SIGNAL SHOP
TOPEKA, KANS.

STANDARDS
OF
CONSTRUCTION
AND
MAINTENANCE

OFFICE
SIGNAL ENGINEER SYSTEM

A. T. & S. F. RY. CO.

Zachary Gillihan
Digitally signed by Zachary Gillihan
DN: cn=Zachary Gillihan, o=ZCG Utility Scrap, ou, email=zachary.gillihan@gmail.com, c=US
Date: 2017.09.09 09:03:18 -05'00'

Smead
No. 202L
HASTINGS, MINN. • LOGAN, OHIO U.S.A.

PLAN NUMBER INDEX

STANDARDS OF CONSTRUCTION & MAINTENANCE

PLAN NUMBER	C&M PAGE
SP-36	136
SP-37	138
SP-38	137
SP-69	135
SP-126	255
SP-127	256
SP-132	250
SP-139-1	129
SP-139-2	130
SP-139-3	131
SP-142	266
SP-143	267
SP-144	268
SP-145	212
SES-612	114
SES-633	127
SES-645	143
SES-646A	1
SES-655	112
SES-657-1	2
SES-657-2	3
SES-657-3	4
Z-165	193
Z-191	16A
Z-202A	98
Z-205	99
0-614	82
0-637	81
0-656	257
0-725	12
0-726	145
0-758	71
0-789	58
0-	59

PLAN NUMBER	C&M PAGE
0-801	151
0-810	186
0-819	157
0-821	139
0-842	253
0-893	162
0-907	121
0-908	183
0-910	182
0-912	173
0-913	181
0-914	172
0-915	171
0-916	170
0-917	168
0-919	169
0-924	14
0-925	10
0-926	199B
0-927	62
0-929A	163
0-930	124
0-1060	92
0-1061	93
0-1062	104
0-1065	91
0-1067	30
0-1068	83
0-1122	235
0-1132	209
0-1150	188
0-1155	73
0-1159	74
0-1160	41
0-1172	52
0-1176	161

PLAN NUMBER	C&M PAGE
0-1178	196
0-1189	199
0-1190	95
0-1191	210
0-1194	194
0-1198	254
0-1199	260
0-1200	252
0-1201	263
0-1202	262
0-1204	126
0-1209	32
0-1210	17
0-1212	122
0-1213	147
0-1220	198
0-1222	97
0-1223	76
0-1231	132
0-1235	120
0-1240	133
0-1241	164
0-1242 1244	157A C262A
0-1245	103
0-1253A	42
0-1256	131A
0-1257	264
0-1258	265
0-1262	202
0-1263	132A
0-1264	202A
0-1269	15
0-1271	202B
0-1272	79
0-1279	211
0-1275-1	100
0-1275-2	101
0-1275-3	102
0-1277	251A

PLAN NUMBER INDEX

STANDARDS OF CONSTRUCTION AND MAINTENANCE

PLAN NUMBER	C&M PAGE
SP-36	136
SP-37	138
SP-38	137
SP-41	259
SP-69	135
SP-126	255
SP-127	256
SP-132	250
SP-139-1	129
SP-139-2	130
SP-139-3	131
SP-142	266
SP-143	267
SP-144	268
SP-145	212
SES-612	114
SES-633	127
SES-645	143
SES-646A	1
SES-655	112
SES-657-1	2
SES-657-2	3
SES-657-3	4
Z-165	193
Z-191	16A
Z-202A	98
Z-205	99
0-576	124
0-614	82
0-637	81
0-656	257
0-725	12
0-726	145
0-758	71
0-789	58
0-790	59

PLAN NUMBER	C&M PAGE
0-801	151
0-810	186
0-819	157
0-821	139
0-842	253
0-893	162
0-907	121
0-908	183
0-910	182
0-912	173
0-913	181, 172
0-915 0914	171
0-916	170
0-917	168
0-919	169
0-925	10
0-926	199B
0-927	62
0-1060	92
0-1061	93
0-1062	104
0-1065	91
0-1067	30
0-1068	83
0-1122	235
0-1132	209
0-1150	188
0-1155	73
0-1159	74
0-1160	41
0-1176	161
0-1178	196
0-1189	199
0-1190	95
0-1191	210
0-1194	194
0-1198	254
0-1199	260

PLAN NUMBER	C&M PAGE
0-1200	252
0-1201	263
0-1202	262
0-1204	126
0-1209	32
0-1210	17
0-1212	122
0-1213	147
0-1220	198
0-1222	97
0-1223	76
0-1231	132
0-1235	120
0-1240	133
0-1241	164
0-1242	157A
0-1245	103
0-1253A	42
0-1256	131A
0-1257	264
0-1258	265
0-1262	202
0-1263	132A
0-1264	202A
0-1267	14
0-1269	15
0-1271	202B
0-1272	79
~~0-1274~~	~~211~~
0-1275-1	100
0-1275-2	101
0-1275-3	102
0-1277	251A
0-1279	C211
0-1281	202B

PLAN NUMBER	C&M PAGE
Z-168	C-200
E020	C-A
E 0-39	C-B
E 0-544	10
E0 558A	11
0-1244A	6
E0 541	7
0 1165	8
E0 507	C-10
E0-537	C12
M-270	C-14
Z202A	C98
0-1143	C-183
0914	172
0-930	124
Z-207	C199
inoperative sign	
Z-202A	C-98
Z-205	C99

INDEX
STANDARDS OF CONSTRUCTION AND MAINTENANCE

SUBJECT	PLAN NUMBER	C&M PAGE
Clearances:		1-9
Minimum Clearance Diagram	SES-646A	1
Clearances for Signal Bridges	SES-657-1	2
	SES-657-2	3
	SES-657-3	4
Cable Post Installations:		10-15
Stub Pole Location using Creosoted Pole	0-925	10
Cast Iron Arrester Box on Cable Post	0-725	12
Sheet Steel Relay Case on Cable Post	0-1267	14
Cast Iron Telephone Box	0-1269	15
Automatic Train Stop:		16-20
Inductor Location	Z-191	16A
Engine Receiver and Wayside Indicator	0-1210	17
Circuit Controllers		30-40
Rubber Mounted Connection	0-1067	30
Support Guide for Long Connection	0-1209	32
C.T.C.:		41-50
Control Machine Measurements	0-1160	41
Instrument House Location	0-1253-A	42
Foundations:		
Cantilever, 16'	0-789	58
Cantilever, 26'	0-790	59
Guard Rail	0-927	62

SUBJECT	PLAN NUMBER	C&M PAGE
Foundations: (continued)		
N-2 Dwarf Signal, Wide Spacing	0-1194	194
FA Dwarf Signal	0-1178	196
ES-25 Spring Switch Lamp	0-1220	198
H-5 Searchlight Dwarf Signal	0-1132	209
H-2 with R-2 Dwarf Signal	0-1191	210
Instrument Case:		71-80
Wood Plug for Cable Post	0-758	71
Door Stop, B-10 Case	0-1155	73
Adaptor, B-10 Case on Cellar	0-1159	74
Grounding of Instrument Case	0-1223	76
Selector Box	0-1272	79
Insulated Rail Joints:		81-90
Location for Lock Circuits	0-637	81
Location of Railroad Crossings	0-614	82
Location at Signals	0-1068	83
Interlocking, Electric:		91-99
Turned Bolts for Track Switch Connections	0-1065	91
Throw Rods for Interlocked & Electric Locked Switch	0-1060	92
Detector Rods for Interlocked & Elec. Locked Switch	0-1061	93
Offset Crank for Aux. Connection, Horizontal Rods	0-1190	95
Relay Housing and Junction Box	0-1222	97
No. 24 turnout vertical front rods & aux. connection	Z-202A	98
No. 20 turnout vertical front rods & aux. connection	Z-205	99
Interlocking, Switch Accessories:		100-119
Offset Crank for Aux. Connection, Vertical Rods	0-1275-1	100
Lock Rod for Interlocked Switches	0-1275-2	101
Pipe Guide for Auxiliary Connections	0-1275-3	102
Tie for Mounting Switch Machines	0-1245	103
Switch Adjuster for Interlocked Switch	0-1062	104
Jaw and Adjustable Link for 7/8" Bolt	SES-655	112
One-inch Pipe and Coupling	SES-612	114

SUBJECT	PLAN NUMBER	C&M PAGE
Miscellaneous:		120-134
Replacing 113D Coil with 104A Induction Coil -	0-1235	120
Junction Box for Underground Cable - - - - - -	0-907	121
Fibre Tags - - - - - - - - - - - - - - - - - -	0-1212	122
Standard Shunt Wire - - - - - - - - - - - - - -	0-576	124
Mileage Sign for Motor Car Indicator - - - - -	0-1204	126
U-Bolt -	-SES-633	127
Automatic Crossing Gates - - - - - - - - - - -	-SP-139-1	129
- - - - - - - - - - -	-SP-139-2	130
- - - - - - - - - - -	-SP-139-3	131
Counterweights-WRRS Auto.Crossing Gate Arm - -	-0-1256	131A
Motor Car Indicator with Reflectorized Post - -	0-1231	132
Indicator Post - - - - - - - - - - - - - - - -	-0-1263	132A
Low Voltage Light Type Indicator - - - - - - -	-0-1240	133
Oil Unloading Stations:		135-140
Commercial Stations Handling Inflammables - - -	SP-69	135
Gasoline Filling and Unloading Station - - - -	-SP-36	136
Gasoline Unloading Station - No Rack - - - - -	-SP-38	137
Gasoline Unloading Station - With Rack - - - -	-SP-37	138
Clamp for Grounding - - - - - - - - - - - - -	0-821	139
Pole Line:		
Poles - Individual Arm Gain - *Fig. E-1		
Crossarms - - - - - - - - - - - - - - - - - -	-SES-645	143
Double Arming - - - - - - - - - - - - - - - -	-*Fig. F-3, J-2	
Signal Transmission Line - - - - - - - - - - -	-0-726	145
Location of Wires on Crossarms *Par. J-11, J-13		
Single Phase Line - - - - - - - - - - - - - -	-0-1213	147
Line Crossing - - - - - - - - - - - - - - - -	*Par. C-1, C-6 & Table C-1	
Cable Taps to Low Voltage Wires *Fig. L-40		
Cable Taps to Copper Wire - - - - - - - - - -	-0-801	151
Methods of Guying Curves - - -	*Par. G-1 thru G-32	
Storm Guying - - - - - - - - -	*Par. G-33 thru G-42	
Cable Location Guying - - - - -	*Fig. L-27	
Down Guy - - - - - - - - - - -	-*Fig. H-1, 2, 5, 7, 9 & 14	
Crossarm Guy - - - - - - - - -	-*Fig. H-15, H-16	
Transformer Location CSP - - - - - - - - - -	0-819	157
Sectionalizing Details - CSP Transformer Location - - - - - - - - - -	0-1242	157A
Transformer Location-440 volt -	-*Fig. L-38	

* - In Spec. 100 Book

SUBJECT	PLAN NUMBER	C&M PAGE
Pole Line: (continued)		
Low Voltage Signal Power Wires *Fig. L-39		
Molding and Strap for Crossarm	0-1176	161
Cable Hanger, RC Wire - - - -	0-893	162
Pole Jct. Box for Code Line Filter - - - - - - - - - - *Fig. L-23		
Pole Jct. Box for Switch Light Transformer - - - - - - - -	0-1241	164
Tie Wire, Application of #10 Insulated - - - - - - - - - *Fig. J-7		
Pole Mounted Code Line Disconnect - - - - - - - - *Fig. L-37		
* - In Spec. 100 Book		
		168-234& 264-270
Signals:		
H-5 Searchlight Signal Case, Bracket & Outlet	0-917	168
H-2 Searchlight Signal Case, Bracket & Outlet	0-919	169
Signal Ladder for Ground Signals - - - - - -	0-916	170
H-5 Searchlight Ground Signal (17' height) -	0-915	171
H-5 Searchlight Ground Signal (22' height) -	0-912	173
H-5 with H-2 Searchlight Ground Sig.(17'height)	0-913	181
H-5 with H-2 Searchlight Ground Sig.(22'height)	0-910	182
H-5 with H-2 Searchlight Ground Sig.(27'height)	0-908	183
H-5 Bridge Dwarf on Cantilever - - - - - - -	0-810	186
H-5 with H-2 on Cantilever - - - - - - - - -	0-1150	188
Semaphore with "S" Siding Sign - - - - - - -	Z-165	193
N-2 Dwarf - Wide Spacing - - - - - - - - - -	0-1194	194
FA - Dwarf - - - - - - - - - - - - - - - - -	0-1178	196
ES-25 Spring Switch Lamp - - - - - - - - - -	0-1220	198
Inoperative Approach Signal - - - - - - - -	0-1189	199
Raco Battery Saver on Inoperative Distant Sig.	0-926	199B
Metal Number Plate - - - - - - - - - - - - -	0-1262	202
Number Plate for Searchlight Dwarf - - - - -	0-1264	202A
Aluminum Grade Signal Marker Plate - - - - -	0-1271	202B
H-5 Searchlight Dwarf Signal --- - - - - - -	0-1132	209
H-2 with R-2 Dwarf - - - - - - - - - - - - -	0-1191	210
Colorlight Train Order Signal - - - - - - -	0-1274	211
H-5 with H-2 on 2-Track Signal Bridge - - -	SP-145	212
H-5 Low Ground for Secondary Tracks - - - -	0-1257	264
H-5 with H-2 Low Ground for Secondary Tracks	0-1258	265
H-5 with H-2 on 16'-0" Cantilever with Ext.	SP-142	266
H-5 with H-2 on C&NW Bridge-Top Chord Removed	SP-143	267
H-5 with H-2 on 3-Track Lattice Girder Bridge	SP-144	268
Tools:		235-?
Switch Tester - - - - - - - - - - - - - - - -	0-1122	?

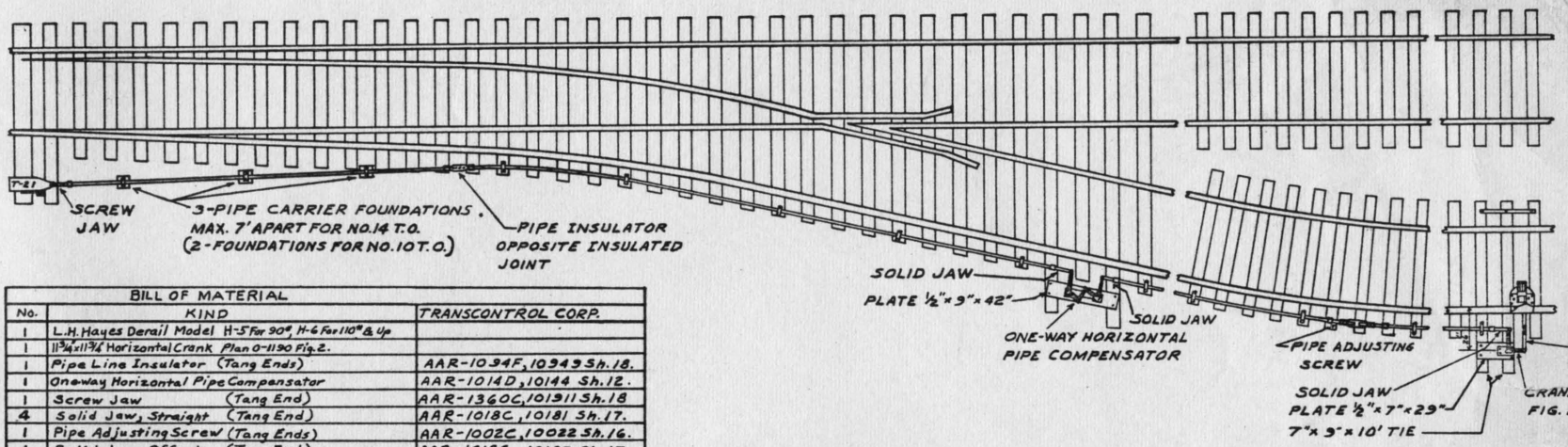
2-16-6

SUBJECT	PLAN NUMBER	C&M PAGE
Track Connections:		250-263
Installing Track Wires in Bootleg	SP-132	250
Underground Cables to Track Without Bootlegs	0-1277	251A
Temporary Bootleg Wires	0-1200	252
Bonding Highway Crossings	0-842	253
Turnout Bonding	0-1198	254
Shunt Wires at Single Switch	SP-126	255
Shunt Wires at Crossover	SP-127	256
Jumper for Fouling Circuit	0-656	257
Bonding Frog and Switch	SP-41	259
Factory Bonding Frog	0-1199	260
Railhead Bond	0-1202	262
Web Bond	0-1201	263
Hayes Derail	E 0-20	CA
Searchlight Sig Pedestal	E 0541	7
Shifted Load Detector	E 0-558A	11

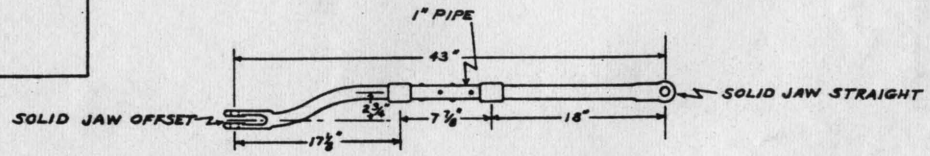
SIGNAL SYSTEM TWO — ASPECTS AND INDICATIONS

SYMBOL	ASPECT	NAME	INDICATION	RULE
	G G	CLEAR	PROCEED.	281
	FLASHING G	APPROACH-LIMITED	PROCEED; APPROACH NEXT SIGNAL NOT EXCEEDING LIMITED SPEED, AND BE PREPARED TO ENTER DIVERGING ROUTE AT PRESCRIBED SPEED.	281(A)
	FLASHING Y Y Y Y Y	APPROACH-MEDIUM	PROCEED; APPROACH NEXT SIGNAL NOT EXCEEDING MEDIUM SPEED, AND BE PREPARED TO ENTER DIVERGING ROUTE AT PRESCRIBED SPEED.	282*
	R G	DIVERGING-CLEAR	PROCEED THROUGH DIVERGING ROUTE; PRESCRIBED SPEED THROUGH TURNOUT.	283
	Y Y	APPROACH	PROCEED PREPARING TO STOP AT NEXT SIGNAL; IF EXCEEDING MEDIUM SPEED IMMEDIATELY REDUCE TO MEDIUM SPEED.	285
	FLASHING R Y	DIVERGING-APPROACH	PROCEED THROUGH DIVERGING ROUTE; PRESCRIBED SPEED THROUGH TURNOUT; APPROACH NEXT SIGNAL PREPARING TO STOP, IF EXCEEDING MEDIUM SPEED IMMEDIATELY REDUCE TO MEDIUM SPEED.	286
	FLASHING R R Y R	RESTRICTING	PROCEED AT RESTRICTED SPEED.	290*
	R R NUMBER PLATE	STOP AND PROCEED	STOP; THEN PROCEED AS PRESCRIBED BY RULE 320.	291
	R R	STOP	STOP.	292

*FLASHING ASPECT, RULES 282 & 290, ARE THE PREFERRED ASPECTS AND SHOULD BE USED FOR NEW WORK.



BILL OF MATERIAL		
No.	KIND	TRANSCONTROL CORP.
1	L.H. Hayes Derail Model H-5 for 90#, H-6 for 110# & Up	
1	11¾"x11¾" Horizontal Crank Plan 0-1190 Fig. 2.	
1	Pipe Line Insulator (Tang Ends)	AAR-1034F, 10343 Sh. 18.
1	Oneway Horizontal Pipe Compensator	AAR-1014D, 10144 Sh. 12.
1	Screw Jaw (Tang End)	AAR-1360C, 10131 Sh. 18
4	Solid Jaw, Straight (Tang End)	AAR-1018C, 10181 Sh. 17.
1	Pipe Adjusting Screw (Tang Ends)	AAR-1002C, 10022 Sh. 16.
1	Solid Jaw, Offset (Tang End)	AAR-1018C, 10182 Sh. 17.
2	7" x 9" x 15' Ties (#14 T.O.) (16' For #10 T.O.)	
2	7"x 9" x 13' Ties	
2	7"x 9" x 10' Ties	
72	½"x 4" Lag Screws	
12	¾"x 10" Mach. Bolts with Bridge Washers	
40	Button Head Rivets	
273	Ft. Plugged Pipe	
8	¾"x 2½" Mach. Bolt	
8	¾" Lock Nuts	
3	Foundations For Pipe Carriers (2 For #10 T.O.)	
36	One-Way Pipe Carries	
1	½"x 9"x 42" Plate	
1	½"x 7"x 29" Plate	
1	Connecting Rod 43" Long (See Inset) (Topeka Shops)	
1	½"x 2"x 5" Mild Steel	

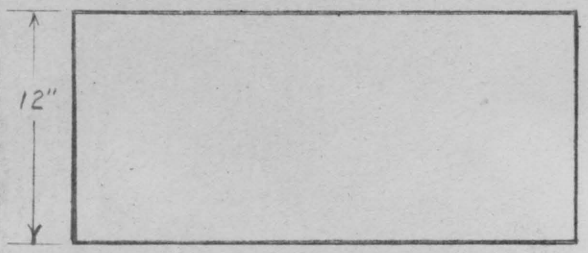


CONNECTING ROD TO DERAIL (TOPEKA SHOPS)

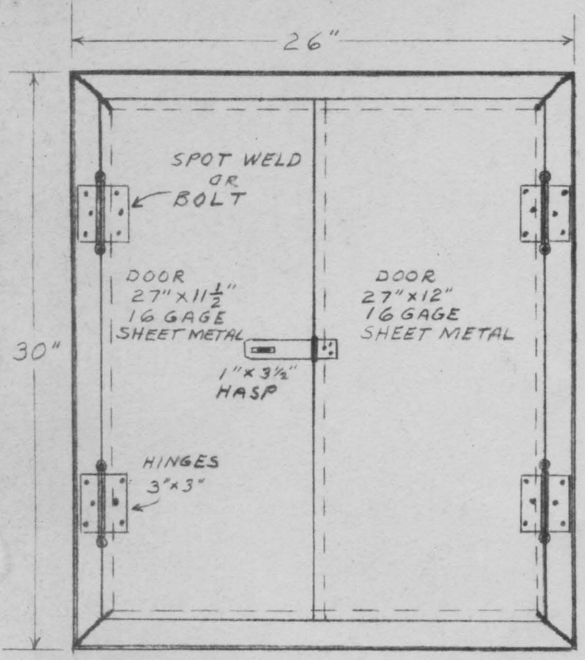
HAYES DERAIL

5-11-64 S.E.O.

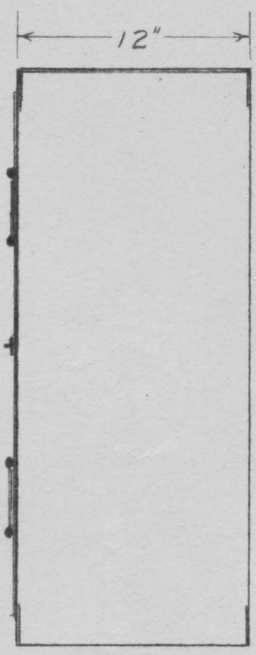
EO-20



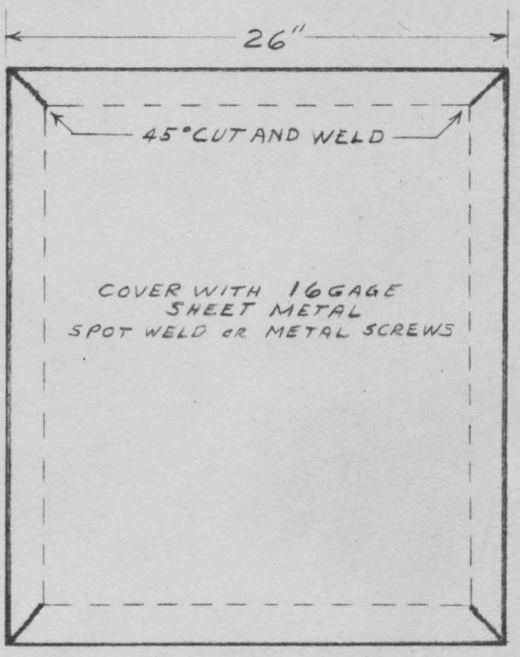
TOP VIEW



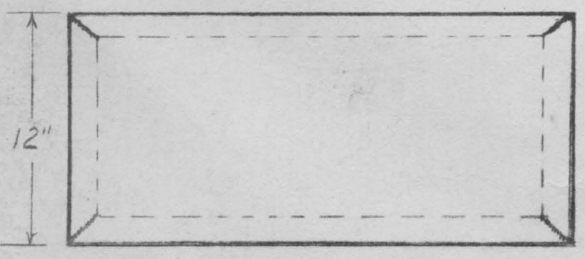
FRONT VIEW



SIDE VIEW



BACK VIEW



BOTTOM VIEW

PAINT:
1- COAT METAL PRIMER
2- COATS ALUMINUM

NOTE:
CONSTRUCT FROM
16 GAGE SHEET METAL.
HEAVY LINES ARE BENDS.

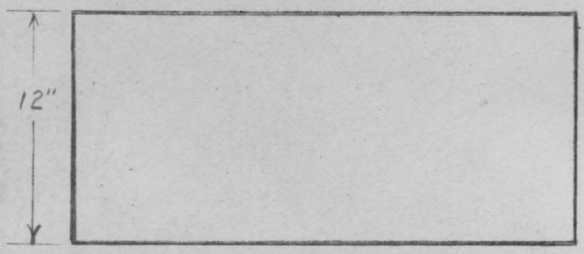
SHEET METAL CASE

FOR VALVE-REGULATOR & SWITCH
AT PROPANE TANK
SEO-TOPEKA 11-24-64
SCALE 1/10" = 1"

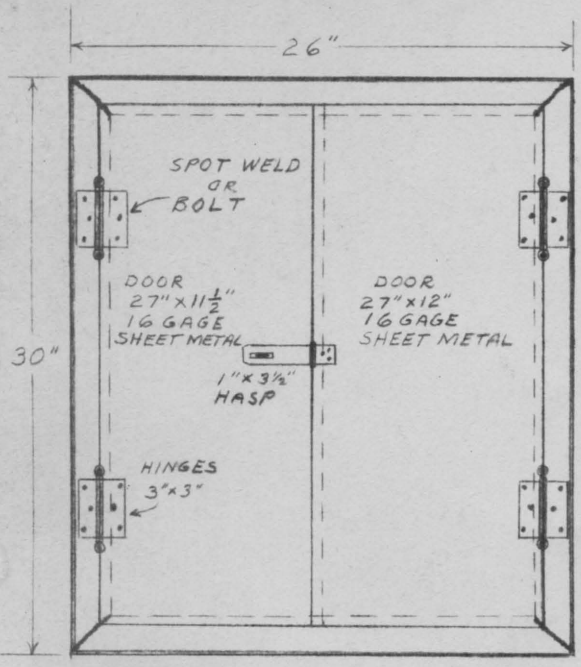
EO-39

Rev. 12-4-64

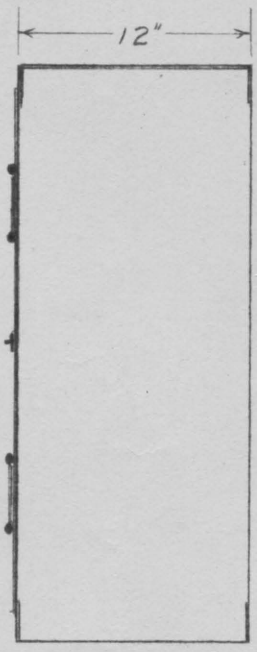
C 13



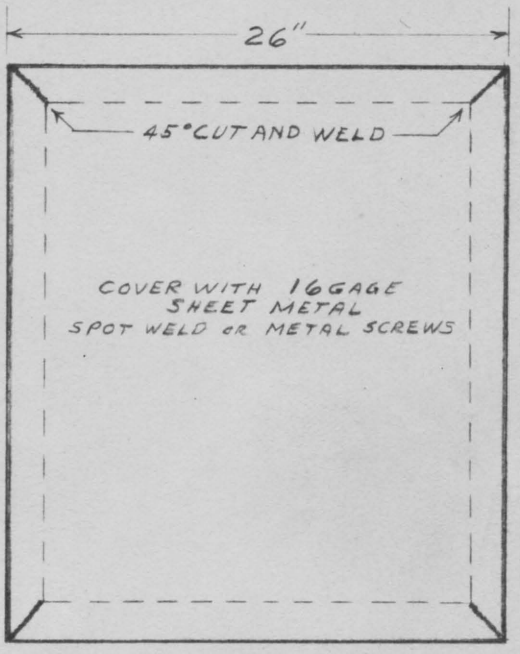
TOP VIEW



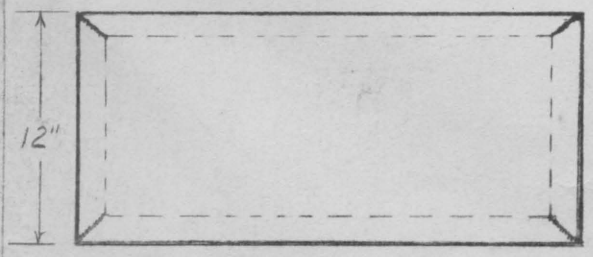
FRONT VIEW



SIDE VIEW



BACK VIEW



BOTTOM VIEW

PAINT:
1- COAT METAL PRIMER
2- COATS ALUMINUM

NOTE:
CONSTRUCT FROM
16 GAGE SHEET METAL.
HEAVY LINES ARE BENDS.

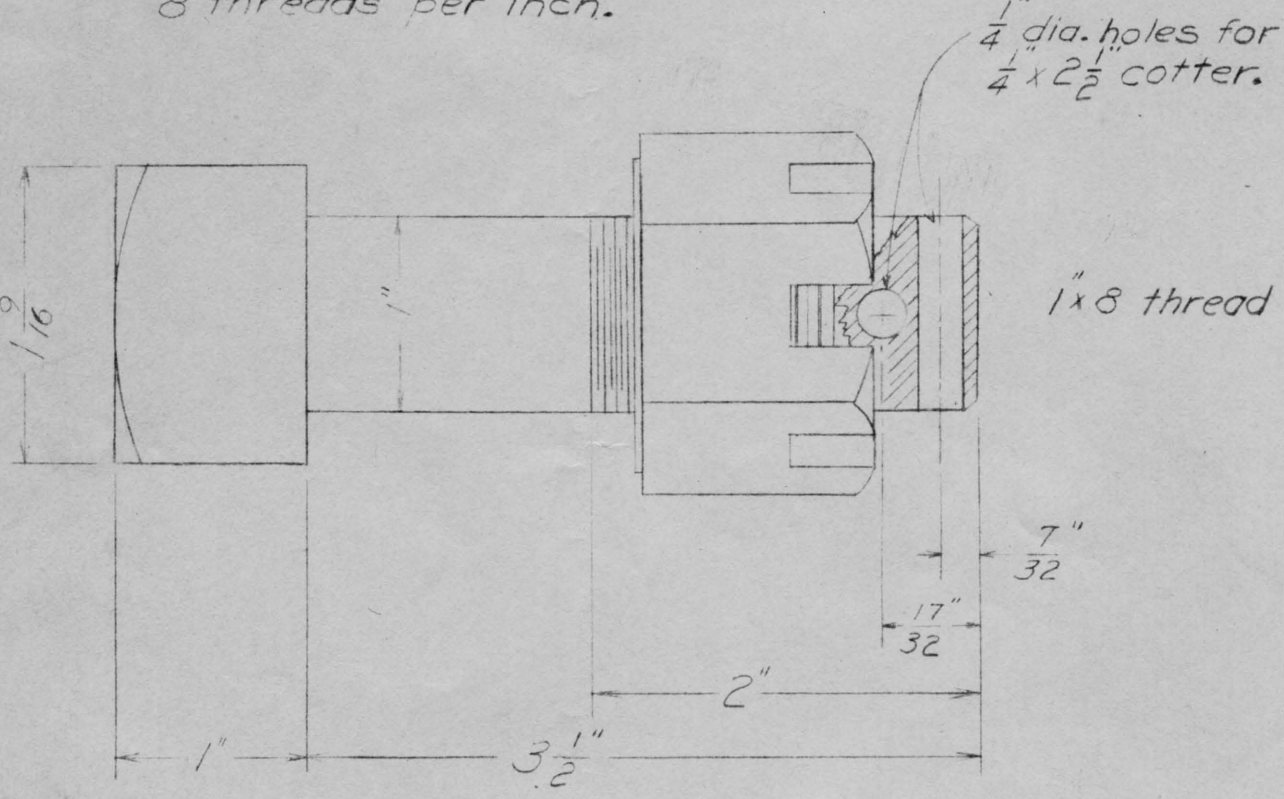
SHEET METAL CASE

FOR VALVE-REGULATOR & SWITCH
AT PROPANE TANK
SEO-TOPEKA 11-24-64
SCALE 1/10" = 1"

EO-39

Rev. 12-4-64

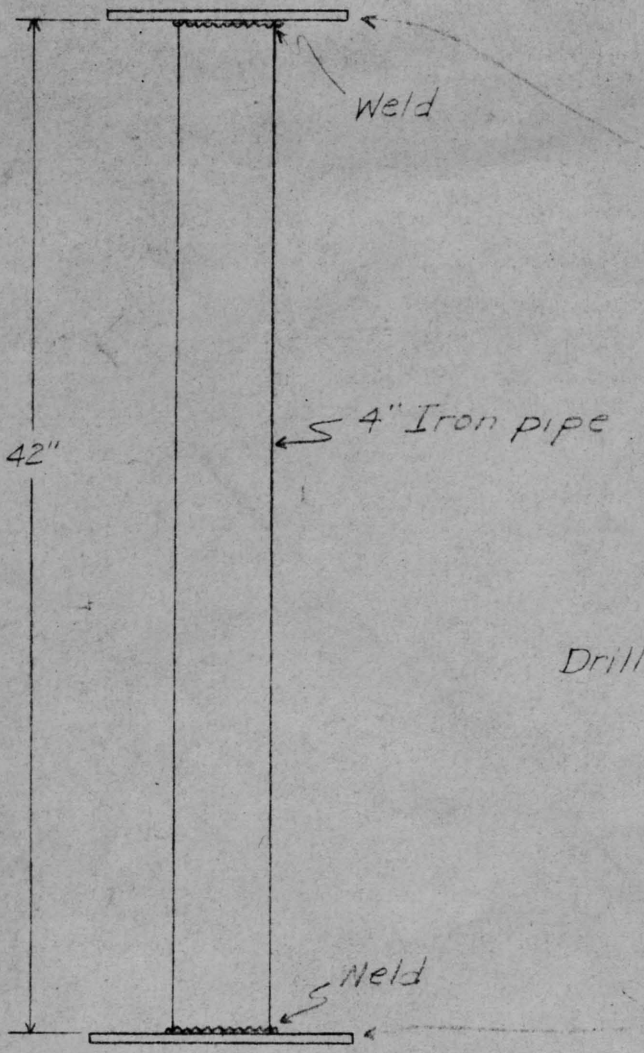
Slotted Nut, 1" dia. x 1 1/4" thick
8 threads per inch.

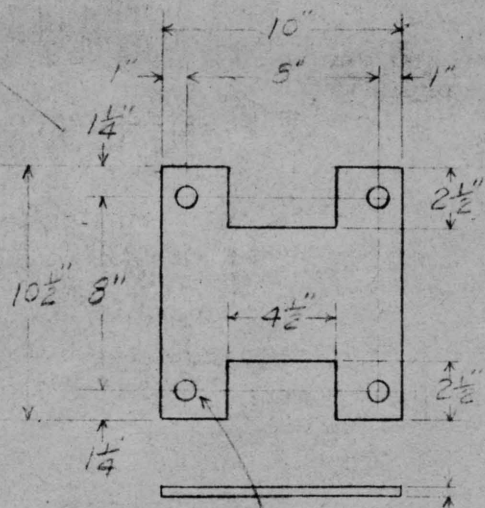


The A. T & S. F Ry. Co.

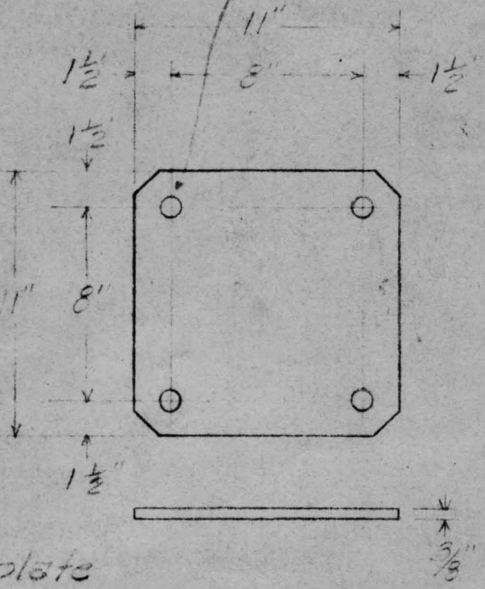
1" Sq Hd. Turned Bolt
with Slotted Nut

5550 1-9-58 0-1244 A





Drill holes for ¾" bolts



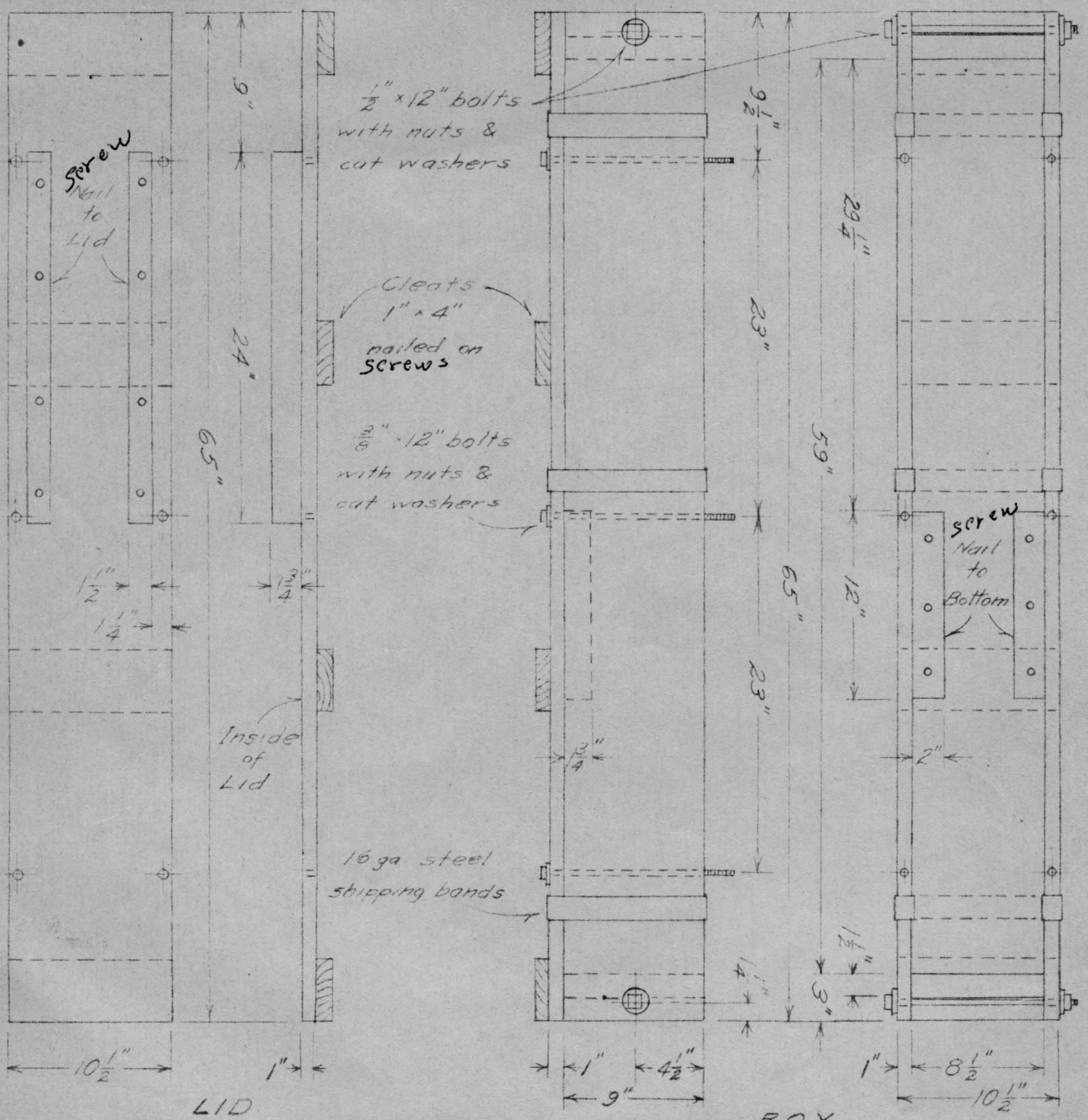
To be painted with one coat of steel car primer

Material: Std. 4" iron pipe 42" long
1-piece ⅜" X 10" X 10½" boiler plate
1-piece ⅜" X 11" X 11" boiler plate

To be furnished complete with 4-¾" x 2" sq. hd. machine bolts with nuts and washers

SEARCHLIGHT SIGNAL PEDESTAL
SHOP MADE
SEC-EL TOPEKA 3-6-57

EC-541



Stencil on top of LID:
"RETURN TO SIGNAL SHOP TOPEKA"

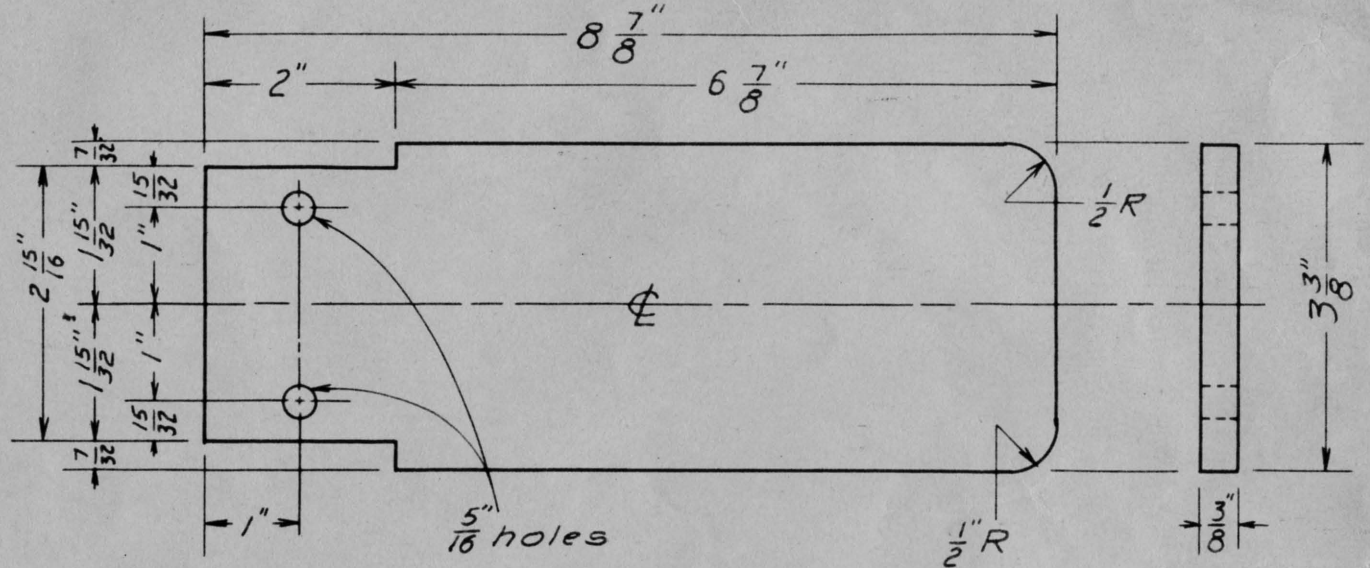
Material - Yellow Pine
Bottom & Lid : 1" x 10½"
Sides : 1" x 9" Ends : 1½" x 9"

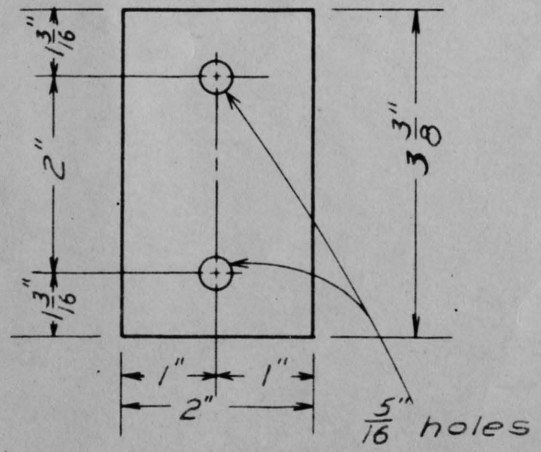
Finish - Two coats paint, inside and outside.

USE Screws for Cleats To Lid and Bottom.

8

A.T. & S.F Ry. Co.
Shipping Box for Mechanical Switchman
SESO 3-2-51
O-1165



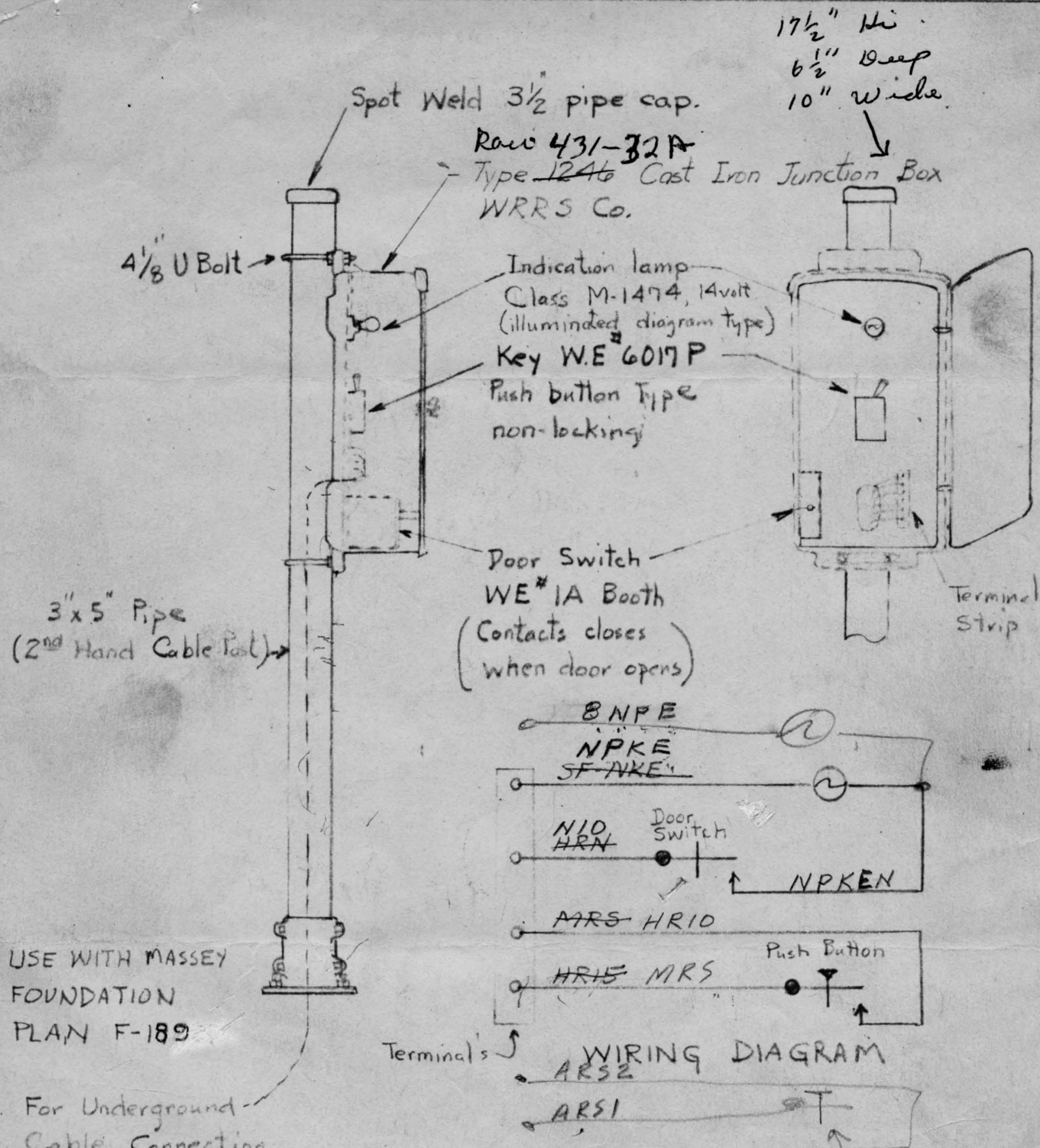


Material:
Scrap belting for blade.
12 Gauge sheet steel for retaining plate.

BLADE FOR STYLE T2 DWARF SIGNAL

SESO 0-1265 1-17-57

G

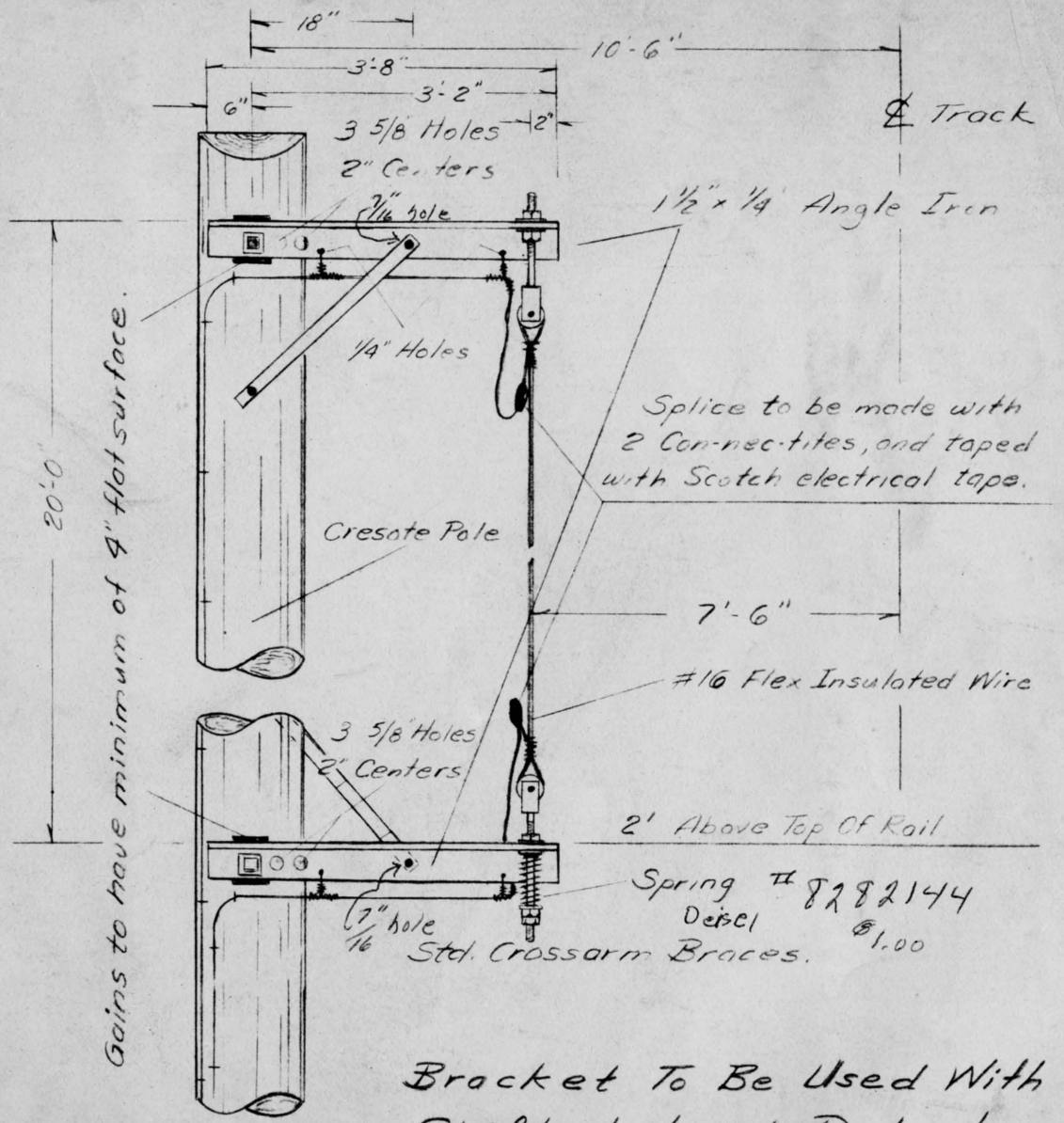


PUSH BUTTON & INDICATION LIGHT
IN
CAST IRON BOX

SEO EL TOPEKA 9-9-57

EO-544


The A.T. & S.F. Ry. Co.
RECEIVED
JUN 20 1958
TOPEKA, KANSAS
GENERAL STOREKEEPER

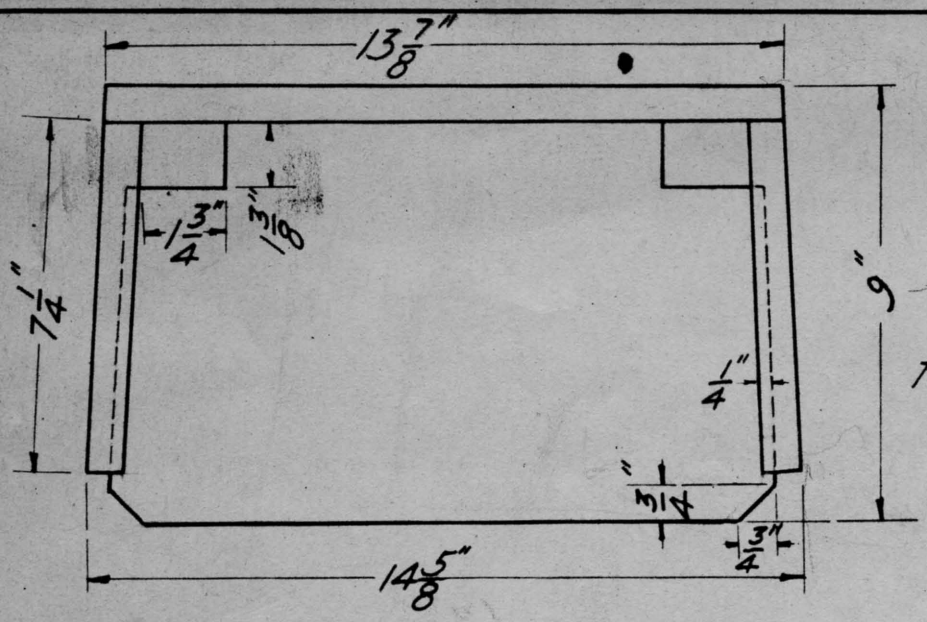


Bracket To Be Used With Shifted Load Detector

EO-558A

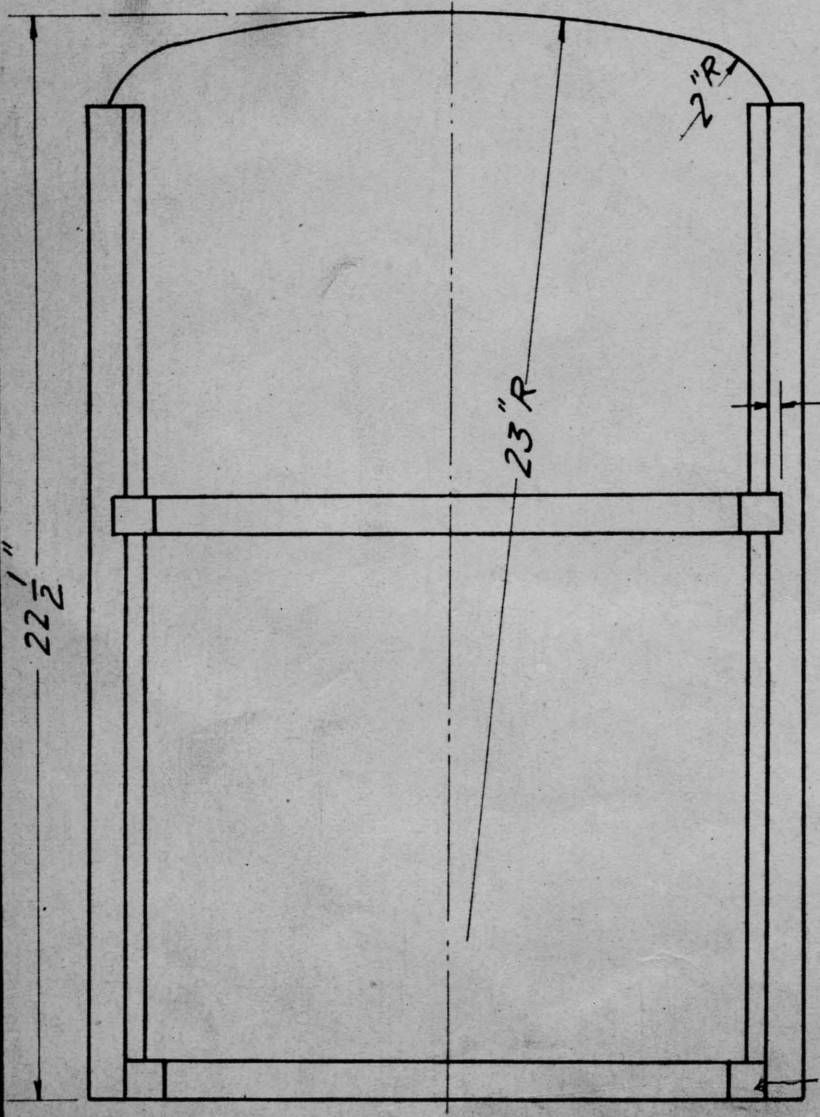
Rev 6-8-64

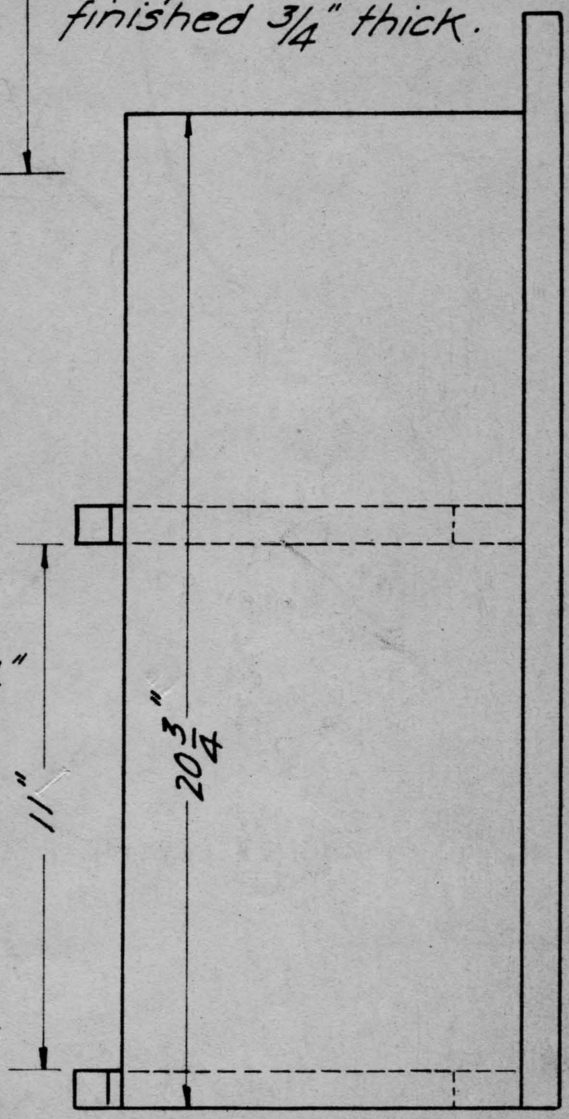
if
8 to be made



Material
Clear white pine
6d. nails.

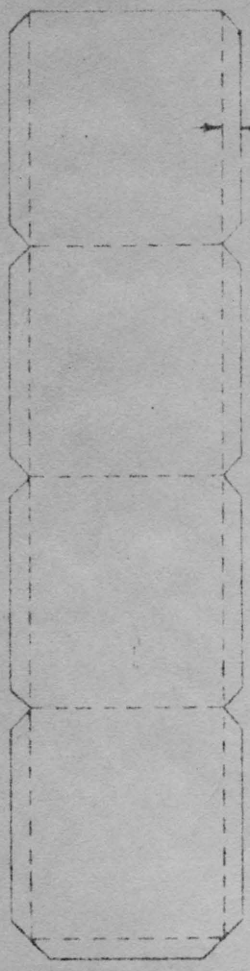
All pieces to be
finished 3/4" thick.

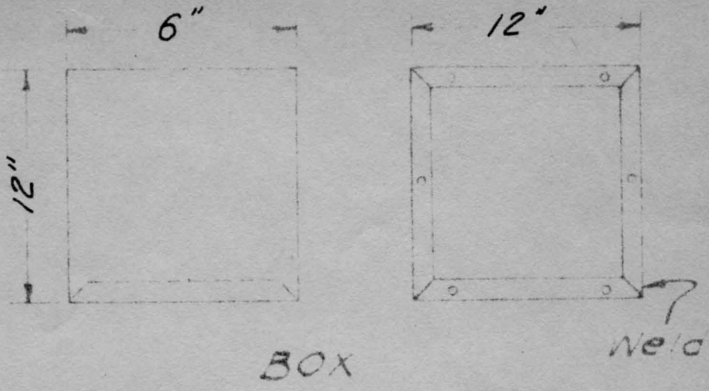




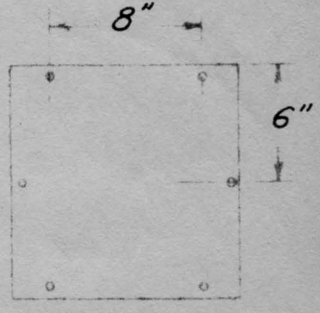
A. T. & S. F. Ry. System
WOOD LINING
FOR
IRON RELAY BOX
S.E.S.O. Topeka 12-2-38
" - 1 1/2" x 1" wide one side only
0-894

Revised 6-4-'40





BOX



FRONT & BACK COVERS

Developed length 48.452 inches.

Material: 18 ga. Sheet iron.

All holes to be drilled for #8-32 Oven-head self taping metal screws

Paint: 1 Coat Primer and 2 Coats Grey Green Lacquer

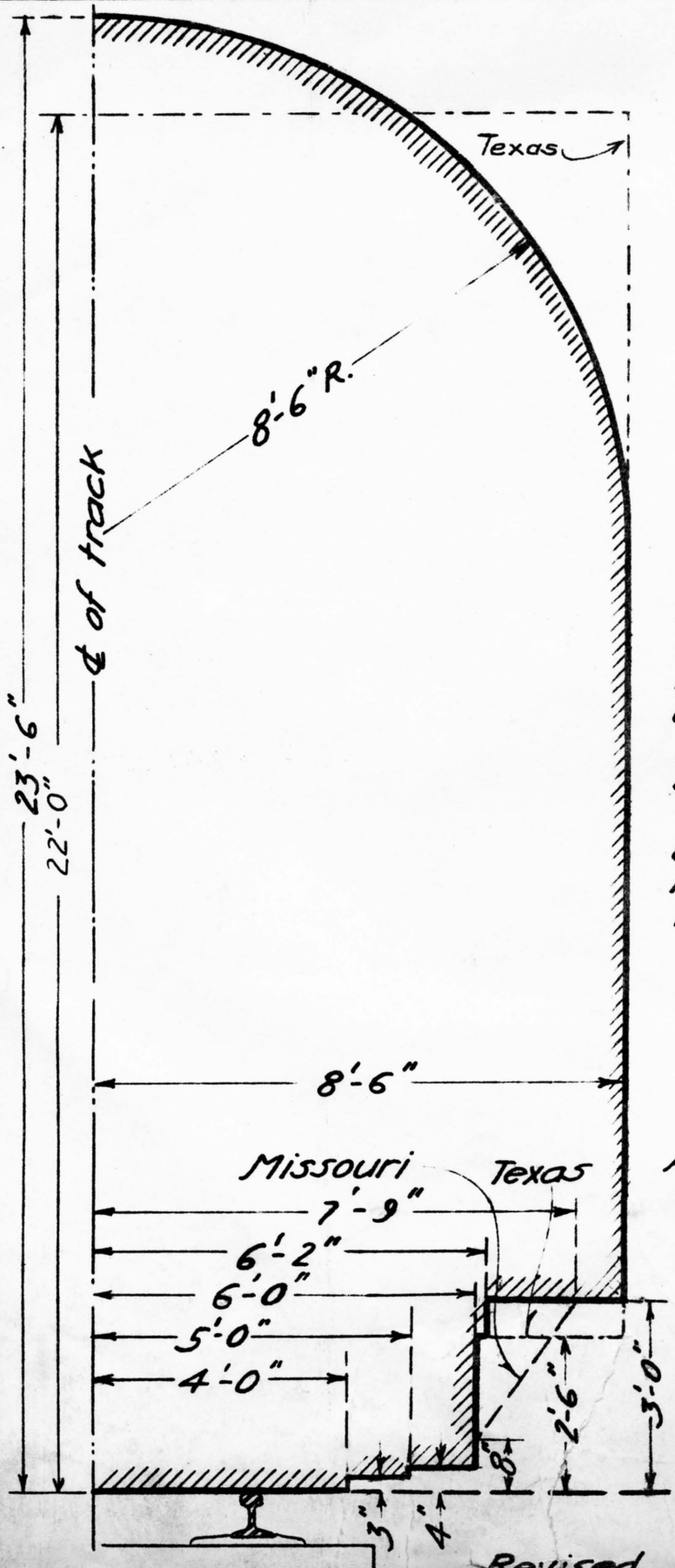
A.T.&S.F.Ry. Co.

METAL BOX FOR CONTROL BOX USED WITH H-5 TRAIN ORDER SIGNAL

SESO

9-29-55

O-1233-A



This diagram supersedes SES-646 and applies on tangent track for construction and reconstruction of signal equipment except where requirements of public authority are more restrictive.

Indentations at lower right apply to dwarf signals and interlocking apparatus between tracks.

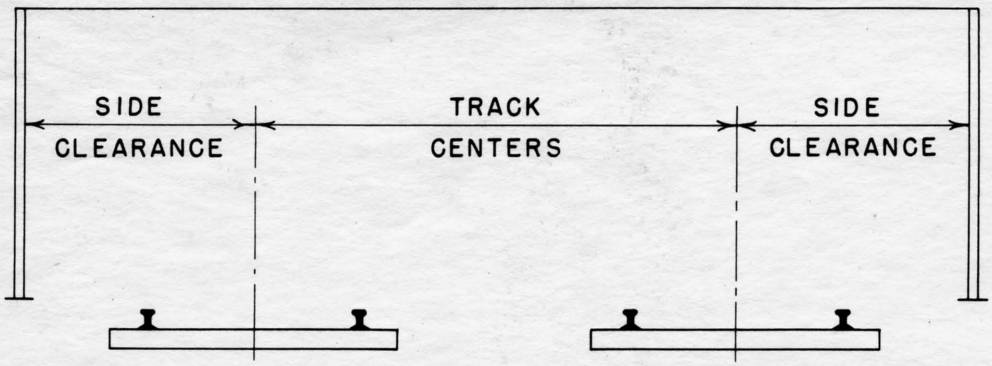
Approved _____
Signal Engineer System
Topeka 10-20-48

A. T. & S. F. Ry.

MINIMUM CLEARANCE DIAGRAM FOR SIGNAL EQUIPMENT

Revised 3-18-71

SES-646

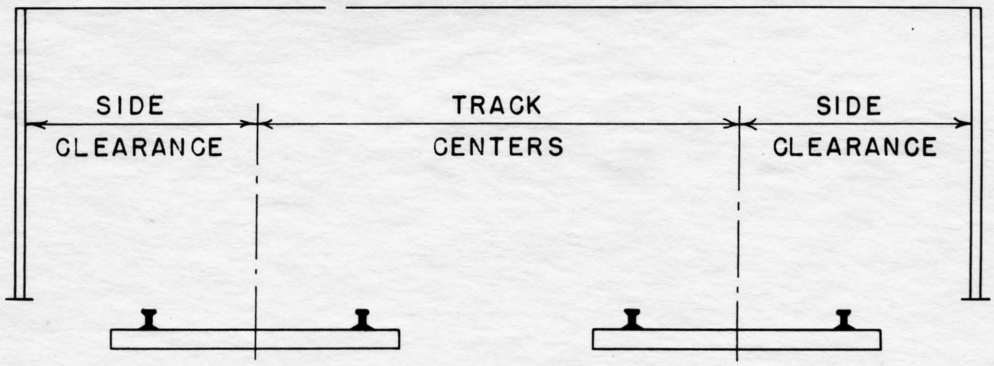


MINIMUM SIDE CLEARANCE FROM CENTER OF TRACK			
	MINIMUM SIDE CLEARANCE OUTSIDE OF CURVE	MAXIMUM TRACK CENTERS	MINIMUM SIDE CLEARANCE INSIDE OF CURVE
TANGENT	8' – 6"	18' – 0"	8' – 6"
0° – 30'	8' – 7"	16' – 5"	10' – 0"
1°	8' – 7"	16' – 4"	10' – 1"
1° – 30'	8' – 8"	16' – 3"	10' – 1"
2°	8' – 8"	16' – 2"	10' – 2"
2° – 30'	8' – 9"	16' – 0"	10' – 3"
3°	8' – 9"	16' – 0"	10' – 3"
4°	8' – 10"	15' – 10"	10' – 4"
5°	8' – 11"	15' – 8"	10' – 5"
6°	9' – 0"	15' – 6"	10' – 6"
7°	9' – 1"	15' – 4"	10' – 7"
8°	9' – 1"	15' – 4"	10' – 7"
9°	9' – 2"	15' – 2"	10' – 8"
10°	9' – 3"	15' – 0"	10' – 9"
11°	9' – 4"	14' – 10"	10' – 10"
12°	9' – 5"	14' – 8"	10' – 11"
13°	9' – 6"	14' – 6"	11' – 0"
14°	9' – 7"	14' – 4"	11' – 1"
15°	9' – 8"	14' – 2"	11' – 2"
16°	9' – 9"	14' – 0"	11' – 3"

TWO-TRACK BRIDGE CES-5216A, SPAN 35'-0". MINIMUM SIDE CLEARANCE AS SHOWN ABOVE TO BE USED FOR TWO, THREE, FOUR AND FIVE TRACK BRIDGES EXCEPT AS FOLLOWS: IN IOWA USE SES 657 SH. 2. IN ILLINOIS USE SES 657 SH. 3

A.T. & S.F. RY. CO.
CLEARANCES FOR
SIGNAL BRIDGES
SESO 3-30-51
SES 657 SH. 1 OF 3

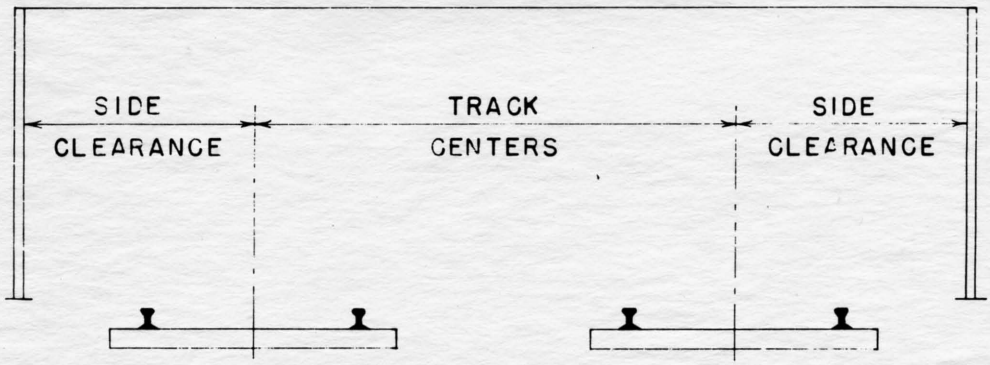
REV. 5-9-51



MINIMUM SIDE CLEARANCE FROM CENTER OF TRACK			
	MINIMUM SIDE CLEARANCE OUTSIDE OF CURVE	MAXIMUM TRACK CENTERS	MINIMUM SIDE CLEARANCE INSIDE OF CURVE
TANGENT	8' – 8"	17' – 8"	8' – 8"
0° – 30'	8' – 9"	16' – 1"	10' – 2"
1°	8' – 9"	16' – 0"	10' – 3"
1° – 30'	8' – 10"	15' – 11"	10' – 3"
2°	8' – 10"	15' – 10"	10' – 4"
2° – 30'	8' – 11"	15' – 8"	10' – 5"
3°	8' – 11"	15' – 8"	10' – 5"
4°	9' – 0"	15' – 6"	10' – 6"
5°	9' – 1"	15' – 4"	10' – 7"
6°	9' – 2"	15' – 2"	10' – 8"
7°	9' – 3"	15' – 0"	10' – 9"
8°	9' – 3"	15' – 0"	10' – 9"
9°	9' – 4"	14' – 10"	10' – 10"
10°	9' – 5"	14' – 8"	10' – 11"
11°	9' – 6"	14' – 6"	11' – 0"
12°	9' – 7"	14' – 4"	11' – 1"
13°	9' – 8"	14' – 2"	11' – 2"
14°	9' – 9"	14' – 0"	11' – 3"

TWO-TRACK BRIDGE CES-5216A, SPAN 35'-0".
MINIMUM SIDE CLEARANCE AS SHOWN ABOVE
TO BE USED FOR TWO, THREE, FOUR AND FIVE
TRACK BRIDGES IN IOWA ONLY.

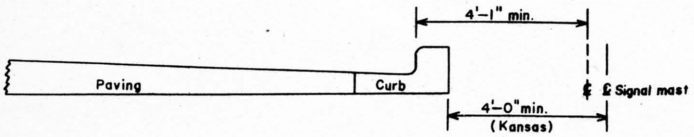
A.T. & S.F. RY. CO.
CLEARANCES FOR
SIGNAL BRIDGES
SESO 5-9-51
SES 657 SH. 2 OF 3



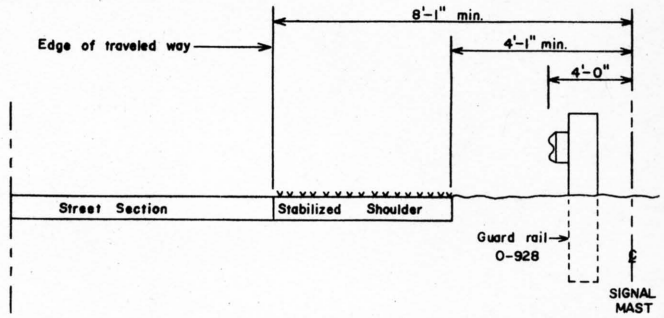
MINIMUM SIDE CLEARANCE FROM CENTER OF TRACK			
	MINIMUM SIDE CLEARANCE OUTSIDE OF CURVE	MAXIMUM TRACK CENTERS	MINIMUM SIDE CLEARANCE INSIDE OF CURVE
TANGENT	9' – 0"	17' – 0"	9' – 0"
0° – 30'	9' – 1"	15' – 5"	10' – 6"
1°	9' – 1"	15' – 4"	10' – 7"
1° – 30'	9' – 2"	15' – 3"	10' – 7"
2°	9' – 2"	15' – 2"	10' – 8"
2° – 30'	9' – 3"	15' – 0"	10' – 9"
3°	9' – 3"	15' – 0"	10' – 9"
4°	9' – 4"	14' – 10"	10' – 10"
5°	9' – 5"	14' – 8"	10' – 11"
6°	9' – 6"	14' – 6"	11' – 0"
7°	9' – 7"	14' – 4"	11' – 1"
8°	9' – 7"	14' – 4"	11' – 1"
9°	9' – 8"	14' – 2"	11' – 2"
10°	9' – 9"	14' – 0"	11' – 3"

TWO-TRACK BRIDGE CES-5216A, SPAN 35'-0".
MINIMUM SIDE CLEARANCE AS SHOWN ABOVE
TO BE USED FOR TWO, THREE, FOUR AND FIVE
TRACK BRIDGES IN ILLINOIS ONLY.

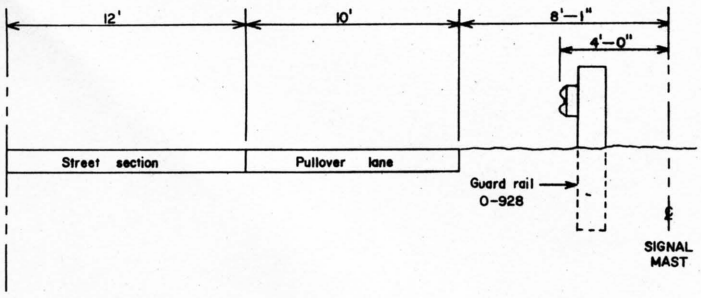
A.T. & S.F. RY. CO.
CLEARANCES FOR
SIGNAL BRIDGES
SESO 5-9-51
SES 657 SH. 3 OF 3



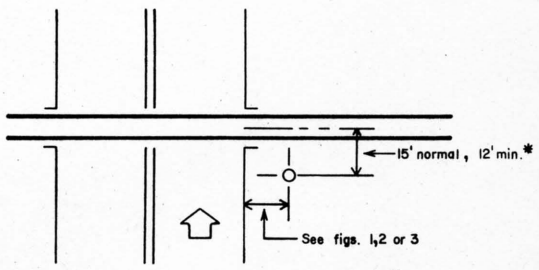
LOCATION OF SIGNALS FROM CURB
FIG. 1



LOCATION OF SIGNALS FROM ROADWAY WITH NO CURB
FIG.2



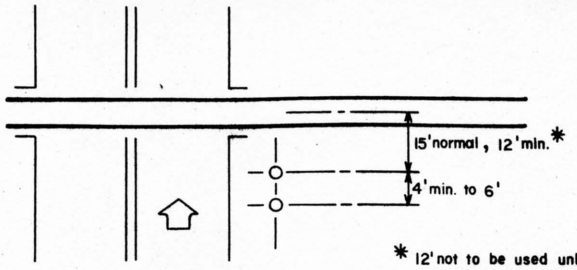
LOCATION OF SIGNALS FROM PULLOVER OR DECELERATION LANE
ON SOME STATE HIGHWAYS IN KANSAS
FIG. 3



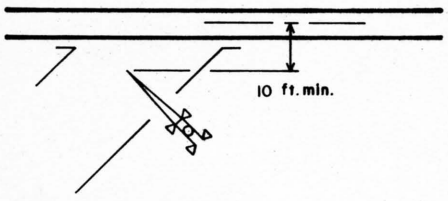
* 12' not to be used unless authorized by ACE-S.

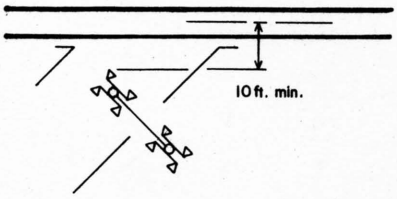
LOCATION OF SIGNALS FROM CENTER LINE OF TRACK
FIG. 4

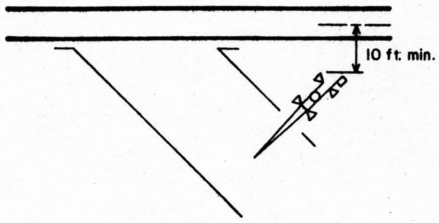
NOTE: Either cantilever or gate may be closest to track as local conditions require.



