

MULTIPLING OF TRUNKS FROM SELECTOR LEVELS EQUIPMENT DESIGN REQUIREMENTS STEP-BY-STEP SYSTEMS

1. GENERAL

SCOPE

1.01 This specification covers the requirements for the multiplying of trunks from selector banks in step-by-step offices. It covers straight and graded multiples on selector frames both with and without distributing terminal assemblies. The arrangements for groups of ten or fewer trunks, however, are not for use in No. 355A offices; instead, the arrangements per ED-30676-01 shall be employed.

1.02 This specification is reissued to:

- (a) Revise 1.08.
- (b) Revise 2.09 to clarify the use of brown 22BG wire when used for single conductor jumpers for a last-trunk-busy register.
- (c) Remove references to no-such-number tone, which has been rated Mfr Disc.
- (d) Specify that, on unused terminals for vacant levels, sleeve MULT shall be removed to the last working terminal and connected to ground.
- (e) Revise Plan 37.

DESCRIPTION

1.03 In the larger step-by-step offices and PBXs there are two general types of *selector frames*, those *with a distributing terminal assembly* and those *without one*. The methods of handling the trunks from the banks of selectors mounted on these two types of frames differ in certain respects, as covered separately in Parts 2 and 3 of this specification. Part 1 covers the practices which are applicable to both types of frames. Part 4 describes cross-connecting arrangements for trunks of graded multiple subgroups to selectors, trunks, or repeaters;

Part 5 covers such arrangements for trunks of graded multiple subgroups to connectors.

1.04 As many selectors as traffic conditions will permit should have access through their bank terminals on a particular level. So that this may occur, the bank terminals shall be multiplied for as many selectors as will provide a sufficient load for each particular subgroup of trunks.

1.05 Selectors have their banks multiplied in equipment units of ten banks each, and each such unit with the associated selectors is referred to as a *division of selectors*. The selectors of one or more divisions which are given access to the same *subgroup of trunks* on a particular level comprise a *subgroup of selectors*. (For the definition of "subgroup," refer to 1.06.) When ten or fewer selectors in a subgroup are to be given access to ten or fewer trunks on a particular level, no multiplying between selector divisions for this level is required. Larger selector subgroups are built up by multiplying together the required number of divisions so that the number of selectors per subgroup is usually some multiple of ten and the number of trunks in the subgroup is determined by the traffic to be carried.

1.06 Subgroups of ten or fewer trunks are known as *straight or nongraded multiple subgroups* since each trunk is common to all divisions in the subgroup of selectors. Subgroups of more than ten trunks are known as *graded multiple subgroups* since part of the trunks are common to all divisions and the remainder are individual to one or more divisions. Graded multiple arrangements are shown in Parts 4 and 5 of this specification. The term *subgroup* is generally intended to refer both to the trunks that are multiplied on a particular level to the banks of a given number of selectors, and to the selectors which have access on that level to any of these trunks. This combination of selectors and trunks in a subgroup will be expressed as "n" number of selectors on "x" number of trunks. The same selectors may make up different subgroup arrange-

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ments on the several levels. For example, 320 selectors may make up one graded multiple subgroup of 320 selectors on 35 trunks on one level, two graded multiple subgroups of 160 selectors on 27 trunks on another level, four graded multiple subgroups of 80 selectors on 23 trunks on another, and on a low traffic level, a nongraded subgroup of 320 selectors on 10 or fewer trunks.

1.07 Selector divisions on the same frame are *multiplied together* as required on a straight or graded multiple basis *by means of strap wire or jumpers*. For straight multiple subgroups, all trunks shall be multiplied to all divisions, and for graded multiple subgroups, the common trunks are multiplied to all divisions and the individual trunks are multiplied only to the divisions which they serve.

Reversal of Trunks

1.08 So that all of the selectors of a *straight multiple subgroup* having access to ten or fewer trunks shall not be required to hunt over the trunks in the same order, all of the working trunks of each level (except the last) shall be reversed approximately in the middle of the subgroup of selectors having access to them. However, if there are four or fewer equipped trunks, no reversal shall be introduced and all trunks shall be multiplied straight. (For a description of *certain exceptions* to the practice of reversing the common trunks in the selector multiple before *intertoll selectors in toll centers*, refer to J61525, which covers intertoll dialing equipment.) When expanding a trunk group from the selector to the combined connector, a maximum of two additional trunks may be added, at the telephone company's discretion, without being included in the reversal.

1.09 So that all of the selectors of a *graded multiple subgroup* shall not be required to hunt over the common trunks in the same order, all but the last common trunk shall be reversed approximately in the middle of the subgroup of selectors having access to them, as indicated by the graded multiple arrangements (Fig. 1 and 2 and cross-connection Plans 50 through 236). Where trunks are reversed, either in straight or graded multiples, the *designations* of these trunks shall be applied to the bank terminals of the first division of a subgroup, the trunk designations below the reversal being in reverse order. These reversals are accomplished by the use of reversal forms in place of straight vertical straps, or by jumpers.

1.10 *Unless otherwise specified, the reversal shall be made approximately in the middle of the subgroup of selectors*, regardless of whether the complete subgroup appears on one or more than one selector frame. However, when the traffic delivered by the two halves of a subgroup is substantially different, it may be desirable to locate the reversal at some other point to more nearly balance the traffic delivered by the selectors on each side of the reversal. Such cases might be combinations of local and toll selectors, or subscriber and operator selectors. Such deviations shall be specified by the telephone company.

Last Working Trunk

1.11 In the case of either straight or graded multiple subgroups, the *last working trunk is not reversed* with the others but is carried through straight so that, where required, a last-trunk-busy register circuit may be accommodated. An exception is made in the case of trunks to large groups of toll rotary or level hunting connectors, where the last trunk is included in the reversal (refer to 1.18 through 1.24).

Cross-Connection of Graded Multiple—General

1.12 In general, the number of trunks appearing before a subgroup of selectors will not be a multiple of ten. However, trunks from one or more subgroups shall be connected to the *outgoing cables* in such a manner as to utilize the circuits solidly and avoiding, where possible, unequipped selector positions on the shelves of the succeeding switches in the train. *By cables is meant ten consecutive cable circuits* to ten consecutive selectors on a following shelf or half-shelf. The lower-choice trunks carry heavier traffic than the higher-choice trunks, and, in order to distribute the load evenly over succeeding shelves of switches, *the trunks shall be cross-connected to outgoing cables in such a way as to distribute trunks of different choices over the cables*. (The requirements for accomplishing this in graded multiple subgroups to selectors and connectors are covered in Parts 4 and 5; and in subgroups to repeaters in conjunction with rotary out-trunk switches, in J33001.)

1.13 Selector subgroups of various numbers of selectors having graded multiples of 11 through 45 trunks for use on trunk groups to other selectors, repeaters, or trunks are shown in Part 4. An index for these subgroups shows the numbers of trunks that

shall be common to the various divisions of selectors. Part 5 describes other selector subgroups of various numbers of selectors having graded multiples of 11 through 31 trunks for use on trunk groups to connectors. (An index of these subgroups follows the text of this specification.)

Subgroups of Fewer Than Ten Trunks

1.14 Where a subgroup of selectors will furnish a load for *fewer than ten trunks*, the working terminals shall be multiplied in the same manner as for a full subgroup of ten trunks, ie, the last working terminal shall be multiplied straight to the bank terminals for all of the selector divisions in the subgroup and the remaining working terminals shall be multiplied with a reversal in the middle of the subgroup, except that where there are four or fewer total trunks, no reversal shall be made. The trunk assignment to the bank terminals shall be numbered from 1 up.

1.15 The remaining terminals shall be multiplied with the last working terminals, as covered in Parts 2 and 3. An exception to this practice occurs on intertoll dialing selectors where unused terminals are made busy (see J61525). Furthermore, in No. 355A offices, because of the intershelf multiplying and trunk assignment procedures employed with groups of fewer than ten trunks, there is no definite last trunk preceding the nonworking terminals. Therefore, nonworking terminals are multiplied with several working terminals in accordance with specific patterns (see ED-30676-01).

Trunks to Combination Connectors

1.16 *Where a connector shelf is equipped only with combination connectors*, each connector is wired to both local and toll selectors. The trunks from the local selectors shall be associated with the combination connectors in straight numerical sequence so that the connectors will be assigned from left to right, ie, from 1 up. However, since a reversal is provided in the middle of the local selector multiple, half of the local selectors hunt forward and the other half, backward, over all of the connectors in the group, except the last equipped connector whose associated trunk is carried through without reversal. The trunks from the toll selectors are also associated with the combination connectors in straight numerical sequence so that the connectors are selected from left to right. *No reversal is provided in the multiple of*

toll selector subgroups immediately preceding combination connectors.

1.17 In the past, where both local and combination connectors were furnished to serve the same hundreds group, it was imperative that the combination connectors be made the last choice of the local selectors to avoid delaying toll calls. To accomplish this, it was the practice to limit the assignment of combination connectors to the common trunks of a graded multiple. Now, however, combination connectors in hundreds groups of more than ten connector totals are no longer standard. Furthermore, where there is a toll train, it is now also the practice in hundreds groups of ten or fewer connectors to provide combination connectors only. Where both local and toll connectors are located on the same shelf, the trunks from the local selectors should be assigned in the same order as the growth of this type of connector on the shelf; that is, trunk 1 should be assigned to the local connector on the extreme right of the connector shelf, and subsequent trunks to connectors in right-to-left progression until all the local connectors have been assigned. The toll selector trunks shall be associated with toll connectors in straight left-to-right numerical sequence.

Trunks to Large Groups of Toll Rotary or Level Hunting Connectors

1.18 In order to reduce the hunting time of toll intermediate selectors to the larger groups of toll connectors, where there are two or more shelves of toll intermediate selectors per thousands, a reversal shall be made in the multiple between these shelves in the trunk groups to toll rotary or level hunting connectors. *This reversal shall include all terminals of trunks common to all of the selectors, including the last terminals.* As a result, the last trunk will not be multiplied straight. *To make this reversal most effective, the toll intermediate selectors shall be equipped on the shelves and the preceding toll transmission selectors shall be connected with the toll intermediate selectors in such a manner as to obtain a reasonable balance of traffic* between the two sides of the reversal. For example, 15 toll intermediate selectors shall be divided, 8 and 7, on two shelves; 23 selectors shall be divided, 10, 10, and 3, with the reversal between the first and second shelves; 37 selectors shall be divided, 10, 9, 9, and 9; or 43 selectors, divided 10, 10, 10, 10, and 3, with the reversal between shelves 2 and 3 (one subgroup to connectors) or between shelves 1 and 2, and 3 and 4

(two subgroups to connectors). Instances of as many selectors as 37 or 43 will seldom be encountered.

1.19 The toll transmission selector bank trunks to the toll intermediate selectors shall be graded in accordance with the diagrams in Fig. 1 or 2, but the order of connecting the trunks to the toll intermediate selectors shall be revised in some instances, as outlined below, to obtain the desired balance.

1.20 *Wherever possible, this balance shall be obtained by the use of cross-connecting Plans 1 through 47.* This should be done, for example, with a single subgroup of 18 to 20 trunks from toll transmission selectors to toll intermediate selectors, or two subgroups of 19 to 20 trunks each, or a combination of subgroups that would come within one or two selectors of completely filling two or four toll intermediate selector shelves, which in turn form one subgroup per pair of shelves or one subgroup for four shelves to hunting connectors.

1.21 If, however, it is *judged that the use of cross-connecting Plans 1 through 47 will not give a reasonable balance, Plan 234*, for cross-connections to rotary hunting connector groups having PBX groups of more than 10 trunks, or a modification of this plan, shall be used. *For example, with two or four shelves of toll intermediate selectors*, where the shelves are partially equipped with the selectors distributed evenly over the shelves (see 1.18), and the reversal in the subgroup or subgroups to connectors occurs between shelves 1 and 2 for two shelves, or between shelves 2 and 3, or 1 and 2 and 2 and 3 (two subgroups to connectors) for four shelves, Plan 234 shall be used for cross-connecting one or more subgroups of trunks to these toll intermediate selectors. If there is more than one subgroup, each succeeding subgroup shall start on the next switch in the order of cross-connection per Plan 234 following the last switch assigned in the preceding group.

1.22 If there should be *three or five shelves of toll intermediate selectors* with a partially or fully equipped third or fifth shelf which is included in the same graded subgroup to connectors as the preceding fully equipped selector shelves, a modified Plan 234 shall be employed. This modification consists of assigning the lowest traffic (highest choice) trunks of the subgroup or subgroups of trunks to the selectors on the third or fifth shelf and proceeding to assign the remaining trunks in accordance with Plan

234 as outlined for two or four shelves. *As an example*, assume a very extreme case of a subgroup of 27 trunks from 60 toll transmission selectors and a subgroup of 18 trunks from 40 intertoll selectors, to 45 toll intermediate selectors, and that the toll intermediate selectors connect on each of two levels to a group of 23 trunks to level hunting connectors. Then, the two lowest traffic trunks in the larger 27 trunk subgroup and the three lowest traffic trunks of the smaller 18 trunk subgroup would be connected to the five toll intermediate selectors on the fifth shelf. (These lowest choice trunks should be chosen for assignment alternately or successively from each subgroup, starting with the smaller.) These would be the eighth and tenth choice trunks in the 27 trunk subgroup and the seventh, eighth, and tenth choice trunks in the 18 trunk subgroup. The remaining trunks should then be assigned on shelves 1 through 4 in accordance with Plan 234, the assignment of the 18 trunk group, starting with the seventh switch on the second shelf following the seventh switch on the first shelf where the 25 trunks of the first subgroup left off. The same principles shall apply to 3 shelves of 21 through 30 selectors. *As an exception*, if for any reason a final third or fifth shelf of selectors were connected in a separate subgroup to connectors, then the first two or four shelves should be treated independently without any attempt to minimize traffic delivered to the last shelf. In the above specific case, the 27 trunk subgroup should be cross-connected in accordance with Plan 32 and the 18 trunk subgroup as a fill-in subgroup in accordance with Plan 37, starting with the eighth selector on the third shelf and ending with the fifth selector on the fifth shelf.

1.23 With three or five toll intermediate selector shelves, the above procedure may sometimes result in some imbalance of traffic to the two sides of the subgroups to connectors. However, more elaborate plans to obtain the additional benefit of a more perfect balance do not appear to be justified. In cases *where Plan 234 is installed* and the number of trunks to toll intermediate selectors changes, it will not be necessary to rearrange the existing cross-connections unless the number of selector shelves changes, additional trunks merely being assigned to added selectors in order, or selectors corresponding to subtracted trunks removed from service.

1.24 In all of the above cases, the *numbers of the plans used* shall be placed on the frame cross-connection drawing, eg, 32, 37, 234, or 234 modified.

Vacant Levels

1.25 *Vacant levels of local selector multiple* may be wired and connected to recorded announcement intercepting trunks, except levels of digit-absorbing selectors to which digits will always be absorbed, which shall be left completely unconnected; that is, not multiplied, connected to any succeeding circuits, or made busy.

1.26 When two or more sets of five intercepting trunks are required in an office, the selector frames shall be divided into as many groups as there are sets of trunks. The frames shall be divided on the basis of the ultimate equipment, and each group shall contain approximately the same number of first selector frames, second selector frames, etc. (See 2.25 and 3.12 for the methods of terminating these trunks on selector frames.)

1.27 *Vacant levels of toll selector multiple* shall be wired to five intercepting trunks. (See 2.30 and 3.12 for the methods of terminating these trunks on selector frames.)

Directory Error Trunks

1.28 Vacant local selector levels, the numbers of which have been listed in the telephone directory through error, shall be wired to five intercepting trunks. (See 2.30 and 3.12 for the methods of terminating these trunks on selector frames.)

Selector Multiple Preceding Level Hunting Connectors Serving a Group of More Than 100 Trunks to a PBX

1.29 *When a group of level hunting connectors is to serve more than 100 lines in a PBX group*, it will be necessary to assign more than one connector hundreds group to the PBX although only one number will be listed in the directory. The selector level multiple corresponding to the hundreds group in which the listed number of the PBX appears will be split, as covered in the specification for connectors and connector shelves, so as to feed all the level hunting connectors for the PBX, and the levels corresponding to the other hundreds group will be set aside, for the group shall be abandoned and treated as a vacant level.

2. SELECTOR FRAMES WITH DISTRIBUTING TERMINAL ASSEMBLIES

Distributing Terminal Assembly

2.01 The distributing terminal assembly (DTA) is a frame on which selector *bank terminal strips* are arranged to facilitate (a) strapping between selector divisions on the same frame, (b) cabling to selectors in the same subgroup on preceding or succeeding frames, and (c) cabling to succeeding selectors or connectors in the switch train or to distributing frames for cross-connection to trunks.

2.02 The distributing terminal assembly is inserted between two bays of selector shelves, each with a 20-selector capacity. On each shelf are two divisions of ten selector banks, each terminating on a *bank terminal strip* which spreads all bank terminals of all levels horizontally, with the trunks of level 1 at the left followed by those of levels 2, 3, etc. Each level has each of the T, R, S, and, where provided, C terminals of each trunk located in a different vertical plane so that when these bank terminal strips are assembled on the frame, terminals of trunks to be multiplied lie one above the other for convenient straight strapping.

2.03 The vertical space occupied by one selector shelf (on either side of the DTA) is that occupied on the DTA by four bank terminal strips, the upper two of which are associated with the two selector divisions of the shelf to the left and the other two with those of the shelf to the right.

Outgoing Terminal Strips

2.04 All trunks from the DTA bank terminal strips are jumpered to outgoing terminal strips which are arranged in a vertical row at either side of the terminal assembly. These outgoing terminal strips also terminate tie cables to other frames (usually preceding or succeeding frames) for use when it is necessary to multiple selector divisions of different frames together to obtain the desired multiplying arrangement.

2.05 In general, *the top outgoing terminal strip* on each side of the bay shall be used for terminating intercepting trunks, traffic register leads, and for ground terminal punchings.

2.06 *The second, third, and fourth terminal strips* from the top, or more as required, shall be

reserved for long multiple tie cables to and from other frames, growth top down. These outgoing terminal strips to which tie cables connect are referred to as tie cable terminal strips. The **remaining outgoing terminal strips** with growth top down shall be used for outgoing trunk cables, and are referred to as outgoing terminal strips or outgoing trunk terminal strips. To facilitate jumper assignments and switchboard cabling to succeeding switch shelves, the outgoing cables to these shelves shall be assigned to successive outgoing terminal strip circuits in the order in which the succeeding shelves appear on the frame (or before the DTA on DTA-type selector frames). (Refer to 3.09 and 4.23.) Note that on the right-hand side of the DTA, the order of connecting to connector hundreds for levels 6 through 0 would be 0, 6, 7, 8, and 9.

2.07 *All terminal strips on each side* shall be six points for 3-wire frames and eight points for 4-wire frames.

2.08 The **strap wire** to be used for multiplying divisions together shall be No. 22 gauge type J wire and shall be run by the installer on the front of the terminals. The wire for making multiple reversals shall also be No. 22 gauge type J strap wire, and the leads for the reversals shall be made into a sewed form in the shop and connected by the installer as required.

2.09 *Jumper wire* for use between the terminals on the rear of the bank terminal strips, and to the outgoing terminal strips at each side of the frame, shall be distributing frame type L wire or type U when this wire replaces type L. Type 22U wire must be used for multiconductor jumpers on distributing frame assemblies having solderless wrapped bank and outgoing terminal strips. However, type 22BG brown wire shall be used for single conductor jumpers for the last-trunk-busy register. Outgoing **trunk switchboard cables** and tie cables that are to be associated with levels 1 through 5 shall be terminated, preferably on the outgoing terminal strips at the left of the DTA, and with levels 6 through 0 on outgoing terminal strips at the right of the DTA. **Jumpers** shall be carried parallel to the bottom edge of each bank terminal strip and through the distributing ring at the bottom of the bank terminal strip from which the jumper was taken.

2.10 *In general, the cross-connections to outgoing trunks shall be terminated on the bank terminal strip*, corresponding with the uppermost divi-

sion of selectors in the multiple. This applies regardless of whether the divisions are on the same or on different frames. In case of trunks to selectors, exceptions are made to this procedure as covered in detail in Part 4, in the interest of reducing the number of jumper changes required on transitions from one size subgroup to another.

Subgroups Split Between Two Frames

2.11 In cases where, with graded multiple arrangements, it is still desirable to split a subgroup of selectors between two frames, the jumpers to the tie cable terminal strips shall be taken from a division of selectors lower in the multiple than that from which the outgoing jumpers are taken; and, in case of the common trunks, from a division of selectors **below the reversal, when the reversal appears on the lower numbered frame**. Where **the reversal appears on the higher numbered frame**, jumpers to tie cables on that frame shall be taken from a division of selectors **above the reversal**.

2.12 *Where the reversal is to be made between selector divisions on separate frames*, this shall be done in the tie cable jumpers at the **lower numbered frame**.

2.13 If there are ever **only 20 selectors in a subgroup divided between two frames**, the reversal shall be made in the tie cable jumpers at the lower numbered bay. The outgoing trunk jumpers shall run directly between the outgoing trunk and the tie cable terminal strips, in order to avoid double jumpers on the bank terminal strip.

Unequipped Bank Terminal Strips

2.14 *Where one or two bank terminal strip positions are unequipped*, but the bank terminal strips for a given subgroup of selectors appear immediately above and below the unequipped space, vertical strap wire shall span the unequipped terminal strip space, except in cases where the reversal occurs between selector divisions located above and below the unequipped space. Where the reversal occurs between two divisions separated by one or more unequipped divisions, jumpers shall be used.

2.15 *Where more than two divisions are unequipped*, and bank terminal strips for a subgroup appear both above and below the unequipped space, jumper wire shall be used on the rear of the terminal strips to span unequipped space, and shall be

run through the nearest jumper retaining ring. The jumper wire for levels 1 through 5 should be run through the left rings and for levels 6 through 0, through the right rings (facing the front of the terminal assembly). Where it would normally be necessary to terminate these (loop) jumpers on the same bank terminals to which jumpers to outgoing trunks or tie cables are connected, the loop jumpers shall be terminated at the outgoing trunk or tie cable terminal strip instead, in order to avoid double jumpers on bank terminal strips.

Order of Connecting Cable Circuits

2.16 The cabling for outgoing trunks to succeeding circuits, as well as the tie cabling, shall be run straight; that is, the circuits shall be connected in consecutive order, regardless of the order of assigning the selector level trunks. The irregularities in assignment are provided for by the jumpers at the DTA.

Mixing Local and Incoming Traffic by Means of a TDF

2.17 In a 6-digit area having a large PBX development, if local and incoming traffic is mixed in such a way that each subgroup of third selectors contains a proportionate amount of local and incoming traffic, a considerable saving in the number of fourth selectors and connectors may be obtained. This is because the local and incoming peak loads frequently do not occur at the same time. Furthermore, abnormal traffic peaks in either the local or incoming groups do not have such a serious effect when this traffic is distributed.

2.18 There are *two methods of mixing local and incoming traffic* by means of a trunk distributing frame (TDF), as shown in Fig. KK and LL on SD-30200-01. The *first method*, as shown in Fig. KK on these schematics, calls for terminating the trunks from the banks of the second selectors on the horizontal terminal strips of a TDF. The jacks of the third selectors are terminated on the vertical trunk distributing frame (VTDF). The second selector trunks may then be cross-connected at the TDF to the third selectors. The incoming repeaters, trunks, and trunk circuits are cabled to the horizontal trunk distributing frame (HTDF) and may be cross-connected there to the third selectors. It should be noted, however, that in the case of incoming trunks and present trunk circuits and repeaters which are already terminated on the main distributing frame (MDF) or intermediate distributing frame (IDF), a tie cable will have to be run to the HTDF; and in order to associate the in-

coming circuits with the third selectors, jumpers will have to be run at the MDF or IDF as well as at the TDF. To avoid this, it may be economical in some cases to terminate the second selector banks and third selector jacks on the IDF instead of the TDF.

2.19 In the *second method of mixing traffic*, as shown in Fig. LL on each of the schematics, the second and third selectors are cross-connected in the same manner as in the first method. However, the incoming circuits are associated with the third selectors by means of a tip and ring multiple of the third selector jacks appearing at the horizontal main distributing frame (HMDF), being cross-connected as desired at the MDF.

2.20 *This mixing of local and incoming traffic should be employed only when specified* and the choice between the above two arrangements will be made by the telephone company on an economic basis. The choice depends upon the ratio of incoming to local selectors and upon the comparative cost of the cable runs. *Where there are incoming repeaters or trunk circuits, the first method should be used.*

2.21 Selectors shall not be cross-connected in groups of less than five, due to the shelf wiring limitations for obtaining peg counts.

Limited Mixing of Local and Incoming Traffic

2.22 Where the cost of mixing local and incoming traffic at a TDF is not considered justified, one of two procedures can be employed: (1) *Where the somewhat limited mixing of this traffic into the subgroups of various levels* outgoing from selectors preceding connectors is desired, sets of 2, 3, 4, 5, 7, or 9 half-shelves of the predominately local class of these selectors may be sandwiched on the selector frames, with similar sets of half-shelves of the predominately incoming class of these selectors, as outlined in 4.24. This may be applicable in some 5-digit offices where it is desired to mix this traffic to several large connector groups in one or more of the thousands groups of third selectors, or perhaps in some 6-digit offices instead of the TDF arrangement of mixing local and incoming traffic on the third selector shelves. (2) *Where it is desired to mix this traffic to one or only a few large connector groups* to avoid abnormal busy conditions to these groups caused by the piling up of either local or incoming traffic, mixing can be accomplished in the graded multiple subgroups to these connector groups, by multiplying the selector divisions preceding these connectors in such a way as

to distribute the predominately local and predominately incoming divisions evenly over the subgroups to these connectors. This may be accomplished by means of the regular strapping and jumpering facilities at the DTA for the selectors preceding connectors and should in no way affect the normal layout of the selector shelves on these frames. *Both of these plans, however, are less desirable from an equipment standpoint and involve some additional cost* as compared with the regular methods of cabling and cross-connecting subgroups where mixing is not provided, and should be specified by the telephone companies only after careful consideration of the traffic advantages to be obtained.

Unused Terminals

2.23 On selector frames with distributing terminal assemblies, unused terminals of subgroups of less than ten trunks are multiplied straight through all of the divisions in the subgroup (except as indicated for unequipped terminal strips), and the T, R, and S or the T, R, S, and C punchings of these terminals shall be multiplied on the rear of the frame with No. 22 strap wire to the corresponding punchings of the highest numbered working terminal in the subgroup. As a safeguard against failure to remove straps as trunks are added, this strap wire shall be run on the group of bank terminals from which the outgoing jumpers are taken. The same shall also apply on vacant levels to terminals beyond the five intercepting trunk circuits except that, as indicated in 2.26, the S punchings only of the unused terminals are multiplied with ground. In this case, the outgoing jumpers will only occur on two levels, so that the horizontal strapping on the other levels shall be placed on a division where the tie jumpers are located. If, in any of these cases more than two unequipped bank terminal strips are bridged by loop jumpers for the working terminals, they should not be similarly bridged for the nonworking terminals. Instead, the nonworking terminals should be connected by horizontal straps to the last working terminal both above and below the gap caused by the unequipped terminal strips. (See 1.15 for exceptions on intertoll dialing selectors.)

Vacant Levels

2.24 *The bank terminal strip terminals for all vacant local train selector levels* shall be strapped vertically for all ten trunks of each level, without introducing a reversal in the middle of the group. As indicated in 2.23, if this multiplying on any level should be required to jump more than two un-

equipped bank terminal strips, so that loop jumpers would be required (see 2.15), only the five circuits for intercepting trunks and a ground circuit shall be included in these tie jumpers and the unused terminals shall be multiplied both above and below these breaks in the vertical multiplying of the unused terminals (see 2.25).

2.25 *On the top outgoing terminal strips at both the right and left sides of the frame*, four sets of five T, R, and S terminals are reserved for connection of jumpers from the vacant levels to intercepting trunks. Five recorded announcement intercepting trunks shall be terminated on the cable side of the first of these sets of terminals on one side of the frame and multiplied to the corresponding set of terminals on the top terminal strip on the other side, regardless of whether there are any vacant levels on the selector multiple.

2.26 *The first five bank terminals (1 through 5) of the highest numbered vacant level* of levels 1 through 5 in the group of selectors shall be jumpered from the top bank terminal strip involved, through the jumper retaining rings at the left of the DTA to the five intercepting trunks on the top outgoing terminal strip of the left-hand side. Bank terminals 6 through 10 shall be treated as unused terminals but instead of the T, R, and S punchings of these five terminals being multiplied and connected to the T, R, and S punchings of the last working terminal as previously described for working levels, the S punchings only shall be multiplied together and bank terminal 10 shall be jumpered from the top bank terminal strip involved, through the jumper retaining rings at the left of the DTA to ground.

2.27 *In the case of more than one vacant level in levels 1 through 5*, a set of jumpers for trunks 1 through 5 of each lower numbered vacant level shall be run between the bank terminals of this level and trunks 1 through 5 of the next higher numbered vacant level through the nearest jumper retaining rings at the left of the frame. In order to avoid double jumpers on bank terminal strips, the jumpers shall, wherever possible, be terminated on a division of bank terminals of the higher numbered vacant level different from the division on which the jumpers to a still higher level or intercepting trunks are terminated. The S punchings of terminal 10 of each lower numbered vacant level shall be run between bank terminal 10 of this level and bank terminal 10 of the next higher vacant level.

2.28 *Vacant levels of levels 6 through 10 shall be multiplied in the same manner* as vacant levels of levels 1 through 5, except that the jumpers to the distributing terminal strip shall be connected to the lower numbered vacant level, and through rings at the right, and to the outgoing terminal at the top of the right-hand side.

Directory Error Trunks

2.29 *Vacant local selector levels, the numbers of which have been listed in the telephone directory through error*, shall be wired in a manner similar to that described for vacant levels to be connected to intercepting trunks, the connections being made, however, to the second set of five T, R, and S terminals on the top outgoing terminal strip at both right and left sides of the frame for connection to five directory error intercepting trunks. In this case also, only the S punching of terminals 6 through 10 shall be multiplied and connected to ground.

2.30 Although the treatment of nonworking selector levels pertains principally to local selector levels, similar procedures are employed for connecting intercepting trunks to nonworking levels of toll and intertoll selector levels, utilizing where necessary the third and fourth sets of five T, R, and S terminals on the top outgoing terminal strip reserved for this use. Further details covering the assignment of the four sets of terminals for all classes of intercepting trunks are covered on the selector frame equipment drawing, ED-31274-().

Special Service Trunks From 2-Party Message Rate Selectors

2.31 When 2-party message rate selectors are used for first or service code selectors, *lead C of the bank multiple for these selectors shall be grounded* for special service, recording completion information, repair clerk, test desk, and other operator trunks reached by codes, as follows: on the bank terminal strips, the vertical multiplying for the C terminals of each subgroup of selectors shall be run in the same manner as for terminals T, R, and S. On the uppermost division of selectors and on lower divisions as necessary, horizontal strapping shall be provided between the C terminals, such as to multiple all C terminals of a subgroup together. A single jumper wire shall be run from the C terminal of trunk 10 on the uppermost division of the subgroup to a ground terminal on the top outgoing terminal strip. On all

other levels, the C terminals shall be left completely disconnected.

3. SELECTOR FRAMES WITHOUT DISTRIBUTING TERMINAL ASSEMBLY

3.01 *Selector frames without a DTA* are equipped with shelves arranged to mount ten selectors per shelf. The bank multiple for these selectors terminates on a bank terminal strip at the right-hand end of the shelf.

3.02 *For selector levels with graded multiple*, common and individual trunks are jumpered as required between bank terminal strips of adjacent shelves to produce the graded multiple arrangements covered in Parts 4 and 5. These common and individual trunks are then cross-connected to an auxiliary terminal strip at the right of a regular shelf bank terminal strip, on which the outgoing cables to the succeeding circuits are connected. Trunks from different divisions are cross-connected to outgoing cables on the auxiliary terminal strip in accordance with the standard arrangements for graded multiple, as described in Parts 4 and 5.

3.03 As indicated, one auxiliary terminal strip is always mounted on the top shelf of a frame and, in some cases, may have sufficient capacity to serve the graded levels on one frame. All shelves, however, are drilled to accommodate an auxiliary terminal strip and additional strips can be equipped as required. If the top shelf of the frame or a shelf in any other position on which an auxiliary terminal strip is normally to be located is unequipped, the terminal strip, together with regular shelf jumper rings and cable bracket, shall be mounted on a bracket per J32310P, L8. If a shelf is later equipped in such a position, the terminal strip, jumper rings, and cable bracket are transferred to the shelf.

3.04 The auxiliary terminal strip on the top shelf of a frame also serves as a distributing point for intercepting circuits, last-trunk-busy register circuits, and ground, as illustrated on ED-30847-01. It may also be used for terminating outgoing cables to succeeding circuits, tie cables, or any other circuits to provide increased flexibility or easier maintenance.

3.05 *For selector levels without graded multiple*, subgroups of selectors are formed by jumpering between the bank terminal strips of shelves on the same frame and cabling to associated shelves on preceding or succeeding frames, as required. Outgo-

ing trunks to the jacks of succeeding switches are also cabled directly from the bank terminal strips.

3.06 *All multiplying between shelves on the same frame*, with or without graded multiple, and all multiplying to an auxiliary terminal strip on the same frame shall be loose wiring of the type covered in BSP Section AA610.003. Outgoing cable, in the case of nongraded levels and jumpers to outgoing cables at auxiliary terminal strips, in the case of graded multiple, shall in general be terminated on the highest shelf of each subgroup on the frame. Reversals are made in the jumpers between two shelves and requirements for the location of these reversals in both graded and nongraded subgroups follow the same general rules as for frames with a DTA. (See 1.08 through 1.10 and 2.11 through 2.14.)

Split Subgroups

3.07 *Where a subgroup of selectors is located on two or more frames*, a tie cable shall be run between the frames between bank terminal strips for nongraded levels and between auxiliary terminal strips for graded levels. Tie cables (or jumpers to tie cables) shall be run from the lowest division on the frame on the lower numbered frame, or the highest division on the higher numbered frame.

3.08 *Where the reversal is to be made between selector divisions on separate frames*, this shall be done in the tie cable (or jumpers to the tie cable) at the lower numbered frame.

Trunks to Connectors

3.09 Ordinarily, cables to connectors in nongraded groups (as well as to other succeeding circuits) are run from bank terminal strips to succeeding shelves and connected in regular order to successive switches on these shelves. *In case of cables to toll rotary hunting connectors* in hundreds groups having PBX groups of more than 10 trunks—connected in accordance with Plan 236—these cables shall be run from auxiliary terminal strips and fanned out or otherwise run to the several connector shelves, as required; and connections to these circuits shall be made by jumper from bank terminal strips. The circuits of each of these cables shall be connected in regular order to the connector positions of the first connector shelf on a frame, then to those of the second shelf, etc, until the circuits to all shelves on a frame are connected. These connections must satisfy the initial equipment requirements; also, where possible,

the remaining circuits in these cables should be connected to succeeding unequipped connectors positions. Unused terminals on a level shall be strapped on each terminal strip and connected to last working trunks, as covered in 3.10, but the S leads of the unused outgoing cable circuits need *not* be left unconnected at the auxiliary outgoing terminal strip, since no jumpers will be run for these circuits.

Unused Terminals

3.10 *Where a subgroup of selectors requires fewer than ten trunks on any working level*, the working trunks are multiplied through all shelves of selectors, as described. In No. 1 and 350A offices, working terminals on each level are assigned in the order in which the selector hunts, that is, from 1 up. The T, R, and S punchings of *the remaining non-working sets of terminals* in each shelf shall be strapped and connected to corresponding punchings of working terminals, as covered on ED-30301-02. S leads in the outgoing cable from bank terminal strips to succeeding shelf-mounted switches will be treated as unequipped leads, and not connected to the unused terminals. The same general multiplying procedure applies to terminals on vacant levels beyond those connected to the intercepting trunk terminals, except as indicated in 3.12. (See 1.15 for exceptions in No. 355A offices and on intertoll selectors, and 3.09 for trunks to connectors from auxiliary terminal strips.)

3.11 *The bottom row of terminals on the top auxiliary terminal strip shall be reserved for ground connections*. The installer shall ground these terminals by running a No. 20 gauge type BH lead to a ground punching on the shelf fuse panel (or, where none is available, to any of the ground punchings on the shelf miscellaneous terminal strip).

Vacant Levels

3.12 On the top auxiliary terminal strip, *five recorded announcement trunks and five additional intercepting trunks shall be terminated*. The first five trunks of all vacant levels shall be multiplied together straight and jumpered to five intercepting trunks on the auxiliary terminal strip, as shown on ED-30301-02. In No. 1 and 350A offices, the S punchings only of the remaining terminals of the vacant levels shall be multiplied at each bank terminal strip with ground. In No. 355A offices, however, because of the different treatment of nongraded trunk groups (see 1.15), it is necessary to multiple the T, R, and S leads (see ED-30676-01).

4. ARRANGEMENT OF CROSS-CONNECTIONS FOR GRADED MULTIPLE TRUNK GROUPS TO OTHER SELECTORS, TRUNKS, OR REPEATERS

Selector Graded Multiple Arrangements

4.01 *The selector graded multiple arrangements,* shown in Fig. 1 and 2 and in the index herein, are for use with subgroups of 20, 40, 60, 80, 120, 160, 240, and 320 selectors on from 11 to as many as 45 trunks. In addition, any number of selectors may be included in graded multiple subgroups of from 11 to 15 trunks, also, graded arrangements of 480 or 640 selectors on 16, 17, or 18 trunks may be provided initially and allowed to grow to grades of 19, where necessary. The diagrams in Fig. 1 and 2 are based on the indicated minimum numbers of selectors per subgroups. Each row of dashes, on this basis, represents terminals of one level for ten selectors. To expand the diagrams into subgroups for larger numbers of selectors, assume that each row of dashes represent proportionately greater numbers of selectors having their banks on a given level multiplied together; for example, 20, 40, 80, etc, for subgroups having 2, 4, 8, etc times as many selectors as the basic subgroups. Examples of such expansion are indicated in Fig. 4 where each row of dashes always represents the bank terminals of ten selectors.

