### TABLE 19.9—continued

<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>6 to less than 7.5</td>
<td>Nil.</td>
<td>4 in any 7-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0.25</td>
<td>5 in any 7-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0.5</td>
<td>7 in any 7-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0.75</td>
<td>9 in any 7-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>10.5 in any 7-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>1.25</td>
<td>12.5 in any 7-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td>14 in any 7-m length of wall.</td>
</tr>
<tr>
<td>7.5 to less than 9</td>
<td>Nil.</td>
<td>9 in any 9-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0.25</td>
<td>11.5 in any 9-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0.5</td>
<td>13.5 in any 9-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0.75</td>
<td>16 in any 9-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>18.5 in any 9-m length of wall.</td>
</tr>
<tr>
<td>9 to less than 10.5</td>
<td>Nil.</td>
<td>17 in any 11-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0.25</td>
<td>19.5 in any 11-m length of wall.</td>
</tr>
<tr>
<td></td>
<td>0.5</td>
<td>22.5 in any 11-m length of wall.</td>
</tr>
<tr>
<td>10.5 to less than 13.5</td>
<td>Nil.</td>
<td>30.5 in any 15-m length of wall.</td>
</tr>
<tr>
<td>13.5 to less than 18</td>
<td>Nil.</td>
<td>45.5 in any 18-m length of wall.</td>
</tr>
<tr>
<td>18 and over</td>
<td>Nil.</td>
<td>No limitation.</td>
</tr>
</tbody>
</table>

19.10. * * * * *

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) The Council may exempt a Class V, VI, VII or VIII building from any or all of the requirements of this Part upon production of a certificate issued 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 any or all of the provisions of this Part, and additional to those prescribed in 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.

(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.

(4) Nothing in this clause shall be construed as giving exemption from the provisions of clause 1.6.

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) An applicant for approval to erect a building to which this clause applies shall furnish to the Council a report obtained by him from the Board of Fire Commissioners of New South Wales as to any special provisions which the Board thinks should be made to restrict or combat the spread of fire.

(3) The Council shall, after considering any recommendation contained in a report received by it under subclause (2), impose such special requirements for restricting or combating the spread of fire as it may consider desirable.
Ordinance No. 70—Local Government Act 1919

(4) Any special requirement imposed pursuant to subclause (3) shall—

(a) be imposed only by resolution of the Council in respect of the building concerned;

(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 requirements of this Part, except that exemptions may be granted from one or more of those requirements where the Board of Fire Commissioners of New South Wales so recommends.

19.13. (1) Where a building has, for the purpose of a public garage, one or more storeys wholly or partly below ground level, to the extent that such storeys are not counted in the rise of storeys, those storeys shall not exceed 6 000 m² in aggregate floor area.

(2) Where smoke separation is provided between storeys or portions of a storey, the maximum aggregate floor area of 6 000 m² shall apply to each compartment so formed.

(3) Smoke separation provided pursuant to subclause (2) shall consist of non-combustible construction so located and installed as to inhibit the spread of smoke from one compartment to another.

(4) No openings shall be permitted in the construction referred to in subclause (3) except as permitted by clause 22.16.

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 clause 20.1 (b) shall be an official report issued by one of the following testing authorities:

(a) National Building Technology Centre, Commonwealth Department of Housing and Construction (formerly the Experimental Building Station);

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

(c) Fire Insurers' Research and Testing Organisation, Great Britain;

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

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

(f) National Research Council, Canada;

(g) Underwriters' Laboratories of Canada;

(h) Building Research Association of New Zealand;

(i) A laboratory approved for that particular test by—

(i) the National Association of Testing Authorities, Australia;

(ii) the Department of the Environment of Great Britain; or

(iii) the Testing Laboratory Registration Council of New Zealand.

(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° C average; and

(ii) 649° 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 referred to in clause 20.1 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 satisfy 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.

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

20.4. A steel column, being a structural member referred to in clause 20.1, 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.
Ordinance No. 70—Local Government Act 1919

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, Australia, certifying in the form authorised by that Association 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.
(3) Where, in the case of a building more than 25 m in height, the Council has approved the use of a material to provide a specific fire-resistance rating and the performance of the material in a fire depends upon the manner of its application in the building, the Council may require from the applicant a statement, in a form acceptable to the Council, that the material has been installed in the building in accordance with the approval.