LOCATION OF SIGNALS WHERE CANTILEVERS AND GATES ARE REQUIRED
FIG. 1

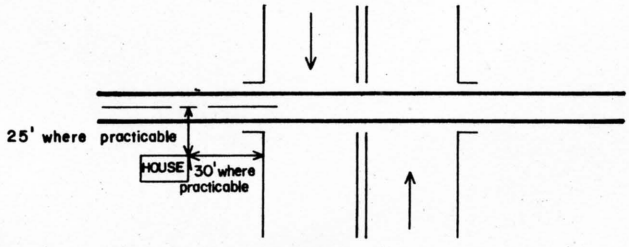




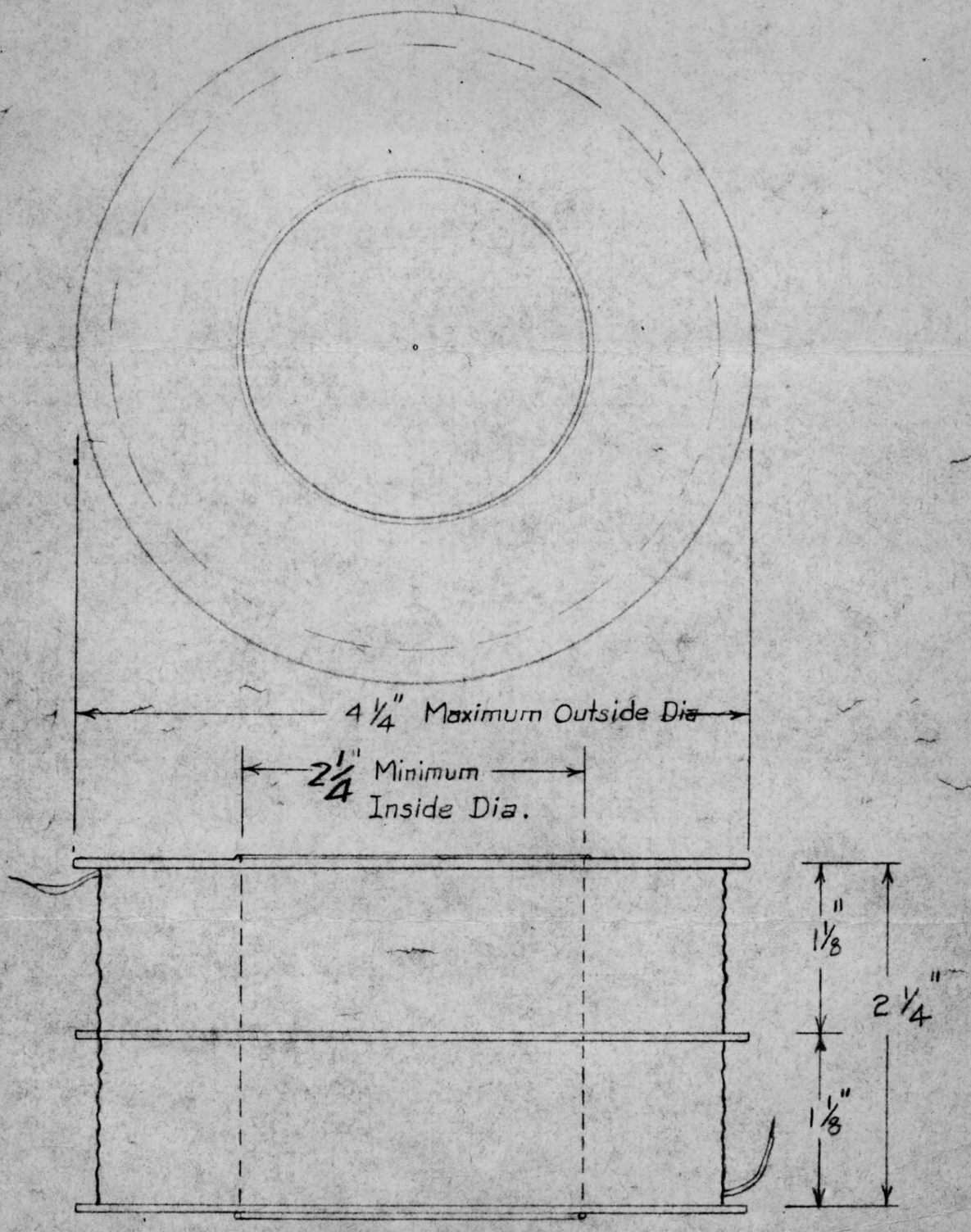


NOTE: Consider possible wide loads in applying this standard.

MINIMUM CLEARANCE OF SIGNAL ATTACHMENTS ON ANGLED CROSSINGS
FIG. 2



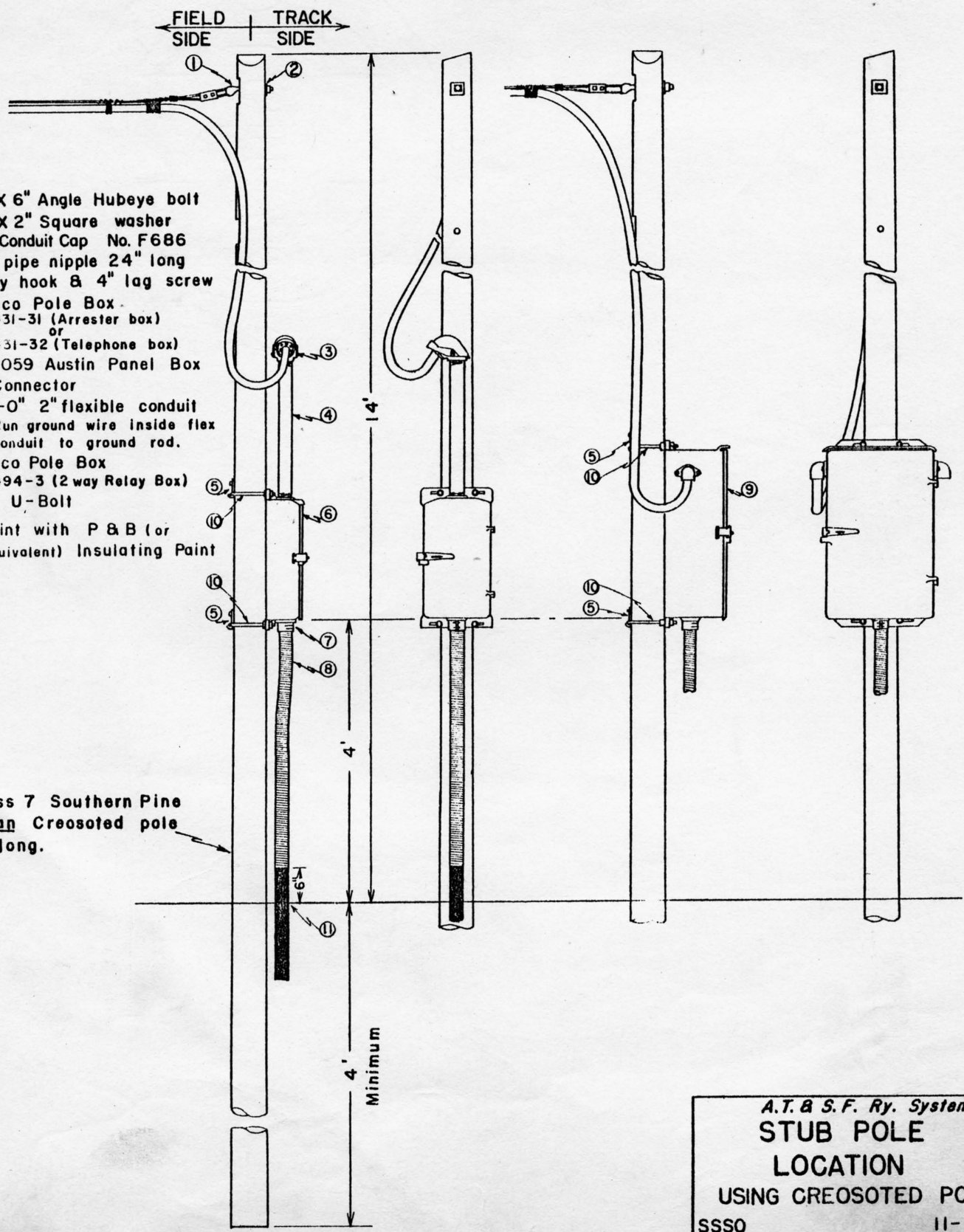
LOCATION OF HOUSE FROM STREET AND TRACK
FIG. 3



DC Resistance = .9 ohm

220 V. AC COIL
FOR LINE CONTACTOR
(16L) EO-507

16L To be made AT ELECTRIC Shop



① ⅝" X 6" Angle Hubeye bolt
② 2" X 2" Square washer
③ 2" Conduit Cap No. F686
④ 2" pipe nipple 24" long
⑤ Guy hook & 4" lag screw
⑥ Raco Pole Box 431-31 (Arrester box) or 431-32 (Telephone box)
⑦ #2059 Austin Panel Box Connector
⑧ 5'-0" 2" flexible conduit Run ground wire inside flex conduit to ground rod.
⑨ Raco Pole Box 494-3 (2 way Relay Box)
⑩ 6" U-Bolt
⑪ Paint with P & B (or equivalent) Insulating Paint

Class 7 Southern Pine Clean Creosoted pole 18' long.

A.T. & S.F. Ry. System

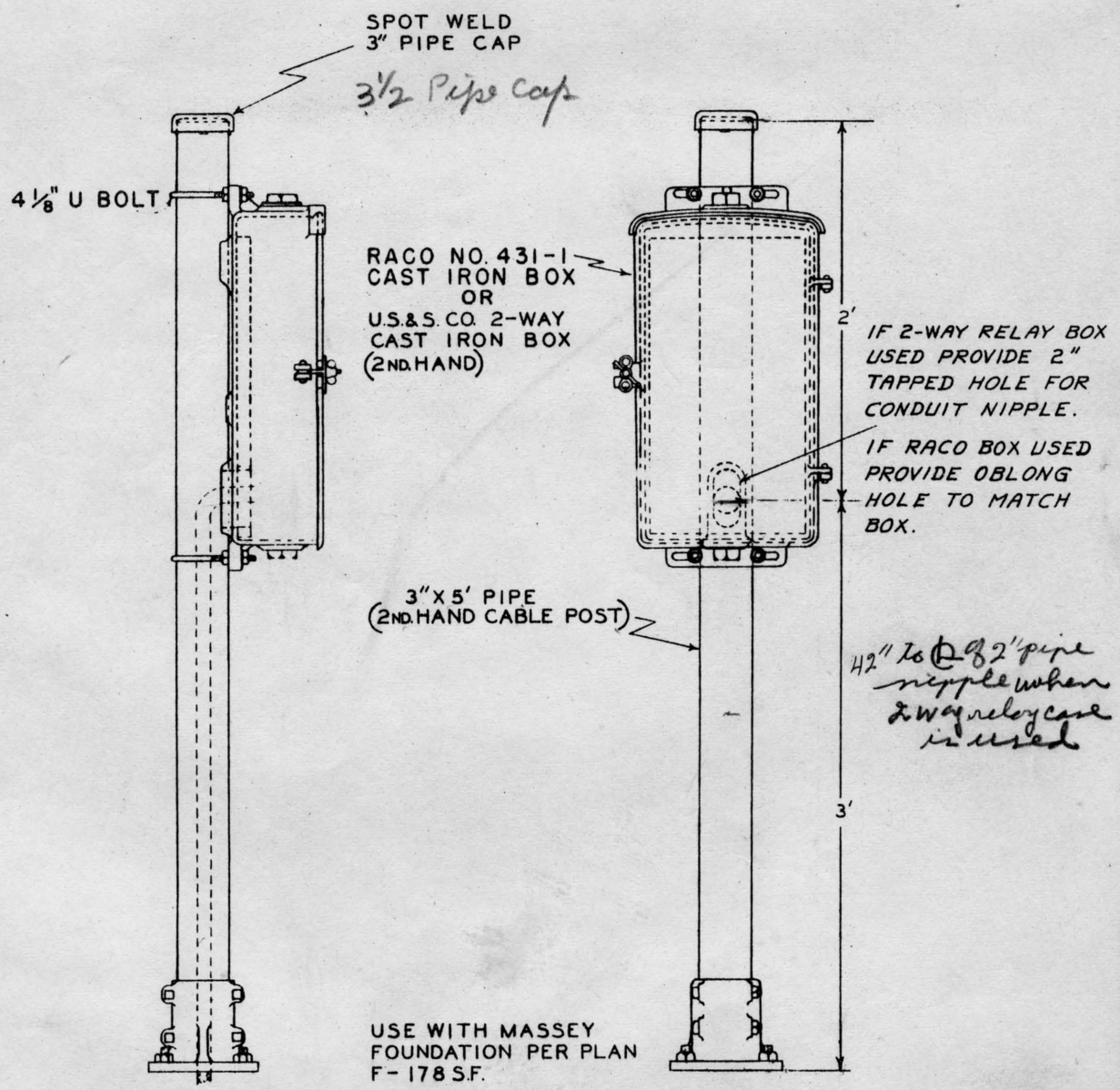
STUB POLE LOCATION

USING CREOSOTED POLE

SSSO 11-15-61

0-925

Rev: 10-26-64



A.T. & S.F. RY. CO.

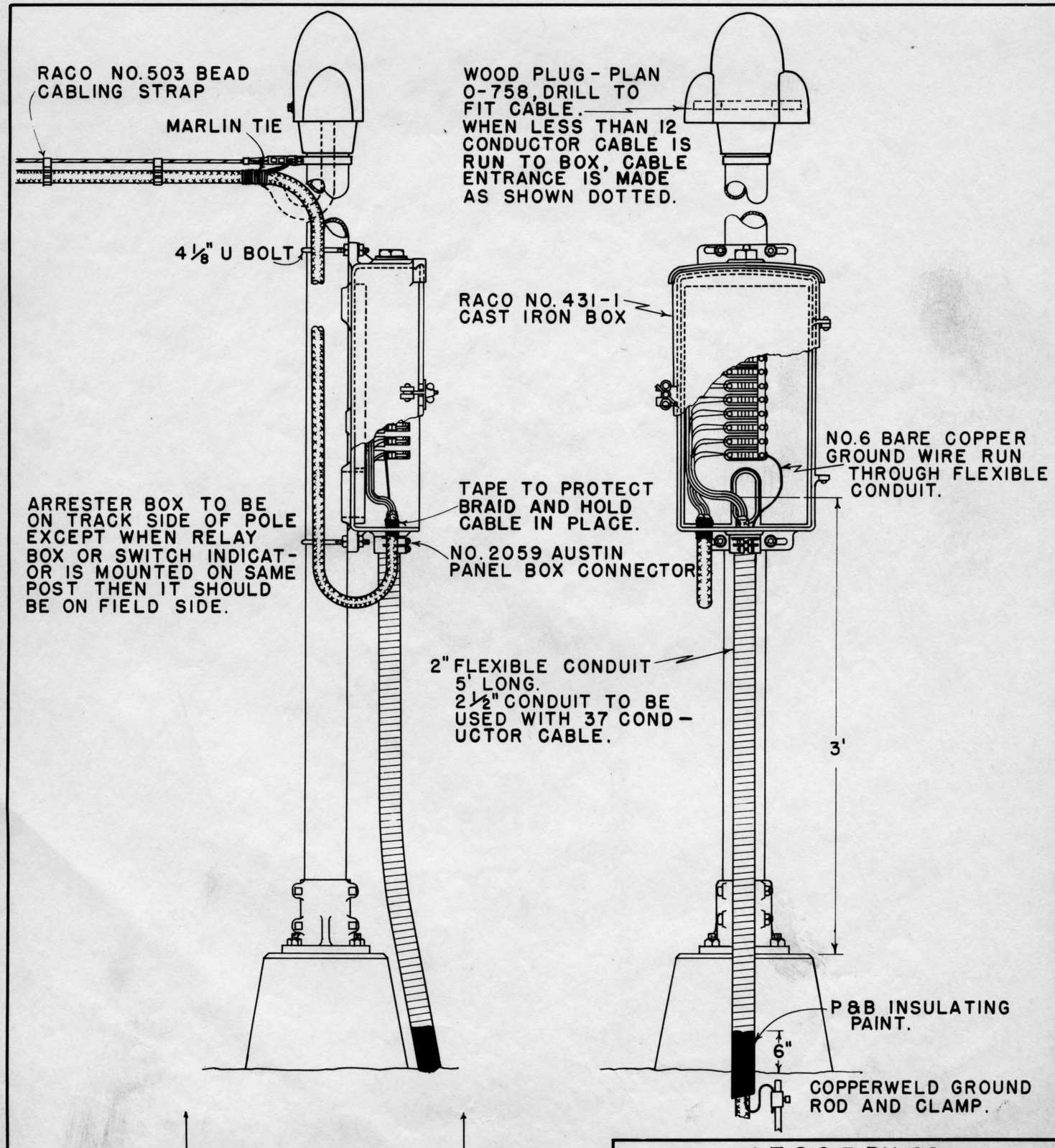
CAST IRON TELEPHONE BOX

S.E.O. TOPEKA

11-27-56

EO-537

EO 12-C12 over



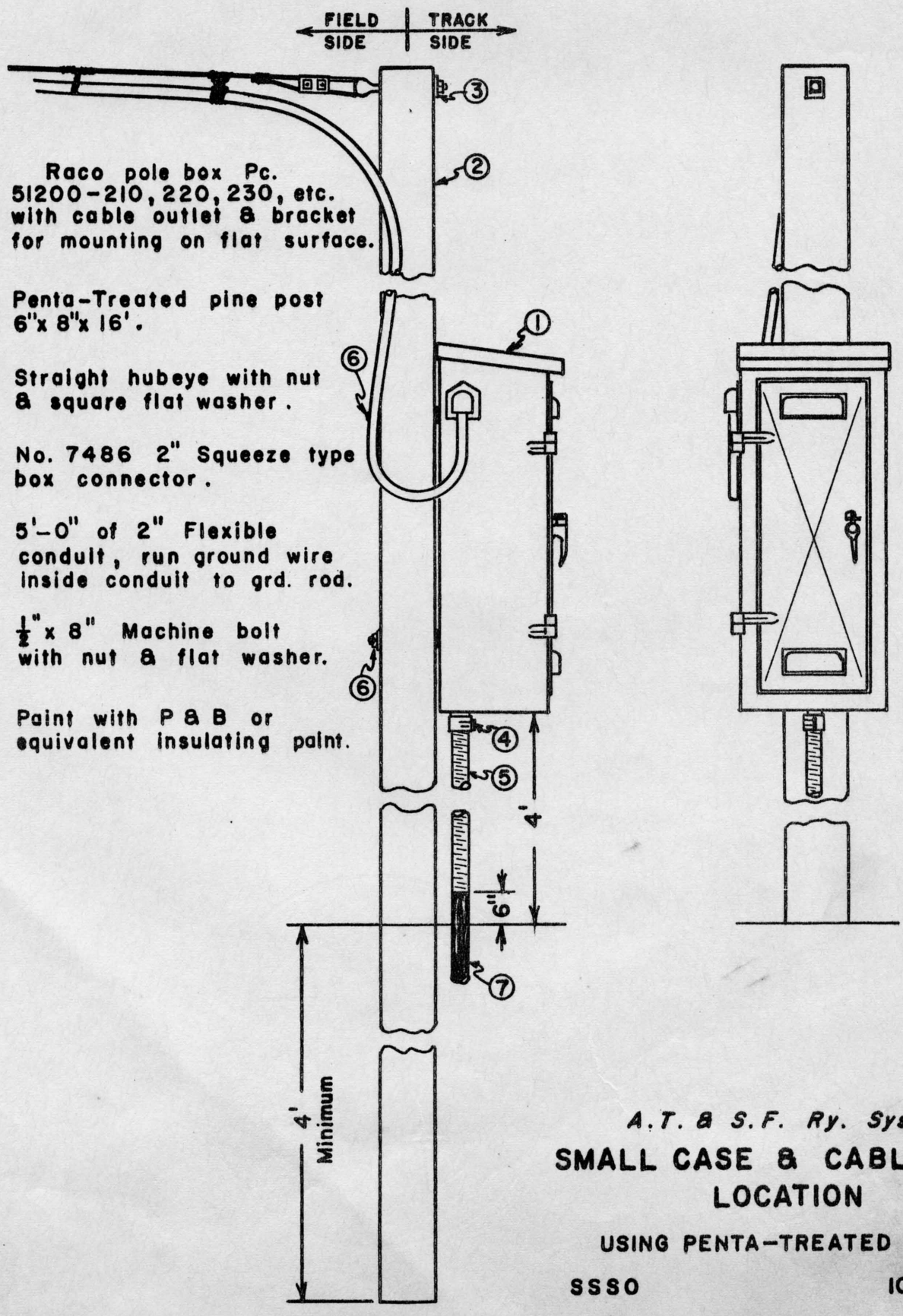
A.T. & S.F. RY. CO.

CAST IRON LIGHTNING ARRESTER BOX ON CABLE POST

S.E.S.O. TOPEKA MAY 15, 1950

0-725

KAUL



① Raco pole box Pc. 51200-210, 220, 230, etc. with cable outlet & bracket for mounting on flat surface.

② Penta-Treated pine post 6"x 8"x 16'.

③ Straight hubeye with nut & square flat washer.

④ No. 7486 2" Squeeze type box connector.

⑤ 5'-0" of 2" Flexible conduit, run ground wire inside conduit to grd. rod.

⑥ ½"x 8" Machine bolt with nut & flat washer.

⑦ Paint with P & B or equivalent insulating paint.

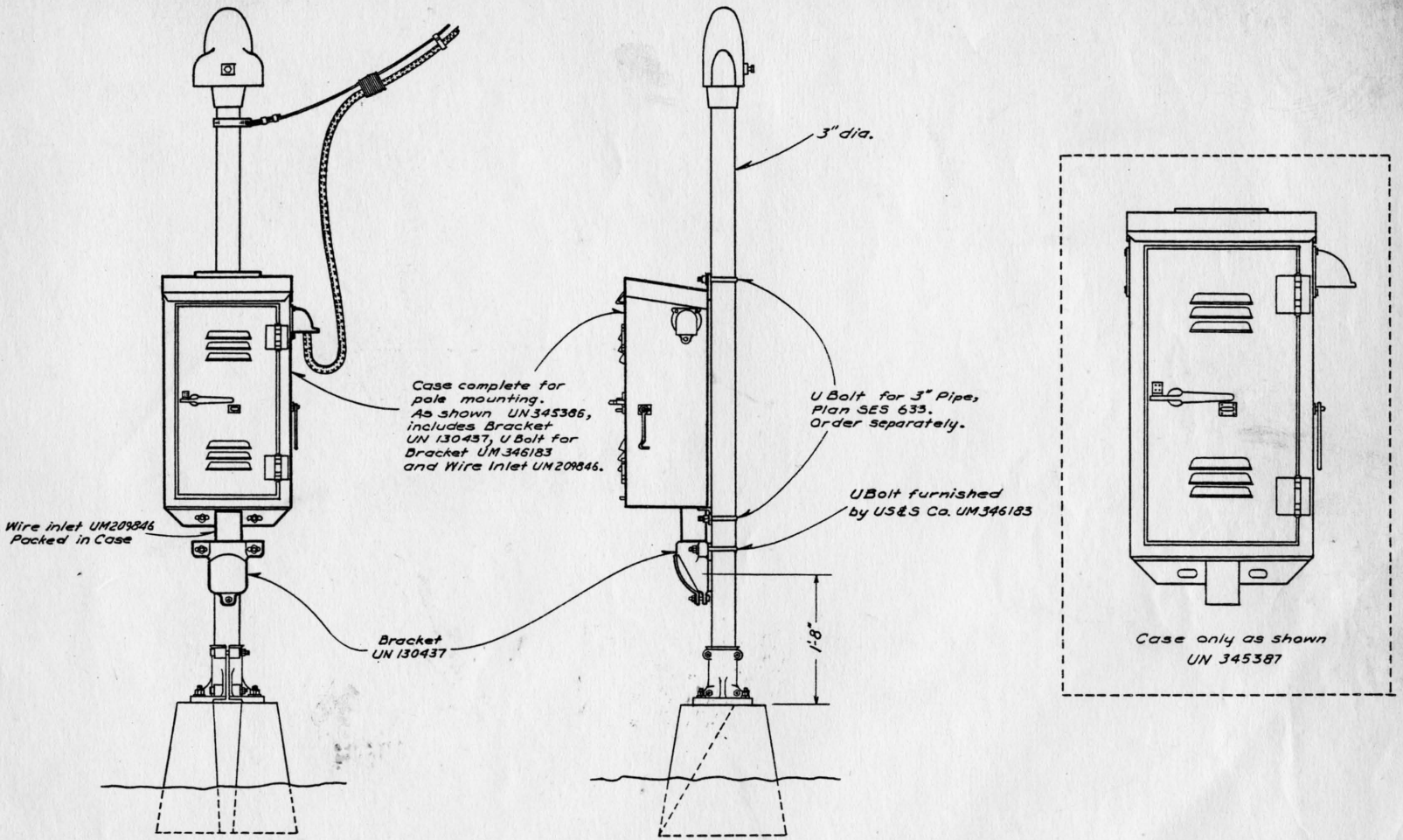
A.T. & S.F. Ry. System

SMALL CASE & CABLE DROP LOCATION

USING PENTA-TREATED POST

SSSO 10-21-68

0-924



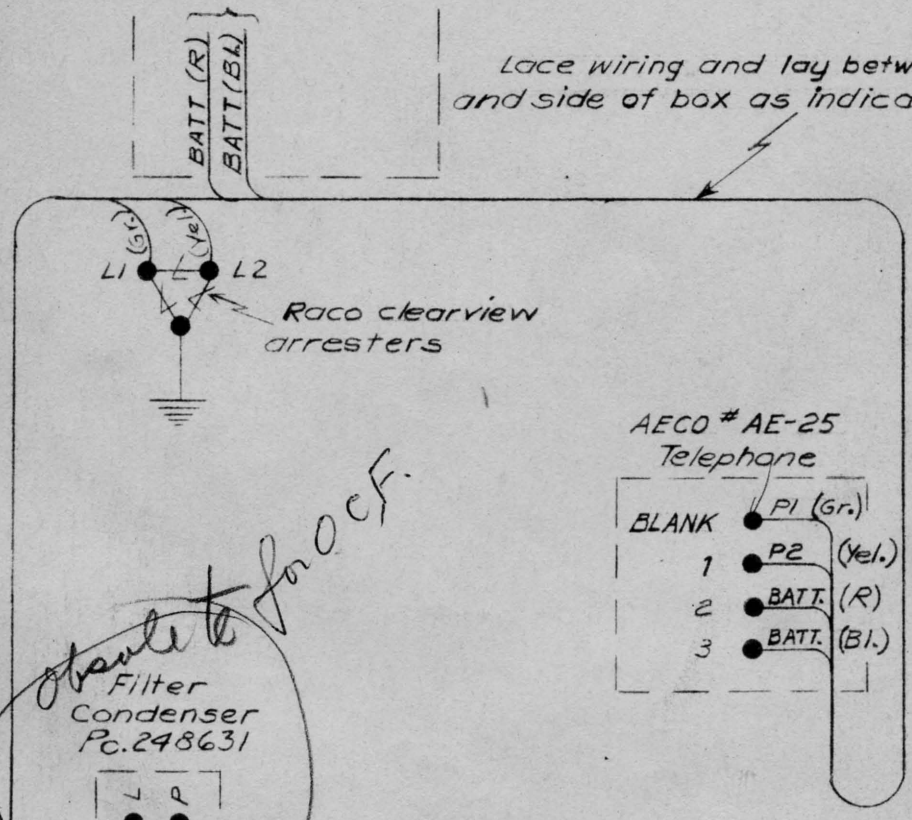
The A. T. & S. F. Ry. System

STYLE "S" SHEET STEEL RELAY CASE ON CABLE POST

SSSO 0-1267 1 - 21 - 58

C-14

To W.E. #1-A battery box, leave 10"-14" slack wire in box.



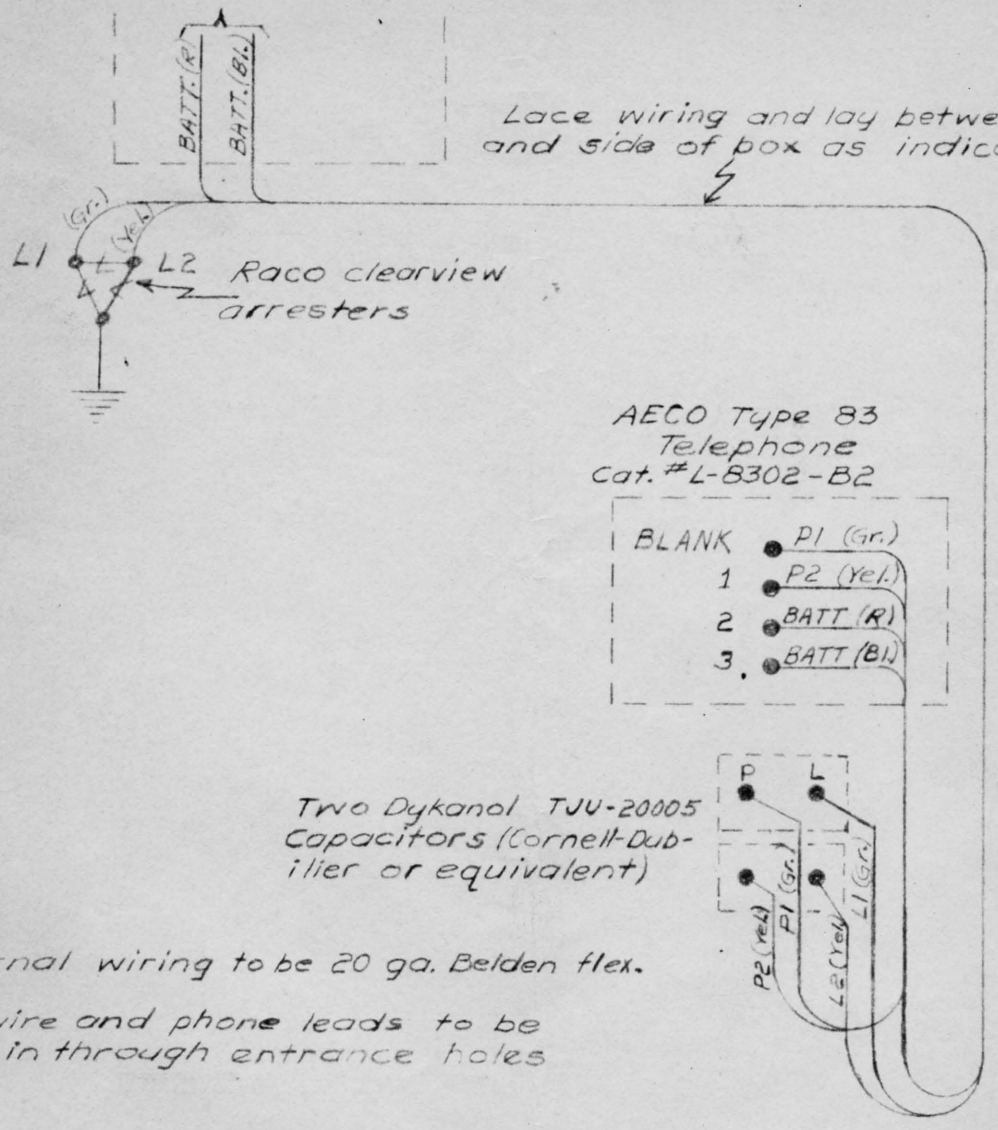
All internal wiring to be 20 ga. Belden Flex.

Ground wire and phone leads to be brought in through cable post entrance hole in field.

WIRING DIAGRAM
FOR
CAST IRON TELEPHONE BOX
SHOWN ON PLAN O-1269
SSSO TOPEKA JANUARY 30, 1958

M-270

To W.E. #1-A battery box, leave 10"-14" slack wire in box



Two Dykanol TJU-20005 Capacitors (Cornell-Dubilier or equivalent)

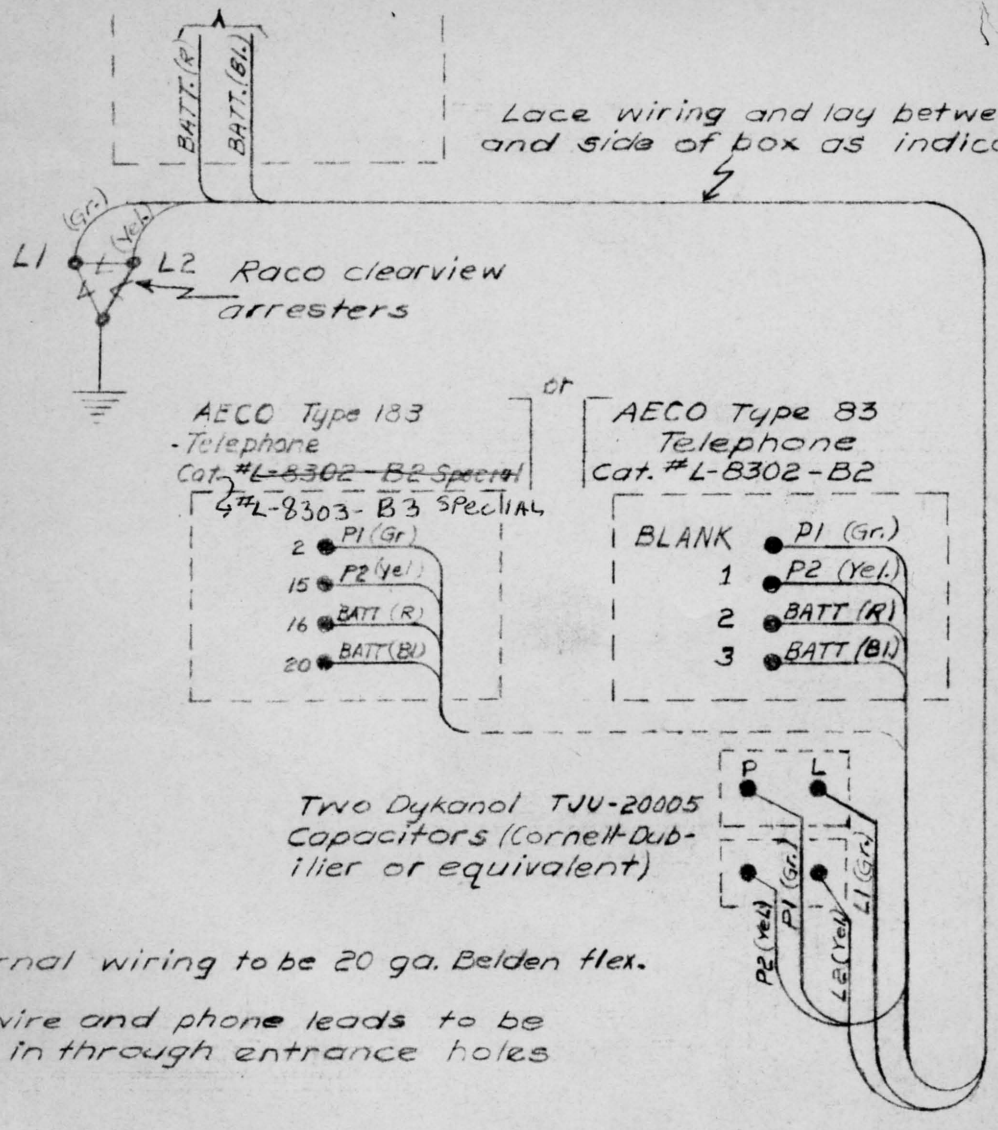
All internal wiring to be 20 ga. Belden flex.

Ground wire and phone leads to be brought in through entrance holes in field.

The A.T. & S.F Ry. System
WIRING DIAGRAM FOR
CAST IRON TELEPHONE BOX
SHOWN ON PLAN O-1269

SSSO Topeka M-270 10-15-59

To W.E. #1-A battery box, leave 10"-14" slack wire in box



Two Dykanol TJU-20005 Capacitors (Cornell-Dubilier or equivalent)

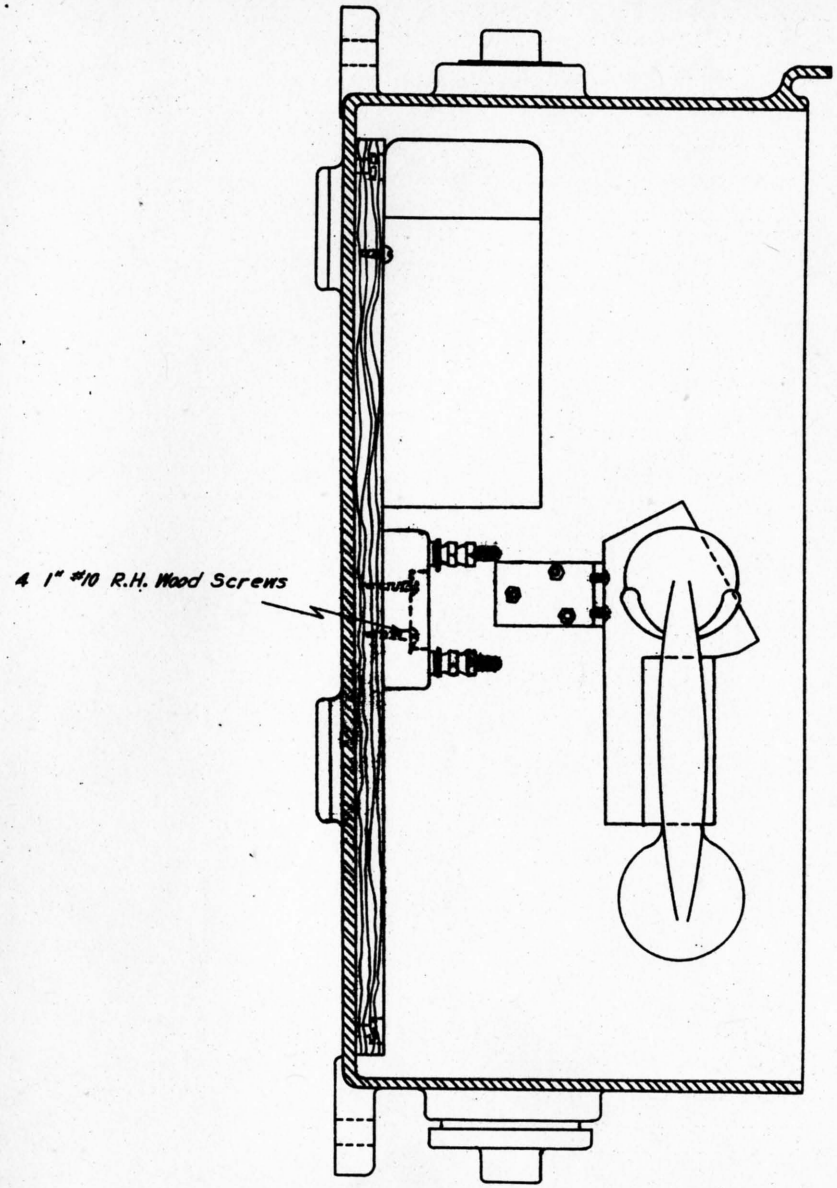
All internal wiring to be 20 ga. Belden flex.

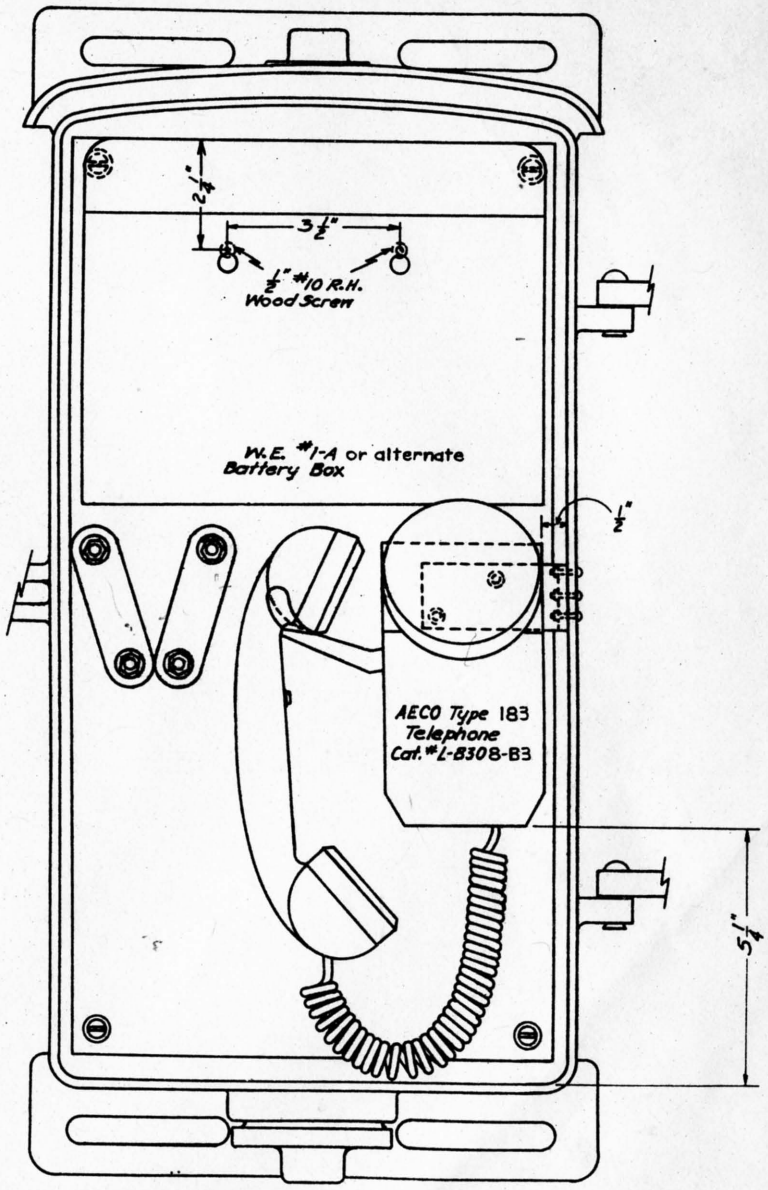
Ground wire and phone leads to be brought in through entrance holes in field.

The A.T. & S.F Ry. System
WIRING DIAGRAM FOR
CAST IRON TELEPHONE BOX
SHOWN ON PLAN O-1269

SSSO Topeka M-270 10-15-59

Rev. 9-20-63





Raco 431-32 cast iron or 092431-BBX aluminum arrester box for mounting on cable post similar to Plan 0-925, C-10.

See Plan M-270 for wiring diagram as wired in Topeka Shop.

The A. T. & S. F. Ry. System

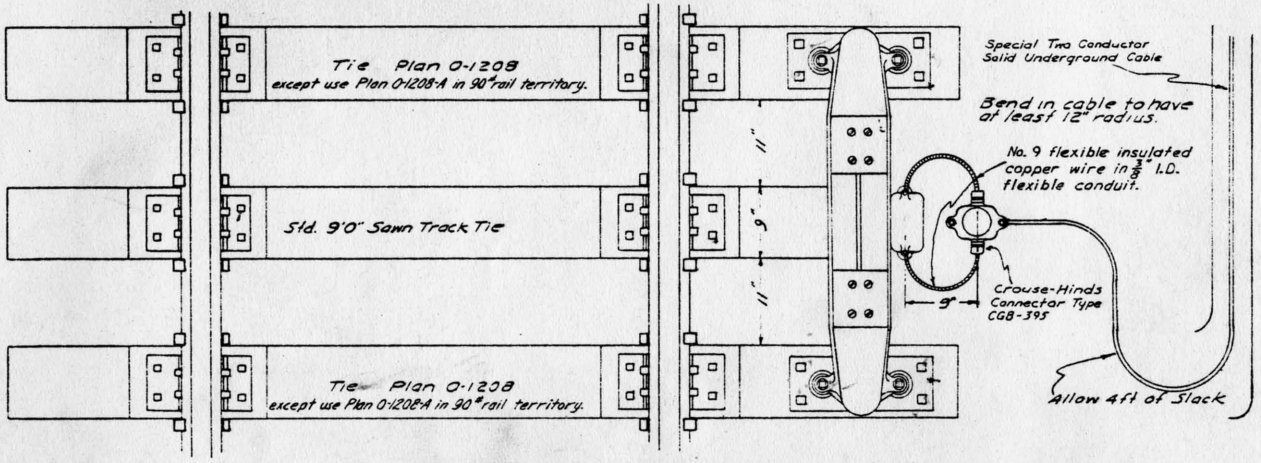
CAST IRON TELEPHONE BOX

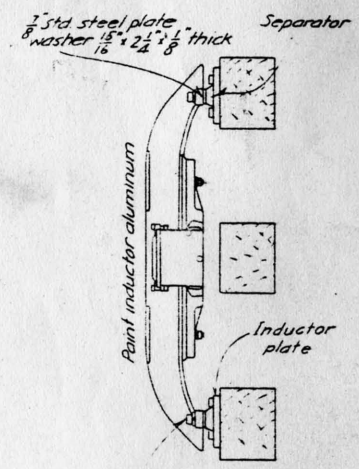
SSSO 0-1269 10-1-59

REVISED 8-29-77

C-15

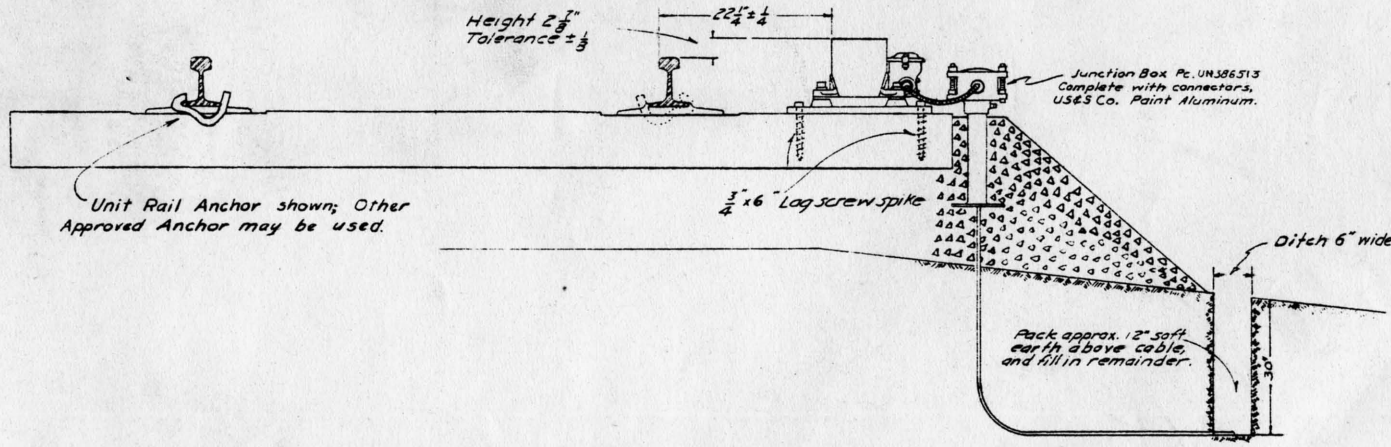
TIE PLATE		RAIL		List of washers, separators and bolts required for mounting one inductor						
				Washers	Separators			Length of 7/8" bolt		
AT&SF Plan	Thickness	Weight	Hght.	1/8" Steel	1/16" R.190383	3/8" R.134512	1½" R.134513	4¾"	5½"	3½"
1884 Sh. 90	23/32"	110	6¼"	8	4	8	—	4		
1884 Sh. 90	27/32"	112 or 115	6 5/8"	12	4	—	4	4		
1884 Sh. 91	7/8"	131 or 132	7½"	8	4	4	4		4	
1884 Sh. 51	½"	90	5 3/8"	8		4				4
1884 Sh. 90	21/32"	119	6 13/16"	12		4	4		4	
1884 Sh. 91	7/8"	136	7 5/16"	8		8	4		4	



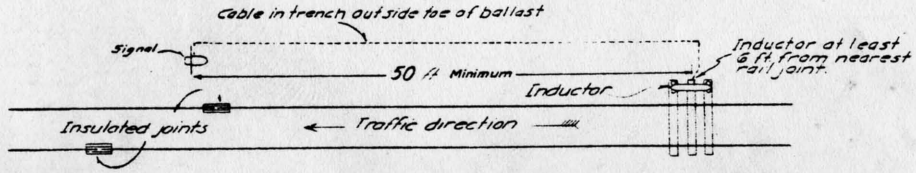


⅞" Sq. hd. bolt with ⅛" plain steel lock washer (¼" x ¼" section)

The inductor plates, also the ⅞" bolts, lock washers, flat washers and separators are furnished by Signal Co.



Each inductor has a number stamped on the leaving end of the inductor which may be used in recording tests.



The A. T. & S. F. Ry. System

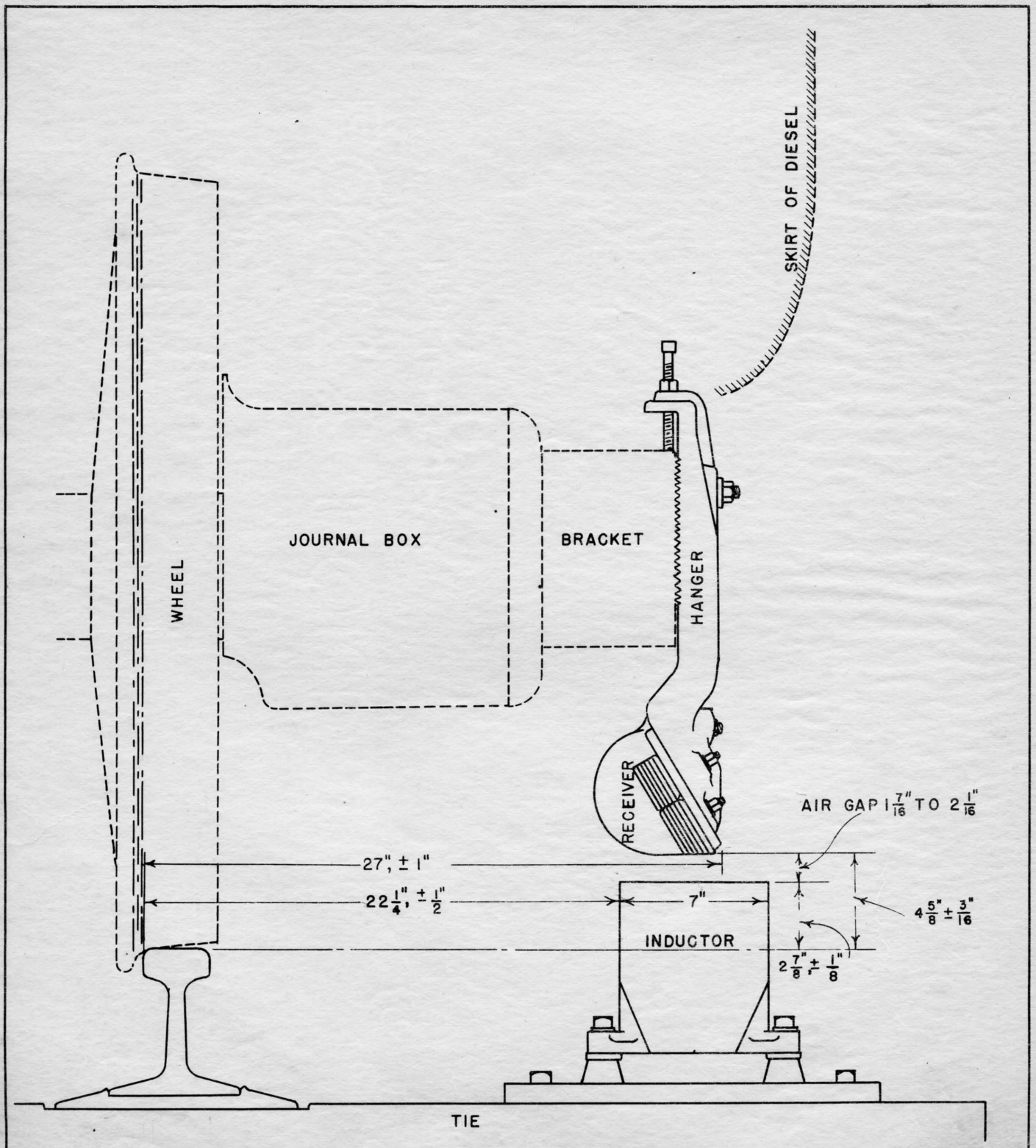
AUTOMATIC TRAIN STOP
INDUCTOR LOCATION

SSSO 11-12-59

Z-191

REV. 2-20-63

C-16A



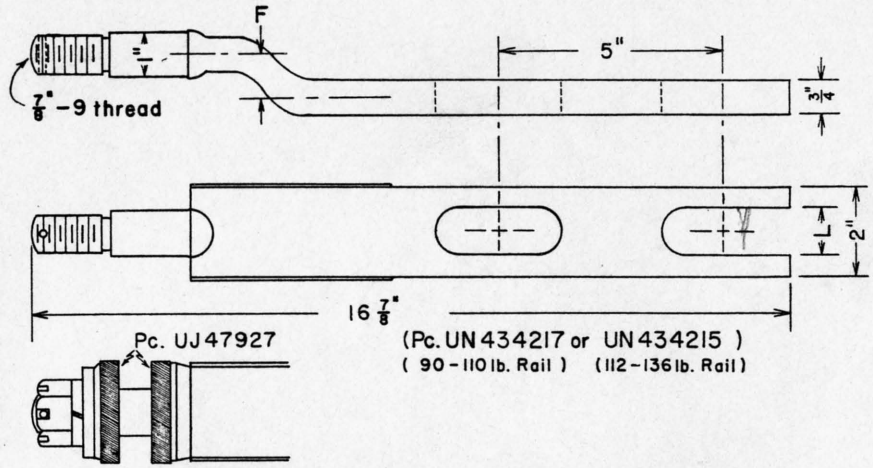
A.T. & S.F. RY. SYSTEM

AUTOMATIC TRAIN STOP

ENGINE RECEIVER AND WAYSIDE INDUCTOR

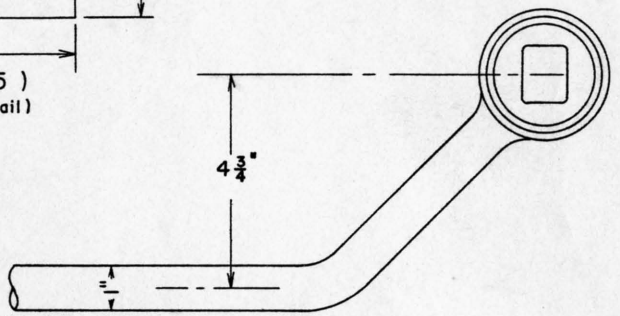
S.E.S.O. TOPEKA 9-14 -'50

O-1210



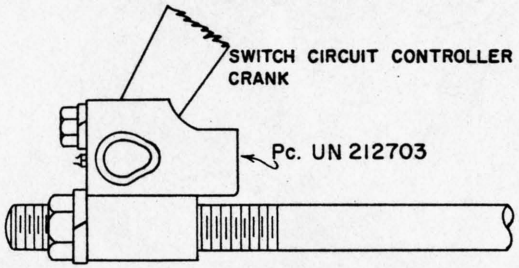
SWITCH LUG

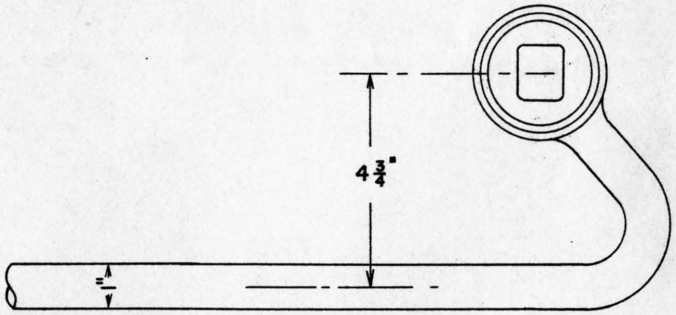
PIECE NO.	F DIM.	L DIM.
UN434217	1 1/4"	25/32"
UN434215	1"	1 1/16"



ROD FOR FAR RAIL

Pc. UN 376403 – 7' 10 1/2" long





ROD FOR NEAR RAIL

Pc. UN 321508 – 3' 9 1/2" long

Rod lengths shown are measured from center of track connection to threaded end of Rod.

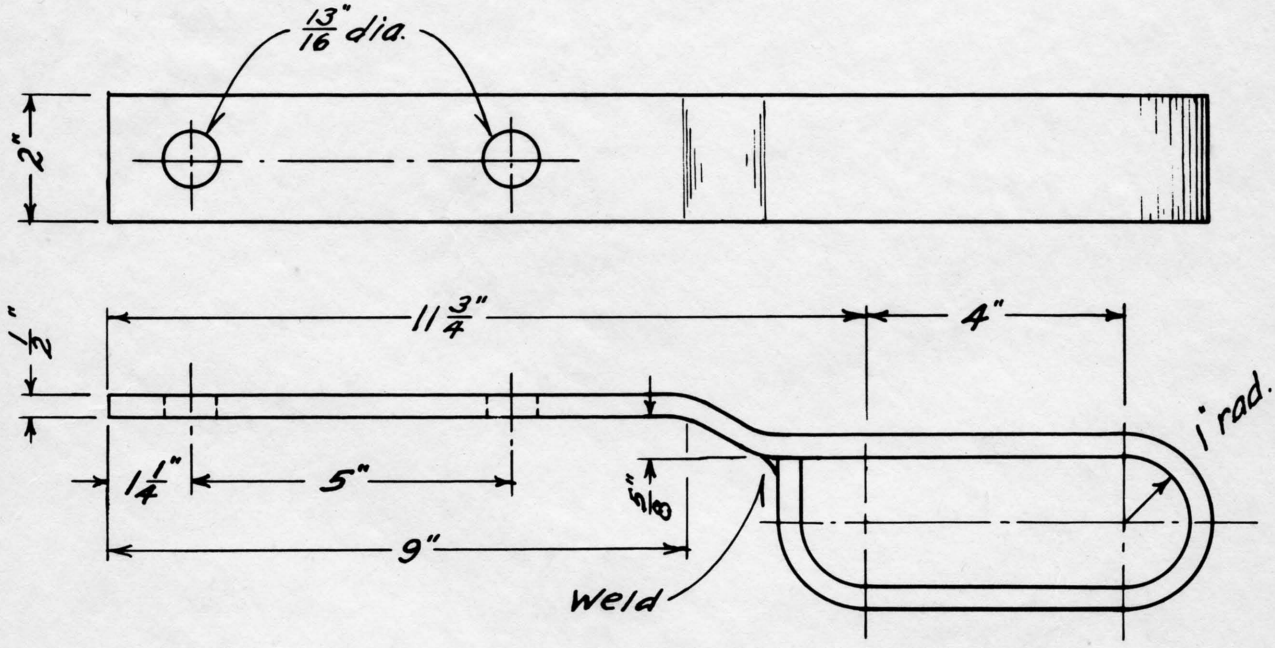
A.T. & S.F. Ry. System

SWITCH CIRCUIT CONTROLLER CONNECTION – RUBBER MOUNTED

SSSO 11-1-61

REV. 4-25-67 **0-1067**

C-30



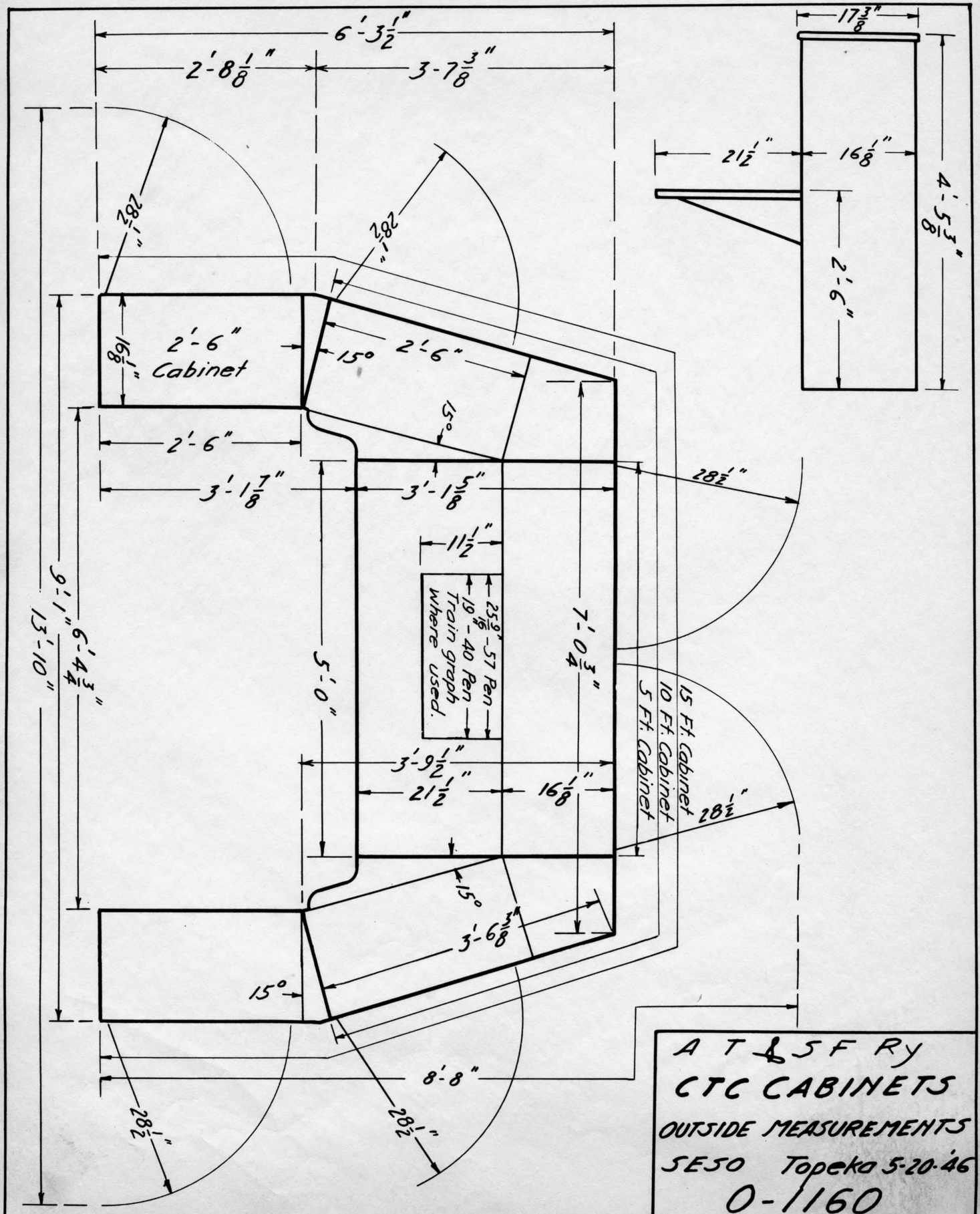
Material : $\frac{1}{2}$" x 2" Common Iron
$25\frac{1}{2}$" developed length

To be used with long switch circuit controller rod per CES 5455

SUPPORT GUIDE

SESO Topeka 1-24-50

0-1209



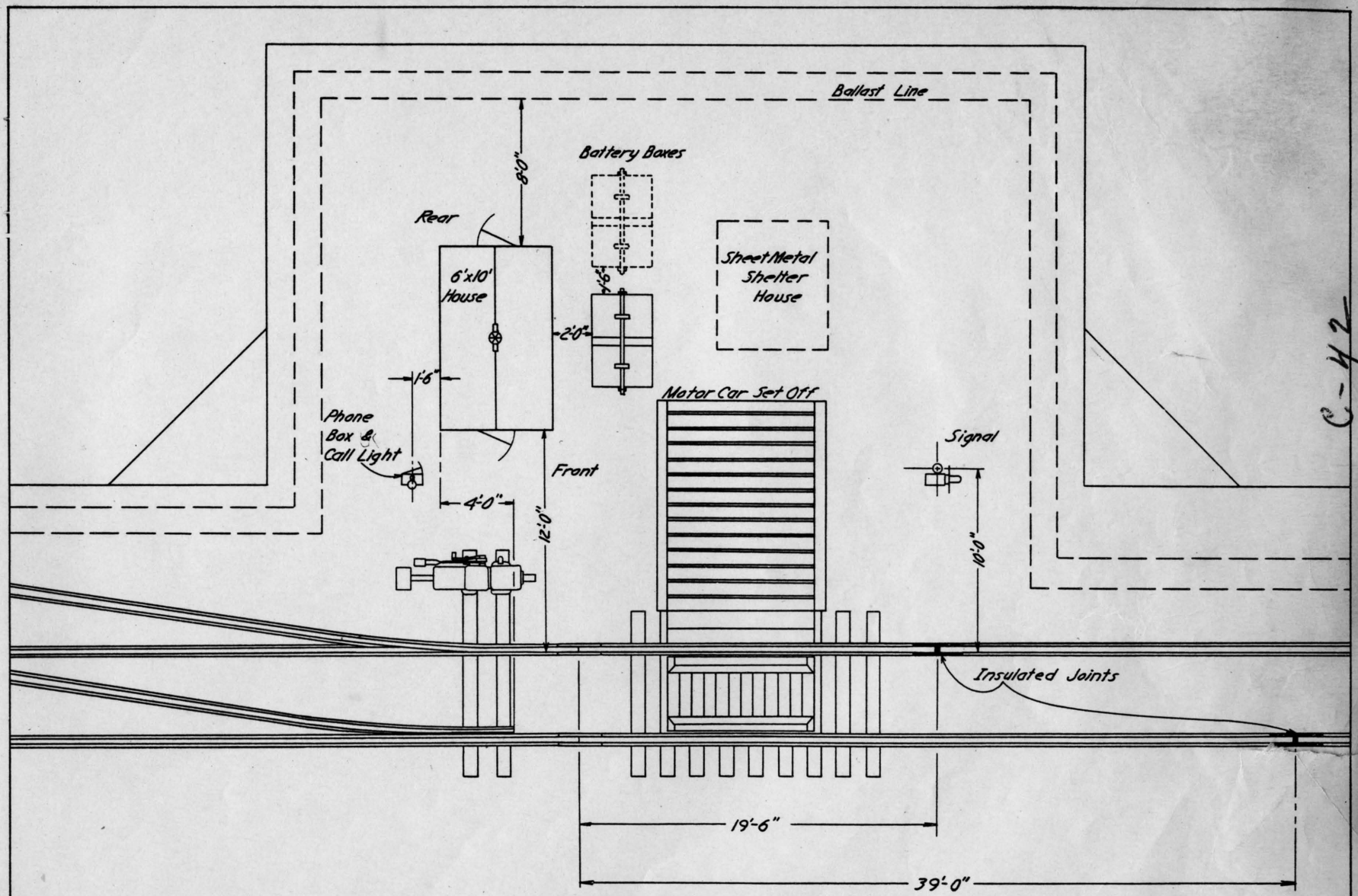
A T & S F Ry

CTC CABINETS

OUTSIDE MEASUREMENTS

SESO Topeka 5-20-46

0-1160



C-42

A. T. & S. F. Ry. Co.

INSTRUMENT HOUSE LOCATION

SESO 1-18-55 O-1253-A

B-10 or RACO Case (High or Low) 23 7/8" X 23 7/8"

Sheet Steel Instrument Cases

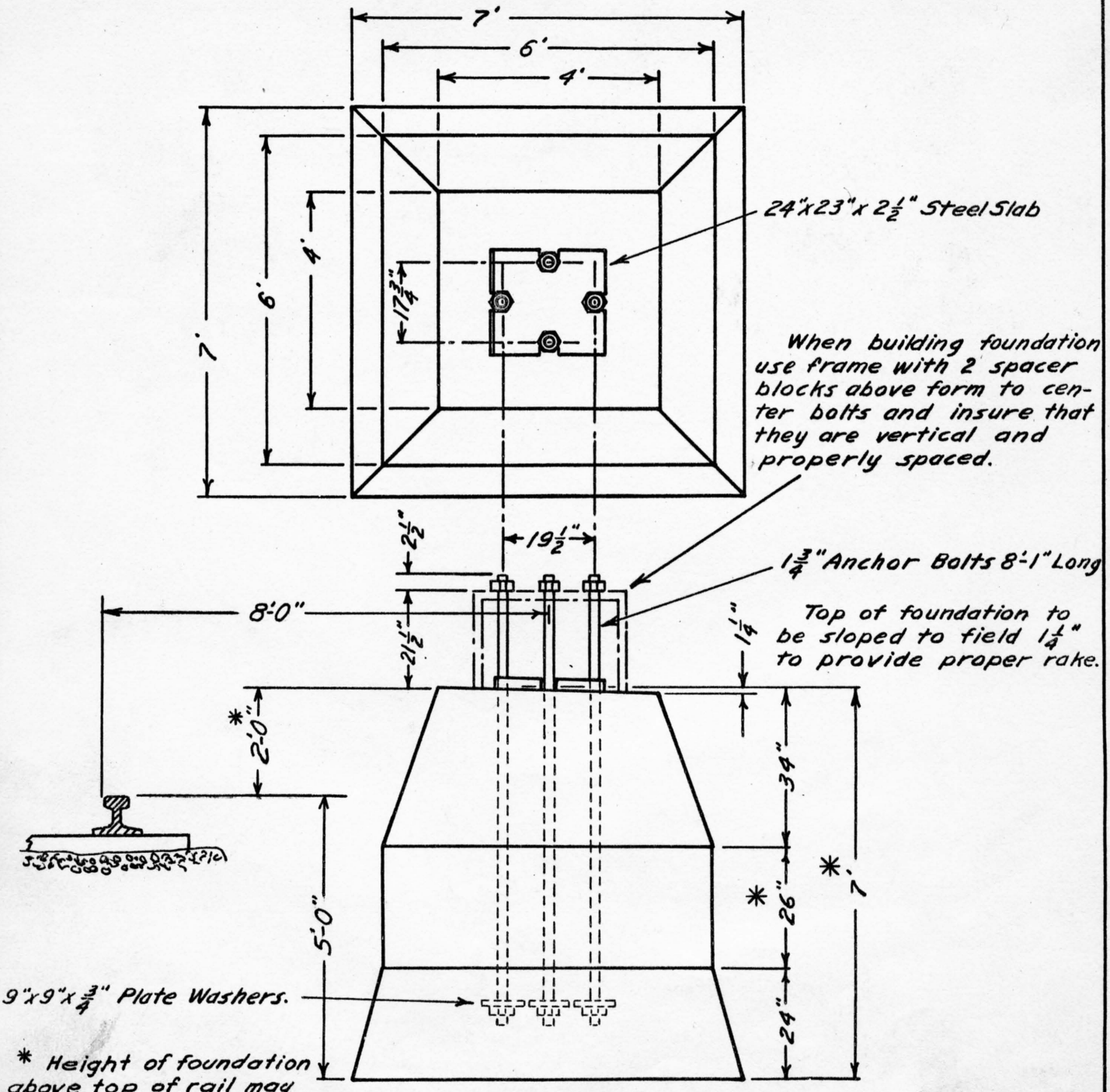
	WABCO	RACO*	MODERN INDUSTRIES	
4'-11" Case	4'-2" X 1'-6 1/2"	4'-2 1/2" X 1'-6 1/2"	5'-1 1/4" X 1'-6 1/2"	
6'-9" Case	6'-0" X 1'-6 1/2"	6'-2 1/2" X 1'-6 1/2"	6'-11 1/4" X 1'-6 1/2"	
9'-8" Case	7'-6" X 1'-6 1/2"	8'-10 1/2" X 1'-6 1/2"	9'-10 1/4" X 1'-6 1/2"	

* Bolt holes are slotted on RACO cases allowing 2 1/2" lengthwise leeway.

Sheet Steel Relay House

	WABCO	RACO	MODERN INDUSTRIES	
5'X5'		4'-4"X4'-4"		
5'X7'	4'-4"X6'-4"			
6'X6'		5'-4"X5'-4"	5'-4"X5'-4"	
6'X8'	5'-4"X7'-4"	5'-4"X7'-4"	5'-4"X7'-4"	
6'X10'	5'-6"X9'-6"	5'-4"X9'-4"		
6'X12'	5'-7 7/8" X 11'-1 7/8"	5'-4"X 11'-4"		
8'X10'	7'-7"X 9'-4"			
8'X12'	7'-7 7/8" X 11'-1 7/8"			
9'X10'		8'-4"X 9'-4"		
9'X12'			8'-4" X 11'-4"	

A. T. & S. F. Ry. Co.
FOUNDATION
BOLT CENTERS
FOR
STANDARD HOUSINGS
S.S.S.O. 1-4-71 O-1172



NOTE:
Anchor bolts and exposed surfaces of slab shall be given heavy coat of Petrolatum in the field.

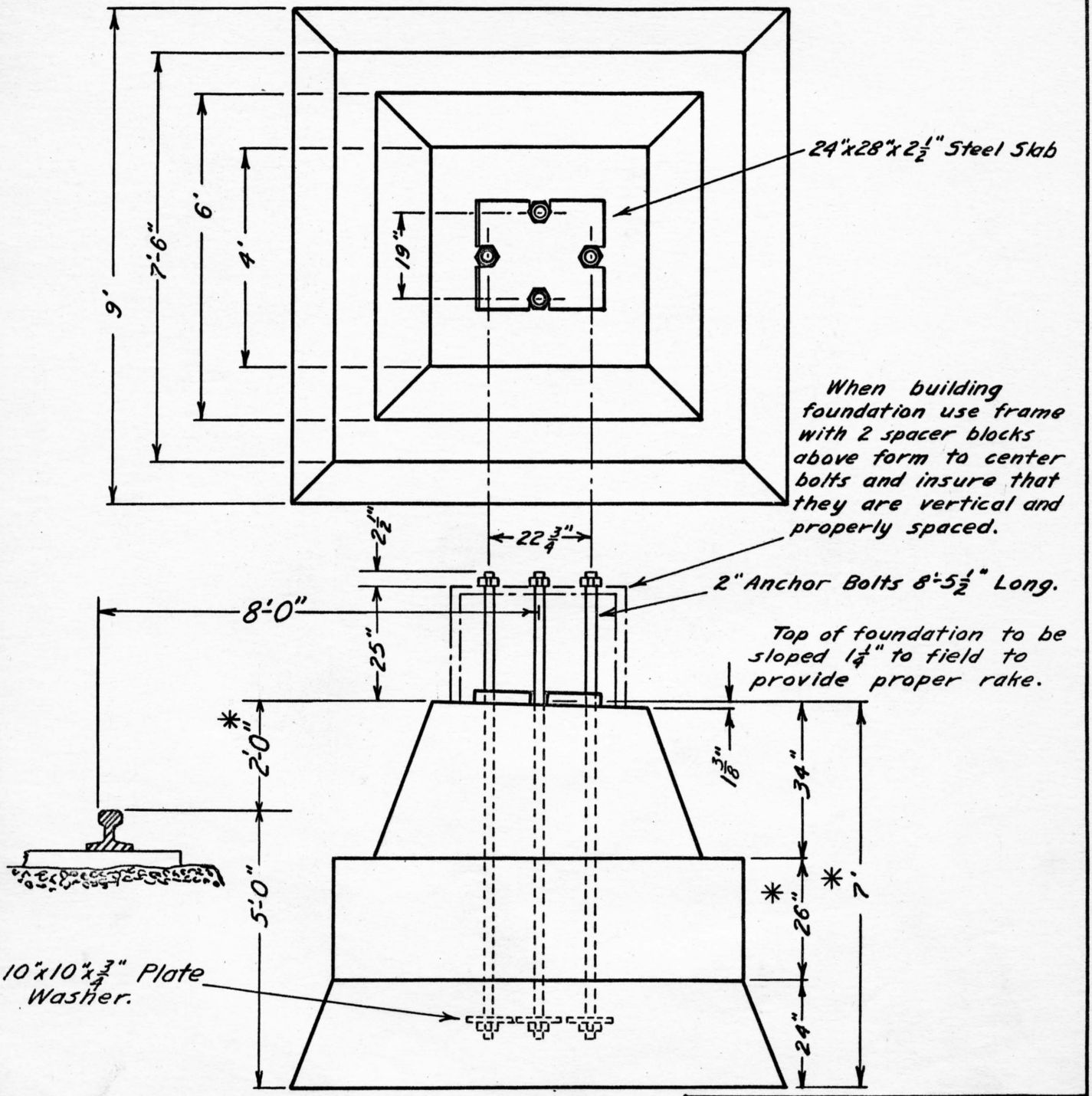
Revised 1-10-58

A.T.&S.F. RY. CO.

CONCRETE FOUNDATION FOR 16' CANTILEVER

SESO 12-5-51

O-789



* Height of foundation above top of rail may be varied to provide clearances shown on SES 646A.

NOTE:
Anchor bolts and exposed surfaces of slab shall be given heavy coat of Petrolatum in the field.

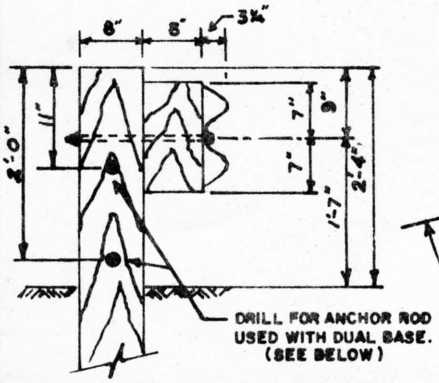
Revised 1-10-58

A.T.&S.F. RY. CO.

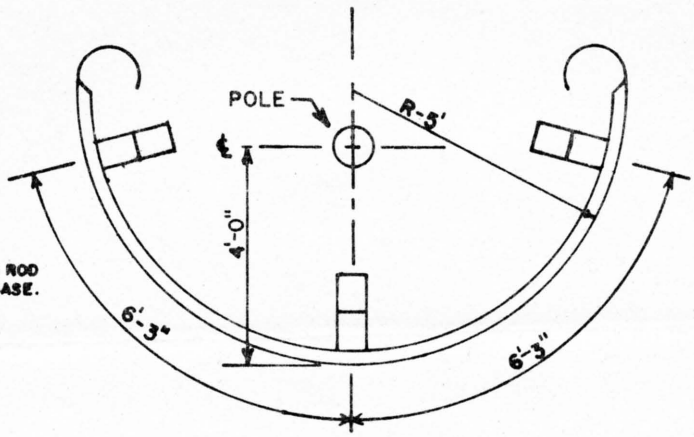
CONCRETE FOUNDATION FOR 26' CANTILEVER

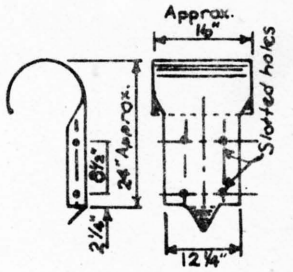
SESO 12-5-51

0-790

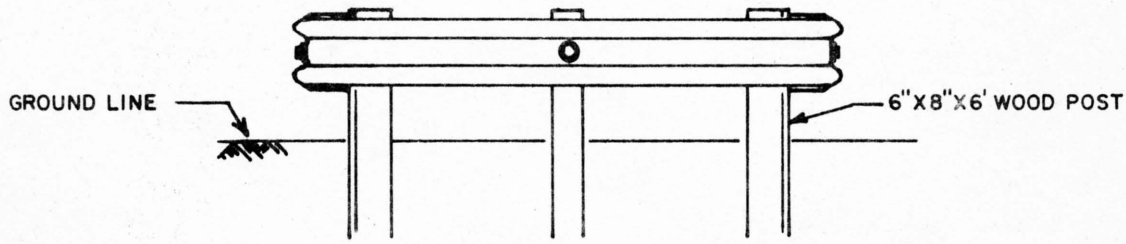


DETAIL OF WOOD POST AND THROUGH BOLT.



