Zachary C. Gillihan
Digitally signed by Zachary C. Gillihan
DN: cn=Zachary C. Gillihan, o=ZCG Utility Scrap, ou, email=amerenue04@yahoo.com, c=US
Date: 2014.01.07 07:47:32 -06'00'

Date: August 2, 1972 — INDEX OF ALL EO PLANS — Sheet 11

EO No.	Date	Division Used On	To Field	Description
592				Obsolete. See I-190
593	7-21-61			AFO 2-Circuit Coupling Unit: Sheets 1 and 2; SES-99 Replaces
593A	11-06-63		No	AFO Repair Record
594	8-15-61	Shop	Yes	Anchor Plate and Bolt for Sectional Foundations
595	4-25-61	Shop	Yes	Motor Car Mounted Test Box for Simpson No 260 and Weston Model 280 or 540
596	8-17-61	Shop	Yes	Motor Car Mounted Test Box for PD-20 Code Meter and Weston 280 or 540
597	8-30-62	I		T C S Machine Arrangement--Third and Fourth Districts, Illinois Division
598	8-30-02	I		T C S Machine Arrangement--First and Second Districts, Illinois Division
599	7-27-61		No	Telephone Repeater
601	3-16-61	I	Yes	Roanoke (Main St) Crossing Bell Circuit
602	9-08-65	M	Yes	Stillwater Mile Post 26 plus 2,175 ft: Automat Flagman
603	3-16-61	I	Yes	Cooper Crossing Bell Circuit
604	9-08-65	M	Yes	Cushing, Mile Post 83 plus 4,345 ft: Automatic Flagman
605	2-12-63	M	Yes	Biglow, Kansas: Automatic Flagman
606	9-08-65	M	Yes	Meeker: Mile Post 120 plus 257 feet--Bell Circu
607	4-12-61	M	Yes	Webber: Mile Post 150 plus 3,865 feet--Bell Circuit
608	4-12-61	M	Yes	Webber: Mile Post 146 plus 2,939 feet--Bell Circuit
609	4-12-61	M	Yes	Longford: Mile Post 78 plus 1,471 feet--Bell Circuit
610	3-16-61	I	Yes	Richmond, Missouri: Mile Post 2 plus 2,046 fee Bell Circuit

Date: August 2, 1972 INDEX OF ALL EO PLANS Sheet 12

EO No.	Date	Division Used On	To Field	Description
611	3-16-61	I	Yes	Groveland, Roberts Street: Bell Circuit
611A	3-16-61	I	Yes	Groveland, Route 21, Mile Post 50 plus 3,220 feet Flashing Light Signals
612	3-16-61	I	Yes	Henrietta (Main Street): Bell Circuit
613	3-16-61	I	Yes	Lawson (Raum Street), Mile Post 297 plus 4,491 ft Automatic Flagman
614	2-27-64	I	Yes	Richmond, Missouri (College Avenue and Camden St) Automatic Flagman
615	3-16-61	I	Yes	Rayville, Mile Post 13 plus 3,358 feet: Automati Flagman
616	9-08-65	E	Yes	Grenola, Mile Post 210 plus 3,900 ft: Automatic Flagman
617	4-12-61	M	Yes	Aurora, Mile Post 102 plus 587 ft: Bell Circuit
619	9-08-65	M	Yes	Drumright, Mile Post 1 plus 3,241 ft: Bell Circ
620	4-15-61	E	Yes	Rest, Mile Post 138 plus 2,640 feet: Automatic F man
622	4-20-65	M	Yes	Florence (North End of Wye Track): Automatic Flag
623	9-08-65	M	Yes	Quay, Mile Post 69 plus 2,852 ft: Automatic Flag
624	4-15-61	E	Yes	Vinland, Mile Post 11 plus 2,628 ft: Automatic Flagman
625	3-01-67	E	Yes	Eureka, Third Street: Automatic Flagman
626	4-15-61	E	Yes	Bonner Springs, Mile Post 2 plus 1,400 feet: Aut matic Flagman
627	6-22-54	M	Yes	Motor Car Indicator: Bridge 31A
628	4-12-61	M	Yes	Hope, Mile Post 36 plus 3807 feet: Automatic Fl man
629				
631	9-08-65	M	Yes	Glencoe, Mile Post 21 plus 5,210 feet: Automati Flagman

Date: August 2, 1972 INDEX OF ALL EO PLANS Sheet 13

EO No.	Date	Division Used On	To Field	Description
632	9-08-65	M	Yes	Glencoe, Mile Post 19 plus 1,813 feet: Automat: Flagman
633	3-28-66	M	Yes	Kaw, Main Street: Automatic Flagman
634	3-18-66	M	Yes	Fairfax, Main Street: Automatic Flagman
635	3-16-61	I	Yes	Agency, Missouri, Mile Post 62 plus 2,173 feet: Automatic Flagman
636	4-15-61	E	Yes	Wadsworth, Mile Post 17.6: Automatic Flagman
637	4-15-61	E	Yes	Winfield, Main Street: Automatic Flagman
638	4-15-61	E	Yes	Atchison District, Mile Post 16 plus 1,613 feet: Automatic Flagman
639	4-15-61	E	Yes	Lansing, Mile Post 16.8: Automatic Flagman
640	4-15-61	E	Yes	Stone, Mile Post 7.5: Automatic Flagman
641				
642	4-15-61	E	Yes	Frontenac, Mile Post 48 plus 985 feet: Flashing Light Signal
643	5-10-61	E	Yes	Nortonville, Mile Post 17 plus 4,334 feet: Autc matic Flagman
644	4-15-61	E	Yes	Parnell, Mile Post 6 plus 3,194 feet: Automatic Flagman
645	9-08-65	M	Yes	Pawnee, Mile Post 6 plus 0,032 feet: Automatic Flagman
646	2-26-64	M	Yes	Sparks, Mile Post 109 plus 4,248 feet: Crossing Bell
647	5-02-68	E	Yes	Madison, Mile Post 19 plus 1,215 feet: Automati Flagman
648	9-08-65	M	Yes	Cushing: Mile Post 86 plus 4,686 feet, Automati Flagman
649	4-15-61	E	Yes	Topeka, Mile Post 50 plus 500 feet: Automatic Flagman
650	9-08-65	M	Yes	Enid--Independence and Washington Avenue

Date: August 2, 1972 INDEX OF ALL EO PLANS Sheet 14

EO No.	Date	Division Used On	To Field	Description
651	7-15-64	M	Yes	Abilene, Third Street: Flashing Light Signals
652				
653	4-15-61	E	Yes	Topeka, Mile Post 45 plus 2,462 feet: Flashing Light Signals
654	7-15-64	M	Yes	Great Bend, Mile Post 1 plus 2,609 feet: Wig-Wag at Broadway Street
655	4-15-61	E	Yes	Meriden, Mile Post 39 plus 1,347 feet: Automatic Flagman
656	4-15-61	E	Yes	Leavenworth Bells, Spruce and Cherokee Streets
656A	3-14-56			Jumper for Fouling Protection
657	9-08-65	M	Yes	Yost, Mile Post 23 plus 876 feet
658	4-15-61	E	Yes	Burlingame Automatic Flagman: Topeka Avenue
659	4-15-61	E	Yes	Leavenworth Automatic Flagman: Thorton Street
660	8-10-33	All	Yes	Stop for Upper Quadrant Wig-Wag
661				Obsolete. See I-71 and 71A
662				Obsolete. See I-71 and 71A
663	12-02-66	Office	No	Griswold Signal Company Aluminum Cantilever with Pivot Head
700	4-26-68	Office	No	Maintainer's Toolhouse Sketch
770				
775				
777	7-05-66	I-E-M	Yes	Highway Crossing Gate with Flasing Light Signals. (Use 777B for all New Work) Reference Only.
777A	7-05-66	I-E-M	Yes	Highway Crossing Gate with Flashing Light Signals (Use 777B for All New Work).
777B	7-05-66	All	Yes	Highway Crossing Gate with Flashing Light Signals
777C	7-05-66	E	Yes	Highway Crossing Gate with Flashing Light Signals "POWER DOWN"

Date: August 2, 1972 INDEX OF ALL EO PLANS

EO No.	Date	Division Used On	To Field	Description
779				Track Circuiting for Flashing Light Signals in N signal territory.
780	11-13-53			Typical Local Crossing Protection Circuit
780A	12-01-53			Typical Local Crossing Protection Circuit
789	8-27-57	I	Yes	Concrete Foundation for 16-ft Cantilever for Signal 52 and Signal 54 near Corwith
790	12-12-62	M	Yes	Special Foundations for Relay Houses on Fill at Winfield Junction
791	5-18-67	All	Yes	Foundation for Cantilever Type Flashing Light Si
799	6-02-61	M	Yes	Typical Circuits: Train Order Signal--N2 Signals (Cherryvale) (2 sheets)
800	4-08-61	I	No	Insulated Link for Vertical Control Rod of Tilti Insulator Switch
800A	7-10-61			Typical Circuits for Train Order Signal Using "H Signal Units
801	8-24-59	All	Yes	Code Line Disconnect Box
802	7-18-55	All	Yes	Code Line Disconnect. Do Not Use for New Work (New Work: Use E O 8 0 1 dated 5-29-59)
806		Office	No	Braking Distance Study
900	9-06-68	C	Yes	Las Animas to La Junta Transposition Record (12 sheets)
901	12-08-58	C	Yes	Hilton - Riverdale: Transposition Record (3 shee
902	8-17-42	C	Yes	La Junta-Trinidad: Transposition Record (25 shee
903	10-18-66	C	Yes	La Junta-Denver: Transposition Record (5 sheets
904	3-21-66	I	Yes	Instructions for Making Quarterly Tests of G R S Data-Trans Carrier
904A	1-10-67	All	Yes	Quarterly Test Record G R S Data-Trans Carrier
905	10-01-65	Office	No	Office (Sheet 1) and Field (Sheet 2) Form for Te on Data-Trans Carrier
906	10-01-65	Office	No	H or Bl Carrier Form for Test of Detector Locati

Date: August 2, 1972 INDEX OF ALL EO PLANS Sheet 16

EO No.	Date	Division Used On	To Field	Description
907	1-10-67	I	Yes	Hot Box Carrier Record: Sheets 1, 2 and 3
907A				Hot Box Carrier Sketch
907B	3-31-67	C	Yes	Quarterly Test Record: Servo Signal Carrier
907C	12-23-68	Office		Operation of Hot Box Detector
907D	9-13-66	All	Limited	Dragging Equipment Detector
908	11-26-69	Limited	Limited	Presence Detector Record
909	3-30-70	Office		Type "G" Contact Bender
910	10-19-70	All	Yes	Transformer Location (Trickle Charge)
910A	4-21-72	All	Yes	Commercial Power Installation
911 (File 13-3-C)	3-04-66	Office	No	Maintenance Material List
920	5-17-71			Logic for Weigh-in-Motion Scale for Weight Classification of Cars in Retarder Yard
1218	9-11-58	I	Yes	One Pole Guy Wire Location (Reference)
T-13-4	5-11-64			Contact Spring Leaf Assembly: S S S O Plan

INDEX OF EO PLANS

Illinois

Division

Date: December 31, 1964

Revised: December 4, 1979

EO Number	Date	Description
11	06-29-64	"WAIT - TWO TRAINS" sign
20	05-11-64	Hayes Derail
23B	06-03-74	531 Harmon Carrier Test Recorder (Field Redout)
23C P.1,2,3	06-03-74	Instructions for Maintenance of GRS Hot Box Det.
23D P.1,2,3,4	06-03-74	Instructions for GRS Scanner Optical Alignment.
23E P.1,2,3,4	06-03-74	Instructions for Adjusting Absolute/Differential Alarm Levels
23F P.1,2,3,4	06-03-74	Instructions for Maintenance of Servo 7621/7707 HB Det.
#24 DXL	06-02-61	Crossover Wiring No. 24 Turnout (Reference)
#24 DXR	06-02-61	Crossover Wiring No. 24 Turnout (Reference)
36C	12-03-57	Single Switch Wiring
36 CXL	12-03-57	Crossover Wiring
36 CXR	12-03-57	Crossover Wiring
#36D	03-31-53	Single Switch Wiring (Reference)
#36 DXL	08-17-53	Crossover Wiring (REference)
#36DXR	08-17-53	Crossover Wiring (Reference)
37 Sheet 2		Stancor Transformer Voltage Table
37B	06-26-64	Switch Heater Control Box (TYPE B-2)
38	11-25-63	Typical Pipe and Heater Details for Switch Heaters
39	12-04-64	Sheet Metal Case for Hardward at Propane Tank
40	12-31-64	Rails Company Snow Detector Control Box Wiring, Sheets 1 and 2
41	04-11-67	Operating Instructions for Rails Company Switch Heaters
41A	04-12-67	Special Heat Shield Brace for Rails Company Heaters
41B	04-12-67	Rails Company "PT" Controller Wiring Pland and Time Cyc
60A-B-C	02-15-67	Typical Battery Rectifier Wiring for Storage Battery
66A-B-C and D	09-29-71	Sensitive Track Circuits
66E-F	09-29-71	Track Circuits
66G-GR	01-21-72	Center-fed Track Circuits
66I	10-03-66	Track Circuit Adjustment Table: DN-22BH Relay
66IA	01-21-72	Track Circuit Adjustment Table: DN-11 Relay
66IB	01-21-72	Track Circuit Adjustment Table for Center-fed Track Circuits Using Carbon Primary or Type"ST" Primary
66IE	06-14-67	Instructions for installation and maintenance of Center-Fed Track Circuits
# 80B	11-17-49	Fouling Protection Circuits (Reference Only)
# 80B1	06-02-64	Fouling Protection Circuit with Switch Lock (Reference Only)
89	10-04-54	Foundation and Anchor Bolts for 2-Track Bridge
89A	11-15-79	Foundation for Aluminum Signal Bridge
91	03-03-71	Field Inspection and Testing of Harmon AFTAC Overlay (3 sheets)
91A	01-25-73	Line Overlay Level Adjustments
92	09-15-69	Field Inspection and Testing for WABCO Track AFO Units (2 sheets)

INDEX OF EO PLANS

Illinois

Division

Date: December 31, 1964

Revised: August 2, 1972

EO Number	Date	Description
143A	6-18-59	Traffic Reversal--Four (4) Intermediate Signals
143AN	6-16-64	Traffic Reversal—North Track: Two (2) Intermediate Signals
143B	6-18-59	Traffic Reversal—Approach Medium "W"
143BN	6-16-64	Traffic Reversal--North Track: Two (2) Intermediate Signals —Approach Medium "W"
143C	6-18-59	Traffic Reversal—Approach Medium "E"
143D	11-06-59	Traffic Reversal—Approach Limited "E"
143E	11-06-59	Traffic Reversal--Approach Limited "W"
144	8-16-61	Local Wiring for H-5 Searchlight Signal with Primary Battery
144A	8-22-67	Searchlight Signal Without "PTR" Relay
145	8-16-61	Local Wiring for H-5 Searchlight Signal with Primary Battery
175C	5-14-62	Local Wiring for Intermediate Signal Location: Flashing Yellow on "W" Signal
500A	8-26-65	Underground Cable Protector Plan
501	5-01-56	Clearance Diagram for Signal Equipment
516	4-14-64	Guard Rail for Flashing Light Signals
530	11-11-66	Automatic Train Stop (A T S) Wiring
535	11-26-58	Wayside Circuit for Type 43 Telephone
536	4-16-68	Precast Concrete Foundation Details for C&NW Type Signal Brids
536A	5-29-68	Precast Concrete Foundation Details: Signal Bridge (CES 5216
537A	11-04-64	Cast Iron Telephone Box on Wood Pole (for all new work)
540	4-21-71	Method of Mounting F-9233A Filter and 19A Arrester for TCS Pho
545A	6-21-68	Insulated Joint Fiber Information
558A	6-08-64	Shifted Load Detector Bracket
577		Switch Lock Instructions
578		To Operate Dual Control Switch by Hand (Instructions)
588	11-08-60	Resistance Adjustment Chart for Everett Resistance Unit (2 she
# 777	7-05-66	Highway Crossing Gate with Flashing Light Signals (use 777 B f all new work): Reference Only
# 777A	7-05-66	Highway Crossing Gate with Flashing Light Signals (use 777 B f all new work)
777B	7-05-66	Highway Crossing Gate with Flashing Light Signals
791	5-18-67	Foundation for Cantilever-type Flashing Light Signals
# 801	8-24-59	Code Line Disconnect Box
910	10-19-70	Transformer Location (trickle charge)
910A	4-21-72	Commercial Power Installation
1219	11-30-72	Maintenance Instructions for DC Motors.
1220	10-23-72	Field Tests for Cross and Grounds.

INDEX OF EO PLANS

Eastern

Division

Date: December 31, 1964

Revised: December 4, 1979

EO Number	Date	Description
23F P.1,2,3,4	06-03-74	Instructions for maintenance of Servo 7621/7707 HB Det.
# 24 DXL	06-02-61	Crossover Wiring No 24 Turnout (Reference)
24 DXR	06-02-61	Crossover Wiring No 24 Turnout (Reference)
36 C	12-03-57	Single Switch Wiring
36 CXL	12-03-57	Crossover Wiring
36 CXR	12-03-57	Crossover Wiring
# 36D	03-31-53	Single Switch Wiring (Reference)
# 36 DXL	08-17-53	Crossover Wiring (Reference)
# 36 DXR	08-17-53	Crossover Wiring (Reference)
37 Sheet 2		Stancor Transformer Voltage Table
37B	06-26-64	Switch Heater Control Box (Type B2)
38	11-25-63	Typical Pipe and Heater Details for Switch Heaters
39	12-04-64	Sheet Metal Case for Hardware at Propane Tank
40	12-31-64	Rails Company Snow Detector Control Box Wiring, Sheets 1 and 2
41	04-11-67	Operating Instructions for Rails Company Switch Heaters
41A	04-12-67	Special Head Shield Brace for Rails Company Heaters
41B	04-12-67	Rails Company "PT" Controller Wiring Plan and Time Cycle
60 A-B-C	02-15-67	Typical Battery Rectifier Wiring for Storage Battery
66 A-B-C &D	09-29-71	Sensitive Track Circuits
66 E-F	09-29-71	Track Circuits
66 G-GR	01-21-72	Center-Fed Track Circuits
66 I	10-03-66	Track Circuit Adjustment Table: DN-22BH Relay
66 IA	01-21-72	Track Circuit Adjustment Table: DN-11 Relay
66 IB	01-21-72	Track Circuit Adjustment Table for Center-Fed Track Circuits using Carbon Primary or Type "ST" Primary
66 IE	06-14-67	Instructions for Installation and Maintenance of Center-Fed Track Circuits
# 80B	11-17-49	Fouling Protection Circuits (Reference only)
# 80B1	06-02-64	Fouling Protection Circuits with Switch lock (Reference Only)
89	10-04-54	Foundation and Anchor Bolts for 2-Track Bridge
89A	11-15-79	Foundation for Aluminum Signal Bridge
91	03-03-71	Field Inspection and Testing of Harmon AFTAC Overlay (3 Sheets)
91 A	01-25-73	Line Overlay Level Adjustments
92	09-15-69	Field Inspection and Testing for WABCO Track AFO Units (2 Sheets)

INDEX OF EO PLANS

Eastern

Division

Date: December 31, 1964

Revised: April 14, 1976

EO Number	Date	Description
144	8-16-61	Local Wiring for H-5 Searchlight Signal with Primary Battery
144A	8-22-67	Searchlight Signal Without "PTR" Relay
145	8-16-61	Local Wiring for H-5 Searchlight Signal with Primary Battery
175B	10-29-62	Local Wiring for Intermediate Signal Locations: Flashing Yellow on "E" Signal
175D	10-29-62	Local Wiring for Intermediate Signal
500A	8-26-65	Underground Cable Protector Plan
516	4-14-64	Guard Rail for Flashing Light Signals
530	11-11-66	Automatic Train Stop (A T S) Wiring
535	11-26-58	Wayside Circuit for Type 43 Telephone
536	4-16-68	Precast Concrete Foundation Details for C&NW Type Signal Bridge
536A	5-29-68	Precast Concrete Foundation Details: Signal Bridge (CES 5216 E)
537A	11-04-64	Cast Iron Telephone Box on Wood Pole (for all new work)
540 Ref only	4-21-71	Method of Mounting F-9233A Filter and 19A Arrester for TCS Phone
545A	6-21-68	Insulated Joint Fiber Information
577		Switch Lock Instructions
578		To Operate Dual Control Switch by Hand (Instructions)
588	11-08-60	Resistance Adjustment Chart for Everett Resistance Unit (2 sheet
# 777	7-05-66	Highway Crossing Gate with Flashing Light Signals (use 777 B for all new work): Reference Only
# 777A	7-05-66	Highway Crossing Gate with Flashing Light Signals (use 777 B for all new work)
777B	7-05-66	Highway Crossing Gate with Flashing Light Signals
777C	7-05-66	Highway Crossing Gate with Flashing Light Signals "POWER DOWN"
791	5-18-67	Foundation for Cantilever-type Flashing Light Signals
# 801	8-24-59	Code Line Disconnect Box
910	10-19-70	Transformer Location (trickle charge)
910A	4-21-72	Commercial Power Installation
1219	11-30-72	Maintenance Instructions for DC Motors.
1220	10-23-72	Field Tests for Cross and Grounds.

INDEX OF EO PLANS

Middle

Division

Date: December 31, 1964

Revised: August 2, 1972

EO Number	Date	Description
3F p.1,2,3	6-3-74	Instructions for Maintenance of Servo 7621/7707 HB
# 24DXL	6-02-61	Crossover Wiring No 24 Turnout (Reference)
~~24DXR~~	~~6-02-61~~	~~Crossover Wiring No 24 Turnout (Reference)~~ Now 36 DXR (SE
36C	12-03-57	Single Switch Wiring
36CXL	12-03-57	Crossover Wiring
36CXR	12-03-57	Crossover Wiring
# 36D	3-31-53	Single Switch Wiring (Reference)
# 36DXL	8-17-53	Crossover Wiring (Reference)
# 36DXR	8-17-53	Crossover Wiring (Reference)
37 Sheet 2		Stancor Transformer Voltage Table
37B	6-26-64	Switch Heater Control Box (Type B2)
38	11-25-63	Typical Pipe and Heater Details for Switch Heaters
39	12-04-64	Sheet Metal Case for Hardware at Propane Tank
40	12-31-64	Rails Company Snow Detector Control Box Wiring, Sheets 1 and
41	4-11-67	Operating Instructions for Rails Company Switch Heaters
41A	4-12-67	Special Heat Shield Brace for Rails Company Heaters
41B	4-12-67	Rails Company "PT" Controller Wiring Plan and Time Cycle
60A-B-C	2-15-67	Typical Battery Rectifier Wiring for Storage Battery
66A-B-C and D	9-29-71	Sensitive Track Circuits
66E-F	9-29-71	Track Circuits
66G-GR	1-21-72	Center-fed Track Circuits
66I	10-03-66	Track Circuit Adjustment Table: DN-22BH Relay
66IA	1-21-72	Track Circuit Adjustment Table: DN-11 Relay
66IB	1-21-72	Track Circuit Adjustment Table for Center-fed Track Circuits Using Carbon Primary or Type "ST" Primary
66IC	12-16-66	Track Circuit Adjustment Table: 0.30 CD Code Following Relay
66IE	6-14-67	Instructions for Installation and Maintenance of Center-fed Track Circuits
# 80B	11-17-49	Fouling Protection Circuits (Reference Only)
# 80B1	6-02-64	Fouling Protection Circuits with Switch Lock (Reference Only)
89	10-04-54	Foundation and Anchor Bolts for 2-Track Bridge
91	3-03-71	Field Inspection and Testing of Hanson AFTAC Overlay (3 sheet
91A	1-25-73	Line Overlay Level Adjustments.
92	9-15-69	Field Inspection and Testing for NABCO Track AFO Units (2 she
144	8-16-61	Local Wiring for H-5 Searchlight Signal with Primary Battery
144A	8-22-67	Searchlight Signal Without "PTR" Relay
145	8-16-61	Local Wiring for H-5 Searchlight Signal with Primary Battery

INDEX OF EO PLANS

Middle

Division

Date: December 31, 1964

Revised: August 2, 1972

EO Number	Date	Description
160	9-26-61	Local Signal Circuits, Coded Track
161E-W	5-06-53	"75" and "180" Code Transmitter Control Circuits
162E-W	5-06-53	"75", "120", and "180" Code Transmitter Control Circuits
163E-W	5-06-53	"75", "120", and "180" Code Transmitter Control Circuits with "120R" Relay Selection
167	9-26-61	Front Contact Coding Cut Section
171	11-20-53	Lighting Circuits for Coded Track
172	11-20-53	Lighting Circuit for Intermediate Location
172F	12-22-59	Lighting Circuits Coded Track, Approach Medium "E"/"W"
173	11-20-53	Lighting Circuit for Intermediate Location
173F	12-22-59	Coded Track, Approach Medium "W"/"W"
174	11-20-53	Lighting Circuit for Intermediate Location
174F	12-22-59	Coded Track, Approach Medium, Two Signals
175A	5-14-62	Local Wiring for Intermediate Signal Location
175B	10-29-62	Local Wiring for Intermediate Signal Location: Flashing Yellow on "E" Signal
175C	5-14-62	Local Wiring for Intermediate Signal Location: Flashing Yellow on "W" Signal
175D	10-29-62	Local Wiring for Intermediate Signal Location: Flashing Yellow on Both Signals
500A (see below)		
516	4-14-64	Guard Rail for Flashing Light Signals
530	11-11-66	Automatic Train Stop (A T S) Wiring
535	11-26-58	Wayside Circuit for Type 43 Telephone
536A	5-29-68	Precast Concrete Foundation Details: Signal Bridge (CSS 5216 E)
537A	11-04-64	Cast Iron Telephone Box on Wood Pole (for all new work)
540 (See Cont'd)	4-21-71	Method of Mounting F-9233A Filter and "19A" Arrester for TCS Pho
545A	6-21-68	Insulated Joint Fiber Information
574	5-28-34	WA-9 (low voltage D C Automatic Flagman)
575	2-02-43	WA-19 (storage battery Circuit for Automatic Flagman)
576	4-14-50	WA-64 (Wiring Arrangement for Automatic Train Stop--superseded by EO-530)
577		Switch Lock Instructions
578		To Operate Dual Control Switch by Hand (Instructions)
588	11-08-60	Resistance Adjustment Chart for Everett Resistance Unit (2 sheet
777	7-05-66	Highway Crossing Gate with Flashing Light Signals (use 777 B for all new work): Reference Only
777A	7-05-66	Highway Crossing Gate with Flashing Light Signals (use 777 B for all new work)
500A	8-26-65	Underground Cable Protector Plan

INDEX OF EO PLANS

Middle

Division

Date: December 31, 1964

Revised: August 2, 1972

EO Number	Date	Description
777B	7-05-66	Highway Crossing Gate with Flashing Light Signals
791	5-18-67	Foundation for Cantilever-type Flashing Light Signals
# 801	8-24-59	Code Line Disconnect Box
910	10-19-70	Transformer Location (trickle charge)
910A	4-21-72	Commercial Power Installation
1219	11-30-72	Maintenance Instructions for DC Motors.
1220	10-23-72	Field Tests for Cross and Grounds.

INDEX OF EO PLANS

Colorado

Division

Date: December 15, 1965

Revised: April 14, 1976.

EO Number	Date	Description
23F		Instructions For Maintenance and Inspection of Servo 7521 and 7707 D Hot Box Detectors.
37 Sheet 2		Stancor Transformer Voltage Table
38	11-25-63	Typical Pipe and Heater Details for Switch Heaters
39	12-04-64	Sheet Metal Case for Hardware at Propane Tank
40	12-31-64	Rails Company Snow Detector Control Box Wiring, Sheets 1 and 2
40A	3-05-68	Rails Company Detector Adapted to PAD Heater
41	4-11-67	Operating Instructions for Rails Company Switch Heaters
41A	4-12-67	Special Heat Shield Brace for Rails Company Heaters
41B	4-12-67	Rails Company "PT" Controller Wiring Plan and Time Cycle
55	6-01-32	WA-55 (Local Wiring for Searchlight Signal)
56A	5-03-39	WA-56A (Local Wiring for Searchlight Signal)
57	3-12-32	WA-57 (Single and Double Battery Locations)
60A-B-C	2-15-67	Typical Battery Rectifier Wiring for Storage Battery
66A-B-C and D	9-29-71	Sensitive Track Circuits
66E-F	9-29-71	Track Circuits
66G-GR	1-21-72	Center-fed Track Circuits
66I	10-03-66	Track Circuit Adjustment Table: DN-22BH Relay
66IA	1-21-72	Track Circuit Adjustment Table: DN-11 Relay
66IB	1-21-72	Track Circuit Adjustment Table for Center-fed Track Circuits Usi Carbon Primary or Type "ST" Primary
66IB1	5-16-67	Track Circuit Adjustment Table for Center-fed Track Circuits Usi Edison Storage or Nickel-Cadmium Battery
66IE	6-14-67	Instructions for Installation and Maintenance of Center-fed Trac Circuits
69	7-26-57	WA-69 (Signal Lighting Circuits)
80	4-03-50	WA-80B (Fouling Protection Circuits)
# 80B	11-17-49	Fouling Protection Circuits (Reference Only)
# 80B1	6-02-64	Fouling Protection Circuits with Switch Lock (Reference Only)
89	10-04-54	Foundation and Anchor Bolts for 2-Track Bridge
91	3-03-71	Field Inspection and Testing of Harmon AFTAC Overlay (3 sheets)
91A	1-25-73	Line Overlay Level Adjustments.
92	9-15-69	Field Inspection and Testing for WABCO Track APO Units (2 sheets
144	8-16-61	Local Wiring for H-5 Searchlight Signal with Primary Battery
144A	8-22-67	Searchlight Signal Without "PTR" Relay
145	8-16-61	Local Wiring for H-5 Searchlight Signal with Primary Battery

INDEX OF EO PLANS

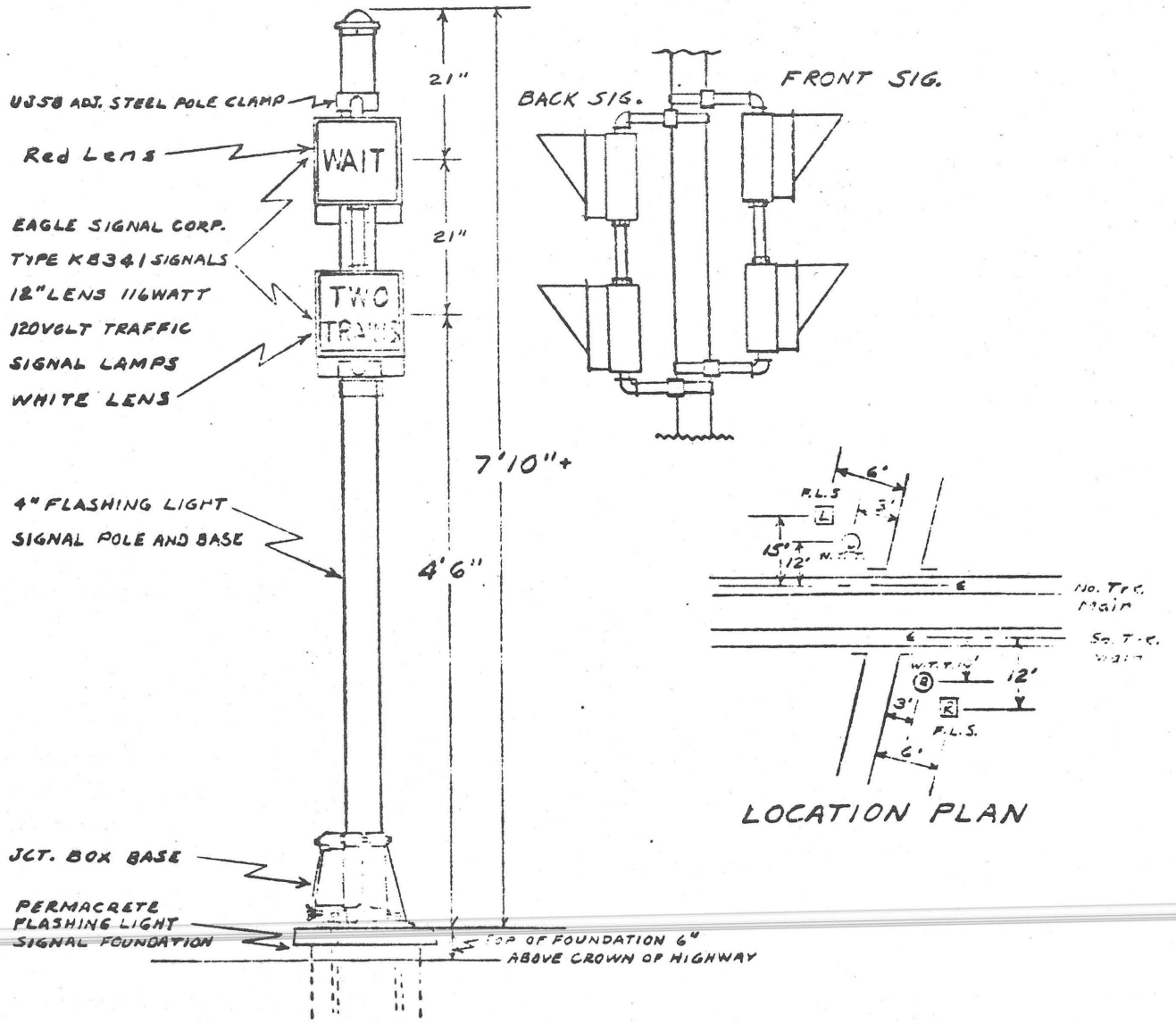
Colorado

Division

Date: December 15, 1965

Revised: April 14, 1976

EO Number	Date	Description
175A	5-14-62	Local Wiring for Intermediate Signal Location
175B	10-29-62	Local Wiring for Intermediate Signal Location: Flashing Yellow on "E" Signal
175C	5-14-62	Local Wiring for Intermediate Signal Location: Flashing Yellow on "W" Signal
175D	10-29-62	Local Wiring for Intermediate Signal Location: Flashing Yellow on Both Signals
500A	8-26-65	Underground Cable Protector Plan
516	4-14-64	Guard Rail for Flashing Light Signals
530	11-11-66	Automatic Train Stop (A T S) Wiring
535	11-26-58	Wayside Circuit for Type 43 Telephone
536	4-16-68	Precast Concrete Foundation Details for C&NW Type Signal Bridge
536A	5-29-68	Precast Concrete Foundation Details: Signal Bridge (CES 5216 E)
537A	11-04-64	Cast Iron Telephone Box on Wood Pole (for all new work)
540 Ref only	4-21-71	Method of Mounting F-9233A Filter and 19A Arrester for TCS Phone
545A	6-21-68	Insulated Joint Fiber Information
558B	12-23-54	WA-66 (High Water Detector)
558D		Instructions for Maintenance of High Water Detectors
574	5-28-34	WA-9 (Low Voltage D C Automatic Flagman)
575	2-02-43	WA-19 (Storage Battery Circuit for Automatic Flagman)
576	4-14-50	WA-64 (Wiring Arrangement for Automatic Train Stop) (Superseded by E O - 5 3 0
577		Switch Lock Instructions
578		To Operate Dual Control Switch by Hand (Instructions)
588	11-08-60	Resistance Adjustment Chart for Everett Resistance Unit (2 sheets
777B	7-05-66	Highway Crossing Gate with Flashing Light Signals
791	5-18-67	Foundation for Cantilever-type Flashing Light Signals
# 801	8-24-59	Code Line Disconnect Box
910	10-19-70	Transformer Location (trickle charge)
910A	4-21-72	Commercial Power Installation
1219	11-30-72	Maintenance Instructions for DC Motors.
1220	10-23-72	Field Tests for Cross and Grounds.

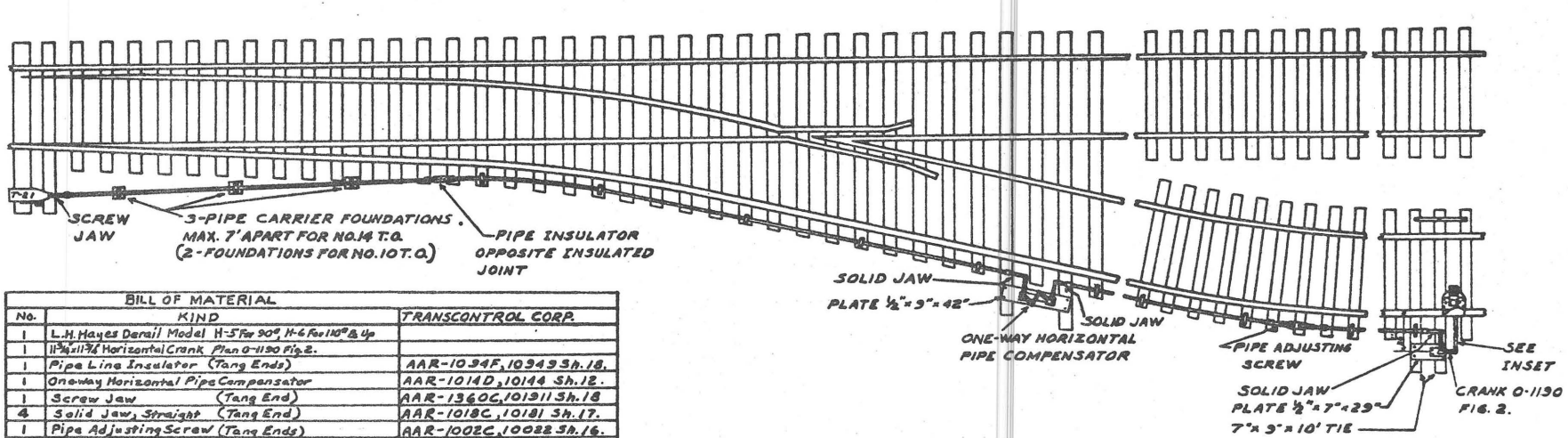


LOCATION PLAN

WAIT - TWO - TRAINS SIGNAL
USED IN CONJUNCTION WITH
FLASHING LIGHT SIGNALS AT
COURT ST. KINSMAN ILL.
Dr. 7-29-63

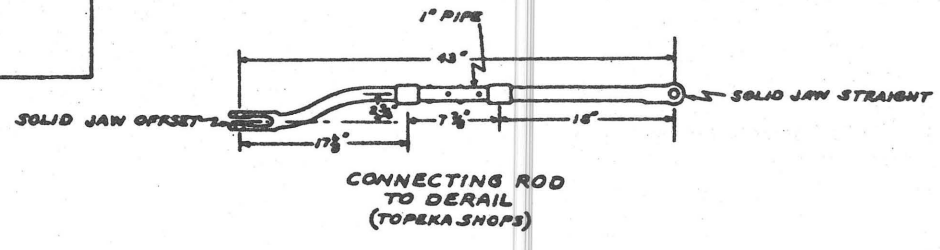
Rev. 6-29-64

EO-11



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	One-way Horizontal Pipe Compensator	AAR-1014D, 10144 Sh. 12.
1	Screw Jaw (Tang End)	AAR-1360C, 10191 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 (9H T.O.) (16' For 10T.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	⅜" x 2½" Mach. Bolt	
8	⅜" 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 48" Long (See Inset) (Topeka Shops)	
1	½" x 2" x 5" Mild Steel	

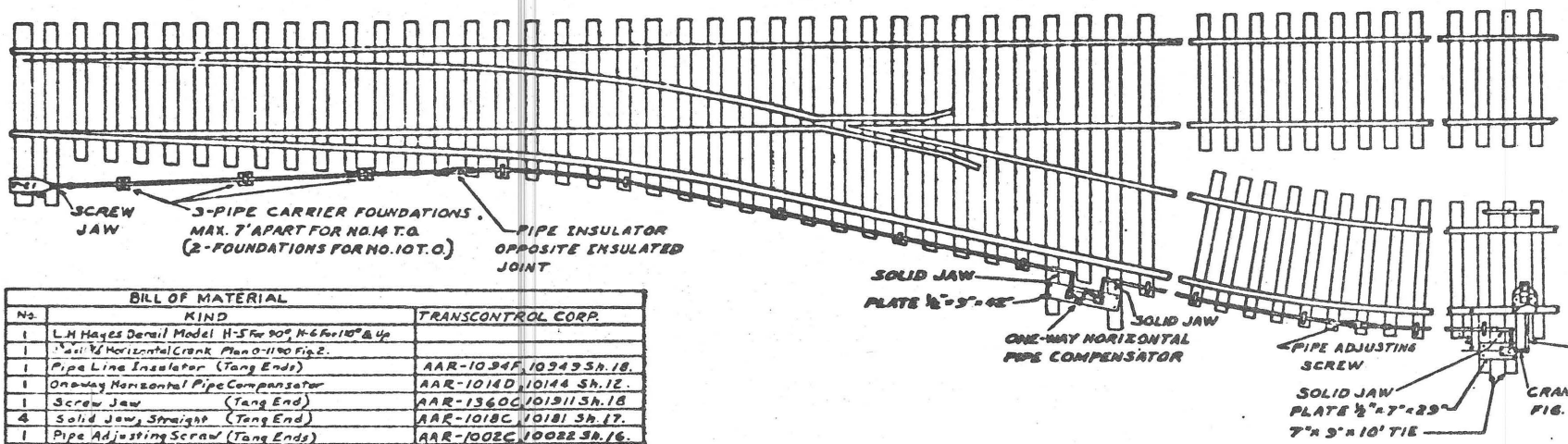


CONNECTING ROD TO DERAIL (TOPEKA SHOPS)

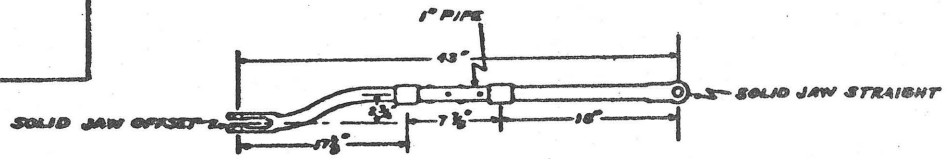
HAYES DERAIL

5-11-64 S.E.O.

E O - 20



BILL OF MATERIAL		
No.	KIND	TRANSCONTROL CORP.
1	L.H. Hayes Derail Model H-5 For 90°, H-6 For 15° & Up	
1	Nail 'A' Horizontal Crank Plan O-1190 Fig 2.	
1	Pipe Line Insulator (Tang Ends)	AAR-1094F, 10949 Sh. 18.
1	Oneway Horizontal Pipe Compensator	AAR-1014D, 10144 Sh. 12.
1	Screw Jaw (Tang End)	AAR-1360C, 101911 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 (Old 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 Carriage	
1	½" x 9" x 42" Plate	
1	½" x 7" x 29" Plate	
1	Connecting Rod 45" Long (See Inset) (Topeka Shops)	
1	½" x 2" x 4.5" Mild Steel	



CONNECTING ROD TO DERAIL (TOPEKA SHOPS)

HAYES DERAIL

5-11-64 S.E.O.

EO-20

Date: August 2, 1972 INDEX OF ALL EO PLANS Sheet 1

EO No.	Date	Division Used On	To Field	Description
1	8-02-72	Office	No	Index of "E O" Plans
2	8-02-72	I	Yes	Index of "E O" Plans in E O Book, Illinois Divis
3	12-23-61	Office	No	"E O" Plans, Book Front Cover
4		Office	No	Function Assignment Chart, Typical
5	8-02-72	E	Yes	Index of "E O" Plans in E O Book, Eastern Divisi
6	8-02-72	M	Yes	Index of "E O" Plans in E O Book, Middle Divisic
7	8-02-72	C	Yes	Index of "E O" Plans in E O Book, Colorado Divis
8	1-03-63	All	No	In-service Testing Check List (2) (list)
9, 9A, and 9A-1, 9A-2		Office	No	Speed Test Charts (Hump Yard)
10	3-27-67	Office	No	Highway Crossing Signals Progress Record
10A		Office	No	Highway Crossing Gate Breakage Report
11	6-29-64	I	Yes	"WAIT--TWO TRAINS" Sign
12	8-28-63	Office	No	Modified H1 Carrier Telephone Terminal
12A	5-25-64	Office	No	Type SV-2-1 Telephone Repeater
12B	2-24-71	Office		W7-11 Voice Repeater, Sheets 1 and 2
13	7-30-64	Office	No	Type SV-2-1 Telephone Repeater (Modified)
14	10-08-63	Office	No	F-20 Inverter Wiring (Used for Style "C" Track Circuits
14A	9-19-66	Office	No	F-20 Inverter Replacing F-10 Tuned Alternator
15	8-31-65	Office	No	Record of 10-volt, 25-watt Lamps
15A	10-20-64	Office	No	Record of Defects by Wheel Checker
16	4-20-64	Office	No	"H" Carrier Pads
17	4-21-64	Office	No	Method for Mounting F-9226 (R W Neill) Bridging Filter and Dykanol Capacitors for T C S Phone
18	4-29-64	Office	No	Titles-Binder Nos. 1, 2, and 3 for Track Charts

Date: August 2, 1972 INDEX OF ALL EO PLANS Sheet 2

EO No.	Date	Division Used On	To Field	Description
19	5-01-64	Office	No	Braking Distance Ascending and Descending
20	5-11-64	I	Yes	Hayes Derail
21	9-24-65	Office	No	Hot Box Locator Reset Chassis for 6-Volt Operatic
21A	10-03-66	Office	No	Logic Box Housing for Hot Box Detectors
21B	2-12-68		Limited	115-Volt Hot Box Locator (Modified for 12-volt)
22	9-24-65	Office	No	Truck Tool Box
23	4-03-69	E	Limited	Instructions for Readout Locations—Hot Box Locat
23A		All	Limited	Hot Box Readout (Schematic)
23A-1	1-20-69	All	Limited	Hot Box Readout—Instructions
24	6-20-66	Office	No	Bracket for Mounting Mars Light
24A	7-31-67			Scanner Plate Adaptor Plate (Servo)
24DXL	6-02-61	I-E-M	Yes	Crossover Wiring No 24 Turnout (Reference)
24DXR	6-02-61	I-E-M	Yes	Crossover Wiring No 24 Turnout (Reference)
36C	12-03-57	I-E-M	Yes	Single Switch Wiring
36CXL	12-03-57	I-E-M	Yes	Crossover Wiring
36CXR	12-03-57	I-E-M	Yes	Crossover Wiring
36D	3-31-53	I-E-M	Yes	Single Switch Wiring (Reference)
36DXL	8-17-53	I-E-M	Yes	Crossover Wiring (Reference)
36DXR	8-17-53	I-E-M	Yes	Crossover Wiring (Reference)
37 Sh 2		All	Yes	Stancor Transformer Voltage Table
37B	6-26-64	I-E-M	Yes	Switch Heater Control Box (Type B2)
38	11-25-63	All	Yes	Typical Pipe and Heater Details for Switch Heater
38A	12-29-66	All	No	Dispatcher Control Circuits for Switch Heaters
39	12-04-64	All	Yes	Sheet Metal Case for Hardware at Propane Tank

EO No.	Date	Division Used On	To Field	Description
66 IE	06-14-67	All	Yes	Instructions for installation and maintenance of Center-Fed track circuits
67	08-13-65	Office	No	"TR" Battery Test Form
67A	05-19-70	All	Limited	"TR" Battery Test Record (Reference only) (Obsolete)
67B	10-07-70	All	Limited	"TR" Battery Life Chart (Reference only) (Obsolete)
69	07-26-57	C	Yes	WA-69 (Signal Lighting Circuits)
80	04-03-50	C	Yes	WA-80B (Fouling Protection Circuits)
80B	11-17-49	All	Yes	Fouling Protection Circuits (Reference onl
80B1	06-02-64	All	Yes	Fouling Protection Circuits with switch lock (Reference only)
80C	12-15-65	All	Yes	Jumper for Fouling Circuit
80D	03-27-51	Office	Yes	Fouling Protection Circuits
81	04-14-72	All	Yes	Underground Cable Connection to Track
88	09-09-59	Affice	No	Foundation and Anchor Bolts for 2-Track Bridge (Reference Only) (Office)
89	10-04-54	All	Yes	Foundation and Anchor Bolts for 2-Track Bridge
89A	11-15-79	IE	Yes	Foundation for Aluminum Signal Bridge
90	01-24-67	Office	No	Model 1140A Harmon Motion Detector
91	03-03-71	All	Yes	Field Inspection and Testing of Harmon AFTAC overly (3 Sheets)
92	09-15-69	All	Yes	Field Inspection and Testing for WABCO Track AFTAC Units (2 Sheets)
143A	06-18-59	I	Yes	Traffic Reversal -- Four (4) Intermediate Signals
143AN	06-16-64	I	Yes	Traffic Reversal - North Track - Two (2) Intermediate Signals
143B	06-18-59	I	Yes	Traffic Reversal - Approach Medium "W"
143BN	06-16-64	I	Yes	Traffic Reversal - North Track -- Two (2) Intermediate Signals -- Approach Medium "W

Date: August 2, 1972 INDEX OF ALL EO PLANS Sheet 5

EO No.	Date	Division Used On	To Field	Description
143C	6-18-59	I	Yes	Traffic Reversal--Approach Medium "E"
143D	11-06-59	I	Yes	Traffic Reversal--Approach Limited "E"
143E	11-06-59	I	Yes	Traffic Reversal--Approach Limited "W"
144	8-16-61	All	Yes	Local Wiring for H-5 Searchlight Signal with Primary Battery
144A	8-22-67	All	Yes	Searchlight Signal Without "PTR" Relay
145	8-16-61	All	Yes	Local Wiring for H-5 Searchlight Signal with Primary Battery
160	9-26-61	M	Yes	Local Signal Circuits, Coded Track
161E-W	5-06-53	M	Yes	"75" and "180" Code Transmitter Control Circuits
162E-W	5-06-53	M	Yes	"75", "120", and "180" Code Transmitter Control Circuits
163E-W	5-06-53	M	Yes	"75", "120", and "180" Code Transmitter Control Circuits with 120R Relay Selection
167	9-26-61	M	Yes	Front Contact Coding Cut Section
171	11-20-53	M	Yes	Lighting Circuit for Coded Track
172	11-20-53	M	Yes	Lighting Circuit for Intermediate Location
172F	12-22-59	M	Yes	Lighting Circuits Coded Track, Approach Medium "E"/"W"
173	11-20-53	M	Yes	Lighting Circuit for Intermediate Location
173F	12-22-59	M	Yes	Coded Track, Approach Medium "W"/"W"
174	11-20-53	M	Yes	Lighting Circuit for Intermediate Location
174F	12-22-59	M	Yes	Coded Track, Approach Medium, Two Signals
175A	5-14-62	M-C	Yes	Local Wiring for Intermediate Signal Location
175B	10-29-62	E-M-C	Yes	Local Wiring for Intermediate Signal Location: Flashing Yellow on "E" Signal
175C	5-14-62	I-M-C	Yes	Local Wiring for Intermediate Signal Location: Flashing Yellow on "W" Signal

Date: August 2, 1972 INDEX OF ALL EO PLANS Sheet 6

EO No.	Date	Division Used On	To Field	Description
175D	10-29-62	E-M-C	Yes	Local Wiring for Intermediate Signal Location: Flashing Yellow on "Both" Signals
200	6-09-65	Office	Yes	Method of Applying Raco Insulated Testing Link
200A	11-19-65	Office	Yes	Method of Applying Raco Insulated Testing Link with Solid Wire
201	5-17-63	Office	No	Wheel Template for Chevrolet Truck
300	3-10-71			Summary of Interlocked Railroad Crossings Located on Eastern Lines
379	12-16-64	Office	No	Tool Box at Low Voltage Switch Movement
500A	8-26-65	All	Yes	Underground Cable Protector Plan
501	5-01-56	I	Yes	Clearance Diagram for Signal Equipment
503	2-13-53	Shop	No	Filing Rack for Drafting Room
504	1-24-53	Shop	No	Battery Table for C T C Station
505	1-19-53	Shop	No	Testing Table for C T C Units
507	5-15-64	Electric Shop	No	220-Volt A C coil--for Line Contactor No 16L
507A	5-15-64	Electric Shop	No	220-Volt A C coil--for Line Contactor No 16H
510		Office	No	Typical Transposition Sheet
511	1-16-53	Office	No	Typical Title for Signal Circuit Plans
512	6-19-59			Light Type Motor Car Indicator in Cast Iron Box
512A	1-20-69	Office	No	No 1379 Reflex Switch Lamp
513	3-14-57	Shop	No	Switch Circuit Controller Connection Rod
516	4-14-64	All	Yes	Guard Rail for Flashing Light Signals
517	5-09-72	All	Divn Office Limited	Crossing Protection Survey Information (3 shee
518	6-18-65	Office	No	Miles to Feet Chart
519				

Date: August 2, 1972 INDEX OF ALL EO PLANS Sheet 7

EO No.	Date	Division Used On	To Field	Description
522		Office	No	Communications Department Pole Line Plans (Shopto (Fort Madison) to Big Blue)
524				Signal Equipment Dimensions (3 sheets)
527				
529	10-02-46	Shop	No	3/4-Inch U-bolt for SIX-INCH Pipe Post
529A	2-23-51	Shop	No	1/2-Inch U-bolt for SIX-INCH Pipe Post
530	11-11-66	All	Yes	Automatic Train Stop (A T S) Wiring
531	12-22-54	Shop	No	Metal Wire Chase
532	12-23-66	All	Limited	Automatic Train Stop (A T S) Inductor Gauge
533	2-21-56	I	Yes	Typical Pole Line Layout for Placing Code Line— Illinois Division
533A	5-15-62	I	Yes	Transposition Pattern--McCook - Chillicothe
534	3-12-56	I	Yes	Transposition Pattern--Chillicothe - Fort Madison
534A	4-23-59	M	Yes	Transposition Pattern--East to West of Illinor
535	11-26-58	All	Yes	Wayside Circuit for Type 43 Telephone
536	4-16-68	All	Yes	Precast Concrete Foundation Details for C&NW Type Signal Bridge (order from Permacrete)
536A	5-29-68	All	Yes	Precast Concrete Foundation Details Signal Bridge (CES-5216 E)
537A	11-04-64	All	Yes	Cast Iron Telephone Box on Wood Pole (for all new work)
537B	9-02-64			Type 60 Wall Phone Connection to Code or Block
538 and 538A-B	3-06-57	E	No	Case Wiring Plans (Reference Only)
539		E	Yes	Transposition Record (Emporia--Ottawa) (2 sheets)
539A		E	Yes	Transposition Record (Ottawa-Olathe) (2 sheets)
539B	4-09-62	E	Yes	Transposition Record (Holliday-Olathe) (13 sheets

Date: August 2, 1972 INDEX OF ALL EO PLANS Sheet 8

EO No.	Date	Division Used On	To Field	Description
540	4-21-71	All	Yes	Method of Mounting F-9233A Filter and "19A" Arrester for TCS Phone
540A	12-17-65	All	Limited	HC-33 Ground Signal--Emergency Use Only
541	3-06-57	Shop	No	Searchlight Signal Pedestal (Shop-made)
542	5-23-57	All	Yes	Sheet Metal Stencil for Pole Line Marking
543		All	Yes	Record of Train Order Signals on Eastern Lines
544	3-06-67	Shop	No	Push Button and Indication Light in Cast Iron Bo
545A	6-21-68	All	Yes	Insulated Joint Fiber Information
545B	2-03-66	All	Yes	Insulated Joint Failure Report
545C		Office	No	Insulated Joint Installation and Retirement Reco
546		M	Yes	Face Plate--Test Set
547		M	Yes	Test Set Face Plate for Kinsley-Dodge City Machi
547A		M	Yes	Wiring Diagram for Test Set: Kinsley-Dodge Mach
548	12-03-58	Shop	No	Clearing Section Sign
549	2-10-60	Office	No	"514" Code System Interconnections
550	1-19-27	Office	No	Classification of Maintainers' Duties--Office Information (4 sheets)
550A	1-25-67	All	Yes	Form for General Signal Inspection
551	4-12-26	Shop	No	Sleet Shield for Magnetic Flagman
553		Office	No	Drafting Room Work Sheet
553A		Office	No	Drafting Room "SA" Time Report Sheet
554		Office	No	Job Report (Labor)
555		—	No	SES 136 - SP - 1 Using Sun Relay
556		All	Yes	Motor Car Indicator Record
557		Office	No	ICC Report Tracings (Automatic Interlockings)

Date: August 2, 1972 INDEX OF ALL EO PLANS Sheet 9

EO No.	Date	Division Used On	To Field	Description
558		Office	No	Slide Detector Fence
558A	6-08-64	--	No	Shifted-load Detector Bracket
558B	12-23-54	C	Yes	WA-66 (High Water Detector)
561		All	Limited	Form 888 (Division Office Information): Spring Switch Inspection Form
562	3-16-65	Office	No	Form for Personal Injury Record
563		All	Limited	Telephone Instructions (Division Request) (2 she
564		All	Limited	Cycle Recorder Test Sheets (Division Request)
566		Office	No	Emporia-Newton Transposition Pattern
566A	4-23-63	M	Yes	Newton-Hutchinson Transposition Pattern (3 sheets
567		Office	No	Color Code for Resistors
568	10-22-49	Office	No	Hand-throw Crossovers Between Main Lines (Easter Lines) (5 Sheets)
569	11-30-56	Corwith	Yes	Sketch of Concrete Valve Box (for Corwith Hump)
570		Office	No	Western Union: Standard Symbols and Abbreviatio
571	6-09-58	Office	No	Narrow Band Carrier Receiver Performance Curves (6 Sheets)
571A	4-11-66	Office	No	Maintenance Tests for Coded Carrier (3 Sheets)
571B	1-03-67	—	—	CTC Carrier Line Test Record
		I	Yes	Sheets 1, 2 and 3
		E	Yes	Sheets 4 and 5
		M	Yes	Sheets 6, 7, 8, 9 and 10
572		Corwith	Yes	Typical Track Connections for Corwith Hump (3 sh
572A	5-06-68	I-E-C	No	Lubrication Schedule for Retarder Yards
573	12-14-67	Argentine		Ties for Mounting DA-10 Direct Acting Switch Mac
573A	5-19-68	Argentine	Yes	Air Line Posts
574	5-28-34	M-C	Yes	WA-9 (Low Voltage D C Automatic Flagman)

Date: August 2, 1972 INDEX OF ALL EO PLANS Sheet 10

EO No.	Date	Division Used On	To Field	Description
575	2-02-43	M-C	Yes	WA-19 (Storage Battery Circuit for Automatic Flagman)
576	4-14-50	M-C	Yes	WA-64 (Wiring Arrangement for Automatic Train St (superseded by E O - 5 3 0)
577		All	Yes	Switch Lock Instructions
578		All	Yes	To Operate Dual Control Switch by Hand (Instruc- tions)
579	9-22-60	Office	No	List of Switches on Rule 261 Territories (14 she
580	6-24-60	I	Yes	Conduit Arrangement 2-Track Bridge with 2 or 4 Signals
580A	9-06-60	I	Yes	Conduit Arrangement 2-Track Bridge with two (2) 2-Unit Signals "W"/"W"
580B	9-06-60	I	Yes	Conduit Arrangement 2-Track Bridge with two (2) 2-Unit Signals "E"/"W"
581	10-21-59	I	Yes	Conduit Arrangement 16-ft Cantilever with one (1 2-Unit Signal
581A	12-24-59	I	Yes	Conduit Arrangement 16-ft Cantilever with two (2 2-Unit Signals
582	10-21-59	I	Yes	Conduit Arrangement 26-ft Cantilever with 4-ft Extension and two (2) 2-Unit Signals
583	10-21-59	I	Yes	Conduit Arrangement Underground Cable Connecti
584	9-27-60	I	Yes	Hand Rail 2-Track Bridge
585	10-18-61	All	No (I)	AFO Receiver Wiring for Crossing Protection (Ob lete)
586	11-05-59	I	Yes	Emergency Control Panel (506A) (Obsolete)
587	11-16-59	I	Yes	Emergency Control Panel (514 Code System)(Obsol
587A	10-20-70	All	Limited	Instructions for Operating Test Panel
588	11-08-60	All	Yes	Resistance Adjustment Chart for Everett Resista Unit (2 sheets)
590	12-07-59	All	Yes	D C Pass/ A C Block Filter for A C Overlay Circ (Reference Only--See SFS 99A)

INSTRUCTIONS

THE HOT BOX LOCATOR WILL REGISTER THE LOCATION OF UP TO FOUR ABNORMAL JOURNALS ON EACH SIDE OF TRAIN.

THE TOP ROW OF RED LAMPS AND COUNTERS INDICATE CONDITIONS ON THE NORTH SIDE OF TRAIN.

THE BOTTOM ROW OF RED LAMPS AND COUNTERS INDICATE CONDITIONS ON THE SOUTH SIDE OF TRAIN.

LAMP NO. 1 IN THE TOP ROW LIGHTS UP WHEN THE FIRST HOT BOX ON THE NORTH SIDE OF A TRAIN IS DETECTED BY THE SCANNERS. THE COUNTER ASSOCIATED WITH THE LIGHT REGISTERS THE NUMBER OF AXLES BETWEEN THE HOT BOX AND THE LAST AXLE OF THE TRAIN PASSING OVER THE SCANNERS.

LAMP NO. 2 WILL TURN ON WHEN THE SECOND HOT BOX IS DETECTED, AND ITS COUNTER WILL REGISTER THE NUMBER OF AXLES FROM THE SECOND HOT BOX TO THE END OF THE TRAIN.

LAMP NO. 3 AND 4 AND THEIR COUNTERS WILL FUNCTION FOR THE THIRD AND FOURTH HOT BOXES DETECTED.

THIS SAME INFORMATION WILL BE DISPLAYED BY THE LAMPS AND COUNTERS IN THE LOWER ROW FOR ABNORMAL JOURNALS DETECTED ON THE SOUTH SIDE OF A TRAIN.

AFTER MAKING A WRITTEN RECORD OF THE ABOVE IMFORMATION AND BEFORE CLOSING THE DOOR, PUSH THE COUNTER RE-SET BUTTON IN THE RIGHT CENTER POSITION ON THE PANEL TO EXTINGUISH THE LIGHTS AND CLEAR THE COUNTERS.

INSTRUCTIONS

THE HOT BOX LOCATOR WILL REGISTER THE LOCATION OF UP TO TWO ABNORMAL JOURNALS ON EACH SIDE OF TRAIN.

THE TWO NUMBERED LAMPS AND COUNTERS LOCATED UNDER ⌐—RAIL 1—¬ INDICATE CONDITIONS ON THE NORTH SIDE OF TRAIN.

THE TWO NUMBERED LAMPS AND COUNTERS LOCATED UNDER ⌐—RAIL 2—¬ INDICATE CONDITIONS ON THE SOUTH SIDE OF TRAIN.