20.6. * * * * *

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 Perlite and 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 Gypsum 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.
Ordinance No. 70—Local Government Act 1919

(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 for walls has a thickness exceeding 19 mm the plaster shall be reinforced—

(a) expanded metal lath complying with subclause (8); or
(b) 13-mm × 13-mm × 0.710-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 1 200 mm above each floor.

(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.
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 AS 1480 (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.

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

(a) the cross-sectional dimensions of the member are not less than those given in AS 1481 (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 subject to clause 1.3 (3) (j).

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Thickness of principal material (millimetres)</th>
<th>Annexure reference—clause number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural member</strong></td>
<td><strong>Construction of member</strong></td>
<td>1 hr</td>
<td>1½ hr</td>
</tr>
<tr>
<td>Loadbearing walls whether internal or external, and common and party walls whether loadbearing or non-loadbearing</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></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid pressed clay bricks</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extruded, cored clay bricks</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid concrete blocks and concrete bricks</td>
<td>127</td>
<td>150</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>Reinf, or prestressed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-loadingbearing walls whether internal or external (except common and party walls—see above)</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></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extruded, cored or lattice clay bricks—</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unplastered</td>
<td>100</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>Plastered 19 mm thick on both sides</td>
<td></td>
<td>110</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>110</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plastered 19 mm thick on both sides</td>
<td></td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>Solid concrete blocks and concrete bricks</td>
<td>100</td>
<td>127</td>
</tr>
</tbody>
</table>

Referred to subclause (1) of clause 20.10.

Referred 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>Cavity wall—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>230-mm cavity wall—</td>
<td>One leaf of solid clay brick on flat and one leaf solid clay brick on edge</td>
<td>190</td>
<td>4</td>
</tr>
<tr>
<td>250-mm cavity wall—</td>
<td>One leaf of solid clay brick and one leaf of concrete block stretcher units</td>
<td>200</td>
<td>5</td>
</tr>
<tr>
<td>Concrete—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unreinforced</td>
<td></td>
<td>177</td>
<td>200</td>
</tr>
<tr>
<td>No-fines, plastered 19 mm thick on both sides</td>
<td>150</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Reinforced</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prestressed</td>
<td></td>
<td>Refer to subclause (1) of clause 20.10.</td>
<td></td>
</tr>
<tr>
<td>Hollow blocks of concrete with—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category A aggregate</td>
<td></td>
<td>66</td>
<td>83</td>
</tr>
<tr>
<td>Category B aggregate</td>
<td></td>
<td>73</td>
<td>93</td>
</tr>
<tr>
<td>Category C aggregate</td>
<td></td>
<td>82</td>
<td>101</td>
</tr>
<tr>
<td>Terra-cotta—</td>
<td>Plastered 19 mm thick one side</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Plaster 19 mm thick on both sides</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>Solid gypsum blocks</td>
<td></td>
<td>75</td>
<td>88</td>
</tr>
<tr>
<td>Gypsum-perlite or gypsum-vermiculite plaster on metal lath and channels</td>
<td></td>
<td>51</td>
<td>63</td>
</tr>
<tr>
<td>Steel columns (including fabricated columns)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<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>
<td></td>
</tr>
<tr>
<td>Solid clay bricks with—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column spaces filled</td>
<td></td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Column spaces not filled</td>
<td></td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Solid concrete blocks with—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column spaces filled</td>
<td></td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Column spaces not filled</td>
<td></td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Gypsum blocks laid in gypsum-sand mortar with—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column spaces filled</td>
<td></td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Column spaces not filled</td>
<td></td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Hollow terra-cotta blocks plastered 13 mm thick with</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column spaces filled</td>
<td></td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Column spaces not filled</td>
<td></td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Structural concrete cast in-situ around mesh or binding, and non-loadbearing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As above, plastered 13 mm thick</td>
<td></td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>As above, non-loadbearing</td>
<td></td>
<td>25</td>
<td>32</td>
</tr>
</tbody>
</table>

