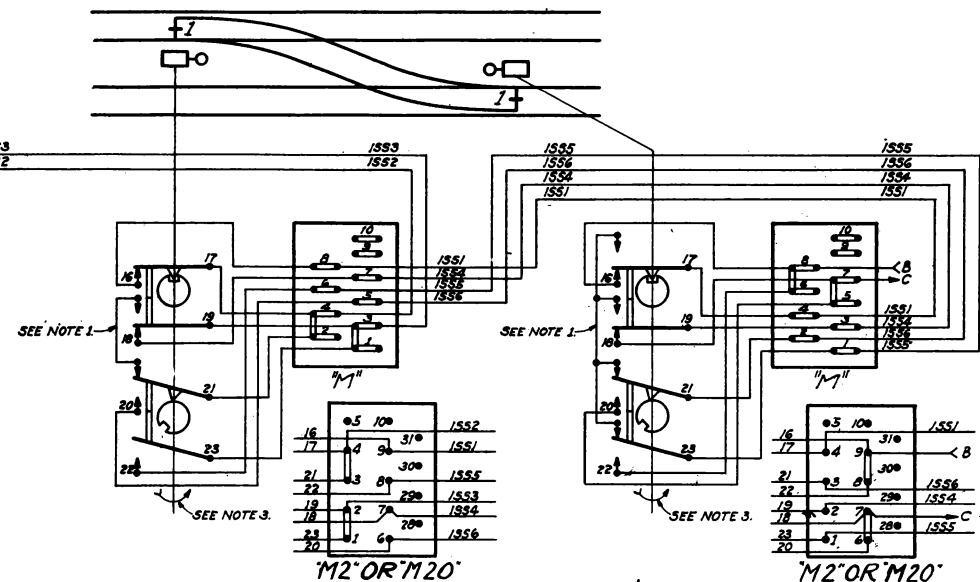
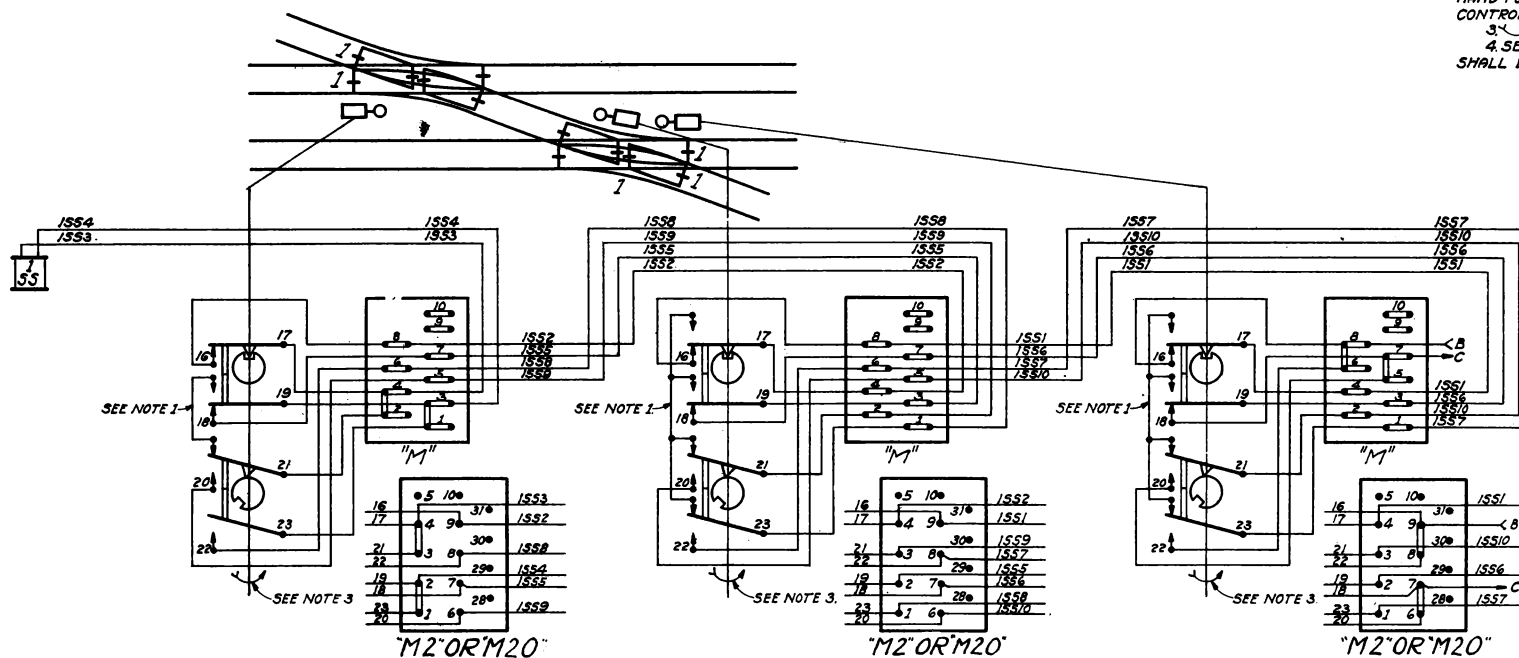




NOTE:-

1. CONTACT PIECE, ADJUSTED TO SHUNT INDICATION CIRCUITS WHILE SWITCH IS UNLOCKED.
2. INDICATION CAMS ARE ADJUSTED FOR MOVEMENT WHERE THE RIGHT HAND POINT IS NORMALLY CLOSED. WHERE LEFT HAND POINT IS NORMALLY CLOSED, REVERSE INDICATION CONTROLLER CAMS.
3.  - ARROW INDICATES DIRECTION OF NEXT ROTATION.
4. SEGMENTS FOR INDICATION AND DETECTOR MAGNETS SHALL BE IN ACCORDANCE WITH PLAN S-824.



STYLE "M" & "M2" MOVEMENTS
SWITCH INDICATION AND "SS"
CONTROL CIRCUITS.
(WITH QUICK SWITCH)

REVISIONS.

6-25-29. TERMINAL BOARD
FOR "12" AND "120" MOV'T ADDED.
APPROVED:- *Attwood*
REDRAWN FROM SH'S 4,5, AND 6 OF
PLAN S-823 DATED 12-8-23 LAST
REVISED 12-27-24.

