

SECTION 6.

WIDTHS AND LENGTHS OF EXCHANGE BUILDINGS

1. GENERAL.

1.1 The widths and lengths provided for the exchange equipment rooms in buildings are related to the site dimensions, the method of underground cable entry, the provision of access driveways, the positioning of such rooms as Manual, Battery, Power and the auxiliary rooms for staff amenities, test areas and air conditioning plant rooms each placed to meet the best operating and maintenance aspects and to economies as much as possible in lobby, passage or other type of dead space. Site conditions in some instances may necessitate some departure from standard dimensions laid down in this E.I.

1.2 The dimensions of an equipment room, whether it is for -

- (a) 2000 Type.
- (b) Pre 2000 Type.
- (c) Siemens 16.
- (d) Siemens 17 Trunk Switching, or for
- (e) Long Line Equipment,

are dependent on the width and depth of the racks, length and width of trunk boards, or the base dimensions of primary line switch units and the manner in which they are positioned on the equipment floor.

1.3 Details are included hereunder of the factors which shall be taken into account when planning the dimensions of the Exchange room, which is free of columns, for each type of equipment.

1.4 As 4'6" wide 2000 type racks are used extensively to provide modern communication services, the majority of buildings will be designed to meet the structural dimensions of these racks.

The details supplied for other types of equipment are included for reference purposes only. Where a building is required to house such equipment, the layout or design of the building shall be determined from the tables and figures included.

2. 2000 TYPE EQUIPMENT.

2.1 The dimensions of equipment rooms (see Fig. 1) which are free of columns is determined by -

- (i) the number of standard 4'6" rack to included in each row;
- (ii) the number of rows of 4'6" racks;
- (iii) the grouping selected for subscribers' line equipment racks;
- (iv) dimensions of passageways;
- (v) placement of the M.D.F. in respect to the equipment rack and U.G. cable racks.

INTERNAL PLANT
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A number of equipment rooms with varying widths and lengths to meet these conditions has been developed in recent years for the installation of 2000 type equipment racks in rows which provide for suitable operating and maintenance practices. These switch rooms are -

- (a) a 43' width equipment room for a 6-rack suite with M.D.F. at right angles to the rack suites; see Fig. 2 and Tables for allowed dimensions.
- (b) a 48' width equipment room for a 7-rack suite with M.D.F. at right angles; see Fig. 2 and Tables.
- (c) a 40' width equipment room for a 7-rack suite with M.D.F. parallel with the equipment rows. Fig. 3.

See Section 10 for the layout of equipment in buildings of this type.

The detailed dimensions which should be taken into account in determining the widths of switch rooms including passageways and dimensions of other equipment (such as M.D.F.'s) are detailed in appropriate figures in this instruction. The details for the standard width of building listed above are also included (see Figs. 4-8).

The methods to be used to determine widths of buildings which include columns are detailed in Section 8.

The allowed widths of passageways and the standard aisle dimensions to be used are detailed in Section 12 and 11 respectively.

3. PRE-2000 TYPE EQUIPMENT.

3.1 The widths of equipment rooms are determined by -

- (i) the grouping of subscribers' primary line switch units;
- (ii) dimensions of passageways;
- (iii) placement of the M.D.F. in respect to the equipment;
- (iv) the positioning of the trunk boards in the various switching stages.

Most layouts of subscribers' line switch units are arranged in suites of five to achieve a 1000 line grouping. This arrangement establishes the principles on which pre-2000 type layouts are planned and in conjunction with the provision of allowed passages, determines the width of the switchroom. Figs. 9a, b, c and d are included to detail typical arrangements of this class of equipment for Branch and Main Exchange.

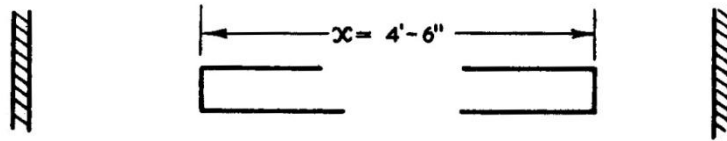
Siemens Type Equipment.

Similar engineering aspects to those stated for 2000 type and pre-2000 type should be taken into account when determining the widths of buildings for the installation of this class of equipment. Fig. 10 illustrates the principles of layout of Siemens 17 type equipment. Details are not included for Siemens 16 equipment as this class of plant is installed in one State only and no further buildings will need to be designed for its installation.

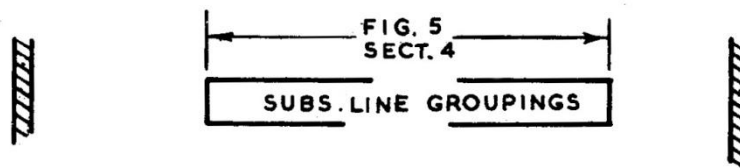
4. LONG LINE EQUIPMENT.

4.1 The installation of long line equipment racks in Exchange buildings for junction carrier or junction amplifier requirements introduces further problems. Details of floor area requirements for this type of plant are given in Section 106 of this instruction.