*Note: The table continues with additional entries for various structural elements and their fire resistance ratings.*
### 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>Steel columns (including fabricated columns)</td>
<td>Columns incorporated in, or in</td>
<td>Thickness of principal material (millimetres)</td>
<td>Annexure reference—clause number</td>
</tr>
<tr>
<td>—continued</td>
<td>contact on one or more sides with solid masonry or concrete</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>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 32 38 57 76</td>
<td>8, 11, 12, 13</td>
</tr>
<tr>
<td></td>
<td>Category A aggregate</td>
<td>25 32 38 51 63</td>
<td>8, 11, 12, 13</td>
</tr>
<tr>
<td></td>
<td>Gypsum cast in-situ</td>
<td></td>
<td>48</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 22 25 35 44</td>
<td>14, 15</td>
</tr>
<tr>
<td></td>
<td>Sprayed to contour</td>
<td>22 25 35 48 57</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Columns not incorporated in, or in direct contact with solid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>masonry or concrete walls not less than 100 mm thick, with fire</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>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 50 50 63 75</td>
<td>11, 12</td>
</tr>
<tr>
<td></td>
<td>Column spaces not filled</td>
<td>50 50 63</td>
<td>11</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 50 51 75 100</td>
<td>11, 12</td>
</tr>
<tr>
<td></td>
<td>Column spaces not filled</td>
<td>50 50 63</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Columns not incorporated in, or in direct contact with solid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>masonry or concrete walls not less than 100 mm thick, with fire</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>protection of—</td>
<td></td>
<td></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 75 100 11, 12</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Column spaces not filled</td>
<td>50</td>
<td>11</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 75 100</td>
<td>9, 11, 12</td>
</tr>
<tr>
<td></td>
<td>Column spaces not filled</td>
<td>50</td>
<td>9, 11</td>
</tr>
<tr>
<td></td>
<td>Structural concrete cast in-situ around mesh or binding and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>not subjected to any applied loading</td>
<td>25 32 38 51 63</td>
<td>11, 12, 13</td>
</tr>
<tr>
<td></td>
<td>As above, plastered 13 mm thick</td>
<td>25 32 38 51</td>
<td>6, 11, 12, 13</td>
</tr>
<tr>
<td></td>
<td>Structural concrete cast in-situ around mesh or binding and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>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 38 44 63 89</td>
<td>8, 11, 12, 13</td>
</tr>
<tr>
<td></td>
<td>Category A aggregate</td>
<td>25 32 38 51 70</td>
<td>8, 11, 12, 13</td>
</tr>
<tr>
<td>Structural member</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<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>
<td></td>
</tr>
<tr>
<td>Gypsum cast in-situ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gypsum-perlite or gypsum-vermiculite plaster—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sprayed on metal lath</td>
<td>19</td>
<td>22</td>
<td>29</td>
</tr>
<tr>
<td>Sprayed to contour</td>
<td>25</td>
<td>32</td>
<td>41</td>
</tr>
<tr>
<td>Reinforced concrete</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prestressed concrete</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Columns of—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural concrete encasement incorporating—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category B or C aggregate</td>
<td>25</td>
<td>32</td>
<td>38</td>
</tr>
<tr>
<td>Category A aggregate</td>
<td>25</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>Gypsum-perlite or gypsum-vermiculite plaster—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sprayed on metal lath</td>
<td>19</td>
<td>22</td>
<td>25</td>
</tr>
<tr>
<td>Sprayed to contour</td>
<td>22</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>Joists, beams, girders and trusses 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>
<td></td>
</tr>
<tr>
<td>Structural concrete encasement incorporating—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category B or C aggregate</td>
<td>25</td>
<td>38</td>
<td>44</td>
</tr>
<tr>
<td>Category A aggregate</td>
<td>25</td>
<td>32</td>
<td>38</td>
</tr>
<tr>
<td>Gypsum-perlite or gypsum-vermiculite plaster—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sprayed on metal lath</td>
<td>19</td>
<td>22</td>
<td>29</td>
</tr>
<tr>
<td>Sprayed to contour</td>
<td>25</td>
<td>32</td>
<td>41</td>
</tr>
<tr>
<td>Concrete—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reinforced</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prestressed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 porphyrite, 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 Ministerial Specification No. 4.
   
