

TRANSLATOR-CARD CLASS AND
INCOMING- AND OUTGOING-TRUNK
WIRING OPTIONS NOS. 4A AND 4M
TOLL-SWITCHING SYSTEMS

1. GENERAL

1.01 This section describes translator-card class information and certain trunk wiring options used to control the circuit operations associated with outgoing class information, traffic-separation registers, supervision, ringing, and method of completion. Information is included in this section for making the proper translator-card class, and wiring-option assignments, and for recording the assignments used.

1.02 It is intended that the information presented herein shall be used when adding new trunk groups, adding new trunks to existing groups, and adding new points to existing intertoll networks.

2. APPARATUS AND MATERIAL (FOR WIRING OPTIONS)

2.01 The following apparatus and material is required for placing or removing trunk options:

- Soldering copper and solder as required
- Bell System pliers as required
- Make-busy plugs as required
- No. 22-gauge type-J sleeved strap wire (P26991)
- No. 22-gauge bare-wire strap (P314952)
- Insulating sleeving (RM-628436)
- Cord (#6)
- Protective canvas

3. DESCRIPTION OF INCOMING-TRUNK WIRING OPTIONS

3.01 The following paragraphs describe the various incoming-trunk options used in 4A and 4M offices. No specific option designations are given since specific designations covering the same purpose may vary between different circuit drawings.

3.02 VO. This option is used on incoming and two-way intertoll trunks and through-tandem trunks when these trunks should be connected only to a via-grade outgoing intertoll trunk and not terminal-grade outgoing intertoll trunks, irrespective of the

intertoll code used. It is also used to indicate a through call (through peg-count register) if an incoming intertoll, two-way intertoll, or through-tandem trunk attempts to connect to an outgoing intertoll trunk. A key at the traffic-supervisory rack provides a means for connecting overflow VO traffic on a final route to system-overload announcement or circuit-busy announcement trunks. All incoming and two-way intertoll trunks and through-tandem trunks are connected using the VO option.

3.03 NVO. This option is used on toll-tandem trunks to permit connection to either via-grade or terminal-grade outgoing intertoll trunks. It is used when a through peg-count registration is not stroked on an attempt to an outgoing intertoll trunk. A key at the traffic-supervisory rack provides a means for connecting overflow NVO traffic on a final route to system-overload announcement or circuit-busy announcement trunks. All toll-tandem trunks are connected using the NVO option.

3.04 Traffic-separation options. Four incoming-trunk class options, combined with seven outgoing classifications, provide for a maximum of 28 possible classes of traffic which may peg-count separately. The outgoing classes are assigned on the translator card. The four incoming classes are designated GR 1-4. Table No. 1 indicates the present arrangements for traffic-separation registration in Oakland. Table No. 2 indicates the present arrangements for Sacramento. The unassigned options are not shown. Changes or additions to incoming-trunk traffic-separation classes will be indicated on the traffic trunk request, and XRL's. These tables are examples only.

TABLE 1
TRAFFIC SEPARATION 4M

Incoming Trunk		Out-Trunk Class Translator Card		
Class Option	Traffic From	Traffic To		
		TSO	TS1	TS2
GR2	State	State	Inter State	SF XBT
GR4	Inter State	State	Inter State	SF XBT

TABLE 2
TRAFFIC SEPARATION 4A

Incoming Trunk		Out-Trunk Class Translator Card		
Class Option	Traffic From	Traffic To		
		TSO	TS1	TS2
GR1	State	State	Inter PT&T	Inter State
GR2	Inter State	State	Inter PT&T	Inter State

4. DESCRIPTION OF OUTGOING CLASS INFORMATION USED IN NO. 4-TYPE TOLL-SWITCHING OFFICES

4.01 Translator-card class information used by 4A and 4M offices. The following classes are used under conditions outlined in Tables 6 and 7 and as described in the subparagraphs. BSP Section 212-120-301, Chart No. 2 shows which translator cards require class. In general a card having trunks on it requires class.

