

## 6A KEY TELEPHONE SYSTEM

### SINGLE-TALKING LINK

### CONNECTIONS

#### 1. GENERAL

1.01 This section is reissued to:

- (a) Show minor wiring changes.
- (b) Provide connection information for
  - Auxiliary relay circuit 227B KTU, which replaces the 227A KTU rated MD.
  - TOUCH-TONE® adapter, 247A (MD) KTU, formerly covered in Section 518-410-410.
- (c) Delete installation information.

Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

1.02 Identification and installation information for this system is covered in Section 518-410-100.

1.03 The visual and audible signal circuit referred to in this section is the electro-mechanical flash, wink, ring, and time-out circuit (232-type KTU).

#### 2. CONNECTIONS

2.01 The connection diagrams serve as a guide to the installer in connecting the 6A Key Telephone System units to provide the desired features.

2.02 When adding a TOUCH-TONE adapter (247-type KTU) to a system that will have TOUCH-TONE and rotary dial stations, the following applies:

- (a) TOUCH-TONE and rotary dial stations must be assigned line circuits on separate KTUs [214B (MD), 234A, or 215A]. This insures that the TOUCH-TONE adapter will be activated only by TOUCH-TONE dial stations.

- (b) The number of each type dial station would determine whether they are assigned to the 9-station KTU [214B (MD) or 234A] or 3-station KTU (215A).

2.03 Where diodes, resistors, etc., are shown to be furnished on a local basis, use a 228A KTU (bridging unit) or equivalent for terminations.

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Fig. 14 — Addition of TOUCH-TONE Adapter Circuit [247B with 207B or C, 214B (MD), and 215A KTUs]

Fig. 15 — Addition of TOUCH-TONE Adapter Circuit (247B with 234A and 215A KTUs)

**TABLE A**  
**WIRING OPTIONS ASSOCIATED**  
**WITH SYSTEM**

WIRING	OPTION	
X	Without (Max 9 Codes)	Transfer Circuit
W	With (Over 9 Codes)	
K	With	Preset Conference
J	Without	
G	With	Camp-On
N	Without	
H	Without	Aux Rel Busy Lamp Ckt (Note 1)
M	With	
S	Without	Aux Rel Lamp Flash Ckt (Note 2)
V	With	
AK	Interrupted	Audible Signal
AL	Single Spurt	
AJ	Dial, Busy, and Audible Tone (Note 3)	
AQ	Busy Signal and Camp-On Control Circuit When Used With a 207B KTU	
AR	Preset Conference Time-Out Circuit	

*Note 1:* Provide *M* option when system is over 40 busy lamps.

*Note 2:* Provide *V* option when system is over 20 simultaneous flashing lamps.

*Note 3:* A 207C or 234A KTU is required when dial tone is furnished.

**TABLE B**  
**WIRING OPTIONS ASSOCIATED**  
**WITH STATIONS**

WIRING	OPTION	
E	With	Automatic Cutoff (Note 1)
F	Without	
Y	Over <i>T</i> & <i>R</i> Leads	Sta Aud Sig
Z	Over Sep Sig Pair	
AA	Sta Assoc with Com Aud Arr	
Q	With	Aux Rel Sta Ckt (MD) (Note 2)
AG	Without	
AG	Without	Add-On Transfer Ckt (Note 3)
AO	With	
AE	Local Sta or Off Prem Sta When <i>AK</i> Opt is Provided	Sig Key Selection of Station
AF	Off Prem Sta When <i>AL</i> Opt is Provided	
AB	Sta to Originate Add-On Conference (MD)	
AS	Without	Station Busy
AT	With	

**Note 1:** A station wired for *F* option cannot camp on the system.

**Note 2:** Provide *Q* option when a station that originates add-on conferencing (*AB* option) is also associated with *Z* or *AA* option.

**Note 3:** Provide *AO* option for each station that originates the add-on conference circuit.

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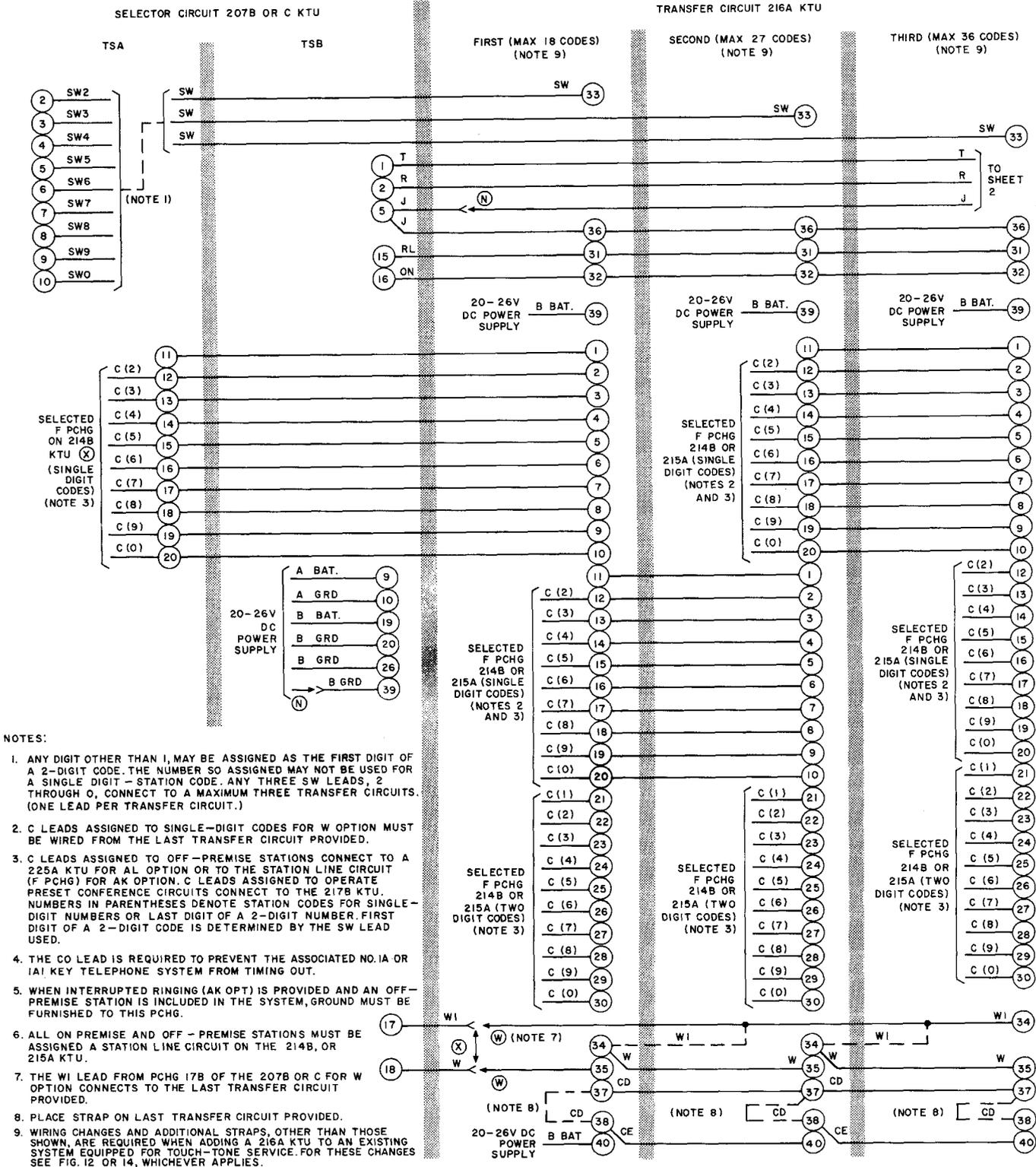


Fig. 1 — Connections for Basic Units [207B or C, 214B (MD), 216A, and 19B KTUs] (Sheet 1)

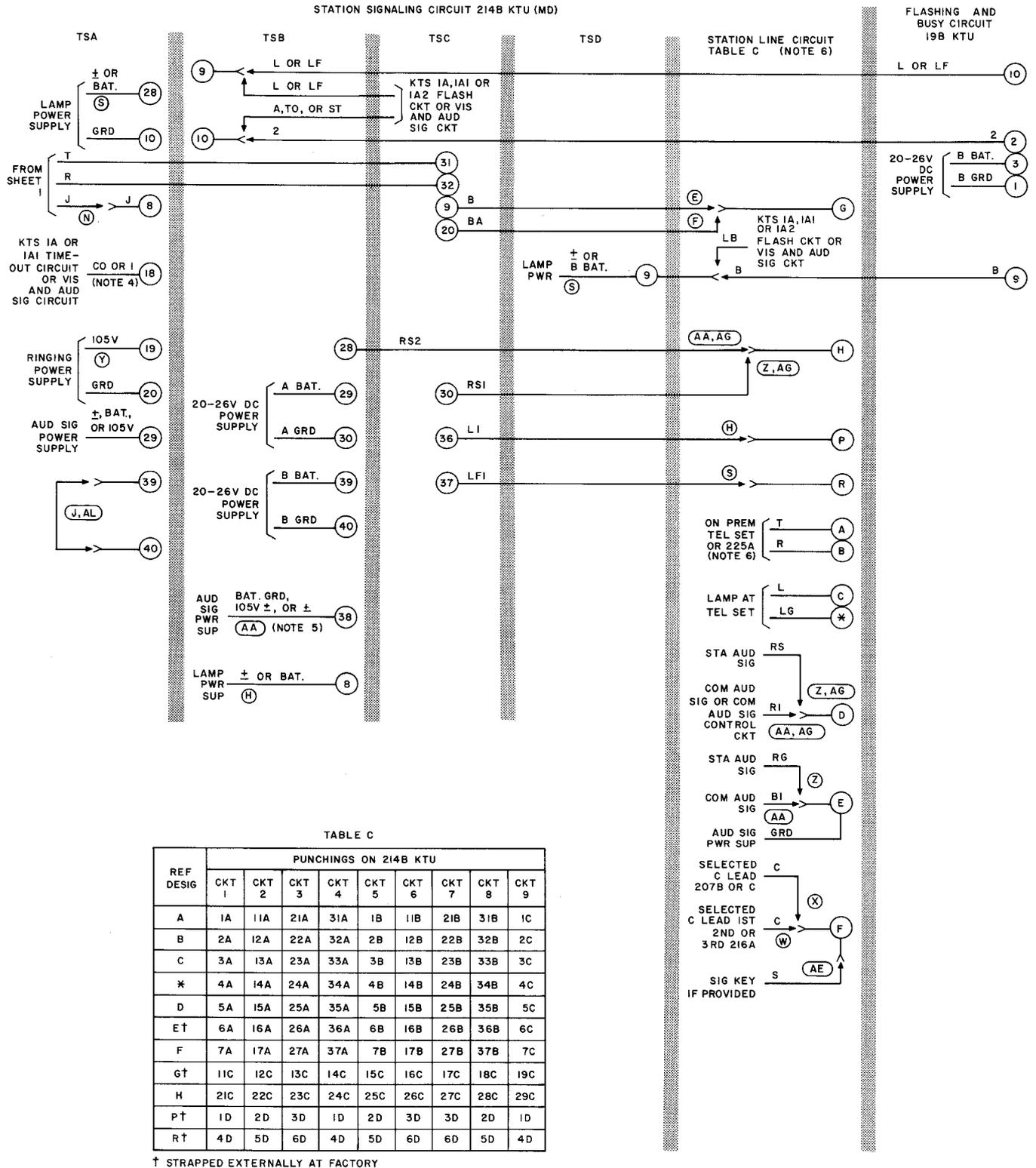
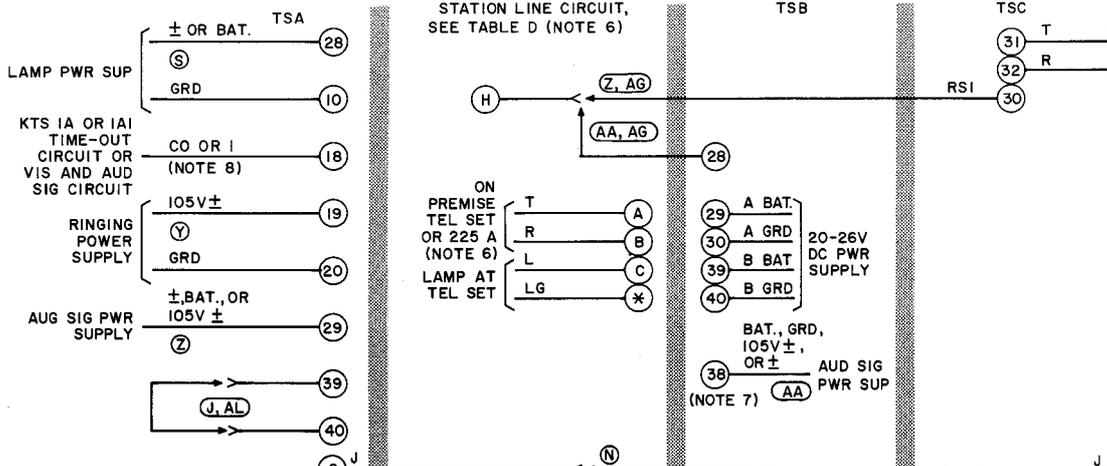


Fig. 1 — Connections for Basic Units [207B or C, 214B (MD), 216A, and 19B KTUs] (Sheet 2)