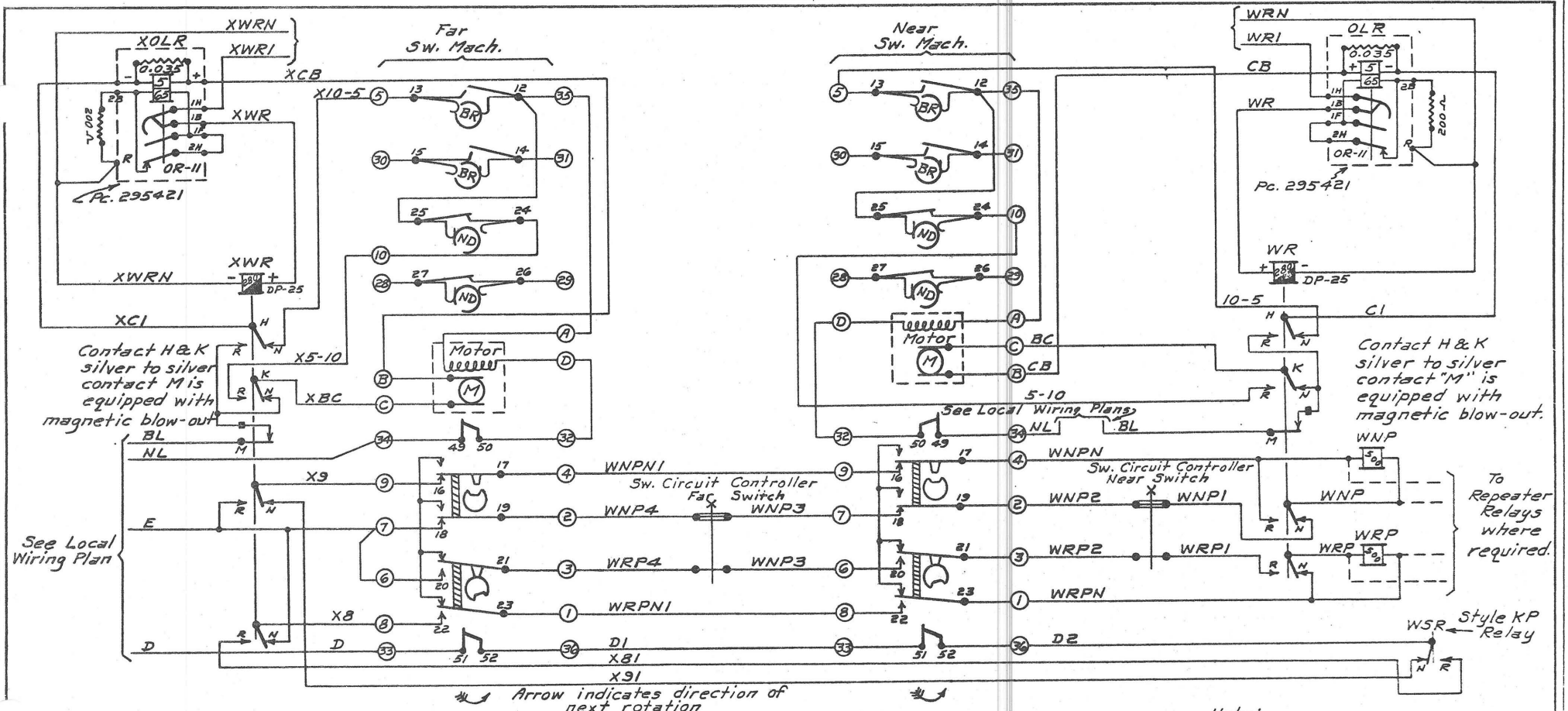
LAMP NO.1 UNDER ⌐—RAIL 1—¬ LIGHTS UP WHEN THE FIRST HOT BOX ON THE NORTH SIDE OF A TRAIN IS DETECTED BY THE SCANNERS. THE COUNTER ASSOCIATED WITH THE LIGHT REGISTERS THE NUMBER OF AXLES BETWEEN THE HOT BOX AND THE LAST AXLE OF THE TRAIN PASSING OVER THE SCANNERS.

LAMP NO.2 UNDER ⌐—RAIL 1—¬ WILL TURN ON WHEN THE SECOND HOT BOX ON THE NORTH SIDE OF TRAIN IS DETECTED, AND ITS COUNTER WILL REGISTER THE NUMBER OF AXLES FROM THE SECOND HOT BOX TO THE END OF THE TRAIN.

THE RED LAMP IN CENTER OF LOCATOR INDICATES A THIRD ABNORMAL JOURNAL AND THE REMAINDER OF TRAIN SHOULD BE INSPECTED.

THIS SAME INFORMATION WILL BE DISPLAYED BY THE LAMPS AND COUNTERS UNDER ⌐—RAIL 2—¬ FOR ABNORMAL JOURNALS DETECTED ON THE SOUTH SIDE OF A TRAIN.

AFTER MAKING A WRITTEN RECORD OF THE ABOVE INFORMATION AND BEFORE CLOSING THE DOOR, PUSH THE COUNTER RE-SET BUTTON TO RIGHT OF GLASS OVER THE PANEL TO EXTINGUISH THE LIGHTS AND CLEAR THE COUNTERS.



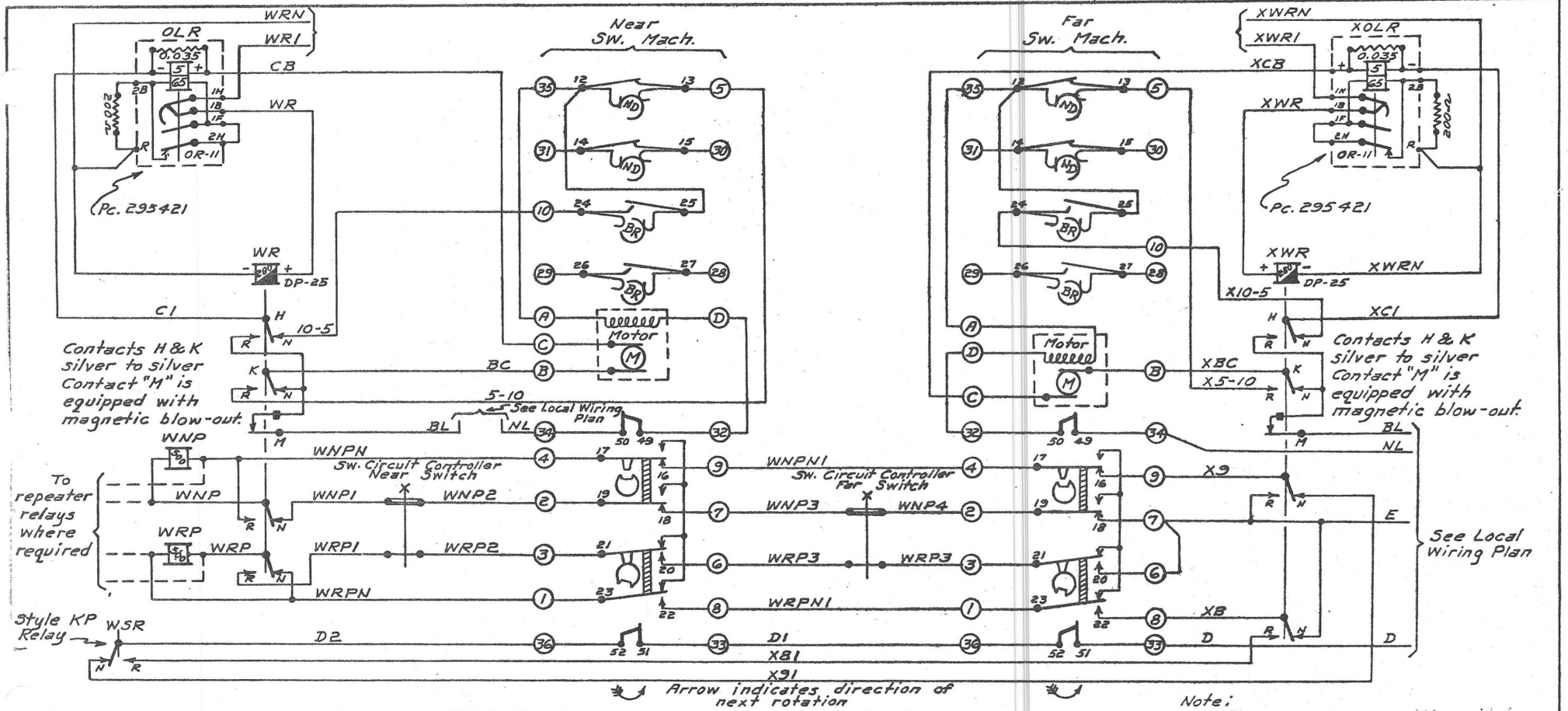
All Switch wires to be #9 B & SG
Contacts 49-50 and 51-52 opened by selecter lever
○ = Terminal on machine Terminal board.

STYLE M22A or M23A U.S. & S. Co.
D.C. LOW VOLTAGE SWITCH MOVEMENT
FOR USE WITH CODE CONTROL ONLY
CROSSOVER WITH SWITCH POINT NORMALLY TO LEFT

S.E.O. TOPEKA 6-2-61

Note:
Prefix nomenclature with switch number when more than one X-over is used.

EO-24DXL



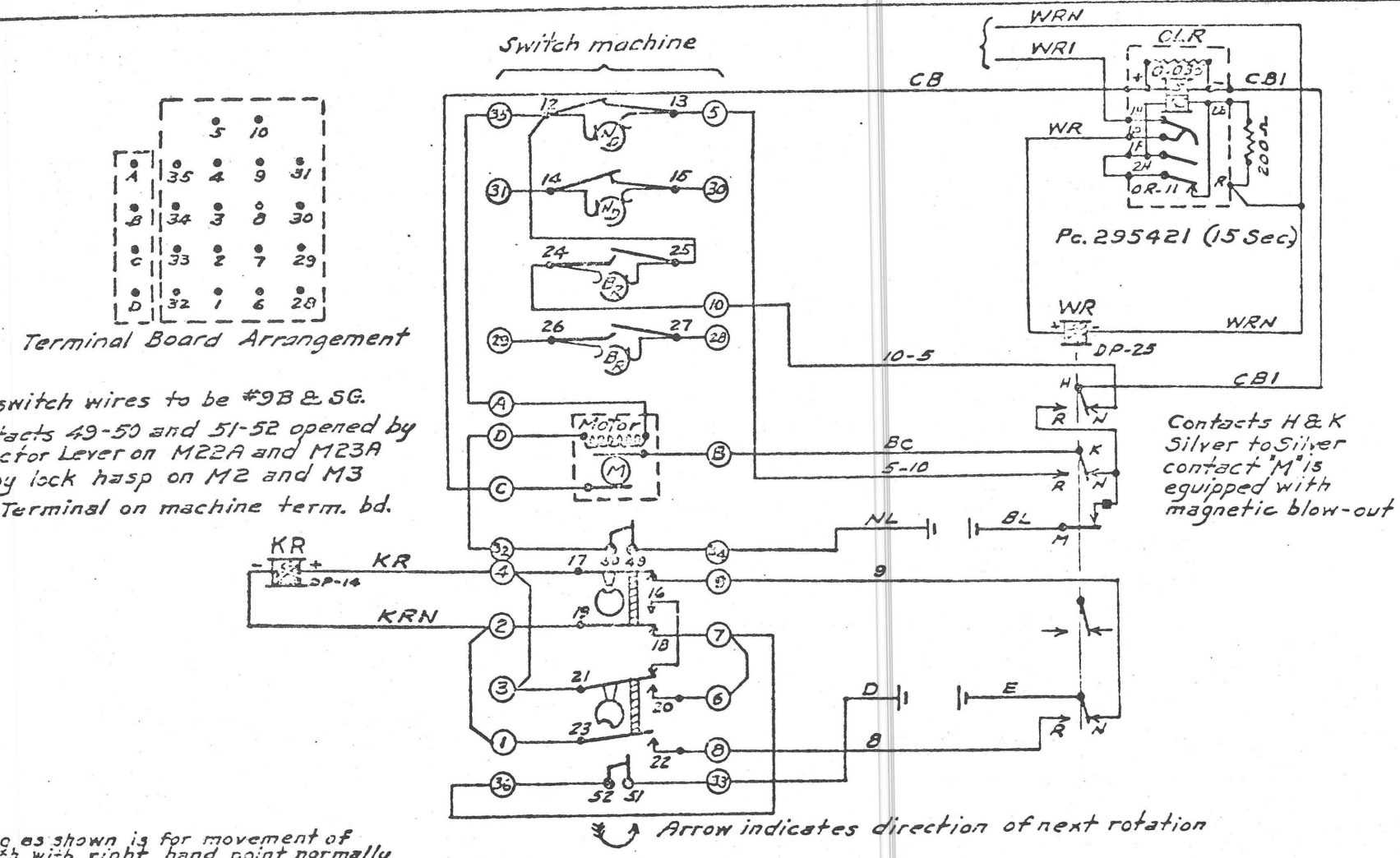
All switch wires to be #9 B. & S.G.
Contacts 49-50 and 51-52 opened by selector lever
○ = Terminal on machine Terminal board.

Note:
Prefix nomenclature with switch number when more than one X-over is used.

STYLE M22A or M23A U.S. & S. Co.
D.C. LOW VOLTAGE SWITCH MOVEMENT
FOR USE WITH CODE CONTROL ONLY
CROSSOVER WITH SWITCH POINT NORMALLY TO RIGHT

S.E.O. TOPEKA 6-2-61

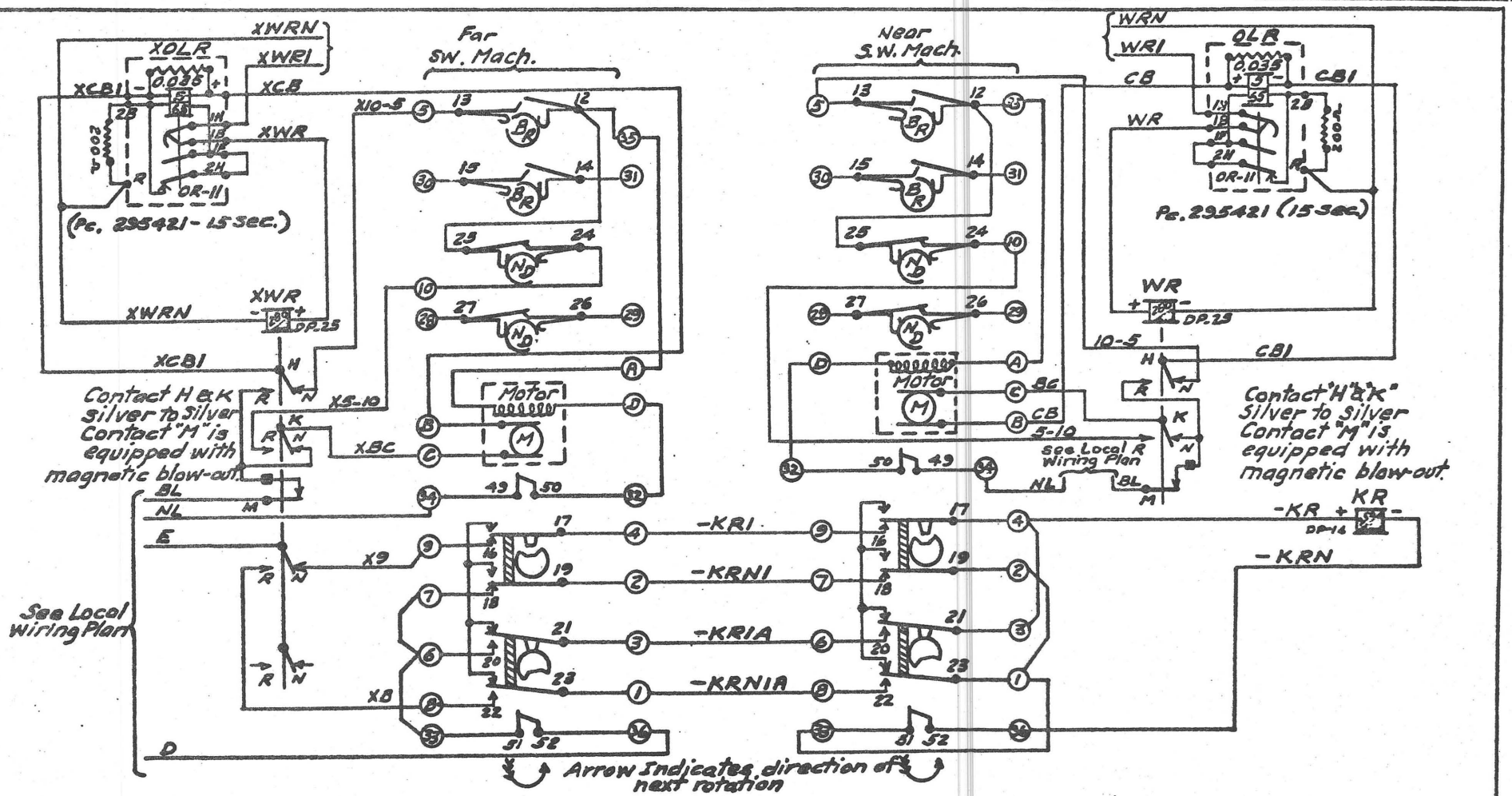
EO-24DXR



STYLE M2-M3-M22A or M23A U.S. & S. CO. D.C. LOW VOLTAGE SWITCH MOVEMENT FOR USE WITH POLARIZED INDICATION

S.E.O. TOPEKA 12-3-57

EO-36C



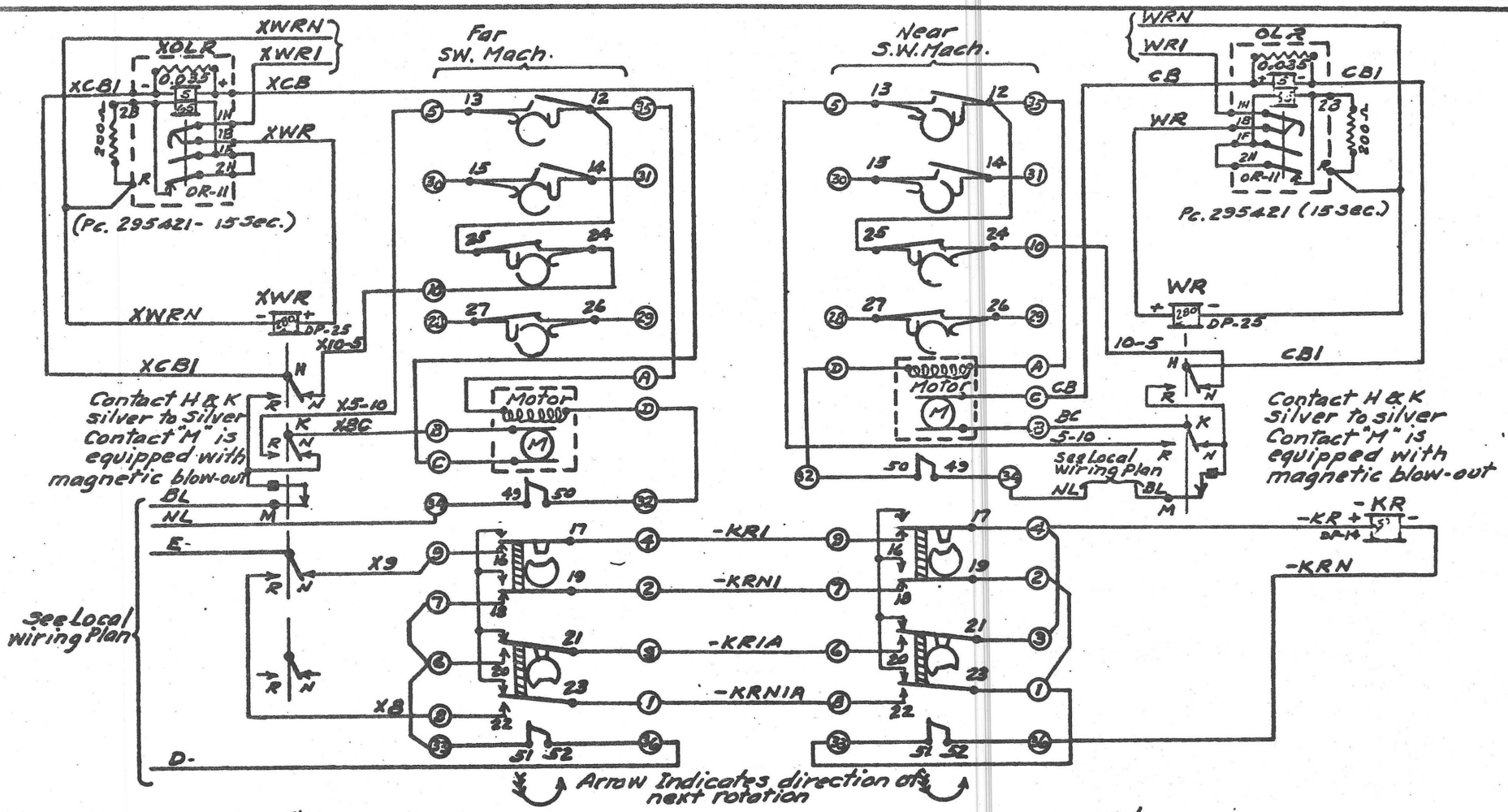
All switch wires to be #9 B&S.G.
Contacts 49-50 and 51-52 opened by selecter lever.
○=Terminal on machine Terminal board.

Note:
Prefix nomenclature with switch number when more than one X-over is used.

STYLE M2-M3-M22A OR M23A U.S. & S. CO. D.C. LOW VOLTAGE SWITCH MOVEMENT FOR USE WITH POLARIZED INDICATION

S.E.O. TOPEKA 12-3-57

EO-36CXL



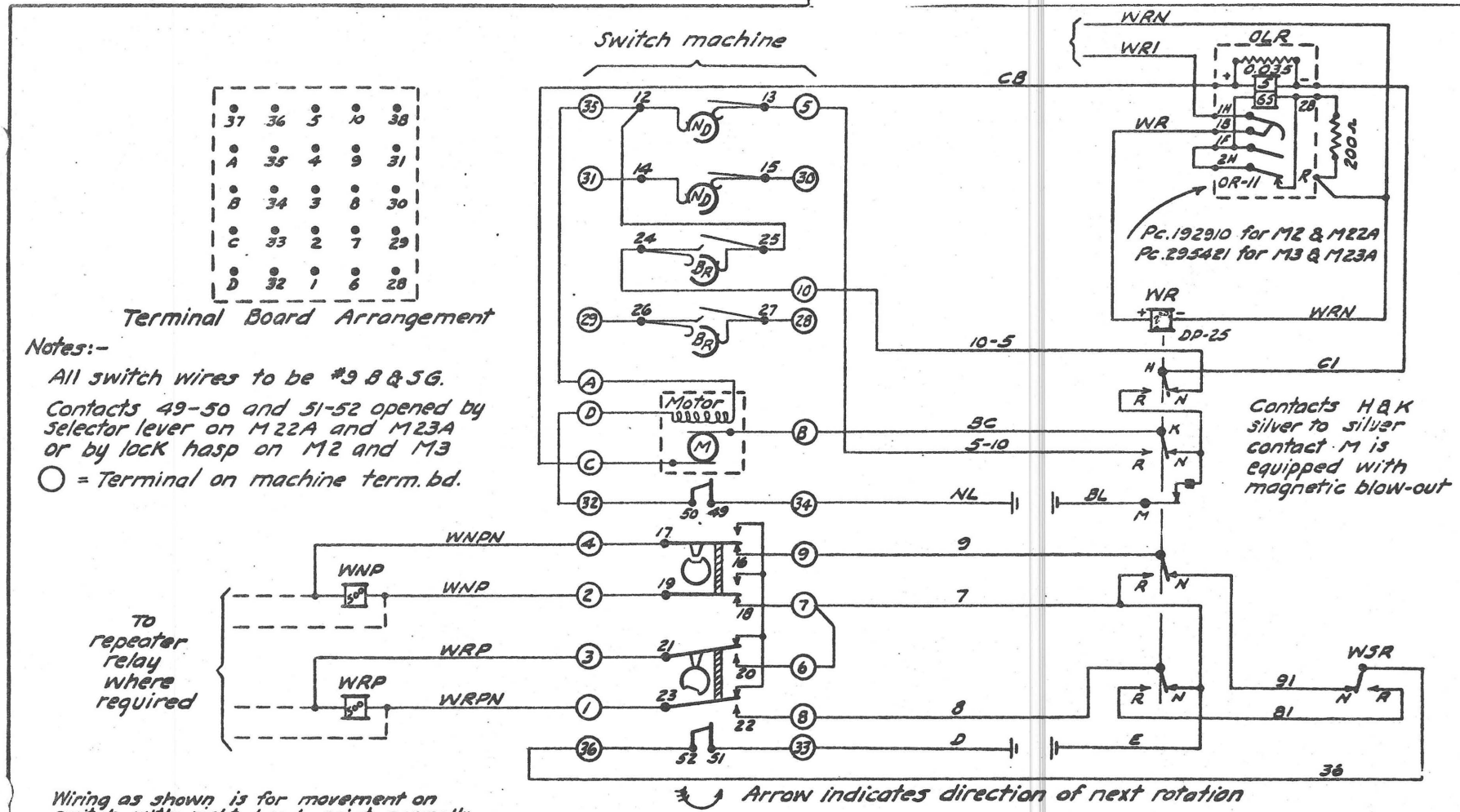
All switch wires to be #9 B&S.G.
Contacts 49-50 and 51-52 opened by selecter lever
○ - Terminal on machine Terminal board.

STYLE M2-M3-M22A OR M23A U.S. & S. CO. D.C. LOW VOLTAGE SWITCH MOVEMENT FOR USE WITH POLARIZED INDICATION

S.E.O. TOPEKA 12-3-57

Note:
Prefix nomenclature with switch number when more than one X-over is used.

EO-36CXR

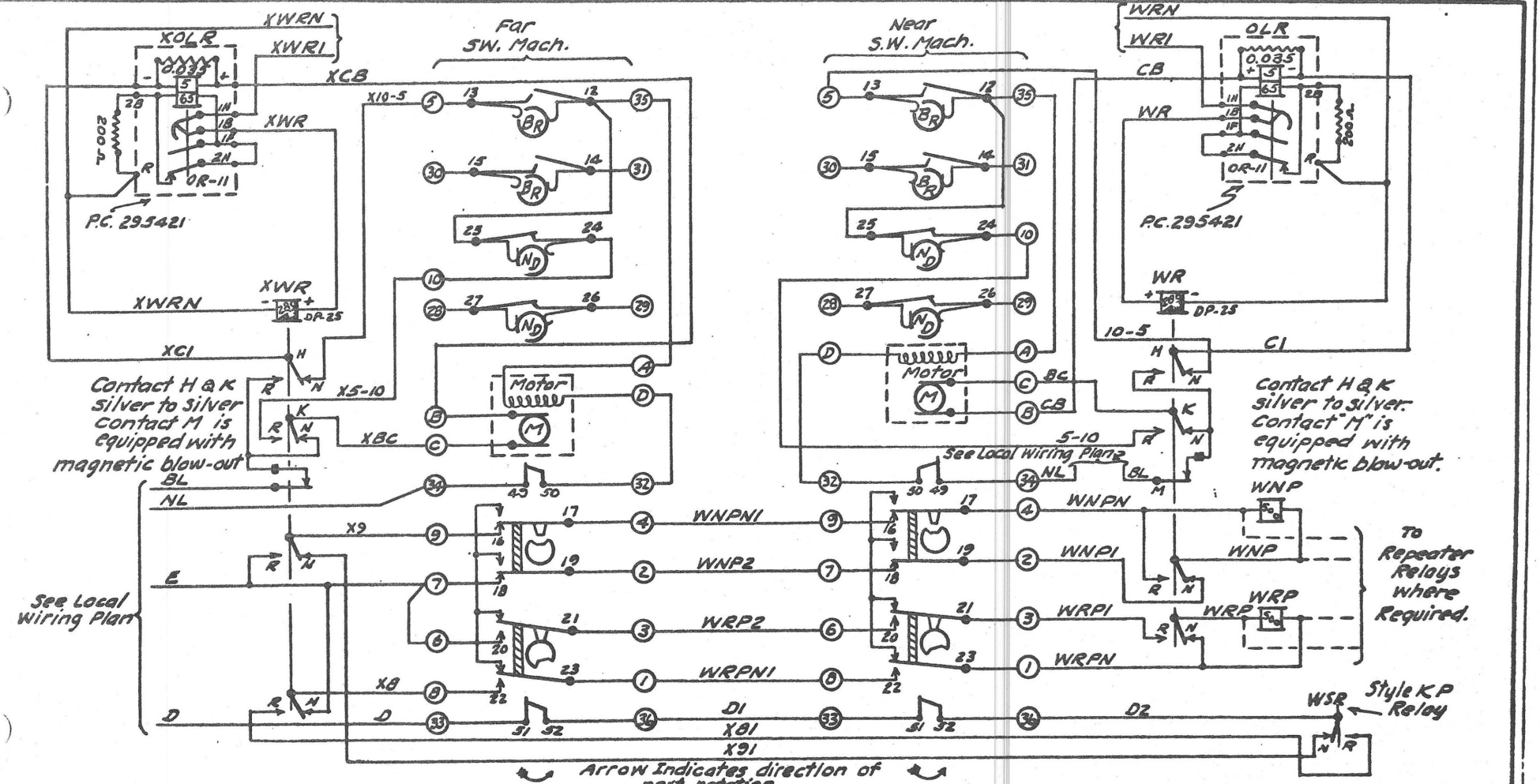


Wiring as shown is for movement on switch with right hand point normally closed. When the left hand point is normally closed, interchange the external leads to terminal posts "B" and "C" interchange leads to terminal posts "3" and "10" and reverse indication controller cams.

STYLE M2-M3-M22A OR M23A US&S.CO. D.C. LOW VOLTAGE SWITCH MOVEMENT FOR USE WITH TIME-CODE CONTROL ONLY.

S.E.O. TOPEKA 3-31-53

EO-36D



All Switch wires to be #9 B & S. G
Contacts 49-50 and 51-52 opened by selecter lever.
○ = Terminal on machine Terminal board.

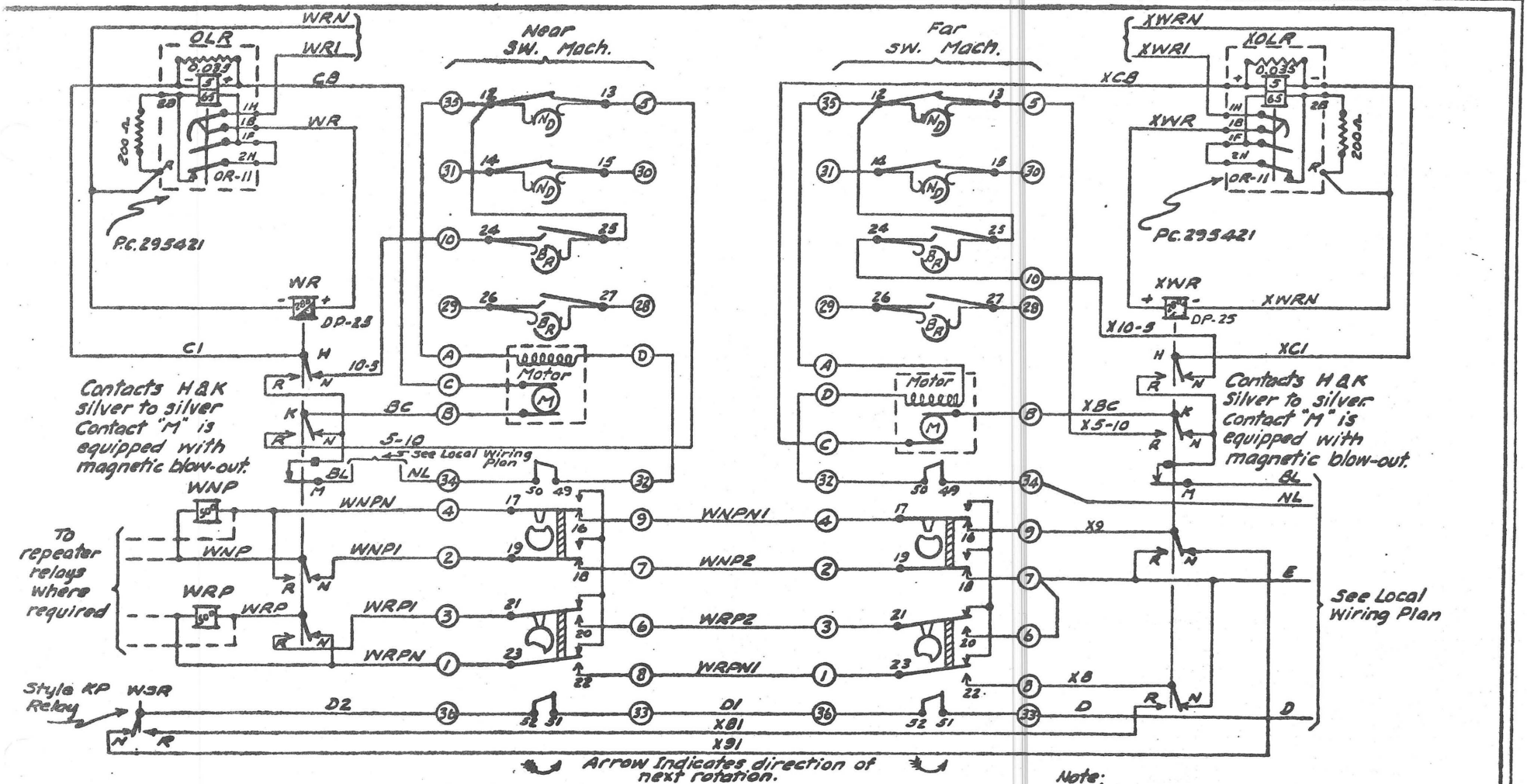
STYLE M22A or M23A U.S & S. Co., D.C. LOW VOLTAGE SWITCH MOVEMENT FOR USE WITH CODE CONTROL ONLY

CROSSOVER WITH SWITCH POINT NORMALLY TO LEFT

S.E.O. TOPEKA 8-17-53

Note:
Prefix nomenclature with switch number when more than one X-over is used.

EO-36 DXL



All switch wires to be #9 B.&S.G. Contacts 49-50 and 51-52 opened by selector lever.
○ = Terminal on machine terminal board.

STYLE M22A or M23A U.S.&S.Co., D.C. LOW VOLTAGE SWITCH MOVEMENT FOR USE WITH CODE CONTROL ONLY

CROSSOVER WITH SWITCH POINT NORMALLY TO RIGHT

S.E.O. TOPEKA 8-17-53

Note: Prefix nomenclature with switch number when more than one X-over is used.

EO-36 DXR

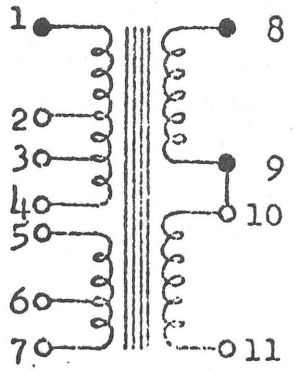
Stancor Transformer Voltage Table

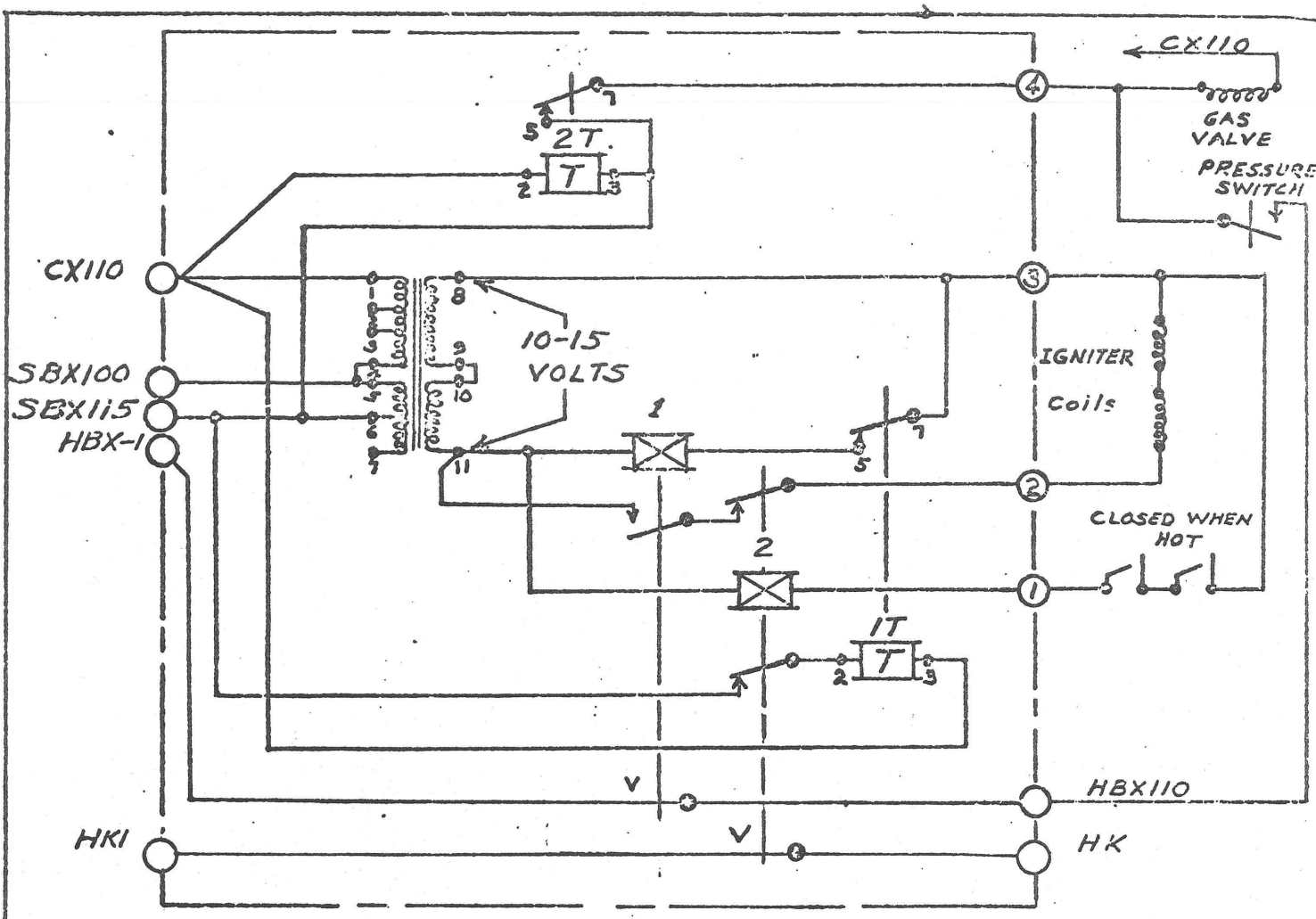
RT-204 - Output 8.0 A. D.C.			RT-206 - Output 12.0 A. D.C.		
Input 117 vac Term.No.	Connect Term.No.	Resistive Load Secondary Volts AC	Input 117 vac Term.No.	Connect Term.No.	Resistive Load Secondary Volts AC
1-2	---	29.2	1-2	---	29.8
1-7	2-6	25.7	1-7	2-6	26.0
1-6	2-5	22.8	1-6	2-5	23.8
1-7	2-5	20.6	1-7	2-5	21.2
1-3	---	19.3	1-3	---	19.7
1-7	3-6	17.6	1-7	3-6	17.9
1-6	3-5	16.2	1-6	3-5	16.7
1-7	3-5	15.0	1-7	3-5	15.4
1-4	---	14.2	1-4	---	14.6
1-7	4-6	13.3	1-7	4-6	13.5
1-6	4-5	12.5	1-6	4-5	12.9
1-7	4-5	11.7	1-7	4-5	12.0

Each transformer has the winding arrangement and terminal numbering shown in the schematic diagram below.

The primary winding is connected to terminals 1, 2, 3, & 4. A separate winding is connected to terminals 5, 6, and 7 that may be used in series with the primary to raise or lower the secondary voltage output. A variety of combinations is possible using the taps on both windings, plus the "Aiding" or "Bucking" action of the extra winding.

The secondary winding of each transformer consists of two identical windings connected to terminals 8 and 9 and to 10 and 11 respectively. Use the tables showing the various output voltages for specific terminal connections as your guide. Many combinations are possible other than those listed in the tables.





Transformer Stancor No. RT204 (8Amp. @ 12V.)

Relays 1&2 Potter & Brumfield No. FR11AL5
12VAC. Coil – 20amp. DPDT. contacts.

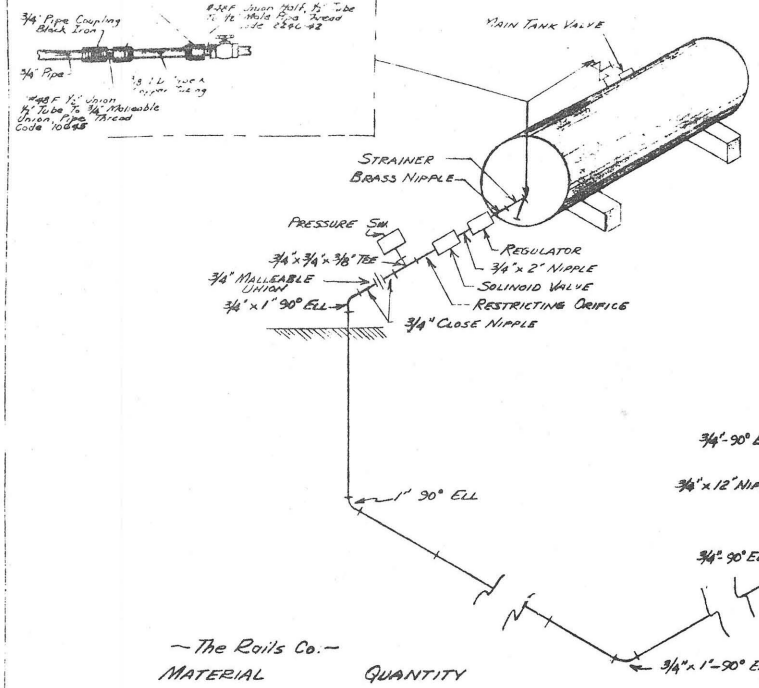
Relay 1T Amperite time delay with normally closed contact, 115V. operation, 180 sec. delay.

Relay 2T Amperite time delay with normally closed contact, 115V. operation, 30 sec. delay
Note: Install and wire octal base for 2T relay. No relay required unless specified by requisition, or plans

When one fuel tank feeds more than one switch, HBX circuit must be revised to connect in SERIES with all other control boxes. See local wiring.

SWITCH HEATER
CONTROL BOX
EO-375

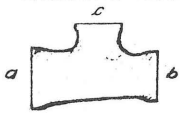
6-26-64



— The Rails Co. —

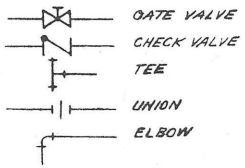
MATERIAL	QUANTITY
Rail Tel. Piping Layout Without Globe Valve Or Gas Cock And With 10' Cross Pipe	1
Rail Tel. Propane Sw. Heater Layout (Rails Co.)	1
Rails Co. Heat Shield Layout	1
Solenoid Valve, Without Strainer (Rails Co.)	1
Pressure Regulator, Complete With Gage And Strainer. (Rails Co.)	1
Pressure Switch, Each Complete With 1/4" Restricting Orifice.	1
Igniter	2
3/4"-90° Elbow	2
3/4" Iron Pipe	As Required
1" Iron Pipe	As Required
1"-90° Elbow	1
3/4 x 1"-90° Elbow	2
3/4" Close Nipple	2
3/4" Union	1
3/4" x 3/4" x 3/4" Tee	1
Restricting Orifice	1
3/4" x 4" Nipple	1
3/8" I.D. Type K High Pressure - Copper Tubing	3' (Approx.)
3/8" to 3/4", No 46F Female Coupling	1
3/4 x 3" Nipple, (To Replace Globe Valve - And Nipples).	1
3/4" x 12" Nipple	1

REDUCING TEES

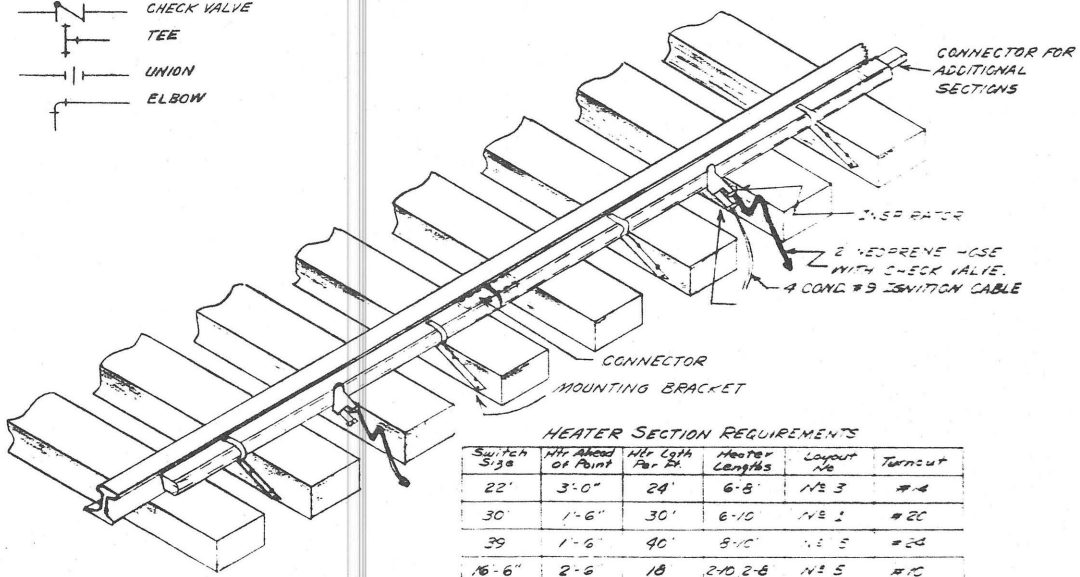


a	b	c
1"	3/4"	3/4"

LEGEND:



— HEATER DETAILS —



HEATER SECTION REQUIREMENTS

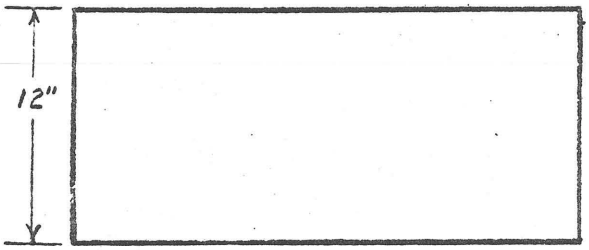
Switch Sitg	Htr Ahead of Point	Htr Lgth Per Ft.	Heater Lengths	Layout No	Turnout
22'	3'-0"	24'	6-8'	No 3	#4
30'	1'-6"	30'	6-10	No 4	#20
39	1'-6"	40'	8-10'	No 5	#24
46-6"	2'-6	18	2-10, 2-8	No 5	#10

TYPICAL PIPE AND HEATER LAYOUT FOR RAILS COMPANY SWITCH HEATERS

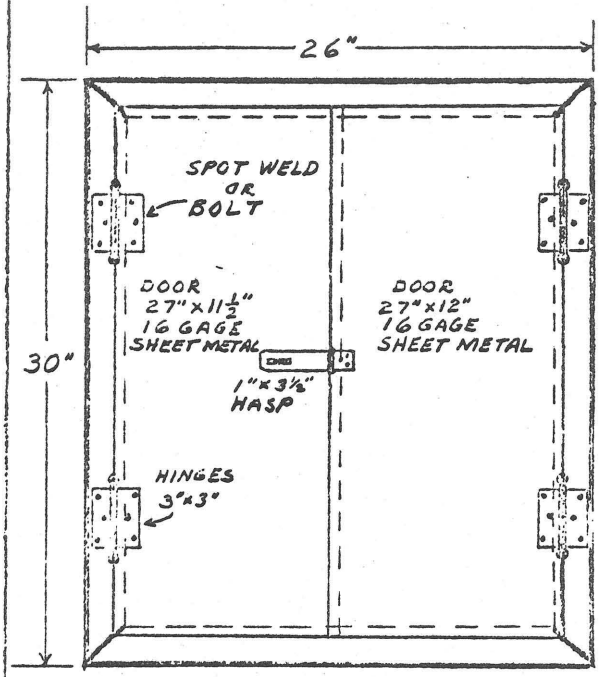
S.E.A. Topeka, Kansas Nov 16 1962

Revised 1-25-63

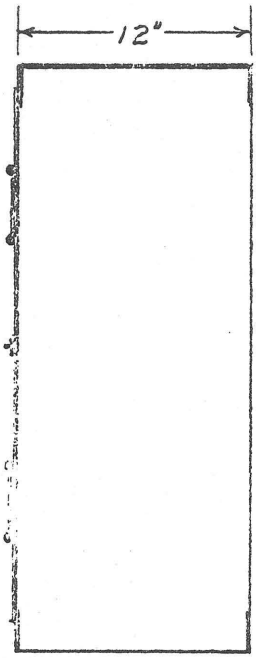
EO-38



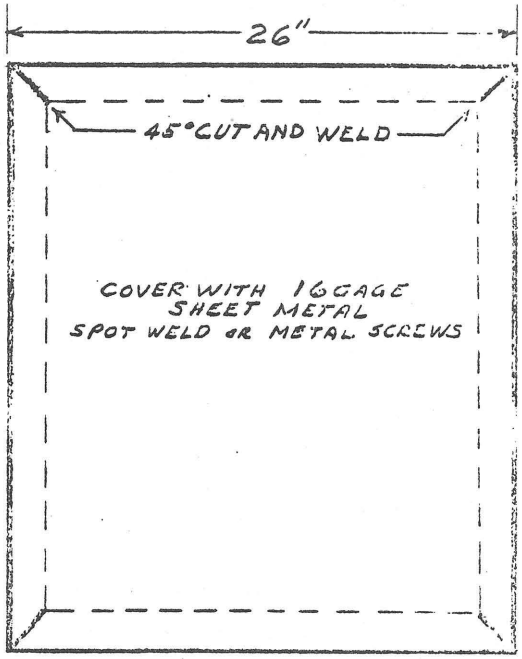
TOP VIEW



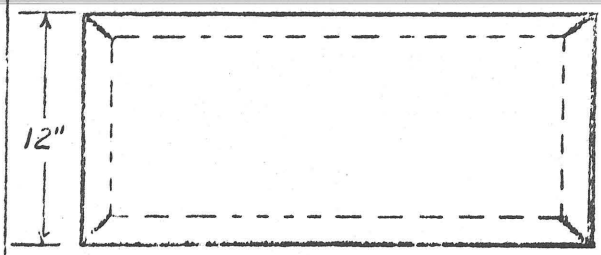
FRONT VIEW



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.

Price $40.00 2-17-65

SHEET METAL CASE
FOR VALVE-REGULATOR & SWITCH
AT PROPANE TANK

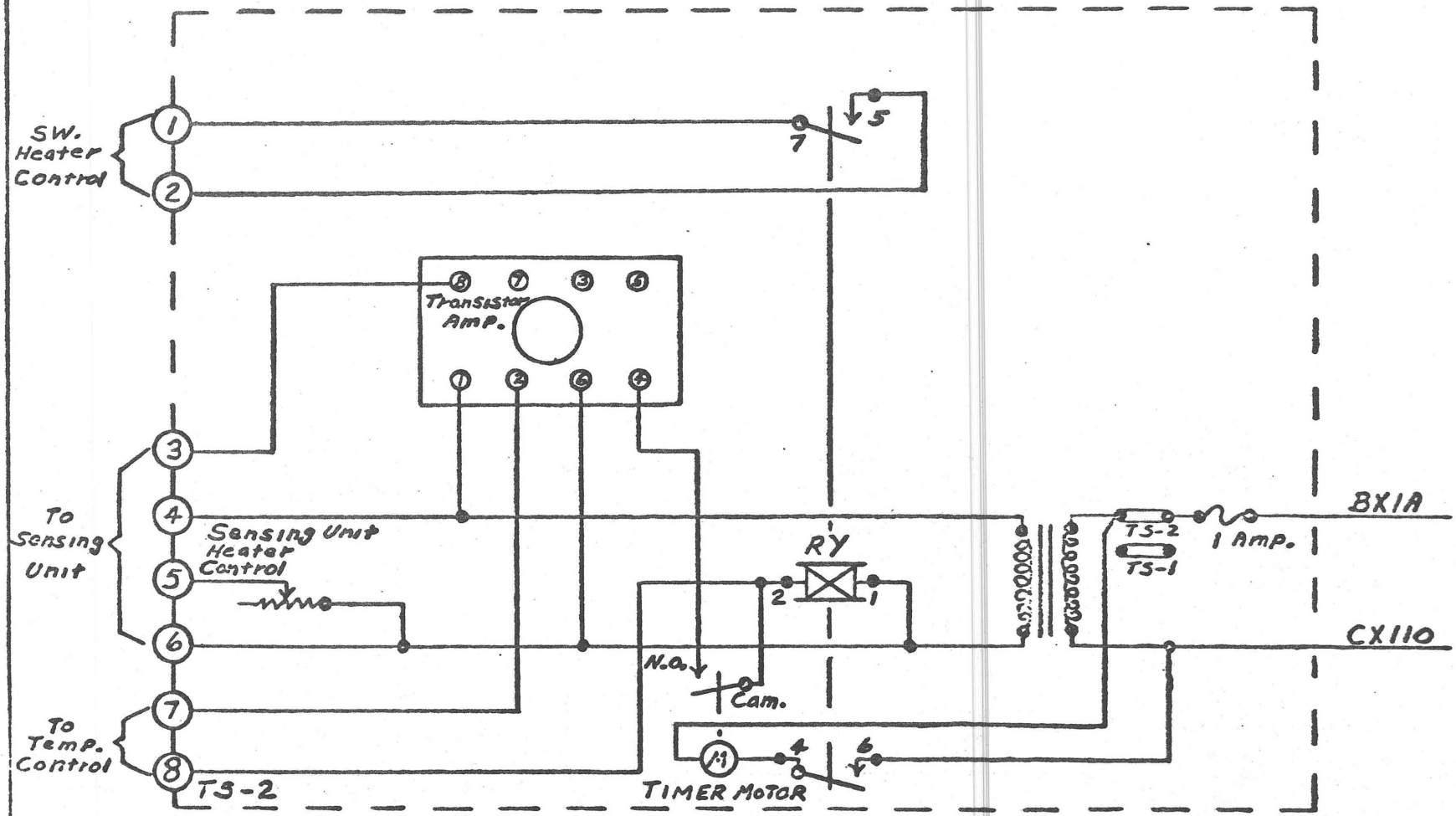
SEO-TOPEKA 11-24-64

SCALE 1/10" = 1"

Rev. 12-4-64

EO-39

POWER REQUIREMENTS
1-Sensing Head 21 Watts
each additional Head
add 16 Watts



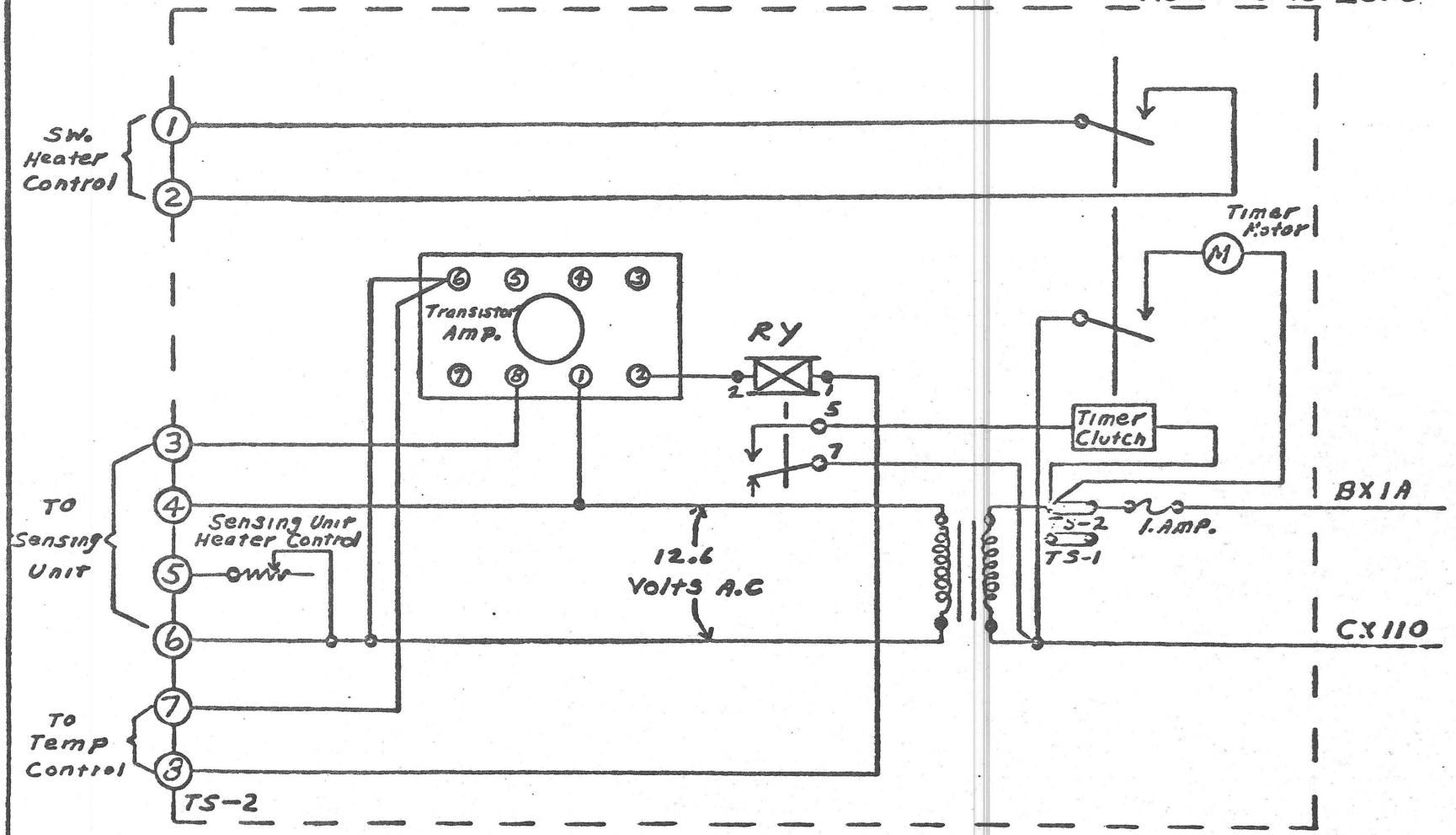
RAILS CO. SNOW DETECTOR
CONTROL BOX WIRING

S. E. O. TOPEKA 12-31-64

EO-40 Sh.1

POWER REQUIREMENTS 1-Sensing Head 21 Watts
each additional Head 16 Watts

When RY Relays Releases
Timer Clutch Mechanically
Closed Until Timer Indicator
Returns to Zero



RAILS CO. SNOW DETECTOR
CONTROL BOX WIRING

S.E.O. TOPEKA 12-31-64

EO-40 Sh. 2

OPERATING INSTRUCTIONS FOR RAILS CO. SWITCH HEATERS

(Propane-fired igniters, series-wired)

REMOVING

In spring of year, switch heaters and attachments should be removed from rail. When inspirator hose is removed, care must be taken not to allow dirt, moisture, etc. to fall into gas pipe. Seal gas pipe with pipe plug, and inspirator hoses with tape. Store in a clean dry area. Remove or cover sensing heads with small can. Remove power feed and unplug transistor amplifier from snow detector box.

CLEANING

Clean burner by removing end plug, stand burner on end and tap with a hammer, wire brush interior to remove all loose rust and scale. Inspirator throat should be clean with 12-gauge shotgun wire brush to remove all carbon, rust and soot. Clean orifice by gently reaming hole with #68 drill bit to restore to original diameter. When end plug is replaced in burner, (type held by retaining rings) two retaining rings should be used with ring openings opposite each other. Loose fitting end plugs should be coated with asbestos furnace cement to prevent air leakage.

REINSTALLING

Burners should fit firmly against and 1/2" up from bottom of ball of rail, heat retaining shield should fit a minimum of 1-1/2" from ball of rail and 1/2" above burners. Igniter wire should be replaced every fall, each igniter should have ten standing turns of wire (will take approximately 14 turns) and read 4.5 to 5 volts across igniter coils. (It is important that the voltage across both igniters be the same.) Very carefully place igniter assembly in tube with thermal switch above igniter wire. Inspirator shields should rest 1/4" from inspirator. Ballast should be cleaned out under burners at least 3" down from top of ties. Check following adjustments:

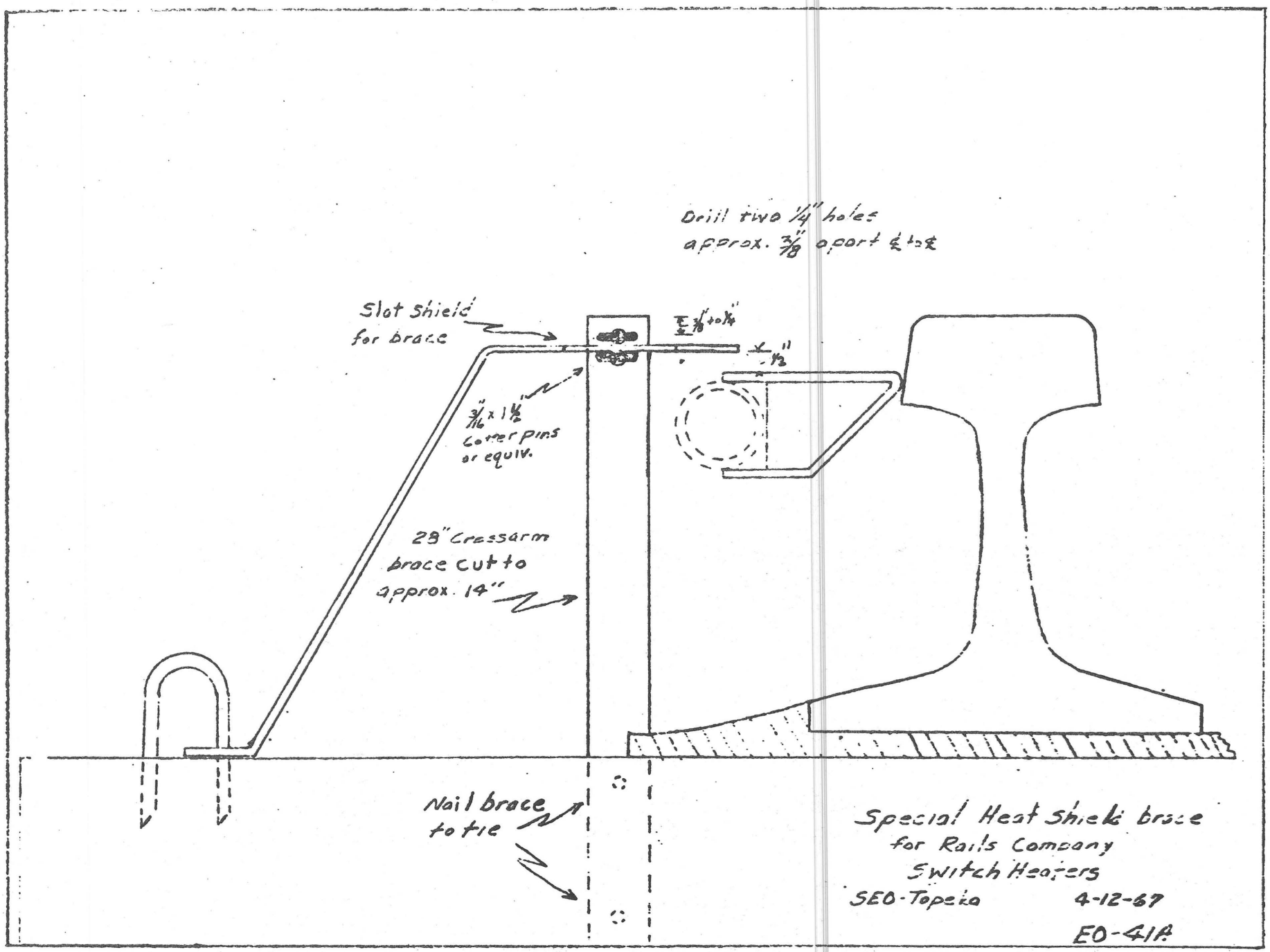
Gas pressure between 12 and 15 lbs.;
Sensing head heater between 10 and 12 volts;
Thermostat between 35 - 38 degrees.
(Make certain outside temperature bulb will remain in shade all winter.)