S-823

SHEET 1 OF 12

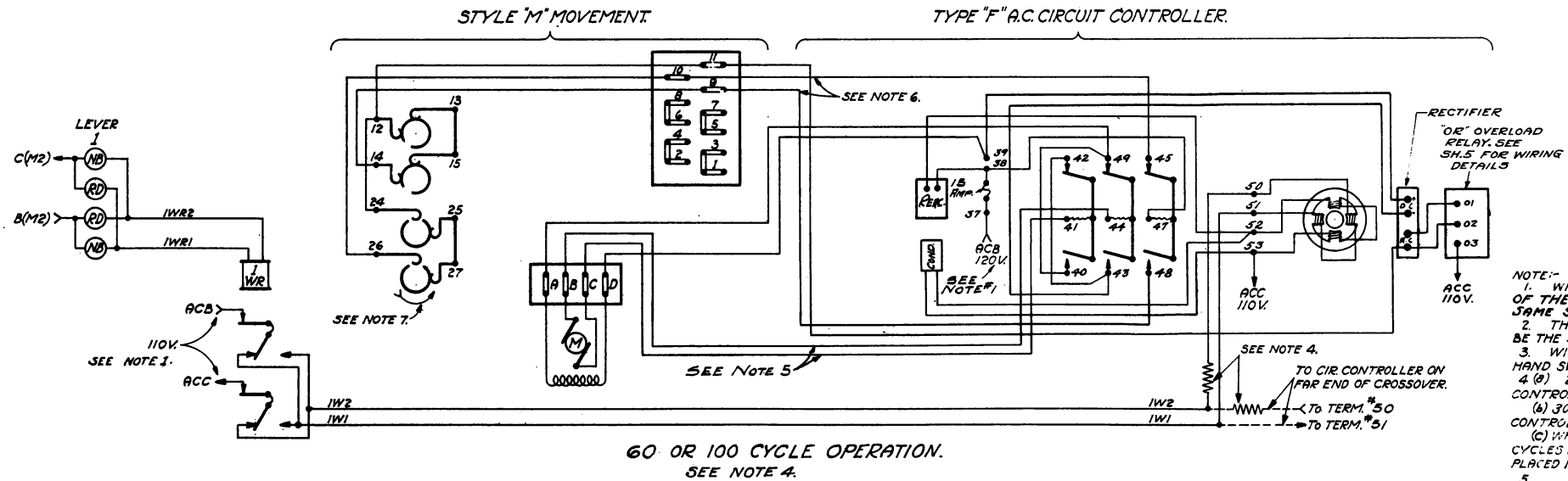
THE PENNSYLVANIA RAILROAD STANDARD CIRCUITS FOR ELECTRIC SWITCHES

OFFICE OF CHIEF SIGNAL ENGINEER,
PHILA., PA., JUNE 25, 1929.

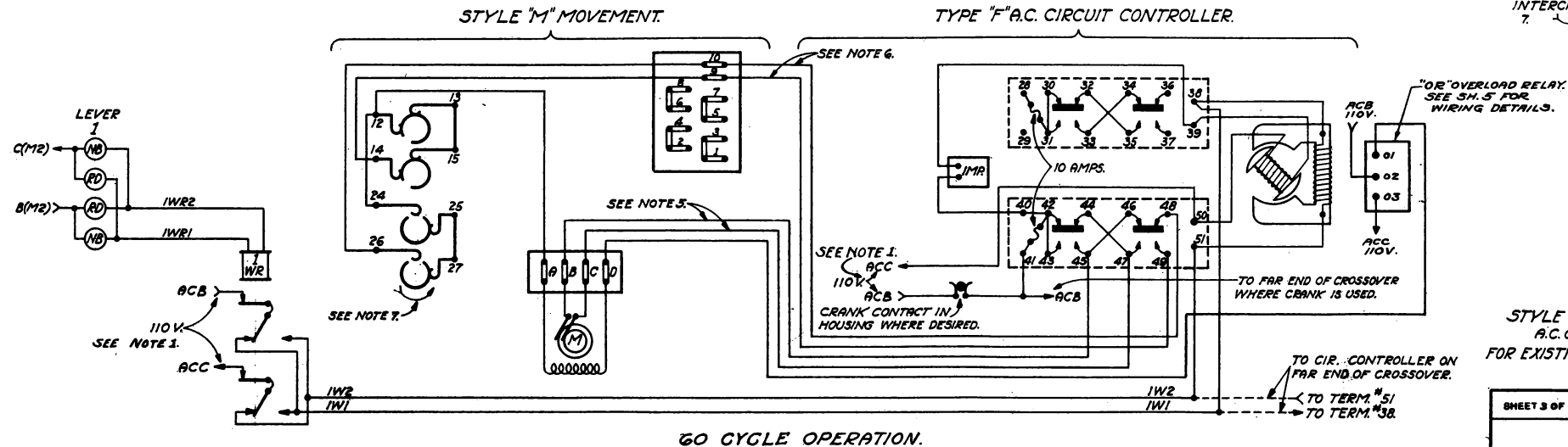
Approved 
Chief Signal Engineer

NOT TO SCALE

Approved  J. H. Williams
Chief Engineer



- NOTE:-
1. WHERE A.C. CONTROLLERS ARE USED BOTH ELEMENTS OF THE CONTROLLER MUST BE ENERGIZED FROM THE SAME SOURCE OF POWER.
 2. THE CONTROL OF A SINGLE SWITCH AND DERAIL SHALL BE THE SAME AS A CROSSOVER.
 3. WIRING AS SHOWN IS FOR MOVEMENT WHERE RIGHT HAND SWITCH POINT IS NORMALLY CLOSED.
 4. (a) 250 OHM RESISTORS SHALL BE USED FOR 100 CYCLE CONTROLLERS.
(b) 300 OHM RESISTORS SHALL BE USED FOR 60 CYCLE CONTROLLERS.
(c) WHERE A 100 CYCLE CONTROLLER IS OPERATED ON 60 CYCLES A 100 OHM-5WATT CAPACITY RESISTOR SHALL BE PLACED IN SERIES WITH THE 250 OHM RESISTOR.
 5. WHERE LEFT HAND POINT IS NORMALLY CLOSED OR FOR MOVABLE POINT FROG MOVEMENT INTERCHANGE LEADS TO B AND C.
 6. WHERE LEFT HAND POINT IS NORMALLY CLOSED INTERCHANGE LEADS TO 9 AND 10.
 7. -ARROW INDICATES DIRECTION OF NEXT ROTATION.