- (a) Manual (M). Use when the trunks on the translator card terminate directly to a manual switchboard (without PCI equipment), or desks and keys. Do not use on cards to manual offices that route via dial-office trunk groups.
- (b) Multifrequency Outpulsing (MF). Use when the trunks on the card terminate in a distant sender-type office on equipment that is controlled by multifrequency tones. No "expected-delay" or "stop-go" information required.
- (c) DC Outpulsing (DC). Use when an outgoing sender is required in the No. 4-type office. Not used in our No. 4A offices. Oakland No. 4M office translator cards directing to trunk groups using outgoing-trunk class options (see Paragraph 4.03) will use DC class on the translator cards.
- (d) Cancel-Delay Loop Closure (CDLC). This class is used in 4A offices in addition to type-of-pulsing class, when the outgoing trunks on the card have a timed-disconnect feature (guarded). This prevents reseizure until the distant-offices equipment has had time to return to normal. 4M offices use CDLC in all cases except toll-completing MF trunks. Intertoll trunks are usually guarded. Toll-completing trunks are usually unguarded.

4.02 Translator-card class information used by 4A offices only. Dial-Pulse Classes. The following classes are used under conditions outlined in Table 6 and as described in the subparagraphs.

- (a) Outpulsing Simplex Dial (SXD). Use when the trunks on the card terminate to distant offices that: (1) have equipment that is actuated by dial pulses, (2) receive pulses transmitted by E- and M-lead signaling (composite, single-frequency, etc.). CDLC is always used with this class (see Paragraph 4.01 (d)). See "Expected-Delay Dial" Paragraph (c) and "Expected Stop-Go" dialing Paragraph (d). When this class is used alone, route shall not expect-delay dial or stop-go indication. (See Table 6 List No. 1 for office types.)
- (b) Outpulsing-Loop Dial (LPD). Use when the trunks on the card terminate to distant offices that: have equipment that is actuated by dial pulses, receive pulses transmitted on a loop basis. See "Expected-Delay Dial" Paragraph (c) and "Expected Stop-Go" dialing Paragraph (d). When this class is used alone, route shall not expect a delay-dial or stop-go indication. (See Table 6 List No. 1.)
- (c) Expect Dial Delay (XDD). Use with SXD and LPD classes when the outpulsing of the first digit may be delayed. An example of this is where the No. 4A office reaches a distant office that is equipped to receive the incoming dial pulses in a sender circuit. A link must be set up between the incoming trunk and an idle sender. This action is subject to delay. The outpulsing of the first digit must be withheld until the sender is attached. Other cases requiring the "expect dial delay" are trunk groups from the No. 4A office connecting directly to link-type community dial offices. These offices are indicated in Table 6 List No. 2.
- (d) Expected Stop-Go Dialing (XSG). Use with SXD and LPD classes when the outpulsing of the first digit can start without an initial delay, but a stop may be required in outpulsing subsequent digits. An example of this is where the No. 4A office reaches a distant step-by-step toll-dialing center and through it a community dial office of the link type. In this case the first two digits outpulsed are the CDO code used in the step-by-step toll center. Since intertoll selector equipment is directly connected to the intertoll trunk, no delay in outpulsing the CDO code is required. The subscriber's

telephone number follows the CDO code but the pulses for these numerals cannot necessarily start directly after the CDO code. The design of the community dial office equipment is such that a link must be set up between the selected tributary trunk and the switching equipment at the CDO. A link may not be available immediately. A "stop-dial" signal must be provided in order to stop further pulsing until a link is connected. When a link is ready, a "go" signal is sent back to the No. 4A equipment and pulsing is again started.

See Table 6 List No. 2 for community dial offices requiring XSG class when reached through a nonsender-type toll center. Dial routes to nonsender-type toll centers outside of the Northern California Area and Nevada will use XSG. It is impractical to keep information of these changes in other areas or companies.

4A incoming senders can accommodate only one "expected-delay dial" and one expected "stop-go" signal. Proposed routing must take this into consideration.

(e) 20-Cycle Ringing (20C). Use with LPD class when the selector in the local office requires a 20-cycle ringing signal from the No. 4A office before it will ring the called party.

(f) Simplex Ringing (SXR). This class is not used by our No. 4-type offices.

4.03 Description of outgoing-trunk wiring options - 4M offices.

4.030 Outgoing dial-trunk class. The following classes are used under the conditions indicated in Table 3 and as described in the subparagraphs:

(a) CX Option. This option is used on trunks to distant offices that: (1) have equipment that is actuated by dial pulses, (2) receive pulses transmitted by composite-signaling equipment, (3) have equipment that may require a break in the successive transmission of digits, once the first digit pulsing has started ("stop-go" dialing, see Table 6 List No. 2).

