DISTRICT FRAMES
FLAT, INDIVIDUAL, AND TWO-PARTY MESSAGE RATE
BATTERY ON CO RELAY
EQUIPMENT DESIGN REQUIREMENTS
PANEL SYSTEMS

1. GENERAL

Scope

1.01 This specification, together with the supplementary information listed herein, covers the equipment design requirements for the framework, equipment, and circuits to be used in the manufacture and installation of district frames arranged for flat, individual, and two-party message-rate, coin, A operators' keypulsing or dialing service for use in panel offices having battery on the cutoff relay, and subscriber line loops of 750 or 1500 ohms.

1.02 This specification is reissued to incorporate previous appendix changes.

Capacity

1.03 The district frame has a capacity of 60 selectors and 450 outgoing trunk circuits.

Description

1.04 The subscriber district frame is one of a chain of frames in the panel system which is used exclusively for originating traffic. It is a steel structure of a type known as a double-sided frame, designed for mounting panel-type banks, selectors, sequence switches, and associated relays, repeating coils, condensers, and miscellaneous apparatus.

1.05 The flat-rate, message-rate individual, keypulsing, A operators' dialing, and message-rate party district frames consist of five bays, namely, a center bay, for mounting the banks, friction roll drives, clutches, brush rods, commutators, etc, two sequence switch bays, and two relay bays. The sequence switch bays are adjacent to the center bay, one at the right and one at the left. The relay bays are at the two ends of the frame.

1.06 The district frame is arranged to accommodate three lengths of mounting plates depending on the amount of relay equipment in the circuit. The length of frame required is shown in the tables on the mounting plate equipment drawing.

1.07 A transmission battery filter panel is mounted above the commutators on the front of district frames, for supplying the 48-volt talking battery in offices with subscriber line loops of 1500 ohms.

2. SUPPLEMENTARY INFORMATION

815-000-000 — Panel Systems Index
AA128.002 — List of General Equipment Design Requirements Sections
AA128.006 — List of General Equipment Requirement Sections
Floor Plan Data — Section 4.12, Sheet 4

3. DRAWINGS

WECo J drawings listed should be ordered by referring to the prefix and base number and requesting the highest suffix dash (—) numbers.

Key Sheet

SD-21300-01 — Battery on the CO Relay — Panel Systems

Framework

ED-20081-01 — Sequence Switch Frame Details
ED-20150-01 — Framework Limits for Single-Sided Frames
ED-20177-78 — Assembly of Frame