"OR" OVERLOAD RELAYS, FOR EXISTING INSTALLATIONS, OVERLOAD RELAY MAY BE INSTALLED IN INSTRUMENT CASE IF LOCATED IN CLOSE PROXIMITY TO THE SWITCH MOVEMENT. IF NOT, A NEW CIRCUIT CONTROLLER BOX SHALL BE USED.

REVISIONS.

MAR. 1, 1937. NOTE 1. FORMERLY SPECIFIED 500 OHM RESISTOR.

APPROVED: *[Signature]* *[Signature]*

SEPT. 1, 1934. "OR" OVERLOAD RELAYS ADDED IN LIEU OF THERMAL CUTOUTS.

APPROVED: *[Signature]* *[Signature]*

REDRAWN FROM SHS 1 & 7 OF PLAN S-823 DATED 12-8-23 & 10-26-26 RESPECTIVELY.

STYLE "M" MOVEMENT. A.C. OPERATION FOR EXISTING INSTALLATIONS.

SHEET 3 OF 12

S-823

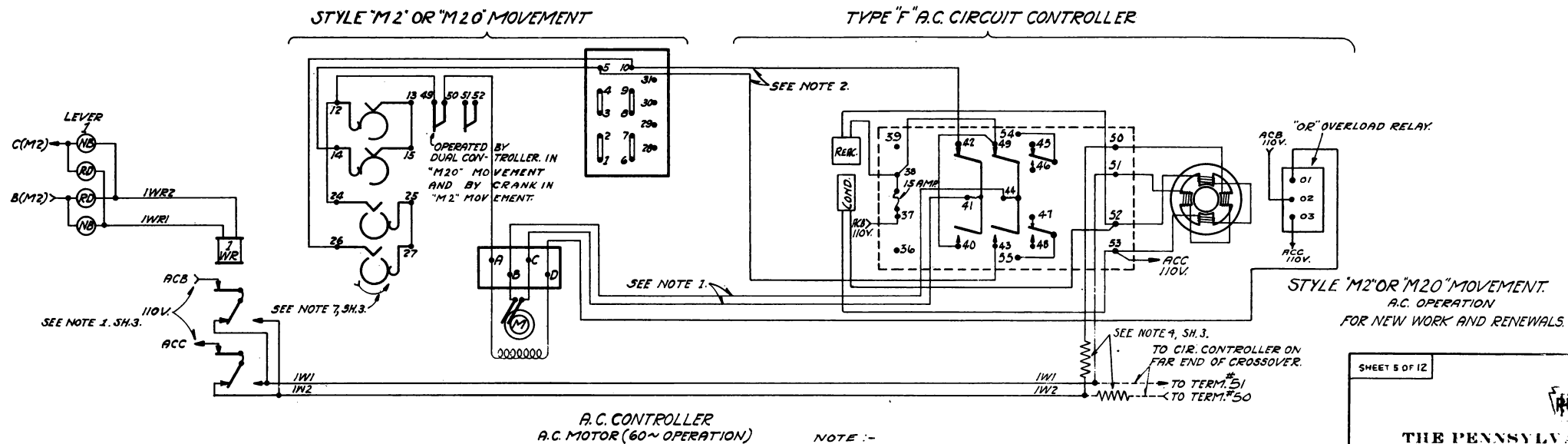
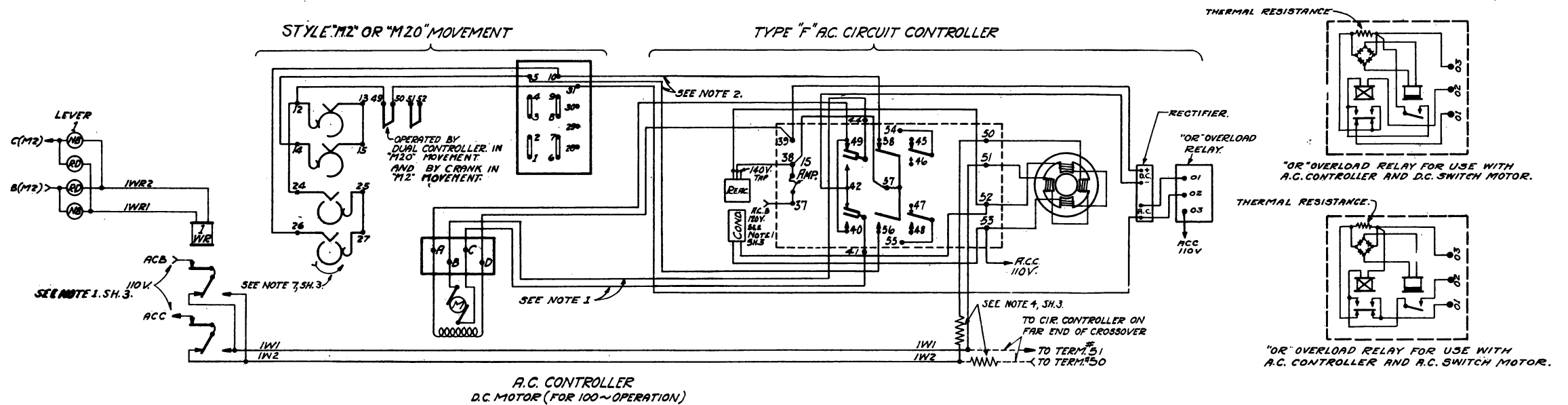
THE PENNSYLVANIA RAILROAD
STANDARD
CIRCUITS FOR ELECTRIC SWITCHES

OFFICE OF CHIEF SIGNAL ENGINEER,
PHILA., PA., JUNE 20, 1929.

Approved *[Signature]* Chief Signal Engineer

NOT TO SCALE

Approved *[Signature]* Chief Engineer



"OR" OVERLOAD RELAYS.
FOR EXISTING INSTALLATIONS, OVERLOAD RELAY MAY BE INSTALLED IN INSTRUMENT CASE IF LOCATED IN CLOSE PROXIMITY TO THE SWITCH MOVEMENT. IF NOT, A NEW CIRCUIT CONTROLLER BOX SHALL BE USED.

NOTE:-
1. WHERE LEFT HAND POINT IS NORMALLY CLOSED OR FOR MOVABLE POINT FROG MOVEMENT, INTERCHANGE LEADS TO B AND C.
2. WHERE LEFT HAND POINT IS NORMALLY CLOSED, INTERCHANGE LEADS TO 5 AND 10.
FOR GENERAL NOTES SEE SHEET 3.