4.02 *These graded multiple arrangements can be applied to any of the present standard frames,* either with or without a DTA. For subgroups of any number of selectors, on 10 to 15 trunks, the multiplying plan shall be the same as for 20 selectors on 10 to 15 trunks (Fig. 1). For graded arrangements having multiples of 20 selectors on more than 15 trunks, the plans used shall be as shown in the other portions of Fig. 1 and 2. In general, fewer tie cables will be required if subgroups of 20, 40, 80, 160, or 320 selectors (and in some cases 640) are used on selector frames 11 feet, 6 inches high, and subgroups of 20, 40, 60, 120, or 240 selectors (and in some cases 480) on selector frames nine feet high. This practice, in general, shall therefore be followed in engineering the subgroups.

Equalization of Traffic on Cables

4.03 Since the various trunks in a graded or nongraded subgroup carry differing amounts of traffic, it is necessary to cross-connect these trunks to succeeding switches in such a manner that the loads delivered to succeeding half-shelves are approximately equal. (Hereinafter the terms "half-shelf" and

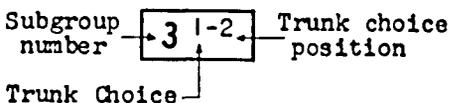
"DTA" as applied to frames with a DTA will be employed, but this can be interpreted as "shelf" and outgoing trunk connecting facilities on selector frames without a DTA.) *Where the selector level trunks are cabled through an IDF or TDF* to repeaters, either direct or through out-trunk switches, to outgoing trunks, DSA or toll board, information, or other desks, any necessary equalization or distribution of traffic will be accomplished at a distributing frame. This distributing frame shall be the IDF or TDF in the originating office, except in the case of groups of trunks to distant offices not going through out-trunk switches, in which case the distribution should be accomplished at a distributing frame in the distant office. *In all of these cases, the assignment of the trunks* of the graded multiple subgroups to the outgoing cables at the DTA outgoing terminal strips *should be made in a left to right, top down order* in each subgroup, and to consecutive circuits of successive cables. Cross-connections at the IDF or TDF for trunks from selectors to rotary out-trunk switches shall be made in accordance with the plans covered on ED-30839-01.

4.04 *For graded subgroups to other selectors in the same building,* not cabled through a distributing frame, the equalization of traffic to cables is accomplished at the DTA, or at auxiliary outgoing terminal strips on 10-capacity shelves, following the cross-connection plans for graded multiple arrangements attached to this specification. As indicated previously, *the term cable,* as used in conjunction with these plans, *means the ten consecutive circuits to ten consecutive selectors on a following shelf or half-shelf.* Several such groups of circuits may be included in one switchboard cable. These cross-connection plans, No. 1 through 36 and 38 through 47, are designed to limit to a great degree the number of cross-connection changes necessary when regrading to subgroups of sizes other than initially installed, due to changes in traffic. This is made possible by the use of uniform cross-connecting patterns for most of the subgroups, termed *fundamental subgroups,* supplemented by a few *fill-in subgroups.* *Occasionally trunks to the following selectors in the same office are cabled to the TDF or IDF for the purpose of mixing local and incoming traffic* (see 2.17 through 2.21). In such cases, where connections to the following local selectors can be made in groups of ten consecutive selectors on the same half-shelf, cross-connections, in accordance with these plans, should also be made at the DTA, the cross-connections at the TDF or IDF being run straight in groups of ten. If the connections to the following local selectors are not

made in groups of ten consecutive selectors on the same half-shelf, any necessary traffic distribution should be accomplished at the TDF or IDF, and the cross-connections at the DTA run in a left to right, top down order in each subgroup, and to consecutive circuits of successive cables (see 4.03).

4.05 The cross-connection pattern for each fundamental subgroup or pair of fundamental subgroups of a given graded multiple arrangement **repeats itself as often as necessary** for the complete assignment of the outgoing trunks. When the fundamental subgroups have been assigned to cables, in all cases except those where the number of trunks in the subgroup is a multiple of five, certain circuits in some of the cables remain unused. The trunks assigned to these gaps comprise the fill-in subgroups. With this arrangement, it is possible in many cases to increase or decrease the size of the trunk subgroups by changing the cross-connections of the trunks in the fill-in subgroups, and only an occasional trunk in the fundamental subgroups. In this manner, the number of jumper changes required on regrades is considerably less than that required for previous graded multiple patterns.

4.06 Fig. 3 illustrates how the fundamental subgroups are repeated as many times as is required to complete the assignment of the outgoing trunks. In this figure, it will also be noticed that there are *ten vertical rows of numbers representing, in order, from left to right, the ten circuits in each cable, while each horizontal row represents the particular selector bank trunks to be assigned to the ten circuits within a particular cable.* In each of the spaces in the table, one, two, or three numbers may appear. *The number in bold-faced type designates the selector subgroup number. The other single number, or numbers to the left of the dash, designate the trunk choice, that is the horizontal position of the trunk on the selector bank. The numbers to the right of the dash identify the position of a particular trunk choice in the graded multiple patterns, per Fig. 1 and 2, numbered top down.* This position identification is required, since in any one pattern there may be several trunks of the same choice, and they need to be specified in order to save jumper changes on regrades. An example of this numbering in the cross-connection plans is as follows:



4.07 The assignments of cable circuits for all graded multiple conditions are covered by Plans 2 through 36 and 38 through 47. These plans show the needed information as described for Fig. 3, but for simplicity, the fundamental subgroup, which repeats as often as required, is shown only twice, although the fundamental subgroup number, or numbers, associated with each of the cables assigned to fill-in subgroups are shown; and the *fill-in subgroups in some cases are shown only to the mid-point of the cross-connection cycle* after which the last half of the cycle shall repeat the first half, in reverse. For example, in Plan 17, the mid-point of the cycle occurs in cable 58. To complete the cycle, the same fill-in subgroup arrangement shall be repeated bottom up for fill-in subgroups F3 and F4, as indicated, in part, as follows:

					Cable No.
F2	4 -3	1-4	3-3	6	48
	4 -4	2-3	3-4	5-2	53
	7	2-4	2-4	7	58
F3	4 -4	2-3	3-4	5-2	63
	4 -3	1-4	3-3	6	68

The fundamental subgroups in these plans are numbered from 1 up and the fill-in subgroups are numbered F1, F2, F3, etc. In general, it will be advantageous to number the subgroups on each level in this manner on the job DTA equipment drawings, prefixed by the cross-connecting plan number, ie, 17-1, 17-F1, 17-2, 17-3, etc. The subgroup or subgroups, of any class in the office that are to be cross-connected as fill-in subgroups per any of Plans 1 through 36 and 38 through 47 shall be those in locations on the frames such that the tie cable requirements for connecting them to the proper outgoing cables will be a minimum. It should be noted that, so far, all discussion of fill-in subgroups has been on the basis that they are the same type graded multiple as the fundamental subgroups. The use of cross-connecting Plan 37, which can be used for cross-connecting miscellaneous and leftover subgroups as fill-in subgroups, is discussed in 4.14 and 4.19. Plan 1, for 10 trunks, shows a cross-connecting plan as close as possible to that of 11 trunks. *Subgroups of less than ten trunks connected to one cable shall be cross-connected in regular order, or to more than one cable, in accordance with the proper arrangement in Plan 37.*

Outgoing Trunk Assignments

4.08 The trunk choice numbers shown in Plans 1 through 36 and 38 through 47 are the bank terminal numbers on a particular selector level. In planning an office, the outgoing trunks from the selector or DTA frame are assigned numerically to the bank terminals in accordance with the sequence of the numbers in the plans. As a typical example, refer to cross-connection Plan 32 for 60, 120, or 240 selectors on 27 trunks. The full table consists of 9 fundamental subgroups and one fill-in subgroup, and 27 cables or 270 outgoing trunks. Assume that the 270 outgoing trunks which are to be connected to this group are numbered 201 through 470. Starting with the first subgroup and reading left to right in the table, trunk 201 is assigned to the first position, first choice trunk of the first subgroup. Trunk 202 is assigned to the fifth position, first choice trunk; trunk 203 to the first position, second choice trunk; 204 to the fifth position, third choice trunk; and trunk 205 to the second position, second choice trunk, etc. Trunk 228, the first fill-in position trunk, is assigned to the fourth position, first choice trunk of the first fill-in subgroup. Similarly trunk 229 is assigned to the tenth choice trunk, and trunk 230 is assigned to the first position, first choice trunk of this fill-in subgroup. *Typical numbering of first subgroups of trunks is shown in Fig. 4.* The outgoing circuits of the *final cable* on a level may end with a final fundamental subgroup or a final fill-in subgroup. A final fill-in subgroup may be cross-connected in accordance with Plans 2 through 36 and 38 through 47 for fill-in subgroups of the same type as the fundamental subgroups, or Plan 37 or F1 subgroups for Plans 38 through 46 (see 4.14)., If it is a final fill-in subgroup, cross-connected per one of Plans 2 through 36 or 38 through 47, any trunks to be connected with a final cable or cables, after all of the preceding fill-in positions have been assigned, shall be connected in the same order that they would normally be connected, but in this case to all of the cable circuits in succession (see fill-in subgroup F1, Fig. 12). On the first addition, these final trunks will be reassigned to new fill-in positions to conform with the standard pattern. (See the alternate arrangement in 4.20.)

Jumper Terminations

4.09 There shall be certain definite selector divisions on which the jumpers for each individual, partial common, or common trunk of a particular type of subgroup shall terminate (Fig. 4). Exceptions are permissible only as covered in 4.30.

Regrading—Alternate Cross-Connecting Plans

4.10 *When regrading from one size trunk subgroup to another*, in the majority of cases, it is principally necessary to remove multiple leads and add jumpers when the trunk group is increasing in size, or conversely, to remove jumpers and add multiple leads when the trunk group is decreasing, and, in addition, to rearrange a limited number of jumpers. This is particularly the case when regrading between numbers of trunks in the same multiple of five, as 16 through 20; 21, 23, and 25; 27 and 29; 31, 33, and 35, etc. *However, in regrading between numbers of trunks in adjacent ranges of five trunk*, as between 20 and 21, 23 or 35; 29 and 31, 33 or 35; 35 and 37 or 39, etc, the patterns of connection to succeeding cables change, necessitating greater rearrangements of trunk. In such cases, alternate cross-connection plans, shown in Fig. 5 through 16, shall be used. These plans are of two general categories, as covered in (a) and (b). An additional recommendation is made in (c).

- (a) *The first of these categories comprises plans covered by Fig. 5 through 16 without letter suffixes.* These figures provide for the assignment of the same trunks on any one cable for fundamental and fill-in subgroups as for the regular cross-connection plans for the subgroup size to which the transition is being made. However, the locations of components of cross-connections to certain cables and the order of connecting to successive cables are rearranged to provide greater similarity in the connections before and after conversion. Maximum similarity has been sacrificed in the interest of maintaining a fair degree of distribution of fill-in subgroups over successive half-shelves of succeeding selectors. Numbers in parentheses beside the new subgroup numbers represent the subgroup numbers prior to revision. Numbers in parentheses at the left side of the table indicate the former subgroup or subgroups with which each cable was associated in accordance with the regular cross-connection plan for the prior arrangement. All cable numbers are the same as the cable numbers prior to conversion. *In Fig. 6, 8, 10, 12, 14, and 16, certain of the fundamental subgroups are split over nonconsecutive cables to reduce jumper changes.* Subgroups cross-connected per these alternate plans shall be numbered with *suffix A* when the number of trunks is increased or *B* when the number of trunks is reduced, such suffixes to be added to the number of the regular plan for the size subgroup after

conversion. *When such alternate plans have been installed, they shall remain as alternate plans even though further change takes place within the same range of subgroup size.* New subgroups should be installed in accordance with the regular cross-connection plans. The alternate plans can, of course, be revised further, within the same range of five trunks merely by the same minor revisions as required for the regular cross-connection plans.

(b) *The second category of plans* referred to in

(a) are new, and are covered by additions to Fig. 5, 7, 9, 11, and 13 in the form of letter suffix figures. These figures, covering *increases only in numbers of trunks per subgroup*, provide for still further reductions in cross-connection changes, and are provided as an optional standard to the original nonsuffix figures. The remaining figures do not afford material opportunity for such savings. These optional plans are based on merely *displacing successive portions of trunks* in certain subgroups with the added trunks in the remaining subgroups, and *reconnecting displaced and added trunks* of the former subgroups to *new tail-end cables*. Provision is also made for further growth to the second higher range of five trunks before complete recross-connection to new regular plans is required. Details and descriptions of the changes are covered in each figure. The optional plans are identified by the additional suffix A, for example, Plan 7AA as well as Plan 7A. Although these plans may not provide quite as good balance of traffic over the subgroups from succeeding selectors in cases of severe overloads, indications are that a satisfactory balance will be obtained. One disadvantage in these plans is that the transfer of all displaced and added trunks to new tail-end cables may result in *somewhat greater amounts of interframe tie cabling*. Existing cabling facilities should therefore be taken into consideration in choosing between the two categories of change.

(c) *In order to minimize the necessity for utilizing the alternate cross-connection plans*, it is recommended that special attention be given to the provision in the standard *Traffic Engineering Practices Div. D. Sec. 4-C Page 7*, which reads in part as follows:

"...it is suggested that when the numbers of trunks in a subgroup will in the near future be changed to the next higher number of trunks which is in the

succeeding range of five trunks, consideration be given to the *use of the larger subgroup initially*. If for instance an initial grade of 160 selectors on 35 trunks were indicated and estimates of future traffic indicates that a 160 on 37 or 39 grade would be required on the next job, the provision of a 160 on 37 grade initially would save rearrangement costs...."

4.11. In general, in making regrades in any particular case, fill-in subgroups that have been disconnected will have to be reconnected to new cables in accordance with the regular arrangement for this size subgroup; or one or more fundamental subgroups will have to be reconnected to fill-in subgroup positions, depending on whether the subgroup size is increasing or decreasing.

Tail-End Cables and Leftover and Miscellaneous Subgroups

4.12 Where the total trunks on a given level outgoing from a particular class of selectors is not an exact multiple of ten trunks, there will be a partially assigned tail-end cable to a half-shelf of the following selectors in the train, ending either with a fundamental subgroup or a final fill-in subgroup. *Where this partially assigned cable is not a final tail-end cable for all classes of trunks on the level, it should ordinarily be filled out to avoid an intermediate partially equipped shelf.* This may be done in one of two different ways. *One method consists of cross-connecting the vacant circuits* to trunks of a final fill-in subgroup of a following class of trunks on the same level, if such a class is available, which, from the operating standpoint, can be mixed with the preceding class. The fundamental subgroups of the following class should start on a new cable, following the last cable of the preceding class. After the last cable in this following class that is partially occupied by a fundamental subgroup has been assigned to a final fill-in subgroup (in the prescribed manner for a fill-in subgroup of the same type as the fundamental subgroups), any remaining trunks in this final fill-in subgroup should then be assigned to the unassigned circuits of the previous tail-end cable. Any trunks still remaining will be assigned to a new tail-end cable. If some circuits in the preceding tail-end cable still remain unassigned, they may be similarly assigned to a final fill-in cable of a subsequent class; or the cable treated as a tail-end cable for the level. A partially equipped tail-end cable for a level

should, wherever practicable, be associated with the last shelf or half-shelf of the following selectors in the train.

4.13 *Another and preferable method* of filling out tail-end cables is through the use of leftover and miscellaneous subgroups. This method is related to the procedure outlined for the general utilization of such subgroups for assignment to fill-in positions of any or all cables associated with fundamental subgroups (see 4.14). ***Such a procedure has two advantages.*** One advantage of mixing the different traffic of such subgroups with that of fundamental subgroups, results in a more uniform distribution of traffic to the following subgroups in the train. The other advantage is that of increasing the quantity of subgroups (of a main class) that can be assigned in accordance with the uniform patterns for fundamental subgroups.

4.14 As indicated, ***leftover and miscellaneous subgroups should be utilized as far as possible for assignment to fill-in positions, left after the assignment of the fundamental subgroups of a main class, and to tail-end cables from any of the classes of selectors.*** ("Leftover" subgroups for any level are subgroups from the selectors remaining after all of the regular subgroups conforming with regular graded multiple patterns for that level have been formed. They ordinarily comprise fewer selectors and trunks than the regular subgroups.) To facilitate the the above assignment, the cross-connection arrangements in Plan 37 should be used when subgroups of from 3 to 35 trunks are to be used as fill-in subgroups under any condition except in accordance with Plans 1 through 36. These arrangements are set up in such a manner that if any number of consecutive trunks is assigned to a cable, these trunks will deliver reasonably close to average traffic for that number of trunks at full rated busy-hour load. Special attention is also paid to the distribution of trunks from upper and lower portions of the graded multiple patterns in such a manner that the effect of traffic imbalance in leftover subgroups upon the following subgroups will be minimized. Cross-connection plans for from 37 through 45 trunk subgroups are not included in Plan 37. Instead, the F1 fill-in subgroups in Plans 38 through 46, for 37 through 43 trunks, are laid out in such a manner that they will be suitable for cross-connection to all fill-in positions in the same manner as the arrangements in Plan 37. In the case of 45 trunk subgroups, the F1 subgroup for 43 trunks shall be utilized, with the two additional trunks cross-connected at the end of the order. Any other

cross-connection plans than the above shall not be used for cross-connection to fill-in positions in this manner, except as outlined in 4.08 for a final fill-in subgroup per Plans 2 through 36 and 38 through 47.

4.15 *The order of selecting leftover and other subgroups for use as fill-in subgroups,* until all desired fill-in and tail-end cable positions have been filled, should be as follows:

- (a) The smaller of the leftover subgroups and small miscellaneous subgroups.
- (b) The larger leftover subgroups.
- (c) The larger of single subgroup classes, such as a single subgroup of trunks from coin-first selectors.
- (d) One or more of the subgroups from a small class in the office, such as one or more of the subgroups from message rate-first selectors, or a subgroup from incoming second or third selectors.

The selected subgroups need not be assigned in the above order, but should be assigned in the order that will result in the minimum tie cable requirements. Each subgroup should be assigned in the order indicated in Plan 37 or the F1 subgroups for 37 to 45 trunk arrangements and, in general, to successive cables having vacancies; and each successive subgroup should begin on the cable circuit following the last circuit of the preceding subgroup.

4.16 Where possible, ***sufficient subgroups should be selected to utilize all vacant fill-in and tail-end cable circuits in regular order,*** up to, or beyond, one or more circuits on the last such cable on the level. A last cable that is partially assigned should be classed as a tail-end cable. If this tail-end cable should normally be the middle cable of a set of 3, 5, 7, or 9 assigned to a pair of fundamental subgroups, the normal order of cable assignments for these two subgroups should be changed to make this cable the one connected to the last half-shelf of the following selectors. This variation from plan is desirable, both from equipment and traffic engineering standpoints. On the next addition it will not be necessary to reconnect to this cable to place it in the normal position.

4.17 *If there are insufficient trunks in subgroups of the type indicated* to fill out the cables, a subgroup from the main class of selectors should be

cross-connected as a final fill-in subgroup, in accordance with the proper one of Plans 1 through 36 and 38 through 47. *The cross-connections should follow the pattern for the first such fill-in subgroup* of the proper plan, and consequently the assignment must start with the first fill-in position of a cable associated with a fundamental subgroup. This should be the first such cable not assigned to any trunks of the preceding fill-in subgroup; or the cable that would normally be incompletely filled by the last trunk of this subgroup. In the latter case, the trunks of the preceding fill-in subgroup that normally would be assigned to this cable will be displaced and should be connected to the tail-end cable for the level.

4.18 The fill-in arrangements of Plans 1 through 36 and 38 through 47 will, in general, be used only under the following conditions:

- (a) Where fill-in subgroups of the same type as the fundamental subgroups are used exclusively (no leftover, miscellaneous, or subgroup of a different class available).
- (b) Where, after leftover and other classes of subgroups available are assigned (as described in 4.17), there are still two or more partially assigned cables, a subgroup from the main class of selectors should be used as a final fill-in subgroup and cross-connected in accordance with the proper one of Plans 1 through 36 and 38 through 47.

A somewhat better distribution of traffic from the fill-in subgroups is obtained by using Plans 1 through 36 and 38 through 47, and some reduction of jumper change on regrades will result.

4.19 *On additions not involving regrading of the fundamental subgroups*, it should not be necessary to disturb a fill-in subgroup that does not otherwise change. Instead, if desired, it is permissible to provide a break in a fill-in subgroup cross-connected in accordance with Plan 37, or F1 subgroups for 37 through 45 trunks, to get around the subgroup that does not change.

4.20 Occasionally it will be found that the *great majority of the trunks of a final fill-in subgroup* cross-connected in accordance with one of Plans 2 through 36 or 38 through 47 are forced out on one or more tail-end cables, and will have to be reconnected on the next addition (see 4.08). To reduce the amount of such reconnecting, the final subgroup may be cross-connected as a *modified funda-*

mental subgroup under certain conditions. For instance, if the final subgroup were to be cross-connected as a final fill-in subgroup, approximately 75 percent or more of the trunks of this subgroup would have to be reconnected when subgroups are added. In this case, the subgroup should be cross-connected as a final fundamental subgroup, except that certain trunks in the last cable, and where necessary in the next to last cable, shall be selected for assignment to the fill-in positions on preceding cables. *The trunks, so selected*, should be the trunks that will give the closest approximation to a standard fill-in combination of trunks on any one cable for that cross-connection plan. *For example*, suppose 3 subgroups of 27 trunks are involved. If the last subgroup were cross-connected as a fill-in subgroup per Plan 19, there would be 21 trunks on three final cables, or 78 percent of the trunks in the subgroup, that would have to be recross-connected if subgroups were added. If, initially, there had been 4 subgroups, there would be only 18 circuits, or 63 percent, that would have to be recross-connected. In the former case only, therefore, the last subgroup would be cross-connected as a fundamental subgroup. According to Plan 19, the last cable of the fundamental subgroup trunks 1-6, 4-2, and 5-2, and trunks 2-2, 3-2, and 9 can be combined into 2 sets of fill-in circuits corresponding to those on cables 15 and 27, respectively. These should be connected to the fill-in positions as required on preceding cables and trunk 1-8 assigned to circuit 1 of the last cable. *When subgroups are added*, this subgroup should be reverted to a regular fundamental subgroup pattern and 20 trunks will remain unchanged. Such a condition as the foregoing may occur when there are only about 2 or 3 subgroups of the same type on a level; or where such a quantity of like subgroups is encountered at the end of a larger number of subgroups (Fig. 3 and 9).

Irregular Forms of Leftover Subgroups

4.21 *When the number of selectors in a leftover subgroup is greater than half a full subgroup*, the telephone company may sometimes specify the full subgroup plan, but with the trunks normally associated with the unequipped selectors omitted, in order to keep the wiring changes to a minimum when the subgroup grows to a full subgroup. *Also, if the number of selectors omitted in the leftover subgroup is not sufficient to result in trunks being omitted in this manner*, the telephone company may specify a reduction in trunks to be accomplished by the multiplying of the higher choice individual trunks

associated with the omitted selectors, with adjacent trunks of the same choice. In these cases, the omitted trunks that would normally be cross-connected to cable circuits assigned at this time shall be replaced on these cable circuits with working trunks of this subgroup that normally would connect to higher numbered cable circuits not assigned at this time. Working trunks of the same choice, or as near as possible, as the omitted trunks, should be substituted in order to preserve the traffic balance. *For example*, if the full subgroup calls for 160 selectors on 31 trunks and there are only 138 selectors in the leftover subgroup, the telephone company would specify 138 selectors on 29 trunks, 160/31 form. Cross-connection Plan 21 would be used, but the omitted first-choice trunk 1-8 normally connecting with cable circuit 227 (subgroup 1) would be replaced with second-choice trunk 2-2, normally connecting with cable circuit 231, and omitted trunk 2-8, normally on cable circuit 229, would similarly be replaced by trunk 4-4, normally connecting with cable circuit 230. Omitted trunks that normally would connect with unassigned cable circuits require no substitution. The same general procedure should be followed if such a leftover subgroup is cross-connected as a fill-in subgroup either per Plan 37 or Plans 1 through 36. *An example of the multiplying of individual trunks due to the omission of a few selectors* would be a case of 141 leftover selectors from full subgroups of 160 selectors on 33 trunks. In this case, the last second- and third-choice trunks, 2-8 and 3-8, would be multiplied with 2-7 and 3-7, respectively, and the telephone company would specify 141 selectors on 31 trunks, 160/33 form. Referring to cross-connection Plan 22, if this subgroup is to be a fundamental subgroup, trunk 3-8 can be dropped and trunk 4-2 will be cross-connected to the cable circuit normally occupied by trunk 2-8. Similar substitutions would be made in any of the fill-in subgroup arrangements.

4.22 *Another form of leftover subgroup* which consists of a few selectors and associated trunks added to the last full subgroup may be specified by the telephone company. This may be specified when the leftover selectors by themselves would not require more than seven trunks. By combining these selectors with the last division of a full subgroup, one or two fewer additional individual trunks will be required and the remaining terminals of the leftover selectors will be multiplied with corresponding trunks of the last selector division of the full subgroup. The added individual trunks in these cases shall be treated as a small leftover subgroup and cross-connected as a fill-in subgroup in accordance with Plan 37.

Association of Cables and Combining of Subgroups

4.23 In general, *successive fundamental subgroups or pairs of fundamental subgroups of a particular class on a level should be cross-connected to successive sets of 2, 3, 4, 5, 7, or 9 cables associated with consecutive half-shelves of the following selectors in the train*, that is, consecutive with respect to the appearance of their banks on the DTA. For example, in the order A-201, B-201, A-202, B-202, C-201, D-201, etc. This will result in the most uniform distribution of traffic to the following subgroups. This may not always be practicable after additions, but should be adhered to as closely as possible. To facilitate jumper assignments, the outgoing cables shall be assigned to the outgoing terminal strip circuits in the same order.

4.24 Furthermore, *fundamental subgroups from different classes of selectors should, in general, be cross-connected to the half-shelves of the following selectors in the train in the same order that the selectors making up the subgroup of these classes appear on the frames*. For example, if the first selectors appear on the frames in the order of coin box, message rate, and flat rate, fundamental subgroups of trunks from these selectors should be cross-connected in that order to the second selector half-shelves. Where specified by the telephone company, however, *in order to mix to a limited extent the traffic outgoing from two classes of selectors having substantially different traffic per trunk*, such as from flat-rate and message-rate first selectors having substantially different traffic per trunk, or similarly, from local and incoming second or third selectors, a departure from this practice may be followed (see 2.22). Sets of 2, 3, 4, 5, 7, or 9 of the following half-shelves associated with one or a pair of fundamental subgroups of one class may be sandwiched proportionately between similar sets of half-shelves associated with subgroups of the other class. This, of course, would be accomplished through appropriate cabling from the selector DTA to the following selectors. This sandwiching should not be carried any further. Even to this extent, it is not desirable from an equipment standpoint and results in some disadvantages from the maintenance standpoint. It should, therefore, be specified only after careful consideration of the traffic advantage obtained.

4.25 *It is considered undesirable to combine leftover selector shelves of a main class of first selectors on the last frame (usually flat rate) with other classes of selectors on the head-end frame to*

form a larger miscellaneous subgroup because (1) this subgroup must always be broken up on the next addition and usually recombined to form a different subgroup, and (2) long tie cables from the first to the last frame are required for this purpose. Exceptions may be considered necessary in order to gain efficiency on a level having a very low calling rate such as a first or 0 level of first selectors. Leftover shelves of the classes on the head-end frame (coin or message rate) may be combined with other selectors on that frame, however. *Smaller than normal subgroups of the main class of selectors that it may have been found necessary to mount on the head-end frame, should not ordinarily be combined with the selectors of the following frame* since it is desirable to start new subgroups at the top of the first frame used exclusively for the main class of selectors, in order to reduce tie-cable requirements. Such subgroups of the main class on the head-end frame should be combined with selectors of another class on that frame to form a mixed subgroup, treated as subgroups by themselves, or in exceptional cases, combined with selectors of the same class on the last frame to form a larger subgroup. This last alternative is undesirable for the same reasons that it is undesirable to combine leftover selectors on the last frame with other classes of selectors on the head-end frame and should be avoided unless some decided advantage is obtained.

4.26 *In certain cases it will be advantageous to pair a leftover or miscellaneous subgroup with a different size subgroup*, cross-connecting the two subgroups as a pair of odd and even fundamental subgroups, with one cable shared by trunks of both subgroups. A subgroup so paired with another should be limited to a leftover or miscellaneous subgroup, and, in general, should be done only under two conditions, as outlined in 4.27 and 4.28. Furthermore, a subgroup should *only* be so cross-connected if it cannot be used as a fill-in subgroup cross-connected in accordance with Plan 37.

4.27 The condition under which a miscellaneous subgroup may be paired with another subgroup (see 4.26) is on a head-end first selector frame where there is a single subgroup of the main class of selectors located on this frame that would otherwise have to be paired with the next subgroup of this class on the following frame, ie, a subgroup of 160 selectors on 25 trunks. A miscellaneous or other single subgroup on this frame of 11 through 15, 21 through 25, etc, trunks may be paired with this subgroup. The miscellaneous or single subgroup should be cross-

connected as an odd-numbered fundamental subgroup and numbered 1. The subgroup of the main class shall be cross-connected as an even-numbered fundamental subgroup and numbered 0; in this case, designated on the DTA equipment drawing as 18-0. If the main class subgroup has fewer than 5 trunks on the partially assigned cable (say a subgroup of from 21 through 25 trunks), this may be paired with a miscellaneous or single subgroup having from 5 through 9 trunks on the partially assigned cable, such as a subgroup of 15 through 19 trunks, or 25 through 29 trunks, making sure the trunks of the two subgroups on the same cable do not together exceed 10.

4.28 *A leftover subgroup of any class may be paired, where possible, with the last full subgroup of the same class, but again only if this subgroup cannot be used as a fill-in subgroup* cross-connected per Plan 37. For example, assume the full subgroup of this class has 25 trunks and there is a leftover subgroup of 15 trunks that is not required as a fill-in subgroup. This leftover subgroup may be paired with a final odd-numbered full subgroup and cross-connected as an even-numbered fundamental subgroup. Again, assume a full subgroup of 160 selectors on 27 trunks and a partial subgroup of 110 selectors on 22 trunks (160/27 form). The 22-trunk subgroups may be paired with the last full subgroup cross-connected as an even-numbered fundamental subgroup.

4.29 This section is intended to cover as complete a variety of possible cross-connection arrangements based on Plans 1 through 47 as is considered to be practicable, and these recommendations should be followed without essential departures. To introduce cross-connecting arrangements not covered herein may in some cases cause objectionable traffic imbalances, necessitating recross-connecting. ED-30846-01, covering standard DTA cross-connection arrangements, illustrates the application of many of the arrangements covered herein.

Regrading Old-Type Graded Multiple Subgroups

4.30 When regrading from the previous standard multiple arrangements per ED-30683-01 to the arrangements described herein, in order to reduce jumper changes, it may in some cases be desirable to leave jumpers connected to some of the existing locations on the bank terminal strips even though these locations do not conform with the locations specified in Fig. 4. This is considered permissible, but the present

standards should be adhered to as closely as practicable, particularly with respect to the relative location of the jumpers from individual and partial common trunks, in order to keep jumper changes on future rearrangements to a minimum. Furthermore, present standards with respect to the location of jumpers above or below the reversal should be followed.

5. ARRANGEMENT OF CROSS-CONNECTIONS FOR GRADED MULTIPLE TRUNK GROUPS TO CONNECTORS

5.01 The selector graded multiple arrangements shown in the index pages and in Plans 50 through 236 are for use with subgroups of selectors from 20 to as many as 210 selectors on 11 to as many as 31 trunks to connectors. In the rare case where more than 210 selectors per subgroup are required, a suitable plan shall be selected from Plans 50 through 233.

5.02 The trunk assignments shown in Plans 50 through 233 *are to be used for trunks to all types of connectors except local rotary hunting connector groups arranged for PBXs of more than ten trunks*. In the latter case, the trunk assignments should be modified (see 5.06 and 5.07). They apply specifically to shelves on which the local or combination connectors grow from left to right, as on shelves having ten combinations or ten local connectors only (except rotary hunting connector shelves arranged for PBX groups of more than ten trunks). Where overflow shelves have more than ten connectors such as 11 level hunting connectors, or 15 other type connectors with a supplementary frame, Plans 50 through 233 shall be construed as applying to consecutive connectors on consecutive shelves. Where these plans are used on shelves having both local and toll connectors, the local connectors (therefore, growing from right to left, to the same principle of cross-connecting) shall be employed, but the numbering will start with 10 (or 15) in each cable and go downward.

5.03 *If the size of the connector group changes, it will in no case be necessary to rearrange the existing cross-connections*. If connectors are added, the additional trunks shall be connected in order to the added connectors. If the size of the group is reduced, certain connectors, as required, will be removed from service.

5.04 *For groups of more than 100 selectors (10 divisions), graded multiple arrangements have*

been shown only for groups consisting of an even number of divisions. For groups consisting of an odd number of divisions, the graded multiple arrangement used should be the same as that for the even-numbered group of one less division, except that the selectors in the additional division shall be given access to the same trunks as the selectors in the last division shown.

5.05 The plans covering the graded multiple sub-grouping to connectors are based on fully equipped divisions of the selectors preceding the connectors, except a possible partially equipped last division. If a partially equipped last division has four or more selectors, it shall be considered as fully equipped and the plans used unmodified. If the last division has three or less selectors, the individual trunks indicated thus, †, should be strapped and the partial common trunks indicated thus, *, should be changed to individual trunks in order to provide the total number of trunks specified for the graded multiple. *If cases arise where other than the last division of a group is partially equipped with selectors*, revisions may be made in the multiplying plans to approximate the traffic conditions of the arrangement illustrated.

5.06 As indicated (see 5.02), the trunk assignments shown in Plans 50 through 233 shall not be followed for rotary hunting connector groups having PBX groups of more than ten trunks, since their use tends to concentrate the first-choice trunks on certain of the connector shelves, which in turn overloads certain of the trunks to the PBX. Instead, the trunks in a graded multiple shall be connected in a top-down left-to-right order to the first equipped connectors on successive shelves, then the second equipped connectors, and so on, through the last equipped connectors until all trunks are connected. A typical cross-connection plan for local connectors only is shown in Plan 234.

5.07 Where there are both toll and local connectors in such groups having PBXs of more than ten trunks, both the local and toll connectors shall be distributed over the connector shelves in order to equalize traffic to the shelves and to permit the toll connectors to have access to all of the PBX trunks. The toll connectors shall grow from left to right over the shelves, starting with the first positions, and the local connectors from right to left, starting with position 10, and proceeding in this manner through all shelves for the complete connector equipment. The trunks of the local and toll selector multiples shall be connected to the connectors in this same order, proceeding in

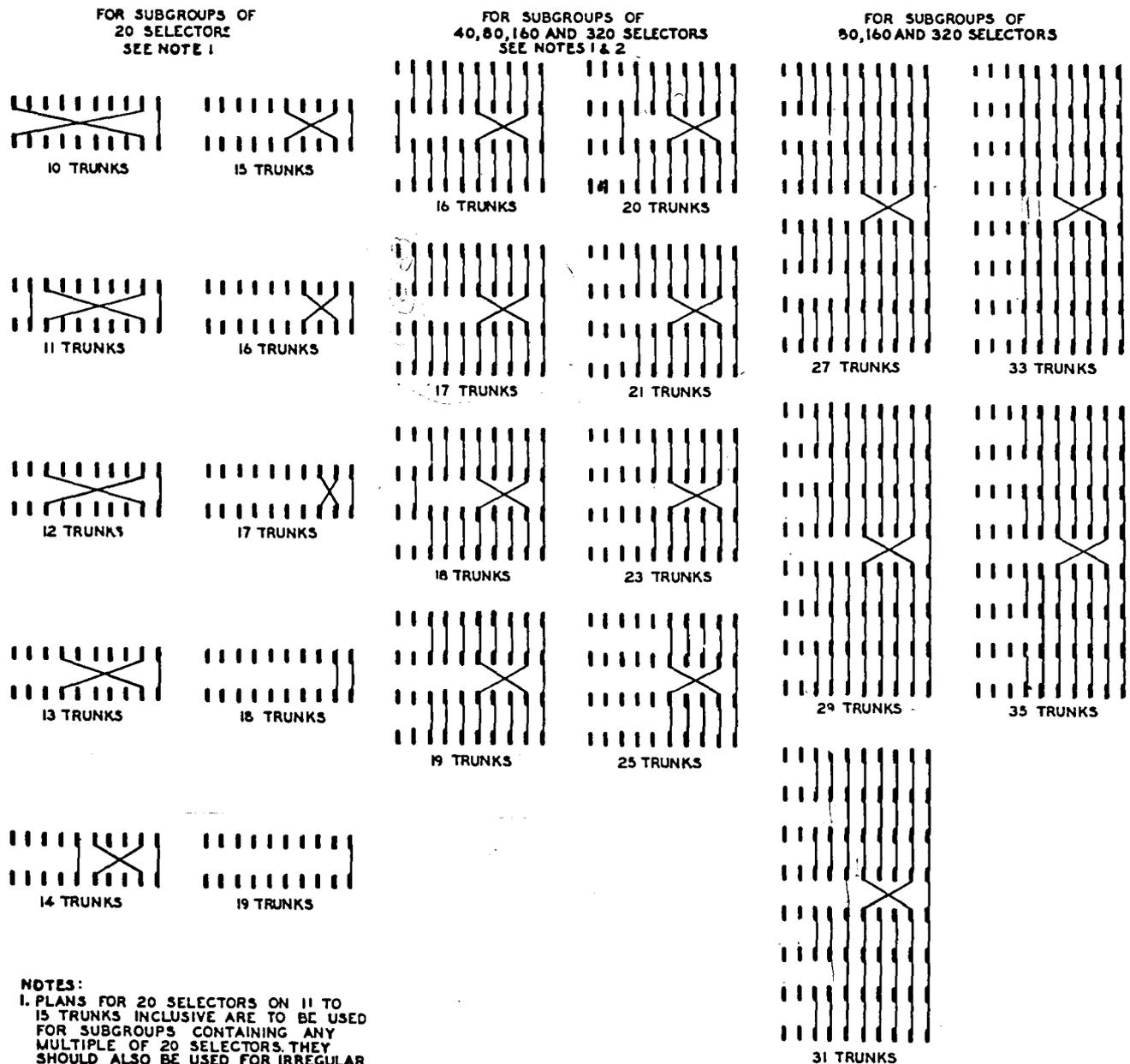
the case of graded multiple subgroups in the same order of trunk assignment as outlined in 5.06. If this assignment results in more than one fewer connector on the shelves toward the end of the group than on the earlier shelves, one or more of the last assigned local connectors on the earlier shelves, starting with the first shelf, shall be reassigned to later shelves until the number of connectors on the shelves do not differ by more than one. An example of this arrangement with graded multiple from local selectors is shown in Plan 236. Plan 236 replaces a previous arrangement shown in Plan 235, where the toll connectors were not distributed over the shelves. (See 3.09.)

