



HONG KONG

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# CODES OF PRACTICE

UNDER THE BUILDINGS ORDINANCE

WIND EFFECTS

AND

PROVISION OF MEANS OF ESCAPE

IN CASE OF FIRE AND ALLIED

REQUIREMENTS

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PUBLIC WORKS DEPARTMENT

HONG KONG

MAY 1968

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## CONTENTS

	<i>Page.</i>
1. Code of Practice on Wind effects ... ..	1
2. Code of Practice on provision of means of Escape in Case of Fire and Allied Requirements ... ..	5



HONG KONG

CODE OF PRACTICE ON WIND EFFECTS

## BUILDING (CONSTRUCTION) REGULATIONS

## CODE OF PRACTICE ON WIND EFFECTS.

G.N. 1730/59.

Pursuant to regulation 22(2) of the Building (Construction) Regulations, the following Code of Practice on Wind Effects is published—

1. The total horizontal force on a building shall be calculated as the basic wind pressure from Table I acting on the whole of the projected area of the building multiplied by the shape factor of the building from Table II. In determining building zone heights at Table I measurements shall be taken from the average ground level adjacent to the windward face of the building to the top of parapet. In the case of pitched roofs the basic wind pressure corresponding to a height halfway between the eaves and ridge levels shall be taken.

Wind Loads on  
a building as a  
whole.

TABLE I.

*Basic Wind Pressures in Lbs. per square foot.*

Zone Height of Building above average ground level	Basic Wind Pressure "P"
From 0 to 30 ft.	25
From 30 to 80 ft.	40
From 80 to 200 ft.	50
From 200 to 350 ft.	60
From 350 to 450 ft.	75
450 ft. and above	90

2. (a) No allowance shall be made for the general or specific shielding of other building or structures nor of natural features.

Shielding &  
Unusual  
Exposures.

(b) The Building Authority may require higher basic wind pressures for very high or unusual buildings or for conditions of unusual exposure.

3. (a) The wind forces as detailed in Table I shall be applied to normal enclosed buildings generally rectangular in plan, and with a ratio of height to base-width (measured in the direction of the wind) not exceeding four.

Shape Factors.

(b) For other cases the basic wind pressures in Table I shall be multiplied by the shape factors given in Table II in calculating the wind forces on the building as a whole.

TABLE II.

Shape Factors.

Plan shape of building or part of a building	Factor		
	Ratio of height to base-width		
	not more than 4	over 4 but less than 8	8 or more
Circular .....	0.6 P	0.65 P	0.7 P
Octagonal .....	0.8 P	0.9 P	1.0 P
Sq. (Wind perpendicular to diagonal) .....	0.8 P	0.9 P	1.0 P
Sq. or rectangular (wind perpendicular to face) .....	1.0 P	1.15 P	1.3 P

4. (a) The structural framework or fabric and foundations of the building shall be designed to withstand the total wind force so calculated together with wind forces due to projections above the roof level, or to signs erected on the roof, calculated in accordance with paragraphs 8 and 10, without exceeding the appropriate limitations of permissible stress for the materials used.
- (b) Normal stresses including those in respect of earth bearing capacity, foundations and piles may be increased for resisting the combined effect of dead and imposed loads and wind loads, but the increase shall not exceed that permitted by the L.C.C. By-laws or Code of Practice in accordance with which the building is designed and shall be in respect only of stresses induced by wind loads.
- (c) The effect of permanent structural walls and floors in stiffening a building framework may be taken into account in designing the structure.
- (d) The overturning moment on the building as a whole due to wind load shall not exceed two-thirds of the moment of stability of the building due to dead load only, unless the building is anchored to its foundations so as to resist the excess overturning moment and the excess of horizontal shear over the safe sliding friction. Vertically driven piles shall not be considered to resist horizontal forces.
- (e) Where multiple spans of roof cover a large area of uniform height, the building shall be designed for a horizontal wind drag, at roof level, equal to one-tenth of the basic wind pressure multiplied by the plan area of the building in square feet, in addition to the wind load on the walls or projections above the roof.

5. Where a building is of unusual shape or slenderness or where openings in walls are of unusual proportion, the Building Authority may require more detailed calculations and estimates of wind loads.

Special Buildings.

6. The external wind loads calculated from the pressures "P" in Table I are the sum of the total pressure on the windward face and the total suction on the leeward face, appropriate to the building.

Wind Pressures on Walls

In addition to these, the internal pressures and suction due to opening in the walls shall be taken into account in the design of the panel walls.

- (a) Where the wall surfaces are nominally airtight, *i.e.* with fixed windows and closed doors, each wall shall be designed to withstand a total inward pressure of 0.6 "P" lbs./sq. ft. or alternatively a total outward suction of 0.5 "P" lbs./sq. ft.
- (b) Where the wall surfaces have one-third of the area open, or capable of being open or broken open, each wall shall be designed for a total inward pressure of 0.9 "P" lbs./sq. ft. or alternatively a total outward suction of 0.9 "P" lbs./sq. ft.
7. (a) The roofs of all buildings shall be designed for a pressure acting outward normal to the surface equal to one and a quarter times the basic wind pressure of Table I appropriate for the building. Such pressures shall be considered as acting on the whole surface of the roof.
- (b) Where the pitch of the roof exceeds thirty degrees the roof also shall be designed to withstand a pressure acting inwards normal to the roof surface equal to the basic wind pressure appropriate for the building. Such pressure shall be applied only to the windward surface of the roof.
- (c) Anchorage of the roof to the walls and columns, and of walls and columns to the foundations shall be provided in all cases to resist uplift and sliding in excess of one half the dead load resistance.

Wind Pressure on Roofs.

8. The wind pressure acting on projections above the roof level such as stair-hoods, tanks, lift motor-rooms, etc. shall be considered separately from the general wind pressure on the building. The wind pressures given in Table II shall apply and the structure and its anchorage to the main building designed to resist the full wind loading so calculated.

Wind Pressure on Projections above roof level.

Local Effects  
of Wind.

9. (a) Overhanging cornices and eaves shall be designed for an upward pressure equal to twice the appropriate basic wind pressure.
- (b) All fastenings for wall and roof sheeting or covering within a distance of one-sixth of the length of the span, in the case of roofs, from the eaves, or ridge of the roof slope, and one-sixth of the length of the wall, in the case of both roofs and walls from each end of the walls, shall be designed for an outward suction equal to twice the appropriate basic wind pressure.

Signs.

10. (a) Solid signs erected at ground level shall be designed for a wind load of 25 lbs. per sq. foot. Solid signs on roofs shall be designed for the basic wind pressure appropriate to the height zone of the centre of the sign. Signs in which the open area is less than one quarter of the gross area shall be considered to be solid signs.
- (b) Open signs erected at ground level shall be designed for a wind pressure of 50 lbs. per sq. foot. Open signs on roofs shall be designed for a pressure equal to twice the basic wind pressure appropriate to the height zone of the centre of the sign. These pressures shall be applied to the aggregate projected area of all the members of the sign.