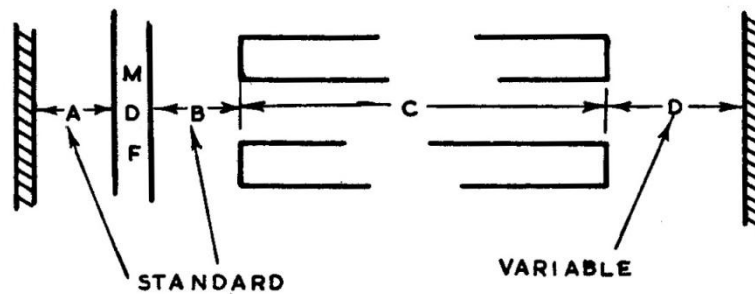
2000 TYPE EQUIPMENT.



- (a) The width of a building is primarily dependent on the number of 4'6" racks in a row.

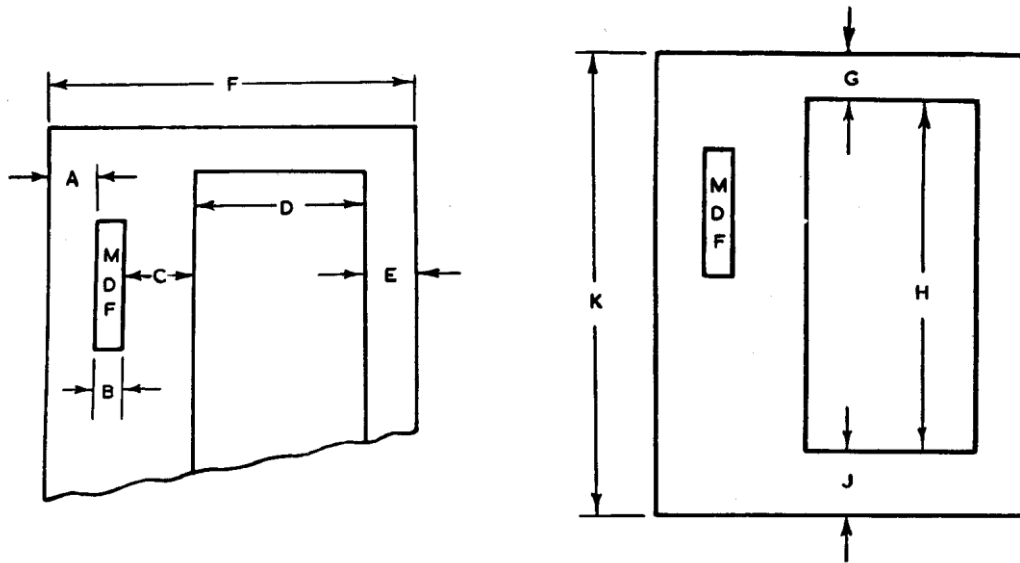


- (b) Subscribers' line groupings should be kept uniform.



- (c) The overall width is determined by -
- (i) the length of the equipment row
 - (ii) the placement of the M.D.F.
 - (iii) the widths of passageways A, B and D

FIG. 1. FUNCTIONS OF WIDTH.



(a) Width.

(b) Length.

No. of Racks per Row	A	B (M.D.F. Width)	C	D	E	F	Desired Width of Building
4	4	3'7"	5	18'	(2'5") / (2'11")	33'0"/33'6"	33'0"/34'0"
5	4	3'7"	5	22'6"	/ (2'11")	/38'0"	/38'0"
6	4	3'7"	5	27'	/ (2'11")	/42'6"	/43'0"
7	4	3'7"	6	31'6"	(2'11")	48'0"	48'0"

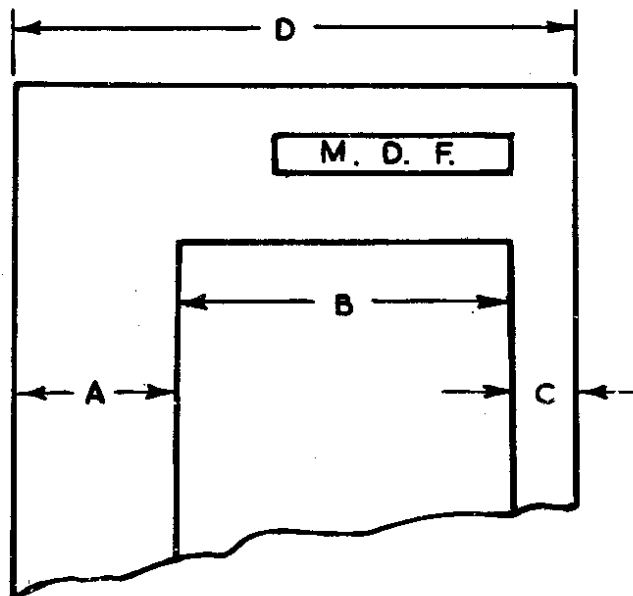
Note:- () denotes variable dimension.

WIDTH TABLE.

