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LOCAL GOVERNMENT ACT 1960-1981.

UNIFORM BUILDING BY-LAWS 1974

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Local Government Act 1960-1981

UNIFORM BUILDING BY-LAWS 1974

GROUP I—PRELIMINARY.

PART 1—PRELIMINARY.

Citation

1.1 These by-laws may be cited as the Uniform Building By-laws 1974.

List of Contents.

1.2 These by-laws are divided into Parts and Groups of Parts as follows—

Amended by *G.G.* 1/7/77, p. 2022; *G.G.* 28/9/79, p. 2999; *G.G.* 29/2/80, p. 673.

Interpretation

Definitions and the Like

1.3 (1) In these by-laws unless the contrary intention appears—

Amended by *G.G.* 7/5/76, p. 1406; *G.G.* 11/6/76, p. 1882; *G.G.* 1/7/77, p. 2022; *G.G.* 16/6/78, p. 1920; *G.G.* 28/9/79, p. 2999; *G.G.* 29/2/80, p. 673-4.

"allotment" and "lot" have the same meaning as the term "lot" has in, and for the purposes of, the Town Planning and Development Act 1928;

"alteration" in relation to building, includes an addition or an extension to, or an enlargement of, a building;

"approved" means approved by the council except where used in relation to plans, drawings and specifications submitted for approval under section 374 of the Act, in which case "approved" has a meaning consistent with the provisions of that section;

"arcade" means a right-of-way or passage, whether open to the sky or not, on to which shops open on one or both sides;

"assembly building" means a building designed, constructed, or adapted for the assembly of persons for—

(a) civic, political, educational, transit, religious, social, or recreational purposes; or

(b) entertainment or amusement;

"automatic"—

(a) applied to a fire door, smoke door or other member required to prevent or restrict the spread of fire or smoke through an opening, means designed to close by the operation of an approved heat-actuated or smoke-actuated device; and

(b) applied to a smoke-and-heat vent, means designed to open by the operation of an approved heat-actuated or fire-sensing device;

"automatic fire alarm system" means an automatic fire alarm system conforming to the requirements of Australian Standard 1670 being item 45 of the First Schedule;

"basement or basement storey" means any storey of a building which is under the ground storey;

"builder" means a person employed to construct any building or to demolish, alter or execute any work on a building already constructed, and includes the owner or occupier of the land upon which any such building is or is intended to be constructed, or other person for whom, or by whose order or under whose direction and control such alteration or work was done or is intended to be done, as the case may be;

"Chief Fire Officer" means Chief Officer as defined in section 4 of the Fire Brigades Act 1942;

"combustible"—

(a) applied to a material, means combustible in accordance with Australian Standard 1530, being item 1 of the First Schedule;

(b) applied to construction or part of a building, means constructed wholly or in part of materials that are combustible within the meaning of paragraph (a);

"common wall" means a wall that is common to adjoining buildings, not being a party wall;

"construct" includes "erect";

"coverage" in relation to the proportion of a site that may be occupied by buildings means the total area covered by all buildings on the land, when measured from the outer surface of their walls, plus the area of any projections beyond the walls, including overhanging eaves, but insofar only as they project more than 1 m horizontally from the wall; but—

(a) in the case of Class I and IA buildings does not include—

(i) car-parking areas that are wholly below ground level or below the building; or

(ii) car-parking areas to a height of not more than 1050 mm above ground level providing the top is a roof garden; and

(b) in the case of Class II buildings does not include roofed parking spaces;

"cross wall" means an internal wall dividing party or external walls into distinct lengths;

"curtain wall" means a non-loadbearing external wall that is not a panel wall;

"effective distance" has the meaning that is given to that expression in sub-bylaw (4) of by-law 16.6;

"exit" means an exit referred to in by-law 24.4;

"external wall" means an outer wall or vertical enclosure of a building not being a party or common wall;

"Fire Brigades Board" means the Western Australian Fire Brigades Board as constituted under the Fire Brigades Act 1942;

"fire main" means a water service pipe connected to a water supply and installed within a building or building site for fire-fighting purposes;

"fire wall" means an internal wall that divides a storey or building into sections to resist the spread of fire;

"fire zone" means a primary or secondary fire zone, as the case may be, so declared pursuant to the provisions of Part 5;

"fire-isolated passageway" means a corridor, hallway, or the like, providing egress to or from a fire-isolated stairway or fire-isolated ramp or to a road or open space, and conforming with by-law 24.9;

"fire-isolated ramp" means a ramp within a fire-resisting enclosure, providing egress from a storey or space in the nature of a storey and conforming with by-law 24.10;

"fire-isolated stairway" means a stairway that is within a fire-resisting shaft, including the floor and top enclosing structure, and that meets the relevant requirements of the appropriate Table in Part 16;

"fire-resistance rating" means a fire-resistance grading or rating as determined in the Standard Fire Test;

"fire-resisting" applied to a structural member or other part of a building, means having the fire-resistance rating required for that structural member or other part;

"fire-resisting construction" means one of the types of construction of a building referred to in Part 16;

"fire-source feature" has the meaning that is given to that expression in sub-bylaw (1) of by-law 16.6;

"first storey" means that storey of a building which is next above the ground storey, the successive storeys above the first storey being the second storey, the third storey and so on to the topmost storey;

"flammable liquid" means any liquid substance having a flash point less than 65.6°C when tested in the manner specified—

(a) in Part II, regulations 6 to 10, of the Flammable Liquids Regulations 1967, as amended from time to time; or

(b) by the British Institute of Petroleum in its published "Methods for Analysis and Testing";

"flat" means a suite of rooms designed, constructed, or adapted as a separate domicile in a building, other than a Class IA building, containing two or more such domiciles, or as a domicile in a building otherwise of Class V, VI, VII or VIII;

"floor area" means—

(a) with respect to a storey—the gross area of that storey measured over the enclosing walls, if any, and such portions of the party walls as belong to that building; and

(b) with respect to a room—the gross area of the room measured within the finished surfaces of the walls, and includes the area occupied by any cupboards or other built-in furniture, fixtures or fittings;

"footing" means the construction by which the weight of the building is transferred to the foundations;

"foundation" means the ground that supports the building;

"general residential zone" means that portion of the district that has been declared as such by the council acting pursuant to Part II;

"ground storey" means that storey of a building the floor level of which is nearest to the mean ground level at the street frontage; and, for the purposes of this definition, where a site has a frontage to more than one street the owner may nominate the frontage that is to be regarded as the street frontage;

"habitable room" means a room (other than a bathroom, laundry, water closet, or the like), that is designed, constructed, or adapted for the activities normally associated with domestic living, and for the purpose—

(a) includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, sunroom and the like; and

(b) excludes in addition to bathrooms, laundries, water closets and the like, such rooms or spaces as food storage pantries, walk-in-wardrobes, corridors, hallways, lobbies, photographic darkrooms, clothes-drying rooms and other spaces of a specialized nature occupied neither frequently nor for extended periods;

"height"—

(a) in relation to a building means the measurement taken from the permanent footpath level immediately in front of the centre of the face of the building to the level of the top of the eaves, parapet or flat roof whichever is the highest;

(b) in relation to a building when defined in terms of number of storeys means the rise in storeys reckoned according to the provisions of by-law 17.1;

(c) in relation to a storey means the measurement taken from the floor level 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;

(d) in relation to a room means the measurement taken from the floor to—

(i) the underside of the ceiling; or

(ii) where there is no ceiling, the underside of the construction at the top of the room,

except in the case of a room in a Class I, IA, II, III or IV building where the term means the measurement to the underside of the lowest beam or other projection, other than a light fitting, below the ceiling level;

"hydrant" means a fire hydrant or plug connected to a fire main or to a water main in a street, as the case requires;

"institutional building" means a building designed, constructed, or adapted as a clinic, convalescent home, hospital, infirmary, nursing home, sanatorium, asylum, pre-school centre, home or institute for orphans, poor, aged, sick, or physically or mentally handicapped persons, or similar institution;

"internal wall" means a wall of a building, not being an external, common or party wall;

"kiosk" means a stall or apartment enclosed by walls, which the public does not enter, and which is used for the sale or distribution of goods or services;

"loadbearing" applied to a wall, a part of a wall, a shaft, or any similar member, means intended to support a vertical load additional to its own weight;

"masonry" means stone, brick, terra-cotta block, concrete block, or other similar building units, or a combination thereof, assembled together unit by unit to form a wall, pier, chimney, or other part of a building;

"mezzanine" means that space within a room which is situated between—

(a) an intermediate floor constructed within the room but not extending across the full area of the room; and

(b) the floor level, ceiling, or roof, as the case may be, next above the intermediate floor;

"metropolitan region" has the same meaning as it has in, and for the purposes of, the Town Planning and Development Act 1928;

"non-combustible"—

(a) applied to a material, means not combustible in accordance with Australian Standard 1 530—as amended from time to time, being item 1 of the First Schedule; and

(b) applied to construction or a part of a building means constructed wholly of materials that are non-combustible within the meaning of paragraph (a);

"open space" means a space on the site, open to the sky and connecting directly with a public place;

"open-deck parking station" means a parking station in which all portions of the parking storeys are cross-ventilated by means of permanently opened ventilation openings in not fewer than two opposite or approximately opposite sides, the openings in each case being no smaller in unobstructed area than half the vertical area of the side concerned;

"owner" includes any person in possession or receipt either of the whole of any part of the rents or profits of any land or tenement or in the occupation of any land or tenement otherwise than as a tenant from year to year, or for any less term, or as a tenant at will;

"panel wall" means a non-loadbearing external wall, in frame or similar construction, that is wholly supported at each storey;

"parapet" means that portion of any wall which is carried up above the line of junction with a roof or gutter;

"part" when applied to a building, means a physical component or portion of a component;

"partition wall" means—

(a) a non-loadbearing internal wall that does not extend beyond one storey of a building; or

(b) a non-loadbearing member resembling such a wall,

as the case requires;

"party structure" means any partition wall or floor required to have a fire-resistance rating and used for the purpose of separating storeys or rooms in separate occupancies;

"party wall" means a wall forming part of a building and used or constructed to be used in any part of its height or length for the separation of adjoining buildings;

"plot ratio" means the ratio of the gross total of the areas of all floors to the area of land within the site boundaries, and in calculating the gross total of the areas of all floors the areas shall be measured over any walls, and—

(a) in the case of Class 1 and 1A buildings, include passages, lift shafts, stairs, garages, outbuildings and amenities but not—

(i) verandahs, or carports attached to dwellings, the sides of which are completely open over not less than a half of their total perimeter; or

(ii) free standing carports completely open on all sides;

(b) in the case of Class III buildings in a residential or residential flat area and Class II buildings, include, subject to the provisions of Part 11 passages, lobbies, amenities, and access ways, but not lift shafts, stairs, machinery rooms, air-conditioning equipment rooms, non-habitable floor space in basements, areas used exclusively for the parking of wheeled vehicles or open balconies of not more than 2400 mm in depth, of which the longest open side has no enclosure other than a balustrade of 1050 mm in height and to which there is no other access other than by way of the tenancy of which it forms an exclusive part; and

(c) in the case of Class III buildings in other than a residential or residential flat area and Class IV, V, VI, VII, VIII and IX buildings, do not include lift shafts, stairs, toilets, and amenities, external wall thickness, plant rooms and the gross area of any floor space used for the parking of wheeled vehicles including access to and from that space within the building;

"portion" when applied to a building, means a space or set of adjoining spaces in a building;

"practising structural engineer" means an engineer with qualifications in structural engineering that are acceptable to the Institution of Engineers of Australia for the grade of corporate member, and who is actively engaged in structural design and supervision of building construction and has been so engaged for not less than five years;

"pre-school centre" means a building, other than a school, designed, constructed, or adapted for the pre-school care or training of not fewer than six children;

"private garage" means—

(a) a garage of a Class 1 or 1A building; or

(b) a storey or part of a storey capable of accommodating not more than three vehicles, of a building not being of Class 1 or 1A;

"public corridor" means a corridor, hallway or the like which—

(a) serves as a means of egress from two or more sole-occupancy units to a required exit from the storey concerned; or

(b) is required by these by-laws to be provided as a means of egress from any portion of a storey to such an exit;

"public garage" means a garage that is neither a private garage nor designed, constructed or adapted for the servicing of vehicles, other than washing, cleaning or polishing;

"reinforced concrete" means concrete containing reinforcement embedded in such a manner that the two materials act together in resisting forces and complying with the requirements of Part 28;

"repair" means the reconstruction or renewal of any part of an existing building for the purpose of its maintenance but does not include alteration;

"required" means required by or under these by-laws;

"retaining wall" means a wall used to resist the lateral displacement of any material;

"rise" means the rise in storeys reckoned according to the provisions of by-law 17.1;

"roadway" in relation to any street, road or way, means the whole space between boundaries on either side of the road reserve;

"school" includes a university, institute of technology, agricultural college, primary or secondary school, teachers' training college, school of mines, theological college or similar establishment designed, constructed, or adapted for primary, secondary or tertiary education;

"section" when applied to a building means a portion of the building that is required to be separated from the remainder of the building as prescribed in Part 19 or Part 23;

"service station" means a garage that is not a private garage and which is designed, constructed or adapted for the servicing of vehicles, other than only washing, cleaning or polishing;

"self-closing", applied to a door or window, means equipped with an approved device designed to bring the door or window to the fully closed position immediately after each manual opening;

"shaft" means the walls and other parts of a building bounding a well or a vertical chute, duct, flue, or similar passage, but not a chimney or like part of a building intended for the discharge of hot products of combustion;

"site" in relation to a building, means the area of land comprised by the lot on which the building is, or is proposed to be, constructed;

"sleeper wall" means a masonry or concrete wall built under the ground storey of a building to which Part 41 applies and having no basement, as support for the floor and walls of the building;

"sole-occupancy unit" means a room or other portion of a building designed, constructed, or adapted for occupation by one owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier;

"solid" applied to a wall, means without cavities, vertical cores, or holes, or other voids, except those included within its individual masonry units;

"sprinkler system" means a system of water sprinklers within a building set to discharge automatically at a pre-determined temperature and conforming to the requirements of Australian Standard 2118 being Item 2 of the First Schedule;

"sprinklered" in relation to a building, means a building in which a sprinkler system has been installed;

"stairway" includes the treads and risers or a flight of stairs and the landings between flights;

"Standard Fire Test" means the Fire-resistance Test of Structures set out in Australian Standard 1 530, being Item 1 of the First Schedule;

"storey" means that space within a building which is situated between one floor level and the floor level next above, or if there is no floor above, the ceiling or roof above, but does not include—

(a) such a space in which the only use for which the space is designed, constructed, or adapted is for the accommodation of—

(i) lift shafts, stairways, or meter rooms; or

(ii) bathrooms, shower rooms, laundries, water closets, or other sanitary compartments; or

(iii) not more than three vehicles; or

(b) a mezzanine, except as provided in sub-bylaw (6) of by-law 17.1;

"structural member" means any building element whose main function is to support itself or other parts of the building, or both, together with any superimposed live, wind or earthquake loading;

"the Act" means the Local Government Act 1960;

"the council" means the council in whose municipal district a building is constructed or proposed to be constructed;

"the district" means the municipal district in which a building is constructed or proposed to be constructed;

"the surveyor" means the building surveyor as defined by the Act;

"topmost storey" means the uppermost storey of a building, whether constructed partly in the roof or not.

Certain Structures etc. Not to be Regarded as Storeys or Included in Calculation of Building Height

(2) For the purposes of these by-laws—

(a) 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, ventilation, lift, or other equipment, water tanks, or similar service units;

(b) in measuring the height of a building structures containing only heating, ventilation, lift or other equipment, water tanks or similar service units, bulkheads, pent houses, overstairs, ornamental towers, spires, domes, architectural features or decorations, or other superstructures constructed above the main roof of the building shall not be included unless their aggregate width exceeds one-fourth of the width of the frontage of the building.

References and Language

(3) In these by-laws, unless the contrary intention appears—

(a) a reference to a Part, by-law or Schedule refers to a Part of these by-laws, one of these by-laws, or a Schedule to these by-laws, as the case may require;

(b) a reference to a Division, sub-bylaw, paragraph or subparagraph refers to a Division of the Part, sub-bylaw of the by-law, paragraph of the sub-bylaw (or of the by-law, if it has no sub-bylaw), or subparagraph of the paragraph, as the case may be, in which the reference is made;

(c) a reference to a Form quoted by a numeral is a reference to the Form so numbered in the Third Schedule and a reference to a Specification quoted by a numeral is a reference to the Specification so numbered in the Fourth Schedule;

(d) a reference to a Table quoted by a numeral with or without a letter or other numerals is a reference to the Table contained in, or next following, the by-law, sub-bylaw, paragraph or subparagraph similarly referred to;

(e) language referring to a building in being shall be construed, with all necessary changes, for a proposed building, so that among other things—

(i) **********

(ii) a reference to a structural member of certain materials shall be construed as a reference to a proposed structural member which, if constructed as proposed, would be of those materials; and

(iii) a reference to the purpose of a building shall be construed as a reference to the purpose for which a proposed building is to be used on completion;

(f) a reference to a "building" shall be construed as a reference to an "entire building" or a "portion of a building", as the case requires;

(g) where a word is defined in these by-laws, every derivative of that word has a meaning corresponding with that definition;

(h) abbreviations and symbols for units and multiples and sub-multiples of units have the same meaning as they have ascribed to them in Australian Standard 1155 being Item 11 of the First Schedule; and

(i) the numerical values prescribed are subject to tolerances according to the Standard, Code or Specification concerned, normal trade practice, or good practice as the case may be.

Re-erection of Buildings

(4) For the purposes of these by-laws the re-erection of a building that has been removed and transported from another site, or from another location on the same site, shall be regarded as being the erection of a new building.

Saving and Transitional Provisions

Saving of Applications (including those Affected by Amendments to these By-laws)

1.4 (1) Where plans, drawings and specifications relating to the construction or alteration of a building on a site have been submitted to the council for its approval and, before the council has finally disposed of the matter — Amended by *G.G.* 27/3/75, p. 1030.

(a) these by-laws come into operation in the district or in that part of the district in which the site is located; or

(b) an amendment to these by-laws comes into operation in the district or in that part of the district in which the site is located,

the council shall deal with the matter in accordance with the by-laws in operation under Part XV of the Act in the district or that part of the district at the time when the plans, drawings and specifications were submitted.

Transitional Period to Follow Coming into Operation of these By-laws or Amendments Thereto

(2) Where plans, drawings and specifications relating to the construction or alteration of a building on a site are submitted to the council for its approval then, notwithstanding that those plans, drawings and specifications do not comply with these by-laws as in operation, at the time of their submission, in the district or in that part of the district in which the site is located, the council may approve of those plans, drawings and specifications if the council is satisfied that—

(a) if those same plans, drawings and specifications had been submitted to the council at some time during the period of three months prior to the date of their actual submission they would have complied with the by-laws then in operation under Part XV of the Act in the district or that part of the district; and

(b) no undue delay has been occasioned in the submission of those plans, drawings and specifications to the council.

Repairs to External Walls

1.5 Where for the repair of an external wall more than half its area must be renewed (whether because this part has fallen or must be taken down for any reason), the whole wall shall be brought into conformity with these by-laws as though it were a wall of a new building.

Alterations to Existing Buildings

Application of By-law

1.6 (1) This by-law applies wherever structural alterations are proposed for any building, irrespective of whether that building was erected before or after these by-laws came into operation in the district or in that part of the district in which the building is situated.

Certain Alterations Not Permissible

(2) Structural alterations shall not be approved if they would—

(a) unduly reduce the existing level of fire protection afforded to persons in the building;

(b) unduly reduce the existing level of resistance to fire of the building structure; or

(c) unduly reduce the existing safeguards against spread of fire to adjoining buildings.

Council May Require Entire Building to Conform in Some Cases

(3) The council may require that the entire building shall be brought into conformity with these by-laws as though it were a new building if—

(a) the proposed alterations, together with any other structural alterations completed or approved within the previous three years, represent more than half the total volume of the original building, measured over the roof and the external walls; or

(b) the council considers that the safety of persons accommodated in or resorting to the building, or the risk of the spread of fire to adjoining buildings, so warrants.

Alterations Associated with a Change of Use

(4) If structural alterations to a building are associated with a change of use from that of one Class of building to that of another, by-law 6.6 shall apply.

Exemptions

1.7 The following buildings and work are exempt from the provisions of these by-laws, that is to say—

(a) any building that is exempted by Statute;

(b) temporary offices and sheds used by builders, on or about the site of any building being constructed, repaired, altered or reinstated, or used by contractors in carrying out works for any public body or corporation on or about the site of the work and used exclusively for the purpose of that building or work; but that exemption shall, however, continue only during the time occupied in completing the building or work, and in any case shall not exceed the duration of building operations, except by special permission of the council;

(c) minor repairs not involving—

(i) replacement, addition or alteration of structural members; and

(ii) the cutting or building up of any opening in any wall;

(d) a cabin or chalet outside the metropolitan region to which the Local Government Model By-laws (Holiday Accommodation) No. 18 apply, but only to the extent to which those by-laws modify these by-laws; and

(e) any building the plans, drawings and specifications of which—

(i) were approved before these by-laws came into operation in the district or in that part of the district in which the building is situated; or

(ii) are approved pursuant to sub-bylaw (1) or (2) of by-law 1.4,

if that building is completed in accordance with and subject to the provisions of the by-laws in relation to which that approval was given.

GROUP II—GENERAL PROVISIONS

PART 2—LEGAL PROCEEDINGS AND NOTICES

Service of Notices etc

2.1 Where the council or an employee of the council is authorized by these by-laws to give to any person any notice, demand, direction or order—

(a) the notice, demand, direction or order may be signed by the clerk of the council or the surveyor; and

(b) service of the notice, demand, direction or order may be effected in accordance with the provisions of section 657 of the Act.

Notices to Other Authorities

Builder to Give Notice

2.2 (1) Every builder who intends to construct, alter, add to, underpin, demolish or remove any building shall, prior to the commencement of any work, give notice of that intention to any body, authority or instrumentality which is authorized under a law of the State to direct, regulate or approve the carrying out of any part of that building work.

Powers of Surveyor

(2) The surveyor may refuse to issue a building licence or demolition licence under the provisions of Part 8 unless or until satisfied that the provisions of sub-bylaw (1) have been complied with, and that the approval of such of the authorities therein mentioned as may apply to the particular case has been obtained, or may issue a building licence or demolition licence subject to compliance with the requirements of those authorities.

GROUP II—GENERAL PROVISIONS

PART 3—ENFORCEMENT AND INSPECTIONS

Power of Surveyor to Enter and Inspect

3.1 The surveyor may, at all reasonable times after receipt by the council of the notice mentioned in section 375 of the Act or his learning of the commencement of building operations in his district and until thirty days after his receipt of notice of completion of the building operations, enter and inspect any site, building, erection, structure or work, for the purpose of ascertaining whether the builder is complying or has complied with, or whether those building operations are exempt from, the provisions of these by-laws.

GROUP II—GENERAL PROVISIONS

PART 4.—PENALTIES

Offences and Penalties

Offences

4.1 (1) Where, by these by-laws, anything is directed, or forbidden, to be done, or authority is given to any person to direct, or forbid, anything to be done and that authority is exercised, any person failing or neglecting to do anything so directed, or doing anything so forbidden, commits an offence.

Penalties

(2) A person guilty of an offence against these by-laws is liable to the penalty expressly mentioned in relation to the offence, or, if no penalty is expressly mentioned, to a penalty not exceeding four hundred dollars.

GROUP II—GENERAL PROVISIONS

PART 5—ESTABLISHMENT OF FIRE ZONES

Definitions

5.1 For the purposes of this Part—

"town planning by-laws" means by-laws made by the council under section 248 of the Act or by the Governor under section 31 of the Town Planning and Development Act 1928;

"town planning scheme" means a town planning scheme prepared or adopted by the council that has taken effect and is in force under the Town Planning and Development Act 1928;

"town planning scheme in course of preparation" means a town planning scheme that has yet to take effect under the Town Planning and Development Act 1928, but which clearly defines the purposes for which the land proposed to be covered by the scheme will be permitted to be used once the scheme has taken effect;

"zoned" means zoned under town planning by-laws, a town planning scheme, or a town planning scheme in course of preparation.

5.2 **********

Declaration of Fire Zones

5.3 The council may, by resolution approved by the Minister, declare that any part of its district—

(a) zoned business or commercial; and

(b) meeting the requirements of by-law 5.8 or by-law 5.9,

shall be a primary or secondary fire zone, as the case may be.

Certain Adjacent Parts of Districts to be Included in the One Fire Zone

5.4 For the purposes of by-law 5.3 adjacent parts of a district that are—

(a) zoned business or commercial; and

(b) so situated that the minimum distance between their boundaries is less than 36 m,

shall be regarded as a single part of the district.

Fire Zones in Other Areas

5.5 The council may, by resolution approved by the Minister, declare that any defined part of its district—

(a) not zoned business or commercial; and

(b) meeting the requirements of by-law 5.8 or by-law 5.9,

shall be a primary or secondary fire zone, as the case may be.

5.6 **********

Alteration or Revocation of Fire Zone Declarations

5.7 A council may, by resolution approved by the Minister, vary or revoke a resolution made under by-law 5.3 or 5.5 and thereupon the fire zone established by that second-mentioned resolution shall be altered or abolished accordingly.

Primary Fire Zones: Requirements

5.8 A primary fire zone shall—

(a) be not less than 18 000 m² in area, measured exclusive of public reserves, public places, railways, and rivers; and

(b) include not fewer than four allotments of land.

Secondary Fire Zones: Requirements

5.9 A secondary fire zone shall—

(a) be not less than 9 000 m² and not more than 18 000 m² in area, measured exclusive of public reserves, public places, railways, and rivers; and

(b) include not fewer than four allotments of land.

Map and Register of Fire Zones

Council to Prepare

5.10 (1) The council shall cause to be prepared and kept a map and a register of the fire zones established within its district.

Details Required on Map

(2) The map shall show clearly and accurately the boundaries for the time being of every fire zone established within the district, and their designation as either primary or secondary fire zones.

Details Required in Register

(3) The register shall contain a copy of each resolution of the council establishing a fire zone in its district and of any resolution varying or revoking such a resolution.

Inspection of Map and Register by Public

(4) Any person may inspect the fire zone map and register without fee at any time during the normal office hours of the council.

Effect of Establishment of Fire Zones

5.11 A building shall not be constructed in a fire zone established pursuant to this Part unless it complies with such of the requirements of these by-laws relating to buildings in fire zones as are applicable to that building.

GROUP II—GENERAL PROVISIONS

PART 6—CLASSIFICATION OF BUILDINGS

Classification

The Classes of Buildings

6.1 (1) For the purposes of these by-laws, buildings and portions of buildings are classified as follows— Amended by *G.G.* 7/5/76, p. 1406.

(a) Class I: a single dwelling-house;

(aa) Class IA: a duplex, being two attached domiciles, each being complete and self-contained, and, when erected in a single occupancy residential area, being so designed as to give an external appearance of a single dwelling-house;

(b) Class II: a building containing two or more flats;

(c) Class III: residential buildings, being common places of abode for a number of unrelated persons, including—

(i) boarding houses, guest houses, hostels, and lodging houses;

(ii) the residential portions of hotels and motels;

(iii) the residential portions of schools;

(iv) the residential portions of institutional buildings accommodating members of the staff of the institution; and

(v) flats not included in paragraph (b) or paragraph (d);

(d) Class IV: flats in buildings that elsewhere are of Class V, VI, VII, VIII or IX, being in each case the only flat in the building;

(e) Class V: office buildings, being buildings for professional or commercial purposes, excluding buildings of Classes VI, VII, VIII, and IX;

(f) Class VI: shops and other buildings for the sale of goods by retail or the supply of services direct to the public, including—

(i) eating rooms, tea rooms, coffee rooms, cafes, restaurants, and milk and soft-drink bars;

(ii) the non-residential portions of hotels and motels;

(iii) hairdressers' and barbers' shops, public laundries, and undertakers' establishments; and

(iv) markets, sale rooms, show rooms and service stations;

(g) Class VII: buildings that are—

(i) warehouses, being buildings for the storage of goods only or for the display of goods for sale by wholesale;

(ii) public garages; or

(iii) fire stations;

(h) Class VIII: buildings that are—

(i) factories, being buildings in which a handicraft or a process in or incidental to the making, assembling, altering, repairing, renovating, preparing, ornamenting, finishing, cleaning, washing, or adapting of goods is carried on for trade, sale, or gain—

(A) those not containing a space of abnormal fire hazard within the meaning of paragraph (c) or (d) of Part D of the Second Schedule being of Class VIIIa; and

(B) those containing a space of abnormal fire hazard within the meaning of paragraph (c) or (d) of Part D of the Second Schedule being of Class VIIIb; and

(ii) laboratories—

(A) those not containing a space of abnormal fire hazard within the meaning of paragraph (c) or (d) of Part D of the Second Schedule being of Class VIIIa; and

(B) those containing a space of abnormal fire hazard within the meaning of paragraph (c) or (d) of Part D of the Second Schedule being of Class VIIIb;

(i) Class IX: buildings of a public nature, comprising—

(i) Class IXa being institutional buildings as defined in by-law 1.3; and

(ii) Class IXb being schools and other assembly buildings, as defined in by-law 1.3,

but excluding portions of such buildings that are of Class III or used as laboratories.

(j) Class X: outbuildings.

Classes VIIIa and VIIIb, IXa and IXb

(2) Unless the contrary intention appears, Class VIIIa and Class VIIIb are separate classifications and Class IXa and Class IXb are separate classifications.

Principles of Classification

(3) For the purposes of this by-law the classification of a building or portion of a building is determined by the purpose for which it is designed, constructed, or adapted to be used.

Multiple Classifications

(4) Where portions of a building each have different purposes, each such portion shall, subject to by-law 6.7, be separately classified in accordance with this by-law.

Doubtful Classifications

Council to Determine

6.2 (1) Where there is any doubt or dispute as to the classification of a building or portion of a building, the building shall be classified in such one of the classes mentioned in by-law 6.1 as the council considers appropriate.

Effect of Determination

(2) A classification so determined for a building or portion of a building shall be deemed to be its classification for the purposes of these by-laws.

Certificate of Classification

Preparation

6.3 (1) Where, after the commencement of the Local Government Act Amendment Act (No. 3) 1973, approval is given for the erection of a building the council shall—

(a) on completion of the building; or

(b) where it consents in writing to the occupation of portion of the building concerned before the completion of the entire building concerned,

prepare a certificate of classification, in duplicate, in the form, or to the effect, of Form 1.

Issue

(2) The original of the certificate shall be issued to the person on whose behalf the building was erected.

Inspection of Certificates

(3) The duplicate shall be retained in the council's office and shall be open to inspection free of charge by any person during the normal office hours of the council.

No Occupation Until Certificate is Issued

(4) A person shall not occupy any portion of a building until a certificate of classification has been issued in accordance with these by-laws.

Non-application to Class I or Class X Building

(5) This by-law does not apply to a Class I or X building.

Particulars to be Shown on Certificate of Classification

6.4 A certificate of classification shall show—

(a) the class or classes of building for which the building has been designed and approved; and

(b) where the building has portions differently classified, the portions to which each classification or group of classifications relates.

Certificate for a Building Occupied in Stages

Amended by *G.G.* 1/7/77, p. 2022.

6.5 Where a certificate of classification has been issued for portion of an uncompleted building and the council approves the occupation of a further portion of the building, it shall—

(a) revoke that certificate; and

(b) issue a further certificate of classification in accordance with by-law 6.3, covering all portions of the building for which approval to occupy has been given by the council.

Change of Use

Application of By-law

6.6 (1) This by-law applies to any building, whether erected before or after the commencement of the Local Government Act Amendment Act (No. 3), 1973.

Existing Buildings

(2) The use of a building in existence before the commencement of the Local Government Act Amendment Act (No. 3) 1973 shall not be changed from that of one Class to that of another Class unless—

(a) the building complies with the requirements of these by-laws applicable to the new Class; and

(b) the change of use has been approved by the council, but that approval shall not be withheld if the building complies with the requirements of these by-laws applicable to the new Class.

Buildings Erected After Commencement of the Amending Act

(3) A building erected after the commencement of the Local Government Act Amendment Act (No. 3), 1973, shall not be used for a purpose—

(a) not specified in the certificate of classification; or

(b) for which it is required that a certificate of classification be issued,

unless the building complies with the requirements of these by-laws applicable to the new purpose and the proposed use of the building.

Change of Use to be Notified

(4) Before making any change in the use of a building which would result in a change of classification under these by-laws, the person proposing to make that change shall notify the council in writing, setting out the nature of the proposed change of use.

New Certificate

(5) Upon approving a change of use the council shall—

(a) revoke any certificate of classification already in existence for the building;

(b) prepare a certificate of classification in accordance with by-law 6.3 in respect of the new use; and

(c) issue the original of that certificate to the person proposing the change of use.

Classification Where Portion of a Storey has an Ancillary Use

Heading. Amended by *G.G.* 1/7/77, p. 2022.
Amended by *G.G.* 1/7/77, p. 2022.

6.7 Where portion of a storey, not being a laboratory, is used for a purpose—

(a) for which a different classification applies; but

(b) ancillary to a purpose for which not less than ninety per cent of the floor area of the storey is used,

the council may determine that the classification applying to the major use shall apply to the whole of the storey.

Offences

6.8 Any person who uses or occupies or permits the use or occupation of a building in contravention of sub-bylaw (2) or sub-bylaw (3) of by-law 6.6 shall be guilty of an offence under these by-laws.

Penalty: Four hundred dollars and in addition a daily penalty of twenty dollars for each day during which the offence continues.

GROUP II.—GENERAL PROVISIONS

PART 7.—UNITED BUILDINGS

When Buildings are Deemed United

Requirements

7.1 (1) If two or more buildings abutting each other—

(a) are connected on every storey through openings in the walls dividing them from one another;

(b) collectively comply with all the requirements of these by-laws as though they were a single building; and

(c) are wholly in one occupancy,

they shall, for the purposes of these by-laws, be deemed to be united to form one building.

Council May Exempt Storeys from Being Connected

(2) A council may exempt united buildings from being connected on a storey so long as the means of egress from every portion of the building comply with the requirements of these by-laws.

Alterations in a United Building

7.2 If any alteration is made in two or more buildings that are deemed under by-law 7.1 to be united to form one building— Amended by *G.G.* 1/7/77, p. 2022.

(a) the united building; or

(b) each building forming portion of it,

shall after the alteration comply with all the requirements of these by-laws for a single building.

Procedure When Buildings Cease to be in One Occupancy

7.3 Where any buildings deemed to be united to form one building cease to be in one occupancy, the owner thereof or if the buildings are the property of different owners, then each such owner shall—

(a) give notice of the cessation of the one occupancy to the surveyor;

(b) forthwith submit plans and specifications of any work required in order that each building shall conform to the requirements of these by-laws; and

(c) have any work carried to completion, as early as practicable after issue of a building licence by the council.

Stopping Up of Openings

7.4 Any opening or gangway connecting openings between buildings deemed to be united to form one building shall be maintained until the consent of the council has been obtained to its being stopped up and that consent shall not be given unless and until each of those buildings conforms to the requirements of these by-laws.

Buildings may be Connected

7.5 Buildings not deemed to be united may with the approval of the council be connected by— Amended by *G.G.* 1/7/77, p. 2022.

(a) a doorway in an external wall or party structure opening onto a stairway, landing or passage, if that doorway is fitted with a fire door having a fire-resistance rating of not less than four hours and complying with the requirements of Australian Standard 1905 being item 3 of the First Schedule and that door is so hung as not to encroach, at any part of its swing, on the stairway, landing or passage; or

(b) an open gangway or bridge of fire-resisting construction.

GROUP II.—GENERAL PROVISIONS

PART 8.—BUILDING APPLICATIONS

Applications

Application for Licence

8.1 (1) Every builder intending to construct a building or alter, add to, repair or underpin, demolish or remove an existing building shall before commencing— Amended by *G.G.* 1/7/77, p. 2022.

(a) that construction, alteration, addition, repair or underpinning, demolition or removal; or

(b) any earthworks necessary for, or incidental to, that construction, alteration, addition, repair or underpinning, demolition or removal,

make written application to the council for a licence to commence that work.

Form and Lodging of Application

(2) Applications made under sub-bylaw (1) shall be in the form of Form 2 or 3, whichever is appropriate, and shall be lodged at the office of the surveyor.

Particulars to Accompany Application

Builder to Submit Drawings etc

8.2 (1) Every builder making application for a building licence shall deposit with the surveyor— Amended by *G.G.* 1/7/77, p. 2023; *G.G.* 16/6/78, p. 1920.

Building Details

(a) two complete sets of drawings (to a scale not less than 1:100) showing—

(i) a plan of every storey;

(ii) at least two elevations of external fronts;

(iii) one or more sections, transverse or longitudinal;

(iv) the heights of each storey;

(v) depth of foundations;

(vi) underpinnings;

(vii) levels of ground;

(viii) construction of the walls, floors and roofs; and

(ix) any other information that the surveyor may require,

all clearly figured and dimensioned;

Block Details

(b) a block and drainage plan (to a scale not less than 1:500) showing—

(i) street names, lot number, and title reference of the site with the north point clearly marked;

(ii) the size and shape of the site;

(iii) the dimensioned position of proposed new building and of any existing buildings on the site;

(iv) the relative levels of the site with respect to the street or way adjoining;

(v) the position and size of any existing sewers and existing stormwater drains; and

(vi) the position of street trees, if any, between the site and the roadway;

Specifications

(c) two copies of specifications describing materials to be used in the construction and, where not indicated on the drawings, the sizes thereof together with all other information not shown on the drawings, which is necessary to show that the building will, if constructed in accordance with the specifications, comply with the provisions of these by-laws;

Structural Calculations

(d) when required by the surveyor, a complete set of detailed calculations of the stresses and detailed drawings covering the structural members; and

Cost Estimate

(e) an estimate of the cost of the proposed construction and, when so required by the surveyor, the name and address of any registered architect, practising structural engineer or other person under whose supervision the construction is to be carried out.

Requirements as to Drawings

(2) The drawings referred to in sub-bylaw (1) shall be in ink on drawing paper or tracing cloth, or be approved duplicate prints, and shall not in any case be less in size than 594 mm x 420 mm (sheet A2).

New and Existing Work

(3) Any new work shall be clearly delineated on the drawings as distinct from existing work by colouring or other suitable means.

Particulars to Accompany Application for Demolition Licence

(4) An application for a licence to demolish or remove a building shall be accompanied by particulars of the location of the building, and such other particulars as the council may require.

Particulars of Levels to be Supplied where Earthworks Involved

(5) Without limiting the generality of subparagraph (vii) of paragraph (a) of sub-bylaw (1), where any alteration is proposed to the existing conformation of the ground on the site involving earthworks of any description the council may require the drawings referred to in that paragraph to show all levels, both new and old, clearly marked or indicated by contour lines or in such other manner as the council may direct.

Copies For Records

Copies to be Retained

8.3 (1) One copy of any drawing, plan, specification or calculation shall remain in the office of the surveyor as a permanent record.

Plans etc. May be Inspected By or With Consent of Owner

(2) The owner or mortgagee of any building or any person authorized in writing by the owner or mortgagee may, during the normal office hours of the council, inspect any plan or other document relating to that building retained pursuant to sub-bylaw (1).

Commencement of Work

Buildings or Alterations

8.4 (1) A builder shall not commence to construct, alter, add to or underpin any building and shall not commence any earthworks necessary for, or incidental to, that construction, alteration, addition or underpinning until— Amended by *G.G.* 28/9/79, p. 2999.

(a) the plans, drawings and specifications have been approved;

(b) the surveyor has stamped the plans, drawings and specifications with the official stamp showing the number of the application and the date of approval;

(c) the builder has paid the appropriate fee prescribed in Part 9; and

(d) a licence has been issued in the form of Form 4 or 5.

Demolition

(2) A builder shall not commence to demolish or remove any building until—

(a) he has paid the appropriate fee prescribed in Part 9; and

(b) a licence has been issued in the form of Form 7.

Examination of Drawings etc

Surveyor to Examine

8.5 (1) The surveyor shall examine all plans, drawings, and specifications deposited with him, but if any such plans, drawings or specifications are, in the surveyor's opinion, not in conformity with the requirements of this Part or not clear or not easily legible, or do not contain sufficient information, he may, within 14 days of their deposit with him, return them to the builder for amendment, and in that case the plans, drawings and specifications shall be considered as not having been deposited with the surveyor until re-submitted by the builder. Amended by *G.G.* 7/5/76. P. 1406.

Disapproval of Drawings etc

(2) If—

(a) the council; or

(b) the surveyor, acting pursuant to a delegation under paragraph (a) of subsection (1b) of section 374 of the Act,

refuses to approve any plan, drawing or specification, notice of the refusal to approve shall be given in writing to the builder and the reasons for the refusal to approve shall be stated in the notice.

Duration of Licence

Heading substituted by *G.G.* 28/9/79, p. 2999.

Building Licence

8.6 (1) A building licence in the form of Form 4 is void if the work covered by the licence (the building) is not substantially commenced within twelve months of the date of the issue of the licence; but at any time after the expiry of twelve months the approval of the council or the surveyor, as the case may be, to the plans, drawings and specifications previously approved may, if those plans, drawings and specifications are still in conformity with these by-laws, be again obtained subject to the payment of any further fees and the lodging of such further plans, drawings and specifications as the council or surveyor may at its or his discretion require.

Amended by *G.G.* 7/5/76, p. 1406: *G.G.* 28/9/79, p. 2999.

Demolition Licence

(2) A demolition licence in the form of Form 7 is void if the work covered by the licence is not commenced within twelve months of the date of the issue of the licence.

Buildings Left Incomplete

Time for Completion

8.7 (1) Where a licence is issued under these by-laws for the construction of a building that building shall be completed within twenty-four months of the date of the issue of the licence.

Consequences of Failure to Complete

(2) Where work on the construction of a building is commenced but is not completed within the time prescribed by sub-bylaw (1) the provisions of section 409A of the Act apply.

Departure from Drawings

8.8 No variation from or alteration of approved plans, drawings and specifications shall be made by any builder without the consent of the surveyor in writing having been first obtained, and any alteration or departure from the approved plans, drawings and specifications shall, on the consent of the surveyor therefor being notified, be drawn, described, and endorsed on and in the plans, drawings and specifications.

Preliminary Plans and Provisional Approvals

Plans May be Lodged With Owner's Consent

8.9 (1) Notwithstanding anything contained in this Part any person having paid the fees prescribed in item 7 of Part 9 may submit to the surveyor preliminary plans, drawings and specifications of any building proposed to be constructed, accompanied by the written consent of the owner of the site of the proposed building to the lodging of those plans, drawings and specifications for examination and report as to whether such proposal is capable of being executed in conformity with these by-laws.

Application for Provisional Approval

(2) Without limiting the operation of sub-bylaw (1) a person may apply to the council for its provisional approval of a proposed building, by lodging with his application—

(a) the fee prescribed in item 7 of Part 9;

(b) preliminary plans, elevations and sections of the proposed building; and

(c) such concise specifications or descriptions as the council may require to satisfy itself as to the nature of the building and its intended use.

Consideration by Council

(3) The council may after considering the report of the surveyor on an application made pursuant to sub-bylaw (2), give its provisional approval for the construction of the proposed building, if, when constructed, it would conform to these by-laws as in force, at the time of the making of the application, in the district or in that part of the district in which the building is proposed to be constructed.

Duration of Provisional Approval

(4) A provisional approval given pursuant to sub-bylaw (3) shall remain in force—

(a) where the cost of the proposed building exceeds $100,000, for a period of twelve months from the date on which it is given; and

(b) in every other case, for a period of six months from the date on which it is given.

Effect of Provisional Approval

(5) A provisional approval given pursuant to sub-bylaw (3) has the effect, notwithstanding any provision of these by-laws to the contrary, of enabling the person to whom it is given, during the period that it is in force, to procure the issue of a licence for the commencement of work on the proposed building, if the final plans, drawings and specifications are in conformity with the provisional approval and the fees prescribed in Part 9 are paid.

GROUP II.—GENERAL PROVISIONS

PART 9.—FEES

Scale of Fees

9.1 The scale of fees set out in Table 9.1 shall be chargeable by and received by a council on an application for any license, or for services to be rendered or provided under these by-laws, but in respect of buildings used for primary production, other than residences and outbuildings appurtenant thereto, the fees shall be one half of the rates prescribed in that scale of fees.

Amended by *G.G.* 2/4/76, pp. 1068-9.

TABLE 9.1

SCALE OF FEES

Amended by *G.G.* 24/12/76, p. 5098.

		$
1. Application Forms	For application form in every case	0.40
2. New Buildings and Additions	For a licence for a new building, and additions to an existing building—	
	(a) for each m² up to 500 m² (with a minimum fee of $10)	0.22
	(b) for each additional m² up to 1 000 m²	0.17
	(c) for each additional m² in excess of 1 000 m²	0.15
3. Alterations	For a licence for alterations to an existing building—	
	(a) for each m² up to 1 000 m² (with a minimum fee of $10)	0.17
	(b) for each additional m² in excess of 1 000 m²	0.12
	(c) for cutting an opening in an external, internal, or party wall when no other work is undertaken at the same time	5.50
	(d) for the construction of a patio the total cost of which does not exceed $500	6.00
4. Outbuildings or Swimming Pools (up to $700 value)	For a licence to construct or alter an outbuilding or a swimming pool where the total cost of the work does not exceed $700	6.00
5. Furnaces, Chimneys etc:	For a licence for the construction of a furnace, chimney shaft, or shaft for ventilation or for any other purpose (in addition to the fee for any other work undertaken at the same time)—	
	(a) if the height does not exceed 20 m	22.50
	(b) if the height exceeds 20 m	30.00
	(c) if the height exceeds 30 m for every metre or part of a metre in excess of 30 m an additional fee of	1.45
6. Flues:	For a licence to carry a flue from an oven, stove, steam-boiler, furnace or close fire into an existing flue	7.50
7. Preliminary Plans:	For an examination and report on preliminary plans— 25 per cent of the fees for a license, to carry out the work described in such plant.	
8. Shop Fronts:	For a licence to install a new shop front—	
	(a) if no structural alteration is required	11.00
	(b) if new girders or columns are required for each metre thereof (with a minimum fee of $18)	1.90
9. Transmitting Masts:	For a licence to erect a transmitting wireless mast attached to a building, for each metre or part thereof	1.12

		$
10. Dangerous Structure:	For survey and report on a dangerous structure	22.50
11. Computation Fees:	(a) in the case of building of reinforced concrete or steel framed construction—	
	(i) for each m² up to 500 m² (with a minimum fee of $6)	0.24
	(ii) the fee per m² shall be reduced by 5 cents for every 10 m² by which the area of the building exceeds 500 m² (with a minimum fee of 12 cents per m²);	
	(b) in the case of a building of brick or stone in which the floors are carried by internal pillars or columns, the fee shall be two-thirds the amount of the fee calculated under paragraph (a) of this item;	
	(c) for the purpose of calculating computation fees the building is measured over the outside of external walls at each floor level;	
	(d) in the case of alterations to existing buildings, the fee shall be assessed over the areas covered by such alterations:	
	(e) for reinforced concrete or fire-resisting floors including girders and beams	16.00
	(f) for reinforced concrete or fire-resisting floors, without girders and beams	8.00
12. Materials on Street:	For a licence for deposit of building material on a street—	
	(a) 25 cents for each month or part of a month, for each m² of the area of the street enclosed by any hoarding or fence; and	
	(b) 12 cents for each m² for each week of any renewal of such a licence.	
13. Demolition:	For a licence to demolish a building—	
	(a) for a building of not more than 2 storeys, per storey	2.50
	(b) for a building of more than 2 storeys, per storey	5.00

GROUP II—GENERAL PROVISIONS

PART 10—MATERIALS AND WORKMANSHIP—ADMINISTRATIVE PROVISIONS

Buildings to be Properly Constructed

10.1 Every part of a building shall be constructed in a good and workmanlike manner.

Suitability of Materials

Materials Dangerous to Health

10.2 (1) Materials which for any reason are dangerous to health, or that have been used in the construction of any cesspit, drain, or sewer, shall not be used in the construction of a building.

