313'-9" inside face of abutment wingwall to end of steel L.75' D.P.G. Span

75'-0" o.to o. Steel DPG Span (73'-0" c.to c. Bearings)

162'-0" c.to c. Pins

75'-0" o.to o Steel DPG Span (73'-0" c.to c. Bearings)

Sta. 103+18

Sta. 106+31.75

Counter-weight (Span lowered)

37'-11½"

Low Steel El. 83.666

*Normal Lift 30'-54"
Low Steel El. 52.00

117'-0½" top of masy to top of Col.

118'-1" top of masy to c. Sheaves

*68'-4½" Max. Lift

Counter-weight (Span raised)

Spans @ 20'-3¼" = 121'-7½"

19'-9"

19'-9"

40' Beam Span by U.S. Steel Company

End of Steel = Sta. 106+32.25

Ties
Slab ℄ 7'-0¼"
Sole ℄ 1"
Masy ℄ 1"
Total 8'-0"

West to Baytown

32 Ties

Base of Rail El. 20.5

11'-0"

8'-0" B/R to Masy

5'-6"

El. 12.5

32'-5¼"

3'-6"

1'-0"

1'-8"

2'-0"

4'-6"

1'-0"

8'-0"

2'-0"

El. 13.5

18'-0"

Grade 0.00% Level

Base of Rail

5'-2½"

6½"

Low Steel El. 15.29

4'-6"

8'-0"

11'-0"

2'-6"

1'-0"

3'-6"

2'-0"

32'-5¼"

18'-0"

El. 12.5

5'-3"

93¼ Ties

8'-0" B/R to Masy

4'-0½"

3'-3"

16'-0"

8 panels @ 20'-3" = 162'-0" c to c. Pins

Water Level June '70

Water Level El. 0.515 1-26-61

Mean High Water El. 2.0

Mean Low Water El. 0.0

Approximate Ground Line

6-24" ϕ Concrete Piles @ 40 ft.

6-24" ϕ Conc. Piles @ 40 ft.

WEST ABUT.

CEDAR BAYOU flows South

Ground Line June '70

PIER "A"

1 ft.

6'-0"

El. 17.0

16 Creo. Timber Piles

Ties
℄ Pin Hole to Top Strg. 3' 8¼
Masy to ℄ Pin Hole 2'-6"
Total 7'-0"

ELEVATION

WEST PIER

7'-0" 7'-0"

EAST PIER

7'-0" 7'-0"

16 Creo. Timber Piles

℄ Pier = Sta. 106+31.25

30'-0" c. to c. Chords

℄ Bridge = Sta. 104+75

5'-0"

8 @ 2'-6" = 22'-6"

3'-6"

3'-6"

1'-9"

1'-9"

1'-6"

1'-6"

℄ Bridge & Track

Sym about ℄

105'-4" ℄ W Pier to ℄ E. Pier

315'-0" ℄ Pile to ℄ Pile

8'-0"

71'-10"

72'-1"

3'-0"

1-6

HALF PLAN & HALF PILING PLAN

Follow Dimension - Do Not Scale

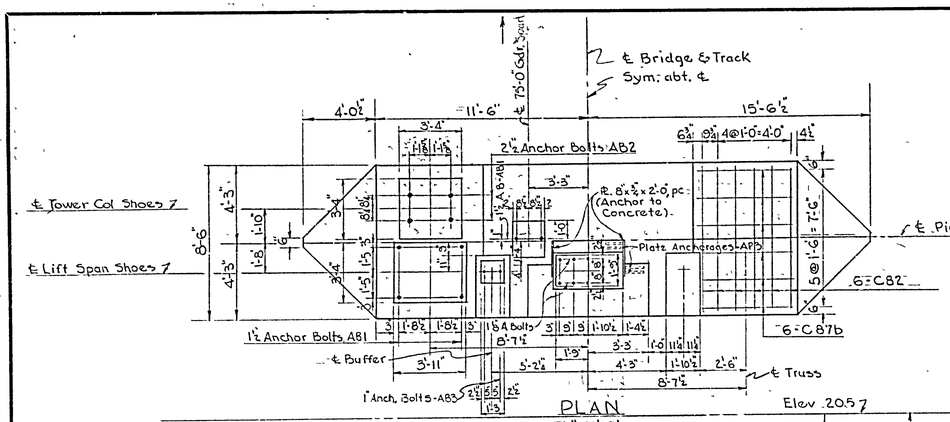
Rev. No 2 5-26-67 chg East Abut. to Pier "A"
Rev. No. 1 2-1-67 chg ℄ Sta. from 103+20 & revise ground line.

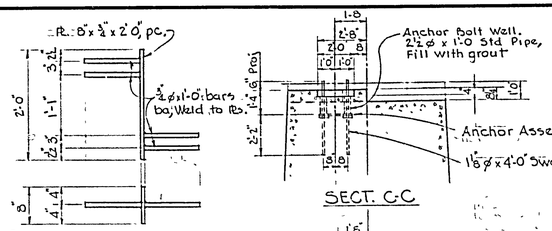
On U.S. Steel Lead Track
1⅝ Mi. S.E. of Baytown, Texas
Scale 3/32" = 1'-0"
Office of Chief Engr. St. Louis Mo. 11-18-66

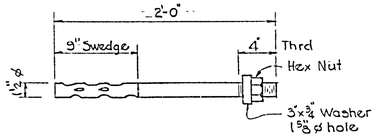
MISSOURI PACIFIC RAILROAD CO.
DEQUINCY DIVISION
BRIDGE No. 3
Over Cedar Bayou

JBR

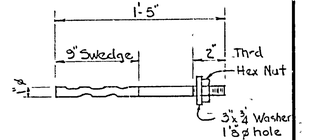
File No. D3A-1.95-1



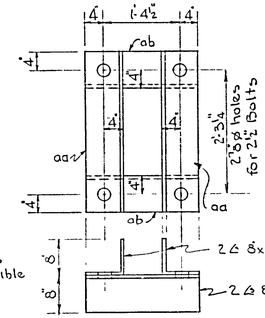




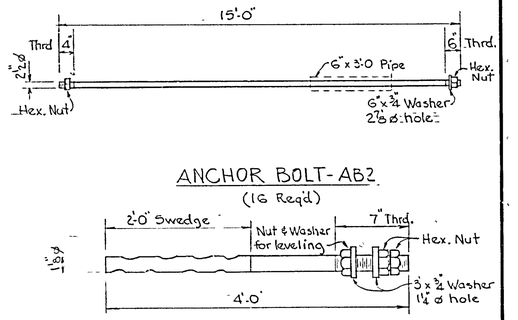
ANCHOR BOLT- AB1
(24 Reqd)



ANCHOR BOLT- AB3
(8 Reqd)

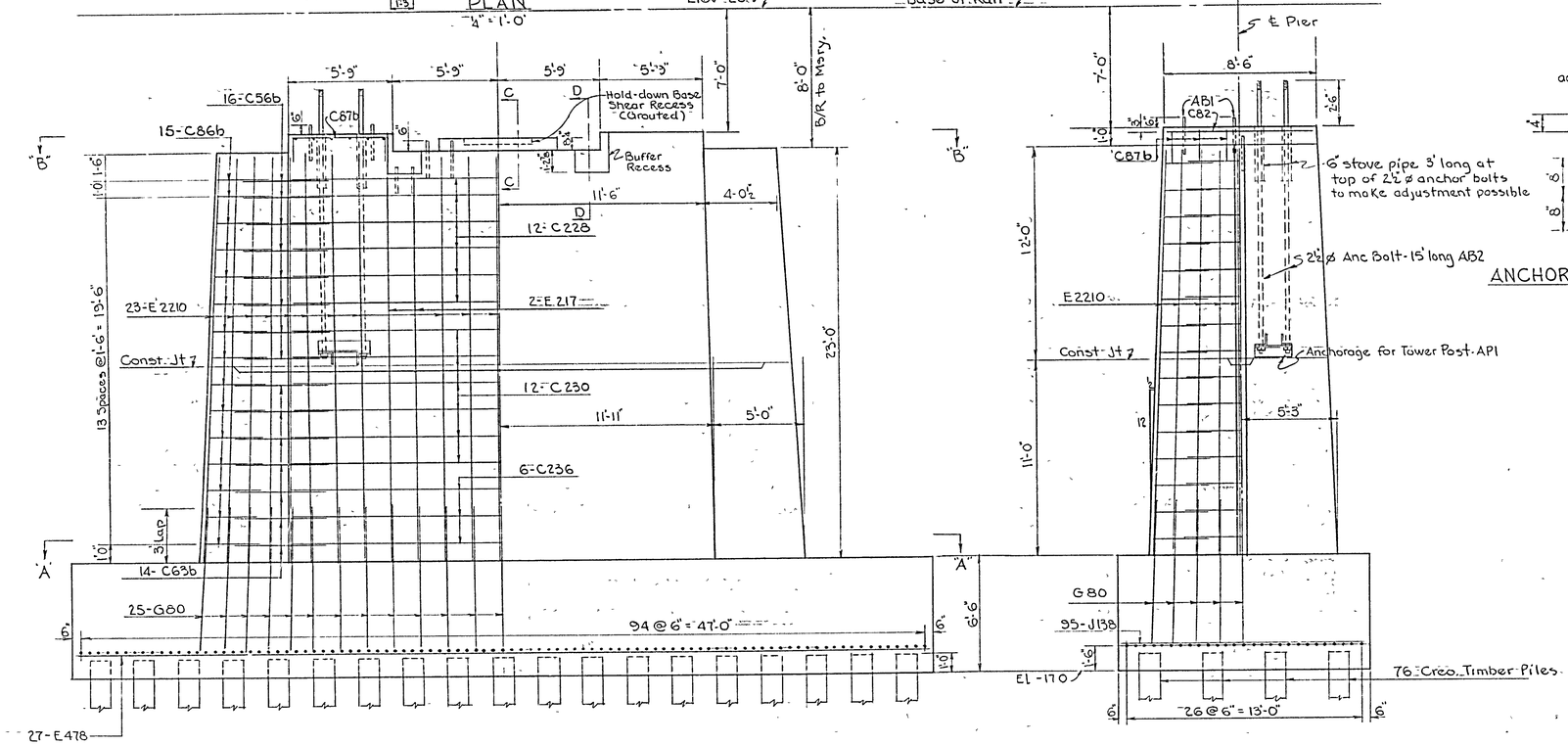


ANCHORAGE FOR TOWER POST- AP1
¾" = 1'-0"

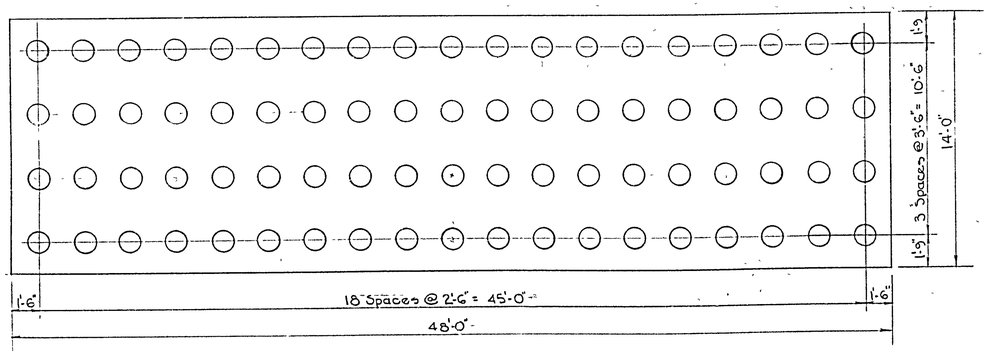


ANCHOR BOLT- AB2
(16 Reqd)

ANCHOR BOLT- AB4
(20 Reqd)

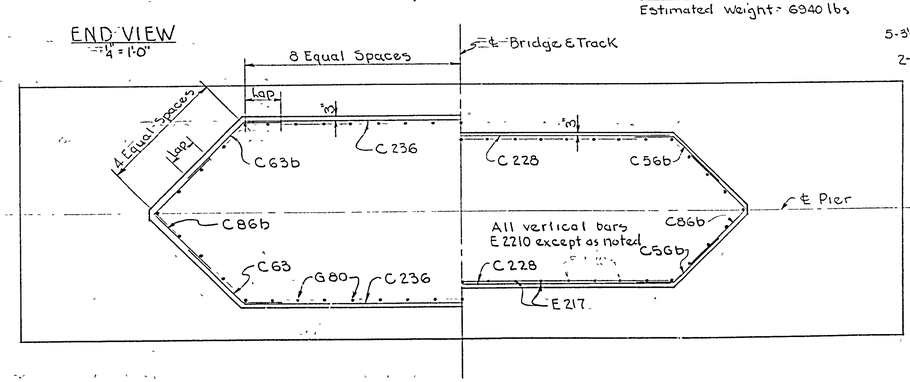


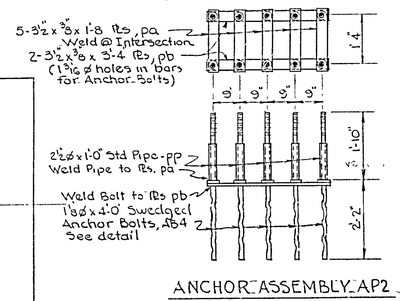
ELEVATION
¼" = 1'-0"



PILING PLAN
¼" = 1'-0"

END VIEW
¼" = 1'-0"





ANCHOR ASSEMBLY AP2

Quantities (1-Pier)
Concrete ----- 3908 C.Y.
Reinforcing Steel -- 11,185 lbs.

HALF SECTION "A-A"
¼" = 1'-0"

HALF SECTION "B-B"
¼" = 1'-0"

BILL OF MATERIAL (For Piers only)

Shipping List		Shop List					
No	Mark	No	Mark	Description	Length	Remarks	Weight
24	AB1	24		1½ ø Anchor Bolts	2'-0"	See Detail	337
		24		1½ ø Hex. Nuts			
		24		3"ø x ¼" R. Washers		1⅜ ø hole	
16	AB2	16		2½ ø Anchor Bolts	15'-0"	See Detail	4231
		32		2½ ø Hex. Nuts			
		16		6"ø x ¾" R. Washers		2⅜ ø hole	
4	AP1	8	aa	∠ 8x8x¾	2'-11¼"	See Detail	1549
		8	ab	∠ 8x8x¾	2'-0½"	See Detail	
8	AB3	8		1" ø Anchor Bolts	1'-5"	See Detail	42
		8		1" ø Hex Nuts			
		8		3"ø x ¾" R. Washers		1⅜ ø hole	
20	AB4	20		1⅛ ø Anchor Bolts	4'-0"	See Detail	345
		60		1⅛ ø Hex. Nuts			
		40		3"ø x ¾" R. Washers		1¼ ø hole	
2	AP2	10	pa	Rs 3½ x ⅜	1'-8"	See detail	249
		4	pb	Rs 3½ x ⅜	3'-4"	"	
		20	pp	Std Pipe-2½ ø	1'-0"	"	
4	AP3	4	pc	Rs 8" x ¾"	2'-0	See detail	187
		16	ba	¾ ø bars	1'-0"	See detail	

Estimated Weight = 6940 lbs

Rev. 2 Chg. Sheet No. from 2/3 to 2/6 5-26-67 WER
Rev. 1 Add Span Buffers & Hold-downs 2-13-67 JBR

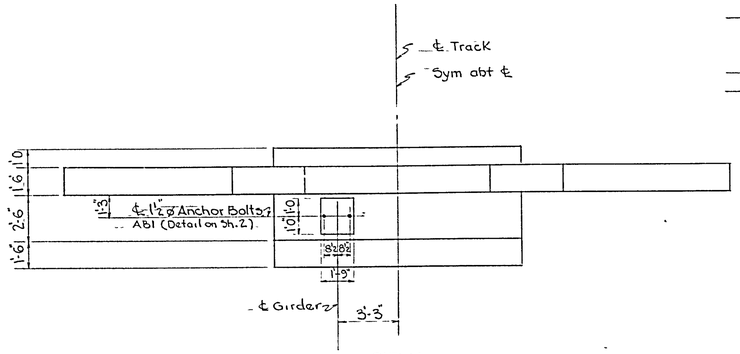
MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION.

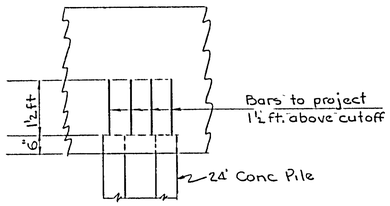
DETAIL OF PIERS
BRIDGE No. 3 over Cedar Bayou
on U.S. Steel Lead Track
1⅜ Miles SE. of Baytown, Texas
Scale: As Noted.

Office of Chief Engineer- St Louis, Mo. 11-15-66

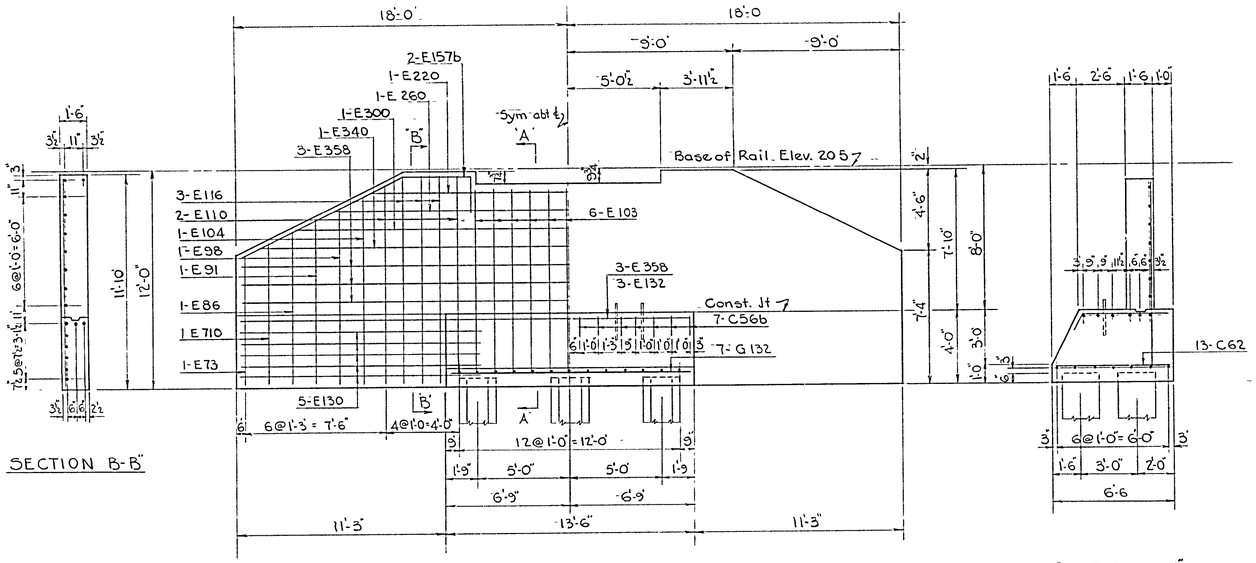
2/6

FILE NO. D3A - 1.95 - 2





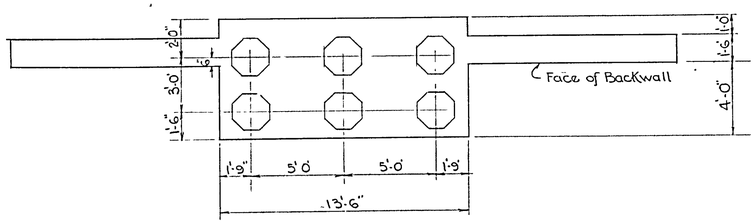
DETAIL AT TOP OF PILE



FRONT ELEVATION

SECTION A-A

SECTION B-B



PILING PLAN

DETAIL OF ABUTMENT

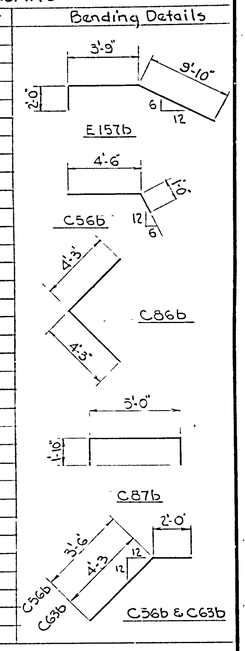
BILL OF MATERIAL (WEST ABUTMENT AND PIER "A")

Shipping List		Shop List					
No.	Mark	No	Mark	Description	Length	Remarks	Weight
8	AB1	8		1½ø Anchor Bolts	2'-0"	See Detail	113
		8		1½ø Hex. Nuts			
		8		3"x3"x¼ø Washers		1⅝ø hole	

Est. Total Weight = 113 lbs

BILL OF BARS

	No.	Mark	Size	Length	Weight	Bending Details
West Abutment	7	G132	#8	13'-2"	246	
	6	E358	6	35'-8	322	
	1	E340	6	34'-0"	51	
	1	E300	6	30'-0"	45	
	1	E260	6	26'-0"	39	
	1	E220	6	22'-0	33	
	4	E157b	6	15'-7"	94	
	3	E132	6	13'-2"	60	
	10	E130	6	13'-0"	196	
	6	E116	6	11'-6"	104	
	4	E110	6	11'-0"	66	
	2	E104	6	10'-4"	31	
	11	E103	6	10'-3"	170	
	2	E98	6	9'-8"	29	
	2	E91	6	9'-1	28	
	2	E86	6	8'-6"	26	
	2	E710	6	7'-10"	24	
	2	E73	6	7'-3"	22	
	13	C62	4	6'-2"	54	
	14	C56b	4	5'-6	52	
East & West Piers	190	J138	#10	13'-8"	11,173	
	96	G80	8	8'-0"	2051	
	54	E478	6	47'-8"	3866	
	88	E2210	6	22'-10"	3018	
	12	C236	4	23'-6"	188	
	24	C230	4	23'-0"	369	
	24	C228	4	22'-8"	363	
	24	C87b	4	8'-7"	138	
	60	C86b	4	8'-6"	341	
	24	C82	4	8'-2	131	
	56	C63b	4	6'-3"	234	
	64	C56b	4	5'-6"	235	
	8	E217	6	21'-7"	260	



Total Est Wt. = 25,740 lbs.

Reinforcing bars to be deformed section, rolled from new billet stock, intermediate grade steel. (A.S.T.M. designation A15-65 & A305-65)

QUANTITIES

Item	Concrete CY	Reinforcing Steel lbs	Conc. Piles No	Conc. Piles Length	Timber Piles No	Timber Piles Length	Structural Steel & Hardware lbs
West Abutment	29.9	1,692	6	40'			113
E. & W. Piers	781.6	22,367			152	30'	6940
Pier "A"	16.9	1,260	6	40'			
Total	828.4	25,319	12	40'	152	30'	7053

General Notes:-

Concrete ---- Concrete to be in accordance with Missouri Pacific Line's Specifications for Concrete and Reinforced Concrete Railroad Bridges and other Structures adopted Jan. 24, 1951 with a minimum strength of 3000 p.s.i. in 28 days
Exposed edges of 90° or less to be beveled one inch unless noted.
Exposed surfaces to be formed in a manner to produce a smooth and uniform appearance without rubbing or plastering.
Bridge seats to be level and have a float finish

Rein. Steel ---- Reinforcing bars to be blocked to proper location and securely wired against displacement.

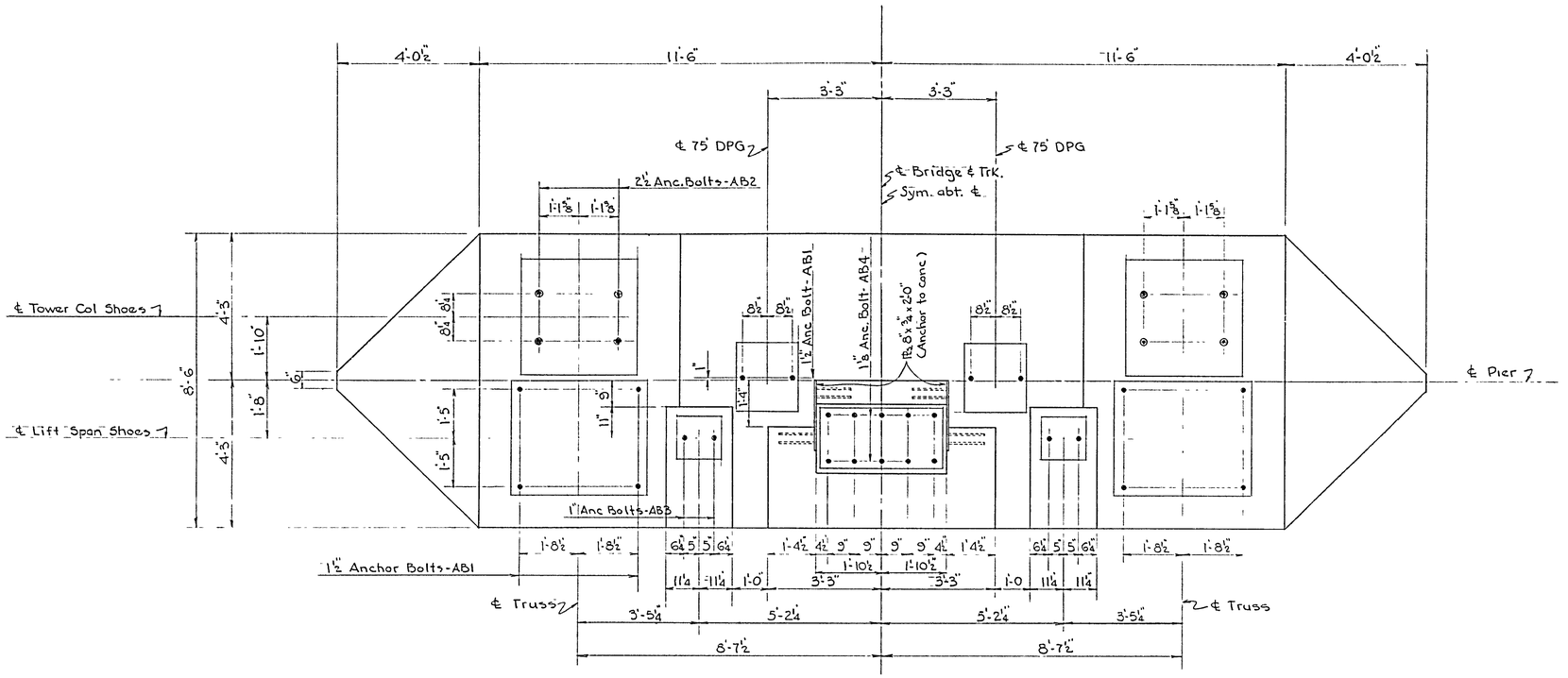
3/6

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

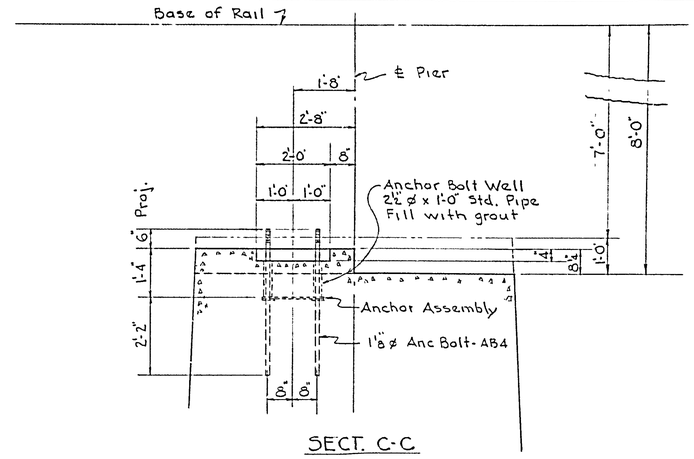
DETAIL OF WEST ABUTMENT
Bridge No. 3 over Cedar Bayou
on U.S. STEEL Lead Track
1⅞ Miles Southeast of Baytown, Texas
Scale: ¼" = 1'-0"
Office of Chief Engineer-St. Louis, Mo. 11-18-66
JBR

Rev. (2) (Delete E. Abutment And Change Sheet No.) 5-26-67 R.W.H. EML
Rev. (1) (Changed 8 E 2210 bars to 8-E 217 bars C in Piers) (Changed 24-C89b bars to 24-C87b bars (in Piers)) 2-13-67 JBR RCH EML

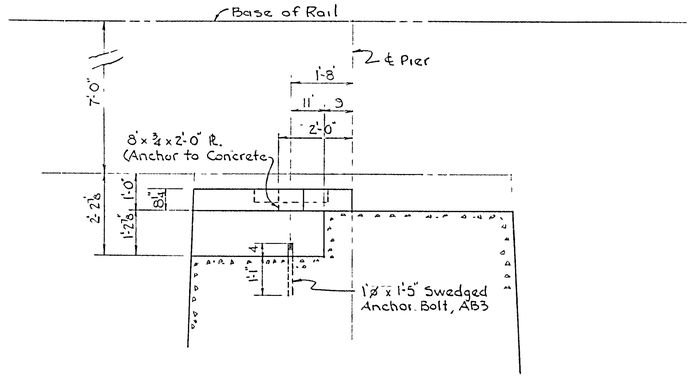
FILE No. D3A-1.95-3



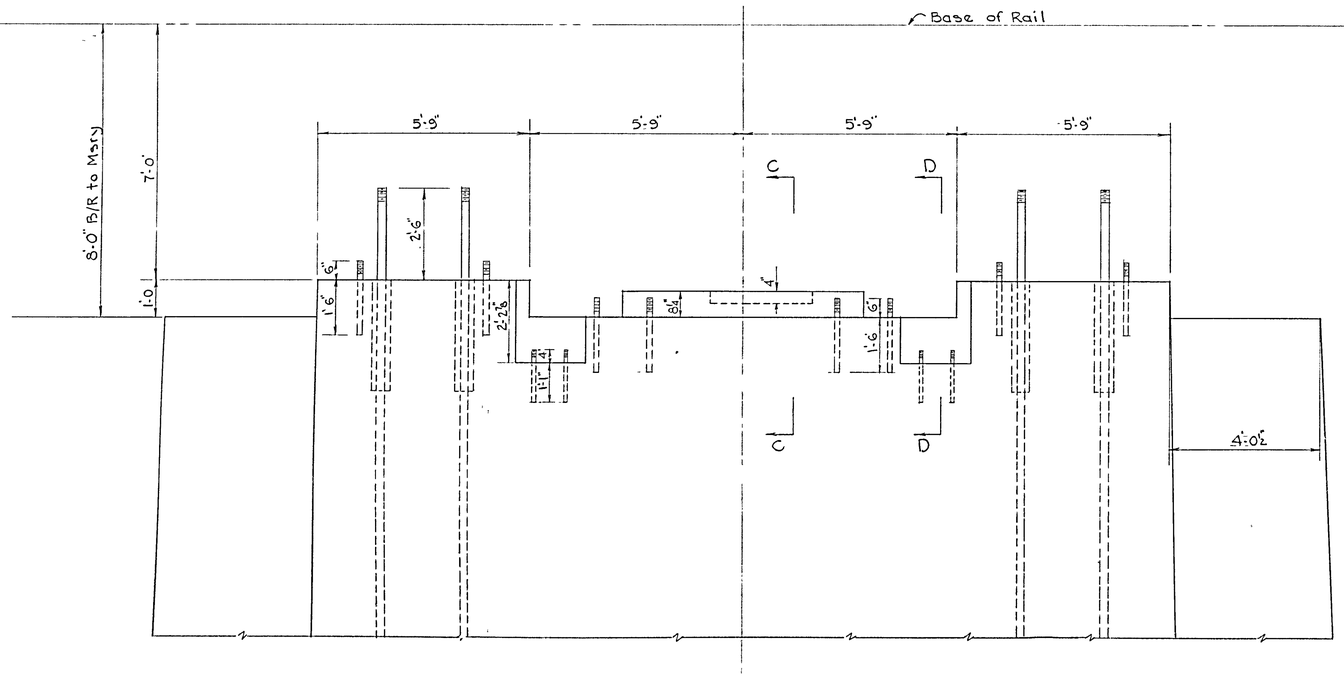
PLAN



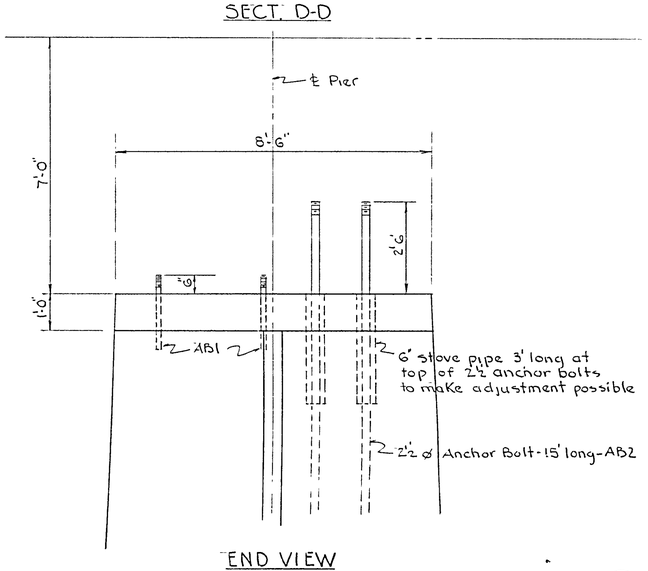
SECT. C-C



SECT. D-D



ELEVATION



END VIEW

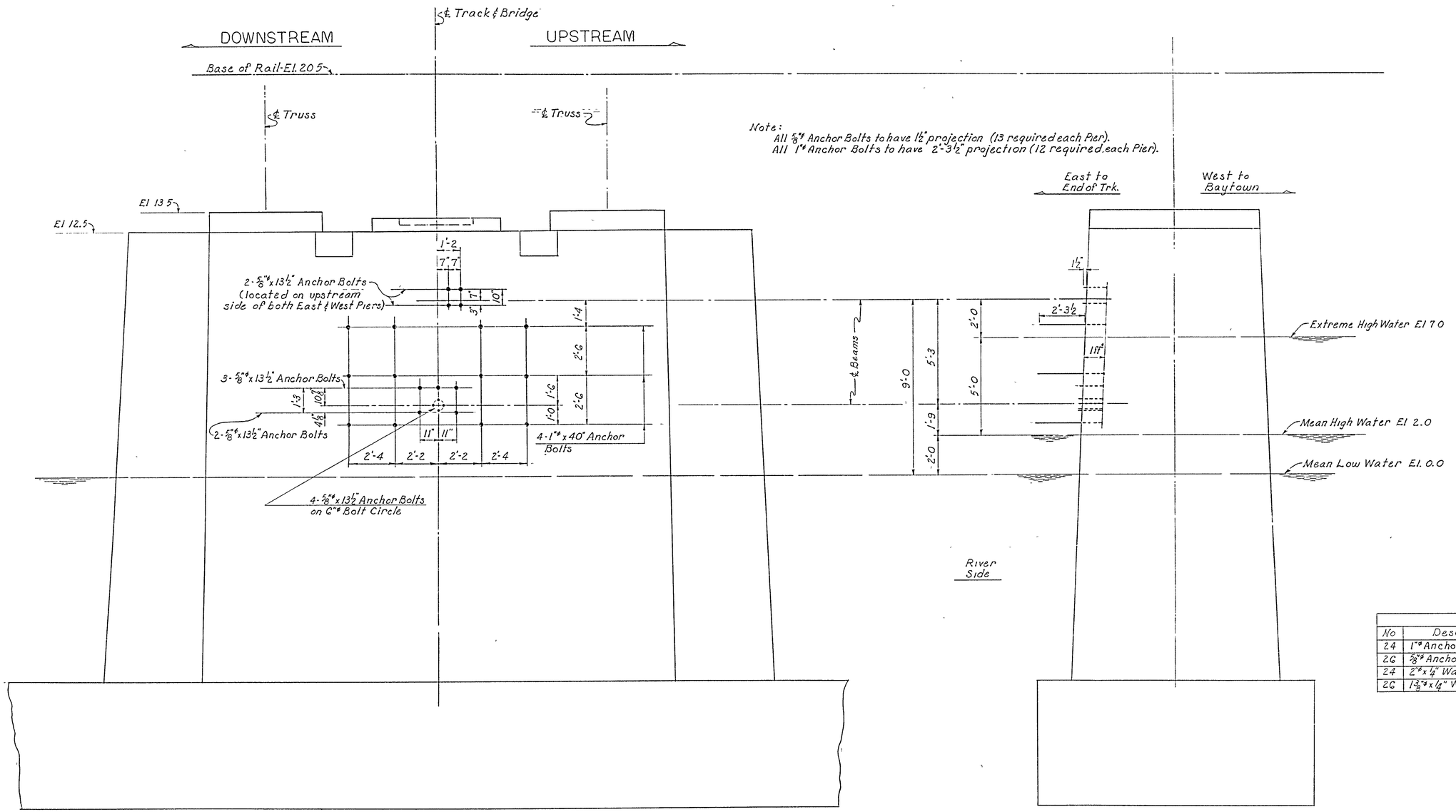
4/6

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

DETAIL OF PIERS
Bridge No. 3 over Cedar Bayou
U.S. Steel Lead Track
1.66 Miles S.E. of Baytown, Texas
Scale: ½"=1'-0"

Office of Chief Engineer-St. Louis, Mo. 4-10-67
R.W.H.
J.B.R.

File No. D3A-1.95-4



FRONT ELEVATION
West Pier

SIDE ELEVATION.
West Pier

Note
1) Bolts to be located in East Pier opposite hand of West Pier.
2) Bolts to be imbedded in East Pier as shown.

BILL OF HARDWARE

No	Description	Length	Remarks	Wt.
24	1"ø Anchor Bolts	40"	Hex Nut - 9" Swedge - 3" Thread	221
26	⅝"ø Anchor Bolts	13½"	Hex. Nut - 9" Swedge - 2" Thread	33
24	2"ø x ¼" Washers		1 1/16"ø holes	4
26	1⅜"ø x ¼" Washers		1 1/16"ø holes	2

Total Est. Wt. = 260 lbs.

5/6

MISSOURI PACIFIC RAILROAD CO
DE QUINCY DIVISION

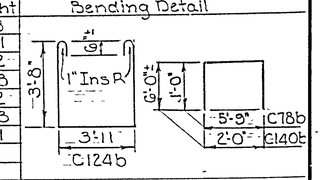
LOCATION OF BOAT DETECTOR
ANCHOR BOLTS
BRIDGE No. 3
1⅔ Miles S.E. of Baytown, Texas
Scale: ⅜"=1'-0"
Office of Chief Engineer St Louis, Mo 5-11-67

JBR

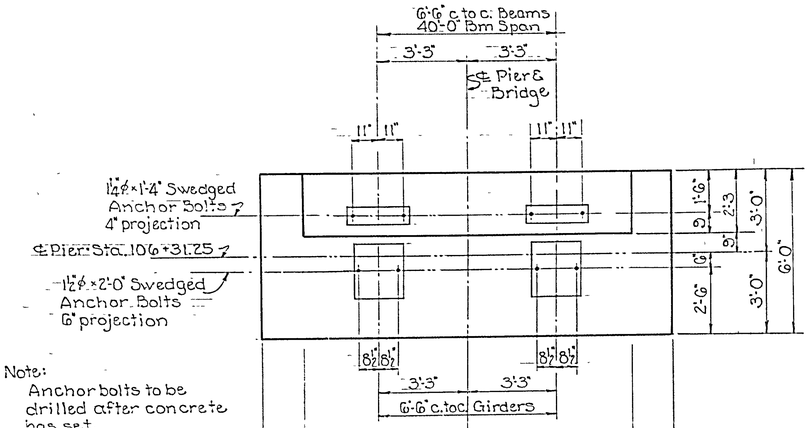
FILE No. D3A-1.95-5

BILL OF BARS

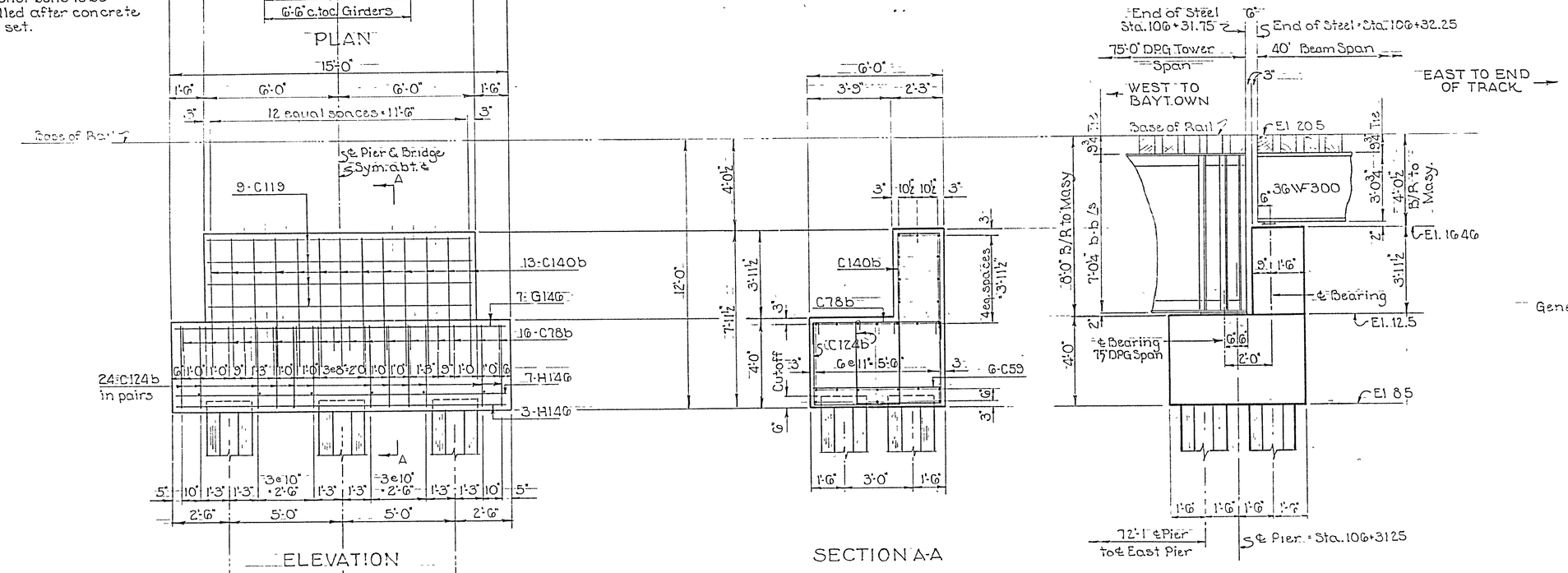
No.	Mark	Size	Length	Weight	Bending Detail
10	H146	# 9	14'-6"	493	
7	G146	#8	14'-6"	271	
13	C140b	#4	14'-0"	122	
24	C124b	#4	12'-4"	198	
16	C78b	#4	7'-8"	82	
6	C59	#4	5'-9"	23	
9	C119	#4	11'-9"	71	



All bars to be deformed section, rolled from new billet stock, intermediate grade steel.



Note:
Anchor bolts to be drilled after concrete has set.



QUANTITIES

	Concrete	R/F Steel	24" Conc Pile
PIER "A"	116.9 C.Y.	12601 lbs.	6

General Notes:

Concrete ____ Concrete to be proportioned by the Water-Cement ratio method to develop a strength of 3000 psi in 28 days.
Exposed edges of 90° or less to be beveled 1" unless noted.
Exposed surfaces to be formed in a manner to produce a smooth and uniform appearance without rubbing or plastering.
Bridge seats to be level and have a float finish.

Reinf Steel ____ Reinforcing bars to be blocked to proper location and securely wired against displacement.

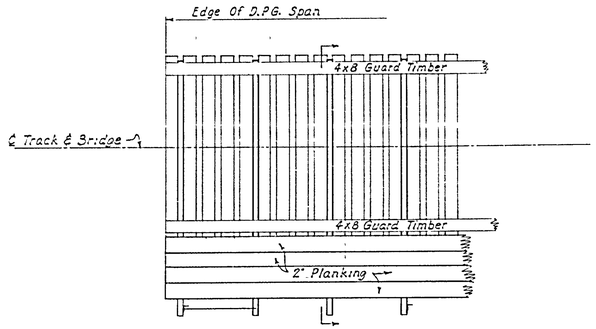
6/6

MISSOURI PACIFIC RAILROAD CO.
DEQUINCY DIVISION

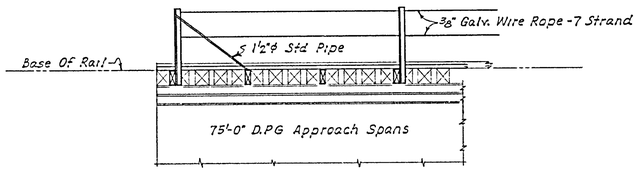
DETAIL OF PIER "A"
BRIDGE No. 3
over Cedar Bayou
On U.S. Steel Lead Track
1⅔ Mi. S.E. of Baytown, Texas
Scale: 3/8" = 1'-0"
Office of Chief Engr. St. Louis, Mo. 5-26-67

FMI

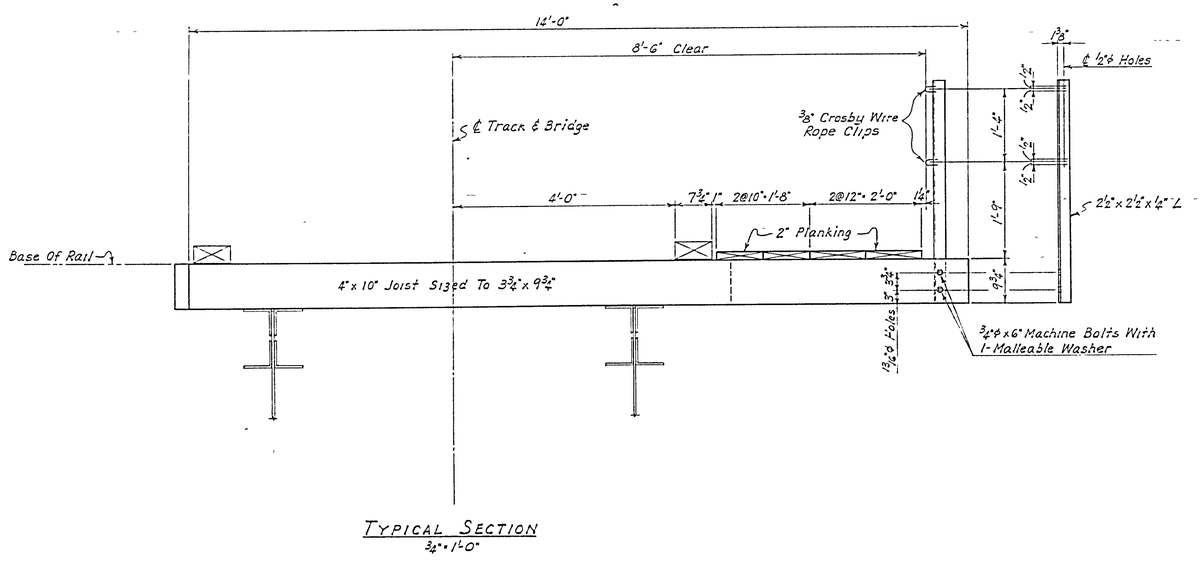
FILE No. D3A-1.95-6



PARTIAL PLAN
1/4" = 1'-0"



PARTIAL ELEVATION
1/4" = 1'-0"

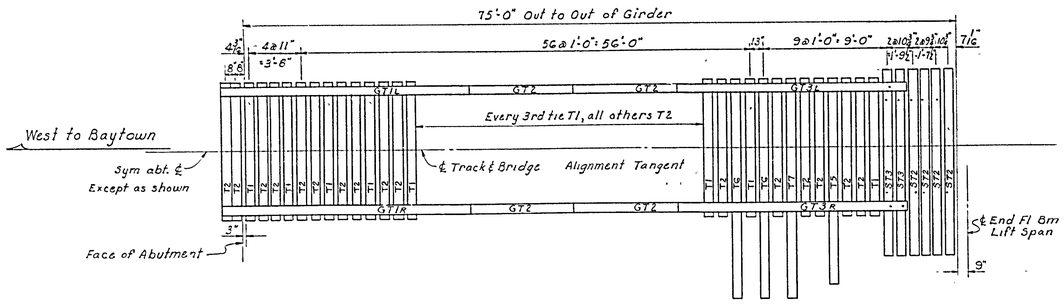


TYPICAL SECTION
3/4" = 1'-0"

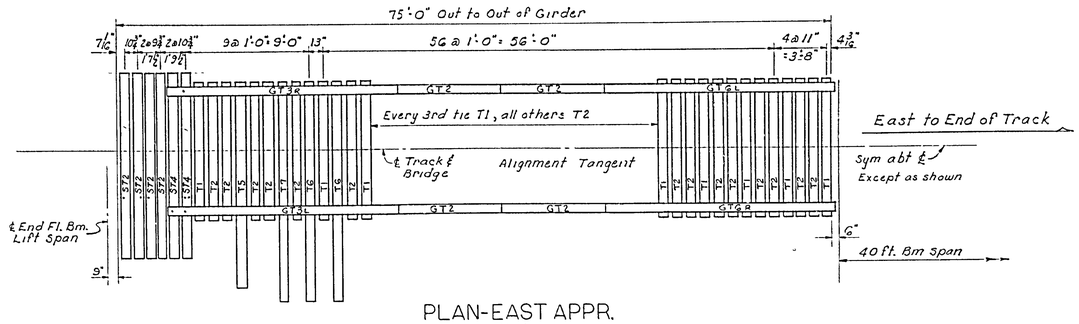
MISSOURI PACIFIC RAILROAD CO.
DEQUINCY DIVISION

WALKWAY DETAILS
75' D.P.G. APPROACH SPANS
BRIDGE No. 3
Over Cedar Bayou
1 2/3 Miles S.E. of Baytown, Texas
Scales As Noted
Office of Chief Engineer, St. Louis, Mo. 12-13-67

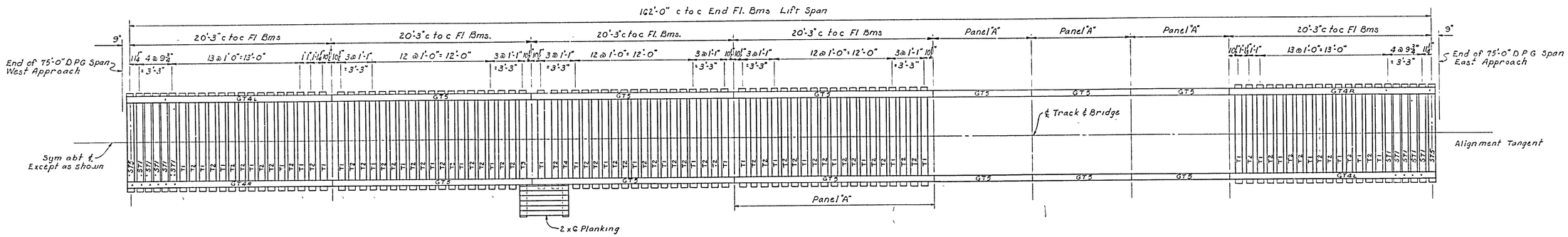
FILE No. D3A-1.75-7



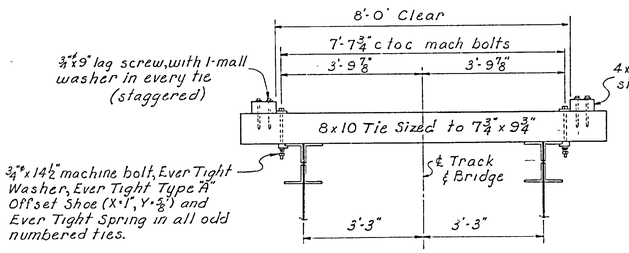
PLAN-WEST APPR.
3/16" = 1'-0"



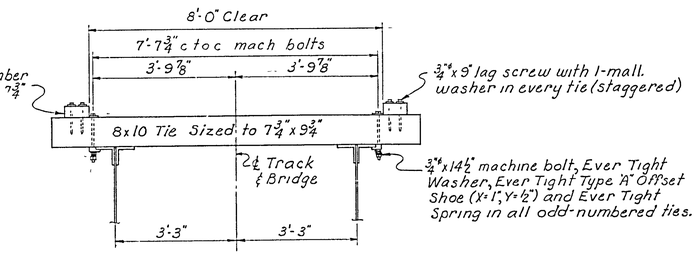
PLAN-EAST APPR.
3/16" = 1'-0"



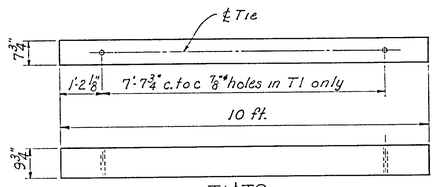
PLAN-LIFT SPAN
3/16" = 1'-0"



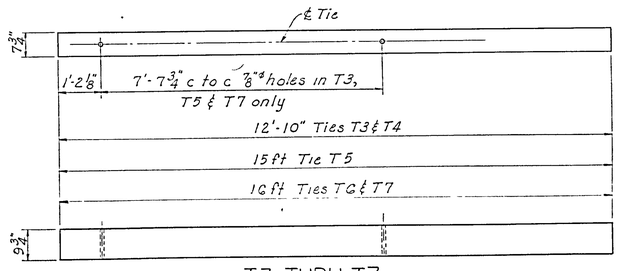
TYPICAL SECTION
Approach Spans
1/2" = 1'-0"



TYPICAL SECTION
Lift Span
1/2" = 1'-0"



T1 & T2



T3 THRU T7
DETAILS OF TIES
1/2" = 1'-0"

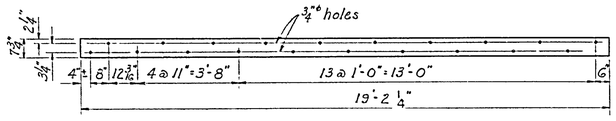
1/2

MISSOURI PACIFIC RAILROAD CO
DE QUINCY DIVISION

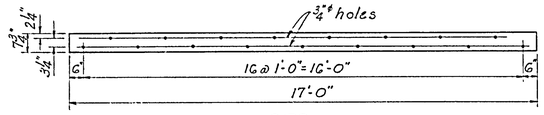
DECK PLAN
BRIDGE No. 3
Over Cedar Bayou
1 3/4 Miles S.E. of Baytown, Tex
Scale : As noted

EMC Office of Chief Engineer St Louis, Mo. 7-13-67

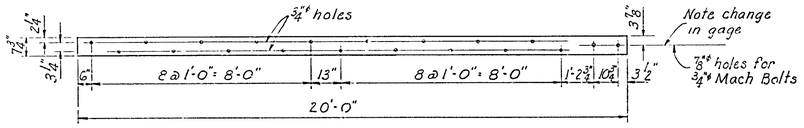
FILE No. D3A-1.95-8



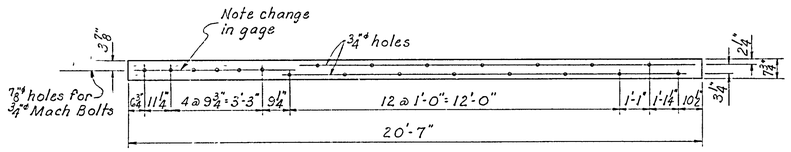
GT1R



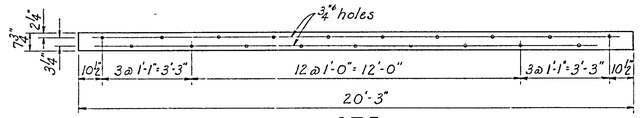
GT2



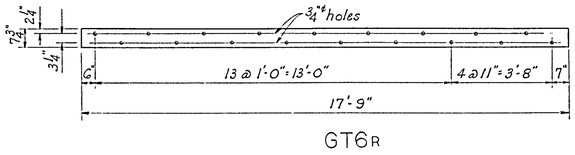
GT3R



GT4R

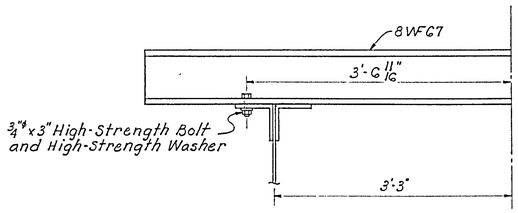


GT5

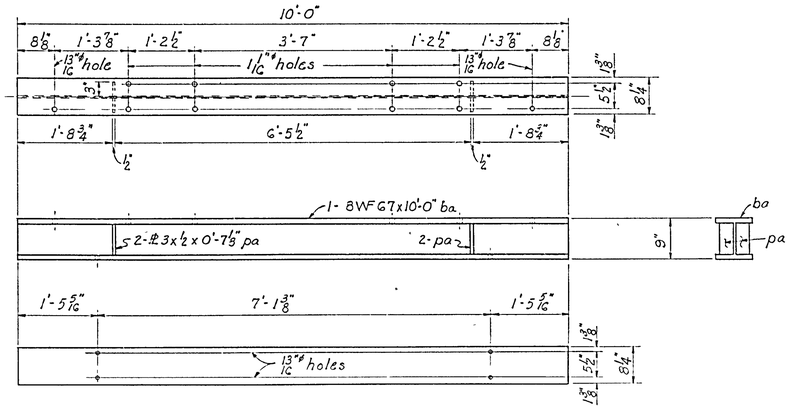


GT6R

DETAILS OF GUARD TIMBERS
3/8" = 1'-0"

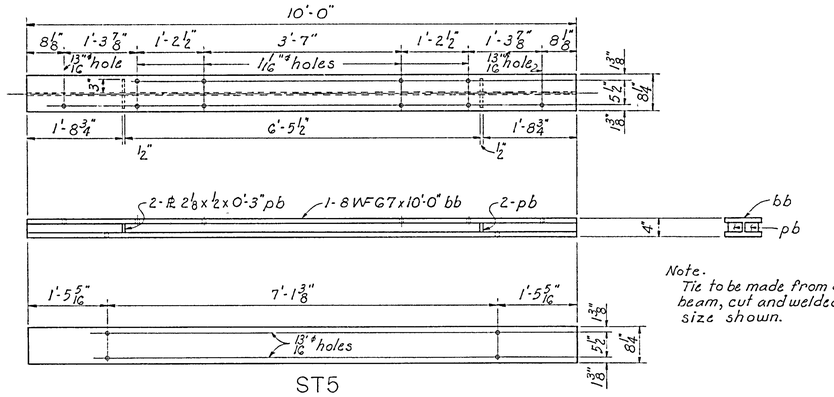


DETAILS OF
STEEL TIE CONNECTION
1" = 1'-0"



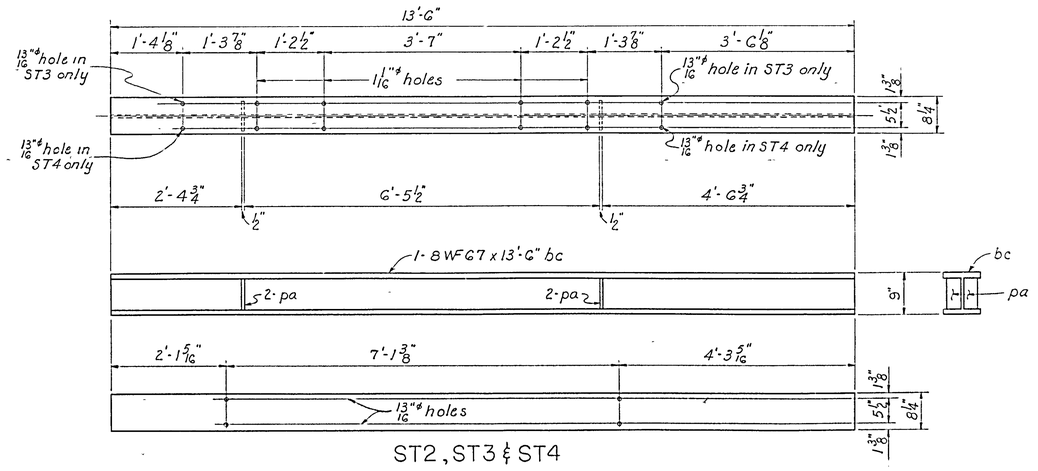
ST1

Welding Note:
Weld all lines of contact with a cont 5/16 Fillet weld



ST5

Note.
Tie to be made from 8WFG7 beam, cut and welded to size shown.



ST2, ST3 & ST4
DETAILS OF STEEL TIES
3/4" = 1'-0"

BILL OF TIMBER

No	Mark	Size	Length	Remarks	F.B.M
99	T1	8x10	10 ft.	sized to 7 3/4" x 9 3/4" see detail	6600
177	T2	8x10	10 ft.	" " " " "	11,800
1	T3	8x10	12'-10"	" " " " "	86
1	T4	8x10	12'-10"	" " " " "	86
2	T5	8x10	15 ft	" " " " "	200
4	T6	8x10	16 ft	" " " " "	427
2	T7	8x10	16 ft.	" " " " "	213
2	GT1R	4x8	19'-2 1/4	sized to 3 3/4" x 7 3/4" see detail	102
8	GT2	4x8	17'-0"	" " " " "	363
4	GT3R	4x8	20'-0"	" " " " "	213
4	GT4R	4x8	20'-7"	" " " " "	220
12	GT5	4x8	20'-3"	" " " " "	648
2	GT6R	4x8	17'-9"	" " " " "	95
6		2x6	5 ft.	Stock Size - Planking	30

Total Est. F.B.M. = 21,083

BILL OF HARDWARE

No	Description	Length	Remarks	Wt
218	3/4"ø machine bolts	14 1/2"	Sq Head & Nut	444
34	3/4"ø machine bolts	7"	Hex. Head & Nut	38
101	3/4"ø High-Strength bolts	3"	Hex Head & Nut	68
101	Circular High-Strength Washers		For 3/4"ø bolts	10
101	Ever Tight Type "A" Offset Shoes		(X = 1", Y = 3/8")	96
118	Ever Tight Type "A" Offset Shoes		(X = 1", Y = 1/2")	104
218	Ever Tight Washers		For 3/4"ø bolts	218
218	Ever Tight Springs		" " "	44
600	3/4"ø lag screws	9"		720
635	malleable washers		For 3/4"ø lag screws & mach bolts	210
	20d common wire nails	4"	for planking	1

Total Est Wt. = 1953 lbs.

BILL OF MATERIAL

Shipping List		Shop List					
No.	Mark	No.	Mark	Description	Length	Remarks	Wt.
10	ST1	10	ba	8WFG7	10'-0"	See Detail	6321
		40	pa	L 3x1/2	0'-7 1/8"	" "	
8	ST2	8	bc	8WFG7	13'-6"	" "	7333
		32	pa			" "	
2	ST3	2	bc			" "	1833
		8	pa			" "	
2	ST4	2	bc			" "	1833
		8	pa			" "	
2	ST5	2	bb	8WFG7	10'-0"	" "	1156
		8	pb	L 2 1/8 x 1/2	0'-3"	" "	

Total Est. Wt. = 18976 lbs.

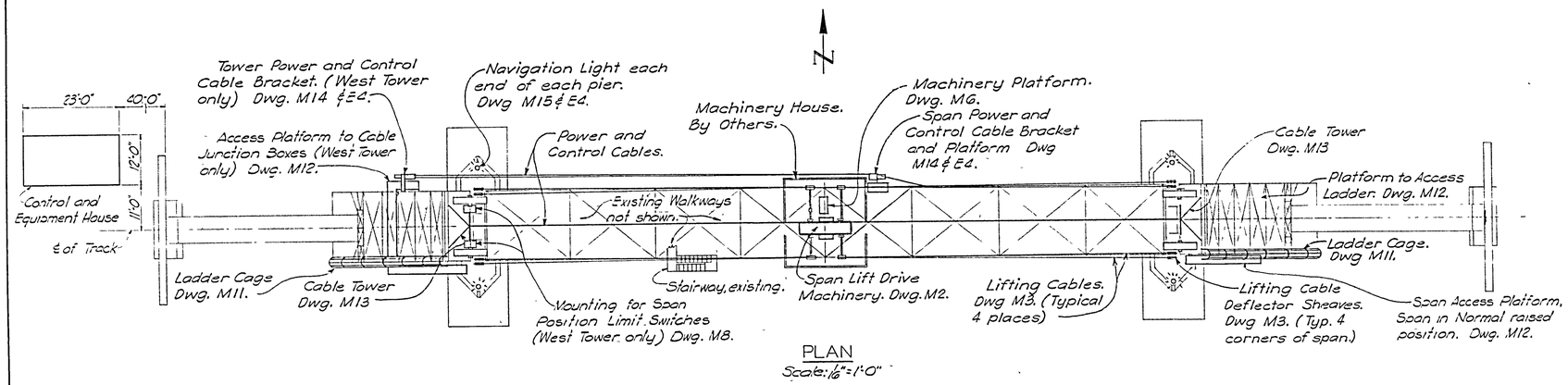
General Notes:

All timber to be creosoted Southern Pine.
All field holes and cuts to be treated with hot preservative.
Holes in ties for lag screws to be bored in field, 1/2" diam.
Lag screws shall not be driven
Ever Tight Springs to be fully compressed upon application.
Steel ties to be O.H. Structural Steel, ASTM A-36, and to be given one shop coat of red lead and linseed oil conforming to S.S.P.C. specification 2-64T, except at drilled holes.
High-strength bolts and washers to conform to A.S.T.M Specifications, A-325.

2/2

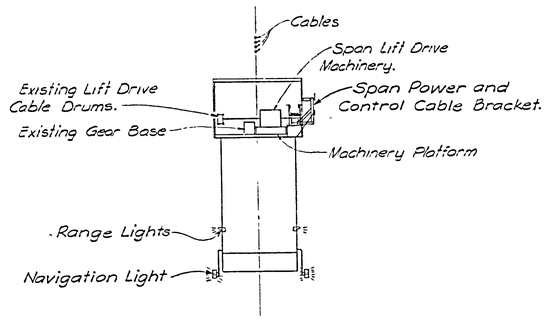
MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION
DECK PLAN
BRIDGE No. 3
Over Cedar Bayou
1 3/8 Miles S.E. of Bayfown, Tex.
Scale: As noted
EML ✓ Office of Chief Engineer St. Louis, Mo. 7-25-67

File No. D3A-1.95-8

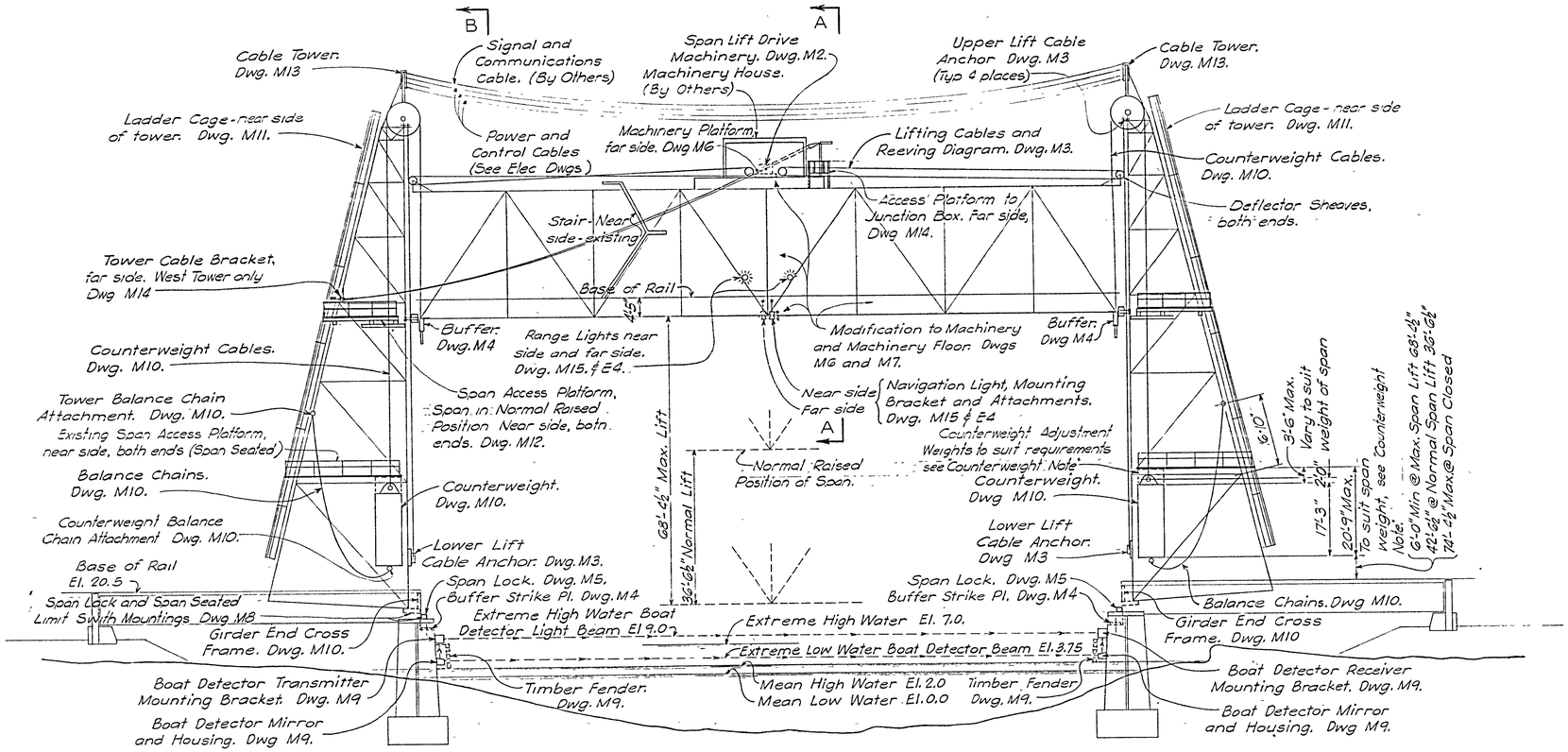


PLAN

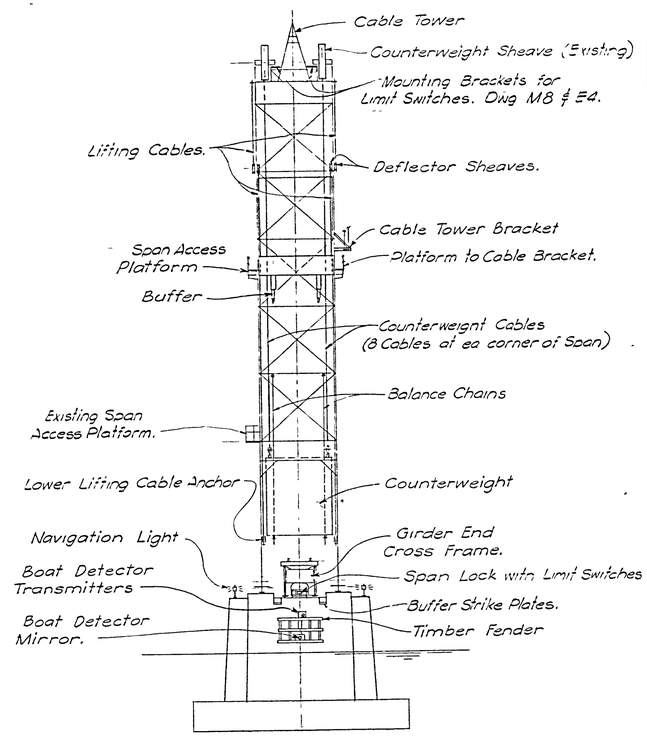
Scale: 1/16"=1'-0"



SECTION A-A



ELEVATION



SECTION B-B

LIST OF DRAWINGS

MECHANICAL & STRUCTURAL DRAWINGS

DWG NO	TITLE
M1	General Arrangement
M2	Span Lift Drive
M3	Deflector Sheaves & Span Lift Cable Anchors
M4	Buffers
M5	Span Lock
M6	Modifications To Existing Machinery Floor
M7	Modifications To Existing Machinery
M8	Limit Switches
M9	Boat Detector Carriage
M10	Deck Girder End Cross Frames
M11	Access Ladder
M12	Platform To Access Ladder
M13	Power - Control & Utility Cable Tower
M14	Cable Bracket
M15	Warning & Navigation Lighting

ELECTRICAL DRAWINGS

DWG NO	TITLE
E1	Power Schematic
E2	Control Schematic
E3	Control Console CC1
E4	Electrical Equipment & Conduit
E5	Interconnection Diagram

COUNTERWEIGHT NOTE

Counterweights must be adjusted after all new construction and modifications have been completed on the Lift Span. Equal additional amounts of weight must be placed on top of both Counterweights. An attempt shall be made to lift Span following the addition of each 500 lbs to each Counterweight. Motor circuit breakers shall be set so as not to exceed 225% normal torque. The additional weight on the Counterweight shall be adjusted to secure identical drive motor current readings during both the opening and closing cycles. After the balanced condition is achieved 500 lbs. of weight shall be removed from each Counterweight to provide positive seating of the Span in the closed position.

Note: Do not scale this drawing. Follow dimensions.

MISSOURI PACIFIC RAILROAD CO.
DEQUINCY DIVISION

LIFT BRIDGE MODIFICATIONS
GENERAL ARRANGEMENT

BRIDGE NO 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

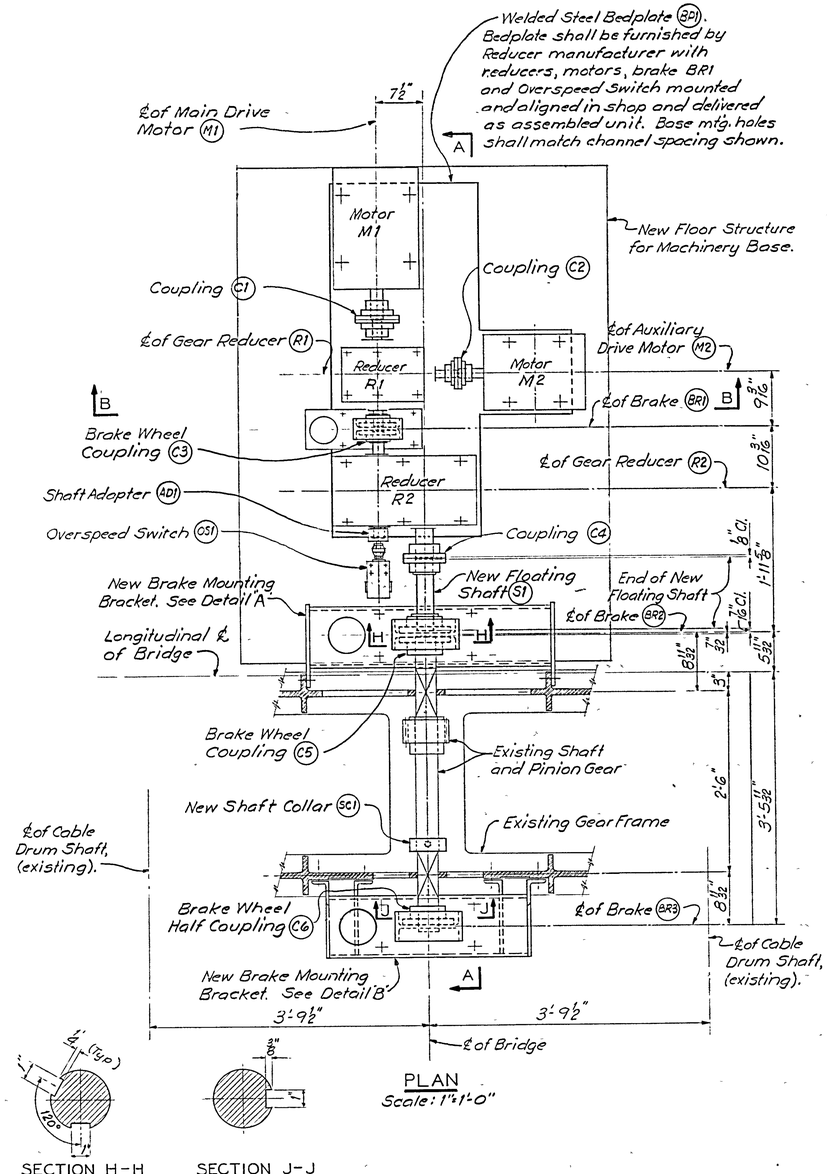
SVERDRUP & PARCEL AND ASSOC, INC.
CONSULTING ENGINEERS
ST. LOUIS, MO

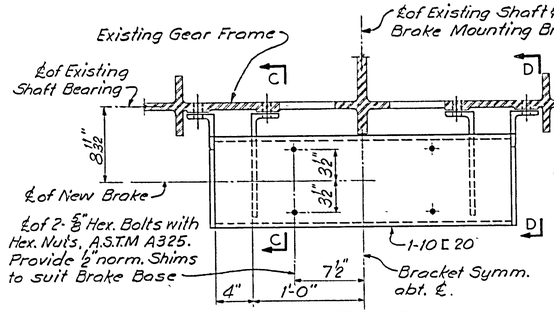
SCALE: 1/16 IN = 1 FT.
DATE

2602
67-034

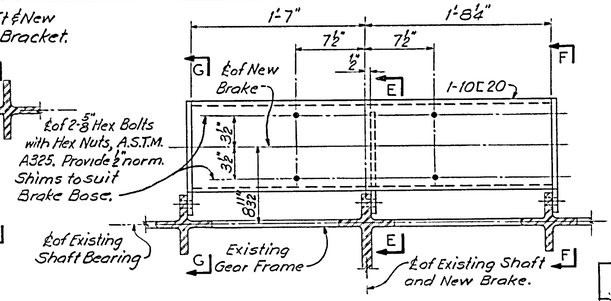
FILE No. D3A-1.95-9

DRAWING NO. M1





DETAIL B
Scale: 1½"=1'-0"



DETAIL A
Scale: 1½"=1'-0"

Notes

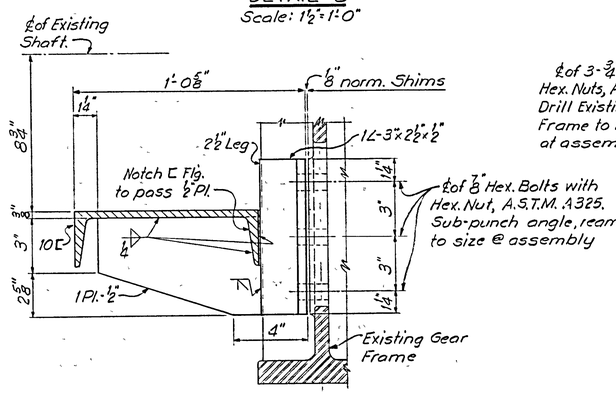
Materials and workmanship shall conform to current Standards and Specifications of AREA, ASTM, AWS, AGMA, NEMA, ASA and others as applicable to the items being furnished, fabricated or assembled. All rolled Steel shall be A-36.

Shop Details shall be submitted to the Railroad for review and approval prior to fabrication and assembly.

Details and dimensions as shown are based on Falk Reducers, G.E. Brakes and Couplings as listed.

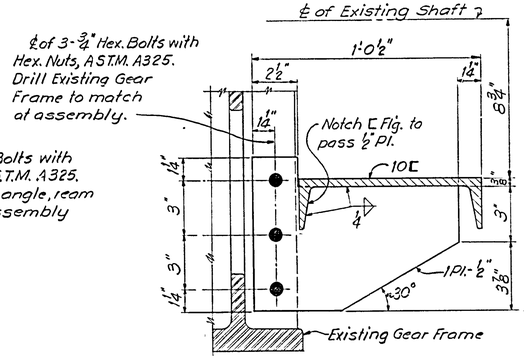
EQUIPMENT LIST - SPAN DRIVE MACHINERY

Item	No. Req'd.	Description
M1	1	Span Main Drive Motor, 15 H.P., 825 rpm, Squirrel-Cage Type. See Electrical Equipment and Device List.
M2	1	Span Auxiliary Drive Motor, 5 H.P., 825 rpm, Squirrel-Cage Type. See Electrical Equipment and Device List.
BR1	1	Thrustor Brake, Spring Set, 825 rpm, without Brake Wheel. Adjust to 40 ft lbs continuous retarding torque. See Electrical Equipment and Device List.
BR2	1	Thrustor Brake, Spring Set, 131.5 rpm, without Brake Wheel. Adjust to 240 ft lbs continuous retarding torque. See Electrical Equipment and Device List.
BR3	1	Thrustor Brake. Same as BR2 above.
R1	1	Right Angle Spiral Bevel Gear Reducer, Ratio 3.52. Double output shafts. Provide Falk Type GHB, Size 3 or Philadelphia Type BT, Size 3406 Reducer.
R2	1	Parallel Shaft Helical Gear Reducer, Ratio 6.27. Double input shaft with one end shortened. Provide modified Falk Type Y1, Size 2050 or Philadelphia Type HB, Size 3107 Reducer.
C1	1	Flexible Coupling, Steel Grid Type. Falk Steelflex Standard, Type F, Size 8F. Bores to suit M1 and R1 Shafts.
C2	1	Flexible Coupling, Steel Grid Type, Falk Steelflex Standard, Type F, Size 6F. Bores to suit M2 and R1 Shafts.
C3	1	Flexible Coupling, Gear Type. Waldron Brake Wheel Type, Class ABW, Size 2A or equal with 8" dia. x 3¼ face brake wheel (G.E. Brake). Bores to suit R1 and R2 shafts.
C4	1	Floating Shaft Coupling, Gear Type. Waldron Class AFS Normal, Size 2½ AFS or equal. Bores to suit R2 and S1 shafts.
C5	1	Floating Shaft Brake Wheel Coupling, Gear Type. Waldron Class AFS Normal, Size 3AFS or equal with 11" dia. x 5" face brake wheel (G.E. Brake). Bores to suit S1 and existing 3⅞" shaft. Special keyway in Rigid half, see details.
C6	1	Rigid Coupling, Male half only, for Brake Wheel. Waldron Class AR, Size 3AR or equal with 11" dia. x 5" face brake wheel. (G.E. Brake). Bore to suit existing 3⅞" shaft. Special keyway in hub, see details.
S1	1	Floating Shaft, 2-5/8" dia. Class Cl forged carbon steel.
SC1	1	Shaft Collar, Solid Iron. Dodge or equal. Bore to suit existing 3⅞" shaft.
AD1	1	Shaft Adapter, Reducer R2 input shaft extension to coupling on Overspeed Switch OS1.
OS1	1	Overspeed Switch. See Electrical Equipment and Device List. Mount on bracket attached to bedplate.
BP1	1	Machinery Bedplate, Welded Steel. To be furnished by reducer manufacturer.
A	1	Brake Support Bracket for BR2. Welded steel with mounting supports for attachment to existing cast gear frame ribs.
B	1	Brake Support Bracket for BR3. Welded steel with mounting brackets matching existing brake mounting holes in gear frame web.

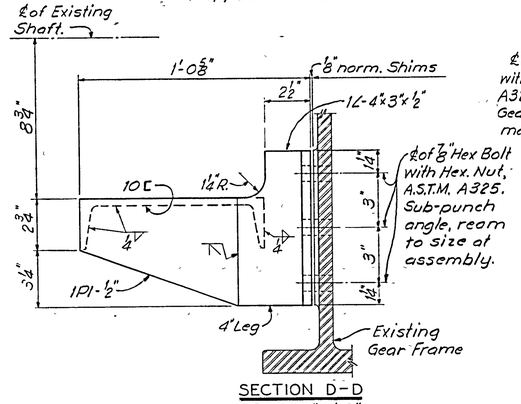


SECTION C-C
Scale: 3"=1'-0"

Note: 2 required, 1- as shown and 1- opposite hand.

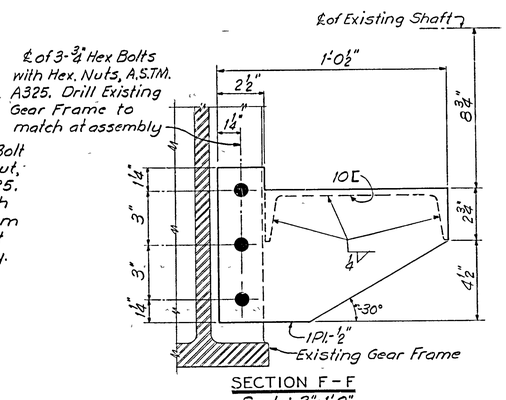


SECTION E-E
Scale: 3"=1'-0"



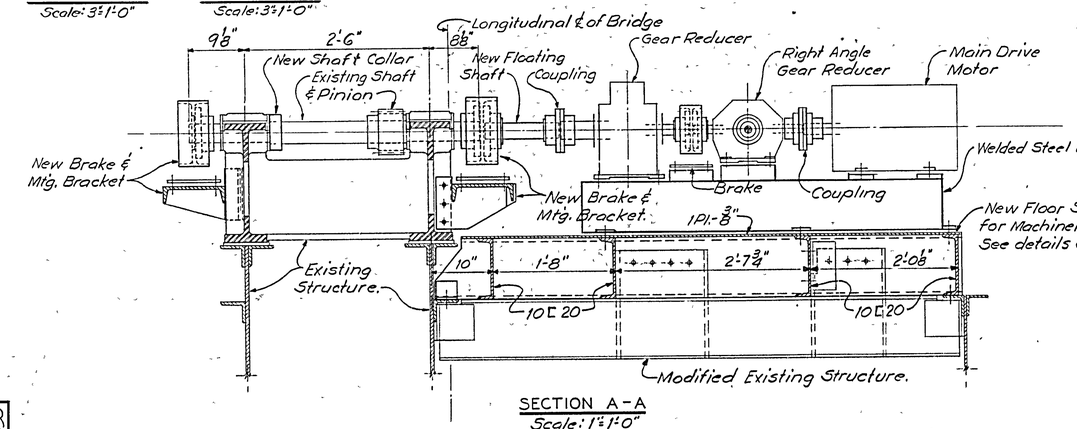
SECTION D-D
Scale: 3"=1'-0"

Note: 2 required, 1- as shown and 1- opposite hand.