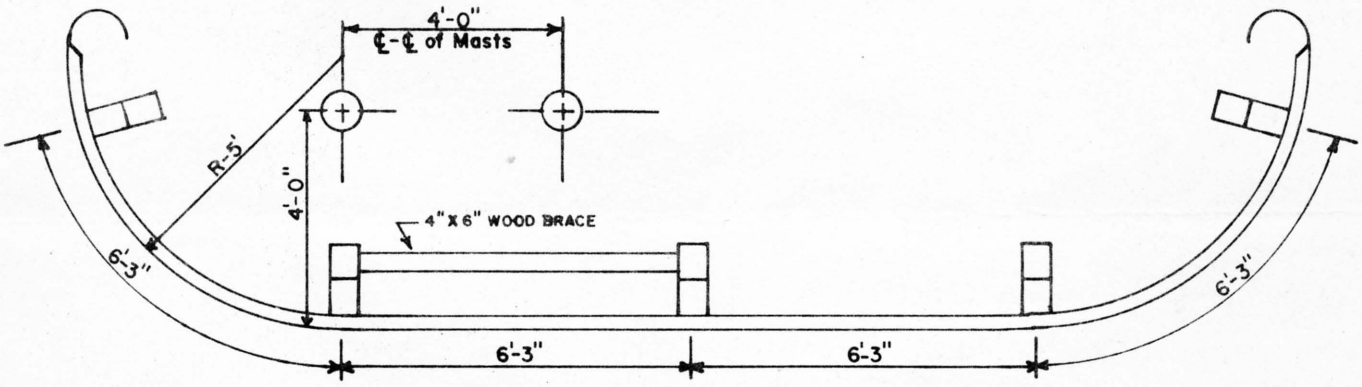


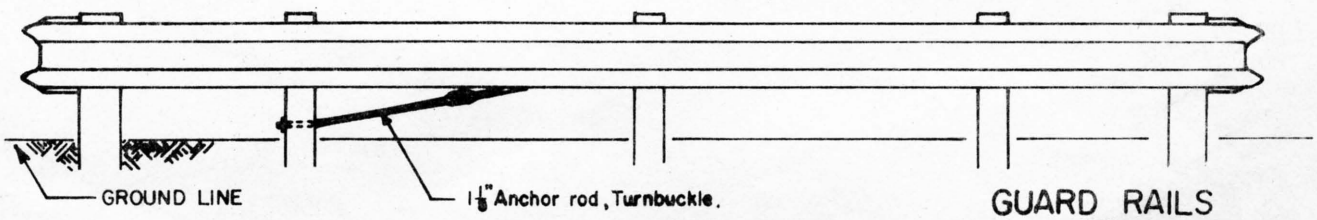
DETAIL OF TERMINAL SECTION



GUARD FENCE PROTECTION OF SINGLE RAILROAD SIGNAL BASE

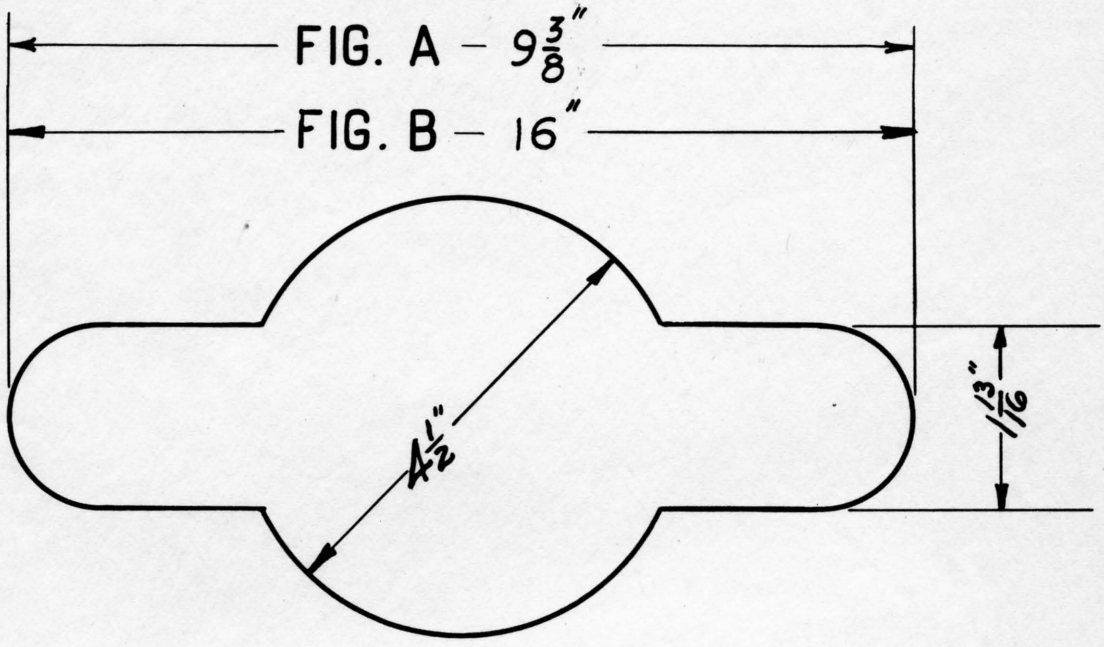
GUARD FENCE PROTECTION OF DUAL RAILROAD SIGNAL BASE





GUARD RAILS
FOR
HIGHWAY CROSSING INSTALLATIONS

SSSO 5-27-75 0-928

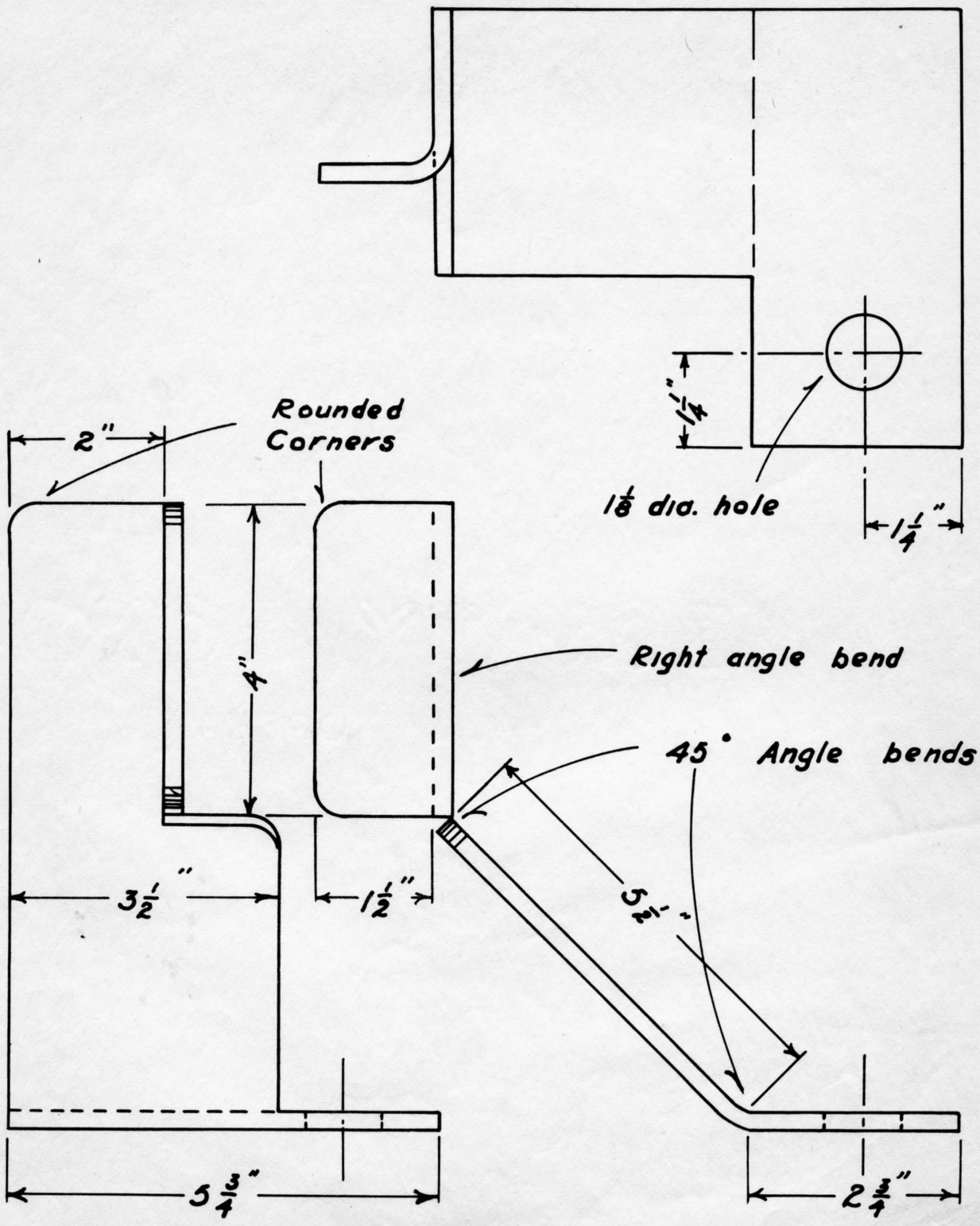


To be made of 1" dressed pine.

Note:-
Use Fig. A with small cap.
" " B " wide sweep cap.

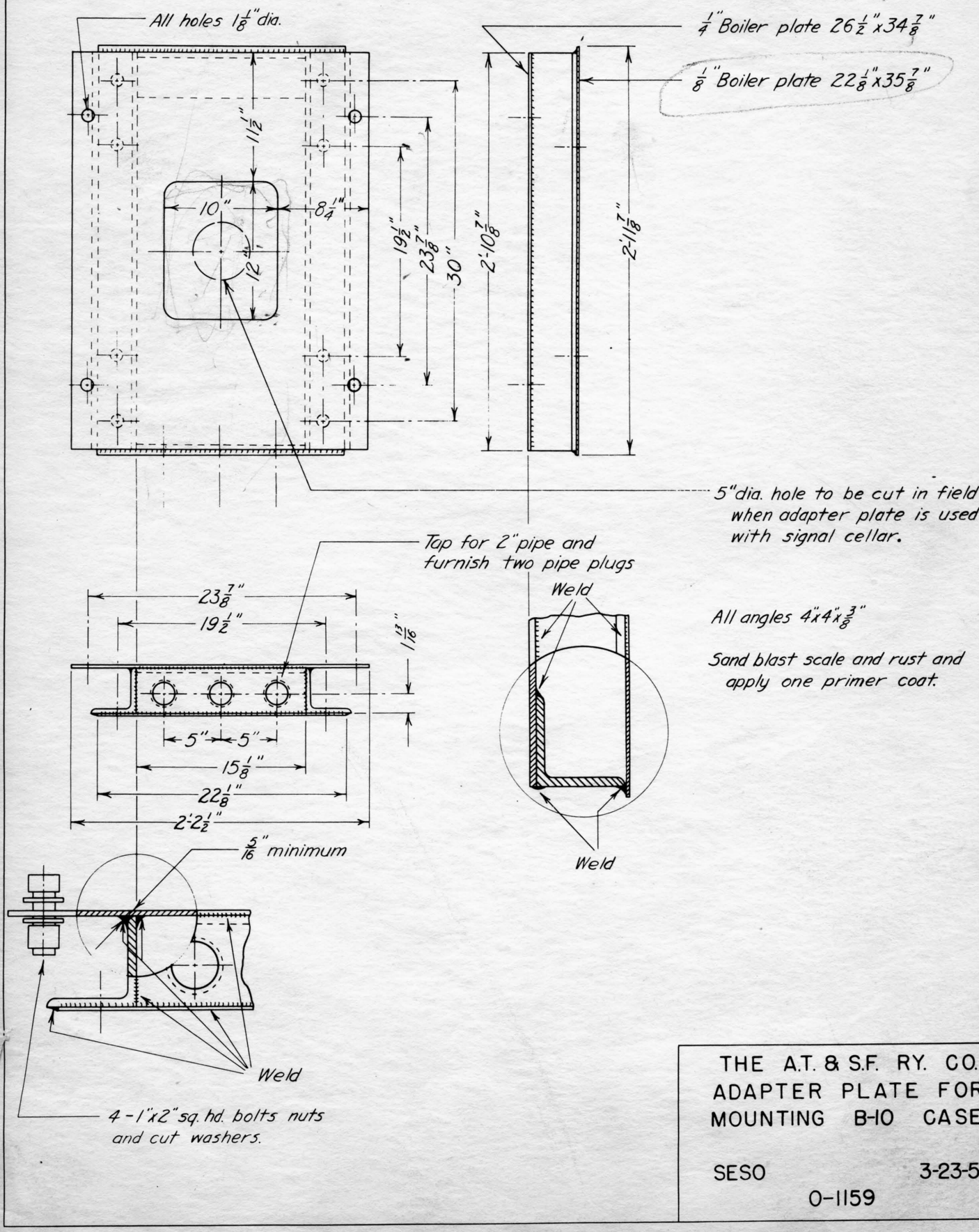
A. T. and S. F. Ry. System.
WOODEN PLUGS
for
CABLE POSTS
S.E.S.O. Topeka. July 13-25
O-758.

Revised 4-23-40



1/4" Plate : 5 3/4" x 12 1/4"

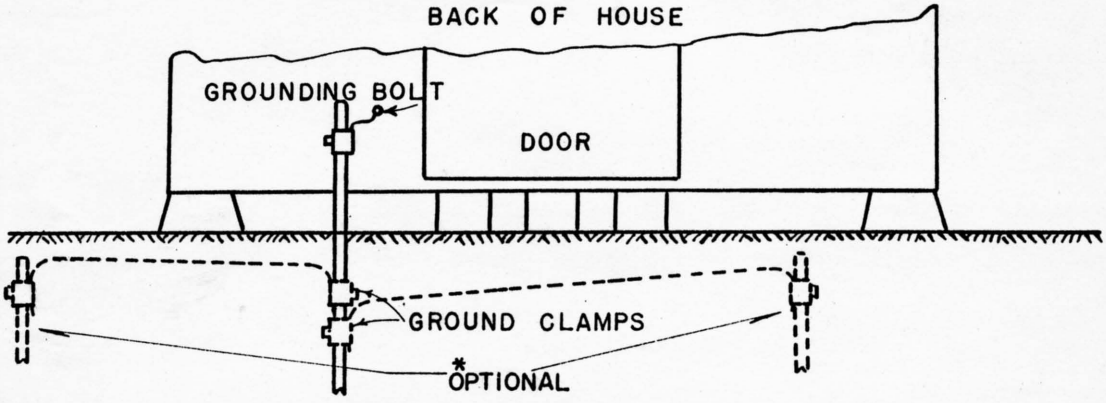
A. T. & S. F. RY. CO.
DOOR STOP FOR B-10 CASE
SESO TOPEKA REDRAWN 5-27-50
O-1155



THE A.T. & S.F. RY. CO.
ADAPTER PLATE FOR MOUNTING B-10 CASE

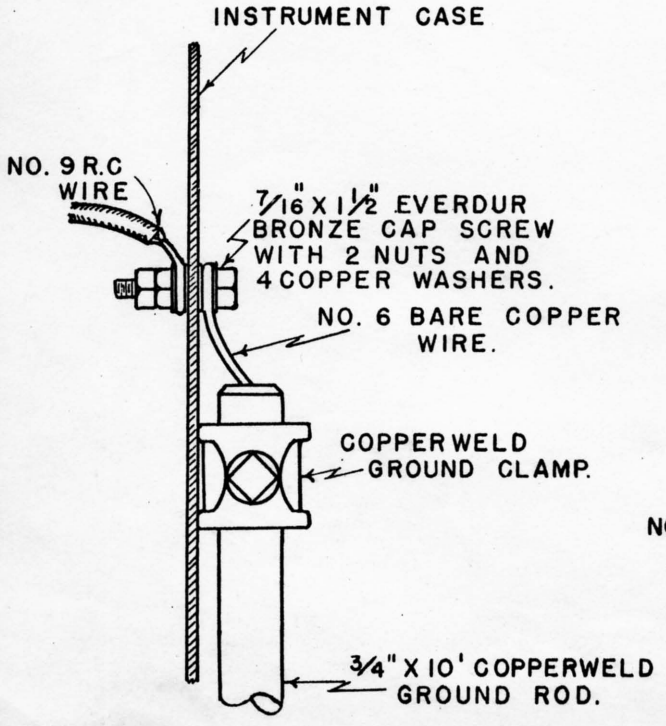
SESO 3-23-51

0-1159

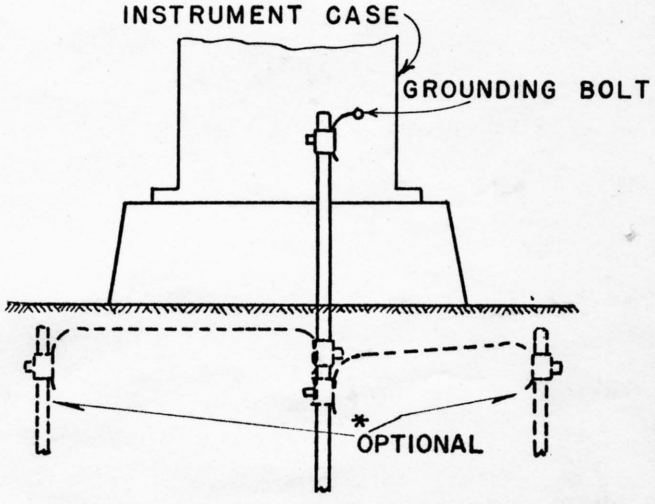


TYPICAL GROUNDING OF SHEET STEEL RELAY HOUSE

*EXTRA GROUNDS OPTIONAL, TO BE INSTALLED IN DIFFICULT GROUNDING LOCATIONS.



DETAILS OF GROUND



TYPICAL GROUNDING OF INSTRUMENT CASE

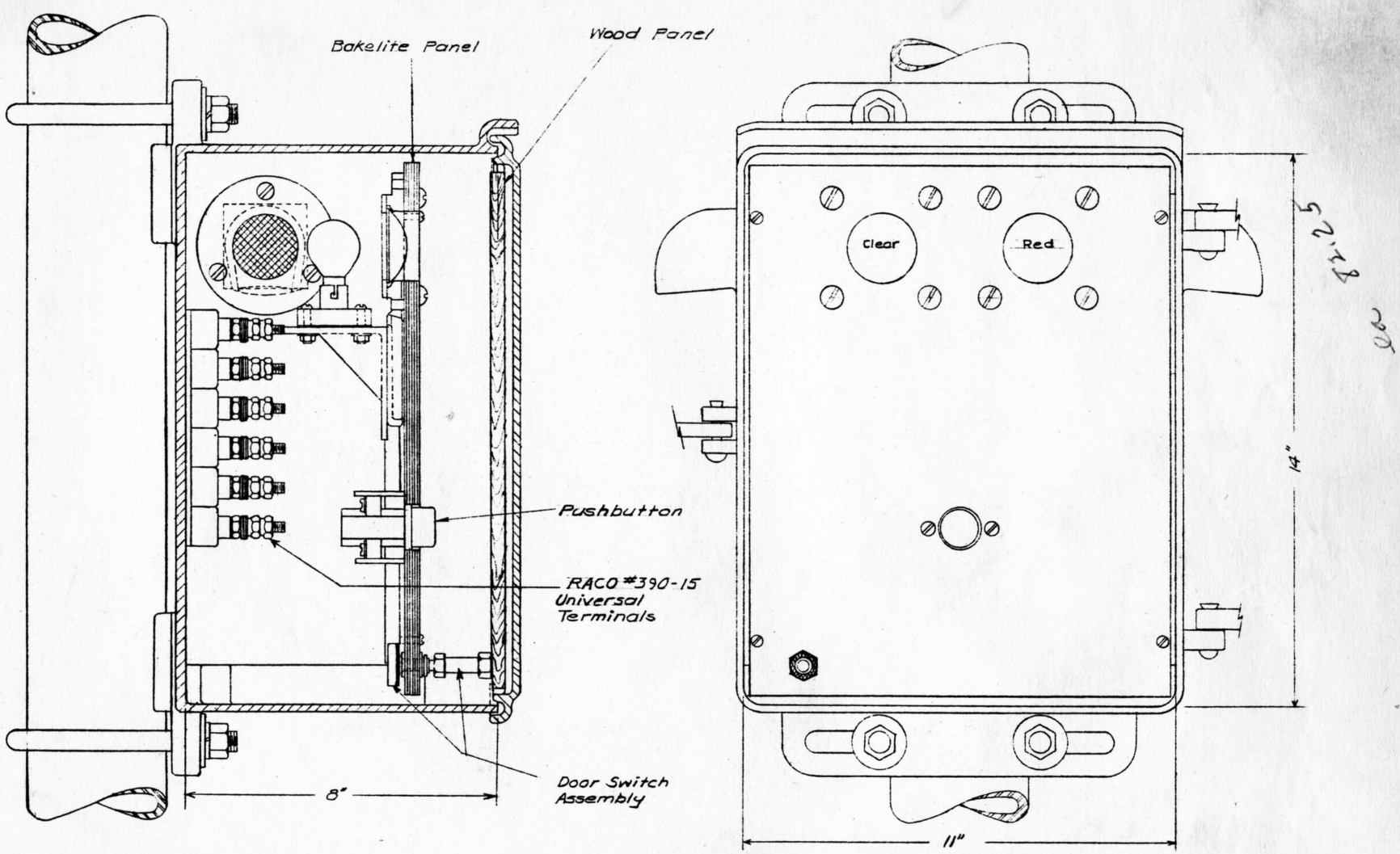
NOTES

ADDITIONAL GROUND RODS, WHEN REQUIRED, SHOULD BE APPROXIMATELY 6 FEET APART DRIVEN BELOW SURFACE OF GROUND AND CONNECTED TO MAIN ROD WITH NO.6 BARE COPPER.

THE METAL SURFACE OF CASE OR HOUSE MUST BE CLEAN BEFORE APPLYING CAP SCREW TO INSURE A GOOD CONTACT.

A.T. & S.F. RY. CO.
GROUNDING OF CASES AND HOUSES
S.E.S.O. TOPEKA JUNE 28, 1950
0-1223

REV: 7-7-64



RACO No. 568-8 Selector Box furnished with Red and Clear lens.
RACO No. 568-7 Selector Box furnished with Red lens, but with Clear lens blanked out.

Rev. 5-21-59

The A.T. & S.F. Ry. System

SELECTOR BOX

6550 C-1272 2-13-59

C-79

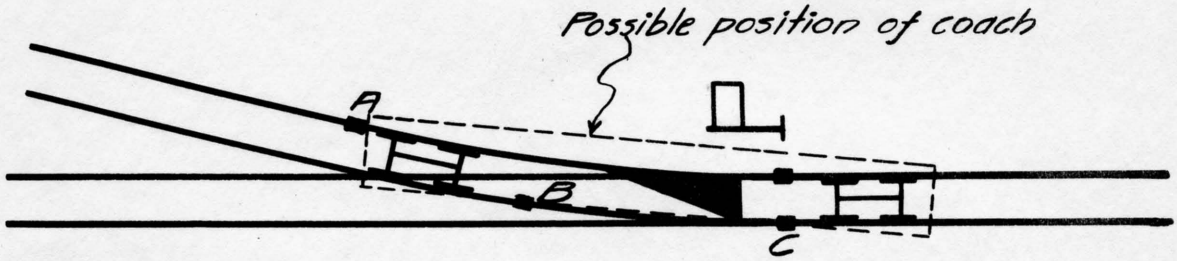


Fig. 1 - Showing incorrect location of insulated joints.

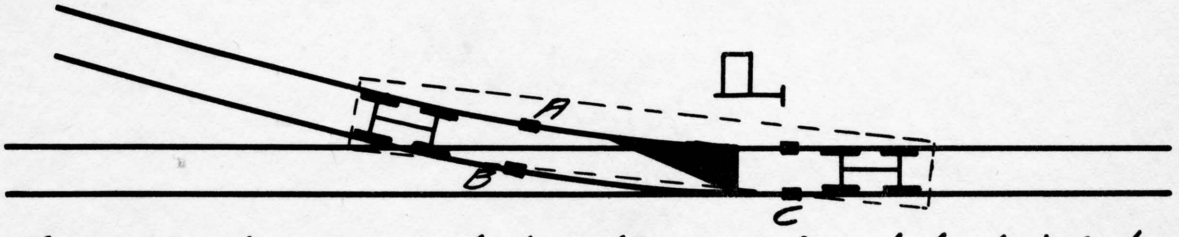


Fig. 2 - Showing correct location of insulated joints.

When a track circuit terminates very close to a switch, as shown at "C," the insulated joint marked "A" must be placed opposite that marked "B," so as to eliminate the dead portion of the track section between "A" and "B."

If this is not done a coach standing with its trucks in the position shown above will not effect the electric locking of the switch, so that the latter may be operated under a train, causing a derailment or splitting the switch.

TRACK INSULATION FOR ELECTRIC LOCKING CIRCUITS.

S.E.S.O. - Topeka. Ks. Jan-17-1917. A. T. & S. F. Ry System

0-637

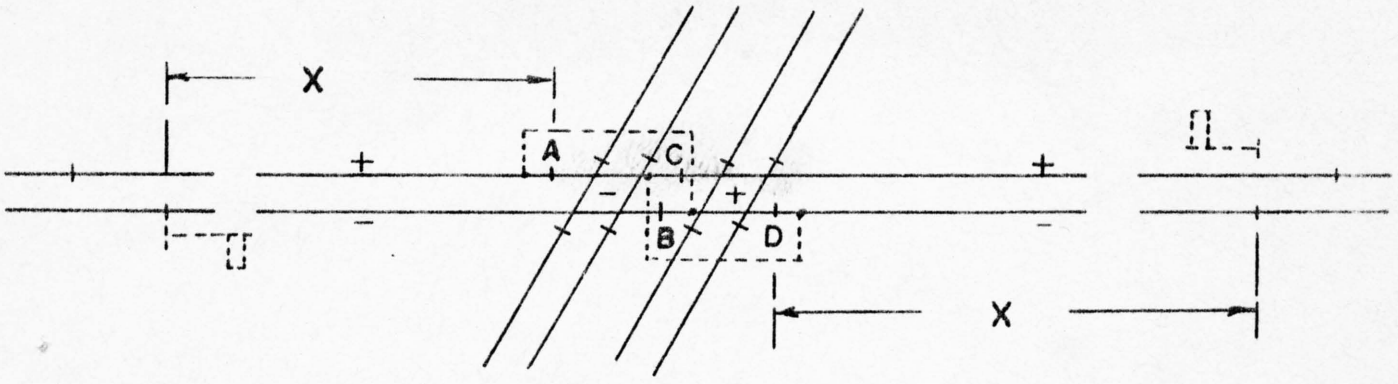


FIG. 1

(REQUIRES SPECIAL INSULATION AT B AND C)

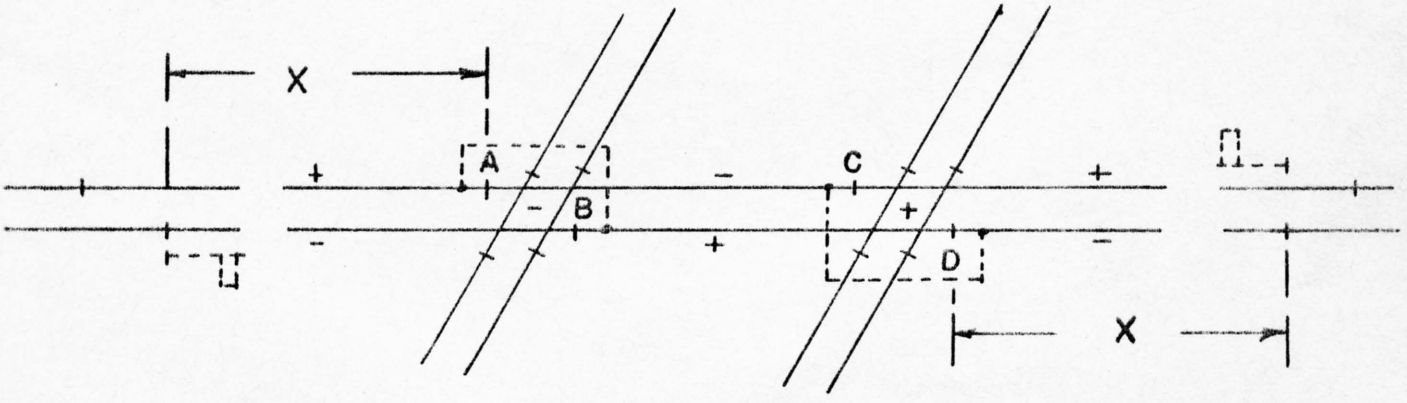


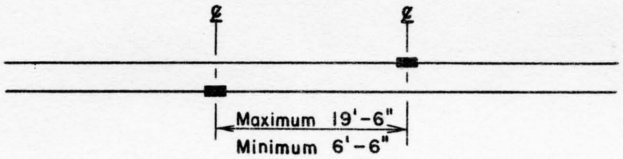
FIG. 2

Dimension X should be at least 100 ft. for new work and must be greater than maximum inner wheelbase of any engine or car.

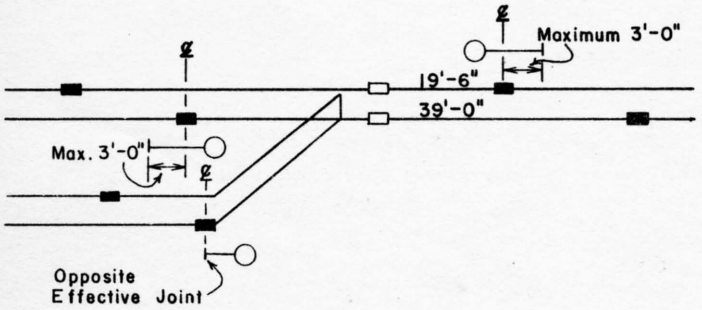
Longitudinal distance between joints A and B and between joints C and D must not exceed 35 ft. or the shortest wheelbase of an engine operating in that location.

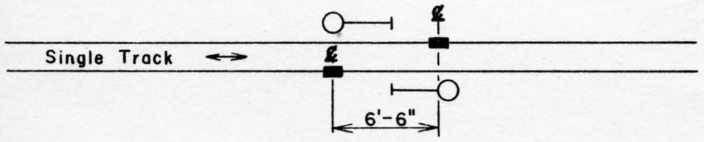
SPECIAL TRACK CIRCUIT AT RAILROAD CROSSINGS TO REDUCE THE LENGTH OF DEAD SECTIONS

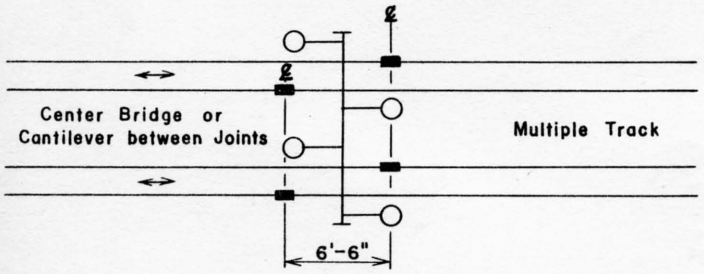
SSSO CHICAGO REDRAWN 7-21-69 O-614



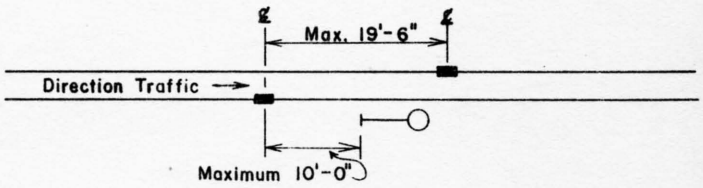
STANDARD LOCATION INSULATED JOINTS

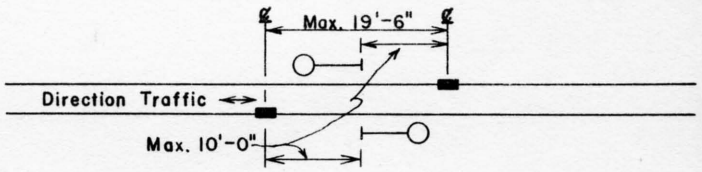


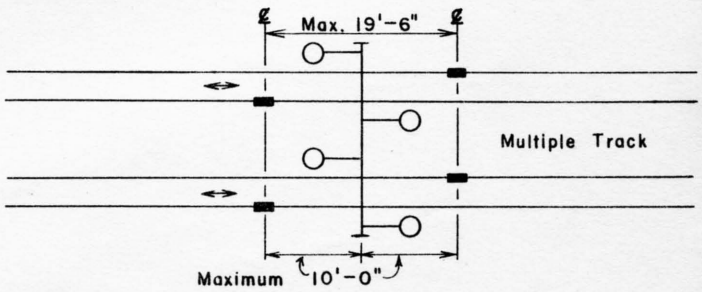




CONTROLLED SIGNALS







AUTOMATIC SIGNALS

NOTES:-

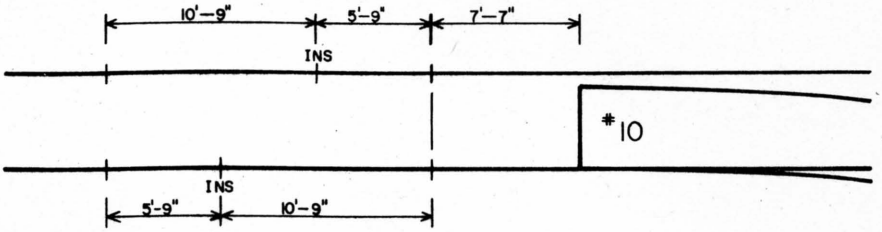
1. In ATC Territory, joints will be placed opposite.
2. Joints at battery or relay locations may vary from 6'-6" to 19'-6".
3. See CES 5492 and 5613 for location of insulated joints in turnouts and crossovers.

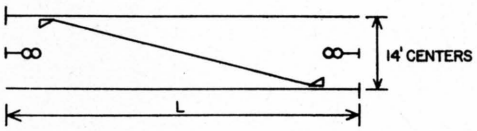
The A.T. & S.F. Ry. Co.

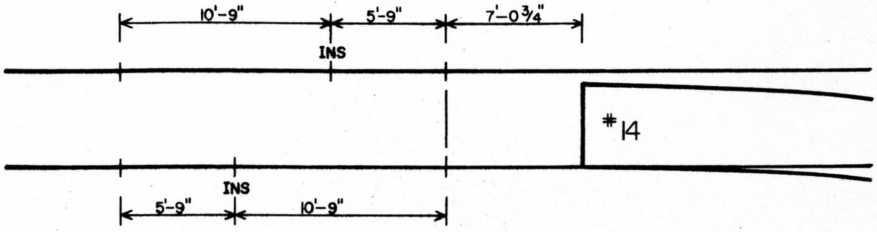
INSULATED JOINTS
AT SIGNAL LOCATIONS

SSSO 5-23-62

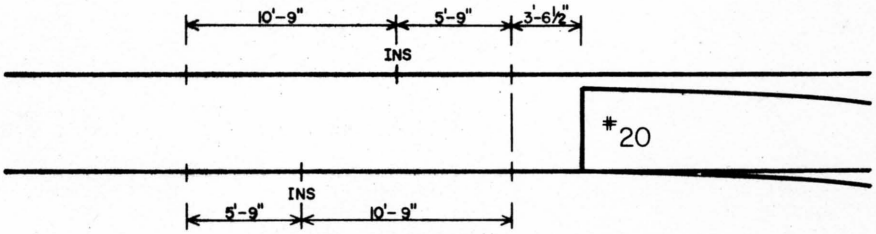
0-1068



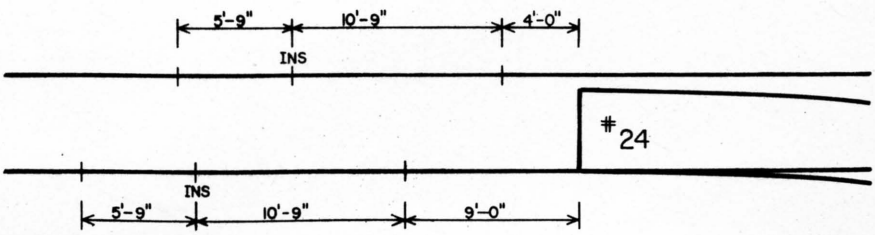




SIZE X-OVER	DIM L
#10	232'-2"
#14	305'-7"
#20	415'-4"
#24	491'-10"



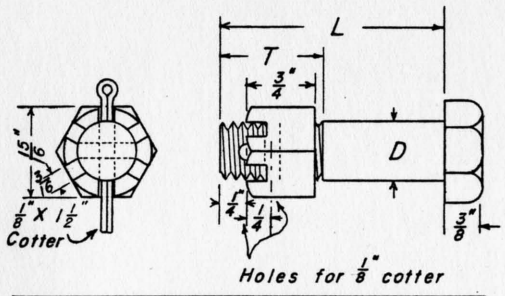
MAXIMUM STAGGER OF INSULATED JOINTS AT CONTROLLED SIGNALS 6'-6".
MAXIMUM STAGGER OF INSULATED JOINTS AT AUTOMATIC SIGNALS OR OTHER TRACK LOCATIONS 19'-6".



INSULATED JOINTS AT SIGNAL LOCATIONS USING BONDED JOINTS
ACE-S 10-21-80

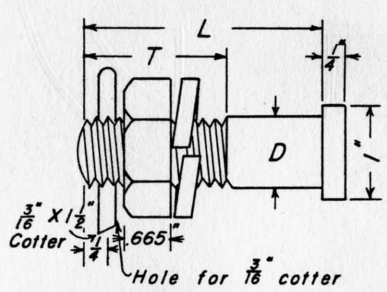
0-1069

FIG. 1



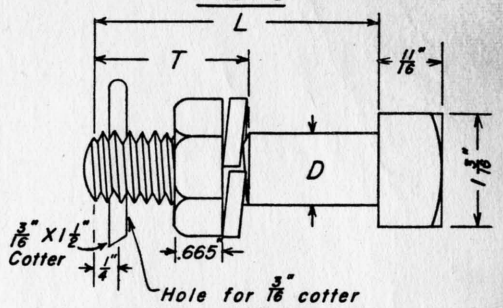
	L	D	T	Application
Ref. A	2 5/8"	5/8"	1 1/4" 11-NC3	Plan O-1061 Fig. 1

FIG. 2



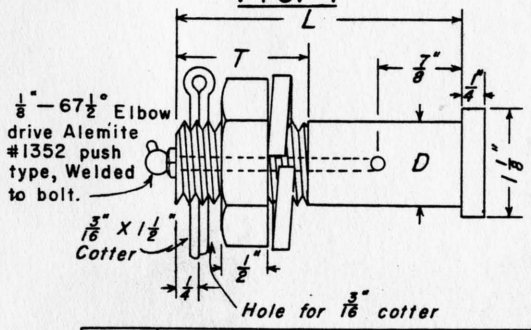
	L	D	T	Application
Ref. A	2 1/2"	3/4"	1 1/2" 10-NC3	Plan O-1061 Fig. 2

FIG. 3



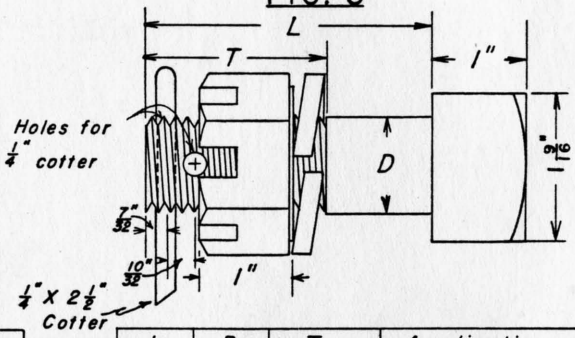
	L	D	T	Application
Ref. A	3"	3/4"	1 5/8" 10-NC3	Plan O-1061 Fig. 3
Ref. B	3 1/2"	3/4"	1 3/4" 10-NC3	
Ref. C	4"	3/4"	2 1/4" 10-NC3	
Ref. D	4 1/2"	3/4"	2 1/2" 10-NC3	

FIG. 4



	L	D	T	Application
Ref. A	3"	7/8"	1 5/8" 9-NC3	Plan O-1060

FIG. 5



	L	D	T	Application
Ref. A	3"	1"	1 7/8" 8-NC3	CES 5484
Ref. B	3 1/2"	1"	2" 8-NC3	Z-202 Sh. 1

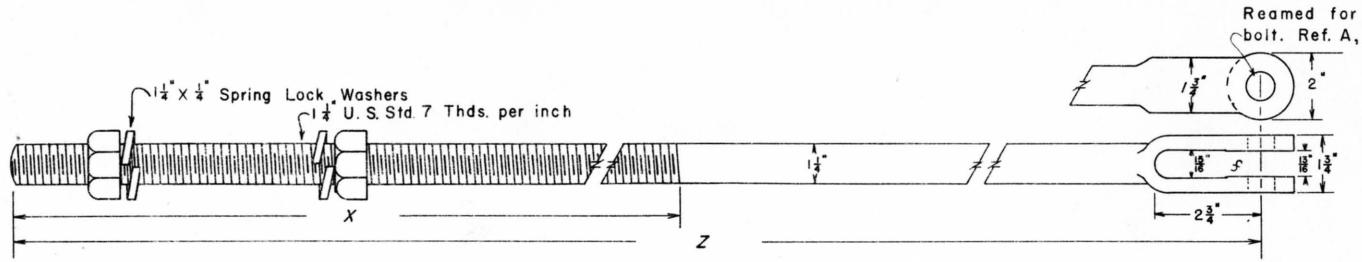
A.T.& S.F. Ry. System

TURNED BOLTS for TRACK SWITCH CONNECTIONS

SSSO 8-10-61

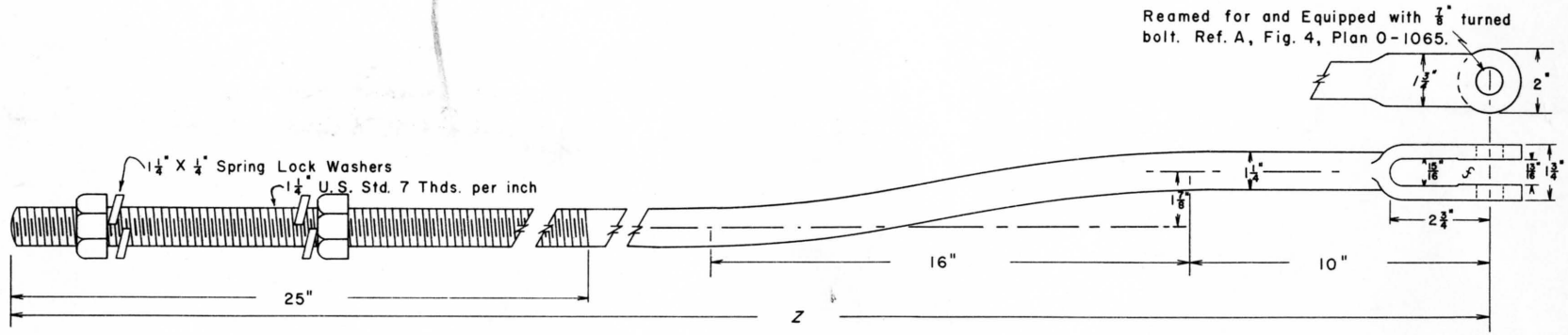
0-1065

C-91



REF.	THREADS DIM. "X"	LENGTH DIM. "Z"	APPLICATION
A	25 Inch	65 Inch	Machine To No. 8, 10, 14 or 20 Points Auxiliary Conn. to No. 20 Turnout
C	30 Inch	81 Inch	Machine To No. 24 Points Auxiliary Conn. to No. 24 Turnout

FIG. 1
THROW ROD FOR INTERLOCKED SWITCH LAYOUTS



REF. A – Z Dimension for STANDARD T-21 installation, 82 Inches.
REF. B – Z Dimension for CALIFORNIA T-21 installation, 112 Inches.
REF. C – Z Dimension for RACOR® I ROD T-21 installation, 98 Inches.

FIG. 2
THROW ROD FOR T-21 SWITCH LOCK LAYOUTS

NOTES:–
Throw rods to be made from 1 1/4" Round Bar Stock, furnished with one 7/8" turned bolt per Plan 0-1065 Fig. 4, 2 hexagonal nuts and 2 spring washers as shown.
No welding of rod is permitted.

A.T. & S.F. Ry. System

THROW ROD
FOR
INTERLOCKED SWITCHES
AND
T-21 SWITCH LOCK LAYOUTS

SSSO 8-10-61

Revised 8-18-72

0-1060

C-92

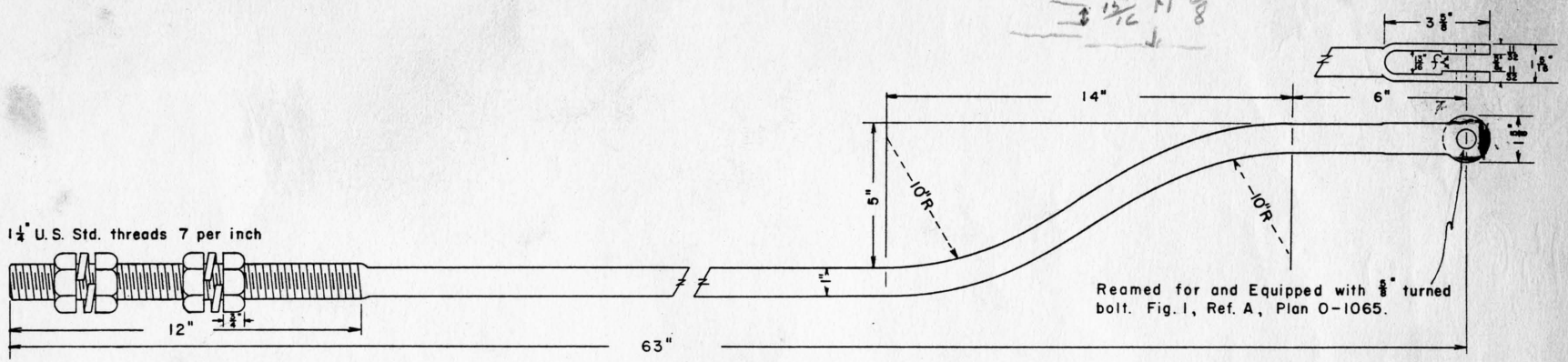


FIG. 1
POINT DETECTOR ROD FOR STYLE M- SWITCH MACHINE

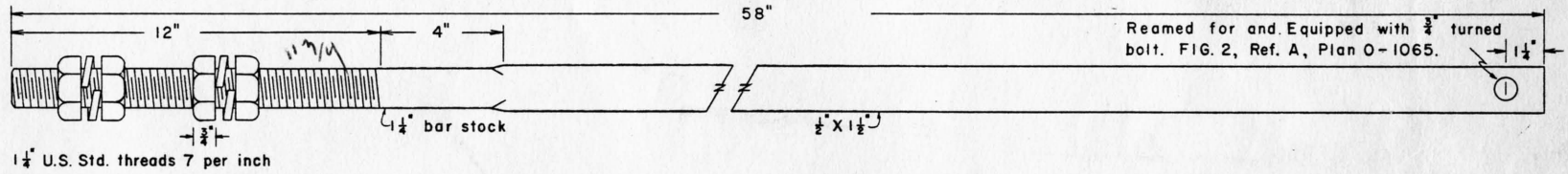
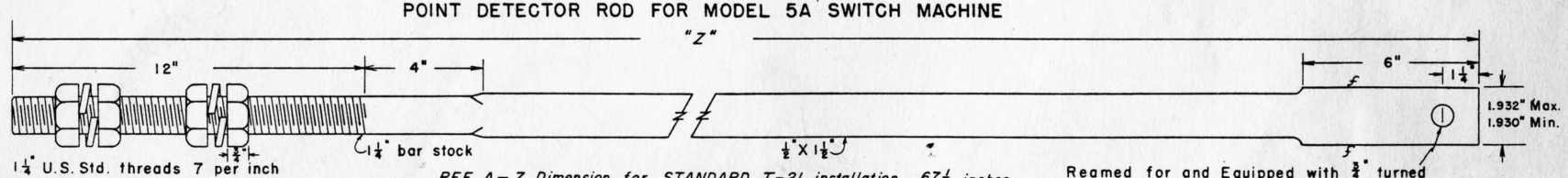


FIG. 2
POINT DETECTOR ROD FOR MODEL 5A SWITCH MACHINE



REF. A – Z Dimension for STANDARD T-21 installation, 67½ inches.
REF. B – Z Dimension for CALIFORNIA T-21 installation, 97½ inches.

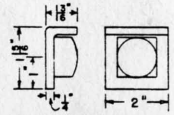
Reamed for and Equipped with ¾" turned bolt. Fig. 3, Ref. A, Plan O-1065 and bolt head keeper shown on this plan.

FIG. 3
POINT DETECTOR ROD FOR T-21 SWITCH LOCK

NOTES:—

Each rod to be furnished equipped with one turned bolt with fittings as detailed (Plan O-1065) for end with hole and 4 hexagonal nuts and 2 – 1¼" X ¼" spring washers for threaded end.

No welding of rod is permitted.



Bolt head keeper to be furnished with FIG. 3 point detector rods.

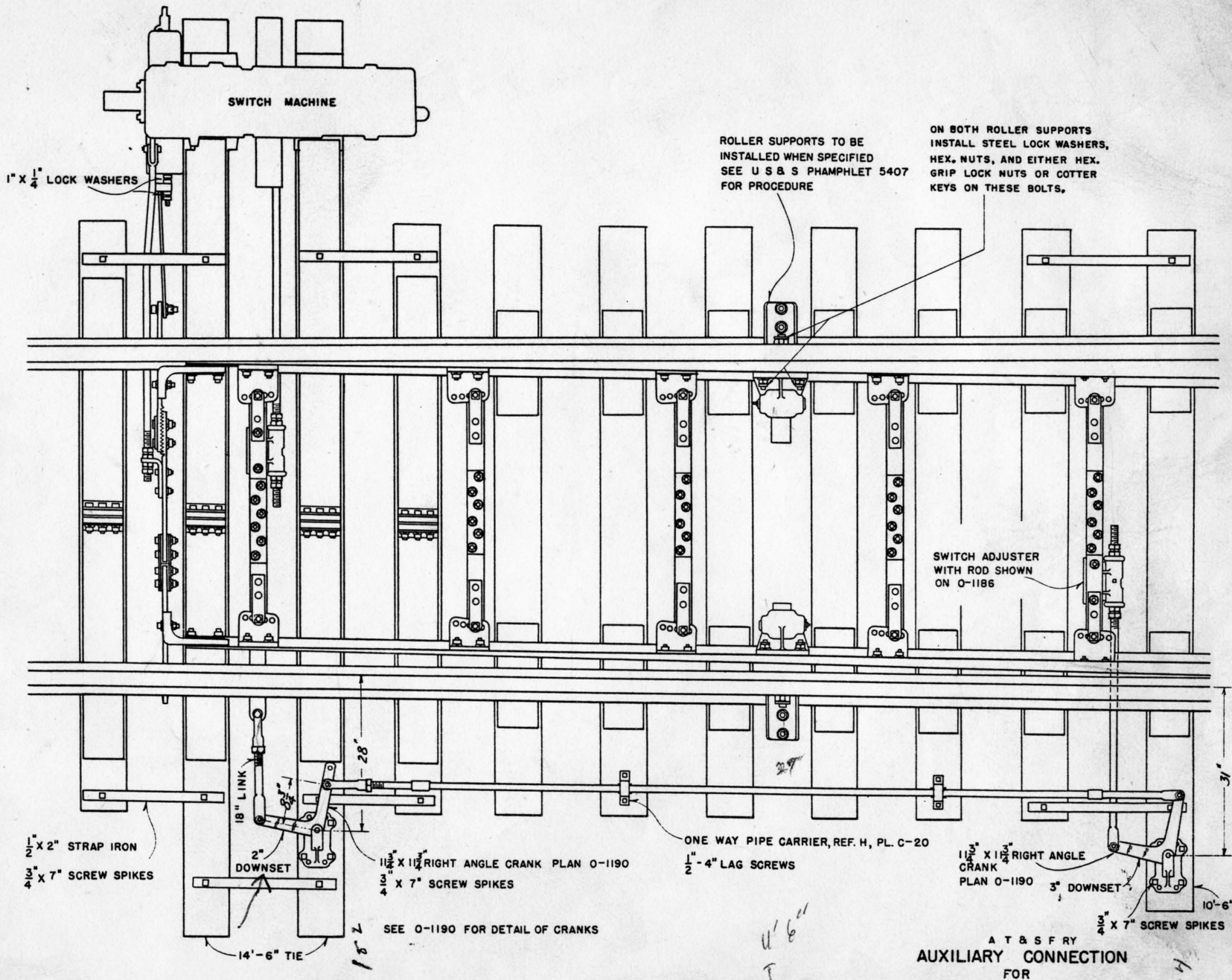
A.T. & S.F. Ry. System

POINT DETECTOR ROD
FOR
INTERLOCKED SWITCHES
AND
T-21 SWITCH LOCK LAYOUTS

SSSO 8-10-61

0-1061

C-93



A T & S F RY

AUXILIARY CONNECTION FOR LONG SWITCH POINTS

S E S O 6-1-48

Rev. 7-12-56

Z-162

Z-162

C-94

Drill when Re-assembled IN - Signal Shop 1-58

Drill all cranks

Drill out To 1 3/32" Bush with Bronze Bushing 1/8" x 3/4"

2.23

Dr. & ream for 7/8" pin

8 3/4"

Drill out To 1 15/16" Bush with Bronze Bushing 1 1/2" x 1 1/4" x 2" L

1 1/4 PIN

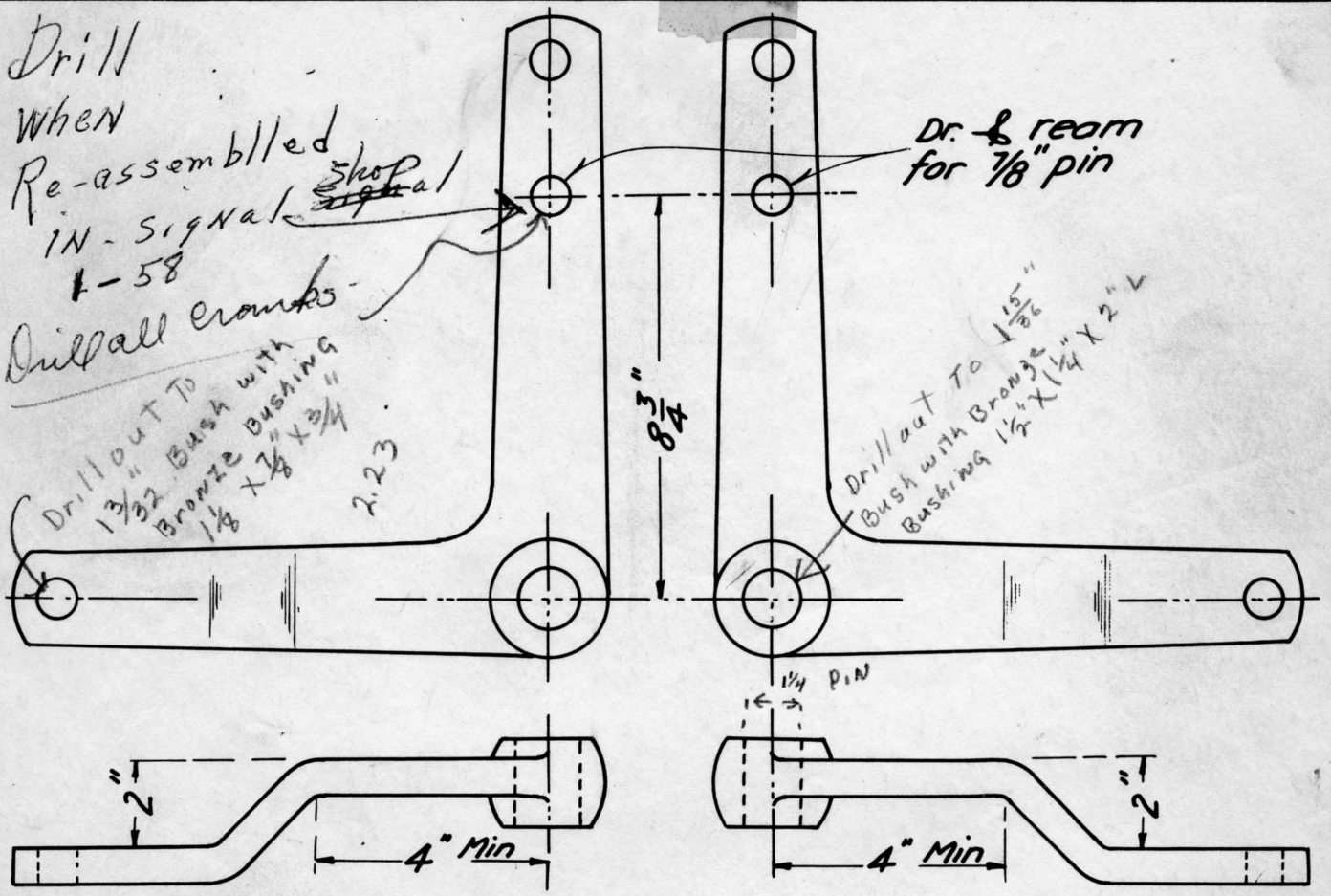


FIG. 1 RIGHT HAND

FIG. 2 LEFT HAND

11 3/4" x 11 3/4" Cranks with 2" down set and hole at 8 3/4" in straight arm

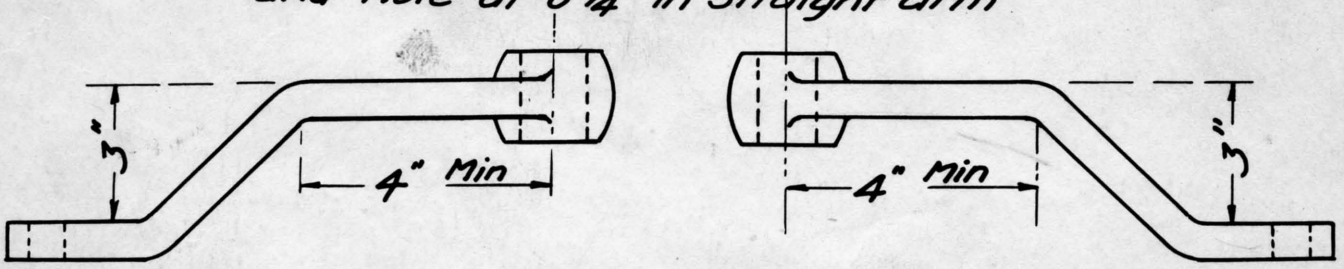


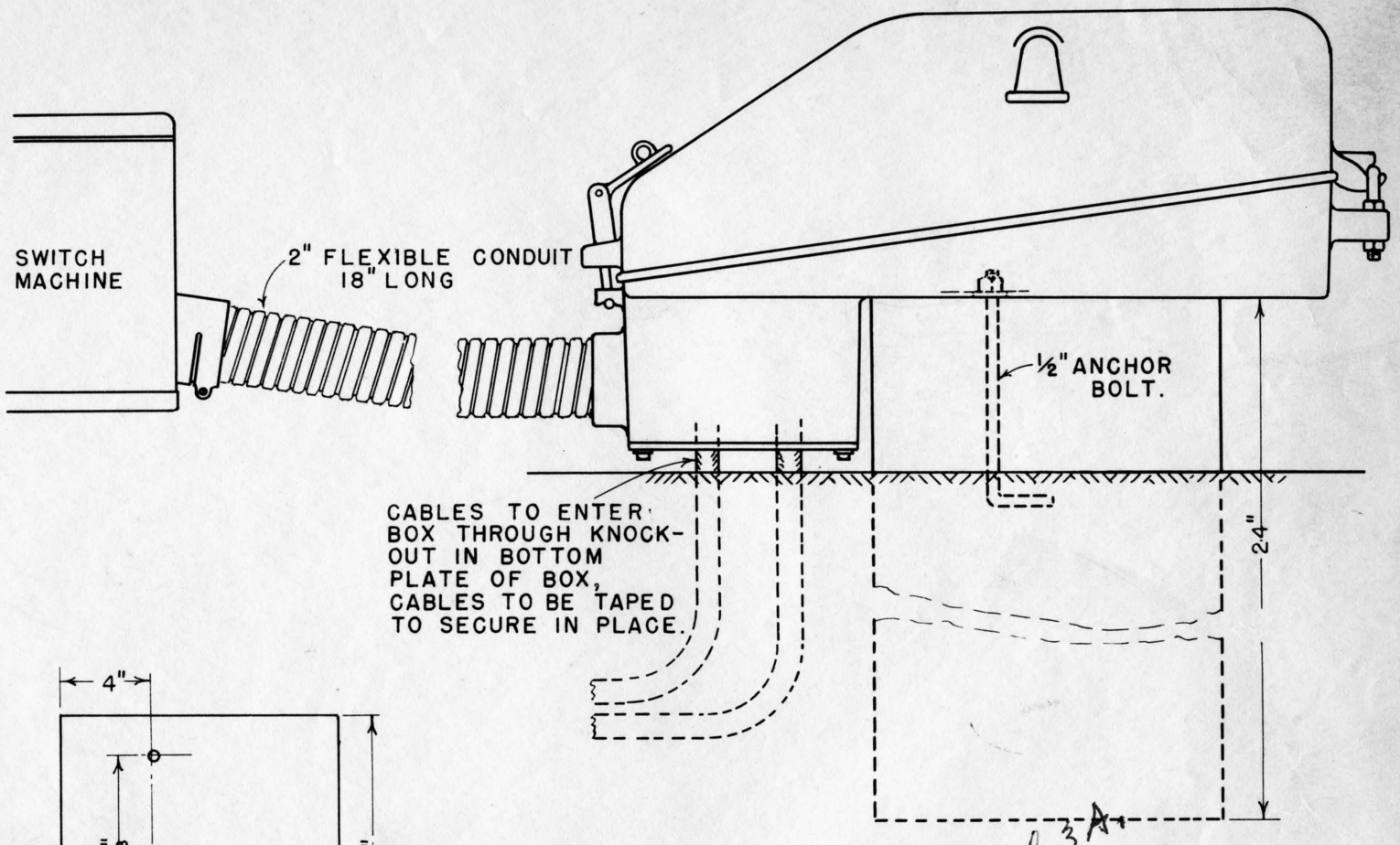
FIG. 3 RIGHT HAND

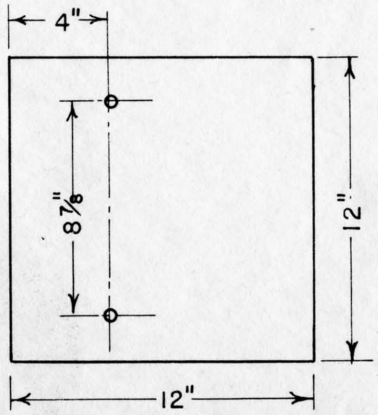
FIG. 4 LEFT HAND

11 3/4" x 11 3/4" Cranks with 3" down set and without extra hole

See Z-162 for installation plan (Pg. C-94)

A T & S F Ry Co.
OFFSET CRANKS FOR AUXILIARY CONNECTION TO LONG SWITCH POINTS
SESO Topeka 11-10-48
O-1190





TOP OF FOUNDATION

ANCHOR BOLTS SHOULD EXTEND 1¼" ABOVE TOP OF FOUNDATION.

Pc 294807
Dwg. C-16726-Sh-3A

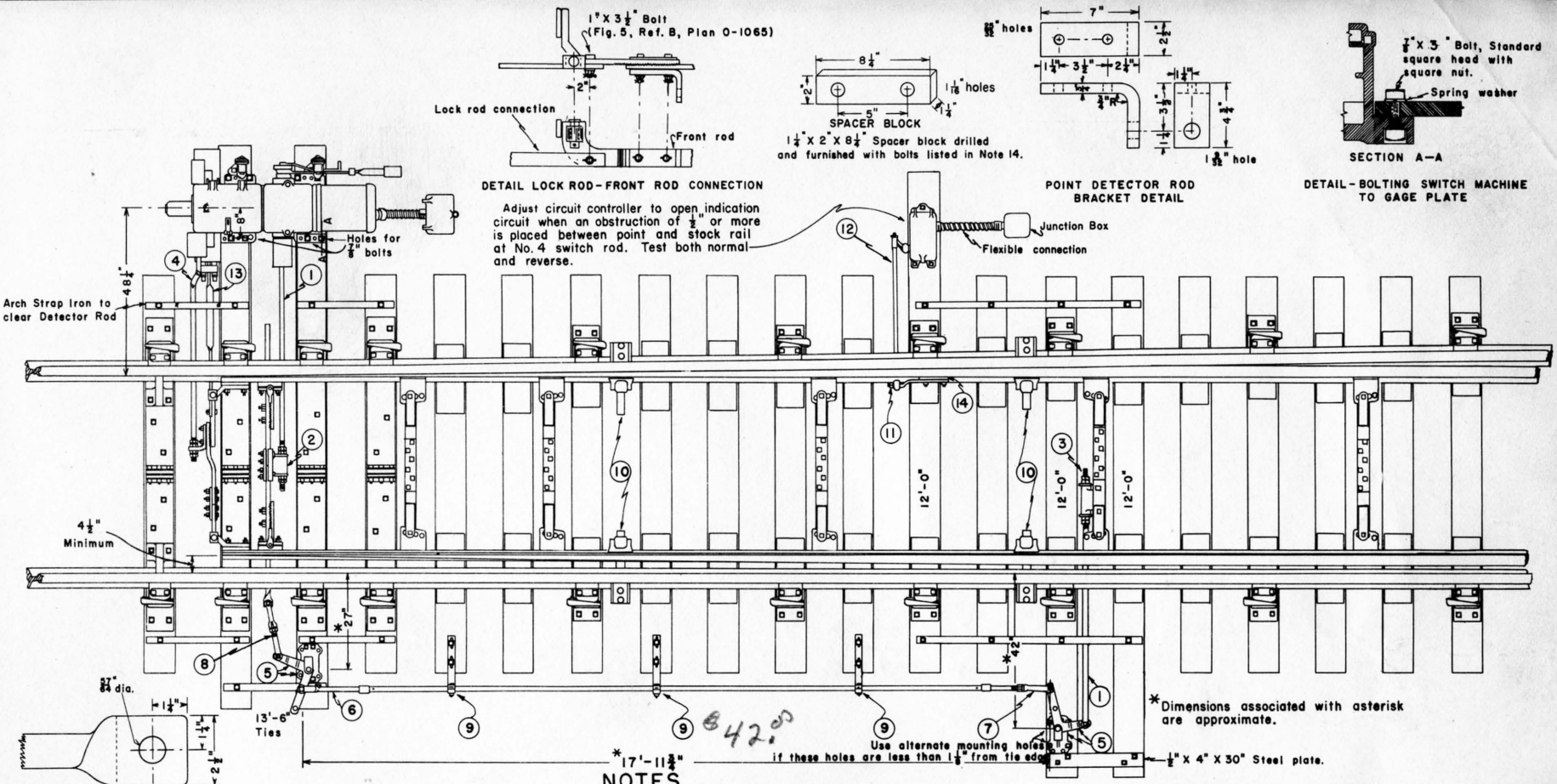
A.T. & S.F. RY. CO.

SWITCH CONTROL RELAY HOUSING AND JUNCTION BOX

S.E.S.O. TOPEKA JUNE 8, 1950

O-1222

C-97



NOTES

1. Throw rod, Plan 0-1060, Fig. 1, Ref. C. cut off to 74" length. Remove Alemite fitting from turned bolt, to clear cover on switch machine.
2. Switch adjuster, Plan 0-1062, Fig. 2.
3. Switch adjuster, Plan 0-1062, Fig. 1.
4. Point detector rod, Plan 0-1061, Fig. 1.
5. Crank stand assembly, 10116, AAR Sig. Sec. Dwg. equipped with cranks bent and drilled in Topeka Shop, "L.H." per Plan 0-1275-1. If switch machine is located on right of switch points - cranks are to be bent and drilled "R.H." and auxiliary rod installed on opposite side of track.
6. Solid jaw, 10181, AAR Sig. Sec. Dwg.
7. Screw jaw, 10199, AAR Sig. Sec. Dwg.
8. Adjustable link, 10198, AAR Sig. Sec. Dwg.
9. Pipe guide, Plan 0-1275-3.
10. Roller bearings for switch points. U.S.&S. Co., Ref. A, Pl. C-150. "Drill holes for 1¼" turned bolt, in stock rail, 3¼" above base of rail, and 2 holes in switch point per U.S.&S. Co. pamphlet U-5407 Installation procedure."
11. Switch lug, Plan 0-1067, Dimension "E" 1". Pc. No. UN297460-001.
12. Switch circuit controller rod for Near rail, Plan 0-1067.
13. Lock rod connection, Fig. A. Plan 0-1275-2.
14. Spacer block, complete with 2-1" X 5" web bolts drilled for ¼" cotter.

A. ⅞" turned bolts, Fig. 4, Ref. A, Plan 0-1065, used to connect all linkage for aux. throw rod.

B. ¾" X 6" Screw Spikes, Plan CES 50136-914 to be used to: apply tie spacing straps, switch plates, pipe guides, crank stands, hand throw lever stands and field side of switch machine, to ties.

C. All tie spacing straps are made from ½" X 2" strap iron.

D. All jaws to be double riveted to pipe with ¼" X 1 11/16" rivets.

E. Use flat spring lock washers between adjusting nuts on throw rods, point detector rod, point detector, adjustable lock rod and between the jaw and jam nut on screw jaws and adjustable link.

15. Type SMJ rods are interchangeable with MJ rods which were used on original installations.

A.T.& S.F. Ry. System

#24 TURNOUT USING RACOR MF FRONT ROD

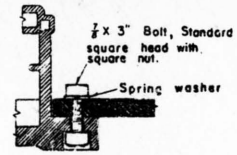
TYPE SMJ ROD FOR No. 1 ROD

SSSO 1-30-62

Revised: 1-31-75

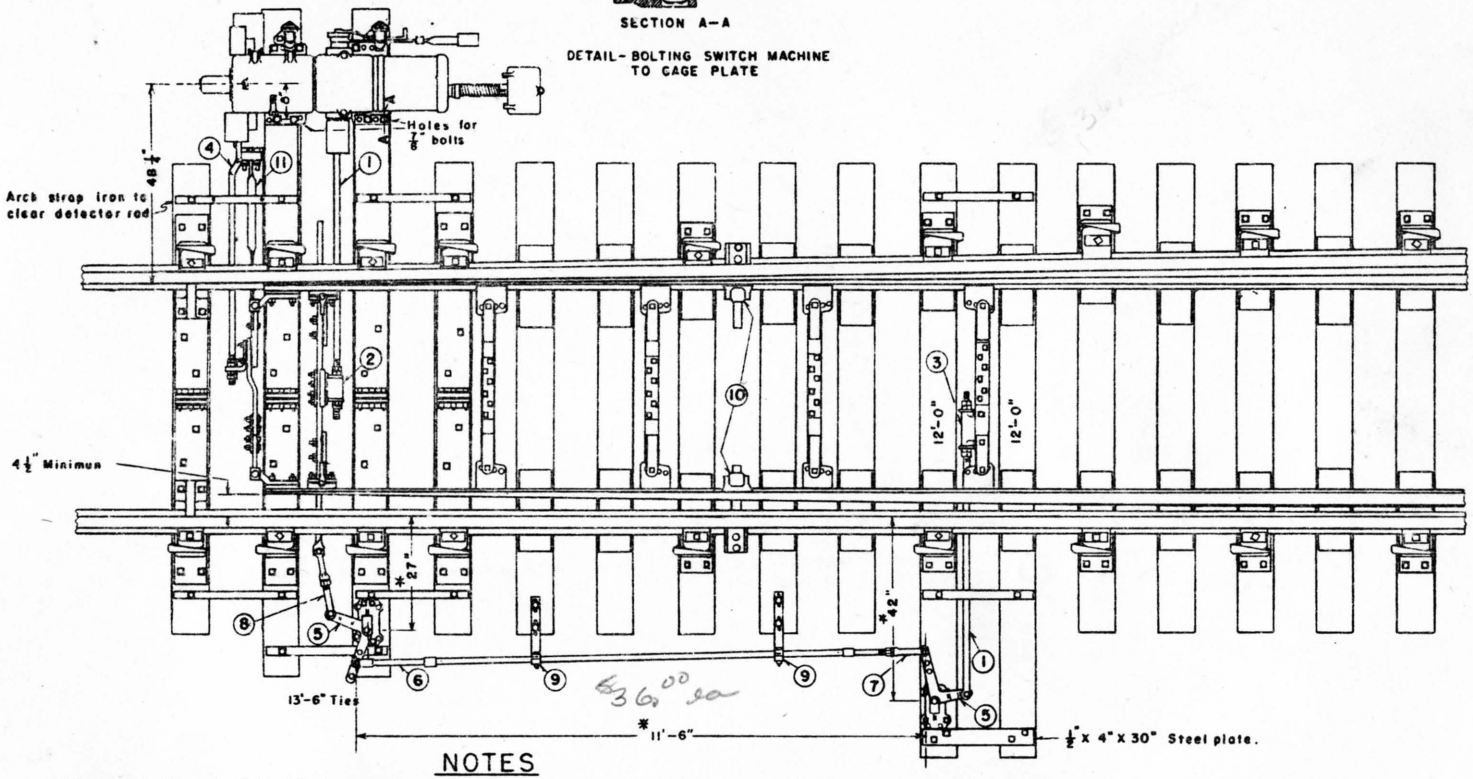
Z-202A

C-98



SECTION A-A

DETAIL - BOLTING SWITCH MACHINE TO CAGE PLATE



NOTES

1. Throw rod, Plan 0-1060, Fig. 1, Ref. C. cut off to 74" length. Remove Alemite fitting from turned bolt, to clear cover on switch machine.
2. Switch adjuster, Plan 0-1062, Fig. 2.
3. Switch adjuster, Plan 0-1062, Fig. 1.
4. Point detector rod, Plan 0-1061, Fig. 1.
5. Crank stand assembly, 10116, AAR Sig. Sec. Dwg. equipped with cranks bent and drilled in Topeka Shop, "L.H." per Plan 0-1275-1. If switch machine is located on right of switch points, cranks are to be bent and drilled "R.H." and auxiliary rod installed on opposite side of track.
6. Solid jaw, 10181, AAR Sig. Sec. Dwg.
7. Screw jaw, 10199, AAR Sig. Sec. Dwg.
8. Adjustable link, 10198, AAR Sig. Sec. Dwg.
9. Pipe guide, Plan 0-1275-3.
10. Roller bearings for switch points. U.S.&S. Co., Ref. A, Pl. C-150. "Drill holes for 1⅛" turned bolt, in stock rail, 3¼" above base of rail, and 2 holes in switch point per U.S.&S. Co. pamphlet U-5407 Installation procedure."
11. Lock rod connection, Fig. A, Plan 0-1275-2.
12. For details of No. 1 Rod, Lock rod - Front rod connections, and Point detector rod bracket see plan Z-202A.

A. Use alternate mounting holes in cranks, if outside holes are less than 1⅛" from tie edge.

B. ⅞" turned bolts, Fig. 4, Ref. A, Plan 0-1065, used to connect all linkage for aux. throw rod.

C. ¾" X 6" Screw Spikes, Plan CES 50136-914 to be used to: apply tie spacing straps, switch plates, pipe guides, crank stands, hand throw lever stands and field side of switch machine, to ties.

D. All tie spacing straps are made from ½" X 2" strap iron.

E. All jaws to be double riveted to pipe with ¼" X 1 11/16" rivets.

F. Use flat spring lock washers between adjusting nuts on throw rods, point detector rod, point detector, adjustable lock rod and between the jaw and jam nut on screw jaws and adjustable link.

G. Dimensions associated with asterisk are approximate.

13. Type SMJ rods are interchangeable with MJ rods which were used on original installations.

A.T.&S.F. Ry. System

#20 TURNOUT USING RACOR MF FRONT ROD

TYPE SMJ ROD FOR No. 1 ROD

SSSO 1-30-67

REV. 5-20-75

Z-205

C-99

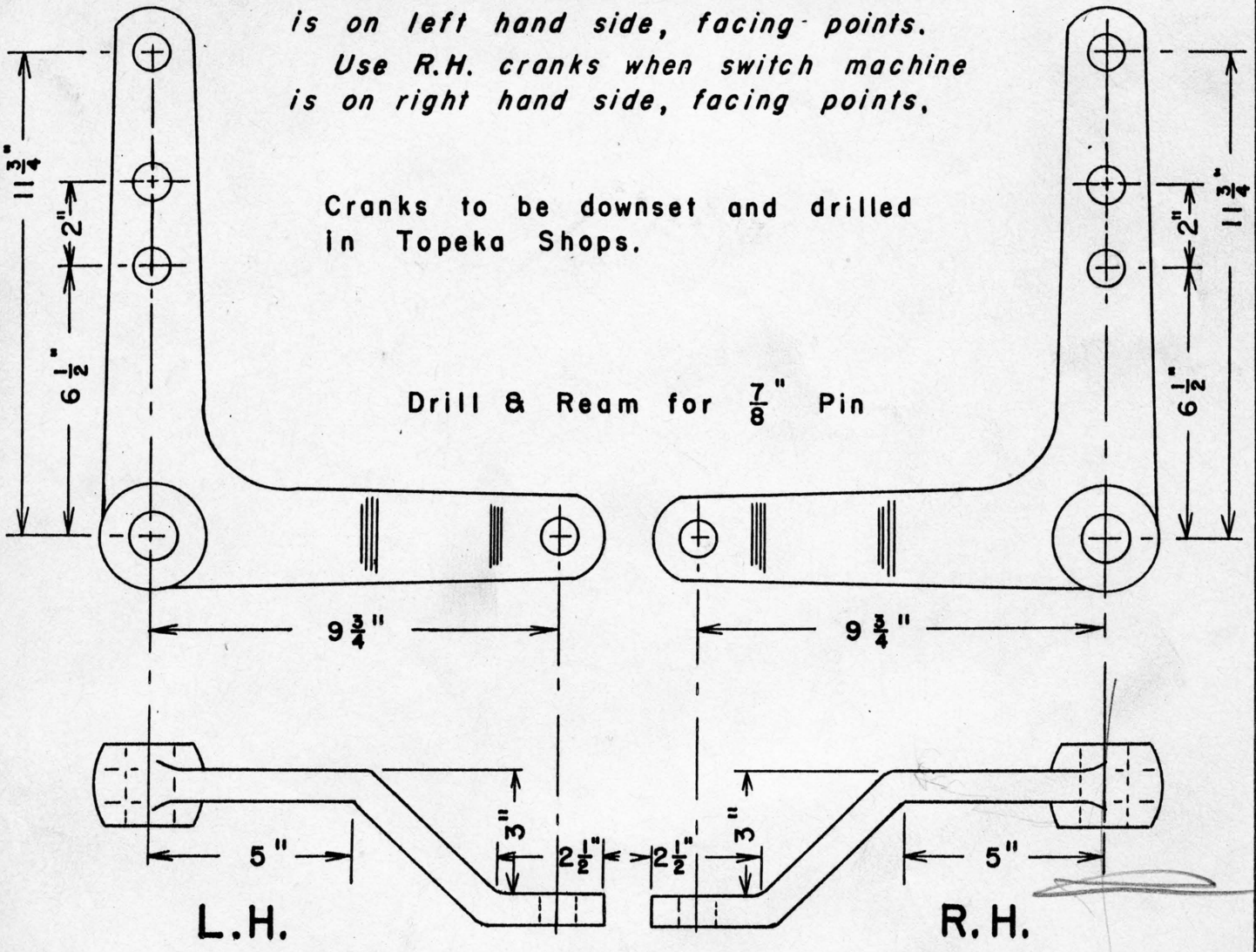
O.E. KAUL

NOTE:

Use L.H. cranks when switch machine is on left hand side, facing points.