REVISIONS.
MAR. 1, 1937. RESISTORS IN CONTROLLER CIRCUIT FORMERLY LOCATED AT "WR" RELAY.
APPROVED: <i>A.H. Hudd</i>
SEPT. 1, 1934. "OR" OVERLOAD RELAYS ADDED IN LIEU OF THERMAL CUTOUPS.
APPROVED: <i>A.H. Hudd</i>

SHEET 5 OF 12

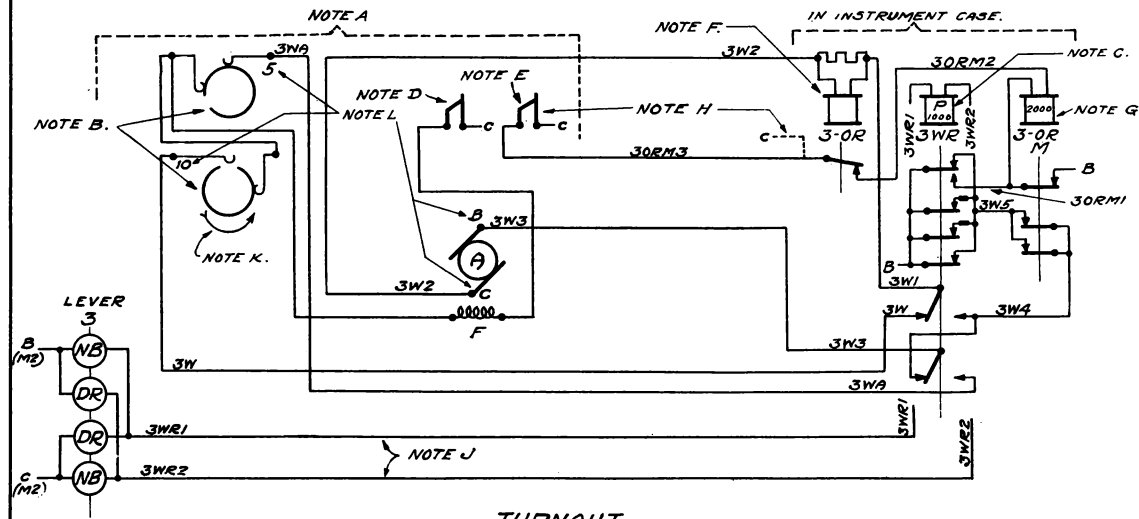
S 623

THE PENNSYLVANIA RAILROAD
STANDARD
CIRCUITS FOR ELECTRIC SWITCHES

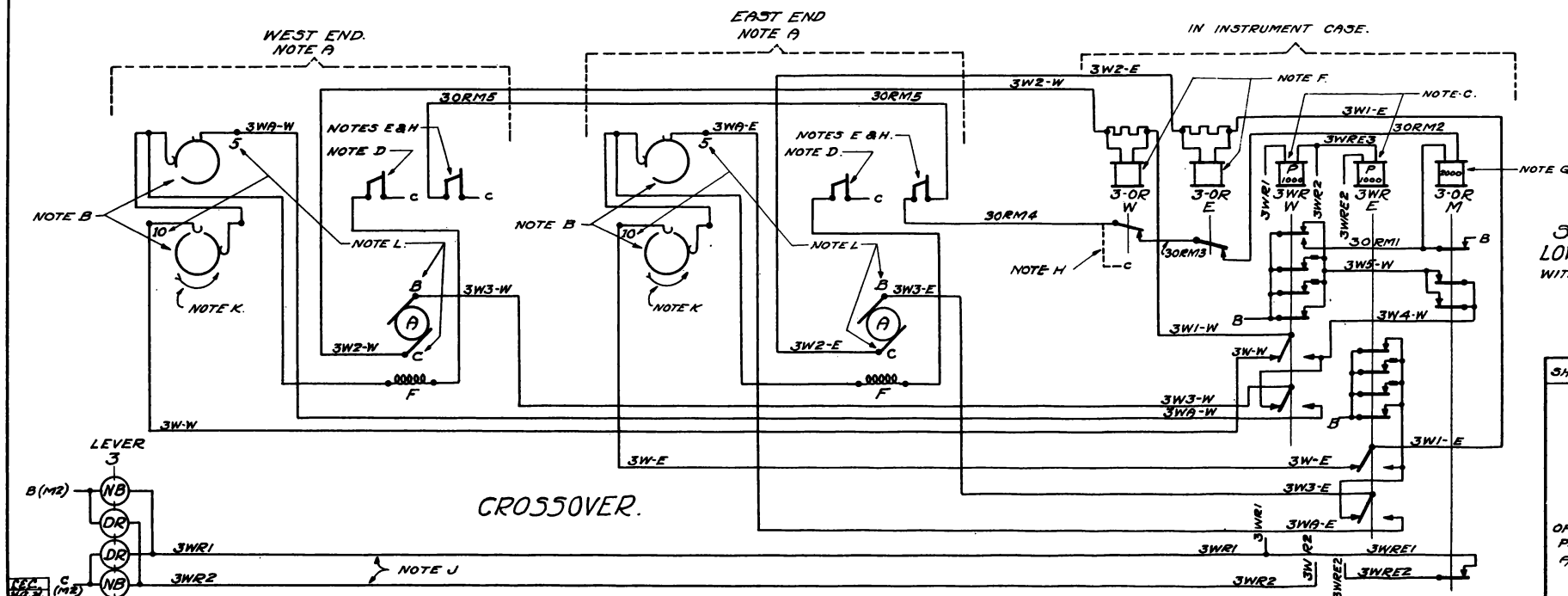
DESIGN OF C&P SIGNAL AND NEWS
FILED MAR. 1, 1937.

Approved: *A.H. Hudd*
Chief Signal Engineer

Approved: *[Signature]*



TURNOUT.



CROSSOVER.

