DISTRICT FRAMES
COIN AND INDIVIDUAL AND TWO-PARTY MESSAGE RATE ZONE AND OVERTIME REGISTRATION AND COIN COLLECTION 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 zone and overtime registration district frames arranged for individual, two party message rate and coin service for use in panel offices having battery on the cut-off relay and subscriber line loops of 750 or 1500 ohms. Equipment included in this specification may be ordered by specifying the code and list numbers covered in part 4. This specification does not cover the modification of existing district frames for zone and overtime registration.

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 message rate individual, and message rate party district frames consists 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. An additional bay is bolted to each relay bay which contains the zone and overtime apparatus consisting of sequence switches and relays.

1.06 The coin district frame is a standard five bay selector frame as described above and in addition has a bay bolted to each of the relay bays for mounting the coin control apparatus consisting of power driven selectors and their associated relay equipment.

1.07 The district frame is arranged to accomodate 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.

1.08 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.

Subdivisions of Equipment

J27504A (A&M Only) - IMR District Frame With Zone and Overtime Registration
J27504B (A&M Only) - Coin District Frame With Coin Overtime Registration
J27504C (A&M Only) - 2 PMR District Frame With Zone and Overtime Registration

2. SUPPLEMENTARY INFORMATION

815-000-000 - Panel Systems Index
AA128.006 - List of General Equipment Requirement Sections
X-61400 - List of Engineering Requirement Specifications
J20102 - Switchboard Power Cabling
J27501 - District Frames - Battery on CO Relay Offices
J27503 - District Frames - Ground on CO Relay Offices
J29202 - Modification of Existing Offices for Zone and Overtime Registration
J29203 - Modification of Existing Offices for Overtime Coin Collection
Floor Plan Data - Section 4.12, Sheet 7

