

**INTERCEPT ANNOUNCEMENT SYSTEMS**  
**LAYOUT FEATURES**

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**1. GENERAL**

**1.01** This section covers the general transmission features of intercept announcement systems. Details of specific intercept announcement systems are covered in other sections.

**1.02** Intercept service provides a recorded or live announcement for answering calls made to exchange line numbers which are vacant, disconnected, or changed. Intercepted traffic may be handled on either a local or centralized basis.

**1.03** Where intercepted traffic is handled in a terminating manual office (local intercepting service) there are no special transmission considerations

since no trunks between offices are involved. However, all offices require the proper adjustment of speech levels and the limitation of common wiring to prevent talk-through.

**1.04** Centralized intercept service involves a trunk between the intercepted central office and the building where the centralized intercepting announcement machine or operator is located. The transmission design of these trunks should ensure minimum losses. For trunks from local step-by-step and panel-type offices, an allowance should be made for additional bridging loss encountered on intercepting service.

**1.05** The 5A, 6A, and 7A announcement systems provide machine facilities for answering intercept calls. With these facilities, calls may be intercepted and automatically routed to an announcement machine containing recording-reproducing equipment.

**1.06** Incoming calls to the machine may be on either a barge-in or a synchronized basis. Disconnect normally occurs when the last calling customer hangs up; however, the reproducer may be arranged to give the calling customer a set number of announcements before disconnection.

**1.07** The importance of good intercept transmission cannot be over emphasized. Any misunderstanding resulting from poor transmission of these intercepts may be accompanied by unfavorable customer reaction.

**1.08** General transmission design considerations for announcement systems and a glossary of terms are found in Section 852-520-100.

**2. EQUIPMENT INFORMATION**

**A. General**

**2.01** In general, machine intercept will reduce the number of operator-handled intercept calls by approximately 50 percent. However, on initial installations of the system or when major

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rearrangements of existing installations are planned, it is recommended that operator intercept positions sufficient to handle 60 percent of the total intercept traffic be provided.

**2.02** All intercept trunks perform the same basic operations. When seized by an intercept call, they provide an automatic start of the announcement machine and connect the call to the announcement machine.

**2.03** The announcement trunk is a facility between a main center or subcenter and a local office, local tandem, or toll switch. This is the subscriber's access to the serving main center or subcenter.

**2.04** Since the amount of intercept traffic in a given central office determines the number of trunks required, each office is engineered to its own needs.

### B. Announcement Systems

**2.05** *5A Announcement System:* This system is used in No. 4 type toll crossbar and crossbar tandem offices. A block diagram of No. 5A recorded announcement facilities is shown in Fig. 1.

**2.06** Six announcements may be made simultaneously, each arranged to give announcements automatically to a maximum of 100 calls in toll offices and 80 in tandem offices. The announcement cycle is 12.6 seconds.

**2.07** The amplifiers of each channel have individual gain controls to regulate the amplification levels for recording and reproducing. The announcement failure alarm circuit is connected when the amplifier is in the reproducing condition.

**2.08** In case of machine failure, provision is made to permit an operator to make announcements.

**2.09** For a detailed description of the 5A announcement system refer to Section 951-112-100.

**2.10** *6A Announcement System:* This system is designed primarily for use with centralized intercepting service. The 6A announcement system provides a recorded message at regular intervals. Access to this equipment is obtained through intercepting trunks that are provided with a feature

which automatically routes calls to the announcement machine.

**2.11** The announcement machine consists essentially of two units, each consisting of a recorder-reproducer and an amplifier. One unit carries the load while the other is arranged for standby operation. Failure of the working unit results in automatic transfer of the standby unit to the working position.

**2.12** Trunking and cross-connection arrangements are available for step-by-step, panel, and No. 1 and No. 5 crossbar systems.