1 No. of Rows	2 G	3 H	4 J	5 K	6 Where mid passage is provided add	7 K1	8 Desired Length	
							Without Passage	With Passage
20	(5'0")	62' 5½"	(3'0")	70' 5½"	3'10"	78' 3½"	71'	75'
18	(5'0")	55' 11½"	(3'0")	63' 11½"	3'10"	67' 9½"	64'	68'
16	(5'0")	49' 5½"	(3'0")	57' 5½"	3'10"	61' 3½"	58'	62'
14	(5'0")	42' 11½"	(3'0")	50' 11½"	3'10"	54' 9½"	51'	55'
12	(5'0")	36' 5½"	(3'0")	44' 5½"	3'10"	48' 3½"	48'	52'
11	(5'0")	33' 9½"	(3'0")	41' 9½"	2' 8"	44' 5½"	45'	58'

LENGTH TABLE.

FIG. 2. STANDARD BUILDINGS.

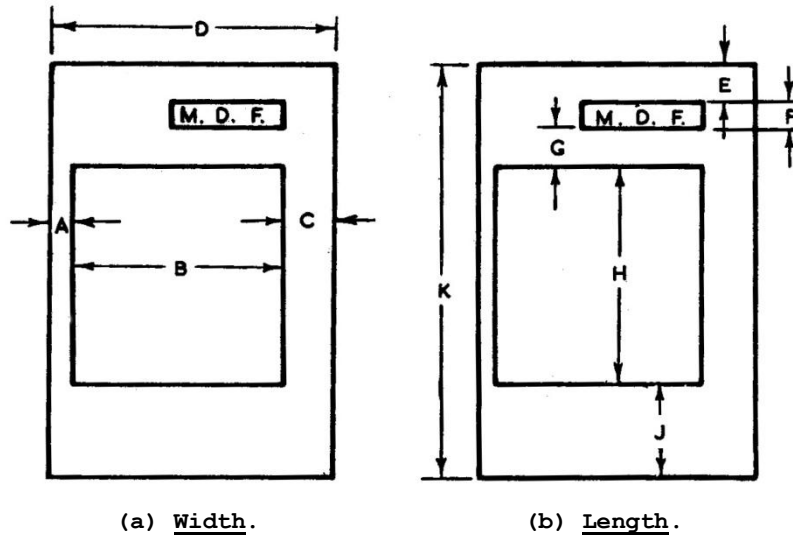


WIDTH.

No. of Racks per Row	A	B	C	D	Desired Width of Building	Remarks
4	4'0"	18'0"	2'0"	24'0"	24'	Layouts apply mostly to small exchanges, mainly in the country.
5	5'0"	22'6"	2'6"	24'0"	30'	
6	5'6"	27'0"	3'0"	35'6"	36'	
7	5'6"	31'6"	3'0"	40'4"	40'	

WIDTH TABLE.

FIG. 3. WIDTHS OF BUILDINGS.



Plan	A	B	C	D	Desired Width
1	1' 10"	15' 0"	4' 0"	20' 0"	20' 0"
2	6"	15' 9"	3' 9"	20' 0"	20' 0"

WIDTH TABLE.

Plan	E	F	G	H	J	K	No. of equip. per rows.	Desired length of Building.
1	3' 0"	2' 9"	3' 0"	14' 3½"	3' 0½"	26' 0½"	5	35'
2	0"	1' 6"	3' 0"	10' 5½"	3' 0"	17' 11½"	4	23'

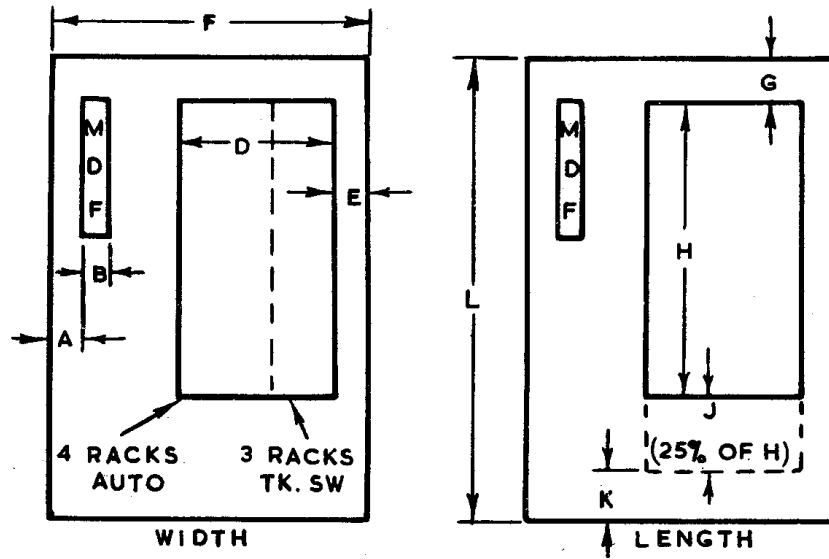
LENGTH TABLE.

NOTE:- Plan 1 has three 4' 6" and one 1' 6" rack per row.

Plan 1 has three 4' 6" and one 1' 6" rack per row. Plan 2 has wall type MDF.

Plan 1 has standard M.D.F. The additional length provided is to cater for power equipment.

FIG. 4. TEMPORARY ACCOMMODATION.



