COLUMN SPACING IN EQUIPMENT ROOMS

1. GENERAL

1.01 This section covers column spacing in equipment rooms for new buildings housing crossbar and/or step-by-step central office equipment.

1.02 The purpose of this section is to recommend column spacing with regard to the structural framing for equipment buildings. These spacings are for consideration in the design of equipment buildings with the objective of effecting economies in building construction by improving the efficient use of equipment floor space.

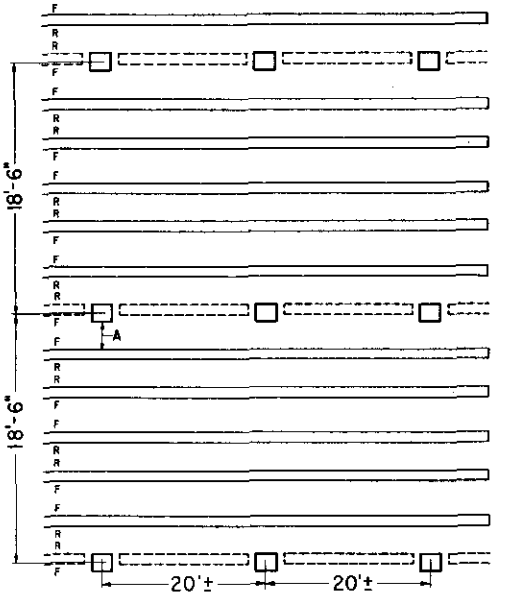
1.03 It is important that early in the building design stage the engineers of both the Telephone Company and the architects collaborate in arriving at the best method of structural framing as related to the equipment arrangements to assure maximum efficiency in the utilization of floor space.

2. COLUMN SPACING FOR CROSSBAR EQUIPMENT

2.01 Aisle Dimensions: As a result of a recent review of the matter of aisle spacing for crossbar frames, it is recommended that widths of 30 inches be adopted for maintenance aisles, and 23 inches in No. 5 crossbar and 24 inches in No. 1, tandem and toll crossbar offices for wiring aisles in new installations of crossbar frames. These aisle dimensions will permit the accommodation of five rows of frames between columns in an 18'-6" span, and in addition a partial row in line with the columns.

2.02 Column Spacing: It is recommended that column spacings of 18'-6" be used in the width of the building (at right angles to the run of the frames) for crossbar frame bays in No. 1 and No. 5 crossbar offices, and in crossbar tandem and crossbar toll offices. This departure from the former practice of using spans that are multiples of 4 feet and resulting in a 20-foot minimum span for five crossbar frames in a span will achieve appreciable saving in building size. Fig. 1 indicates a typical arrangement of crossbar frames and aisles with 18'-6" span.

CROSSBAR SYSTEMS
TYPICAL LAYOUT OF CROSSBAR FRAME BAYS WITH NARROW AISLES AND 18'-6" COLUMN SPACINGS



Aisle Dimensions - F to F or Maintence = 30"
R to R or Wiring = 23" for No. 5 Crossbar
= 24" for No. 1, Tandem & Toll Crossbar
Frame Width - 10½" - No. 5, 10" - No. 1, Tandem & Toll Crossbar
Dimension "A" - Columns 18" Wide - 22½"
Columns 20" Wide - 20½"

Fig. 1

2.03 M.D.F. Bays: The reduction in span covered in Paragraph 2.02 is not applicable to the M.D.F. bays, which normally include the number group and translator equipment of the No. 5 system. The 30-inch aisle is not intended to apply to the L.D.F., block relay and translator frame rows of the No. 1 crossbar system. The special requirements of this equipment are indicated in the Bell System Floor Plan Data Sheets.

2.04 Toll Terminal Equipment Bays: The practicability of applying an 18'-6" span to bays accommodating toll terminal equipment is currently under study. New projects which include such equipment, if they involve consideration of reduced column spacing at the location of toll terminal equipment are considered individually.

2.05 Aisle Clearance at Columns: Free-standing columns in the equipment rooms necessarily restrict aisle clearances at these locations. In view of the reduced aisle dimensions recommended in Paragraph 2.01, it is desirable to maintain clearances at not less than indicated as dimension "A" in Fig. 1. It is recommended, therefore, that the column dimension measured in a direction perpendicular to the run of the frame be kept to 18" or less and should not in any case exceed a maximum of 20". These dimensions assume that ventilating ducts, conduit, pipes, etc., will not be permitted to encroach on the minimum clearances recommended.

3. COLUMN SPACING FOR STEP-BY-STEP EQUIPMENT

3.01 Aisle Dimensions: The use of standard aisle dimensions as indicated in Fig. 2 and in the Bell System Floor Plan Data Sheets will permit the accommodation of five rows of frames in an 18'-6" span, plus a partial sixth row in line with the columns if desired.