5.08 In the case of changes in the graded multiple arrangement to a connector group of this kind, it will not be necessary to rearrange the existing

cross-connections unless a connector shelf is added, the procedure being merely to add additional connectors to the existing shelves and connect them to selector trunks (see 5.07) as shown by dotted numbers in Plans 234 and 236. If the size of the group is reduced, certain connectors will be removed from service as required.

5.09 In some cases, a telephone company may specify one of Plans 50 through 233 for use as a single subgroup to repeaters not associated with rotary out-trunk switches or to a single subgroup of other trunks or selectors. In such cases, the trunks should be cross-connected to a distributing frame in a left-to-right top-down order, or direct to other selectors in accordance with Plan 234. In the latter case, however, unless otherwise specified, the selectors shall be equipped solid over the shelves.

GRADED MULTIPLE ARRANGEMENTS FOR TRUNKS FROM SELECTOR MULTIPLE TO OTHER SELECTORS, TRUNKS OR REPEATERS



- NOTES:
1. PLANS FOR 20 SELECTORS ON 11 TO 15 TRUNKS INCLUSIVE ARE TO BE USED FOR SUBGROUPS CONTAINING ANY MULTIPLE OF 20 SELECTORS. THEY SHOULD ALSO BE USED FOR IRREGULAR SUBGROUPS CONTAINING ANY NUMBER OF SELECTORS ON 11-15 TRUNKS, THE REVERSAL BEING PLACED APPROXIMATELY IN THE MIDDLE UNLESS OTHERWISE SPECIFIED. ALSO THE PLANS FOR 40, 80, 160 AND 320 SELECTORS ON 16-18 TRUNKS MAY BE USED FOR INITIAL SUBGROUPS CONTAINING 640 SELECTORS AND BE PERMITTED TO GROW TO 19 TRUNKS.
 2. THE JUMPER TERMINATIONS AS COVERED IN FIG. 4 THAT ARE NOT MADE TO THE UPPER-MOST DIVISION ASSOCIATED WITH CERTAIN TRUNKS ARE REPEATED HERE AS A PRECAUTION AGAINST IMPROPER JUMPER TERMINATIONS.

Fig. 1 - (Part 1)

FOR SUBGROUPS OF
80, 160 AND 320 SELECTORS

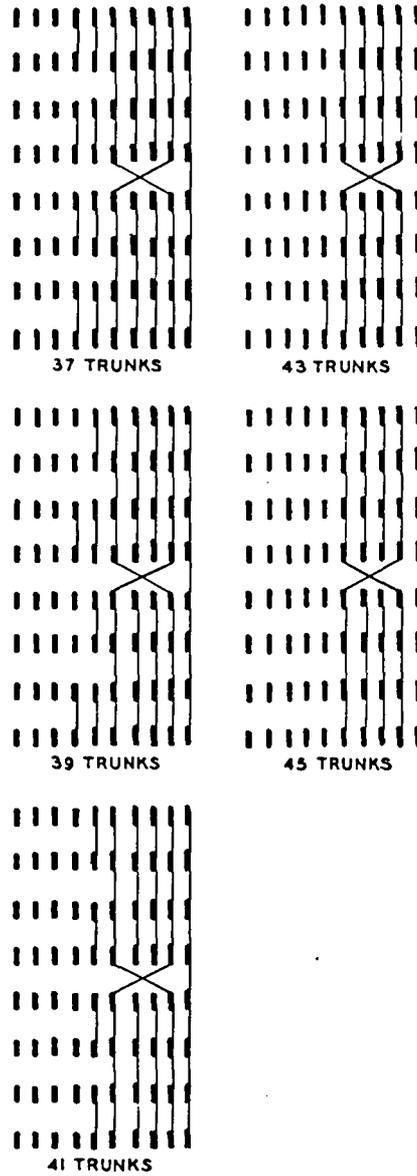
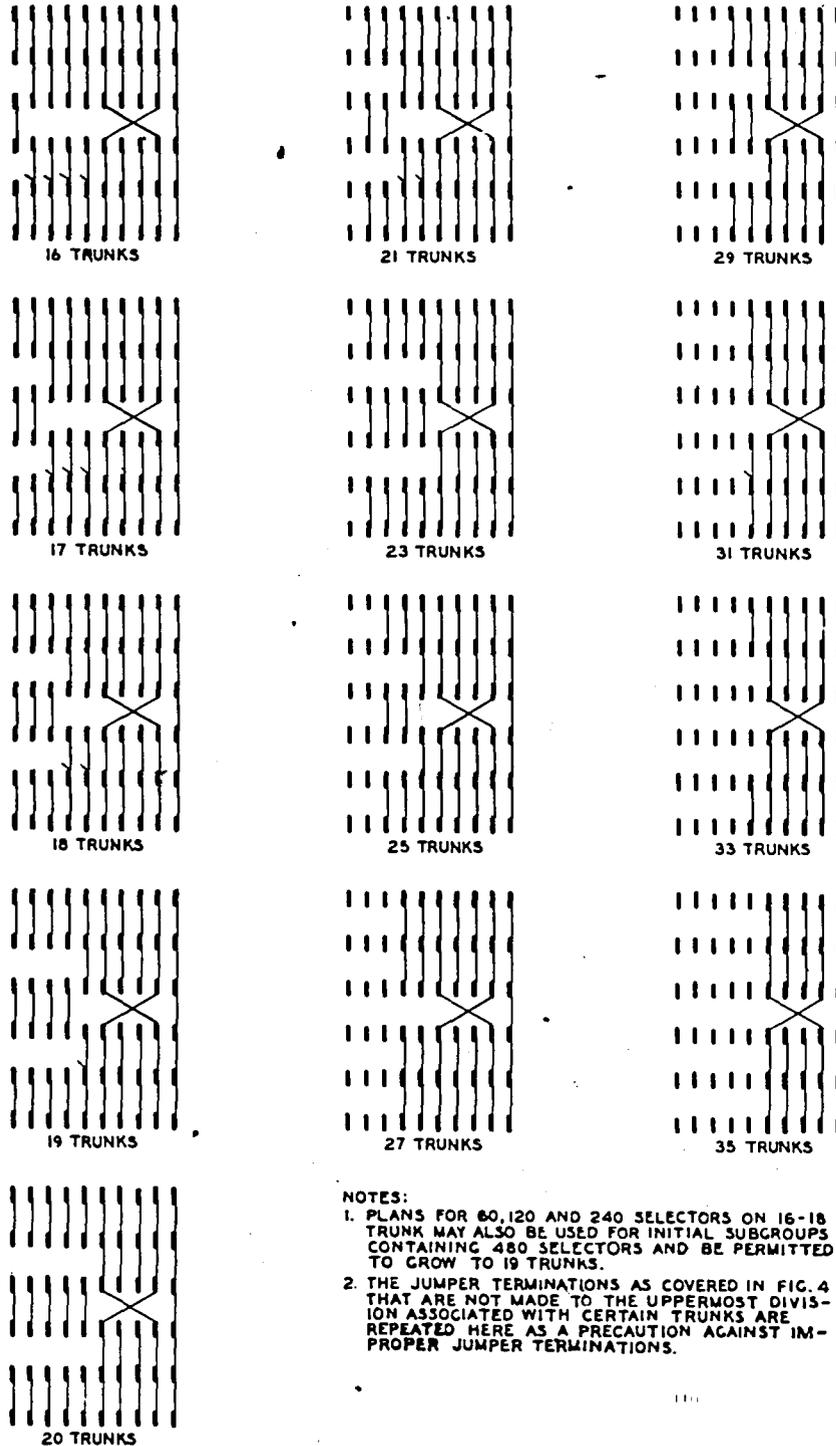


Fig. 1 - (Part 2)

GRADED MULTIPLE ARRANGEMENTS FOR TRUNKS FROM SELECTOR MULTIPLE TO OTHER SELECTORS, TRUNKS OR REPEATERS

FOR USE WITH SUBGROUPS OF 60, 120 AND 240 SELECTORS
SEE NOTES 1 & 2



NOTES:

1. PLANS FOR 60, 120 AND 240 SELECTORS ON 16-18 TRUNK MAY ALSO BE USED FOR INITIAL SUBGROUPS CONTAINING 480 SELECTORS AND BE PERMITTED TO GROW TO 19 TRUNKS.
2. THE JUMPER TERMINATIONS AS COVERED IN FIG. 4 THAT ARE NOT MADE TO THE UPPERMOST DIVISION ASSOCIATED WITH CERTAIN TRUNKS ARE REPEATED HERE AS A PRECAUTION AGAINST IMPROPER JUMPER TERMINATIONS.

Fig. 2 - (Part 1)

FOR SUBGROUPS OF 120 AND 240 SELECTORS
SEE NOTE 2

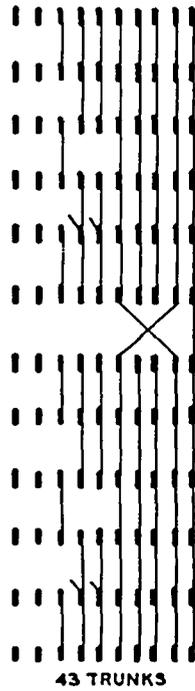
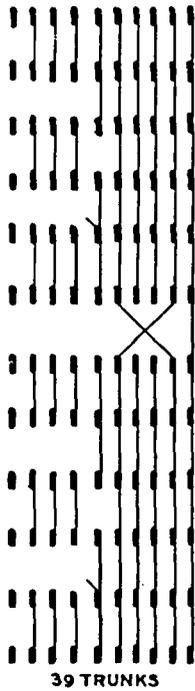
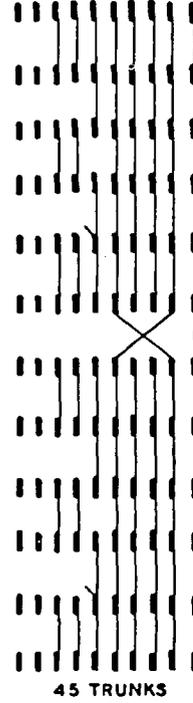
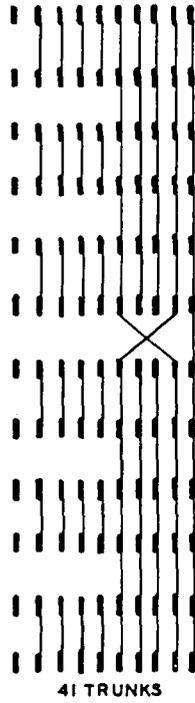
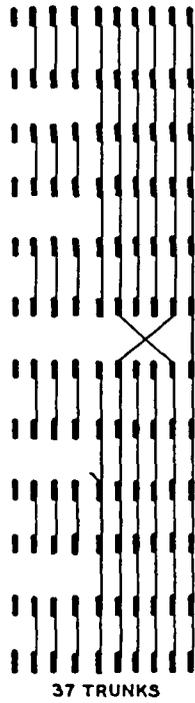
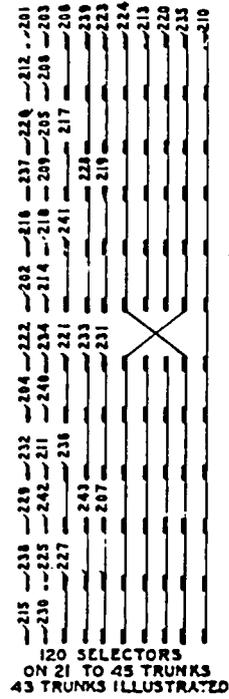
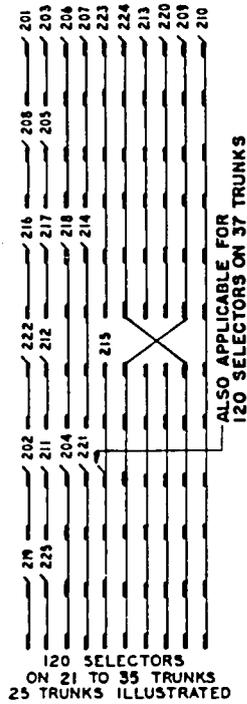
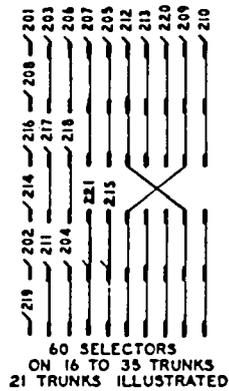
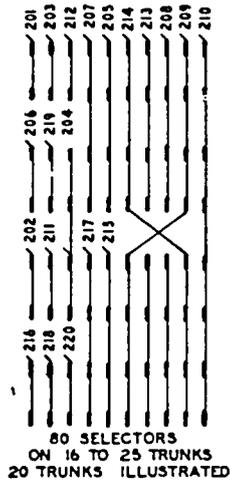
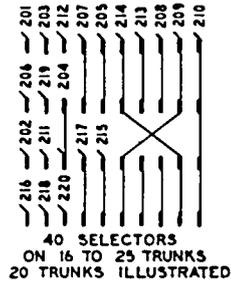
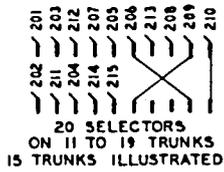


Fig. 2 - (Part 2)

TRUNKS IN CABLE											CABLE NO.
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-2	2-1	3-2	5	6	4	8	9	10	1
	2-2	3-1	7	FI 3-1	1-1	7	5	7	3-1	2-2	2
2	1-1	1-2	2-1	3-2	5	6	4	8	9	10	3
3	1-1	1-2	2-1	3-2	5	6	4	8	9	10	4
	2-2	3-1	7	FI 2-2	1-2	10	8	7	3-1	2-2	5
4	1-1	1-2	2-1	3-2	5	6	4	8	9	10	6
5	1-1	1-2	2-1	3-2	5	6	4	8	9	10	7
	2-2	3-1	7	FI 3-2	2-1	6	9	7	3-1	2-2	8
6	1-1	1-2	2-1	3-2	5	6	4	8	9	10	9
7	1-1	1-2	2-1	3-2	5	6	4	8	9	10	10
	2-2	3-1	7	FI 4	F2 1-1	5	6	7	3-1	2-2	11
8	1-1	1-2	2-1	3-2	5	6	4	8	9	10	12
9	1-1	1-2	2-1	3-2	5	6	4	8	9	10	13
	2-2	3-1	7	F2 2-1	8	7	3-1	7	3-1	2-2	14
10	1-1	1-2	2-1	3-2	5	6	4	8	9	10	15
11	1-1	1-2	2-1	3-2	5	6	4	8	9	10	16
	2-2	3-1	7	F2 2-2	1-2	10	9	7	3-1	2-2	17
12	1-1	1-2	2-1	3-2	5	6	4	8	9	10	18
13	1-1	1-2	2-1	3-2	5	6	4	8	9	10	19
	2-2	3-1	7	F2 3-2	4	5	9	7	3-1	2-2	20
14 _(MOD)	1-1	1-2	2-1	3-2	10	6	4	8			21

Fig. 3 - Typical Example Illustrating the Method of Repeating Fundamental Subgroups and a Modified Assignment of a Final Fundamental Subgroup to Connect Two of its Trunks Normally Connected with the Last Cable to Fill-in Positions 6 and 7 on Cable 20 - Based on Plan 4

ARRANGEMENTS SHOWING SPECIFIC BANK TERMINAL STRIPS
 AT WHICH OUTGOING JUMPERS FOR VARIOUS SIZED
 SUBGROUPS PER FIGS. 1 & 2 SHALL BE CONNECTED
 AND TYPICAL NUMBERING INFORMATION FOR
 JUMPER TERMINATIONS AT OUTGOING TERMINAL STRIPS
 FOR TRUNKS TO SUCCEEDING SELECTORS



ALSO APPLICABLE FOR 37 TRUNKS
 120 SELECTORS ON 37 TRUNKS

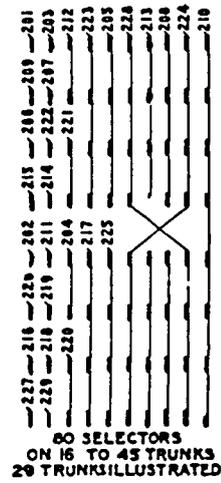
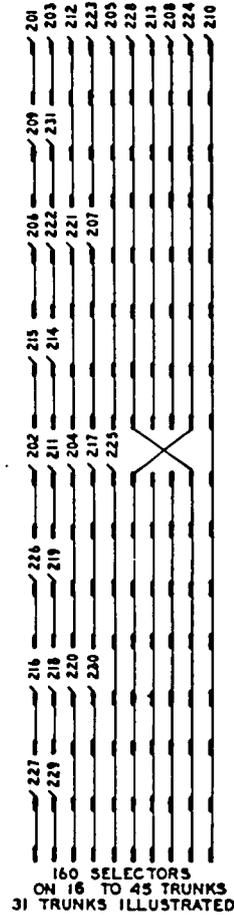


Fig. 4

FORMER SUBGROUPS ON CABLES PRIOR TO REVISION	TRUNKS IN CABLE										CABLE NO.
	1	2	3	4	5	6	7	8	9	10	
(1)	1	1	2	3	5	3	4	8	9	10	1
(1)(2)	1 ⁽¹⁾ 2	6	7	4	5	1	F1(3) 10	4	3	1	2
(2)	1	1	2	3	5	3	4	8	9	10	3
(3)	2 ⁽²⁾ 2	6	7	4	5	1	F1(3) 2	6	1	7	4
(3)(4)	F1(3) 1	8	3	5	1	5	4	7	6	2	5
(4)	3(4) 1	1	2	3	5	3	4	8	9	10	6
(5)	1	1	2	3	5	3	4	8	9	10	7
(5)(6)	4(5) 2	6	7	4	5	1	F1(3) 9	4	2	5	8
(6)	1	1	2	3	5	3	4	8	9	10	9
(7)	5(6) 2	6	7	4	5	1	F2(7) 10	4	3	1	10
(7)(8)	F2(7) 7	1	6	2	1	5	4	7	6	2	11
(8)	6(8) 1	1	2	3	5	3	4	8	9	10	12
(9)	1	1	2	3	5	3	4	8	9	10	13
(9)(10)	7(9) 2	6	7	4	5	1	F2(7) 5	3	8	1	14
(10)	1	1	2	3	5	3	4	8	9	10	15
(11)	8(10) 2	6	7	4	5	1	F2(7) 9	4	2	5	16
(11)(12)	F3(11) 1	3	4	10	1	5	4	7	6	2	17
(12)	9(12) 1	1	2	3	5	3	4	8	9	10	18
(13)	1	1	2	3	5	3	4	8	9	10	19
(13)(14)	10(13) 2	6	7	4	5	1	F3(11) 2	6	1	7	20
(14)	1	1	2	3	5	3	4	8	9	10	21
(15)	11(14) 2	6	7	4	5	1	F3(11) 5	3	8	1	22
(15)(16)	F3(15) 1	2	4	9	1	5	4	7	6	2	23
(16)	12(16) 1	1	2	3	5	3	4	8	9	10	24

Fig. 5 - Change from 11, 12, 13, 14, or 15 Trunks to 16, 17, 18, 19, or 20 Trunks - 60, 120, or 240 Selectors on 16 Trunks Illustrated - Plan 24A - 4 Cycles of 4 Existing Subgroups Each. If other subgroups are to be used as fill-in subgroups, existing subgroups 3, 7 and 11 may be cross-connected as new fundamental subgroups as required. Any final existing subgroup may be cross-connected as F2 or F3 instead of 7 or 11. Existing subgroup 15 may become a new fundamental or fill-in subgroup.

Change From 15 Trunks 20 Selectors To	Trunks in Cable										Cable No.				
	1	2	3	4	5	6	7	8	9	10					
16 Trunks Plan 7AA	(Odd)	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8	9	10	1,4 Etc			
		2-2	3-1	7	4-2	5-2	5-2	4-2	7	6-2*	2-2	2,5 Etc			
										(3-1)					
Etc	(Even)	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8	9	10	3,6 Etc			
		2	6-2	3-1	4	6-2	3-1	8	6-2	3-1	10	6-2	3-1	Tail-End	
17 Trunks Plan 8AA	(Odd)	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8	9	10	1,4 Etc			
		2-2	3-1	7-1	4-2	5-2	5-2	7-2*	7-1	6-2	2-2	2,5 Etc			
								(4-2)							
Etc	(Even)	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8	9	10	3,6 Etc			
		2	6-2	3-1	7-2	4-2	4	6-2	3-1	7-2	4-2	6	6-2	3-1	Tail-End
		6	7-2	4-2	8	6-2	3-1	7-2	4-2	10	6-2	3-1	7-2	4-2	Tail-End
18 Trunks Plan 9AA	(Odd)	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8-1	9	10	1,4 Etc			
		2-2	3-1	7-1	4-2	5-2	5-2	7-2	7-1	6-2	8-2*	2,5 Etc			
										(2-2)					
Etc	(Even)	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8-1	9	10	3,6 Etc			
		2	6-2	3-1	7-2	4-2	8-2	2-2	4	6-2	3-1	7-2	4-2	Tail-End	
		4	8-2	2-2	6	6-2	3-1	7-2	4-2	8-2	2-2	8	6-2	3-1	Tail-End
19 Trunks Plan 10AA	(Odd)	1-1	5-2*	2-1	3-2	5-1	6-1	4-1	8-1	9-1	10	1,4 Etc			
		2-2	3-1	7-1	4-2	1-2*	9-2*	7-2	7-1	6-2	8-2	2,5 Etc			
							(5-2)								
Etc	(Even)	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8-1	9-1	10	3,6 Etc			
		2	6-2	3-1	7-2	4-2	8-2	2-2	9-2	5-2	4	6-2	3-1	Tail-End	
		4	7-2	4-2	8-2	2-2	9-2	5-2	6	6-2	3-1	7-2	4-2	Tail-End	

Fig. 5A - Change From 15 Trunks to 16, 17, 18, or 19 Trunks - 20 Selectors - Plans 7AA, 8AA, 9AA, and 10AA. Added Trunks in Odd Numbered Subgroups Replace Certain Trunks in Even Numbered Subgroups. The Added and Displaced Trunks of the Even Numbered Subgroups are Assigned to Added Tail-End Cables. "*" Indicates Connections Changed From the Next Lower Numbers of Trunks. If After Such a Transition the Number of Trunks Increases Still Further Within the Same Range of Five Trunks, the Assignments to Tail-End Cables Shall Be Made to Conform Essentially With the Arrangement for the New Size With the Least Possible Rearrangement. Fig. 5D Indicates the General Procedure for Accomplishing This

Change From 15 Trunks 40, 80, 160, 320, 640 Selectors To	Trunks in Cable										Cable No.			
	1	2	3	4	5	6	7	8	9	10				
16 Trunks Plan 11AA	(Odd)	1-1	1-2	2-1	3-2	5-1	4-2*	4-1	8	9	10	1,4 Etc		
		2-2	3-1	7	6*	5-2	5-2	1-3*	7	3-1	2-2	2,5 Etc		
								(6)						
Etc	(Even)	1-1	1-2	2-1	3-2	5-1	4-2*	4-1	8	9	10	3,6 Etc		
	2	1-3	6	4	1-3	6	6	1-3	6	8	1-3	6	Tail-End	
17 Trunks Plan 12AA	(Odd)	1-1	1-3	2-1	3-2	5-1	1-2*	4-1	8	9	10	1,4 Etc		
		2-2	3-1	7	6	5-2	4-2*	1-4	7	3-1	2-2	2,5 Etc		
							(5-2)							
Etc	(Even)	1-1	1-3	2-1	3-2	5-1	1-2*	4-1	8	9	10	3,6 Etc		
	2	1-4	6	4-2	5-2	4	1-4	6	4-2	5-2	6	1-4	6	Tail-End
18 Trunks Plan 13AA	(Odd)	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	1,4 Etc		
		2-2	3-1	7	6	5-2	4-2	1-4	7	2-3*	2-2	2,5 Etc		
										(3-1)				
Etc	(Even)	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	3,6 Etc		
	2	1-4	6	4-2	5-2	2-3	3-1	4	1-4	6	4-2	5-2	Tail-End	
19 Trunks Plan 14AA	(Odd)	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	1,4 Etc		
		2-3	3-1	7	6	5-2	4-2	1-4	2-2*	2-4	2-3	2,5 Etc		
									(7)					
Etc	(Even)	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	3,6 Etc		
	2	1-4	6	4-2	5-2	2-4	3-1	2-2	7	4	1-4	6	Tail-End	
20 Trunks Plan 15AA	(Odd)	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	1,4 Etc		
		2-3	3-1	7	6	5-2	4-2	1-4	2-2	2-4	3-3*	2,5 Etc		
											(2-3)			
Etc	(Even)	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	3,6 Etc		
	2	1-4	6	4-2	5-2	2-4	3-1	2-2	7	3-3	2-3	Tail-End		

Fig. 5B - Change From 15 Trunks to 16, 17, 18, 19, or 20 Trunks - 40, 80, 160, 320, and 640 Selectors - Plans 11AA, 12AA, 13AA, 14AA, and 15AA. Added Trunks in Odd Numbered Subgroups Replace Certain Trunks in Even Numbered Subgroups. The Added and Displaced Trunks of the Even Numbered Subgroups Are Assigned to Added Tail-End Cables As Indicated. "*" Indicates Connections Changed From the Next Lower Numbers of Trunks. If After Such a Transition the Number of Trunks Increases Still Further Within the Same Range of Five Trunks, the Assignments to Tail-End Cables Shall Be Made to Conform Essentially With the Arrangement for the New Size With the Least Possible Change. Fig. 5D Indicates the General Procedure for Accomplishing This. If Further Growth to 21, 23, or 25 Trunks Should Be Required, Trunks of One or More "Odd" Subgroups May Be Displaced By Added Trunks of Four Other "Odd" or "Even" Subgroups Maximum for Each Such "Odd" Subgroup, in General Conformance with Plans per Fig. 7A, 7B, and 7C. Any Further Growth Shall Be Accomplished By Complete Rearrangement to New Regular Plans

Change From 15 Trunks 60, 120, 240, or 480 Selectors To	Trunks in Cable										Cable No.		
	1	2	3	4	5	6	7	8	9	10			
16 Trunks Plan 24AA	(Odd)	1-1	1-3	2-1	3-2	5-1	3-1*	4-1	8	9	10	1,4 Etc	
		2-2	6*	7	4-2	5-2	5-2	4-2	1-2*	6*	2-2	2,5 Etc	
	(Even)	1-1	1-3	2-1	3-2	5-1	3-1	4-1	8	9	10	3,6 Etc	
Etc	2	1-2	7	4 1-2	7	6 1-2	7	8	1-2	7	10 1-2	7	Tail-End
17 Trunks Plan 25AA	(Odd)	1-1	1-3	2-1	3-2	5-1	3-1	4-1	8	9	10	1,4 Etc	
		2-3	6	7	4-2	5-2	5-2	4-2	1-2	2-2*	2-3	2,5 Etc	
	(Even)	1-1	1-3	2-1	3-2	5-1	3-1	4-1	8	9	10	3,6 Etc	
Etc	2	1-2	7	2-2	6	4 1-2	7	2-2	6	6	1-2	7	Tail-End
18 Trunks Plan 26AA	(Odd)	1-1	1-3	2-1	3-3	5-1	3-1	4-1	8	9	10	1,4 Etc	
		2-3	6	7	4-2	5-2	5-2	4-2	1-2	2-2	3-2*	2,5 Etc	
	(Even)	1-1	1-3	2-1	3-3	5-1	3-1	4-1	8	9	10	3,6 Etc	
Etc	2	1-2	7	2-2	6	3-2	2-3	4	1-2	7	2-2	6	Tail-End
19 Trunks Plan 27AA	(Odd)	1-1	1-3	2-1	3-3	5-1	3-1	4-1	8	9	10	1,4 Etc	
		2-3	6	7	4-3	5-2	4-2*	4-3	1-2	2-2	3-2	2,5 Etc	
	(Even)	1-1	1-3	2-1	3-3	5-1	3-1	4-1	8	9	10	3,6 Etc	
Etc	2	1-2	7	2-2	6	3-2	2-3	4-2	5-2	4	1-2	7	Tail-End
20 Trunks Plan 28AA	(Odd)	1-1	1-3	2-1	3-3	5-1	3-1	4-1	5-2	9	10	1,4 Etc	
		2-3	6	7	4-3	5-3	4-2	8*	1-2	2-2	3-2	2,5 Etc	
	(Even)	1-1	1-3	2-1	3-3	5-1	3-1	4-1	5-2*	9	10	3,6 Etc	
Etc	2	1-2	7	2-2	6	3-2	2-3	4-2	5-2	8	4-3	Tail-End	

Fig. 5C - Change From 15 Trunks to 16, 17, 18, 19, or 20 Trunks - 60, 120, 240, or 480 Selectors - Plans 24AA, 25AA, 26AA, 27AA, and 28AA. Added Trunks in Odd Numbered Subgroups Replace Certain Trunks in Even Numbered Subgroups. The Added and Displaced Trunks of Even Numbered Subgroups Are Assigned to Added Tail-End Cables As Indicated. "*" Indicates Connections Changed From the Next Lower Numbers of Trunks. If After Such a Transition the Number of Trunks Increases Still Further Within the Same Range of Five Trunks, the Assignments to Tail-End Cables Shall Be Made to Conform Essentially With the Arrangement for the New Size With the Least Possible Change. Fig. 5D Indicates the General Procedure for Accomplishing This If Further Growth to 21, 23, or 25 Trunks Should Be Required, Trunks of One or More "Odd" Subgroups May Be Displaced by Added Trunks of Four Other "Odd" or "Even" Subgroups Maximum for Each Such "Odd" Subgroup, in General Conformance With Plans per Fig. 7A, 7B, and 7C. Any Further Growth Shall Be Accomplished by Complete Rearrangement to New Regular Plans

Change From Plan	To Plan	Trunks in Cable										Tail-End Cables
		1	2	3	4	5	6	7	8	9	10	
6	11AA	2 1-3	6	4 1-3	6	6 1-3	6	8 1-3	6	10 1-3	6	1
		12 1-3	6	14 1-3	6							2
11AA	12AA	2 1-3	6	4-2*	5-2*	6 1-3	6	4-2*	5-2*	10 1-3	6	1
		10 4-2*	5-2*	14 1-3	6	4-2	5-2	4 1-3	6	4-2	5-2	2
		8 1-3	6	4-2	5-2	12 1-3	6	4-2	5-2			3
12AA	13AA	2 1-4	6	4-2	5-2	2-3*	3-1*	10 2-3*	3-1*	1-4	6	1
		10 4-2	5-2	14 1-4	6	4-2	5-2	2-3*	3-1*	8 2-3*	3-1*	2
		8 1-4	6	4-2	5-2	12 1-4	6	4-2	5-2	2-3	3-1	3
		4 1-4	6	4-2	5-2	2-3	3-1	6 1-4	6	4-2	5-2	4
		6 2-3	3-1									5
13AA	14AA	2 1-4	6	4-2	5-2	2-4	3-1	2-2*	7*	10 1-4	6	1
		10 4-2	5-2	2-4*	3-1*	2-2*	7*	8 2-2*	7*	2-3	3-1	2
		8 1-4	6	4-2	5-2	12 1-4	6	4-2	5-2	2-4	3-1	3
		12 2-2*	7*	6 2-4*	3-1*	2-2*	7*	1-4	6	4-2	5-2	4
		4 1-4*	6*	4-2	5-2	2-3	3-1	2-2	7	14 1-4	6	5
		14 4-2	5-2	2-3	3-1	2-2	7					6
14AA	15AA	2 1-4	6	4-2	5-2	2-4	3-1	2-2	7	3-3*	2-3*	1
		10 4-2	5-2	2-4	3-1	2-2	7	3-3*	2-3*	1-4*	6*	2
		12 2-2*	7*	3-3*	2-3*	1-4	6	4-2	5-2	2-4	3-1	3
		6 3-3*	2-3*	2-4	3-1	2-2	7	1-4	6	4-2	5-2	4
		4 1-4	6	4-2	5-2	2-3	3-1	2-2	7	3-3*	2-3*	5
		14 4-2	5-2	2-3	3-1	2-2	7	1-4	6	4-2	5-2	6
		8 1-4	6	4-2	5-2	2-3	3-1	2-2	7	3-3	2-3	7

Fig. 5D - General Method of Reassigning Trunks Where, After A Transition Into the Range of 16, 17, 18, or 19 Trunks, the Number of Trunks per Subgroup Increases Still Further Within the Range of 16 to 20 Trunks, With Minimum Jumper Changes. 14 Subgroups Total per Plans 11AA Through 15AA Illustrated. Subgroups for Initial Growth Into This Range Shall Be Connected per Fig. 5A, 5B, or 5C. "*" Indicates Changes From Next Lower Number of Trunks

FORMER SUB GRPS. ON CABLES PRIOR TO REVISION	TRUNKS IN CABLE										CABLE NO.		
	1	2	3	4	5	6	7	8	9	10			
(1)	1	1	2	3	5	6	4	8	9	10	1		
(1)(F1)	1(1) 2	3	7	4	5	5	4	7	3	2	2		
(2)	2(2)	1	1	2	3	5	6	4	8	9	10	3	
(2)(F1)	3(F1)	1	1	2	3	5	6	4	8	9	10	4	
(3)	4(3)	1	1	2	3	5	6	4	8	9	10	5	
(3)(F1)	2	3	7	4	5	5	4	7	3	2	6		
(4)	5(4)	1	1	2	3	5	6	4	8	9	10	7	
(4)(F1)	3(F1)	2	3	7	4	5	6(F2)	5	4	7	3	2	8
(5)	7(5)	1	1	2	3	5	6	4	8	9	10	9	
(5)(F2)	2	3	7	4	5	5	4	7	3	2	10		
(6)	8(6)	1	1	2	3	5	6	4	8	9	10	11	
(6)(F2)	6(F2)	1	1	2	3	5	6	4	8	9	10	12	

Fig. 6 - Change from 16, 17, 18, 19, or 20 Trunks to 11, 12, 13, 14, or 15 Trunks - 60, 120, or 240 Selectors on 15 Trunks Illustrated - Plan 6B - 3 Cycles of 2 Existing Subgroups Each. If existing fill-in subgroups are not available for indicated subgroups 3 and 6, these subgroups may consist of added or existing fundamental subgroups (preferably a final subgroup in either case). The numbers assigned to new subgroups 3 and 6 are typical only. See Paragraph 4.10

FORMER SUBGROUPS ON CABLES PRIOR TO REVISION	TRUNKS IN CABLE										CABLE NO.		
	1	2	3	4	5	6	7	8	9	10			
(1)	1	1	2	3	5	1	4	8	9	10	1		
(1)	1 (1)	2	3	7	6	5	1	4	2	2	3	2	
(2)	3	F1(3)	3	2	7	1	1	10	2	5	3	3	
(2)	2 (2)	2	3	7	6	5	1	4	2	2	3	4	
(3)	1	1	2	3	5	1	4	8	9	10	5		
(3)	3	F1(3)	4	2	9	1	2	8	3	5	4 3	6	
(4)	3 (4)	1	1	2	3	5	1	4	8	9	10	7	
(4)	2	3	7	6	5	1	4	2	2	3	8		
(5)	4 (5)	1	1	2	3	5	1	4	8	9	10	9	
(5)	2	3	7	6	5	1	4	2	2	3	10		
(6)	1	1	2	3	5	1	4	8	9	10	11		
(6)	5 (6)	2	3	7	6	5	1	4	2	2	3	12	
(7)	3	F1(3)	6	3	4	1	3	F2(8)	6	1	4	3	13
(7)	6 (7)	2	3	7	6	5	1	4	2	2	3	14	
(8)	1	1	2	3	5	1	4	8	9	10	15		
(8)	3	F2(8)	8	1	3	2	3	5	2	9	8 3	16	
(9)	7 (9)	1	1	2	3	5	1	4	8	9	10	17	
(9)	2	3	7	6	5	1	4	2	2	3	18		

Fig. 7 - Change from 16, 17, 18, 19, or 20 Trunks to 21, 23, or 25 Trunks - 40, 80, 160, or 320 Selectors on 21 Trunks Illustrated - Plan 16A - 1-4/5 Cycles of 5 Existing Subgroups Each. If other subgroups are to be used as fill-in subgroups, existing subgroups 3 and 8 may be cross-connected as new fundamental subgroups as required. Any final existing subgroup may be cross-connected as F2 instead of subgroup 8.