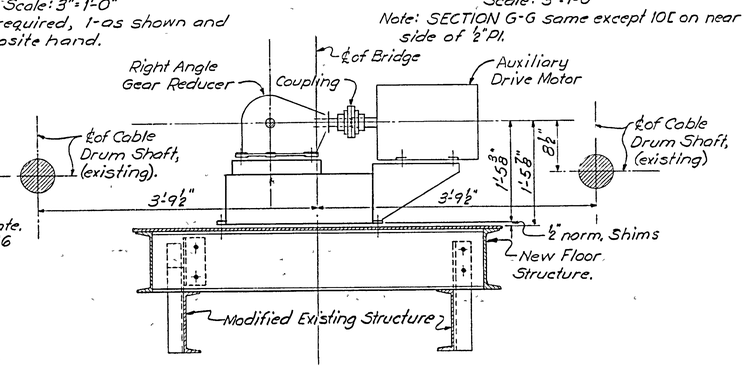


SECTION F-F
Scale: 3"=1'-0"

Note: SECTION G-G same except 10⊏ on near side of ½" Pl.



SECTION A-A
Scale: 1"=1'-0"



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

Note: Do not scale this drawing. Follow dimensions.

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

SPAN LIFT DRIVE

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

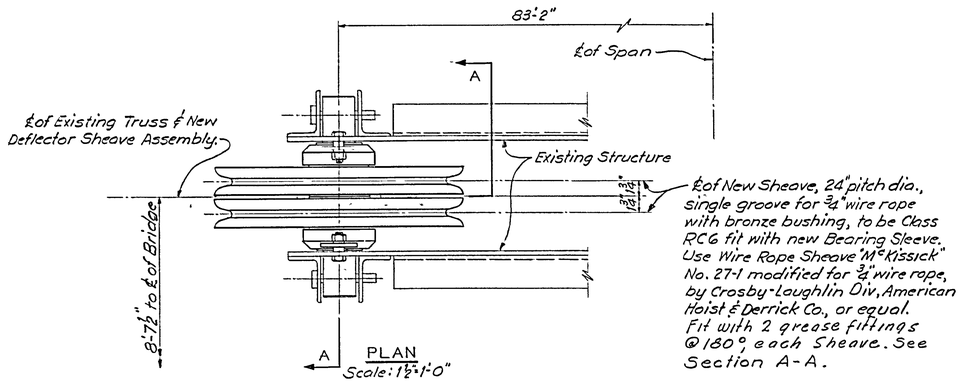
SVERDRUP & PARCEL AND ASSOC., INC.
CONSULTING ENGINEERS
ST. LOUIS, MO.

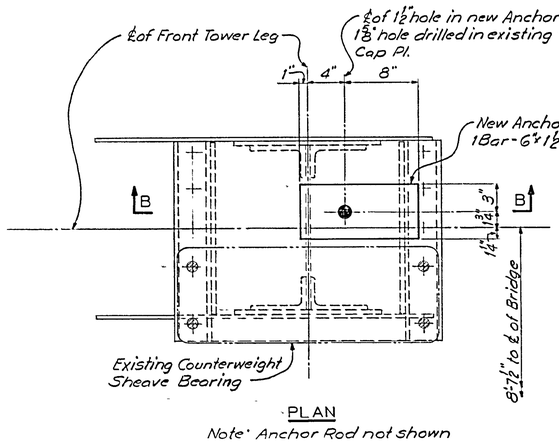
SCALE: As Noted

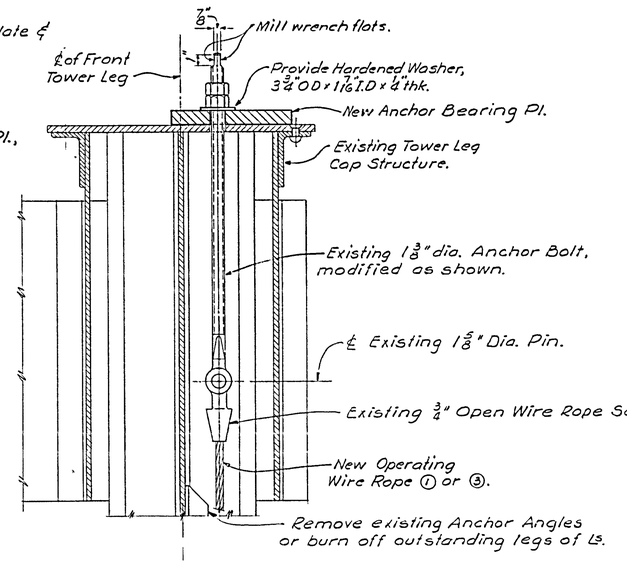
DATE:

2602
67-D30

FILE No. D3A-1.95-10 DRAWING NO. M2







SECTION B-B

OPERATING CABLE NOTES

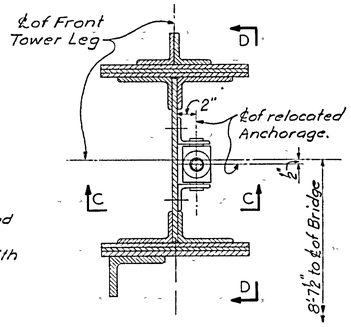
Operating Cables - ¾" Dia. Preformed Wire Rope, Purple Plus, 6 x 37 Class Wire Rope, 6 x 36 Filler Wire Type L with IWRC, Bethlehem Steel Co, or equal.

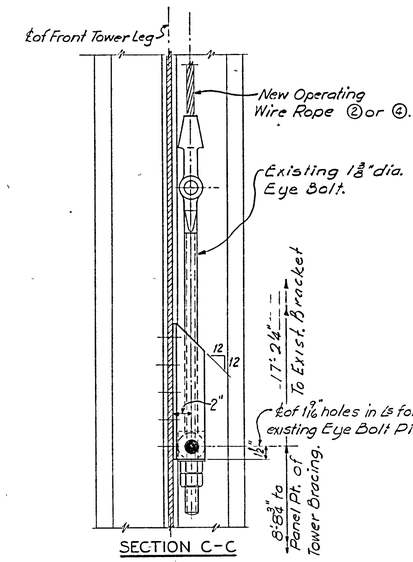
Cable Lengths - Distance from ℄ of Pin on installed Socket to end of taut Cable:
- Cable ① - 176'-0" - 2 req'd.
- Cable ② - 186'-0" - 2 req'd.
- Cable ③ - 176'-0" - 2 req'd.
- Cable ④ - 186'-0" - 2 req'd.

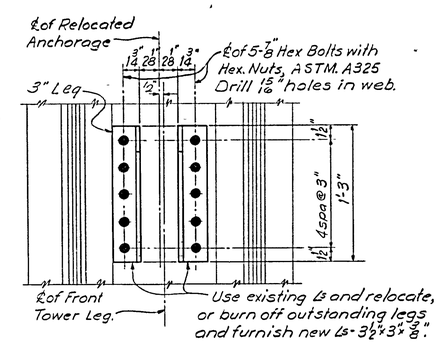
Cable Fittings and Attachments - Salvage Existing Open Sockets, Eye Bolts and Drum Clamps. Modify Eye Bolts for Cables ① and ③. Sockets shall be attached to new Rope in accordance with Rope Manufacturer's recommended procedures and shall be performed by certified personnel.

Cable Reavings - Cable Drums shall be positioned with Anchor Clamps in position shown with Span in lowered position. Cables ① and ③ shall have 2 dead turns on Drums in lowered position. Cables ② and ④ shall have 13 turns (2 dead and 11 live) on Drums with Span in lowered position. Cable Clamps on Drum shall be used for adjusting length of Cable. Each Coble shall be adjusted to sag 1'-7½". This sag shall be obtained with not more than 10" of Eye Bolt extension as shown.

UPPER ANCHOR

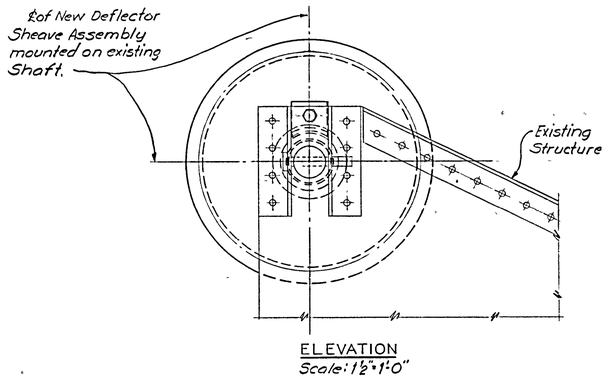


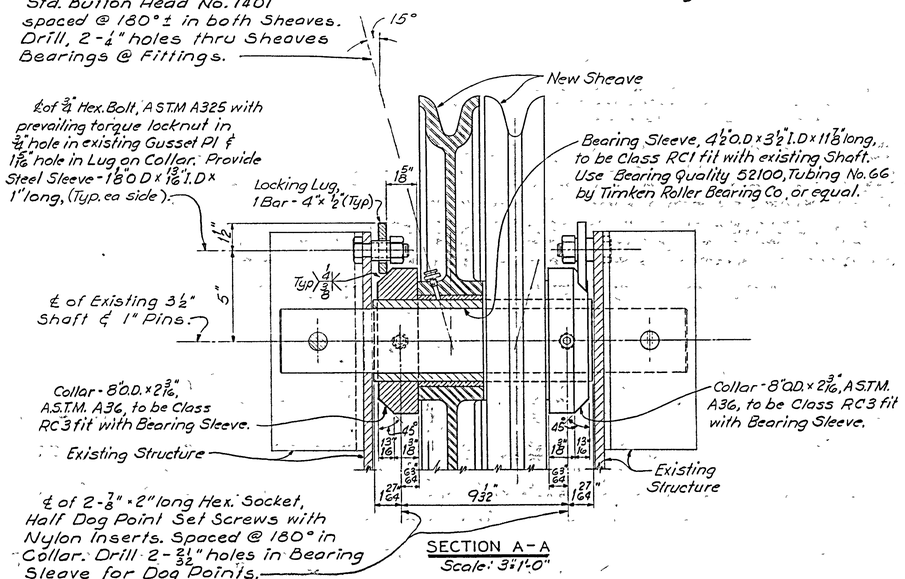




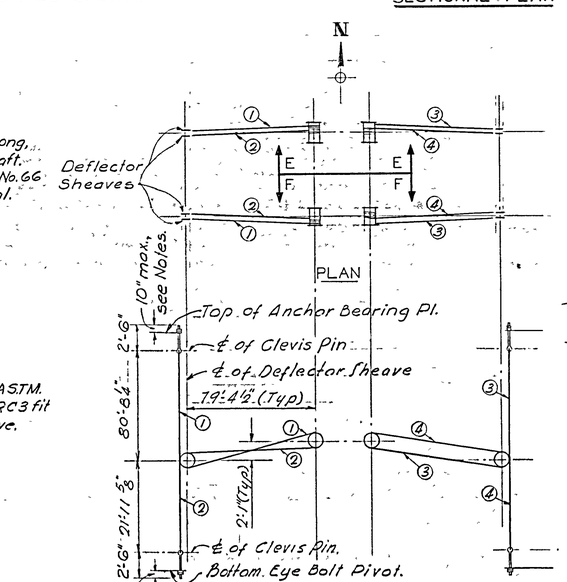
LOWER ANCHOR

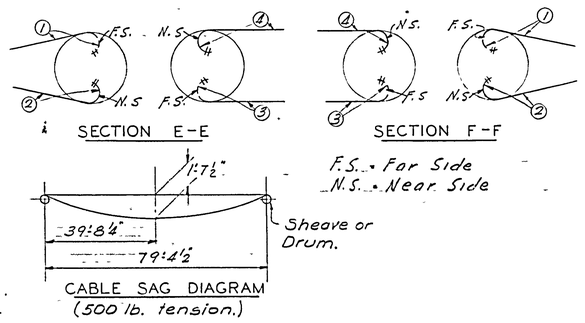
DETAILS OF LIFT CABLE ANCHORAGES
Scale: 1½"=1'-0"





DETAILS OF NEW DEFLECTOR SHEAVE ASSEMBLY
4 Req'd. as shown.





LIFTING CABLE REAVING DIAGRAM
No Scale

Note: Do not scale this drawing. Follow dimensions.

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

DEFLECTOR SHEAVES AND SPAN LIFT CABLE ANCHORS

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

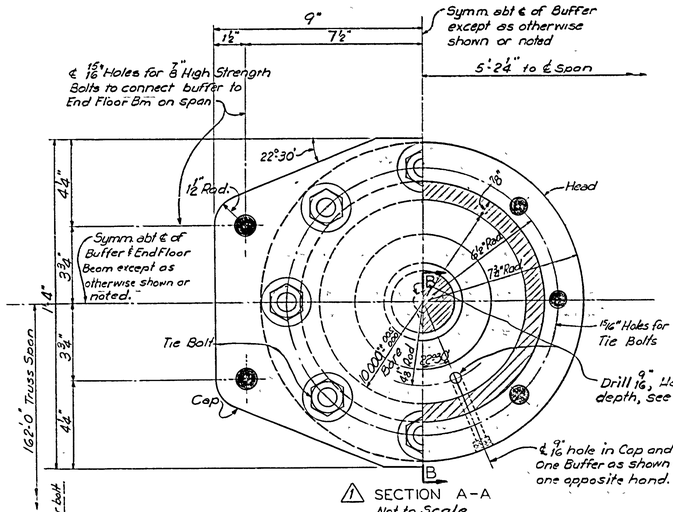
JVERDRUP & PARCEL AND ASSOC., INC.
CONSULTING ENGINEERS
ST LOUIS, MO.

SCALE: As Noted
DATE

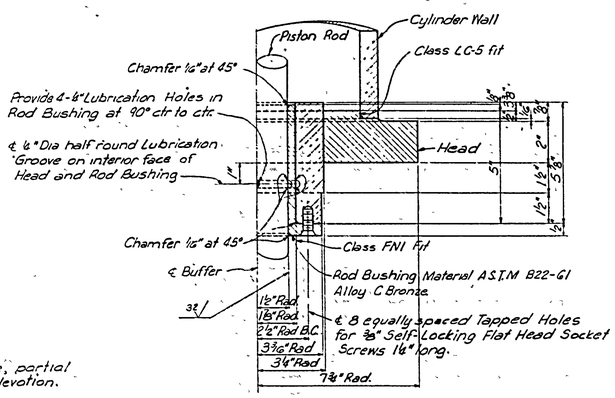
2602
67-D41

File No. D3A - 1.95 - 11

DRAWING NO. M3

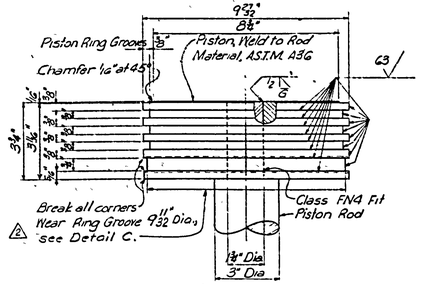


1 SECTION A-A
Not to Scale

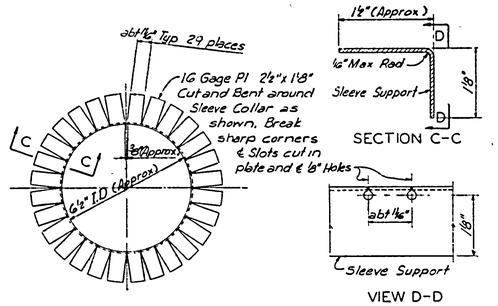


SECTION B-B

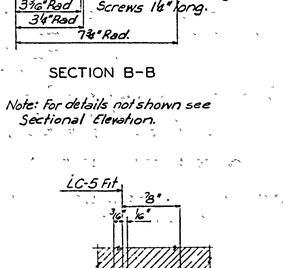
Note: for details not shown see Sectional Elevation.



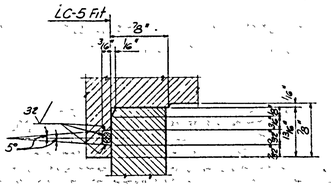
2 PISTON
Not to Scale



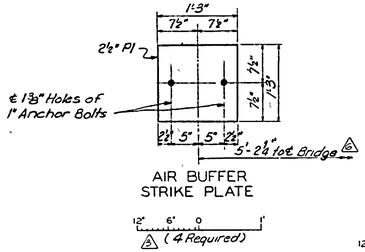
SLEEVE SUPPORT

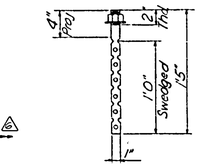


2 DETAIL C
Scale: 1"=1"



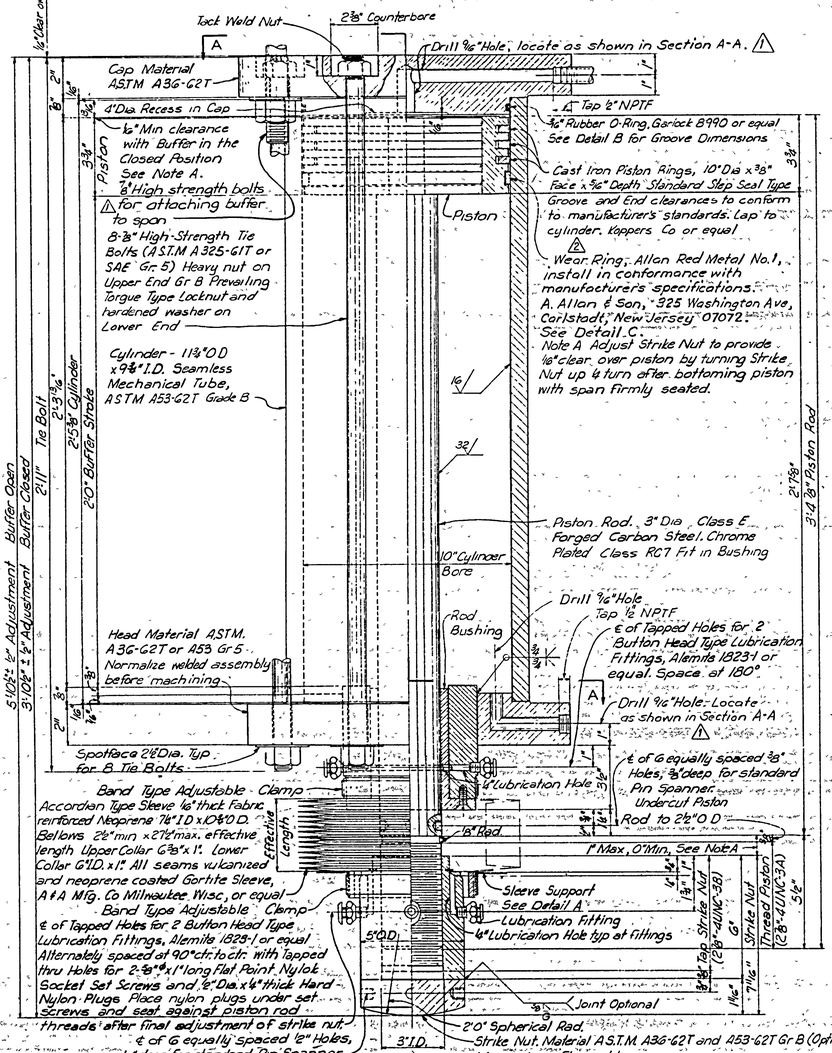
DETAIL B





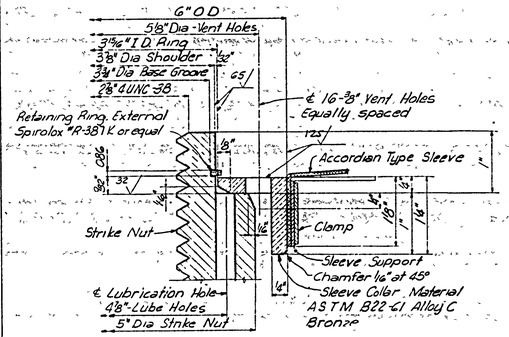
STRIKE PLATE ANCHOR BOLT
12" 9" 6" 3" 0
2 (8 Required)

2 Anchor Bolts shall not be furnished with Buffer Assembly.

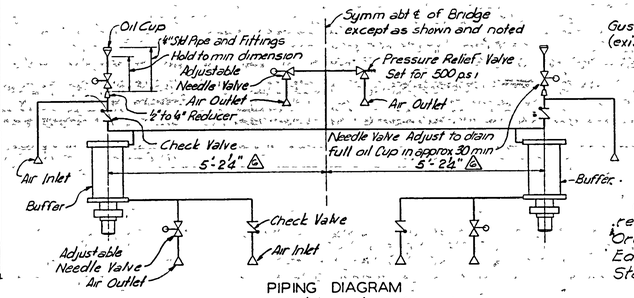


SECTIONAL ELEVATION
Not to Scale
SPAN AND COUNTERWEIGHT BUFFER
2 (4 Required)

Note: Do not scale this drawing. Follow dimensions.



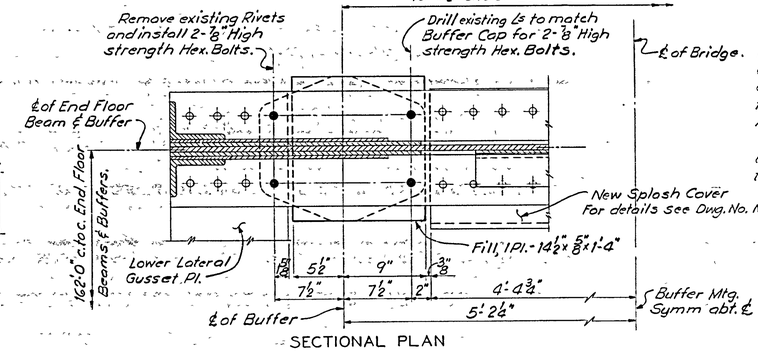
DETAIL A



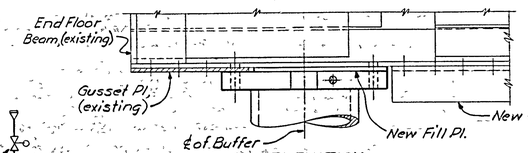
PIPING DIAGRAM
Not to scale

PIPING NOTES

All pipe to be ⅛" Schedule 80, except as noted.
All ¼" Fittings to be 2000 lb. Forged Steel, Screwed Type.
Oil Cups to be Gits Bros. Mfg. Co. Style D, No. 1609 or equal, with wool felt strainer.
Air Inlets or Outlets to be ¼" Std. Mall. Reducer Coupling Cover end with 14 mesh Bronze Screen secured with Hose Clamp.
All steel pipe and fittings to be galvanized.
Piping shall be arranged to use min. length of pipe.



SECTIONAL PLAN



ELEVATION

2 BUFFER MOUNTING DETAIL

Scale: 1½"=1'-0"
(Typical 4 places)

1 REVISION NOTE

Revisions listed indicate changes required on Shop Details, Shop Order K-481, Drawing No. 7598E30 Earle Gear & Machinery Co., 4707-4715 Stenton Ave. Philadelphia, Pa.

2 PIPING NOTES (CONT.)

Piping on span shall be clamped to end floor beams.
All pipe and fittings shall be thoroughly inspected at Field Assembly. Thread or cutting chips which may break loose shall be removed and the interiors thoroughly flushed to remove all foreign material.

GENERAL NOTES

Material and workmanship shall conform to current Standards and Specifications of AREA, ASTM, AWS, ASA and others as applicable to the items being furnished, fabricated or assembled. All rolled Steel shall be A-36.

Shop Details shall be submitted to the Railroad for review and approval prior to fabrication and assembly.

DATE	REV NO	REVISION	EARLE GEAR NO	APPROVED
Feb 1967	1	Shop Details Revision Note		
Feb 1967	2	Buffer Mounting Detail	263	
Feb 1967	3	Anchor Bolts excluded		
Feb 1967	4	Pipe Inspection & Cleaning Note		
Feb 1967	5	Number of Buffer Assemblies		
Feb 1967	2	Piston & Wear Ring	253, 260	
Feb 1967	1	Cylinder Cap	250	

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

BUFFERS

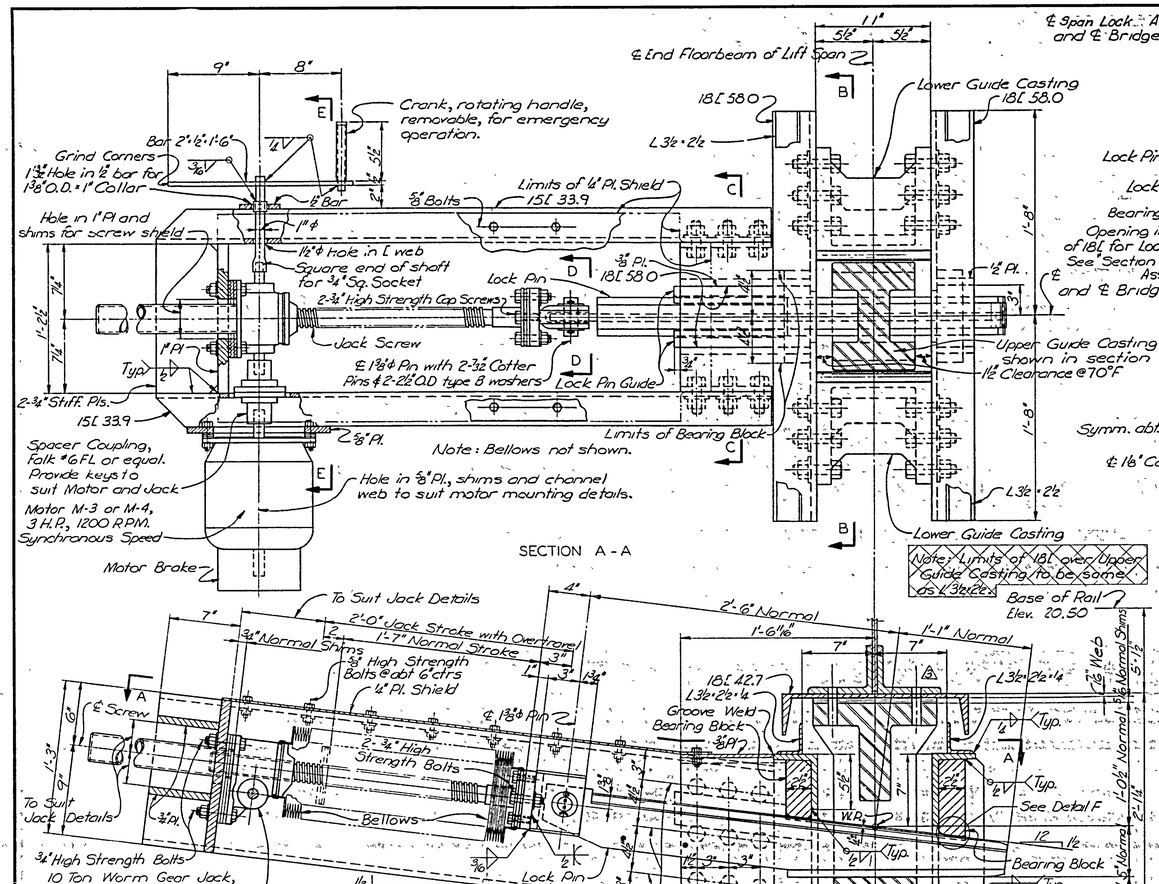
BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

SVERDRUP & PARCEL AND ASSOC., INC.
CONSULTING ENGINEERS
ST. LOUIS, MO.

SCALE: As Noted
DATE:

2602
67-022

FILE No. D3A-1.95-12 DRAWING NO. M4



NOTES

Materials and workmanship shall conform to current Standards and Specifications of A.R.E.A., A.S.T.M., AWS., A.G.M.A., A.S.A. and others as applicable to the items being furnished, fabricated, or assembled.

All rolled Steel shall be A-36.

Shop Details shall be submitted to the Railroad for review and approval prior to fabrication and assembly.

⚠ REVISION NOTE

Revisions listed indicate changes required on Shop Details, Shop Order K-481, Drawings No. 7895 E30, 7896 E30, 7898 E30, & 7899 E30, Earle Gear & Machinery Co. 4707-4715 Stenton Ave. Philadelphia Pa.

DATE	REV. NO.	REVISION	EARLE GEAR NO.	APPROVED
Feb. 1967	⚠	Shop Details Reference Note		
Feb. 1967	⚠	Anchor Assembly Excluded		
Feb. 1967	⚠	Upper Guide Casting Mounting	128	
Feb. 1967	⚠	Splash Cover Channel and Mtg.	127	
Feb. 1967	⚠	Added Limit Switch mounting holes.	145	

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

SPAN LOCK

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

SVERDRUP & PARCEL AND ASSOC., INC. CONSULTING ENGINEERS
ST. LOUIS, MO
SCALE:
DATE:

2602
17.020

FILE No. D3A-1.95-13

DRAWING NO. M5

Remove
Burn off the four 12" Ls indicated on horizontal lines flush or slightly below the top elevation of Beam B5 and Beam B2A flanges. (Discard B13 and B14)

Remove
Remove ⅜" clip angle from Vertical channel completely on this support only.

Remove
Burn off the three ⅜" Clip Angles indicated on horizontal lines above the top of the vertical supporting channels. Discard B11 and B1

Remove
Burn off seven ⅞" rivets as shown on top flange of each truss chord Knock out rivets and and discard B10.

Provide
Install four ⅞" H.S. Struct. Bolts in upper flange of top chord in location indicated

Remove
Burn off outstanding legs of four ⅜" conn angles indicated on vertical line near heel and discard B12.

Remove
Burn off plates and angles indicated on horizontal lines flush or slightly below the top elevation of the adjacent floor support beam flanges Discard material above burn-off elevation

Provide
Outside limits of new struct. Support base for lift drive machinery assembly. Details of base shown at right.

Note: Floor Pl 60"×⅜"×6'-9¾" lg not shown Floor plate to be welded to ℄ after frame has been bolted in place.

PLAN OF STRUCTURAL SUPPORT BASE FOR LIFT DRIVE MACHINERY

Reference Drawings
Virginia Bridge and Iron Co. Shop Details, Contract V-715
Sht E-2 Diagram of Machinery Floor.
Sht. 2 Trusses
Sht. 9 Machinery Supports
Sht. 10 Machinery Beams
Sht 11 Machinery Beams

SECTION A-A

SECTION B-B

SECTION C-C

NOTES
All rolled steel in machinery platform shall be A.S.T.M A36.
All bolts shall be ¾", A.S.T.M. A325.
Welding sequences shall be scheduled to prevent warpage of frame or floor plate.

Note:- Do not scale this drawing follow dimensions.

MISSOURI PACIFIC RAILROAD CO
DE QUINCY DIVISION
MODIFICATIONS TO EXISTING MACHINERY FLOOR
BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS
SVERDRUP & PARCEL AND ASSOC., INC CONSULTING ENGINEERS ST LOUIS, MO
SCALE
DATE

2602
17-D16

FILE NO. D3A-1.95-14 DRAWING NO. M6

Engine Pedestal

Indicator

Hand Brake

Engine Pedestal

Section at ℄

Section Showing Clutch Shifter

Hand Turning Mechanism

MACHINERY SALVAGE NOTES

All machinery shown in bold outline and cross-hatched will become a part of the modified operating machinery and shall remain on the Span.

All other mechanical components shall be removed, including the End Span Locks, which are not shown, and the mechanical Shafts and Linkage for operating the Rail Tongues at Track level.

LUBRICATION NOTES

Existing Lubrication Fittings on the Salvaged Machinery shall be removed and replaced with Standard Button Head Lubrication Fittings, using appropriate size threaded units to suit existing holes.

Provide Heavy-duty lever type Grease Gun. Alemite Model 6679-J, 24 ounce capacity, fitted with Alemite Hose Assembly No 1189 for Standard Button Head Fittings.

Note: Do not scale this drawing. Follow dimensions.

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

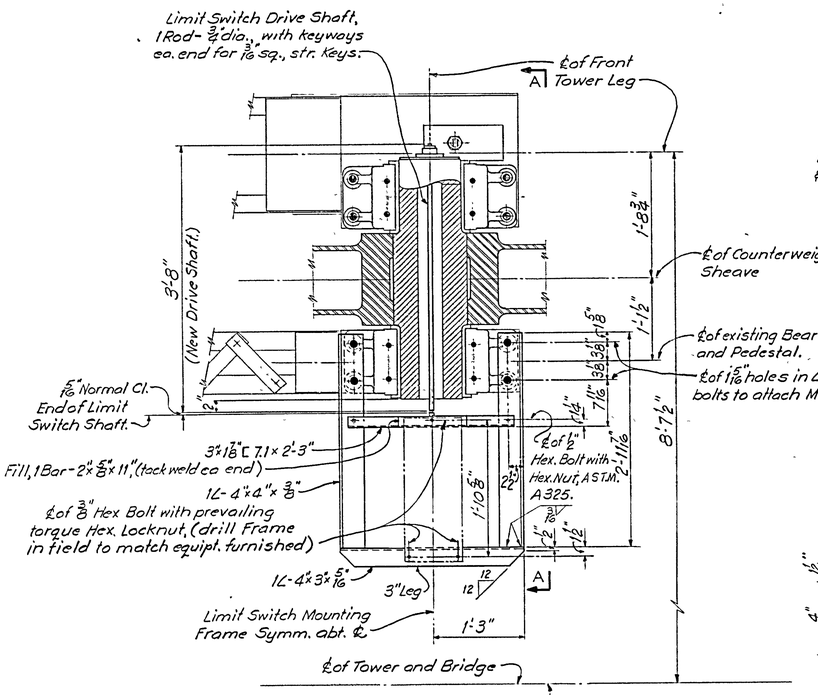
MODIFICATIONS TO EXISTING MACHINERY

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

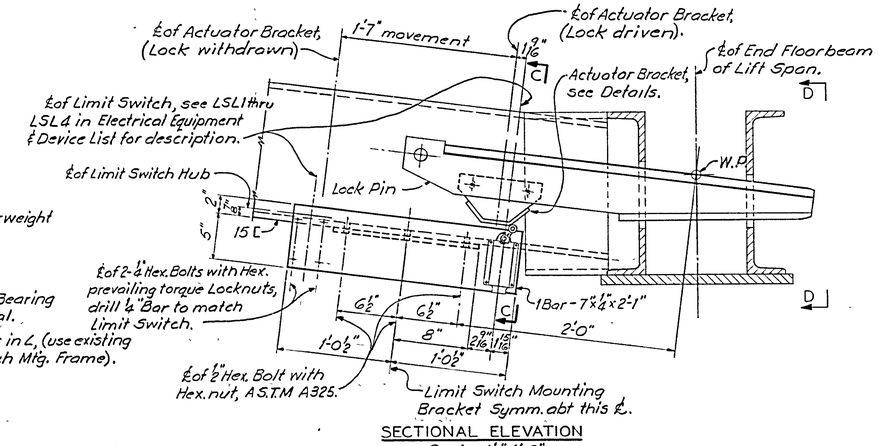
SVERDRUP & PARCEL AND ASSOC, INC — SCALE
CONSULTING ENGINEERS
ST LOUIS, MO — DATE

FILE No. D3A-1.95,-15,4 — DRAWING NO. M7

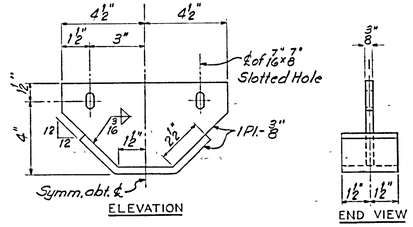
2002
67-019



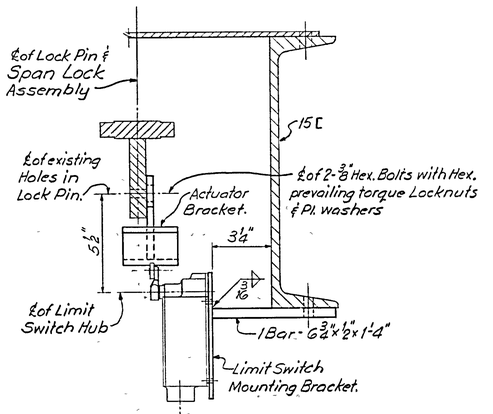
SECTIONAL PLAN
Scale: 1" = 1'-0"



SECTIONAL ELEVATION
Scale: 1 1/2" = 1'-0"



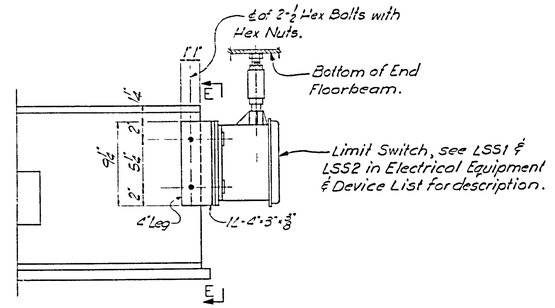
DETAILS OF ACTUATOR BRACKET
Scale: 3" = 1'-0"



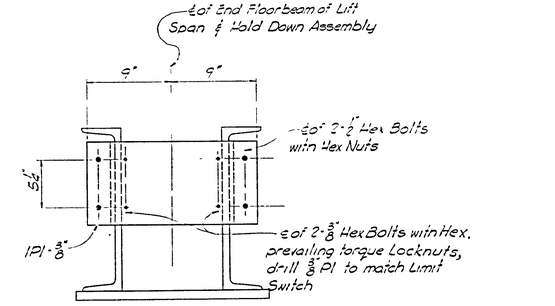
SECTION C-C
Scale: 3" = 1'-0"

LIMIT SWITCH LEVER SET AND TRAVEL
Scale: 1" = 1"

DETAILS OF SPAN LOCK LIMIT SWITCH MOUNTING
(At each end of Lift Span)

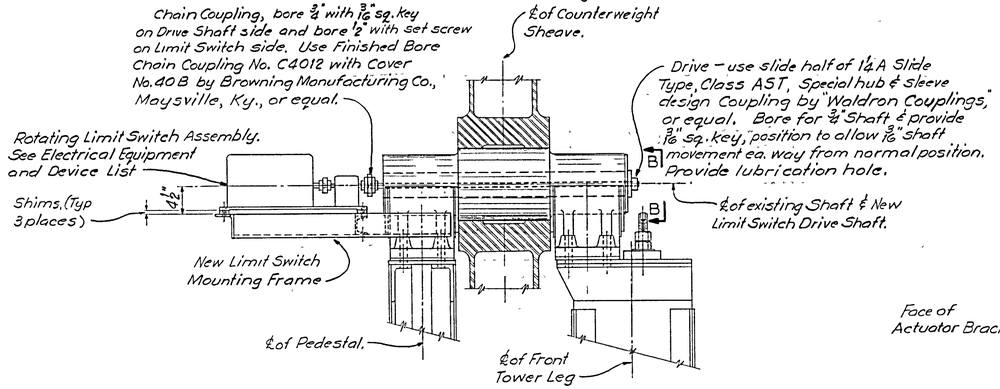


VIEW D-D
Scale: 1 1/2" = 1'-0"

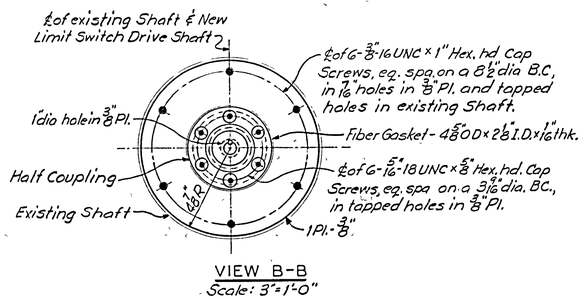


VIEW E-E
Scale: 1 1/2" = 1'-0"

"SPAN SEATED" LIMIT SWITCH MOUNTING
(At each end of Lift Span)



ELEVATION A-A
Scale: 1" = 1'-0"



VIEW B-B
Scale: 3" = 1'-0"

DETAILS OF SPAN POSITION LIMIT SWITCHES
(At West Tower only)

Note: Do not scale this drawing. Follow dimensions.

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

LIMIT SWITCHES

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

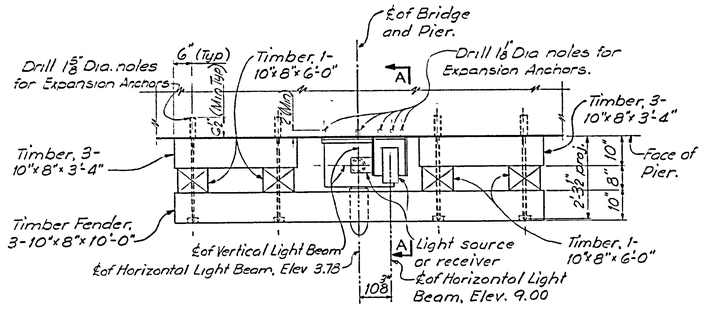
SVERDRUP & PARGEL AND ASSOC., INC
CONSULTING ENGINEERS
ST. LOUIS, MO

SCALE: As Noted
DATE:

2602-67-042

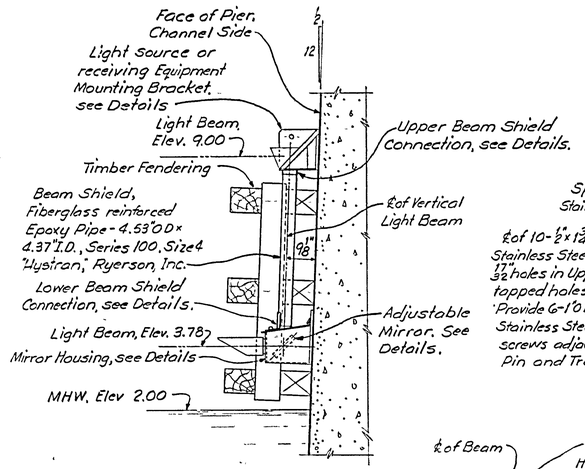
FILE NO. D3A-1.95-16

DRAWING NO. M8

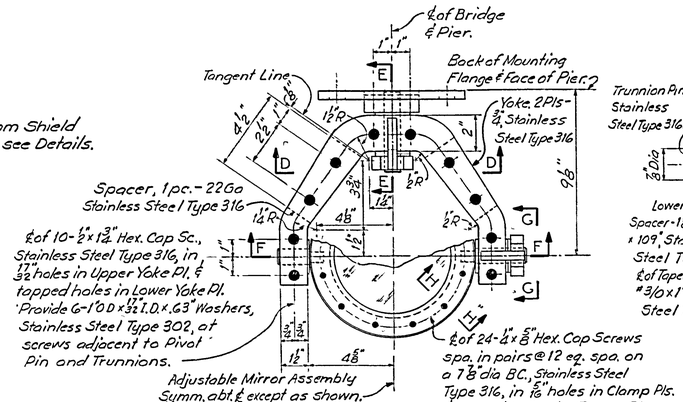


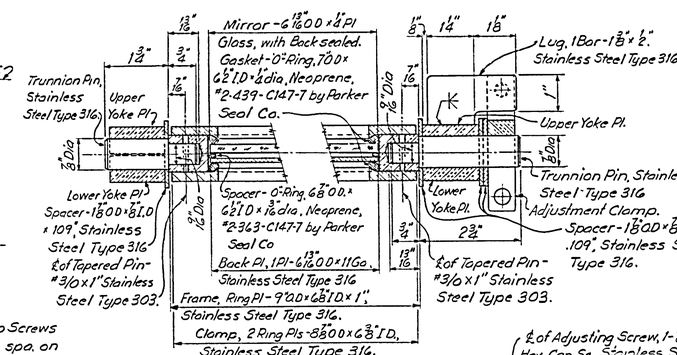
PLAN
Scale: ½"=1'-0"

Note: One Unit as shown, Unit on other Pier to be opposite hand. Plan is shown normal to Pier Face.

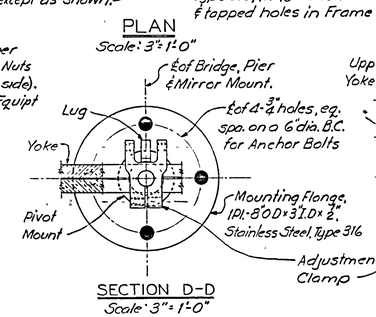


SECTION A-A
Scale: ½"=1'-0"



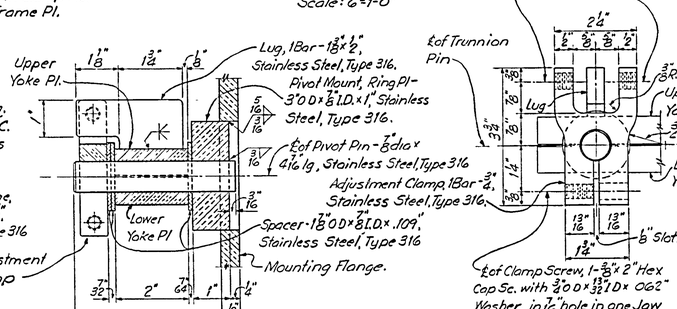


SECTION F-F
Scale: 6"=1'-0"

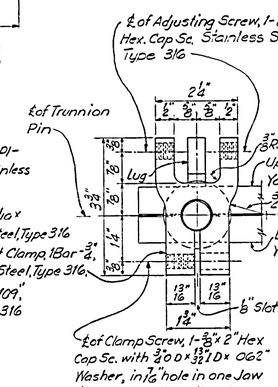


DETAILS OF UPPER BEAM SHIELD CONNECTION
Scale: 3"=1'-0"
(2-required)

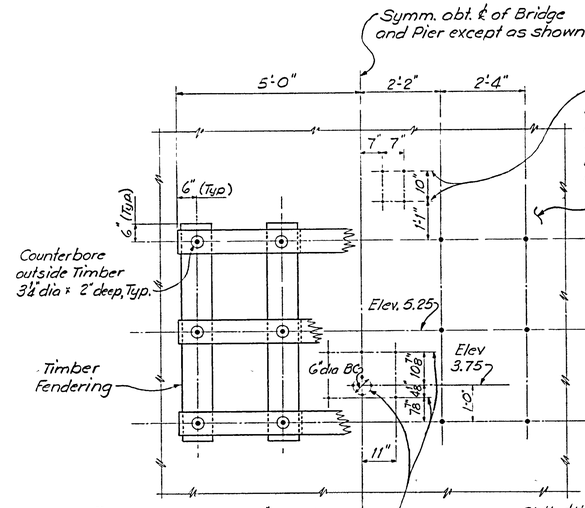
SECTION D-D
Scale: 3"=1'-0"



SECTION E-E
Scale: 6"=1'-0"

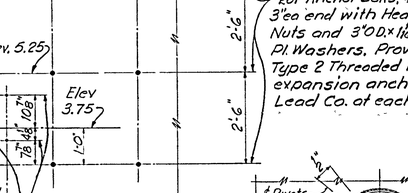


VIEW G-G
Scale: 6"=1'-0"

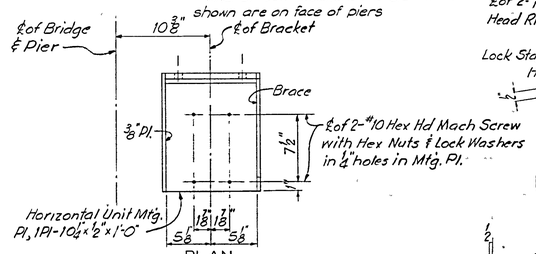


ELEVATION
Scale: ½"=1'-0"

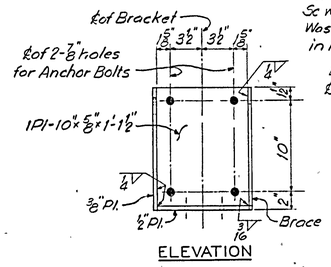
Anchor bolt locations and Elevations shown are on face of piers



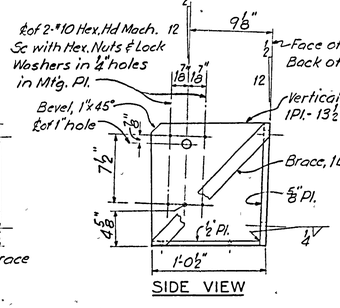
PLAN



PLAN

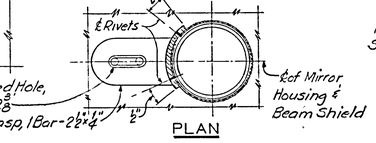


ELEVATION



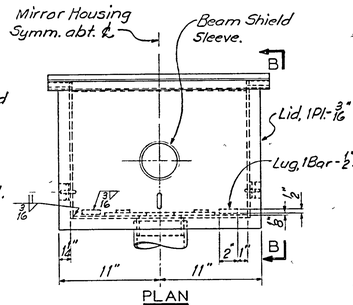
SIDE VIEW

DETAILS OF EQUIPMENT MOUNTING BRACKET
Scale: 1½"=1'-0"
Note: 2 required, one as shown, one opposite hand.

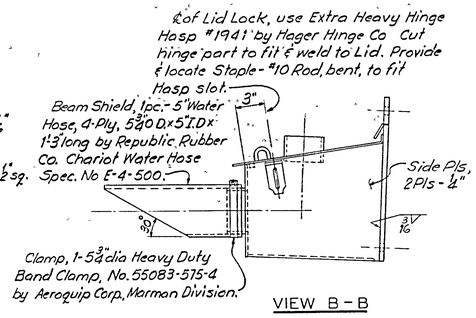


ELEVATION

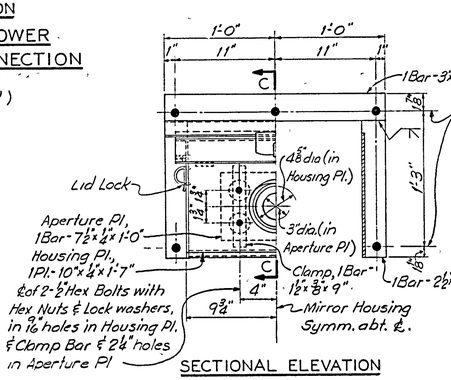
DETAILS OF LOWER BEAM SHIELD CONNECTION
Scale: 3"=1'-0"
(2-required)



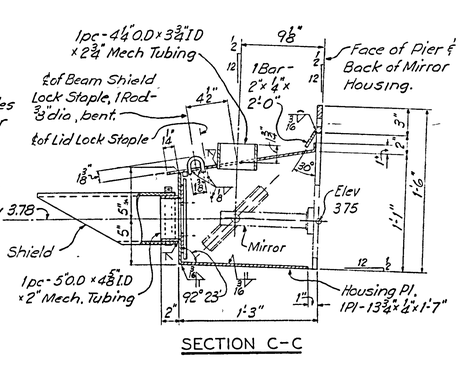
PLAN



VIEW B-B

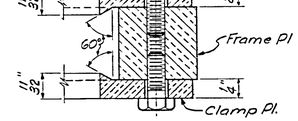


SECTIONAL ELEVATION



SECTION C-C

DETAILS OF MIRROR HOUSING
Scale: 1½"=1'-0"
(2-required)



SECTION H-H
Scale: 1"=1"
Note: Mirror, Back Pl & Seals not shown.

DETAILS OF ADJUSTABLE MIRROR
(2-required)

NOTES

All Timber Fender members shall be treated.

Note: Do not scale this drawing. Follow dimensions.

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

BOAT DETECTOR CARRIAGE

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

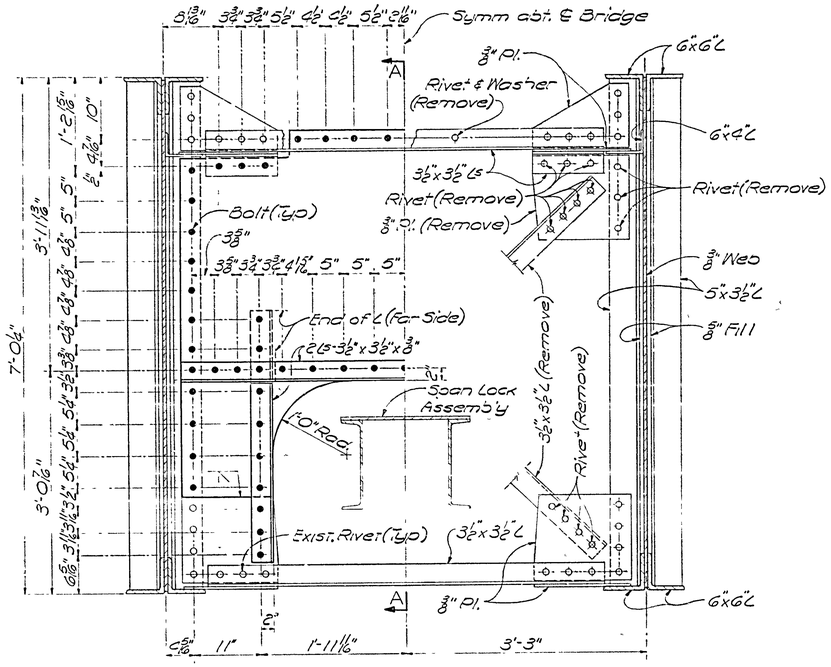
SVERDRUP & PARCEL AND ASSOC, INC.
CONSULTING ENGINEERS
ST LOUIS, MO.

SCALE As Noted
DATE

2602
67-088

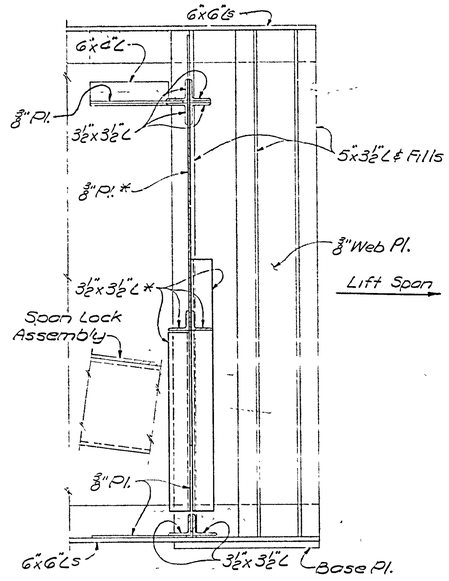
FILE No. D3A-1.95-17

DRAWING NO. M9



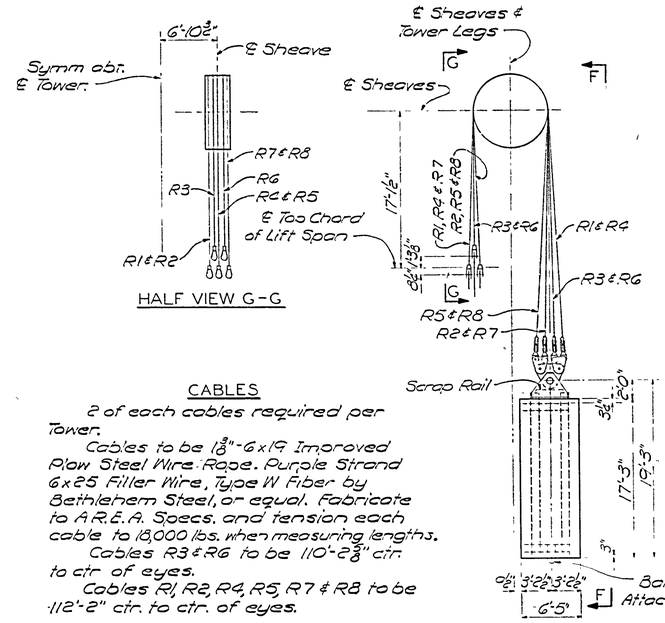
NEW CONSTRUCTION

MODIFICATIONS TO EXISTING STRUCTURE



SECTION A-A

* Denotes new construction



CABLES

2 of each cables required per Tower.

Cables to be 1⅜"-6x19 Improved Plow Steel Wire Rope. Purple Strand 6x25 Filler Wire, Type W Fiber by Bethlehem Steel, or equal. Fabricate to A.R.E.A. Specs. and tension each cable to 18,000 lbs. when measuring lengths.

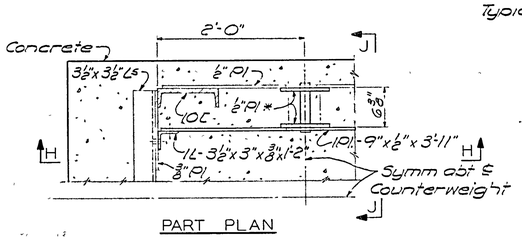
Cables R3 & R6 to be 110'-2⅜" ctr. to ctr of eyes.

Cables R1, R2, R4, R5, R7 & R8 to be 112'-2" ctr. to ctr. of eyes.

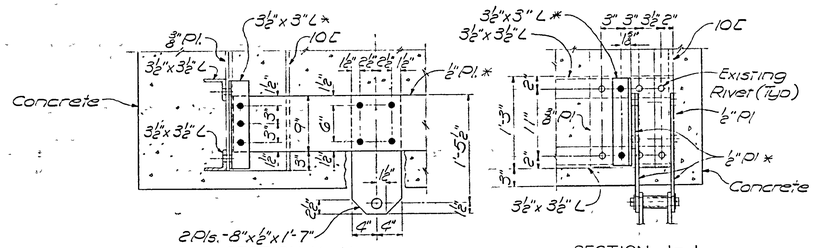
COUNTERWEIGHT AND CABLES

Scale: ⅛" = 1'-0"

Typical at each Tower.



PART PLAN



BALANCE CHAIN ATTACHMENT TO COUNTERWEIGHT

Scale: 1" = 1'-0"

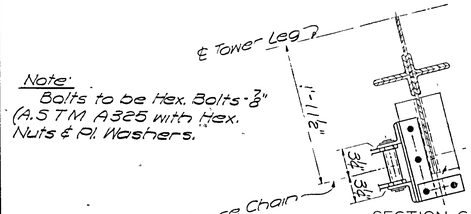
* Denotes new construction.

Bolts to be Hex. Bolts - ⅞" (A.S.T.M. A325) with Hex. Nuts & Pl. Washers.

75'-0" DECK GIRDER END CROSS FRAMES ADJACENT TO LIFT SPAN

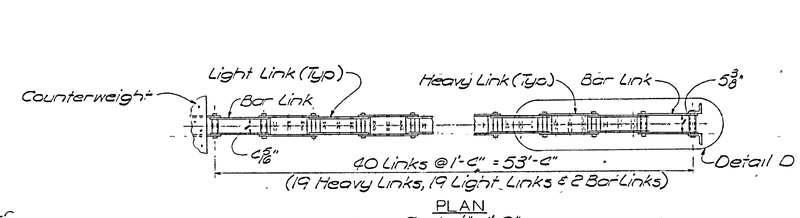
Scale: 1" = 1'-0"

Bolts to be Hex. Bolts - ⅞" (A.S.T.M. A325) with Hex. Nuts and Pl. Washers.



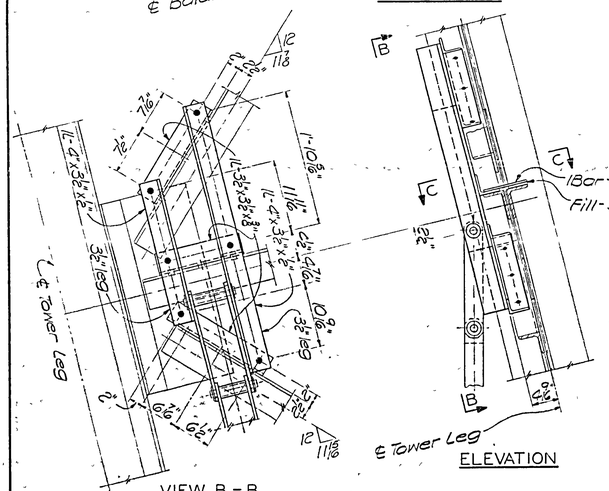
Note:
Bolts to be Hex. Bolts - ⅞" (A.S.T.M. A325 with Hex. Nuts & Pl. Washers.

SECTION C-C



PLAN

Scale: ½" = 1'-0"

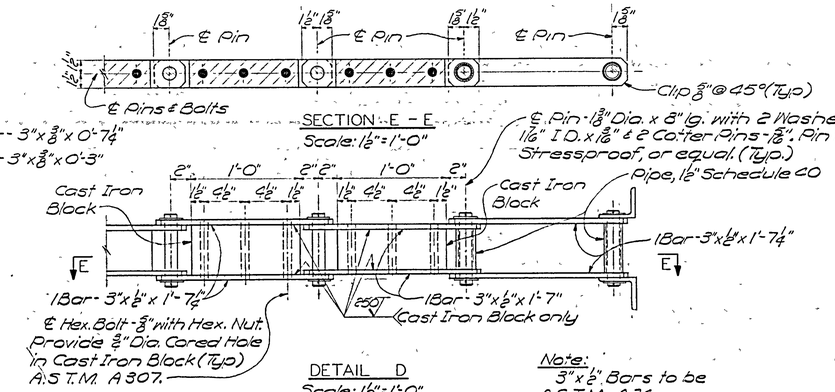


VIEW B-B

ELEVATION

BALANCE CHAIN ATTACHMENT TO TOWER LEG

Scale: 1" = 1'-0"



DETAIL D

Scale: 1½" = 1'-0"

Typical Link Details.

Note:
3"x½" Bars to be A.S.T.M. A36.

BALANCE CHAIN

Scale: As Noted

Required.

℄ Pin - 1⅜" Dia. x 8" lg. with 2 Washers - 2½" O.D. x 1⅛" I.D. x ⅛" & 2 Cotter Pins - ⅛". Pin to be Ryerson Stressproof, or equal. (Typ.)

Note: Do not scale this drawing. Follow dimensions.

2602
67033

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

DECK GIRDER END CROSS FRAMES AND COUNTERWEIGHT DETAILS

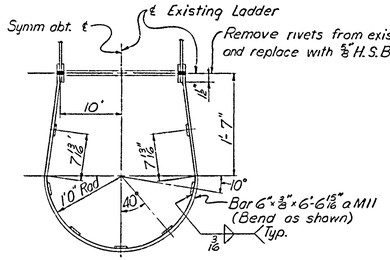
BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

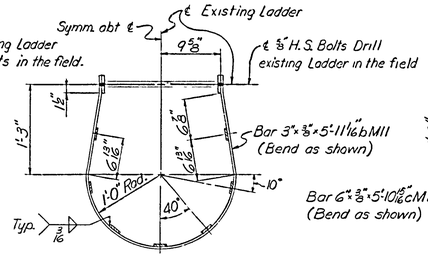
SVERDRUP & PARCEL AND ASSOC., INC.
CONSULTING ENGINEERS
ST. LOUIS, MO.

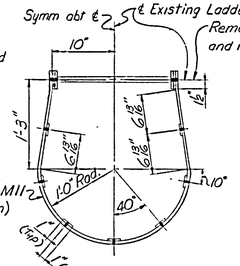
SCALE: As Noted.
DATE:

FILE NO. D3A-1.95-18

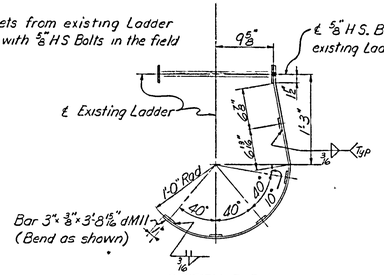
DRAWING NO. M10





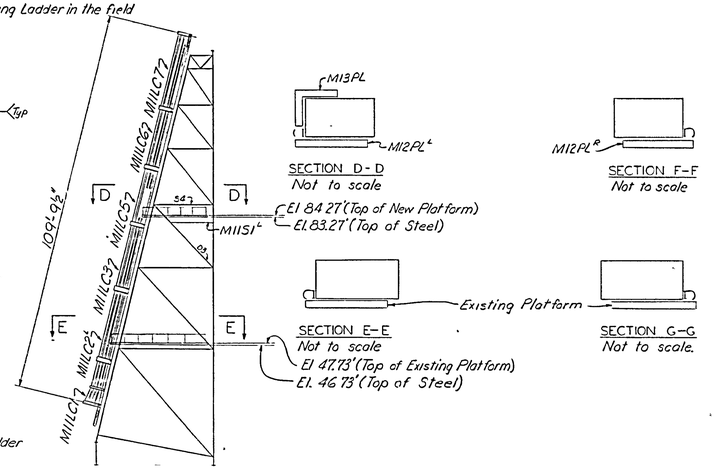


TYPE "3 HOOP
Scale: 1"=1'-0"



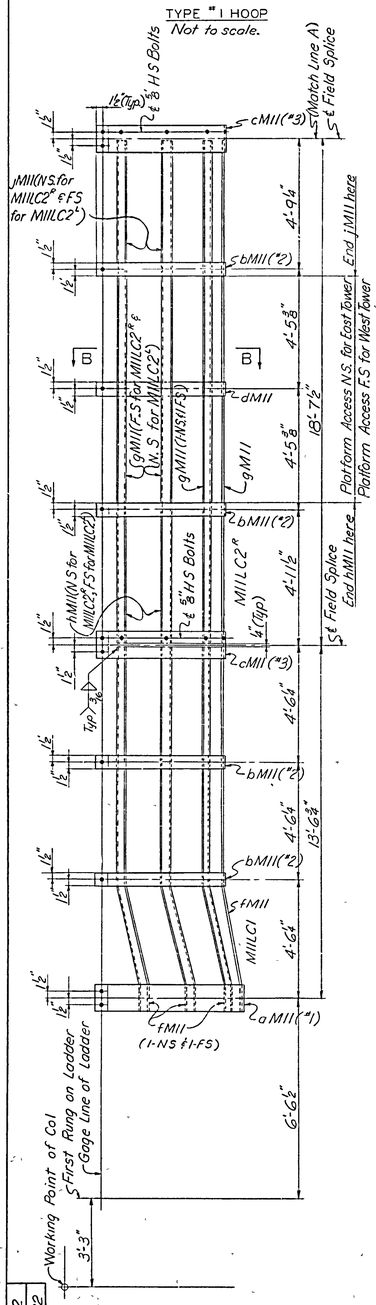
SECTION B-B
Scale: 1"=1'-0"

Note: MIILC2^R ℄ MIILC4 as shown.
MIILC2^L opposite hand.

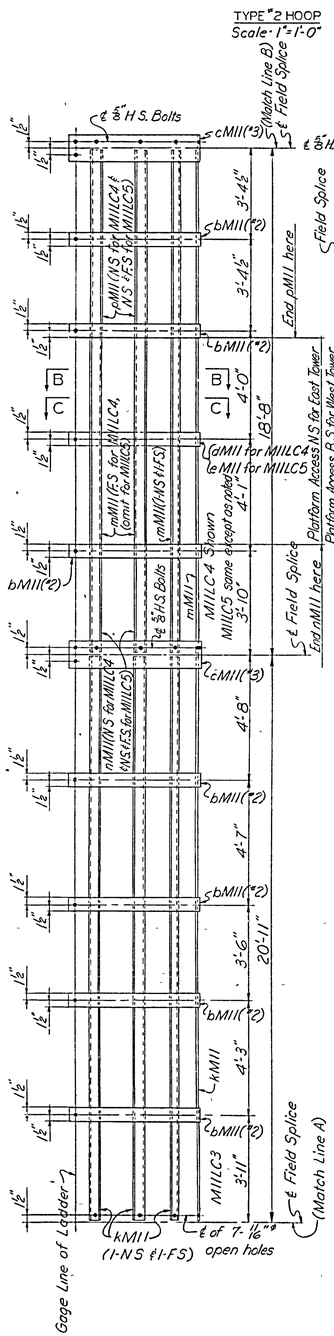


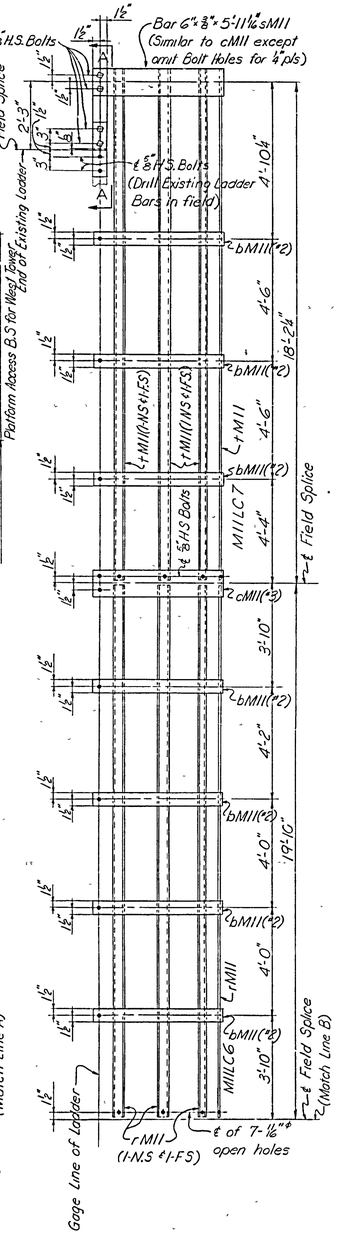
SOUTH ELEVATION
Not to scale

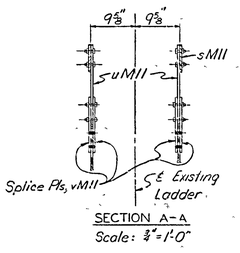
TYPE "1 HOOP
Not to scale.



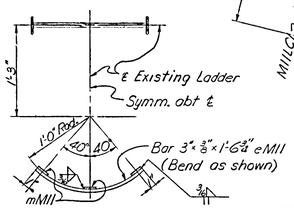
TYPE "2 HOOP
Scale: 1"=1'-0"







SECTION A-A
Scale: ¾"=1'-0"



SECTION C-C
Scale: 1"=1'-0"
Note: MIILC5 only

MATERIAL FOR LADDER CAGES

MIILC1
1-aMII
2-bMII
1-cMII
7-Bars 2"×¼"×13'-9¾" (abt) fMII

MIILC2^R
2-bMII
1-cMII
1-dMII
5-Bars 2"×¼"×18'-7¼" gMII
2-Bars 2"×⅛"×5'-0⅜" hMII
2-Bars 2"×¼"×4'-10⅝" jMII

MIILC3
4-bMII
1-cMII
7-Bars 2"×¼"×20'-10¾" kMII

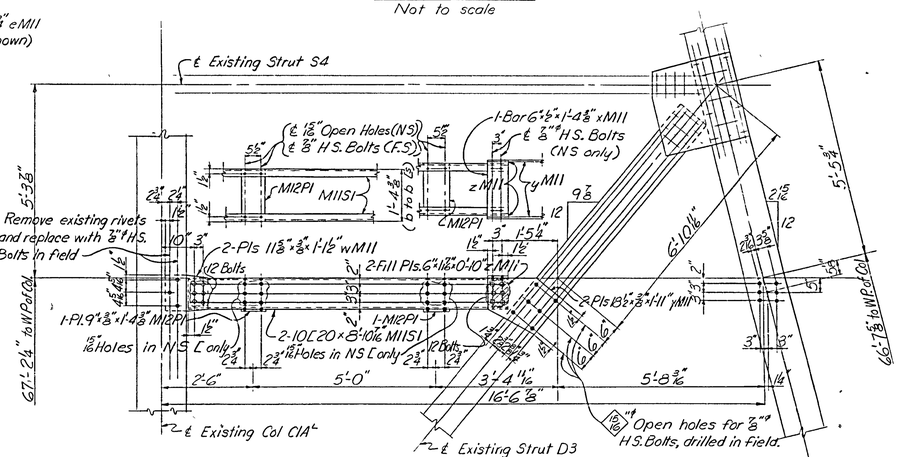
MIILC4
3-bMII
1-cMII
1-dMII
5-Bars 2"×¼"×18'-7⅜" mMII
2-Bars 2"×¼"×3'-11⅜" nMII
2-Bars 2"×¼"×6'-10⅜" pMII

MIILC5
3-bMII
1-cMII
1-eMII
3-mMII
4-nMII
4-pMII

MIILC6
4-bMII
1-cMII
7-Bars 2"×¼"×19'-9⅞" rMII

MIILC7
3-bMII
1-sMII
7-Bars 2"×¼"×18'-5⅛" tMII
2-Bars 3"×⅝"×2'-5⅜" uMII } Ship bolted to cage
4-Bars 3"×⅜"×1'-0" vMII }

Make-2-Ladder Cages As Shown Mark MIILC1
Make-One-Ladder Cage As Shown Mark MIILC2^R
Make-One-Ladder Cage Opposite Hand to MIILC2^R Mark MIILC2^L
Make-2-Ladder Cages As Shown Mark MIILC3
Make-One-Ladder Cage As Shown & Noted Mark MIILC4
Make-One-Ladder Cage As Shown & Noted Mark MIILC5
Make-2-Ladder Cages As Shown Mark MIILC6
Make-2-Ladder Cages As Shown Mark MIILC7



Make-One-Strut As Shown Mark MI1S1^R (For East Tower)
Make-One-Strut Opposite Hand Mark MI1S1^L (For West Tower)
Note. Completely bolt in shop with ⅞" H.S. Bolts, plates MI2PI, wMII, xMII, yMII & zMII to channels as shown.

SOUTH ELEVATION (@ El 83.27')
Scale: ½"=1'-0"

NOTES

All open holes to be 1 1/16" ø except as noted
All Structural Shapes, Plates & Bars to be A.S.T.M.-A36.
Shaded areas indicate existing material.
H.S. indicates bolting material per ASTM-A325 or equal

ELEVATION OF LADDER CAGE
Not to scale

Note: Do not scale this drawing. Follow dimensions

MISSOURI PACIFIC RAILROAD CO.
DEQUINCY DIVISION

ACCESS LADDER

BRIDGE NO 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

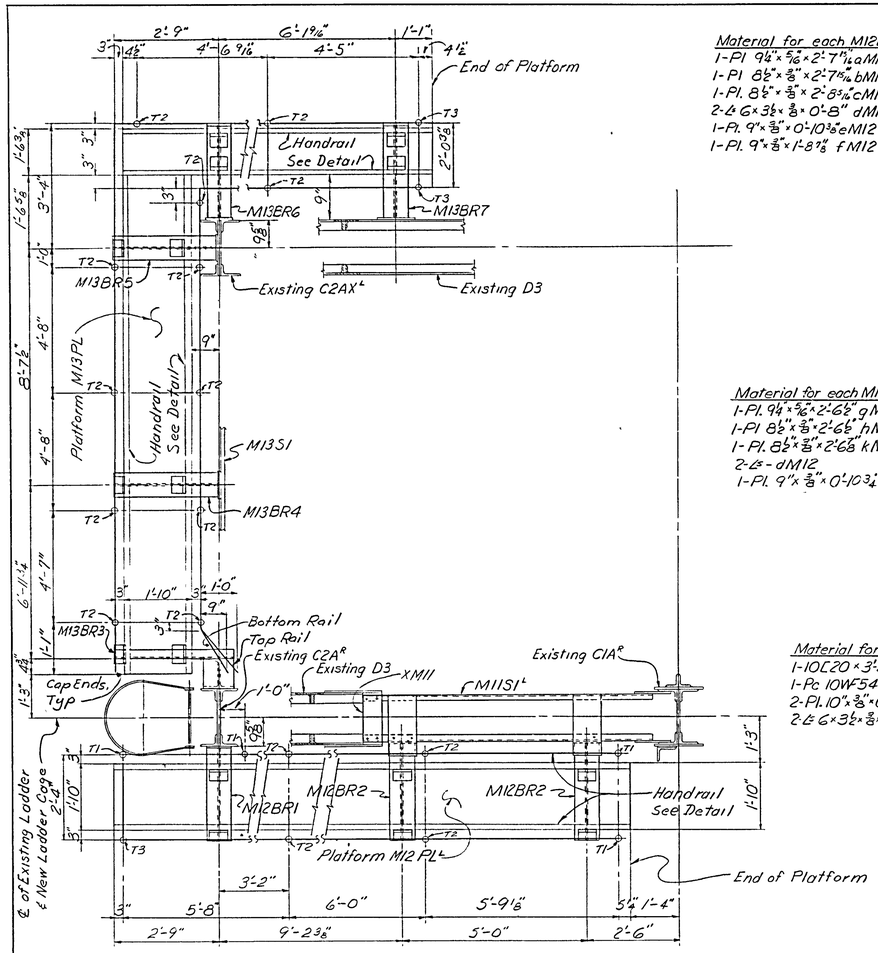
SVERDRUP & PARCEL AND ASSOC, INC
CONSULTING ENGINEERS
ST. LOUIS, MO.

SCALE As Noted
DATE

2602
67-D92

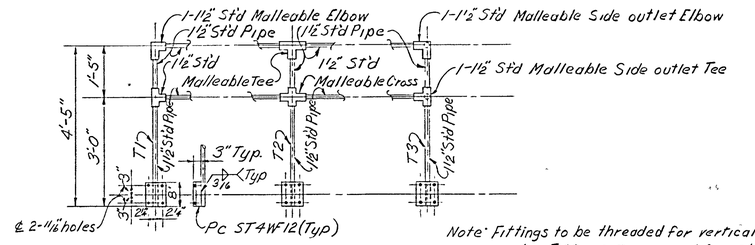
FILE No. D3A-1.95-19

DRAWING NO. M11



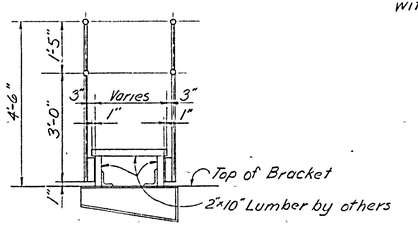
PLAN (@EI 83 27)
Scale: 1/2"=1'-0"

Make-One-Platform As shown Mark M12 PL℄ (West Tower)
Make-One-Platform As shown except Opposite Hand Mark M12 PLR (East Tower)
Make-One-Platform As shown Mark M13 PL (West Tower)



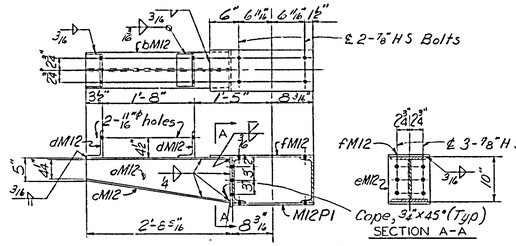
TYPICAL HANDRAIL DETAILS
Scale: 1/2"=1'-0"

Note: Fittings to be threaded for vertical posts. Fittings to reamed for slip-fitting rails except at end or corner Posts. Slip-fitting rails to be pinned with 1-3/8" bolt at each end



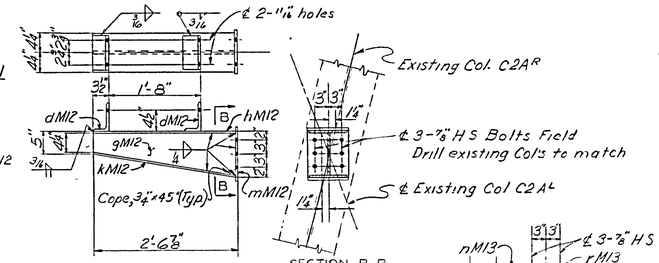
SECTION THRU WALKWAY
Scale: 1/2"=1'-0"

Material for each M12BR2
1-Pl 9¼"x⅝"x2'-7¹¹/₁₆" aM12
1-Pl 8½"x⅜"x2'-7⅝" bM12
1-Pl. 8½"x⅜"x2'-6³/₁₆" cM12
2-L's 6x3½x⅜x0'-8" dM12
1-Pl. 9"x⅜"x0'-10⅜" eM12
1-Pl. 9"x⅜"x1'-8⅞" fM12



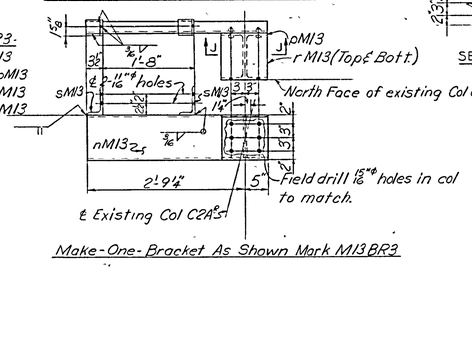
Make-4-Brackets As Shown Mark M12BR2

Material for each M12BR1
1-Pl. 9¼"x⅝"x2'-6⅛" gM12
1-Pl 8½"x⅜"x2'-6⅛" hM12
1-Pl. 8½"x⅜"x2'-6⅜" kM12
2-L's - dM12
1-Pl. 9"x⅜"x0'-10¾" mM12

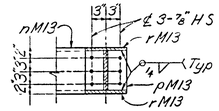


Make-2-Brackets As Shown Mark M12BR1

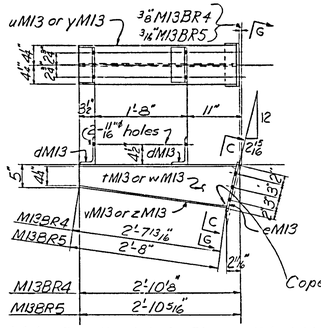
Material for M13BR3:
1-10C20 x 3'-2¼" nM13
1-Pc 10WF54 x 0'-9½" pM13
2-Pl. 10"x⅜"x0'-10⅝" rM13
2-L's 6x3½x⅜x0'-3¼" sM13



Make-One-Bracket As Shown Mark M13BR3



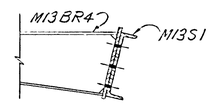
SECTION J-J



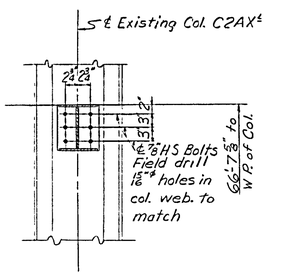
Material for M13BR4
1-Pl 9"x⅝"x2'-9¾" tM13
1-Pl. 8½"x⅜"x2'-9¾" uM13
1-Pl. 8½"x⅜"x2'-7¹³/₁₆" vM13
2-L's-6"x3½"x0'-8" dM13
1-Pl.-9"x⅜"x0'-10¾" eM13

Material for M13BR5
1-Pl. 9"x⅝"x2'-9⅛" wM13
1-Pl. 8½"x⅜"x2'-9⅛" yM13
1-Pl. 8½"x⅜"x2'-8" zM13
2-L's - dM13
1-Pl.-9"x⅜"x0'-10¾" eM13

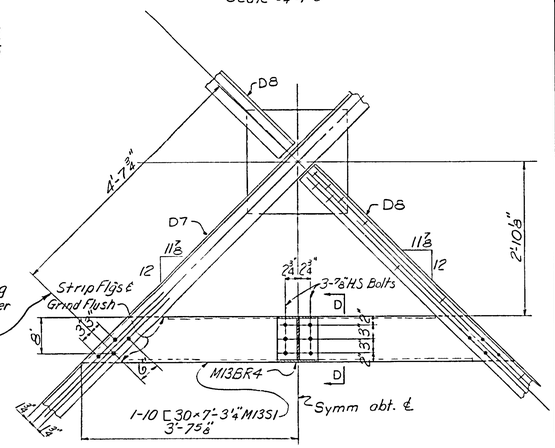
Make-One-Bracket As Shown ℄ Noted Mark M13BR4
Make-One-Bracket As Shown ℄ Noted Mark M13BR5
Note: Welding same as shown for M12BR1.



SECTION D-D
Scale. 1½"=1'-0"

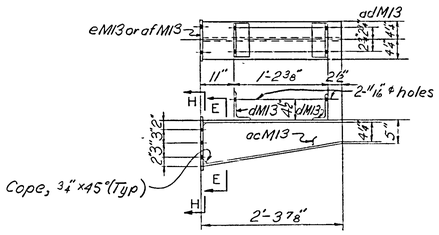


SECTION C-C
Scale 3¼"=1'-0"



SECTION G-G
Scale: 3¼"=1'-0"

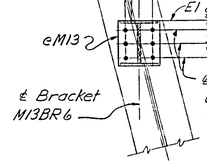
Make-One-Strut As Shown Mark M13S1



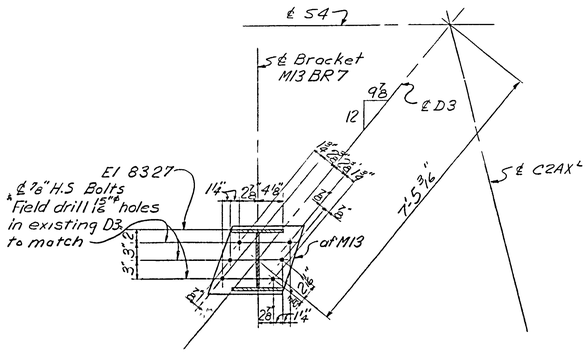
Make-One-Bracket As Shown ℄ Noted Mark M13BR6
Make-One-Bracket As Shown ℄ Noted Mark M13BR7
Note: Weld same as shown for M12BR1

Material for M13BR6
1-Pl 9¼"x⅜"x2'-3½" acM13
1-Pl 8½"x⅜"x2'-3½" adM13
1-Pl 8½"x⅜"x2'-3 15/16" aeM13
2-L's-dM13
1-Pl.-eM13

Material for M13BR7
1-Pl-acM13
1-Pl-adM13
1-Pl-aeM13
2-L's-dM13
1-Pl 10¾"x⅜"x1'-3" afM13



SECTION E-E
Scale: 3¼"=1'-0"
(M13 BR6 only)



SECTION H-H
(M13 BR7 only)

NOTES
All Structural Shapes, Plates & Bars to be A S T M. - A36
All open holes to be 15/16" ø except as noted.
H.S indicates bolting mat'l per AS TM. A325 or equal

MISSOURI PACIFIC RAILROAD CO.
DEQUINCY DIVISION

PLATFORM TO ACCESS LADDER

BRIDGE NO 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

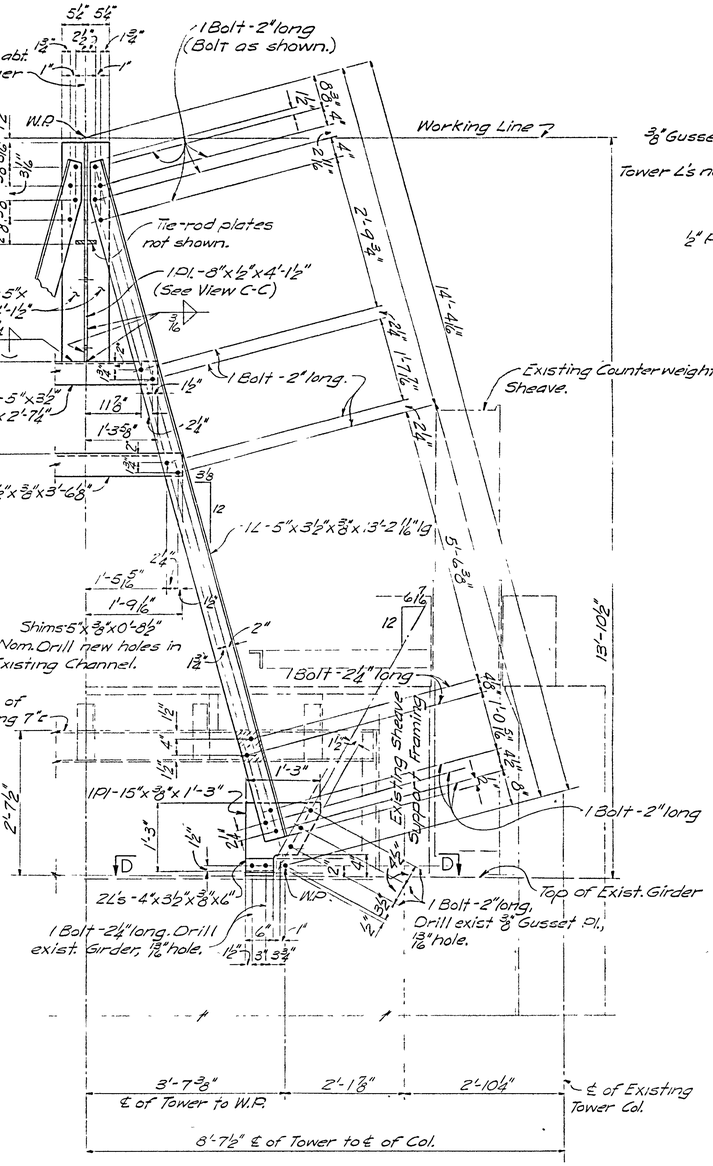
SVERDRUP & PARCEL AND ASSOC, INC
CONSULTING ENGINEERS
ST LOUIS, MO.