Wind Forces  
during erection.

11. Provision shall be made for wind stresses during the erection of any building.



HONG KONG

CODE OF PRACTICE ON  
PROVISION OF MEANS OF ESCAPE  
IN CASE OF FIRE AND ALLIED  
REQUIREMENTS

**BUILDING (PLANNING) REGULATIONS  
CODE OF PRACTICE ON  
PROVISION OF MEANS OF ESCAPE IN CASE OF FIRE  
AND ALLIED REQUIREMENTS.**

**1. *Introduction.***

- (1) Regulation 41(1) of the Building (Planning) Regulations requires that "every building shall be provided with such means of escape in case of emergency as may be required by the intended use of a building".
- (2) The Building Authority deals with each case on its merits after full consideration of the circumstances. Nothing herein contained must be taken as in any way derogating from the powers of the Building Authority to secure reasonable and adequate means of escape in case of fire.
- (3) The requirements contained herein may be accepted as a Code of Practice for the guidance of authorized architects in the preparation of plans for new buildings.

**2. *Interpretations.***

- "Balcony Approach" means a balcony being an external approach to a common staircase serving one or more occupancies.
- "Basement Storey" means any storey of a building below the ground storey and from which any exit route is in an upward direction to a ground storey.
- "Capacity" in relation to a room or storey or building means that number of persons which the room or storey or building, is, for the purpose of this Code of Practice, to be taken as capable of holding. Provided that where there is on any storey the entrance to a maisonette, that storey shall for the purpose of this definition be deemed to include the upper floor of the maisonette.
- "Discharge Value" means the number of persons that a staircase of given width may be assumed to be capable of discharging from a given number of storeys.
- "Exit Door" means a door from a storey, flat, or room, which door gives access from such storey, flat, or room on to an exit route.
- "Exit Route" means a route by which persons in any storey of a building may reach a place of safety outside the building and may include a room, doorway, corridor, stairway or other means of passage not being a revolving door, lift or escalator.
- "Flat" means a separate and self contained set of premises constructed for the purposes of a dwelling and forming part of a building from some other part of which it is divided horizontally and includes a maisonette and tenement floor.



"F.R.P." means the period for which the element of construction is capable of resisting the action of fire when tested in accordance with BSS 476: 1932, all as specified in the Schedule to the Building (Construction) Regulations.

"Ground Storey" means the storey in which is situated the main entrance to the building. Where a building fronts or abuts on more than one street and due to a difference in street levels there are two or more main entrances serving different streets and situated in different storeys, each such storey may be considered as a ground storey.

"Institutional Building" means a hospital, sanatorium, nursing home, clinic and includes any building used or intended to be used for the care or treatment of persons.

"Lobby" means an enclosed lobby being the approach to a staircase and which acts as a Fire and Smoke check between a storey and the staircase.

"Maisonette" means a flat not being a tenement floor and having more than one storey.

"Protected Corridor" means a corridor separated from the building it serves by partitions having an F.R.P. of not less than  $\frac{1}{2}$  hour and which partitions have all openings therein filled with fixed lights or self-closing doors each having an F.R.P. of not less than  $\frac{1}{2}$  hour.

"Protected Lobby" means a lobby enclosed throughout by partitions having an F.R.P. of not less than  $\frac{1}{2}$  hour and has all openings therein filled with fixed lights or self-closing doors having an F.R.P. of not less than  $\frac{1}{2}$  hour.

"Protected staircase" means a staircase separated from the building it serves by partitions having an F.R.P. of not less than  $\frac{1}{2}$  hour and which has all openings in such partitions filled with fixed lights or self-closing doors each having an F.R.P. of not less than  $\frac{1}{2}$  hour.

"Residential Building" means a domestic building, hotel, boarding house, hostel and any barrack or dormitory accommodation.

"Staircase (External)" means a staircase which is completely open to the external air on at least two sides from the level of the top of the balustrade to the underside of the flight of stairs immediately above.

"Staircase (Internal)" means a staircase enclosed on all sides by partitions or walls and which has all openings in the external walls glazed or otherwise protected from the weather.

"Staircase (Partly External)" means a staircase partly open on one or more sides and includes any stair which is neither an internal stair nor an external stair.

"Travel Distance" means the distance required to be traversed from any point in a storey of a building to either—

- (a) the fire-resisting door in the staircase enclosure or
- (b) if there is no such door, the first stair tread of the staircase.

"Usable Floor Area" means the aggregate of the areas of the floor or floor in a storey or a building excluding any staircases, public circulation space, lift landings, lavatories, water-closets, kitchens, and any space occupied by machinery for any lift, air-conditioning system or similar service provided for the building.

### 3. Application.

(a) The principles laid down in this Code of Practice are applicable to all buildings with the exception of domestic buildings not exceeding two main storeys in height used or intended to be used for occupation by a single family.

(b) Where any Ordinance or any Regulation made under any Ordinance includes any provision relating to Means of Escape in case of Fire nothing in this Code of Practice shall be deemed to over-rule such provision. In this connexion attention is drawn to

(i) The Places of Public Entertainment Ordinance and the Regulations made thereunder.

(ii) The Factories and Industrial Undertakings Ordinance and the Regulations made thereunder.

(c) Where the occupancy of a building constitutes a special hazard the Building Authority may require such alteration to the standards laid down in this Code of Practice as in his opinion may be necessary. Examples of buildings of special fire hazard are

(i) Godowns and warehouses including multi-storey car parks.

(ii) Motor Car Repair Shops.

(iii) Retail shops over 3,000 square feet in overall area. Provided that retail shops of less than 3,000 square feet in area which deal in hazardous materials will be considered as a special hazard.

(iv) Factories and workshops generally.

*Note:* This list is not exhaustive and is included for guidance. Cases of doubt should be referred to the Building Authority.

### 4. Hazard of Occupancy.

The hazard of occupancy, for the purpose of this Code of Practice, shall be the relative danger of the start and spread of fire, the danger of smoke or gases generated, the danger of explosion or other occurrence which may endanger the lives and safety of the occupants of a building.

### 5. Buildings of mixed Occupancy.

Where a building of mixed occupancy includes one or more occupancies of special fire hazard the Building Authority may prescribe such structural or other requirements as in his opinion are necessary; provided that in the case of areas of special hazard occupancy directly associated with an occupancy of normal hazard (e.g. store rooms for combustible material in a hotel; a kitchen attached

to a restaurant; a boiler room etc.) the requirements of this paragraph will be met if such areas of special hazard are—

- (a) enclosed by walls and floors having an F.R.P. not less than 1 hour, and
- (b) Provided with self-closing doors having an F.R.P. not less than  $\frac{1}{2}$  hour, and
- (c) Provided with protected lobbies between each door and any escape route from the main building.

