NEW YORK CENTRAL LINES

N. Y. C. R. R.
ELECTRIC DIVISION
GRAND CENTRAL TERMINAL
SIGNAL DEPARTMENT
STANDARDS & USEFUL INFORMATION.

W.H. ELLIOTT SYMBOLS.

Revision Date

Number	Description
CC-1	Index for "CC" Standard Typical Plans
CC-54	Std. Mod. 2A D.C. Dwarf Sig 45° Control Dyn. Ind. Fields in Multiple.
CC-55	Typical wiring for Inter & Sub. Inter Sta. switch board
CC-58	Intercommunication circuit G.C. Terminal
CC-65	Standard approach locking circuits
CC-66	2A D.C. dwarf signal circuit breaker operation
CC-68	Operating switch board G.C. Terminal
CC-69	Std. 2A D.C. Dwarf Sig. 45° Control A.C. Ind.-Fields in Series
CC-70	" " " " " " " " " Multiple
CC-71	" " " " " " " " Dynamic Ind. Fields in Series
CC-73	Model 2A D.C. 110V.-Inter signal-0° to 45° to 90° control
CC-74	Mod 2A D.C. Dwarf Sig. opposing Sig. Circuit-A.C. Indication.
CC-79	Intercommunication cancelling circuit G.C. Term.
CC-80	Model 4A switch machine modified wiring.
CC-81	Switch levers cross wiring
CC-82	Motor dwarf alarm-with repeater
CC-83	3 Position 2A-A.C. Inter home signal wiring
CC-84	Single switch lever New type I.S. Selector
CC-85	Double " " " " " "
CC-93	Operating switch-board with seperate D.P. switch
CC-94	" " " modified
CC-97	Single rail track circuit (Relayed) G.C. Terminal
CC-98	Power switch board.
CC-99	Mercury arc rectifier
CC-101	Two rail track circuit-Individual transformer

Revision 2 Date 11-27-41

Number	Description
CC-102	Single rail track circuit-Individual transformer
CC-103	" " " " Grand Central Terminal
CC-104	Fusing of station signal lights - Sub. Inter. Sta. Z.
CC-105	Electric locks emergency circuit
CC-106	Time release circuits.
CC-107	Standard 2A-A.C. Rear home signal wiring.
CC-108	Standard 2A-A.C. Non-Auto. Signal wiring
CC-109	Mod. 2A-D.C. Dwarf Sig. Opposing Sig. Circuit-Dynamic Ind.
CC-111	Auto. Block Signal Circuits.
CC-112	Block circuits (Typical) Mt Vernon to N.W. Plains (formerly Page-84)
CC-113	Typical Circuit for Home & Distant Tunnel Signals
CC-114	Typical circuit of connections where 300V line ends and 2200 V. line starts, showing 100 to right on 300V line
CC-115	Intercommunication Cancelling circuit between Inter. Stas. A-U and Inter. Stas B-U
CC-116	Electric Locks - Emergency Circuits - KY-MX-BG-JO-NW
CC-117	" " " " NK-Harlem R. Draw
CC-118	Power Switch Board Wiring Diagram - Inter. Stas FA-FB
CC-119	Typical Control Circuit for Signals on Loop Tracks
CC-120	Wiring for Operating Sw. Board with seperate D.P. Switch
CC-122	Cuts in Common - Hudson & Harlem Divs.

Number	Description
CC-125	Typical Wiring for Charging Battery by Rectifier
CC-126	" " for Light Signals (59th St. to "MJ")
CC-127	Wiring Dia. for Mod. 5A Switch Machine.
CC-128	Wiring for Single Phase Induction Motor for Mod. 2A Sig.
CC-130	Circuit for Light out Relay
CC-131	Wiring for Flash Signal on East Gallery - G.C.T.
CC-132	Single to Double Rail Track Cir. - Trans. on Single End
CC-133	" " " " " " " " Double "
CC-134	Single Rail Track Circuit
CC-135	Double " " "
CC-136	Typical Wiring for Light Signals - Putnam Div.
CC-137	Typical Lock Circuit Using "96" Relay
CC-140	Right to Left X-over & Left Hand Turnout
CC-141	Right & Left Hand Turnouts Operated in Series by One Lever.
CC-142	Right & Left Hand Turnouts Operated in Series by One Lever.
CC-143	Left to Right Crossover & Right Hand Turnout Operated in Series by One Lever.
CC-144	New Type Circuit Breaker for Model 2A Dwarf
CC-145	Typical Circuit-Type "S"-3 Ind. Color Light Signal.

WIRE DESIGNATION FOR SIGNALING CIRCUITS

SHEET-1- EE-31.

No	Description.	Revision	Date
12	Control wire for Distant signal relay between distant signal relay and point on home Signal Relay		
13	Control wire for home signal relay between home signal relay and point on S.T. relay.		
14	Motor and slot control wire for home signal (Mod 6) and green light wire in (Tunnel) home signal circuit		
15	Wire between back point on home signal relay and red lamp (Tunnel) home signal circuit.		
17	Light wire for approach circuit.		
18	" " " advance circuit.		
19	Control wire for S.T. relay between point 1 and 2 contact poly relay and S.T. relay in relay box		
20	Wire from track transformer to polyphase relay.		
21	" " " " " " "		
22	Distant signal relay control wire.		
23	Home Signal relay control wire.		
SR	Home Signal relay control wire. (Do not use on new plans or when retagging)		
24	Home signal slot control wire from circuit breaker on up and down rod on home signal.		
25	Wire from track transformer to track (Negative track wire G.C. Terminal and Harmon)		
26	Wire from track transformer to track (Positive track wire G.C. Terminal and Harmon)		
27	Wire from track to polyphase relay		
28	" " " " " "		
31	Wire from switch circuit controller to S.S. relay		
31-N	Normal S.S. relay wire between switch circuit controllers		
31-R	Reverse S.S. relay wire between switch circuit controllers		
32	Wire from switch circuit controller to S.S. relay.		
32-N	Normal S.S. relay wire between switch circuit controllers		
32-R	Reverse S.S. relay wire between switch circuit controllers		

APPROVED _____
SIGNAL ENG'R G.C.T. ELEC. DIV.

Drawn By J.C.L. 12/11/27

Co[illegible] J.C.L. 12/11/27

Correct [illegible]

Correct _____

No	Description	Revision, 1 Date, 12-6-27
34	Slot control wire for distant signal between point on distant signal relay and circuit breaker on distant signal (Mod. 6) also between point on distant signal relay and green lamp (Tunnel) distant signal circuit.	
35	Wire between back contact on distant signal relay and yellow lamp (Tunnel) distant signal circuit.	
41	Wire to a.c. Signal Hock	
43	Wire for A.C. signal-light repeater.	
44	Wire from circuit breaker on up and down rod on home signal to teaser coil of motor (Mod 6)	
45	Wire controlling 45° position.	
46	Wire to control element of "S" Signal	
47	Wire to control element of "S" Signal	
48	Wire to local and light of "S" Signal	
49	Wire from outlying switch circuit controller to line relay	
51	Approach lock relay control wire.	
53	Preliminary indicator wire.	
54	Distant signal slot wire between circuit breaker on home signal and circuit breaker on distant signal. (Mod. 6)	
55	Wire from working coil of signal motor to circuit breaker on home signal (Mod. 6)	
56	" " " " " " " " " " " " " " " "	
57	Local wire controlling signal motor circuit (Mod. 6)	
58	Motor control wire for 2 arm home signal (A.C. Mod. 6)	

Nº	Description	Revision, 1 Date, 12-6-26
63	Approach signal repeater wire (Mod. 6)	
64	Wire between point on home signal relay and point on distant signal relay.	
67	Distant signal repeater wire. (Mod. 6)	
68	Outlying switch bell wire.	
69	Wire between bell keys. Outlying switch circuit.	
70	Wire between bell key and bell. Outlying switch circuit.	
71	Wire between bell key and condenser. Outlying switch. circuit.	
72	Wire between dry battery, positive, and bell key at outlying switch.	
89	Wire between switch instrument coils and contact spring on switch instrument (In Int. Sta)	
90	Wire controlling 90° position.	
A-90	Wire controlling 90° position of "A" rear home signal.	
B-90	Wire controlling 90° position of "B" rear home signal.	
93	Control wire for advance block signal (Clearing Wire)	
94	Wire between slot and circuit breaker on home signal.	
95	Control wire for S.T. relay in Int. Sta. between point on poly-phase relay and S.T. relay coil.	
96	Control Wire for '96' Relay between Control Block and "96" Relay.	
100	50 Volt - A.C. Common.	
101	50 Volt - A.C. Energy.	
109	169 Volt A.C. Energy.	
110	110 Volt D.C. Common.	

No	Description	Revision, 2 Date, 12-6-27
M-110	110 Volt D.C. Common from power switch-board to operating switch board.	
M-111	110 Volt D.C. Energy from power switch-board to operating switch board.	
BM-110	110 Volt D.C. Common from battery to power-switch board.	
BM-111	110 Volt D.C. Energy from battery to power-switch board.	
111	110 Volt D.C. Energy	
120	12 Volt ac. common	
121	12 Volt ac. energy	
163	Advance signal repeater wire.	
200	Common - Low voltage D.C. - Storage Battery.	
201	Energy - Low voltage D.C. Storage Battery.	
202	2 Volt D.C. common from power switch-board to telegraph sounders.	
B-202	2 Volt D.C. common from battery to power switch-board for telegraph sounders.	
203	2 Volt D.C. energy from power-switch-board to telegraph sounders.	
B-203	2 Volt D.C. energy from battery to power switch-board for telegraph sounders.	
207	Preliminary indicator bell wire (Seperate bell)	
263	Home signal repeater wire.	
300	Common - Low voltage A.C.	
301	Energy - Low voltage A.C.	

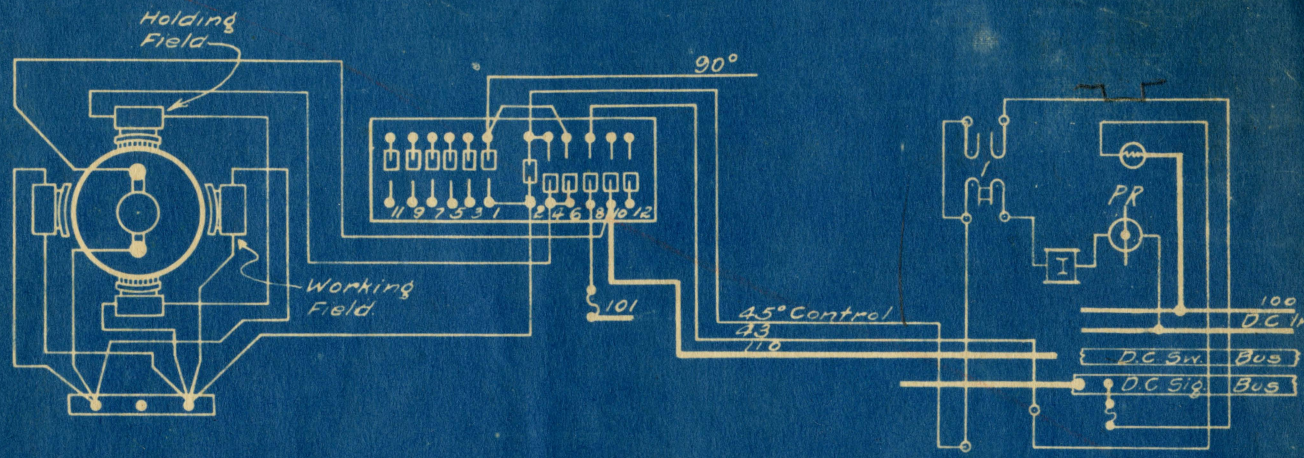
No	Description	Revision Date
307	Wire between switch lock coil and circuit controller on switch indicator.	
308	Wire between armature point on S.T. relay and circuit controller of switch indicator	
309	Switch indicator wire between switch indicator and S.T. relay.	
365	Wire between back contact on S.T. relay and front contact of switch indicator.	
366	Wire between contact spring on switch instrument in Int. Sta. and front contact of switch indicator.	
367	Wire between contact spring on switch instrument coils in Int. Sta. and contact spring on switch lock at switch.	
400	Dry cell common. Outlying switch circuits.	
401	Dry cell energy. " " "	
500	Common - High voltage D.C.	
501	Energy - High voltage D.C.	
601	Check lock wire between check lock lever and preliminary indicator.	
602	Check lock wire between Int. Sta's.	
603	" " " " " "	
604	Check lock wire between check lock levers and preliminary indicator.	
700	55 Volt common for electric locks.	
701	55 Volt energy for electric locks.	

Zachary Gillihan
Digitally signed by Zachary Gillihan
DN: cn=Zachary Gillihan, o=ZCG US LLC, ou, email=Zachary.gillihan@zcgus.com, c=US
Date: 2024.08.14 20:42:36 -05'00'

No	Description.	Revision 2 Date. A-30-25
800	Common 55 Volt A.C for 95° Relay - G.C.T.	
801	Energy 55 Volt A.C. for 95° Relay - G.C.T.	
1110	110 Volt D.C. Common to G.C. Term. Intercommunication System.	
1111	110 Volt D.C. Energy to G.C. Term. Intercommunication System.	
C	Common Wire.	
L	Wire controlling A.C and D.C. locks.	
N	Normal control wire.	
R	Reverse control wire.	
W	Wire from track relay to directors diagram in Inter. Sta.	
MG-1	Wire from power Switch-board to Motor Generator Field.	
MG-2	" " " " " " " " "	
MG-3	" " " " " " " " Armature.	
MG-4	" " " " " " " " "	
Ind-110	Wire from Operating Switch-board to Indication bus.	
PR-110	" " " " " " Individual Polarized Relay Circuit.	
PR-111	" " " " " " " " " "	

CC/54

Revision: 2 Date: 2-22-16



Standard Mod. 2A, D.C. Dwarf Signal — 45° Control Circuit.

DYNAMIC INDICATION.

Fields in Multiple.

Drawn by: G.C. Whitney. 2/22/16

Checked by: G.C.W. 2/22/16

Asst Engr.

Correct: [illegible] 2/22/16

Asst. Signal Engr E.D.

Correct:

Ass't Signal Engr E.D.

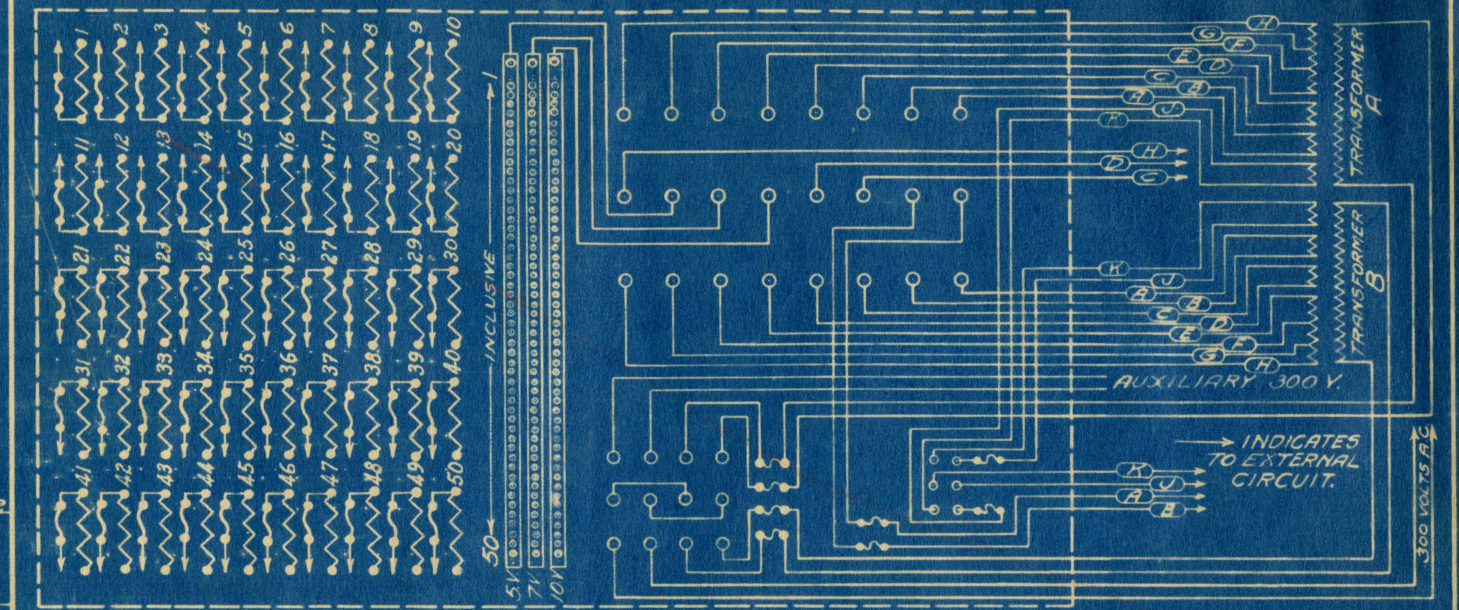
Approved N.S. Brevoort

Signal Engineer E.D.

CC/55

LETTER REFERS TO TRANSFORMER POST ONLY.

Revision ___ Date 10-10-12



WIRE SIZE	WIRE NO.	DESIGNATION	LETTER
#6	100	55 VOLT COMMON	A
#6	101	55 VOLT ENERGY	B
300,000Ω	20	RELAY LOCAL	C
300,000Ω	21	RELAY LOCAL	D
#0	26	TRACK COMMON	E
#0	26	" "	F
#0	26	" "	G
#0	25	TRACK WINDING	H
#6	701	LOCK BUS WIRE	J
#6	700	LOCK COMMON	K

Drawn by: G C Whitney 5/29/12

Checked by: [signature] Ass't Engr

Correct: [signature] Asst Sig. Engr E.D.

Correct: [signature] Asst Sig. Engr E.D.

GRAND CENTRAL TERMINAL.

A.C. DISTRIBUTION SW-BD—REAR VIEW

APPROVED: _____ SIGNAL ENGINEER E.D.

CC-58

Revision____ Date____

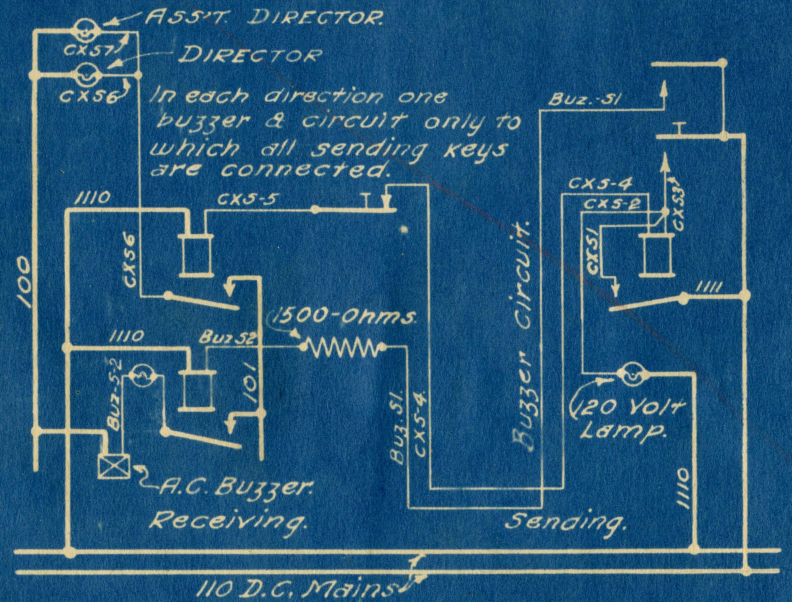
Drawn By: J.W.L. 12/4/12

Checked By: A.C.W. 12/7/12 10/24/12
Ass't. Eng'r.

Correct: _____
Ass't. Sig. Eng'r.

Correct: _____
Ass't. Sig. Eng'r.

Note:
W.E. Co's Type 114 relay.
Resistance - 1075 Ohms.



Scheme of Wire Numbering is as follows:
4 Characters will be used in each number.
1st Track Letter. A-B-C-D-E-F-G-H-I or J.
2nd Train Symbol.
X = N.Y.C. Train (Harlem Elec.)
Y = New Haven Train.
Z = N.Y.C. Train (Hudson Elec.)
ZE = N.Y.C. Engine.
SH = Shop Train.
YE = New Haven Traffic.
3rd. Direction of Traffic.
N = North
S = South.
4th Wire No. in Circuit.
1110 = 110 V. Lighting Common.
1111 = 110 V. " Energy.
Characters 3 & 4 to be used in Buzzer Circuit.