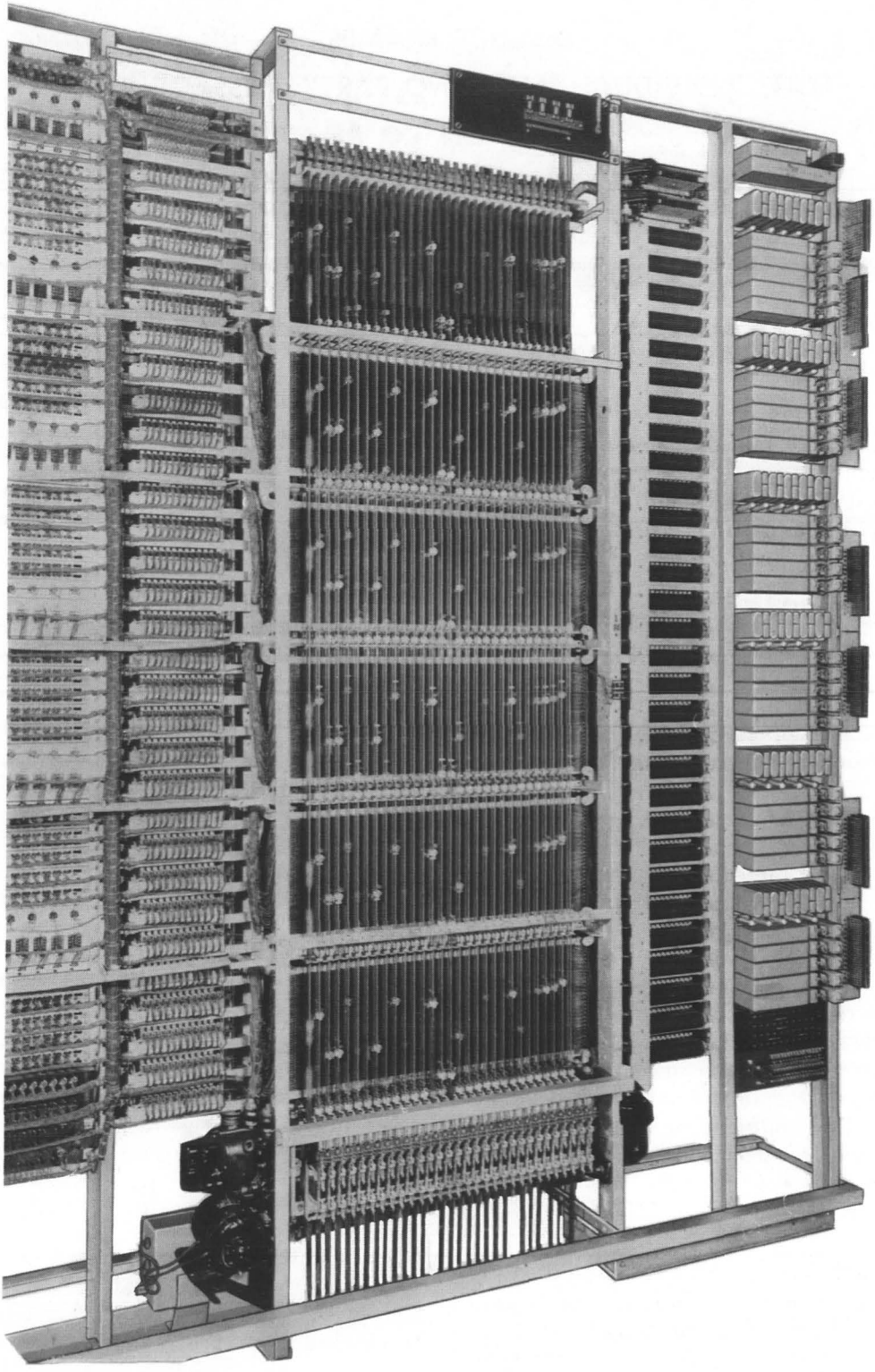

Fig. 1 – F and IMR District Frame

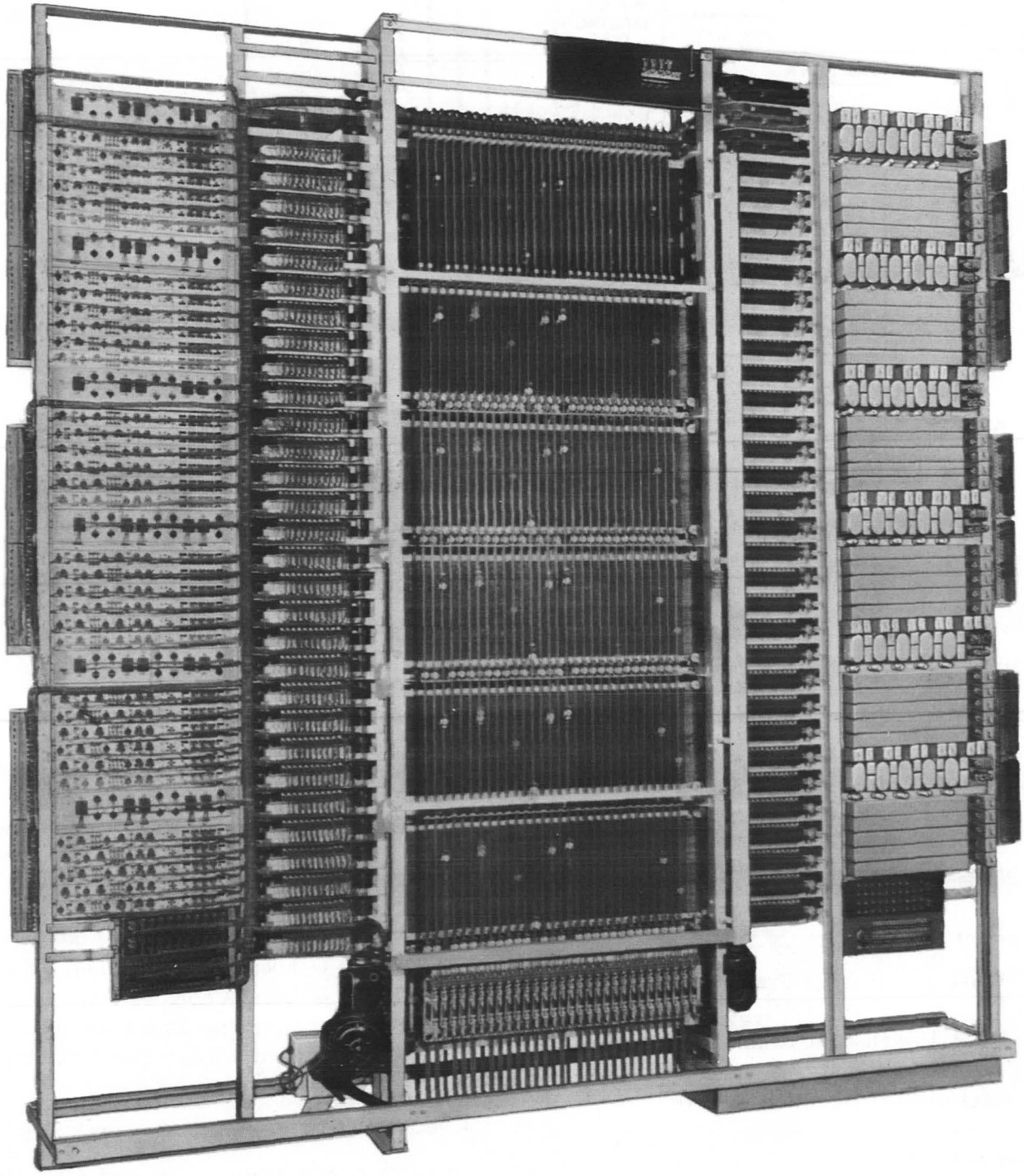

Fig. 2 – Two-party Message Rate District Frame

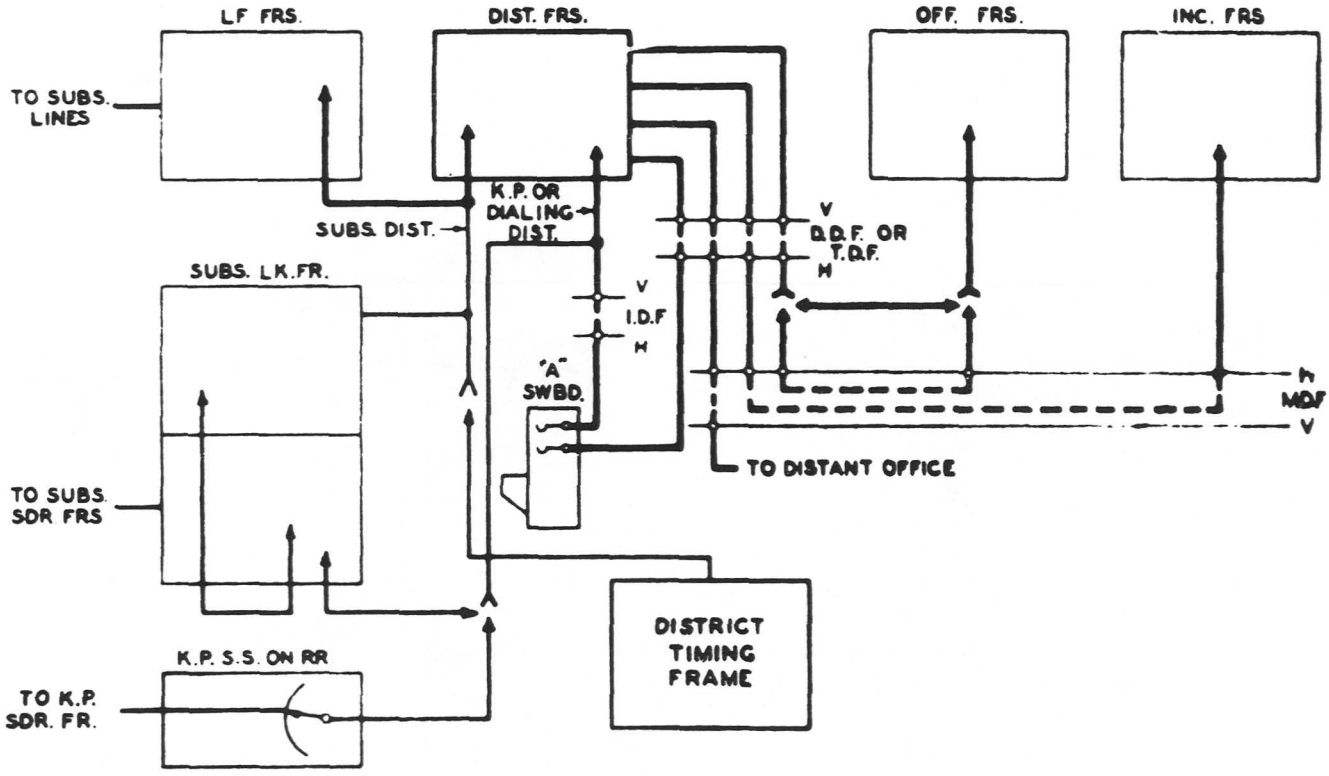

Fig. 3 – Traffic Schematic

Framework (Cont)

ED-20293-01 — Framework Limits for Double-Sided Frames
ED-20446-01 — Length of Connecting Shafts
ED-20509-57 — Assembly of Fuse Panel
ED-20624-50 — Assembly of Jack Panel
ED-20628-50 — Assembly of Jack Panel — Coin
ED-20865-50 — Assembly of Filter Panel

Equipment

J27501A-( ) — District Frame Equipment — F and IMR
J27501C-( ) — District Frame Equipment — 2PMR
ED-90411-01 — Designation Cards

Wiring and Cabling

ED-20114-01 — Multiple Cable Forms
ED-20192-01 — Switchboard Cabling Plan
ED-20192-02 — Switchboard Cabling Details