Former Subgroups On Cables Prior To Revision	Trunks in Cable										Cable No.
	1	2	3	4	5	6	7	8	9	10	
(1)	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	1
(1)	1 (1) 2-3	3-1	7	6	5-2	1-4	4-2	2-4	2-2	3-4	2
(2)	2 (2) 1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	3
(2)	2 (2) 2-3	3-1	7	6	5-2	1-4	4-2	2-4	2-2	3-4	4
(3)	3-2*	1-3	2-1	3-3	5-1	1-2	4-1	8	9	1 3-2*	5
(3)	5 3-2*	3 (3) 3-1	7	6	5-2	1-4	4-2	2-4	2-2	3-2*	6
(4)	4 (4) 1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	7
(4)	4 (4) 2-3	3-1	7	6	5-2	1-4	4-2	2-4	2-2	3-4	8
(5)	5 (5) _____	Same As 1 (1)									9
(5)											10
(6)	6 (6) _____	Same As 1 (1)									11
(6)											12
(7)	7 (7) 1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	13
(7)	7 (7) 2-3	3-1	7	6	5-2	1-4	4-2	2-4	2-2	3-4	14
(8)	3-2*	1-3	2-1	3-3	5-1	1-2	4-1	8	9	6 (6) 3-2*	15
(8)	8 (8) 2-3*	8 (8) 3-1	7	6	5-2	1-4	4-2	2-4	2-2	3-2*	16
(9)	9 (9) 1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	17
(9)	9 (9) 2-3	3-1	7	6	5-2	1-4	4-2	2-4	2-2	3-4	18
	3 1-1	3-2	2-3	3-4		8 1-1	10	3-2	3-4	3 10	19

Fig. 7A - Change From 20 Trunks to 21 Trunks - 40, 80, 160, or 320 Selectors - Plan 16A.
 "*" Indicates Connections Changed. Based on Cable Circuits of Existing Third, Eighth, Thirteenth, Etc, Subgroups Being Utilized for the Assignment of the Added Trunks of the Two Preceding and Two Succeeding Subgroups. The Displaced and Added Trunks of These (Third, Eighth, Etc) Subgroups Shall Be Assigned to a New Tail-End Cable As Indicated. Nine Subgroups Total Are Illustrated. If There Were A Tenth Subgroup, the 3-2 Trunk of This Subgroup Would Be Connected to the Circuit of Cable 16 Marked "0", and the Displaced Selector Multiple Trunk Would Be Connected to a New Tail-End Cable 21 Instead of 19

Former Subgroups On Cables Prior To Revision	Trunks in Cable										Cable No.
	1	2	3	4	5	6	7	8	9	10	
(2)	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	3
(2)	2 (2) 2-3	3-1	7	6	5-2	1-4	4-3	2-4	4-2*	3-4	4
(3)	3-2	2-2*	4-4*	3 (3) 3-3	5-1	1-2	4-1	4-4*	2-2*	3-2	5
(3)	5 3-2	2-2*	4-4*	6	5-2	1-4	4-3	4-2*	2-2*	3-2	6
(4)	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	7
(4)	4 (4) 2-3	3-1	7	6	5-2	1-4	4-3	2-4	4-2*	3-4	8
(5)	5 (5) Same As 2 (2)										9
(5)	6 (6) Same As 2 (2)										10
(6)	6 (6) Same As 2 (2)										11
(6)	6 (6) Same As 2 (2)										12
(7)	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	13
(7)	7 (7) 2-3	3-1	7	6	5-2	1-4	4-3	2-4	4-2*	3-4	14
(8)	3-2	2-2*	4-4*	3 (3) 3-3	5-1	1-2	4-1	4-4*	2-2*	3-2	15
(8)	8 (8) 2-3°	3-1°	7°	6	5-2	1-4	4-3	4-4*	2-2*	3-2	16
(9)	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	17
(9)	9 (9) 2-3	3-1	7	6	5-2	1-4	4-3	2-4	4-2*	3-4	18
	1-1	1-3*	2-1*	8 3-4*	2-1	1-1	10	8*	9*	10	19
	3 2-3	3-1	7	2-4	1-3	4-2	8	3 2-4	4-2	3-4	20
	3-2	2-2	4-4				9	4-4	2-2	3-2	21

Fig. 7B - Change From 20 Trunks to 23 Trunks - 40, 80, 160, or 320 Selectors - Plan 17AA. "*" Indicates Connections Changed From Plan 16AA for 21 Trunks. Same Basis of Change As Described in Fig. 7A. Three Tail-End Cables Required for Assignment of Displaced and Added Trunks From Subgroups 3 and 8. The Order of Connecting the Trunks to the Circuits of the Tail-End Cables Other Than Those Connected in Accordance With the Fundamental Subgroup Patterns (See Fig. 7C) Is not Fixed, But in General Shall Be Such That (a) There Is a Variety of Higher and Lower Choice Trunks on Each Cable and (b) There Is As Little Change As Practicable Between Successive Subgroup Sizes. However, the Examples Illustrated Shall Be Employed

Former Subgroups On Cables Prior To Revision	Trunks in Cable										Cable No.	
	1	2	3	4	5	6	7	8	9	10		
(2)	2 (2)	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	5-2*	10	3
(2)		2-3	3-1	7	6	5-3	1-4	4-3	2-4	4-4*	3-4	4
(3)		3-2	2-2	4-2*	9*	5-4*	1 5-4*	9*	4-2*	2-2	3-2	5
(3)	5	3-2	2-2	4-2*	9*	5-4*	4 5-4*	9*	4-2*	2-2	3-2	6
(4)	4 (4)	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	5-2*	10	7
(4)		2-3	3-1	7	6	5-3	1-4	4-3	2-4	4-4*	3-4	8
(5)	5 (5)	Same As 2 (2)										9
(5)		Same As 2 (2)										10
(6)	6 (6)	Same As 2 (2)										11
(6)		Same As 2 (2)										12
(7)	7 (7)	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	5-2*	10	13
(7)		2-3	3-1	7	6	5-3	1-4	4-3	2-4	4-4*	3-1	14
(8)		3-2	2-2	4-2*	9*	5-4*	6 5-4*	9*	4-2*	2-2	10	15
(8)	8 (8)	2-3°	3-1°	7°	6°	5-3°	9 5-4*	9*	4-2*	2-2	3-2	16
(9)	9 (9)	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	5-2*	10	17
(9)		2-3	3-1	7	6	5-3	1-4	4-3	2-4	4-4*	3-4	18
	3	1-1	1-3	2-1	3-3*	5-1*	1-2*	4-1*	8	5-2*	10	19
		2-3	3-1	7	6*	5-3*	1-4*	4-3	2-4	4-4*	3-4	20
		3-2	2-2	4-2*	9	5-4	8 5-4	9	4-2*	2-2	3-2	21
	8	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	5-2	10	22
						8 1-4	4-3	2-4	4-4	3-4	23	

Fig. 7C - Change From 20 Trunks to 25 Trunks - 40, 80, 160, or 320 Selectors - Plan 18AA. "*" Indicates Connection Changes From Plan 17AA for 23 Trunks. Same Basis of Change As Indicated in Fig. 7A. Five Tail-End Cables Required for Assignment of Displaced and Added Trunks of Subgroups 3 and 8. Note That in Fig. 7A Through 7C Assignments on Tail-End Cables Are Made, Insofar As Possible, in Accordance With the Fundamental Subgroup Patterns for the New Sizes of Subgroups, Starting With Subgroup 3 and Working Through Subgroup 8. This Same Principle Shall Be Followed With Greater Numbers of Subgroups (See Fig. 7D), and for Subgroups of 60, 120, or 240 Selectors. If Further Growth to 27 or 29 Trunks Should Be Required, Subgroups 2, 5, 7, 10 (When Equipped), and 3, Etc, May Be Extended Into Cable Circuits of Cables 5, 6, 15, 16, and 21, Respectively, in General Conformance With Plans per Fig. 9A and 9B. Any Further Growth Shall Be Accomplished by Complete Re-arrangement to New Regular Plans

Range of Change	Trunks in Cable										Cable No.				
	1	2	3	4	5	6	7	8	9	10					
Change From 20 Trunks To 21 Trunks Part of Plan 16AA	3 (3)	1-1	3-2	1-1	13 (13)	1-1	2-3	3-2	3-4	8 (8)	3-2	10	3 (3)	10	31
		2-3	8 (8)	2-3	3-4	10								3-4	32
Change From 21 Trunks To 23 Trunks Part of Plan 17AA	3 (3)	1-1	1-3*	2-1*	1-1	2-3	10*	3-4	8*	9*		10		31	
		2-3	3-1*	7*	13 (13)	1-3*	2-4	4-2	8	3 (3)	2-4	4-2	3-4	32	
	3-2	2-2	4-4	3-1	3-2	4-4	9		4-4	2-2		3-2	33		
	8 (8)	1-1	3-2	2-1	2-1	2-2	7	8 (8)	2-4	8	9		10	34	
2-3		3-1	7							4-2		3-4	35		
Change From 23 Trunks To 25 Trunks Part of Plan 18AA	3 (3)	1-1	1-3	2-1	3-3*	5-1*	1-2*	4-1*	8	5-2*		10		31	
		2-3	3-1	7	6*	5-3*	1-4*	4-3	2-4	4-4*		3-4		32	
		3-2	2-2	4-2*	9*	5-4*	5-4*	9*	4-2*	2-2		3-2		33	
	8 (8)	1-1	1-3	2-1	3-3*	5-1*	1-2*	4-1*	8	5-2*		10		34	
		2-3	3-1	7	6	5-3	1-4	4-3*	2-4	4-4*		3-4		35	
		1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	5-2		10		36	
13 (13)	2-3	3-1	7	6	5-3	1-4	4-3	2-4	4-4		3-4		37		
	3-2	2-2	4-2	9	5-4								38		

Fig. 7D - Connections to Tail-End Cables, Only for the Change of Fifteen, 20-Trunk Subgroups to 21-, 23-, and 25-Trunk Subgroups, With Subgroups 3, 8, and 13 Reassigned to the Tail-End Cables. Part Of Plans 16AA, 17AA, and 18AA. "*" Indicates Connection Changes From 21 and 23 Trunks to 23 and 25 Trunks, Respectively. With Other Numbers of Subgroups, the Same Principle of Assigning As Great a Variety as Possible of Different Choice Trunks to the Fill-In Positions of Each Added Tail-End Cable Shall Be Employed. Use the Specific Arrangements Shown Hereon Wherever Possible

FORMER SUB-GRPS. ON CABLES PRIOR TO REVISION	TRUNKS IN CABLE										CABLE NO.
	1	2	3	4	5	6	7	8	9	10	
(1)	1	1	2	3	5	1	4	8	9	10	1
(1)	2	3	7	6	5	1	4	2	2	3	2
(1)(F1)(2)	2(F1)1	1	2	3	5	1	4	8	9	10	3
(2)	1	1	2	3	5	1	4	8	9	10	4
(2)	3(2)2	3	7	6	5	1	4	2	2	3	5
(3)	4(3)1	1	2	3	5	1	4	8	9	10	6
(3)	2	3	7	6	5	1	4	2	2	3	7
(3)(F1)(4)	2(F1)2	3	7	6	5	1	4	2	2	3	8
(4)	5(4)1	1	2	3	5	1	4	8	9	10	9
(4)	2	3	7	6	5	1	4	2	2	3	10
(5)	6(5)1	1	2	3	5	1	4	8	9	10	11
(5)	2	3	7	6	5	1	4	2	2	3	12
(5)(F1)(F2)(6)	7(F2)1	1	2	3	5	1	4	8	9	10	13
(6)	1	1	2	3	5	1	4	8	9	10	14
(6)	8(6)2	3	7	6	5	1	4	2	2	3	15
(7)	9(7)1	1	2	3	5	1	4	8	9	10	16
(7)	2	3	7	6	5	1	4	2	2	3	17
(7)(F2)(8)	F2-2	3	7	6	5	1	4	2	2	3	18
(8)	1	1	2	3	5	1	4	8	9	10	19
(8)	10(8)2	3	7	6	5	1	4	2	2	3	20

Fig. 8 - Change from 21, 23, or 25 Trunks to 16, 17, 18, 19, or 20 Trunks - 40, 80, 160, or 320 Selectors on 20 Trunks Illustrated - Plan 15B - 4 Cycles of 2 Existing Subgroups Each. If existing fill-in subgroups are not available for indicated subgroups 2 and 7, these subgroups may consist of added or existing fundamental subgroups (preferably a final subgroup in either case). The numbers assigned to new subgroups 2 and 7 are typical only. See Paragraph 4.10.

FORMER SUBGROUPS ON CABLES PRIOR TO REVISION	TRUNKS IN CABLE										CABLE NO.	
	1	2	3	4	5	6	7	8	9	10		
(1)	1	1	2	3	5	1	4	8	1	10	1	
(1)	1 ⁽¹⁾	2	3	7	6	1	1	4	2	4	3	2
(1)(2)	3	2	4	9	5	1	1	FI(3)1	7	1	3	
(2)	1	1	2	3	5	1	4	8	1	10	4	
(2)	2 ⁽²⁾	2	3	7	6	1	1	4	2	4	3	5
(3)	3	2	4	9	5	1	1	FI(3)1	1	8	6	
(3)	3	2	4	9	5	1	1	FI(3)3	4	1	7	
(3)(4)	3 ⁽⁴⁾	2	3	7	6	1	1	4	2	4	3	8
(4)	1	1	2	3	5	1	4	8	1	10	9	
(4)	3	2	4	9	5	1	1	FI(3)4	1	5	10	
(5)	4 ⁽⁵⁾	1	1	2	3	5	1	4	8	1	10	11
(5)	2	3	7	6	1	1	4	2	4	3	12	
(5)(6)	FI	1	4	5	1	1	5	9	4	2	3	13
(6)	5 ⁽⁶⁾	1	1	2	3	5	1	4	8	1	10	14
(6)	2	3	7	6	1	1	4	2	4	3	15	
(7)	1	1	2	3	5	1	4	8	1	10	16	
(7)	6 ⁽⁷⁾	2	3	7	6	1	1	4	2	4	3	17
(7)(8)	3	2	4	9	5	1	1	FI(3)3	1	4	18	
(8)	1	1	2	3	5	1	4	8	1	10	19	
(8)	7 ⁽⁸⁾	2	3	7	6	1	1	4	2	4	3	20
(9)	3	2	4	9	5	1	1	FI(3)2	10	2	21	
(9)	3	2	4	9	5	1	1	6	2	3	22	
(9)(10)	8 ⁽¹⁰⁾	2	3	7	6	1	1	4	2	4	3	23
(10)	1	1	2	3	5	1	4	8	1	10	24	
(10)	3	2	4	9	5	1	1	FI(3)9	3	2	25	
(11)	9 ⁽¹¹⁾	1	1	2	3	5	1	4	8	1	10	26
(11)	2	3	7	6	1	1	4	2	4	3	27	
(11)(12)	II	1-6	4-2	5-2	1	1	5	9	4	2	3	28
(12)	10 ⁽¹²⁾	1	1	2	3	5	1	4	8	1	10	29
(12)	2	3	7	6	1	1	4	2	4	3	30	
	1	1	2	3	5	1	4	8	1	10	31	
	II	2	3	7	6	1	1	4	2	4	3	32
	(MOD)	3-2	2-2	1-8	9							33

Fig. 9 - Change from 21, 23, or 25 Trunks to 27 or 29 Trunks - 80, 160, or 320 Selectors on 27 Trunks Illustrated - Plan 19A - 2 Cycles of 6 Existing Subgroups Each. Example of Modified Assignment of a Final Fundamental Subgroup to Connect a Few of its Trunks to Fill-in Positions. If other subgroups are to be used as fill-in subgroups, existing subgroup 3 may be cross-connected as a new fundamental subgroup.

Change From Plan	To Plan	Trunks in Cable										Cable No.			
		1	2	3	4	5	6	7	8	9	10				
18 For 25 Trunks	19AA For 27 Trunks	(Odd)	1-1	1-5	2-1	3-3	5-1	1-3	4-1	8	1-2*	10	1,6 Etc		
			2-3	3-1	7	6	1-4*	1-7	4-3	2-4	4-4	3-4	2,7 Etc		
			3-2	2-2	4-2	9	5-2	1-6*	1-8*	4-2	2-2	3-2	3,8 Etc		
	Etc	(Even)	1-1	1-5	2-1	3-3	5-1	1-3	4-1	8	1-2*	10	4,9 Etc		
			2-3	3-1	7	6	1-4*	1-7	4-3	2-4	4-4	3-4	5,10 Etc		
			2	1-6	5-2	1-8	9	4 1-6	5-2	1-8	9	6 1-6	5-4	Tail-End	
18 For 25 Trunks	20AA For 29 Trunks	(Odd)	1-1	1-5	2-1	3-3	5-1	1-3	2-2*	8	1-2	10	1,6 Etc		
			2-5	3-1	7	2-4*	1-4	1-7	4-2	2-7	2-6*	3-4	2,7 Etc		
			3-2	2-3	4-1	9	5-2	1-6	1-8	6*	2-8*	3-2	3,8 Etc		
	Etc	(Even)	1-1	1-5	2-1	3-3	5-1	1-3	2-2*	8	1-2	10	4,9 Etc		
			2-5	3-1	7	2-4*	1-4	1-7	4-2	2-7	2-6*	3-4	5,10 Etc		
			2	1-6	5-2	1-8	9	6	4-1	2-8	2-3	4 1-6	5-2	Tail-End	
Etc	(Even)	4	1-8	9	6	4-1	2-8	2-3	6	1-6	5-2	1-8	9	Tail-End	
		19AA (Tail-End Cables Only)	2	1-6	5-2	1-8	9	4 1-6	5-2	1-8	9	6 1-6	5-2	26	
			6	1-8	9	8 1-6	5-2	1-8	9	10	1-6	5-2	1-8	9	27
19AA (Tail-End Cables Only)	20AA	Etc	2	1-6	5-2	1-8	9	6*	4-1*	2-8*	2-3*	6 1-6	5-2	26	
			6	1-8	9	6*	4-1*	2-8*	2-3*	10	1-6	5-2	1-8	9	27
			10	6	4-1	2-8	2-3	4 1-6	5-2	1-8	9	6	4-1	28	
			4	2-8	2-3	8 1-6	5-2	1-8	9	6	4-1	2-8	2-3	29	

Fig. 9A - Change From 25 Trunks to 27 or 29 Trunks - 80, 160, or 320 Selectors - Plans 19AA and 20AA. Added Trunks in Odd Numbered Subgroups Replace Certain Trunks in Even Numbered Subgroups. Added and Displaced Trunks of the Even Numbered Subgroups Are Assigned to Added Tail-End Cables. "*" Indicates Connections Changed From the Next Lower Numbers of Trunks. If After Such a Transition the Number of Trunks Increases Still Further Within the Same Range of Five Trunks, the Assignments to Tail-End Cables Shall Be Made to Conform Essentially With the Arrangement for the New Size With the Least Possible Rearrangement. The Latter Part of This Figure Indicates the General Procedure for Accomplishing This. If Further Growth to 31, 33, or 35 Trunks Should Be Required, Trunks of One or More "Odd" Subgroups May Be Displaced By Added Trunks of Six Other "Odd" or "Even" Subgroups, in General Conformance With Plans per Fig. 11A, 11B, and 11C. Any Further Growth Shall Be Accomplished By Complete Rearrangement to New Regular Plans

Change From Plan	To Plan	Trunks in Cable										Cable No.			
		1	2	3	4	5	6	7	8	9	10				
31	32AA	(Odd)	1-1	1-5	2-1	3-5	2-2	3-1	4-1	2-3*	9	10	1,6 Etc		
			2-5	2-4	7	4-2	5-2	1-3	3-2*	3-3	1-6	8	2,7 Etc		
			3-4*	1-4	5-1	6	2-6	1-2*	3-6*	5-1	1-4	3-4*	3,8 Etc		
							(2-6)	(6)							
		(Even)	1-1	1-5	2-1	3-5	2-2	3-1	4-1	2-3*	9	10	4,9 Etc		
			2-5	2-4	7	4-2	5-2	1-3	3-2*	3-3	1-6	8	5,10 Etc		
		2	1-2	2-6	3-6	6	4	1-2	2-6	3-6	6	6	1-2	2-6	Tail-End
		6	3-6	6	8	1-2	2-6	3-6	6	10	1-2	2-6	3-6	6	Tail-End
	31	33AA	(Odd)	1-1	1-5	2-1	3-5	2-2	3-1	4-1	2-3	5-2*	10	1,6 Etc	
				2-5	2-4	7	4-3	5-3	1-3	3-2	3-3	1-6	8	2,7 Etc	
3-4				1-4	5-1	6	2-6	1-2	3-6	4-2*	9*	3-4	3,8 Etc		
									(5-1)	(1-4)					
(Even)			1-1	1-5	2-1	3-5	2-2	3-1	4-1	2-3	5-2*	10	4,9 Etc		
			2-5	2-4	7	4-3	5-3	1-3	3-2	3-3	1-6	8	5,10 Etc		
		2	1-2	2-6	3-6	6	4-2	5-1	9	1-4	4	1-2	2-6	Tail-End	
		4	3-6	6	4-2	5-1	9	1-4	6	1-2	2-6	3-6	6	Tail-End	
	6	4-2	5-1	9	1-4	8	1-2	2-6	3-6	6	4-2	5-1	Tail-End		
	8	9	1-4	10	1-2	2-6	3-6	6	4-2	5-1	9	1-4	Tail-End		
	Etc														

Fig. 9B - Change From 25 Trunks to 27 or 29 Trunks - 60, 120, or 240 Selectors - Plans 32AA and 33AA. Added Trunks in Odd Numbered Subgroups Replace Certain Trunks in Even Numbered Subgroups. Added and Displaced Trunks of Even Numbered Subgroups Are Assigned to Added Tail-End Cables. "*" Indicates Connections Changed From the Next Lower Numbers of Trunks. If After Such a Transition the Number of Trunks Increases Still Further Within the Same Range of Five Trunks, the Assignments to Tail-End Cables Shall Be Made to Conform Essentially With the Arrangement for the New Size With the Least Possible Rearrangement. The General Procedure for Accomplishing This As Indicated in the Latter Part of Fig. 9A Shall Be Followed in This Case. If Further Growth to 31, 33, or 35 Trunks Should Be Required, Trunks of One or More "Odd" Subgroups May Be Displaced By Added Trunks of Six Other "Odd" or "Even" Subgroups Maximum for Each Such "Odd" Subgroup, in General Conformance With Plans per Fig. 11A, 11B, or 11C. Any Further Growth Shall Be Accomplished By Complete Rearrangements to New Regular Plans

FORMER SUBGROUPS ON CABLES PRIOR TO REVISION	TRUNKS IN CABLE										CABLE NO.		
	1	2	3	4	5	6	7	8	9	10			
(1)	1	1	2	3	5	1	4	8	5	10	1		
(1)	1 ⁽¹⁾	2	3	7	6	5	1	4	2	4	3	2	
(1)(F1)		3	2	4	9	5	5	9	4	2	3	3	
(2)	2	1	1	2	3	5	1	4	8	5	10	4	
(2)	2 ⁽²⁾	2	3	7	6	5	1	4	2	4	3	5	
(2)(F1)	3 ^(F1)	1	1	2	3	5	1	4	8	5	10	6	
(3)		1	1	2	3	5	1	4	8	5	10	7	
(3)	4 ⁽³⁾	2	3	7	6	5	1	4	2	4	3	8	
(3)(F1)		3	2	4	9	5	5	9	4	2	3	9	
(4)		1	1	2	3	5	1	4	8	5	10	10	
(4)	5 ⁽⁴⁾	2	3	7	6	5	1	4	2	4	3	11	
(4)(F1)	3 ^(F1)	2	3	7	6	5	1	4	2	4	3	12	
(5)		1	1	2	3	5	1	4	8	5	10	13	
(5)	6 ⁽⁵⁾	2	3	7	6	5	1	4	2	4	3	14	
(5)(F1)		3	2	4	9	5	5	9	4	2	3	15	
(6)		1	1	2	3	5	1	4	8	5	10	16	
(6)	7 ⁽⁶⁾	2	3	7	6	5	1	4	2	4	3	17	
(6)(F1)	3 ^(F1)	3	2	4	9	5	8 ^(F2)	5	9	4	2	3	18
(7)		1	1	2	3	5	1	4	8	5	10	19	
(7)	9 ⁽⁷⁾	2	3	7	6	5	1	4	2	4	3	20	
(7)(F1)		3	2	4	9	5	5	9	4	2	3	21	
(8)		1	1	2	3	5	1	4	8	5	10	22	
(8)	10 ⁽⁸⁾	2	3	7	6	5	1	4	2	4	3	23	
(8)(F1)	8 ^(F2)	1	1	2	3	5	1	4	8	5	10	24	
(9)		1	1	2	3	5	1	4	8	5	10	25	
(9)	11 ⁽⁹⁾	2	3	7	6	5	1	4	2	4	3	26	
(9)(F1)		3	2	4	9	5	5	9	4	2	3	27	
(10)		1	1	2	3	5	1	4	8	5	10	28	
(10)	12 ⁽¹⁰⁾	2	3	7	6	5	1	4	2	4	3	29	
(10)(F2)	8 ^(F2)	2	3	7	6	5	1	4	2	4	3	30	

Fig. 10 - Change from 27 or 29 Trunks to 21, 23, or
or 25 Trunks - 40, 80, 160, or 320
Selectors on 25 Trunks Illustrated -
Plans 18B - 5 Cycles of 2 Existing sub-
groups each. If existing fill-in sub-
groups are not available for indicated
subgroups 3 and 8, these subgroups may
consist of new or existing fundamental
subgroups (preferably a final subgroup
in either case). The numbers assigned
to subgroups 3 and 8 are typical only.
See Paragraph 4.10.

FORMER SUBGROUPS ON CABLES PRIOR TO REVISION	TRUNKS IN CABLE										CABLE NO.	
	1	2	3	4	5	6	7	8	9	10		
(1)	1	1	2	3	5	1	4	8	1	10	1	
(1)	1(1)	2	3	7	2	1	1	4	2	2	3	2
(1)(F1)		3	2	4	9	5	1	1	6	2	4	3
(2)		1	1	2	3	5	1	4	8	1	10	4
(2)	2(2)	2	3	7	2	1	1	4	2	2	3	5
(2)(F1)		3	2	4	9	5	1	1	6	2	4	6
(3)	1(1)	2	F1(F)3	1	2	1	1	10	2	4	2	7
(3)		2	3	7	2	1	1	4	2	2	3	8
(3)(F1)	3(3)	3	2	4	9	5	1	1	6	2	4	9
(4)		1	1	2	3	5	1	4	8	1	10	10
(4)		2	F1(F)6	1	3	1	2	4	2	8	2	11
(4)(F1)		3	2	4	9	5	1	1	6	2	4	12
(5)	4(5)	1	1	2	3	5	1	4	8	1	10	13
(5)		2	3	7	2	1	1	4	2	2	3	14
(5)(F1)		2	F1(F)4	1	3	1	2	5	2	9	6	15
(6)	5(6)	1	1	2	3	5	1	4	8	1	10	16
(6)		2	3	7	2	1	1	4	2	2	3	17
(6)(F1)		3	2	4	9	5	1	1	6	2	4	18
(7)		1	1	2	3	5	1	4	8	1	10	19
(7)	6(7)	2	3	7	2	1	1	4	2	2	3	20
(7)(F1)		3	2	4	9	5	1	1	6	2	4	21

Fig. 11 - Change from 27 or 29 Trunks to 31, 33, or 35 Trunks - 80, 160 or 320 Selectors on 31 Trunks Illustrated - Plan 21A - One Cycle of 7 Existing Subgroups. Existing subgroup 4 may be cross-connected as a new fundamental or fill-in subgroup. If other subgroups are to be used for new subgroup F1, existing subgroup F1 may be cross-connected as a new fundamental subgroup.

Former Sub-groups on Cables Prior to Revision	Trunks in Cable										Cable No.		
	1	2	3	4	5	6	7	8	9	10			
(1)	1 (1)	1-1	1-5	2-1	3-3	5-1	1-3	4-2*	8	1-2	10	1	
(1)		2-5	3-1	7	2-4	1-4	1-7	4-3	2-7	2-6	3-4	2	
(1) (F1)		3-2	2-3	4-1	9	5-2	1-6	1-8	6	2-8	4-4*	3	
(2)											4		
(2)	2 (2)	Same As 1 (1)										5	
(2) (F1)												6	
(3)		2-2*	1-5	2-1	3-3	5-1	1-3	4-2*	8	1-2	1	2-2*	7
(3)	5	2-2*	3 (3) 3-1	7	2-4	1-4	1-7	4-3	2-7	2-6	6	2-2*	8
(3) (F1)	7	2-2*	2-3	4-1	9	5-2	1-6	1-8	6	2-8		2-2*	9
(4)											10		
(4)	4 (4)	Same As 1 (1)										11	
(4) (F1)												12	
(5)											13		
(5)											14		
(5) (F1)	5 (5)	Same As 1 (1)										15	
(6)											16		
(6)	6 (6)	Same As 1 (1)										17	
(6) (F1)												18	
(7)											19		
(7)	7 (7)	Same As 1 (1)										20	
(7) (F1)												21	
(8)											22		
(8)	8 (F1)	Same As 1 (1)										23	
(8)												24	
		2-2	3 (3) 1-1	10	3-2	2-5	3-4	4-4			3 (3) 2-2	25	

Fig. 11A - Change From 27 or 29 Trunks to 31 Trunks - 40, 80, 160, or 320 Selectors - Plan 21AA. "*" Indicates Connections Changed From Plan 20 for 29 Trunks. Seven Fundamental and One Fill-In Existing Subgroup. Third Subgroup Trunks Displaced for Assignment of Additional Trunks of the Two Preceding and Four Succeeding Subgroups. Displaced and Added Trunks of This Third Subgroup Are Assigned to Tail-End Cable, Following the Recross-connected F1 Subgroup As Fundamental Subgroup 8. With More Than Seven Fundamental Subgroups, the Tenth, Seventeenth, Etc, Subgroups Shall Be Utilized, As Required, for the Assignment of Added Trunks of a Maximum of Six Other Subgroups Each. See Fig. 11D

Former Subgroups On Cables Prior To Revision	Trunks in Cable										Cable No.		
	1	2	3	4	5	6	7	8	9	10			
(1)	1-1	1-5	2-1	3-5	5-1	1-3	3-2*	8	1-2	10	1		
(1)	2-5	3-1	7	2-4	1-4	1-7	3-4*	2-7	2-6	3-7	2		
(1)	3-3	2-3	4-1	9	5-2	1-6	1-8	6	2-8	3-6	3		
(2)											4		
(2)	2(2)	Same As 1(1)									5		
(2)											6		
(3)	2-2	4-2*	3-8*	3-5	5-1	1-3	3-2*	3-8*	4-2*	2-2	7		
(3)	5	2-2	4-2*	3-8*	2-4	1-4	1-7	3-4*	6	3-8*	4-2*	2-2	8
(3)	7	2-2	4-2*	3-8*	9	5-2	1-6	1-8	3-8*	4-2*	2-2	9	
(4)											10		
(4)	4(4)	Same As 1(1)									11		
(4)											12		
(5)											13		
(5)	5(5)	Same As 1(1)									14		
(5)											15		
(6)											16		
(6)	6(6)	Same As 1(1)									17		
(6)											18		
(7)											19		
(7)	7(7)	Same As 1(1)									20		
(7)											21		
(8)											22		
(8)	8(F1)	Same As 1(1)									23		
(8)											24		
	2-2	4-2*	3-8*	3-3	2-8*	2-3*	4-1*	3-8	4-2	2-2	25		
	1-1	1-5	2-1	6	3-6	3-7	2-6	8	1-2	10	26		
	3(3)	2-5	3-1	7				2-7			27		

Fig. 11B - Change From 27 or 29 Trunks to 33 Trunks - 40, 80, 160, or 320 Selectors - Plan 22AA. "*" Indicates Connections Changed From Plan 21AA for 31 Trunks. Same Basis of Change As Described in Fig. 11A. Two Additional Cables, 26 and 27, Are Required for Assignment of Displaced and Added Trunks of Subgroup 3

Former Subgroups On Cables Prior To Revision	Trunks in Cable										Cable No.		
	1	2	3	4	5	6	7	8	9	10			
(1)	1-1	1-5	2-1	3-5	4-4*	1-3	3-2	8	1-2	10	1		
(1)	2-5	3-1	7	2-4	1-4	4-2*	3-4	2-7	2-6	3-7	2		
(1)	3-2	2-3	4-1	9	5-2	1-6	1-8	6	2-8	3-6	3		
(2)											4		
(2)	2 (2) _____ Same As 1 (1)										5		
(2)											6		
(3)	2-2	4-3	3-8	1-7*	5-1*	5-1*	1-7*	3-8	4-3	2-2	7		
(3)	5	2-2	4-3	3-8	1-7*	5-1*	6	5-1*	1-7*	3-8	4-3	2-2	8
(3)	7	2-2	4-3	3-8	1-7*	5-1*	5-1*	1-7*	3-8	4-3	2-2	9	
(4)											10		
(4)	4 (4) _____ Same As 1 (1)										11		
(4)											12		
(5)											13		
(5)	5 (5) _____ Same As 1 (1)										14		
(5)											15		
(6)											16		
(6)	6 (6) _____										17		
(6)											18		
(7)											19		
(7)	7 (7) _____ Same As 1 (1)										20		
(7)											21		
(8)											22		
(8)	8 (F1) _____ Same As 1 (1)										23		
(8)											24		
	2-2	4-3	3-8	1-7*	5-1*	5-1*	1-7*	3-8	4-3	2-2	25		
	1-1	1-5	2-1	3-5*	4-4*	1-3*	3-2*	8	1-2	10	26		
	2-5	3-1	7	2-4	1-4	4-2	3-4	2-7	2-6	3-7	27		
	3-2	2-3	4-1	9	5-2	1-6	1-8	6	2-8	3-6	28		

Fig. 11C - Change From 27 or 29 Trunks to 35 Trunks - 80, 160, or 320 Selectors - Plan 23AA. "*" Indicates Connection Changes From Plan 22AA for 33 Trunks. Three Additional Cables, 26, 27, and 28 Are Required for Assignment of Displaced and Added Trunks of Subgroup 3. Note That in Fig. 11A Through 11C Assignments on Tail-End Cables Are, Insofar As Possible, in Accordance With the Fundamental Subgroup Patterns for the New Sizes of Subgroups. This Same Principle Shall Be Followed With Greater Numbers of Displaced Subgroups (See Fig. 11D), and for Subgroups of 60, 120, or 240 Selectors. If Further Growth to 37 or 39 Trunks Should Be Required, Subgroups 2, 5, 7, 8, Etc, May Be Extended Into Cable Circuits of Cables 7, 8, 9, and 25, Respectively, in General Conformance With Plans per Fig. 13A and 13B. Any Further Growth Shall Be Accomplished by Complete Rearrangements to New Regular Plans

Range Of Change	Trunks in Cable										Cable No.			
	1	2	3	4	5	6	7	8	9	10				
Change From 29 Trunks To 31 Trunks Part Of Plan 21AA	22 (22) _____ Same As (1) In Fig. 11A										64			
	_____										65			
	_____										66			
	2-2	3 (3)	2-5	3-2	17 (17)	1-1	3-2	3-4	10	3 (3)	2-2	3-4	2-2	67
	23 (F1) _____ Same As (1) In Fig. 11A										68			
_____										69				
_____										70				
3 (3) 1-1 10 (10) 1-1 2-2 17 (17) 2-2 2-5 10 (10) 2-5 3-2 3-4 10 3 (3) 10										71				
Change From 31 Trunks To 33 Trunks Part Of Plan 22AA	22 (22) 2-2 4-2* 3-8* 17 (17) 1-1 3-3 2-1* 7* 3-8* 4-2* 2-2										67			
	_____										68			
	23 (F1) _____ Same As (1) In Fig. 11B										69			
	_____										70			
	1-1	1-5*	2-1*	2-2	3-1*	4-1*	3-6*	8*	1-2*	10				71
	2-5	3-1	7	17 (17)	1-2	2-3	3-7	6	3 (3)	2-7	2-6	3-7	72	
	3-3	2-3	4-1		1-5	2-5	4-2	10	6	2-8	3-6		73	
	2-2	4-2	3-8		2-6	3-8	2-7	8	3-8	4-2	2-2		74	
	1-1	1-5	2-1		2-8	2-3	3-3	6	8	1-2	10		75	
	2-5	3-1	7		2-6	2-8	4-1		2-7	2-6	3-7		76	
Change From 33 Trunks To 35 Trunks Part Of Plan 23AA	22 (22) 2-2 4-3 3-8 1-7* 5-1* 5-1* 1-7* 3-8 4-3 2-2										67			
	_____										68			
	23 (F1) _____ Same As (1) In Fig. 11C										69			
	_____										70			
	1-1	1-5	2-1	3-5*	4-4*	1-3*	3-2*	8	1-2	10			71	
	2-5	3-1	7	2-4*	1-4*	4-2*	3-4*	2-7	2-6	3-7			72	
	3-3	2-3	4-1	9*	5-2*	1-6*	1-8*	6	2-8	3-6			73	
	2-2	4-3	3-8	1-7*	5-1*	5-1*	1-7*	3-8	4-3	2-2			74	
	10 (10) _____ Same As 3 (3)*										75			
	_____										76			
_____										77				
17 (17) _____ Same As 3 (3)										78				
_____										79				
_____										80				
2-2	4-2	3-8	1-7	5-1								81		

Fig. 11D - Connections to Tail-End Cables Only for Change of Twenty-Three, 29-Trunk Subgroups per Plan 20 to 31-, 33-, and 35-Trunks Subgroups, With Trunks of Subgroups 3, 10, and 17 Reassigned As Required to Added Tail-End Cables Part of Plans 21AA, 22AA, and 23AA. "*" Indicates Changes From 31 and 33 Trunks to 33 and 35 Trunks, Respectively. This Same Principle of Assigning As Great a Variety, As Possible, of Different Choice Trunks to the Fill-In Portion of Each Cable Shall Be Employed for Other Numbers of Subgroups. Use the Specific Arrangements Shown Hereon Wherever Possible

FORMER SUBGROUPS ON CABLES PRIOR TO REVISION	TRUNKS IN CABLE										CABLE NO.	
	1	2	3	4	5	6	7	8	9	10		
(1)	1	1	2	3	5	1	2	8	1	10	1	
(1)	1 (1)	2	3	7	2	1	1	4	2	2	3	2
(1)		3	2	4	9	5	1	1	6	2	FI(F1) 1	3
(1)(F1)(2)	2 (F2)	1	1	2	3	5	1	2	8	1	10	4
(2)		1	1	2	3	5	1	2	8	1	10	5
(2)	2 (2)	2	3	7	2	1	1	4	2	2	3	6
(2)		3	2	4	9	5	1	1	6	2	FI(F1) 8	7
(3)		1	1	2	3	5	1	2	8	1	10	8
(3)	3 (3)	2	3	7	2	1	1	4	2	2	3	9
(3)		3	2	4	9	5	1	1	6	2	FI(F1) 1	10
(3)(F1)(4)	2 (F2)	2	3	7	2	1	1	2	2	2	3	11
(4)		1	1	2	3	5	1	2	8	1	10	12
(4)	4 (4)	2	3	7	2	1	1	4	2	2	3	13
(4)		3	2	4	9	5	1	1	6	2	FI(F1) 5	14
(5)		1	1	2	3	5	1	2	8	1	10	15
(5)	5 (5)	2	3	7	2	1	1	4	2	2	3	16
(5)		3	2	4	9	5	1	1	6	2	FI(F1) 1	17
(5)(F1)(6)	2 (F2)	3	2	4	9	5	1	1	6	2	FI(F1) 4	18
(6)		1	1	2	3	5	1	2	8	1	10	19
(6)	6 (6)	2	3	7	2	1	1	4	2	2	3	20
(6)		3	2	4	9	5	1	1	6	2	FI(F1) 2	21
(7)		1	1	2	3	5	1	2	3	1	10	22
(7)	7 (7)	2	3	7	2	1	1	4	2	2	3	23
(7)		3	2	4	9	5	1	1	6	2	FI(F1) 3	24
(7)(F1)(F2)(8)	8 (12)	1	1	2	3	5	1	2	8	1	10	25
(8)		1	1	2	3	5	1	2	8	1	10	26
(8)	9 (8)	2	3	7	2	1	1	4	2	2	3	27
(8)		3	2	4	9	5	1	1	6	2	FI(F1) 2	28
(9)		1	1	2	3	5	1	2	8	1	10	29
(9)	10 (9)	2	3	7	2	1	1	4	2	2	3	30
(9)		3	2	4	9	5	1	1	6	2	FI(F1) 7	31
(9)(F2)(10)	8 (12)	2	3	7	2	1	1	4	2	2	3	32
(10)		1	1	2	3	5	1	2	8	1	10	33
(10)	11 (10)	2	3	7	2	1	1	4	2	2	3	34
(10)		3	2	4	9	5	1	1	6	2	FI(F1) 1	35
(11)		1	1	2	3	5	1	2	8	1	10	36
(11)	12 (11)	2	3	7	2	1	1	4	2	2	3	37
(11)		3	2	4	9	5	1	1	6	2	FI(F1) 4	38
(11)(F2)	8 (12)	3	2	4	9	5	1	1	6	2	FI(F1) 1	39
(12)		3	2	10	2	3	1	2	1	5	3	40
(12)	FI(F1)	6	2	9	2	1	2					41

indicated subgroup 2, this subgroup may consist of a new or existing fundamental subgroup (preferably a final subgroup). The numbers assigned to subgroups 2 and 8 are typical only. See Paragraph 4.10.