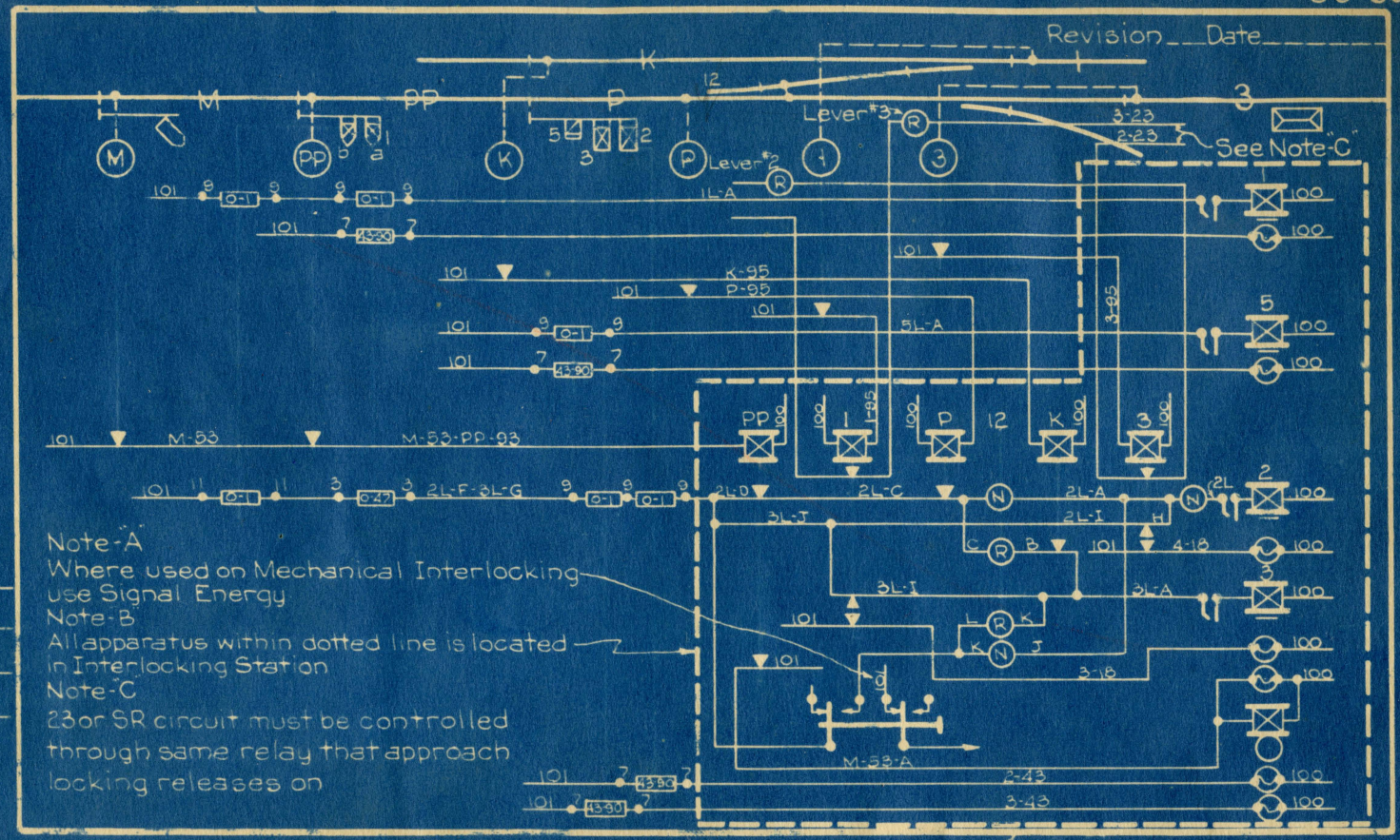
Grand Central Term. - Intercommunication Circuits.

Approved: _____
Signal Engineer.

Standard Approach Locking Circuits

Supersedes CC-65-Dec 11-12

CC-65



Drawn by D.M.S. 4-21-20

Checked by

Correct

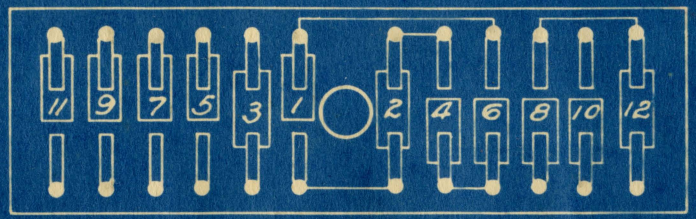
Correct

Approved

Signal Engr. E.D.

CC/66

Revision: 1 Date: 11-4-21



1. Snaps in at 45° out at 90°
2. " out " 45°
3. Made only at 0°
4. Drags in at 45°
5.
6. Drags in at 90°
7.
8. Made 43° to 90°
9.
10. Made 5° to 0°
11.
12. Made 1° to 0°

Drawn by: G.S. Whitney 3/18/22

Checked by:

Asst Engr

Correct: Louis Johnson 4/11/22
Asst Signal Engr E.D.

Correct:

Asst Signal Engr E.D.

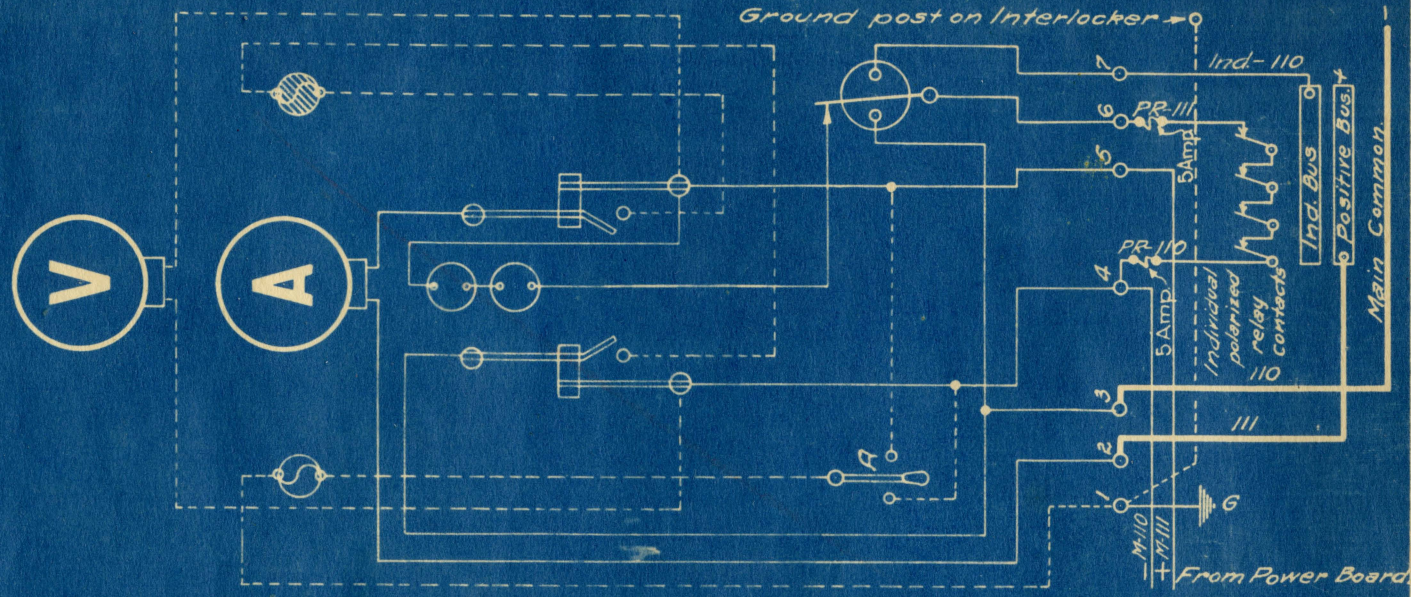
Mod. 2A, D.C. Dwarf Signal.

CIRCUIT-BREAKER OPERATION.

Approved: J.T. Broad
Signal Engineer E.D.

CC/68

Revision: 6 Date: 3-2-28



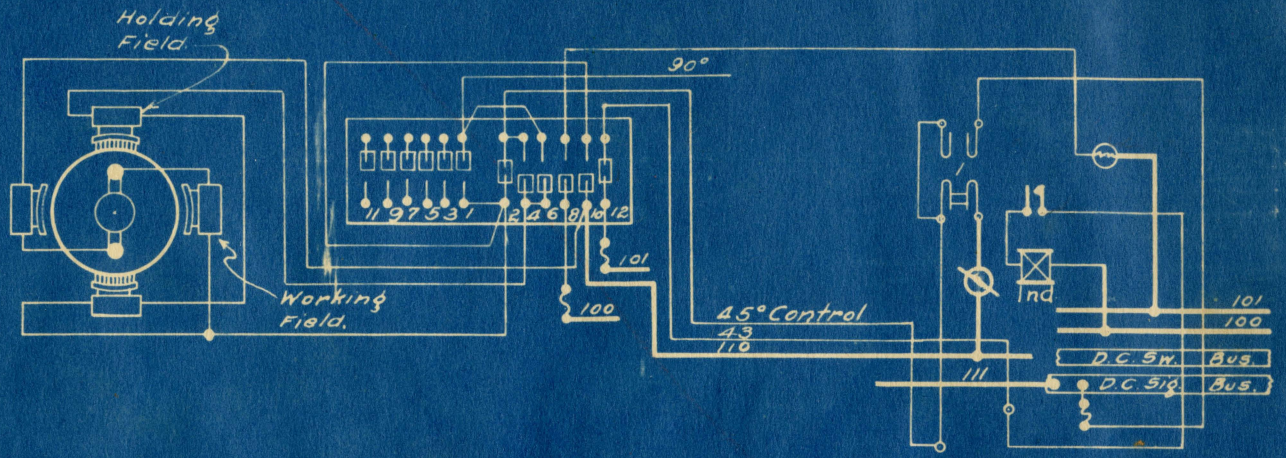
To test for ground: Press switch A to right or left. If lamp lights when pressed to the right it shows that negative wire is grounded. If lamp lights when pressed to the left it shows that positive wire is grounded.

N.Y.C.R.R. Multiple Unit Type Machine. —Operating Switch-Board.

Approved: _____
Signal Engineer E.D.

Drawn by: [illegible] 3/15/12
Checked by: [illegible]
Asst Eng'r.
Correct: [illegible] 9/X/11
Asst Signal Engr E.D.
Correct: [illegible]
Asst Signal Engr E.D.

Revision ..... Date .....



Standard Mod 2A. D.C. Dwarf Signal — 45° Control Circuit.

A.C. INDICATION.

Fields in Series.

Drawn by: [illegible] 3/18/12

Checked by: [illegible]

Asst Engr.

Correct: [illegible]

Asst Signal Engr E.D.

Correct: [illegible]

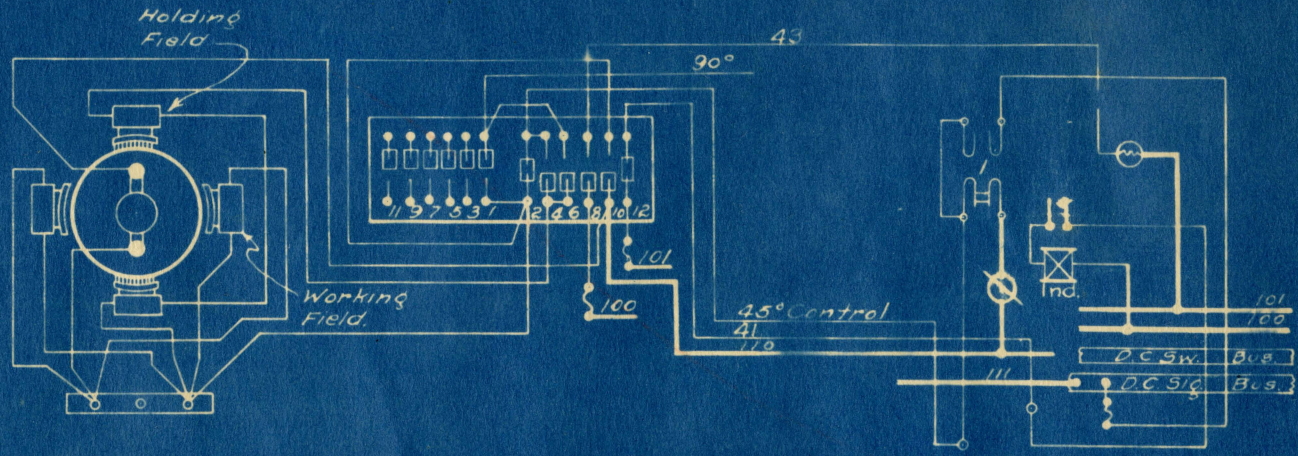
Asst Signal Engr E.D.

Approved: [illegible]

Signal Engineer E.D.

CC/70

Revision ... Date ...



Standard Mod. 2A. D.C. Dwarf Signal — 45° Control Circuit.

A.C. INDICATION.

Fields in Multiple

Approved: ... Signal Engineer E.D.

Drawn by G C Whitney 3/18/12

Checked by ...

Asst Engr.

Correct: Robt Johnson 3/21/12 Asst Signal Engr E.D.

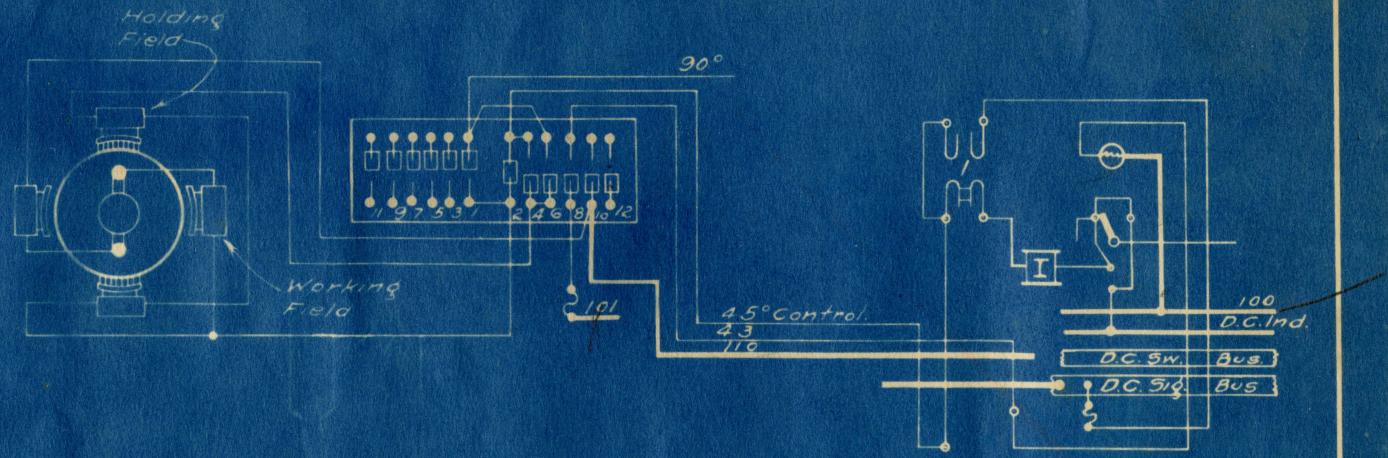
Correct: ...

Asst Signal Engr E.D.

G.C.W. 4/27/10

CC/71

Revision Date



Standard Mod. 2A, D.C. Dwarf Signal — 45° Control Circuit.

DYNAMIC INDICATION.

Fields in Series.

Drawn by G.C. Whitney 3/18/12

Checked by

Ass't Eng'r.

Correct: Roy S. Johnson 3/21/12
Ass't Signal Eng'r E.D.

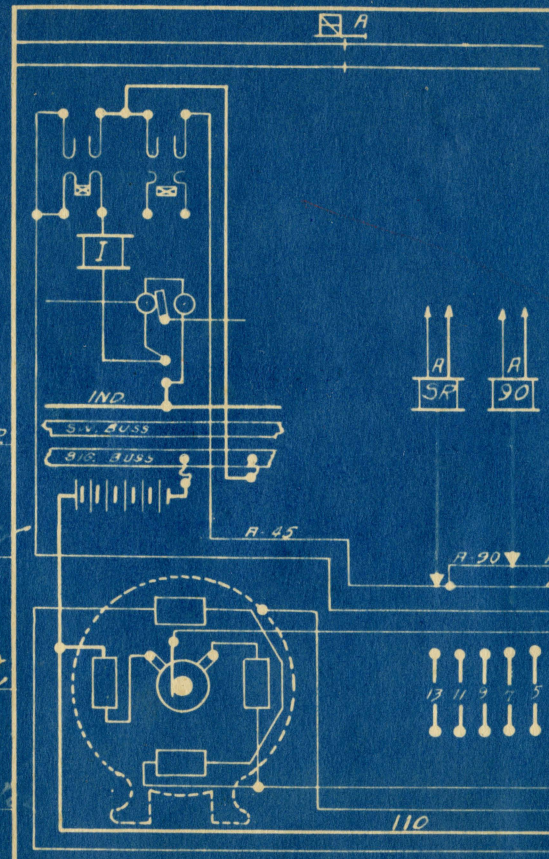
Correct:

Ass't Signal Eng'r E.D.

Approved H.S. Balliet
Signal Engineer E.D.

Revised Date

CC/73



CIRCUIT BREAKER OPERATION

CONTACT SPACE	GOING REVERSE CLOSES	GOING REVERSE OPENS	GOING NORMAL CLOSES	GOING NORMAL OPENS	
2		40°	10°		SNAPS OPEN & CLOSED
4	40°	85°	10°	10°	" " " " FOR SIG. STICK.
			40°	10°	FOR AUTOMATIC
6	37°	43°	43°	37°	DRAG 40° HOLD CLEAR 0° POS. OF BLADE
8	83°	88°	88°	83°	" 85° " " 45° " " "
10	127°			127°	" 130° " " 90° " " "
	37°	41°	41°	37°	" SNUB 0° POSITION OF BLADE
12	83°	88°	88°	83°	" " 45° " " "
	127°			127°	" " 90° " " "
1	85°	130°	85°	80°	SNAPS OPEN & CLOSED FOR STICK
			85°	40°	" " " " " AUTO.
14		43°	43°		
3					COMMON

STANDARD CIRCUIT MOD. "2A" 110 V. D.C. INTERLOCKING SIGNAL.

APPROVED

SIGNAL ENGINEER E.D.

DRAWN BY

A. H. Garvey 3/21/12

CHECKED BY

H. M. Trigg

ASS'T. ENG'R. E.D.

CORRECT:

Robt. C. Johnston 3/23/12

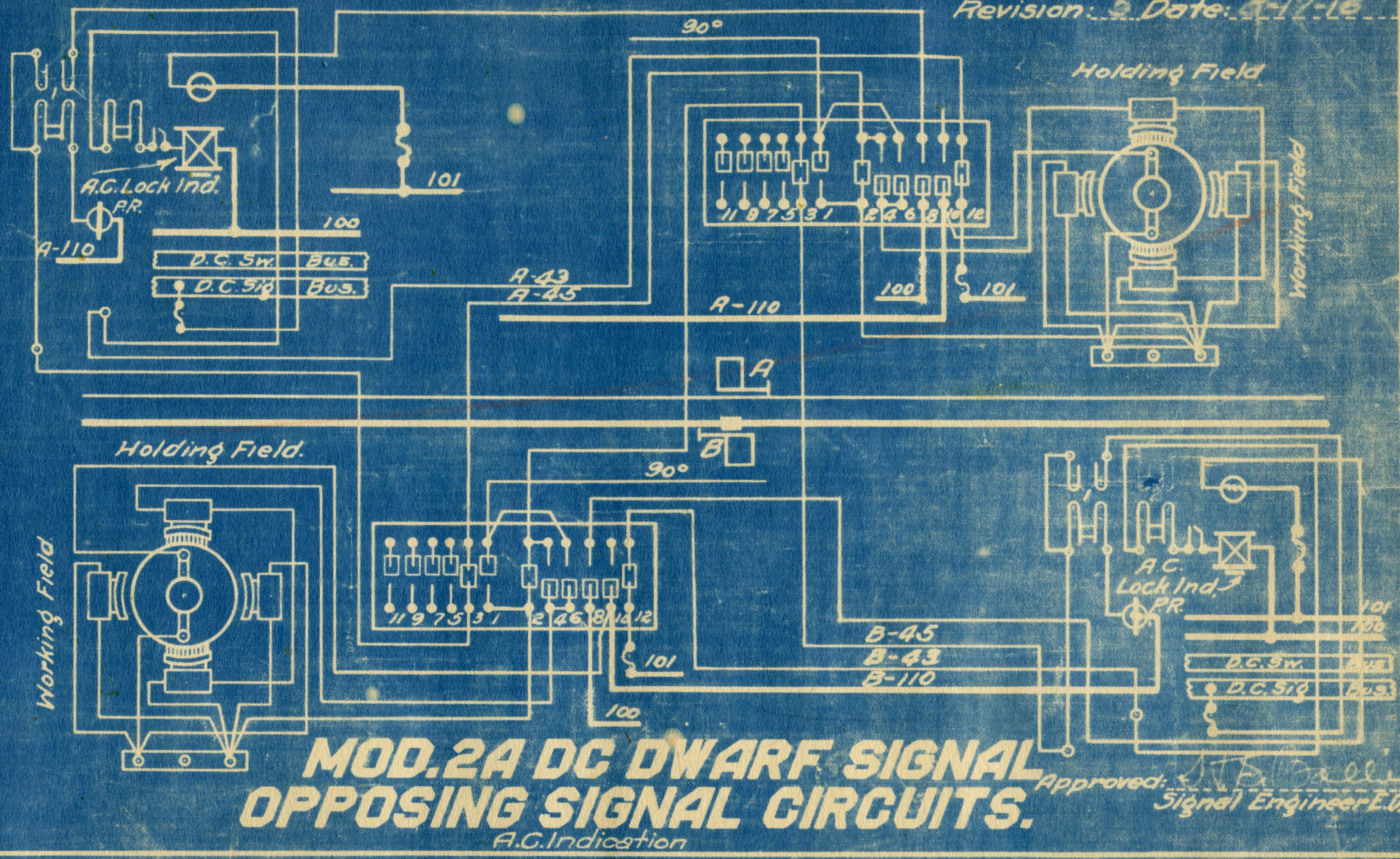
A'S'S'T SIG. ENG'R. E.D.

CORRECT.

ASS'T. SIG. ENG'R. E.D.

CC/74

Revision: 5 Date: 6-17-16



MOD. 2A DC DWARF SIGNAL OPPOSING SIGNAL CIRCUITS.