#### Buildings with Single Staircases.

- (1) In accordance with Regulations 39(2) and 41 of the Building (Planning) Regulations single staircases may be permitted in buildings not exceeding 6 storeys in height in which the level of the floor of the uppermost storey is not more than 55 feet above the level of the ground at the point of discharge of the staircase.
- (2) No building will be permitted to have a single staircase unless such building complies with the following conditions:—
  - (a) Each element of construction shall have an F.R.P. of not less than 1 hour.
  - (b) No room or storey of the building may be used for any occupancy other than (i) Domestic or (ii) Offices, except that the ground storey may be used for the purposes of a shop or carport provided that:—
    - (i) The stair from ground to first floor level shall be separated from the remainder of the building by a wall having an F.R.P. of not less than 2 hours.
    - (ii) The wall enclosing the stair shall at the main entrance be returned for a distance of not less than 1' 6" along the frontage of any shop or carport.
  - (c) In the case of a building in which the level of the highest floor is not more than 42 feet above ground level, adequate access shall be provided to enable a rescue appliance to reach at least one window of every separate occupancy on each floor above the ground storey. Such access shall be adequate for the proper operation of a 50 foot Escape Ladder and attention is drawn to the following requirements.
    - (i) If the Escape Ladder is to operate from the street there shall be no boundary wall or fence at a distance greater than 15 feet from the building on the frontage of such street, and the height of such boundary wall must be limited so as not to interfere with the operation of the ladder.
    - (ii) If the Escape Ladder is to operate from inside the curtilage of the building site there shall be provided—
      - (a) a clear distance of not less than 20 feet between the building face and any boundary wall or fence
      - (b) access to the site through a gateway or other opening not less in width than 8' 6" nor less in height than 12 feet.

- (d) In the case of a building in which the level of the highest floor is not more than 42 feet above ground level the usable floor area of any storey above the ground floor shall not exceed 2,500 square feet.
- (e) In the case of a building in which the highest floor is more than 42 feet above ground level the usable floor area of any storey above the ground floor shall not exceed 1,500 square feet.
- (f) A partly external or an external staircase will not be permitted if any open side of such staircase opposes (whether directly or diagonally) and is within 20 feet of:—
  - (i) the opposite side of the street, or
  - (ii) the lot boundary, not being a common boundary with a street, or
  - (iii) any other building not being part of the same building on the same lot.
- (g) In the case of a building in which the level of the highest floor is more than 42 feet above ground level:—
  - (i) the staircase shall be continued to the roof; and
  - (ii) access to such staircase at each storey shall be through a protected lobby, or a lobby open to the external air on at least two sides.

#### 7. Assessment of Accommodation.

As a guide to assessing the requirements for Means of Escape, or the population of various portions of a building, or the number of persons and population density within a building (where not specifically shown on layout or seating plans), the following shall be the basis of calculation.

TABLE 1

Intended use of room or storey	Factor representing sq. ft. of usable floor per person
(a) Assembly halls and auditoria without seating or with movable seating	6
(b) Dance Halls (calculated on dancing area)	8
(c) Restaurants (calculated on dining area)	10
(d) Public Lounges (calculated on usable floor area)	25
(e) Shops and Showrooms (calculated on usable floor area)	50
(f) Offices (calculated on usable floor area)	100
(g) Tenement Houses, Barracks, Dormitories and self contained flats comprising a single room or having the main living area subdivided by rooms	30
(h) Self contained flats with corridor or balcony access having five or more flats on each floor served by each staircase	50
(i) Flats not covered by (g) or (h)	100

Notes: (i) For definition of "usable floor area" see paragraph 2.  
(ii) Schools, hospitals, hotels, hostels etc. will be assessed on the basis of detailed layout plans.

*General requirements as to exit routes.*

- (1) Every building to which this Code applies shall be so constructed that there are available from each storey of the building such exits and exit routes as will comply with the requirements set out in this code.
- (2) Every exit route shall lead directly to a street or to an open area having unobstructed access, not less in width than the total required width of exit routes discharging into such an area, to a street. Such access to a street shall not be closed with doors or gates unless such doors or gates are fitted with panic bolts as the sole means of being locked in a closed position.
- (3) Every part of an exit route shall be provided with adequate lighting.
- (4) The width of an exit doorway shall be the least clear width measured between the vertical members of the door frame.
- (5) The width of a stair, stair landing, passage or corridor comprising an exit route shall be measured between the finished surfaces of the walls or of the inner sides of any balustrade and shall not be decreased by the introduction of any projections other than handrails the projection of which shall not exceed 3½ inches.

*Exits from Rooms.*

- (1) There shall be available from every room of a capacity exceeding 10 persons not less than the number of exit doors shown in Table 2 according to the capacity of the room, and the width of each exit door shall be not less than the width shown in Table 2 according to the capacity of the room and the number of exit doors provided.
- (2) Every exit door so provided shall give access to an exit route which complies with paragraph 8 and which is independent of any other exit route to which access may be directly obtained from that room. Provided that where the capacity of a room does not exceed 200 persons the exit doors from such room may give access to a single corridor or balcony approach from which it is possible to escape in more than one direction.
- (3) Where two or more exit doors (required by Table 2 to serve a room) vary in width, any width of an exit door in such group in excess of 50% above the width of the narrowest exit door in such group shall not be included in the calculation for the minimum total width of exit doors as required in column 3 of Table 2.

*Exits from storeys.*

- (1) Every building, except those buildings permitted under paragraph 6 to have a single staircase, shall be so constructed that there are available from each storey not less than 2 exit routes or such greater number as may be required by Table 2. Provided that
  - (a) no exit shall be required from a storey solely in order to serve the upper floors of any number of maisonettes,

- (b) where two or more exit routes (required by Table 2 to serve a storey) vary in width, any width of an exit route in such group in excess of 50% above the width of the narrowest exit route in such group shall not be included in the calculation for the minimum total width of exit routes as required by column 4 of Table 2.

TABLE 2

Table showing minimum number of exit doorways from a room, or exit routes from a storey, and required minimum width thereof.

Capacity of Room or Storey	Min. No. of exit doors (from room) or exit routes (from storey)	Min. total width of		Min. width of each	
		(a) exit doors	(b) exit routes	(a) exit doors	(b) exit routes
11 — 25	1	—	—	2' 6"	3' 0"
26 — 100	1	—	—	2' 10"	3' 6"
101 — 200	2	5' 8"	6' 6"	2' 10"	3' 0"
201 — 300	2	8' 0"	8' 0"	3' 6"	3' 6"
301 — 500	2	10' 0"	10' 0"	3' 6"	3' 6"
501 — 750	3	15' 0"	15' 0"	4' 0"	4' 0"
751 — 1,000	4	20' 0"	20' 0"	4' 0"	4' 0"
1,001 — 1,250	5	25' 0"	25' 0"	4' 6"	4' 6"
1,251 — 1,500	6	30' 0"	30' 0"	4' 6"	4' 6"
Over 1,500	7 or such greater number as the Building Authority may require	To be calculated at the rate of 1' 0" width per 50 persons		5' 0"	5' 0"

Note: In the case of Places of Public Entertainment attention is drawn to the Places of Public Entertainments Regulations, the requirements of which must be followed.