SCALE AS NOTED
DATE

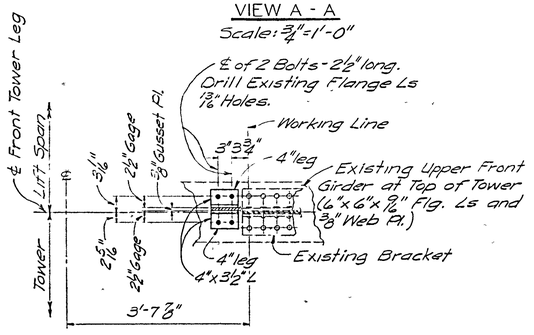
2602
67-D23

Note: Do not scale this drawing Follow dimensions.

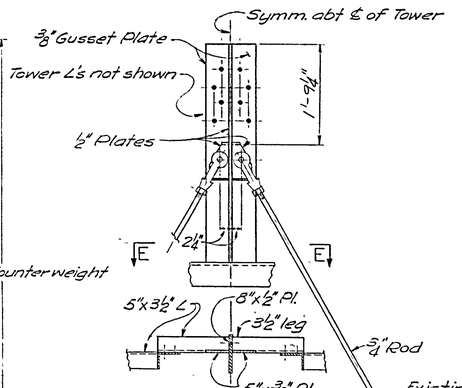
FILE No. D3A-1.95-20 DRAWING NO. 12



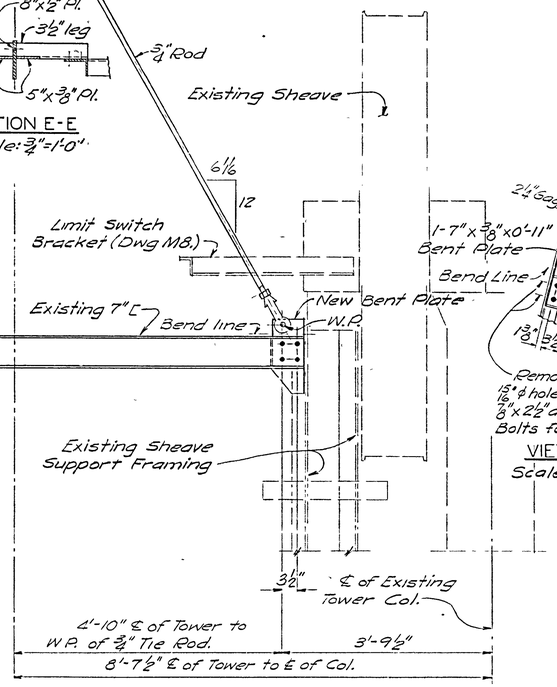
VIEW A - A
Scale: ¾" = 1'-0"



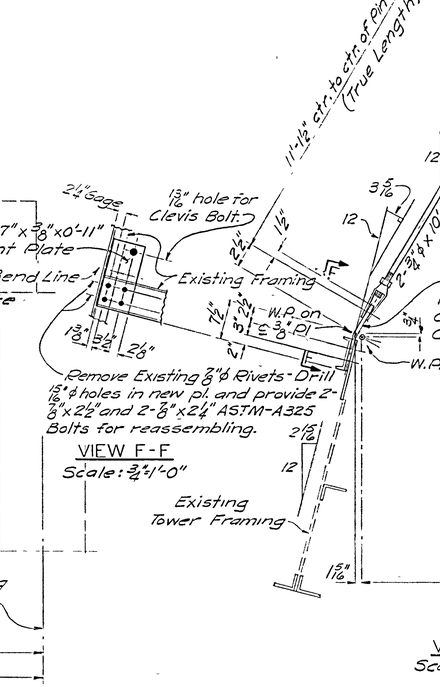
SECTION D-D
Scale: ¾" = 1'-0"



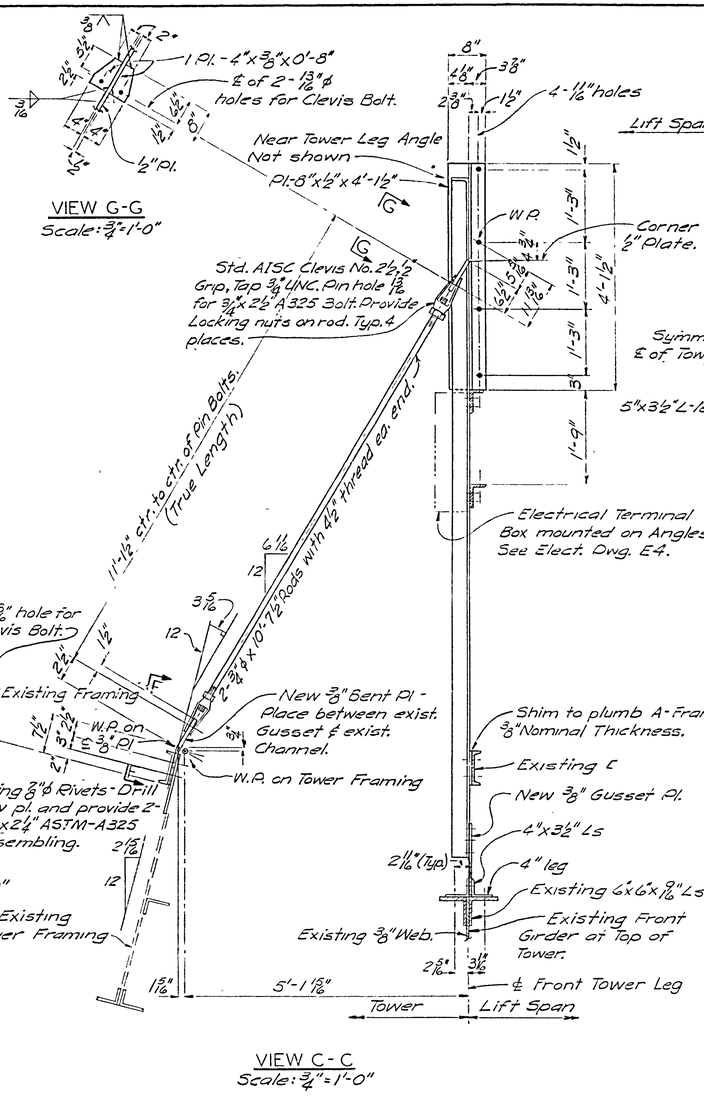
SECTION E-E
Scale: ¾" = 1'-0"



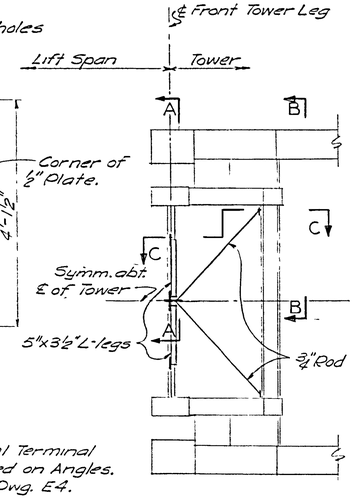
VIEW B - B
Scale: ¾" = 1'-0"



VIEW F - F
Scale: ¾" = 1'-0"



VIEW C - C
Scale: ¾" = 1'-0"



KEY PLAN
(Top of Tower)

NOTES

All New Struct. Steel shall be A.S.T.M. A36.
All Bolts to be ¾" A.S.T.M - A325 unless otherwise noted on the details.
Bolt holes shall be drilled 13/16" or 15/16" as required for the ¾" or ⅞" bolts.
Tie Rods shall be adjusted as necessary to plumb A-Frame Tower.

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION
POWER - CONTROL & UTILITY CABLE TOWER
LOCATED ATOP LIFT SPAN TOWERS
BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

SVERDRUP & PARCEL AND ASSOC, INC
CONSULTING ENGINEERS
ST LOUIS, MO

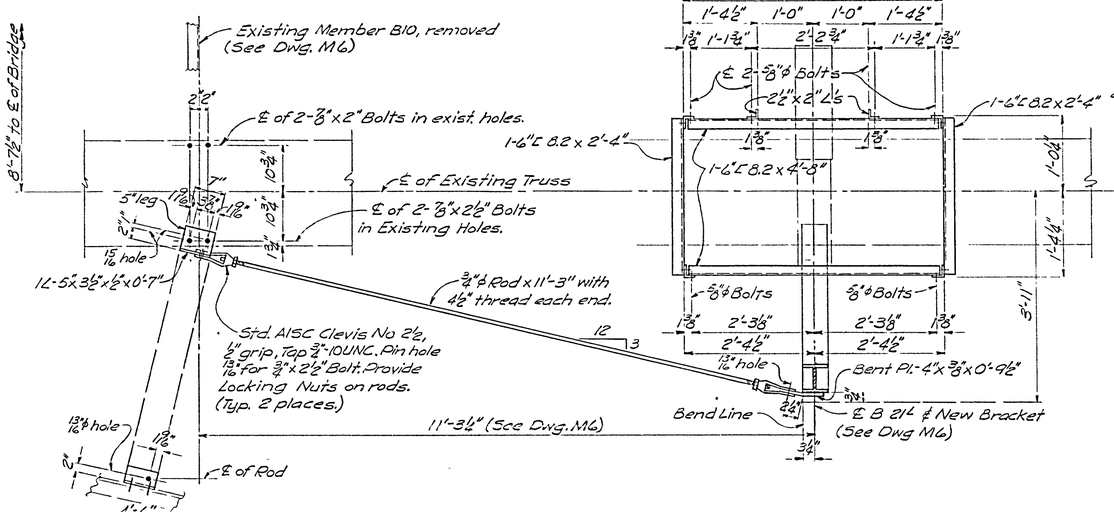
SCALE As Noted
DATE -

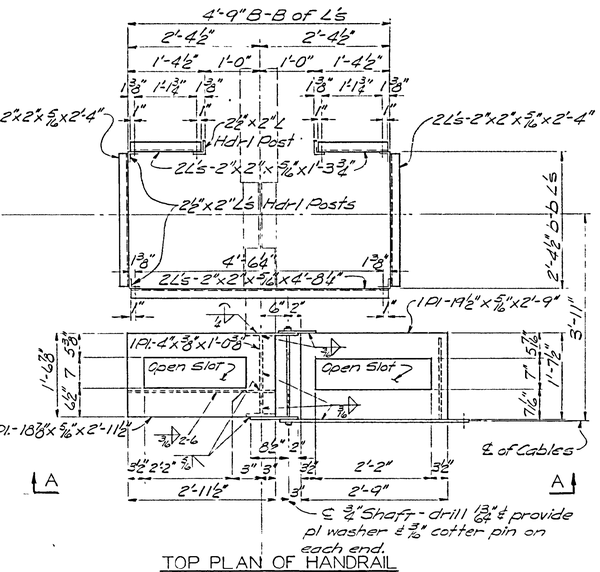
2602
67-075

Note: Do not scale this drawing. Follow dimensions.

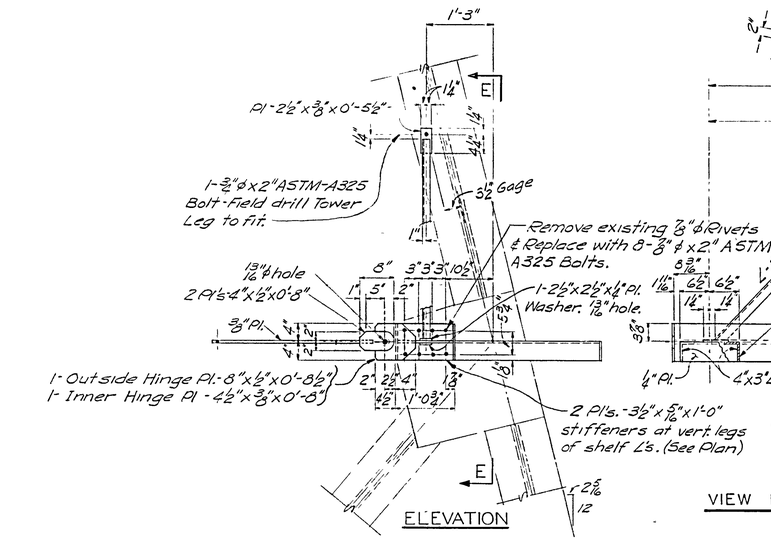
FILE No. D3A-1.95-21

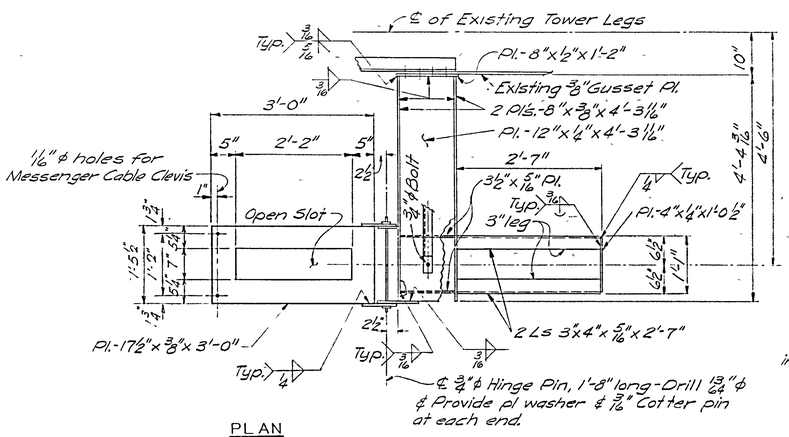
DRAWING NO. M13

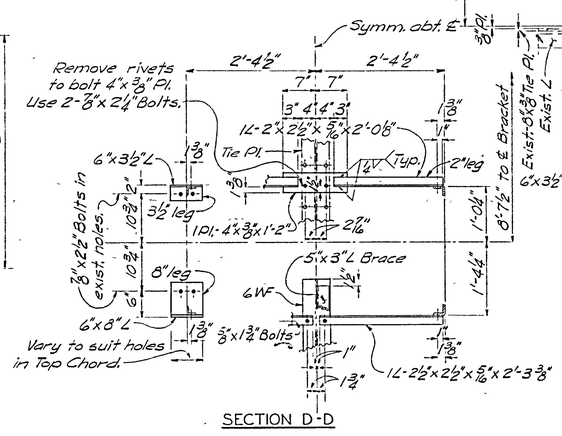




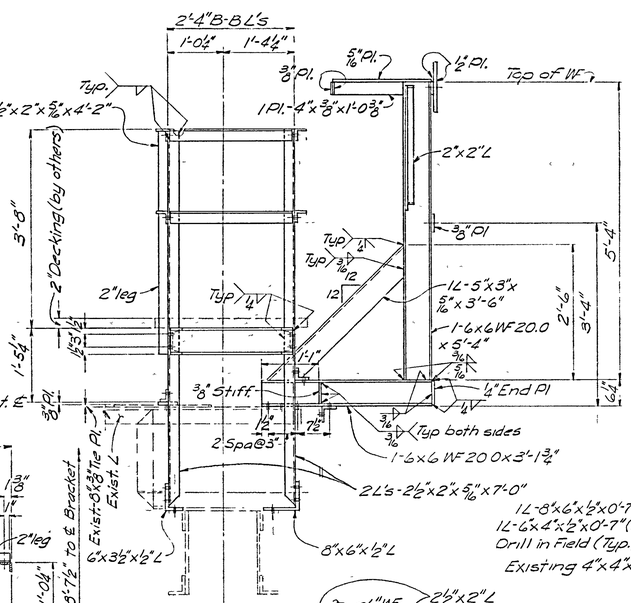
TOP PLAN OF HANDRAIL AND TERMINAL BOX SUPPORTS

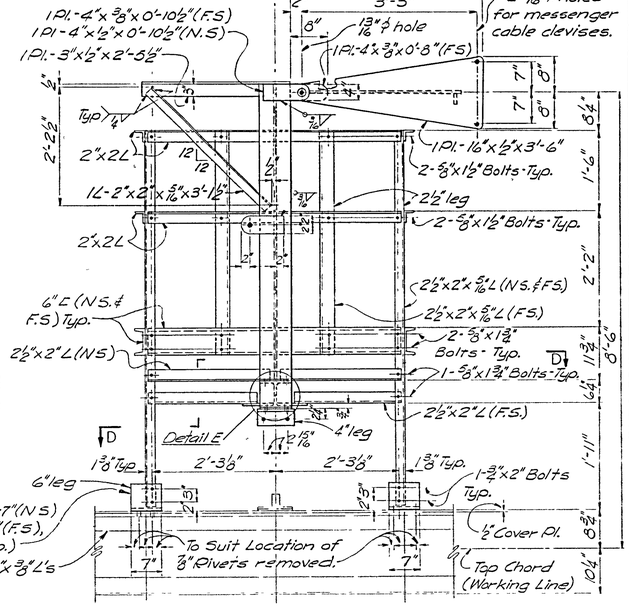






SECTION C-C





VIEW A-A

NOTES

All bolts shall be A.S.T.M. A325.

All Structural Steel shall be A.S.T.M. A36.

DETAILS OF CABLE TOWER BRACKET

Scale: ¾"=1'-0"
(One Required)
Note: See Dwg. M1, General Arrangement, for Location.

DETAILS OF SPAN POWER & CONTROL CABLE BRACKET

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

CABLE BRACKET

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

SVERDRUP & PARCEL AND ASSOC., INC
CONSULTING ENGINEERS
ST. LOUIS, MO.

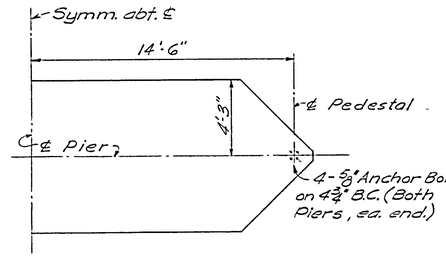
SCALE:
DATE:

2602
67084

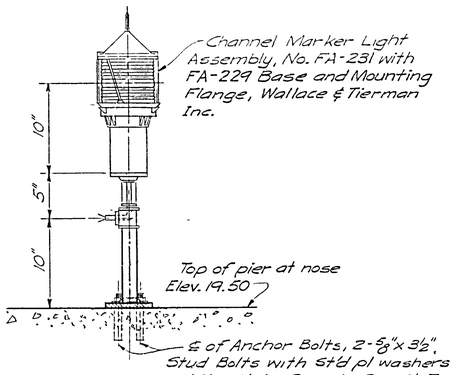
Note: Do not scale this drawing Follow dimensions

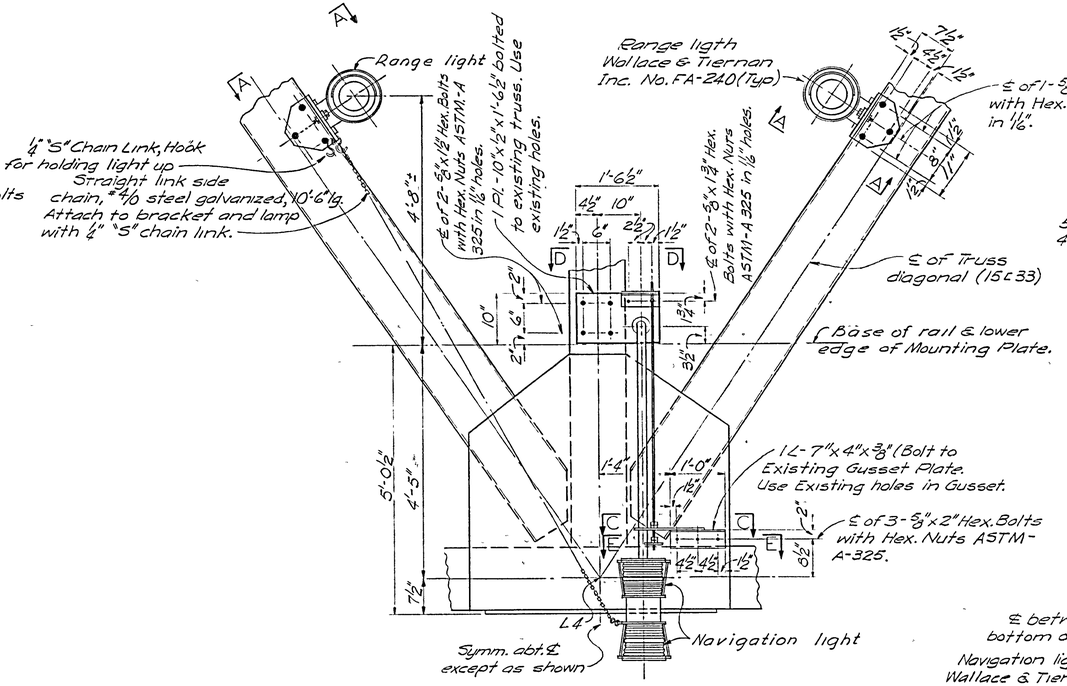
FILE NO. D3A-1.95-22

DRAWING NO. M14

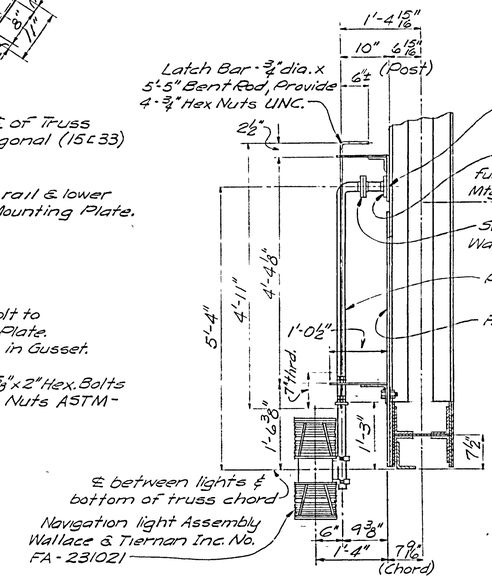


PARTIAL PLAN
Scale: ¼"=1'-0"



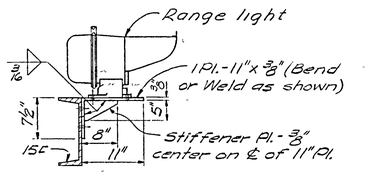


ELEVATION
Scale: ¾"=1'-0"

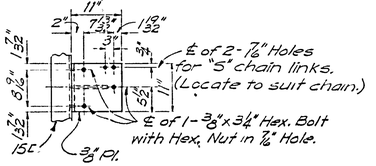


ELEVATION
Scale: ¾"=1'-0"

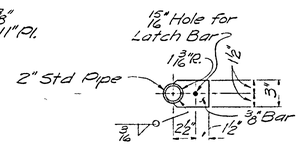
MOUNTING DETAILS
NAVIGATION LIGHTS
NL7 THRU NL 10
Scale: 1½"=1'-0"



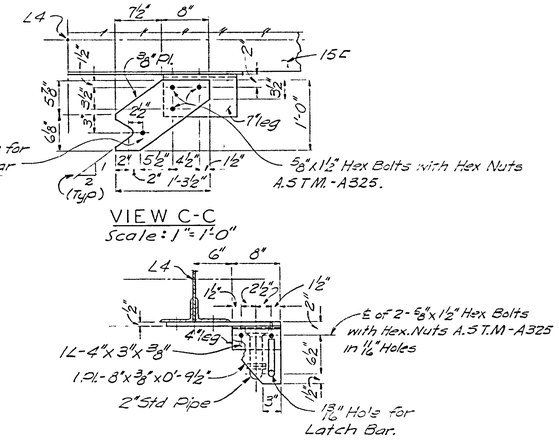
VIEW A-A
Scale: ¾"=1'-0"



VIEW B-B
Scale: ¾"=1'-0"



VIEW E-E
Scale: 1½"=1'-0"



VIEW C-C
Scale: 1"=1'-0"

VIEW D-D
Scale: 1"=1'-0"

MOUNTING DETAILS
NAVIGATION LIGHTS NL 1 & NL 2
RANGE LIGHTS NL 3 THRU NL 6

MISSOURI PACIFIC RAILROAD CO.
DEQUINCY DIVISION

WARNING & NAVIGATION LIGHTING

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

SVERDRUP & PARCEL AND ASSOC., INC
CONSULTING ENGINEERS
ST. LOUIS, MO

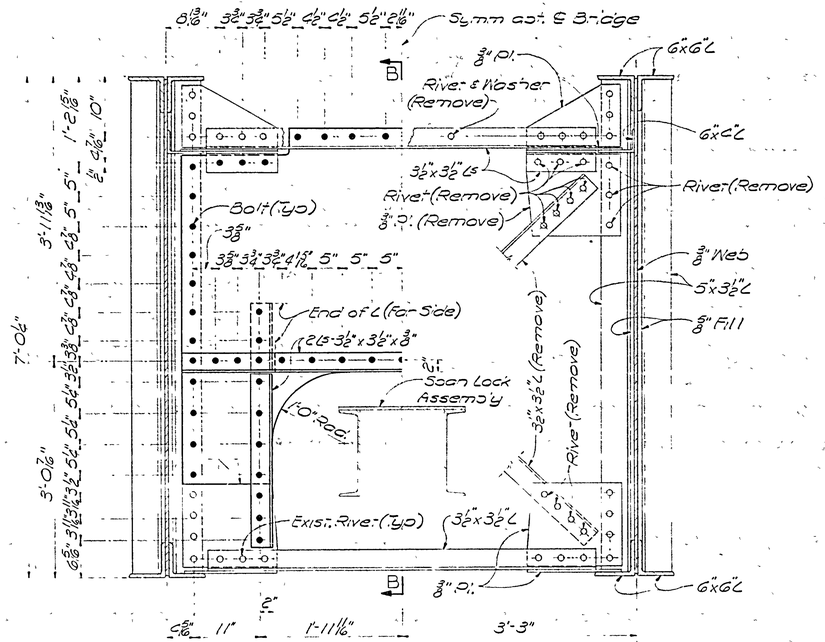
SCALE:

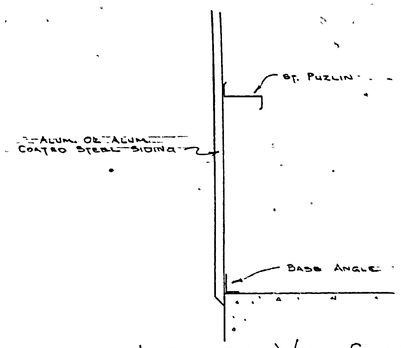
DATE:

2602
67D-74

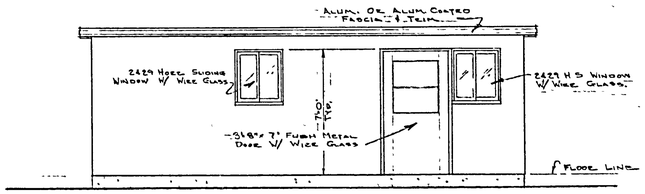
Note: Do not scale this drawing. Follow dimensions.

FILE NO. D3A-1.95-23 DRAWING NO. M15

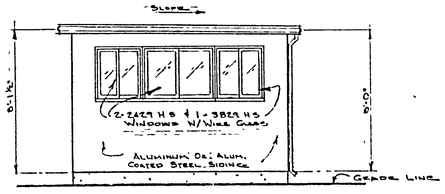

Sym. m ctr. ℄ Bridge
B
3/8" Pl.
6"x6"L
Rivet Washer (Remove)
6"x6"L
3½"x3½"Ls
Rivet (Remove)
3/8" Pl. (Remove)
Rivet (Remove)
Bolt (Typ.)
3/8"
3/8" Web
5"x3½"L
3/8" Fill
End of L (Far Side)
2 Ls 3½"x3½"x3/8"
Soap Lock Assembly
10'-2 1/2"
3½"x3½"L (Remove)
Rivet (Remove)
Exist. Rivet (Typ.)
3½"x3½"L
3/8" Pl.
6"x6"L
3'-11 3/8"
7'-0"
3'-0 7/8"
1'-2 1/8"
4" 4 7/8" 10"
5" 5" 5"



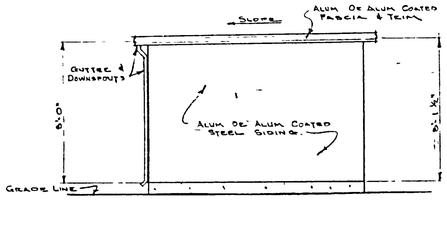
ALTERNATE WALL SECTION
SCALE: 1" = 1'-0"



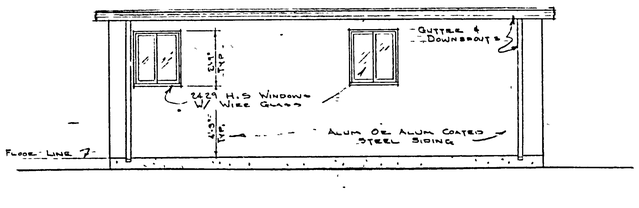
SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



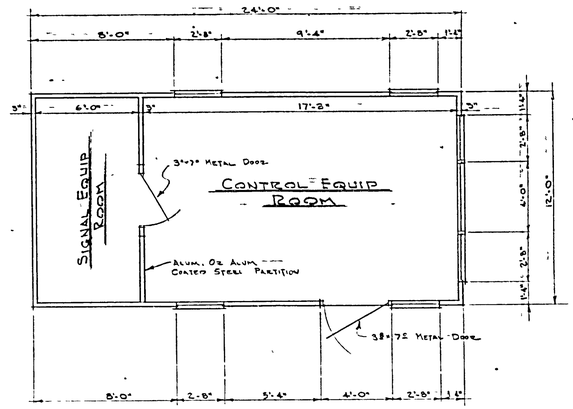
EAST ELEVATION
SCALE: 1/4" = 1'-0"



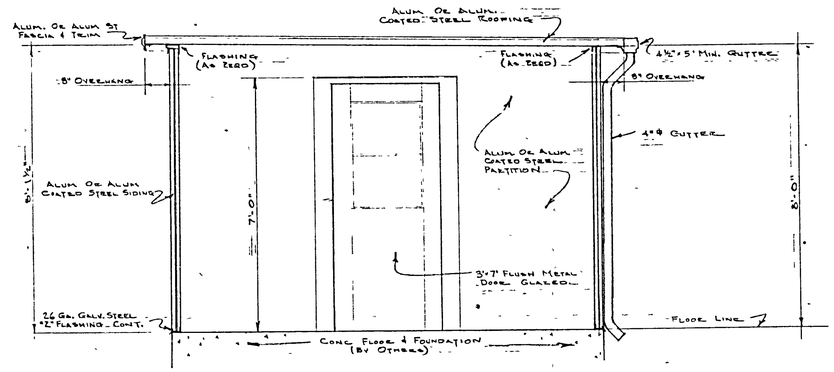
WEST ELEVATION
SCALE: 1/4" = 1'-0"



NORTH ELEVATION
SCALE: 1/4" = 1'-0"



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



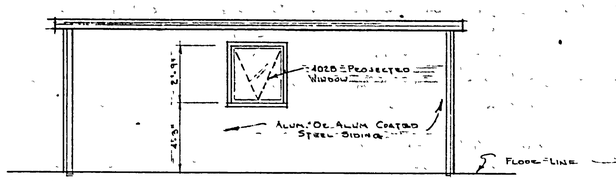
SECTION
SCALE: 1/2" = 1'-0"

DIMENSIONS MAY VARY SLIGHTLY TO CONFORM TO MANUFACTURERS STANDARDS HOWEVER ANY VARIATION SHOULD BE DESCRIBED IN PROPOSAL.

MISSOURI PACIFIC RAILROAD CO.

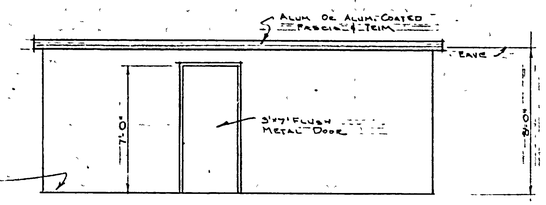
Made by E.L.O.	SIGNAL & CONTROL EQUIP. BLDG. FOR BRIDGE No 3 OVER CEDAR BAYOU NEAR BAYTOWN, TEX.	Revised
Traced by		
Checked by		
Sheet No. 1 of 2	Office of Chief Engineer St Louis, Mo Date June 16, 1967 Scale As Noted S. B. Watson Architect	Drwg No D-100

FILE No D3A-1.95-25



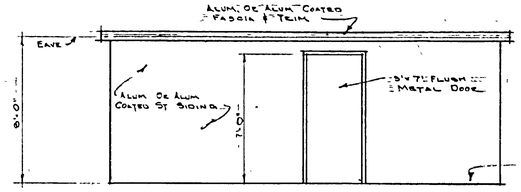
NORTH ELEVATION

SCALE: ½"=1'-0"



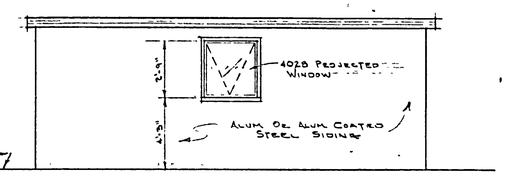
EAST ELEVATION

SCALE: ½"=1'-0"



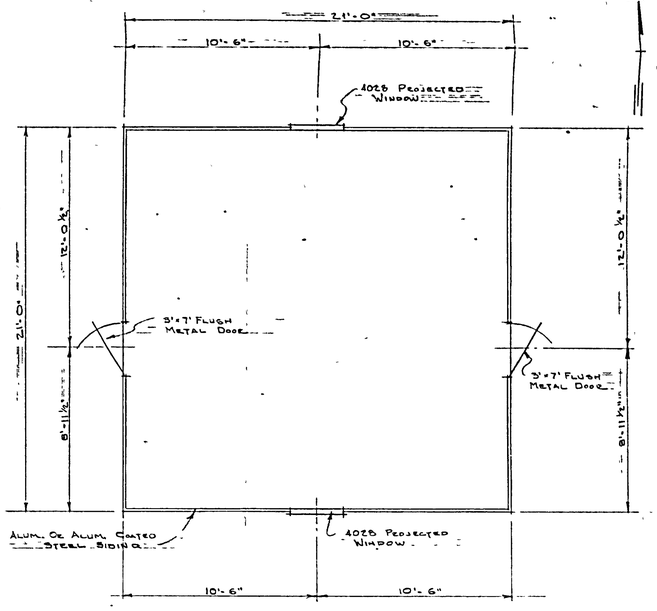
WEST ELEVATION

SCALE: ½"=1'-0"



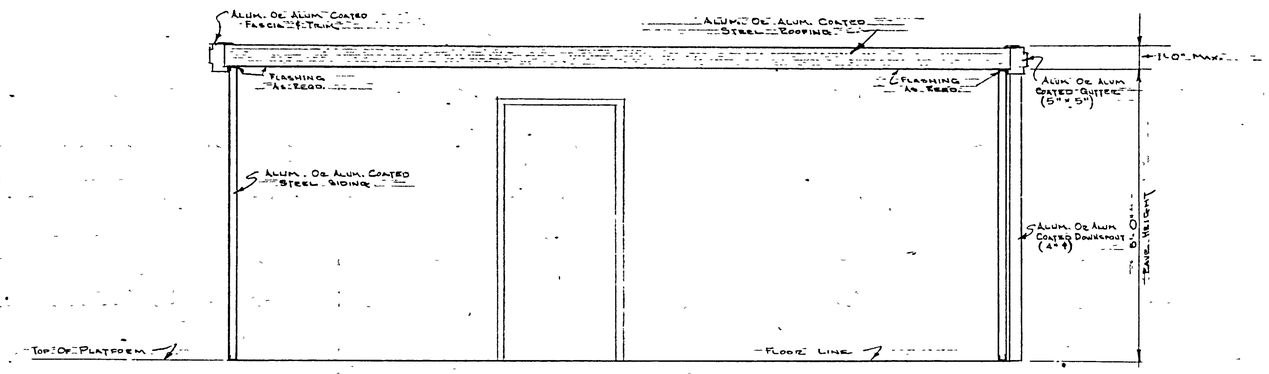
SOUTH ELEVATION

SCALE: ½"=1'-0"



PLAN

SCALE: ½"=1'-0"



SECTION

SCALE: ½"=1'-0"

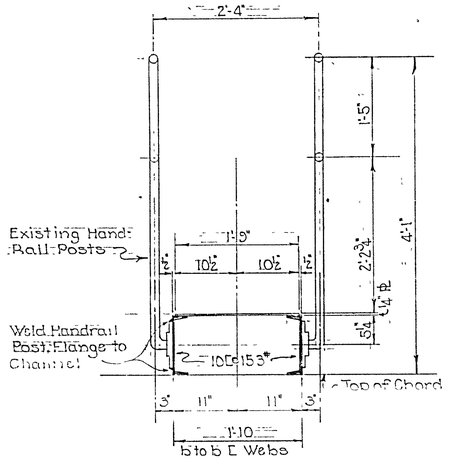
DIMENSIONS MAY VARY SLIGHTLY TO CONFORM TO MANUFACTURERS STANDARDS HOWEVER ANY VARIATION SHOULD BE DESCRIBED IN PROPOSAL.

THIS BLDG. WILL BE CONSTRUCTED ON A WOOD OR METAL DECK FLOOR (BY CARRIER) ON THE TOP OF A STEEL LIFT SPAN.

MISSOURI PACIFIC RAILROAD CO.

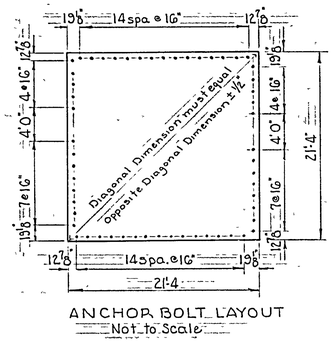
Made by E.L.O.	MACHINERY HOUSE FOR BRIDGE No. 3 OVER CEDAR BAYOU NEAR BAYTOWN, TEX.	Revised
Traced by		
Checked by	Office of Chief Engineer St Louis, Mo	
Sheet No (2) of 2	Date June 16, 1967 Scale As Noted	Drwg No D-100
	S L Adams Architect	

FILE No. D3A-1.95-26

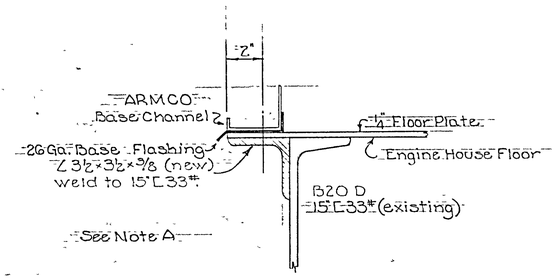


TYPICAL SECTION OF WALKWAY
1" = 1'-0"

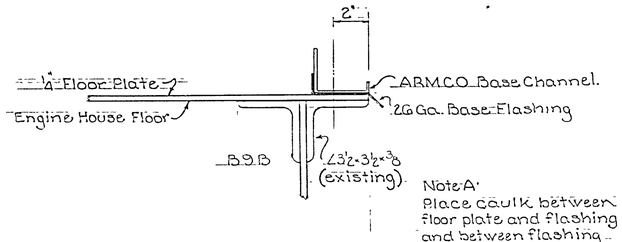
¼" thick floor plate (11.25 #/sq ft.) similar to USS Floor Plate - Sect S300 carbon steel.



ANCHOR BOLT LAYOUT
Not to Scale

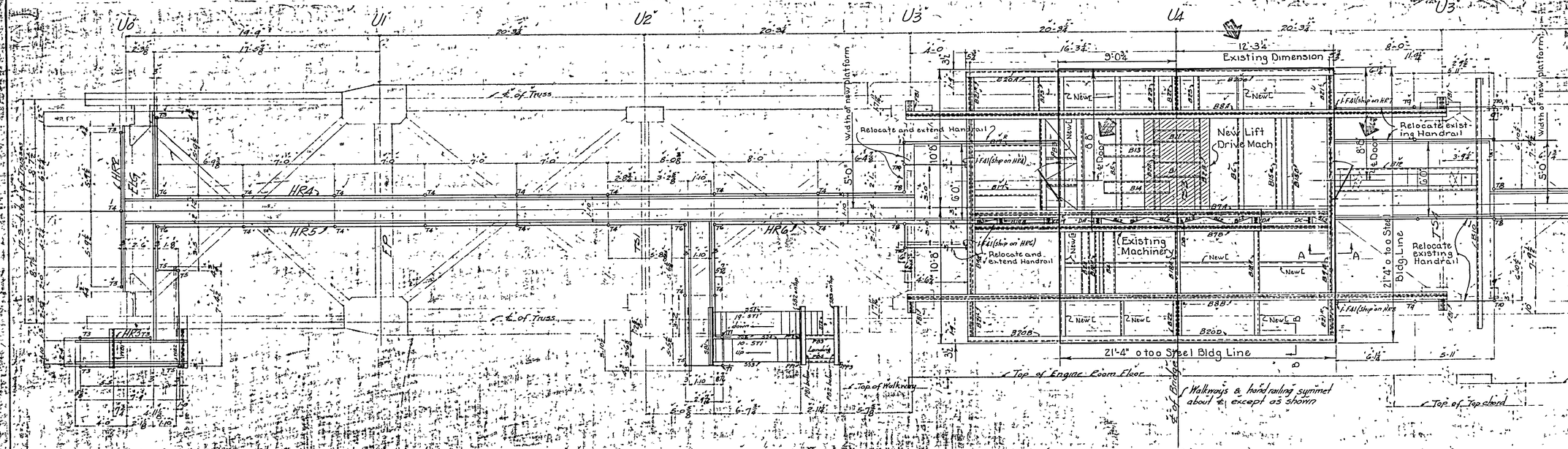


SECTION B-B
3" = 1'-0"



Note A:
Place caulk between floor plate and flashing and between flashing and base channel.

SECTION A-A
3" = 1'-0"



ERECTION DIAGRAM FOR ENGINE HOUSE FLOOR & HAND
1" = 1'-0"

Note carefully location of building and doors.

MISSOURI PACIFIC RAILROAD CO
DEQUINCY DIVISION
DETAILS OF ENGINE HOUSE FLOOR AND WALKWAYS ON
BRIDGE No. 3
over Cedar Bayou
Near Baytown, Texas
Scale: As Noted
Office of Bridge Engr. St L. Mo. 6-22-61
WEB

FILE No. D3A-195-26

SECTION

2602

SVERDRUP & PARCEL

JOB Mo. Pac. - Modif. Br. # 3221

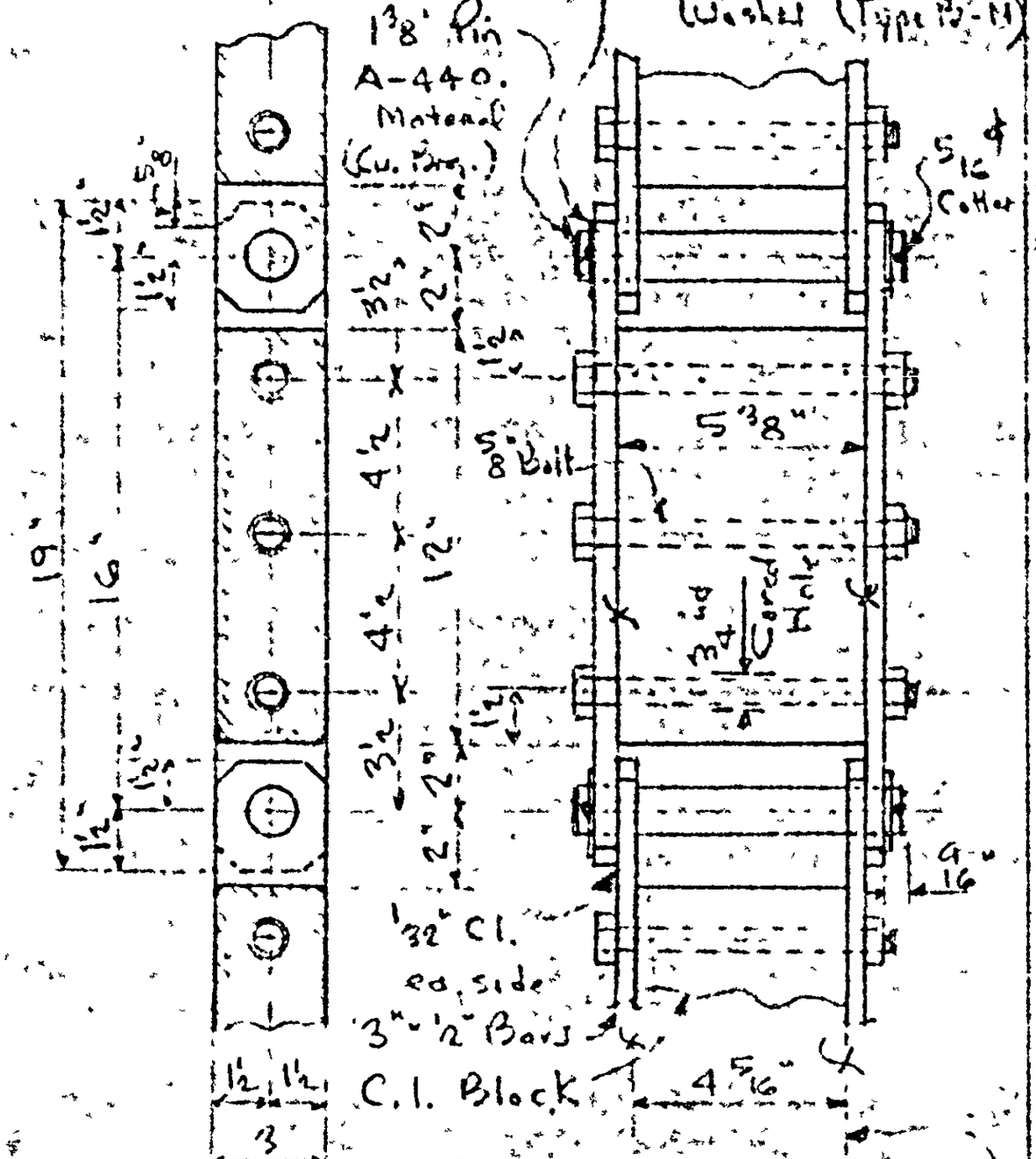
SHEET NO A OF

DATE Feb. 19, 1957

COMPUTATIONS FOR MACHINERY

BY Newman CHKD

BALANCE CHAIN



TYPICAL DETAILS OF CHAIN

Est Weight

Compute Wt. of Chain outside the width of the casting block on the narrow links, then determine width of Block req'd to furnish 51#/1' of length as desired.

Wt. Req'd per 16' link = 51 x 1.33 = 68#

Side Bars - holes not deducted

2 - H. 3" - 1/2" x 1.583 @ 5.1 = 16.16

Less 2 - 5/8" ø x .083 @ 1.33 = .22

15.94#

Bolt Hds. & Nuts on O.S. of Bars (3/8 Proj.)

= 3 x .241 = .72#

Pins

2 - 1 3/8" ø x .047 @ 5.05 = .52#

Washers

4 - @ .18 = .72

Cast Iron

1P. 3" x 11/16" - 12" @ .26 = 9.95#

(9.36#/1" thick)

Wt. Bars, Bolts, etc & 11/16" Cast Element = 27.85#

Width of cast block req'd in narrow link

$$\frac{68.0 - 27.85}{9.36} = 4.30''$$

= 4.30"

Clearance in cored holes was not deducted.

→ Use 4 5/16" for narrow links and 5 3/8" for wide lengths of chains.

→ Bolts 6 1/2" & 7 1/2" long. 5/8" diameter.

FILE NO. D3A-27

-1.95-27

2602

1st

SVERDRUP & PARCEL

JOB Mo. Pac. – Modif. Br. 3221

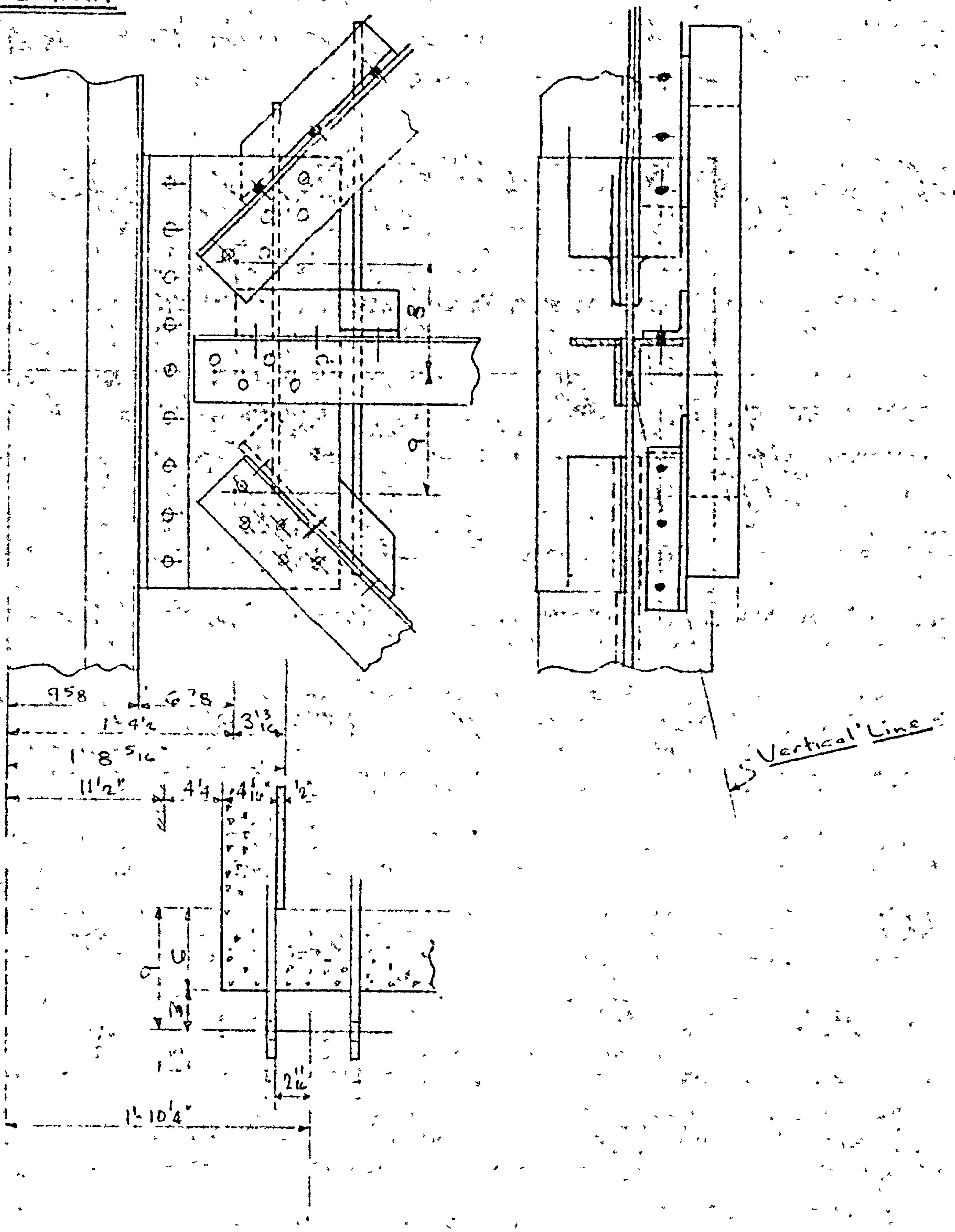
COMPUTATIONS FOR Machinery

SHEET NO ______ OF ______

DATE Feb. 10, 1967

BY Newman CHKD ______

Balance Chain



2602

SVERDRUP & PARCEL

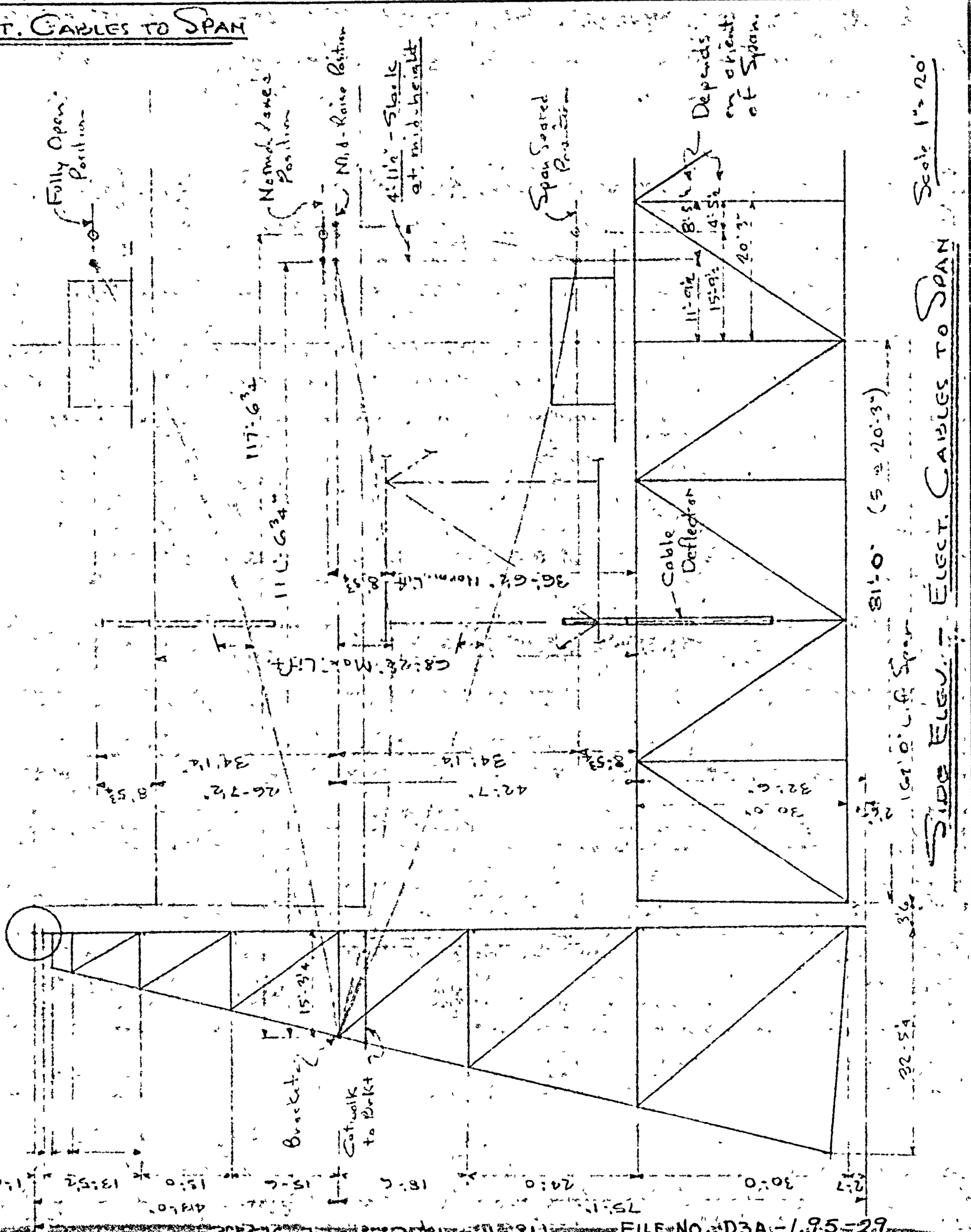
JOB Mo. Pac. - Modif. PR 3221 SHEET NO ____ OF ____

DATE Feb 8, 1967

COMPUTATIONS FOR Machinery BY Neumann CHKD ____

Electrical Cable Brackets

Elect. Cables to Span



FILE NO. D3A-1.95-29

2602

SVERDRUP & PARCEL

JOB Mo. Pac. - Moore Bar. 13.221

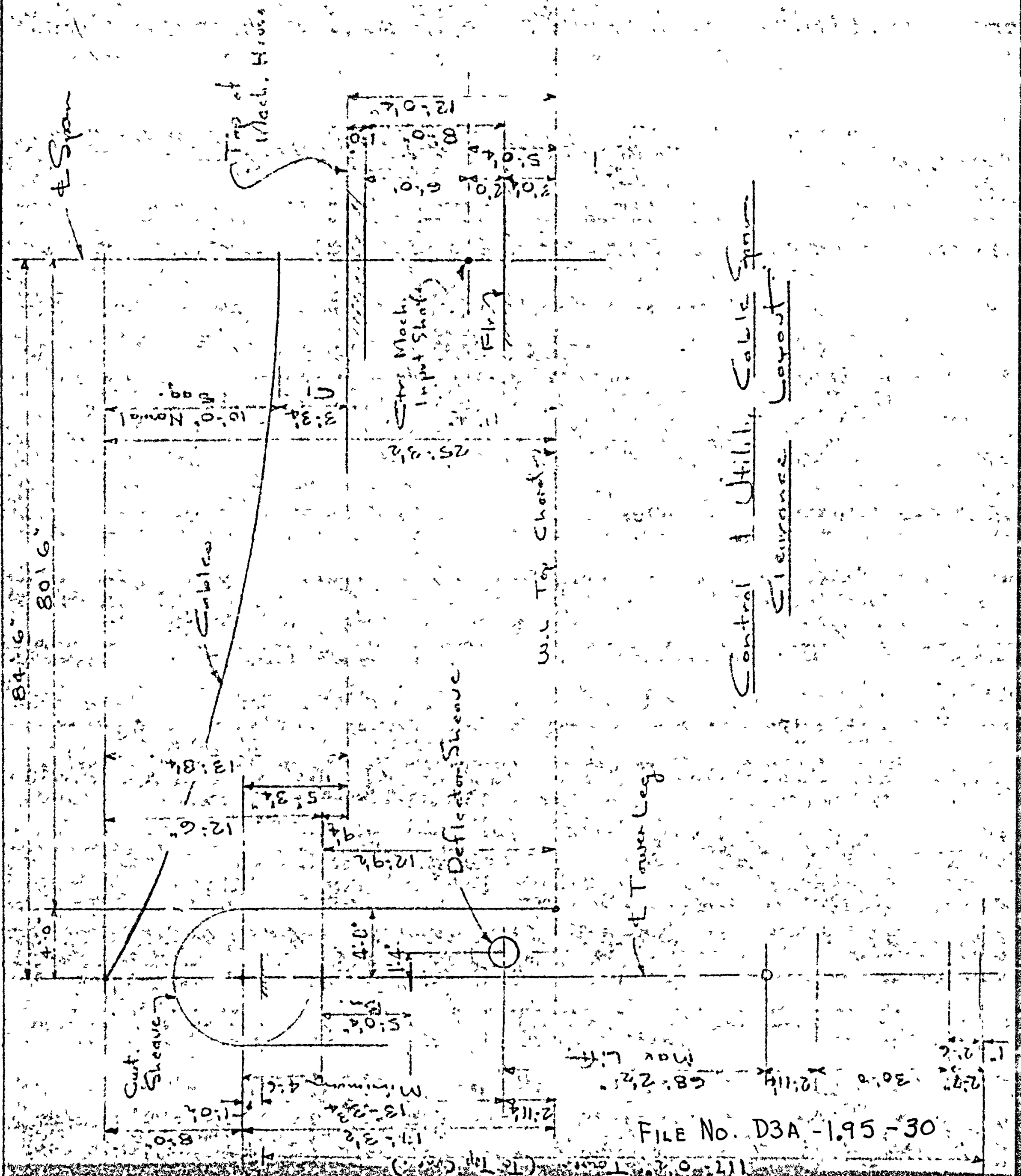
SHEET NO _____ OF _____

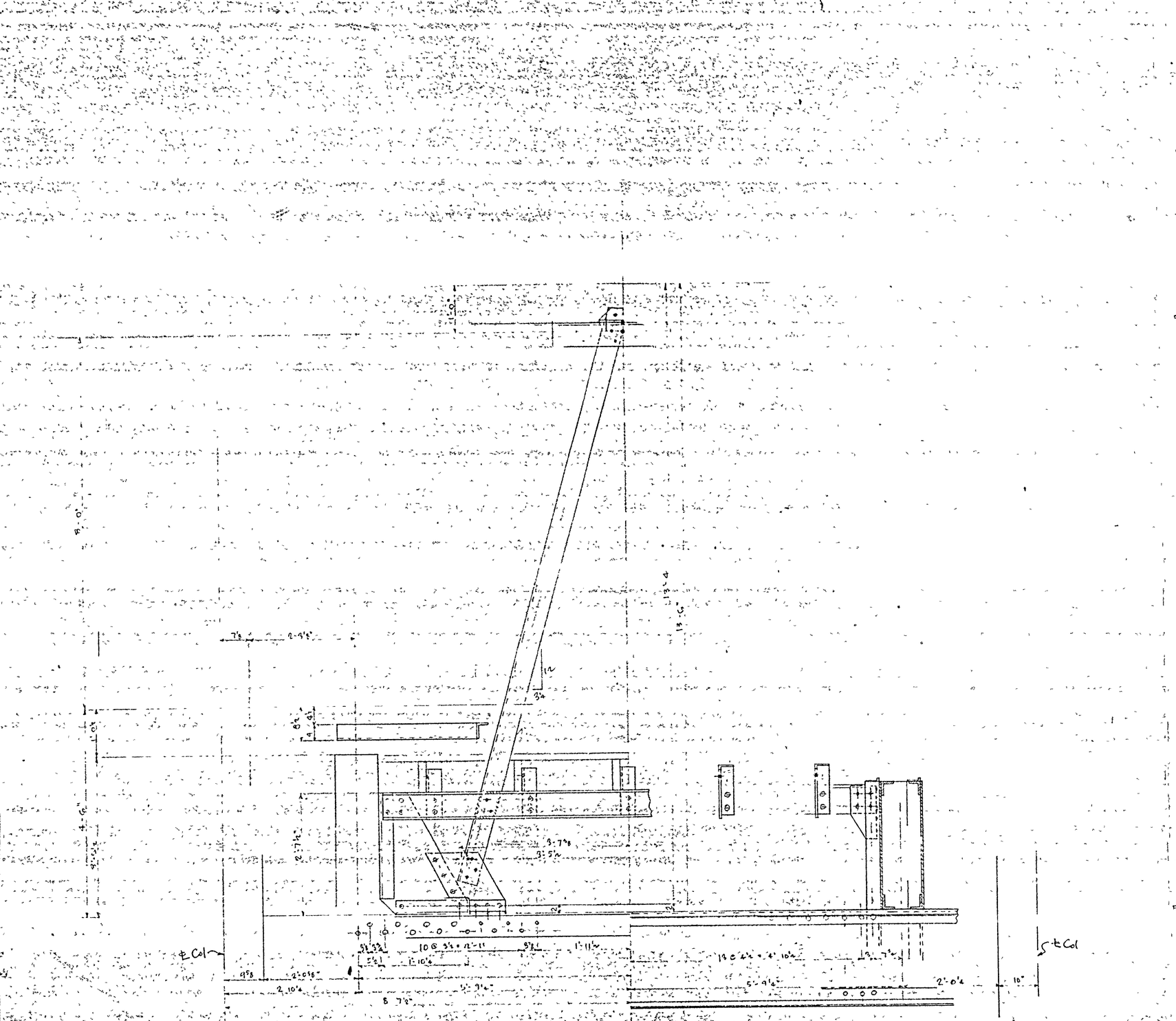
DATE Feb. 4, 1967

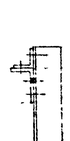
COMPUTATIONS FOR Machinery

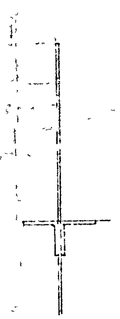
BY Nauman CHKD _____

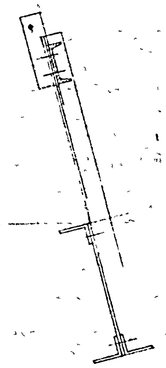
CABLES: Tower to Tower


Control & Utilities Cable System Layout
Tower Nos.
Cut Sleeve
Cut Sleeve
Conduits
Tower Nos.
Tower Nos.
Tower Nos.



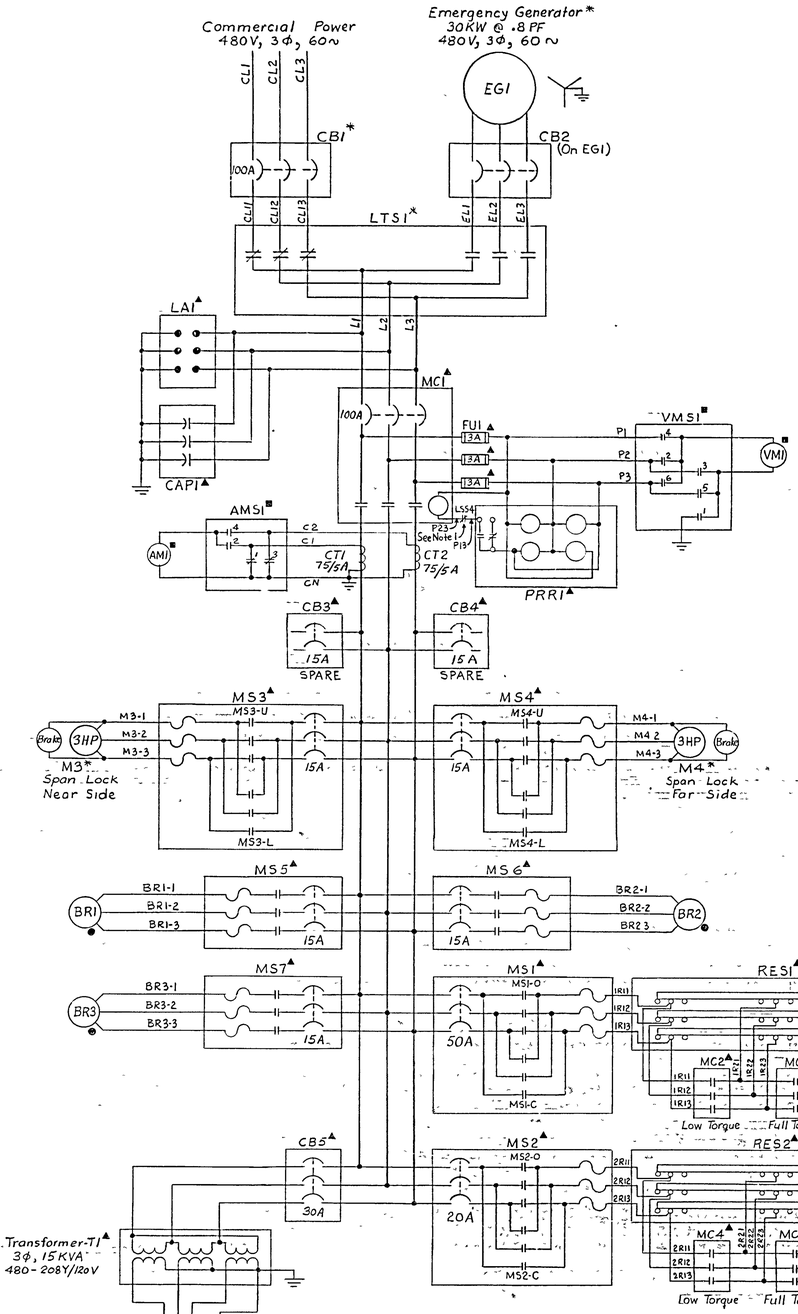






Mo Pac. - Modif. BR. 3121
Layout Study
Power, Control & Utility Cable Towers
located on
Lift Span Towers
2602 S & P 2-9-C

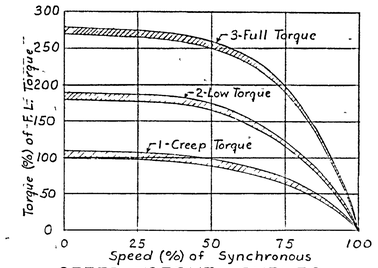
File No. D3A-1.95-31



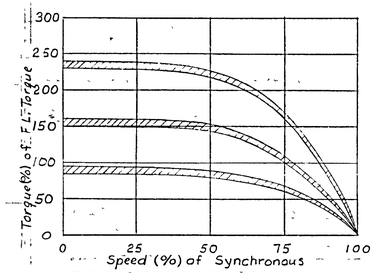
Directory	LP1-N1		Directory
Bridge Control	1	2	Navigation Lights
Horns	3	4	RR Signal System
Control Rm Ltg	5	6	RR Signal System
Control Rm Recp	7	8	Mach. Hse Ltg
Bridge Ltg (fwd)	9	10	Mach. Hse Recp
Bridge Ltg (fwd)	11	12	Spare
Spare	13	14	Spare
Space Htr. No1	15	16	Space Htr. No2

480 VOLT POWER SYSTEM

NOTES:
1. See Control Schematic for contactor and relay coils and contacts not shown on this drawing



SPEED-TORQUE CURVES
SPAN MAIN DRIVE MOTOR



SPEED-TORQUE CURVES
SPAN AUXILIARY DRIVE MOTOR

Contact	Positions (Rear View)						
	3	2	1	3-1	2-3	1-2	OFF
1	X	X	X				
2		X					
3					X	X	
4			X	X		X	
5				X			
6	X				X		

Shown in OFF position

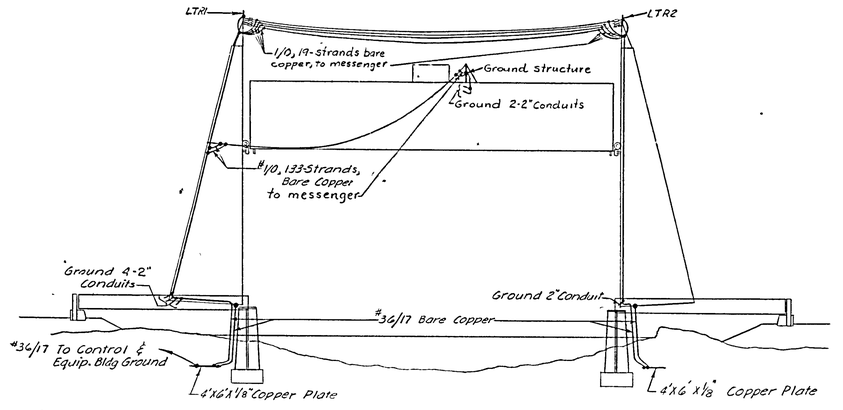
VOLTMETER SWITCH-VMS1*

Contact	Positions (Rear View)						
	3	Int.	2	Int.	1	Int	OFF
1	X	X				X	X
2		X	X	X	X	X	
3				X	X	X	X
4	X	X	X	X			

Shown in OFF position

AMMETER SWITCH-AMS1*

LOCATION SYMBOLS:
- ▲ Motor Control Panel - MCP1
- ■ Control Console - CC1
- ● Span Drive Mechanism
- * Individually



GROUNDING & LIGHTNING PROTECTION
Scale 1/32" = 1'-0"

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

POWER SCHEMATIC

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

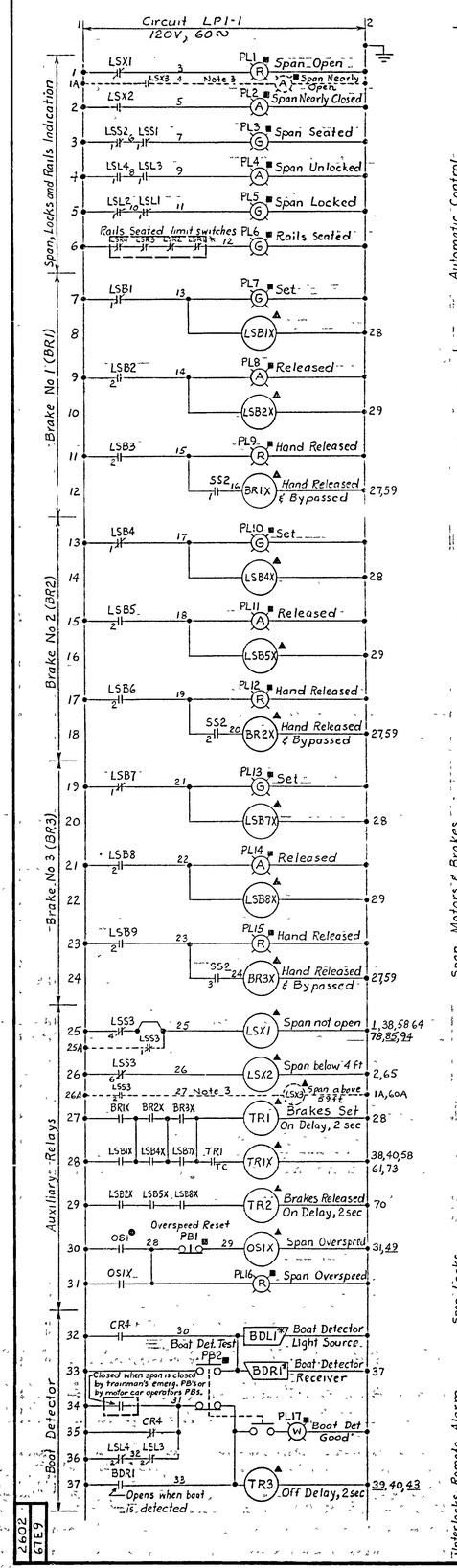
SVERDRUP & PARCEL AND ASSOC, INC.
CONSULTING ENGINEERS
ST. LOUIS, MO.

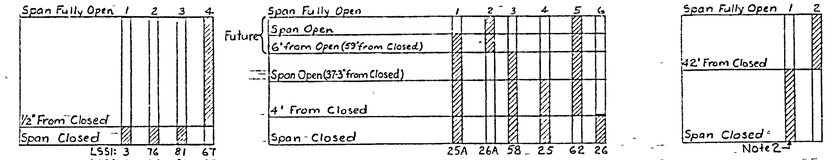
SCALE: As Noted.
DATE:

DRAWING NO. E1

FILE No. D3A-1.95-32

2602
6TE8





Contact	Positions (Rear View) OPEN 3	2	1	STOP	CLOSE 1	2	3	Line No.
1				X				49
2				X				64
3				X				60A
4	X	X	X					59
5					X	X	X	61
6	X	X				X	X	67
7	X						X	70

Maintained contacts

CSI - SPAN DRIVE CONTROL

Contact	Positions (Rear View) LOCK	STOP	UNLOCK	Line No.
1			X	73
2	X			75

Spring return to STOP from LOCK and UNLOCK positions.

CS2 - SPAN LOCKS

Contact	Positions (Rear View) MAIN	AUTO	AUX	Line No
1	X			51
2		X		52
3			X	54

Maintained contacts

SS3 - DRIVE SELECTOR

Contact	Positions (Rear View) AUTO	MAN	Line No
1	X		38
2		X	49
3	X		58
4	X	X	59
5	X		65
6		X	67
7	X		70
8		X	70
9	X		71
10		X	73
11	X		74
12		X	82
13	X		83
14		X	84
15	X		88
16		X	95
17	X		60A
18		X	Spare

Maintained contacts

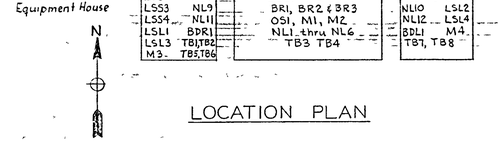
SSI - CONTROL SEL. SWITCH

Contact	Positions (Rear View) BR3	BR2	BRI	OFF	Line No.
1			X		12
2		X			18
3	X				24
4	X	X		X	55
5	X		X	X	56
6		X	X	X	57
7	X	X		X	58
8	X		X	X	58
9		X	X	X	58

Maintained contacts;

SS2 - BRAKE BYPASS

LTS1, EG1
MCP1, CC1
HRN1, HRN2
FPS1
Control & Equipment House



LOCATION PLAN

LOCATION SYMBOLS

- ▲ Motor Control Panel, MCP1
- ■ Control Console CC1
- ● Span Drive Mechanism
- ✕ Individually
- [ ] Furnished & Installed by Mo-Pac Signal Dept

NOTES

1. All contacts are shown with span seated and locked, brakes set, rails seated, CS1 and CS2 in STOP position, SS1 and SS3 in AUTO position and SS2 in OFF position, and relays, contactors and starters in the deenergized or unlatched position
2. See Power Schematic for contacts not shown on this drawing
3. Dashed schematic shows future devices required when span is to be raised to the fully open position. Devices LSX3, CR9 and amber indicating light will not be required now. All other relay, starter and switch contacts shown for future use are to be provided as spares

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

CONTROL SCHEMATIC

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

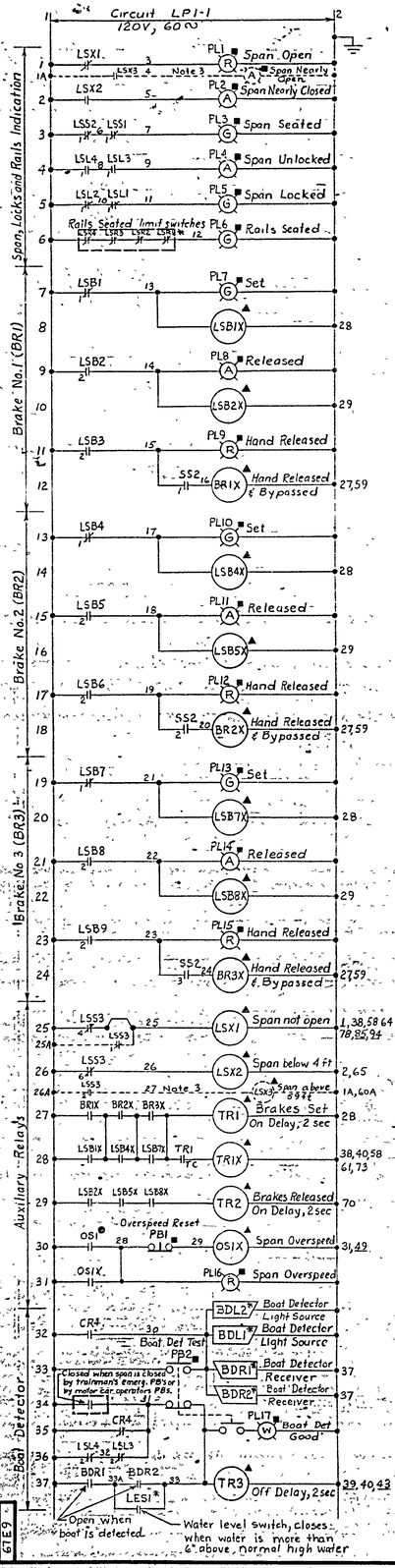
SVERDRUP & PARCEL AND ASSOC, INC.
CONSULTING ENGINEERS
ST LOUIS, MO

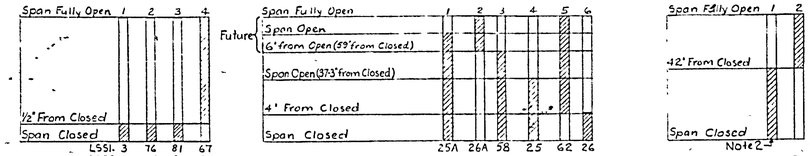
SCALE: None
DATE:

FILE No. D3A-1.95-33

DRAWING NO. E2

2602
61E9





Contact	Positions (Rear View) OPEN 3	2	1	STOP	CLOSE 1	2	3	Line No
1				X				49
2				X				64
3				X				60A
4	X	X	X					59
5					X	X	X	61
6	X	X				X	X	67
7	X						X	70

Maintained contacts

CSI-SPAN DRIVE CONTROL*

Contact	Positions (Rear View) LOCK	STOP	UN-LOCK	Line No.
1			X	73
2	X			75

Spring return to STOP from LOCK and UNLOCK positions

CS2-SPAN LOCKS*

Contact	Positions MAIN	AUTO	AUX	Line No.
1	X			51
2		X		52
3			X	54

Maintained contacts

SS3-DRIVE SELECTOR*

Contact	Positions (Rear View) AUTO	MAN	Line No
1	X		38
2		X	49
3	X		58
4		X	59
5	X		65
6		X	67
7	X		70
8		X	70
9	X		71
10		X	73
11	X		74
12		X	82
13	X		83
14		X	84
15	X		88
16		X	95
17	X		60A
18		X	Spare

Maintained contacts

SSI-CONTROL SEL. SWITCH*

Contact	Positions (Rear View) BR3	BR2	BR1	OFF	Line No
1			X		12
2		X			18
3	X				24
4	X	X		X	55
5	X		X	X	56
6		X	X	X	57
7	X	X		X	58
8	X		X	X	58
9		X	X	X	58

Maintained contacts,

SS2-BRAKE BYPASS*

LTS1, EG1 MCP1, CC1 HRN1, HRN2 FPS1 — Control & Equipment House

West Tower		Lift Span	East Tower	
LSS1	NLT	LSB1 thru LSB9	NL8	LSS2
LSS3	NL9	BR1, BR2 & BR3	NL10	LSL2
LSS4	NL11	OSI, MI, MZ	NL12	LSL4
LSL1	BDR1	NL1 thru NL6	BDL1	M4
LSL3	TB1,TB2	TB3 TB4	TB1, TB8	
M3	TB5,TB6			

LOCATION PLAN

LOCATION SYMBOLS
- ▲ Motor Control Panel, MCP1
- ■ Control Console CC1
- ● Span Drive Mechanism
- ↘ Individually
- [ ] Furnished & Installed by Mo-Pac Signal Dept

NOTES
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3. Dashed schematic shows future devices required when span is to be raised to the fully open position. Devices LSX3, CR9 and amber indicating light will not be required now. All other relay, starter and switch contacts shown for future use are to be provided as spares

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

CONTROL SCHEMATIC

BRIDGE NO.3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

SVERDRUP & PARCEL AND ASSOC, INC. CONSULTING ENGINEERS ST LOUIS, MO
SCALE: None
DATE:

2602 61E9

FILE No. D3A-1.95-34

ALTERNATE DRAWING NO. E2

1'-6" | 2'-0"

Sloped Rear Panel

Space for RR Signal System
(Screw removable cover)

BUS VOLTAGE — VM1

TOTAL CURRENT — AM1

VOLTMETER — VMS1

AMMETER — AMS1

Top Panel

Space for RR Signal System
(Screw removable cover)

BOAT DETECTOR GOOD — W — PL17

SPAN OVERSPEED — R — PL16

Space

HORN — PB3

BOAT DETECTOR TEST — PB2

OVERSPEED RESET — PB1

SPAN OPEN — R — PL1

DIMMER — DIM1

BRAKE BR1 | BRAKE BR2 | BRAKE BR3

HAND RELEASED — R — PL9 | PL12 | PL15

RELEASED — A — PL8 | PL11 | PL14

SET — G — PL7 | PL10 | PL13

SPAN NEARLY CLOSED — A — PL2

SPAN SEATED — G — PL3

RAILS SEATED — G — PL6

UNLOCKED — A — PL4

LOCKED — G — PL5

AUXILIARY MOTOR — R — PL19

DRIVE SELECTOR AUX AUTO MAIN — SS3

MAIN MOTOR — W — PL18

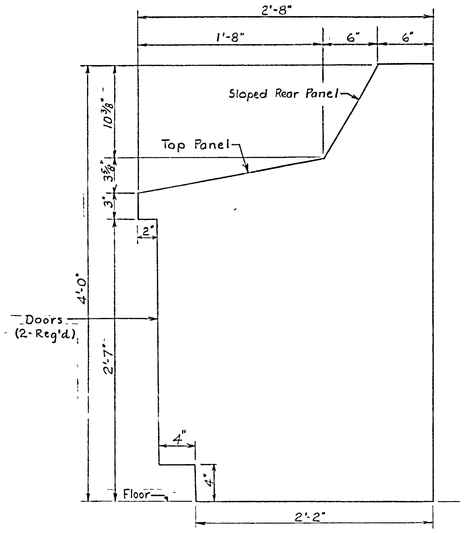
CONTROL SELECTOR (MAN / AUTO) — SS1

BRAKE BYPASS BR2 (BR1 / BR3, OFF) — SS2

SPAN LOCKS (UNLOCK / STOP / LOCK) — CS2

SPAN DRIVE CONTROL (CLOSE / STOP / OPEN) — CS1

TOP PANEL & SLOPED REAR PANEL
SCALE: 6"=1'-0"



END VIEW
SCALE: 1½"=1'-0"

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

CONTROL CONSOLE-CC1

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

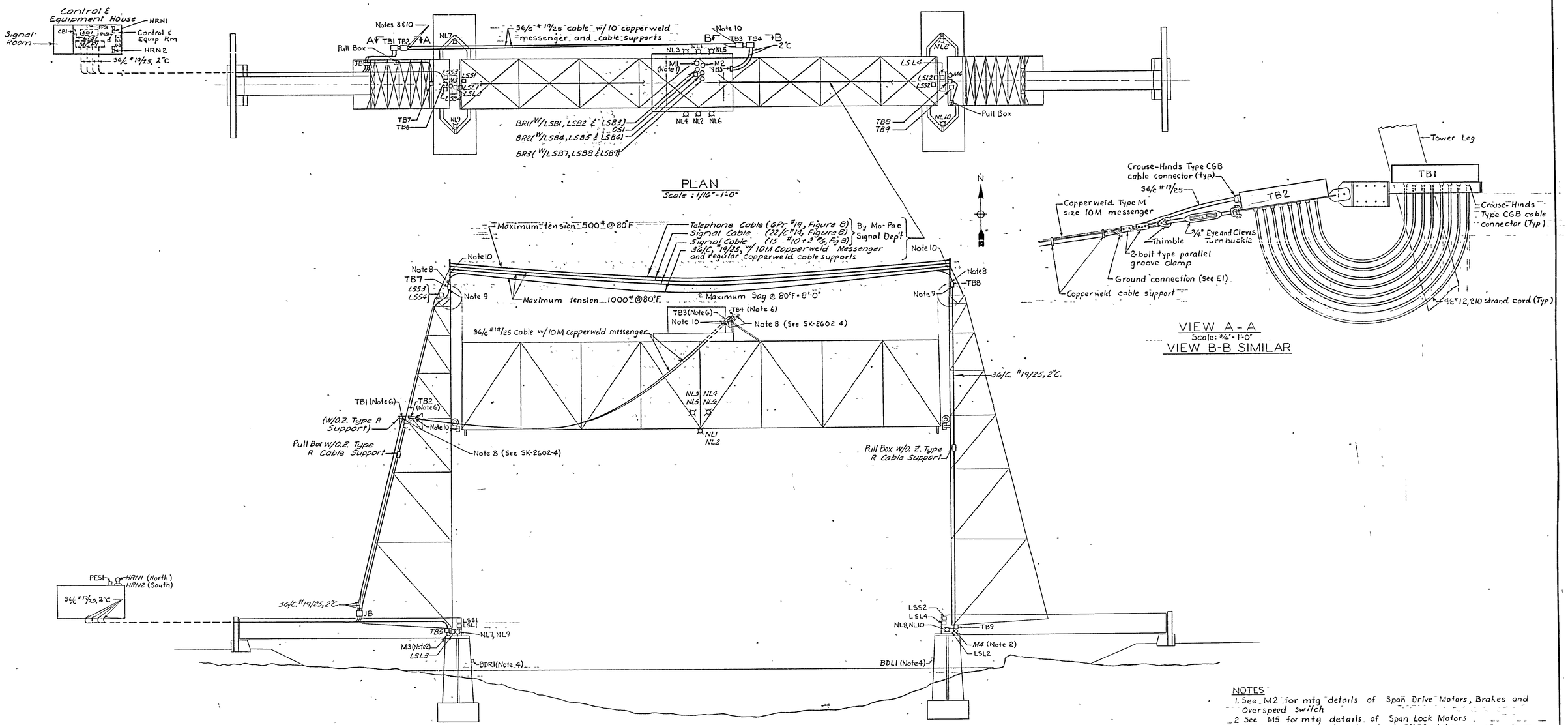
SVERDRUP & PARCEL AND ASSOC., INC.
CONSULTING ENGINEERS
ST. LOUIS, MO

SCALE: As Noted
DATE:

2602
67E10

FILE NO. D3A-195-35

DRAWING NO. E3



NOTES

1. See M2 for mtg details of Span Drive Motors, Brakes and Overspeed switch
2. See M5 for mtg details of Span Lock Motors
3. See M8 for mtg details of Limit Switches
4. See M9 for mtg. details of Boat Detector
5. See M13 for mtg. provisions for tower-to-tower cable attachment devices
6. See M14 for mtg. details of Terminal Boxes TB1, TB2, TB3 and TB4
7. See M15 for mtg details of Navigation Lights
8. Use Crouse-Hinds type CGB cable connector for cable entry into terminal boxes
9. Use O.Z Type R cable support for cable entering terminal boxes from conduit below
10. Terminate messenger using eye-and-clevis turnbuckle, thimble and two 2-bolt type parallel groove clamps.
11. See E1 for grounding & lightning protection

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

ELECTRICAL EQUIPMENT AND CONDUIT

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

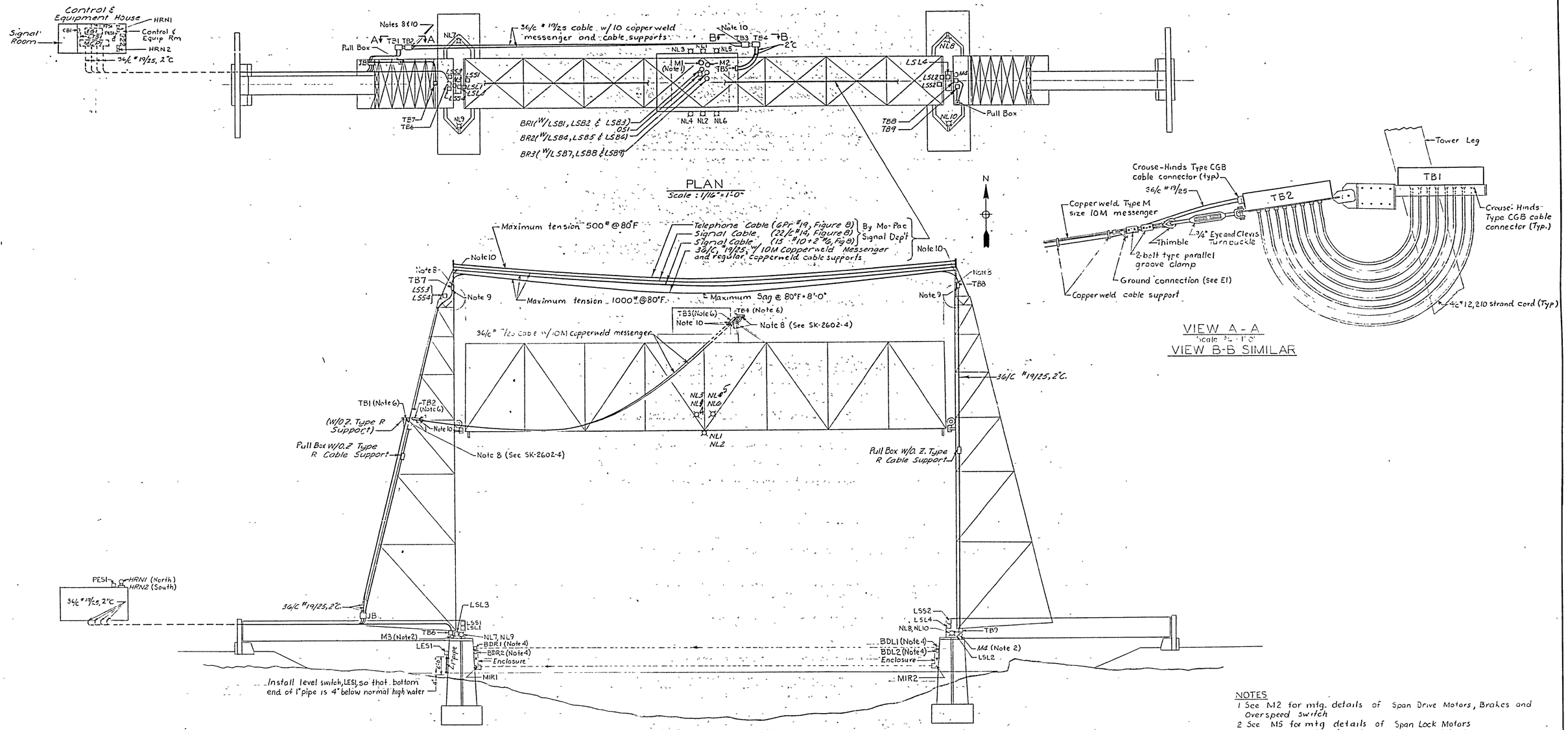
SVERDRUP & PARCEL AND ASSOC., INC.
CONSULTING ENGINEERS
ST. LOUIS, MO.