NOTE :-

- A. SWITCH MOVEMENT- M2, M20 OR M22 - CLASS B - 20 VOLT MEDIUM SPEED.
- B. CONTACTS ON SWITCH INDICATION CIRCUIT CONTROLLER.- SEE NOTE L.
- C. POLARIZED SWITCH CONTROL RELAY WITH 2F & 2B LOW VOLTAGE CONTACTS, 2F HIGH VOLTAGE CONTACTS AND 4N & 4R POLAR CONTACTS, THE HIGH VOLTAGE FRONT CONTACTS BEING ADJUSTED TO OPEN AFTER THE LOW VOLTAGE CONTACTS.
- D. DUAL SELECTOR LEVER CONTACT ON M20 OR M22 MOVEMENT OR STICK CONTACT ACTUATED BY HAND CRANK OPERATION ON M2 MOVEMENT WHICH MUST BE MANUALLY RESET.
- E. DUAL SELECTOR LEVER CONTACT ON M20 OR M22 MOVEMENT.
- F. ORIO OVERLOAD RELAY (NON-STICK TYPE).
- G. DUAL SELECTOR AND OVERLOAD STICK REPEATER DN11 RELAY, ONCE OPENED CAN ONLY BE PICKED UP BY OPENING THE "WR" RELAY.
- H. WHEN CONTROLLING AN M2 MOVEMENT OMIT CONTACT REFERRED TO IN NOTE E AND CONNECT AS SHOWN BY DOTTED LINE.
- J. CONTROL CIRCUITS FOR "WR" RELAYS ARE TYPICAL. COMPLETE CIRCUITS FOR "WR" RELAYS SHALL BE SHOWN ON CIRCUIT PLAN FOR EACH INSTALLATION.
- K. ARROW INDICATES DIRECTION OF NEXT ROTATION.
- L. SWITCH MACHINE WIRING IS SHOWN FOR A MOVEMENT HAVING A R.H. POINT NORMALLY CLOSED. IF USED FOR A SWITCH HAVING A L.H. POINT NORMALLY CLOSED, INTERCHANGE LEADS TO TERMINALS 'B' & 'C' AND TO TERMINALS 5 & 10 ON MAIN TERMINAL BOARD IN SWITCH MACHINE, ALSO REVERSE THE INDICATION CIRCUIT CONTROLLER CAMS-NOTE B.

STYLE M2-M20-M22
LOW VOLTAGE MOVEMENTS
WITH ORIO OVERLOAD RELAY.

REVISIONS.

SUPERSEDES SH. 6 OF PLAN
3-823 DATED 6-25-22

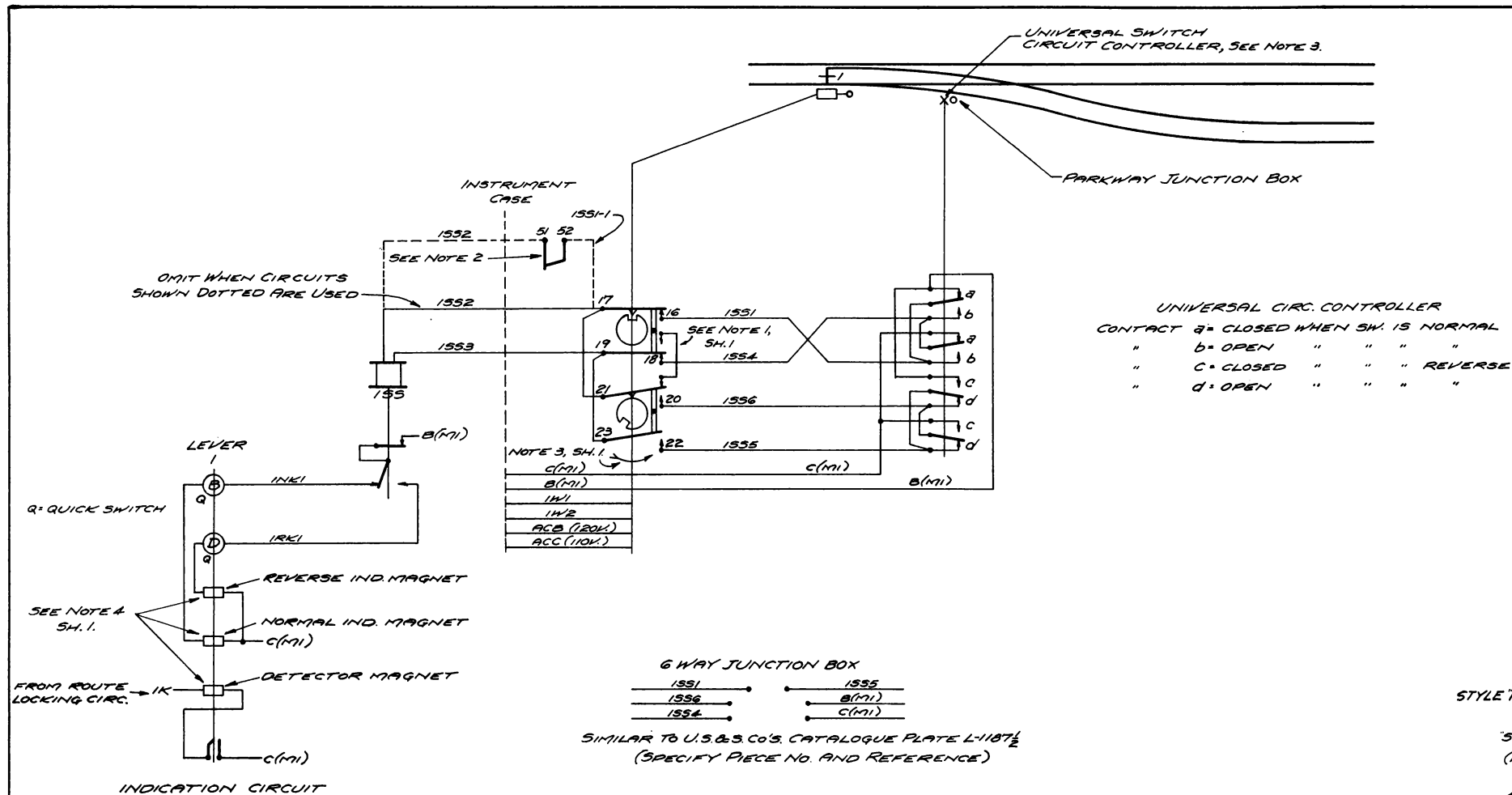
SHEET 6 OF 12.

3-823

THE PENNSYLVANIA RAILROAD
STANDARD
CIRCUITS FOR ELECTRIC SWITCHES

OFFICE OF CHIEF SIGNAL ENGINEER.
PHILA., PA., FEB. 3, 1927.
APPROVED: *[Signature]*
CHIEF SIGNAL ENGINEER

NOT TO SCALE
APPROVED: *[Signature]*
CHIEF ENGINEER.



STYLE 'M1', 'M2', 'M20', 'M22' MOVEMENTS
SWITCH INDICATION AND
'55' CONTROL CIRCUITS
(WITH QUICK SWITCH)
WHERE
45' SWITCH POINTS
ARE USED
AND
UNIVERSAL CIRCUIT
CONTROLLER PROVIDED

REVISIONS

SHEET 1 OF 12

S-823



THE PENNSYLVANIA RAILROAD STANDARD CIRCUITS FOR ELECTRIC SWITCHES

OFFICE OF CHIEF SIGNAL ENGINEER
PHILA., PA., SEPT. 5, 1935.