   (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 4-mm wire ties according to AS Int. 324.
   
   (d) The cavity shall be not more than 50 mm wide.
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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>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cement and sand, or cement, lime and sand on one face only</td>
</tr>
<tr>
<td>Category A aggregate</td>
<td>No concession shall be made.</td>
</tr>
<tr>
<td>Category B aggregate</td>
<td>No concession shall be made.</td>
</tr>
<tr>
<td>Category C aggregate</td>
<td>No concession shall be made.</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 material 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 pumics 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 AS 1465.

(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.
9. Hollow Terra-cotta Construction

(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 thickness; or

(b) 40 per cent of the gross volume of the block in a block of 100-mm thickness; or

(c) 50 per cent of the gross volume of the block in a block of 150-mm thickness.

(2) *

10. Gypsum-perlite or Gypsum-vermiculite Plaster in Walls. The gypsum-perlite or 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 (including Fabricated Steel Columns)

(1) Where the principal fire-protective construction of a steel column (including any fabricated steel 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 (including Fabricated Steel Columns). Where steel columns (including fabricated steel columns) are required to have a 3-hour or a 4-hour fire-resistance rating, re-entrant 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 3.15 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 5 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, Girders, Trusses and the Like. Where the principal fire-protective material of a steel open-webbed joist, girders, trusses or the like 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 3.15 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 5 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 an open-webbed joist, girder, truss or the like, has a thickness of less than 38 mm plus one-twelfth the width of that soffit, it shall be mechanically vibrated into position.

17. Gypsum-perlite Plaster, or Gypsum-vermiculite Plaster as Protection for Steel Oper-webbed Joists, Girders, Trusses and the Like. Where the protection is applied to a steel open-webbed joist, girder, truss or the like 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.

18. Gypsum-perlite Plaster or Gypsum-vermiculite Plaster Sprayed to Contour

(1) The plaster shall be integrally reinforced as follows:

(a) Reinforcement shall be used when a surface of a structural member, or of any part of a structural member, to be protected falls within the limits of Table 20.10 (18).

(b) Reinforcement shall be in—

(i) expanded metal lath complying with clause 20.8 (8); or

(ii) 13 mm x 13 mm x 0.710 mm galvanised steel wire mesh,

the reinforcement being placed at a distance from the surface of the plaster of not less than one-third, and not more than two-thirds, of the thickness of the plaster.

(c) Reinforcement shall be permanently fixed in accordance with the relevant requirements of Table 20.10 (18).

(2) For the purposes of Table 20.10 (18)—

(a) a surface is a vertical surface if the plane of the surface is at an angle to the horizontal plane of more than 80 degrees, and includes a surface so depicted in Diagram 20.10 (18);
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(b) a surface is a non-vertical surface if—

(i) the plane of the surface is at an angle to the horizontal plane of more than 10 degrees and not more than 80 degrees; and

(ii) the surface does not face downwards,

and includes a surface so depicted in Diagram 20.10 (18);

(c) a surface is an underside if—

(i) the plane of the surface is at an angle to the horizontal plane of not more than 80 degrees; and

(ii) the surface faces downwards,

and includes a surface so depicted in Diagram 20.10 (18); and

(d) a surface is an upperside if—

(i) the plane of the surface is at an angle to the horizontal plane of not more than 10 degrees; and

(ii) the surface does not face downwards.

---

**TABLE 20.10 (18)**

LOCATION OF REINFORCEMENT AND ITS FIXING

<table>
<thead>
<tr>
<th>Surface to be protected</th>
<th>Reinforcement required if width of surface exceeds—(mm)</th>
<th>Spacing for fixing of reinforcement (mm centres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘H’ or ‘I’ section shapes—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Non-Vertical</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Underside</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Upperside</td>
<td>Not Required</td>
<td>Not Required</td>
</tr>
<tr>
<td>Other shapes—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical</td>
<td>Any size</td>
<td>450</td>
</tr>
<tr>
<td>Non-Vertical</td>
<td>Any size</td>
<td>300</td>
</tr>
<tr>
<td>Underside</td>
<td>Any size</td>
<td>300</td>
</tr>
<tr>
<td>Upperside</td>
<td>Not Required</td>
<td>Not Required</td>
</tr>
</tbody>
</table>
DIAGRAM 20.10 (18)

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7
19. Limitation on Use of Extruded, Cored Clay Bricks. The extruded, cored clay bricks used in loadbearing walls, whether internal or external, or in common or party walls, whether loadbearing or non-loadbearing, shall be in a portion of the building containing not more than four storeys.