SCALE: As Noted
DATE:

2602
67E11

FILE NO. D3A-1.95-36

DRAWING NO. E4



NOTES

1 See M2 for mtg. details of Span Drive Motors, Brakes and Overspeed switch
2 See M5 for mtg details of Span Lock Motors
3. See M8 for mtg details of Limit Switches
4 See M9 for mtg. details of Boat Detectors
5 See M13 for mtg provisions for tower-to tower cable attachment devices
6 See M14 for mtg details of Terminal Boxes TB1, TB2, TB3 and TB4
7 See M15 for mtg. details of Navigation Lights
8 Use Crouse-Hinds type CGB cable connector for cable entry into terminal boxes
9 Use O.Z Type R cable support for cable entering terminal boxes from conduit below
10. Terminate messenger using eye-and-clevis turnbuckle, thimble and two 2-bolt type parallel groove clamps
11 See E1 for grounding & lightning protection

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

ELECTRICAL EQUIPMENT AND CONDUIT

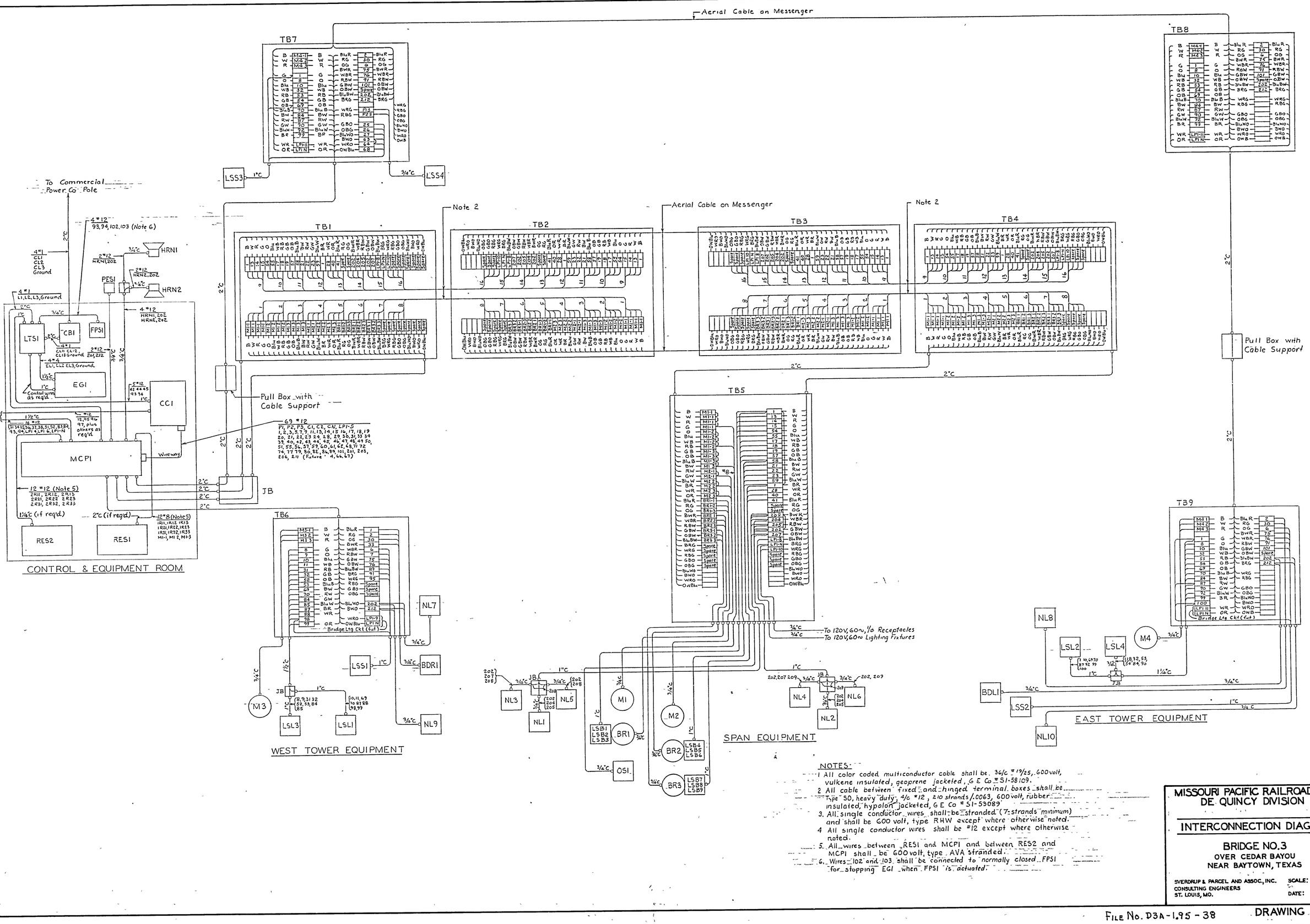
BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

SVERDRUP & PARCEL AND ASSOC., INC. CONSULTING ENGINEERS ST. LOUIS, MO.
SCALE: As Noted
DATE:

2602-67E11-

FILE NO D3A-1.95-37

ALTERNATE DRAWING NO. E4



NOTES:

1. All color coded multiconductor coble shall be. 3/4"C #19/25, 600 volt, vulkene insulated, geoprene jackeled, G E Co #51-58109.
2. All cable between fixed and hinged terminal boxes shall be Type SO, heavy duty, 4/c #12, 210 strands/.0063, 600 volt, rubber insulated, hypalon jacketed, G E Co #51-53089
3. All single conductor wires shall be stranded (7 strands minimum) and shall be 600 volt, type RHW except where otherwise noted.
4. All single conductor wires shall be #12 except where otherwise noted.
5. All wires between RES1 and MCPI and between RES2 and MCPI shall be 600 volt, type AVA stranded.
6. Wires 102 and 103 shall be connected to normally closed FPSI for stopping EGI when FPSI is actuated.

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

INTERCONNECTION DIAGRAM

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

SVERDRUP & PARCEL AND ASSOC., INC.
CONSULTING ENGINEERS
ST. LOUIS, MO.

SCALE: None
DATE:

2602
GTE 12

FILE NO. D3A-1.95-38

DRAWING NO. E5

Aerial Cable on Messenger

TB7

TB8

LSS3 1"C

3/4"C LSS4

To Commercial Power Co. Pole

4#12 93,94,102,103 (Note 6)

2"C

4#1 CL1, CL2, CL3 Ground

3/4"C HRN1

2#12 HRN1,202

2#12 HRN2,202

PESI

3/4"C HRN2

4#1 L1,L2,L3,Ground

1"C

3/4"C

4#12 HRN1,202 HRN2,202

LTSI

CBI

FPSI

4#1 CL1, CL2, CL3 Ground

2#12 201,212

3/4"C

4#4 E.G.I. CL3 Ground

1 1/2"C

EGI

Control wires as reqd.

1"C

6#12 93,94 4#5

CCI

To Signal Equip.

1 1/2 C

16#12 (or 34#16 or 37#18, 51#20, 83#22 93,94,...PI-5, PI-6 LPI N)

12,96,94 97, plus others as reqd.

MCPI

Wireway

12#12 (Note 5) 2RII, 2RI5, 2R21, 2R22 2R23 2R31, 2R32 2R33

1 1/4"C (if reqd.)

2"C (if reqd.)

12#8 (Note 5) IRII IRI2 IRI3 IR21 IR22 IR23 MI-1, MI 2, MI 3

RES2

RESI

CONTROL & EQUIPMENT ROOM

Pull Box with Cable Support

69 #12 PI, P2, P3 CI, C2, CN, LPI-5 1, 2, 3, 5 7, 9 11 13, 14, 15 16, 17, 18, 19 20, 21, 22, 23 24 28, 29, 30, 31, 33 34 39 40, 42, 43, 44, 45, 46, 47, 48, 49 50, 51, 55, 56 57, 59, 60, 61, 62, 68 71 72 74, 77 79, 80, 82, 84, 89 101, 201, 203, 206, 211 (Future #14&17)

JB

TB6

NL7

3/4"C

LESI

1"C

LSSI

JB

BDRI

BDR2

NL9

M3

LSL3

LSLI

WEST TOWER EQUIPMENT

Note 2

TB1

TB2

Aerial Cable on Messenger

TB3

Note 2

TB4

TB5

2"C

To 120V, 60w, 1/2 Receptacles

To 120V, 60w Lighting Fixtures

NL3

NL5

NLI

M1

M2

LSB1 LSB2 LSB3

BRI

BR2

LSB4 LSB5 LSB6

OSI

BR3

LSB7 LSB8 LSB9

NL4

NL6

NL2

SPAN EQUIPMENT

TB9

NL8

LSL2

LSL4

M4

3/4"C

1 1/4"C

BDLI

BDL2

LSS2

NL10

EAST TOWER EQUIPMENT

Pull Box with Cable Support

NOTES:

1. All color coded multiconductor cable shall be 36/c #19/25, 600 volt, "Vulkene insulated, geoprene jacketed, G E Co # SI-58109.
2. All cable between fixed and hinged terminal boxes shall be Type SO, heavy duty, 4/c #12, 210 strands/.0063, 600 volt, rubber insulated, hypalon jacketed, G E Co. # SI-53089
3. All single conductor wires shall be stranded (7-strands minimum) and shall be 600 volt, type RHW except where otherwise noted
4. All single conductor wires shall be #12 except where otherwise noted
5. All wires between RESI and MCPI and between RES2 and MCPI shall be 600 volt, type AVA stranded
6. Wires 102 and 103 shall be connected to normally closed FPSI for stopping EGI when FPSI is actuated

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

INTERCONNECTION DIAGRAM

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

SVERDRUP & PARCEL AND ASSOC., INC.
CONSULTING ENGINEERS
ST. LOUIS, MO.

SCALE: None

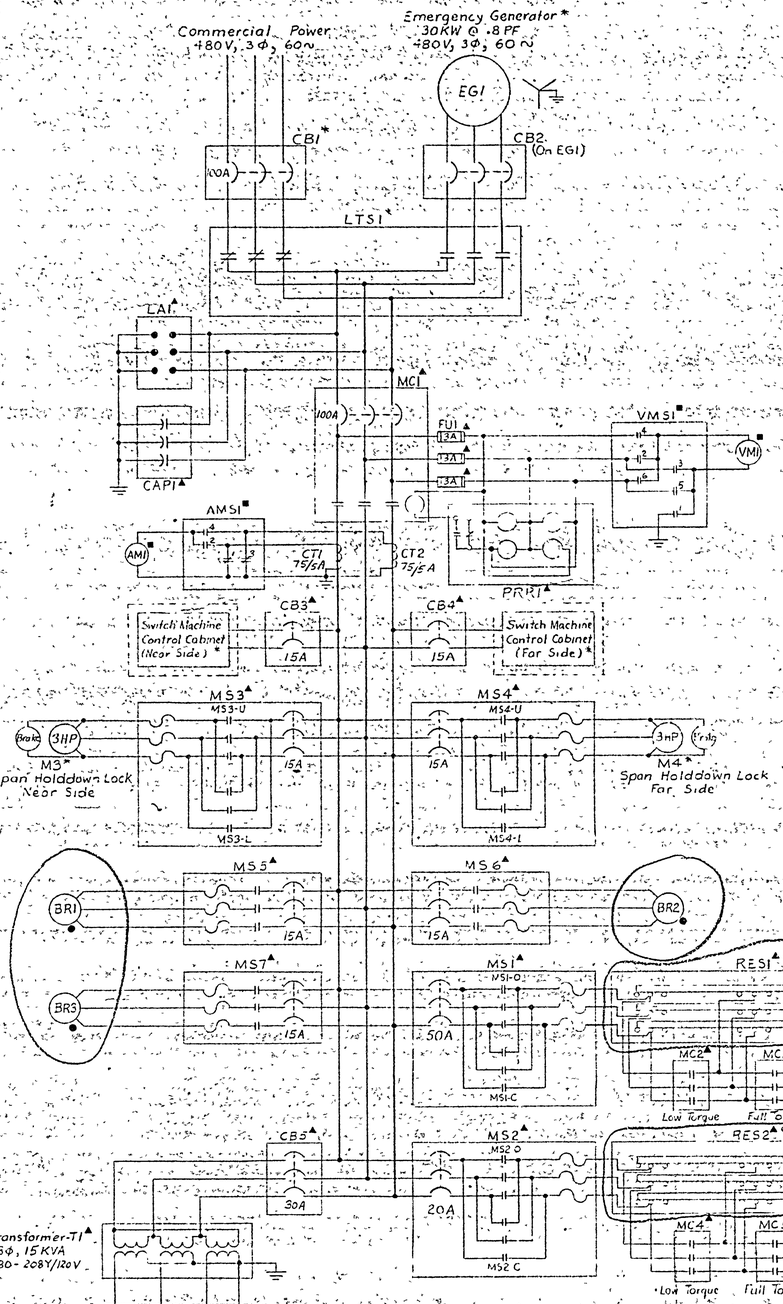
DATE:

2602
67E12

File No. D3A-1.95-39

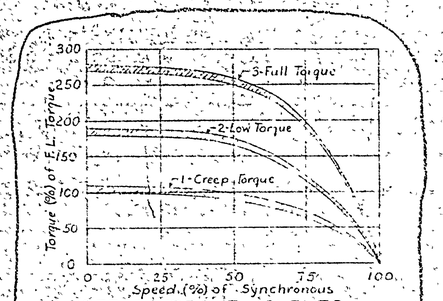
ALTERNATE

DRAWING NO. E5

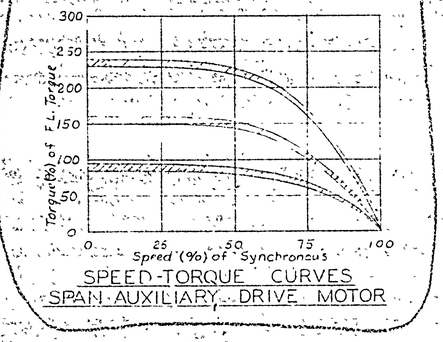


Note: See Control Schematic for contactor and relay coils and contacts not shown on this drawing.

480 VOLT POWER SYSTEM



SPEED-TORQUE CURVES
SPAN MAIN DRIVE MOTOR



SPEED-TORQUE CURVES
SPAN AUXILIARY DRIVE MOTOR

Contact	Positions (Rear View)						
	-3	2	1	3-1	2-3	1-2	OFF
1	X	X	X				
2		X					
3				X	X		
4			X	X		X	
5					X		
6	X					X	

Shown in OFF position

VOLTMETER SWITCH-VMS1

Contact	Positions (Rear View)						
	3	Int	2	Int.	1	Int	OFF
1	X	X				X	
2		X	X	X	X	X	
3				X	X	X	X
4	X	X	X	X			

Shown in OFF position

AMMETER SWITCH-AMS1

LOCATION SYMBOLS:
▲ Motor Control Panel - MCP1
■ Control Console, CC1
● Span Drive Mechanism
* Individually
[ ] By Mo-Pac

NOTE:
1. This issue of the drawing is to be used only as a reference for ordering the lift span drive machinery assembly.
2. The encircled items pertains to the lift span drive machinery assembly.
3. RES1 and RES2 shall be furnished with this order, but will be installed by others.

MISSOURI PACIFIC RAILROAD CO.
DE QUINCY DIVISION

BRIDGE NO. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

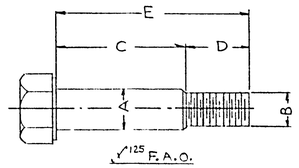
SVERDRUP & PARCEL AND ASSOC, INC.
CONSULTING ENGINEERS
ST. LOUIS, MO.

SCALE:
DATE:

FILE NO. D3A-1.95-40

2602
6715

AMERICAN STD. HEAVY
SEMI- FINISHED
WASHER FACED
BOLT HEADS & HEX. NUTS
A. S. A. B18.2



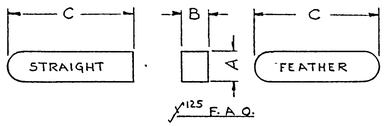
TURNED BOLT LIST

A S T M. A307 GRADE "A"

S O. A-

DWG.

Pc No.	HEAD	QTY	A	B	C	D	E	FOR	SEMI-FINISHED HEX. NUT	SPRING LOCKWASHER	BEVEL WASHER	TYPE OF BOLT
128	HEX	20	1 1/16" +.000" -.002"	1"-8	3 1/2"	2"	5 1/2"	127	20	20	—	BASE
133	HEX	48	15/16" +.000" -.002"	7/8"-9	2"	1 5/8"	3 5/8"	132	48	48	—	BASE
148	HEX	36	15/16" +.000" -.032"	7/8"-9	3/4"	1 1/2"	2 1/4"	145 & 146	36	36	—	BASE



KEY LIST

1045 STEEL

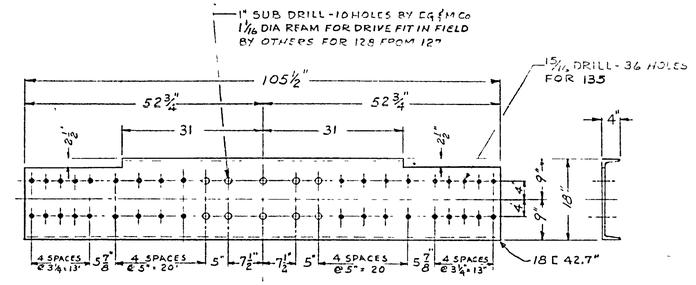
S.O. A-

DWG.

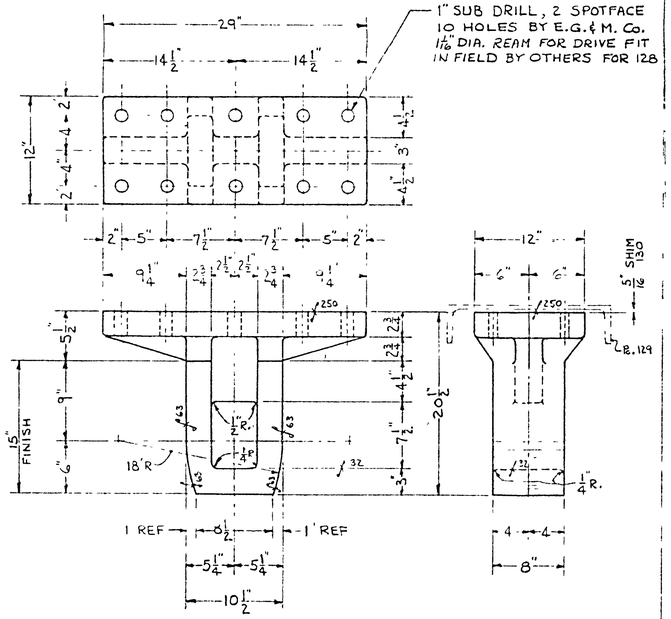
Pc. No.	KIND	QTY.	A	B	C	FOR	ON
176	SQ ENDS	2"	1/4"	1/4"	1 1/2"	175	SCREW JACK

S.O. A-729 BILL OF MATERIAL DWG 8371 E 30

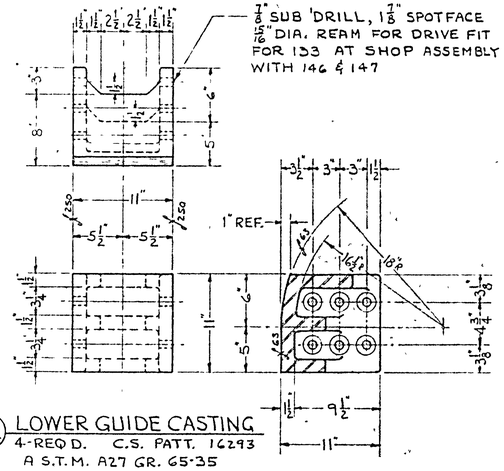
Pc. No	NAME	QTY	MTL.	SPEC'S.	PATT.	REMARKS
115						
116						
117						
118						
119						
120						
121						
122						
123						
124						
125						
126						
127	UPPER GUIDE CASTING	2	C.S.	ASTM A27 GR 65-35	16292	
128	BASE BOLT FOR 127	20	S.	ASTM A307 GRADE A		T. B. LIST
129	SPLASH COVER FOR 127	2	S.	ASTM A36		
130	SHIM FOR 127	2 SETS	S.	MFG STD		
131						
132	LOWER GUIDE CASTING	4	C.S.	ASTM A27 GR 65-35	16293	
133	BASE BOLT FOR 132	48	S.	ASTM A307 GRADE A		T. B. LIST
134						
135	BOLT FOR 127	72	S	ASTM A325	HEX HD HIGH STR	7/8"-9 x 2 1/2 LG.
136	NUT FOR 135	72	S	ASTM A325	HEX HD	7/8"-9 AMER. HEAVY
137	WASHER FOR 135	144	S	ASA B27.2	PLAIN	1 3/4 OD x 13/16 ID HARDENED FOR A325T BOLTS
138						
139						



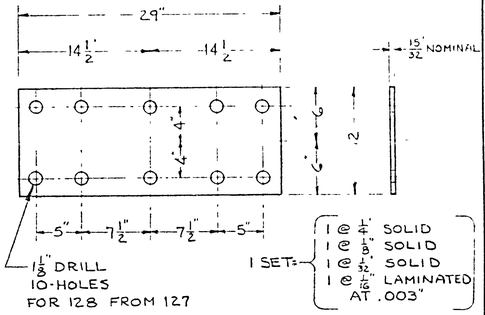
(129) SPLASH COVER FOR 127
2 REQ'D. S. A.S.T.M. A 36



(127) UPPER GUIDE CASTING
2-REQ'D. C.S. PATT. 16292
A.S T.M. A27 GR 65-35



(132) LOWER GUIDE CASTING
4-REQ'D. C.S. PATT. 16293
A S.T.M. A27 GR. 65-35



(130) SHIM FOR 127
2-SETS REQ'D. C.F.S.
MFG. STD.

APPROVED:
C. Baker
CHIEF ENGINEER
5-26-67

SPECIFICATIONS A.R.E.A. & SPECIAL PROVISIONS

INSPECTION

GENERAL NOTES

ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED
SPOT FACE FOR ALL BOLT HEADS & NUTS
SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS
SHOP PAINT—ONE COAT— RED LEAD
FINISHED SURFACES COATED—NO-OX-ID "A" SPECIAL
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

DATE		REVISIONS	APPROVED

S O A-729 CONTRACT

SPAN HOLD DOWN LOCK
MISSOURI PACIFIC RR. BRIDGE No 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

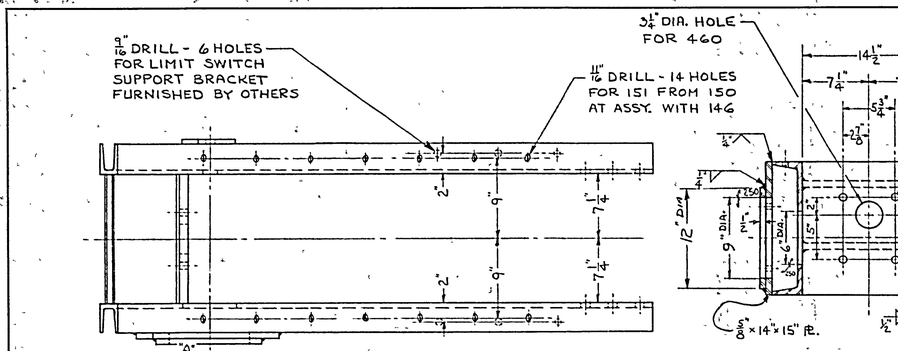
THE EARLE GEAR AND MACHINE COMPANY
4707 TO 4715 STENTON AVENUE
PHILADELPHIA 44, PA

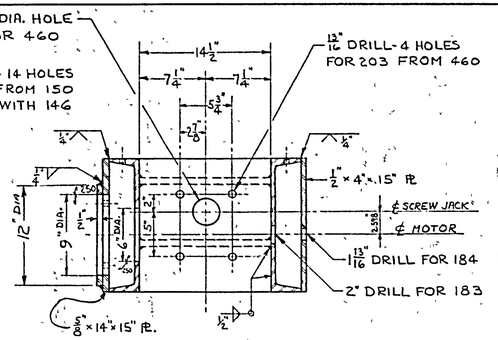
DRAWN BY A.J.R. 5-10-67 APPROVED BY
CHECKED BY REV APPVD
DATE REV APPVD

SHEET 1 OF 5 DWG. Nº 8371 E 30

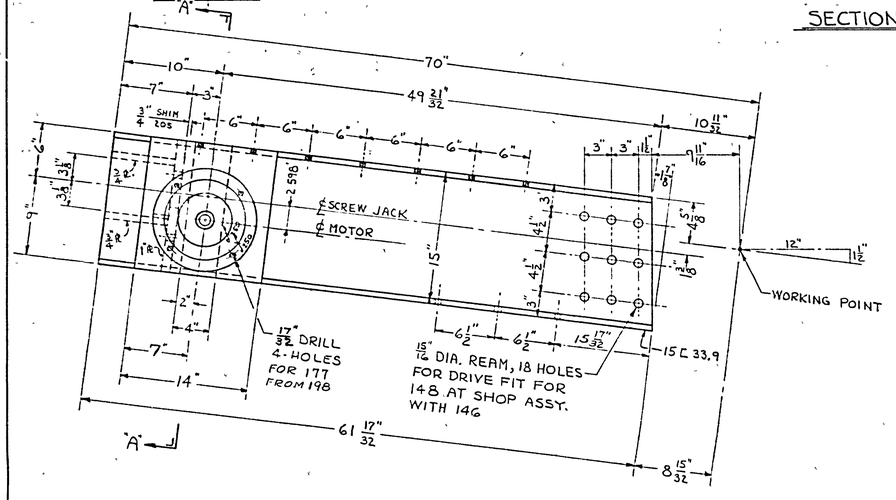
FILE No. D3A-1.95-41

COPYMATION INC.

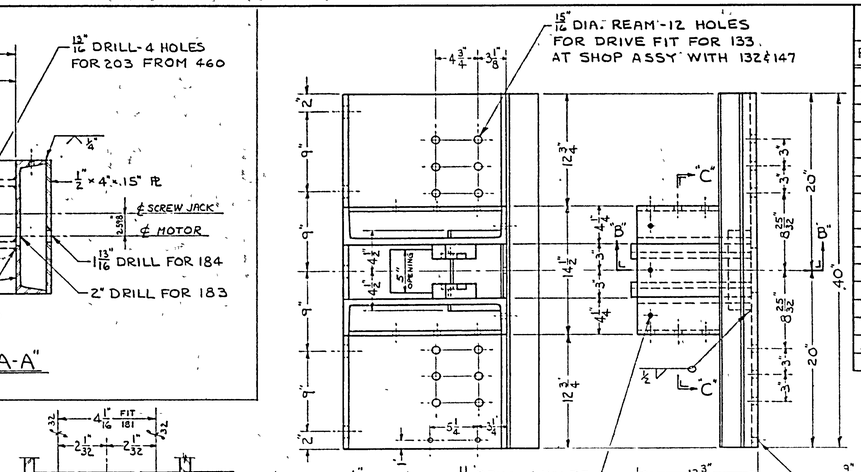




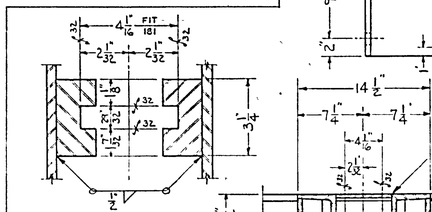
SECTION "A-A"



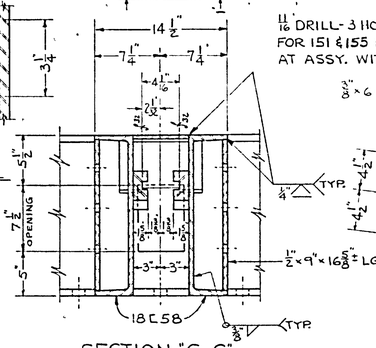
(145) WORM JACK FRAME
2-REQ'D. S. WELDMENT
A.S.T.M. A 36



SECTION "B-B"

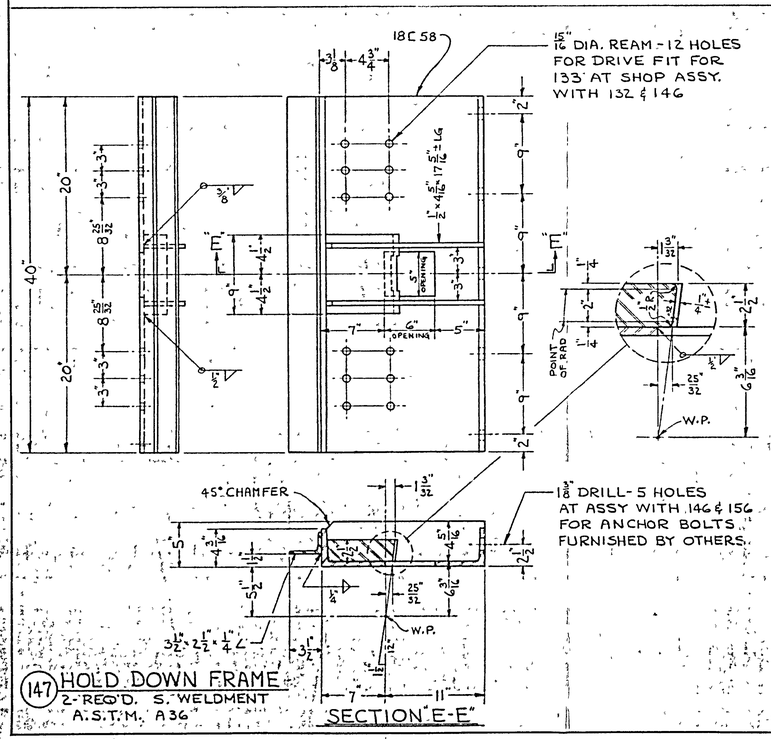


SECTION "D-D"



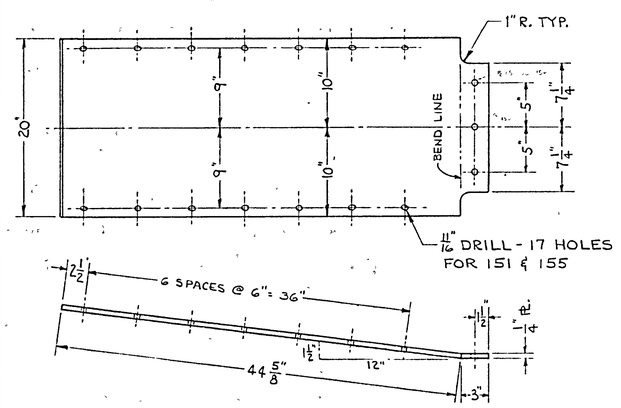
SECTION "C-C"

S.O. A-729	BILL OF MATERIAL					DWG. 8372 E 30
P. No.	NAME	QTY.	MTL.	SPEC'S.	PATT.	REMARKS
145	WORM JACK FRAME	2	S.	ASTM A36		WELDMENT
146	HOLD DOWN FRAME	2	S.	ASTM A36		WELDMENT
147	HOLD DOWN FRAME	2	S.	ASTM A36		WELDMENT
148	BOLT FOR 145 & 146	36	S.	ASTM A307 GRADE A		T. B. LIST
149						
150	COVER PLATE FOR 145 146	2	S.	ASTM A36		
151	BOLT FOR 150	32	S.	ASTM A307 GRADE A	HEX. HD MACH	5/8"-11 x 2 1/2" LG. W/HEX. NUT
152	LOCKWASHER FOR 151-155	34	S.	AM. STD 867.1	SPRING	5/8" SIZE MED. SECTION
153	BEVEL WASHER FOR 151	28	M.I.	MFG. STD		5/8" SIZE SLOPE 2" IN 12"
154	BEVEL WASHER FOR 151	4	M I.	MFG. STD		5/8" SIZE 2° SLOPE
155	BOLT FOR 150	2	S.	ASTM A307 GRADE A	HEX HD MACH	5/8"-11 x 1 3/4" LG. W/HEX. NUT
156	BASE PLATE FOR 146 147	2	S.	ASTM A36		WELDMENT
157						
158						
159						
160						
161						

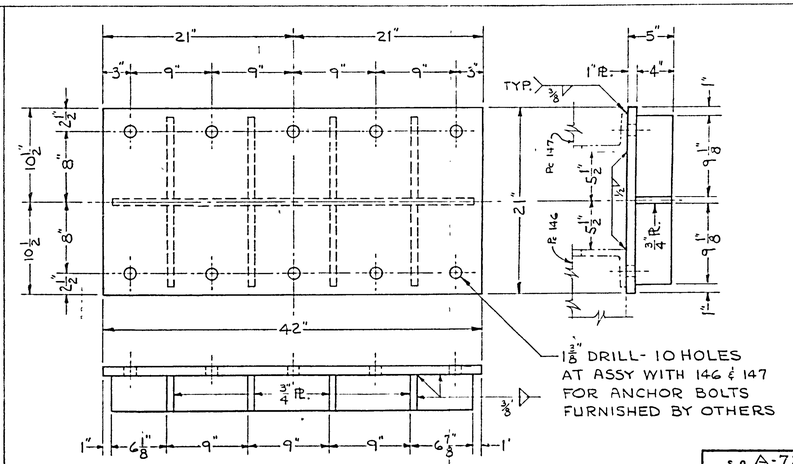


(147) HOLD DOWN FRAME
2-REQ'D. S. WELDMENT
A.S.T.M. A36

SECTION "E-E"



(150) COVER PLATE FOR 145 & 146
2-REQ'D. S. WELDMENT
A.S.T.M. A36



(156) BASE PLATE FOR 146 & 147
2-REQ'D. S. WELDMENT
A.S.T.M. A36

Revised Plan
APPROVED AUG 18 1967
J. J. Asst V.P.-Engr.

SPECIFICATIONS A.R.E.A.

INSPECTION NONE BY CUSTOMER

GENERAL NOTES
ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED
SPOT FACE FOR ALL BOLT HEADS & NUTS
SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS
SHOP PAINT—ONE COAT— RED LEAD
FINISHED SURFACES COATED—NO-OX-ID "A" SPECIAL
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

DATE	BY	REVISIONS	APPROVED
6-14-67	GP	P. 145 REVISED TO SUIT MOTOR	

S.O. A-729 CONTRACT
SPAN HOLD DOWN LOCK
MISSOURI PACIFIC R.R. BRIDGE No 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

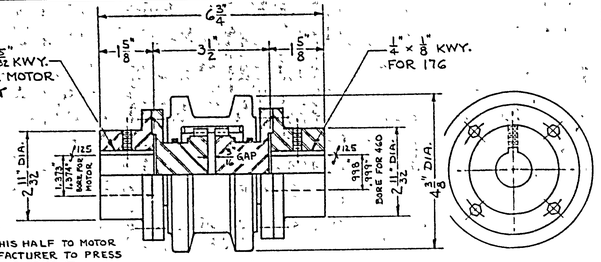
THE EARLE GEAR AND MACHINE COMPANY
4707 TO 4715 STENTON AVENUE
PHILADELPHIA 44, PA

DRAWN BY AJR 5-12-67 APPROVED BY MO-PAC RR 5-26-67
CHECKED BY REV. APPVD
DATE REV. APPVD

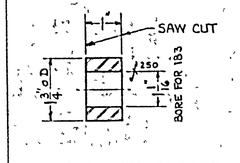
SHEET 2 OF 5 DWG. Nº 8372 E 30 △

FILE No. D3A-1.95-42

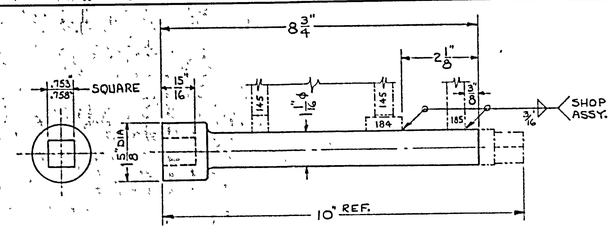
COPYMATION INC.



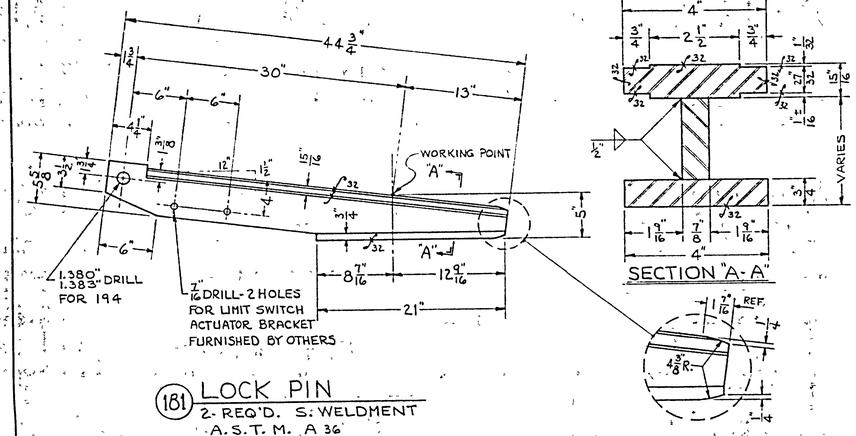
(175) MOTOR COUPLING
2-REQ'D. S. FALK No. 30T31



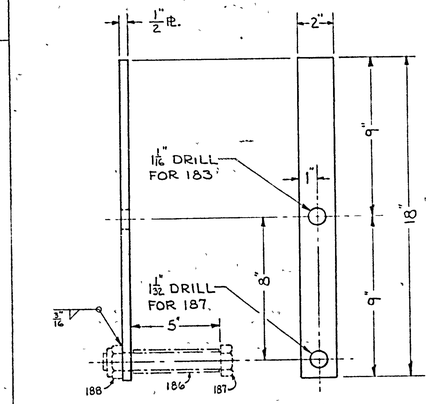
(184) COLLAR FOR 183
2-REQ'D. S.
A.I.S.I. C1018
MAKE FROM 1 3/4" O.D. x 3/8" WALL SEAMLESS TUBING



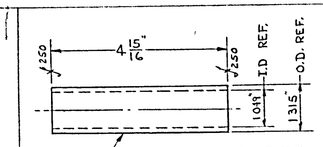
(183) HAND OPERATOR EXTENSION
2-REQ'D. ALLOY STEEL
WILLIAMS No. G-110 ALTERED



(181) LOCK PIN
2- REQ'D. S. WELDMENT
A.S.T.M. A 36



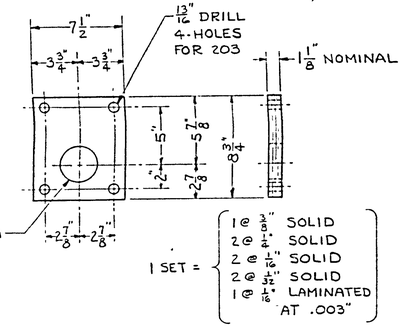
(185) HAND CRANK
2-REQ'D. H.R.S.
A.I.S.I. 1020



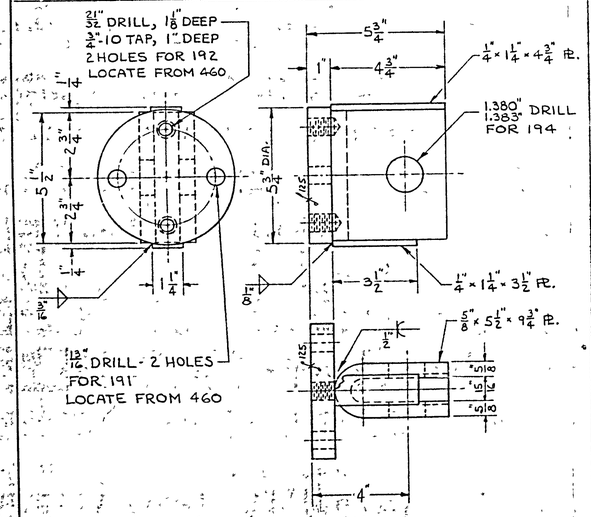
(186) HANDLE FOR 185
2-REQ'D. S.
A.S.T.M. A120

P. No.	NAME	QTY.	MTL.	SPEC'S	PATT.	REMARKS
175	MOTOR COUPLING	2	S.	MFG. STD		FALK No. 30T31
176	KEY FOR 175	2	S.	A-1 S-1 C1045		KEY LIST
177*	BASE BOLT FOR MOTOR	8	S.	ASTM A307 GRADE A	HEX. HD. MACH	1/2 - 13 x 3 1/4" LG. W/HEX. NUT
178*	LOCKWASHER FOR 177	8	S.	AM. STD. B27.1	SPRING	1/2 SIZE MED. SECTION
179	SHIM FOR MOTOR	2 SETS	S.	MFG. STD.		SEE DETAIL
180						
181	LOCK PIN	2	S.	ASTM A36		WELDMENT
182						
183	HAND OPERATOR EXT.	2	ALLOY S.	MFG. STD		MAKE FROM WILLIAMS NO G-110 1" DRIVE EXTENSION
184	COLLAR FOR 183	2	S.	A-1 S-1 C1018		MAKE FROM 1 3/4 O.D. x 3/8 WALL SEAMLESS TUBING
185	HAND CRANK	2	H.R.S.	A.I.S.I. C1020		
186	HANDLE FOR 185	2	S.	ASTM A120		1" GALV. PIPE x 4 15/16 LG.
187	BOLT FOR 185 & 186	2	S.	ASTM A307 GRADE A	HEX. HD. MACH	1" - 8 x 6 1/2" LG.
188	LOCKNUT FOR 187	2	S.	MFG. STD.		ESNA No. 49 TU 16B
189						
190	YOKE FOR 181	2	S.	ASTM A36		WELDMENT
191	BOLT FOR 190	4	S.	ASTM A307 GRADE A	HEX. HD. MACH	3/4" - 10 x 3" LG. W/HEX. NUT
192	CAP SCREW FOR 190	4	S.	ASTM A307 GRADE A	HEX. HD.	3/4" - 10 x 1 3/4" LG.
193	LOCKWASHER FOR 191 192	8	S.	AM. STD. B27.1	SPRING	3/4" SIZE MED. SECTION
194	PIN FOR 181 & 190	2	C.F.S.	A.I.S.I. C1042		
195	PLAIN WASHER FOR 194	4	S.	AM. STD. B27.2	STD.	1 1/2" I.D. x 3 1/4 O.D. x *7GA THK
196	COTTER PIN FOR 194	4	S.	MFG. STD	STD.	1/4" DIA. x 2 1/4" LG.
197						
198	MOTOR	2		MFG. STD		SEE G.E. DWGS 145B3094 145B3056
199						
200	WORM GEAR JACK	2	—	MFG STD		DUFF NORTON MODEL 1810
201	LUB FITTING FOR 200	4	—	MFG. STD.	GIVENS BUTTON	ALEMITE No 1831
202						
203	BASE BOLT FOR 200	8	S.	ASTM A307 GRADE A	HEX MD MACH	3/4" - 10 x 3 1/2" LG. W/HEX. NUT
204	LOCKWASHER FOR 203	8	S.	AM STD. B27.1	SPRING	3/4" SIZE MED. SECTION
205	SHIM FOR 200	2 SETS	S.	MFG. STD.		

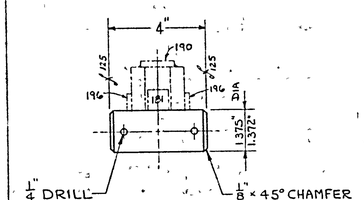
S.O. A-729 BILL OF MATERIAL DWG. 8373 E 30



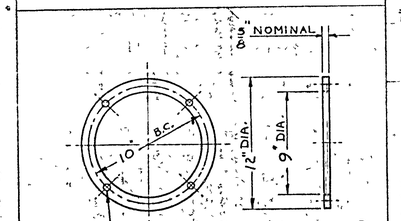
(205) SHIM FOR 200
2-SETS REQ'D. C.F.S.
MFG. STD.



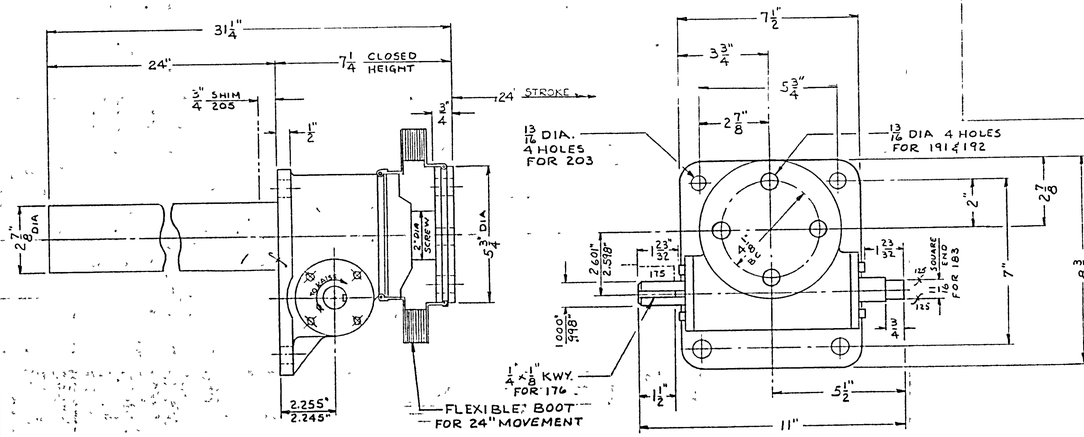
(190) YOKE FOR 181
2-REQ'D. S. WELDMENT
A.S.T.M. A36



(194) PIN FOR 181 & 190
2-REQ'D. C.F.S.
A.I.S.I. C1042



(179) SHIM FOR MOTOR
2-SETS REQ'D. C.F.S.
MFG. STD.



(200) WORM GEAR JACK
2-REQ'D. DUFF-NORTON
MODEL No. 1810, RATIO 8:1
RATED 10 TONS

SHOP NOTE:
REPLACE HYD LUB FITTING WITH PL 201

Revised Plan
APPROVED AUG 18 1967
J D Brennan
Ass't V.P. Engr.

SPECIFICATIONS A.R.E.A.

INSPECTION NONE BY CUSTOMER

GENERAL NOTES
ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED
SPOT FACE FOR ALL BOLT HEADS & NUTS
SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS
SHOP PAINT—ONE COAT— RED LEAD
FINISHED SURFACES COATED—NO-OX-ID "A" SPECIAL
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

DATE		REVISIONS	APPROVED
8-14-67	GP	PCS. 177, 178 & 179 REVISED TO SUIT MOTOR	

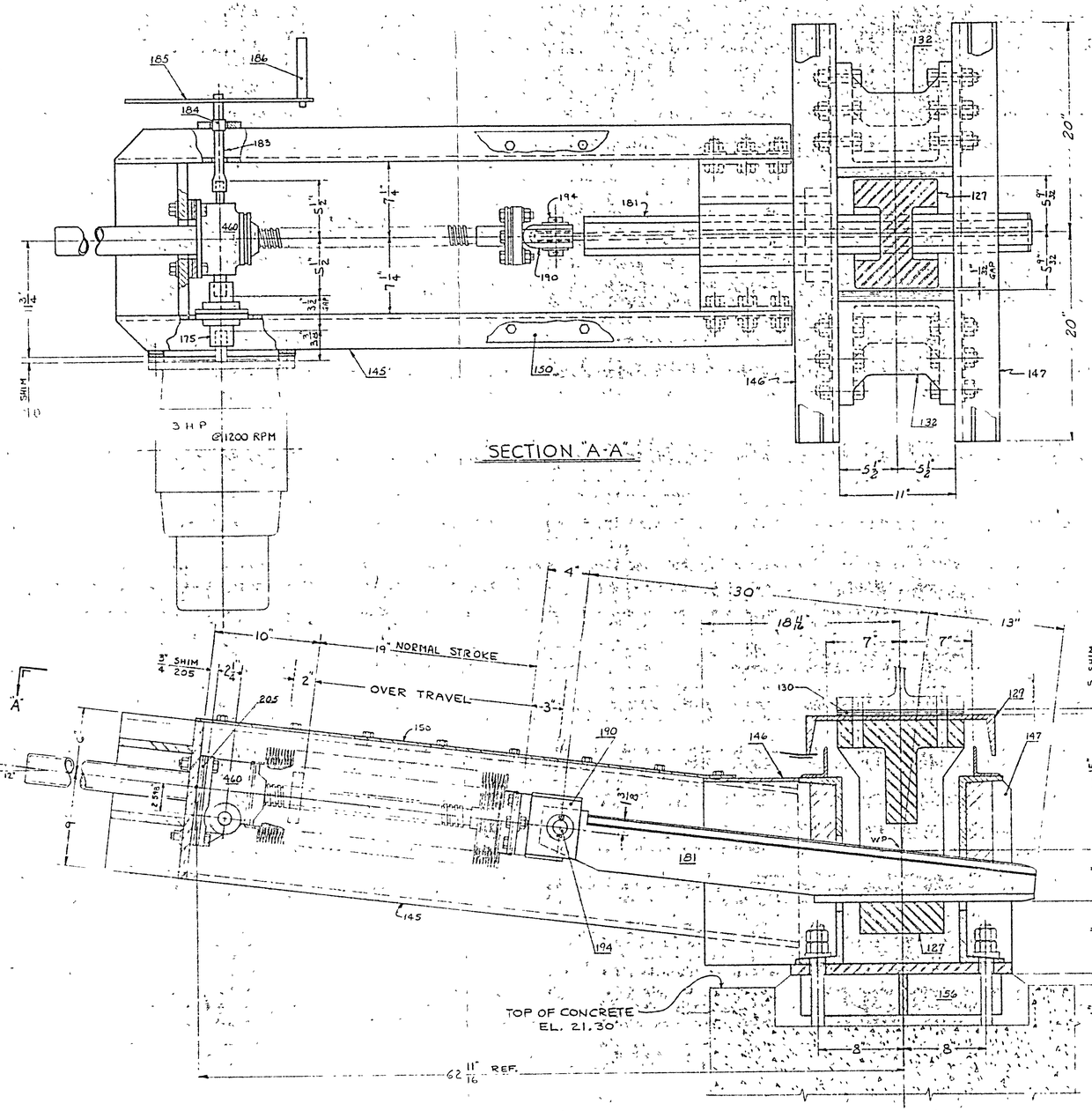
S.O. A-729 CONTRACT
SPAN HOLD DOWN LOCK
MISSOURI PACIFIC RR BRIDGE No. 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

THE EARLE GEAR AND MACHINE COMPANY
4707 TO 4715 STENTON AVENUE
PHILADELPHIA 44, PA.

DRAWN BY A.J.R. 5-11-67 APPROVED BY Mo Pac RR 5-26-67
CHECKED BY REV APP'D
DATE REV APP'D
SHEET 3 OF 5 DWG. No 8373 E 30 Δ1

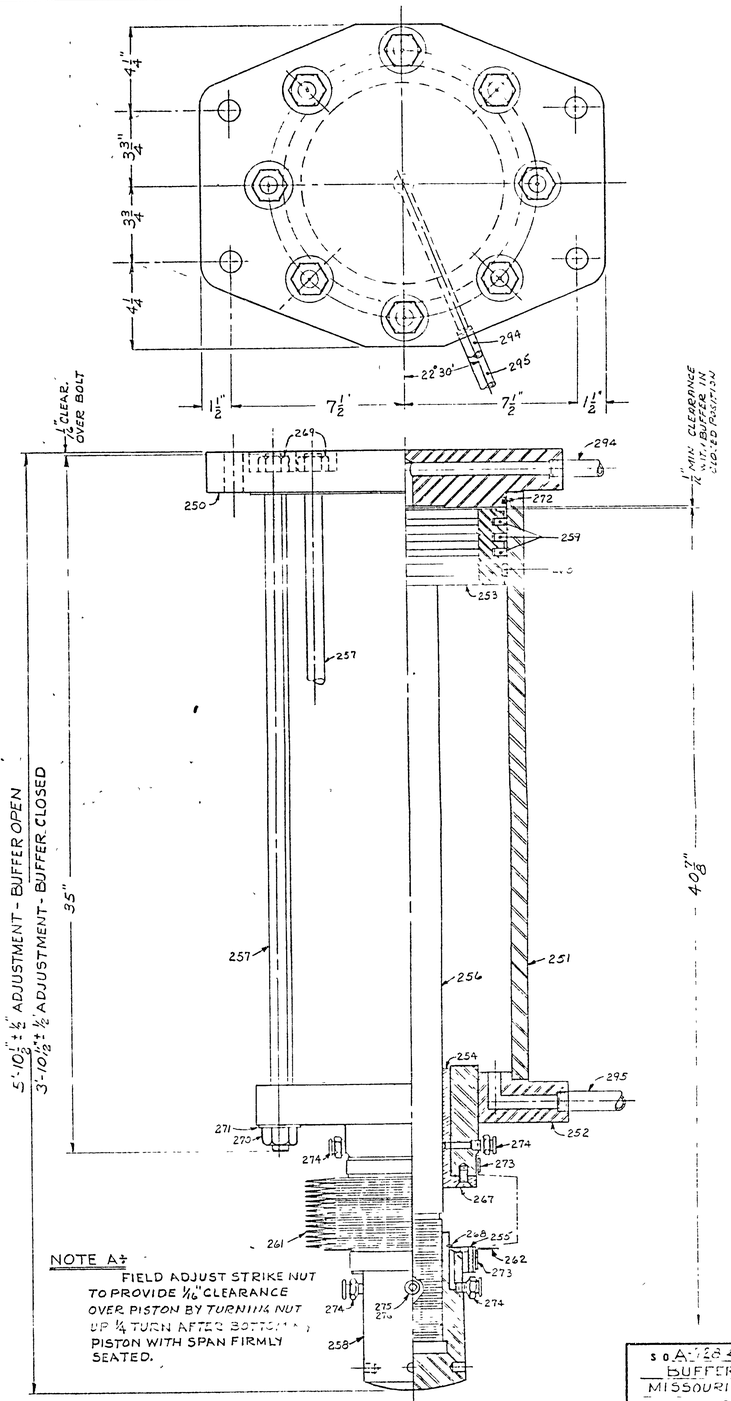
FILE No. D3A-1.95-43

COPYMATION INC.



S.O. A-729

SPAN HOLD-DOWN ASSEMBLY



NOTE A:
FIELD ADJUST STRIKE NUT TO PROVIDE 1/16" CLEARANCE OVER PISTON BY TURNING NUT UP ¼ TURN AFTER BOTTOMING PISTON WITH SPAN FIRMLY SEATED.

S.O. A-728

BUFFER ASSEMBLY

FOR PIPING DIAGRAM, SCHEMATIC SEE DWG

Revised Plan

APPROVED

J. S. Newman
Asst VP Engr

DATE		REVISIONS	APPROVED
8-14-67	GP	SECT A-A REV TO SUIT MOTOR	

S.O. A-728 A/B CONTRACT
BUFFER & HOLD DOWN ASSEMBLY
MISSOURI PACIFIC R.R. BRIDGE No 3
OVER CEDAR BAYOU
NEAR BAYTOWN, TEXAS

SPECIFICATIONS A.R.E.A.

INSPECTION NONE BY CUSTOMER

GENERAL NOTES

ALL STEEL CASTINGS & FORGINGS TO BE ANNEALED
SPOT FACE FOR ALL BOLT HEADS & NUTS
SCRIBE PITCH LINES ON BOTH SIDES OF ALL GEARS
SHOP PAINT—ONE COAT— RED LEAD
FINISHED SURFACES COATED—NO-OX-ID "A" SPECIAL
CUT OIL GROOVES IN ALL BEARINGS UNLESS NOTED
ALL SHIMS TO BE DRILLED

THE EARLE GEAR AND MACHINE COMPANY
4707 TO 4715 STENTON AVENUE
PHILADELPHIA 44, PA

DRAWN BY AJB APPROVED BY [illegible] 8-25-67
CHECKED BY ____ REV APPVD ____
DATE ____ REV APPVD ____

SHEET 5 OF 5 DWG. Nº S57E30

FILE No. D3A-1,95-45

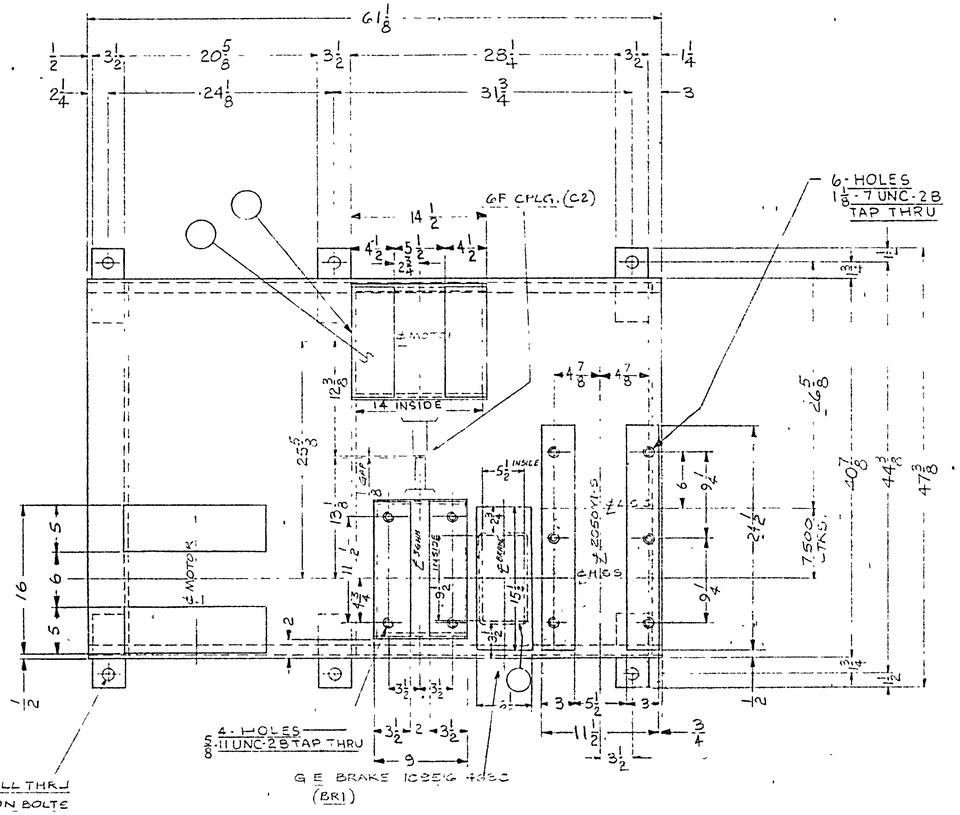
COPYMATION INC.

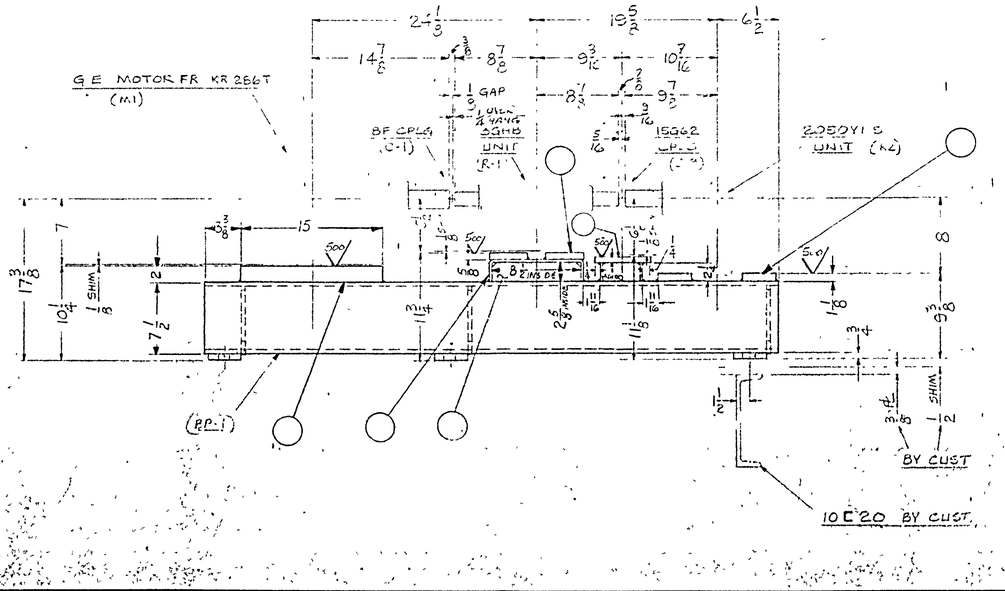
4189 74

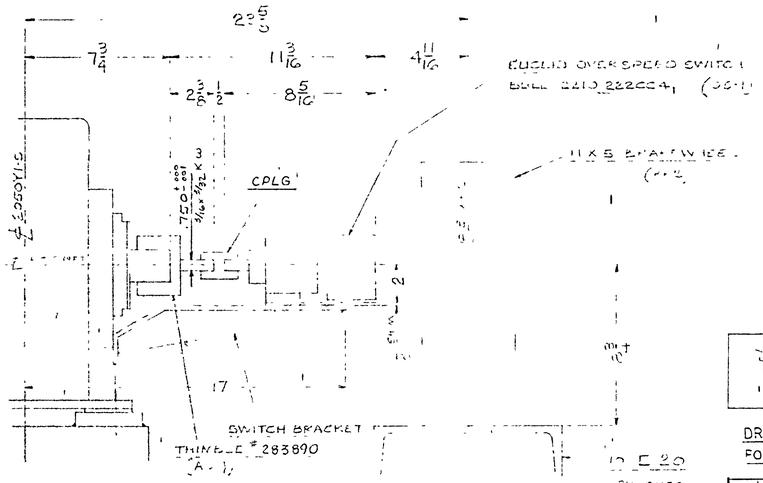
DRAWING NO.

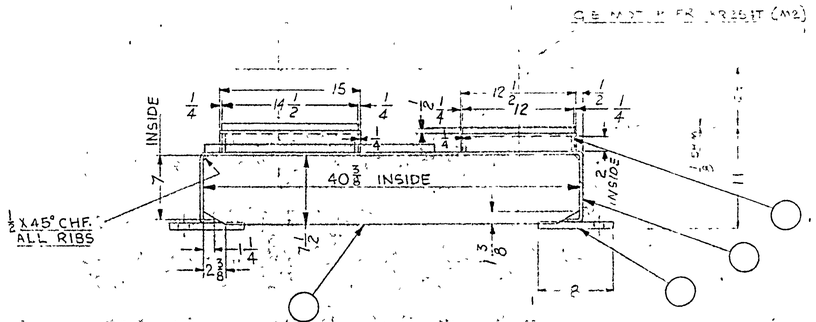
M O NO	1676683

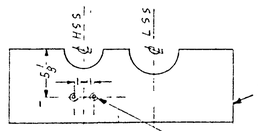
PART AND SPECIFICATION	NO REQ PER UNIT	ROUGH PART NO	MATERIAL	HEAT TREATMENT	WEIGHTS ROUGH	WEIGHTS FINISH
BEDPLATE	1		FABR STL			
ONE OF THE ABOVE CONSISTS OF THE FOLLOWING						











DRILLING DIAGRAM FOR BRACKET MTG

WELD NOTES

1. UNLESS SPECIFIED BY AMERICAN WELDING SOCIETY SYMBOLS, ALL WELDS TO BE 1/4 CONTINUOUS FILLET
2. ALL UNSPECIFIED PLATE IS 1/4 THICK.
3. ALL RADII FORMED WITH 1/4 PUNCH RADIUS

SYM	REVISION	LOC	CHECKED	DATE	M O
N					
M					
L					
K					
J					
H					
G					
F					
E					
D					
C					
B					
A					

CERTIFIED RECORD PRINT AUG 21 1967 PURCHASER

FRACTIONAL MACHINING DIMENSIONS SHALL BE HELD TO A TOLERANCE OF ± .015 UNLESS OTHERWISE SPECIFIED. THIS DRAWING IS LOANED WITH THE UNDERSTANDING THAT IT MUST NOT BE REPRODUCED OR COPIED IT IS SUBJECT TO RETURN UPON DEMAND

THE FALK CORP.
MILWAUKEE, WISCONSIN

DESCRIPTION	BEDPLATE				
UNIT	3GHB & 2050YI-S				
DRAWN	J MAIN	DATE 6 12 67	CHECKED L TOLG	DATE 6 16 67	
TRACED		DATE	SCALE 1/4" = 1'-0"		
SUPERSEDED BY		SUPERSEDES			
SIMILAR TO					
DRAWING NO	418974				

SPAN LIP DRIVE BRIDGE #5 OVER CEDAR BAYOU, NEAR BAYTOWN, TEXAS.

P/L 1129306

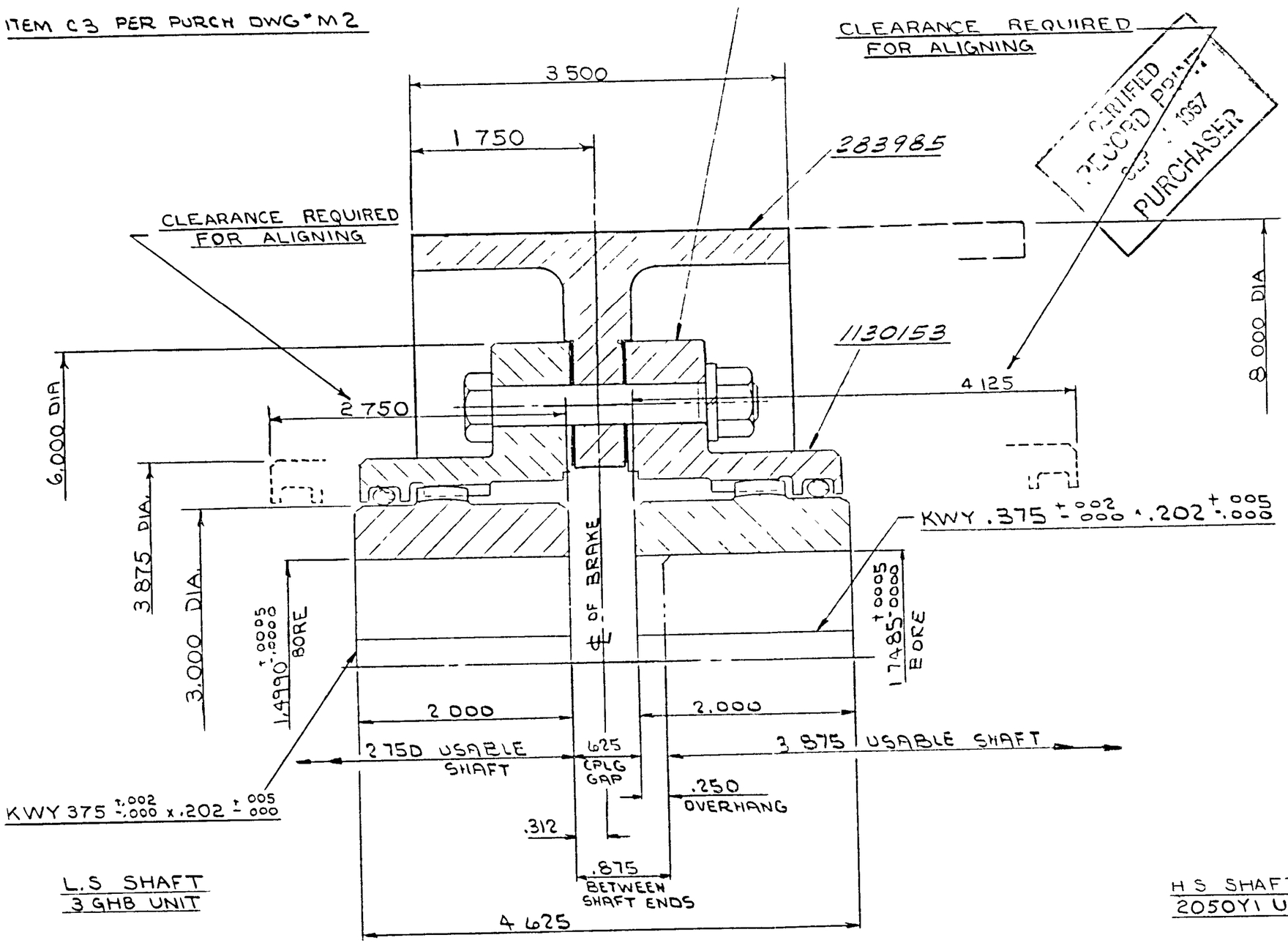
REF JOST DWG M2
FILE NO D3A-1.95-46

SPAN LIFT DRIVE
BRIDGE Nº 3 OVER CEDAR BAYOU
NEAR BAYTOWN TEXAS

ITEM C3 PER PURCH DWG * M2

SLEEVE TO BE USED AS JIG FOR WHEEL & MATCH MARK

P/L # 1130152



L.S SHAFT
3 GHB UNIT

H S SHAFT
2050Y1 UNIT

M O NO	NO REQ	NAME OF PART	MATERIAL	HEAT TREAT	RGH PART NO	WEIGHTS RGH	WEIGHTS FIN
1	6·7656	83 04					

15662 BRAKEWHEEL CPLG.

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES
TOLERANCES ON
1 PL DEC ± .060 | 2 PL DEC ± .030 | 3 PL DEC ± .010 | ANGLES ± 1°
THESE TOLERANCES APPLY TO MACHINED SURFACES ONLY

THE FALK CORP.
MILWAUKEE WISCONSIN

TITLE 15662 BRAKEWHEEL CPLG.