Approved:

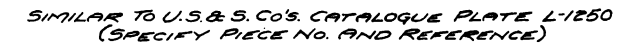
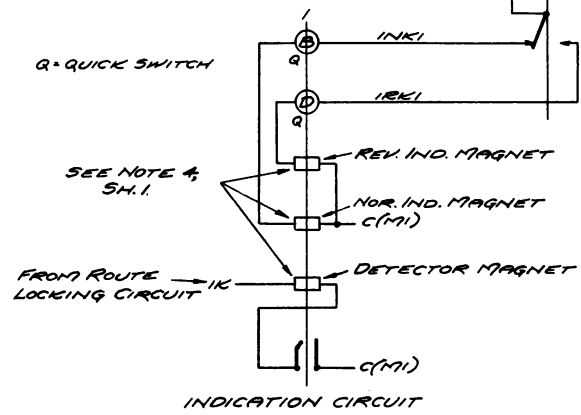
T. J. Sullivan
Chief Signal Engineer

NOT TO SCALE

Approved:

T. J. Sullivan
Chief Engineer

NEA
JAN
CUB
1935



- STYLE "M," "ME," "MP," "MP2" MOVEMENTS
SWITCH INDICATION AND
35' CONTROL CIRCUITS
(WITH QUICK SWITCH)
WHERE
45' SWITCH POINTS
ARE USED
AND
UNIVERSAL CIRCUIT
CONTROLLERS PROVIDED

REVISIONS	
5	

SHEET 8 OF 12
 S-823



THE PENNSYLVANIA RAILROAD

STANDARD

CIRCUITS FOR ELECTRIC SWITCHES

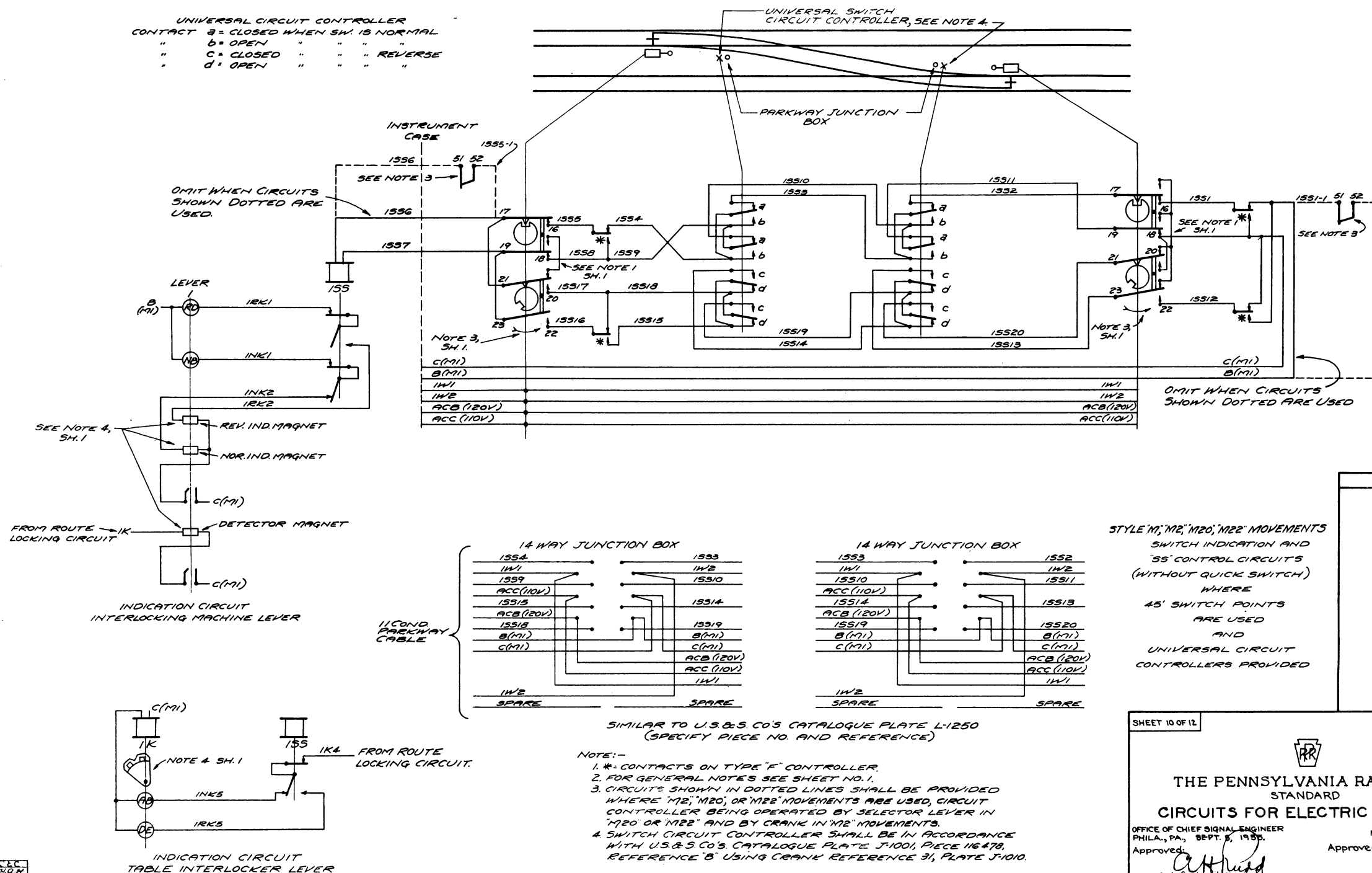
OFFICE OF CHIEF SIGNAL ENGINEER
 PHILA., PA., SEPT. 5, 1935.