A.C. Indication

Drawn by: G.C. Whitney

Checked by: [illegible]
Asst Engr.

Correct: Robt. Johnson 9/21/16
Asst Signal Eng'r E.D.

Correct: [illegible]
Asst Signal Engr E.D.

Approved: [illegible]
Signal Engineer E.D.

JEW 9/17/16 JEW 9/21/16.

CC-79.

Revision 1 Date 12-9-16

Drawn By: H.W.C. 12/4/16

Checked By: J.C.W. 12/7/16
Ass't. Eng'r.

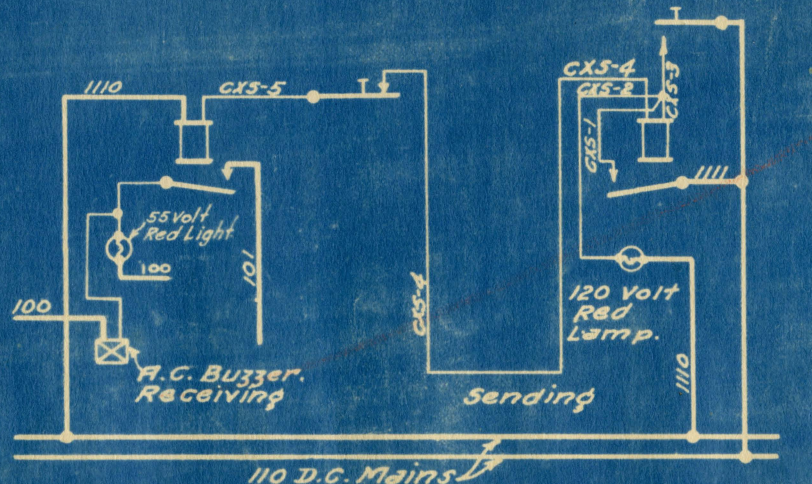
Correct: [signature]
Ass't. Sig. Eng'r.

Correct: [signature]
Ass't. Sig. Eng'r.

J.C.W. 12/8/16

Note:
W.E.Co's. Type 114 relay.
Resistance-1075 Ohms.

Note:
See-CC-58 for numbering scheme.

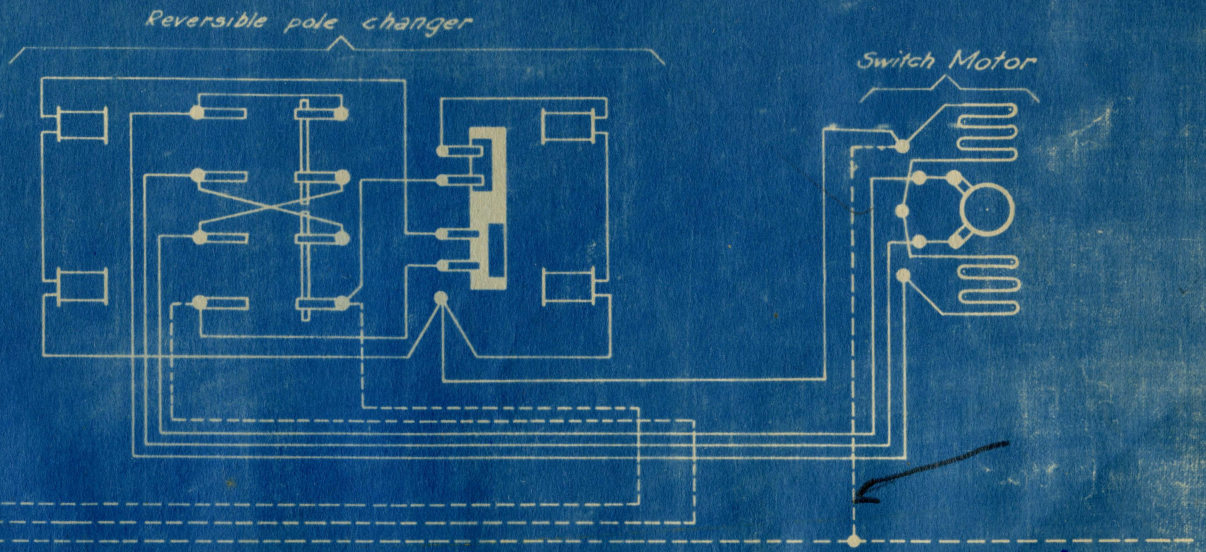


G.C. Term. - Intercommunication Cancelling Circuit.
Between Inter. Sta's. "B & F"

Approved: [signature]
Signal Engineer.

CC-80

Revision 1 Date 1-13-13.



Interior wiring for Model 4-A Switch Machine with separate contacts for each pair of polechanger magnets

Designed by: G.R.S.Co. 5/29/12

Traced by: A.M.G. 1/3/13

Checked by: [illegible] 1/26/13

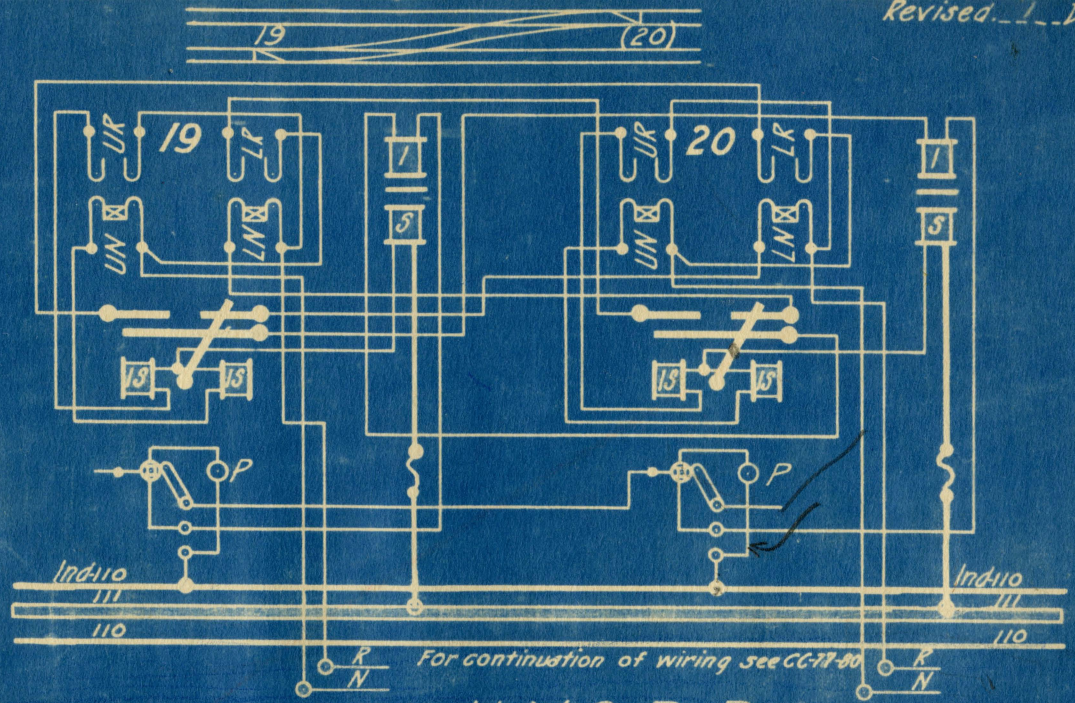
Correct: [illegible]

Correct: [illegible] 1/2/13

Approved: [illegible]
Signal Engineer.

CC-81

Revised 1 Date 3-1-[illegible]



N.Y.C.R.R.

Signal Department - Electric Div.

SWITCH LEVERS.-CROSS WIRING.

Approved: [illegible]
Signal Engineer. E.D.

Drawn By: H.W.L. 2/5/13

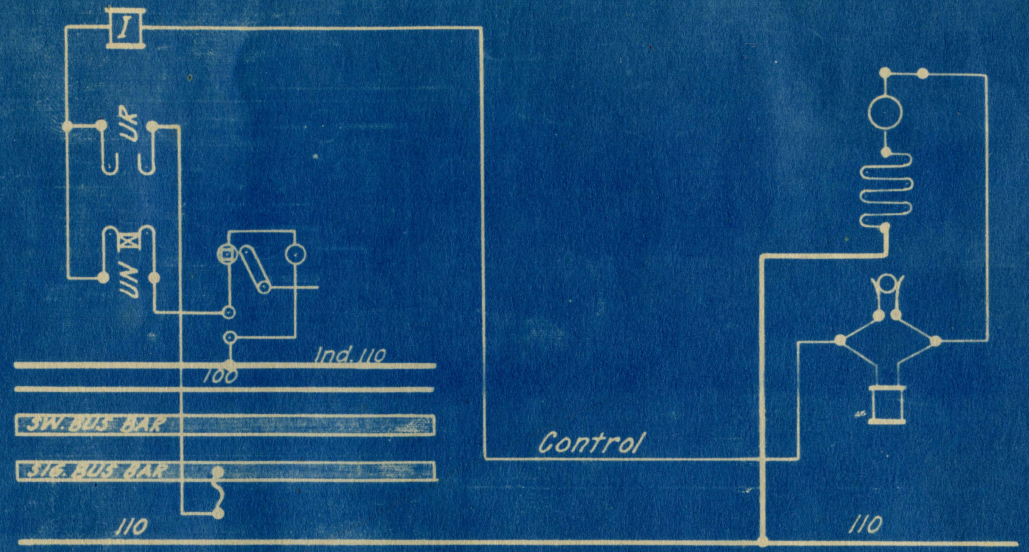
Checked By: [illegible] 2/5/13

Correct: [illegible]

Correct: [illegible] 2/[illegible]/13

CC-82

Revised 1 Date



GRAND CENTRAL TERMINAL
Signal Department
ONE ARM MOTOR DWARF

Designed By: G.C.W. 2/5/13

Drawn By: G.C.W. 2/5/13

Checked By: G.C.W. 2/5/13

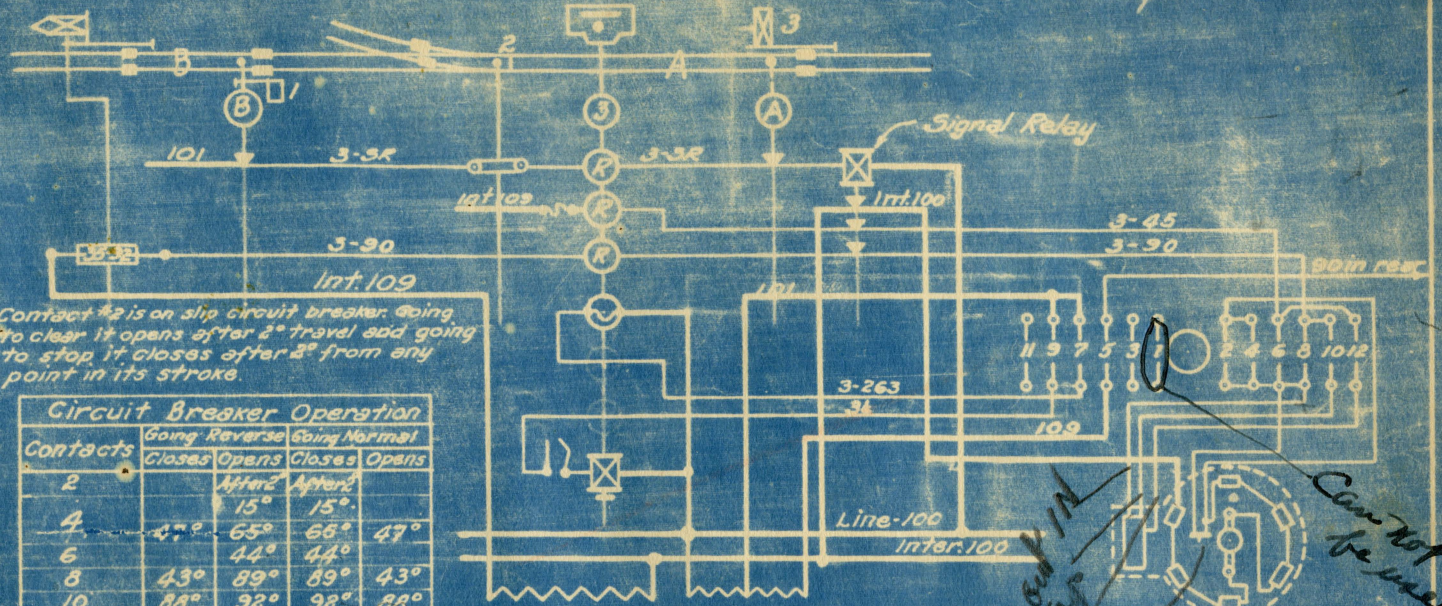
Correct: [illegible] 2/11/13

Correct: [illegible] 3/4/13

Approved: [illegible]
Signal Engineer E.D.

CC-83

Revision 3 Date 4-1-24



Contact #2 is on slip circuit breaker. Going to clear it opens after 2° travel and going to stop it closes after 2° from any point in its stroke.

Circuit Breaker Operation

Contacts	Going Reverse		Going Normal	
	Closes	Opens	Closes	Opens
2		After 2°	After 2°	
		15°	15°	
4	47°	65°	66°	47°
6		44°	44°	
8	43°	89°	89°	43°
10	88°	92°	98°	88°
12	43°	47°	47°	43°
1				
3				
5	35°	92°	92°	35°
7	43°	92°	92°	43°
9		1°	1°	
11				

N.Y.C.R.R.
Signal Dept. Electric Div.
Standard 2A-A.C.,
Interlocking Signal Wiring.

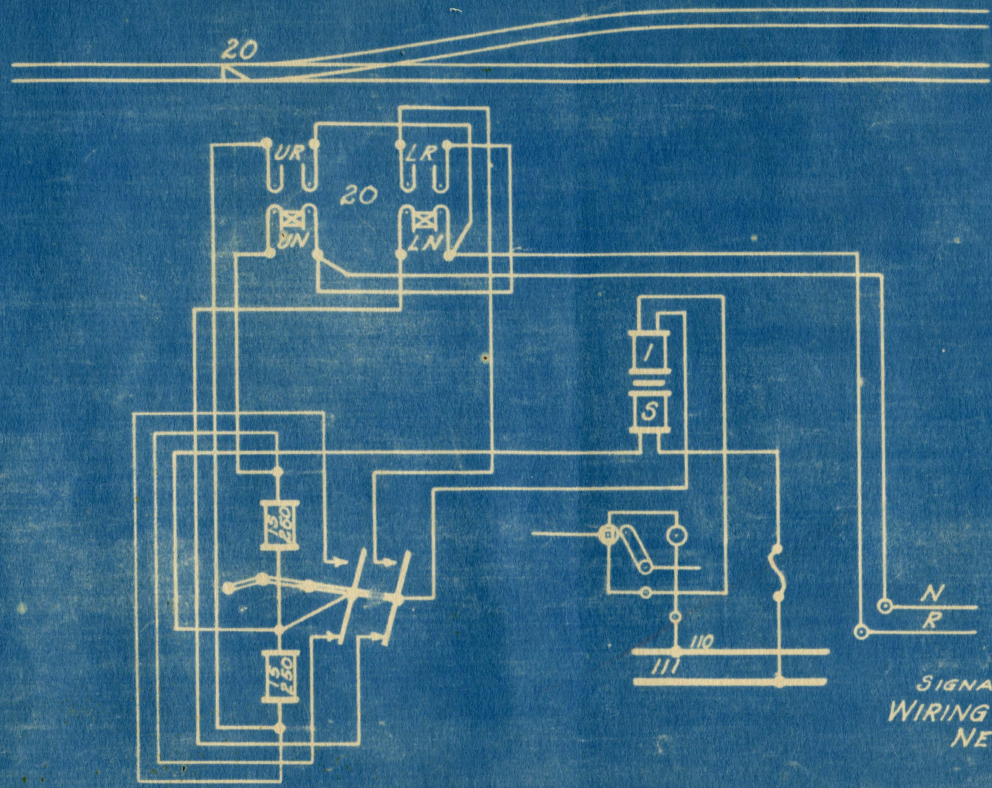
Approved: M. S. Bassett
Signal Engineer.

Can not be used

Drawn By: H.W.L. 4/26/18
Checked By: JEW 4/28/18
Correct: [illegible]
Correct: [illegible] 4/28/18
JEW 12/9/16

CC-84

Revision: 3 Date: 10-21-13



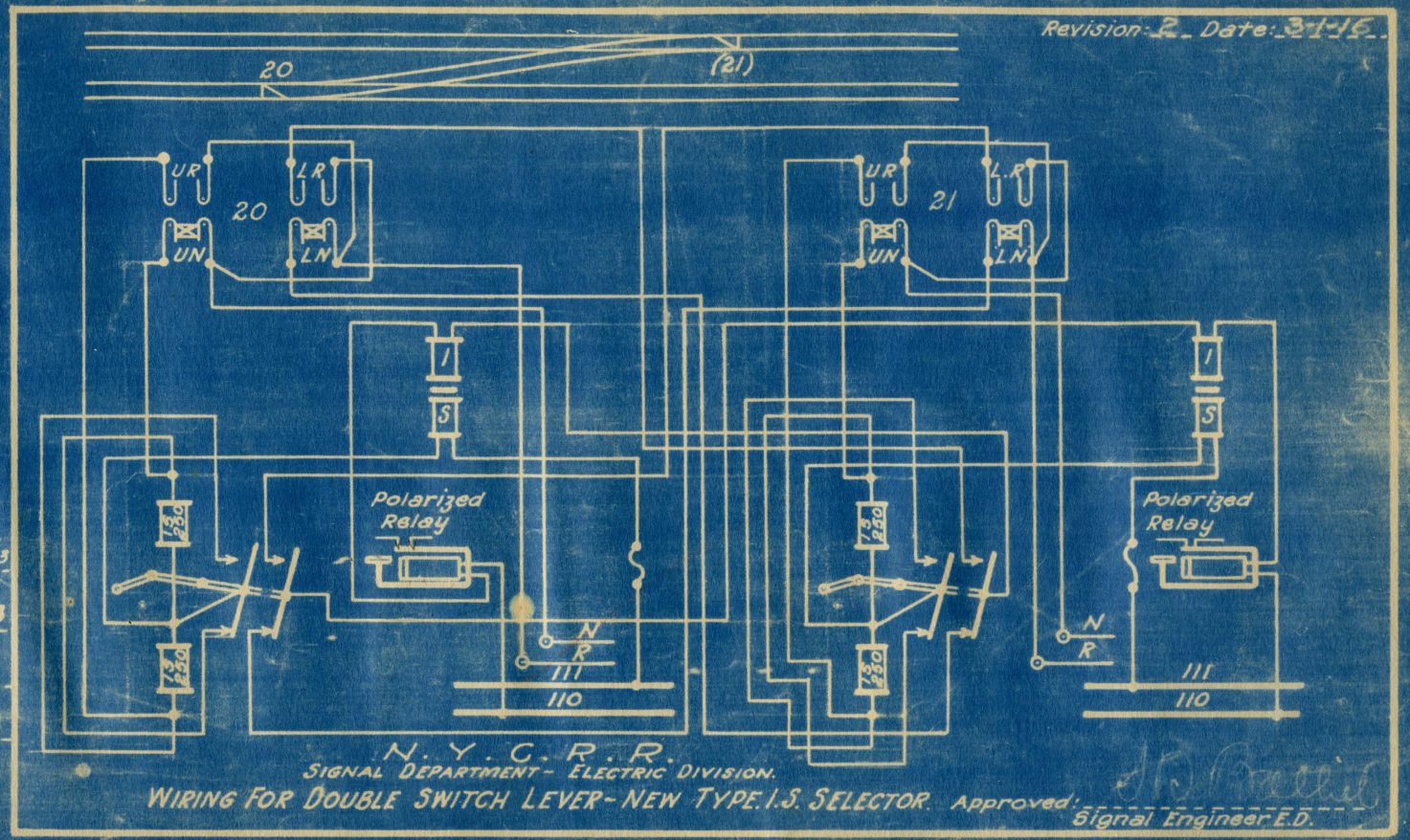
Drawn By: N. W. L. 4/17/13
Checked By: GCW 4/19/13
Corrected: RC 4/19/13
Correct: WL 7/29/13

N. Y. C. R. R.
SIGNAL DEPARTMENT - ELECTRIC DIV.
WIRING FOR SINGLE SWITCH LEVER.
NEW TYPE - I.S. SELECTOR.

Approved: J. S. Reed
Signal Engineer E.D.

C.C-85

Revision: 2 Date: 3-1-46



Drawn By: H.W.B. 4/17/13

Checked By: G.C.W. 4/18/13

Corrected: 4/24/13

Correct: [illegible] 7/29/13

N.Y.C.R.R.

SIGNAL DEPARTMENT - ELECTRIC DIVISION.

WIRING FOR DOUBLE SWITCH LEVER - NEW TYPE I.S. SELECTOR. Approved: [illegible]

Signal Engineer E.D.

WIRING FOR OPERATING SWITCH BOARD WITH SEPARATE D.P. SWITCH.