(b) LP Option. This option is used on trunks to distant offices that: (1) have equipment that is actuated by dial pulses, (2) receive pulses transmitted on a loop basis, (3) have equipment that may require a break in the successive transmission of digits once the first digit pulsing has started ("stop-go" dialing, see Table 6 List No. 2).

(c) LP-SGC Option. This option is used on trunks to distant offices that: (1) have equipment that is actuated by dial pulses, (2) receive pulses transmitted on a loop basis, (3) have equipment that does not require a break in the successive transmission of digits once the first digit pulsing has started ("stop-go cancel," see Paragraph (g)).

(d) CX-SGC Option. This option is used on trunks to distant offices that: (1) have equipment that is actuated by dial pulses, (2) receive pulses transmitted by composite or single-frequency signaling equipment, (3) have equipment that does not require a break in the successive transmission of digits once the first digit pulsing has started ("stop-go cancel," see Paragraph (g)).

(e) CX-XDD Option. This option is used on trunks to distant offices that: (1) have equipment that is actuated by dial pulses, (2) receive pulses transmitted by composite or single-frequency signaling equipment, (3) have equipment where the outpulsing of the first digit may be delayed (expect dial delay, see Paragraph 4.02 (c)).

(f) CX-AT Option Not Used. This option provides an increase in interdigital timing from 0.6 seconds to 0.8 seconds. This feature was originally designed for use with trunks employing single-frequency signaling but it was later determined that this was unnecessary.

(g) "Stop-Go Cancel." This term is applied to the circumstances which prevail when the outpulsing of all digits after the first digit can proceed without being delayed. "Stop-go cancel" can be used when the No. 4M equipment pulses directly or indirectly to offices found in Table 6 List No. 1. The "stop-go cancel" option should not be used on any outgoing dial-pulse routings to toll centers outside of the Northern California Area and Nevada as it is impractical to keep information of changes in other areas and other companies. On routings that terminate within the area, the option can not be used unless it is positively known that the above conditions can be met. A 4M-office trunk group that can switch through a step-by-step toll-dialing office to both "stop-go cancel" and "stop-go" offices can not use "stop-go cancel" option.

TABLE 3
OUTGOING DIAL-TRUNK CLASS - 4M

<u>Condition</u>	<u>Class Abbrev.</u>	<u>Lead</u>		<u>Outgoing Sender Relays Operated</u>
		<u>KT</u>	<u>KR</u>	
Composite Signaling, "Stop-Go" Required	CX		0WG	RM, RS, CX
Loop Signaling, "Stop-Go" Required	LP	0WG		TM, TS, LP
Loop Signaling, "Stop-Go Cancel"	LP-SGC (Cl. 1)		300WG	RS, CL1, LP, SGC
Composite Signaling, "Stop-Go Cancel"	CX-SGC (Cl. 2)	300WG		TS, CL2, CX, SGC
Composite Signaling, Added Time Required	CX-AT (Cl. 3)	0WG	300WG	TM, TS, RS, CL3, CX, AT
Composite Signaling, "Expect Dial Delay"	CX-XDD (Cl. 4)	300WG	0WG	TS, RM, RS, CL4, CX, XDD

4.031 Revertive- and PCI-Trunk Class. The following classes are used under the conditions indicated in Table 4 and as described in the subparagraphs.

(a) Controlled Ringing. This option is used on toll-switching trunks when the trunk circuit at the local office requires an incoming ringing signal, either from the outward operator or from the outgoing sender, to start ringing the subscriber.

(b) Automatic Ringing. This option is used on toll-switching trunks when the trunk circuit at the local office is arranged automatically to start ringing the subscriber.

(c) Crossbar. This option is used on toll-switching trunks to crossbar offices.

(d) Panel: Battery-Cutoff or Ground-Cutoff, Repeating. This option is used on toll-switching trunks to battery-cutoff panel offices or to ground-cutoff panel offices when repeating incoming-trunk circuits are required. The battery-cutoff panel offices in the East Bay are:

452	836
444	793
832	568

There are no ground-cutoff panel offices requiring repeating incoming-trunk circuits from the No. 4M office.