Faulty or Unsuitable Materials

(2) Faulty or unsuitable materials shall not be used in the construction of a building.

Council may Test Materials

(3) The council may test any material used or proposed to be used in the construction of a building, and may prohibit the use of any material which does not meet the relevant requirements of these by-laws or which is found to be unsuitable or unfit for the purpose for which it is intended.

Authentication of Materials and Forms of Construction

Council Prerogative

10.3 (1) Where it is proposed to use in any part of a building any material or form of construction that is required by these by-laws—

(a) to meet a specific performance requirement; or

(b) to comply with any standard rule or standard specification,

and the material or form of construction is not for the time being the subject of a declaration under sub-bylaw (4) declaring it to meet that requirement or comply with that standard rule or standard specification, as the case may require, the council may require that the application for a building licence shall be accompanied by satisfactory documentary evidence in support of the proposed use of that material or form of construction.

Form of Evidence

(2) The documentary evidence referred to in sub-bylaw (1) may be in one of the following forms—

(a) a report issued by a competent testing authority, showing that the material or form of construction has been submitted to the tests listed in the report, and setting out the results of these tests and any other relevant information that demonstrates its suitability for use in the building as proposed;

(b) an Accreditation Certificate, being a certificate that—

(i) has been issued by the Chief, Experimental Building Station, Department of Housing and Construction of the Australian Public Service;

(ii) relates the properties and performance of a material or form of construction that is referred to therein to a specific provision thereof; and

(iii) has not been revoked or cancelled by the said Chief; or

(c) any other form of satisfactory documentary evidence that, in the opinion of the council, correctly described the properties and performance of the material or form of construction and adequately demonstrates its suitability for use in the building as proposed.

Evidence re Fire-resistance Ratings

(3) The provisions of this by-law do not operate so as to permit the acceptance by the council for the purposes of by-law 20.1 or 20.2 of any evidence other than the evidence referred to in those by-laws.

Declarations by Minister

(4) The Minister may, on the recommendation of the Building Advisory Committee, declare any material or form of construction to be a material or form of construction that—

(a) meets a specific performance requirement; or

(b) complies with a certain standard rule or standard specification.

Cancellation of Declarations

(5) The Minister may, on the recommendation of the Building Advisory Committee, cancel a declaration made under sub-bylaw (4).

Adoption of Australian and Other Standards

Certain Provisions Not Included

10.4 (1) Wherever any by-law of these by-laws adopts by reference any standard, rule, standard specification, code of practice, or other document issued by the Standards Association of Australia or other body, this adoption, unless the relevant by-law specifies otherwise, shall not include the adoption of any provision—

(a) specifying or defining the respective rights, responsibilities, or obligations as between themselves of any manufacturer, supplier, or purchaser; or

(b) specifying or defining the responsibilities of any tradesman or other building operative; or

(c) requiring the submission for approval of any material, building component, or form or method of construction, or details thereof, to any person or body other than a person or body specifically empowered by the Act or these by-laws to give that approval; or

(d) specifying that a material, building component, or form or method of construction, or details thereof, shall be submitted to the Standards Association of Australia or a Committee of the Association for expression of opinion; or

(e) permitting a departure from any provisions of the standard rule, specification, code or practice, or other document at the sole discretion of the manufacturer or purchaser, or by arrangement or agreement between the manufacturer and purchaser.

Standards and Codes Amended

(2) A reference in any of these by-laws to a document mentioned in sub-bylaw (1) shall, unless the relevant by-law specifies otherwise, be deemed to be a reference to that document together with—

(a) all amendments thereto made before the inclusion of a reference to that document in the First Schedule; and

(b) such other amendments thereto as are specified in the First Schedule as at the date of application for a building licence.

GROUP II—GENERAL PROVISIONS

PART 11—SITE REQUIREMENTS

Interpretations

Frontage and Minimum Distance

11.1 (1) In and for the purposes of these by-laws— Amended by *G.G.* 29/2/80, p. 674.

(a) the width of the frontage of a site is deemed to be the distance measured in a horizontal plane at right angles to one of the boundaries of the side of the site from its intersection with the alignment of the street to the opposite boundary of the site or a prolongation of the boundary, and in the event of the side boundaries of the site not being parallel, the average of the distances so measured is the width of the frontage;

(b) where a corner of a site at the junction or intersection of any streets has been truncated—

(i) the width of the frontage shall be measured from a point at the intersection of the prolongations of the side and front boundaries of the site; and

(ii) the area shall be calculated as if the land thereby excised were portion of the site; and

(c) wherever a minimum distance of a wall from a boundary of the site is provided by the by-laws, that distance shall be measured horizontally from the boundary to the out-most projection from the exterior wall, but where a chimney back, not more than 1675 mm in width is projecting, the extent of the projection shall be determined by the horizontal distance by which the projection exceeds 355 mm.

Length of Wall

(2) In and for the purposes of this Part the length of a wall means its total length measured as if it were continuous in one plane, irrespective of any projection or set back between the exterior faces of outside walls of the building, but—

(a) the length of a portion of the wall containing windows of habitable rooms may be measured independently from the portion of the wall not containing those windows; and

(b) a setback with a minimum width of 1825 mm and a depth of 1525 mm or more from the face of the wall, allows the wall on either side of the setback to be measured independently.

Distances from Street Alignments in Residential Districts

Restriction on Construction of Buildings

11.2 (1) Except where authorized to do so under sub-bylaw (3), a person shall not construct a building or an addition to any building, in a residential district, so that any wall of the building or addition or any part of eaves projecting towards a street alignment of the site by more than one metre beyond a wall of the building or addition is— Amended by *G.G.* 27/3/75, p. 1030; *G.G.* 7/5/76, p. 1406; *G.G.* 29/2/80, p. 674.

(a) between the street alignment of the site and the building line fixed by the council, by by-law, for that particular street or that part of the street; or

(b) where no such building line has been fixed by the council, within 7.5 m of the street alignment that it is to face or is, where the site has a frontage to more than one street, within 7.5 m or such lesser distance as the council may fix, of the other street alignment or alignments.

Publication of Building Lines

(2) A building line when fixed by the council, by by-law, shall be clearly—

(a) marked upon a plan, together with the street alignment; or

(b) described in the resolution of the council pursuant to which the by-law is made,

and that plan or resolution shall be open for examination or perusal by the public, free of charge, during the normal office hours of the council.

Council May Grant Concession

(3) The council may, where it is satisfied that special circumstances warrant it so doing, authorize the construction of a building or an addition to a building in a position that would but for that authorization be contrary to sub-bylaw (1).

Swimming Pools

(4) A swimming pool is not a building for the purposes of this by-law, if no part of it is more than 600 mm above the natural surface surrounding it.

General Site Restrictions Applying to Class I, IA, II or III Buildings

Restrictions on Construction of Buildings

Amended by *G.G.* 29/2/80, p. 675.

11.3 (1) A person shall not construct—

(a) any building of Class I, IA, II or III on any site whereon there exists, or there is in the course of construction, or it is proposed to construct, any other building of any of those Glasses, unless the site is then subdivided into a separate site or sites satisfying the provisions of the Town Planning and Development Act 1928, and of this Part, with regard to any existing and any intended building, or unless the council approves of the construction of an additional building on an application that provides for the demolition of an existing building;

(b) any building of any kind on any space or part of any space existing between a Class I, IA, II or III building and the frontage of its site unless—

(i) the building to be constructed is an addition to or an extension of the existing building; or

(ii) the land or part of the land contained in the space between the existing building and the frontage of its site is comprised in a certificate of title other than that relating to the land on which the existing building is situated;

(c) any Class 1, 1A or III building so that the horizontal distance from any point on a site boundary to—

(i) any part of the building—is less than 750 mm;

(ii) any part of the building at the level of the lowest storey the floor of which is more than 1 830 mm above the natural ground level at that point—is less than 1 800 mm; or

(iii) any part of the building higher than every part to which subparagraph (ii) refers—is less than 3 300 mm; or

(d) any outbuilding which does not comply with the provisions of Part 53A.

Paragraph (a) of Sub-bylaw (1) Not to Apply to Certain Sites

(2) The provisions of paragraph (a) of sub-bylaw (1) do not apply to a site that is not located within—

(a) the metropolitan region;

(b) the municipal district of a town; or

(c) the boundaries of a townsite.

Dispersed Buildings

(3) The restriction imposed by paragraph (a) of sub-bylaw (1) does not apply to any building on an area which the council has set aside, under a town planning scheme or zoning by-law, as a special area for—

(a) motels or buildings of a similar nature; or

(b) buildings of a recreational and holiday facility nature.

Concession for Large Sites

(4) Notwithstanding the provisions of sub-bylaws (1) and (2) a person may construct two buildings of Class I, on a site within the metropolitan region if—

(a) the area of the site is not less than 1 ha;

(b) both buildings will be erected in a position that complies with all other provisions of these by-laws relating to site requirements in respect of separate sites; and

(c) the council is of the opinion that, in the circumstances of each case, the construction of two buildings on the site should be permitted.

Site Restrictions for Class I and IA Buildings

General

11.4 (1) A person shall not construct a Class I or IA building— Amended by *G.G.* 27/3/75, p. 1031; *G.G.* 29/2/80, p. 675.

(a) on any site having an area, in the case of a Class I building, of less than 557 m² or a frontage of less than 15 m, or in the case of a Class IA building, an area of less than 911 m² or a frontage of less than 20 m, except as provided by by-law 11.10;

(b) so that—

(i) the external walls of the building that face the rear boundary of the site have an average distance of less than 7.5 m from that boundary; or

(ii) the horizontal distance from any point on a boundary of the site, other than a street boundary, to a wall (including a footing wall or parapet wall) of—

(I) the building—is less than 900 mm;

(II) the lowest storey the floor of which is more than 1 830 mm above the natural ground level of the ground at that point—is less than 2 400 mm; or

(III) the building, where the wall is higher than the storey referred to in item (II) of this subparagraph—is less than 3 300 mm,

without, however, affecting the operation of by-law 11.17;

(c) having outbuildings which do not comply with by-law 11.17 and Part 53A;

(d) that, together with any buildings appurtenant thereto, is of a total gross area that—

(i) exceeds a plot ratio of .33;

(ii) [Deleted by *G.G.* 29/2/80, p. 675.]

(iii) exceeds a site coverage of .4; or

(iv) exceeds a maximum coverage prescribed under the provisions of sub-bylaw (1) of by-law 11.16;

(e) in such a position as to prevent reasonable access, to the rear of a domicile, by a driveway of at least 2400 mm in width, unless provision is made in the domicile itself for a garage; or

(f) without providing space, behind the building line, for the parking or standing of a motor vehicle or, in the case of a Class IA building, one motor vehicle for each domicile, either in the form of a garage or carport complying with these by-laws or of any other space.

Interpretation

(2) For the purposes of this by-law, the area occupied by a building includes the area occupied by outbuildings, but not unroofed terraces.

Concessions

(3) Notwithstanding the provisions of sub-bylaw (1)—

(a) a Class I building may be constructed on any site of which the subdivision whereby the site was created has been approved by the Town Planning Board under the provisions of the Town Planning and Development Act 1928, or by the Minister on appeal to him under section 26 of that Act;

(b) where an area has been zoned by the council as an area for the provision of accommodation for pensioners, a Class IA building may be constructed on a site in that area, of not less than 557 m²; but that building shall be used for the accommodation of pensioners only and then, for not more than two in any one unit of the building; or

(c) where a Class I building is to be constructed on a site that has a frontage to each of two intersecting streets, then, if the building is to be so sited that—

(i) the prolongation of its front, in either direction, will meet the boundary of one of those streets; and

(ii) not less than 140 m² of open space will be provided at its rear,

the council may permit the construction of a wall of the building within 7.5 m of a rear boundary of the site;

(d) a Class I or IA building may be constructed so that the external walls that face the rear boundary of the site have an average distance of less than 7.5 m from that boundary if the external walls that face another boundary of the site (not being a street boundary) have an average distance of not less than 7.5 m from that other boundary.

Special Provision for Areas Where Vehicular and Pedestrian Access are Separated

(4) Notwithstanding any other provisions in this by-law, the council may vary the setback distance in the case of a site—

(a) abutting both a street and a pedestrian way; and

(b) situated in an area subdivided and designed so that it is normal for vehicular access to a site in that area to be gained over a boundary of the site other than the boundary over which pedestrian access to that site is gained.

Calculation of Average Distance from Boundary

(5) In determining for the purposes of this by-law whether external walls have an average distance of less than 7.5 m from the site boundary which they face—

(a) the two most widely separated points on that boundary from which lines can be projected at right angles to meet those walls, shall be determined;

(b) the area enclosed by that boundary, lines projected at right angles from the two points referred to in paragraph (a), and those walls, shall be calculated;

(c) the area of a rectangle having one dimension of a length equal to the distance between the two points referred to in paragraph (a), and the other dimension of a length of 7.5 m shall be calculated;

(d) if the area calculated pursuant to paragraph (b) is less than the area calculated pursuant to paragraph (c), those walls shall be deemed to have an average distance of less than 7.5 m from that boundary.

Site Requirements for Class II Buildings

General

11.5 (1) A person constructing a Class II building shall construct it so that—

(a) in the case of a building having its respective walls parallel to the side and rear boundaries of the site, the distance of any wall or any appurtenances other than eaves from its nearest boundary is not less than that prescribed in Table 11.5 (1) for buildings of the number of storeys indicated in each case:

TABLE 11.5 (1).

CLASS II BUILDINGS: DISTANCE FROM BOUNDARIES

Number of Storeys	Distance from Boundaries (Metres)
1 to 3	3
4	4
5	5
6	6
7	7.1
8	8.1
9	9.1
10	10.2
Over 10	10.7

(b) in the case of a building having any wall or any appurtenances other than eaves not parallel to the boundary of the site nearest to it—

(i) the average distance of the wall from that boundary is not less than; or

(ii) the centre point of a straight line drawn from the foremost to the rearmost point of the building on that nearest site is not less than; or

(iii) no portion of the building projects beyond the line mentioned in subparagraph (ii) or is (within a minimum of 3 m) less than half,

the distance prescribed by paragraph (a), from that boundary;

(c) except where adequate mechanical drying apparatus is provided to the satisfaction of the surveyor, there is not less than 30 m of clothes line located at the rear or side of the building, for each laundry in the building;

(d) any external walls facing each other and containing windows to habitable rooms are not less than 6 m apart;

(e) the width of any court or area, having a depth of more than 6 m and walls fronting from its opposite sides, is at least equal to its depth;

(f) any window of a habitable room does not face into an enclosed court;

(g) no part of a building is within 7.5 m of any street alignment;

(h) spaces are provided to the satisfaction of the council for the exclusive use of the occupiers, behind the building line or (if none) at least 7.5 m from the street alignment, for the parking or standing of motor vehicles, on the basis of 1 1/3 vehicles per flat; and

(i) sufficient open space is provided for vehicles to be turned about on the site, without the necessity of their entering the street when being driven in reverse.

Frontages

(2) The council may prescribe frontages for flats, but a residential flat building shall not be constructed on a site with a frontage of less than 20 m.

Plot Ratio and Site Coverage

(3) The council may by by-laws prescribe plot ratios and site coverage not exceeding those set out in Table 11.5 (3), and in the case of single person flats may so prescribe densities not exceeding 296 per hectare.

TABLE 11.5 (3).

Plot Ratio and Site Coverage.

Percentage of Site Coverage	Plot Ratio
33	1
27.5	1.1
25	1.2
20	1.25
16.5	1.33

In the case of single person flats the plot ratio indicated above shall not apply where the number of flats involved does not exceed 296 to the hectare.

Area of Passages etc.

(4) Where a passage or access way provided in a Class II building exceeds 1 m in width, the area of the access way or passage shall for the purposes of this by-law and the definition of plot ratio in Part 1 be deemed to be the area that the passage or access way would have occupied if its width had been 1 m.

Site Restrictions Applying to Class III Buildings

General

11.6 (1) Where the zoning by-laws of the council permit the construction of Class III buildings in residential flat areas, those buildings shall comply with the provisions of by-law 11.5.

Clubs and Hotels

(2) Any residential club or hotel in a business or other area zoned for commercial or similar purposes shall be constructed so that it occupies not more than—

(a) 66 per cent of the total area of the site, which has a frontage to one street;

(b) 75 per cent of the total area of the site, which has a frontage to two streets; and

(c) 80 per cent of the total area of the site, which has a frontage to three streets.

Whole Site May be Occupied in Certain Cases

(3) Notwithstanding the provisions of sub-bylaw (2) the whole of the site may be occupied by one or more floors of the building if—

(a) no part of any such floor is used for sleeping accommodation;

(b) adequate natural or artificial means of lighting and ventilation approved by the surveyor is provided in conformity with Part 50; and

(c) the occupation of the site in that manner is not contrary to the provisions of any zoning by-laws or contrary to any lawful requirements of the council.

Site Restrictions Applying to Class IV Buildings

11.7 Any Class IV building shall have constructed therewith for the use of the occupants a space open to the air and without roof, which—

(a) shall have an area of not less than 42 m^2;

(b) may be provided in the form of a flat roof higher than that of the floor of the ground storey; and

(c) shall be of a dimension of not less than 3 m in any direction.

Site Restrictions for Class VI Buildings

Minimum Area and Frontage

11.8 (1) A person shall not construct any Class VI building (other than a kiosk) on a site, unless—

(a) the area of the site is, subject to sub-bylaw (2), not less than 185.5 m^2; and

(b) the frontage of the site is not less than 5 m.

Council May Approve Lesser Area

(2) Notwithstanding the provisions of paragraph (a) of sub-bylaw (1), where—

(a) the area of the site has been decreased by the widening of the street, to provide a setback; or

(b) the site, being contained in an area approved for shops, abuts a street that is wider than those outside the shopping area,

the council may permit the construction of a Class VI building on a site of such less area than 185.5 m^2, but not less than 139 m^2, as the council determines after consultation with the Commissioner of Public Health, as being sufficient to enable the site to be adequately drained.

Site Restrictions for Buildings of a Combination of Classes I and VI

Minimum Area and Frontage

11.9 (1) Subject to by-law 11.10 a person shall not construct a building that is a combination of Classes I and VI unless—

(a) the area of the site is not less than 557 m^2; and

(b) the width of the frontage of the site is not less than 15 m.

Shops in Front of Dwellings

(2) In a building that is a combination of Classes I and VI a shop shall not be constructed in front of the dwelling unless—

(a) the shop or in the case of two or more shops about to be constructed, one of those shops is connected to the dwelling so that when completed the whole will form one building and be in one occupation;

(b) the dwelling has a clear uninterrupted frontage of not less than 4.5 m, but the council may permit the dwelling to be located on the first floor over the shops with an unobstructed frontage and a separate fire-isolated staircase for the dwelling leading to the street; and

(c) any lock-up shop is isolated from the combined shop and dwelling and from any other lock-up shop by horizontal and vertical party structures.

Open Space Required

(3) A building that is a combination of Classes I and VI shall be provided with an open space as required for a Class I building.

Council May Permit Smaller Sites for Buildings of Class I or I and VI Combined

11.10 Notwithstanding paragraph (a) of sub-bylaw (1) of by-law 11.4 or paragraph (a) of sub-bylaw (1) of by-law 11.9, the council may permit—

(a) a Class I building, or a building of Classes I and VI combined, but not a Class IA building, to be constructed on a site smaller in area than 557 m^2 if the site comprises the whole of a lot shown on a plan of subdivision approved by the appropriate authority before the date on which these by-laws came into force in the district or in that part of the district in which the site is located;

(b) a Class I building, or a building of Classes I and VI combined, but not a Class IA building, to be constructed on a site not less than 371.5 m^2 in area which has been reduced below 557 m^2 by severance due to resumption by the council for street widening or other purposes.

Class V, VI, VII and VIII Buildings

11.11 The council may permit the ground floor of a Class V, VI, VII or VIII building to occupy the whole of the site so long as the requirements of these by-laws as to lighting are met, and adequate natural or artificial means of ventilation are provided to the approval of the council.

Special Restrictions on Sites Abutting Class I, IA, II. or III Sites

11.12 A person shall not construct a building of any class on land abutting land on which a Class I, IA, II or III building is or may be constructed unless the first-mentioned building is set back— Erratum *G.G.* 14/3/75, p. 908. Amended by *G.G.* 19/3/76. p. 828.

(a) at least 7.5 m from the street alignment; and

(b) at least 900 mm from the common boundary,

but this by-law does not apply where both the land and the abutting land are situated within a district other than a residential district.

Site Requirements for General Residential Zones

Types of Zone

11 13 (1) In this by-law—

(a) G.R. Duplex (Class IA) means a building comprising two complete and self-contained domiciles;

(b) G.R. Multiple 3 (Class II) means a building comprising three flats;

(c) G.R. Multiple 4 (Class II) means a building comprising four flats.

Saving

(2) Nothing in this by-law operates so as to prevent the construction, occupancy or use of a single family detached unit on a lot created by a subdivision approved under the Town Planning and Development Act 1928 prior to the definition and classification of the general residential zone in which the lot is comprised.

Construction in G.R. Zones to Conform with Table 11.13

(3) Notwithstanding anything to the contrary in this Part but subject to this by-law, a person shall not construct a building on a lot in a general residential zone, except in conformity with Part A, B or C of Table 11.13, as the class of the general residential zone may require.

TABLE 11.13

PART A—GENERAL RESIDENTIAL ZONE—CLASS 4 (G.R.-4)

Minimum Lot Area Square Metres	Minimum Effective Frontage Metres	Maximum Number of Dwelling Units D.U.	Maximum Plot Ratio P.R.	Minimum Number of Car Spaces	Minimum Setbacks from Boundaries Metres		
					Front	Side(s)	Rear
680	18	1 (single Family detached unit)	0.30	2 per D.U.	7.5	Minimum 2.4 on one side and 1.5 on the other or, where a garage is incorporated in the side of the structure, 1.5 on each side	7.5
1000	20	2 (G.R. Duplex)	0.30	2 per D.U.	7.5	3.0 per storey each side	7.5
1250	23	3 (G.R. Multiple 3)	0.30	2 per D.U.	9.0	3.0 per storey each side	7.5
1510	25	4 (G.R. Multiple 4)	0.30	2 per D.U.	9.0	3.0 per storey each side	7.5
2000	30	Multiple	0.30	5 D.U. or less 8 spaces	9.0	3.0 per storey each side	9.0
2520	35	Multiple	P.R. increases 0.000 625 for		9.0	3.0 per storey each side	9.0
3000	40	Multiple	each 25 m² increase in lot	6-20 D.U.—1.5 spaces for each D.U.	9.0	3.0 per storey each side	9.0
4000	50	Multiple	area between 2000 m² and 10 080 m²	Over 20 D.U.—30 plus 1.25 spaces for each D.U. in excess of 20	9.0	3.0 per storey each side	9.0
10080	60	Multiple	0.50		9.0	3.0 per storey each side	9.0

Where comprehensive architectural plans and designs of houses, such as are commonly known as "Patio Houses" are submitted for a minimum group of 4 dwelling units, the council has, with the consent of the Town Planning Board, a discretion to modify standard as follows:—

300	12	1 (Single family patio house)	0.35	1 per D.U.	6.0	Nil between patio houses, 3.0 at ends of each row	6.0

Where comprehensive architectural plans and designs are submitted for multi-unit development with a lot area of 1 ha the Minister may, after considering reports from the council and the Town Planning Board, modify any standard, other than the plot ratio, if he is satisfied that the modifications are both socially and aesthetically desirable.

Where comprehensive subdivision plans and development designs are submitted for precincts or neighbourhoods with a minimum area of 8 ha, the Minister may, after considering reports from the council and the Town Planning Board, modify any standard, if he is satisfied that the modifications are both socially and aesthetically desirable.

TABLE 11.13
PART B—GENERAL RESIDENTIAL ZONE—CLASS 5 (G.R.-5)

Minimum Lot Area Square Metres	Minimum Effective Frontage Metres	Maximum Number of Dwelling Units D.U.	Maximum Plot Ratio P.R.	Minimum Number of Car Spaces	Minimum Setbacks from Boundaries Metres		
					Front	Side(s)	Rear
450	16	1 (single family detached unit)	0.35	2 per D.U.	7.5	1.5 m per storey each side	7.5
900	20	2 (G.R. Duplex)	0.35	2 per D.U.	7.5	1.5 m per storey each side	7.5
1200	23	3 (G.R. Multiple 3)	0.35	2 per D.U.	9.0	1.5 m per storey each side	7.5
1510	25	4 (G.R. Multiple 4)	0.35	2 per D.U.	9.0	1.5 m per storey each side	7.5
2000	30	Multiple	0.35	5 D.U. or less 8 spaces	9.0	1.5 m per storey each side	9.0
2520	35	Multiple	P.R. increases 0.003 75 for		9.0	1.5 m per storey each side	9.0
3000	40	Multiple	each 25 m² increase in lot	5—20 D.U. 1.5 spaces for each D.U.	9.0	1.5 m per storey each side	9.0
4000	40	Multiple	area between 2000 m²	Over 20 D.U.—30 spaces plus 1 25	9.0	1.5 m per storey each side	9.0
6000	40	Multiple	and 9000m	spaces for each D.U. in excess of 20	9.0	1.5 m per storey each side	9.0
8000	40	Multiple			9.0	1.5 m per storey each side	9.0
9000	40	Multiple	1.4		9.0	1.5 m per storey each side	9.0
Where comprehensive architectural plans and designs of houses such as are commonly known as "row houses" are submitted for a minimum group of 4 dwelling units, the council has, with the consent of the Town Planning Board, a discretion to modify standards as follows:—							
220	10	1 (Single family row house)	0.50	1 per D.U.	6.0	Nil between row houses; 1.5 m at ends of each row	6.0

Where comprehensive architectural plans and designs are submitted for multi-unit development with a lot area exceeding 9000 m², the Minister may, after considering reports from the council and the Town Planning Board, modify any standard, other than plot ratio, if he is satisfied that the modifications are both socially and aesthetically desirable.

Where comprehensive subdivision plans and development designs for precincts or neighbourhoods are submitted for a minimum area of 4 ha the Minister may, after considering reports from the council and Town Planning Board, modify any standard, if he is satisfied that the modifications are both socially and aesthetically desirable.

TABLE 11.13

PART C—GENERAL RESIDENTIAL ZONE—CLASS 6 (G.R.-6)

Minimum Lot Area Square Metres	Minimum Effective Frontage Metres	Maximum Number of Dwelling Units D.U.	Maximum Plot Ratio P.R.	Minimum Number of Car Spaces	Minimum Setbacks from Boundaries Metres		
					Front	Side(s)	Rear
450	16.0	1 (single family detached unit)	0.35	2 per D.U.	6.0	1.5 per storey each side	6.0
700	18.0	2 (G.R. Duplex)	0.35	2 per D.U.	6.0	1.5 per storey each side	6.0
800	18.5	3 (G.R. Multiple 3)	0.35	2 per D.U.	7.5	1.5 per storey each side	6.0
900	19.0	4 (G.R. Multiple 4)	0.35	2 per D.U.	7.5	1.5 per storey each side	6.0
1000	20.0	Multiple	0.35	5 D.U. or less 8 spaces	9.0	1.5 per storey each side up to a max of 9.0	7.5
1510	25.0	Multiple	P.R. Increases 0.00625 for	5 to 20 D.U. 1.5 spaces for each D.U.	9.0	1.5 per storey each side up to a max. of 9.0	7.5
2000	30.0	Multiple	each 25 m² increase in lot		9.0	1.5 per storey each side up to a max. of 9.0	7.5
2520	35.0	Multiple	area between 1000 m²	20-50—30 spaces plus 1.25 spaces for	9.0	1.5 per storey each side up to a max. of 9.0	7.5
3000	40.0	Multiple	and 8000 m².	each D.U. in excess of 20	9.0	1.5 per storey each side up to a max. of 9.0	7.5
7000	40.0	Multiple		Over 50 D.U.—68 spaces plus 1 space	9.0	1.5 per storey each side up to a max. of 9.0	7.5
8000	40.0	Multiple	2.1	for each D.U. in excess of 50	9.0	1.5 per storey each side up to a max. of 9.0	7.5
Where comprehensive architectural plans and designs of houses, such as are commonly known as "town houses" are submitted for a minimum group of 4 dwelling units, the council has, with the consent of the Town Planning Board, a discretion to modify standards as follows:—							
150	6.0	1 (single family town house)	0.70	1 per D.U.	6.0	Nil	6.0

Where comprehensive architectural plans and designs are submitted for multi-unit development with a lot area exceeding 8000 m² the Minister may, after considering reports from the council and the Town Planning Board, modify any standard, other than plot ratio, if he is satisfied that the modifications are both socially and aesthetically desirable.

Provisions Applying in G.R. Zones

(4) Subject to the particular provisions of Table 11.13 the following provisions apply to all residential buildings in every general residential zone—

(a) *Lot Coverage by Buildings:* A residential building or buildings shall not occupy a greater percentage of a lot than is shown in Table 11.13 (4):

TABLE 11.13 (4)

LOT COVERAGE IN G.R. ZONES

On lots subject to a maximum plot ratio—	Maximum percentage of lot which may be covered by buildings.
Up to and including 0.7	35
From 0.7 up to and including 0.9	20
From 0.9 up to and including 1.1	16.66
Over 1.1	15

(b) *Distances Between Buildings on the Same Lot:* Where more than one building is constructed on a lot, all standards shall be observed, as though the development were a single structure. In addition, the minimum distance between two buildings shall be 9 m or that required under the formula set out below, whichever is the greater. The formula regulating the minimum distance between any buildings (referred to as "Building A" and "Building B") is as follows:

$$D = \frac{L^A + L^B + 2(H^A + H^B)}{6}$$

where

D is the required minimum horizontal distance between any wall of Building A and any wall of Building B or the vertical prolongation of either.

L^A is the total length of Building A. The total length of Building A is the length of that portion or portions of a wall or walls of Building A from which, when viewed from directly above, lines drawn perpendicular to Building A will intersect any wall of Building B.

L^B is the total length of Building B. The total length of Building B is the length of that portion or portions of a wall or walls of Building B from which, when viewed from directly above, lines drawn perpendicular to Building B will intersect any wall of Building A.

H^A is the height of Building A. The height of Building A is the height above natural ground level of any portion or portions of a wall or walls along the length of Building A. Natural ground level is the mean level of the ground immediately adjoining the portion or portions of the wall or walls along the total length of the building.

H^B is the height of Building B. The height of Building B is the height above natural ground level of any portion or portions of a wall or walls along the length of Building B. Natural ground level is the mean level of the ground immediately adjoining that portion or portions of the wall or walls, along the total length of the building.

The minimum required distance between two buildings as derived from the formula set out in this paragraph may be reduced by 15 per cent if—

(i) either of the buildings has a height of two storeys or less and the other has a height of six storeys or more; and

(ii) the difference between the heights of the two buildings is 18 m or more.

Single storey covered parking areas shall not be regarded as separate buildings for the purposes of this paragraph.

(c) *Setbacks for Lots with Multiple Street Frontages:* Setbacks from all effective street frontages shall conform to the standards for front boundaries, except in the case of a lot at a corner of intersecting streets, where the minimum setback from not more than one secondary street is reduced to one-half the minimum setback from the effective frontage to the primary street or streets.

(d) *Sizes, Location and Design of Car-parking, Natural Planting and Pedestrian Spaces on Lots:* The minimum dimensions of every required car-parking space shall be 5.4 m x 2.4 m excluding all access drives. A minimum of 50 per cent of the area of every lot shall be designed, developed and maintained as natural planting and pedestrian space (access driveways between street alignment and setback line may be included in the 50 per cent of the area maintained as natural planting). When considering any development application, the council shall have regard to and may impose conditions on, the details of locating and designing the required car-parking spaces, natural planting and pedestrian spaces on the lot. In particular, the council shall take into account, and may impose conditions concerning—

(i) the proportion of car spaces to be roofed or covered;

(ii) the proportion of car spaces to be below natural ground level;

(iii) the means of access to each car space and the adequacy of any vehicular manoeuvring area;

(iv) the location of the car spaces on the site and their effect on the amenity of adjoining development, including the potential effect, if those spaces should later be roofed or covered;

(v) the extent to which car spaces are located within required building setback area;

(vi) the locations of proposed public footpaths, vehicular crossings or private footpaths, within the lot, and the effect on both pedestrian and vehicular traffic movement and safety;

(vii) the suitability and adequacy of proposed screening or natural planting; and

(viii) the suitability and adequacy of elevated structural decks for development and service as a proportion of the required area for natural planting and pedestrian space.

Powers Reserved to Minister

Provisions May be Varied in Public Interest

11.14 (1) Notwithstanding the provisions of by-law 11.13, where the Minister determines that the public interest is better served by not requiring strict adherence to the standards imposed by that by-law, he may, on the recommendation of the council or the Town Planning Board, in a particular case, vary a provision relating to a general residential zone.

Notice of Intention to Vary Provision: Objections

(2) The Minister shall cause a notice of his intention to vary a provision under sub-bylaw (1) to be published in the *Government Gazette* and a newspaper circulating in the general residential zone, notifying persons interested that they may, by notice in writing to an address stipulated, object to the variation within a period of 28 days from the date of the last publication of the notice.

Consideration of Objections to Variation

(3) The Minister may, after considering any objections he may receive to the variation of a provision under sub-bylaw (1)—

(a) proceed to vary the provision, in the manner notified;

(b) proceed to vary the provision, subject to modifications of the manner notified; or

(c) elect not to proceed with the variation,

and notice of the Minister's decision shall be published in the *Government Gazette* and be sent to every person who objected to the variation.

Declaration of General Residential Zones

11.15 The council may declare a portion of its district to be a general residential zone, if that portion—

(a) is within the metropolitan region and has been classified by the council as Class 4 (G.R.4), Class 5 (G.R.5) or Class 6 (G.R.6) under a Town Planning Scheme prepared or adopted by the council and approved by the Minister for Town Planning or under an amendment to that scheme duly prepared or adopted and approved under the Town Planning and Development Act 1928, subsequent to the 30th October 1963;

(b) is within the metropolitan region and is defined as a general residential zone and so classified by the Metropolitan Region Planning Authority under the Metropolitan Region Town Planning Scheme Act 1959; or

(c) is outside the metropolitan region and

(i) is within a townsite, or other area specified in the declaration and is classified by the council as a Class 4 (G.R. 4); or

(ii) is classified by the council as Class 5 (G.R. 5) or Class 6 (G.R. 6) under a Town Planning Scheme prepared or adopted by it and approved by the Minister for Town Planning or under an amendment to that scheme so prepared or adopted and approved under the Town Planning and Development Act 1928, subsequent to the 30th October 1963.

Maximum Plot Ratios and Site Coverage

11.16 The council may, by by-laws, prescribe maximum plot ratios and site coverages for any part of its district, but so that— Amended by *G.G.* 29/2/80, p. 675.

(a) in any area designated by the council as a single occupancy residential area, in the case of Class 1 or 1A buildings—

(i) the plot ratio does not exceed 0.5; and

(ii) the site coverage does not exceed 0.4:

(b) in any area designated by the council as a residential flat area, the plot ratio and site coverage do not exceed those set out in Table 11.5 (3); and

(c) in any other area the plot ratio does not exceed five.

Special Provisions Relating to Distance of Walls from Boundaries

11.17 Notwithstanding any other provision of this Part—

(a) a wall of a building of unprotected metal or timber framed construction shall not be constructed nearer than 1200 mm to the boundary of an allotment not in the same occupancy as the site, or in the case of a site in a commercial or industrial area, nearer to such a boundary than 2100 mm or a distance equal to the height of the wall, whichever is the greater;

(b) a wall of a building having a timber frame and an outer veneer of masonry or concrete shall not be constructed nearer than 900 mm to the boundary of an allotment not in the same occupancy as the site.

Town Planning Scheme to Prevail

11.18 Where and to the extent that there is inconsistency between provisions of this Part or Part 53A in force in a district or part of a district and a town planning scheme in force under the Town Planning and Development Act 1928, in that district or part of a district, the provisions of that scheme prevail.

GROUP III—BUILDINGS IN COURSE OF ERECTION OR DEMOLITION

PART 12—PRECAUTIONS DURING CONSTRUCTION

Licences Under Section 377 of the Act

12.1 A licence issued under section 377 of the Act shall be in the form of Form 6.

Hoardings

General

12.2 (1) The erection, maintenance, lighting and removal of hoardings and fences shall be carried out in accordance with the provisions of Part XV of the Act and with such other requirements as the surveyor may specify in order to ensure the safety and convenience of the public.

Limit of Encroachment

(2) A hoarding or fence erected pursuant to Part XV of the Act, or under a licence issued under section 377 of the Act shall not encroach past half the width of the public footway, at pavement level.

Protection of Adjacent Property

Shoring and Underpinning

12.3 (1) Where an excavation or demolition is to be made in proximity to an existing building the walls of that building shall be shored or underpinned, or both, and be so protected as may be necessary to ensure stability. Amended by *G.G.* 3/11/78, p. 4195.

Additional Precautions

(2) Where the foundation of an existing building is of material likely to become unstable as a result of the excavation of adjoining ground, additional precautions, to the satisfaction of the surveyor shall be taken to ensure its stability.

Building Work Affecting Building of Adjoining Owner

(3) The provisions of section 391 of the Act apply to and in relation to building work described in subsection (1) of that section.

Damage by Vibration

(4) Where any building operations or earthworks involve the use of equipment that may, in the opinion of the council, cause damage by vibration to the property of an owner of land in the vicinity of the land on which such operations or earthworks are carried out, the council may impose requirements as to the manner of carrying out such operations or earthworks for the purpose of minimizing such damage, and effect shall be given thereto.

Protection of Excavation

12.4 Every excavation for a building shall be properly guarded and protected and shall, where necessary, be sheet piled so as to prevent caving in of the adjoining earth or pavement, and in any case required by the surveyor, sheetpiling of an approved type shall be utilised to protect the subsoil from damage by scour of subsoil or surface waters.

Storage of Material on Streets etc

Permissible in Certain Circumstances Only

12.5 (1) A builder shall not deposit or store any material whatever on a street, way, or other public place except for the purpose of immediate transportation of that material onto the building site or ground being used for the purposes of building operations, and the deposit and transportation shall be carried out as expeditiously as possible, and at such times, as in special circumstances the surveyor may direct, so as to cause the least possible obstruction to traffic on the street or way, and with due precautions for the public safety and convenience.

No Restriction Where Licence has been Obtained

(2) Any part of the street or way for which the builder has procured a licence for use and enclosure by a hoarding, shall be deemed part of the building site for the purposes of this Part for the period covered by that licence.

Provisions of Fire Services Heading inserted by *G.G.* 9/12/77, p. 4581.

Fire Mains to be Progressively Installed in Certain Buildings

12.6 (1) Where a building that will, when constructed, exceed two storeys or 9 m in height is required under by-law 27.2 to be provided with a fire main, the fire main shall, so far as is practicable, be installed progressively during the construction of the building so as to be available and ready for use not more than two storeys or 9 m below the highest formed floor of the building. Inserted by *G.G.* 9/12/77, pp. 4581-2.

Provisions Applying to Fire Mains Referred to in Sub-bylaw (1)

(2) The following provisions apply to a fire main that is required by sub-bylaw (1) to be installed progressively during the construction of a building, that is to say—

(a) a water supply shall be provided in the fire main;

(b) where required by Specification No. 4 a fire brigade booster connection shall be provided in accordance with that Specification and such connection shall be available for use immediately after installation;

(c) hydrant valves fitted with instantaneous female couplings conforming with British Standard 336 being item 47 of the First Schedule shall be provided from the fire main so that not more than 36 m of hose will be needed to fight a fire on any storey to which the fire main has been progressively installed;

(d) approved hose reels complete with hose of not less than 19 mm diameter shall be provided and installed in such numbers and locations as would be required to service the building when completed.

Other Provisions not Affected

(3) Nothing in this by-law affects the provisions of Part 27 or Specification No. 4.

GROUP III.—BUILDINGS IN COURSE OF ERECTION OR DEMOLITION

PART 13.—DEMOLITION

Licence to Take Down Buildings

13.1 A licence issued under section 374A of the Act shall be in the form of Form 7.

Demolition of Buildings

13.2 Any person demolishing or removing any building or part of a building shall ensure that— Amended by *G.G.* 28/9/79, p. 2999.

(a) before any demolition work commences, the health surveyor of the council has provided a certificate that the building to be demolished has been treated so as to ensure that it is not infested by rodents;

(b) the provisions of the Construction Safety Act 1972, and the regulations in force from time to time under that Act are complied with in relation to the demolition work;

(c) no part of an external wall abutting on a street or way is demolished, except during such hours as are permitted by the surveyor;

(d) materials removed or displaced from the building are not placed in any street or way, and before commencing work, as the case requires, are kept sprayed with water so as to prevent any nuisance from dust;

(e) no materials removed or displaced from the building being demolished or materials left standing are burned on the demolition site;

(f) the council is notified of the existence of any septic tank on the demolition site seven days prior to the emptying and filling of the tank;

(g) any septic tank on the demolition site is either emptied and filled with clean sand, or removed entirely, and that any soak-well, leach drain or similar apparatus is removed or filled with clean sand;

(h) a footpath deposit is lodged with the council to cover the cost of any damage caused to footpaths during the demolition operation, against which the actual cost of repairing any damage will be charged and any unexpended balance refunded to the person taking out the licence, and that if the cost of repairs is in excess of the deposit lodged the amount of the excess is paid on demand to the council;

(i) where necessary, a temporary crossing place is constructed over the footpath as specified by the council; and

(j) the demolition site is cleared, and left clean and tidy to the satisfaction of the surveyor, within 90 days of the commencement of the demolition work.

GROUP IV.—BUILDINGS IN RELATION TO PUBLIC ROADS

PART 14.—HEIGHT IN RELATION TO WIDTH OF ROADS

Maximum Building Height

Method of Calculation

14.1 (1) No portion of any building shall project beyond the continuation of a line drawn from the ground level at the building line on the opposite side of the street to a point at the centre of the building vertically above the building line thereof at a height equal to twice the horizontal distance between those two building lines.

Frontages to Two Streets of Equal Width

(2) The maximum building height in respect of a site having a frontage to two streets equal in width shall be taken from the permanent footpath level at the centre of the frontage to the street at the higher level.

Frontages to Two Streets of Unequal Width

(3) The maximum building height in respect of a site having a frontage to two streets differing in width, shall be determined by the wider street for a depth of twice the width of the street from that wider street, and by the narrower street for any balance of the depth from the wider street.

Width of Street

(4) For the purposes of this by-law the width of a street is determined by measuring at right angles from the building line at the centre of the frontage of the building, to the opposite building line of the same street.

GROUP IV.—BUILDINGS IN RELATION TO PUBLIC ROADS

PART 15.—PROJECTIONS BEYOND ROAD ALIGNMENTS

Construction of Projections

Materials

15.1 (1) Every coping, cornice, string course, fascia, window dressing, portico, balconette, bridge connecting buildings, ballustrade, architectural projection or decoration, where projecting beyond the street alignment, shall be of brick, tile, stone, artificial stone, slate, cement, or other fire-resisting material approved for the purpose by the council.

Not to be Part of Structural Design

(2) A projection mentioned in sub-by-law (1) shall not form part of the structural design of the building.

Minimum Height Above Pavement

15.2 A projection shall not extend beyond the street alignment at any height less than 2700 mm from the level of the public footway but the provisions of this by-law do not apply to—

(a) footings constructed in accordance with the provisions of Part 33; or

(b) mouldings constructed in accordance with Part 53.

Limits of Projection

Fixed by Act or by Reference to Street Width

15.3 (1) No part of an awning, verandah or balcony of a cantilever type shall encroach over a street, way or other public place to a greater distance than that provided for by subsection (2) of section 400 of the Act, and no other projection shall extend beyond the street alignment more than—

(a) 900 mm in a street exceeding 12.2 m in width; or

(b) 600 mm in a street 12.2 m or less in width.

No Projections in Certain Streets

(2) A projection shall not be permitted in a street or way of less than 6 m in width.

Window Balconies etc

15.4 A balcony shall not encroach over a street, way or public place to a greater distance than that provided by subsection (2) of section 400 of the Act, and a balcony, balconette, window or turret shall not project more than 900 mm beyond the street alignment in a street over 12.2 m in width, or more than 600 mm in a street from 10 m to 12.2 m in width, and—

(a) any part of a projection where it overhangs a street shall be not less than 2700 mm above the level of the street and be not nearer than 1200 mm to the centre of the nearest party wall or to any adjoining building or allotment not in the same occupation;

(b) the aggregate length of any projections shall not exceed one-half of the length of the wall of the building on the level of the floor on which the projections are made;

(c) a projecting window shall not exceed a total overall width of 3600 mm and the distance between any two projecting windows shall not be less than one-half of the aggregate width of those windows;

(d) projecting windows shall not be connected by a balcony having any portion projecting beyond the street alignment; and

(e) a projection shall be constructed of fire-resisting materials to the satisfaction of the council.

Timber Window Shutters

15.5 Notwithstanding the provisions of this Part, louvred window shutters are permitted if they project not more than 50 mm beyond the street alignment when in the fully open position.

Service Pipes

15.6 Service pipes shall not project unless at least 2700 mm above the public footway and then not more than 200 mm beyond the street alignment, and rainwater heads shall not project more than 300 mm beyond that alignment.

Gates, Doors etc. Abutting on Street

15.7 A person shall not construct or hang any gate, door, window, or shutter in such a manner that any part of the gate, door, window or shutter when being opened projects over any street or way at a height less than 2700 mm above the level of the pavement.

GROUP V—FIRE SAFETY AND FIRE RESISTANCE

PART 16—FIRE-RESISTING CONSTRUCTION OF BUILDINGS

Certain Buildings to be of Certain Types of Construction

The Buildings and Types of Construction Concerned

16.1 (1) Unless otherwise permitted by these by-laws buildings of Classes II to IX inclusive shall be erected in one of the following types of construction—

(a) Type 1, in accordance with by-law 16.7.
(b) Type 2, in accordance with by-law 16.8.
(c) Type 3, in accordance with by-law 16.9.
(d) Type 4, in accordance with by-law 16.10.
(e) Type 5, in accordance with by-law 16.11.

The Buildings Deemed to be of Fire-resisting Construction

(2) For the purpose of these by-laws, a building that meets the requirements of this Part for one of the types of construction described in sub-bylaw (1) shall be deemed to be a building of fire-resisting construction.

Order of Fire-resistance of the Types of Construction

(3) Type 1 construction shall be deemed to be the most fire-resistant and Types 2 to 5 the successively less fire-resistant of the types of fire-resisting construction.

Type of Construction in a Particular Building

Type Required

16.2 (1) The type of fire-resisting construction required in a building shall be the least fire-resistant type of construction permissible—

(a) under Part 17 if the building is not in a fire zone; or

(b) under Part 18 if the building is in a fire zone.

Types Permissible

(2) A building that is required by Part 17 or Part 18 to be of a particular type of fire-resisting construction may be erected in a more fire-resistant type of construction.

Class IV

(3) The structual members of a Class IV section of a building shall be of the same fire-resisting construction as is required for corresponding members in the building of which it is part.

Fire-separated Sections of a Building

16.3 Each section of a building that is fire-separated according to Part 23 from the remainder of the building shall be subject to this Part as though it were itself a building.

Fire Protection for a Support of Another Part of a Building

Protection Required

16.4 (1) A part of a building that gives direct or indirect vertical support to another part required to have a fire-resistance rating shall have a fire-resistance rating not less than the greater of—

(a) the fire-resistance rating required for the part it supports; and

(b) the fire-resistance rating, if any, required for the part itself,

and be non-combustible if the part it supports is required to be non-combustible.