ED-20252-01 — Schematic Layout
ED-20287-01 — Wiring and Cabling of Traffic Registers
ED-20289-01 — Grounding Scheme for Make Busy Trunks
ED-20292-01 — Schematic of Cabling of 208 Selectors
ED-20623-01 — Method of Running and Supporting Frame Battery and Ground Leads
ED-20740-01 — Cabling Schematic between District and Line Finder Frames
ED-20781-01 — Local Cable — 1 and 2 Party
ED-20781-02 — Local Cable — Coin
ED-20808-01 — Outgoing Trunk Multiple
ED-20811-01 — Switchboard Power Cabling

4. EQUIPMENT

J27501A (A&M Only) — F and IMR District Frame

Equipment J27501A-( )
Local Cable — ED-20781-01, Item 1

List 1 — Framework, assembly, wiring, and equipment for one flat and individual message rate district frame using 16-1/2-inch mounting plates in offices with subscriber line loops of 750 ohms.

	WIRE	EQUIP	SEE NOTES
Frame Assembly ED-20177-78, G1		1	
Assembly Details ED-20177-78, G4		2	
Fuse Panel Assembly ED-20509-57, G2 or G7		2	
Jack Panel Assembly ED-20624-50, G10		2	5.03
District Selector Ckt	60	0	A
District Release Ckt SD-21824-01	2	0	B
Miscellaneous Ckt SD-21221-01:			
Fuse Alarm Fig. 1	2	2	
Paths Busy Tone Fig. 7	2	2	
Frame Busy Fig. 8, 9, or 10	2	2	C
Motor Stop Fig. 11	2	0	
Frame Line Fig. 12	2	2	
Test Battery Supply Fig. 13	2	2	
Spare Jack Fig. 16	2	2	
Remote Control Jack Fig. 17	4	4	
Patching Jack Fig. 18	2	2	
Selector Time Alarm Fig. 5 or 22	2	2	D

List 2 — Framework, assembly, wiring, and equipment for one flat and individual message-rate district frame using 16-1/2-inch mounting plates for use in offices with maximum subscriber line loops of 1500 ohms.

