16.16. (1) The provisions of this Part relating to the construction of floors and any supporting columns shall, except as otherwise provided in this clause, apply to the floor of a mezzanine and its supporting columns, if any.

(2) Mezzanine floors and any columns supporting only those floors need not have a fire-resistance rating or be non-combustible if the following requirements are met:

(a) The area of the mezzanine floor shall not exceed 180 m² or one-third of the area of the room concerned, whichever is the lesser.

(b) If a room includes two or more mezzanines and the floors of those mezzanines are at or near the same level, the aggregate area of such floors shall not exceed 180 m² or one-third of the area of the room concerned, whichever is the lesser.

(c) Every wall or column that supports any part of the building except the mezzanine floor or floors shall—

(i) if it is at any point within 6 m of the mezzanine floor or floors; and

(ii) if it is required elsewhere in this Part to have a fire-resistance rating,

have a fire-resistance rating of not less than one and one-third the rating otherwise required.

16.17. A beam, column, or other framing member—

(a) that passes through a duct or a well within a shaft; and

(b) that is required to have a fire-resistance rating,

shall be of concrete, or be encased in concrete, and have a fire-resistance rating of not less than 2 hours.

16.18. In a Class II or Class III building, a ceiling—

(a) above a public corridor, public hallway, or the like, or above a stairway or ramp that is required to be bounded by fire-resisting walls; and

(b) not forming an integral part of the floor, or roof next above, and not being a ceiling with a resistance to the incipient spread of fire to the space above itself of not less than one hour,

shall be non-combustible, and, if in a building of Type 1, or Type 2 construction, shall have only non-combustible supports.
16.19. Unless otherwise stated in this Ordinance, a combustible lining may be attached, inside a building, to a face of a structural member that is required—

(a) to have a fire-resistance rating; or

(b) to be non-combustible.

16.20. (1) For the purposes of this clause, clause 19.1 shall apply in determining the number of storeys a building contains.

(2) Where, in a building that contains one storey only, a steel column is incorporated in an external wall that is required to have a fire-resistance rating, the column need not have a fire-resistance rating.

(3) Where, in a building that contains more than one storey, a steel column that supports a roof truss or beam at an external wall has either no fire-resistance rating or a rating that is less than that required for the wall—

(a) the truss or beam and the column shall be so constructed that in the event of fire they will not tend to overturn the wall; and

(b) the wall shall be so constructed that it does not at any time depend upon the column for support.

16.21. In a building required to be of Type 1 or Type 2 construction, the following shall be non-combustible:

(a) Materials, if any, attached to the outside face of an external wall.

(b) The construction of and frames around external doors and windows, if the building is in a fire zone.

16.22. A roof required by clause 16.7 to have a fire-resistance rating and to be non-combustible may be covered with built-up roofing consisting of successive layers of bitumen-impregnated, tar-impregnated, or similar roofing felt.

16.23. In a building of Type 1 or Type 2 construction, a roof, not complying with this Part as to fire-resisting construction, may be superimposed on a concrete-slab roof if—

(a) the superimposed roof and any construction between it and the concrete slab roof are non-combustible throughout; and

(b) the concrete-slab roof complies with this Part as to fire-resisting construction.
16.24. A non-combustible structure situated on a roof and containing one or more of the following only—

(a) hot-water or other water tanks; or

(b) ventilating ductwork; or

(c) ventilating fans and their motors; or

(d) air-conditioning chillers; or

(e) window-cleaning equipment; or

(f) other service units that are non-combustible and do not contain combustible fluids,

need not comply with the other provisions of this Part.

16.25. (1) Every lintel shall have the fire-resistance rating, if any, Lintels. Where a fire-resistance rating is required for the part of the building in which it is situated, except as in subclause (2).

(2) Steel angles, plates, or bars comprising lintels that span openings— Where a fire-resistance rating is not required for the lintel.

(a) in walls of buildings containing only one storey; or

(b) in non-loadbearing walls of Clause II buildings; or

(c) not exceeding 3 m in width, and bridged by non-loadbearing masonry; or

(d) not exceeding 1.8 m in width, and bridged by loadbearing masonry, being part of a solid wall or part of one of the leaves of a cavity wall, the masonry in each case being not more than 150 mm in thickness,

shall not be subject to subclause (1) unless the lintels help to support fire doors or fire shutters.


(a) of a facing or finish to a part of a building required to have a fire-resistance rating; or

(b) of ducting or any other service to such a part,

shall provide for the attachment or installation to proceed without impairing the potential fire-resistance performance of that part.
16.27. (1) This clause applies to a building built over a public road, railway, bus terminal, or similar public facility.

(2) The fire-resistance rating of each structural member in, immediately above, or immediately alongside the public facility concerned shall be not less than that determined by the Council, having regard to—

(a) the particular circumstances; and

(b) the other provisions of this Part.

(3) The Council may require that any column or floor subject to subclause (2) shall be of reinforced or prestressed concrete, or structural steel encased in concrete.

GROUP V.—FIRE SAFETY AND FIRE RESISTANCE.

PART 17.—Construction Required Except in Fire Zones.

17.1. (1) For the purposes of this Ordinance, the “rise” in storeys of a building means the number of storeys above the ground, calculated in accordance with the provisions of this clause.

(2) The greatest number of storeys in a building at any part of its perimeter, counted above the finished ground adjacent to the external walls at that part, shall be deemed to be the “rise” in storeys of the building.

(3) When any part of an external wall abuts the boundary of an adjoining allotment of land, the natural ground level at the relevant part of the boundary shall be regarded as the finished ground in reckoning the number of storeys at the part of the wall concerned.

(4) In applying subclause (3), if there is any doubt as to the natural ground level (because of prior excavation or other cause) this level shall be assessed to the satisfaction of the Council.

(5) In counting the number of storeys above the finished ground at any part of an external wall, a storey shall be excluded from the reckoning if—

(a) it is situated at the top of the building and contains only heating, ventilating, lift or other equipment, water tanks, or similar service units; or

(b) it is situated partly below the finished ground against that part of the wall and extends not more than 1 m above the average level of that ground, the measurement being taken to—

(i) the underside of the ceiling; or
(ii) where there is no ceiling, the underside of the construction at the top of the storey, except that, if the length of that part of the wall exceeds 12 m, the average level of the finished ground against it, used in the measurement, shall be the average for that 12-m section of its length where the ground is lowest.

(6) In calculating the “rise” in storeys of a building which incorporates one or more mezzanines—
   (a) any mezzanine having a floor area of more than 180 m²; and
   (b) two or more mezzanines at or near the same level in a room and having an aggregate floor area of more than 180 m²,
shall, notwithstanding the provisions of clause 1.3 (1), be regarded as a storey in that portion of the building in which they are situated.

(7) Any storey that has an internal height of more than 5.2 m shall be regarded as—
   (a) one storey, if it is the only storey above the ground; or
   (b) two storeys in any other case.

(8) The rise in storeys of a section of a building that is fire-separated according to Part 23 from the remainder of the building shall be determined as though the section were itself a building.

17.2. (1) The type of fire-resisting construction required in a building of Class II, III, V, VI, VII, VIII or IX—
   (a) except in a fire zone; and
   (b) except as conceded in clauses 17.4, 17.5 and 17.6 for certain Class II buildings, and in clause 17.8 for open-deck parking stations,
shall be that stated in the relevant column of Table 17.2.

### TABLE 17.2.

**Type of Fire-Resisting Construction Required Except in a Fire Zone.**

<table>
<thead>
<tr>
<th>Rise in storeys</th>
<th>Class of building</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>II</td>
</tr>
<tr>
<td>6 or more</td>
<td>Type 1</td>
</tr>
<tr>
<td>5</td>
<td>Type 2</td>
</tr>
<tr>
<td>4</td>
<td>Type 2</td>
</tr>
<tr>
<td>3</td>
<td>Type 3</td>
</tr>
<tr>
<td>2</td>
<td>Type 3</td>
</tr>
<tr>
<td>1</td>
<td>Type 5</td>
</tr>
</tbody>
</table>

Certain mezzanines to be regarded as storeys.

Certain high storeys to be regarded as two storeys.

Determination of rise of a fire-separated section.

Type of fire-resisting construction required.

Classes concerned and their location.
2) A section of a building that is fire-separated according to Part 23 from the remainder of the building shall be subject to subclause (1) as though the section were itself a building.

3) In a building of mixed classifications, the type of fire-resisting construction required shall be that type of construction that is the most fire-resistant of the types arising from the application of subclause (1) at each storey, based on the assumptions that—

(a) a classification applying to the particular storey applies also to the storeys vertically below it; and

(b) the particular storey and those vertically below it comprise an entire building.

Lightweight construction. 17.3. (1) For the purposes of this clause, "lightweight construction" means—

(a) that variety of fire-resisting construction in which the construction affording fire protection—

(i) is not in continuous contact with the principal construction that it fire-protects; or

(ii) is of sheet or board material, plaster, render, sprayed application, or other material similarly susceptible to damage by pressure or abrasion; and

(b) that variety of fire-resisting construction which incorporates or comprises—

(i) concrete containing pumice, perlite, vermiculite, or other soft material; or

(ii) masonry having a measured thickness of less than 70 mm.

(2) Subject to subclause (3), in a building having a rise exceeding four storeys, a beam or column, or a wall required to have a fire-resistance rating, not being a partition wall, shall not incorporate or be of lightweight construction if it is in—

(a) any Class VI, VII, or VIII portion; or

(b) any portion, regardless of its classification, that is below the level of a Class VI, VII, or VIII portion.

(3) Subclause (2) shall not apply where any Class VI portion concerned is designed, constructed, or adapted for use as—

(a) a cafe or restaurant; or

(b) a tea room, coffee room, or milk or soft-drink bar; or

(c) a hairdresser's or barber's shop; or

(d) a shop of any other kind, the normal functioning and servicing of which would not, in the opinion of the Council, represent undue risk of damage to the lightweight construction of any beam, column, or wall.
17.4. (1) A building that is entirely of Class II and that is not in a fire-zone shall be subject to subclause (2), instead of clause 17.2, if it is so designed that—

(a) no part of any flat is vertically above any part of another flat; and

(b) the floor between each flat and any garage below is constructed of reinforced or prestressed concrete.

(2) The type of fire-resisting construction required in a building referred to in subclause (1) shall be as follows, according to the greatest number of storeys contained in any flat, and irrespective of its rise in storeys—

(a) For three storeys contained ........................................ Type 2.

(b) For one or two storeys contained .................................. Type 5.

17.5. A Class II or Class III building having a rise of two storeys may be of Type 5 construction if it complies with the special provisions of Part 24 as to means of egress from sole-occupancy units in such a building.

17.6. (1) Where the Council approves of the conversion of an existing building from Class I to Class II, the converted building shall be of that type of fire-resisting construction stated in the relevant column of Table 17.2, subject to the concession of clauses 17.4 or 17.5, if applicable, and to the concession for external walls set out in subclause (2) of this clause.

(2) The external walls of a building described in subclause (1) shall not be required to have a fire-resistance rating or be non-combustible if the building—

(a) is not in a fire zone; and

(b) contains not more than two storeys.