3. DRAWINGS

Keysheet - Panel Systems

SD-21300-01 - Battery on the CO Relay

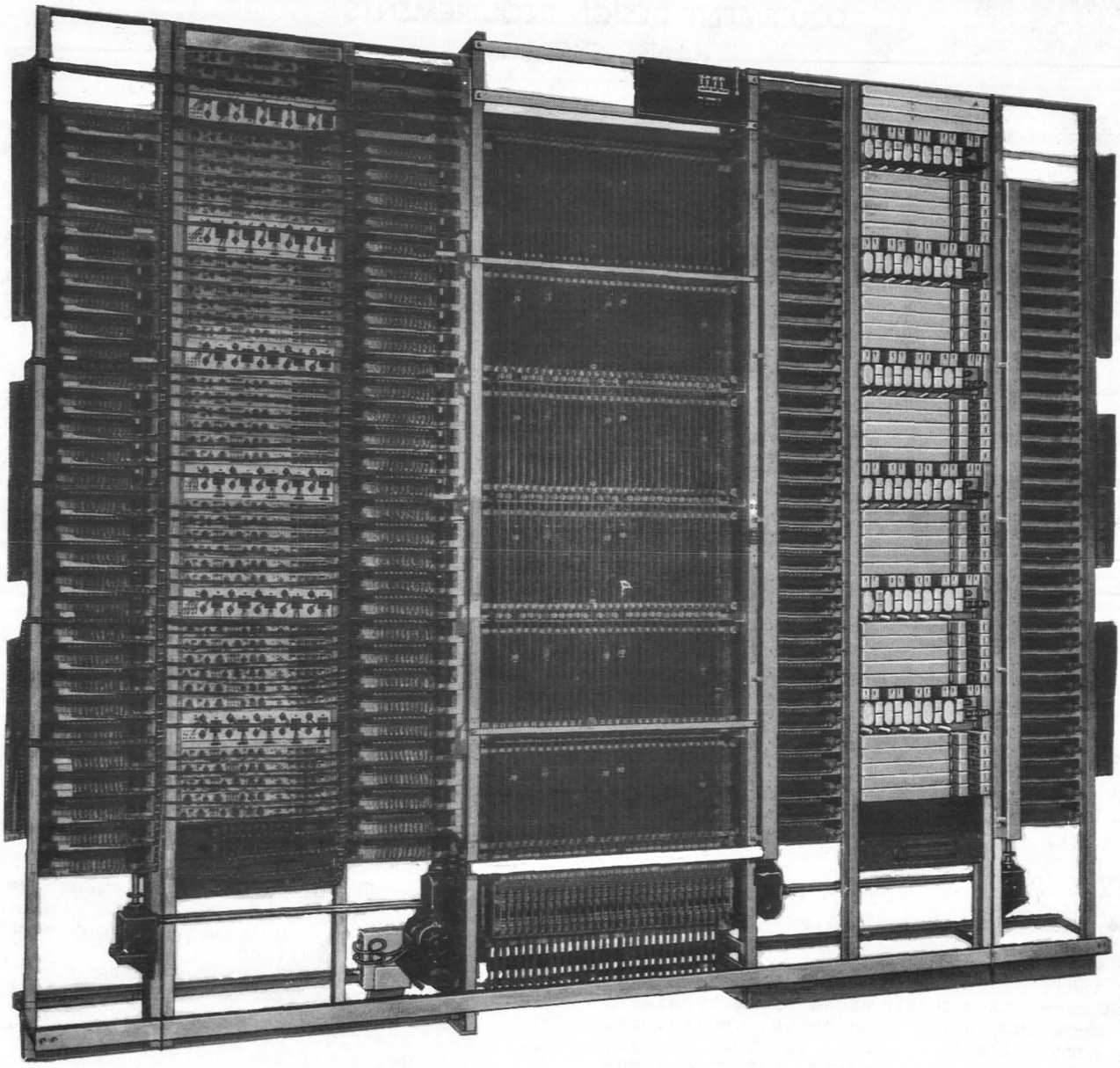