Non-essential Members Excepted

(2) The support of any wall, floor or roof referred to in sub-bylaw (1) of this by-law means the direct support and does not include any lateral member of a floor system connected to any wall, roof or floor and not essential for the normal structural stability of the wall, roof or floor.

Certain Materials Permissible where Non-combustible Materials are Required

16.5 The following materials, though combustible or containing combustible fibres, may be used wherever these by-laws require a non-combustible material— Amended by *G.G.* 29/2/80, p. 675.

(a) plasterboard;

(b) perforated gypsum lath with a normal paper finish;

(c) fibrous-plaster sheet conforming to Australian Standard 2185 being item 4 of the first Schedule.

Exposure to Fire-source Features

The Features in Relation to a Building

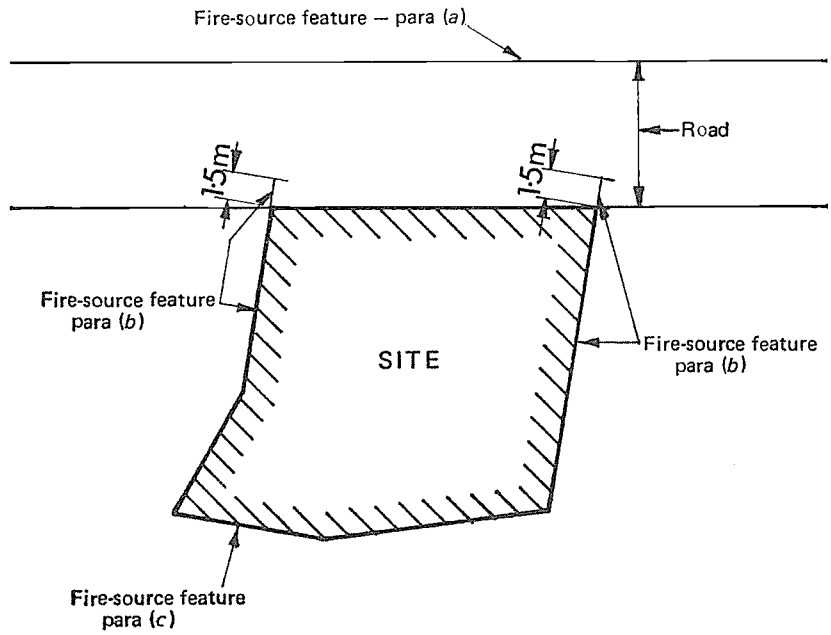
16.6 (1) "Fire-source feature" means, in relation to a building, and as the case requires— Amended by *G.G.* 7/5/76, p. 1406; *G.G.* 1/7/77, p. 2023.

(a) the farther boundary of a road adjoining the site; or

(b) a side boundary of the site, together with a 1.5 m straight projection of that boundary onto the road; or

(c) a rear boundary of the site; or

(d) an external wall of another building, not of a Class I, IA or X, that stands on the site.



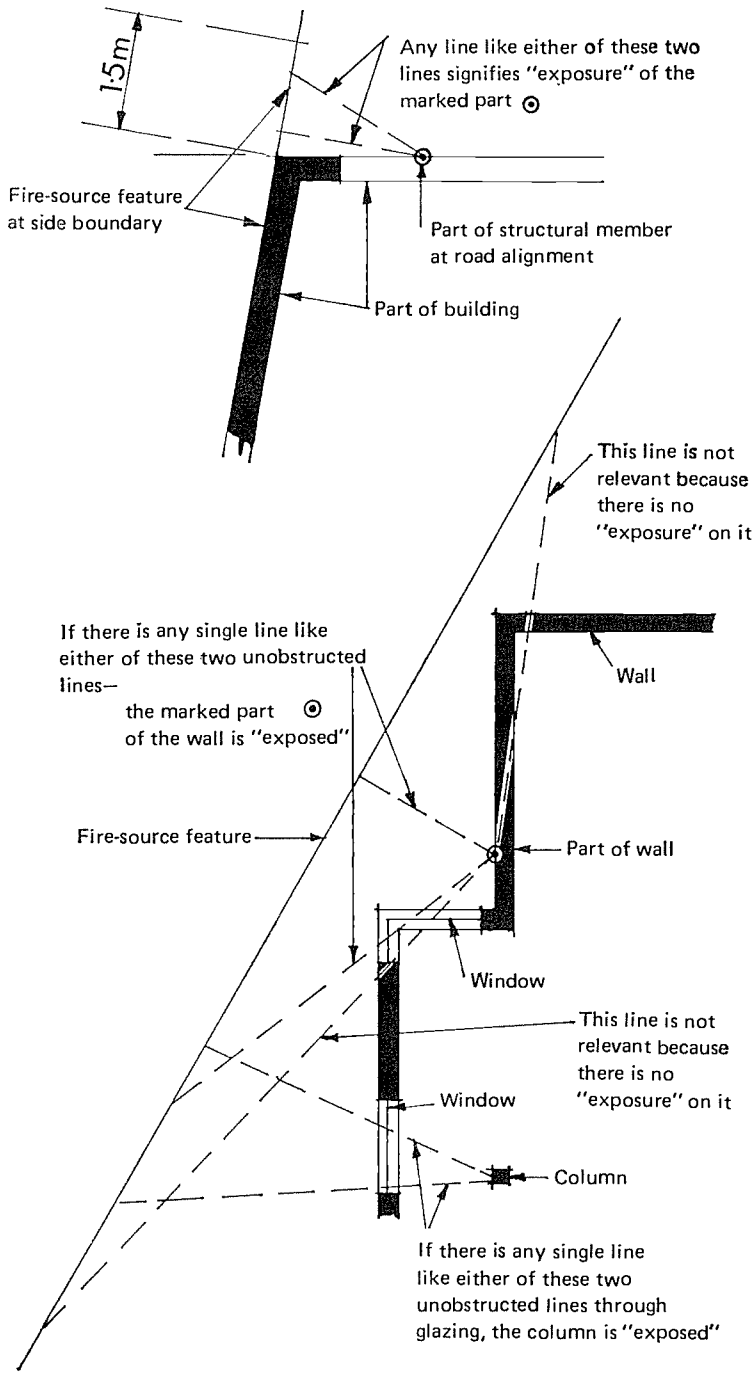
PLAN ILLUSTRATING SUB-BYLAW (1)
OF BY-LAW 16.6

Where the Exposure is Deemed to Occur

(2) Except as in sub-bylaw (3), a part of a structural member shall be deemed to be exposed to a fire-source feature if any of the horizontal straight lines between that part and the fire-source feature, or a vertical projection thereof, is not obstructed by another part of the building that—

(a) has a fire-resistance rating of not less than ½ hour;

(b) is neither transparent nor translucent.



PLANS EACH ILLUSTRATING SUB-BYLAW (2) OF BY-LAW 16.6

Where a Fire-source Feature is to be Neglected

(3) A part of a structural member shall not be deemed to be exposed to a fire-source feature if—

(a) the fire-source feature is an external wall of another building that stands on the site and the part concerned is more than 15 m above the highest part of that external wall; or

(b) the fire-source feature is a side or rear boundary of the site and the part concerned is below the level of the finished ground at every relevant part of the boundary concerned.

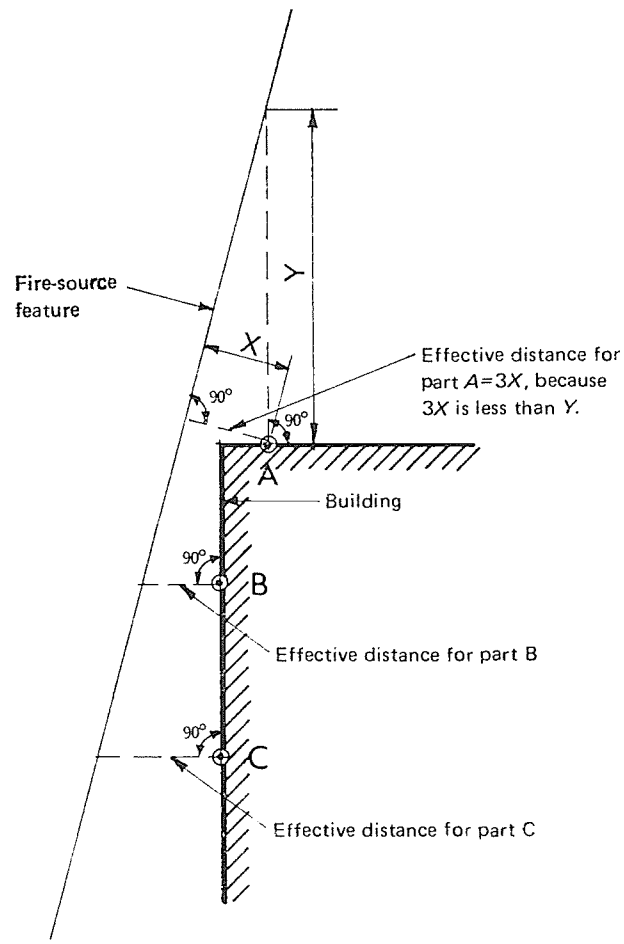
Effective Distance and its Determination

(4) The "effective distance" between a part of a structural member and a fire-source feature to which it is exposed means the lesser of—

(a) the horizontal distance from that part to the fire-source feature, or a vertical projection thereof, measured at right angles to the vertical face of the part; and

(b) three times the horizontal distance from the fire-source feature to that part, measured at right angles to the fire-source feature or a vertical projection thereof,

or, if one of these distances cannot be found (because of the particular geometrical considerations concerned) then the other distance or triple-distance, as applicable.



PLAN ILLUSTRATING SUB-BY-LAW (4) OF BY-LAW 16.6

Where Various Effective Distances Apply

(5) Where, in terms of this by-law, various "effective distances" apply for different parts of a structural member, that member shall be so constructed that—

(a) the entire member has the fire-resistance rating applicable to that part having the least "effective distance" between itself and the relevant fire-source feature; or

(b) each such part of the member has the fire-resistance rating applicable according to its individual "effective distance" from the relevant fire-source feature,

but this provision shall not so operate as to permit exemption from by-law 16.4.

Type 1 Construction

Requirements

16.7 (1) In a building required to be of Type 1 construction, each part mentioned in Table 16.7, and any beam or column incorporated in it, shall (subject to the modifications set out in this by-law and by-law 16.22)—

Amended by *G.G.* 27/3/75, p. 1031; *G.G.* 7/5/76, p. 1406; *G.G.* 24/12/76, p. 5098; *G.G.* 16/6/78, p. 1920; *G.G.* 3/11/78, p. 4195; *G.G.* 29/2/80, p. 675.

(a) be non-combustible except where a rating is not listed;

(b) have a fire-resistance rating not less than that listed in the Table, for the particular class of building concerned; and

(c) be constructed according to sub-bylaw (11) or sub-bylaw (12) if applicable.

TABLE 16.7
TYPE 1 CONSTRUCTION:
FIRE-RESISTANCE RATINGS OF STRUCTURAL MEMBERS

Structural Members	Ratings (in hours) Class of Building							
	II	III	V	VI	VII	VIIIa	VIIIb	IX
External walls (including beams and columns incorporated in them) and other external structural members where, in terms of by-law 16.6, the effective distance between the wall or other member and any fire-source feature to which it is exposed is—								
for loadbearing parts—								
less than 4.5 m	3	3	3	3	4	3	4	3
4.5 m to less than 6 m	2	2	2	3	4	3	4	2
6 m or more	1½	1½	2	3	4	3	4	2
for non-loadbearing parts (including spandrels)—								
Less than 4.5 m	3	3	3	3	4	3	4	3
4.5 m to less than 6 m	2	2	2	3	4	3	4	2
6 m to less than 7.5 m	1½	1½	2	3	4	3	4	2
7.5 m to less than 9 m	1	1	1½	2	3	2	3	1½
9 m or more	1	1	1	1½	2	1½	2	1
Common walls and party walls	4	4	4	4	4	4	4	4
Internal Loadbearing walls and fire walls (including those bounding public corridors, public hallways and the like or between or bounding sole-occupancy units, and those of loadbearing shafts)	1½	1½	2	3	4	3	4	2
Lift shafts and stair shafts required to be fire-resisting that are not loadbearing	1½	1½	2	2	2	2	2	2
Ventilating, pipe, garbage, and like shafts neither intended for discharge of hot products of combustion nor loadbearing	1½	1½	1½	2	2	2	2	1½
Internal non-loadbearing walls (including partition walls)—								
bounding public corridors, public hallways, and the like	1	1	—	—	1	1	1	—
between or bounding sole-occupancy units	1	1	—	—	—	—	—	—
bounding a stairway that is not required to be enclosed by a fire-resisting shaft	1	1	—	—	—	—	—	—
Floors (including floor beams), roofs (including roof beams and trusses), and internal columns	1½	1½	2	3	4	3	4	2

Class II Buildings not in Fire Zones: Concession

(2) In a Class II building not in a fire zone a fire-resistance rating of 1½ hours shall apply, as a modification of Table 16.7, for any structural member, except a common or party wall, required by that Table to have a fire-resistance rating exceeding 1½ hours.

Class II Buildings: Floors Within Flats

(3) In a Class II building of Type 1 construction, where—

(a) a flat extends through two storeys; and

(b) all the walls bounding that flat or unit are non-combustible and have a fire-resistance rating of not less than 1½ hours,

the floor separating the two storeys within the flat or unit may be reinforced concrete of not less then 100 mm thickness.

Concession for Certain Floors

(4) In a building of Type 1 construction, the following floors need not have a fire-resistance rating or be non-combustible—

(a) a floor laid directly on the ground;

(b) where the building is of Class II, III, V or IX, a floor the space below which is not a storey and is not designed, constructed, or adapted for—

(i) the accommodation of motor vehicles; or

(ii) the accommodation of bathrooms, shower rooms, laundries, water closets, or other sanitary compartments; or

(iii) use as a work area; or

(iv) storage or any other ancillary purpose.

Class V, IXb Buildings: Concession According to Floor Loading

(5) In a Class V or IXb building, if any floor is designed for a live load not exceeding 3kPa a fire resistance rating of 1½ hours shall apply as a modification of Table 16.7, for—

(a) the floor next above (including floor beams); or

(b) the roof, if that is next above (including roof beams).

Certain Class VII Buildings: Concession for Certain Internal Non-loadbearing Walls

(6) In a Class VII building having a rise of not more than six storeys, internal non-loadbearing walls (including partition walls) bounding public corridors, public hallways, and similar spaces may contain combustible framing, if the combustible material so concerned—

(a) has not been jointed by means of glue, or, if so jointed, it has been laminated or finger jointed and has been glued with resorcinol formaldehyde or resorcinol phenol formaldehyde glue; and

(b) has a mass per unit length in the aggregate of not more than 45kg/m of partition wall measured horizontally.

Class VII Open-deck Parking Stations: Modifications for Certain Parts

(7) For an open-deck parking station the following fire resistance ratings shall apply, as modifications of Table 16.7—

(a) for a column situated, in terms of by-law 16.6 at an effective distance of less than 4.5m from a fire source feature to which it is exposed—3 hours;

(b) for any other column—2 hours;

(c) for an internal loadbearing wall or fire wall—2 hours;

(d) for a floor beam, wherever more than half its cross-section is less than 3m from an edge of a floor—2 hours;

(e) for a floor beam otherwise—1 hour;

(f) for a floor—1 hour.

Certain Buildings of Classes II, III and IX: Concession for Roof

(8) In a Class II or Class III or Class IX building having a rise of not more than six storeys, the roof need not comply with sub-bylaw (1) if—

(a) the roof covering is non-combustible; and

(b) the ceiling immediately below the roof has a resistance to the incipient spread of fire to the roof space of one hour, as determined in the Standard Fire Test.

Certain Buildings of Classes V to VIII: Concession for Roof

(9) In a Class V, VI, VII, or VIII building having a rise of not more than six storeys, the roof need not comply with sub-bylaw (1) but if the building has a rise of more than three storeys—

(a) the roof covering shall be non-combustible; and

(b) the ceiling immediately below the roof shall have a resistance to the incipient spread of fire to the roof space of one hour, as determined in the Standard Fire Test.

Internal Columns Exposed Through a Window to a Fire-source Feature

(10) That section of Table 16.7 specifying fire resistance ratings according to effective distance extends also to those parts of an internal column that—

(a) face and are within 1.5m of a window; and

(b) are exposed (in terms of by-law 16.6) through that window to a fire-source feature.

Certain Internal Walls to be Constructed in Specific Ways

(11) Every internal wall (including a partition wall) required by Table 16.7 to have a fire-resistance rating—

(a) shall extend to—

(i) the underside of the floor, if any, next above; or

(ii) the underside of a roof complying with sub-bylaw (1); or

(iii) the roof covering of any other roof; or

(iv) a ceiling immediately below the roof and having a resistance to the incipient spread of fire to the roof space of one hour, as determined in the Standard Fire Test; and

(b) shall be so fixed to the floor, roof, or ceiling concerned as to be held by it against overturning in the event of fire.

Certain Parts of Type 1 Construction to be Constructed of Specific Materials

(12) In a building of Type 1 construction—

(a) internal loadbearing walls and fire walls (including those that are parts of loadbearing shafts) shall be of concrete or masonry;

(b) non-loadbearing—

(i) lift shafts and stair shafts required to be fire resisting; and

(ii) ventilating, pipe, garbage, and similar shafts that are not intended for discharge of hot products of combustion,

shall be of concrete, masonry, or plaster on metal lath or other material not less hard and dense than plaster on metal lath; and

(c) if the building is of Class II or III—internal walls bounding a sole-occupancy unit or separating adjoining sole-occupancy units shall be of concrete or masonry.

Concessions for Certain Internal Columns and Walls

(13) Where, pursuant to sub-bylaw (8) or sub-bylaw (9) a roof that does not have a fire resistance rating is used in a building having a rise of not more than six storeys, internal columns, (excluding those referred to in sub-bylaw (10)) and internal loadbearing walls (excluding fire walls) in the storey immediately below that roof may have the following fire resistance ratings instead of those listed in Table 16.7—

(a) Class II and Class III building—one hour;

(b) Class V, VI, VII and VIII buildings—one hour if the building has a rise exceeding three storeys, but otherwise no rating.

Type 2 Construction

Requirements

16.8 (1) In a building required to be of Type 2 construction— Amended by *G.G.* 24/12/76, p. 5098.

(a) external walls, common or party walls, any beams or columns incorporated in them shall be non-combustible; and

(b) each part mentioned in Table 16.8, and any beam or column incorporated in it, shall (subject to the modifications set out in this by-law)—

(i) have a fire resistance rating not less than that listed in the Table, for the particular class of building concerned; and

(ii) be constructed according to sub-bylaw (10) or sub-bylaw (11) if applicable.

TABLE 16.8.

TYPE 2 CONSTRUCTION: FIRE RESISTANCE RATINGS OF STRUCTURAL MEMBERS.

Structural Members	Ratings (in hours) Class of Building.							
	II	III	V	VI	VII	VIIIa	VIIIb	IX
External walls (including beams and columns incorporated in them) and other external structural members where, in terms of by-law 16.6, the effective distance between the wall or other member and any fire source feature to which it is exposed is—								
for loadbearing parts—								
less than 4.5 m	3	3	3	3	4	3	4	3
4.5 m to less than 6 m	2	2	2	3	4	3	4	2
6 m or more	1½	1½	2	3	4	3	4	2
for non-loadbearing parts (including spandrels)—								
less than 4.5 m	3	3	3	3	4	3	4	3
4.5 m to less than 6 m	2	2	2	3	4	3	4	2
6 m to less than 7.5 m	1½	1½	2	3	4	3	4	2
7.5 m to less than 9 m	1	1	1½	2	3	2	3	1½
9 m or more	1	1	1	1½	2	1½	2	1
Common walls and party walls	4	4	4	4	4	4	4	4
Internal loadbearing walls and fire walls (including those bounding public corridors, public hallways, and the like, or between or bounding sole occupancy units, and those of loadbearing shafts).	1½	1½	2	3	4	3	4	2
Lift shafts and stair shafts required to be fire resisting that are not loadbearing	1½	1½	2	2	2	2	2	2
Ventilating, pipe, garbage, and like shafts neither intended for discharge of hot products of combustion nor loadbearing	1½	1½	1½	2	2	2	2	1½
Internal non-loadbearing walls (including partition walls)—								
bounding public corridors, public hallways and the like	1	1	—	—	1	1	1	—
between or bounding sole-occupancy units	1	1	—	—	—	—	—	—
bounding a stairway that is not required to be enclosed by a fire resisting shaft	1	1	—	—	—	—	—	—
Floors (including floor beams), roofs (including roof beams and trusses), and internal columns	1	1	1	1	1	1	1	1

Certain Floor and Roof Construction Deemed to Comply

(2) In a building of Type 2 construction, a floor or roof shall be deemed to have a fire-resistance rating of one hour if—

(a) the ceiling immediately below the floor or roof has a resistance to the incipient spread of fire to the space above itself of one hour as determined in the Standard Fire Test; and

(b) in the case of a roof, the roof covering is non-combustible.

Concession for Certain Floors

(3) In a building of Type 2 construction the following floors need not have a fire-resistance rating—

(a) a floor laid directly on the ground;

(b) a floor, not laid directly on the ground, the space below which is not a storey and is not designed, constructed or adapted for—

(i) the accommodation of motor vehicles; or

(ii) the accommodation of bathrooms, shower rooms, laundries, water closets, or other sanitary compartments; or

(iii) use as a work area; or

(iv) storage or any other ancillary purpose.

Class II Buildings not in Fire Zones: Concession

(4) In a Class II building not in a fire zone a fire-resistance rating of 1½ hours shall apply, as a modification of Table 16.8, for any structual member, except a common or party wall, required by that Table to have a fire-resistance rating exceeding 1½ hours.

Class II Buildings: Concession for Floors Within Flats

(5) In a Class II building of Type 2 construction, a floor separating two storeys within a single flat need not have a fire-resistance rating if all the walls bounding that flat—

(a) are non-combustible; or

(b) have surfaces, within the flat, with Spread of Flame and Smoke Developed indices not greater than those prescribed by sub-bylaw (11).

Concession for Certain Loadbearing Walls

(6) Where the roof of a building and the ceiling immediately below that roof comply with sub-bylaw (2), a fire resistance rating of one hour shall apply as a modification of Table 16.8, for an internal loadbearing wall (excluding a fire wall) in the storey immediately below that roof.

Class VII—Open-deck Parking Stations: Modifications for Certain Parts

(7) For an open-deck parking station the following fire-resistance ratings shall apply, as modifications of Table 16.8—

(a) for a column situated, in terms of by-law 16.6, at an effective distance of—

(i) less than 4.5 m from a fire-source feature to which it is exposed—2 hours;

(ii) 4.5 m to less than 9 m from such a feature—1½ hours;

(iii) 9 m or more from such a feature—1 hour;

(b) for an internal loadbearing wall or fire wall—2 hours.

Roofs and Certain Columns in Certain Low-rise Buildings: Concession

(8) In a building of Type 2 construction, the roof and its internal supporting columns (excluding those referred to in sub-bylaw 9) need not comply with sub-bylaw (1) if the rise of the building does not exceed two storeys.

Internal Columns Exposed Through a Window to a Fire-source Feature

(9) Those parts of an internal column in a building of Type 2 construction that—

(a) face and are within 1.5 m of a window; and

(b) are exposed (in terms of by-law 16.6) through that window to a fire-source feature,

shall, if the effective distance between the fire-source feature and the part of the column concerned is less than 6 m have a fire-resistance rating of not less than 1½ hours.

Certain Partition Walls to be Constructed in Specific Ways

(10) A partition wall required by Table 16.8 to have a fire-resistance rating—

(a) shall extend to—

(i) the underside of the floor, if any, next above; or

(ii) the underside of a roof complying with sub-bylaw (1); or

(iii) a ceiling as described in sub-bylaw (2); and

(b) shall—

(i) be so fixed to the floor, roof, or ceiling concerned as to be held by it against overturning in the event of fire; or

(ii) be of concrete or masonry carried on a wall of concrete or masonry below.

Other Parts of Type 2 Construction to be Constructed in Specific Ways

(11) In a building of Type 2 construction—

(a) internal loadbearing walls and fire walls (including those that are parts of loadbearings shafts) shall be of concrete or masonry;

(b) non-loadbearing—

(i) lift shafts and stair shafts required to be fire-resisting; and

(ii) ventilating, pipe, garbage and similar shafts that are not intended for discharge of hot products of combustion,

shall be of concrete, masonry, or plaster on metal lath or other material not less hard and dense than plaster on metal lath;

(c) if the building is of Class II or III—internal walls bounding a sole-occupancy unit or separating adjoining sole-occupancy units shall be of concrete or masonry; and

(d) those surfaces of internal non-loadbearing walls (including partition walls) that face public corridors, public hallways, and the like shall, if the walls are not constructed wholly of materials that are non-combustible, have—

(i) a Spread of Flame Index not greater than 3; and

(ii) a Smoke Developed Index not greater than 5,

according to Australian Standard 1530 Part IV, being item 1 in the First Schedule.

Type 3 Construction

Requirements

16.9 (1) In a building required to be of Type 3 construction—

Amended by *G.G.* 24/12/76, p. 5098; *G.G.* 1/7/77, p. 2023; *G.G.* 29/2/80, p. 675.

(a) external walls, common or party walls, and any beams or columns incorporated in them shall be non-combustible;

(b) each part mentioned in Table 16.9, and any beam or column incorporated in it, shall (subject to the modifications set out in this by-law)—

(i) have a fire-resistance rating not less than that listed in the Table, for the particular class of building concerned; and

(ii) be constructed according to sub-bylaw (6) or sub-bylaw (9) if applicable; and

(c) parts mentioned in sub-bylaw (5) shall be constructed in the way specified in that sub-bylaw.

TABLE 16.9

TYPE 3 CONSTRUCTION:

FIRE-RESISTANCE RATINGS OF STRUCTURAL MEMBERS

Structural Members	Ratings (in hours) Class of Building							
	II	III	V	VI	VII	VIIIa	VIIIb	IX
External walls (including beams and columns incorporated in them) and other external structural members where, in terms of by-law 16.6, the effective distance between the wall or other member and any fire-source feature to which it is exposed is—								
for loadbearing parts—								
less than 4.5m	3	3	3	3	4	3	4	3
4.5m to less than 6m	2	2	2	3	4	3	4	2
6m or more	1½	1½	2	3	4	3	4	2
for non-loadbearing parts (including spandrels)—								
less than 4.5m	3	3	3	3	4	3	4	3
4.5m to less than 6m	2	2	2	3	4	3	4	2
6m to less than 7.5m	1½	1½	2	3	4	3	4	2
7.5m to less than 9m	1	1	1	1½	2	1½	2	1
9m or more	½	½	½	1	1	1	1	½
Common walls and party walls	4	4	4	4	4	4	4	4
Internal loadbearing walls and fire walls (including those bounding public corridors, public hallways, and the like, or between or bounding sole occupancy units, and those of loadbearing shafts.)	1½	1½	2	3	4	3	4	2
Lift shafts and stair shafts required to be fire-resisting that are not loadbearing	1½	1½	2	2	2	2	2	2
Ventilating, pipe, garbage and like shafts neither intended for discharge of hot products of combustion nor loadbearing	1½	1½	1½	2	2	2	2	1½
Internal non-loadbearing walls (including partition walls)—								
bounding public corridors, public hallways and the like	1	1	—	—	—	—	—	—
between or bounding sole-occupancy units	1	1	—	—	—	—	—	—
bounding a stairway that is not required to be enclosed by a fire-resisting shaft	1	1	—	—	—	—	—	—

Class II Buildings Not in Fire Zones: Concession

(2) In a Class II building not in a fire zone a fire-resistance rating of 1½ hours shall apply, as a modification of Table 16.9, for any structural member, except a common or party wall, required by that Table to have a fire-resistance rating exceeding 1½ hours.

Concession for Certain Loadbearing Walls

(3) An internal loadbearing wall (excluding a fire wall) in a storey immediately below the roof shall not be required to comply with sub-bylaw (1), but in a Class II or Class III building—

(a) shall have a fire-resistance rating of not less than one hour if the wall bounds—

(i) a public corridor, public hallway, or the like; or

(ii) a sole-occupancy unit; or

(iii) a stairway that is not required to be enclosed by a fire-resisting shaft; and

(b) shall, if it is a wall referred to in paragraph (a), extend—

(i) to the underside of a ceiling having a resistance to the incipient spread of fire to the roof space of not less than one hour, as determined in the Standard Fire Test; or

(ii) to the underside of the roof covering if it is non-combustible; or

(iii) 450 mm above the adjoining roof covering if it is combustible,

and in the case of subparagraphs (ii) and (iii) shall not be crossed by timber purlins or other combustible material.

Class VII—Open-deck Parking Stations: Modifications for Certain Parts

(4) For an open-deck parking station the following fire-resistance ratings shall apply, as modifications of Table 16.9—

(a) for a column situated, in terms of by-law 16.6, at an effective distance of—

(i) less than 6 m from a fire-source feature to which it is exposed—1 hour;

(ii) 6 m or more from such a feature—nil;

(b) for an internal loadbearing wall or fire wall—2 hours.

Certain Junctions of Floor Members and Stair Shafts to be Constructed in a Specific Way

(5) Where, in a building of Type 3 construction, a stair shaft supports a floor or any structural part thereof, the junction of—

(a) the stair shaft; and

(b) the floor or part,

shall, unless the floor or part has a fire-resistance rating of one hour or more, be so constructed that the floor or part if sagging or falling as a result of fire, will be free to do so without causing structural damage to the shaft.

Extent of Certain Partition Walls

(6) In a Class II or Class III building, a partition wall required by Table 16.9 to have a fire-resistance rating shall extend—

(a) to the underside of the floor, if any, next above; or

(b) to the underside of a ceiling having a resistance to the incipient spread of fire to the space above itself of not less than one hour, as determined in the Standard Fire Test; or

(c) to the underside of the roof covering if it is non-combustible; or

(d) 450 mm above the adjoining roof covering if it is combustible,

and in the case of paragraphs (c) and (d) shall not be crossed by timber purlins or other combustible material.

Buildings of Classes II and III: Certain Ceilings to be Constructed in a Specific Way

(7) In a Class II or Class III building of Type 3 construction the ceiling of the topmost storey shall be as specified in by-law 16.12, except where all internal walls in that storey extend to the roof.

Buildings of Classes II, III and IX: Certain Parts to be Covered with Fire-protective Material

(8) In a Class II, III or IX building of Type 3 construction the following, if combustible or of metal, shall be covered with a fire-protective material in accordance with by-law 16.12, unless the structural member concerned has a fire-resistance rating of not less than half an hour—

(a) the underside of a floor (including the sides and undersides of its floor beams, if any) where the floor is above a storey or above a space (not being a storey) that is designed, constructed, or adapted for—

(i) the accommodation of motor vehicles; or

(ii) the accommodation of bathrooms, shower rooms, laundries, water closets, or other sanitary compartments; or

(iii) use as a work area; or

(iv) storage or any other ancillary purpose;

(b) a column supporting such a floor.

Other Parts of Type 3 Construction to be Constructed in Specific Ways

(9) In a building of Type 3 construction—

(a) internal loadbearing walls and fire walls (including those that are parts of loadbearing shafts) shall be of concrete or masonry;

(b) non-loadbearing—

(i) lift shafts and stair shafts required to be fire resisting; and

(ii) ventilating, pipe, garbage, and similar shafts that are not intended for discharge of hot products of combustion,

shall be of concrete, masonry, or plaster on metal lath or other material not less hard and dense than plaster on metal lath; and

(c) if the building is of Class II or III—internal walls bounding a sole-occupancy unit or separating adjoining sole-occupancy units shall be of concrete or masonry.

Type 4 Construction

Application of By-Law

16.10 (1) In a building of Type 4 construction all parts mentioned in this by-law shall be constructed in accordance with the relevant requirements set out herein.

Amended by *G.G.* 27/3/75, p. 1031; *G.G.* 29/2/80, p. 675.

Certain Parts to have Fire-resistance Ratings

(2) Each part mentioned in Table 16.10, and any beam or column incorporated in it, shall (subject to the modification set out in sub-bylaw (3))—

(a) be non-combustible; and

(b) have a fire-resistance rating not less than that listed in the Table, for the particular class of building concerned.

TABLE 16.10

TYPE 4 CONSTRUCTION:

FIRE-RESISTANCE RATINGS OF STRUCTURAL MEMBERS

Structural Members	Ratings (in hours) Class of Building					
	V	VI	VII	VIIIa	VIIIb	IX
External walls (including beams and columns incorporated in them) and other external structural members where, in terms of by-law 16.6, the effective distance between the wall or other member and any fire-source feature to which it is exposed is less than 3 m	1	1	1	1	1	1
Fire walls	2	3	4	3	4	2

Class VII—Open-deck Parking Stations: Concession for Fire Walls

(3) For an open-deck parking station a fire-resistance rating of 2 hours shall apply, as a modification of Table 16.10, for a fire wall (including one that is part of a shaft).

Certain External and Internal Walls

(4) External walls not mentioned in Table 16.10 and internal loadbearing walls (including those that are parts of loadbearing shafts) shall—

(a) be of concrete or masonry; or

(b) have their main framing (including its diagonal bracing) in steel or concrete, and their sheeting, if any, in non-combustible material,

except for that part, if any, of an internal wall that supports only a roof.

Fire Walls

(5) Fire walls in a building of Type 4 construction shall be of concrete or masonry.

Internal Columns

(6) Internal columns, if any, that support a floor in a building of Type 4 construction shall be of—

(a) steel, concrete, or masonry; or

(b) hardwood having nominal dimensions of not less than 125 mm × 125 mm.

Floors: General Requirements

(7) Floors in a building of Type 4 construction shall (subject to the modification set out in sub-bylaw (8))

(a) be non-combustible; or

(b) have their main framing (including all floor beams and joists) in—

(i) steel or concrete; or

(ii) hardwood having nominal dimensions of not less than 100 mm × 75 mm; or

(iii) timber, other than hardwood, having nominal dimensions of not less than 125 mm × 100 mm.

Concession for Certain Floors

(8) In a building of Type 4 construction the following floors need not comply with sub-bylaw (7)—

(a) a floor laid directly on the ground;

(b) a floor, not laid directly on the ground, the space below which is not a storey and is not designed, constructed, or adapted for—

(i) the accommodation of motor vehicles; or

(ii) the accommodation of bathrooms, shower rooms, laundries, water closets, or other sanitary compartments; or

(iii) use as a work area; or

(iv) storage or any other ancillary purpose.

Buildings of Classes II and III: Use of Type 4 Construction

(9) A Class II or Class III building of Type 4 construction shall, in addition to meeting the relevant requirements of this by-law, comply with the provisions of by-law 16.11 applicable to a building of the class concerned, regarding, as the case requires—

(a) the fire-resistance rating and construction of internal walls (including partition walls)—

(i) bounding public corridors, public hallways and the like; or

(ii) between or bounding sole-occupancy units; or

(iii) bounding a stairway;

(b) the level to which a wall referred to in paragraph (a) shall extend;

(c) the protection to be afforded to the underside of a floor and its supporting columns, if any; and

(d) the construction of the ceiling of the topmost storey.

Certain Parts to be Covered with Fire-protective Material

(10) In a Class IX building of Type 4 construction the following, if combustible or of metal, shall be covered with fire-protective material in accordance with by-law 16.12 unless the structural member concerned has a fire-resistance rating of not less than half an hour—

(a) the underside of a floor (including the sides and undersides of its floor beams, if any) where the floor is above a storey, or above a space (not being a storey) that is designed, constructed, or adapted for—

(i) the accommodation of motor vehicles; or

(ii) the accommodation of bathrooms, shower rooms, laundries, water closets, or other sanitary compartments; or

(iii) use as a work area; or

(iv) storage or any other ancillary purpose;

(b) a column supporting such a floor.

Type 5 Construction

Application of By-law

16.11 (1) In a building required to be of Type 5 construction all parts mentioned in this by-law shall be constructed in accordance with the relevant requirements set out herein.

Amended by *G.G.* 24/12/76, p. 5099; *G.G.* 1/7/77, p. 2023; *G.G.* 29/2/80, p. 675.

Certain Parts to Have Fire-resistance Ratings

(2) Each part mentioned in Table 16.11, and any beam or column incorporated in it, shall (subject to the modifications set out in this by-law) have a fire-resistance rating not less than that listed in the Table, for the particular class of building concerned.

TABLE 16.11
TYPE 5 CONSTRUCTION:
FIRE-RESISTANCE RATINGS OF STRUCTURAL MEMBERS

Structural Members	Ratings (in hours) Class of Building							
	II	III	V	VI	VII	VIIIa	VIIIb	IX
External walls (including beams and columns incorporated in them) and other external structural members where, in terms of by-law 16.6, the effective distance between the wall or other member and any fire-source feature to which it is exposed is less than 3m	1	1	1	1	1	1	1	1
Fire Walls	1½	1½	1½	3	3	3	4	1½
Internal walls (including partition walls)—								
bounding public corridors, public hallways, and the like	1	1	—	—	—	—	—	—
between or bounding sole-occupancy units	1	1	—	—	—	—	—	—
bounding a stairway	1	1	—	—	—	—	—	—

Certain External Walls to be Non-combustible

(3) An external wall (including beams and columns in it) that is required by Table 16.11 to have a fire-resistance rating shall subject to sub-bylaw (4), be non-combustible.

External Walls: Outer Part May Meet Certain Requirements for the Wall

(4) Where an external wall is required by sub-bylaws (2) and (3) to have a fire-resistance rating and be non-combustible, those requirements shall be deemed to have been met if the outer part of the wall has the required fire-resistance rating and is non-combustible.

Certain Buildings of Classes VII and VIIIb: Construction of Certain Other External Walls

(5) In a Class VII building of Type 5 construction containing a space of abnormal fire hazard within the meaning of paragraph (a) or (b) of Part D of the Second Schedule, or in a Class VIIIb building of Type 5 construction, an external wall—

(a) that faces and is within 7.5 m of a boundary of an adjoining allotment of land; and

(b) that is not required by Table 16.11 to have a fire-resistance rating,

shall be non-combustible or be sheeted externally with non-combustible material.

Buildings of Class II and III:
Construction of Certain Internal Walls

(6) In a Class II or Class III building of Type 5 construction, internal walls (including partition walls) bounding a sole-occupancy unit or separating adjoining sole-occupancy units—

(a) need not have a fire-resistance rating if—

(i) each sole-occupancy unit concerned has direct egress to the ground or to an external balcony providing egress in two different directions from the building; and

(ii) the sheeting of those walls, if not backed by concrete or masonry, is non-combustible; and

(b) if required to have a fire-resistance rating, shall be of concrete or masonry having the required fire-resistance rating.

Fire Walls

(7) In a building containing two storeys and of Type 5 construction, fire walls shall be of concrete or masonry.

Extent of Certain Partition Walls

(8) In a Class II or Class III building a partition wall required by Table 16.11 to have a fire-resistance rating shall extend—

(a) to the underside of the floor, if any next above; or

(b) to the underside of a ceiling having a resistance to the incipient spread of fire to the space above itself of not less than one hour, as determined in the Standard Fire Test; or

(c) to the underside of the roof covering if it is non-combustible; or

(d) 450 mm above the adjoining roof covering if it is combustible,

and in the case of paragraphs (c) and (d) shall not be crossed by timber purlins or other combustible material.

Buildings of Classes II and III:
Certain Ceilings to be Constructed in a Specific Way

(9) In a Class II or Class III building of Type 5 construction, the ceiling of the topmost storey shall be as specified in by-law 16.12, except where all internal walls in that storey, required by Table 16.11 to have a fire resistance rating, extend to the roof.

Buildings of Classes II, III and IX:
Certain Parts to be Covered with Fire-protective Material

(10) In a Class II, III or IX building of Type 5 construction, the following, if combustible or of metal, shall be covered with a fire-protective material in accordance with by-law 16.12, unless the structural member concerned has a fire-resistance rating of not less than half an hour—

(a) the underside of a floor (including the sides and undersides of its floor beams, if any) where the floor is above a storey, or above a space (not being a storey) that is designed, constructed or adapted for—

(i) the accommodation of motor vehicles; or

(ii) the accommodation of bathrooms, shower rooms, laundries, water closets, or other sanitary compartments; or

(iii) use as a work area; or

(iv) storage or any other ancillary purpose;

(b) a column supporting such a floor.

Fire Protective Covering of Certain Members in Buildings

Heading amended by *G.G.* 29/2/80, p. 676.

16.12 The fire-protective covering or ceiling required by sub-bylaws (7) and (8) of by-law 16.9, sub-bylaw (10) of by-law 16.10, and sub-bylaws (9) and (10) of by-law 16.11 shall be a lining or ceiling of—

Amended by *G.G.* 16/6/78, p. 1920; *G.G.* 29/2/80, p. 676.

(a) 13 mm plasterboard; or

(b) 12 mm asbestos-silica board; or

(c) 12 mm mesh-reinforced fibrous plaster in which the mesh is one of 13 mm x 13 mm x 0.710 mm welded wire located not more than 6 mm from the exposed face; or

(d) 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.

Construction of Stairs and Landings

Stairways Required to be Within Fire-resisting Shafts

16.13 (1) In stairways that are required to be within fire-resisting shafts— Amended by *G.G.* 19/3/76, p. 829; *G.G.* 16/6/78, p. 1920.

(a) the treads and landings shall be constructed only of—

(i) reinforced or prestressed concrete in no part less than 75 mm thick, measured exclusive of topping; or

(ii) precast reinforced concrete, not prestressed, in no part less than 63 mm thick;

(iii) [Deleted by *G.G.* 19/3/76, p. 829.]

(iv) [Deleted by *G.G.* 19/3/76, p. 829.]

finished throughout in non-combustible material; and

(b) structural members, if any supporting treads or landings shall be non-combustible and have a fire-resistance rating of not less than one hour.

Class II Buildings:
Stairways not Required to be Within Fire-resisting Shafts

(2) In a Class II building having a rise of more than two storeys, the stairs and landings (including any supporting structural members) of a required stairway that is not required to be within a fire-resisting shaft shall—

(a) be constructed according to sub-bylaw (1); or

(b) be constructed only of—

(i) reinforced or prestressed concrete; or

(ii) steel in no part less than 6 mm thick; or

(iii) timber that has not been glued or similarly jointed and has an average density at a moisture content of 12 per cent of not less than 800 kg/m^3 and a finished thickness of not less than 44 mm.

Construction of Ramps

16.14 Ramps and their landings, where required to be within fire-resisting shafts, shall be non-combustible and have a fire-resistance rating of not less than one hour.

Fire-resistance Ratings of Fire Walls and Floors Common to Two Sections of a Building

When the Sections are of Different Classes

16.15 (1) Where a building has sections of different classes— Amended by *G.G.* 1/7/77, p. 2023.

(a) the fire-resistance rating of a fire wall required between the sections (including a Class IV portion, if any) shall be as follows—

(i) where the sections are served in any storey by the same public corridor, public hallway or the like—1½ hours in that storey;

(ii) in every other case—the fire-resistance rating prescribed in this Part for both sections (if those ratings are the same) or for that section for which the greater rating is prescribed (if those ratings are different); and

(b) a fire-resistance rating that applies according to by-law 16.7 or by-law 16.8 for a floor in the lower section (if one section is below the other) shall apply also for the floor between the sections.

When Bounding a Plant Room

(2) A fire wall required to bound a room designed, constructed, or adapted for the housing of equipment such as lift, heating, ventilating or air-conditioning plant or transformers, generators or other electrical equipment, or other special equipment for the servicing of the building, shall have a fire-resistance rating of not less than the greater of—

(a) 2 hours; and

(b) the rating for a fire wall prescribed in this Part for the particular class of the building in which the room is situated.

Mezzanine Floors

Application of Part 16

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 by-law, apply to the floor of a mezzanine and its supporting columns, if any.

Amended by *G.G.* 16/6/78, p. 1920.

Concession for Mezzanines of Restricted Area

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

(a) the area of the mezzanine floor does not exceed 200 m² or the appropriate maximum floor area prescribed in Table 38.7 (3), 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 does not exceed 200 m² or the appropriate maximum floor area prescribed in Table 38.7 (3), whichever is the lesser;

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

(i) if it is at any part 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 of not less than that set out in column 1 of Table 16.16(2)(c),

has a fire-resistance rating of not less than that set out in column 2 of that Table opposite to the rating it is required elsewhere in this Part to have.

Table 16.16(2)(c)

column 1 Required rating (in hours)	column 2 Rating to meet conditions in by-law 16.16(2)(c) (in hours)
½	1
1	1½
1½	2
2	3
3	4

Certain Parts Within Ducts or Wells to be Specially Constructed for Fire-resistance

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.

Buildings of Classes II and III: Certain Ceilings and Ceiling Supports to be Non-combustible

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.

Combustible Internal Linings

16.19 Unless otherwise stated in these by-laws, 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.

Construction of Certain External Walls and Steelwork

Constructional Concession: One Storey

16.20 (1) 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.

Constructional Requirements: More than One Storey

(2) 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.

Ancillary Construction at External Walls

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.

Roofing Felt on a Roof Required to have a Fire Rating

16.22 A roof required by by-law 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.

Roof Superimposed on Concrete Slab in Types 1 and 2 Construction

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.

Concession for Certain Structures Situated on Roofs

16.24 A non-combustible structure situated on a roof and containing, singly or together, 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) lift machinery; or

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

need not comply with the other provisions of this Part so long as no wall of the structure is situated at a distance from the outside perimeter of the building that is less than the height of that wall above that outside perimeter.

Lintels

Where a Fire-resistance Rating is Required

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

Where a Fire-resistance Rating is not Required for the Lintel

(2) Steel angles, plates, or bars comprising lintels that span openings—

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

(b) in non-loadbearing walls of Class 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 sub-bylaw (1) unless the lintels help to support fire doors or fire shutters.

Appurtenant Construction not to Impair Fire-resistance Performance

16.26 The design of every method of attachment or installation—

(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.

Buildings Above Certain Public Facilities

Facilities Concerned

16.27 (1) This by-law applies to a building built above a public place, railway, bus terminal, or similar public facility.

Fire Rating Required

(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 after consultation with the Fire Brigades Board and having regard to—

(a) the particular circumstances; and

(b) the other provisions of this Part.

Floor Construction

(3) The council or Fire Brigades Board may require that any column or floor subject to sub-bylaw (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

Rise in Storeys

Interpretation

17.1 (1) For the purposes of these by-laws, the rise in storeys of a building shall be calculated in accordance with the rules set out in this by-law.

Amended by *G.G.* 16/6/78, p. 1920; *G.G.* 29/2/80, p. 676.

Determination

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

Calculation Where Wall Abuts a Boundary of an Adjoining Allotment

(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.

Certain Levels to be Determined by the Council

(4) In applying sub-bylaw (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.

Certain Storeys Excluded from the Reckoning

(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.

Certain Mezzanines to be Regarded as Storeys

(6) In calculating the rise in storeys of a building which incorporates one or more mezzanines—

(a) any mezzanine having floor area of more than 200 m^2; or

(b) two or more mezzanines at or near the same level in a room and having an aggregate floor area of more than 200 m^2,

shall be regarded as a storey in that portion of the building in which they are situated.

Certain High Storeys to be Regarded as Two Storeys

(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.

Determination of Rise of a Fire-separated Section

(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.

Type of Fire-resisting Construction Required

Classes Concerned and their Location

17.2 (1) The type of fire-resisting construction required in a building of Class II, III, V, VI, VII, VIII, or IX— Amended by *G.G.* 29/2/80, p. 676.

(a) except in a fire zone; and

(b) except as provided in by-laws 17.4, 17.5 and 17.6 for certain Class II buildings and in by-law 17.8 for open-deck parking stations,

shall be that stated in the relevant column of Table 17.2.