	NAME	DATE
DRAWN	SATORIUS	6-14-67
CHECKED	D F	
DATE	6-20-67	
TRACED		
DATE		
SCALE	1-1	
SIMILAR TO		

SYM	REVISION	DATE	CHK'D
A			
B			
C			
D			
E			
F			
G			
H			

DRAWING NO 283251

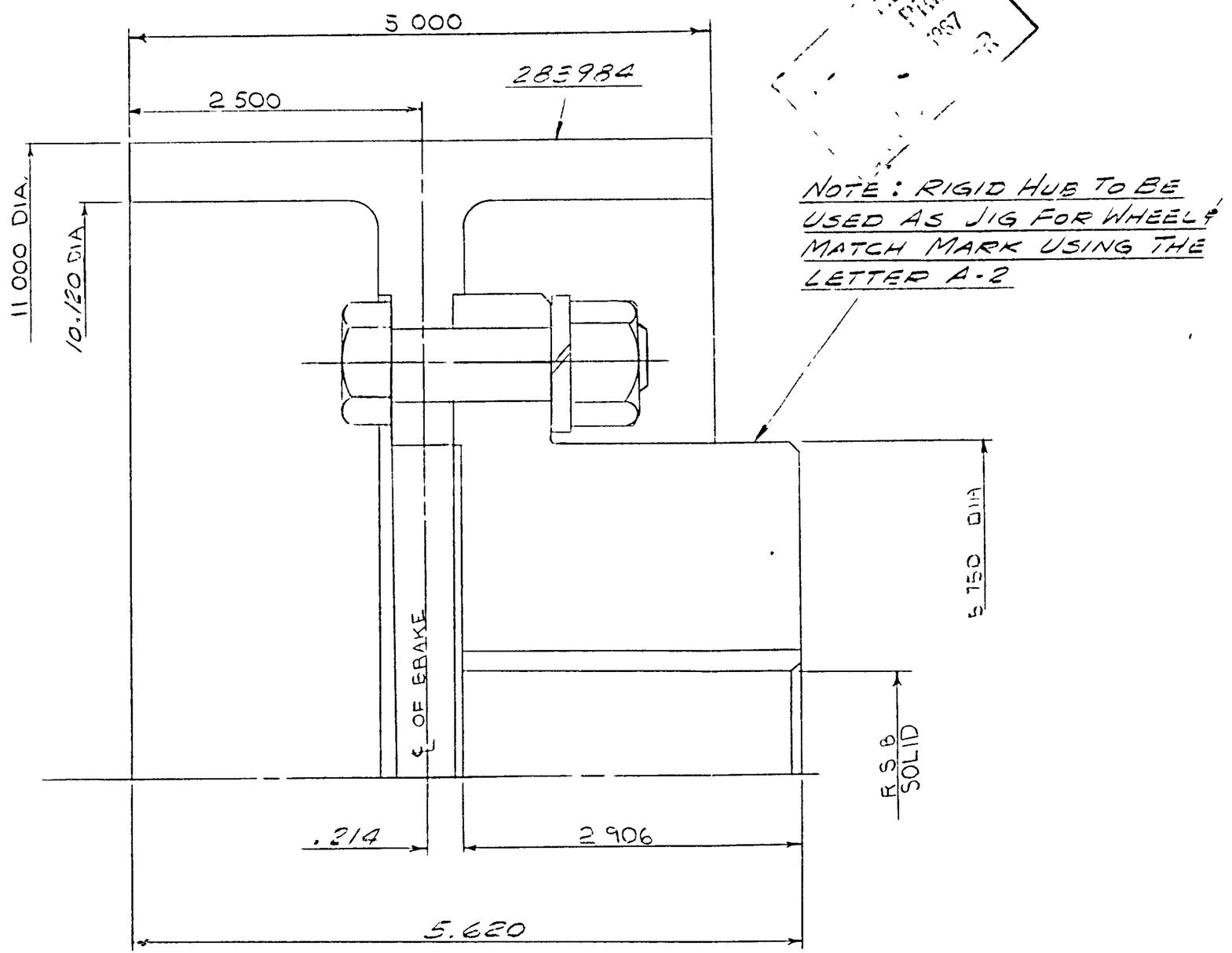
FORM S 808

FILE No D3A-1.95-47

SPAN LIFT DRIVE
BRIDGE No 3 OVER CEDAR BAYOU
NEAR BAYTOWN TEXAS

ITEM C6 PER PURCH DWG * M 2

P/L #1120151



NOTE: RIGID HUB TO BE USED AS JIG FOR WHEEL MATCH MARK USING THE LETTER A-2

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES
TOLERANCES ON
1 PL DEC ± .060 | 2 PL DEC ± .030 | 3 PL DEC ± .010 | ANGLES 1
THESE TOLERANCES APPLY TO MACHINED SURFACES ONLY

THE FALK CORP.
MILWAUKEE WISCONSIN

TITLE 25966 - BRAKEWHEEL HALF CPLS

DRAWN SATORIUS
DATE 6-14-67
CHECKED
DATE
TRACED
DATE
SCALE 1-1
SIMILAR TO

SYM	REVISION	CHK'D	DATE	M O
A				
B				
C				
D				
E				
F				
G				
H				

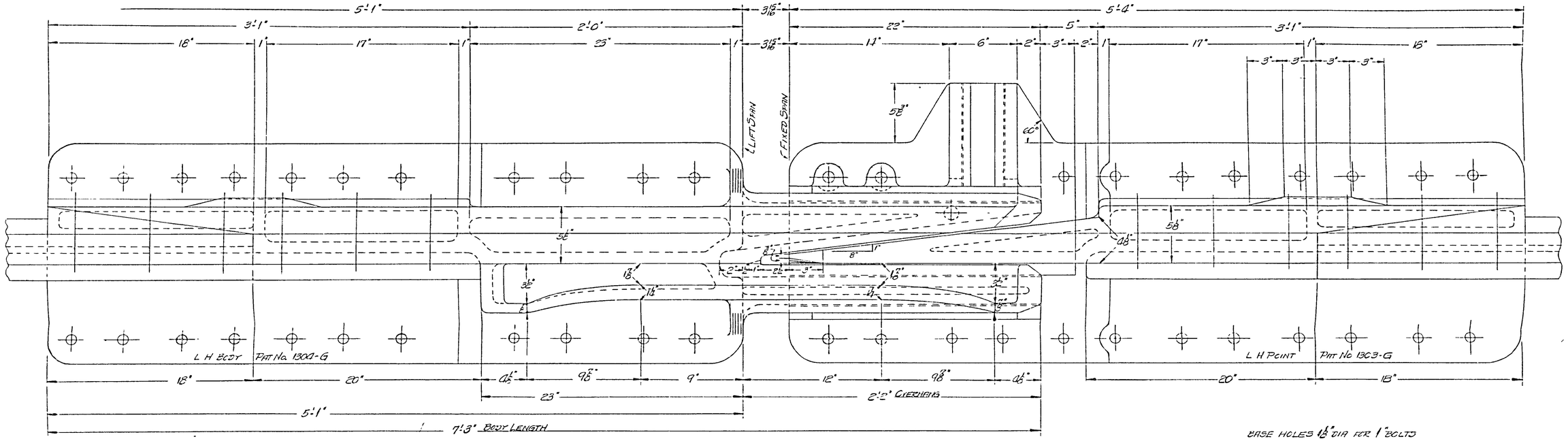
DRAWING NO 283276

M O NO 116 7-5644 03
NAME OF PART 25966 BRAKEWHEEL
NO REQ | MATERIAL | HEAT TREAT | RGH PART NO | WEIGHTS RGH FIN

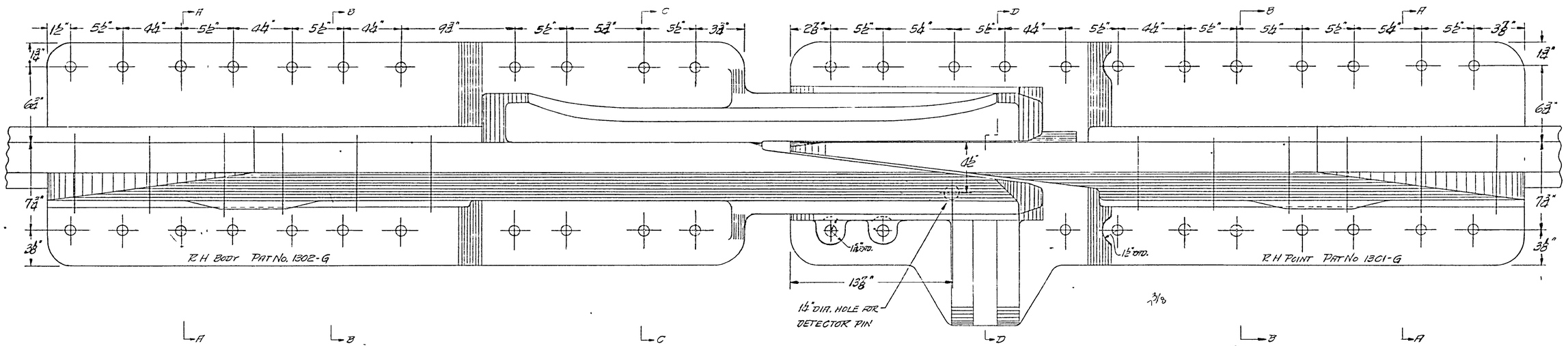
FILE No D3A-1.95-48

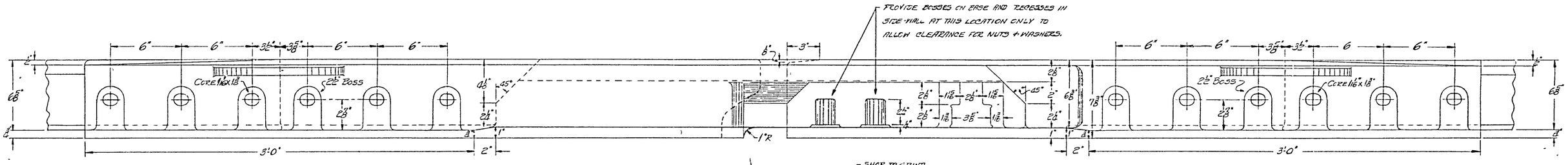
FORM 11 808

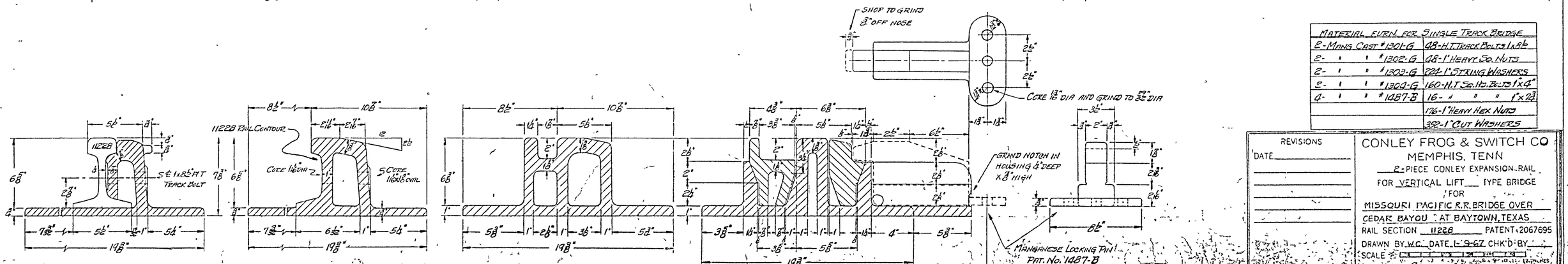
126 3 1M 2 66



BASE HOLES 1⅛" DIA FOR 1" BOLTS



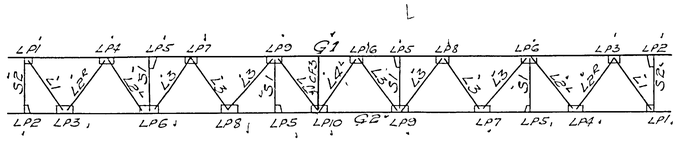


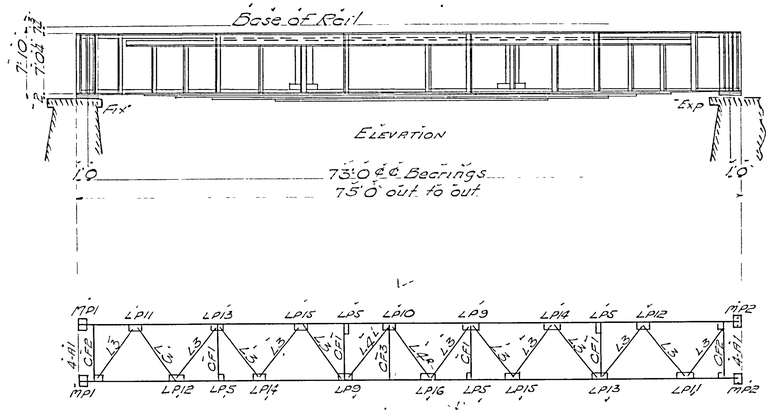


MATERIAL FURN. FOR SINGLE TRACK BRIDGE	
2-MANG CAST #1301-G	48-H.T. TRACK BOLTS 1x8½
2- " " #1302-G	48-1" HEAVY SQ. NUTS
2- " " #1303-G	224-1" STK'NG WASHERS
2- " " #1304-G	160-H.T. SQ. HD. BOLTS 1"x4"
4- " " #1487-B	16- " " " 1"x2½"
	176-1" HEAVY HEX NUTS
	352-1" CUT WASHERS

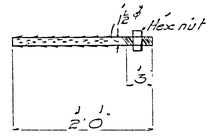
REVISIONS	
DATE	

CONLEY FROG & SWITCH CO
MEMPHIS, TENN
2-PIECE CONLEY EXPANSION-RAIL
FOR VERTICAL LIFT TYPE BRIDGE
FOR
MISSOURI PACIFIC R.R. BRIDGE OVER
CEDAR BAYOU AT BAYTOWN, TEXAS
RAIL SECTION 11228 PATENT 2067695
DRAWN BY W.C. DATE 1-9-67 CHK'D BY
SCALE 1" 0 1 2 3 4 5 6 7 8 9 10 11 12 INCHES
APPROVED
JAN 31 1967
MAT. M-1700
DRAWING NO. 11-446
FILE NO. D3A 195-49

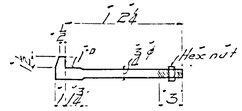




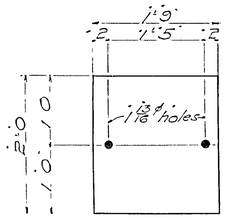
Erection Diagram



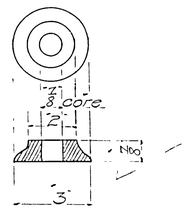
Make 16 Anchor Bolts A1



Make 10 Hook Bolts HB1

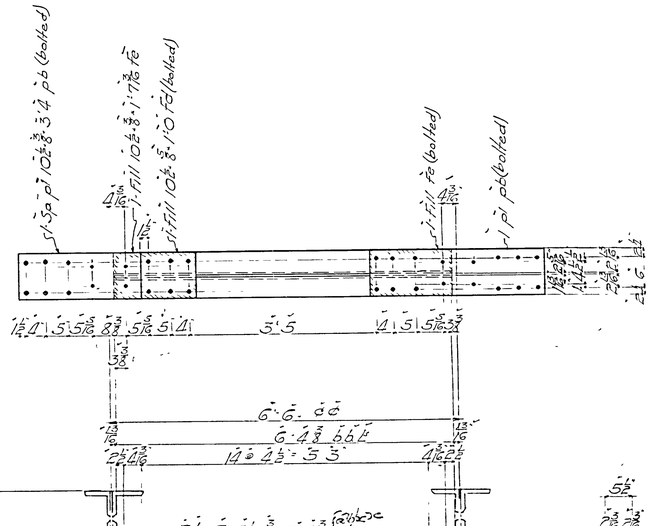


1-Pl 21-1-2'0 MP1
1-Pl 21-1-12'0 plate from 16 MP2

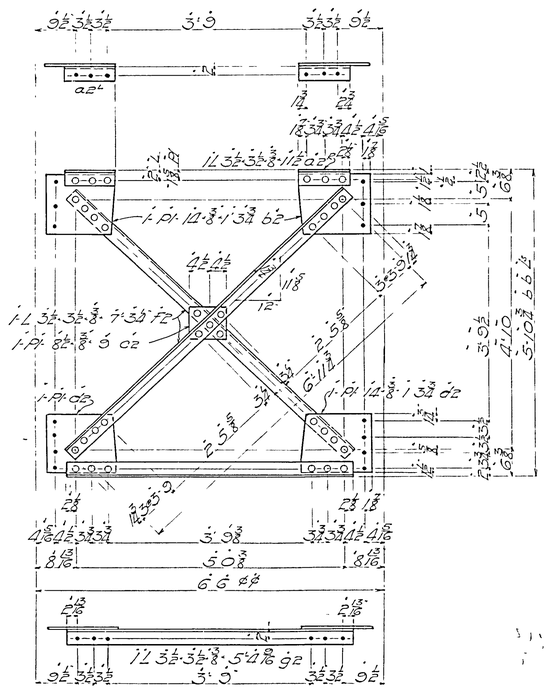


Make 10 Cast Iron Ogee Washers.

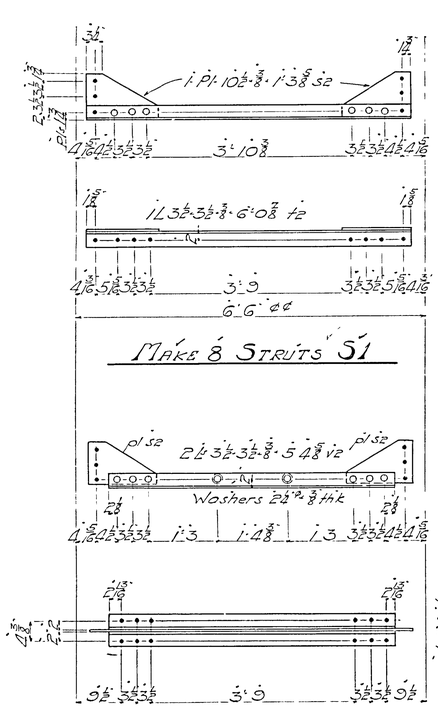
Make 4 Masonry Plates MP1
" 4 " " MP2



Make 2 Cross Frames CF3

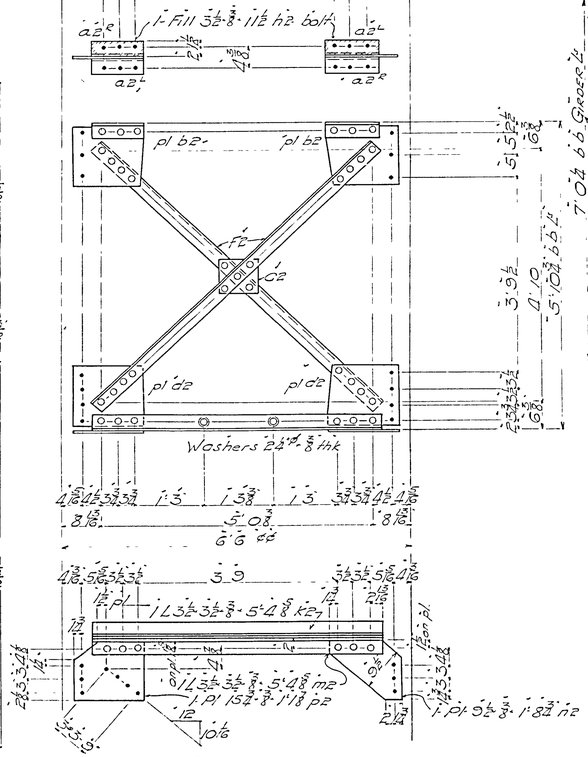


Make 8 Cross Frames CF1



Make 8 Struts S1

Make 4 Struts S2



Make 4 Cross Frames CF2

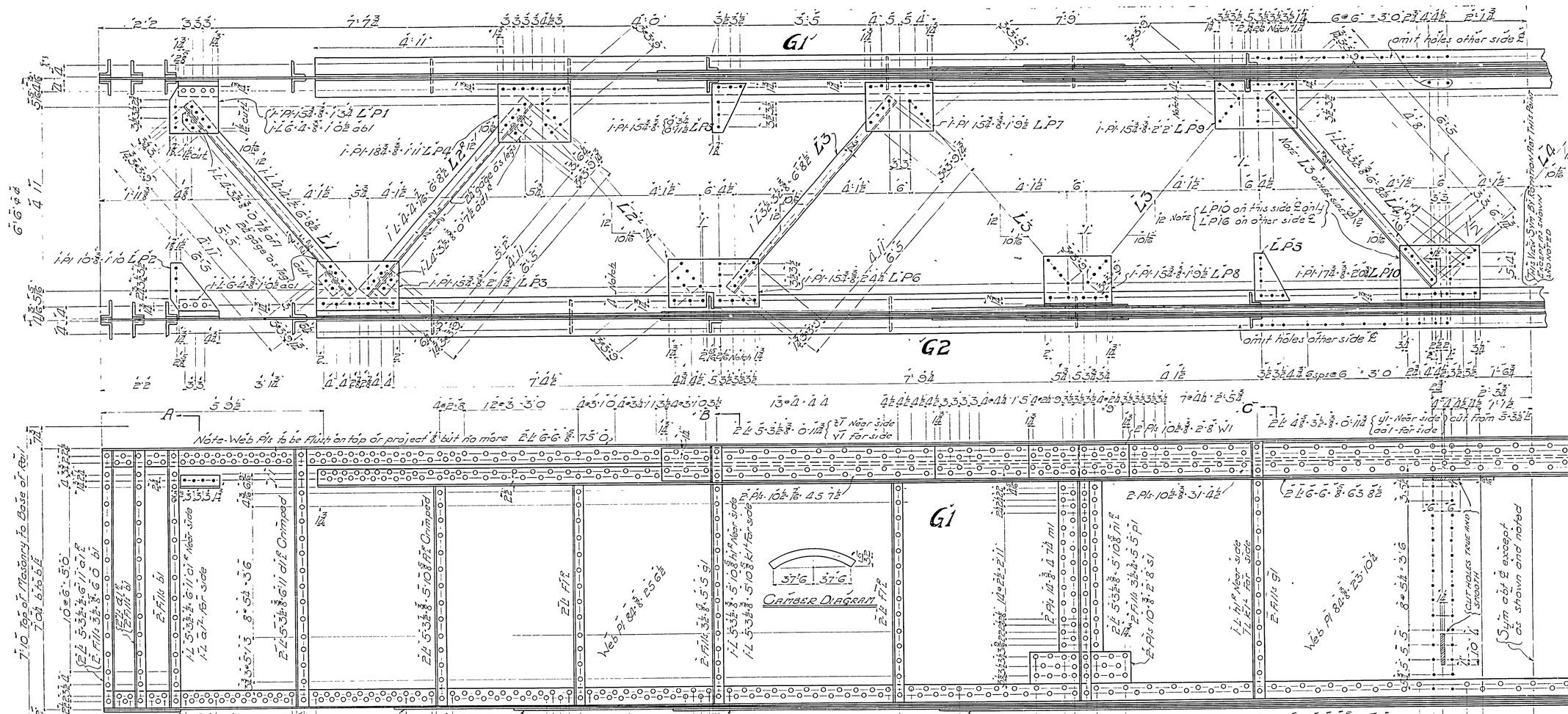
O H Structural Steel
Mo Pacific
dim
16 " unless noted
All holes punched full size
1 Coat Red lead and pure linseed oil mixed as per spec Surfaces in contact
1 coat before assembling Finished surfaces
1 coat white lead after
Erection
R W Hunt
Riveted

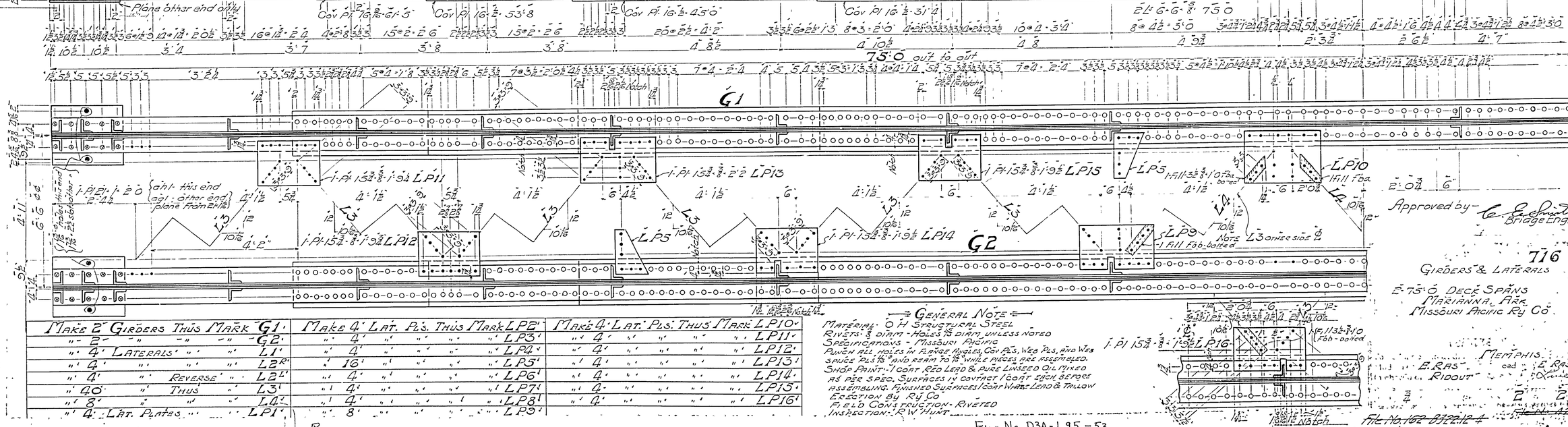
Approved by C E Smith
Bridge Engineer.

716
Cross Frames - Struts
Etc
2-75'0 Deck Spans
Location Marianna, Ark.
Missouri Pacific Ry Co.

Roanoke Memphis
Checked by E. Ras Traced by E. Ras
Designed by R. Rout Quantities
Revised
Sheet 1 2

File No. D3A-1.95-52





Make 2 Girders Thus Mark G1	Make 4 Lat. Pls. Thus Mark LP2	Make 4 Lat. Pls. Thus Mark LP10
" 2 " " " G2	" 4 " " " LP3	" 4 " " " LP11
" 4 Laterals " " L1	" 4 " " " LP4	" 4 " " " LP12
" 4 " " " L2R	" 16 " " " LP5	" 4 " " " LP13
" 4 " Reverse " L2L	" 4 " " " LP6	" 4 " " " LP14
" 40 " Thus " L3	" 4 " " " LP7	" 4 " " " LP15
" 8 " " " L4	" 4 " " " LP8	" 4 " " " LP16
" 4 Lat. Plates " " LP1	" 8 " " " LP9	

General Note

Material: O H Structural Steel
Rivets: ⅞ diam - Holes 15/16 diam unless noted
Specifications - Missouri Pacific
Punch all holes in flange Angles, Cov Pls, Web Pls, and Web Splice Pls ⅛" and ream to ⅞" while pieces are assembled.
Shop Paint - 1 coat Red Lead & Pure Linseed Oil Mixed as per spec. Surfaces in contact to be painted before assembling. Finished Surfaces 1 coat White Lead & Tallow
Erection By Ry Co
Field Construction - Riveted
Inspection - R W Hunt

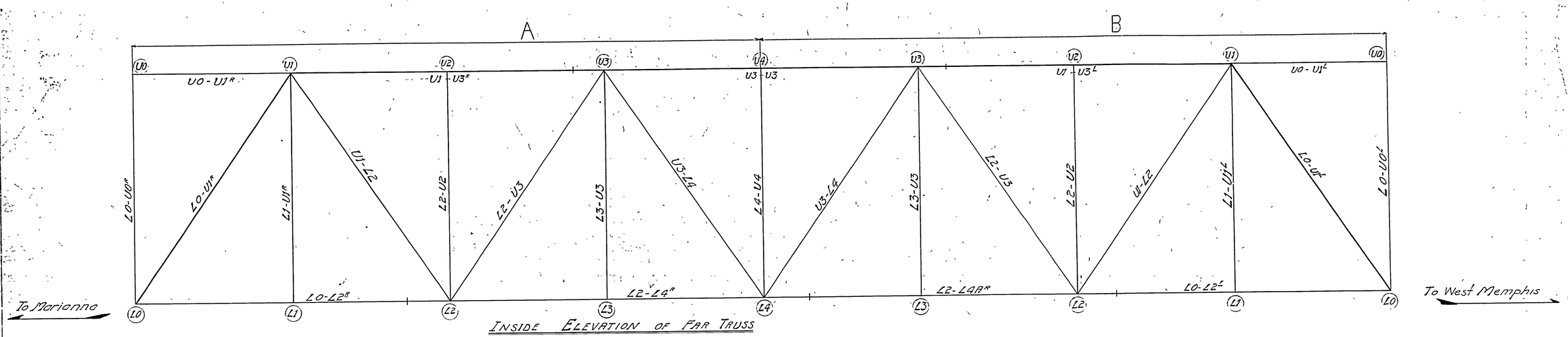
Approved by C. E. Smith
Bridge Engineer

716
Girders & Laterals
2-75'-0 Deck Spans
Marianna, Ark.
Missouri Pacific Ry Co

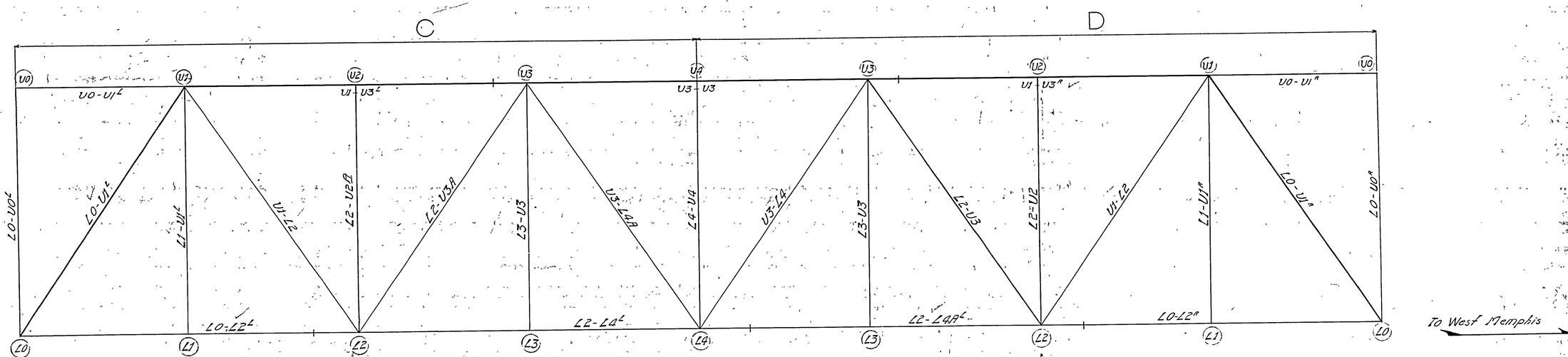
Memphis
E. Ras
Ridout

File No. D3A-1.95-53

File No. 102-D322.12-4



INSIDE ELEVATION OF FAR TRUSS



OUTSIDE ELEVATION OF NEAR TRUSS

SHOP NOTE

Members are to have Panel Points marked on them in all cases. Members coming in divisions A-B-C or D are to be marked with the division letter

Approved by L. E. Smith
5-1-12 Bridge Engineer

GENERAL NOTES

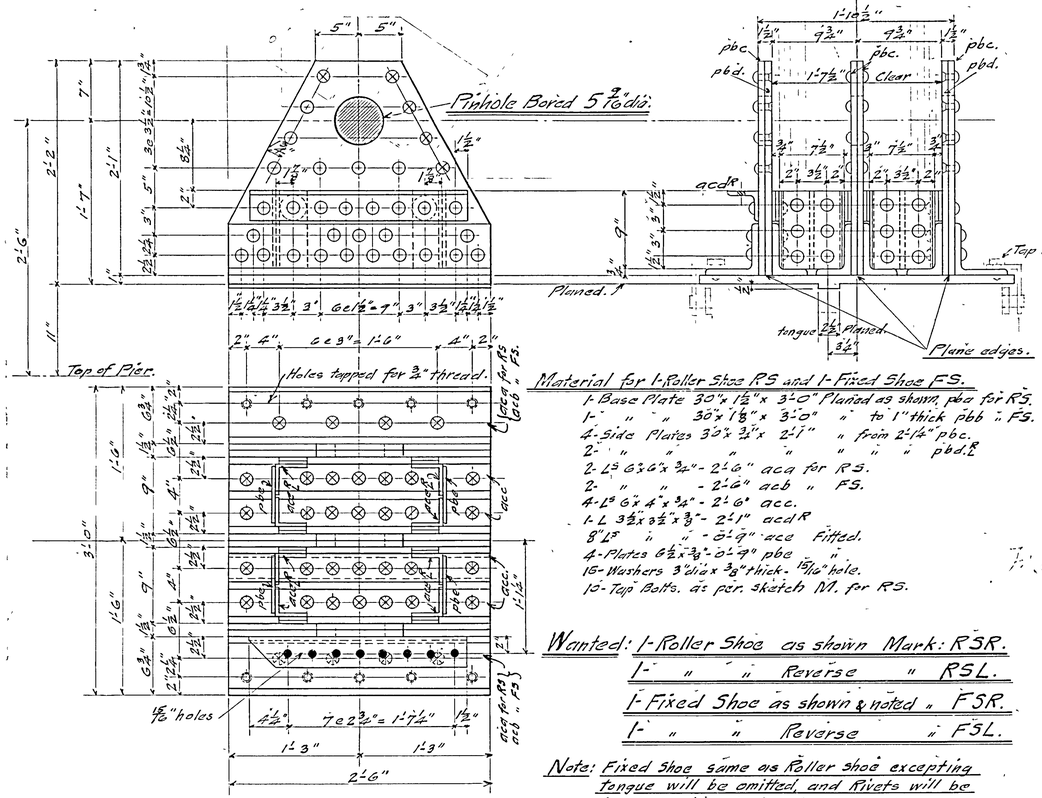
Material
Certificat on
Rivets
Holes
Reaming
Fi Point
Field Paint
Erection
Field Conn'ns
Inspection

Material to Clear Dills

CONTRACT V 715
Details of Match Diagram
For 1-162 S.T. Thro. Riveted Lift Span
Location Marianna, Ark
Owner MISSOURI PACIFIC RY Co
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.
To be fabricated at the Plant
Made by H.P. Traced by H.P.
In charge of Checked by
Inspn
Scale 1/8 in. = 1 ft. Sheet No. E1

FILE No. D3A 1.95 54

FILE No. 162-B322-12-5



Material for 1-Roller Shoe RS and 1-Fixed Shoe FS.

1-Base Plate 30"x 1 1/2"x 3'-0" Planed as shown, pba for RS.
1- " " 30"x 1 1/8"x 3'-0" " to 1" thick pbb " FS.
4-Side Plates 3 0"x 2 1/2"x 2'-1" " from 2'-1 1/4" pbc.
2- " " " " " " " pbd.E
2-L's 6"x6"x 3/8"- 2'-6" aca for RS.
2- " " - 2'-6" acb " FS.
4-L's 6"x 4"x 3/8"- 2'-6" acc.
1-L 3 1/2"x 3 1/2"x 3/8"- 2'-1" acdR
8"L's " " - 0'-9" ace Fitted.
4-Plates 6 1/2"x 3/8"- 0'-9" pbe "
16-Washers 3 1/16"x 3/8" thick. 15/16" hole.
10-Top Bolts. as per. sketch M. for RS.

Wanted: 1-Roller Shoe as shown Mark: RSR.
1- " " Reverse " RSL.
1-Fixed Shoe as shown & noted " FSR.
1- " " Reverse " FSL.

Note: Fixed Shoe same as Roller Shoe excepting tongue will be omitted, and Rivets will be located where tapped holes are shown, and C.S. in Bottom of Plate.

Roller Pedestal - "RP."

Fixed Pedestal - "FP."

1 3/8" Cored Holes Bass. 4" dia. x 1/2" high.

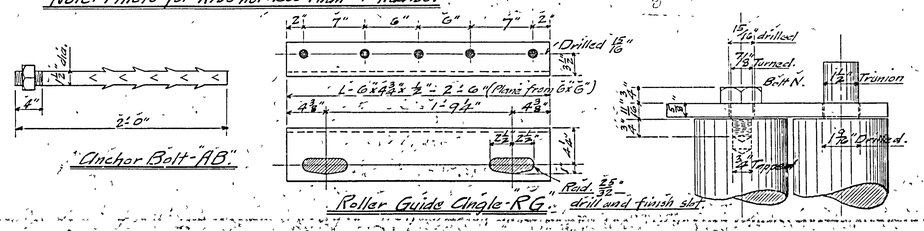
Centre line of Truss.

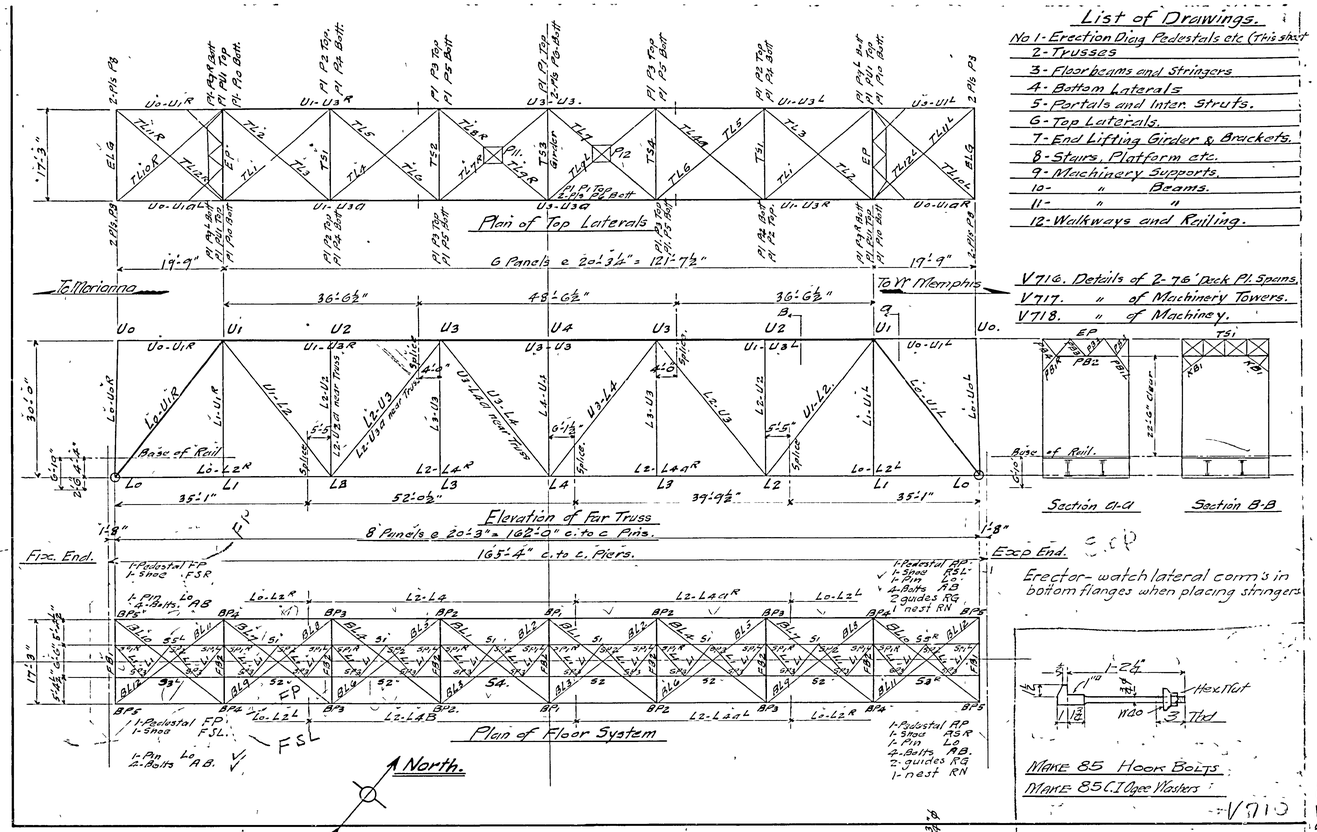
"Anchor Bolt-AB."

Cast Steel Pedestals.

Wanted: 2-Pedestals Mark: "RP."
" 2- " " "FP."

Note: Fillets for Ribs not less than 3/4" Radius.





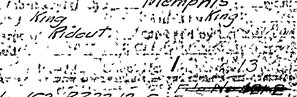
List of Drawings.

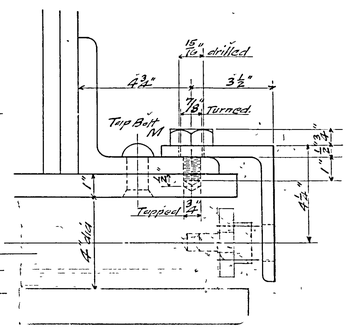
No 1-Erection Diag. Pedestals etc (This sheet
2-Trusses
3-Floorbeams and Stringers
4-Bottom Laterals
5-Portals and Inter. Struts.
6-Top Laterals.
7-End Lifting Girder & Brackets.
8-Stairs, Platform etc.
9-Machinery Supports.
10- " Beams.
11- " "
12-Walkways and Railing.

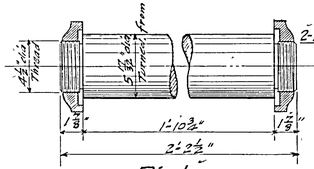
V716. Details of 2-76' Deck Pl. Spans.
V717. " of Machinery Towers.
V718. " of Machinery.

Make 85 Hoor Bolts
Make 85 C.I Ogee Washers

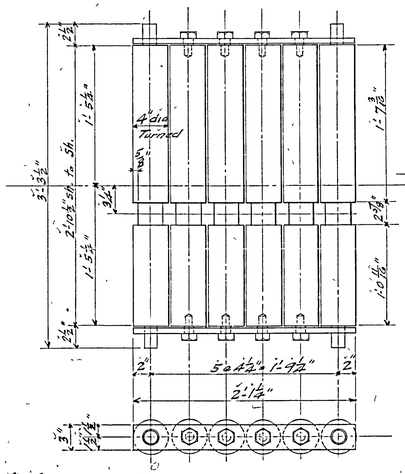
V715







Approved by: C. E. Smith
5-1-12 Bridge Engineer.



Material for 1-Roller Nest-"RN."

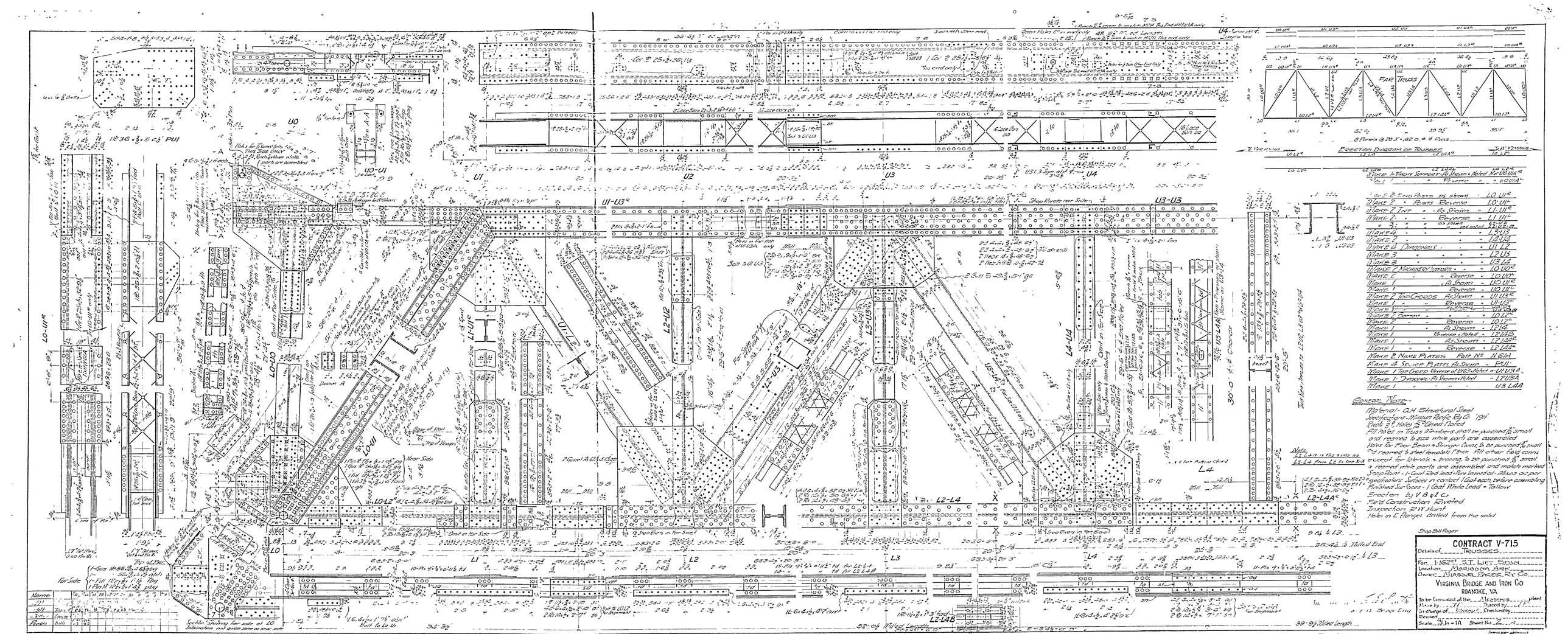
2-Rollers 4" dia. 3'-3 1/2" long. turn from 4 1/4"ϕ
4- " " 2'-10 3/4" " " "
2-Bars 3"x 5/8" - 2'-1 1/4" "
8-Top Bolts N as per. detail.

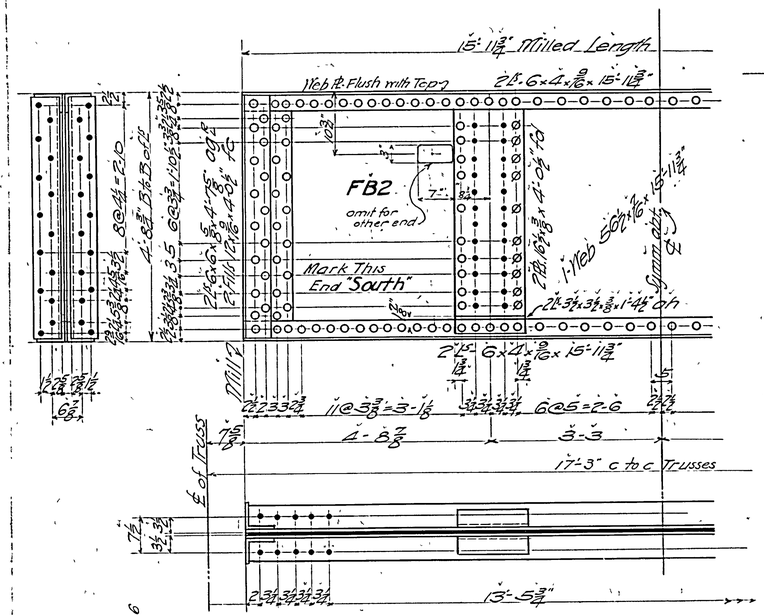
Wanted: 2-Roller Nests Mark: "RN."
4- Roller Guides " RG.
4- Pins. " Lo.
1- Stained. Driving Nut: DN.
1- " Pilot " PN.
16- Anchor Bolts Mark: AB.

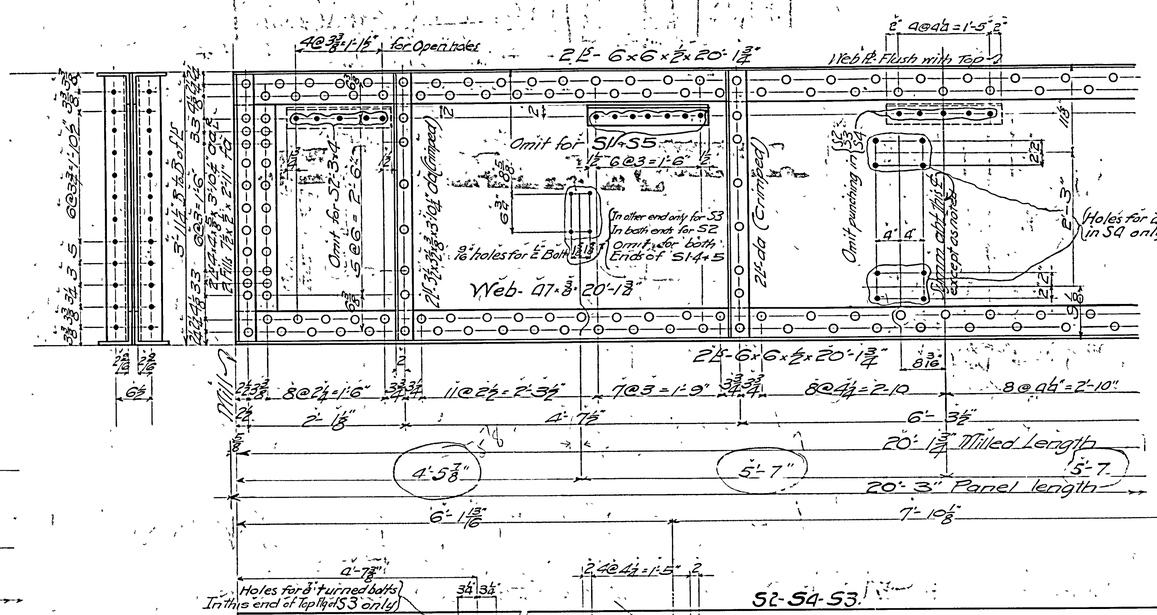
Name Rec'd 1915
O.H. Struct. Steel.
Missouri Pac. for 1911.
7/8" dia.
as noted. Material 3/8" thick and over drilled from solid. under 3/4" punched to Size.
1-Coat of Red lead & pure linseed oil mixed as per. specif. Surfaces in contact 1-coat each before assembling.
by V.B.&I. Co.
Riveted.
R.W. Hunt.
All finished surfaces to receive 1-Coat of white Lead and tallow, before Shipment.

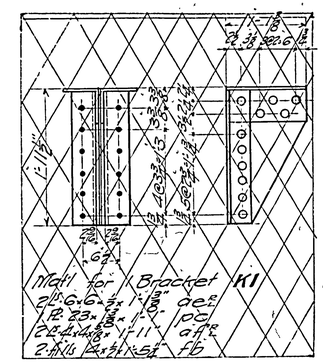
715
Cast Steel Pedestals, Shoes, Rollers, Pins and Erection Diagram.
1-162 S.Thro-Riveted Lift Span.
Marianna-Ark.
Missouri Pac. Ry. Co.
Memphis
King
Wideut
1

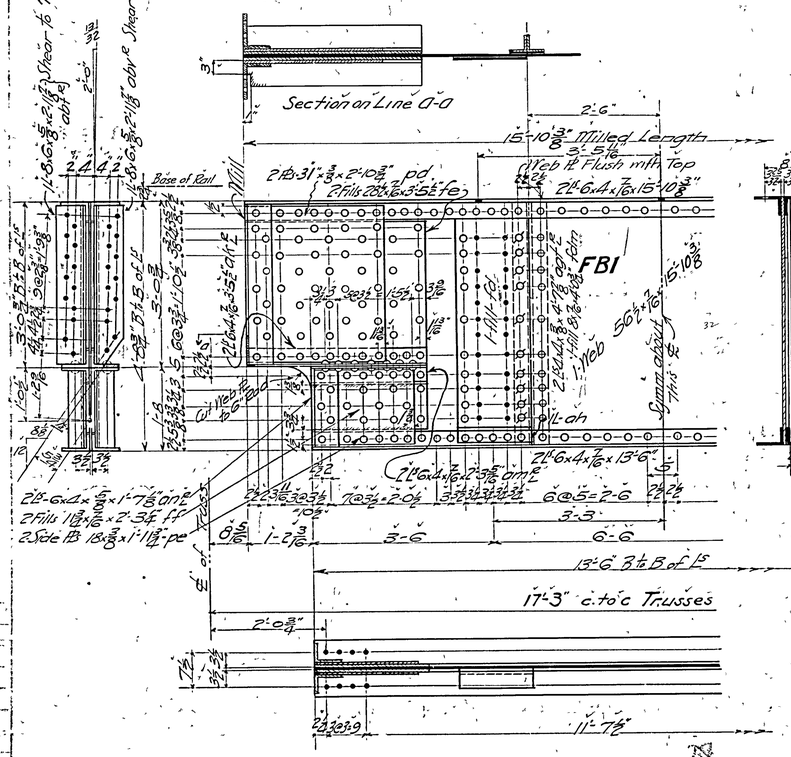
File No. D3A-1.95-55.
File No. 162-3322.12-6

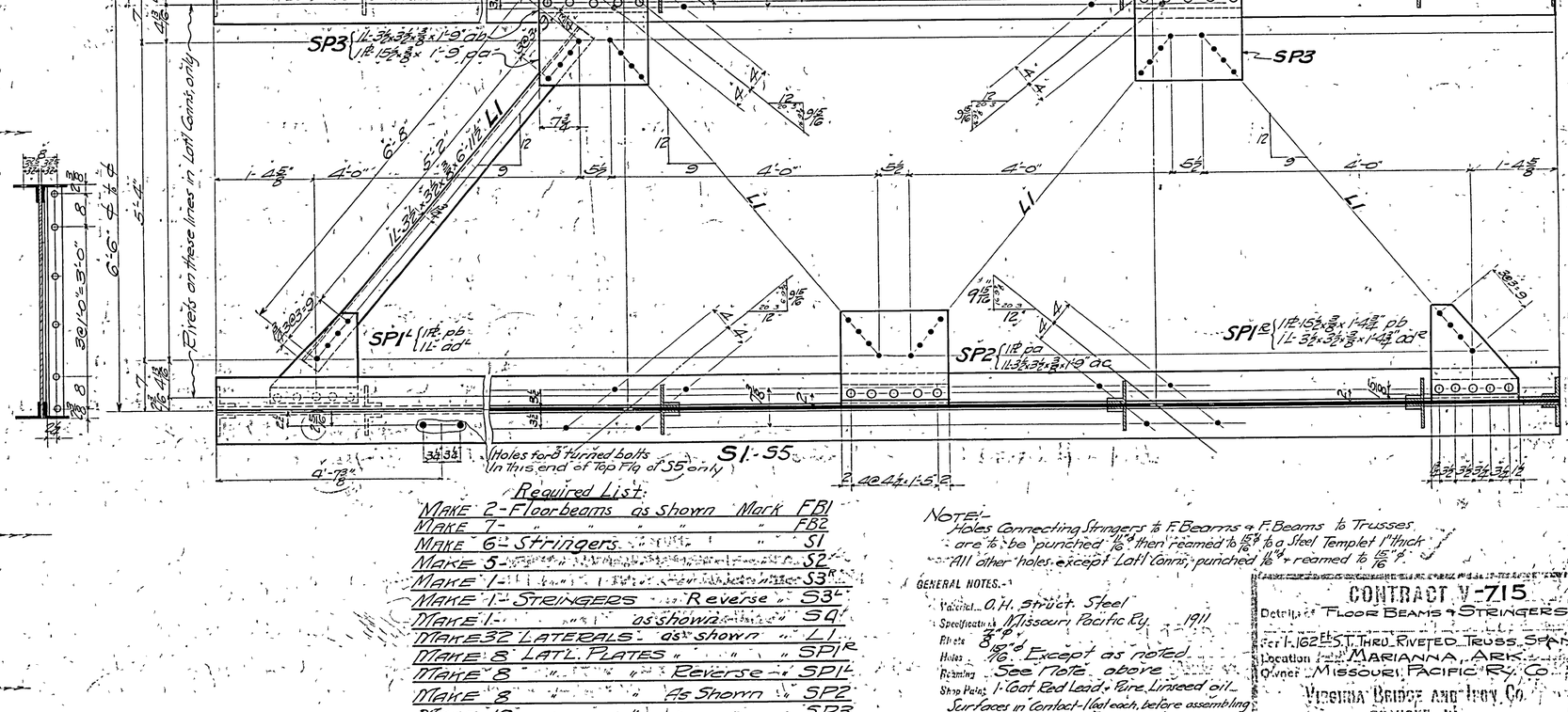

U0
U1
U2
U3
U4
U0-U1
U1-U2
U2-U3
U3-U4
U1-U3
U3-U3
L0
L1
L2
L3
L4
L0-L1
L1-L2
L2-L3
L3-L4
L0-L2
L2-L4
L2-L4A
L2-L4B
L0-U1
L1-U1
L2-U2
L3-U3
L4-U4
L0-U2
L1-U2
L2-U3
L3-U4
L0-L2
L2-L4
L2-L4A
L2-L4B
FAR TRUSS
ERECTION DIAGRAM OF TRUSSES
8 Panels @ 29'-4 2/3" = 6 4 Pcls
Shop Bill Pages
CONTRACT V-715
Details of TRUSSES
For L1621 S.T. Liet. Span
Location MARIANNA Ark.
Owner MISSOURI PACIFIC RY. CO.
VIRGINIA BRIDGE AND IRON CO
ROANOKE, VA
To be fabricated at the Meadows plant
Made by W.
In charge of Eddie L. Checked by
Revised
Scale 1/2 in = 1ft Sheet No. 2
GENERAL NOTE-
Material- Q.H. Structural Steel
Specifications- Missouri Pacific R.R.Co. 1931
Field Rivets- Button Head
All holes in Truss Members shall be punched 1/8" small and reamed to size while parts are assembled
Holes for Floor Beam & Stringer Conn.s to be punched 1/4" small and reamed to steel templets 1 thick. All other field conn.s except splices & bracing, to be punched 1/8" small & reamed while parts are assembled and matchmarked
Shop Paint - 1 Coat Red lead - Pure linseed oil - Mixed as per specifications. Surfaces in contact 1 Coat each, before assembling
Finished Surfaces - 1 Coat White Lead + Tallow
Erection by V.B. & I. Co.
Field Construction Riveted
Inspection by Government
Holes in C. flanges drilled from the solid
Name 1 and 2 End Posts as shown - L0 U1R
Name 2 " Posts Reverse " L0 U1L
Name 2 Int " As Shown " L1 U1R
Name 2 " " Reverse " L1 U1L
Name 2 " " as shown " L2 U2
" 3 " " as noted L2 U2-A
Name 4 " " " L3 U3
Name 2 " " " L2 U2
Name 2 Diagonals " " " U1 L2
Name 3 " " " L2 L3
Name 2 Members Vertical " " L0 U0R
Name 2 " Reverse " L0 U0L
Name 1 As Shown " L0 U1R
Name 1 Reverse " L0 U1L
Name 2 Top Chords As Shown " U1 U2
Name 1 " " Reverse " U1-U2
Name 1 " " As Shown " U2-U3A
Name 2 Corner " " L0 L2
Name 1 " " Reverse " L0 L2
Name 1 As Shown " L2 L4
Name 1 Reverse Noted " L2 L4B
Name 1 " As Shown " L2 L4A
Name 1 " Reverse " L2 L4A'
Name 2 Name Plates Patt No N 61A
Name 4 Splice Plates As Shown " PU1
Name 1 Top Chord Center of U1-U3 Noted " U1 U3A
Name 1 Diagonal As Shown Noted " L2 U3A
Name 1 " " " U3 L4A
Note L2 L2A is the same as L2 L4 from L2 to line X-X
Shop Rivets for Sides
Shop Rivets for Top
Shop Rivets for Bottom
Field Rivets
Milled End
Milled Length
Section Showing far side of L0 Extensions and given same as near side
Name
Pcs.
Size
Length
Weight
Shop
Field
Total
Plates
Angles
Rivets
bills
Far Side
Near Side
Elect Conn for Sig
Elect Conn for Sig & Ltg
Elect Conn for Ltg
Elect Conn for Sig & Ltg
Elect Conn for Sig











Required List:

Make 2	Floorbeams as Shown Mark FB1
Make 7	" " " FB2
Make 6	Stringers " " S1
Make 5	" " " S2
Make 1	" " " S3R
Make 1	Stringers Reverse " S3L
Make 1	" as shown " S4
Make 32	Laterals as shown " L1
Make 8	Lat'l. Plates " " " SP1R
Make 8	" " Reverse " SP1L
Make 8	" " As Shown " SP2
Make 16	" " " " SP3
Make 1	Stringer As Shown & Noted " S5R
Make 1	" Reverse " S5L

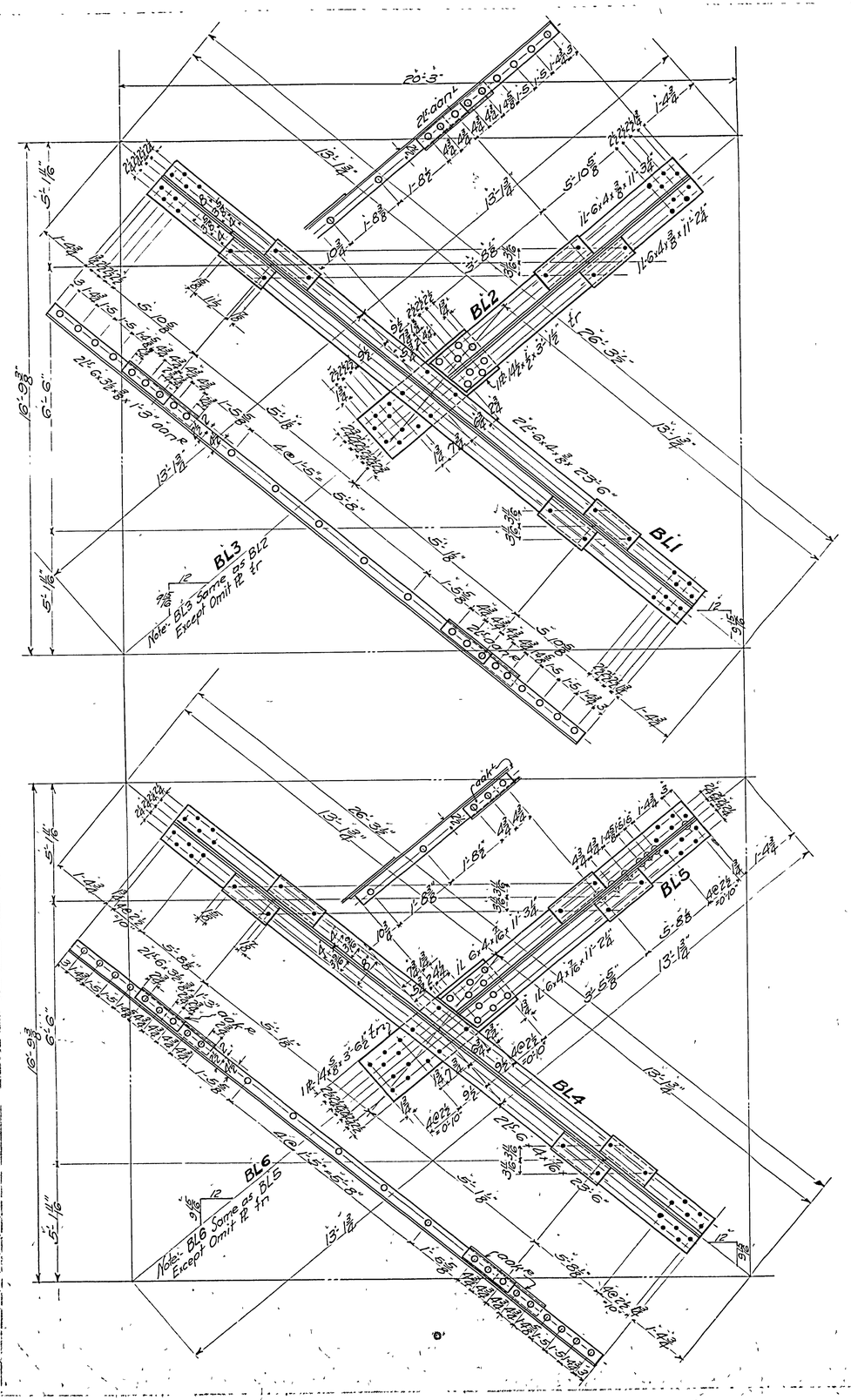
Approved by: C. E. Lovett
5-1-12 Bridge Engineer.

NOTE:- Holes Connecting Stringers to F. Beams & F. Beams to Trusses are to be punched 15/16" then reamed to 15/16" to a Steel Templet 1" thick. All other holes except Lat'l Conns, punched ⅞" & reamed to 15/16".

GENERAL NOTES.-
Material... O.H. Struct. Steel
Specifications... Missouri Pacific Ry. ... 1911
Rivets... ⅞" ø
Holes... 15/16". Except as noted.
Reaming... See Note above.
Shop Paint... 1 Coat Red Lead & Pure Linseed oil. Surfaces in Contact-1 Coat each, before assembling.
Erection... by V. B. & I. Co.
Field Connⁿs... Riveted.
Inspection... Hunt & Co.
Material of Sub-Str...

CONTRACT V-715
Details of Floor Beams & Stringers
For 1-162'-5" Thru Riveted Truss Span
Location... Marianna, Ark.
Owner... Missouri Pacific Ry. Co.
Virginia Bridge and Iron Co.
Roanoke
Shop Fabrication... Memphis.
Mailed... 1911 ... 1911
Number of Sheets... 3.
Scale... 3"=1'-0"

File No. D3A-1,95-57
File No. 16767-3322.12-8


BL1
BL2
BL3
Note: BL3 Same as BL2 Except Omit PL 1/2"
BL4
BL5
BL6
Note: BL6 Same as BL5 Except Omit PL 1/2"
20'-3"
26'-3½"
13'-1¾"
5'-1⅛"
16'-9⅜"
6'-6"
5'-10⅝"
5'-8"
1-1'-5"
1-1'-5½"
1-1'-6"
1-1'-6½"
1-1'-7"
1-1'-7½"
1-1'-8"
1-1'-8½"
1-1'-9"
1-1'-9½"
1-1'-10"
1-1'-10½"
1-1'-11"
1-1'-11½"
1-2'-0"
1-2'-0½"
1-2'-1"
1-2'-1½"
1-2'-2"
1-2'-2½"
1-2'-3"
1-2'-3½"
1-2'-4"
1-2'-4½"
1-2'-5"
1-2'-5½"
1-2'-6"
1-2'-6½"
1-2'-7"
1-2'-7½"
1-2'-8"
1-2'-8½"
1-2'-9"
1-2'-9½"
1-2'-10"
1-2'-10½"
1-2'-11"
1-2'-11½"
1-3'-0"
1-3'-0½"
1-3'-1"
1-3'-1½"
1-3'-2"
1-3'-2½"
1-3'-3"
1-3'-3½"
1-3'-4"
1-3'-4½"
1-3'-5"
1-3'-5½"
1-3'-6"
1-3'-6½"
1-3'-7"
1-3'-7½"

Symm. abt this ℄

17'-3" ℄ to ℄ of Trusses

Section A-A

Section B-B

Bend line

℄ Truss

6" Hole

Section on ℄

Material for 1 Diaphragm (2 Reqd As Shown, 2 " Reverse)

Note: Drive rivet on these lines after diaphragm is complete

℄ Top Chord

Open Holes For Sole

End of Cov Pl. Developed

Development of Pl-hb

Development of Pl-hc

Section A-A

Section B-B

Section on ℄

PB1R

PB1L

PB2

PB3

PB4

EP

TS1

TS2

TS3

TS4

KB1

Top = 13'-7⅞"

11'-5⅝"

16'-1⅛" B to B of Lf

16'-0" B to B of Lf

Cut for Web Plate

Omit for TS1

Symm abt this ℄

Approved by: [signature]
5-1-12 Bridge Engineer

Reqd List

Make 2 Portals As Shown	Mk EP
Make 2 Portal Braces As Shown	" PB1R
Make 2 " " Reverse	" PB1L
Make 2 " " As Shown	" PB2
Make 4 " " "	" PB3
Make 4 " " "	" PB4
Make 2 Top Struts as shown & noted	" TS1
Make 1 " " " "	" TS2
Make 1 " Strut as shown.	" TS3
Make 8 Knee Braces	" KB1
Make 1 " Top Strut as shown & noted	" TS4

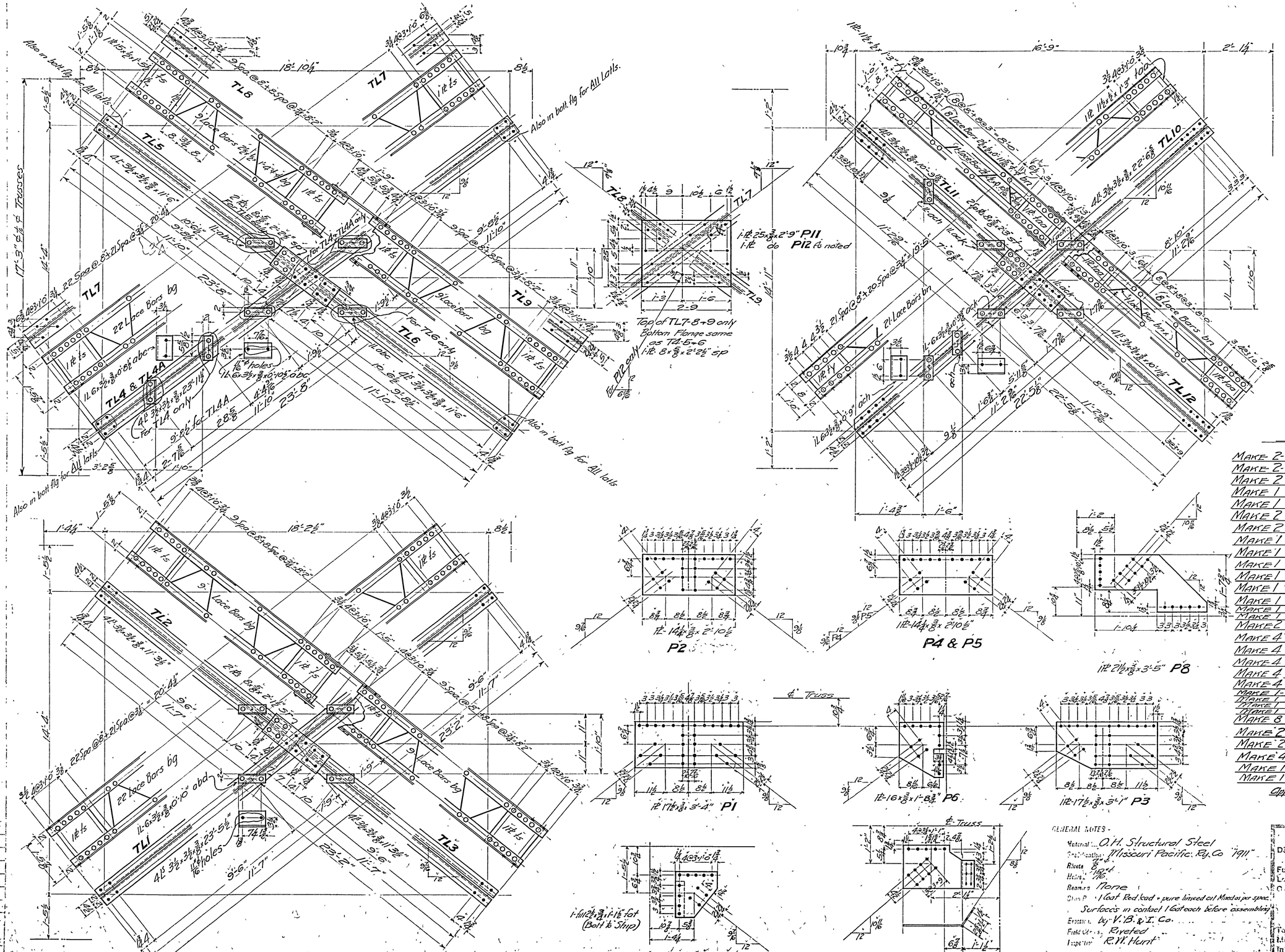
GENERAL NOTES:
Material O.H. Structural Steel
Specifications Missouri Pacific Ry Co's 1911
Rivets ⅞"
Holes 15/16"
Reaming None
Shop Paint 1 Coat Red Lead + Pure Linseed oil Mixed as per spec
Field Paint Surfaces in contact-1 Coat each, before assembling
Erection by: V.B. & I. Co
Field Conn's Riveted
Inspection R.W. Hunt

Material on Shop Bills

CONTRACT V-715
Details of Portals and Struts
For 1-162' ST. LIFT SPAN
Location Marianna, Ark.
Owner Missouri Pacific Ry Co.
Virginia Bridge and Iron Co.
Roanoke, Va.
To be fabricated at the Memphis plant
Work by (2) Traced by (2)
In charge of Ridout Checked by
Revised
Sec 32 - T. 1 N. - R. 1 E. Sheet No. 5

File No. D3A-1-95-59

File No. 162-B322.12-10



Required List

Make 2	Top Laterals	As Shown	Mk TL1
Make 2	"	"	" TL2
Make 2	"	"	" TL3
Make 1	"	As Shown "& Noted"	" TL4
Make 1	"	" " "	" TL4A
Make 2	"	" " "	" TL5
Make 2	"	" " "	" TL6
Make 1	"	" " "	" $TL7^R$
Make 1	"	Reverse	" $TL7^L$
Make 1	"	As Shown	" $TL10^R$
Make 1	"	Reverse	" $TL10^L$
Make 1	"	As Shown	" $TL11^R$
Make 1	"	Reverse	" $TL11^L$
Make 1	"	As Shown	" $TL12^R$
Make 1	"	Reverse	" $TL12^L$
Make 2	Lat. Plates		" PI
Make 4	"		" P2
Make 4	"		" P3
Make 4	"		" P4
Make 4	"		" P5
Make 4	"		" P6
Make 1	Top Lateral	As Shown	" $TL8^R$
Make 1	"	Reverse	" $TL8^L$
Make 1	"	As Shown	" TL9
Make 1	"	Reverse	" TL9
Make 8	Lateral Plates	As Shown	" P8
Make 2	"	"	" $P9^R$
Make 2	"	Reverse	" $P9^L$
Make 4	"	As Shown	" P10
Make 1	"	"	" P11
Make 1	"	As Shown "& Noted"	" P12

Approved by: C. E. Smith
5-1-12 Bridge Engineer.

General Notes -

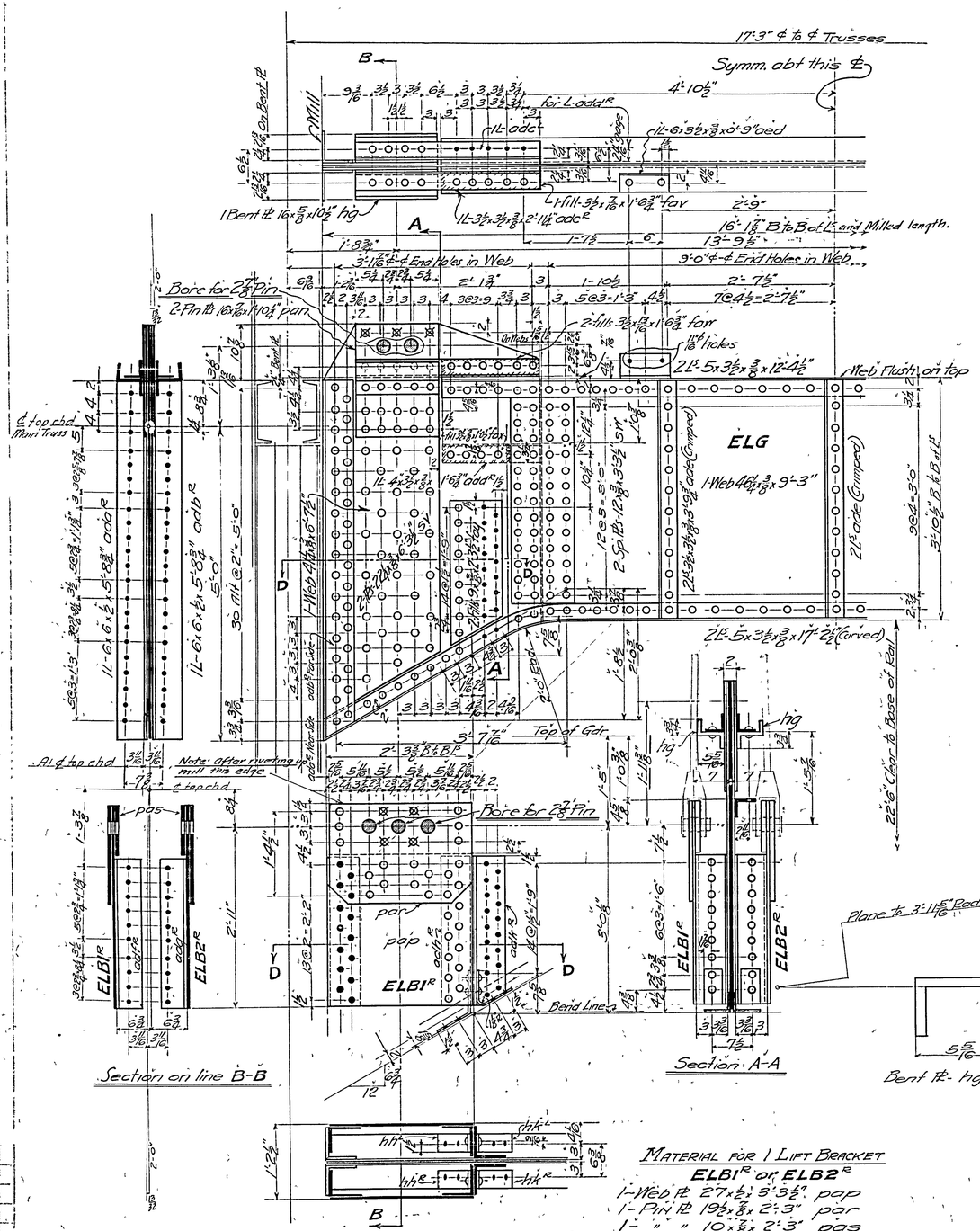
Material: O.H. Structural Steel
Specifications: Missouri Pacific Ry. Co. 1911
Rivets: ⅞"ø
Holes: 15/16"
Reamers: None
Shop Paint: 1 Coat Red Lead + pure linseed oil Mixed as per spec.
Surfaces in contact 1 Coat each before assembling
Erection: by V.B. & I. Co.
Field Connections: Riveted
Inspection: R.W. Hunt

Materials on Strain Bills

CONTRACT V-715
Details of Top Laterals & Plates
For 1-162'-0" S.T. Liet. Span
Location Marianna, Ark.
Owner Missouri Pacific Ry Co.
Virginia Bridge and Iron Co.
Roanoke, Va.
To be shipped at or to Memphis, Tenn.
Made at Roanoke, Va. Traced by V.W.
In charge at Ridout Checked by C.A.H.
Released
Sheets 1 to 6 inc. Sheet No. 6

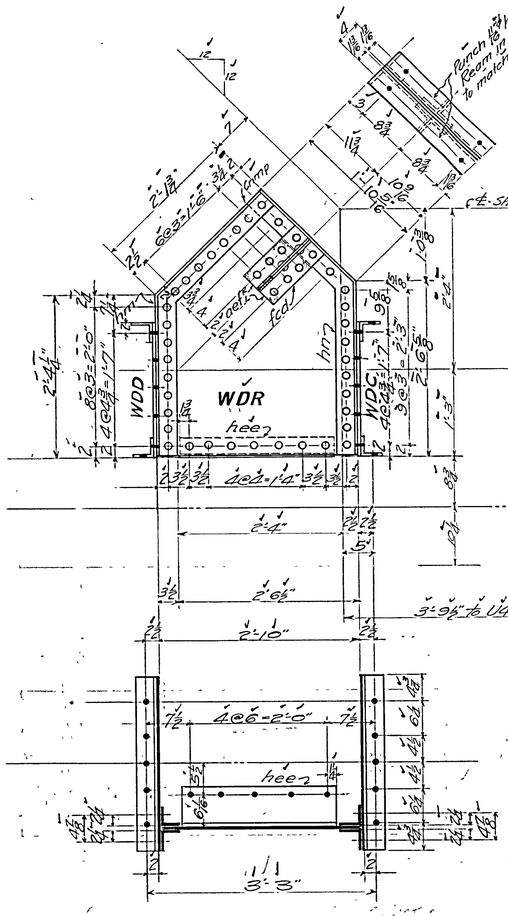
File No. D3A-1.95-60

File No. 162-0322.12-11



Material for 1 Lift Bracket ELB1R or ELB2R

1-Web Pl 27x½x 3'-3½" pap
1-Pin Pl 19½x⅞x 2'-3" par
1- " " 10x⅞x 2'-3" pas
Shear from 6x6x½ L: 1L- 6x5x½x2'-5" adf^R (For ELB1R); 1L- do. adg^R (For ELB2R) — Bolt for Shipt.
1L- 6x6x½x2'-5" adh^R (For ELB1R)
1L- do adk^R (For ELB1R)
1L- do adk^L (For ELB2R)
1 Bent Pl 3½x½x1'-4" hh^R (For ELB1R)
1 " " " do. hh^L (For ELB2R)
1 " " 3½x½x1'-1½" hk^R (For ELB1R)
1 " " do. hk^L (For ELB2R)
1L- 6x6x½x2'-5" adh^L (For ELB2R)

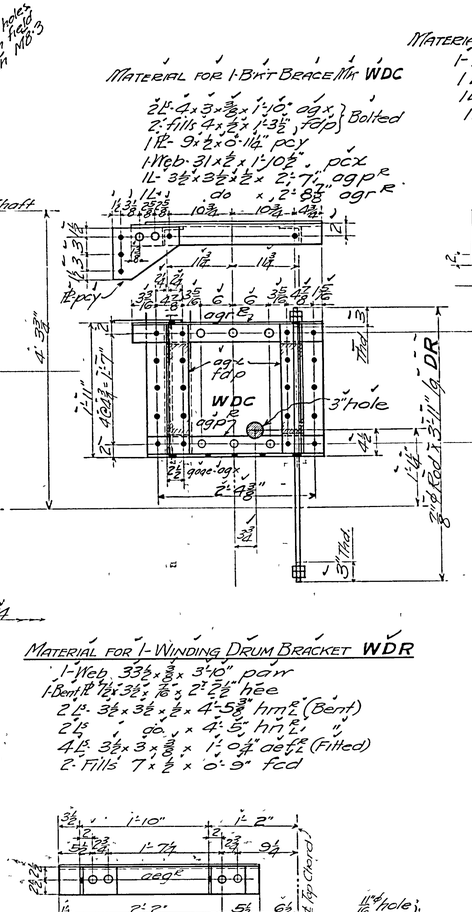


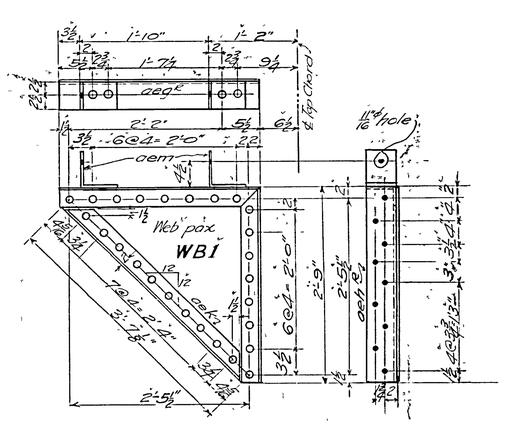
Material for 1 Winding Drum Bracket WDR

1-Web 33½x⅜x 3'-10" pcr
1-Bent Pl 12½x3½x⅜x 2'-2½" hee
2L 3½x3½x½x 4'-5⅜" hm^L (Bent)
2L " do. x 4'-5" hn^L " "
4L 3½x3½x⅜x 1'-0" de^L (Filled)
2-Fills 7x½x 0'-9" fcd

Material for 1 Bracket WB1

1-Web Pl 32½x⅜x 2'-8½" pax
1-L 5x3½x⅜x 2'-9" aeg^R
1L " do aeh^L
1L-3½x3½x⅜x 3'-6⅜" aek
2L 6x6x⅞x 0'-5" aem





Required List

Make 2 End Lifting Girders As Shown Mk ELG	
Make 2 " " Bracket - " " "	ELB1R
Make 2 " " " - Reverse "	ELB1L
Make 2 " " " - As Shown "	ELB2R
Make 2 " " " Reverse	ELB2L
Make 4 Winding Drum Brackets As Shown	WDR
Make 4 " " " " Reverse	WDL
Make 2 " " Bkt Braces As Shown	WDC^R
Make 2 " " " " Reverse	WDC^L
Make 1 Walk Bracket As Shown	WB1^R
Make 1 " " Reverse	WB1^L
Make 2 Winding Drum Bkt Braces As Shown	WDD^R
Make 2 " " " Reverse	WDD^L
Make 8 Rod Bolts As Shown	DR

Note:
Holes Connecting Gdrs to Posts + Brackets to Gdrs, are to be punched 11/16" then reamed to 13/16" to a Steel Templet 1" thick. All metal over ¾" thick to be drilled from the solid. All other holes punched 11/16" + reamed to 12/16"

Approved by: C. E. Smith
5-1-12 Bridge Engineer.

GENERAL NOTES:
Material O.H Struct Steel
Stencilling Missouri Pacific Ry 1911
Rivets ⅞ Except as noted
Notes See Note above
Painting 1 Coat Red lead + Pure linseed oil
Surfaces in contact Coat each before assembling
Erection by V.B. & I. Co.
Drilling Riveted
Fabrication Hunt + Co.

CONTRACT V-715
Details of LIFTING GIRDERS & BRACKETS
For 1-162 Ft S.T. THRU RIVETED TRUSS SPAN
Location MARIANNA, ARK.
Owner MISSOURI PACIFIC RY. CO.
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.
To be fabricated at the Memphis plant
Sheet No. 7

File No. D3A-1.95-61
File No. 162-S.S.2.12-12

Material for 1 Bracket Mk SB1

1-Web Pl 28 3/8 x 4'-6 3/8" pat
1L-3 1/2 x 3 1/2 x 3/8 x 4'-6 3/8" adr
1L- do x 2'-1 5/8" ads
1L- do x 1'-6 3/8" adt
1L-4 x 3 x 3/8 x 1'-4 1/2" adv
1 fill 3 x 3/8 x 0'-10" fca } Bolt
1 fill do x 1'-1" fcb }

Material for 1 Bracket Mk SB2

1 Web Pl 21 1/2 x 3/8 x 2'-9 3/8" pcb
1L-5 x 3 1/2 x 3/8 x 4'-6 3/8" adw
1L-3 1/2 x 3 1/2 x 3/8 x 2'-8" adx
1L-5 x 3 1/2 x 3/8 x 1'-4 1/2" aea
1 fill 5 x 3/8 x 0'-10" fce } Bolt
1 " do x 1'-1" fcf }

Material for 1 Bracket Mk SB3

1-Web Pl 21 1/2 x 3/8 x 2'-3 3/8" pca
1L-3 1/2 x 3 x 3/8 x 4'-6 3/8" ady
1L- adx
1L-4 x 3 1/2 x 3/8 x 1'-4 1/2" aeb } Bolt
1 fill 3 1/2 x 3/8 x 0'-10" fcg }
1 " do x 1'-1" fch }

Material for 1 Walk Bkt. Mk. WB2

2 Pl 3 1/2 x 3 1/2 x 3/8 x 2'-10 1/2" aey E
2 Pl do x 2'-11 1/2" aew E
2 Pl do x 1'-0 3/8" aex E
2 Pl 6 x 3 1/2 x 3/8 x 0'-7 3/8" aey
1 Web Pl 13 x 3/8 x 2'-10 1/2" pcc
2 Fills 3 1/2 x 3/8 x 0'-6" fcn
1 Pl 9 x 3/8 x 1'-11 1/2" 6x (Bolted)

Required List

Make 1 Stair Stringer As Shown	Mk SS1
Make 1 " " " "	" SS2
Make 1 " " " "	" SS4
Make 1 " " Reverse of SS4 & notch	" SS3
Make 29 " Treads " "	" ST1
Make 1 " " " "	" ST2
Make 1 " Bracket " "	" SB1
Make 1 " " " "	" SB2
Make 1 " " " "	" SB3
Make 1 " Platform Beam " "	" PB1
Make 1 " " " "	" PB2
Make 1 " " " "	" PB3
Make 1 " " " "	" PB4
Make 1 " Post " "	" PP1
Make 1 " " " "	" PP2
Make 1 " " " "	" PP3
Make 2 Walk Brackets " "	" WB2

Approved by C. E. Smith
5-1-12 Bridge Eng.

GENERAL NOTES:-
Material O.H. Struct Steel
Specifications Missouri Pacific Ry Co 1911
Rivets 7/8"ø
Holes 13/16" Unless Noted
Painting
Shop Paint 1 Coat Red lead + Pure linseed oil Mixed as per spec. Surfaces in contact before assembly
Erection by V.B & I.Co.
Field Connections Riveted
Inspection R.W. Hunt

Material on Shop Bills:

CONTRACT V-715
Details of Stairs, Platform, Bkts, Etc.
For 1-162 Ft. S.T.L. Lift Span
Location Marianna, Ark.
Owner Missouri Pacific Ry. Co.
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.
To be fabricated at the Memphis plant
Made by DW Traced by DW
In charge of Hunt Checked by Hunt
Revised
Scale 3/4 In. = 1 ft. Shipt No. 8 of

File No D3A-1.95-62

File No 162-B322.12-17

B8A

B8B

B8B - Opp Hand

B8A

Inside View of B8A

Top View B21 only

Section A-A

Elevation

Section B-B

Section C-C

B13 B14 B1 B11 B21 B22 B2A B2B B5

Material for 1 Pedestal - Mk PB3A

Material for 1-Bkt. Mk FB1

Material for 1-Bkt. Mk B21 & B22

Required List

Make	Mk
1 - Girder - As Shown -	B8A
1 " " " + Noted "	B8B
1 " Pedestal " " " -	PB3A
4 Brackets " " "	FB1 -
2 " " Reverse "	B21 -
2 " " As Shown "	B22
1 Machy Support As Shown "	B1 -
1 " " " " - "	B11 -
1 " " " " "	B13
1 " " " " "	B14
1 " " " " "	B2A
1 " " " " "	B2B
1 " " " " "	B5

Approved by C. E. Smith
5-1-12 Bridge Engr

O H Struct Steel
Missouri Pacific Ry Co 1911
Except as noted
None
Heat Red lead + pure linseed oil-filled as per spec
Surfaces in contact - 1 Coat each before assembling
by Ry Co
Riveted
R W Hunt

-715
Machinery Supports
1-162 ft ST. Lift Span
Marianna, Ark.
Missouri Pacific Ry Co

Memphis Plant
Record 7/9/12

24, 25, 26 - 1 3/4 9

File No. D3A-1.95-63 — File No 162-5322.12-14

SECTION A-A

INSIDE VIEW OF B7A

OUTSIDE VIEW OF B7B

Spa same as B7A

Note.- Spa for Flg Lt same as B9A

REED LIST

Make 1 Girder: As Shown Mk B7A	Make 3 Struts: As Shown Mk B18
Make 1 " - " - " " B7B	
Make 1 Bottom Latl " " - " B1A	Make 1 " " - - " B9A
Make 6 " Latls " " B12A	Make 1 " " - " - " B9B
Make 1 " Latl " " B13A	
Make 2 Diaphragms " " " DA	
Make 1 " - " " " DB	
Make 1 " " " " " DC	
Make 1 " " " " " B19 R	
Make 1 " Reverse " B19 L	

Approved by C. C. Smith
5-1-12 Bridge Engr.

