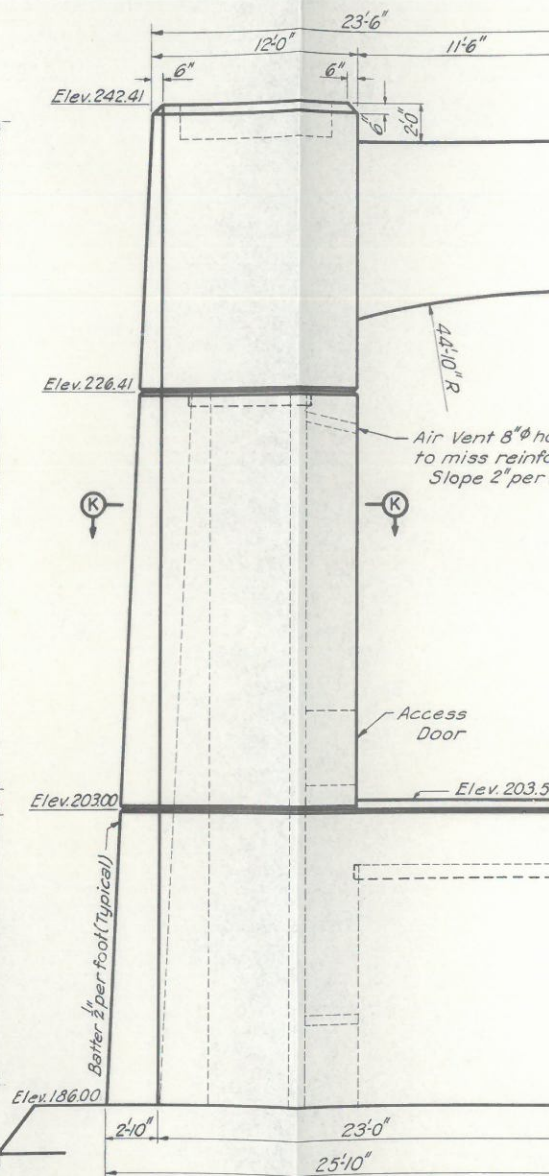
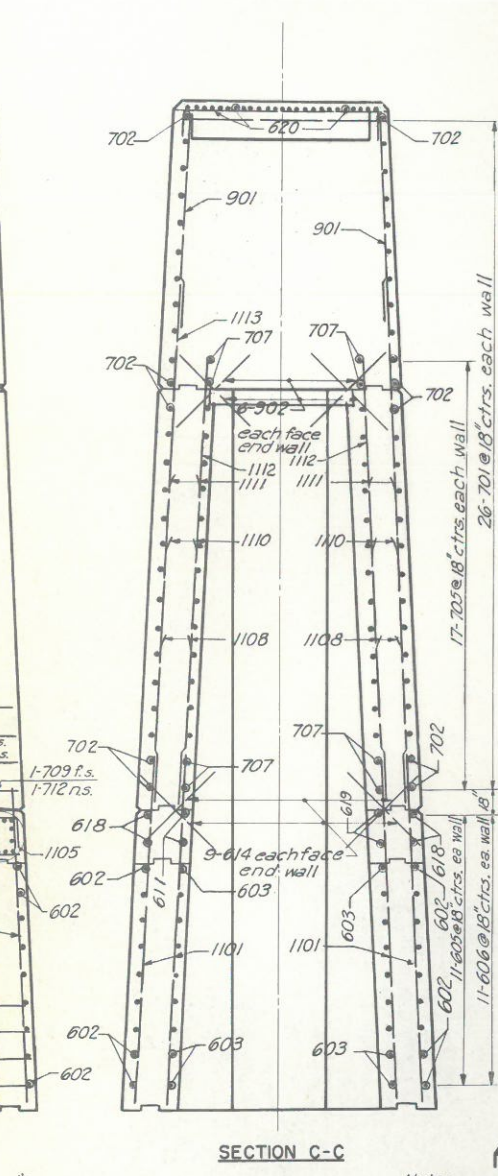
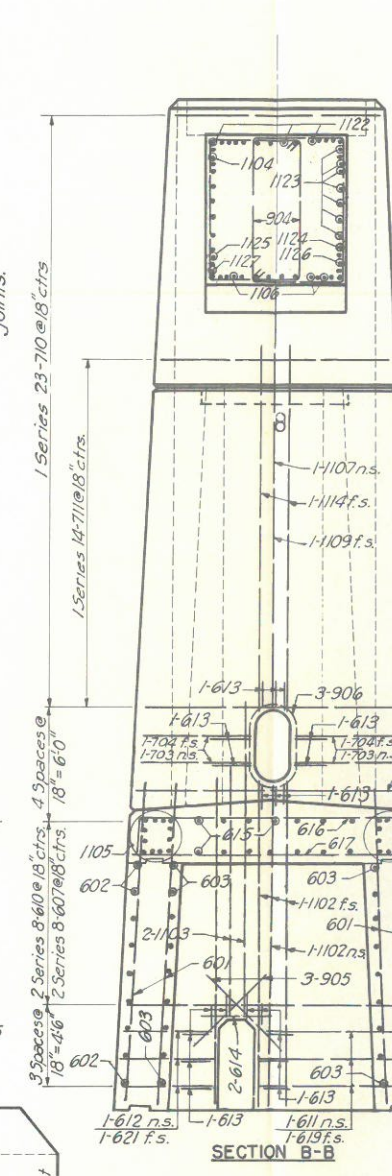
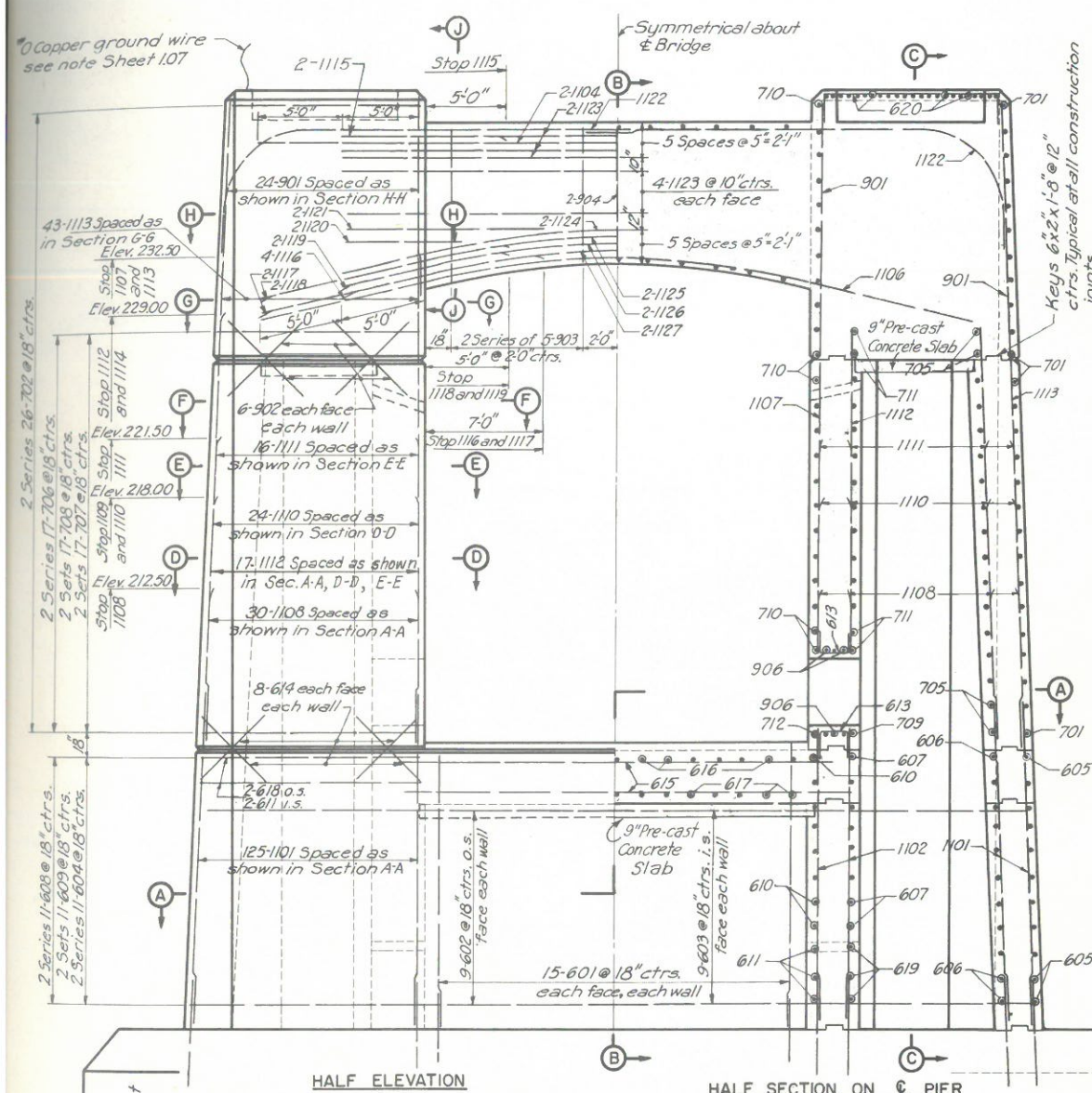
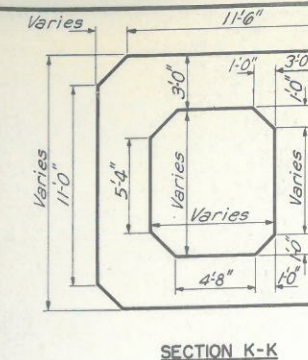
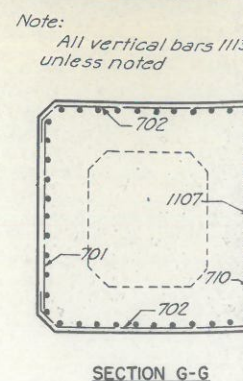
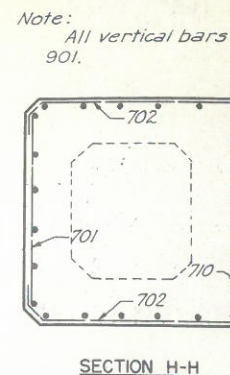
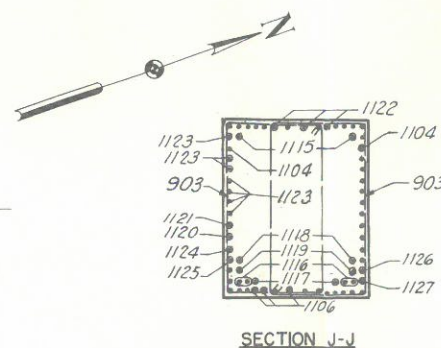
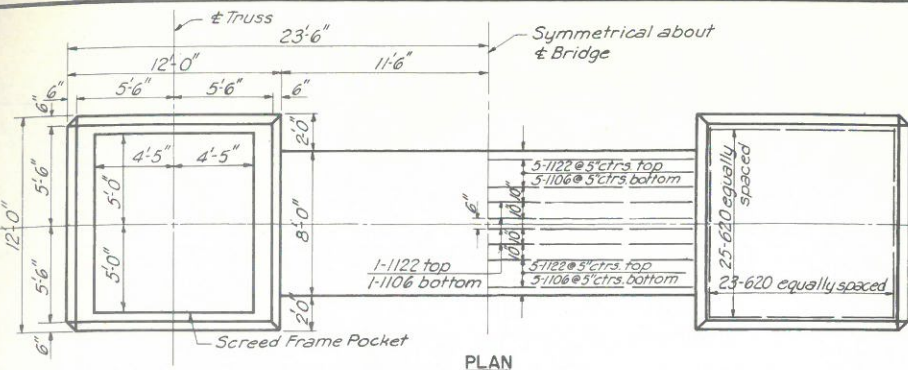