*11. Exits from Flats and Tenements.*

- (1) Every flat or tenement floor which is provided with a single exit door shall be so arranged that the entrance to the kitchen is not adjacent to the exit route, within the flat or tenement, to such exit door. Provided that the kitchen door may be adjacent to the exit route if
  - (a) such door is self-closing, and
  - (b) the capacity of the flat or tenement floor does not exceed ten persons.

*12. Travel Distance.*

The maximum travel distances that will be permitted from any part of a building shall be as follows:—

(a) *Buildings permitted to have a single staircase.*

A travel distance of 80 feet of which not more than 40 feet may be along a corridor or not more than 60 feet may be along a balcony approach.

(b) *Buildings required to have two or more staircases.*

A travel distance of 120 feet of which not more than 80 feet may be along a corridor or not more than 100 feet may be along a balcony approach. Provided that

- (i) For offices, schools and other buildings of normal hazard not being Residential or Institutional Buildings, in which the exit route is along a balcony approach, the travel distance may be increased to 150 feet of which not more than 120 feet may be along the balcony approach.
- (ii) Where the exit route is in one direction only (i.e. a dead-end) the maximum travel distance shall not be greater than twice the length of the exit route between the entrances to the enclosures of the required staircases, or, where there are more than two required staircases, between the entrances to the two required staircases nearest to each other; and shall not in any event exceed 60 feet, of which not more than 40 feet may be along a corridor or balcony approach.

*Note:* "entrance to the enclosure to a required staircase" shall be deemed to mean the door opening on to any landing of the stairs themselves.

13. *Widths of stairways and exits.*

- (1) The minimum number of exits from every room or storey and the widths thereof shall be in accordance with the requirements of paragraphs 9 & 10 and Table 2.
- (2) No exit door from a room or storey having a capacity in excess of 10 persons, leading to an exit route shall be less than 2' 6" in width (single leaf door) or 4' 0" width (double leaf door). An exit door may exceed the width of the exit route or staircase it serves by not more than 6 inches.
- (3) Every stair serving one or more storeys of a building either above or below the ground storey shall be of a clear width not less than that calculated from Tables 3, 4, 5 and 6 according to the number and capacity of the storeys served and the number and width of stairways serving such storeys provided that—
  - (a) no stair shall be less in width than 3' 0";
  - (b) the stairs of a building exceeding four storeys in height shall be not less in width than 3' 6";
  - (c) where a building contains two or more staircases of *equal width* the capacity of the storeys served by such stairs shall be calculated from the formula
 
$$C = (n - 0.25) P$$

$$n = \text{number of staircases}$$

$$P = \text{Discharge value of a single staircase of the appropriate width serving the appropriate number of storeys taken from Table 3.}$$

*Example* An office building 9 storeys high contains 5 Nos. 4' 6" staircases. What is the total discharge value of the staircases?

*Answer* No. of storeys above ground = 8. From Table 3 P (for 8 storeys above ground, width 4' 6") = 735

$$C = (5 - 0.25) \times 735 = 3,490. \text{ (approx.)}$$

- (d) Where a building contains 2 or more staircases of *unequal width* the capacity of the storeys served by such stairs shall be calculated by adding together the discharge values of each staircase of the appropriate width serving the appropriate number of storeys taken from Table 3, provided that the discharge value of the widest staircase (or where several staircases of equal width are the widest, then one of these) shall be multiplied by 0.75 before being added to the total.

*Example* An office building 9 storeys high contains 2 Nos. 3' 6" staircases, 2 Nos. 4' 6" staircases, 1 No. 5' 0" staircase. What is the total discharge value of the staircases?

*Answer* No. of storeys above ground = 8 Nos.

2/3' 6" stairs. Discharge Value  $2 \times 545 = 1090$

2/4' 6" stairs. Discharge Value  $2 \times 735 = 1470$

1/5' 0" stair. Discharge Value  $.75 \times 830 = 622.5$

Total 3182.5

*Example* An office building 9 storeys high contains 2 Nos. 3' 6" staircases, 1 No. 4' 6" staircase, 2 Nos. 5' 0" staircases. What is the total discharge value of the staircases?

*Answer* No. of storeys above ground = 8 Nos.

2/3' 6" stairs. Discharge Value  $2 \times 545 = 1090$

1/4' 6" stair. Discharge Value  $1 \times 735 = 735$

2/5' 0" stairs. Discharge Value  $1.75 \times 830 = 1452.5$

Total 3277.5

- (4) Where a stair is continued to serve a basement storey that part of the stair serving the basement shall be treated as a separate stair, for the purpose of calculating the width of such stair.
- (5) Where an exit route from a ground storey forms also the exit route from a stair, the width of such exit route shall be not less than the sum of—
  - (a) half the width required by this code of practice for the exit from the ground storey; and
  - (b) the width required for the stair from an upper storey; and
  - (c) the width required for the stair, if any, from a basement storey.

**TABLE 3**  
Discharge Value of a Single Staircase.

Number of storeys above or below ground storey	Discharge Value of a Single Staircase						
2	290	335	380	425	465	505	540
3	320	370	420	475	525	575	625
4		405	465	530	590	645	705
5		440	505	580	650	715	785
6		475	550	635	710	790	870
7		510	590	685	770	860	950
8		545	635	735	830	930	1,035
9		580	680	790	890	1,000	1,115
10		615	720	840	955	1,070	1,195
Each additional storey add:—	—	35	45	50	60	70	80
Width of stair	3' 0" but under 3' 6"	3' 6" but under 4' 0"	4' 0" but under 4' 6"	4' 6" but under 5' 0"	5' 0" but under 5' 6"	5' 6" but under 6' 0"	6' 0"

**TABLE 4**

Minimum widths of stairs where all storeys are served by a single staircase

Number of storeys above ground storey	Total capacity of storeys served by stair (persons)	Minimum width of stair
1	0 — 25	3' 0"
2	0 — 50 51 — 150 151 — 200	3' 0" 3' 6" 4' 0"
More than 2 storeys to a maximum of 5 storeys	0 — 75 * 76 — 175 176 — 250 251 — 325 326 — 400	3' 0" * 3' 6" 4' 0" 4' 6" 5' 0"

\* 3' 0" stairs only permitted where number of storeys above ground storey does not exceed three.

**TABLE 5**

Two Staircase Buildings: Minimum Width of each Staircase.