(e) Panel: Ground-Cutoff, Nonrepeating. This option is used on toll-switching trunks to ground-cutoff panel offices that do not require the use of repeating incoming-trunk circuits. The East Bay ground-cutoff panel offices using non-repeating incomings from the No. 4M office are:

451	652
632	798
636	872
638	

(f) Manual PCI Direct, Office Nos. 0000-9999 Only. This option is used on toll-switching trunks to manual PCI offices where the subscriber number range does not exceed 9999. The presence or absence of party-station letters is immaterial.

(g) Manual PCI Direct, Office Nos. 0000-10499. This option is used on toll-switching trunks to manual PCI offices when the number range extends to but does not exceed 10499. The presence or absence of party-station letters is immaterial.

(h) Manual PCI Direct, Office Nos. 0000-10999. This option is used on toll-switching trunks to manual PCI offices where the number range extends to 10999. The presence or absence of party-station letters is immaterial.

TABLE 4
REVERTIVE- AND PCI-TRUNK CLASS

Toll-Switching Trunk To:	Type of Trunk at Local Office		Lead	
	Cont Ring	Auto Ring	KT	KR
Crossbar	x	x	300WG 300WG	300WB 0WG
Panel: Bat. -Cutoff or Grd. -Cutoff Repeating	x	x	300WG 300WG	300WG
Panel: Grd. -Cutoff, Nonrepeating	x	x	0WG 0WG	300WG
Manual PCI Direct.	Office Nos. 0-9999 only	x	300WB	
	Off. Nos. 0-10499 Only	x	300WB	0WG
	Off. Nos. 0-10999 Only	x	300WB	300WB

5. PAD-CONTROL TOLL-CONNECTING TRUNKS

5.01 General. Options are provided in the toll-connecting trunk circuit for controlling the switchable pads associated with the connected intertoll-trunk circuit. Two methods of operation are provided as described in the subparagraphs. The TR (transmission recommendation) will specify their use.

(a) Low-Loss Operation. A low-loss toll-connecting trunk is one designed to meet the nominal toll-connecting trunk loss without omission of the "A" pads in the connected intertoll trunk. The loss of the trunk conductors extending between the 4-wire switching office and the local office should not exceed a maximum of 4db.

(b) High-Loss Operation. A high-loss toll trunk is one where the loss exceeds the 4db loss-limiting value and the gain derived from the omission of the "A" pad in the intertoll trunk is used to offset this loss.

5.02 Pad-Control Nonsplit, 7db, "A" Switching-Pad Office.

(a) Low-loss toll-connecting trunks do not switch out the "A" pads in the connected intertoll trunk.

(b) High-Loss. Provide options in the toll-connecting trunk to switch out the "A" pad.

5.03 Pad-Control Split "A" Pad Office. Pads are provided as follows:

5db "A" pads consist of a "2" (2db) and "A-2" (3db) pad. 7db "A" pads consist of a "2" (2db) and "A-2" (5db) pad.

(a) Low-Loss. Provide options in the toll-connecting trunks to switch out the "2" pad.

(b) High-Loss. Provide options in the toll-connecting trunks to switch out the whole "A" pad.

TABLE 5
TOLL-CONNECTING TRUNK—
SIMPLEX (FOR PAD CONTROL)

Type Office	Type Pad	Low-Loss Option	Pad Out	High-Loss Option	Pad Out
4A	Split	11500WG	"2"	500WG	"A"
4M	Nonsplit	-	-	500WG	"A"

6. TRUNK CIRCUITS AND DESIGNATIONS

6.01 The trunk circuits to which the wiring-option information applies are listed below. Also included in the list are the standard designations for these trunks, as used on designation strips, XRL's, trunk requests, wiring lists, etc.