Fig. 1 - IMR District Frame Arranged for Zone and Overtime

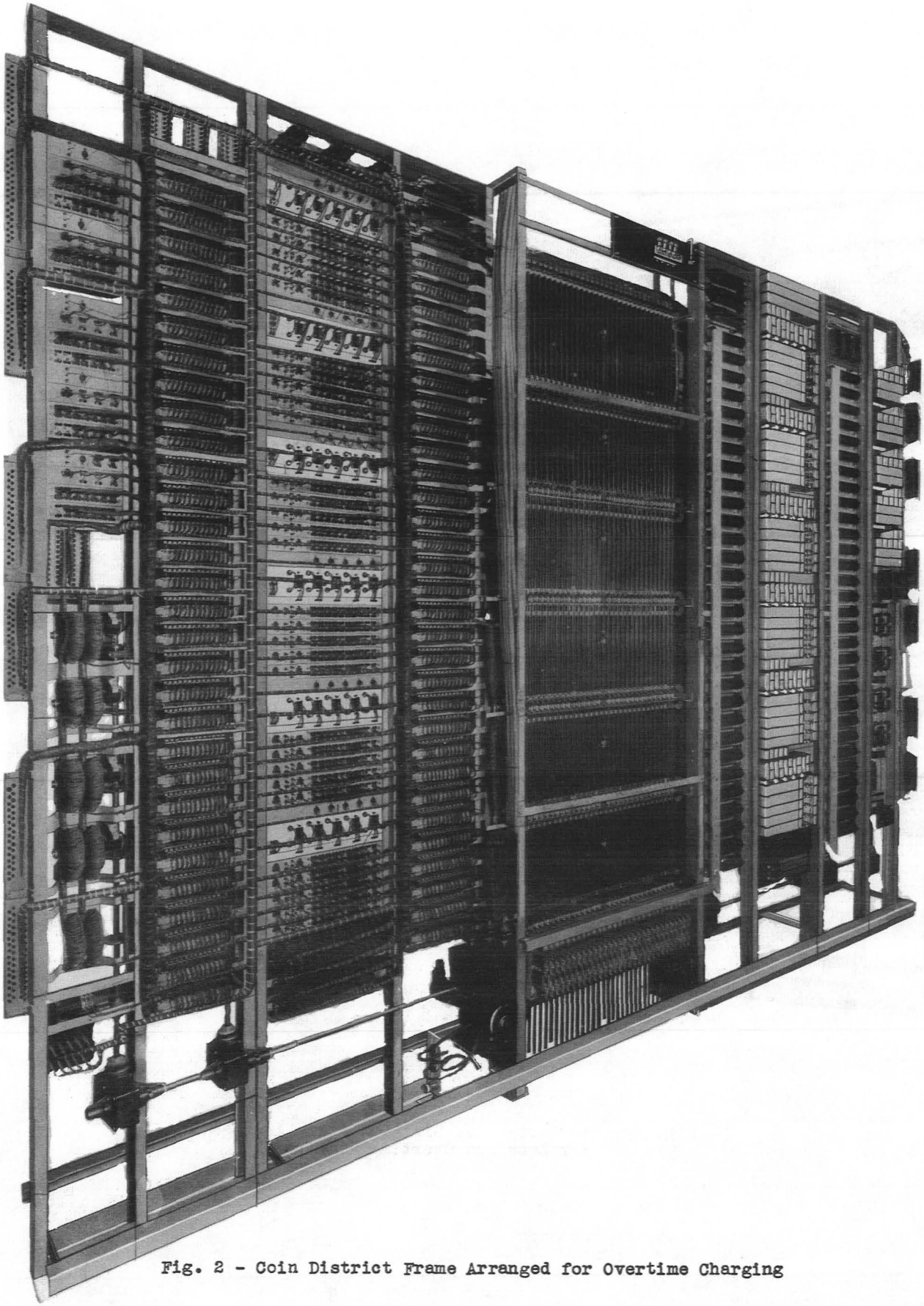

Fig. 2 - Coin District Frame Arranged for Overtime Charging