CC/93

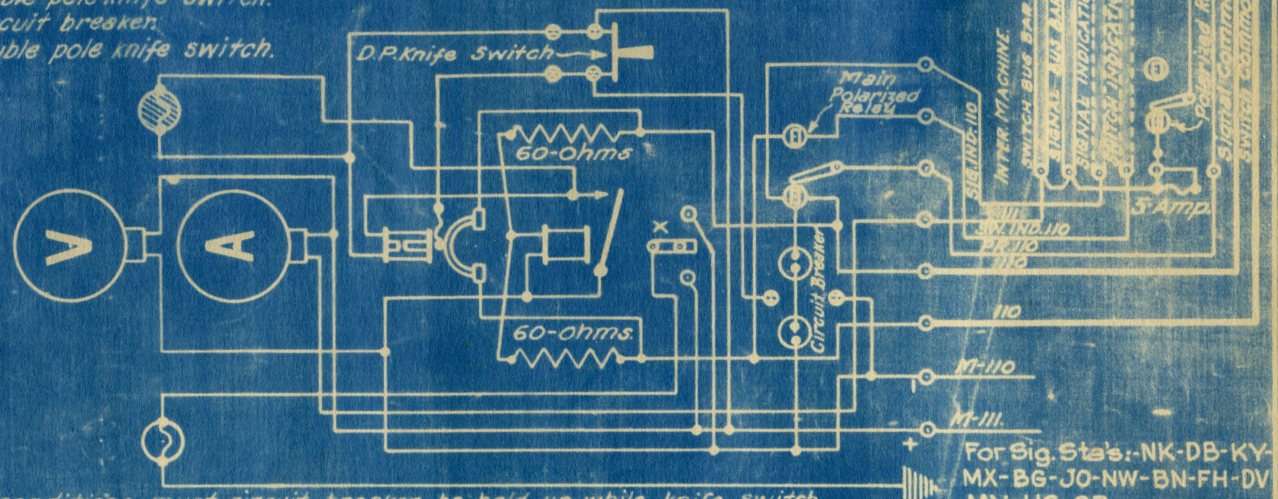
Revision: 3 Date: 2-8-19

Operation.

In case a red light appears on the operating board it must be relieved in the following manner.

1st Close all armatures on individual polarized relays, also see that armature on main polarized relay located on operating board is closed.
2nd Open double pole knife switch.
3rd Close circuit breaker.
4th Close double pole knife switch.

Note:
To test for ground throw switch X to right and if lamp lights it shows that + wire is grounded. If thrown to left and lamp lights — wire is grounded. If lamp fails to light it shows that main operating relay is open.



Note:
A- Under no conditions must circuit breaker be held up while knife switch is operated.
B- Do not allow levers to be operated while closing circuit breaker.
C- Do not close circuit breaker or manipulate knife switch while trains are moving over interlocking, on section protected by operating board affected.
D- If circuit breaker opens when knife switch is closed, remove the trouble before closing circuit breaker again.

For Sig. Sta's:- NK-DB-KY-MX-BG-JO-NW-BN-FH-DV MV-HS-CD.

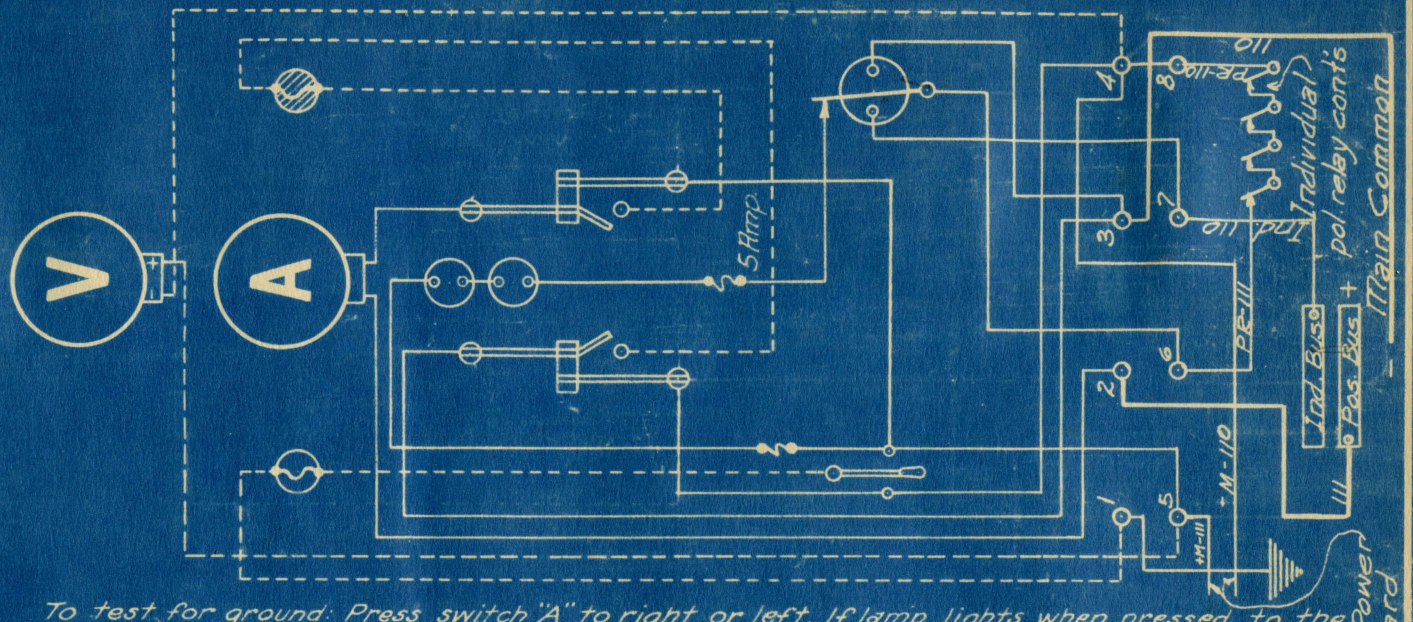
Drawn By: A.W.C. 5/29/13.
Checked By: J.C.W. 6/2/13
Correct. W.M. 6/3/13

N.Y.C.R.R.
SIGNAL DEPARTMENT.
MAY 29 1913.

Approved: _____
Signal Engineer.

CC-94

Revised: 3 Date: 11-27-16



To test for ground: Press switch "A" to right or left. If lamp lights when pressed to the right it shows that negative wire is grounded. If lamp lights when pressed to the left it shows that positive wire is grounded.

Modified Model-2-Machine. Operating Switch Board

N.Y.C.R.R.

For Sig.Sta's:- A-B-C-U-F-
VO-GD-OW-PF-CR-HM.

Approved: _____
Signal Engineer.

Drawn By: W.W.L. 7/19/13
11/10/14

Checked By: J.C.W. 7/19/13

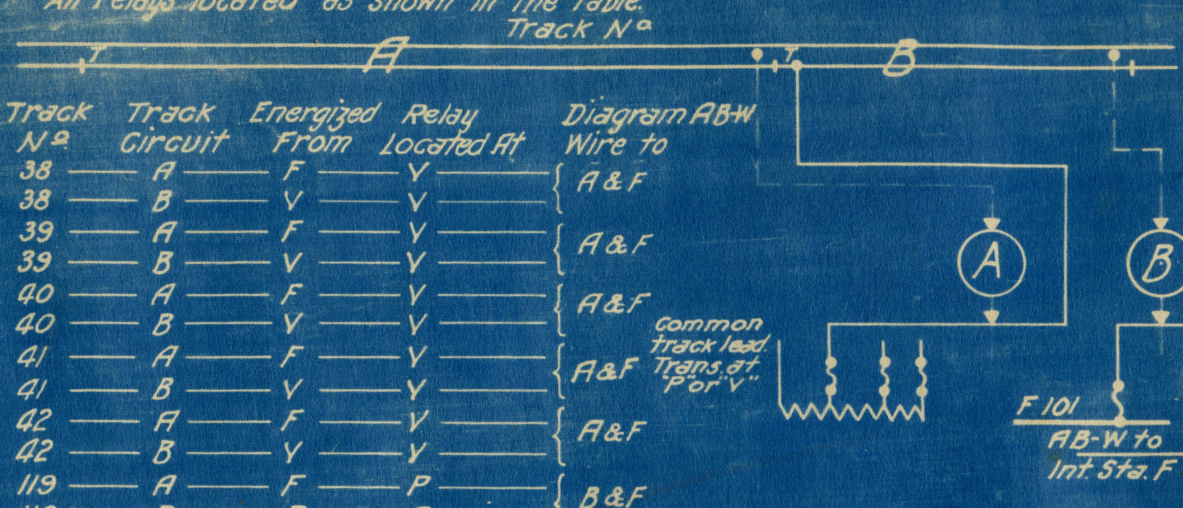
Correct: M.T. 7/19/13

J.C.W. 11/27/16

CC/97

All relays located as shown in the table.

Revision 0 Date: 9-6-13



Track No.	Track Circuit	Energized From	Relay Located At	Diagram AB-W Wire to
38	A	F	V	A & F
38	B	V	V	
39	A	F	V	A & F
39	B	V	V	
40	A	F	V	A & F
40	B	V	V	
41	A	F	V	A & F
41	B	V	V	
42	A	F	V	A & F
42	B	V	V	
119	A	F	P	B & F
119	B	P	P	
120	A	F	P	B & F
120	B	P	P	
122	A	F	P	B & F
122	B	P	P	
123	A	F	P	B & F
123	B	P	P	
125	A	F	P	B & F
125	B	P	P	

Designed By: G.C.W. & He. Ka

Drawn By: H.W.L. 9/6/13

Checked By: GCW 9/6/13

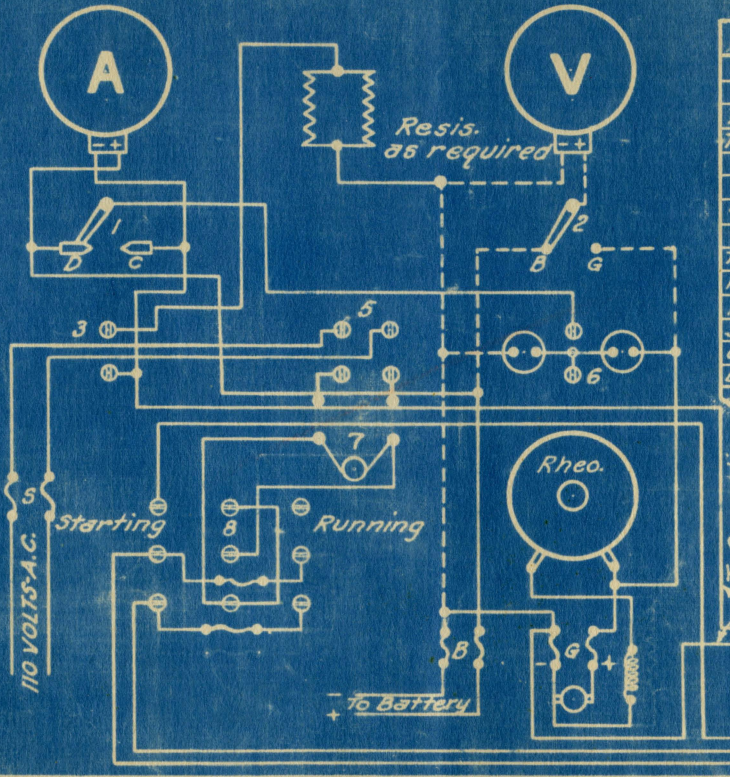
Correct: WM 9/6/13

Relayed Single Rail Track Circuits. Grand Central Terminal

Approved: _____ Ass't. Term. Mg'r.

CC-98

Revision 3 _ Date 1-17-24



MANIPULATION			
FUNCTION	THROW SWITCHES		
To Charge Battery	6 Up	8R	
To Serve Int. From Gen.	6-Up	8R	
To Measure Gen. Voltage	2-G		
" " Battery "	2-B		
" " Charging Current	1-C		
" " Battery Discharge	1-D		

To Start Motor: Put Switches 5 Up-7 Up-8L. After Motor Is Up To Speed, Move Switch 8 To The Right.

Note - 7 Low Voltage Circuit Breaker.

Switch 3 When Closed Puts Battery On Normal Discharge And Should Be Held Closed For 1 Minute Before Reading Voltage.

Switch 3 Should Not Be Closed While Charging Bat.

For Inter. Stas. VN, OW, PF, CR, CD

N.Y.C.R.R.
SIGNAL DEPT. ELECT. DIV.
POWER SWITCH BOARD WIRING DIAGRAM.

Note: For Motor Wiring See-PP-45.

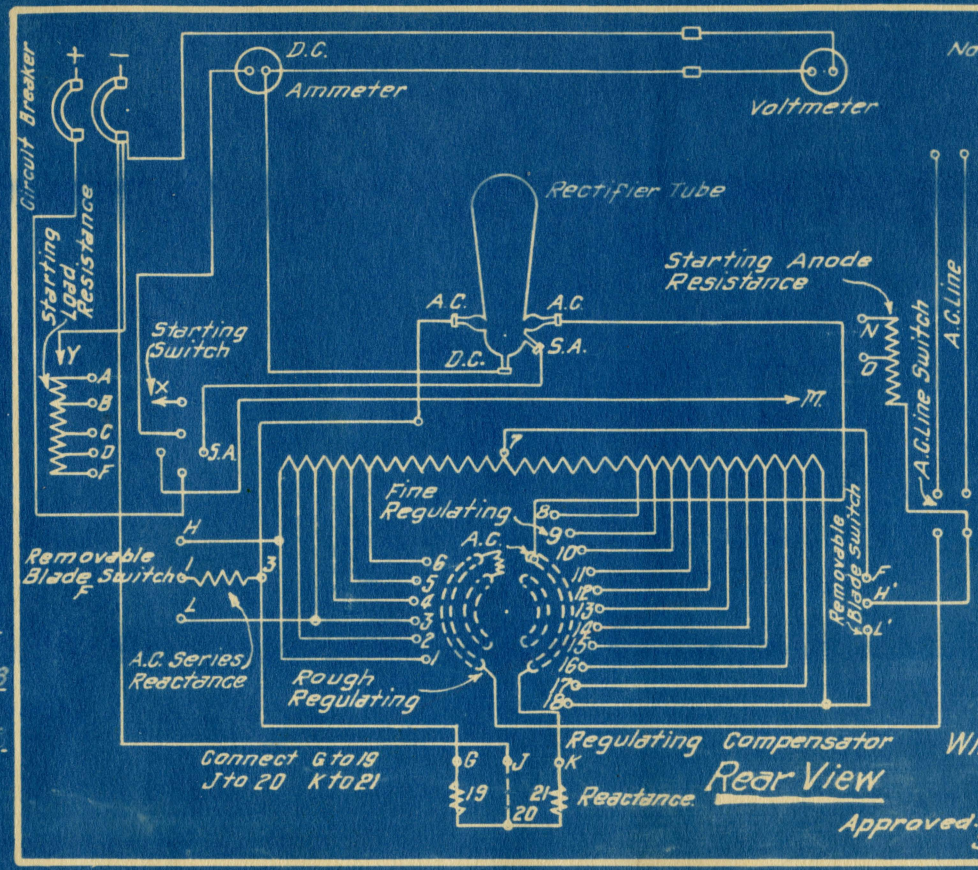
Approved: _____ Signal Engineer.

Drawn By: [illegible] 9/29/13
1946/13

Checked By: [illegible] 9/29/13

Correct: [illegible] 9/29/13

CC-99



Revision 1 Date 3-1-16

Note:
Drawn from General Electric Co's.
Drawing - DS-*P3050.

When Operated on 110 Volt-60 Cycle Circuit. Connect M to O on Starting Anode Resist.			
D.C. Volts.	Position of Rem. Bld. Sw.	Position of Rough Dial.	Connections of Starting Load Resist.
10-38	H-H1	1 or 2	Y to B X to C
35-55	H-H1	3	Y to C X to D
50-70	H-H1	4	Y to B X to D
60-85	H-H1	5	Y to A X to D
70-100	H-H1	6	Y to D X to E

When Operated on 220 Volt-60 Cycle Circuit. Connect M to N on Starting Anode Resist.			
D.C. Volts.	Position of Rem. Bld. Sw.	Position of Rough Dial.	Connections of Starting Load Resist.
20-40	L-L1	1 or 2	Y to C X to D
25-50	L-L1	3 or 4	Y to C X to D
35-75	L-L1	5 or 6	Y to B X to D
60-90	H-H1	1	Y to D X to E
85-120	H-H1	2	Y to C X to E
110-175	H-H1	3 or 4	Y to A X to E

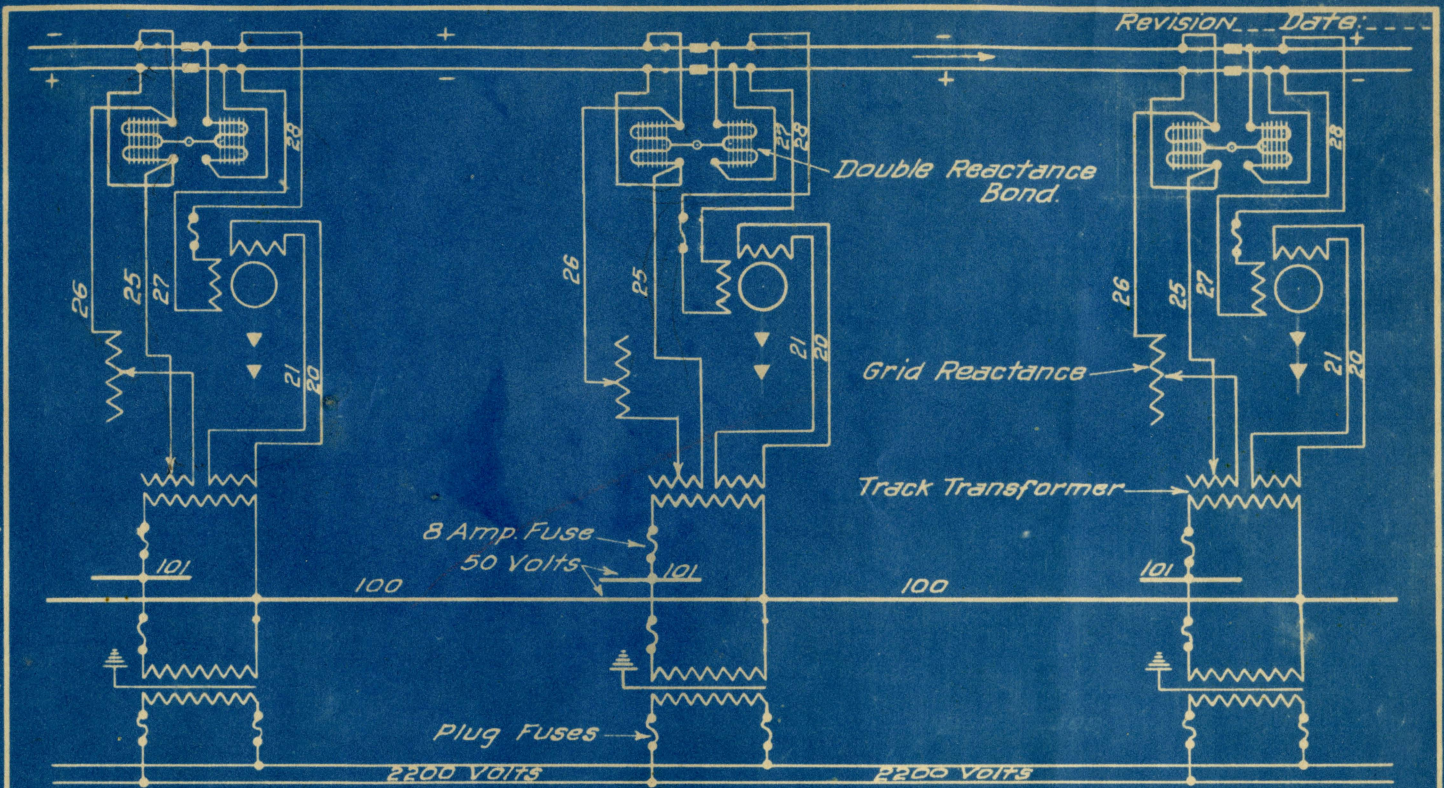
N.Y.C.R.R.
SIGNAL DEPT - ELECTRIC DIVISION
WIRING DIAGRAM FOR MERCURY ARC RECTIFIER.

Approved: J.B. Allied
Signal Engineer.

Drawn By: [illegible] 11/3/13
Checked By: JCW 11/6/13
Correct: [illegible]

CC-101

Revision Date:



A.C. DOUBLE RAIL TRACK CIRCUIT SHOWING POLARITY-SEPARATE TRACK TRANS.