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<u>TRUNK</u>	<u>CIRCUIT NO.</u>	<u>DESIGNATION</u>	<u>TRUNK</u>	<u>CIRCUIT NO.</u>	<u>DESIGNATION</u>
Toll Tandem - MF - 2W - From No. 5 Office	SD-68358-01	ITAC	Toll Switching - MF to XBT	SD-68325-01	OXJ
Toll Tandem - MF - 3W - From Toll Switchboard No. 3	SD-68319-01	ITN	Toll Switching - RP to Panel, XB - PCI	SD-68326-01	OSC
Toll Tandem - MF - From Toll Switchboard No. 1 Thru Position	SD-68322-01	ITG	Toll Switching - DP to SXS	SD-68326-01	OSCI
Toll Tandem - MF - 2W - From Toll Switchboard Nos. 1, 3, or 3C - Precision Network	SD-68331-01	ITH	Toll Switching - RP to XB, with Repeater	SD-68366-01	OSD
Toll Tandem - DP - From Toll Switchboard	SD-68315-01	ITD	Outgoing to Desks	SD-68332-01	ODA
Toll Tandem - MF - From 3C Switchboard	SD-68358-01	ITS	Outgoing Toll Tandem - MF - 4W	SD-68309-01	OTB
Toll Tandem - MF - CX Supvn. Type B	SD-68154-01	ITX	Outgoing - MF or DC - No. 5 Switchboard to No. 4 XB	SD-68292-01	ITT
Toll Tandem - MF - 2W - From Toll Switchboard Nos. 1, 3, or 3C - Compromise Network	SD-68331-01	ITIII	Outgoing - From 17C Toll Testboard	SD-68141-01	ITK
Toll Tandem - MF - 3W - From Toll Switchboard No. 1 - Wet-Dry Supvn.	SD-68369-01	ITR	Incoming - To 17C Toll Testboard	SD-68299-01	IOI
Intertoll-Incoming - Dial	SD-68135-01	IIA	TX - To 3C Switchboard	SD-68282-01	OXA
Intertoll-Incoming - Modified to MF	SD-68135-01	IIE	TX - To DSA Switchboard	SD-68303-01	OXH
Intertoll-Incoming - MF	SD-68154-01	IIC	TX - To Distant 3C Switchboard	SD-68239-01	OXB
Intertoll - 2-Way - Dial	SD-68102-01	21C	TX - To Toll Switchboard No. 3 or 3C	SD-68304-01	OXD
Intertoll - 2-Way - Dial - Temporary Auto Outgoing	SD-68102-01	21CA	TX - 4W to 3C Switchboard	SD-68289-01	OXC
Intertoll - 2-Way - MF	SD-68259-01	21D	TX - To Toll Switchboard No. 1 - with Trans. Switching Pad	SD-68306-01	OXF
Intertoll - 2-Way - MF	SD-68508-01	21G	TX - 3W - To Toll Switchboard No. 1	SD-68368-01	OXG
Intertoll - 2-Way - MF - Temporary Auto Outgoing	SD-68259-01	21DA	121	SD-68291-01	121B
Intertoll - 2-Way - MF - Dial	SD-68355-01	21E	151	SD-68377-01	151B
Outgoing Intertoll - Dial	SD-68308-01	OIE	Overflow Trunk and GB Chain Relay Circuit	SD-68420-01	OFL
Outgoing Intertoll - MF	SD-68312-01	OIF	Circuit-Busy Announcement	SD-68501-01	CBA
Outgoing Ringdown	SD-68260-01	OIC	System-Overload Announce- ment	SD-68501-01	SOA
Toll Switching - MF to XB	SD-68325-01	OXJ	Vacant-Code Announcement	SD-68501-01	VCA
			Overflow Training	SD-68083-01	OFLT
			Reorder	SD-68247-01	RO
			Reorder Monitor	SD-68249-01	ROM
			No Circuit Training	SD-68083-01	NCT