Use R.H. cranks when switch machine is on right hand side, facing points.

Cranks to be downset and drilled in Topeka Shops.



11 3/4" X 11 3/4" Cranks with Downset and Additional Drilling as Shown.

Application of these cranks shown on Plan Z-202 Sh. 1, Z-202A and Z-205.

A.T. & S.F. Ry. System

CRANKS FOR AUXILIARY CONNECTION TO LONG POINT

SSSO 10-2-61

REV. 1-20-67

0-1275-1

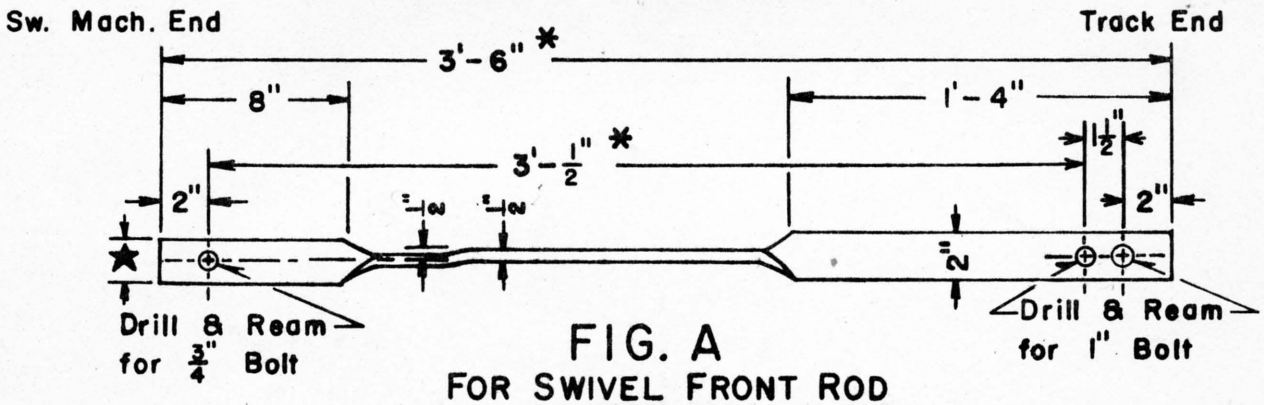


FIG. A
FOR SWIVEL FRONT ROD
PLAN Z-202A, Z-205

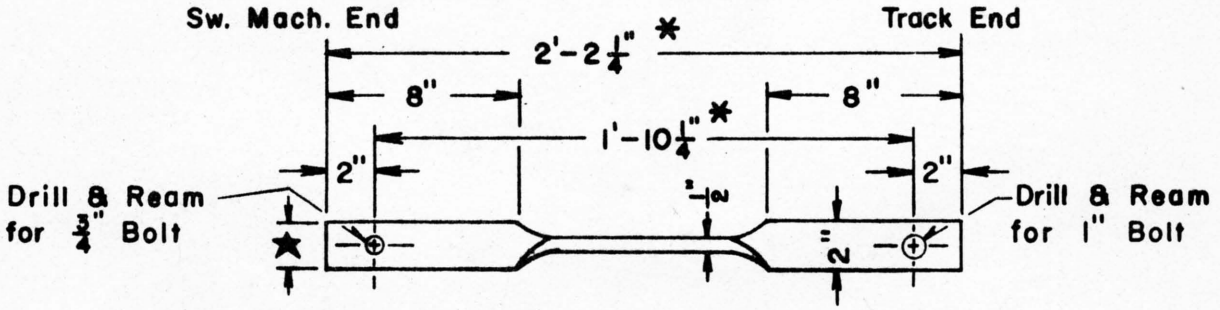
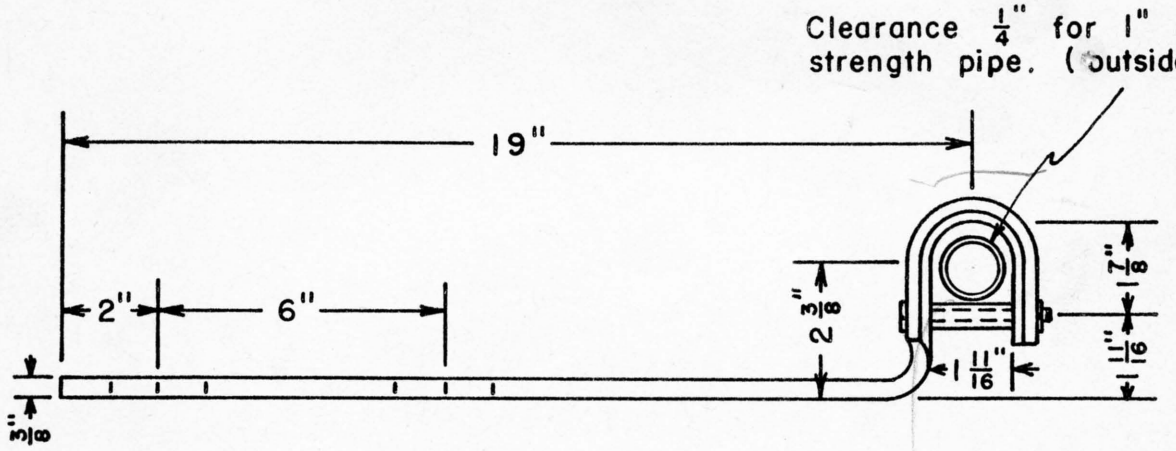


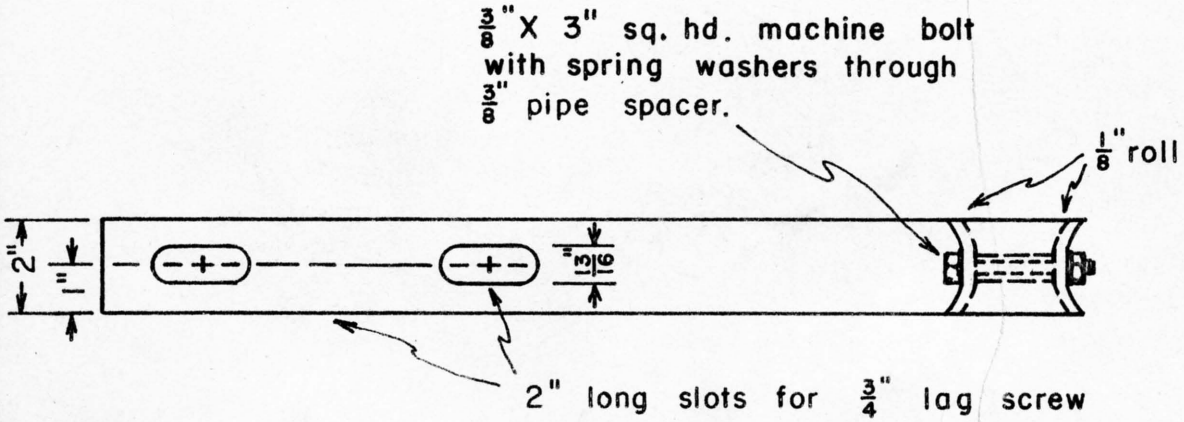
FIG. B
FOR RIGID (S. Fe Style) FRONT ROD
PLAN Z-162 & Z-202 Sh. 2

★ Machine this end to 1.931" ±.

* These dimensions are after twist and offset has been placed in rod.

A. T. & S. F. Ry. System
LOCK ROD CONNECTION
FROM SWITCH MACHINE
TO FRONT ROD
SSSO REDRAWN 1-20-67
REV. 5-21-75
0-1275-2





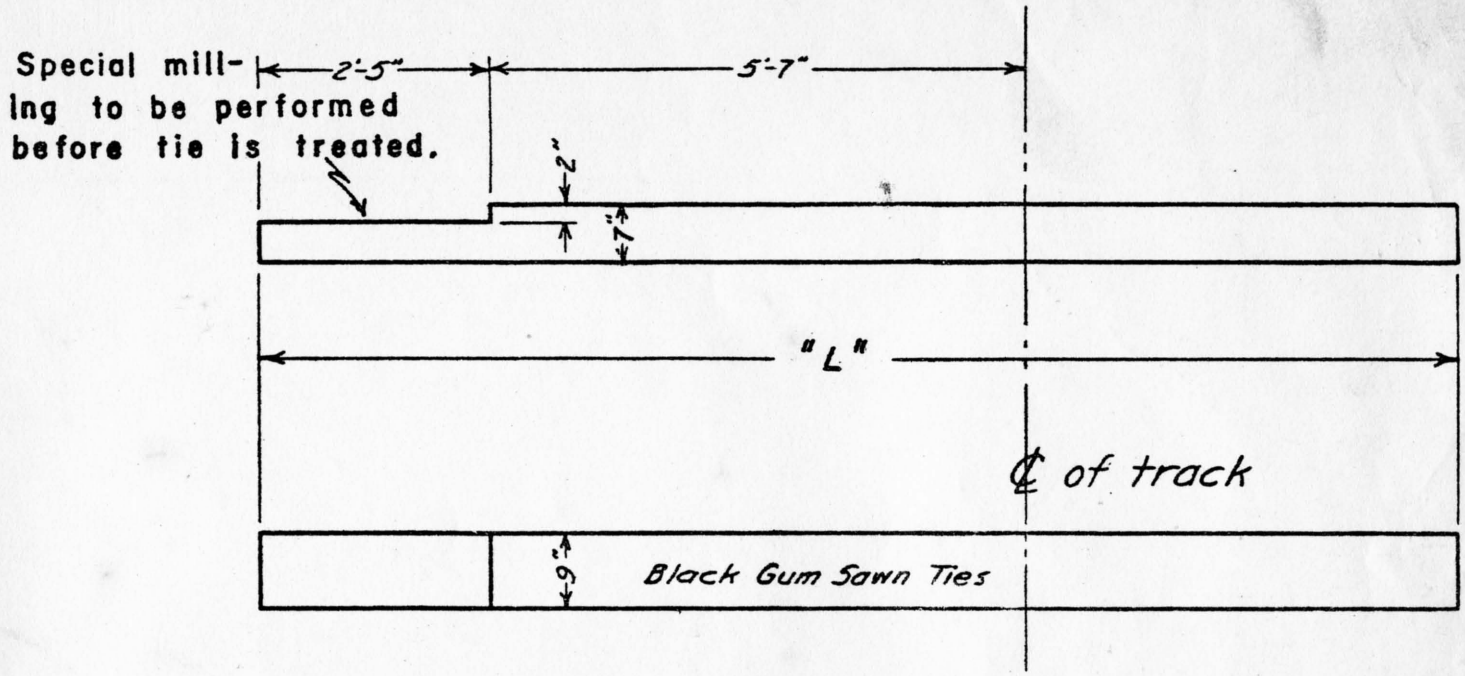
Complete assembly to be manufactured and assembled in Topeka Shops.

A. T. & S. F. Ry. System

PIPE GUIDE FOR AUXILIARY CONNECTION TO LONG POINTS

SSSO 10-2-61

REVISED 10-17-69 O-1275-3



Dimension "L" (length) to be shown on order. Refer to C&M or CES plan for type installation and proper length.

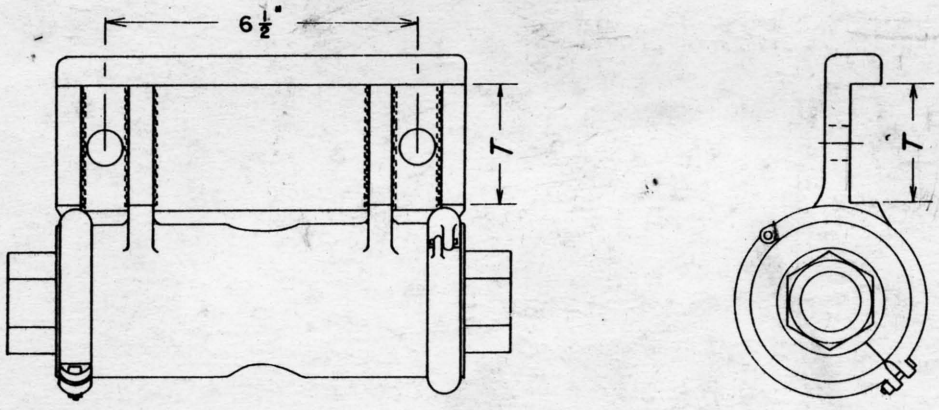
A.T. & S.F. RY. CO.

TIE FOR MOUNTING GRS MOD 5A OR US&S TYPE M3-M23 SWITCH MACH.

SSSO 7-15-52 O-1245

Rev. 10-2-61

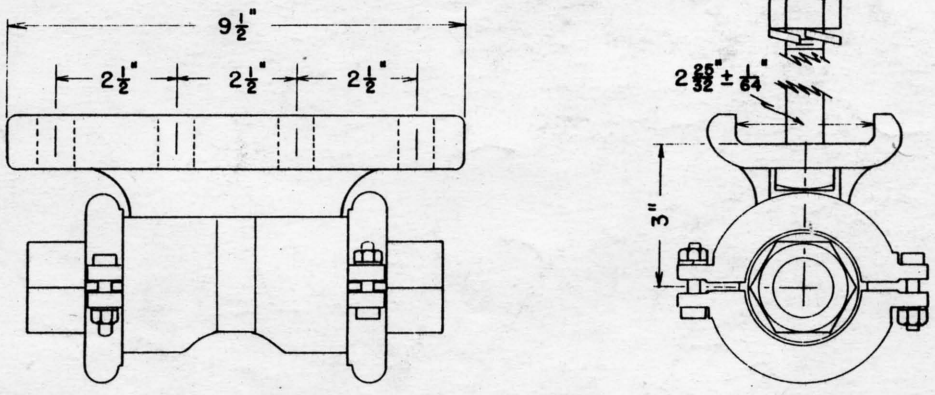
C-103



Bossert Style	Width "T"	BOLTS Size	Reference	Quan	Use With
2B	2 5/8"	¾" X 3"	Plan 0-1065 Fig 3 Ref A	2	75-119# Rail
2B-3	3 3/16"	¾" X 3½"	Plan 0-1065 Fig 3 Ref B	1	131-136# Rail

Bossert Adjusters come Complete with Adjusting Nuts and Mounting Bolts in quantity shown. (See SBM)

SWITCH ADJUSTER FOR HORIZONTAL SWITCH RODS
FIG. 1



Adjuster (per AAR Dwg. 1274A) comes complete with Adjusting Nuts and four ¾" X 4" Mounting bolts. Bolts per Plan 0-1065 Fig. 3, Ref. C.

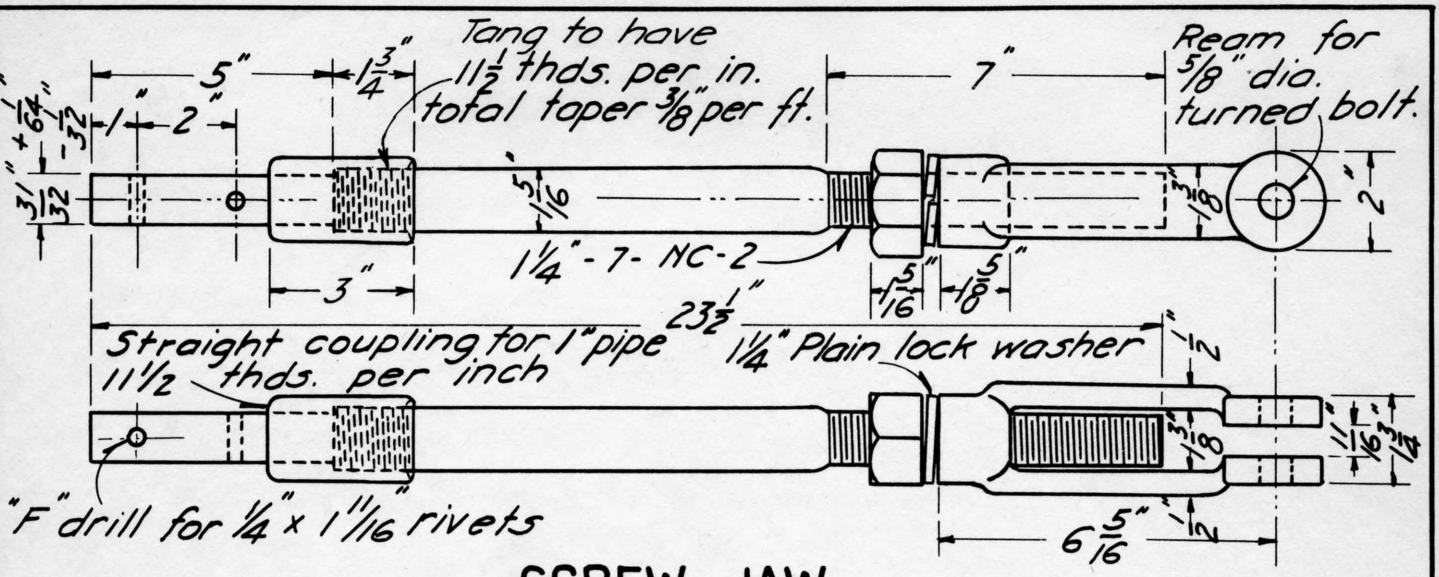
SWITCH ADJUSTER FOR VERTICAL SWITCH RODS
FIG. 2

A.T. & S.F. Ry. System

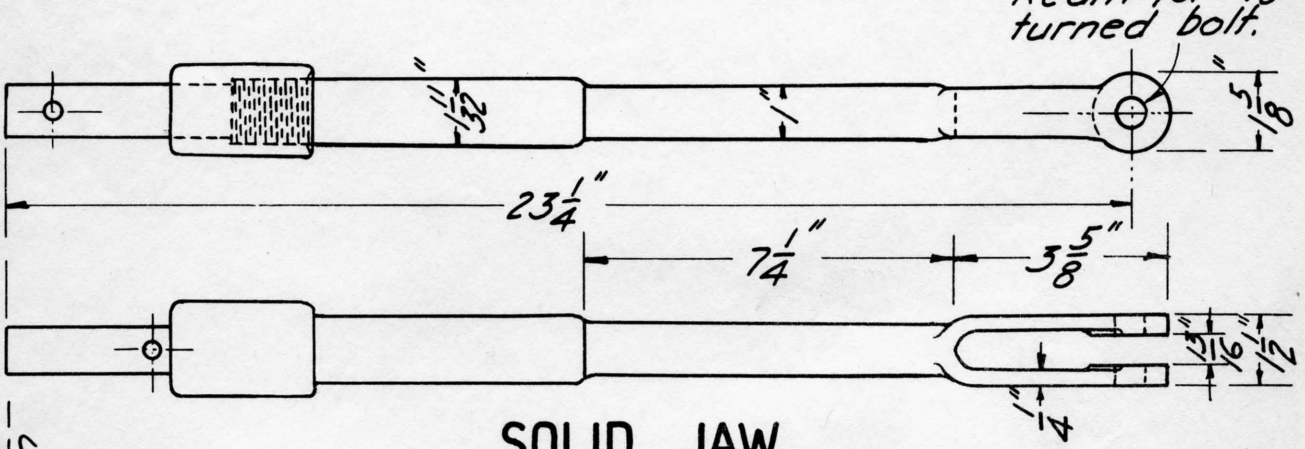
ADJUSTER
FOR
INTERLOCKED SWITCHES

SSSO 12-20-61

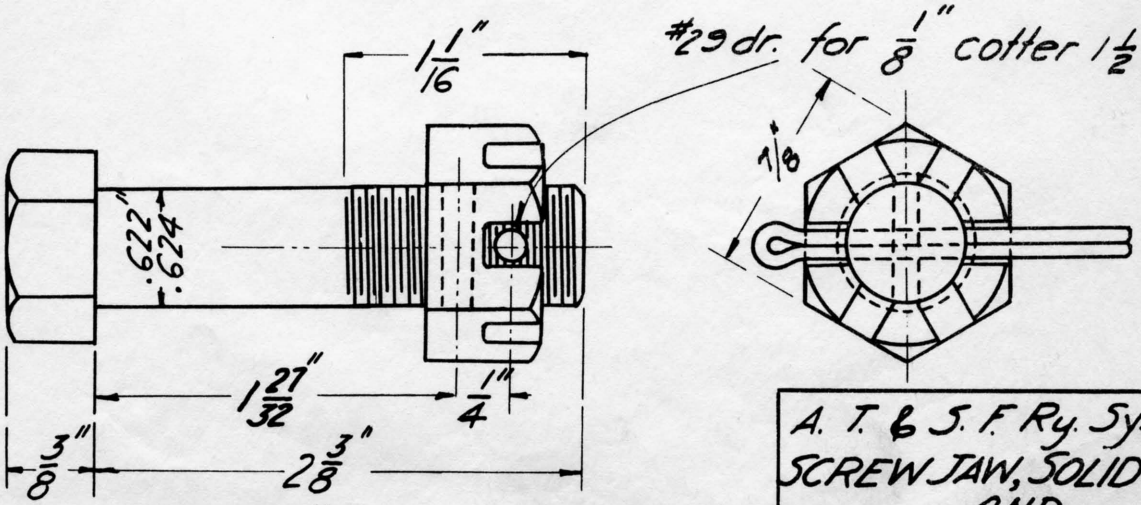
0-1062



SCREW JAW



SOLID JAW



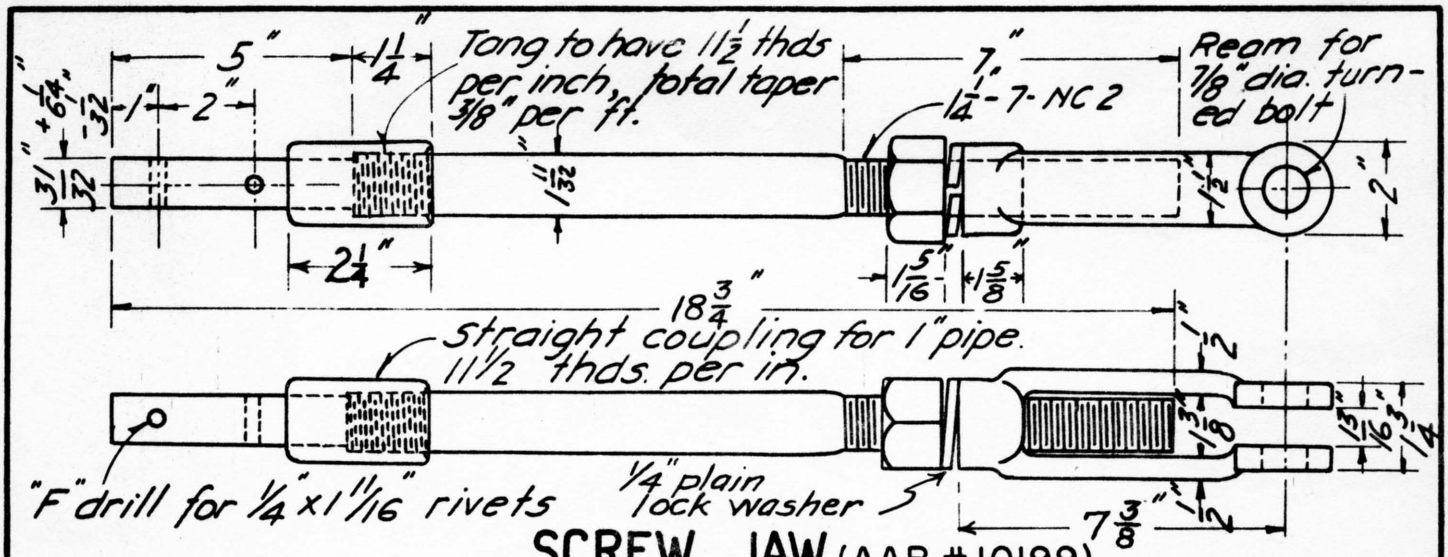
5/8" TURNED BOLT

For use with 5/8 jaws
Thread on bolt and nut to be 5/8"-11-NC3

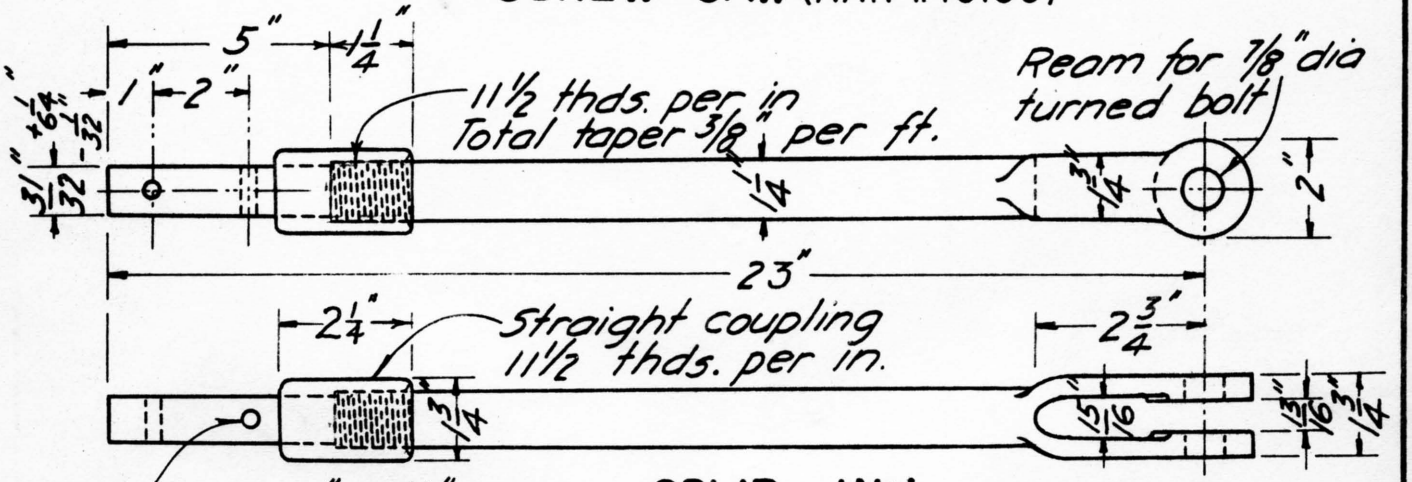
Approved H. D. Douglas
Signal Engr. System

A. T. & S. F. Ry. System
SCREW JAW, SOLID JAW
AND
5/8" TURNED BOLT
SE50 Topeka 7-19-38
SES-654

Revised 10-26-49

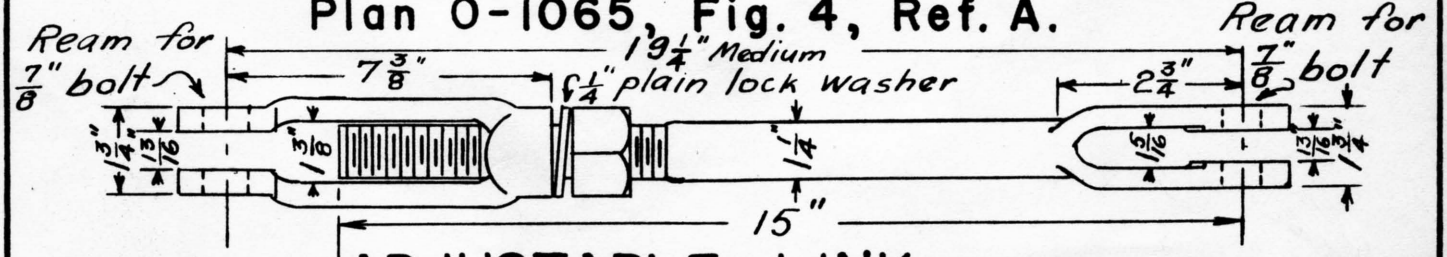


SCREW JAW (AAR #10199)



SOLID JAW (AAR #10181)

Ordering Reference for 7/8" turned bolts, Plan 0-1065, Fig. 4, Ref. A.



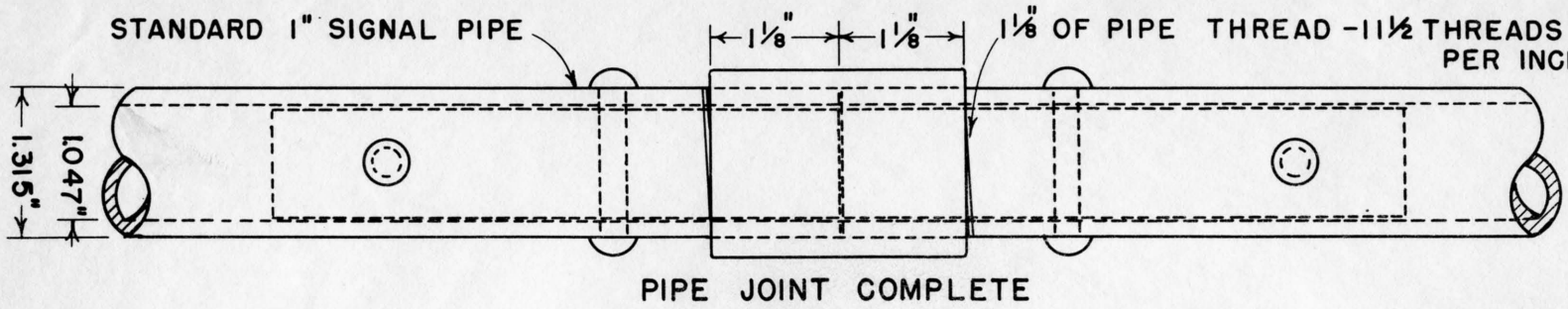
ADJUSTABLE LINK (AAR #10198)

A.T. & S.F. Ry. System
SCREW JAW, SOLID JAW USING 7/8" TURNED BOLT
SE50 Topeka 7-21-38
SES-655

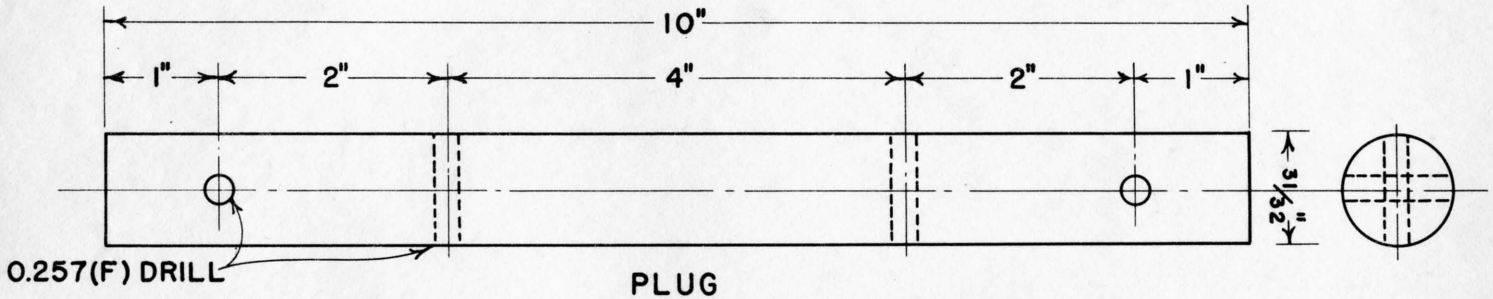
Approved _____ Signal Engr Sys.

Revised 3-28-72

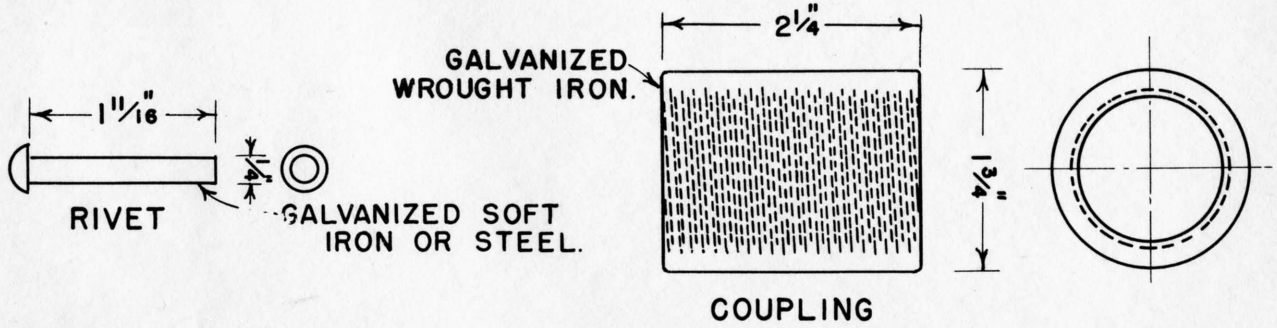
A.A.R. SIGNAL SECTION DRAWING 1015.



PIPE JOINT COMPLETE



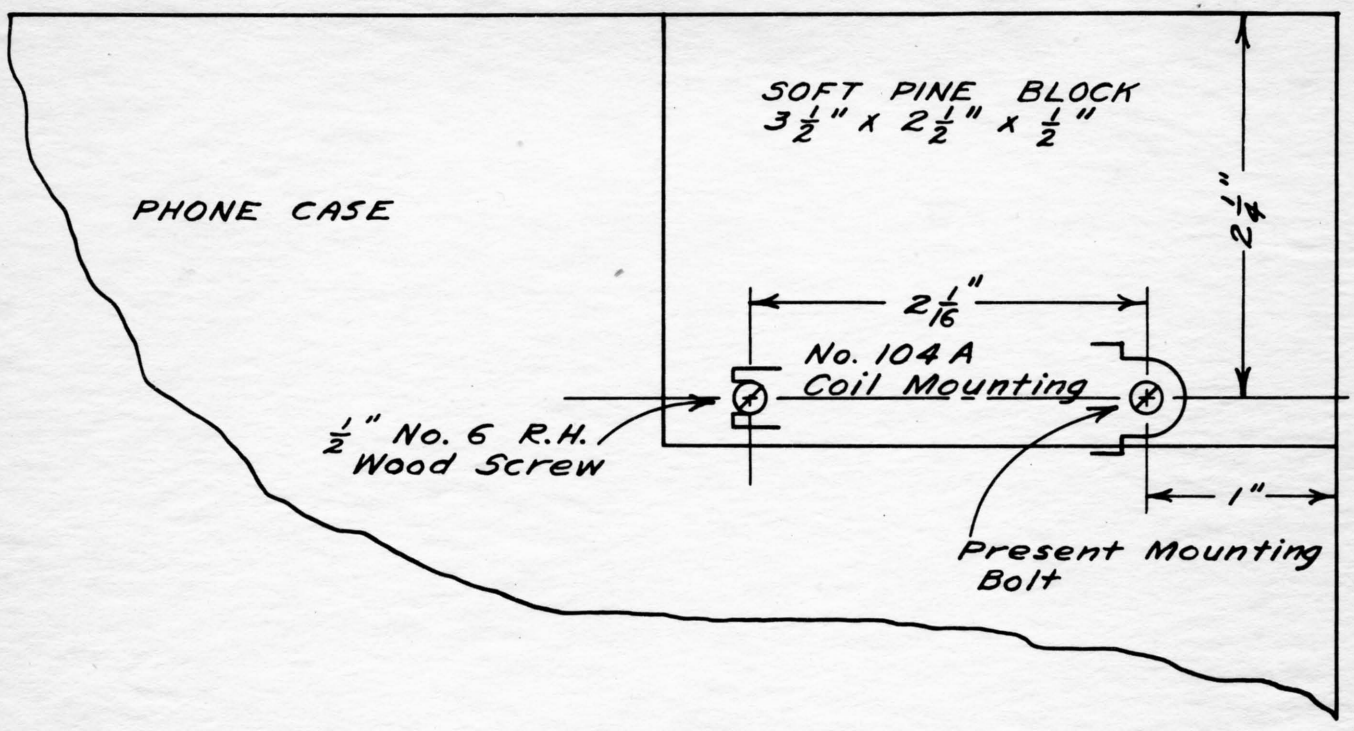
PLUG

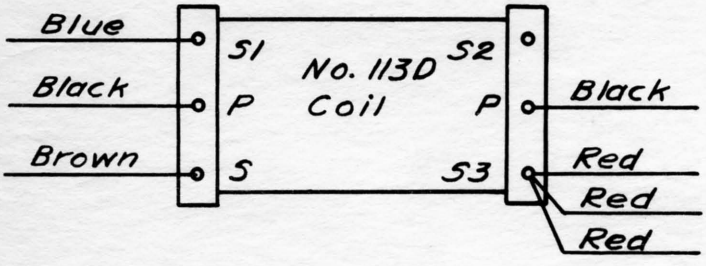


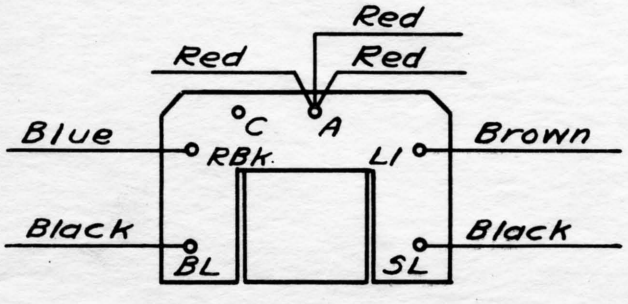
COUPLING

A.T.&S.F. RY. CO.
ONE INCH PIPE AND COUPLING
S.E.S.O. TOPEKA 6-16-1950
S. E. S. 612

C-114







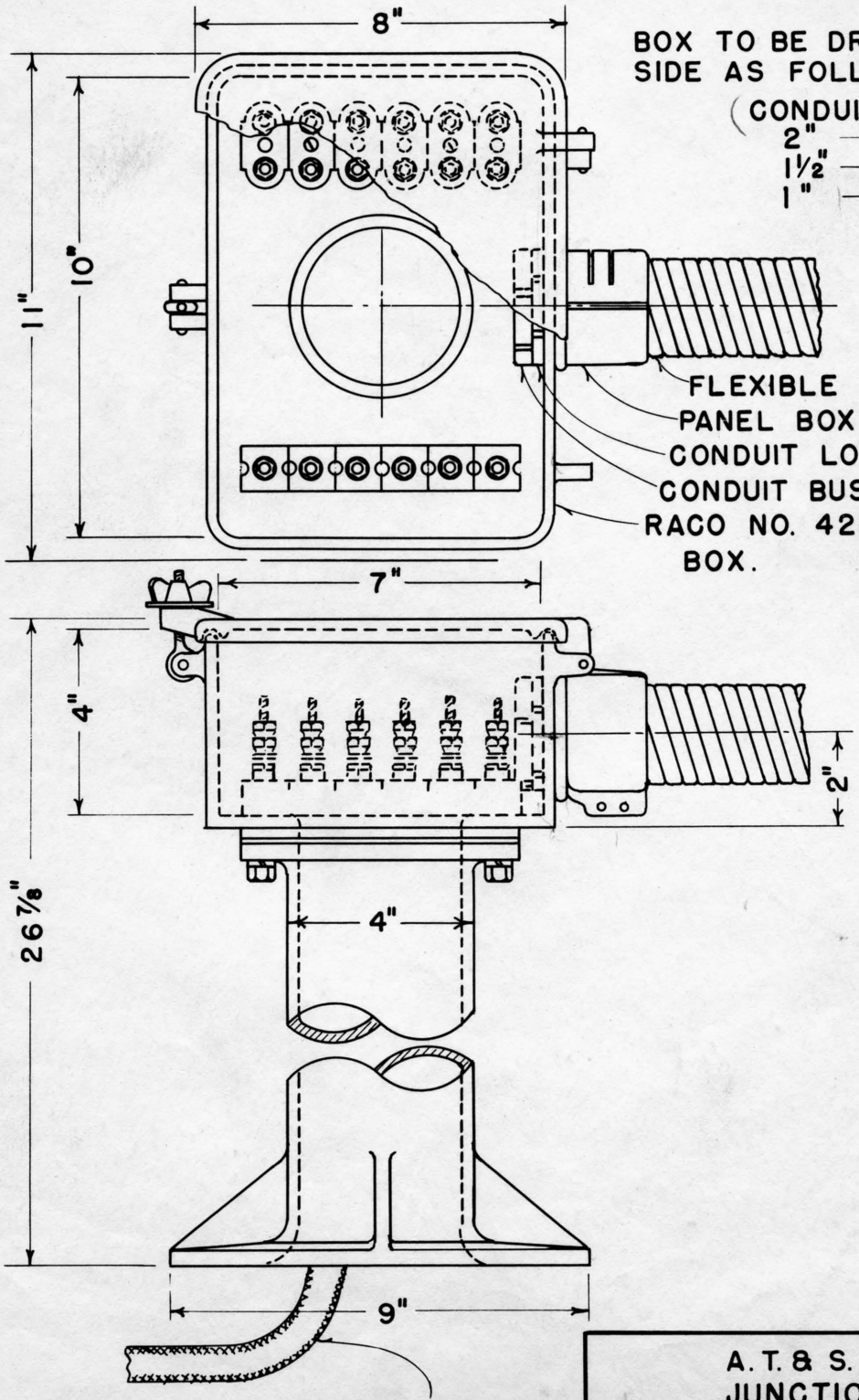
No. 104 A Coil

A. T. & S. F. Ry. Co.

MOUNTING AND WIRING DIAGRAM FOR USE WHEN REPLACING 113D COIL WITH 104A INDUCTION COIL

SESO 5-25-51

O-1235



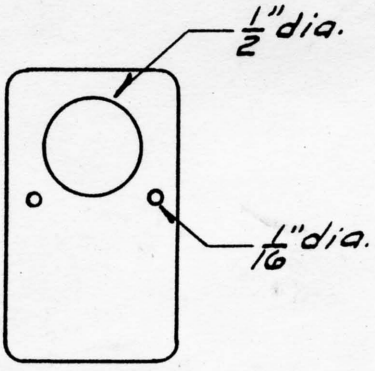
BOX TO BE DRILLED ON HINGE SIDE AS FOLLOWS:

CONDUIT	SIZE HOLE
2"	2 3/8"
1 1/2"	1 15/16"
1"	1 5/16"

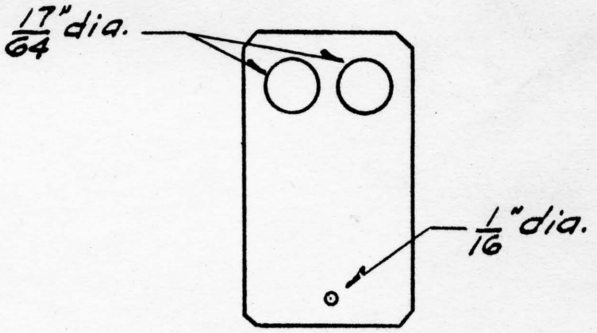
FLEXIBLE CONDUIT.
PANEL BOX CONNECTOR.
CONDUIT LOCKNUT.
CONDUIT BUSHING.
RACO NO. 428-11 TERMINAL BOX.

BEND IN CABLE SHOULD NOT BE SHARP ENOUGH TO DAMAGE COVER.

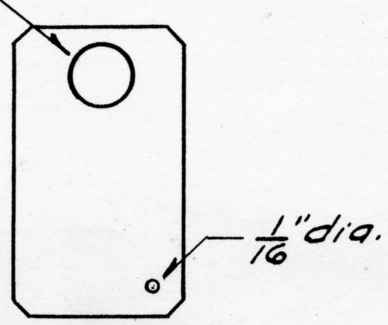
A. T. & S. F. RY. CO.
JUNCTION BOX FOR UNDERGROUND CABLE
S.E.S.O. TOPEKA MAY 15, 1950
O-907



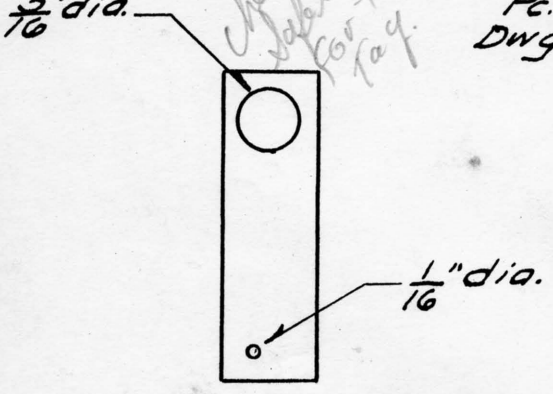
Pc. UJ 34564
Dwg. 8988 Sh. 262



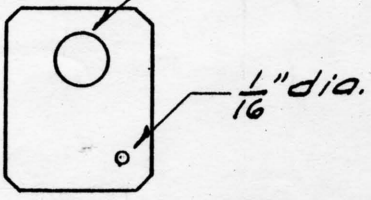
Pc. UJ 34571
Dwg. 8988 Sh. 262



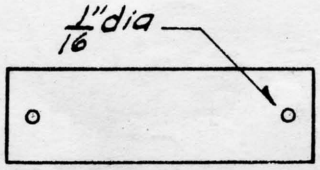
Pc. UJ 34569
Dwg. 8988 Sh. 260



Pc. UJ 34563
Dwg. 8988 Sh. 261



Pc. UJ 34568
Dwg. 8988 Sh. 260

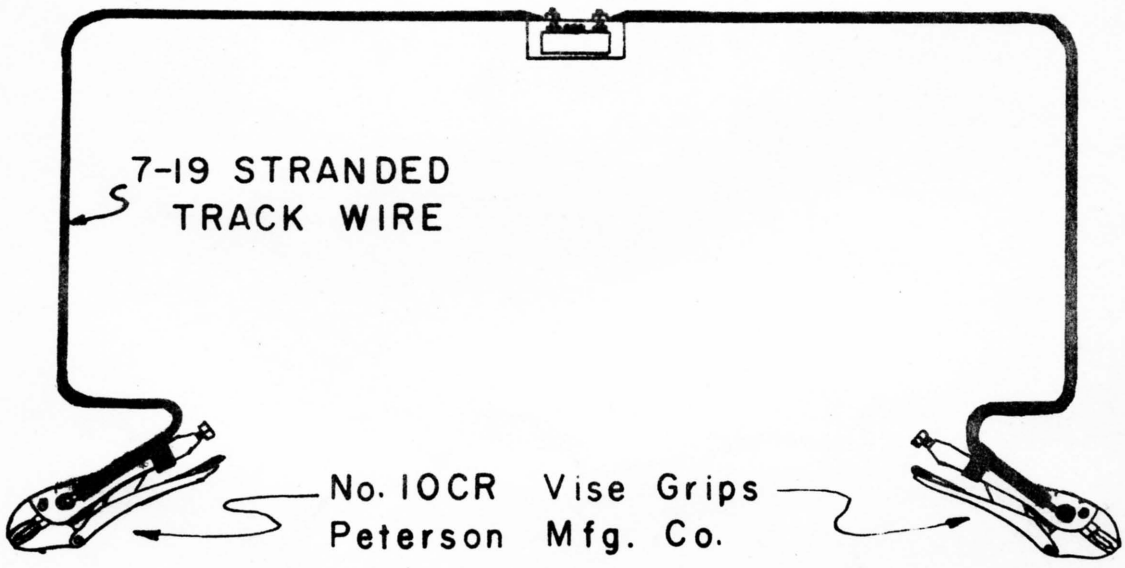


Pc. UJ 34570
Dwg. 8988 Sh. 261

A. T. & S. F. Ry.
U. S. & S. Co.
GREY FIBRE TAGS
SESO Topeka 4-14-50
O-1212

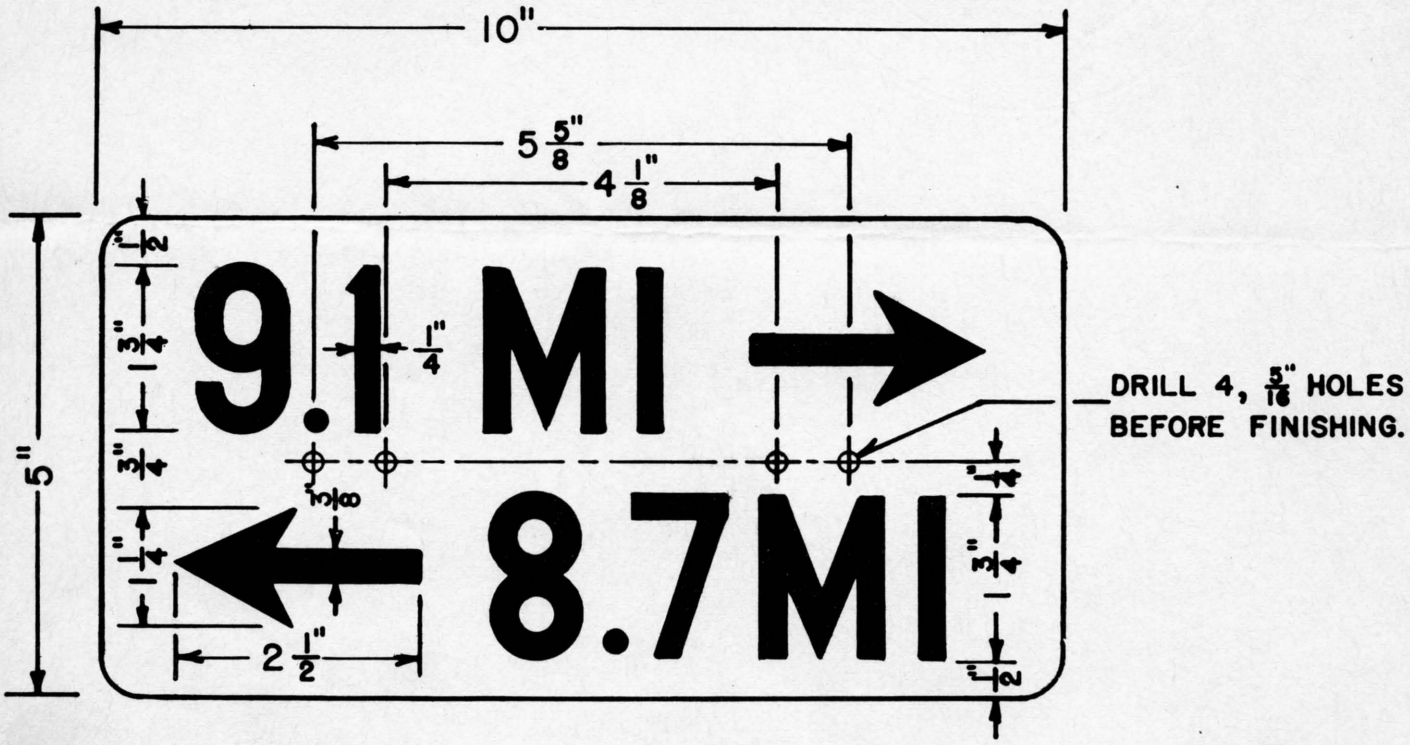
Revised 5-29-62 C-122

TOTAL LENGTH = 8 FT.
TOTAL RESISTANCE = 0.06 ohm; includes wire and two-way terminal block with resistor encapsulated in rubber-like resin.



Completed shunts to be furnished by signal shops. Requisitions should specify Signal Shop Construction.

A.T. & S.F. RY. CO.
STANDARD SHUNT WIRE
SSSO CHICAGO 6-20-68
0-930



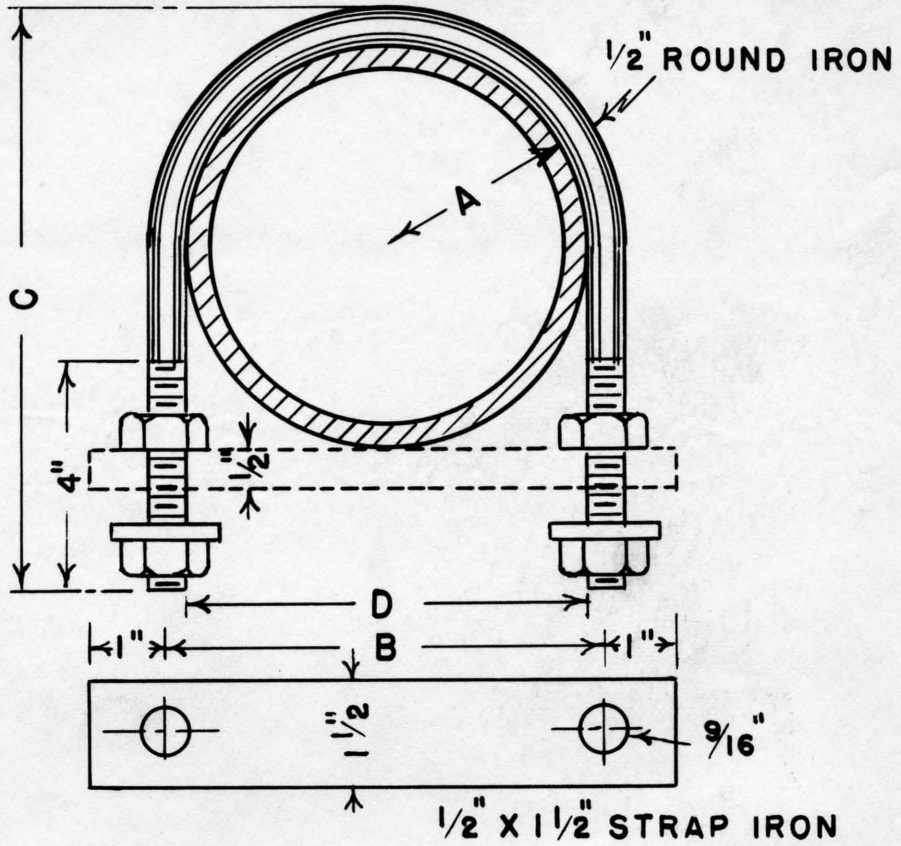
MATERIAL: (MINIMUM) .102" THICK ALUMINUM PLATE WITH SURFACE SMOOTH AND CLEAN. CORNERS TO BE ROUNDED AND EDGES DRESSED OFF SMOOTH, WITH HOLES DRILLED AS SHOWN.

FINISH: WHITE SCOTCHCAL BACKGROUND WITH BLACK NUMERALS.

PACKAGE: TWO $\frac{1}{4}$"x$\frac{5}{8}$" ALUMINUM BOLTS WITH EACH PLATE.

MOUNTING and MATERIALS: USE 2" OR 3" PIPE STRAP AS REQUIRED WHEN ASSEMBLING IN FIELD. USE PLASTIC TAPE BETWEEN POST AND MILEAGE PLATE.

A.T. & S.F. RY.
MILEAGE SIGN
AT
MOTOR CAR INDICATOR
TO SHOW LENGTH OF
DIRECTION OF CONTROL
S.E.S.O. TOPEKA 8-31-'49
0-1204



SIZE OF MAST INSIDE DIAM.	DIMENSIONS				DEVELOPED LENGTH
	A	B	C	D	
3	1 13/16"	4 1/8"	7"	3 5/8"	16"
4	2 5/16"	5 1/8"	7 1/8"	4 5/8"	16 3/4"
5	2 13/16"	6 1/8"	8 1/8"	5 5/8"	19 1/4"
6	3 5/16"	7 1/8"	9 1/8"	6 5/8"	21 3/4"

WHEN ORDERING U-BOLTS, SIZE WILL BE DESIGNATE BY REFERENCE TO DIMENSION "B".

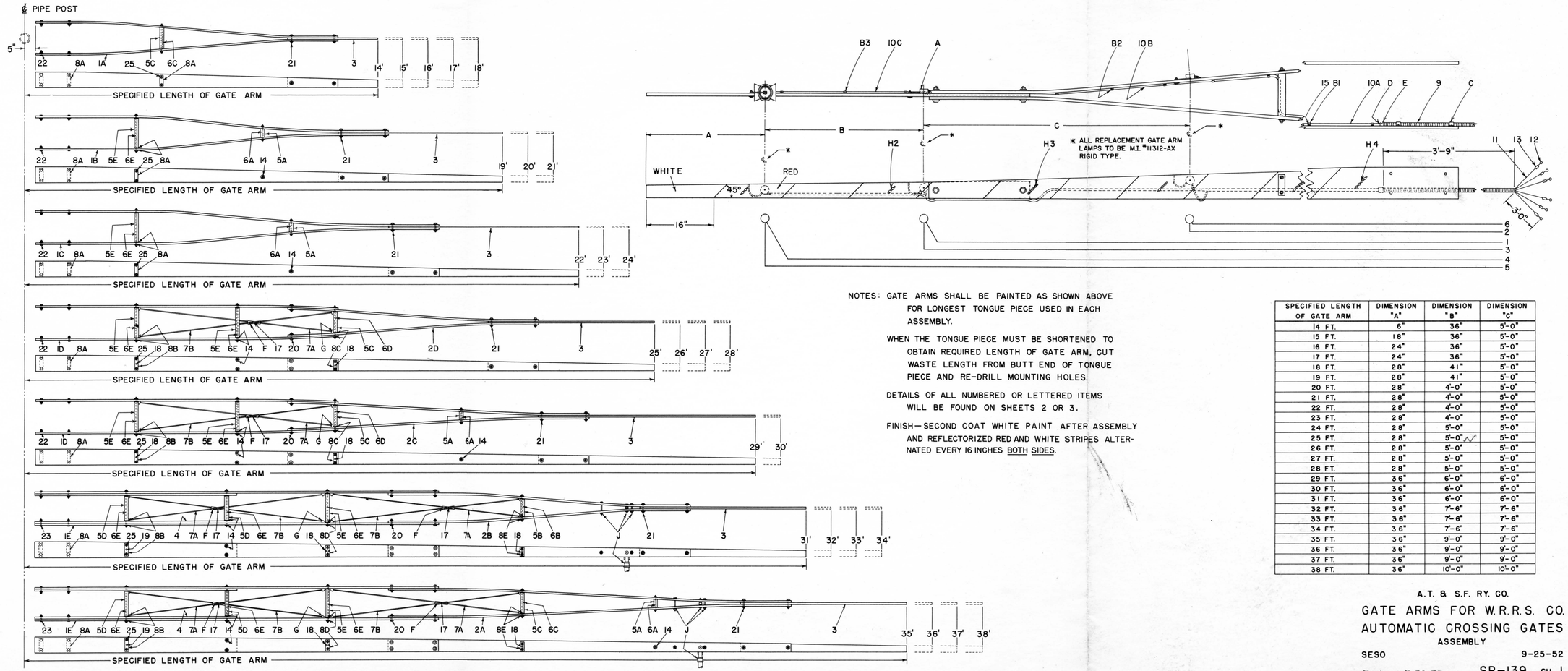
STRAP IRON TO BE FURNISHED ONLY WHEN SPECIFIED ON REQUISITION.

A. T. & S. F. RY. CO.

U - BOLTS

S.E.S.O. TOPEKA. REDRAWN MAY 15, 1950

SES 633



NOTES: GATE ARMS SHALL BE PAINTED AS SHOWN ABOVE FOR LONGEST TONGUE PIECE USED IN EACH ASSEMBLY.

WHEN THE TONGUE PIECE MUST BE SHORTENED TO OBTAIN REQUIRED LENGTH OF GATE ARM, CUT WASTE LENGTH FROM BUTT END OF TONGUE PIECE AND RE-DRILL MOUNTING HOLES.

DETAILS OF ALL NUMBERED OR LETTERED ITEMS WILL BE FOUND ON SHEETS 2 OR 3.

FINISH—SECOND COAT WHITE PAINT AFTER ASSEMBLY AND REFLECTORIZED RED AND WHITE STRIPES ALTERNATED EVERY 16 INCHES BOTH SIDES.

SPECIFIED LENGTH OF GATE ARM	DIMENSION "A"	DIMENSION "B"	DIMENSION "C"
14 FT.	6"	36"	5'-0"
15 FT.	18"	36"	5'-0"
16 FT.	24"	36"	5'-0"
17 FT.	24"	36"	5'-0"
18 FT.	28"	41"	5'-0"
19 FT.	28"	41"	5'-0"
20 FT.	28"	4'-0"	5'-0"
21 FT.	28"	4'-0"	5'-0"
22 FT.	28"	4'-0"	5'-0"
23 FT.	28"	4'-0"	5'-0"
24 FT.	28"	5'-0"	5'-0"
25 FT.	28"	5'-0"	5'-0"
26 FT.	28"	5'-0"	5'-0"
27 FT.	28"	5'-0"	5'-0"
28 FT.	28"	5'-0"	5'-0"
29 FT.	36"	6'-0"	6'-0"
30 FT.	36"	6'-0"	6'-0"
31 FT.	36"	6'-0"	6'-0"
32 FT.	36"	7'-6"	7'-6"
33 FT.	36"	7'-6"	7'-6"
34 FT.	36"	7'-6"	7'-6"
35 FT.	36"	9'-0"	9'-0"
36 FT.	36"	9'-0"	9'-0"
37 FT.	36"	9'-0"	9'-0"
38 FT.	36"	10'-0"	10'-0"

A.T. & S.F. RY. CO.

GATE ARMS FOR W.R.R.S. CO. AUTOMATIC CROSSING GATES

ASSEMBLY

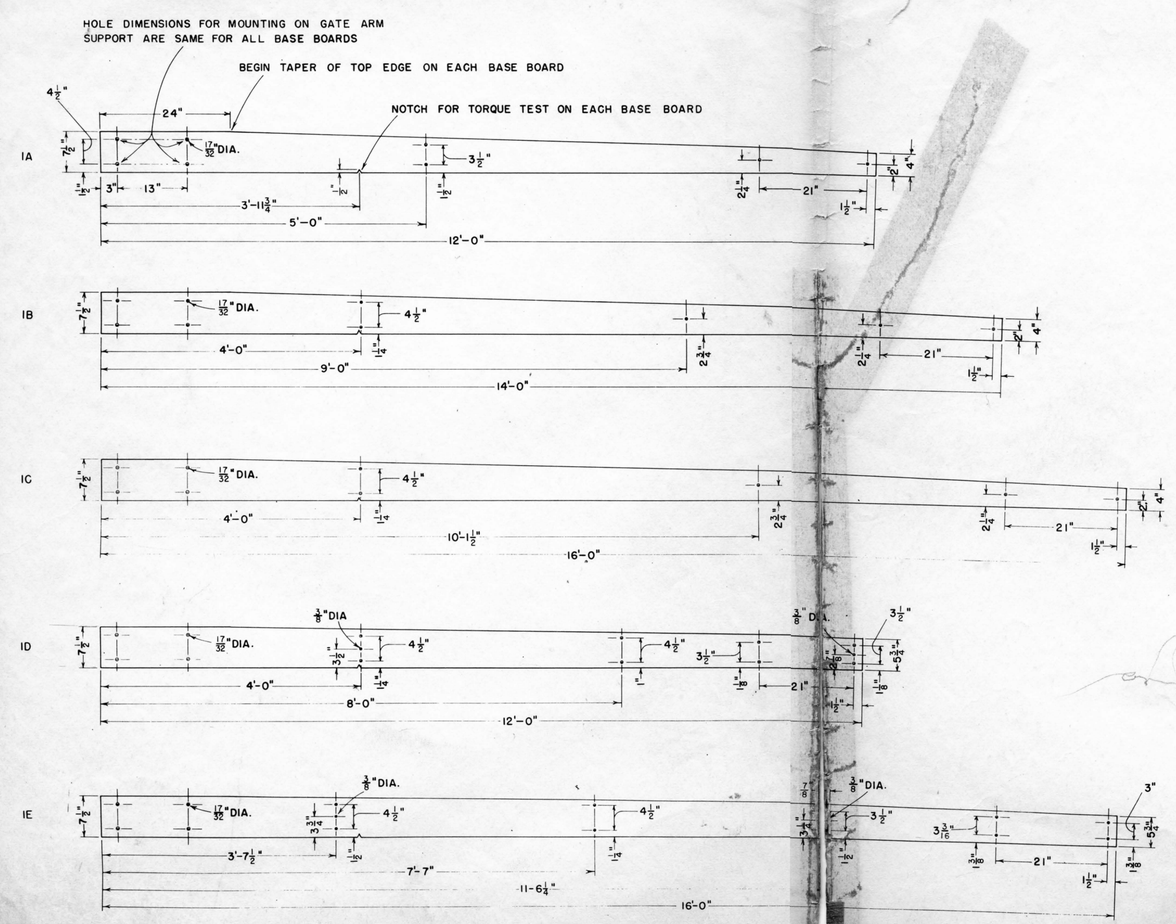
SESO 9-25-52

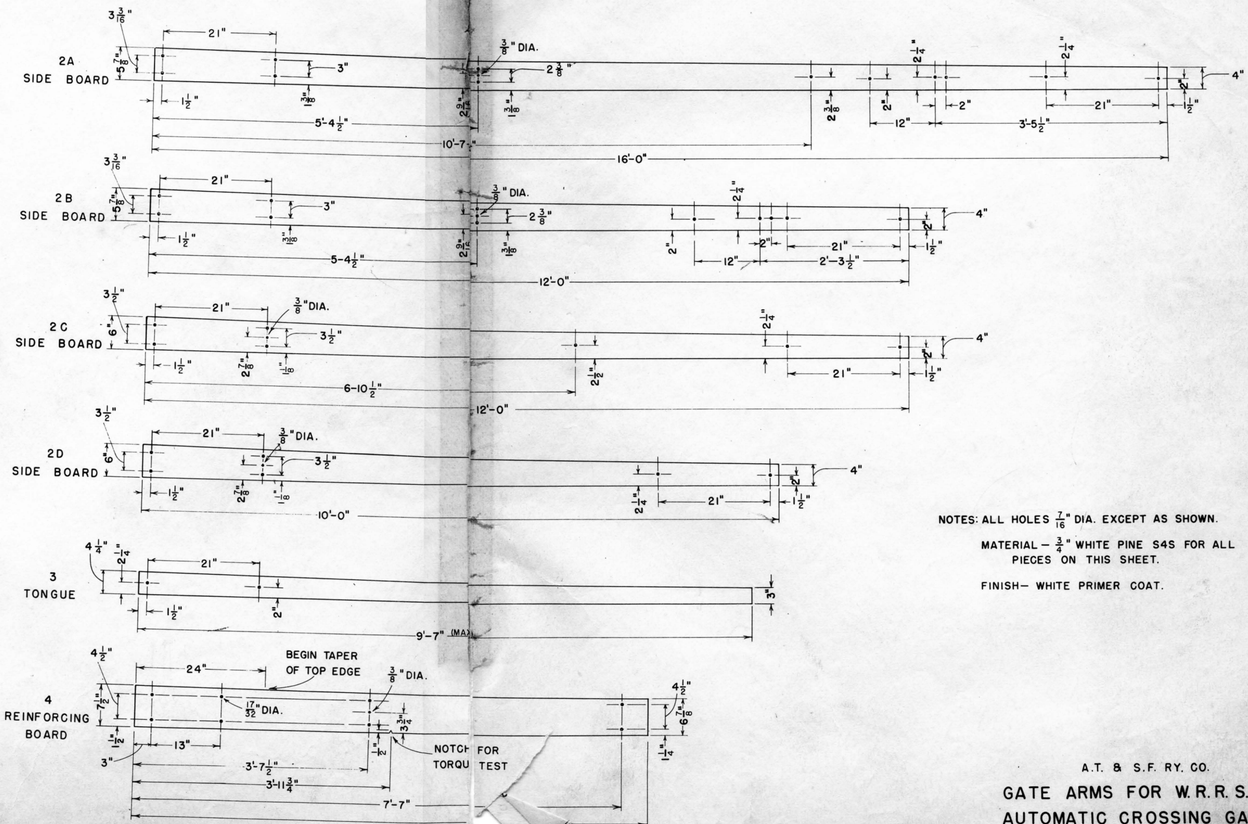
Revised 5-30-73 SP-139 SH. 1

HOLE DIMENSIONS FOR MOUNTING ON GATE ARM SUPPORT ARE SAME FOR ALL BASE BOARDS

BEGIN TAPER OF TOP EDGE ON EACH BASE BOARD

NOTCH FOR TORQUE TEST ON EACH BASE BOARD





NOTES: ALL HOLES 7/16" DIA. EXCEPT AS SHOWN.

MATERIAL – ¾" WHITE PINE S4S FOR ALL PIECES ON THIS SHEET.

FINISH– WHITE PRIMER COAT.

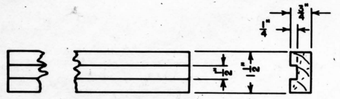
A.T. & S.F. RY. CO.

GATE ARMS FOR W.R.R.S. CO. AUTOMATIC CROSSING GATES

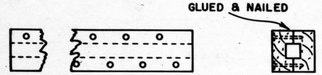
DETAILS OF WOOD PIECES

SESO 9-25-52

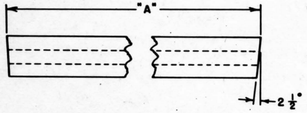
SP-139 SH. 2



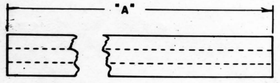
MOLDING



ASSEMBLY



ITEM NO.	DIM."A"
5A	4"
5B	8 1/2"
5C	10 1/8"

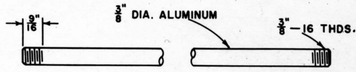


ITEM NO.	DIM."A"
5D	12 3/4"
5E	14 1/8"

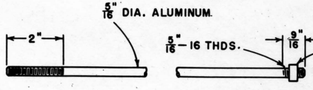
SPACER BLOCKS

MATERIAL: WHITE PINE, 3/4" X 1 1/2", S4S

FINISH: WHITE PRIMER COAT.

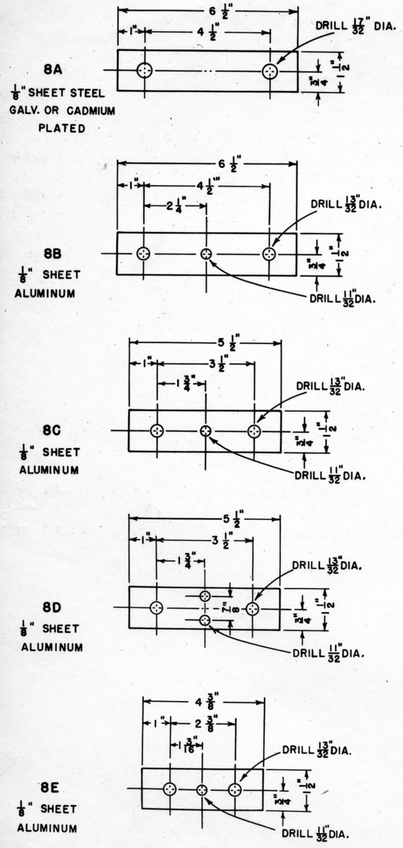


6A	THROUGH STUD	6 1/2"	LONG W.R.R.S. CO.	PC. NO. 3562-66D
6B	DITTO	11 3/8"	DITTO	3562-66G
6C	DITTO	12 3/4"	DITTO	3562-66E
6D	DITTO	14 1/8"	DITTO	3562-66B
6E	DITTO	16 7/8"	DITTO	3562-66



7A TIE ROD & NUT 41 1/2" LONG R.H. THD. W.R.R.S. CO.
PC. NO. 3562-63E

7B TIE ROD & NUT 48" LONG L.H. THD. W.R.R.S. CO.
PC. NO. 3562-63F



WASHER PLATES

ORDERING REFERENCES FROM TOPEKA SHPS

ITEM	DESCRIPTION
9	3/4"X 54" PENFLEX LIGHTWEIGHT GALVANIZED STEEL TUBING
10A	1/2" FLEXIBLE NON-METALIC TUBING
10B	3/8" DITTO
10C	7/32" DITTO
11	NO. 14 AWG FLEXIBLE COPPER WIRE, 19 STRANDS, 3/64" WALL ONNITE INSULATION WITH 1/64" NEOPRENE COVERING
12	WIRE TERMINALS, AMP NO. 36908, A-M-P CO.
13	WIRING TAGS, PC. 292269, U. S. & S. DIV.
14	PLAIN ROUND WASHER, 7/16" I.D., 1 1/2" O.D., 1/16" STEEL
15	WOOD SCREWS NO. 12 X 3/4", RD. HD. BRASS
16	COTTER PIN 1/8"X 1 1/2", STEEL, GALVANIZED OR CADMIUM PATED (FOR ITEM G)
17	CAP SCREW, 1/4"-20 X 1 1/4", HX. HD. STEEL
18	MACHINE BOLT, 5/16"-18 X 1 3/4", HX. HD., STEEL, SQ. NUT
19	DITTO 5/16"-18 X 2 1/2", DITTO
20	DITTO 3/8"-16 X 2 1/4", HX. HD., STEEL, HX. NUT & TW PLAIN STEEL WASHERS 7/16" I.D., 1 1/2" O.D.
21	DITTO 3/8"-16 X 3" DITTO
22	DITTO 1/2"-13 X 2" HX. HD., STEEL, HX. NUT & LOK WASHER
23	DITTO 1/2"-13 X 2 3/4" DITTO
24	SQ. NUT 5/16"-18
25	HX. NUT 3/8"-16

NOTES: ALL BOLTS, NUTS & PLAIN WASHERS SHALL BE GALVANIZED OR CADMIUM PLATED AFTER THREADS HAVE BEEN CUT.

ORDERING REFERENCES FROM W.R.R.S. CO.

ITEM	DESCRIPTION	PC. NO.
A	TERMINAL BLOCK ASSEMBLY, COMPLETE	3561-196
B1	CLIP FOR 1/2" LOOM	3562-96
B2	CLIP FOR 3/8" LOOM	3562-95
B3	CLIP FOR 7/32" LOOM	3562-94
C	HANGER FOR FLEX CONDUIT	3565-153
D	INTERNAL BUSHING	3565-197
E	CONDUIT CLAMP	3565-194A
F	TURNBUCKLE SET, COMPLETE WITH 1/4"-20 X 1 1/4" CAP SCREW, 1 EACH	3562-67 & 68
G	TIE ROD CLIP, COMPLETE WITH 1/8"X 1 1/2" COTTER PIN	3562-70A
H2	CRYSTAL REFLECTOR BUTTONS, 2 BUTTON CHAIN, COMPLETE WITH THEFT RESISTING SCREWS FOR MOUNTING ON GATE ARM	3562-170-2
H3	DITTO FOR 3 BUTTON CHAIN	3562-170-3
H4	DITTO FOR 4 BUTTON CHAIN	3562-170-4
J	BUFFER LEG ASSEMBLY	3562-316A
K	GATE LIGHT – TYPE 1585, FRESNEL LENS	1585
6A	THROUGH STUD 6 1/2" LONG	3562-66D
6B	DITTO 11 3/8"	3562-66G
6C	DITTO 12 3/4"	3562-66E
6D	DITTO 14 1/8"	3562-66B
6E	DITTO 16 7/8"	3562-66
7A	TIE ROD & NUT 41 1/2" LONG R.H. THDS.	3562-63E
7B	DITTO 48" LONG L.H. THDS.	3562-63F

A.T. & S.F. RY. CO.

GATE ARMS FOR W.R.R.S. CO.
AUTOMATIC CROSSING GATES
SPACER BLOCKS & HARDWARE

SESO 9-25-52

SP-139 SH. 3

AVERAGE COUNTERWEIGHTS REQUIRED FOR MODEL 10 SIGNAL GATE ARMS WITH THREE GATE LIGHTS SPACED IN ACCORDANCE WITH STANDARD LAMP SPACING

	SPECIFIED LENGTH OF GATE ARM	NUMBER OF COUNTERWEIGHTS REQUIRED					COUNTERWEIGHT EXTENSION ARM (SEE NOTE BELOW)	LENGTH OF TYPE 3562-182 1" MOUNTING BOLT	WEIGHT REQUIRED (LBS)
		3562-226A 160 lb.	3562-227 50 lb.	3562-228 25 lb.	3562-229 100 lb.	3562-230 200 lb.			
ONE COUNTERWEIGHT ARM REQUIRED	14 Ft.	1	—	—	—	—	—	8" ONE REQ.	160
	15 Ft.	1	—	—	—	—	—	8" ONE REQ.	160
	16 Ft.	1	—	1	—	—	—	8" ONE REQ.	185
	17 Ft.	1	1	—	—	—	—	8" ONE REQ.	210
	18 Ft.	1	1	1	—	—	—	8" ONE REQ.	235
	19 Ft.	1	—	—	1	—	—	8" ONE REQ.	260
	20 Ft.	1	—	—	1	—	—	8" ONE REQ.	260
	21 Ft.	1	—	1	1	—	—	8" ONE REQ.	285
	22 Ft.	1	—	1	1	—	—	8" ONE REQ.	285
	23 Ft.	1	1	—	1	—	—	8" ONE REQ.	310
	24 Ft.	1	—	—	—	1	—	8" ONE REQ.	360
TWO COUNTERWEIGHT ARMS REQUIRED	25 Ft.	2	—	2	—	—	—	8" TWO REQ.	370
	26 Ft.	2	1	1	—	—	—	8" TWO REQ.	395
	27 Ft.	2	2	—	—	—	—	8" TWO REQ.	420
	28 Ft.	2	1	—	1	—	—	8" TWO REQ.	470
	29 Ft.	2	—	—	2	—	—	8" TWO REQ.	520
	30 Ft.	2	2	—	2	—	—	8" TWO REQ.	620
TWO COUNTERWEIGHT EXTENSION ARMS REQUIRED	31 Ft.	2	1	1	—	—	TWO REQ.	8" TWO REQ.	395
	32 Ft.	2	2	—	—	—	TWO REQ.	8" TWO REQ.	420
	33 Ft.	2	2	1	—	—	TWO REQ.	8" TWO REQ.	445
	34 Ft.	2	2	2	—	—	TWO REQ.	8" TWO REQ.	470
	35 Ft.	2	1	1	1	—	TWO REQ.	8" TWO REQ.	495
	36 Ft.	2	—	—	2	—	TWO REQ.	8" TWO REQ.	520
	37 Ft.	2	—	1	2	—	TWO REQ.	8" TWO REQ.	545
	38 Ft.	2	—	2	2	—	TWO REQ.	8" TWO REQ.	570
	39 Ft.	2	1	1	2	—	TWO REQ.	8" TWO REQ.	595
	40 Ft.	2	2	—	2	—	TWO REQ.	8" TWO REQ.	620

USE NO. 3565-174 EXTENSION ARMS WITH TYPE 3565 (US&S) GATES.

POUNDS OF COUNTERWEIGHT REQUIRED ARE APPROXIMATE AND WILL VARY WITH WEIGHT OF WOOD USED IN GATE ARM AND WITH FITTINGS APPLIED.

THE FOLLOWING ARE INCLUDED WITH EACH EXTENSION ARM—

2 - 1"x 3 1/2" LG. MACHINE BOLTS.
2 - NO. 3565-104 CLAMP WASHERS.
2 - 1" HEX. NUTS.
2 - 1" PLAIN WASHERS.

A.T. & S.F. RY. CO.
COUNTERWEIGHTS REQUIRED FOR W.R.R.S. CO.
AUTOMATIC CROSSING GATE ARM

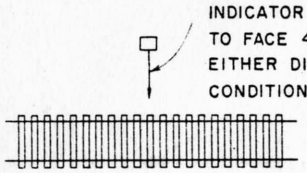
SSSO 1-19-55

REVISED 1-24-74

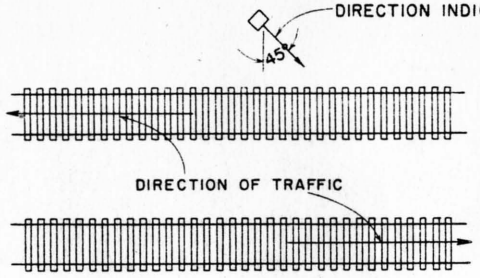
0-1256

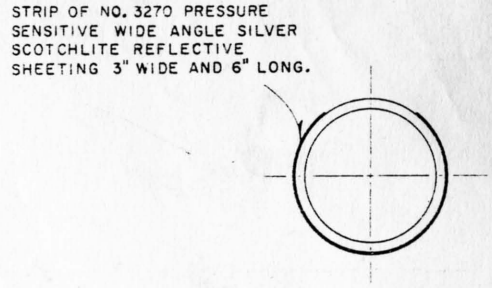
C-131A

SINGLE TRACK



MULTIPLE TRACK





SECTION OF INDICATOR POST
SHOWING APPLICATION OF SCOTCHLITE STRIPS

NOTES:

APPLY SCOTCHLITE STRIPS AS FOLLOWS:

CLEAN SURFACE OF POST WITH KEROSENE AND WIPE SURFACE COMPLETELY DRY.