Drawn By: A.C.W. 2/5/14

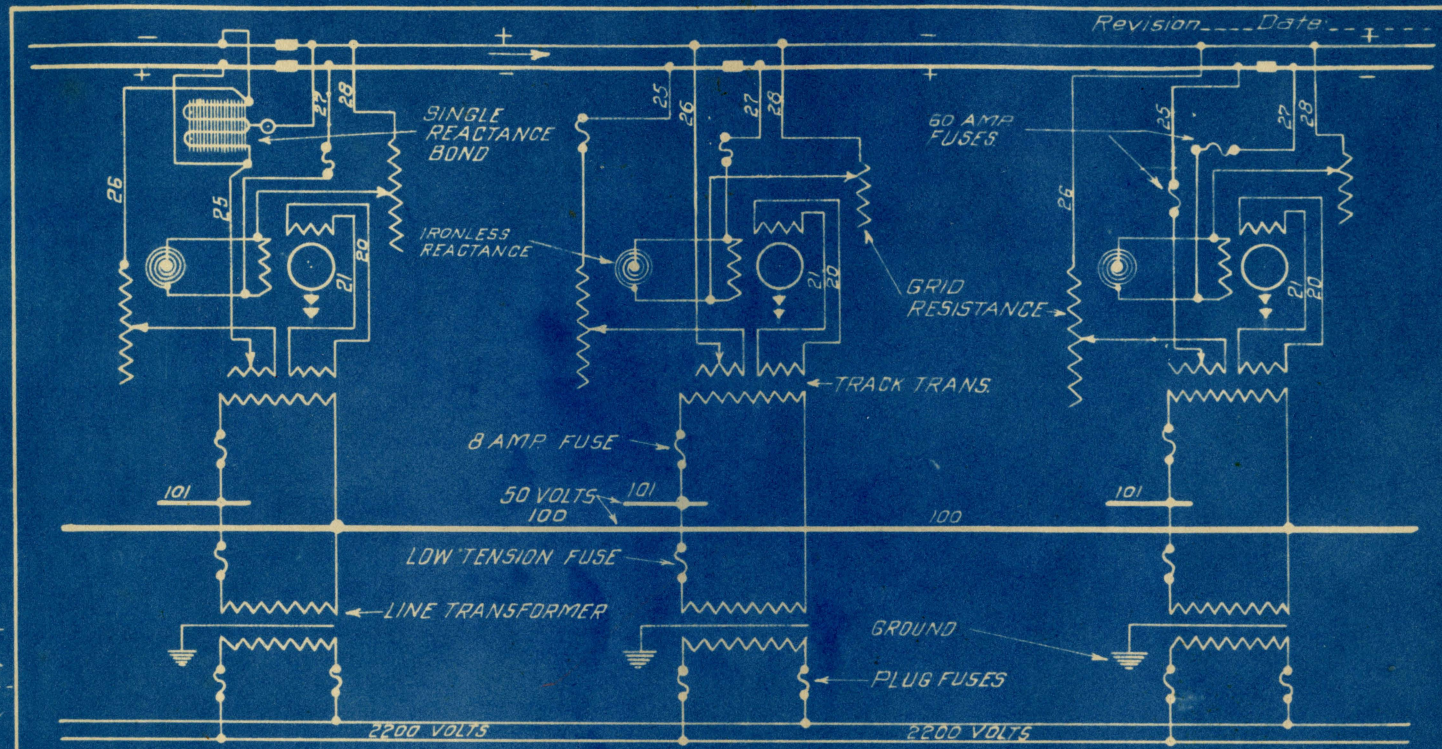
Checked By: [illegible] 2/6/14

Correct: [illegible] 2/6/14

Approved: _____ SIGNAL ENGINEER

CC-102

Revision ____ Date ____



A.C. SINGLE RAIL TRACK CIRCUIT SHOWING POLARITY-SEPARATE TRACK TRANS.

Approved: _____
SIGNAL ENGINEER

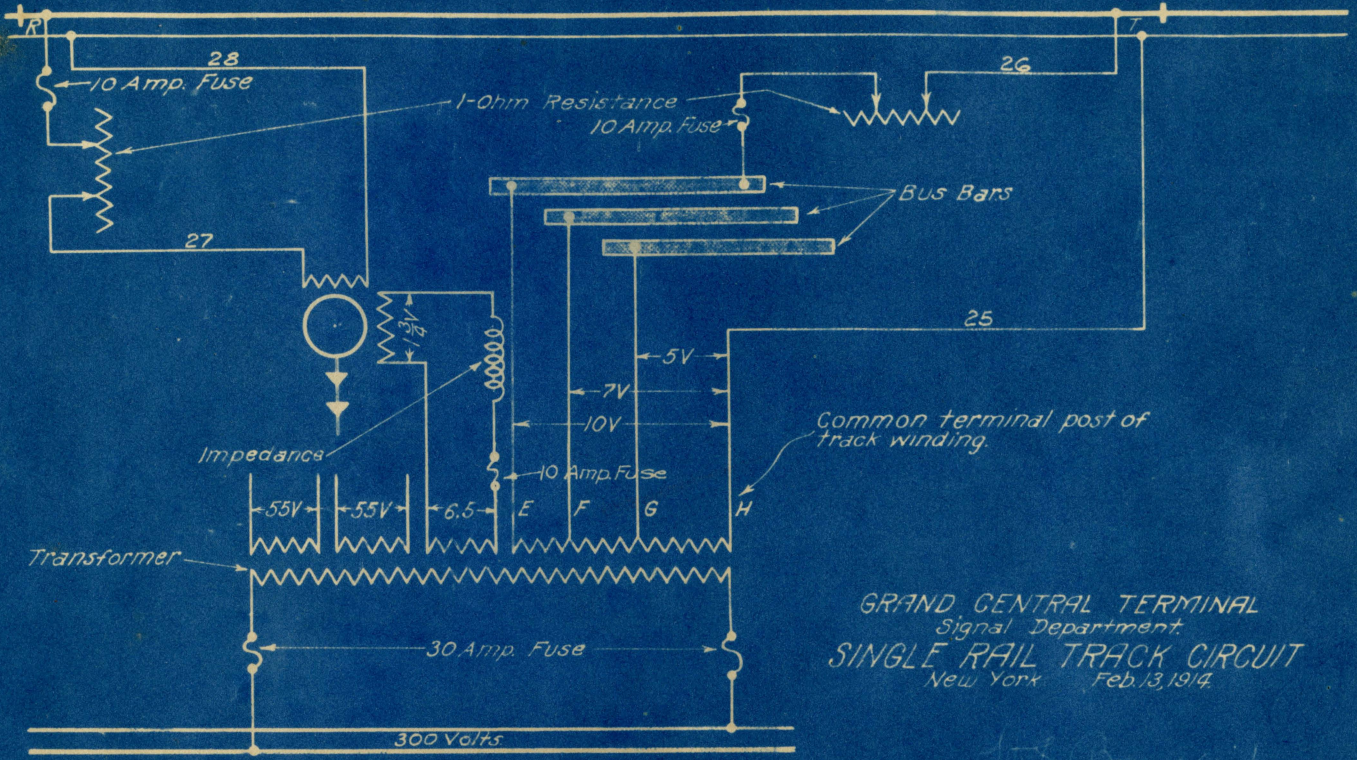
Drawn By: A. W. L. 2/4/14

Checked By: Drew 2/6/14

Corre... MM 2/6/14

CC-103

Revision: 1 Date: 2-3-26



Drawn By: A. W. b. 2/14

Checked By: F.D.C. 2/16/14

Correct: F.M. 2/16/14

GRAND CENTRAL TERMINAL
Signal Department
SINGLE RAIL TRACK CIRCUIT
New York Feb. 13, 1914

Approved: [signature]
Ass't Term. Mg'r.

FUSING OF STATION SIGNAL LIGHTS.

CC-104

Revision____ Date:_____

Fuse Number	Station Light	Fuse Number	Station Light	Fuse Number	Station Light
1	15	16	32	31	113
2	16	17	33	32	114
3	17	18	34		
4	18	19	35		
5	19	20	36		
6	20	21	37		
7	21	22	104		
8	23	23	105		
9	24	24	106		
10	25	25	107		
11	26	26	108		
12	27	27	109		
13	28	28	110		
14	29	29	111		
15	30	30	112		

Drawn By: _____ 3/19/14

Checked By: RCW 3/19/14

Cor: _____

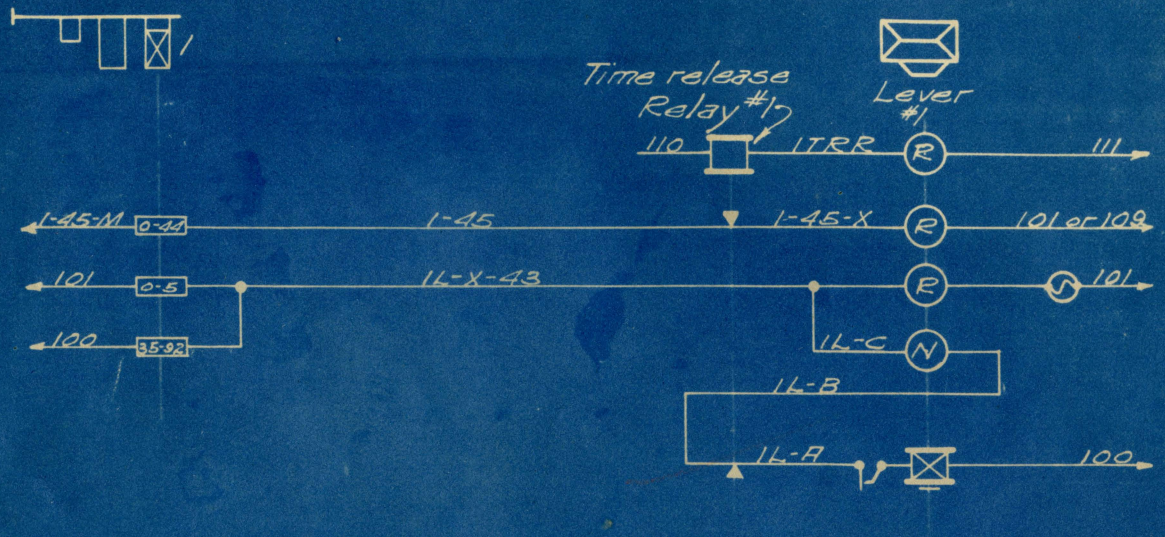
Sub. Inter. Sta. "Z"

Approved: _____

Assit. Term. Mgr.

Time Release Circuits CC/106

Revised__Date_____



Traced by D.III.S. 10/13/14

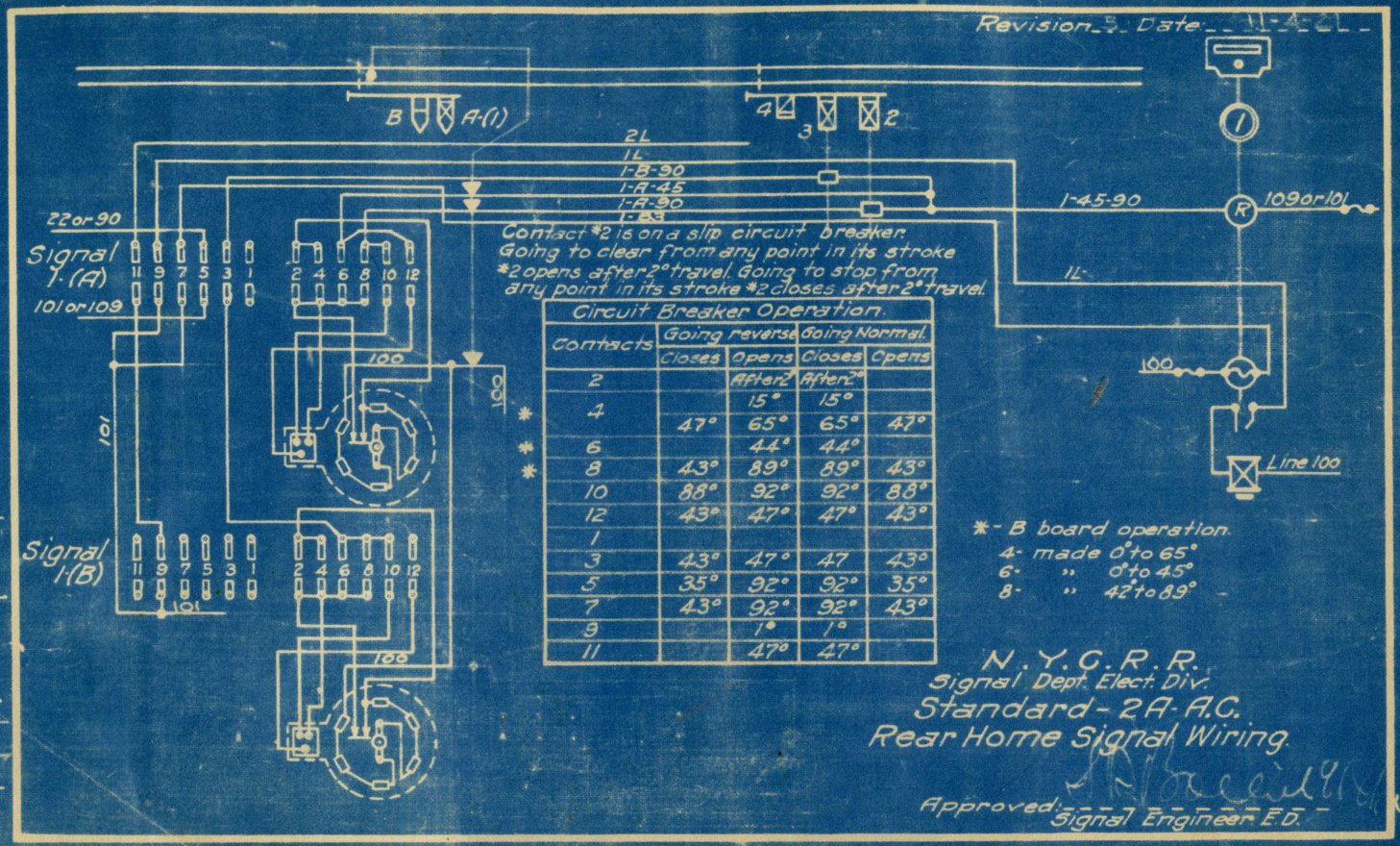
Checked by [illegible] 10/14

Correct [illegible] 10/17/14

Approved [illegible]
Signal Eng. E.D.

CC-107

Revision 5 Date 11-4-21



Contact *2 is on a slip circuit breaker.
Going to clear from any point in its stroke *2 opens after 2° travel. Going to stop from any point in its stroke *2 closes after 2° travel.

Circuit Breaker Operation.

Contacts	Going reverse		Going Normal.	
	Closes	Opens	Closes	Opens
2		After 2°	After 2°	
4	47°	15° 65°	15° 65°	47°
6		44°	44°	
8	43°	89°	89°	43°
10	88°	92°	92°	88°
12	43°	47°	47°	43°
1				
3	43°	47°	47	43°
5	35°	92°	92°	35°
7	43°	92°	92°	43°
9		1°	1°	
11		47°	47°	

*- B board operation.
4- made 0° to 65°
6- " 0° to 45°
8- " 42° to 89°

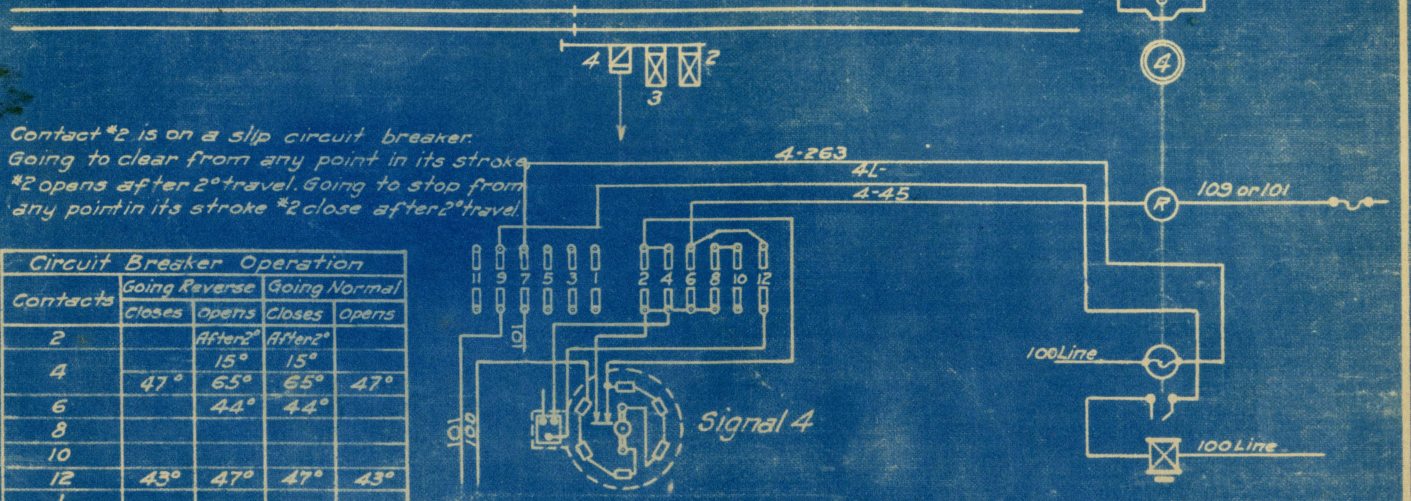
N. Y. C. R. R.
Signal Dept. Elect. Div.
Standard - 2A - A.C.
Rear Home Signal Wiring.

Approved: [illegible] 9/8/15
Signal Engineer E.D.

Drawn By: K. W. L. 9/1/15
Checked By: Dew 9/1/15
Correct: WM 9/3/15
Correct: E.B.S. 9/3/15
Correct: [illegible] 9/4/15
Dew 10/19/15

CC-108

Revision 4 Date: 11-4-21



Contact #2 is on a slip circuit breaker. Going to clear from any point in its stroke #2 opens after 2° travel. Going to stop from any point in its stroke #2 close after 2° travel.

Circuit Breaker Operation				
Contacts	Going Reverse		Going Normal	
	Closes	Opens	Closes	Opens
2		After 2°	After 2°	
4		15°	15°	
	47°	65°	65°	47°
6		44°	44°	
8				
10				
12	43°	47°	47°	43°
1				
3				
5				
7	43°	92°	92°	43°
9		1°	1°	

Drawn By: J.W.L. 9/1/15

Checked By: Jow 9/1/15

Correct: WM 9/2/15

Correct: EHS 9/3/15

Correct: WM 9/4/15

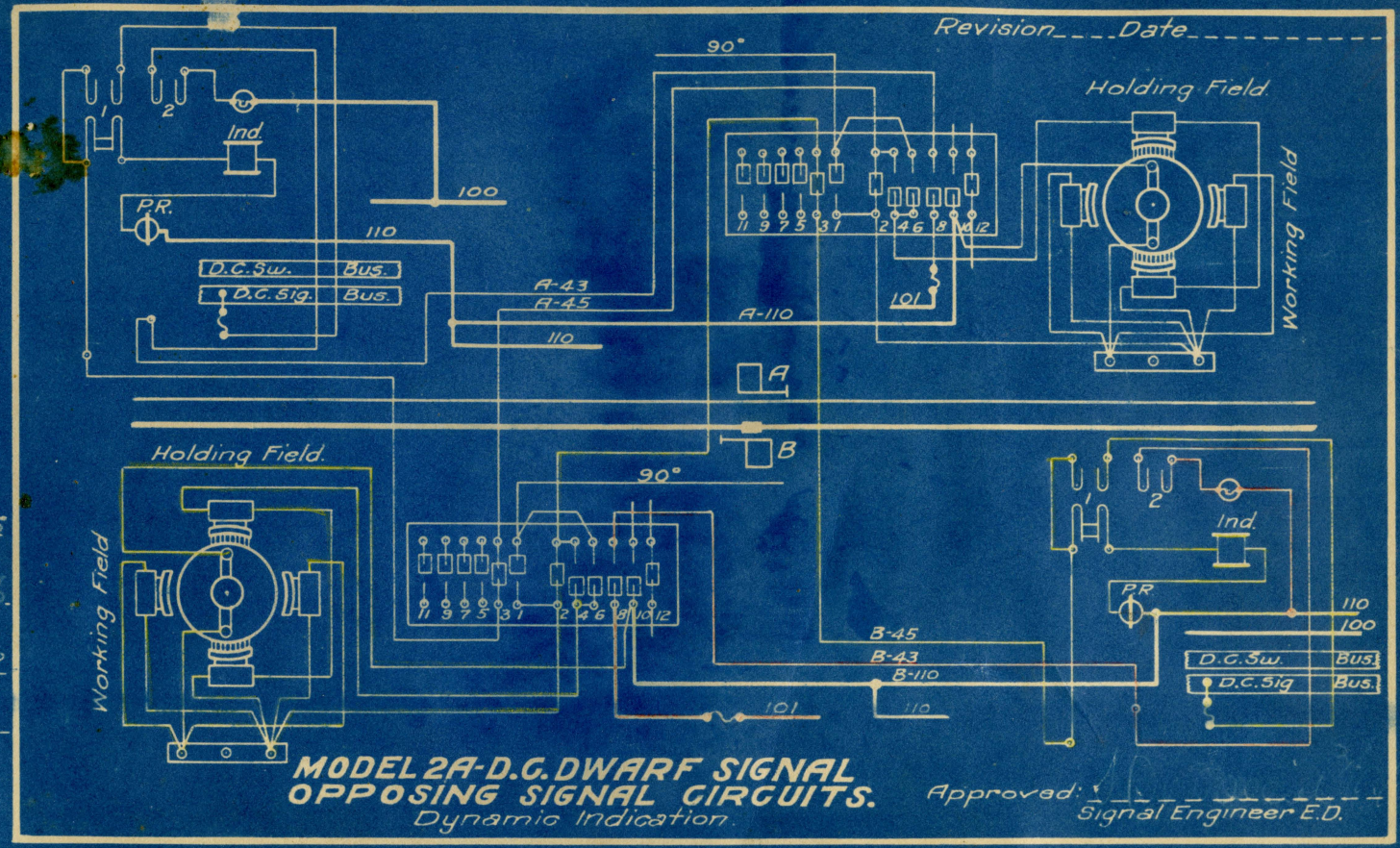
Jow 9/4/15

N.Y.C.R.R.
Signal Dept. Electric Div.
Standard 2A. A.C.
Non-Auto., Signal Wiring.

Approved: R.S. Needham 9/4/15
Signal Engineer. E.D.

CC-109.