<u>TRUNK</u>	<u>CIRCUIT NO.</u>	<u>DESIGNATION</u>
Two-way Intertoll Trunk - Inc. DP Outgoing DP, MFP or Automatic - CX Supvn. Type B	SD-68232-01	21A
Two-way Intertoll Trunk - Inc. MFP Outgoing DP, MFP, or Automatic - CX Supvn. Type B	SD-68233-01	21B
Intertoll - Incoming MFP	SD-68320-01	IB
Toll Tandem - MFP - From Toll Switchboard No. 1 through Position	SD-68375-01	ITL
Toll Tandem - MFP From Toll Switchboard No. 1	SD-68376-01	ITM
Toll Tandem - DP - From Intertoll-Dialing Circuits in Same Bldg.	SD-68450-01	ITAA
Toll Tandem - MF - 4W - From XBT or Switchboard	SD-68290-01	ITAG - ITC
Toll Tandem - MFP - From No. 1 Switchboard	SD-68358-01	ITAC
Toll Tandem - MF - From 3CL Switchboard	SD-68238-01	ITB
Outgoing - Intertoll - DP - MFP or Automatic-CX Supvn. Type B	SD-68231-01	OIA
Outgoing - Intertoll - DP - To Intertoll-Dialing Cir- cuits in Same Bldg.	SD-68449-01	OIH
Toll Switching - DP, MF, or SF	SD-68242-01	OSB
Toll Switching - MF - E and M Supv.	SD-68513-01	OSN
Toll Switching - DP - E and M Supv.	SD-68514-01	OSP
Toll Switching - DP - To SXS Office in Same Bldg.	SD-68451-01	OSH
TX - To Toll Switchboard No. 1	SD-68417-01	OXK
151	SD-68461-01	151E
Digit Absorbing	SD-68243-01	DA
Reorder Monitor No. 1 Switchboard	SD-68447-01	ROMC

7. WORK ITEMS

7.01 General. In placing the option wiring, usually in the form of strapping, the methods described below shall be followed.

7.02 Either bare tinned-copper wire or sleeved tinned-copper wire shall be used for strapping, depending upon the length of the straps, whether the straps carry potential, and clearances between the straps and other terminals or uninsulated metal work. The kind of wire to be used for various conditions is as follows:

BATTERY OR OTHER-POTENTIAL STRAPS:

<u>Between Points of Connection</u>	<u>Clearance</u>	<u>Wire</u>
Over 1/2"	3/4" or more	Bare
Over 1/2"	Less than 3/4"	Sleeved
1/2" or less	1/8" or more	Bare
1/2" or less	Less than 1/8"	Sleeved

NONPOTENTIAL STRAPS

<u>Between Points of Connection</u>	<u>Clearance</u>	<u>Wire</u>
Over 1/2"	1/8" or more	Bare
Over 1/2"	Less than 1/8"	Sleeved
1/2" or less	1/32" or more	Bare
1/2" or less	Less than 1/32"	Sleeved

7.03 In placing the straps the following should be observed.

- (a) Allow proper access to the wiring terminals or other parts of the apparatus.
- (b) Avoid interference with the operation of the apparatus.
- (c) Avoid obscuring designations where practicable.
- (d) Solder straps to terminals so that they can be unsoldered and removed with the minimum disturbance to other wiring.
- (e) Sleeving shall extend up to the connected terminals.

7.04 On relays equipped with thin flexible terminals closely spaced, such as on the U and Y relays, straight bare-wire straps may be placed through the holes in adjacent terminals of the same group of terminals, providing no wiring other than the incoming lead is connected to the terminals. The holes of the terminals shall be completely filled with solder.

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7.05 Protection of Unused Leads. The skinned ends of all disconnected leads shall be protected individually by sleeving (RM-628436). Place the sleeving over the end of each lead so that it extends inward beyond the end of the wire insulation at least one inch and extends outward beyond the end of the bare wire at least one-half inch. Each unused lead shall be sewed back on the form using No. 6 cord. At least one stitch of the cord shall be placed over the sleeve to hold it in place.

7.06 Protection of Nearby Equipment. Protective canvas shall be used to cover nearby equipment to prevent trouble from solder splashes and wire clippings.

8. TESTING

8.01 After placing translator cards in the translators make the following tests.

(a) A translator-card verification test, as outlined in BSP Section 212-120-502, will be made on each new card in all translators.

(b) At least one routing-verification test call will be made for each translator-card order established. "Expect Dial-Delay" and "Stop-Go" feature shall be verified where required.

(c) Advancing through trunk subgroups on cards with card-to-card routing instructions, and to proper all-trunks-busy signal will be tested with the decoder-marker test frame.

(d) Alternate-route pattern cross connections will be checked for all new cards with relay-route or card-to-relay routing instructions. These will include:

(1) Decoder-marker test-circuit test to verify proper initial route relay selected.