Fig. 12 - Change from 31, 33 or 35 to 27 or 29 Trunks - 80, 160, or 320, Selectors on 29 Trunks Illustrated - Plan 20B - 6 Cycles of 2 Existing Subgroups Each. Method of Completing Assignment of Fill-in Subgroup to Tail-end Cables. If an existing fill-in subgroup is not available for

FORMER SUBGROUPS ON CABLES PRIOR TO REVISION	TRUNKS IN CABLE										CABLE NO.	
	1	2	3	4	5	6	7	8	9	10		
(1)	1	1	2	3	4	1	5	8	1	10	1	
(1)	1 (1)	2	3	7	2	1	4	3	2	5	3	2
(1)		3	2	4	9	5	1	1	6	2	3	3
(1)(2)		2	4	3	1	5	2	3	FI (3) 2	10	1	4
(2)	2 (2)	1	1	2	3	4	1	5	8	1	10	5
(2)		2	3	7	2	1	4	3	2	5	3	6
(2)		3	2	4	9	5	1	1	6	2	3	7
(3)	6 (7)	2	4	3	1	5	2	3	FI (3) 3	2	5	8
(3)		1	1	2	3	4	1	5	8	1	10	9
(3)	3 (4)	2	4	3	1	5	2	3	FI (3) 4	3	2	10
(3)(4)		FI (3) 3	6	1	3	2	5	1	3	4	2	11
(4)	3 (4)	1	1	2	3	4	1	5	8	1	10	12
(4)		2	3	7	2	1	4	3	2	5	3	13
(4)		3	2	4	9	5	1	1	6	2	3	14
(5)	4 (5)	1	1	2	3	4	1	5	8	1	10	15
(5)		2	3	7	2	1	4	3	2	5	3	16
(5)		3	2	4	9	5	1	1	6	2	3	17
(5)(6)	5 (6)	2	4	3	1	5	2	3	FI (3) 5	1	4	18
(6)		1	1	2	3	4	1	5	8	1	10	19
(6)	6 (7)	2	3	7	2	1	4	3	2	5	3	20
(6)		3	2	4	9	5	1	1	6	2	3	21
(7)		2	4	3	1	5	2	3	FI (3) 2	5	1	22
(7)	7 (8)	2	3	7	2	1	4	3	2	5	3	23
(7)		3	2	4	9	5	1	1	6	2	3	24
(7)(8)	FI (3)	7	2	3	3	2	5	1	3	4	2	25
(8)		1	1	2	3	4	1	5	8	1	10	26
(8)	8	2	3	7	2	1	4	3	2	5	3	27
(8)		3	2	4	9	5	1	1	6	2	3	28
FI (3)	FI (3)	9	3	2	1	4	3	3	1	4	2	29
		8	1	3	2	5	1					30

Fig. 13 - Change from 31, 33, or 35 Trunks to 37 or 39 Trunks - 80, 160 and 320 Selectors, on 37 Trunks Illustrated - Plan 38A - 2 Cycles of 4 Existing Subgroups Each. If other subgroups are to be used as fill-in subgroups, existing subgroup 3 may be cross-connected as a new 3rd or final fundamental subgroup. A final existing subgroup in any cycle other than the 7th subgroup as illustrated may be cross-connected as the indicated new 6th fundamental subgroup.

Change From	To	Trunks in Cable										Cable No.			
		1	2	3	4	5	6	7	8	9	10				
23 For 35 Trunks	38AA For 37 Trunks, Etc	(Odd)	1-1	1-5	2-1	3-5	4-4	1-3	5-2*	8	1-2	10	1,8 Etc		
			2-5	3-1	7	2-4	1-4	4-2	3-4	2-7	5-4*	3-7	2,9 Etc		
			3-3	2-3	4-1	9	5-3	1-6	1-8	6	2-8	3-6	3,10 Etc		
			2-2	4-3	3-8	1-7	5-1	2-6*	3-2*	3-8	4-3	2-2	4,11 Etc		
		(Even)	1-1	1-5	2-1	3-5	4-4	1-3	5-2*	8	1-2	10	5,12 Etc		
			2-5	3-1	7	2-4	1-4	4-2	3-4	2-7	5-4*	3-7	6,13 Etc		
			3-3	2-3	4-1	9	5-3	1-6	1-8	6	2-8	3-6	7,14 Etc		
		2	2-6	5-1	3-2	1-7	4	2-6	5-1	3-2	1-7	6	2-6	5-1	Tail-End
		6	3-2	1-7	8	2-6	5-1	3-2	1-7	10	2-6	5-1	3-2	1-7	Tail-End
		23 For 35 Trunks	39AA For 39 Trunks Etc	(Odd)	1-1	1-5	2-1	3-5	4-6	1-3	5-2	8	4-2*	10	1,8 Etc
2-5	3-1				7	2-4	1-4	4-3	3-4	2-7	5-4	3-7	2,9 Etc		
3-3	2-3				4-1	9	5-3	1-6	1-8	4-5*	2-8	3-6	3,10 Etc		
2-2	4-4				3-8	1-7	5-1	2-6	3-2	1-2*	6*	2-2	4,11 Etc		
(Even)	1-1			1-5	2-1	3-5	4-6	1-3	5-2	8	4-2*	10	5,12 Etc		
	2-5			3-1	7	2-4	1-4	4-3	3-4	2-7	5-4	3-7	6,13 Etc		
	3-3			2-3	4-1	9	5-3	1-6	1-8	4-5*	2-8	3-6	7,14 Etc		
2	2-6			5-1	3-2	7-1	1-2	3-8	6	4-4	4	2-6	5-1	Tail-End	
4	3-2			1-7	1-2	3-8	6	4-4	6	2-6	5-1	3-2	1-7	Tail-End	

Fig. 13A - Change From 35 Trunks to 37 or 39 Trunks - 80, 160, or 320 Selectors - Plans 38AA and 39AA. Added Trunks in Odd Numbered Subgroups Replace Certain Trunks in Even Numbered Subgroups. Added and Displaced Trunks of the Even Numbered Subgroups Are Assigned to Added Tail-End Cables. "*" Indicates Connections Changed From the Next Lower Numbers of Trunks. If After Such a Transition the Number of Trunks Increases Still Further Within the Same Range of Five Trunks, the Assignments to Tail-End Cables Shall Be Made to Conform Essentially With the Arrangement for the New Size With the Least Possible Rearrangement. The General Procedure for Accomplishing This Indicated in the Latter Part of Fig. 9A Shall Be Followed in This Case

Change From Plan	To Plan	Trunks in Cable										Cable No.	
		1	2	3	4	5	6	7	8	9	10		
36 For 35 Trunks	43AA For 37 Trunks	(Odd)	1-1	1-6*	2-1	1-8*	2-2	3-1	4-1	2-3	4-2	10	1,8 Etc
			2-5	1-2*	7	4-5	1-12*	1-5	3-2	3-3	1-11	8	2,9 Etc
			3-4	1-7	5-1	6	2-6	1-3	3-6	4-3	1-10	4-6	3,10 Etc
			5-2	1-9	4-4	2-4	9	1-4* (9)	2-4	3-5* (4-4)	1-9	5-2	4,11 Etc
		(Even)	1-1	1-6*	2-1	1-8*	2-2	3-1	4-1	2-3	4-2	10	5,12 Etc
			2-5	1-2*	7	4-5	1-12*	1-5	3-2	3-3	1-11	8	6,13 Etc
			3-4	1-7	5-1	6	2-6	1-3	3-6	4-3	1-10	4-6	7,14 Etc
		2	1-4	9	3-5	4-4	4 1-4	9	3-5	4-4	6 1-4	9	Tail-End
		6	3-5	4-4	8 1-4	9	3-5	4-4	10 1-4	9	3-5	4-4	Tail-End
		36 For 35 Trunks	44AA For 39 Trunks	(Odd)	1-1	1-6	2-1	1-8	2-2	3-1	5-4*	2-3	4-2
2-5	1-2				7	4-5	1-12	1-5	3-2	3-3	5-2*	8	2,9 Etc
3-4	1-7				5-1	6	2-6	1-3	3-6	4-3	1-10	4-6	3,10 Etc
5-3	1-9				4-4	2-4	9	1-4	4-1* (2-4)	3-5	1-9	1-11* (5-2)	4,11 Etc
(Even)	1-1			1-6	2-1	1-8	2-2	3-1	5-4*	2-3	4-2	10	5,12 Etc
	2-5			1-2	7	4-5	1-12	1-5	3-2	3-3	5-2*	8	6,13 Etc
	3-4			1-7	5-1	6	2-6	1-3	3-6	4-3	1-10	4-6	7,14 Etc
2	1-4			9	3-5	4-4	4-1	2-4	1-11	5-2	4 1-4	9	Tail-End
4	3-5			4-4	4-1	2-4	1-11	5-2	6 1-4	9	3-5	4-4	Tail-End

Fig. 13B - Change From 35 Trunks to 37 or 39 Trunks - 120 or 240 Selectors - Plans 43AA and 44AA. Added Trunks in Odd Numbered Subgroups Replace Certain Trunks in Even Numbered Subgroups. Added and Displaced Trunks of the Even Numbered Subgroups Are Assigned to Added Tail-End Cables. "*" Indicates Connections Changed From the Next Lower Numbers of Trunks. If After Such a Transition the Number of Trunks Increases Still Further Within the Same Range of Five Trunks, the Assignments to Tail-End Cables Shall Be Made to Conform Esstentially With the Arrangement for the New Size, With the Least Possible Rearrangement. The General Procedure for Accomplishing This Indicated in the Latter Part of Fig. 9A Shall Be Followed in This Case

FORMER SUBGROUPS ON CABLES PRIOR TO REVISION	TRUNKS IN CABLE										CABLE NO.
	1	2	3	4	5	6	7	8	9	10	
(1)	1	1	2	3	4	1	3	8	1	10	1
(1)	2	3	7	2	1	4	3	2	2	3	2
(1)	3	2	4	9	5	1	1	6	2	3	3
(1)(F1)	2	4	3	1	5	5	1	3	4	2	4
(2)	1	1	2	3	4	1	3	8	1	10	5
(2)	2	3	7	2	1	4	3	2	2	3	6
(2)	3	2	4	9	5	1	1	6	2	3	7
(2)(F1)	3(F1)	1	1	2	3	4	1	3	8	1	10
(3)	1	1	2	3	4	1	3	8	1	10	9
(3)	2	3	7	2	1	4	3	2	2	3	10
(3)	3	2	4	9	5	1	1	6	2	3	11
(3)(F1)	2	4	3	1	5	5	1	3	4	2	12
(4)	1	1	2	3	4	1	3	8	1	10	13
(4)	2	3	7	2	1	4	3	2	2	3	14
(4)	3	2	4	9	5	1	1	6	2	3	15
(4)(F1)	3(F1)	2	3	7	2	1	4	3	2	3	16
(5)	1	1	2	3	4	1	3	8	1	10	17
(5)	2	3	7	2	1	4	3	2	2	3	18
(5)	3	2	4	9	5	1	1	6	2	3	19
(5)(F1)	2	4	3	1	5	5	1	3	4	2	20
(6)	1	1	2	3	4	1	3	8	1	10	21
(6)	2	3	7	2	1	4	3	2	2	3	22
(6)	3	2	4	9	5	1	1	6	2	3	23
(6)(F1)	3(F1)	3	2	4	9	5	1	1	6	2	3
(7)	1	1	2	3	4	1	3	8	1	10	25
(7)	2	3	7	2	1	4	3	2	2	3	26
(7)	3	2	4	9	5	1	1	6	2	3	27
(7)(F1)	2	4	3	1	5	5	1	3	4	2	28
(8)	1	1	2	3	4	1	3	8	1	10	29
(8)	2	3	7	2	1	4	3	2	2	3	30
(8)	3	2	4	9	5	1	1	6	2	3	31
(8)(F1)	3(F1)	2	4	3	1	5	12 (ii)	5	1	3	4
(9)	1	1	2	3	4	1	3	8	1	10	33
(9)	2	3	7	2	1	4	3	2	2	3	34
(9)	3	2	4	9	5	1	1	6	2	3	35
(9)(F1)	2	4	3	1	5	5	1	3	4	2	36
(10)	1	1	2	3	4	1	3	8	1	10	37
(10)	2	3	7	2	1	4	3	2	2	3	38
(10)	3	2	4	9	5	1	1	6	2	3	39
(10)(F1)	3	2	4	9	5	1	1	6	2	3	40
(11)	1	1	2	3	4	1	3	8	1	10	41
(11)	3	2	4	9	5	1	1	6	2	3	42

Fig. 14 - Change from 37 or 39 Trunks to 31, 33, or 35 Trunks - 80, 160, or 320 Selectors on 35 Trunks Illustrated - Plan 23B - 5-1/2 Cycles of 2 Existing Subgroups Each. If an existing fill-in subgroup is not available for indicated subgroup 3, this subgroup may consist of an added or an existing fundamental subgroup (preferably a final subgroup). Similarly, indicated fundamental subgroup 12 may consist of another existing fill-in subgroup or an added or another existing fundamental subgroup (preferably a final subgroup). The numbers assigned to new subgroups 3 and 12 are typical only. See Paragraph 4.10

FORMER SUBGROUPS ON CABLES PRIOR TO REVISION	TRUNKS IN CABLE										CABLE NO.	
	1	2	3	4	5	6	7	8	9	10		
(1)	1	1	2	3	4	1	5	8	4	10	1	
(1)	2	3	7	2	1	4	3	2	5	4	2	
(1)	3	2	4	9	5	1	1	4	2	3	3	
(1)(F1)	2	4	3	1	5	2	3	1	6	4	4	
(2)	1	1	2	3	4	1	5	8	4	10	5	
(2)	2	3	7	2	1	4	3	2	5	4	6	
(2)	3	2	4	9	5	1	1	4	2	3	7	
(2)(F1)	2	4	3	1	5	2	3	1	6	4	8	
(3)	1(1) 3	FI(F1) 4	1	3	1	10	2	7	2	3	9	
(3)	2	3	7	2	1	4	3	2	5	4	10	
(3)	3	2	4	9	5	1	1	4	2	3	11	
(3)(F1)	3	FI(F1) 4	1	4	1	5	2	8	2	3	12	
(4)	1	1	2	3	4	1	5	8	4	10	13	
(4)	2	3	7	2	1	4	3	2	5	4	14	
(4)	3	2	4	9	5	1	1	4	2	3	15	
(4)(F1)	2	4	3	1	5	2	3	1	6	4	16	
(5)	1	1	2	3	4	1	5	8	4	10	17	
(5)	2	3	7	2	1	4	3	2	5	4	18	
(5)	3	2	4	9	5	1	1	4	2	3	19	
(5)(F1)	2	4	3	1	5	2	3	1	6	4	20	
(6)	1	1	2	3	4	1	5	8	4	10	21	
(6)	2	3	7	2	1	4	3	2	5	4	22	
(6)	3	2	4	9	5	1	1	4	2	3	23	
(6)(F1)	2	4	3	1	5	2	3	1	6	4	24	
(7)	5(5) 3	FI(F1) 4	1	4	2	6	3	5	3	3	25	
(7)	2	3	7	2	1	4	3	2	5	4	26	
(7)	3	2	4	9	5	1	1	4	2	3	27	
(7)(F1)	3	FI(F1) 3	1	4	1	5	3	4	2	3	28	
(8)	1	1	2	3	4	1	5	8	4	10	29	
(8)	2	3	7	2	1	4	3	2	5	4	30	
(8)	3	2	4	9	5	2	3	1	6	4	31	
(8)(F1)	2	4	3	1	5	1	1	4	2	3	32	
	3(3)	1	1	2	3	4	1	5	8	4	10	33
		2	4	3	1	5	2	3	1	6	4	34
	7(7)	1	1	2	3	4	1	5	8	4	10	35
		2	4	3	1	5	2	3	1	6	4	36
	FI(F1) 4	2	3	1	5	2	9	3	3		37	

Fig. 15 - Change From 37 or 39 Trunks to 41, 43, or 45 Trunks - 80, 160, or 320 Selectors on 41 Trunks Illustrated - Plan AOA - 2 Cycles of 4 Existing Subgroups Each. If other subgroups are to be used for fill-in subgroups, existing fill-in subgroup F1 may be cross-connected as a new fundamental subgroup.

FORMER SUBGROUPS ON CABLES PRIOR TO REVISION	TRUNKS IN CABLE										CABLE NO.	
	1	2	3	4	5	6	7	8	9	10		
(1)	1	1	2	3	4	1	5	8	4	10	1	
(1)	2	3	7	2	1	4	3	2	5	3	2	
(1)	3	2	4	9	5	1	1	4	2	3	3	
(1)	2	4	3	1	5	2	3	1	6	(10) 1	4	
(1)(F1)(2)	2 (F1)	1	1	2	3	4	1	5	8	4	10	5
(2)	1	1	2	3	4	1	5	8	4	10	6	
(2)	2	3	7	2	1	4	3	2	5	3	7	
(2)	3	2	4	9	5	1	1	4	2	3	8	
(2)	2	4	3	1	5	2	3	1	6	(10) 5	9	
(3)	1	1	2	3	4	1	5	8	4	10	10	
(3)	2	3	7	2	1	4	3	2	5	3	11	
(3)	3	2	4	9	5	1	1	4	2	3	12	
(3)	2	4	3	1	5	2	3	1	6	(10) 2	13	
(3)(F1)(4)	2 (F1)	2	3	7	2	1	4	3	2	5	3	14
(4)	1	1	2	3	4	1	5	8	4	10	15	
(4)	2	3	7	2	1	4	3	2	5	3	16	
(4)	3	2	4	9	5	1	1	4	2	3	17	
(4)	2	4	3	1	5	2	3	1	6	(10) 3	18	
(5)	1	1	2	3	4	1	5	8	4	10	19	
(5)	2	3	7	2	1	4	3	2	5	3	20	
(5)	3	2	4	9	5	1	1	4	2	3	21	
(5)	2	4	3	1	5	2	3	1	6	(10) 4	22	
(5)(F1)(6)	2 (F1)	3	2	4	9	5	1	1	4	2	3	23
(6)	1	1	2	3	4	1	5	8	4	10	24	
(6)	2	3	7	2	1	4	3	2	5	3	25	
(6)	3	2	4	9	5	1	1	4	2	3	26	
(6)	2	4	3	1	5	2	3	1	6	(10) 1	27	
(7)	1	1	2	3	4	1	5	8	4	10	28	
(7)	2	3	7	2	1	4	3	2	5	3	29	
(7)	3	2	4	9	5	1	1	4	2	3	30	
(7)	2	4	3	1	5	2	3	1	6	(10) 6	31	
(7)(F1)(8)	2 (F1)	2	4	3	1	5	2	3	1	6	(10) 2	32
(8)	1	1	2	3	4	1	5	8	4	10	33	
(8)	2	3	7	2	1	4	3	2	5	3	34	
(8)	3	2	4	9	5	1	1	4	2	3	35	
(8)	2	4	3	1	5	2	3	1	6	(10) 3	36	
(9)	1	1	2	3	4	1	5	8	4	10	37	
(9)	2	3	7	2	1	4	3	2	5	3	38	
(9)	3	2	4	9	5	1	1	4	2	3	39	
(9)	2	4	3	1	5	2	3	1	6	(10) 4	40	
(9)(F1)(10)	11 (MOD)	3	2	4	9	5	1	1	4	2	3	41
(10)	10 (10)	1	1	2	3	4	1	5	8	4	10	42
(10)	2	3	7	2	1	4	3	2	5		43	

Fig. 16 - Change from 41, 43, or 45 Trunks to 37 or 39 Trunks - 80, 160, or 320 Selectors on 39 Trunks illustrated - Plan 39B - 5 Cycles of 2 Existing Subgroups Each. If an existing fill-in subgroup is not available for indicated subgroup 2, this subgroup may consist of an added or an existing fundamental subgroup. The number assigned to this subgroup is typical only. See Paragraph 4.10. Subgroup 11 illustrates an example of a modified assignment of a final fundamental subgroup to connect a few of its trunks to fill-in positions. This subgroup may also consist of an existing fill-in subgroup or an added or other final existing fundamental subgroup.

INDEX AND TABLE FOR TRUNKS TO SELECTORS, TRUNKS, OR REPEATERS

Index and Table Showing the Graded Multiple Arrangements of Various Selector Groups of from 11 to 45 Trunks Outgoing to Other Selectors, Trunks, or Repeaters, and Cross-connecting Plans for Trunks to Other Selectors

MULTIPLE ARRANGEMENT		TRUNKS COMMON TO PART OF DIVISION						TRUNKS COMMON TO ALL DIVISIONS	CROSS-CONN. PLAN NO.
SELECTORS	TRUNKS	NUMBER OF DIVISIONS							
		1	2	3	4	6	8		
20	10							10	1
20	11	2						9	2
20	12	4						8	3
20	13	6						7	4
20	14	8						6	5
20	15	10						5	6
20	16	12						4	7
20	17	14						3	8
20	18	16						2	9
20	19	18						1	10
40	10							10	1
40	11		2					9	2
40	12		4					8	3
40	13		6					7	4
40	14		8					6	5
40	15		10					5	6
40	16	2	9					5	11
40	17	4	8					5	12
40	18	6	7					5	13
40	19	8	6					5	14
40	20	10	5					5	15
40	21	12	4					5	16
40	23	16	2					5	17
40	25	20						5	18
60	10							10	1
60	11			2				9	2
60	12			4				8	3
60	13			6				7	4
60	14			8				6	5
60	15			10				5	6
60	16		3	8				5	24
60	17		6	6				5	25
60	18		9	4				5	26
60	19		12	2				5	27
60	20		15					5	28
60	21	6	6	4				5	29
60	23	6	12					5	30
60	25	12	6	2				5	31
60	27	18		4				5	32
60	29	18	6					5	33
60	31	24		2				5	34
60	33	26	2					5	35
60	35	30						5	36
80	10							10	1
80	11				2			9	2
80	12				4			8	3
80	13				6			7	4
80	14				8			6	5
80	15				10			5	6
80	16		2		9			5	11
80	17		4		8			5	12
80	18		6		7			5	13
80	19		8		6			5	14
80	20		10		5			5	15
80	21		12		4			5	16
80	23		16		2			5	17
80	25		20					5	18
80	27	8	12		2			5	19
80	29	16	4		4			5	20
80	31	16	8		2			5	21
80	33	24			4			5	22
80	35	24	4		2			5	23

INDEX AND TABLE FOR TRUNKS TO SELECTORS, TRUNKS, OR REPEATERS (Contd)

Index and Table Showing the Graded Multiple Arrangements of Various Selector Groups of from 11 to 45 Trunks Outgoing to Other Selectors, Trunks, or Repeaters, and Cross-connecting Plans for Trunks to Other Selectors

MULTIPLE ARRANGEMENT		TRUNKS COMMON TO PART OF DIVISION						TRUNKS COMMON TO ALL DIVISIONS	CROSS-CONN. PLAN NO.
SELECTORS	TRUNKS	NUMBER OF DIVISIONS							
		1,2 or 4	2,4 or 8	3 or 6	4,8 or 16	6,12 or 24	8,16 or 32		
120	10							10	1
120	11					2		9	2
120	12					4		8	3
120	13					6		7	4
120	14					8		6	5
120	15					10		5	6
120	16				3	8		5	24
120	17				6	6		5	25
Also 120	18				9	4		5	26
240	19				12	2		5	27
120	20				15			5	28
120	21		6		6	4		5	29
120	23		6		12			5	30
120	25		12		6	2		5	31
120	27		18			4		5	32
120	29		18		6			5	33
120	31		24			2		5	34
120	33		26		2			5	35
120	35		30					5	36
160	10							10	1
160	11					2		9	2
160	12					4		8	3
160	13					6		7	4
160	14					8		6	5
160	15					10		5	6
160	16				2	9		5	11
160	17				4	8		5	12
Also 160	18				6	7		5	13
320	19				8	6		5	14
160	20				10	5		5	15
160	21				12	4		5	16
160	23				16	2		5	17
160	25				20			5	18
160	27		8		12	2		5	19
160	29		16		4	4		5	20
160	31		16		8	2		5	21
160	33		24			4		5	22
160	35		24		4	2		5	23
120 or 240	37	12	18			2		5	43
"	39	12	18	4				5	44
"	41	12	24					5	45
"	43	24	6	8				5	46
"	45	24	12	4				5	47
80,160 or 320	37	24	8					5	38
"	39	28	6					5	39
"	41	32	4					5	40
"	43	36	2					5	41
"	45	40						5	42

INDEX AND TABLE SHOWING THE GRADED MULTIPLE ARRANGEMENTS USED IN CONNECTION WITH TRUNK GROUPS FROM SELECTORS TO CONNECTORS OF FROM 11 TO 31 TRUNKS

For Local Rotary Hunting Connector Groups Arranged for PBXs of More Than 10 Trunks Ignore the Trunk Designations on the Multiple Arrangement Figures

MULT. ARRANGEMENT		TOTAL TRKS.	TRUNKS COMMON TO PART OF DIVISION											TRUNKS COMMON TO ALL LOCAL & TOLL DIVISIONS	MULTIPLE ARRANGEMENT PLAN
SELECTORS			NUMBER OF DIVISIONS												
LOCAL	TOLL		1	2	3	4	5	6	7	8	9	10	11		
31-40	ALL	11		2										9	50
		12		4										8	51
		13		6										7	52
		14		8										6	53
		15	4	4										7	54
		16	4	6										6	55
		17	8	2										7	56
		18	8	4										6	57
		19	8	6										5	58
		20	12	2										6	59
		21	12	4										5	60
		23	16	2										5	61
		41-50	ALL	11		1	1								
12				2	2									8	63
13				3	3									7	64
14	3			2	1									8	65
15	3			3	2									7	66
16	3			4	3									6	67
17	6			3	1									7	68
18	8			2	1									7	69
19	8			3	2									6	70
20	9			4	1									6	71
21	9			5	2									5	72
23	12			5	1									5	73
51-60	ALL			11			2								
		12			4									8	75
		13			6									7	76
		14			8									6	77
		15		6	2									7	78
		16		6	4									6	79
		17		9	2									6	80
		18	6	3	2									7	81
		19	6	6										7	82
		20	6	6	2									6	83
		21	6	6	4									5	84
		23	12	3	2									6	85
		25	12	6	2									5	86
		27	18		4									5	87
		29	18	6										5	88
31	24		2									5	89		
61-70	ALL	11			1	1								9	90
		12		2	1									9	91
		13		2	2	1								8	92
		14		4	2									8	93
		15		4	3	1								7	94
		16	5	1	1	1								8	95
		17	5	1	2	2								7	96
		18	5	3	2	1								7	97
		19	5	5	2	7								7	98
		20	5	5	3	1								6	99
		21	10	2	1	1								7	100
		23	10	4	2	1								6	101
		25	10	6	3	1								5	102
		27	12	7	3									5	103
		29	15	7	2									5	104
31	20	4	1	1								5	105		

INDEX AND TABLE SHOWING THE GRADED MULTIPLE ARRANGEMENTS USED IN CONNECTION
WITH TRUNK GROUPS FROM SELECTORS TO CONNECTORS OF FROM 11 TO 31 TRUNKS (Cont'd)

For Local Rotary Hunting Connector Groups Arranged for PBXs of More Than
10 Trunks Ignore the Trunk Designations on the Multiple Arrangement Figures

MULT. ARRANGEMENT		TRUNKS COMMON TO PART OF DIVISION											TRUNKS COMMON TO ALL LOCAL & TOLL DIVISICNS	MULTIPLE ARRANGEMENT PLAN			
SELECTORS		TOTAL TRKS.	NUMBER OF DIVISIONS														
LOCAL	TOLL		1	2	3	4	5	6	7	8	9	10			11		
71-80	ALL	11				2									9	106	
		12				4									8	107	
		13				6									7	108	
		14				8									6	109	
		15			4		4								7	110	
		16			4		6								6	111	
		17			8		2								7	112	
		18			8		4								6	113	
		19				12										7	114
		20				12		2								6	115
		21			8	4		2								7	116
		23			8	8										7	117
		25			8	10		1								6	118
		27			8	12		2								5	119
		29				10	13		1							5	120
31				18	5		3							5	121		
81-90	ALL	11				1	1								9	122	
		12				2	2								8	123	
		13				3	3								7	124	
		14				4	4								6	125	
		15			3	1	2	2							7	126	
		16			3	1	3	3							6	127	
		17			6	2	1	1							7	128	
		18			6	2	2	2							6	129	
		19			9	3									7	130	
		20			9	3	1	1							6	131	
		21			7	4	1	1	1						7	132	
		23			7	7	2								7	133	
		25			7	7	2	2	2						5	134	
		27			9	6	5	1	1						5	135	
		29			9	9	6								5	136	
31			16	4	4	1	1						5	137			
91-100	ALL	11					2								9	138	
		12					4								8	139	
		13						6							7	140	
		14						8							5	141	
		15				5		2							8	142	
		16				5		4							7	143	
		17				5		6							6	144	
		18				10									8	145	
		19				10		2							7	146	
		20				10		4							6	147	
		21				10		6							5	148	
		23				15		2							6	149	
		25			10	5		4							6	150	
		27			10	5	2	1	4						5	151	
		29			10	10			4						5	152	
31			10	10	6								5	153			

INDEX AND TABLE SHOWING THE GRADED MULTIPLE ARRANGEMENTS USED IN CONNECTION WITH TRUNK GROUPS FROM SELECTORS TO CONNECTORS OF FROM 11 TO 31 TRUNKS (Cont'd)

For Local Rotary Hunting Connector Groups Arranged for PEIs of More Than 10 Trunks Ignore the Trunk Designations on the Multiple Arrangement Figures

MULT. ARRANGEMENT		TRUNKS COMMON TO PART OF DIVISION											TRUNKS COMMON TO ALL LOCAL & TOLL DIVISIONS	MULTIPLE ARRANGEMENT PLAN				
SELECTORS		TOTAL TRKS.	NUMBER OF DIVISIONS															
LOCAL	TOLL		1	2	3	4	5	6	7	8	9	10			11			
101-110	ALL	11					1	1							9	See Par. 5.04		
		12					2	2							8			
		13					3	3									7	
		14					4	4									6	
		15		4	1		1	1									8	
		16		4	1		2	2									7	
		17		4	1		3	3									6	
		18		8	2													8
		19		8	2		1	1										7
		20		8	2		2	2										6
		21		8	2		3	3										5
		23		12	3		1	1										6
		25	9	5	1		2	2										6
		27	9	5	3		3	2										5
		29	9	9	2		2	2										5
31	9	9	6		2										5			
111-120	ALL	11						2							9	154		
		12						4								8	155	
		13						6								7	156	
		14						8								6	157	
		15			4			4								7	158	
		16			4	3		2								7	159	
		17			8			2								7	160	
		18			8			4								6	161	
		19		6	4			2								7	162	
		20		6	4			4								6	163	
		21		6	8											7	164	
		23		12		3		2								6	165	
		25		12	4	3										6	166	
		27		12	4	6										5	167	
		29		12	12											5	168	
31		18	8											5	169			
121-130	ALL	11						1	1						9	See Par. 5.04		
		12						2	2						8			
		13						3	3								7	
		14						4	4								6	
		15			3	1		2	2								7	
		16			3	4		1	1								7	
		17			6	2		1	1								7	
		18			6	2		2	2								6	
		19		5	4	1		1	1								7	
		20		5	4	1		2	2								6	
		21		5	7	2											7	
		23		10	2	2	1	1	1								6	
		25		10	5	3	1										6	
		27		10	5	5	2										5	
		29		10	11	3											5	
31		15	9	2										5				

INDEX AND TABLE SHOWING THE GRADED MULTIPLE ARRANGEMENTS USED IN CONNECTION WITH TRUNK GROUPS FROM SELECTORS TO CONNECTORS OF FROM 11 TO 31 TRUNKS (Cont'd)

For Local Rotary Hunting Connector Groups Arranged for PBXs of More Than 10 Trunks Ignore the Trunk Designations on the Multiple Arrangement Figures

MULT. ARRANGEMENT		TOTAL TRKS.	TRUNKS COMMON TO PART OF DIVISION											TRUNKS COMMON TO ALL LOCAL & TOLL DIVISIONS	MULTIPLE ARRANGEMENT PLAN	
SELECTORS			NUMBER OF DIVISIONS													
LOCAL	TOLL		1	2	3	4	5	6	7	8	9	10	11			
131-140	ALL	11							2						9	170
		12							4						8	171
		13							6						7	172
		14							8						6	173
		15			2	3	2								8	174
		16			2	3	2		2						7	175
		17			2	3	2		4						6	176
		18			7				4						7	177
		19			7				6						6	178
		20			8	4									8	179
		21			8	4				2					7	180
		23			14					2					7	181
		25			14		1	2		2					6	182
		27			14		2	4		2					5	183
29			15	4	1	2		2					5	184		
31			16	8				2					5	185		
141-150	ALL	11							1	1				9	See Par. 5.04	
		12							2	2				8		
		13								3	3			7		
		14								4	4			6		
		15			2	2	2	1						8		
		16			2	2	2	1	1	1				7		
		17			2	2	2	1	2	2				6		
		18			6	1			2	2				7		
		19			6	1			3	3				6		
		20			7	4	1							8		
		21			7	4	1			1	1			7		
		23			12	2				1	1			7		
		25			12	2	1	1	1	1	1			6		
		27			12	2	2	2	2	1	1			5		
29			13	6	2	1	1		1			5				
31			14	8	2			1	1			5				
151-160	ALL	11								2				9	186	
		12								4				8	187	
		13									6			7	188	
		14									8			6	189	
		15				4					4			7	190	
		16				4					6			6	191	
		17				8					2			7	192	
		18				8					4			6	193	
		19					12							7	194	
		20					12				2			6	195	
		21			8	4					2			7	196	
		23			8		8							7	197	
		25			8		10				1			6	198	
		27			8		12				2			5	199	
29			8		16							5	200			
31			16		8				2			5	201			

INDEX AND TABLE SHOWING THE GRADED MULTIPLE ARRANGEMENTS USED IN CONNECTION WITH TRUNK GROUPS FROM SELECTORS TO CONNECTORS OF FROM 11 TO 31 TRUNKS (Cont'd)

For Local Rotary Hunting Connector Groups Arranged for PBXs of More Than 10 Trunks Ignore the Trunk Designations on the Multiple Arrangement Figures

MULT. ARRANGEMENT		TOTAL TRKS.	TRUNKS COMMON TO PART OF DIVISION											TRUNKS COMMON TO ALL LOCAL & TOLL DIVISIONS	MULTIPLE ARRANGEMENT PLAN	
SELECTORS			NUMBER OF DIVISIONS													
LOCAL	TOLL		1	2	3	4	5	6	7	8	9	10	11			
161-170	ALL	11									1	1			9	See Par. 5.04
		12									2	2			8	
		13									3	3			7	
		14									4	4			6	
		15					3	1			2	2			7	
		16					3	1			3	3			6	
		17					6	2			1	1			7	
		18					6	2			2	2			6	
		19					9	3							7	
		20					9	3			1	1			6	
		21				7	1	3	1		1	1			7	
		23				7	1	6	2						7	
		25				7	1	8	2				1		6	
		27				7	1	9	3			1	1		5	
29				7	1	12	4						5			
31				14	2	6	2			1	1		5			
171-180	ALL	11										2		9	202	
		12										4		8	203	
		13										6		7	204	
		14										8		6	205	
		15							6			2		7	206	
		16							9					7	207	
		17					2	2	6					7	208	
		18					3		7			2		6	209	
		19				6			6					7	210	
		20				6			6			2		6	211	
		21				12						2		7	212	
		23				12			3			2		6	213	
		25				12	2	2	3					6	214	
		27				18						4		5	215	
29				18			6					5	216			
31				24						2		5	217			
181-190	ALL	11									1	1		9	See Par. 5.04	
		12									2	2		8		
		13										3	3			7
		14										4	4			6
		15							4	2		1	1			7
		16							6	3						7
		17					2	1	5	2						7
		18					3		4	3		1	1			6
		19				5	1		4	2						7
		20				5	1		4	2		1	1			6
		21				10	2					1	1			7
		23				10	2		2	1		1	1			6
		25				10	4	1	3	1						6
		27				15	3					2	2			5
29				15	3		4	2					5			
31				20	4					1	1		5			

INDEX AND TABLE SHOWING THE GRADED MULTIPLE ARRANGEMENTS USED IN CONNECTION
WITH TRUNK GROUPS FROM SELECTORS TO CONNECTORS OF FROM 11 TO 31 TRUNKS (Cont'd)

For Local Rotary Hunting Connector Groups Arranged for PEXs of More Than
10 Trunks Ignore the Trunk Designations on the Multiple Arrangement Figures