No. of Lines	A	M. D. F. B	Passage C	Equip. D	Max. Permissible E	Tot. Wid. F	Building width required
1200	4'	3' 7"	5' 0"	31' 6"	3' 0"	47'	48'
2400	4'	3' 7"	5' 0"	31' 6"	3' 0"	47'	48'
3600	4'	3' 7"	5' 0"	31' 6"	3' 0"	47'	48'

WIDTH TABLE.

No. of Lines	Passage G	H	25% of H J	Pass. K	Tot. Len. L	Building length required	Rows of Standard spacing	Extra rows for develop.
1200	5' 0"	23' 5½"	6' 6"	3' 0"	37' 11½"	38'	8	2
2400	5' 0"	36' 5½"	10' 4"	3' 0"	54' 9½"	55'	12	3
3600	5' 0"	49' 5½"	13' 0"	3' 0"	70' 5½"	71'	16	4

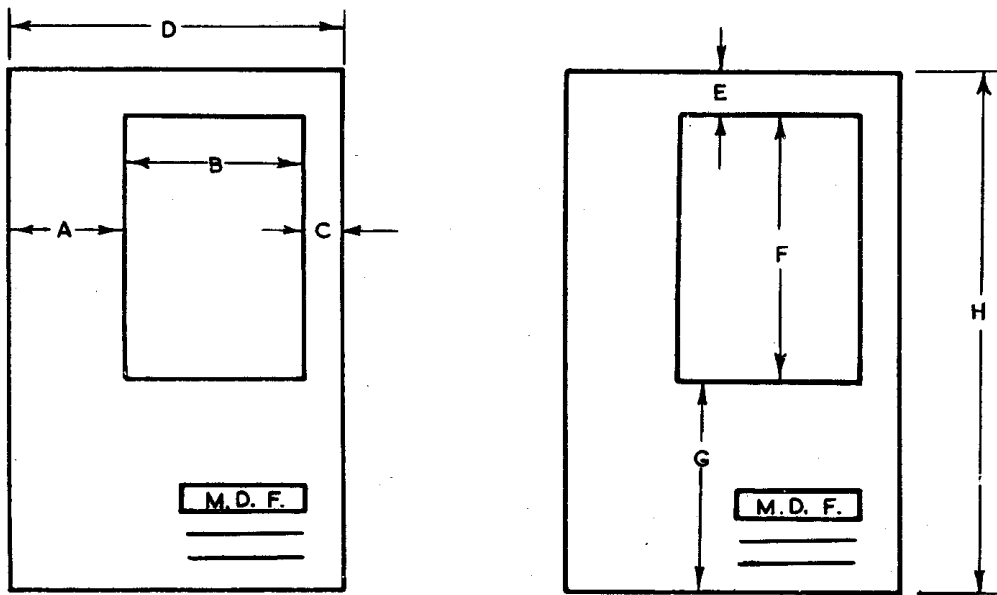
LENGTH TABLE.

NOTE 1 Building to be 48' wide clear of nibs.
(Building widths and lengths taken to next nearest foot).

2 Provision of space for Auto. Trunk Exchange Equipment is included.

3 A 25% increased equipment area added for unforeseen development.

FIG. 5. COUNTRY EXCHANGES (Up to 3,600 lines.)



(a) Width.

(b) Length.

NOTE:-

Wider passageway at 'A' is due to 4' or 8' modules used in wall members.

A	B	C	D
5' 6"	31' 6"	3' 0"	40' 0"

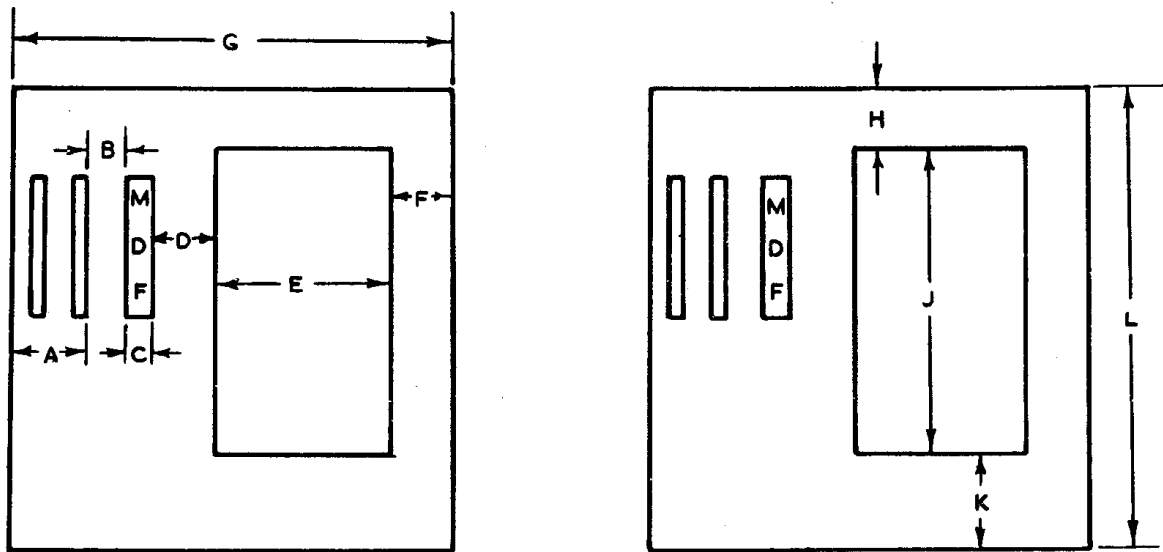
WIDTH TABLE.