(2) Decoder-marker test-circuit test on each decoder, where changes in alternate route cross connections are required, to test advance through all trunk subgroups and to proper final route all-trunks-busy signal.

(3) Request the 17C testboard to test changed alternate-route cross connection (including routes changed from final to high usage) with test calls to each subgroup and to final route all-trunk-busy signal. This shall be done during light-load period by placing a call, locking forward and verifying trunk in lowest subgroup selected. Then all

trunks in first subgroup will be locked-out and a test call made to insure next subgroup selected. This will be repeated through all subgroups to final all-trunks-busy signal.

8.02 Establish a routine in conjunction with the 17C testboard to test all alternate-route trees by the subgroup lock-out and test-call method on a six-month basis. Schedule to precede the two peak-load holidays.

8.03 Trunk wiring options: After placing all required option wiring, test the trunks in a manner that will insure that all options necessary for correct operation are in place and in proper working order. Tests of this nature will include, where applicable, calls through both trains, traffic-separation register operation, outgoing dial or revertive PCI-sender class, rering forward, supervision, and talking. When "Stop-go cancel" is not used, place test calls to one or more distant points where a "stop-dial" signal is returned during the outpulsing. When "expect dial delay" is used, place test calls to one or more distant points where a delay-dial signal is returned prior to outpulsing.

8.04 Although not controlled by options, the trunk-circuit functions associated with marker selection, make busy, and group busy shall be tested prior to placing the trunk or trunk group in service.

8.05 Make transmission-loss tests, singing-point tests, and pad-control tests, where applicable, on all newly established toll-tandem, toll-switching, and miscellaneous trunks.

9. RECORDS

9.01 Trunk Records. Trunk records will be prepared by the Plant Trunk Assignment Bureau using the following forms:

PTA 16A&B Trunk Cross Connection Running List

PTA 16 Miscellaneous Cross Connection Running List

9.02 The trunk cross connection running lists will specify the trunk options required by trunk group. For trunks using line and balance nets the type of coil shall be indicated.

9.03 Connector and Frame-Assignment Records. New trunks and trunk groups shall be added to Forms PTA 132, Trunk Block Connector Trunk Test Connector Cross Connection Chart, and PTA 135, Link Frame Assignment Record. Disconnected trunks shall be deleted from these forms.

NO. 4A TOLL-SWITCHING OFFICE

Table 6
TRANSLATOR-CARD CLASS 4A

Items	Type	Par. 4.01(d) Guarded Unguarded	Outpulsing Class on Card Order Note 2										Par. 4.01(d) 3	Intermediate Office	Terminating Office	General Notes		
			NI	MIF	DC	LPD	SXD	XDD	XSG	20C	SXR	CDLC						
1	Intertoll Manual	Guarded	X												X		Manual switchboard	Intertoll trunk facilities to distant switchboard.
2	Toll Completing Manual	Unguarded	X														Manual switchboard desks, etc.	Toll-connecting trunk facilities to 121, 101, TX, 958, etc.
3	Toll Completing PCI or Revertive	Guarded			X										X		#1 Panel #1 Crossbar #1 Manual equipped to receive display	Outgoing sender used in No. 4A office. Not equipped here.
4	Intertoll MF Pulsing	Guarded		X											X		#4-Type Toll Switching #1 Crossbar Tandem #5 Crossbar	MF pulsing depends on trunk facilities used. Intertoll trunk facilities used in No. 4A office.
5	Toll Completing MF Pulsing	Unguarded		X													#1 Crossbar Tandem #5 Crossbar #1 Crossbar	MF pulsing depends on trunk facilities used. Toll-completing trunks facilities used in No. 4A office.
6	Intertoll Simplex Dialing	Guarded					X							X	#1 SxS Tandem #1 SxS Intertoll Net List No. 1	List No. 1 Manual Switchboard	SXD trunk always guarded. SXD pulsing depends on trunk facilities used to inter. office.	
7	Toll Completing Simplex Dialing	Guarded					X							X			List No. 1	SXD trunks always guarded. SXD pulsing depends on trunk facilities used to term. office.
8	Intertoll Simplex Dialing	Guarded					X	X						X	No. 4-type toll switching #1 Crossbar Tandem #5 Crossbar List No. 2	List No. 1 Manual Switchboard	SXD trunks always guarded. SXD pulsing depends on trunk facilities used to toll center. Terminating-office informa- tion required only for in- termediate offices in the List No. 2 and connecting- company link type.	
9	Toll Completing Simplex Dialing	Guarded					X	X						X			#5 Crossbar List No. 2	SXD trunks always guarded. Toll-completing trunk facilities used to terminating office.