GROUP V—FIRE SAFETY AND FIRE-RESISTANCE

PART 21—Fire Doors, Smoke Doors, Fire Windows, Fire Shutters and Thermally Released Links—Construction Requirements

21.1. Every required fire door shall—

(a) comprise a complete doorset as described in AS 1905 (Part 1);

(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 140° C, except in any glazed part thereof.

21.2. (1) Notwithstanding the provisions of AS 1905 (Part 1), 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 $64.6 \times 10^3 \text{ mm}^2$ in any other case.

(2) Notwithstanding the provisions of AS 1905 (Part 1), a fire door which is required to close automatically in the event of fire shall be equipped with, or installed in conjunction with, an actuating device comprised of—

(a) an approved heat-actuated device; or

(b) an approved smoke-actuated device, which has been fitted in an approved manner and in an approved location.
(3) A certificate issued pursuant to clause 10 of AS 1905 (Part 1) in respect of a fire door which, pursuant to subclause (2), is required to be equipped with, or installed in conjunction with, an actuating device shall, except where the device is comprised of a thermally released link, certify that the fire door complies with the requirements of subclause (2).

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 Ministerial Specification No. 1; or

(c) a glass-block window panel, complying as to maximum dimensions, construction, and installation with Ministerial Specification No. 2.
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) where a metallic fire shutter is not prohibited by this Ordinance—a steel shutter complying with AS 1905 (Part 2).

21.6. Thermally released links shall be designed and installed in accordance with AS 1890.

21.7. As soon as practicable after a lift shaft has been installed in a building, the person by whom the shaft has been installed shall furnish to the Council a certificate, to the effect that all lift doors which have been installed by the person in the shaft and which are required to have a particular fire-resistance rating—
(a) have been installed in accordance with the provisions of AS 1735 relating to the installation of lift doors; and
(b) have that particular fire-resistance rating.

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 building.
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Opening defined

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 part of the wall, such as a panel-filled part, that does not have the relevant fire-resistance rating specified by Part 16 for the structural parts of the wall.

Vertical separation of openings in external walls

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.

Alternative methods of separation

(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).

Conventional spandrel-type separation

(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.
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(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) The following openings shall be protected in accordance with the requirements of subclause (2):

(a) any opening (other than an opening located in a storey at or near ground level) that is within an effective distance of—

(i) in the case of a building of Type 1, Type 2 or Type 3 construction—6 m; or

(ii) in the case of a building of Type 4 or Type 5 construction—3 m,

from a fire-source feature of a kind referred to in clause 16.6 (1) (a);

(b) any opening that is within an effective distance of 3 m from a fire-source feature of a kind referred to in clause 16.6 (1) (b), (c) or (d).
(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.

(3) Subclause (1) does not apply to—

(a) any opening in an external wall of a Class II or Class III building, except where the building is situated within a fire zone; or

(b) any opening that consists merely of—

(i) a control joint or weep hole in masonry or concrete construction, or a joint between pre-cast concrete panels, that is no larger than necessary for its purpose; or

(ii) a non-combustible ventilator that is incorporated in a wall for the purpose of providing ventilation for the wall cavities and sub-floor areas of a building, that does not exceed $45 \times 10^3 \text{mm}^2$ in face area and that is located no closer than 2 m from any other such ventilator.

22.5. (1) Openings in an external wall shall not, in relation to any storey, occupy more than one-third of the surface area of such part of the wall as is within that storey if—

(a) any such opening is within an effective distance of—

(i) in the case of a building of Type 1, Type 2 or Type 3 construction—6 m; or
(ii) in the case of a building of Type 4 or Type 5 construction—3 m,
from a fire-source feature of a kind referred to in clause 16.6 (1) (a); or
(b) any such opening is within an effective distance of 3 m
from a fire-source feature of a kind referred to in clause 16.6 (1) (b), (c) or (d).