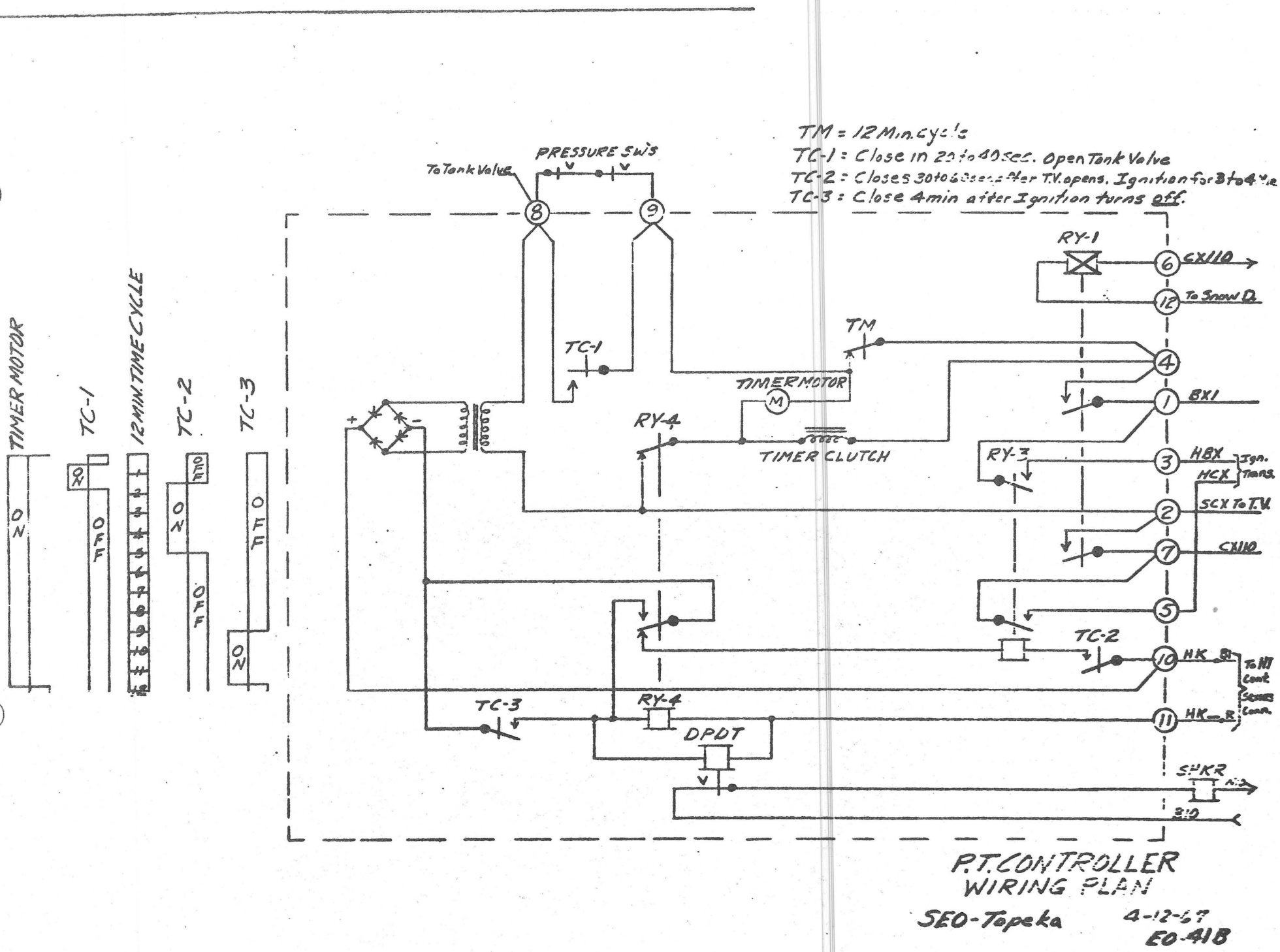
Controller box should operate as follows:

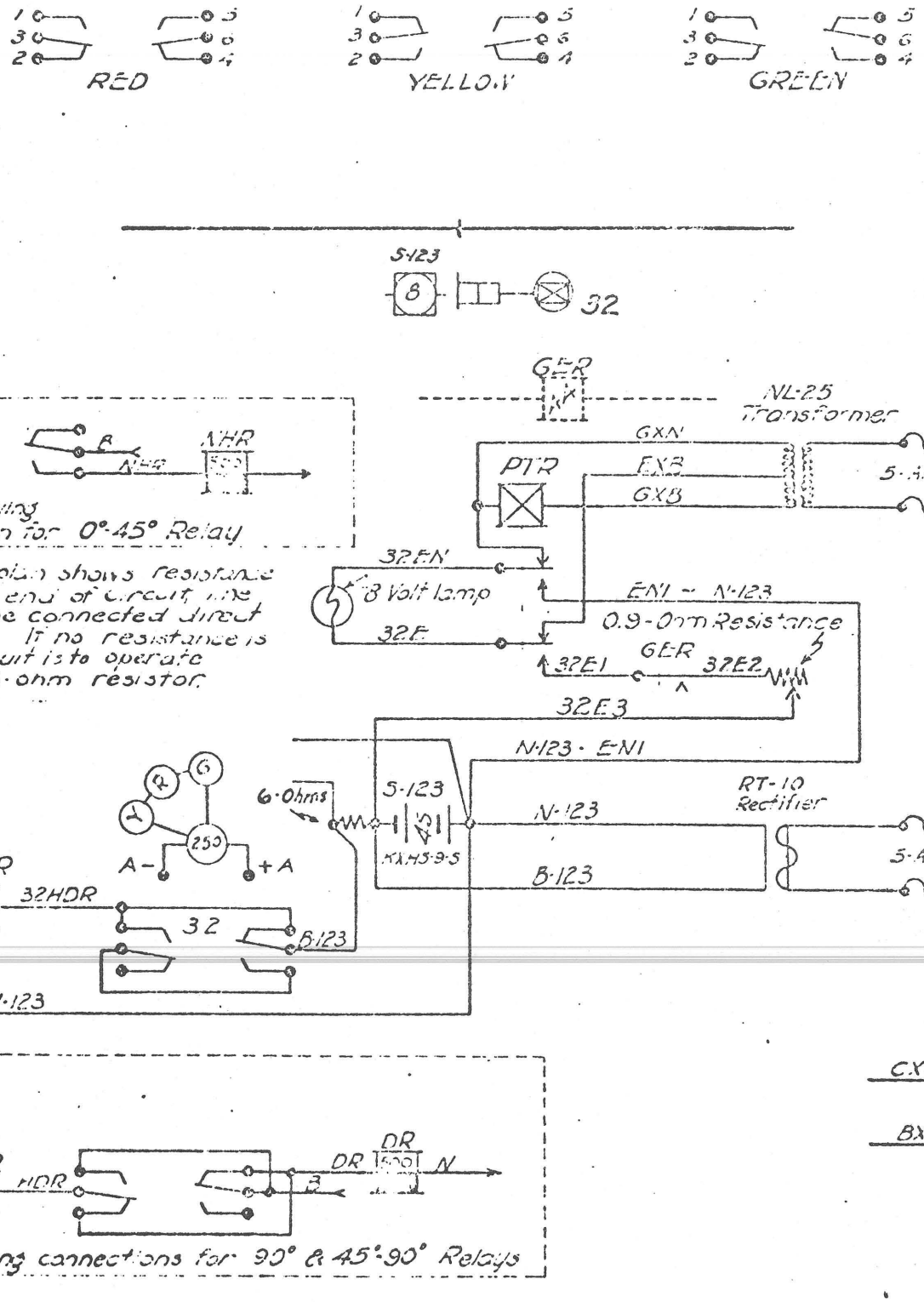
Actuate RY-1 relay, motor should run 20 to 40 seconds before gas comes on;
Gas should be on 30 to 60 seconds before ignition (when RY-3 is energized);
Ignition should be on 3-1/2 to 4 minutes and turn off 3-1/2 to 4 minutes before TC-3 cam closes and RY-4 is energized.
See that snow detector box actuates RY-1 relay by dispatcher control, and also with moisture in sensing heads.
Check that control station receives the indication on completion of cycle.

SEO Topeka 4/11/67

EO-41


Drill two 1/4" holes
approx. 3/8" apart ℄ to ℄
Slot shield
for brace
3/16" x 1 1/2"
Cotter pins
or equiv.
28" Crossarm
brace cut to
approx. 14"
Nail brace
to tie
Special Heat Shield brace
for Rails Company
Switch Heaters
SEO-Topeka 4-12-67
EO-41A


TM = 12 Min. cycles
TC-1 = Close in 25 to 40 sec. Open Tank Valve
TC-2 = Closes 30 to 60 secs after T.V. opens. Ignition for 3 to 4 min
TC-3 = Close 4 min after Ignition turns off.
TIMER MOTOR
TC-1
12 MIN TIME CYCLE
TC-2
TC-3
ON
OFF
PRESSURE SWS
To Tank Valve
8
9
TC-1
TM
TIMER MOTOR
M
RY-4
TIMER CLUTCH
RY-1
6
CX110
12
To Snow D.
4
1
BX1
RY-3
3
HBX
Ign. Trans.
HCX
2
SCX To T.V.
7
CX110
5
TC-2
10
HK
To HT Cont. Series Conn.
TC-3
RY-4
DPDT
11
HK
SHKR
N.O.
3:0
P.T. CONTROLLER
WIRING PLAN
SEO-Topeka
4-12-67
EO-418



LOCAL WIRING FOR SEARCHLIGHT SIGNAL

POLARIZED CONTROL 45° P.C.

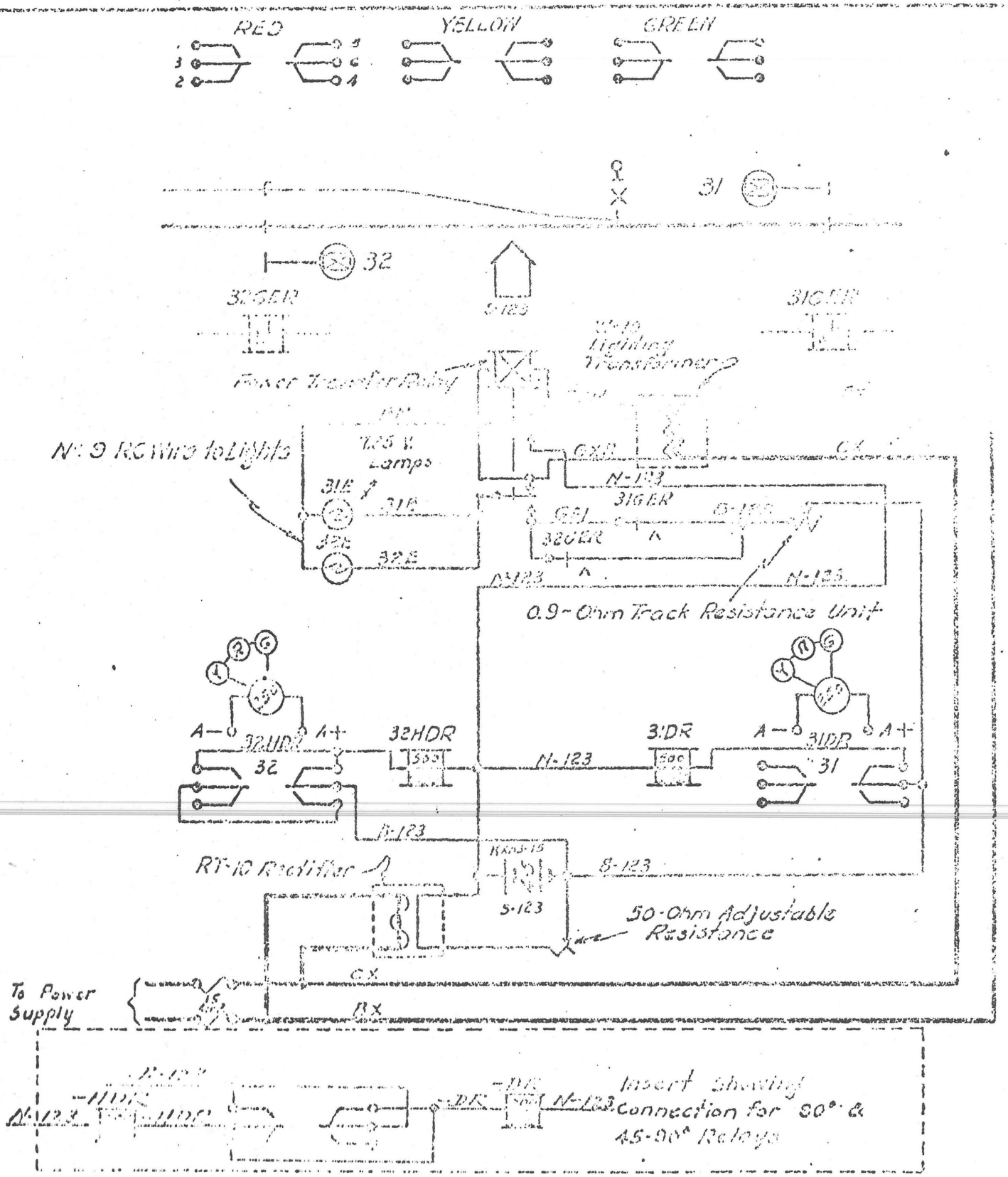
S.E.O. AMARILLO TEXAS
OCT. 20 1931
LAST REVISED:- 6-1-32

(Note: This plan superseded by SES-136 & 137

This plan supersedes plan drawn 2-13-31 for 1931 Construction

(WA-3
EO-55

This plan redrawn from WA-56 dated 2-16-31
To be used for rewiring signals at end
of sidings Le Santa to Platter, where
conc. relay house used. File: 21.3.4.5

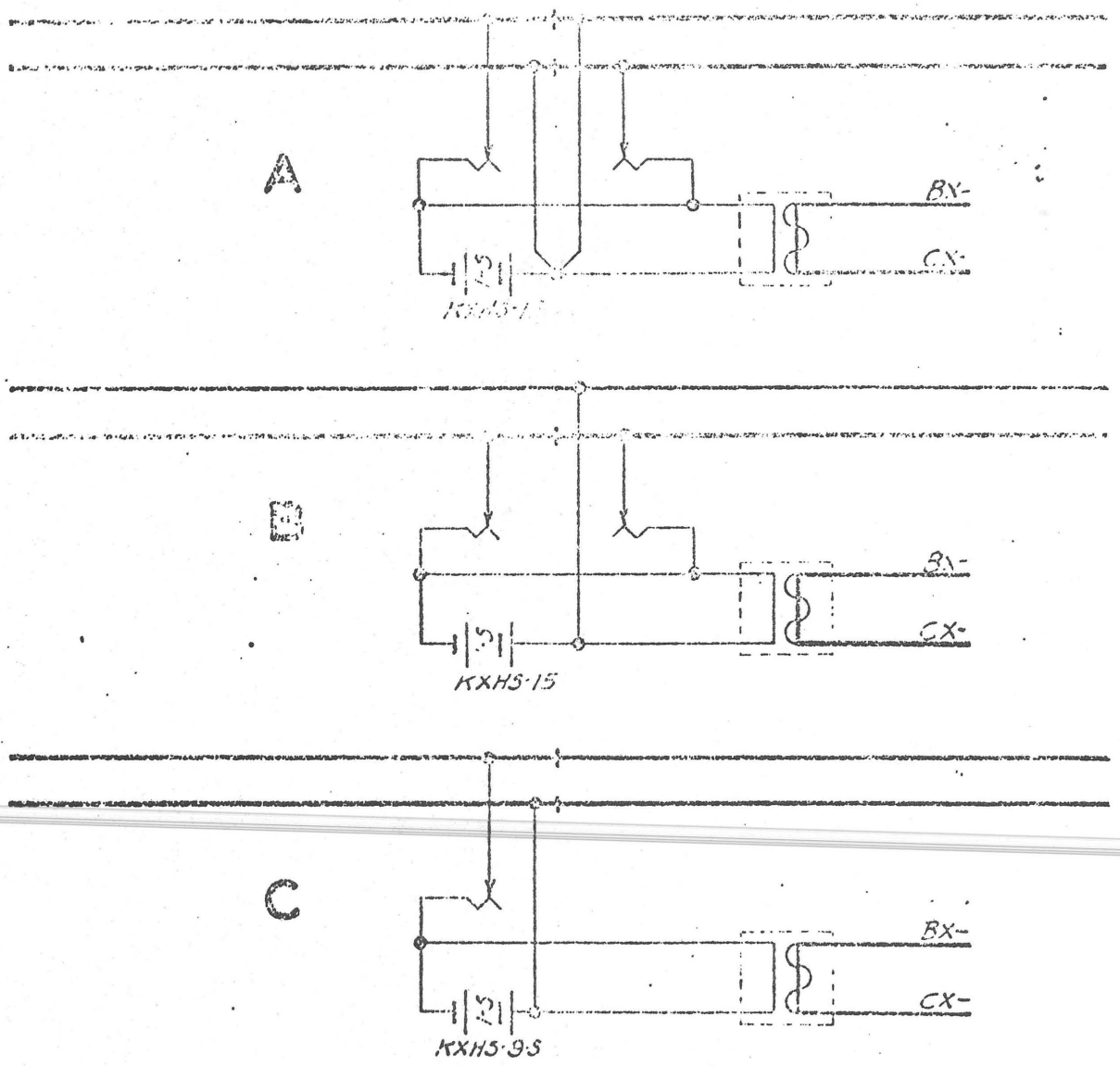


LOCAL WIRING FOR SEARCHLIGHT SIGNALS
END OF PASSING SIDING

EO-56A
(WA-56-A)

S.F.O. AMARILLO 5-3-32

WA-57

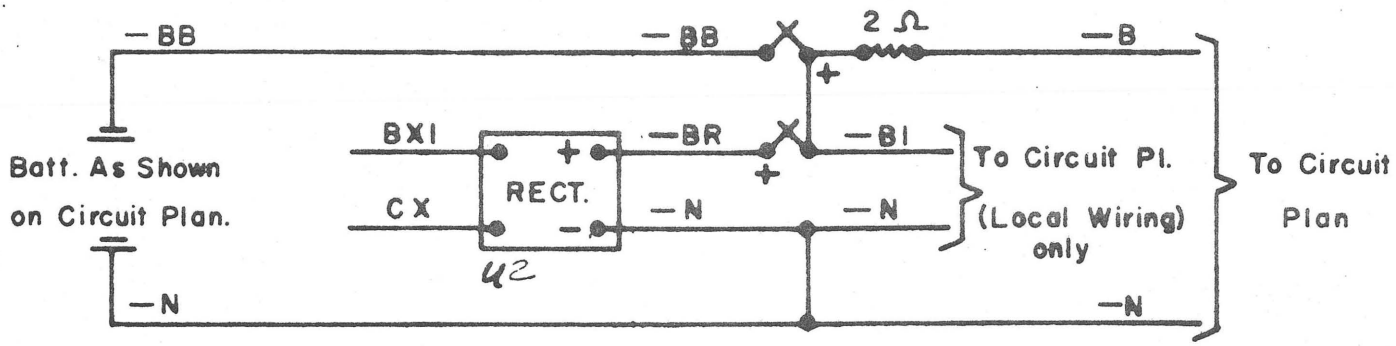


SINGLE AND DOUBLE BATTERY LOCATIONS

STORAGE BATTERY SCHEME

S.E.O. AMARILLO, TEXAS
REDRAWN - 3-12-32.
This plan supersedes plan used on 1931 construction

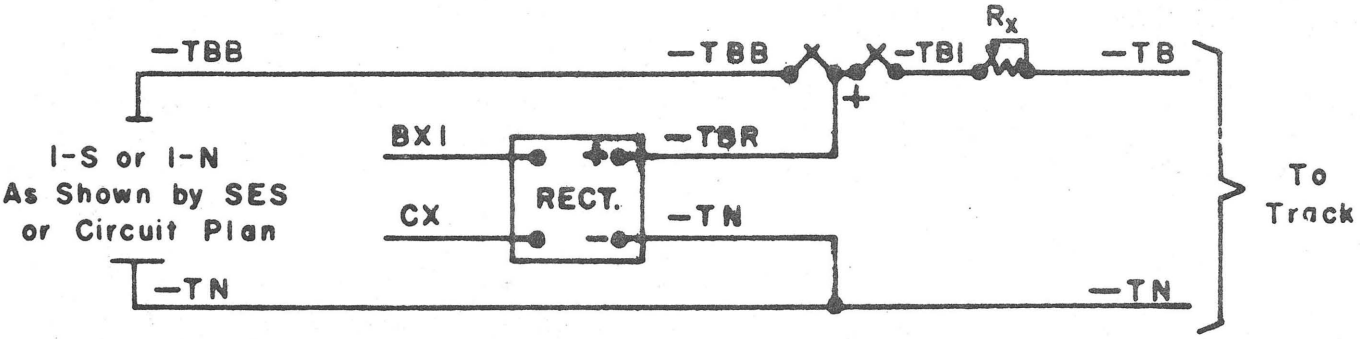
EO-57
(WA-57)



Rectifier To Have Sufficient Voltage & Current Capabilites
To Meet Circuit Requirements.

TYPICAL STORAGE BATTERY & RECTIFIER WIRING

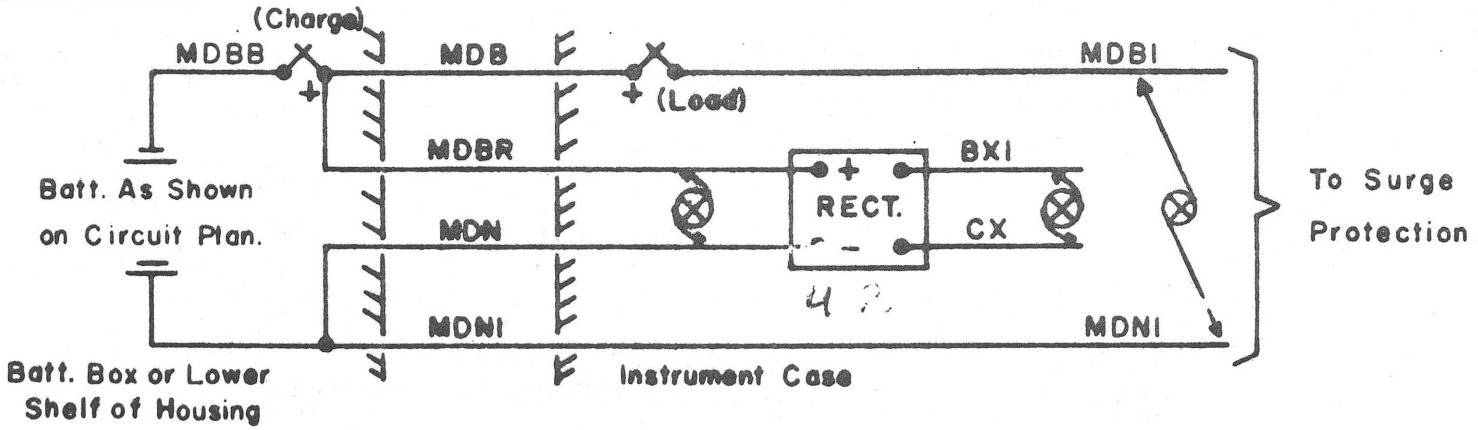
EO-60A



Rectifier To Have Sufficient Voltage & Current Capabilities
To Meet Circuit Requirements.

TYPICAL BATTERY & RECTIFIER WIRING FOR TRACK CIRCUITS

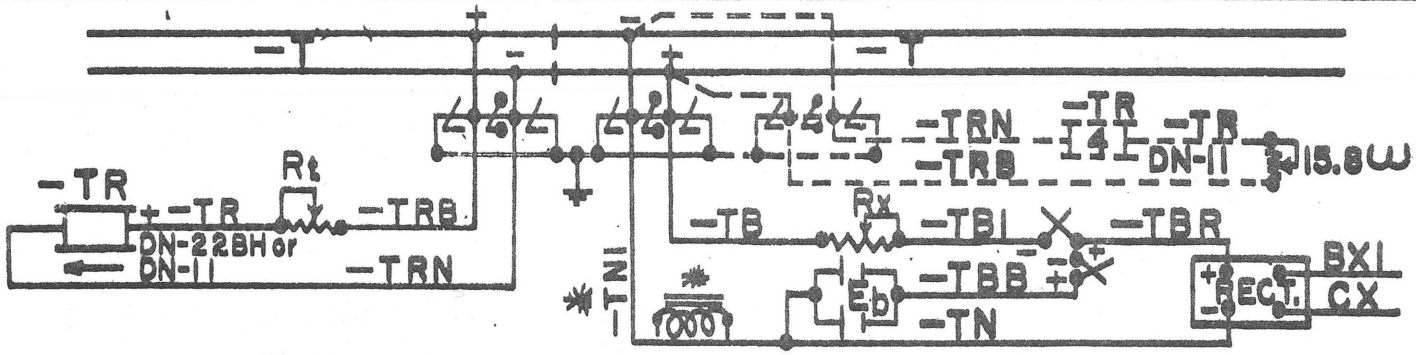
EO-60B



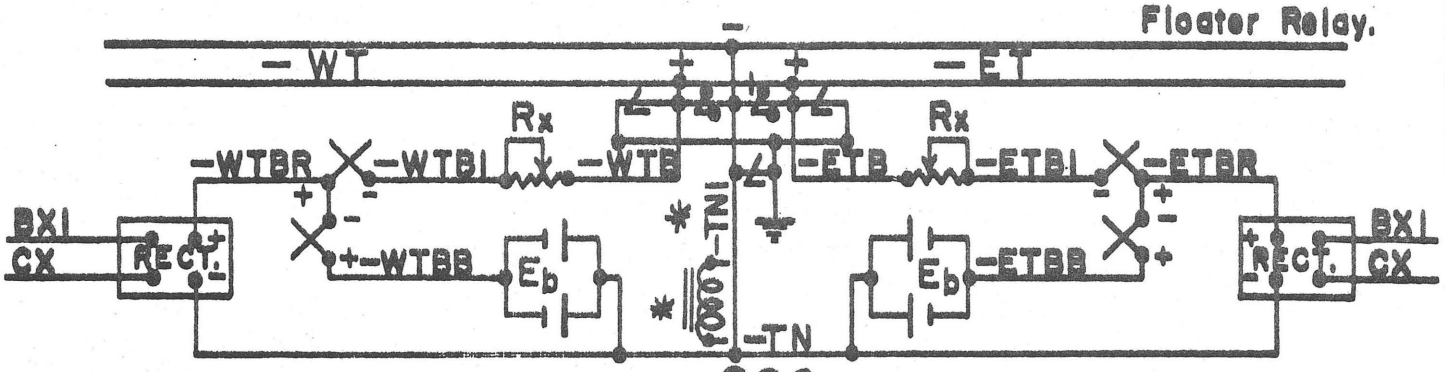
Rectifier To Have Sufficient Voltage & Current Capabilites
To Meet Circuit Requirements.

TYPICAL STORAGE BATTERY & RECTIFIER WIRING FOR ELECTRONIC EQUIPMENT

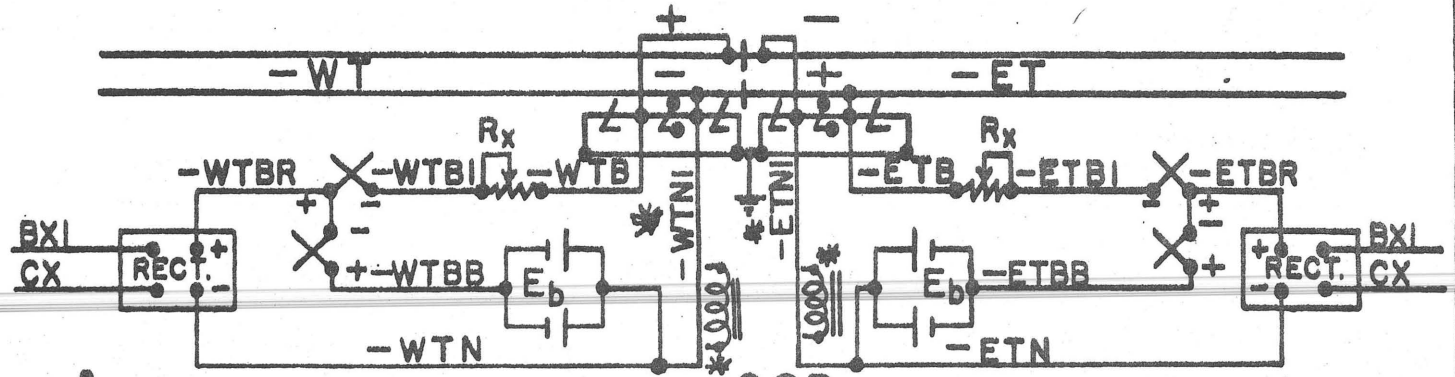
EO-60C



66A 66B ---- Optional For Floater Relay.



66C



66D

RACO (Equalizer) 700-1.

RACO-485 or USG-327988.

For Copper-Oxide battery use 4 cells multiple-series. $\left(\dashv\vdash\ \overset{H}{E_b}\ \dashv\vdash\right)$

Wire Carbon primary cells in multiple as shown.

Rectifiers to be style RT-5 PC.No.228173, No.2643, TI or HT-1222A.

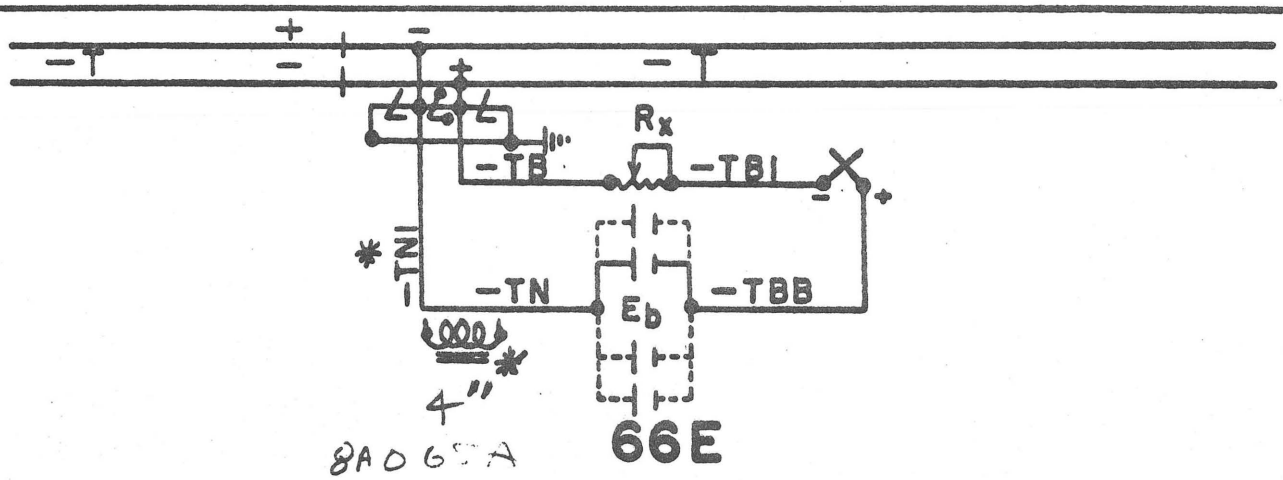
On timing sections used in connection with crossing protection use EO-66D.

For adjustment and settings for R_x and R_t see I-97 for Copper-Oxide, and EO-66I-Series for Carbon Cells.

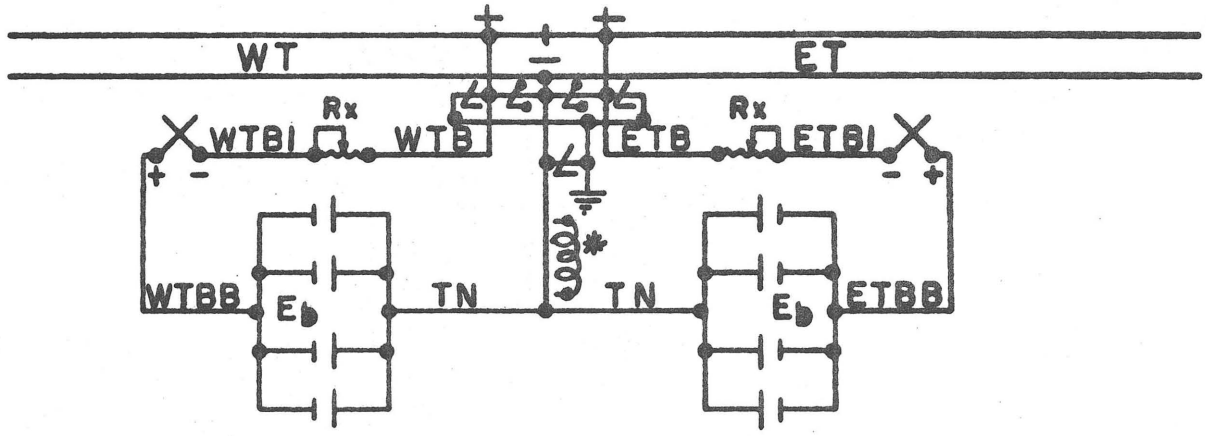
✱ Denotes VT-2, VT-10 or Equiv. Reactor to be Placed in Neg. Track Lead as Shown, Where Overlay Track Circuit is Present and EO-Reference is Suffixed by X. (I.e. EO-66B-X).

Dr. 5-2-61 Rev. 9-29-71

EO-66A-B-C-D



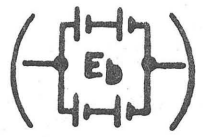
66E



EO-66F

RACO (Equalizer) 700-1.

RACO 485.

For Copper-Oxide battery use 4 cells multiple-series. 

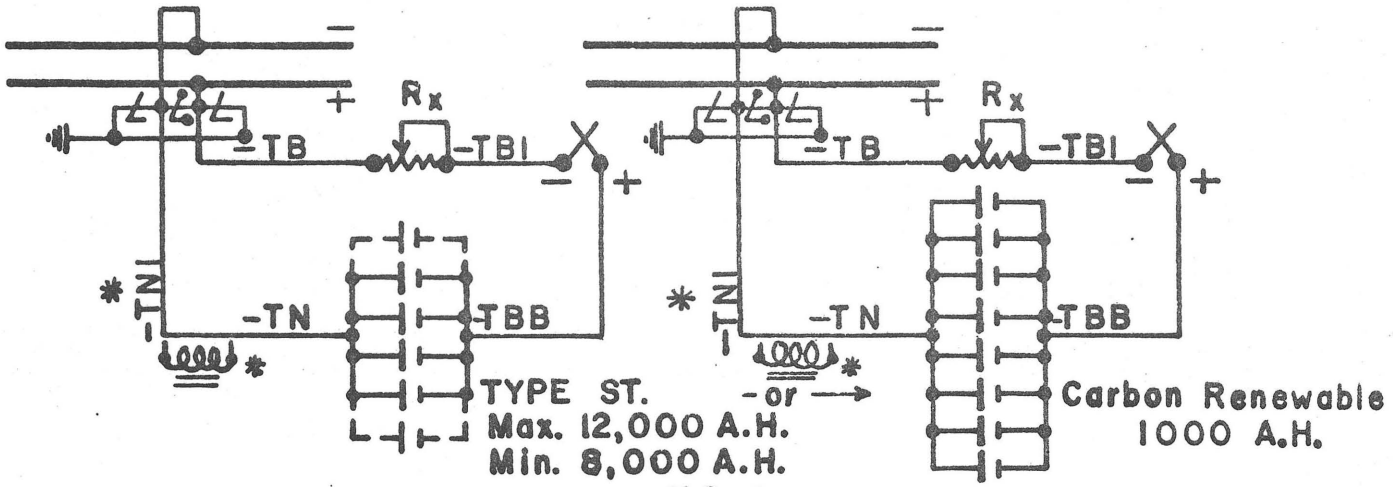
Wire Carbon primary cells in multiple as shown.

For adjustment and settings for R_x and R_t see I-97 for Copper-Oxide, and EO-66I-Series for Carbon cells.

* Denotes VT-2, VT-10 or Equiv. Reactor to be Placed in Neg. Track Lead as Shown, Where Overlay Track Circuit is Present and EO-Reference is Suffixed by X. (i.e. EO-66E-X)

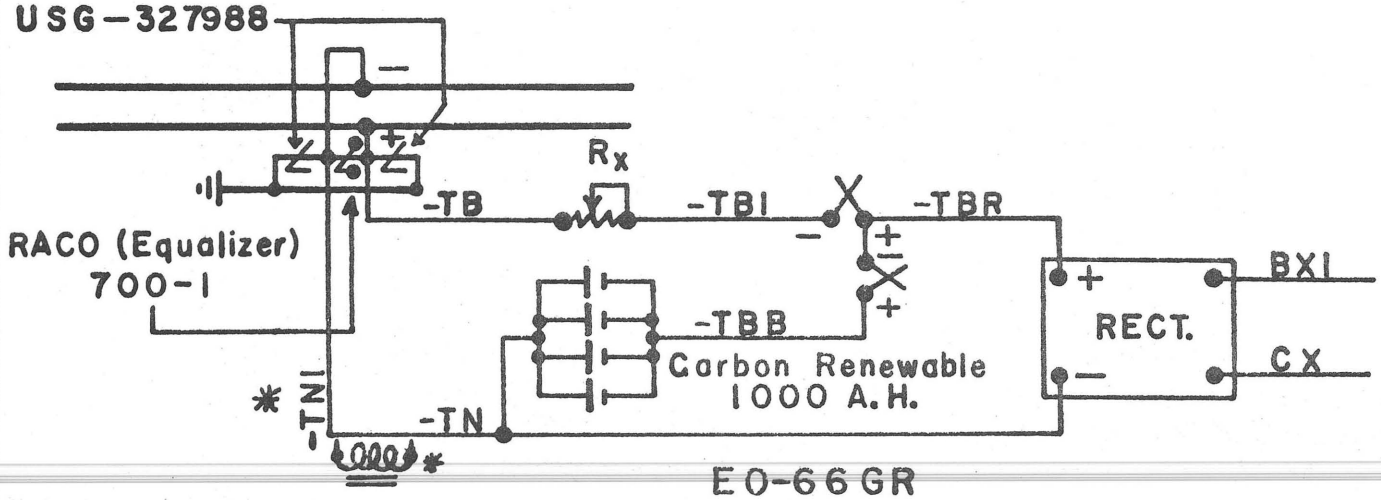
Drawn 7-6-61 Rev. 9-29-71

EO-66E-F



RACO-485
or
USG-327988

EO-66G



EO-66GR

CENTER FED TRACK CIRCUITS

For Circuits Over 7,500'. Located Center of Circuit + or — 300'.
Rectifier to be TI or Howard & Gould NO. HT-1222A.

TYPE ST Primary Battery Used in Areas Where They Will Be Used Predominately, and Without Rectifier Regardless of Available A.C. Power.
ST-2-2000 (Factory Parallel Connected-Two 1.25V-1000 A.H. Cells)
ST-3 (Field Parallel Connected-Three 1.25V-1000 A.H. Cells)

For Adjustment and Setting of R_X See EO-66IB.

* Denotes VT-2, VT-10 or Equiv. Reactor to be Placed in Neg. Track Lead as Shown, Where Overlay Track Circuit is Present and EO-Reference is Suffixed by X. (i.e. EO-66GR-X).

Drawn 1-26-67 Rev. 1-21-72

EO-66G-66GR

TRACK CIRCUIT ADJUSTMENT TABLE FOR DN-22BH TRACK RELAY USING CARBON PRIMARY CELLS IN MULTIPLE.

The values given below are based on a ballast resistance of 2 ohms per 1,000 Ft. and are to be used where new circuits are installed and as a guide in maintaining this type of track circuit. For a more detailed explanation see Page I-97 in Standards of Instructions for Construction and Maintenance.

Type of Relay	Track Circuit Length	Rt (ohms) Resistance in Relay End		Rx (ohms) Resistance at Battery End	
DN-22BH, 4-ohm	200	2.0		3.0	- 5 ohm
"	500	2.0		1.9	resistor
"	750	2.0	9.95 ohm	1.5	
"	1000	2.0	resistor	1.0	
"	1500	1.5		0.76	
"	2000	1.5		0.6	
"	2500	0.9		0.6	
"	3000	0.6		0.6	
"	3500	0.6	1.9 ohm resistor	0.4	1.9 ohm resistor
DN-22BH, 0.5-ohm	3501	0.4		0.76	
"	4000	0.4		0.6	
"	4500	0.4		0.6	
"	5000	None		0.9	
"	5500	"		0.76	
"	6000	"		0.76	
"	6500	"		0.6	

Minimum value of Rx where Carbon Primary Cells are used must not be less than values shown below:

DN-22BH, 4-ohm relay 0.3 ohm Rx

DN-22BH, 0.5 ohm relay 0.4 ohm Rx

SEO-EL Topeka 11/4/60

DR. 5-2-61 Rev. 10-3-66

EO-

TRACK CIRCUIT ADJUSTMENT TABLE

FOR DN-11 TRACK RELAY

USING CARBON PRIMARY CELLS IN MULTIPLE OR TYPE ST PRIMARY BATTERY

The values given below are based on a ballast resistance of 2 ohms per 1,000 feet and are to be used where new circuits are installed and as a guide in maintaining this type of track circuit. For a more detailed explanation see Page I-97 in Standards of Instructions for Construction and Maintenance.

Type of Relay	Track Circuit Length	Rt (ohms) Resistance in Relay End		Rx (ohms) Resistance at Battery End	
DN-11, 4-ohm	200	4.0		4.0	5 ohm resistor
"	500	4.0		2.3	
"	750	4.0	9.95 ohm resistor	1.7	
"	1,000	2.0		2.2	
"	1,500	2.0		1.5	
"	2,000	2.0		1.14	
"	2,500	2.0		0.9	
"	3,000	2.0		0.76	1.9 ohm resistor
DN-11, 0.5-ohm	3,001	0.4		0.76	
"	3,501	0.4	0.9 ohm resistor	0.76	
"	4,000	0.4		0.6	
"	4,500	0.4		0.6	
"	5,000	None		0.9	
"	5,500	"		0.76	
"	6,000	"		0.76	
"	6,500	"		0.6	

Minimum value of Rx where Carbon Primary Cells are used must not be less than values shown below:

DN-11 4-ohm relay 0.6 ohm Rx

DN-11 0.5 ohm relay 0.4 ohm Rx

SEO EL Topeka 5/19/64
Revised 1-21-72

EO-66IA

TRACK CIRCUIT ADJUSTMENT TABLE

FOR CENTER FED TRACK CIRCUITS

USING CARBON PRIMARY CELLS OR TYPE ST PRIMARY BATTERY

The values given below are based on a ballast resistance of 2 ohms per 1,000 feet and are to be used where new circuits are installed and as a guide in maintaining this type of track circuit.

Type of Relay	Center Fed Track Circuit Length	Rt (ohms) Resistance in Relay ends		Rx (ohms) Resistance at Battery	
DN-22BH, 0.5 ohm	8,000	0.2	0.9 ohm Resistor	0.5	
"	9,000	0.2		0.5	
"	10,000	None		0.5	1.9 ohm or 0.9 ohm Resistor
"	11,000	"		0.5	
"	12,000	"		0.4	
"	13,000	"		0.4	
"	14,000	"		0.3	
DN-11, 0.5 ohm	8,000	0.2	0.9 ohm Resistor	0.5	
"	9,000	0.2		0.5	
"	10,000	None		0.5	
"	11,000	"		0.5	0.9 ohm Resistor
"	12,000	"		0.4	

Minimum value of Rx where Carbon Primary Cells are used must not be less than values shown below:

DN-22BH 0.5 ohm relay 0.24 ohm Rx
DN-11 0.5 ohm relay 0.3 ohm Rx

SEO EL Topeka 2/14/67

Revised 1-21-72

EO-66IB

TRACK CIRCUIT ADJUSTMENT TABLE

FOR CENTER FED TRACK CIRCUITS

USING EDISON STORAGE BATTERY OR NICKEL-CADMIUM BATTERY

The values given below are based on a ballast resistance of approximately 2 ohms per 1,000 feet and are to be used where new circuits are installed and as a guide in maintaining this type of track circuit.

Type of Relay	Center Fed Track Circuit Length	Rt (ohms) Resistance in Relay ends	Rx (ohms) Resistance at Battery
DN-22BH, 0.5 ohm	8,000	0.2 0.9 ohm	0.5
"	9,000	0.2 Resistor	0.5
"	10,000	None	0.5
"	11,000	"	0.5 0.9 ohm
"	12,000	"	0.4 Resistor
"	13,000	"	0.4

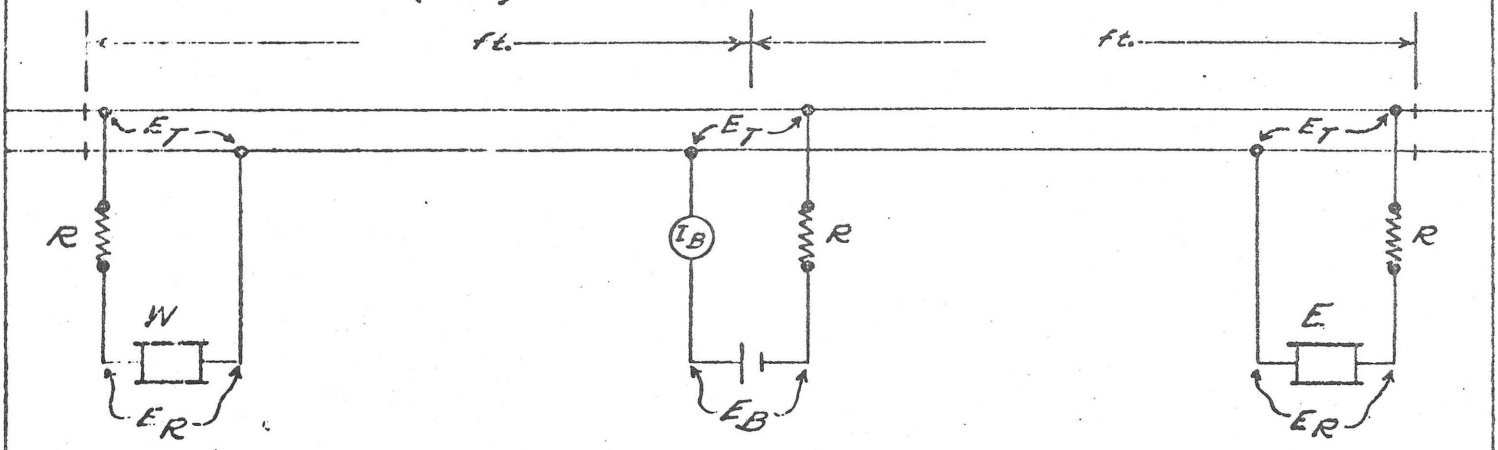
Minimum value of Rx 0.3 ohm

SEO EL Topeka 5/16/67

EO-66IB1

DATA SHEET
Center fed Track Circuits

Location _____ (Town) Mile Post _____



Relay-Type _____	Batt.-Type _____	Relay-Type _____
Relay-Res. _____ Ω	No. Cells _____	Relay-Res. _____ Ω
E_T - Volts _____	E_T - Volts _____	E_T - Volts _____
E_R - Volts _____	E_B - Volts _____	E_R - Volts _____
R - Ohms _____	R - Ohms _____	R - Ohms _____
E_I - Amps _____ (Calculated)	I_B - Amps _____	E_I - Amps _____ (Calculated)
K - Ohms _____		K - Ohms _____
B - Ohms _____		B - Ohms _____

NOTE:

K = Value of resistance which shunts relay

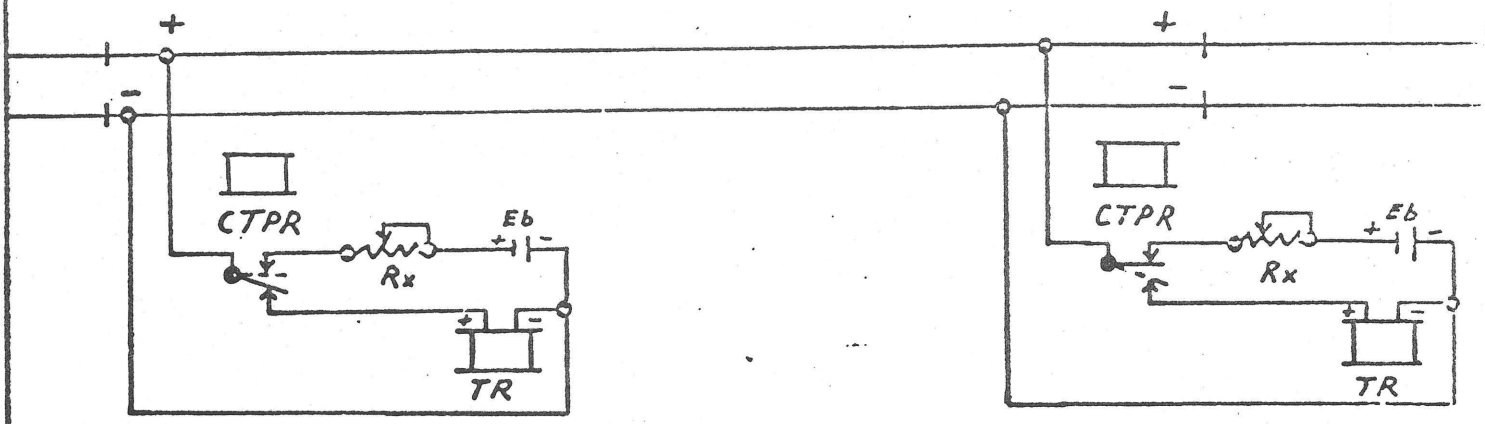
B = Value of resistance which, after relay is shunted, allows relay to pick up.

See EO-661E for explanation of shunting procedure.

TRACK CIRCUIT ADJUSTMENT TABLE FOR 0.30 OHM STYLE CD

(CODE FOLLOWING) TRACK RELAY

Reversible Circuit With Steady Energy Using Lead Storage Battery



TR = 0.30 Ohm Style CD Min. Working 0.820 Ampere
Eb = 1 Cell Nickel Iron Storage
Rail Resistance 0.03 Ohm/M ft.
Min. D.C. Ballast 3.0 and 5.0 Ohms/M ft
Min. Resistance to Shunt Track Relay 0.06 Ohm
Table based on 0.15 ohm total lead resistance (including track leads and case wiring) at each end of track circuit.

ADJUSTMENT TABLE

Length Track Circuit	3.0 Ohms/M ft. Rx Ohms	5.0 Ohms/M ft Rx Ohms
1000	0.67	0.73
2000	0.53	0.61
3000	0.41	0.51
4000	0.31	0.42
5000	0.22	0.34
6000	0.15	0.27
7000	0.10	0.20

Min. Rx 0.1 Ohm

SEO-EL Topeka
12-16-66

EO-66 IC

EO-66ID

INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE of TYPE TR CARBONAIRE BATTERY

The Type TR cell has a normal voltage of 1.25 volts and capacity of 3300 ampere hours. It has a carbon life not to exceed three years. Primarily it is to be used in track circuit applications where a.c. power is not available.

Where 4 ohm track relay is used, one TR cell is to be used as shown on EO-66E and adjusted per EO-66IA.

Where 0.5 ohm track relay is used, two TR cells in multiple are to be used as shown on EO-66E and adjusted per EO-66I.

Where center fed track circuit is used, four TR cells in multiple are to be used as shown on EO-66G and adjusted per EO-66IB.

This battery is shipped dry with central carbon and filler opening sealed. Do not remove these seals until ready to fill the battery. Cells should be activated the day prior to being placed in service.

To determine any severe internal damage to the cell which cannot be visually checked, test meter reading will be taken before cell is installed. (See Test Instructions)

To allow battery solution to stabilize, wait 10 minutes after activation before taking reading. For this test the meter reading should be at least 15 amperes.

Cells may be damaged in shipment. Leakage of electrolyte or failure to meet above test indicates a defect. Any cells found defective shall be reported to Signal Supervisor and held for inspection and adjustment by manufacturer.

FILLING DIRECTIONS

1. Remove the seal over central carbon and from the top of the filler hole.

2. Slowly pour approximately five quarts of reasonably clean water into the filler hole. Bring the solution level up to 1-1/2" from the top of filler hole by placing wire gauge in filler neck and adding water until solution level holds steady at the crossbar of the gauge. Remove wire gauge and replace filler cap. The battery is now ready for use.

GENERAL INFORMATION

When battery is filled it will get warm and then cool off, which causes solution to rise a little and then recede. This is normal and no more water need be added on this account. There is no advantage in maintaining solution level at any exact point during battery life, except that if it falls below two inches from top of filler the level should be brought up to 1-1/2" by adding water. Prior to placing battery in service, solution level should be checked and brought up to 1-1/2" level if required. (Water should not be added unless solution level is more than 1/2" below required level.) The top of the battery, especially the central carbon, should be protected from dripping condensation, driving storm, or the like. Under heaviest climatic conditions there may be a minor wetness around the battery top. This may be wiped off. Battery used outdoors will be protected in well ventilated housing.

TEST PROCEDURE

1. Each battery must be tested INDIVIDUALLY. If batteries are in multiple hook-up, disconnect each battery, test, and then reconnect to circuit. This will keep the circuit in operation and, at the same time, permit each battery to be tested individually. Where only one battery is used in a circuit, it need not be disconnected.

2. Clip the negative lead wire from the meter FIRMLY to the STRIPPED section of the negative lead wire of the battery. In like manner, connect the positive lead wires. It is essential to make good electrical connections so the clips must be securely fastened to the bare portion of the battery leads.

3. The test meter is equipped with a special, momentary contact toggle switch. It makes contact by being pressed to the right and breaks the contact as soon as the pressure is released.

   In order to keep the test meter steady for a quick, accurate reading, it is desirable to hold it in both hands, with the thumb of the right hand resting against the toggle switch.

4. With the meter held in position as indicated above, press the toggle switch MOMENTARILY to the right, maintaining the contact for not more than one second.

TEST PROCEDURE (continued)

4. (continued)

Within the one second interval the meter needle will normally reach a peak and then drop back slightly. It is this "drop back" reading --- where the needle momentarily holds steady --- that must be observed and recorded. After a few experimental readings with the meter, this phase of the procedure will become readily apparent. It is also most important that you do not hold the switch in the "on" position for more than one second.

CAUTION: When the meter is applied to cell which is electrically connected to a track circuit, there is the possibility that the momentary short circuit current may depress the battery voltage long enough to cause the release of the track relay.

5. Having recorded the meter reading, take solution temperature reading of the battery being tested using a suitable Fahrenheit scale thermometer. Record the battery solution temperature.

6. Using both the meter readings and temperature reading, check the discharge reference table to complete the test. This table indicates the ampere-hours delivered or consumed for various solution temperatures.

To use the tables, first round off to the nearest 10° F. the solution temperature which was taken. Next, read across the appropriate temperature line to the reading nearest that obtained on the meter. The ampere-hours consumed are indicated at the top of the column.

DISCHARGE REFERENCE TABLE

(On Page 4)

TEST PROCEDURE (continued)

6. (continued)

DISCHARGE REFERENCE TABLE

Sol. Temp.--°F.	Meter Reading (amps.) for Various Capacities Consumed			
	2400 A.H.	2700 A.H.	3000 A.H.	3300 A.H.
110	29.0	27.0	24.0	22.0
100	27.5	25.5	22.5	20.5
90	26.0	24.0	21.0	19.0
80	24.5	22.5	19.5	17.5
70	23.0	21.0	18.0	16.0
60	21.5	19.5	16.5	14.5
50	20.0	18.0	15.0	13.0
40	18.5	16.5	13.5	11.5
30	17.0	15.0	12.0	10.0
20	15.5	13.5	10.5	8.5
10	14.0	12.0	9.0	7.0
0	12.0	10.5	7.5	5.5

Battery inspection will be made monthly using test procedure outlined above. In addition, voltage reading will be taken which will indicate relative condition of cell. Marked deviation of voltage will give some indication cell is nearing exhaustion.

In using reference table above, accurate solution temperature reading is very important. Atmospheric temperature is not a satisfactory substitute.

Any cell which expels solution through filler hole should be replaced. This indicates that cell has nearly delivered its rated capacity. Such action usually occurs at high solution temperature. This condition should be reported to Signal Supervisor, giving solution temperature, cell voltage and test meter reading at time condition observed.

Cells should be renewed when they have delivered 3000 ampere hours.

SEO EL Topeka
September 13, 1968

INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE OF CENTER FED TRACK CIRCUITS

Center-fed track circuits can be used on circuits up to 14,000 feet in length using DN-22BH 0.5-ohm relays and up to 12,000 ft. using DN-11 0.5-ohm relays with Carbon Primary cells or equivalent. See adjustment tables E0-66 IB and 66 IB1 for maximum length circuits with various relay and battery combinations. Battery will be located at center or within 800 feet thereof. In no case will either side of the circuit be more than half the maximum length indicated above. Battery will not be located within confines of double ended side track. Center-fed track circuits will not be used where one circuit controls crossing protection.

Installation will be made using typical Plan E0-66G or GR and adjusted using E0-66IB and E0-IB1. Record will be made on E0-66IBR and copy furnished to Supervisor and Signal Engineer.

After installed and adjusted as outlined above, shunting sensitivity will be checked using US&S Shunt Block. Shunting sensitivity must be 0.06 ohm or more to comply with ICC regulations. If circuit will not meet this requirement, then limiting resistance shall be increased to provide 0.06 ohm shunting. Record of this test will be recorded on E0-66IBR and maintained in Supervisor's office.

After adjusted to provide 0.06 ohm, shunt check will be made to determine value of resistance across rails at relay which will allow relay to just pick up, this will be accomplished using US&S shunt block. Proper use of shunt block requires that track be shunted each time resistance value is changed, then removing shunt to determine whether or not relay will pick up. Typical values of resistance are 0.15 to 0.2 ohms with the lower value on long circuits and high value on short (8,000 ft.) circuits. The above test should be made when track is dry and ballast resistance is high.

Minimum values of limiting resistance "R_x" are shown on the adjustment tables.

SEO Topeka 2/13/67
Revised 6/14/67

TYPE TR BATTERY TEST RECORD

M.P. _____ TRACK CKT. NO. _____

LENGTH _____ TYPE RELAY _____

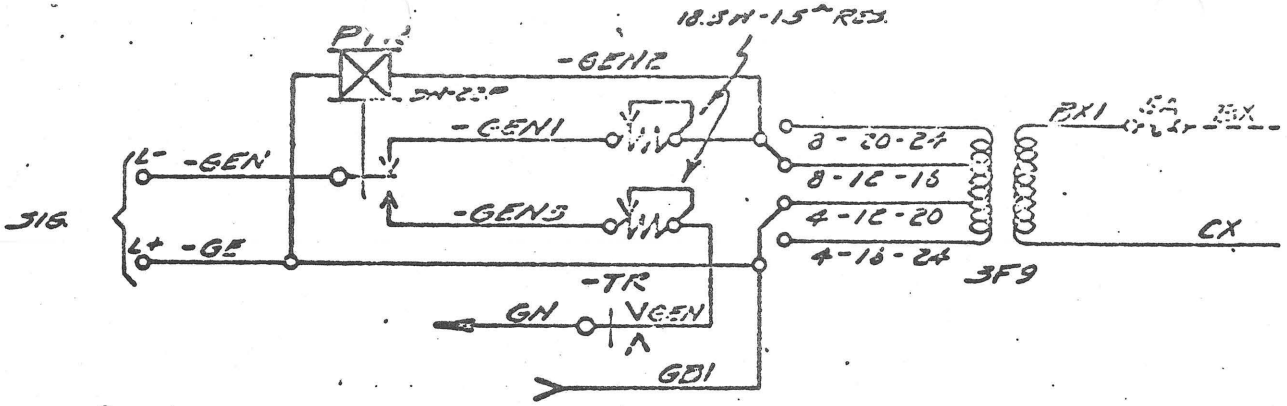
Rx _____ Rt _____ NO. CELLS _____

DATE	E_b	SCR READING	TEMP.	DATE	E_b	SCR READING	TEMP.

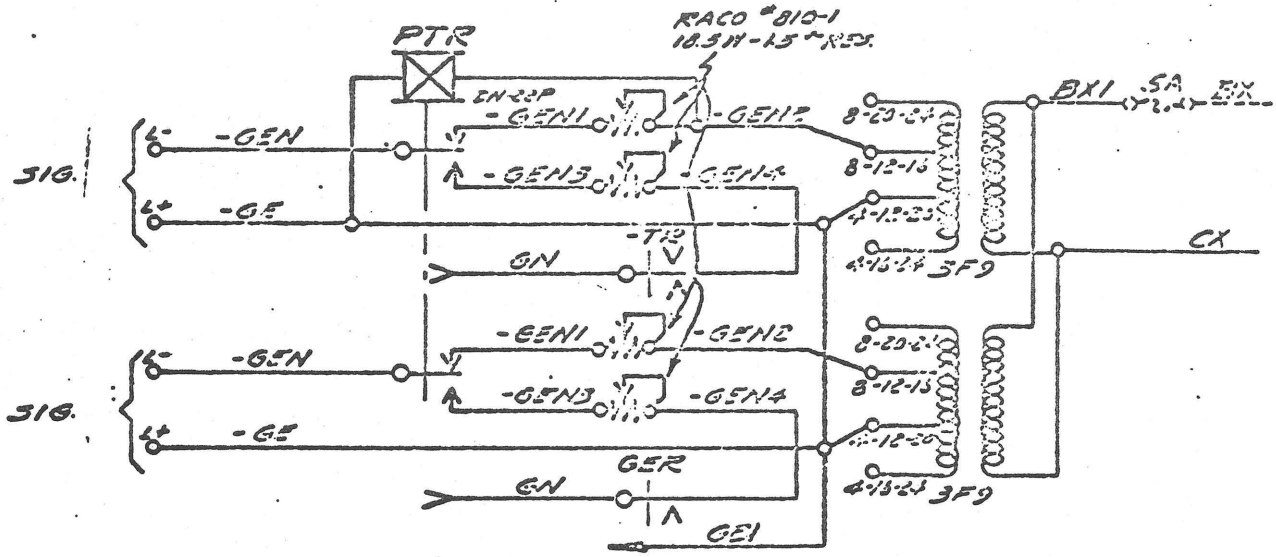
TR BATTERY LIFE CHART

BATTERY CURRENT IN AMPERES	AMPERE HOURS PER DAY	AMPERE HOURS PER YEAR	CALCULATED LIFE TR CELL IN DAYS
.100	2.7	985.5	1,111
.200	5.3	1,934.5	568
.300	8.0	2,920.0	376
.400	10.6	3,869.0	283
.500	13.3	4,854.5	225
.600	15.9	5,840.0	189
.700	18.6	6,789.0	161
.800	21.2	7,738.0	141
.900	23.9	8,723.5	125
1.000	26.5	9,672.5	106

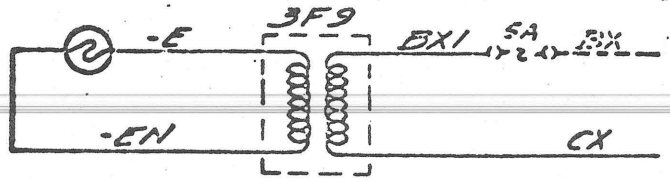
THE ABOVE TABLE IS BASED ON 10% ALLOWANCE FOR TRAIN SHUNT AND WET TRACK. IN ADDITION CALCULATED LIFE IS BASED ON 3000 AMPERE HOUR CAPACITY. THIS CAN BE USED AS A GUIDE TO DETERMINE BATTERY LIFE BUT MUST BE ADJUSTED FOR LOCAL CONDITIONS.