3.02 Column Spacing: It is recommended that column spacings of 18'-6" be used in the width of the building (at right angles to the run of the frames) for frame bays in step-by-step offices. The use of the 18'-6" span will reduce the areas required for step-by-step equipment frames in new offices and will achieve appreciable savings in building size.

3.03 This plan, in addition, will facilitate economical layouts of crossbar equipment in the building if the installation of such equipment becomes desirable at some future date.

3.04 Fig. 2 illustrates the application of this spacing to step-by-step equipment layouts and indicates the location of frames with respect to columns of various sizes, with the resulting clearances.

3.05 M.D.F. Bays: It is not intended that the recommended 18'-6" span covered in Paragraph 3.02 be applied to the M.D.F. bays which normally include the I.D.F. in a step-by-step layout and which are designed to meet the special requirements of this equipment as indicated in the Bell System Floor Plan Data Sheets.

3.06 Aisle Clearance at Columns: The dash lines in Fig. 2 indicate the minimum clearances between the frames and the face of the columns recommended in the Bell System Floor Plan Data Sheets. Where the column dimension at right angles to the run of the frames is 14" or less, satisfactory clearances are obtained when the frames in line with the columns are centered on the columns. With column widths of 16" or more,

STEP-BY-STEP DIAL SYSTEM
TYPICAL LOCATION OF FRAMES
WITH 18'-6" COLUMN SPACINGS

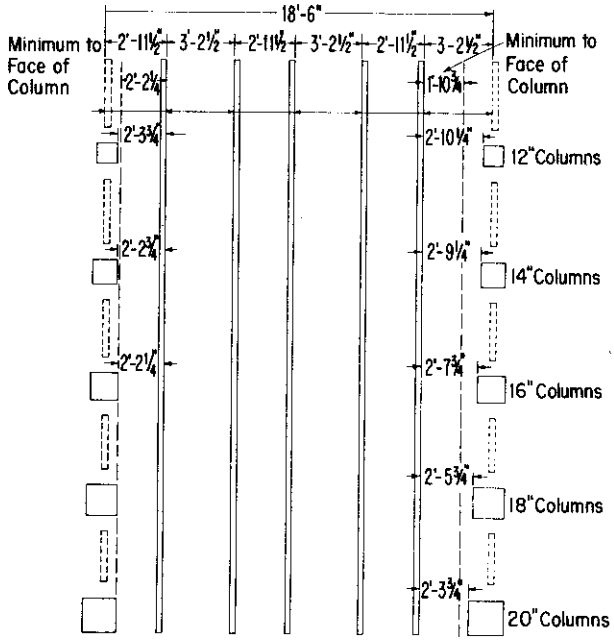


Fig. 2

the frames in line with the columns are offset from the center lines of the columns by varying amounts, in order to obtain the necessary clearances between the frames and the columns at both sides of the span.

3.07 Although Fig. 2 indicates that adequate minimum aisle clearances can be obtained with columns up to 24" in width, it is recommended that the column dimension measured in a direction perpendicular to the run of the frames be kept to 18" or less and should not, in any case, exceed a maximum of 20". These dimensions assume that ventilating ducts, conduit, pipes, etc., will not be permitted to encroach on the minimum clearances. This limitation is required for layouts of crossbar equipment in an 18'-6" span and adherence thereto will preclude difficulties in obtaining efficient use of equipment space in case it becomes desirable to install crossbar equipment in the building at some future date.

4. CONSIDERATIONS COMMON TO BOTH CROSSBAR AND STEP-BY-STEP EQUIPMENT

4.01 Other Requirements: It may occasionally be desirable to adjust certain column spacings in the equipment spaces because of operating room or other requirements on other floors.

An operating room for two lines of switchboard can generally be laid out in a space the width of two 18'-6" bays. Clerical desks and tables can usually be located in the center of such a room. In such cases, the clearances and aisle space for each line of switchboard will approximate the minimum dimensions recommended in Traffic Engineering Practices, Division J, Section 2, Traffic Space Requirements - Operating Rooms. An operating room for one line of switchboard requires a minimum width of 20 feet and normally a 20-foot bay is provided.

4.02 Longitudinal Column Spacing: The equipment floor space is most efficiently used if the column spacing in the direction of the length of the building (parallel to the run of the frames) is in the order of 20 feet or an even multiple of two feet. This dimension is varied to some extent as required by such considerations as the length of the initial building, the contemplated ultimate extension and the necessity of keeping columns out of cross aisles.

4.03 Longitudinal Column Dimensions: The dimensions of columns measured in the direction of the length of the building (parallel to the run of the frames) is held to a minimum consistent with the cross section of the structural members plus fireproofing. Ducts, pipes, etc., which are sometimes furred in with the column are not normally permitted to encroach on the longitudinal clearance between columns in equipment spaces. These procedures are intended to minimize the length of the reduced portions of the aisles.