Number of storeys above ground storey	Calculated number of people in building above Ground Storey					
2	585	665	745	815	885	945
3	645	740	835	920	1,010	1,090
4	710	815	925	1,025	1,130	1,230
5	770	890	1,015	1,130	1,255	1,375
6	830	965	1,110	1,240	1,380	1,515
7	890	1,040	1,200	1,345	1,505	1,660
8	950	1,115	1,290	1,450	1,630	1,805
9	1,015	1,190	1,380	1,555	1,750	1,945
10	1,075	1,265	1,470	1,665	1,875	2,090
Each additional storey add:—	60	75	90	105	125	145
Width of stair	3' 6" but under 4' 0"	4' 0" but under 4' 6"	4' 6" but under 5' 0"	5' 0" but under 5' 6"	5' 6" but under 6' 0"	6' 0"

**TABLE 6**

Three Staircase Buildings: Minimum Width of each Staircase.

Number of storeys above ground storey	Calculated number of people in building above Ground Storey					
2	920	1,045	1,170	1,280	1,390	1,490
3	1,015	1,160	1,310	1,445	1,585	1,715
4	1,115	1,275	1,455	1,615	1,775	1,935
5	1,210	1,395	1,595	1,780	1,970	2,160
6	1,305	1,515	1,745	1,950	2,170	2,390
7	1,400	1,630	1,885	2,115	2,365	2,610
8	1,495	1,750	2,025	2,280	2,560	2,835
9	1,595	1,870	2,170	2,445	2,750	3,060
10	1,690	1,985	2,310	2,610	2,945	3,285
Each additional storey add:—	95	120	140	165	195	225
Width of stair	3' 6" but under 4' 0"	4' 0" but under 4' 6"	4' 6" but under 5' 0"	5' 0" but under 5' 6"	5' 6" but under 6' 0"	6' 0"

14. *Enclosure of Staircases.*

- (1) Every required stairway in a building to which this Code applies, not being a staircase wholly within a maisonette, shall be separated from the remainder of the building by a wall having an F.R.P. of not less than  $\frac{1}{2}$  hour or such longer period as may be required by Regulation 98(2) (b) of the Building (Construction) Regulations.
- (2) Any opening in the wall separating a staircase from the remainder of the building shall be protected by
  - (a) a self-closing door having an F.R.P. of not less than  $\frac{1}{2}$  hour or
  - (b) borrowed lights constructed in accordance with Regulation 101(2) of the Building (Construction) Regulations.Provided that no such door shall be required between a balcony approach and any stairway leading therefrom.
- (3) This paragraph shall not apply to staircases which
  - (a) are provided only to assist in the general circulation within a building, and
  - (b) are additional to the minimum number of staircases necessary to comply with the requirements of paragraph 13.

*Note:* In this connexion attention is drawn to the requirements of Regulation 96 of the Building (Construction) Regulations.

15. *Exits at Ground Floor Level.*

- (1) The enclosing walls of every staircase, shall be so continued at ground floor level as to separate from the remainder of the building any passage or corridor leading from the stair to any ground level exit doorway to which the stair gives access; provided that—
  - (a) In the case of a building served by two or more staircases, a cloak-room, lavatory, water-closet or porters office may open off such passage-way; and
  - (b) In the case of a building served by three or more staircases one in every three such staircases may discharge through fire resisting self-closing doors to an unprotected lobby, hall or shopping arcade.

16. *Buildings with a single staircase; access to such staircase.*

- (1) Every staircase shall be separated from the remainder of the building in accordance with the requirements of paragraph 14.
- (2) Every internal corridor giving access to rooms or flats in separate occupancies in a single staircase building shall be enclosed by partitions having an F.R.P. of not less than  $\frac{1}{2}$  hour; provided that ventilation and borrowed lighting to the corridor may be provided in the upper part of such partitions at a height of not less than 6 feet above floor level. Self-closing doors having an F.R.P. of not less than  $\frac{1}{2}$  hour shall be required to all such rooms or flats.

- (3) Every window opening on to a balcony approach in a single staircase building shall be so arranged that
  - (a) The window sill shall be not less than 3' 0" above the balcony level.
  - (b) It shall not be possible to fix in an open position any window in such manner as to obstruct the balcony or reduce its minimum required width. Provided that nothing in this sub-paragraph shall prevent a window from being opened through 180 degrees and being fixed open in such position or the use of fanlights at a height not less than 6' 6" above the balcony level.
- (4) Every door opening on to a balcony approach in a single staircase building shall be self-closing and have an F.R.P. of not less than  $\frac{1}{2}$  hour. It shall not at any part of its swing reduce the minimum required width of such balcony approach.

17. *Buildings with two or more stairs: Internal access to Staircases.*

- (1) Every staircase shall be separated from the remainder of the building in accordance with the requirements of paragraph 14.
- (2) The exit door of any room, flat or storey with direct access to a common stair shall be self-closing with an F.R.P. of not less than  $\frac{1}{2}$  hour.
- (3) Every internal corridor giving access to rooms or flats in separate occupancies shall be enclosed by partitions having an F.R.P. of not less than  $\frac{1}{2}$  hour; provided that ventilation and borrowed lighting to the corridor may be provided in the upper part of such partitions at a height not less than 6 feet above floor level.
- (4)
  - (a) Fire resisting doors will not normally be required to rooms or flats opening off an internal corridor from which escape is possible in two directions;
  - (b) Fire resisting doors will be required to rooms or flats opening off a dead end corridor.
- (5) A lobby between the internal corridor and the staircase will not normally be required in buildings in which the highest storey is not more than 100 feet above ground level. In accordance with paragraph 14 a fire resisting self-closing door will be required between the staircase enclosure and the corridor.
- (6) The exit route from any room, flat or storey to any part of a staircase which serves a storey more than 100 feet above the level of the ground shall be through a lobby. Such lobby shall be either
  - (a) a protected lobby, or
  - (b) a lobby open to the external air on at least two sides.Provided that this paragraph shall not apply to a staircase to which access is from a balcony approach.

- (1) The access to the stairs shall be so arranged that each stair is approached from a different direction; provided that dead ends will be permitted in accordance with paragraph 12. No two staircases shall have a common enclosure wall unless the doors opening directly on to any landing of the stairs themselves are not less than 20 feet apart.
- (2) The means of escape from any part of the building shall be so arranged that it is not necessary to pass through one staircase enclosure in order to reach an alternative stair.

3. *Buildings with two or more staircases: Balcony approach.*

- (1) Every staircase shall be separated from the remainder of the building in accordance with the requirements of paragraph 14.
- (2) No door opening on to the balcony approach shall at any part of its swing reduce the minimum required width of such balcony.
- (3) Every window opening on to the balcony approach shall be so arranged that it shall not be possible to fix any such window in an open position in such manner as will reduce the minimum required width of the balcony. Provided that nothing in this paragraph shall prevent a window from opening through 180 degrees and being fixed open in such position, or the use of fanlights at a height not less than 6' 6" above the balcony level.
- (4) Fire resisting doors and fire resisting glazing to windows will not normally be required, except to dead ends.
- (5) The access to the stairs shall be so arranged that each stair is approached from a different direction; provided that dead ends of limited length in accordance with paragraph 12 will be permitted. No two staircases shall have a common enclosure wall unless the doors opening directly on to any landing of the stairs themselves are not less than 20 feet apart.
- (6) The means of escape from any part of the building shall be so arranged that it is not necessary to pass through one staircase enclosure in order to reach an alternative stair.