17.7. A Class IV portion of a building shall be of that type of fire-resisting construction required for the building of which it is a part.

17.8. An open-deck parking station need not comply with the other requirements of this Part if—

(a) it contains not more than three storeys; and

(b) it is of Type 4 construction in which—

(i) the floors are of concrete; and

(ii) all the columns and floor beams are of steel or concrete.
GROUP V.—FIRE SAFETY AND FIRE RESISTANCE.

PART 18.—Construction Required in Fire Zones.

18.1. A building shall be deemed to be in a fire zone if not less than half its total volume, measured over the roof and the external walls, is situated within the zone.

18.2. In a primary fire zone, the type of fire-resisting construction required in a building of Class II, III, V, VI, VII, VIII or IX shall be determined in accordance with Table 18.2.

TABLE 18.2.

<table>
<thead>
<tr>
<th>Rise in storeys</th>
<th>Type of construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 or more</td>
<td>Type 1</td>
</tr>
<tr>
<td>2</td>
<td>Type 2</td>
</tr>
<tr>
<td>1</td>
<td>Type 3</td>
</tr>
</tbody>
</table>

18.3. In a secondary fire zone, the type of fire-resisting construction required in a building of Class II, III, V, VI, VII, VIII or IX shall be that stated in the relevant column of Table 18.3.

TABLE 18.3.

<table>
<thead>
<tr>
<th>Rise in storeys</th>
<th>Class of building</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>II</td>
</tr>
<tr>
<td>4 or more</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Type 1</td>
</tr>
<tr>
<td>2</td>
<td>Type 2</td>
</tr>
<tr>
<td>1</td>
<td>Type 3</td>
</tr>
</tbody>
</table>

18.4. A section of a building that is fire-separated according to Part 23 from the remainder of the building shall be subject to clause 18.2 or clause 18.3, as the case requires, as though the section were itself a building.

18.5. In a building of mixed classifications, the type of fire-resisting construction required in a fire zone shall be that type of construction that is the most fire-resistant of the types arising from the application of clause 18.3 or clause 18.4, as the case requires, at each storey, based on the assumptions that—

(a) a classification applying to the particular storey applies also to the storeys vertically below it; and
(b) the particular storey and those vertically below it comprise an entire building.

18.6. Clause 17.3 regarding restrictions on the use of lightweight construction in certain buildings extends to buildings in a fire zone.

18.7. A Class IV portion of a building shall be of that type of fire-resisting construction required for the building of which it is a part.

18.8. A Class I building in a fire zone, if containing more than two storeys, shall have external walls of concrete or masonry.

18.9. A Class X building in a fire zone, if containing more than one storey, shall have external walls of concrete or masonry.

18.10. An open-deck parking station need not comply with the other requirements of this Part if—

(a) the number of storeys it contains does not exceed the number stated in Table 18.10, according to the category of fire zone in which the building is situated and the average area across each storey measured to the outside of the building and irrespective of any internal walls (including fire walls);

(b) the area across any storey is not less than the area across a storey at a higher level; and

(c) the building is of Type 4 construction in which—

(i) floors of concrete or concrete and steel decking are provided at each parking level;

(ii) the floors are structurally continuous across all floor beams, and have a fire-resistance rating of \( \frac{1}{2} \) hour or more;

(iii) the floor beams which have any part less than 3 m from the outside of a floor have a fire-resistance rating of 1\( \frac{1}{2} \) hours or more;

(iv) the other floor beams and the columns are of steel or concrete; and

(v) any part of an internal column that—

(A) is exposed, in terms of clause 16.6, to a fire-source feature; and

(B) has an effective distance of less than 9 m between itself and the fire-source feature, has a fire-resistance rating of 2 hours or more.
TABLE 18.10.
MAXIMUM PERMISSIBLE NUMBER OF STOREYS ACCORDING TO CATEGORY OF FIRE ZONE AND AVERAGE AREA ACROSS EACH STOREY.

In this Table, the area across a storey includes the areas above the ramps that lead down from the storey.

<table>
<thead>
<tr>
<th>Category of fire zone</th>
<th>Maximum permissible number of storeys for an average area across each storey (in square metres) of—</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than 650</td>
</tr>
<tr>
<td>Primary...</td>
<td>5</td>
</tr>
<tr>
<td>Secondary...</td>
<td>4</td>
</tr>
</tbody>
</table>

GROUP V.—FIRE SAFETY AND FIRE RESISTANCE.

PART 19.—Floor-area Limitations.

Interpretative provisions.
Certain storeys deemed to be excluded from calculations.

Class VII and Class VIII buildings of partly one and partly two storeys.

19.1. (1) In this Part, the number of storeys contained in a building shall be deemed not to include a storey situated at the top of the building and containing only heating, ventilating, lift, or other equipment, water tanks, or similar service units and the floor area of such a storey shall not be taken into account for the purposes of this Part.

(2) For the purposes of this Part, a Class VII or Class VIII building shall be deemed to contain only one storey if—

(a) it contains two storeys in one or more portions and only one storey in the remainder of the building; and

(b) the sum of the floor areas of the storeys in the portion or portions containing two storeys does not exceed one-fourth of the floor area of the remainder of the building.

19.2. (1) This clause applies to Class V, VI, VII and VIII buildings of Type 2, 3, 4, or 5 construction, subject to the exemptions permissible under clauses 19.3 and 19.4 in regard to certain buildings containing only one storey.

(2) In a building to which this clause applies, the sum of the floor areas of all storeys shall not (subject to subclause (3)) exceed the relevant maximum floor area set out in Table 19.2.
(3) In a building containing two or more storeys, the relevant maximum floor area set out in Table 19.2 shall apply to each storey, instead of the sum of all storeys, if—

(a) every floor (including its vertical supports) between the storeys cases has a fire-resistance rating of not less than 2 hours;

(b) the storeys are not interconnected by escalators;

(c) every lift well, stairway, or ramp is bounded by a shaft that has a fire-resistance rating of not less than two hours; and

(d) the external walls, in a building of Type 4 or Type 5 construction, are of concrete or masonry.

(4) Where a storey is divided into sections by fire walls, the following rules shall apply:

(a) If the building contains only one storey, the relevant maximum floor area set out in Table 19.2 shall apply to each such section as though it were a complete building.

(b) If the building contains two or more storeys and complies with subclause (3), the relevant maximum floor area set out in Table 19.2 shall apply to each such section as though it were a complete storey.

**TABLE 19.2.**

**MAXIMUM FLOOR AREAS ACCORDING TO TYPE OF FIRE-RESISTING CONSTRUCTION, CLASSIFICATION, AND WHETHER OR NOT A SPRINKLER SYSTEM IS INSTALLED.**

(In square metres.)

In this Table, the maximum floor areas apply to—

(a) the total floor area throughout a single or multi-storey building; or

(b) the floor areas of each storey of a building if the provisions of subclause (3) of clause 19.2 are met.

<table>
<thead>
<tr>
<th>Type of fire-resisting construction of building</th>
<th>Class V</th>
<th>Class VI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not sprinklered</td>
<td>Sprinklered</td>
</tr>
<tr>
<td>Type 2 ........................................</td>
<td>5 500</td>
<td>9 000</td>
</tr>
<tr>
<td>Type 3 ........................................</td>
<td>5 500</td>
<td>9 000</td>
</tr>
<tr>
<td>Type 4 ........................................</td>
<td>4 500</td>
<td>7 500</td>
</tr>
<tr>
<td>Type 5 ........................................</td>
<td>2 800</td>
<td>4 500</td>
</tr>
<tr>
<td>Type of fire-resisting construction of building</td>
<td>Class VII</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For storage or display of goods not referred to in Second Schedule (Medium or low hazard).</td>
<td>For storage or display of goods referred to in Second Schedule (High hazard).</td>
</tr>
<tr>
<td></td>
<td>Not sprinklered</td>
<td>Sprinklered</td>
</tr>
<tr>
<td>Type 2</td>
<td>5 500</td>
<td>9 000</td>
</tr>
<tr>
<td>Type 3</td>
<td>5 500</td>
<td>9 000</td>
</tr>
<tr>
<td>Type 4</td>
<td>4 500</td>
<td>7 500</td>
</tr>
<tr>
<td>Type 5</td>
<td>2 800</td>
<td>4 500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class VIIIa (Medium or low hazard)</th>
<th>Class VIIIb (High hazard)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not sprinklered</td>
<td>Sprinklered</td>
</tr>
<tr>
<td>Type 2</td>
<td>5 500</td>
</tr>
<tr>
<td>Type 3</td>
<td>5 500</td>
</tr>
<tr>
<td>Type 4</td>
<td>4 500</td>
</tr>
<tr>
<td>Type 5</td>
<td>2 800</td>
</tr>
</tbody>
</table>

Exemption for single-storey buildings not exceeding 18,000 m² in area.

19.3. A building containing only one storey and having a floor area not exceeding 18,000 m² shall not be subject to the floor-area limitations specified in clause 19.2 if—

(a) an open space, not less than 18 m in width, is provided on or associated with the site of the building in accordance with clause 19.5; or

(b) the building is of Type 2 or Type 3 construction and complies with the following requirements:

(i) The space below the roof shall be divided into compartments in accordance with clause 19.6;

(ii) The building shall be provided with approved automatic smoke-and-heat vents in accordance with clause 19;
(iii) Every external wall facing the boundary of an adjoining allotment of land shall be provided with a parapet in accordance with clause 19.8, except where the provisions of that clause permit the height of the parapet to be reduced to nil; and

(iv) Windows and other openings in every external wall facing the boundary of an adjoining allotment of land shall be so limited in area as to comply with clause 19.9.

19.4. (1) A Class VI, VII, or VIII building containing only one storey and having a floor area exceeding 18,000 m² shall not be subject to the floor-area limitations specified in clause 19.2 if—

(a) an open space, not less than 24 m in width, is provided on or associated with the site of the building in accordance with clause 19.5; or

(b) the building is of Type 2 or Type 3 construction and complies with the following requirements:

(i) The space below the roof shall be divided into compartments in accordance with clause 19.6;

(ii) The building shall be provided with approved automatic smoke-and-heat vents in accordance with clause 19.7;

(iii) Every external wall facing the boundary of an adjoining allotment of land shall be provided with a parapet in accordance with clause 19.8, except where the provisions of that clause permit the height of the parapet to be reduced to nil;

(iv) Windows and other openings in every external wall facing the boundary of an adjoining allotment of land shall be so limited in area as to comply with clause 19.9; and

(v) An approved sprinkler system shall be installed throughout the building.