Fire-separated Sections

(2) A section of a building that is fire-separated according to Part 23 from the remainder of the building shall be subject to sub-bylaw (1) as though the section were itself a building.

Buildings of Mixed Classifications

(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 sub-bylaw (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.

TABLE 17.2
TYPE OF FIRE-RESISTING CONSTRUCTION REQUIRED
EXCEPT IN A FIRE ZONE

Substituted by *G.G.* 29/2/80, p. 676.

Rise in Storeys	Class of Building								
	II	III	V	VI	VII	VIIIa	VIIIb	IXa	IXb
6 or more									
5	Type 1		Type 2		Type 1				
4			Type 2		Type 2	Type 2			
3			Type 3	Type 2	Type 3	Type 3	Type 3		
2	Type 2	Type 3	Type 5	Type 5	Type 5	Type 5	Type 5	Type 2	Type 3
1	Type 5	Type 5	Type 5	Type 5	Type 5	Type 5	Type 5	Type 5	Type 5

Lightweight Construction

Definition

17.3 (1) For the purposes of this by-law, "lightweight construction" means— Amended by *G.G.* 16/6/78, p. 1920.

(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 of 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 thickness of less than 70 mm.

Restrictions on the Use of Lightweight Construction

(2) Subject to sub-bylaw (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 underneath a Class VI, VII, or VIII portion.

Where the Restrictions do Not Apply

(3) Sub-bylaw (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.

Type of Fire-resisting Construction Allowed in Certain Class II Buildings

17.4 A building that— Amended by *G.G.* 1/7/77, p. 2023.

(a) is entirely of Class II;

(b) is not in a fire zone; and

(c) has a rise of three storeys,

may be of Type 2 construction if—

(d) no portion of any flat is vertically above any portion of another flat; and

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

17.5**********

Existing Buildings Converted from Class I or IA to Class II

Type of Construction Required

17.6 (1) Where the council approves of the conversion of an existing building from Class I or IA 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 provisions of by-law 17.4, if applicable, and to the concession for external walls set out in sub-bylaw (2) of this by-law.

Concession for External Walls in Certain Buildings

(2) The external walls of a building described in sub-bylaw (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.

Requirements for Class IV Portions of Buildings

Heading amended by *G.G.* 1/7/77, p. 2023.

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. Amended by *G.G.* 1/7/77, p. 2023.

Class VII—Open-deck Parking Stations: Concession as to Type of Construction

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.

Buildings Deemed to be in Fire Zones

18.1 A building shall be deemed to be in a fire zone if more than half its total volume measured over the roof and the external walls, is situated within the zone.

Construction Required in a Primary Fire 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 that stated in the second column of Table 18.2. Amended by *G.G.* 29/2/80, p. 677.

TABLE 18.2

TYPE OF FIRE-RESISTING CONSTRUCTION REQUIRED IN A PRIMARY FIRE ZONE

Rise in Storeys	Type of Construction
3 or more	Type 1
2	Type 2
1	Type 3

Construction Required in a Secondary Fire Zone

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.

Amended by *G.G.* 29/2/80, p. 677.

TABLE 18.3

TYPE OF FIRE-RESISTING CONSTRUCTION REQUIRED IN A SECONDARY FIRE ZONE

Substituted by *G.G.* 29/2/80, p. 677.

Rise in Storeys	Class of Building								
	II	III	V	VI	VII	VIIIa	VIIIb	IXa	IXb
4 or more	Type 1							Type 1	
3			Type 2	Type 2	Type 2	Type 2	Type 2		
2	Type 2	Type 2	Type 3	Type 3	Type 3	Type 3	Type 3	Type 2	Type 2
1	Type 3	Type 3	Type 3	Type 3	Type 3	Type 3	Type 3	Type 3	Type 3

Fire-separated Sections

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 by-law 18.2 or by-law 18.3, as the case requires, as though the section were itself a building.

Buildings of Mixed Classifications

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 by-law 18.2 or by-law 18.3, as the case requires, at each storey, based on the assumptions that—

Amended by *G.G.* 29/2/80, p. 677.

(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.

Use of Lightweight Construction

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

Requirements For Class IV Portions of Buildings

Heading amended by *G.G.* 1/7/77, p. 2023.

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.

Amended by *G.G.* 1/7/77, p. 2023.

Construction Required For Class I and IA Buildings

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

Construction Required For Class X Buildings

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

Class VII—Open-deck Parking Stations: Concession as to Type of Construction

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 ½ 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 1½ 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 by-law 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
OPEN-DECK PARKING STATIONS
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.

Category of Fire Zone	Maximum Permissible Number of Storeys for an Average Area Across Each Storey (in Square Metres) of—					
	Less than 650	650 to less than 900	900 to less than 1 300	1 300 to less than 1 800	1 800 to less than 3 200	3 200 to less than 7 400
Primary	5	6	7	8	9	10
Secondary	4	5	6	7	8	9

GROUP V—FIRE SAFETY AND FIRE RESISTANCE

PART 19—FLOOR AREA LIMITATIONS

Interpretation

Certain Floor Areas to be Disregarded

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

Class VII and Class VIII Buildings of Partly One and Partly Two Storeys

(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.

General Floor Area Limitations

Application of By-law

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

Amended by *G.G.* 30/5/75, p. 1641.

Limitations on Total Floor Area

(2) In a building to which this by-law applies, the sum of the floor areas of all storeys shall not (subject to sub-bylaw (3)) exceed the relevant maximum floor area set out in Table 19.2.

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 sub-bylaw (3) of by-law 19.2 are met.

Type of Fire Resisting Construction of Building	Class V		Class VI	
	Not Sprinklered	Sprinklered	Not Sprinklered	Sprinklered
Type 1, 2 or 3	5 500	9 000	3 500	5 500
Type 4	4 500	7 500	3 000	4 500
Type 5	2 800	4 500	2 000	2 800
	Class VII			
	Not containing a space of abnormal fire hazard within the meaning of paragraph (a) or (b) of Part D of the Second Schedule		Containing a space of abnormal fire hazard within the meaning of paragraph (a) or (b) of Part D of the Second Schedule	
	Not Sprinklered	Sprinklered	Not Sprinklered	Sprinklered
Type 1, 2 or 3	5 500	9 000	3 500	5 500
Type 4	4 500	7 500	3 000	4 500
Type 5	2 800	4 500	2 000	2 800
	Class VIIIa (Medium or Low Hazard)		Class VIIIb (High Hazard)	
	Not Sprinklered	Sprinklered	Not Sprinklered	Sprinklered
Type 1, 2 or 3	5 500	9 000	3 500	5 500
Type 4	4 500	7 500	3 000	4 500
Type 5	2 800	4 500	2 000	2 800

Limitations to Apply to Individual Storeys in Certain Cases

(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 has a fire-resistance rating of not less than two 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 2 hours; and

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

Fire-separated Sections of a Storey

(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 sub-bylaw (3), the relevant maximum floor areas set out in Table 19.2 shall apply to each such section as though it were a complete storey.

Exemption for Single-storey Buildings of Class VII and VIII Not Exceeding 18 000 m² in Area

19.3 A Class VII or VIII 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 by-law 19.2 if an automatic fire alarm system is installed throughout the building in accordance with Australian Standard 1670 being item 45 of the First Schedule; and

Amended by *G.G.* 11/6/76. P. 1882.

(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 by-law 19.5; or

(b) the building is of Type 1, 2 or 3 construction and complies with the following requirements—

(i) the space below the roof is divided into compartments in accordance with by-law 19.6;

(ii) the building is provided with approved automatic smoke-and-heat vents in accordance with by-law 19.7;

(iii) every external wall facing the boundary of an adjoining allotment of land is provided with a parapet in accordance with by-law 19.8, except where the provisions of that by-law 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 are so limited in area as to comply with by-law 19.9.

Exemption for Single-storey Class VII and Class VIII Buildings Exceeding 18 000 m² in Area

General Conditions of Exemption

19.4 (1) A Class 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 by-law 19.2 if a sprinkler system is installed throughout the building in accordance with Australian Standard 2118 being item 2 of the First Schedule; and—

Amended by *G.G.* 28/9/79, p. 2999.

(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 by-law 19.5; or

(b) the building is of Type 1, 2 or 3 construction and complies with the following requirements—

(i) the space below the roof is divided into compartments in accordance with by-law 19.6;

(ii) the building is provided with approved automatic smoke-and-heat vents in accordance with by-law 19.7;

(iii) every external wall facing the boundary of an adjoining allotment of land is provided with a parapet in accordance with by-law 19.8, except where the provisions of that by-law 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 are so limited in area as to comply with by-law 19.9.

Two or More Buildings on the Site

(2) In determining whether sub-bylaw (1) is applicable, all Class VII or VIII buildings on the one site that are within 27 m 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 by-law 19.8 and by-law 19.9 as though the buildings were on different sites, with an imaginary boundary line in a position nominated by the person on whose behalf the building is being erected.

Requirements For Open Spaces Around Large Single-storey Buildings

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, 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;

(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 sub-stations and pump houses) may encroach upon the width of the space if the council is satisfied that the encroachment—

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

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

Draught Curtains, Vertical Glazing, and Smoke-And-Heat Compartments

19.6 In a building required to have the space below the roof divided into compartments, the following requirements shall be met— Amended by *G.G.* 1/7/77, p. 2023; *G.G.* 16/6/78, p. 1920.

(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 part of the "saw-tooth" comprises non-combustible non-shattering material, or wired glass not less than 6 mm thick;

(b) the foregoing curtains or vertical part of the "saw-tooth" 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 1 000 m^2 in area, measured in a horizontal plane;

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

(i) the horizontal distances between the foregoing curtains or vertical part of the "saw-tooth"; and

(ii) the horizontal distance between any external walls 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.

Smoke-And-Heat Vents

Definition

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 escape of smoke and hot gases if there is an outbreak of fire in the building. Amended by *G.G.* 1/7/77, p. 2023.

Requirements

(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 part of the "saw-tooth" described in by-law 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° 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 Part D of the Second Schedule—3 : 100;

(ii) in all other cases—3 : 200.

Parapets

Height Requirements

19.8 (1) A parapet required by this Part to be provided on an external wall shall, subject to sub-bylaw (2), have a height not less than set out in the second column of Table 19.9, according to— Amended by *G.G.* 1/7/77, p. 2023.

(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.

Concession in Height of Parapet

(2) The height of parapet required by Table 19.9 may be reduced by an amount equal to one-third of 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 that part of the roof extending in from the external wall is not less than one hour; and

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

Limitations on Areas of Window Openings

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 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
MAXIMUM PERMISSIBLE AGGREGATE AREAS OF WINDOWS AND OTHER OPENINGS

Distance of Wall from Boundary (metres)	Height of Parapet (metres)	Maximum Permissible Aggregate Area of Openings (square metres)
Less than 1.5	1.5	Nil
1.5 to less than 2	1	Nil
	1.25	0.5 in any 2 m length of wall
	1.5	1 in any 2 m length of wall
2 to less than 3	0.75	Nil
	1	0.5 in any 3 m length of wall
	1.25	1 in any 3 m length of wall
	1.5	2 in any 3 m length of wall
3 to less than 4.5	0.5	Nil
	0.75	1 in any 4 m length of wall
	1	2 in any 4 m length of wall
	1.25	3 in any 4 m length of wall
	1.5	4 in any 4 m length of wall
4.5 to less than 6	Nil	Nil
	0.25	1.5 in any 5 m length of wall
	0.5	3 in any 5 m length of wall
	0.75	4 in any 5 m length of wall
	1	5 in any 5 m length of wall
	1.25	6.5 in any 5 m length of wall
	1.5	7.5 in any 5 m length of wall
6 to less than 7.5	Nil	4 in any 7 m length of wall
	0.25	5 in any 7 m length of wall
	0.5	7 in any 7 m length of wall
	0.75	9 in any 7 m length of wall
	1	10.5 in any 7 m length of wall
	1.25	12.5 in any 7 m length of wall
	1.5	14 in any 7 m length of wall
7.5 to less than 9	Nil	9 in any 9 m length of wall
	0.25	11.5 in any 9 m length of wall
	0.5	13.5 in any 9 m length of wall
	0.75	16 in any 9 m length of wall
	1	18.5 in any 9 m length of wall
9 to less than 10.5	Nil	17 in any 11 m length of wall
	0.25	19.5 in any 11 m length of wall
	0.5	22.5 in any 11 m length of wall
10.5 to less than 13.5	Nil	30.5 in any 15 m length of wall
13.5 to less than 18	Nil	45.5 in any 18 m length of wall
18 and over	Nil	No limitation

Change of Use of Existing Class VII and Class VIII Buildings

Certain Uses Associated with Class VII

19.10 (1) An existing Class VII building (erected before or after these by-laws came into operation in the district or in that part of the district in which the building is situated) that is not being used for the storage or display of—

(a) goods referred to in Part A of 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.

Certain Uses Associated with Class VIII

(2) An existing Class VIII building (erected before or after these by-laws came into operation in the district or in that part of the district in which the building is situated) that is not being used for a handicraft or process—

(a) referred to in Part B or C of 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.

Exemption of Certain Buildings from Requirements of this Part

Heading substituted by *G.G.* 7/5/76, pp. 1406-7.

Certain Class VII and VIII Buildings for Storage, Display, or Processing of Non-combustible Materials

19.11 (1) The council may exempt a Class VII or Class VIII building from the requirements of this Part upon production of a certificate issued by the Fire Brigades Board to the effect that substantially all of the materials stored or displayed or used in a handicraft or process therein are non-combustible.

Substituted by *G.G.* 7/5/76, pp. 1406-7.

Certain Class V, VI, VII and VIII Buildings

(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 Fire Brigades Board to the effect that—

(a) in respect of a particular existing or proposed building to which sub-bylaw (1) does not apply, satisfactory provisions alternative to any or all of the provisions of Part 19 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.

Conditions in Granting Exemption Under Sub-bylaw (2)

(3) An exemption pursuant to sub-bylaw (2) shall be granted only by resolution of the council—

(a) in the particular case; and

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

Interpretation

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

Special Provisions for Certain Buildings

Buildings Concerned

19.12 (1) This by-law 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.

Council May Impose Special Requirements

(2) The council may impose such special requirements for restricting or combating the spread of fire as it considers desirable.

Conditions in Imposing Special Requirements

(3) Any special requirement pursuant to sub-bylaw (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 council so resolves.

GROUP V—FIRE SAFETY AND FIRE RESISTANCE

PART 20.—FIRE RESISTANCES OF STRUCTURAL MEMBERS.

Fire-resistance Ratings: Method of Establishment

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 by-law 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 by-law 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 by-laws 20.3 or 20.4, as the case may be; or

(d) one that is approved by the council pursuant to by-law 20.5.

Documentary Evidence of Fire-resistance Ratings

Form of Evidence

20.2 (1) The report referred to in paragraph (b) of by-law 20.1 shall be an official report issued by one of the following testing authorities— Amended by *G.G.* 16/6/78, p. 1921; *G.G.* 29/2/80, p. 677.

(a) Experimental Building Station, Department of Housing and Construction of the Australian Public Service;

(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—

(i) registered with or approved by the National Association of Testing Authorities, Australia; or

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

(iii) approved by the Testing Laboratory Registration Council of New Zealand,

for the particular test concerned.

Details of Report

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

Conditions of Acceptance of Report

(3) Where a report issued pursuant to sub-bylaw (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.

Variation Permitted to Method of Restraint

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

Submission of Report to Council

(5) A copy of the official report referred to in this by-law 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.

Variation in Span of Certain Members

Conditions of Acceptance

20.3 (1) Where the structural member referred to in by-law 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— Amended by *G.G.* 1/7/77, p. 2023.

(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, the 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 sub-bylaw (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, being a structural member referred to in by-law 20.1, may vary from the size of the tested prototype if— Amended by *G.G.* 1/7/77, p. 2023.

(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.

Minor Variations from Prototype

Council Discretion

20.5 (1) where a structural member that is required to have a fire-resistance rating— Amended by *G.G.* 1/7/77, p. 2023.

(a) is not deemed, pursuant to by-law 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 by-law 20.3 or by-law 20.4,

the council may approve its use upon production of a report in accordance with sub-bylaw (2).

Reports from Specified Authorities

(2) For the purposes of sub-bylaw (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 authorized 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 by-law 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 and heading thereto repealed by *G.G.* 16/6/78, p. 1921.]

Certain Materials Interchangeable

In Concrete and Plaster

20.7 (1) A fire-resistance rating achieved when using any material of Group A, B, C, D, or E, set out below in this sub-bylaw, 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, granodiorite, or trachyte.

Perlite and Vermiculite

(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.

Certain Materials to Meet Special Requirements

Application of By-law

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 by-law, their uses shall be subject to such of the requirements herein as the case requires. Amended by *G.G.* 16/6/78, p. 1921; *G.G.* 28/9/79, p. 2999.

Bricks and Certain Blocks

(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.

Gypsum Blocks

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

Gypsum-sand Mortar and Plaster

(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.

Plaster of Cement and Sand, or Cement, Lime and Sand

(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.

Gypsum-perlite and Gypsum-vermiculite Plaster

(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 m^3 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 m^3 of perlite or vermiculite to 800 kg of gypsum and the second of which shall consist of material in the proportions of 1 m^3 of perlite or vermiculite to 530 kg of gypsum.

Gypsum for Plaster or Mortar

(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.

Reinforcement

(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 1.34 kg/m^2;

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

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

Plaster Reinforcement

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

(a) expanded metal lath complying with sub-bylaw (8); or

(b) 13 mm x 13 mm x 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 then one-third of the total thickness of the plaster.

Column Coverings

Protection against Injury Generally

20.9 (1) The fire-protective covering of a steel column 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.

Protection Against Indenting of Lightweight Construction

(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.

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— Amended by *G.G.* 11/6/76, p. 1882.

(a) the cross-sectional dimensions of the member are not less than those given in Appendix B of Australian Standard 1480, being item 5 of the First Schedule (according, where relevant, to the loads to be supported by the member); and

(b) the types and thickness 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 Concrete

(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 1481, being item 6 of the First Schedule, (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.

Other Materials

(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 notes, 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 these by-laws.

Construction Not Tested or Not Complying

(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.

Fire-resistance Rating Deemed to Satisfy Lesser Requirements

(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

Amended by *G.G.* 11/6/76, pp. 1882-3; *G.G.* 1/7/77, p. 2024; *G.G.* 16/6/78, p. 1921; *G.G.* 29/2/80, pp. 678-9.

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.

Column 1	Column 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
Structural Member	Construction of Member	Thickness of principal material (millimetres)					Annexure Reference note number
		1 hr	1½ hr	2 hr	3 hr	4 hr	
Loadbearing walls whether internal or external, and common and party walls whether loadbearing or non-loadbearing	Solid walls and cavity walls excluding the width of the cavity—						
	Ashlar stone masonry ...	—	—	—	—	300	1
	Solid pressed clay bricks	—	110	—	—	230	2
	Solid concrete blocks and concrete bricks ...	—	127	150	177	200	2
	Concrete—						
	Unreinforced	—	—	—	177	200	—
	Reinforced	Refer to sub-bylaw (1) of by-law 20.10					
	Prestressed	Refer to sub-bylaw (2) of by-law 20.10					
Non-loadbearing walls whether internal or external (except common and party walls—see above)	Solid walls and cavity walls, excluding the width of the cavity—						
	Ashlar stone masonry ...	—	—	—	—	300	1
	Extruded, cored or lattice clay bricks—						
	Unplastered	100	110	139	—	200	3
	Plastered 19 mm thick on both sides	—	—	110	150	—	3, 6
	Solid pressed clay and calcium-silicate bricks—						
	Unplastered	—	110	—	—	190	4
	Plastered 19 mm thick on both sides	—	—	110	—	—	6
	Solid concrete blocks and concrete bricks	100	127	150	177	200	—
	Cavity wall—						
	230 mm cavity wall—						
	One leaf of solid clay brick on flat and one leaf solid clay brick on edge	—	—	—	—	190	4
	250 mm cavity wall—						
	One leaf of solid clay brick and one leaf of concrete block stretcher units	—	—	—	—	200	5
	Concrete—						
	Unreinforced	—	—	—	177	200	—
	No-fines, plastered 19 mm thick on both sides	—	—	—	150	—	6
	Reinforced	Refer to sub-bylaw (1) of by-law 20.10					
	Prestressed	Refer to sub-bylaw (2) of by-law 20.10					

TABLE 20.10 *(Continued)*
FIRE-RESISTANCE RATINGS DEEMED TO APPLY TO CERTAIN STRUCTURAL MEMBERS

Column 1	Column 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
Structural Member	Construction of Member	Thickness of principal material (millimetres)					Annexure Reference note number
		1 hr	1½ hr	2 hr	3 hr	4 hr	
Non-loadbearing walls whether internal or external (except common and party walls—see above)—*continued*	Hollow blocks of concrete with—						
	Category A aggregate...	66	83	96	119	142	7, 8
	Category B aggregate...	73	93	109	134	157	7, 8
	Category C aggregate...	82	101	121	149	172	7, 8
	Terra-cotta—						
	Plastered 19 mm thick one side.....	150	—	—	—	—	6, 9
	Plastered 19 mm thick on both sides.....	100	150	—	—	—	6, 9
	Solid gypsum blocks	75	88	100	110	127	—
	Gypsum-perlite or gypsum vermiculite plaster on metal lath and channels	—	51	63	—	—	10
Steel columns including fabricated columns	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—						
	Solid clay bricks with—						
	column spaces filled..	50	50	50	50	63	11, 12
	column spaces not filled.....	50	50	50	—	—	11
	Solid concrete blocks with—						
	column spaces filled..	50	50	50	63	88	11, 12
	column spaces not filled.....	50	50	63	—	—	11
	Gypsum blocks laid in gypsum-sand mortar with—						
	column spaces filled..	—	—	50	63	88	11, 12
	column spaces not filled.....	—	—	50	—	—	11
	Hollow terra-cotta blocks plastered 13 mm thick with—						
	column spaces filled..	—	—	50	63	88	9, 11, 12
	column spaces not filled.....	—	—	50	—	—	9, 11
	Structural concrete cast *in situ* around mesh or binding, and non-loadbearing	25	32	38	51	63	11, 12, 13
	As above, plastered 13 mm thick	—	25	32	38	51	6, 11, 12, 13

TABLE 20.10 *(Continued)*
FIRE-RESISTANCE RATINGS DEEMED TO APPLY TO CERTAIN STRUCTURAL MEMBERS

Column 1	Column 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
Structural Member	Construction of Member	Thickness of principal material (millimetres)					Annexure Reference note number
		1 hr	1½ hr	2 hr	3 hr	4 hr	
Steel columns including fabricated columns—*continued.*	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—						
	Structural concrete cast *in situ* around mesh or binding and designed to be loadbearing and incorporating—						
	Category B or C aggregate	25	32	38	57	76	8, 11, 12, 13
	Category A aggregate	25	32	38	51	63	8, 11, 12, 13
	Gypsum cast *in situ*	—	—	—	—	48	—
	Gypsum-perlite or gypsum-vermiculite plaster—						
	Sprayed on metal lath	19	22	25	35	44	14, 15
	Sprayed to contour	22	25	35	48	57	18
	Columns not incorporated in, or in direct contact with solid masonry or concrete walls not less than 100 mm thick, with fire protection of—						
	Solid clay bricks with—						
	column spaces filled	50	50	50	63	75	11, 12
	column spaces not filled	50	50	63	—	—	11
	Solid concrete blocks with—						
	column spaces filled	50	50	50	75	100	11, 12
	column spaces not filled	50	50	63	—	—	11
	Columns not incorporated in, or in direct contact with, solid masonry or concrete walls not less than 100 mm thick, with fire protection of—						
	Gypsum blocks laid in gypsum-sand mortar with—						
	column spaces filled	—	—	50	75	100	11, 12
	column spaces not filled	—	—	50	—	—	11

TABLE 20.10 *(Continued)*
FIRE-RESISTANCE RATINGS DEEMED TO APPLY TO CERTAIN STRUCTURAL MEMBERS

Column 1	Column 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
Structural Member	Construction of Member	Thickness of principal material (millimetres)					Annexure Reference note number
		1 hr	1½ hr	2 hr	3 hr	4 hr	
Steel columns including fabricated columns—*continued*	Hollow terra-cotta blocks plastered 13 mm thick with—						
	column spaces filled ..	—	—	50	75	100	9, 11, 12
	column spaces not filled.....	—	—	50	—	—	9, 11
	Structural concrete cast *in situ* around mesh or binding and not subjected to any applied loading.....	25	32	38	51	63	11, 12, 13
	As above, plastered 13 mm thick	—	25	32	38	51	6, 11, 12, 13
	Structural concrete cast *in situ* around mesh or binding and designed to be loadbearing and incorporating—						
	Category B or C aggregate.....	25	38	44	63	89	8, 11, 12, 13
	Category A aggregate.....	25	32	38	51	70	8, 11, 12, 13
	Columns not incorporated in, or in direct contact with, solid masonry or concrete walls not less than 100 mm thick, with fire protection of—						
	Gypsum cast *in situ*	—	—	—	—	51	—
	Gypsum-perlite or gypsum-vermiculite plaster—						
	sprayed on metal lath	19	22	29	38	48	14, 15
	sprayed to contour ..	25	32	41	54	63	18
Concrete columns	Columns of—						
	Reinforced concrete.....	Refer to sub-bylaw (1) of by-law 20.10					
	Prestressed concrete.....	Refer to sub-bylaw (2) of by-law 20.10					
Steel beams including open-webbed joists, girders, trusses and the like	Joists, beams, girders, and trusses, in direct contact with solid reinforced concrete slab or hollow-block floor or roof construction, with fire protection of—						
	Structural concrete encasement incorporating—						
	Category B or C aggregate.....	25	32	38	51	63	8, 16
	Category A aggregate.....	25	25	32	44	57	8, 16

TABLE 20.10 *(Continued)*
FIRE-RESISTANCE RATINGS DEEMED TO APPLY TO CERTAIN STRUCTURAL MEMBERS

Column 1	Column 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
Structural Member	Construction of Member	Thickness of principal material (millimetres)					Annexure Reference note number
		1 hr	1½ hr	2 hr	3 hr	4 hr	
Steel beams including open-webbed joists, girders, trusses and the like—*continued*	Gypsum-perlite or gypsum-vermiculite plaster—						
	Sprayed on metal lath	19	22	25	35	44	15, 17
	Sprayed to contour	22	25	35	48	57	18
	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—						
	Structural concrete encasement incorporating—						
	Category B or C aggregate	25	38	44	63	89	8, 16
	Category A aggregate	25	32	38	51	70	8, 16
	Gypsum-perlite or gypsum-vermiculite plaster—						
	Sprayed on metal lath	19	22	29	38	48	15, 17
	Sprayed to contour	25	32	41	54	63	18
Floors, roofs and ceilings	Concrete—						
	Reinforced	Refer to sub-bylaw (1) of by-law 20.10					
	Prestressed	Refer to sub-bylaw (2) of by-law 20.10					

ANNEXURE TO TABLE 20.10

1. *Ashlar Stone Masonry.* The ashlar 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. *Stresses in Loadbearing Masonry.* The calculated compressive stresses applied to internal loadbearing masonry less than 150 mm thick shall not exceed 1.1 MPa, the calculations being based on net areas of masonry units if these contain cores or similar holes.
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 70 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 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 in accordance with Australian Standard 1640, being item 20 of the First Schedule.
   (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 note 7.
   (c) The leaves shall be tied with wall ties complying with by-law 36.6.
   (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 subnote (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

TYPE OF AGGREGATE USED IN MANUFACTURE OF BLOCKS (See note 8)	TYPE OF PLASTER AND ITS LOCATION		
	Cement and sand, or cement, lime and sand on ONE face only	Cement and sand, or cement, lime and sand on BOTH faces	Gypsum, or gypsum-perlite, or gypsum-vermiculite on ONE or BOTH faces
Category A Aggregate	No concession shall be made	Equivalent thickness of concrete block without plaster plus 25 per cent of total thickness of plaster	Equivalent thickness of concrete block without plaster plus total thickness of plaster
Category B Aggregate	No concession shall be made	Equivalent thickness of concrete block without plaster plus 35 per cent of total thickness of plaster	Equivalent thickness of concrete block without plaster plus 1.1 times the total thickness of plaster
Category C Aggregate	No concession shall be made	Equivalent thickness of concrete block without plaster plus 50 per cent of total thickness of plaster	Equivalent thickness of concrete block without plaster plus 1.25 times the total thickness of plaster

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 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 (SiO_2) 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 subnote (1).

(c) Unexpanded blast-furnace slag.

(3) Category C aggregate shall comply with the following:

(a) Aggregate shall comply with Australian standard 1465, being item 8(a) of the First Schedule.

(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 (SiO_2), 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 1120 kg/m^3.

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) [Deleted by *G.G.* 16/6/78, p. 1921.]

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 × 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 Columns*

(1) Where the principal fire-protective construction of a steel column, whether or not a fabricated 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 subnote (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 the 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 Columns.* Where steel columns, whether or not fabricated 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 for Columns.* 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. *Materials 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, girder, truss 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 a 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 Open-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 or Gypsum-vermiculite Plaster Sprayed to Contour.*

(1) For the purposes of this note—

(a) a surface of a member is deemed to be—

(i) vertical at every point from which a line drawn perpendicular to the surface would be not more than ten degrees from horizontal;

(ii) an upper horizontal surface at every point from which a line drawn perpendicular to, and away from, that point would extend upwards at not more than ten degrees from vertical;

(b) the width of a surface at a point shall be the width of the surface measured across that point.

(2) The plaster applied to a member shall be reinforced in accordance with this note—

(a) in the case of a member having a cross-sectional shape resembling the letter "H" or "I", at every point at which the width of a flat surface, other than an upper horizontal surface, of the member is more than—

(i) where the surface is vertical at that point, 450 mm;

(ii) where the surface is not vertical at that point, 300 mm;

(b) in the case of any other member, at every point on a surface other than an upper horizontal surface.

(3) Where reinforcement is required by this note it shall be—

(a) expanded metal lath complying with sub-bylaw (8) of by-law 20.8; or

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

placed at a distance from the outer surface of the plaster of not less than one-third of the thickness of the plaster, and permanently fixed to the member—

(c) where the surface of the member is vertical, at 450 mm centres; and

(d) where the surface of the member is not vertical, at 300 mm centres.

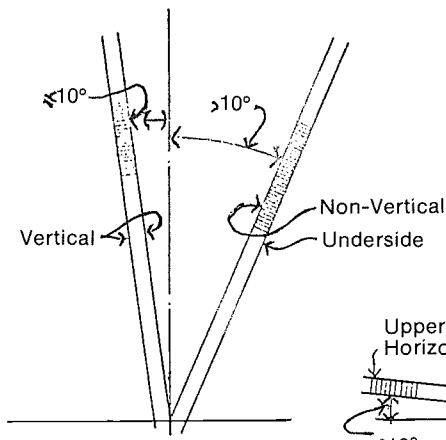


Figure 1.

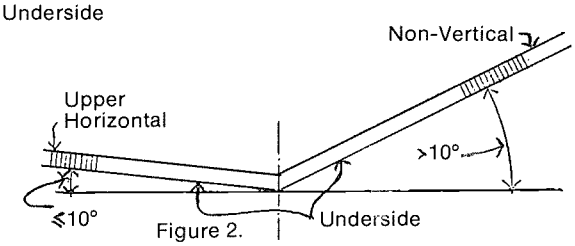


Figure 2.

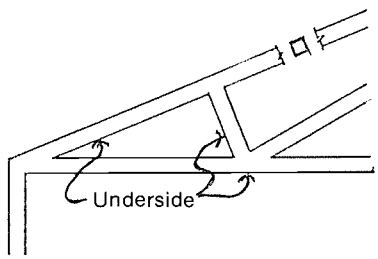


Figure 3.

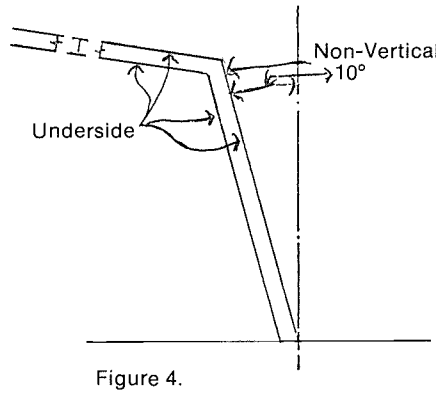


Figure 4.

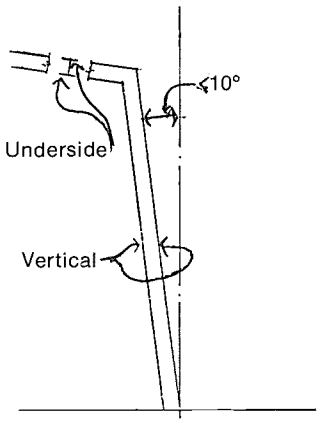


Figure 5.

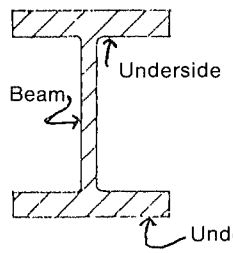


Figure 6.

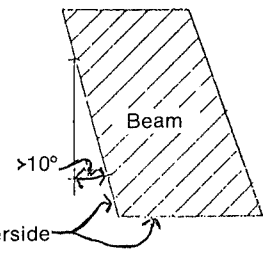


Figure 7.

Figures illustrating annexure reference note 18 to Table 20.10.

GROUP V.—FIRE SAFETY AND FIRE RESISTANCE

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

Fire Doors—Construction Requirements

Amended by *G.G.* 1/7/77, p. 2024; *G.G.* 29/2/80, p. 679.

21.1 Every required fire door shall—

(a) compromise a complete doorset as described in Australian Standard 1905, being item 3 of the First Schedule;

(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.

Fire Doors—Supplementary Requirements

Glazing

Amended by *G.G.* 1/7/77, p. 2024.

21.2 (1) Notwithstanding the provisions of Australian Standard 1905, being item 3 of the First Schedule, 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 x 10^3 mm^2 in any other case.

Fire Door Signs: Wording

(2) A required fire door shall be clearly and legibly labelled by a sign bearing—

(a) in the case of a self-closing fire door, the words:
"FIRE DOOR
KEEP CLOSED" ; or

(b) in the case of an automatic fire door, the words:
"FIRE DOOR
DO NOT OBSTRUCT"

Fire Door Signs: Lettering and Position

(3) The sign referred to in sub-bylaw (2) shall be—

(a) in capital letters not less than 25 mm high in a colour contrasting with that of the background; and

(b) located on the face of the fire door or some other approved location where the sign will be clearly visible when the fire door is open.

Smoke Doors

21.3 Every required smoke door shall—

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

(b) be side-hung; and

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

Fire Windows: Alternative Construction

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 the maximum dimensions, construction, and installation with Specification No. 1; or

(c) a glass-block window panel, complying as to maximum dimensions, construction, and installation with Specification No. 2.

Fire Shutters: Alternative Construction

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 maximum dimensions, construction, and installation with Specification No. 3.

Evidence of Compliance

To be Submitted to Council

21.6 (1) When the installation of any required fire door, fire window or fire shutter has been completed, the building owner shall furnish evidence to the council to show— Amended by *G.G.* 1/7/77, p. 2024.

(a) that each such fire door, fire window or fire shutter is identical with the tested prototype, or where non-tested fire windows or fire shutters are installed, each such fire window or fire shutter has been manufactured in strict accordance with the requirements of Specification No. 1, No. 2 or No. 3, as the case may require; and

(b) that where a fire door has been installed, the fire door frame has been correctly installed and in all respects the fire door has been installed in accordance with Australian Standard 1905, being item 3 of the First Schedule, or that where a fire window or fire shutter has been installed, the fire window or fire shutter has been correctly installed in accordance with Specification No. 1, No. 2 or No. 3, as the case may require.

Form of Evidence

(2) The evidence referred to in sub-bylaw (1) shall be in the form of a certificate by the manufacturer of the fire door, fire window or fire shutter, or his accredited representatives, certifying that an inspection of the installation has been carried out and that, as far as can be ascertained, the fire door, fire window or fire shutter installation complies with paragraphs (a) and (b) of that sub-bylaw.

GROUP V—FIRE SAFETY AND FIRE RESISTANCE

PART 22—LOCATION AND PROTECTION OF OPENINGS

Application

22.1 This Part shall apply to every building except a Class 1, 1A or X building.

Opening Defined

22.2 For the purposes of this Part, an "opening" in an external wall includes— Amended by *G.G.* 1/7/77, p. 2024.

(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 part of the wall.

Vertical Separation of Openings in External Walls

Application of By-law

22.3 (1) This by-law shall apply to buildings of Type 1 and Type 2 construction, but shall not extend to— Amended by *G.G.* 16/6/78, p. 1921.

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

(b) openings above one another within 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 not less than 900 mm in height and complying with the following conditions—

(i) the construction shall extend not less than 600 mm above the upper surface of the intervening floor;

(ii) the construction shall comprise non-combustible material having the relevant fire-resistance rating prescribed for external walls by Table 16.7 (in the case of Type 1 construction) or Table 16.8 (in the case of Type 2 construction);

(iii) there shall be no voids between the edge of the floor and the inside face of the spandrel or other vertical construction, as the case may be; or

(b) a slab or other horizontal construction that—

(i) projects outwards from the face of the wall for a distance of not less than 1100 mm;

(ii) extends along the wall not less than 450 mm beyond the lateral limits of the openings concerned; and

(iii) is non-combustible and has a fire-resistance rating of not less than one hour.

Protection of Openings in External Walls

Where Protection Required

22.4 (1) In a fire zone, the following openings in an external wall shall be protected in accordance with sub-bylaw (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.

Protection Required

(2) The protection referred to in sub-bylaw (1) shall be as follows—

(a) Doorways—one-hour fire doors (self closing or automatic);

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

(c) Other openings—construction having a fire-resistance rating of not less than one hour.

Limitations of Openings in External Walls

22.5 Openings between successive floors in an external wall referred to in by-law 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.

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 by-law; or

(b) openings for services installed or protected in accordance with by-law 22.13.

Protection of Doorways

(2) Subject to sub-bylaw (4) a doorway in a fire wall shall be protected by one of the following alternative methods—

(a) two fire doors or fire shutters, one 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 of 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.

Limitation on Doorway Openings

(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.

Fire Shutters Not to be Used in Certain Places

(4) Notwithstanding sub-bylaw (2) a fire shutter shall not be used to protect a doorway in a fire wall if there would be a danger that combustible materials on one side of the doorway would be ignited by radiation through the shutter.

Doorways in Fire-isolated Stairways, Passageways, and Ramps

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.

Openings in Fire-isolated Lift Shafts

Doorways

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 AS CA3, being item 9 of the First Schedule, 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.

Lift Indicator Panels, etc

(2) Lift call panels, indicator panels and other panels in the walls of a fire-isolated lift shaft shall, if they exceed 32.5 x 10^3 mm^2 in area, be backed by construction having a fire-resistance rating of not less than one hour.

Doorways in Buildings of Class II and III

Doorways to Public Corridors etc

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— Amended by *G.G.* 1/7/77. p. 2024.

(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 sub-bylaw (3).

Doorways Between Sole-occupancy Units, etc

(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 sub-bylaw (3).

Protection Required

(3) The protection required by sub-bylaws (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.

Entrance Doorways of Class IV Buildings

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— Amended by *G.G.* 1/7/77, p. 2024.

(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.

Services Passing through Openings in Certain Walls or Floors

22.11 (1) In a building of Type 1 or Type 2 construction, services associated with the functioning of the building and passing through a wall or floor shall, over the whole of their length, either be individual metal pipes, metal conduits, or the like, or be installed in shafts complying with Part 16. Substituted by *G.G.* 29/2/80, pp. 679-80.

(2) Notwithstanding sub-bylaw (1), in a building of Type 1 or Type 2 construction that contains not more than three storeys and complies with Part 19, sanitary or water supply plumbing passing through a wall or floor referred to in that sub-bylaw—

(a) to the outside of the building; or

(b) into a shaft complying with Part 16 and having at the top a permanently mounted vent of which the area of the opening is not less than one-quarter of the cross-sectional area of the shaft,

may be of polyvinyl chloride.

Openings to Shafts, etc.

Protection in Type 1 and 2 Construction

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 provided in sub-bylaw (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.

In Sanitary Compartments

(2) An opening referred to in sub-bylaw (1) shall not be subject to that sub-bylaw 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.

Openings for Service Installations

Application of By-law

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

Pipes and Conduits

(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 its 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.

Ventilating and Air-conditioning Ducts

(4) Openings for ventilating or air-conditioning ducts or other equipment shall be protected as required by Part 55 and Specification No. 7.

Other Services

(5) Openings for other services not mentioned in sub-bylaws (2), (3) and (4) shall be protected in an approved manner.

Skylights

(6) Any skylight placed in a court or well, constructed in a building, or constructed on a roof of fire-resisting construction shall be in accordance with the provisions of sub-bylaw (2) of by-law 22.4 and those of Part 21.

GROUP V.—FIRE SAFETY AND FIRE RESISTANCE

PART 23.—SEPARATION OF A BUILDING INTO SECTIONS BY FIRE-RESISTING CONSTRUCTION

Part heading substituted by *G.G.* 1/7/77, p. 2024.

Separation into Sections by Fire Walls

Heading amended by *G.G.* 1/7/77, p. 2024.

When Section Regarded as a Separate Building

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 by-law shall be subject to the provisions of these by-laws as though it were a separate building.

Fire Wall to Extend Through All Storeys

(2) A fire wall shall extend through all storeys and spaces in the nature of storeys that are common to the section of the building and shall be carried through to the underside of the roof covering.

Where Sections Have Roofs at Different Levels

(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.

Council May Permit Certain Exemptions

(4) Notwithstanding anything to the contrary in this by-law, the council may permit an exemption from any or all of the requirements of paragraph (b) of sub-bylaw (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.

Combustible Materials Not to Cross Fire Walls

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

Fire-resistance Rating of 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.

Openings

(7) Openings in the fire wall shall comply with the relevant provisions of Part 22.

Separation Between Portions of Different Classifications

Heading amended by *G.G.* 1/7/77, p. 2024.

When Required

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

Amended by *G.G.* 1/7/77, p. 2024; *G.G.* 16/6/78, p. 1921.

Within the Same Storey

(2) If the sections 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 sub-bylaw (1) of by-law 16.15.

Within Different Storeys

(3) If the sections 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 1 construction is required) or Table 16.8 (if Type 2 construction is required) for the classification of the lower of the two adjoining storeys concerned.

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

(i) 13 mm plasterboard; or

(ii) 12 mm asbestos-silica board; or

(iii) 12 mm mesh-reinforced fibrous plaster in which the mesh is one of 13 mm x 13 mm x 0.710 mm welded wire located not more than 8 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.

Class IV Portions of Buildings: Exemption

Heading amended by *G.G.* 1/7/77, p. 2024.

23.3 The walls, or floors separating a Class IV portion from the remainder of the building (including the case of a combined shop and dwelling) shall not be subject to by-law 23.2.

Amended by *G.G.* 1/7/77, p. 2024.

Exemption from Separation Within Same Storey

Amended by *G.G.* 1/7/77, p. 2024.

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.

Separation of Lifts from Remainder of Building

When Required

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.

Stairways and Lifts in the One Shaft

(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.

Garages Attached to Buildings

Public Garages

23.6 (1) A public garage, or service station shall not be located within or attached to another building, unless it is separated from every other occupancy by a party structure having a fire-resistance rating of three hours in the case of walls and floors.

Private Garages: Class II and III Buildings

(2) A private garage may be attached to a Class II or III building of Type 1, 2 or 3 construction if that garage is separated from the rest of the building by a wall and floor having a fire-resistance rating of one hour.

Private Garages: Class I and IA Buildings

(3) A private garage may be attached to a Class I or IA building of Type 1, 2 or 3 construction, if it is separated from the building by a single brick wall or block wall extending—

(a) where a ceiling of sheet metal, fibrous plaster, or asbestos is incorporated in the construction of the garage, to the height of the ceiling; and

(b) in any other case, to the underside of the roof of the building.

Private Garages: Wood Frame Class I and IA Buildings

(4) In the case of a Class I or IA building of Type 5 (wood frame) construction, the council may approve the attachment of a private garage if it is lined internally on the walls and ceiling with 4.5 mm asbestos or 9.5 mm plaster.

Private Garages: Construction in Relation to Class I and IA Buildings

(5) In the case of a Class I or IA building a private garage may—

(a) be constructed below the floor of a domicile, if the floor has (as a minimum requirement) the undersides of the joists covered with fibrous plaster of not less than 9.5 mm in thickness or with sheet metal and, in the case of buildings of Type 5 construction, if the walls are sheeted with asbestos of 4.5 mm, or fibrous plaster of 9.5 mm, minimum thickness;

(b) have an opening to a domicile, if that opening is not wider than 900 mm and is closed by a solid cored door having a minimum thickness of 38 mm.

GROUP V—FIRE SAFETY AND FIRE RESISTANCE

PART 24—MEANS OF EGRESS

Division 1—Introductory

Divisions of Part 24

24.1 This Part is divided as follows— Amended by *G.G.* 1/7/77, p. 2024.

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
Division 6—Miscellaneous.

24.2 **********

[Exits and Paths of Travel to Comply with this Part

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

Types of Exits

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

Application of Division

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

Alterations to Buildings

24.6 Where alterations, extensions, or additions are proposed in respect of any building (irrespective of whether that building was erected before or after these by-laws came into operation in the district or in that part of the district in which the building is situated), and 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.

Protection of Openings in Exits and Paths of Travel.

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.

Direct Access to Rooms from Certain Exits

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.

Fire-isolated Passageways: Construction

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.

Fire-isolated Ramps: Construction

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.

External Stairways in Lieu of Fire-isolated Stairways

Where Permissible

24.11 (1) External stairways may serve as required exits in lieu of fire-isolated stairways in buildings not exceeding six storeys in height, subject to this by-law. Amended by *G.G.* 1/7/77, p. 2024.

Construction

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

Enclosure under Certain Conditions

(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 part in the enclosing walls of the stairway shall be within 6 m of any window or doorway in the external walls of the building.

Exemption from Enclosure

(4) Sub-bylaw (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 shown—

(i) windows less than 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.

Escalators and Non-required Stairways

Number of Storeys Served

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.

Exemptions

(2) Sub-bylaw (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.

Travel via Non-fire-isolated Stairways

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.

Discharge of Fire-isolated Stairways and Ramps

To Roads or Open Space

24.14 (1) Subject to sub-bylaw (2) 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. Amended by *G.G.* 9/12/77, p. 4581.

To Space in Building that is not Fully Enclosed

(2) Notwithstanding by-law 24.4 or sub-bylaw (1), in a Class V, VI, VII or VIII building a fire-isolated stairway or a fire-isolated ramp may discharge, directly or by way of a fire-isolated passageway, into a storey or similar space within the confines of the building 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 space do not occupy, in total, more than one-third of its perimeter.

Separation of Rising and Descending Stair Flights

No Direct Connection

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

Construction Separating Flights

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

Discharge of Non-fire-isolated Stairways and Ramps in Class VI Buildings

24.16 In a Class VI building, a required non-fire-isolated 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.

Installations in Exits and Paths of Travel

Gas Meters

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 Pipes

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

Other Services

(3) 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 non-combustible construction or a material listed in by-law 16.12—

(a) electricity meters or ducts;
(b) telephone switchboards;
(c) electrical motors or other motors serving equipment in the building.

Openings to Chutes for Hot Products of Combustion

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.

Enclosure of Space under Stairs

Fire-isolated Stairways

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.

Non-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—

(a) the enclosing floors, 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.

Doorways and Doors

Application of By-law

24.20 (1) This by-law shall apply to doorways and doors— Amended by *G.G.* 24/12/76, p. 5099.

(a) serving as required exits; or
(b) forming part of a required exit.