C.H. Struct. Steel
Missouri Pacific Ry Co 1911
Except as Noted.
None
1 Coat Red lead + pure linseed oil Mixed as per spec.
Surfaces in contact - 1 Coat each before assembling
by Ry Co.
Riveted
R.M. Hurst

715
MACHINERY BEAMS
1-162 Ft S.T. LIFT SPAN
MARIANNA, ARK
MISSOURI PACIFIC RY CO

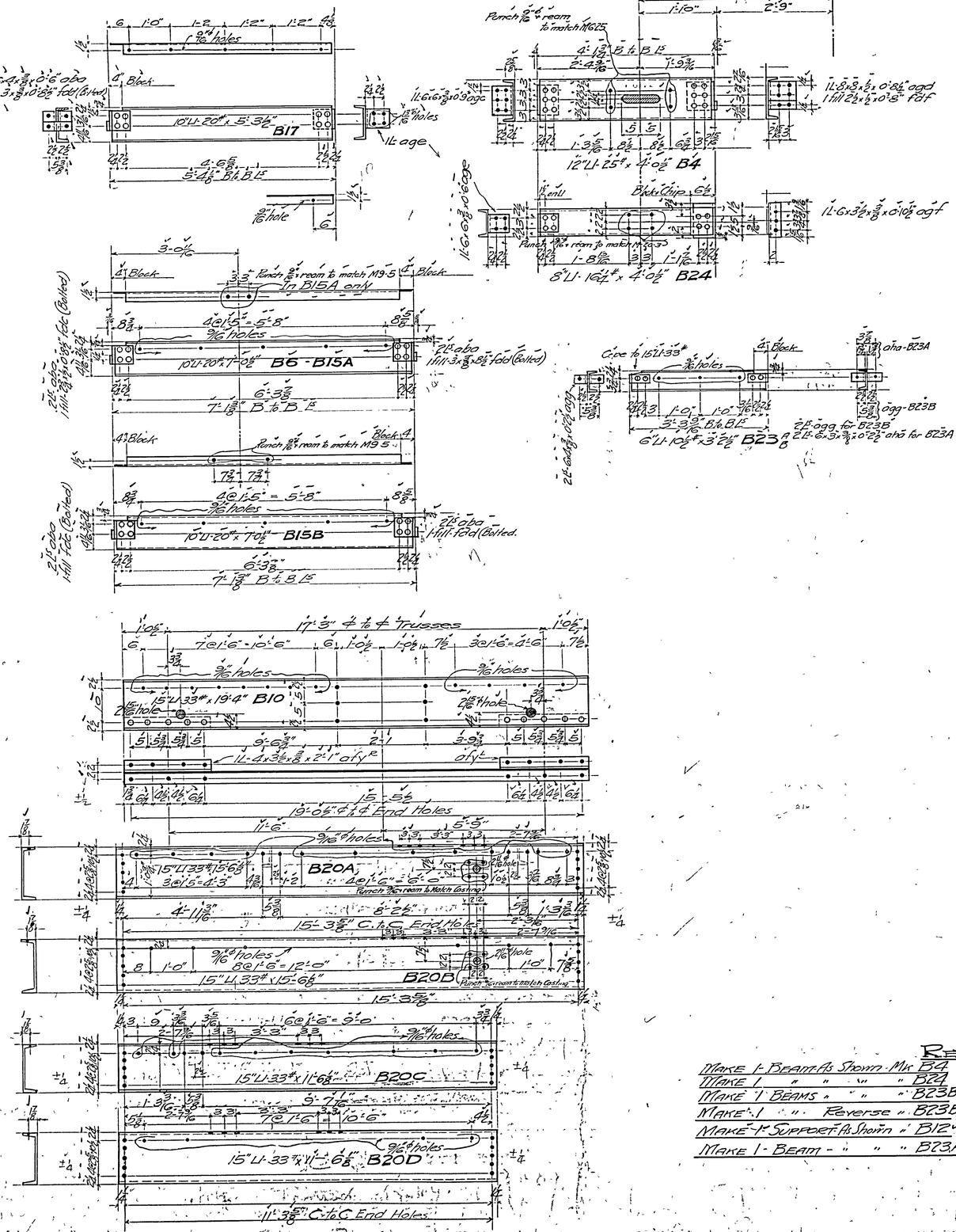
MEMPHIS
Ridout Howard 1/31/12

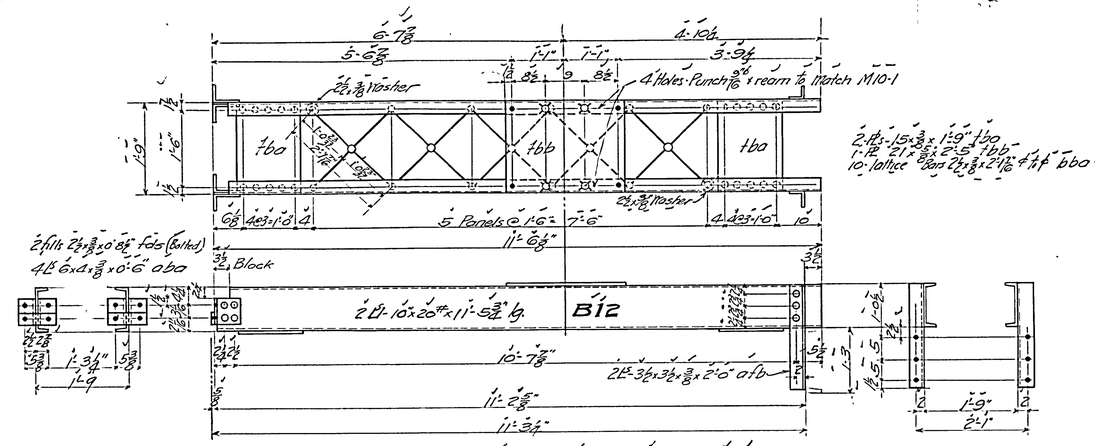
27 & 28

10

File No. D3A - 1.95 - G4

File No 162-B322.12-15 File No 421-2





Support for Pedestal Casting M10-1

Reed List

Make 1 Beam As Shown Mk B4		Make 1 " As Shown " B17R	
Make 1 " " " " B24		Make 1 " Reverse " B17L	
Make 1 Beams " " " B23BR		Make 1 " As Shown " B6	
Make 1 " " Reverse " B23BL		Make 1 " " " " B15A	
Make 1 Support As Shown " B12		Make 1 " " " " B15B	
Make 1 Beam - " " " B23A		Make 1 " " " " B10	
		Make 1 " " " " B20A	
		Make 1 " " " " B20B	
		Make 1 " " " " B20C	
		Make 1 " " " " B20D	

GENERAL NOTES -

Material O.H. Struct. Steel
Specifications Missouri Pacific Ry Co 1911
Rivets 7/8" ø
Holes ¹⁵/₁₆" ø Except as Noted
Paint None
Shop Coat Red lead - pure linseed oil Mix as per spec.
Surfaces in contact - 1 Coat each before assembling
Erection By Ry Co
Field Connections Riveted
Inspection R.W. Hunt

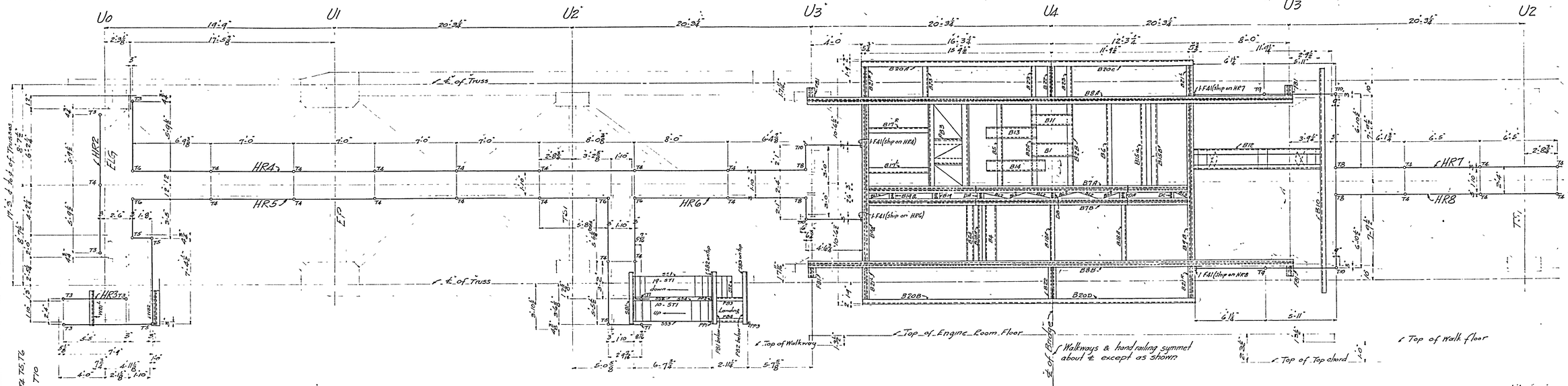
Approved by C.E. Smith
5-1-12 Bridge Engineer

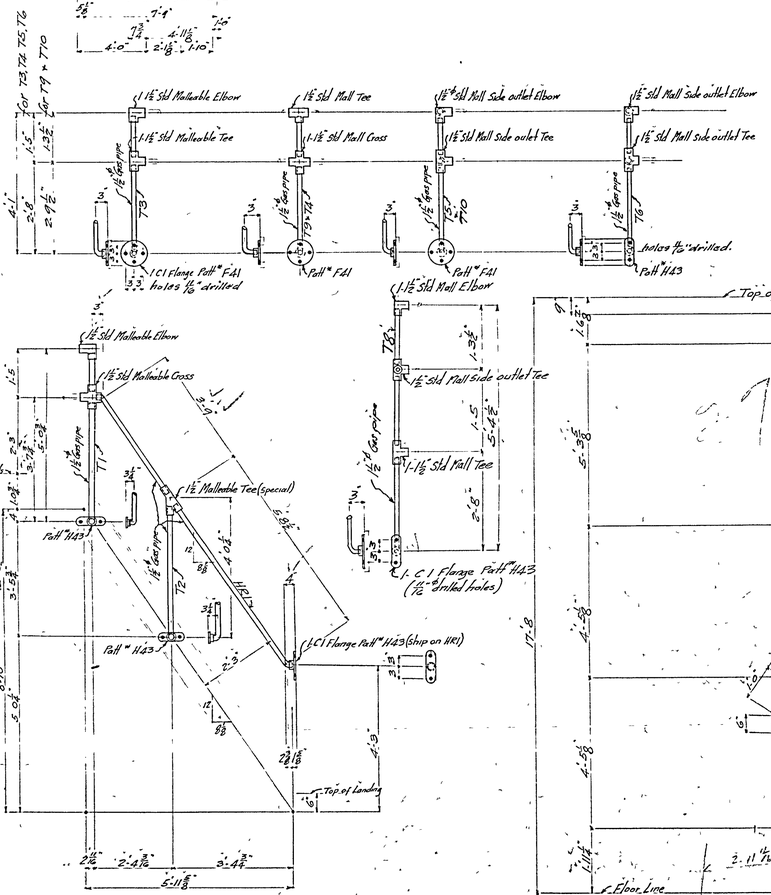
CONTRACT V-715
Details of MACHINERY BEAMS
For 1-162 ft S.T. LIFT SPAN
Location MARIANNA, ARK.
Owner MISSOURI PACIFIC RY CO.
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.
To be fabricated at the MEMPHIS Plant
Made by BT Checked by CMT
In charge of Rodut Checked by Howard 7/3/12
Revised
Scale 3/4" = 1'-0" Sheet No 1.1 of 1 Sheets

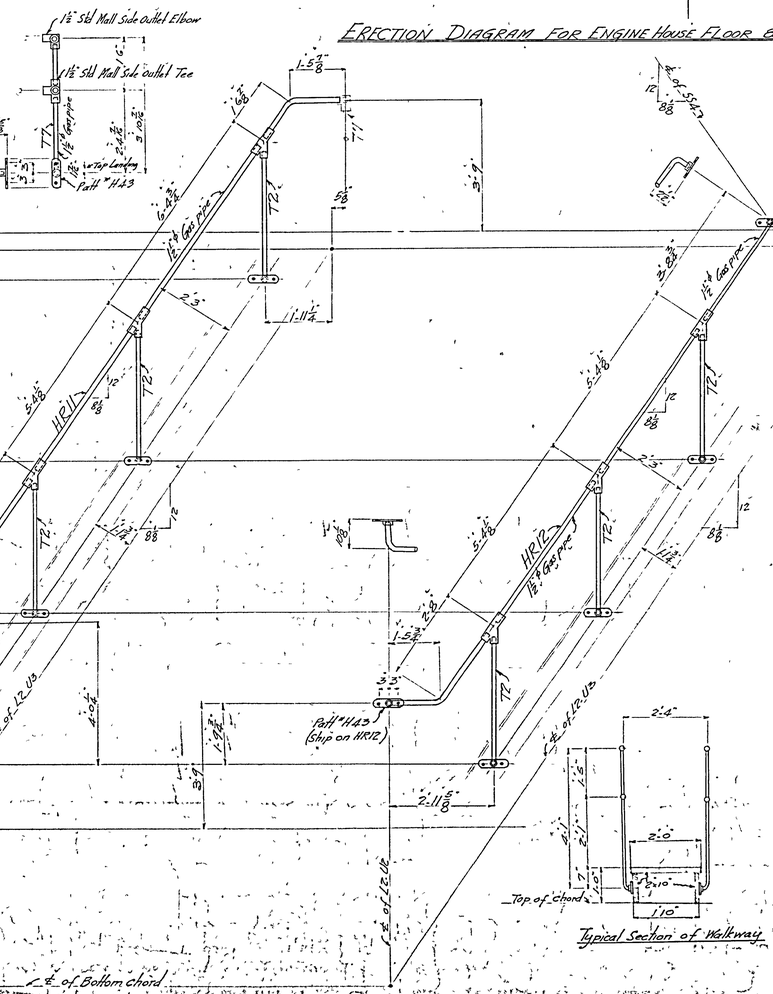
Working Drg. Date 29, 30 3/12

File No. D3A-195-65

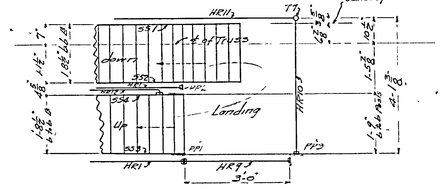
File No 162-B322.12-16 File No 162-B322.12-16



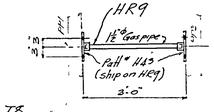


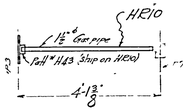


Erection Diagram for Engine House Floor & Hand Railing



Erection Diagram of Landing





Make 4 - Hand Rail Posts as shown Mark	T8
2	T9
4	T10
Make 2 - Hand Rail Posts as shown Mark	T1
9	T2
12	T3
31	T4
7	T5
6	T6
1	T7
2 - Lines Hand Railing as shown	10-0½" lg - Mark HR1
4	11-7" lg - HR2
4	5-5" lg - HR3
2	69-1⅜ lg - HR4
2	74-5⅝ lg - HR5
2	30-2⅞ lg - HR6
2	78-5⅜ lg - HR7
2	92-4⅝ lg - HR8
2	3-2" lg - HR9
2	4-1⅜ lg - HR10
1	21-7¼ lg - HR11
1	18-6¼ lg - HR12

Note Hand Railing to have Right and Left threads.

Typical Section of Walkway

Approved by C. C. Smith
5-1-12 Bridge Engineer

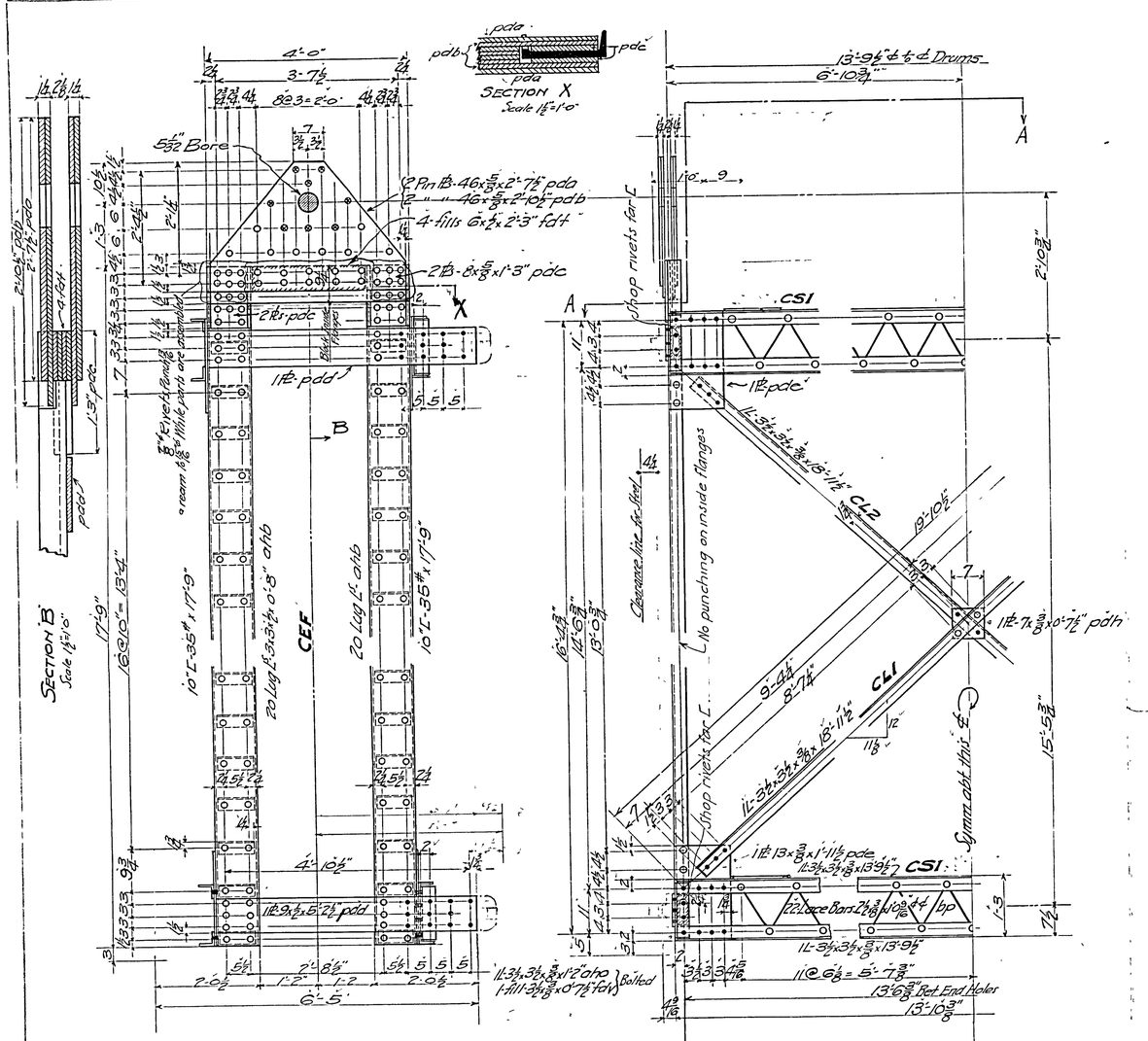
Material: O.H. Structural Steel
Specification: Missouri Pacific Ry Co 1911
Rivets: ⅞" diam. except hand rail flange connections which are ¹⅞" for ⅞" Bolts.
Holes: 1. Coat Red Lead & Pure Linseed oil
Mixed as per Spec. Surfaces in contact 1 Coat each before assembling.
Erected by Va B & I. Co.
Painting: Painted except Hand Railing to be bolted by R.W. Hunt.

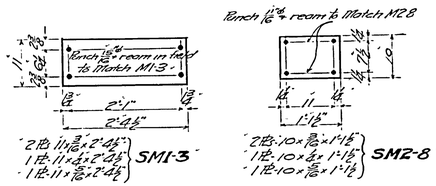
CONTRACT Y 715
Details of HAND RAILING & ERECTION DIAGRAM FOR ENGINE HOUSE FLOOR and HAND RAILING
For 1-162' H S.T. Liet. Span
Located at MARIANNA, ARK
Owned by MISSOURI PACIFIC RAILWAY CO.
Fabricated by VIRGINIA BRIDGE AND IRON CO ROANOKE, VA.
To be fabricated at the Memphis Shop
Made by Moore Traced by Moore
Inspected by Ridout Checked by Wright
Revised Scale 1½" to 1 ft. Drawing No. 12

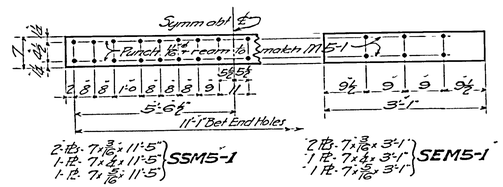
32.8.33

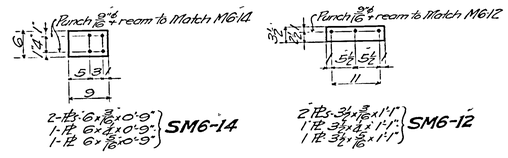
File No. D3A-195-66

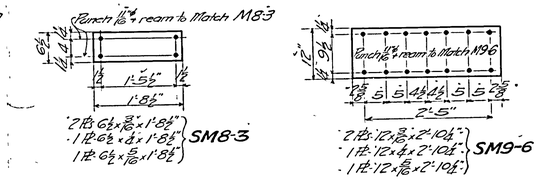
File A6-162-B22212-17

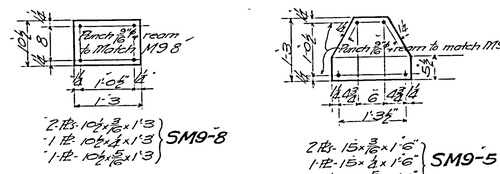


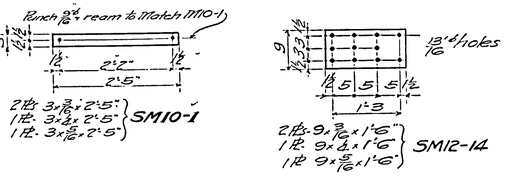


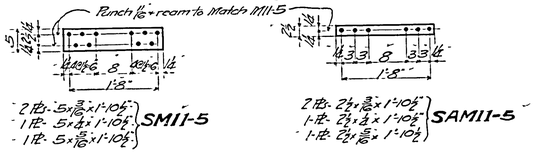


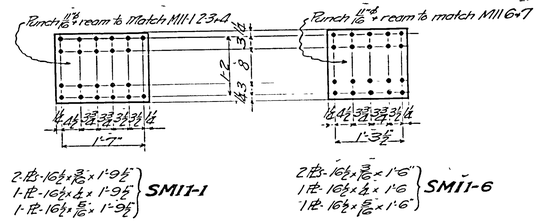


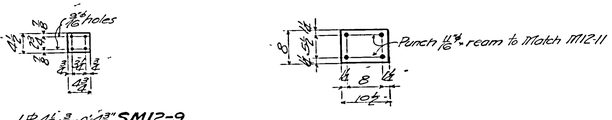


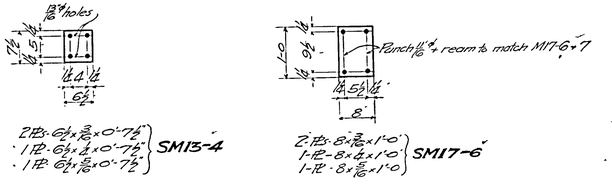


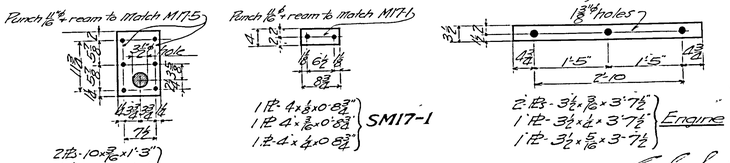










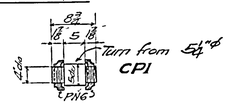


Approved by C. E. Smith
S-I-T-V Bridge Engineer.

Reqd List for 2 Counterweights

Make 2	Grd'r. End Frames	As Shown Mk	CEF R
Make 2	" "	Reverse "	CEF L
Make 4	" Struts	As Shown "	CSI
Make 4	" Laterals	" "	CL1
Make 4	" "	" "	CL2
Make 4	" Pins	" "	CP1

NOTE:- Rivets ⅞" ø Except as Noted
Holes punched 1⅛" ø



Reqd List for Shims

Make 8 Sets	Shim Pcs	As Shown	Mk	SM1-3
Make 1 Set	"	"	"	"	SM2-8
Make 2 Sets	"	"	"	"	SSM5-1
Make 2 "	"	"	"	"	SEM5-1
Make 3 "	"	"	"	"	SM6-14
Make 4 "	"	"	"	"	SM6-12
Make 8 "	"	"	"	"	SM8-3
Make 1 Set	"	"	"	"	SM9-6
Make 1 "	"	"	"	"	SM9-8
Make 1 "	"	"	"	"	SM9-5
Make 2 Sets	"	"	"	"	SM10-1
Make 8 Sets	"	"	"	"	SM11-5
Make 8 "	"	"	"	"	SAM11-5
Make 8 "	"	"	"	"	SM11-1
Make 8 "	"	"	"	"	SM11-6
Make 26 "	"	"	"	"	SM12-9
Make 2 "	"	"	"	"	SM12-11
Make 2 "	"	"	"	"	SM13-4
Make 2 "	"	"	"	"	SM17-6
Make 1 Set	"	"	"	"	SM17-5
Make 4 Sets	"	"	"	"	SM17-1
Make 2 "	"	"	"	"	Engine
Make 8 "	"	"	"	"	SM12-14

NOTE:- Bolt or Lash Shims together for shipment

GENERAL NOTES

Material O.H. Struct. Steel
Specifications Missouri Pacific Ry Co 1911
Rivet ⅞" ø Except as Noted
Holes As Noted
Reaming As Noted
Shop Paint 1 Coat Red lead + Pure linseed oil Mixing per Spec.
Field Paint
Erection
Field Connections Riveted
Inspection R.W. Hurst

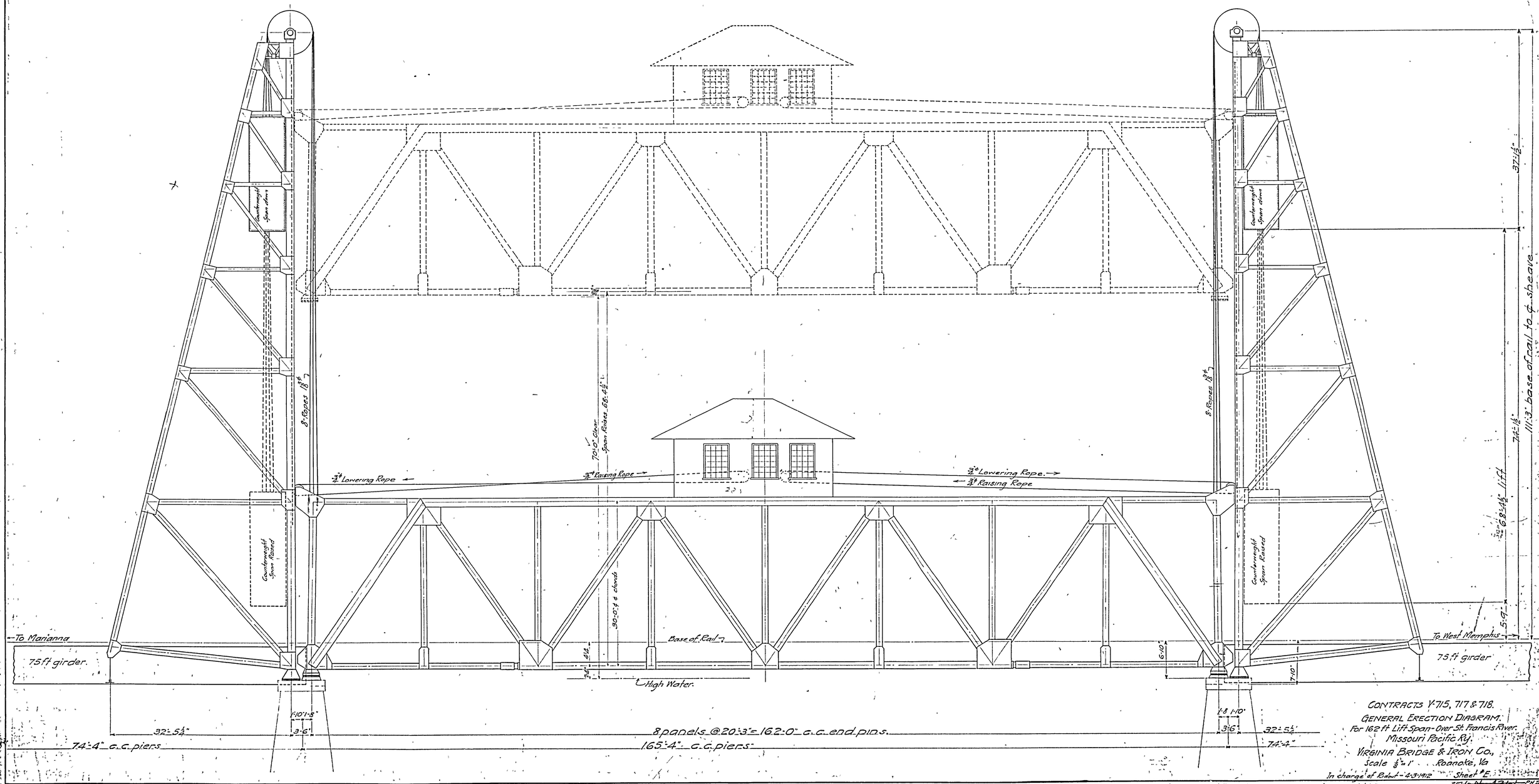
Material on Strip Drlg. 34 - 38 incl.

CONTRACT V.-715
Details of Counterweight Frames and Shim Plates
For 1-162'-8" S.T. Lift Span
Location Marianna, Ark.
Owner Missouri Pacific Ry Co.
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.
To be fabricated at the Memphis plant.
Made by
Traced by
In charge of Ridout
Checked by
Revised
Scale ½" In. = 1 ft. Sheet No. 13 of 13

FILE NO. D3A-1.95-67

FILE NO. 162-8328-12-18

St. Francis River Bridge.
V710 & V716 12-75 ft Plate-girder Spans
V872 Erection of girder spans
V715 162 ft. Lift Span,
V717 Towers.
V718 Machinery.
AG593 Cables
V873 Erection.



CONTRACTS V-715, 717 & 718.
GENERAL ERECTION DIAGRAM.
For 162 ft Lift Span over St. Francis River.
Missouri Pacific Ry.
VIRGINIA BRIDGE & IRON CO.,
Scale 3/8" = 1' Roanoke, Va
In charge of Robt - 4-3-1912 Sheet *E

FILE No. D3A-1.95-68

File No 162-8322.12-19. File No 121 PHD

Holes for 1⅛" Turned Bolts to be drilled in field to match bearings after bearings and sheaves have been assembled and lined up

To Marianna

To West Memphis

Base of Rail · Grade Level

High Water

Erector + Centering Gratings must be assembled on columns and holes reamed to match.

162'0" c to c. End Pins on Lift Span

165'4" c to c Piers

32'5¼"

3'6"

52'

105'

30'0" c to c Chds

70'0" Clear Height above H.W.

118'1" Top of Mas to ℄ Sheave

117'0" " " top of Col

111'9"

111'7"

22'6" clear

Walkway - see drg #G

S1A Near side
S1 Far side

Rest Pier #11

Rest Pier #12

℄ Pier and Bridge

Top View

Section C-C

Section A-A

View B-B

2 Hex Nuts

Top of Mas

Anchors furnished by Va. B. & I. Co.

Detail showing projection of anchors for towers

Approved by C. E. Schmidt
5-14-12 Bridge Engineer

Material: O. H. Structural Steel
Specifications: Missouri Pacific Ry. 1911
Rivets: See drawing #1
Holes: " " #1
Painting: " " #1
Shop Paint: 1 Coat Red Lead + Oil (see spec)
Field Paint: 2 coats Detroit Graphite (Lift #35, Top #30)
Erection: By Va. B. & I. Co.
Lettering: Riveted
Inspection: R. W. Hunt + Co.

CONTRACT V717

Detail of ERECTION DIAGRAM FOR TOWERS

For Bridge over St. Francis River

Location: Marianna, Ark. Memphis Div. Missouri Pacific Ry.

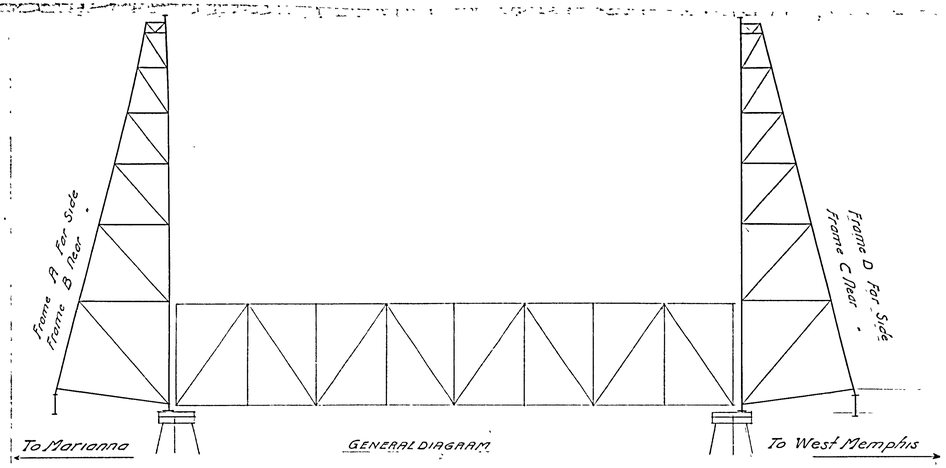
Owner: St. Louis Iron Mountain & Southern Ry.

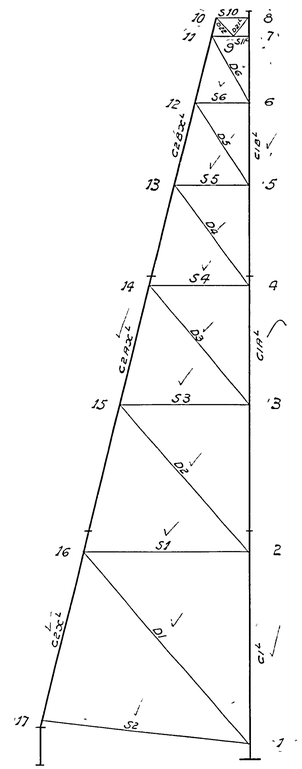
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.

To be furnished from Memphis, Tenn.
Made by G.S.K. Traced by G.S.K.
Designed by Ridout Checked by
Scale 1/32 Drawing No. E1 6

File No. D3A-795-69

File No. 162-B225/12-28

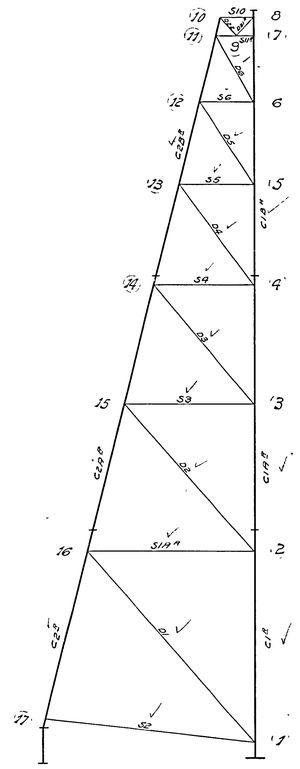




FRAME (A)

Inside Elevation of FAR FRAME

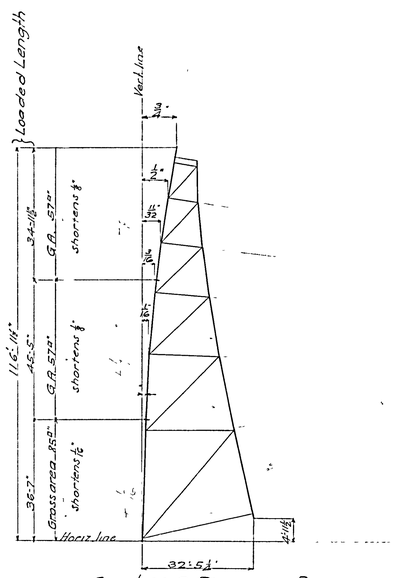
Marks of All members on this frame to have prefix A



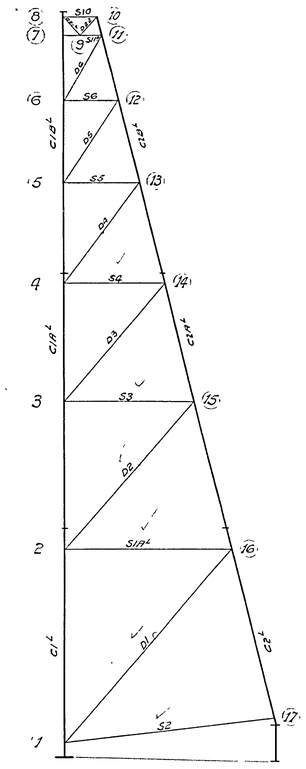
FRAME (B)

Outside Elevation of NEAR FRAME

Marks of all members on this frame to have prefix B



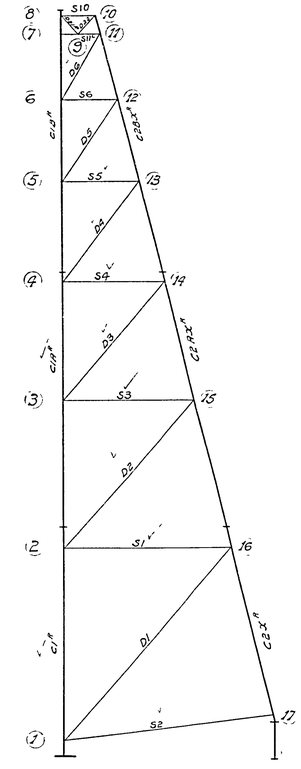
Camber & Reaming Diagram.



FRAME (C)

Outside Elevation of NEAR FRAME

Marks of All members on this frame to have prefix C



FRAME (D)

Inside Elevation of for Frome

Marks of All member on this Frome to have prefix D

SHOP NOTE

Assemble tower Frames complete as per this Diagram - and, after All members are properly aligned and firmly bolted together, ream all field connections including Column splices. Then Match-Mark both ends of each member with the proper panel point number and prefix letter, thus: (7) S2 (1)

Approved by- H. E. Smith
5-IX-12 Bridge Engineer

CONTRACT 717.
MATCH DIAGRAM FOR TOWERS
Bridge over ST FRANCIS RIVER
at Marianna, Ark.-Memph Div

ARKANSAS BRIDGE CO.
DANVILLE, ILL.

For [illegible] at the [illegible]
Mfr's No. H.P. [illegible] H.P.
Designed by [illegible]
Tested [illegible] E2
Date [illegible]

FILE No. D3A-1.95-70

Title No. 162-B222.12.21 File No. 421-1

Make 4 Masonry Plates Mark MP1

Section C-C

Make 2 Patent Plates C1

Bolt to C2a & C2xa in shop

Make 2 Struts Mark S1 as shown

Make 1 Strut as shown Mark S1A

Make 1 " reverse " S1AL

Make 4 Diagonals Mark D1

Make 4 Diagonals Mark D2

Make 4 Struts Mark S2

Material in Shoe

1 Pl. 40 × 1½ × 3'4" ca.
2 Ls. 8 × 8 × ¾ × 3'4" ab
2 Ls. 8 × 8 × ¾ × 2'3" ac
2 Pls. 20⅝ × ½ × 3'4" pf (Mill 1 Edge from 21)
8 Ls. 6 × 3½ × ½ × 1'7½" ad
4 Ls. " " 1'9" ae
4 Ls. " " 1'1½" af
2 pls. 21 × ½ × 1'7½" pa
2 fills 4½ × ¾ × 2'3" fak

Make 2 Column Sections as shown Mark C1
" 2 " " opp. hand " C1
" 1 " " as shown " C2
" 1 " " opp. hand " C2
" 1 " " as shown " C2x
" 1 " " opp. hand " C2x

Approved by C. E. Smith
5-14-12 Bridge Engineer

NOTE:-
All holes to be punched ¼" small and reamed to size, except in flgs of L which are to be drilled
All holes for field connections are to be reamed to a steel templet 1" thick, or while members are assembled and members match marked
Sides of towers are to be assembled complete in shop; holes reamed while parts are firmly bolted together, and then match-marked as per drawing # E2.

CONTRACT #7/7
Detail of Bottom Section of Towers
For Bridge over St. Francis River
Location Marianna Ark. : Memphis Div.
Owner Missouri Pacific Ry
St. Louis, Iron Mountain and Southern Ry Co.

WADDELL & HARRINGTON
LIFT BRIDGE
PATENTED IN U.S.A.
AUG 24-1909. MAR 22-1910
MAY 31-1911 MAR 29-1910
OTHER PATENTS PENDING
PATENTED IN CANADA
FEB. 1-1910 MAR 8 1910

GENERAL NOTES.
Material O.H. Struct Steel
Specifications Missouri Pacific Ry. 1911
Workmanship ⅞" ø except in flgs of L ¾" ø
Rivets ⅞" ø except as noted
Painting See Note above
Erection 1 coat Red Lead + Oil (see spec)
Fabricated By Va. B. & I. Co.
Connections Riveted
Erected by R.W. Hunt + Co.
Inspection at Shops
To be inspected at the Memphis
Made by G.S.K. Traced by G.S.K.
Checked by Ridout Checked by
Scale 3" = 1' Sheet 6
Field 12-1-1

FILE No. D3A-1.95-71

File No. 162-8222.12-22

MAKE-4-DIAGONALS-MARK-D4

MAKE-4-DIAGONALS-MARK-D3

MAKE-4-STRUTS-MARK-S4

MAKE-4-STRUTS-MARK-S3

Make-2-Column Sections as shown Mark C1A^{R}
" 2 " opp hand " C1A^{L}
" 1 " as shown " C2A^{R}
" 1 " opp hand " C2A^{L}
" 1 " as shown " C2AX^{R}
" 1 " opp hand " C2AX^{L}

Rivet spacing same as other side

Note: Dimensions not given same as for pl. ps

Omit on far side

Omit for C2AX

Side D

Side C

Cable Length

Milled Length

Approved by C. E. Smith
5-14-12 Bridge Engineer

O.H. Struct Steel
Specifications Missouri Pacific Ry 1911
Rivets 7/8" ø
Holes 15/16" ø except as noted
Paint See dwg. #1
Shop Paint 1-Coat Red Lead & Oil (see spec.)
Erection By Va. B. & I. Co.
Shop Work Riveted
Inspection R.W. Hunt & Co.
All Washers 2 1/2" x 3/8"
Standard Sizes 6-7

717
Details of Middle Section of Towers
For Bridge over St. Francis River
Location Marianna, Ark.: Memphis Div
Owned by Missouri Pacific Ry
St. Louis, Iron Mountain & Southern Ry Co
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.
To be fabricated at the Memphis
Made by G.S.K. Traced by G.S.K.
Checked by Ridout Checked by Miller
Revised
Scale 1/2" = 1'-0" Sheet No. 2

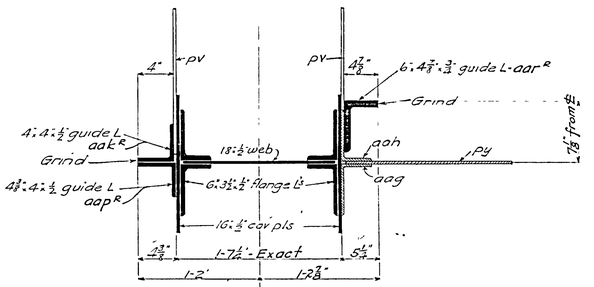
FILE NO. D34-195-72

Material in Cap

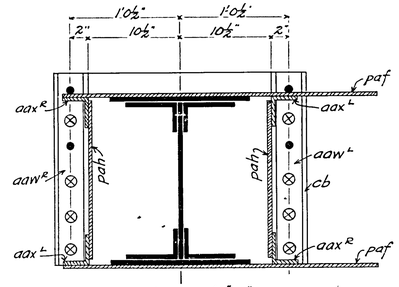
1-pl-22 × ¾ × 2'-5" cb
2-Ls-6 × 3½ × ½ × 1'-10" aaw^R
4-Ls 3½ × 3 × ⅜ × 2'-9" aax^R
2-pls-19 × ⅜ × 3'-4½" pah
2-pls-33 × ⅜ × 3'-0½" paf

Make-1-Column Section - as shown - Mark-C2B^R

"	1	"	opp hand	C2B^L
"	2	"	as shown	C1B^R
"	2	"	opp hand	C1B^L
"	4	Struts	as shown	S5
"	4	"	" "	S6
"	4	"	" "	S10
"	4	"	" "	S11^R
"	4	"	opp hand	S11^L
"	4	Diagonals	as shown	D5
"	4	"	" "	D6
"	8	"	" "	D22
"	4	"	" "	D21^R
"	4	"	opp hand	D21^L
"	1	Column Section — as shown —		C2BX^R.
"	1	" " —	opp hand	C2BX^L.



Section at "EE"



Section at "F"
Looking up Column

Approved by C. E. Smith
5-14-12 Bridge Engineer

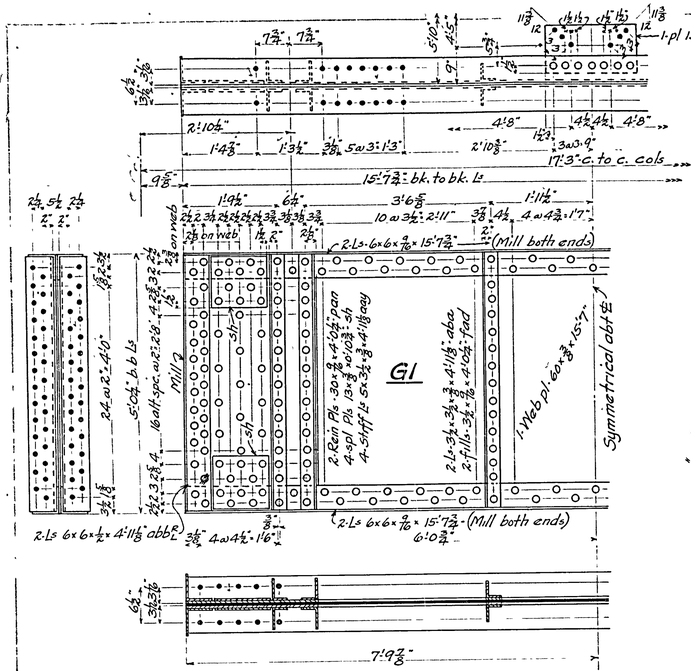
Material O.H. Struct Steel
Shipped via Missouri Pacific Ry.-1911
Rivets ⅞"ø
Holes 15/16" except as noted
Paint See Dwg. #1
1 Coat Red Lead + Oil (see spec)
Shop Paint
Erected By Va. B. & I. Co.
Field Connections Riveted
Inspected by R.W. Hunt & Co

All Washers 2½" - ⅜" thick

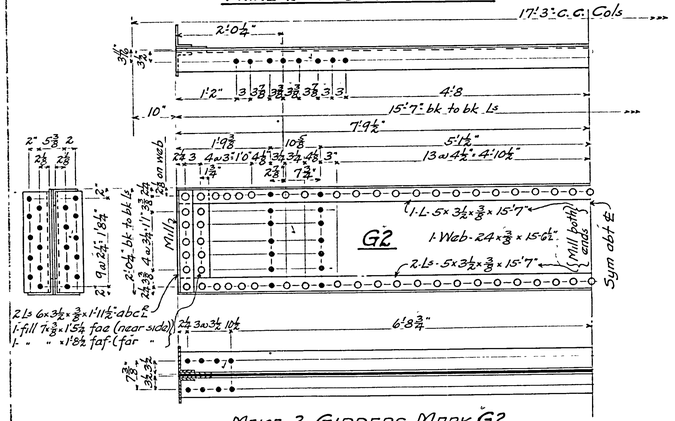
CONTRACT 717
Detail of Top Section of Towers
For Bridge over St. Francis River
Location Marianna, Ark. - Memphis Div.
of Missouri Pacific Ry. and
St. Louis, Iron Mountain & Southern Ry. Co.
Virginia Bridge and Iron Co.
Roanoke, Va.
To be fabricated at the Memphis Plant
Made by G.S.K. Traced by G.S.K.
In charge of Ridout Checked by
Revised
Scale ¾" = 1'-0" Sheet No. 3 of 6

FILE No. D3A-1.95-73.

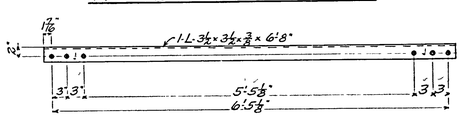
File No 162-8222-12-24



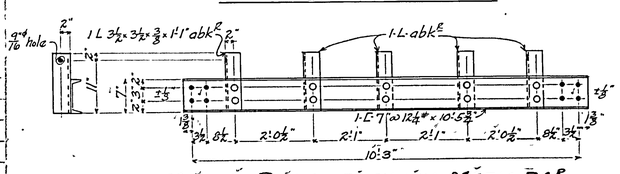
MAKE-2-GIRDERS-MARK-G1



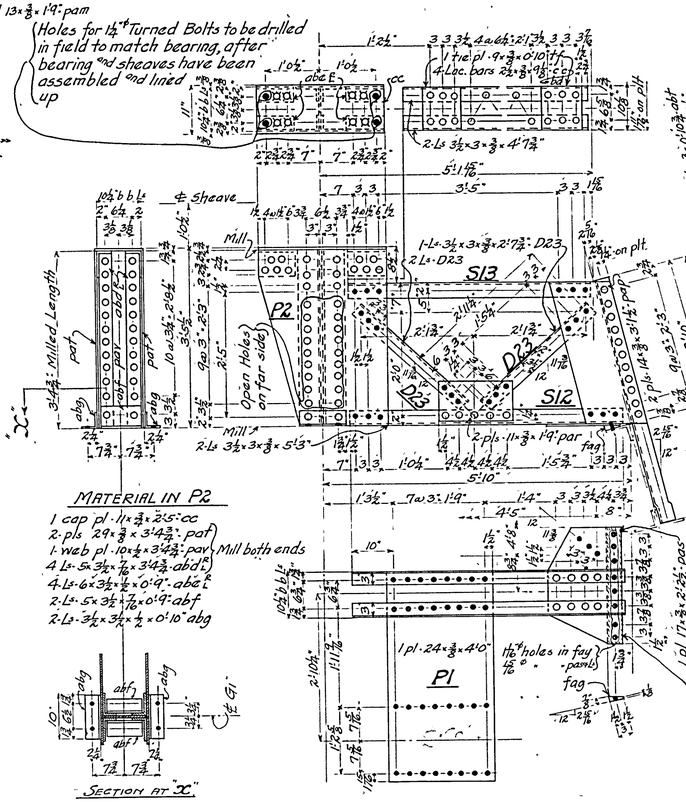
MAKE-2-GIRDERS-MARK-G2



MAKE-4-LATERALS-MARK-L1



MAKE-2-BEAMS-AS SHOWN-MARK-B4R
" 2 " OPP HAND " B4L

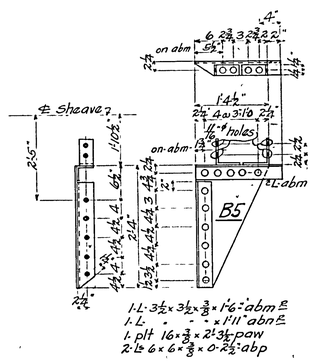


MATERIAL IN P2

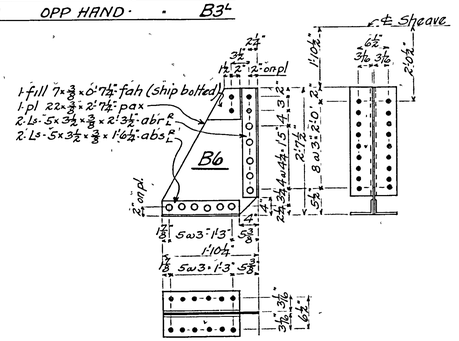
1 cap pl-11x⅞x2'-5"-cc
2-pls 29x⅜x3'-4½"-pat
1-web pl-10x½x3'-4½"-par
4 Ls-5x3½x7/16x3'-4½"-abd
4-Ls-6x3½x½x0'-9"-abe
2-Ls-5x3½x7/16x0'-9"-abf
2-Ls-3½x3½x½x0'-10"-abg
Mill both ends

MAKE-2-PEDESTALS-AS SHOWN-MARK-P2R

"	2	" OPP HAND	" P2L
"	4 PLATES	AS SHOWN	" P1
"	4 STRUTS	" "	" S13
"	2	" "	" S12R
"	2	OPP HAND	" S12L
"	16 DIAGONALS	AS SHOWN	" D23
"	2 BRACES	" "	" B3R
"	2	" OPP HAND	" B3L



MAKE-4-BRACKETS-AS SHOWN-MARK-B5R
" 4 " OPP HAND " B5L



MAKE-4-BRACKETS-AS SHOWN-MARK-B6

GENERAL NOTES:-

Material O.H. Struct. Steel
Specifications Missouri Pacific Ry.-1911
Rivets ⅞"ø
Holes 15/16"ø unless noted
Reaming See Dwg. #1
Shop Paint 1 Coat Red Lead & Oil
Field Paint
Erection V.B.B.I.Co.
Field Conn'ts Riveted
Inspection R.W. Hunt & Co.

Material on Ship Bills 8-9

Note
S12-S13-D23-P1-B3 were shipped up complete. GH.S. 7/13/12

Approved by L. C. Smith 5-14-12 Bridge Engineer

CONTRACT 1717
Details of Pedestals, Struts, Girders, etc., of Top of Towers
For Bridge over St Francis River
Location Marianna, Ark. Memphis Div
Owned by Missouri Pacific Ry. St Louis, Iron Mountain & Southern Ry Co.
Virginia Bridge and Iron Co.
To be fabricated at the Memphis Shops
Made by G.S.K. Traced by G.S.K.
In charge of Ridout Checked by
Revised
Scale ¾ In. = 1 ft. Sheet No. 4 of

File No. D3A-1.95-74

File No. 162-B322.12-25 File No. 421-L

Make 2 Portal Struts Mark-PS1
" 4 knee Braces . -KB1

Make 2 Portal Girders Mark PS2

Make 6 Diagonals Mark-D7
" 12 " " -D8
" 2 " " -D9
" 4 " " -D10

Make 2 Diagonals Mark-D12
" 2 " -D13
" 2 " -D19

Make 8 Struts Mark S8

Make 6 Diagonals Mark-D11
" 12 " " -D15
" 2 " " -D16
" 4 " " -D17

Make 2 Diagonal Mark-D18
" 2 " -D19
" 2 " " -D20

Make 8 Struts Mark-S9

Make 2 Brackets as shown Mark-B1R
" 2 " opp hand -B1L
" 2 " as shown -B2R
" 2 " opp hand -B2L

Approved by C. E. Smith
5-14-12 Bridge Engineer

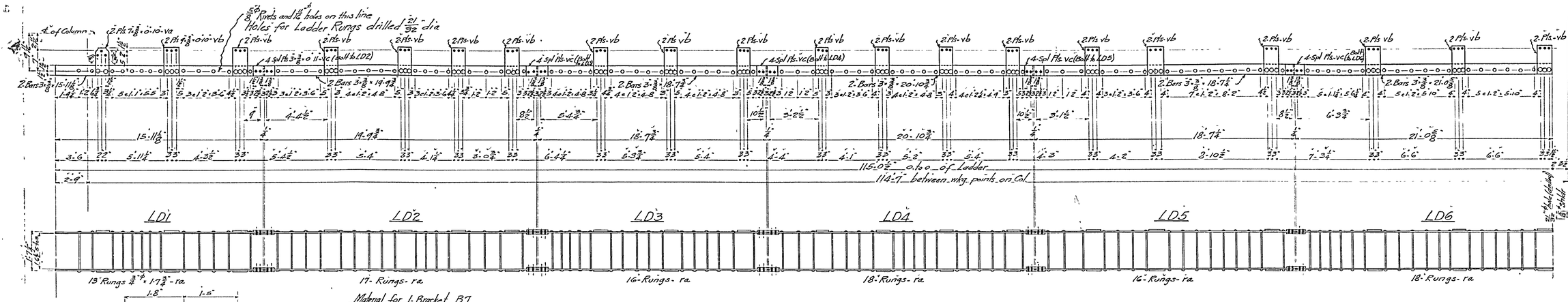
GENERAL NOTES
Design O.H. Struct. Steel
Specifications Missouri Pacific Ry - 1911
Loads E-72
Rivets 7/8" ø except as noted see dwg #1
Erection See Dwg. #1
Shop paint 1 Coat red lead & Oil see specs.
Field Paint
Fabrication By 1941 Specs
Inspection Riveted
Inspection R.W. Hunt & Co

CONTRACT # 717
Details of Bracing
For Bridge over St Francis River
Location Mariana, Ark.
Owner Missouri Pacific Ry. Co.
St Louis, Iron Mountain & Southern Ry Co.
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.
To be fabricated at the Memphis Shop
Made by C.M.B. Traced by C.M.B.
In charge of Rideout Checked by
Revised
Scale 3" = 1'-0" Sheet No 5 of 6

10-11-12-13

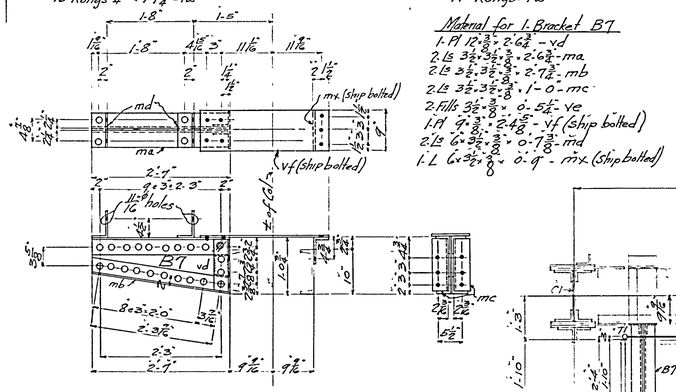
FILE No. D3A-1.95-75

File No. 162-8322.12-26



MAKE 2 LADDERS AS SHOWN MARK LD1

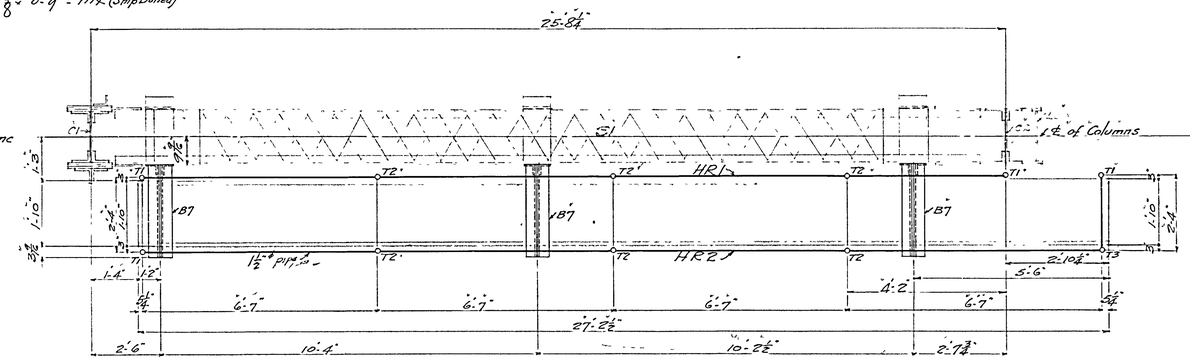
2	LD2
2	LD3
2	LD4
2	LD5
2	LD6



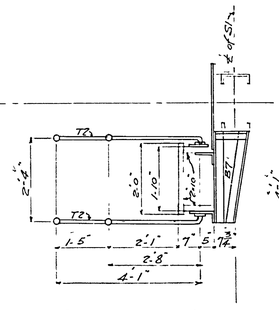
Material for 1 Bracket BT

1-Pl 12-3/8 x 2-6 3/4 - vd
2 Ls 3 1/2 x 3 1/2 x 3/8 x 2-6 3/4 - ma
2 Ls 3 1/2 x 3 1/2 x 3/8 x 2-7 1/2 - mb
2 Ls 3 1/2 x 3 1/2 x 3/8 x 1-0 - mc
2 Fills 3 1/2 x 3/8 x 0-5 1/4 - ve
1-Pl 9 x 3/8 x 2-4 5/8 - vf (Ship bolted)
2 Ls 6 x 3 1/2 x 3/8 x 0-7 3/8 - md
1 L 6 x 3 1/2 x 3/8 x 0-9 - mx (Ship bolted)

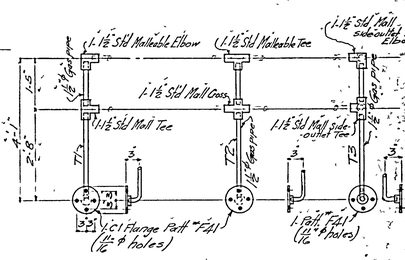
MAKE 6 BRACKETS AS SHOWN MARK BT

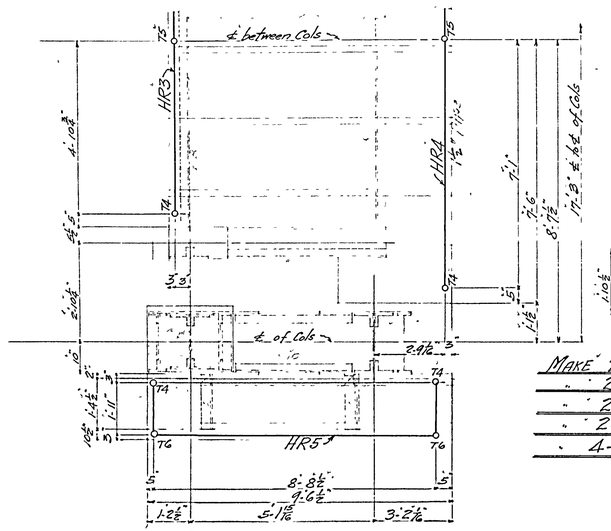


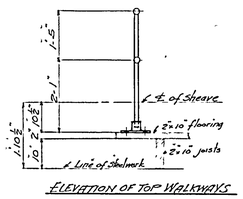
ERECTION DIAGRAM FOR LOWER WALKWAY AND DETAIL OF HAND RAILING



TYPICAL SECTION OF LOWER WALKWAY

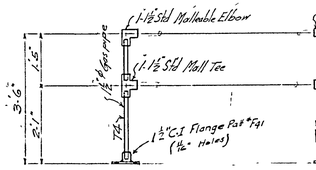






MAKE 2 LINES HAND RAILING AS SHOWN 23-11" lg - MARK HR1

2	28-8 lg -	HR2
2	9-9 1/2 lg -	HR3
2	4-2 lg -	HR4
4	12-6 1/2 lg -	HR5



MAKE 8 HAND RAIL POSTS AS SHOWN MARK T1

12	T2
2	T3
16	T4
4	T5
8	T6

Approved by C. E. Smith
5-14-12 Bridge Engineer

Material: O.H Structural Steel
Paint: Missouri Pacific Ry. 1911.
Shop Paint: 2 coats except as noted.
Field Paint: 1 coat except as noted.
Finish: 1 Coat Red Lead & Oil (See Spec)
Fabricated by: V.B.&I. Co.
Erection: Riveted - except Hand Railing to be bolted by R.W. Hurst & Co.

CONTRACT 7-717
Description: LADDERS & HAND RAILING
For Bridge over St. Francis River
Location: Marianna, Arkansas. Memphis Div.
Missouri Pacific Ry Co.
St. Louis, Iron Mountain & Southern Ry Co.
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.
To be fabricated at the Memphis Shops
Made by Moore 12/12 Traced by Moore
In charge of Albert Checked by Kirby 12/12
Revised
Scale 3" = 1 in. 6-12 6-12
1425
FILE NO. D3A-1.95-76
THE 16 7-717 B 22 12 27 THE 12 L1

Engine Pedestal

Indicator

Hand Brake

Engine Pedestal

Section at ℄

Section Showing Clutch Shifter

Hand Turning Mechanism

Floor line

Floor line

Shaft for operating rail tongues

V 872 Erection of 12 Girder Spans.
V 873 Erection of Truss, Machinery, Operating-house and Towers
V 710-V 716 Plate Girder Spans.
V 715-162 ft Truss Span
V 717- Steel Towers
V 718- Machinery

E1 General Plan of Machinery.
E2 Plan of Locking Machinery.

Dwg # 1 Counterweight Sheaves, Bearings, etc
" 2 Truss-guide Rollers.
" 3 Rail-lock Indicator
" 4 Truss-lift " .
" 5 Gear-frame & Gears
" 6 Clutch Shifting Machinery
" 7 Brake Machinery.
" 8 Shafts, Bearings, Couplings, etc.
" 9 Bearings & Shafts for Clutch Shifter.
" 10 Capstan, Winding-drums, etc.
" 11 Guides & Tongues for Trusses.
" 12 Truss-locking Machinery.
" 13 " " .
" 14 Interlocking " .
" 15 Rail-locking " .
" 16 " " .
" 17 " " .

GENERAL NOTES -

30 HP Gasoline Engine with Air-compressor, Air & Cooling-tanks, Whistle, and all Piping, necessary Signal-lights and Cement for counterweight are to be furnished f o b bridge site by the Railway Company

Va B & I Co will furnish all Structural Steel and Machinery except as above noted Also Operating House, Platform & Walkways and Sand & Stone for Counterweight.

Approved by C E Smith
5-11-12 Bridge Engineer.

CONTRACT 718.
General Plan of Machinery.
162 Ft Lift Span
over St Francis River
Missouri Pacific Ry.
Memphis
GWR
Ridout
Scale 1/2 in. = 1 ft. E1
Checked
File No 162-B228-12-28

FILE No. D3A-1.95-77

U3 | U4 | U3

40'-6½"

20'-3½" | 20'-3½" | 2'-9½"

15'-9½" | 11'-9½" | 8'-5⅞"

4'-5⅞" | 5'-5" | 3'-9 | 2'-4½" | 2'-6" | 1'-9 | 1'-9 | 2'-10½" | 2'-10½" | 1'-3½" | 3'-0

B20A | B20C

FB1 | B21R | B23A | B23BL | B22 | B23BR | B21L | FB1

B8A

B17R | B17L | PB3 | B11 | B13 | B1 | B14 | B2A | B2B | B5 | B6 | B15A | B15B | B12 | B9A | B9B | B10

17'-3" c. to c. of Trusses

c. to c. Span

B7A | B7B

DA | DB | DC | B12 | B19 | B11

11'-7" | 18'-6" | 1'-9½"

B24 | B18 | B4

B8B

FB1 | B21L | B22 | B21R | FB1

B20B | B20D

4'-5⅞" | 9'-9" | 6'-0½" | 6'-0½" | 5'-9

15'-9½" | 11'-9½"

20'-3½" | 20'-3½"

c. to c. Bridge

Section A-A

Approved by C. E. Smith
5-1-12 Bridge Engineer

CONTRACT -715

DIAGRAM OF MACHINERY FLOOR

For 162ft ST Thru Riveted Truss Span

MARIANNA, ARK.

Over MISSOURI PACIFIC RY. CO.

PORTAGE, VA.

To be erected at the MEMPHIS Shops

Made by C.P.M. Inspected by C.P.D.

Approved Elliott Chief Engr.

Scale No. EZ

File No. D3A-1.95-78

File AB-162-B22-12-29 File Bridge 1220

Note - Interlocking mechanisms is to be so adjusted that lever M7-1 cannot be moved to lift span until rail tongues M16-10 & 11 and bridge locks M12-1 have been fully drawn. For large scale lay-out see dwg. M2.

℄ of Bridge

℄ of Span

Span Guides at Top Chord - 5 men both ends of Span

Shaft M13-7

3'-3" clear

PL8 PL6 PL7

73'-6"

77'-10⅝"

7 Supports "B" & 2 Supports "C" this end.
6 " " " 2 " " other end. } On each Truss

Support "B" { Stand M12-9 Roller M12-8 Pin M12-10

Support "C" { Stand M12-9A Roller M12-8 Pin M12-10

1" Gas Pipe

Mig Line Top Chord

Span Locked

PL5 PL4 PL3

Support "A" { Bracket M17-18 Roller M17-19 Pin M17-20

℄ Bottom Chord

85'-9½"

Position with Tongues Drawn

HALF SECTION AT "A"

300'

PL2 PL1

66'-10⅛"

9'-5½"

4'-6½"

1'-0" about

45°

5.1

32°

Diagram of Bottom Chord Span Guides

℄ of Truss & Towers

To West Memphis

3-Rollers M2-1
2-Pins M2-3
1-Pin M2-5

3'-6" 162'-0" ℄ end pins 3'-6"
169'-0" c. c. columns

Approved by: C. E. Smith
5-1-12 Bridge Engr.

DIAGRAMS of Rail Lock, Bridge Latch, Inter-Locking Mechanism & Span Guides.
For 1-162 ft. S.T. Lift Span
Over St. Francis River.
Missouri Pacific Ry. Co.

VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.

To be associated with Memphis
Made by D. 3/1/12 Traced by
Checked by Ridout Quantities by
Sheet No. E2

File No. D3A-1,95-79

File No. 162-B322.12-30

Finish entire surface of grooves.

Face — 4 — 7 — 4 — Face — 1'3"

1'0" Dia Bore for M1-2 Light driving fit

1'1" Dia Core

¼ Elevation

7" Rod

8'0" Pitch Dia & Ropes

8'3" Turned

Bore for 10" shaft

¼ Section

2 Lomas nuts PN2 for CP2-3-4
2 " " PN3 " CP1

CP1 turned from 3¼" Ø
CP2-3-4 " " 3" Ø

4½" for CP1 + CP2
3¾" " CP3 + CP4

Make 8 Pins — Mark CP1 200 lbs
" 16 " " CP2 260 lbs
" 16 " " CP3 225 lbs
" 32 " " CP4 485 lbs

Material for 1 Bearing M1-3.

1 Cap Cast Steel
1 Base "
1 Bronze Bushing (top)
1 " " (Bottom)
4 Turned Bolts 1"Ø - 1'4½" as per det.
8 Hex Nuts 8" Top.
8 Brass Shims 4"×1½"×10½"

Hex Hd — 1'2½" — Turned — 2½" — 8" Thread — 1'4½"

Section at ℄

End View

chip oil grooves

Drill for 1¼" Turned Bolts driving fit

Drill for 1" Turned Bolts

Bore for M1-2

Brass shims

Bore for 10" shaft

Make 8 Bearings Mark M1-3 {Cast Steel unless noted}

Approved C. E. Smith
5-1-12 Bridge Engineer

General Notes:

All gears to have 20° involute machine cut teeth, with pitch lines scribed on both sides. All surfaces in contact to be finished. All journals polished and bearings scraped to fit journals. All bearings to have {Lubrication screen feed / Marine type grease} cups on pipe extensions screwed into the top half of bronze. Keys to have no taper unless noted, and must fit tight top, bottom and both sides. All machinery parts to be assembled on steel work at shop, and match marked with steel. All steel castings to be annealed. All bearings to have grooves cut for grease. All bronzes shall have the following composition: copper 70.7%, Tin 10.3%, Lead 9.3%, Phosphorous 5%.
All fillings to be finished. All shafts must work freely in bearings. All levers, wheels etc, which are keyed to shafts to be a light driving fit.

Note
M1-3 & M1-6 are to be drilled in pairs and match marked.

Make 4 Sheaves Mark M1-1. Cast Steel.

Full Size Section of Sheave Rim.

Make 4 Balance Bars Mark M1-4 {Forged Steel}

Make 16 Balance Bars Mark M1-5 {Rolled High Steel. 80,000# Min Ult Strength}

Make 4 Shafts Mark M1-2. Forged Steel. Finish all over

Make 32 Balance Bars Mark M1-6. Rolled High Steel. 80,000# Min Ult Strength

Make 16 Clevises Marked M1-7. Forged Steel

Assembled Equalizer 4 Reqd. Scale 1"=1ft.

Counterweight End

Truss End

2 Truss ℄

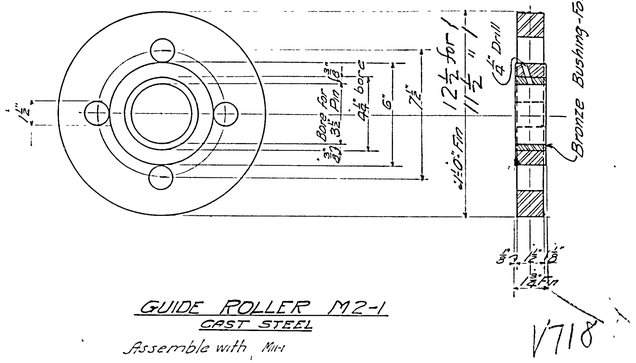
General Note cont'd.

As Noted
Mo Pacific Ry Co.
{Waddell & Harrington Consulting Engineers}
Coat finished surfaces with lead & tallow
Red lead and oil
Paint
Purchaser
Final Coats
R W Hunt & Co
Pattern Maker to allow ⅛" for
all surfaces to be finished

Contract No 718.
Lifting Machinery
Sheaves, Bearings & Equalizer
For 162' Thro. Span
Location Marianna Ark (over St Francis River)
Owners The Missouri Pacific Rwy Co.
Roanoke, Va.
Memphis
E. Pass. Div. E. Pass.
Ridout

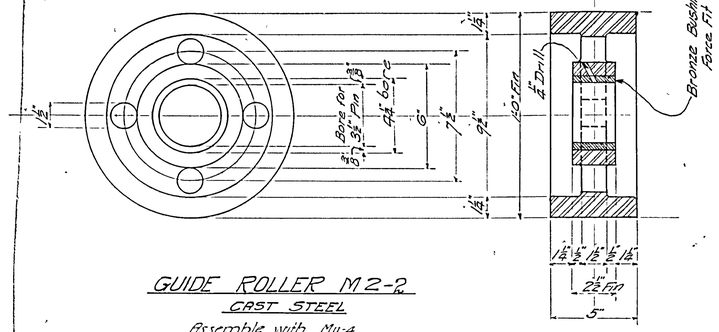
File No. D3A-195-80

File No 762-B22-12-31

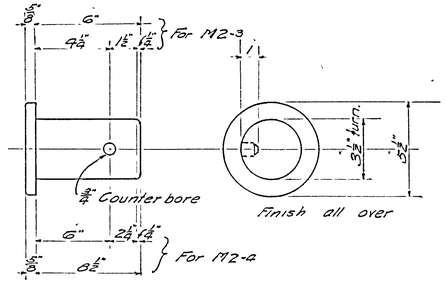


GUIDE ROLLER M2-1
CAST STEEL
Assemble with M11-1

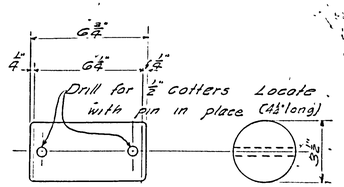
V718



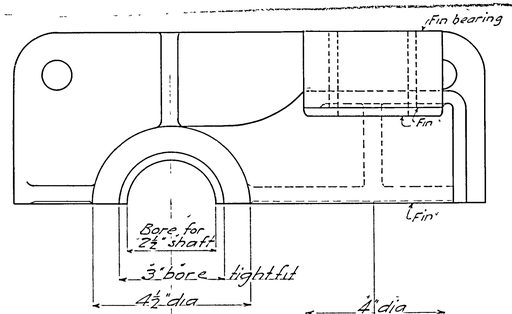
GUIDE ROLLER M2-2
CAST STEEL
Assemble with M11-4

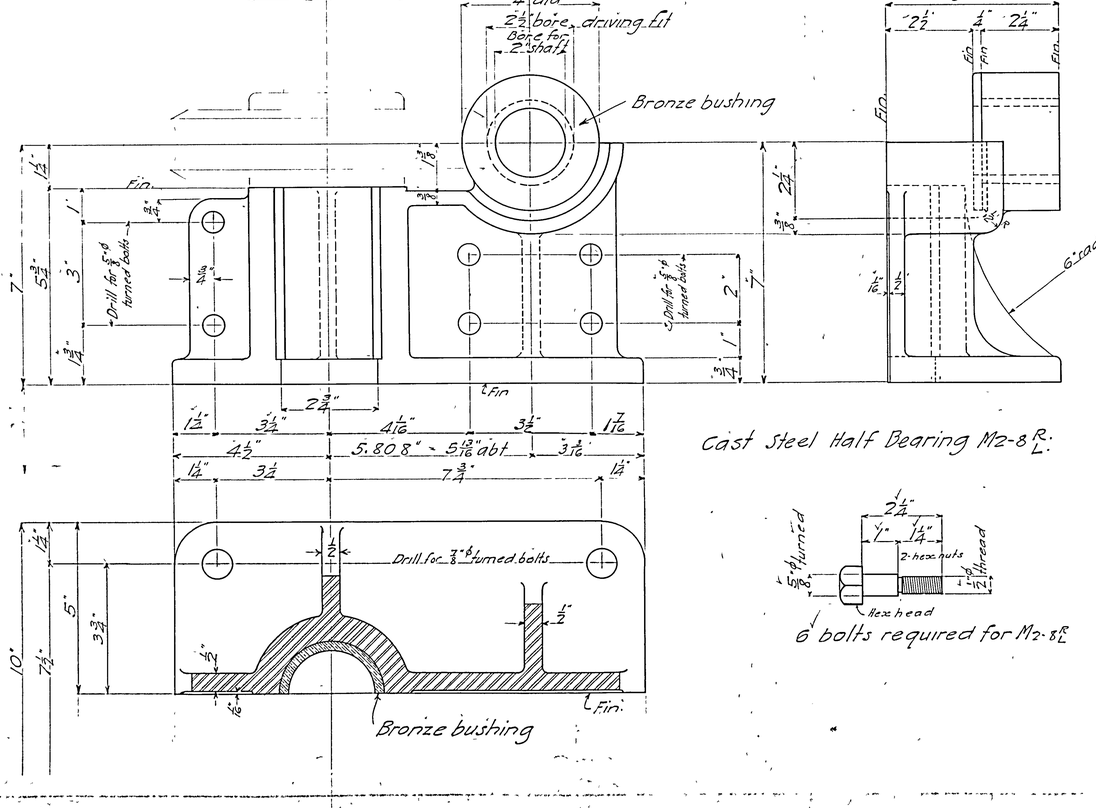


PIN M2-3 — Assemble with M11-1
STEEL FORGING
PIN M2-4 — Assemble with M11-4
STEEL FORGING



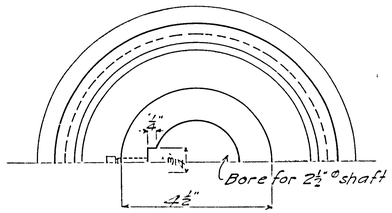
PIN M2-5
GOLD ROLLED STEEL
Assemble with M11-1

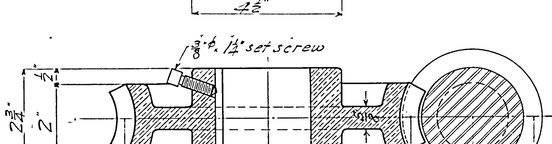




Cast Steel Half Bearing M2-8 R.L.

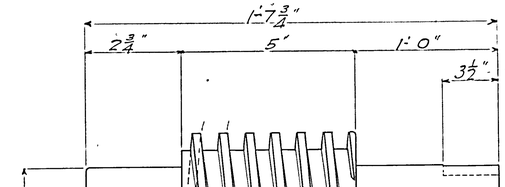
6 bolts required for M2-8 L





Bronze wheel 8.117" dia 34 teeth ¾" pitch. Cut teeth. M2-6 see gear note Dwg #1

Forged steel worm 3.5" dia. finish all over M2-7. Single pitch RH thread



MAKE	6	GUIDE ROLLERS	MARK M2-1
"	6	"	" M2-2
"	4	PINS	" M2-3
"	6	"	" M2-4
"	2	"	" M2-5
"	1	Worm Wheel	" M2-6
"	1	" Shaft	" M2-7
"	1	Half Bearing thus	" M2-8R
"	1	" " rev	" M2-8L

Approved by C. C. Smith
5-1-12 Bridge Engr.

General Notes: see dwg. #1

V 718
GUIDE AND CENTERING CASTINGS
162 ft. Lift Span
over St. Francis River
MISSOURI PACIFIC RWY CO
MEMPHIS
Traced by WCD
Checked by QWK
PIDOUT
3&6
2

FILE No. D3A-1.95-81

File No. 162-B522.12-32

Holes for ⅝" stud bolts

Holes for ⅝" tap - bolts

Cover Plate 3½ · ⅜ · 1'-0¾"
SHEET IRON.

Pointer ⅜ · 16 · 2½"
SHEET IRON.

Stud ⅜" hex ¼" thd. ⅝" thd ¾" long

⅝" thread

¾" dia.

Finish

Nut Bronze Casting

Separator C1
⅜" cast machine screws ⅜ long

Screw
RH Thread ⅛" pitch 1400-1/10

UNLOCKED

LOCKED

Frame - 2½ · ⅜ bars

Rail

~M15-6

½" Rod

4 spc. @ 3" = 1'-0"

1'-0¾"

1'-12¾"

1'-10¼"

1'-1½"

Note_
Back ground of cover plate to be painted white. Arrows and letters to be located on plate when indicator is erected. Arrows, letters, and pointer to be painted black.

General Notes see dwg #1

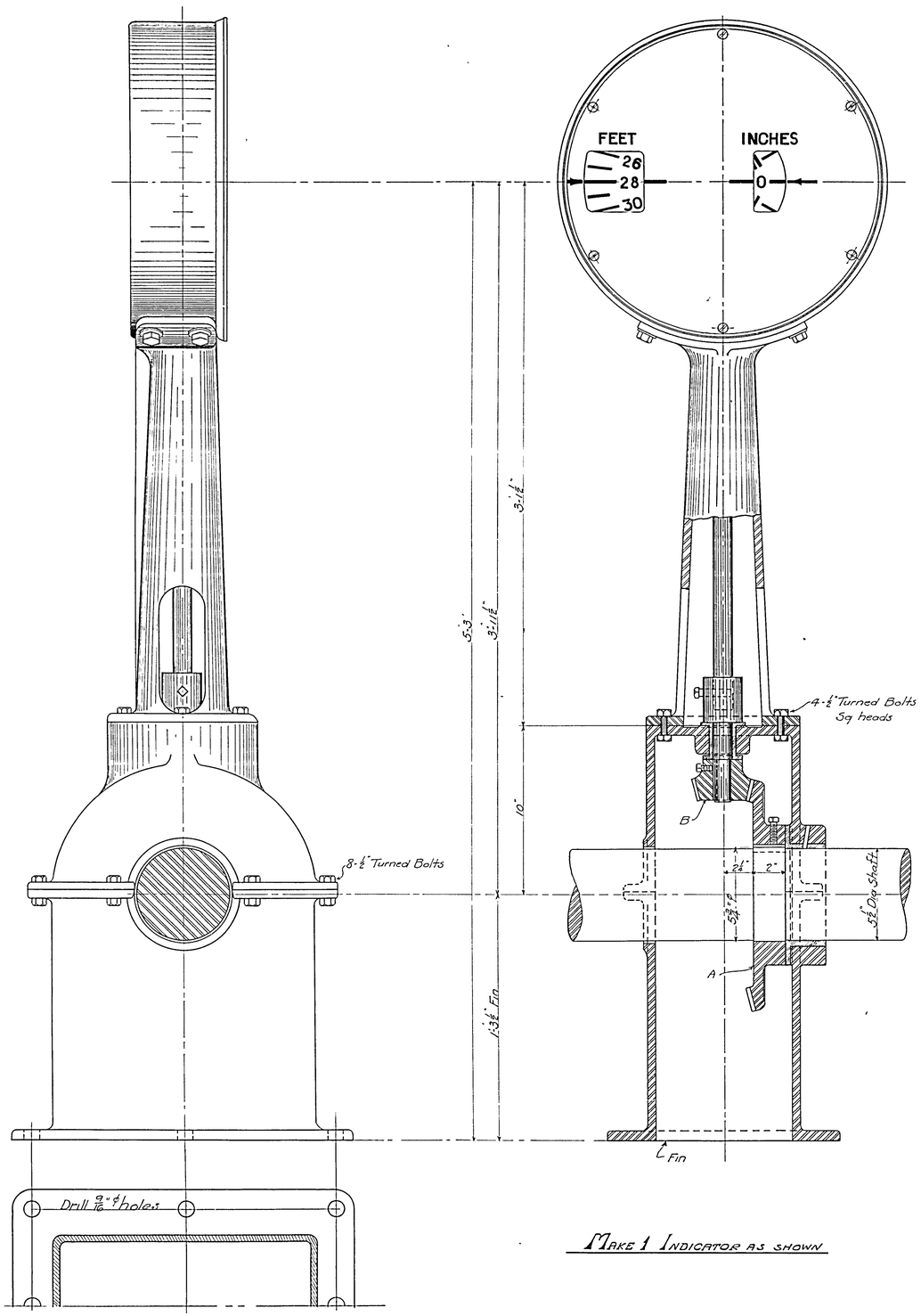
Make 1 Indicator as shown (Complete)
for Rail Locks

Approved by
C. E. Smith
5-1-17 Bridge Engineer

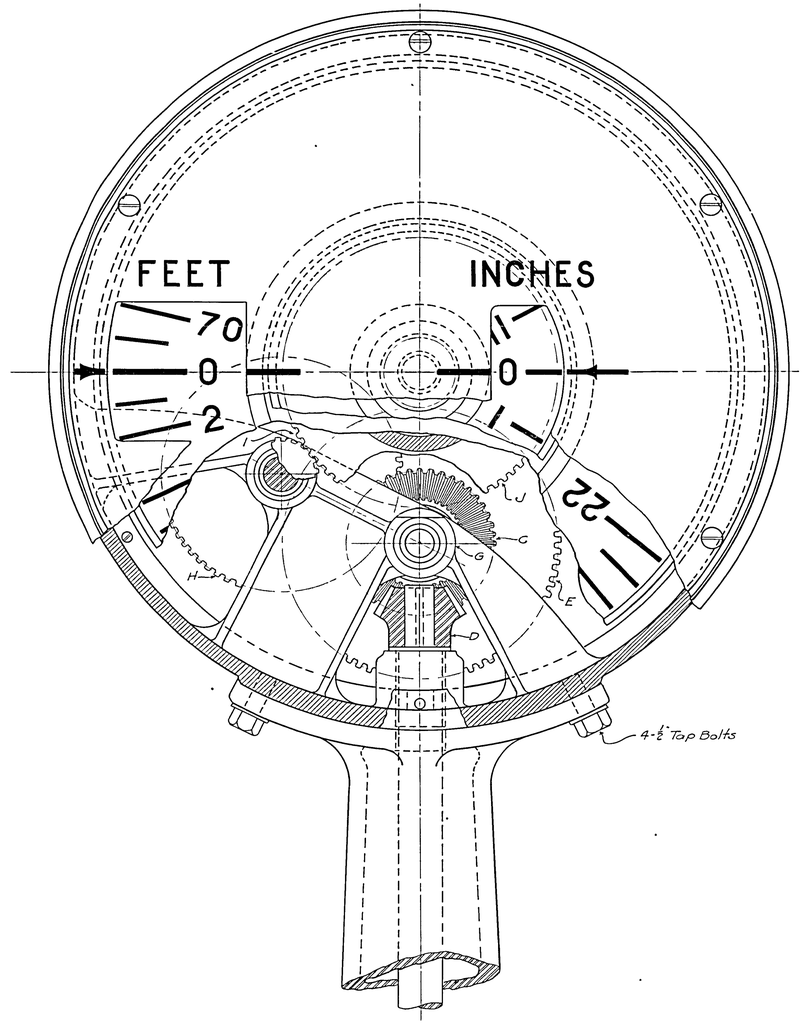
CONTRACT V 718.
Indicator for
Rail Locks.
For 162'-0" Thru Span.
Location Over St. Francis River, Marianna, Ark.
Owner Missouri Pacific Ry. Co.
Virginia Bridge and Iron Co
Roanoke, Va.
To be fabricated at the Memphis plant
Made by E.R. Traced by E.R.
In charge of R. Dout Checked by O.H.C.
Revised
Scale 12 In. = 1 Ft. Sheet No. 3 of 6 Sheets

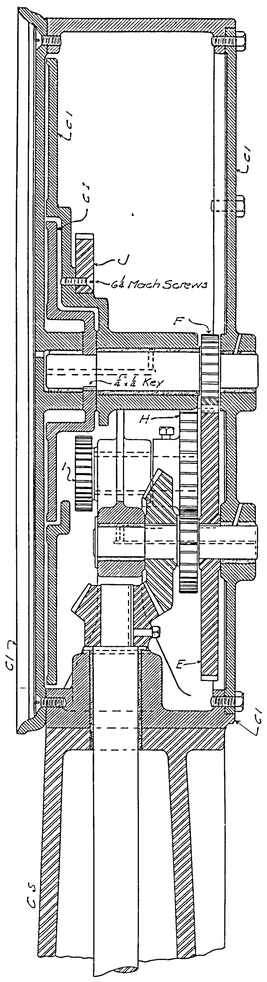
File No. D3A-1.95-82

File No 162-B322.12-03



MAKE 1 INDICATOR AS SHOWN





	Mark	Material	Pitch Dia	O.S. Dia	No Teeth	Cir Pitch	Face	Dia Bore	Keyway	Remarks
Gear	A	Steel Cast	12.7324"	12.8238"	80	½"	1⅝"	5⅞"	½" × 3/16"	Bevel wheel
Pinion	B	Steel Forg	3.8197"	4.1245"	24	½"	1⅝"	1"	¼" × ⅛"	" "
Gear	G	Steel Forg	5.2720	5.3568"	53	5/16"	1"	1"	¼" × ⅛"	
Pinion	D	Steel Forg	2.4867"	2.6668"	25	5/16"	1"	1"	¼" × ⅛"	
Gear	E	Steel Cast	7.9578"	8.1567"	80	5/16"	½"	1"	¼" × ⅛"	
Pinion	F	Steel Forg	1.9894"	2.1884"	20	5/16"	½"			Forged on Shaft
Pinion	G	Steel Forg	1.9894"	2.1884"	20	5/16"	½"			Forged on Shaft
Gear	H	Steel Cast	7.9578"	8.1567"	80	5/16"	½"	1"	¼" × ⅛"	
Pinion	I	Steel Forg	1.9894"	2.1884"	20	5/16"	½"			Forged on Shaft
Gear	J	Steel Cast	8.9525"	9.1514"	90	5/16"	½"	4½"		Forced on Disc

GENERAL NOTES

Background of Dials to be painted White
Graduations and Numbers to be painted Black
Graduations and Numbers to be cast on Dial 1/16" high.
Gears to have 20° Involute Teeth and to be finished all over.
All Bearings and Contact Surfaces to be finished
All Bushings to be forced in
Letters and Arrows on face to be cast 1/16" high

GENERAL NOTES -

Material
Stress
Rivets
Holes
Inspection
Fin Pass
Erection
Paint Coats
Inspection

Approved by C. E. Smith
5-1-12 Bridge Engineer

PLATE NO. 718

Details of Mechanical Indicator

For Bridge over the St Francis River

Location Missouri Pacific Ry.