Approved: *A. H. [Signature]*
 Chief Signal Engineer

NOT TO SCALE

Approved: *T. J. Skellern*
 Chief Engineer

UNIVERSAL CIRCUIT CONTROLLER
CONTACT a = CLOSED WHEN SW. IS NORMAL
" b = OPEN " " " "
" c = CLOSED " " " REVERSE
" d = OPEN " " " "



REVISIONS

STYLE "M1," "M2," "M20," "M22" MOVEMENTS
SWITCH INDICATION AND
'55' CONTROL CIRCUITS
(WITHOUT QUICK SWITCH)
WHERE
45' SWITCH POINTS
ARE USED
AND
UNIVERSAL CIRCUIT
CONTROLLERS PROVIDED

SHEET 10 OF 12

S-823

THE PENNSYLVANIA RAILROAD
STANDARD
CIRCUITS FOR ELECTRIC SWITCHES

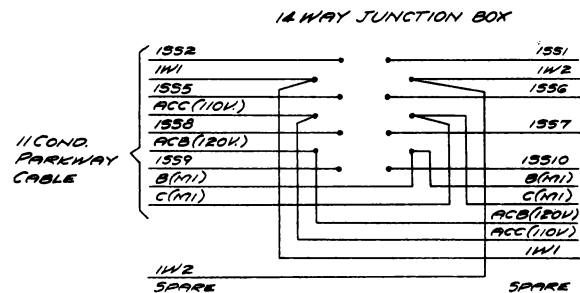
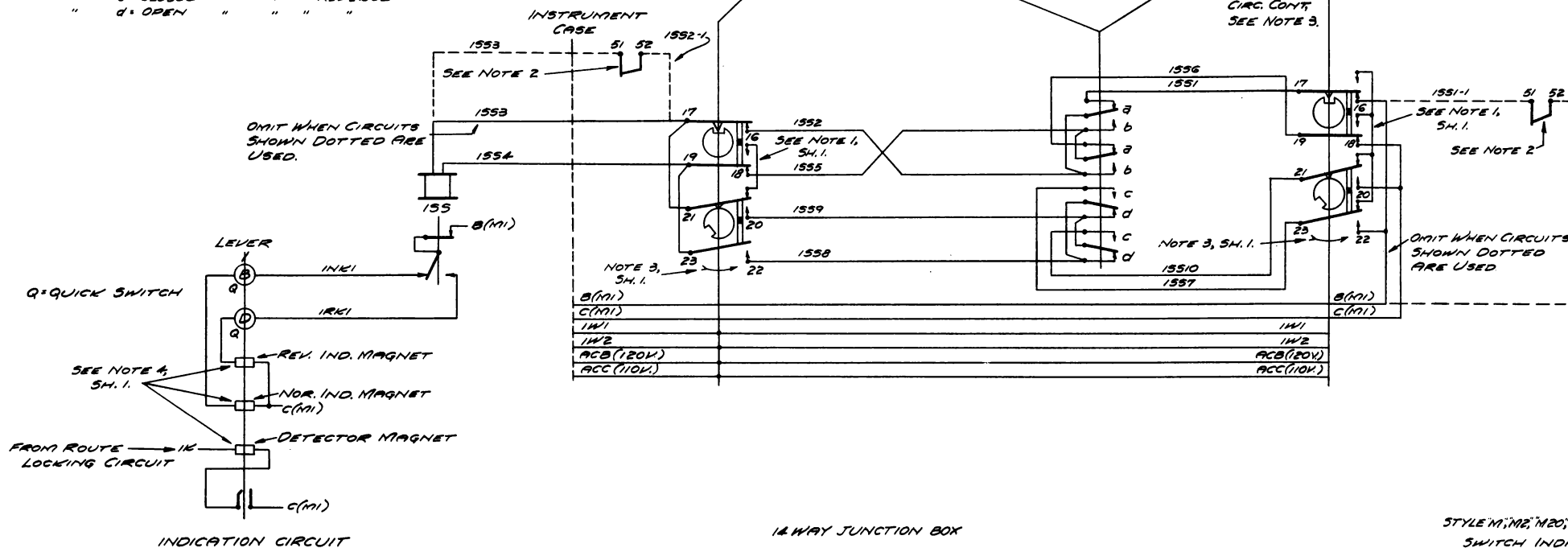
OFFICE OF CHIEF SIGNAL ENGINEER
PHILA., PA., SEPT. 5, 1935.

Approved: 
Chief Signal Engineer

NOT TO SCALE

Approved: *T. J. Skellman*
Chief Engineer

UNIVERSAL CIRCUIT CONTROLLER
CONTACT a: CLOSED WHEN SW. IS NORMAL
" b: OPEN " " " "
" c: CLOSED " " " REVERSE
" d: OPEN " " " "



SIMILAR TO U.S. & S. CO'S. CATALOGUE PLATE L-1250.
(SPECIFY PIECE NO. AND REFERENCE)

NOTE:-

1. FOR GENERAL NOTES SEE SHEET NO. 1.
2. SWITCHES IN DOTTED LINES SHALL BE PROVIDED WHERE "M2", "M20" OR "M22" MOVEMENTS ARE USED, CIRCUIT CONTROLLER BEING OPERATED BY SELECTOR LEVER IN "M20" OR "M22" AND BY CRANK IN "M2" MOVEMENTS.
3. SWITCH CIRCUIT CONTROLLER SHALL BE IN ACCORDANCE WITH U.S. & S. CO.'S CATALOGUE PLATE J-1001, PIECE 116478, REFERENCE 'B' USING CRANK REFERENCE 31, PLATE J-1010.
4. WHERE 45' SWITCH POINTS ARE LOCATED ON NEAR END OF CROSSOVER ONLY CIRCUIT CONTROLLER AND JUNCTION BOX MARKED 'A' SHALL BE PROVIDED AND WHERE 45' SWITCH POINTS ARE LOCATED ON FAR END OF CROSSOVER ONLY CIRCUIT CONTROLLER AND JUNCTION BOX MARKED 'B' SHALL BE PROVIDED.

STYLE "M", "M2", "M20", "M22" MOVEMENTS
SWITCH INDICATION AND
"35" CONTROL CIRCUITS
(WITH QUICK SWITCH)
WHERE
45' SWITCH POINT
IS USED
ON ONE END ONLY
AND
UNIVERSAL CIRCUIT
CONTROLLER PROVIDED.

REVISIONS

SHEET 11 OF 12

S-823



THE PENNSYLVANIA RAILROAD
STANDARD

CIRCUITS FOR ELECTRIC SWITCHES

OFFICE OF CHIEF SIGNAL ENGINEER
PHILA., PA., SEPT. 5, 1935.