A



B



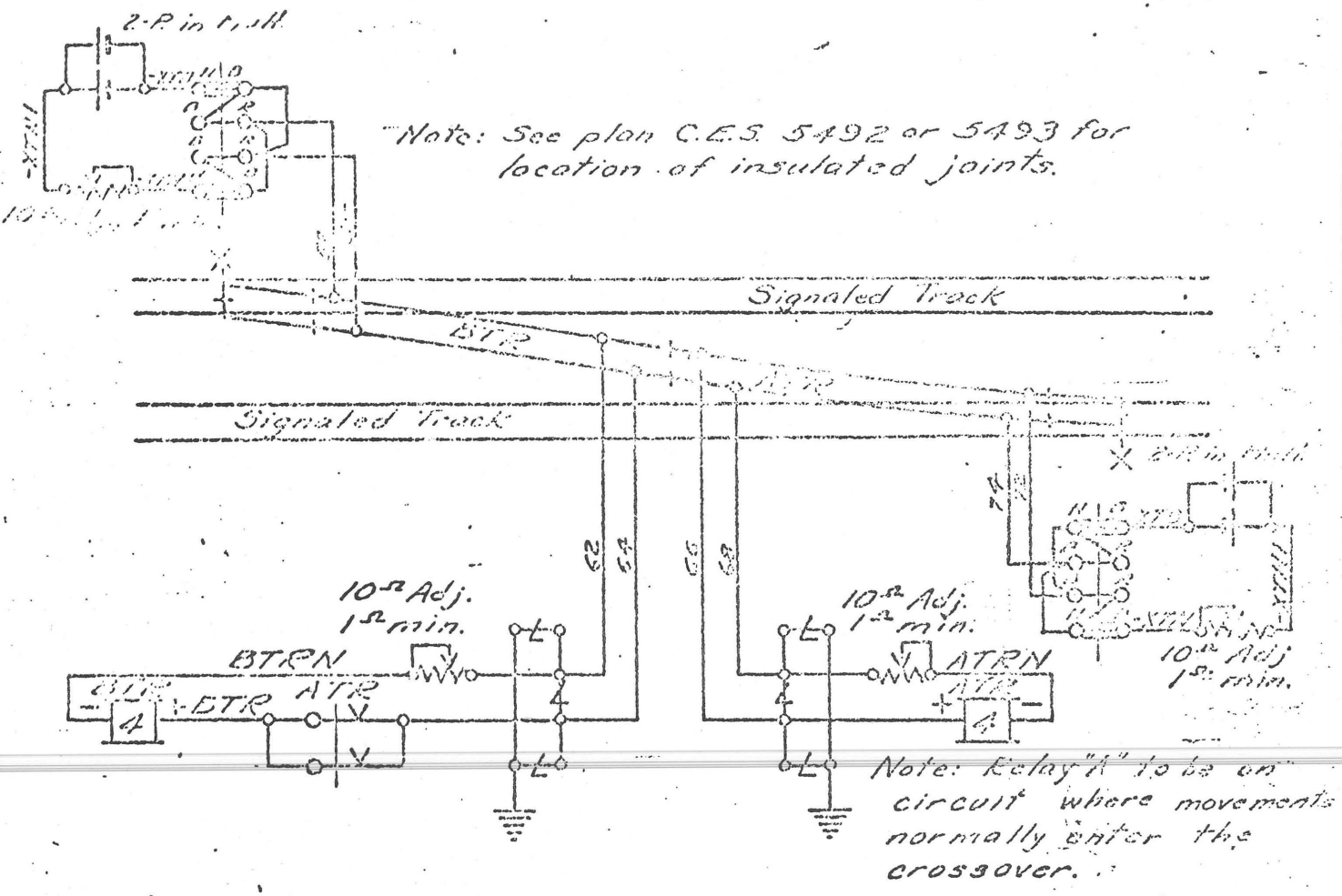
C

SIGNAL LIGHTING CIRCUITS

S.E.O. AMARILLO, TEXAS

JULY 23, 1957

EO-63
(WA-50)



FOULING PROTECTION ON MAIN TRACK CROSSOVER (SP-80B)

S.E.O. AMARILLO

DRAWN: 1-19-49

Rev. 4-3-50

EO-80
(WA-80B)

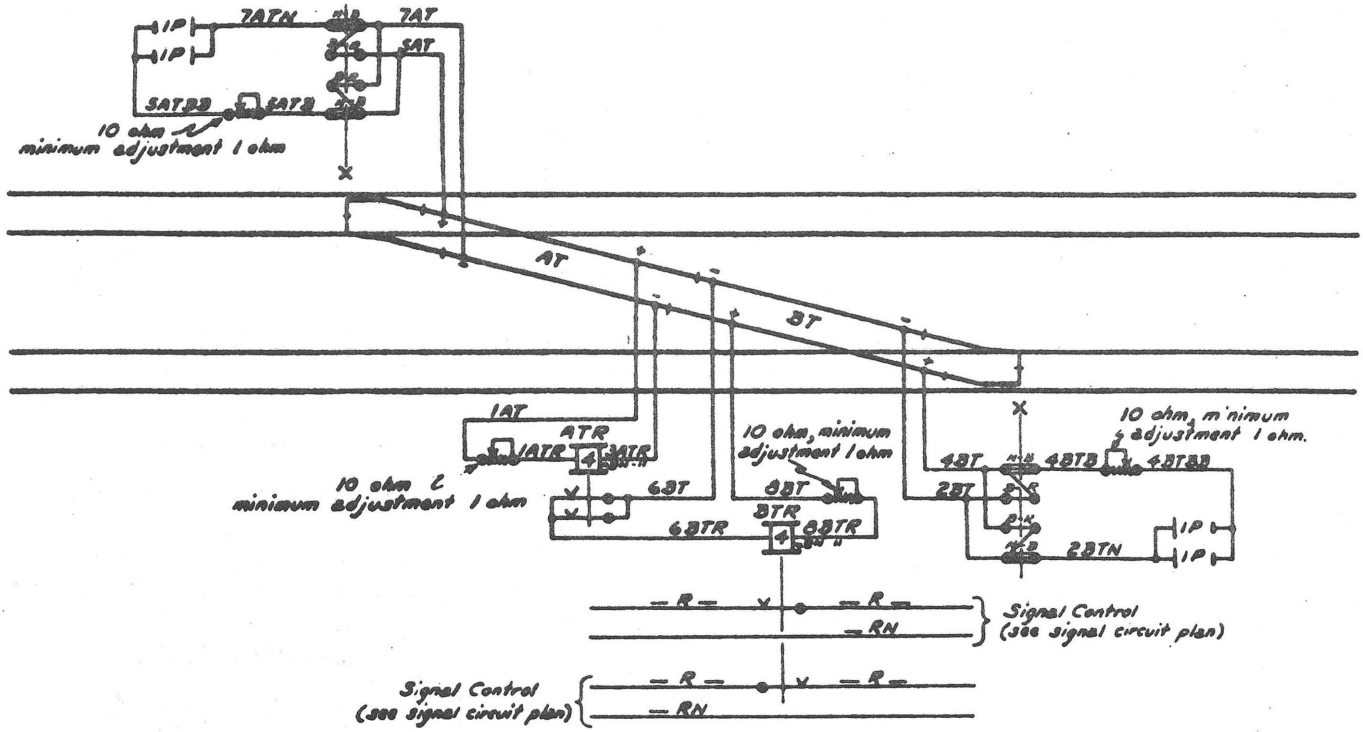
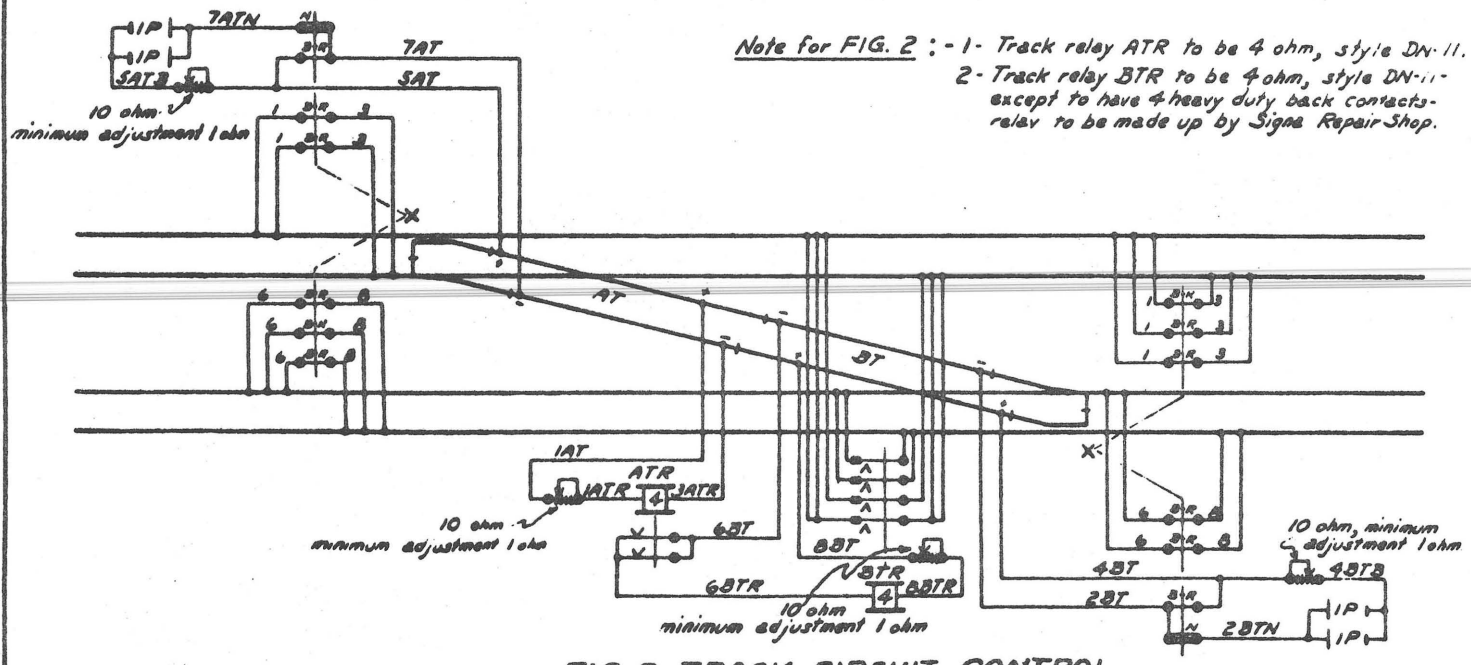


FIG. 1 LINE CIRCUIT CONTROL



Note for FIG. 2 : - 1- Track relay ATR to be 4 ohm, style DN-11.
2- Track relay BTR to be 4 ohm, style DN-11- except to have 4 heavy duty back contacts- relay to be made up by Signal Repair Shop.

FIG. 2 TRACK CIRCUIT CONTROL
NOT FOR USE IN LINE CIRCUIT TERRITORY

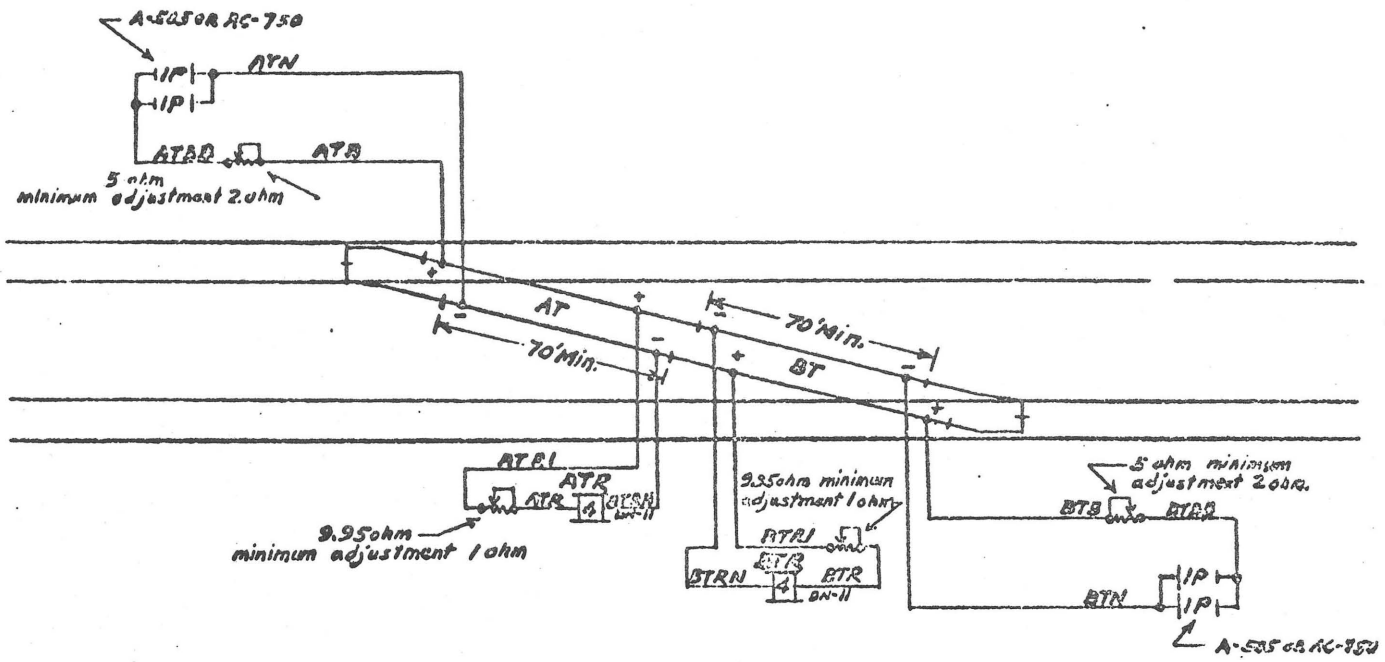
FOULING PROTECTION CIRCUITS

MAIN TRACK CROSSOVER
AUTOMATIC BLOCK TERRITORY

SEO EL TOPEKA — A. T. & S. F. RY.
DRAWN 11-17-49 — NO SCALE

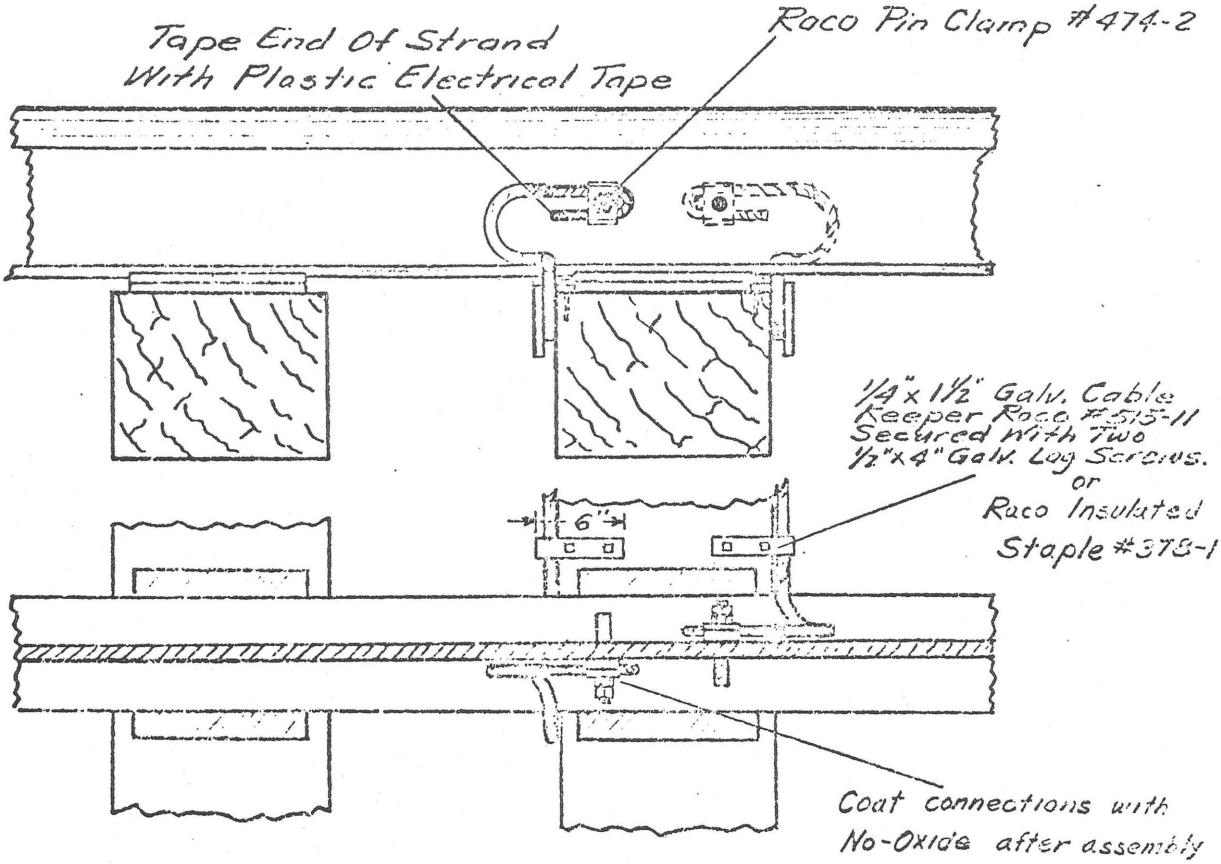
APPROVED _____ SIGNAL ENGINEER

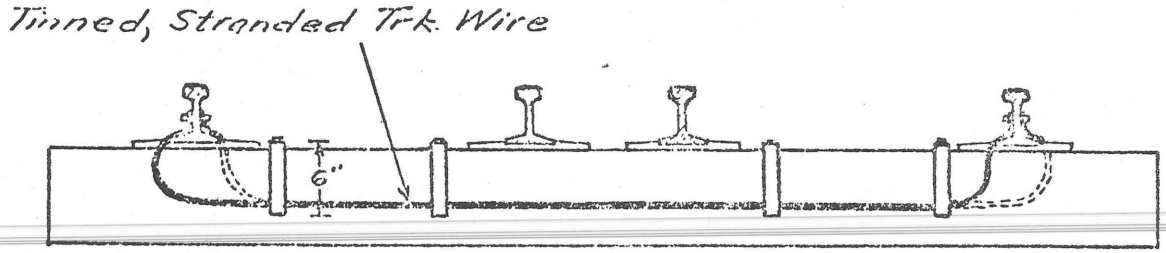
PLAN EO-80B



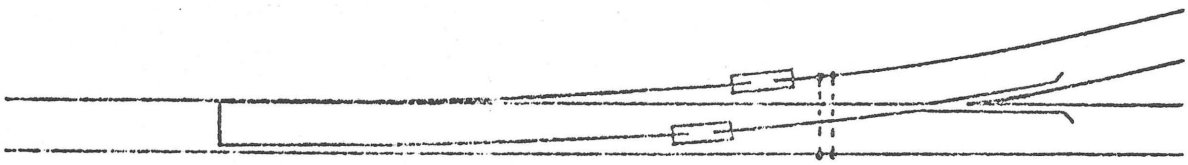
Note: If 70' minimun distance cannot be provided as shown, then insulated rail joints in center of crossover should be placed opposite.

FOULING PROTECTION CIRCUITS
MAIN TRACK CROSSOVER
SWITCH LOCK ON ONE OR BOTH ENDS
SEO TOPEKA 6-2-64 EO-2001





Connection To Rail



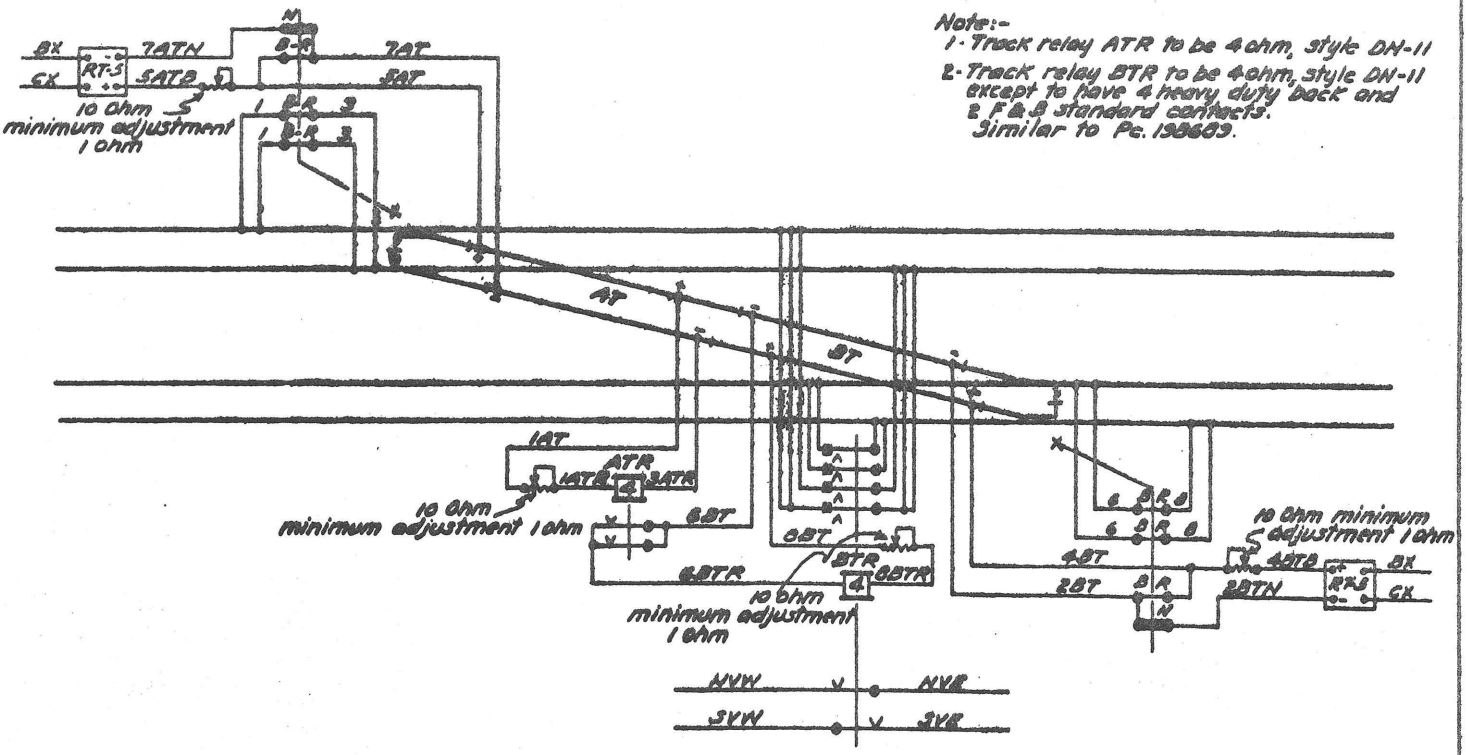
Location Of Jumper Wires

Jumper For Fouling Circuit

S.E.O. ~ Topeka, Kansas - 4-23-64

Revised 12-15-65

EO-80C



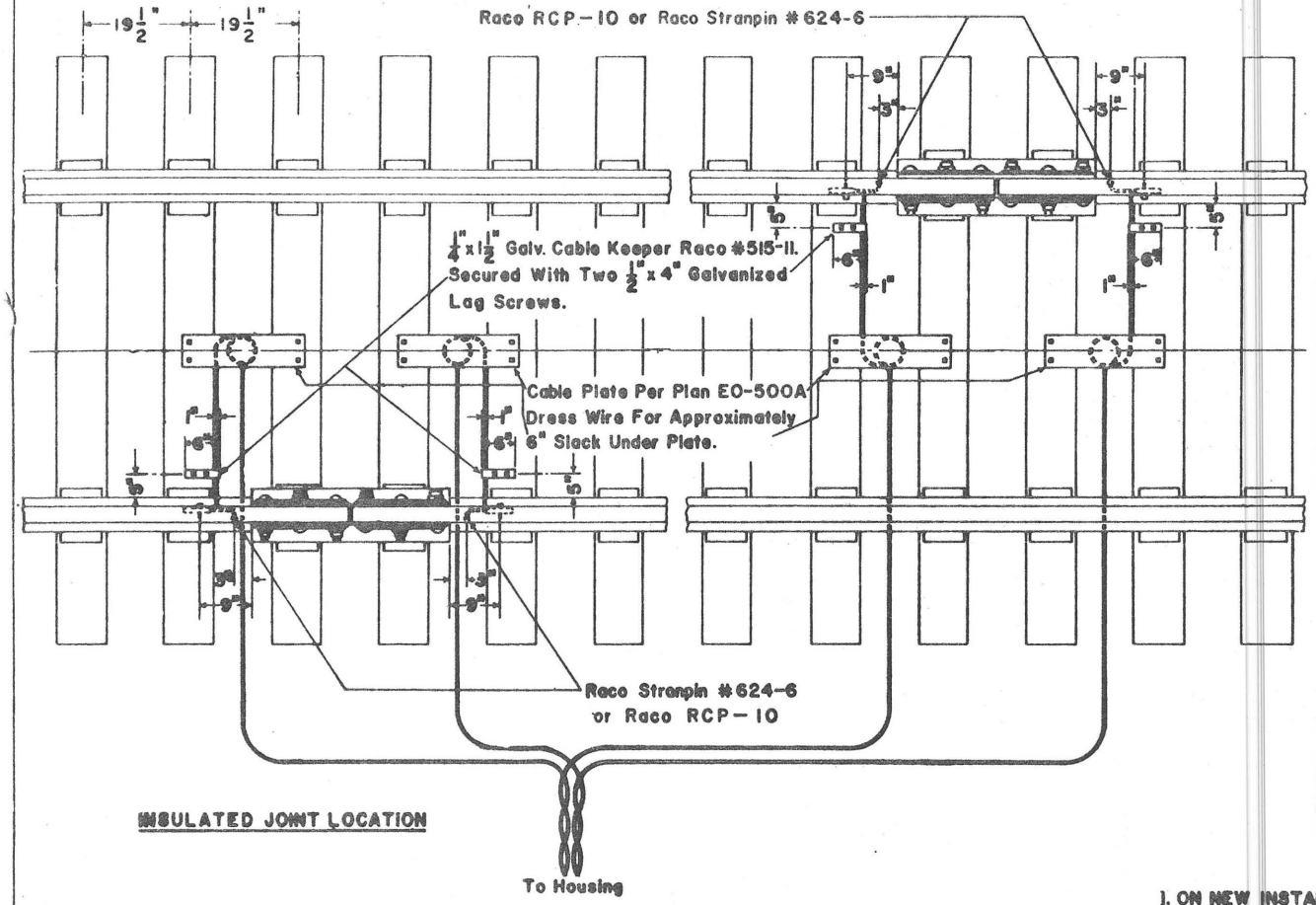
Note:-
1- Track relay ATR to be 4 ohm, style DN-11
2- Track relay BTR to be 4 ohm, style DN-11 except to have 4 heavy duty back and 2 F & B standard contacts. Similar to Pc. 138609.

FOULING PROTECTION CIRCUITS

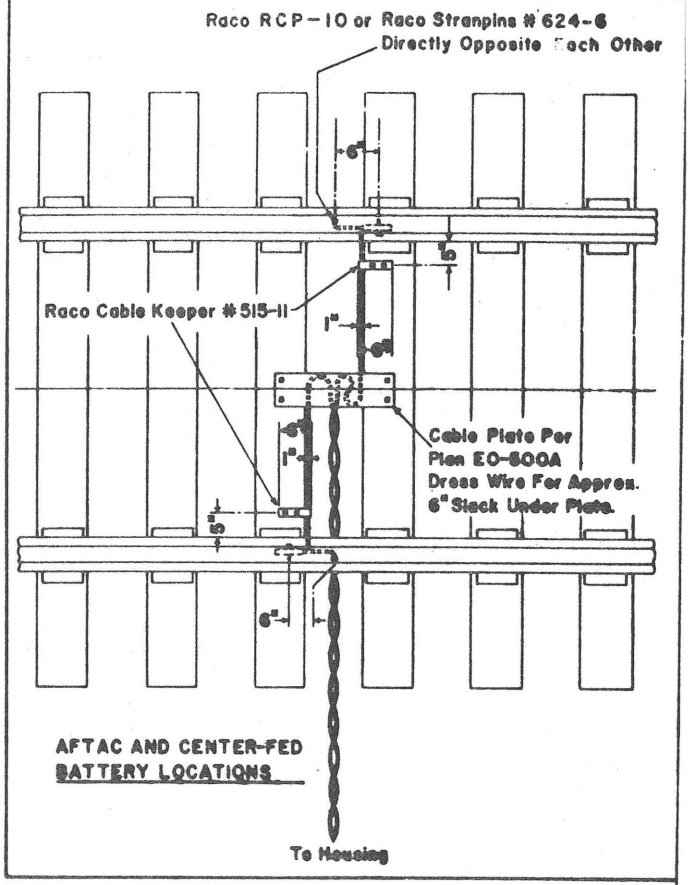
MAIN TRACK CROSSOVER
AUTOMATIC TRAIN CONTROL TERRITORY
360 EL TOPEKA — A.T.&S.F.RY.
3-27-51 — NO SCALE

APPROVED _____ SIGNAL ENGINEER

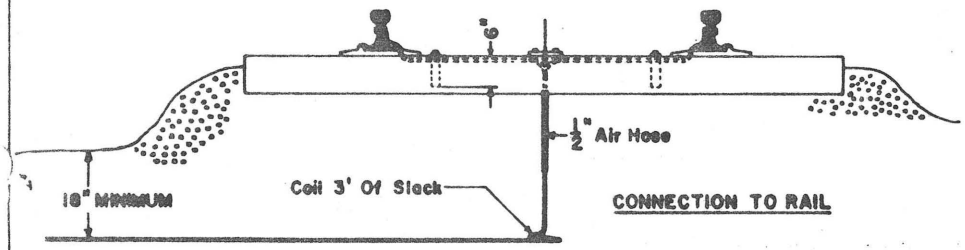
PLAN EO-800



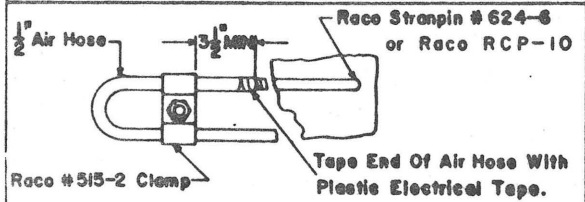
INSULATED JOINT LOCATION



AFTAC AND CENTER-FED BATTERY LOCATIONS

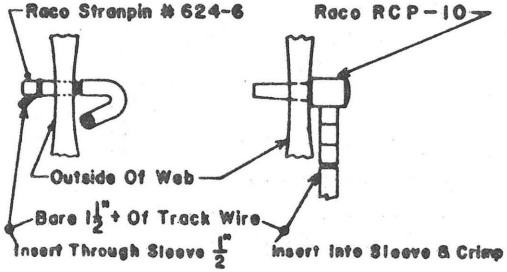


CONNECTION TO RAIL



NOTE: After Assembly, Coat Exposed Strand And Rail Connection With No-Ox-Id.

DETAIL OF CONNECTION TO RAIL



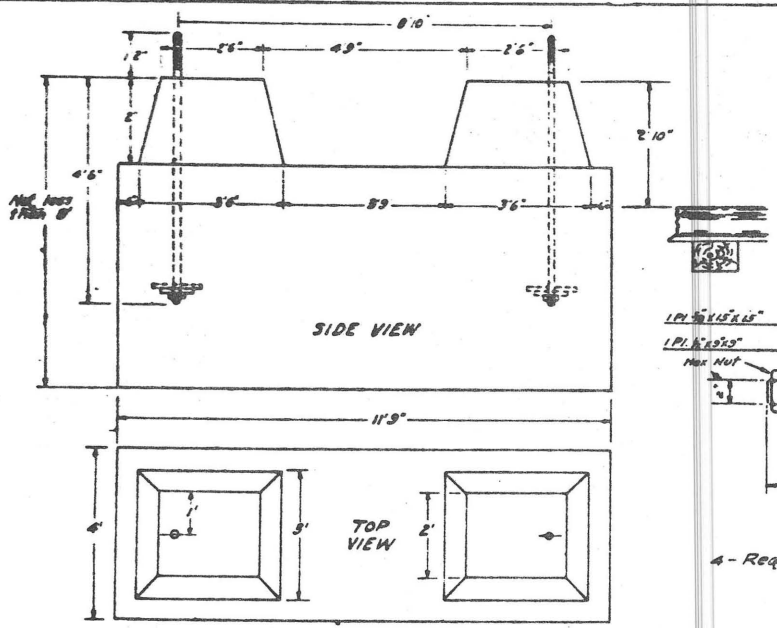
NOTES

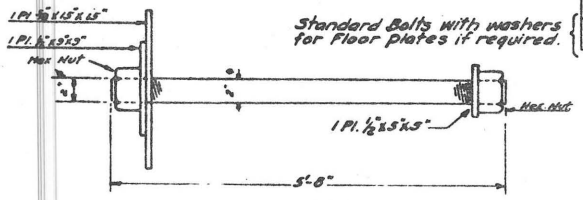
1. ON NEW INSTALLATIONS, Or Complete Renewal Of Wiring: Run Twisted Pair Insulated Stranded Track Wire To Housing Without Splicing. Apply AMP #33465 Terminals For Terminating In Housing.
2. Track Wiring Run To Be Not Less Than 18" Below Surface.
3. Track Connections Are Shown For Conventional Tie Spacing. 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.
4. Stranded Insulated Cable To Be Protected By ½" Air Hose, Taped Thoroughly On Each End, From Below Ballast Through Clamp Assembly. See Detail Of Connection To Rail.

UNDERGROUND CABLE CONNECTION TO TRACK
WITHOUT BOOTLEGS

S.E.O. E.L. TOPEKA, KANSAS 5-30-72
4-22-74

EO-61





Anchor Bolts A1

4 - Required For Each Signal Bridge.

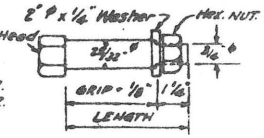
COMPLETE LIST OF FIELD BOLTS FOR 3-4 OR 5 TRACK BRIDGES				
NO.	Diam	Grip+1/8	Length	Pieces Connected
128	25/32"	3/4"	2 1/8"	Girder to Bent
40	25/32"	1 1/16"	2 1/2"	L1 R&L to Girder & Bent
168	Washers, round 2" dia. X 1/4" - 13/16" hole.			
2	1/2"	None	2"	F1 Plates to Ladder
12	3/4"	None	2 1/2"	BP to Girder
122	3/4"	None	2 1/2"	F1 Plates to Girder & Bent

Special Bolts to be furnished with all Bridges.

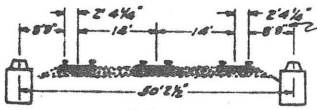
Standard Bolts complete with washers to be furnished with all Bridges

Standard Bolts with washers for Floor Plates if required.

SPECIAL BOLT

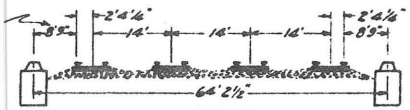


FOR DETAILS SEE
BES 4456 3-TRACK BR.
BES 4275 4-TRACK BR.



3 Track

Minimum Side Clearance For Tangent Straight Track. For Additional Clearances See SES 657 3h1 In IOWA use SES 657 3h2. In Illinois use SES 657 3h3.



4 Track

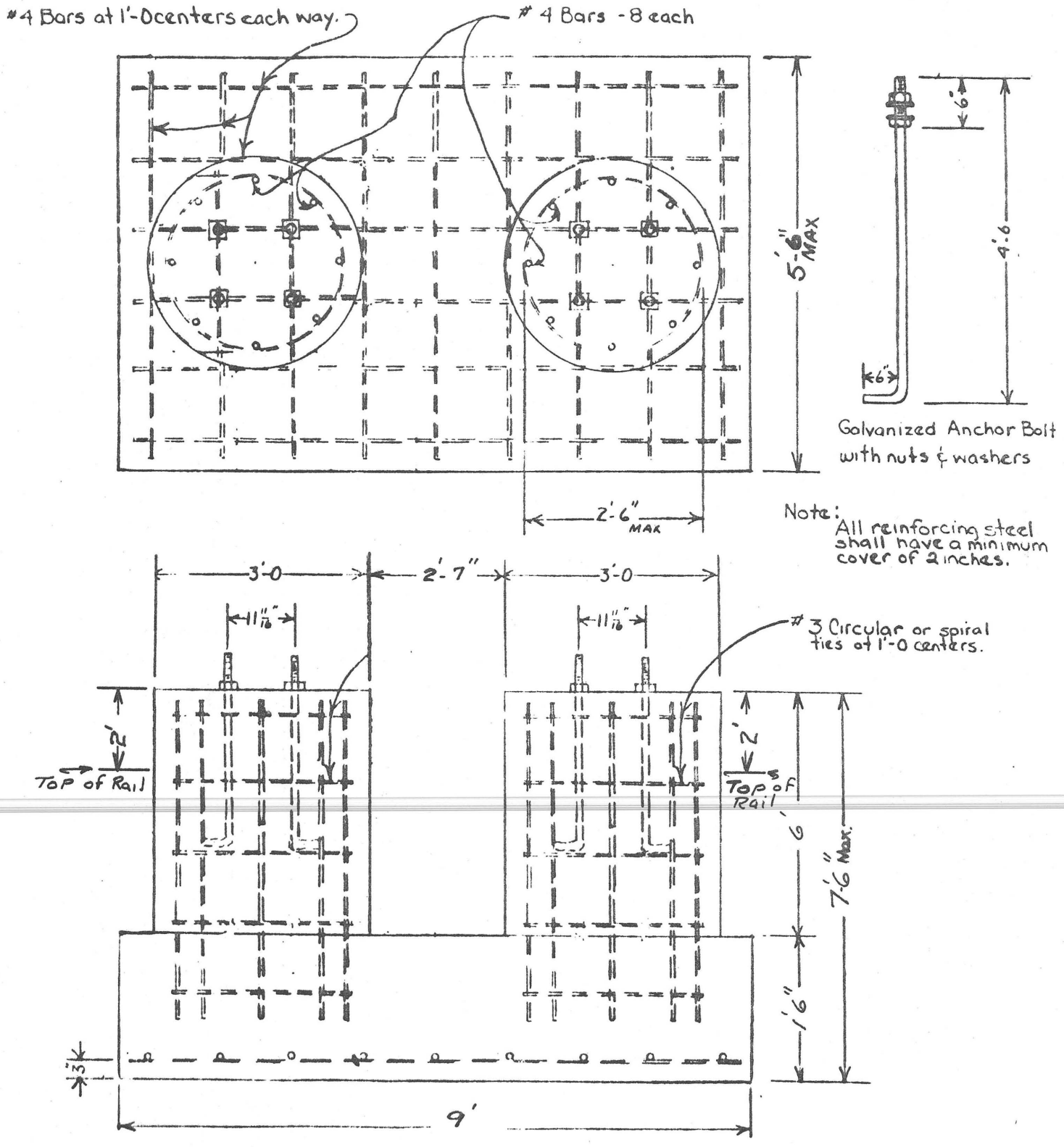
END VIEW

FOUNDATIONS, ANCHOR BOLTS & FIELD ASSEMBLY BOLTS FOR 3 & 4 TRACK SIGNAL BRIDGES PER BES PLANS 4456 & 4275

SEO TOPEKA

8-18-52
Rev. 10-4-54

PLAN EO-89



A.T&S.F Ry. Co.
FOUNDATION FOR ALUMINUM
SIGNAL BRIDGE

SEO TOPEKA 11-15-79

FO-894

Field Inspection and Testing
of
Harmon AFTAC Track Overlays
Models 1100AT - 1110AT - 1110AR - 1100AT/R

The purpose of this writeup is to enable maintenance personnel to properly test Harmon AFTAC track transmitters and receivers in the field in effort to determine defective module boards in need of replacement.

Test Equipment:

1] Simpson Model 260 volt-ohm-milliameter

2] 1.9 ohm track resistor

Test Procedure:

1] Measure receiver input battery voltage at terminals +12V and - (Com) which should read between 9 and 14 volts.

2] Check .5A Slo-Blo fuse on surge panel. If fuse is blown and replacement fuse also blows, the trouble is in receiver. Replace surge panel module board. If fuse continues to blow, replace receiver board (131A) and/or RFIN (130A) board with same frequency. When fuse ceases to blow after replacement of above-mentioned boards, adjust receiver per instructions in Item 10.

3] If fuse is not blown on receiver surge panel, place d.c. meter leads on receiver terminals relay + and relay - and turn adjustment "pot" on receiver board clockwise to determine if sufficient d.c. voltage can be obtained to energize relay. If relay energizes, adjust receiver per instructions on Item 10; however, if more than one-half "pot" adjustment is required to energize relay and no obvious reason, such as wet track, is apparent, you should investigate reason for change in level. Broken or high resistance bonding, trouble at transmitter, etc., could be causing level change.

4] If unable to energize receiver relay or considerable "pot" adjustment is required to energize relay, proceed to transmitter location.

5] Measure transmitter battery input at terminals +12v and -(Com) which should read between 9 and 14 volts.

6] Check 3A SLO-BLO fuse on surge panel. If fuse is blown and replacement fuse continues to blow, replace surge panel, power amp (122A), RFOUT (128A-1 low power) and transmitter (121A) boards one at a time until fuse holds.

7] If transmitter fuse is not blown, disconnect from track circuit at terminals on top of cabinet marked (Rails). Place 1.9 ohm track resistor across transmitter (Rails) terminals and read the AC voltage output of transmitter with meter on output scale. AFTAC transmitter output levels can be set up to provide three levels of power by arrangement of jumpers placed on terminals 1, 2 and 3; however these jumpers should not be changed after initial installation except by permission of Supervisor's office.

Model 1110AT
No jumpers = approx. 1.4V A.C.
Terminals 1 and 2 jumpered = approx. 2V A.C.
Terminals 2 and 3 jumpered = approx. 2V A.C.
Terminals 1, 2 and 3 jumpered = approx. 3V A.C.

Model 1100AT and 1100AT/R
No jumpers = approx. .16V A.C.
Terminals 1 and 2 jumpered = approx. .25V A.C.
Terminals 1, 2 and 3 jumpered = approx. .5V A.C.

If approximate readings can be obtained from transmitter with 1.9 ohm as indicated above, transmitter is not at fault. If greatly reduced or no A.C. voltage is recorded on meter, replace module boards of correct frequency one at a time until suitable output is obtained.

8] Return to receiver and adjust per instructions indicated on Item 10. If still unable to adjust receiver satisfactorily, replace receiver board (131A) and/or RFIN (130A) boards. If still unable to adjust receiver satisfactorily, inspect track for open bonds, broken rail, shorted track, etc.

9] When trouble is finally located and corrected, whether it be a track condition or AFTAC module board replacement, the AFTAC receiver must be checked for proper adjustment in the following manner before leaving the site.

10] Two methods of receiver adjustment are acceptable depending on type of shunt wire.

1. Standard 2 terminal .06 ohm shunt should be placed across track 6 feet beyond the receiver track connections in the direction away from the transmitter.

2. New standard variable shunt (.06 - .07 - .08 - .09 ohm) should be placed directly across receiver track plug connections on each rail using .08 ohm section of shunt block.

Field Inspection and Testing of Harmon AFTAC Track Overlays

Using either method, Nos. 1 or 2, adjust "pot" on receiver card counterclockwise until D.C. relay voltage reads .5V. Remove shunt and relay should energize to approximately 11 volts ± 2 volts.

The above adjustment procedure should be under normal ballast conditions. Under wet or other adverse ballast conditions place .06 ohm shunt 10 to 12 feet beyond connection and when ballast conditions improve to normal, readjust per above item Nos. 1 and 2.

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FIELD INSPECTION AND TESTING FOR US&S CO. TRACK AFO UNITS

The purpose of this write-up is to enable maintenance personnel to properly test US&S Company AFO track transmitters and receivers in the field before marking them bad order. One important reminder, when adjusting receivers never reduce the fixed resistance below 240 ohms (except on instructions from Signal Supervisor), to do so will increase receiver sensitivity so that it will not shunt under certain conditions.

TEST EQUIPMENT:

1. Simpson Model 260 volt-ohm-milliameter.
2. 1.5 ohm, 1 watt resistor.

TEST PROCEDURE:

1. Measure receiver battery input voltage at terminals DC+ and DC- which should read between 9 and 15 volts.

2. The receiver may be equipped with a 0.25 amp. Slo-Blo fuse. If fuse is blown and replacement fuse also blows, the unit should be replaced.

3. Measure receiver output voltage at terminals +R and -R for a value equal to the minimum pickup voltage or higher of the AFO relay. (Refer to I-84 for minimum pickup value.) If voltmeter shows low voltage or no voltage, check the receiver "RELAY VOLTS" control to determine if vibration has loosened the lock nut and shifted the control. If so, readjust the control for proper voltage. Do not adjust the control at this time if the lock nut is found to be tight. Proceed to transmitter location.

4. Measure transmitter battery input voltage at terminals DC+ and DC- which should read between 9 and 15 volts.

5. The transmitter may be equipped with a 0.25 amp Slo-Blo fuse. If fuse is blown and replacement fuse also blows, the unit should be replaced.

6. Disconnect transmitter from track circuit at terminals 1T and 2T. Place the 1.5 ohm resistor across 1T and 2T. The AC reading across 1T and 2T should be 0.3 volt or higher for low power transmitters and 1.0 volt or higher for high power transmitters. If the reading is below these minimums, replace the unit. Return to receiver location.

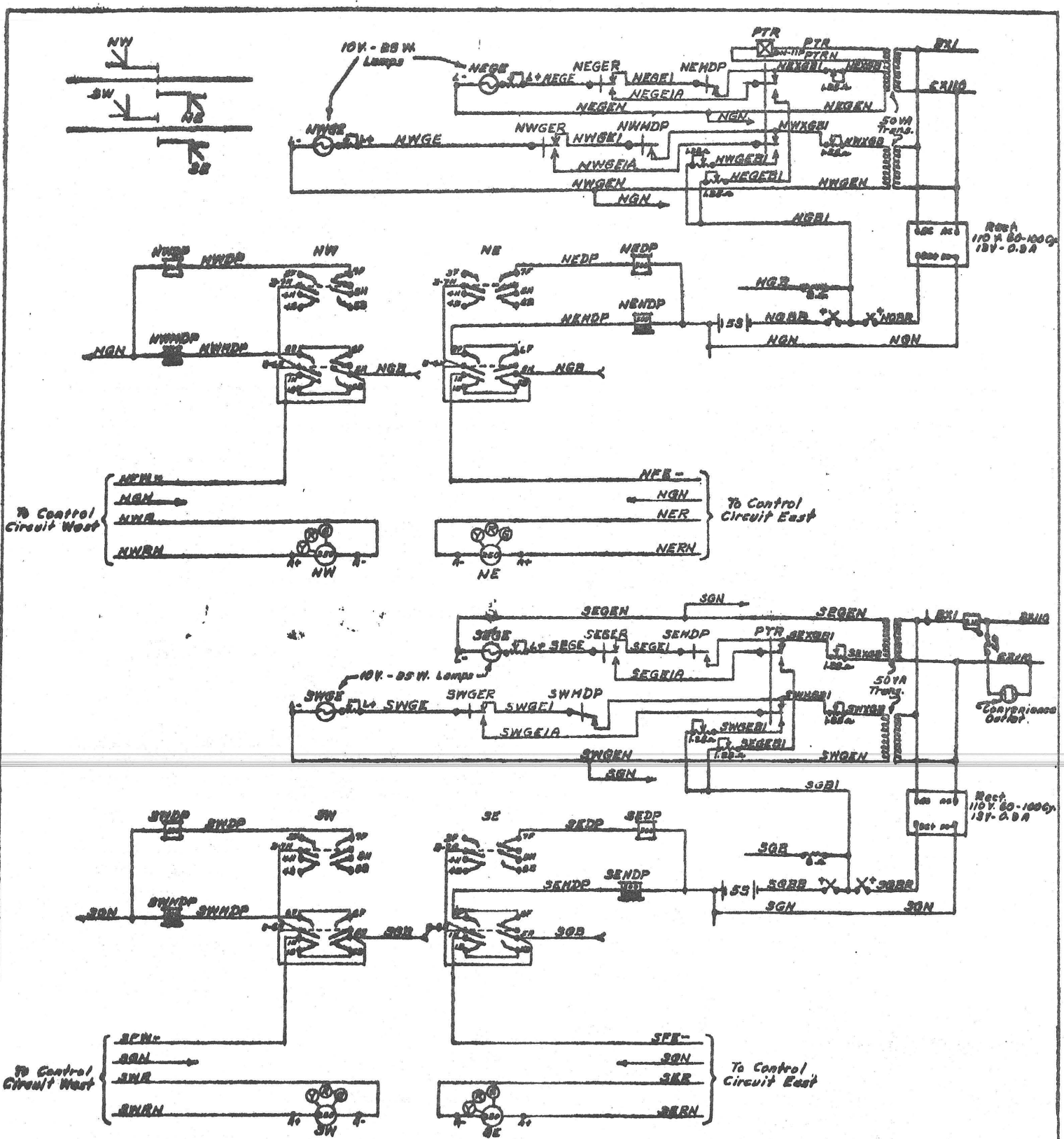
- Continued -

7. If operation is not correct, recheck readings outlined in Step 3. (Both receiver and transmitter could be defective.) If voltage reading is still less than minimum pickup value, attempt to increase output voltage by clockwise adjustment of "RELAY VOLTS" control. Resistance 510 and 1K may be jumpered out to provide additional adjustment for output control. Do not jumper out 240 as stated in preface. If sufficient output voltage cannot be obtained, replace unit.

8. If the battery, transmitter and receiver are not at fault, check track, track connections, AFO relay and all related circuits. A defective track coupling unit, where used may be a cause of difficulty.

9. If units are operating within voltage limits and AFO relay still does not respond, the transmitter frequency may have drifted. Substitute a transmitter of the correct frequency. If operation is not correct substitute a receiver of correct frequency and check for correct operation. If operation is now correct, reconnect the original transmitter and check for correct operation. (Both receiver and transmitter could be defective.)

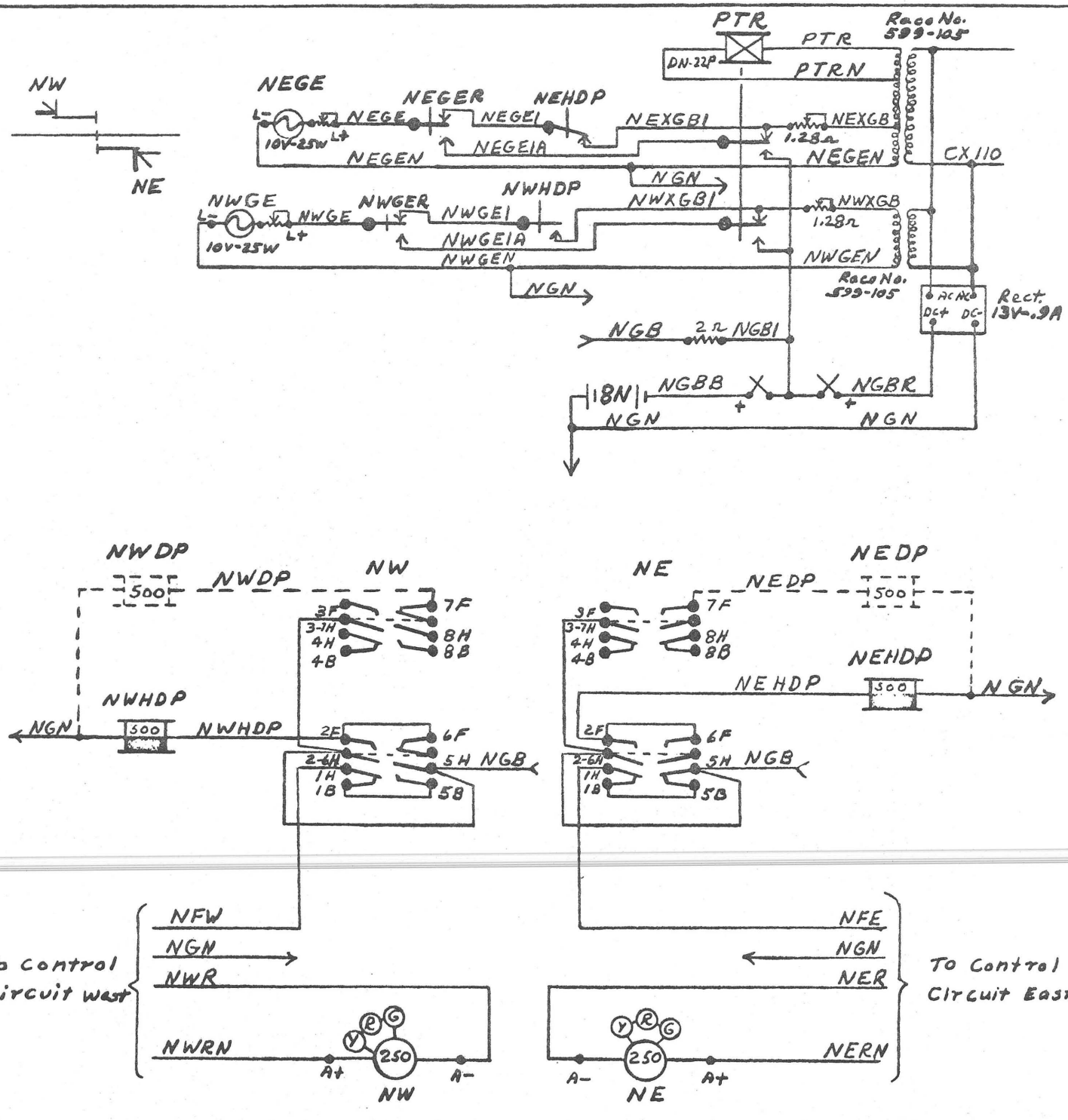
10. Adjust receiver for proper shunting sensitivity. <u>This adjustment should be made with ballast in good condition</u>. Connect a 0.06 ohm shunt across the track, 20 feet from the receiver track connections in the direction away from the transmitter. (When the loop connection is used, connect the 0.06 ohm shunt across the track, five feet from the receiver loop in the direction of the transmitter.) Adjust "RELAY VOLTS" control until relay just drops out, observe voltage across relay terminals. Tighten "RELAY VOLTS" lock nut and check voltmeter to see that tightening the lock nut did not change voltmeter readings, if necessary readjust for original reading.



LOCAL WIRING FOR INTERMEDIATE LOCATION
UNION N-5 SEARCHLIGHT SIGNALS — TRAFFIC REVERSAL SYSTEM

SEO TOPEKA 6-18-59

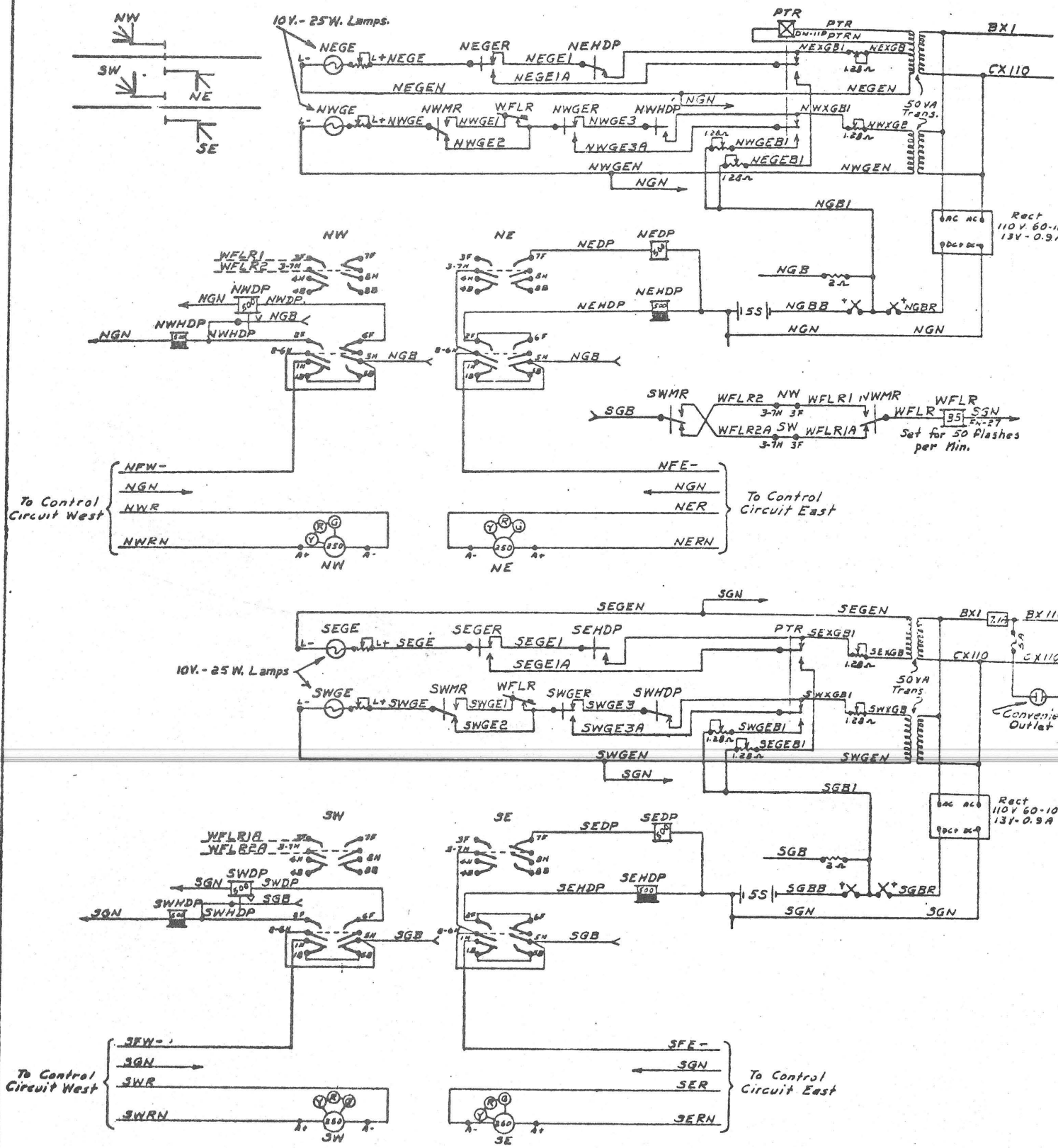
EO-143A



LOCAL WIRING FOR NORTH TRACK INTERMEDIATE LOCATION
UNION H-5 SEARCHLIGHT SIGNALS ~ TRAFFIC REVERSAL SYSTEM

SEO. EL. 6-16-64

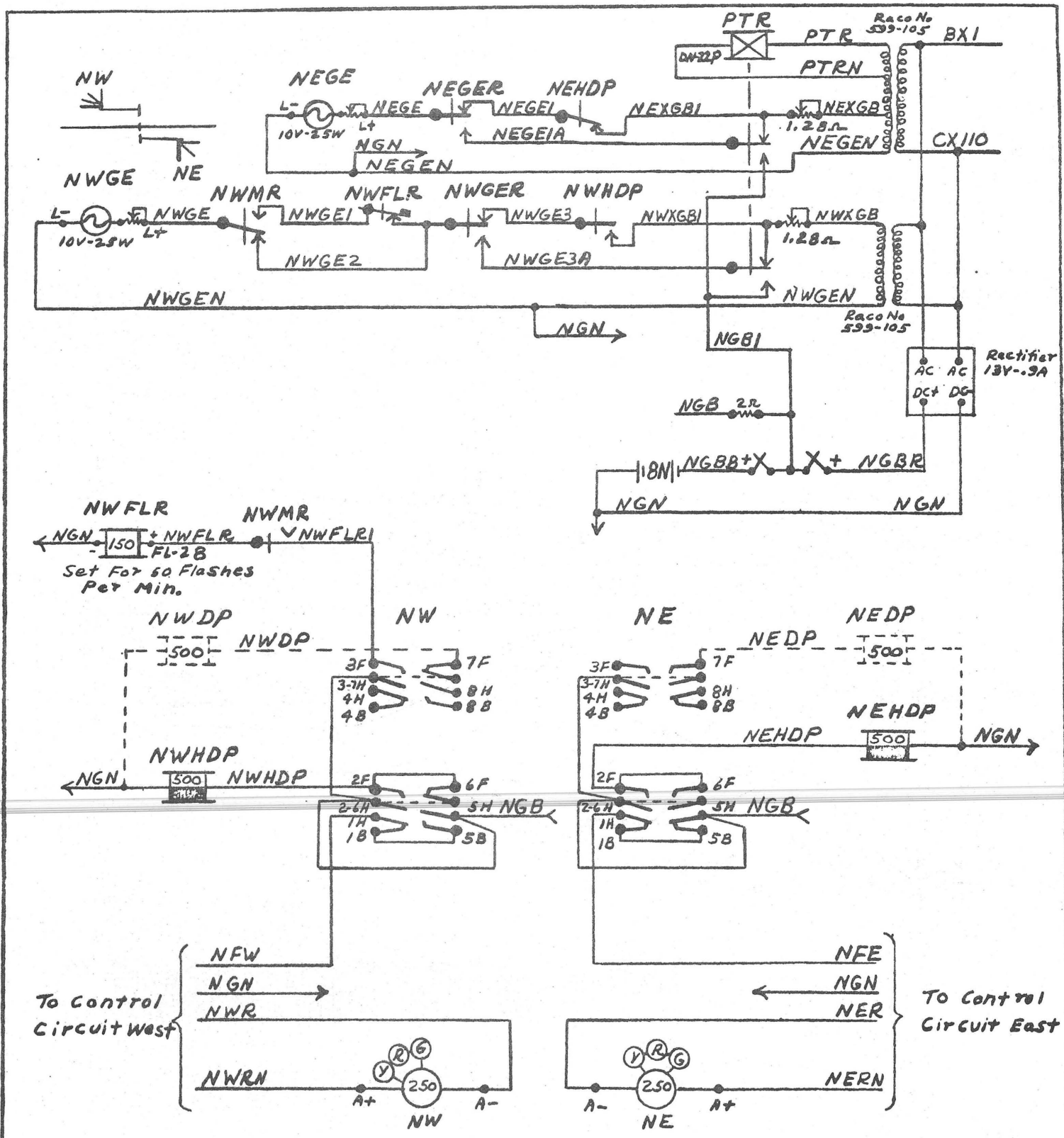
EO-143AN



LOCAL WIRING FOR INTERMEDIATE LOCATION
UNION H-5 SEARCHLIGHT SIGNALS ~ TRAFFIC REVERSAL SYSTEM
APPROACH MEDIUM INDICATION ON "W" SIGNALS