(2) In determining whether subclause (1) is applicable, all Class Two or VI, VII, or VIII buildings on the one allotment of land that are within 27 m more of each other shall be deemed to be the one building, except in a case where—

(a) the external walls facing each other in the buildings concerned—

(i) have a fire-resistance rating of not less than 2 hours; and

(ii) are non-combustible; and

(b) each such wall complies with clause 19.8 and clause 19.9 as though the buildings were on different allotments, with an imaginary boundary line in a position nominated by the person on whose behalf the building is being erected.
19.5. An open space required by this Part to be provided on or associated with the site of a building—

(a) shall, except as conceded in paragraph (c), be contiguous with or straddle all the boundaries of the site, as the case requires, and shall include any road, river, public reserve or public place adjoining the site, but not the farthest 6 m thereof;

(b) shall not include any part of an adjoining allotment of land not being a road, river, public reserve or public place;

(c) shall not in any part be built upon, or designed for the storage or processing of materials, or any like purpose, except that guard houses and service buildings (such as substations and pump houses) may encroach upon the width of the space if the Council (after consultation with the Board of Fire Commissioners) is satisfied that the encroachment—

(i) should not unduly impede fire fighting at any part of the perimeter of the site; and

(ii) should not unduly add to the risk of spread of fire to an adjoining allotment of land.

19.6. In a building required to have the space below the roof divided into compartments, the following requirements shall be met:

(a) The compartments shall be formed by—

(i) vertical, non-combustible, non-shattering, draught curtains (including asbestos-silica board and excluding asbestos-cement board) hung from the roof structure; or

(ii) the use of a saw-tooth roof in which the vertical sections of the "saw-tooth" comprise non-combustible, non-shattering material, or wired glass not less than 6.3 mm thick;

(b) The foregoing curtains or vertical roof sections shall extend from the roof sheeting to a level not less than 1.5 m below the lowest part of the opening, to the outside air, of the lowest required smoke-and-heat vent.

(c) The holes through which any non-metallic curtains are fixed shall be not less than 10 mm in diameter oversize, and shall be so located as to allow expansion of the curtains in the event of fire within the building.

(d) None of the compartments so formed shall exceed 1000 m² in area, measured in a horizontal plane.

(e) In spaces of abnormal fire hazard specified in the Second Schedule—

(i) the horizontal distances between the foregoing curtains or vertical roof sections; and

(ii) the horizontal distance between any external wall and the curtain or glazing, if any, nearest to it, shall not exceed 30 m.
(f) A ceiling or like construction shall not be used in or below any such compartment.

19.7. (1) In this Part, "smoke-and-heat vent" means a vent, located in or near the roof of a building, to provide means for the escape of smoke and hot gases if there is an outbreak of fire in the building.

(2) In a building required to have approved automatic smoke-and-heat vents, the following requirements shall be met:

(a) Each of the compartments below the roof and separated by the curtains or vertical roof sections described in clause 19.6 shall have one or more approved automatic smoke-and-heat vents.

(b) The automatic opening of the vents, if a sprinkler system is installed, shall be set for a temperature not less than 5\(^\circ\) on the Celsius scale above that at which the sprinkler system is set to operate.

(c) The aggregate airway of vent openings in each compartment shall bear not less than the following ratio to the area of the compartment:

(i) Where the space vertically below the compartment is or includes a space of abnormal fire hazard specified in the Second Schedule \[\text{3:100;}\]

(ii) In all other cases \[\text{3:200.}\]

19.8. (1) A parapet required by this Part to be provided on an external wall shall, subject to subclause (2), have a height not less than set out in the second column of Table 19.9, according to—

(a) the distance of the wall from the boundary of the adjoining allotment of land it faces; and

(b) the aggregate area of windows and other openings to be used below the parapet.

(2) The height of parapet required by Table 19.9 may be reduced by an amount equal to one-third the distance to which a concrete or other non-combustible roof extends into the building from the external wall concerned if—

(a) the fire-resistance rating of the section of the roof extending from the external wall is not less than one hour; and

(b) the supports of the roof section concerned are non-combustible and have a fire-resistance rating of not less than one hour.

19.9. In an external wall in which the windows and other openings are required by this Part to be limited in area, their aggregate area shall not exceed the maximum permissible aggregate area of windows and other openi
g.
openings stated in Table 19.9, according to the distance of the wall from the boundary of the adjoining allotment of land it faces.

**TABLE 19.9.**

<table>
<thead>
<tr>
<th>Distance of wall from boundary (metres)</th>
<th>Height of parapet (metres)</th>
<th>Maximum permissible aggregate area of openings (square metres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1·5</td>
<td>1·5</td>
<td>Nil, 0·5 in any 2-m length of wall.</td>
</tr>
<tr>
<td>1·5 to less than 2</td>
<td>1</td>
<td>Nil, 1 in any 2-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>1·25</td>
<td>0·5 in any 3-m length of wall.</td>
</tr>
<tr>
<td>2 to less than 3</td>
<td>1·5</td>
<td>1·25 in any 3-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0·75</td>
<td>1·25 in any 3-m length of wall.</td>
</tr>
<tr>
<td>3 to less than 4·5</td>
<td>0·5</td>
<td>1·25 in any 3-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0·75</td>
<td>1·25 in any 3-m length of wall.</td>
</tr>
<tr>
<td>4·5 to less than 6</td>
<td>Nil</td>
<td>1·25 in any 4-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0·25</td>
<td>1·25 in any 4-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0·5</td>
<td>1·25 in any 4-m length of wall.</td>
</tr>
<tr>
<td>6 to less than 7·5</td>
<td>Nil</td>
<td>1·25 in any 5-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0·25</td>
<td>1·25 in any 5-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0·5</td>
<td>1·25 in any 5-m length of wall.</td>
</tr>
<tr>
<td>7·5 to less than 9</td>
<td>Nil</td>
<td>1·25 in any 6-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0·25</td>
<td>1·25 in any 6-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0·5</td>
<td>1·25 in any 6-m length of wall.</td>
</tr>
<tr>
<td>9 to less than 10·5</td>
<td>Nil</td>
<td>1·25 in any 7-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0·25</td>
<td>1·25 in any 7-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0·5</td>
<td>1·25 in any 7-m length of wall.</td>
</tr>
<tr>
<td>10·5 to less than 13·5</td>
<td>Nil</td>
<td>1·25 in any 7-m length of wall.</td>
</tr>
<tr>
<td>13·5 to less than 18</td>
<td>Nil</td>
<td>1·25 in any 7-m length of wall.</td>
</tr>
<tr>
<td>18 and over</td>
<td>Nil</td>
<td>1·25 in any 7-m length of wall.</td>
</tr>
</tbody>
</table>

19.10. (1) A Class VII building (erected before or after the commencement of this Ordinance) that is not or at any time ceases to be used for the storage or display of—

(a) goods referred to in the Second Schedule; or

(b) combustible goods of any kind,

shall not be so used unless the building complies with the relevant requirements of this Part.
(2) A Class VIII building (erected before or after the commencement of this Ordinance) that is not or at any time ceases to be used for a handicraft or process—

(a) referred to in the Second Schedule; or

(b) in which a principal material of any kind is combustible,

shall not be so used unless the building complies with the relevant requirements of this Part.

19.11. (1) Upon production of a certificate, issued by the Board of Fire Commissioners, that in respect of a particular existing or proposed Class VII or Class VIII building it is of opinion that substantially all of the materials stored or displayed, or used in a handicraft or process, are non-combustible, the Council may exempt the building from the requirements of this Part.

(2) Upon production of a certificate by the Board of Fire Commissioners to the effect that—

(a) in respect of a particular existing or proposed building to which subclause (1) does not apply, satisfactory provisions alternative to those of Part 19, and additional to those prescribed by Part 27, have been made to restrict or combat the spread of fire; or

(b) in respect of a particular existing building which is proposed to be altered there is no necessity to require that the whole of the building as so altered shall be brought into conformity with the requirements of this Part,

the Council may exempt the building from any or all of the requirements of this Part.

(3) An exemption pursuant to subclause (2) shall be granted only by resolution of the Council—

(a) in the particular case;

(b) having regard to the purposes for which the building is intended or adapted to be used; and

(c) having regard to any recommendations included in the certificate of the Board of Fire Commissioners as to the requirements to be imposed.
19.12. (1) This clause shall apply, irrespective of any other provision of this Part, to any Class V, VI, VII, or VIII building of Type 1, 2, 3, 4, or 5 construction where—

(a) the total floor area throughout the building exceeds 36,000 m²; or

(b) the Council is of opinion, irrespective of total floor area, that special provisions should be made in a particular building to restrict or combat the spread of fire.

(2) The Council shall refer a matter arising under subclause (1) to the Board of Fire Commissioners for report and after consideration of any recommendation contained in their report, shall impose such special requirements for restricting or combating the spread of fire as it may consider desirable.

(3) Any special requirement pursuant to subclause (2) shall—

(a) be imposed only by resolution of the Council in the particular case;

(b) be imposed only by reason of the purposes for which the building is intended or adapted to be used; and

(c) be additional to the relevant requirements of this Part, except that exemptions may be granted from one or more of those requirements where the Board of Fire Commissioners so recommends.

GROUP V.—FIRE SAFETY AND FIRE RESISTANCE.

PART 20.—Fire Resistances of Structural Members.

20.1. Where a structural member of a building is required to have a fire-resistance rating, the structural member shall be—

(a) one that is deemed, pursuant to clause 20.10, to have the required fire-resistance rating; or

(b) one that is identical with a prototype that has been submitted to—

(i) the Standard Fire Test; or

(ii) a test that is similar to the Standard Fire Test, and is shown by documentary evidence in the form of a report, as referred to in clause 20.2, to have achieved the required fire-resistance rating; or

(c) one that is identical with a tested prototype as specified in paragraph (b), except for the variations permissible under clauses 20.3 or 20.4, as the case may be; or

(d) one that is approved by the Council pursuant to clause 20.5.
20.2. (1) The report referred to in paragraph (b) of clause 20.1 shall be an official report issued by one of the following testing authorities:

(a) Commonwealth Experimental Building Station, Commonwealth Department of Works;

(b) Fire Research Station, Building Research Establishment; Department of the Environment, Great Britain;

(c) National Bureau of Standards, United States of America;

(d) Underwriters' Laboratories Incorporated, United States of America;

(e) National Research Council, Canada; and

(f) Underwriters' Laboratories of Canada.

(2) The report shall fully describe the conditions of test, and the form of construction of the tested prototype.

(3) Where a report issued pursuant to subclause (1) indicates that the tested prototype was subjected to restraints applied by direct compression, or compression forces developed as a result of the inability of the tested prototype to expand thermally because of the nature of its supports and its position during the tests, the following conditions shall apply:

(a) In the case of a deck or floor the report shall not be acceptable for the purposes of this Part.

(b) In the case of a steel beam, open-web joist or column the report shall certify that the temperature of the steel in the tested prototype did not exceed—

(i) 538°F C average; and

(ii) 649°F C maximum.

(4) The method of restraint may differ from that of the tested prototype, if calculations according to clause 20.3 are submitted and approved.

(5) A copy of the official report referred to in this clause shall be submitted to the Council by the person for whom the building is being erected, but the Council may waive this requirement if a copy of the report is already in its possession.