Revision____Date_____



Drawn By: [illegible] 3/2/16

Checked By: [illegible] 3/2/16

Corrected [illegible] 3/4/16

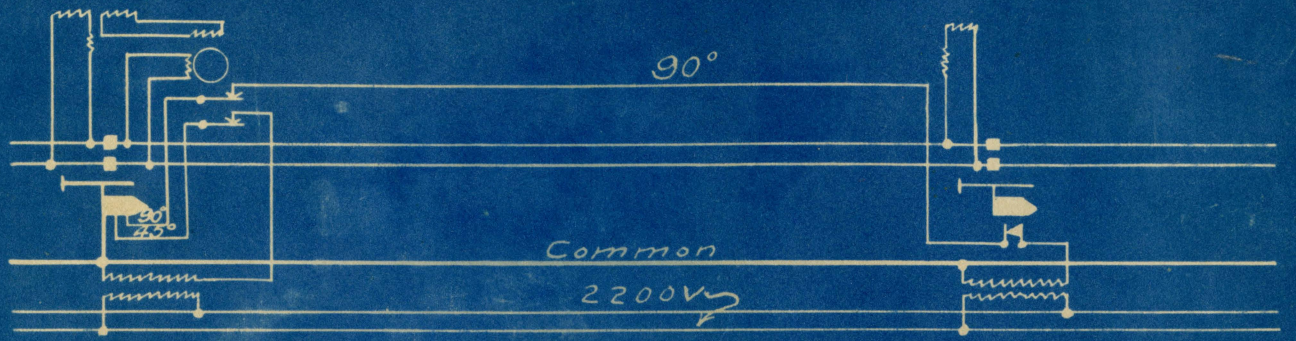
Corrected [illegible] 3/6/16

MODEL 2A-D.C. DWARF SIGNAL OPPOSING SIGNAL CIRCUITS.

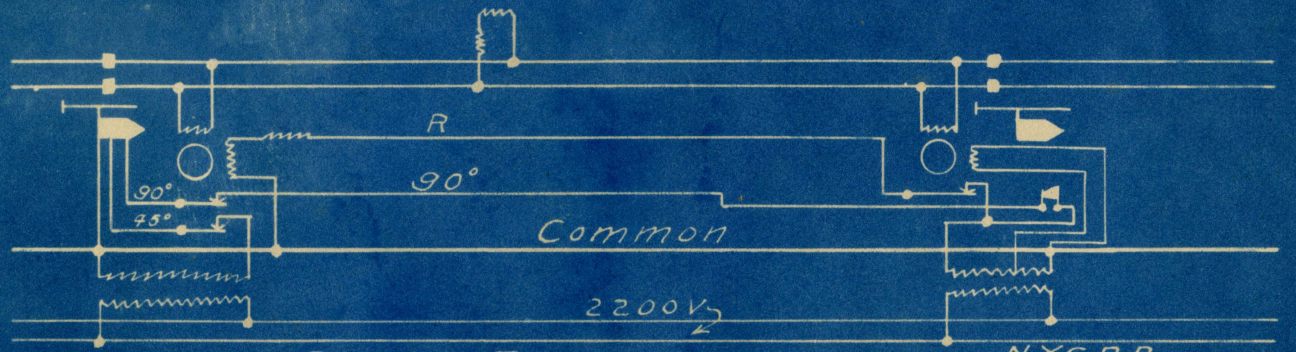
Dynamic Indication.

Approved: _____

Signal Engineer E.D.



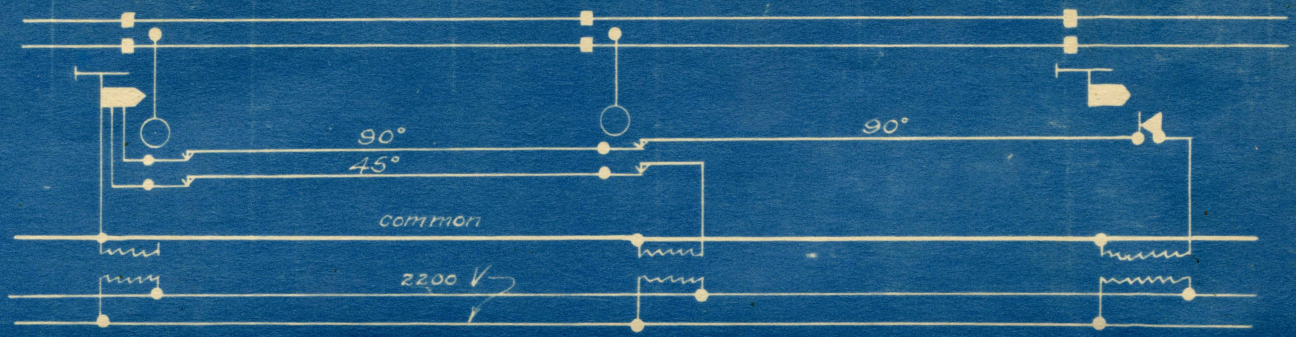
End Fed



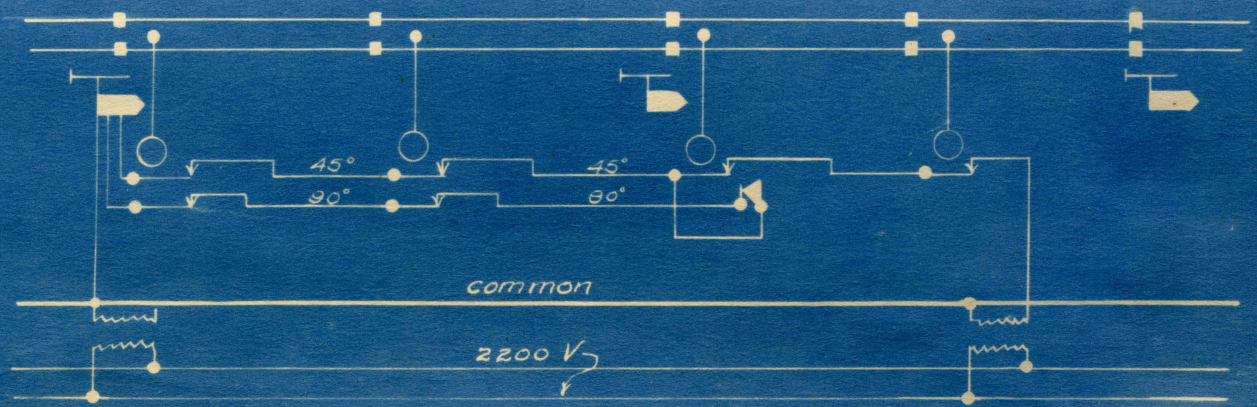
Center Fed

Drawn by: R.H.C.B.
Checked by: [illegible] 3/23/16
Correct: [illegible] 3/23/16

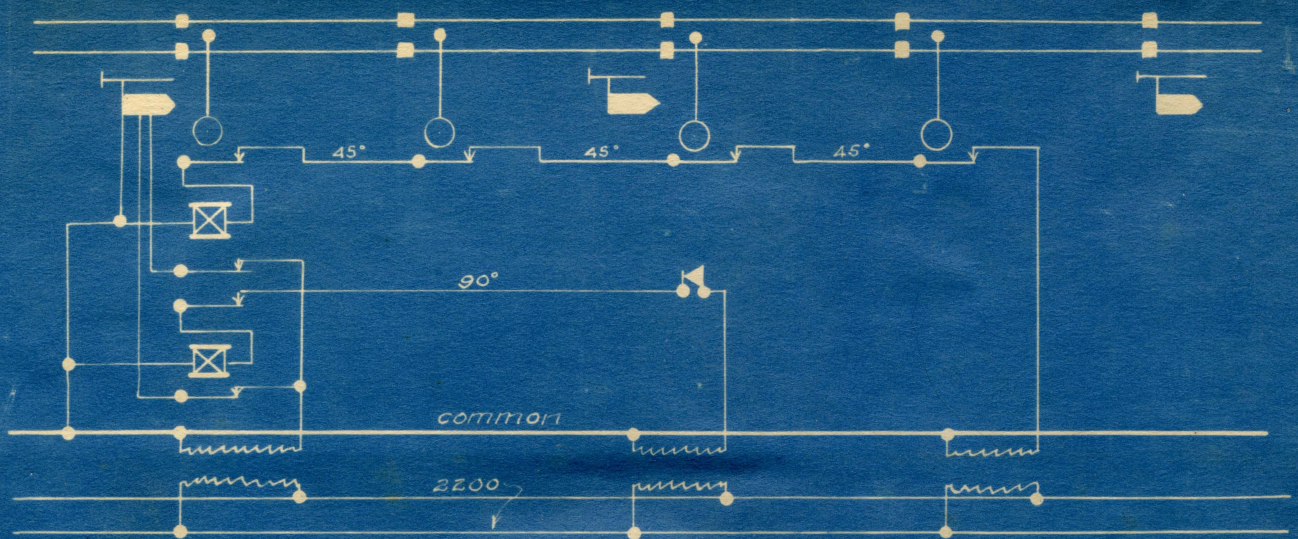
N.Y.C.R.R.
Sig. Dept — Elec. Div.
Automatic Block Signals.
Approved: Asst Term Manager.



NON OVERLAP WITH CUT SECTION



OVERLAP ~ LINE OPERATION

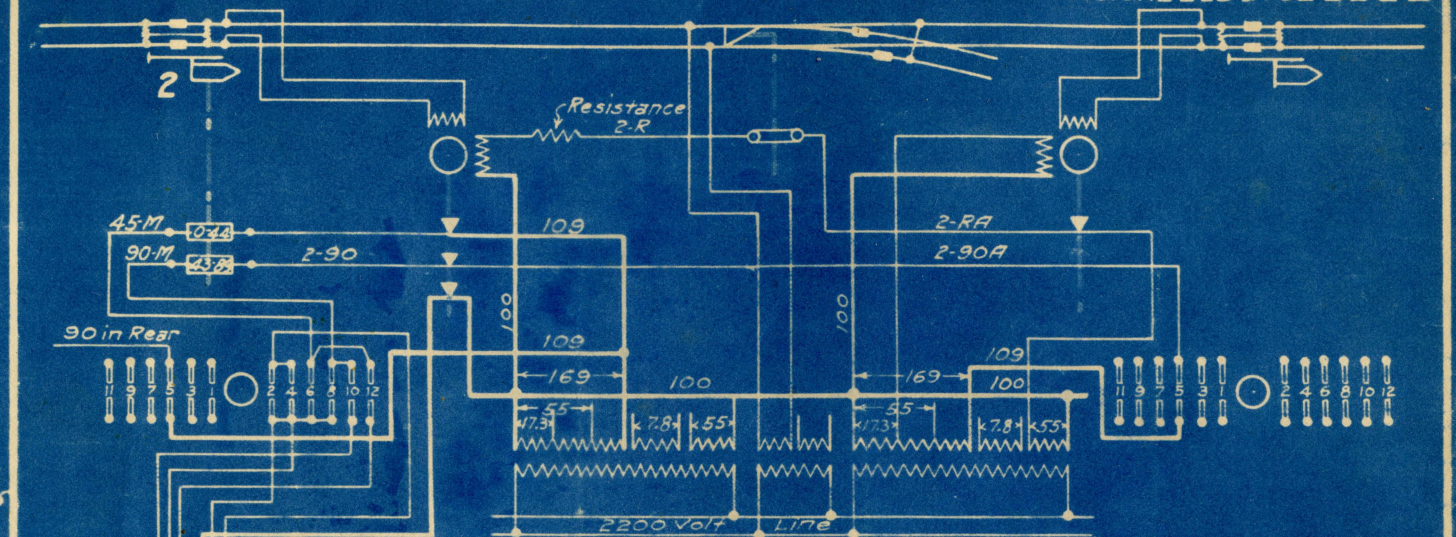


OVERLAP-LINE CONTROLLED

Approved H D Purcell 7/4
Signal Engineer, E.D.

Supersedes Page 84 Small size. ~~Page 84~~ CC-112

Revision _ _ Date _ _ _ _ _



Note: Contacts 1 & 2 are on a slip Circuit Breaker Going to clear from any point in its stroke-No.1 closes and No.2 opens after 5° travel. Going to stop from any point in it stroke-No.1 opens and No.2 closes after 5° travel.

Operation of Circuit Breaker

Contact	Going Reverse Closes	Going Reverse Opens	Going Normal Closes	Going Normal Opens	Contact	Going Reverse Closes	Going Reverse Opens	Going Normal Closes	Going Normal Opens
1					2				
3	35°	92°	92°	35°	4	0°	23°	23°	0°
5						47°	70°	70°	47°
7					6	0°	44°	44°	0°
9					8	43°	89°	89°	43°
11					10	88°	92°	92°	88°
					12	43	47°	47°	43°

Drawn By: H. W. C. 7/26/15

Checked By: FCW 7/28/15

Correct: WM 7/29/15

Block Circuits (Typical)

Mt. Vernon to N.W. Plains.

Harlem Div.

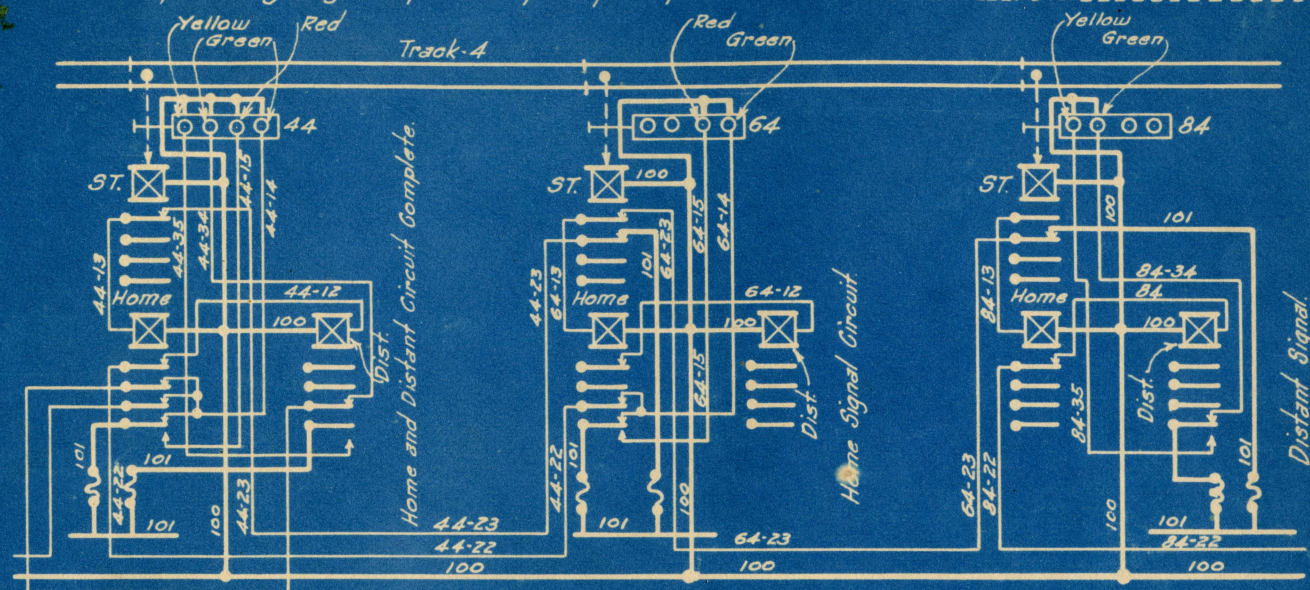
Approved: H. P. Bowles 7/29/15

Signal Engineer

GC-113

Superseding Page 4 of Book of Useful Information.

Revision: Date:



N. Y. C. R. R.

Signal Dept. - Elect. Div.

TYPICAL CIRCUIT FOR HOME AND DISTANT TUNNEL SIGNALS.

New York.

Drawn By:

Checked By:

Corr

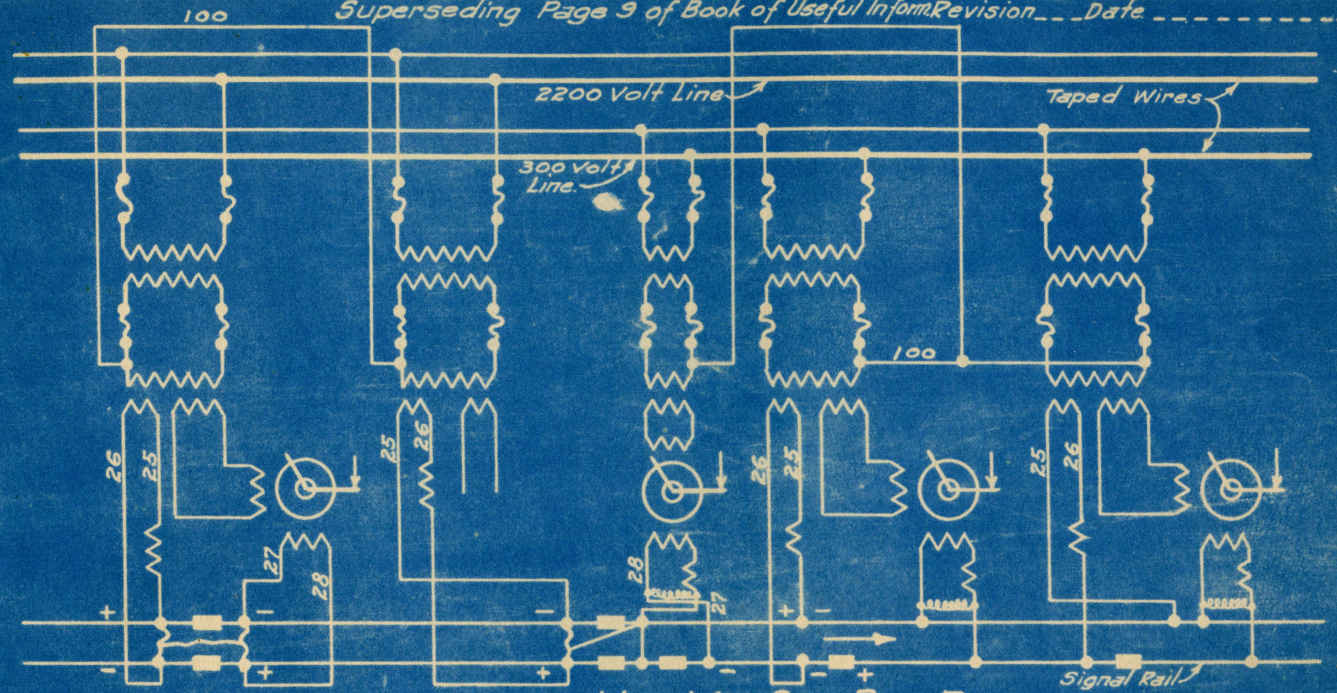
Correct:

Approved:

Signal Engineer: E.D.

CC-114

Superseding Page 9 of Book of Useful Inform. Revision___ Date_____



N. Y. C. R. R.

Signal Dept.-Elect. Div.

TYPICAL CIRCUIT OF CONNECTIONS WHERE 300V LINE ENDS AND 2200V. LINE STARTS, SHOWING 100 TO THE RIGHT ON 300V. LINES.

Approved:_____
Signal Engineer E.D.

Drawn By:_____

Checked By: GCW 12/13/16

Correct:_____

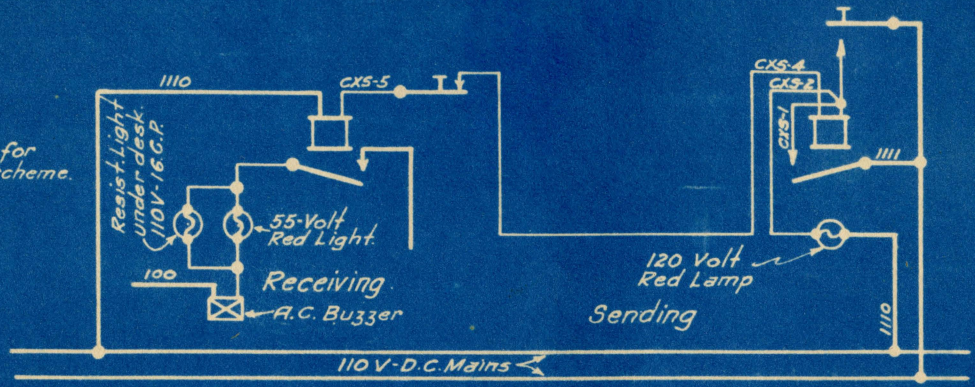
Correct:_____

CC-115

Revision_____ Date:_____

Note:
W.E.Co's. Type 114 relay.
Resistance-1075 Ohms.

Note:
See CC-58 for numbering scheme.



Drawn By:_____

Checked By: Jones 12/31/16

Correct: [illegible] 12/31/16

Correct:_____

GRAND CENTRAL TERMINAL.

Office of Ass't. Terminal Manager.

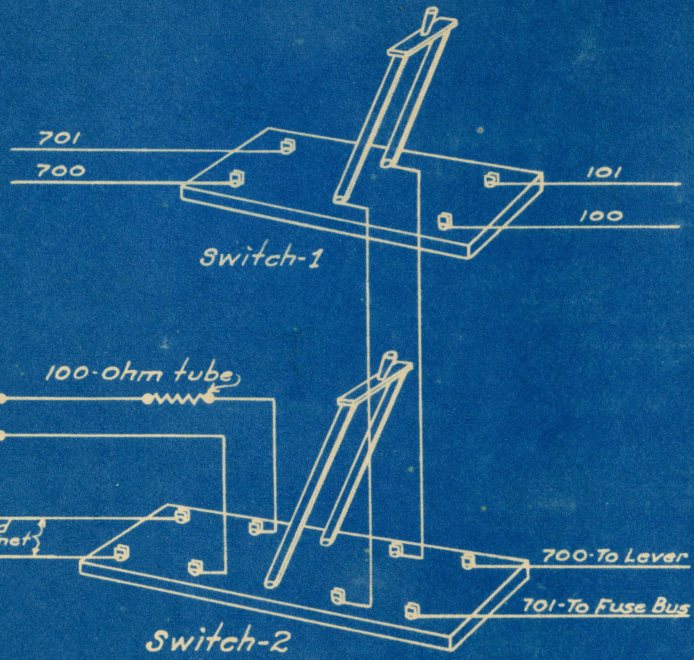
INTERCOMMUNICATION CANCELLING CIRCUIT BETWEEN INTER. STA'S. "A & U" AND INTER. STA'S. "B & U"

New York. Dec. 8, 1916.