	WIRE	EQUIP	SEE NOTES
Frame Assembly ED-20177-78, G5		1	
Assembly Details ED-20177-78, G4		2	
Fuse Panel Assembly ED-20509-57, G2 or G7		2	
Jack Panel Assembly ED-20624-50, G10		2	5.03
Filter Panel ED-20865-50		1	5.15 5.16
District Selector Ckt	60	0	& A
District Release Ckt SD-21824-01	2	0	B
Misc Ckt SD-21221-01:			
Fuse Alarm Fig. 1	2	2	
Paths Busy Tone Fig. 7	2	2	
Frame Busy Fig. 8, 9, or 10	2	2	C
Motor Stop Fig. 11	2	0	
Frame Line Fig. 12	2	2	
Test Battery Supply Fig. 13	2	2	
Spare Jack Fig. 16	2	2	
Remote Control Jack Fig. 17	4	4	
Patching Jack Fig. 18	2	2	
Battery Filter Fig. 21	1	1	
Selector Time Alarm Fig. 22	2	2	

List 3 — Wiring and equipment per SD-21221-01, two Fig. 29 required in addition to list 1 or 2 when announcement facilities are required for overflow trunks.

Notes

A. The district selector circuits are listed in the tables on the equipment detail drawings.

B. This circuit shall be wired universally so that both sides of the frame are wired alike.

C. Universal wiring shall be provided for Fig. 8, 9, and 10.

D. For additions to existing offices having 750-ohm subscribers line loops, furnish Fig. 5; otherwise furnish Fig. 22.

J27501C (A&M Only) — 2 PMR District Frame

Equipment — J27501C-( )
Local Cable — ED-20781-01, Item 3

List 1 — Framework, assembly, wiring, and equipment for one 2-party message-rate district frame using 23-inch mounting plates in offices with subscriber line loops of 750 ohms.

	WIRE	EQUIP	SEE NOTES
Frame Assembly ED-20177-78, G3		1	
Assembly Details ED-20177-78, G4		2	
Fuse Panel Assembly ED-20509-57, G2		2	
Jack Panel Assembly ED-20624-50, G10		2	5.03
District Selector Ckt	60	0	A
District Release Ckt SD-21824-01	2	0	B
Misc Ckt SD-21221-01:			
Fuse Alarm Fig. 1	2	2	
Paths Busy Tone Fig. 7	2	2	
Frame Busy Fig. 8, 9, and 10	2	2	C
Motor Stop Fig. 11	2	0	
Frame Line Fig. 12	2	2	
Test Battery Supply Fig. 13	2	2	
Spare Jack Fig. 16	2	2	
Remote Control Jack Fig. 17	4	4	
Patching Jack Fig. 18	2	2	
Selector Time Alarm Fig. 5 or 22	2	2	D

List 2 — Framework, assembly, wiring, and equipment for one 2-party message-rate district frame using 23-inch mounting plates for use in offices with maximum subscriber line loops of 1500 ohms.

	WIRE	EQUIP	SEE NOTES
Frame Assembly ED-20177-78, G7		1	
Assembly Details ED-20177-78, G4		2	
Fuse Panel Assembly ED-20509-57, G2 or G7		2	
Jack Panel Assembly ED-20624-50, G10		2	5.03
Transmission Battery Filter Panel ED-20865-50		1	5.15 5.16
District Release Ckt	60	0	& A
District Release Ckt SD-21824-01	2	0	B
Misc Ckt SD-21221-01:			
Fuse Alarm Fig. 1	2	2	
Paths Busy Tone Fig. 7	2	2	
Frame Busy Fig. 8, 9, or 10	2	2	C
Motor Stop Fig. 11	2	0	
Frame Line Fig. 12	2	2	
Test Battery Supply Fig. 13	2	2	
Spare Jack Fig. 16	2	2	
Remote Control Jack Fig. 17	4	4	
Patching Jack Fig. 18	2	2	
Battery Filter Fig. 21	1	1	
Selector Time Alarm Fig. 22	2	2	

List 3 — Wiring and equipment per SD-21221-01, two Fig. 29 required in addition to list 1 or 2 when announcement facilities are required for overflow trunks.