20.3. (1) Where the structural member is a floor, roof, or beam of steel or reinforced concrete (other than prestressed concrete), it may be of longer or shorter span than that of the prototype if evidence is produced to the Council to show that the following conditions will be met:

(a) The calculated stresses at the centre of the span of the structural member under the total dead and live load shall not exceed those in the centre of the span of the construction referred to in the official test report.
(b) The calculated tensile stress in steel in the structural member shall not be greater at the centre of the span under the total dead and live load than—

(i) 100 per cent of the design tensile stress in the steel referred to in the official test report, where the average temperature of the steel measured in accordance with the requirements of the Standard Fire Test does not exceed 538° C; or

(ii) 70 per cent of that stress, where the average temperature of the steel so measured is 593° C; or

(iii) between 100 and 70 per cent of that stress, on a proportionally interpolated basis, where the average temperature of the steel so measured is between 538° C and 593° C.

(c) A negative bending moment, if any, at either end of the span, if additional to a negative bending moment referred to in the official test report—

(i) may be taken into account in the calculations; but

(ii) shall not be deemed to relieve the central bending moment by more than one-tenth thereof,

and two such negative bending moments, one at each end of the span, may be so taken into account in the calculations but collectively shall not be deemed to relieve the central bending moment by more than one-fifth.

(d) If the tested prototype contained a feature which produced a negative bending moment during the relevant fire-resistance test, that feature shall be repeated in the structural member proposed to be used.

(e) If a condition of horizontal restraint was introduced during the relevant fire-resistance test of the tested prototype, the structural member proposed to be used shall be designed to compensate for that condition.

Evidence of compliance with conditions.

(2) The evidence referred to in subclause (1) shall be in the form of a report and calculations prepared by a practising structural engineer.

Variations in columns.

20.4. A steel column may vary from the size of the tested prototype if—

(a) its cross-sectional profile is similar to that of the tested prototype; and

(b) its slenderness ratio and ratio of surface area to mass per unit of length are not greater than those of the tested prototype.
20.5. (1) Where a structural member that is required to have a fire-resistance rating—

(a) is not deemed, pursuant to clause 20.10, to have that rating; and

(b) departs in some minor degree from the tested prototype but in a manner other than that permissible under clause 20.3 or clause 20.4,

the Council may approve its use upon production of a report in accordance with subclause (2).

(2) For the purposes of subclause (1), the Council may accept a report in the following terms from one or other of the authorities indicated, whichever it considers appropriate in the particular case:

(a) A testing authority registered with the National Association of Testing Authorities, certifying that the materials incorporated in the structural member have physical and chemical properties that are identical with those of the materials—

(i) incorporated in a tested prototype that has achieved the required fire-resistance rating; and

(ii) described in the relevant report of that test.

(b) One of the authorities listed in clause 20.2—

(i) certifying that, in the opinion of the authority concerned, the proposed construction would, despite the minor departures from a tested prototype, be capable of achieving the required fire-resistance rating if submitted to the Standard Fire Test; and

(ii) giving details of materials, construction, and methods of restraint or support which must be complied with to achieve the required fire-resistance rating.

20.6. Where dimensions of components or materials are stated in this Part they are minimum acceptable dimensions and shall be calculated according to the following:

(a) The required dimensions for—

(i) burnt-clay and burnt-shale brickwork;

(ii) sand-lime brickwork;

(iii) solid concrete blockwork; and

(iv) timber,

are, unless otherwise stated to the contrary, nominal dimensions subject to normal trade tolerances.

(b) Where hollow concrete blocks are permitted according to Table 20.10 their required thickness shall be calculated according to the rules set out in the annexure to that Table.

(c) For materials not referred to in paragraphs (a) and (b) the required dimensions are actual measured dimensions subject to normal trade tolerances.
20.7. (1) A fire-resistance rating achieved when using any material of Group A, B, C, D, or E, set out below this subclause, as an ingredient in concrete or plaster, shall be deemed to apply equally when any other material of the same group is used in the same proportions in concrete or plaster:

- Group A: Any portland cement,
- Group B: Any lime,
- Group C: Any dense sand,
- Group D: Any dense calcareous aggregate, including any limestone or any calcareous gravel,
- Group E: Any dense siliceous aggregate, including any basalt, diorite, dolerite, granite, grano-diorite, or trachyte.

(2) A fire-resistance rating achieved when using gypsum-perlite plaster or gypsum-vermiculite plaster shall be deemed to apply equally for both gypsum-perlite and gypsum-vermiculite plasters.

20.8. (1) If a structural member is required to have a fire-resistance rating and it incorporates any of the materials mentioned in this clause, their uses shall be subject to such of the requirements herein as the case requires.

(2) Bricks, terra-cotta blocks, and concrete blocks shall be laid in cement mortar or composition mortar and such mortars shall comply with the relevant provisions of Part 28.

(3) Gypsum blocks shall be laid in gypsum-sand mortar or lime mortar.

(4) Gypsum-sand mortar and gypsum-sand plaster—

(a) shall consist of not more than 3 parts by volume of sand to 1 part by volume of gypsum; or

(b) shall consist of not more than 2½ parts by volume of sand to 1 part by volume of gypsum, if lime putty is added, in which case the lime putty shall not exceed 5 per cent by volume of the mixed ingredients.

(5) Where plaster is prescribed in Table 20.10 the plaster—

(a) shall consist of—

(i) cement and sand; or

(ii) cement, lime and sand, having a thickness not less than that shown in the Table; and

(b) may be finished with gypsum, gypsum-sand, gypsum-perlite or gypsum-vermiculite plaster, or with lime putty.
(6) Where gypsum-vermiculite or gypsum-perlite plaster is prescribed in Table 20.10 the plaster—

(a) shall have a thickness not less than that shown in the Table; and

shall conform with the following:

(i) Where the required thickness is less than 25 mm the plaster shall be applied in either one or two coats each consisting of material in the proportion of 1 m³ of perlite or vermiculite to 640 kg of gypsum.

(ii) Where the required thickness is more than 25 mm the plaster shall be applied in two coats, the first of which shall consist of material in the proportions of 1 m³ of perlite or vermiculite to 800 kg of gypsum and the second of which shall consist of material in the proportions of 1 m³ of perlite or vermiculite to 530 kg of gypsum.

(7) In this Part, "gypsum", in relation to a plaster mix or mortar, means plaster-of-paris or any similar material derived from gypsum and used as an ingredient in plaster or mortar.

(8) Where expanded metal lath is required as a reinforcement for plaster, or as a base for plaster or sprayed application it shall—

(a) have a mass per unit area of not less than 1.84 kg/m²;

(b) have not less than 98 meshes/m; and

(c) be protected against corrosion by galvanising or other approved method.

(9) Where plaster used as a fire-protective material has a thickness exceeding 19 mm the plaster shall be reinforced with—

(a) expanded metal lath complying with subclause (8); or

(b) 12.7-mm x 12.7-mm x 0.71-mm galvanised steel wire mesh,

the reinforcement being securely fixed to the wall and positioned at a distance from the face of the wall concerned of not less than one-third of the total thickness of the plaster.

20.9. (1) The fire-protective covering of a steel column, if of "lightweight construction" as defined in clause 17.3, shall be protected by metal or other suitable material, if the column is liable to damage from the movement of vehicles, materials, or equipment, or any like cause.

(2) In addition, where any such covering so subject to injury is not in continuous contact with the column, the voids concerned shall be filled solid, with approved non-combustible material, to a height of not less than 1200 mm above each floor.
Sealing at
floor level
in certain
lightweight
construction.

(3) Where—

(a) a steel column extends through two or more storeys; and

(b) its fire-protective covering is not in continuous contact with it,

a plug of approved non-combustible fire-protective material shall be inserted at each floor to seal all voids at those floor levels, including the voids between the column and its fire-protective covering.

Certain
structural
members
deemed to
have specific
fire-
resistance
ratings.
Reinforced
concrete.

20.10. (1) A structural member of reinforced concrete in which—

(a) the cross-sectional dimensions of the member are not less than those given in Appendix B of Australian Standard CA2, "SAA Code for Concrete in Buildings" (according, where relevant, to the loads to be supported by the member); and

(b) the types and thicknesses of the fire-protective concrete or other material used therein are in accordance with those given in that Appendix,

shall be deemed to have the relevant fire-resistance rating set out in that Appendix.

Prestressed
cement.

(2) A structural member of prestressed concrete in which—

(a) the cross-sectional dimensions of the member are not less than those given in Australian Standard CA35, "SAA Prestressed Concrete Code" (according, where relevant, to the loads to be supported by the member); and

(b) the types and thicknesses of the fire-protective concrete or other material used therein are in accordance with those given in that Standard,

shall be deemed to have the relevant fire-resistance rating set out in that Standard.

(3) A structural member listed in column 1 of Table 20.10 in which the construction incorporates a material or combination of materials listed opposite thereto in column 2, shall be deemed to have the fire-resistance rating at the head of column 3, 4, 5, 6, or 7, as the case may be if—

(a) the principal material has the thickness, if any, listed in the relevant column;

(b) the construction meets the conditions or requirements set out in the numbered clauses, if any, listed opposite thereto in column 8 and included in the annexure to the Table; and

(c) the construction meets all other relevant requirements of this Ordinance.
(4) A blank space in any of columns 3 to 7 indicates that—
(a) the relevant construction has not achieved the particular fire
resistance rating concerned; or
(b) the relevant construction has not been tested to achieve the
particular fire-resistance rating concerned.

(5) Where a particular type and thickness of construction is
deemed to have a particular fire-resistance rating that construction shall be
deemed to satisfy any requirement for a lower fire-resistance rating.

**TABLE 20.10.**

**Fire-Resistance Ratings Deemed to Apply to Certain Structural Members.**

Figures appearing in columns 3, 4, 5, 6, and 7 denote thicknesses in millimetres of
materials, and are the thicknesses of the principal material of construction measured
according to Clause 20.6.

<table>
<thead>
<tr>
<th>Structural member</th>
<th>Construction of member</th>
<th>Thickness of principal material (millimetres)</th>
<th>Annexure reference—clause number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 hr</td>
<td>1/2 hr</td>
</tr>
<tr>
<td>Loadbearing walls</td>
<td>Solid walls and cavity walls, excluding the width of the cavity—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loadbearing walls</td>
<td>Ashlar stone masonry</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Loadbearing walls</td>
<td>Solid pressed clay bricks</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Loadbearing walls</td>
<td>Solid concrete blocks and concrete bricks</td>
<td>127</td>
<td>150</td>
</tr>
<tr>
<td>Non-loadbearing walls</td>
<td>Concrete—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-loadbearing walls</td>
<td>Unreinforced</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-loadbearing walls</td>
<td>Reinforced</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-loadbearing walls</td>
<td>Prestressed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid walls and cavity walls, excluding the width of the cavity—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ashlar stone masonry</td>
<td>177</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid pressed clay bricks</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid concrete blocks and concrete bricks</td>
<td>100</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>Plastered 19 mm thick on both sides</td>
<td>110</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Plaster 19 mm thick on both sides</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid pressed clay and calcium-silicate bricks—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unplastered</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plastered 19 mm thick on both sides</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plaster 19 mm thick on both sides</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid concrete blocks and concrete bricks</td>
<td>100</td>
<td>127</td>
</tr>
<tr>
<td></td>
<td>Cavity wall—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>230-mm cavity wall—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>One leaf of solid clay brick on flat and one leaf solid clay brick on edge</td>
<td>190</td>
<td></td>
</tr>
<tr>
<td></td>
<td>250-mm cavity wall—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>One leaf of solid clay brick and one leaf of concrete block stretcher units</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Concrete—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unreinforced</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No-fines, plastered 19 mm thick on both sides</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reinforced</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Refer to subclause (1) of clause 20.10.
Refer to subclause (2) of clause 20.10.
### TABLE 20.10—continued.