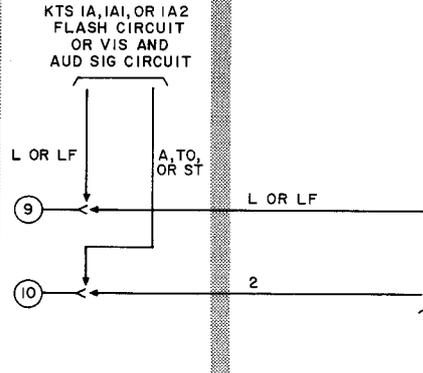
PART OF SELECTOR AND TRANSFER CIRCUIT-234A KTU (MAX. 18 CODES)



- NOTES:
1. ANY DIGIT OTHER THAN 1, MAY BE ASSIGNED AS THE FIRST DIGIT OF A 2-DIGIT CODE. THE NUMBER SO ASSIGNED MAY NOT BE USED FOR A SINGLE DIGIT-STATION CODE. ANY THREE SW LEADS, 2 THROUGH 0, CONNECT TO A MAXIMUM THREE TRANSFER CIRCUITS. (ONE LEAD PER TRANSFER CIRCUIT.)
  2. C LEADS ASSIGNED TO SINGLE-DIGIT CODES FOR W OPTION MUST BE WIRED FROM THE LAST TRANSFER CIRCUIT PROVIDED.
  3. C LEADS ASSIGNED TO OFF-PREMISE STATIONS CONNECT TO A 225A KTU FOR AL OPTION OR TO THE STATION LINE CIRCUIT (F PCHG). FOR AK OPTION, C LEADS ASSIGNED TO OPERATE PRESET CONFERENCE CIRCUITS CONNECT TO THE 217B KTU. NUMBERS IN PARENTHESES DENOTE STATION CODES FOR SINGLE-DIGIT NUMBERS OR LAST DIGIT OF A 2-DIGIT NUMBER. FIRST DIGIT OF A 2-DIGIT CODE IS DETERMINED BY THE SW LEAD USED.
  4. THE W1 LEAD FROM PCHG 7D OF THE 234A FOR W OPTION CONNECTS TO THE LAST TRANSFER CIRCUIT PROVIDED. WHEN 216A KTUS ARE NOT PROVIDED, STRAP 7D TO 20D ON 234A KTU.
  5. PLACE STRAP ON LAST TRANSFER CIRCUIT PROVIDED. WHEN 216A KTUS ARE NOT PROVIDED, STRAP 16D TO 19D ON 234A KTU.
  6. ALL ON PREMISE AND OFF-PREMISE STATIONS MUST BE ASSIGNED STATION LINE CIRCUIT ON THE 234A OR 215A KTU.
  7. WHEN INTERRUPTED RINGING (AK OPT) IS PROVIDED AND AN OFF-PREMISE STATION IS INCLUDED IN THE SYSTEM, GROUND MUST BE FURNISHED TO THIS PCHG.
  8. THE CO LEAD IS REQUIRED TO PREVENT THE ASSOCIATED NO. IA OR IAI KEY TELEPHONE SYSTEM FROM TIMING OUT.

REF DESIG	PUNCHINGS ON 234A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
A	1A	11A	21A	31A	1B	11B	21B	31B	1C
B	2A	12A	22A	32A	2B	12B	22B	32B	2C
C	3A	13A	23A	33A	3B	13B	23B	33B	3C
*	4A	14A	24A	34A	4B	14B	24B	34B	4C
D	5A	15A	25A	35A	5B	15B	25B	35B	5C
E†	6A	16A	26A	36A	6B	16B	26B	36B	6C
F	7A	17A	27A	37A	7B	17B	27B	37B	7C
G†	11C	12C	13C	14C	15C	16C	17C	18C	19C
H	21C	22C	23C	24C	25C	26C	27C	28C	29C
P†	1D	2D	3D	1D	2D	3D	3D	2D	1D
R†	4D	5D	6D	4D	5D	6D	6D	5D	4D

9. WIRING CHANGES AND ADDITIONAL STRAPS, OTHER THAN THOSE SHOWN, ARE REQUIRED WHEN ADDING A 216A KTU TO AN EXISTING SYSTEM EQUIPPED FOR TOUCH-TONE SERVICE. FOR THESE CHANGES SEE FIG. 13 OR 15, WHICHEVER APPLIES.



TO SHEET 2

Fig. 2 — Connections for Basic Units (234A, 216A, and 19B KTUs) (Sheet 1)

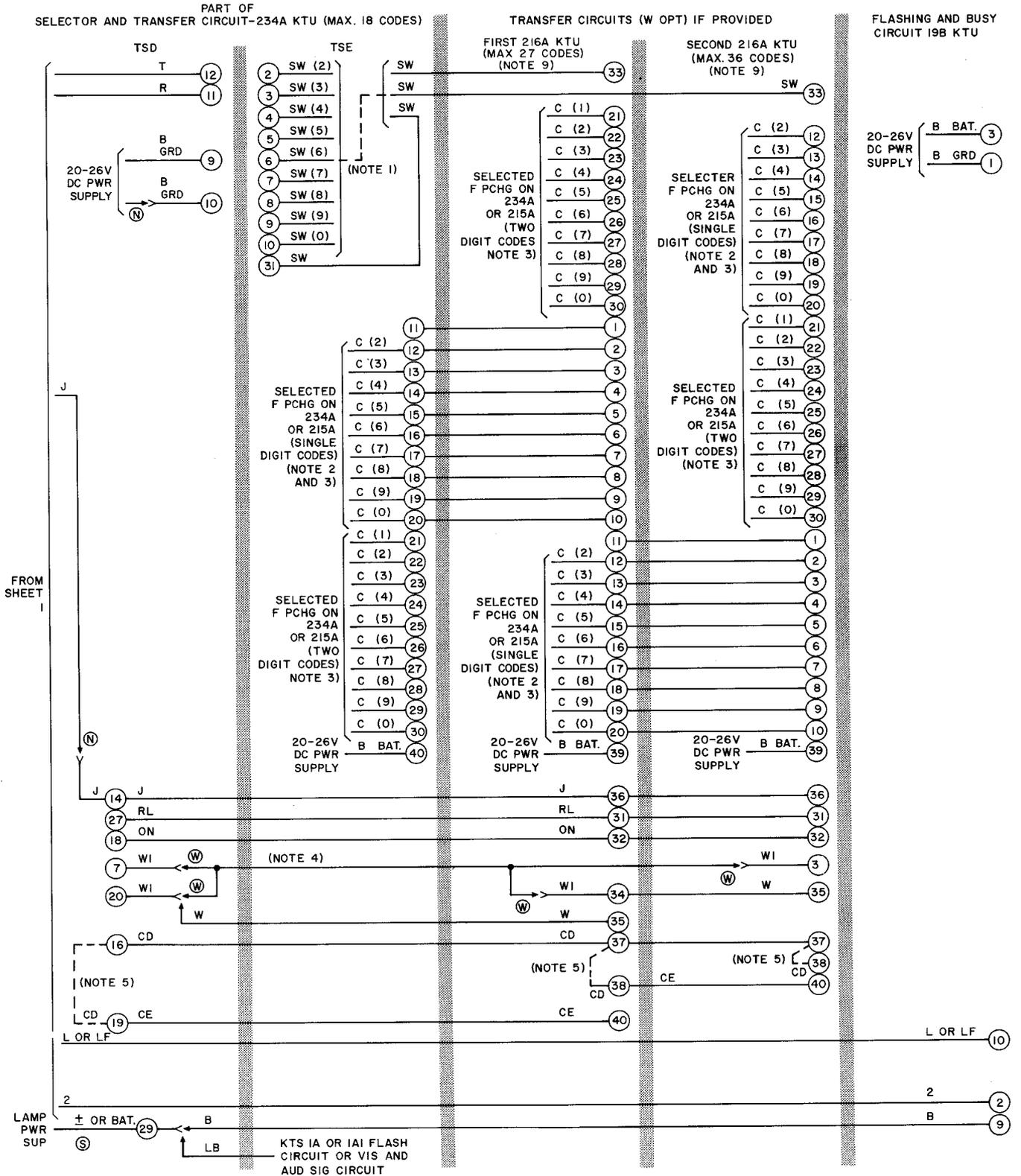
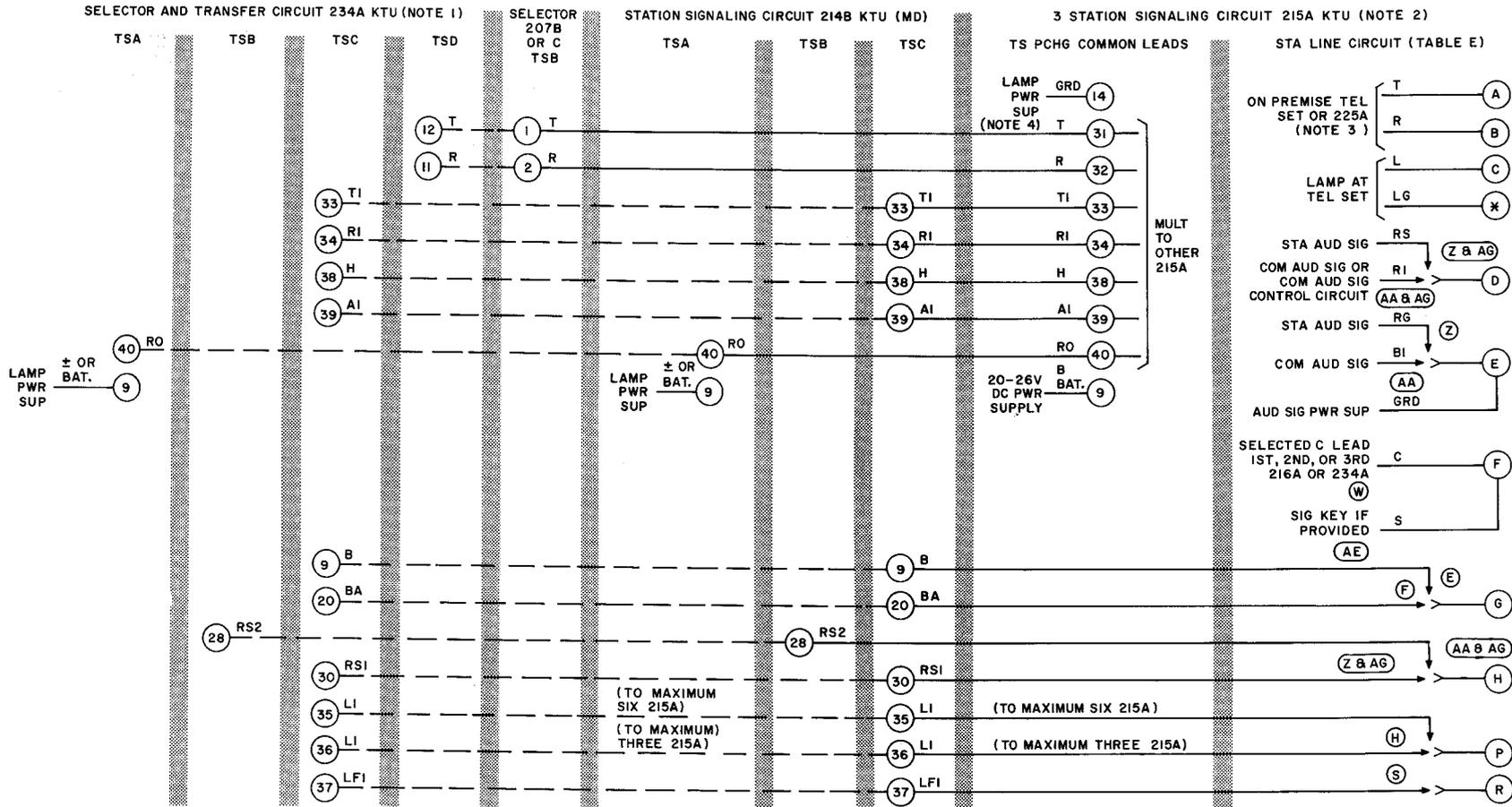


Fig. 2 — Connections for Basic Units (234A, 216A, and 19B KTUs) (Sheet 2)



NOTES:

- DASHED LINES INDICATE CONNECTIONS TO 215A KTU WHEN 234A KTU IS PROVIDED IN LIEU OF 207B OR C KTU AND 214B KTU.
- PROVIDE ONE 215A KTU FOR EACH THREE STATIONS OVER NINE ON THE SYSTEM (W OPT).
- ALL ON-PREMISE AND OFF-PREMISE STATIONS MUST BE ASSIGNED A STATION LINE CIRCUIT.
- TERMINAL 31 IS CONNECTED AS SHOWN WHEN 215A KTU IS ASSIGNED TO ROTARY DIAL STATIONS. WHEN THE 215A KTU IS ASSIGNED TO TOUCH-TONE DIAL STATIONS, TERMINAL 31 CONNECTS TO THE TOUCH-TONE ADAPTER. SEE FIG. 12, 13, 14 OR 15 WHICHEVER APPLIES.