ARKANSAS STATE HIGHWAY COMMISSION
MISSISSIPPI STATE HIGHWAY DEPARTMENT
MISSISSIPPI RIVER BRIDGE
NEAR HELENA, ARKANSAS

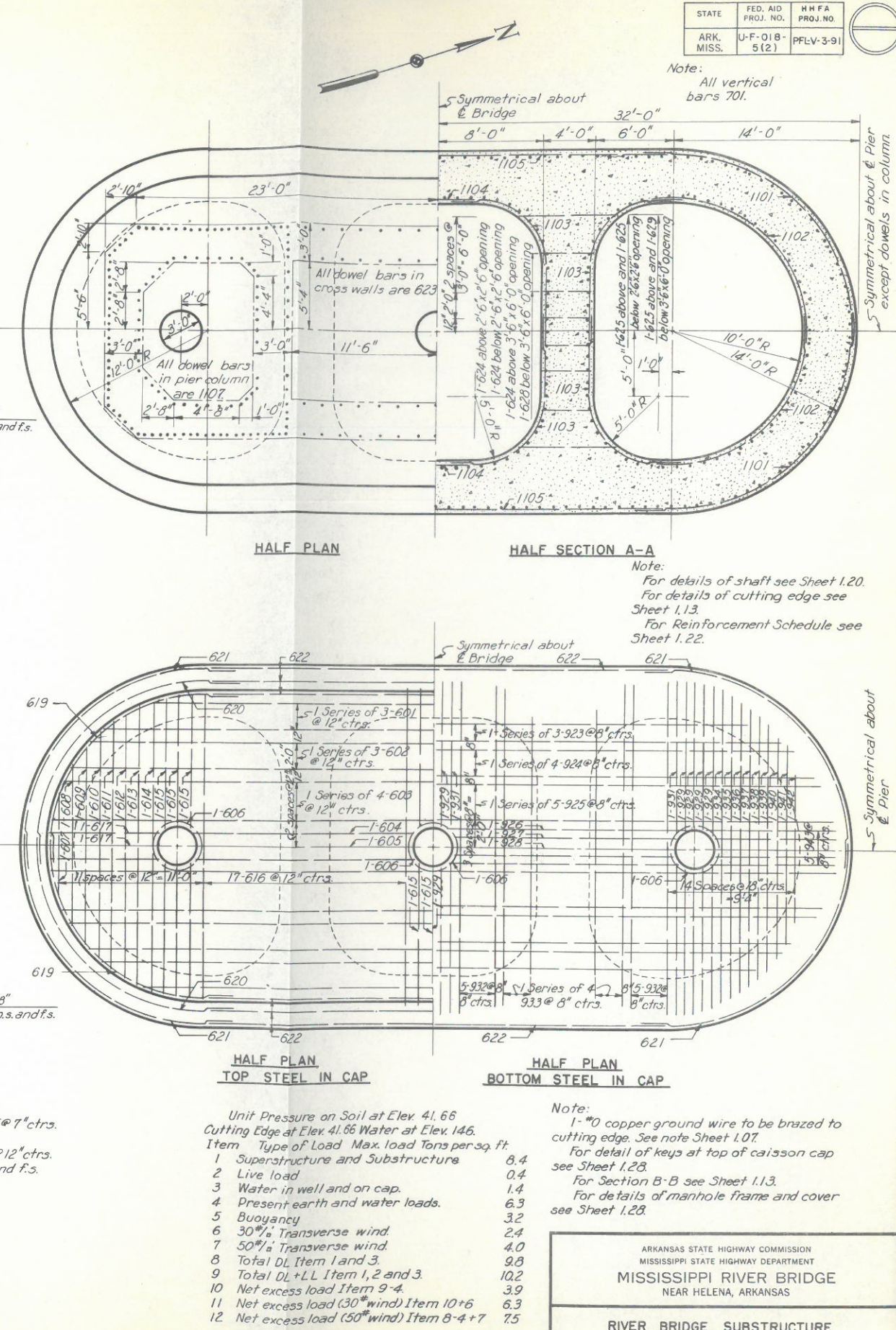
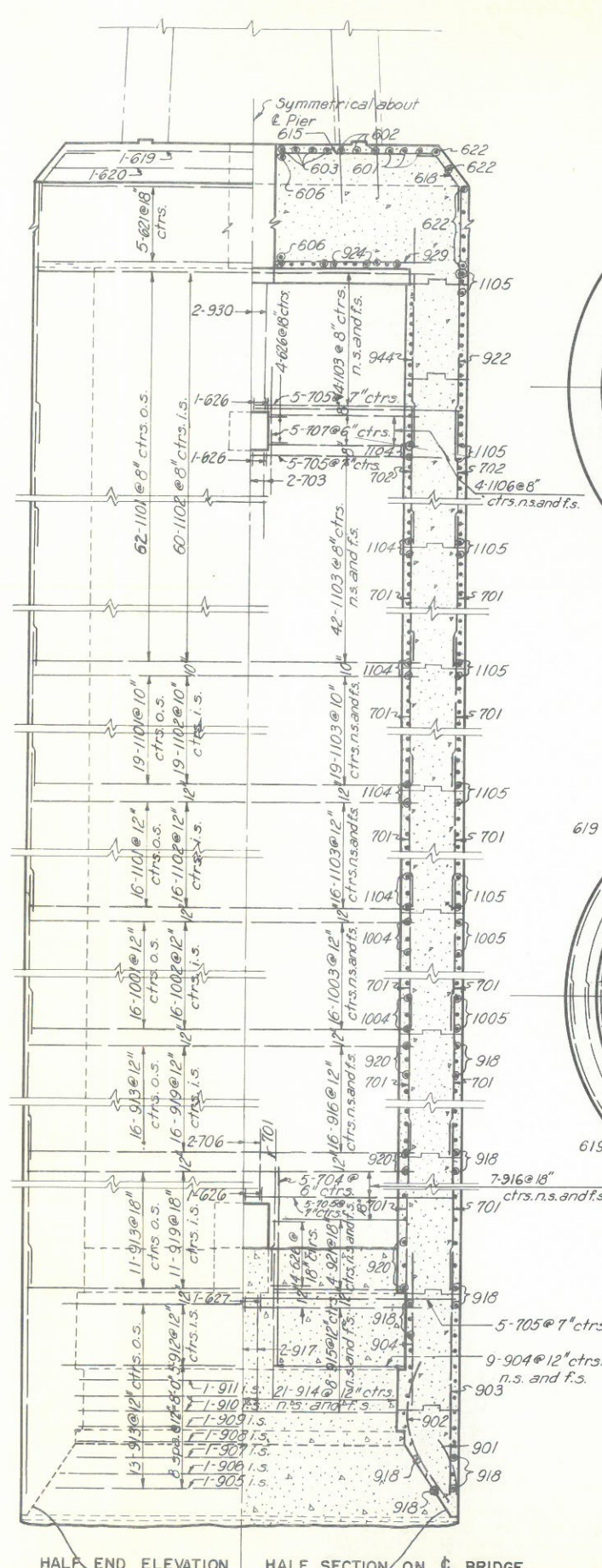
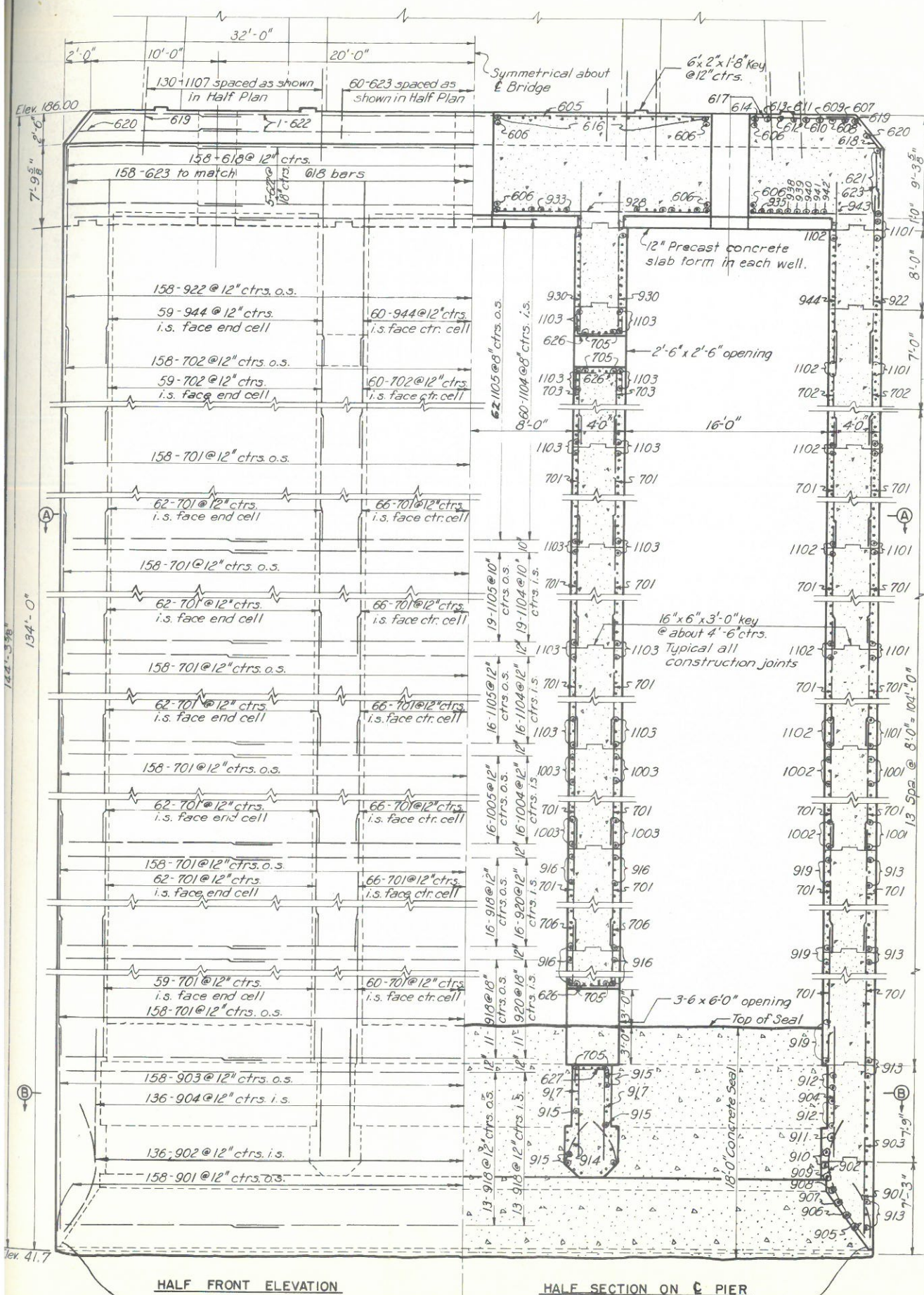
RIVER BRIDGE SUBSTRUCTURE
PIER 13 REINFORCEMENT SCHEDULE

SCALE: No Scale
MADE: F.C.S. DATE: 9-14-56
TRCD, G.E.C. DATE: 10-29-56
CKD, G.R.C. DATE: 10-30-56
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
984 SHEET-119

GA 12562 As Built
NO. MADE DATE REVISION



Note:
All vertical bars 701.