**Fire-Resistance Ratings Deemed to Apply to Certain Structural Members—continued.**

<table>
<thead>
<tr>
<th>Structural member</th>
<th>Construction of member</th>
<th>Thickness of principal material (millimetres)</th>
<th>Annexure reference—clause number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 hr</td>
<td>1½ hr</td>
</tr>
<tr>
<td>Non-loadbearing walls</td>
<td>Hollow blocks of concrete with—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Category A aggregate</td>
<td>66</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>Category B aggregate</td>
<td>73</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td>Category C aggregate</td>
<td>82</td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>Terra-cotta—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plastered 19 mm thick one side</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plastered 19 mm thick on both sides</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Solid gypsum blocks</td>
<td>75</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>Gypsum-perlite or gypsum-vermiculite plaster on metal lath and channels</td>
<td></td>
<td>51</td>
</tr>
<tr>
<td>Steel columns and pipe columns</td>
<td>Columns incorporated in, or in contact on one or more sides with solid masonry or concrete walls not less than 100 mm thick, with fire protection of—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid clay bricks with—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column spaces filled</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Column spaces not filled</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Solid concrete blocks with—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column spaces filled</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Column spaces not filled</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Gypsum blocks laid in gypsum-sand mortar with—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column spaces filled</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Column spaces not filled</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Hollow terra-cotta blocks plastered 13 mm thick with—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column spaces filled</td>
<td>50</td>
<td>50</td>
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<tr>
<td></td>
<td>Column spaces not filled</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Structural concrete cast in-situ around mesh or binding, and non-loadbearing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>As above, plastered 13 mm thick</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Columns incorporated in, or in contact on one or more sides with solid masonry or concrete walls not less than 100 mm thick, with fire protection of—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Structural concrete cast in-situ around mesh or binding and designed to be load bearing and incorporating—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Category B or C aggregate</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Category A aggregate</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Gypsum cast in-situ</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Gypsum-perlite or gypsum-vermiculite plaster—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sprayed on metal lath</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Sprayed to contour</td>
<td>22</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Columns not incorporated in, or in direct contact with solid masonry or concrete walls not less than 100 mm thick, with fire protection of—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid clay bricks with—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column spaces filled</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Column spaces not filled</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Solid concrete blocks with—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column spaces filled</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Column spaces not filled</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>
TABLE 20.10—continued.
FIRE-RESISTANCE RATINGS DEEMED TO APPLY TO CERTAIN STRUCTURAL MEMBERS—continued.

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Thickness of principal material (millimetres)</th>
<th>Annexure reference—cause number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural member</td>
<td>Construction of member</td>
<td>1 hr</td>
<td>½ hr</td>
</tr>
<tr>
<td>Steel columns and pipe columns—continued.</td>
<td>Columns not incorporated in, or in direct contact with solid masonry or concrete walls not less than 100 mm thick, with fire protection of—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gypsum blocks laid in gypsum- sand mortars with—</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Column spaces filled</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column spaces not filled</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hollow terra-cotta blocks plastered 13 mm thick with—</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Column spaces filled</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Column spaces not filled</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Structural concrete cast in-situ around mesh or binding and not subjected to any applied loading</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>As above, plastered 13 mm thick</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Structural concrete cast in-situ around mesh or binding and designed to be load-bearing and incorporating—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Category B or C aggregate</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Category A aggregate</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Columns not incorporated in, or in direct contact with solid masonry or concrete walls not less than 100 mm thick, with fire protection of—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gypsum cast in-situ</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gypsum-perlite or gypsum-vermiculite plaster—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sprayed on metal lath</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Sprayed to contour</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>Concrete columns.</td>
<td>Columns of—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reinforced concrete</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prestressed concrete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steel open-webbed joists, beams, girders and trusses.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>in direct contact with solid reinforced concrete slab or hollow-block floor or roof construction, with fire protection of—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Structural concrete encasement incorporating—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Category B or C aggregate</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Category A aggregate</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Gypsum-perlite or gypsum-vermiculite plaster—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sprayed on metal lath</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Sprayed to contour</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Joists, beams, girders and trusses</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>not in direct contact with solid reinforced concrete slab or hollow-block floor or roof construction with fire protection of—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Structural concrete encasement incorporating—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Category B or C aggregate</td>
<td>25</td>
<td>32</td>
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<tr>
<td></td>
<td>Category A aggregate</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Gypsum-perlite or gypsum-vermiculite plaster—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sprayed on metal lath</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Sprayed to contour</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>Floors, roofs, and ceilings.</td>
<td>Concrete—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reinforced</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prestressed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Refer to subclause (1) of clause 20.10.
Refer to subclause (2) of clause 20.10.
ANNEXURE TO TABLE 20.10.

1. *Ashlar Stone Masonry.* The ashlar stone masonry used shall be in a portion of the building containing not more than two storeys, and shall not be of—
   (a) aplite, granite, granodiorite, quartz dacite, quartz diorite, quartz porphyry, or quartz porphyry; or
   (b) conglomerate, quartzite, or sandstone; or
   (c) chert or flint; or
   (d) limestone or marble.

2. * * * * *

3. *Cored or Lattice Bricks.* The cored or lattice bricks used shall have a net volume, exclusive of cored and similar holes, of not less than 75 per cent of their gross volume, measured on the overall rectangular shape of the bricks.

4. *Cavity Walls of Solid Clay Bricks.* Cavity walls of solid clay bricks in which one leaf is on flat and one leaf is on edge shall be subject to the following rules:
   (a) One leaf of brickwork shall have an actual thickness of not less than 110 mm and the other leaf shall have an actual thickness of not less than 75 mm.
   (b) The thickness of brickwork shall be subject to the tolerances permitted for bricks by Specification No. 4 “Burnt Clay and Shale Building Bricks”.
   (c) The cavity shall be not more than 50 mm wide.

5. *Cavity Walls having one leaf of Solid Clay Bricks and one leaf of Concrete Blocks.* Cavity walls of solid clay bricks and concrete blocks shall be subject to the following rules:
   (a) The outer leaf of the wall shall consist of solid clay bricks not less than 110 mm thick.
   (b) The inner leaf of the wall shall consist of solid or hollow concrete blocks having—
      (i) an actual thickness of not less than 90 mm; and
      (ii) a net thickness in the case of hollow concrete blocks of not less than 68 mm, calculated in accordance with the rules applicable to concrete blocks of Category C aggregate according to clause 7.
   (c) The leaves shall be tied with 3.65-mm wire ties according to Australian Standard Interim 324, “Metal Wall Ties for Brickwork”.
   (d) The cavity shall be not more than 50 mm wide.

6. *Certain Tabulated Thicknesses Exclude Plaster.* The thickness of plastering used shall be additional to the listed thickness of the principal material.

7. *Thickness of Hollow Concrete Blocks.*

   (1) The thickness listed in Table 20.10 shall be calculated by taking the total actual volume of a concrete block, subtracting the volume of all core holes and dividing the resultant figure by the actual area of one vertical exposed face of the block.
(2) Where the blocks are plastered the thickness of the block according to subclause (1) may be increased by the amount shown in the following table:

### INCREASE OF THE EQUIVALENT THICKNESS FOR WALLS OF CONCRETE BLOCKS BY APPLICATION OF PLASTER.

<table>
<thead>
<tr>
<th>Type of aggregate used in manufacture of blocks (See clause 8)</th>
<th>Type of plaster and its location</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cement and sand, or cement, lime and sand on one face only</td>
<td>Cement and sand, or cement, lime and sand on both faces</td>
</tr>
<tr>
<td>Category A aggregate.</td>
<td>No concession shall be made.</td>
<td>Equivalent thickness of concrete block without plaster. plus 25 per cent of total thickness of plaster.</td>
</tr>
<tr>
<td>Category B aggregate.</td>
<td>No concession shall be made.</td>
<td>Equivalent thickness of concrete block without plaster. plus 35 per cent of total thickness of plaster.</td>
</tr>
<tr>
<td>Category C aggregate.</td>
<td>No concession shall be made.</td>
<td>Equivalent thickness of concrete block without plaster. plus 50 per cent of total thickness of plaster.</td>
</tr>
</tbody>
</table>

8. **Aggregates for Concrete and Concrete Blocks.**

(1) Category A aggregate shall comply with the following requirements:

(a) The aggregate shall consist of particles with a uniformly porous and cellular structure.

(b) The aggregate may be—

(i) material prepared by expanding, calcining or sintering such materials as clay, shale, slate, diatomaceous shale, perlite, vermiculite or obsidian;

(ii) expanded blast-furnace slag produced by treating molten blast-furnace slag with water; or

(iii) material from natural deposits of frothed types of lava such as certain pumices and certain scorias, being porous volcanic-glass formations, friable in character and predominantly light grey in colour for pumice and dark grey for scoria.
(c) Aggregate other than pumice or scoria shall not contain more than 65 per cent by weight of silica (SiO₂) when determined by chemical analysis.

(2) Category B aggregate shall be one of the following:
   (a) Coal or coke cinders.
   (b) Scorias other than those referred to in subclause (1).
   (c) Unexpanded blast-furnace slag.

(3) Category C aggregate shall comply with the following:
   (a) Aggregate shall comply with the Australian Standard A77, "Aggregates for Concrete".
   (b) Aggregate shall be—
       (i) calcareous material;
       (ii) river gravel, granite, feldspar, dolerite, diorite, basalt; or
       (iii) greywacke or sandstone.
   (c) Aggregate shall contain not more than 65 per cent by weight of silica (SiO₂), determined by chemical analysis.

(4) Fine aggregate shall comply with the following:
   (a) Where Category A aggregates are used the fine aggregate shall be of the same material as is used for the coarse aggregate, or if silicious sand is used its total amount shall be not more than 20 per cent of the total weight of all fine and coarse aggregates.
   (b) Lightweight fine aggregate shall have a density when dry and loose of not more than 1 120 kg/m³.


(1) The volume of cored holes in a block shall not exceed—
   (a) 35 per cent of the gross volume of the block in a block of 75-mm nominal thickness; or
   (b) 40 per cent of the gross volume of the block in a block of 100-mm nominal thickness; or
   (c) 50 per cent of the gross volume of the block in a block of 150-mm nominal thickness.

(2) The net thickness of a terra-cotta block shall be the nominal total thickness of that block.

10. Gypsum-vermiculite or Gypsum-vermiculite Plaster in Walls. The gypsum-vermiculite plaster used shall be applied to each exposed side of steel expanded-metal lath, the lath being securely wired to 19-mm x 0.44 kg/m steel channels used as studs and spaced at not more than 380-mm centres.