REMOVE PAPER PROTECTIVE LINERS FROM THE 3" X 6" SCOTCHLITE STRIPS.

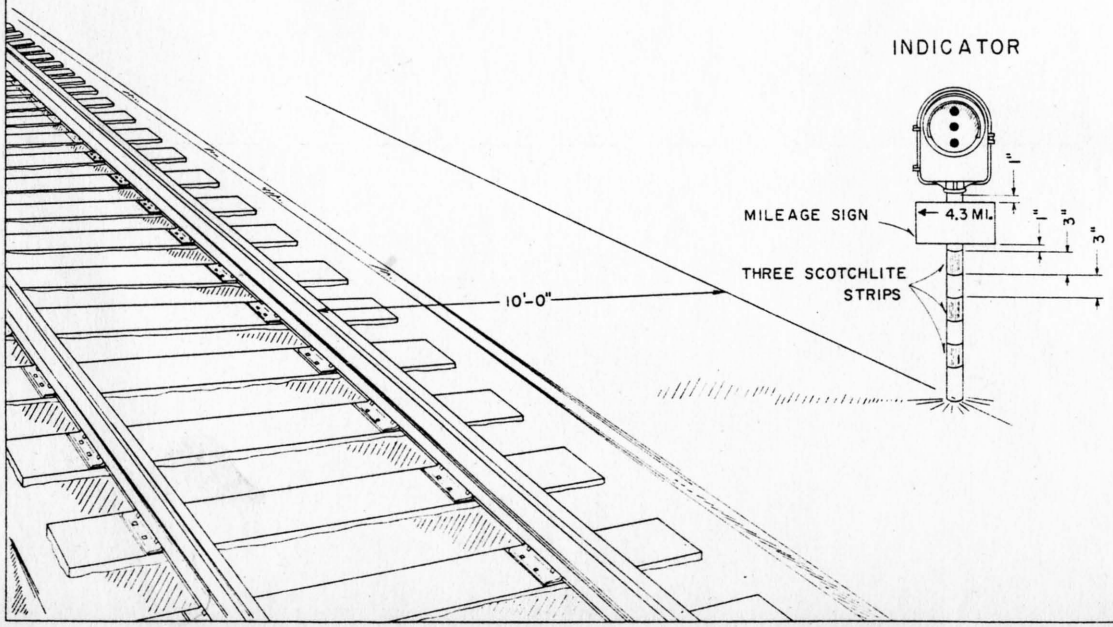
TOUCH DOWN ONE EDGE OF STRIP AND HAND ROLL IT TO POST, HOLDING OPPOSITE EDGE AWAY UNTIL ENTIRE STRIP IS APPLIED.

WHEN TEMPERATURE IS BELOW 55° F. ADHESIVE MATERIAL ON BACK OF SCOTCHLITE STRIP SHOULD BE SOFTENED BY APPLYING A THIN FILM OF RUBBING (ISOPROPYL) ALCOHOL.

FOR DETAILS OF MILEAGE SIGN SEE DWG. 0-1204.

OVERALL HEIGHT OF INDICATOR TO BE 3'—4" ABOVE GROUND LEVEL.

INDICATOR TO BE NOT LESS THAN 10'—0" FROM CABLE POST OR HOUSING.



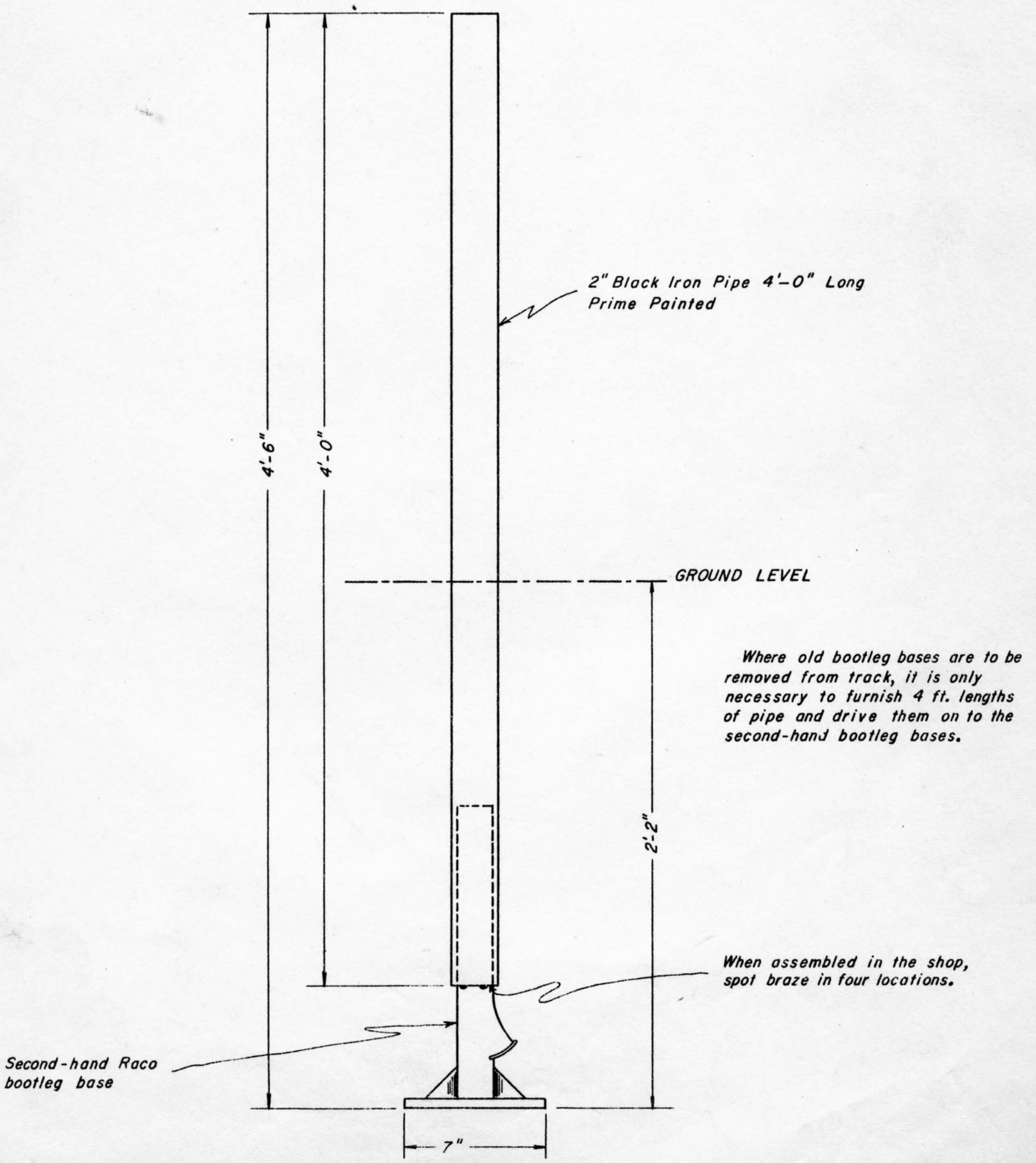
Revised 5-20-53

The A. T. & S. F. Ry. System

MOTOR CAR INDICATOR
WITH
REFLECTORIZED POST

SESO 0-1231 11-19-51

C-132



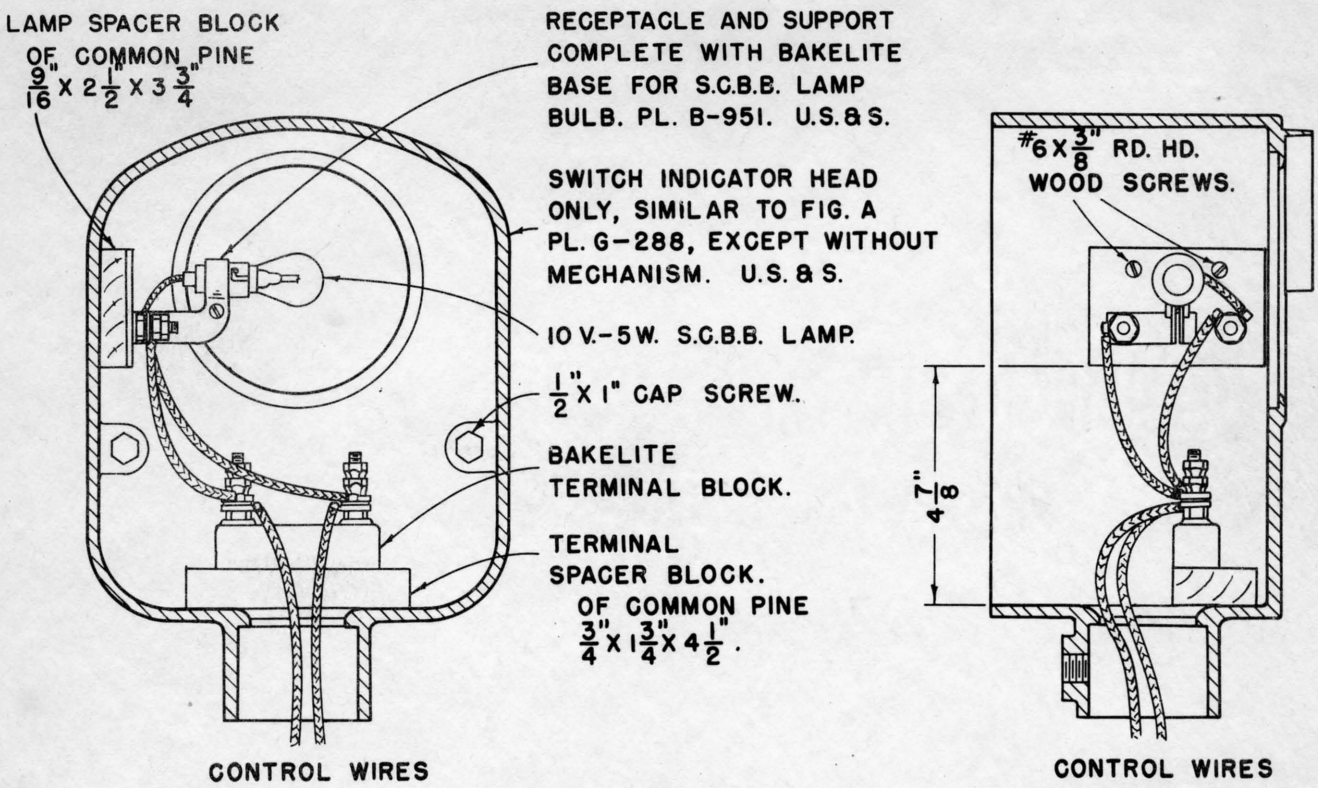
The A. T. & S. F. Ry. System

INDICATOR POST

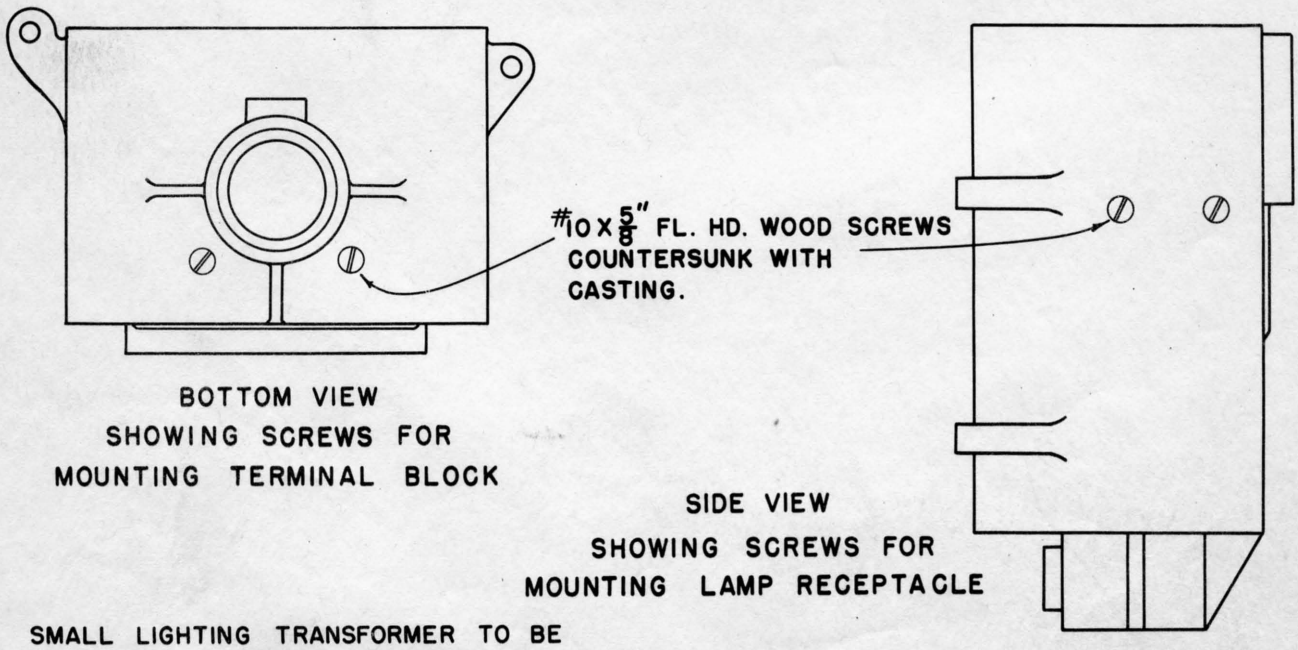
(2" Black Iron Pipe on Second-Hand Bootleg Base)

SESO 11-1-56 O-1263

Revised 7-9-58



SECTIONAL VIEWS
SHOWING ARRANGEMENT OF APPARATUS



BOTTOM VIEW
SHOWING SCREWS FOR
MOUNTING TERMINAL BLOCK

SIDE VIEW
SHOWING SCREWS FOR
MOUNTING LAMP RECEPTACLE

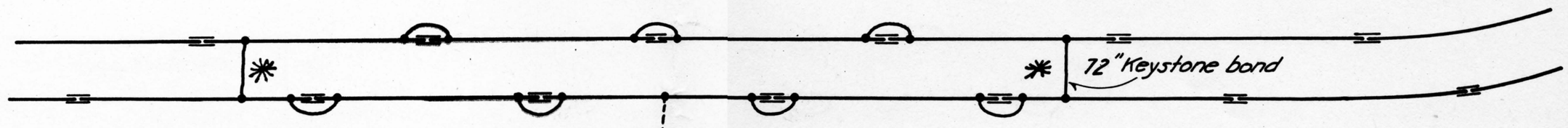
SMALL LIGHTING TRANSFORMER TO BE LOCATED IN INSTRUMENT HOUSING OR IN BOX ON POLE PER PLAN 0-1243 (C-164)

A.T. & S.F. RY. CO.

DETAILS OF LOW VOLTAGE

LIGHT TYPE INDICATOR

SESO 11-8-51 0-1240

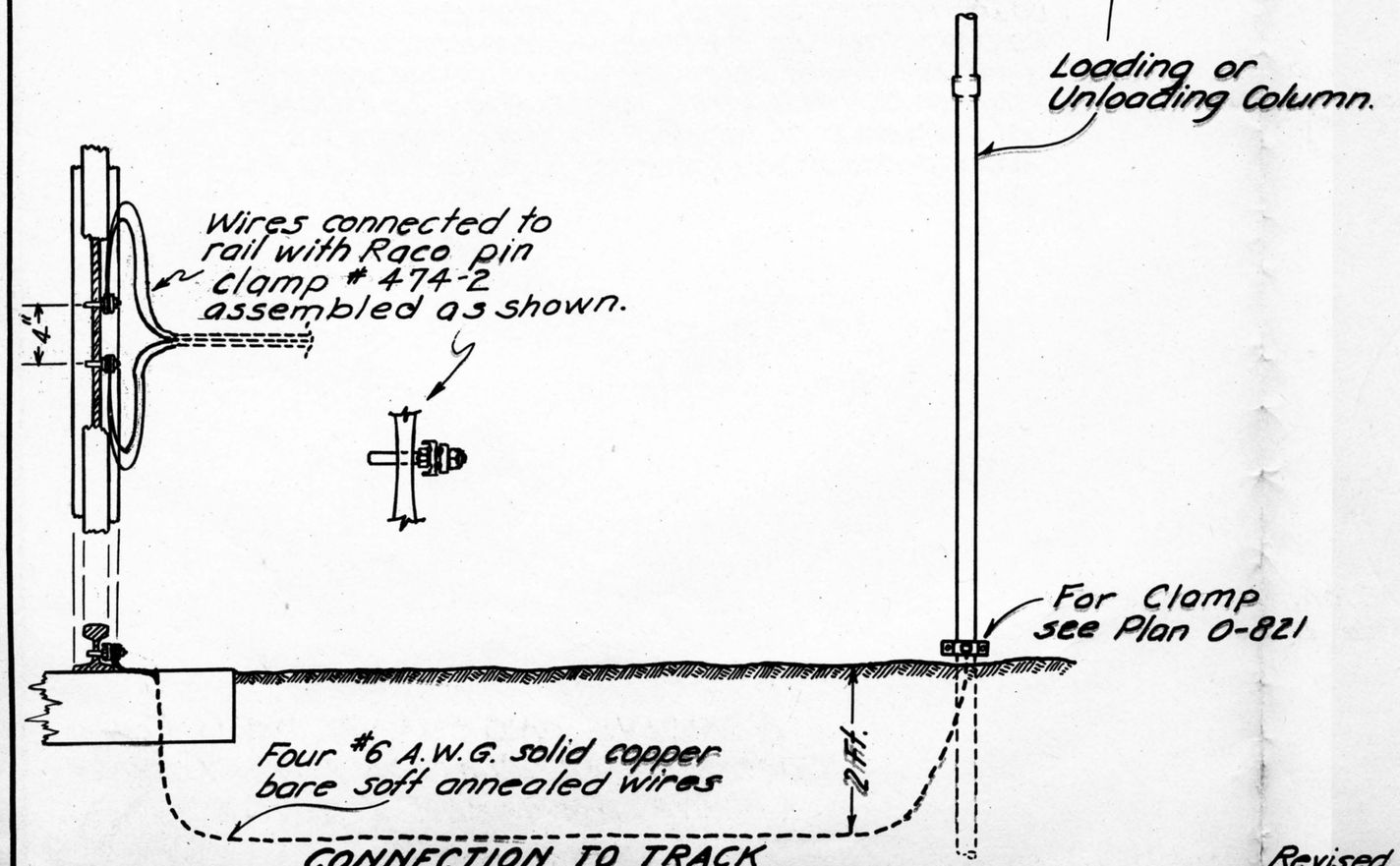


* On signaled trackage omit the 72" keystone bond between rails and connection between rail and unloading rack where indicated by *

Bonded track section shall include all rails on which rail equipment may stand during loading or unloading operations.

Each piping system shall be electrically connected to rails as shown. Where there is more than one column connected by pipe, at least every third column shall be electrically connected to rails. *.

Where there is evidence of stray electric currents, insulated joints shall be installed at both ends of bonded track and if necessary other precautions taken as required by A.A.R. Circular No. 170.



BONDING AND CONNECTIONS FOR COMMERCIAL STATIONS HANDLING INFLAMMABLE LIQUIDS

5550 4-9-41 SP-69

Revised 12-15-69

10-4-68 WDC

Kaul

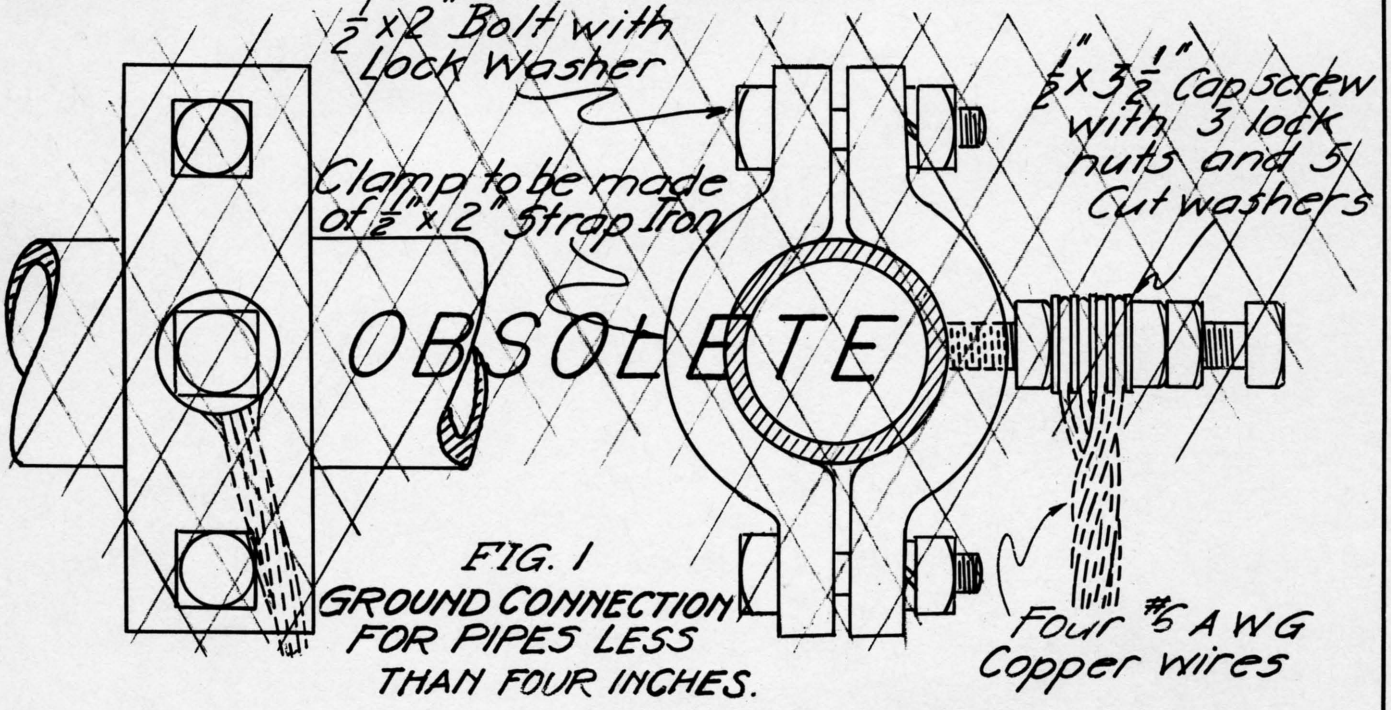


FIG. 1
GROUND CONNECTION FOR PIPES LESS THAN FOUR INCHES.

FOR FIG. 1 USE WATER PIPE GROUND CLAMP NO. 3 FOR 1 1/4" TO 2" PIPE AND NO. 4 FOR 2 1/2" TO 3 1/2" PIPE OBTAINABLE AT ELECTRICAL STORE SECTION

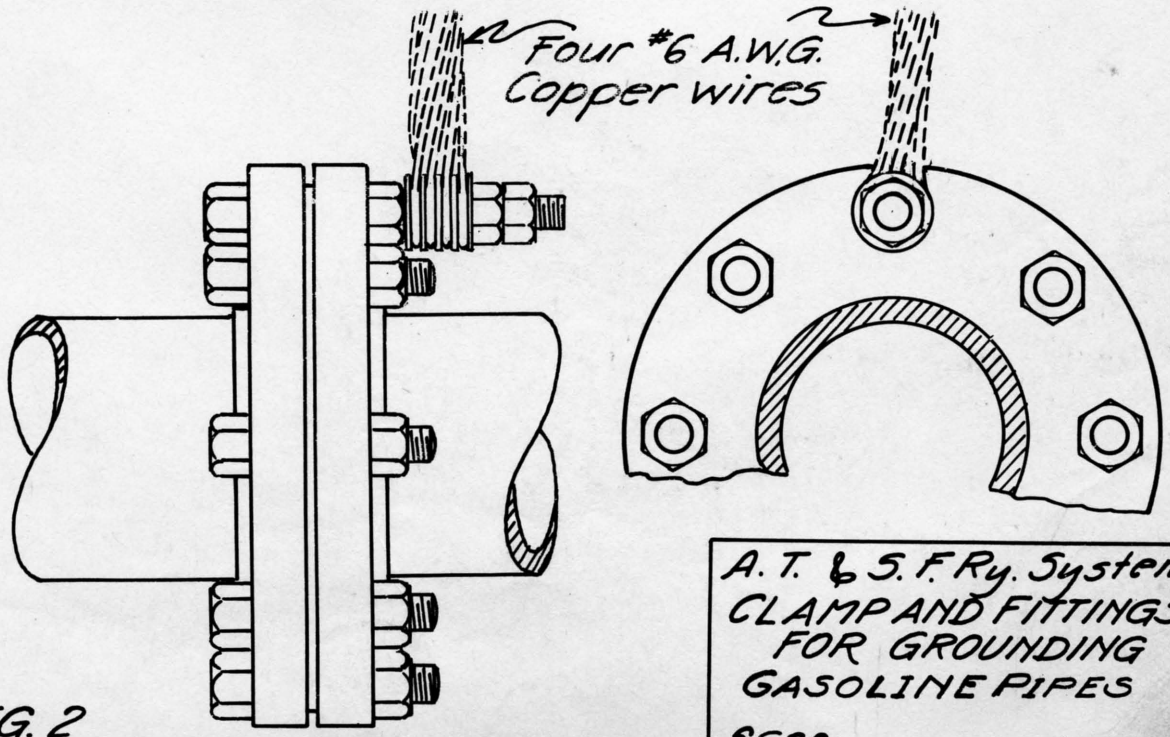


FIG. 2
FLANGED PIPE GROUND CONNECTION FOUR INCH OR LARGER PIPE

A. T. & S. F. Ry. System
CLAMP AND FITTINGS FOR GROUNDING GASOLINE PIPES
5550 1-20-33
O-821

REV. 9-20-68 C-139

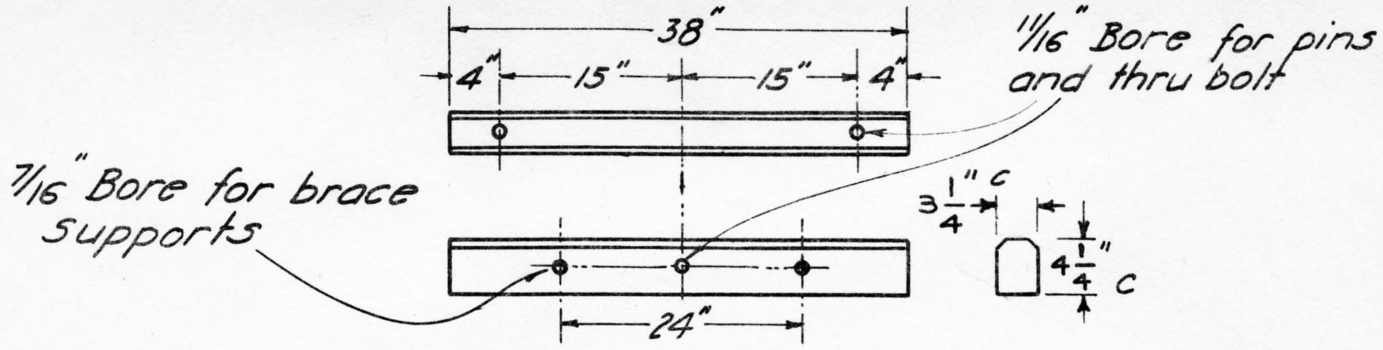


FIG.A NELA 2 PIN ARM

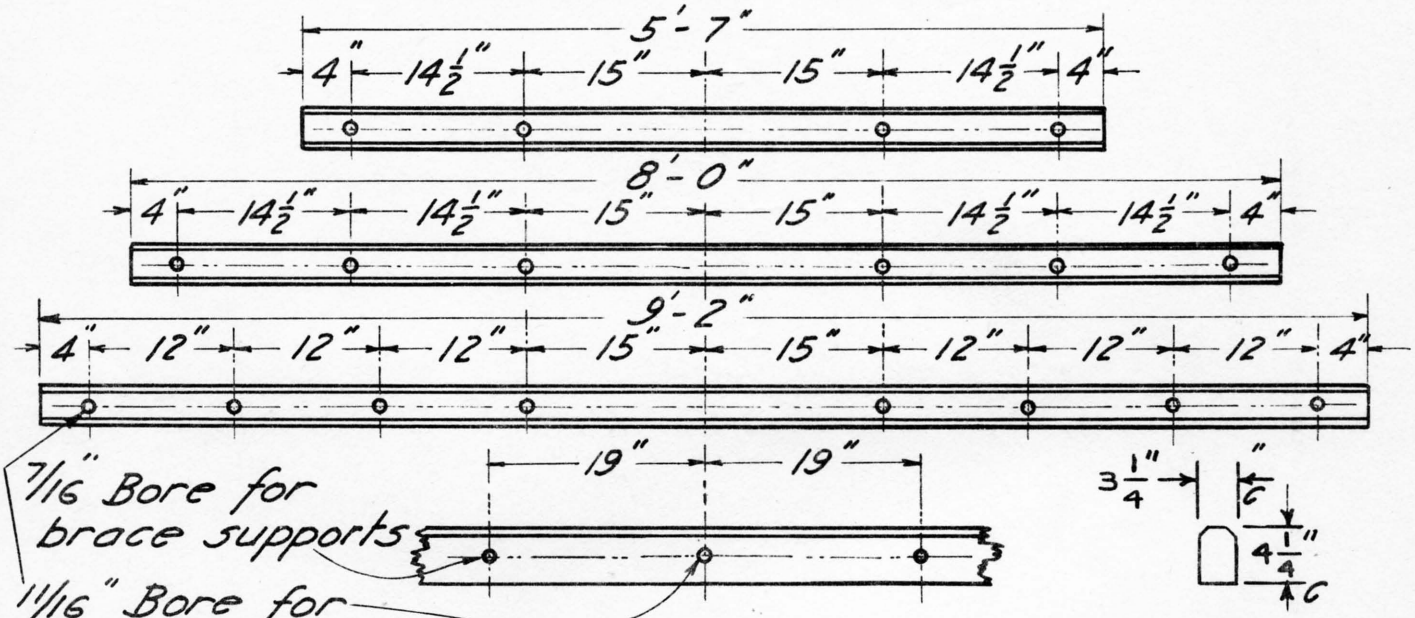
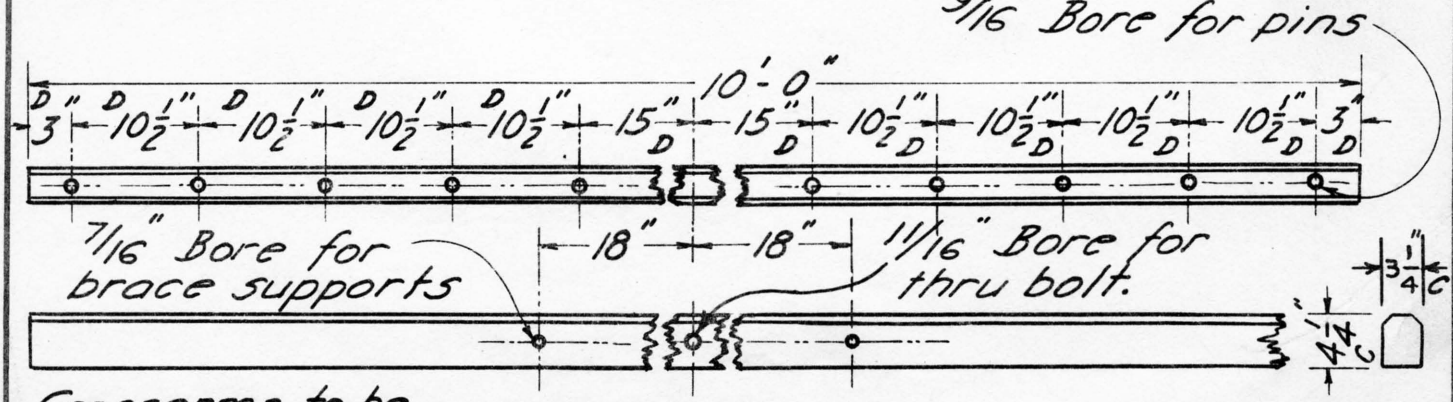


FIG. B NELA 4, 6 and 8 PIN ARMS



Crossarms to be made of Douglass Fir of quality to meet AAR - COMM. Spec. 1-A-28

SANTA FE 10 PIN ARM

FIG. C
STANDARD CROSSARMS

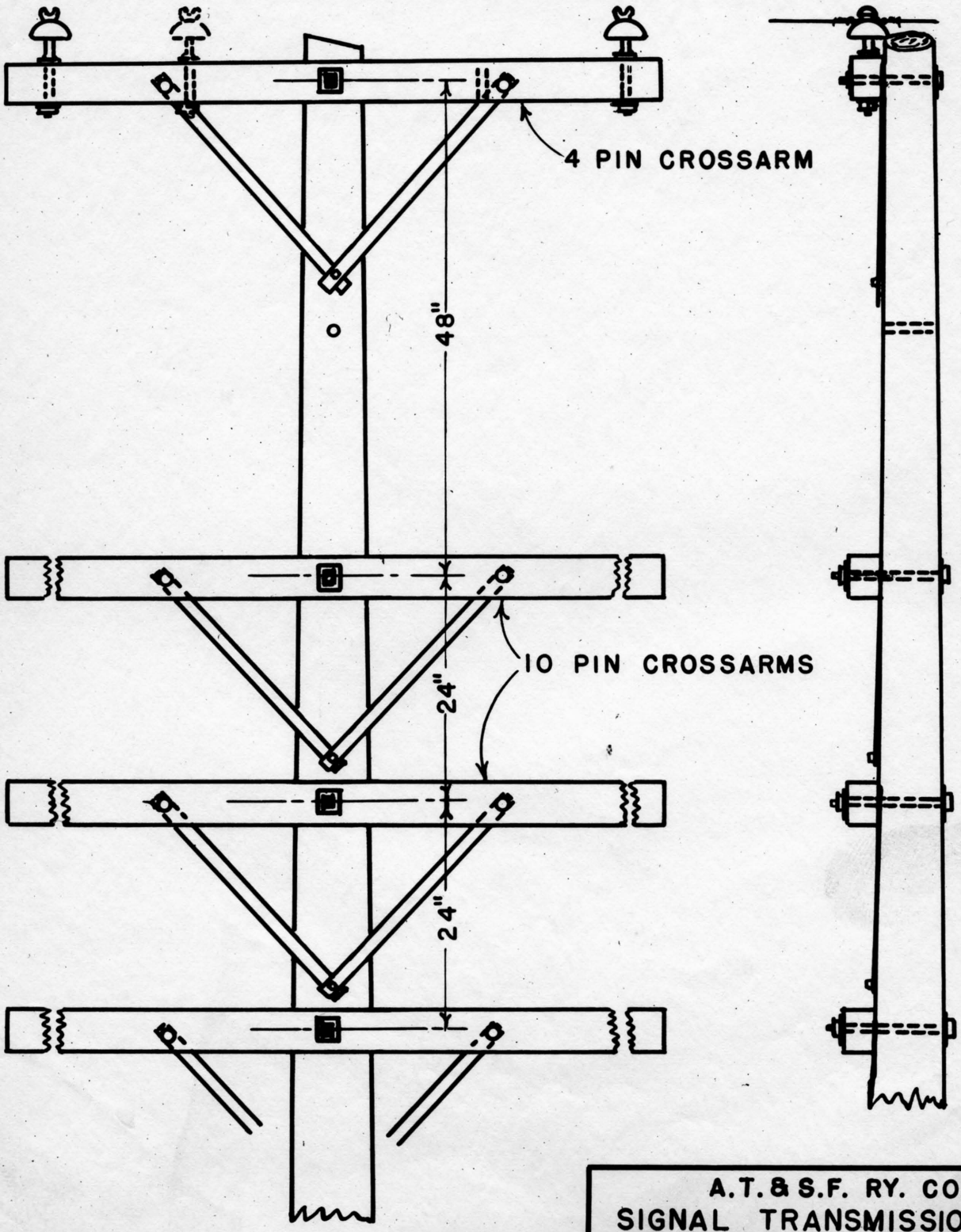
Note: C denotes allowable variation of 1/16", D of 1/8" over and under.

Approved _____ A. T. & S. F. Ry. System
Signal Engr. System

SES645

SESO Topeka 12-6-37

Revised 6-2-76



A.T. & S.F. RY. CO.

SIGNAL TRANSMISSION LINE

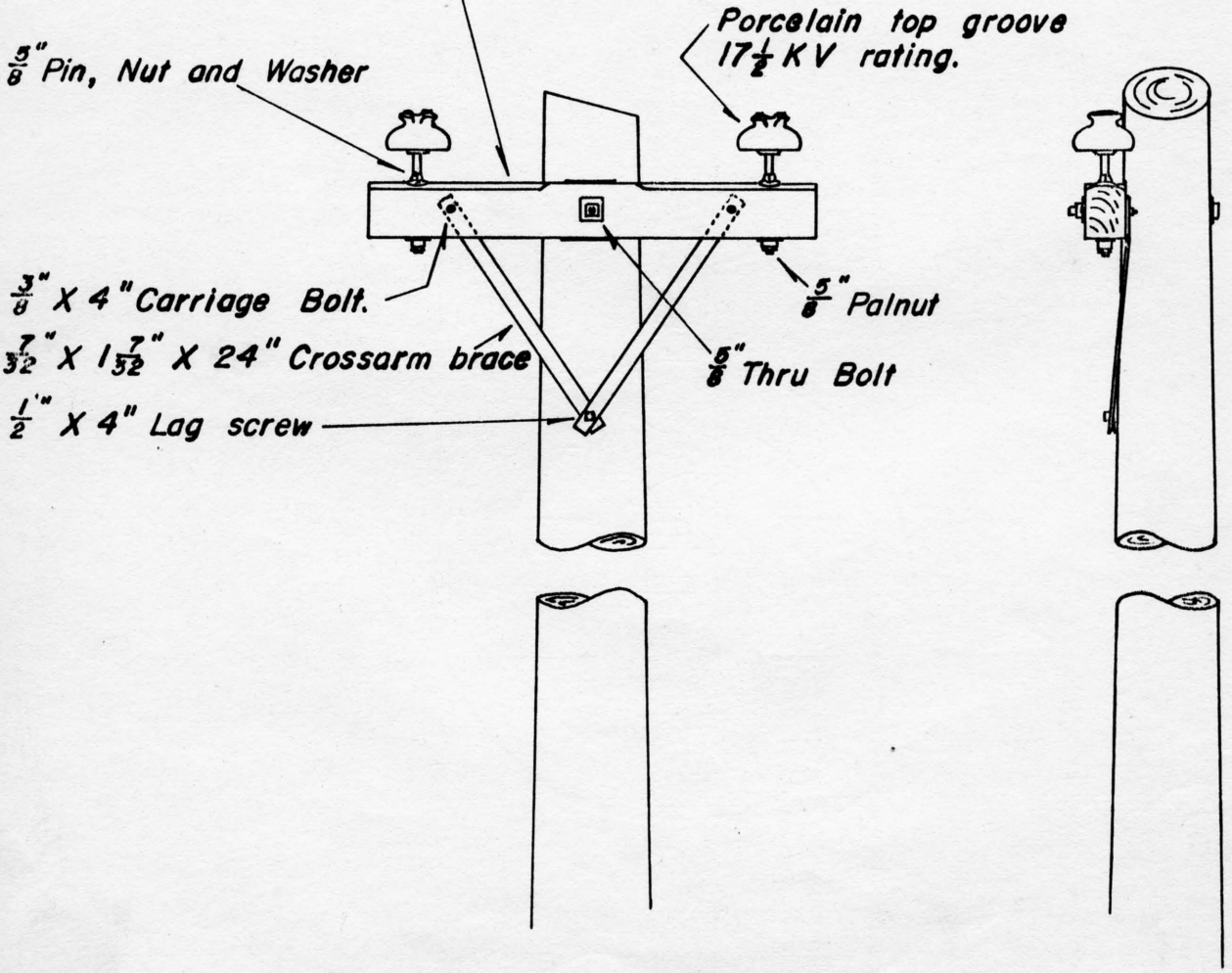
S.E.S.O. TOPEKA JUNE 15, 1950

0-726

C-145

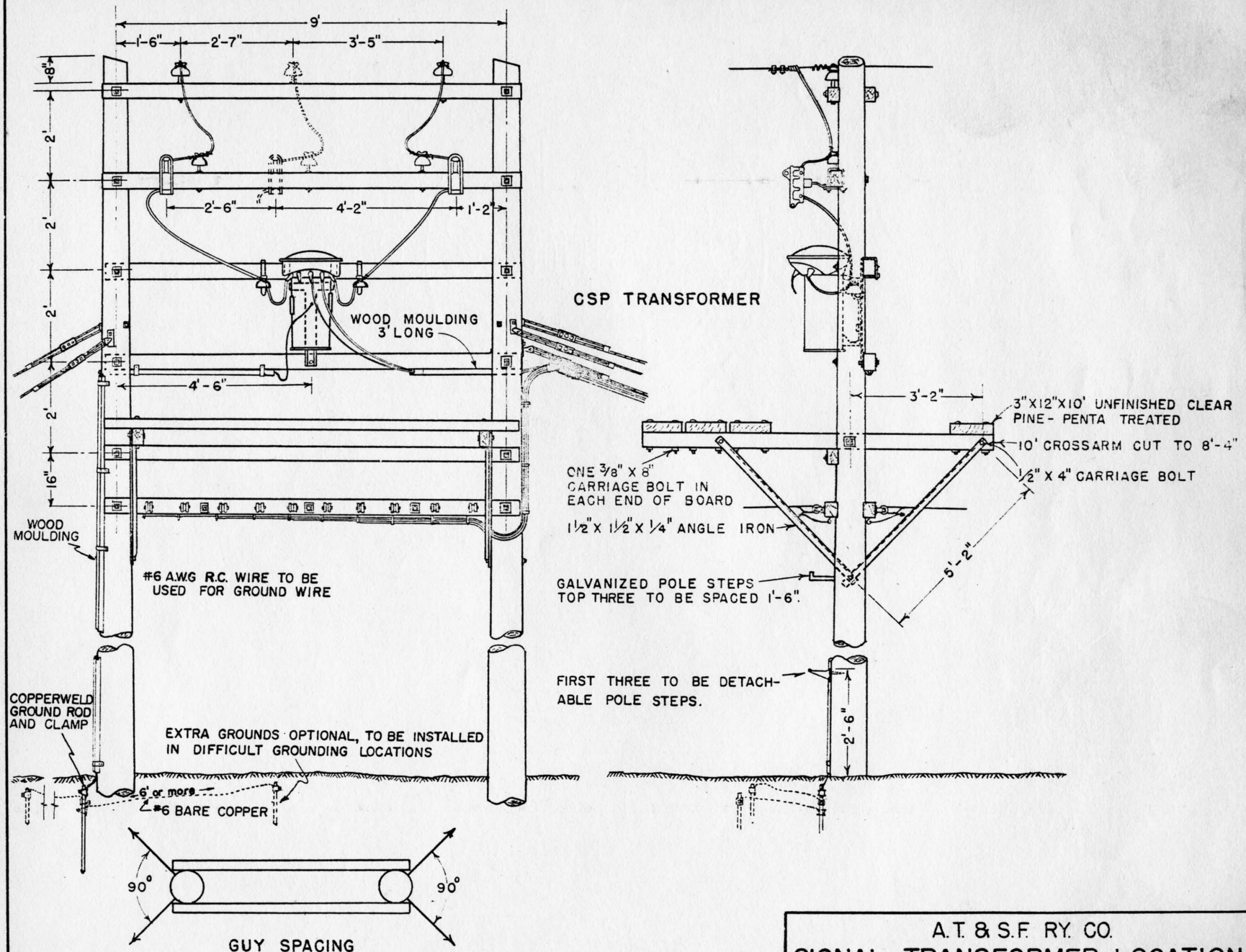
Rev. 9-25-52

Fig. A SES 645



SINGLE PHASE POWER LINE

A.T. & S.F. RY. CO.
S.S.S.O. TOPEKA
REDRAWN: 11-12-64
0-1213



A.T. & S.F. RY. CO.

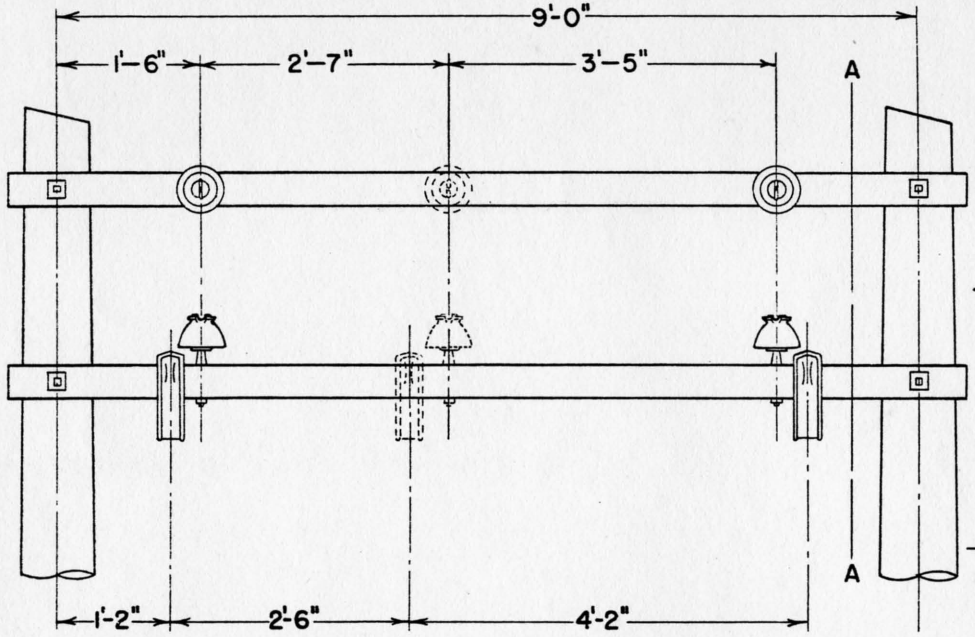
SIGNAL TRANSFORMER LOCATION WITH CSP TRANSFORMER

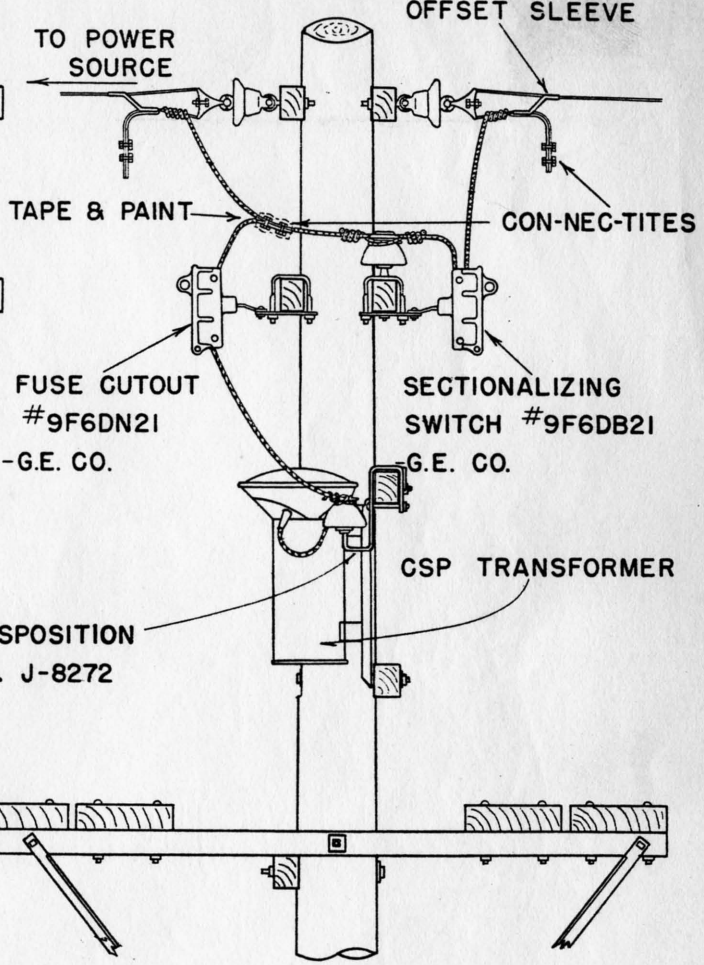
S.E.S.O. TOPEKA — JUNE 15, 1950

0-819

C-157

Rev: 11-11-66





SECTION A-A

A.T. & S.F. RY. CO.

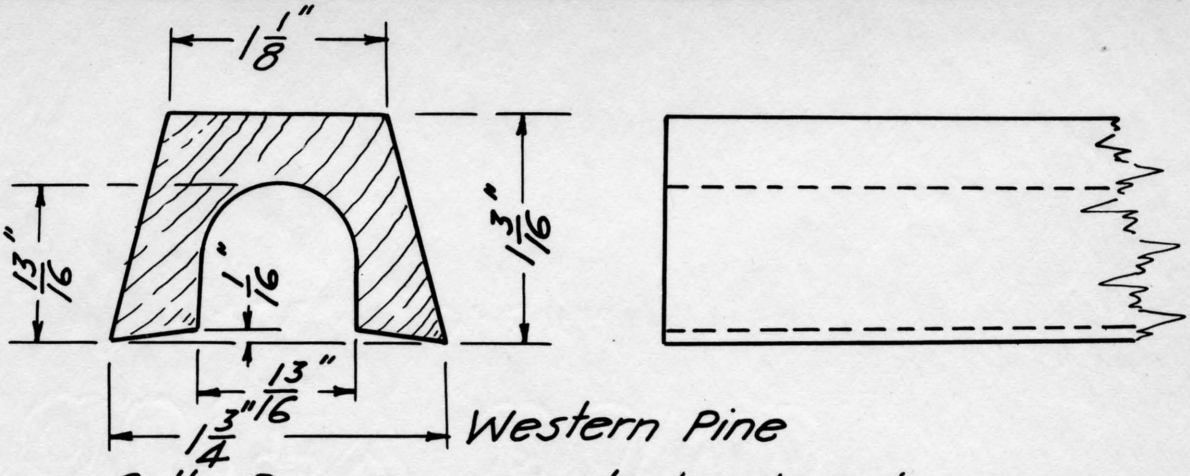
SECTIONALIZING DETAILS AT A CSP TRANSFORMER LOCATION

SESO 1-16-52

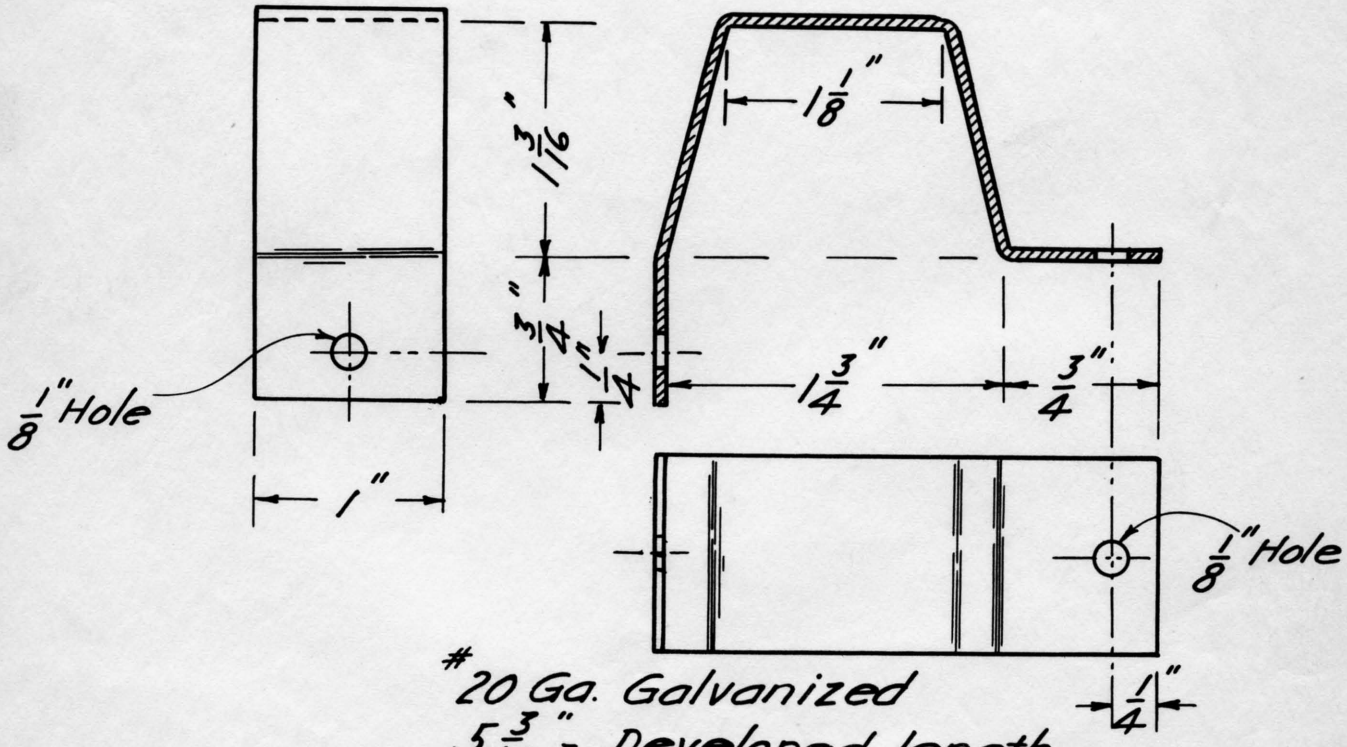
0-1242

Rev 11-11-64

0-157-A



6 lb. Rueping creosote treatment.
Steam dried.



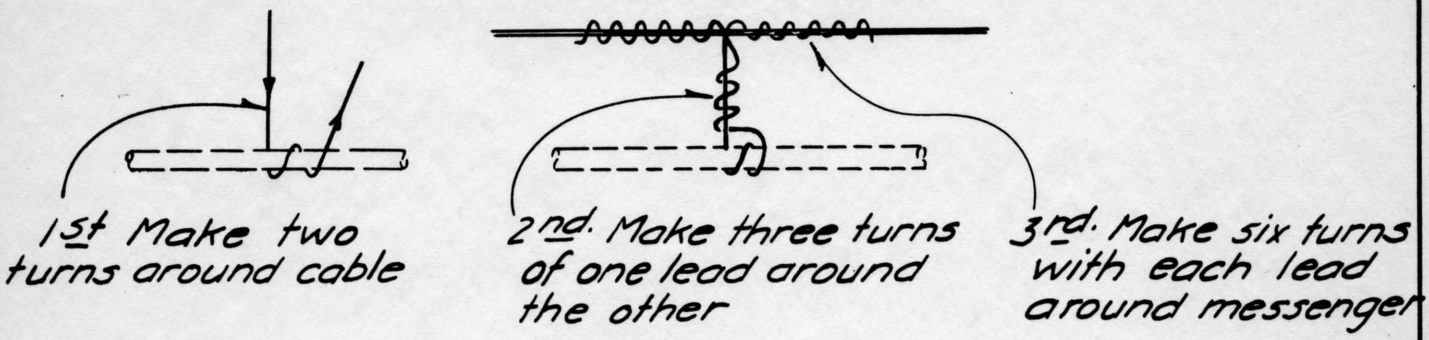
20 Ga. Galvanized
5 3/16" = Developed length

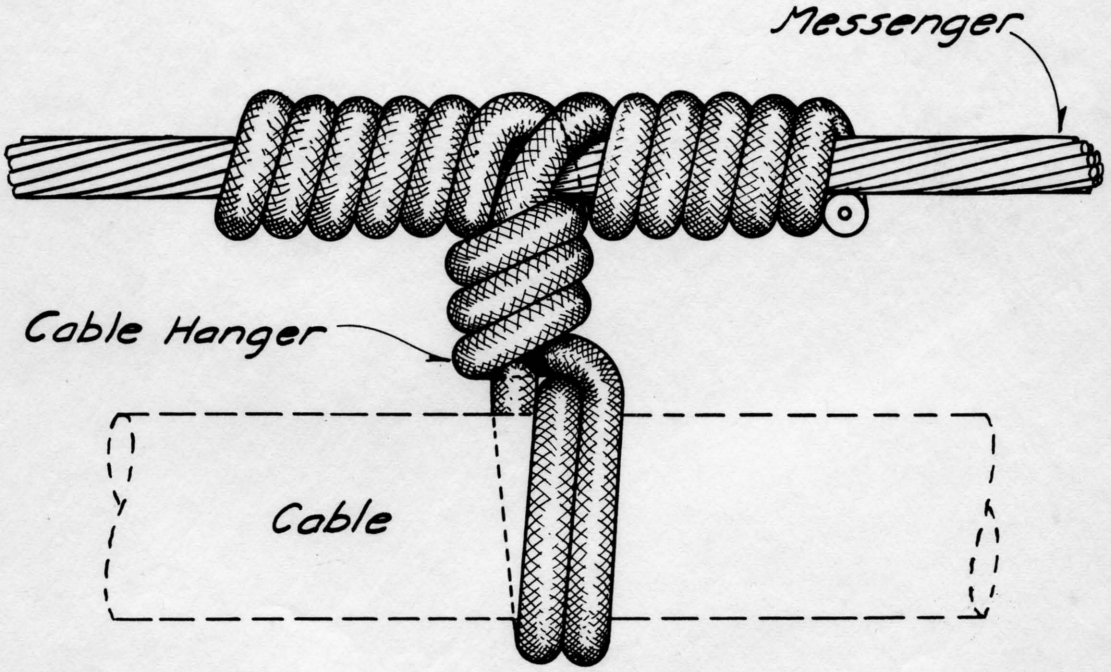


Bend strap in field as shown when molding is to be strapped to line pole.

Revised 5-10-48

A T & S F Ry
CROSSARM MOLDING AND STRAP FOR POLE LINE WORK
SESO Topeka 12-12-47
O-1176





Cable hanger to be made of No. 14 A WG 3/64" rubber covered braided wire.

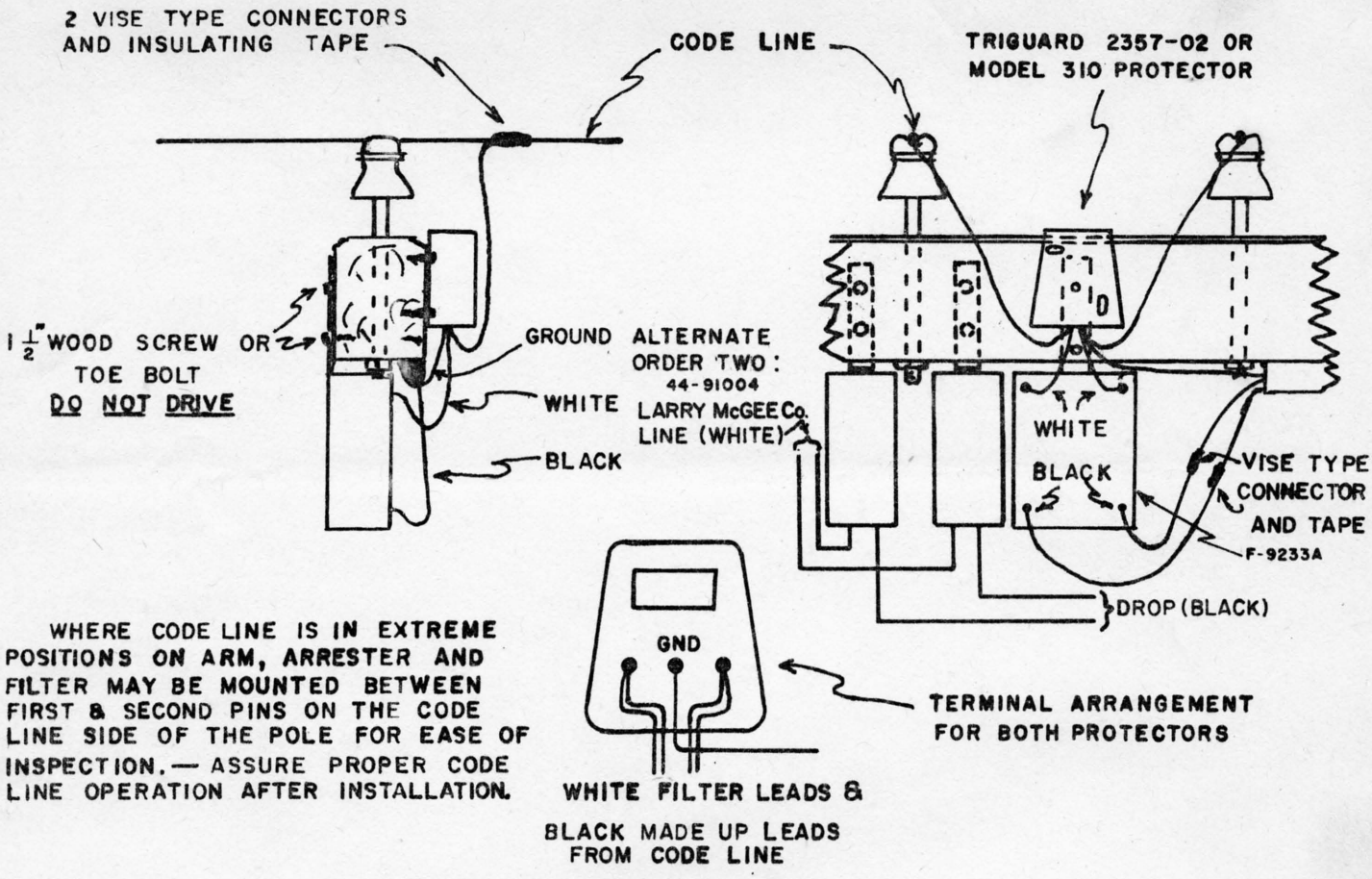
Hangers and cable to be painted with standard cable paint.

A. T. & S. F Ry. System

CABLE HANGER

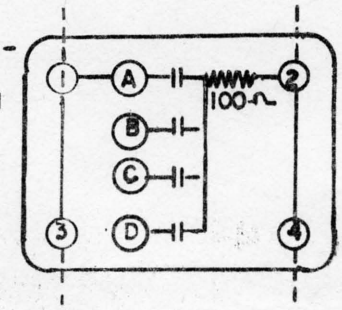
S.E.S.O. Topeka 10-27-38

O-893



WHERE CODE LINE IS IN EXTREME POSITIONS ON ARM, ARRESTER AND FILTER MAY BE MOUNTED BETWEEN FIRST & SECOND PINS ON THE CODE LINE SIDE OF THE POLE FOR EASE OF INSPECTION. — ASSURE PROPER CODE LINE OPERATION AFTER INSTALLATION.

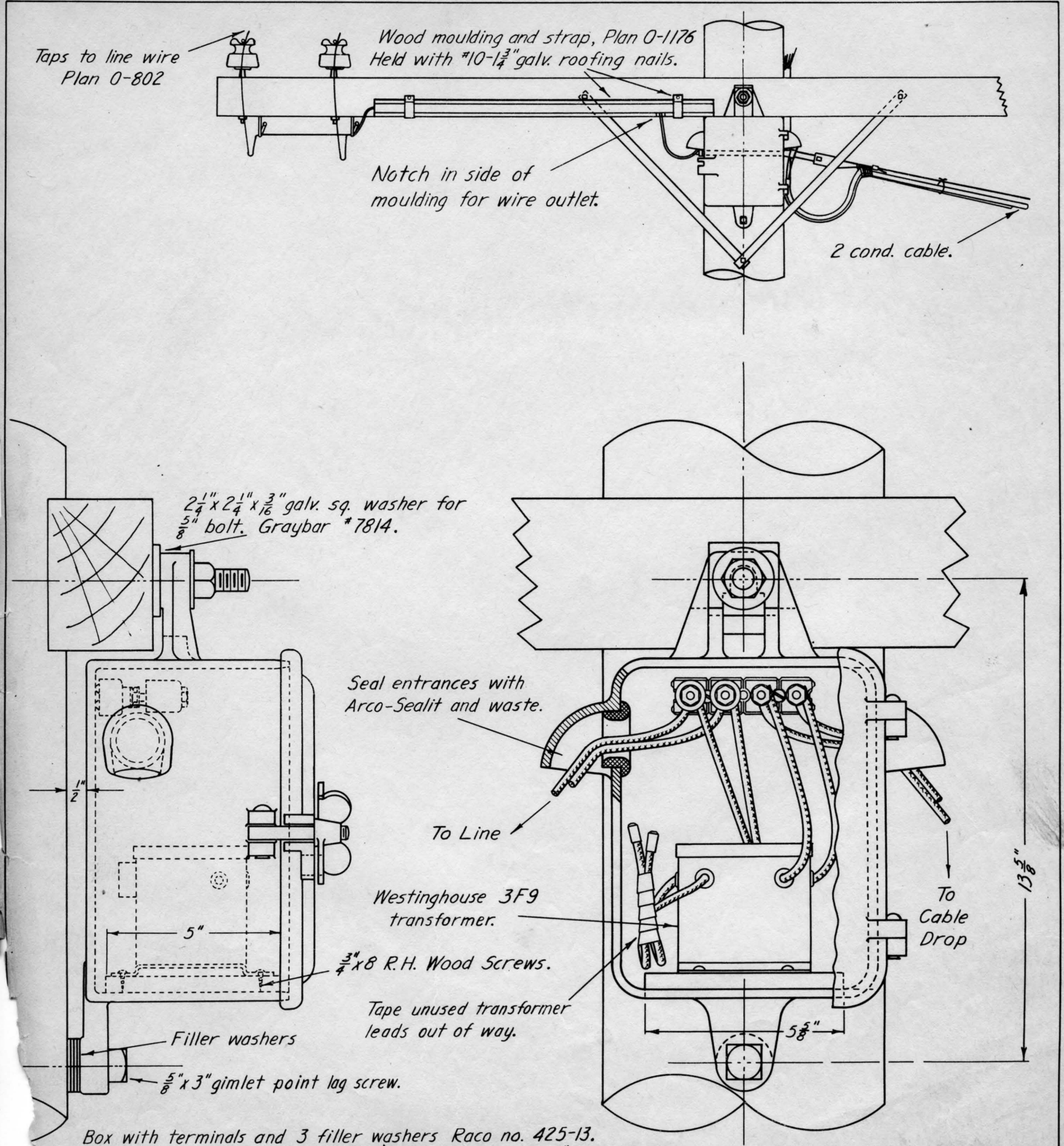
T-9203 TUNING ACCESSORY BLOCK IN PHONE HOUSING AND ONLY ON CODE LINES WHERE CARRIER FREQUENCIES BETWEEN 4 AND 10 KHZ ARE USED.



TWISTED PAIR LENGTH IN FEET	QUAD LENGTH IN FEET	STRAP TERMINALS
0-100	0-160	ABCD
100-200	160-320	ABC
200-300	320-480	AB
300-400	480-640	NONE
TUNES FILTER BETWEEN 3.2 AND 3.8 KHZ		

METHOD FOR MOUNTING F-9233A FILTER AND PROTECTOR FOR TCS PHONE

SSSO 10-1-68 REVISED :- 8-8-75 **0-929A**



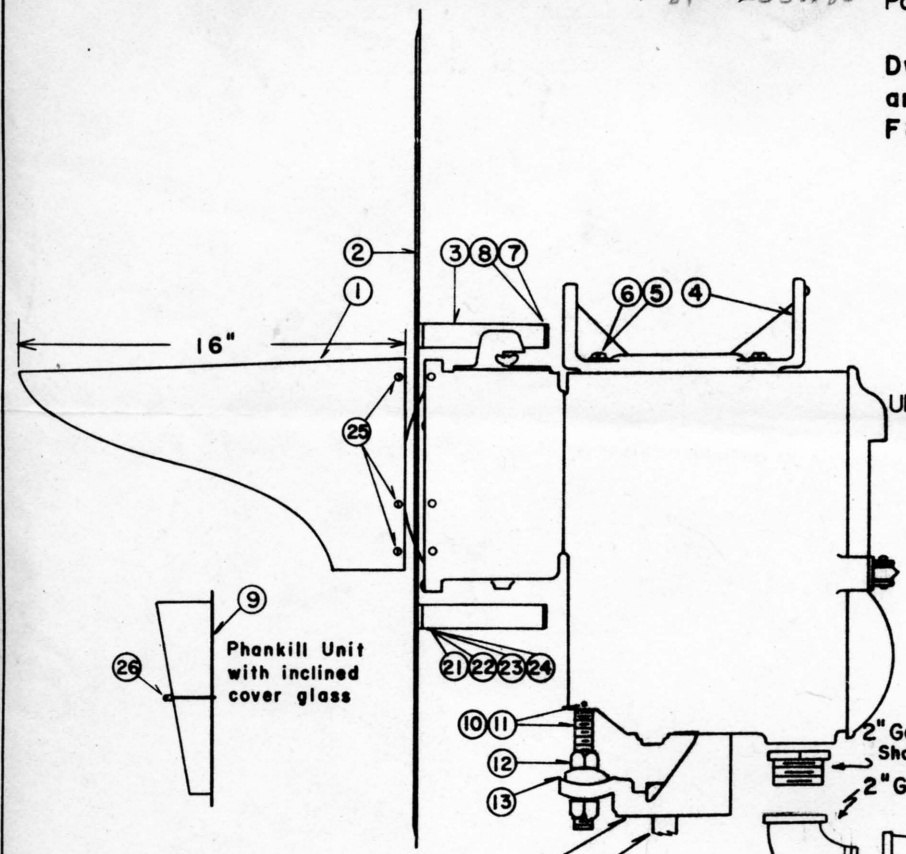
Box with terminals and 3 filler washers Raco no. 425-13.
Additional filler washers required to mount box ½" from pole to be ⅝" cut washers.
Bottom board to be made from clear soft pine 545.

A.T. & S.F. RY. CO.
POLE JUNCTION BOX FOR
SWITCH LIGHT TRANSFORMER
SESO 11-12-51 0-1241

4-9-81 #2558.80

Pc. X391125-001

Style H-5 Signal head Complete per Dwg. F80120 Sh. 4, with Phankill unit and inclined cover glass per Dwg. F80119 Sh. 1.



UN436257-002 - Signal Case complete, without operating unit.
(add suffix if resistance unit is desired)

UN 103700 Unit, Operating, H-5

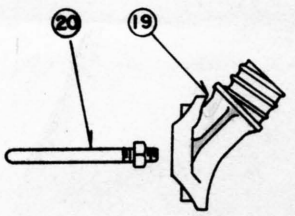
2" Galv. Chase Nipple (inserted from inside)
Short nipple and conduit bushing may be substituted.

2" Galv. Street Elbow

2" Galv. 90° Elbow

BC-200 Jake Connector

2" S.S. Flex. Conduit 32" long



Item No.	US&S Pc. No.	DESCRIPTION	Reqd.
1	UM 184414	Lens hood	1
2	UM 144459	Background 35"	1
3	UM 210318	Background support	2
4	UN 210395	Sight Bracket	1
5	UJ 50037	Hex Hd. cap Screw	2
6	UJ 47767	Lock washer	2
7	UJ 50051	Screw $\frac{3}{8}$"-16 X $\frac{3}{4}$" Hex Hd. Cap	3
8	UJ 47768	Washer $\frac{3}{8}$" lock	3
9	See I-181	Phankill with inclined cover	1
10	UM 410528	Stud $\frac{3}{4}$" (held by item 11)	1
11	UM 11992	Pin (for item 10)	1
12	UJ 48026	Nut $\frac{3}{4}$"-10 Hex. Steel	2
13	UM 146404	Washer	1
14	UM 144205	Supporting Bracket	1
15	UJ 46870	1"-8 4$\frac{1}{2}$" Sq. Stl. Bolt	1
16	UM 147483	Adjusting Bracket	1
17	UJ 48033	1"-8 Nut, Std. Hex Jam	2
18	U0 371193	$\frac{3}{4}$" U-Bolt, Complete	2
19	UN 103713	Cable Outlet	1
20	U0 348215	$\frac{1}{2}$" U-Bolt, Complete	1
21	UM 165462	Bolt $\frac{5}{16}$"	4
22	UM 1669	Washer, flat $\frac{5}{16}$"	4
23	UM 1650	Nut $\frac{5}{16}$" Hex std	4
24	UJ 47767	Washer, lock $\frac{5}{16}$"	4
25	UJ 525052	Screw, #10-32 X $\frac{1}{2}$" R.H.SS	6
26	UJ 51351	Screw, #14-24 X 2$\frac{3}{4}$" Fil. hd	2

For further reference see U.S.&S. Plan F80120 Sh. 4.

A.T. & S.F. Ry. System
H-5 SEARCHLIGHT SIGNAL CASE, BRACKET AND CABLE OUTLET

SSSO 9-1-61

0-917

REVISED:-11-30-71

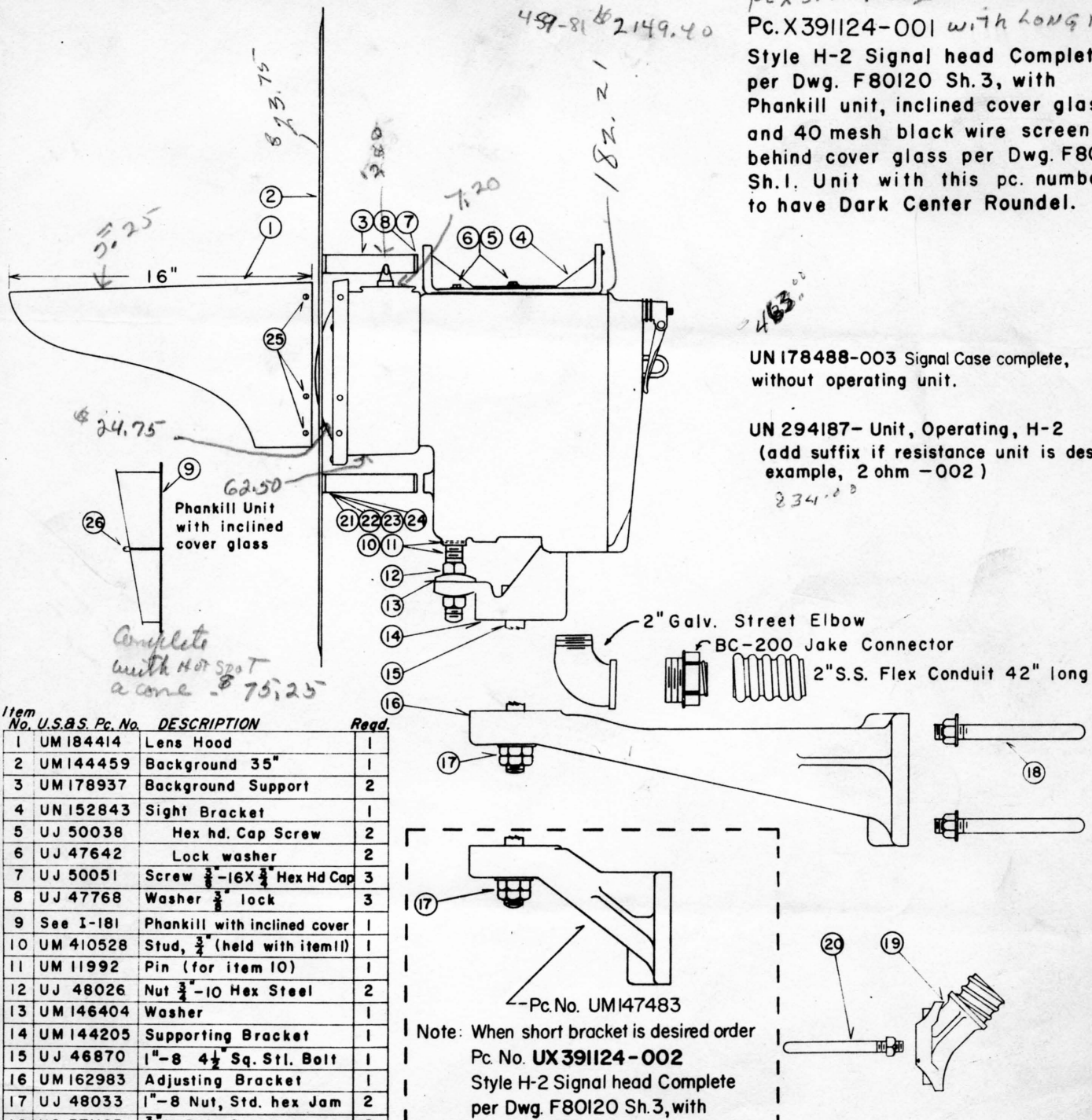
Pc X 391124-002 with Short Bracket

Pc. X391124-001 with LONG Bracket

Style H-2 Signal head Complete per Dwg. F80120 Sh. 3, with Phankill unit, inclined cover glass and 40 mesh black wire screen behind cover glass per Dwg. F80119 Sh. 1. Unit with this pc. number to have Dark Center Roundel.

UN 178488-003 Signal Case complete, without operating unit.

UN 294187- Unit, Operating, H-2
(add suffix if resistance unit is desired example, 2 ohm -002)



Item No.	U.S.&S. Pc. No.	DESCRIPTION	Reqd.
1	UM 184414	Lens Hood	1
2	UM 144459	Background 35"	1
3	UM 178937	Background Support	2
4	UN 152843	Sight Bracket	1
5	UJ 50038	Hex hd. Cap Screw	2
6	UJ 47642	Lock washer	2
7	UJ 50051	Screw $\frac{3}{8}$"-16X $\frac{3}{4}$" Hex Hd Cap	3
8	UJ 47768	Washer $\frac{3}{8}$" lock	3
9	See I-181	Phankill with inclined cover	1
10	UM 410528	Stud, $\frac{3}{4}$" (held with item 11)	1
11	UM 11992	Pin (for item 10)	1
12	UJ 48026	Nut $\frac{3}{4}$"-10 Hex Steel	2
13	UM 146404	Washer	1
14	UM 144205	Supporting Bracket	1
15	UJ 46870	1"-8 4$\frac{1}{2}$" Sq. Stl. Bolt	1
16	UM 162983	Adjusting Bracket	1
17	UJ 48033	1"-8 Nut, Std. hex Jam	2
18	UO 371193	$\frac{3}{4}$" U-Bolt Complete	2
19	UN 103713	Cable Outlet	1
20	UO 348215	$\frac{1}{2}$" U-Bolt Complete	1
21	UM 165462	$\frac{5}{16}$" Bolt	4
22	UM 1669	$\frac{5}{16}$" Washer, flat	4
23	UM 1650	$\frac{5}{16}$" Nut, Hex Std	4
24	UJ 47767	$\frac{5}{16}$" Washer, lock	4
25	UJ 525052	Screw, #10-32X $\frac{1}{4}$" R.H.SS	6
26	UJ 51351	Screw, #14-24X2 $\frac{3}{4}$" Fil. hd	2

For further reference see U.S.&S. Plan F80120 Sh. 3.

Note: When short bracket is desired order Pc. No. **UX391124-002**
Style H-2 Signal head Complete per Dwg. F80120 Sh. 3, with Phankill unit, inclined cover glass and 40 mesh black wire screen behind cover glass per Dwg. F80119 Sh. 1. Unit with this pc. number to have Yellow, Red & Green Roundels.