Approved:_____
Ass't. Term. Mgr.

CC-116

Revision___ Date_____



Note:
Knife Switches to be located in basement of building enclosed in sealed Cabinet.

MANIPULATION.		
To Serve Locks From	Throw Sw's.	
700-701	1L	2R
100-101	1R	2R
110 D.C. & Plug Cutout		2L
Note: All switch locks are energized normally from 700-701		

Drawn By: [illegible] 4/9/17

Checked By: [illegible] 4/9/17

Correct: [illegible] 4/10/17

Correct: [illegible] 4/14/17

Correct:_____

Correct:_____

Note:
As installed in Int. Sta. KY, MX, BG, JO, NW.

N. Y. C. R. R.
Signal Dept.- Electric Div.
ELECTRIC LOCKS
EMERGENCY CIRCUITS.

Approved: [illegible] 4/14/17
Signal Engineer. E.D.

Revision: Date:

Drawn By: M.L. 4/9/17

Checked By: [illegible]

Correct: [illegible]

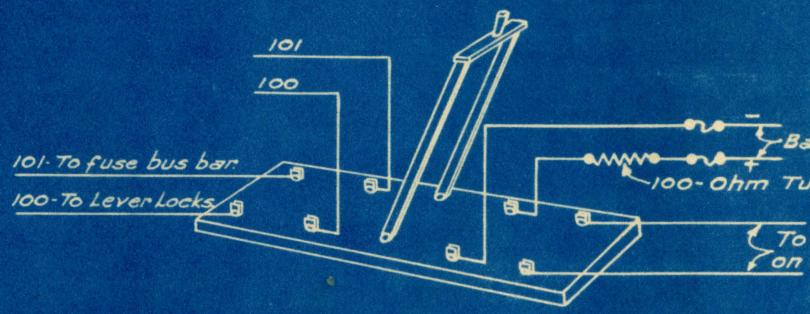
Correct: [illegible]

Correct:

Correct:

Note:
As installed in Int. Sta. NK & Harlem River Draw Bridge.

Manipulation	
To Reverse Locks From	Throw Sw
100-101	2L
110 D.C. & Plug Cut-out	2R
Note: All switch Locks are energized normally from 100-101.	



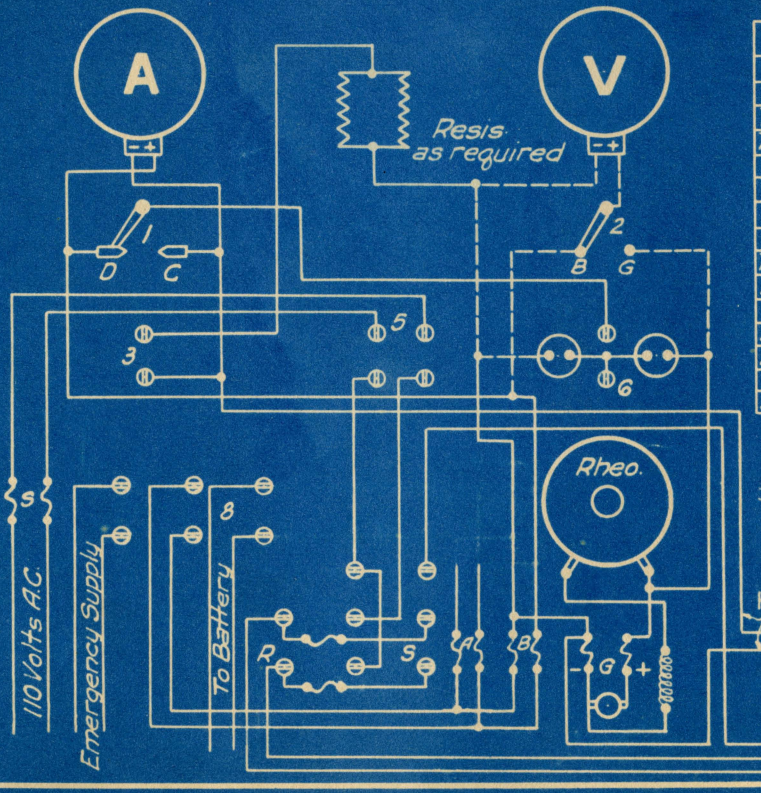
Note:
Knife Switch to be located in basement of building enclosed in sealed Cabinet.

N. Y. C. R. R.
Signal Dept.- Electric Div.
ELECTRIC LOCKS.
EMERGENCY CIRCUITS.

Approved: [illegible] 4/11/17
Signal Engineer. E.D.

CC-118

Revision --- Date ---



MANIPULATION			
FUNCTION	THROW SWITCHES		
To Charge Battery	6 Up	8L	
To Serve Int From Gen.	6 Up	8L	
To Measure Gen Voltage	2-G		
" " Battery "	2-B		
" " Charging Current	1-C		
" " Battery Discharge	1-D		

To Start Motor-Put Switches 5 Up-8R-After Motor is up to Speed, Move Switch 8 to the Right

Switch 3 When closed puts Battery on Normal Discharge r should be held closed for 1 Minute before Reading Voltage.
Switch 3 should not be closed while charging Bat

For Inter Stations FA+FB

N. Y. C. R. R.
Signal Dept. - G.C.T.
POWER SWITCH BOARD
WIRING DIAGRAM

Note - For Motor Wiring See PP-45
R = Running
S = Starting

Approved

Asst. Term. Mgr.

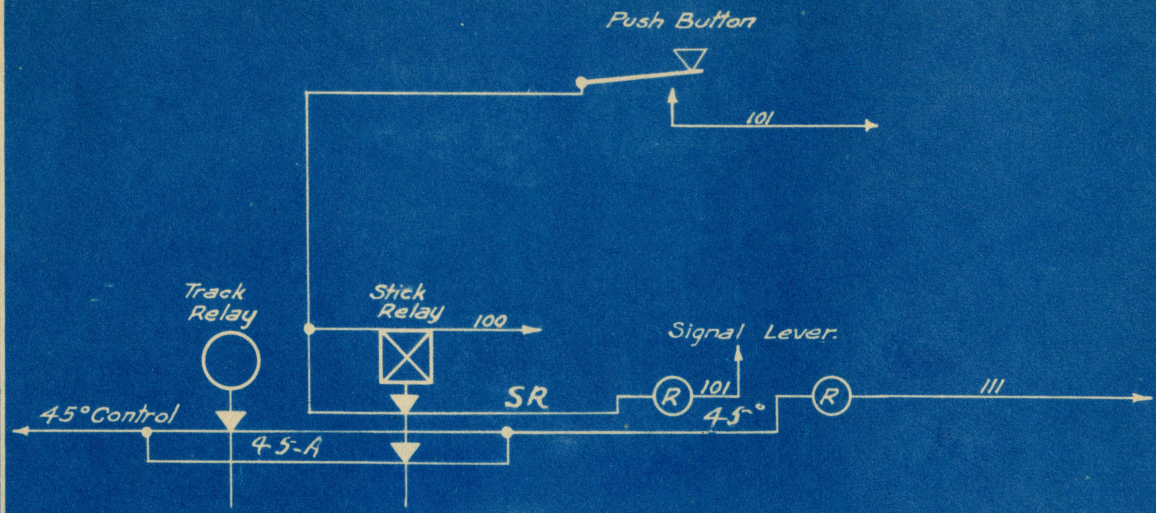
Drawn by DMS 2-13-18

Checked by

Correct

CC-119

Revision_____ Date:_____



GRAND CENTRAL TERMINAL.
Office of Ass't. Terminal Manager.
TYPICAL CONTROL CIRCUIT FOR SIGNALS ON LOOP TRACKS.
New York. Dec. 20, 1918.

Drawn By._____

Checked By._____

Correct. 12/21/18 J. Whorrison

Correct. H. E. L. 12/21/18

Approved:_____
Ass't. Term. Mgr.

Wiring for Operating Switch Board with Seperate D.P Switch

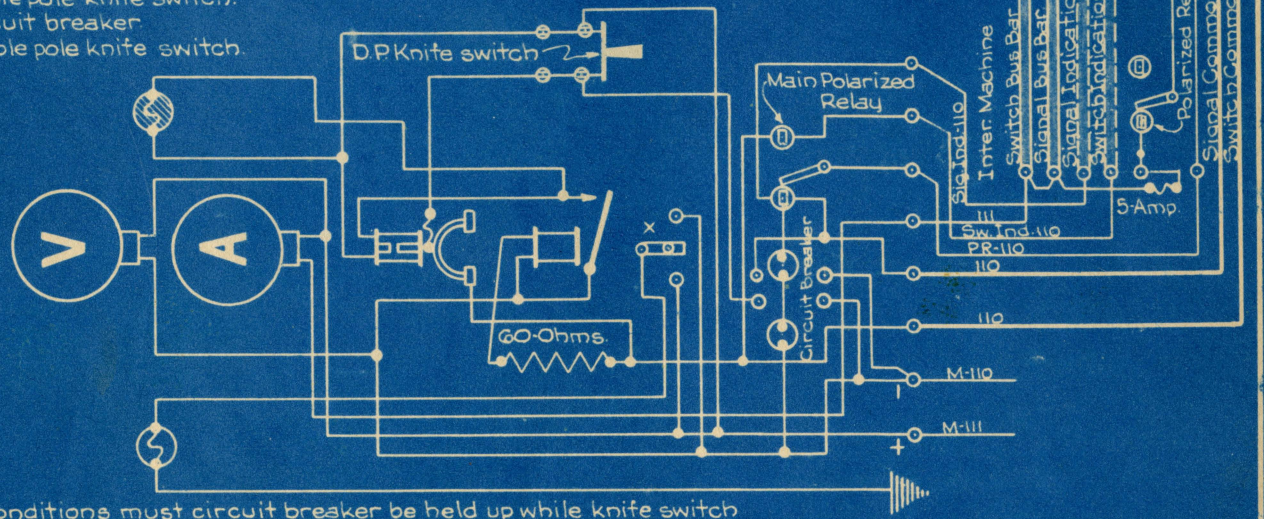
CC-120

Revision 1 Date 2/10/20

Operation

In case a red light appears on the operating board it must be relieved in the following manner

1st Close all armatures on individual polarized relays, also see that armature on main polarized relay located on operating board is closed.
2nd Open double pole knife switch.
3rd Close circuit breaker.
4th Close double pole knife switch.



Note-
To test for ground throw switch X to right and if lamp lights it shows that + wire is grounded if thrown to left and lamp lights — wire is grounded.
Red lamp lighted shows that main operating relay is open.

Note-
A-Under no conditions must circuit breaker be held up while knife switch is operated.
B-Do not allow levers to be operated while closing circuit breaker.
C-Do not close circuit breaker or manipulate knife switch while trains are moving over interlocking, on section protected by operating board affected.
D-If circuit breaker opens when knife switch is closed, remove the trouble before closing circuit breaker again.

N. Y. C. R. R.
SIGNAL DEPARTMENT
Feb. 9-20

Approved _____
Signal Engr. E.D

Drawn by D.M.S. 2-9-20

Checked by _____

Corr[illegible] 2/13/20

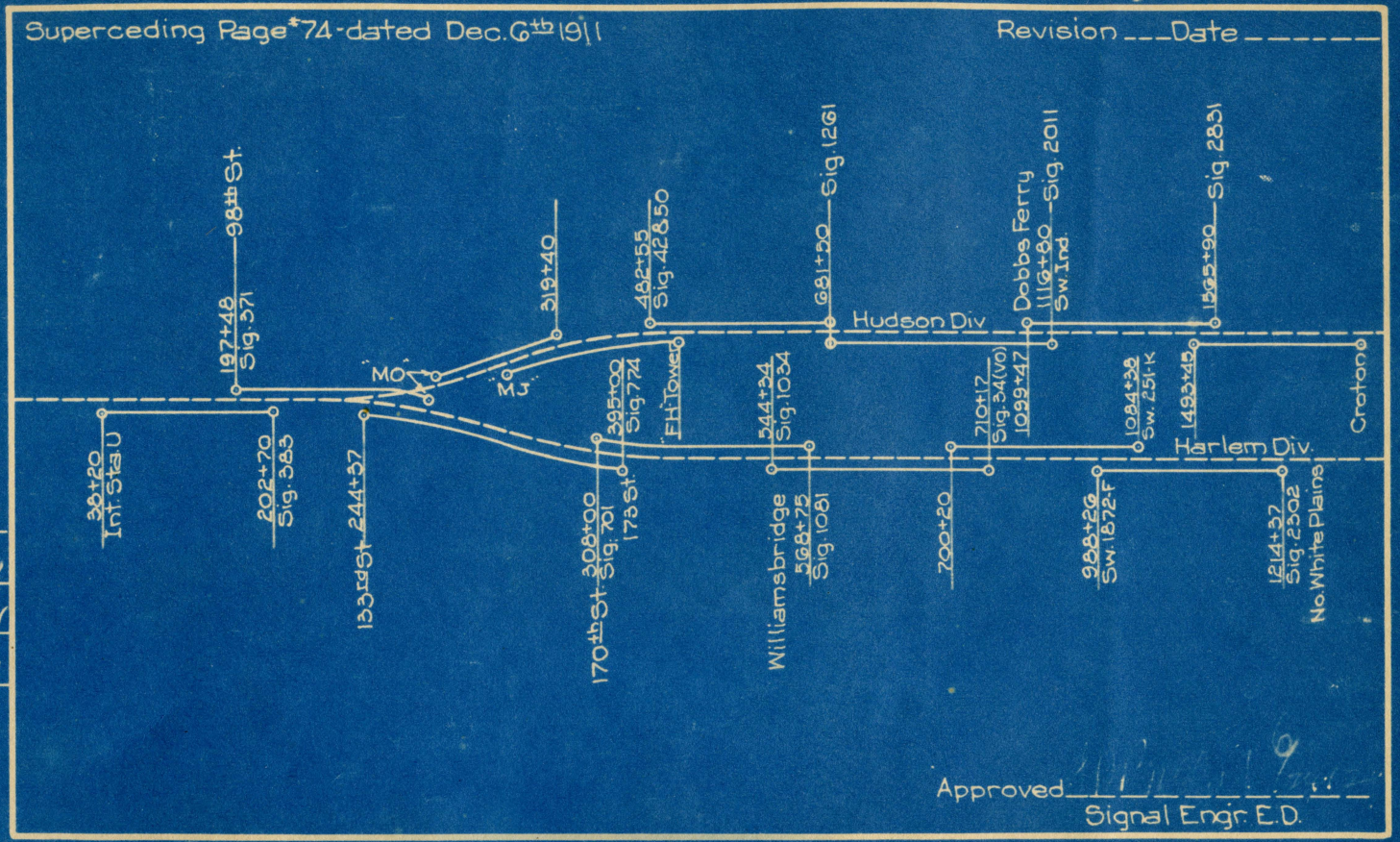
Correct _____

Cuts in Common Wire - Hudson & Harlem Divisions

CC-122

Superceding Page *74 - dated Dec. 6th 1911

Revision ___ Date ___



Approved _____

Signal Engr. E.D.

Drawn by D.M.S. 5-12-21

Correct WM 6/16/21

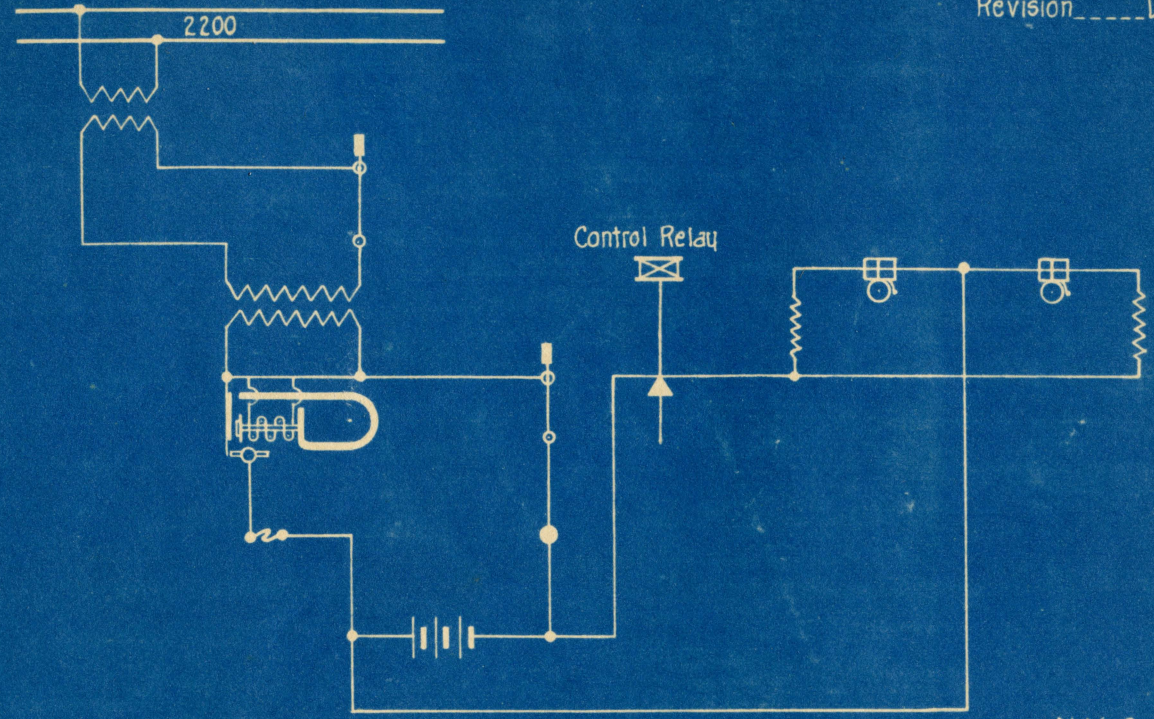
Correct E.B.S. 6/24/21

Corr... Hall 7/6/21

Typical Wiring for Charging Battery by Rectifier

CC-125

Revision_____ Date_____



Drawn by E.D.M. 7-20-23.

Correct 7/24/23

Correct _____

Corre_____

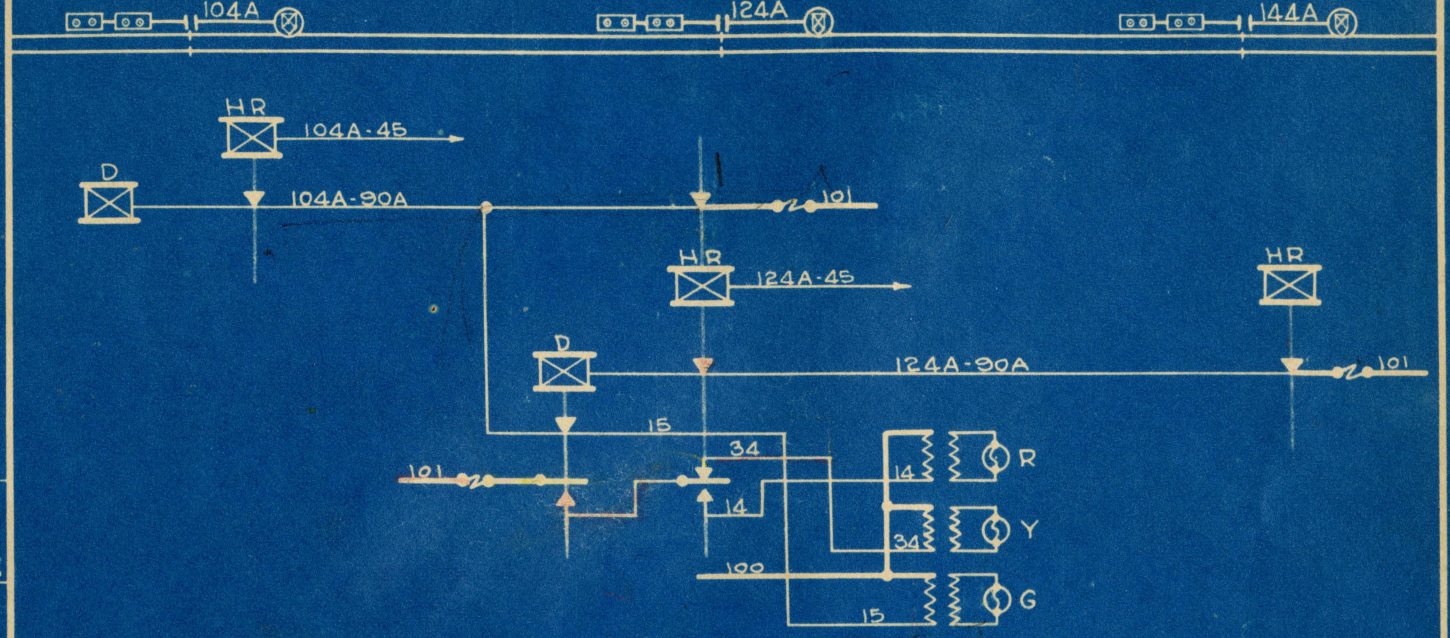
N.Y.C.R.R.
Signal Dept. July 20, 23.

Approved _____
Signal Eng'r. E.D.

Typical Wiring for Light Signals (59th St. to "MJ")

CC-126

Revision___ Date_____



Drawn by E.D.M. Oct 21-24

Correct

Correct

Approved_____

Signal Eng'r. E.D.

4-10-25

Note 1: Contacts "a" & "b" move from positions 4 to 5 or vice versa as machine completes its locking stroke or due to the influence of the shunt coils when lever is reversed in mid stroke.