**2.13** Central offices arranged for a No. 6A intercept system provide trunking arrangements as shown in Fig. 2.

**2.14** The capacity of the main center is 600 trunks and of each subcenter is 300 trunks.

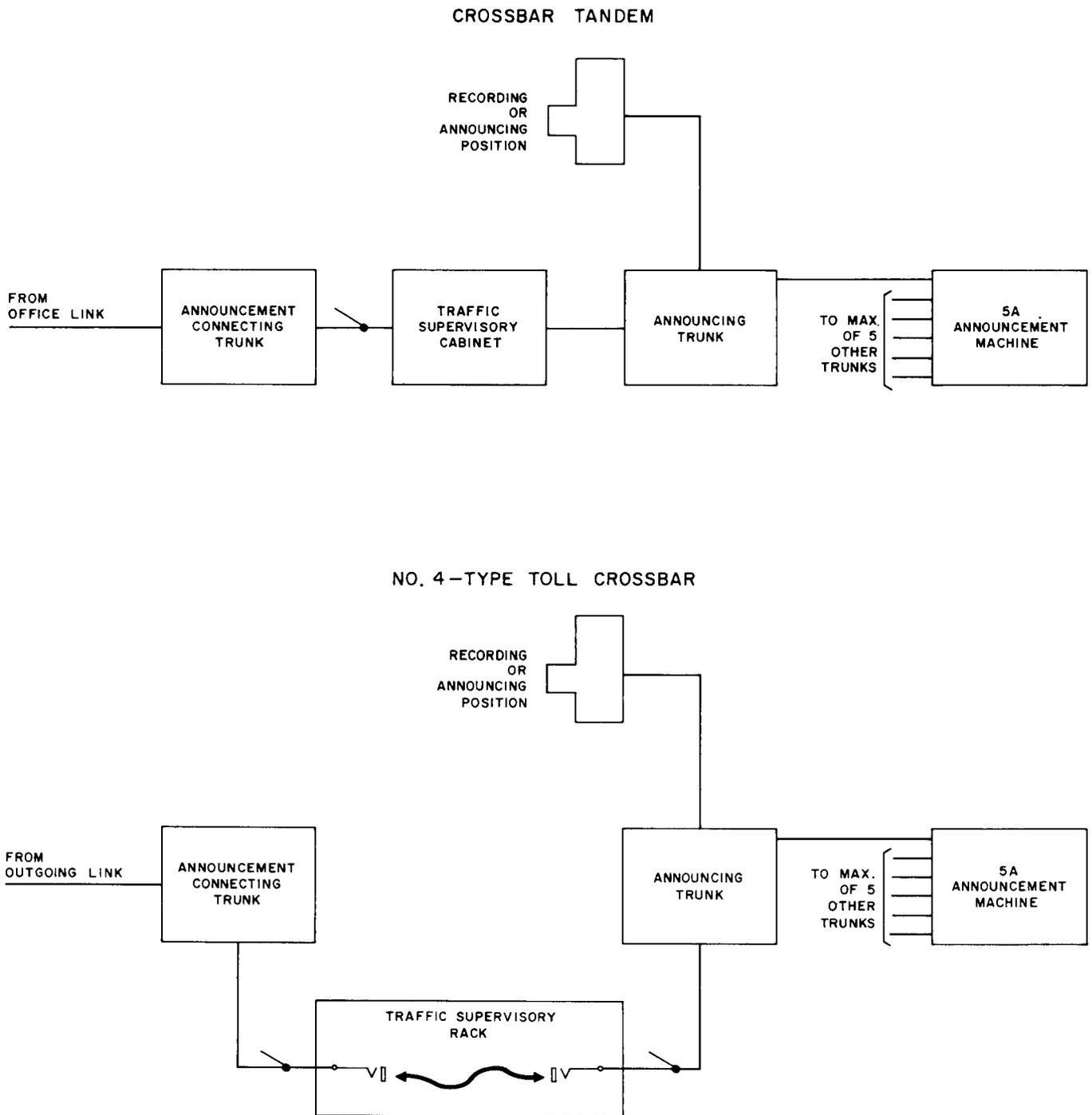
**2.15** For a detailed description of the 6A announcement system refer to Section 951-114-100.