MULT. ARRANGEMENT			TRUNKS COMMON TO PART OF DIVISION											TRUNKS COMMON TO ALL LOCAL & TOLL DIVISIONS	MULTIPLE ARRANGEMENT PLAN
SELECTORS		TOTAL TRKS.	NUMBER OF DIVISIONS												
LOCAL	TOLL		1	2	3	4	5	6	7	8	9	10	11		
191-200	ALL	11										2		9	218
		12										4		8	219
		13										6		7	220
		14										8		6	221
		15					4					4		7	222
		16					4					6		6	223
		17					5					6		6	224
		18				10								8	225
		19				10						2		7	226
		20				10						4		6	227
		21				10						6		5	228
		23				10	4					4		5	229
		25				10	8					2		5	230
		27				20						2		5	231
		29				20	4							5	232
		31			10	10	4						2		5
201-210	ALL	11									1	1	9	See Par. 5.04	
		12									2	2	8		
		13									3	3	7		
		14									4	4	6		
		15					3	1			2	2	7		
		16					3	1			3	3	6		
		17				4	1				3	3	6		
		18				8	2						8		
		19				8	2				1	1	7		
		20				8	2				2	2	6		
		21				8	2				3	3	5		
		23				8	5	1			2	2	5		
		25				8	8	2			1	1	5		
		27				16	4				1	1	5		
		29				16	7	1					5		
		31			9	1	8	5	1			1	1		5

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1	4	2	3	5	6	7	8	9	10	1

Plan 1 - 20, 40, 60, 80, 120, 160, 240, and 320
 Selectors on 10 Trunks
 For Use on 9'-0" or 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.		
1	2	3	4	5	6	7	8	9	10			
1	1-1	1-2	2	3	5	6	7	8	9	10	1	
	4	F1	4	3	2	1-1	7	1-2	6	10	4	2
2	1-1	1-2	2	3	5	6	7	8	9	10	3	
3/4	F1	9	8	5	2	3	9	4	6		5	
5/6	F2	10	8	1-1	1-2	7	5	4	2		8	
7/8	F3	7	8	1-1	1-2	5	6	3	9		11	
9/10		10	1-1	2	1-2	8	5	6	4		14	
11/12	F4	10	9	7	3	2	9	4	8		17	
13/14	F5	10	3	1-1	1-2	7	5	6	2		20	
15/16	F6	3	8	1-1	1-2	10	9	5	7		23	
17/18		6	4	2	1-1	6	5	3	7		26	
19/20	F7	9	8	4	1-2	10	1-1	7	8		29	
21/22	F8	9	5	3	1-2	2	4	6	10		32	

Plan 2 - 20, 40, 60, 80, 120, 160, 240, and 320
 Selectors on 11 Trunks
 For Use on 9'-0" or 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.		
1	2	3	4	5	6	7	8	9	10			
1	1-1	1-2	2-1	2-2	5	6	7	8	9	10	1	
	4	3	F1	3	2-1	1-1	7	5	6	3	4	2
2	1-1	1-2	2-1	2-2	5	6	7	8	9	10	3	
3/4			F1	8	2-2	1-2	10	9	4		5	

Plan 3 - 20, 40, 60, 80, 120, 160, 240, and 320
 Selectors on 12 Trunks
 For Use on 9'-0" or 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-2	2-1	3-2	5	6	4	8	9	10	1
	2-2	3-1	7	F1 3-1	1-1	7	5	7	3-1	2-2	2
2	1-1	1-2	2-1	3-2	5	6	4	8	9	10	3
3/4				2-2	1-2	10	8				5
5/6				F1 3-2	2-1	6	9				8
7/8				4	1-1	5	6				11
9/10				2-1	8	7	3-1				14
11/12				F2 2-2	1-2	10	9				17
13/14				3-2	4	5	9				20
15/16				3-1	1-1	10	4				23
17/18				F3 2-1	3-2	6	8				26
19/20				7	2-2	1-2	6				29
21/22				2-1	1-1	9	10				32
23/24				F4 1-2	3-1	5	8				35
25/26				2-2	4	3-2	7				38

Plan 4 - 20, 40, 60, 80, 120, 160, 240, and 320

Selectors on 13 Trunks

For Use on 9'-0" or 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-2	2-1	3-2	5	6	4-1	8	9	10	1
	2-2	3-1	7	4-2	F1 1-1	7	4-2	7	3-1	2-2	2
2	1-1	1-2	2-1	3-2	5	6	4-1	8	9	10	3
3/4					1-2	10					5
5/6					2-1	6					8
7/8					2-2	8					11
9/10					F1 3-1	9					14
11/12					4-2	3-2					17
13/14					4-1	5					20

Plan 5 - 20, 40, 60, 80, 120, 160, 240, and 320

Selectors on 14 Trunks

For Use on 9'-0" or 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-2	2-1	3-2	5-1	6	4-1	8	9	10	1
	2-2	3-1	7	4-2	5-2	5-2	4-2	7	3-1	2-2	2
2	1-1	1-2	2-1	3-2	5-1	6	4-1	8	9	10	3

Plan 6 - 20, 40, 60, 80, 120, 160, 240, and 320

Selectors on 15 Trunks

For Use on 9'-0" or 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8	9	10	1
	2-2	3-1	7	4-2	5-2	6-2	FI 4-2	3-2	10	1-1	2
2	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8	9	10	3
	2-2	3-1	7	4-2	5-2	6-2	6-1	5-1	1-2	9	4
3							FI 4	5-2	7	2-1	6
4							3-1	6-2	2-2	8	8

Plan 7 - 20 Selectors on 16 Trunks
For Use on 9'-0" or 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8	9	10	1
	2-2	3-1	7-1	4-2	5-2	6-2	7-2	FI 3-2	10	1-1	2
2	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8	9	10	3
	2-2	3-1	7-1	4-2	5-2	6-2	7-2	5-1	1-2	9	4
3								5-2	7-1	2-1	6
4								FI 4-1	2-2	8	8
5								4-2	6-1	3-1	10
6								7-2	6-2	1-1	12
7								3-1	7-1	4-1	14
8								6-1	4-2	5-1	16
9								3-2	5-2	8	18
10								F2 2-1	10	1-2	20
11								6-2	2-2	7-2	22
12								9	5-1	2-1	24
13								4-1	2-2	8	26
14								7-1	6-1	3-1	28
15								F3 7-2	3-2	6-2	30
16								9	5-2	1-1	32
17								4-2	1-2	10	34

Plan 8 - 20 Selectors on 17 Trunks
For Use on 9'-0" or 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8-1	9	10	1
	2-2	3-1	7-1	4-2	5-2	6-2	7-2	8-2	FI 10	1-1	2
2	1-1	1-2	2-1	3-2	5-1	6-1	4-1	8-1	9	10	3
	2-2	3-1	7-1	4-2	5-2	6-2	7-2	8-2	1-2	9	4
3									7-1	2-1	6
4									2-2	8-1	8
5									6-1	3-1	10
6									FI 3-2	6-2	12
7									7-2	5-1	14
8									5-2	4-1	16
9									4-2	8-2	18

Plan 9 - 20 Selectors on 18 Trunks
For Use on 9'-0" or 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	5-2	2-1	3-2	5-1	6-1	4-1	8-1	9-1	10	1
	2-2	3-1	7-1	4-2	1-2	6-2	7-2	8-2	9-2	FI 1-1	2
2	1-1	5-2	2-1	3-2	5-1	6-1	4-1	8-1	9-1	10	3
	2-2	3-1	7-1	4-2	1-2	6-2	7-2	8-2	9-2	9-1	4
3										2-1	6
4										8-1	8
5										3-1	10
6										6-2	12
7										5-1	14
8										4-1	16
9										8-2	18
10										10	20
11										FI 1-2	22
12										7-1	24
13										2-2	26
14										6-1	28
15										3-2	30
16										7-2	32
17										5-2	34
18										4-2	36
19										9-2	38

Plan 10 - 20 Selectors on 19 Trunks
For use on 9'-0" or 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE,										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-2	2-1	3-2	5-1	4-2	4-1	8	9	10	1
	2-2	3-1	7	6	5-2	1-3	FI 9	1-2	10	1-1	2
2	1-1	1-2	2-1	3-2	5-1	4-2	4-1	8	9	10	3
	2-2	3-1	7	6	5-2	1-3	5-1	3-1	1-3	7	4
3							FI 3-2	8	4-1	2-1	6
4							4-2	5-2	2-2	6	8

Plan 11 - 40, 80, 160, 320, and 640 Selectors
on 16 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	1
	2-2	3-1	7	6	5-2	1-4	4-2	FI 1-2	10	1-1	2
2	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	3
	2-2	3-1	7	6	5-2	1-4	4-2	3-1	1-3	7	4
3								8	5-1	1-4	6
4								FI 5-2	2-2	6	8
5								4-1	9	2-1	10
6								4-2	3-2	6	12
7								9	5-1	2-1	14
8								5-2	3-1	4-1	16
9								2-2	8	3-2	18
10								F2 1-1	10	1-2	20
11								4-2	1-3	7	22
12								1-4	5-1	4-1	24
13								5-2	1-1	6	26
14								4-2	9	2-1	28
15								F3 3-1	2-2	8	30
16								1-2	10	1-3	32
17								7	3-2	1-4	34

Plan 12 - 40, 80, 160, 320, and 640 Selectors
on 17 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	1
	2-2	3-1	7	6	5-2	1-4	4-2	2-3	FI 10	1-1	2
2	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	3
	2-2	3-1	7	6	5-2	1-4	4-2	2-3	FI	1-3	7
3								5-1		1-4	6
4								1-2		6	8
5								9		2-1.	10
6								2-2		8	12
7								5-2		2-3	14
8								3-2		4-1	16
9								4-2		3-1	18

Plan 13 - 40, 80, 160, 320, and 640 Selectors
on 18 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02.

TRUNKS IN CABLE										CABLE NO.		
1	2	3	4	5	6	7	8	9	10			
1	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	1	
	2-3	3-1	7	6	5-2	1-4	4-2	2-4	2-2	FI 1-1	2	
2	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	3	
	2-3	3-1	7	6	5-2	1-4	4-2	2-4	2-2	FI	7	4
3											1-4	6
4											6	8
5											2-1	10
6											8	12
7											2-3	14
8											4-1	16
9											3-1	18
10											10	20
11											1-2	22
12											5-1	24
13											1-3	26
14											9	28
15											2-2	30
16											5-2	32
17											3-2	34
18											4-2	36
19											2-4	38

Plan 14 - 40, 80, 160, and 320 Selectors on 19 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE*										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-3	2-1	3-2	5-1	1-2	4-1	8	9	10	1
	2-3	3-1	7	6	5-2	1-4	4-2	2-4	2-2	3-3	2

Plan 15 - 40, 80, 160, and 320 Selectors on 20 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	1
	2-3	3-1	7	6	5-2	1-4	4-2	2-4	2-2	3-4	2
	3-2	F1 3-2	2-2	7	1-1	1-2	10	2-3	5-1	3-2	3
2	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	4
	3-3	3-1	7	6	5-2	1-4	4-2	2-4	2-2	3-4	5
3/4	F1	4-2	2-4	9	1-3	2-1	8	3-3	5-2		8
5/6		6	3-4	4-1	1-4	3-1	6	1-1	4-1		13
7/8		8	1-2	3-1	2-1	3-2	5-1	2-2	9		18
9/10	F2	7	1-3	1-4	2-3	3-3	5-2	3-4	10		23
11/12		4-2	2-4	1-1	2-1	3-1	5-1	7	9		28
13/14	F3	5-2	1-2	3-2	1-3	2-2	10	4-1	6		33
15/16		3-3	2-3	4-2	1-4	2-4	8	3-4	6		38
17/18		5-1	2-1	3-1	1-1	3-2	9	2-2	7		43
19/20	F4	5-2	2-3	4-1	1-2	3-3	1-3	3-4	10		48
21/22		8	4-2	2-4	1-4						53

Plan 16 - 40, 80, 160, and 320 Selectors on 21 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	1
	2-3	3-1	7	6	5-2	1-4	4-3	2-4	4-2	3-4	2
	3-2	2-2	4-4	F1 7	1-1	1-2	10	4-4	2-2	3-2	3
2	1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	9	10	4
	2-3	3-1	7	6	5-2	1-4	4-3	2-4	4-2	3-4	5
3/4				9	1-3	2-1	8				8
5/6				4-1	1-4	3-1	6				13
7/8			F1	4-2	2-2	3-2	5-1				18
9/10				4-3	2-3	3-3	5-2				23
11/12				4-4	2-4	3-4	5-1				28
13/14				3-1	1-1	2-1	10				33
15/16				4-1	1-2	2-2	8				38
17/18			F2	4-2	1-3	3-2	9				43
19/20				4-3	1-4	3-3	6				48
21/22				4-4	2-3	3-4	5-2				53
23/24				7	2-4						58

Plan 17 - 40, 80, 160, and 320 Selectors on 23 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	5-2	10	1
2-3	3-1	7	6	5-3	1-4	4-3	2-4	4-4	3-4	2
3-2	2-2	4-2	9	5-4	5-4	9	4-2	2-2	3-2	3
1-1	1-3	2-1	3-3	5-1	1-2	4-1	8	5-2	10	4
2-3	3-1	7	6	5-3	1-4	4-3	2-4	4-4	3-4	5

Plan 18 - 40, 80, 160, and 320 Selectors on 25 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	1-5	2-1	3-3	5-1	1-3	4-1	8	1-2	10	1
2-3	3-1	7	6	1-4	1-7	4-3	2-4	4-4	3-4	2
3-2	2-2	4-2	9	5-2	1-6	1-8	F1 1-4	7	1-1	3
1-1	1-5	2-1	3-3	5-1	1-3	4-1	8	1-2	10	4
2-3	3-1	7	6	1-4	1-7	4-3	2-4	4-4	3-4	5
3-2	2-2	4-2	9	5-2	1-6	1-8	1-5	1-6	8	6
3							3-2	4-2	1-2	9
4							4-3	1-7	5-1	12
5							5-2	4-4	1-3	15
6							F2 3-3	1-8	4-1	18
7							2-3	10	2-1	21
8							6	2-4	3-1	24
9							9	3-4	2-2	27

Plan 19 - 80, 160, and 320 Selectors on 27 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
	1-1	1-5	2-1	3-3	5-1	1-3	2-2	8	1-2	10	1
1	2-5	3-1	7	2-4	1-4	1-7	4-2	2-7	2-6	3-4	2
	3-2	2-3	4-1	9	5-2	1-6	1-8	6	2-8	FI 1-1	3
	1-1	1-5	2-1	3-3	5-1	1-3	2-2	8	1-2	10	4
2	2-5	3-1	7	2-4	1-4	1-7	4-2	2-7	2-6	3-4	5
	3-2	2-3	4-1	9	5-2	1-6	1-8	6	2-8	8	6
3										1-2	9
4										5-1	12
5										1-3	15
6										4-1	18
7										2-1	21
8										3-1	24
9										2-2	27
10										7	30
11										1-4	33
12										4-2	36
13										1-5	39
14										3-2	42
15										3-3	45
16										FI 10	48
17										2-4	51
18										3-3	54
19										1-6	57
20										2-5	60
21										1-7	63
22										5-2	66
23										3-4	69
24										6	72
25										2-6	75
26										9	78
27										2-7	81
28										1-8	84
29										2-8	87

Plan 20 - 80, 160, and 320 Selectors on 29 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	1-5	2-1	3-3	5-1	1-3	4-2	8	1-2	10	1
2-5	3-1	7	2-4	1-4	1-7	4-3	2-7	2-6	3-4	2
3-2	2-3	4-1	9	5-2	1-6	1-8	6	2-8	4-4	3
2-2	F1 3-4	1-6	2-1	1-1	1-2	10	2-5	4-2	2-2	4
1-1	1-5	2-1	3-3	5-1	1-3	4-2	8	1-2	10	5
2 2-5	3-1	7	2-4	1-4	1-7	4-3	2-7	2-6	3-4	6
3-2	2-3	4-1	9	5-2	1-6	1-8	6	2-8	4-4	7
3/4	6	1-7	3-1	1-3	2-2	4-1	2-6	8		11
5/6	F1 4-3	1-8	3-2	1-4	2-3	5-1	2-7	9		18
7/8	5-2	2-8	3-3	1-5	2-4	7	4-4	1-1		25
9/10	5-1	2-1	3-1	1-2	2-2	8	4-1	1-3		32
11/12	F2 2-3	1-4	3-2	1-5	2-4	6	4-2	7		39
13/14	2-5	1-6	3-3	1-7	2-6	1-8	4-3	10		46
15/16	9	2-7	4-4	2-8	3-4	5-2	1-1	3-1		53
17/18	3-2	1-2	3-3	2-1	4-1	5-1	2-2	9		60
19/20	3-4	1-3	2-3	1-4	1-5	10	2-4	4-2		67
21/22	F3 4-3	4-4	1-6	1-7	2-5	6	2-6	5-2		74
23/24	8	7	2-7	1-8	2-8	3-1	1-1	3-2		81
25/26	5-1	2-1	3-3	1-2	2-2	2-3	4-1	9		88
27/28	F4 4-2	1-3	3-4	1-4	2-4	8	2-5	6		95
29/30	2-6	1-5	4-3	2-7	1-6	5-2	1-7	10		102
31/32	7	4-4	2-8	1-8						109

Plan 21 - 80, 160, and 320 Selectors on 31 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	1-5	2-1	3-5	5-1	1-3	3-2	8	1-2	10	1
2-5	3-1	7	2-4	1-4	1-7	3-4	2-7	2-6	3-7	2
3-3	2-3	4-1	9	5-2	1-6	1-8	6	2-8	3-6	3
2-2	4-2	3-8	F1 2-1	1-1	1-2	10	3-8	4-2	2-2	4
1-1	1-5	2-1	3-5	5-1	1-3	3-2	8	1-2	10	5
2-5	3-1	7	2-4	1-4	1-7	3-4	2-7	2-6	3-7	6
3-3	2-3	4-1	9	5-2	1-6	1-8	6	2-8	3-6	7
3/4			3-1	1-3	2-2	4-1				11
5/6			3-2	1-4	2-3	5-1				18
7/8			3-3	1-5	2-4	7				25
9/10			3-4	1-6	2-5	8				32
11/12			F1 3-5	1-7	2-6	6				39
13/14			3-6	1-8	2-7	9				46
15/16			4-2	2-8	3-7	5-2				53
17/18			3-8	2-1	4-1	5-1				60
19/20			2-2	1-1	1-2	10				67
21/22			3-1	1-3	2-3	6				74
23/24			3-2	1-4	2-4	3-3				81
25/26			F2 3-4	1-5	2-5	3-5				88
27/28			3-6	1-6	2-6	8				95
29/30			4-2	2-7	3-7	5-2				102
31/32			3-8	1-7	2-8	9				109
33/34			7	1-8						116

Plan 22 - 80, 160, and 320 Selectors on 33 Trunks
 For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	1-5	2-1	3-5	4-4	1-3	3-2	8	1-2	10	1
2-5	3-1	7	2-4	1-4	4-2	3-4	2-7	2-6	3-7	2
3-3	2-3	4-1	9	5-2	1-6	1-8	6	2-8	3-6	3
2-2	4-3	3-8	1-7	5-1	5-1	1-7	3-8	4-3	2-2	4
1-1	1-5	2-1	3-5	4-4	1-3	3-2	8	1-2	10	5
2-5	3-1	7	2-4	1-4	4-2	3-4	2-7	2-6	3-7	6
3-3	2-3	4-1	9	5-2	1-6	1-8	6	2-8	3-6	7

Plan 23 - 80, 160, and 320 Selectors on 35 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	1-3	2-1	3-2	5-1	3-1	4-1	8	9	10	1
2-2	6	7	4-2	5-2	1-2	F1 10	4-1	3-1	1-1	2
1-1	1-3	2-1	3-2	5-1	3-1	4-1	8	9	10	3
2-2	6	7	4-2	5-2	1-2	2-1	6	1-3	7	4
3						F1 5-2	3-2	8	1-2	6
4						9	4-2	2-2	5-1	8

Plan 24 - 60, 120, 240, and 480 Selectors on 16 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	1-3	2-1	3-2	5-1	3-1	4-1	8	9	10	1
2-3	6	7	4-2	5-2	1-2	2-2	F1 10	3-1	1-1	2
1-1	1-3	2-1	3-2	5-1	3-1	4-1	8	9	10	3
2-3	6	7	4-2	5-2	1-2	2-2	4-1	1-3	7	4
3							3-2	8	1-2	6
4							F1 4-2	2-2	5-1	8
5							5-2	9	2-1	10
6							6	2-3	4-1	12
7							8	3-1	1-1	14
8							2-1	5-1	4-2	16
9							10	2-2	1-2	18
10							F2 7	3-2	1-3	20
11							6	5-2	2-3	22
12							9	5-1	2-1	24
13							10	3-1	1-1	26
14							7	4-1	1-2	28
15							F3 8	2-2	3-2	30
16							5-2	4-2	2-3	32
17							9	6	1-3	34

Plan 25 - 60, 120, 240, and 480 Selectors on 17 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-3	2-1	3-3	5-1	3-1	4-1	8	9	10	1
	2-3	6	7	4-2	5-2	1-2	2-2	3-2	FI 10	1-1	2
2	1-1	1-3	2-1	3-3	5-1	3-1	4-1	8	9	10	3
	2-3	6	7	4-2	5-2	1-2	2-2	3-2	FI	1-3	7
3								8		1-2	6
4								2-2		5-1	8
5								9		2-1	10
6								2-3		6	12
7								4-1		3-1	14
8								3-2		4-2	16
9								5-2		3-3	18

Plan 26 - 60, 120, 240, and 480 Selectors on 18 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.		
1	2	3	4	5	6	7	8	9	10			
1	1-1	1-3	2-1	3-3	5-1	3-1	4-1	8	9	10	1	
	2-3	6	7	4-3	5-2	1-2	2-2	3-2	4-2	FI 1-1	2	
2	1-1	1-3	2-1	3-3	5-1	3-1	4-1	8	9	10	3	
	2-3	6	7	4-3	5-2	1-2	2-2	3-2	4-2	7	4	
3										1-2	6	
4										5-1	8	
5										2-1	10	
6										6	12	
7										3-1	14	
8										4-2	16	
9										3-2	18	
10										10	20	
11										FI	1-3	22
12											8	24
13											2-2	26
14											9	28
15											2-3	30
16											4-1	32
17											3-3	34
18											5-2	36
19											4-3	38

Plan 27 - 60, 120, 240, and 480 Selectors on 19 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	1-3	2-1	3-3	5-1	3-1	4-1	5-2	9	10	1
2-3	6	7	4-3	5-3	1-2	2-2	3-2	4-2	8	2

Plan 28 - 60, 120, and 240 Selectors on 20 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	1-5	2-1	3-3	5-1	3-1	4-1	1-2	9	10	1
2-3	6	7	1-4	5-2	1-3	2-2	3-2	1-6	8	2
4-2	F1 5-1	1-4	4-1	2-1	3-1	8	1-5	9	4-2	3
2-1	1-5	2-1	3-3	5-1	3-1	4-1	1-2	9	10	4
2-3	6	7	1-4	5-2	1-3	2-2	3-2	1-6	8	5
3/4	F1 5-2	2-3	4-2	1-1	1-2	7	3-2	6		8
5/6	10	3-3	2-2	1-3	1-6	2-1	4-1	7		13
7/8	5-1	1-1	3-1	1-2	2-2	10	1-3	6		18
9/10	F2 8	1-4	4-2	1-5	3-2	5-2	2-3	9		23
11/12	3-3	1-6	3-1	1-1	1-2	2-1	8	10		28
13/14	F3 5-1	2-2	4-1	1-3	1-4	7	3-2	6		33
15/16	4-2	1-5	5-2	1-6	2-3	9	3-3	8		38
17/18	4-1	1-1	3-1	1-2	2-1	10	1-3	7		43
19/20	F4 5-1	1-4	4-2	1-5	3-2	2-2	6	9		48
21/22	2-3	1-6	5-2	3-3	1-1	2-1	5-1	10		53
23/24	4-1	1-2	6	5-2	1-3	2-2	3-1	9		58
25/26	F5 2-3	1-4	4-2	1-5	3-2	8	1-6	7		63
27/28	3-3	1-1	5-1	1-2	2-1	7	4-1	6		68
29/30	F6 4-2	1-3	5-2	1-4	3-1	9	2-2	8		73
31/32	3-2	1-5	3-3	1-6	2-3	10	4-1	6		78
33/34	3-1	2-1	5-1	1-1	1-2	1-3	9	10		83
35/36	F7 5-2	1-4	4-2	1-5	3-2	8	2-2	7		88
37/38	3-3	2-3	1-6	4-1	2-1	10	1-1	6		93
39/40	F8 3-1	1-2	5-1	1-3	2-2	7	1-4	9		98
41/42	3-2	1-5	4-2	1-6	3-3	5-2	2-3	8		103

Plan 29 - 60, 120, and 240 Selectors on 21 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	1-5	2-1	3-3	5-1	3-1	4-1	1-2	9	10	1
2-3	6	7	4-2	5-3	1-3	2-2	3-2	1-6	8	2
4-3	1-4	5-2	F1 4-1	2-1	3-1	8	5-2	1-4	4-3	3
2 1-1	1-5	2-1	3-3	5-1	3-1	4-1	1-2	9	10	4
2-3	6	7	4-2	5-3	1-3	2-2	3-2	1-6	8	5
3/4			4-2	1-1	1-2	7				8
5/6			2-2	1-3	5-1	9				13
7/8			F1 3-2	1-4	2-3	10				18
9/10			4-3	1-5	3-3	5-2				23
11/12			6	1-6	5-3	2-1				28
13/14			4-1	1-1	1-2	7				33
15/16			5-1	1-3	2-2	9				38
17/18			F2 3-1	1-4	2-3	10				43
19/20			4-2	1-5	3-2	8				48
21/22			5-2	3-3	1-6	4-3				53
23/24			6	5-3	1-1	2-1				58
25/26			4-1	1-2	3-1	8				63
27/28			5-1	1-3	2-2	7				68
29/30			-2	1-4	3-2	9				73
31/32			F3 3-3	1-5	2-3	10				78
33/34			5-3	1-6	4-2	6				83
35/36			4-3	1-1	3-1	8				88
37/38			1-2	4-1	2-1	10				93
39/40			5-1	1-3	2-2	7				98
41/42			F4 4-2	1-4	3-2	5-2				103
43/44			5-3	2-3	1-5	6				108
45/46			4-3	1-6	3-3	9				113

Plan 30 - 60, 120, and 240 Selectors on 23 Trunks
 For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
	1-1	1-5	2-1	3-3	2-2	3-1	4-1	1-2	9	10	1
1	2-5	2-4	7	4-2	5-2	1-3	2-3	3-2	1-6	8	2
	4-3	1-4	5-1	6	2-6	2-6	6	5-1	1-4	4-3	3
	1-1	1-5	2-1	3-3	2-2	3-1	4-1	1-2	9	10	4
2	2-5	2-4	7	4-2	5-2	1-3	2-3	3-2	1-6	8	5

Plan 31 - 60, 120, and 240 Selectors on 25 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
	1-1	1-5	2-1	3-5	2-2	3-1	4-1	2-3	9	10	1
1	2-5	2-4	7	4-2	5-2	1-3	3-2	3-3	1-6	8	2
	3-4	1-4	5-1	6	2-6	1-2	3-6	FI 1-4	10	1-1	3
	1-1	1-5	2-1	3-5	2-2	3-1	4-1	2-3	9	10	4
2	2-5	2-4	7	4-2	5-2	1-3	3-2	3-3	1-6	8	5
	3-4	1-4	5-1	6	2-6	1-2	3-6	2-3	1-5	7	6
3								2-4	8	1-2	9
4								3-2	1-6	6	12
5								3-3	9	1-3	15
6								FI 3-4	2-5	4-1	18
7								5-1	3-5	2-1	21
8								4-2	2-6	3-1	24
9								5-2	3-6	2-2	27

Plan 32 - 60, 120, and 240 Selectors on 27 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	1-5	2-1	3-5	2-2	3-1	4-1	2-3	5-2	10	1
2-5	2-4	7	4-3	5-3	1-3	3-2	3-3	1-6	8	2
3-4	1-4	5-1	6	2-6	1-2	3-6	4-2	9	FI 1-1	3
1-1	1-5	2-1	3-5	2-2	3-1	4-1	2-3	5-2	10	4
2-5	2-4	7	4-3	5-3	1-3	3-2	3-3	1-6	8	5
3-4	1-4	5-1	6	2-6	1-2	3-6	4-2	9	7	6
3									1-2	9
4									6	12
5									1-3	15
6									5-1	18
7									2-1	21
8									3-1	24
9									2-2	27
10									8	30
11									1-4	33
12									3-2	36
13									1-5	39
14									9	42
15									2-3	45
16									FI 3-3	48
17									10	51
18									3-4	54
19									2-4	57
20									5-1	60
21									1-6	63
22									5-2	66
23									2-5	69
24									5-3	72
25									3-5	75
26									4-2	78
27									3-6	81
28									4-3	84
29									2-6	87

Plan 33 - 60, 120, and 240 Selectors on 29 Trunks
 For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-5	2-1	3-5	2-2	3-1	4-1	2-3	4-2	10	1
	2-5	2-4	7	4-5	4-4	1-3	3-2	3-3	1-6	8	2
	3-4	1-4	5-1	6	2-6	1-2	3-6	4-3	9	4-6	3
	5-2	F1 3-5	1-3	4-1	1-1	3-1	7	2-3	6	5-2	4
2	1-1	1-5	2-1	3-5	2-2	3-1	4-1	2-3	4-2	10	5
	2-5	2-4	7	4-5	4-4	1-3	3-2	3-3	1-6	8	6
	3-4	1-4	5-1	6	2-6	1-2	3-6	4-3	9	4-6	7
3/4	5-1	4-4	1-4	2-4	3-2	4-2	1-5	8		11	
5/6	F1 4-5	1-6	3-3	1-2	2-1	10	2-5	5-2		18	
7/8	4-6	2-6	4-3	2-2	3-4	3-6	9	1-1		25	
9/10	2-1	1-2	4-1	1-3	3-1	5-1	2-2	10		32	
11/12	F2 6	3-2	2-3	1-4	2-4	4-2	3-3	8		39	
13/14	4-3	3-4	5-2	1-5	1-6	9	3-5	4-4		46	
15/16	7	4-5	4-6	2-5	2-6	3-6	1-1	5		53	
17/18	4-1	1-2	3-1	1-3	2-1	10	2-2	6		60	
19/20	F3 5	2-3	4-2	1-4	3-2	7	2-4	9		67	
21/22	3-3	2-5	4-3	1-5	2-6	8	3-4	4-4		74	
23/24	4-5	3-5	4-6	1-6	3-6	5-1	1-1	9		81	
25/26	4-1	2-1	1-2	1-3	2-2	4-2	3-1	10		88	
27/28	F4 3-2	1-4	4-3	2-3	3-3	5-2	2-4	7		95	
29/30	4-4	3-4	2-5	1-5	2-6	3-5	4-5	8		102	
31/32	1-6	4-6	6	3-6						109	

Plan 34 - 60, 120, and 240 Selectors on 31 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	5-2	2-1	3-5	2-2	3-1	4-1	2-3	4-2	10	1
2-5	2-4	7	4-5	5-3	1-3	3-2	3-3	1-6	8	2
3-4	1-4	5-1	6	2-6	1-2	3-6	4-3	9	4-6	3
5-4	1-5	4-4	F1 4-1	1-1	3-1	7	4-4	1-5	5-4	4
1-1	5-2	2-1	3-5	2-2	3-1	4-1	2-3	4-2	10	5
2-5	2-4	7	4-5	5-3	1-3	3-2	3-3	1-6	8	6
3-4	1-4	5-1	6	2-6	1-2	3-6	4-3	9	4-6	7
3/4				6	2-3	3-2	4-2			11
5/6				3-3	1-2	2-1	10			18
7/8				4-3	2-2	3-4	5-1			25
9/10				4-4	1-3	3-5	5-4			32
11/12			F1	5-2	1-4	2-4	4-5			39
13/14				5-3	1-5	2-5	9			46
15/16				4-6	1-6	2-6	8			53
17/18				3-6	1-1	2-1	10			60
19/20				4-1	1-2	3-1	7			67
21/22				4-2	1-3	2-2	8			74
23/24				4-3	1-4	3-2	5-1			81
25/26				5-2	1-5	2-3	4-4			88
27/28			F2	4-5	2-4	3-3	5-4			95
29/30				5-3	1-6	2-5	3-4			102
31/32				6	3-5	2-6	4-6			109
33/34				9	3-6					116

Plan 35 - 60, 120, and 240 Selectors on 33 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.
1	2	3	4	5	6	7	8	9	10	
1-1	5-3	2-1	3-5	2-2	3-1	4-1	2-3	4-2	10	1
2-5	5-2	7	4-5	5-4	1-3	3-2	3-3	1-6	8	2
3-4	1-4	5-1	6	2-6	1-2	3-6	4-3	5-6	4-6	3
5-5	1-5	4-4	2-4	9	9	2-4	4-4	1-5	5-5	4
1-1	5-3	2-1	3-5	2-2	3-1	4-1	2-3	4-2	10	5
2-5	5-2	7	4-5	5-4	1-3	3-2	3-3	1-6	8	6
3-4	1-4	5-1	6	2-6	1-2	3-6	4-3	5-6	4-6	7

Plan 36 - 60, 120, and 240 Selectors on 35 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

GRADED MULT. PATTERN (FORM)		NUMBER OF TRUNKS																																				
SELS	TRKS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	TRKS	
20	3	2	3	1																																		3
	4	2	4	1	3																																	4
	5	2	4	5	1	3																																5
	6	2	5	6	1	3	4																															6
	7	2	4	1	7	6	3	5																														7
	8	3	6	4	1	8	7	5	2																													8
	9	3	7	4	8	9	1	5	2	6																												9
	10	3	8	4	9	10	1	6	2	5	7																											10
	11	4	9	5	2	6	1-2	10	1-1	7	3	8																										11
	12	4	9	5	2-2	6	1-1	10	1-2	7	2-1	8	3																									12
	13	4	3-2	8	2-1	6	1-2	10	1-1	7	2-2	5	3-1	9																								13
	14	4-1	3-2	6	2-1	8	1-2	10	1-1	7	2-2	9	3-1	4-2	5																							14
	15	4-1	5-2	2-1	8	3-1	4-2	6	1-2	7	3-2	2-2	10	1-1	9	5-1																						15
	16	4-1	5-2	6-1	2-2	7	3-2	8	1-1	10	1-2	6-2	5-1	2-1	9	3-1	4-2																					16
	17	5-1	3-2	9	2-1	7-1	4-2	6-1	1-2	10	1-1	6-2	4-1	7-2	2-2	8	3-1	5-2																				17
	18	5-1	6-2	2-2	8-1	3-1	4-2	7-2	1-1	10	1-2	7-1	5-2	3-2	9	2-1	8-2	6-1	4-1																			18
	19	5-1	6-2	4-2	7-1	3-1	8-2	2-2	9-1	1-1	10	1-2	9-2	2-1	8-1	3-2	7-2	4-1	6-1	5-2																		19
	40, 80, 160, 320, Also 640 For 16, 17, & 18 Trks	16	4-1	5-2	1-1	8	2-1	9	1-3	10	1-2	6	3-2	7	2-2	5-1	4-2	3-1																				16
		17	4-1	3-2	5-2	1-1	7	2-2	6	1-3	10	1-2	9	2-1	8	1-4	5-1	3-1	4-2																			17
18		4-1	2-3	8	1-1	5-2	3-1	6	1-3	10	1-2	9	1-4	7	2-2	5-1	2-1	4-2	3-2																			18
19		3-1	4-2	2-1	8	1-4	6	2-4	5-1	1-2	10	1-3	5-2	2-2	9	1-1	7	2-3	4-1	3-2																		19
20		4-1	3-3	2-1	9	1-1	7	2-4	5-2	1-2	10	1-3	5-1	2-2	8	1-4	6	2-3	3-1	3-2	4-2																	20
21		3-1	4-2	3-3	2-1	9	1-1	7	2-4	5-1	1-3	10	1-2	5-2	2-2	8	1-4	6	2-3	3-2	4-1	3-4																21
80, 160, 320	23	4-1	2-4	8	1-1	4-3	3-2	2-1	5-2	3-3	6	1-4	10	1-2	9	3-1	5-1	2-3	3-4	4-2	1-3	7	2-2	4-4													23	
	25	4-1	3-3	4-4	3-2	6	2-3	5-1	1-4	8	2-1	5-4	1-2	10	1-3	5-2	2-4	7	1-1	5-3	2-2	9	3-4	4-2	3-1	4-3											25	
	27	3-1	1-5	4-1	3-4	1-1	4-3	2-1	7	1-8	9	1-2	5-1	2-3	10	2-2	5-2	1-6	6	1-3	8	2-4	4-2	1-7	3-2	4-4	1-4	3-3									27	
29	2-1	5-2	1-1	2-5	6	1-8	3-2	2-3	3-4	1-4	7	2-7	4-1	1-6	10	1-2	4-2	2-2	8	1-5	3-1	2-6	3-3	1-3	9	2-4	1-3	5-1	2-8							29		
31	3-1	2-5	1-3	4-4	2-2	1-6	6	2-7	4-2	1-8	7	3-3	2-4	5-2	1-1	10	1-5	5-1	2-8	3-2	8	1-2	4-3	2-1	9	1-4	2-6	4-1	1-7	2-3	3-4					31		
33	5-1	2-5	3-3	1-8	2-1	3-6	1-2	3-7	2-4	4-2	7	1-5	3-2	2-6	9	1-4	10	1-6	6	2-2	3-8	1-1	8	4-1	2-7	3-4	1-7	3-1	2-8	1-3	3-5	2-3	5-2			33		
35	5-1	3-5	2-3	4-4	1-2	3-4	2-6	4-1	1-3	3-8	2-1	8	1-5	3-2	2-8	6	1-6	10	1-1	9	2-4	3-7	1-4	7	2-5	3-1	1-8	4-3	2-2	3-6	1-7	4-2	2-7	3-3	5-2	35		
60, 120, 240, Also 480 For 16, 17, & 18 Trks.	16	4-1	3-2	5-2	1-1	7	2-2	6	1-2	10	1-3	9	2-1	8	3-1	5-1	4-2																				16	
	17	3-1	4-2	5-1	1-3	7	2-2	9	1-2	10	1-1	6	2-3	8	2-1	5-2	3-2	4-1																			17	
	18	3-1	4-2	3-3	5-1	1-2	8	2-3	6	1-1	10	1-3	9	2-1	7	2-2	5-2	3-2	4-1																		18	
	19	4-1	3-3	5-1	1-2	8	2-1	4-2	3-2	6	1-3	10	1-1	9	3-1	4-3	2-2	7	2-3	5-2																		19
	20	4-1	3-3	5-1	1-2	7	2-1	9	4-2	1-3	10	1-1	4-3	5-2	2-3	6	3-1	5-3	2-2	8	3-2																	20
	21	4-1	3-2	5-2	1-1	9	2-1	7	1-4	3-3	1-3	10	1-8	3-1	2-3	8	1-2	6	2-2	5-1	1-5	4-2																21
	23	3-1	5-3	1-3	6	2-3	5-2	1-5	7	2-2	4-3	1-2	10	1-6	4-2	2-1	8	1-1	5-1	1-4	9	3-2	4-1	3-3														23
	25	2-1	5-2	3-2	1-2	8	2-4	4-1	1-4	6	3-3	2-5	1-3	10	1-6	2-2	4-2	9	1-1	4-3	2-3	7	1-5	3-1	5-1	2-6											25	
	27	4-1	3-6	2-3	5-2	1-1	7	2-5	3-2	1-3	9	2-4	3-1	1-6	10	1-2	3-5	2-6	6	1-4	3-3	2-1	8	1-5	5-1	2-2	3-4	4-2									27	
	29	4-1	3-6	4-2	2-3	9	1-5	3-1	2-2	5-3	1-1	7	2-5	3-3	1-6	10	1-2	5-2	2-4	8	1-3	3-5	2-1	6	1-4	3-2	2-6	5-1	3-5	4-3							29	
	31	3-1	5-2	2-2	4-5	1-1	6	3-6	4-3	2-5	8	1-1	4-4	2-3	3-2	1-6	10	1-3	3-5	2-4	4-1	1-5	7	2-1	4-6	3-3	9	1-2	4-2	2-6	5-1	3-4					31	
33	3-1	2-6	5-3	1-3	4-4	3-5	5-1	2-2	8	1-5	4-3	3-2	6	2-4	4-6	1-1	10	1-4	4-1	2-3	9	3-6	4-5	1-2	7	2-5	5-4	3-3	4-2	1-6	5-2	2-1	3-4			33		
35	3-1	4-6	2-3	5-4	1-5	4-2	3-6	5-1	2-4	8	1-3	5-5	2-2	4-4	3-3	6	1-6	10	1-1	9	3-5	4-1	2-5	5-2	1-4	7	2-1	5-6	3-2	4-5	1-2	5-3	2-6	4-3	3-4	35		