Revolving Doors and Roller Shutters

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

Sliding doors

(3) A sliding door shall not be fitted to a doorway referred to in sub-bylaw (1) other than a doorway leading to a road or open space.

Power-operated Sliding Doors

(3a) Where a power-operated sliding door is fitted it shall be so constructed that, in the event of malfunction or of failure of the power source, it may be opened manually under a force of not more than 110N.

Swinging Doors: Encroachment

(4) A swinging door fitted to a doorway referred to in sub-bylaw (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;

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

(c) shall not when part or fully open encroach on any road or public footpath.

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

Direction of Swing

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

(a) a doorway opening to a sanitary compartment that is not required by by-law 53.16 to have a door which opens outwards; and

(b) a door to a shop or business which is opened and locked back, during all business working hours.

Operation of Locks

(6) A door referred to in sub-bylaw (1) shall be readily openable, without a key, from the side facing the direction of egress.

Thresholds

Incorporation of Steps or Ramps

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 sub-bylaw (2), incorporate a step or ramp at any point closer to the doorway than the width of the door leaf.

Doorways Opening to Exterior of Building

(2) A doorway opening to a road, open space, or external balcony shall not be subject to sub-bylaw (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.

Egress to Open Space

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, the path of travel to the road shall be by way of— Amended by *G.G.* 1/7/77, p. 2025.

(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.

Widths of Stairways

To be Measured Clear of Obstructions

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. Amended by *G.G.* 1/7/77, p. 2025.

Exceeding 2 040 mm in Width

(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 by a balustrade or handrail continuous between landings; and

(b) each such division 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

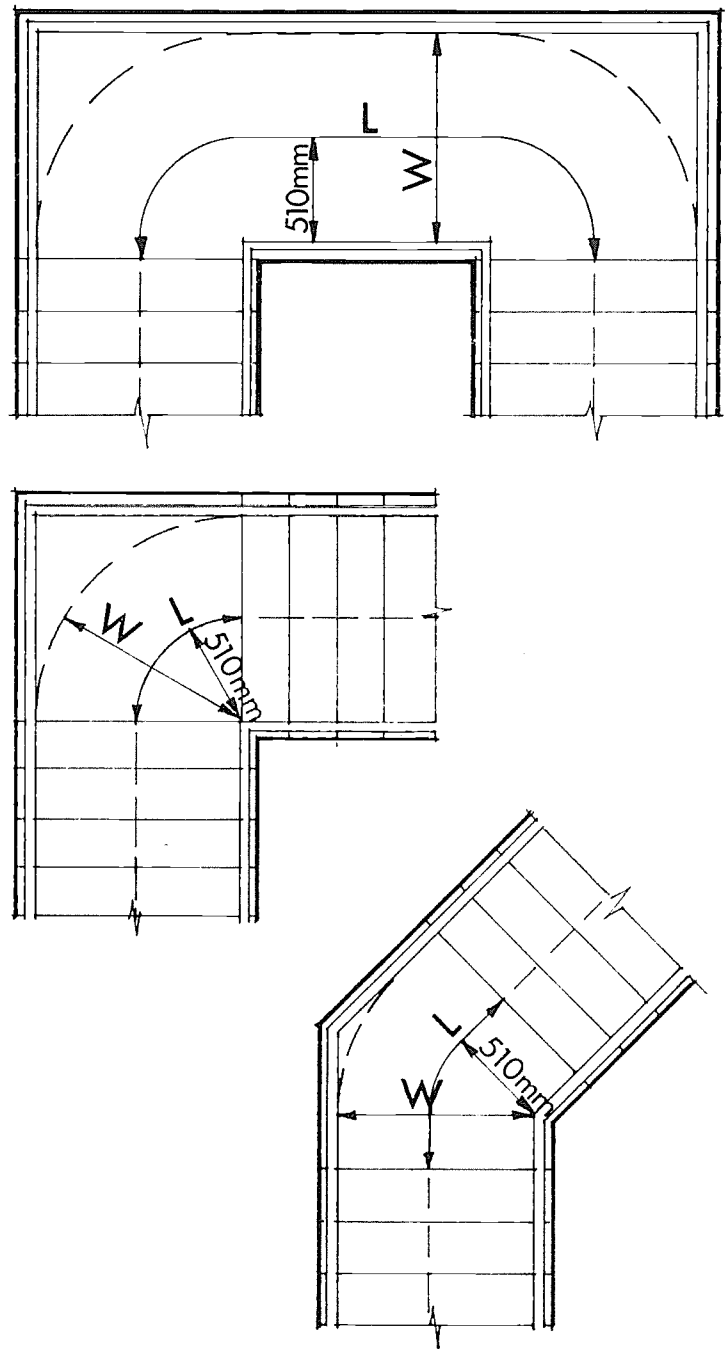


FIGURE 24.23 ILLUSTRATING BY-LAW 24.23.

STAIRWAY REQUIREMENTS

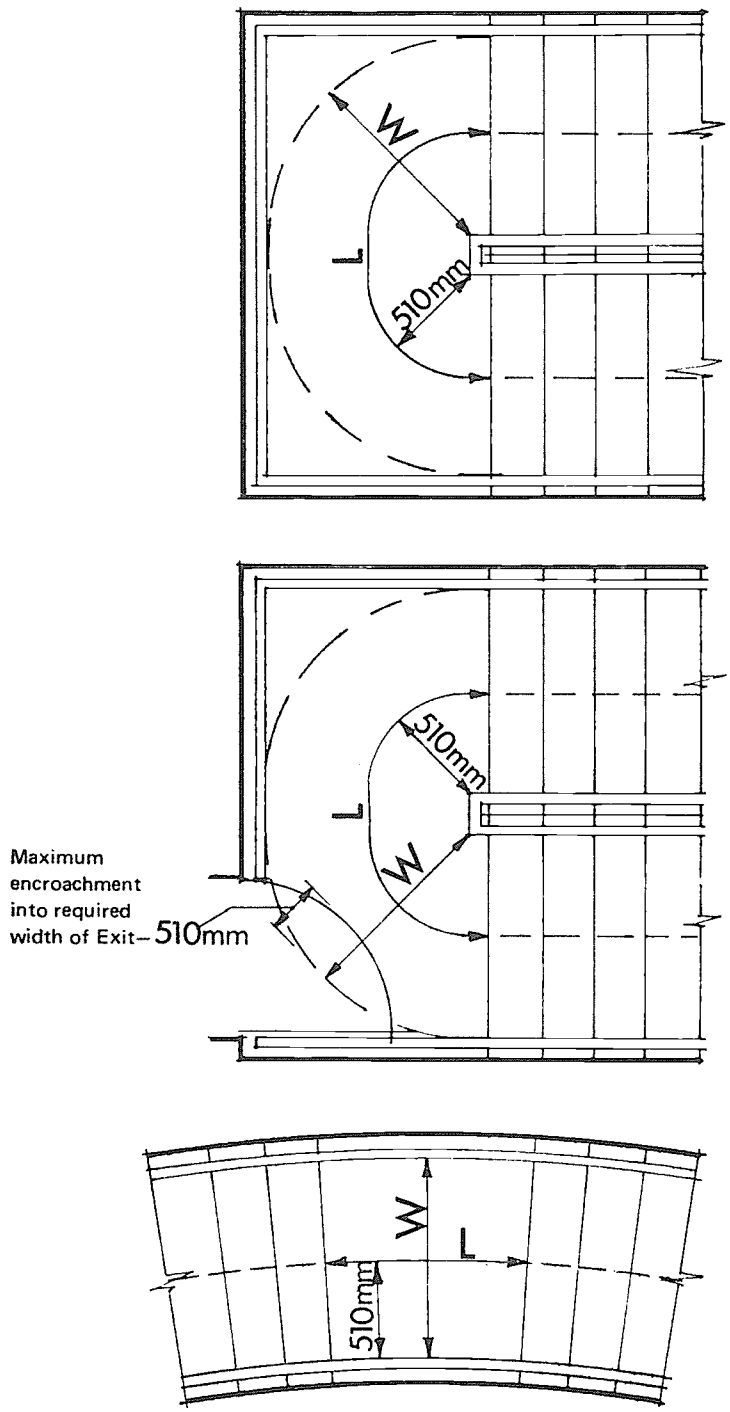


FIGURE 24.23 ILLUSTRATING BY-LAW 24.23.

Landings

Between Flights

24.24 (1) Every stairway or ramp serving as a required exit shall be provided with landings where necessary—

(a) in the case of a stairway, to limit the number of risers in a flight to 18; or

(b) in the case of a ramp, to limit the vertical height ascended in one flight to 3 600 mm.

Length

(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 not be less than 760 mm.

Surface Finish

(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.

Certain Curved Stairways and Ramps Exempt

(4) Sub-bylaw (1) does not apply to a curved stairway, or curved ramp, in which the direction of travel changes at a rate of at least 90° per 3 000 mm of vertical height ascended by the stairway or ramp.

Treads and Risers

Number in a Flight

24.25 (1) Subject to sub-bylaw (4) of by-law 24.24 the flight of a required stairway shall not have more than 18 or less than 2 risers.

Going and Riser Heights

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

Construction of Treads

(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.

Construction of Risers

(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.

TABLE 24.25

LIMITS OF RISER HEIGHT AND GOING

Amended by *G.G.* 29/2/80, p. 680.

Shape of Treads in Plan		Rectangular	Tapered as in a Curved Stairway		
Riser Height *R* mm	Max.	190	190		
	Min.	115	115		
Going *G* mm	Max.	395	Wide end of Tread	445	
	Min.	250	Narrow end of Tread	205	
Quantity $2R + G$	Max.	630	Wide end of Tread	Max.	675
				Min.	625
	Min.	585	Narrow end of Tread	Max.	590
				Min.	545

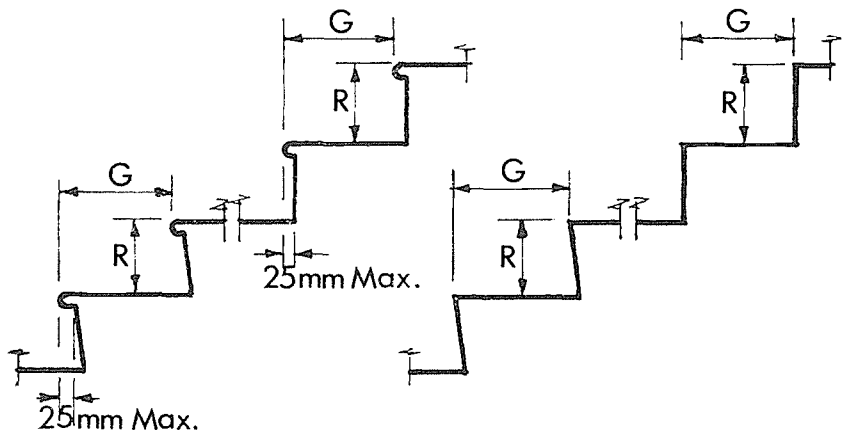


FIGURE 24.25

Ramps: General Requirements

Measurement of Width

24.26 (1) The width of a ramp serving as a required exit 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 of not less than 2 030 mm vertically above the floor surface of the ramp.

Gradient

(2) The slope of a ramp serving as a required exit shall have a grade of not more than 1 in 8 in any part.

Surface Finish

(3) The floor surface of a ramp shall have a non-slip finish.

Outgoing Vehicle Ramps

(4) The grade of an outgoing vehicle ramp from a building shall not exceed 1 in 12 within 3 650 mm of the alignment of the street to which it gives access.

Handrails and Balustrades

Where Stairway etc. Not Bounded by a Wall

24.27 (1) Subject to by-law 53.13, a handrail or balustrade shall be provided along the side of any required stairway or ramp, and any landing, corridor, hallway, external access balcony, or bridge, or the like, leading to an exit, wherever that side is not bounded by a wall and is more than 915 mm (or 5 risers in the case of a stairway) above the finished surface of the floor or ground, as the case may be, below.

Number of Handrails

(2) A handrail shall be provided along at least one side of every flight of stairs in a required stairway and where the flight is 1 525 mm or more in width, a handrail shall be provided along each side.

Height, etc. of Handrails

(3) Required handrails shall be fixed at a vertical height of not less than 865 mm above—

(a) the nosings of stair treads; and

(b) the floor surface of ramps, landings, corridors, hallways, external access balconies, bridges and the like,

and shall be so constructed that there will be no obstruction on or above them that will tend to break a hand hold.

Handrails to be Continuous Between Landings

(4) Every required handrail shall be continuous between stair flight landings.

Widths of Exits According to Number of Persons

Application of By-law

24.28 (1) This by-law shall apply wherever this Part regulates the minimum width of required exits or doorways leading to required exits according to the number of persons accommodated in a storey.

Calculation of Number Accommodated

(2) The number of persons deemed to be accommodated in a storey shall be the sum of the numbers obtained by dividing the floor area of each portion of the storey by the relevant number of square metres per person listed in Table 24.28, according to the use or proposed use of that portion.

Occupancy Use Not Listed

(3) Where a particular use of portion of a storey is not listed in Table 24.28, the number of square metres per person to be used in the calculation shall be as determined by the council.

Calculation of Floor Area

(4) In this by-law, the floor area of a storey or portion of a storey shall exclude spaces set aside for—

(a) lifts, stairs, and escalators;

(b) corridors, hallways, lobbies, and the like;

(c) service ducts and the like; and

(d) sanitary compartments or other ancillary uses.

TABLE 24.28
AREAS PER PERSON ACCORDING TO USE

Type of Use	Square metres per person
Bar	1
Boiler	30
Board Room	2
Boarding House	15
Cafe	1
Cafeteria	1
Computer Room	25
Dining Room	1
Factory—	
(a) a machine shop, fitting shop, or like place for cutting, grading, finishing or fitting of metals or glass, except in the fabrication of structural steel-work or manufacture of vehicles or bulky products	5
(b) areas used for fabrication and processing other than those in (a)	50
(c) a space in which the layout and natural use of fixed plant or equipment determine the number of persons which will occupy the space during working hours	The area per person determined by the natural use of the fixed plant or equipment and as approved by the council
Garage—public	30
Guest House	15
Hostel	15
Kiosk	1
Kitchen	10
Laboratory	10
Laundry	10
Library—reading space	2
—storage space	30
Office, including one for typewriting or document copying	10
Plant Room for—ventilation, electrical or other service units	30
—Boilers or Power plant	50
Reading Room	2
Restaurant	1
Shop—space for sale of goods—	
(a) at a level entered direct from the open air or any lower level	1.5
(b) all other levels	3
Showroom—display area	5
Staff Room	10
Storage space	30
Switch Room	30
Telephone exchange—private	30
Transformer Room	30
Workshop—for maintenance staff	30
—for manufacturing processes	As for "Factory"

Exit Signs

Application of By-law

24.29 (1) The provisions of this by-law are subject to the provisions set out in sub-bylaw (6) in regard to Class II buildings and sub-bylaw (7) in regard to the entrance doors of certain sole-occupancy units.

Provision at Doorways of Certain Exits

(2) Exit signs shall be provided in the following positions—

(a) on or near every door affording direct access from a storey to—
  (i) an enclosed stairway or ramp serving as a required exit;
  (ii) an external stairway serving as a required exit; and
  (iii) an external access balcony leading to a required exit; and
(b) on or near every door discharging from an enclosed stairway or ramp at every level of access to a road or open space.

In Corridors, etc. Under Certain Conditions

(3) Exit signs shall also be installed in corridors, hallways, lobbies, and the like indicating the direction of a required exit, if the council is of opinion that the location of the exits will not otherwise be readily apparent to persons occupying or visiting the building.

Position and Illumination of Signs

(4) A required exit sign shall—

(a) in the cases referred to in sub-bylaw (2) be installed on or near the doorway concerned in such a position as to be clearly visible to persons approaching the exit or external balcony, as the case may be;
(b) in the cases referred to in sub-bylaw (3) be installed in positions approved by the council; and
(c) be illuminated externally or internally by an emergency lighting system or by self-luminous paint or other self-luminous material.

Details on Signs

(5) Every sign required by this by-law shall—

(a) conform with the details and dimensions of Figure 24.29 and Table 24.29; and
(b) contain only the word "EXIT" together with an arrow where necessary to indicate the direction of the exit.

Class II Buildings

(6) The foregoing provisions shall not apply to a Class II building in which every door referred to in paragraphs (a) and (b) of sub-bylaw (2) is clearly and legibly labelled on the side remote from the exit or balcony, as the case may be, with the word "EXIT" in capital letters 25 mm high in a colour contrasting with that of their background.

Entrance Doors to Certain Sole Occupancy Units

(7) Notwithstanding anything to the contrary in this by-law, it shall not be necessary to provide an exit sign on or near an entrance doorway of a sole-occupancy unit in a Class II, III or IV building.

FIGURE 24.29

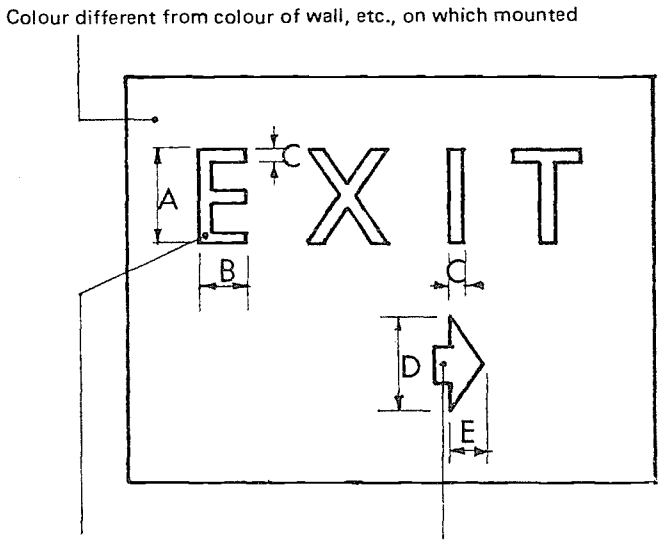


TABLE 24.29
MINIMUM DIMENSIONS

Dimension	Minimum Value Permitted
A	100 mm
B	1/2 A
C	12 mm
D	100 mm
E	1/3 D

Note— Figure 24.29 and Table 24.29 do not apply to a Class II building complying with by-law 24.29 (6)

Division 3—Class II and III Buildings

Application of Division

24.30 This Division, in addition to Division 1 and Division 2, shall apply to Class II and Class III buildings, but shall not apply to any sole-occupancy unit or room therein which has its own direct access to a road or open space.

Number of Exits

Buildings not More than Six Storeys in Rise

24.31 (1) In a building having a rise of not more than six storeys, one exit only shall be required except where—

(a) the building is subject to sub-bylaw (2); or

(b) the requirements of by-law 24.32 cannot be met by the provision of a single exit.

Buildings More than Six Storeys in Rise

(2) In a building having a rise of more than six storeys, at least two exits shall be provided.

Situation of Sole-occupancy Units, etc.

Where One Exit is Permissible

24.32 (1) Where only one exit is required in a Class II or Class III building— Amended by *G.G.* 1/7/77, p. 2025.

(a) the entrance doorway of a sole-occupancy unit shall not be more than 5.5 m from that exit; and

(b) no point on the floor of a room, not being a room in a sole-occupancy unit, shall be more than 15 m from that exit.

Where Two or More Exits are Required

(2) Where two or more exits are required in a Class II or Class III building—

(a) the entrance doorway of a sole-occupancy unit shall not be more than 5.5 m from a point from which travel in different directions to two of those exits is available; and

(b) no point on the floor of a room, or passage not being a room in a sole-occupancy unit, shall be more than 15 m from a point from which travel in different directions to two of those exits is available.

Distance Between Alternative Exits

24.33 Where two exits are required to serve as alternative exits in relation to any room or sole-occupancy unit in a Class II or III building the distance between those two exits shall not be more than 45 m, and in the case of a Class III building the distance between the two exits shall not be less than 9 m.

Measurement of Distances

"Nearest Part of an Exit" Defined

24.34 (1) In this by-law, "nearest part of an exit" means— Amended by *G.G.* 1/7/77, p. 2025.

(a) in the case of a fire-isolated stairway, fire-isolated passageway, or fire-isolated ramp, the nearest part of the doorway providing access thereto;

(b) in the case of a non-fire-isolated internal or external stairway the nearest part of the nearest riser;

(c) in the case of a non-fire-isolated ramp, the nearest part of the junction of the floor of the ramp and the floor of the storey concerned; and

(d) in the case of a doorway opening to a road or open space, the nearest part of that doorway.

Methods of Measurement

(2) In measuring the distances referred to in by-laws 24.32 and 24.33 the following rules shall apply;

(a) In the case of a room, not being a sole-occupancy unit the distance shall include the straight-line measurement from any point on the floor of the room to the nearest part of a doorway leading therefrom, together with the distance from such part of the doorway to the single required exit or point from which travel in different directions to two required exits is available, as the case requires.

(b) The distance from the doorway of a room or sole-occupancy unit shall, subject to paragraph (d), be measured in a straight line to the nearest part of the required single exit or point from which travel in different directions to two required exits is available, as the case requires.

(c) The distance between two required exits shall, subject to paragraph (d), be measured in a straight line between the nearest parts of those exits.

(d) Where a corridor, hallway, external balcony or other path of travel leading to a required exit or connecting two required exits, includes a curve or change of direction, the distance shall include the shortest measurement along the corridor or other path of travel, whether by curves, or straight lines, or a combination of both.

Alternative Exits to Discharge Separately

24.35 Where two or more exits are required in a Class II or Class III building, they shall provide separate egress to a road or open space and at the level of discharge shall not be connected by any corridor, hallway, lobby, or the like (other than a fire-isolated passageway) that is common to two or more of them.

Required Stairways in Class II Buildings

Where Stairways Must be Fire-isolated

24.36 (1) In a Class II building every required stairway shall be a fire-isolated stairway, except as provided in sub-bylaw (2).

Where Non-fire-isolated Stairways are Permissible

(2) Non-fire-isolated stairways may serve as required exits in Class II buildings where—

(a) such stairways connect not more than three storeys, or not more than four storeys if at least one storey is set aside solely for the accommodation of motor vehicles or other ancillary purposes; and

(b) the provisions of by-law 24.38 are met.

Required Stairways in Class III Buildings

Where Stairways Must be Fire-isolated

24.37 (1) In a Class III building every required stairway shall be a fire-isolated stairway, except as provided in sub-bylaw (2).

Where Non-fire-isolated Stairways are Permissible

(2) Non-fire-isolated stairways may serve as required exits in Class III buildings where—

(a) such stairways connect not more than two storeys, or not more than three storeys if at least one storey is set aside solely for the accommodation of motor vehicles or other ancillary purposes; and

(b) the provisions of by-law 24.38 are met.

Non-fire-isolated Stairways: Conditions to be Met

Travel Distance to Road or Open Space

24.38 (1) The distance between the doorway of a room or sole-occupancy unit and the point of egress to a road or open space by way of any stairway that is non-fire-isolated and is required to serve that room or sole-occupancy unit shall not exceed—

(a) 30 m in a building of Type 4 or Type 5 construction; and

(b) 60 m in all other cases.

Measurement of Travel Distance

(2) For the purpose of sub-bylaw (1), the distance to a stairway shall be measured in accordance with by-law 24.34, the remainder of the distance being measured—

(a) along the shortest line of travel to the road or open space; and

(b) in the case of the treads and risers of a stair, along a line connecting the nosings of the treads.

Dimensions of Doorways Exits and Paths of Travel

Doorways

24.39 (1) In a Class II or Class III building, every doorway—

(a) serving as a required exit from a storey; or

(b) leading to or forming part of a required exit or path of travel to an exit,

shall have a clear opening of not less than 1 980 mm in height and not less than 760 mm in width.

Exits and Paths of Travel

(2) In a Class II or Class III building, every required exit and path of travel to an exit shall, except for doorways, have a minimum unobstructed vertical clearance throughout of 2 030 mm and a minimum unobstructed width throughout of 1 020 mm.

Division 4—Class IV, V, VI, VII and VIII Buildings

Heading amended by *G.G.* 1/7/77, p. 2025.

Application of Division

24.40 This Division, in addition to Division 1 and Division 2, shall apply to Class V, VI, VII and VIII buildings and any Class IV portion thereof.

Number of Exits Required

Buildings Not More than Six Storeys in Rise

24.41 (1) In a building having a rise of not more than six storeys, one exit only shall be required except where— Amended by *G.G.* 9/12/77, p. 4581.

(a) the building is subject to sub-bylaw (2); or

(b) the requirements of sub-bylaw (1) of by-law 24.42 cannot be met by the provision of a single exit, in which case two or more exits are required.

Certain Storeys at Low Level to have Two Exits

(2) Where egress from a storey would involve a vertical rise within the building of more than 1 500 mm at least two exits shall be provided from that storey.

Buildings More than Six Storeys in Rise

(3) In a building having a rise of more than six storeys at least two exits shall be provided.

Situation of Parts of Building in Relation to Exits

Where One Exit is Permissible

24.42 (1) Where only one exit is required in a Class V, VI, VII, or VIII building, no point on a floor shall be more than 18 m from that exit.

Where Two or More Exits are Required

(2) Where two or more exits are required, no point on a floor shall be more than 18 m from—

a) the nearer or nearest of those exits; or

(b) a point from which travel in different directions to two of those exits is available, in which case the total distance from the first-mentioned point to the nearer or nearest of those exits shall not exceed 40 m.

Class VI Buildings—Distance to Single Exit in Ground Storey

(3) In a Class VI building, the distance to a single exit serving a storey at a level of access to a road or open space may be increased to not more than 30 m.

Class IV Portions of Buildings—Distance to Exits, etc.

(4) The entrance doorway to a Class IV portion of a building shall be situated at a distance of not more than 5.5 m from—

(a) an exit; or

(b) a point from which travel in different directions to two exits is available.

Distance Between Alternative Exits

Maximum Distance

24.43 (1) Where two exits are required to serve as alternative exits in relation to any point on the floor of a storey, the distance between those two exits shall not exceed 60 m.

Minimum Distance

(2) Where two or more exits are required to serve a storey, the minimum distance between two of them shall not be less than 9 m.

Measurement of Distances

Nearest Part of an Exit

24.44 (1) In this by-law, "nearest part of an exit" has the meaning ascribed to it by sub-bylaw (1) of by-law 24.34. Amended by *G.G.* 1/7/77, p. 2025.

Method of Measurement

(2) In measuring the distances referred to in by-laws 24.42 and 24.43, the following rules shall apply—

(a) in the case of a room, the distance shall include the straight-line measurement from any point on the floor of the room to the nearest part of a doorway leading therefrom, together with the distance from that part of the doorway to—

(i) the nearest part of a required exit; or

(ii) a point from which travel in different directions to two required exits is available,

as the case requires;

(b) the distance from the doorway of a room, or of a Class IV portion of the building, or from a point on the floor not within a room shall, subject to paragraphs (d), (e) and (f) be measured in a straight line to—

(i) the nearest part of a required exit; or

(ii) a point from which travel in different directions to two required exits is available,

as the case requires;

(c) the distance between two required exits shall, subject to paragraphs (d), (e) and (f) be measured in a straight line between the nearest parts of those exits;

(d) where a corridor, hallway, external balcony, or other path of travel leading to a required exit or connecting two required exits, includes a curve or change of direction, the distance shall include the shortest measurement along the corridor or other path of travel, whether by curves, or straight lines, or a combination of both;

(e) where more than one corridor, hallway, or other internal path of travel connects two required exits, the measurement shall be along that path of travel producing the greatest distance;

(f) where a wall (including a demountable partition wall) that does not bound—

(i) a room; or

(ii) a corridor, hallway or the like,

necessitates a change of direction in proceeding to a required exit, the distance shall be measured along the line of travel past that wall or partition.

Types of Stairways Required

24.45 In a Class V, VI, VII, or VIII building required stairways—

(a) may be non-fire-isolated if the building contains not more than two storeys; and

(b) shall be fire-isolated in all other cases.

Dimensions of Doorways

Generally

24.46 (1) Every doorway—

(a) serving as a required exit from a storey; or

(b) leading to or forming part of a required exit or path of travel to an exit,

shall have a clear opening of not less than 1980 mm in height and not less than 760 mm in width, this width to be increased where necessary, to comply with sub-bylaw (2) or sub-bylaw (3) as the case may be.

Leading to Road, etc. from Storeys with Large Populations

(2) Where, pursuant to by-law 24.28, a storey at the level of access to a road or open space is deemed to accommodate more than 100 persons—

(a) the width of a doorway serving as the only exit from that storey; and

(b) the sum of the widths of two or more doorways serving as required exits from that storey,

shall not be less than 760 mm plus 255 mm for every 25 persons (or part of 25 persons) in excess of 100.

Leading to or from Stairway or Ramp

(3) Where, pursuant to by-law 24.48, a stairway or ramp is required to be more than 1020 mm in width at any level, the following doorways leading to or from the stairway or ramp shall have the minimum widths listed—

(a) a doorway providing direct access from a storey—255 mm less than the required width of the stairway or ramp in that storey level;

(b) a doorway providing direct access from the stairway or ramp at the level of access to the road or open space—255 mm less than the required width of the stairway or ramp at that level.

Dimensions of Paths of Travel

24.47 Every required path of travel to an exit shall, except for doorways, have a minimum unobstructed vertical clearance throughout of 2030 mm and a minimum unobstructed width throughout of 1020 mm.

Dimensions of Exits

Vertical Clearance

24.48 (1) Every required exit shall, except for doorways, have a minimum unobstructed vertical clearance throughout of 2030 mm.

Minimum Widths

(2) Every required exit shall except for doorways have a minimum unobstructed width throughout of 1020 mm and this width shall be increased, if necessary, to meet the provisions of sub-bylaw (3).

Width to be Sufficient to Accommodate all Persons in a Storey

(3) Where, pursuant to by-law 24.28, a storey is deemed to accommodate more than 100 persons and not more than 200 persons—

(a) the width of a single stairway or ramp serving that storey (if only one such exit is required); and

(b) the sum of the widths of two or more stairways or ramps required to serve that storey,

shall, at the level of entry from the storey concerned, be not less than the relevant dimension set out in Table 24.48, according to the number of persons deemed to be accommodated in that storey, and where the number of persons deemed to be accommodated exceeds 200, the relevant width shall be 2040 mm plus 255 mm for every 25 persons (or part of 25 persons) in excess of 200.

Width Not to Diminish in Direction of Travel

(4) The required width of a required stairway or ramp shall not diminish in the direction of travel to a road or open space.

TABLE 24.48
WIDTHS OF STAIRWAYS OR RAMPS ACCORDING TO NUMBER OF PERSONS ACCOMMODATED IN A STOREY

Number of Persons Accommodated according to By-law 24.28		Aggregate width
Exceeding	Not exceeding	
	100	1020 mm
100	125	1275 mm
125	150	1530 mm
150	175	1785 mm
175	200	2040 mm

Division 5—Class IX Buildings†

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Division 6—Miscellaneous

Exits from Buildings of Class I and IA

24.50 Every building of Class I or IA of more than two storeys shall be provided with an external stairway unless a second internal stairway is provided.

GROUP V—FIRE SAFETY AND FIRE RESISTANCE

PART 25—CHIMNEYS, FLUES, FIREPLACES, STOVES AND SIMILAR FEATURES

Application of Part

25.1 Every chimney, flue, fireplace, stove, heating appliance, and similar feature that is situated within or forms part of a building of any of the Classes I to X inclusive shall comply with such of the provisions of this Part as are applicable thereto, and the specific requirements of the unit installed.

Gas Burning Appliances

25.2 A gas stove, gas heater or other gas-burning appliance shall be installed in accordance with the following—

(a) the provisions of the "Installation Code for Gas Burning Appliances and Equipment" issued jointly by the Australian Gas Association and the Australian Liquefied Petroleum Gas Association; and

(b) any relevant requirements laid down by or under any Act relating to the supply of gas in the area concerned.

Domestic Type Oil Heaters

25.3 A domestic type oil heating appliance shall be provided with a flue and the appliance, together with its flue and other associated fittings, shall be installed in accordance with Austalian Standard 1691, being item 10 of the First Schedule.

Amended by *G.G.* 11/6/76, p. 1883.

Domestic Type Solid Fuel Appliances

25.4 A domestic type solid fuel burning appliance shall be provided with a flue, and the appliance, together with its flue shall be installed in accordance with Australian Standard 1691 being item 10 of the First Schedule, as though it were an oil-heating appliance, subject to the following conditions—

Amended by *G.G.* 11/6/76, p. 1883; *G.G.* 28/9/79, p. 2999; *G.G.* 29/2/80, p. 680.

(a) the minimum distance between the appliance and any nearby combustible material shall be as specified in Table 5.1 of that Standard;

(b) where the case temperature of the appliance is not known it shall for the purposes of Table 5.1 of that Standard, be deemed to have a case temperature exceeding 150°C;

(c) the minimum distance between the appliance and any nearby combustible material may be reduced below the distances specified in such Table under the same conditions as those specified for an oil-heating appliance by Rule 5.2.4 of that Standard;

(d) the flue shall be constructed of asbestos cement not less than 9.5 mm thick, cast iron or other approved material, complete with outer casing.

Boilers

25.5 A boiler to which Part 1 of Australian Standard CB1, being item 12 of the First Schedule, applies shall be provided with a flue, and the boiler, together with its flue, shall be installed in accordance with the relevant provisions of that Standard.

Hearths and Hoods

Hearths: When to be Provided

25.6 (1) Every open fireplace, and every solid fuel burning appliance in which the fuel burning compartment is not enclosed, or can be opened during operation, shall be provided with a hearth.

Amended by *G.G.* 1/7/77, p. 2025.

†See Health Act 1911 and Public Buildings Regulations made thereunder.

Construction of Hearths

(2) A required hearth shall be of stone, concrete, masonry or other similar non-combustible material and be so constructed that—

(a) its upper surface does not slope away from the grate or appliance; and

(b) combustible material situated below the hearth shall not be nearer than 155 mm from the upper surface of the hearth, but this requirement shall not apply to combustible material below that part of the hearth which is required to extend beyond the appliance, fireplace opening, or limits of the fireplace, as the case requires.

Limits of Hearth

(3) A required hearth—

(a) shall extend not less than 300 mm beyond the front of the fireplace opening and not less than 150 mm beyond each side of that opening; and

(b) where the fireplace or appliance is free-standing from any wall of the room, shall extend beyond the limits of the fireplace or appliance for a distance not less than 300 mm unless by reason of the design of the fireplace or appliance, the council approves a variation of this requirement.

Hoods

(4) Every open fireplace, and every free-standing solid fuel burning appliance shall be provided with a hood or canopy of cross-sectional area not less than—

(a) the area of the open fireplace; or

(b) the area of the top of the appliance,

as the case requires.

Chimneys and Flues: Special Requirements

One Flue Per Appliance

Amended by *G.G.* 27/3/75, p. 1031; *G.G.* 16/6/78, p. 1921.

25.7 (1) A flue shall not be used to convey the hot products of combustion from more than one appliance or fireplace except in the case of—

(a) gas burning appliances where the relevant requirements referred to in by-law 25.2 permit otherwise; or

(b) boilers referred to in by-law 25.5 where Australian Standard CB1, being item 12 of the First Schedule, permits otherwise.

Design and Position of Terminal

(2) A flue or chimney shall terminate in an approved cowl, cap or terminal and shall not terminate in such a position as to constitute—

(a) a risk of fire to nearby combustible material; or

(b) a risk of penetration of flue gases through nearby windows or other openings, fresh air inlets, mechanical ventilation inlets or exhausts or the like.

Flues to Extend for Full Height.

(3) Where a chimney contains more than one flue, each flue shall extend throughout the full height of the chimney.

Fire-resistance of Chimney or Flue

(4) A chimney or flue shall be so constructed that—

(a) it is capable of withstanding the temperatures likely to be generated by the appliance or appliances to which it is connected;

(b) the temperature of the exposed faces will not exceed a level that would cause damage to nearby parts of the building; and

(c) the hot products of combustion will not escape through the walls of the chimney or flue.

Certain Flues Deemed to Comply with Sub-bylaw (4)

(5) A flue attached to an appliance referred to in by-law 25.2, 25.3, 25.4 or 25.5 and constructed according to the requirements or standard to which it is subject pursuant to the by-law concerned shall be deemed to comply with sub-bylaw (4).

Certain Chimneys in Class I, IA and X Buildings Deemed to Comply with Sub-bylaw (4)

(6) In a Class I, IA or Class X building an open fireplace and a chimney connected thereto that are constructed according to the following rules shall be deemed to comply with sub-bylaw (4);

(a) Up to a height of not less than 300 mm above the underside of the arch or lintel the walls forming the sides and back of the fireplace shall be constructed in two separate leaves of solid masonry, having a total thickness, exclusive of any cavity, of not less than 180 mm.

(b) Concrete masonry shall not be used in the construction of the inner leaf of the masonry referred to in paragraph (a).

(c) The walls of the fireplace and chimney above the level referred to in paragraph (a) shall be constructed of masonry units having a net volume, exclusive of cored or similar holes, of not less than 75 per cent of their gross volume, measured on the overall rectangular shape of the units, and having an actual thickness of not less than 90 mm.

(d) A chimney shall have its flue lined internally to a thickness not less than 12 mm with a rendering consisting of cement, lime, and sand in the proportions of one part cement, three parts lime and ten parts sand by volume, or other approved material.

Evidence of Compliance with Sub-bylaw (4)

(7) In the case of a chimney or flue that is deemed, pursuant to sub-bylaw (5) or sub-bylaw (6), to comply with sub-bylaw (4), the council may require the production of satisfactory evidence that the chimney or flue concerned will meet the requirements of sub-bylaw (4).

Building in of Combustible Material.

(8) Combustible material shall not be situated nearer to the inner face of a flue or fireplace opening than—

(a) 90 mm in the case of an appliance having an output rating of not more than 15 kW; or

(b) 190 mm in the case of an open fireplace or an appliance having a rating of more than 15 kW but less than 320 kW; or

(c) 280 mm in the case of an appliance having a rating of 320 kW or more.

Damp-Proof Courses and Flashings

(9) A chimney shall be constructed with damp-proof courses and flashings so arranged as to prevent the penetration of rain-water to any part of the interior of the building.

Incinerator Rooms

Construction

25.8 (1) Where an incinerator is installed in a separate room within a building, that room shall be separated from other portions of the building by construction having a fire-resistance rating of not less than 1 hour.

Construction of Chimneys and Flues

(2) The chimney or flue of an incinerator, except an incinerator not forming part of a building, shall comply with the relevant provisions of by-law 25.7.

Hopper in Charging Chute

(3) A hopper giving access to a charging chute of an incinerator within or forming part of a building, shall be non-combustible; and

(a) shall be gas-tight when closed;

(b) shall be so designed as to return to the closed position automatically after use;

(c) shall not be attached to a chute that connects directly to a flue except where the hopper is located in the open air; and

(d) shall not be located in a required exit.

GROUP V—FIRE SAFETY AND FIRE RESISTANCE

PART 26—FIRE PROTECTION IN CLASS IX BUILDINGS

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GROUP V—FIRE SAFETY AND FIRE RESISTANCE

PART 27—FIRE FIGHTING SERVICES AND APPLIANCES

27.1 **********

Fire Mains

When to be Provided

27.2 (1) Where, pursuant to these by-laws— Amended by *G.G.* 9/12/77, p. 4581.

(a) hose reels are required in a building; or

(b) hydrants are required to be installed within the building or building site or at roof level,

a fire main shall be provided and every such hose reel and hydrant shall be connected to that fire main.

For Fire-fighting Purposes Only

(2) A fire main shall not be designed, constructed, or adapted for use for any purpose other than the supply of water for fire-fighting purposes.

Fire Mains Design

(3) Fire mains and fire pumps shall be designed and installed in accordance with Specification No. 4.

Design Certificate

(4) The builder shall submit to the council a certificate obtained from the Fire Brigades Board to the effect that—

(a) the design of any required fire main meets the provisions of sub-bylaw (3); and

(b) all required hydrants are acceptable and suitable for use in conjunction with the fire hoses of the fire brigade serving the district.

Hose Reels

Required in Certain Buildings

27.3 (1) In the classes of buildings listed in Table 27.3 hose reels shall be installed in the storeys listed in the second column of that Table. Amended by *G.G.* 11/6/76, p. 1883; *G.G.* 1/7/77, p. 2025; *G.G.* 9/12/77, p. 4581; *G.G.* 16/6/78, pp. 1921-2.

TABLE 27.3

BUILDINGS IN WHICH HOSE REELS ARE REQUIRED IN CERTAIN STOREYS

CLASS OF BUILDING	STOREYS IN WHICH HOSE REELS ARE REQUIRED
II.....	Every storey if the rise in storeys of the building includes more than three storeys of flats.
III.....	Every storey if the rise in storeys of the building includes more than two residential storeys.
V, VI, VII, VIII.....	(a) Every storey exceeding 500 m² in floor area, irrespective of the rise in storeys. (b) Every storey if building has a rise of more than four storeys.

Location of Hose Reels

(2) In those storeys of a building in which hose reels are required pursuant to sub-bylaw (1) they shall be located in accordance with Specification No. 4 and so that—

(a) no point on the floor of the storey shall be beyond the reach of the nozzle end of a fully extended hose reel installed within the storey;

(b) each hose reel shall be accessible at all times to all occupants of those portions of the storey served by it; and

(c) no hose reel shall be installed in a fire-isolated stairway, fire-isolated passageway or fire-isolated ramp.

Standards of Construction and Installation

(3) Every required hose reel shall—

(a) comply with Australian Standard 1221, being item 13 of the First Schedule; and

(b) be installed in accordance with Specification No. 4 and the relevant provisions of Australian Standard 1851, being item 14 of the First Schedule.

Exemption in Certain Areas

(4) The council may exempt a building from the provisions of this by-law if—

(a) a public water supply is not available; and

(b) any other sufficient water supply is not or cannot reasonably be made available for connection to the building concerned.

Hydrants

Required in Certain Buildings

Amended by *G.G.* 1/7/77, p. 2025.

27.4 (1) One or more hydrants shall be provided at the level of every storey in the following buildings—

(a) Class II, III, V, VI, VII, and VIII buildings having a rise of more than four storeys, irrespective of floor area;

(b) Class VI, VII, and VIII buildings in which irrespective of the rise in storeys, the sum of the floor areas of all storeys exceeds the relevant floor area figure set out in the second column of Table 27.4.

TABLE 27.4

HYDRANTS IN BUILDINGS OF CERTAIN FLOOR AREA

(To be installed where total floor area exceeds figure listed in second column).

CLASS OF BUILDING	FLOOR AREA FIGURE (Square Metres)
VI	2000
VII—	
(a) For storage or display of goods referred to in Part A of Second Schedule	2000
(b) Other cases	2800
VIIIa	2800
VIIIb	2000

Distance from Hydrants

(2) In the buildings referred to in sub-bylaw (1) no point on the floor of a storey shall be outside a radius of 36 m from a hydrant installed within that storey.

Hydrants at Roof Level of Certain Buildings

(3) In a building having a rise of more than six storeys, in addition to complying with sub-bylaw (1), one or more hydrants shall be provided at the level of the roof except—

(a) a roof having a pitch of more than 10 degrees; or

(b) a roof of a plant room or other subsidiary structure erected on or above the level of the main roof of the building,

and shall be so located that no point on the roof shall be outside a radius of 36 m from a hydrant.

Distances of Certain Class VI, VII and VIII Buildings from Hydrants

(4) In a Class VI, VII or VIII building that is not required, pursuant to sub-bylaw (1), to be provided with internal hydrants and in which the total floor area exceeds 500 m^2 no point on any floor of the building shall be more than the prescribed distance from a hydrant situated—

(a) in the road to which the site has frontage; or

(b) in the building; or

(c) within the site but external to the building.

Prescribed Distance

(4a) For the purposes of sub-bylaw (4) the prescribed distance is—

(a) 200 m in the case of a Class II or III building;

(b) 90 m in the case of any building other than a Class II or III building.

External Hydrants to be Provided in Certain Cases

(5) Where, pursuant to this by-law—

(a) hydrants are required to be installed within a building; and

(b) every entrance to the building is more than 90 m from a hydrant situated in the road to which the site has frontage,

one or more hydrants shall be provided additionally on the site (but external to the building), the number and location of such hydrants to be determined by the council after consultation with the Fire Brigades Board.

Measurement of Distances from Hydrants

(6) For the purposes of sub-bylaws (4) and (5), the distance of any point on a floor of a building from a hydrant shall be measured as follows—

(a) in a straight line between the hydrant and the point concerned if it is in a storey providing direct access to the hydrant; and

(b) in other cases by adding together—

(i) the distance between the hydrant and the nearest stairway or ramp leading to the storey concerned;

(ii) the distance between the landing of the stairway or ramp at the level of access to the hydrant and the landing of the storey concerned the distance being measured in the case of stairways along the nosings of the treads; and

(iii) the distance in a straight line, from the relevant landing to the point concerned.

Use by Fire Brigade Personnel

(7) Every required hydrant shall be—

(a) suitable for the connection of the fire hoses of the fire brigade serving the district; and

(b) installed in a position that is accessible to fire brigade personnel, but shall not be installed in a fire-isolated stairway, fire-isolated passageway, or fire-isolated ramp.

Exemption from Provision of Hydrants

(8) The council may grant exemption from any or all of the foregoing provisions of this by-law if—

(a) a public water supply is not available, and

(b) any other sufficient water supply is not or cannot reasonably be made available,

for use on the site concerned.

Installation

(9) Hydrants shall be installed in the manner required by Specification No. 4.

Alarms and Sprinklers in Buildings Over a Certain Height

Top Floor Not More than 42 m Above Lowest Floor Providing Egress

27.5 (1) Where the floor of the topmost storey of a building is more than 21 m but not more than 42 m above the floor of the lowest storey providing egress to a road or open space, an automatic fire alarm system shall be installed throughout the building in accordance with Australian Standard 1670, being item 45 of the First Schedule.

Amended by *G.G.* 11/6/76, p. 1883; *G.G.* 28/9/79, p. 2999.

Top Floor More than 42 m Above Lowest Floor Providing Egress

(2) Where the floor of the topmost storey of a building is more than 42 m above the floor of the lowest storey providing egress to a road or open space, a sprinkler system shall be installed throughout the building in accordance with Australian Standard 2118 being item 2 of the First Schedule.

Water Service

27.6 The water service supplying fire mains, hydrants, hose reels and sprinkler systems required by this Part shall comply with Specification No. 4.

Variation of Requirements

27.7 The council may exempt a building from any of the requirements of this Part upon production of a certificate, issued by the Fire Brigades Board, recommending such exemption in the particular case and subject to compliance with any alternative requirements recommended by that Board.

Provision for Special Hazards

Reference to Fire Authorities

27.8 (1) Where the council is of opinion that in a particular proposed Class VII or Class VIII building, special problems of fighting fire would arise because of the nature or quantity of materials stored or displayed, or used in a handicraft or process, it shall refer the proposal to the Fire Brigades Board, for report.

Imposition of Special Requirements

(2) After consideration of a report by the Fire Brigades Board pursuant to sub-bylaw (1), the council may impose such special requirements to facilitate the fighting of fire as it considers desirable in the particular case.

Public Buildings

27.9 Nothing in this Part affects the operation of the Public Buildings Regulations, as amended from time to time, made under the Health Act 1911.

GROUP VI—STRUCTURAL PROVISIONS

PART 28—MATERIALS

Bricks

Burnt Clay and Shale

28.1 (1) Every burnt clay and shale brick used in a building shall comply with Australian Standard A21, being item 16 of the First Schedule.

Amended by *G.G.* 11/6/76, p. 1883; *G.G.* 1/7/77, p. 2025.

Concrete Bricks

(2) Every concrete brick used in a building shall comply with Australian Standard 1346, being item 17 of the First Schedule.

Calcium Silicate Bricks

(3) Every calcium silicate brick used in a building shall—

(a) comply with Australian Standard 1653, being item 18 of the First Schedule; and

(b) have a transverse strength of not less than that specified for burnt clay and shale bricks in Australian Standard A21, being item 16 of the First Schedule.