Notes

A. The district selector circuits are listed in the tables on the equipment detail drawings.

B. This circuit shall be wired universally so that both sides of the frame are wired alike.

C. Universal wiring shall be provided for Fig. 8, 9, and 10.

D. For additions to existing offices having 750-ohm subscriber line loops, furnish Fig. 5; otherwise furnish Fig. 22.

5. GENERAL NOTES

5.01 Unless otherwise specified by the telephone company, the district frames shall be fully equipped with multiple banks.

5.02 Drive and motor equipment shall not be furnished as a part of this subdivision, but should be furnished separately as required.

5.03 The jack panel shall be fully equipped with TMB jacks irrespective of whether or not all the district selector circuits are equipped or not.

5.04 Where the flat and individual message-rate district frame is not fully equipped, it may be wired and equipped with A operators' keypulsing or dialing district selector circuits.

5.05 Where the coin district frame is not fully equipped, it may be wired and equipped with F and IMR, keypulsing, or dialing district selector circuits.

5.06 Where the two-party message-rate district frame is not fully equipped, it may be wired and equipped with F and IMR, keypulsing, or dialing district selector circuits.

District Multiple

5.07 The district multiple consists of five panel-type banks of 100 sets of terminals each which constitute the outgoing paths to the office or incoming selectors in the same building or to trunks to other exchanges. Each bank is divided from bottom up into ten groups, eight groups consisting of eleven sets of terminals and two groups of six sets of terminals. The top set of terminals in each group is for overflow purposes. The bank is not divided mechanically and these groups exist only from a wiring standpoint.

5.08 When more than the above five or ten trunks are required to any destination, two or more adjacent groups in the same bank may be combined by grounding the sleeve of the intermediate overflow terminals so as to test as busy trunks. The district selectors will thus hunt over the trunks in all these combined groups in the same manner as though they were one large group. With this provision, the district multiple may be arranged in any desired combination from forty groups of ten trunks each and ten groups of five trunks each, down to five groups of ninety trunks each.

5.09 If the district multiple is not graded, all trunks shall be slipped between frames in layers of five with one layer reversed to equalize the average trunk hunting time.

5.10 When the traffic requires that the district multiple be graded, a group of trunks is divided into two general divisions, namely individual and common. Individual trunks are located on the lower-numbered terminals of a trunk group assignment and are multipled through a subgroup or portion of the district frames. The common trunks are located immediately above the individual trunks and are common to all the district selectors involved.

5.11 Under normal traffic conditions, a district selector will not reach the common group of trunks unless all the individual trunks appearing in a group of trunks become busy. To obtain flexibility in assigning individual and common trunks, each group of trunks is divided into four classes from a wiring standpoint, namely individual, convertible, convertible partial common, and common trunks.

5.12 The individual trunks shall be slipped between frames in layers of five with the bottom layer reversed. The convertible trunks shall be cabled to the distributing frame in the same subgroups as the individual trunks and made common between subgroups by jumper wires or used as individual trunks in accordance with the traffic requirements. The number of individual trunks are increased or decreased by changing the jumper wires of the convertible trunks at the distributing frame. The convertible trunks shall be wired straight, that is without slip.

5.13 The common trunks shall be wired straight between frames with a reversal in the short multiple cable only where the individual trunks are subgrouped. The partial commons, however, are wired straight through without any slip or reversal. These trunks shall be located between the regular convertible common and the convertible individual trunks. They permit changing the size of graded groups in small steps without affecting the regular convertible trunks and thus reduce the amount of plate work involved.