Plan 37 - Showing Order of Cross-connecting the Trunks of Subgroups Used as Fill-in Subgroups on Cables Associated with Fundamental Subgroups of Other Than the Same Type. See Paragraph 4.14 for Subgroups of 37 to 45 Trunks

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-5	2-1	3-5	4-4	1-3	5-2	8	1-2	10	1
	2-5	3-1	7	2-4	1-4	4-2	3-4	2-7	5-4	3-7	2
	3-3	2-3	4-1	9	5-3	1-6	1-8	6	2-8	3-6	3
	2-2	4-3	3-8	1-7	5-1	2-6	3-2	FI 2-6	10	1-1	4
2	1-1	1-5	2-1	3-5	4-4	1-3	5-2	8	1-2	10	5
	2-5	3-1	7	2-4	1-4	4-2	3-4	2-7	5-4	3-7	6
	3-3	2-3	4-1	9	5-3	1-6	1-8	6	2-8	3-6	7
	2-2	4-3	3-8	1-7	5-1	2-6	3-2	FI 3-5	2-3	5-1	8
3							4-4	3-3	2-1	12	
4							1-6	6	3-1	16	
5							5-4	1-4	4-1	20	
6							2-7	5-3	1-2	24	
7							FI 3-6	2-4	7	28	
8							9	3-4	2-2	32	
9							1-7	4-3	3-2	36	
10							3-7	1-5	4-2	40	
11							2-8	8	1-3	44	
12							3-8	2-5	5-2	48	
13							1-8	10	1-1	52	
14							3-5	2-3	5-1	56	
15							4-4	3-3	2-1	60	
16							1-6	6	3-1	64	
17							5-4	1-4	4-1	68	
18							2-7	5-3	1-2	72	
19							FI 3-6	2-4	7	76	
20							9	3-4	2-2	80	
21							1-7	4-3	3-2	84	
22							3-7	1-5	4-2	88	
23							2-8	8	1-3	92	
24							3-8	2-5	5-2	96	
25							1-8	2-6	10	100	
26							3-5	2-3	5-1	104	
27							4-4	3-3	2-1	108	
28							1-6	6	3-1	112	
29							5-4	1-4	4-1	116	
30							2-7	5-3	1-2	120	
31							FI 3-1	2-4	7	124	
32							9	3-4	2-2	128	
33							1-7	4-3	3-2	132	
34							3-7	1-5	4-2	136	
35							2-8	8	1-3	140	
36							3-8	2-5	1-1	144	
37							1-8	2-6	5-2	148	

Plan 38 - 80, 160, and 320 Selectors on 37 Trunks
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-5	2-1	3-5	4-6	1-3	5-2	8	4-2	10	1
	2-5	3-1	7	2-4	1-4	4-3	3-4	2-7	5-4	3-7	2
	3-3	2-3	4-1	9	5-3	1-6	1-8	4-5	2-8	3-6	3
	2-2	4-4	3-8	1-7	5-1	2-6	3-2	1-2	6	FI 1-1	4
2	1-1	1-5	2-1	3-5	4-6	1-3	5-2	8	4-2	10	5
	2-5	3-1	7	2-4	1-4	4-3	3-4	2-7	5-4	3-7	6
	3-3	2-3	4-1	9	5-3	1-6	1-8	4-5	2-8	3-6	7
	2-2	4-4	3-8	1-7	5-1	2-6	3-2	1-2	6	FI 5-1	8
3										2-1	12
4										3-1	16
5										4-1	20
6										1-2	24
7										7	28
8										2-2	32
9										3-2	36
10										4-3	40
11										1-3	44
12										5-2	48
13										2-3	52
14										10	56
15										3-3	60
16										FI .6	64
17										1-4	68
18										5-3	72
19										2-4	76
20										4-2	80
21										3-4	84
22										4-4	88
23										1-5	92
24										8	96
25										2-5	100
26										4-5	104
27										2-6	108
28										3-5	112
29										4-6	116
30										1-6	120
31										5-4	124
32										2-7	128
33										3-6	132
34										9	136
35										1-7	140
36										3-7	144
37										2-8	148
38										3-8	152
39										1-8	156

Plan 39 - 80, 160, and 320 Selectors on 39 Trunks.
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-5	2-1	3-5	4-7	1-3	5-2	8	4-2	10	1
	2-5	3-1	7	2-4	1-4	4-3	3-4	2-7	5-4	4-8	2
	3-3	2-3	4-1	9	5-3	1-6	1-8	4-6	2-8	3-6	3
	2-2	4-5	3-8	1-7	5-1	2-6	3-2	1-2	6	4-4	4
	3-7	F1	4-4	1-6	3-3	1-1	10	2-2	7	2-7	3-7
2	1-1	1-5	2-1	3-5	4-7	1-3	5-2	8	4-2	10	6
	2-5	3-1	7	2-4	1-4	4-3	3-4	2-7	5-4	4-8	7
	3-3	2-3	4-1	9	5-3	1-6	1-8	4-6	2-8	3-6	8
	2-2	4-5	3-8	1-7	5-1	2-6	3-2	1-2	6	4-4	9
3/4	F1	4-7	1-5	4-3	1-2	5-3	2-1	8	2-4		14
5/6		4-8	1-7	4-2	2-3	6	3-1	5-4	3-5		23
7/8		3-7	1-8	4-1	1-3	5-2	3-2	4-5	2-6		32
9/10		4-6	2-8	3-6	1-4	5-1	2-5	9	3-4		41
11/12		3-8	1-6	3-3	1-1	10	2-2	4-4	2-7		50
13/14	F2	4-7	1-5	4-3	1-2	5-3	2-1	8	2-4		59
15/16		4-8	1-7	4-2	2-3	6	3-1	5-4	3-5		68
17/18		3-7	1-8	4-1	1-3	5-2	3-2	4-5	2-6		77
19/20		4-6	2-8	3-6	1-4	5-1	2-5	9	3-4		86
21/22		3-8	7	3-3	1-1	10	2-2	4-4	1-6		95
23/24	F3	4-7	1-5	4-3	1-2	5-3	2-1	8	2-4		104
25/26		4-8	1-7	4-2	2-3	6	3-1	5-4	3-5		113
27/28		3-7	1-8	4-1	1-3	5-2	3-2	4-5	2-6		122
29/30		4-6	2-8	3-6	1-4	5-1	2-5	9	3-4		131
31/32		3-8	7	2-7	1-1	10	2-2	3-3	1-6		140
33/34	F4	4-7	1-5	4-3	1-2	5-3	2-1	8	2-4		149
35/36		4-8	1-7	4-2	2-3	6	3-1	5-4	3-5		158
37/38		3-7	1-8	4-1	1-3	5-2	3-2	4-5	2-6		167
39/40		4-6	2-8	3-6	1-4	5-1	2-5	9	3-4		176
41/42		3-8	7	2-7	4-4						185

Plan 40 - 80, 160, and 320 Selectors on 41 Trunks.
 For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-5	2-1	3-5	4-7	1-3	5-3	8	4-2	10	1
	2-5	3-1	7	2-4	1-4	4-3	3-4	2-7	5-6	5-2	2
	3-3	2-3	4-1	9	5-4	1-6	1-8	4-6	2-8	3-6	3
	2-2	4-5	3-8	1-7	5-1	2-6	3-2	1-2	5-5	4-4	4
	3-7	4-8	6	F1 3-3	1-1	10	2-2	6	4-8	3-7	5
2	1-1	1-5	2-1	3-5	4-7	1-3	5-3	8	4-2	10	6
	2-5	3-1	7	2-4	1-4	4-3	3-4	2-7	5-6	5-2	7
	3-3	2-3	4-1	9	5-4	1-6	1-8	4-6	2-8	3-6	8
	2-2	4-5	3-8	1-7	5-1	2-6	3-2	1-2	5-5	4-4	9
3/4				4-3	1-2	5-4	2-1				14
5/6				4-2	2-3	6	3-1				23
7/8				4-1	1-3	5-3	3-2				32
9/10				3-6	1-4	5-1	2-5				41
11/12			F1	5-5	1-6	7	2-7				50
13/14				4-7	1-5	5-2	2-4				59
15/16				4-8	1-7	5-6	3-5				68
17/18				3-7	1-8	4-5	2-6				77
19/20				4-6	2-8	9	3-4				86
21/22				3-8	8	4-4	2-7				95
23/24				3-3	1-1	10	2-2				104
25/26				4-3	1-2	5-4	2-1				113
27/28				4-2	2-3	6	3-1				122
29/30				4-1	1-3	5-3	3-2				131
31/32			F2	3-6	1-4	5-1	2-5				140
33/34				5-5	1-6	7	4-4				149
35/36				4-7	1-5	5-2	2-4				158
37/38				4-8	1-7	5-6	3-5				167
39/40				3-7	1-8	4-5	2-6				176
41/42				4-6	2-8	9	3-4				185
43/44				3-8	8						194

Plan 41 - 80, 160, and 320 Selectors on 43 Trunks.
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-5	2-1	3-5	4-7	2-3	5-3	8	4-2	10	1
	2-5	3-1	7	2-4	1-4	4-3	3-4	2-7	5-7	5-2	2
	3-3	5-4	4-1	9	5-5	1-6	1-8	4-6	2-8	3-6	3
	2-2	4-5	3-8	1-7	5-1	2-6	3-2	1-2	5-6	4-4	4
	3-7	4-8	6	1-3	5-8	5-8	1-3	6	4-8	3-7	5
2	1-1	1-5	2-1	3-5	4-7	2-3	5-3	8	4-2	10	6
	2-5	3-1	7	2-4	1-4	4-3	3-4	2-7	5-7	5-2	7
	3-3	5-4	4-1	9	5-5	1-6	1-8	4-6	2-8	3-6	8
	2-2	4-5	3-8	1-7	5-1	2-6	3-2	1-2	5-6	4-4	9

Plan 42 - 80, 160, and 320 Selectors on 45 Trunks.
For Use on 11'-6" Frames - See Paragraph 4.02

TRUNKS IN CABLE											CABLE NO.	
1	2	3	4	5	6	7	8	9	10			
1	1-1	1-6	2-1	1-8	2-2	3-1	4-1	2-3	4-2	10	1	
	2-5	1-2	7	4-5	1-12	1-5	3-2	3-3	1-11	8	2	
	3-4	1-7	5-1	6	2-6	1-3	3-6	4-3	1-10	4-6	3	
	5-2	1-9	4-4	2-4	9	3-5	1-4	F1	3-2	6	1-1	4
2	1-1	1-6	2-1	1-8	2-2	3-1	4-1	2-3	4-2	10	5	
	2-5	1-2	7	4-5	1-12	1-5	3-2	3-3	1-11	8	6	
	3-4	1-7	5-1	6	2-6	1-3	3-6	4-3	1-10	4-6	7	
	5-2	1-9	4-4	2-4	9	3-5	1-4	F1	4-2	1-2	2-3	8
3								1-3	4-3	5-2	12	
4								7	2-4	1-4	16	
5								3-1	1-5	4-4	20	
6								1-6	10	2-2	24	
7								F1	2-5	4-6	1-7	28
8								4-5	1-8	2-6	32	
9								1-9	5-1	3-4	36	
10								8	2-1	1-10	40	
11								3-3	1-11	4-1	44	
12								1-12	9	3-5	48	
13								3-6	6	1-1	52	
14								4-2	1-2	2-3	56	
15								1-3	4-3	5-2	60	
16								7	2-4	1-4	64	
17								3-1	1-5	4-4	68	
18								1-6	10	2-2	72	
19								F2	2-5	4-6	1-7	76
20								4-5	1-8	2-6	80	
21								1-9	5-1	3-4	84	
22								8	2-1	1-10	88	
23								3-3	1-11	4-1	92	
24								1-12	9	3-5	96	
25								3-6	3-2	1-1	100	
26								4-2	1-2	2-3	104	
27								1-3	4-3	5-2	108	
28								7	2-4	1-4	112	
29								3-1	1-5	4-4	116	
30								1-6	10	2-2	120	
31								F3	2-5	4-6	1-7	124
32								4-5	1-8	2-6	128	
33								1-9	5-1	3-4	132	
34								8	2-1	1-10	136	
35								3-3	1-11	4-1	140	
36								1-12	9	3-5	144	
37								3-6	3-2	6	148	

Plan 43 - 120 and 240 Selectors on 37 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-6	2-1	1-8	2-2	3-1	5-4	2-3	4-2	10	1
	2-5	1-2	7	4-5	1-12	1-5	3-2	3-3	5-2	8	2
	3-4	1-7	5-1	6	2-6	1-3	3-6	4-3	1-10	4-6	3
	5-3	1-9	4-4	2-4	9	3-5	1-4	1-11	4-1	FI 1-1	4
2	1-1	1-6	2-1	1-8	2-2	3-1	5-4	2-3	4-2	10	5
	2-5	1-2	7	4-5	1-12	1-5	3-2	3-3	5-2	8	6
	3-4	1-7	5-1	6	2-6	1-3	3-6	4-3	1-10	4-6	7
	5-3	1-9	4-4	2-4	9	3-5	1-4	1-11	4-1	FI 2-3	8
3									5-3	12	
4									1-4	16	
5									4-4	20	
6									2-2	24	
7									1-7	28	
8									2-6	32	
9									3-4	36	
10									1-10	40	
11									4-1	44	
12									3-5	48	
13									6	52	
14									1-2	56	
15									4-3	60	
16									2-4	64	
17									1-5	68	
18									10	72	
19									FI 4-6	76	
20									1-8	80	
21									5-1	84	
22									2-1	88	
23									1-11	92	
24									9	96	
25									3-2	100	
26									4-2	104	
27									1-3	108	
28									7	112	
29									3-1	116	
30									1-6	120	
31									2-5	124	
32									4-5	128	
33									1-9	132	
34									8	136	
35									3-3	140	
36									1-12	144	
37									3-6	148	
38									5-2	152	
39									5-4	156	

Plan 44 - 120 and 240 Selectors on 39 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-6	2-1	1-8	2-2	3-1	5-6	5-5	4-2	10	1
	2-5	1-2	7	4-5	1-12	1-5	3-2	2-3	5-3	8	2
	3-4	1-7	5-1	6	2-6	1-3	3-6	4-3	1-10	4-6	3
	5-4	1-9	4-4	2-4	9	3-5	1-4	1-11	4-1	5-2	4
	3-3	F1 4-3	1-6	3-4	1-1	5-6	2-2	8	1-11	3-3	5
2	1-1	1-6	2-1	1-8	2-2	3-1	5-6	5-5	4-2	10	6
	2-5	1-2	7	4-5	1-12	1-5	3-2	2-3	5-3	8	7
	3-4	1-7	5-1	6	2-6	1-3	3-6	4-3	1-10	4-6	8
	5-4	1-9	4-4	2-4	9	3-5	1-4	1-11	4-1	5-2	9
3/4	3-2	1-7	4-6	1-2	6	2-3	5-1	4-5		14	
5/6	4-2	1-8	3-6	1-3	5-3	2-1	5-4	2-5		23	
7/8	F1 3-3	1-9	2-4	1-4	10	1-12	4-1	5-5		32	
9/10	4-4	1-10	3-1	1-5	7	2-6	9	5-2		41	
11/12	3-5	1-6	3-4	1-1	5-6	2-2	8	1-11		50	
13/14	3-2	1-7	4-6	1-2	6	2-3	5-1	4-5		59	
15/16	4-2	1-8	3-6	1-3	5-3	2-1	5-4	2-5		68	
17/18	F3 3-3	1-9	2-4	1-4	10	1-12	4-1	5-5		77	
19/20	4-4	1-10	3-1	1-5	7	2-6	9	5-2		86	
21/22	3-5	4-3	3-4	1-1	5-6	2-2	8	1-11		95	
23/24	3-2	1-7	4-6	1-2	6	2-3	5-1	4-5		104	
25/26	4-2	1-8	3-6	1-3	5-3	2-1	5-4	2-5		113	
27/28	F4 3-3	1-9	2-4	1-4	10	1-12	4-1	5-5		122	
29/30	4-4	1-10	3-1	1-5	7	2-6	9	5-2		131	
31/32	3-5	4-3	1-6	1-1	5-6	2-2	8	1-11		140	
33/34	3-2	1-7	4-6	1-2	6	2-3	5-1	4-5		149	
35/36	4-2	1-8	3-6	1-3	5-3	2-1	5-4	2-5		158	
37/38	F5 3-3	1-9	2-4	1-4	10	1-12	4-1	5-5		167	
39/40	4-4	1-10	3-1	1-5	7	2-6	3-4	5-2		176	
41/42	3-5	4-3	1-6	9						185	

Plan 45 - 120 and 240 Selectors on 41 Trunks
 For Use on 9'-0" Frames - See Paragraph 4.02

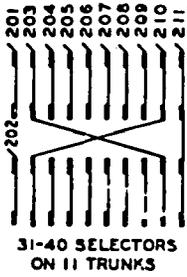
TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-6	2-1	1-8	2-3	3-1	5-4	2-2	2-4	10	1
	2-9	1-2	7	2-6	1-12	1-5	3-2	2-5	5-2	8	2
	3-4	1-7	5-1	6	2-11	1-3	3-6	4-2	1-10	2-12	3
	5-3	1-9	4-3	2-7	9	3-5	1-4	1-11	4-1	2-8	4
	3-3	2-10	4-4	FI 3-4	1-1	5-4	2-3	4-4	2-10	3-3	5
2	1-1	1-6	2-1	1-8	2-3	3-1	5-4	2-2	2-4	10	6
	2-9	1-2	7	2-6	1-12	1-5	3-2	2-5	5-2	8	7
	3-4	1-7	5-1	6	2-11	1-3	3-6	4-2	1-10	2-12	8
	5-3	1-9	4-3	2-7	9	3-5	1-4	1-11	4-1	2-8	9
	3/4			4-4	1-2	6	2-5				14
5/6			3-6	1-3	5-2	2-1				23	
7/8			2-7	1-4	10	1-12				32	
9/10			3-1	1-5	7	2-11				41	
11/12			4-2	1-6	8	2-8				50	
13/14			FI 3-2	1-7	5-1	2-6				59	
15/16			2-4	1-8	5-3	2-9				68	
17/18			3-3	1-9	4-1	2-10				77	
19/20			4-3	1-10	9	2-12				86	
21/22			3-5	1-11	2-2	5-1				95	
23/24			3-4	1-1	5-4	2-3				104	
25/26			4-4	1-2	6	2-5				113	
27/28			3-6	1-3	5-2	2-1				122	
29/30			2-7	1-4	10	1-12				131	
31/32			F2 3-1	1-5	7	2-11				140	
33/34			4-2	1-6	8	2-8				149	
35/36			3-2	1-7	1-11	2-6				158	
37/38			2-4	1-8	5-3	2-9				167	
39/40			3-3	1-9	4-1	2-10				176	
41/42			4-3	1-10	9	2-12				185	
43/44			3-5	2-2						194	

Plan 46 - 120 and 240 Selectors on 43 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

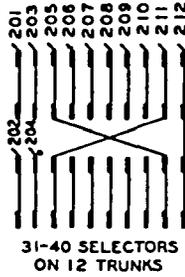
TRUNKS IN CABLE										CABLE NO.	
1	2	3	4	5	6	7	8	9	10		
1	1-1	1-6	2-1	1-8	2-3	3-1	4-5	2-2	2-4	10	1
	2-9	1-2	7	2-6	1-12	1-5	3-2	2-5	5-2	8	2
	3-4	1-7	5-1	6	2-11	1-3	3-6	4-3	4-2	2-12	3
	5-3	1-9	4-4	2-7	9	3-5	1-4	1-11	4-1	2-8	4
	3-3	2-10	4-6	1-10	5-4	5-4	1-10	4-6	2-10	3-3	5
2	1-1	1-6	2-1	1-8	2-3	3-1	4-5	2-2	2-4	10	6
	2-9	1-2	7	2-6	1-12	1-5	3-2	2-5	5-2	8	7
	3-4	1-7	5-1	6	2-11	1-3	3-6	4-3	4-2	2-12	8
	5-3	1-9	4-4	2-7	9	3-5	1-4	1-11	4-1	2-8	9

Plan 47 - 120 and 240 Selectors on 45 Trunks
For Use on 9'-0" Frames - See Paragraph 4.02

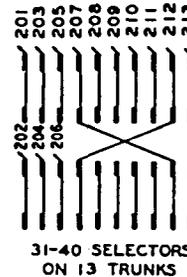
GRADED MULTIPLE PLANS FOR TRUNKS FROM SELECTOR MULTIPLE TO CONNECTORS
WITH ORDER OF ASSIGNING TRUNKS TO CONNECTORS INDICATED
(PLANS 50 TO 65 HEREON - PLANS 66 TO 233 ON SUCCEEDING PAGES)