- Unit Pressure on Soil at Elev. 41.66
Cutting Edge at Elev. 41.66 Water at Elev. 146.
Item Type of Load Max. load Tons per sq. ft.
- | | | |
|----|--|------|
| 1 | Superstructure and Substructure | 8.4 |
| 2 | Live load | 0.4 |
| 3 | Water in well and on cap. | 0.4 |
| 4 | Present earth and water loads. | 6.3 |
| 5 | Buoyancy | 3.2 |
| 6 | 30% Transverse wind | 2.4 |
| 7 | 50% Transverse wind | 4.0 |
| 8 | Total DL Item 1 and 3. | 9.8 |
| 9 | Total DL + LL Item 1, 2 and 3. | 10.2 |
| 10 | Net excess load Item 9-4. | 3.9 |
| 11 | Net excess load (30% wind) Item 10+6. | 6.3 |
| 12 | Net excess load (50% wind) Item 8-4+7. | 7.5 |

Note:
1-#0 copper ground wire to be brazed to cutting edge. See note Sheet 1.07.
For detail of keys at top of caisson cap see Sheet 1.23.
For Section B-B see Sheet 1.13.
For details of manhole frame and cover see Sheet 1.28.

ARKANSAS STATE HIGHWAY COMMISSION
MISSISSIPPI STATE HIGHWAY DEPARTMENT
MISSISSIPPI RIVER BRIDGE
NEAR HELENA, ARKANSAS

RIVER BRIDGE SUBSTRUCTURE
PIER 14
CAISSON DETAILS

SCALE 3/4" = 1'-0"
MADE 1/10/56 DATE 9-11-56
TRCD. 8-18 DATE 10-29-56
CKD. D.L.C. DATE 10-31-56

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

984 SHEET 1.21

GA 12562 As Built

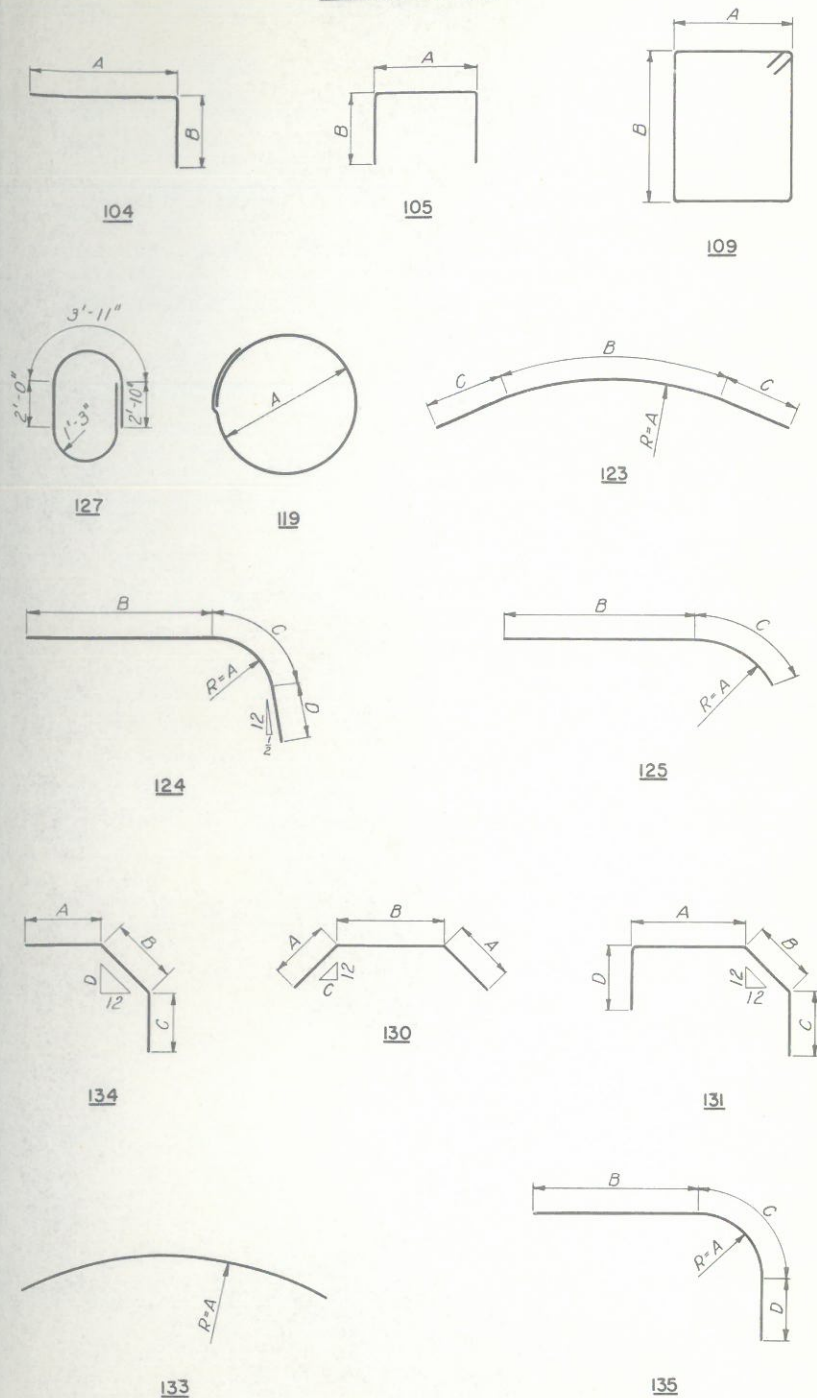
NO. MADE DATE REVISION

SHAFT							
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
601	60	16'-0"	Str.				
602	18	45'-9"	Str.				
603	18	44'-3"	Str.				
604	4 Ser. of 11	6'-8" to 7'-7"	130	1'-11"	2'-10"	12	
605	22	11'-0"	Str.				
606	22	10'-0"	Str.				
607	2 Ser. of 8	11'-3" to 12'-3"	Str.				
608	4 Ser. of 11	7'-0" to 8'-0"	Str.				
609	44	5'-6"	Str.				
610	2 Ser. of 8	14'-9" to 15'-9"	Str.				
611	14	8'-9"	Str.				
612	6	4'-9"	Str.				
613	40	6'-6"	105	2'-8"	1'-11"		
614	204	5'-0"	Str.				
615	14	27'-0"	Str.				
616	15	18'-9"	105	14'-11"	1'-11"		
617	15	15'-0"	Str.				
618	8	15'-2"	104	13'-3"	1'-11"		
619	6	8'-9"	Str.				
620	96	14'-8"	105	10'-10"	1'-11"		
621	6	3'-6"	Str.				
701	52	11'-0"	Str.				
702	4 Ser. of 26	16'-3" to 18'-6"	131	11'-3"	0'-6" to 2'-0"	2'-3"	2'-3"
703	8	6'-3"	Str.				
704	8	5'-0"	Str.				
705	34	10'-0"	Str.				
706	4 Ser. of 17	5'-6" to 6'-11"	Str.				
707	68	9'-3"	Str.				
708	68	5'-6"	Str.				
709	2	12'-0"	Str.				
710	2 Ser. of 23	11'-6" to 14'-6"	Str.				
711	2 Ser. of 14	9'-10" to 11'-6"	Str.				
712	2	14'-9"	Str.				
901	48	15'-6"	Str.				
902	144	6'-0"	Str.				
903	4 Ser. of 5	31'-4" to 33'-8"	109	5'-0"	7'-10" to 9'-0"		
904	2	31'-4"	109	5'-0"	7'-10"		
905	12	6'-0"	Str.				
906	6	14'-8"	127				
1101	250	20'-6"	Str.				
1102	10	18'-3"	Str.				
1103	8	15'-3"	Str.				
1104	2	43'-0"	Str.				
1105	24	30'-3"	Str.				
1106	14	43'-4"	123	45'-3"	23'-4"	10'-0"	
1107	2	23'-9"	Str.				
1108	60	9'-6"	Str.				
1109	2	9'-3"	Str.				
1110	48	15'-0"	Str.				
1111	32	18'-6"	Str.				
1112	34	26'-0"	Str.				
1113	86	29'-6"	Str.				
1114	4	20'-3"	Str.				
1115	4	10'-0"	Str.				
1116	8	12'-2"	125	45'-8"	5'-0"	7'-2"	

SHAFT							
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
1117	4	17'-2"	125	45'-8"	10'-0"	7'-2"	
1118	4	15'-1"	125	46'-6"	10'-0"	5'-1"	
1119	4	10'-1"	125	46'-1"	5'-0"	5'-1"	
1120	4	7'-0"	Str.				
1121	4	12'-0"	Str.				
1122	28	32'-0"	124	5'-0"	20'-10"	7'-8"	3'-6"
1123	14	33'-0"	Str.				
1124	2	33'-4"	123	46'-11"	23'-4"	5'-0"	
1125	2	43'-4"	123	46'-6"	23'-4"	10'-0"	
1126	2	33'-4"	123	46'-1"	23'-4"	5'-0"	
1127	2	43'-4"	123	45'-8"	23'-4"	10'-0"	
CAISSON							
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
601	4 Ser. of 3	23'-3" to 26'-6"	Str.				
602	4 Ser. of 3	27'-9" to 29'-3"	Str.				
603	4 Ser. of 4	29'-9" to 30'-9"	Str.				
604	4	17'-3"	Str.				
605	2	16'-6"	Str.				
606	6	12'-11"	119	3'-6"			
607	2	8'-6"	Str.				
608	2	12'-6"	Str.				
609	2	15'-0"	Str.				
610	2	17'-0"	Str.				
611	2	18'-9"	Str.				
612	2	20'-0"	Str.				
613	2	21'-3"	Str.				
614	2	22'-3"	Str.				
615	18	9'-9"	Str.				
616	34	23'-9"	Str.				
617	6	8'-0"	Str.				
618	158	6'-10"	134	1'-11"	3'-0"	1'-11"	15
619	4	21'-5"	125	11'-9"	1'-11"	19'-6"	
620	4	22'-11"	125	12'-9"	1'-11"	21'-0"	
621	20	24'-7"	125	13'-9"	1'-11"	22'-8"	
622	14	36'-0"	Str.				
623	218	4'-0"	Str.				
624	24	3'-6"	Str.				
625	12	7'-6"	Str.				
626	50	7'-6"	105	3'-6"	2'-0"		
627	6	6'-6"	105	2'-6"	2'-0"		
628	8	2'-6"	Str.				
629	4	6'-6"	Str.				
701	2412	18'-3"	Str.				
703	12	11'-9"	Str.				
704	20	11'-0"	Str.				
705	40	27'-6"	Str.				
706	12	12'-0"	Str.				
707	20	7'-6"	Str.				
901	158	5'-3"	125	6'-0"	0'-9"	4'-6"	
902	136	12'-9"	125	7'-6"	1'-9"	11'-0"	
903	158	16'-6"	Str.				
904	208	10'-9"	Str.				
905	4	23'-11"	125	12'-6"	2'-10"	21'-1"	

CAISSON							
MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
906	4	22'-6"	125	11'-7"	2'-10"	19'-8"	
907	4	21'-7"	125	11'-0"	2'-10"	18'-9"	
908	4	21'-0"	125	10'-8"	2'-10"	18'-2"	
909	4	20'-9"	125	10'-6"	2'-10"	17'-11"	
910	8	20'-6"	125	10'-4"	2'-10"	17'-8"	
911	4	20'-11"	125	10'-7"	2'-10"	18'-1"	
912	20	21'-3"	125	10'-10"	2'-10"	18'-5"	
913	160	25'-11"	125	13'-9"	2'-10"	23'-1"	
914	84	4'-9"	133	5'-3"			
915	32	26'-9"	Str.				
916	184	17'-6"	135	5'-3"	6'-5"	8'-3"	2'-10"
917	12	7'-9"	Str.				
918	106	36'-0"	Str.				
919	108	18'-9"	125	10'-4"	1'-0"	17'-9"	
920	54	6'-0"	Str.				
921	32	14'-1"	135	5'-3"	3'-0"	8'-3"	2'-10"
922	158	13'-6"	Str.				
923	4 Ser. of 3	26'-0" to 28'-3"	Str.				
924	4 Ser. of 4	29'-3" to 31'-0"	Str.				
925	4 Ser. of 5	31'-4" to 32'-6"	Str.				
926	4	17'-9"	Str.				
927	4	16'-9"	Str.				
928	2	16'-6"	Str.				
929	22	11'-6"	Str.				
930	12	12'-3"	Str.				
931	8	12'-0"	Str.				
932	20	26'-3"	Str.				
933	4 Ser. of 4	21'-0" to 25'-9"	Str.				
934	2	24'-9"	Str.				
935	2	24'-0"	Str.				
936	2	23'-6"	Str.				
937	2	22'-6"	Str.				
938	2	21'-6"	Str.				
939	2	19'-9"	Str.				
940	2	17'-6"	Str.				
941	2	16'-0"	Str.				
942	2	12'-6"	Str.				
943	10	9'-9"	Str.				
944	178	11'-0"	Str.				
1001	64	26'-5"	125	13'-9"	3'-2"	23'-3"	
1002	64	18'-10"	125	10'-4"	1'-0"	17'-10"	
1003	128	18'-0"	135	5'-3"	6'-7"	8'-3"	3'-2"
1004	32	6'-6"	Str.				
1005	32	36'-0"	Str.				
1101	380	26'-11"	125	13'-9"	3'-6"	23'-5"	
1102	380	19'-0"	125	10'-4"	1'-0"	18'-0"	
1103	728	18'-6"	135	5'-3"	6'-9"	8'-3"	3'-6"
1104	190	7'-0"	Str.				
1105	190	36'-0"	Str.				
1106	32	15'-3"	135	5'-3"	3'-6"	8'-3"	3'-6"
1107	260	7'-0"	Str.				