No. of Rows	E	F	G	H	Where a transverse passage is required. Ø	Desired Length	
						Without centre passage Dimension H	With centre passage Dimension H + Col. 6
20	(3' 0")	62' 5½"	20' 10"	86' 3½"	3' 10"	86'	90'
18	(3' 0")	55' 1½"	20' 10"	79' 9½"	3' 10"	80'	84'
16	(3' 0")	49' 5½"	20' 10"	73' 3½"	3' 10"	73'	77'
14	(3' 0")	42' 11½"	20' 10"	66' 9½"	3' 10"	67'	71'
12	(3' 0")	36' 5½"	20' 10"	60' 3½"	3' 10"	60'	64'
11	(3' 0")	33' 9½"	20' 10"	57' 7½"	2' 8"	58'	61'

LENGTH TABLE.

Note:- Ø Dimensions added on, for centre passage when required. Where even number of rows are required for equipment, add 3' 10" for another row to create passage, where odd number of rows are required for equipment, add 2' 8" for another row to create passage. See Fig. 8 which illustrates method for selection of 3' 10" or 2' 8" added dimension.

FIG. 6. PREFABRICATED BUILDINGS.



(a) Width.

(b) Length.

No. of Racks in Row	A*	B	C	D	E	F	G	Desired Width of Building
4	7' 2½"	4'	3' 7"	5'	18'	2' 5"/2' 11"	40' 2½"/40' 8½"	41'
5	7' 2½"	4'	3' 7"	5'	22' 6"	/2' 11"	/45' 2½"	46'
6	7' 2½"	4'	3' 7"	5'	27'	/2' 11"	/49' 8½"	50'
7	7' 2½"	4'	3' 7"	5'	31' 6"	2' 11"	54' 2½"	55'

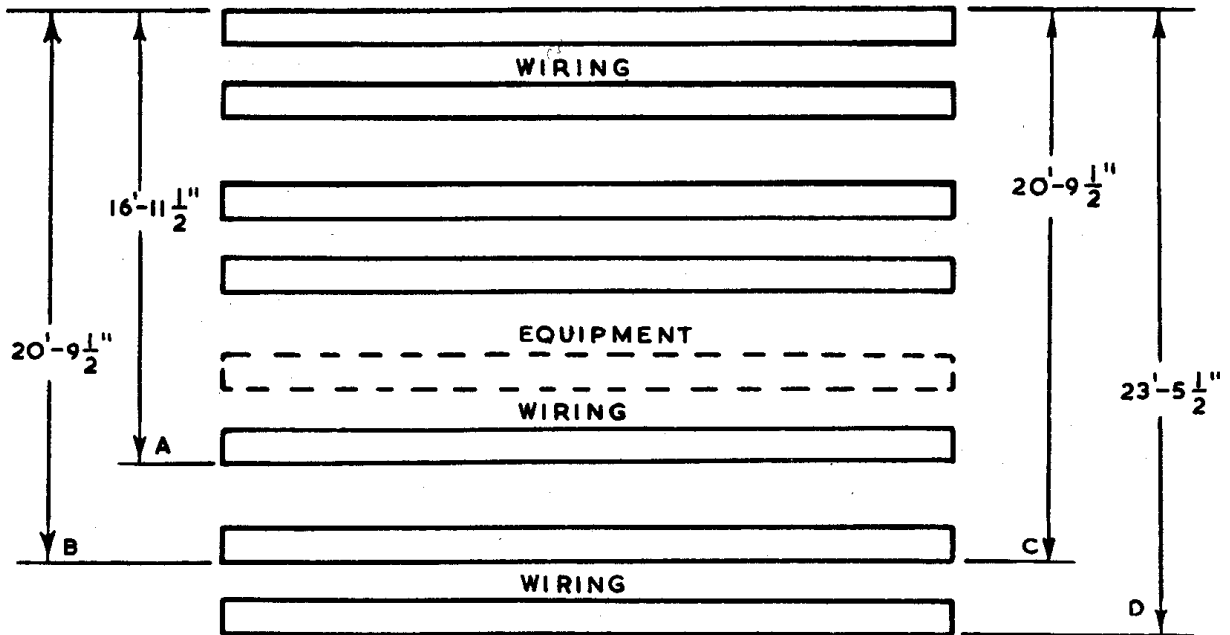
* This dimension should be varied to suit the actual width of the access stairway to the cable entry. 7' 2½" is the minimum dimension when the aisle is 3' 2" wide.

WIDTH TABLE.