11. Protection of Steel Columns and Pipe Columns.

(1) Where the principal fire-protective construction of a steel column or pipe column is brickwork, blockwork, concrete, or similarly hard construction placed against the steel, the thickness listed for the material of that construction shall be construed to mean the thickness measured from the face of the steel or from the outer part of any rivet or bolt, whichever is the nearer to the outside of the fire-protective construction, subject to the provisions of subclause (2).

(2) The following rules shall apply to construction other than terra-cotta blockwork:
   (a) Where the construction has an overall thickness of not less than 38 mm the measurement may be made disregarding rivet heads.
(b) Where the construction has an overall thickness of not less than 50 mm the measurement may be made disregarding any part of a bolt that is not a high-tensile bolt.

(c) Where the construction has an overall thickness of not less than 50 mm, any splice plate having no part located in that part of the column that begins 915 mm above the level of a floor, and terminates at the underside of the floor or roof next above, may encroach upon that thickness by not more than one-quarter thereof.

(d) Where the construction is in a column intended to have a 4-hour fire-resistance rating, the edge of any flange not more than 38 mm thick (measured inclusive of any splice plate) that projects more than 63 mm beyond a web may encroach by 12 mm upon the overall thickness.

(3) Bricks and concrete blocks shall have steel wire or mesh reinforcement laid in alternate courses, lapped at corners, and gypsum blocks and hollow terra-cotta blocks shall be similarly reinforced in every horizontal joint.

12. Re-entrant and Like Parts of Certain Steel Columns. Where steel columns are required to have a 3-hour or a 4-hour fire-resistance rating, re-entrant parts and parts, if any, between the required fire-protective material and the steel shall be filled with concrete or other hard fire-protective material.

13. Reinforcement of Fire-protective Concrete. A steel wire mesh or binding shall be placed approximately 20 mm from the outer surface of the fire-protective concrete used, and the mesh or binding shall include wires—

(a) having a diameter of not less than 3.25 mm; and

(b) spaced at not more than 100-mm centres vertically, except that, where the concrete has an overall thickness of not less than 50 mm, wires having a diameter of not less than 4.87 mm and spaced at not more than 150-mm centres vertically may be used instead.

14. Column Protection of Gypsum-perlite or Gypsum-vermiculite Plaster on Metal Lath. In column protection of gypsum-perlite or gypsum-vermiculite plaster on metal lath as listed—

(a) the plaster shall be applied to the lath; and

(b) the lath shall be of—

(i) steel expanded metal, not less than 12 mm clear of the column where the plaster has a thickness of 35 mm or more, or not less than 6 mm clear of the column otherwise, and fixed at not more than 610-mm centres vertically to steel furring channels; or

(ii) self-furring steel expanded metal with furring dimples to hold it not less than 10 mm clear of the column.

15. Material Sprayed on Metal Lath. The lath shall be steel expanded metal lath and the thickness of the sprayed material shall be measured from the back of the lath.

16. Protection of Steel Open-webbed Joists, Beams, Girders and Trusses. Where the principal fire-protective material of a steel open-webbed joist, beam, girder, or truss is structural concrete encasement—

(a) the thickness of such encasement listed shall be construed to mean the minimum thickness measured from the face of the steel or from the outer part of any rivet or bolt, whichever is the nearer to the outside of the encasement, except that—

(i) where the encasement has an overall thickness of not less than 38 mm the measurement may be made disregarding rivet heads; and

(ii) where the encasement has an overall thickness of not less than 50 mm the measurement may be made disregarding any part of a bolt that is not a high-tensile bolt;
(b) a steel wire mesh or binding shall be placed in the encasement approximately 20 mm from the outer surface thereof, and the mesh or binding shall include wires—

(i) having a diameter of not less than 3.25 mm; and

(ii) spaced at not more than 100-mm centres horizontally, except that, where the concrete has an overall thickness of not less than 50 mm, wires having a diameter of not less than 4.7 mm and spaced at not more than 150-mm centres horizontally may be used instead; and

(c) where the encasement, being on the soffit of a joist, beam, girder, or truss, has a thickness of less than 38 mm plus one-twelth the width of that soffit, it shall be mechanically vibrated into position.

17. Gypsum-pelite Plaster, or Gypsum-vermiculite Plaster as Protection for Joists, Beams and the like. Where the protection is applied to a steel open-webbed joist, beam or truss, the lath shall be spaced not less than 20 mm clear from the steel, using steel furring channels at not more than 610-mm centres.

**GROUP V. — FIRE SAFETY AND FIRE RESISTANCE.**

**PART 21. — FIRE DOORS, SMOKE DOORS, FIRE WINDOWS, AND FIRE SHUTTERS — CONSTRUCTION REQUIREMENTS.**

**Fire doors: general requirements.**

21.1. Every required fire door shall—

(a) comprise a complete doorset as described in Australian Standard CA 57 “S.A.A. Fire Door Code”;

(b) comply with the relevant provisions of that Standard; and

(c) subject to the variations permissible under that Standard, be identical with a tested prototype which—

(i) has achieved the required fire-resistance rating;

(ii) during the first 30 minutes after the commencement of the fire test, did not have a rise in temperature on the side remote from the furnace of more than 121° C, except in any glazed portion thereof.

**Glazing in fire doors.**

21.2. Notwithstanding the provisions of Australian Standard CA 57 “S.A.A. Fire Door Code”, a required fire door—

(a) shall not incorporate glazing if it protects an opening in a fire wall; and

(b) shall not incorporate glazing in excess of \(64.6 \times 10^3\) mm² in any other case.

**Smoke doors.**

21.3. Every required smoke door shall—

(a) comprise one door-leaf or two door leaves;

(b) be side-hung;

(c) inhibit the penetration of smoke, at every part, through the doorway to which it is fitted; and

(d) be of solid material which may include glazing.
21.4. Every required one-hour fire window shall be—
   (a) a window that is—
      (i) identical in construction with a prototype thereof that has
          been subjected to the Standard Fire Test and in that test has
          demonstrated its ability, for one hour, to prevent the spread
          of flames and hot gases through the window opening;
      (ii) installed in the same manner as was the tested prototype
          referred to in subparagraph (i); and
      (iii) not used in an opening that is greater in height or width than
          the opening in which the prototype was tested under the
          Standard Fire Test; or
   (b) a window of wired glass in framing of galvanized steel; complying
       as to maximum dimensions, construction, and installation with
       Specification No. 1 “Fire Windows” as approved by the Minister
       for Local Government and published in the Gazette; or
   (c) a glass-block window panel, complying as to maximum dimen-
       sions, construction, and installation with Specification No. 2
       “Hollow Glass-block Window Panels” as approved by the Minister
       for Local Government and published in the Gazette.

21.5. Every required fire shutter shall be—
   (a) a shutter that is—
      (i) identical with a prototype thereof that has been subjected to
          the Standard Fire Test and in that test has demonstrated its
          ability, for the required period, to prevent the spread of fire
          through the opening concerned;
      (ii) erected in the same manner as was the tested prototype
          referred to in subparagraph (i); and
      (iii) not used in an opening that is greater in height or width than
          the opening in which the prototype was tested under the
          Standard Fire Test; or
   (b) a shutter comprising a curtain of interlocking steel slats, mounted
       on a barrel and sliding in steel guides, and complying as to maxi-
       mum dimensions, construction, and installation with Specification
       No. 3 “Fire-resistant Roller Shutters” as approved by the Minister
       for Local Government and published in the Gazette.

GROUP V.—FIRE SAFETY AND FIRE RESISTANCE.

PART 22.—Location and Protection of Openings.

22.1. This Part shall apply to every building except a Class I or Class X Application.

building.
22.2. For the purposes of this Part, an "opening" in an external wall includes—

(a) a doorway;

(b) a window or other glazed area, whether fixed or openable; and

(c) any section of the wall, such as a panel-filled section, that does not have the relevant fire-resistance rating specified by Part 16 for the structural sections of the wall.

22.3. (1) This clause shall apply to buildings of Type 1 and Type 2 construction, but shall not extend to—

(a) a building or portion of a building designed, constructed, or adapted as an open-deck parking station; or

(b) openings above one another in a stairway.

(2) Where any part of an opening in an external wall is situated vertically above another opening in the storey next below, there shall be provided between those openings—

(a) a spandrel or other vertical construction complying with subclause (3); or

(b) a slab or other horizontal construction complying with subclause (4) or the variations from subclause (4) that are permissible under subclause (5).

(3) If a spandrel or other vertical construction is provided between the openings the following rules shall apply:

(a) The construction shall comprise non-combustible material having the relevant fire-resistance ratings listed in Table 16.7 (in the case of Type 1 construction) or Table 16.8 (in the case of Type 2 construction).

(b) The construction shall be not less than 900 mm in height.

(c) There shall be no voids between the edge of the floor and the inside face of the construction.

(4) If a slab or other horizontal construction is provided between the openings, the following rules shall apply:

(a) The construction shall comprise non-combustible material having a fire-resistance rating of not less than one hour.

(b) The construction shall project outwards from the plane of the opening in the higher storey for a distance of not less than 1 100 mm.

(c) The construction shall extend along the wall at each side of the two openings concerned for a distance of not less than 450 mm beyond the lateral limits of those openings.
(5) The following variations from the rules set out in subclause (4) shall be permissible:

(a) It shall not be necessary for the slab or other horizontal construction to comply with paragraph (b) of subclause (4) if a combination of the following dimensions produces an overall dimension of not less than 2,200 mm:

(i) The horizontal dimension from the plane of the opening in the lower storey to the outside edge of the slab or other horizontal construction. (If the plane of the opening in the lower storey is behind the plane of the opening above, the measurement shall be taken as though the lower opening were in the same plane as that of the opening above.)

(ii) The vertical dimension, measured from the level of the top of the opening in the lower storey (or from any part of the slab or other horizontal construction which extends below that level) to the bottom level of the opening in the upper storey (or to any part of the slab or other horizontal construction which extends above that level). If such vertical dimension is less than 300 mm, it shall not be counted in the calculations.

(iii) The horizontal dimension from the outside edge of the slab or other horizontal construction to the plane of the opening in the upper storey.

(b) It shall not be necessary for the construction at any side of the two openings to comply with paragraph (c) of subclause (4) if—

(i) the construction is provided with a vertical upstand at or beyond the lateral limits of the two openings;

(ii) the height of the vertical upstand is not less than 300 mm; and

(iii) the combination of the height of the vertical upstand plus twice the distance, if any, by which the construction extends beyond the lateral limits of the two openings produces an overall dimension of not less than 900 mm.

(6) Notwithstanding anything to the contrary in this clause, the Council may, in lieu of requiring compliance with the foregoing provisions, approve the use in an external wall of a form of construction which—

(a) comprises non-combustible material having a fire-resistance rating of not less than one hour; and

(b) is capable, in the opinion of the Council, of inhibiting the spread of fire from storey to storey via openings in the wall either better or as effectually as construction complying with subclauses (3), (4), or (5).
22.4. (1) In a fire zone, the following openings in an external wall shall be protected in accordance with subclause (2):

(a) An opening that faces and is less than 6 m from the farther boundary of a road adjoining the site, other than one located in a storey at or near ground level.

(b) An opening that faces and is less than 3 m from the boundary of an adjoining allotment of land.