BENDING DIAGRAMS



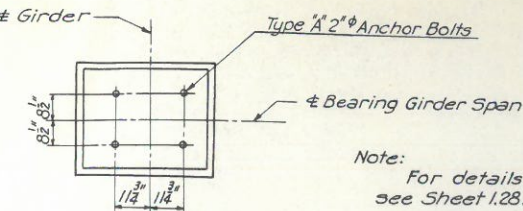
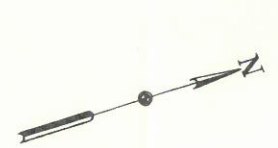
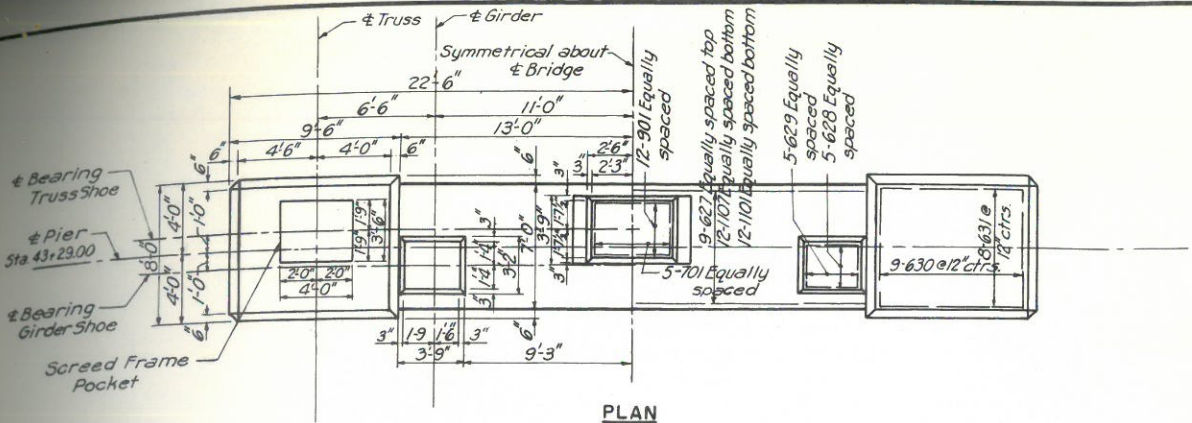
ARKANSAS STATE HIGHWAY COMMISSION
MISSISSIPPI STATE HIGHWAY DEPARTMENT
MISSISSIPPI RIVER BRIDGE
NEAR HELENA, ARKANSAS

RIVER BRIDGE SUBSTRUCTURE

PIER 14 REINFORCEMENT SCHEDULE

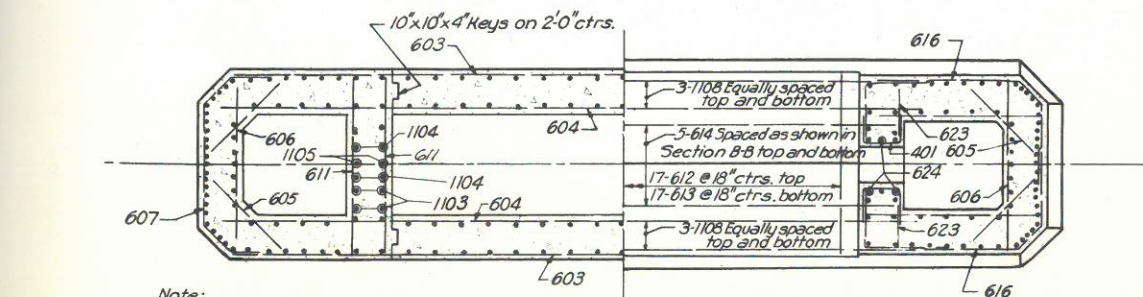
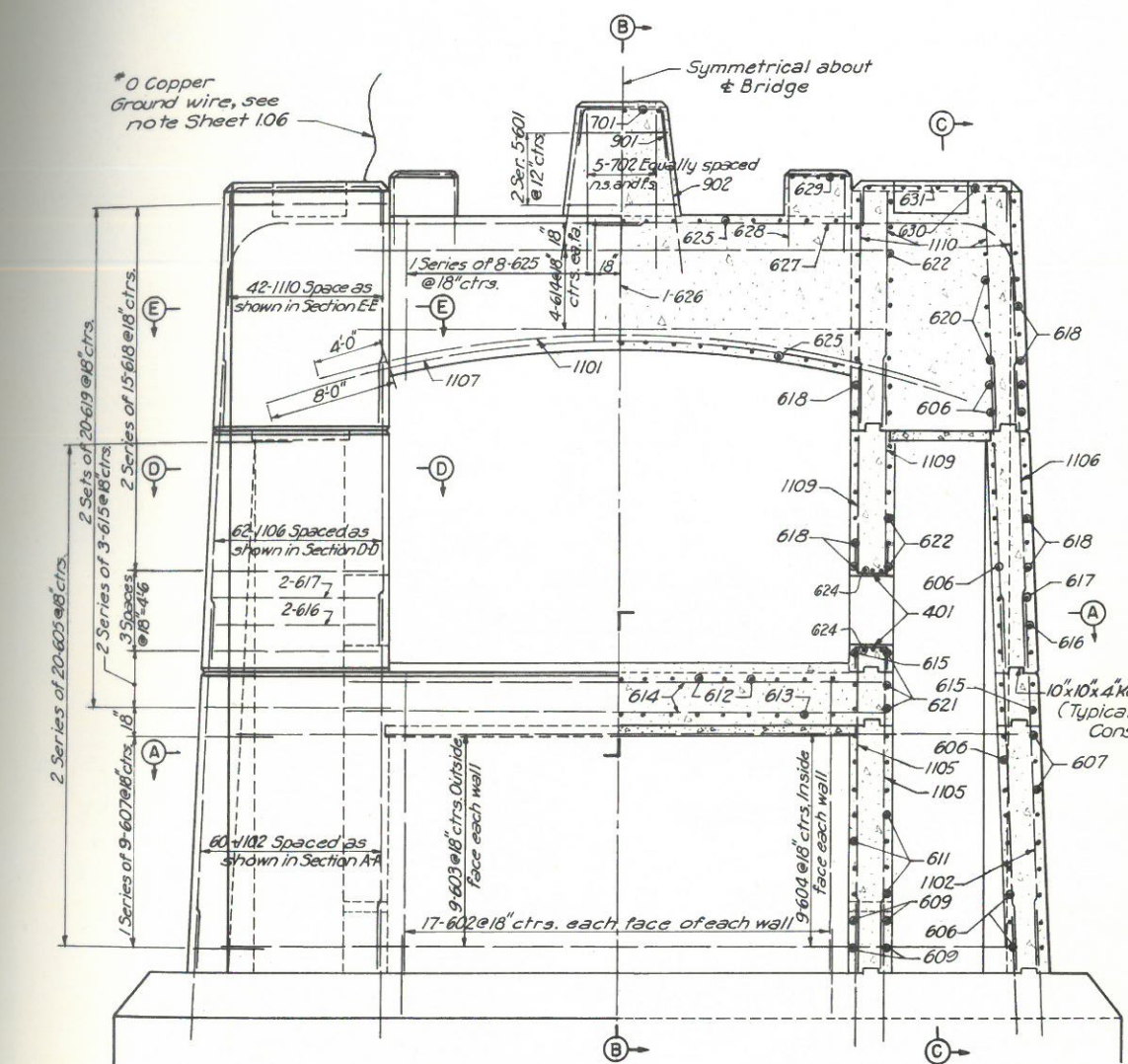
SCALE: No Scale
MADE: FCS DATE: 9-17-56
TRCD: DATE: 10-12-56
CKD: DATE: 10-12-56
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
984 SHEET: 1.22