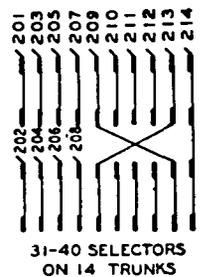
PLAN 50



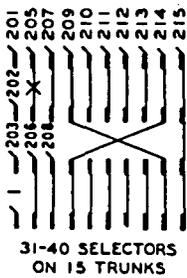
PLAN 51



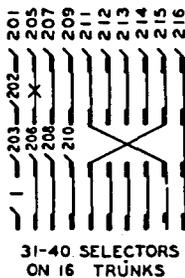
PLAN 52



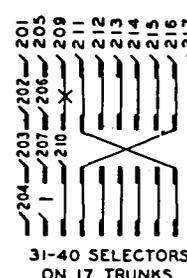
PLAN 53



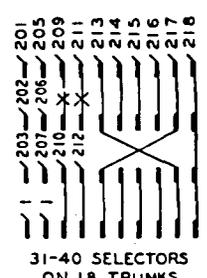
PLAN 54



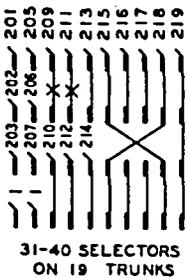
PLAN 55



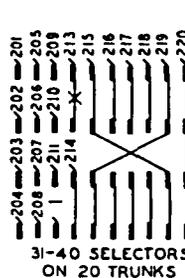
PLAN 56



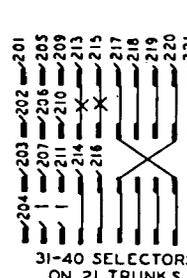
PLAN 57



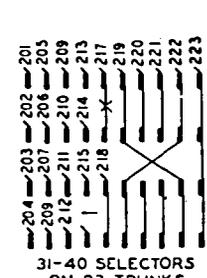
PLAN 58



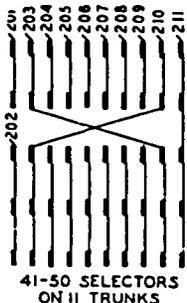
PLAN 59



PLAN 60



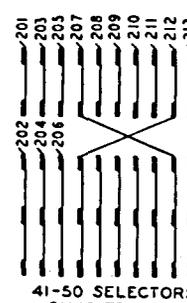
PLAN 61



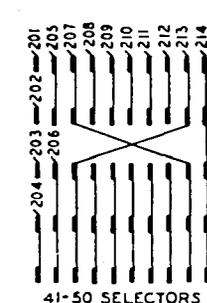
PLAN 62



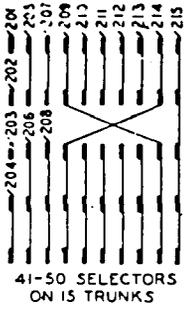
PLAN 63



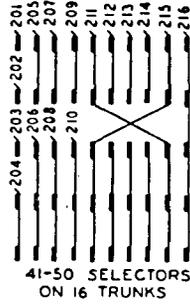
PLAN 64



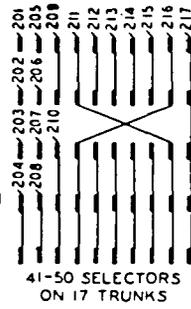
PLAN 65



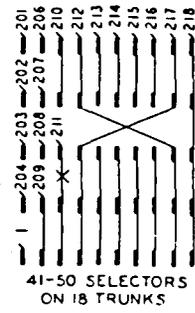
PLAN 66



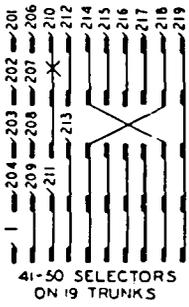
PLAN 67



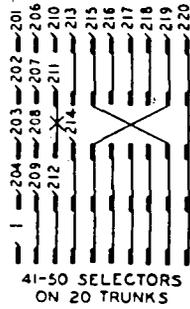
PLAN 68



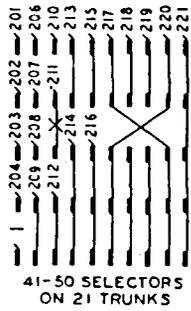
PLAN 69



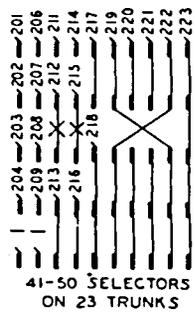
PLAN 70



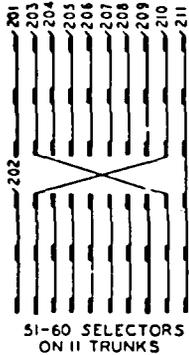
PLAN 71



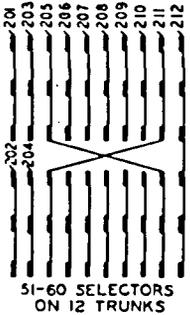
PLAN 72



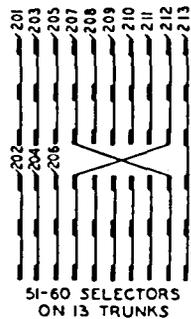
PLAN 73



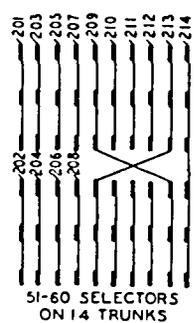
PLAN 74



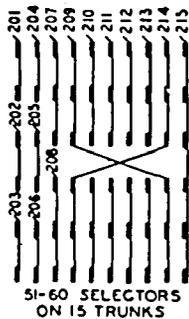
PLAN 75



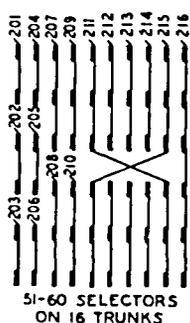
PLAN 76



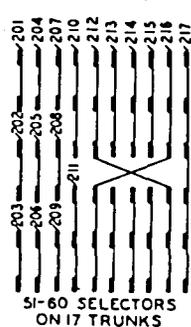
PLAN 77



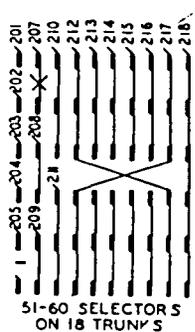
PLAN 78



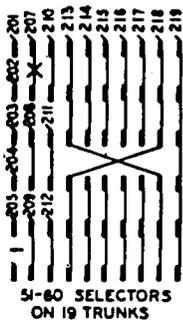
PLAN 79



PLAN 80



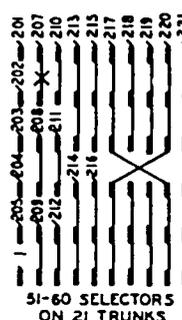
PLAN 81



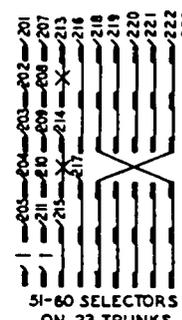
PLAN 82



PLAN 83



PLAN 84



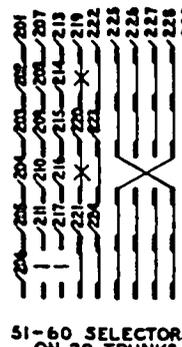
PLAN 85



PLAN 86



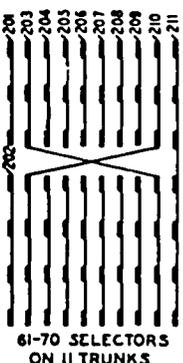
PLAN 87



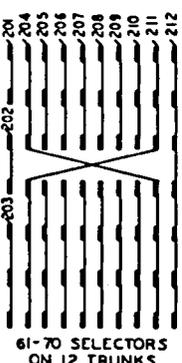
PLAN 88



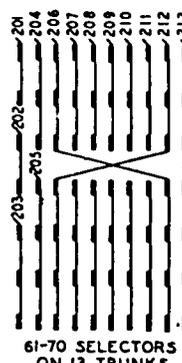
PLAN 89



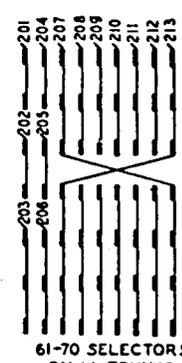
PLAN 90



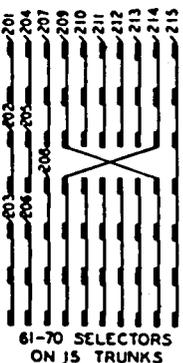
PLAN 91



PLAN 92



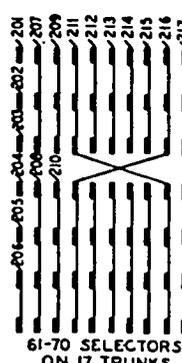
PLAN 93



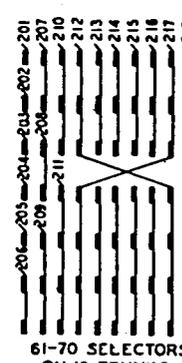
PLAN 94



PLAN 95



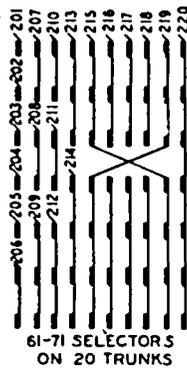
PLAN 96



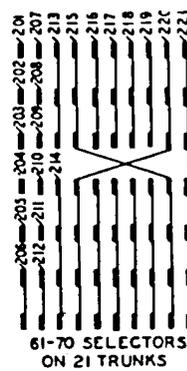
PLAN 97



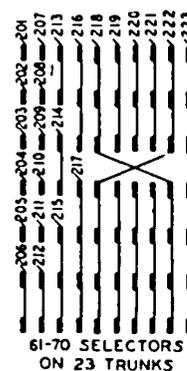
PLAN 98



PLAN 99



PLAN 100



PLAN 101



PLAN 102



PLAN 103



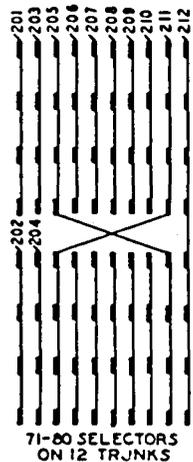
PLAN 104



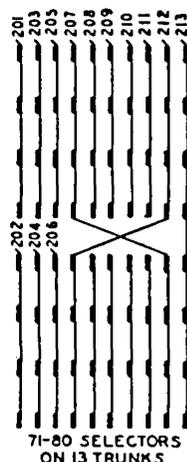
PLAN 105



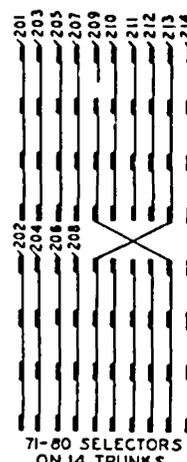
PLAN 106



PLAN 107



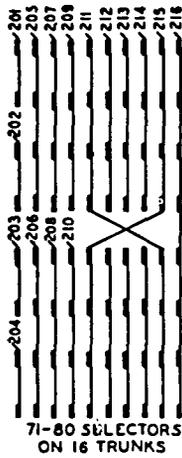
PLAN 108



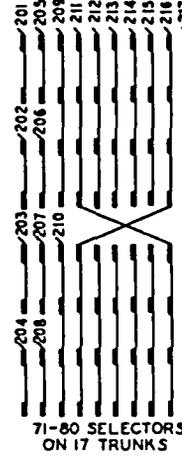
PLAN 109



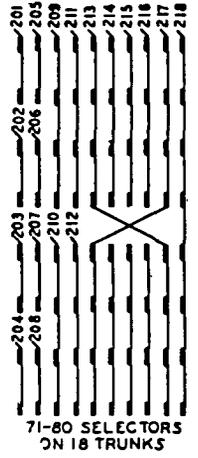
PLAN 110



PLAN 111



PLAN 112



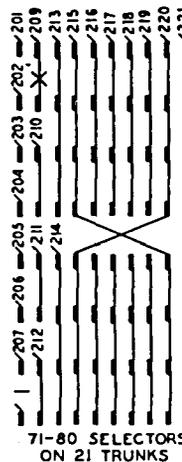
PLAN 113



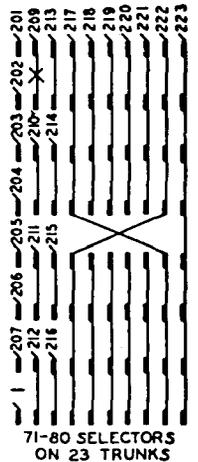
PLAN 114



PLAN 115



PLAN 116



PLAN 117



PLAN 118



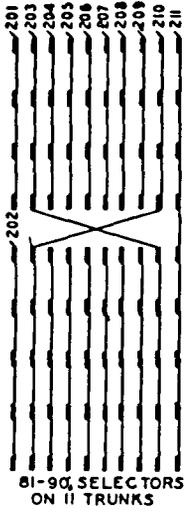
PLAN 119



PLAN 120

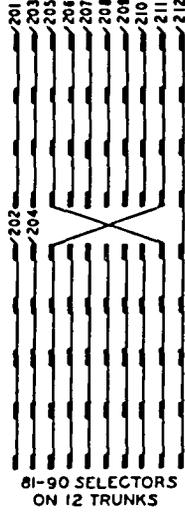


PLAN 121



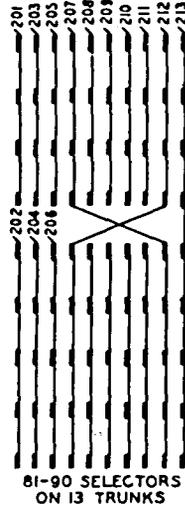
81-90 SELECTORS ON 11 TRUNKS

PLAN 122



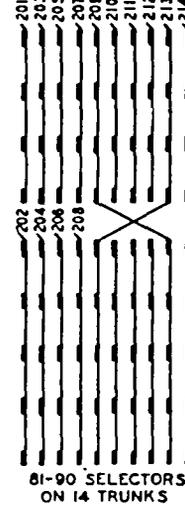
81-90 SELECTORS ON 12 TRUNKS

PLAN 123



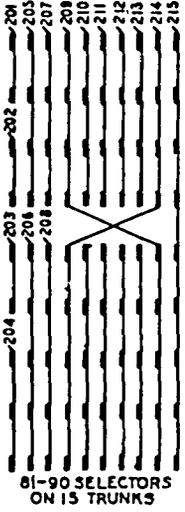
81-90 SELECTORS ON 13 TRUNKS

PLAN 124



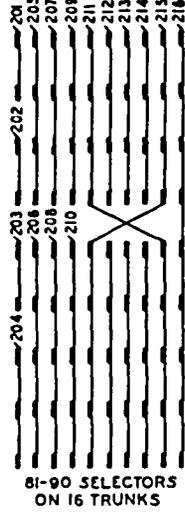
81-90 SELECTORS ON 14 TRUNKS

PLAN 125



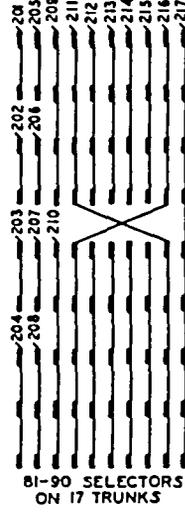
81-90 SELECTORS ON 15 TRUNKS

PLAN 126



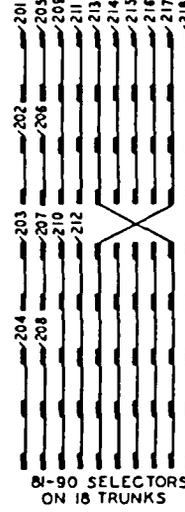
81-90 SELECTORS ON 16 TRUNKS

PLAN 127



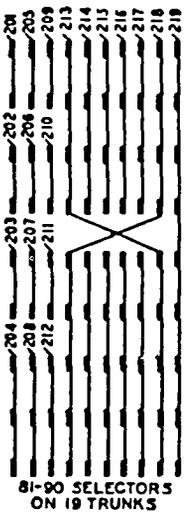
81-90 SELECTORS ON 17 TRUNKS

PLAN 128



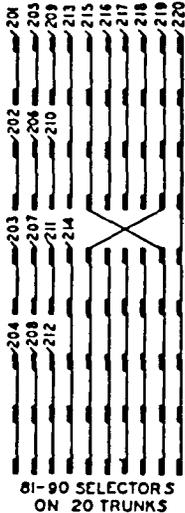
81-90 SELECTORS ON 18 TRUNKS

PLAN 129



81-90 SELECTORS ON 19 TRUNKS

PLAN 130



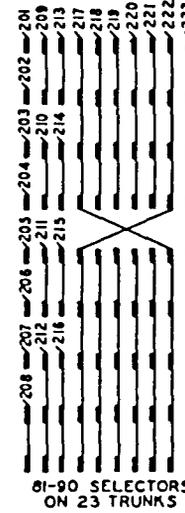
81-90 SELECTORS ON 20 TRUNKS

PLAN 131



81-90 SELECTORS ON 21 TRUNKS

PLAN 132



81-90 SELECTORS ON 23 TRUNKS

PLAN 133



81-90 SELECTORS ON 25 TRUNKS
PLAN 134



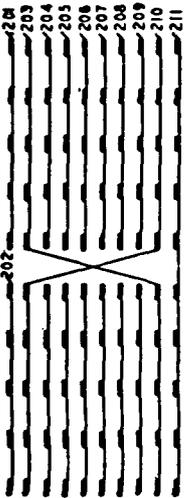
81-90 SELECTORS ON 27 TRUNKS
PLAN 135



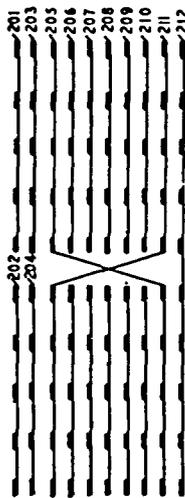
81-90 SELECTORS ON 29 TRUNKS
PLAN 136



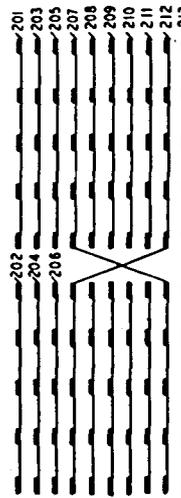
81-90 SELECTORS ON 31 TRUNKS
PLAN 137



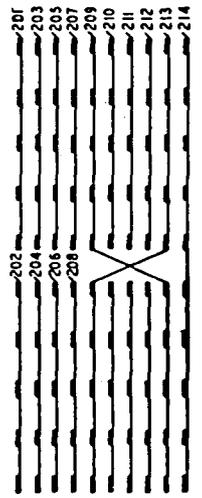
91-100 SELECTORS ON 11 TRUNKS
PLAN 138



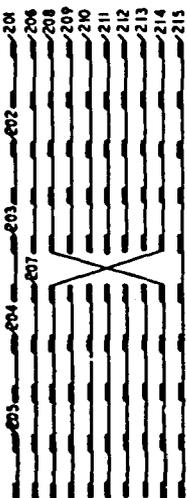
91-100 SELECTORS ON 12 TRUNKS
PLAN 139



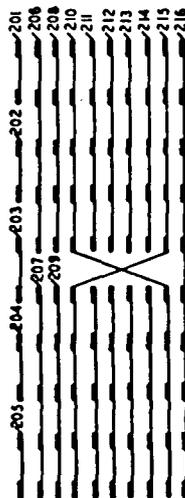
91-100 SELECTORS ON 13 TRUNKS
PLAN 140



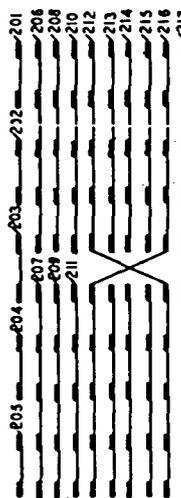
91-100 SELECTORS ON 14 TRUNKS
PLAN 141



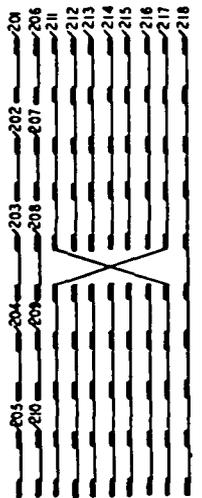
91-100 SELECTORS ON 15 TRUNKS
PLAN 142



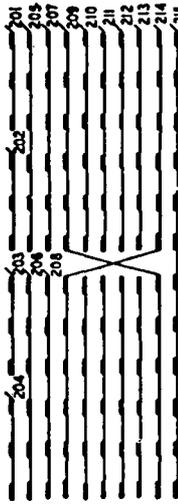
91-100 SELECTORS ON 16 TRUNKS
PLAN 143



91-100 SELECTORS ON 17 TRUNKS
PLAN 144

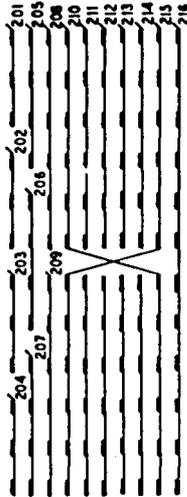


91-100 SELECTORS ON 18 TRUNKS
PLAN 145



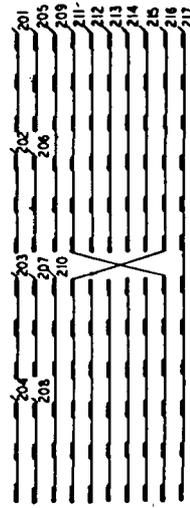
III-120 SELECTORS ON 15 TRUNKS

PLAN 158



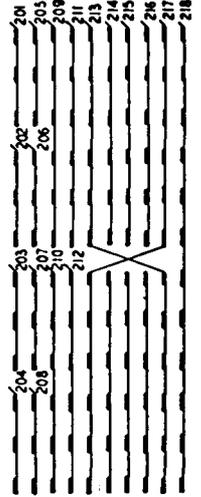
III-120 SELECTORS ON 16 TRUNKS

PLAN 159



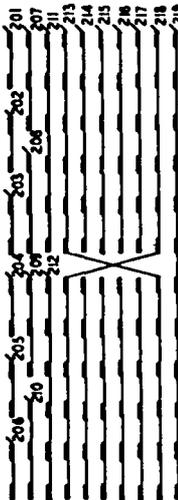
III-120 SELECTORS ON 17 TRUNKS

PLAN 160



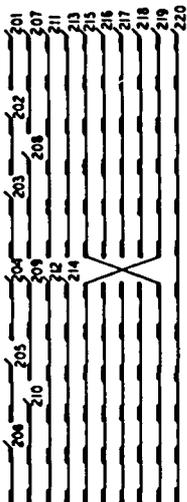
III-120 SELECTORS ON 18 TRUNKS

PLAN 161



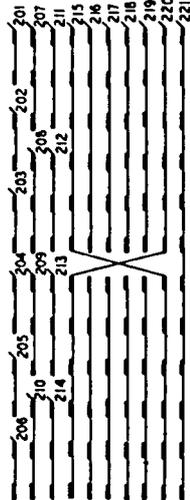
III-120 SELECTORS ON 19 TRUNKS

PLAN 162



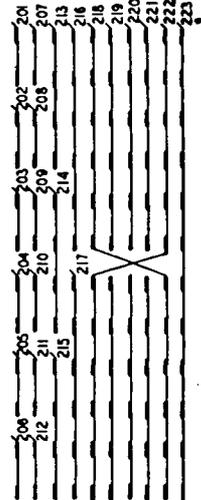
III-120 SELECTORS ON 20 TRUNKS

PLAN 163



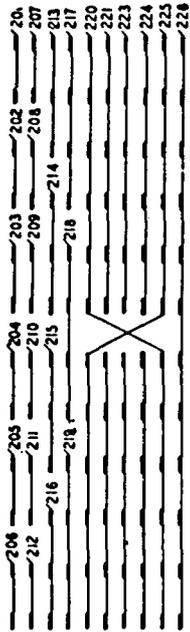
III-120 SELECTORS ON 21 TRUNKS

PLAN 164



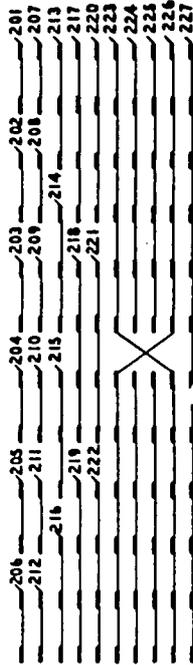
III-120 SELECTORS ON 23 TRUNKS

PLAN 165



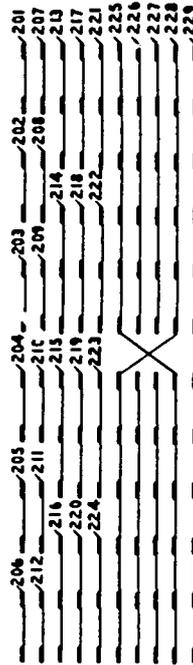
111-120 SELECTORS ON 25 TRUNKS

PLAN 166



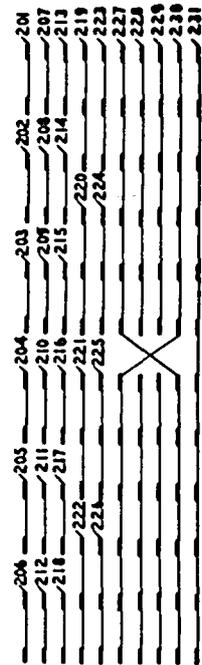
111-120 SELECTORS ON 27 TRUNKS

PLAN 167



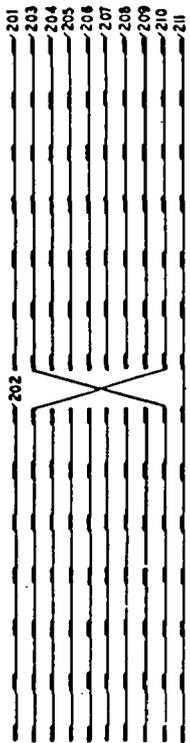
111-120 SELECTORS ON 29 TRUNKS

PLAN 168



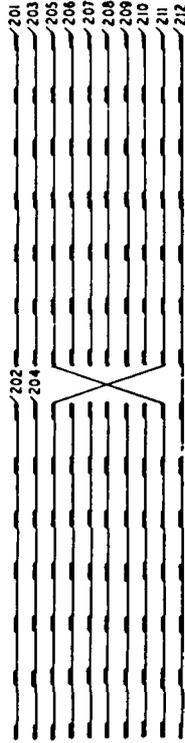
111-120 SELECTORS ON 31 TRUNKS

PLAN 169



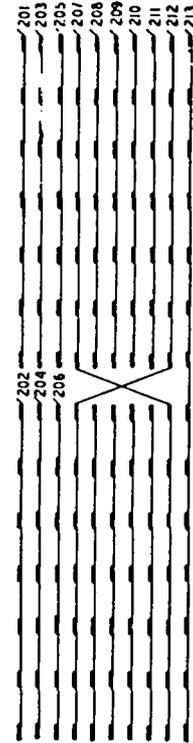
131-140 SELECTORS ON 11 TRUNKS

PLAN 170



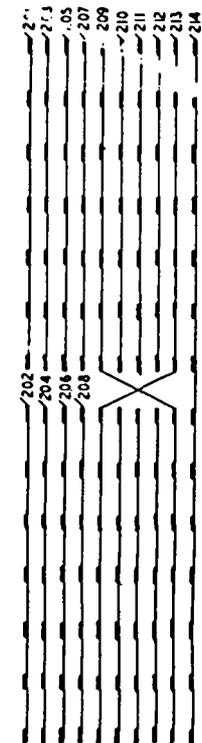
131-140 SELECTORS ON 12 TRUNKS

PLAN 171



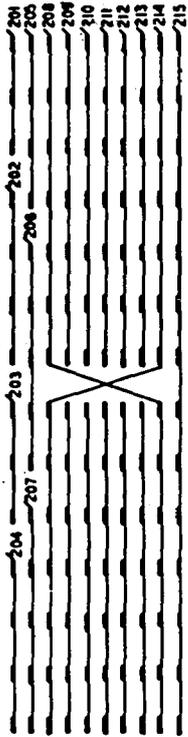
131-140 SELECTORS ON 13 TRUNKS

PLAN 172



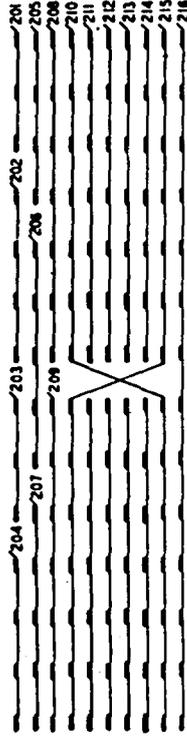
131-140 SELECTORS ON 14 TRUNKS

PLAN 173



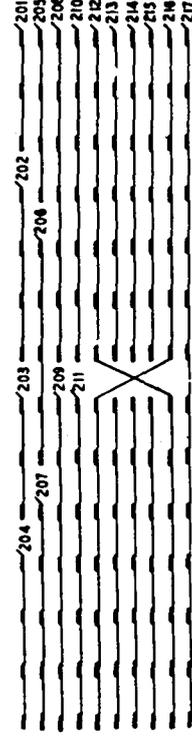
131-140 SELECTORS ON 15 TRUNKS

PLAN 174



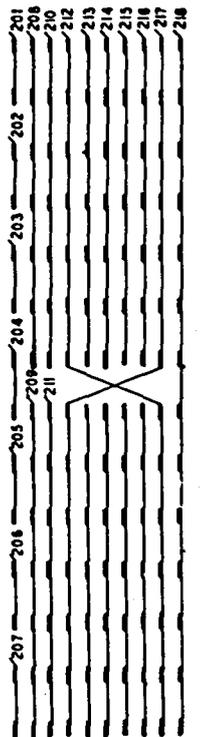
131-140 SELECTORS ON 16 TRUNKS

PLAN 175



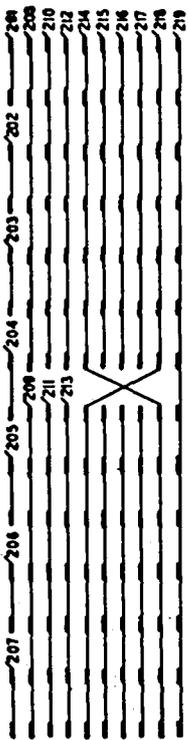
131-140 SELECTORS ON 17 TRUNKS

PLAN 176



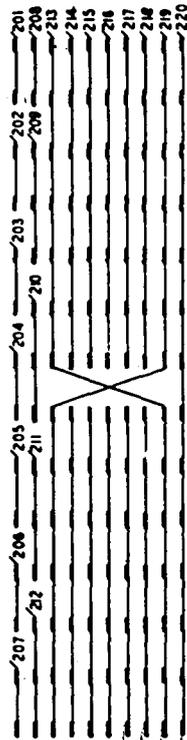
131-140 SELECTORS ON 18 TRUNKS

PLAN 177



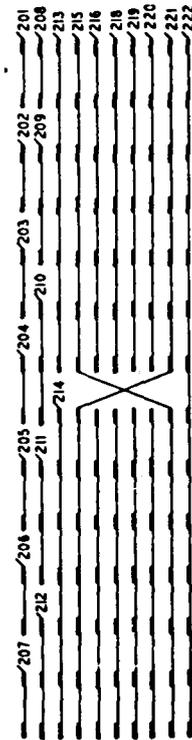
131-140 SELECTORS ON 19 TRUNKS

PLAN 178



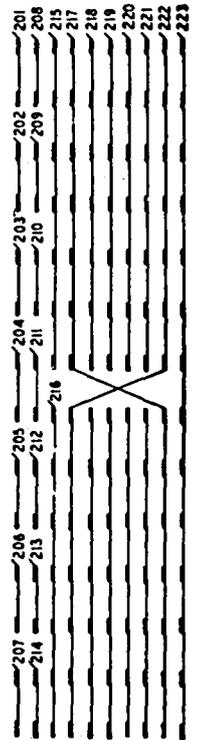
131-140 SELECTORS ON 20 TRUNKS

PLAN 179



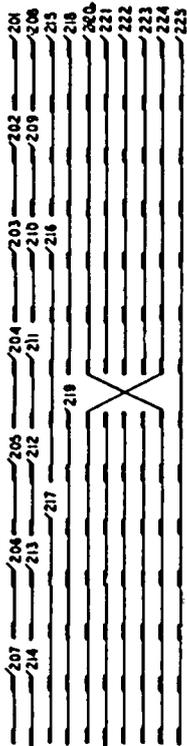
131-140 SELECTORS ON 21 TRUNKS

PLAN 180



131-140 SELECTORS ON 23 TRUNKS

PLAN 181



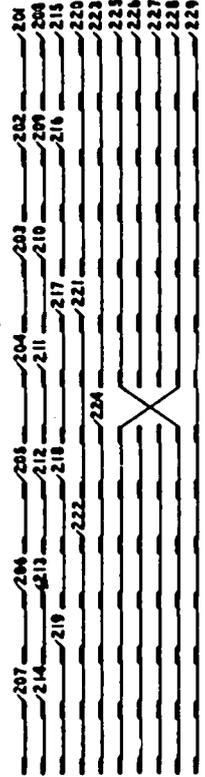
131-140 SELECTORS ON 25 TRUNKS

PLAN 182



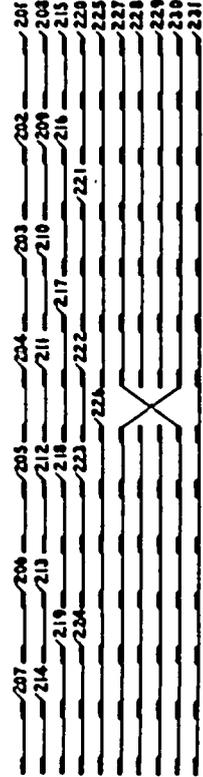
131-140 SELECTORS ON 27 TRUNKS

PLAN 183



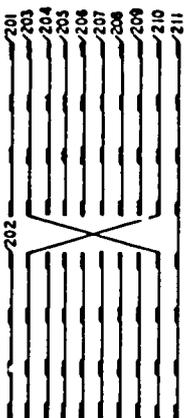
131-140 SELECTORS ON 29 TRUNKS

PLAN 184



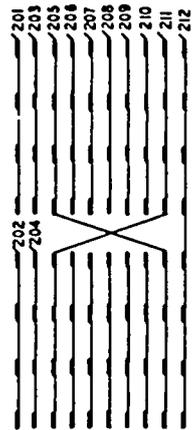
131-140 SELECTORS ON 31 TRUNKS

PLAN 185



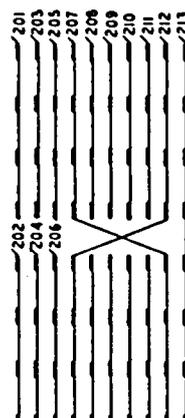
151-160 SELECTORS ON 11 TRUNKS

PLAN 186



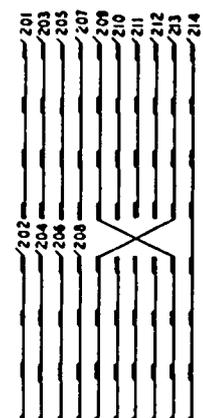
151-160 SELECTORS ON 12 TRUNKS

PLAN 187



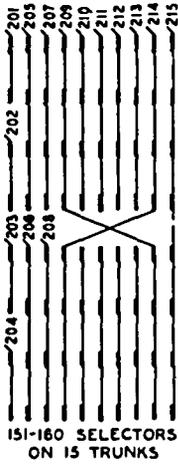
151-160 SELECTORS ON 13 TRUNKS

PLAN 188



151-160 SELECTORS ON 14 TRUNKS

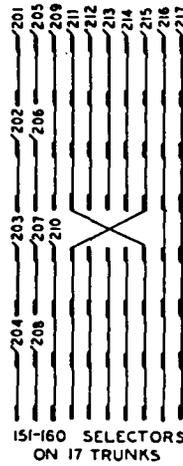
PLAN 189



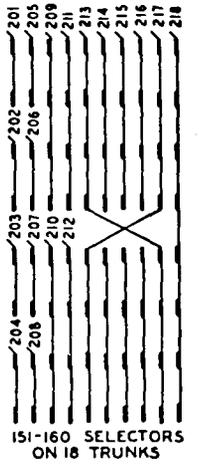
PLAN 190



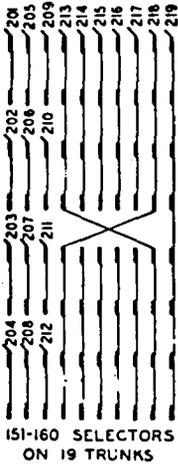
PLAN 191



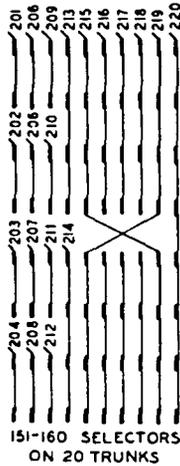
PLAN 192



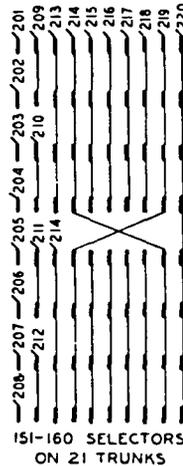
PLAN 193



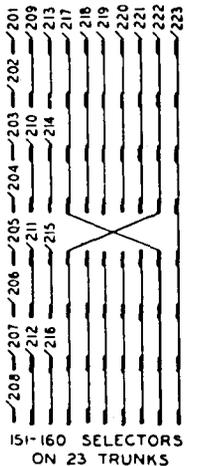
PLAN 194



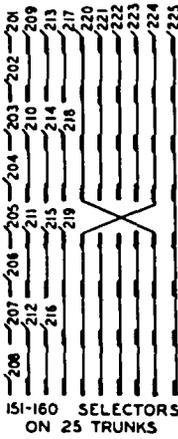
PLAN 195



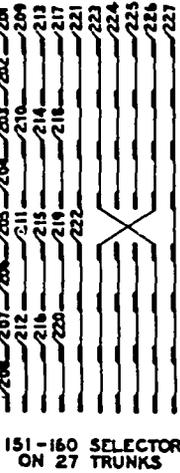
PLAN 196



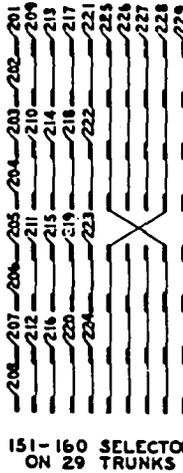
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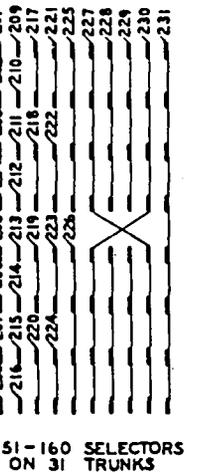
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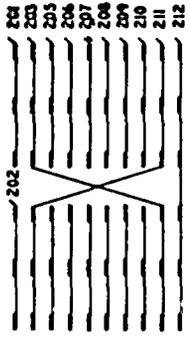
PLAN 199



PLAN 200

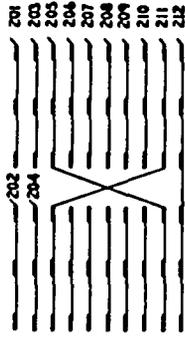


PLAN 201



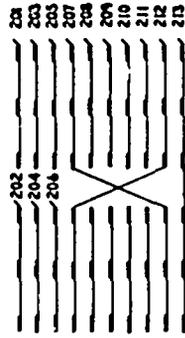
171-180 SELECTORS ON 11 TRUNKS

PLAN 202



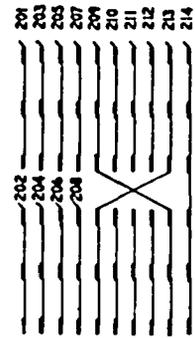
171-180 SELECTORS ON 12 TRUNKS

PLAN 203



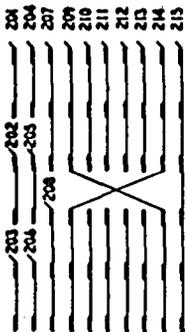
171-180 SELECTORS ON 13 TRUNKS

PLAN 204



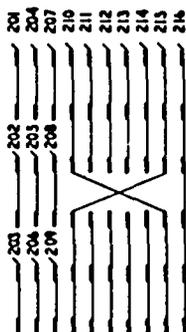
171-180 SELECTORS ON 14 TRUNKS

PLAN 205



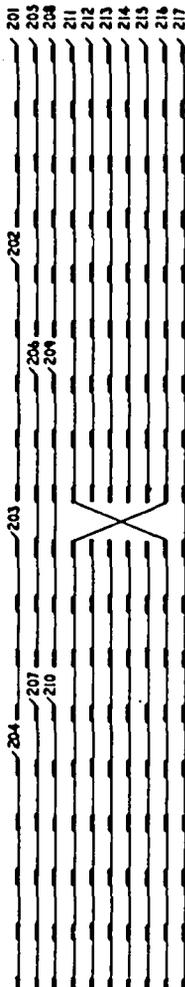
171-180 SELECTORS ON 15 TRUNKS

PLAN 206



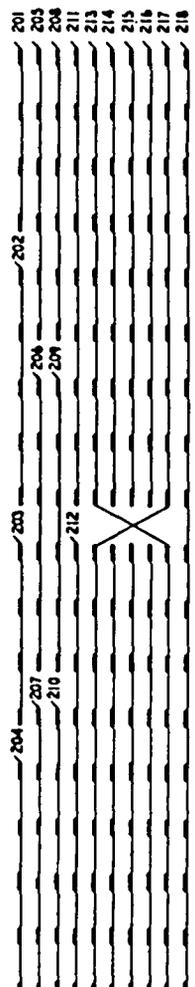
171-180 SELECTORS ON 16 TRUNKS

PLAN 207



171-180 SELECTORS ON 17 TRUNKS

PLAN 208



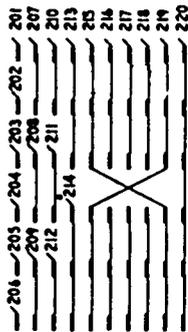
171-180 SELECTORS ON 18 TRUNKS

PLAN 209



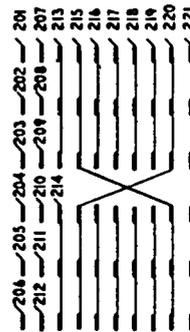
171-180 SELECTORS ON 19 TRUNKS

PLAN 210



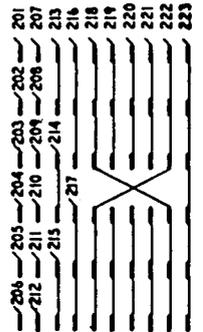
171-180 SELECTORS ON 20 TRUNKS

PLAN 211



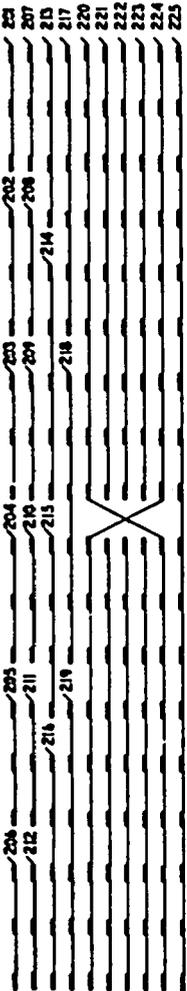
171-180 SELECTORS ON 21 TRUNKS

PLAN 212



171-180 SELECTORS ON 23 TRUNKS

PLAN 213



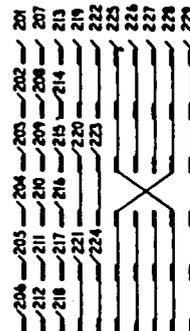
171-180 SELECTORS ON 25 TRUNKS

PLAN 214



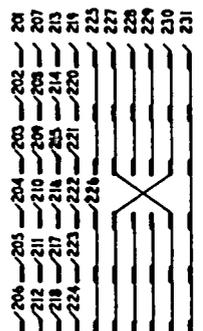
171-180 SELECTORS ON 27 TRUNKS

PLAN 215



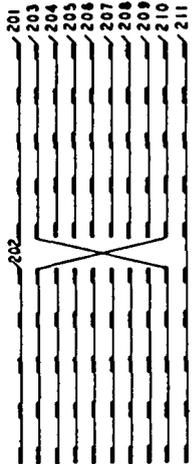
171-180 SELECTORS ON 29 TRUNKS

PLAN 216



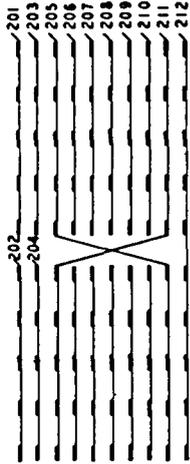
171-180 SELECTORS ON 31 TRUNKS

PLAN 217



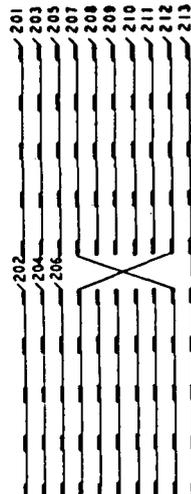
191-200 SELECTORS
ON 11 TRUNKS

PLAN 218



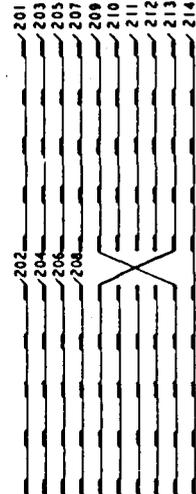
191-200 SELECTORS
ON 12 TRUNKS

PLAN 219



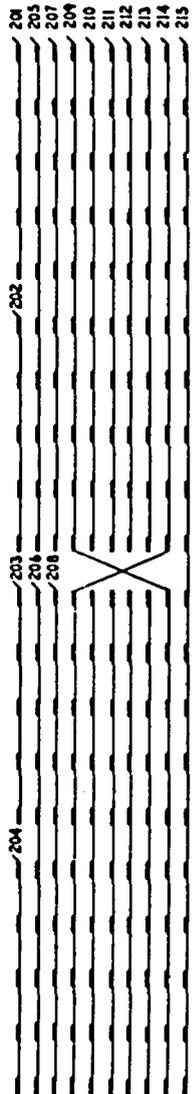
191-200 SELECTORS
ON 13 TRUNKS

PLAN 220



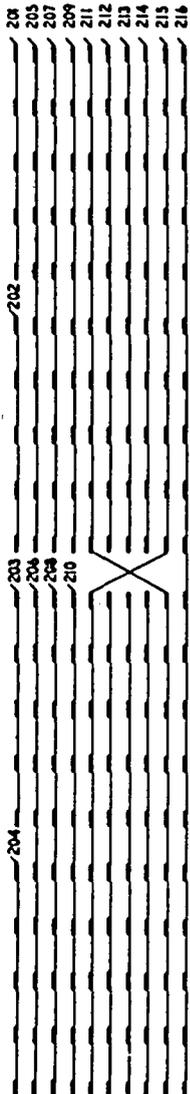
191-200 SELECTORS
ON 14 TRUNKS

PLAN 221



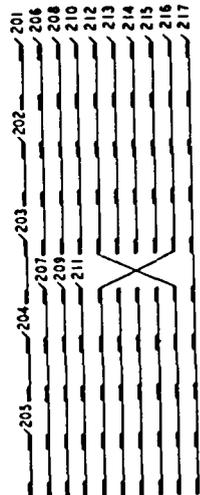
191-200 SELECTORS
ON 15 TRUNKS

PLAN 222



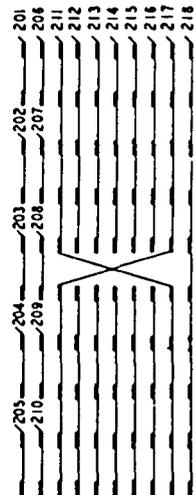
191-200 SELECTORS
ON 16 TRUNKS

PLAN 223



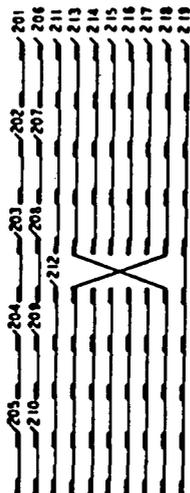
191-200 SELECTORS
ON 17 TRUNKS

PLAN 224



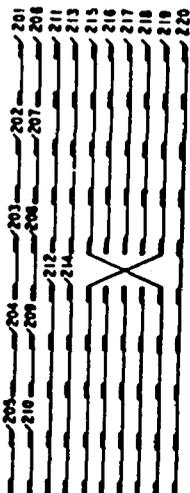
191-200 SELECTORS
ON 18 TRUNKS

PLAN 225



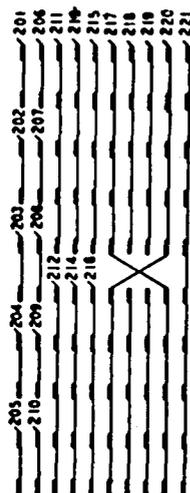
191-200 SELECTORS ON 19 TRUNKS

PLAN 226



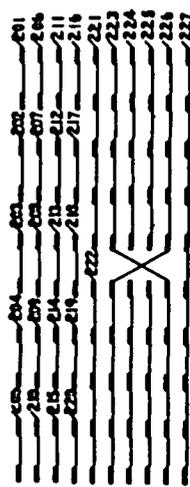
191-200 SELECTORS ON 20 TRUNKS

PLAN 227



191-200 SELECTORS ON 21 TRUNKS

PLAN 228



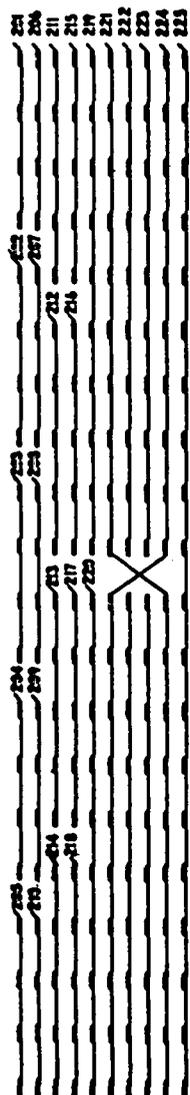
191-200 SELECTORS ON 27 TRUNKS

PLAN 231



191-200 SELECTORS ON 23 TRUNKS

PLAN 229



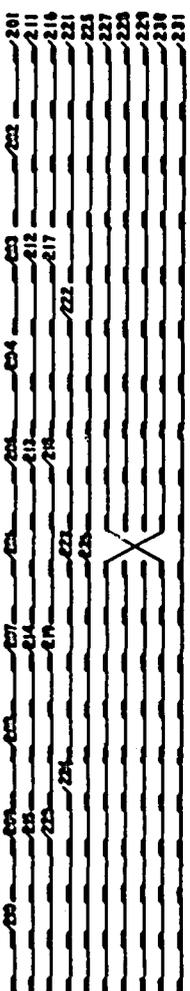
191-200 SELECTORS ON 25 TRUNKS

PLAN 230



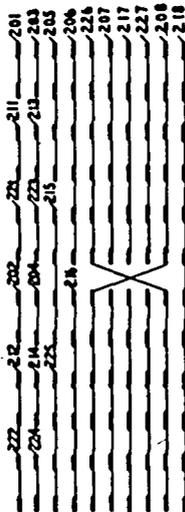
191-200 SELECTORS ON 29 TRUNKS

PLAN 232



191-200 SELECTORS ON 31 TRUNKS

PLAN 233



120 SELECTORS
ON 23 TRUNKS
FOR PLAN 234



120 SELECTORS
ON 27 TRUNKS
FOR PLAN 236

TYPICAL EXAMPLES OF TRUNKS FROM SELECTORS TO ROTARY HUNTING CONNECTOR GROUPS HAVING PBX GROUPS OF MORE THAN 10 TRUNKS. IN THE GRADED MULTIPLE EXAMPLES THERE ARE 120 SELECTORS ON 23 AND 27 TRUNKS TO CONNECTORS. THE CONNECTORS ARE MOUNTED ON THREE AND FOUR SHELVES AS INDICATED (SEE PARACRAPHS 5.06 - 5.08)

CROSS CONNECTING PLAN

CABLE NO.	SEQUENCE OF CONNECTING TERMINALS TO TRUNKS IN EACH OUTGOING CABLE									
1	1	1	2	2	3	4	6	9	4	-
2	1	1	2	2	3	4	7	10	-	-
3	1	1	2	2	3	5	8	3	-	-

LOCAL CONNECTORS ONLY
(23 CONNECTORS INITIALLY WITH
2 ADDITIONAL CONNECTORS SHOWN DOTTED)
PLAN 234

CROSS CONNECTING PLAN

CABLE NO.	SEQUENCE OF CONNECTING TERMINALS TO TRUNKS IN EACH OUTGOING CABLE									
1	TOLL	TOLL		4	5	4	3	2	1	1
2	TOLL	TOLL		9	5	4	3	2	1	1
3	TOLL	TOLL		10	6	4	3	2	2	1
4	TOLL		4	8	7	5	3	2	2	1

LOCAL AND TOLL CONNECTORS IN CONNECTOR GROUP
(27 LOCAL AND 6 TOLL CONNECTORS INITIALLY WITH
2 ADDITIONAL LOCAL AND 1 ADDITIONAL TOLL CON-
NECTOR SHOWN DOTTED)

ILLUSTRATES 8TH CHOICE (INITIAL) AND 4TH CHOICE
(ADDED) LOCAL CONNECTORS REASSIGNED TO LAST
SHELF IN ORDER TO EQUALIZE CONNECTORS ON
THE SHELVES.

PLAN 236 (REPLACING PLAN 235)

Bell Telephone Laboratories, Incorporated

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WE Dept 8413-AJP/JJK-WEA