**2.16** *7A Announcement System:* This system, arranged for intercept service, will automatically reproduce a recorded announcement on a call-demand basis. By means of cross connections, calls to changed, unassigned, or disconnected numbers and vacant selector levels are routed to intercept trunks. These trunks when seized, provide an automatic start for the announcement set and connect the intercepted call to the set.

**2.17** A block diagram of the 7A announcement system, as used in a step-by-step office, is shown in Fig. 3. The 7A announcement system, as used for direct distance dialing (DDD) intercept in a No. 5 crossbar office, is shown in Fig. 4.

**2.18** The 7A announcement system will service more than one intercepted call at any time, but once the reproducing cycle is started by an intercepted call, any further calls routed to the system may receive a partial announcement. In this case, the subscriber must remain on the connection for the next complete announcement.

**2.19** The control circuit allows an operator to produce a new announcement either locally or from a remote location and to check the new recording for quality.



**Fig. 1—5A Announcement System—Block Diagram of Recorded Announcement Facilities**

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**2.20** For a detailed description of the 7A announcement system refer to Section 951-116-100.

### **3. CONTROL CIRCUIT DESIGN**

**3.01** Transmission design for the control circuit should be in accordance with the requirements for the specific system.

### **4. MAIN CENTER**

**4.01** The main center equipment includes the recorder-reproducer, amplifier, coupling unit, and distribution unit. The exact type of coupling unit varies somewhat, depending on whether local-remote or remote operation is used.

**4.02** Announcement trunk circuits from the distribution bus are of two types, having 1000-Hz loss of 6 to 18 dB. The loss depends on the system and the type of connection. The high-loss circuit is intended to be used for connections to local subscribers served by the main center or for connections over interoffice trunks of less than 4 dB. The low-loss trunk circuits are used for all higher loss connections. Connections to calling subscriber lines are made either through repeating coils or isolating capacitors, depending on the type of office.

**4.03** Subcenter circuits from the distribution bus to subcenters differ somewhat, depending on whether single or dual arrangements are to be used. Impedance-matching options are available for loaded and nonloaded facilities or short-haul carrier facilities.

**4.04** The distribution center bus level is adjusted to the required value (reading of 0 on built-in vu meter in 6A system). The gains of the subcenter amplifiers are adjusted only after the distribution center equipment is properly adjusted.

### **5. 6A ANNOUNCEMENT SYSTEM SUBCENTERS**

**5.01** Equipment of a 6A announcement system subcenter consists of one or two amplifiers and a distribution bus with announcement trunks or intercept trunks. A volume indicator is provided to monitor the level at the distribution bus and the output of the amplifiers.

**5.02** Terminations of the trunks at the subcenter depend upon the types of facilities used.

**5.03** When dual subcenter trunks are used, the two subcenter amplifiers are each adjusted to a 0-vu output (measured across each amplifier) when connected to the bridge. This results in a 0-vu bus level, if the amplifiers are properly poled. The failure of either of the amplifiers or an associated trunk will cause a decrease in the bus level.

**5.04** Level adjustments at the subcenter should always be made after any changes that are made in alignment at the distribution center. Transmission levels into subscriber lines and loading considerations are the same as for the distribution center.

### **6. 6A ANNOUNCEMENT SYSTEM SUBCENTER TRUNK DESIGN**

**6.01** Loaded or nonloaded cable or short-haul carrier facilities may be used between distributing centers. If single-channel arrangements are used, up to four trunks may be operated in tandem. If dual facilities are used, only two trunks are permitted in tandem.