Exemption

(2) Subclause (1) does not apply to an opening which—
(a) is located in a storey at or near ground level; and
(b) faces—
   (i) a building situated on the same site as the
   building in which the opening is located; or
   (ii) a road.

Openings in fire walls
Permissible openings

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.

Protection of doorways

(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 (not being a metallic 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.

(4) Where a doorway in a fire wall is fitted with sliding fire doors that are designed to be kept open during the periods for which the building is being used:

(a) the means by which those doors are kept open shall consist of an electro-magnetic device;

(b) the device shall be designed to release those doors so that they are fully closed not less than 20 seconds, and not more than 30 seconds, after any required combustion detector or required sprinkler system in the building is activated;

(c) approved combustion detectors shall be installed in each section of the building connected by the doorway, 1 500 mm out from the centre of the doorway and not more than 300 mm above the top of the doorway;

(d) an audible warning device shall be installed at one side of the doorway in such a manner that it is activated when any required combustion detector or required sprinkler system in the building is activated;

(e) a red flashing warning light of an approved intensity shall be installed on each side of the doorway in such a manner that—

(i) both lights are activated when any required combustion detector or required sprinkler system in the building is activated; and

(ii) each light is readily visible to any person approaching the doorway from the side on which it is installed; and

(f) signs shall be installed on both sides of the doorway located directly over the opening stating “WARNING—SLIDING FIRE DOOR” in block capital letters not less than 50 mm in height in a colour contrasting with the background.
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22.7. (1) Every doorway that opens to a fire-isolated stairway, fire-isolated passageway or fire-isolated ramp (not being a doorway which opens to a road or open space) shall be protected in accordance with subclause (2).

(2) The protection required by subclause (1) shall be as follows:

(a) in the case of a building not more than 25 m in height—a self-closing one-hour fire door;

(b) in the case of a building not more than 25 m in height—a self-closing two-hour fire door or a self-closing three-hour fire door where so required by clause 16.7 (14).

22.8. (1) If, 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 AS 1735 relating to fire-rated lift landing doors; and

(b) are set to remain in the closed position at all times except when—

(i) they are required to be open for the reception or discharge of passengers, goods or vehicles; or

(ii) they serve an emergency lift that is, for the time being, removed from normal automatic operation.

(2) Lift call panels, indicator panels and other panels in the walls of a fire-isolated lift shaft shall, if they exceed $32.5 \times 10^3 \text{ mm}^2$ in area, be backed by construction having a fire-resistance rating not less than that rating required for the entrance doors to the lift.

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) In a Class II or Class III building, 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.

(4) Notwithstanding anything to the contrary in this clause, the Omission of fire doors in certain buildings Council may permit the omission of fire doors in Class II or Class III buildings of Type 1 or Type 2 construction upon production of a certificate from the Board of Fire Commissioners certifying that, in its opinion, such doors may be omitted and subject to such other requirements, if any, recommended by the Board.

22.10. The doorway of a Class IV portion of a building providing access to any internal portion 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. (1) 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.

(2) Notwithstanding subclause (1), in a building of Type 1 or Type 2 construction, plumbing services associated with the functioning of the building and passing through a floor may be in polyvinyl chloride pipes and fittings if—

(a) the building contains not more than 2 storeys and complies with the provisions of Part 19;
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(b) the floors passed through are those between sanitary compartments which—

(i) are separated from other portions of the building as though they were ventilating, pipe, garbage, or like shafts, not intended for the discharge of hot products of combustion; and

(ii) have all doorways opening therefrom protected by self-closing one-hour fire doors,

and if the opening for those polyvinyl chloride pipes and fittings comply with the provisions of clause 22.13 relating to openings for metal pipes, metal conduits, or the like; or

(c) those pipes and fittings (not being pipes or fittings which form part of a required fire main, a required hydrant, a required hose reel or a required sprinkler system) are fire-stopped in accordance with subclause (3) at each point at which those pipes and fittings pass through a floor which is required to have a fire-resistance rating.