Blocks

28.2 Every concrete block used in a building shall comply with Australian Standard 1500, being item 19 of the First Schedule.

Amended by *G.G.* 11/6/76, p. 1883.

Mortar

Brickwork Masonry

28.3 (1) Mortar used for brickwork masonry shall comply with Australian Standard 1640, being item 20 of the First Schedule.

Amended by *G.G.* 11/6/76, p. 1883.

Masonry Construction

(2) Mortar used for masonry construction not referred to in sub-bylaw (1) shall comply with Australian Standard A123, being item 21 of the First Schedule, except where evidence to the satisfaction of the council is produced to show that an alternative type of mortar is satisfactory for the proposed use.

Lime Mortar

(3) Notwithstanding sub-bylaws (1) and (2) lime mortar used in any masonry construction shall contain one part of lime, not less than one-tenth of a part of portland cement, and not more than three parts of fine aggregate.

Alternative Rules for Certain Buildings

(4) In buildings not exceeding two storeys in height the requirements of sub-bylaws (1) and (2) shall be deemed to be complied with if the following rules are observed—

(a) mortars of the types numbered 1, 2, 3 and 5 in Table 28.3(4) may be used in any masonry;

(b) mortars of the types numbered 4 and 6 in Table 28.3(4) may be used in brickwork masonry if the building does not exceed one storey in height and the masonry concerned is neither—

(i) an external wall less than 180 mm in nominal thickness; nor

(ii) an external panel wall.

TABLE 28.3(4).

TYPES OF MORTAR

TYPE OF MORTAR	VOLUME PROPORTIONS			
	Portland Cement	Masonry Cement	Hydrated Lime or Lime Putty	Fine Aggregate
1. Portland Cement Mortar	1		1/10	3
2. Masonry Cement Mortars		1		3
3. Masonry Cement Mortars		1		4
4. Masonry Cement Mortars		1		5
5. Composition Mortar	1		2	9
6. Lime Mortar	1/10		1	3

Mortar in Masonry Below Ground Level

(5) (a) Notwithstanding anything contained in sub-bylaw (1), (2) or (4) cement mortar of the type numbered 1 in Table 28.3(4) shall be used in the construction of any part of a wall situated below ground level.

(b) Paragraph (a) does not apply in relation to limestone footings.

Plain Concrete

Australian Standard

28.4 (1) Plain concrete used in a building shall comply with the requirements of Australian Standard 1480, being item 5 of the First Schedule. Amended by *G.G.* 11/6/76, p. 1883.

Compressive Strength.

(2) Concrete mixed in proportions set out in Table 28.4 and having a slump of not more than 100 mm shall be regarded as having the compressive strength set out in that Table in relation to that mixture.

TABLE 28.4

CONCRETE STRENGTH

VOLUME PROPORTIONS			STRENGTH MPa
Portland Cement	Fine Aggregate	Coarse Aggregate	
1	2.5	5	14
1	2	4	15
1	2	3	15
1	1.5	3	20
1	1	2	20

Reinforced Concrete

28.5 Reinforced concrete used in buildings shall comply with Australian Standard 1480 being item 5 of the First Schedule. Amended by *G.G.* 11/6/76, p. 1883.

Prestressed Concrete

28.6 Prestressed concrete used in buildings shall comply with Australian Standard 1481 being item 6 of the First Schedule.. Amended by *G.G.* 11/6/76, p. 1883.

Other Materials

28.7 Where it is proposed to use in a building for structural purposes any material not otherwise provided for in these by-laws the council may require the submission of satisfactory evidence to show that the material will be suitable for the purpose for which it is intended. Substituted by *G.G.* 16/6/78, p. 1922.

Particleboard

Heading inserted by *G.G.* 29/2/80, p. 680.

Flooring

28.7A. Particleboard structural flooring used in a building shall comply with Australian Standard 1859 being item 56 of the First Schedule. Inserted by *G.G.* 29/2/80, p. 680.

Cement

Portland and Masonry

28.8 (1) In this Part— Amended by *G.G.* 11/6/76, p. 1883; *G.G.* 9/12/77, pp. 4581-2.

"portland cement" means portland cement complying with Australian Standard 1315 being item 48 of the First Schedule;

"masonry cement" means masonry cement complying with Australian Standard 1316 being item 50 of the First Schedule.

Blended Cement

(2) Where blended cement is used in the construction of a building it shall comply with Australian Standard 1317 being item 49 of the First Schedule.

Materials Endangering Life Not to be Used

Prohibited Materials

28.9 (1) A material listed in Part 1 of Table 28.9 shall not be used in the construction of any building.

Restricted Materials

(2) A material listed in Part 2 of Table 28.9 shall not be used in the construction of any building if that use would contravene a condition or restriction imposed by that Part in respect of that material.

TABLE 28.9 Amended by *G.G.* 11/6/76, p. 1883.

PROHIBITED AND RESTRICTED MATERIALS

PART 1

Item	Prohibited Material
1.	Polystyrene-Cellular (Foamed or Expanded): Standard Grade.
2.	Polyurethane-Cellular (Foamed) or Isocyanurate Foam: Standard Grade.
3.	Pliable Roof Sarking Membrane having Flammability Index greater than 10 when determined by a Flammability Test as described in Australian Standard 1530 Part 4, Fire Test on Building Materials and Structures, being item 1 in the First Schedule.

PART 2

Item	Restricted Material	Restrictions and Conditions
1.	Polystyrene Cellular (Foamed or Expanded): Self Extinguishing Grade	(a) shall not be used in any stairway, passageway or ramp, or in any lobby, corridor or the like which forms part of an escape path from any section of a building; (b) when approved for use in areas other than those detailed in paragraph (a) shall be "self-extinguishing" in accordance with the tests set out in Australian Standard K156 being item 52 of the First Schedule and any adhesive, paint, or other surface treatment used in conjunction with expanded polystyrene material shall not reduce the "self-extinguishing" capacity of the material below this requirement.
2.	Polyurethane-Cellular (Foamed) or Isocyanurate Foam material	(a) shall not be used in any stairway, passageway or ramp, or any lobby, passageway, corridor or the like which forms part of an escape path from any section of a building other than a building of Class 1 or 1A; (b) shall not be used unless in the form of a sandwich panel which— (i) is faced with asbestos cellulose board or other similar approved material which is not subject to shattering when exposed to rapid heating; and (ii) has edges sealed in an approved manner to prevent contact with flame; (c) shall not be used in a building having a rise of more than two storeys unless the material is used on external walls or external cladding in a position where the products of combustion will be vented direct to the open, and the polyurethane or isocyanurate foam material is capable of qualifying for indices not higher than— (i) Spread of Flame Index 2; (ii) Smoke Produced Index 5; according to Australian Standard 1530 Part 4, Fire Tests on Building Materials and Structures, being item 1 of the First Schedule.
3.	Pliable Roof Sarking Membrane (other than that referred to in item 3 of Part 1 of this Table)	The material used and method of fixing shall comply with Australian Standard 1736, Code for Pliable Roof Sarking, being item 37 of the First Schedule.

PART 3

Maximum Acceptable Indices
(See Part 2 item 2)

Part of Building	Spread of Flame Index	Smoke Developed Index
Walls:		
Sprinkler Protected Building	5	5
Non-Sprinklered Building	2	5
Ceilings:		
Sprinkler Protected Building	2	5
Non-Sprinklered Building	0	2

GROUP VI—STRUCTURAL PROVISIONS

PART 29—STRESSES AND LOAD FACTORS

Stresses, Deflections and Load Factors on Special Materials

29.1 The working stresses, deflections and load factors used for materials or forms of construction for which specific provision is not made in these by-laws shall be as approved.

Loading Notice Plates

To be Posted on Completion of Certain Buildings

29.2 (1) On completion of any Class V, VI, VII, or VIII building constructed after these by-laws come into operation in the district or in that part of the district in which the site is located and before occupation of any such building, any floor or part of a floor which has been designed to sustain a uniformly distributed live load exceeding 5 kPa shall have a notice conspicuously and permanently posted adjacent thereto in the form hereunder indicating the actual loadings for which the floor or part of the floor has been structurally designed.

Designed Floor Loading

Distributed..... kg/m^2

Concentrated..... kg

Design and Position of Notice Plates

(2) The lettering of a notice posted pursuant to sub-bylaw (1) shall be embossed or cast into a metal tablet not less than 230 mm square and located not less than 1 m above floor level.

GROUP VI—STRUCTURAL PROVISIONS

PART 30—DESIGN FOR DEAD AND OTHER LOADS

Loads

30.1 The design of every building shall comply— Amended by *G.G.* 11/6/76, p. 1883.

(a) as regards design for dead and live loads: with Australian Standard 1170, Part I—1971, being item 22 of the First Schedule; and

(b) as regards design for wind loads: with Australian Interim Standard 350-1952. Part II, being item 53 of the First Schedule.

GROUP VI—STRUCTURAL PROVISIONS

PART 31—EXCAVATION, EARTHWORK, AND RETAINING WALLS

Excavations and Backfilling Safety

General

31.1 (1) All excavations and backfilling shall be executed in a safe and workmanlike manner.

Guarding of Excavations

(2) All excavations shall be properly guarded and protected to prevent them from being dangerous to life or property.

Inspection of Excavations

(3) Twenty-four hours' notice shall be given to the surveyor, of intention to place footings.

Water Removal or Diversion

Council may Require

31.2 (1) The council may require water to be removed or diverted from excavations before, during or after concrete or other building materials are deposited therein.

Amended by *G.G.* 1/7/77, p. 2025.

Pipes etc. to be Filled

(2) Water and vent pipes and drains, if left in position, shall be filled by grouting, or other means, after the concrete has thoroughly hardened.

Drainage Work.

(3) If necessary, provision shall be made on the site for the drainage and diversion of rainwater as required by by-law 44.1 or 44.3 or by or under the Health Act 1911.

Retaining Walls

When Required

31.3 (1) Wherever the soil conditions so require or the excavation is permanent with a slope steeper than the angle of repose or natural slope of the soil, retaining walls or other approved methods of preventing movement of the soil shall be provided and adequate provision made for drainage.

Materials

(2) A retaining wall shall be of durable material of sufficient strength to support the embankment together with any superimposed loads.

Depth of Foundation Excavation

General

31.4 (1) Foundations shall be excavated to such depth as will—

(a) be unaffected by seasonal expansion and contraction or any other expansion or contraction brought about by a change in moisture content; and

(b) in the opinion of the surveyor, ensure that the foundation can effectively support the loads imposed thereon by the building.

External Walls

(2) In granulous soils the bottom of a footing for an external wall shall not be less than 300 mm below the finished ground level.

Sand-Pads

Heading inserted by *G.G.* 1/7/77, p. 2025.

31.5 Where, for the purpose of constructing a slab-on-ground footing for a Class 1 or 1A building, a sand-pad is formed above a foundation that is not composed of stable soil the sand-pad shall, when consolidated, have a minimum depth of not less than 600 mm or such lesser depth as is approved.

Inserted by *G.G.* 1/7/77, p. 2025.
Amended by *G.G.* 16/6/78, p. 1922.

Earthwork Generally

Stabilisation of Filling, Embankments, etc.

Heading inserted by *G.G.* 1/7/77, p. 2026.

31.6 (1) All filling, embankments and sides of excavations must be stabilised and protected against erosion by wind and water where the structural safety of any building could be affected and shall be capable of supporting any reasonable loads that may be exerted on them from within the site or from any required support to adjoining ground.

Inserted by *G.G.* 1/7/77, p. 2026.
Amended by *G.G.* 16/6/78, p. 1922.

Placing of Filling

(2) Filling shall be deposited in layers and shall not be placed unless and until all deleterious rubbish and vegetable matter has been removed from the filling and from the area to be filled.

Height of Embankments, etc.

(3) The height of any newly formed embankment or newly excavated face shall not be greater than 1.5 m unless otherwise approved by the council.

Powers of Council in Relation to Earthwork

Heading inserted by *G.G.* 1/7/77, p. 2026.

31.7 All earthwork referred to in this Part shall be carried out to the satisfaction of the council and in accordance with the guidelines (if any) determined by the council to be appropriate to the local conditions applying in the district or in that part of the district in which the site is located.

Inserted by *G.G.* 1/7/77, p. 2026.

GROUP VI—STRUCTURAL PROVISIONS

PART 32—FOUNDATIONS

Assessment of Adequacy

32.1 The adequacy of foundations shall be assessed on the basis of—

(a) well established and relevant local knowledge and experience of foundation conditions in the vicinity of the proposed building; or

(b) tests on the foundation materials.

GROUP VI—STRUCTURAL PROVISIONS

PART 33—FOOTINGS NOT ON PILING OR CAISSONS

Provision of Footings

33.1 Suitable footings shall be provided where necessary to reduce the intensity of the pressure of the building on the foundations.

Design of Footings

33.2 Footings, including slab-on-ground footings shall be designed and constructed so that any relative movements of separate footings and of different parts of any one footing under loading, or of a footing and any other element of the substructure will not impair the stability of or cause significant structural damage to the superstructure.

Amended by *G.G.* 1/7/77, p. 2026.

Footings for Class I and IA Buildings and Class X Buildings Appurtenant Thereto

Heading amended by *G.G.* 28/8/79, p. 2999.

Application

33.3 (1) In a Class I or IA building or a Class X building appurtenant to a Class I or IA building footings constructed in accordance with the relevant provisions of this by-law shall be deemed to comply with by-law 33.2, except where by reason of—

(a) the nature of the foundation; or

(b) the design of the building; or

(c) any other relevant considerations,

the council is of opinion that such footings would not be adequate in the particular case.

Amended by *G.G.* 11/6/76, p. 1883; *G.G.* 24/12/76, p. 5099; *G.G.* 9/12/77, p. 4582; *G.G.* 28/9/79, pp. 2999-3000.

Measurement of Height of Walls

(2) For the purposes of Table 33.3 (4), the height of a wall shall be measured from the top of the strip footing to the top of the uppermost masonry component of the wall, but not including any gable.

Concrete Strength

(3) Concrete used in footings constructed according to this by-law shall have a compressive strength at 28 days (F'c) of not less than 15 MPa, determined in accordance with the provisions of Australian Standard 1480, being item 5 of the First Schedule.

Strip Footings: Stable Soils

(4) Concrete strip footings shall have a width and depth according to Table 33.3 (4) if constructed on stable soil foundations such as sand or gravel.

TABLE 33.3 (4)

Amended by *G.G.* 28/9/79, p. 3000.

CROSS-SECTIONAL DIMENSIONS OF CONCRETE STRIP FOOTINGS

Construction of Wall	Nominal thickness of wall to be supported (including cavity) not more than—(mm)	Size of concrete (width and depth in mm)
In a single storey building, a masonry wall of height (according to sub-bylaw (2)) not exceeding 4 200 mm....	270 110	450 x 250 300 x 250
In a single storey building, a masonry veneer wall of height (according to sub-bylaw (2)) not exceeding 4 200 mm.....	110	300 x 250
In a single storey building of timber frame construction, a masonry foundation wall of height not exceeding 1 500 mm.....	110	230 x 150

Footings for Free-standing Piers

(5) Brick or concrete block free-standing piers shall have brick, concrete block or concrete footings—

(a) not less than 150 mm thick; and

(b) projecting not less than 50 mm beyond each face of the piers.

Brick or Stone Footings

(6) Footings of brick or stone may be used in Type 3, 4 or 5 construction not exceeding one storey in height, constructed on firm, dry sand.

Addition of Second Storey

(6a) Notwithstanding subsection (6), the council may approve of the addition of a second storey to an existing building, or part of an existing building, that is of one storey in height if a certificate of a practising structural engineer is produced to the council verifying the adequacy of the footings.

Limestone Footings

(7) Where natural limestone footings are used—

(a) every footing shall consist of first grade limestone laid in lime, cement or composition mortar, and constructed in accordance with this by-law;

(b) all trenches for the footings shall be thoroughly saturated with water before any limestone is laid, and in every case the footing shall be taken down to solid virgin soil;

(c) the bottom of the footings shall not be less than 300 mm below the finished ground level and where necessary the footings shall be stepped down to achieve this depth with the steps—

(i) being at least 300 mm in height; and

(ii) having the top stone overlap the lower stone for a distance of at least 300 mm;

(d) large flat squared through stones 300 mm thick shall be used for bottom and top of footings, and every 1 200 mm elsewhere, all laid on a natural bed and no stone used shall be more than 350 mm in height;

(e) to all external walls extending for a distance of 750 mm in each direction from each corner, the footings shall be increased in width 125 mm beyond adjacent stonework on both faces;

(f) sufficient openings shall be left in footings between rooms at doors and openings so as to provide adequate ventilation under floors; and

(g) 230 mm x 110 mm x 75 mm bricks shall be built into the footings to support the ends of every floor bearer.

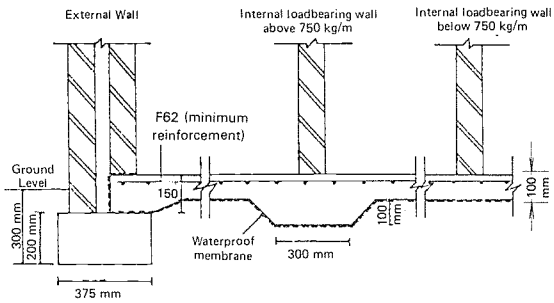
Slab-on-Ground Construction

(8) Where slab-on-ground construction is to be used on a stable soil foundation, the construction shall be designed—

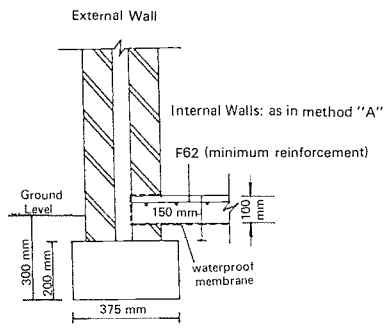
(a) by a practising structural engineer; or

(b) in accordance with one of the methods depicted in Figure 33.3 (8).

Method A—Separate Edge Beam



Method B—Separate Edge Beam (Alternative)



Method C—Monolithic Edge Beam

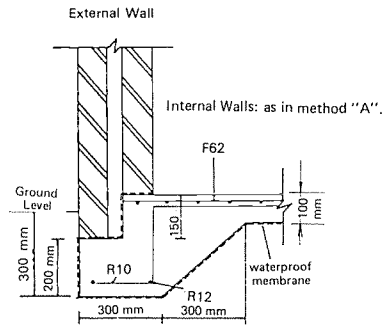


FIGURE 33.3 (8)
All dimensions in mm.

Levels of Footings

Two Footings of a Building Touching or Abutting

33.4 (1) Where two footings of a building abut or touch one another, the underside of the footings shall be placed at the same level, unless otherwise permitted by the surveyor, but where the footings do not abut or touch one another, the difference of level between the underside of the one footing and the underside of the other footing, shall not exceed the shortest horizontal distance between the two footings, or such other difference as the surveyor may, in any circumstances, direct.

Adjoining Building

(2) The underside of the underpinning of an adjoining building wall shall be a footing within the meaning of this by-law.

Stepping

(3) Nothing in this by-law shall prevent the gradual stepping of footings where in long lengths.

Projection of Footings

33.5 A footing shall not project beyond the street alignment except that where the top of the footing—

(a) is more than 760 mm and less than 3 m below the pavement level, the footing may extend 300 mm beyond the street alignment; and

(b) is 3 m or more below the pavement level the footing may extend 760 mm beyond the street alignment.

GROUP VI.—STRUCTURAL PROVISIONS

PART 34.—PILING AND CAISSONS

Part Not to Apply in Some Cases

34.1 This Part shall not apply to piers or stumps used as a substructure above ground level in which such piers or stumps are designed to transmit the loads of the superstructure to the footings or foundation.

Design and Construction

34.2 Substructures wholly or partly of piling or caissons shall be so designed and constructed that any relative movements of the substructure or of separate parts of the substructure will not impair the stability of or cause significant structural damage to the superstructure.

Piles

Requirements

34.3 (1) Piles shall be—

(a) designed and constructed to resist the forces involved in handling and driving and in supporting all loads superimposed on the piles; and

(b) of timber, concrete, steel or other approved material or any approved combination thereof.

Superimposed Loads

(2) The superimposed loads on piles shall, where possible, be applied concentrically with the axis of each single isolated pile or the centre of gravity of any pile group.

Timber Piles

34.4 Every timber pile shall—

(a) be of hardwood or other approved timber;

(b) be sound and straight;

(c) have a diameter at the point of not less than 155 mm;

(d) have a diameter at the butt of not less than 255 mm;

(e) be used only under conditions where it remains permanently damp; and

(f) be located in a position so that its centre is not less than twice its butt diameter from the centre of the nearest other timber pile.

GROUP VI.—STRUCTURAL PROVISIONS

PART 35.—WALLS—GENERAL REQUIREMENTS

Loadbearing Wall Construction

Definition

35.1 (1) For the purpose of this by-law "loadbearing wall construction", applied to a building means that type of construction in which loadbearing walls are designed as the principal means of transmitting downwards throughout the height of the building its dead and live loads.

Amended by *G.G.* 11/6/76, p. 1883

Application of By-law

(2) This by-law applies to every building of loadbearing wall construction more than three storeys in height.

Structural Design: Alternatives

(3) Every building to which this by-law applies shall comply with one of the following alternative rules—

(a) the building shall be provided with horizontal continuity at every floor level by means of—

(i) a concrete floor cast *in situ* capable of resisting all the negative bending moments specified for such a floor by Australian Standard 1480 for concrete, being item 5 of the First Schedule; or

(ii) a floor comprising precast concrete units connected in such a manner as to be capable of resisting all the negative bending moments specified by Australian Standard 1480 for a reinforced concrete floor cast *in situ*, being item 5 of the First Schedule;

(b) the building shall be so constructed that the floors together with the loadbearing walls, shall be capable of resisting bending moments which are equivalent, in their effect, to the negative bending moments specified by Australian Standard 1480, being item 5 of the First Schedule, for a reinforced concrete floor cast *in situ;* or

(c) the building shall be so constructed, that if any part of a loadbearing wall, 6 m in length and not exceeding in height the height of the storey in which it is located is removed or displaced from any cause whatsoever, the stresses developed in the remaining parts of the wall shall not exceed normal working stresses, by more than 25 per cent and the remaining structural parts of the building shall be held in place.

Structural Engineer's Certificate

(4) If the council is not otherwise able to satisfy itself that a building, to which this by-law applies, complies with one of the alternative rules referred to in sub-bylaw (3), it may require the submission of a certificate by a practising structural engineer approved by the council, that the proposed building will so comply.

Hollow Masonry Blocks

Not to be Used in Certain Buildings

35.2 (1) Subject to sub-bylaw (2), hollow masonry blocks shall not be used in loadbearing walls in buildings of more than one storey in height.

Exception

(2) Hollow masonry blocks may be used in a loadbearing wall in a building of two storeys in height if the plans of the building are accompanied by a certificate from a practising structural engineer to the effect that the design of the wall conforms to the requirements of Australian Standard CA 32, being item 23 of the First Schedule.

Control Joints

When Required

35.3 (1) Control joints adequate to control expansion and contraction shall be provided—

(a) in masonry or concrete external walls continuing for a distance not less than 15 m;

(b) in masonry or concrete internal walls continuing for a distance not less than 30 m;

(c) in masonry or concrete parapet walls continuing for a distance not less than 7.5 m;

(d) in sand-lime brick walls continuing for a distance not less than 9 m.

Set-offs

(2) For the purposes of sub-bylaw (1) a wall that has a set-off shall be deemed to continue unless that set-off is greater than three times the thickness of the wall.

Veneers, Facings and Tiles

Definitions

35.4 (1) In this by-law—

"facing" means stone, synthetic stone, architectural terra-cotta or other approved material which is applied to a wall and contributes to the strength of a wall;

"non-corrosive metal" means phosphor bronze, aluminium bronze, stainless steel, brass or copper;

"veneer" means—

(a) stone, synthetic stone, architectural terra-cotta or ceramic slabs of not less than 19 mm thickness;

(b) precast reinforced concrete slab; or

(c) other approved materials, that are applied or affixed to, but do not form part of the structural walls, columns, beams or frame.

Veneer

(2) (a) Each unit of veneer applied to or affixed to the outer face of a reinforced concrete or masonry wall shall be tied to the structural walling with—

(i) substantial wall ties or cramps; or

(ii) bolts of not less than 12.7 mm in diameter,

and such ties, cramps or bolts shall be of non-corrosive metal.

(b) The pull out force on the total number of wall ties, cramps or bolts per unit of veneer shall be not less than five times the dead weight of that unit.

(c) The spacings of the wall ties, cramps or bolts shall be at such centres as are determined by the surveyor, but in any event the centres shall be not more than 450 mm apart horizontally, and not more than 900 mm apart vertically, and in the case of bolts supporting precast slabs the centres shall be determined by structural computations.

(d) A bolt carrying part of the dead weight of a veneer slab shall have a diameter of not less than 12.7 mm and be of non-corrosive metal.

(e) A structural frame or member carrying part of the dead weight of the veneer and the bolts used in connection therewith shall be of non-corrosive metal, unless the surveyor is satisfied that the frame or member and the bolts used will remain dry, in which case heavily galvanised steel of a minimum thickness of 9.5 mm may be used for the frame in conjunction with bolts of at least 9.5 mm in diameter.

(f) All structural elements supporting veneer shall have a fire-resistance rating of 3 hours, or be protected by a wall having a fire-resistance rating of 3 hours, except where the veneer forms part of a wall in a structure not requiring a fire-resistance rating.

(g) Veneer shall be continuously supported, at each floor level, on structural concrete or non-corrosive metal, with a maximum distance of 3 600 mm vertically, between supports.

Facings

(3) (a) Facings shall—

(i) be not less than 100 mm in thickness, in every part;

(ii) be built concurrently with the wall and be bonded into the backing for not less than 100 mm in every third course; and

(iii) have an ultimate compressive strength at least equal to that of the masonry wall to which they are bonded.

(b) Facings may be considered as part of a wall in computing the thickness and strength of the wall.

Tiles

(4) (a) Tiles shall—

(i) be not more than 25 mm in thickness and shall neither be longer nor wider than 300 mm;

(ii) have a keyed back;

(iii) be anchored to a backing wall with a cement mortar, that has a shearing stress of 345 kPa or by other approved cementing materials; and

(iv) not be used at a height exceeding 3 350 mm.

(b) The provisions of subparagraph (iv) of paragraph (a) do not apply to—

(i) tiles that do not exceed 160 mm × 160 mm in area and 6.5 mm in thickness if adequate protection is provided by means of a continuous projecting hood or similar protection, in the event of tiles dropping from the wall; and

(ii) mosaic tiles that are less than 25 mm in length and in width.

Control Joints

(5) (a) Control joints shall be provided for—

(i) tiles fixed on a reinforced concrete wall, at intervals of not more than 1 500 mm both horizontally and vertically, if not already provided by the actual tile jointing; and

(ii) veneer, at intervals of not more than 3 600 mm both horizontally and vertically.

(b) All expansion joints shall be filled with an approved mastic.

Flashings and Mortar

(6) (a) Flashings to prevent the penetration of moisture and additional fixings for support of veneers, facings and tiles shall be provided as may be required by the surveyor.

(b) All veneers other than precast concrete slabs shall be filled at the back with a strong mortar.

GROUP VI—STRUCTURAL PROVISIONS

PART 36—WALLING OF MASONRY

External Wall Thicknesses

Cavity Walls

36.1 (1) For the purposes of this Part the sum of the standard thicknesses of the inner and outer leaves of a cavity wall shall be deemed to be the standard thickness of the wall. Amended by *G.G.* 1/7/77, p. 2026.

Minimum Thickness of External Walls

(2) The external walls of a building, if of masonry construction, shall be designed and constructed in accordance with the relevant provisions of this Part and shall not be less than 200 mm in standard thickness except—

(a) in the case of Class VII and VIII buildings where the council permits the use of external walls having a standard thickness of less than 200 mm; or

(b) in the case of a single storey building or the topmost storey of multi-storey buildings where cavity wall construction is used and the standard thickness of the wall is not less than 180 mm; or

(c) in the case of—

(i) Class X buildings;

(ii) garages, tool sheds and the like forming portion of a building used for other purposes; or

(iii) water closets and the like forming portion of a building, other than a Class I, IA, II, III, IV or V building, used for other purposes.

Walls Less Than 200 mm in Thickness

(3) The council may require a certificate from a practising structural engineer approved by the council as to the structural adequacy of any wall less than 200 mm in standard thickness if—

(a) the wall exceeds 3 m in height; or

(b) the council is unable for any reason to satisfy itself that the wall will be structurally adequate.

Walls of Outbuildings and Other Non-habitable Rooms and Structures

(4) Masonry external walls of—

(a) Class X buildings;

(b) garages, tool sheds and the like forming part of a building used for other purposes; and

(c) water closets and the like forming part of a building, other than a Class I, IA, II, III, IV or V building, used for other purposes,

shall not be less than 90 mm in standard thickness and where such walls are less than 180 mm in standard thickness—

(i) cross walls or equivalent buttresses shall be constructed at intervals of not more than 9 m;

(ii) the width of the building measured in the direction of the span of the roof shall not exceed 7.5 m and the height of the wall shall not exceed 2 700 mm exclusive of the parapet;

(iii) piers measuring not less than 230 mm by 110 mm properly bonded to the walls, shall be formed at intervals of not more than 2 700 mm and not exceeding a height of 2 400 mm;

(iv) the roof shall be so constructed that the walls are not subject to any thrust therefrom; and

(v) the walls shall not be required to support any load other than the load of the roof.

Brickwork Masonry

Design and Construction

36.2 (1) Masonry of— Amended by *G.G.* 11/6/76, p. 1883; *G.G.* 1/7/77, p. 2026.

(a) burnt clay and shale bricks;

(b) calcium silicate bricks; or

(c) concrete bricks,

shall be designed and constructed in accordance with Australian Standard 1640 being item 20 of the First Schedule.

Australian Standard 1640: Strength of Bricks

(2) In addition to the requirements of sub-bylaw (1) the following provisions shall apply to masonry of burnt clay and shale or concrete bricks—

(a) the compressive strength figures used in the design calculations shall be based on the known compressive strength of the bricks to be used in the walls;

(b) if the known compressive strength of the bricks exceeds 48 MPa the design calculations shall be based on a maximum figure of 48 MPa;

(c) bricks shall comply with the following transverse strength requirements, according to the figures used in the design calculations for the compressive strength of the bricks—

(i) compressive strength not exceeding 24 MPa—no brick shall have a transverse strength of less than 1.7 MPa and the average transverse strength of the bricks shall be not less than 2 MPa;

(ii) compressive strength exceeding 24 MPa—no brick shall have a transverse strength of less than 1.9 MPa and the average transverse strength of the bricks shall be not less than 2.7 MPa;

(d) the council may require the submission of evidence that the bricks meet the relevant requirements of paragraph (c) and that the compressive strength of the bricks is not less than that used in the design calculations.

Certain Provisions of AS 1640 Not to Apply

(3) For the purposes of this by-law the following provisions of Australian Standard 1640 being item 20 of the First Schedule shall not apply—

(a) the definition of "clay brick" in rule 1.4;

(b) rule 2.1.1.—Clay Bricks;

(c) rule 2.3—Damp-proof courses, Flashings and Weatherings;

(d) rule 3.7—Prevention of Moisture Penetration;

(e) the second paragraph of rule 5.1—Supervision;

(f) rule 6.9—Sound Insulation Tests;

(g) rule 6.4—Determination of Minimum Compressive Strength of Bricks; and

(h) rule 6.5—Determination of Initial Rate of Absorption of bricks.

[36.3 and heading repealed by *G.G.* 1/7/77, p. 2026.]

Unreinforced Concrete Block Masonry

Design and Construction

36.4 (1) Unreinforced concrete block masonry shall be designed and constructed in accordance with Part 1 of Australian Standard 1475 being item 23 of the First Schedule. Substituted by *G.G.* 16/6/78, p. 1922.

Free Standing Walls—Design and Construction

(2) In addition to complying with the requirements of sub-bylaw (1) a free standing wall shall be designed and constructed so as to have a height to thickness ratio of not more than 8 and—

(a) where a membrane type damp-proof course is inserted near the base that ratio shall not be more than 5;

(b) where the wall is in the nature of a parapet that ratio shall not be more than 3.

Interpretation.

(3) For the purposes of this by-law the expression "free standing wall" means a wall not subject to any superimposed load other than wind load and having no effective lateral support.

Special Masonry

Council may Permit

36.5 (1) The council may permit the construction of buildings of masonry construction in which— Amended by *G.G.* 1/7/77, pp. 2026-7.

(a) the walls are less than the minimum thickness prescribed in by-laws 36.1, 36.2, or 36.4; or

(b) the masonry is not built of—

(i) burnt clay and shale bricks; or

(ii) concrete bricks; or

(iii) calcium silicate bricks; or

(iv) concrete blocks,

if such buildings are constructed in accordance with the requirements of this by-law.

Limitations

(2) If the masonry described in sub-bylaw (1) is—

(a) loadbearing—the building shall not contain more than 2 storeys;

(b) non-loadbearing—the masonry shall be fully supported at the level of every floor by—

(i) frame construction; or

(ii) rigid construction effectually functioning as frame construction; or

(iii) brickwork masonry complying with by-law 36.2; or

(iv) concrete block masonry complying with by-law 36.4.

Certificates of Engineers and Others

(3) In the case of any proposal to build under the provisions of this by-law, where the council is not otherwise able to satisfy itself beyond doubt that the whole or any part is acceptable, it may require the submission of a certificate from a practising structural engineer, or other person or body, approved by the council—

(a) certifying that when completed the building will be structurally sound; and

(b) setting forth in detail the bases on which it is given and the extent to which the engineer, person or body has relied on relevant specifications, rules, codes of practice or publications in respect of the construction.

Cavity Walls: Construction

36.6 Subject to Table 20.10 and the Annexure to that Table, where an external wall of a building of any class is constructed as a cavity wall its construction shall comply with the following requirements— Amended by *G.G.* 24/12/76, p. 5099; *G.G.* 1/7/77, p. 2027; *G.G.* 16/6/78, p. 1922.

(a) the inner and outer leaves of the wall shall be separated by a cavity which is of width throughout not greater than 76 mm except in the case of panel walls;

(b) the inner and outer leaves of the wall shall be tied with wall ties of galvanized or other non-corrodible metal having a thickness of not less than 3.15 mm spaced at horizontal intervals of not more than 900 mm and vertical intervals of not more than 450 mm, and the cavity shall be kept clear during construction;

(c) in the case of a building having a rise of three storeys or more, all wall ties used shall have a thickness of not less than 3.15 mm and be of—

(i) stainless steel;

(ii) steel wire galvanised by hot-dipping after fabrication; or

(iii) approved non-corrodible material having a similar stiffness to the materials mentioned in subparagraphs (i) and (ii);

(d) any cavity wall 230 mm or less in standard thickness shall not be of greater superficial extent than 30 m² in any one storey, unless strengthened by a cross wall, fireplace or projecting pier to the satisfaction of the surveyor; and

(e) the standard thickness of the wall shall comply with by-law 36.1.

Cavity Walls: Where Required

Habitable Rooms, etc.

36.7 (1) Subject to sub-bylaws (2) and (3), the external walls of— Amended by *G.G.* 9/12/77, p. 4582.

(a) any habitable room in a Class I, IA, II, III or IV building (including a sleepout or sleepout dado); and

(b) any bathroom, water closet or laundry forming part of a Class I, IA, II, III, IV or V building,

shall be constructed as cavity walls.

Gables

(2) Gables in single storey Class I, IA, II, III or IV buildings or two storey Class I or IA buildings need not comply with sub-bylaw (1) if the gables are constructed of approved materials.

Alternative Provisions For Certain Parts of the State

(3) In the districts of the Shires of Carnarvon, Exmouth, Port Hedland, Roebourne, Shark Bay, Upper Gascoyne and West Pilbara, a wall constructed of hollow concrete blocks shall be deemed to be a cavity wall for the purposes of sub-bylaw (1) of this by-law and paragraph (6) of sub-bylaw (2) of by-law 36.1 if—

(a) the wall is not less than 190 mm in standard thickness;

(b) the hollow concrete blocks comply with by-law 28.2;

(c) the design and construction of the wall complies with by-law 36.4; and

(d) the wall is coated externally with—

(i) two coats of a portland cement based paint approved by the council and applied in conformity with customary building practice; or

(ii) two coats of—

(A) an acrylic latex/cement based finish approved by the council;

(B) a silicone based spray-on waterproofing approved by the council; or

(C) a combination of a finish referred to in subparagraph (A) and a waterproofing referred to in subparagraph (B),

applied in conformity with the manufacturer's specifications.

Panel Walls

Thickness, Support, etc.

36.8 (1) In an external panel wall of masonry construction— Amended by *G.G.* 19/3/76, p. 829; *G.G.* 24/12/76, p. 5099.

(a) where the unsupported area of the wall does not exceed 28 m^2, the wall shall have a standard thickness of not less than 180 mm;

(b) where the unsupported area of the wall exceeds 28 m^2, the wall shall have a standard thickness of not less than 280 mm;

(c) the unsupported areas between structural members shall not exceed 46.5 m^2;

(d) where the outer 110 mm of the wall is supported on continuous steel angles bolted to the face of the structural framework, it shall bear on those steel angles for not less than 76 mm;

(e) any panel wall constructed as a hollow wall shall be securely tied as specified in by-law 36.6;

(f) veneered walls or ashlar facings to such walls are permissible on condition that the total standard thickness shall not be less than 330 mm in the solid unless bonded as prescribed by by-law 35.4

Waiver

(2) The requirements of sub-bylaw (1) as to minimum thickness may be waived, if detailed computations are submitted, demonstrating that the structure has the necessary strength and stability and that the maximum permissible working stresses under dead, live and wind loading are not exceeded.

Lintels: Steel Angle

Bearing and Width

36.9 (1) Where steel angles are used over openings in walls they shall have at least 230 mm bearing each end and be wide enough to give support bearing to masonry of at least 68 mm.

Size

(2) Steel angle sizes in relation to opening span shall be in accordance with Part A or B of Table 36.9, whichever is appropriate.

TABLE 36.9

LINTELS

PART A: STRAIGHT OPENINGS

Openings in mm	Steel Angles in mm
up to 1 500	76 x 76 x 8
over 1 500 but not over 2 700	102 x 102 x 8
over 2 700 but not over 3 150	127 x 76 x 10
over 3 150	To be designed by a practising structural engineer

PART B: CORNER OPENINGS

Openings in mm	Steel Angles in mm
up to 2 700	102 x 102 x 8
over 2 700 but not over 3 150	127 x 76 x 10
over 3 150	To be designed by a practising structural engineer

High Buildings of Loadbearing Brick Construction

Application of By-law

36.10 (1) This by-law applies to buildings of loadbearing brick construction that exceed 27.5 m in height. Amended by *G.G.* 11/6/76, p. 1883.

Design and Construction

(2) Notwithstanding any other provision of this Part, a building to which this by-law applies shall be designed and constructed in accordance with both—

(a) Australian Standard 1640, being item 20 of the First Schedule; and

(b) the requirements of sub-bylaws (3), (4), (5) and (6).

Design

(3) In a building to which this by-law applies direct vertical tension in reinforced brickwork shall not be used in the design for building stability under lateral loading, and the design shall assume that part of each section will be inactive and the remainder will carry compressive stress only.

Supervision

(4) Whenever the maximum stresses in brickwork in a building to which this by-law applies are over 50 per cent of the allowable stresses of a brick structure, continuous supervision shall be carried out by a practising structural engineer or by a clerk of works approved by, and under the control and direction of, a practising structural engineer.

Testing

(5) Testing in relation to brickwork in a building to which this by-law applies shall comply with the following requirements—

(a) preliminary testing of brickwork to ascertain the properties for use in design as load bearing brickwork shall include as major tests—
  (i) full scale wall panel tests;
  (ii) prism tests; and
  (iii) mortar strength test;

(b) where full scale wall test of random samples of brick have demonstrated that those bricks have no inherent weakness, then the strength of brickwork constructed from bricks that come from the same source and are of the same colour, shape and size and perforation as those tested, shall be determined by the prism test and the bond test shall be determined by the method laid down in the Australian Standard 1640, being item 20 of the First Schedule;

(c) where conditions on site, or materials or both, are different from those at the time of preliminary testing, additional bond and prism tests shall be carried out under the new conditions and tested for acceptance in accordance with section 6 of Australian Standard 1640, being item 20 of the First Schedule.

Transverse Strength

(6) Bricks used in a building to which this by-law applies shall have a transverse strength complying with the requirements of sub-bylaw (2) of by-law 36.2.

GROUP VI—STRUCTURAL PROVISIONS

PART 37—WALLING NOT OF MASONRY, TIMBER, OR VENEER-ON-TIMBER

Walls of Concrete or Steelwork

37.1 Walls of concrete or steelwork shall be designed and erected in accordance with Part 40 and any other provisions of these by-laws which are applicable.

Special Walling

Design

37.2 (1) Walls not of masonry, timber, veneer-on-timber, concrete or steelwork shall be so designed as to ensure that they are structurally sound.

Amended by *G.G.* 1/7/77, p. 2027; *G.G.* 9/12/77, p. 4582.

Certificates of Engineers and Others

(2) In the case of any proposal to build under the provisions of this by-law, where the council is not otherwise able to satisfy itself beyond doubt that the whole or any part is acceptable, it may require the submission of a certificate from a practising structural engineer, or other person or body, approved by the council—

(a) certifying that when completed the building will be structurally sound; and

(b) setting forth in detail the bases on which it is given and the extent to which the engineer, person or body has relied on relevant specifications, rules, codes of practice or publications in respect of the construction.

GROUP VI—STRUCTURAL PROVISIONS

PART 38—FLOORS

Floors Generally

38.1 The floors of a building shall be so designed and constructed as to be capable of carrying the dead and live loads to be imposed on them.

Timber Floors

38.2 Floors of timber shall be designed and constructed in accordance with Part 41 and this Part of these by-laws and any other provisions of the by-laws which are applicable.

Concrete Floors

38.3 Floors of concrete shall be designed and constructed in accordance with Part 40 and the provisions of this Part of these by-laws as are applicable.

Steelwork Floors

38.4 Floors of steelwork shall be designed and constructed in accordance with Part 40 and any other provisions of these by-laws which are applicable.

Floors of Bathrooms, Toilets and Laundries, etc.

38.5 The floor of every bathroom, toilet, laundry, etc., shall be constructed of concrete not less than 76 mm in thickness, properly surfaced and graded to an approved floor outlet; but in the case of single storey buildings of Class I, IA, II, III or IV, approved materials as specified in the Health Act, Sewerage (Lighting, Ventilation and Construction) Regulations 1971 may be used. Amended by *G.G.* 7/5/76, p. 1407.

Mezzanine Floors

Fire Resistance

38.6 (1) A mezzanine floor or gallery constructed in any building shall conform to Part 16 in respect to materials and structure where a fire-resistance rating is required. Amended by *G.G.* 7/5/76, p. 1407.

Support

(2) Subject to sub-bylaw (1) either steel or wood may be used to support a mezzanine floor but where wood is used it shall be hardwood not less than 100 mm × 100 mm square and shall be protected against termites.

Area, Height and Width

(3) (a) A mezzanine floor shall not be constructed in any storey with a clear height from floor to ceiling of less than 4.5 m.

(b) Subject to paragraph (c) and by-law 16.16 the ceiling height and floor width and area of a mezzanine floor shall be in conformity with Table 38.7 (3).

(c) A mezzanine shall not exceed the maximum width set out in Table 38.7 (3) or the widths in subparagraph (i), (ii) or (iii) of this paragraph, whichever is the least, that is to say—

(i) when placed along both sides of a room, one sixth of the width of the room;

(ii) when placed along one side of a room, one third of the width of the room; and

(iii) when placed across the end of a room, one third the length of the room.

TABLE 38.7 (3)
AREA, HEIGHT AND WIDTH OF MEZZANINES

USE	Minimum Ceiling Height mm	Maximum Floor Width m	Maximum Floor Area
Storage and display.....	2100	4.5	$\frac{1}{3}$ area of room
Purposes other than storage and display.....	2300	3	$\frac{1}{5}$ area of room
.....	2500	3.6	$\frac{1}{4}$ area of room
.....	2740	4.5	$\frac{1}{3}$ area of room

Light and Ventilation

(4) (a) A mezzanine floor shall be provided with light and ventilation in accordance with Part 50.

(b) A mezzanine floor shall not be enclosed above a height of 1650 mm and the upper 600 mm of any enclosure shall consist of glass or glass louvres securely fitted in proper frames in accordance with Australian Standard 1288, being item 7 of the First Schedule.

(c) A mezzanine floor with a ceiling height of less than 2740 mm shall not be approved for the purpose of providing accommodation for extra operatives where those extra operatives would cause the number of operatives to exceed those allowed by regulations made under the Factories and Shops Act 1963.

Means of Egress

(5) A mezzanine floor shall be provided with alternative means of egress in compliance with the requirements of Part 24, but alternative means of egress may be omitted in the case of a mezzanine floor on which a person cannot be trapped in the event of fire, if that floor does not exceed 93 m^2 in area.

GROUP VI.—STRUCTURAL PROVISIONS

PART 39.—ROOFS AND ROOF STRUCTURES

Roofs: General Requirements

Parts 44, 47, etc. Apply

39.1 (1) Roofs and roof structures shall, in addition to the requirements set out in this by-law, be constructed in accordance with the relevant provisions of Parts 44 and 47 and any other provisions of these by-laws that are applicable.

In Industrial or Business Districts

(2) Any building exceeding three storeys in height, built in an industrial area or business district, shall have a flat roof, but—

(a) a pitched roof may be constructed above another roof if that other roof has a fire-resistance rating that complies with these by-laws and a flat walkway not less than 2400 mm in width is provided around the pitched roof; and

(b) superstructures constructed above the main roof of the building may be constructed with pitched roofs.

Exemption

(3) The provisions of sub-bylaw (2) do not apply to a building constructed at a greater distance than 6 m from the boundaries of the site.

Timber Roofs

39.2 Roofs and roof structures of timber shall be designed and constructed in accordance with Part 41 and other provisions of these by-laws that are applicable.

Concrete Roofs

39.3 Roofs and roof structures of concrete shall be designed and constructed in accordance with Part 40 and any other provisions of these by-laws that are applicable.

Steelwork Roofs

39.4 Roofs and roof structures of steelwork shall be designed and constructed in accordance with Part 40 and any other provisions of these by-laws that are applicable.

Enclosure of Flat Roofs

39.5 Where a building has a flat roof and access to that roof is provided by lift, ramp, or stairs then—

(a) if a wall of the building is required by Part 19 to be provided with a parapet with a minimum height of at least 1220 mm, the provisions of Part 19 apply;

(b) if a wall of the building is required by Part 19 to be provided with a parapet with a minimum height of more than 1065 mm but less than 1220 mm, the provisions of Part 19 apply except that the parapet shall either—

(i) have a minimum height of at least 1220 mm; or

(ii) be surmounted by an approved metal guard rail to a total height of at least 1220 mm;

(c) if Part 19 requires a wall of the building to be provided with a parapet but does not require the minimum height of the parapet to exceed 1065 mm, the provisions of Part 19 apply except that the parapet shall either—

(i) have a minimum height of at least 1220 mm; or

(ii) have a minimum height of at least 1065 mm and be surmounted by an approved metal guard rail to a total height of at least 1220 mm;

(d) if a wall of the building is not required by Part 19 to be provided with a parapet, the wall shall be provided with—

(i) a parapet with a minimum height of at least 1220 mm;

(ii) a parapet with a minimum height of at least 1065 mm surmounted by an approved metal guard rail to a total height of at least 1220 mm; or

(iii) a balustrade with a minimum height of at least 1220 mm in which—

(A) the width of apertures in any direction is not more than 125 mm;

(B) vertical balusters are not spaced more than 125 mm apart; and

(C) there is no toe hold between the heights of 150 mm and 760 mm.