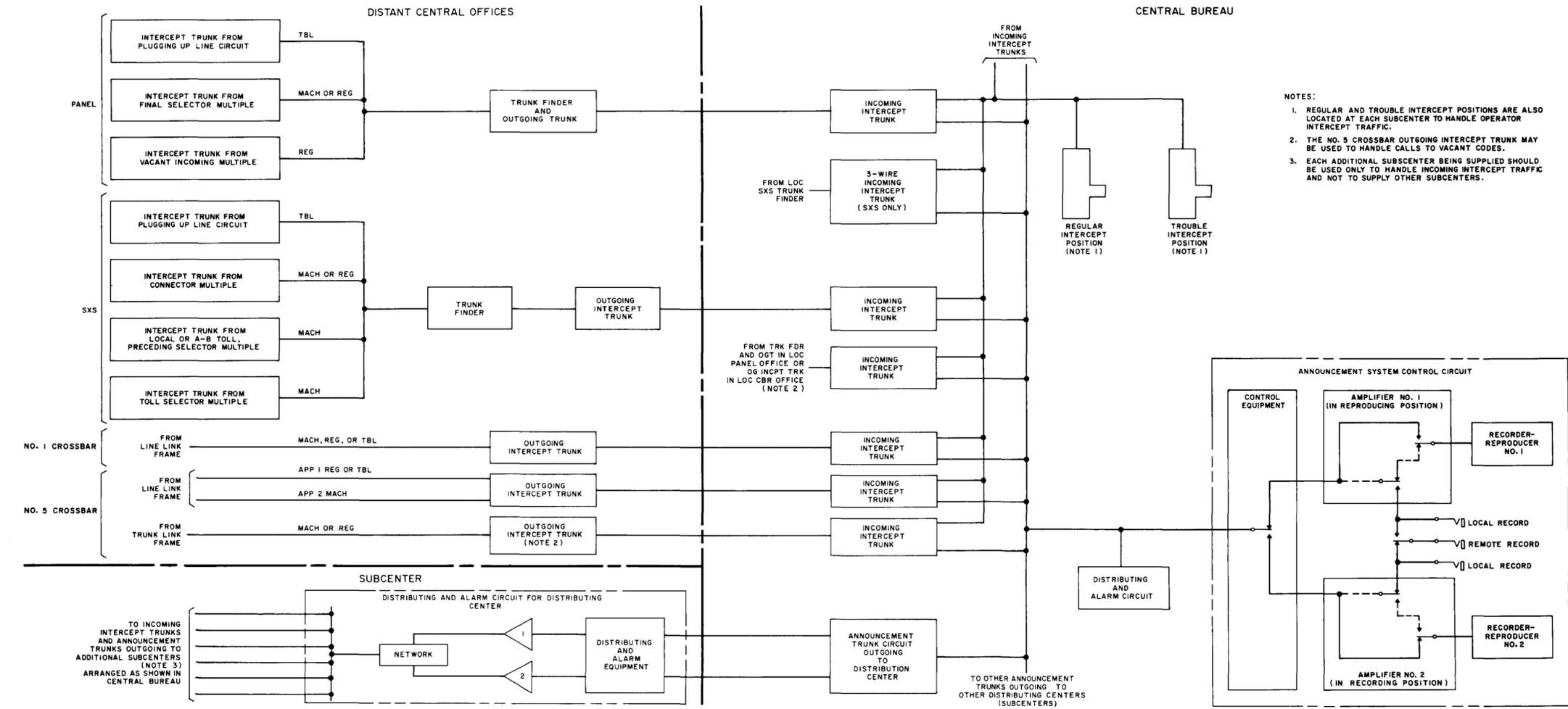
**6.02** Tandem trunks should not exceed 12 dB in loss. The loss at 3000 Hz should not exceed the loss at 1000 Hz by more than 1 dB.

**6.03** If dual channels are used, special precautions should be taken to be sure that the channels are properly matched. The requirements are discussed in Section 852-520-200.

### **7. OTHER TRANSMISSION FACTORS**

#### **A. Frequency Response**

**7.01** The overall frequency response of the system minus that of connecting trunks is essentially flat over the voiceband. Since the frequency response of the equipment is essentially flat, the overall quality will depend on the response of the trunk facilities. Loaded facilities should be used whenever possible. Overall quality will be satisfactory if subcenter design is in accordance with Section 852-520-100.