TABLE E

REF DESIG	PCHGS ON 215A		
	CKT 1	CKT 2	CKT 3
A	1	11	21
B	2	12	22
C	3	13	23
*	4	14	24
D	5	15	25
E†	6	16	26
F	7	17	27
G†	18	19	20
H	28	29	30
P		35	
R		37	

† STRAPPED EXTERNALLY AT FACTORY

Fig. 3 Addition of Three Station Line Circuits (215A KTU)

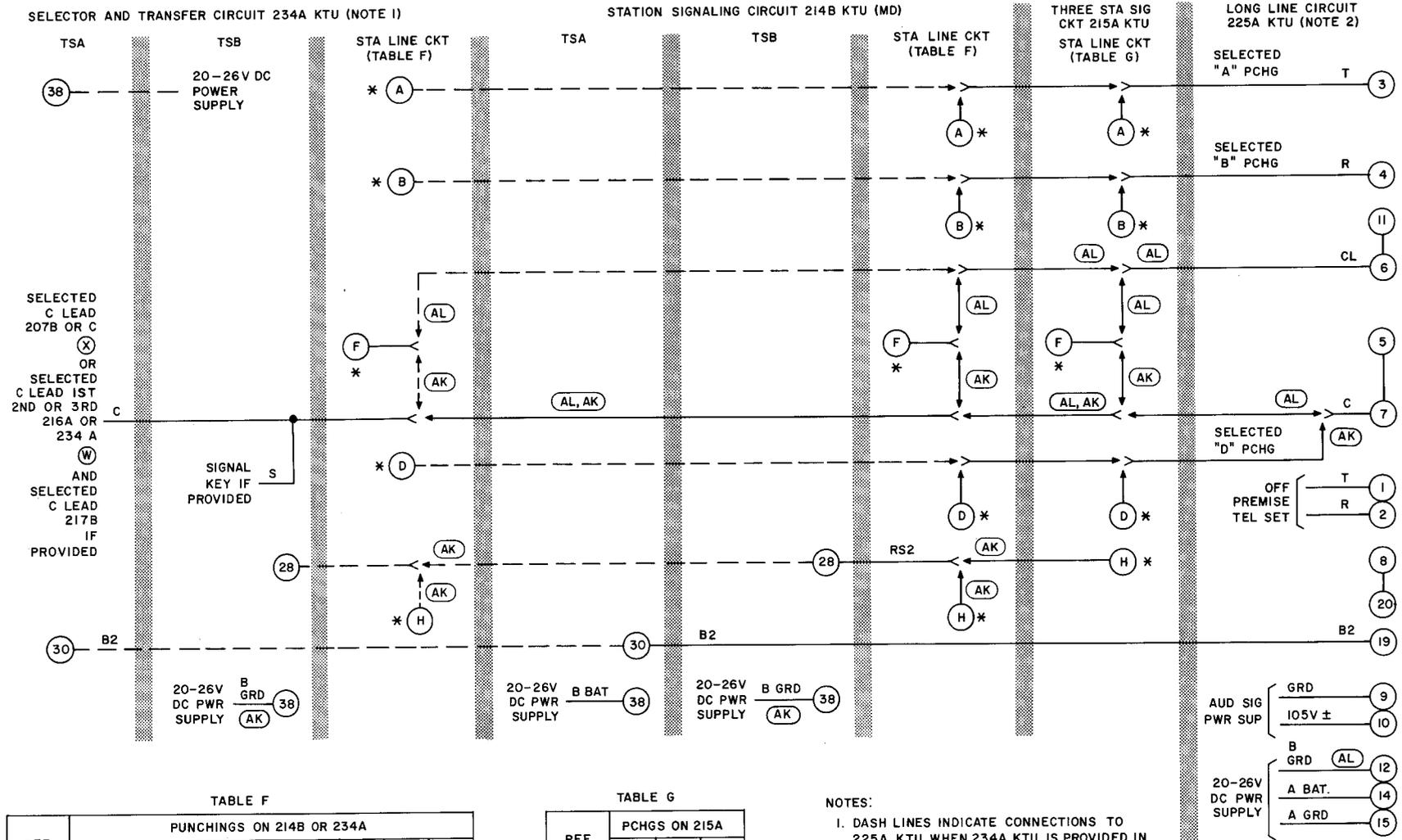


TABLE F

REF DESIG	PUNCHINGS ON 214B OR 234A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
A	1A	11A	21A	31A	1B	11B	21B	31B	1C
B	2A	12A	22A	32A	2B	12B	22B	32B	2C
D	5A	15A	25A	35A	5B	15B	25B	35B	5C
F	7A	17A	27A	37A	7B	17B	27B	37B	7C
H	21C	22C	23C	24C	25C	26C	27C	28C	29C

TABLE G

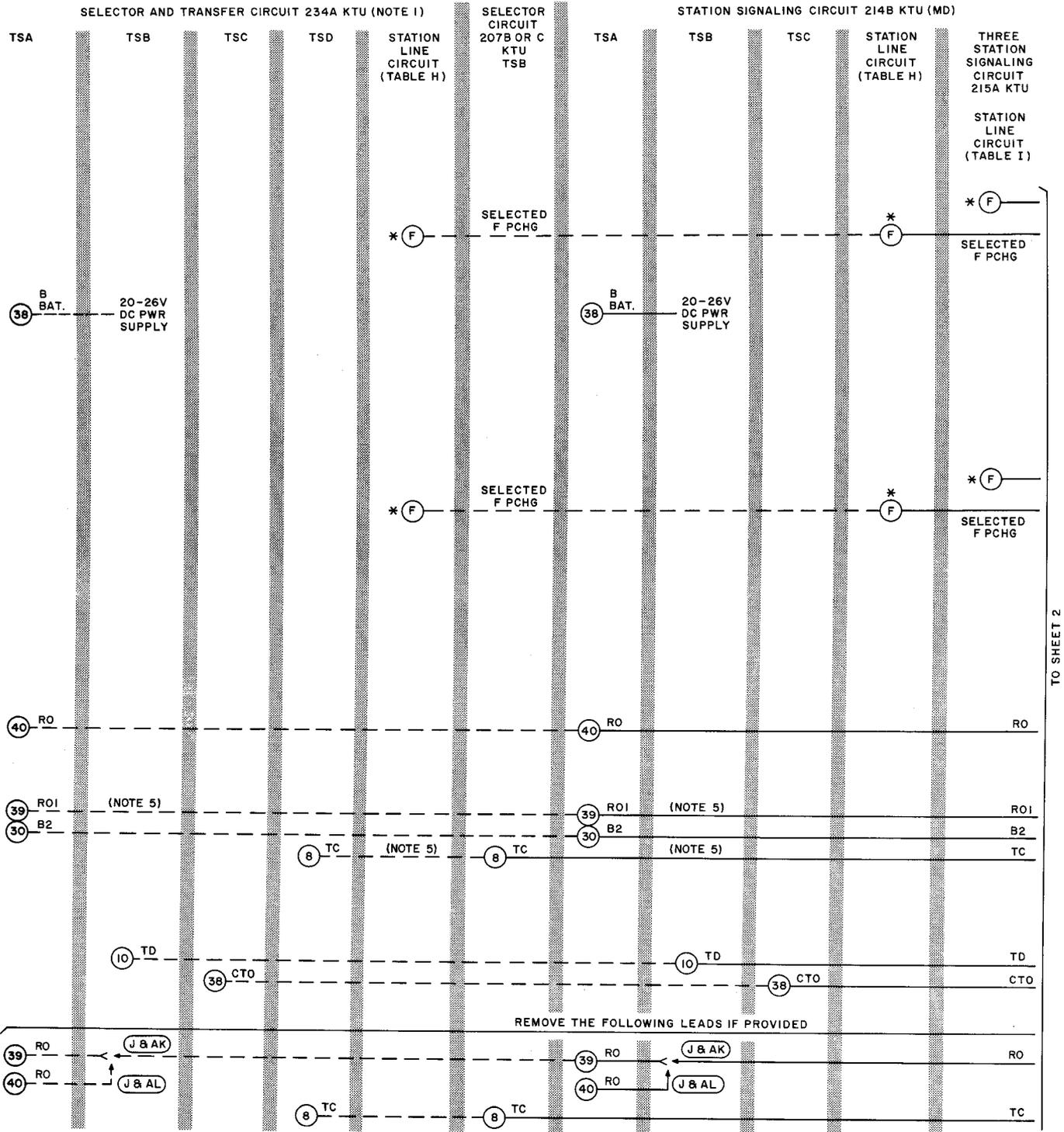
REF DESIG	PCHGS ON 215A		
	CKT 1	CKT 2	CKT 3
A	1	11	21
B	2	12	22
D	5	15	25
F	7	17	27
H	28	29	30

NOTES:

- DASH LINES INDICATE CONNECTIONS TO 225A KTU WHEN 234A KTU IS PROVIDED IN LIEU OF 214B KTU.
  - EACH OFF-PREMISE STATION MUST BE ASSIGNED A STATION LINE CIRCUIT ON THE 214B, 215A, OR 234A KTU.
- \* LINE CIRCUIT ASSIGNED TO OFF-PREMISE STATION.

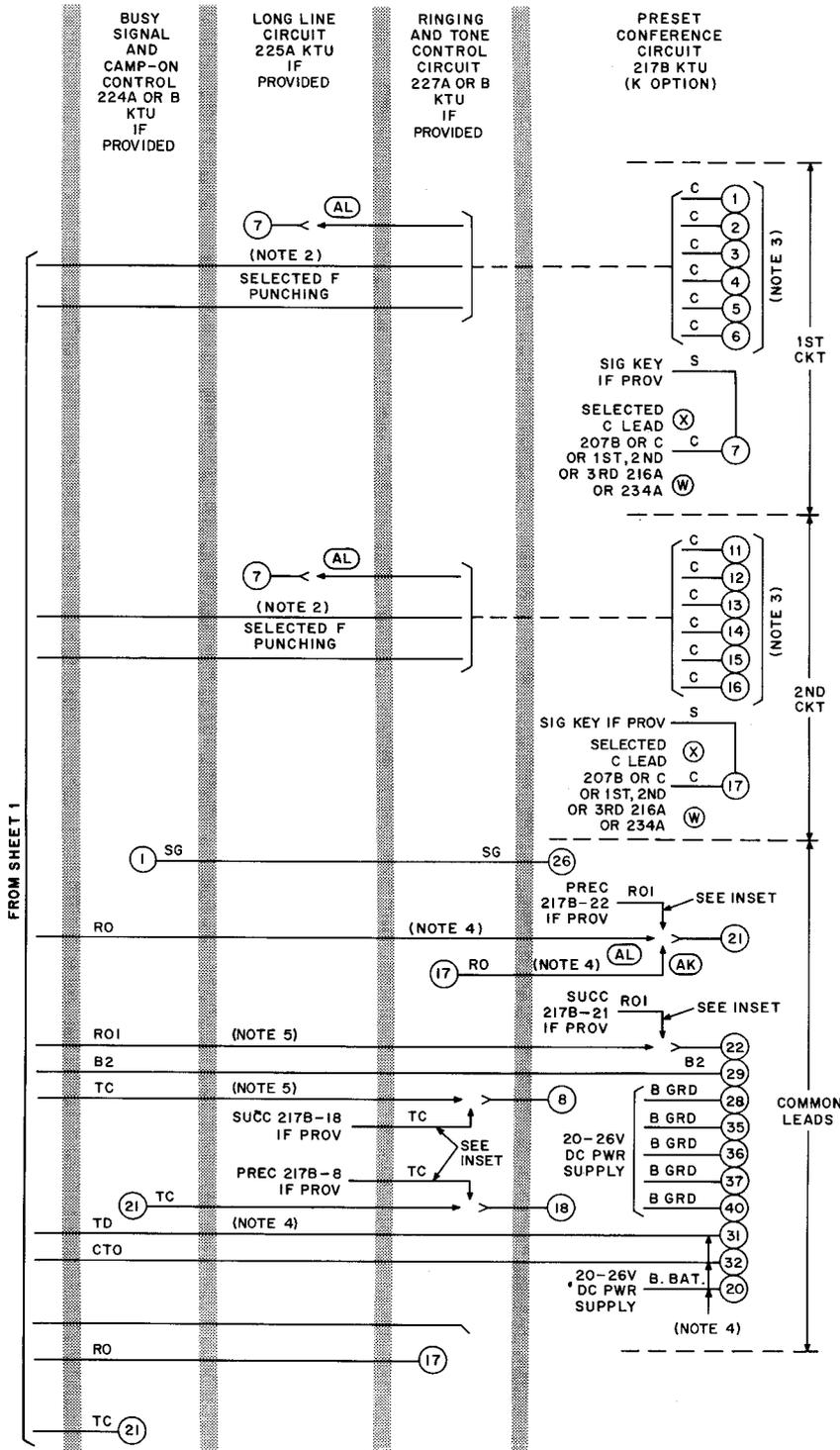
Fig. 4 — Addition of Long Line Circuit (225A KTU)

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TO SHEET 2

Fig. 5 — Addition of Preset Conference and Time-Out Circuit (217B KTU) (Sheet 1)



- NOTES:
1. DASH LINES INDICATE CONNECTIONS TO 217B KTU WHEN 234A KTU IS PROVIDED IN LIEU OF 207B OR C AND 214B KTU.
  2. WHEN AK OPT (INTERRUPTED AUD SIG) IS FURNISHED, THE C LEAD FOR THE OFF-PREMISE STATION CONNECTS TO THE F PUNCHING OF THE STATION LINE CIRCUIT ASSIGNED TO IT ON THE 214B, 215A, OR 234A.
  3. TO MAXIMUM 6-STATION OR LONG LINE CIRCUITS (ONE CIRCUIT PER C LEAD). A STATION MAY APPEAR ON MORE THAN ONE CONFERENCE CIRCUIT.
  4. PROVIDE STRAP TO FIRST 217B ONLY.
  5. PROVIDE STRAP TO LAST 217B ONLY.
- \* LINE CIRCUIT OF STATION ASSIGNED TO PRESET CONFERENCE CIRCUIT.