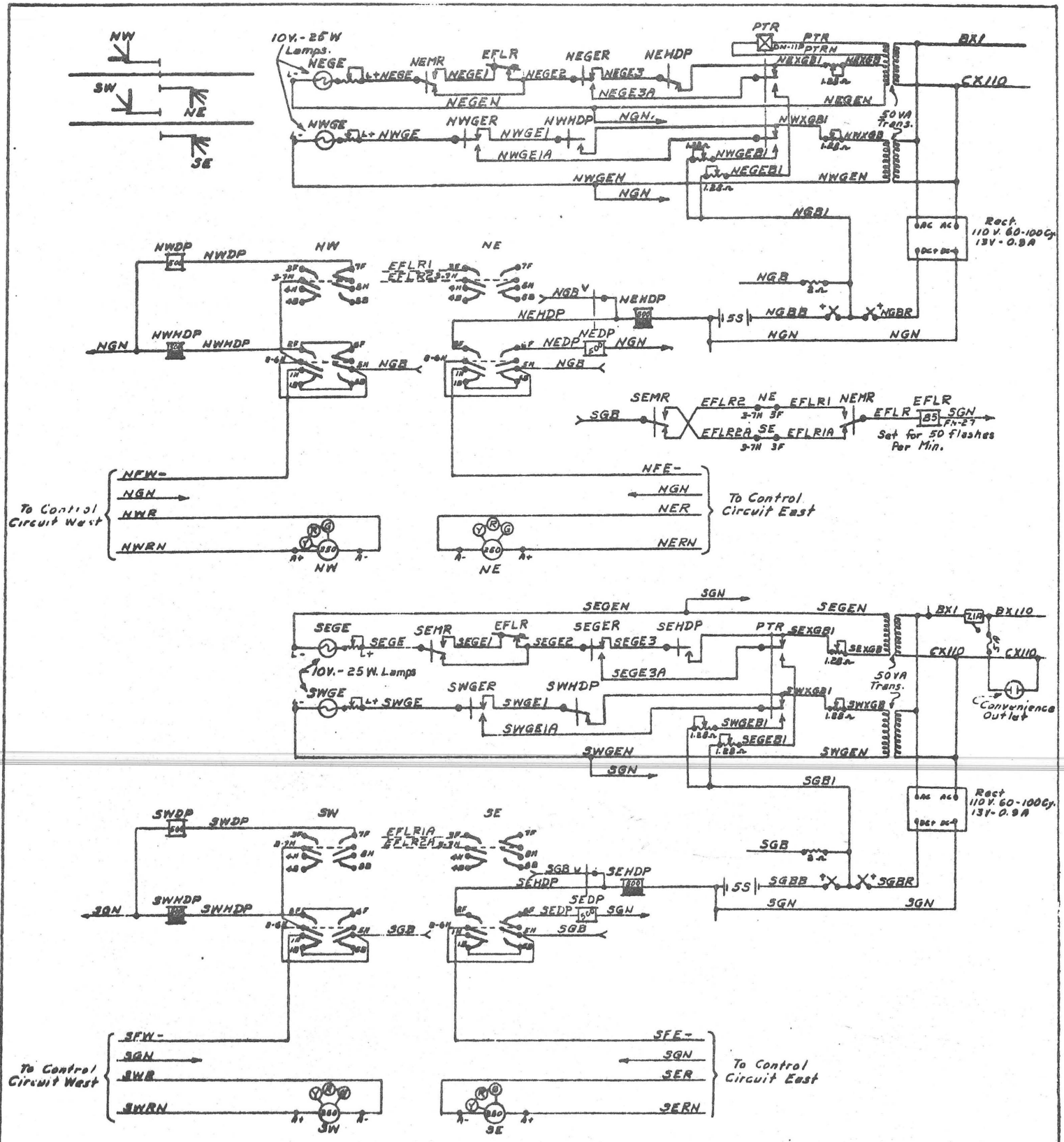
SEO-EL 6-18-59

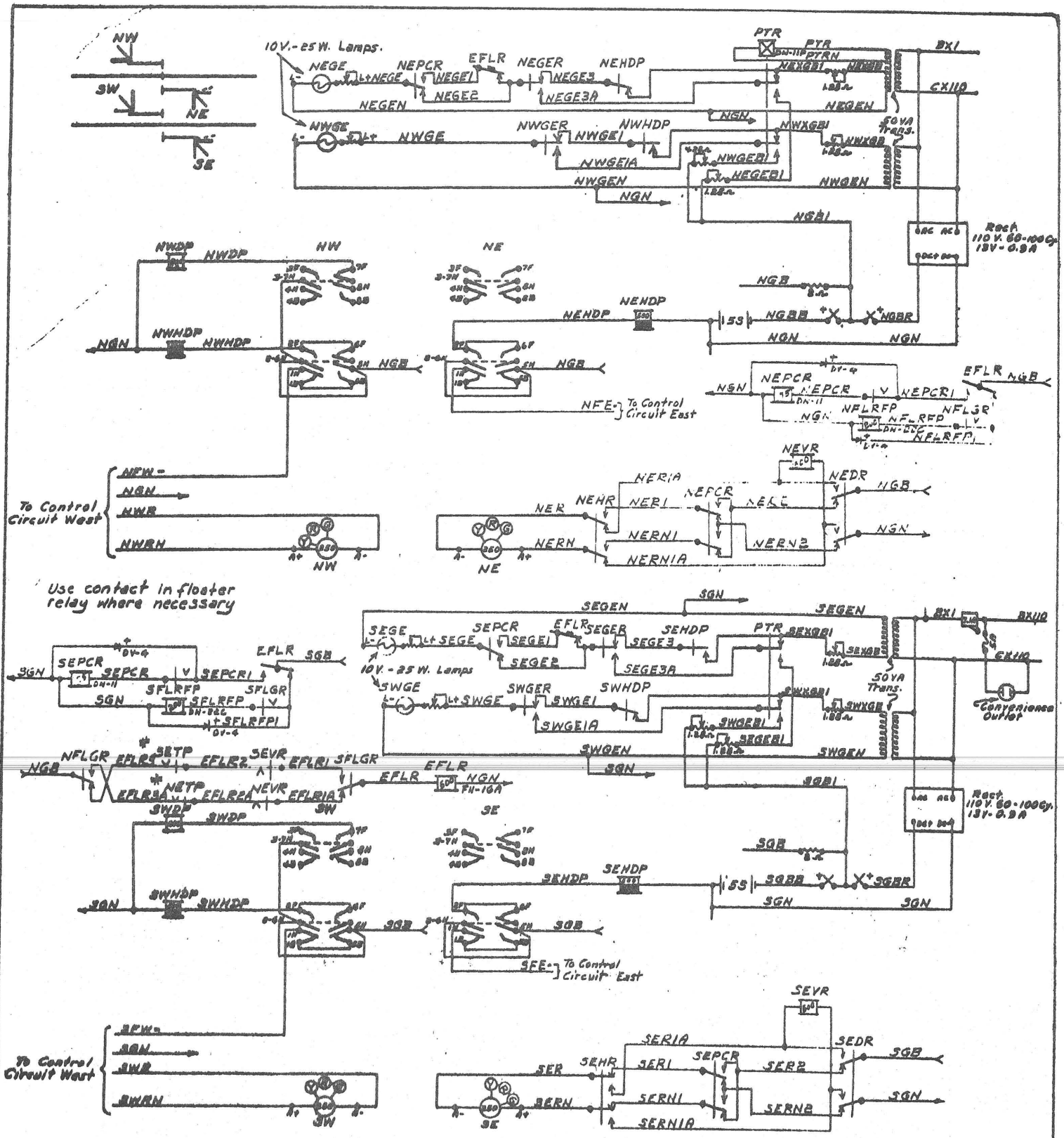
EO-143

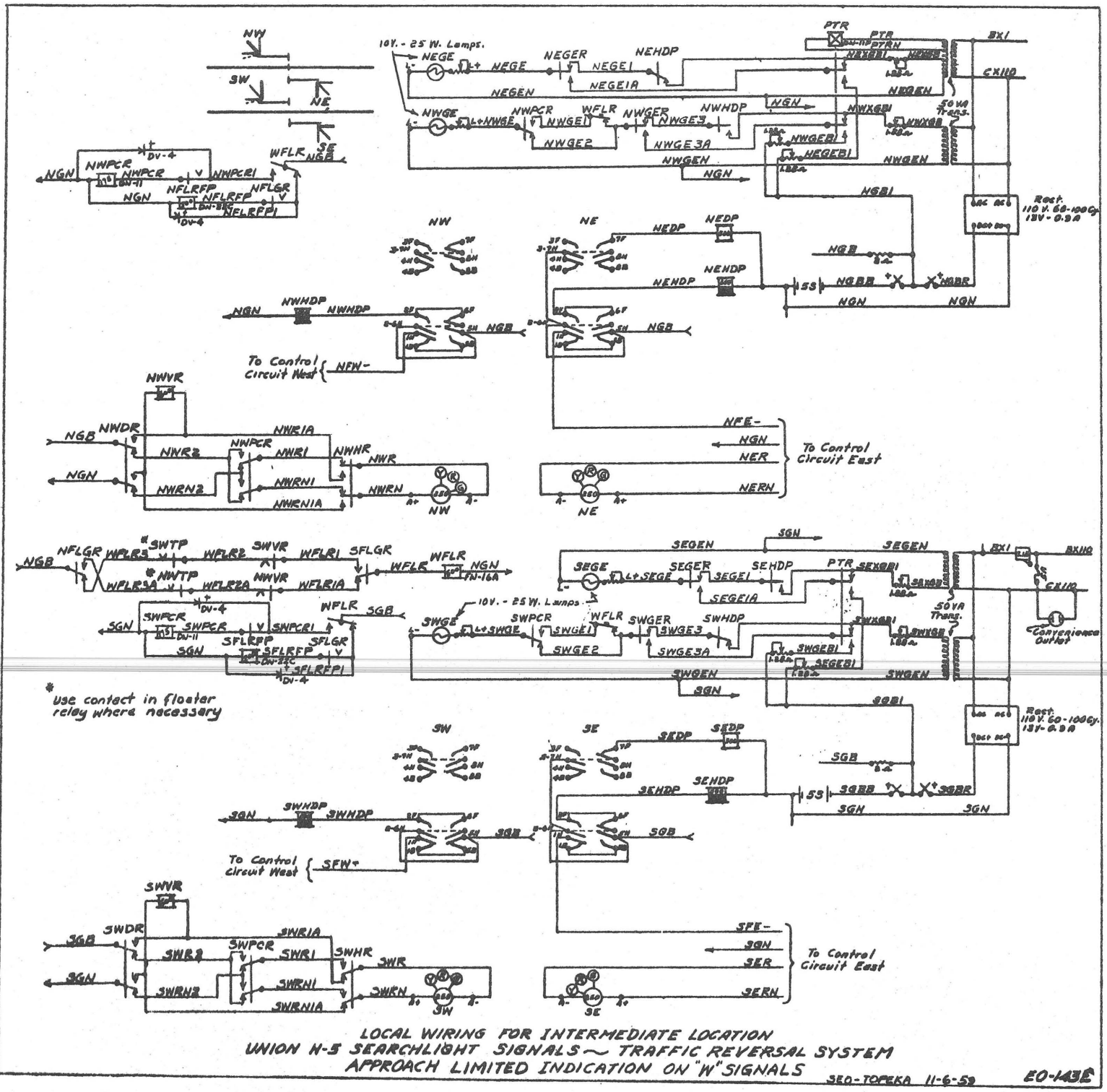


LOCAL WIRING FOR NORTH TRACK INTERMEDIATE LOCATION
UNION H-5 SEARCHLIGHT SIGNALS ~ TRAFFIC REVERSAL SYSTEM
APPROACH MEDIUM INDICATION ON "W" SIGNAL

SEO-EL. 6-16-64 EO-1438N

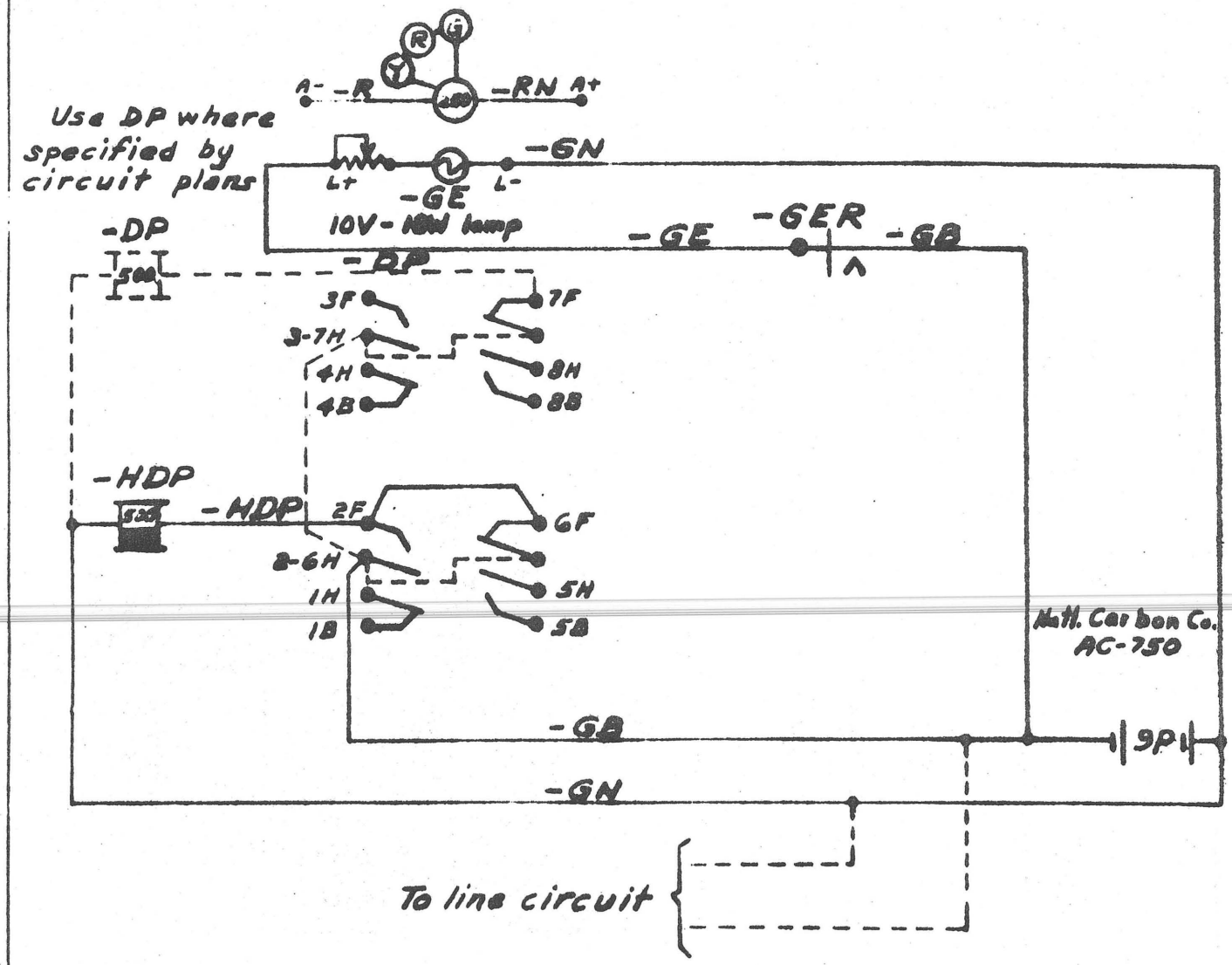

NW
SW
NE
SE
10V.-25W Lamps.
NEGE
NEMR
EFLR
NEGER
NEHDP
PTR
PTRN
NEXGBI
NWXGBI
BXI
CX110
NEGEN
NEGE3A
NEGE1
NEGE2
NEGE3
NWGE
NWGER
NWHDP
NGN
NWGE1
NWGE1A
NWGEBI
NEGEBI
NWGEN
50VA Trans.
NGBI
Rect. 110 V. 60-100 Cy. 13V-0.9A
NWDP
NE
EFLR1
EFLR2
NGB
NEDP
SS
NGBB
NGBR
SEMR
EFLR2A
EFLR1A
SGN
Fl-27
Set for 50 flashes Per Min.
NFW-
NWR
NWRN
NFE-
NER
NERN
To Control Circuit West
To Control Circuit East
SEGEN
SEGE
SEGE1
SEGE2
SEGE3
SEGE3A
SEHDP
SEXGBI
SWGE
SWGER
SWHDP
SWGE1
SWGE1A
SWGEBI
SEGEBI
SWGEN
SGBI
SWDP
SW
SE
EFLR1A
EFLR2A
SGB
SEDP
SWNDP
SFW-
SWR
SWRN
SFE-
SER
SERN
LOCAL WIRING FOR INTERMEDIATE LOCATION
UNION H-5 SEARCHLIGHT SIGNALS — TRAFFIC REVERSAL SYSTEM
APPROACH MEDIUM INDICATION ON "E" SIGNALS
SEO-EL-6-18-52
EO-143C


NW
SW
NE
SE
10V.-25W. Lamps.
NEGE
NEPCR
NEGE1
EFLR
NEGER
NEGE3
NEHDP
NEGE2
NEGE3A
NEGEN
NWGE
NWGER
NWHDP
NWGE1
NWGE1A
NWGEN
NGN
NGB1
PTR
PTRN
BX1
CX110
NEXGB1
NWXGB1
50VA Trans.
Rect. 110 V. 60-100 Cy. 13V-0.9A
NWDP
NWHDP
NGB
NEHDP
NGBR
NFE- To Control Circuit East
NEPCR
NFLRFP
NFLGR
NFLRFP1
NEVR
NEDR
NERIA
NEHR
NERI
NELC
NERNI
NERN2
NERNIA
NER
NERN
To Control Circuit West
NFW-
NWR
NWRN
Use contact in floater relay where necessary
SGN
SEGEN
SEGE
SEGE1
SEGER
SEHDP
SEGE3
SEGE2
SEGE3A
SWGE
SWGER
SWHDP
SWGE1
SWGE1A
SWGEN
SEXGB1
SWXGB1
Convenience Outlet
SGB1
SGB
SGBR
SFE- To Control Circuit East
SETP
SEVR
SFLGR
NETP
SWDP
SWHNDP
SWR
SWRN
SERIA
SEDR
SERI
SERN2
SERNIA
SER
SERN
LOCAL WIRING FOR INTERMEDIATE LOCATION
UNION N-S SEARCHLIGHT SIGNALS ~ TRAFFIC REVERSAL SYSTEM
APPROACH LIMITED INDICATION ON "E" SIGNALS
SEO-EL 11-6-59
EO-143D



LOCAL WIRING FOR INTERMEDIATE LOCATION
UNION N-5 SEARCHLIGHT SIGNALS — TRAFFIC REVERSAL SYSTEM
APPROACH LIMITED INDICATION ON "W" SIGNALS

SEO-TOPEKA 11-6-59 EO-143E

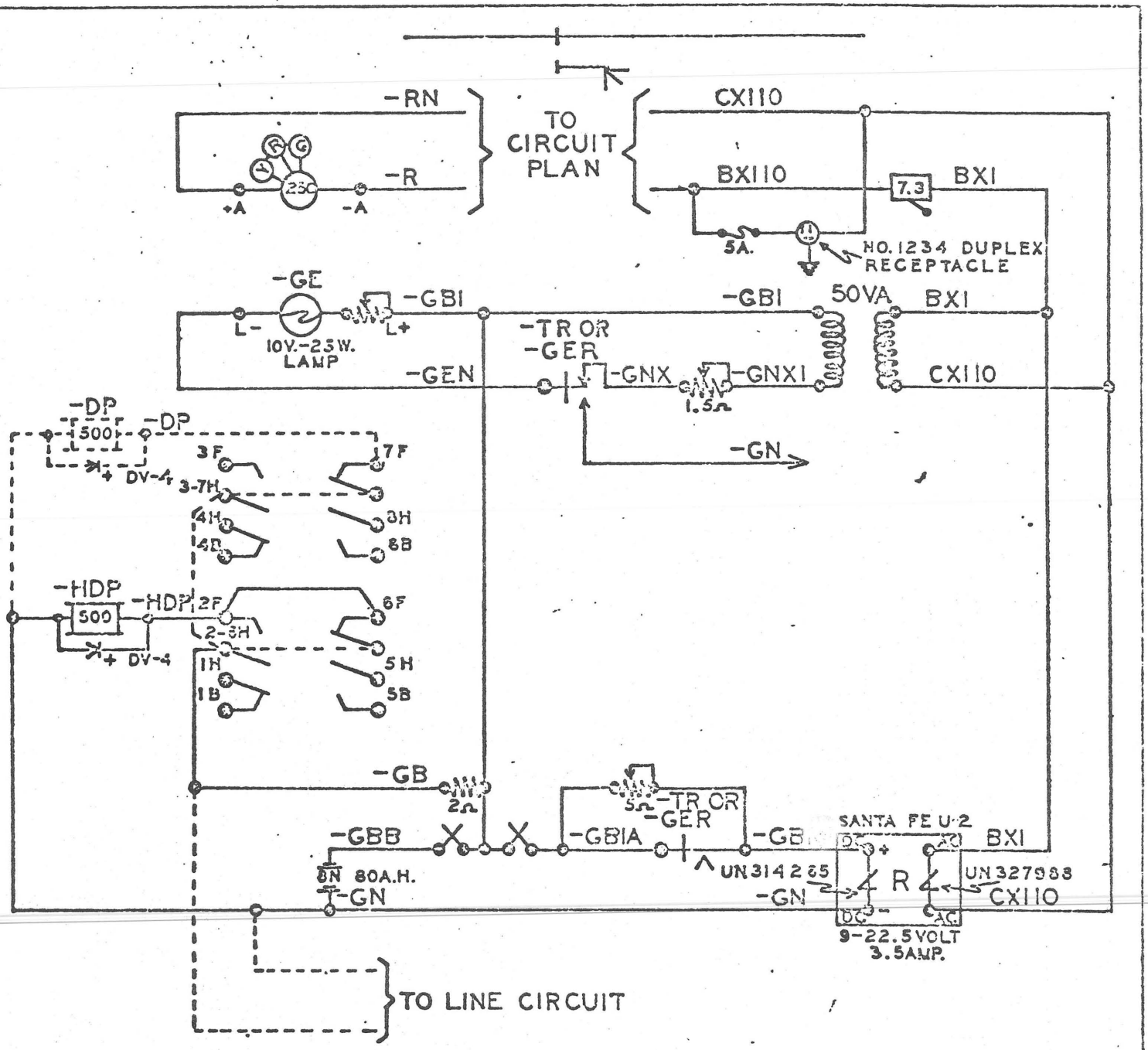


LOCAL WIRING FOR H5 SEARCHLIGHT SIGNAL WITH HIGH VOLTAGE CARBON PRIMARY BATTERY

Revised 8-16-61

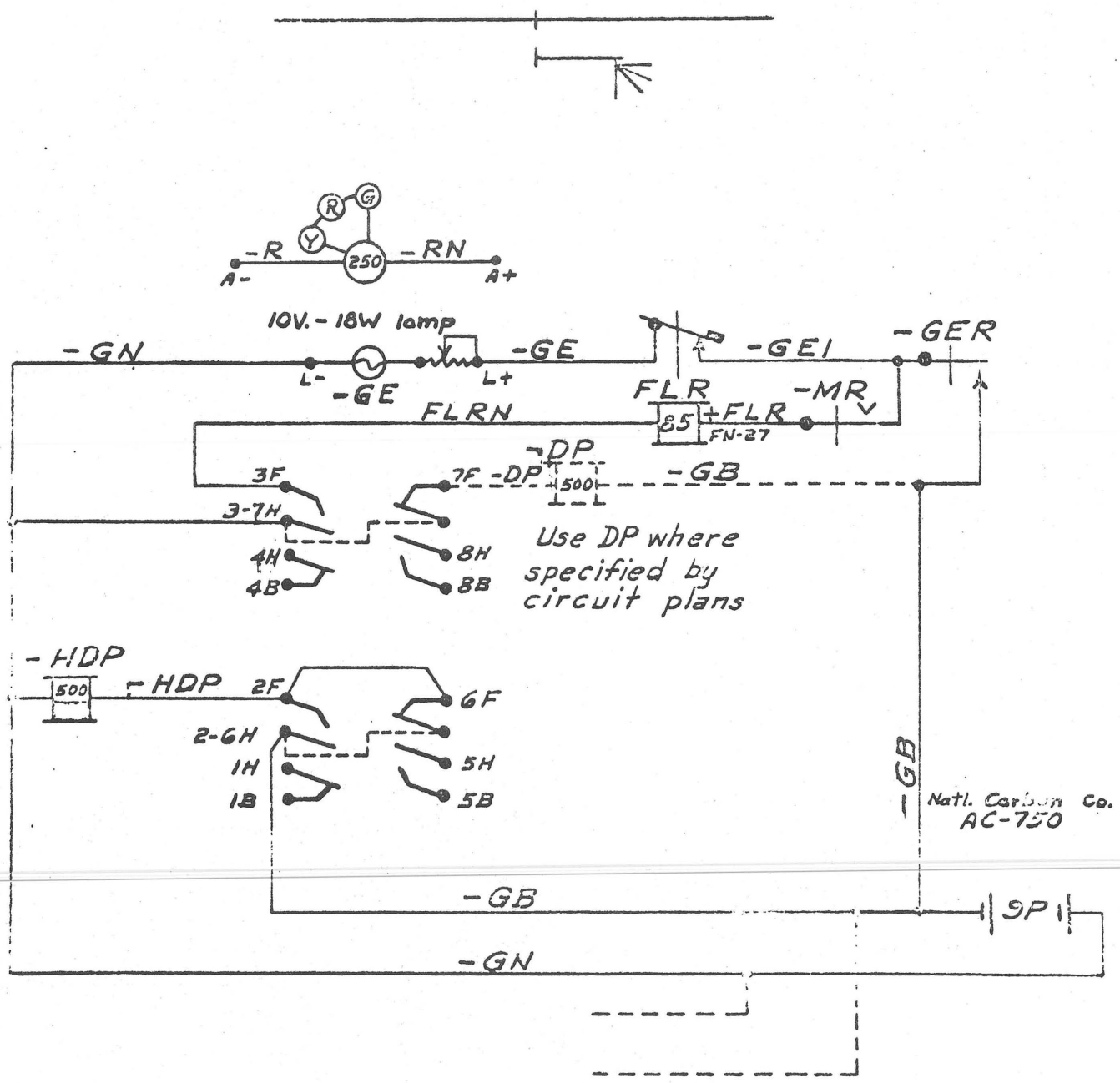
SEO-TOPEKA 10-26-59

EO-144



TYPICAL WIRING FOR H-5 SEARCHLIGHT SIGNAL WITHOUT POWER TRANSFER RELAY USING TWO RATE CHARGE CIRCUIT

S.E.O. TOPEKA
8-22-67

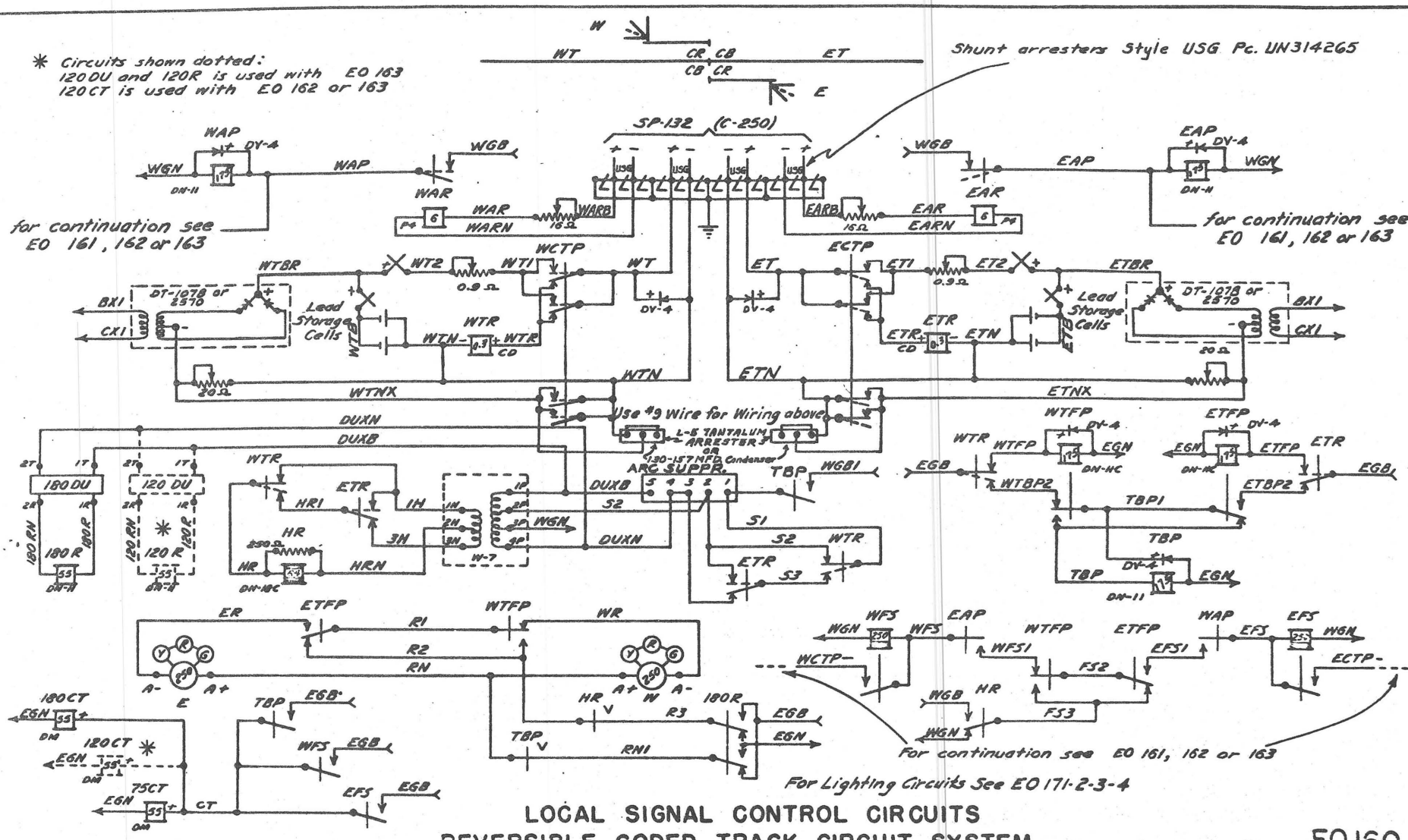


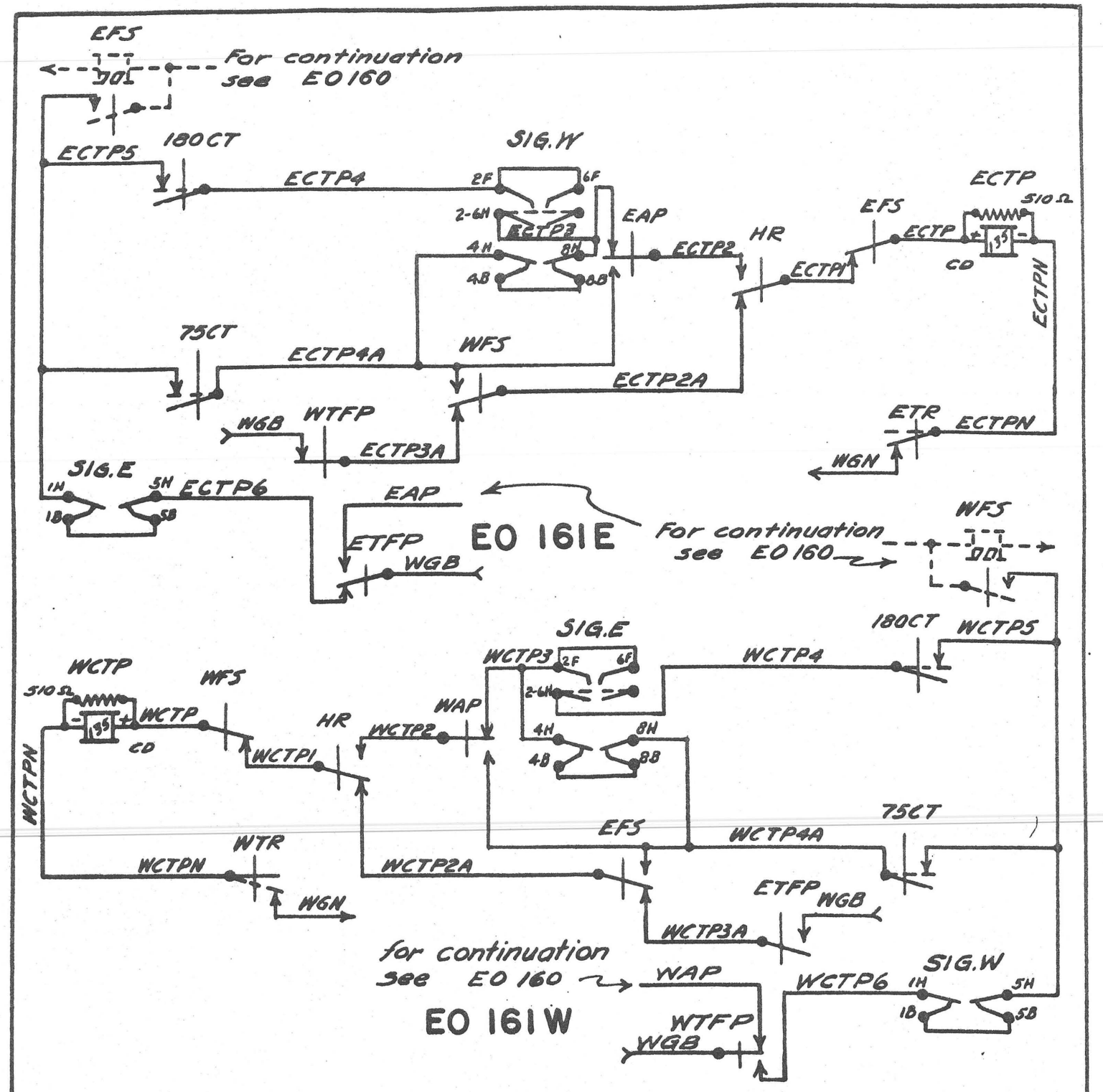
LOCAL WIRING FOR H5 SEARCHLIGHT SIGNAL WITH APPROACH MEDIUM USING HIGH VOLTAGE CARBON PRIMARY BATTERY

Revised 8-16-61

SEO-TOPEKA 10-26-59

EO-1.8.5

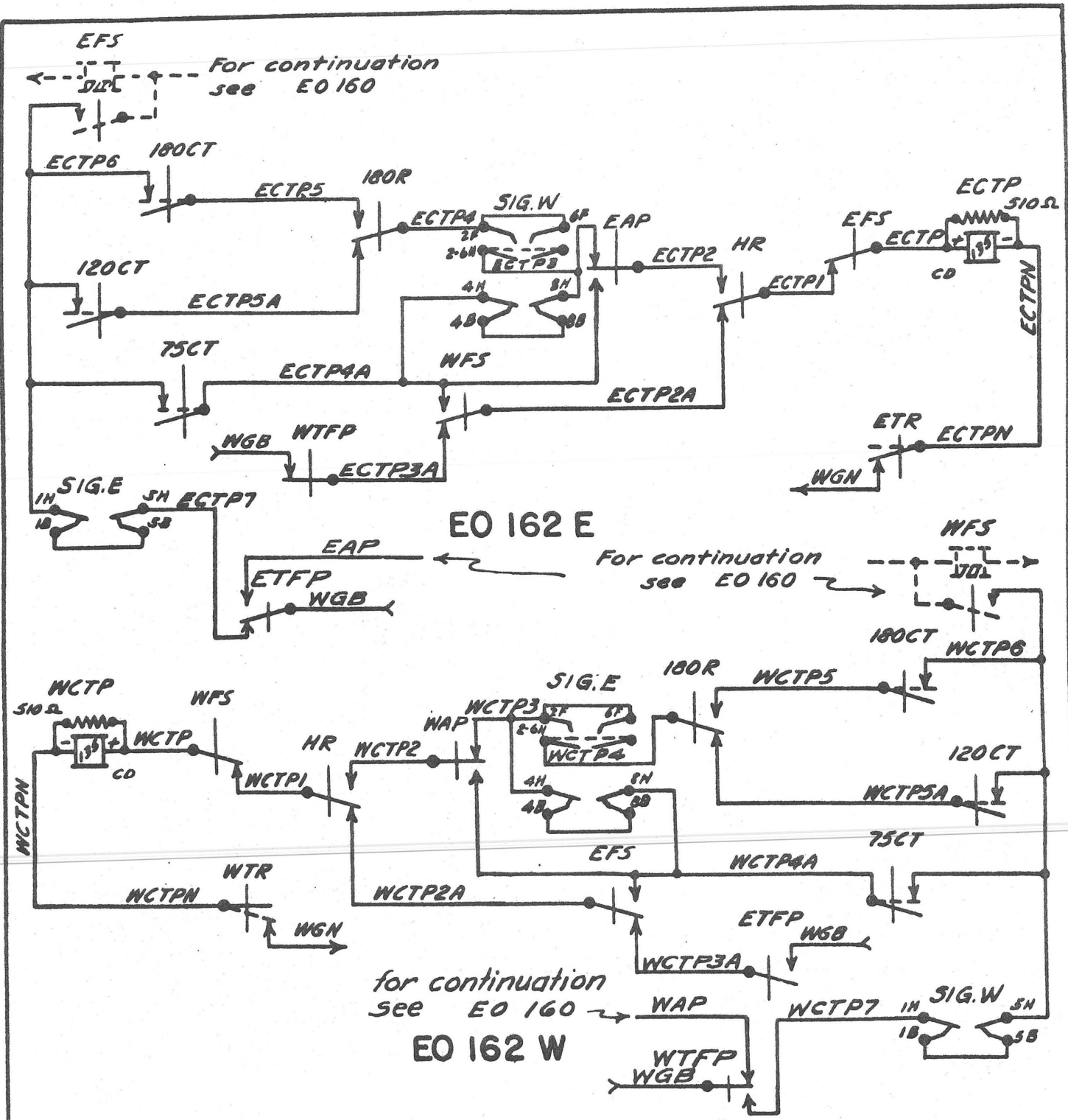

* Circuits shown dotted:
120 DU and 120R is used with EO 163
120 CT is used with EO 162 or 163
Shunt arresters Style USG Pc. UN314265
SP-132 (C-250)
for continuation see EO 161, 162 or 163
for continuation see EO 161, 162 or 163
Use #9 Wire for Wiring above
L-5 TANTALUM ARRESTER OR 130-157 MFD. Condenser
ARC SUPPR.
Lead Storage Cells
DT-1078 or 2570
180 DU
120 DU
180 R
120 R
180 CT
120 CT
75 CT
W-7
For Lighting Circuits See EO 171-2-3-4
For continuation see EO 161, 162 or 163
LOCAL SIGNAL CONTROL CIRCUITS
REVERSIBLE CODED TRACK CIRCUIT SYSTEM
Rev. 9-26-61
EO 160



75 & 180 CODE TRANSMITTER CONTROL CIRCUITS REVERSIBLE CODED TRACK CIRCUIT SYSTEM

2-2-53 Rev 5-6-53

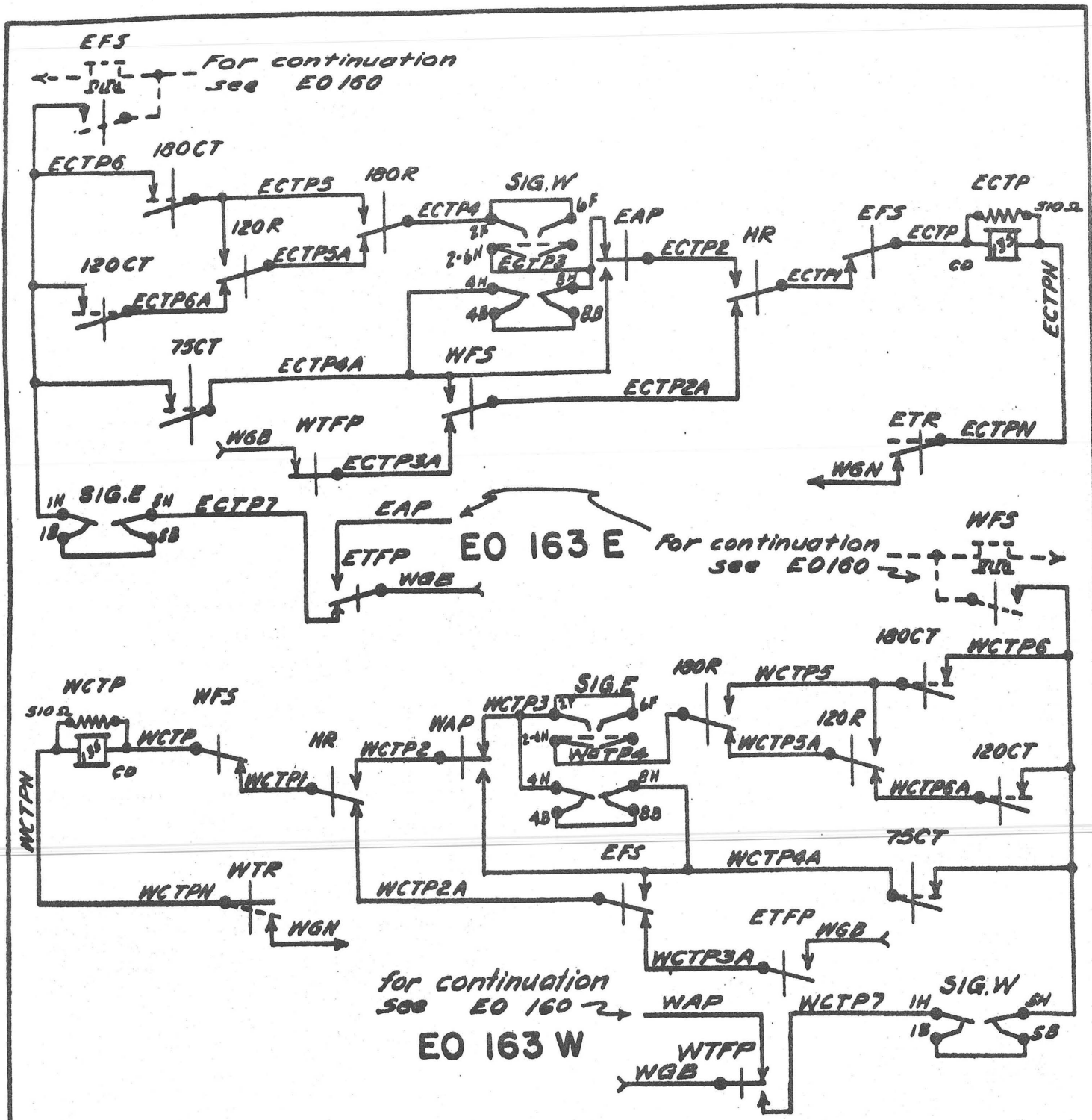
EO 161E-W



75, 120 & 180 CODE TRANSMITTER CONTROL CIRCUITS WITHOUT 120R RELAY SELECTION REVERSIBLE CODED TRACK CIRCUIT SYSTEM

2-2-53 Rev 5-6-53

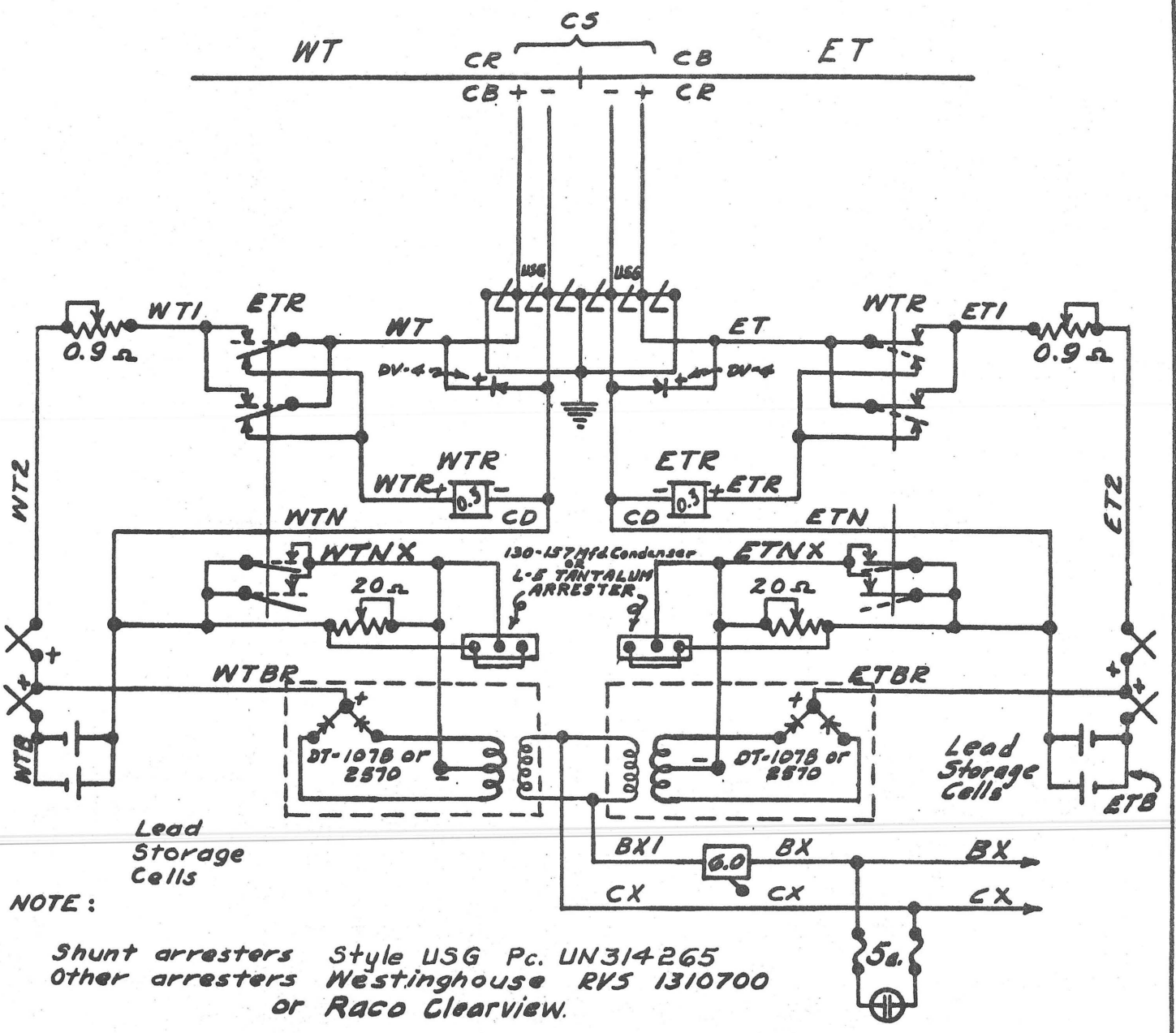
EO 162 E-W



75, 120 & 180 CODE TRANSMITTER CONTROL CIRCUITS WITH 120R RELAY SELECTION REVERSIBLE CODED TRACK CIRCUIT SYSTEM

2-2-53 Rev. 5-6-53

E0163E-W



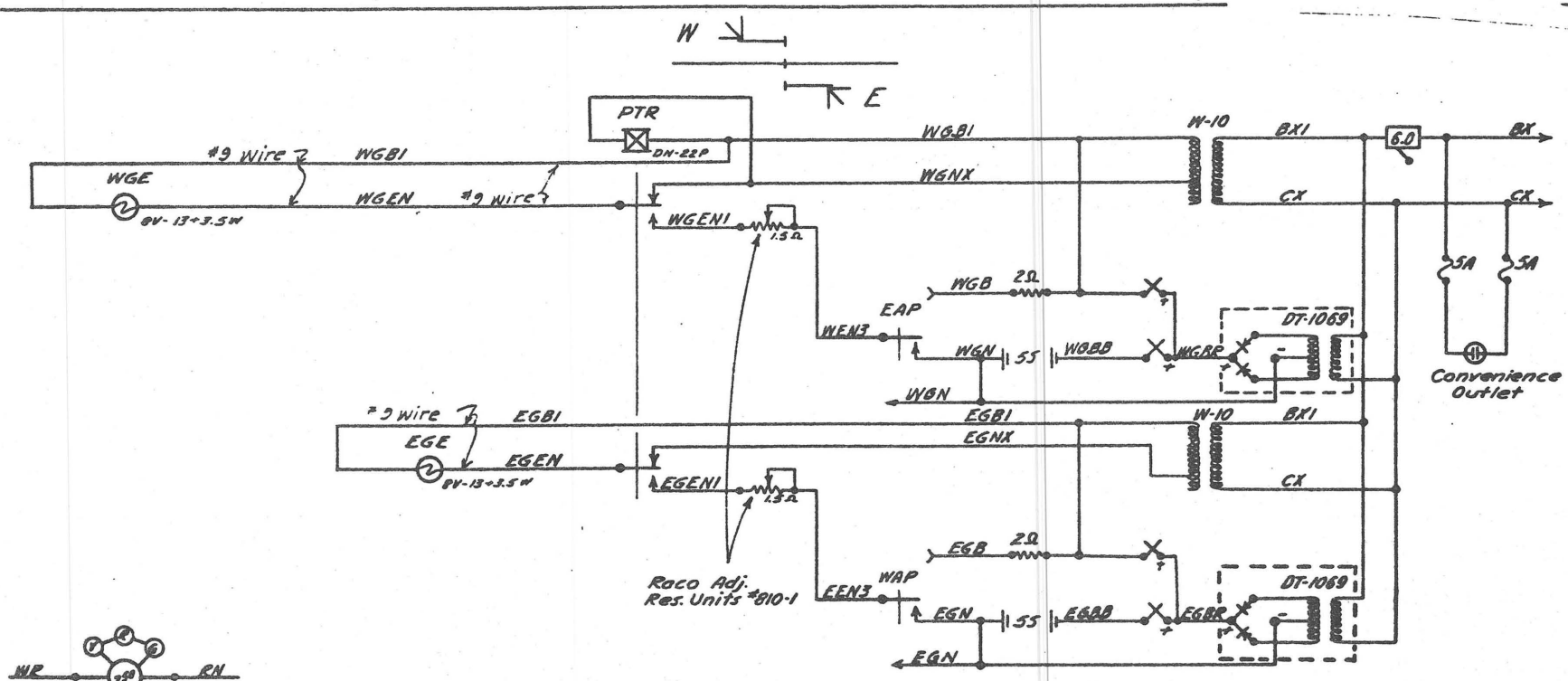
NOTE:

Shunt arresters Style USG Pc. UN314265
Other arresters Westinghouse RVS 1310700
or Raco Clearview.

FRONT CONTACT CODING CUT SECTION AND STEADY ENERGY REPEATING

REV. 9-26-61

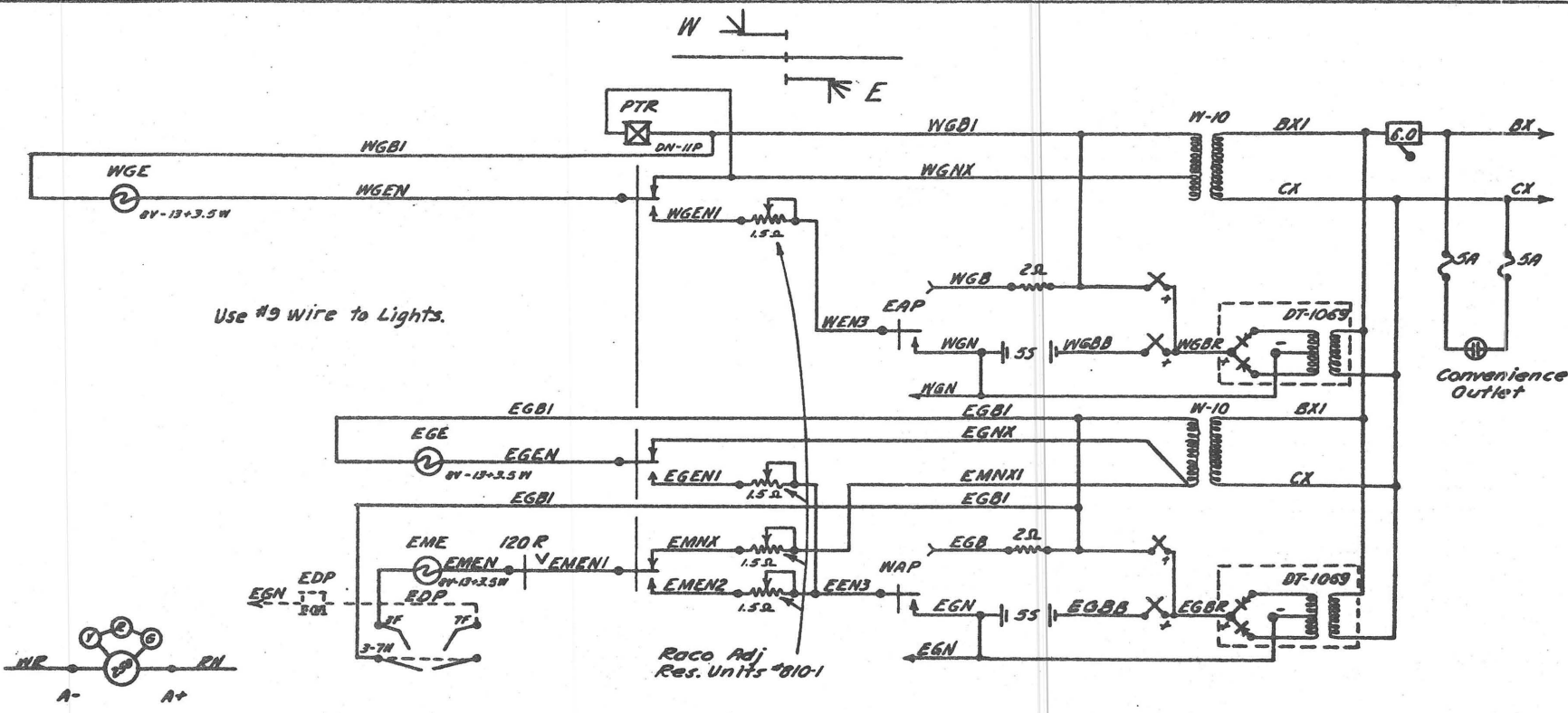
EO-167



LIGHTING CIRCUIT FOR INTERMEDIATE LOCATION REVERSIBLE CODED TRACK CIRCUIT SYSTEM

9-22-52 Rev. 11-20-53

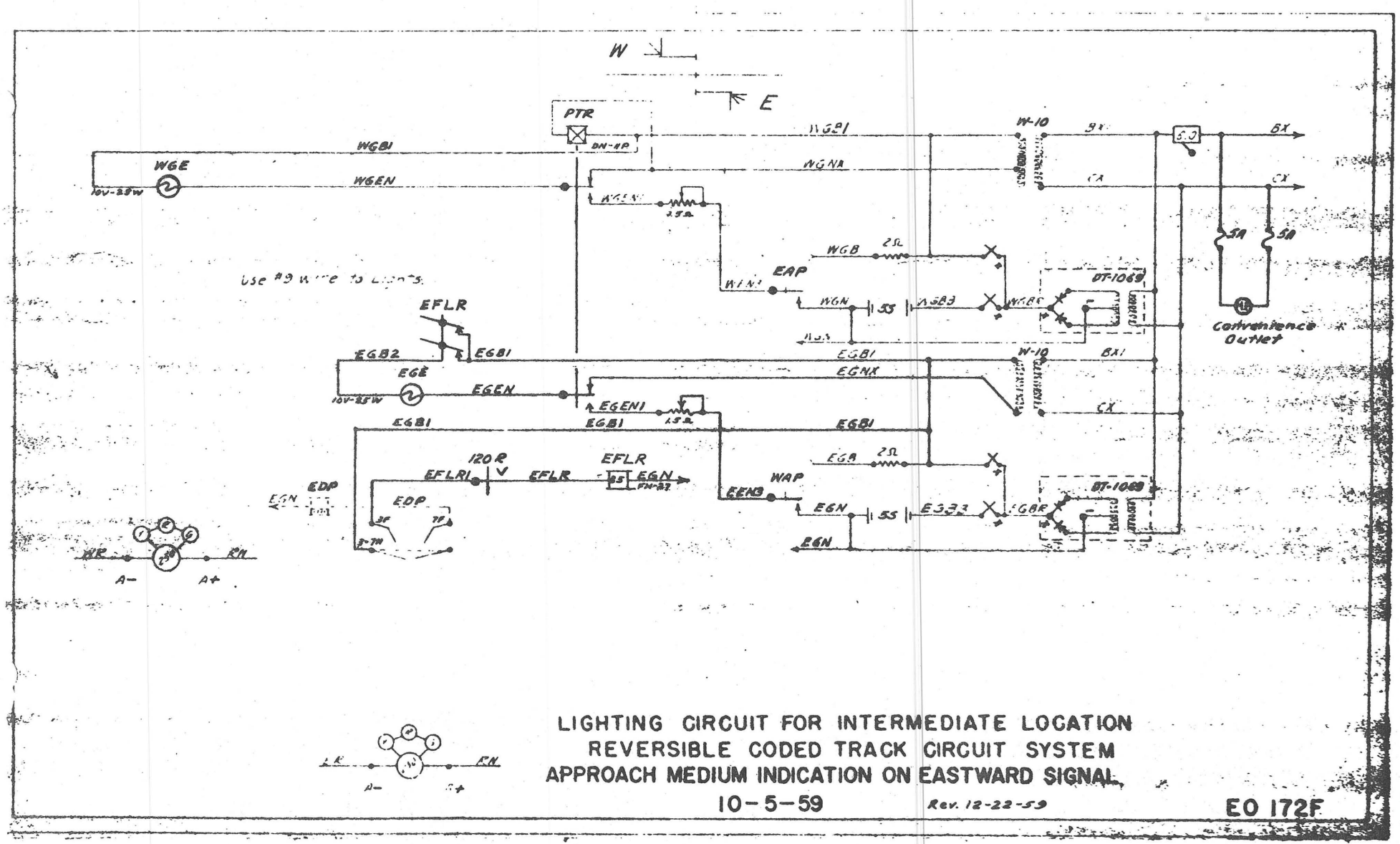
E0171



LIGHTING CIRCUIT FOR INTERMEDIATE LOCATION REVERSIBLE CODED TRACK CIRCUIT SYSTEM ADVANCE INDICATION ON EASTWARD SIGNAL

9-22-52 Rev. 11-20-53

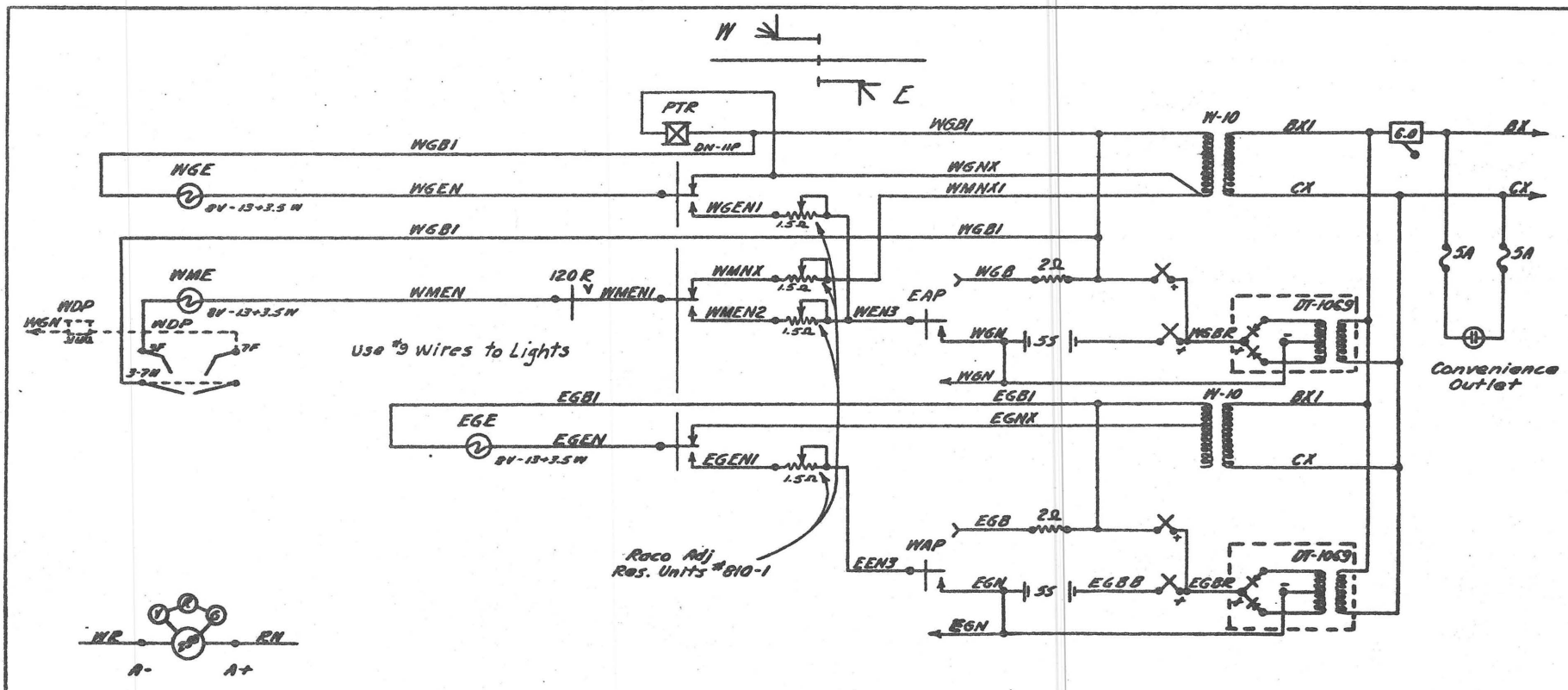
EO 172



LIGHTING CIRCUIT FOR INTERMEDIATE LOCATION
REVERSIBLE CODED TRACK CIRCUIT SYSTEM
APPROACH MEDIUM INDICATION ON EASTWARD SIGNAL

10-5-59 Rev. 12-22-59

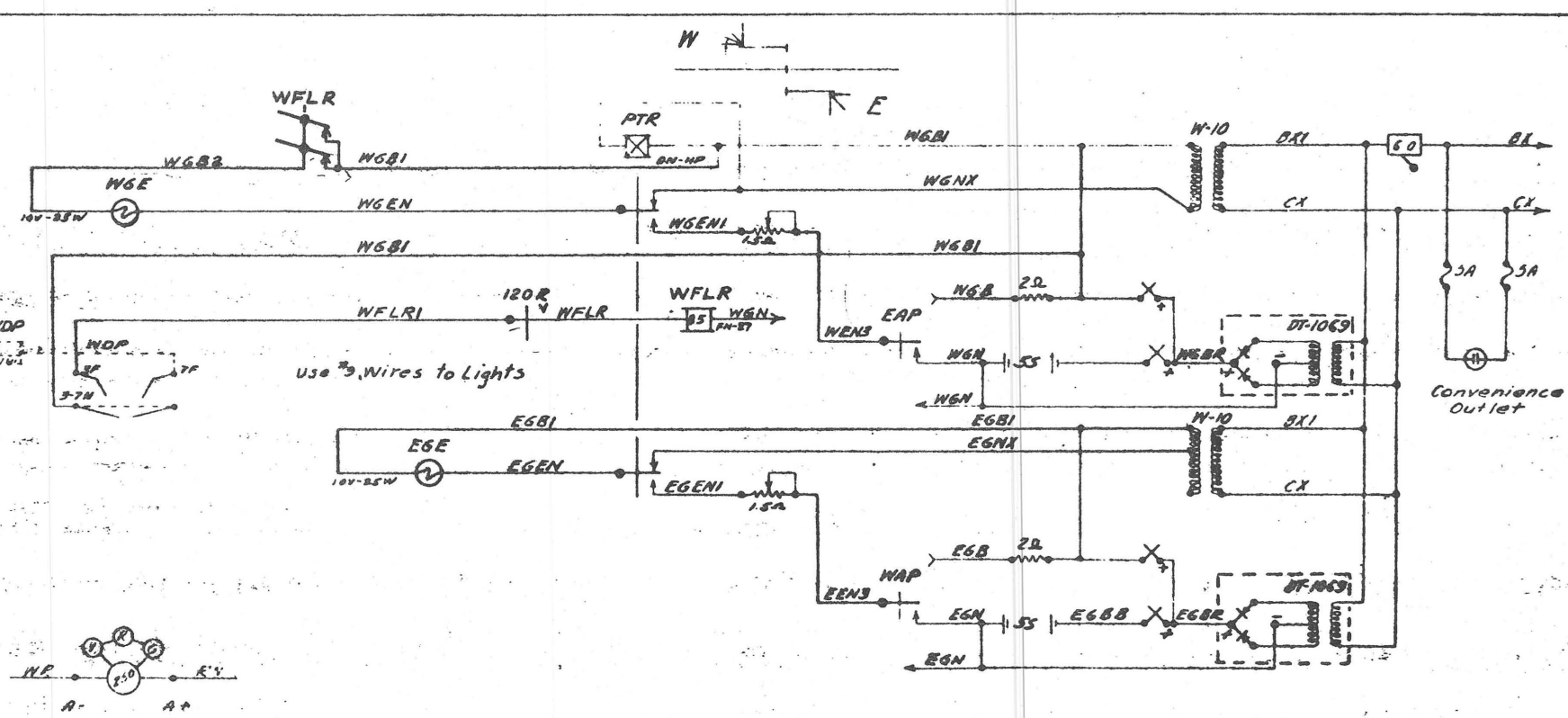
EO 172F



LIGHTING CIRCUIT FOR INTERMEDIATE LOCATION REVERSIBLE CODED TRACK CIRCUIT SYSTEM ADVANCE INDICATION ON WESTWARD SIGNAL

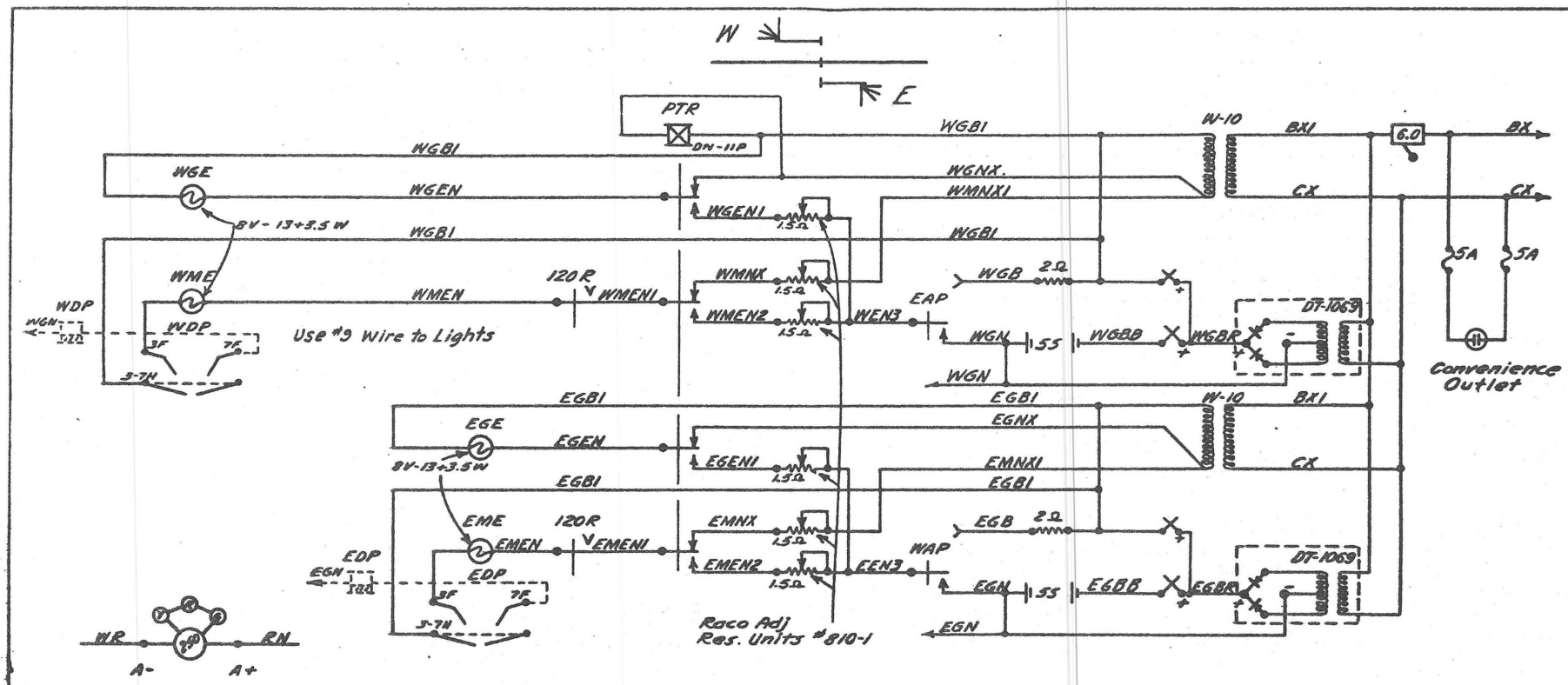
9-22-52 Rev. 11-20-53

E0 173



LIGHTING CIRCUIT FOR INTERMEDIATE LOCATION
REVERSIBLE CODED TRACK CIRCUIT SYSTEM
APPROACH MEDIUM INDICATION ON WESTWARD SIGNAL