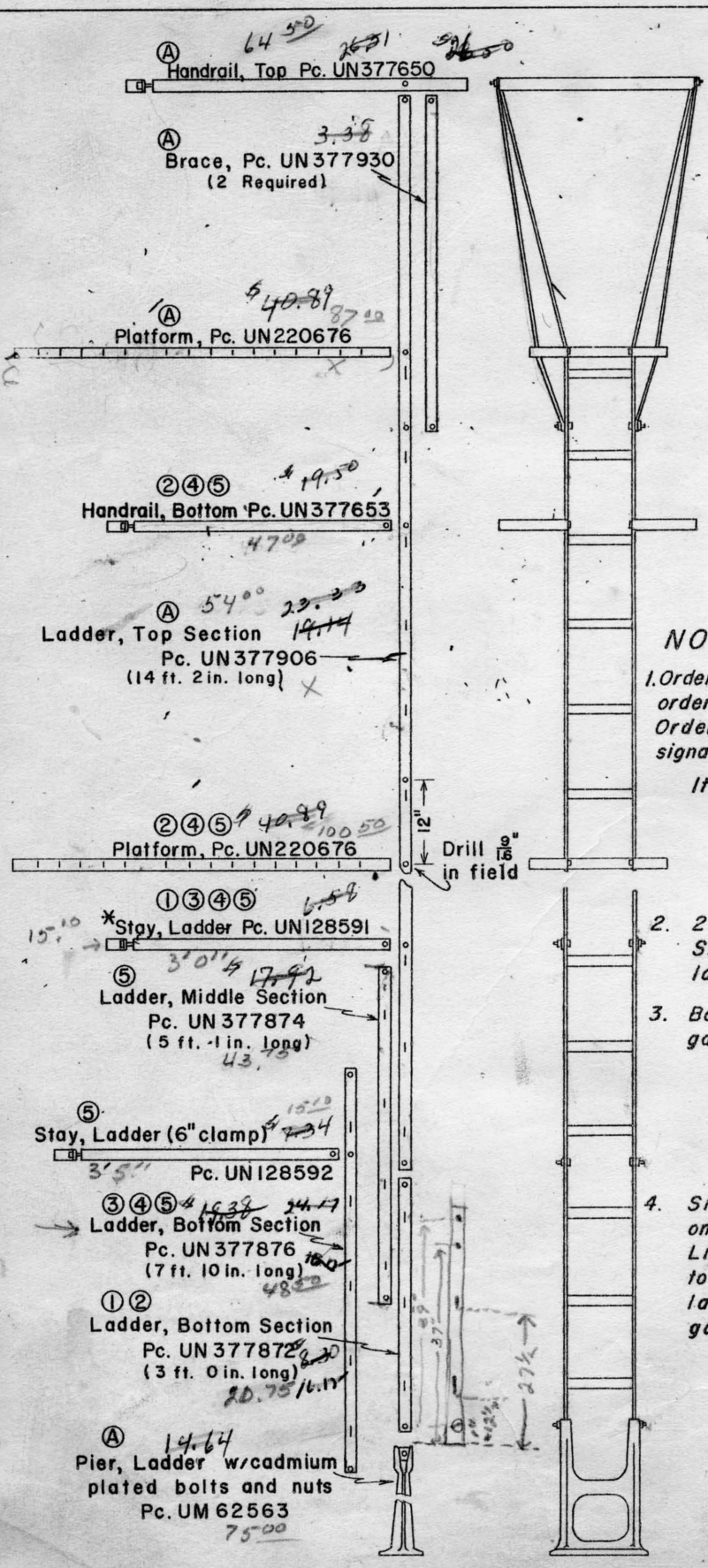
A.T. & S.F. Ry. System

H-2 SEARCHLIGHT SIGNAL CASE, BRACKET AND CABLE OUTLET

SSSO 9-1-61

0-919

REVISED:- 11-30-71



NOTES:-

1. Order items Marked Ⓐ for all signal ladder orders where COMPLETE ladder is required. Order additional items below as listed for signal height and type:

Items Marked	①	Order for 17' Single Unit Signal
" "	②	Order for 17' Two Unit Signal
" "	③	Order for 22' Single Unit Signal
" "	④	Order for 22' Two Unit Signal
" "	⑤	Order for 27' Two Unit Signal.

2. 22' Single Unit Signal will require TWO Ladder Stays (*) Pc. UN128591 when ordering complete ladder.

3. Bolts, square head machine, with nuts (plain or galvanized) required for ladder orders:
   $\frac{1}{2}$" X $1\frac{1}{8}$" – 2 per top handrail, 2 per ladder pier.
   $\frac{1}{2}$" X 1" – 2 per ladder item ordered. Handrails, Platforms and stays to be furnished complete with C-clamp and bolts for fastening to signal mast.

4. Signal poles, ladders and bolts ordered for use on Gulf Lines south of Somerville and on Coast Lines west of San Bernardino and Stockton to have this reference added: "pole, platform, ladder, bolts and pipe cap to be hot dipped galvanized."

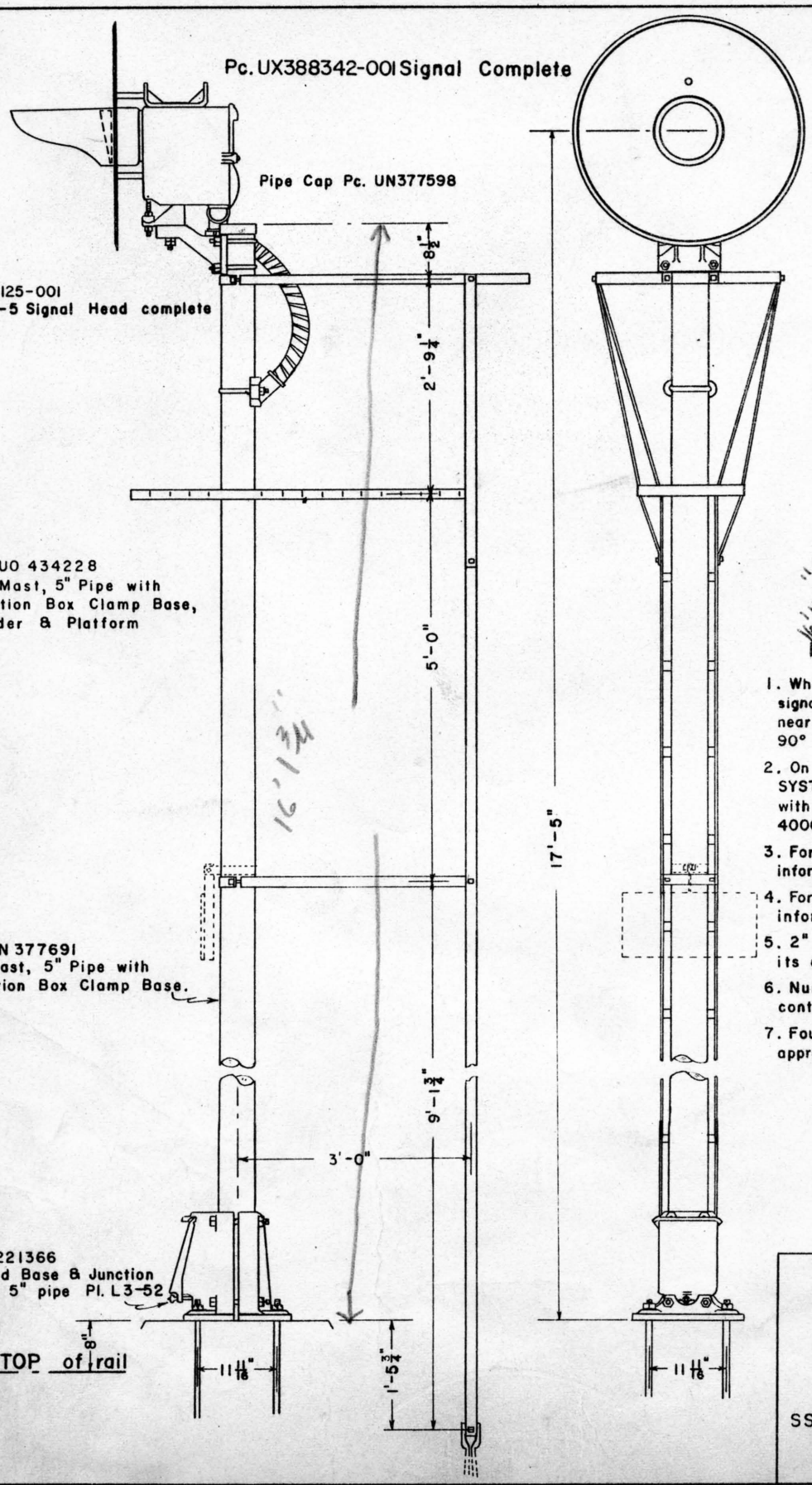
A.T. & S.F. Ry. System

SIGNAL LADDER for 17, 22 & 27 FOOT GROUND SIGNALS

SSSO 9-1-61

0-916

REVISED:- 6-28-63



16'10¾" Top Foundation to Top of Lens Son Lower Sig.
17'5½" " " Upper Sig.

NOTES:-

1. When track centers are not involved, signals will be set 10' from gauge of near rail and bracket will be turned 90° toward track.
2. On Authority of SUPT. SIGNALS SYSTEM may be used between tracks with minimum of 20' centers and 4000' of tangent track in approach.
3. For Signal Unit reference and order information see Plan 0-917.
4. For Ladder reference and order information see Plan 0-916.
5. 2" flex. conduit to be installed with its overlap at bottom of spiral.
6. Number plate to be omitted on controlled signals.
7. Foundation per Plan 0-711 or approved alternate.

A.T. & S.F. Ry. System

H-5 SEARCHLIGHT GROUND SIGNAL

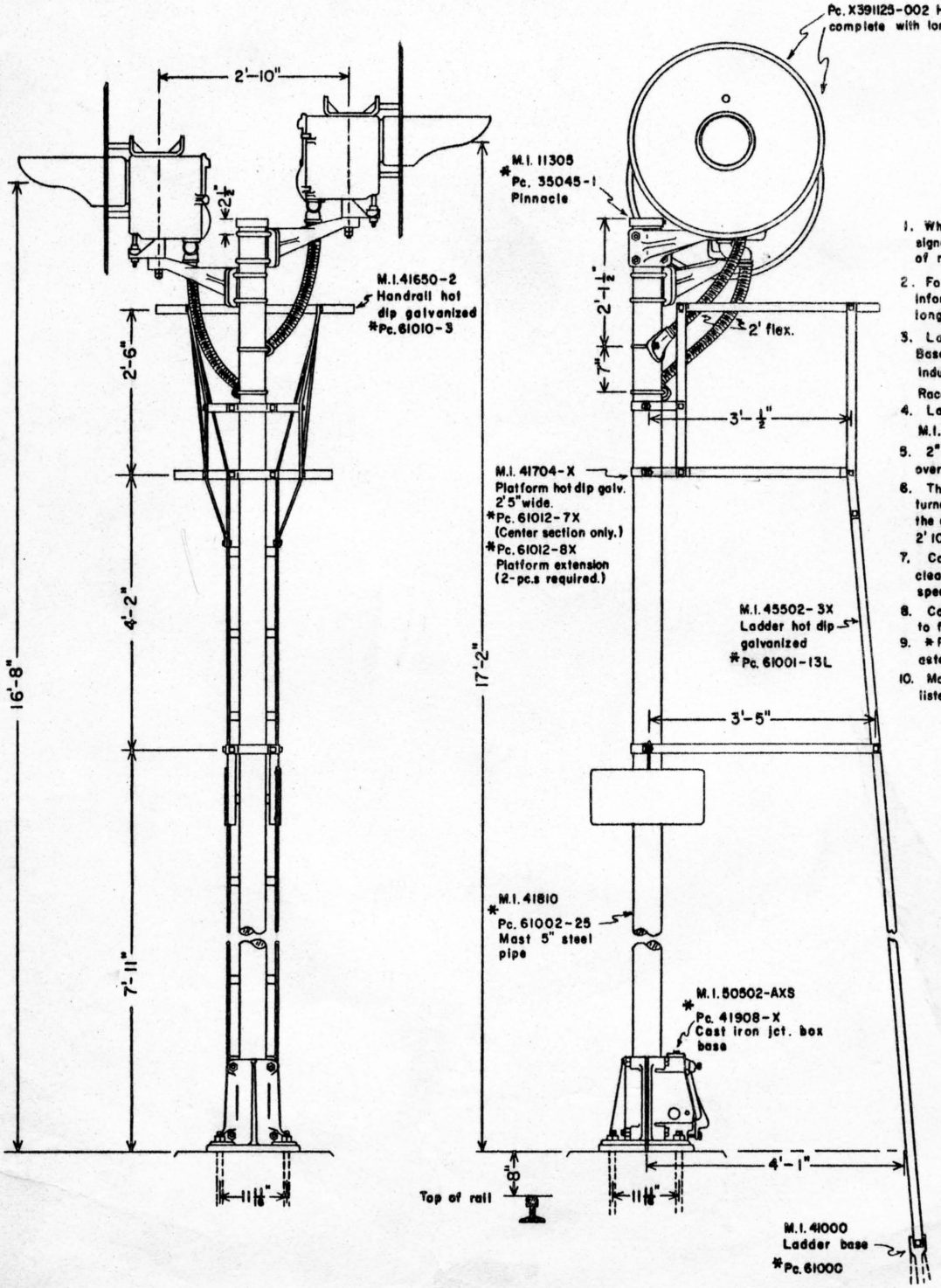
(17' HEIGHT)

SSSO

REDRAWN 2-1-63

0-915

REVISED:-11-16-70



NOTES:

1. When track centers are not involved, signals will be set 10' from gauge of near rail.
2. For Signal Unit reference and order information see Plan 0-917, for long bracket see Plan 0-919.
3. Ladder, Platform, Junction Box Base and Mast complete is Modern Industries assembly NO. 41002-2X3
   Raco assembly NO. 61001-13X
4. Ladder and platform assembly complete M.I. 41002-2X2.
5. 2" flex conduit to be installed with it's overlap at bottom of spiral.
6. The long bracket for each signal is to be turned approximately 40° to the field so the distance between hole centers is 2' 10" and parallel to the track.
7. Cable outlets should be angled to just clear the handrail brace on their respective sides.
8. Cant the ladder 1" per foot from platform to foundation.
9. * Piece numbers associated with an asterik are RACO parts.
10. Modern Industries and Raco parts listed are similar and interchangeable.

A. T. & S. F. RY.

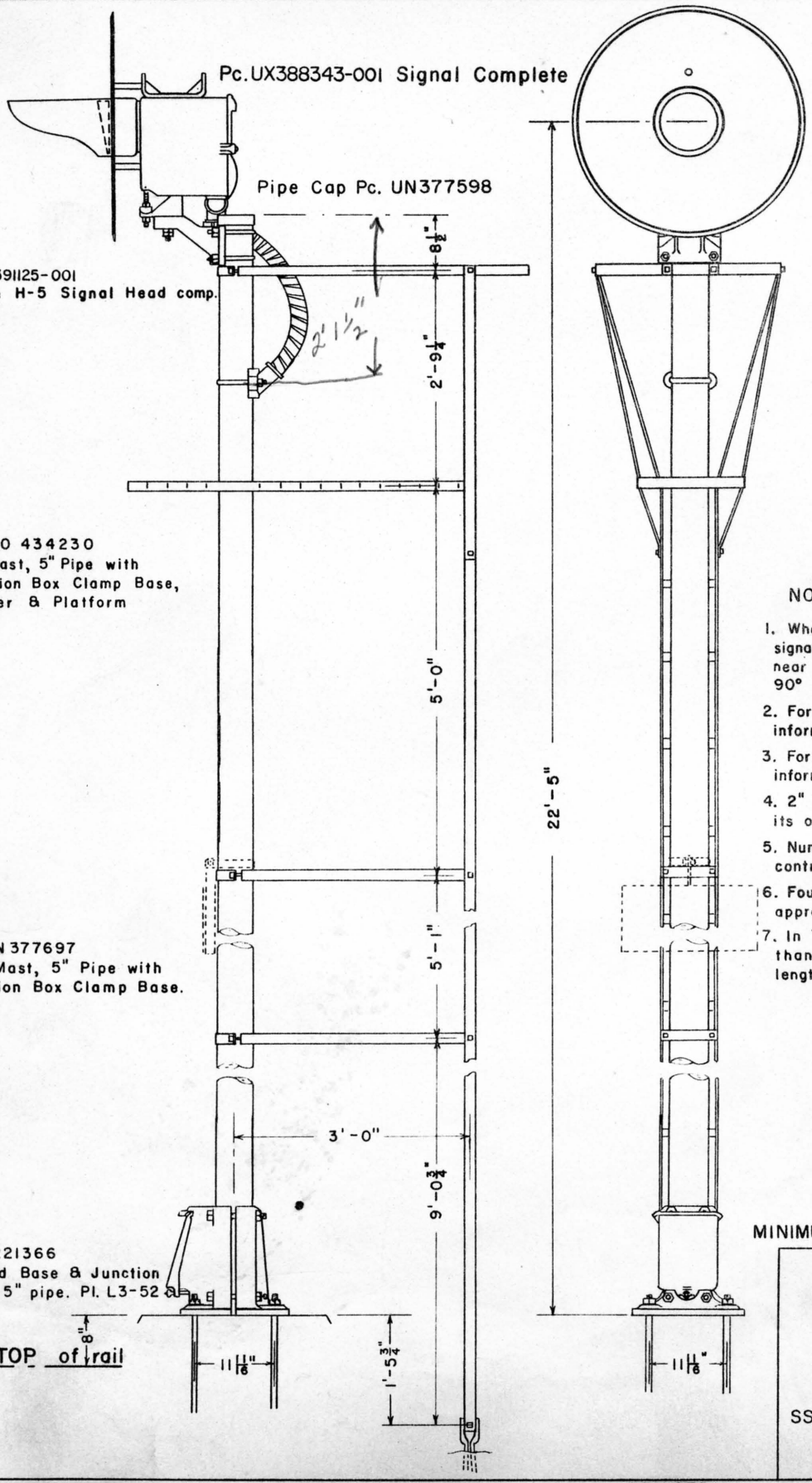
BI-DIRECTIONAL SEARCHLIGHT SIGNAL (17' HEIGHT)

SSSO 7-17-69

0-914

(USE ONLY ON APPROVAL OF SUPT. OF SIGNALS SYSTEM)

REV. 1-8-71



NOTES:-

1. When track centers are not involved, signals will be set 10' from gauge of near rail and bracket will be turned 90° toward track.
2. For Signal Unit reference and order information see Plan 0-917.
3. For Ladder reference and order information see Plan 0-916.
4. 2" flex. conduit to be installed with its overlap at bottom of spiral.
5. Number plate to be omitted on controlled signals.
6. Foundation per Plan 0-711 or approved alternate.
7. In Texas when track centers are less than 20 feet, increase foundation length and set 18 inches above rail.

MINIMUM TRACK CENTERS 18 ft.

A.T. & S.F. Ry. System

H-5 SEARCHLIGHT GROUND SIGNAL BETWEEN TRACKS (22' HEIGHT)

SSSO

REDRAWN 2-1-63

0-912

REVISED:-11-16-70

NOTE:

Fig. 1 – Cut signal pole 6 ½" above six inch pole joint for top of pole mounting.

Fig. 2 – Maximum height for top of pole mounting will be 20'3/16" from lower unit to top of foundation.

*Order 6" pipe clamps for braces.

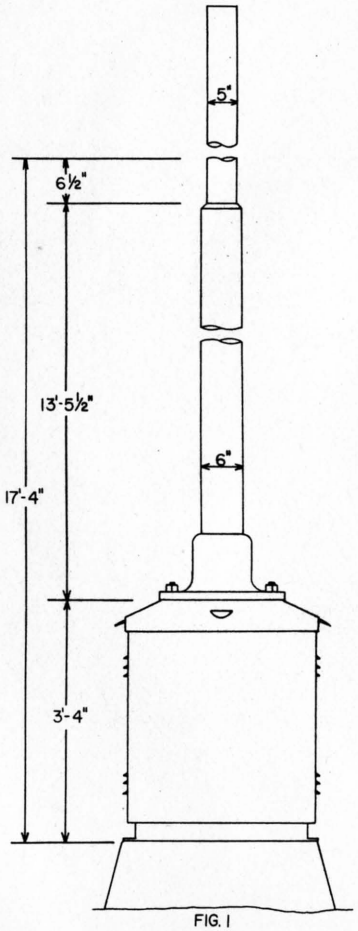


FIG. 1

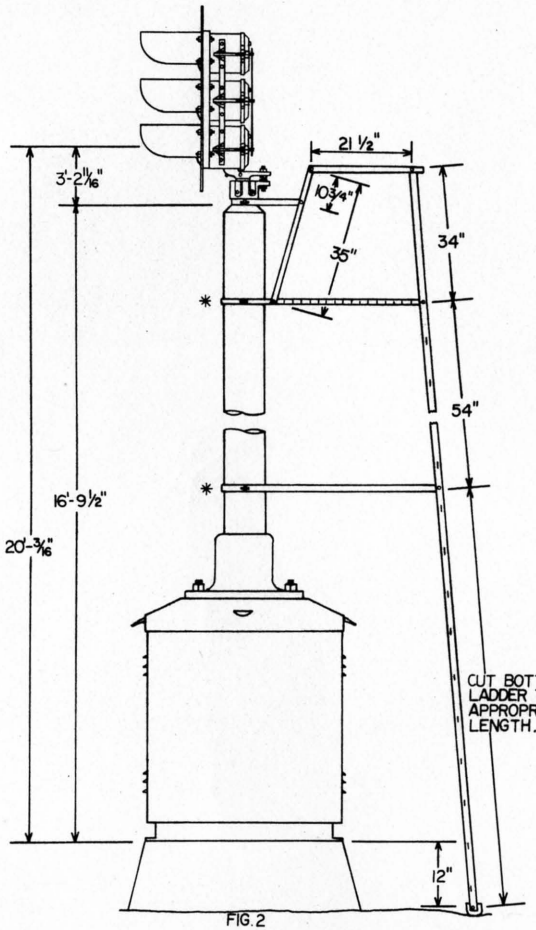


FIG. 2

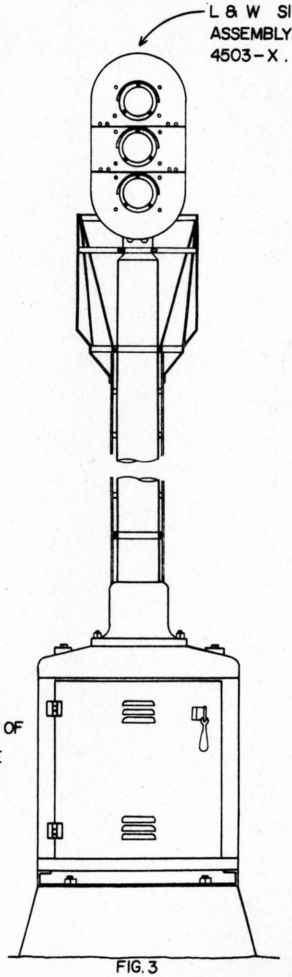
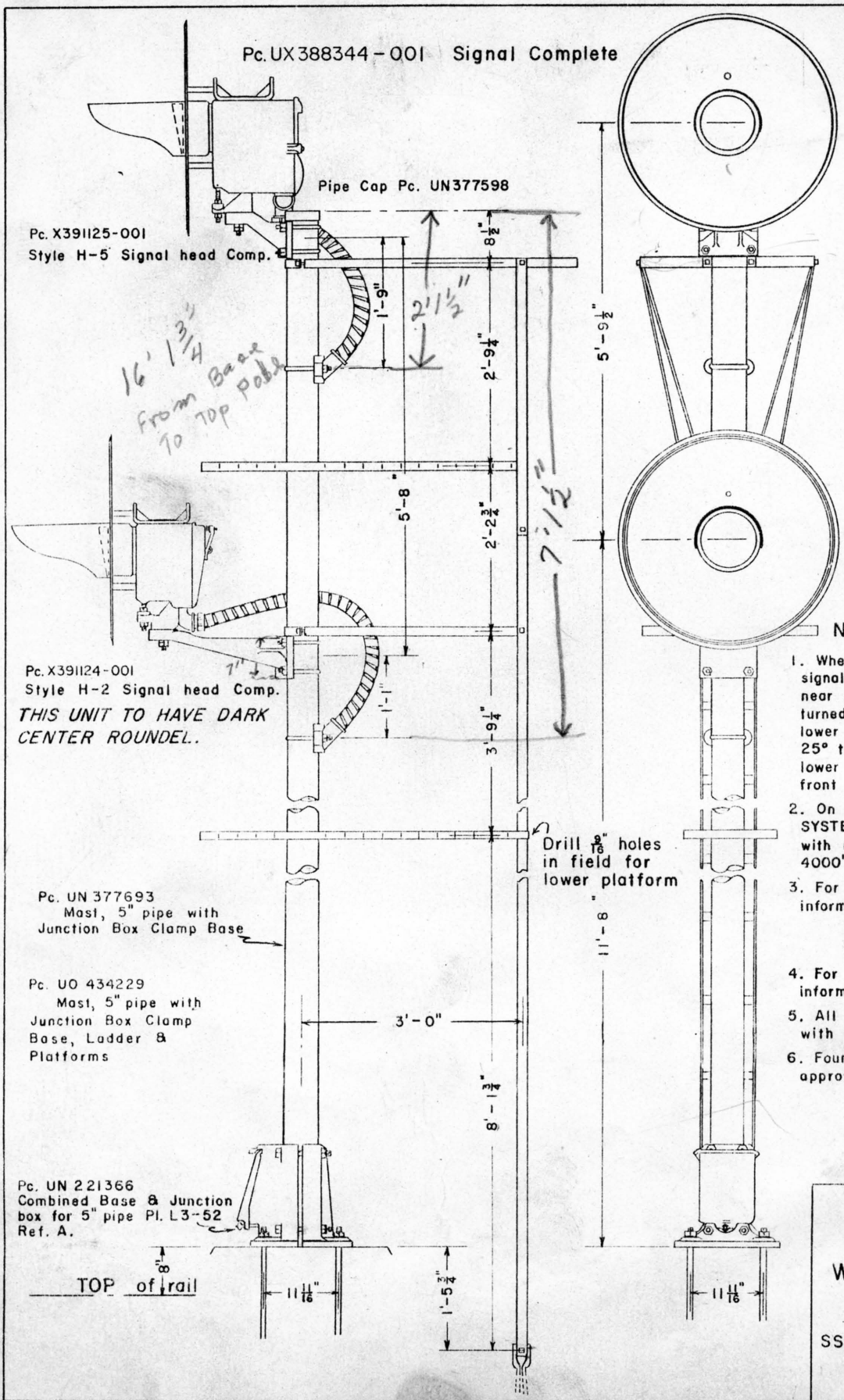


FIG. 3

A. T. & SF RY. CO.
L & W COLORLIGHT GROUND SIGNAL ON LOW INSTRUMENT CASE
ACE-S 12-10-80

O-918



NOTES:-

1. When track centers are not involved, signals will be set 10' from gauge of near rail and upper brocket will be turned 90° toward track. Bracket for lower unit will be turned approximately 25° toward track so that upper and lower units are in vertical line facing front of units.
2. On Authority of SUPT. SIGNALS SYSTEM may be used between tracks with minimum of 20' centers and 4000' of tangent track in approach.
3. For Signal Unit reference and order information see:
   Plan 0-917 for top unit as shown
   Plan 0-919 for lower unit.
4. For Ladder reference and order information see Plan 0-916.
5. All 2" flex. conduit to be installed with its overlap at bottom of spiral.
6. Foundation per Plan 0-711 or approved alternate.

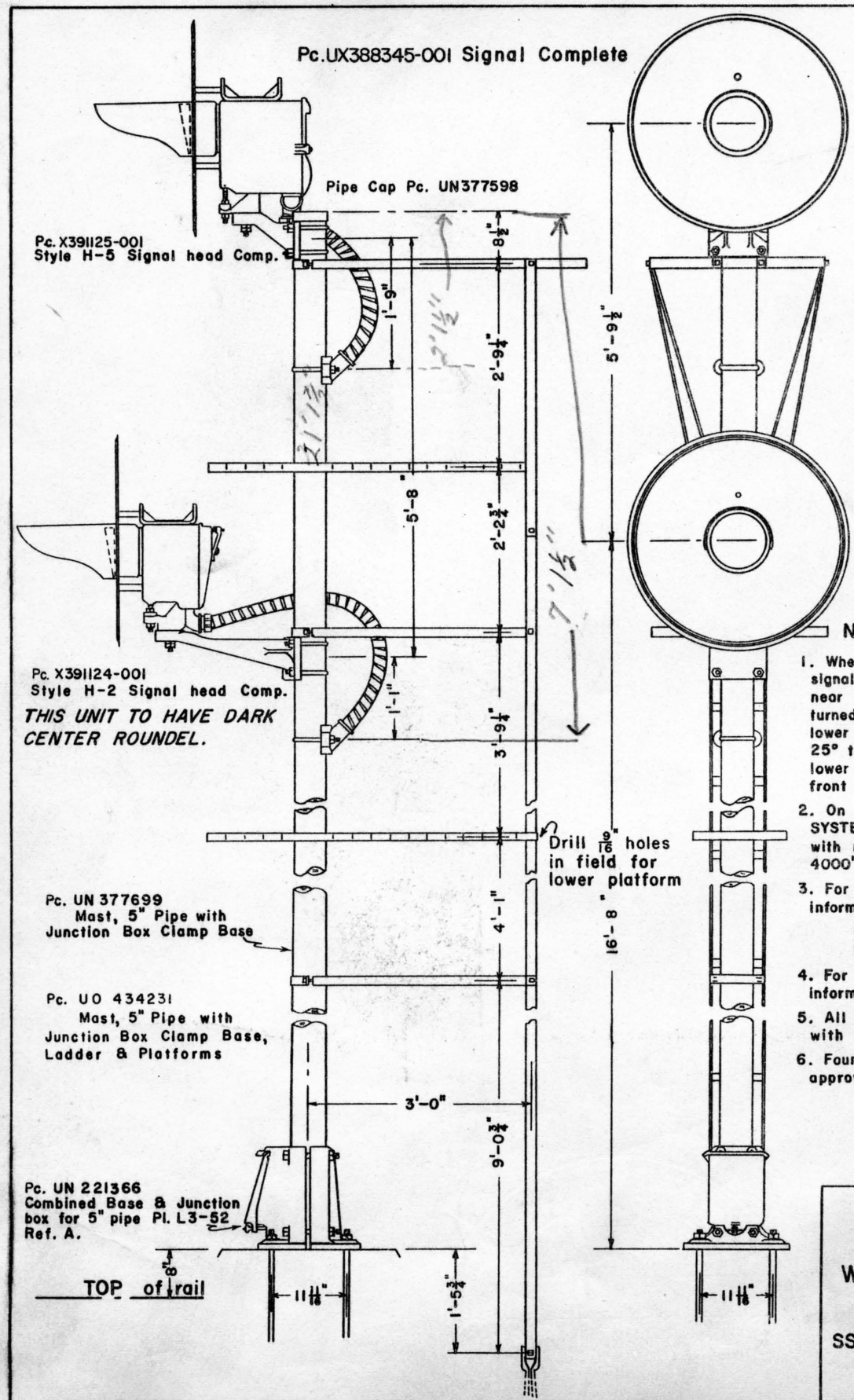
A.T. & S.F. Ry. System
H-5 SEARCHLIGHT GROUND SIGNAL WITH H-2 LOWER UNIT (17' HEIGHT)

SSSO

REDRAWN 2-1-63

0-913

REVISED:-11-16-70



NOTES:-

1. When track centers are not involved, signals will be set 10' from gauge of near rail and upper bracket will be turned 90° toward track. Bracket for lower unit will be turned approximately 25° toward track so that upper and lower units are in vertical line facing front of units.
2. On Authority of SUPT. SIGNALS SYSTEM may be used between tracks with minimum of 20' centers and 4000' of tangent track in approach.
3. For Signal Unit reference and order information see:
   Plan 0-917 for top unit as shown
   Plan 0-919 for lower unit.
4. For Ladder reference and order information see Plan 0-916.
5. All 2" flex. conduit to be installed with its overlap at bottom of spiral.
6. Foundation per Plan 0-711 or approved alternate.

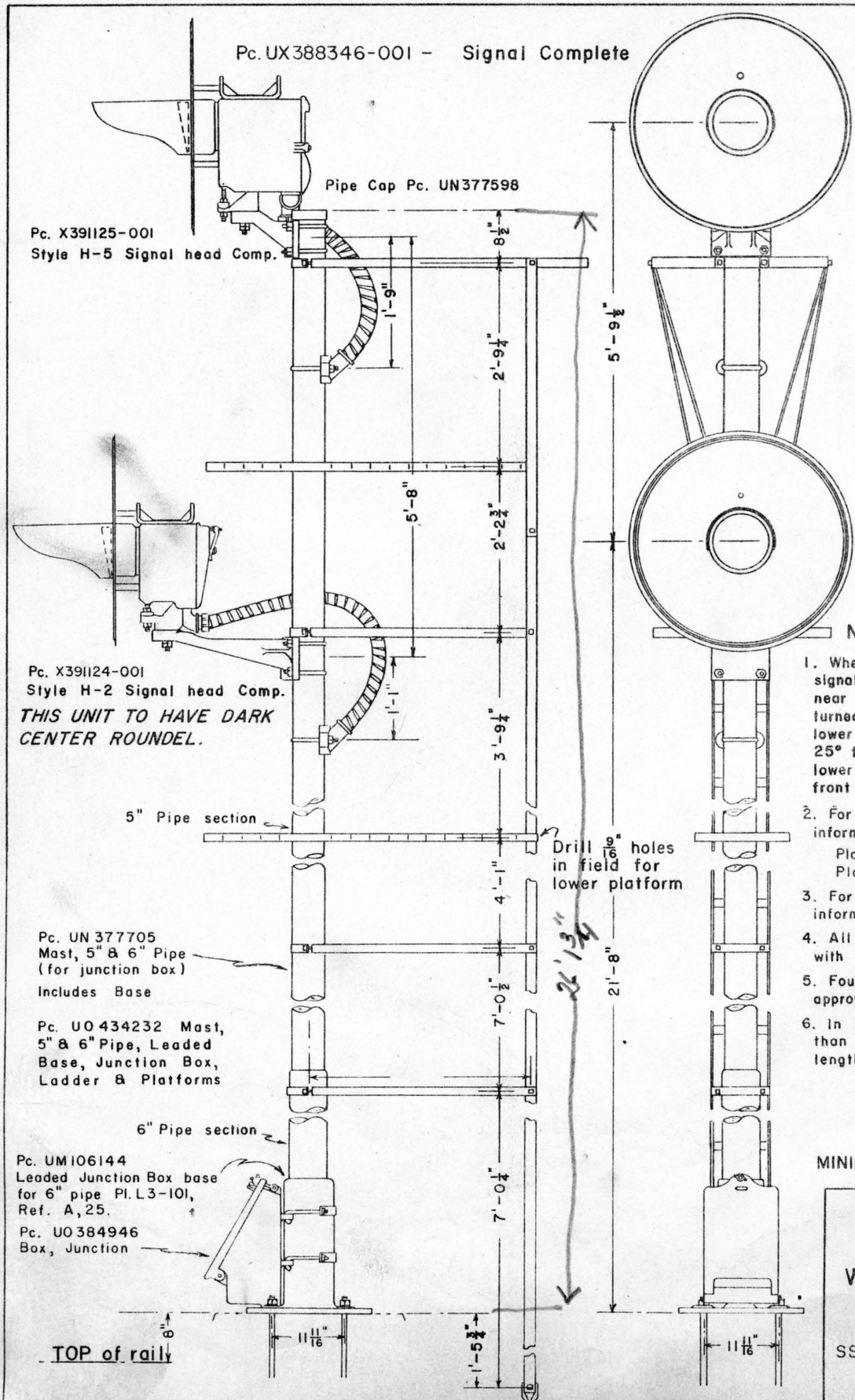
A.T. & S.F. Ry. System

H-5 SEARCHLIGHT GROUND SIGNAL WITH H-2 LOWER UNIT (22' HEIGHT)

SSSO Pole 20' 1 3/4" REDRAWN 2-1-63

0-910

REVISED:- 11-16-70



NOTES:-

1. When track centers are not involved, signals will be set 10' from gauge of near rail and upper bracket will be turned 90° toward track. Bracket for lower unit will be turned approximately 25° toward track so that upper and lower units are in vertical line facing front of units.
2. For Signal Unit reference and order information see:
   Plan 0-917 for top unit as shown
   Plan 0-919 for lower unit.
3. For Ladder reference and order information see Plan 0-916.
4. All 2" flex. conduit to be installed with its overlap at bottom of spiral.
5. Foundation per Plan 0-711 or approved alternate.
6. In Texas when track centers are less than 20 feet, increase foundation length and set 18 inches above rail.

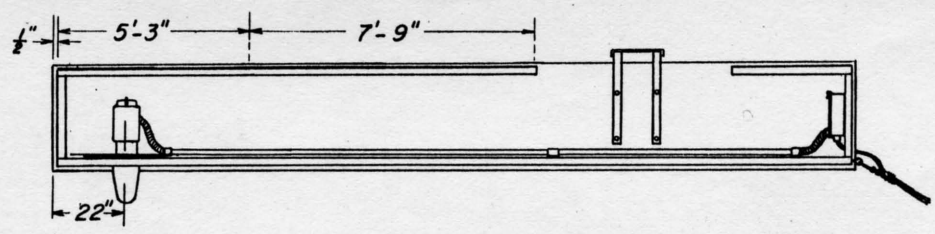
MINIMUM TRACK CENTERS 18 ft.

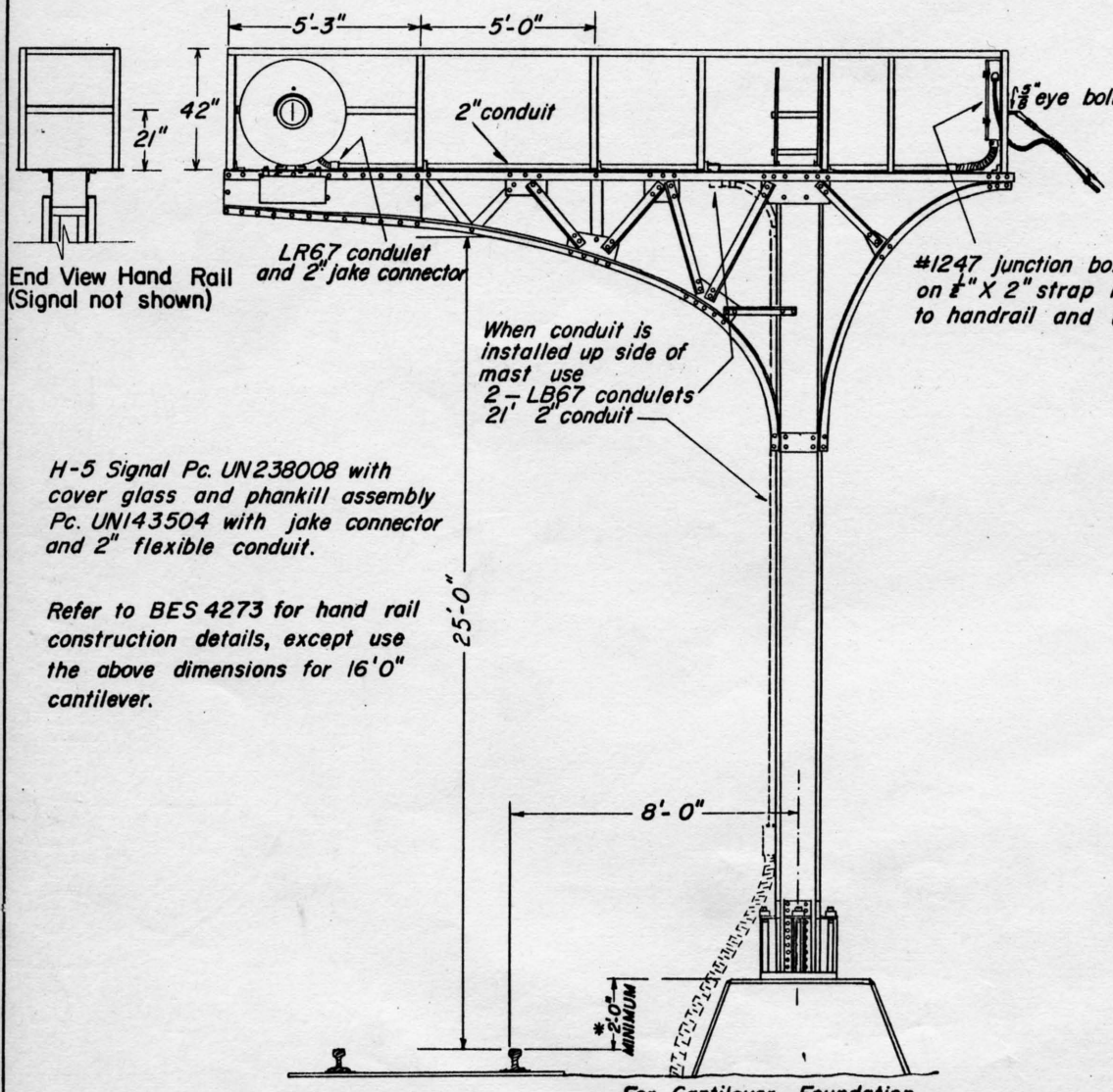
A.T. & S.F. Ry. System
H-5 SEARCHLIGHT GROUND SIGNAL WITH H-2 LOWER UNIT BETWEEN TRACKS (27' HEIGHT)

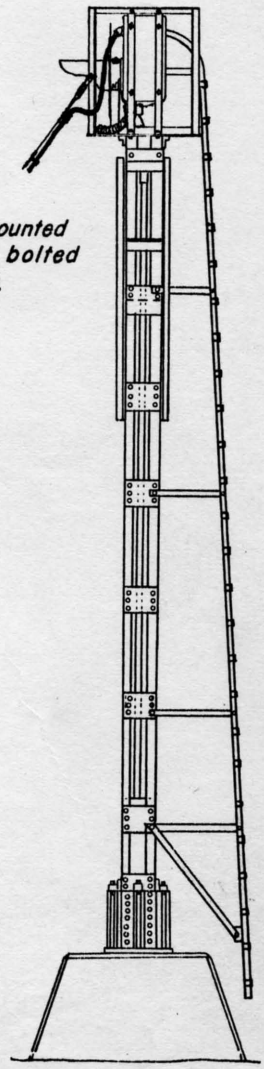
SSSO 26' 1 3/4" REDRAWN 2-1-63

0-908

REVISED:- 11-16-70







For Cantilever Foundation see Plan 0-789.

*Where rebased cantilever masts are used, it will be necessary to set foundation higher above rail to provide 25 feet overhead clearance.

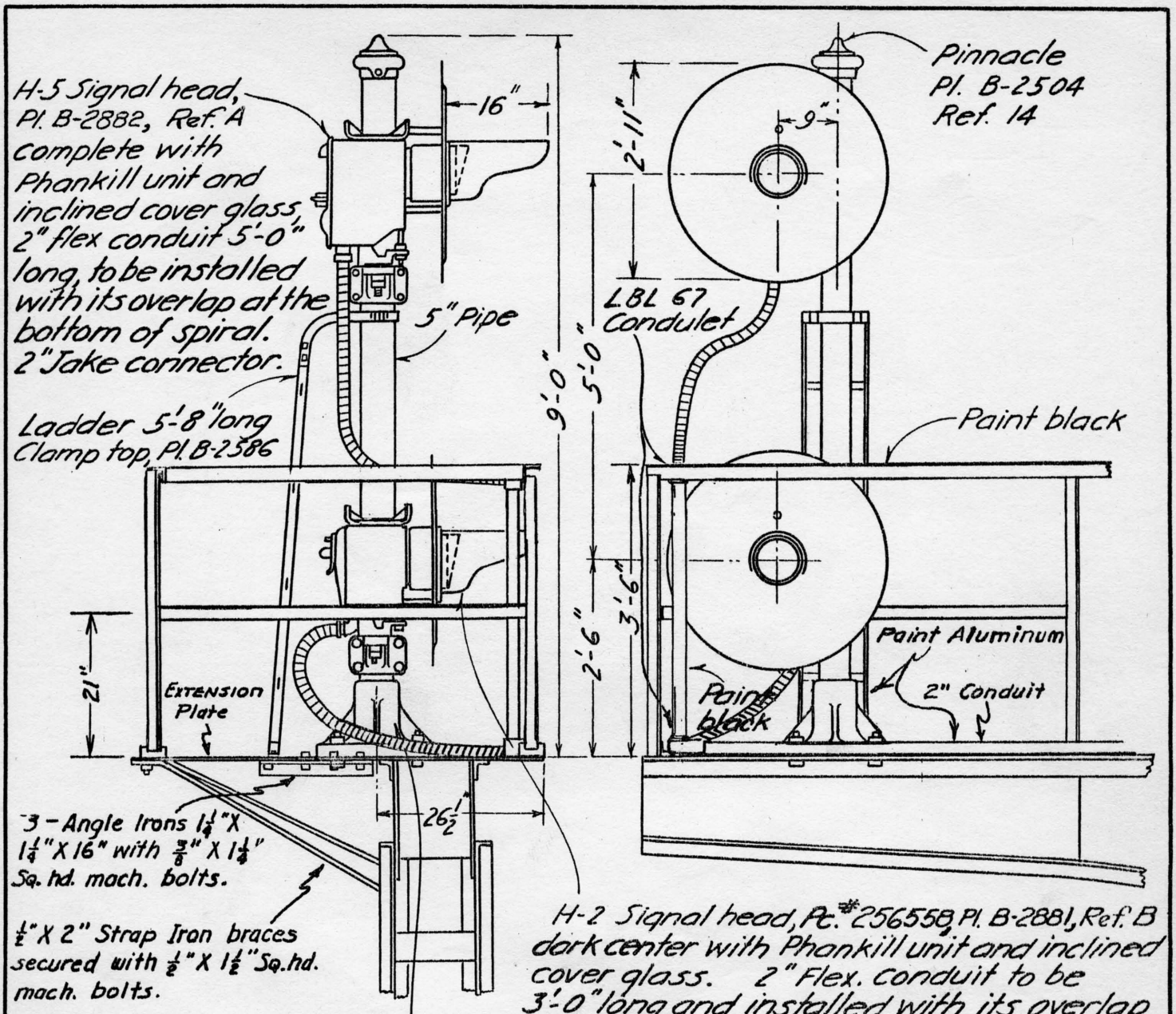
The A.T. & S.F. Ry. Co.

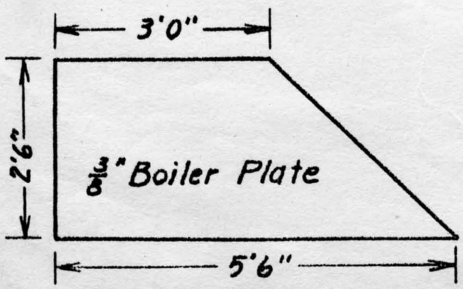
SEARCHLIGHT SIGNAL ON CANTILEVER MAST

SSSO REDRAWN 12-10-63

0-810

Rev: 11-11-64

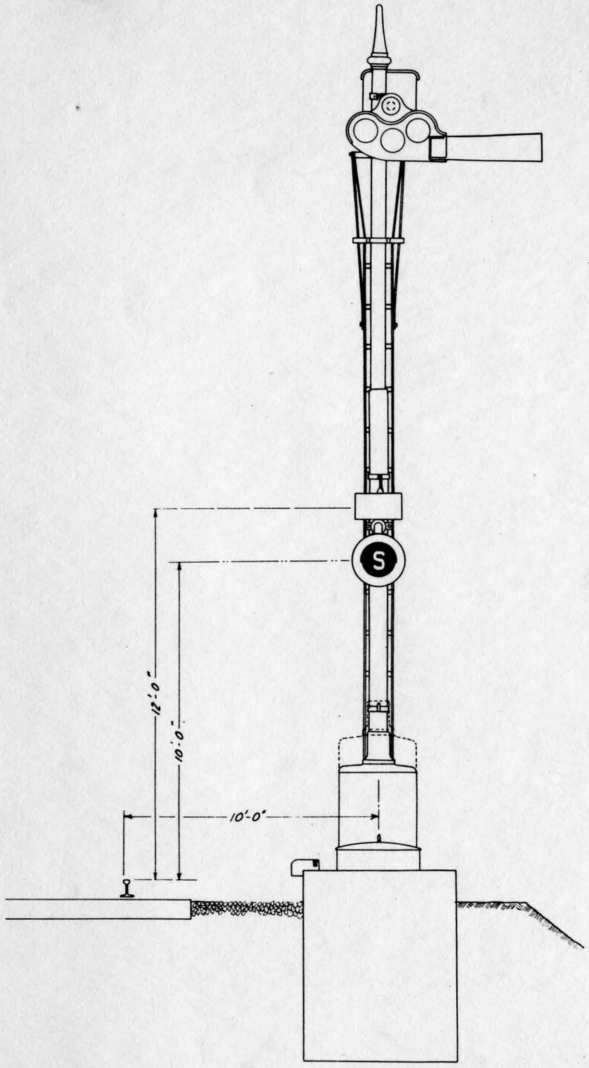


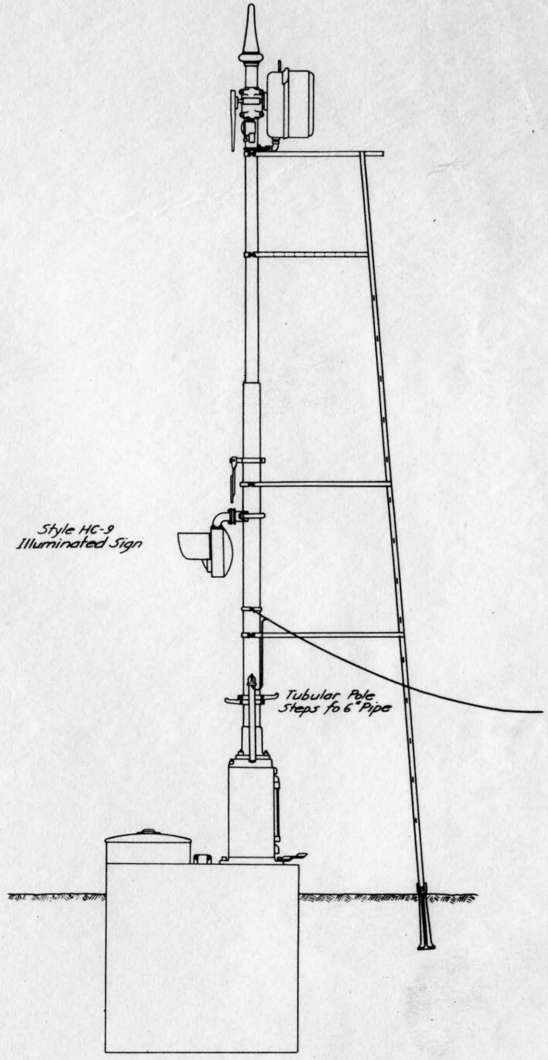


EXTENSION PLATE DETAIL

A T & S F Ry. System
H-5 SEARCHLIGHT SIGNAL WITH H-2 UNIT ON CANTILEVER
SESO Topeka 6-6-45
0-1150

Revised 11-11-64





A.T. & S. F. RY.

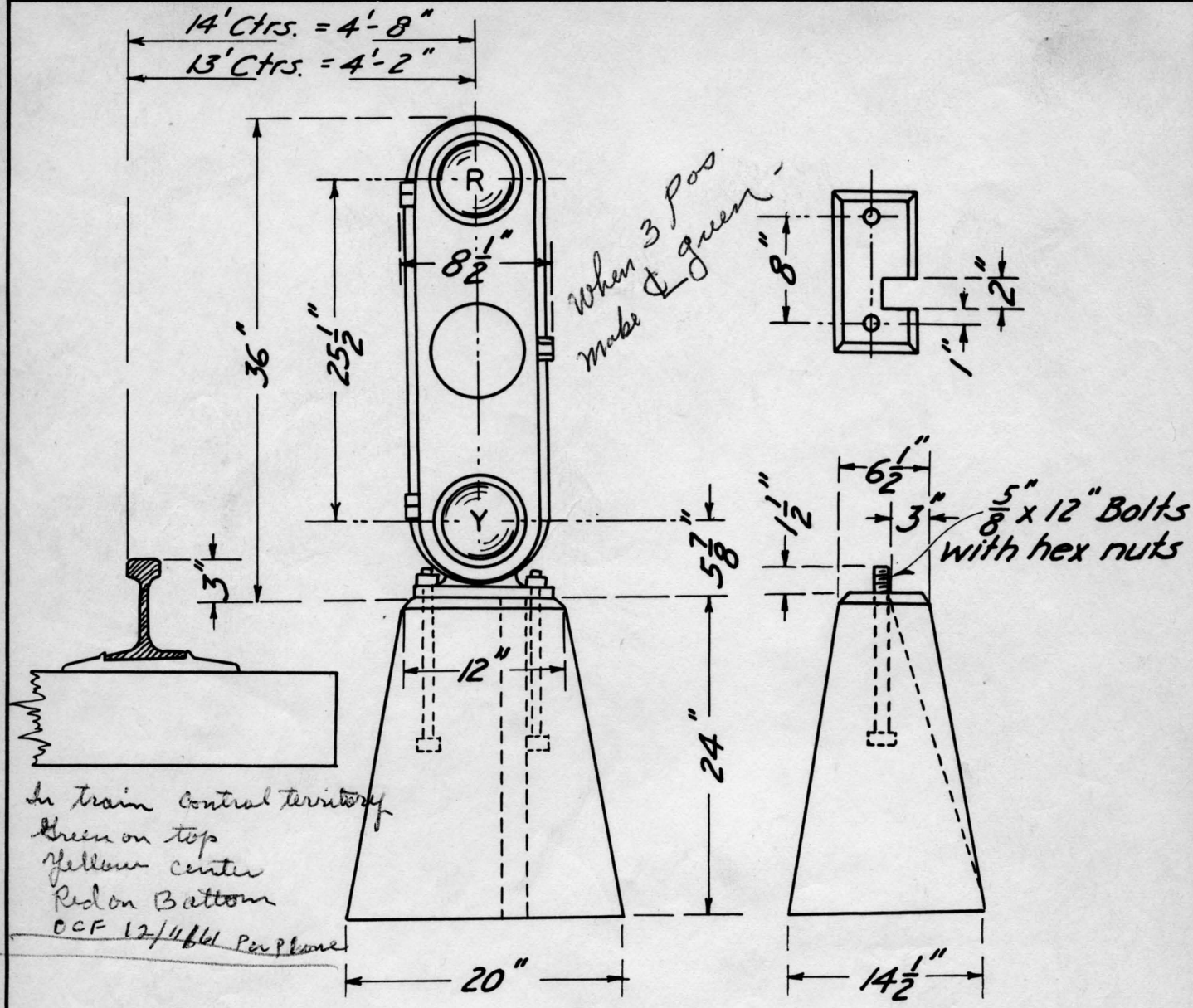
SEMAPHORE SIGNAL
WITH
SIDING SIGN

S E S O TOPEKA 10-27-47

Z-165

Rev. 6-2-53

C-193



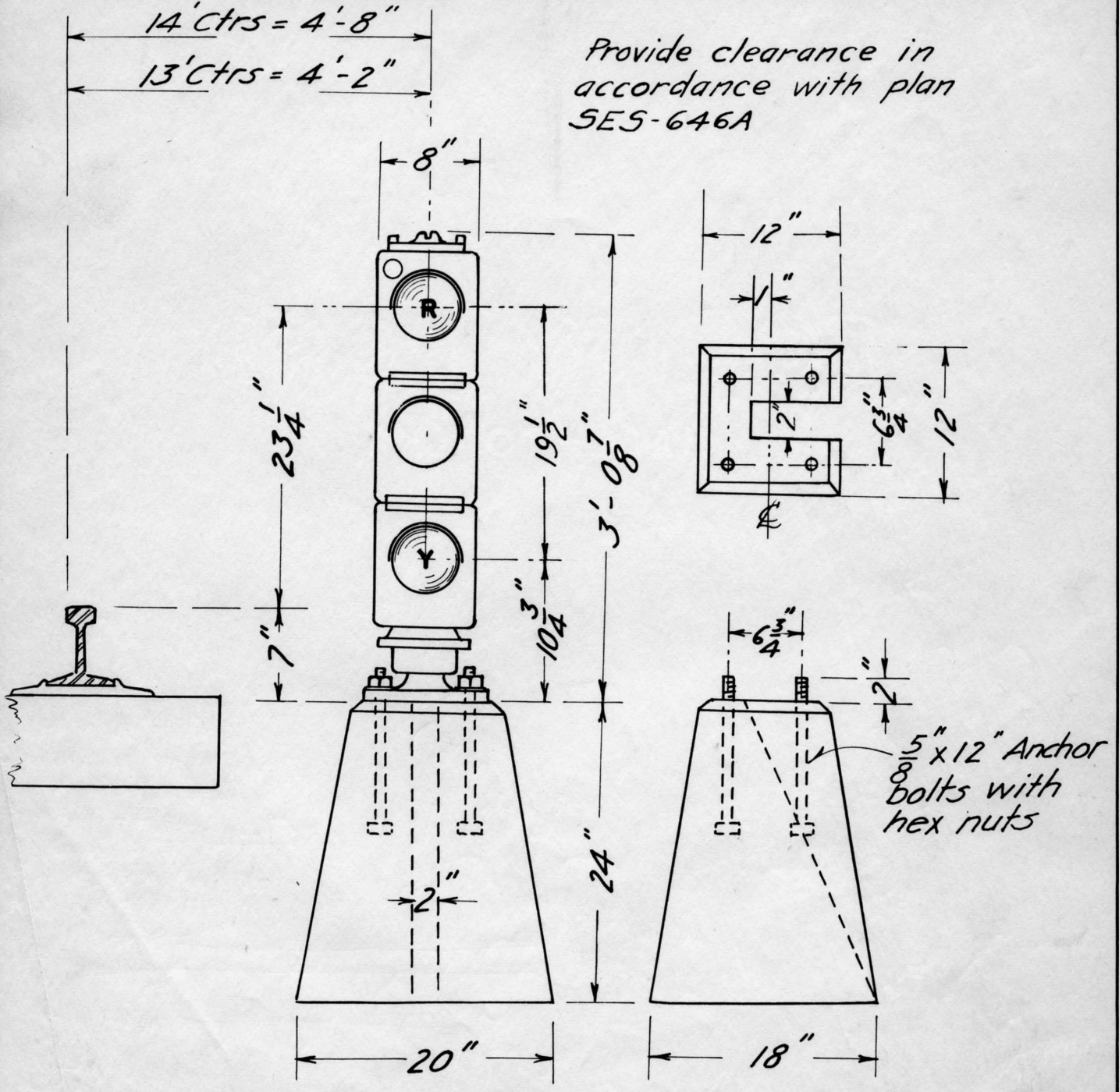
Center unit to be blank where green not required.
Top unit to be red and bottom unit yellow.
Top of foundation to be smooth, accurately leveled and bolts accurately aligned with reference to track.

Provide clearance in accordance with plan SES-646A

CN 286889-2,1 - 3 color.

Same for Blank Center Except Read - Blank Center.

A T & S F Ry
STYLE N-2
DWARF SIGNAL
WIDE SPACING
SESO Topeka 7-20-49
O-1194

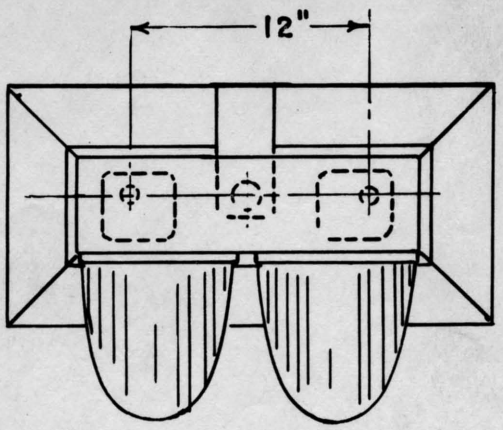


Top of foundation to be smooth, accurately leveled and bolts accurately aligned with reference to track

Center unit to be blank where green not required.

Revised 7-12-50

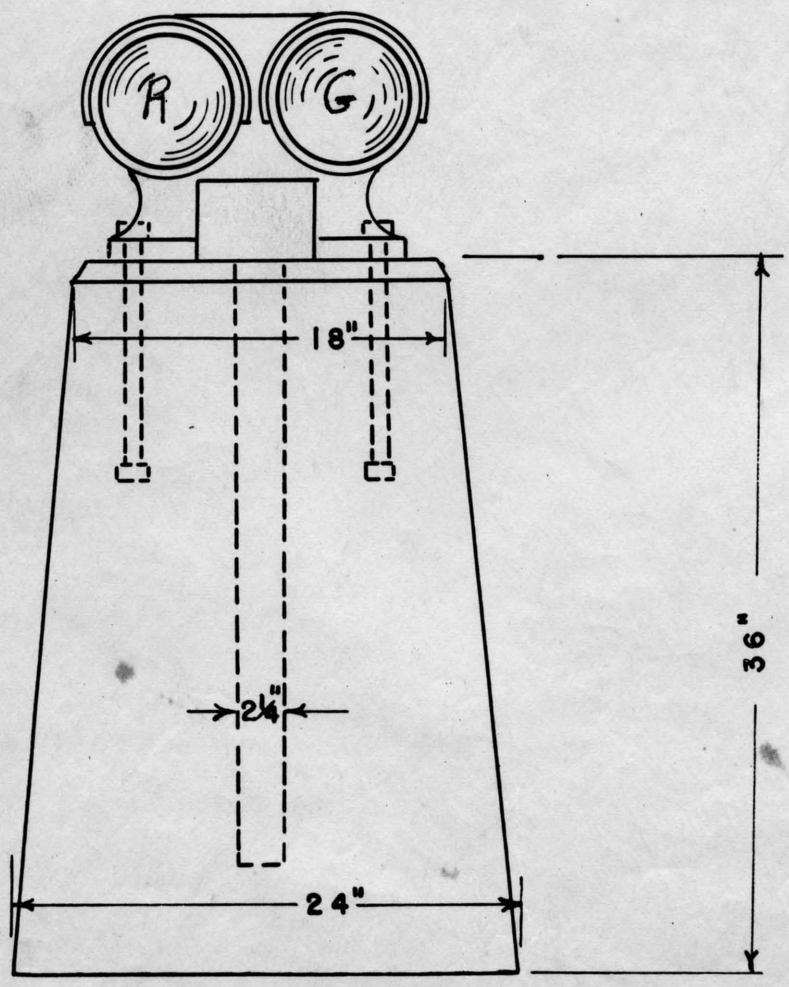
A T & S F Ry
TYPE FA
THREE INDICATION
DWARF SIGNAL
SESO Topeka 12-1-47
0-1178

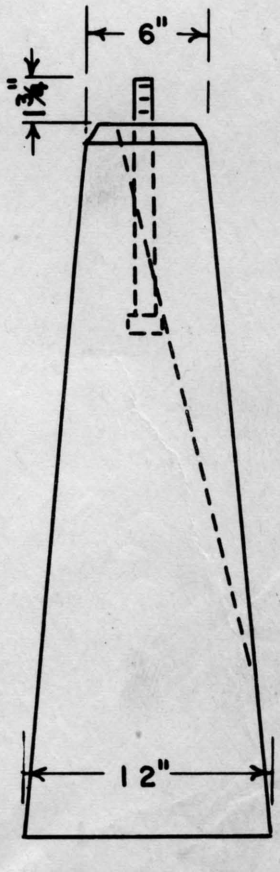


TO BE SET ON SAME SIDE OF TRACK AS SWITCH STAND.

TO BE IN LINE WITH, AND 6 FEET IN APPROACH OF SWITCH STAND.

B-3510 ES-25





A.T.&S.F. RY. CO.

COLORLIGHT SPRING SWITCH LAMP

S.E.S.O. TOPEKA JUNE 8,1950

0-1220

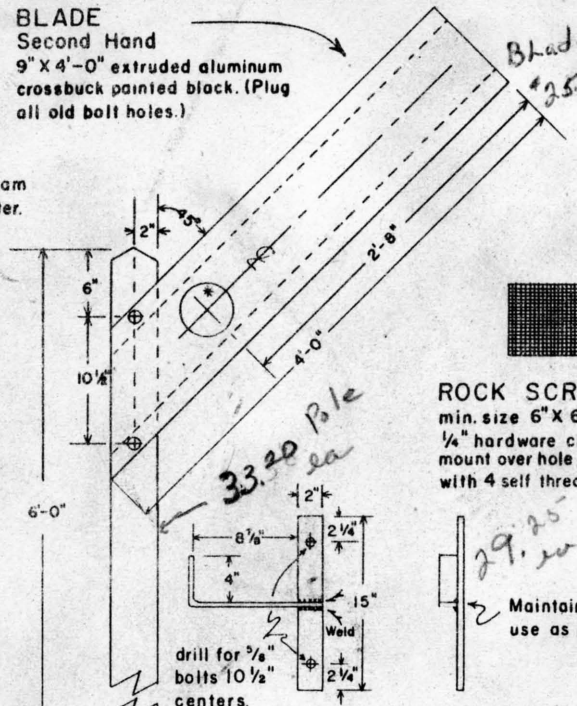
C-198

Rev. 1-14-52

BLADE
Second Hand
9" X 4'-0" extruded aluminum crossbuck painted black. (Plug all old bolt holes.)

Blade #35.20 ea

* Drill or ream 4 ½" diameter.



33.20 Pole ea

ROCK SCREEN
min. size 6" X 6"
¼" hardware cloth
mount over hole in aluminum blade with 4 self threading metal screws.

29.25 ea

Maintain flat surface for use as plate on post.

LAMP BRACKET
(⅜" X 2" Strap Iron.)
For Style D Semaphore lamp with yellow lens.

complete with lamp #152.32

⅝" X 7" galvanized carriage bolts.

Signal to be furnished complete as shown less Style D lamp.
ORDER LAMP SEPARATELY.

use ⅜ X 2" lag screw

#5.45

2 Cond. S.O. cord from battery to lamp to be securely fastened to pole with insulated staples.

4" X 4" X 16'-0"
Penta or Wolmanized treated post, planted 4' in ground.

Detachable Pole Steps Standard Spacing. (4 required.)

#7.23 ea

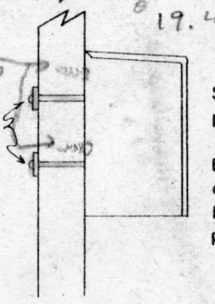
#7235 Lag Plate 3.71

3'-0"

12" min.

2-2" X 8" X 3'-0"
Timbers nailed to post with copper-weld nails.

Front



4-⅝" X 4½" carriage bolts through ⅜" X 2" strap iron. ⅜" X 3" Lag screw may be used to hold strap iron secure.

#19.48

Sheet steel battery box per plan O-1229.

Eveready Air Cell battery CG-212 or Edison Crystalaire Type F. Retain cardboard carton for protection.

NOTE:

1. Signal to be installed at the approach to interlocking where speed is restricted to 20 miles per hour, or less, between home signals where operative approach signal is not provided.

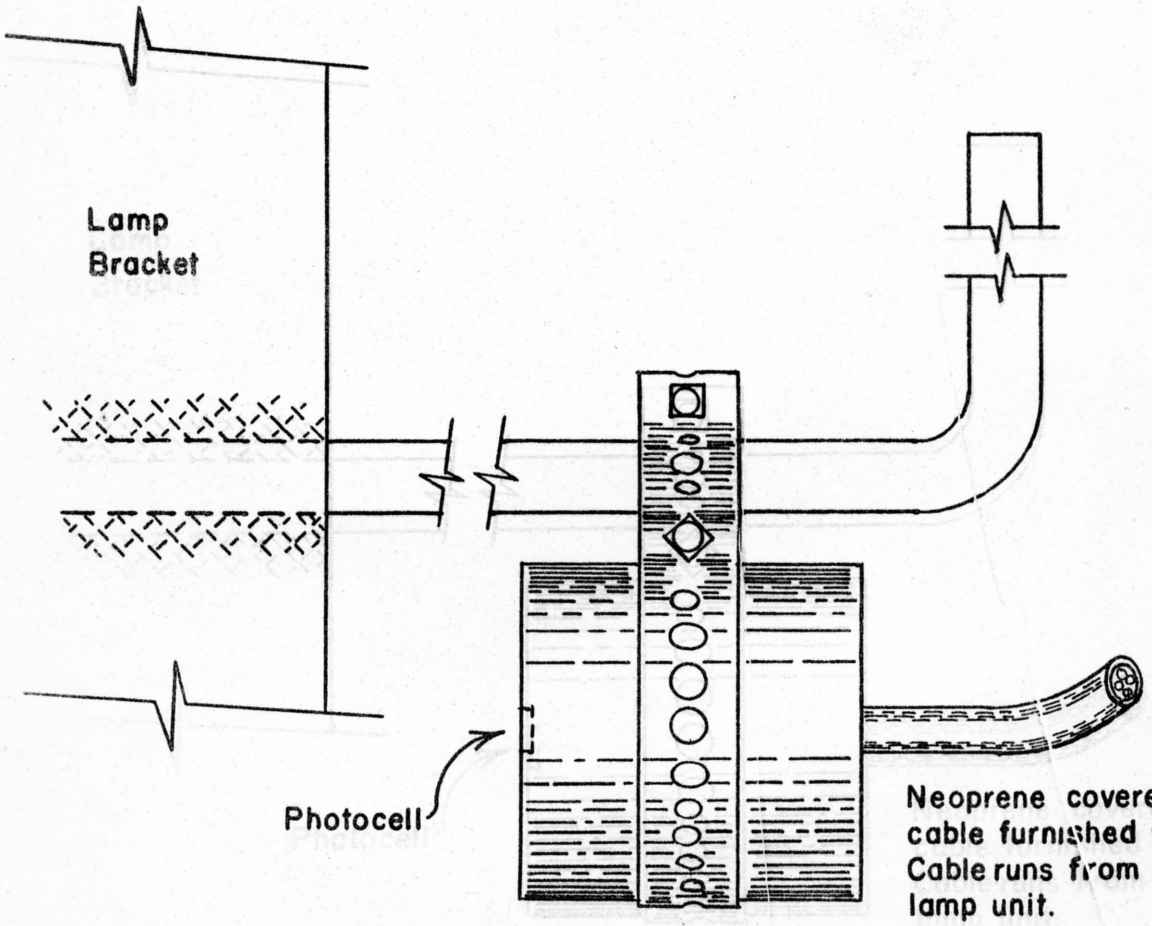
2. Signal to be spaced at least maximum stopping distance from home signal.

3. Post to be set 10'-0" from gage of near rail to ℄ of post.

Complete less D lamp
#f.o.b.
#73.00
1975 Price

A. T. & S. F. RY. CO.
LIGHT WEIGHT INOPERATIVE APPROACH SIGNAL
CONSTRUCTION SPECIFICATIONS

S.S.S.O. Redrawn 1-15-71 Z-207



RACO NO. 632-1

Battery Saver mounted on lamp bracket with perforated steel band provided.

Note:

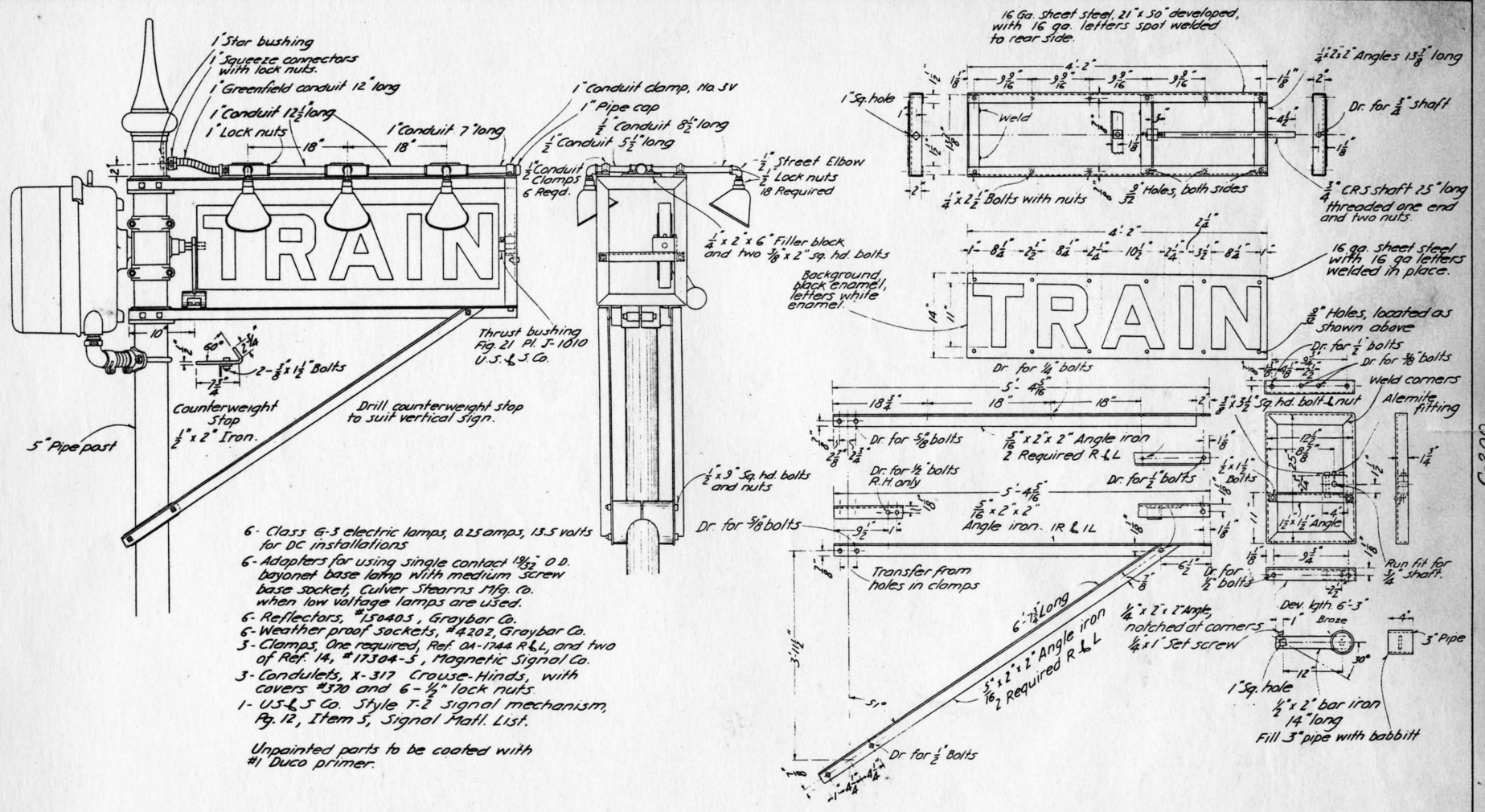
The 4- Conductor cable is connected into the lighting circuit within the lamp housing using "wire nuts" furnished with the battery saver.

Connect battery saver into lighting circuit as shown on plan packed with the device.

The A. T. & S. F. Ry. Co.

INSTALLATION OF RACO BATTERY SAVER ON INOPERATIVE APPROACH SIGNAL (SEE PLAN Z-207)

SSSO Redrawn 1-15-71 O-926



A.T.&S.F. Ry. System

TRAIN SIGN

SESO TOPEKA 8-28-45 Z-168

Revised 4-20-29

C-200

Topeka, Kansas
July 1, 1957

10190-C&M

Messrs. O. C. French
H. A. Appleby
E. R. Frachiseur
W. L. Talevich - Signal Engineers

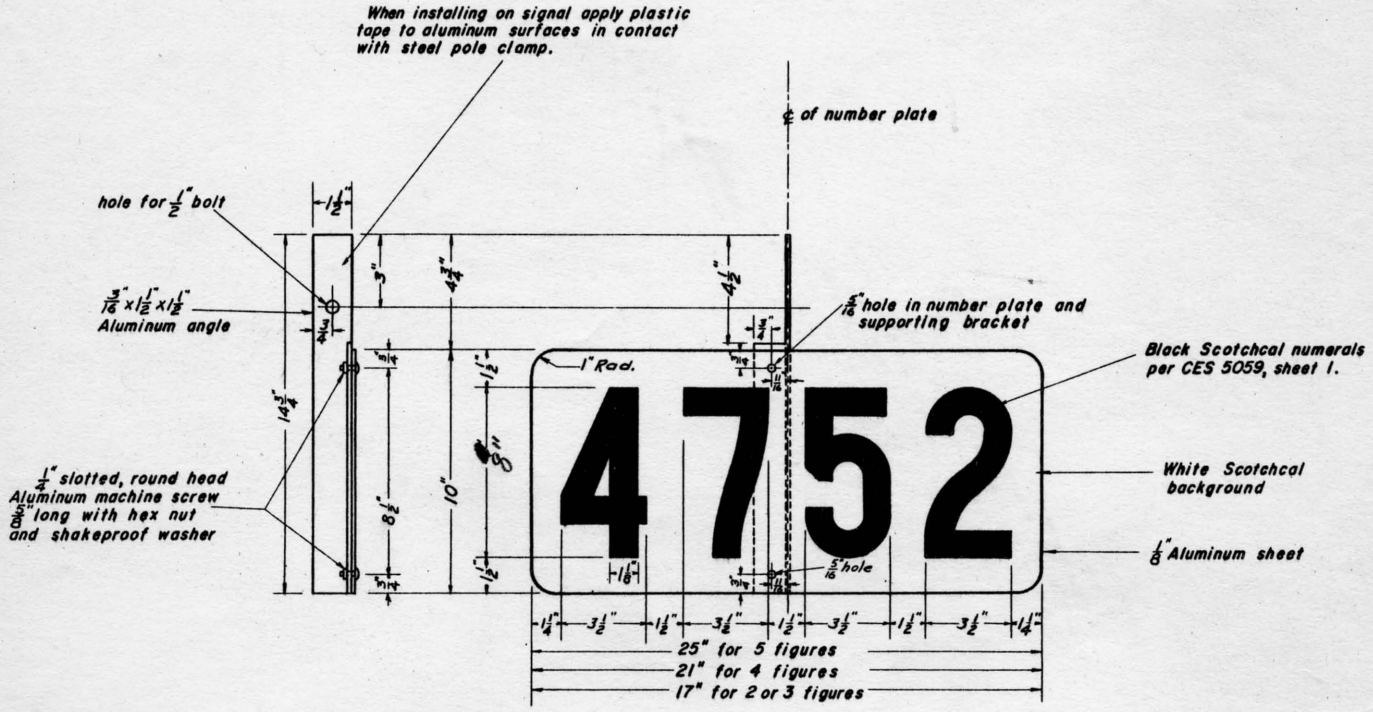
Enclosed is a supply of Sheet C-202, Aluminum Signal Number Plate, Drawing 0-1262, drawn 6-13-56 for distribution to holders of Standards of Construction and Maintenance books.

The number plate illustrated on this plan is now being provided in place of the steel number plate shown on Plan 0-864, Sheet 202, revised 5-4-51. Due to the great number of steel number plates in use, it is recommended that Plan 0-864 be retained in your Standards of Construction and Maintenance books.

G. K. Thomas

Encs.

cc - Messrs. T. A. Blair
R. E. Friel
F. J. Steinberger
A. M. McHenry
S. E. Oldham



Furnish from Albuquerque Shop. Pack number plates separately from supporting angles and bolts to prevent damage in shipment.

Stencil month and year on back of plate in small black letters near hanger.