TABLE I

REF DESIG	PCHGS ON 215A		
	CKT 1	CKT 2	CKT 3
F	7	17	27

TABLE H

REF DESIG	PUNCHINGS ON 214B OR 234A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
F	7A	17A	27A	37A	7B	17B	27B	37B	7C

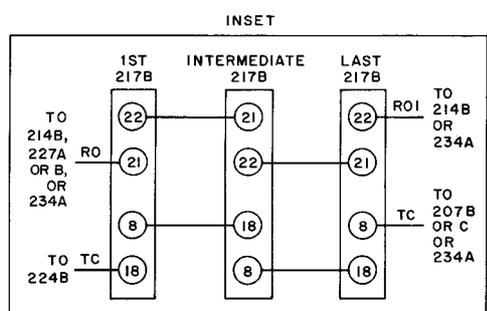


Fig. 5 — Addition of Preset Conference and Time-Out Circuit (217B KTU) (Sheet 2)

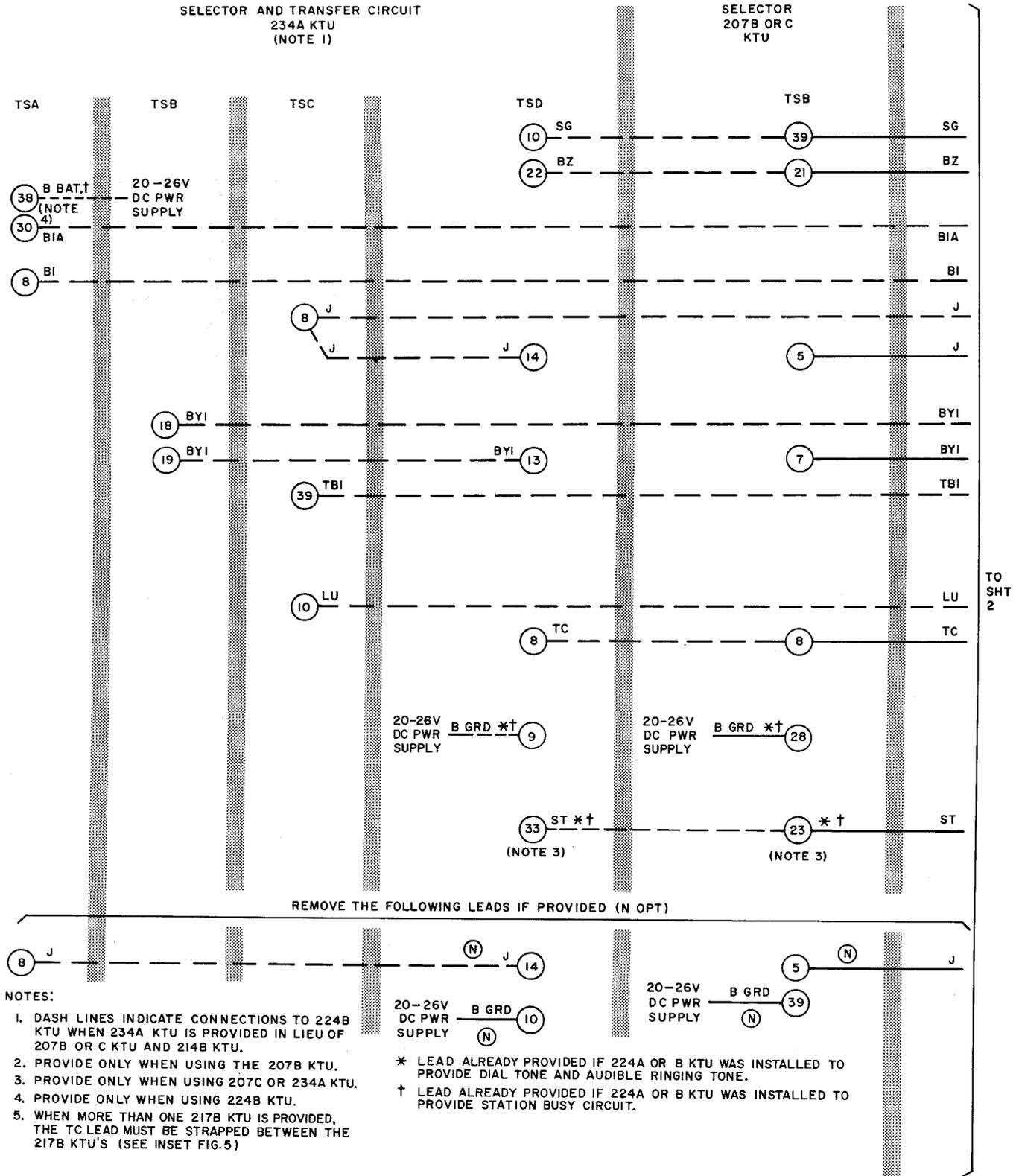


Fig. 6 — Addition of Camp-On Control Circuit (224B KTU) (Sheet 1)

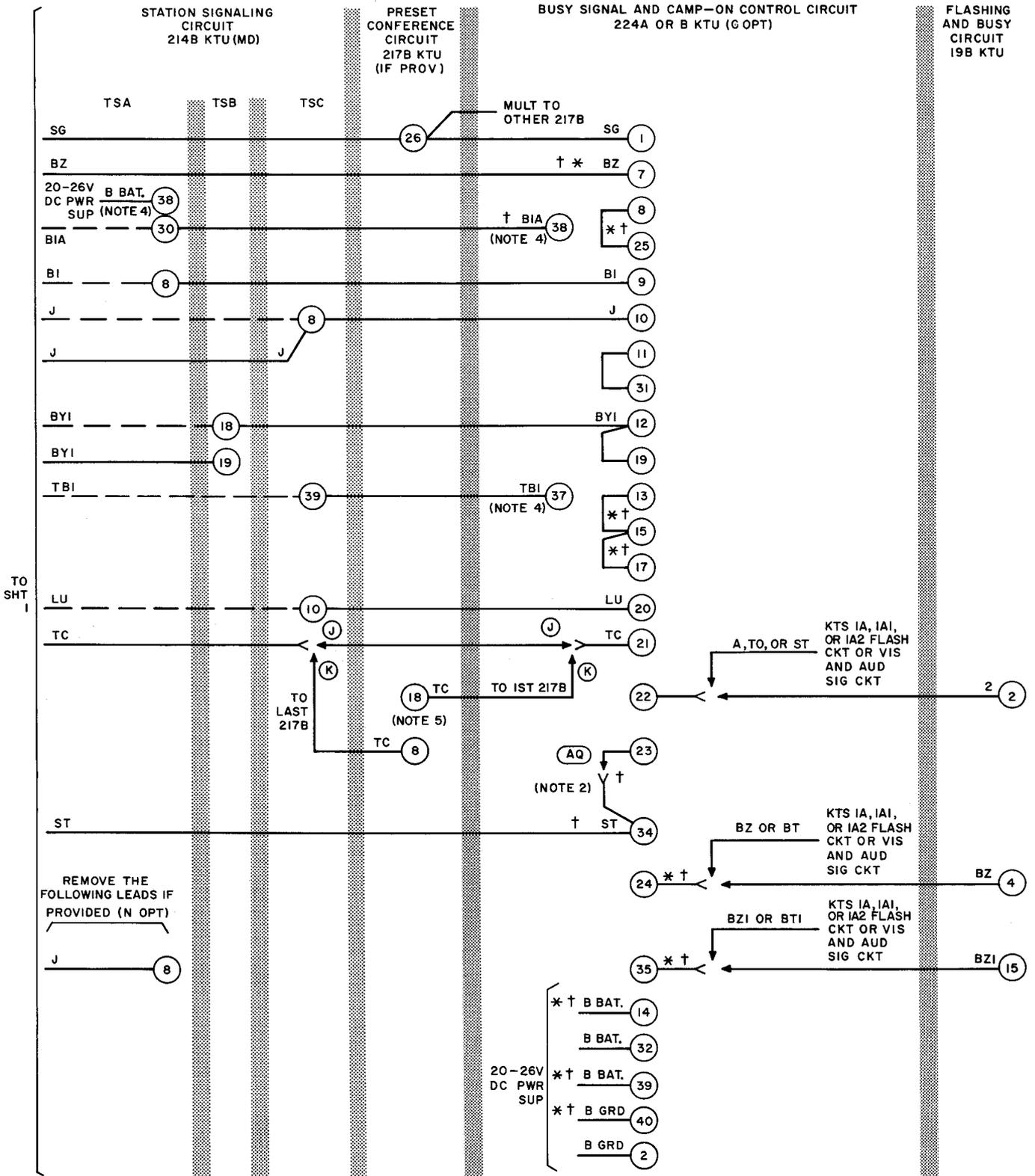


Fig. 6 — Addition of Camp-On Control Circuit (224B KTU) (Sheet 2)

NOTES:

1. DASH LINES INDICATE CONNECTIONS WHEN 234A KTU IS PROVIDED IN LIEU OF 214B KTU.
  2. AN ADD-ON TRANSFER CKT IS REQUIRED FOR EACH STATION ORIGINATING ADD-ON CONFERENCE. USE A 227A OR B KTU FOR SINGLE LINE ADD-ON OR A 229B KTU FOR SINGLE OR MULTIPLE LINE ADD-ON.
  3. PROVIDE ONE NONLOCKING SIGNAL KEY FOR EACH ADD-ON CONFERENCE CKT.
  4. PLACE STRAP ON LAST 226A OR B KTU ONLY.
  5. PLACE B BAT ON FIRST 226A OR B KTU ONLY.
  6. MORE THAN ONE STATION CAN ORIGINATE THE SAME ADD-ON CONFERENCE CKT BY MULTIPLYING THE "M" LEADS OF THE ADD-ON TRANSFER CKTS. TO PCHG 15 OF THE SAME 226A OR B KTU.
  7. PROVIDE ONE 226A OR B KTU FOR EACH CENTRAL OFFICE OR PBX LINE TO BE CONFERENCED.
  8. RESISTOR REQUIRED ON 226A KTU ONLY. ORDER AND PLACE LOCALLY.
  9. USE ONLY THE MS RELAY OF THE 227A KTU OR ANY RELAY (CA1, CA2, OR MS) OF THE 227B KTU FOR A SINGLE ADD-ON TRANSFER CIRCUIT. (SEE TABLE L)
- \* LINE CKT OF STATION ORIGINATING CONFERENCE.