No. of Rows	H	J	K	L	Where mid Passage is provided add	L1	Desired Length	
							Without Passage	With Passage
20	(5' 0")	62' 5½"	(3' 0")	70' 5½"	3' 10"	74' 8½"	71'	75'
18	(5' 0")	55' 11½"	(3' 0")	63' 11½"	3' 10"	67' 9½"	64'	68'
16	(5' 0")	49' 5½"	(3' 0")	57' 5½"	3' 10"	61' 3½"	58'	62'
14	(5' 0")	42' 11½"	(3' 0")	50' 11½"	3' 10"	54' 9½"	51'	55'
12	(5' 0")	36' 5½"	(3' 0")	44' 5½"	3' 10"	48' 3½"	48'	52'
11	(5' 0")	33' 9½"	(3' 0")	41' 9½"	2' 8"	44' 5½"	45'	48'

LENGTH TABLE.

FIG. 7. STANDARD BUILDING U.G. RACKING AND M.D.F. PARALLEL WITH ENDS OF RACKS - PROPOSED TREATMENT.



PROVISION OF A PASSAGEWAY WHICH MAY BE LATER USED AS AN EQUIPMENT SUITE.

FIG. 8.

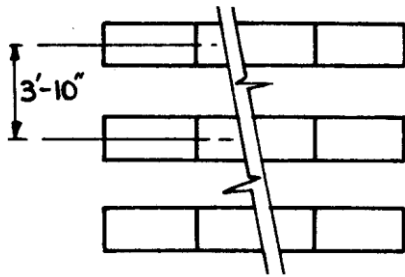
Where the provision of a passageway which can be later used as an equipment suite, will increase the equipment rows from an even to an odd number of rows, as from A to B, add 3'10" to length required for the original equipment layout.

Where the increase is from odd to even as from C to D, add 2'8".

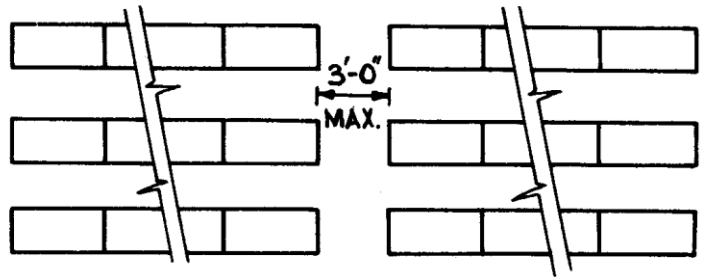
The passageway may be located at any point of the layout if all suites, including the passageway suite, are laid out in the standard manner as shown, i.e.,

- (i) with an equipment side at the commencing point.
- (ii) with wiring sides facing each other, and equipment sides facing each other.

PRE 2000 TYPE EQUIPMENT.