(3) The fire-stopping referred to in subclause (2) (c) shall consist of intumescent seals, shut-off devices or the like that are identical to prototypes that—

(a) have been submitted to the Standard Fire Test; and

(b) have been proved to be capable of maintaining the fire-resistance rating of a floor having a required fire-resistance rating not less than that of the floor through which the pipes and fittings pass.

(4) Where polyvinyl chloride pipes and fittings are used pursuant to subclause (2) (c), the Council may require that—

(a) evidence be furnished to it that the fire-stopping used in connection with those pipes and fittings complies with subclause (3); and

(b) a certificate be furnished to it by the person by whom the pipes and fittings have been installed, being a certificate to the effect that those pipes and fittings have been installed in accordance with the manufacturer's recommended specifications in relation to fire-stopping.
22.12. (1) Except as provided by subclause (3), in a building of Type 1 or Type 2 construction, an opening in a wall providing access to a ventilating pipe, or a garbage or other service shaft, shall be protected in accordance with the requirements of subclause (2).

(2) The protection required by subclause (1) shall be—

(a) in the case of a building not more than 25 m in height—
   (i) a self-closing one-hour fire door;
   (ii) an access panel having a fire-resistance rating of not less than one hour; or
   (iii) a door or hopper of non-combustible construction if the shaft is a garbage shaft; and

(b) in the case of a building more than 25 m in height—
   (i) a self-closing two-hour fire door;
   (ii) an access panel having a fire-resistance rating of not less than 2 hours; or
   (iii) a door or hopper of non-combustible construction if the shaft is a garbage shaft.

(3) Subclauses (1) and (2) do not apply to an opening referred to in subclause (1) if it is—

(a) in a building not more than 25 m in height;
(b) located within a sanitary compartment; and
(c) 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 larger 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.

Wiring not in pipes etc.

(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.

Wall openings for air-handling systems

(4) Except as provided by subclause (5), openings for ventilating or air-conditioning ducts or other equipment shall—

(a) where forming part of an air-handling system referred to in Rule 1.3 (a) of AS 1668 (Part 1); or

(b) where not forming part of an air-handling system referred to in paragraph (a), but where made in a wall required to have a fire-resistance rating to resist the lateral spread of fire,

be protected by fire dampers complying with AS 1682 and Rule 4.3 of AS 1668 (Part 1).

Fire dampers—

where not required or prohibited

(5) Fire dampers—

(a) are not required to be fitted to an opening referred to in subclause (4) if the opening is of a kind referred to in Rule 4.1.4 of AS 1668 (Part 1);

(b) shall not be fitted to an opening referred to in subclause (4) if the opening is of a kind referred to in Rule 4.1.5 of AS 1668 (Part 1); and

(c) shall, where used in vertical air streams, be of a type which has been tested in accordance with the Standard Fire Test and found by an approved testing authority to be suitable for use in such locations.
(6) An air duct which passes through one or more floors required to have a fire-resistance rating shall be enclosed in a shaft which—

(a) has the fire-resistance rating required for a ventilating shaft by Part 16; and

(b) is enclosed at the top and bottom with construction having the same fire-resistance rating as that required for the walls of the shaft, except that the enclosure at the top of the shaft may be omitted where the top of the shaft opens outside the building in which the duct is installed or constructed.

(7) Openings for other services not mentioned in subclauses (2), (3), (4) or (6) shall be protected in an approved manner.

22.14. Where a building is more than 25 m in height, rooflights may not be installed in the roof of the building unless—

(a) the total area of those rooflights does not exceed 10 per cent of the total area of the roof;

(b) none of those rooflights is situated less than 3 m from the boundary of the site (other than a boundary to a public road); and

(c) those rooflights are constructed of non-combustible material and glazed with wired glass or other approved material.

22.15. (1) The enclosing walls of a fire-isolated stairway, fire-isolated passageway or fire-isolated ramp shall not be penetrated by any services other than—

(a) electrical wiring associated with a lighting system or pressurising system serving the fire-isolated stairway, fire-isolated passageway or fire-isolated ramp; and

(b) ducting associated with any pressurising system serving the fire-isolated stairway, fire-isolated passageway or fire-isolated ramp where the ducting—

(i) is constructed of material that has a fire-resistance rating of not less than 2 hours where it passes through any other portion of the building; and
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(ii) does not open into any other portion of the building.