10. *Construction of Staircases.*

- (1) For definitions of—
  - (a) Internal staircase
  - (b) Partly external staircase
  - (c) External staircase  
see paragraph 2.
- (2) Every staircase to which this code applies shall be constructed for its whole height of materials having an F.R.P., as defined in Part XIII of the Building (Construction) Regulations.
- (3) Stairs shall be arranged in straight flights without winders; each flight shall consist of not more than 16 risers nor less than 2 risers. Treads shall be not less than 9 inches wide, measured clear of nosings and the risers shall be not more than 7 inches high. Provided that in schools treads shall be

not less than 10 inches wide and the risers shall be not more than 6 inches nor less than 3 inches high.

- (4) Landings shall be provided at the top and bottom of each flight not less in width and length than the staircase width, and no exit door shall at any part of its swing reduce the effective width of such landing.
- (5) Every staircase shall have a clear width of not less than that required by paragraph 13 and a clear height of not less than 6' 6".
- (6) No stair shall exceed 6 feet in width unless it is divided by a central handrail into separate sections each of which shall be not less than 3' 6" in width. In such cases the newel post of the central handrail shall be carried up to a height of not less than 7 feet.
- (7) (a) There shall be provided—
  - (i) in any case where the width of the stair is less than 3' 6", a single handrail at one side of the stairway;
  - (ii) in any other case, a handrail on each side of the stairway.
- (b) Every such handrail shall—
  - (i) be at a height not less than 2' 9" nor more than 3' 3";
  - (ii) not project so as to reduce the clear width of the stair by more than 3½ inches, for each handrail;
  - (iii) be continuous throughout each flight, but need not be carried round a landing or half landing.

20. *Ramps.*

The slope of every ramp forming part of an exit shall not at any part exceed a slope equivalent to a vertical rise of 1 foot in a horizontal distance of 10 feet.

21. *Doors in relation to Exits.*

- (1) Every door across an exit or into an exit route from a room or storey whose capacity exceeds 50 shall—
  - (a) open in the direction of exit;
  - (b) if constructed to open both ways, have a transparent upper panel;
  - (c) if it is necessary to secure the door against entry from the outside, be capable of being readily opened from the inside although so secured.
- (2) Every door opening on to an exit route:—
  - (a) if it opens outwards into a corridor shall be so arranged as not to obstruct the corridor at any point of its swing;
  - (b) if it opens on to a landing between flights of stairs, shall not at any point of its swing, reduce the effective width of the landing to less than the width of the stair.

- (3) Every exit door from a room or storey having a capacity in excess of 10 persons leading to an exit route—

- (a) if a single leaf door shall be not less in width than 2' 6";
- (b) if a double leaf door, no leaf of such door shall be less in width than 2' 0".

- (4) Every door giving access to a protected lobby from a staircase enclosure or corridor shall be provided with a transparent upper panel of the requisite fire resistance.

#### 12. Position of Lift Shafts.

- (1) In the case of a building with one staircase a lift opening shall not be permitted within the staircase enclosure.
- (2) In the case of a building with two or more staircases a lift opening will be permitted within a staircase enclosure.

#### 13. Windows in external walls.

In any building to which this Code applies the following windows shall be so designed and constructed that they have an F.R.P. of not less than  $\frac{1}{2}$  hour—

- (a) Windows in any light well of which
  - (i) the dimension between opposite walls is less than 10 feet, or
  - (ii) the area is less than 100 square feet or less than 1 square foot for every foot of the height of such light well, whichever is the greater.
- (b) Staircase windows which oppose (whether directly or diagonally) and are within 20 feet of—
  - (i) the opposite side of a street;
  - (ii) the lot boundary, not being a common boundary with the street;
  - (iii) any other building on the same lot.
- (c) Any window within 6 feet of any part of an open side or opening (not being an opening protected by a fire-resisting door) in an external or partly external staircase.

Provided that nothing in this paragraph shall prevent a reasonable area of every such window being made to open.

#### 14. Doors in light wells.

- Any door giving access from a room flat or storey to a light well of which
- (a) the dimension between opposite walls is less than 10' 0", or
  - (b) the area is less than 100 sq. ft. or less than 1 square foot for every foot of the height of such light well whichever is the greater,
- shall be self-closing with an F.R.P. of not less than  $\frac{1}{2}$  hour.

#### 25. Basements.

- (1) The numbers and width of every exit from any basement storey shall be calculated in accordance with paragraphs 9, 10 and 13.
- (2) Every basement storey excepting a basement storey—
  - (a) the floor of which is not more than 10 feet below the level of the ground to which the exit serving such basement storey gives access, and
  - (b) whose area does not exceed 1,500 square feet and
  - (c) which is used solely for a lavatory, cloakroom or plantroomshall have not less than two exits.
- (3) At least one exit from every basement storey, excepting a basement storey which is used solely as a lavatory or cloakroom, shall discharge independently of any other exit into a street or open area having access to a street in accordance with the requirements of paragraph 8(2).
- (4) If a staircase serving the storeys of a building above the ground storey is carried down to serve the basement storey or storeys such stair shall be cut off at such basement storey or storeys by means of a protected lobby.
- (5) No staircase in a single staircase building shall be continued direct to a basement.
- (6) The Building Authority may prescribe such structural or other requirements as in his opinion are necessary in connexion with basement occupancies; in particular such additional requirements may relate to the extract of smoke and hot gases. The following sub-paragraphs are included for guidance.
  - (a) Unobstructed smoke extracts having direct communication with the open air should be provided in or adjoining the external walls and in positions easily accessible to firemen.
  - (b) The area of smoke vents to be provided should take into account the nature of the occupancy, and the smoke vents should be distributed around the perimeter.
  - (c) Covers to smoke extracts should, where practicable, be provided in the stallboard or at pavement level (but not in a public pavement), and the covers should be constructed of light cast iron frame or other construction which may be readily broken by a fireman in an emergency. The covers should be suitably marked.

#### 26. Garages and Car Ports attached to buildings.

- (1) For the purpose of this paragraph—
  - (a) "Car Port" means a covered parking area open for its entire length or width on at least two sides.
  - (b) "Garage" means a covered parking area enclosed by walls, with or without windows, on more than two sides.