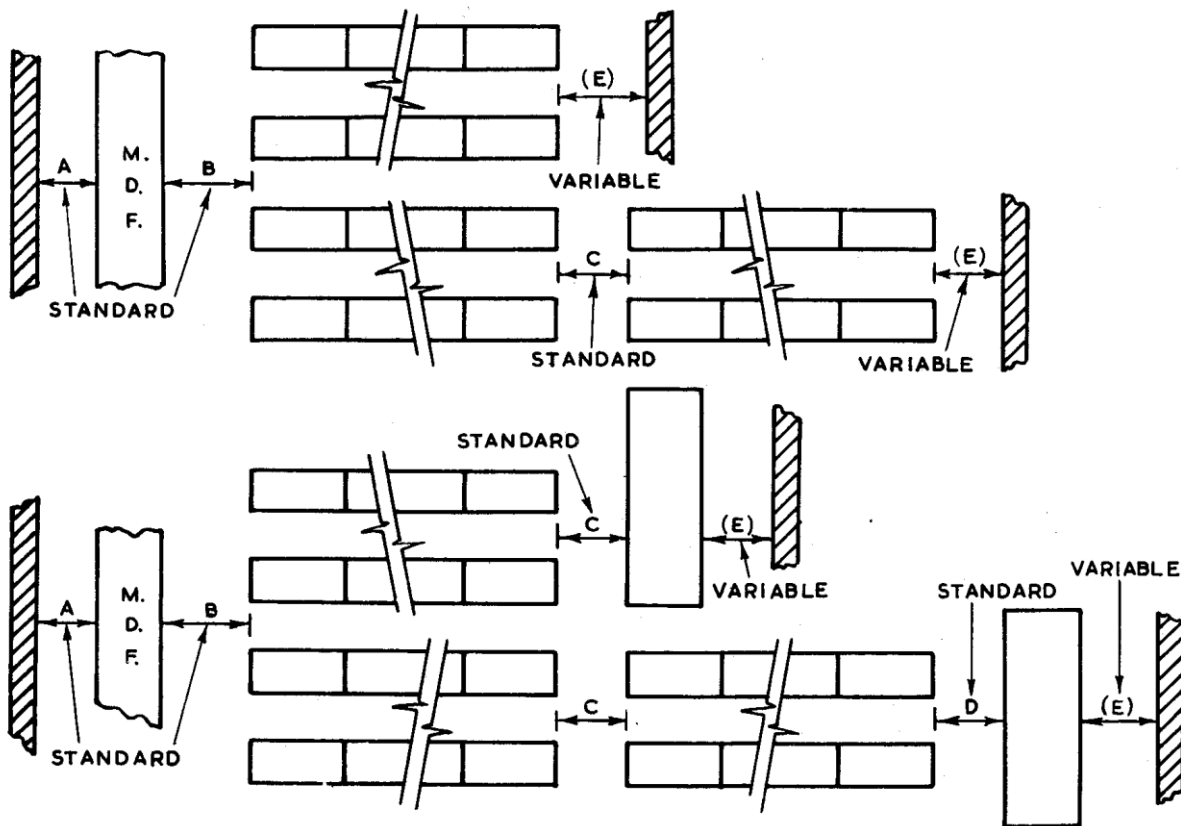


(Suites of 5 - 4' x 1'10" P.L.U.s.



Suites of 10 - 4' x 1'10" P.L.U.s 2 Groups of
fives.

(a) The width of a building is primarily dependent on the number of 4' x 1'10" Primary Line Units in each row.



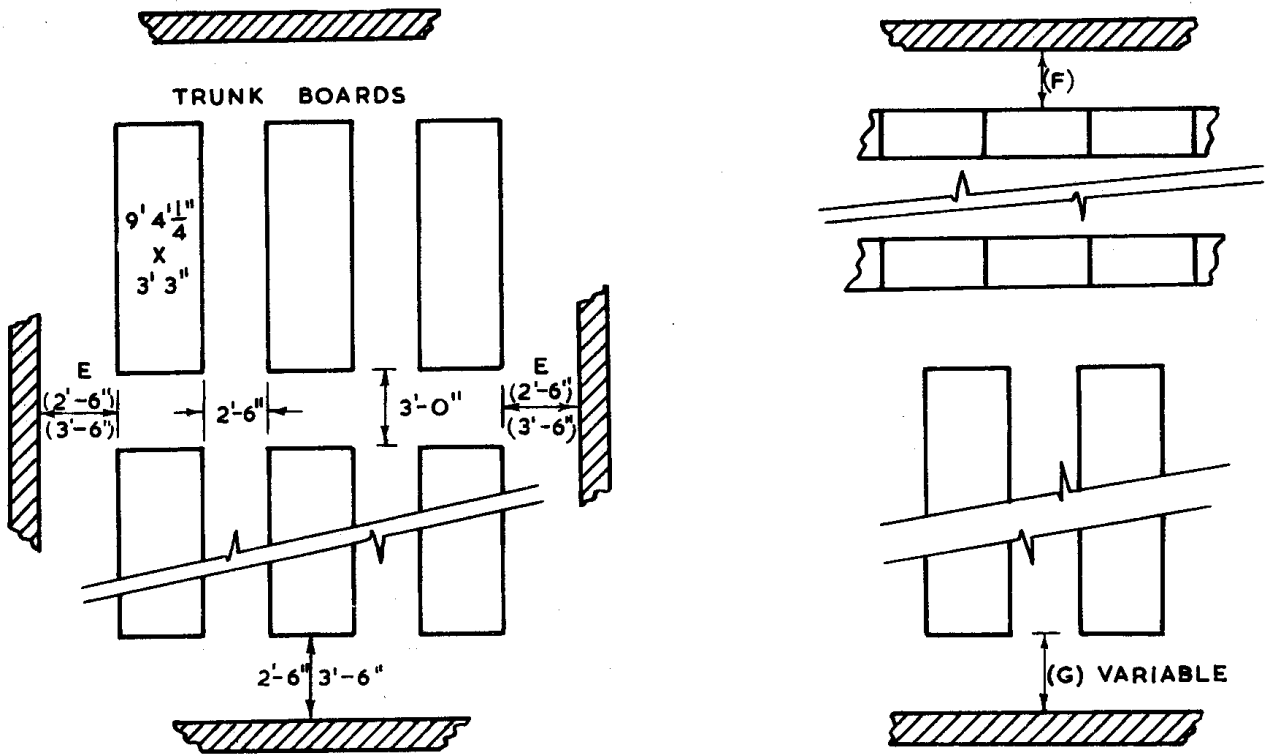
- (b) (i) Group arrangements of Primary Line Units.
(ii) Placement of the MDF.
(iii) The width of the passageways (standard or variable). See Table.
(iv) The locations used to site the 9'4 1/4" x 3'3" trunk boards.
(See (c) and (d) also.

TABLE OF DIMENSIONS.

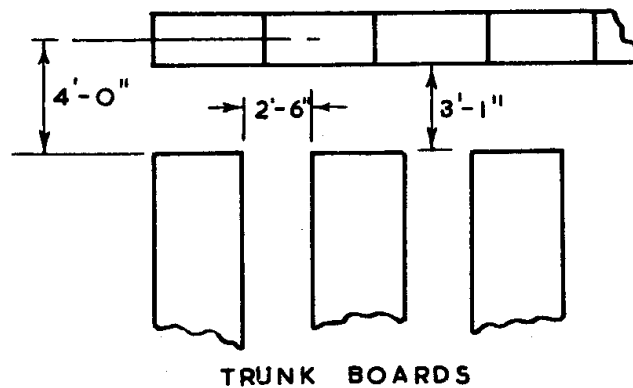
A - 4'
B - 5'
C - 3'6"
D - 2'6" or 3' (for a minor or major passageway)
(E) - (2'6") or (3'6") for a minor or major passageway)

NOTE: (2'6") represents approximate Dimensions.