Note 2: Contacts c-d-e & f are moved from positions 1 or 3 to position 2 prior to machine being unlocked.

Note 3: Contacts c-d-e & f move from positions 1 or 3 or vice versa as machine completes its locking stroke and before contacts a & b start to move.

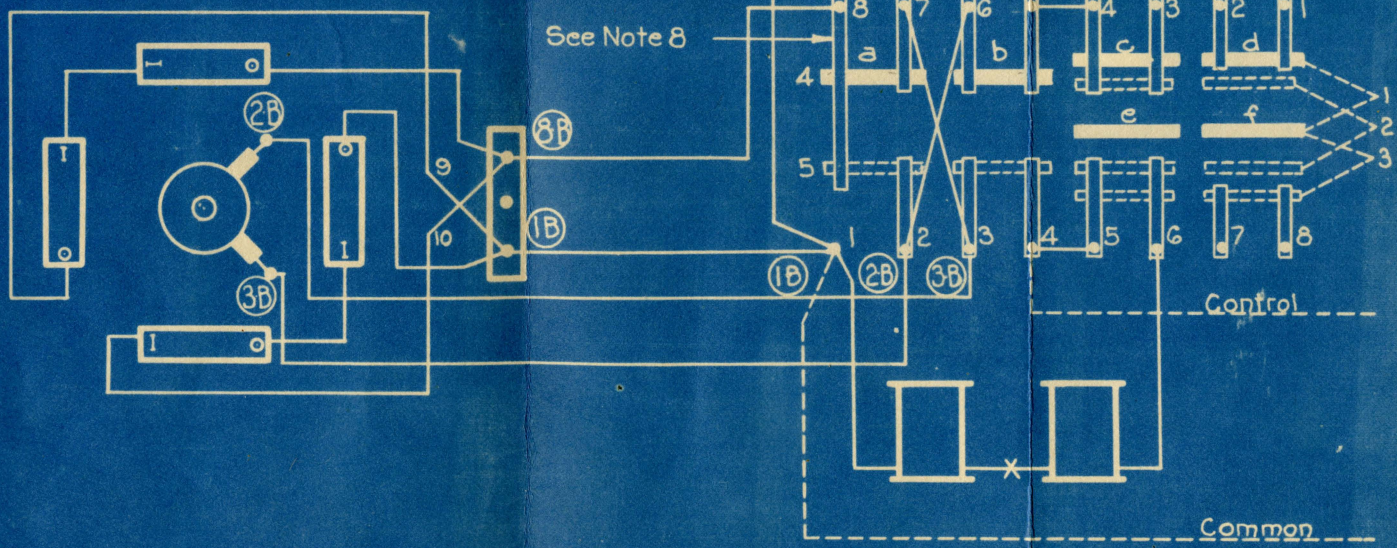
Note 4: Contacts shown in space 1-2-3 & 4 are furnished only when specified. They can be the same as shown in spaces 5 & 6 if desired.

Note 5: X denotes inside ends.

Note 6: Figures in circles denote numbers on wires between motor and pole changer.

Note 7: To connect field coils in series mult. connect wires 9 to 1B and 10 to 8B

Note 8: This contact opens motor circuit when machine is cranked by hand.



Approved _____
Signal Engr. E.D.

Revision_____Date_____

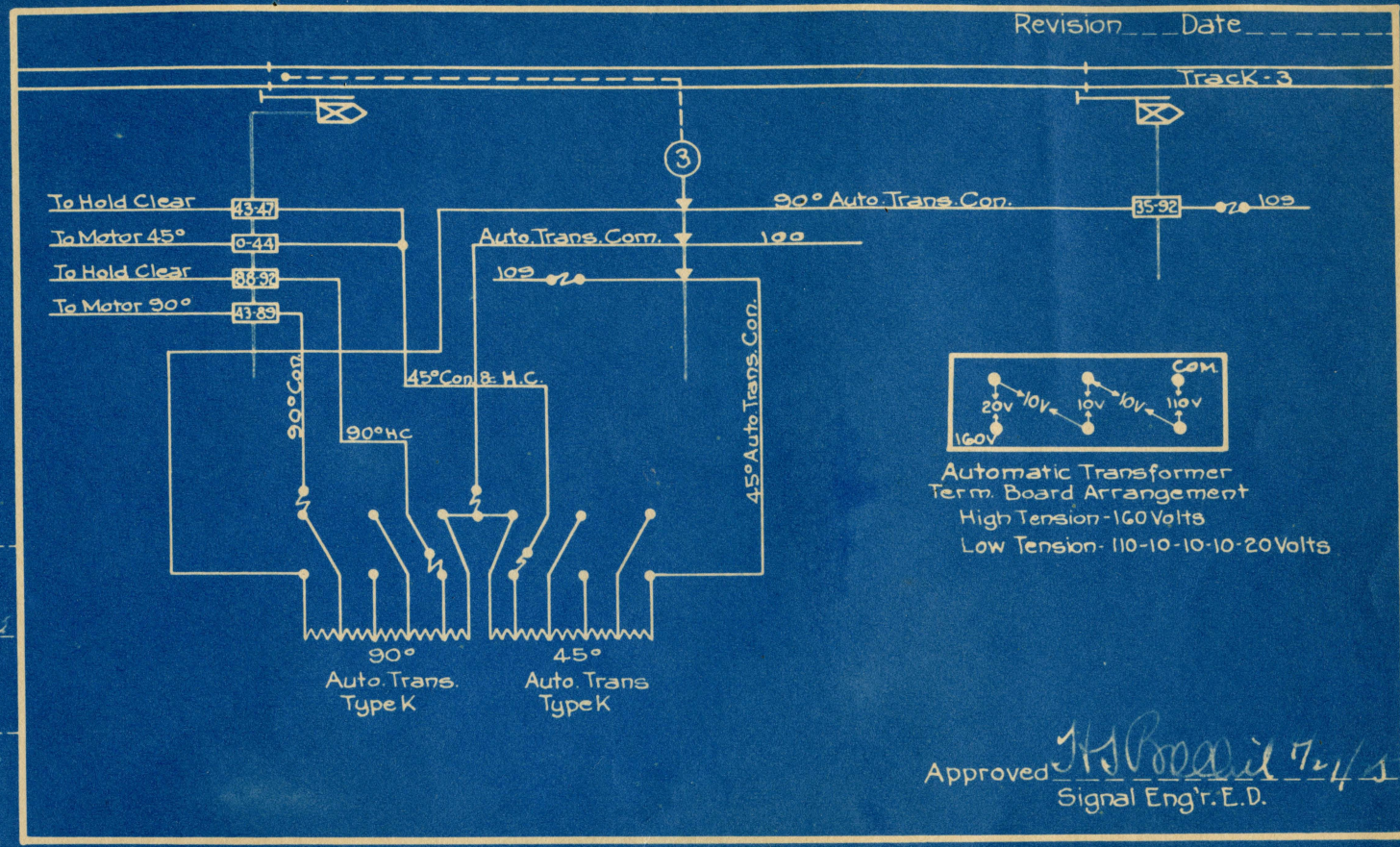
Wiring Diagram for Model 5A Switch Machine

CC-127

Wiring for Single Phase Induction Motor for Model 2A Signals

CC-128

Revision___ Date_____



Drawn by E.D.M. 4-24-25.

Correct W. 7/25/25

Correct_____

Approved H.S. Boyd 7-4-25

Signal Eng'r. E.D.

Revision, _____ Date _____

DRAWN BY: 12/19/13

CHECKED BY: 12/28/13
ASS'T. ENG'R.

CORRECT: 12/31/13
ASS'T. SIG. ENG'R. E.D.

CORRECT:
ASS'T. SIG. ENG'R. E.D.

LIGHT TYPE SEMAPHORE



2 Position
Lower Quadrant.

Non-Automatic - 0° 45°

Semi-Automatic - 0° 45°

Semi-Automatic - 0° 45° 90°

Semi-Automatic - 0° 90°

In-operative

Automatic - 0° 45°

Automatic - 0° 90°

Automatic - 0° 45° 90°

In-operative

Marker Lights.

N. Y. C. R. R.
ELECTRIC DIVISION
GRAND CENTRAL TERMINAL
STANDARD SYMBOLS USED ON SIGNAL PLANS

APPROVED: H. B. Ballier
SIGNAL ENGINEER. E.D.

Revision, Date

DRAWN BY:

CHECKED BY:

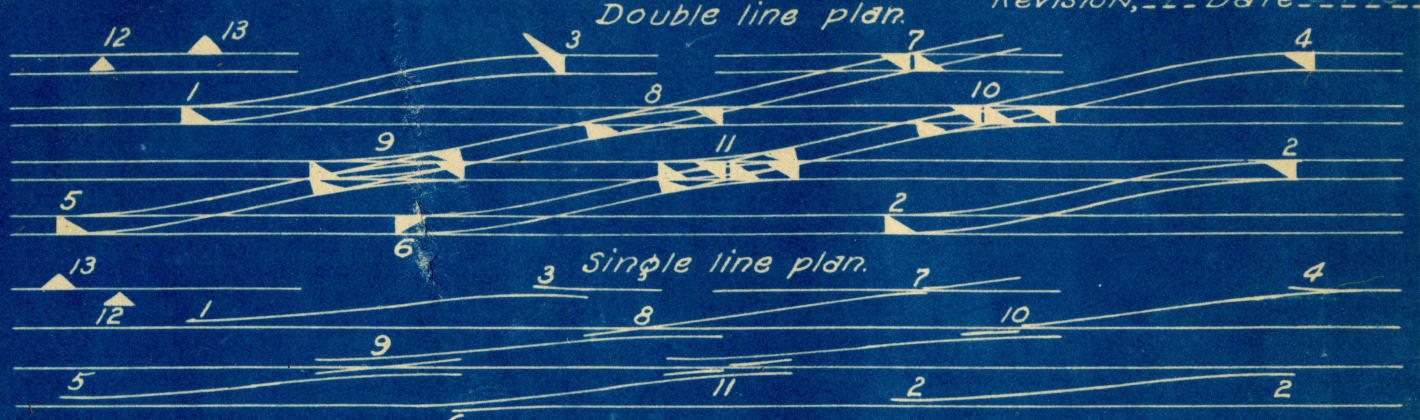
ASS'T. ENG'R.

CORRECT:

ASS'T. SIG. ENG'R. E.D.

CORRECT:

ASS'T. SIG. ENG'R. E.D.



Explanation

1 - Simple turn-out.
2 - Simple cross-over
3 - Derail - point type - derailing.
4 - Derail - point type - non-derailing.
5 - Switch set for straight track.
6 - Switch set for turn-out.
7 - Movable point crossing frog. (M.P.F.)
8 - Single slip switch crossing
9 - Double slip switch crossing
10 - Single slip switch crossing with M.P.F.
11 - Double slip switch crossing with M.P.F.
12 - Derail - lifting block type - non-derailing
13 - Derail - lifting block type - derailing.

N. Y. C. R. R.
ELECTRIC DIVISION
GRAND CENTRAL TERMINAL
STANDARD SYMBOLS USED ON SIGNAL PLANS.

APPROVED:

SIGNAL ENGINEER. E.D.

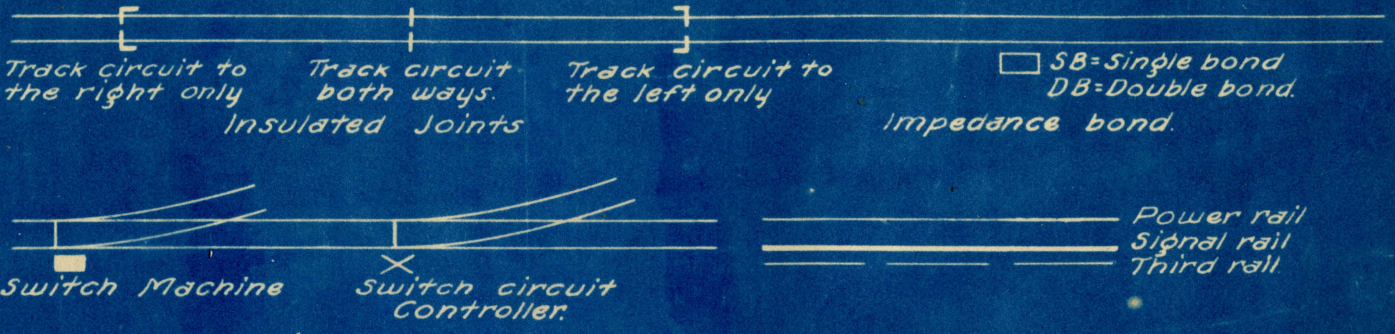
Revision_1_Date, 3-1-16

DRAWN BY:
12/19/12

CHECKED BY:
12/28/12
ASS'T. ENG'R.

CORRECT:
ASS'T. SIG. ENG'R. E.D.

CORRECT:
ASS'T. SIG. ENG'R. E.D.



N.Y.C.R.R.
ELECTRIC DIVISION
GRAND CENTRAL TERMINAL
STANDARD SYMBOLS USED ON SIGNAL PLANS

APPROVED: J.B. Baseil
SIGNAL ENGINEER E.D.

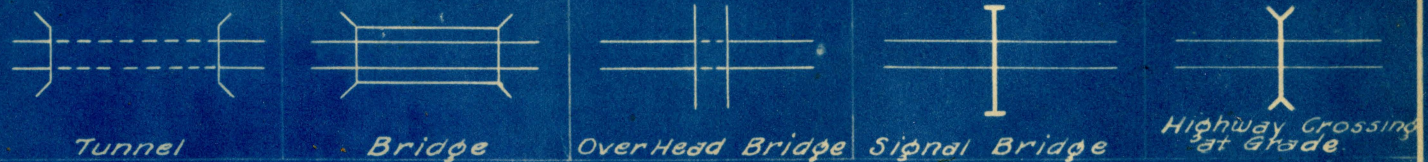
Revision L Date 3-1-12

DRAWN BY:

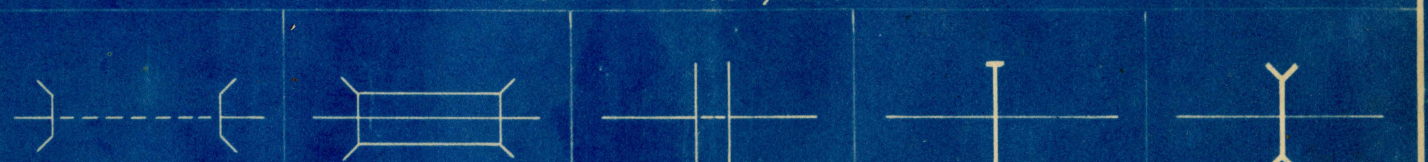
CHECKED BY: 12/28/12
ASS'T. ENG'R.

CORRECT:
ASS'T. SIG. ENG'R. E.D.

CORRECT:
ASS'T. SIG. ENG'R. E.D.



Double line plan



Single line plan.



Interlocking Station

Battery House

N.Y.C.R.R.
ELECTRIC DIVISION
GRAND CENTRAL TERMINAL
STANDARD SYMBOLS USED
ON SIGNAL PLANS.

APPROVED: W.S. Bardwell
SIGNAL ENGINEER E.D.

Revision 1 Date 3-[illegible]

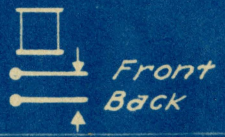
DRAWN BY: [illegible] 12/19/12

CHECKED BY: 12/28/12
J. A. White
ASS'T. ENG'R.

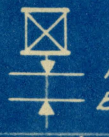
CORRECT:
ASS'T. SIG. ENG'R. E.D.

CORRECT:
ASS'T. SIG. ENG'R. E.D.

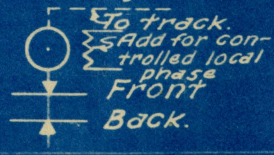
D.C. Relay.



A.C. Line Relay



Polyphase Relay.



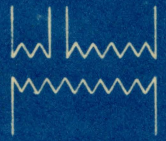
Crossing Bells.



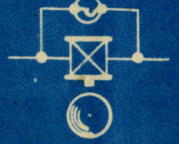
Switch Indicator and Circuit Controller.



Transformer



Preliminary Indicator.



A.C. Lever Lock with Latch Contact.



All locks full normal or reverse except when indicated by. B = Normal Indication or D = Reverse Indication.

Incandescent Lamp.



Polarized Relay.



N.Y.C.R.R.
ELECTRIC DIVISION
GRAND CENTRAL TERMINAL
STANDARD SYMBOLS USED ON SIGNAL PLANS

Approved: A. D. Baeckel
SIGNAL ENGINEER. E.D.

Revision 1 Date 3-1-15

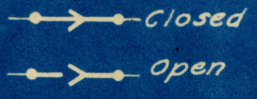
Drawn By: [illegible] 12/9/12

Checked By: [illegible] 12/8/12
ASS'T. ENG'R.

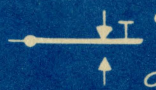
Correct: [illegible]
ASS'T. SIG. ENG'R. E.D.

Correct: [illegible]
ASS'T. SIG. ENG'R. E.D.

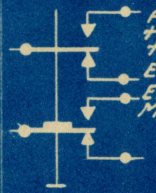
Draw Bridge Circuit Controllers



Strap key or Push Button



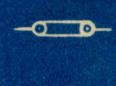
Screw Release



Lever Contacts

- (N) Full normal position.
- (B) Normal indication position
- (D) Reverse indication position
- (R) Full reverse position.

Switch Circuit Contacts.



Signal Contacts.



N.Y.C.R.R.
ELECTRIC DIVISION
GRAND CENTRAL TERMINAL
STANDARD SYMBOLS USED ON SIGNAL PLANS.

Approved: [illegible]
SIGNAL ENGINEER-E.D.

Revision_ Date_

DRAWN BY:
[illegible] 1/19/15

CHECKED BY:
[illegible] 1/28/15
ASS'T. ENGR.

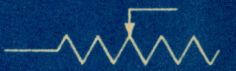
CORRECT:
[illegible] 1/29/15
ASS'T. SIG. ENG'R. E.D.

CORRECT:
[illegible]
ASS'T. SIG. ENG'R. E.D.


Impedance


Impedance with core


Constant Resistance


Variable Resistance

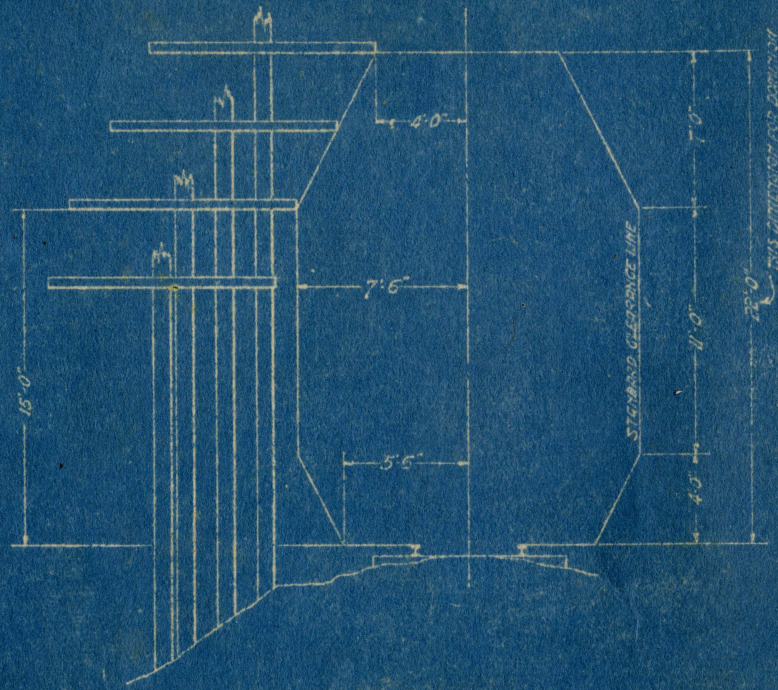

Fuse


Lightning Arrester


Battery specify capacity and number of cells.

N.Y.C.R.R.
ELECTRIC DIVISION
GRAND CENTRAL TERMINAL
STANDARD SYMBOLS USED ON SIGNAL PLANS.

APPROVED: H.D. Brelid
SIGNAL ENGINEER. E.D.



DISTANCE FROM END OF ARM TO CENTER OF TRACK	MINIMUM HEIGHT OF ARM	DISTANCE FROM END OF ARM TO CENTER OF TRACK	MAXIMUM HEIGHT OF ARM
2'-6" OR MORE	LESS THAN 15'-0"	5'-9"	13'-6"
7'-6"	15'-0"	5'-6"	19'-0"
7'-3"	15'-6"	5'-3"	19'-6"
7'-0"	16'-0"	5'-0"	20'-0"
6'-9"	16'-6"	4'-9"	21'-5"
6'-6"	17'-0"	4'-6"	21'-0"
6'-3"	17'-6"	4'-3"	21'-6"
6'-0"	18'-0"	4'-0"	22'-0"

NOTE:- WIRES MUST HAVE CLEARANCE OF 25 FT. OVER TOP OF RAIL, 18 FT. OVER HIGHWAYS AND 15 FT. OVER FARM CROSSINGS.

STANDARD CLEARANCE LINE FOR DOMINION OF CANADA IS 8'-4½" FROM ℄ OF TRACK.

N.Y.C. & H.R.R.R.

SIGNAL DEPARTMENT

CLEARANCE DIAGRAM
TELEGRAPH POLE CROSSARMS

SCALE ⅜" = 1'-0" ALBANY JUNE 14, 1912.

W. H. Elliott 4/9/12.

SIGNAL ENG'R.