NOT TO SCALE

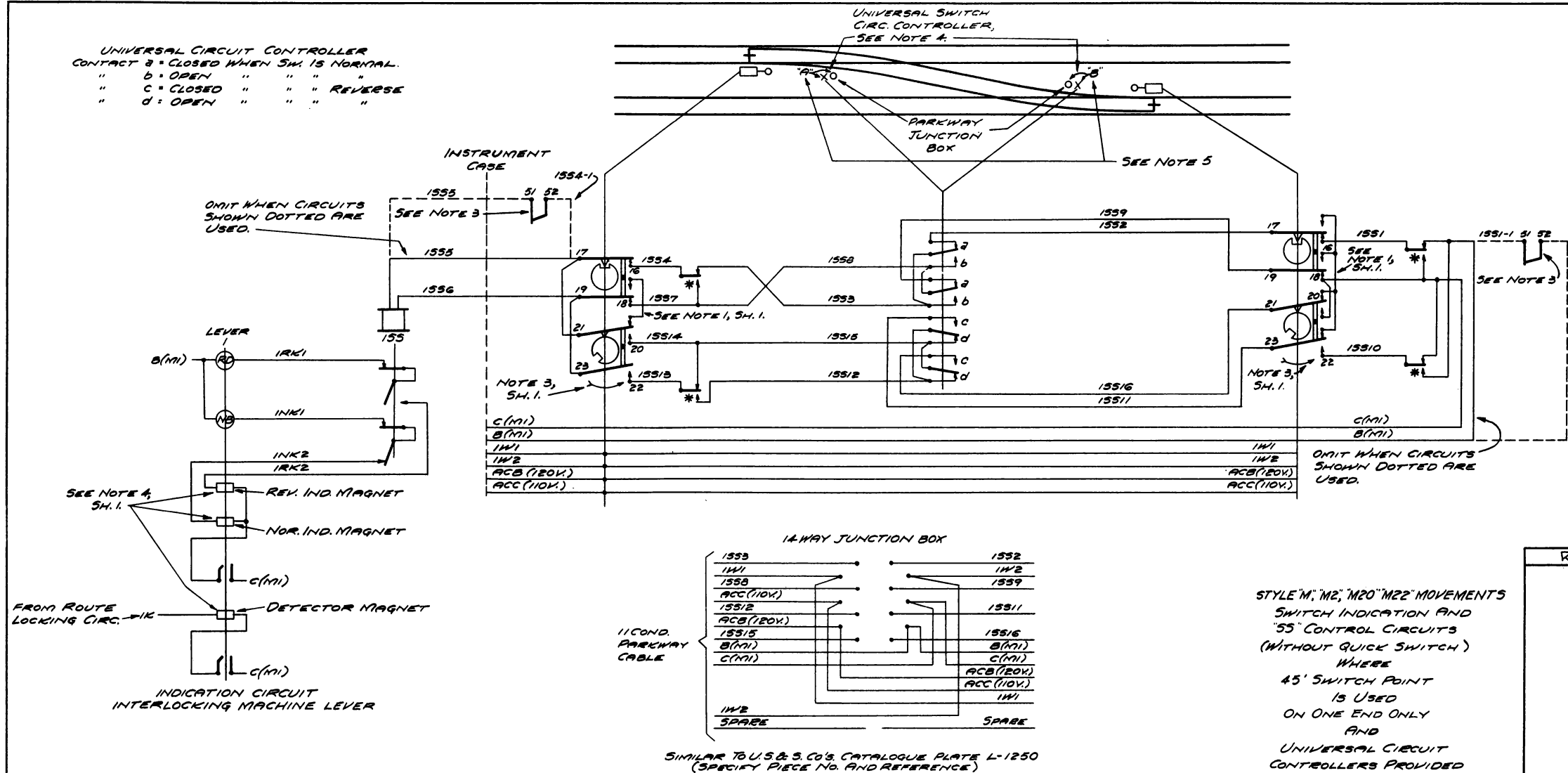
Approved:

Approved:

A.H. Hurd
Chief Signal Engineer

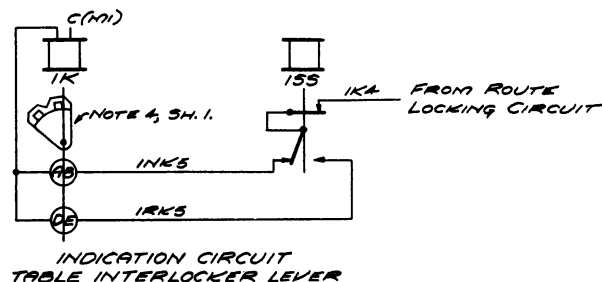
T. J. Skellman
Chief Engineer

UNIVERSAL CIRCUIT CONTROLLER
CONTACT 2 = CLOSED WHEN SW. IS NORMAL.
" b = OPEN " " " "
" c = CLOSED " " " REVERSE
" d = OPEN " " " "



NOTE:-

1. * CONTACTS ON TYPE "F" CONTROLLER.
2. FOR GENERAL NOTES SEE SHEET NO. 1.
3. CIRCUITS SHOWN IN DOTTED LINES SHALL BE PROVIDED WHERE "M2", "M20" OR "M22" MOVEMENTS ARE USED, CIRCUIT CONTROLLER BEING OPERATED BY SELECTOR LEVER IN "M20" OR "M22" AND BY CRANK IN "M2" MOVEMENTS.
4. SWITCH CIRCUIT CONTROLLER SHALL BE IN ACCORDANCE WITH U.S.S. CO'S. CATALOGUE PLATE J-1001, PIECE 116478, REFERENCE "B" USING CRAWL REFERENCE 31, PLATE J-1010.
5. WHERE 45 SWITCH POINTS ARE LOCATED ON FARE END OF CROSSOVER ONLY CIRCUIT CONTROLLER AND JUNCTION BOX MARKED "A" SHALL BE PROVIDED AND WHERE 45 SWITCH POINTS ARE LOCATED ON FARE END OF CROSSOVER ONLY CIRCUIT CONTROLLER AND JUNCTION BOX MARKED "B" SHALL BE PROVIDED.



STYLE "M", "M2", "M20" "M22" MOVEMENTS
SWITCH INDICATION AND
"55" CONTROL CIRCUITS
(WITHOUT QUICK SWITCH)
WHERE
45' SWITCH POINT
IS USED
ON ONE END ONLY
AND
UNIVERSAL CIRCUIT
CONTROLLERS PROVIDED

REVISIONS

S-823

SHEET 12 OF 12

THE PENNSYLVANIA RAILROAD
STANDARD
CIRCUITS FOR ELECTRIC SWITCHES

OFFICE OF CHIEF SIGNAL ENGINEER
PHILA., PA., SEPT. 5, 1935.

Approved:

Chief Signal Engineer

NOT TO SCALE

Approved:

T. J. Skelton
Chief Engineer