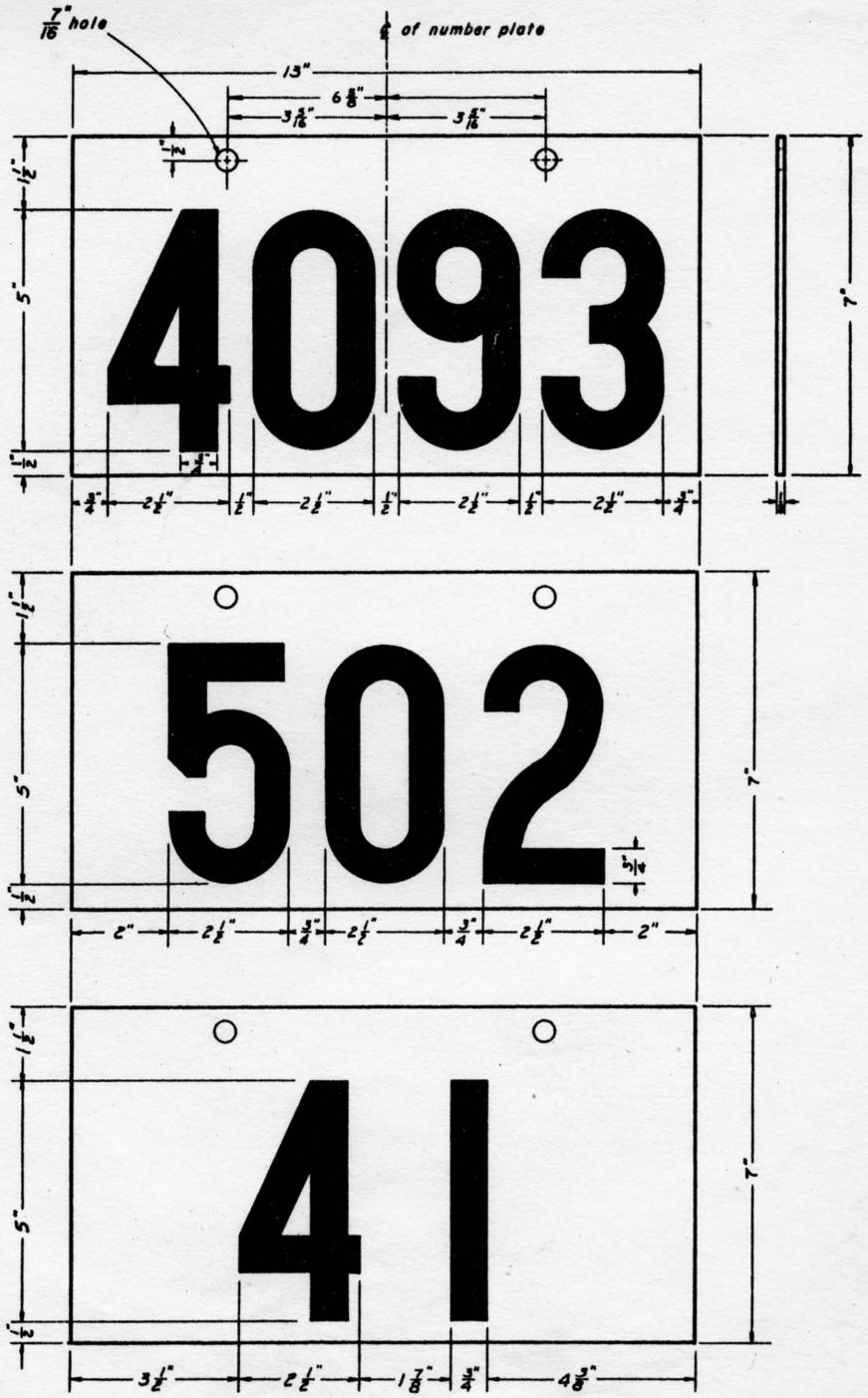
For Painting Black Numbers Only Standard We Got — Ao Check CES 5059 Sh. 1

The A. T. & S. F. Ry. System

ALUMINUM SIGNAL NUMBER PLATE

SESO 6-13-56 O-1262

REF



Material: 1/8" Aluminum sheet.
Black Scotchcal numerals per CES 5059 sheet 1 on white Scotchcal background.

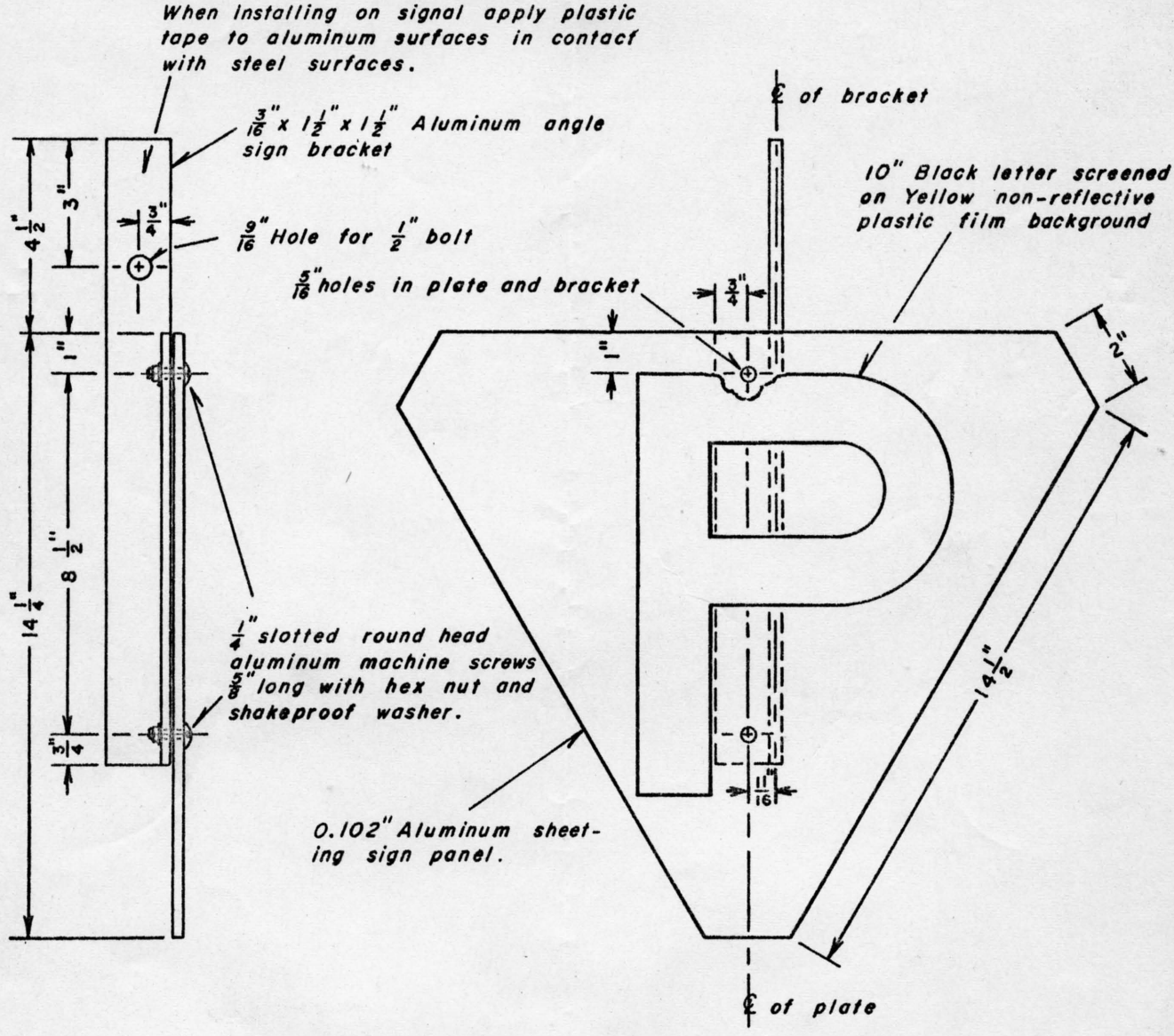
The A. T. & S. F. Ry. System

NUMBER PLATE FOR SEARCHLIGHT DWARF SIGNAL

SESO 12-17-56

0-1264

KAUL



NOTE:

Order from Albuquerque store department per CES plan 50135-973.
Pack sign panels separate from sign brackets and screws to prevent damage in shipment.

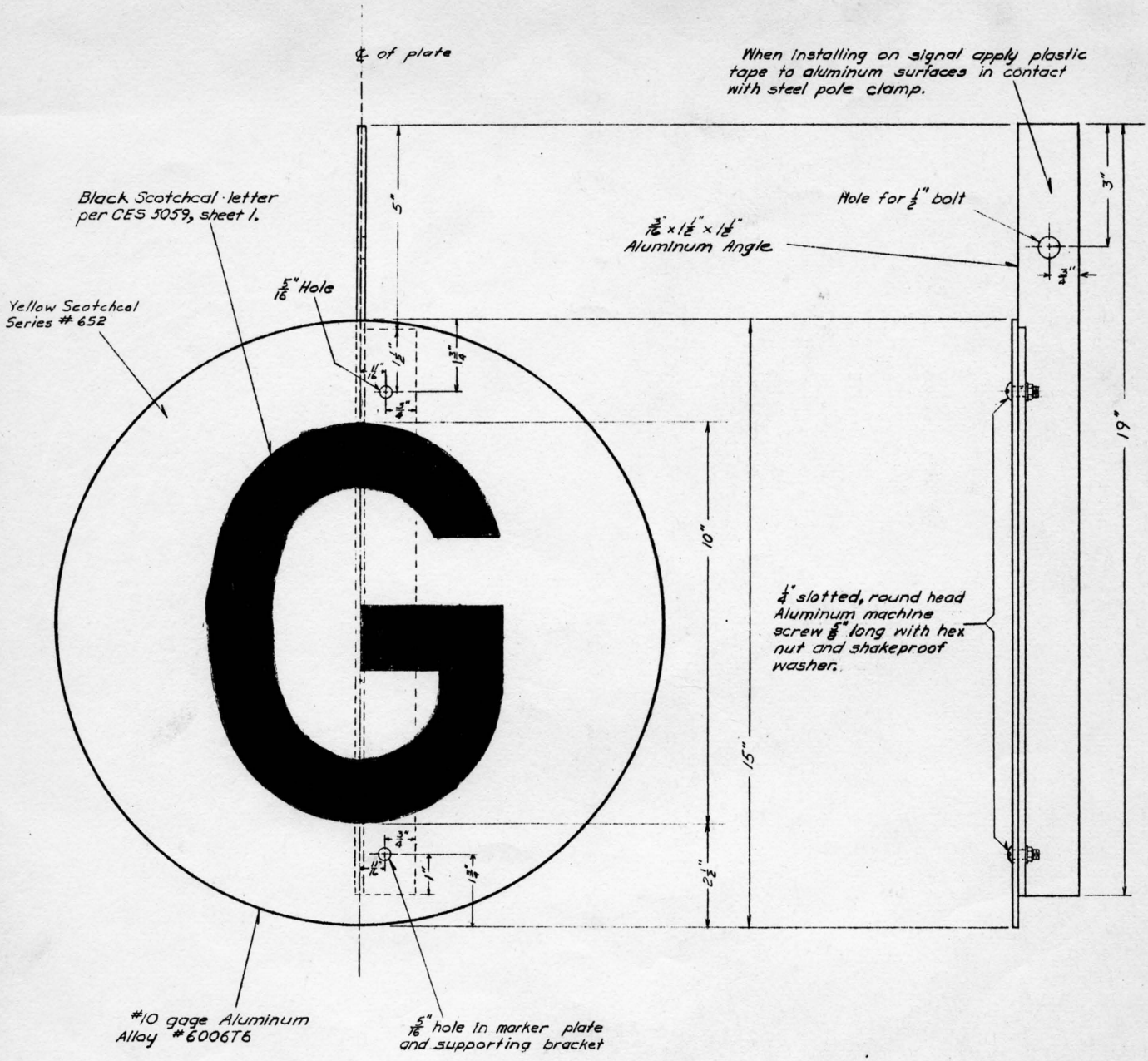
THE A.T. & S.F. RY. SYSTEM

PERMISSIVE SIGNAL MARKER

S.S.S.O. DRAWN 5-20-70

O-1281

REVISED 6-30-70

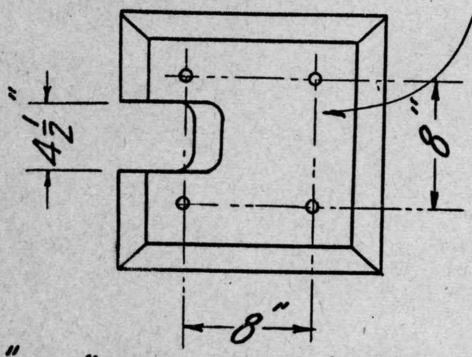


Furnish from Albuquerque shop. Pack marker plates separately from supporting angles and screws to prevent damage in shipment.

The A. T & S. F. Ry. System

ALUMINUM
GRADE SIGNAL MARKER PLATE

5550 10-31-58 O-1271

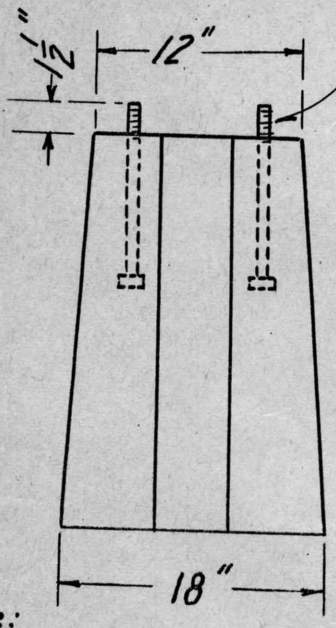


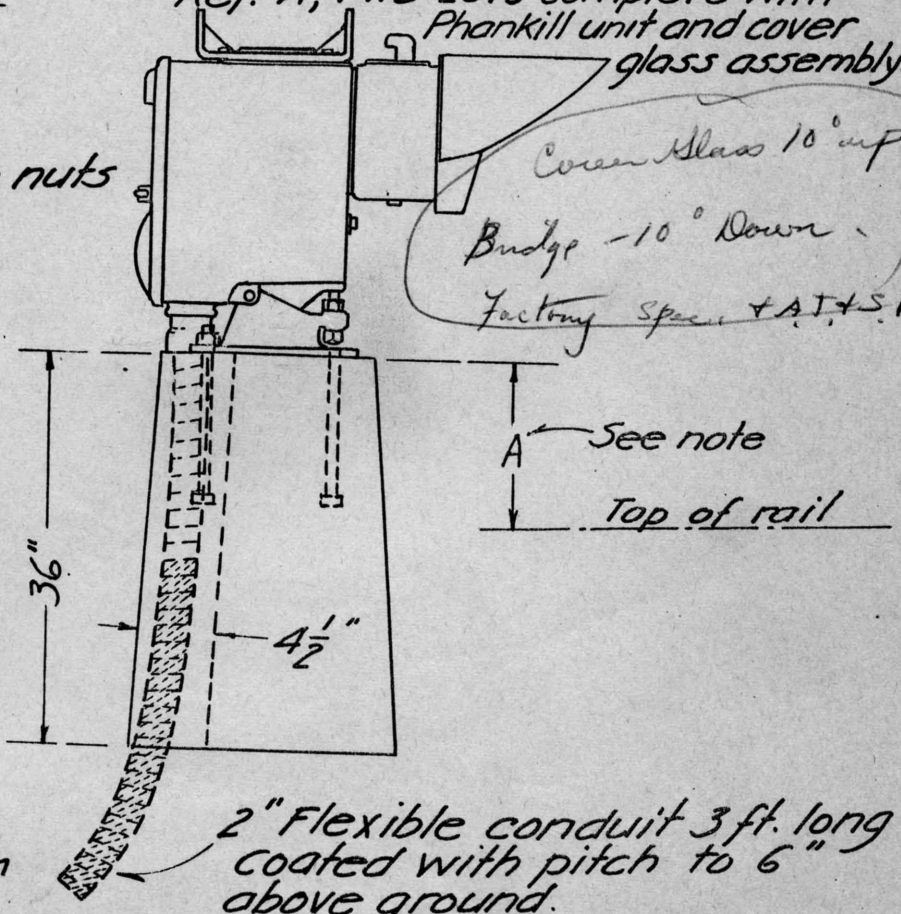
Top of foundation to be smooth, accurately leveled and bolts accurately aligned with reference to track

H-5- Searchlight dwarf signal Ref. A, Pl. B-2878 complete with Phankill unit and cover glass assembly.

Corner Glass 10° up.
Bridge -10° Down.
Factory Spec. + A.T. + S.F.

¾" x 12" Sq. hd. bolts with nuts





2" Flexible conduit 3 ft. long coated with pitch to 6" above ground.

Note:

Clearances must conform to plan SES-646A. Where track centers are 19'-8" or more, ℄ of signal to be 7'-6" from gauge of near rail. Where track centers are less than 19'-8" signal to be located half way between tracks.

A- Where track centers are 18'-2" or more, top of foundation to be 10" above top of rail. Where track centers are less than 18'2", top of foundation to be 8" above top of rail, except where otherwise required to conform to SES-646A.

C-209 C-209

A.T. & S.F. Ry. System
H5
SEARCHLIGHT DWARF SIGNAL
SESO Topeka 1-31-44
0-1132

Track Centers
18 ft. or more
Less than 18 ft.

Height of Foundation
10" above top of rail
conform to SES 646 A

℄ of signal to be 8 ft from gage where track centers are 18 ft. or more. Where centers are less than 18 ft., locate to conform to Plan SES 646 A

$1\frac{1}{2}$" - 45° Street ell and $1\frac{1}{2}$" Jake connectors.

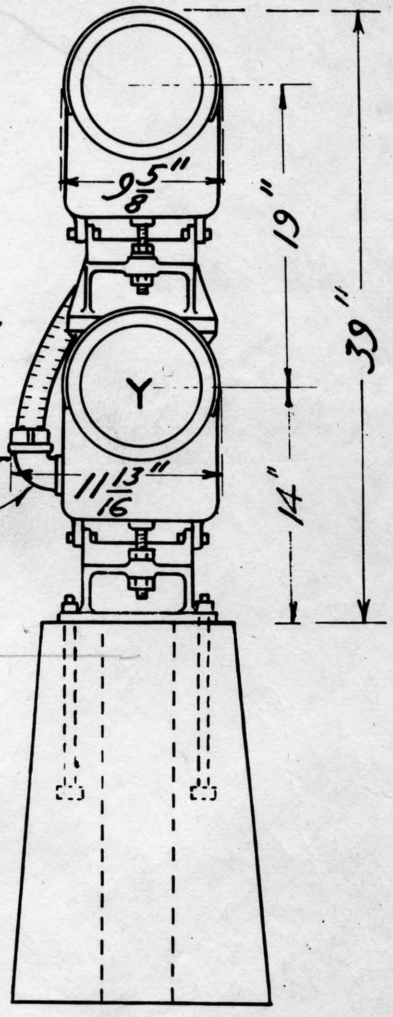
Style H-2 searchlight

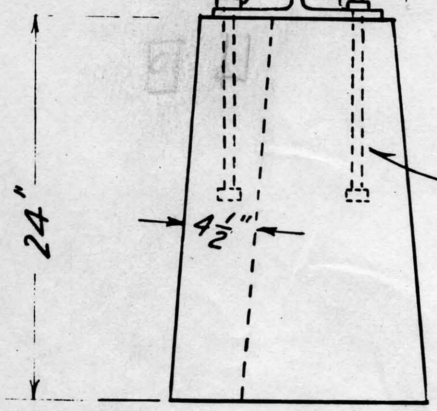
$1\frac{1}{2}$" Flex Conduit

Style R-2 optical unit yellow

$1\frac{1}{2}$" Jake connector

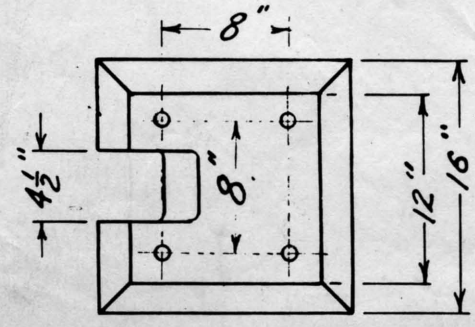
$1\frac{1}{2}$" - 90° elbow and chase nipple





$\frac{3}{4}$" x 12" sq. hd. bolts

40 mesh in top & Bottom Unit in all H-2 R-2 set up operating Unit on 5-11 style lamp



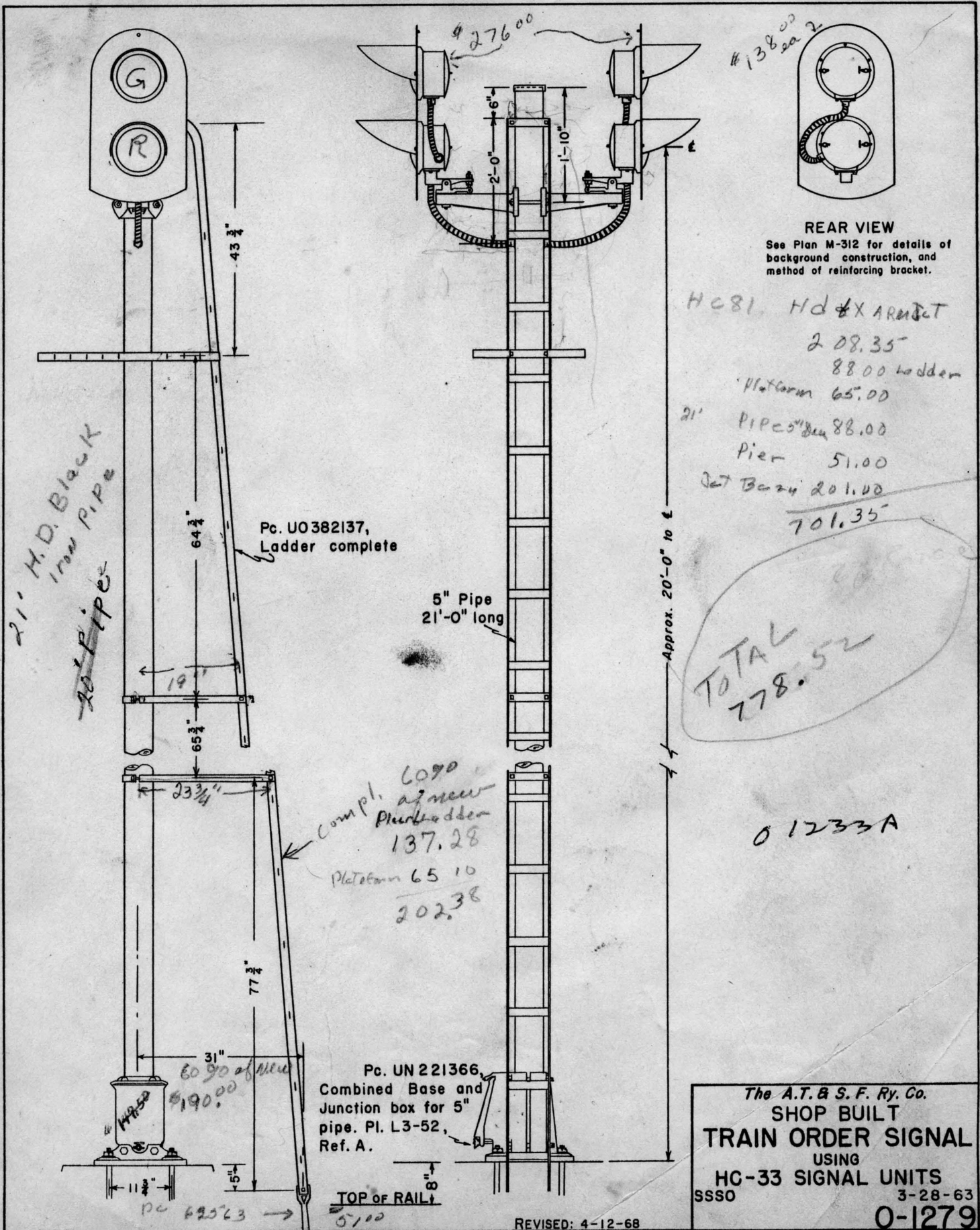
A. T. & S. F. Ry. Co

TWO UNIT STYLE H-2 SEARCHLIGHT DWARF SIGNAL

SESO Topeka 9-30-48

O-1191

Revised 10-30-52



HC81 Hd & X ARM SET
208.35
88.00 Ladder
Platform 65.00
21' Pipe 5" Dia 88.00
Pier 51.00
Set Base 201.00
701.35

TOTAL 178.52

Compl. Ladder
137.28
Platform 65.10
202.38

0 1233A

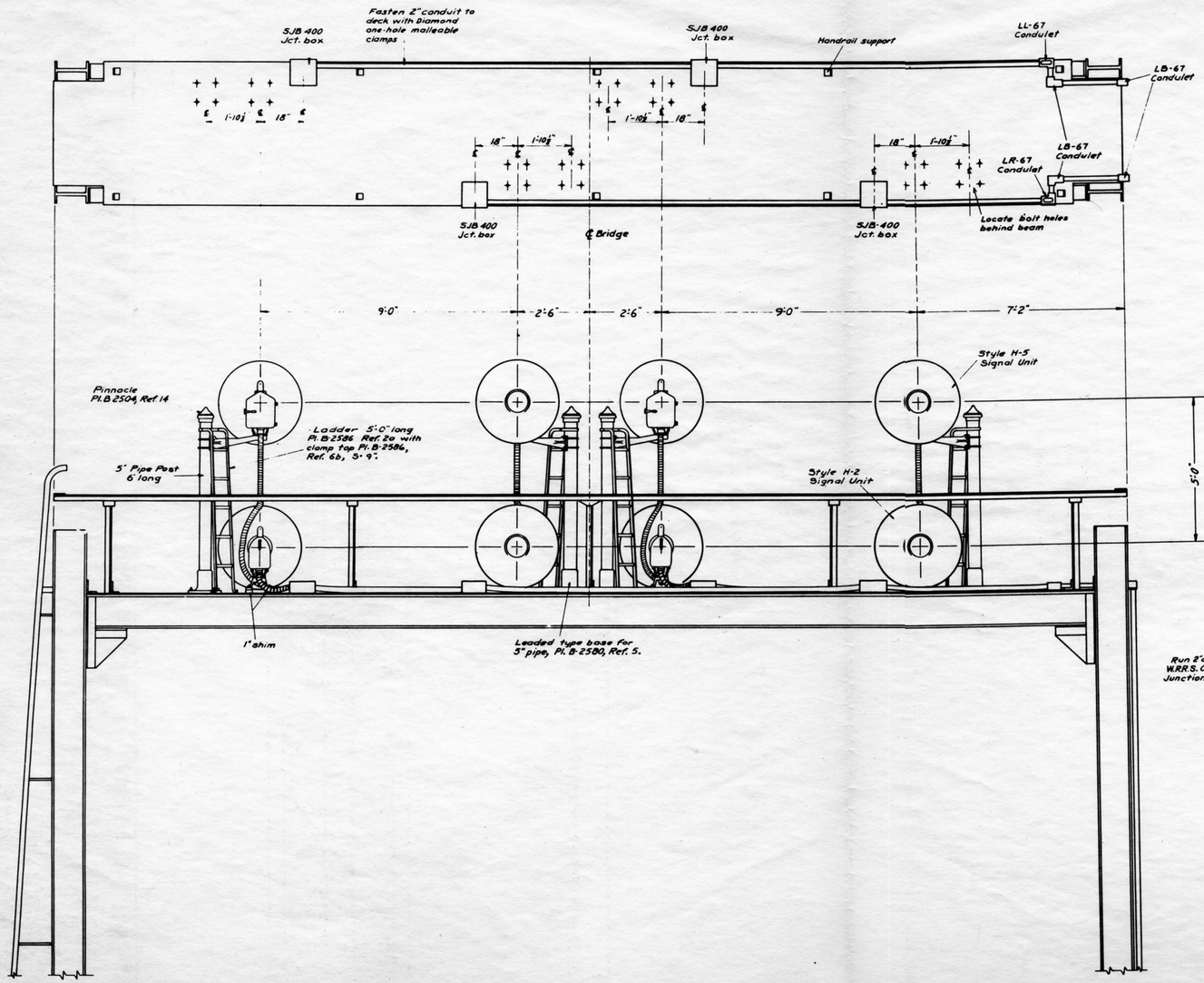
The A.T. & S. F. Ry. Co.

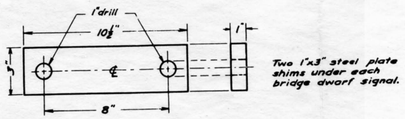
SHOP BUILT TRAIN ORDER SIGNAL USING HC-33 SIGNAL UNITS

SSSO 3-28-63

0-1279

REVISED: 4-12-68

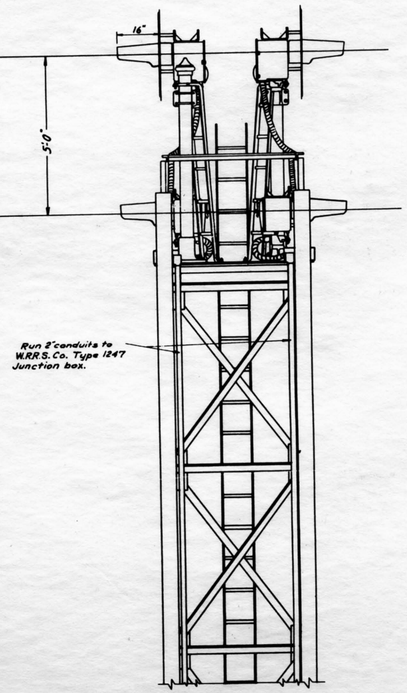


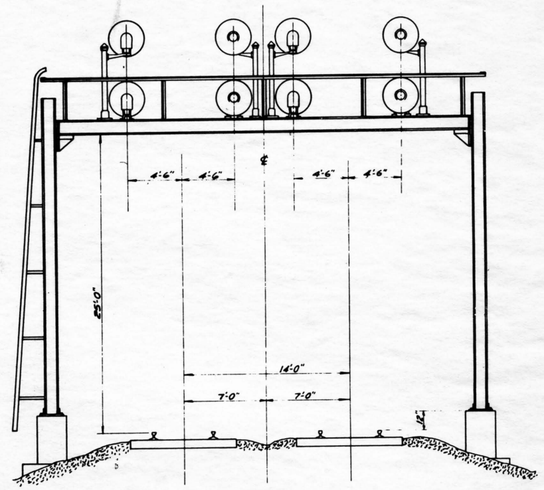


Two 1"x3" steel plate shims under each bridge dwarf signal.

UPPER UNITS: Style H-5 Signal head, Pl. B-2882, Ref. B, complete with Phankill unit and inclined cover glass, except with cable outlet Ref. 7, Pl. B-2882. With 2" flex. conduit 8'-0" long. With mounting bracket Pl. B-2896, Ref. A.

LOWER UNITS: Style H-2 Signal head Pl. B-2881, Ref. B, with dark center, Phankill Unit and inclined cover glass except with dwarf base for bridge mounting Pl. B-2882, Ref. C. With 2" flex. conduit 3'-0" long.





Clearances must conform to SES 646A or SES 657. For details of bridge and foundation see plan CES 5216-A sheets 1 and 2.

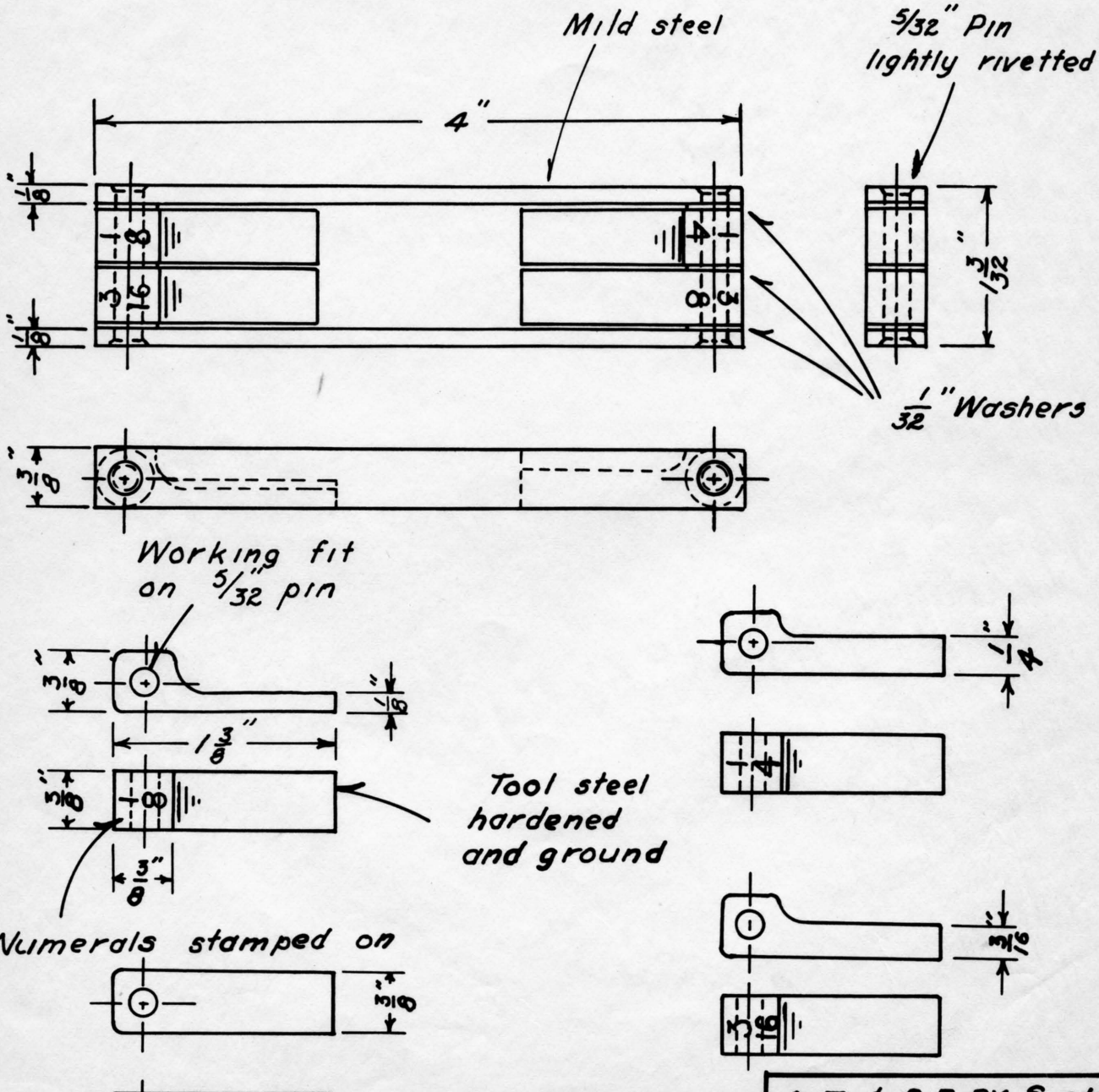
Revised 9-5-57

The A. T. & S. F. Ry. System

SEARCHLIGHT SIGNALS ON TWO TRACK BRIDGE

(FOR BRIDGE CES 5216-A)

SESO 3-8-56 SP-145



Raco 643-3

A. T. & S. F. RY. System

SWITCH TESTER

S.E.S.O. Topeka 3-20-43

O-1122

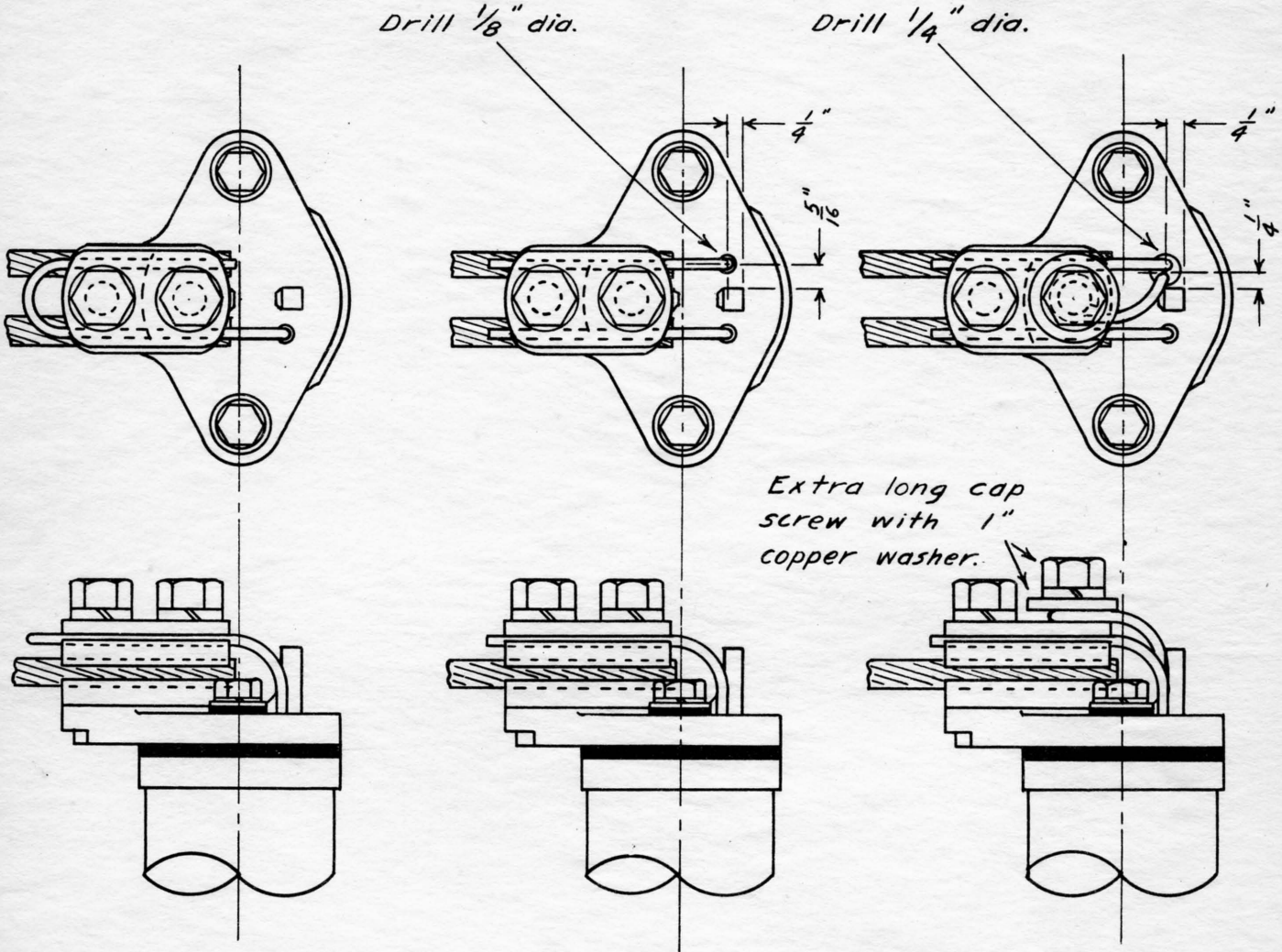
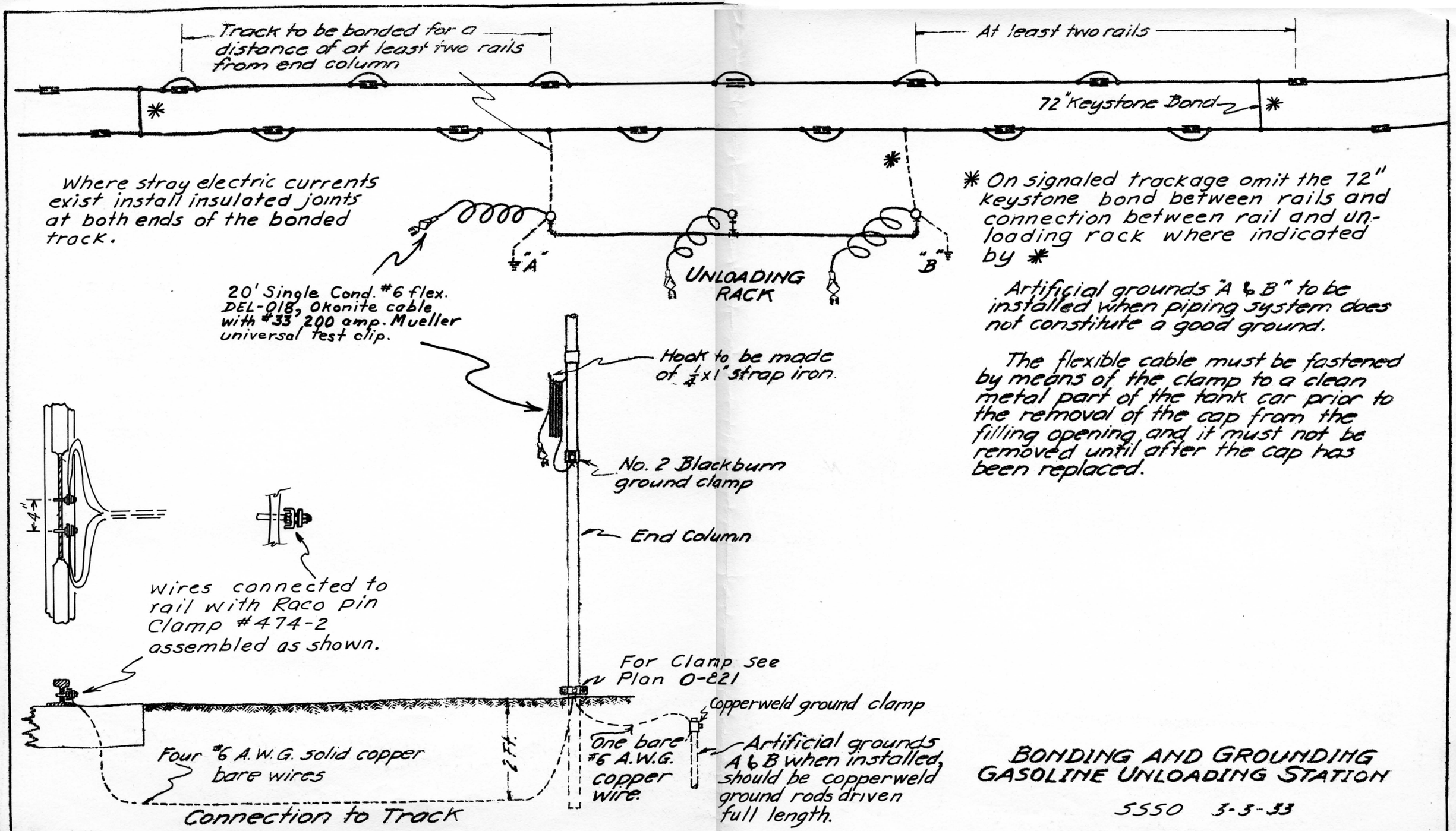


FIG. A
1 WIRE
(GENERAL STANDARD)

FIG. B
2 WIRES

FIG. C
3 WIRES

A.T. & S.F. RY. CO.
METHOD OF INSTALLING TRACK WIRES IN RACO 435-17 BOOTLEG
SESO 6-29-51 SP-132



* On signaled trackage omit the 72" keystone bond between rails and connection between rail and unloading rack where indicated by *

Artificial grounds "A & B" to be installed when piping system does not constitute a good ground.

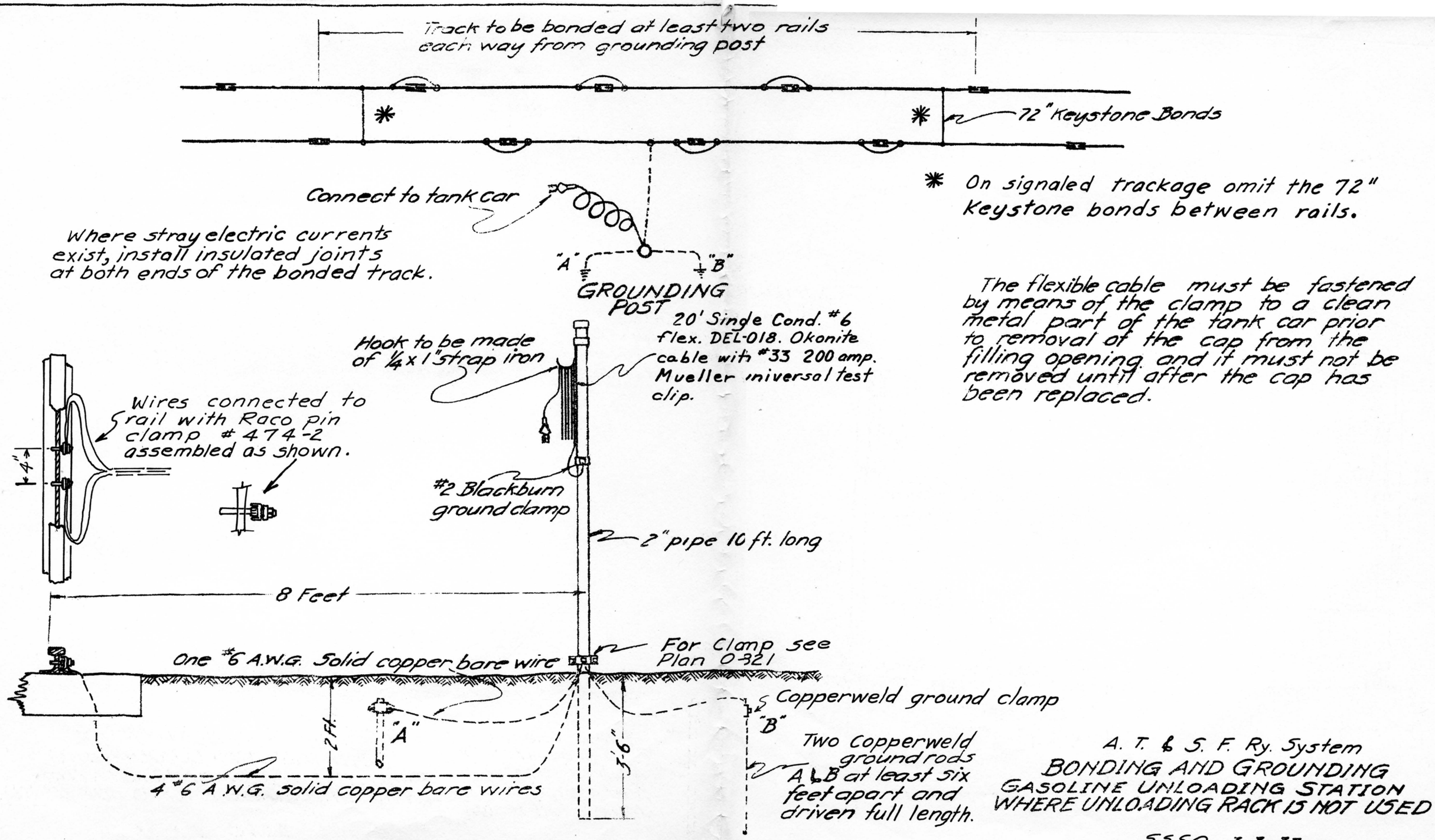
The flexible cable must be fastened by means of the clamp to a clean metal part of the tank car prior to the removal of the cap from the filling opening and it must not be removed until after the cap has been replaced.

BONDING AND GROUNDING GASOLINE UNLOADING STATION

5550 3-3-33

Rev. 10-26-70

SP-37



* On signaled trackage omit the 72" Keystone bonds between rails.

The flexible cable must be fastened by means of the clamp to a clean metal part of the tank car prior to removal of the cap from the filling opening and it must not be removed until after the cap has been replaced.

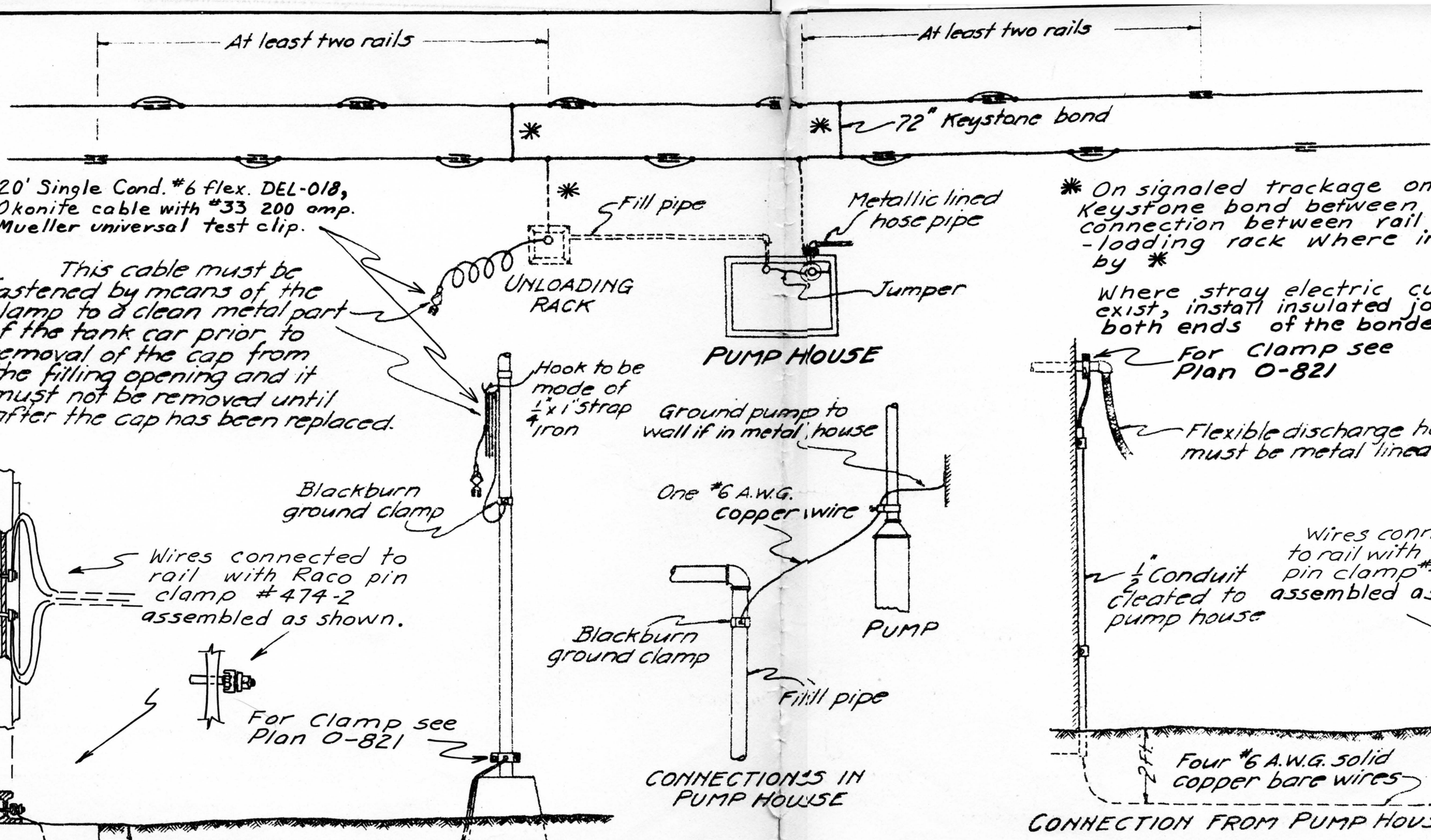
A. T. & S. F. Ry. System

BONDING AND GROUNDING GASOLINE UNLOADING STATION WHERE UNLOADING RACK IS NOT USED

5550 3-3-33

Rev. 10-26-70

SP38

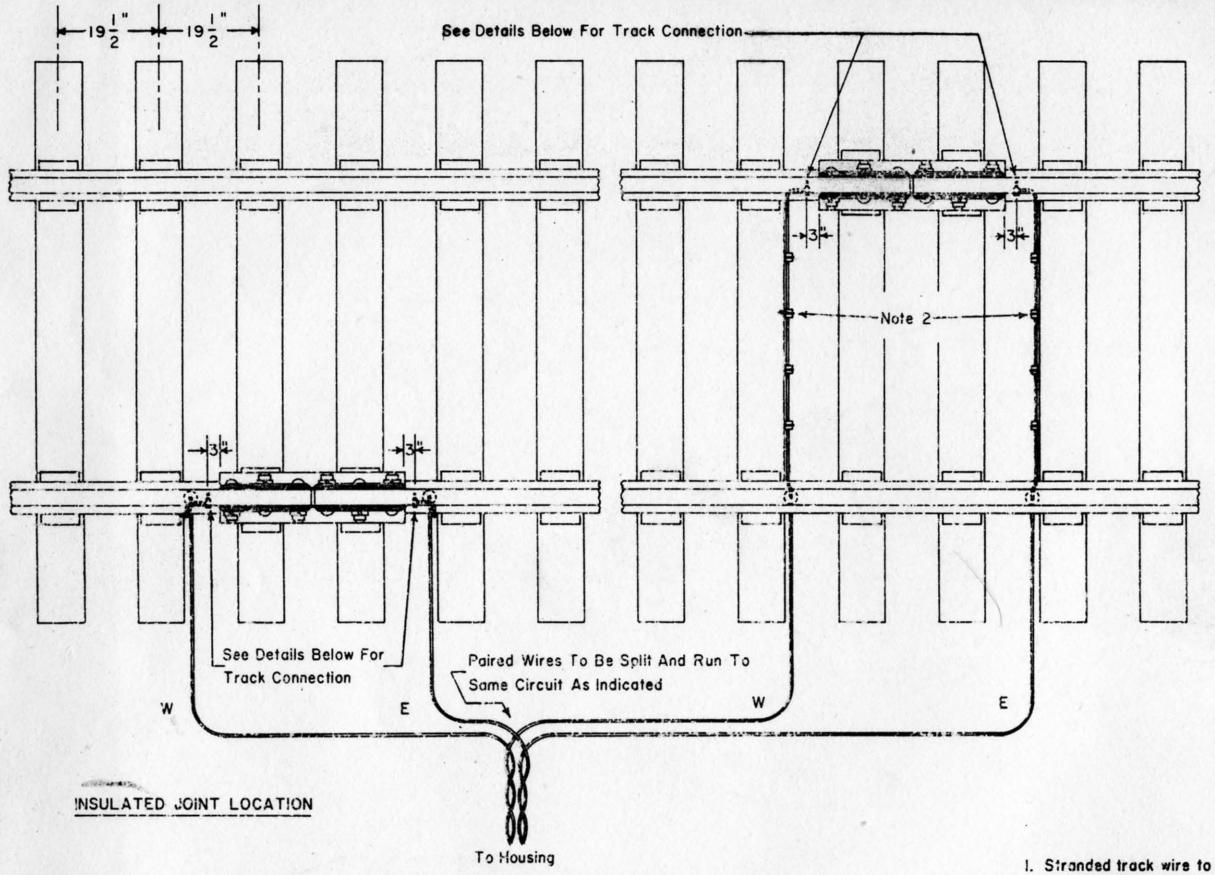


BONDING AND GROUNDING GASOLINE FILLING & UNLOADING STATION

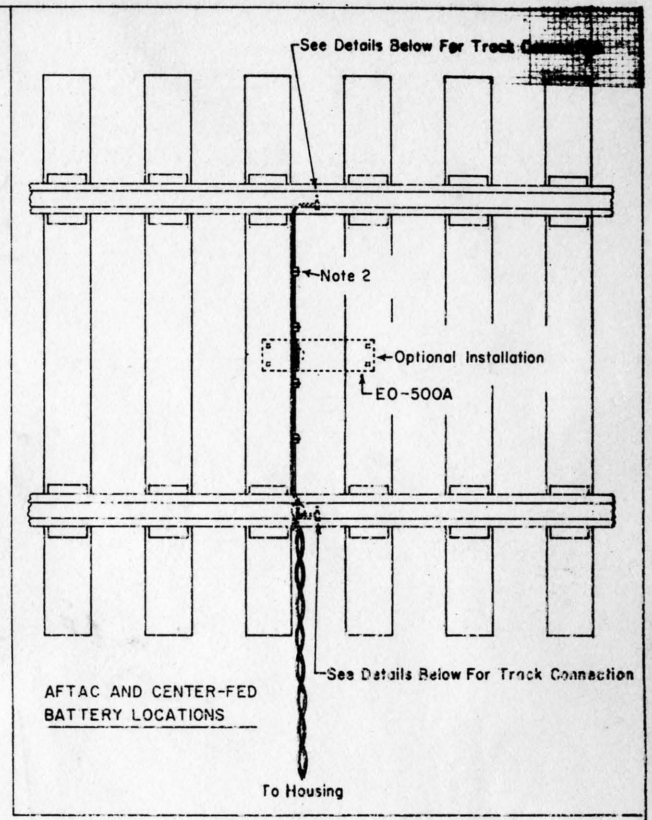
5550 3-3-33

REV. 10-26-70

SP-36



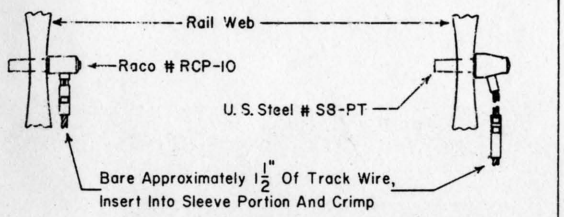
INSULATED JOINT LOCATION



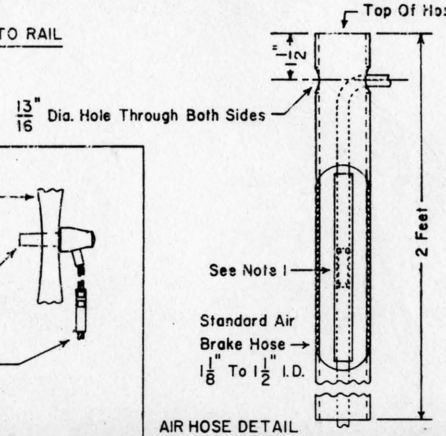
AFTAC AND CENTER-FED BATTERY LOCATIONS



CONNECTION TO RAIL



APPLICATION OF RAIL PLUGS



AIR HOSE DETAIL

NOTES

1. Stranded track wire to be spliced to solid track wire inside air brake hose. Use Amp #34320-4W or L & W #2314J butt splicing sleeve applied with #59083 crimping tool. Use L & W #1760 heat shrink tubing or 3M #3413-7.00 PST connector insulator to insulate and protect splice.
2. Attach bond strand to tie with #021378-15X insulated staples, centering wire 1/2" below top of tie.
3. On either new or partial renewal allow 2 feet of slack under air hose. Coil in track wire to have at least 4 inch radius.
4. Portion of track wiring run outside of ballasted section to be not less than 18" below surface.
5. Track connections are shown for conventional tie spacing. Adapt installation to existing arrangement without disturbing ties. Avoid installing leads where they would be crushed between rail anchors and tie if rail creeps, etc.

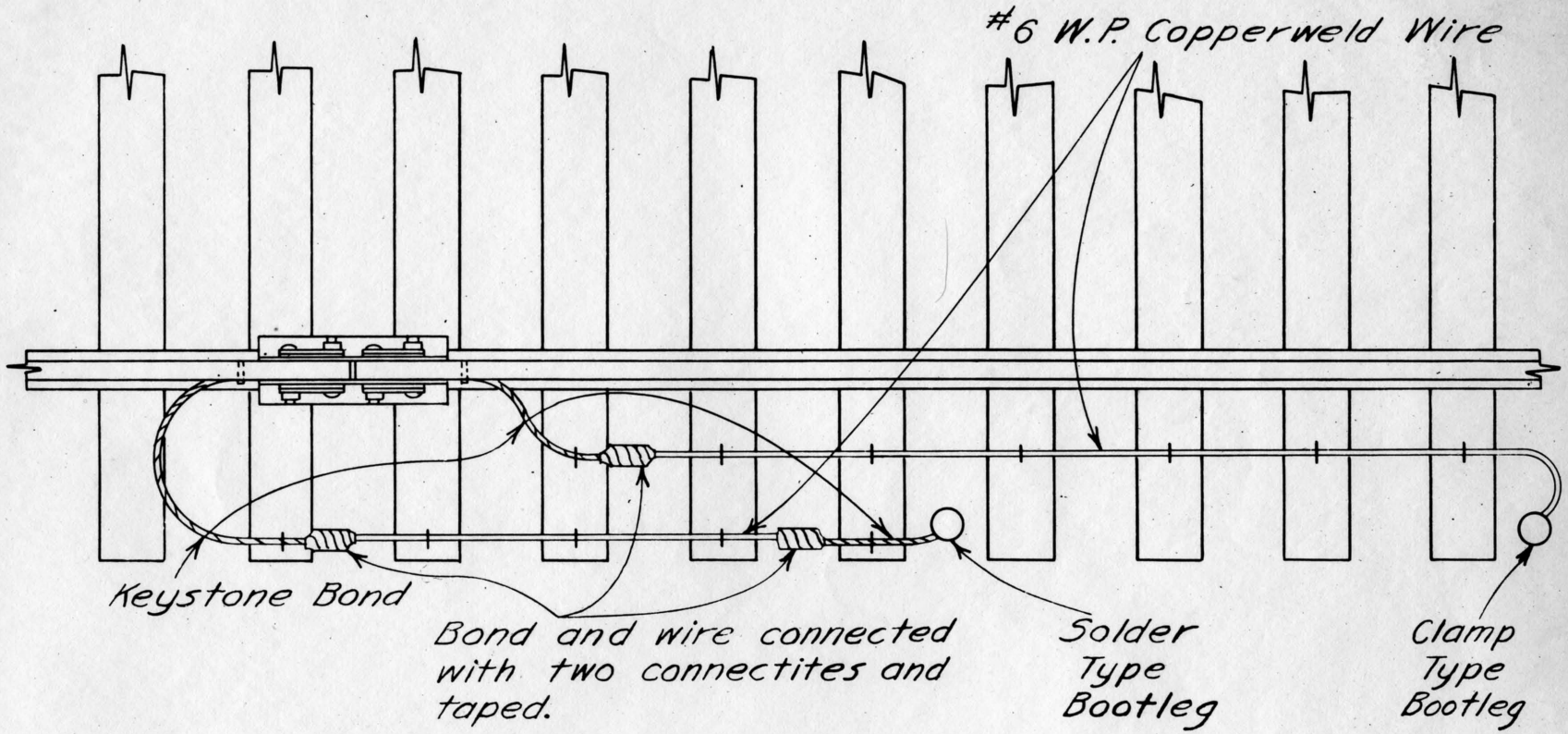
The A. T. & S. F. Ry. System
UNDERGROUND CABLE CONNECTION TO TRACK
WITHOUT BOOTLEGS

S.S.S.O. REDRAWN: 11-10-75

Revised: 12-1-76

0-1277

C-251A



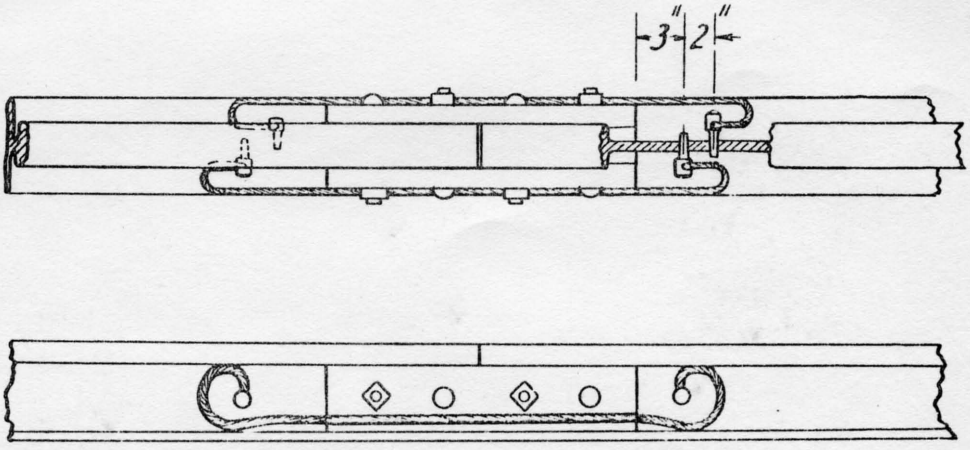
Either type connection shown above may be used depending on type of bootleg available.

A. T. & S. F. Ry.

TEMPORARY BOOTLEG WIRES

SESO 7-16-52 0-1200

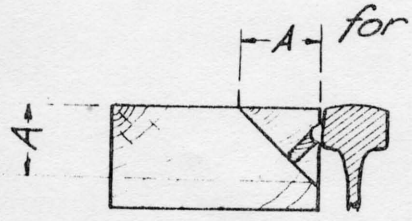
C-252



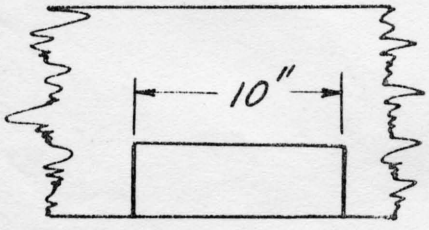
ARRANGEMENT OF BONDS

Two Web Type bonds to be installed as shown

Bonds to be inspected when crossing planks are removed for other purposes.



In addition to web type bonds, a welded bond may be installed at the option of Assistant General Manager where welding equipment is available. It should be as low as possible on ball of rail to avoid damage by wheels of highway traffic. Welded bond when found broken must be replaced as soon as practicable without removing planks.



NOTCHING OF CROSSING PLANK WHERE NECESSARY FOR WELDED BOND.

Bevel of notch "A" can generally be 1" for 90 pound rail but may vary for different sizes of rail.

Treat plank at notch with creosote petroleum mixture and seal with pitch compound

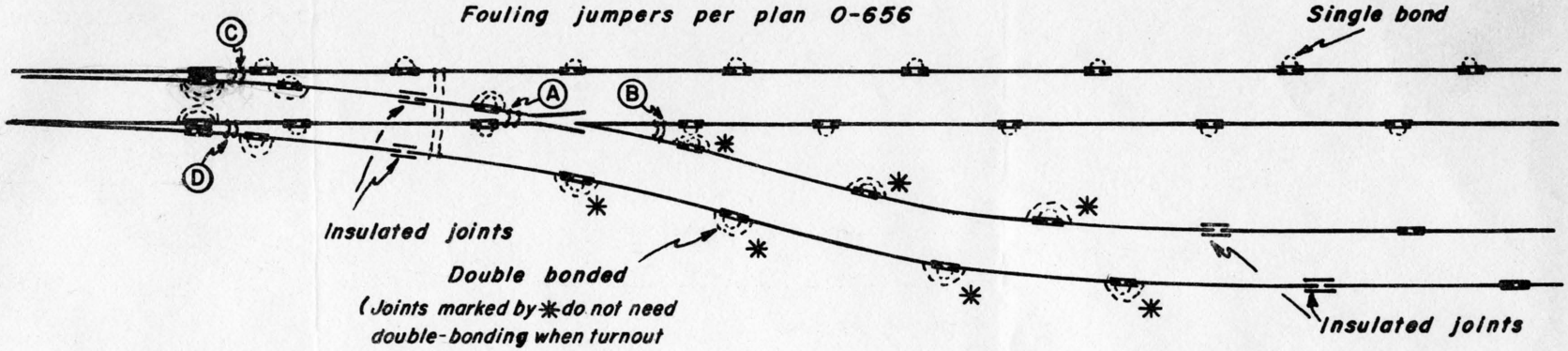
Revised 2-15-'62

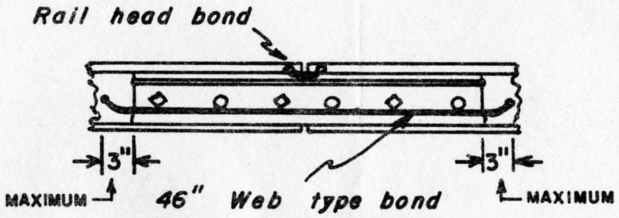
A. T. & S. F. Ry System

BONDING OF PLANKED HIGHWAY CROSSING

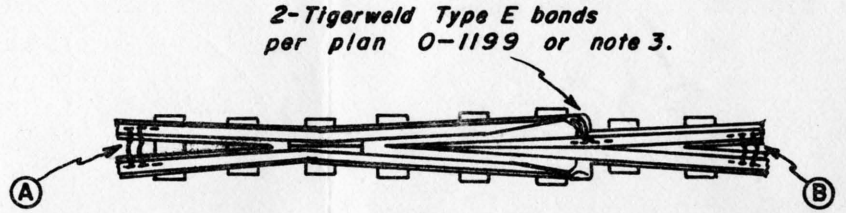
SESO Topeka 3-31-34

0-842





RAIL JOINT BONDING



2 Hanlon & Wilson type BSB-6CH bonds 12" long or 2 #7-19 Strand insulated track wires 12" long installed with Raco # 624-6 Stranpins at (A) and (B). For alternate bonding at (B) where the above bonds can't be used see note 4.

FROG BONDING

NOTES:

1. Bonds between rails at (C) and (D) are to be applied as shown for frog bonding at (A) and (B).
2. Turnouts are to be double bonded using one rail head bond and one web type bond on 110 lb. or larger rail as shown above if possible, two rail head bonds are acceptable. On 90 lb. and smaller rail or where impossible to use a rail head bond use two web type bonds as shown on plan O-842 page C-253.
3. $\frac{7}{32}$" x $6\frac{1}{2}$" Railhead bonds applied with Cadweld type T-6 welder No. 116-2 (For use on solid Self Guarded Frogs used normally in retarder yards).
4. On turnouts where driven bonds can not be used at (B) use 2 Cadweld type rail head switch bonds $\frac{7}{32}$" x 12" long with 1" terminals.

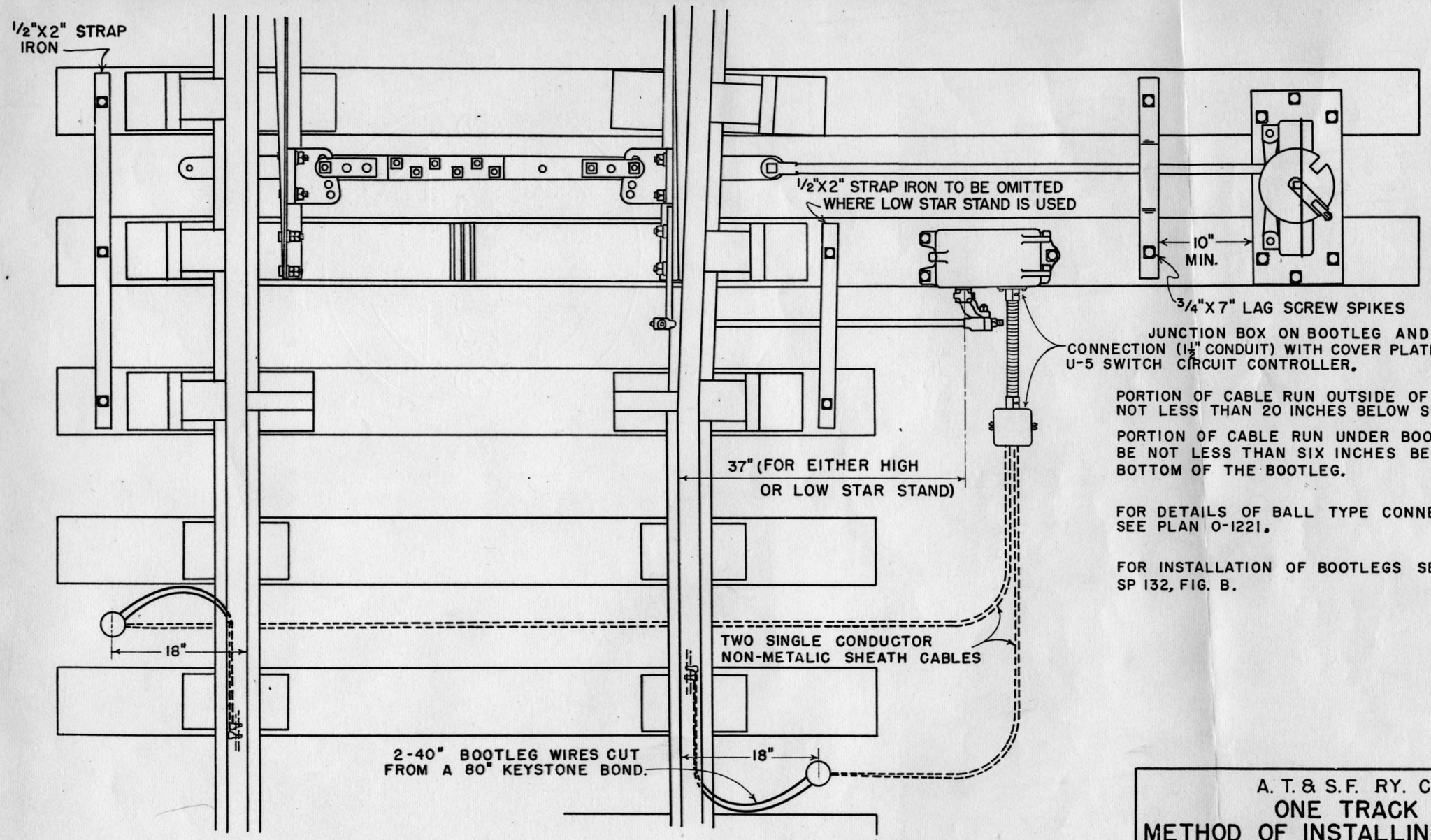
REVISED- 4-10-75

STANDARD BONDING
FOR
TURNOUT AND FROG

SSSO REDRAWN 1-30-70

O-1198

C-254



JUNCTION BOX ON BOOTLEG AND FLEXIBLE CONNECTION (1½" CONDUIT) WITH COVER PLATE FOR US&S U-5 SWITCH CIRCUIT CONTROLLER.

PORTION OF CABLE RUN OUTSIDE OF TIE TO BE NOT LESS THAN 20 INCHES BELOW SURFACE.

PORTION OF CABLE RUN UNDER BOOTLEG TO BE NOT LESS THAN SIX INCHES BELOW THE BOTTOM OF THE BOOTLEG.

FOR DETAILS OF BALL TYPE CONNECTION SEE PLAN O-1221.

FOR INSTALLATION OF BOOTLEGS SEE SP 132, FIG. B.

C-255

Rev. 10-28-60

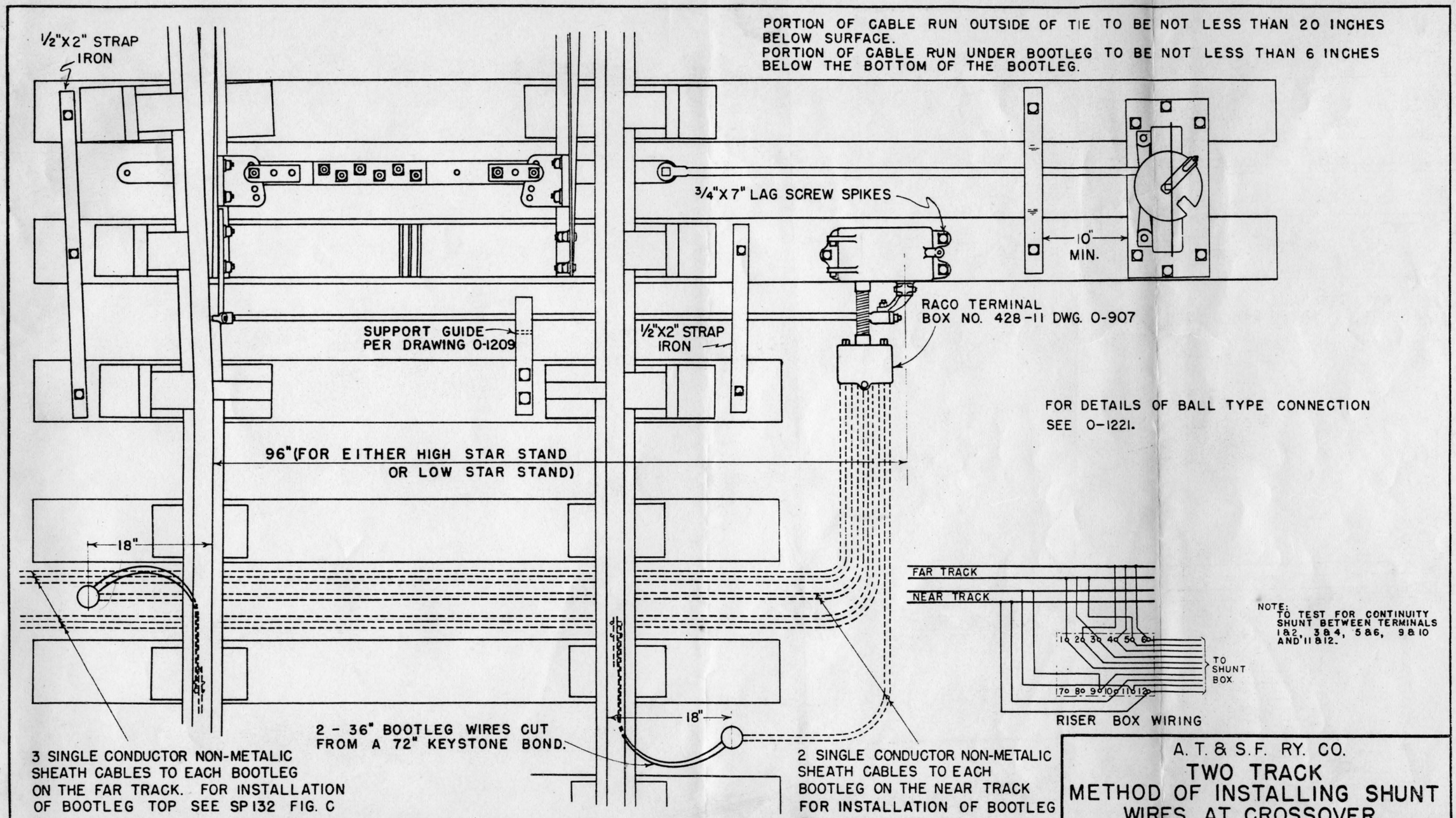
A. T. & S. F. RY. CO.