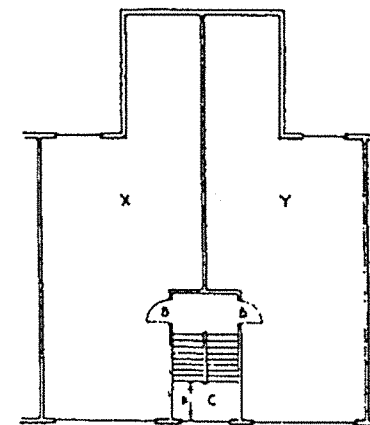


- (2) Where any single storey garage or car port having a floor area not exceeding 1000 square feet adjoins or forms part of a building such garage or car port shall be separated from the building by a wall or floor having an F.R.P. of not less than 1 hour, and there shall be no opening in such wall or floor. Provided that in the case of a garage not exceeding 250 square feet or a car port not exceeding 1000 square feet an opening will be permitted in the wall or floor to give access to the building through a protected lobby or protected corridor or ventilated lobby.
- (3) Where any single storey garage or car port having a floor area exceeding 1000 square feet adjoins or forms part of a building such garage or car port shall be separated from the building by a wall or floor having an F.R.P. of not less than 2 hours, and there shall be no opening in such wall or floor. Provided that:—
- (a) In the case of a car port an opening will be permitted in the wall or floor to give access to the building through a protected lobby or protected corridor or ventilated lobby.
- (b) In the case of a garage an opening will be permitted in the wall or floor to give access to the building through a protected or ventilated lobby having an F.R.P. of 2 hours, with the opening from the garage to such lobby filled in with a door having an F.R.P. of 2 hours and a fusible link shutter to operate at a temperature of 150°F. The door from the lobby to the building to be self-closing with an F.R.P. not less than  $\frac{1}{2}$  hour.

## 27. Domestic Occupancies in certain buildings.

Attention is drawn to Regulation 49 of the Building (Planning) Regulations.

DIAGRAM 1  
TENEMENT HOUSE OR UNDIVIDED OFFICE SPACE.  
SINGLE STAIR—DIRECT ACCESS.  
(See paragraphs 6 and 16)

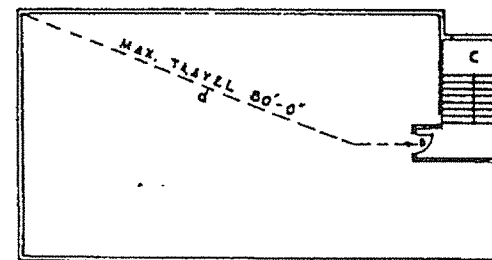


- B Self closing door. (1/2 hour fire resistance)  
C Protected stair.  
W Width of staircase as calculated from Table 4.

### NOTE:—

- Total usable floor area of X+Y not to exceed  
(a) 2,500 square feet if highest floor not more than 42'-0" above ground.  
(b) 1,500 square feet if highest floor more than 42'-0" above ground.

DIAGRAM 2  
UNDIVIDED DOMESTIC OR OFFICE SPACE.  
SINGLE STAIR—DIRECT ACCESS.  
(See paragraphs 6 and 16)



- B Self closing door. (1/2 hour fire resistance)  
C Protected stair.  
d Travel distance. (See paragraph 12)

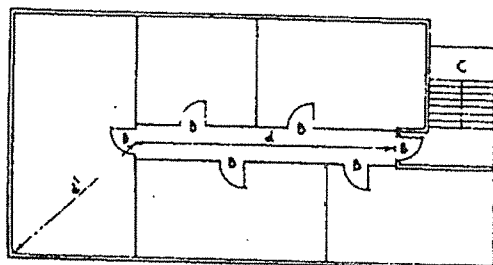
### NOTE:—

Total usable floor area not to exceed

DIAGRAM 3

DIVIDED OFFICE SPACE OR DWELLINGS IN SEPARATE OCCUPANCIES.  
SINGLE STAIR—CORRIDOR ACCESS.

(See paragraphs 6 and 16)



b Self closing doors. (1/2 hour fire resistance)

c Protected stair.

d Travel distance along corridor maximum 40 feet. (See paragraph 12)

$d + d^1$  not to exceed 80 feet.

NOTE:—

Total usable floor area not to exceed

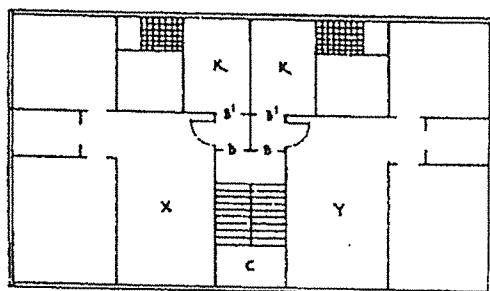
(a) 2,500 square feet if highest floor not more than 42'-0" above ground.

(b) 1,500 square feet if highest floor more than 42'-0" above ground.

DIAGRAM 4

FLATS—DIRECT ACCESS FROM SINGLE STAIR.

(See paragraphs 6 and 16)



b Self closing door. (1/2 hour fire resistance)

b' Door to kitchen—see paragraph 11.

c Protected stair.

K Kitchen.

NOTE:—

Total usable floor area of X+Y not to exceed

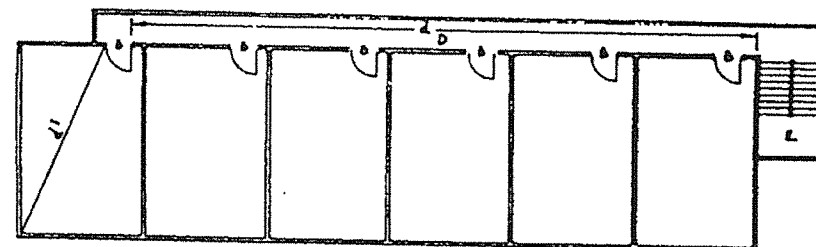
(a) 2,500 square feet if highest floor not more than 42'-0" above ground.

(b) 1,500 square feet if highest floor more than 42'-0" above ground.

DIAGRAM 5

DOMESTIC OR OFFICE ACCOMMODATION.  
SINGLE STAIR—EXTERNAL BALCONY APPROACH.

(See paragraphs 6 and 16)



b Self closing door. (1/2 hour fire resistance)

d External balcony approach.

e External stair.

d Travel distance—maximum 60'-0" along balcony. (paragraph 12)

$d^1$  Travel distance— $d + d^1$  not greater than 80'-0". (paragraph 12)

NOTE:—

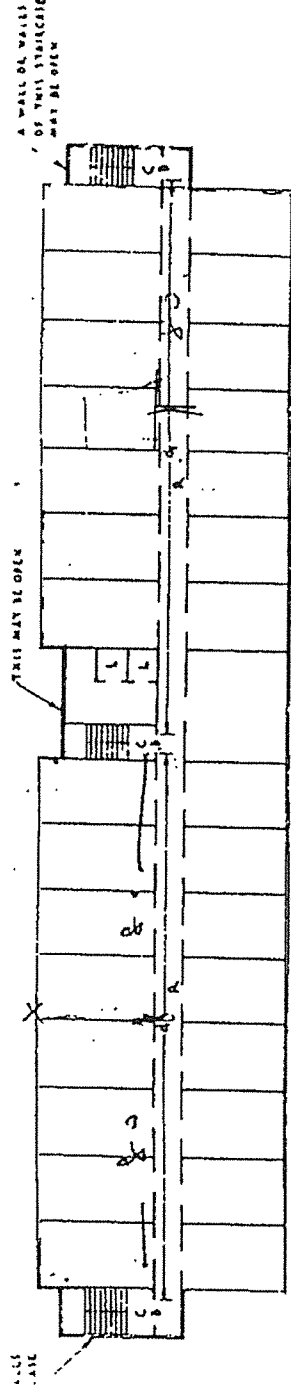
Total usable floor area not to exceed

(a) 2,500 square feet if highest floor not more than 42'-0" above ground.