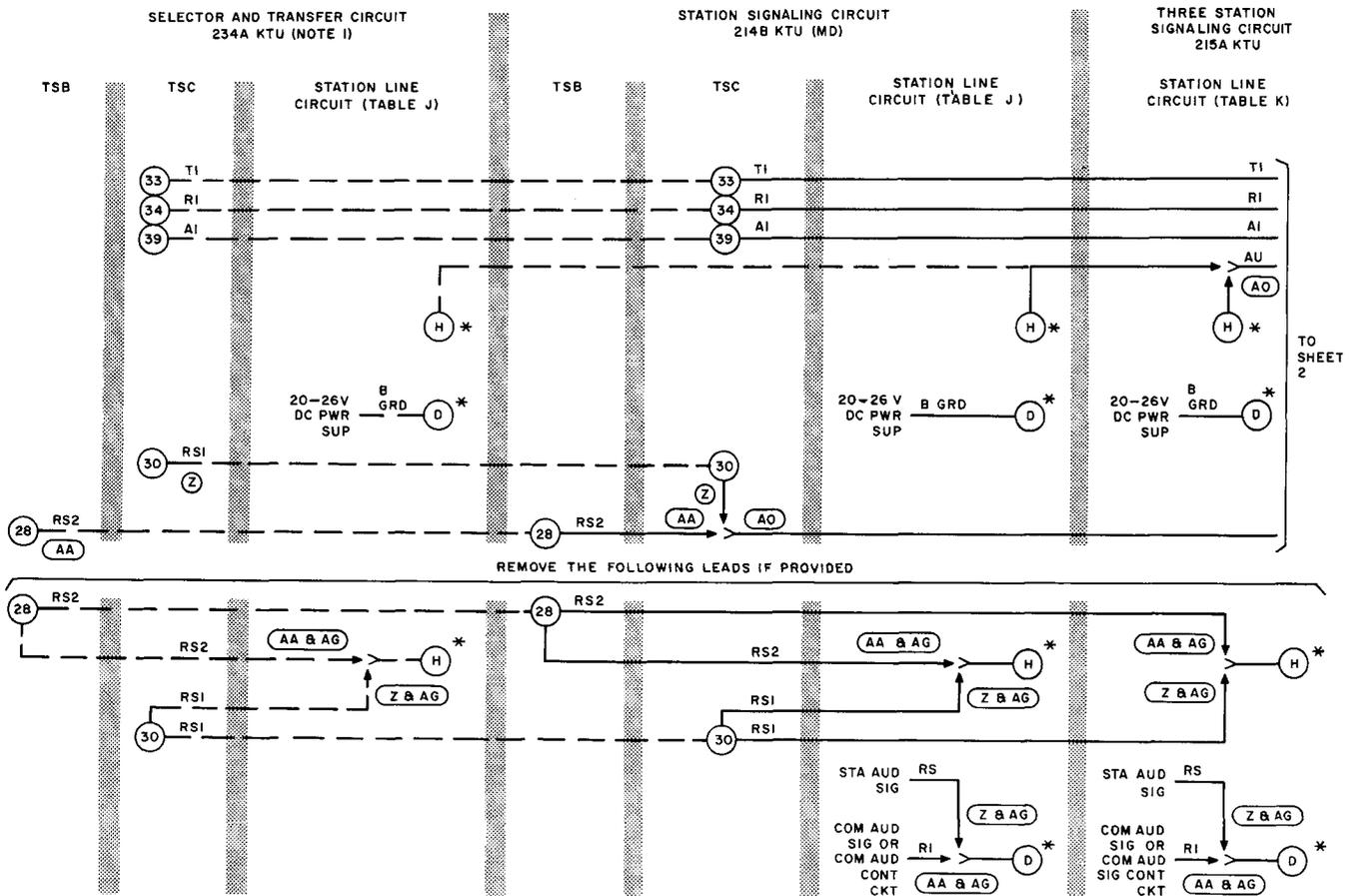
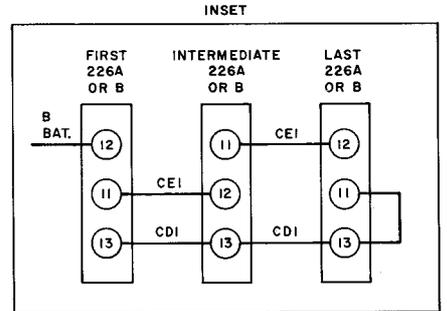
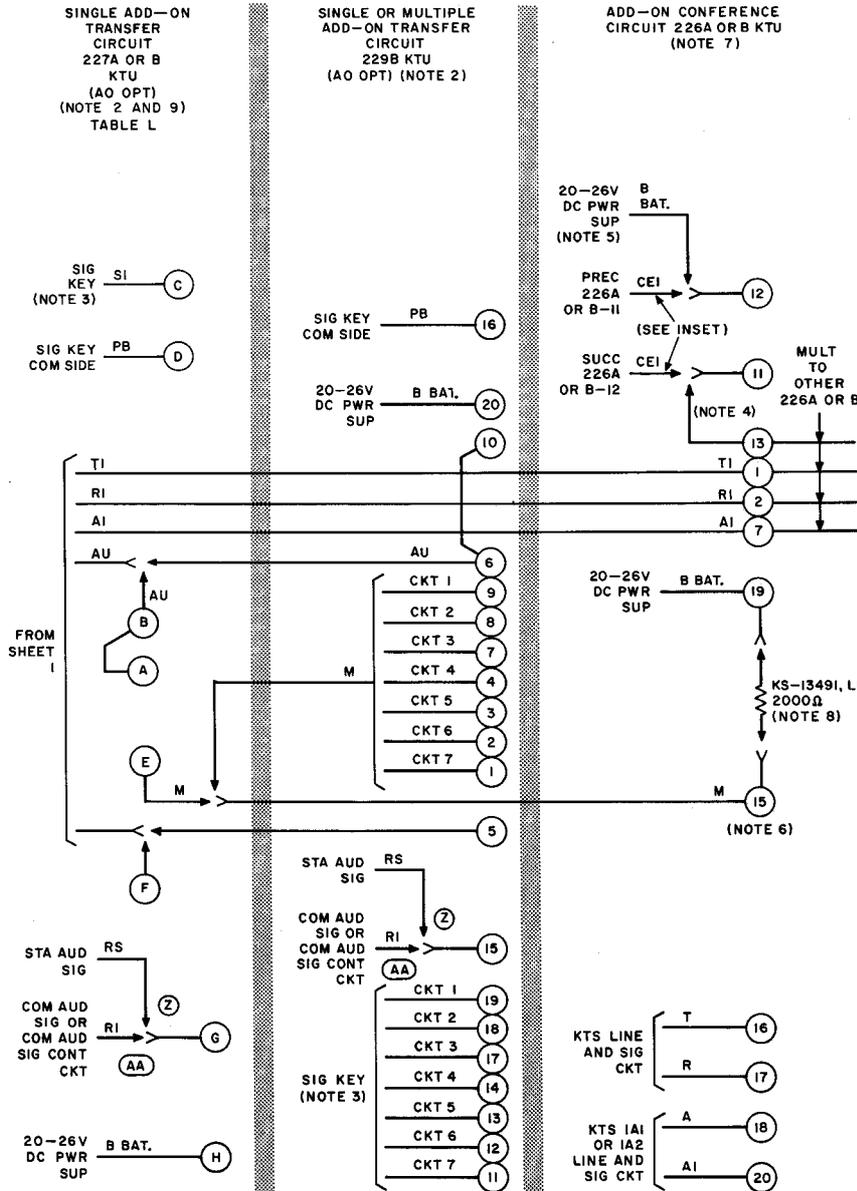


Fig. 7 — Addition of Add-On Conference Circuit (226A or B KTU) (Sheet 1)



**TABLE J**

REF DESIG	PCHGS ON 214B OR 234A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
D	5A	15A	25A	35A	5B	15B	25B	35B	5C
H	21C	22C	23C	24C	25C	26C	27C	28C	29C

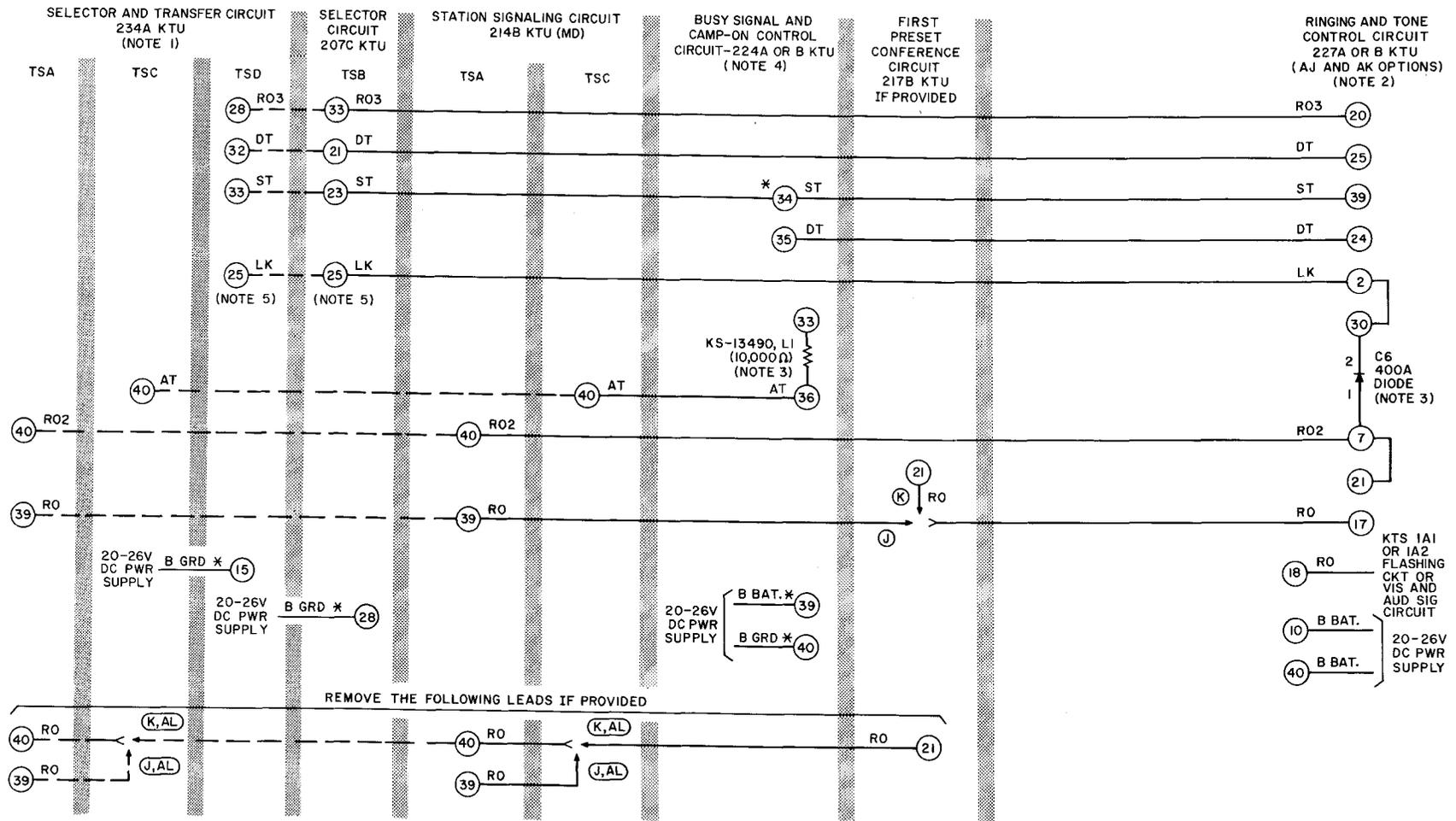
**TABLE K**

REF DESIG	PCHGS ON 215A		
	CKT 1	CKT 2	CKT 3
D	5	15	25
H	28	29	30

**TABLE L**

REF DESIG	RELAY AND TERMINAL DESIGNATIONS		
	227B		
	CA1 RELAY	CA2 RELAY	MS RELAY
A	5	8	2
B	14	20	26
C	12	18	24
D	15	21	27
E	11	17	23
F	36	34	30
G	31	33	39
H	1	10	40

Fig. 7 — Addition of Add-On Conference Circuit (226A or B KTU) (Sheet 2)



NOTES:

1. DASHED LINES INDICATE CONNECTIONS TO 227A OR B KTU WHEN 234A KTU IS PROVIDED IN LIEU OF 207C KTU AND 214B KTU.
2. WHEN INTERRUPTED RINGING (AK OPT) IS ADDED TO AN EXISTING SYSTEM CHANGES ARE REQUIRED ON LONG LINE CIRCUITS IF PROVIDED (SEE FIG. ENTITLED ADDITION OF LONG LINE CIRCUIT).
3. ORDER AND PLACE LOCALLY.
4. PROVIDE A 224B KTU IF NOT ALREADY PROVIDED FOR CAMP-ON OR STATION BUSY FEATURE.
5. WHEN DIAL TONE IS ADDED TO AN EXISTING SYSTEM EQUIPPED WITH A TOUCH-TONE ADAPTER (247A OR B KTU), THE LK LEAD IS CONNECTED

DIFFERENTLY THAN IS SHOWN. SEE FIG. 12, 13, 14, OR 15 WHICHEVER APPLIES.

\* LEAD ALREADY PROVIDED IF 224A OR B WAS INSTALLED TO PROVIDE CAMP-ON OR STATION BUSY CIRCUIT.

Fig. 8 — Addition of Dial Tone and Interrupted Ringing (227A or B KTU)

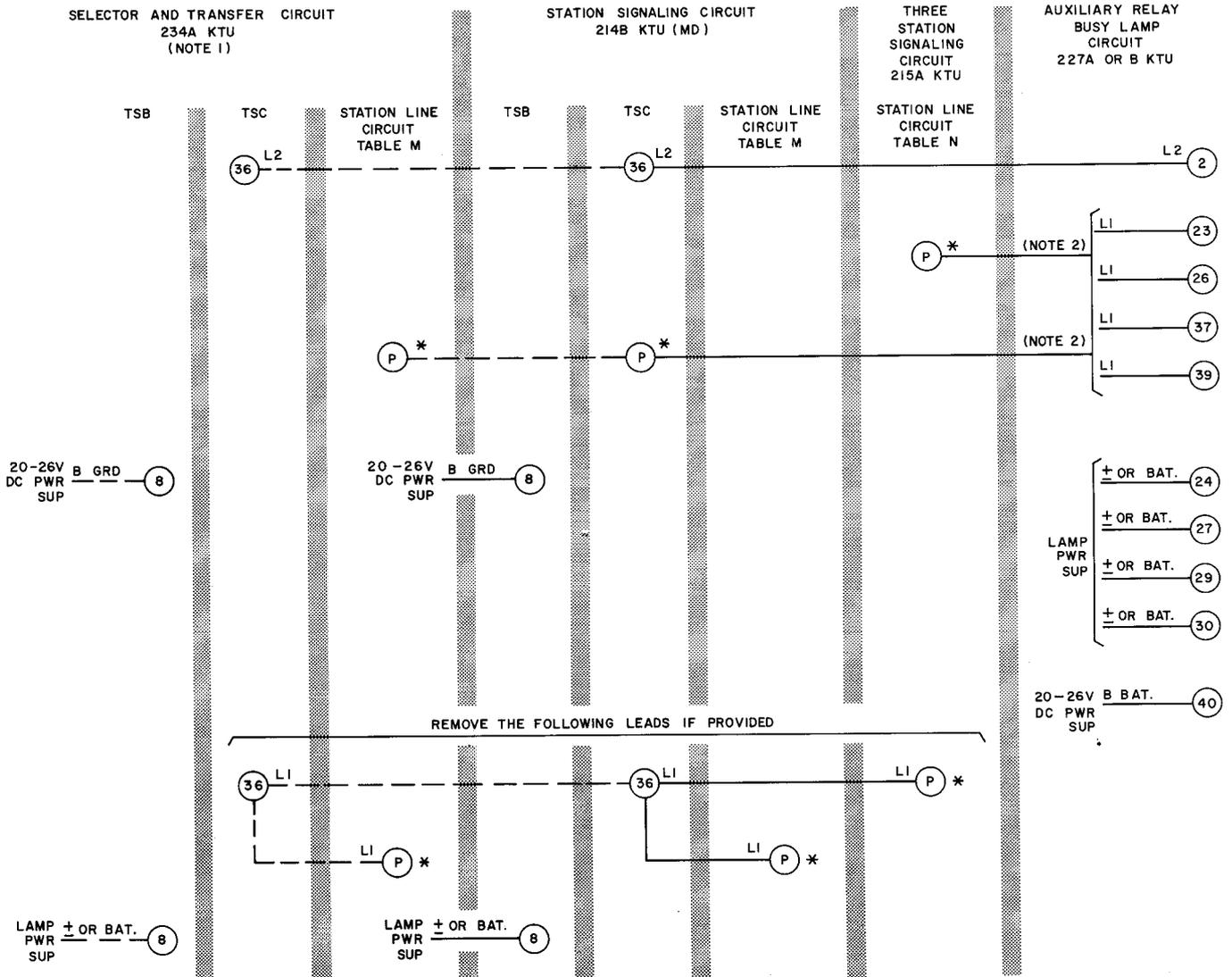


TABLE M

REF DESIG	PUNCHINGS ON 214B OR 234A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
P	ID	2D	3D	ID	2D	3D	3D	2D	ID

NOTES:

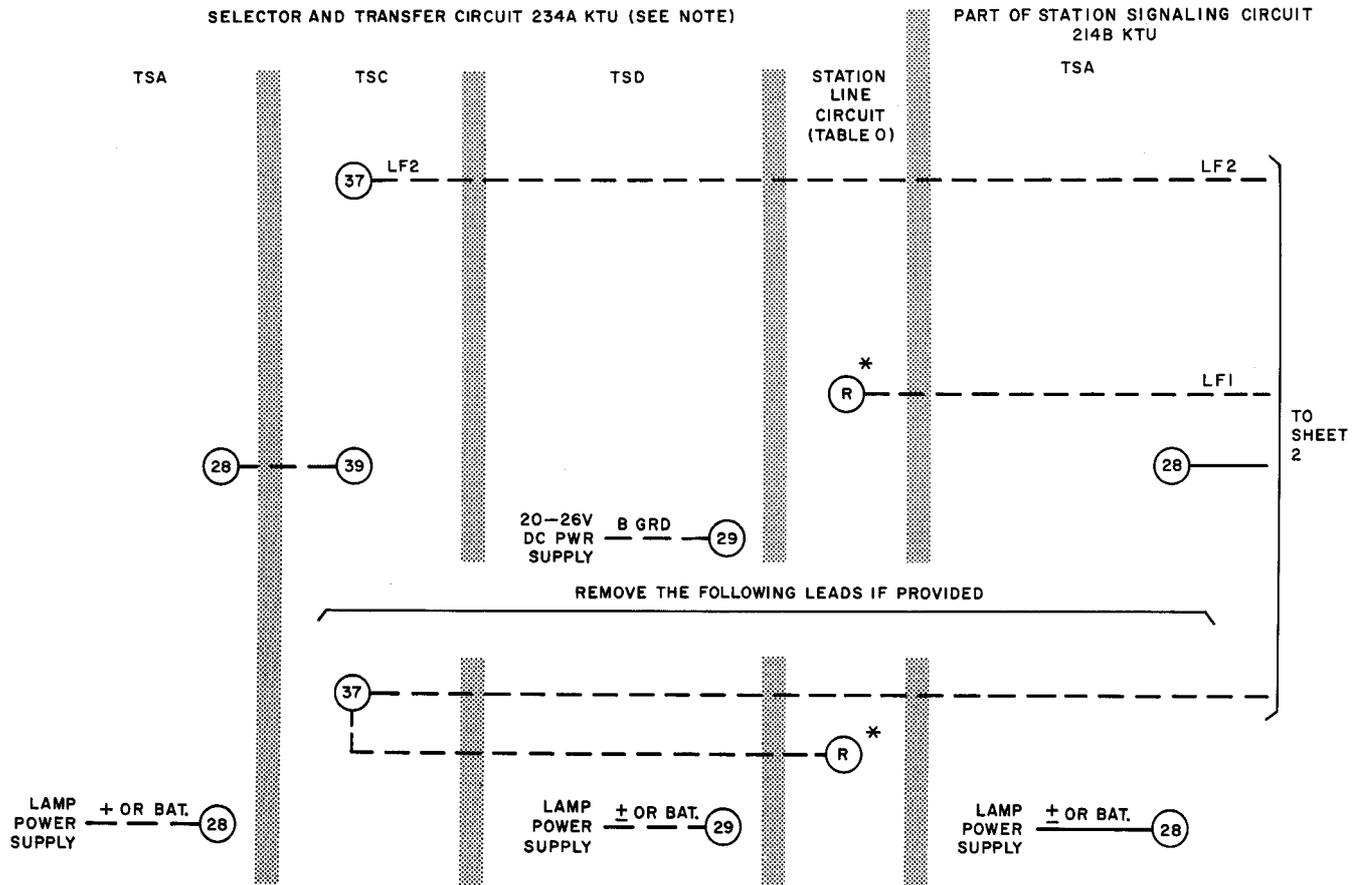
1. DASH LINES INDICATE CONNECTIONS WHEN 234A KTU IS PROVIDED IN LIEU OF 214B KTU.
2. MAXIMUM 20 LAMPS PER L1 LEAD.

\* LINE CKT INVOLVED.

TABLE N

REF DESIG	PCHGS ON 215A		
	CKT 1	CKT 2	CKT 3
P	35		

Fig. 9 — Addition of Auxiliary Relay Busy Lamp Circuit (227A or B KTU)



NOTE

DASH LINES INDICATE CONNECTIONS WHEN 234A KTU IS PROVIDED IN LIEU OF 214B KTU.

\* LINE CKT INVOLVED.

Fig. 10—Addition of Auxiliary Relay Lamp Flash Circuit (227A or B KTU) (Sheet 1)

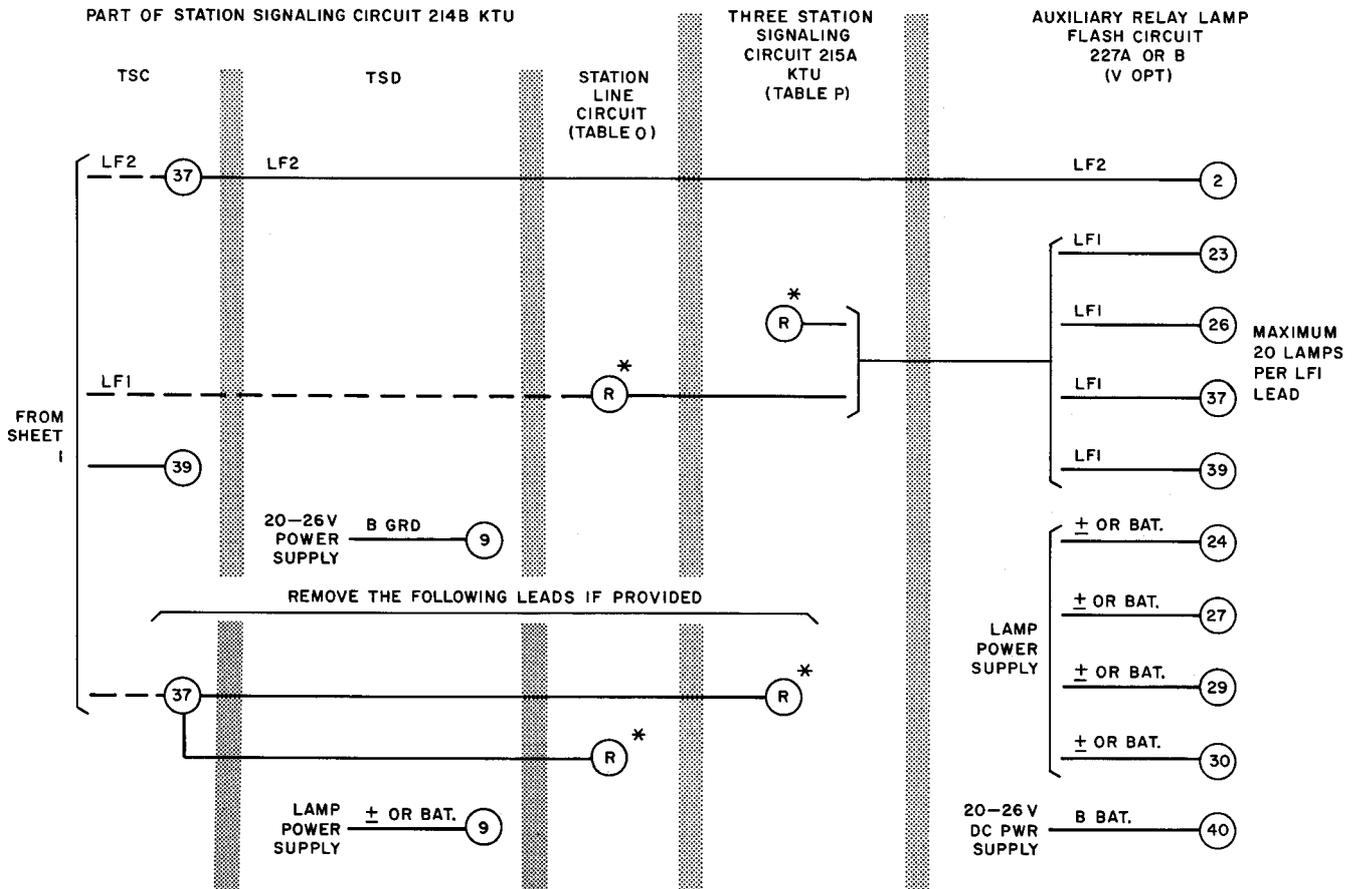


TABLE O

REF DESIG	PUNCHINGS ON 214B OR 234A								
	CKT 1	CKT 2	CKT 3	CKT 4	CKT 5	CKT 6	CKT 7	CKT 8	CKT 9
R	4D	5D	6D	4D	5D	6D	6D	5D	4D

TABLE P

REF DESIG	PCHGS ON 215A		
	CKT 1	CKT 2	CKT 3
R	37		

Fig. 10—Addition of Auxiliary Relay Lamp Flash Circuit (227A or B KTU) (Sheet 2)

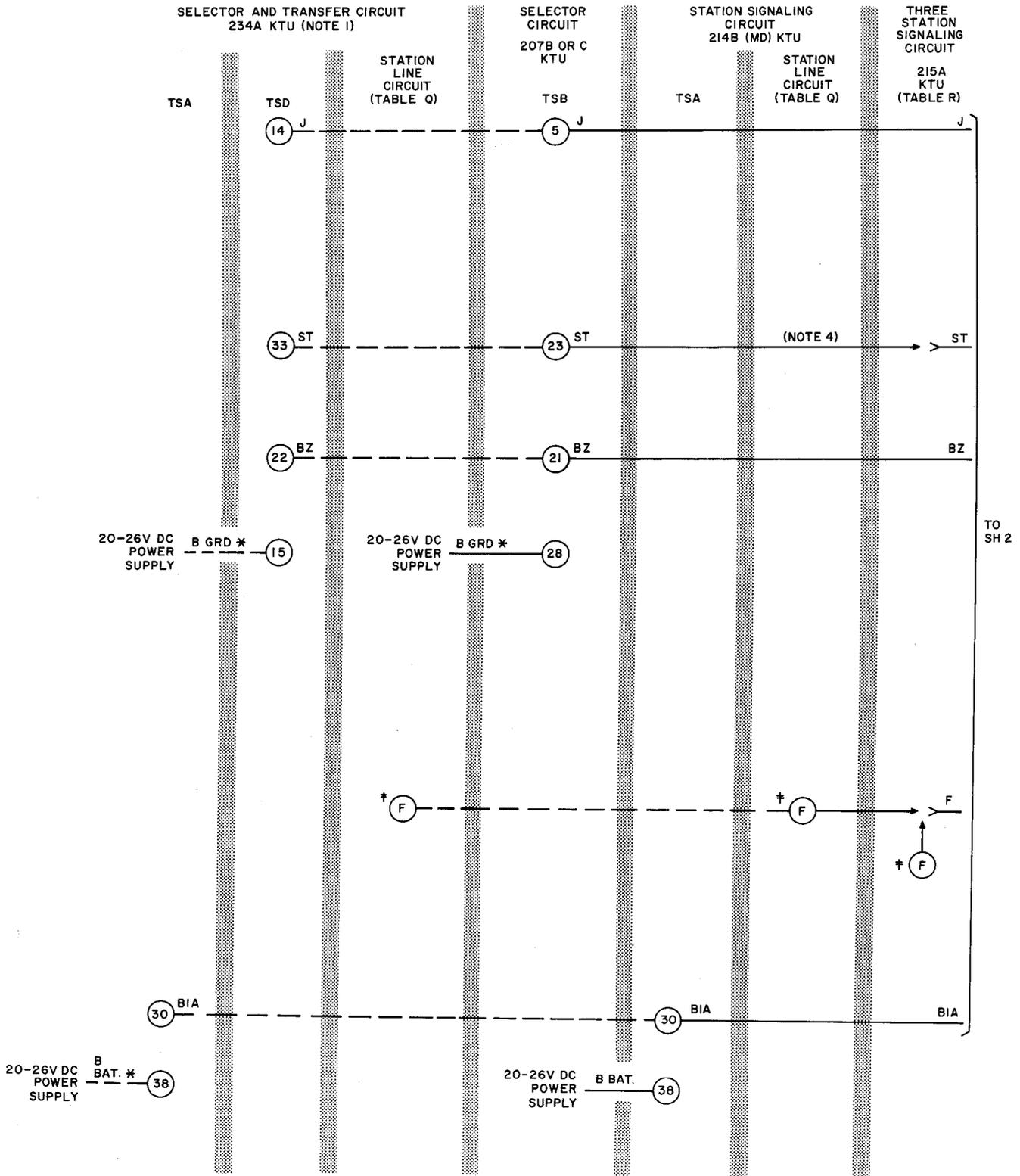


Fig. 11 — Addition of Station Busy Circuit (227A or B KTU) (Sheet 1)