ONE TRACK METHOD OF INSTALLING SHUNT WIRES AT SWITCH

SSSO

JULY 6, 1959

SP-126



A. T. & S. F. RY. CO.

TWO TRACK METHOD OF INSTALLING SHUNT WIRES AT CROSSOVER

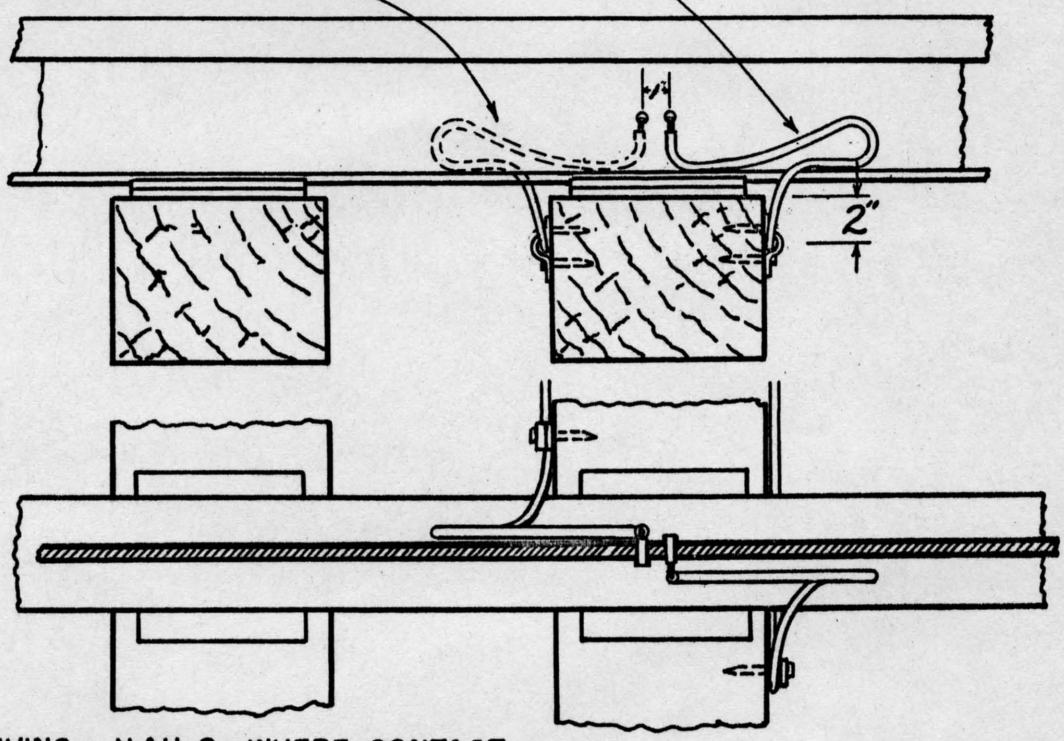
S.E.S.O. TOPEKA — JUNE 27, 1950

SP-127

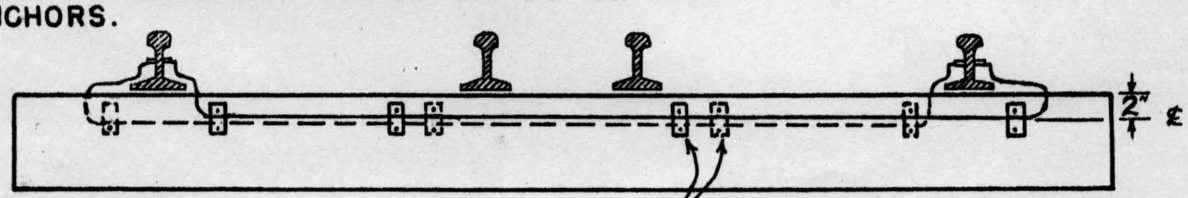
C-256

Rev. 3-10-59

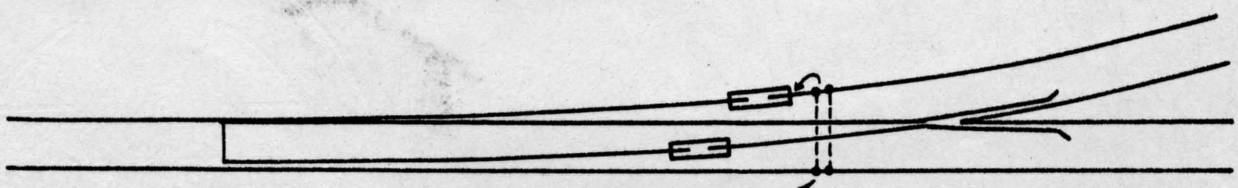
TWO #7-19 STRAND INSULATED TRACK WIRES INSTALLED WITH RACO #624-6 STRANPINS INSERTED FROM OPPOSITE SIDES AS SHOWN OR TWO HANLON & WILSON BSB-6CH BONDS, OR OHIO BRASS SPEARHEAD BONDS, NEOPRENE COVERED, 10 FEET LONG.



AVOID DRIVING NAILS WHERE CONTACT MIGHT BE MADE WITH TRACK SPIKES OR ANCHORS.



RACO INSULATED WIRE CLAMPS NO.378-23



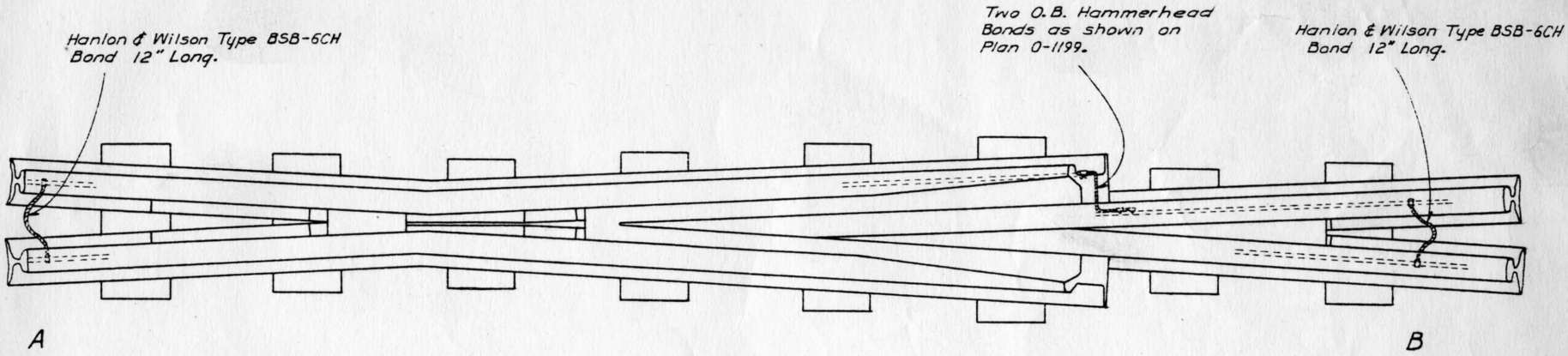
LOCATE JUMPER WIRES AS NEAR TO TURNOUT INSULATION AS POSSIBLE

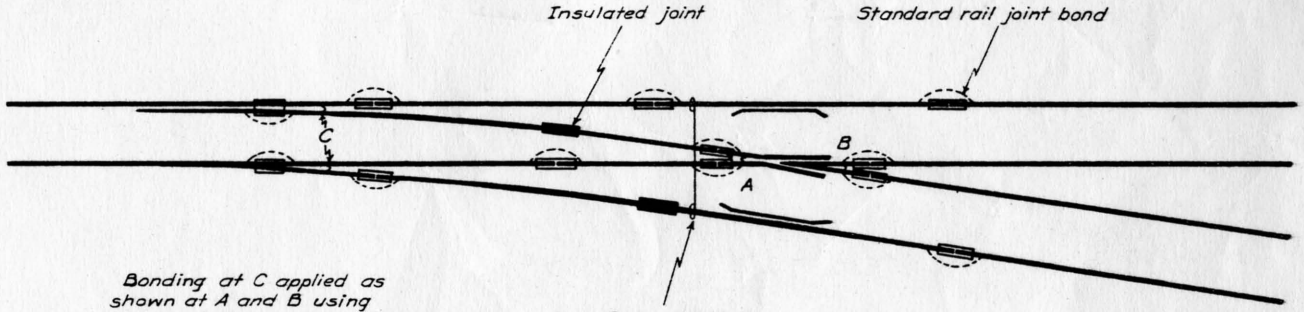
A. T. & S. F. RY. SYSTEM

JUMPER FOR FOULING CIRCUIT

SSSO 0-656 4-1-56

Revised 4-15-68



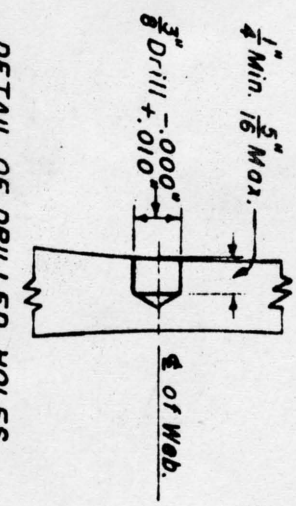


C-259

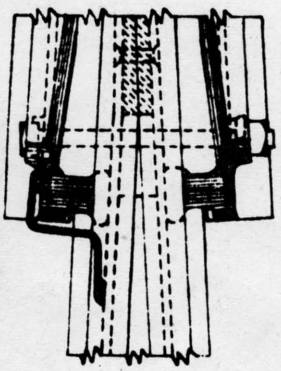
The A. T. & S. F. Ry. System

STANDARD BONDING FOR BOLTED FROG AND SPLIT SWITCH

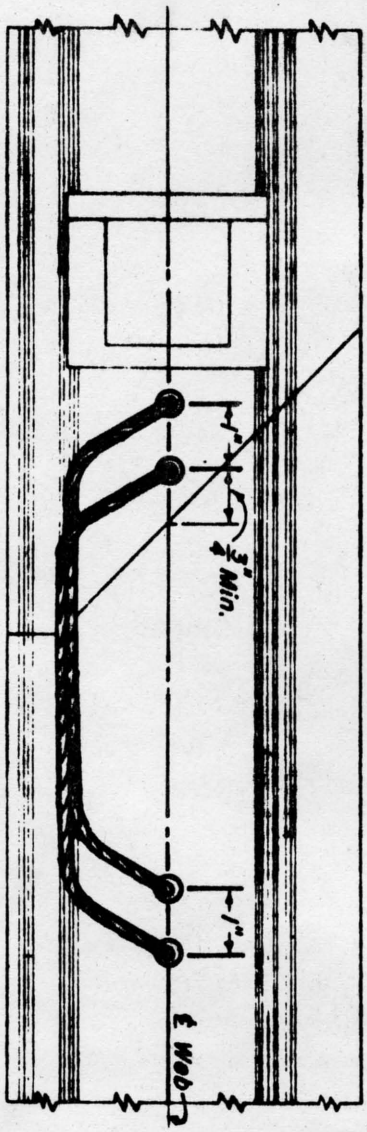
SSSO SP—41 1-15-59

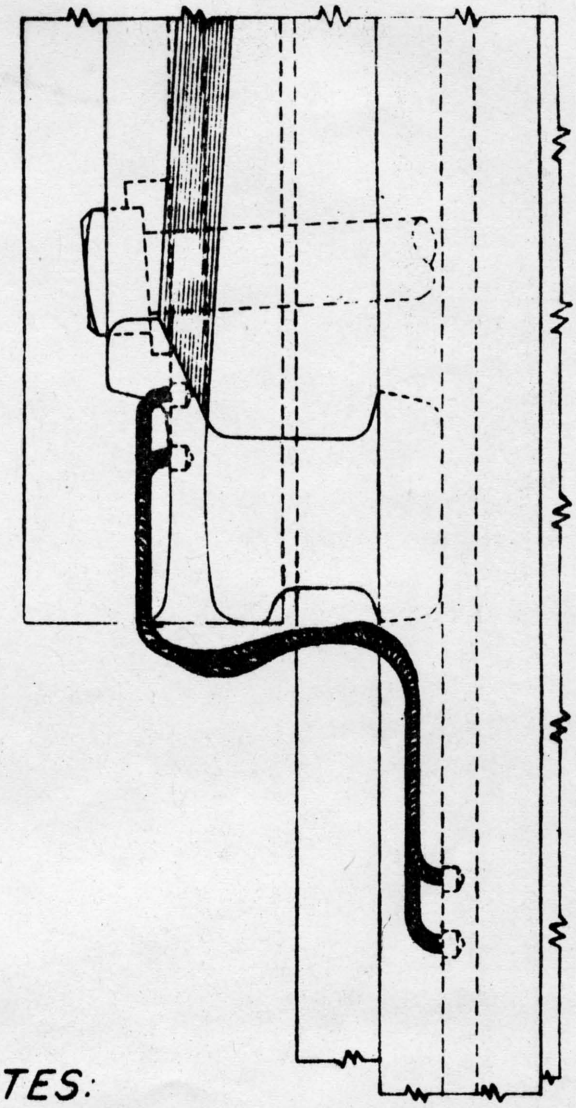


DETAIL OF DRILLED HOLES



REV. 12-28-73





NOTES:

1- Two bonds to be applied to all No.8 and larger number frogs of all types, in 90lb. and heavier rails.

2- Bond ordering reference: Tigerweld Type E, 12" long.

3- On rigid frogs, bonds to be installed on side of frog on which the heads of bolts are located. On spring rail frogs, bonds to be installed on rigid wing rail side.

4- Distance between terminals is shown as 1". This dimension may be decreased, when necessary, due to limited distance from bolt to end of rail.

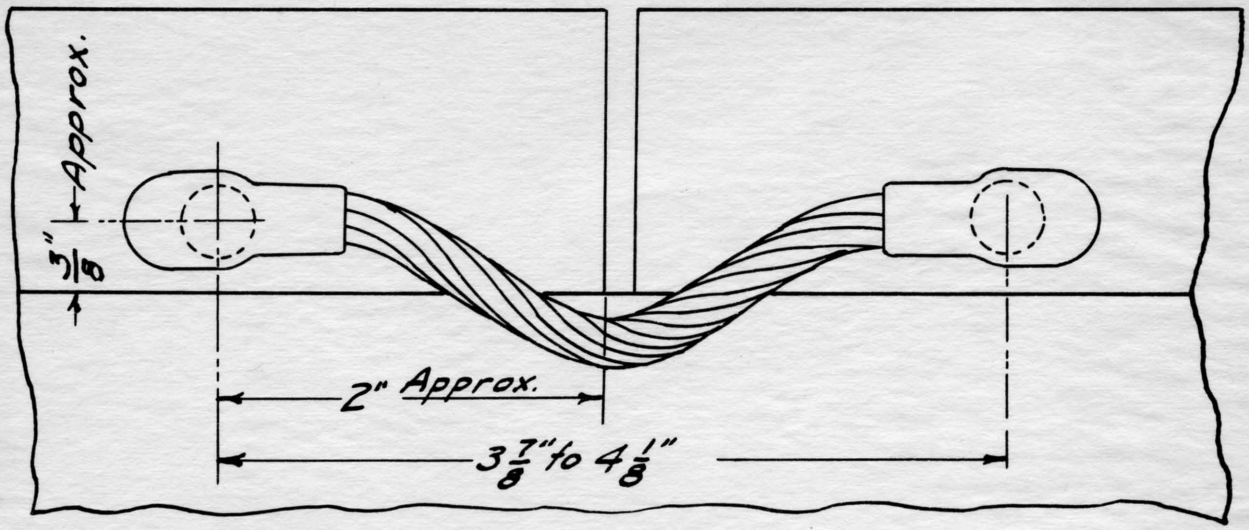
5- When a plate clip (on spring rail frogs) interferes with application of the bonds as shown hereon, the plate clip should be altered to permit proper installation of the bonds.

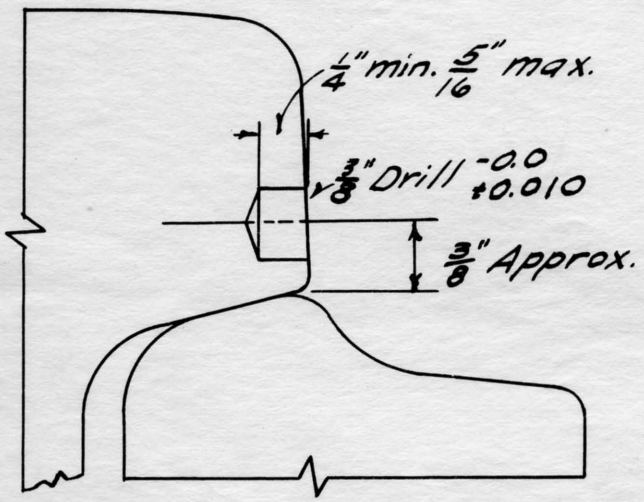
A.T. & S.F. RY.

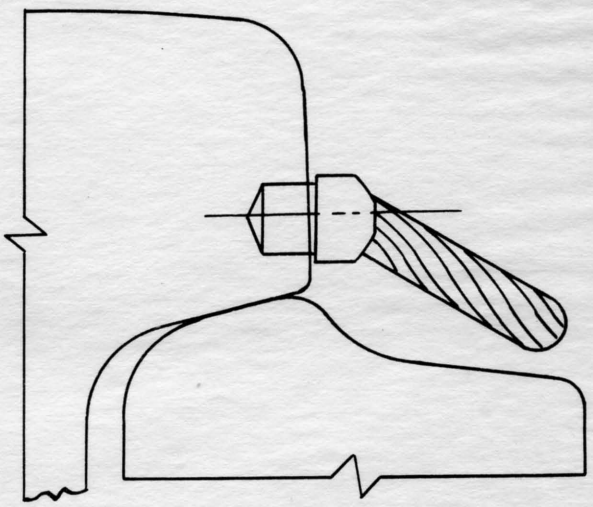
FACTORY BONDING OF TURNOUT FROGS

S.E.S.O TOPEKA 8-26-'49

O-1199







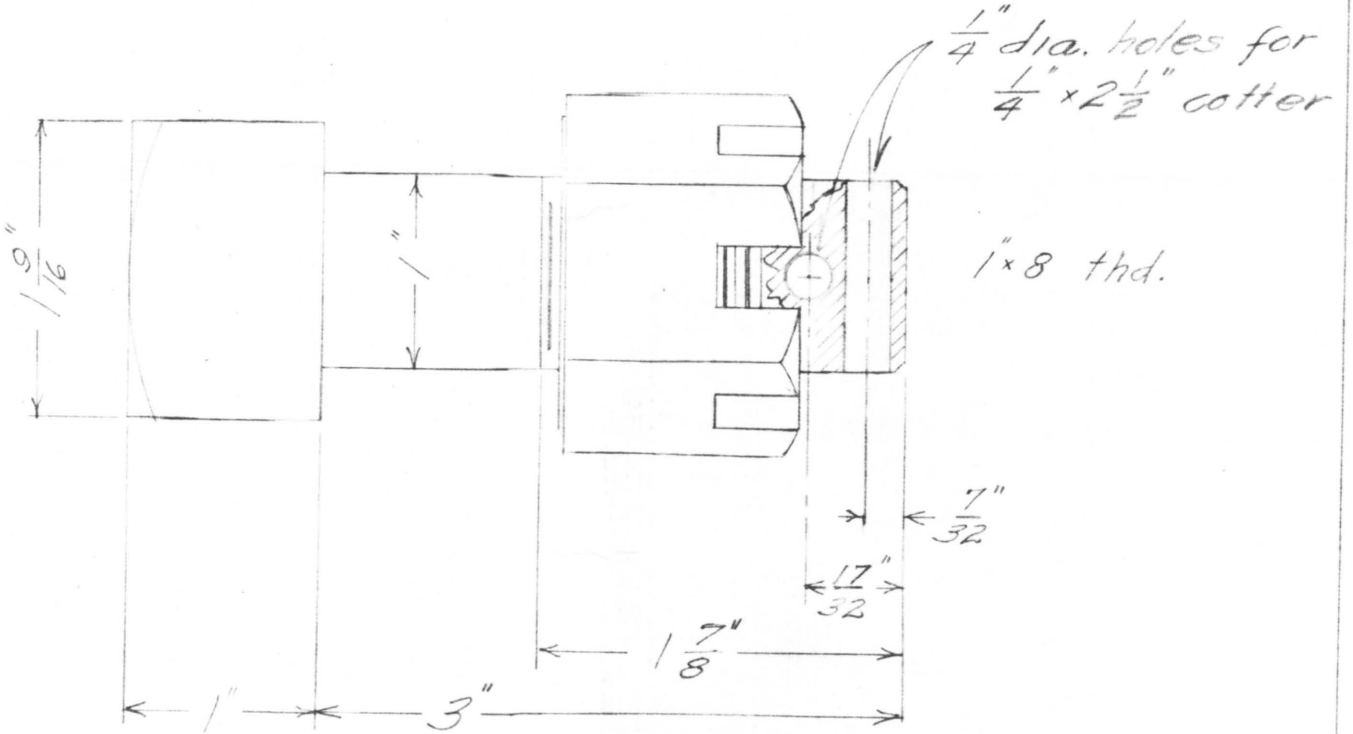
A.T & S.F Ry.

APPLICATION OF RAILHEAD BOND

SESO Topeka 11-29-49

0-1202

Slotted Nut, 1" dia. × 1 1/4" thk.
8 thd. per inch



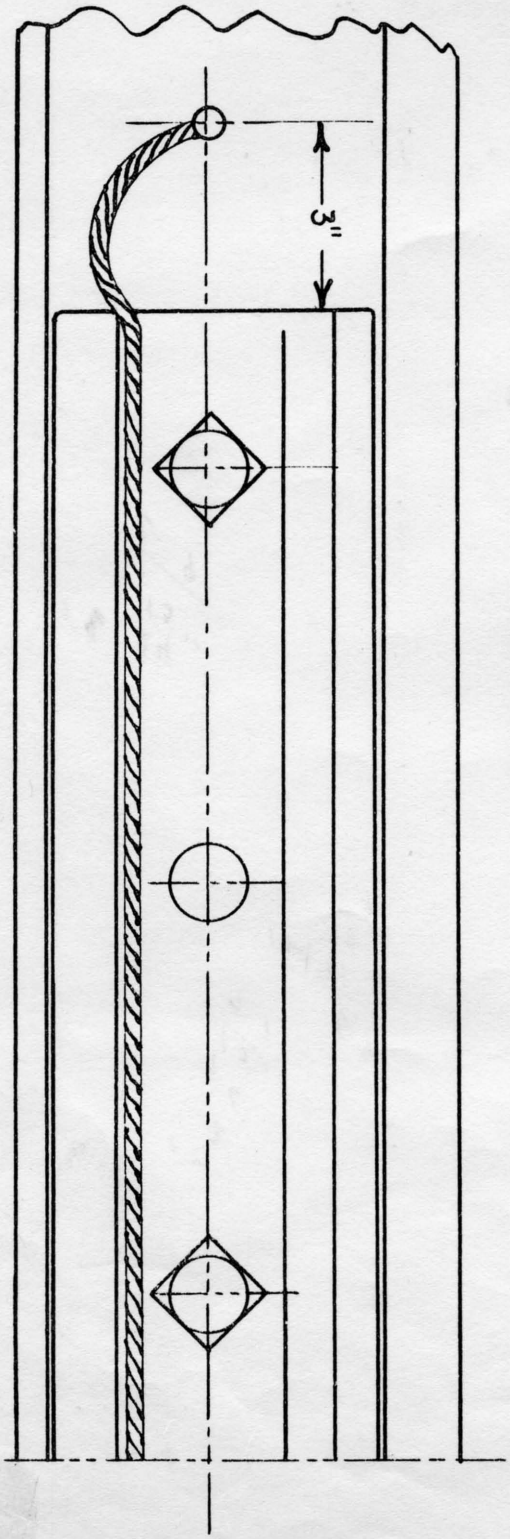
For fastening FRONT ROD to LOCK ROD CONNECTION per CES No. 5484

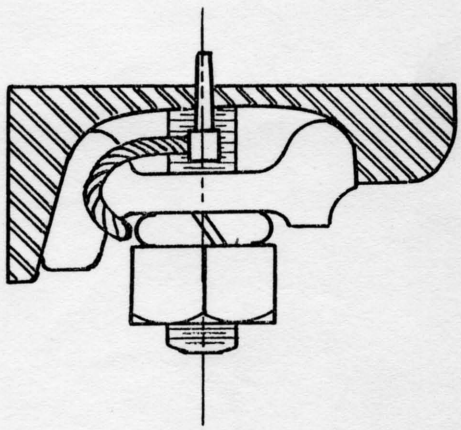
A. T. & S. F. Ry. Co.

1" Sq. Hd Turned Bolt with Slotted Nut

SESO 2-27-52 0-1244

Rev. 3-30-53.

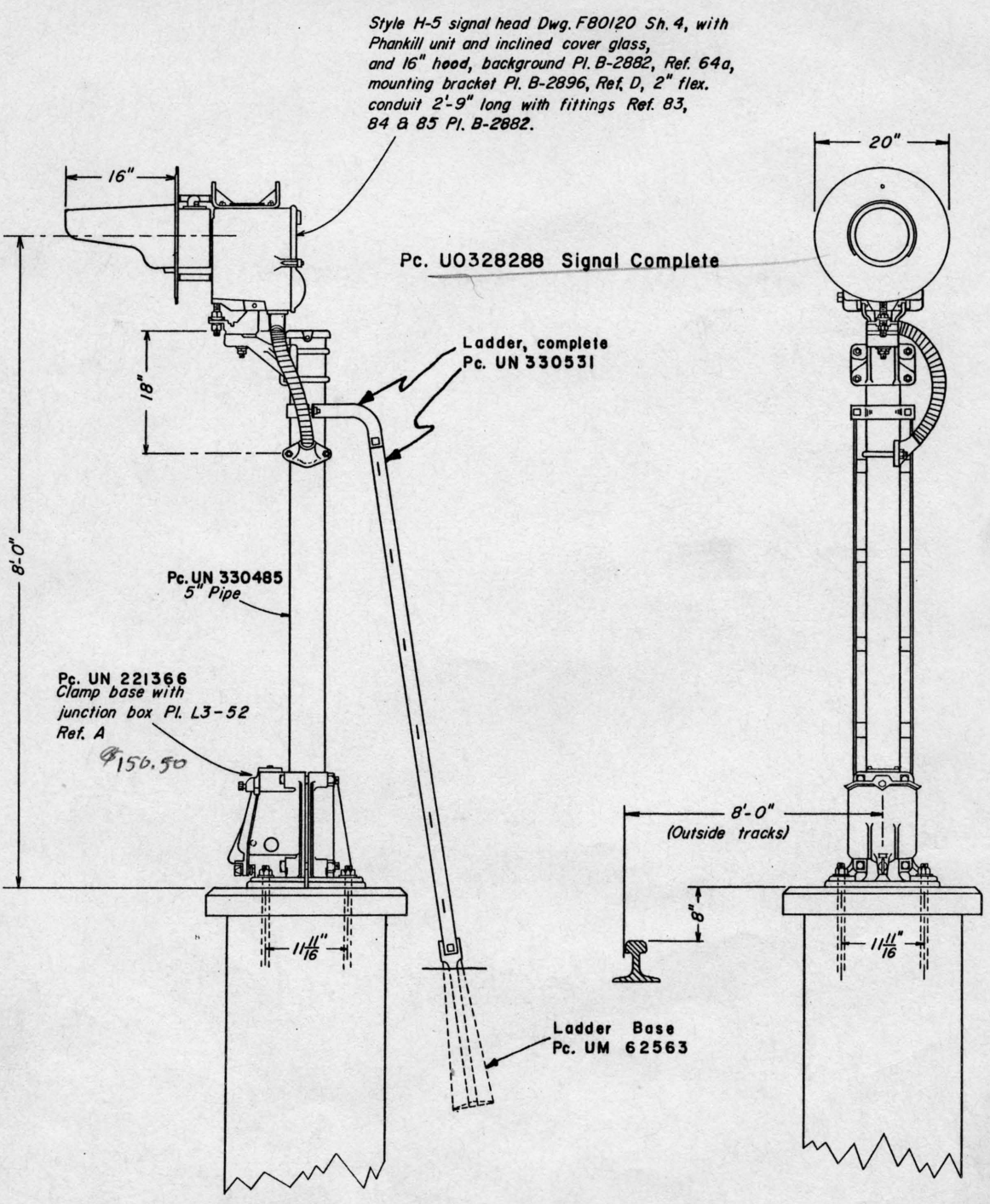




46" WEB TYPE BOND

A.T.&S.F. RY.
WEB TYPE BONDING
AROUND 36" JOINT BAR
S.E.S.O. TOPEKA 5-18-'49
O-1201

REVISED 2-15-62



Where installed between tracks, clearances must conform to SES-646A. Track centers should be not less than 18'-8".

Pc. UO 434233- Signal as shown less H-5 Searchlight Signal Unit

THE A.T. & S.F. RY. SYSTEM

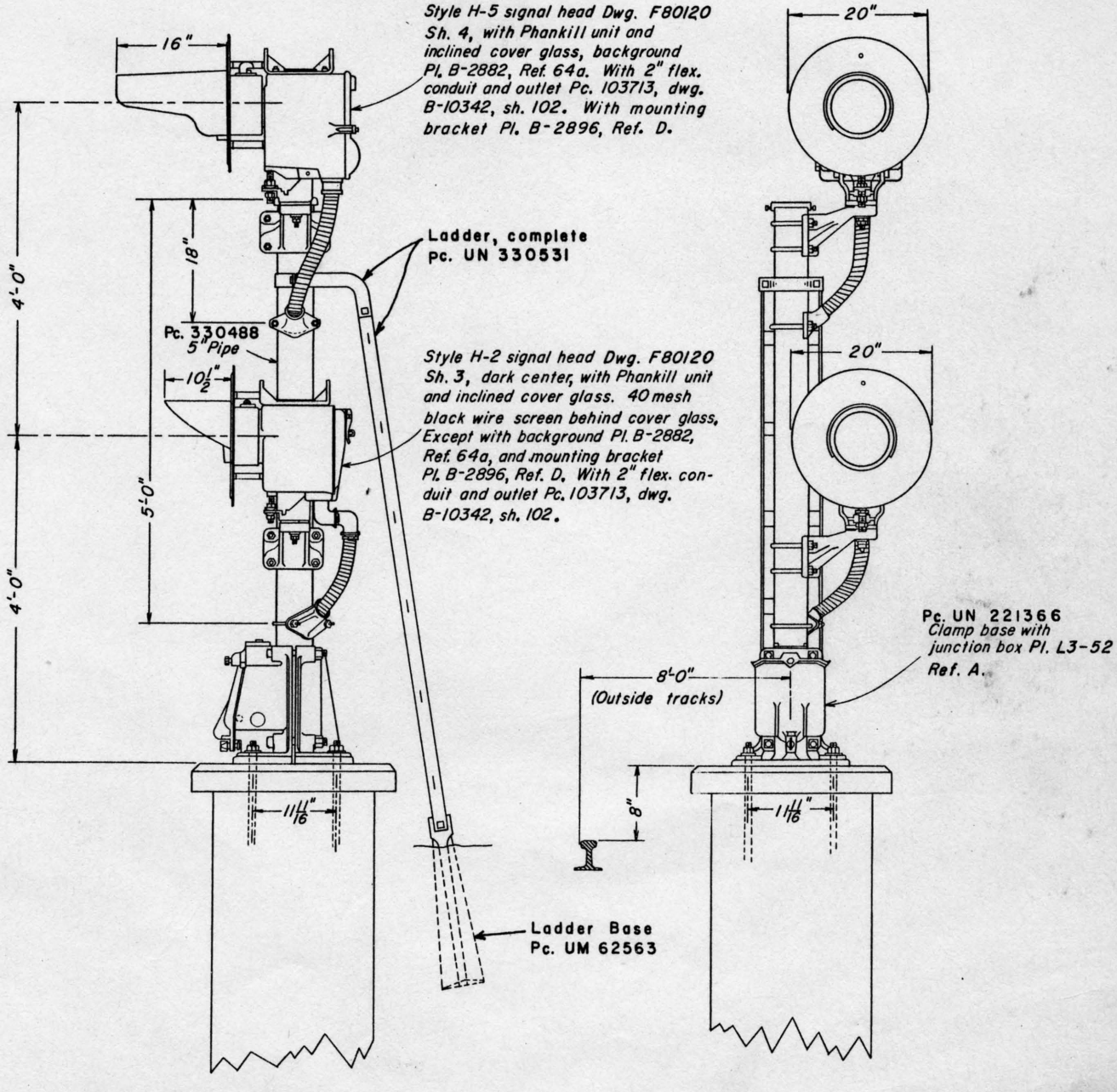
H-5 SEARCHLIGHT
LOW GROUND SIGNAL
FOR SECONDARY TRACKS

Revised 5-1-67

SSSO 12-14-54 0-1257

O.E. Kaul
5

Pc. UO330446 Signal Complete



Where installed between tracks, clearances should conform to SES 646A. Track centers should be not less than 19'-2".

Pc. UO 434234- Signal as shown less H-5 Searchlite Signal Unit

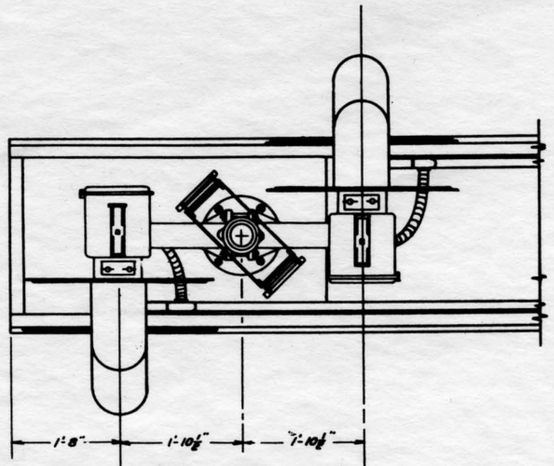
THE A.T. & S.F. Ry. SYSTEM

TWO UNIT SEARCHLIGHT LOW GROUND SIGNAL FOR SECONDARY TRACKS

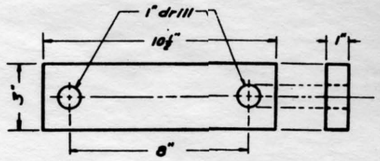
Revised 5-1-67

SSSO 4-20-55

0-1258



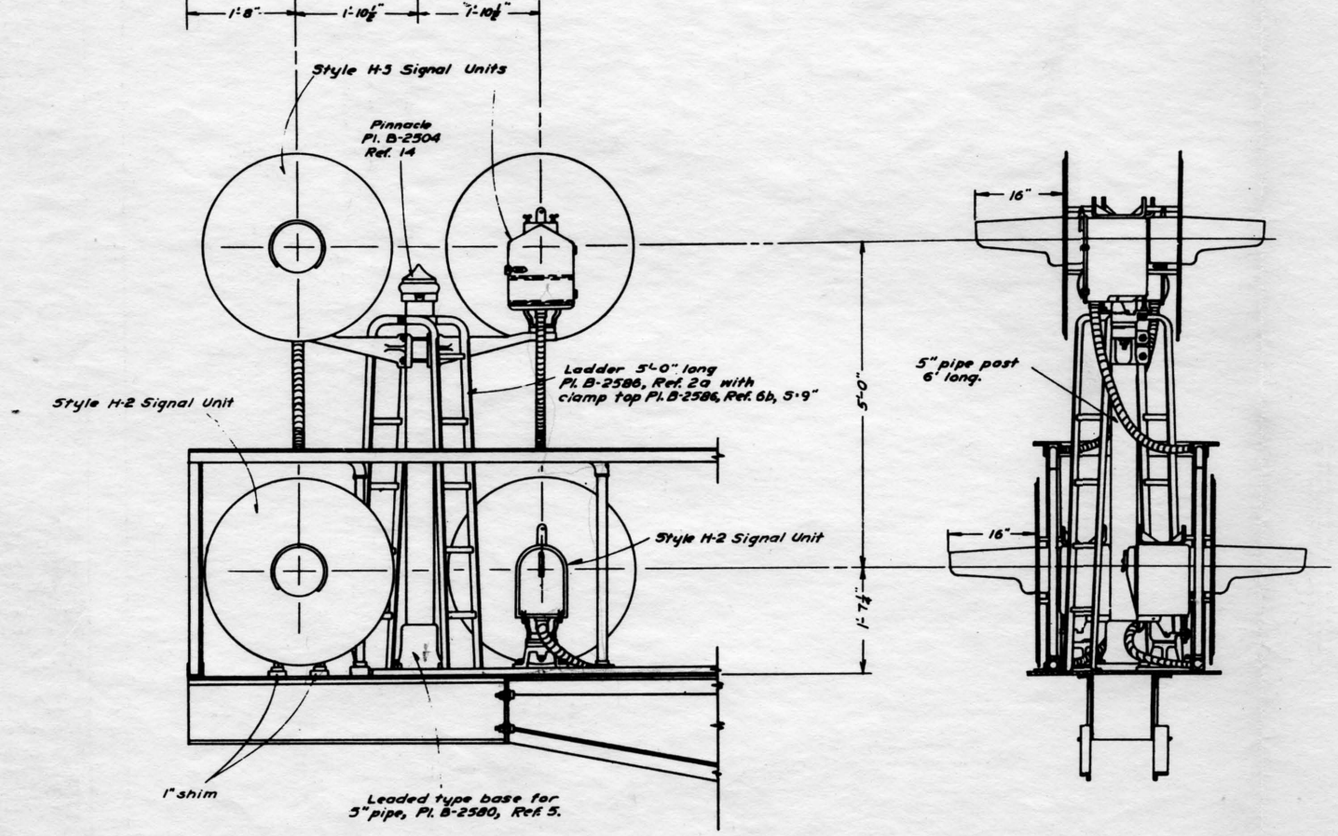
Style H-3 Signal Units

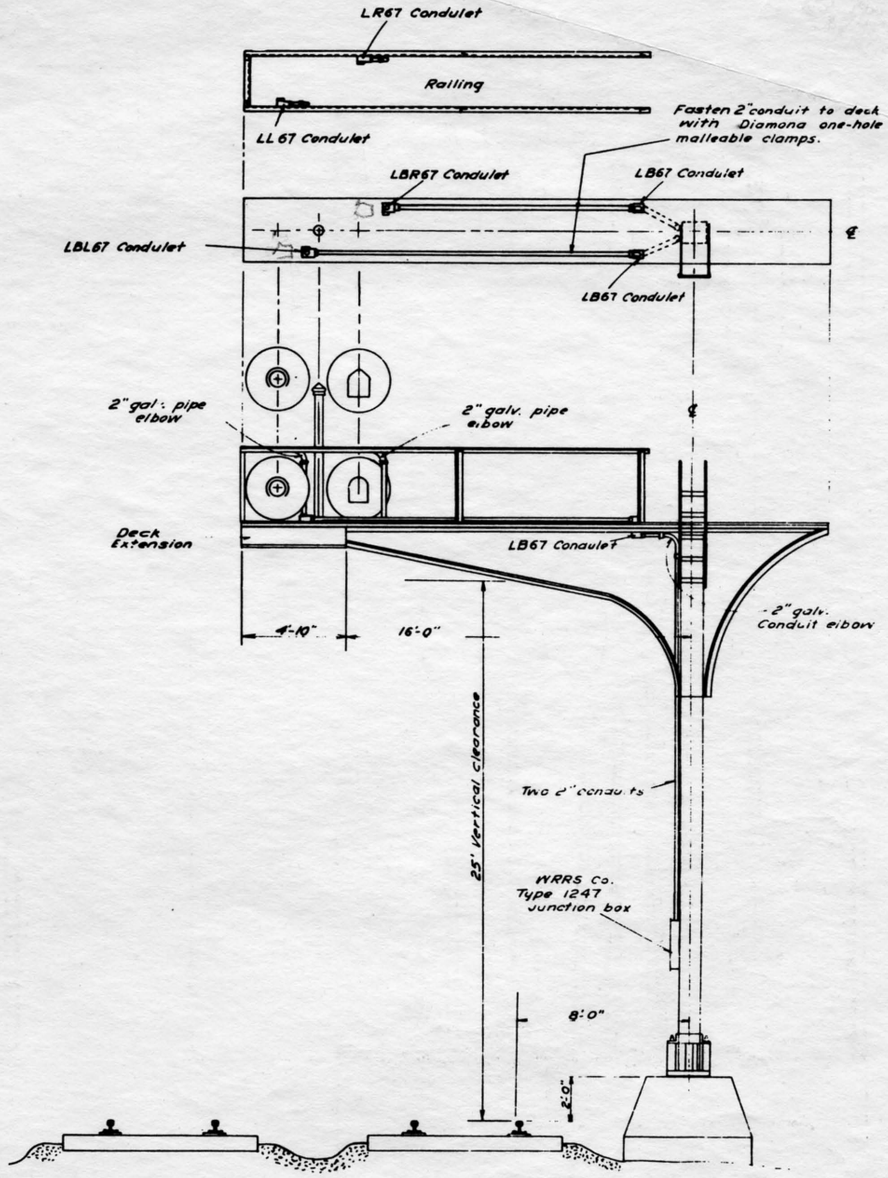


Two 1"x3" steel plate shims under each bridge dwarf signal.

UPPER UNITS - Style H-3 Signal head, Pl. B-2882, Ref B, complete with Phankill unit and inclined cover glass, except with cable outlet Ref 7, Pl. B-2882 complete with gasket Ref. 8 and machine bolt Ref 33. With 2" flex. conduit 5'0" long. With mounting bracket Pl. B-2896, Ref. A.

LOWER UNITS - Style H-2 Signal head, Pl. B-2881, Ref. B, with dark center, Phankill Unit and inclined cover glass, except with dwarf base for bridge mounting, Pl. B-2882, Ref. C. With 2" flex. conduit 3'0" long.





Clearances must conform to SES 646A and should be increased where necessary to meet local requirements.

For details of deck extension see plan BES 4273, sh. 403.

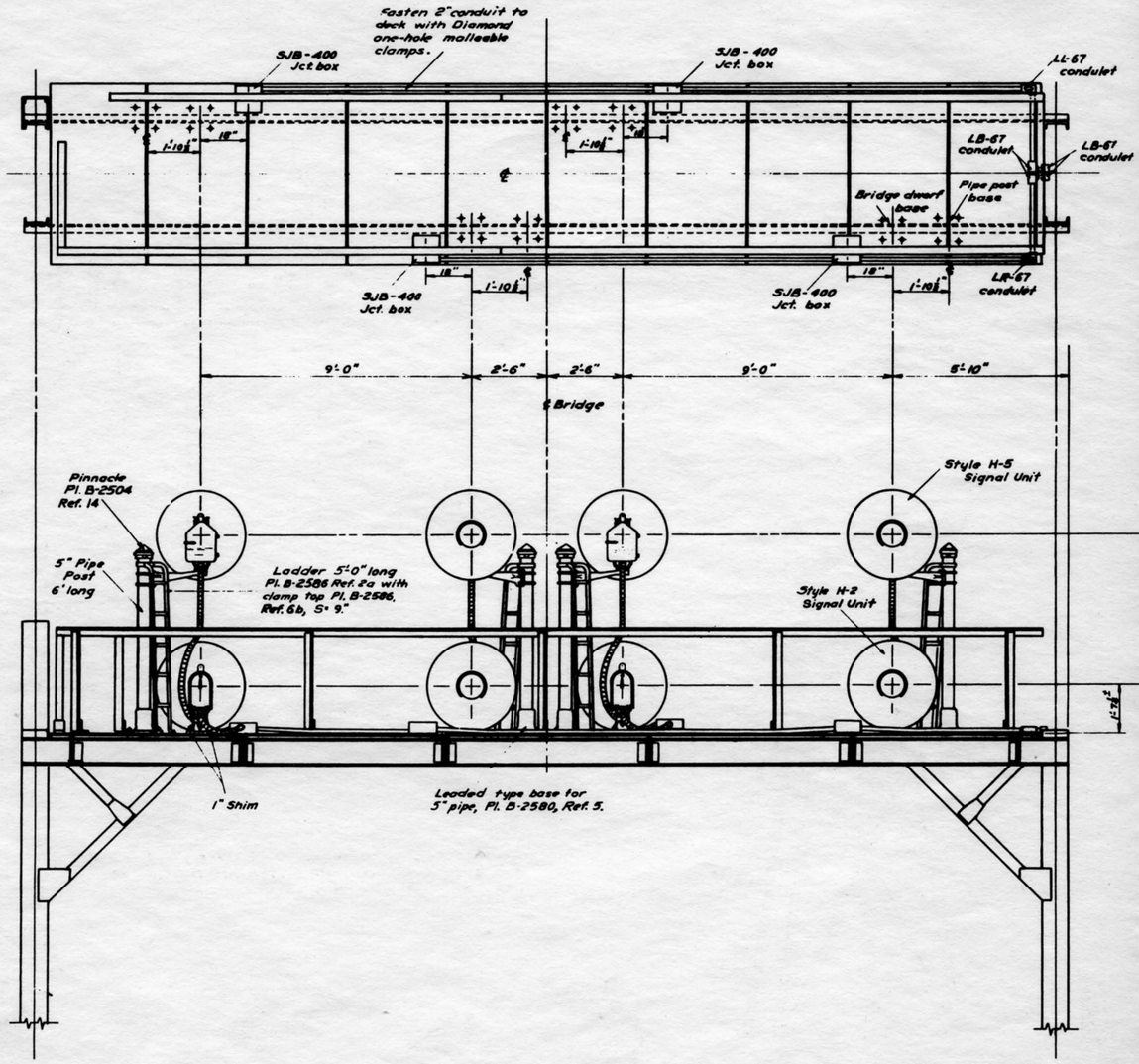
For details of cantilever foundation see plan 0-789.

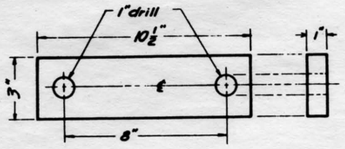
Revised 9-5-57

The A.T. & S.F. Ry. System

SEARCHLIGHT SIGNALS ON 16'-0" CANTILEVER MAST WITH EXTENSION

SESO 11-15-55 SP-142

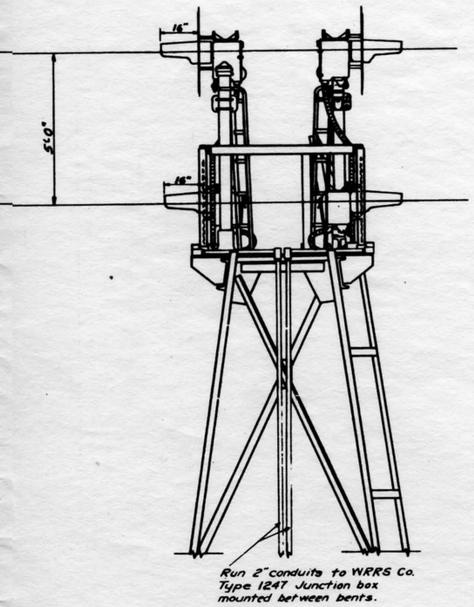


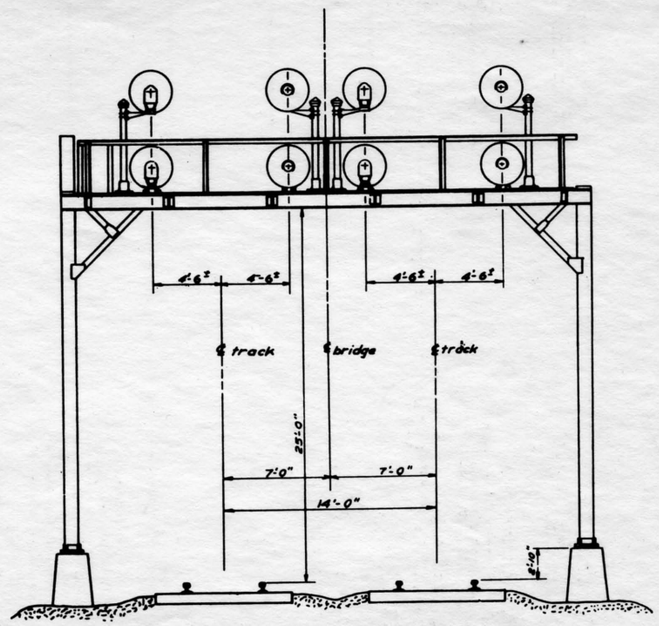


Two 1"x3" steel plate shims under each bridge dwarf signal.

UPPER UNITS: Style H-5 Signal head, Pl. B-2882, Ref. B, complete with Phanklll unit and inclined cover glass, except with cable outlet Ref. 7, Pl. B-2882, complete with gasket Ref. 8, and machine bolt Ref. 53. With 2" flex. conduit 8'-0" long. With mounting bracket Pl. B-2896, Ref. A.

LOWER UNITS: Style H-2 Signal head, Pl. B-2881, Ref. B, with dark centre, Phanklll Unit and inclined cover glass, except with dwarf base for bridge mounting, Pl. B-2882, Ref. C. With 2" flex. conduit 3'-0" long.





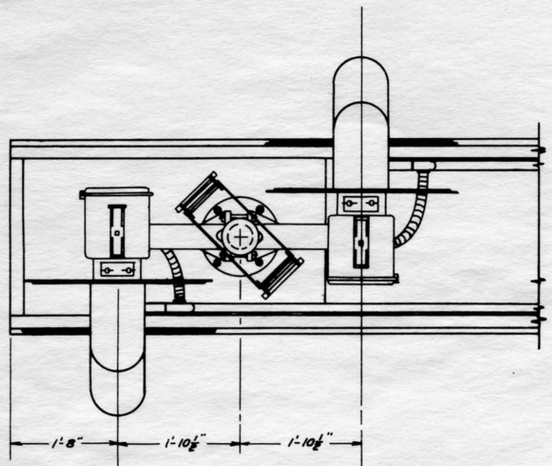
Clearances must conform to SES 646A and SES 657. For details of modified bridge and foundation see plan CES 5216, sheet 202.

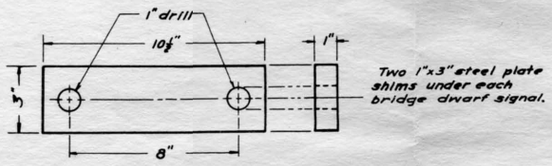
Rev. sea 9-5-57

The A. T. & S. F. Ry. System

SEARCHLIGHT SIGNALS ON TWO TRACK C&NW TYPE BRIDGE WITH TOP CHORD REMOVED

SESO 1-5-56 SP-143

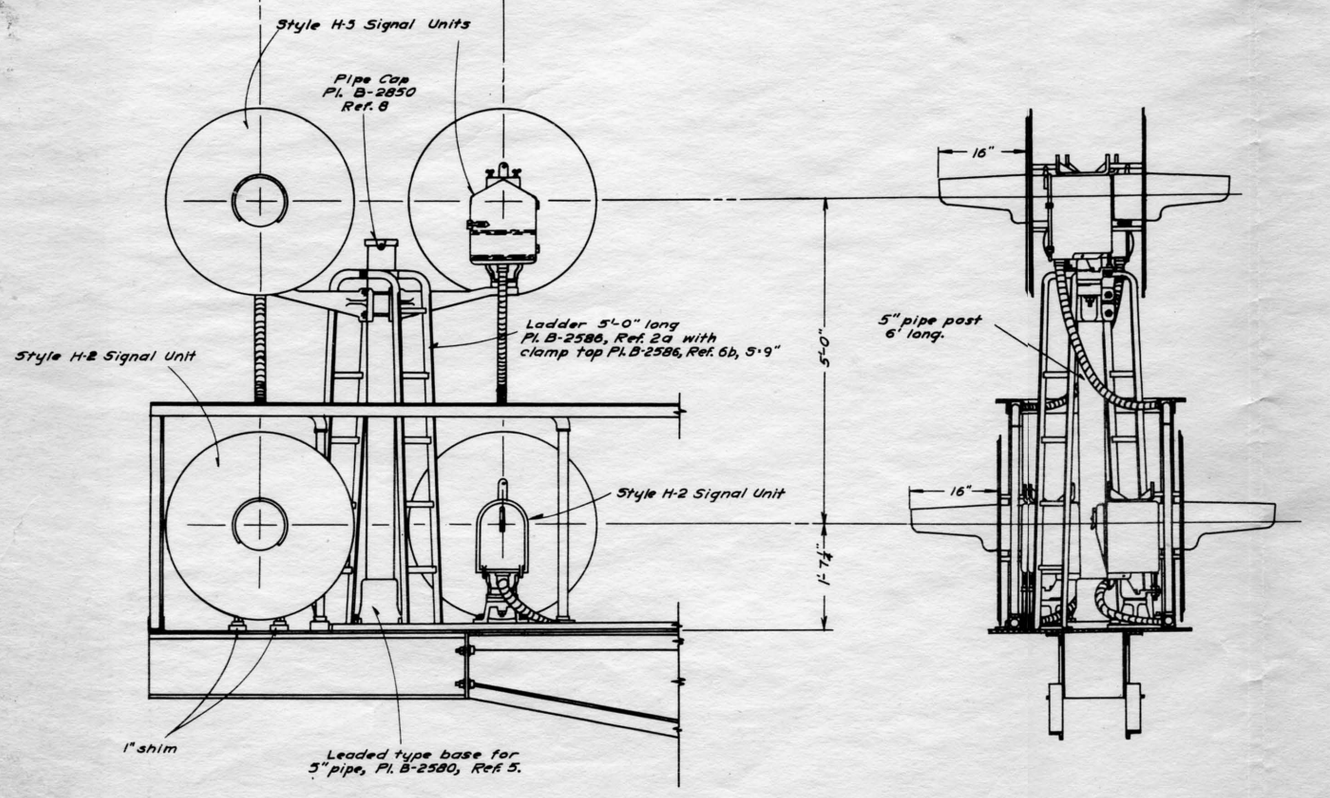


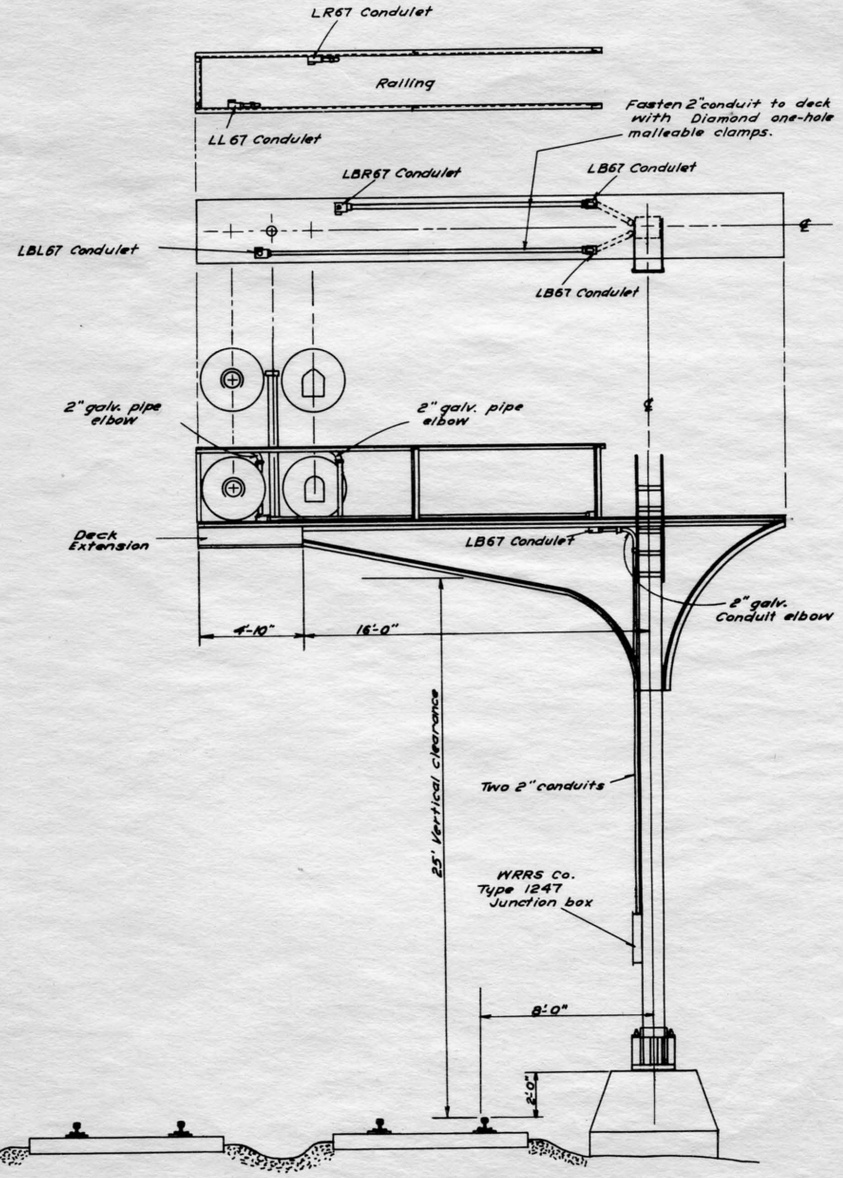


Two 1"x3" steel plate shims under each bridge dwarf signal.

UPPER UNITS - Style H-5 Signal head, Pl. B-2882, Ref B, complete with Phankill unit and inclined cover glass, except with cable outlet Ref. 7, Pl. B-2882 complete with gasket Ref. 8 and machine bolt Ref. 55. With 2" flex. conduit 5'0" long.

LOWER UNITS - Style H-2 Signal head, Pl. B-2881, Ref. B, with dark center, Phankill Unit and inclined cover glass, except with dwarf base for bridge mounting, Pl. B-2882, Ref. 44. With 2" flex. conduit 3'-0" long.





Clearances must conform to SES 646A and should be increased where necessary to meet local requirements.

For details of deck extension see plan BES 4273, sh. 403.

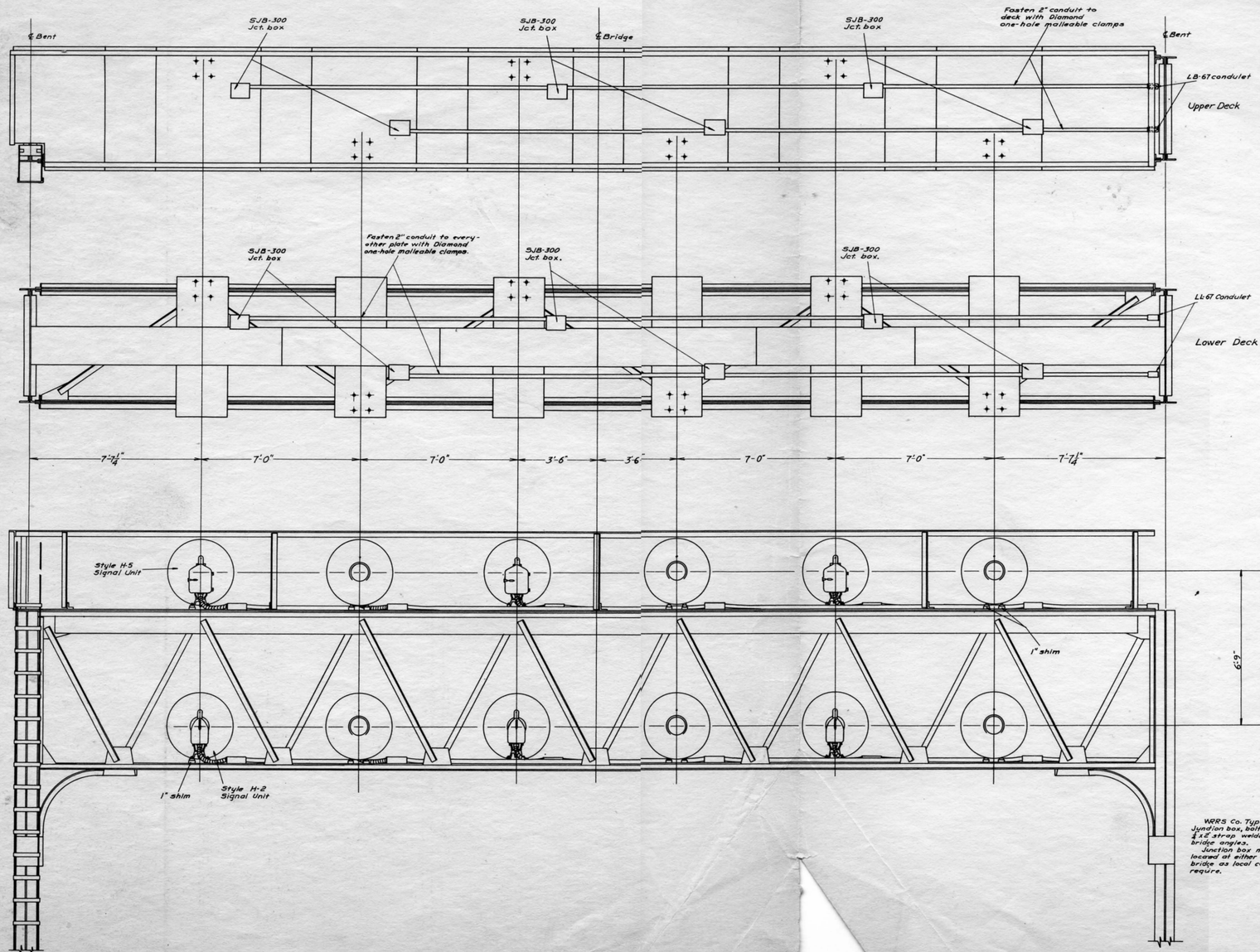
For details of cantilever foundation see plan 0-789.

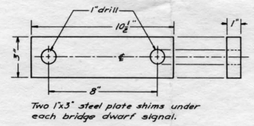
The A.T. & S.F. Ry. System

SEARCHLIGHT SIGNALS ON 16'-0" CANTILEVER MAST WITH EXTENSION

SESO 11-15-55 SP-142

shop

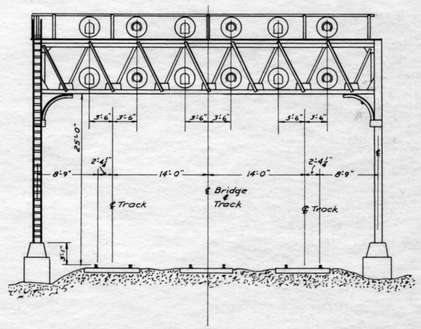




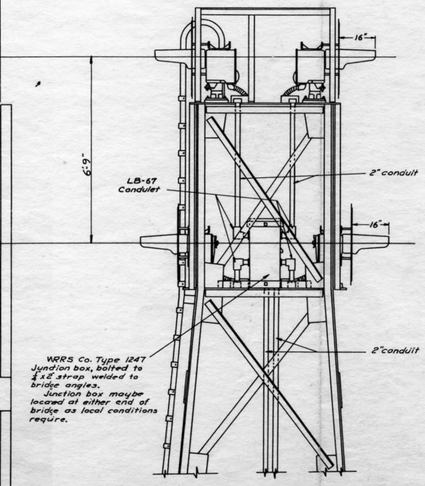
Two 1"x3" steel plate shims under each bridge dwarf signal.

UPPER UNITS: Style H-5 Signal head Pl. B-2882, Ref. C, complete with Phankill unit and inclined cover glass. With 2" flex. conduit 3'-0" long, with fittings Ref. 83, 84, and 85 Pl. B-2882.

LOWER UNITS: Style H-2 Signal head Pl. B-2881, Ref. B, with dark center, Phankill unit and inclined cover glass, except with dwarf base for bridge mounting Pl. B-2882, Ref. C. With 2" flex. conduit 3'-0" long.



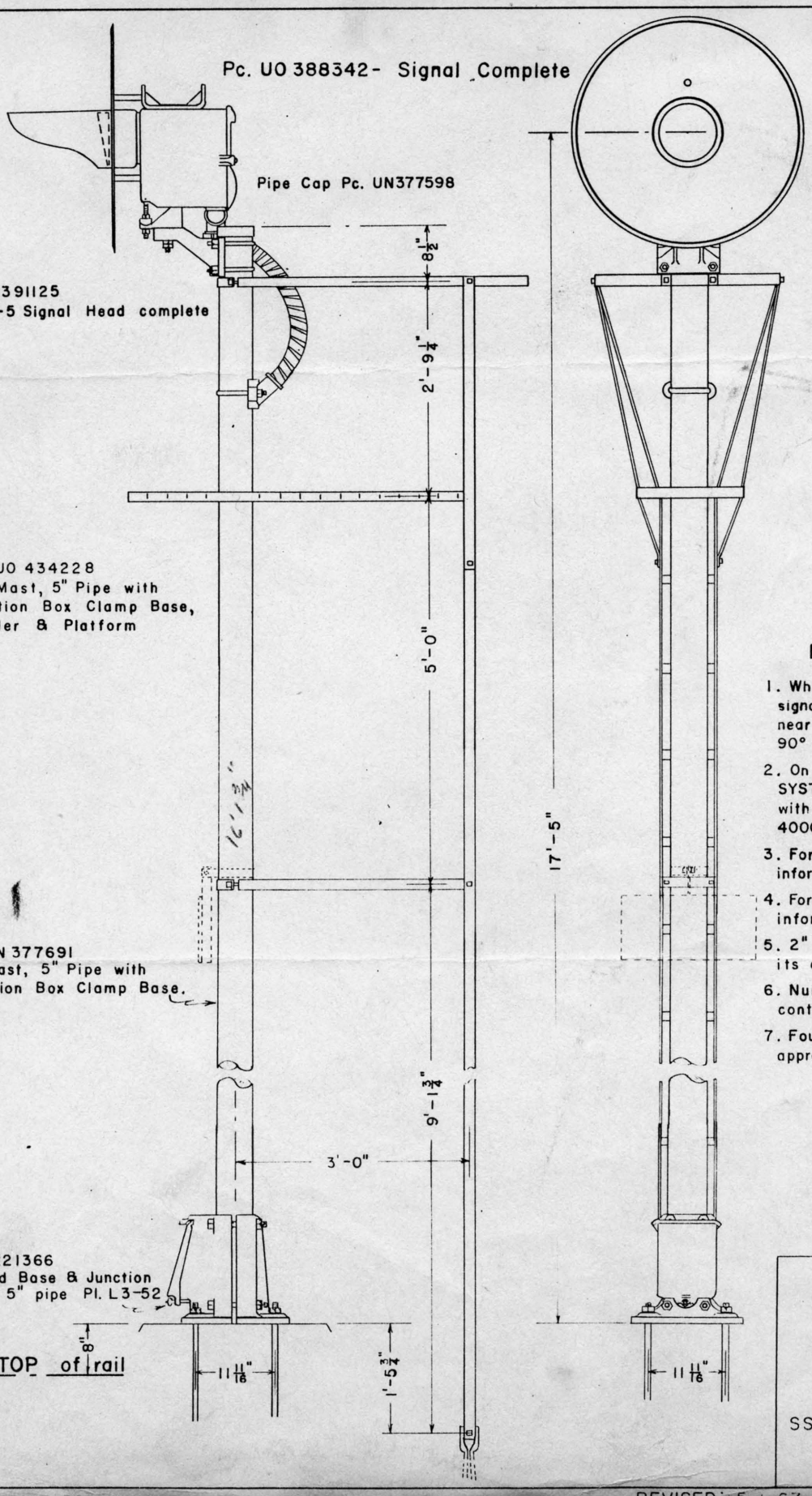
Clearances must conform to SES 646A and SES 657. See plan BES 4456 for details of bridge and plan BES 4875, sheet 101, for details of foundation. For application of walkway and signal mounting plates to lower deck, see plan CES 5230, sheet 101.



The A.T. & S.F. Ry. System

SEARCHLIGHT SIGNALS ON THREE TRACK LATTICE GIRDER BRIDGE

SESO 5-10-56 SP-144



NOTES:-

1. When track centers are not involved, signals will be set 10' from gauge of near rail and bracket will be turned 90° toward track.
2. On Authority of SUPT. SIGNALS SYSTEM may be used between tracks with minimum of 20' centers and 4000' of tangent track in approach.
3. For Signal Unit reference and order information see Plan 0-917.
4. For Ladder reference and order information see Plan 0-916.
5. 2" flex. conduit to be installed with its overlap at bottom of spiral.
6. Number plate to be omitted on controlled signals.
7. Foundation per Plan 0-711 or approved alternate.

A.T. & S.F. Ry. System

H-5 SEARCHLIGHT GROUND SIGNAL

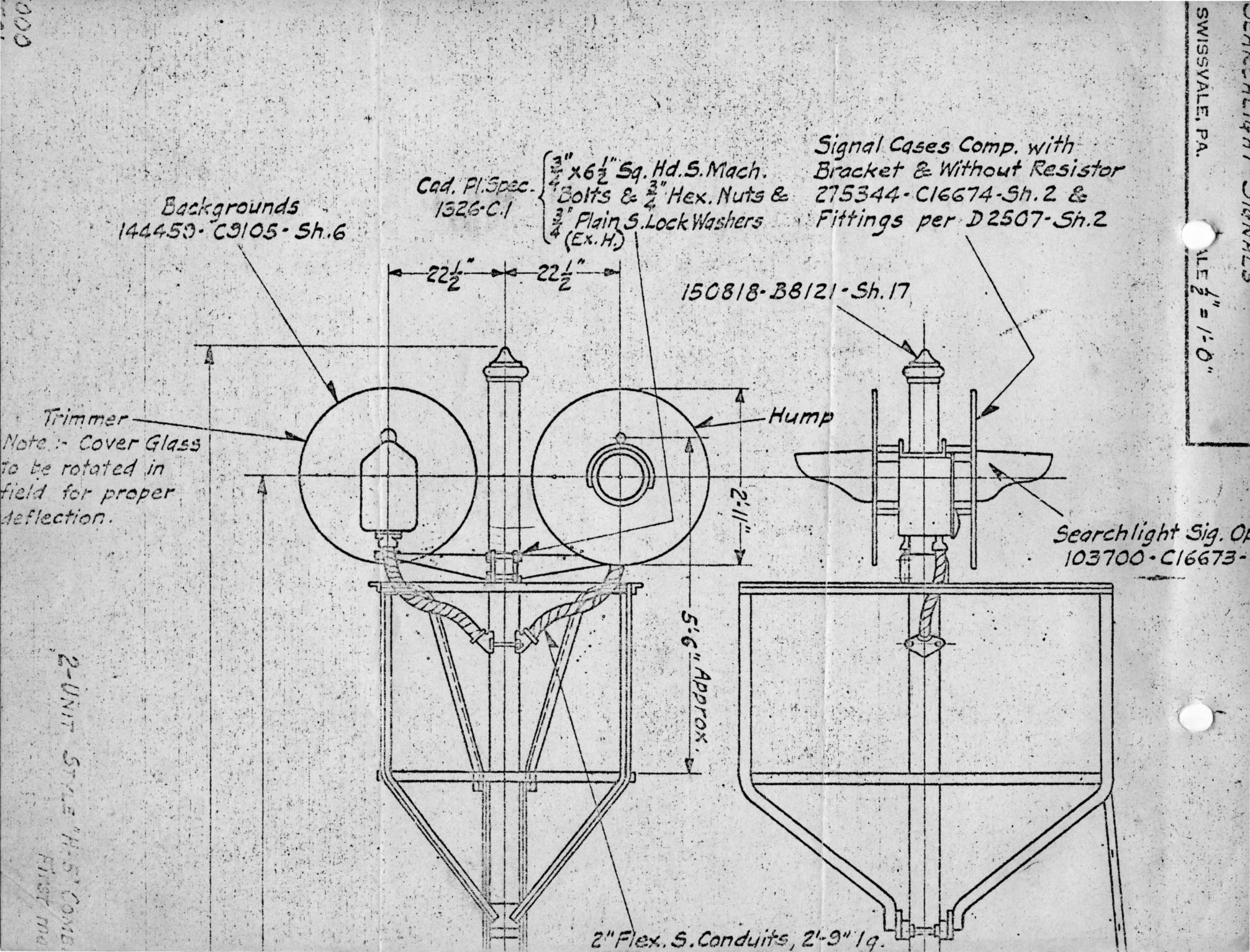
(17' HEIGHT)

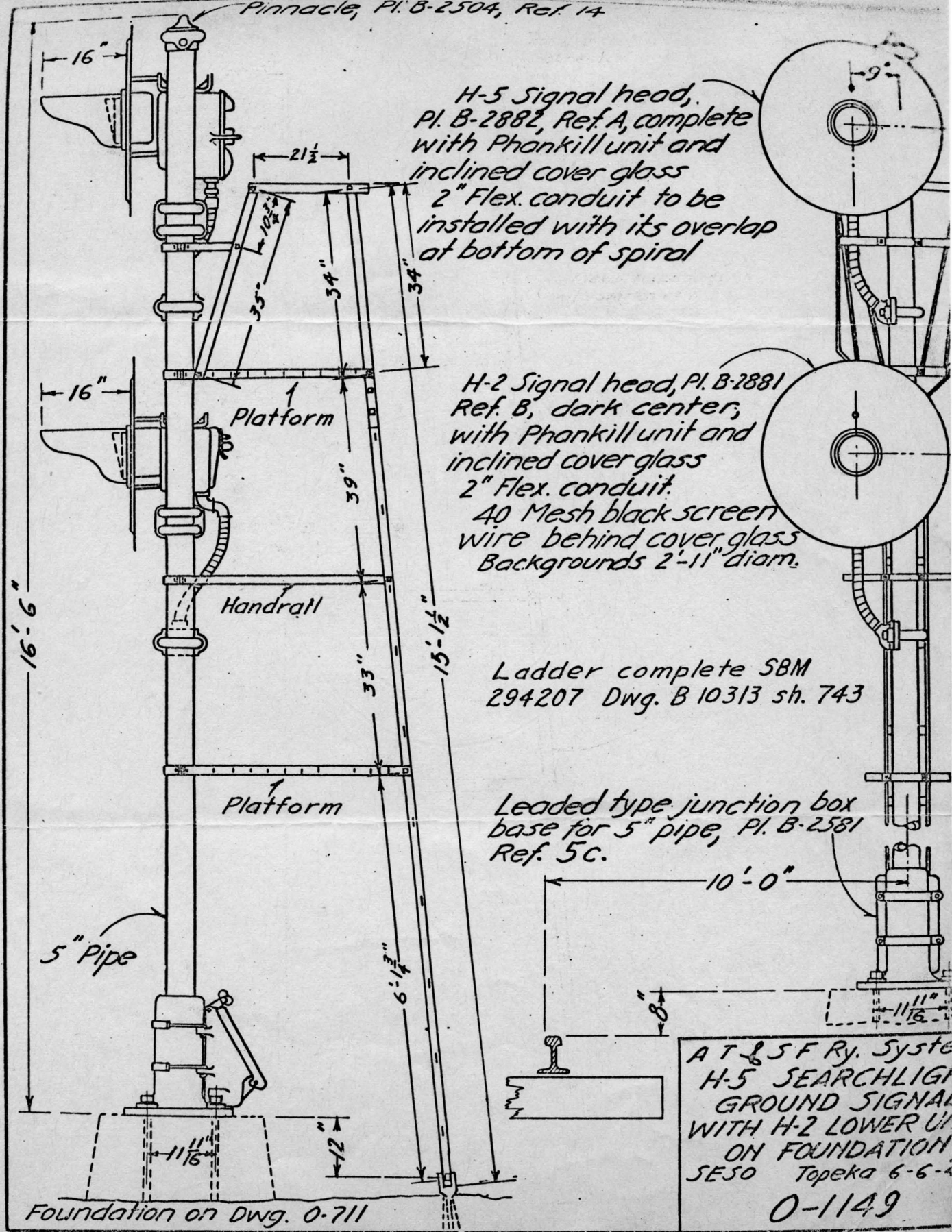
SSSO

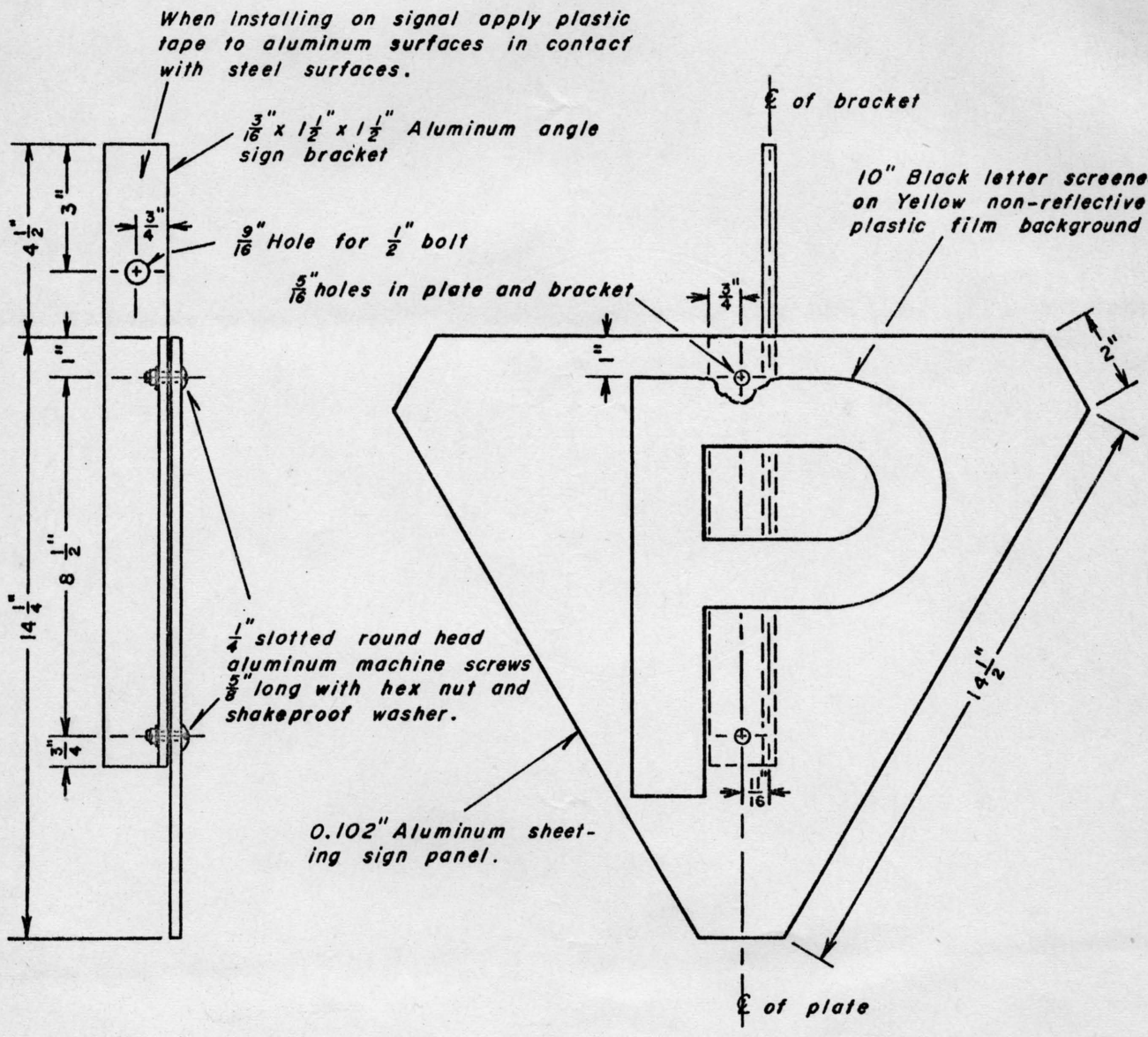
REDRAWN 2-1-63

0-915

REVISED:- 5-1-67


Backgrounds
144453-C9105-Sh.6
Cad. Pl. Spec.
1326-C.1
3/4" x 6 1/2" Sq. Hd. S. Mach. Bolts & 3/4" Hex. Nuts & 3/4" Plain S. Lock Washers (Ex. H.)
Signal Cases Comp. with Bracket & Without Resistor
275344-C16674-Sh.2 &
Fittings per D2507-Sh.2
22 1/2"
22 1/2"
150818-B8121-Sh.17
Trimmer
Note:- Cover Glass to be rotated in field for proper deflection.
Hump
2'-11"
5'-6" Approx.
Searchlight Sig. Op
103700-C16673-
2" Flex. S. Conduits, 2'-9" lg.
SWISSVALE, PA.
1/2" = 1'-0"


Pinnacle, Pl. B-2504, Ref. 14
16"
21½
10 3/4"
35"
34"
34"
H-5 Signal head, Pl. B-2882, Ref. A, complete with Phonkill unit and inclined cover glass
2" Flex. conduit to be installed with its overlap at bottom of spiral
9"
16"
Platform
39"
H-2 Signal head, Pl. B-2881 Ref. B, dark center, with Phonkill unit and inclined cover glass
2" Flex. conduit.
40 Mesh black screen wire behind cover glass
Backgrounds 2'-11" diam.
Handrail
33"
15'-1½"
16'-6"
Ladder complete SBM 294207 Dwg. B 10313 sh. 743
Platform
Leaded type junction box base for 5" pipe, Pl. B-2581 Ref. 5c.
10'-0"
5" Pipe
6'-1¾"
8"
11 11/16"
12"
11 11/16"
Foundation on Dwg. 0-711
A T & S F Ry. Syste
H-5 SEARCHLIG
GROUND SIGNA
WITH H-2 LOWER U
ON FOUNDATION
SESO Topeka 6-6-
0-1149



NOTE:

Order from Albuquerque store department per CES plan 50135-973.
Pack sign panels separate from sign brackets and screws to prevent damage in shipment.

THE A.T. & S.F. RY. SYSTEM

PERMISSIVE SIGNAL MARKER

S.S.S.O. DRAWN 5-20-70

O-1281

REVISED 6-30-70