- NOTES:
1. REGULAR AND TROUBLE INTERCEPT POSITIONS ARE ALSO LOCATED AT EACH SUBCENTER TO HANDLE OPERATOR INTERCEPT TRAFFIC.
  2. THE NO. 5 CROSSBAR OUTGOING INTERCEPT TRUNK MAY BE USED TO HANDLE CALLS TO VACANT CODES.
  3. EACH ADDITIONAL SUBCENTER BEING SUPPLIED SHOULD BE USED ONLY TO HANDLE INCOMING INTERCEPT TRAFFIC AND NOT TO SUPPLY OTHER SUBCENTERS.

Fig. 2-6A Announcement System—General Arrangement for Handling Intercepted Calls

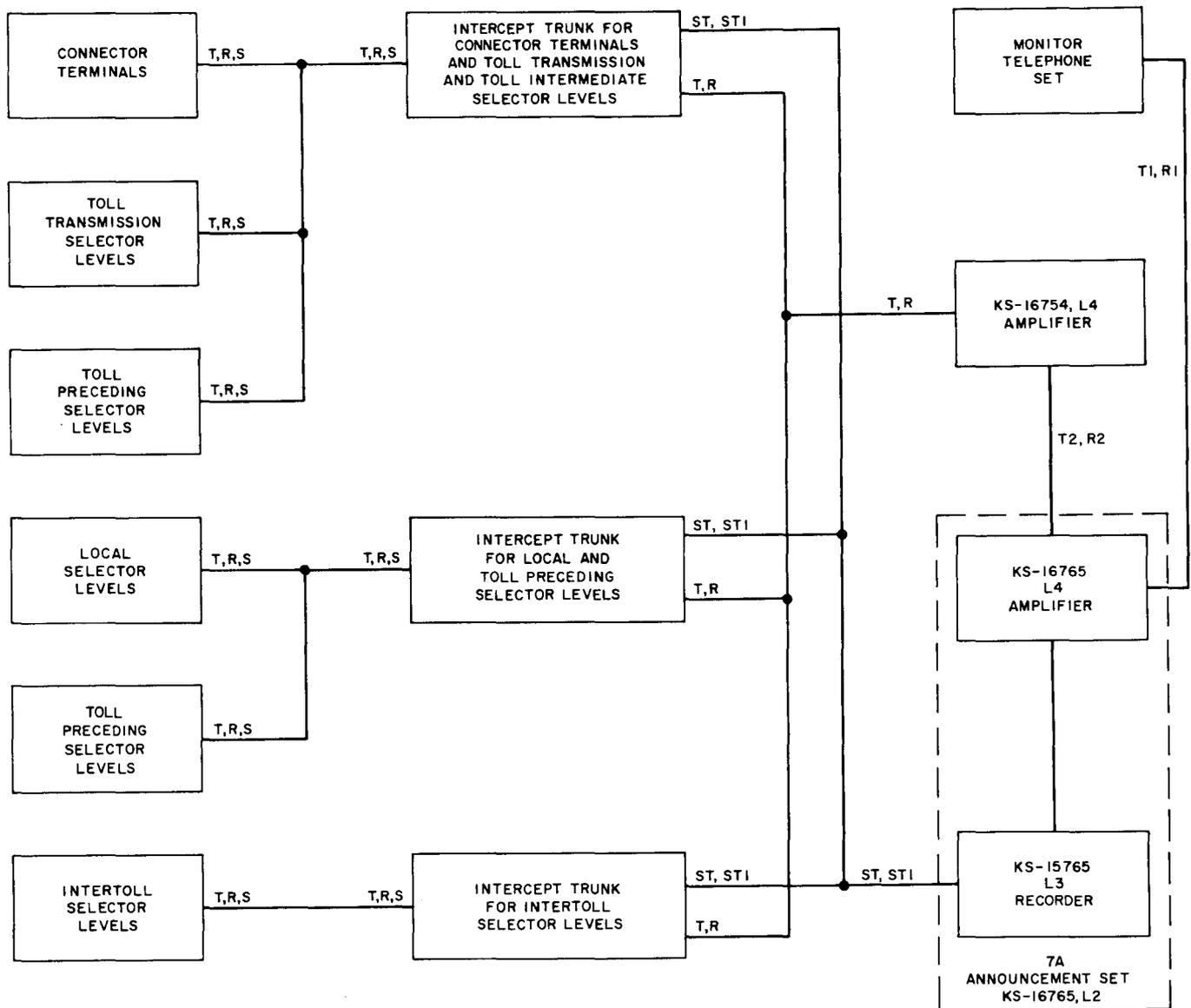


Fig. 3—7A Announcement System—Block Diagram—Step-by-Step Office

## B. Noise

**7.02** The overall reproduced noise should be at least 35 dB below the maximum undistorted 1000-Hz signal when measured on a 3A noise meter using 3-kHz flat noise weighting.