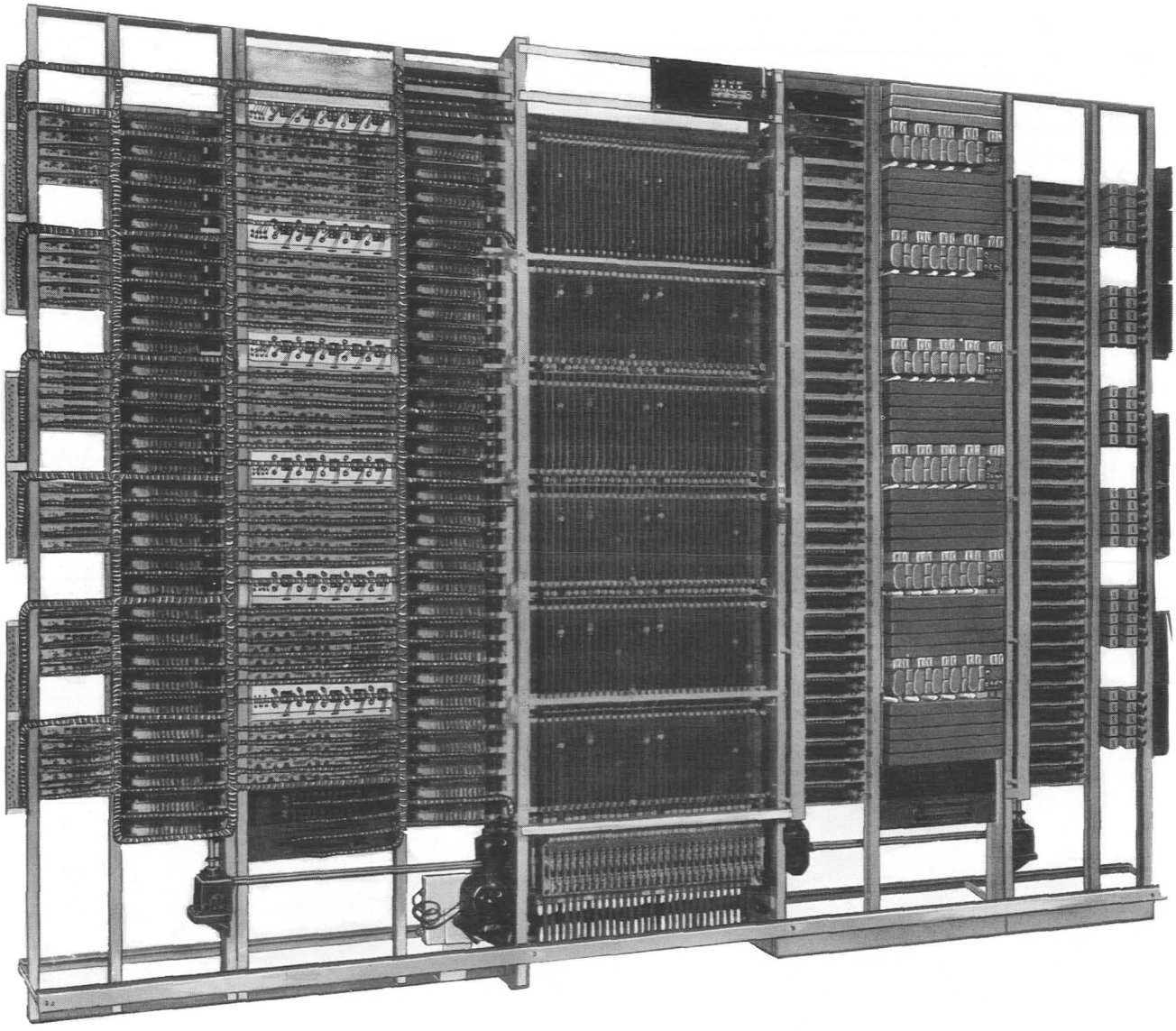

Fig. 3 - Two-Party M.R. District Frame Arranged
For Zone and Overtime Registration