(2) The protection referred to in subclause (1) shall be as follows:

(a) Doorways—approved external automatic sprinklers; or approved external automatic drenchers; or one-hour fire doors (self-closing or automatic);

(b) Windows and other glazed areas—approved external automatic sprinklers; or approved external automatic drenchers; or one-hour fire windows (automatic or permanently fixed in closed position); or one-hour automatic fire shutters;

(c) Other openings—approved external automatic sprinklers; or approved external automatic drenchers; or construction having a fire-resistance rating of not less than one hour.

22.5. Openings between successive floors in an external wall referred to in clause 22.4 shall not occupy more than one-third of the area of the wall between those floors, except where the openings face a public road and are located in a storey at ground level.

22.6. (1) No opening shall be permitted in a fire wall except—

(a) doorways protected in accordance with this clause; or

(b) openings for services installed or protected in accordance with clause 22.13.

(2) A doorway in a fire wall shall be protected by one of the following alternative methods:

(a) Two fire doors or fire shutters, one on each side of the doorway, each of which shall—

(i) have a fire-resistance rating of not less than half that required by Part 16 for the fire wall; and

(ii) be self-closing, or automatic if the automatic closing device is so designed as to operate in the event of fire in a section on either side of the fire wall; or

(b) A fire door on one side and a fire shutter on the other side of the doorway, each of which shall comply with subparagraphs (i) and (ii) of paragraph (a); or
(c) A single fire door or fire shutter which—
   (i) has a fire-resistance rating of not less than that required by
       Part 16 for the fire wall; and
   (ii) is self-closing, or automatic if the automatic closing device is
        so designed as to operate in the event of fire in a section
        on either side of the fire wall.

(3) The aggregate width of openings for doorways in a fire wall
    shall not exceed one-half of the length of the fire wall concerned.

22.7. Every doorway that opens to a fire-isolated stairway, fire-isolated
      passageway, or fire-isolated ramp (not being a doorway opening to a road
      or open space) shall be protected by a self-closing one-hour fire door.

22.8. (1) Where, pursuant to Part 23, a lift shaft is required to be
       fire-isolated, the entrance doorways to that shaft shall be protected by one-
       hour fire doors that—

       (a) comply with the provisions of Australian Standard CA3 "SAA Doorways,
           Lift Code" relating to fire-rated lift landing doors; and
       (b) are set to remain in the closed position at all times except where
           they are required to be open for the reception or discharge of
           passengers, goods or vehicles.

       (2) Lift call panels, indicator panels and other panels in the Lift
           walls of a fire-isolated lift shaft shall, if they exceed $32.5 \times 10^6 \text{ mm}^2$ in
           area, be backed by construction having a fire-resistance rating of not less
           than one hour.

22.9. (1) In a Class II or Class III building, every doorway providing
       access from a sole-occupancy unit or a room not within a sole-occupancy
       unit to—

       (a) a public corridor, public hallway, or the like; or
       (b) the landing of an internal non-fire-isolated stairway serving as a
           required exit,

       shall be protected in accordance with subclause (3).

       (2) A doorway providing access from a sole-occupancy unit to
           another sole-occupancy unit or to a room not within a sole-occupancy unit
           shall be protected in accordance with subclause (3).

       (3) The protection required by subclauses (1) and (2) shall be as
           follows:

           (a) In a building of Type 1 or Type 2 construction—a self-closing one-hour fire door.

           (b) In a building of Type 3, 4 or 5 construction—a self-closing, tight
               fitting, solid core door, not less than 35 mm thick.
22.10. The doorway of a Class IV portion of a building providing access to any internal part of the building not within the Class IV portion shall be protected as follows:

(a) In a building of Type 1 or Type 2 construction—a self-closing one-hour fire door.

(b) In a building of Type 3, 4 or 5 construction—a self-closing, tight-fitting, solid core door, not less than 35 mm thick.

22.11. In a building of Type 1 or Type 2 construction, services associated with the functioning of a building and passing through a floor shall either be in individual metal pipes, metal conduits, metal ducts or the like, or be installed in shafts complying with Part 16.

22.12. (1) In a building of Type 1 or Type 2 construction, an opening in a wall providing access to a ventilating, pipe, garbage, or other service shaft shall, except as conceded in subclause (2) be protected by—

(a) a self-closing one-hour fire door; or

(b) an access panel having a fire-resistance rating of not less than one hour; or

(c) one of the devices referred to in paragraphs (a) and (b) or by a door or hopper of non-combustible construction if the shaft is a garbage shaft.

(2) An opening referred to in subclause (1) shall not be subject to that subclause if it is—

(a) located within a sanitary compartment; and

(b) provided with a door or panel which, together with its frame, is non-combustible or has a fire-resistance rating of not less than one-half hour.

22.13. (1) This clause shall apply to openings in a wall, floor, or ceiling that is required to have a fire-resistance rating or a resistance to the incipient spread of fire.

(2) Individual openings for metal pipes, metal conduits, or the like, conveying—

(a) wires or cables for electrical or telephone services; or

(b) gas, including liquefied petroleum gas; or
(c) other services associated with the functioning of the building, shall be no longer than is necessary to permit of their installation and all gaps around them shall be packed or otherwise treated to the full thickness of the wall, floor, or ceiling, as the case requires, so that fire-resisting performance will not be impaired.

(3) Wires or cables for electrical, telephone, or other services that——

(a) are not enclosed in metal pipes, metal conduits, or other non-combustible material; and

(b) are installed within or pass through a wall, floor, or ceiling, shall be installed according to Part 55, including any relevant provisions of that Part for the protection of openings made for those services.

(4) Openings for ventilating or air-conditioning ducts or other equipment shall be protected as required by Specification No. 7 “Air Conditioning and Air-Conditioning Ducts” as approved by the Minister for Local Government and published in the Gazette.

(5) Openings for other services not mentioned in subclauses (2), Other services.

(3), and (4) shall be protected in an approved manner.

GROUP V.—FIRE SAFETY AND FIRE RESISTANCE.

PART 23.—Separation of Sections of a Building by Fire-resisting Construction.

23.1. (1) A section of a building that is fire-separated from the remainder of the building by a fire wall in accordance with this clause shall be subject to the provisions of Group V of this Ordinance as though it were a separate building.

(2) A fire wall shall extend to the underside of the roof covering, except as provided in subclause (3).

(3) If the roof of one of the adjoining sections is lower than the roof of the other section, the fire wall——

(a) shall be carried through to the underside of the covering of the lower roof; and

(b) shall have a wall constructed on top of it which——

(i) extends to——

(A) the underside of the covering of the higher roof; or

(B) a level 6 m above the lower roof, whichever is the less; and
(ii) has a fire-resistance rating not less than that required for the fire wall; and

(iii) has any openings in it protected as follows:

(A) Doorways—approved external automatic sprinklers; or approved external automatic drenchers; or one-hour fire doors (self-closing or automatic);

(B) Windows and other glazed areas—approved external automatic sprinklers; or approved external automatic drenchers; or one-hour fire windows (automatic or permanently fixed in closed position); or one-hour automatic fire shutters;

(C) Other openings—approved external automatic sprinklers; or approved external automatic drenchers; or construction having a fire-resistance rating of not less than one hour.

(4) Notwithstanding anything to the contrary in this clause, the Council may permit an exemption from any or all of the requirements of paragraph (b) of subclause (3) if it is satisfied that, by reason of the design of the lower roof or the design or proposed use of the building housed under the lower roof, the spread of fire from the lower section to the higher section of the building would be resisted either better or as effectively.

(5) Timber purlins or other combustible material shall not pass through or cross the fire wall.

(6) The fire wall shall have the relevant fire-resistance rating prescribed by Part 16, according to the type of fire resisting construction required for each of the adjoining sections and where these are different the greater rating shall apply.

23.2. (1) Where, in terms of Part 6, a building has portions of different classifications, those portions shall be separated from one another by fire resisting or fire protective construction in accordance with this clause, except as conceded in clauses 23.3 and 23.4.

(2) If the portions of different classifications are alongside one another in the same storey, they shall be separated in that storey by a fire wall, the fire-resistance rating of which shall be determined according to paragraph (a) of subclause (1) of clause 16.15.
(3) If the portions of different classifications are situated one above the other in adjoining storeys they shall be separated as follows according to the required type of construction of the building:

(a) Type 1 and Type 2 construction—the floor between the adjoining classifications shall have a fire-resistance rating not less than that listed for a floor under Table 16.7 (if Type 1 construction is required) or Table 16.8 (if Type 2 construction is required) for the classification in the lower of the two adjoining storeys concerned.

(a) Type 1 and 2 construction—the floor between not less than the adjoining classifications is either Class II or Class III—the underside of the floor (including the sides and undersides of its floor beams, if any) shall be protected by—

(i) 12.7-mm plasterboard; or

(ii) 12.7-mm asbestos-silica board; or

(iii) 12.7-mm mesh-reinforced fibrous plaster in which the mesh is one of the 12.7-mm x 12.7-mm x 0.71-mm welded wire located not more than 6 mm from the exposed face; or

(iv) any other material not less fire-protective than 12.7-mm plasterboard, the material in each case being of fire-protective grade and fixed in accordance with the normal trade practice applicable to the fixing of the material as a fire-protective covering.

23.3. The walls or floors separating a Class IV section from the remainder of the building of which it is a part (including the case of a combined shop and dwelling) shall not be subject to clause 23.2.

23.4. It shall not be necessary to provide a fire wall between different classifications that are alongside one another in the same storey if each of the structural members throughout the storey has a fire-resistance rating as follows:

(a) Where Part 16 specifies the same rating for that member for each of the classifications concerned—the rating so specified.

(b) Where Part 16 specifies different ratings for that member for any of the classifications concerned—the highest of the ratings so specified.

23.5. (1) In a building required to be of Type 1, 2, or 3 construction, lifts connecting more than two storeys shall be separated from the remainder of the building by way of enclosure in a fire-resisting shaft in which—

(a) the walls have the relevant fire-resistance ratings prescribed by Part 16; and

(b) openings for lift landing doors and services are protected in accordance with Part 22.
(2) A stairway and lift shall not be incorporated in the one shaft if either the stairway or the lift is required to be in a fire-resisting shaft.

GROUP V.—FIRE SAFETY AND FIRE RESISTANCE.

PART 24.—Means of Egress.

Division 1.—Introductory.

24.1. This Part comprises the following Divisions:

Division 1.—Introductory.
Division 2.—General Provisions.
Division 3.—Class II and III Buildings.
Division 4.—Class V, VI, VII, and VIII Buildings.
Division 5.—Class IX Buildings.

24.2. Nothing in this Part shall apply to a Class I or Class X building.

24.3. The exits and paths of travel to exits in a building shall comply with the provisions of this Part.

24.4. Exits shall comprise—

(a) internal or external stairways;
(b) ramps;
(c) fire-isolated passageways;
(d) doorways opening to a road or open space,
or a combination of two or more such exits providing egress from a storey or space in the nature of a storey to a road or open space.

Division 2.—General Provisions.