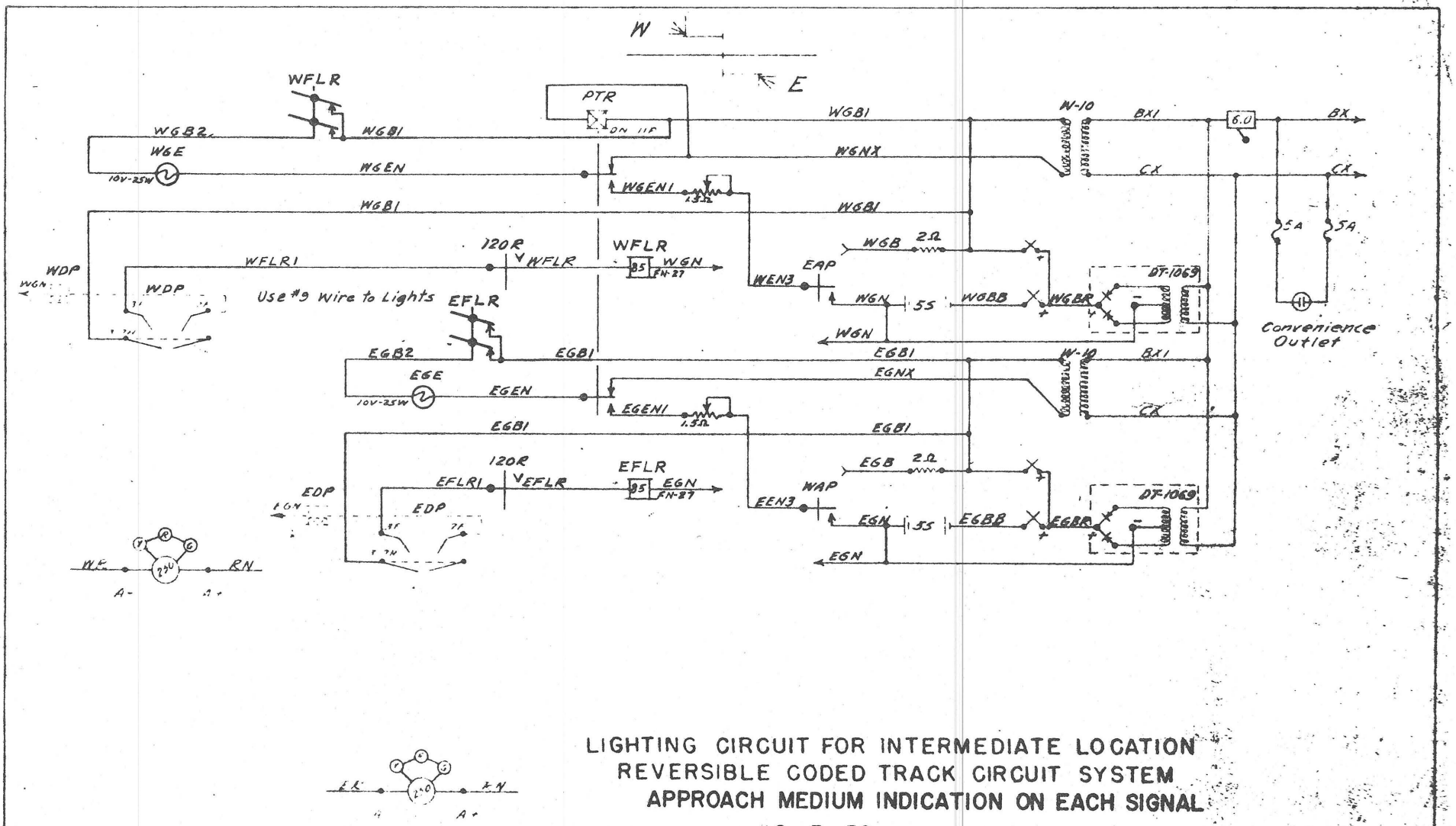
10-5-59 Rev. 12-22-59 EO 173F



LIGHTING CIRCUIT FOR INTERMEDIATE LOCATION REVERSIBLE CODED TRACK CIRCUIT SYSTEM ADVANCE INDICATION ON EACH SIGNAL

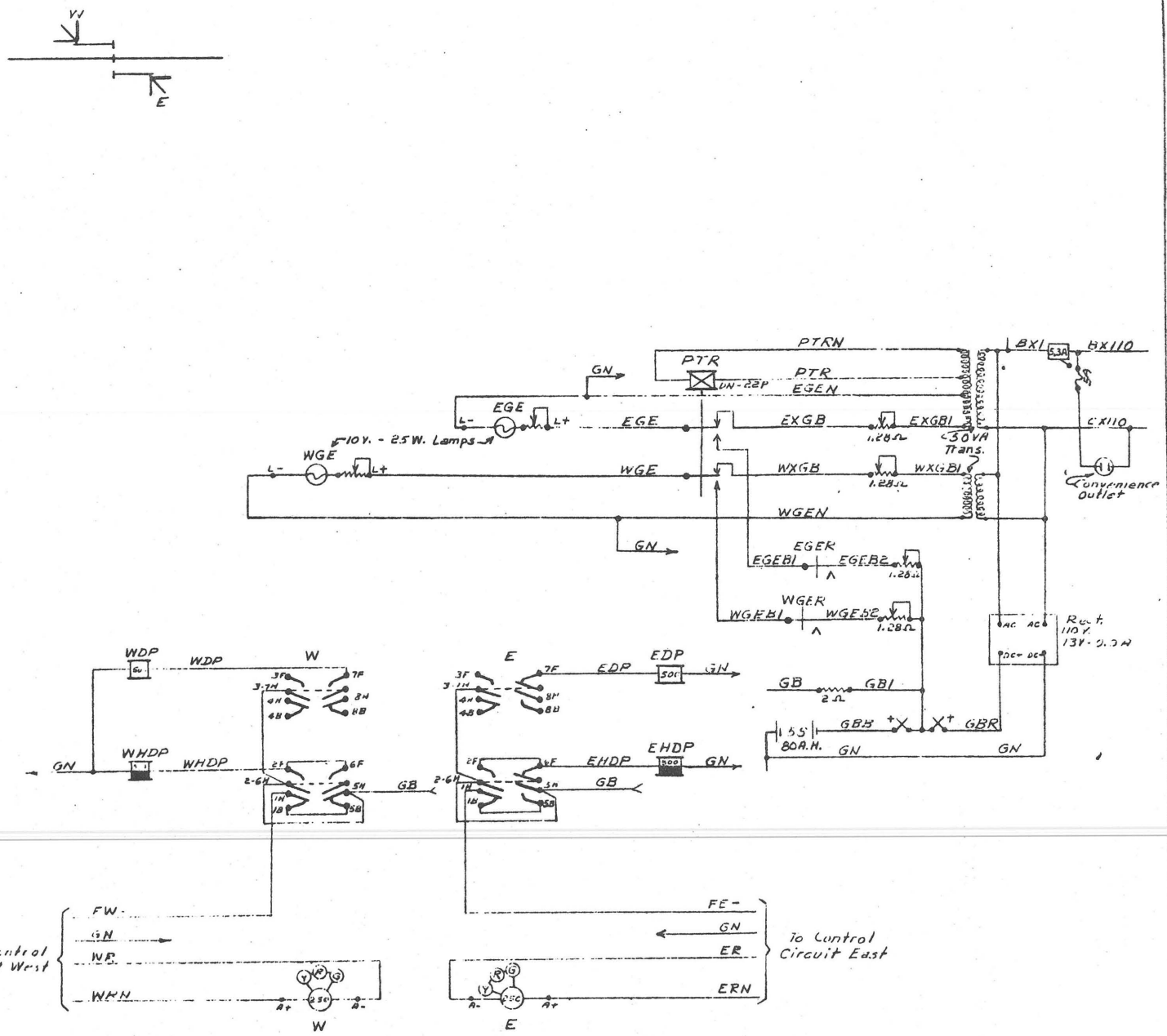
9-22-52 Rev. 11-20-53

EO 174



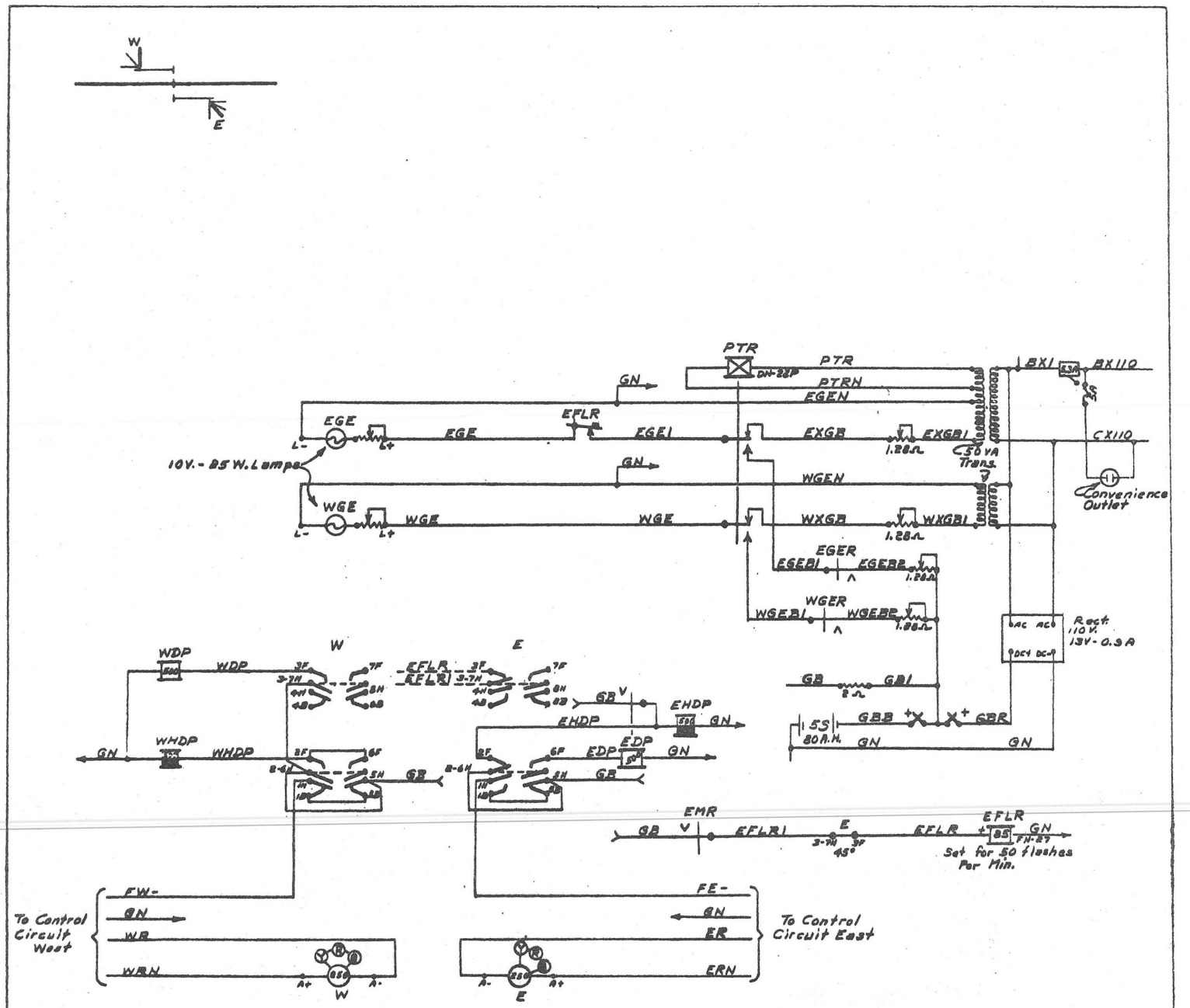
LIGHTING CIRCUIT FOR INTERMEDIATE LOCATION
REVERSIBLE CODED TRACK CIRCUIT SYSTEM
APPROACH MEDIUM INDICATION ON EACH SIGNAL

10-5-59 Rev. 12-22-59 EO 174F



LOCAL WIRING FOR INTERMEDIATE LOCATION
UNION H-5 SEARCHLIGHT SIGNALS — TRAFFIC REVERSAL SYSTEM
SEO TOPEKA 5-14-62

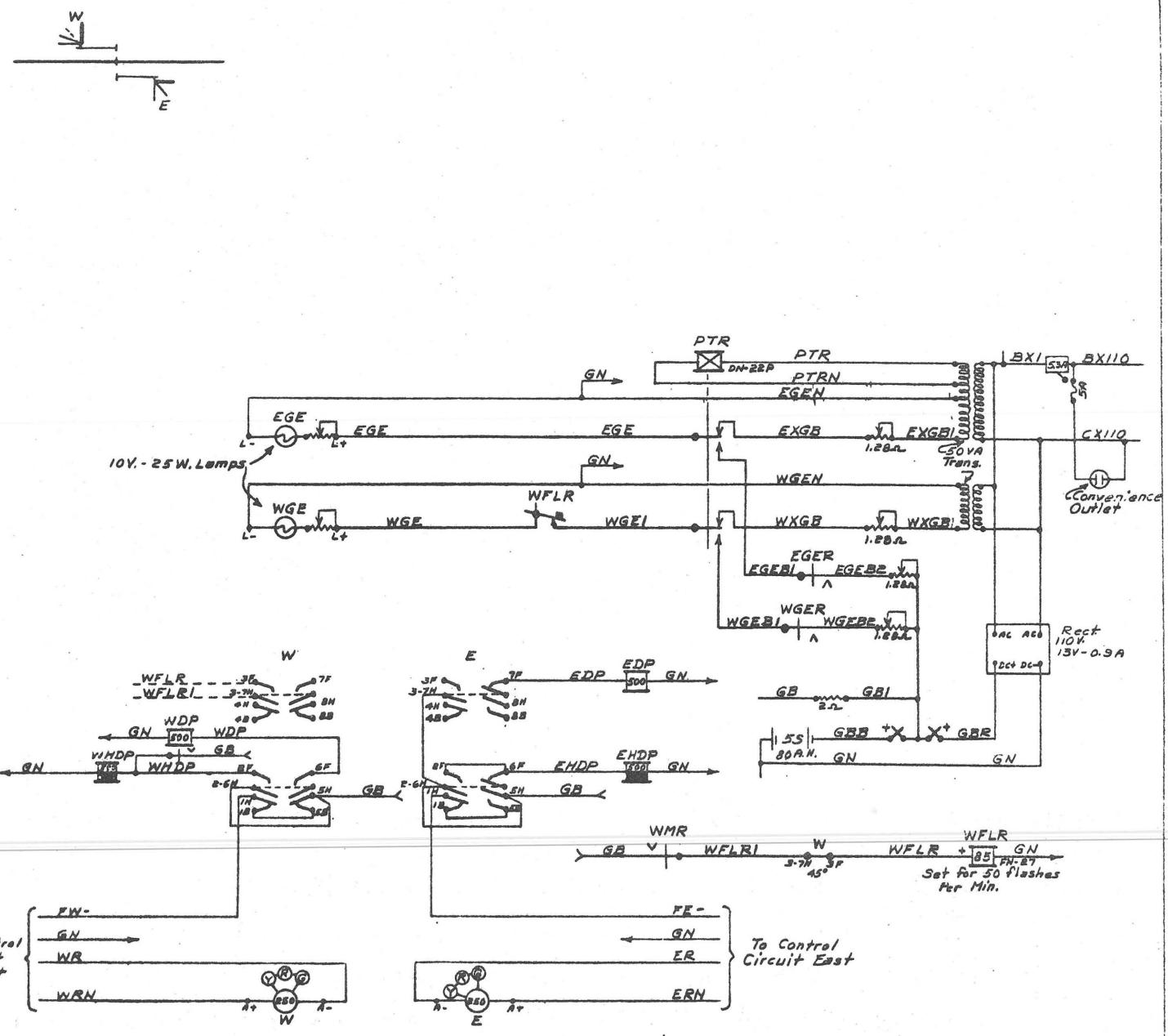
EO-175A



LOCAL WIRING FOR INTERMEDIATE LOCATION
UNION H-5 SEARCHLIGHT SIGNALS ~ TRAFFIC REVERSAL SYSTEM
APPROACH MEDIUM INDICATION ON "E" SIGNAL

SEO-EL-5-14-62

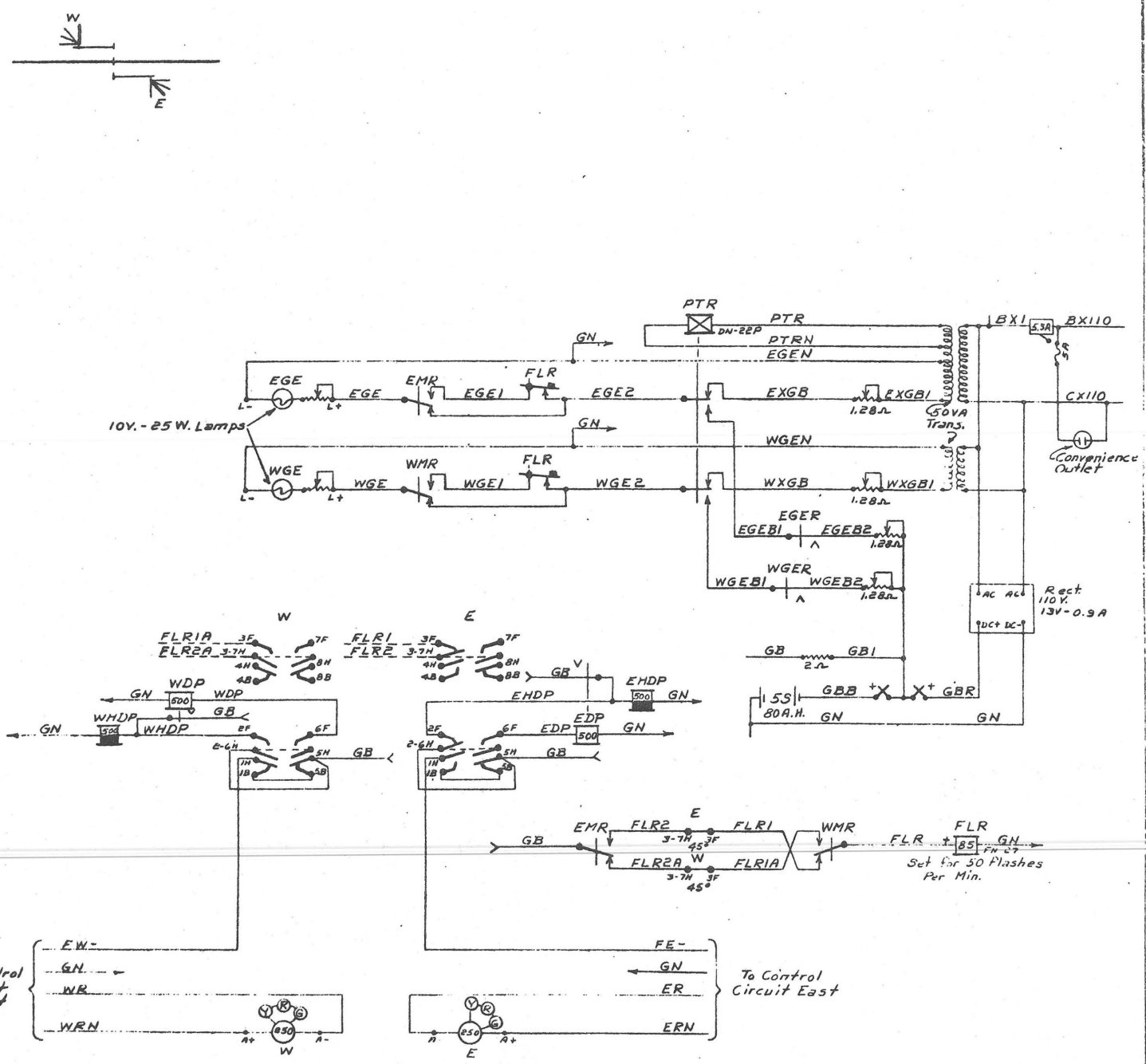
EO-175B



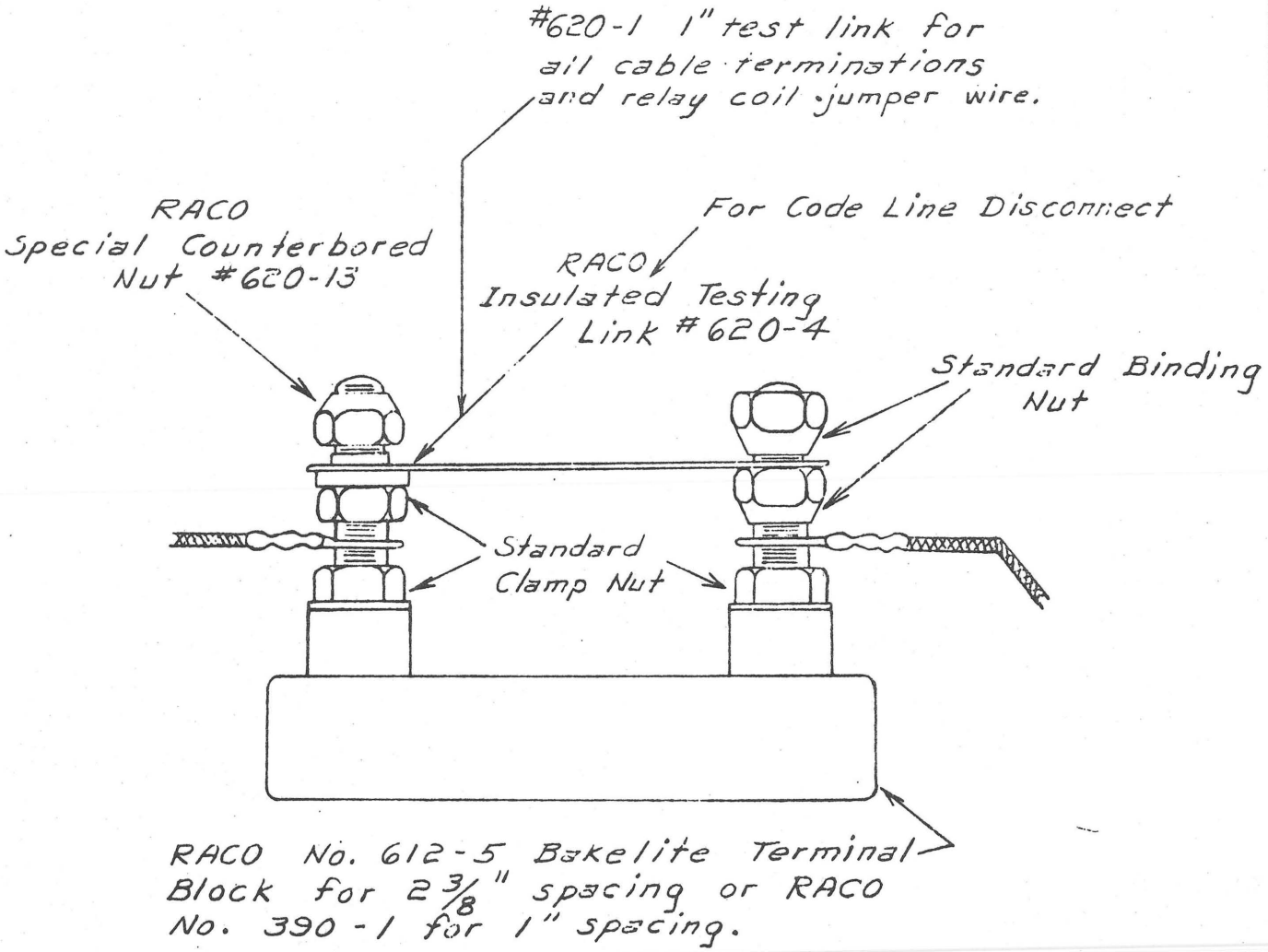
LOCAL WIRING FOR INTERMEDIATE LOCATION
UNION H-5 SEARCHLIGHT SIGNALS ~ TRAFFIC REVERSAL SYSTEM
APPROACH MEDIUM INDICATION ON "W" SIGNAL

SEO-EL - 5-14-62

EO-175C



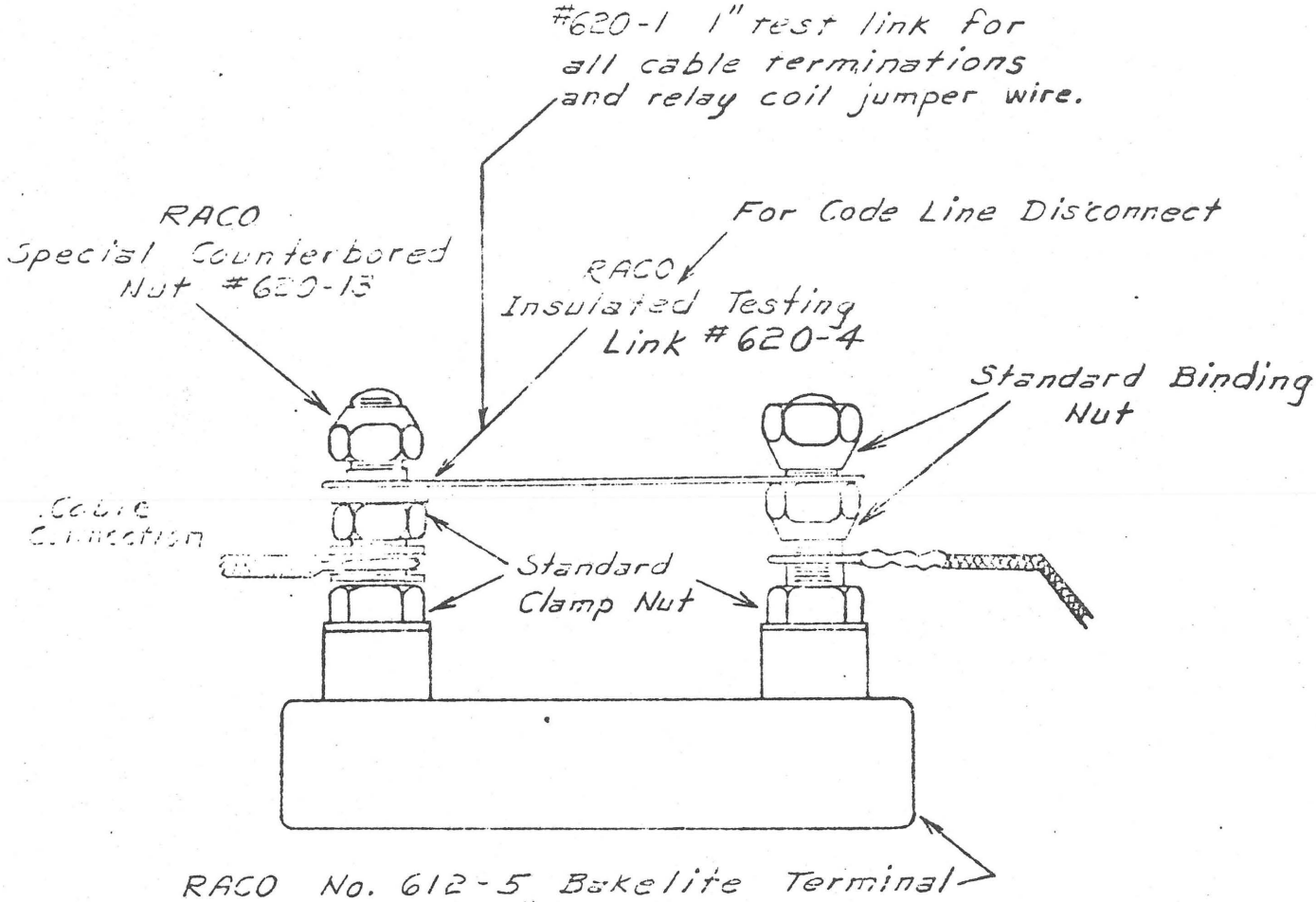
LOCAL WIRING FOR INTERMEDIATE LOCATION
UNION H-5 SEARCHLIGHT SIGNALS ~ TRAFFIC REVERSAL SYSTEM
APPROACH MEDIUM INDICATION ON "E" & "W" SIGNALS SEQ-EL-5-14-62 EO-175D
Rev. 10-29-62



Method of Applying RACO Insulated Testing Link

S.E.O. 3-29-63 EO-200

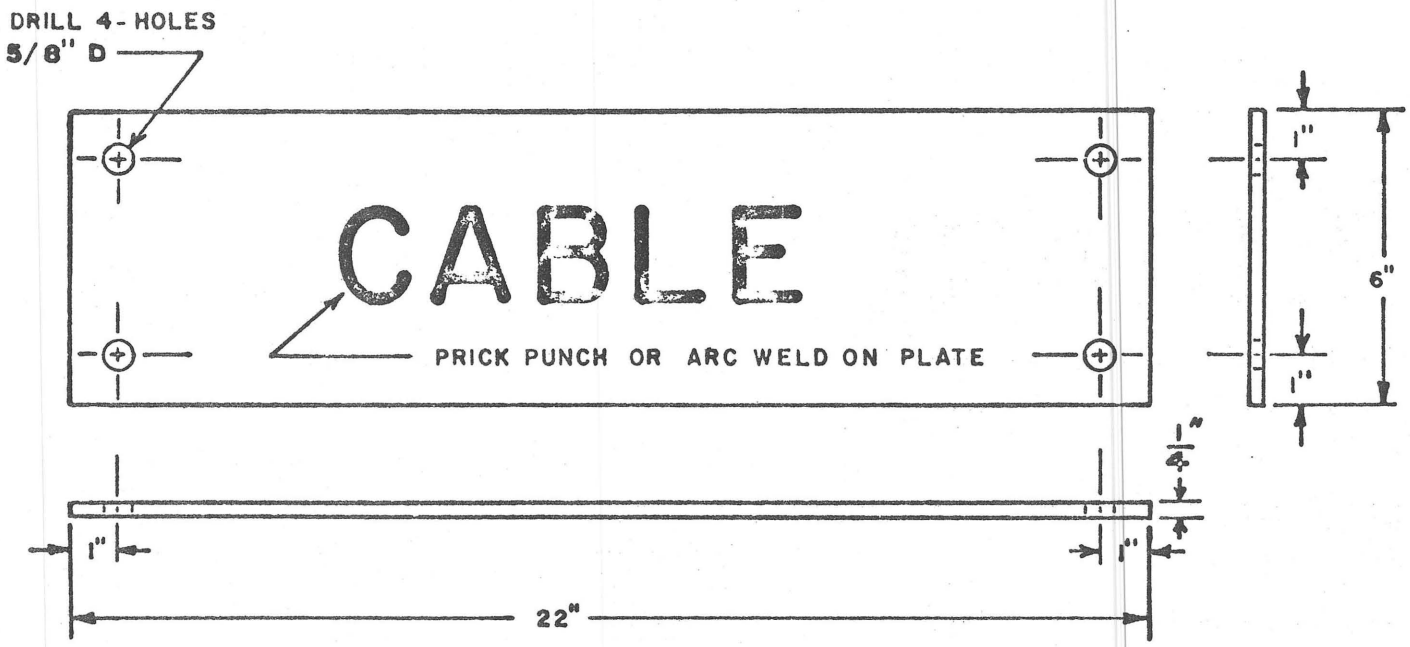
Rev. 6-9-65



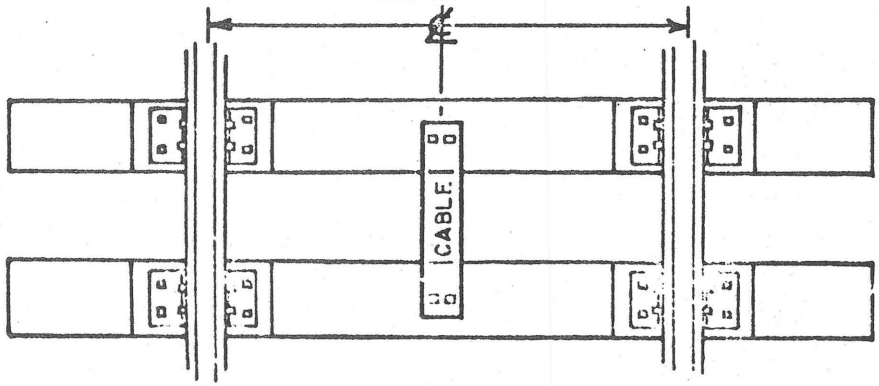
Method of Applying RACO Insulated Testing Link

S.E.O. 11-19-65 EO-200A

NOTE: USE 4-1/2" X 4" GIMLET POINT LAG SCREWS TO MOUNT PLATE.



SKETCH OF PLATE INSTALLATION
NO SCALE

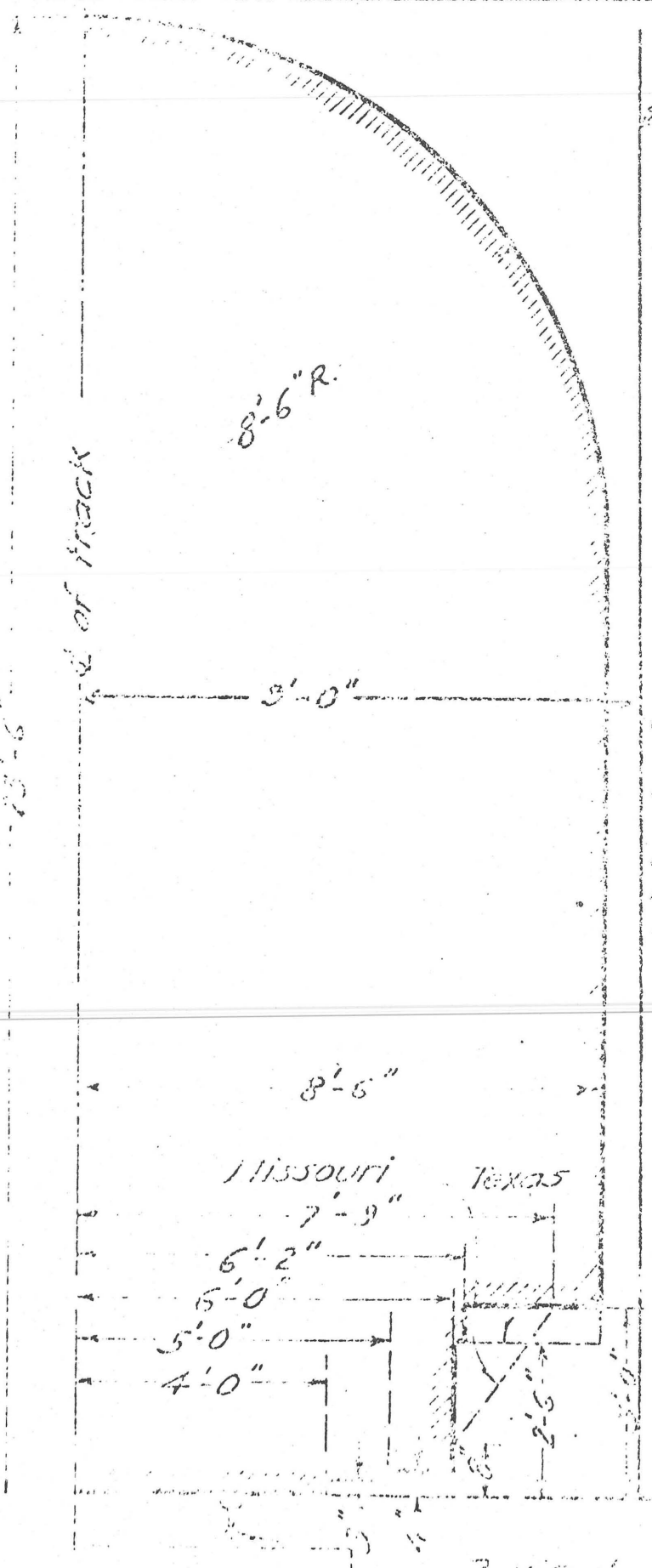


U.G. CABLE PROTECTOR PLATE

SCALE 1/4" = 1"

SEO TOPEKA 8-20-65

EO-500A



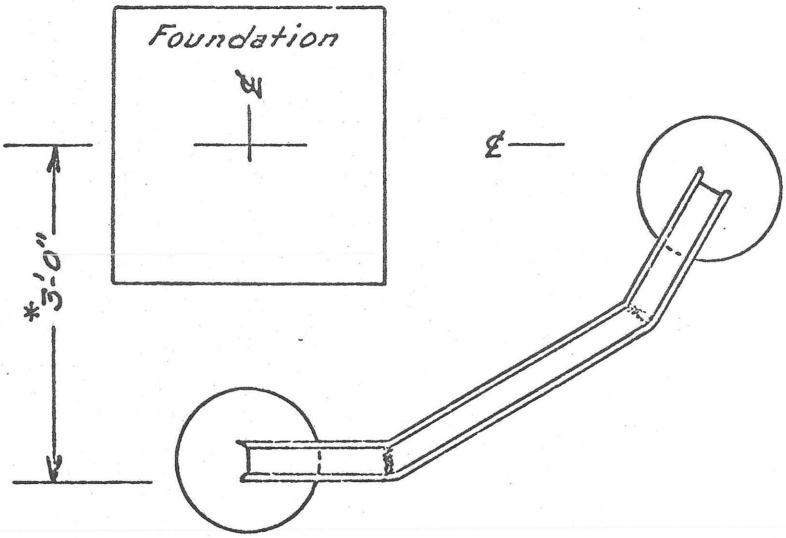
Illinois clearance for Pipes, Posts and signs on tangent track.
On curved track, use minimum side clearance inside of curve as shown on page C-4.

See page C-149 for line crossing clearances.

This diagram supersedes SES-645 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.

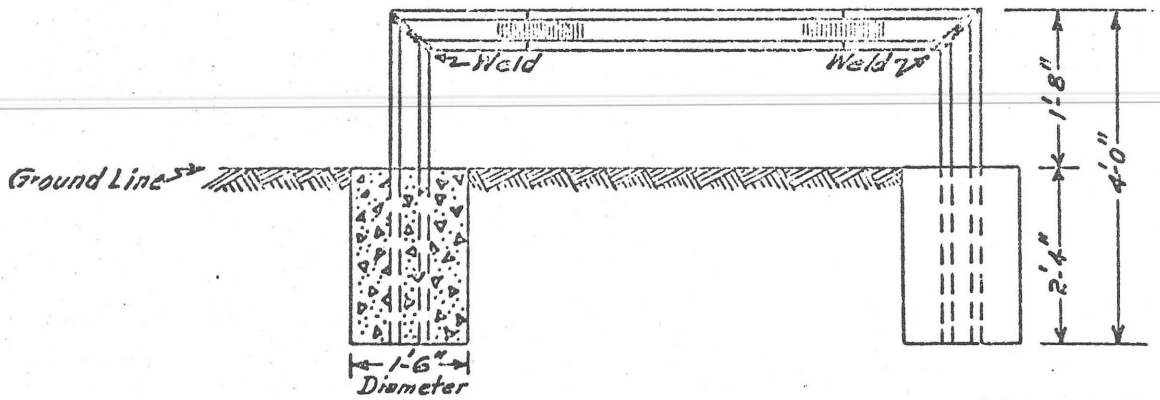
A. T. & S. F. Ry.
MINIMUM CLEARANCE DIAGRAM FOR SIGNAL EQUIPMENT

Revised 5-1-56 EO-501



*Guard Rails normally installed with a standard signal clearance of 6 feet from pavement margin, but in no case less than 2'-6". Guard rail specifications shown on O-927.

~ Roadway ~

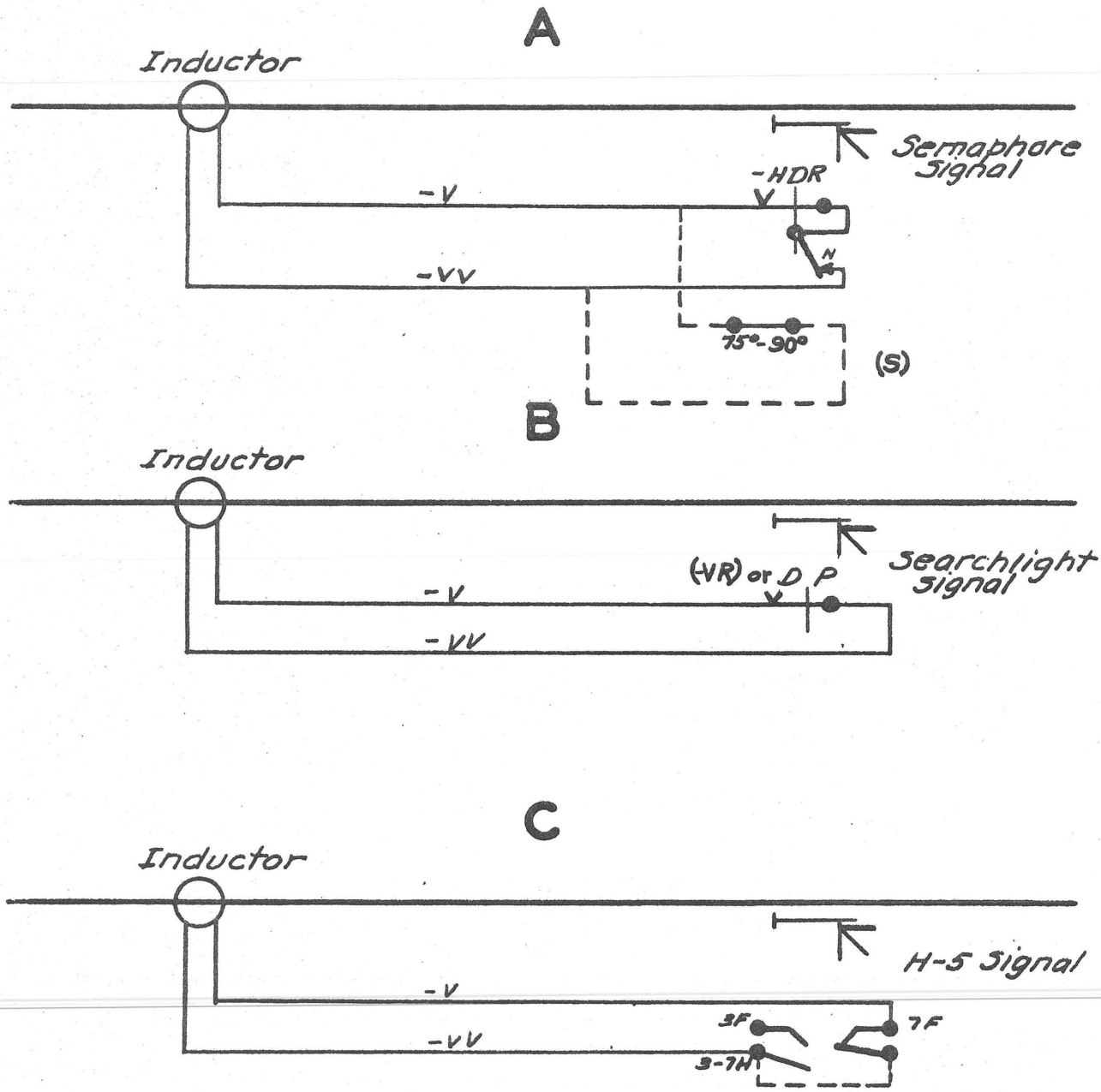


One guard shall be installed at each Signal unless otherwise specified. Guards may be omitted where signals are protected from traffic by concrete curbs.

A. T. & S. F. Ry. Co.
GUARD RAIL
For
HIGHWAY CROSSING
INSTALLATION

S.E.O. - Topeka, Kansas 4-14-64

EO-516



WIRING ARRANGEMENT

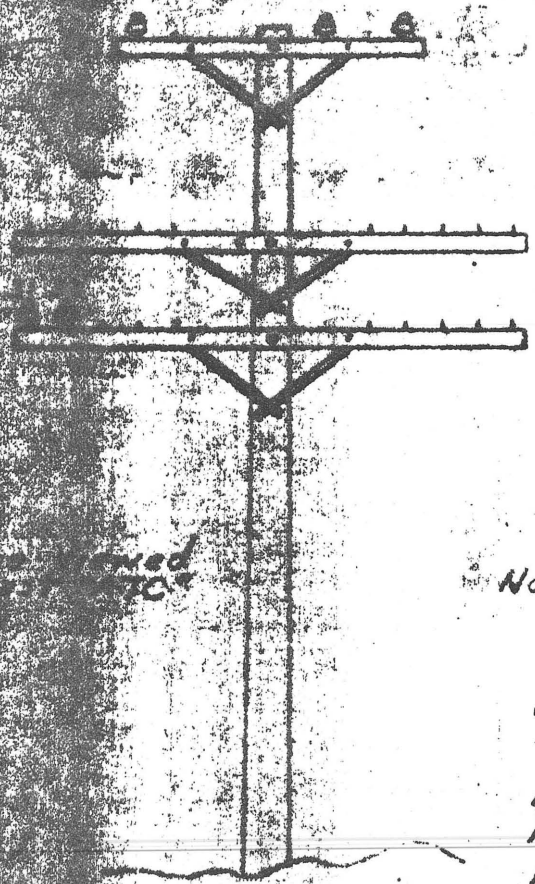
FOR

AUTOMATIC TRAIN STOP

S.E.O.E.L. TOPEKA, KANSAS

10-30-50
REV. 11-11-66

EO-530



6600 V.
Pins 1 to 10

Blank Gain
Pins 11 to 20

A.T.C. Circuits
Pins 21 to 30
110 - 220 V.

Code Line and auxiliary arm for miscellaneous
110 - 220 V. and DC Ckts.

...ed
...ce

Note:

Where 2nd Crossarm is not in place it is to be installed to provide code line space.

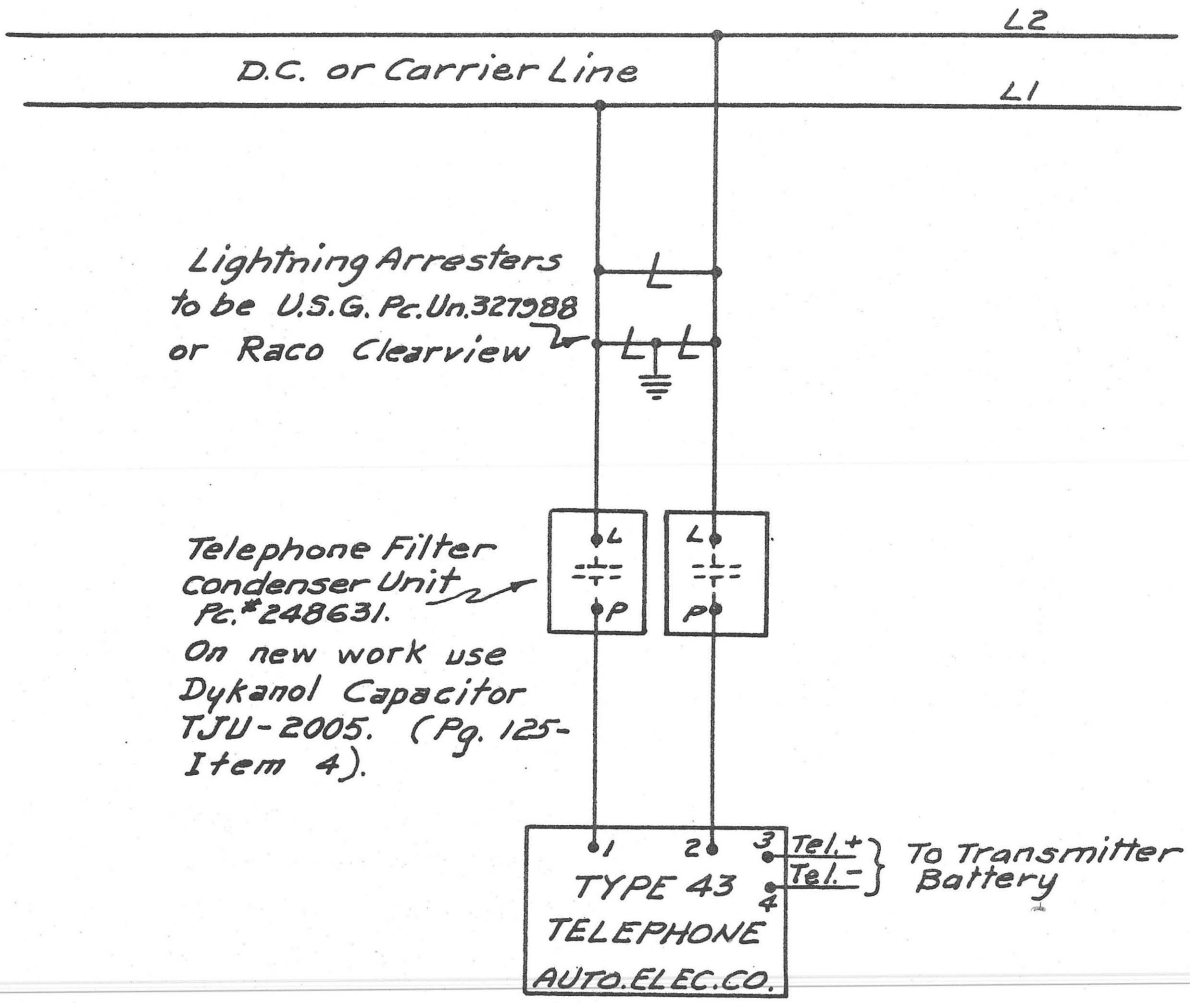
Where already in place, pins 31 and 32 are to be cleared for code line.

No more than 2 J-brackets are to be used except for temporary work.

...to be
...rweld

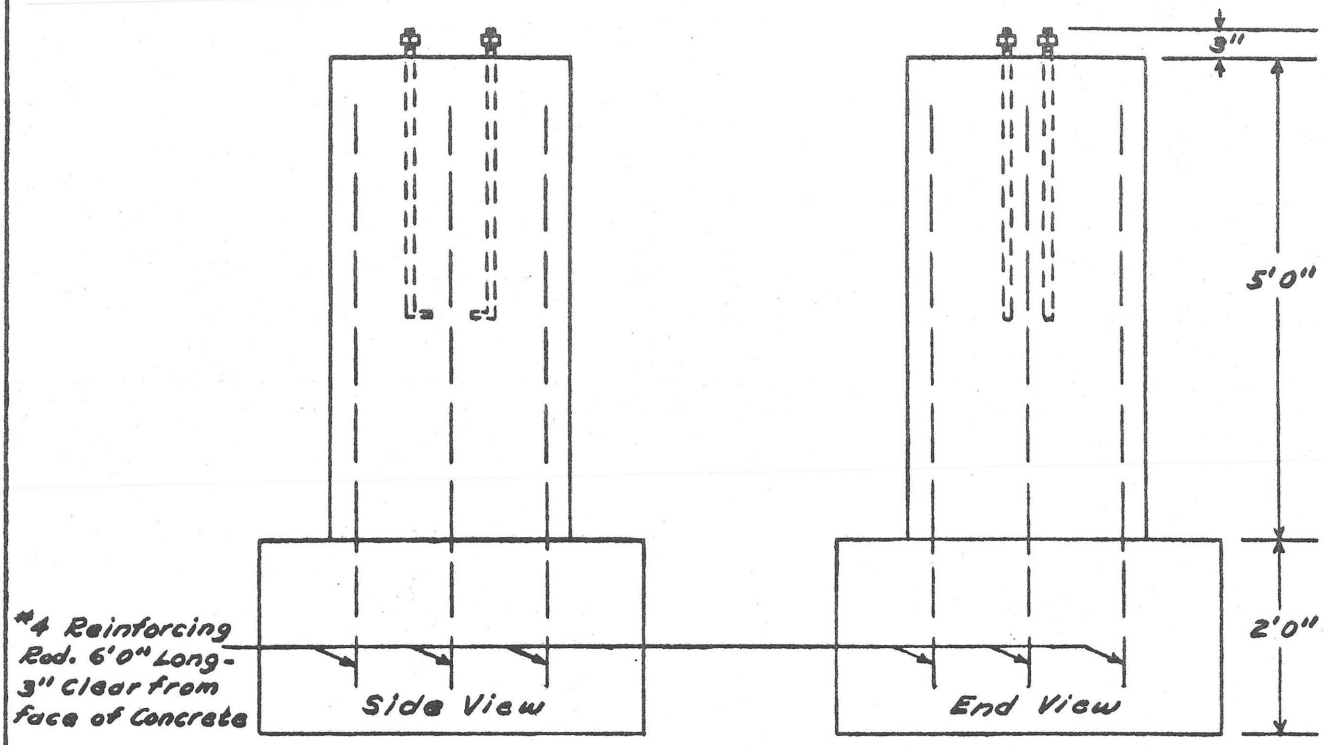
... insulators
... Kilocycles.

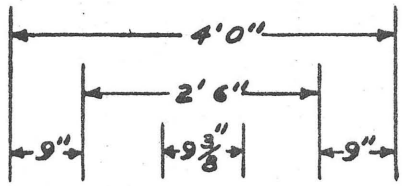
TYPICAL POLE LINE LAYOUT
FOR PLACING CODE LINE
ILLINOIS DIVISION
SEO TOPEKA 2-21-56
No Scale
EO - 595

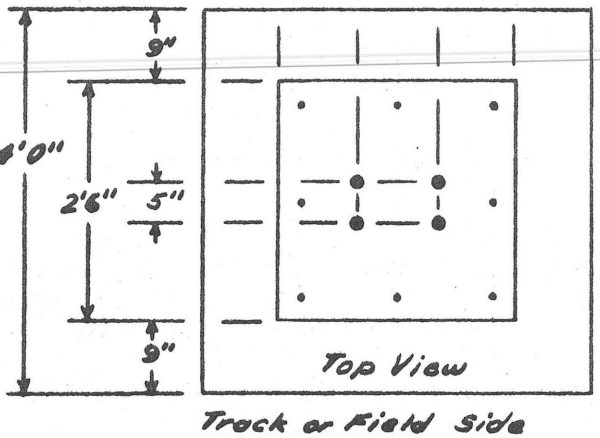


TYPICAL
WAYSIDE CIRCUIT
FOR
TYPE 43 TELEPHONE
SEO-TOPEKA 2-14-57
EO-535

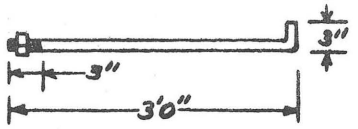
Rev. 11-26-58.







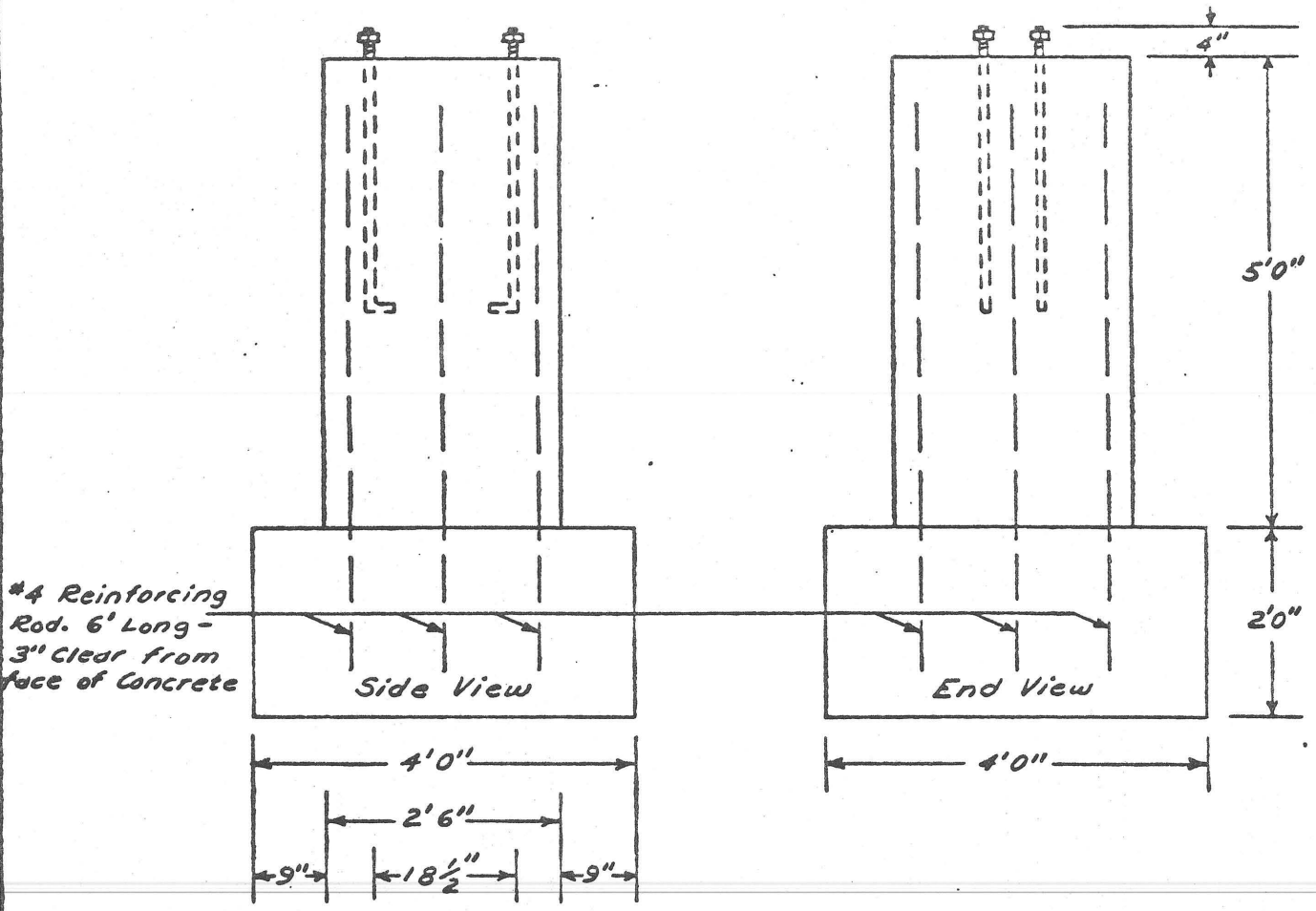
Concrete to have minimum compressive strength of 3000 pounds per sq. inch.

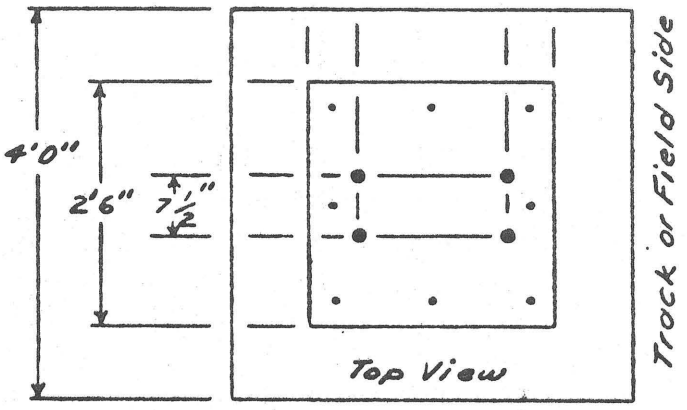


Anchor Bolt

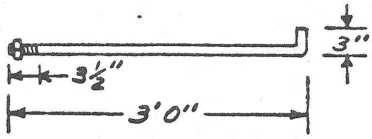
1" Rod 3'3" Long
Hex Nut 1" Top
Cut Washer 1 1/16" Hole

Precast Concrete Foundation Details
for C+NW Type Signal Bridge (CES 5216)
SEO TOPEKA 4-16-68 EO-536





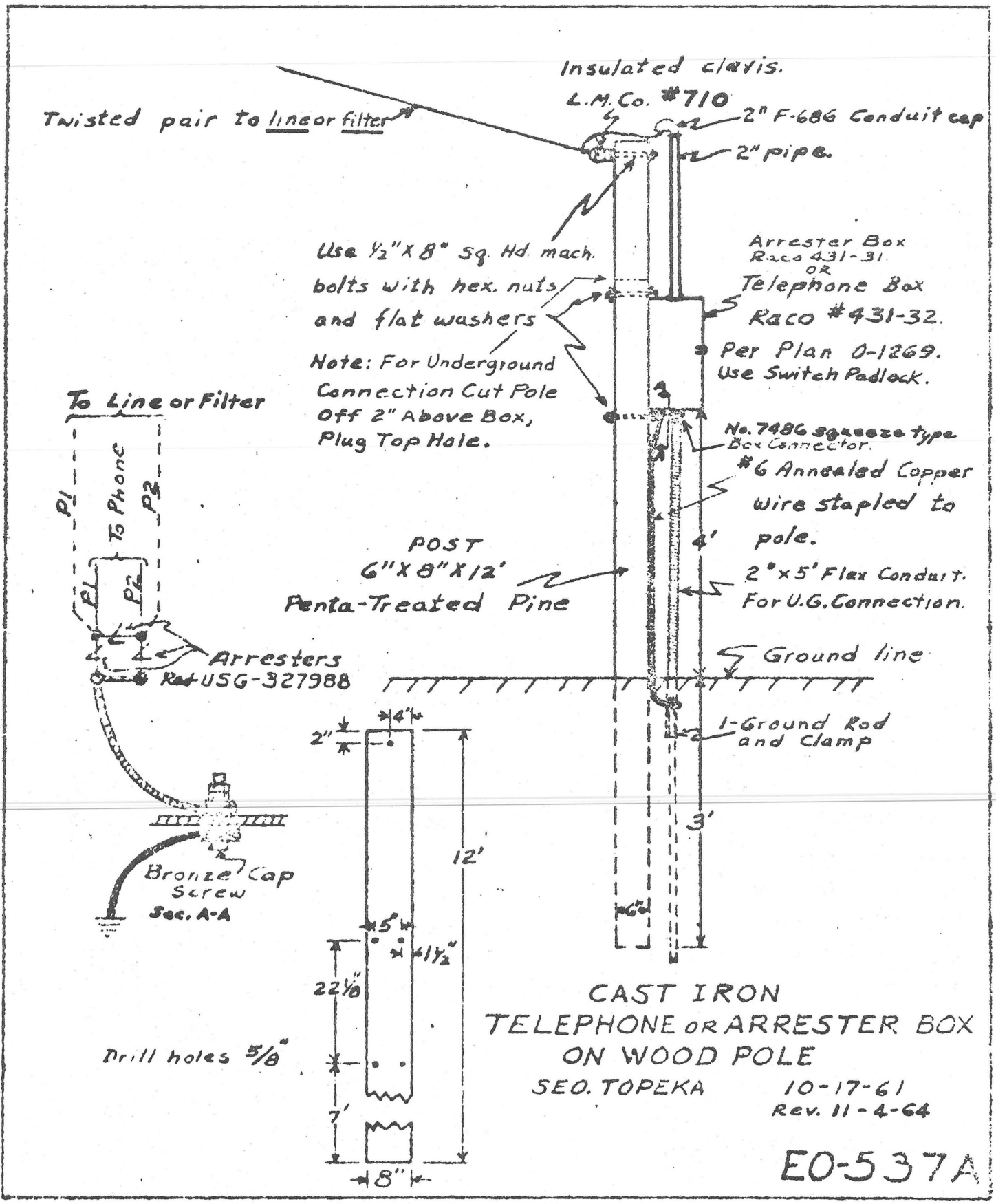
Concrete to have minimum compresive strength of 3000 pounds per sq. inch.