NO.	MADE	DATE	REVISION
1	G.A.	25-62	As Built



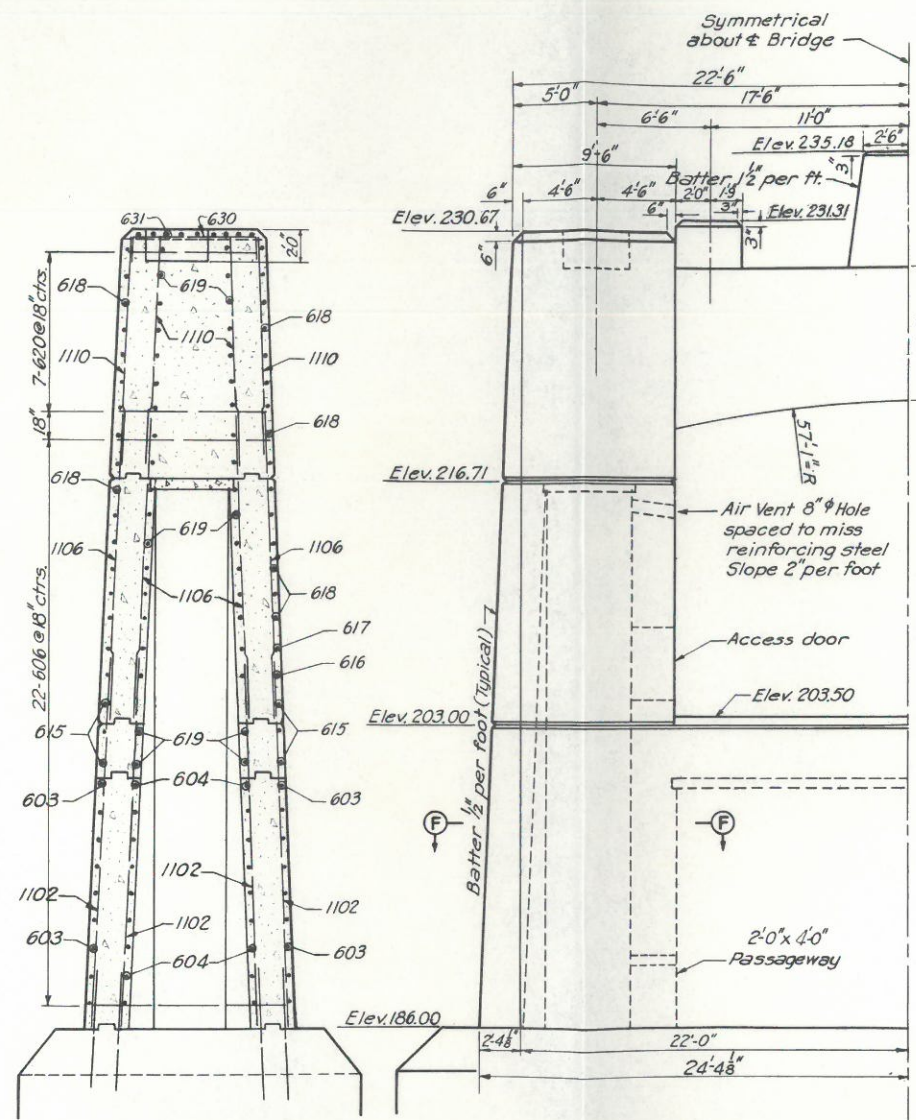
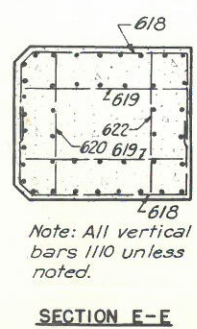
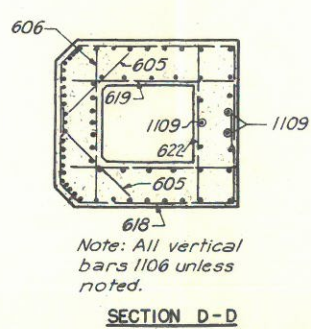
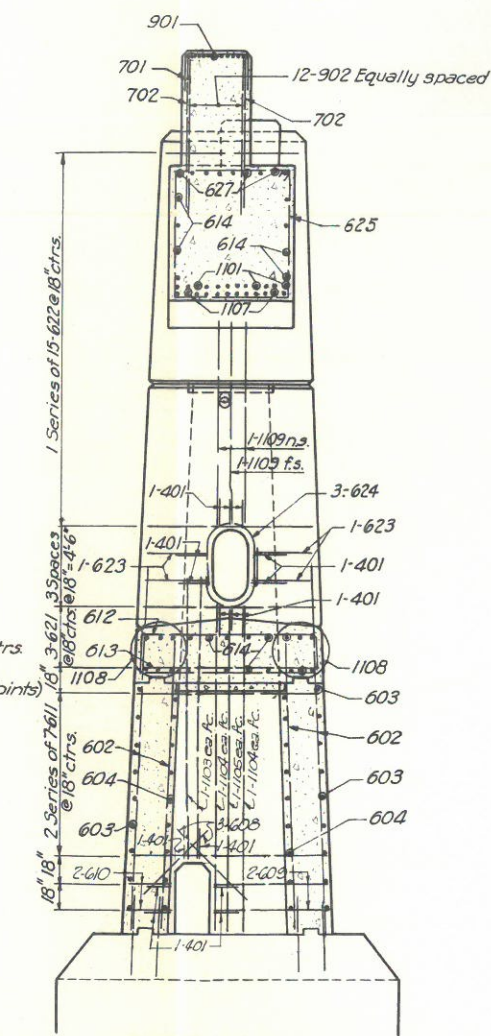
Note:
For details of Anchor Bolts
see Sheet 1.28.

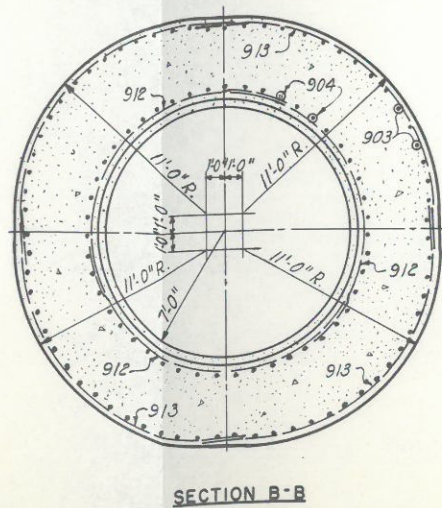
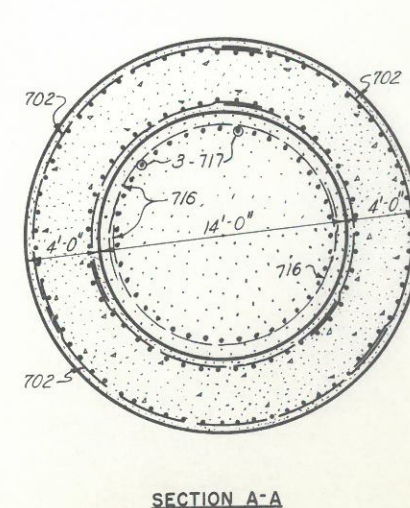
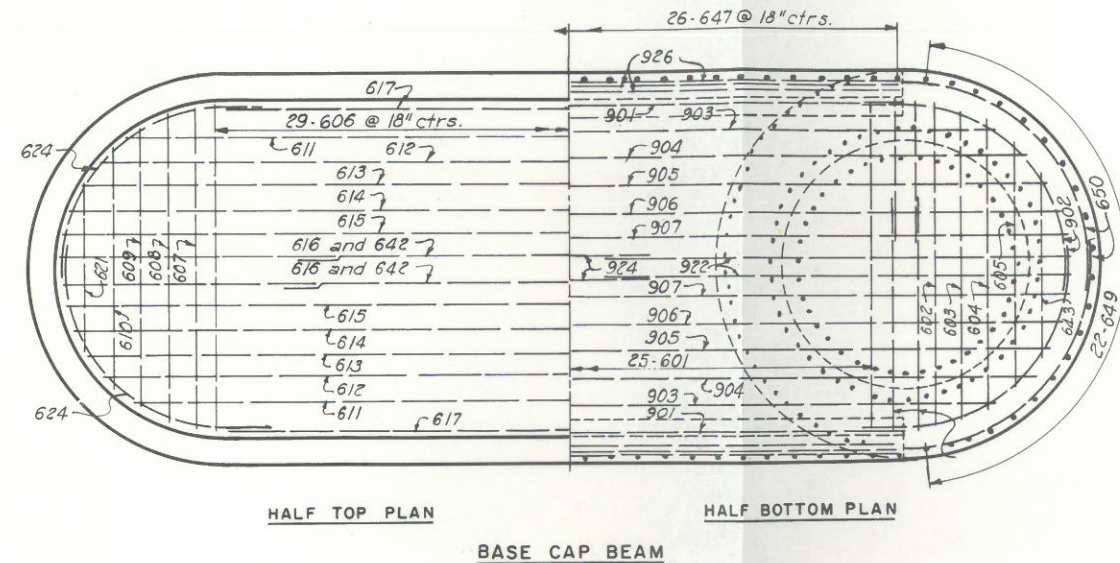
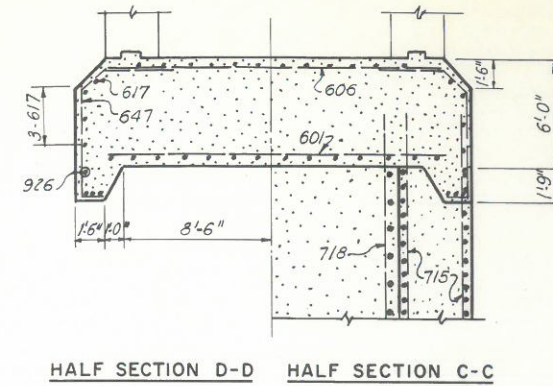
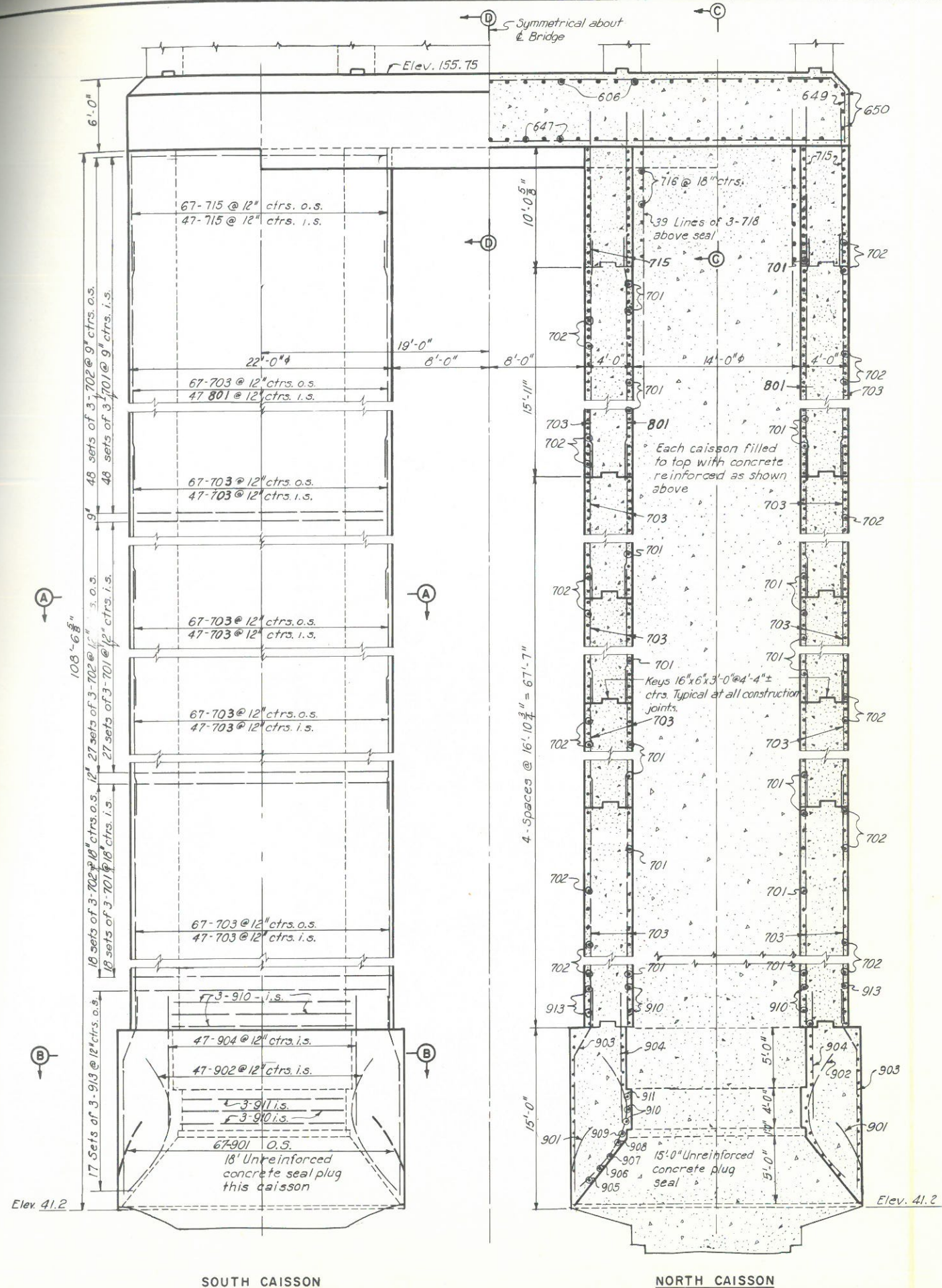
GIRDER SHOE ANCHOR
BOLT PLAN
Scale: 3/8\"/>



Note:
All vertical bars
in column are 1102
unless noted.
All vertical bars
in cross walls are 602.

Note: All vertical
bars 1106 unless
noted.