(b) 1,500 square feet if highest floor more than 42'-0" above ground.

DIAGRAM 6

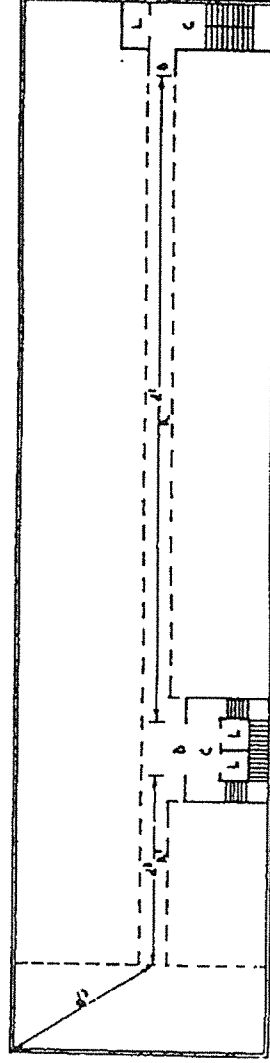
INTERNAL CORRIDOR ACCESS.  
(See paragraph 17)



- B Self closing doors. (1/2 hour fire resistance)
- C Protected stair.
- L Lifts.
- d Travel distance—maximum 160 feet along corridor between stairs.  
(See paragraph 12)
- R Internal corridor. For construction see paragraphs 17(3) and 17(4).

DIAGRAM 7

DIVIDED OR UNDIVIDED SPACE.  
TWO OR MORE STAIRCASES.  
(See paragraph 17)



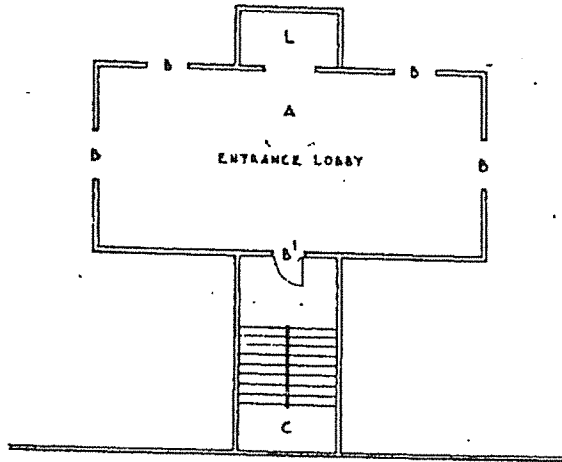
- B Self closing door. (1/2 hour fire resistance)
- C Protected stair.
- L Lift enclosures.
- d<sup>1</sup> Travel distance in corridor—maximum 160 feet. (See paragraph 12)
- d<sup>2</sup> Travel distance in dead-end corridor—maximum 40 feet. (See paragraph 12)
- d<sup>2</sup>+d<sup>3</sup> Maximum travel distance 60 feet. (See paragraph 12)
- R Corridor. For construction see paragraphs 17(3) and 17(4).
- R<sup>1</sup> Corridor in dead-end. See paragraphs 17(3) and 17(4)(b).

DIAGRAM 8

STAIRCASES SERVING STOREYS OVER 100 FEET ABOVE GROUND  
LEVEL.

[See paragraph 17(6)(a)]

This diagram illustrates *ONLY* paragraph 17(6)(a) of the code.



- A Protected lobby.
- B Self closing door. (1/2 hour fire resistance)
- B' Door to staircase.
- C Protected stair.
- C' Enclosure.

Where staircases do not serve any storey more than 100 feet above ground level,  
door B' is *not* required.

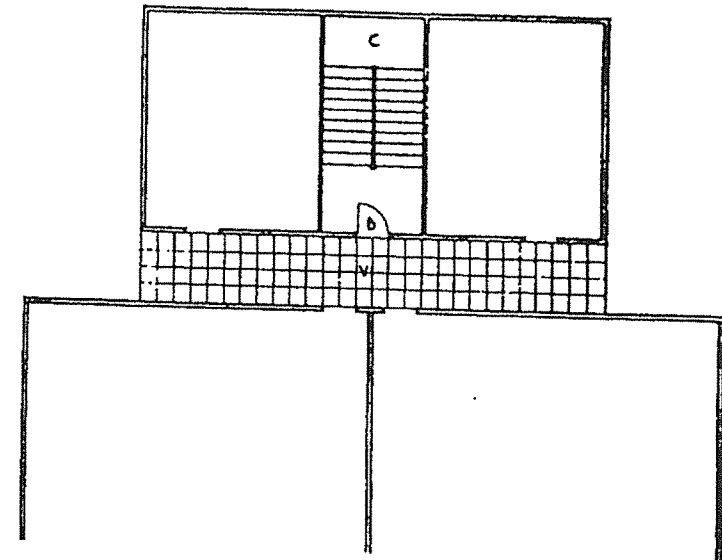
DIAGRAM 9

STAIRCASES SERVING STOREYS OVER 100 FEET ABOVE GROUND  
LEVEL.

[See paragraph 17(6)(b)]

NOTE:—

This Diagram illustrates *ONLY* paragraph 17(6)(b) of the code.



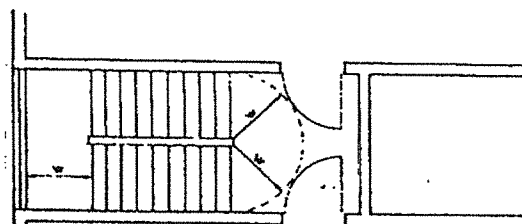
- B Self closing door. (1/2 hour fire resistance)
- C Protected stair.
- V Lobby open to external air on two sides.

DIAGRAM 10

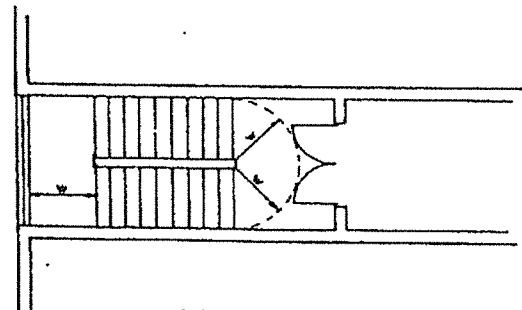
DOOR OPENING OUT TO OPEN CLEAR OF STAIR LANDINGS.  
[see paragraph 21(2)(b)]

NOTE—

This diagram illustrates *ONLY* paragraph 21(2)(b).



W = WIDTH OF STAIR.



W = WIDTH OF STAIR.