FIG. 9. FUNCTIONAL ARRANGEMENTS OF PRE 2000
TYPE EQUIPMENT. (Cont'd next page)



(c) Approved passage widths surrounding standard trunk boards.



(d) Approved passage widths surrounding Primary Line Units and Trunk Boards.

NOTE: Dimension shown 2'6" are standard passage widths.

Dimension shown 2'6" are approved alternative standards for minor 3'6" and major passages.

Dimensions shown (0) are variable to allow for variation in building alignments.

FIG. 9. FUNCTIONAL ARRANGEMENTS OF PRE 2000 TYPE EQUIPMENT. (Cont'd from previous page)

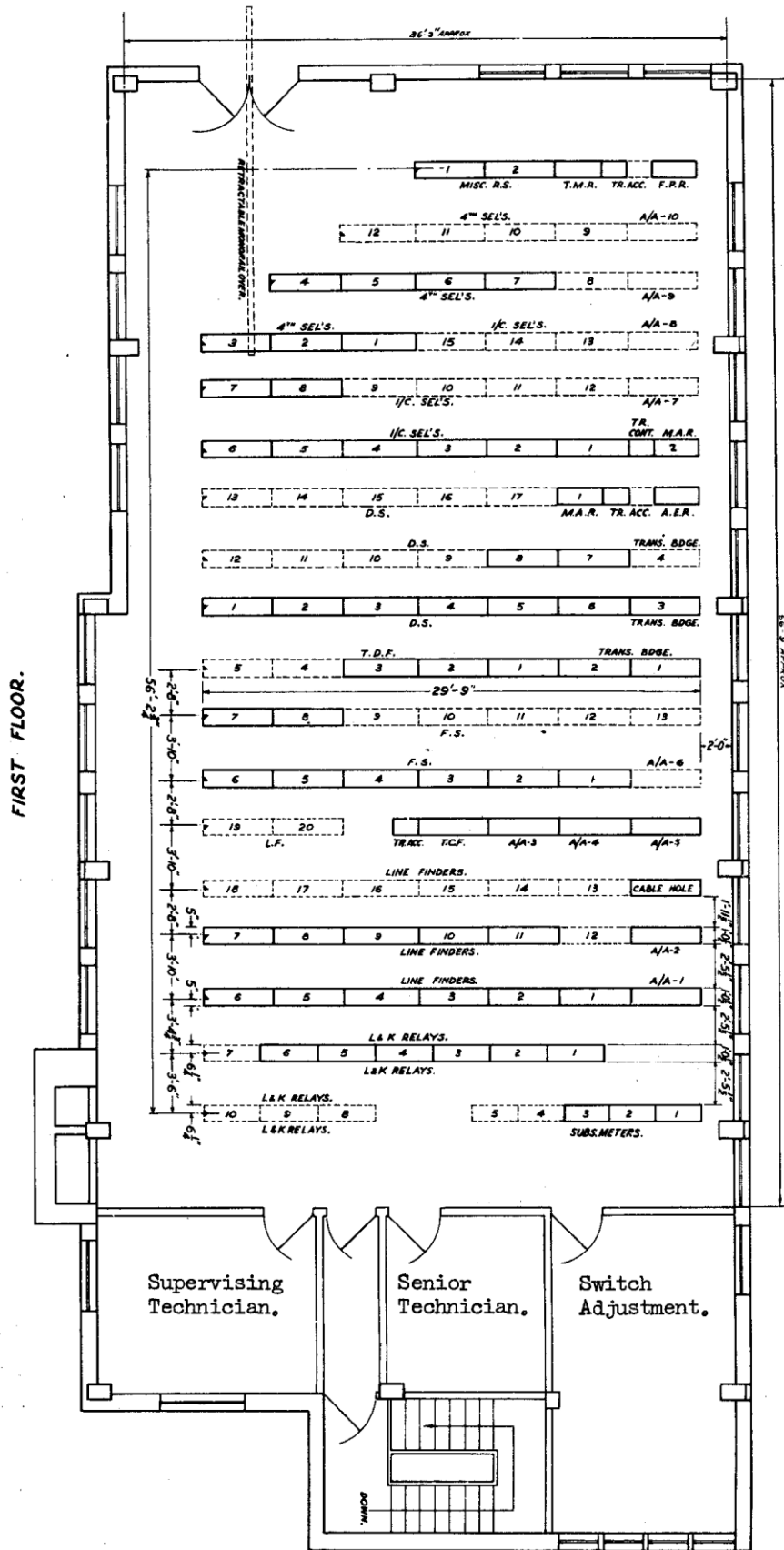


FIG. 10. SIEMENS NO. 17 EQUIPMENT ARRANGEMENTS.