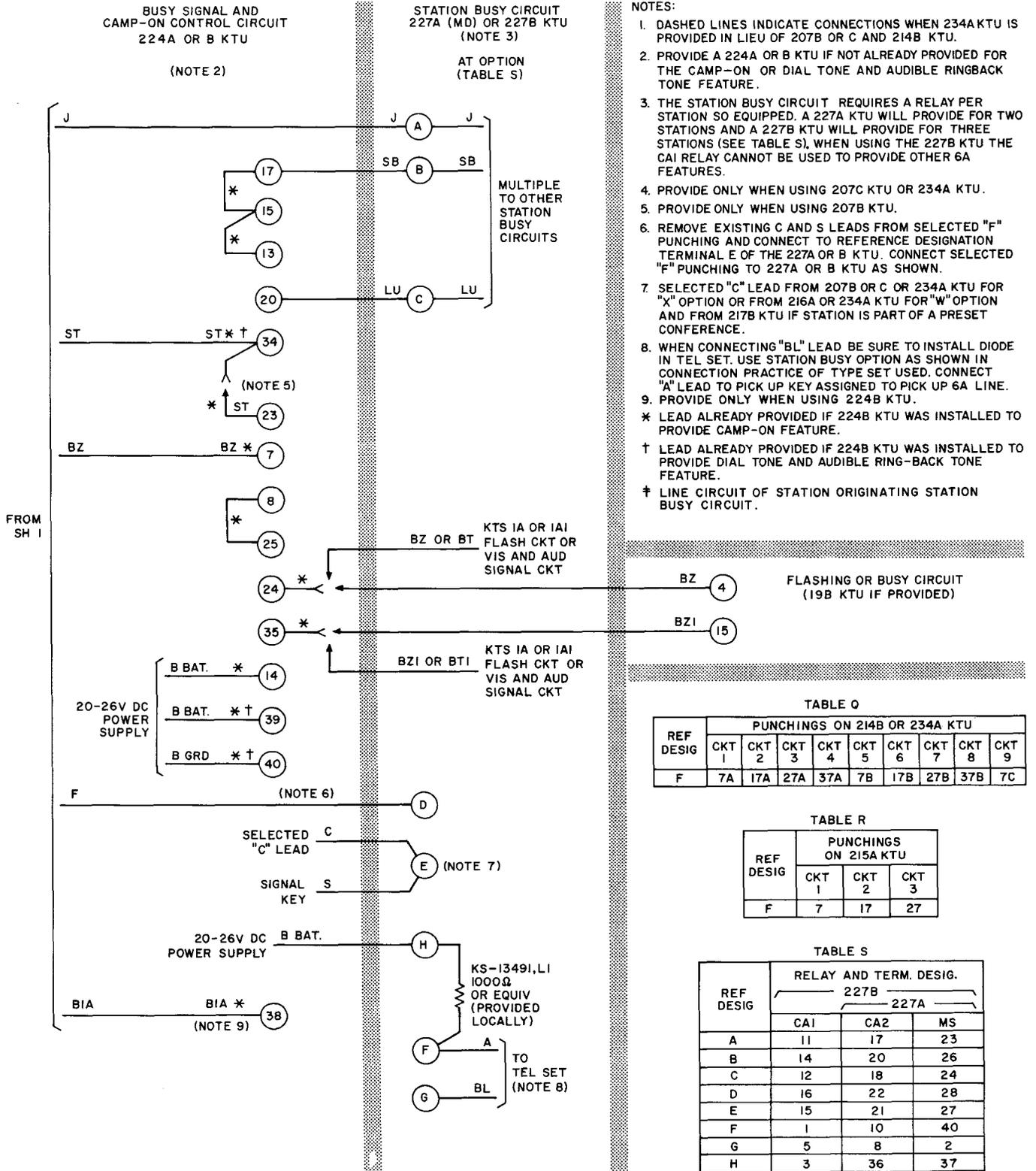


Fig. 11 — Addition of Station Busy Circuit (227A or B KTU) (Sheet 2)





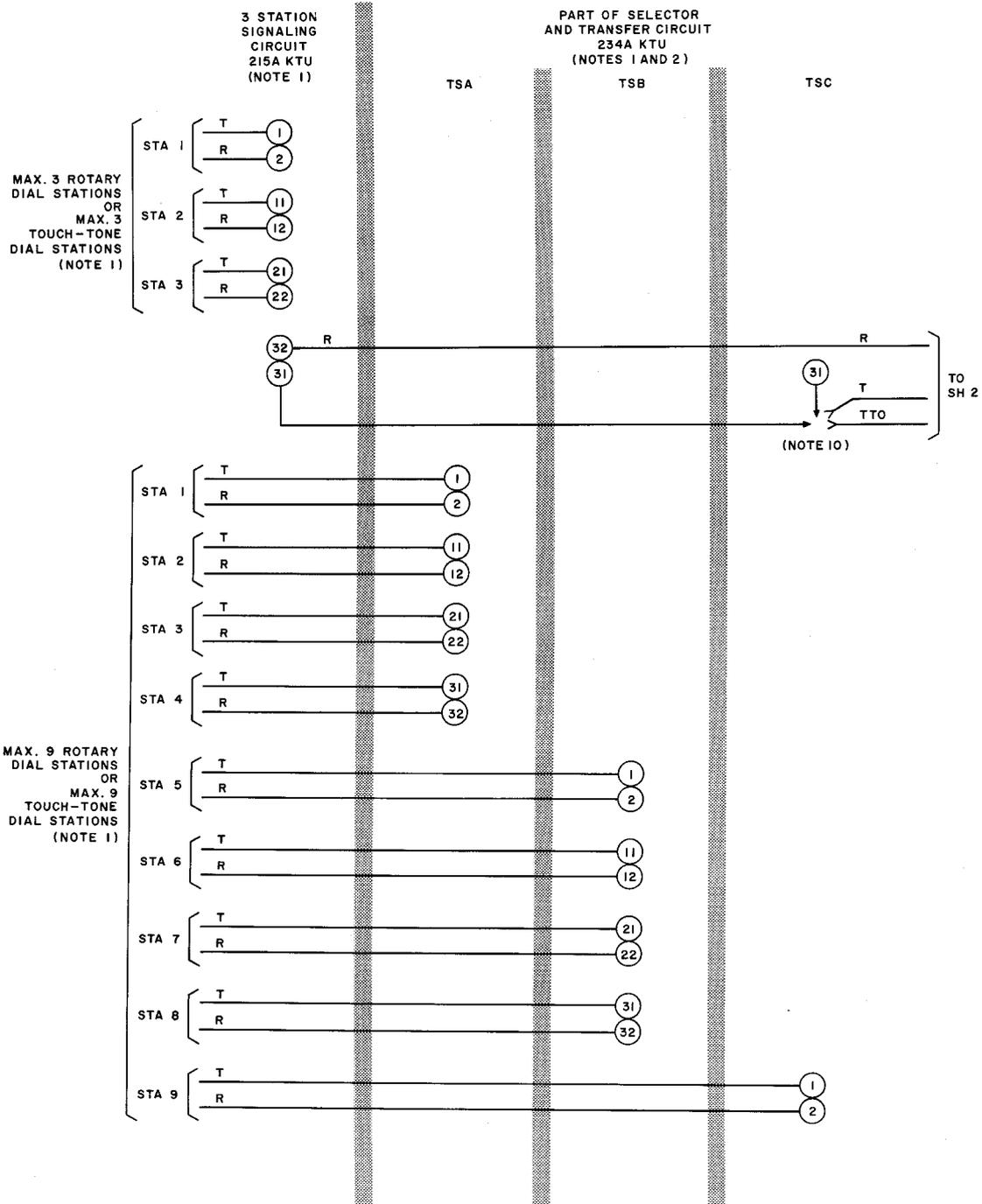


Fig. 13 — Addition of TOUCH-TONE Adapter Circuit [247A (MD) with 234A and 215A KTUs] (Sheet 1)



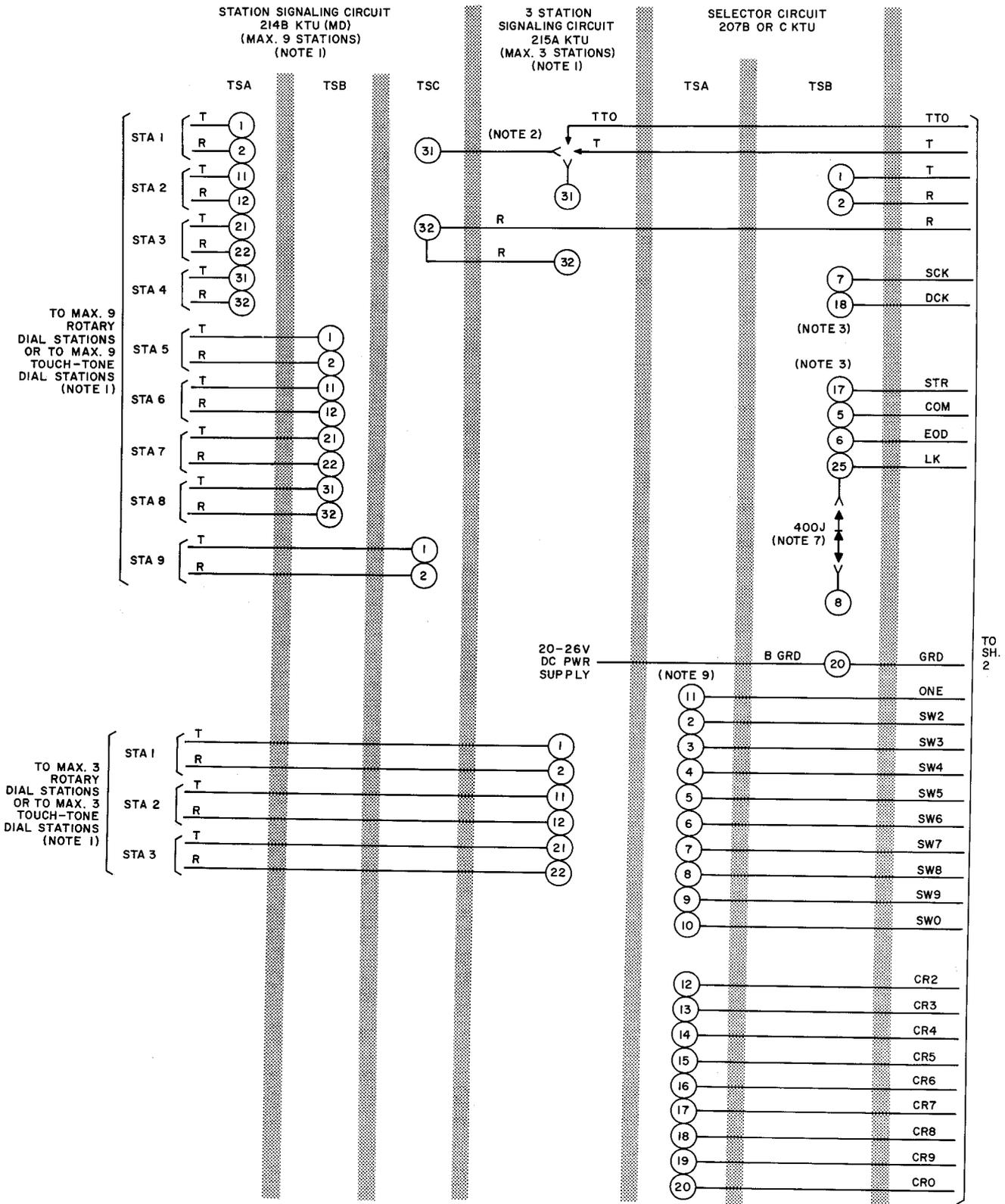


Fig. 14 — Addition of TOUCH-TONE Adapter Circuit [247B with 207B or C, 214B (MD), and 215A KTUs] (Sheet 1)