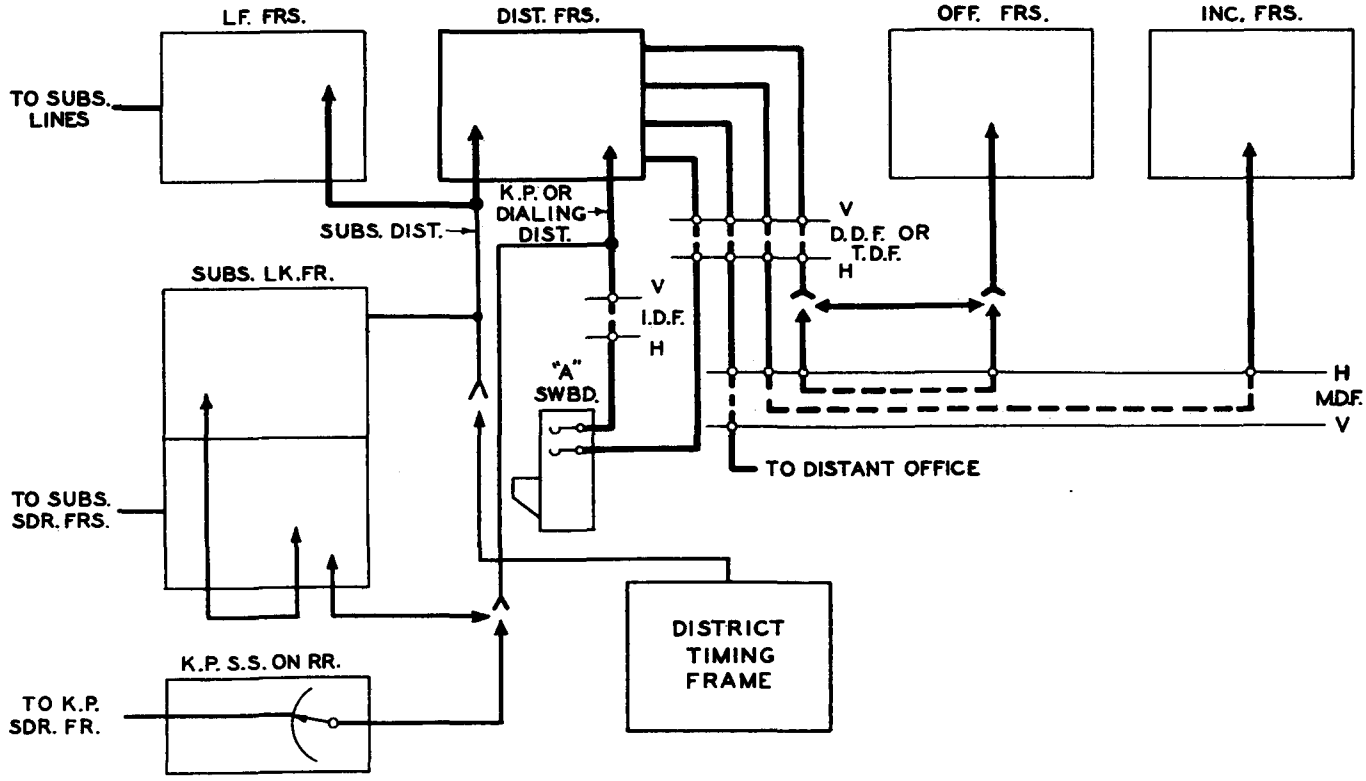

Fig. 4 - Traffic Schematic

Framework

ED-20081-01 - Sequence Switch Frame Details
ED-20150-01 - Framework Limits for Single Sided Frames
ED-20177-01 - Assembly of Frame
ED-20177-02 - Assembly Details
ED-20293-01 - Framework Limits for Double Sided Frames
ED-20446-01 - Length of Connecting Shafts
ED-20509-01 - Assembly of Fuse Panel
ED-20624-01 - Assembly of Jack Panel
ED-20628-02 - Assembly of Jack Panel (Coin)
ED-20865-01 - Assembly of Filter Panel

Equipment

ED-20178-01 - Equipment of Frame
ED-20178-02 - Equipment Details
ED-20865-01 - Equipment of Filter Panel
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-20598-01 - Wiring of Districts to District Timing Frame
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-20781-03 - Local Cable - M.R.I.
ED-20781-04 - Local Cable - M.R.P.
ED-20781-05 - Local Cable - Coin
ED-20808-01 - Outgoing Trunk Multiple
ED-20811-01 - Switchboard Power Cabling

4. EQUIPMENT

J27504A (A&M Only) - IMR District Frame

Equipment - ED-20178-01, Item 5
Equipment Details - ED-20178-02
Local Cable - ED-20781-03, Item 5

List 1 - Framework, assembly, wiring, and equipment for one individual message rate district frame arranged for zone and overtime registration using 19" mounting plates in offices with subscriber line loops of 750 ohms.

	Wire	Equip	See Note
Assembly ED-20177-01, Item 5	-	1	
Assembly Details ED-20177-02, Item 2	-	2	
Fuse Panel Assembly ED-20509-01, Item 38	-	2	
Jack Panel Assembly ED-20624-01	-	2	5.03
District Selector Ckt.	60	As Spec.	A
District Release Ckt. SD-21824-01	2	As Spec.	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	As Spec.	
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 individual message rate district frame arranged for zone and overtime registration using 19" mounting plates for use in offices with maximum subscriber line loops of 1500 ohms.

	Wire	Equip	See Note
Assembly ED-20177-01, Item 5	-	1	
Assembly Details ED-20177-02, Item 2	-	2	
Fuse Panel Assembly ED-20509-01, Item 38	-	2	
Jack Panel Assembly ED-20624-01	-	2	5.03
Battery Panel Assembly ED-20865-01	-	1	5.15
		As	5.16
District Slector Ckt.	60	Spec.	& A
District Release Ckt. SD-21824-01	2	As Spec.	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	As Spec.	
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 for overflow trunks are required.