ROANOKE, VA.

To be fabricated at Co. Memphis

Made by Lewis Traced by

In charge of Ridout Checked by

Revised

Scale 3 & 6 in = 1 Ft. Sheet No. 4

FILE NO D3A-1.95-83

File A6762-8222.12.36

HALF SECTION AT "A."

HALF TOP PLAN.

Drill for $\frac{7}{8}$" turned bolts

Drill for $\frac{7}{8}$" turned bolts to match M7-11

Symm abt ℄ except as noted

This conn on this side of ℄ only

4- oz Grease Cup

3 oz Grease Cup

4 oz grease cup

Drill for 1" turned bolts

Fin

Drill for $\frac{7}{8}$" turned bolts

Conns for Brake Bracket on this side of ℄ only

Symm. about this line except as shown

Drill for $\frac{7}{8}$" turned bolts with Bracket in place (M7-6) near side only

Hole for side shown dotted

Top of Steel

Chip oil grooves in all bearings

Make 1 Gear Frame as shown Mark M5-1
Material - Cast Steel

Section B-B

Half Section C-C

Half Section D-D

Note: Holes for oil cup connections are to be drilled $\frac{3}{8}$"ϕ in steel and tapped for $\frac{3}{8}$"ϕ pipe in bronze

2 hex nuts $\frac{3}{4}$"-tap

16 turned bolts $\frac{7}{8}$"ϕ 3½" for M7-6 & M7-11 to M5-1
8 " " 7½" " 3½" shaft bearing
16 " " 6½" " 4" " "

2 hex nuts $\frac{3}{8}$"-tap

16 1'-11" for 5½" shaft bearing

Make 2 Gears as shown Mark M5-2
94 Teeth, 1½ Pitch, 5" Face, 44.882 PD, Cast Steel

Make 2 Pinions as shown Mark M5-3
19 Teeth, 1½ Pitch 6½" Face, 9.072 PD, Steel Forging

Finish entire surface of jaws to match M8-5

Make 2 Gears as shown Mark M5-4
104 Teeth, 1" Pitch, 3" Face, 33.104 PD, Cast Steel

Make 1 Pinion as shown Mark M5-5
21 Teeth, 1" Pitch, 4" Face, 6.684 PD, Steel Forging

Make 2 Mitre Gears as shown Mark M5-8
40 Teeth 1 Pitch 3" Face 9.549 PD Steel Forging

Make 2 Gears as shown Mark M5-6
57 Teeth 1½ Pitch 4" Face 27.215 PD Cast Steel

Make 2 Pinions as shown Mark M5-7
19 Teeth, 1½ Pitch, 4" Face, 9.072 PD Steel Forging

Bushings to be driving fit in M5-6

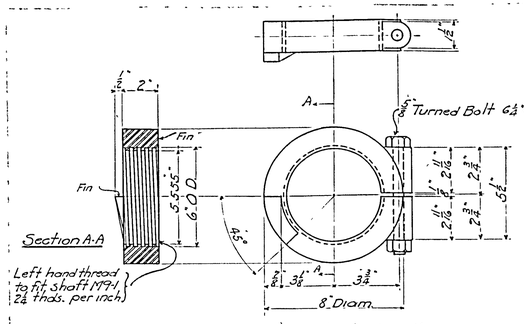
Approved by C. C. Smith.
5-1-11 Bridge Engineer

GENERAL NOTES - See drawing #1

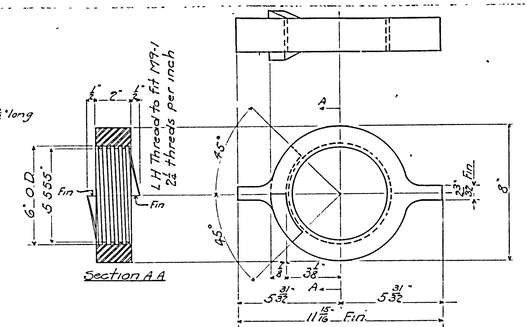
No. 718
Gears and Frame
162 ft. Lift Span
Location St. Francis River Bridge
Owner Missouri Pacific Ry
Missouri Iron Co.
Traced by Lewis
Checked by Ridout
Scale 1" = 1'

FILE No. D3A-1.95-84

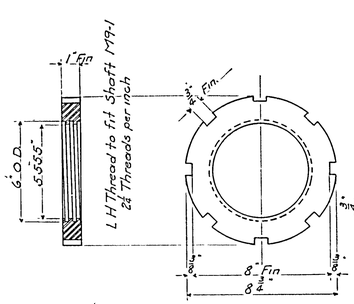
FILE No. 162-B222-12-35



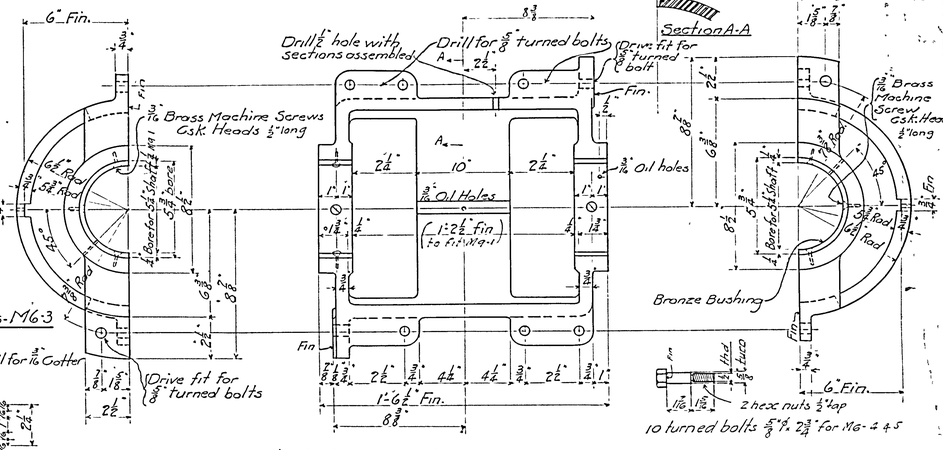
Make 2 Cast Steel Collars Mark M6-1



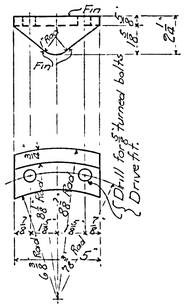
√ Make 1 Cast Steel Collar Mark M6-2



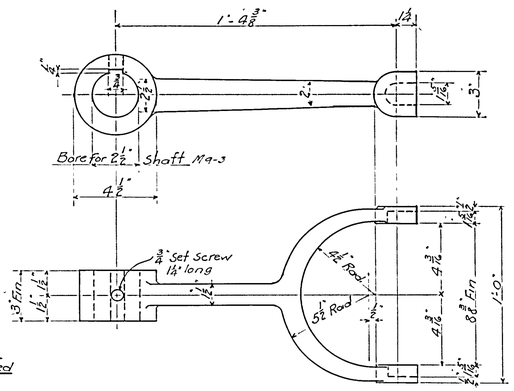
√ Make 2 Cast Steel Lock Nuts-M6-3



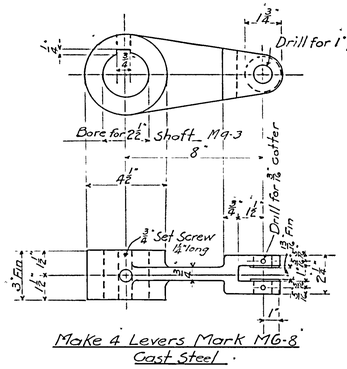
√ Make 1 Cast Steel Hood Section as shown Mark M6-4 } Finish to fit
" 1 " " opp hand M6-5 }



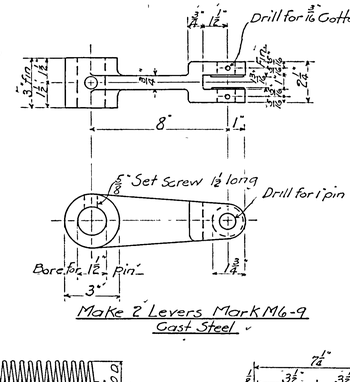
Make 2 Cams Mark M6-6
Steel forging-Case Hardened



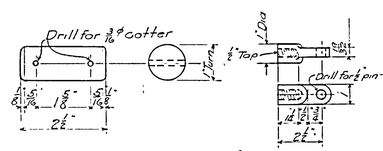
Make 2 Clutch Levers, Mark M6-7
Cast Steel



Make 4 Levers Mark M6-8
Cast Steel

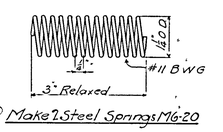


Make 2 Levers Mark M6-9
Cast Steel

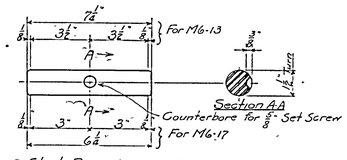


Make 6 Pins Mark M6-10 { 4 for M6-8, 2 for M6-9
Steel

Make 2 Links - Mark M6-11
Steel Bar-Case-Hardened

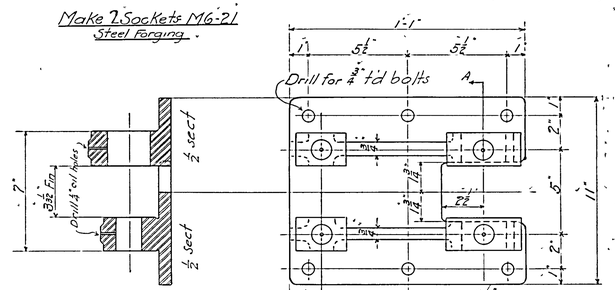


① Make 2 Steel Springs M6-20

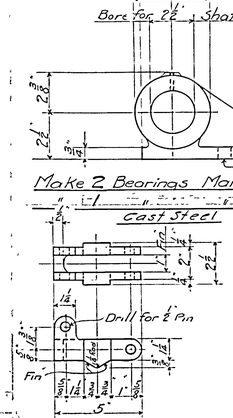


Make 2 Steel Pins M6-13 for M6-12
" 1 " " M6-17 " M6-25

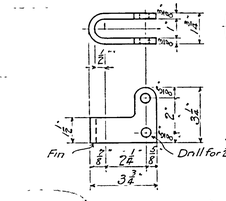
Make 2 Sockets M6-21
Steel Forging



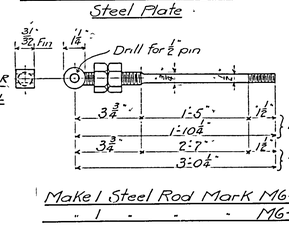
Make 2 Brackets Mark M6-12
Cast Steel



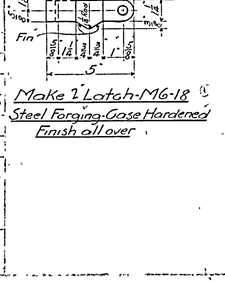
Make 2 Bearings Mark M6-14 R
" 1 " " M6-14 L
Cast Steel



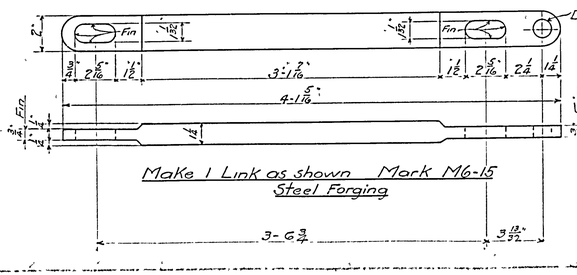
Make 2 Brackets-M6-19
Steel Plate



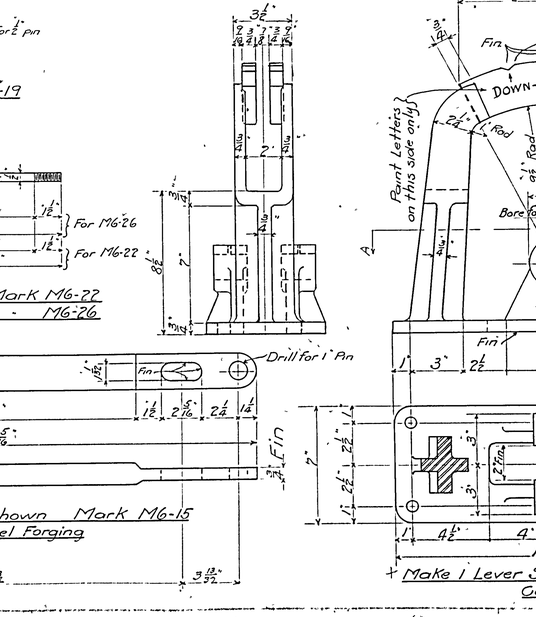
Make 1 Steel Rod Mark M6-22
" 1 " " M6-26



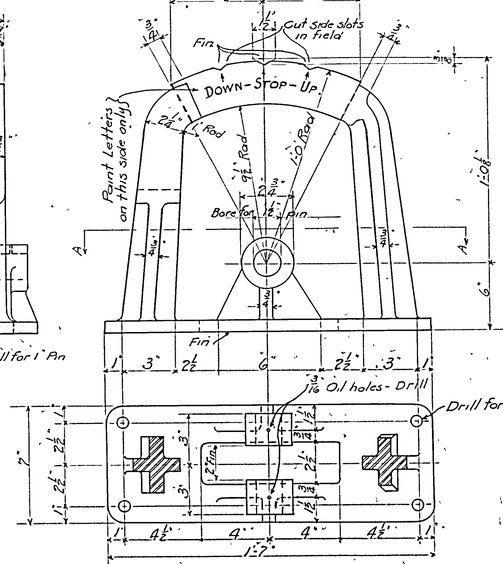
Make 2 Latch-M6-18 ©
Steel Forging-Case Hardened
Finish all over



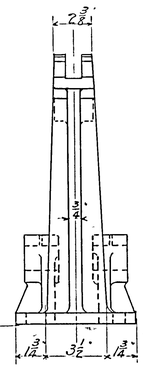
Make 1 Link as shown Mark M6-15
Steel Forging

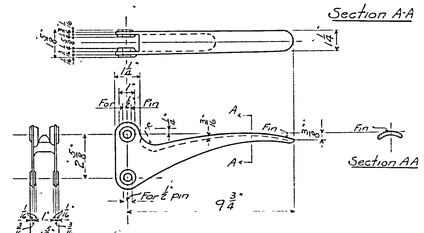


Make 1 Cast Iron Counter Weight Mark M6-23

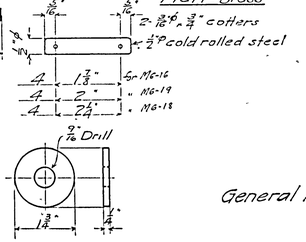


+ Make 1 Lever Stand Mark M6-25
Cast Steel





① Make 2 Handles Mark M6-16
Mat'l - Brass



① Make 2 Steel ft. Washers M6-24

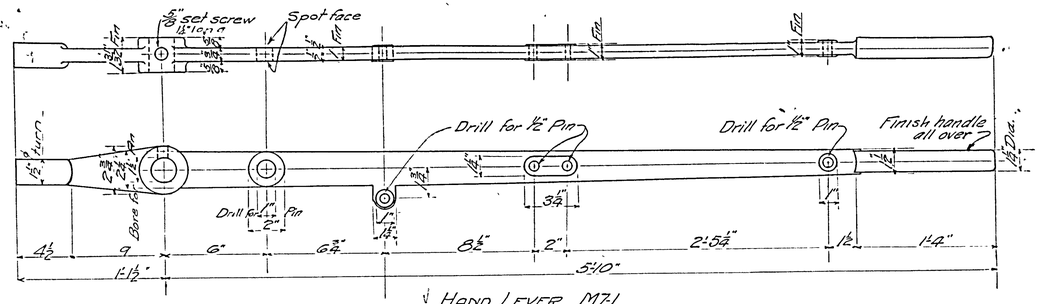
General Notes: see dwg # 1

Approved by: C. E. Smith
5-1-12 Bridge Engineer.

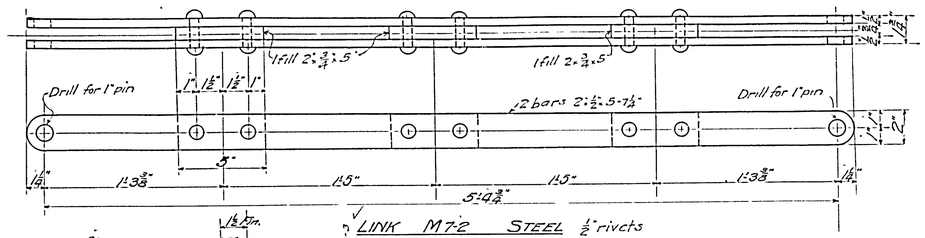
718
Clutch Shifting Apparatus
162 ft. Lift Span
Location St. Francis River Bridge
Ry. Missouri Pacific Ry.
To be built at Memphis
Made by Lewis Traced by
In charge Ridout Checked by
Recommended
Scale 3" = 1'-0"

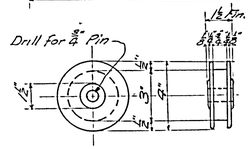
File No. D3A-1.95-85

~~File No. 162-B32-12-36~~

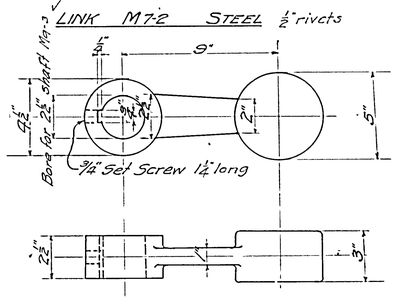


√ HAND LEVER M7-1
CAST STEEL

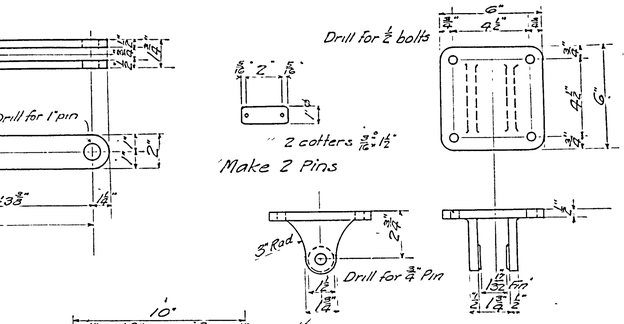


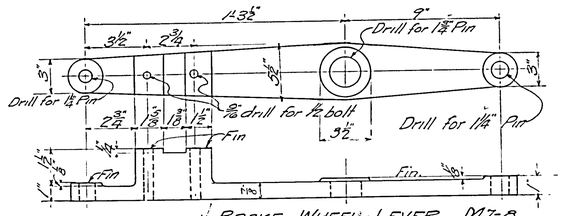


√ SHEAVE M7-4
CAST IRON

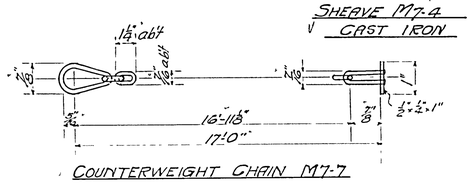


√ WEIGHT M7-5
CAST IRON

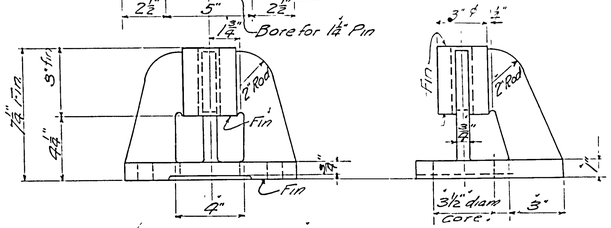




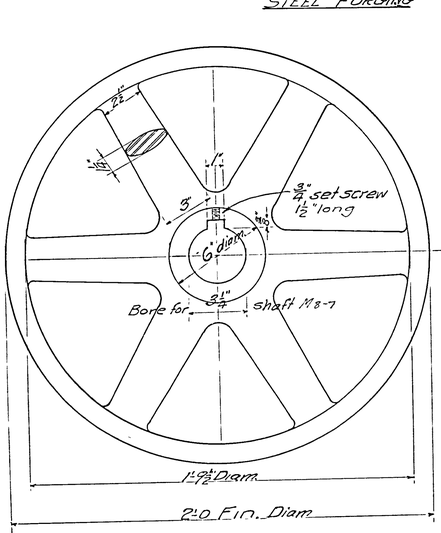
√ BRAKE WHEEL LEVER M7-8
STEEL FORGING



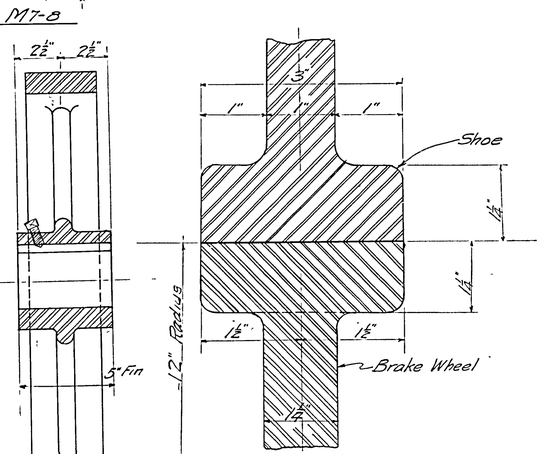
COUNTERWEIGHT CHAIN M7-7



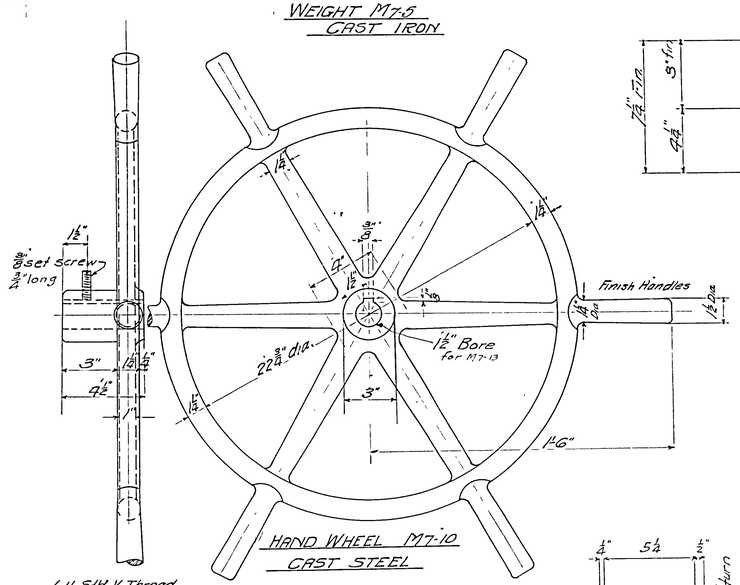
√ BRACKET M7-6
CAST STEEL



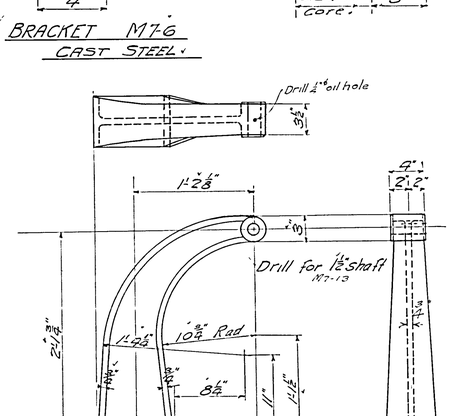
√ BRAKE WHEEL M7-9
CAST STEEL



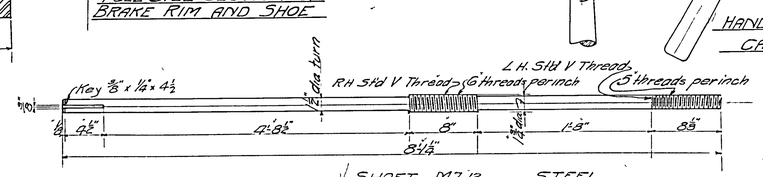
FULL SIZE SECTION OF
BRAKE RIM AND SHOE



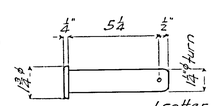
HAND WHEEL M7-10
CAST STEEL

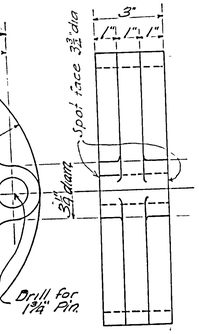


BRACKET M7-11
CAST STEEL

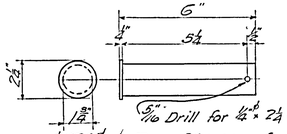


√ SHAFT M7-13 STEEL

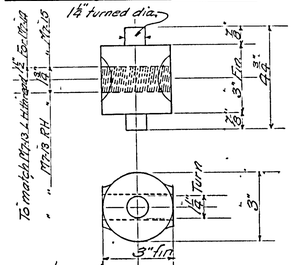




√ BRAKE SHOE M7-12
CAST STEEL



√ PIN M7-16 - for M7-12
Steel.



√ BLOCK M7-14
√ BLOCK M7-15
CAST STEEL

MAKE 1 HAND LEVER	as shown	MARK M7-1
" 4 BRAKE WHEEL LEVERS	"	" M7-8
" 1 BRAKE WHEEL	as shown	" M7-9
" 2 BRAKE SHOES	"	" M7-12
" 1 LINK	"	" M7-2
" 2 SHEAVES	"	" M7-4
" 2 WEIGHTS	"	" M7-5
" 1 COUNTERWEIGHT CHAIN	"	" M7-7
" 2 BRACKETS	"	" M7-3
" 2 "	"	" M7-6
" 1 HAND WHEEL	"	" M7-10
" 1 BRACKET	"	" M7-11
" 1 SHAFT	"	" M7-13
" 1 BLOCK	"	" M7-14
" 1 "	"	" M7-15
" 2 PINS	"	" M7-16

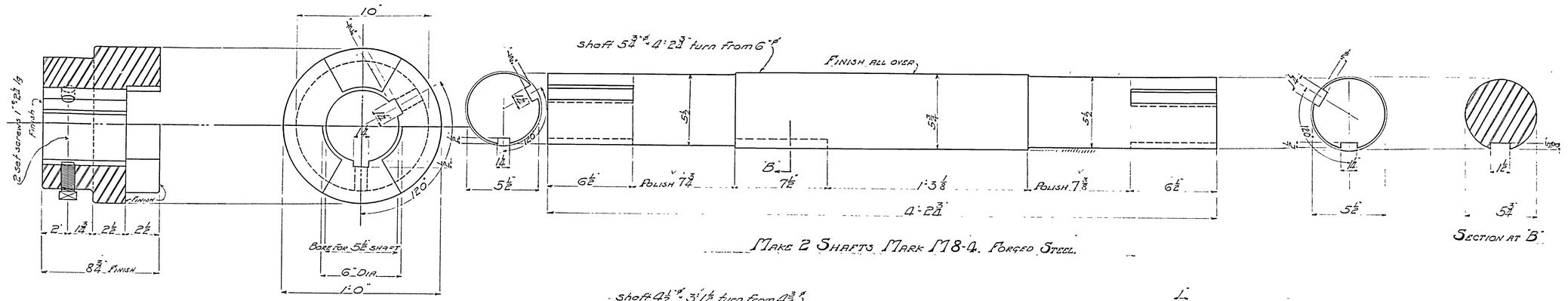
General Notes - See dwg #1

Approved by _____
5-1-14 Bridge Engineer

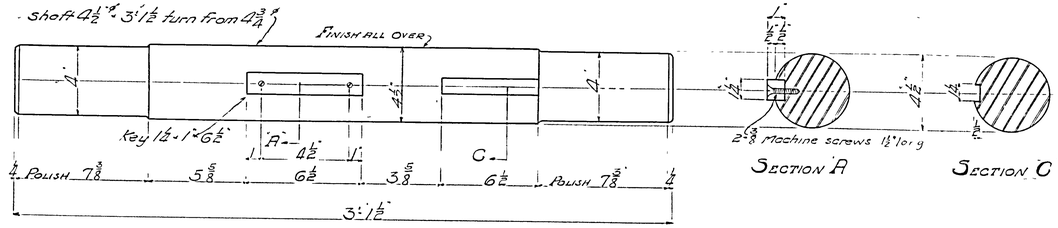
718
BRAKE MACHINERY -
162' LIFT SPAN
over St. Francis River
for THE MISSOURI PACIFIC Rwy Co
Memphis
Designed by WCD Traced by WCD
In Charge of ROUT Checked by JWR
Scale 3" Sheet 8 of 17 Sheets
FILE 16162-8322-12-32

FILE No. D3A-1.95-86

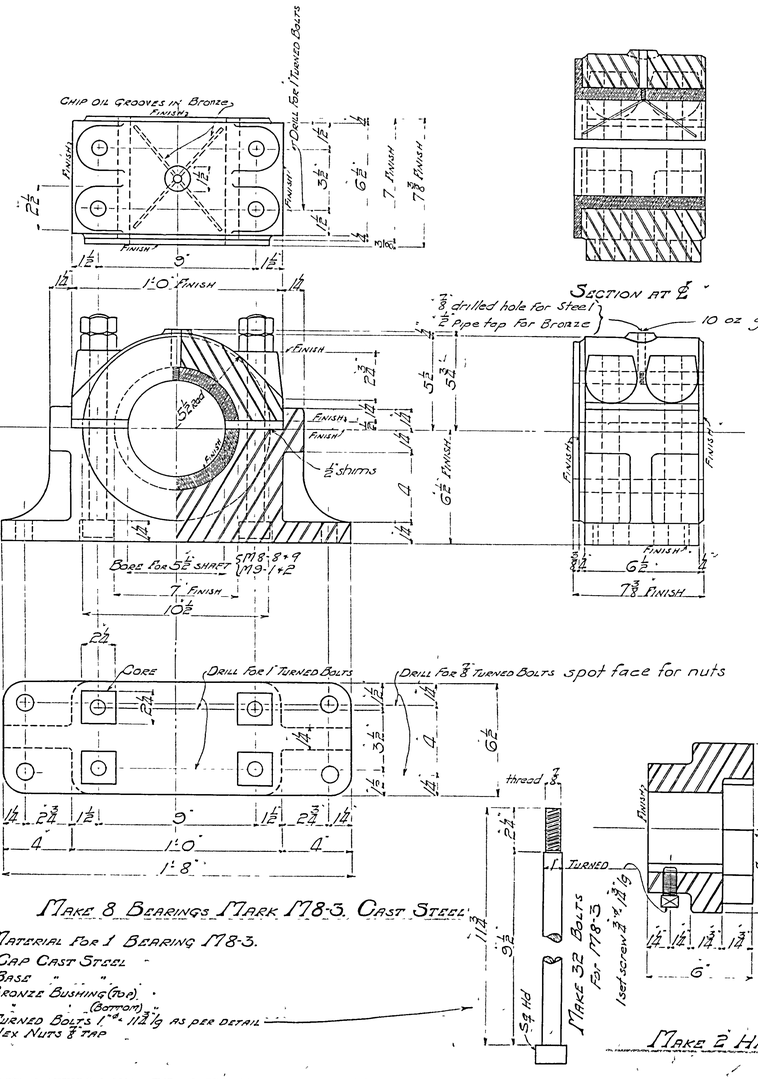
WCD 4-14
JWR 4-14
2.6430
1/2.3



Make 8 Half Clutches Mark M8-1 Cast Steel.
Finish in pairs

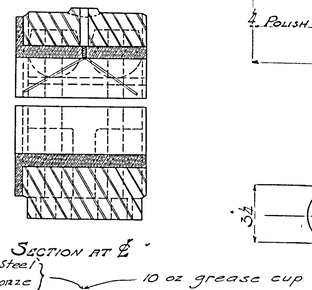


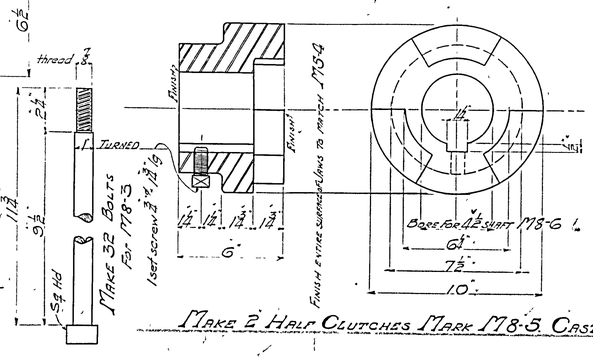
Make 2 Shafts Mark M8-6. Forged Steel.



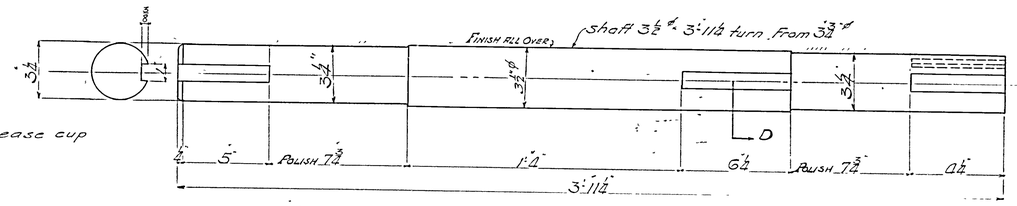
Make 8 Bearings Mark M8-3. Cast Steel

Material for 1 Bearing M8-3.
- 1 Cap Cast Steel
- 1 Base " "
- 1 Bronze Bushing (Top)
- 1 " (Bottom)
- 4 Turned Bolts 1" x 11½" lg as per detail
- 8 Hex Nuts ⅞ tap

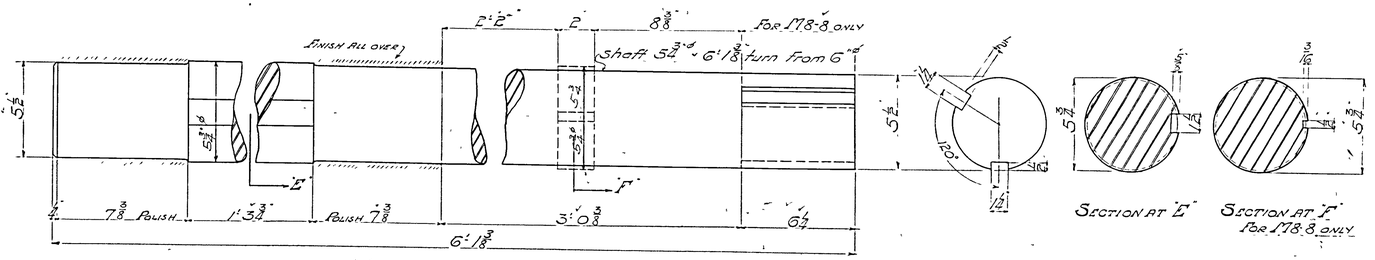




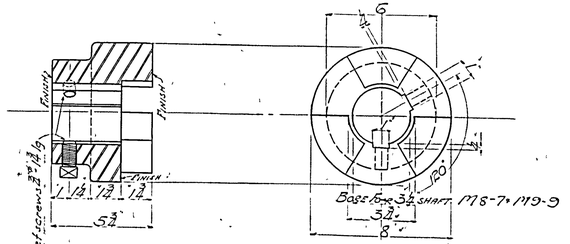
Make 2 Half Clutches Mark M8-5 Cast Steel.



Make 1 Shaft Mark M8-7 Machine Steel.



Make 1 Shaft Mark M8-8 Forged Steel.
Make 1 Shaft Mark M8-9 Forged Steel.



Make 2 Half Clutches Mark M8-2 Cast Steel.
Finish in pairs.

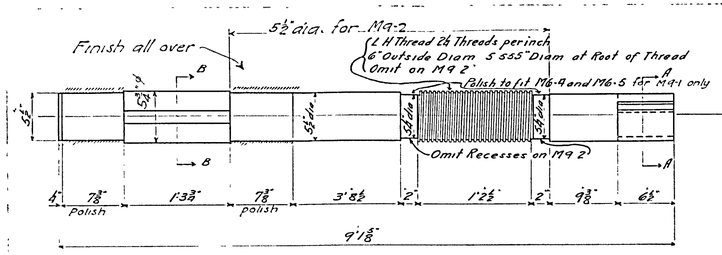
Approved by- C. E. Smith
5-1-17 Bridge Engineer

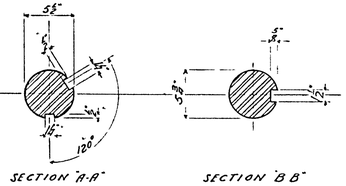
General Notes
See drawing #1

CONTRACT V 718
Details of Shafts & Bearings
For 162'0 Thro. Span
Location Over St Francis River (Marianna Ark.)
Owned by Missouri Pacific Ry Co
Virginia Bridge and Iron Co
Roanoke, Va.
To be fabricated at the Memphis Shop
Made by E. Ras Traced by E. Ras
In charge of Roout Checked by JWR
Revised

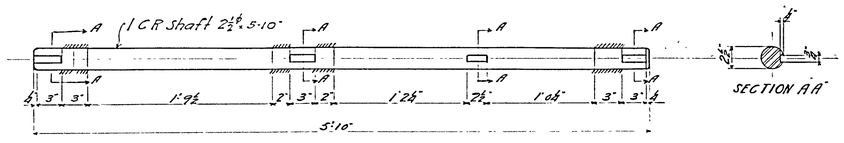
File No. D3A-1.95-87

File No. 162.8322.12-38

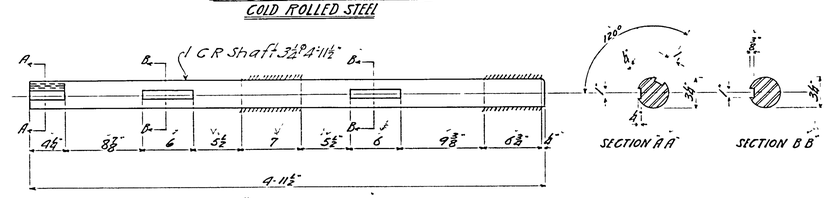




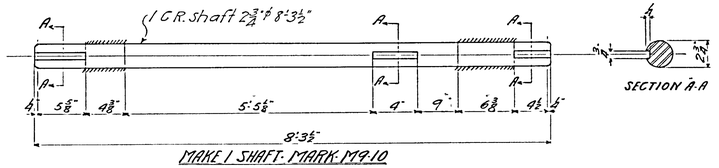
MAKE 1 SHAFT AS SHOWN MARK M9-1
" 1 " " " M9-2
} forged steel



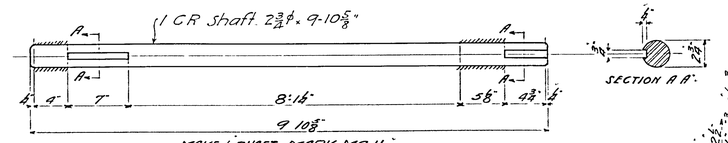
MAKE 2 SHAFTS MARK M9-3
COLD ROLLED STEEL



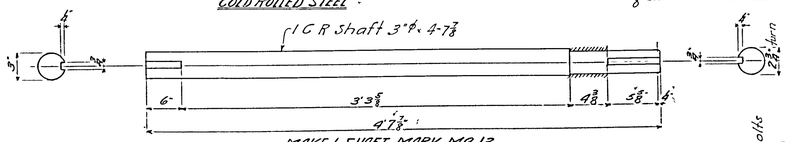
MAKE 1 SHAFT MARK M9-9
COLD ROLLED STEEL



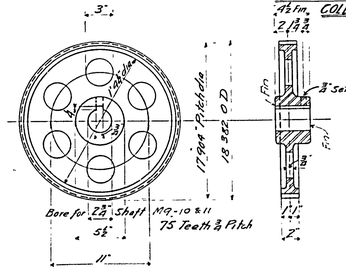
MAKE 1 SHAFT MARK M9-10
COLD ROLLED STEEL



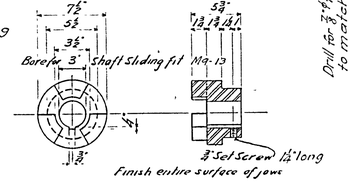
MAKE 1 SHAFT MARK M9-11
COLD ROLLED STEEL



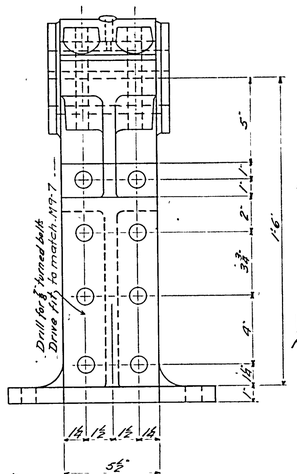
MAKE 1 SHAFT MARK M9-13
COLD ROLLED STEEL

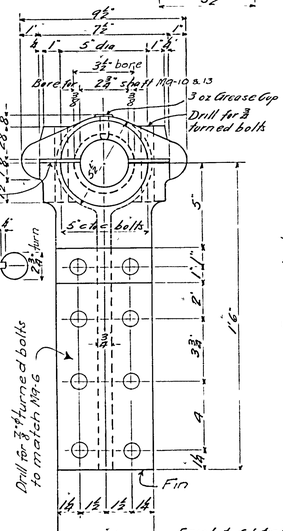


MAKE 2 GEARS MARK M9-4
CAST STEEL

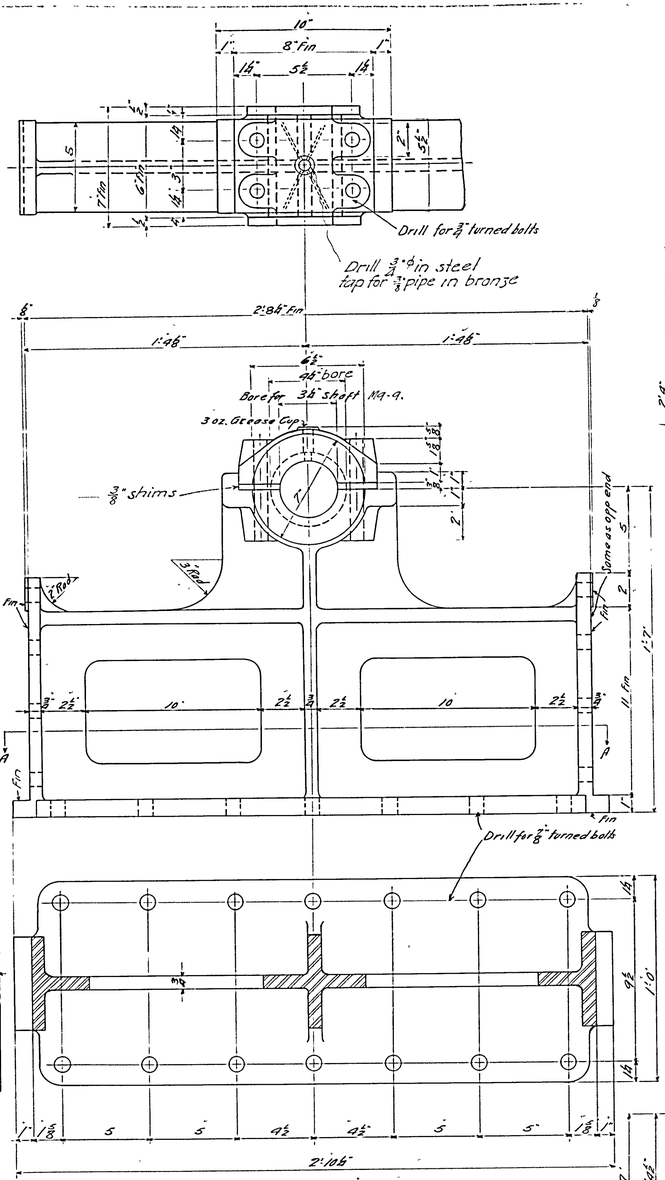


MAKE 1 HALF CLUTCH MARK M9-12
CAST STEEL
To be furnished by M'frs of Engine.





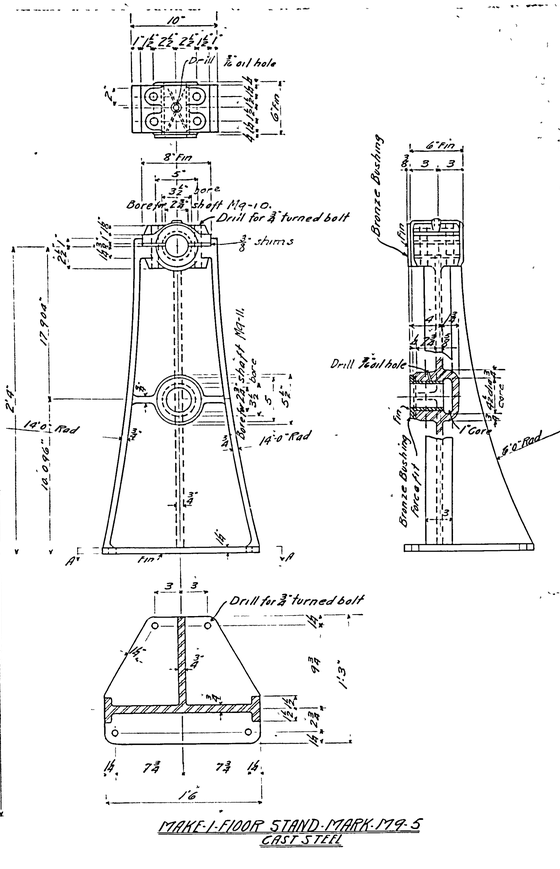
MAKE 2 BRACKETS MARK M9-7
CAST STEEL



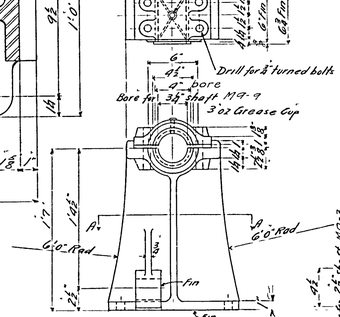
MAKE 1 SHAFT SUPPORT MARK M9-6
CAST STEEL

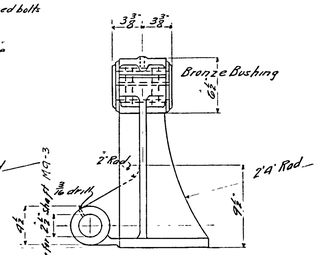
Approved by - C. A. Smith
5-1-11 Bridge Engineer

General Notes See dwg #1



MAKE 1 FLOOR STAND MARK M9-5
CAST STEEL



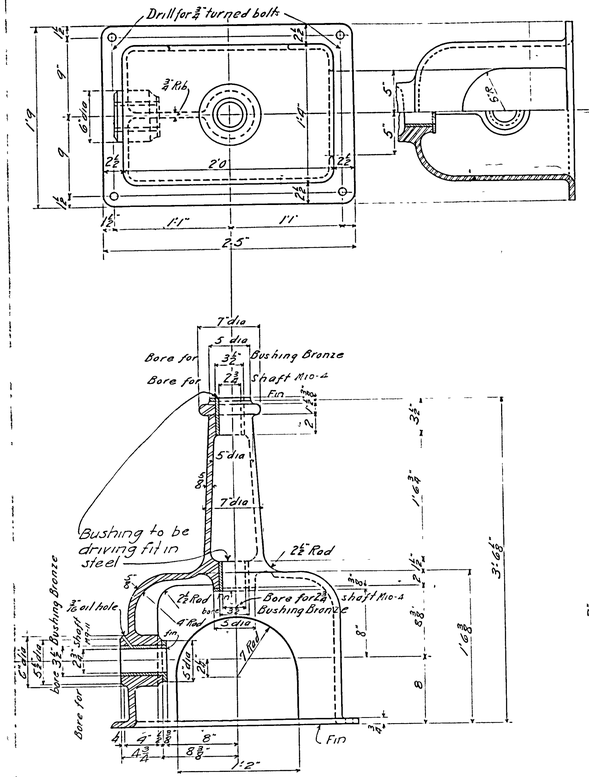


MAKE 1 BEARING MARK M9-8
CAST STEEL

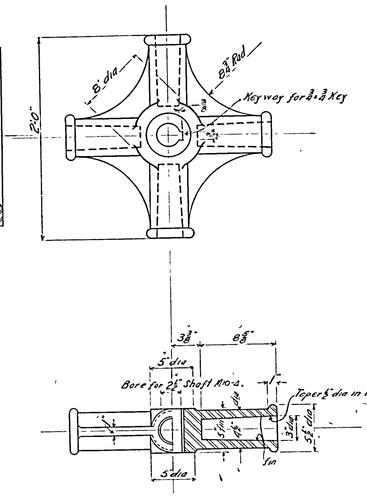
718
Bearings & Shafting for Clutch Shifter
162 Ft Lift Span.
over St. Francis River.
Missouri Pacific Ry

Memphis
Allen
Allen
Kidout
SWR

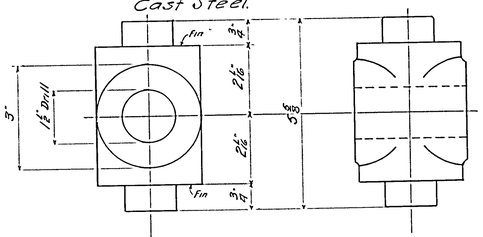
File No. D3A - 1.95 - 88
File No. 162-B2214-39

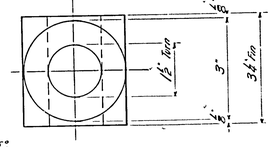


Make 1 Stand Mark M10-1
Cast Steel

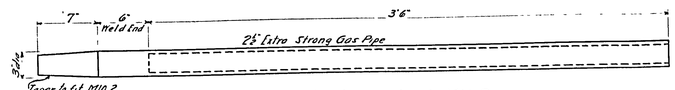


Make 1 Capstan Mark M10-2
Cast Steel

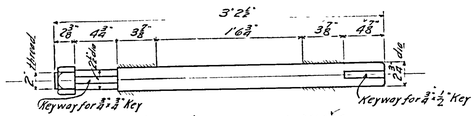




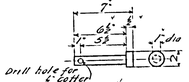
Make 8 Brackets Mark M10-12
Cast Steel



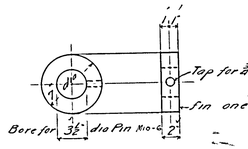
Make 4 Capstan Levers Mark M10-3
Extra Strong Gas Pipe



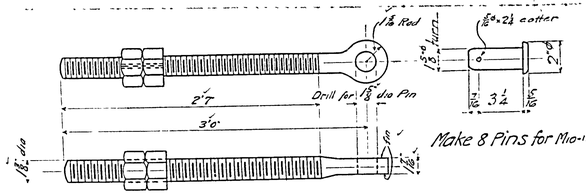
Make 1 Shaft Mark M10-4
Cold Rolled Steel



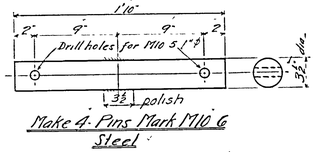
Make 8 Pins Mark M10-5
Steel



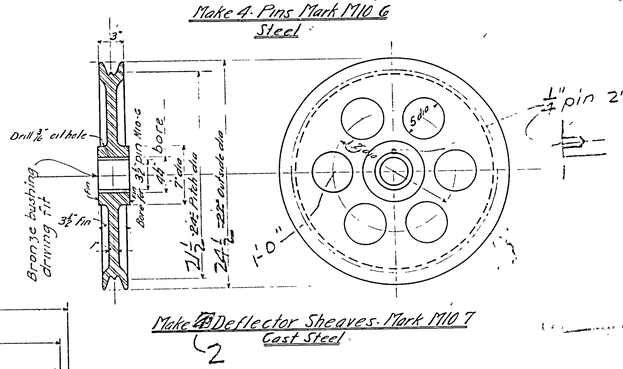
Make 8 Collars Mark M10-10
Steel



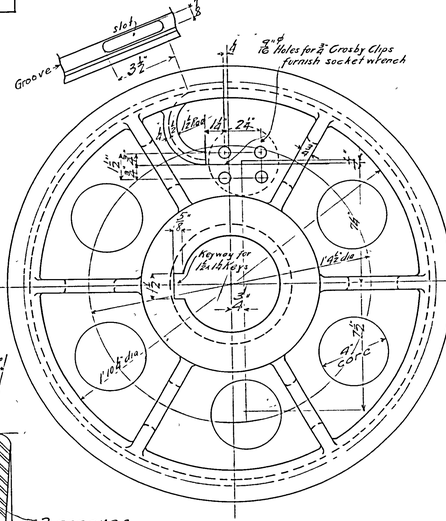
Make 8 Bars Mark M10-11
Steel

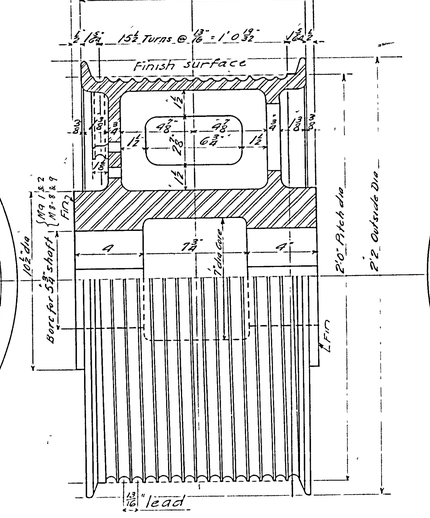


Make 4 Pins Mark M10-6
Steel

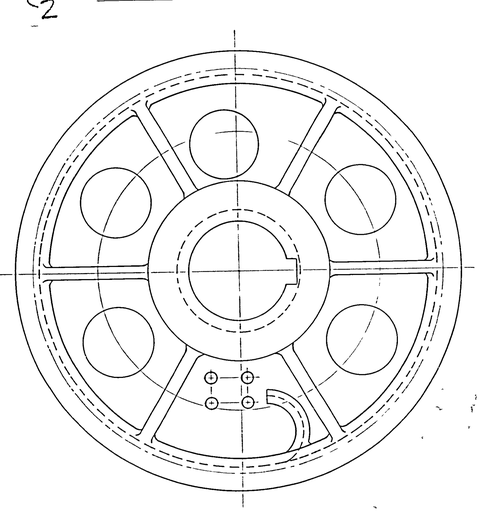


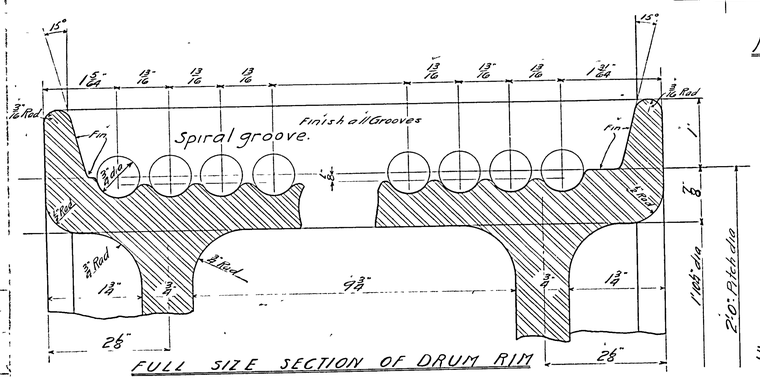
Make 2 Deflector Sheaves Mark M10-7
Cast Steel



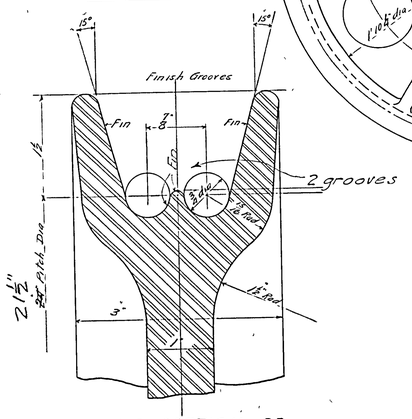


Make 2 Operating Drums As shown Mark M10-8
2 Opp hand M10-9
Cast Steel





FULL SIZE SECTION OF DRUM RIM
M10-8 & 9



FULL SIZE SECTION OF DEFLECTOR RIM
M10-7

Approved by C. E. Smith
5-1-12 Bridge Engineer.

General Notes - see dwg #1.

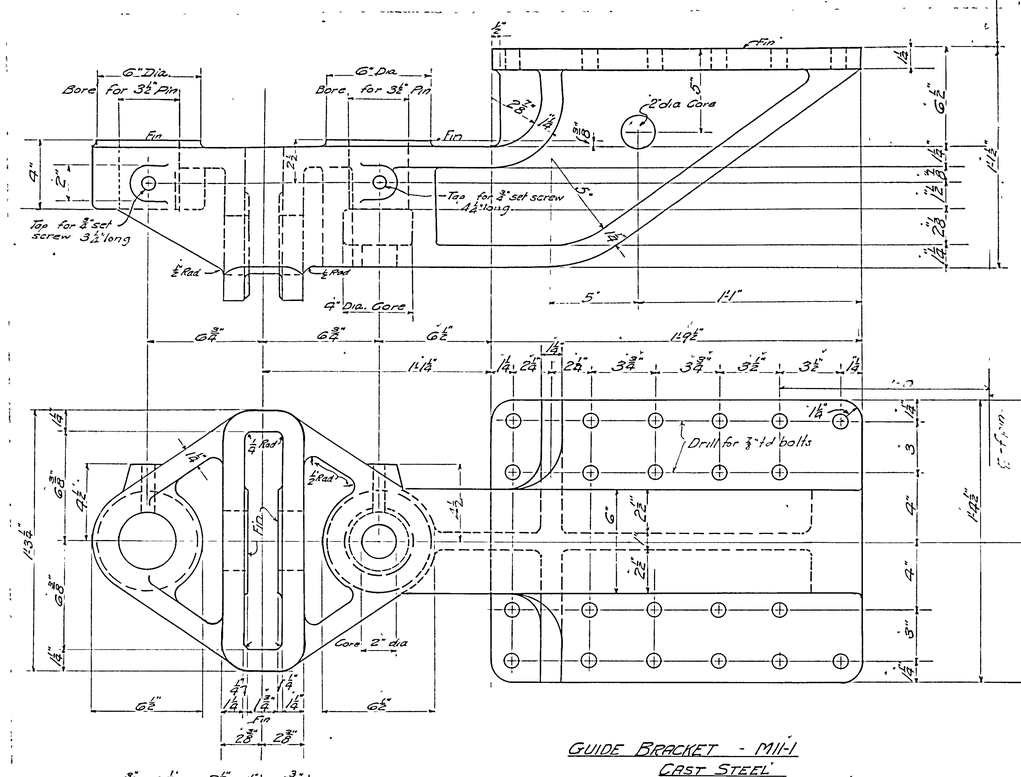
CONTRACT V-718.
Capstan and Drums
162 ft. Lift Span
Location over St. Francis River.
Owner The Missouri Pacific Ry
Engineers The Memphis
Allen
in charge of Widen
3
10

File No. 162-B322-12-40

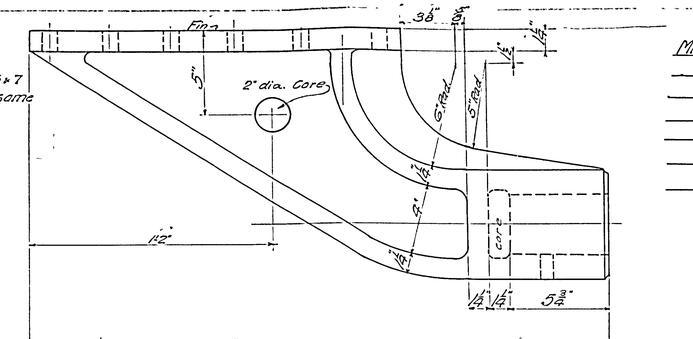
File No. D3A-1.95-89

Note:-
Holes for M11-1-2-3-4-6x7 are to be drilled to the same steel templet

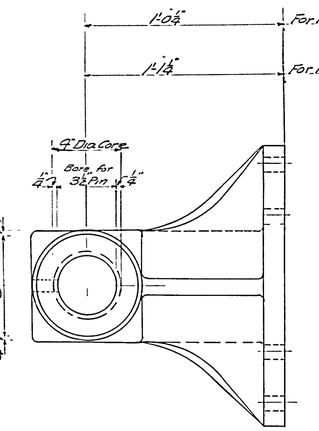
Make 1 Guide Bracket as shown	Mark	M11-1
" 1 "	Reverse	"	M11-2
" 4 Sockets	as shown	"	M11-5
" 2 Guide Brackets	"	"	M11-3
" 4 "	"	"	M11-4
" 2 Tongues	"	"	M11-6
" 2 "	"	"	M11-7

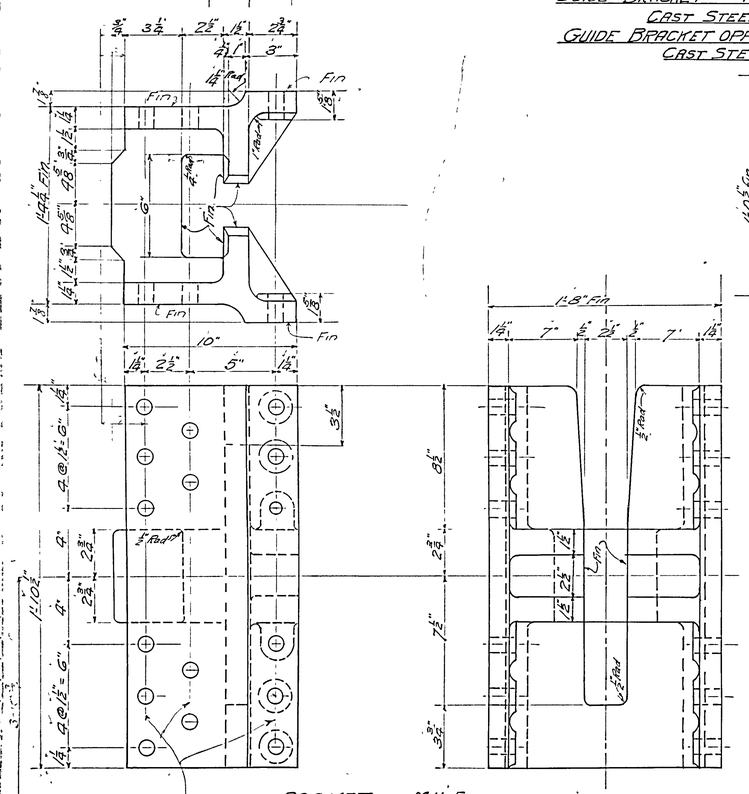


GUIDE BRACKET - M11-1
CAST STEEL
GUIDE BRACKET OPP HAND-M11-2
CAST STEEL

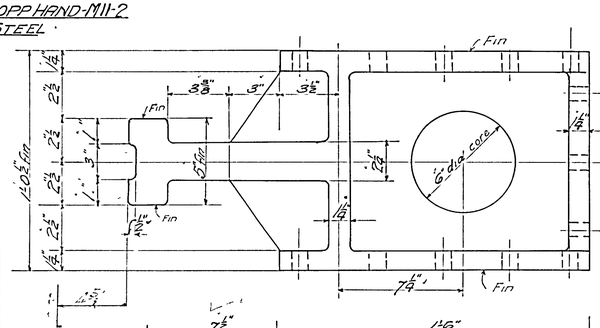


GUIDE BRACKET M11-3
CAST STEEL
GUIDE BRACKET M11-4
CAST STEEL

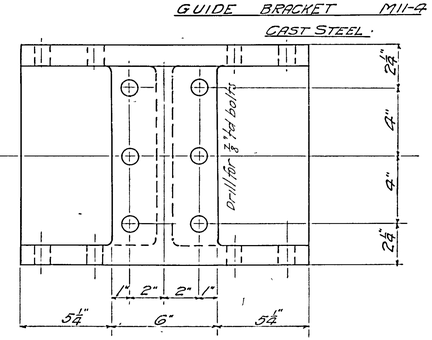




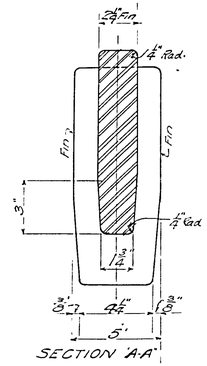
SOCKET M11-5
CAST STEEL



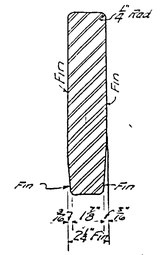
TONGUE M11-6
CAST STEEL
TONGUE M11-7
CAST STEEL



This view for M11-7 Parts not show same as for M11-6



SECTION 'A-A'



SECTION 'B-B'

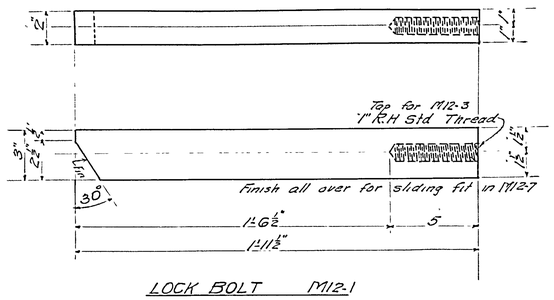
General Notes - see dwg #1.

Approved by C. E. Smith
5-1-12 Bridge Engineer

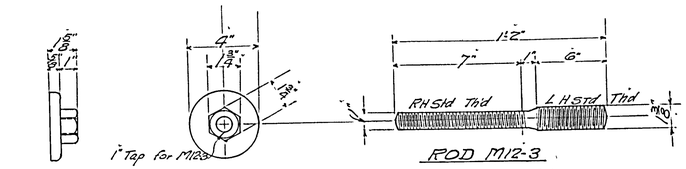
CONTRACT 718
Truss Guides & Tongues
For 162 Ft THRO. SPAN
Location over St Francis River
THE MISSOURI PACIFIC RWY CO
Memphis
W.C.D.
In charge of P. DUBOIS
3
17

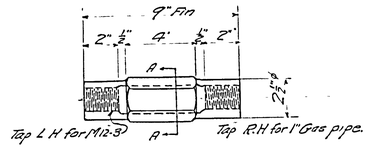
FILE No. D3A-1.95-90

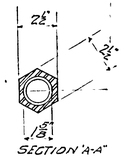
FILE No. 162-8222-D-41

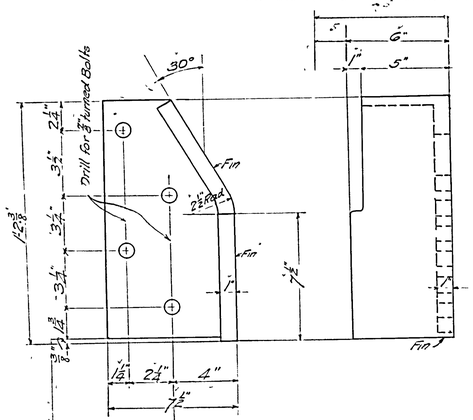


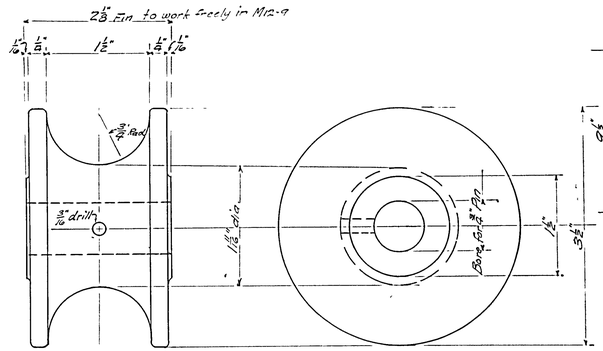
LOCK BOLT M12-1
MEDIUM STEEL

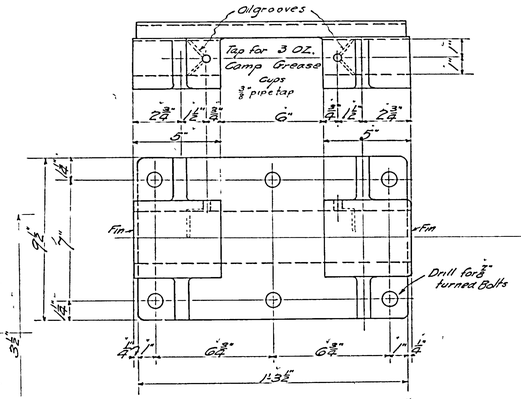


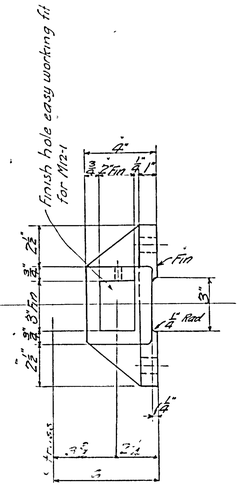


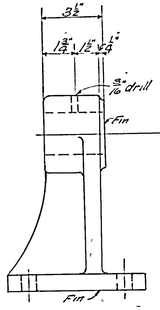


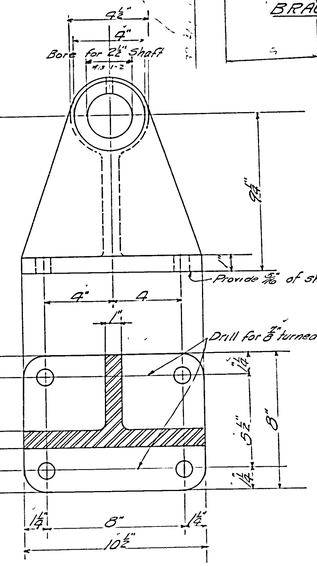


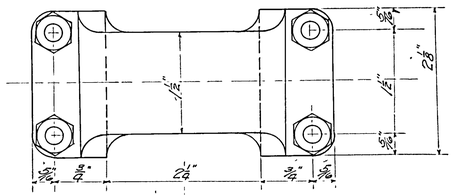


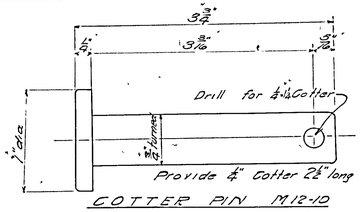


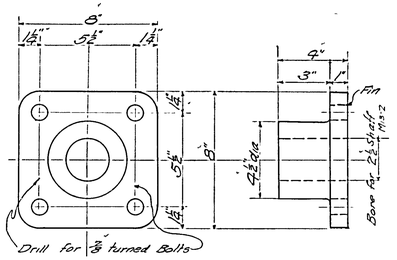




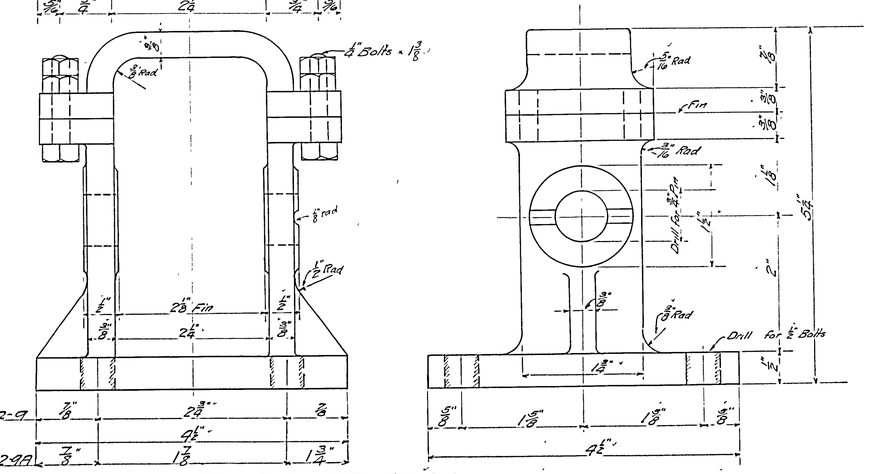


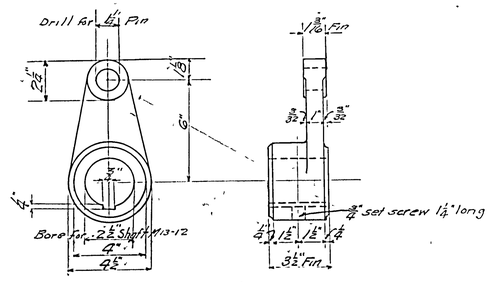


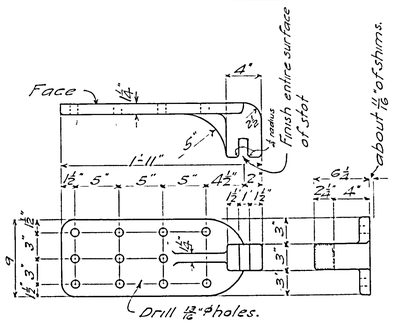




MAKE 4 LOCK BOLTS as shown	MARK M12/
" 4 LOCK NUTS " "	" M12-2
" 4 RODS " "	" M12-3
" 4 SLEEVE NUTS " "	" M12-4
" 2 BRACKETS " "	" M12-5
" 2 " REVERSE	" M12-6
" 4 BOLT SUPPORTS AS SHOWN	" M12-7
" 30 ROLLERS " "	" M12-8
" 26 ROLLER STANDS " "	" M12-9
" 32 COTTER PINS " "	" M12-10
" 2 BEARINGS " "	" M12-11
" 1 " " "	" M12-12
" 2 LEVERS " "	" M12-13
" 8 ROLLER STANDS "	" M12-9A







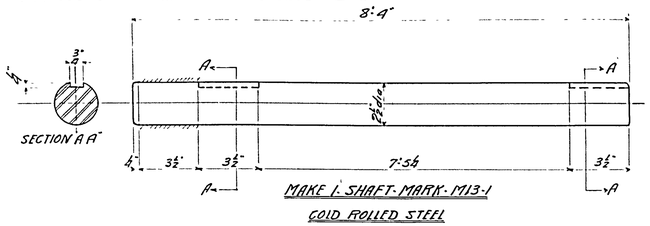
Make 8 Counterweight Guides M12-14.
Cast Steel
To be riveted to counterweight frame in the field.

For General notes see dwg #1.

Approved by C. E. Smith
5-1-12 Bridge Engineer

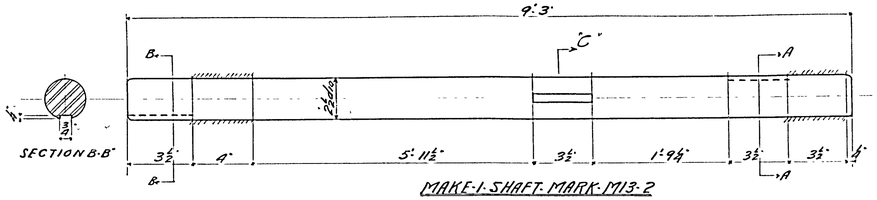
Details of Locking Machinery
For 162 Ft. THRU SPAN
Location over St. Francis River
THE Missouri Pacific Ry Co.
MEMPHIS, TENN.
Fabricated at the MEMPHIS SHOPS
Drawn by WCD Traced by WCD
Checked by RDOUT Checked by JWR 1912
Approved

FILE No. D3A-1.95-91 AFE No 162-B2212-12



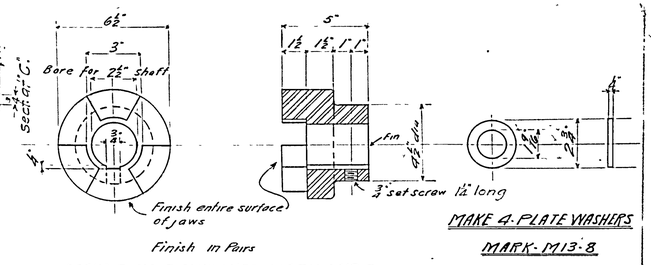
MAKE 1 SHAFT MARK M13-1

COLD ROLLED STEEL



MAKE 1 SHAFT MARK M13-2

COLD ROLLED STEEL

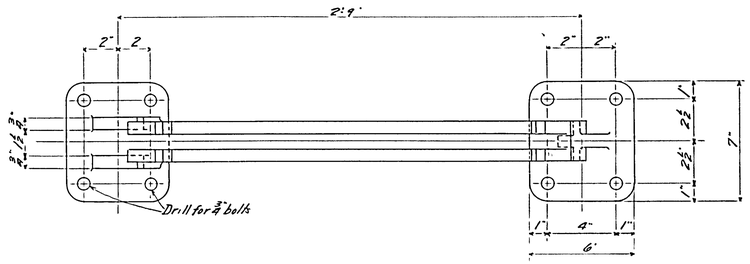


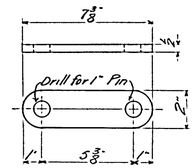
MAKE 2 HALF CLUTCHES MARK M13-3

CAST STEEL

MAKE 4 PLATE WASHERS

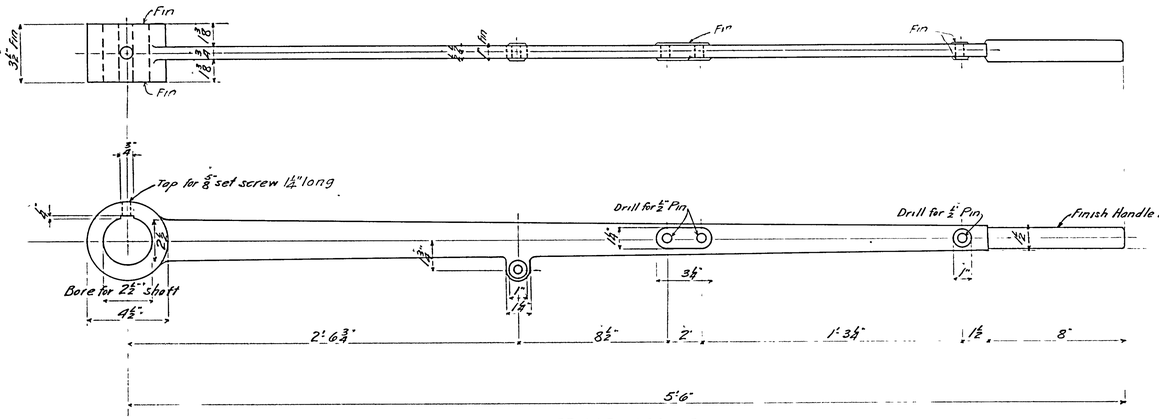
MARK M13-8





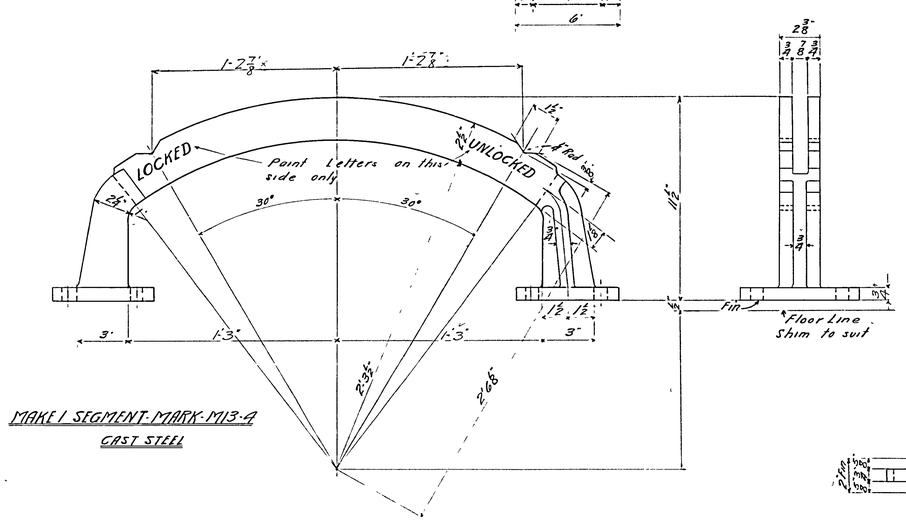
MAKE 4 LINKS MARK M13-14

STEEL PLATE



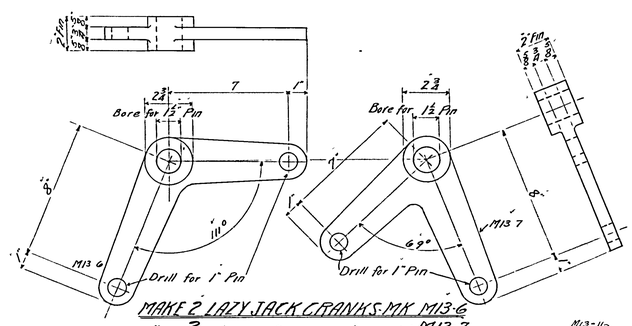
MAKE 1 LOCK HAND LEVER MARK M13-5

CAST STEEL



MAKE 1 SEGMENT MARK M13-4

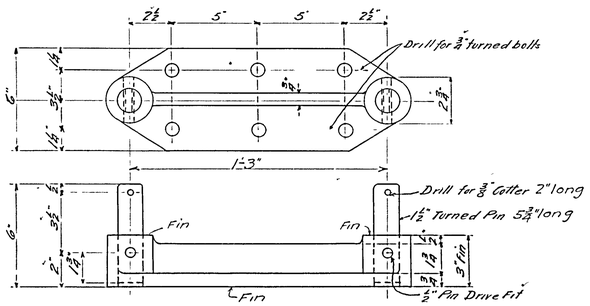
CAST STEEL



MAKE 2 LAZY JACK CRANKS MK M13-6

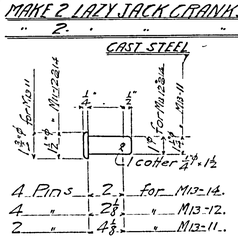
" 2 " " " " M13-7

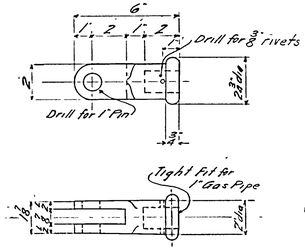
CAST STEEL



MAKE 2 LAZY JACK BASES MARK M13-9

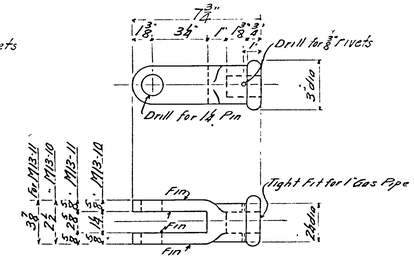
CAST STEEL





MAKE 4 CLEVISES MARK M13-12

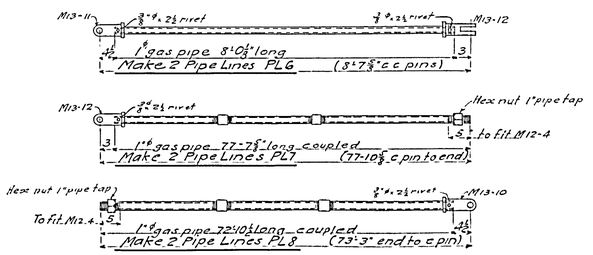
CAST IRON



MAKE 2 CLEVISES MARK M13-10

" 2 " " " M13-11

CAST IRON



General Notes:- see dwg #1

Approved by C. B. Smith

5-1-12 Bridge Engineer

CONTRACT V. 718.