- Notes:
- For details of Cutting Edge see sheet 1.09
 - For Reinforcement Schedule see sheet 1.26
 - 1"0 copper ground wire to be brazed to cutting edge. See note sheet 1.07.
- Unit Pressure on Soil at Elev. 41.17
- Cutting Edge at Elev. 41.17 Water at Elev. 146
- | Item | Type of Load | Max. load Tons per sq. ft. |
|------|---------------------------------------|----------------------------|
| 1 | Superstructure and Substructure | 11.1 |
| 2 | Live Load | 0.3 |
| 3 | Water in well and on cap. | 0 |
| 4 | Present earth and water loads. | 6.4 |
| 5 | Buoyancy | 3.3 |
| 6 | 30% Transverse wind | 0.4 |
| 7 | 50% Transverse wind | 0.6 |
| 8 | Total DL Item 1 and 3 | 11.1 |
| 9 | Total DL+LL Item 1, 2 and 3. | 11.4 |
| 10 | Net excess load Item 9-4. | 5.0 |
| 11 | Net excess load (30% wind) Item 10+6 | 5.4 |
| 12 | Net excess load (50% wind) Item 8-4+7 | 5.3 |

ARKANSAS STATE HIGHWAY COMMISSION
MISSISSIPPI STATE HIGHWAY DEPARTMENT
MISSISSIPPI RIVER BRIDGE
NEAR HELENA, ARKANSAS

RIVER BRIDGE SUBSTRUCTURE
PIER 15 CAISSON DETAILS

SCALE 1/8" = 1'-0"
MADE BY DATE 8-20-56
TRCD. DATE 10-6-56
CKD. DATE 10-6-56
HOWARD, NEEDLES, TAMMEN & BERGENOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
984 SHEET- 1.25

NO.	MADE	DATE	REVISION
GA	130-62	As Built	



SHAFT

MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
401	32	4'-8"	105	2'-2"	1'-3"		
601	2 ser. of 5	10'-6" to 11'-6"	105	5'-0" to 6'-0"	2'-9"		
602	68	16'-9"	Str.				
603	18	43'-6"	Str.				
604	18	45'-0"	Str.				
605	4 ser. of 20	4'-8" to 5'-7"	Str.				
606	44	8'-0"	Str.				
607	2 ser. of 9	14'-0" to 15'-6"	129	1'-7" to 2'-4"	6'-10"		
608	12	5'-0"	Str.				
609	8	6'-3"	Str.				
610	8	2'-3"	Str.				
611	4 ser. of 7	10'-0" to 10'-9"	Str.				
612	17	13'-11"	130	9'-11"	2'-0"	1/2	
613	17	10'-3"	Str.				
614	18	29'-9"	Str.				
615	4 ser. of 3	20'-10" to 21'-4"	131	8'-9"	1'-8" to 2'-10"	4'-6"	5'-11" to 6'-1"
616	4	18'-6"	131	8'-9"	1'-7"	4'-6"	3'-8"
617	4	18'-4"	131	8'-9"	1'-6"	4'-6"	3'-7"
618	4 ser. of 15	18'-7" to 20'-10"	131	8'-9"	0'-8" to 1'-10"	4'-6"	4'-10" to 5'-9"
619	80	9'-0"	Str.				
620	14	7'-6"	Str.				
621	6	9'-9"	Str.				
622	2 ser. of 15	7'-9" to 9'-6"	Str.				
623	8	3'-9"	Str.				
624	6	13'-9"	127				
625	2 ser. of 8	31'-6" to 34'-2"	109	6'-8"	7'-2" to 8'-6"		
626	1	31'-6"	109	6'-8"	7'-2"		
627	18	27'-4"	124	3'-0"	20'-6"	4'-10"	2'-0"
628	10	11'-8"	105	2'-10"	4'-5"		
629	10	11'-2"	105	2'-4"	4'-5"		
630	18	10'-8"	105	6'-8"	2'-0"		
631	16	12'-2"	105	8'-2"	2'-0"		
701	5	7'-11"	105	3'-5"	2'-3"		
702	10	8'-9"	Str.				
901	12	10'-4"	130	2'-10"	4'-8"	1/2	
902	24	9'-3"	Str.				
1101	12	34'-3"	123	57'-9"	26'-3"	4'-0"	
1102	120	20'-6"	Str.				
1103	8	16'-3"	Str.				
1104	8	18'-9"	Str.				
1105	4	18'-3"	Str.				
1106	124	17'-3"	Str.				
1107	12	42'-3"	123	57'-4"	26'-3"	8'-0"	
1108	12	33'-0"	Str.				
1109	6	11'-9"	Str.				
1110	84	13'-6"	Str.				

BASE

MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
645	4	7'-6"	Str.				
646	8	13'-6"	104	7'-6"	6'-2"		
601	25	30'-8"	105	18'-4"	6'-2"		
602	2	30'-6"	105	18'-2"	6'-2"		
603	2	29'-8"	105	17'-4"	6'-2"		
604	2	28'-5"	105	16'-1"	6'-2"		
605	2	26'-4"	105	14'-0"	6'-2"		
606	101	18'-6"	Str.				
607	2	18'-3"	Str.				
608	2	17'-3"	Str.				
609	2	15'-6"	Str.				
610	4	13'-3"	Str.				
611	4	25'-6"	Str.				
612	4	26'-9"	Str.				
613	4	27'-9"	Str.				
614	4	28'-9"	Str.				
615	4	29'-0"	Str.				
616	50	13'-6"	Str.				
617	8	38'-0"	Str.				
618	156	29'-9"	125	9'-3"	14'-3"	15'-6"	
619	76	20'-8"	125	6'-9"	9'-0"	11'-8"	
620	196	16'-0"	Str.				
621	2	9'-3"	Str.				
622	168	6'-3"	Str.				
623	38	5'-9"	Str.				
624	4	17'-6"	125	9'-3"	2'-0"	15'-6"	
625	26	14'-9"	Str.				
626	2	14'-3"	Str.				
627	2	10'-6"	Str.				
628	1	32'-9"	Str.				
629	2	9'-9"	119	2'-6"			
630	1	17'-0"	Str.				
631	4	27'-3"	Str.				
632	4	26'-9"	Str.				
633	4	25'-9"	Str.				
634	4	24'-6"	Str.				
635	4	29'-3"	125	8'-4"	14'-3"	15'-0"	
636	4	27'-9"	125	7'-4"	14'-3"	13'-6"	
637	88	7'-3"	134	2'-0"	3'-0"	2'-3"	15
638	72	4'-0"	Str.				
639	32	5'-0"	Str.				
640	4	11'-6"	Str.				
641	8	11'-3"	Str.				
642	2	34'-6"	Str.				
643	2	22'-9"	105	10'-5"	6'-2"		
901	2	38'-0"	Str.				
902	4	19'-1"	125	9'-2"	2'-10"	16'-3"	
903	4	26'-0"	Str.				
904	4	27'-6"	Str.				
905	8	28'-9"	Str.				
906	8	29'-3"	Str.				
907	8	29'-9"	Str.				
908	36	16'-0"	Str.				
909	38	24'-0"	Str.				
910	1	34'-9"	Str.				
911	40	18'-6"	Str.				
912	2	18'-3"	Str.				
913	2	18'-0"	Str.				
914	2	17'-9"	Str.				
647	52	11'-1"	131	6'-0"	1'-8"	2'-2"	1'-3"
648	204	13'-3"	Str.				
649	44	8'-2"	134	2'-2"	1'-8"	4'-4"	12"
650	16	20'-0"	125	10'-9"	2'-0"	18'-0"	

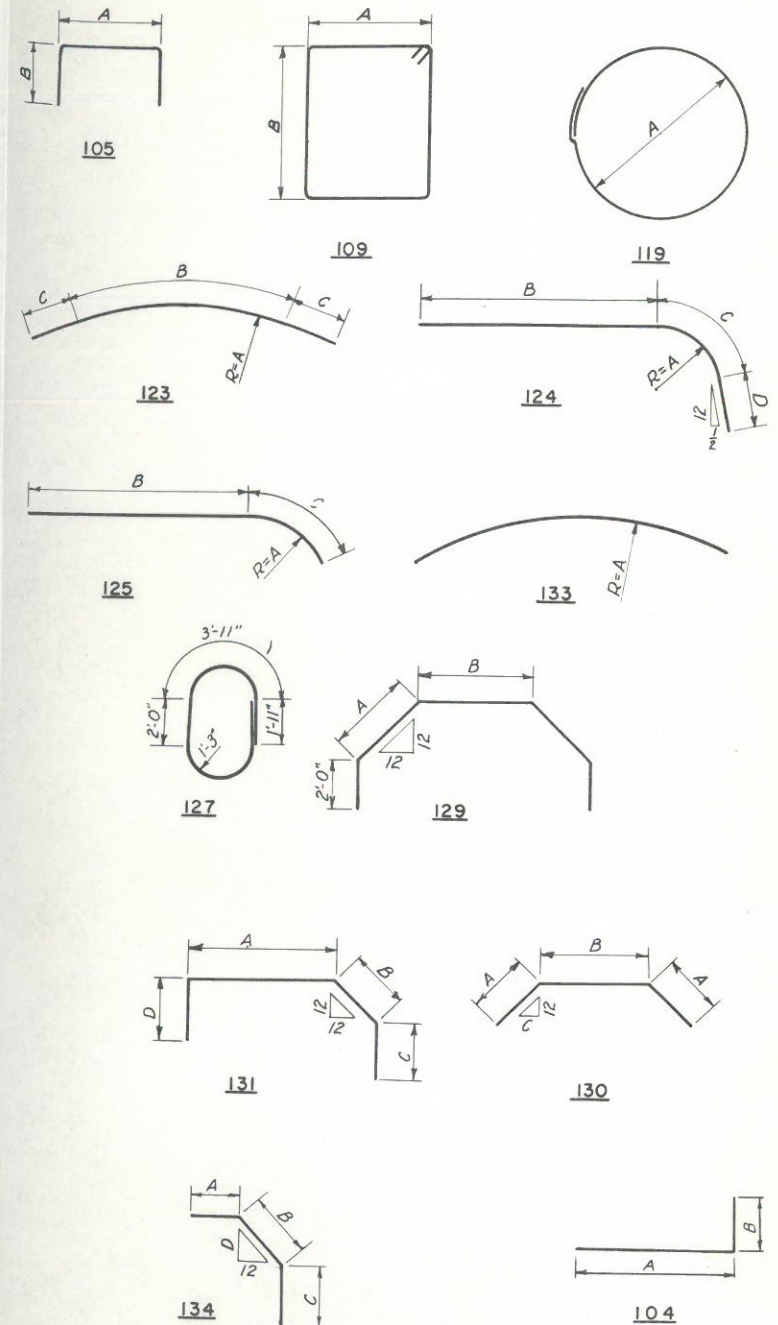
BASE

MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
915	2	17'-3"	Str.				
916	2	16'-6"	Str.				
917	2	15'-9"	Str.				
918	2	14'-9"	Str.				
919	4	8'-0"	Str.				
920	2	14'-0"	Str.				
921	1	19'-0"	Str.				
922	4	28'-3"	Str.				
923	4	27'-0"	Str.				
924	2	34'-6"	Str.				
926	8	37'-6"	Str.				
1101	132	7'-0"	Str.				
401	16	5'-0"	105	2'-6"	1'-3"		

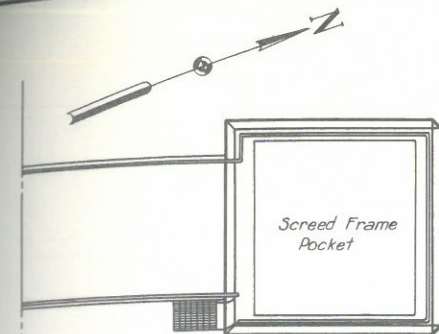
CAISSON

MARK	NUMBER	LENGTH	TYPE	DIMENSIONS			
				A	B	C	D
701	558	17'-9"	133	7'-4"			
702	558	24'-9"	133	10'-9"			
703	1046	19'-2"	Str.				
715	228	12'-3"	Str.				
716	248	21'-11"	133	6'-3"			
717	117	32'-2"	Str.				
718	117	33'-6"	Str.				
801	94	23'-0"	Str.				
901	134	5'-3"	125	6'-0"	0'-9"	4'-6"	
902	94	12'-9"	125	7'-6"	1'-9"	11'-0"	
903	134	16'-6"	Str.				
904	94	10'-9"	Str.				
905	6	22'-9"	133	9'-6"			
906	6	20'-10"	133	8'-7"			
907	6	19'-8"	133	8'-0"			
908	6	18'-11"	133	7'-8"			
909	6	18'-7"	133	7'-6"			
910	30	18'-1"	133	7'-4"			
911	6	18'-8"	133	7'-7"			
912	36	19'-3"	133	7'-10"			
913	102	25'-3"	133	10'-9"			