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 Figs. 8, 9, and 10.

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

J27504B (A&M Only) - Coin District Frame

Equipment - ED-20178-01, Item 7
Equipment Details - ED-20178-02
Local Cable - ED-20781-05, Item 7

List 1 - Framework, assembly, wiring, and equipment for one coin district frame arranged for coin overtime charging using 23" mounting plates in offices with subscriber line loops of 750 ohms.

	Wire	Equip	See Note
Assembly ED-20177-01, Item 7	-	1	
Assembly Details ED-20177-02, Item 3	-	2	
Fuse Panel Assembly ED-20509-01, Item 38	-	2	
Jack Panel Assembly ED-20624-01	-	2	5.03
Jack Panel Assembly ED-20628-02	-	2	5.03
District Selector Ckt.	60	As Spec.	A
Coin Control Ckt.	10	As Spec.	
District Release Ckt. SD-21824-01	2	As Spec.	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	As Spec.	
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	
Coin Control Test Jacks Fig. 19	4	4	
Selector Time Alarm Fig. 5 or 22	2	2	D
Coin Control Time Alarm Fig. 6 or 23	2	2	D

List 2 - Framework, assembly, wiring, and equipment for one coin district frame arranged for coin overtime charging using 23" mounting plates

for use in offices with maximum subscriber line loops of 1500 ohms.

	Wire	Equip	See Note
Assembly ED-20177-01, Item 7	-	1	
Assembly Details ED-20177-02, Item 3	-	2	
Fuse Panel Assembly ED-20509-01, Item 38	-	2	
Jack Panel Assembly ED-20624-01	-	2	5.03
Jack Panel Assembly ED-20628-02	-	2	5.03
Battery Panel Assembly ES-20865-01	-	1	5.15
		As	5.16
District Selector Ckt.	60	Spec.	& A
Coin Control Ckt.	10	As Spec.	
District Release Ckt. SD-21824-01	2	As Spec.	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	As Spec.	
Frame Line Fig. 12			
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	
Coin Control Test Jacks Fig. 19	4	4	
Battery Filter Fig. 21	1	1	
Selector Time Alarm Fig. 22	2	2	D
Coin Control Time Alarm Fig. 23	2	2	D

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

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 Figs. 8, 9, and 10.

D. For additions to existing offices having 750 ohm subs line loops furnish Figs. 5 and 6 otherwise furnish Figs. 22 and 23.

E. When new coin district frames are added in an office, the existing coin control circuits shall be modified to replace the LT relays with S63 relays and the coin control test set changed to test the new relays.

J27504C (A&M Only) - 2 PMR District Frame

Equipment - ED-20178-01, Item 6

Equipment Details - ED-20178-02
Local Cable - ED-20781-04, Item 6

List 1 - Framework, assembly, wiring, and equipment for one two party message rate district frame arranged for zone and overtime registration using 23" mounting plates in offices with subscriber line loops of 750 ohms.

	Wire	Equip	See Note
Assembly ED-20177-01, Item 6	-	1	
Assembly Details ED-20177-02, Item 3	-	2	
Fuse Panel Assembly ED-20509-01, Item 38	-	2	
Jack Panel Assembly ED-20624-01	-	2	5.03
District Selector Ckt.	60	As Spec.	A
District Release Ckt. SD-21824-01	2	As Spec.	B
Misc. Ckt. SD-21221-01			
Fuse Alarm Fig. 1	2	2	
Paths Busy Tone Fig. 7	2	2	
Frame Busy Figs. 8, 9, and 10	2	2	C
Motor Stop Fig. 11	2	As Spec.	
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 two party message rate district frame arranged for zone and overtime registration using 23" mounting plates for use in offices with maximum subscriber line loops of 1500 ohms.