24.5. This Division shall apply to every building except a Class I or Class X building.

24.6. Where alterations, extensions, or additions are proposed in respect of a building, and where such alterations, extensions, or additions would adversely affect the exits or paths of travel to the exits, the Council may require that the building shall comply with this Part or such of the provisions of this Part as it considers necessary.
24.7. Doorways serving as required exits to a road or open space, and doorways and other openings in the enclosing walls, floors and ceilings of required exits or public corridors, hallways, or the like, shall be protected in accordance with Part 22.

24.8. Doorways from rooms, other than—
   (a) sole-occupancy units occupying the whole of a storey; and
   (b) sanitary compartments,
shall not open directly to a stairway, passageway, or ramp that is required to be fire-isolated.

24.9. A fire-isolated passageway shall be enclosed by walls, floors, and ceilings of non-combustible construction having a fire-resistance rating of not less than one hour.

24.10. A fire-isolated ramp may be substituted for a fire-isolated stairway if the construction enclosing the ramp complies with Part 16 for the shaft of a fire-isolated stairway.

24.11. (1) External stairways may serve as required exits in lieu of fire-isolated stairways, subject to this clause.

   (2) The stairway (including connecting bridges, if any) shall be of non-combustible construction throughout.

   (3) If any part of the stairway is less than 6 m from a window or doorway in an external wall of the building from which the stairway serves as a required exit—
      (a) the stairway shall be enclosed for its full height above the lowest level of the window or doorway by non-combustible construction having a fire-resistance rating of not less than one hour; and
      (b) no window or other glazed section in the enclosing walls of the stairway shall be within 6 m of any window or doorway in the external walls of the building.

   (4) Subclause (3) shall not apply if—
      (a) every window is more than 3 m from any part of the stairway; and
      (b) the following windows and doorways are protected as follows:
         (i) Windows 3 m to 6 m from stairway—one-hour automatic fire shutters, or one-hour fire windows (automatic or permanently fixed in closed position).
(ii) Doorways less than 3 m from stairway— one-hour self-closing fire doors.

(iii) Doorways 3 m to 6 m from stairway— one-hour self-closing fire doors, or one-hour automatic fire shutters.

24.12. (1) Escalators and non-required non-fire-isolated stairways shall not connect more than—

(a) three storeys where each of those storeys is provided with an approved sprinkler system throughout; or

(b) two storeys otherwise,

and one of those storeys shall be situated at a level at which egress to a road or open space is provided.

(2) Subclause (1) shall not apply to an escalator or stairway that is—

(a) within a sole-occupancy unit in a Class II building; or

(b) an external escalator or stairway, irrespective of the classification of the building.

24.13. A non-fire-isolated stairway serving as a required exit shall provide a continuous means of travel via its own flights of stairs and landings from every storey served to the level at which egress to a road or open space is provided.

24.14. (1) Every fire-isolated stairway and fire-isolated ramp shall lead directly, or by way of a fire-isolated passageway to a road or open space, except as conceded in subclause (2).

(2) In a Class V, VI, VII, or VIII building, a fire-isolated stairway or fire-isolated ramp discharging into a storey or similar space within the confines of the building shall not be subject to subclause (1) if—

(a) that storey or space is at a level at which egress to a road or open space is provided;

(b) that storey or space is unenclosed or only partly enclosed; and

(c) any walls, columns, piers, glazing or other construction at the periphery of that storey or similar space do not occupy, in total, more than one-third of its perimeter.
(3) Every fire-isolated stairway shall have a notice displayed in a conspicuous position at the landing on each storey level in or to the effect relating to fire-isolated stairs.

OFFENCES RELATING TO FIRE STAIRS.

By virtue of Ordinance No. 72 under the Local Government Act, 1919, it is an offence to—

1. Place anything in this stairway or any associated passageway leading to the exterior of the building, which may impede the free passage of persons.

2. Interfere with or cause obstruction or impediment to the normal operation of the self-closing fire doors providing access to this stairway.

3. Remove, damage, or otherwise interfere with this notice.

MAXIMUM PENALTY: $200.

(4) In any notice displayed in accordance with subclause (3) the words “OFFENCES RELATING TO FIRE STAIRS” and the words and figures “MAXIMUM PENALTY: $200” shall be in letters and figures not less than 7.9 mm in height and all letters and figures in the remainder of the notice shall be not less than 2.4 mm in height.

24.15. (1) Where a stairway serving as an exit is required to be fire-isolated, there shall be no direct connexion between—

(a) a flight of stairs rising from a storey below the lowest level of access to a road or open space; and

(b) a flight of stairs descending from a storey above that level.

(2) Any construction that is common to or separates rising and descending flights of stairs, as referred to in subclause (1), shall be non-combustible and have a fire-resistance rating of not less than one hour.

24.16. In a Class VI building, a non-fire-isolated required stairway or ramp shall discharge at a point not more than—

(a) 18 m from a doorway providing egress to a road or open space or from a fire-isolated passageway leading to a road or open space; or
(b) 30 m from one of two such doorways or passageways where travel to each of them from the stairway or ramp is in opposite or approximately opposite directions.

24.17. (1) Gas meters shall not be installed in a required exit or in any corridor, hallway, lobby or the like leading to a required exit.

Gas meters.

(2) Gas pipes and other fuel pipes shall not be installed in a required exit.

Gas pipes.

(3) Telephone switchboards shall not be installed in required fire-isolated stairways, fire-isolated ramps, or fire-isolated passageways.

Telephone switches.

(4) The following services and equipment shall not be installed in a required exit or in any corridor, hallway, lobby, or the like leading to a required exit unless enclosed by construction that comprises or is lined with non-combustible material or a material listed in clause 16.12:

(a) Electricity meters or ducts.

(b) Electrical motors or other motors serving equipment in the building.

24.18. An opening to any chute or duct intended for conveying the hot products of combustion shall not be located in any part of a required exit or any corridor, hallway, lobby, or the like leading to a required exit.

24.19. (1) The space below a flight of stairs of a required fire-isolated stairway, if such space is within the fire-isolated shaft, shall not be enclosed to form a cupboard or similar enclosed space.

Enclosure of space under stairs.

Fire-isolated stairways.

(2) The space below a flight of stairs of a non-fire-isolated stairway (including an external stairway) serving as a required exit shall not be enclosed to form a cupboard or other enclosed space unless—

Non-fire-isolated stairways.

(a) the enclosing walls and ceilings have a fire-resistance rating of not less than one hour; and

(b) any access doorway to the enclosed space is fitted with a self-closing fire door having a fire-resistance rating of not less than one hour.
24.20. (1) This clause shall apply to doorways and doors—

(a) serving as required exits; or

(b) forming part of a required exit.

(2) A revolving door or roller shutter shall not be fitted to a doorway referred to in subclause (1).

(3) A sliding door shall not be fitted to a doorway referred to in subclause (1), other than one leading to a road or open space, and any such door, if power-operated, shall be so constructed that in the event of malfunction or failure of the power source, it may be opened manually under a force of not more than 110 N.

(4) A swinging door fitted to a doorway referred to in subclause (1)—

(a) shall not, at any part of its swing, encroach by more than 510 mm on the required width of a required stairway or ramp, including the landings thereof; and

(b) shall not, when fully open, encroach by more than 100 mm on the required width of a required exit,

the measurement of encroachment in each case to include door handles or other furniture or attachments to the door.

(5) A swinging door fitted to a doorway referred to in subclause (1) shall swing in the direction of egress except in the case of—

(a) a doorway opening to a sanitary compartment; and

(b) a doorway opening to a road, open space, or external balcony, in which case the door may swing against the direction of egress if fitted with an approved means of fixing it readily in the fully open position.

(6) The concession allowable pursuant to paragraph (b) of subclause (5) shall not apply to a doorway of a required fire-isolated stairway, fire-isolated ramp, or fire-isolated passageway.

(7) A door referred to in subclause (1) shall be readily openable, Operation without a key and by single handed action, from the side that would face of latch. any person seeking egress from the building.
24.21. (1) The threshold of a doorway serving as a required exit or forming part of a required exit shall not, except as in subclause (2), incorporate a step or ramp at any point closer to the doorway than the width of the door leaf.

(2) A doorway opening to a road, open space, or external balcony shall not be subject to subclause (1) if the door sill is not more than 190 mm above the finished surface of the ground, balcony, or the like, to which the doorway opens.

24.22. Where a required exit leads to an open space that is at a different level to the public road to which it is connected, a path of travel to the road shall be provided by way of—

(a) a ramp or other incline having a grade of not more than 1 in 8 at any part; or

(b) a stairway complying with the relevant provisions of this Part.

24.23. (1) The required widths of stairways (as represented by the letter “W” in figure 24.23) shall be measured clear of all obstructions, such as handrails, projecting parts of balustrades, and the like, and shall extend without interruption, except for ceiling cornices, to a height not less than 2,030 mm vertically above a line along the nosings of the treads, or the floor of the landing, as the case requires.

(2) A stairway that exceeds 2,040 mm in unobstructed width shall be deemed to have a width of 2,040 mm unless—

(a) it is divided into sections by a balustrade or handrail continuous between landings; and

(b) each such section is not less than 1,020 mm in width,

in which case the full unobstructed width of the stairway may be counted for the purposes of this Part.
STAIRWAY REQUIREMENTS

Doors - Maximum encroachment into required width of Exit
510 mm

FIGURE 24.23
24.24. (1) Every stairway serving as a required exit shall be provided with landings, where necessary, to limit the number of risers in a flight of stairs to 18.

(2) The length of travel along a landing measured 510 mm from the inside edge of the landing (as represented by the letter "L" in figure 24.23) shall be not less than 760 mm.

(3) Landings shall be provided with a non-slip finish throughout or with an approved non-skid strip near the edge of the landing where it leads to a flight of stairs below.

24.25. (1) The flight of a required stairway shall have not more than 18 or less than 2 risers.

(2) The going and riser height of a flight of stairs in a required stairway shall be constant throughout that flight.

(3) The treads of a flight of stairs in a required stairway shall—

(a) be constructed within the limits of shape and size illustrated in Figure 24.25 and specified in Table 24.25; and

(b) be provided with a non-slip finish throughout or with an approved non-skid strip near the edge of the nosings.

(4) The risers of a flight of stairs in a required stairway shall be constructed within the limits of shape and size illustrated in Figure 24.25 and Table 24.25.

(5) Nothing in this clause shall be deemed to prevent the space between the treads of a stairway (referred to herein as risers) from being completely open.

**TABLE 24.25.
LIMITS OF RISER HEIGHT AND GOING.**

<table>
<thead>
<tr>
<th>Shape of treads in plan</th>
<th>Riser height R in mm Max. Min.</th>
<th>Going G in mm Max. Min.</th>
<th>Quantity 2R + G Max. Min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectangular ..</td>
<td>190 115</td>
<td>395 255</td>
<td>625 585</td>
</tr>
<tr>
<td>Tapered as in a curved stairway ..</td>
<td>190 115</td>
<td>445 205</td>
<td>675 625</td>
</tr>
<tr>
<td></td>
<td>Wide end of tread</td>
<td>Narrow end of tread</td>
<td>Wide end of tread</td>
</tr>
</tbody>
</table>