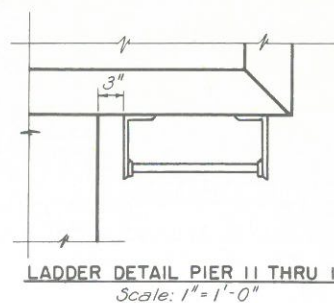
BENDING DIAGRAMS



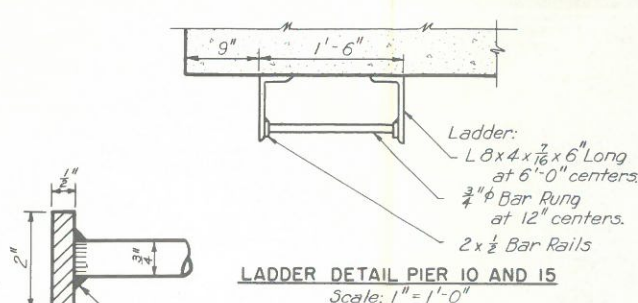
GA	12262	As Built
NO.	MADE	DATE
		REVISION



HALF PLAN
Scale: $\frac{3}{16}'' = 1'-0''$



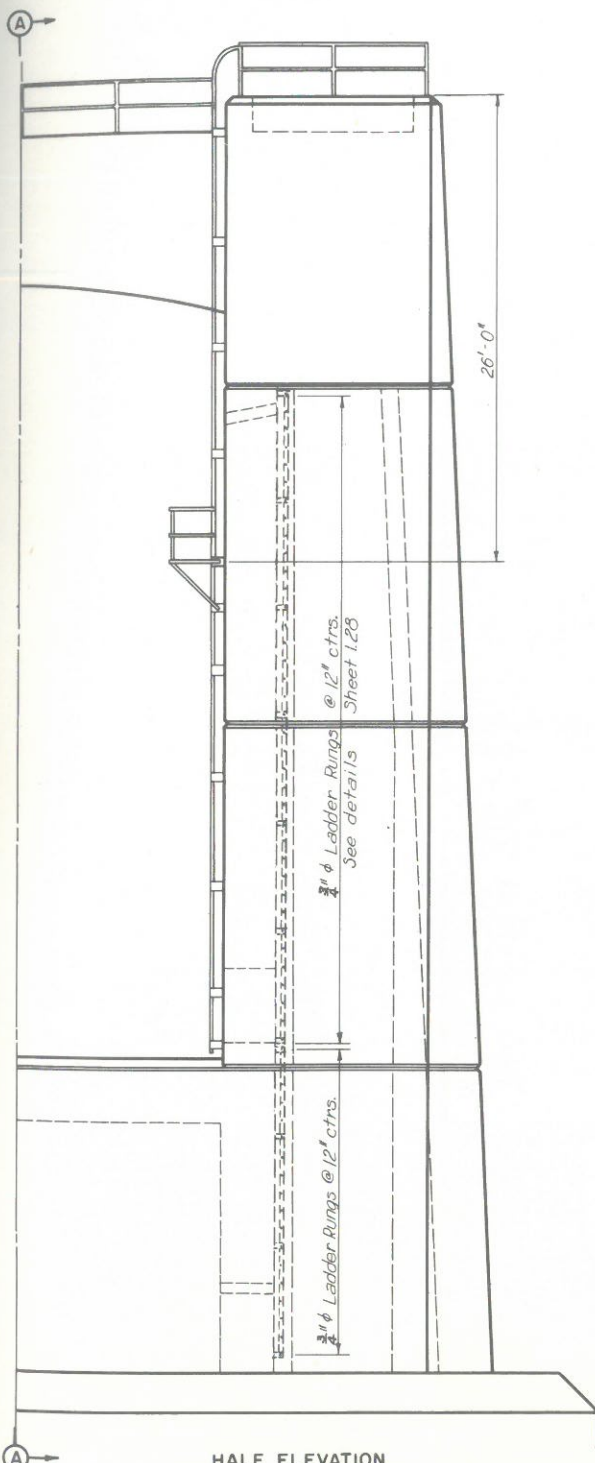
LADDER DETAIL PIER 11 THRU 14
Scale: $1'' = 1'-0''$



LADDER DETAIL PIER 10 AND 15
Scale: $1'' = 1'-0''$

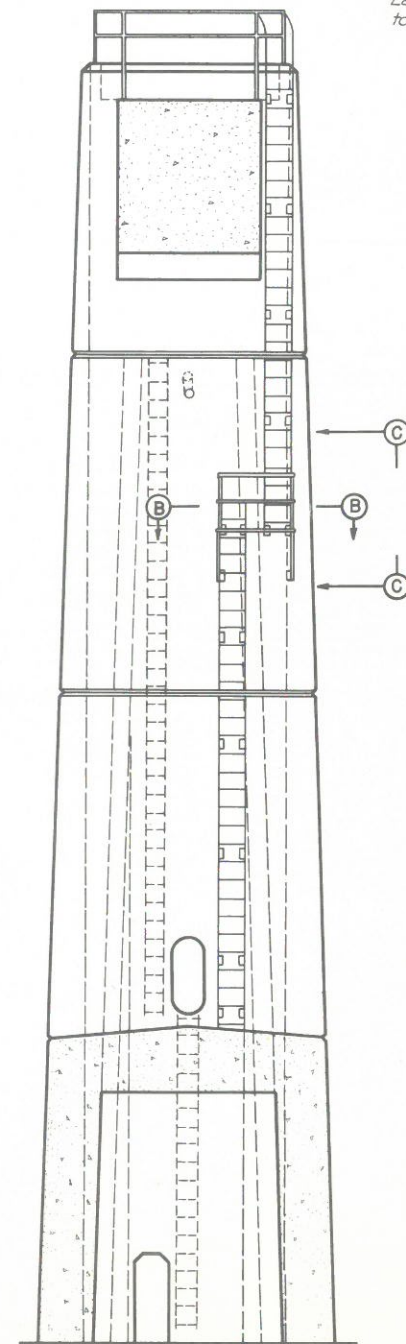
LADDER DETAIL
Scale: $\frac{1}{2}'' = 1'-0''$

Note: Ladder and platform shall be welded complete with $\frac{1}{4}''$ weld. Ladder rails to be anchored to handrail.

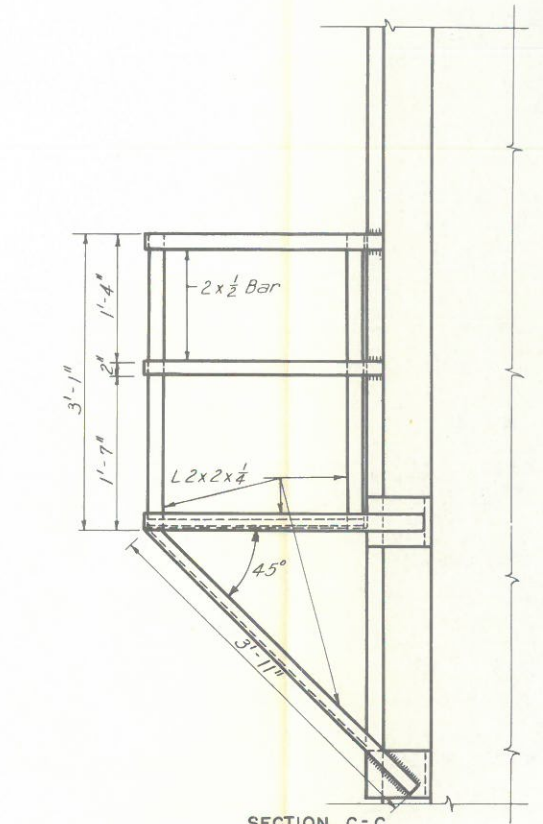


HALF ELEVATION
Scale: $\frac{3}{16}'' = 1'-0''$

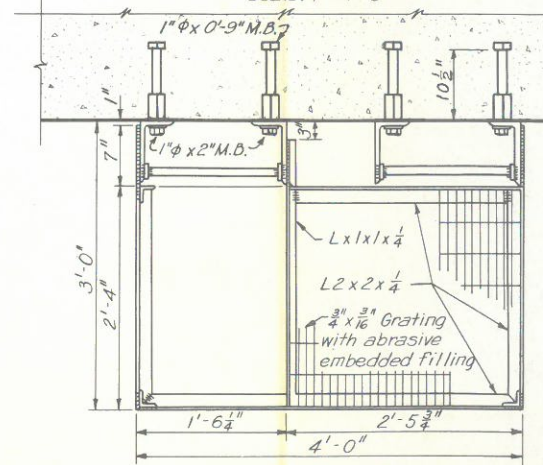
PIER 11 THRU 14



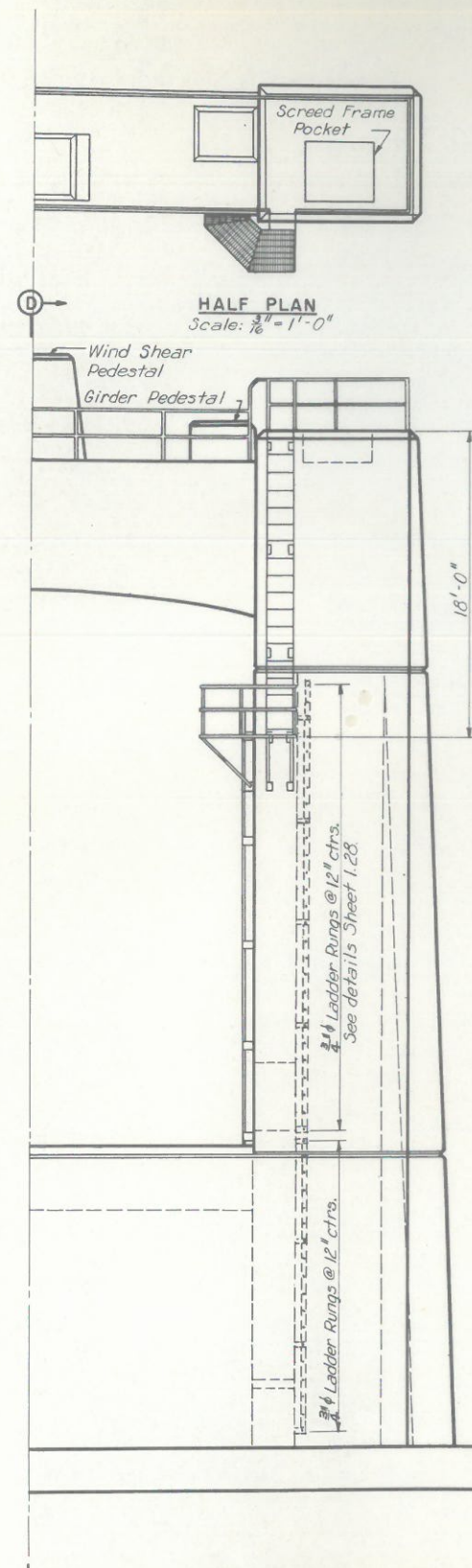
SECTION A-A
Scale: $\frac{3}{16}'' = 1'-0''$