5.14 Graded multiple or nongraded multiple shall be furnished in accordance with the telephone company's traffic information and equipped in accordance with the information covered on the drawings listed herein.

Transmission Battery Filter Panel

5.15 In offices having maximum subscriber line loops of 1500 ohms, a transmission battery filter panel per frame and a resistance lamp per circuit shall be mounted on the district frames. District fuseboards are not required under these conditions and may be removed from offices which have been converted for use with the longer range lines.

5.16 When mounting 11-type resistance lamps below repeating coils which are mounted on the horizontal center line of the mounting plate, a shield shall be mounted between to prevent overheating the repeating coils and condensers. When orders are received for frames having mounting plates of different lengths than those covered in this specification, they shall be referred to the Laboratories and manufacturing information for shields and additional lamp mounting plates will be originated.

5.17 ***Local Wiring***

(a) The local cables shall be wired to care for the ultimate equipment when the ultimate arrangement is given or can be determined.

(b) Frames equipped for both keypulsing or dialing and regular district circuits, shall have both circuits formed in one local cable.

5.18 ***Test Selector***

(a) No. 1 and 2 district selector circuits on each district selector frame shall in all cases be wired for use in connection with routine testing equipment in addition to the regular selector wiring.

(b) Keypulsing or operators dialing district selectors cannot operate both with the A switchboard and as test selectors since the A operator has no means of knowing if they are being used for testing purposes. These selectors should, therefore, if possible, be located at the right end of the bank bay; that is, as the highest-numbered selectors, so that subscribers districts may be located on lowest-numbered selectors. No. 1 and 2 selectors can then be used in regular traffic when not in use with the testing apparatus. When it is necessary to assign keypulsing or dialing district selectors as test selectors, they shall be used exclusively for testing purposes and shall not be cross-connected at the distributing frame to the A switchboard.

Transmission Battery Filter Panel

5.19 In order to prevent crosstalk, the size and method of wiring between the transmission battery filter panel and the resistance lamps shall not be deviated from that shown on the drawings listed herein.

Cabling

To Line Finder Frame

5.20 The district selectors shall be cabled from the selector terminal strips directly to the apparatus terminals of the commutators and clutches of the line finder selectors. The method of cabling and a list of switchboard cables to use for the various conditions encountered are shown on the line finder district cabling schematic and switchboard cabling drawings.

To Subscriber Link Frame

5.21 The district selectors shall be cabled directly to the district finder multiple banks on the subscriber link frame in groups corresponding to the line finder district grouping.

5.22 ***District Multiple***

(a) The outgoing trunk multiple shall be cabled to the distributing frame specified by the telephone company.

(b) Spare district multiple and spare overflow shall be made busy at the distributing frame. If there is a complete district multiple bank spare and not cabled, the sleeve terminals shall not be grounded but left open. This is the same as if the bank had not been furnished.

5.23 ***Miscellaneous***

(a) Cables consisting of No. 20 gauge "AM" wire shall be used for the battery, ground, and tone leads from the distributing power terminal strip to the various fuseboards.

(b) The cabling between the distributing power terminal strip and the points of termination of the various circuits shall be run in the largest switchboard cable consistent with the grouping of the leads and the point of termination. Cable shall be No. 22 gauge-type wire, except ground, tone, and battery leads requiring larger gauge wire.

(c) When modifying existing offices for use with maximum subscriber loops of 1500 ohms, where the battery feeders are under the guard rails, new feeders shall be provided on the cable rack to supply the transmission battery filter panels on the district frames.

Overflow Trunk Announcement

5.24 Announcement control equipment common to more than one district frame per SD-21221-01, Fig. 27, 28, and 30 is covered on ED-20927-10.

List of "A&M Only" and "Mfr Disc." Equipment

The following equipment has been replaced as indicated. Where "A&M Only" items appear, the issue numbers shown are those of the issue in which the rating was first applied.

EQUIPMENT	RATING	DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT
J27501B	Mfr Disc.	6	—
J27501D	Mfr Disc.	6	—

Bell Telephone Laboratories, Incorporated

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