Table 6 (Cont'd)
TRANSLATOR-CARD CLASS 4A

NO. 4A TOLL-SWITCHING OFFICE

Items	Type	Par. 4.01(d) Guarded Unguarded	Outpulsing Class on Card Order Note 2									Par. 4.01(d) 3 CDLC	Intermediate Office	Terminating Office	General Notes
			AI	MF	DC	LPD	SXD	XDD	XSG	20C	SXR				
10	Intertoll Simplex Dialing	Guarded					X		X			X	#1 SxS Tandem #1 SxS Intertoll Net List No. 1	#5 Crossbar List No. 2	SXD trunks always guarded. SXD pulsing depends on trunk facilities to inter- mediate office.
11	Intertoll Simplex Dialing	Guarded					X	X	X			X	List No. 2	List No. 2	SXD trunks always guarded. SXD pulsing depends on trunk facilities to inter- mediate office.
12	Toll Completing Loop Dialing	Unguarded				X					Par. 4.02 (e)	Par. 4.02 (f)		List No. 1	LPD depends on trunk facil- ities used.
13	Toll Completing Loop Dialing	Unguarded				X		X						#5 Crossbar List No. 2	Loop dialing depends on trunk facilities provided.
14	Toll Completing Loop Dialing	Unguarded				X			X		Par. 4.02 (e)	Par. 4.02 (f)	List No. 1	List No. 2	Loop dialing depends on trunk facilities provided to inter. office.
15	Toll Completing Loop Dialing	Unguarded				X		X	X				List No. 2	List No. 2	Loop dialing depends on trunk facilities provided to inter. office.

LISTSList #1 Step-by-Step Offices Nonlink Type

#1 Step-by-Step (WE Step)
350 SxS " "
355A SxS " "
360A SxS " "
35E97 SxS (AE Step)
Stromberg XY

List No. 1-type offices do not require an XDD class if reached directly. They do not require an XSG class if reached via a SxS intertoll net.

List #2 Step-by-Step Link-Type Offices and Relay-Type Offices

375A SxS (AE Step) CX100
32A32 SxS " " CX200 & 200A
32A44 SxS " " MCX500
CX30 Kellogg Relay
CX60

List #2 offices require an XDD class if reached directly. They require an XSG if reached via a SxS intertoll net.

NOTESNote No. 1

Class Information for Independent Co. Offices

Determine Office Type When Required

The type of office, pulsing, and stop-go features will be supplied by the Toll Dial Coordinator upon request.

Note No. 2 - Par. 4.01 and 4.02

X in a column indicates yes for that item.

M = manual outgoing

MF = MF outpulsing

DC = DC outpulsing

SXD = simplex dialing

LPD = loop dialing

XDD = expected-delay dial

XSG = expected stop-go

20C = 20 cycle ringing

SXR = simplex ringing

CDLC = cancel delay loop closure

NO. 4M TOLL-SWITCHING OFFICE

Table 7
TRANSLATOR-CARD CLASS 4M

Items	Type	Outpulsing Class on Card Order - Note 3 Table 6				Intermediate Office	Terminating Office	General Notes
		M	MF	DC	CDLC			
1	Manual	X			X		Manual switchboard	
2	Intertoll MF Pulsing		X		X 4.01(d)		#4-Type Toll Switching #1 Crossbar Tandem #5 Crossbar	MF pulsing depends on trunk facilities provided.
3	Toll Completing MF Pulsing		X				#1 Crossbar Tandem #5 Crossbar #1 Crossbar	Toll completing, MF pulsing, trunk circuit provided in #4M office.
4	Toll Completing PCI or Revertive			X	X		#1 Panel #1 Crossbar #1 Manual equipped to receive display	Outgoing sender used in No. 4M office. Par. 4.031
5	Dial Pulsing			X	X	See General Note	See General Note	Outgoing sender used in No. 4M office. Par. 4.030