SECTION C-C
Scale: $1'' = 1'-0''$

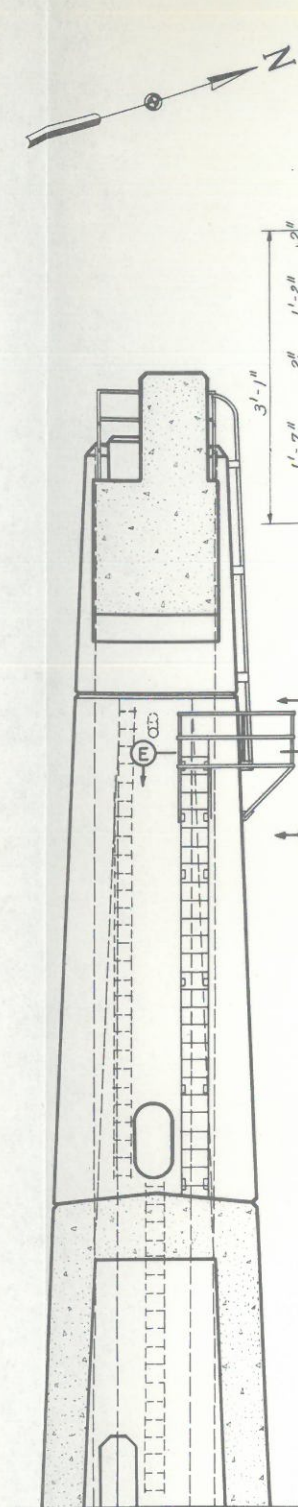


SECTION B-B
Scale: $1'' = 1'-0''$

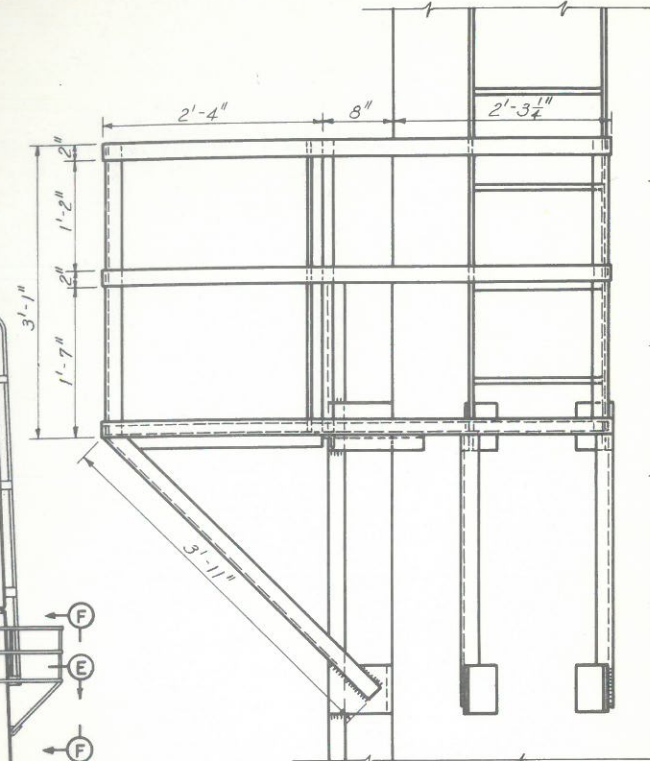


HALF ELEVATION
Scale: $\frac{3}{16}'' = 1'-0''$

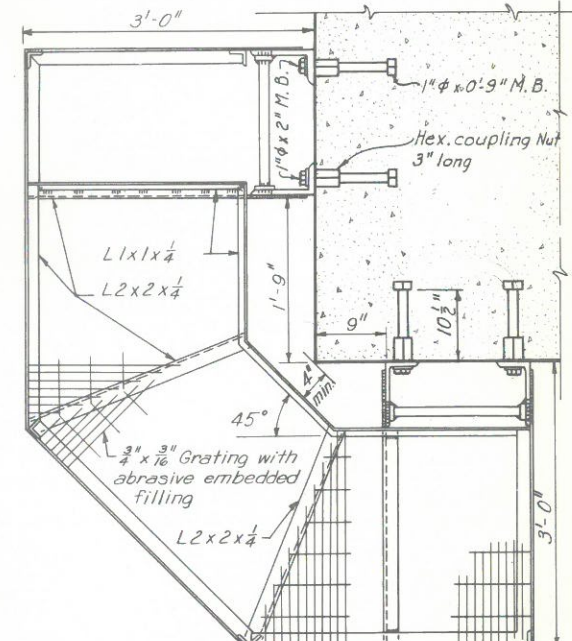
PIER 10 AND 15



SECTION D-D
Scale: $\frac{3}{16}'' = 1'-0''$



SECTION F-F
Scale: $1'' = 1'-0''$

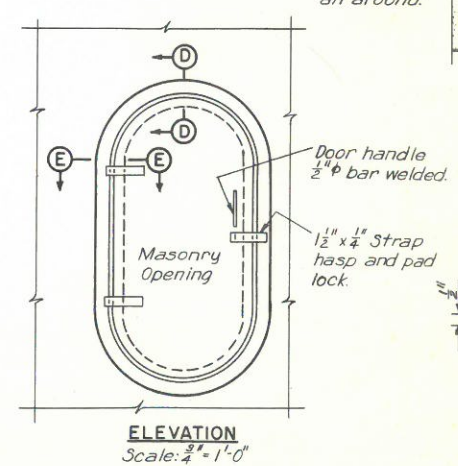
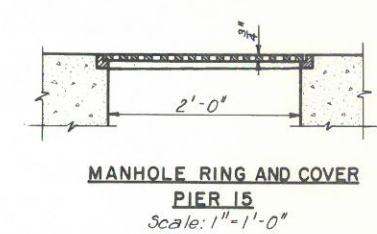
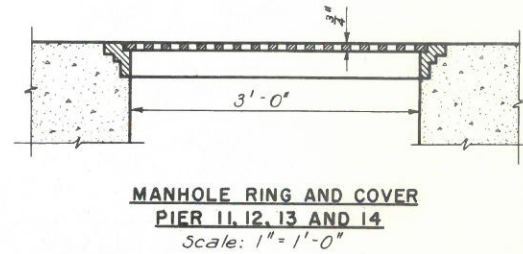
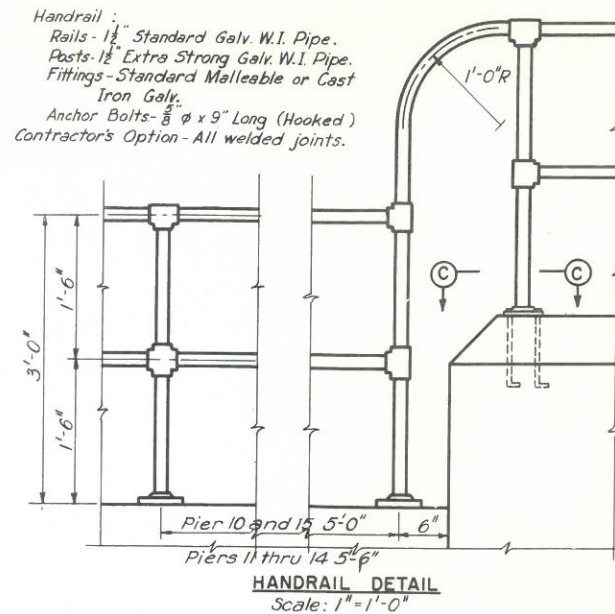
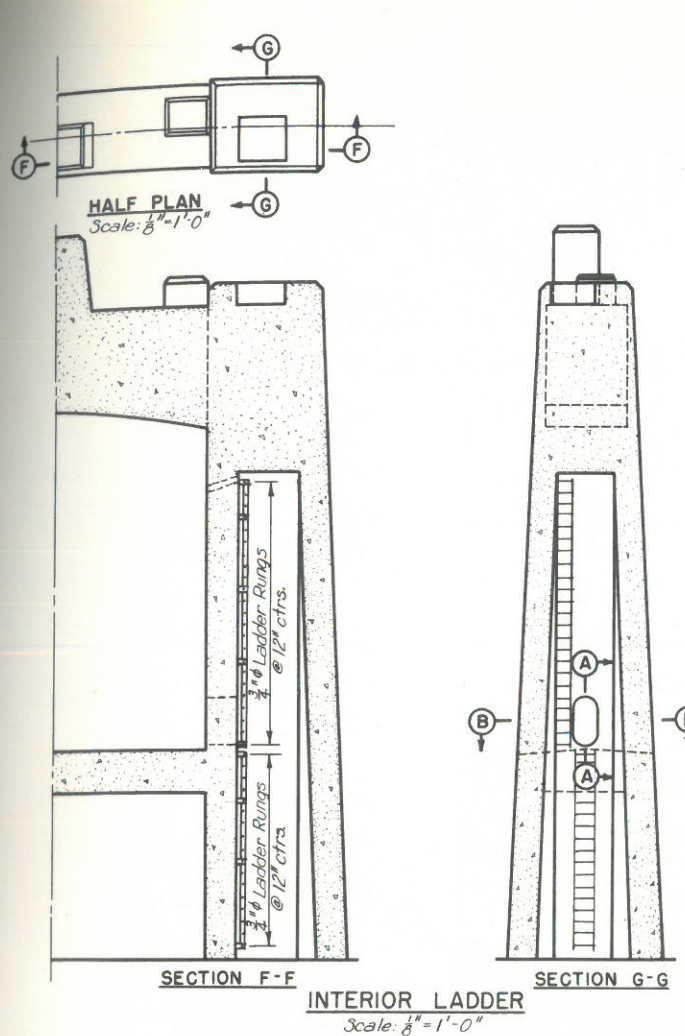


SECTION E-E
Scale: $1'' = 1'-0''$

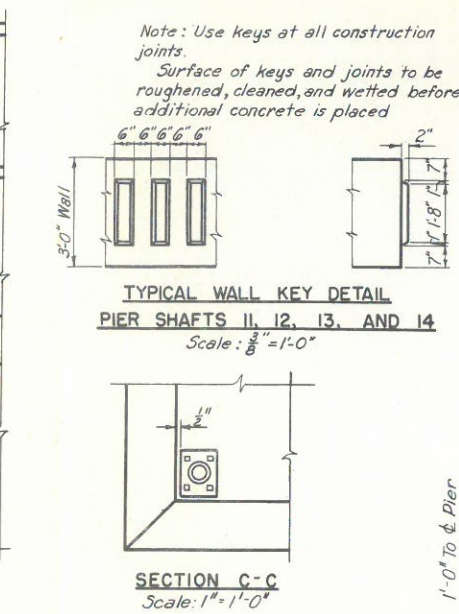
Note: All metal work except parts encased in concrete shall be galvanized after fabrication unless otherwise noted.

NO.	MADE	DATE	REVISION
GA	1-25-62	As Built	

ARKANSAS STATE HIGHWAY COMMISSION MISSISSIPPI STATE HIGHWAY DEPARTMENT MISSISSIPPI RIVER BRIDGE NEAR HELENA, ARKANSAS			
RIVER BRIDGE SUBSTRUCTURE LADDERS			
SCALE As Shown	HOWARD, NEEDLES, TAMMEN & BERGENDOFF		
MADE EC2 DATE 9-27-56	CONSULTING ENGINEERS		
TRCD, GJK DATE 10-1-56	KANSAS CITY CLEVELAND NEW YORK		
CKD, RNO DATE 9-25-56	984 SHEET	1.27	



ACCESS DOOR DETAILS
Scale As Shown
Note: Metal door shall be welded complete with $\frac{1}{4}"$ weld.



Note: Manhole ring and cover, C.I. light duty 36" clearance. Equal to Neenah #R6138.

Note: Manhole ring and cover, C.I. light duty 24" clearance. Equal to Neenah #R4380-21 with angle frame.