Details Lock Operating Machinery

For 162 ft. Lift Span

Location Over St Francis River

Owner Missouri Pacific Ry. Co

Structure Bridge No. [illegible]

To be fabricated at the Memphis Shops

Made by Allen Traced by Allen

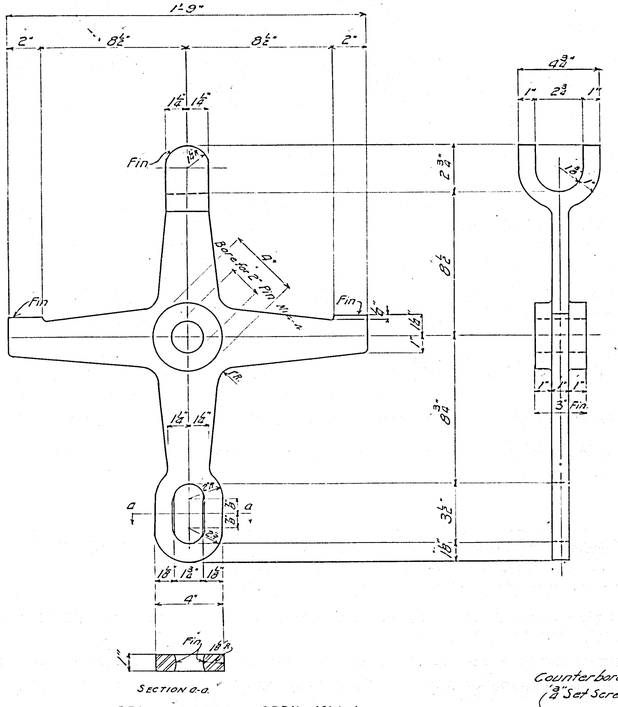
In charge of Ridout Checked by JWR. 7/27

Revised

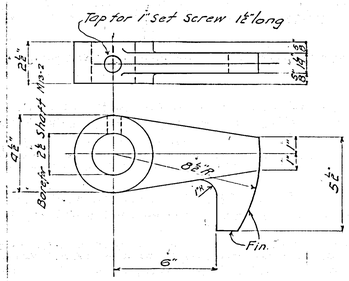
Scale 3" Drawing No. 13 Str. No. [illegible]

File No 162-B3A-1248 File No. 162-B3A-1248

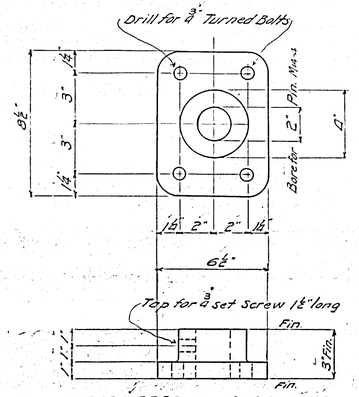
FILE No. D3A-1.95-92



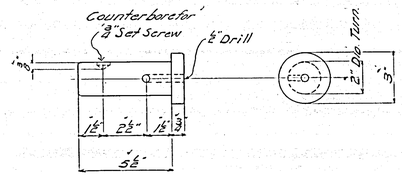
MAKE 1- CROSS MARK M14-1
CAST STEEL



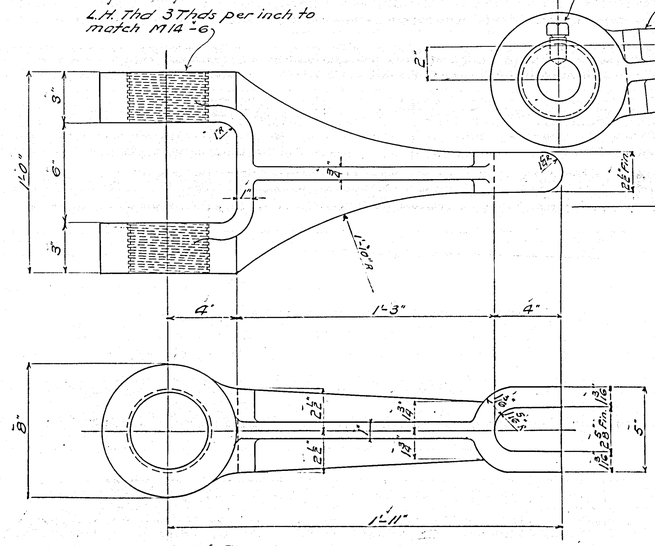
MAKE 2- LEVERS MARK M14-2
CAST STEEL



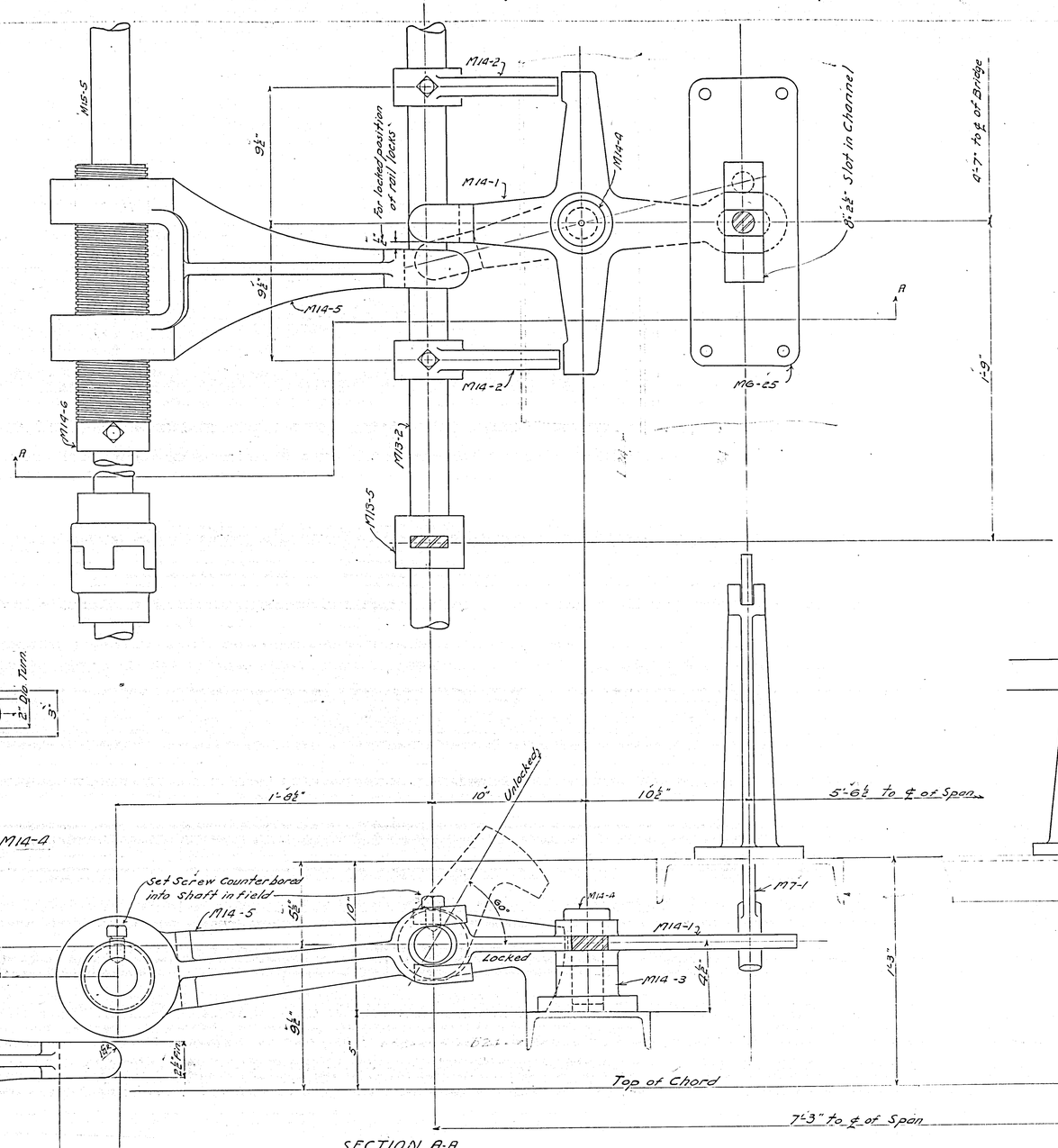
MAKE 1- BEARING MARK M14-3
CAST STEEL



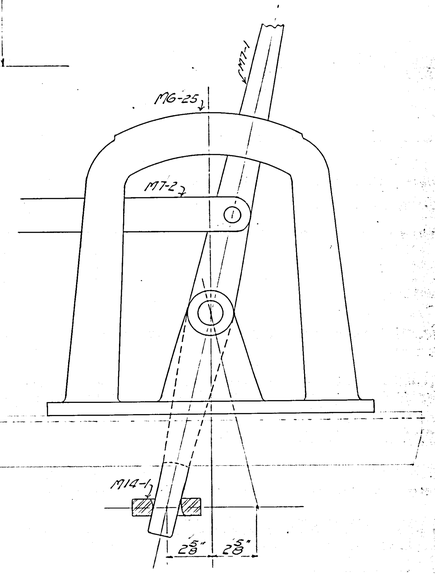
MAKE 1- TURNED PIN MARK M14-4

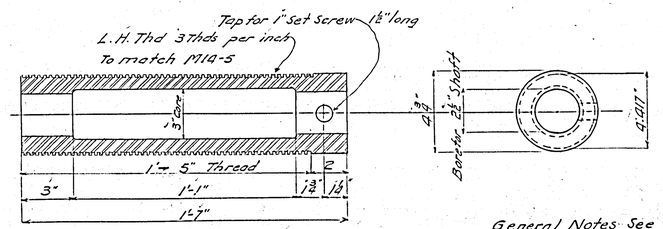


MAKE 1- LEVER MARK M14-5
CAST STEEL



SECTION A-A





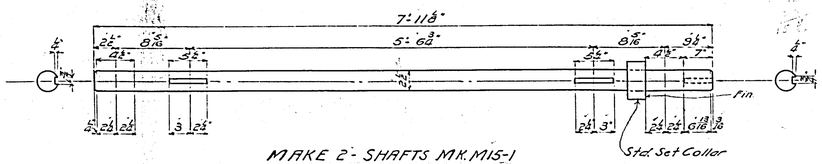
MAKE 1- SLEEVE MARK M14-6
Cast Steel

General Notes See Dwg #1

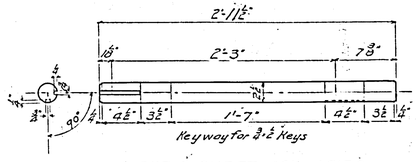
Approved by E. E. Smith
5-1-12 Bridge Engr.

CONTRACT V 718
Details of Interlocking Machinery
1-162' Lift Span
Location Over ST. FRANCIS RIVER
Owner MISSOURI PACIFIC
Virginia Bridge and Iron Co.
ROANOKE, VA.
To be submitted by Memphis
Made by Traced by H.P.
In charge of Ridout Checked by [illegible]
Revised
3 14

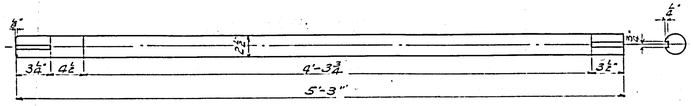
FILE No. D3A-1.95-93



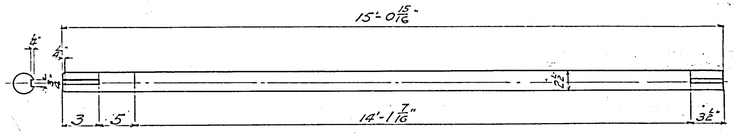
MAKE 2- SHAFTS MK. M15-1
Cold Rolled Steel



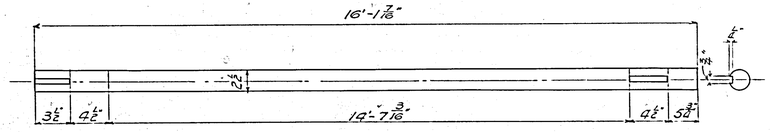
MAKE 1- SHAFT MK. M15-2
Cold Rolled Steel



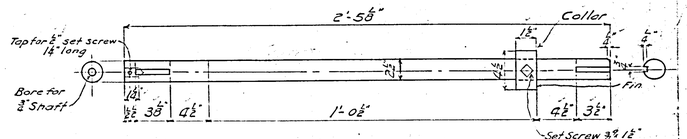
MAKE 1- SHAFT MK. M15-5
Cold Rolled Steel



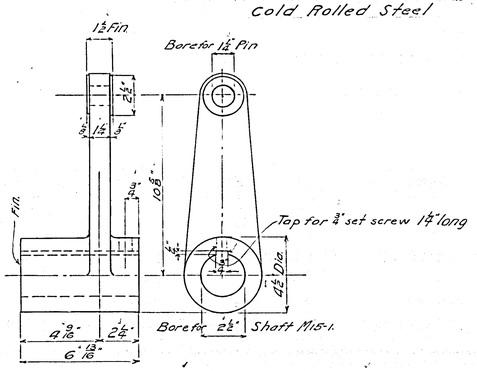
MAKE 1- SHAFT MARK M15-4
Cold Rolled Steel



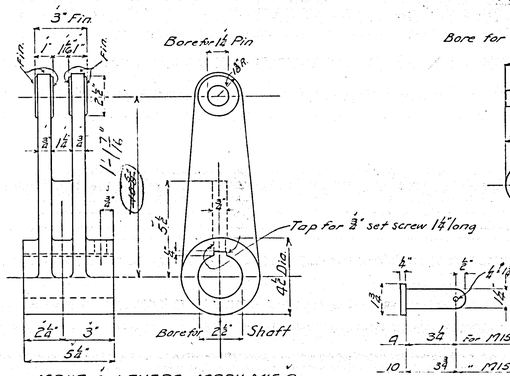
MAKE 1-SHAFT MARK M15-3
Cold Rolled Steel



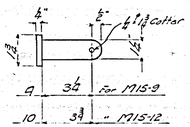
MAKE 1- SHAFT MARK M15-6 - C.R. Steel.

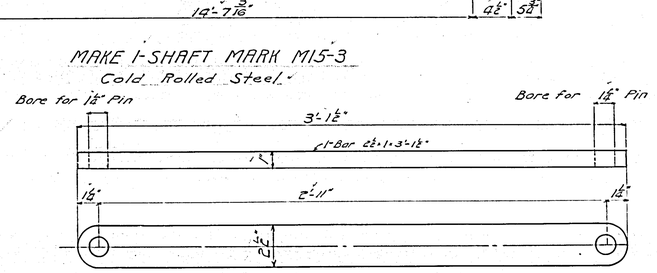


MAKE 2-LEVERS MARK M15-10
Steel Casting

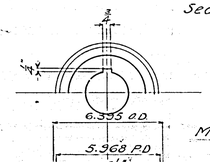


MAKE 4-LEVERS MARK M15-9
Steel Casting - Annealed

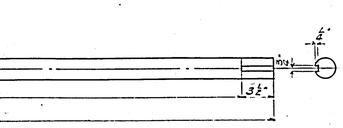




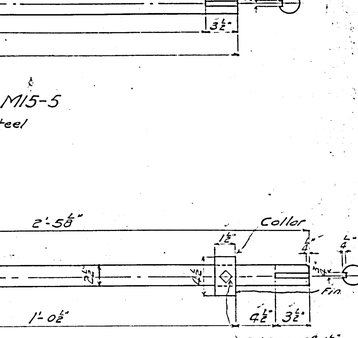
MAKE 4-LINKS MARK M15-8
STEEL

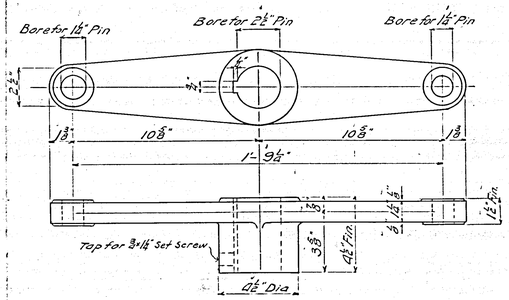


MAKE 2-PINIONS MARK M15-14
Steel Forging.
25 Teeth 3" C.P.
Finished all over

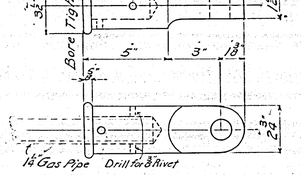


MAKE 2-SHAFTS MARK M15-17 C.R. Steel.

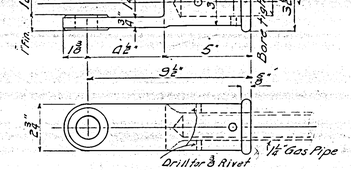




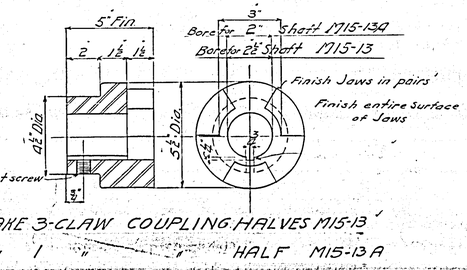
MAKE 3-LEVERS MARK M15-11
Steel Casting



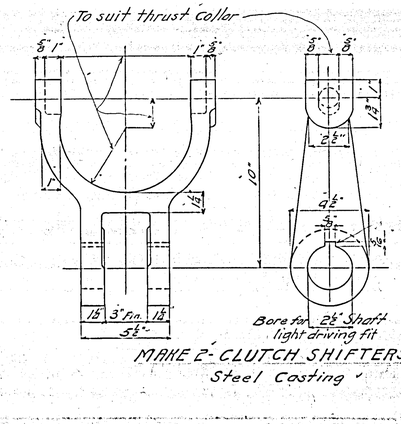
MAKE 2-LINKS MARK M15-19
Forged Steel



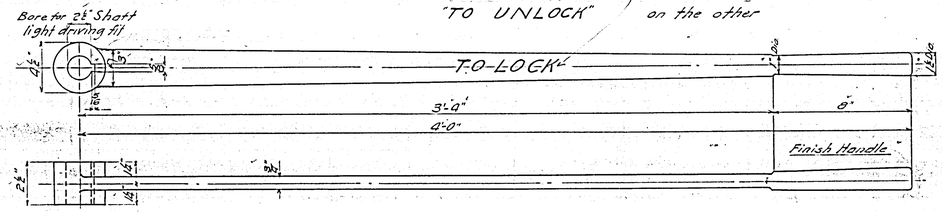
MAKE 10-CLEVISES MARK M15-12
Steel Casting



MAKE 3-CLAW COUPLING HALVES M15-13
" 1 " " HALF M15-13A



MAKE 2-CLUTCH SHIFTERS MARK M15-16
Steel Casting



MAKE 2-HAND LEVERS MARK M15-18
Forged Steel

MAKE 2-GEARS MARK M15-15
Steel Casting
50 Teeth 2" C.P.

NOTE:
Paint: "TO LOCK" thus) on one Lever
"TO UNLOCK" on the other

General Notes:- see dwg #1

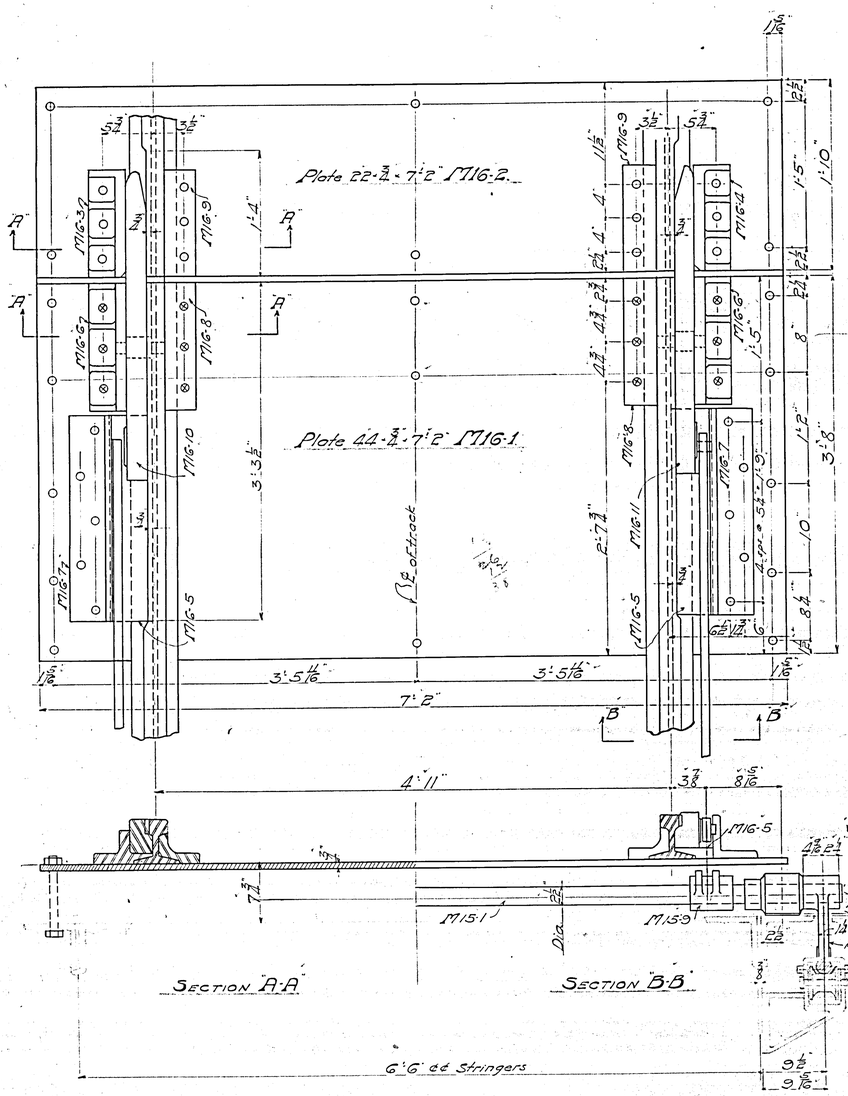
Approved by C. C. Smith
5-1-12 Bridge Engr.

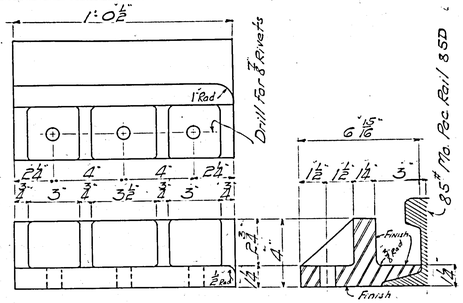
1718
SAFTS, LEVERS, LINKS, CLEVISES, PINIONS, GEARS etc. Rail Locking Machin.
1-162'-0" Lift Span
Over St. Francis River
MISSOURI PACIFIC RY

Memphis
H.P.
Ridout

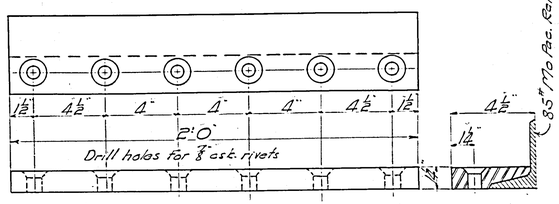
FILE No. D3A-1.95-94

16-16-162-1222-12-45

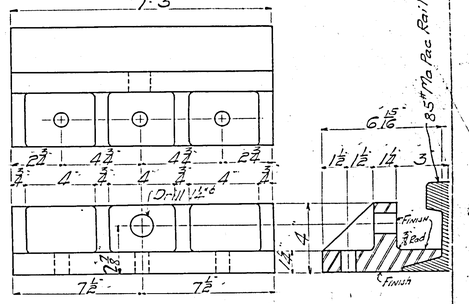




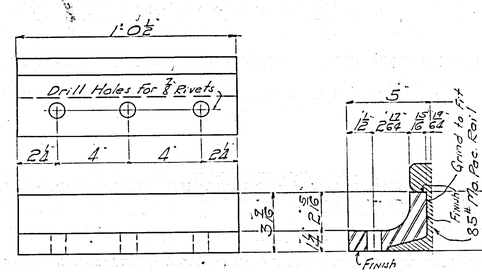
GUIDE CASTING M16-3 AS SHOWN
GUIDE CASTING M16-4 OPP HAND
CAST STEEL



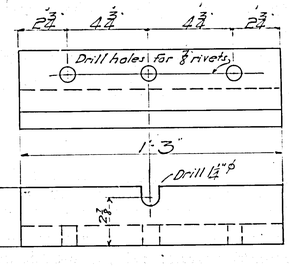
CASTING M16-5 FINISHED ALL OVER
CAST STEEL



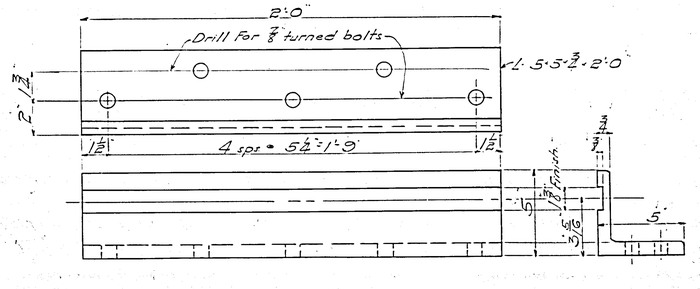
GUIDE CASTING M16-6
CAST STEEL



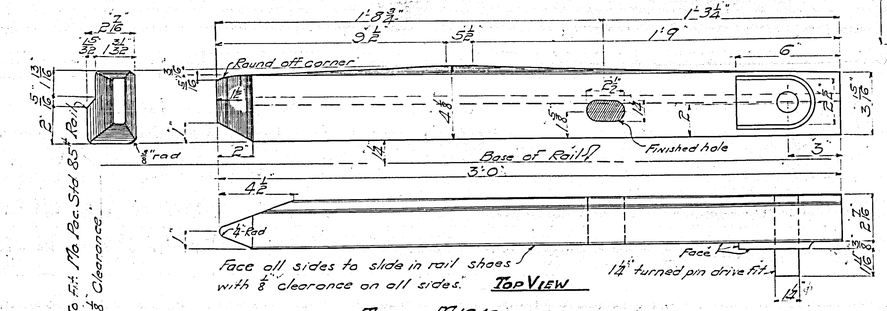
ANGLE BAR M16-9
CAST STEEL



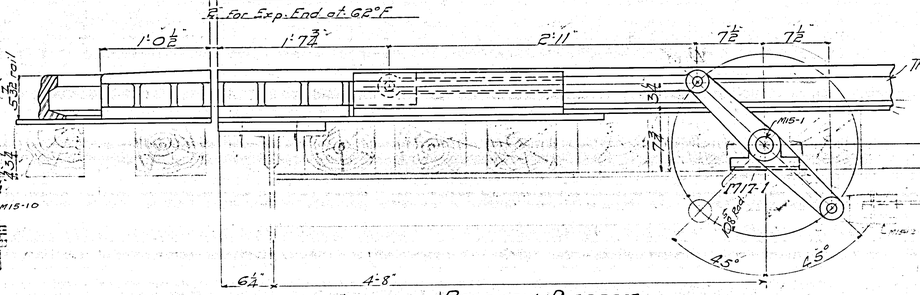
ANGLE BAR M16-8
CAST STEEL



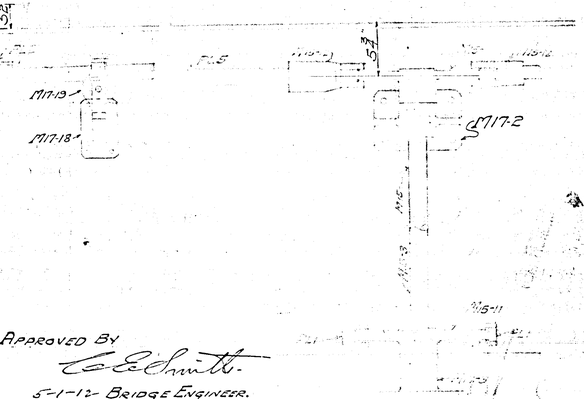
ANGLE M16-7

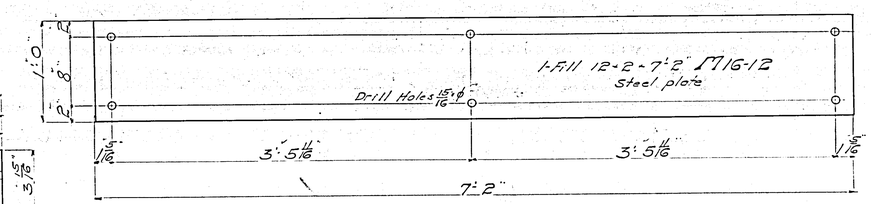


TONGUE - M16-10 AS SHOWN
TONGUE - M16-11 OPP. HAND



ASSEMBLY DIAGRAM





NOTE:-

Tongues to be made of either:- Nickel Steel. (Nickel steel shall be made by the open hearth process, elastic limit not less than 60,000# per sq in. ultimate strength not less than 100,000# per sq in. Nickel shall be not less than 3 percent and phosphorous not greater than 0.04 percent) or Oil tempered crucible steel (0.75% Carbon).

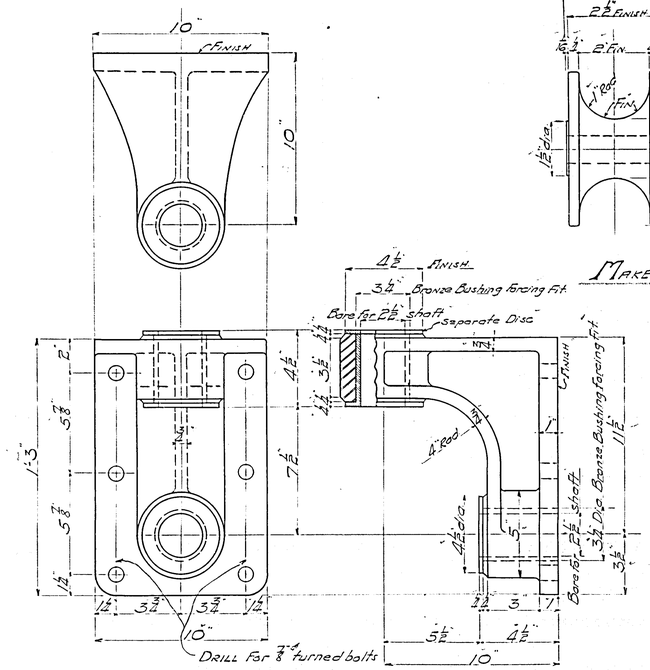
MAKE	2	PLATES AS SHOWN	MARK M16-1
"	2	" " "	M16-2
"	2	GUIDE CASTINGS AS SHOWN	M16-3
"	2	" " OPP HAND	M16-4
"	4	PLATES AS SHOWN	M16-5
"	4	GUIDE CASTINGS " "	M16-6
"	4	ANGLES " "	M16-7
"	4	ANGLE BARS " "	M16-8
"	4	" " "	M16-9
"	2	TONGUES " "	M16-10
"	2	" OPP HAND "	M16-11
"	2	FILLS AS SHOWN "	M16-12

APPROVED BY
C. E. Smith
5-1-12 BRIDGE ENGINEER.

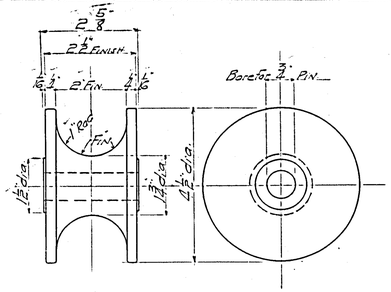
CONTRACT V 718
Details of Tongues, Angles, Rail Fittings, For Rail Locking Machinery
For 162'0" Thro. Span
Location Over St. Francis River, Marianna Ark.
Owner Missouri Pacific Ry. Co.
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.
To be fabricated at the Memphis plant.
Made by E. Rat. Traced by E. Rat.
In charge of Ridout. Checked by
Revised
Scale 1-3 in. = 1 ft. Sheet No. 16 of

FILE No. D3A-1.95-95

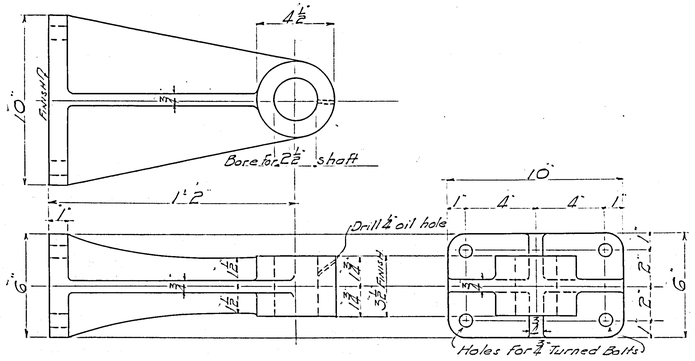
FILE V-718-162-3322.12-46



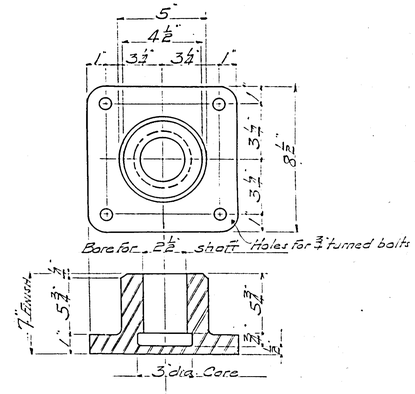
MAKE 1 BEARING M17-5
CAST STEEL



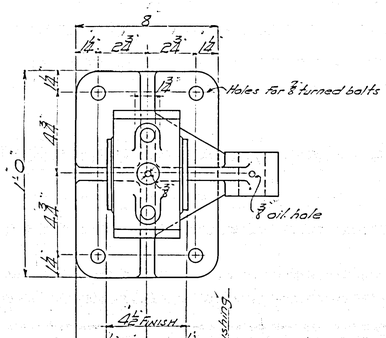
MAKE 12 ROLLERS M17-13.
CAST IRON.



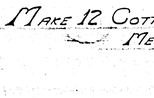
MAKE 2 BEARINGS M17-2
CAST STEEL



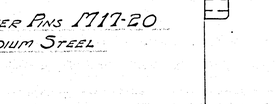
MAKE 1 BEARING M17-3
CAST STEEL



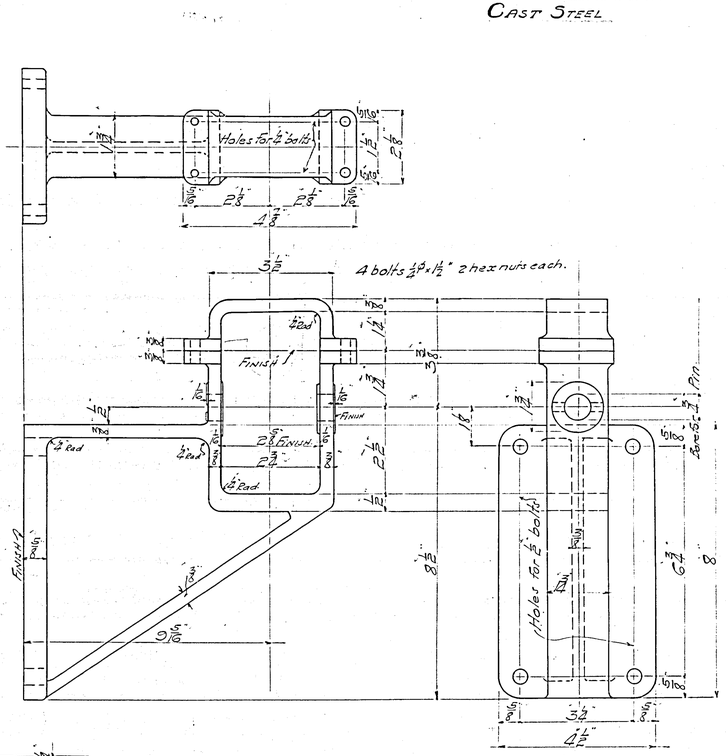
MAKE 1 BEARING M17-6
CAST STEEL



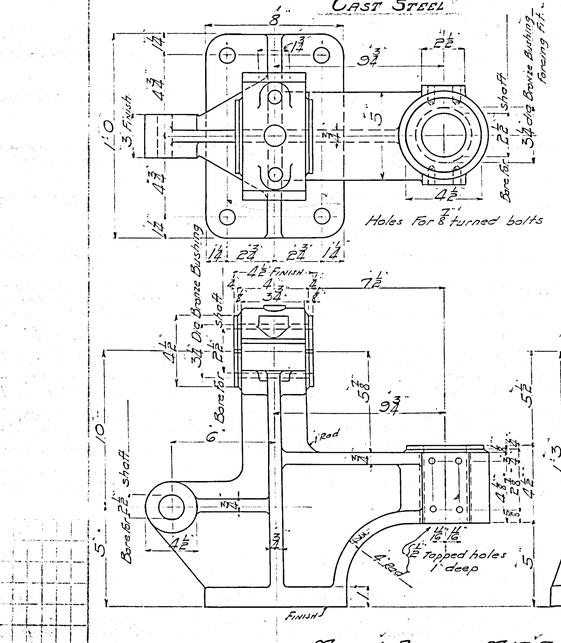
MAKE 12 COTTER PINS M17-20
MEDIUM STEEL



MAKE 2 STUD BOLTS for M17-6.
" 2 " " M17-7.

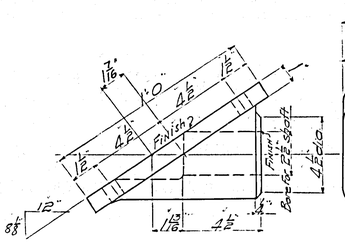


MAKE 12 BRACKETS M17-18.
CAST IRON.

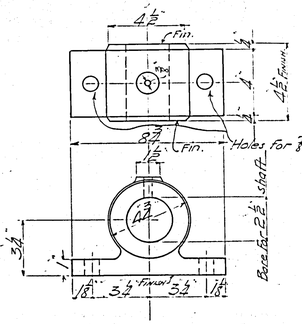


MAKE 1 BEARING M17-5
CAST STEEL

MAKE 1 BEARING M17-7
CAST STEEL



MAKE 1 BEARING M17-4
CAST STEEL



MAKE 4 BEARINGS M17-1
CAST STEEL

APPROVED BY
H. E. Smith
5-1-12 BRIDGE ENGINEER

GENERAL NOTES:- See Dwg. #1

CONTRACT V. 718
Details of: BEARINGS, BRACKETS, etc.
For 1-162' Thro. Span
Location Over St. Francis River, Marianna, Ark.
Owner: Missouri Pacific Ry.
VIRGINIA BRIDGE AND IRON CO
ROANOKE, VA.
To be fabricated at the Memphis plant
Made by E.R. Traced by E.R.
In charge of Ridout Checked by S.W.R. W.
Revised
Sheet No. 17 of Sheets

FILE No. D3A-1.95-96

FILE NO. 162-M17-12.dgn

ER [illegible] 16/16 4-5 2
QUIR [illegible] 16 Bolts

Material for 1- Handle Guide
2-Ls 3½"x3½"x⅜"-1'-5½" ayb
2 Bolts ¾"ø x 3"lg. hex. nut + sq hd
2-Gas Pipes ½" Plg.

Make 1- Handle Guide as shown Mark HGI
Scale 1"=1'-0"

Make 1- Pin and Chain as shown Mark PPI

Make 1- Shaft as shown Mark SS1

CROSS SECTION THRU BRIDGE
Scale ½"=1'-0"

SIDE VIEW AT CENTER OF BRIDGE
Scale ½"=1'-0"

Material for 1- Ladder
1-Pl 22½"x⅜"-6'-2" pya
1- " " " pyb
1- Bent Pl 5"x⅜"-1'-0¾" hya
1- " " 5"x⅜"-1'-1¼" hyb
1- " " 22½"x⅜"-1'-9" hyc
1- " " 22½"x⅜"-2'-9½" hyd
5-Rungs ¾"ø Rods-1'-4½" mya
2- " " " 1'-5½" myb

Make 2- Ladders as shown Mark LL2
Scale 1"=1'-0"

Detail of Rung before Riveting

Material for 1- Lamp Box
2 Bent Pls 12"x⅜"x1'-8" hye
1- " Pl 14"x⅜"x4'-1" hyf
1- " " 7"x½"x1'-8⅝" hyg
1-L 6"x4"x⅜"-1'-0⅜" aya
2-Ls 3½"x3½"x⅝"-1'-0⅜" ayb
2-Bolts ¾"ø x 0'-2" long Sq hd Hex. nut

Make 2- Lamp Boxes as shown Mark LB1
½"ø Rivets.
Scale 1½"=1'-0"

Section on ℄

Material for 1- Roundel Frame.
1-PC x 20 Sheet Iron 17½"x3'-5½" myb
2-clips x 20 " " 2"x2½" hyh (Bent)
1- " " " 3-6½" hyh "

Make 2- Roundel Frames as shown Mark RF1
¾"ø Rivets
Scale 3"=1'-0"

Make 2- Guide Castings as shown GC1
Scale 1"=1'-0"

Make 5- Boxes as shown Mark BB1
Scale 1"=1'-0"

Make 1- Hand Lever as shown Mark HL1
Scale 1"=1'-0"

Make 2- Levers as shown Mark LL1
Scale 1"=1'-0"

Make 1- Cast Iron Washer as shown Mark CIW1

Make 2- Steel Springs 1'6"lg ⅝" inside diam
of 18 Steel Wire to compress to 6" Mark SP1.

Make- 60 lin ft of ⅛" diam. Steel Wire.

Make 2- Rods as shown Mark RR1

Make 3- Keys ¾"x½" as shown Mark K1

Section C-C

Section A-A

Make 2- Roundel Frames as shown Mark RF1
¾"ø Rivets
Scale 3"=1'-0"

GENERAL NOTES.
All O H Bridge Steel (Stock)
Workmanship & Mfrs. Std
Inspection as noted
Painting "
Shop Coat 1- Coat Red Lead & Pure Linseed Oil
Surfaces in contact 1- Coat before assembling
Engineering Va B & I Co.
Field Connections Bolted
Inspection R W Hunt & Co.

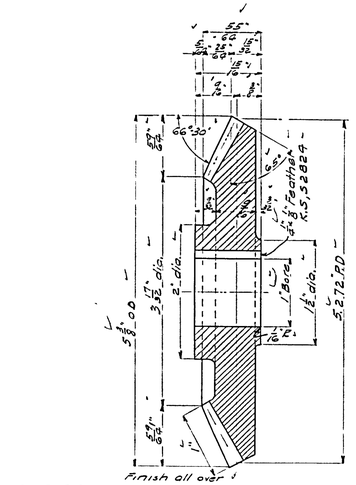
Approved by C E Smith
5-1-12 Bridge Engineer

CONTRACT # 718
Details of Signal Light Box, and Operating Mechanism
For 1-162'0" Lift Span
Location St Francis River Bridge Nanonna, Mo
Owner Missouri Pacific Ry Co.
Virginia Bridge and Iron Co.
ROANOKE, VA.
To be fabricated at the Memphis plant
Made by H.G.L. Traced by L. A. 4/5/12
In charge of Ridout Checked by
Revised
Scale 1in = 1ft Sheet No. 18 of

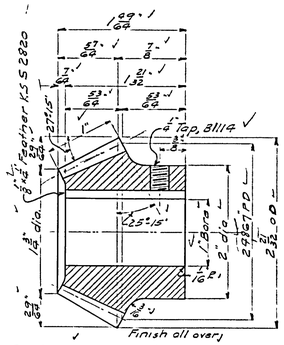
Marked on Shop Bills 142

FILE No. D3A-1,95-97

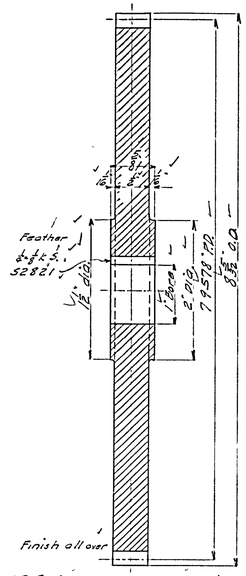
FILE 16162-B222-48 FILE No. 421



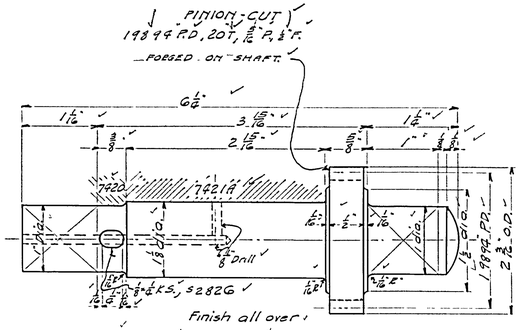
52955 - BEVEL GEAR - CUT
5272 PD, 5/16 P, 53T, 1"F, 1"B
1 REQ'D. F.S.



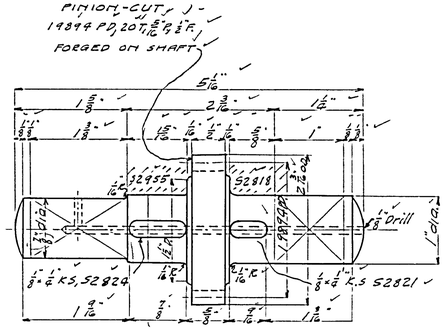
52954 - BEVEL, PINION - CUT.
24867 PD, 25T, 5/16 P, 1"F, 1"B
1 REQ'D F.S.



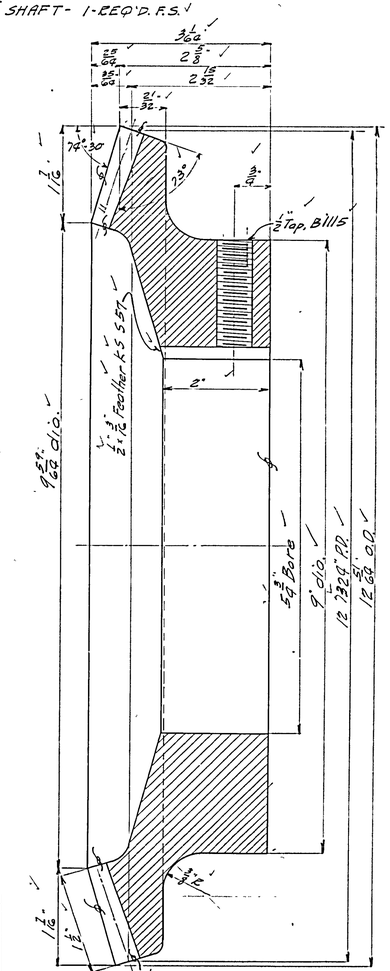
52818 - SPUR GEAR - CUT
79578 PD, 80T, 1/4 P, 2"F, 1"B
1 REQ'D ST. PLATE



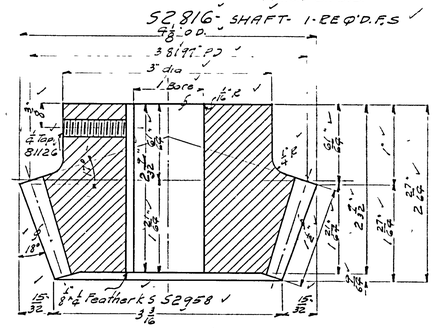
52815 SHAFT - 1 REQ'D. F.S.



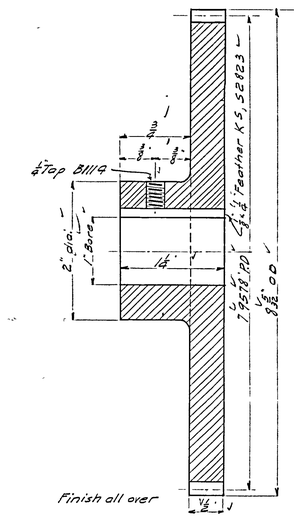
52816 - SHAFT - 1 REQ'D. F.S.



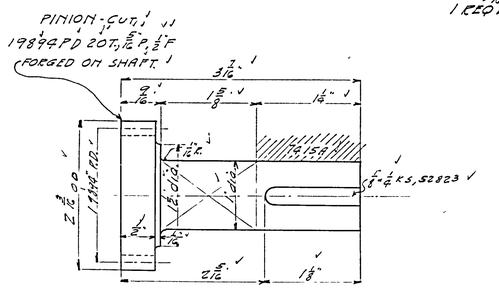
PAT 7916A BEVEL GEAR - CUT
12732 PD, 80T, 3/4 P, 12"F, 5 3/4"B.
1 REQ'D. C.S.



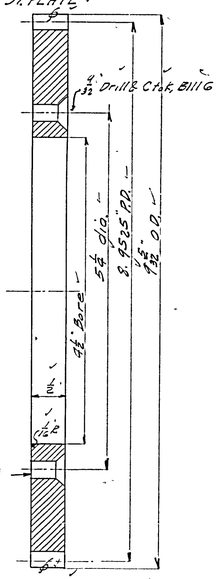
52957 - BEVEL GEAR - CUT
3.8197 PD, 24T, 1/4 P, 12"F, 1"B
1 REQ'D. F.S.



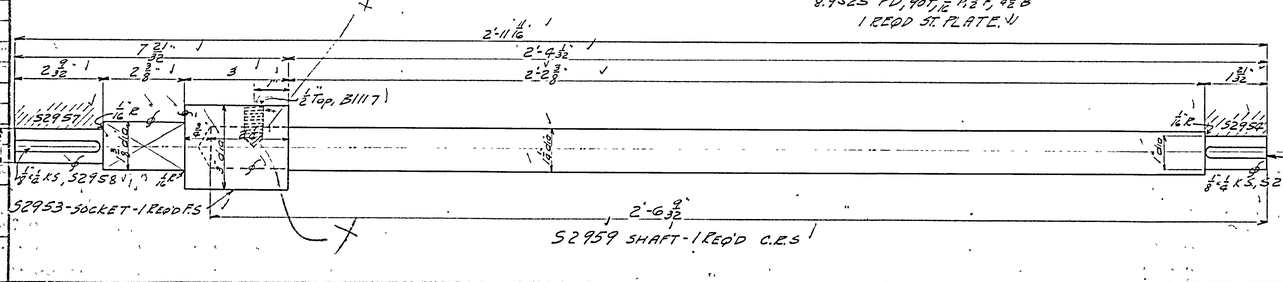
PAT. 7915A - SPUR GEAR - CUT.
79578 PD, 80T, 1/4 P, 2"F, 1"B
1 REQ'D C.S.



52812 - SHAFT - 1 REQ'D. F.S.



52956 - SPUR GEAR - CUT.
8.9525 PD, 90T, 1/4 P, 2"F, 1"B
1 REQ'D ST. PLATE.



52953 - SOCKET - 1 REQ'D F.S.

52959 SHAFT - 1 REQ'D C.R.S.

BILL of MATERIAL for ONE MACHINE

MARK	NO REQ'D	MAT	ITEM	REMARKS
7915A	1	C.S.	Spur Gear Cut 79578 PD, 80T, 1/4 P, 2"F	
7916A	1	C.S.	Bevel Gear Cut 12732 PD 80T, 3/4 P, 12"F	
52955	1	F.S.	Bevel Gear Cut 5272 PD, 53T, 5/16 P, 1"F	
52954	1	F.S.	Bevel Pinion Cut 24867 PD, 25T, 5/16 P, 1"F	
52812	1	F.S.	Shaft 19899 PD 20T 5/16 P 2"F Pinion forged on	
52953	1	F.S.	Socket	
52959	1	C.R.S.	Shaft 1 7/8 dia x 2'-6 3/32"	
52815	1	F.S.	Shaft 19899 PD, 20T, 5/16 P, 2"F Pinion forged on	
52816	1	F.S.	Shaft 19899 PD 20T 5/16 P 2"F Pinion forged on	
52957	1	F.S.	Bevel Pinion 3.8197 PD, 24T, 1/4 P, 1 1/2"F	
52818	1	St. Pl.	Spur Gear Cut 79578 PD, 80T, 1/4 P, 2"F	
52956	1	St. Pl.	Spur Gear Cut 8.9525 PD, 90T, 1/4 P, 2"F	
52820	1	St.	Feather Key 3/4 x 3/4 x 1 3/8"	52952 to 52958
52821	1	St.	Feather Key 1/2 x 1/2 x 3/4"	52818 to 52816
52958	1	St.	Feather Key 3/4 x 3/4 x 2 3/32"	52957 to 52953
52823	1	St.	Feather Key 3/4 x 1/2 x 1 3/8"	7915A to 52812
52824	1	St.	Feather Key 1/2 x 1/2 x 3/4"	52955 to 52816
B1126	1		Set Screw 1/2 x 1 3/8"	For 52957
B1114	2		Set Screw 1/2 x 3/4"	For 52954 & 7915A
B1115	1		Set Screw 1/2 x 1 3/8"	For 7916A
B1116	6		Ctsk Hd Mach Screws 1/2 x 3/4"	
B1117	1		Set Screw 1/2 x 1"	For 52953

Approved by
C. E. Smith Bridge Engr.
6-17-12

GENERAL NOTES. - See Dwg #1

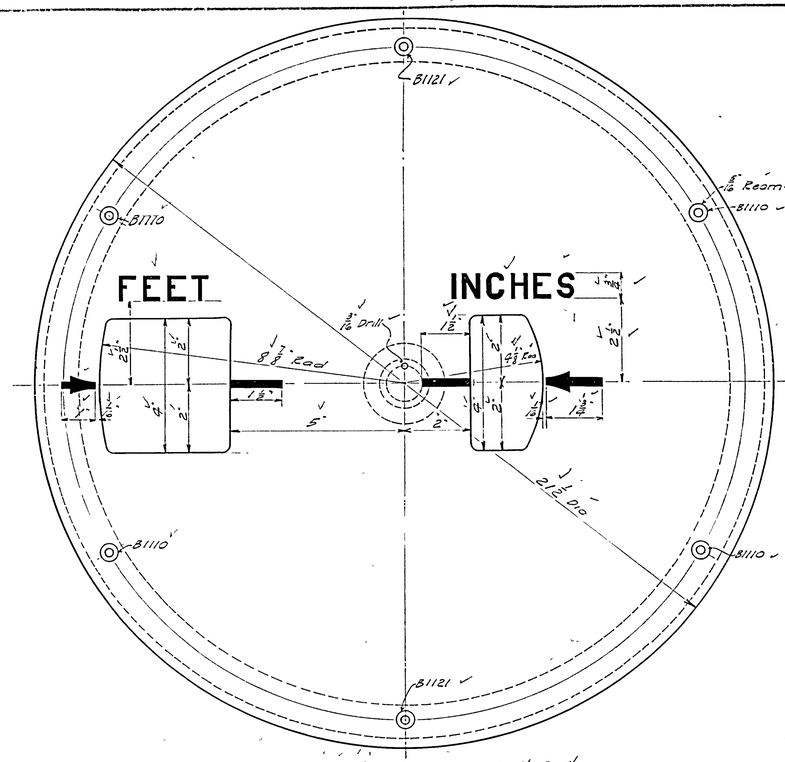
Material
Specifications
Rivets
Holes
Reaming
Shop Paint
Field Paint
Erection
Field Corn's
Inspection

Material on Shop Bills

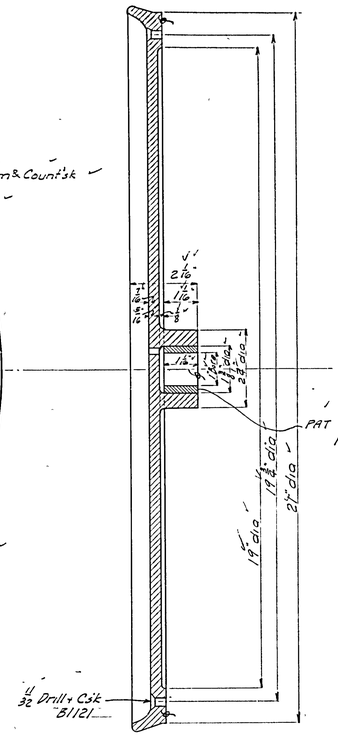
CONTRACT V 7/8
Details of Indicator
For 162 ft. Lift Span Vert.
Location over St. Francis River
Owner Missouri Pacific Ry.

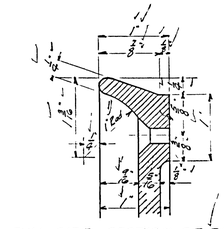
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.

To be fabricated at the Kemphis plant.
Traced from TWMfg Co dwg Traced by Jessee
Revised Checked by
Scale In. = 1 ft. Sheet No. 19 of



PAT 7419- FRONT COVER PLATE
1-REQ'D CI



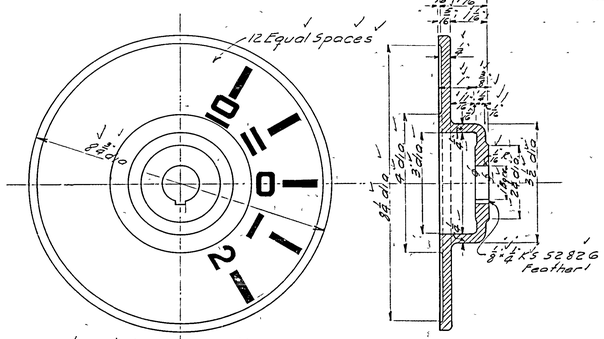


FULL SIZE SECTION OF RIM

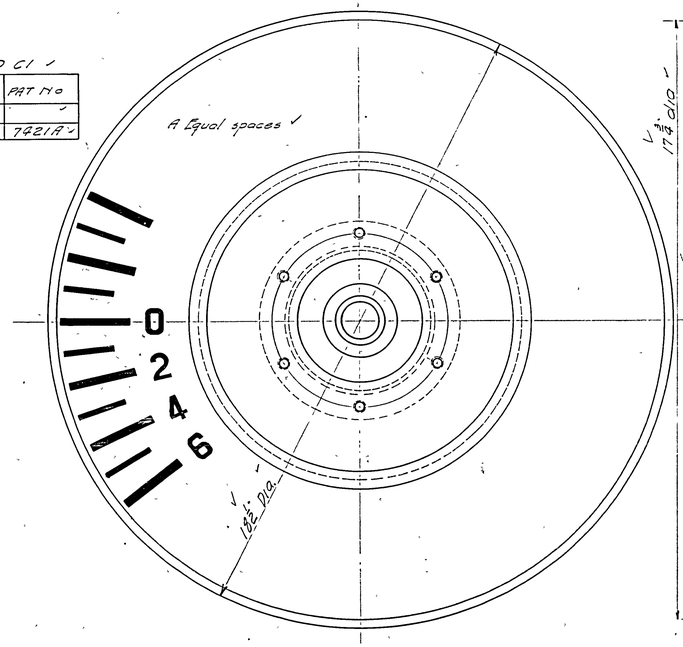
Notes:-
Background of dials to be painted white
Graduations and numbers to be painted black
" " " " cast on dials ½" high
Gears to have 20 involute teeth
All bearings and contact surfaces to be finished
All bushings to be forced in
Letters and arrows on face to be cast on ½" high.

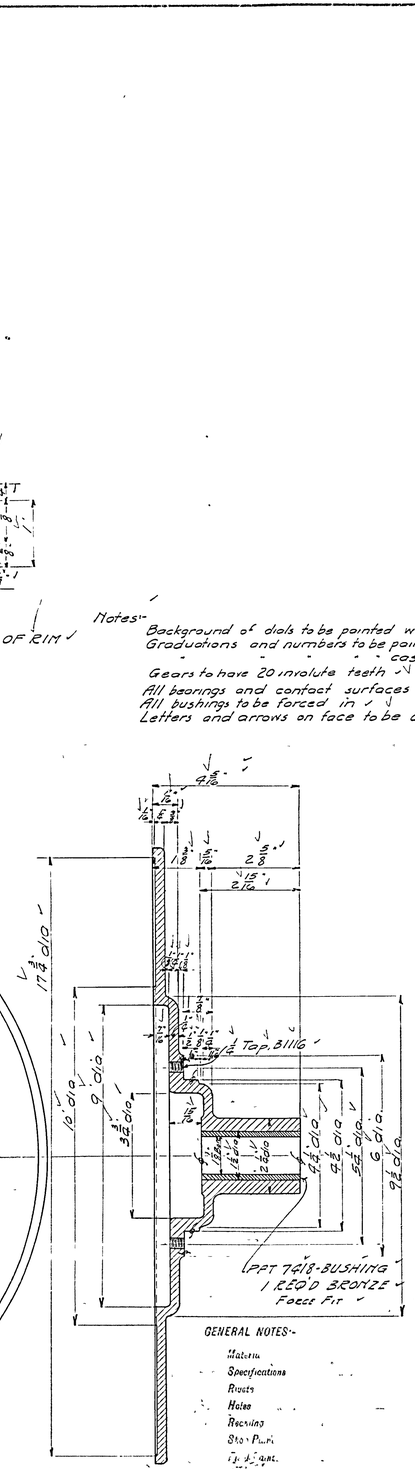
LARGE DIAL - 1 REQ'D CI

Order No	A Equal spaces	PAT No
"	"	"
15905	72	7421A



PAT 7420- SMALL DIAL
1 REQ'D CI





GENERAL NOTES:-
Material
Specifications
Rivets
Holes
Reaming
Steel Parts
Fly Wheel Segment
Erection
Field Connections
Inspection

Material or Shop Bills

Approved by
C. E. Smith Bridge Engr.
6-17-12

MARK	No REQ'd	MAT	ITEM	REMARKS
7419	1	CI	Front Cover Plate	
7420	1	CI	Small Dial	
7417	1	Br.	Bushing 1¾ OD 1⅛ ID ½ Lg	
7418	1	Br.	" 1⅝ OD 1⅜ ID 2¾ Lg	
52826	1	St.	Feather key 2" x ½" x ⅜"	
7421A	1	CI.	Large Dial	

CONTRACT W 7/8
Details of Indicator
For 162 ft. Lift Span
Location over St. Francis River
Owner Missouri Pacific Ry
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.
To be fabricated at the Memphis Shop
Traced from TWMfg Co's Traced by Beaser
dwg. Checked by
Revised
Scale In. = 1 ft. Sheet No. 20 of

FILE No. D3A-1.95-99

FILE 16762-B22.12-50 Field 4216

ORDER NO	G-
15904	

PAT 7407 - STAND
1 REQ'D. C.S.

PAT 7408 - STAND COVER
1 REQ'D C.S.

PAT 7441 - BUSHING IN HALVES
1 REQ'D BRONZE

PAT 7443 - WASHER
1 REQ'D. BRONZE
FINISH ALL OVER

PAT 7442 BUSHING
1 REQ'D BRONZE
FINISH ALL OVER
FORCE FIT

PAT 7411 COLUMN - 1 REQ'D C.S.

DIAL CASE - 1 REQ'D C.I.

PAT NO	A	B	C	D	E	F
7409R	4 3/4	3 1/2	5 1/2	1 3/8	4 5/8	4 3/4

PAT 7444 - BUSHING
1 REQ'D. BRONZE
FORCE FIT - FINISH ALL OVER

PAT 7445 BUSHING 1 REQ'D. BRONZE FORCE FIT - FINISH ALL OVER

PAT 7410 - BACK DIAL COVER - 1 REQ'D C.I.

PAT 7417 - BUSHING
2 REQ'D. BRONZE
FORCE FIT - FINISH ALL OVER

BILL OF MATERIAL FOR ONE INDICATOR.

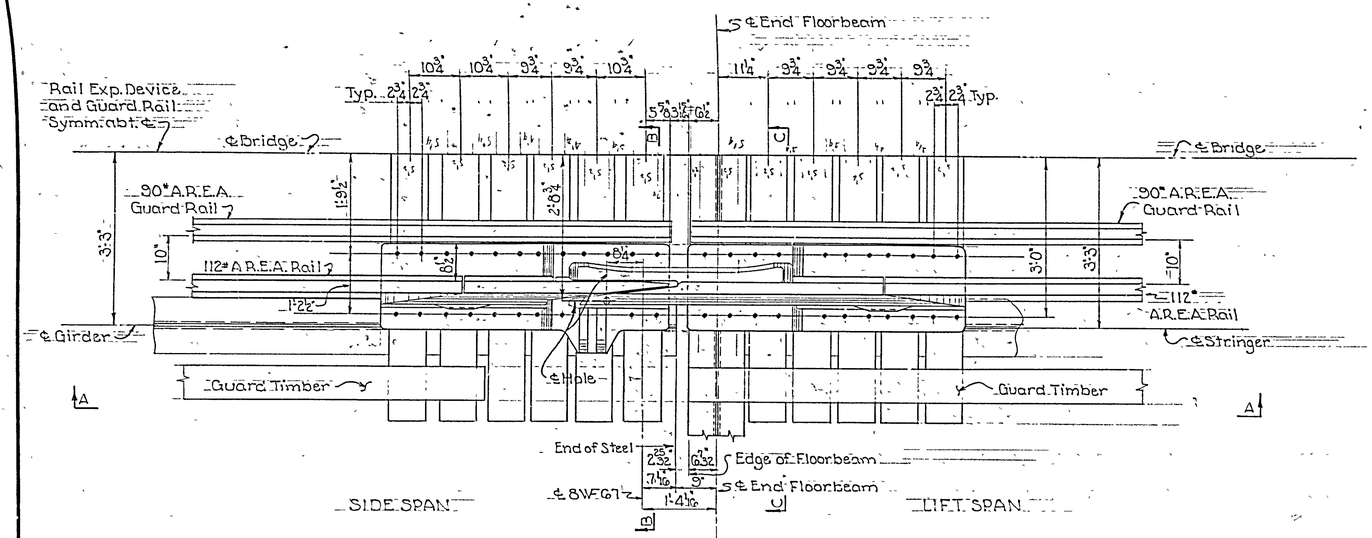
MARK	No REQ'D	MAT	ITEM	REMARKS
7410	1	CI	Back Dial Cover	
7409R	1	CI	Dial Case.	
7407	1	CS	Stand	
7408	1	CS	Stand Cover	
7411	1	CS	Column	
7441	1	Br	Bushing 6" OD 2 3/4" ID 2 Holes	
52829	2	St	Dowel Pin 3/8" x 1"	
B1109	8		Bolts 1/2" x 2" Turned	
B1110	4		Flat Hd Turned Bolts 5/8" x 6" Slotted	
B1111	2		Cap Screws 5/8" x 2"	
B1112	4		Bolts 3/4" x 2 1/2" Turned	
B1113	4		Cap Screws 1/2" x 1 1/2"	
B1121	2		Flat Hd Cap Screws 3/8" x 3/4"	
B1122	2		Turned Bolts 1/2" x 1 1/4"	
7443	1	Br	Washer 3" OD 1 3/8" ID 1/4"	
7442	1	Br	Bushing 1 3/4" OD 1 3/8" ID 2 3/4"	
7417	2	Br	Bushing 1 3/8" OD 1 1/8" ID 1 1/4"	
7444	1	Br	Bushing 1 3/8" OD 1 1/8" ID 1 1/4"	
7445	1	Br	Bushing 1 3/8" OD 1" ID 1 1/4"	
7445	1	Br	Bushing 1 1/4" OD 3/4" ID 1"	

CONTRACT V. 718
Details of Indicator.
For 162 ft Lift Span
Location Over St Francis River
Owner Missouri Pacific Ry

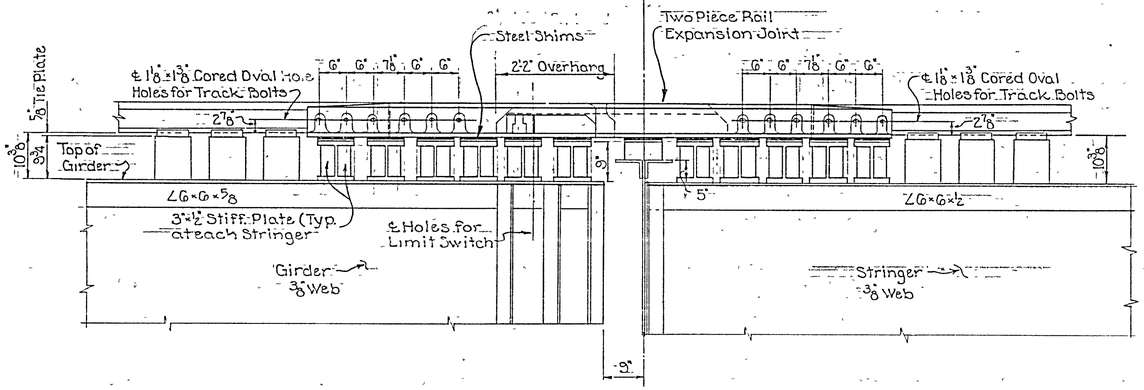
VIRGINIA BRIDGE AND IRON CO.
ROANOKE, VA.
To be fabricated at the Memphis Plant
Traced from I.W. Mfg Co. Dwg Traced by HSD
In charge of Checked by GBH
Revised
Scale - Full Size Blue Print 2" = 1'-0"

Approved by
Chief Engineer Bridge Engr.
1-17-12

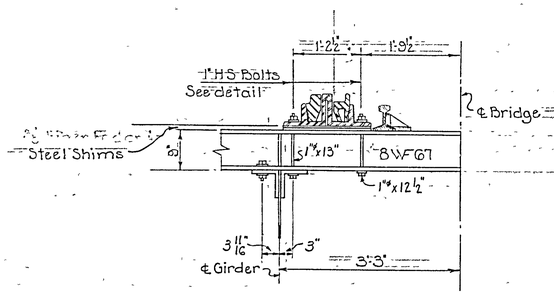
FILE No. D3A-1.95-100
FILE No. 162-D3A-12-5



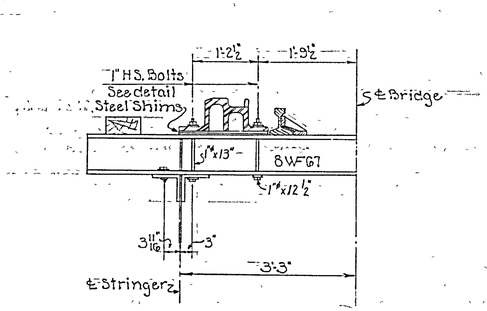
HALF PLAN



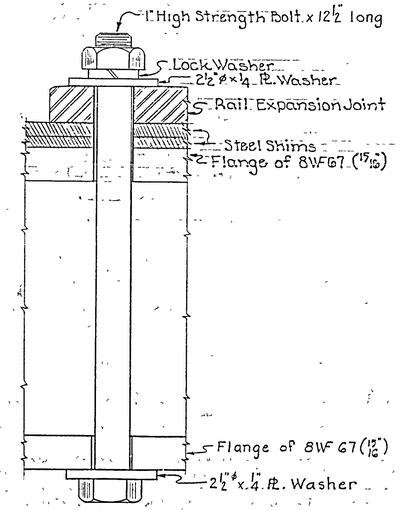
SECTION A-A



SECTION B-B



SECTION C-C

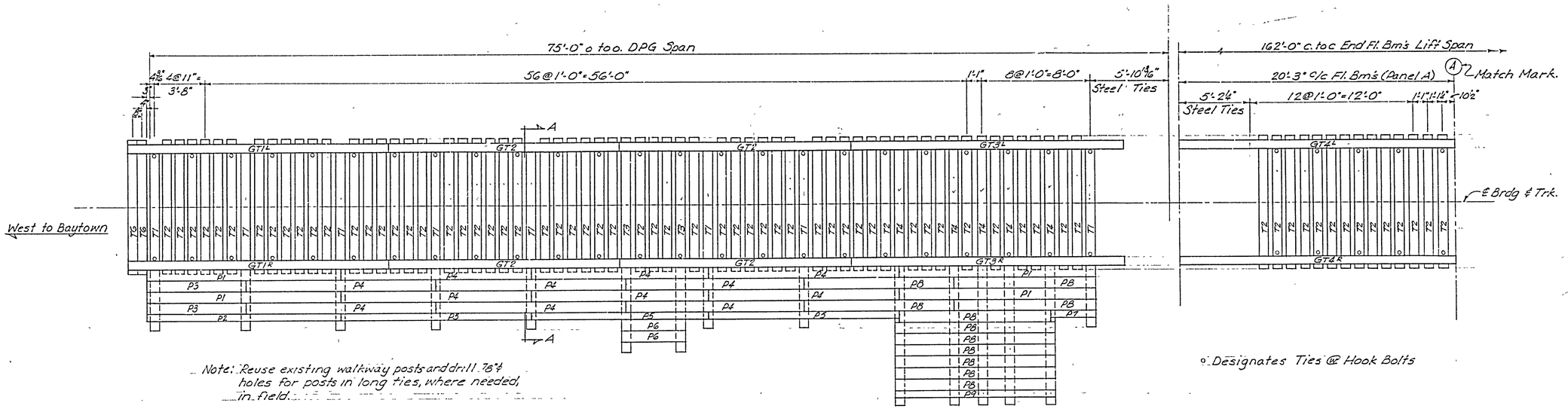


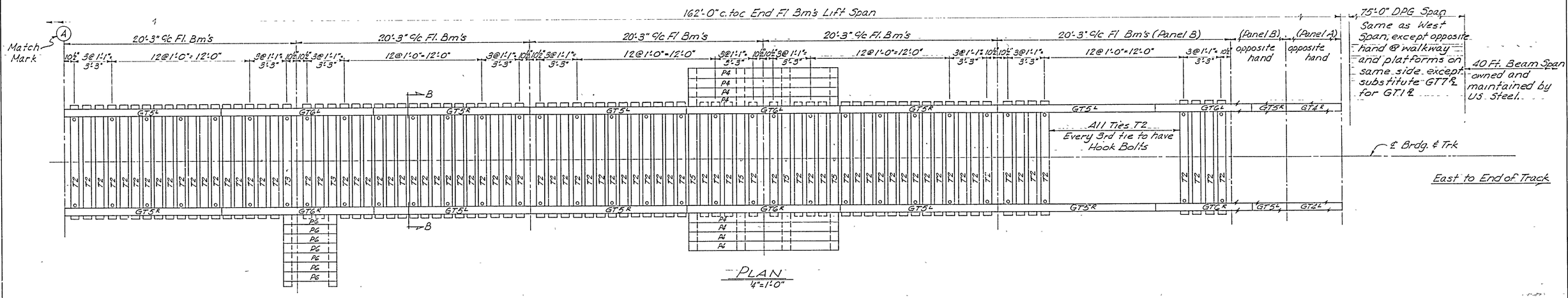
EXPANSION DEVICE BOLT DETAIL
6" = 1'-0"

Revised 9-29-67
1" H.S bolt lengths changed. R.C.H.

MISSOURI PACIFIC RAILROAD CO.
DEQUINCY DIVISION
RAIL EXPANSION JOINTS
BRIDGE No. 3
OVER CEDAR BAYOU
1⅔ Mi. S.E. of Baytown, Tex.
Scale: ¾" = 1'-0" & as noted
Office of Chief Engr. St. Louis, Mo. 12-12-66
RCH
WEB

FILE No. D3A-1.95-101





PLAN
4"=1'-0"

BILL OF TIMBER

No	Mark	Size	Length	Remarks	FBM
16	T1	8x10	12 Ft	SIE to 9 3/4" See Detail	1493
244	T2	"	10 Ft	" " " " "	16267
6	T3	"	16 Ft.	" " " " "	640
10	T4	"	20 Ft.	" " " " "	1333
4	T5	"	16 Ft	" " " " "	427
2	T6	"	10 Ft.	" " " Backwall Tie	133
2	GT1℄	4x8	19'-2"	Sized to 3 3/4 x 7 3/4" See Detail	102
8	GT2	"	17'-0"	" " " " " "	363
4	GT3℄	"	20'-0"	" " " " " "	213
4	GT4℄	"	20'-7"	" " " " " "	220
12	GT5℄	"	13'-7 1/2"	" " " " " "	436
6	GTG℄	"	13'-3"	" " " " " "	212
2	GT7℄	"	18'-0"	" " " " " "	96
8	P1	3x10	16 Ft	Walkway Planking Stock Size	320
2	P2	3x8	"	" " " "	64
4	P3	3x10	8 Ft.	" " " "	80
32	P4	"	14 Ft.	" " " "	1120
6	P5	3x8	"	" " " "	168
11	P6	3x10	6 Ft.	" " " "	165
2	P7	3x8	4 Ft.	" " " "	16
22	P8	3x10	12 Ft.	" " " "	660
2	P9	3x8	12 Ft	" " " "	48

Est. Total FBM 24576

BILL OF HARDWARE

No.	Description	Length	Remarks	Wt.
200	Sealtite Hook Bolts 3/4"ϕ	13"	Hex Nut "Style A"	498
113	Machine Bolts 3/4"ϕ	10"	Hex. Hd. & Nut	160
313	Malleable Washers		for 3/4"ϕ bolts	103
592	Timber Drive Spikes 5/8"ϕ	9"	Washer Hd.	616
68	Wire Rope Clips 3/8"ϕ		Galvanized	32
	Galvanized Wire Rope 3/8"ϕ	360 L.F.	7-twisted wire	98
14	Standard Pipe 1 1/2"ϕ	8 Ft.	Brace Pipe	305
95 lbs	Spikes 5/16"ϕ	7"	for Planking	95

Est. Total Wt. 1907 lbs

General Notes:

All timber to be creosoted Southern Pine
Field holes and cuts to be treated with hot preservative.
Holes in ties for drive spikes to be bored in field 1/2" diam.

SAFETY FIRST

mo-pac

MISSOURI PACIFIC RAILROAD CO.

DIVISION. DE QUINCY | UTS 975 | MILE

DECK PLAN BRIDGE No 3

Location: Near Baytown, Texas

Bridge Dept | Office of Chief Engineer | St Louis, Mo

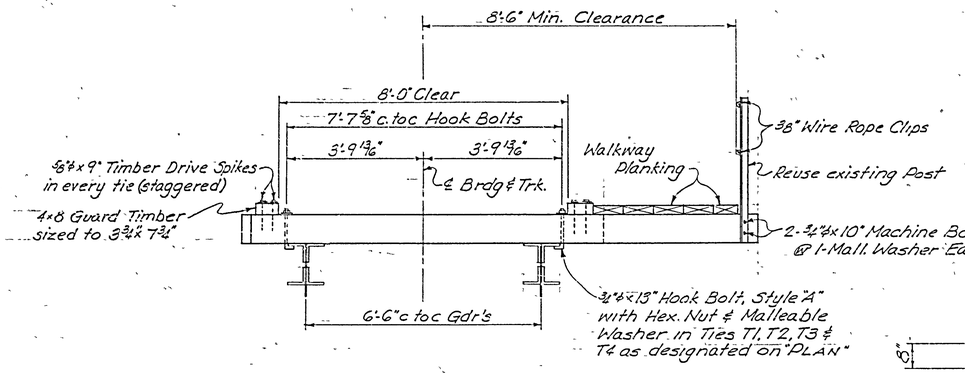
Drawn By. LMS | Date 5-8-80 | Scale As Shown

Checked By MES | Date 7-15-80 | Sheet 1 of 2

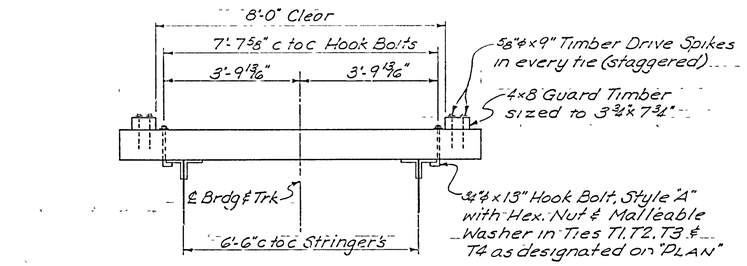
Rev	Description	Drn By	Date

File No. D3A-1.95-102

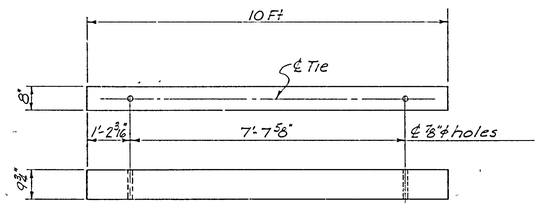
M59264



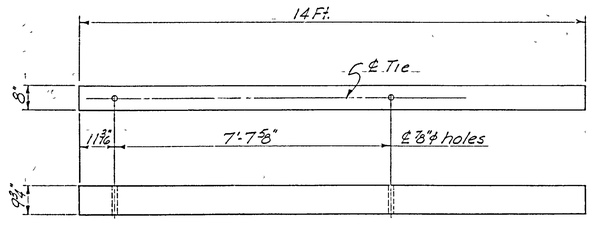
SECTION A-A
½" = 1'-0"



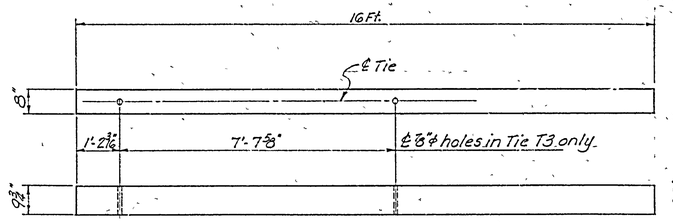
SECTION B-B
½" = 1'-0"



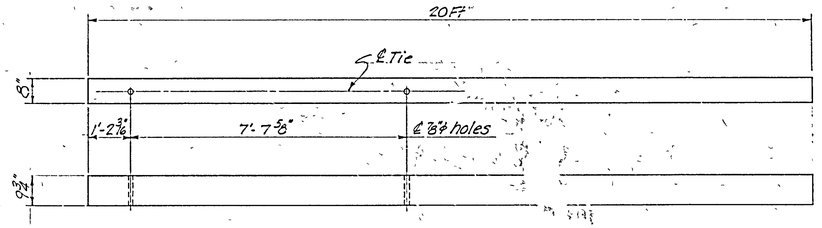
T2



T1

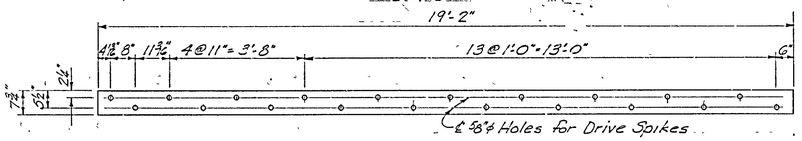


T3 & T5

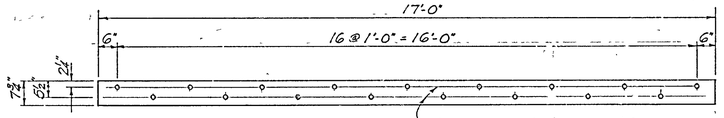


T4

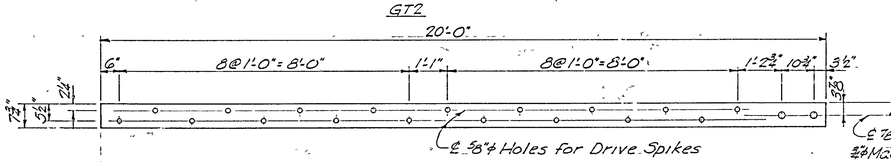
TIE DETAILS
½" = 1'-0"



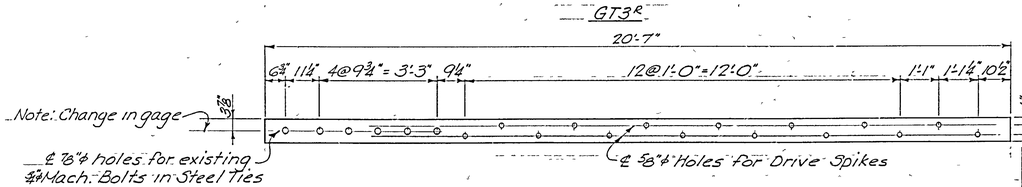
GT1R



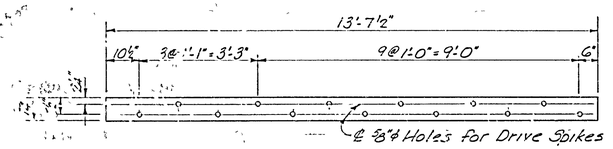
GT2



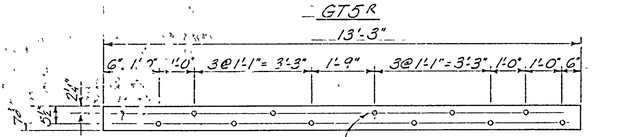
GT3R



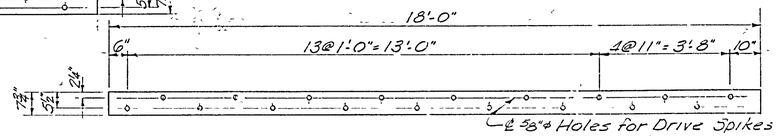
GT4R



GT5R



GT6R



GT7R

GUARD TIMBER DETAILS
½" = 1'-0"

Rev	Description	Drn. By	Date

SAFETY FIRST

mo-pac

MISSOURI PACIFIC RAILROAD CO.

DIVISION De Quincy | U.T.S. 975 | MILE

DECK PLAN DETAILS
BRIDGE No. 3

Location Near Bayltown, Texas.

Bridge Dept | Office of Chief Engineer | St Louis, Mo

Drawn By LMS | Date 5-8-80 | Scale As Noted

Checked By MES | Date 7-15-80 | Sheet 2 of 2

File No. DBA-1.95-103