	Wire	Equip	See Note
Assembly ED-20177-01, Item 6	-	1	
Assembly Details ED-20177-02, Item 3	-	2	
Fuse Panel Assembly ED-20509-01, Item 38	-	2	
Jack Panel Assembly ED-20624-01	-	2	5.03
Battery Panel Assembly ED-20865-01	-	1	5.15
		As	5.16
District Selector Ckt.	60	Spec.	& A
District Release Ckt. SD-21824-01	2	As Spec.	B
Misc. Ckt. SD-21221-01			
Fuse Alarm Fig. 1	2	2	
Paths Busy Tone Fig. 7	2	2	
Frame Busy Figs. 8, 9, or 10	2	2	C
Motor Stop Fig. 11	2	As Spec.	
Frame Line Fig. 12	2	2	

	Wire	Equip	See Note
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 for overflow trunks are required.

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 Figs. 8, 9, and 10.

D. For additions to existing offices having 750 ohm subs 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 MB jacks irrespective of whether or not all the district selector circuits are equipped.

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

5.05 Where the coin district frame is not fully equipped, it may be wired and equipped with IMR, key pulsing 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 IMR, key pulsing 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 of the office to incoming selectors in the same building or to trunks to other exchanges. Each bank is divided from bottom up into 10 groups, 8 groups consisting of 11 sets of terminals and 2 groups of 6 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 5 or 10 trunks are required to any destination, 2 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 40 groups of 10 trunks each and 10 groups of 5 trunks each, down to 5 groups of 90 trunks each.

5.09 If the district multiple is not graded, all trunks shall be slipped between frames in layers of 5 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 2 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 sub-group 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 ivdividual and common trunks each group of trunks is divided into 4 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 5 with the bottom layer reversed. The convertible trunks shall be cabled to the distributing frame in the same sub-groups 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 sub-grouped. The partial commons however are wired straight through without any slip or reversal. These trunks shall be located between the regular