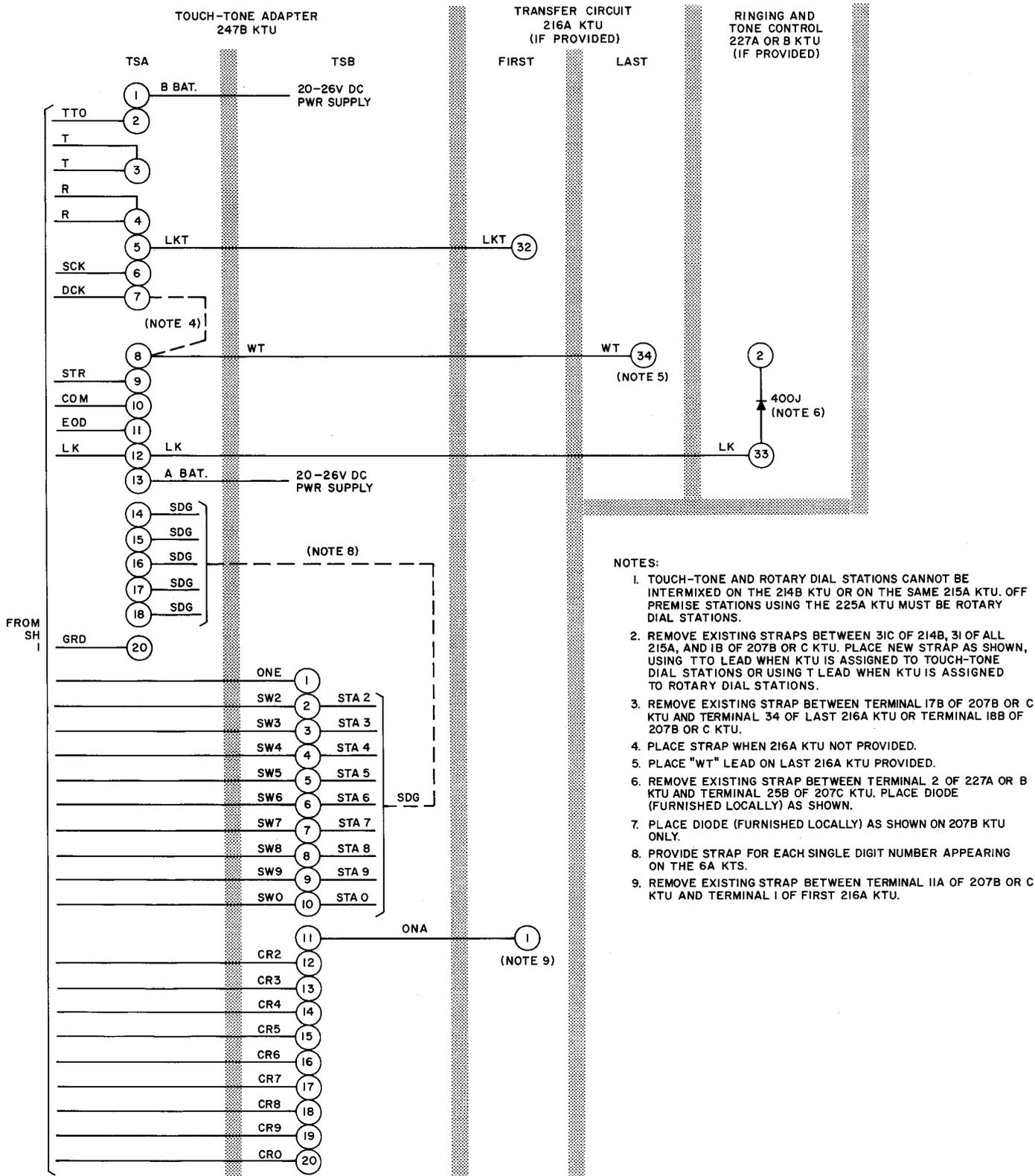


Fig. 14 — Addition of TOUCH-TONE Adapter Circuit [247B with 207B or C, 214B (MD), and 215A KTUs] (Sheet 2)

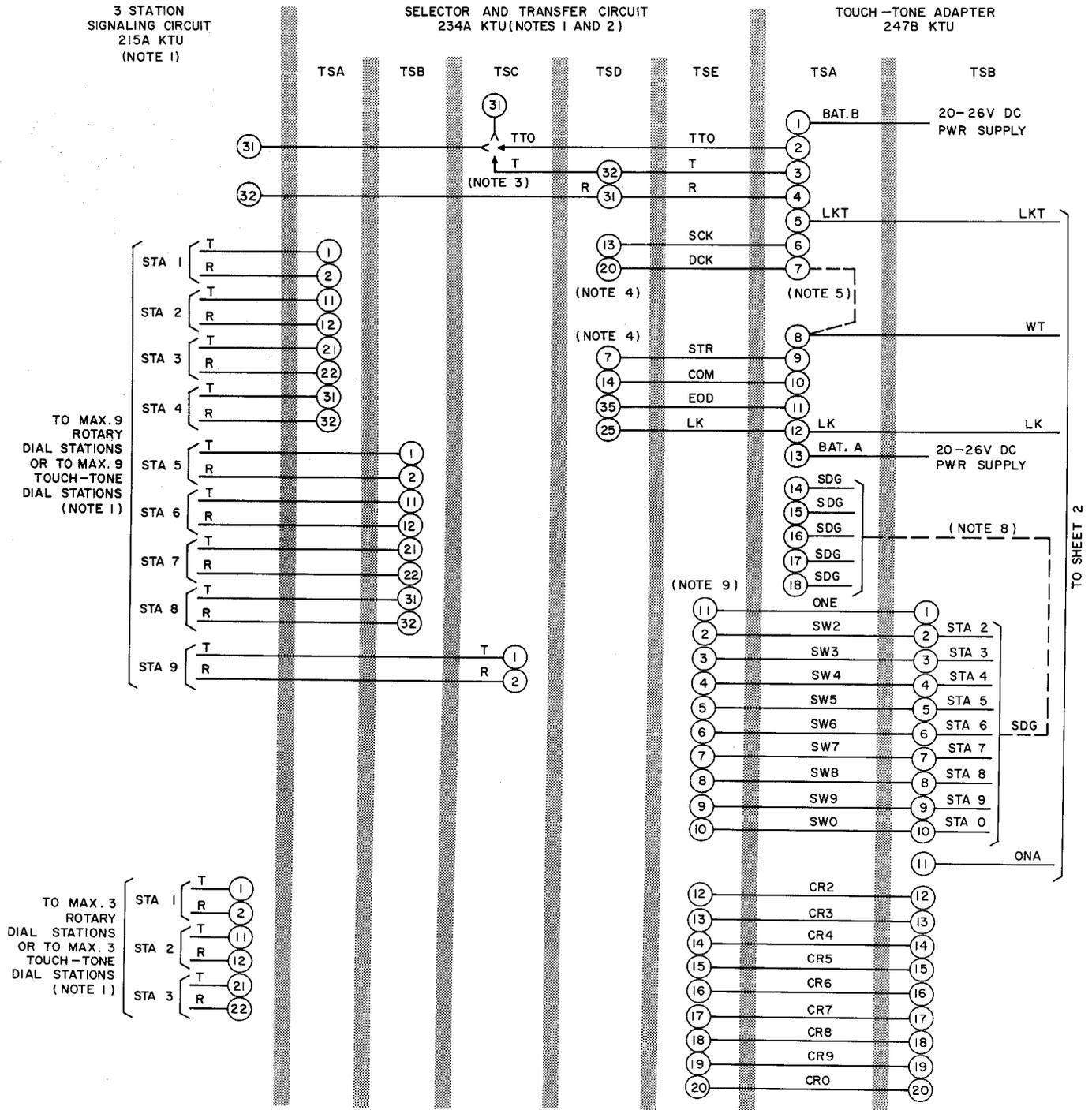
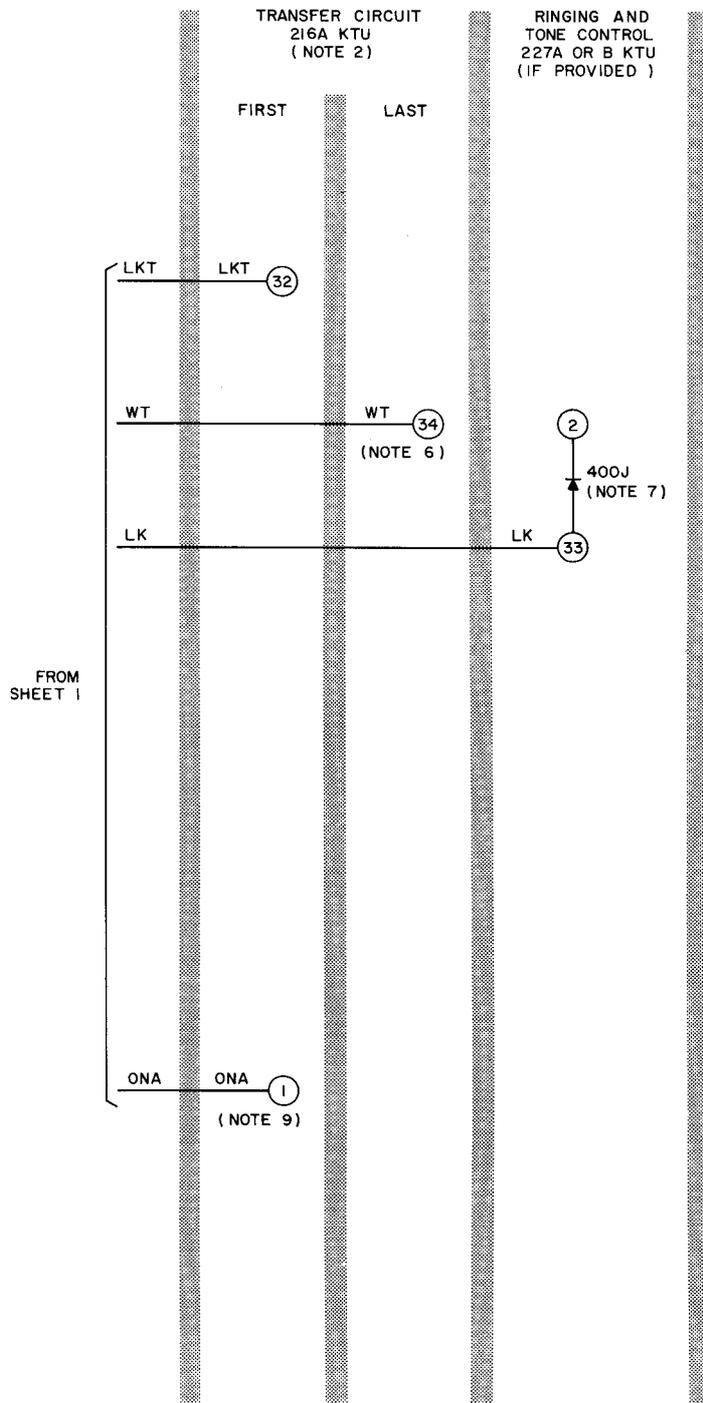


Fig. 15 — Addition of TOUCH-TONE Adapter Circuit (247B with 234A and 215A KTUs) (Sheet 1)



## NOTES:

1. TOUCH-TONE AND ROTARY DIAL STATIONS CANNOT BE INTERMIXED ON THE 234A KTU OR ON THE SAME 215A KTU. OFF PREMISE STATIONS USING THE 225A KTU MUST BE ROTARY DIAL STATIONS.
2. THE TRANSFER CIRCUIT PORTION OF THE 234A KTU CAN NEVER BE USED WITH THE 247B KTU. WHEN THE 6A KTS CONSISTS OF MORE THAN 9 STATIONS PROVIDE A 216A KTU IN PLACE OF THE TRANSFER CIRCUIT IN THE 234A (USE FIG. 2 FOR CONNECTIONS REQUIRED). TO DISABLE THE 234A TRANSFER CIRCUIT REMOVE THE STRAP FROM 31E TO THE SELECTED "SW" LEAD (2E TO 10E) ON THE 234A.
3. REMOVE EXISTING STRAPS BETWEEN 31C OF 234A, 31 OF ALL 215A AND 12D OF 234A KTU. PLACE NEW STRAP AS SHOWN, USING TTO LEAD WHEN KTU IS ASSIGNED TO TOUCH-TONE DIAL STATIONS OR USING T LEAD WHEN KTU IS ASSIGNED TO ROTARY DIAL STATIONS.
4. REMOVE EXISTING STRAP BETWEEN TERMINAL 7D AND 20D ON 234A KTU OR BETWEEN 7D AND TERMINAL 34 OF LAST 216A KTU.
5. PLACE STRAP WHEN 216A KTU NOT PROVIDED.
6. PLACE "WT" LEAD ON LAST 216A KTU PROVIDED.
7. REMOVE EXISTING STRAP BETWEEN TERMINAL 2 OF 227A OR B KTU AND 25D OF 234A KTU. PLACE DIODE (FURNISHED LOCALLY) AS SHOWN.
8. PROVIDE STRAP FOR EACH SINGLE DIGIT NUMBER APPEARING ON THE 6A KTS.
9. REMOVE EXISTING STRAP BETWEEN TERMINAL 11E OF 234A KTU AND TERMINAL 1 OF FIRST 216A KTU.

Fig. 15 — Addition of TOUCH-TONE Adapter Circuit (247B with 234A and 215A KTUs) (Sheet 2)