1" Rod - 3'3" Long
Hex Nut 1" Tap
Cut Washer 1 1/16" Hole

Precast Concrete Foundation Details
for Signal Bridge (CES-5216D)
SEO-TOPEKA 5-29-68

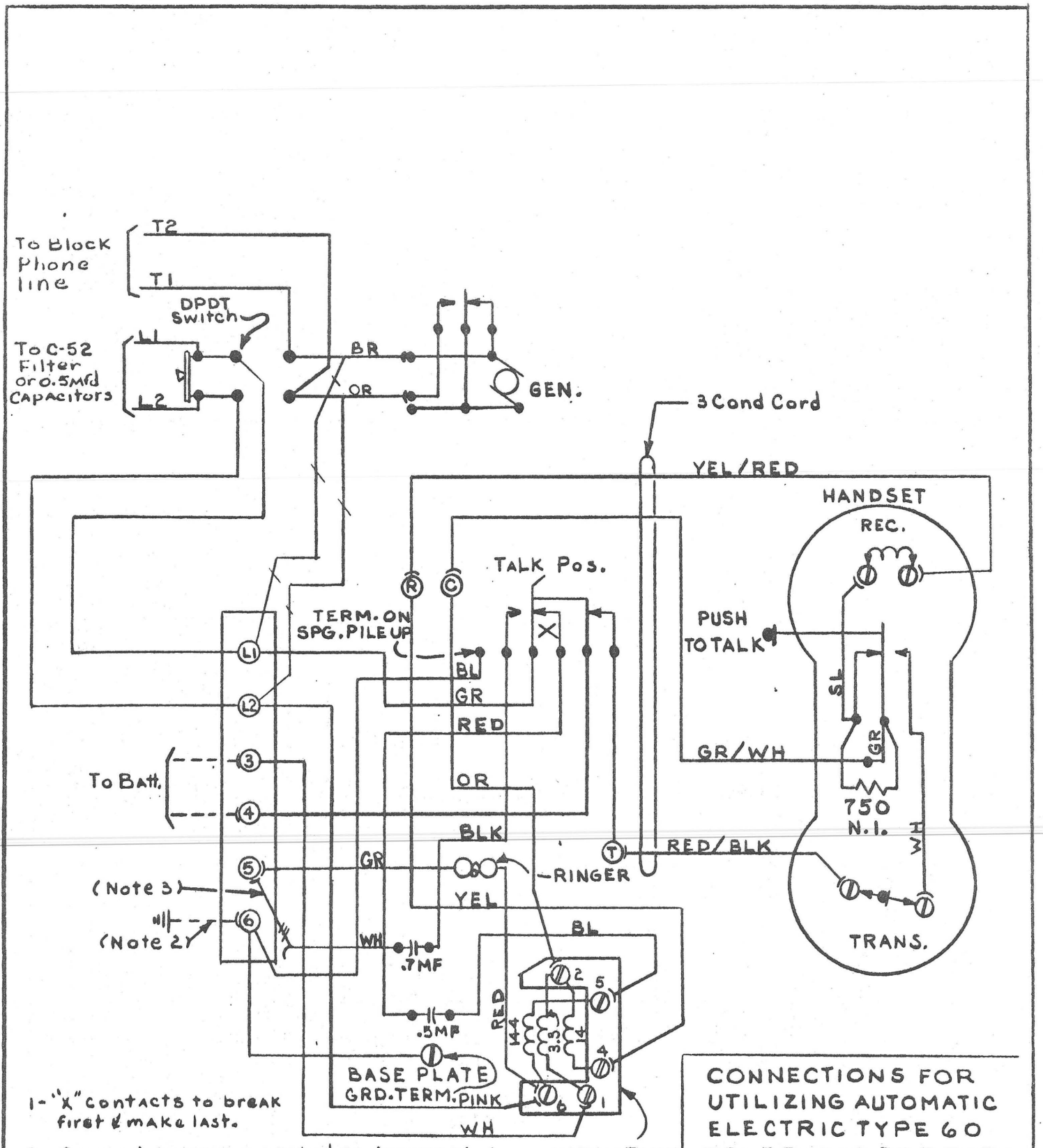
EO-536A



CAST IRON TELEPHONE OR ARRESTER BOX ON WOOD POLE

SEO. TOPEKA 10-17-61
Rev. 11-4-64

EO-537A



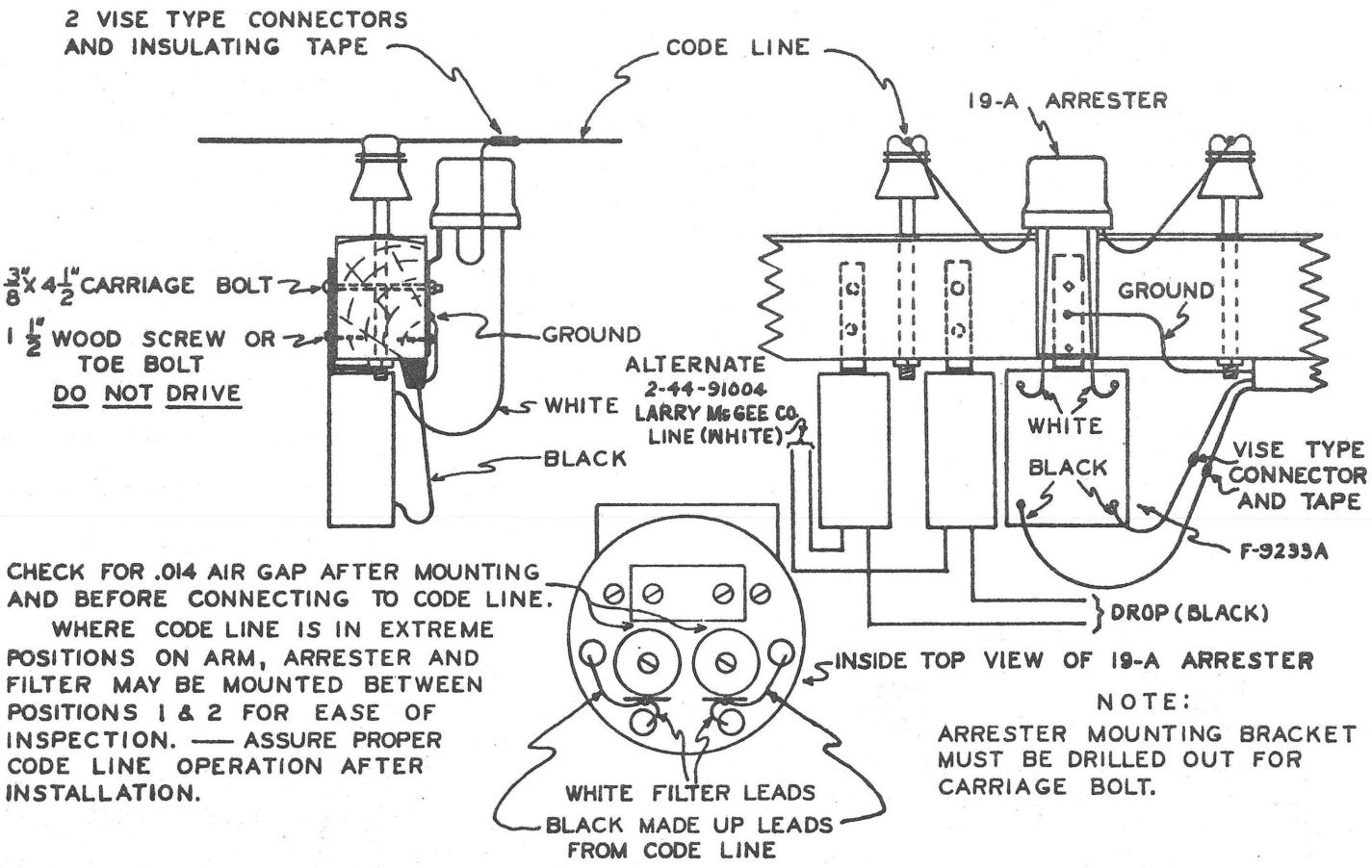
1- "X" contacts to break first & make last.

2- Ground to be connected to terminal 6 for high voltage protection.

3- To Remove ringer from line Remove white Capacitor lead from terminal 5 & tape.

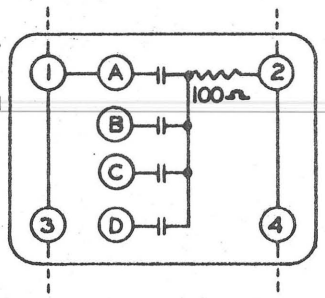
CONNECTIONS FOR UTILIZING AUTOMATIC ELECTRIC TYPE 60 TELEPHONE FOR BOTH CODE & BLOCK PHONE USE.

SEO-EL EO-537B 9-2-64



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

ALTERNATE TUNING BLOCK 44-1802 LARRY McGEE CO.

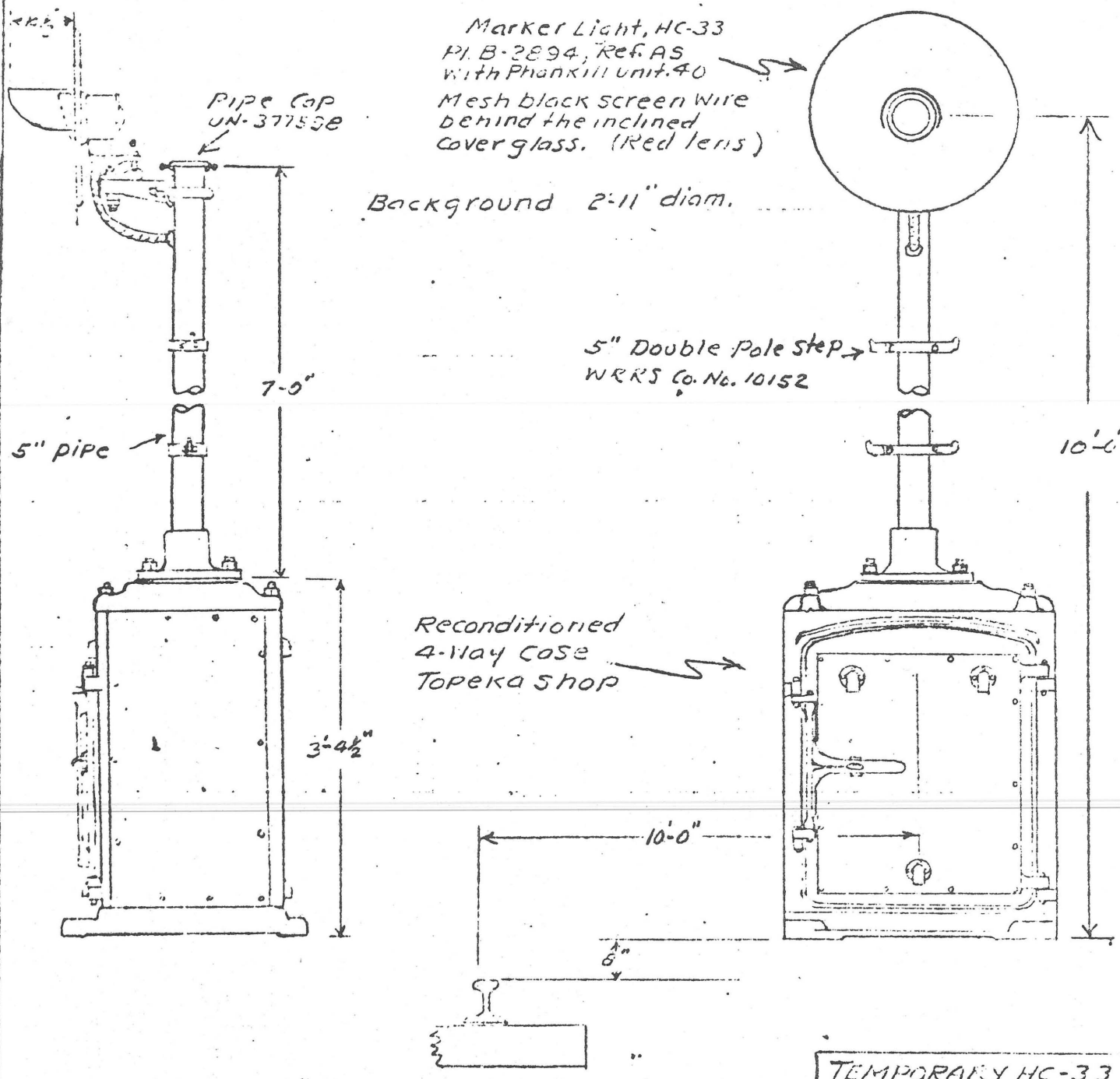


TWISTED PAIR LENGTH IN FEET	QUAD LENGTH IN FEET	STRAP TERMINALS
0-100	0-160	ABCD
100-200	160-320	ABC
200-300	320-480	AB
300-400	480-640	NONE
TUNES FILTER BETWEEN 3.2 AND 3.8 KC		

METHOD FOR MOUNTING F-9233A FILTER AND 19-A ARRESTER FOR TCS PHONE

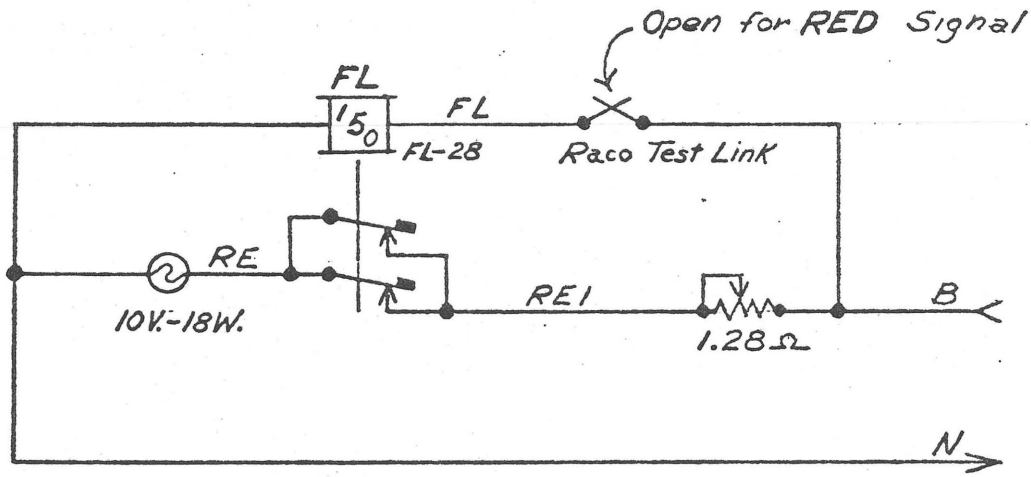
SEO-EL 4-26-68 REV. 4-21-71

EO-540



TEMPORARY HC-33
GROUND SIGNAL
MOUNTED ON TIES OF
SUITABLE FOUNDATION.

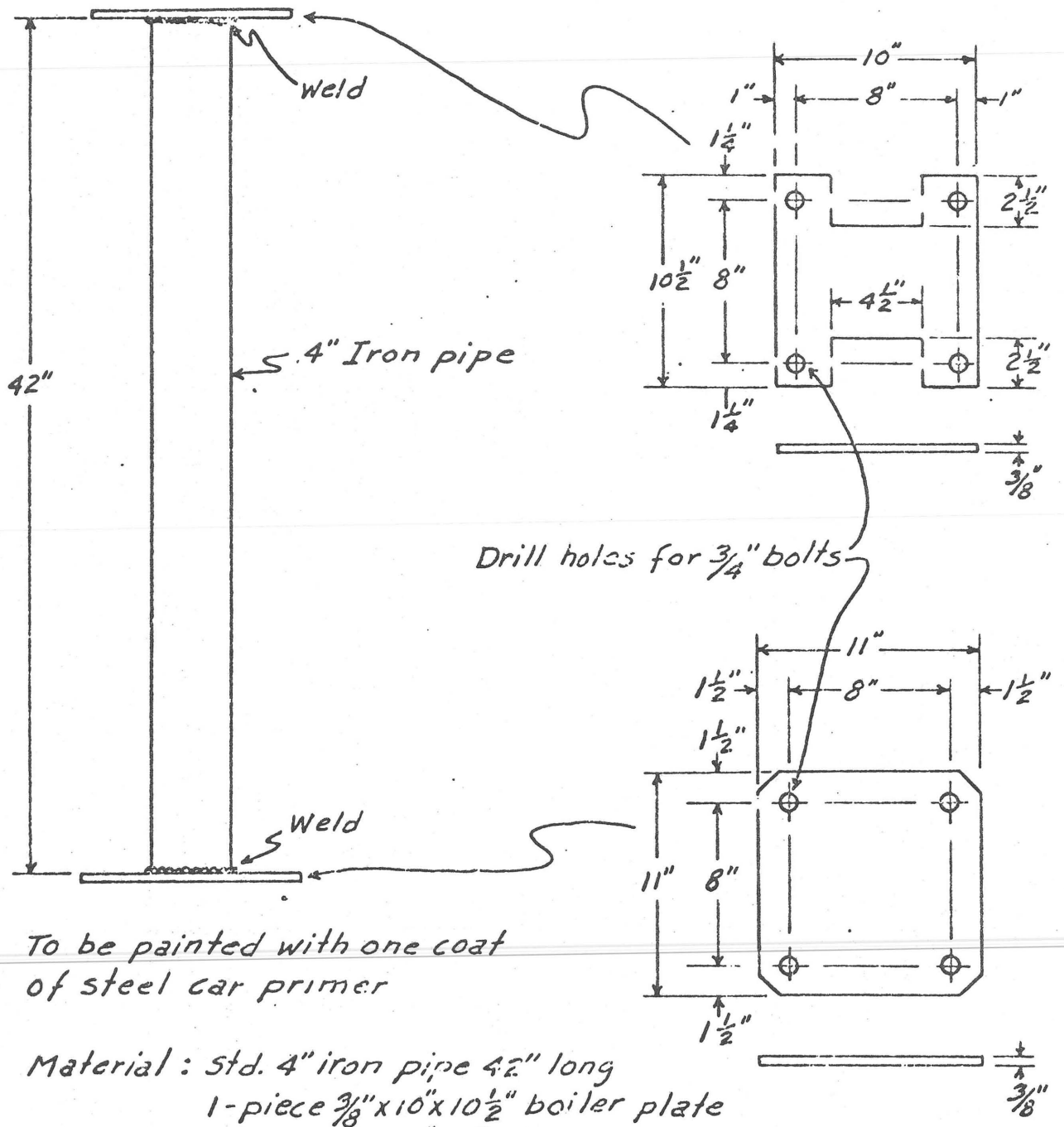
STO Topeka 12-17-65
EO 540A Sh. 1 of 2



WIRING FOR TEMPORARY
HC-33 GROUND SIGNAL

S.E.O. TOPEKA 12-17-65

EO 540A Sh. 2 OF 2



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
SEO-EL TOPEKA 3-6-57

EO-541

Size Rail	Type Rail	Type Joint	Length Joint	Bushings Outside Diam	Bushings Inside Diam.	Bushings Length	Size Bolt	CES No.
75-Lb	A S C E	Cont	4-Hole	1-9/32"	29/32"	1-3/16"	7/8" x 6-1/4"	5470
85-Lb	A S C E	Cont	4-Hole	1-9/32"	29/32"	1-3/16"	7/8" x 6-1/4"	5471
90-Lb	S F	Cont	4-Hole	1-9/32"	29/32"	1-3/16"	7/8" x 6-1/4"	5472
110-Lb	R E	Cont	4-Hole	1-1/2"	1-1/16"	1-1/4"	1" x 6-5/8"	5447
112-Lb	R E	Cont	4-Hole	1-1/2"	1-1/16"	1-1/4"	1" x 6-5/8"	5474
131-Lb	R E	Cont	4-Hole	1-1/2"	1-1/16"	1-5/16"	1" x 6-7/8"	5475
131-Lb	R E	Cont	6-Hole	1-5/8"	1-3/16"	1-5/16"	1-1/8" x 7"	5491
90-Lb	S F	Cont	4-Hole	1-9/32"	29/32"	1-1/4"	7/8" x 10"	5478
112-Lb	R E	2-Rail design	4-Hole	1-1/2"	1-1/16"	1-1/4"	1" x 11-1/2"	5480
112-Lb	R E	Cont	6-Hole	1-1/2"	1-1/16"	1-1/4"	1" x 6-7/8"	5490
115-Lb	R E	Armored	6-Hole	1-1/2"	1-1/16"	1-3/16"	1" x 6-3/4"	5495
119-Lb	C F & I	Armored	6-Hole	1-1/2"	1-1/16"	1-3/16"	1" x 6-7/8"	5498
132-Lb	R E	Armored	6-Hole	1-1/2"	1-1/16"	1-3/16"	1" x 6-3/4"	5496
136-Lb	C F & I	Armored	6-Hole	1-1/2"	1-1/16"	1-3/16"	1" x 6-3/4"	5499
136-Lb	C F & I	Armored	6-Hole	1-5/8"	1-3/16"	1-3/16"	1-1/8" x 7"	5499-2

119 and 136-Lb C F & I has two (2) right- and two (2) left-hand head pieces.

131-Lb has two (2) sizes of bushings: one for 1" bolt; and, one for 1-1/8" bolt.

Insulated Rail Joint Fiber Information.

2-2-6

Signal Supervisor _____

INSULATED JOINT FAILURE REPORT

1. LOCATION OF JOINT:_____
   (Automatic Signal No. or M.P. Plus Poles), (one or Two Joint Location), (North or South Rail), (Turn-out Rail), etc.

2. DEFECT FOUND:_____
   (Crushed Ferrules), (End Post Out), (Metal Particles Bridging), (Dislocated Head Pieces), etc.

3. KIND OF INSULATION:_____
   (Rail Joint Co.), (Taylor Co.), (Spaulding Co.), (Goodyear Neothane), etc.

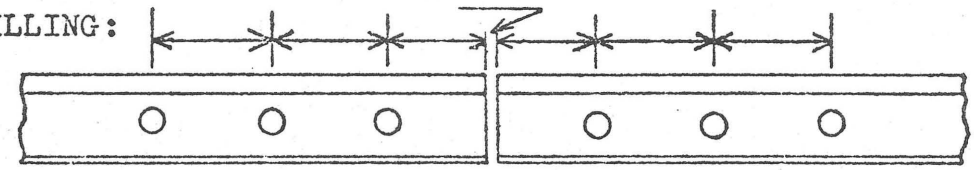
4. WEIGHT AND TYPE OF RAIL:_____
   (Show Weight), (Show jointed or welded).

5. CONDITION OF TRACK:_____
   (Joint Swinging), (Rail Anchors Not Tight), (Bad ties), etc.

6. WAS JOINT MARKED FOR RENEWAL?_____

7. LIFE OF INSULATION:_____

8. DRILLING:



9. DEFECTIVE FERRULES AND BOLTS SENT TO SIGNAL ENGINEER:
   (Yes) or (No)

10. REMARKS:_____

_____

_____

Name_____ Headquarters_____

Date_____

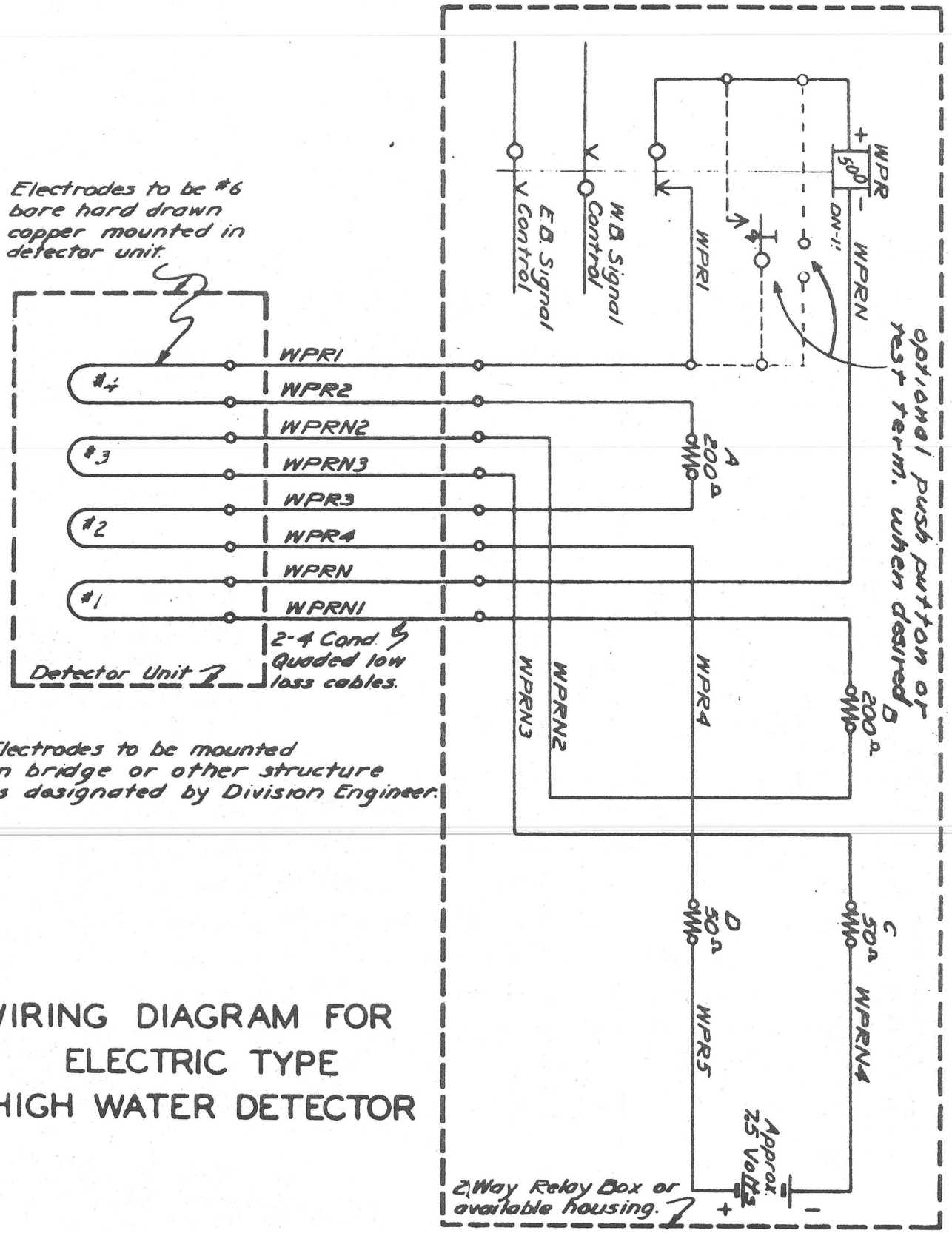
cc: B. J. Hutton - Topeka

EO-545B

GENERAL SIGNAL INSPECTION

Date												
Tested by												
Crosses												
Grounds												
Insp.& Gage ATS												
Test Sw. Cont.												
Adj. Sw. Cont.												
Test Sp. Sw.												
Test Fouling												
6 Month Lamp Renewal												
Semi-Annual Relay Inspection												
Point Detector & Lock Rod on T-21 & Power Sw. same as Sw. Controller												

EO-550A
1-25-67



WIRING DIAGRAM FOR ELECTRIC TYPE HIGH WATER DETECTOR

S.E.O. AMARILLO, TEXAS DRAWN: 11-2-53 (WA-66)

Rev. ~~12-29-54~~ 4-6-73 EO-558B

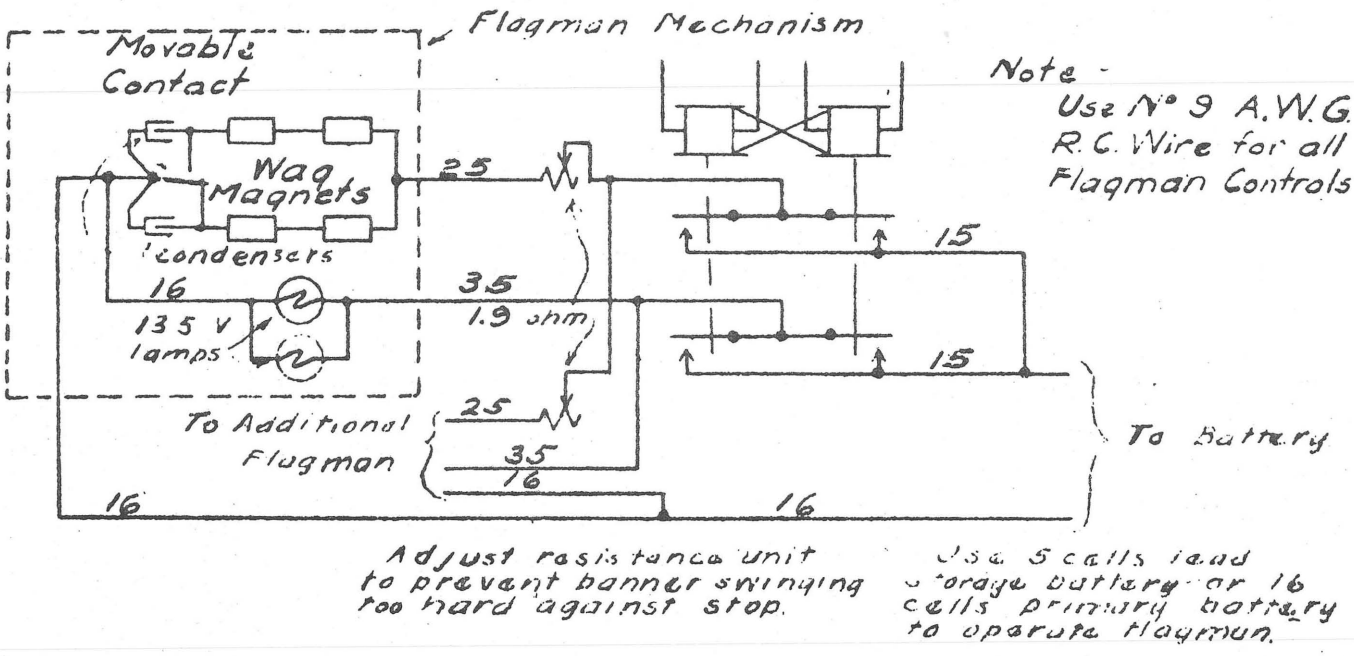
SANTA FE SPRING SWITCHES Form 888 Standard

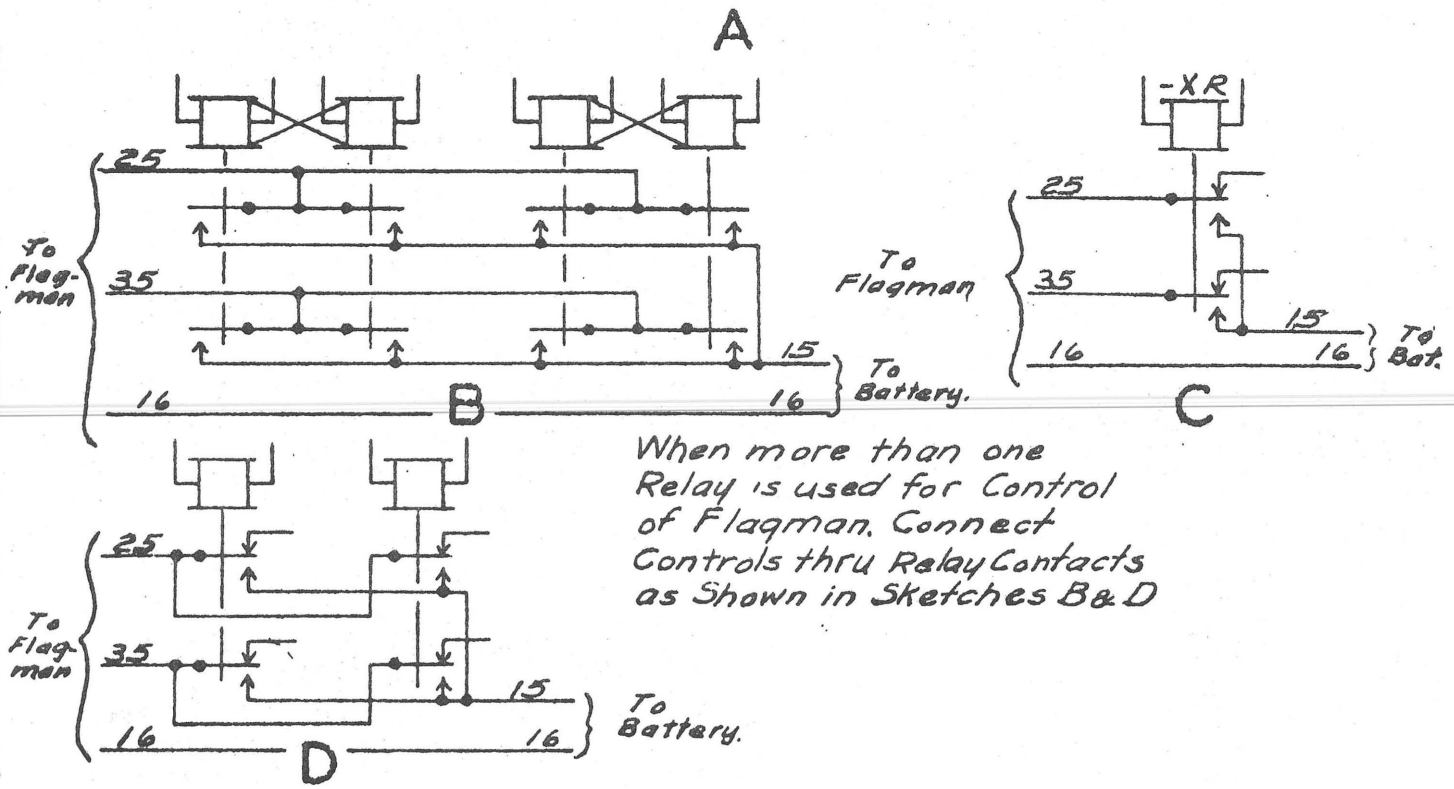
Division _____ Location _____

Date							
Inspected By							
Date							
Inspected By							
Date							
Inspected By							
Date							
Inspected By							

See Pages I-121 to I-124 of Instructions for C&M.

EO-561





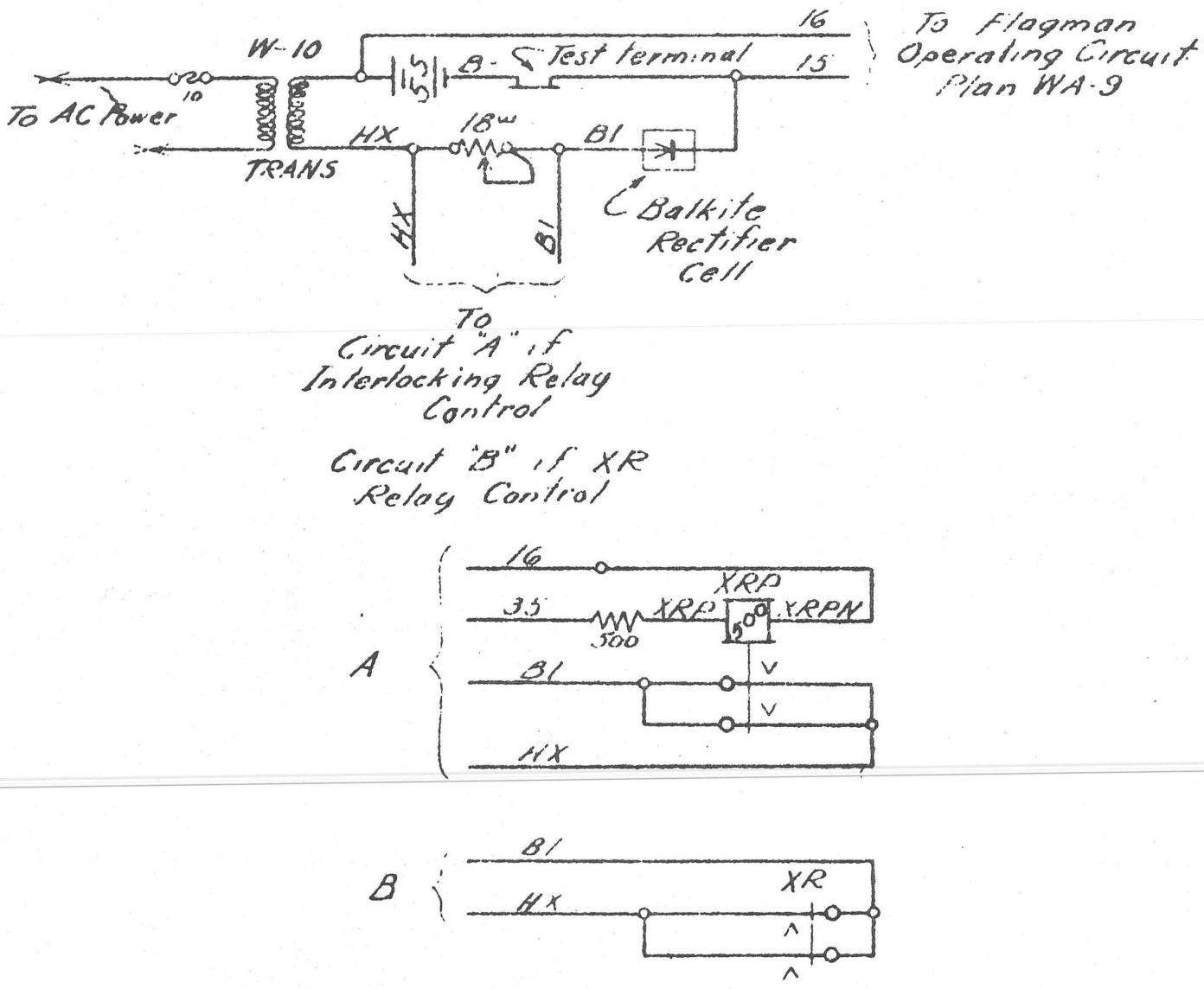
CIRCUIT FOR MAGNETIC TYPE LOW VOLTAGE DIRECT CURRENT AUTOMATIC FLAGMAN

S.E.O AMARILLO

REDRAWN:- 2-26-30

LAST REVISED:- 5-28-34.

EO-574 (WA-9)

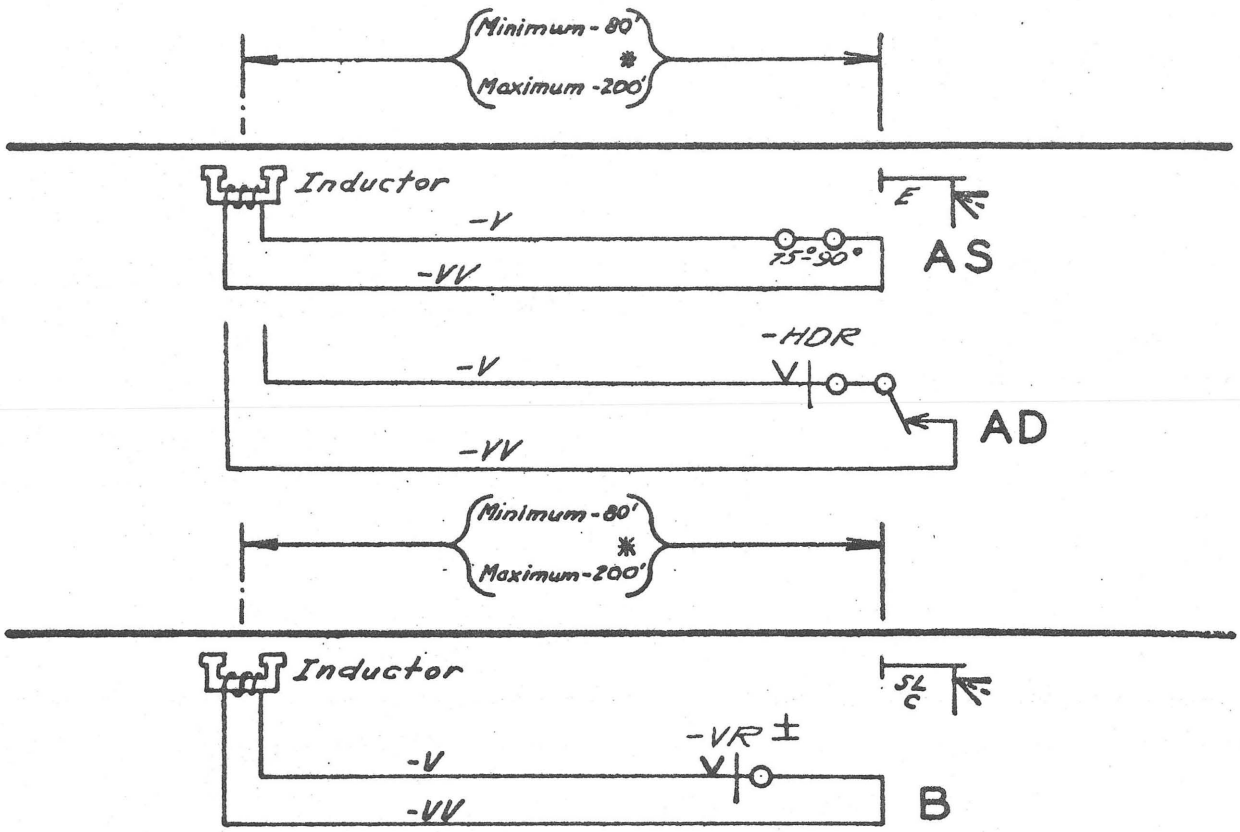


STORAGE BATTERY CIRCUIT FOR AUTOMATIC FLAGMAN SIGNALS

LOCATIONS WHERE DEMAND ON BATTERY IS EXCESSIVE

SEO AMARILLO DRAWN-2-2-43 EO-575 (WA-19)

Note: Change local wiring for semaphore signal to hold clear on motor battery.



± This contact to be in ordinary release relay repeating 90° signal position.

* - Set inductor per plan Z-174 at minimum distance unless local conditions require additional space.

WIRING ARRANGEMENT FOR AUTOMATIC TRAIN STOP

S.E.O. AMARILLO, TEXAS FEBRUARY 15, 1950 (WA-64)

Revised 4-14-50

EO-576

TO OPERATE SWITCH EQUIPPED WITH ELECTRIC LOCK

Movement from Main Line to Side Track

Lock is automatically released by train approaching switch on Main Track after a time delay of from 2 to 3 minutes.

Movement from Side Track to Main Line

Secure permission by telephone from Control Station to occupy Main Line. After granting permission, Control Station will unlock electric lock.

1. Remove switch padlock from electric lock by depressing top foot pedal slightly.
2. Step on lower foot pedal which will release switch hand throw lever when electric lock is unlocked.
3. Operate switch as desired with hand throw lever.
4. Replace padlock and lock switch by stepping on top foot pedal after hand throw lever has been placed in electric lock. Padlock may then be inserted in proper hole to lock switch.

CAUTION

Removing switch padlock places Main Line signals at STOP. Do not remove padlock until permission has been obtained to occupy Main Line.

Train in clear of Main Line must not pass fouling point until lock is released.

TO OPERATE DUAL CONTROL SWITCH BY HAND

1. Secure permission including time and working limits by telephone from Control Station.

2. Remove switch padlocks on Dual Control Switch.

3. Move small selector lever from position marked "MOTOR" to position marked "HAND."

4. Notify Enginemen that selector lever is in "HAND" position stating time and working limits obtained from Control Station.

5. Operate "Hand Throw" lever back and forth until gear is engaged and switch points are seen to move with the movement of the lever.

6. Operate switch as desired by using "Hand Throw" lever.

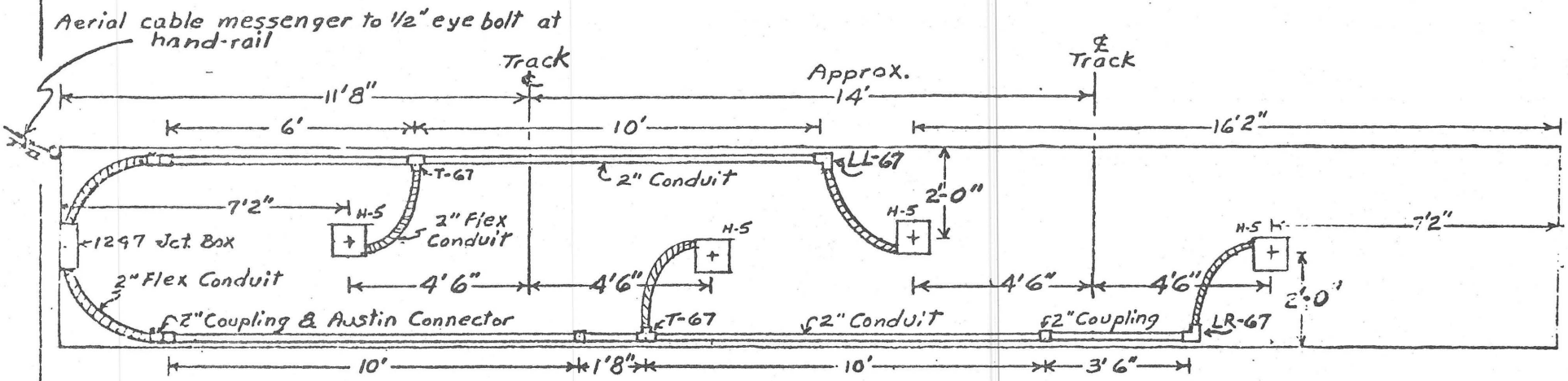
7. Restore selector lever to "MOTOR" position and notify Control Station at or before expiration of authorized time.

8. Lock Dual Control Switch levers with switch padlocks.

9. Notify Enginemen that switch has been returned to "MOTOR" control.

EO-578

45- Meta-positives

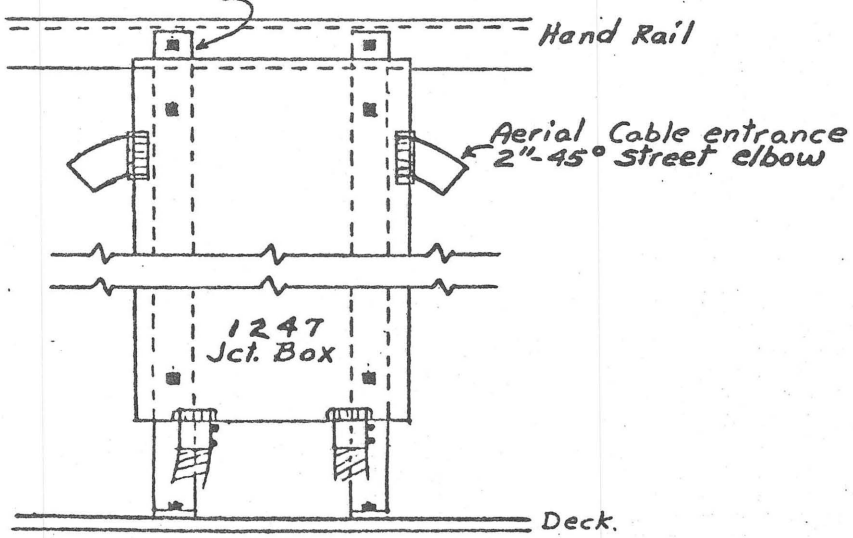


Conduit clamped to deck with 2" 1-hole malleable clamp and 1/2" X 1 1/2" sq. head bolt.

Provide aerial cable for connections to type 1247 Jct. box.

Use flex. wire in conduit to signals.

Use #9 flex. for lamp circuits.



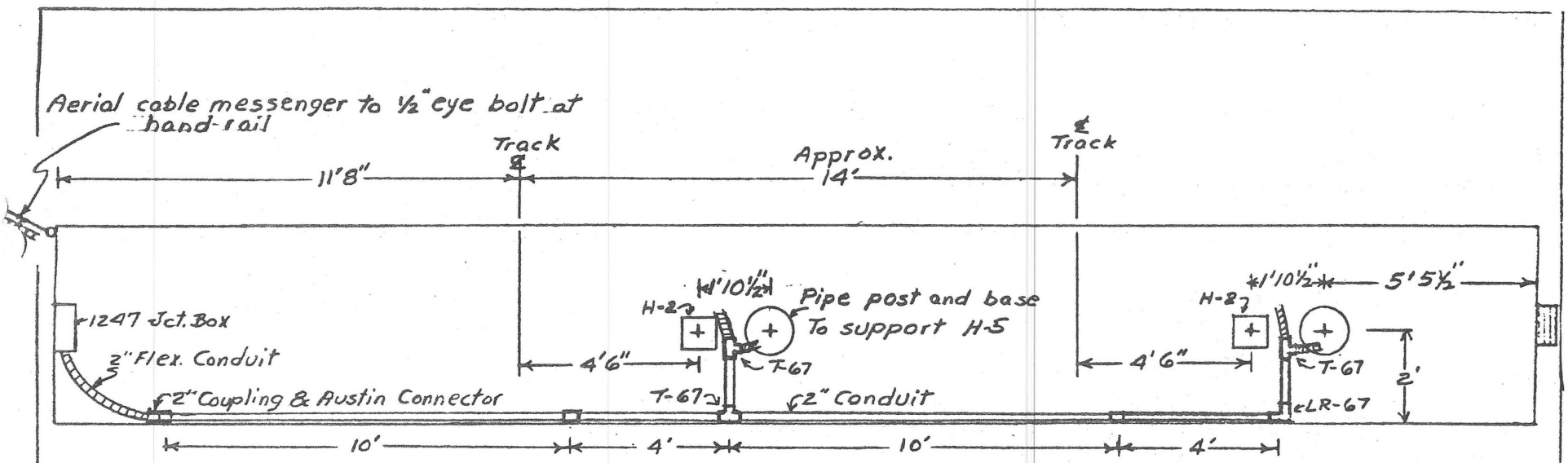
2" Flex. conduit mounted to Jct. box with 2" Austin connector and bushing.

Jct. Box Detail

CONDUIT ARRANGEMENT 2-TRACK BRIDGE WITH 2 or 4 BRIDGE SIGNALS

SEO Topeka 6-24-60

EO-580

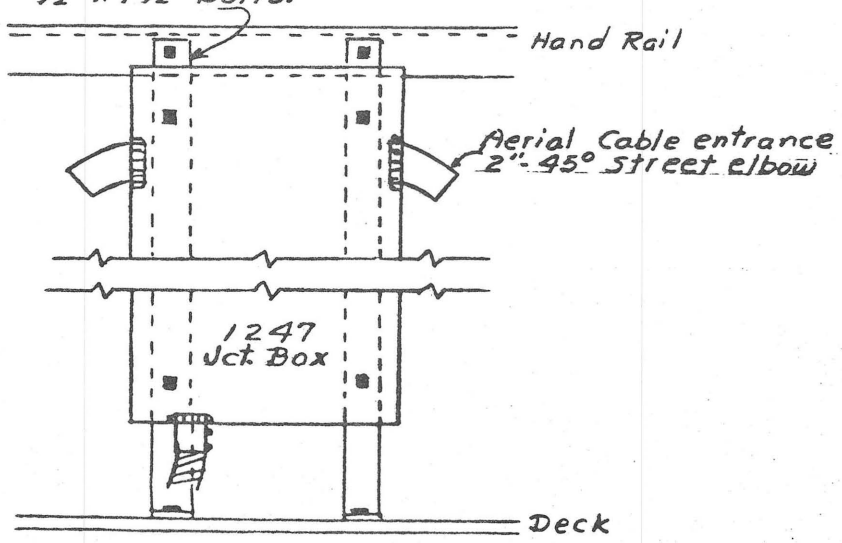


Conduit clamped to deck with 2" 1-hole malleable clamp and ½" x 1½" sq. head bolt.

Provide aerial cable for connections to type 1247 Jct. box.

Use flex. wire in conduit to signals

Use #9 flex. for lamp circuits.

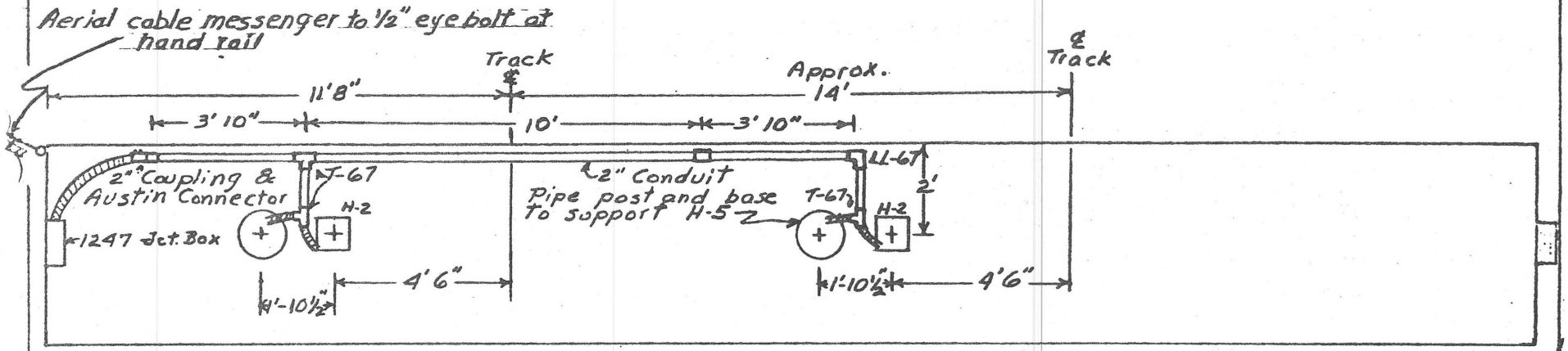


2" Flex. conduit mounted to Jct. box with 2" Austin connector and bushing.

Jct. Box Detail

CONDUIT ARRANGEMENT 2-TRACK BRIDGE WITH TWO 2-UNIT SIGNALS (WESTWARD SIGNALS)

SEO Topeka EO-580A 9-6-60

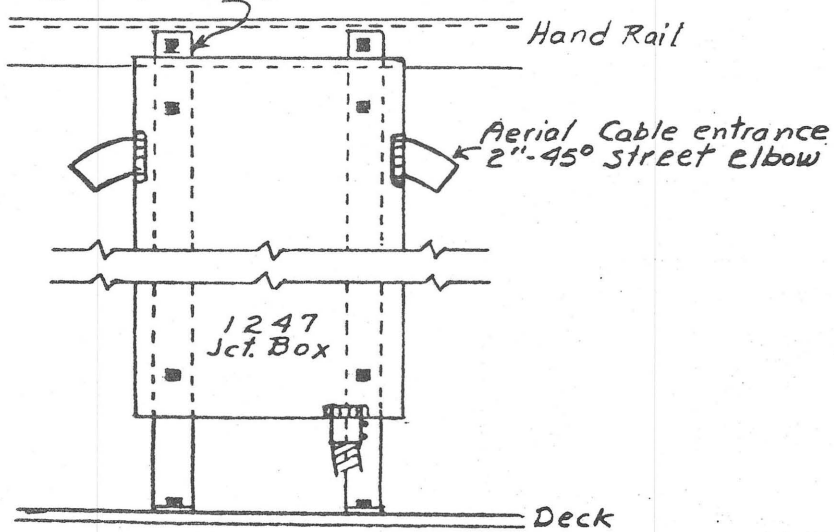


Conduit clamped to deck with 2" 1-hole malleable clamp and ½" x 1½" sq. head bolt.

Provide aerial cable for connections to type 1247 Jct. box.

Use flex. wire in conduit to signals.

Use #9 flex. for lamp circuits.

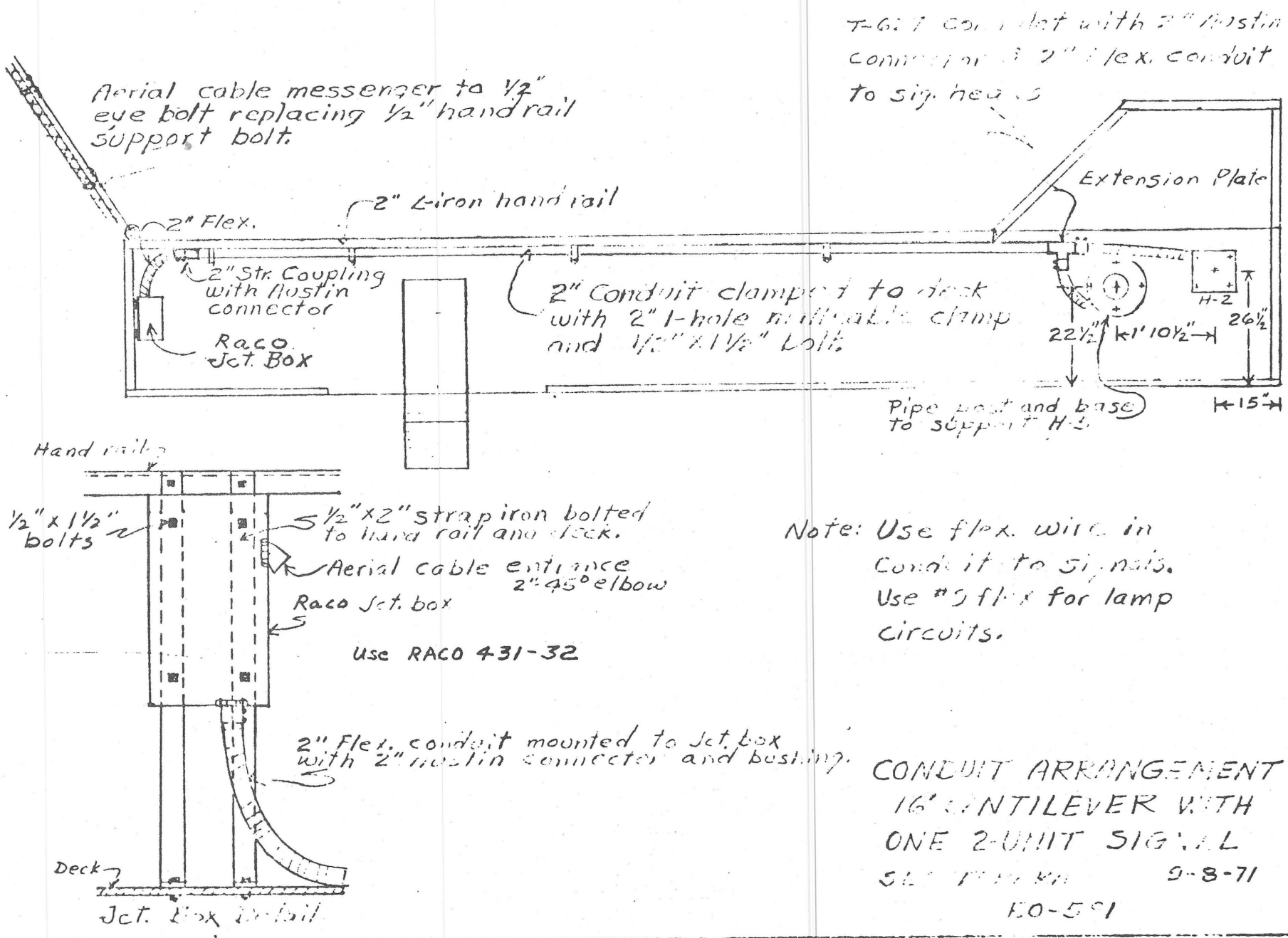


2" Flex. conduit mounted to Jct. box with 2" Austin connector and bushing.

Jct. Box Detail

CONDUIT ARRANGEMENT 2-TRACK BRIDGE WITH TWO 2-UNIT SIGNALS (EASTWARD SIGNALS)

SEO Topeka EO-580B 9-6-60

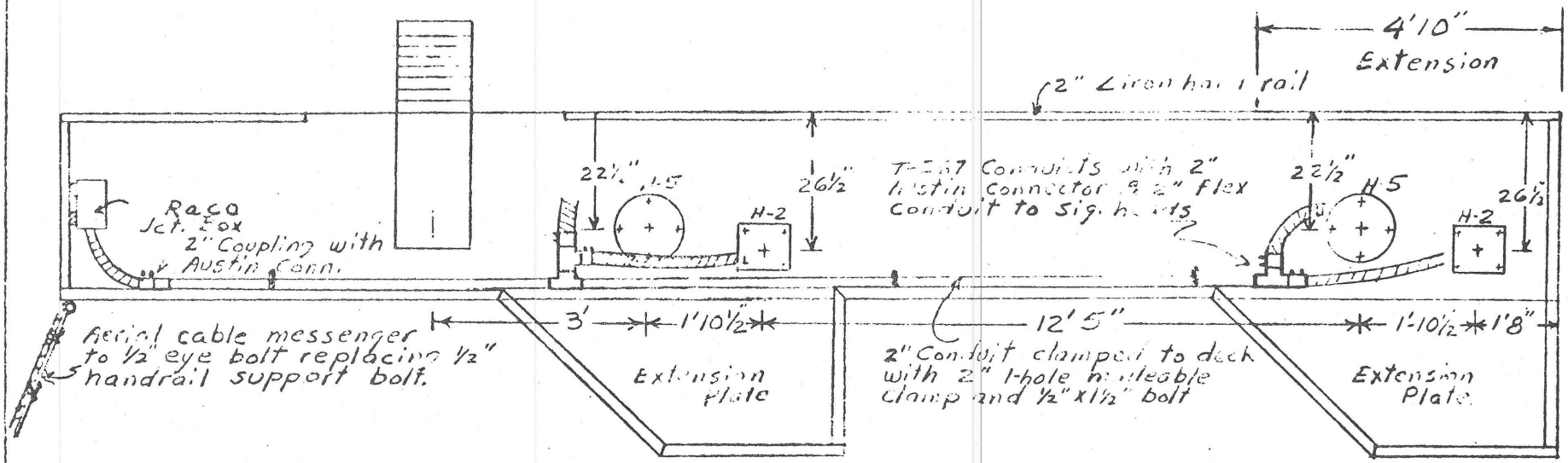


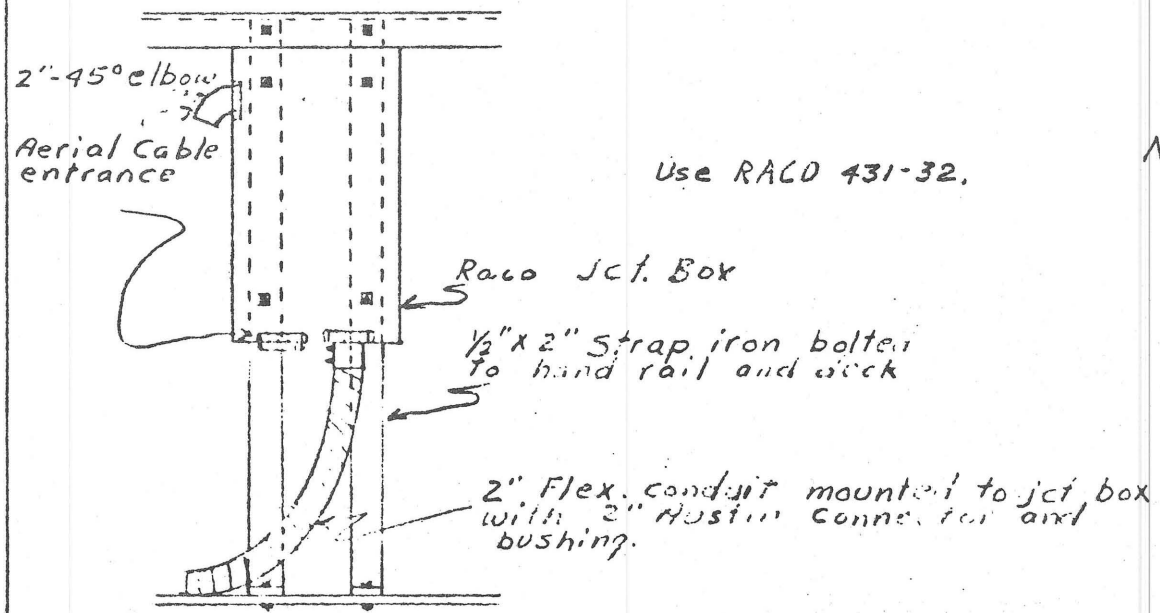
Note: Use flex. wire in conduit to signals. Use #3 flex for lamp circuits.