## C. Talk-Through Suppression

**7.03** Talk-through suppression or the loss between any two simultaneously connected subscribers depends on the subscriber loop and trunk losses

and the bus impedance. The bus impedance is the parallel combination of the trunk terminations and the output impedance of the amplifier. These impedances are such that the minimum loss between subscribers on zero loops is at least 50 dB.

## D. Flutter

**7.04** There should be no noticeable effect on speech quality from flutter or overloading in the recorder-reproducer system.

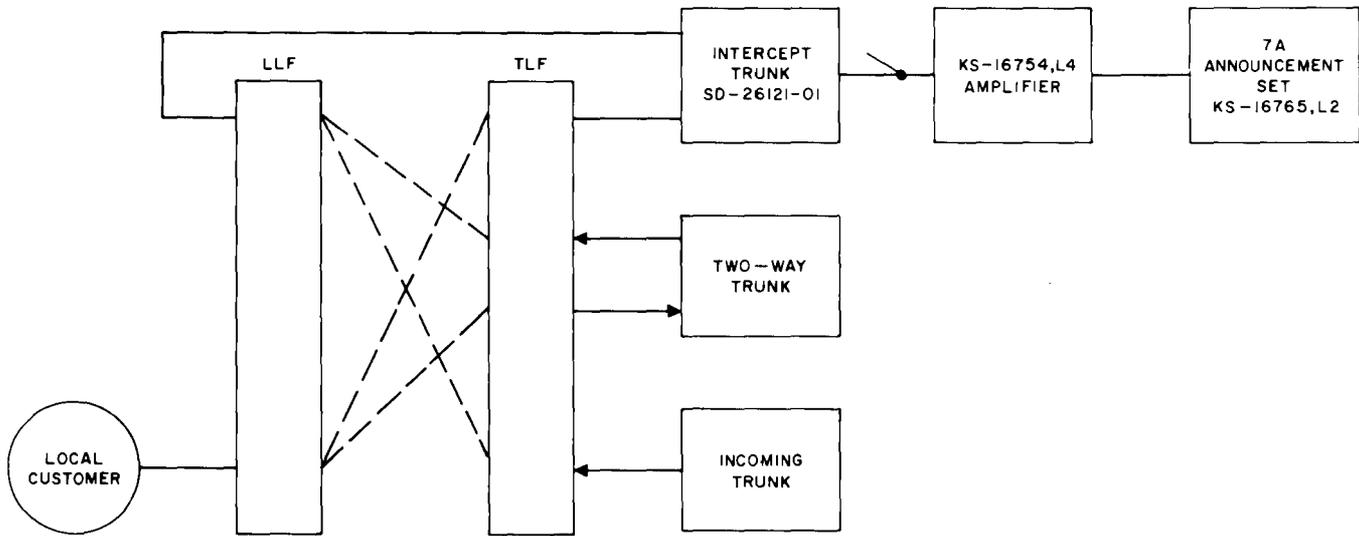


Fig. 4—7A Announcement System—Block Diagram—No. 5 Crossbar Office