

## REQUIREMENTS APPLYING TO SMALL OFFICES EQUIPMENT DESIGN REQUIREMENTS NO. 1 CROSSBAR SYSTEM

### 1. GENERAL

#### Scope

1.01 This specification applies to small No. 1 crossbar offices having two district and two incoming link frames, and covers minimum equipment quantities for offices of this size.

#### Description

1.02 Offices larger than this are engineered in accordance with the minimum requirements contained in the various crossbar frame specifications, i.e., on a basis of a minimum of three originating and three terminating markers, four office link frames, four interrupter frames, and two each of certain of the connector frames.

1.03 In offices of the size covered by this specification, these minimums can be reduced, since the traffic loads encountered do not in general warrant applying the same standards as are used in larger offices. Accordingly, where the traffic and maintenance requirements can be met satisfactorily, a minimum of two originating and two terminating markers, two office link frames, two interrupter and two miscellaneous frames, and one each of the several kinds of connector frames will be specified.

1.04 Also listed herein are certain testing equipments which will be omitted in the smaller offices if the Telephone Company so specifies.

### 2. EQUIPMENT

#### General

2.01 The various link and connector frames shall be equipped with cut-in and preference relays for three markers. This is to facilitate the installation of the third marker when required later, and to avoid the additional J-specification lists that would be needed if the frames were equipped for two markers only. The normally-made contacts on the preference relays for the third marker, through which chain leads are carried, shall be strapped out to insure a closed circuit at these points.

#### Originating and Terminating Markers

2.02 A minimum of two each of these circuits is specified when the originating and terminating traffic, respectively,

can be carried by one marker. The second marker of each type is for maintenance. Both terminating markers shall be equipped for no-test and other special calls.

2.03 In the event an originating marker frame from another office is reused in a 2-marker group, it should be brought into agreement with issues 28-B and 36-B of SD-25016-01 as outlined in PEM's 2205 and 2389. These changes have to do with condenser timing, and effect savings in marker holding time.

#### Office Link Frames

2.04 When two office link frames only are specified, they shall constitute a pair, and in conjunction with the two district link frames will use the 2D-20 office junctor pattern.

#### Subgrouping of Subscriber Senders

2.05 J27550 and J27951, covering the subscriber sender link and the originating sender frames, specify three subgroups for 15 or less senders and a minimum of five subgroups for 16 or more senders. In general, an office with two district frames will not require more than 30 senders. Accordingly, for this case the above J-specification requirements are modified to call for three subgroups for 30 senders or less.

2.06 When, due to growth, the number of senders exceeds 30, two additional subgroups should be provided and the sender multiple enlarged to five subgroups. This avoids a second multiple rearrangement which would be necessary if the pattern was enlarged first to four subgroups and extended later to five subgroups. The assignment of senders to the subgroups should follow present practices as outlined in J27550 insofar as practicable without changing the sender frame cabling to the existing subgroups.

#### Connector Frames

2.07 J28750 for the originating marker connector frame specifies a minimum of two frames and three connectors. For the 2-district link, 2-incoming link case, this is reduced to one frame, minimum, and three connectors.

2.08 J28850 for the terminating marker connector frame specifies a minimum of two frames and four connectors. For

the small office case, this is changed to one frame, minimum, and connector circuits as required.

2.09 The line junctor connector frame has a capacity of four line junctor connectors, and the line choice connector frame has a capacity of two connectors. For the small office case, a minimum of one each of these frames may be furnished.

2.10 The number group connector frame has a capacity of four circuits, and shall be furnished as required for the circuits specified. The requirement in paragraph 5.23 of J27852 that not more than two number group connectors for one office of a combined terminating group be placed on a frame and that the connectors occupy alternate positions, is waived for the small office case.

#### Interrupter Frames

2.11 A minimum of two instead of four interrupter frames may be furnished for an initial unit not exceeding two originating and two terminating markers, two district, and two incoming frames. With the growth of the office to three district or three incoming frames or three markers of either type, two additional interrupter frames should be provided for the added equipment, and the 4-frame assignment pattern followed as nearly as possible without recabling the existing interrupters.

2.12 There accordingly will be two typical patterns for the distribution of circuits to the interrupter frames; one for four frames or more, and one for two frames with provision for growth to four frames.

#### Miscellaneous Frames

2.13 For the smallest size of office, a minimum of two miscellaneous frames is furnished, the requirement that the sender selector units be assigned over three frames being waived. The 2-district, 2-incoming frame size of office will usually be limited to one floor, and for this case, two or three miscellaneous frames will generally suffice. Where three frames are required, the sender selector units will of course be assigned to all three bays.

#### Testing Equipment

2.14 The Telephone Company may elect to omit the following testing equipment in the smaller offices.

- (a) Testing Equipment for Outgoing and Incoming Trunks (Except AC KP Incoming Trunks): In offices having a large number of outgoing and incoming trunks, it is the practice to provide an automatic incoming trunk test frame with its associated connector frame for making tests of full selector outgoing trunks and for making continuity

and polarity tests on all outgoing trunks. Also, a wagon-type incoming trunk test set is provided, chiefly for locating trouble in trunk circuits incoming from other offices. For general testing of trunk circuits and trunk conductors, a manually operated outgoing trunk test frame is provided, on which are located the test and make busy jacks for all outgoing trunks. The outgoing trunk test frame has features for making all the tests made by the automatic and wagon-type test circuits, and accordingly, in the smaller offices, the Telephone Company may elect to omit the automatic and wagon-type test circuits.

- (b) Testing Equipment for Terminating Senders (Except AC KP Senders): An automatic test frame is usually provided for testing terminating senders. An alternative method of testing these senders in small offices is to provide the test selection circuit for the outgoing trunk test frame, and send test calls through the incoming trunks. The test selection unit is used to select the particular sender to be tested. With this arrangement the tests are limited to the detection of troubles already affecting service. A minimum of ten number terminations is necessary to make tests for all the thousands, hundreds, tens, and units digits. The test selection circuit can be used for selecting revertive pulse terminating and B senders, whether central or non-central, but is not at present arranged for selecting dial pulse terminating senders. Provision for selecting the latter type of sender will be made when required.

- (c) Testing Equipment for AC KP Incoming Trunks and Senders: The outgoing trunk test frame is not arranged for sending test calls through an AC KP trunk. In order to make use of the outgoing trunk test frame for testing AC KP trunks and senders, it will be necessary to provide a KP feature equivalent to that available for the wagon-type incoming trunk test set and provide the necessary AC frequencies. Consideration will be given to providing these features when the occasion arises. Pending the development of these arrangements, it will be necessary where AC KP trunks and senders are involved to specify the facilities now available.

- (d) Controller Trouble Indicator Frame: This may be omitted by the Telephone Company in small offices.

- (e) Miscellaneous Testing Equipment: Other testing equipments that may be omitted as a permanent part of the central office testing equipment are:

Call-through test set  
12A transmission measuring set  
Dial tester circuits