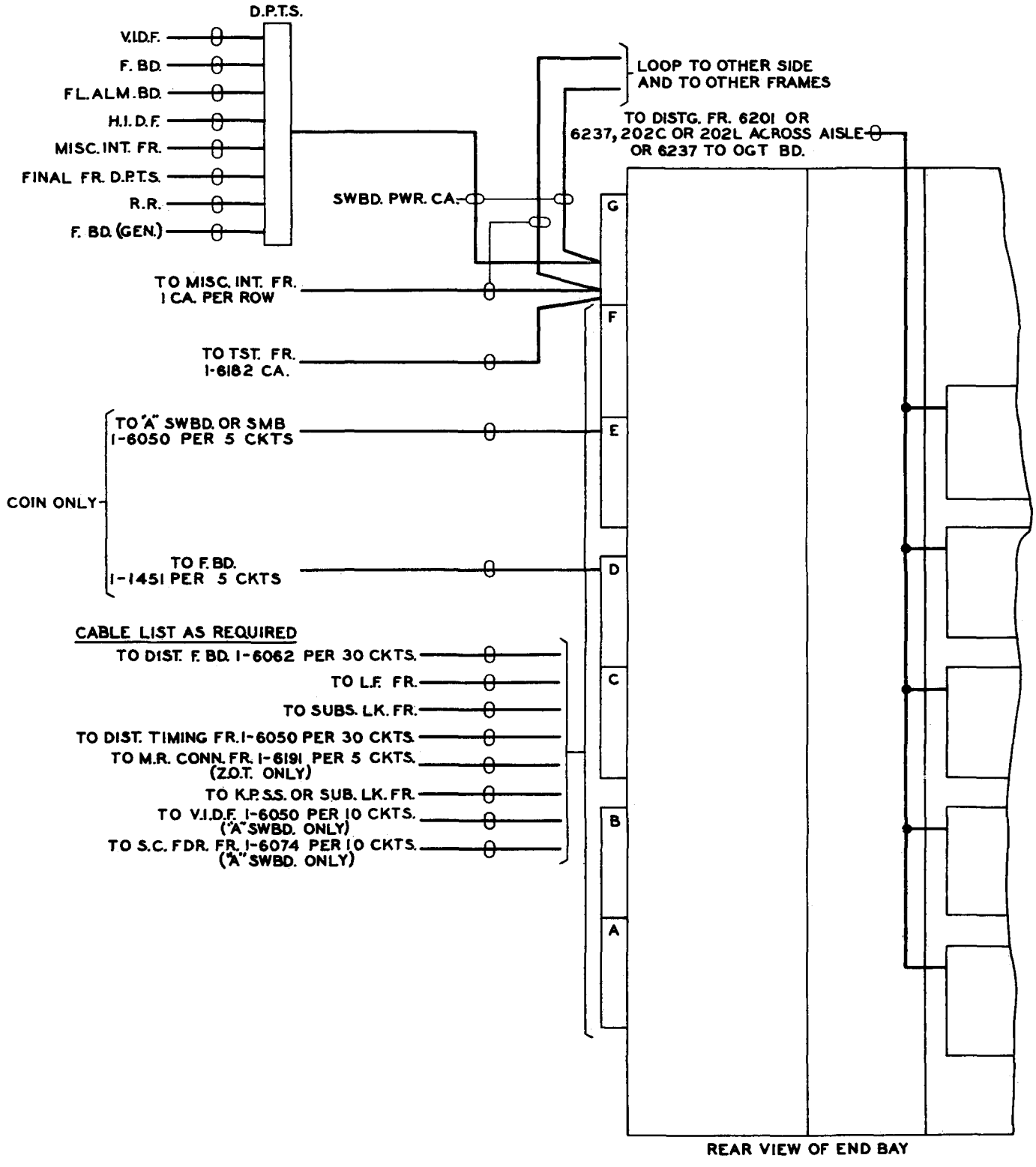

Fig. 5 - Cabling Schematic

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 work involved.

5.14 Graded multiple or non-graded 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 fuse boards 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.

Overflow Trunk Announcement

5.17 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.

6. WIRING AND CABLING

Local Wiring

6.01 The local cables shall be wired to care for the ultimate equipment when the ultimate arrangement is given or can be determined. Universal wiring shall be provided for the various conditions of zone and overtime registration.

6.02 Frames equipped for both key pulsing or dialing and regular district circuits shall have both circuits formed in one local cable.

Test Selector

6.03 District selector circuits Nos. 1 and 2 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.

6.04 Key pulsing 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 the lowest numbered selectors. Selectors Nos. 1 and 2 can then be used in regular traffic when not in use with the testing apparatus. When it is necessary to assign key pulsing 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

6.05 In order to prevent cross-talk, the size and method of wiring between the transmission battery filter panel and the resistance lamps shall not deviate from that shown on the drawings listed herein.

Cabling

General

6.06 The code numbers of the switchboard cables ordinarily used in cabling the various circuits are shown on the switchboard cabling drawing.

To Line Finder Frame

6.07 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

6.08 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.

To District Timing Frame

6.09 A switchboard cable shall be provided per side of the district frames arranged for zone and overtime registration to the district timing frame. These cables shall contain the leads supplying interrupted ground pulses to the districts for timing subscriber's calls. The allotment of these leads at the district timing frame to prevent simultaneous operation of the timing sequence switches per side of the district frame is covered by the wiring of districts to district timing frame drawing listed herein.

District Multiple

6.10 The outgoing trunk multiple shall be cabled to the distributing frame specified by the Telephone Company.

6.11 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.

Miscellaneous

6.12 Cables consisting of No. 20 ESCB wire shall be used for the battery, ground and tone leads from the distributing power terminal strip to the various fuse boards.

6.13 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. Cables shall be No. 22 gauge wire, except ground, tone and battery leads requiring larger gauge wire.

6.14 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.

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