(2) Access to service shafts shall not be provided from any fire-isolated stairway, fire-isolated passageway or fire-isolated ramp.

22.16. (1) No opening shall be permitted in construction required to act as a barrier against the spread of smoke except—

(a) doorways and vehicle access ramps, in each case protected in accordance with this clause;

(b) openings for services necessary for the functioning of the building; or

(c) ducts forming part of a smoke extract system.

(2) A doorway or vehicle access ramp shall be protected by one of the following alternative methods:

(a) a tight-fitting door at least equal to a 35 mm solid core door; or

(b) an imperforate, non-combustible roller shutter which is—

(i) installed in such a manner that—

(A) the guides for the shutters are flush with the walls;

(B) the space between the ceiling and the shutter drum is closed off by means of a fascia panel erected on the guide side of the drum; and

(C) a profile plate is fitted to the bottom of the shutter so that a reasonably close fit is obtained on the surface immediately below the doorway or of the ramp, as the case may be; and

(ii) operable by a hand chain.
GROUP V—FIRE SAFETY AND FIRE-RESISTANCE

PART 23—Separation of a Building into Sections 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 complying with this clause shall be subject to the provisions of Group V of this Ordinance as though it were a separate building.

(2) Except as provided by subclause (3), a fire wall shall extend through all storeys and spaces in the nature of storeys that are common to the section concerned and the adjoining section of the building and shall be carried through to the underside of the roof covering.

(3) If the roof of the section concerned is higher than the roof of an adjoining section, the design of the building shall be such as will restrict the spread of fire from the lower section to the higher section.

(4) The provisions of subclause (3) shall be deemed to be satisfied—

(a) if—

(i) there is constructed between the 2 sections a fire wall that extends to the underside of the covering of the lower roof;

(ii) there is constructed on top of the fire wall another wall that has a fire-resistance rating at least equal to that of the fire wall;

(iii) that other wall extends to the underside of the covering of the higher roof, or at least 6 m above the covering of the lower roof, whichever is the lesser; and

(iv) openings in both walls are protected in accordance with clause 22.4 (2);

(b) if—

(i) there is constructed between the 2 sections a fire wall that extends to the underside of the covering of the lower roof;
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(ii) the lower roof has a fire-resistance rating at least equal to that of the fire wall; and

(iii) there are no openings in the lower roof closer than 3 m to any other wall above the fire wall; or

(c) if—

(i) there is constructed between the 2 sections a fire wall that extends to the underside of the covering of the lower roof;

(ii) the lower roof is non-combustible; and

(iii) the section of the building beneath the lower roof is fitted throughout with an approved sprinkler system.

(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 clause 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 portions shall have a fire-resistance rating not less than that listed for a floor under Table 16.7 (if Type
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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.

(b) Type 3, 4 or 5 construction (applicable only if one of the adjoining portions is of Class II, III or IV)—the underside of the floor (including the sides and undersides of its floor beams, if any) shall be protected by—

(i) 13-mm plasterboard; or
(ii) 12-mm ceramic fibre reinforced silica board; or
(iii) 12-mm mesh-reinforced fibrous plaster in which the mesh is one of 13-mm \times 13-mm \times 0.710-mm welded wire located not more than 6 mm from the exposed face; or
(iv) any other material not less fire-protective than 13-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. *

23.4. It shall not be necessary to provide a fire wall between portions having 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

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(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.

23.6. (1) A portion of a building in which an electricity substation is installed shall be separated from every adjoining portion of the building by construction having a fire-resistance rating of not less than 3 hours.

(2) Doors providing access between any portion of a building in which an electricity substation is installed and any other adjoining portion of the building shall be self-closing fire doors having a fire-resistance rating of not less than 3 hours.

(3) Wiring, within a building and between an electricity main and an electricity substation, or between an electricity substation and a main switchboard, shall be protected by material having a fire-resistance rating of not less than 2 hours.

GROUP V—FI RE SAFETY AND FI RE-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 IV, 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.