Anchorage of Light-weight Roofs

When Required

39.6 (1) Roofs with a pitch of less than 10 degrees and constructed of materials other than reinforced concrete, or cement or terra-cotta tiles shall be anchored down at external walls in the manner provided in sub-bylaw (2) or (3) of this by-law as the case may require.

Amended by *G.G.* 16/6/78, p. 1922.

Wood Frame Walls

(2) In the case of wood frame walls anchorage shall be effected by adequately strapping the roof framing at every rafter and purlin by means of hoop iron, or other approved material, attached to a stud or passed under a lintel.

Masonry Walls

(3) In the case of masonry walls anchorage shall be effected by—

(a) securely fixing anchor bolts consisting of 12.5 mm diameter galvanised mild steel rods, or equivalent flat bars, to the roof framing so that—
  (i) at least one anchor bolt passes within 225 mm of every corner of the wall and of each side of every window or door opening in the wall; and
  (ii) in parts of the wall where there are no window or door openings the anchor bolts are spaced at intervals of not more than 1800 mm; and

(b) either bending and casting the anchor bolts into the footing or alternatively, in the case of anchor bolts in a cavity wall that are more than 900 mm from a door or window opening, securing them to 100 mm wide by 6.5 mm thick galvanised mild steel plates each of which shall be situated at not more than half the vertical height of the wall, bedded 50 mm into each leaf of the wall, and bent down at its centre to form a drip.

Overhanging Roofs etc.

Projections Near Adjoining Property

39.7 (1) Eaves, soffits, and barge boards to any overhanging roof, if within 750 mm of any adjoining building or allotment in other occupation, shall be of fire-resisting materials, unless separated by brickwork at least 230 mm thick, or by reinforced concrete at least 100 mm thick and projecting 100 mm beyond the woodwork.

Pitched Roofs Near Streets or Ways

(2) Subject to sub-bylaw (3) a pitched roof that is within 600 mm of a street or way and slopes towards that street or way shall be protected by a parapet carried to a height of not less than 360 mm from the highest part of the adjoining gutter, or where no gutter adjoins, from the roof covering measured at right angles to the slope of the roof, and shall be constructed of—

(a) masonry set in cement or composition mortar properly weathered on top, and of a thickness not less than $\frac{1}{8}$ of its height or 200 mm, whichever is the greater except in the case—
  (i) of single storey buildings permitted by these by-laws to be constructed in lime mortar in which case the thickness shall not be less than 1/6th of the height or 200 mm, whichever is the greater; and
  (ii) of buildings permitted by by-law 36.1 to be constructed with external walls 90 mm in thickness in which case the parapet may be 90 mm thick;

(b) concrete of a thickness not less than 1/10th of its height or 150 mm, whichever is the greater; or

(c) where the parapet is connected to a reinforced roof or wall, reinforced concrete not less than 100 mm in thickness.

Parapet Not Required in Certain Cases

(3) Notwithstanding sub-bylaw (2) a parapet is not required by reason only of a roof being within 600 mm of a street or way if—

(a) the roof has a fire-resistance rating of at least three hours; or

(b) no eave projects more than 600 mm and the building for its full width is fitted with a street verandah not less than 2400 mm in width, the roof of which slopes towards the building.

GROUP VI—STRUCTURAL PROVISIONS

PART 40—STRUCTURAL CONCRETE AND STEELWORK

Part heading substituted by *G.G.* 1/7/77, p. 2027.

Design and Construction

Structures of Concrete and Steel

40.1 (1) All structures and members of concrete or steel shall be— Substituted by *G.G.* 1/7/77, p. 2027.

(a) designed and constructed in accordance with the principles of structural mechanics; and

(b) capable of sustaining the most adverse combination of loads to which they will be subjected in accordance with the provisions of these by-laws.

Australian Standards Deemed to Satisfy

(2) The requirements of sub-bylaw (1) shall be deemed to be satisfied when structures and members of—

(a) unreinforced concrete, reinforced concrete or composite steel concrete comply with Australian Standard 1480, being item 5 of the First Schedule;

(b) prestressed concrete comply with Australian Standard 1481, being item 6 of the First Schedule; or

(c) steel comply with Australian Standard 1250, being item 26 of the First Schedule or Australian Standard 1538, being item 27 of the First Schedule, whichever is applicable.

Certificates of Engineers and Others

Heading substituted by *G.G.* 1/7/77, p. 2027.

40.2 In the case of any proposal to build under the provisions of this Part, where the council is not otherwise able to satisfy itself beyond doubt that the whole or any part is acceptable, it may require the submission of a certificate from a practising structural engineer, or other person or body, approved by the council— Substituted by *G.G.* 1/7/77, p. 2027. Amended by *G.G.* 9/12/77, p. 4582.

(a) certifying that when completed the construction will be structurally sound; and

(b) setting forth in detail the bases on which it is given and the extent to which the engineer, person or body has relied on relevant specifications, rules, codes of practice or publications in respect of the construction.

GROUP VI.—STRUCTURAL PROVISIONS

PART 41.—TIMBER CONSTRUCTION

Buildings to Comply with this Part

41.1 Where the construction of a timber or timber framed building is authorized within the meaning of section 399 of the Act that building shall comply with the provisions of this Part.

Design and Construction

Australian Codes to Apply

41.2 (1) Except where an alternative method of design and construction is permitted under sub-bylaw (1a), all timber structures and members shall be designed and constructed in accordance with— Amended by *G.G* 11/6/76, p. 1883; *G.G.* 24/12/76, p. 5099.

(a) the timber structural provisions of Australian Standard 1684 being item 40 of the First Schedule; or

(b) Australian Standard 1720 being item 41 of the First Schedule.

Alternative Construction

(1a) Notwithstanding sub-bylaw (1), timber structures and members, other than walls exceeding one storey in height, may be designed and constructed in accordance with Table 41.2.

Engineer to Design, Supervise and Certify

(2) Where timber structures or members are designed in accordance with Australian Standard 1684 or 1720—

(a) the design shall be the responsibility of a practising structural engineer; and

(b) the fabrication and construction of the structures or members shall be supervised by the engineer responsible for the design or a practising structural engineer experienced in such supervision.

Substituted by *G.G.* 24/12/76, pp. 5099-5101.
Amended by *G.G.* 1/7/77, p. 2028; *G.G.* 29/2/80, p. 680.

TABLE 41.2

TIMBER FRAME CONSTRUCTION

1. Stumps

100 mm x 100 mm at not more than 1200 mm centres.

2. Bearers

100 mm x 75 mm fixed on edge and spaced not more than 1500 mm apart.

3. Floor Joists

(a) To be spaced not more than 450 mm centres; double joists to be fixed in all cases where joists are parallel to vermin plates.

(b) Lateral support to be provided by herring bone or other approved strutting or bridging.

(c) Size—

Span between Supports	Size
not over 1 500 mm	100 mm x 50 mm
over 1 500 mm but not over 2 400 mm	150 mm x 50 mm
over 2 400 mm but not over 3 000 mm	200 mm x 50 mm
over 3 000 mm but not over 4 000 mm	225 mm x 50 mm
over 4 000 mm but not over 4 800 mm	250 mm x 50 mm
over 4 800 mm	As approved by surveyor

4. Wall Framing (single storey walls only)

(a) Wall plates: same width as studs and a minimum of 50 mm thick housed 10 mm for studs.

(b) Stud sizes and spacing in relation to height of wall and type of roof:

Size of Stud	Maximum Spacing of Studs	Maximum Height of Wall	Maximum span of Roof Supported on Wall		Maximum Spacing of Rafters	
			Sheet	Tiles	Sheet	Tiles
mm	mm	mm	mm	mm	mm	mm
75 x 50	600	2 500	12 000	8 000	900	600
100 x 50	600	3 000	12 000	8 000	900	600

(c) Corner studs:

(i) where 75 mm x 50 mm wall studs are used—one 75 mm x 75 mm or two 75 mm x 50 mm;

(ii) where 100 mm x 50 mm wall studs are used—one 100 mm x 100 mm or two 100 mm x 50 mm.

(d) Openings: heads, sills and studs to all openings not less than 100 mm x 50 mm.

5. Ceiling Joists

Size of Joist	Maximum Spacing	Maximum Span	
		Single	2 Spans
75 mm x 50 mm	450 mm	1 800 mm	2 000 mm
100 mm x 38 mm	600 mm	2 000 mm	2 400 mm

6. Angle stops

50 mm x 32 mm.

7. Hangers

Not less than 200 mm in depth by 32 mm in thickness spaced up to 1 800 mm and spanning not more than 3 000 mm with hanging straps to joists of either 1.6 mm galvanised hoop iron or 32 mm x 32 mm hardwood securely spiked to hangers and joists.

8. Rafters

Size of Rafter	Maximum Spacing	Maximum Span	
		Single	2 Spans
100 mm x 50 mm	600 mm	2 000 mm	2 400 mm
125 mm x 38 mm	600 mm	2 200 mm	2 700 mm

9. Roof Battens

(a) For tile roofs, a bearing batten of 50 mm x 25 mm to each row of tiles and tiles shall be securely fixed to such tile battens.

(b) For sheet metal roofs battens 75 mm x 38 mm shall be used spaced up to 900 mm centres.

TABLE 41.2 (continued).

TIMBER FRAME CONSTRUCTION

Structural Members	Specifications
10. Roof Purlins	100 mm × 75 mm.
11. Roof Struts	75 mm × 75 mm.
12. Collar Ties	75 mm × 50 mm.
13. Valleys, Barge Boards and Fascias	175 mm × 32 mm
14. Ridges, Hips	175 mm × 25 mm.
15. Flooring	Either— (a) Tongued and grooved boards not exceeding 150 mm in width and not less than 15 mm thick, well cramped up, securely nailed and cleaned off. OR (b) Plywood sheeting capable of withstanding a superimposed load of 3kPa, having a bond of Type A as specified in Australian Standard 2272 or Australian Standard 087 being items 24 and 25, respectively, of the First Schedule and fixed in accordance with the following requirements— (i) Sheets shall be laid with the grain of the face plies at right angles to the line of supporting joists and shall be continuous over at least two spans. (ii) Joints parallel to joists shall be staggered. (iii) Ends of sheets shall be butted centrally over joists, and edges of sheets (unless tongued and grooved) shall be joined centrally over noggings between joists such noggings being of timber not less than 75 mm x 38 mm set flush with the tops of joists. (iv) Nails used for fixing of sheets shall be annularly grooved and not less in length than 2.5 times the thickness of the sheet and shall be spaced as follows— Flat head nails: up to 150 mm centres along the ends of sheets and up to 300 mm centres along the edges. Jolt (Bullet) head nails: up to 100 mm centres along the ends of sheets and up to 200 mm centres along the edges. (v) Ventilation of under floor space shall be provided in accordance with by-law 50.10.
16. Weather Boards	Shall have a lap of not less than one-fifth of the width of the board.
17. Bracing	Walls: The framework of all external and internal walls shall be well braced with— (a) battens not less than 75 mm x 15 mm housed into the studs; or (b) metal braces approved by the surveyor. Roofs: All gable roofs shall be braced against lateral movement with— (a) timber not less than 38 mm in width; or (b) metal braces approved by the surveyor.
18. Sashes and Doors.....	The minimum thickness for sashes shall be not less than 34 mm, and for panel doors not less than 32 mm.

Note: The dimensions for timber stated in this table are nominal dimensions subject to normal trade tolerances.

Wall and Ceiling Linings

Acceptable Materials

41.3 (1) Subject to sub-bylaws (2) and (3) the external and internal wall linings and ceiling linings of a building to which this Part applies may be of any material approved for those respective purposes.

Restrictions on Use of Materials

(2) Notwithstanding sub-bylaw (1) a material shall not be used for any of the purposes referred to in that by-law if that use would contravene the provisions of these by-laws as to fire safety and fire resistance, or the provisions of by-law 28.9.

Sound Insulation

(3) Notwithstanding sub-bylaw (1) the internal walls separating units and common passageways in a Class III building to which this Part applies shall have a sound insulation value of not less than a decibel reduction of 37.

Walls that Comply with Sub-bylaw (3)

(4) For the purposes of sub-bylaw (3), an internal wall shall be deemed to have the sound insulation value therein prescribed if it is—

(a) a brick wall 110 mm in thickness; or

(b) a wall on each side of the framing of which either of the materials specified hereunder is used, namely—

(i) fibrous plaster sheets of a minimum thickness of 12.7 mm; or

(ii) gyprock sheets of a minimum thickness of 12.7 mm.

Support for Framework

Requirements

41.4 (1) The framework of any wall to which this Part applies shall rest upon— Amended by *G.G.* 16/6/78, p. 1922.

(a) a sleeper wall of masonry or concrete not less than 90 mm in thickness; and where the height of that wall exceeds 1 100 mm the wall shall be stiffened with piers not less than 200 mm in width and 90 mm thicker than, and bonded into, the sleeper wall; and the sleeper wall shall rest on a footing of—

(i) concrete with a minimum width of 300 mm and a minimum depth of 150 mm; or

(ii) brickwork set in cement mortar, with a minimum width of 350 mm and a minimum depth of 150 mm;

(b) piers of masonry or concrete, measuring not less than 230 mm square;

(c) reinforced concrete piers, not less than 125 mm square, with integrally cast sole pieces having a bearing area of not less than 460 cm^2; or

(d) stumps of jarrah or other approved timber not less than 100 mm × 100 mm, or galvanised iron piping stumps of not less than 38 mm internal diameter, sunk to a depth below the natural surface of the ground equal to one-fourth of their length but in no case less than 450 mm and resting upon and securely fastened to—

(i) a base of concrete not less than 460 cm^2 in area; or

(ii) a base of masonry constructed in cement mortar 230 mm square, by 150 mm thick; or

(iii) sole plates of jarrah or other approved timber not less than 460 cm^2 in area nor less than 50 mm in thickness.

Concentrated Loads

(2) In addition to the requirements of paragraph (a) of sub-bylaw (1) piers shall be provided under any concentrated load.

Bracing of Stumps

(3) Any stump projecting more than 1 200 mm above the surface of the ground shall be adequately braced.

GROUP VI—STRUCTURAL PROVISIONS
PART 42—VENEER-ON-TIMBER CONSTRUCTION

Construction

Timber Section

42.1 (1) Timber structures and members forming part of a building of veneer-on-timber construction shall comply with Part 41. Amended by *G.G.* 16/6/78, p. 1922.

Wall Ties

(2) The outer veneer shall be tied to the timber framework with wall ties of galvanized or other non-corrodible metal having a thickness of not less than 3.15 mm and be spaced not further apart than—

(a) 450 mm horizontally and 600 mm vertically; or
(b) 600 mm horizontally and 450 mm vertically.

Wall Cavities

Width

42.2 (1) The external walls shall be so constructed as to leave a clear space of not less than 25 mm or more than 50 mm between the veneer and timber framework of the external walls.

Mortar Droppings

(2) Wire mesh fixed at the base of cavities in the external walls of masonry veneer-on-timber construction shall be protected with paper or other material capable of collecting mortar droppings falling in the cavity during the time of construction of masonry above the level of the base of the cavity. Such paper or other material shall be removed from the cavity before any internal linings are fixed in position.

Wall Limitations, Thickness, Length and Height

(3) A veneer wall shall not be constructed—

(a) of masonry less than 90 mm in thickness;
(b) to a greater length than 7.3 m between external return walls or internal cross walls; or
(c) to a greater height than 4.3 m.

GROUP VI—STRUCTURAL PROVISIONS
PART 43—OTHER KINDS OF CONSTRUCTION

Part heading substituted by *G.G.* 1/7/77, p. 2028.

Construction Where Specific Provisions are Non-Existent

Heading substituted by *G.G.* 1/7/77, p. 2028.

43.1 Where no specific provision is made for a system of construction in Group VI—Structural Provisions of these by-laws the council may approve of an application to construct a building if it is satisfied that the building when completed will be structurally sound.

Substituted by *G.G.* 1/7/77, p. 2028.

Certificates of Engineers and Others

Heading substituted by *G.G.* 1/7/77, p. 2028.

43.2 In the case of any proposal to build under the provisions of this Part, where the council is not otherwise able to satisfy itself beyond doubt that the whole or any part is acceptable, it may require the submission of a certificate from a practising structural engineer, or other person or body, approved by the council—

Substituted by *G.G.* 1/7/77, p. 2028.

Amended by *G.G.* 9/12/77, p. 4582.

(a) certifying that when completed the construction will be structurally sound; and
(b) setting forth in detail the bases on which it is given and the extent to which the engineer, person or body has relied on relevant specifications, rules, codes of practice or publications in respect of the construction.

Design and Construction

Heading substituted by *G.G.* 1/7/77, p. 2028.

Structures of Aluminium

43.3 (1) All structures and members of aluminium shall be— Substituted by *G.G.* 1/7/77, p. 2028.

(a) designed and constructed in accordance with the principles of structural mechanics; and

(b) capable of sustaining the most adverse combination of loads to which they will be subjected in accordance with the provisions of these by-laws.

Australian Standard Deemed to Satisfy

(2) The requirements of sub-bylaw (1) shall be deemed to be satisfied when structures and members of aluminium comply with Australian Standard 1664, being item 55 of the First Schedule.

GROUP VII—HEALTH AND AMENITY

PART 44—DRAINAGE OF BUILDING AND SITE

Roof Drainage

Provision of Drainage System

44.1 (1) The roof or roofs of every building shall be provided with a complete drainage system. Amended by *G.G.* 16/6/78, p. 1922.

Design of Drainage System

(2) The design and construction of every roof drainage system and the position and manner of discharge of every stormwater drain shall be to the satisfaction of the council but shall not, in any case—

(a) result in the entry of water into the building; or

(b) affect the stability of the building or any other building on the same site; or

(c) create any unhealthy or dangerous condition on the site.

Exemption From Roof Drainage System

(3) Notwithstanding sub-bylaw (1), the council may permit the omission of a system of drainage from the whole or part of a roof if the council is satisfied that such omission will not result in or create any of the conditions referred to in paragraphs (a), (b) and (c) of sub-bylaw (2).

Building on Land Subject to Dampness or Flooding

Measures to be Taken on Damp Sites

44.2 (1) Where, in the opinion of the council, the dampness of the site on which a building is proposed to be constructed so warrants, the council may require that one or all of the following measures shall be carried out—

(a) the subsoil shall be effectually drained;

(b) the surface of the ground beneath the building shall be regraded or filled and provided with adequate outlets to prevent any accumulation of water beneath the building;

(c) the surface of the ground beneath the building shall be covered with an approved damp-resisting material.

Land Liable to Flooding

(2) A building shall not be constructed upon any land defined by the council as being liable to flooding or inundation.

Drainage of Land External to Building

Substituted by *G.G.* 16/6/78, p. 1922.

44.3 If paving, excavation, or any other work that has been or is proposd to be carried out on the natural surface of the site causes, or in the opinion of the council may cause, undue interference with the existing drainage of rain-water falling on any part of the site external to the building, whether the existing drainage is natural or otherwise, the council may require the provision of a system of drainage to its satisfaction to offset any problems arising or which in its opinion may arise from such interference.

GROUP VII—HEALTH AND AMENITY

PART 45—DISPOSAL OF GARBAGE AND OTHER HOUSEHOLD WASTES

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GROUP VII—HEALTH AND AMENITY

PART 46—PROVISION OF BATHROOMS, CLOSETS, KITCHENS AND LAUNDRIES†

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GROUP VII—HEALTH AND AMENITY

PART 47—WEATHERPROOFING, DAMP-PROOFING AND FLASHING

Roofs and Walls

Roofs to be Waterproof

47.1 (1) Roofs shall be so constructed as to prevent the penetration of rain or other water to the inner parts of a building. Amended by *G.G.* 1/7/77, p. 2028.

External Walls to be Waterproof

(2) External walls (including openings around windows and doors) shall be so constructed as to prevent the penetration of rain or other water to the inner parts of a building.

Exemptions from Weatherproofing

(3) The council may grant exemption from part or all of the requirements of sub-bylaw (1) or sub-bylaw (2) in the following cases—

(a) a Class VII, VIII, or X building where the council is satisfied in the particular case that there is no necessity to require compliance;

(b) a garage, tool shed, water closet, or the like, forming portion of a building used for other purposes.

Concrete Roofing Tiles

With Weathering Check

47.2 (1) A roof that is covered with concrete roofing tiles with weathering checks shall be deemed to comply with sub-bylaw (1) of by-law 47.1 if the tiles— Amended by *G.G.* 11/6/76, p. 1883.

(a) comply with Australian Standard 1759, being item 28 of the First Schedule; and

(b) are fixed in accordance with Australian Standard 1760, being item 29 of the First Schedule.

Without Weathering Check

(2) A roof that is covered with concrete roofing tiles without weathering checks shall be deemed to comply with sub-bylaw (1) of by-law 47.1 if the tiles—

(a) comply with Australian Standard 1757, being item 30 of the First Schedule; and

(b) are fixed in accordance with Australian Standard 1758, being item 31 of the First Schedule.

Terra-cotta Roofing Tiles

To Comply with Standards

47.3 (1) A roof that is covered with terra-cotta roofing tiles shall be deemed to comply with sub-bylaw (1) of by-law 47.1 if the tiles— Amended by *G.G.* 29/2/80, p. 680.

(a) comply with Australian Standard 2049 being item 32 of the First Schedule; and

(b) are fixed in accordance with Australian Standard 2050 being item 33 of the First Schedule.

Other Concrete and Terra-cotta Tiles May be Approved

(2) Concrete or terra-cotta roofing tiles not conforming with the requirements of the Australian Standard specifications referred to in sub-bylaws (1) and (2) of by-law 47.2 and sub-bylaw (1) of this by-law, may be used if they are of a design approved by the Minister acting on the recommendation of the Building Advisory Committee.

† See Health Act 1911, and regulations and by-laws thereunder.

Corrugated Asbestos-Cement Roof

47.4 A roof that is covered with corrugated asbestos-cement sheeting shall be deemed to comply with sub-bylaw (1) of by-law 47.1 if the sheeting— Amended by *G.G.* 11/6/76, p. 1883.

(a) complies with Australian Standard 1611, being item 34 of the First Schedule; and

(b) is fixed in accordance with Australian Standard 1639, being item 35 of the First Schedule.

Corrugated Galvanised Steel

47.5 Corrugated hot-dipped galvanised steel having a 76 mm pitch used as a roof covering shall comply with Australian Standard 1445, being item 36 of the First Schedule. Amended by *G.G.* 7/5/76, p. 1407; *G.G.* 11/6/76, p. 1883.

Pliable Sarking and Insulation

Flammability

47.6 (1) Pliable sarking and insulation for use in buildings shall have a flammability index not greater than 10 when determined by the flammability test described in Australian Standard 1530, being item 1 of the First Schedule. Amended by *G.G.* 11/6/76, p.p. 1883-4.

Fixing

(2) Pliable sarking and insulation when used in buildings shall be fixed in accordance with Australian Standard 1736, being item 37 of the First Schedule.

Steel Supporting Masonry Over Openings

47.7 Steel members supporting masonry over openings in external walls, and which, in the opinion of the council are exposed to salt-laden atmosphere shall be protected against corrosion by— Amended by *G.G.* 16/6/78, p. 1923.

(a) hot-dip galvanising not less than 127 μm in thickness; or

(b) other means not less effective than galvanising as specified in paragraph (a).

Damp-proofing of Certain Rooms

Heading amended by *G.G.* 16/6/78, p. 1923.

Floors of Certain Compartments

47.8 (1) The floor surfaces of bathrooms, shower rooms, slop sink compartments, laundries, closet compartments and urinal compartments shall be of a material impervious to moisture and, except in the case of earth closet compartments, the junctions of the floor with the walls shall be so treated as to prevent the penetration of moisture into the walls.

Walls Adjoining Baths and Showers

(2) The walls—

(a) immediately adjoining or behind a bath; or

(b) of a shower compartment, including the walls about an open shower,

shall be finished to a height of not less than 1 800 mm above the floor with cement render, ceramic tiles or other approved impervious finish.

Walls of Closets and Urinals

(3) Except in a Class I, IA, II or IV building the walls of closet compartments and urinal compartments shall be finished internally to a height of not less than 1 800 mm above the floor with cement render, ceramic tiles or other approved impervious finish.

Laundries

(4) Laundries shall be enclosed by walls to provide protection against storm and rainwater.

Damp-proof Courses and Damp-proof Mortars

Use

47.9 (1) Except in a building that is subject to an exemption granted by the council pursuant to sub-bylaw (3) of by-law 47.1 damp-proof courses shall be laid or damp-proof mortars used in masonry walls and piers in such a manner that moisture from the ground— Amended by *G.G.* 16/6/78, p. 1923.

(a) shall be prevented from reaching the lowest floor timbers and the walls above the lowest floor joists;

(aa) shall be prevented from reaching the walls above the damp-proof courses; and

(b) in the case of any suspended floor constructed of materials other than timber, shall be prevented from reaching the underside of such floor or the supporting beams or girders.

[(2) and heading repealed by *G.G.* 16/6/78, p. 1923.]

Use of Termite Shields and Damp-proof Courses and Damp-proof Mortars

(3) Notwithstanding anything to the contrary in this Part, where approved termite shields are used on piers a damp-proof course or damp-proof mortar shall not be required in such piers.

Overlap of Damp-proof Courses

(4) Where, pursuant to sub-bylaw (1), a damp-proof course is used it shall be overlapped not less than 100 mm at any joins.

Strength of Mortar

(5) Damp-proofing mortar shall be of a crushing strength not less than that of the other mortar in the wall in which it is used.

Damp-proof Courses: Materials

47.10 Damp-proof courses used in a building shall be— Amended by *G.G.* 16/6/78, p. 1923.

(a) uncovered annealed lead having a mass not less than 9.7 kg/m^2; or

(b) uncovered copper having a mass not less than 2.8 kg/m^2 and having a thickness not less than 0.35 mm; or

(c) felt based bituminous asphalt neither less than 2.54 mm thick nor more than 3.05 mm thick (applicable only to walls not higher than 7.8 m above the level of the damp-proof course); or

(d) polyethylene film not less than 250 μm thick; or

(e) annealed sheet aluminium not less than 0.10 mm thick, with a bitumen coat and sheeted with polyethylene film; or

(f) bituminous coated metal complying with Australian Interim Standard 326 being item 38 of the First Schedule; or

(g) bituminous coated fibre felt complying with Australian Interim Standard 327 being item 39 of the First Schedule; or

(h) such other materials as may be approved.

Damp-proofing of Floors on the Ground

Where Required

47.11 (1) Where a concrete slab or paved floor is laid on the ground or on filling, moisture from the ground shall be prevented from reaching the inner surfaces of the floor and adjacent walls by the insertion of damp-proof courses or membranes or by other approved damp-proofing means. Amended by *G.G* 1/7/77, p. 2028.

Exemptions

(2) The council may exempt from the requirements of sub-bylaw (1)—

(a) a Class VII, VIII or X building where it is satisfied in the particular case that there is no necessity to prevent moisture from reaching the inner surfaces of the floor and adjacent walls;

(b) a garage, tool shed, water-closet, or the like, forming portion of a building used for other purposes;

(c) any building if it is satisfied that the condition of the subsoil or the construction of the floor is such that moisture will be prevented from reaching the inner surfaces of the floor or walls without the insertion of damp-proof courses or membranes or the use of other damp-proofing means; and

(d) the base of any stair, lift or like shaft which is satisfactorily drained by gravitational or mechanical means.

[47.12 and heading repealed by *G.G.* 16/6/78, p. 1923.]

GROUP VII.—HEALTH AND AMENITY

PART 48.—TERMITE AND RODENT PREVENTION

Termite Prevention

Application of By-law

48.1 (1) This by-law applies to any building of Class I, IA, II, III or IV and to any timber or timber framed building of any other Class.

Substituted by *G.G.* 24/12/76, p. 5101. Amended by *G.G.* 16/6/78, p. 1923.

Physical and Chemical Protection Required

(2) Subject to sub-bylaw (3) any buildings to which this by-law applies shall be protected against attack by termites by means of—

(a) the treatment of the soil under the building in accordance with Australian Standard 2057 being item 42 of the First Schedule; and

(b) the provision of physical barriers in the building in accordance with Australian Standard 1694 being item 43 of the First Schedule.

Power of Council to Exempt

(3) Where the requirements of either paragraph (a) or paragraph (b) of sub-bylaw (2) are complied with in relation to a building the council may exempt that building from the requirements of the other of those paragraphs.

GROUP VII.—HEALTH AND AMENITY

PART 49.—ROOM SIZES AND HEIGHTS

Interpretation

49.1 For the purposes of this Part—

"laundry facility" means a copper, washing machine or wash trough.

Sizes of Habitable Rooms in Residential Buildings

Basic Minimum Area

49.2 (1) Subject to sub-bylaws (2), (3), (4) and (5) a habitable room in a Class I, IA, II, III or IV building—

Amended by *G.G.* 1/7/77, p. 2028.

(a) shall have a floor area of not less than 7.5 m^2; and

(b) shall not be less than 2400 mm wide in its minimum dimension except in the case of a kitchen or sleepout each of which may have a minimum width of 2100 mm.

Kitchen Annexes

(2) A kitchen that is constructed as an annexe to another habitable room may have a floor area of not less than 4.6 m^2 and a minimum dimension of not less than 1800 mm so long as—

(a) the opening separating the kitchen from that other habitable room is unobstructed, has a minimum width of not less than 1500 mm and a minimum height of not less than 2100 mm, and directly faces the source of natural light;

(b) no point within the kitchen is located at a distance exceeding 7 m from the source of natural light;

(c) the natural light conforms to Part 50 in relation to the combined floor area of the kitchen and that other habitable room; and

(d) a mechanical ventilation system of a standard that is approved by the council is installed in the kitchen.

Domiciles or Flats Containing More than One Habitable Room

(3) In a domicile or flat containing more than one habitable room (not counting any kitchen)—

(a) at least one habitable room shall have a floor area of not less than 14 m^2 and be not less than 3 000 mm wide in its minimum dimension; and

(b) at least one other habitable room shall have a floor area of not less than 11 m^2.

Habitable Rooms Incorporating Cooking Facilities

(4) Where a habitable room other than a kitchen contains facilities for the preparation and cooking of food the minimum floor area of that room, as prescribed by sub-bylaw (1) or (3), shall be increased by 4.6 m^2.

Concession as to Width of Portions of Rooms

(5) Where a portion of a room has—

(a) a floor area not less than the minimum floor area prescribed for that room; and

(b) a minimum dimension not less than the minimum dimension prescribed for that room,

the width of any other portion of the room may be less than the minimum dimension prescribed for the room.

Ablution and Laundry Areas in Residential Buildings

Basic Minimum Areas: One Fitting or Facility Contained

49.3 (1) Any room or partitioned compartment in a building of Class I, IA, II, III or IV which contains only one of the facilities or fittings specified in Column 1 of Table 49.3 (1) shall—

(a) have a floor area of not less than the number of square metres shown in Column 2 of that Table, opposite to the facility or fitting contained in that room or partitioned compartment; and

(b) be of a length not less than, and of a width not less than, the measurement shown in column 3 of that Table, opposite to the facility or fitting contained in that room or partitioned compartment.

TABLE 49.3 (1)

SIZE OF ROOMS CONTAINING ONE FITTING OR FACILITY

Column 1	Column 2	Column 3
Facility or fitting contained singly in room or partitioned compartment	Minimum area of room or partitioned compartment	Minimum length and width of room or partitioned compartment
	m^2	mm
Wash basin	1.1	1000
Bath	2.3	1500
Shower	1.5	800
Water closet	1.2	800
Wash trough and Washing Machine	3.9	1500
Two wash troughs and copper	4.6	1500

Basic Minimum Areas: Two or More Fittings or Facilities Contained

(2) Any room or partitioned compartment in a building of Class I, IA, II, III or IV which contains two or more of the facilities or fittings specified in Column 1 of Table 49.3 (2) shall—

(a) have a floor area of not less than the number of square metres obtained by calculating the aggregate of the numbers of square metres shown in column 2 of that Table, opposite to the facilities or fittings contained in the room or partitioned compartment; and

(b) be of a length not less than, and of a width not less than, the greatest of the measurements shown in Column 3 of that Table, opposite to the facilities or fittings contained in that room or partitioned compartment.

TABLE 49.3 (2)

SIZE OF ROOMS CONTAINING TWO OR MORE FITTINGS OR FACILITIES

Column 1	Column 2	Column 3
Facilities or fittings contained in combination in a room or partitioned compartment	Minimum area to be provided for facility or fitting	Minimum length and width of room or partitioned compartment
	m^2	mm
Wash basin	0.85	900
Bath	1.9	1500
Shower	1.1	750
Water closet	0.95	750
Wash trough and washing machine	3.2	1500

Wash Troughs

(3) For the purposes of sub-bylaws (1) and (2)—

(a) a wash trough and a washing machine both contained within a room; or

(b) a copper and two wash troughs both contained within a room,

shall be regarded as being a single facility or fitting.

Special Provisions and Total Areas

(4) Notwithstanding the provisions of sub-bylaw (1)—

(a) a room which contains a wash basin and either a bath or shower shall have a floor area of not less than 2.7 m^2;

(b) the floor area of an additional bathroom in a building of Class I, IA, II, or IV that is attached to and opens only upon a bedroom and is intended for the exclusive use of the occupants of that bedroom, shall not be required to exceed 2.7 m^2 if that bathroom contains no laundry facilities;

(c) the total floor area of all rooms or partitioned compartments in—

(i) a building of Class I or IV;

(ii) a unit in a building of Class IA; or

(iii) a flat in a building of Class II where that flat is provided with laundry facilities,

that contain facilities or fittings referred to in Tables 49.3 (1) and 49.3 (2) shall not be less than 7.2 m^2;

(d) where a flat in a building of Class II is not provided with laundry facilities, the total floor area, of all rooms or partitioned compartments which contain other facilities or fittings referred to in Tables 49.3 (1) and 49.3 (2) shall not, subject to paragraph (b) of this sub-bylaw, be less than 3 m^2; and

(e) where a sole-occupancy unit in a building of Class III is provided with a water closet and ablution facilities, the total floor area of the part or parts of that unit in which those facilities are provided shall not be less than 2.7 m^2.

Minimum Height of Rooms

Residential Buildings

Amended by *G.G.* 7/5/76, p. 1407; *G.G.* 29/2/80, p. 680.

49.4 (1) In a Class I, IA, II, III or IV building—

(a) the minimum height of any habitable room (other than a sleepout) shall not be less than 2400 mm;

(b) the average height of a sleepout shall not be less than 2400 mm and its minimum height shall not be less than 2100 mm;

(c) the height of any room or partitioned compartment that contains any of the facilities or fittings specified in Table 49.3 (1) shall not be less than 2100 mm; and

(d) the minimum height of any corridor, passage, recess or other non-habitable room shall be 2250 mm.

Office Buildings

(2) The minimum height of any room in a Class V building shall not be less than 2 400 mm.

Shops

(3) The minimum height of any room in a Class VI building shall not be less than 2 700 mm.

Class VII and VIII Buildings

(4) The minimum height of any room in a Class VII or VIII building shall not be less than 2 700 mm, and, where the circumstances so warrant, the council may require a greater minimum height, or the installation of a system of mechanical ventilation complying with the provisions of Part 50, or both.

Public Buildings

(5) The height and size of rooms, passages and corridors in public assembly or institutional buildings shall conform to the requirements of regulations made under Part VI of the Health Act 1911.

Basements

(6) The minimum height of any cellar or basement used for storage purposes only shall be 2 400 mm except under beams, ducts or other obstructions where the height may be reduced to 2 100 mm.

Car-Parking Buildings

(7) Provision shall be made in car-parking buildings for a minimum clearance under beams of not less than 2 100 mm.

Projections and False Ceilings

Heading substituted by *G.G.* 29/2/80, p. 680.

Projections

Substituted by *G.G.* 29/2/80, p. 680.

49.5 (1) Notwithstanding anything contained in this Part, in Class II, III, IV, VII or VIII buildings beams, service pipes, or ducts may project below the minimum height prescribed for a room if the area in plan of those projections does not exceed 20 per cent of the floor area of the room and there is a minimum clear height of not less than—

(a) 2 250 mm in the case of Class II, III or IV buildings;

(b) 2 400 mm in the case of Class VII or VIII buildings.

False Ceilings

(2) Notwithstanding anything contained in this Part, false ceilings may be constructed—

(a) in corridors, passages and recesses—

(i) in Class V, VI, VII or VIII buildings that are air-conditioned, at a height of not less than 2 250 mm;

(ii) in Class VI, VII or VIII buildings that are not air-conditioned, at a height of not less than 2 400 mm;

(b) in lavatory blocks in Class V, VI, VII or VIII buildings, at a height of not less than 2 250 mm.

Concession for Certain Areas of Rooms

Heading substituted by *G.G.* 24/12/76, p. 5101.

49.6 Notwithstanding anything contained in this Part, in a room in a Class I, IA, II or IV building—

Substituted by *G.G.* 24/12/76, pp. 5101-2. Amended by *G.G.* 1/7/77, p. 2029.

(a) the ceiling in a portion of the room designed to be permanently occupied by work benches, cupboards or wardrobes may be constructed at any height so long as the area of ceiling elsewhere in the room that is constructed at or above the minimum height prescribed for the room is not less than the minimum floor area prescribed for the room;

(b) the ceiling in a portion or portions of the room (other than a part of the room mentioned in paragraph (a) of this by-law) may be constructed at a height below the minimum height prescribed for the room so long as—

(i) the floor area of that portion or the aggregate of the floor areas of those portions, as the case may be, does not constitute more than 25 per cent of the total floor area of the room;

(ii) the area of ceiling elsewhere in the room that is constructed at or above that prescribed minimum height is not less than the minimum floor area prescribed for the room; and

(iii) the ceiling in that portion or those portions of the room is constructed at a height of not less than 2 100 mm.

Verandahs

49.7 The minimum clear height of a beam or plate in a verandah in a Class I or IA building shall not be less than 2 000 mm.

GROUP VII—HEALTH AND AMENITY

PART 50—LIGHT AND VENTILATION

Division 1—Lighting

Interpretation

Amended by *G.G.* 27/3/75, p. 1031; *G.G.* 7/5/76, p. 1407.

50.1 For the purposes of this Part "window"—

(a) includes roof lights, glass panels, glass bricks, glass louvres, glazed sashes, glazed doors, or other devices glazed in accordance with Australian Standard 1288, being Item 7 of the First Schedule, capable of transmitting natural light directly from the exterior of a building to the room concerned; but

(b) does not include doors or other devices not capable of transmitting natural light from the exterior of a building to the room concerned when in the closed position.

Provision of Natural Light

Application of By-law

Amended by *G.G.* 7/5/76, p. 1407.

50.2 (1) Natural lighting shall be provided, in the following buildings, to the rooms indicated—

(a) Class I, IA, II and IV buildings—all habitable rooms;

(b) Class III buildings—all bedrooms and dormitories;

(c) Class IX buildings—where required by or under Part VI of the Health Act 1911;

(d) Class VIII buildings—where required by or under the Factories and Shops Act 1963.

Methods and Required Extent of Natural Lighting

(2) Natural lighting required by sub-bylaw (1) shall be provided by means of windows or doors provided with glass installed in accordance with Australian Standard 1288, being Item 7 of the First Schedule, and having a light-transmission rating of not less than 80 per cent of that of a free opening and of an aggregate area of not less than one-tenth of the floor area of the room concerned.

Measurement of Areas of Windows

(3) The light transmitting areas of windows shall be measured exclusive of framing members, glazing bars and other obstructions.

Situation of Windows

Generally

50.3 (1) The required windows of a room shall face—

(a) a court or space open to the sky; or

(b) an open verandah, open carport or the like.

Windows in Class I, IA, II, III, IV and IX Buildings

(2) Subject to sub-bylaw (3) in a Class I, IA, II, III, IV or IX building a required window facing a boundary of the site (not being a boundary to a public place), or a wall of the same building or another building on the site shall be separated from that boundary or wall by a horizontal distance of not less than 900 mm.

Special Requirement for Certain Windows in Class I, IA and IV Buildings

(3) Notwithstanding sub-bylaw (2), in a Class I, IA or IV building a required window facing a wall of the same building shall be separated from that wall by a horizontal distance of not less than 1 800 mm and any eaves overhanging the wall in which the window is situated and the facing wall shall be separated by a horizontal distance of not less than 1 500 mm.

Artificial Lighting

Required in Certain Rooms

50.4 (1) Where in any room not mentioned in sub-bylaw (1) of by-law 50.2 natural lighting by means of windows is not provided to a standard equivalent to that required by by-law 50.2 for rooms mentioned therein, a system of artificial lighting shall be provided to the rooms indicated in the following buildings— Substituted by *G.G.* 29/2/80, p. 681.

(a) Class I, IA and IV buildings—sanitary compartments, bathrooms, shower rooms, airlocks and laundries;

(b) Class II buildings—sanitary compartments, bathrooms, shower rooms, airlocks, laundries, common stairways and other spaces designed for the common use of the occupants of the building;

(c) Class III, V, VI, VII, IX and X buildings—all rooms intended to be occupied by any person for any purpose and all corridors, lobbies, internal stairways and other spaces intended for internal movement or egress.

Exemption for Certain Rooms

(2) The council may exempt a room from the requirements of sub-bylaw (1) if it is satisfied that by reason of—

(a) the nature of the use of the room; or

(b) the periods of occupation,

there will be no undue hazard to occupants seeking egress in case of emergency.

Standard

(3) Artificial lighting required by sub-bylaw (1) shall be in accordance with the requirements of Australian Standard 1680 being item 44 of the First Schedule.

Artificial Lighting of Stairways and Ramps

50.5 Required stairways and ramps shall be provided with artificial lighting by means of separate electrical wiring circuits from the main switchboard for the exclusive use of the stairway or ramp.

Natural Lighting from Adjoining Rooms

Conditions

50.6 (1) Notwithstanding the requirements of by-law 50.2 a room in a Class I, IA, II or IV building or in a sole-occupancy unit of a Class III building may be lighted by way of a glazed area or other opening facing directly into an adjoining room (including an enclosed verandah) subject to the following conditions—

(a) the glazed area or other clear opening shall be not less in area than one-tenth of the floor area of the room concerned;

(b) the adjoining room shall be provided with windows having an aggregate light transmitting area of not less than one-tenth of the combined floor areas of the rooms concerned; and

(c) in the case of a Class II, III or IV building the adjoining rooms shall be within the same sole-occupancy unit.

Reduction in Size of Glazed Areas

(2) The areas specified in paragraphs (a) and (b) of sub-bylaw (1) be reduced by the area of any window in the firstmentioned room transmitting natural light directly to that room.

Division 2—Ventilation

Provision of Ventilation

General

50.7 (1) Every habitable room, office, shop, factory, workroom, sanitary compartment, bathroom, shower room, laundry and any other room designed to be occupied by any person for any purpose shall be provided with either— Amended by *G.G.* 27/3/75, p. 1031; *G.G.* 29/2/80, p. 681.

(a) natural ventilation complying with by-law 50.8; or

(b) a mechanical ventilation or air-conditioning system complying with Part 55.

Class V Buildings

(2) In the case of Class V buildings a system of mechanical forced ventilation with or without cooling, heating and air filtration, supplying or allowing the entry of full outside air or a mixture of outside air together with air returned from the habitable space and complying with Part 55 may be provided in lieu of the requirements of paragraphs (a) and (b) of sub-bylaw (1).

Rooms Containing Cooking Facilities

(3) Where, in a Class I, IA, II or IV building, a room that contains a cooking stove is not provided with either a mechanical ventilation or air-conditioning system complying with Part 55 or an exhaust fan, the stove shall be provided with a hood connected to a flue with a minimum cross-sectional area of not less than 15 000 mm².

Exemption for Certain Rooms

(4) The council may exempt a room from the requirements of sub-bylaw (1) if it is satisfied that such exemption will not result in conditions that are detrimental to the health of the occupants of the room.

Natural Ventilation

Methods and Required Extent of Natural Ventilation

50.8 (1) Natural ventilation required by by-law 50.7 shall be provided by means of permanent openings or windows, doors or other devices which are capable of being opened and shall comply with the following requirements— Amended by *G.G.* 1/7/77, p. 2029; *G.G.* 29/2/80, p. 681.

(a) the aggregate opening or openable size shall be not less than one-twentieth of the floor area of the room required to be ventilated;

(b) the opening or openable size shall be the net area available for the passage of air—

(i) through permanent openings; or

(ii) through windows, doors or other openable devices when opened to their designed maximum extent.

Situation of Natural Ventilation Devices

(2) Unless otherwise stated in these by-laws required natural ventilation devices shall open to—

(a) a court, vent shaft or space open to the sky; or

(b) an open verandah, open carport or the like.

Construction of Vent Shafts

(3) A vent shaft or a fully enclosed court serving as the source of required natural ventilation to an abutting room shall comply with the following requirements—

(a) the top shall be open to the sky;

(b) if it has a cross-sectional area of less than 18 m² it shall be provided with permanent ventilation openings comprising one or more horizontal air intakes or passages which—

(i) communicate directly with a road or open space leading to a road;

(ii) are situated at or below the level of the lowest required natural ventilation device serviced by such vent shaft or fully enclosed court;

(iii) have an aggregate cross-sectional area of not less than 0.5 m^2 or 5 per cent of the horizontal cross-sectional area of the shaft, whichever is the greater; and

(iv) are not less than 0.1 m^2 in cross-sectional area in any one such air intake or passage;

(c) it shall have a minimum internal horizontal—

(i) dimension of 1 200 mm; and

(ii) cross-sectional area of 1.5 m^2.

Natural Ventilation of Certain Rooms in Class I, IA, II, III or IV Buildings

(4) Notwithstanding the requirements of sub-bylaw (1) a room in a Class I, IA, II or IV building or in a sole-occupancy unit of a Class III building may be ventilated by way of clear opening or a window, door or other device capable of being opened, which faces directly into an adjoining room (including an enclosed verandah) subject to the following conditions—

(a) the clear opening, window, door or other device shall have a ventilating area of not less than one-twentieth of the floor area of the room concerned;

(b) the adjoining room shall be provided with a clear opening or a window, door or other device having a ventilating area of not less than one-twentieth of the combined floor areas of the rooms concerned; and

(c) in the case of a Class II, III or IV building the adjoining rooms shall be within the same sole-occupancy unit.

Reduction in Size of Ventilating Areas

(5) The ventilating areas specified in paragraphs (a) and (b) of sub-bylaw (4) may be reduced by the ventilating area of any clear opening, window, door or other device capable of being opened in the firstmentioned room which opens directly to the exterior of the building.

Ventilation of Partitioned Spaces and Rooms in Certain Buildings

(6) Notwithstanding the requirements of sub-bylaw (1), a partitioned space or room in a Class V, VI, VII, VIII, or IX building may be ventilated by way of a clear opening or an openable device (excluding a door) which faces into another room that is ventilated in accordance with sub-bylaws (1) and (2), subject to the following conditions—

(a) the opening or openable device shall have an air way of not less than one-tenth of the floor area of the partitioned space or room; and

(b) in measuring the area of the opening or openable device for the purposes of this sub-bylaw, any part thereof that is more than 3 600 mm above the level of the floor shall be excluded from the calculations.

Provisions as to Water Closets and Urinals

(7) Rooms containing water closets and urinals shall be located in accordance with the Sewerage (Lighting, Ventilation and Construction) Regulations 1971 (as amended from time to time) made under the Health Act 1911 and shall be provided with airlocks as and when so required by those regulations.

Arcade Ventilation

50.9 Where any shop, room or space opens to an arcade the council may, subject to such conditions as it considers desirable, exempt such shop, room or space from the requirements of this Division.