CONDUIT ARRANGEMENT 16' CANTILEVER WITH ONE 2-UNIT SIGNAL

9-8-71

EO-591



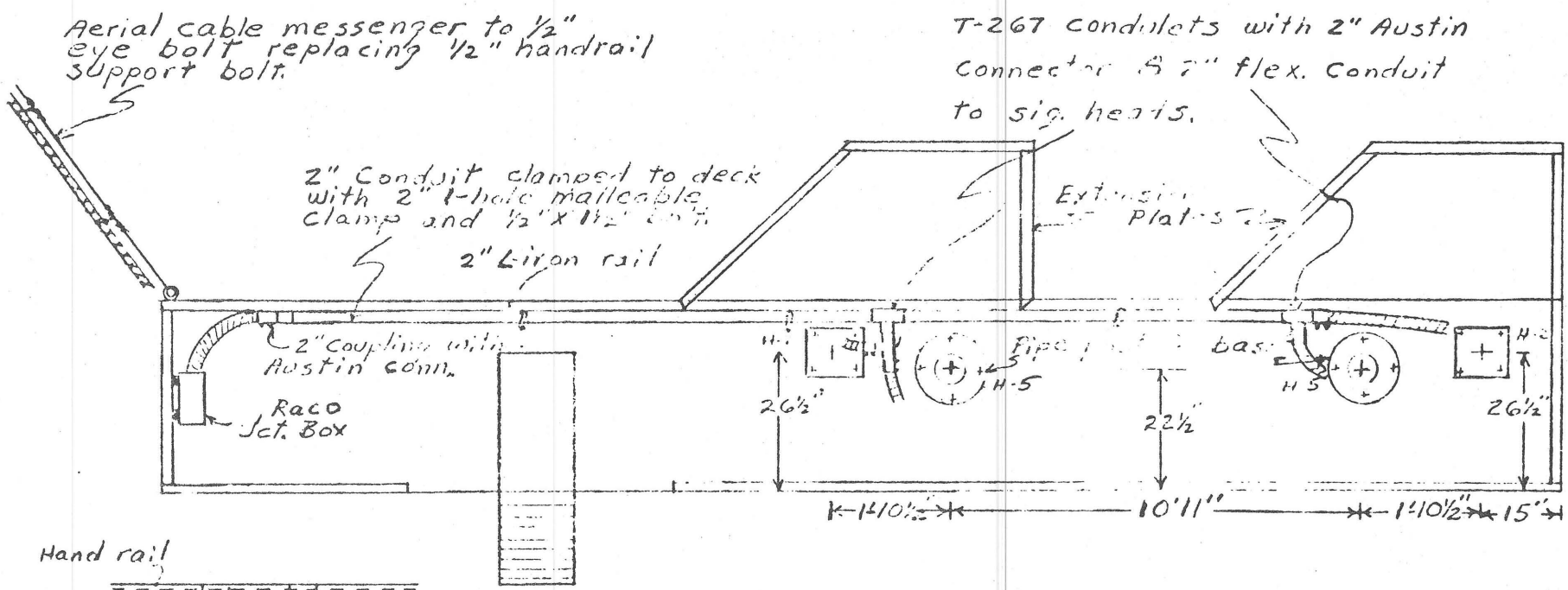


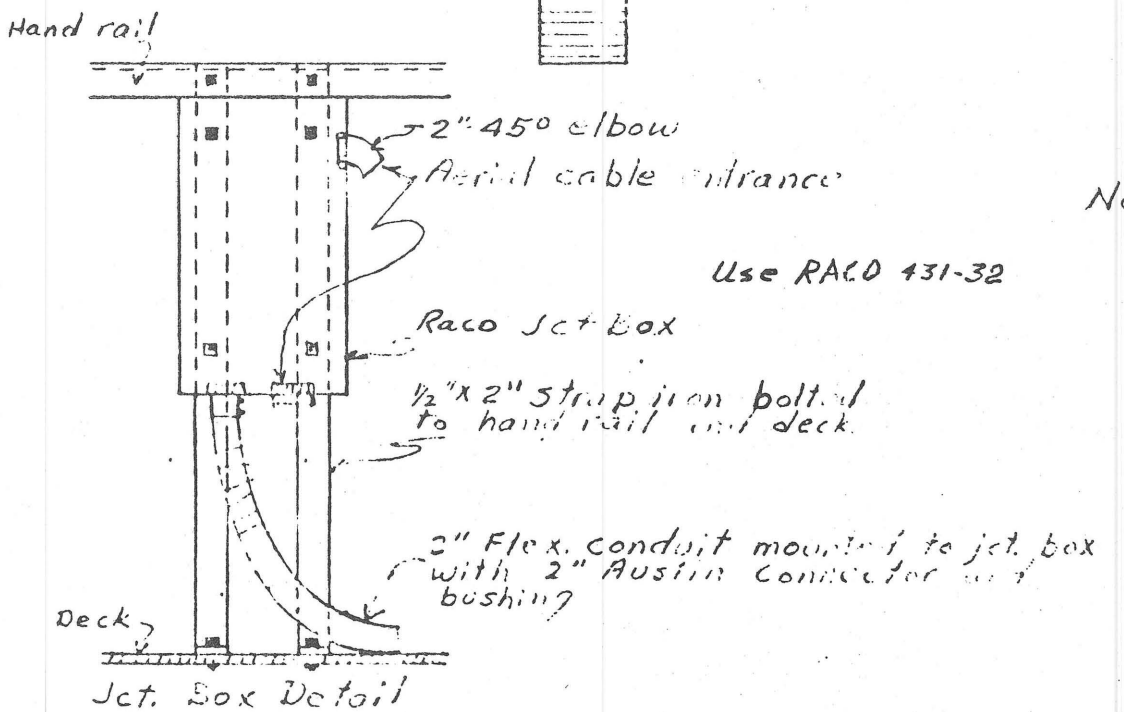
Jct. Box Detail

Use RACO 431-32.

Note: Use flex wire in
Conduit to Signals.
Use #5 flex for lamp
Circuits

CONDUIT ARRANGEMENT
16' CANTILEVER WITH
TWO 2-UNIT SIGNALS
SEO Virginia 9-8-71
EO-5.9.9





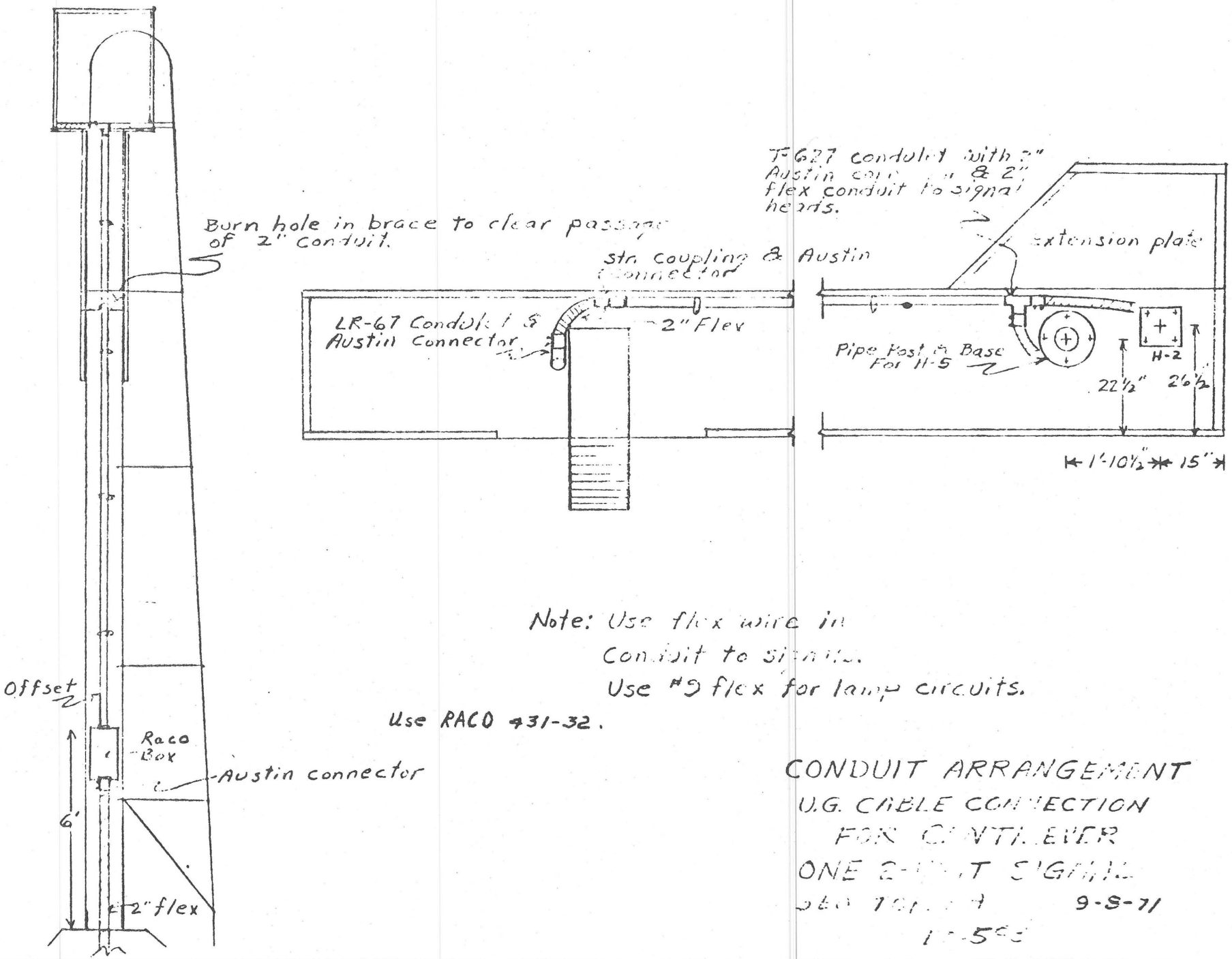
Jct. Box Detail

Note: Use flex wire in conduit to signals. Use #9 flex for lamp circuits.

CONDUIT ARRANGEMENT
26' CANTILEVER WITH
TWO 2-UNIT SIGNALS

S&O [illegible] 9-8-71

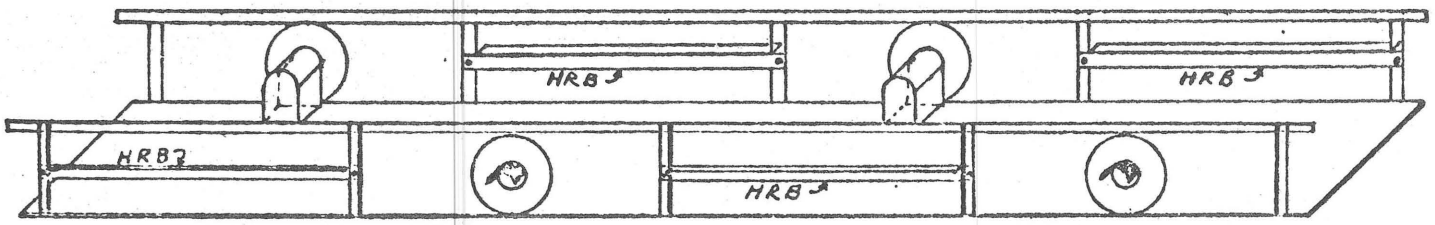
[illegible] 9-5-72



Note: Use flex wire in conduit to signals.
Use #9 flex for lamp circuits.

Use RACO 431-32.

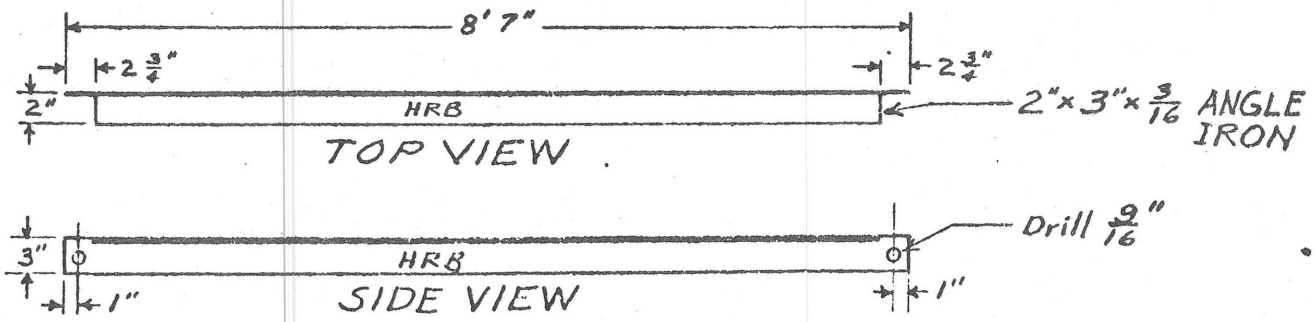
CONDUIT ARRANGEMENT
U.G. CABLE CONNECTION
FOR CANTILEVER
ONE 2-UNIT SIGNAL
9-9-71
1-5[illegible]



Note: Use 1, ½" x 1" squarehead machine bolt with lock washer on each end of hand rail brace.

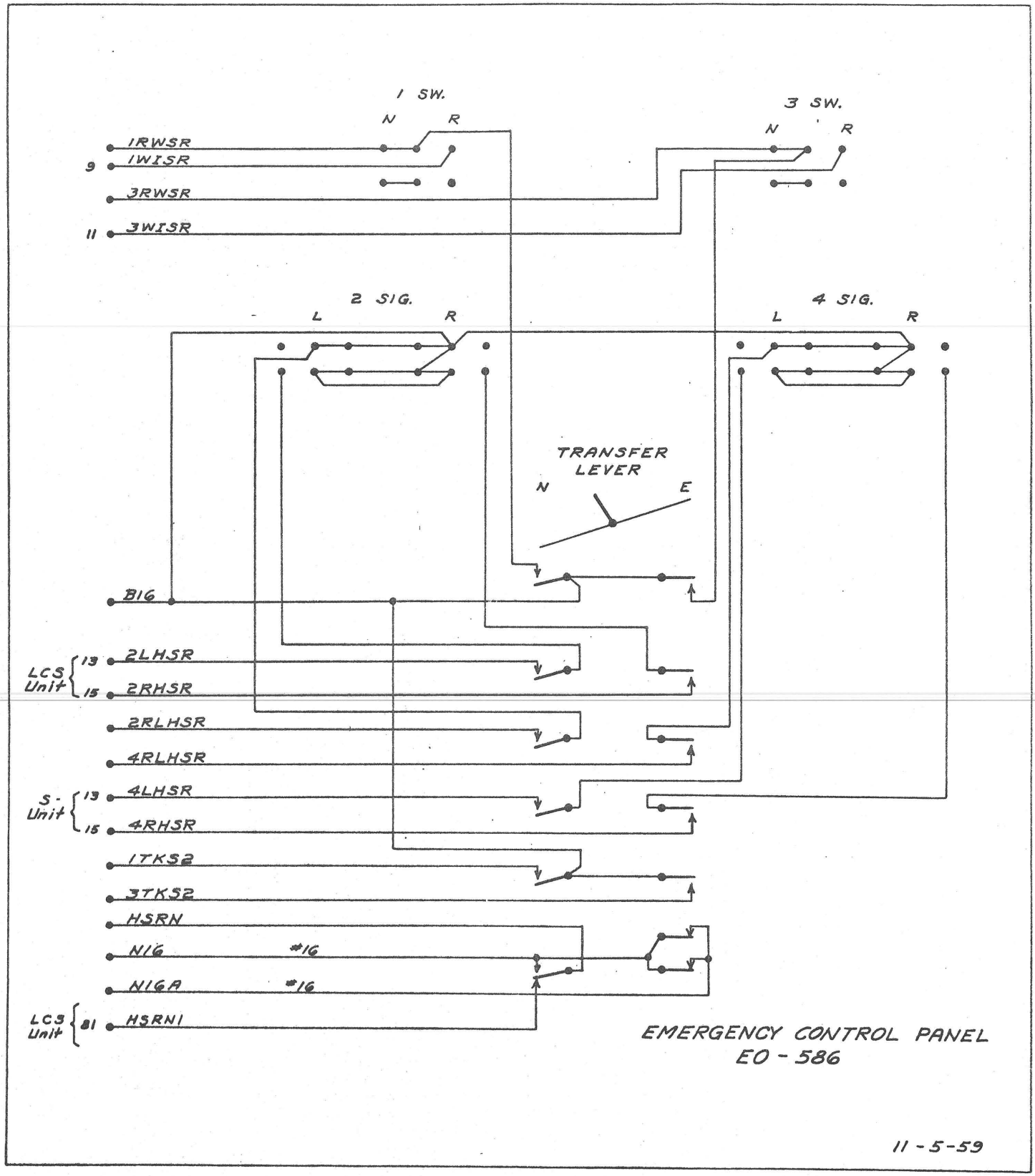


TOP VIEW



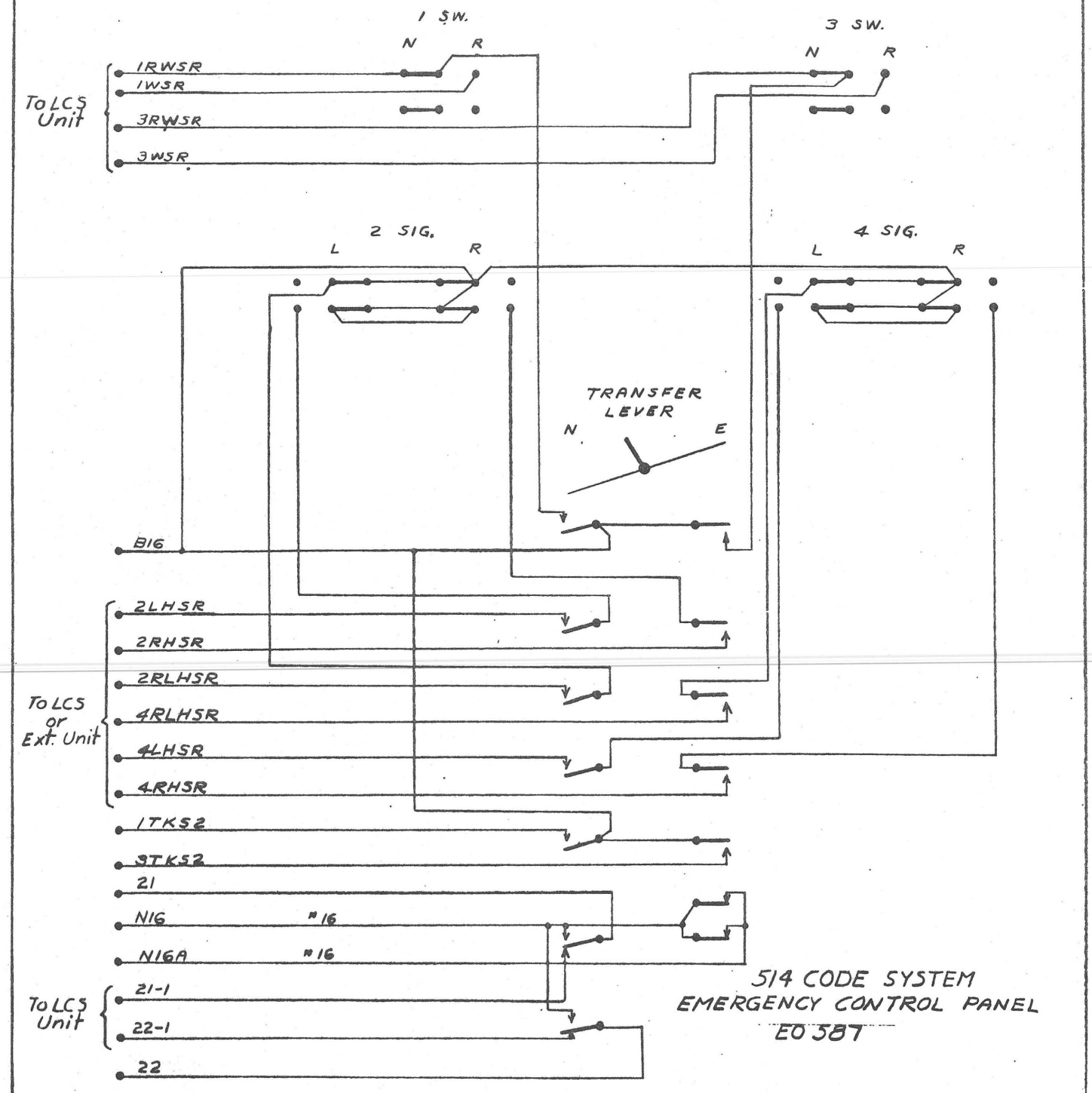
HAND RAIL BRACE

SKETCH
HAND RAIL BRACE
FOR 2" TRACK BRIDGE
SEO TOPEKA 9-27-60
EO-584



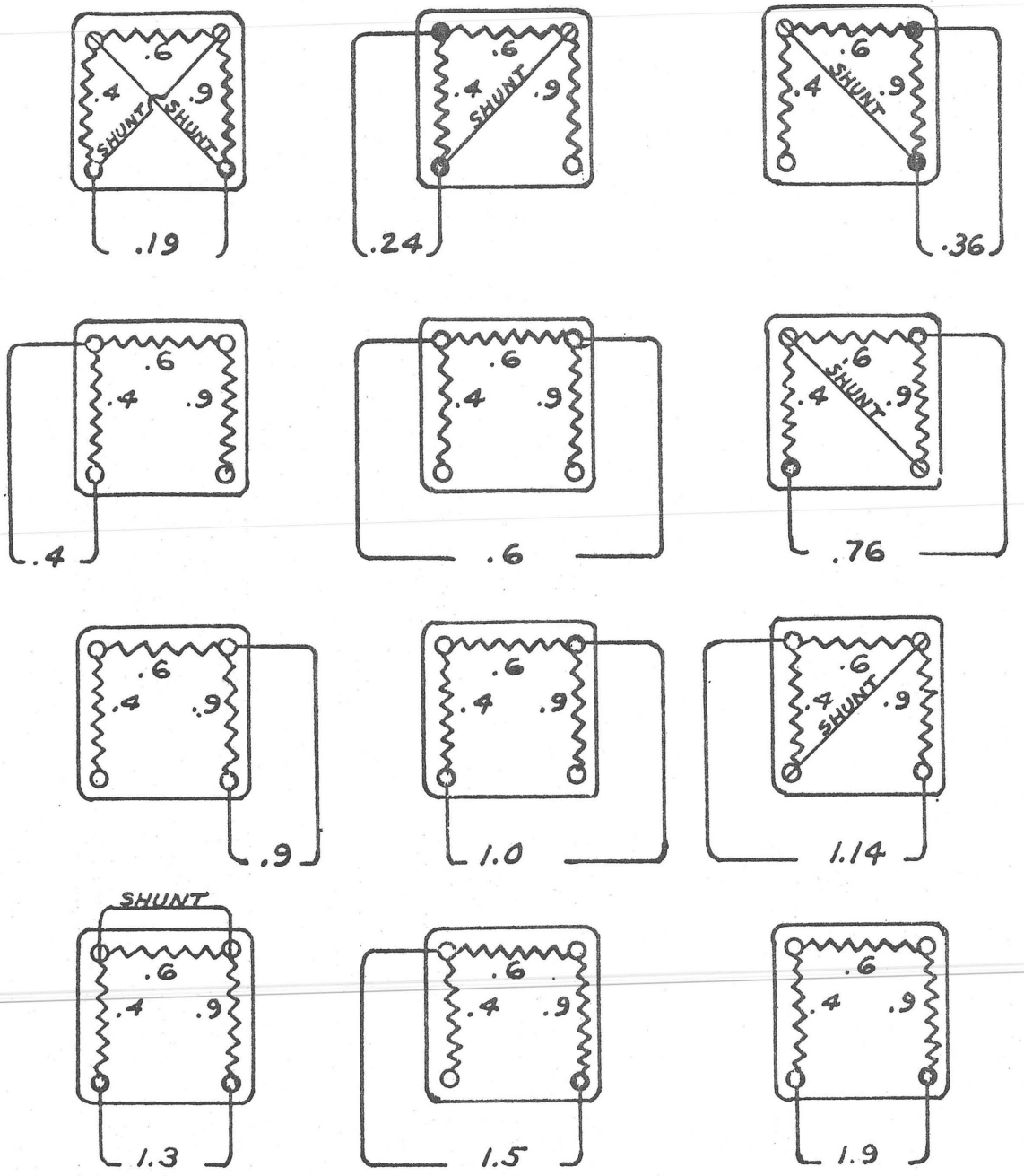
EMERGENCY CONTROL PANEL
EO - 586

11-5-59



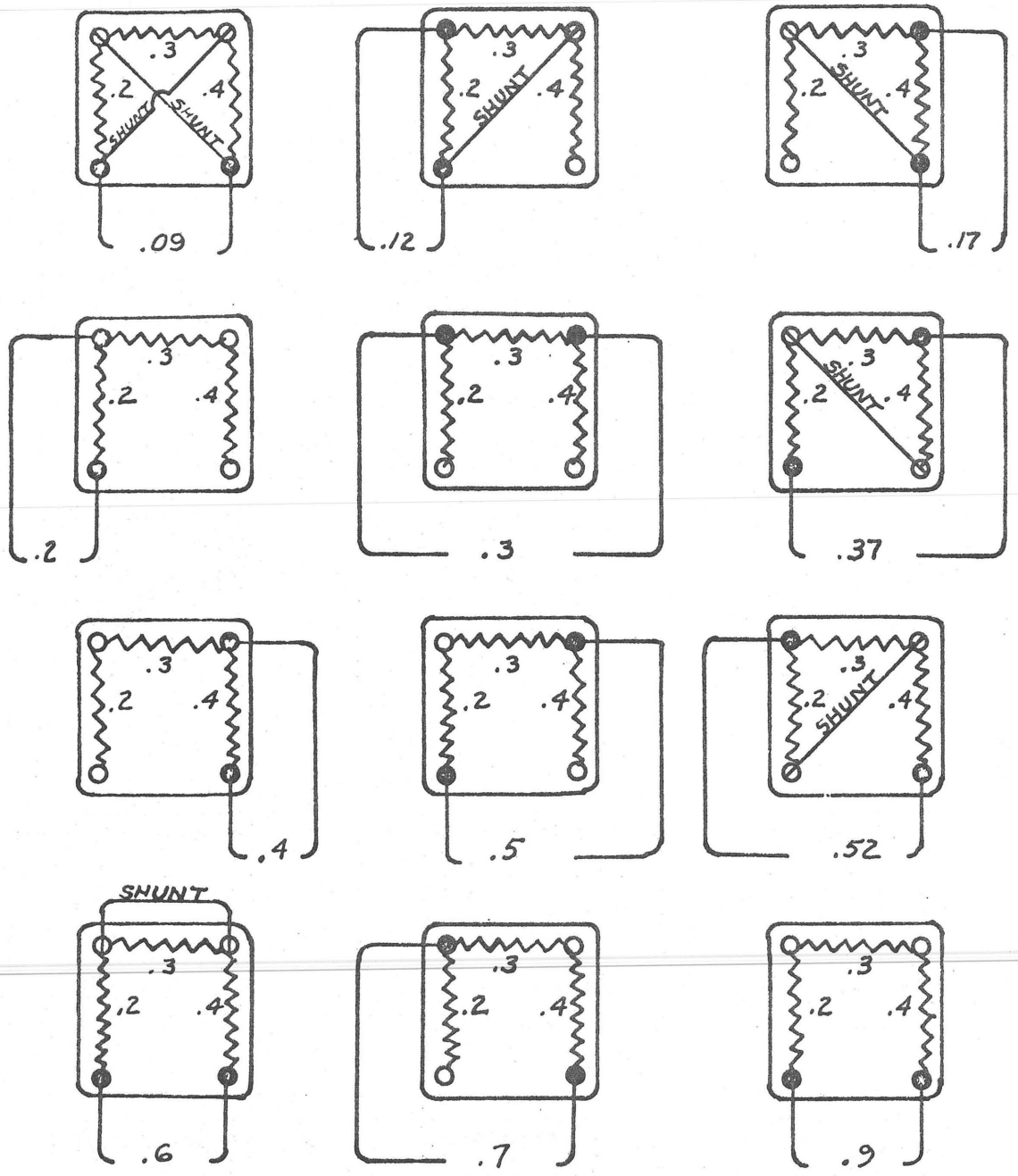
514 CODE SYSTEM
EMERGENCY CONTROL PANEL
E0 587

11-16-59



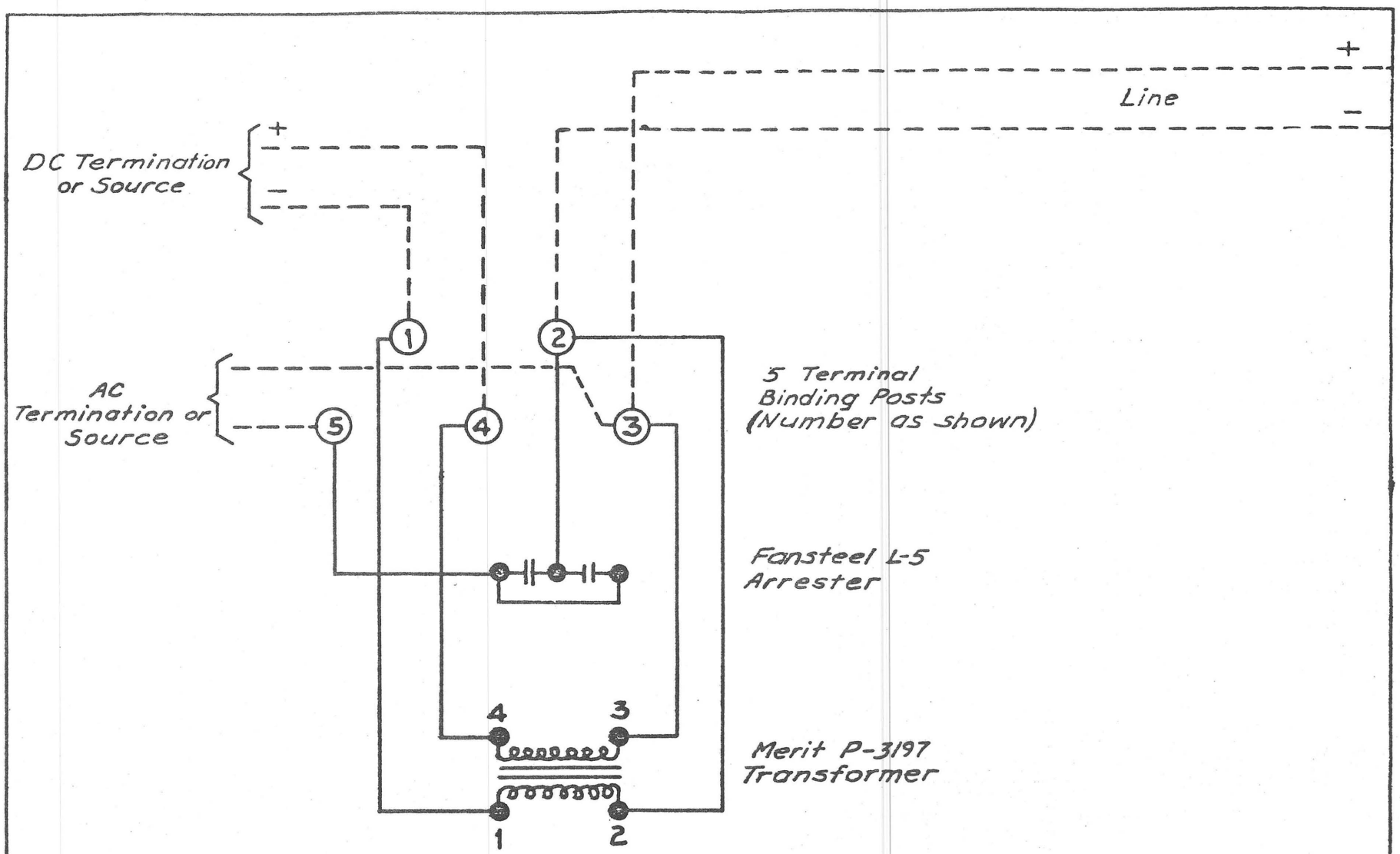
Resistance adjustment chart for Everett Multiple Coil Resistance Unit No. 806 showing 12 combinations up to 1.9Ω.
To adjust resistances, loosen center screw, turn unit to bring any desired pair of binding posts to the wiring connection, and tighten.

S.E.O. TOPEKA 11-8-60
EO 588 SH 1



Resistance adjustment chart for Everett Multiple Coil Resistance Unit No. 805 showing 12 combinations up to .9Ω.
To adjust resistances, loosen center screw, turn unit to bring any desired pair of binding posts to the wiring connection, and tighten.

S.E.O. TOPEKA 11-8-60
EO 588 SH. 2

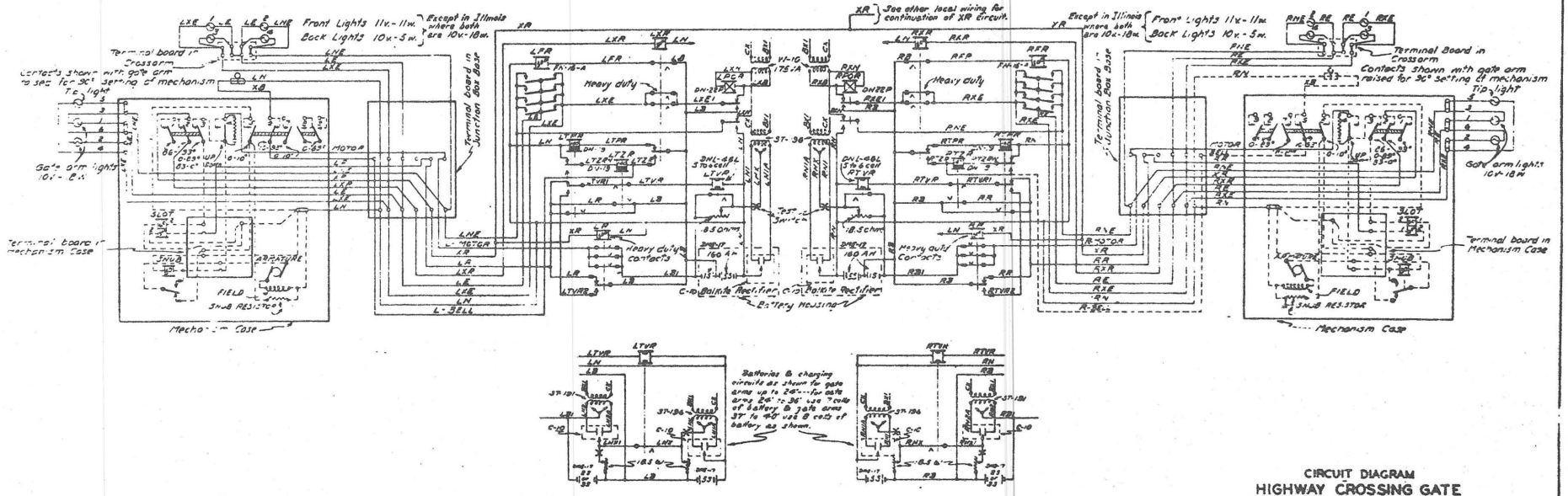


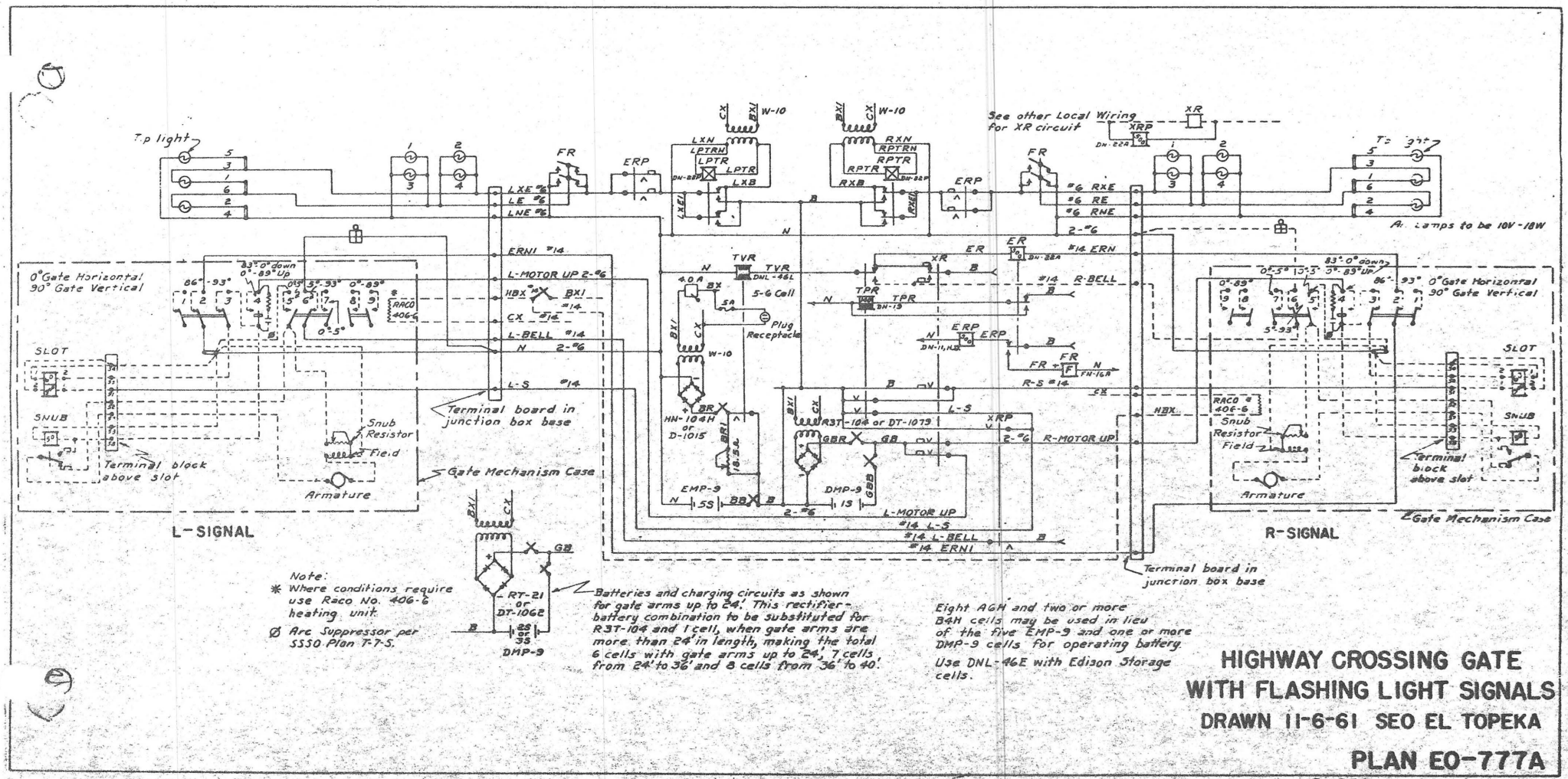
Note —
Wiring indicated by solid lines to be done by Signal Shop.
Dashed lines show field wiring connections.

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

DC PASS - AC BLOCK FILTER FOR AC OVERLAY CIRCUIT

EO-590 12-7-59


REVISIONS
Front Lights 11v.-11w.
Back Lights 10v.-5w.
Except in Illinois where both are 10v.-18w.
See other local wiring for continuation of XR circuit.
Terminal board in Crossarm
Contacts shown with gate arm at set for 90° setting of mechanism
Tip light
Gate arm lights 10v.-8 w.
Terminal board in Junction Box Base
Heavy duty contacts
Heavy duty Contacts
Terminal board in Mechanism Case
Mechanism Case
FIELD
ARMATURE
SHUNT RESISTOR
MOTOR
Batteries & charging circuits as shown for gate arms up to 24'-0"- for gate arms 24'-0" to 36'-0" use 7 cells of battery & gate arms 37'-0" to 40'-0" use 8 cells of battery as shown.
CIRCUIT DIAGRAM
HIGHWAY CROSSING GATE
WITH FLASHING LIGHT SIGNALS
W.R.R.S. CO. MODEL 10 GATE WITH 3564B MECHANISM
SEO EL TOPEKA
A.T.&S.F. RY.
DRAWN 5-2-49
NO SCALE
CHECKED O.E.S.
APPROVED
ASSIST SIGNAL ENGINEER
SIGNAL ENGINEER
PLAN EO-777

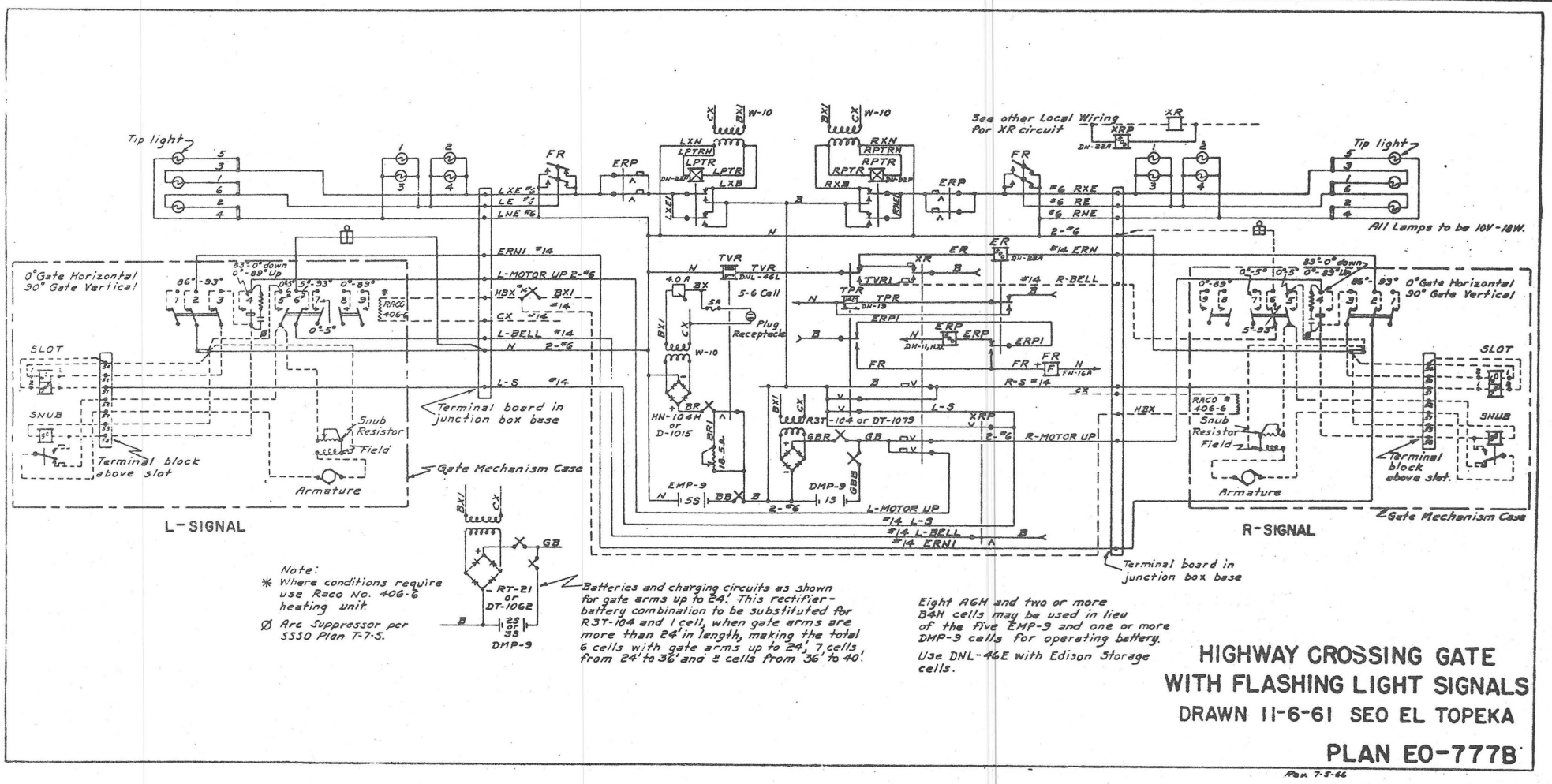


HIGHWAY CROSSING GATE WITH FLASHING LIGHT SIGNALS

DRAWN 11-6-61 SEO EL TOPEKA

PLAN EO-777A

Rev. 7-5-66

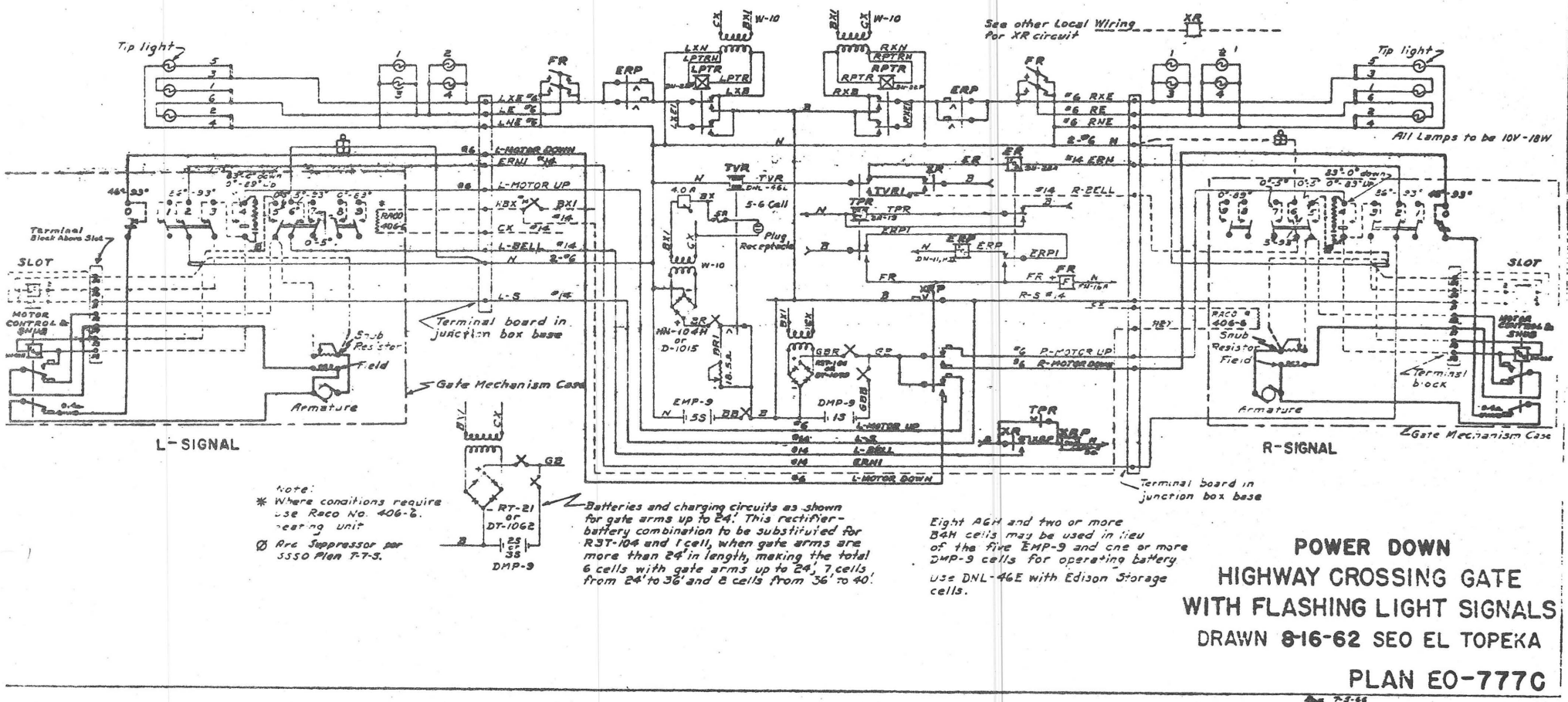


HIGHWAY CROSSING GATE WITH FLASHING LIGHT SIGNALS

DRAWN 11-6-61 SEO EL TOPEKA

PLAN EO-777B

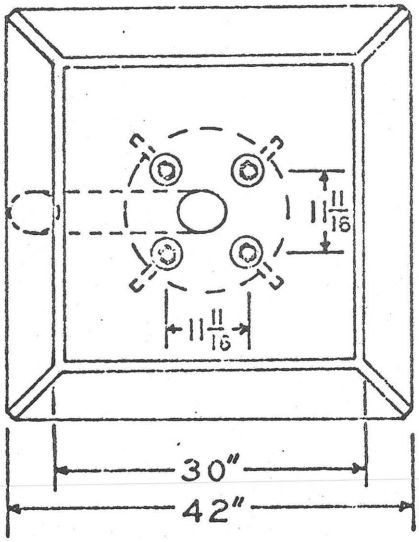
Rev. 7-5-66



POWER DOWN
HIGHWAY CROSSING GATE
WITH FLASHING LIGHT SIGNALS
DRAWN 8-16-62 SEO EL TOPEKA

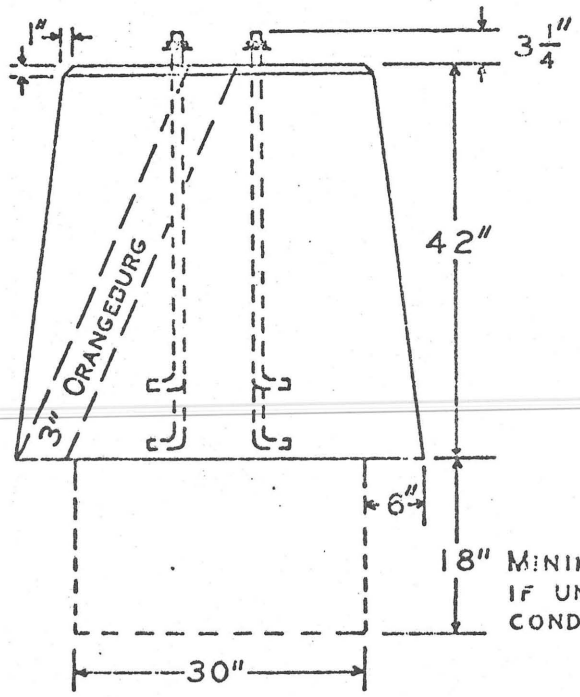
PLAN EO-7770

7-5-66



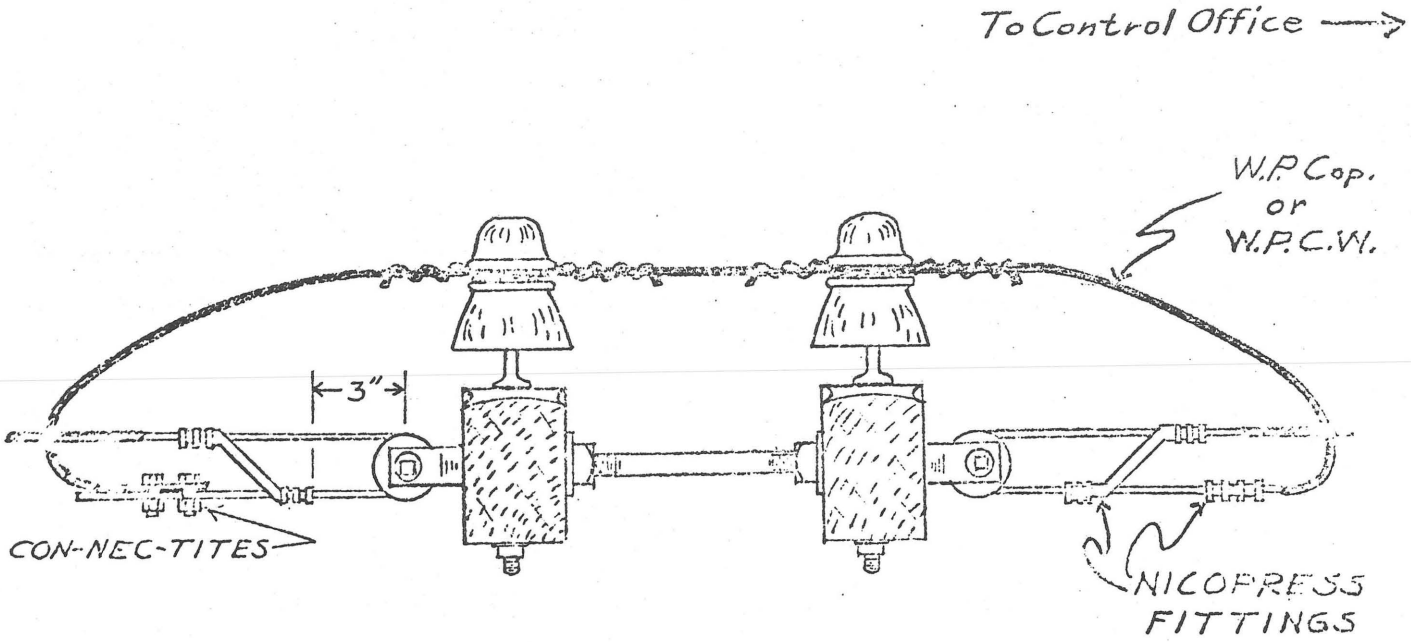


1" BOLT WITH 2" THREADED SECTION AND HEX NUT TO BE 36" LONG FOR 8'-12' CANTILEVER OR 42" LONG FOR 16'-20' CANT.



NOTE: FOUNDATION TO BE MADE OF CONCRETE IN ACCORDANCE WITH AMERICAN RAILWAY ENGINEERING ASSOCIATION SPECIFICATION.

FOUNDATION FOR CANTILEVER TYPE FLASHING LIGHT SIGNAL



Note: Tape all bare wire connections with P&B tape, except on con-nec-tites use Scotch Elect. first then P&B tape.

Dead ends are Hubbard #1340 insulated clevis with #1609 insulator and 5/8" x 5" galv. bolt.

Note: Do Not Use For New Work

5-29-59

Use EO-801

When disconnecting code line disconnect both L1 & L2 to avoid phone noise.

CODE LINE DISCONNECT

SEO-EL TOPEKA, KS. 7-18-55

EO-802

RECORD OF TEST OF GRS DATA-TRAN CARRIER
OFFICE TERMINAL

Note: All voltages are AC except 24 volt DC supply

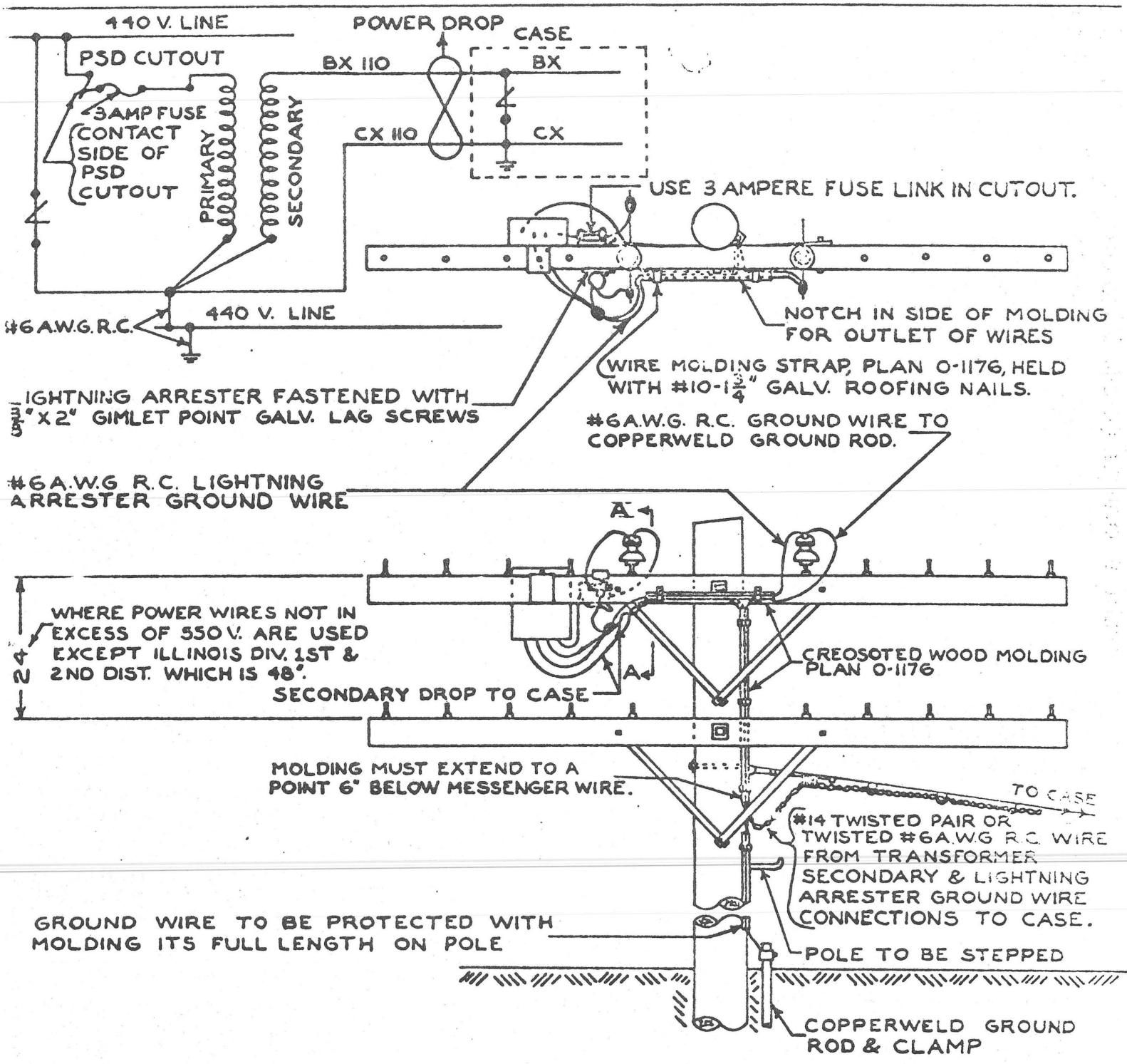
Date	Tested By	24V Supply DC	Input To Rec. Volts	Output Of Rec. Volts	DEMODULATORS							
					CHANNEL A		CHANNEL B		CHANNEL C		CHANNEL D	
					Input	Output	Input	Output	Input	Output	Input	Output

EO-905
Sh. 1

EO-906

Detector Location_____

Date	Tested By	Frequency	Tone Gen Output	Main Carr Input	Main Car Output	Repeater Input	Repeater Between	Repeater Output	Main Car Input	On Receiver	After Filter	Rectified Carrier	Remarks

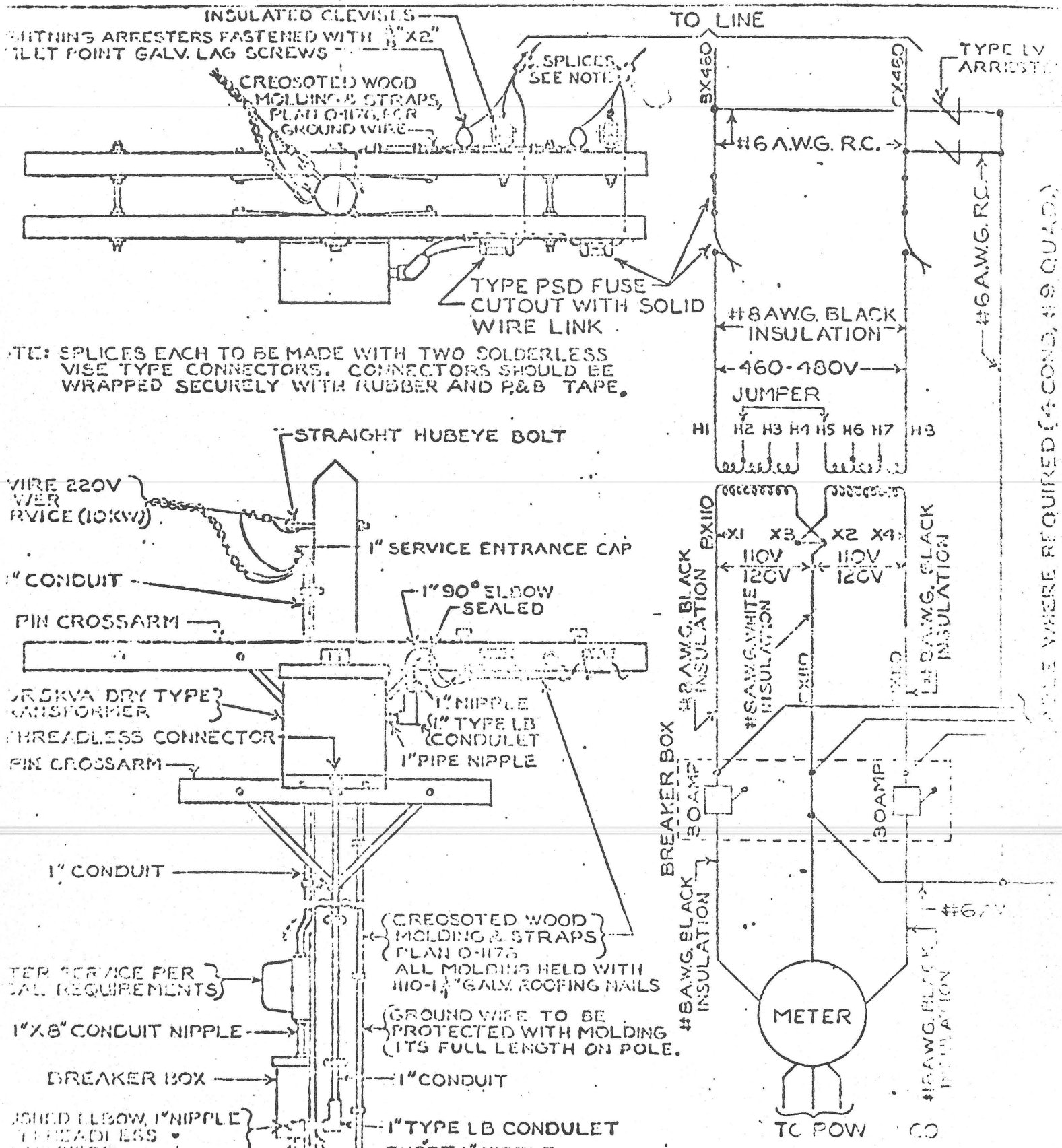


SECTION A-A ENLARGED VIEW

SIGNAL TRANSFORMER LOCATION
TRICKLE CHARGE LINE

S.E.O. TOPEKA 10-19-70

EO-910



COMMERCIAL POWER INST.

S.E.O. TOPEKA

EO-910A