Sub-floor Ventilation

Requirements

50.10 (1) Where the lowest floor of a building is of timber frame construction a space shall be provided between the underside of every joist and bearer and the ground surface and that space shall be—

Amended by *G.G.* 29/2/80. p. 681.

(a) ventilated and cross-ventilated by means of evenly distributed openings in the external walls having an unobstructed area of not less than 2 100 mm^2/m of external wall; and

(b) not less than 200 mm in depth in every part.

Reduction or Increase in Requirements

(2) Notwithstanding the requirements of sub-bylaw (1) the council may—

(a) approve a reduction of the area of the openings or the depth of the space referred to in sub-bylaw (1) or both, if it is satisfied in the particular case that by reason of—.

(i) the nature of the site; or

(ii) the design of the building; or

(iii) the provision of an impervious cover over the ground surface beneath the building; or

(iv) a combination of the factors referred to in subparagraphs (i), (ii) and (iii),

undue deterioration of the floor timbers will not occur as a result of such reduction; or

(b) require an increase in the area of such openings where it considers in the particular case that by reason of the—

(i) nature of the site; or

(ii) design of the building,

such increase is necessary to prevent undue deterioration of the floor timbers.

Position of Sub-floor Ventilation Openings in Cavity Walls

(3) In cavity wall construction the openings specified in paragraph (a) of sub-bylaw (1) shall be provided in the outer leaves of the walls, and openings of the same area shall be provided in the inner leaves in positions as near as practical to those in the outer leaves.

Openings in Internal Walls in Sub-floor Area

(4) Internal walls constructed in the under-floor space referred to in sub-bylaw (1) shall be provided with openings having an aggregate area of not less than 4 000 mm^2/m of wall concerned, and such openings shall be evenly distributed.

Public Garages and Parking Stations

50.11 Every storey of a public garage or parking station shall be provided with either—

(a) a mechanical ventilation or air-conditioning system complying with Part 55; or

(b) a system of permanent natural ventilation to the approval of the council.

GROUP VII.—HEALTH AND AMENITY

PART 50A.—OUTLOOK

Outlook from Office Buildings

Outlook Required in Class V Buildings

50A.1 (1) In every building of Class V provision shall be made in accordance with this by-law for outlook through the external walls of every storey other than— Amended by *G.G.* 7/5/76, p. 1407.

(a) the basement and ground storeys; and

(b) any storey containing only heating, ventilating, lift, or other equipment, water tanks or similar service units.

Transparent Glass Windows

(2) Outlook may be provided in combination with means of provision of natural light and, in any event, shall be provided by means of window openings equipped with fully transparent glass installed in accordance with Australian Standard 1288 being Item 7 of the First Schedule.

Area of Glass Required

(3) The aggregate clear area of glass to be provided pursuant to sub-bylaw (2) shall not be less than—

(a) 3 per cent of the office floor area on the storey excluding passages, corridors and lobbies; or

(b) 10 per cent of the internally exposed area of external walls of the storey, measured between the floor level and a level 2700 mm above floor level,

whichever is the lesser.

Distribution of Windows

(4) (a) The distribution and location of the outlook openings required by this by-law shall be subject to the provisions of these by-laws relating to fire protection.

(b) In walls in which openings are permitted, the outlook openings shall be distributed as evenly as is practicable.

(c) Each sole-occupancy unit in a storey shall be provided with at least one outlook opening.

Levels of Windows

(5) No outlook opening shall have—

(a) a sill level more than 1500 mm above floor level; or

(b) a head level less than 1 500 mm above floor level.

GROUP VII.—HEALTH AND AMENITY

PART 51.—SPECIAL HEALTH AND AMENITY REQUIREMENTS

Heading Amended by *G.G.* 29/2/80, p. 681.

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GROUP VII.—HEALTH AND AMENITY

PART 52.—NOISE TRANSMISSION

Heading inserted by *G.G.* 3/11/78, p. 4196.

Application of Part

Inserted by *G.G.* 3/11/78, p. 4196.

52.1 This Part shall apply to every Class II building.

52.2 * * * * * * * * * * * * * * * * *

Heading inserted by *G.G.* 3/11/78, p. 4196.

Sound Insulation of Walls

Between Flats and Between Flats and Certain Areas

Inserted by *G.G.* 3/11/78, pp. 4196-7.

52.3 (1) A wall dividing separate flats or a wall dividing a flat from a plant room, lift shaft, stairway, public corridor, hallway or the like shall have a Sound Transmission Class of not less than 45.

Between a Bathroom, Laundry or Kitchen, and a Habitable Room in an Adjoining Flat

(2) A wall dividing a bathroom, laundry or kitchen in one flat from a habitable room (other than a kitchen) in an adjoining flat shall—

(a) have a Sound Transmission Class of not less than 50; and

(b) incorporate the following construction in order to reduce the transmission of impact sound—

(i) the wall shall be constructed in two or more separate leaves without rigid mechanical connection other than at its periphery; and

(ii) any connection between the leaves, other than at the periphery, shall be by means of devices incorporating resilient plugs or mountings except that, in the case of a masonry wall, wall ties may be used in accordance with by-law 36.6 as if the wall were an external wall.

Certain Construction deemed to Satisfy

(3) A wall shall be deemed to satisfy the requirements of sub-bylaw (2) if constructed of—

(a) two leaves of 90 mm brick masonry complying with Part 36 and having—

(i) all joints filled solid with mortar; and

(ii) an air space of not less than 40 mm between the leaves;

(b) 190 mm thick concrete block masonry complying with Part 36 and having—

(i) each face of the blocks fitted with 50 mm x 50 mm timber battens at not more than 610 mm centres, screw-fixed into resilient plugs with rubber inserts;

(ii) the space between the battens completely filled with mineral or glass wool blanket or batts not less than 50 mm thick; and

(iii) the outer face of the studs finished with plasterboard not less than 10 mm thick or other material having a weight of not less than 7.3 kg/m^2; or

(c) 110 mm brick masonry complying with Part 36 and having—

(i) each face rendered 12 mm thick;

(ii) 50 mm x 12 mm timber battens, at not more than 610 mm centres, fixed to each face but not recessed into the render;

(iii) one layer of 12 mm thick softboard nailed to the battens; and

(iv) 6.4 mm thick medium density hardboard adhesive-fixed to the softboard.

Ducts Not to Penetrate Certain Walls

Heading inserted by *G.G.* 3/11/78, p. 4197.

52.4 A duct shall not pass through a wall dividing a habitable room, other than a kitchen, in one flat from a bathroom, laundry or kitchen in an adjoining flat.

Inserted by *G.G.* 3/11/78, p. 4197.

Soil and Waste Pipes to be Separated

Heading inserted by *G.G.* 3/11/78, p. 4197.

Application of By-law

52.5 (1) This by-law shall not apply to those sections of a soil or waste pipe serving only one flat and located wholly within that flat.

Inserted by *G.G.* 3/11/78, p.p. 4197-8.

Type of Separation Required

(2) Soil and waste pipes, including those that pass through a floor, shall be separated from the rooms of any flat immediately adjacent thereto by construction having a Sound Transmission Class not less than the following Sound Transmission Class—

Type of Room Immediately Adjacent	Sound Transmission Class
Habitable rooms other than kitchens	45
Kitchens	30
All other rooms	30

Access Door or Panel

(3) Where a soil or waste pipe is required by sub-bylaw (2) to be separated from the rooms of any flat immediately adjacent thereto by construction as specified in that sub-bylaw—

(a) no access door or panel shall be provided in any part of that construction that is immediately adjacent to a habitable room (other than a kitchen); and

(b) an access door or panel in any other part of that construction shall be firmly fixed so as to overlap the frame or rebate of a frame by not less than 10 mm, shall be fitted with a sealing gasket along all edges and shall be constructed of—

(i) wood, particleboard or blockboard having a thickness of not less than 38 mm;

(ii) dense asbestos-cement sheet having a thickness of not less than 9 mm; or

(iii) approved material having a weight of not less than 24.4 kg/m^2.

Sound Insulation of Floors Between Flats

Heading inserted by *G.G.* 3/11/78, p. 4198.

52.6 A floor dividing separate flats shall have a Sound Transmission Class of not less than 45.

Inserted by *G.G.* 3/11/78, p. 4198.

Isolation of Pumps

Heading inserted by *G.G.* 3/11/78, p. 4198.

52.7 A flexible coupling shall be used at the point of connection between the service pipes in a building and any circulating or other pump.

Inserted by *G.G.* 3/11/78, p. 4198.

Sound Transmission Class

Heading inserted by *G.G.* 3/11/78, p. 4198.

52.8 Where a part of a building is required by this Part to have a certain Sound Transmission Class, a form of construction shall not, subject to by-law 52.10, be used unless—

Inserted by *G.G.* 3/11/78, p. 4198.

(a) it has achieved not less than the required value when tested by one of the testing authorities listed in sub-bylaw (1) of by-law 52.10; or

(b) it is deemed, pursuant to by-law 52.3 or by-law 52.9, to have not less than the required value.

Construction Deemed to Satisfy

General Requirements

Heading inserted by *G.G.* 3/11/78, p. 4198.

52.9 (1) For the purposes of this Part a form of construction that—

Inserted by *G.G.* 3/11/78, pp. 4198-4200.

(a) is listed in the first column of Table 52.9; and

(b) complies with the requirements of sub-bylaws (2), (3), (4), (5) and (6), as applicable,

shall be deemed to have a Sound Transmission Class not less than the corresponding Sound Transmission Class set out in the second column of that Table.

Masonry

(2) Masonry units shall be laid with all joints, including those between the masonry and any adjoining construction, filled solid.

Concrete Slabs

(3) Joints between concrete slabs and any adjoining construction shall be filled solid.

Fire-grade Plasterboard

(4) Fire-grade plasterboard shall be of a special grade as manufactured for use in fire-resisting construction, and fixed according to the following paragraphs—

(a) where one layer is required to be fixed to studs it shall be screw-fixed to the studs with joints staggered on opposite faces;

(b) where two layers are required the first layer shall be fixed according to paragraph (a) and the second layer shall be fixed so that the joints do not coincide with those of the first layer and each sheet shall be fixed to the first layer with nails, screws or adhesive, or a combination of those methods as appropriate;

(c) joints between sheets shall be taped and filled solid; and

(d) joints between sheets and any adjoining construction shall be filled solid.

Standard Plasterboard

(5) Plasterboard, being plasterboard other than fire-grade quality, shall be fixed in a similar way to that described for fire-grade plasterboard in sub-bylaw (4).

Steel Studs and Perimeter Members

(6) Where the construction involves the use of steel studs—

(a) the studs shall be of a thickness of not more than 1 mm and not less than 0.60 mm and not less than 63.5 mm in depth;

(b) the studs shall be fixed to steel top and bottom plates of sufficient depth to permit secure fixing of the plasterboard; and

(c) all steel members at the perimeter of the wall shall be securely fixed to the adjoining structure and shall be bedded thereto in resilient compound or caulked so that there are no voids.

TABLE 52.9
SOUND TRANSMISSION CLASS DEEMED TO APPLY TO CERTAIN CONSTRUCTION

Table inserted by *G.G.* 3/11/78 pp. 4198-200.

Construction	Sound Transmission Class
WALLS	
Solid clay or shale bricks, 110 mm thick, rendered 12.7 mm thick on both sides.	45
Solid clay or shale bricks, having a total thickness of not less than 230 mm.	
Concrete bricks 110 mm thick and conforming to Australian Standard 1346, being Item 17 of the First Schedule, and having a total mass per unit area of not less than 195 kg/m^2.	
Dense concrete masonry blocks, 190 mm thick having a total mass per unit area of not less than 215 kg/m^2.	
Dense concrete masonry blocks, 140 mm thick having a wall thickness of not less than 44 mm and having— (a) 50 mm x 50 mm timber battens, spaced at not more than 610 mm centres screw-fixed on one face of the blocks into resilient plugs with rubber inserts; (b) the face of the battens clad with 13 mm thick standard plasterboard; and (c) a total mass per unit area of not less than 220 kg/m^2.	

TABLE 52.9
SOUND TRANSMISSION CLASS DEEMED TO APPLY TO CERTAIN CONSTRUCTION—*continued.*

Construction	Sound Transmission Class
125 mm thick *in situ* concrete slab. 100 mm thick *in situ* dense concrete slab. 100 mm thick precast concrete slab without joints. Steel studs having two layers of 16 mm thick firegrade plasterboard fixed to each face. Steel studs having— (a) one layer of 13 mm thick fire-grade plasterboard fixed to one face, where before fixing, 50 mm thick mineral wool or glass fibre blanket is stapled to the back of each sheet so that the sheet is completely covered; and (b) two layers of 13 mm thick fire-grade plasterboard fixed to the other face. Steel studs having— (a) 50 mm thick mineral wool or glass-fibre batts wedged firmly between the studs; (b) one layer of 16 mm fire-grade plasterboard fixed to one face; and (c) two layers of fire-grade plasterboard fixed to the other face, the inner layer consisting of 16 mm thick fire-grade plasterboard and the outer layer consisting of 13 mm thick fire-grade plasterboard.	45
FLOORS 125 mm thick *in situ* concrete slab. 100 mm thick *in situ* dense concrete slab. 100 mm thick precast concrete slab without joints.	45
DUCTS OR OTHER CONSTRUCTION SEPARATING SOIL AND WASTE PIPES FROM FLATS Masonry not less than 90 mm thick with all joints, including those between the masonry and any adjoining construction, filled solid. Two layers of 10 mm standard plasterboard— (a) fixed to timber studs not less than 75 mm x 50 mm spaced at not more than 407 mm centres; (b) with the joints in the two layers of plasterboard staggered; and (c) with all joints in the plasterboard, including those between the plasterboard and any adjoining construction filled solid.	30

Acceptance of Construction Without Test

Heading inserted by *G.G.* 3/11/78, p. 4200.

Testing Authority's Report

Inserted by *G.G.* 3/11/78, pp.4200-1.

52.10 (1) Where it is proposed to use a form of construction that—

(a) has not been tested by one of the testing authorities listed in this sub-bylaw; and

(b) is not deemed—

(i) pursuant to sub-bylaw (3) of by-law 52.3, to satisfy the requirements of sub-bylaw (2) of that by-law; or

(ii) pursuant to sub-bylaw (1) of by-law 52.9, to have a Sound Transmission Class not less than that required by any other provision of this Part,

the council may, notwithstanding those requirements or that provision, approve the use of that form of construction upon production of a report in accordance with sub-bylaw (2) from a testing authority having an acoustic laboratory with facilities for, and engaged in, the making of airborne sound transmission tests, being—

(a) Experimental Building Station, Department of Construction of the Australian Public Service;

(b) Division of Building Research, Commonwealth Scientific Industrial Research Organisation;

(c) Mechanical Engineering Department, University of Adelaide; or
(d) where the report is in the form authorized by that Association, a laboratory registered in the appropriate field with the National Association of Testing Authorities, Australia.

Report to Include Certain Details

(2) The report referred to in sub-bylaw (1) shall state—

(a) that in the opinion of the authority concerned the proposed construction would be capable of achieving the required Sound Transmission Class, and, in the case of a wall to which sub-bylaw (2) of by-law 52.3 applies, would be not less resistant to the transmission of impact sound than the construction described in sub-bylaw (3) of by-law 52.3; and
(b) details of materials, construction, and methods of fixing which shall be complied with in order to achieve the required performance.

GROUP VIII.—ANCILLARY PROVISIONS

PART 53.—ACCOMMODATION AND SPECIAL REQUIREMENTS FOR CERTAIN BUILDINGS AND COMPONENTS

Swimming Pools

Construction

53.1 (1) Every swimming pool shall, if of concrete, be constructed in accordance with the requirements of Australian Standard 1480 being item 5 of the First Schedule; and if not of concrete, shall be so constructed as to withstand the loading and stresses to which it will ordinarily be subject.

Amended by *G.G.* 11/6/76, p. 1884; *G.G.* 16/6/78, p. 1923.

Siting

(2) A swimming pool shall—

(a) not be sited so that any part of it is nearer to the site boundary than a distance equal to the depth of the pool, except where the pool is constructed in front of the building line and at a distance at least equal to the depth of the pool from the building line, when the pool may be sited adjacent to the site boundary;
(b) be so arranged that the disposal of wastes and the drainage of the pool comply with the relevant by-laws under the Health Act 1911.

Drawings, etc. to be Produced

(3) Any person seeking approval to construct a swimming pool shall submit such drawings and specifications as are prescribed in Part 8, and with such drawings produce—

(a) calculations in support of the design; or
(b) a certificate of a practising structural engineer that the pool will satisfy all requirements as to stability and structural strength.

Refrigerated and Cooling Chambers

Safety Devices

53.2 (1) Refrigerated and cooling chambers which are of sufficient size to permit the entry of a person shall be provided with—

(a) a door which can at all times be opened from inside without a key; and
(b) an approved alarm device located outside, but controllable only from within the chamber.

Door Widths

(2) The door referred to in paragraph (a) of sub-bylaw (1) shall be set in an opening having a clear width of not less than 600 mm.

Strong Rooms

53.3 Strong rooms in buildings shall be provided with—

(a) internal lighting controllable only from within the room;
(b) a pilot light located outside the room but controllable only by the switch for the internal lighting referred to in paragraph (a); and
(c) an approved alarm device located outside but controllable only from within the room.

Safety Glass

Certain Glasses Deemed to be Safety Glass

53.4 (1) For the purposes of this by-law any one of the following shall be deemed to be safety glass— Amended by *G.G.* 16/6/78, p. 1923; *G.G.* 3/11/78, p. 4201.

(a) wired glass not less than 6 mm in thickness;

(b) laminated glass having an overall thickness of not less than 6 mm and comprising two or more layers of glass and one or more plastic inter-layers permanently bonded together under heat and pressure; and

(c) heat-treated (toughened) glass not less than 5 mm in thickness and which is permanently marked with the words "safety glass" or "toughened safety glass" or other words which afford a ready means of identifying the safety characteristics of the glass.

Shower or Bath Screens

(2) Glass used within 1.8 m of the floor in any panel or door screening a shower or bath shall be of safety glass.

Use of Marked Safety Glass in Glass Doors and Panels

(3) Except as provided in sub-bylaw (4)—

(a) every glass door; and

(b) every fixed glass panel that is so located in relation to other parts of the building as to be capable of being mistaken for a doorway or other unimpeded path of travel,

shall be of safety glass marked, either on its surface or by anything attached to its surface, in such manner as to render the door or panel plainly distinguishable.

Exemptions

(4) Sub-bylaw (3) shall not apply to glass doors or glass panels which comprise part of—

(a) a Class 1 or 1A building; or

(b) a flat.

Class I and IA Buildings

Minimum Accommodation Required

53.5 (1) In every Class I building and in each domicile in a Class IA building— Amended by *G.G.* 16/6/78, p. 1923.

(a) the total area of the habitable rooms shall not be less than 40 m^2;

(b) a water closet and ablution, laundry and cooking facilities shall be provided as required by or under the Health Act 1911.

Egress Through Bathroom

(2) In a Class I building or a domicile in a Class IA building a bathroom shall not be so provided as to afford thoroughfare for a means of egress from the building or domicile if the means of egress would be the only alternative means of egress from the building, or domicile.

Additional Accommodation in Class I Buildings

(3) (a) Subject to paragraph (b) a council may approve the issue of a building licence for the alteration of, or addition to, a building of Class I which will result in the provision of two units of accommodation on the site of the building, if—

(i) where the additional accommodation is added to the existing building, direct internal access is provided from the newly added part of the building to the original part of the building; or

(ii) where the additional accommodation is not itself added to the existing building—

(A) there is constructed between the added accommodation and the existing building a fully enclosed connection; and

(B) the total area of the added accommodation and the connection between the added accommodation and the existing building does not exceed 37 m^2.

(b) A council may not approve the issue of a building licence pursuant to paragraph (a) unless—

(i) the council is satisfied that the additional accommodation for which the building licence is sought is intended for occupation by—

(A) a parent of or the parents of the owner of the building or the spouse of the owner; or

(B) a relative of the owner or spouse,

and if additional accommodation is intended for occupation by a relative of the owner or his spouse, the council considers that, in all the circumstances of the case, it would be reasonable to allow the provision of the additional accommodation for the relative;

(ii) the owner permanently resides in the existing building; and

(iii) the council is furnished with a statement signed by the owner of the building and each parent or relative of the owner or his spouse for whose occupation the additional accommodation is intended, stating that the additional accommodation is intended for use by that parent, those parents or that relative, as the case may be, and for no other purpose.

(c) A person shall not knowingly make, either orally or in writing, a false or misleading statement or representation to a council or any member or officer of a council for the purposes of, or in connection with, the seeking or obtaining the approval of the council of the issue of a building licence under this sub-bylaw.

(d) The provisions of paragraphs (a) and (b) apply notwithstanding the provisions of by-law 11.3.

(e) Subject to paragraph (f), a building licence shall not be issued for the addition to, or alteration of, a Class I building which will result in the provision on the site on which the building is situated, of two or more units of self-contained accommodation unless the approval of the issue of the building licence has been given by the council under and in accordance with paragraphs (a) and (b).

(f) Nothing in this sub-bylaw applies to or in relation to an addition to or alteration of a Class I building for the purpose of converting that building into a Class IA or II building.

Dividing Walls in Class IA Buildings

(4) A dividing wall separating the two domiciles of a Class IA building—

(a) shall be a solid wall having a thickness of not less than 230 mm;

(b) shall be carried to the underside of the roof; and

(c) shall comply with the requirements of Part 36.

Exception to Sub-bylaw (4)

(5) Notwithstanding paragraph (a) of sub-bylaw (4) the dividing wall separating the two domiciles in a Class IA building may be constructed as a cavity wall so long as—

(a) each leaf has a standard thickness of not less than 90 mm;

(b) each leaf has all joints completely filled with mortar;

(c) the leaves are separated by a clear cavity of not less than 50 mm in width; and

(d) the wall conforms with the requirements of paragraphs (a) and (b) of by-law 36.6.

Dividing Floors in Class IA Buildings

(6) A floor separating the two domiciles of a Class IA building shall be of reinforced concrete not less than 100 mm in thickness and shall be so constructed as to minimize the passage of impact and airborne noises.

Class II Buildings

Minimum Accommodation Required

53.6 (1) Every flat in a Class II building shall have—

Amended by *G.G.* 24/12/76, p. 5102; *G.G.* 3/11/78, p. 4201.

(a) at least three habitable rooms; and

(b) any water closet and ablution, laundry and cooking facilities required by or under the Health Act 1911.

Single Unit Flats

(2) Notwithstanding sub-bylaw (1) a council may, by zoning, prescribe areas in which single unit flats may be erected comprising—

(a) a bed-sitting room with an area of not less than 17 m^2;
(b) a kitchen with an area of not less than 4.6 m^2 and a minimum width of not less than—
  (i) 1800 mm, if all fittings can be arranged along one wall; or
  (ii) 2100 mm, if it is not possible to arrange all fittings along one wall; and
(c) any water closet and ablution, laundry and cooking facilities required by or under the Health Act 1911.

Walls Separating Flats

(3) In a Class II building a wall separating flats or separating a flat from a common hall shall comply with the provisions of these by-laws as to fire-resistance and fire-separation.

Floors in Class II Buildings

(4) Subject to the application of the concession mentioned in sub-bylaw (5) of by-law 16.8, in a Class II building every floor separating flats, or separating two storeys within the same flat, shall be of reinforced concrete with a minimum thickness of not less than—

(a) 100 mm; or
(b) such greater minimum thickness as may be required under Parts 16 and 20.

Class III Buildings

Boarding Houses, Guest Houses, etc.

53.7 (1) Any boarding, guest or lodging house, hostel, residential club or like establishment offering or letting accommodation for reward shall have sanitary conveniences and ablution and laundry facilities as required by or under the Health Act 1911.

Residential Hotels and Motels

(2) The residential portions of any hotel or motel licensed under the provisions of the Liquor Act 1970, shall be provided with sanitary conveniences and ablution and laundry facilities as required—

(a) by the Licensing Court of Western Australia; and
(b) by or under the Health Act 1911.

Kitchens and Dining Rooms

(3) Every Class III building shall be provided with a kitchen, dining-room and sitting room of sufficient size to serve the persons accommodated in the building as required—

(a) by or under the Health Act 1911; and
(b) in the case of a licensed hotel or motel, by the Licensing Court of Western Australia.

Class IV Buildings

53.8 Every Class IV building shall have—

(a) at least three habitable rooms; and
(b) any water closet and ablution, laundry and cooking facilities required by or under the Health Act 1911.

Class VI Buildings: Shop Fronts

Shop Fronts Generally

Amended by *G.G.* 28/9/79, p. 3000.

53.9 (1) No part of a shop front shall be fixed—

(a) nearer than 75 mm to the centre line of a reinforced concrete party wall;

(b) nearer than 100 mm to the centre of a masonry party wall; or

(c) nearer than 100 mm to a wall of adjoining premises, when those premises have a separate wall.

Near Openings in Other Buildings

(2) A shop front within a distance of 6 m of an opening in an external wall of another building, shall be constructed in accordance with the provisions of Parts 21 and 22, but the shutters mentioned in those Parts may be in the form of window backs, not more than 600 mm from the building line.

Mouldings

(3) A moulding shall not project more than 12 mm beyond the street alignment in any portion of a shop front, at a lesser height than 2700 mm above the pavement.

Shop Fronts Abutting on Exits

(4) Where a shop front, abutting on an exit from a stairway required to be fire-isolated, is returned along a passage or lobby to a depth greater than the width of that passage or lobby, the shop front shall be protected by—

(a) a sprinkler system installed in accordance with Australian Standard 2118 being item 2 of the First Schedule;

(b) an approved self-coiling rolling corrugated steel shutter running in metal grooves and fitted with proper appliances on the outside thereof, suitable for raising and lowering the shutter; or

(c) material having a fire-resistance rating of one hour.

Class VI Buildings: Kiosks

Location

53.10 (1) A kiosk shall not be located within 1375 mm of a street or public way.

In Arcades

(2) A kiosk may, subject to the approval of the council be located in an arcade, and every kiosk so located shall have—

(a) a minimum height of not less than 2400 mm;

(b) a minimum internal dimension of not less than 1065 mm;

(c) a floor area of not less than—

(i) 1.5 m^2, when designed for occupation by one person; or

(ii) 1.9 m^2 per person, when designed for occupation by more than one person; and

(d) adequate ventilation communicating directly with the external air.

Class VIII Buildings: Factories

53.11 Every factory shall comply with any requirements imposed by or under the Factories and Shops Act 1963.

Class IX Buildings

53.12 Every public building within the meaning of Part VI of the Health Act 1911, shall be constructed in conformity with the requirements of the regulations made under that Act.

Protective Balustrades and Guards in Buildings of Class II, III or VI

Where Required

53.13 (1) Notwithstanding by-law 24.27, protective balustrades or guards in accordance with this by-law shall be provided along the side of any stairway, ramp, landing, corridor, hallway, balcony, verandah, bridge, mezzanine floor, stair or escalator well, or the like attached or appurtenant to or included in a building of Class II, III or VI wherever that side is not bounded by a wall and is more than 915 mm (or 5 risers in the case of a stairway) above the finished level of the floor or ground, as the case may be, below.

Height

(2) A balustrade or guard required by this by-law shall have a minimum vertical height of at least—

(a) 900 mm above the nosings of stair treads;

(b) 1050 mm above—

(i) the floor surface of ramps, landings, corridors, hallways, balconies, verandahs, bridges, mezzanines and the like;

(ii) the surface of the floor surrounding stair and escalator wells.

Design of Balustrades and Guards

(3) In balustrades or guards required by this by-law—

(a) the width of apertures in any direction shall not be more than 125 mm;

(b) vertical balusters shall not be spaced more than 125 mm apart; and

(c) there shall be no toe hold between the heights of 150 mm and 760 mm.

Linings and Ceilings

Open Screening in Ceilings

53.14 (1) Ceilings of open screening of non-flammable material, or of open screening of flammable material that does not exceed 10 per cent of the area of the ceiling in which it is to be used, may be used in buildings of any Class.

Amended by *G.G.* 1/7/77, p. 2029; *G.G.* 9/12/77, p. 4582; *G.G.* 16/6/78, p. 1923.

Habitable Rooms to have Lining and Ceiling

(2) All habitable rooms in a Class I, IA, II, III or IV building shall be lined and be provided with a ceiling.

Ceiling Insulation in Buildings with Low-pitched Roofs

(3) Where a habitable room having a height of less than 2 700 mm is contained in a Class I, IA, II, III or IV building having a roof pitch of less than 15 degrees, the topmost ceiling of that building shall be insulated by a layer of slagwool or fibreglass having a minimum thickness of not less than 50 mm or other material of a similar insulation value.

Loading Docks

53.15 Every Class VI, VII or VIII building shall be provided with loading docks and access ways sufficient in size wholly to contain vehicles within the building or on the site occupied by the building and to permit the passage of vehicles from and on to the street, without backing.

Water Closet Doors

53.16 The door of every fully enclosed water closet shall open outwards or be readily removable from the outside.

Rear Access

Minimum Width and Means of Provision

53.17 (1) Every building of Class VI, or Classes I and VI combined, or Class VII or VIII shall be provided with means of access not less than 1524 mm in width for the removal of rubbish from, and servicing of, every separate tenement, shop, warehouse, or factory within the building and the means of access shall be provided in such a manner that every separate tenement or occupancy can be serviced without passing—

(a) through the front entrance of the shop; or

(b) through any other shop or tenement; or

(c) in the case of arcades, through the arcade or street entrance.

Certain Shops Excepted

(2) The provisions of sub-bylaw (1) do not apply to—

(a) banks, boot repair shops, pharmacies, dry cleaning depots, jewellers shops, newsagencies, hairdressing shops, watchmakers shops, or professional chambers; or

(b) arts and craft, clothing and fabric, or gift shops if the total floor area of the shop does not exceed 140 m².

GROUP VIII.—ANCILLARY PROVISIONS

PART 53A.—OUTBUILDINGS

Division 1.—Outbuildings Appurtenant to: Buildings of Classes I and IA; Lodging, Boarding and Guest Houses and Hostels of Class III; and Buildings of Class IV

Distance from Buildings

53A.1 An outbuilding appurtenant to and detached from—

(a) a Class I, IA or IV building; or

(b) a Class III building that is a lodging house, boarding house, guest house or hostel,

shall be at least 1 800 mm from that building.

Construction Generally

Brick Areas may be Declared

53A.2 (1) The council may by by-law declare special areas where any outbuilding shall be constructed of brick.

Height (Internal)

(2) Except in the case of a garden shed not exceeding 4.7 m² in area, and of a kennel, aviary or fowl house, an outbuilding shall not be less than 2100 mm in height from the floor to the ceiling, or, where no ceiling exists, from the floor to the underside of rafters at the lowest point.

Masonry Required

(3) In a brick area, any outbuilding exceeding 37 m² in area shall be built in masonry.

Part 36 to be Complied With

(4) Any brick outbuilding shall comply with the provisions of Part 36.

Part 50 to be Complied With

(5) The provisions of Part 50 apply to the external walls and eaves of outbuildings as though they were the external walls and eaves of the building to which they are appurtenant.

Boundary Distance—Type 4 or 5

(6) An outbuilding of Type 4 or 5 construction shall not be constructed within 1200 mm of the boundary of the site.

—Type 1, 2 or 3.

(7) An outbuilding of Type 1, 2 or 3 construction shall not be constructed within 900 mm of the boundary of the site unless—

(a) the outbuilding is at least 1800 mm behind the rear of the building to which it is appurtenant; and

(b) the outbuilding complies with the provisions of sub-bylaw (8).

Walls Near Boundary

(8) A wall of an outbuilding which is constructed within 900 mm of the boundary shall—

(a) be constructed of brick, stone or concrete;

(b) have a fire-resistance rating not less than that required by these by-laws for an internal non-loadbearing wall of the building to which the outbuilding is appurtenant; and

(c) be carried up as a parapet 375 mm in height above the roof, flat or gutter of the outbuilding,

but a boundary wall may be of material other than brick, stone or concrete if it abuts on a right-of-way or lane over which the owner of the outbuilding has rights.

Wall Height

(9) A wall of an outbuilding shall not exceed 3 m in height including the height of the parapet but the council may, if the circumstances so warrant, grant special approval for a wall to be of a height in excess of 3 m.

Limit on Area of Outbuildings

(10) (a) With the exception of such outbuildings as are mentioned in by-laws 53A.7 and 53A.8, a person shall not without the special approval of the council, construct more than two outbuildings, or an outbuilding exceeding, or outbuildings exceeding in the aggregate, 46.5 m^2 appurtenant to a Class I or IA building.

(b) The provisions of this sub-bylaw do not apply to—

(i) an area zoned for rural activities; or

(ii) an unzoned area, used for rural activities.

Garages and Carports

Garages

53A.3 (1) Private garages may be built where the council is first satisfied as to the soundness of the methods of construction proposed, and as to the materials to be used for walls, wall cladding and roofing, but the garage shall be built so that—

Amended by *G.G.* 24/12/76, p. 5102; *G.G.* 1/7/77, p. 2029.

(a) no part of the garage projects beyond the street alignment to which the site has its principal frontage, or is nearer to that alignment than—

(i) the building line, or the minimum distance, prescribed by Part 11, or the front of the building of which the garage forms an integral portion whichever distance is the lesser;

(ii) the building line prescribed by Part 11 or the front of the building, whichever distance is the lesser, where the garage is detached and of brick construction; or

(iii) the rear of the building, where the garage is of Type 4 or 5 construction; but in optional areas the council may approve of the construction of the garage within the limits prescribed by subparagraph (ii),

except where the configuration of the ground renders it impossible or impractical; in which case the council may permit the construction at a lesser distance from the street alignment;

(b) if detached, no part of the garage is within 6 m of any street or road to which the site has a frontage, except with the approval of the council;

(c) the walls are built of brick or concrete and comply with any of these by-laws applying to buildings of those materials, where the garage exceeds 4 500 mm in height to the highest point of the roof or has a superficial area exceeding 37 m^2 unless the garage is appurtenant to a wood framed dwelling of Type 5 construction;

(d) it complies with such provisions of these by-laws, as to distance from boundaries or other buildings, as apply to the main building, where the garage is built at a distance less than 1800 mm from, or is attached to, or forms portion of that building;

(e) the floors are constructed of approved non-combustible material;

(f) it complies with the provisions of Part 23 where attached to or forming portion of any other building; and

(g) the doors do not open over or upon or obstruct any street, footway or right-of-way.

Concession in Certain Subdivisions

(2) Notwithstanding the provisions of sub-bylaw (1), in the case of a site—

(a) abutting both a street and a pedestrian way; and

(b) situated in an area subdivided and designed so that it is normal for vehicular access to a lot in that area to be gained over a boundary of that lot other than the boundary over which pedestrian access to that lot is gained,

the council may permit the construction of a garage in a position other than that prescribed in these by-laws.

Carports

(3) A carport comprising an open-sided garage without doors, may be located in conformity with the requirements for garages, as set out in sub-bylaw (1) and, in the case of a Class I or IA building, the council may permit the construction of a carport in a position other than that prescribed for garages.

Carports on Boundary

(4) A carport may, in any event, be so located that its supports are on the boundary line if—

(a) the supports are—

(i) metal columns; or

(ii) brick piers not more than 290 mm in width or breadth,

of which not more than four are on the boundary line;

(b) no part of the roof (other than beams, where these are metal) is nearer to the boundary line than 750 mm; and

(c) where the boundary line is a side boundary line, any dividing fence forming a side wall of the carport is not higher than 1800 mm.

Pergola Carports

(5) Subject to sub-bylaw (4) of this by-law, a carport may be a pergola type of flat-roofed construction supported by posts or columns, but without walls or doors, if complying with the following requirements—

Timber (Jarrah-Dressed)—
Spans up to 2 400 mm: 100 mm × 100 mm
Spans over 2 400 mm: 125 mm × 125 mm
Structural Steel.
Brickwork or masonry—230 mm × 230 mm
Concrete—150 mm × 150 mm reinforced.

Private Workshops, Sheds etc.

General

53A.4 (1) Outbuildings for use as private workshops which are not required to be registered under the Factories and Shops Act 1963, sheds and similar structures may be built where the council is first satisfied as to the soundness of the method of construction proposed and as to the material to be used for wall cladding and roofing; but where those structures are—

(a) attached to the main building, they shall be constructed of similar materials to the main building and conform to the requirements as to distance from the boundaries prescribed by these by-laws for the main building; or

(b) detached from the main building, they shall be distant not less than—

(i) 1800 mm from any building used as a dwelling on the same site;

(ii) 15 m from the boundary of the street to which the site has its main frontage; and

(iii) 6 m from any other street to which the site has a frontage, unless especially approved by the council.

Rural Areas

(2) The floor area of an outbuilding used as a private workshop shall not exceed 23 m^2 except in—

(a) an area zoned for rural activities; or

(b) an unzoned area used for rural activities.

Laundries

53A.5 A detached laundry not exceeding 14 m² in superficial area may be built as appurtenant to any building, and if distant 1800 mm or more from the main building, shall comply with all the provisions, other than those of sub-bylaw (1) (b) (i), of by-law 53A.4; but, if built within a distance of 1800 mm from the main building or attached thereto, then the laundry shall comply with such conditions, as to distance from boundaries, as apply to the main building.

Stables

53A.6 A stable may be built if—

(a) the floor is laid with approved impervious material and is not less than 75 mm above ground level;

(b) the building, of whatever material constructed—

(i) is distant not less than 24 m from the property alignment of the street;

(ii) is distant not less than 9 m from any other street in the case of a corner site;

(iii) is distant not less than 900 mm from the boundary of the site other than a street boundary, unless the external wall adjoining that boundary is carried up, as a parapet, at least 375 mm in height above the roof, flat or gutter of the building; and

(iv) is distant not less than 15 m or any greater distance required by any regulations or by-laws made under the Health Act 1911, from any other building used as a dwelling, whether on the same site or on any adjoining allotment; and

(c) the provisions of any health by-laws of the municipality relating to stables are complied with.

Fowlhouses, Kennels, etc.

53A.7 A fowlhouse, kennel or the like structure may be constructed, if it—

(a) has a height not exceeding 2·400 mm and a total superficial area not exceeding 9 m²;

(b) is not less than 18 m distant from the boundary of any street to which the building has a frontage, except in cases where any health by-laws permit a lesser distance; and

(c) complies with the requirements of any regulations or by-laws made under the Health Act 1911.

Conservatories, Shade Houses, Pigeon Lofts, Aviaries

53A.8 A conservatory, shade house, pigeon loft, or aviary may be constructed, subject to the council's approval of the location, design and materials of construction, and subject to compliance with any regulations or by-laws made under the Health Act 1911.

Water Closets and Urinals

Requirements

53A.9 (1) A water closet or urinal not forming part of a main building may be built in the yard or an area appurtenant to each building if— Amended by *G.G.* 16/6/78, p. 1923.

(a) the water closet or urinal is distant not less than 15 m from the building line of the street to which the site upon which it is intended to construct it has its main frontage, and, 6 m from the boundary of any other street to which the site has a frontage, and, if built within 900 mm of the boundary of any adjoining allotment is separated therefrom by a wall of brick, or concrete, not less than 90 mm in standard thickness, carried up to a height of 300 mm above the level of the roof as a parapet wall;

(b) the water closet or urinal is properly screened from public view;

(c) the water closet or urinal is constructed with walls of brick, or concrete not less than 90 mm in standard thickness and floored and roofed to the requirements of the surveyor.

Certain Structures Permitted

(2) Nothing in this by-law prevents—

(a) the construction of a water closet attached to, or within a building, subject to any conditions governing that building in these by-laws; or

(b) the construction in the case of a Class I or IA building of Type 5 construction, of a water closet or urinal of a wood frame construction, if the water closet or urinal has a smoothly finished impervious concrete floor and is lined with an impervious material.

Division 2.—Outbuildings Appurtenant to Buildings of Other Classes

General

53A.10 Except as provided by by-laws 53A.11 and 53A.12, any outbuildings shall comply with requirements set out in Division 1 of this Part.

Outbuildings to be of Brick

53A.11 Any outbuilding shall be constructed of brick; but the council may, by special licence approve of garages and sheds of wood frame construction, appurtenant to buildings in areas where the construction of buildings of Types 4 and 5 construction is permitted by the council.

Location from Boundaries

53A.12 An outbuilding shall not be built nearer to the street alignment than the alignment of the front of the building to which it is appurtenant or closer than 6 m to any other street, to which the site has a frontage, but the council may, if the circumstances so warrant, grant special approval for outbuildings closer to the street frontages.

Division 3.—Use of Outbuildings

Division heading inserted by *G.G.* 9/12/77, p. 4581.

Restriction on use as Habitable Rooms

Heading inserted by *G.G.* 9/12/77, p. 4581.

Approval of Council to be Obtained

53A.13. (1) A Class X building, or a room in a Class X building, shall not be used as a habitable room without the approval in writing of the council.

Inserted by *G.G.* 9/12/77, pp. 4581-2.

Outbuildings—not to be Used as Bedrooms or for Food Preparation

(2) The council shall not approve of the use of a Class X building, or a room in a Class X building, as a bedroom or a room for the preparation of food.

Approval may be Conditional

(3) The council may, in granting its approval pursuant to sub-bylaw (1) in relation to a building or room, impose a condition requiring the building or room to be constructed or altered (as the case may require) so as to conform with any one or more of the provisions of these by-laws applying to habitable rooms in Class I, IA, II, III or IV buildings and, in that event, the approval shall not have effect until that condition is complied with.

GROUP VIII.—ANCILLARY PROVISIONS

PART 54.—AWNINGS AND OTHER ATTACHMENTS

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GROUP VIII.—ANCILLARY PROVISIONS

PART 55.—GENERAL, SERVICES AND EQUIPMENT

Electrical Services

Heading substituted by *G.G.* 28/9/78, p. 3000.

Wiring

55.1 (1) (a) Electrical wiring in any building shall comply with, and be installed in accordance with, the S.A.A. Wiring Rules, Part 1 of Australian Standard 3000 being item 46 of the First Schedule and the further requirements of the supply authority that is to supply electricity to the building.

Substituted by *G.G.* 28/9/79, p. 3000-1.

Separate Controls for Fire and Lift Services

(b) Fire Protection Equipment and lift services as defined in the S.A.A. Wiring Rules shall be independently controlled on the main switchboard as laid down in those rules and the independent main switches required shall be segregated in the main switchboard from other services and shall be separated from the other services by a fire-resistant barrier.

Cables for Fire Protection Equipment

(c) All electrical cabling to fire protection equipment shall be in mineral-insulated copper-sheathed cables with copper conductors or other approved fire-resisting cabling or shall be installed in suitable fire-protected enclosures having a fire-resistance rating of one hour.

High Buildings

(d) Where the floor of the top-most storey of a building is more than 21 m above the floor of the lowest storey providing egress to a road or open space the main switchboard shall be located in a separate switchroom having a fire-resistance rating of one hour.

Gas Services

(2) Gas installations in a building shall be subject to the relevant requirements of Part 25.

Water Services

(3) Water pipes, fittings and appliances connected to a public water supply shall comply with the requirements of the relevant public water supply authority.

Water and Sullage

Where Connected to Public Sewer

(4) (a) Where a building is connected to a public sewerage service, the fixtures, appliances, pipes and fittings for the disposal of sewage or sullage from that building and their installation shall comply with the requirements of the relevant public sewerage authority.

Where Not Connected to Public Sewer

(b) Where a building is not connected to a public sewerage service the fixtures, appliances, pipes and fittings for the disposal of sewage or sullage from that building and their installation shall comply with the requirements of the council.

Telecommunications

(5) (a) Telecommunications conduits from a public street to the first cable terminal point in a building shall comply with, and be installed in accordance with, the requirements of the relevant telecommunications authority.

(b) Telecommunications lines in a building to be connected to a public telecommunications system shall comply with, and be installed in accordance with, the requirements of the relevant telecommunications authority.

55.2 *Repealed* [by *G.G.* 28/9/79, p. 3000.]

55.3 *Repealed* [by *G.G.* 28/9/79, p. 3000.]

55.4 *Repealed* [by *G.G.* 28/9/79, p. 3000.]

Openings in Fire-resisting Construction

Wires and Cables

55.5 (1) Wires or cables for electrical, telephone or other services that — Amended by *G.G.* 1/7/77, p. 2029.

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

(b) pass through a wall, floor or ceiling required to have a fire-resistance rating,

shall comply with sub-bylaw (2) and sub-bylaw (3).

Packing of Holes

(2) The space between any wire or cable referred to in sub-bylaw (1) and the inside faces of the holes in the walls, floors, or ceilings through which they pass, including the inside faces of sleeves or the like that may be inserted to carry them, shall be packed solid with gypsum vermiculite plaster, asbestos, or other approved non-combustible material.

Area of Holes Limited

(3) The total area of any holes for the accommodation of wires or cables referred to in sub-bylaw (1) in any 10 m^2 part of a floor or ceiling required to have a fire-resistance rating shall not exceed 7×10^3 mm^2.

55.6 **********

Air Handling Systems

Installation Requirements

55.7 (1) Where a system of mechanical ventilation or air conditioning is installed pursuant to any requirement of these by-laws that installation shall comply with Specification No. 7.

Openings Subject to Approval

(2) The position of external openings for supply inlets exhaust outlets and relief openings shall be to the satisfaction of the council.

Operation in Event of Fire

(3) In a building that is required by Part 24 to be provided with one or more fire-isolated stairways any ducted air-handling system which is designed to recirculate air in the building shall be so installed that—

(a) in the event of a fire the system shall operate automatically so that there shall be no re-circulation of air and all air shall be exhausted outside the building in a position approved by the council; and

(b) the action referred to in paragraph (a) shall be arranged to take place by the actuation of a smoke detector at the head of the return air shaft, such detector being of a type suitable for monitoring the presence of smoke in air streams.

Exemptions from Sub-bylaw (3)

(4) Sub-bylaw (3) shall not apply to a system handling air in one room or one storey only.

Exclusion of Smoke from Fire-isolated Stairways, Ramps and Passageways

In Buildings Over Six Storeys

55.8 (1) Every required fire-isolated stairway, fire-isolated ramp and fire-isolated passageway which serves a building having a rise of more than six storeys shall be protected from the entry of smoke by one of the alternative sets of requirements set out in sub-bylaw (3) or sub-bylaw (4).

Serving Below Ground Storeys

(2) Every required fire-isolated stairway, fire-isolated ramp and fire-isolated passageway that serves three or more storeys from which egress would involve a vertical rise within the building of more than 1.5 m shall be protected from the entry of smoke in accordance with sub-bylaw (3).

Pressurisation

(3) (a) The fire-isolated stairway, fire-isolated ramp or fire-isolated passageway shall be positively pressurised by means of a pressurising system designed to operate in the event of a fire on any storey by the actuation of—

(i) an approved automatic smoke detection device located in the storey and close to every doorway affording access to the fire-isolated stairway, fire-isolated ramp or fire-isolated passageway; and

(ii) any other required automatic fire-detection system that is installed in the building.

(b) The pressurising system shall be so designed that when it comes into operation—

(i) the system will be capable of maintaining an air-flow into the storey of not less than 1 m/s through the doorways leading from any two successive storeys when the two doors forming part of those doorways, together with the main discharge door, are in the fully open position; and

(ii) the system will be capable of maintaining a positive pressure differential between the stairway, ramp or passageway, as the case may be, and any storey served thereby of not more than 50 Pa when all doors of such stairway, ramp or passageway are in the fully closed position.

(c) No openable window or other openable device (other than necessary doorways, pressure-controlled relief louvres and windows openable by a key) shall be constructed in the stairway, ramp or passageway.

(d) A pressurising system may serve more than one fire-isolated stairway, fire-isolated ramp or fire-isolated passageway but shall not form part of any other air-conditioning or ventilating system.

(e) Ducts used for the pressurising system shall be of non-combustible construction having a fire-resistance rating of not less than one hour and shall draw air from outside the building through inlets in positions approved by the council.

Balcony Access

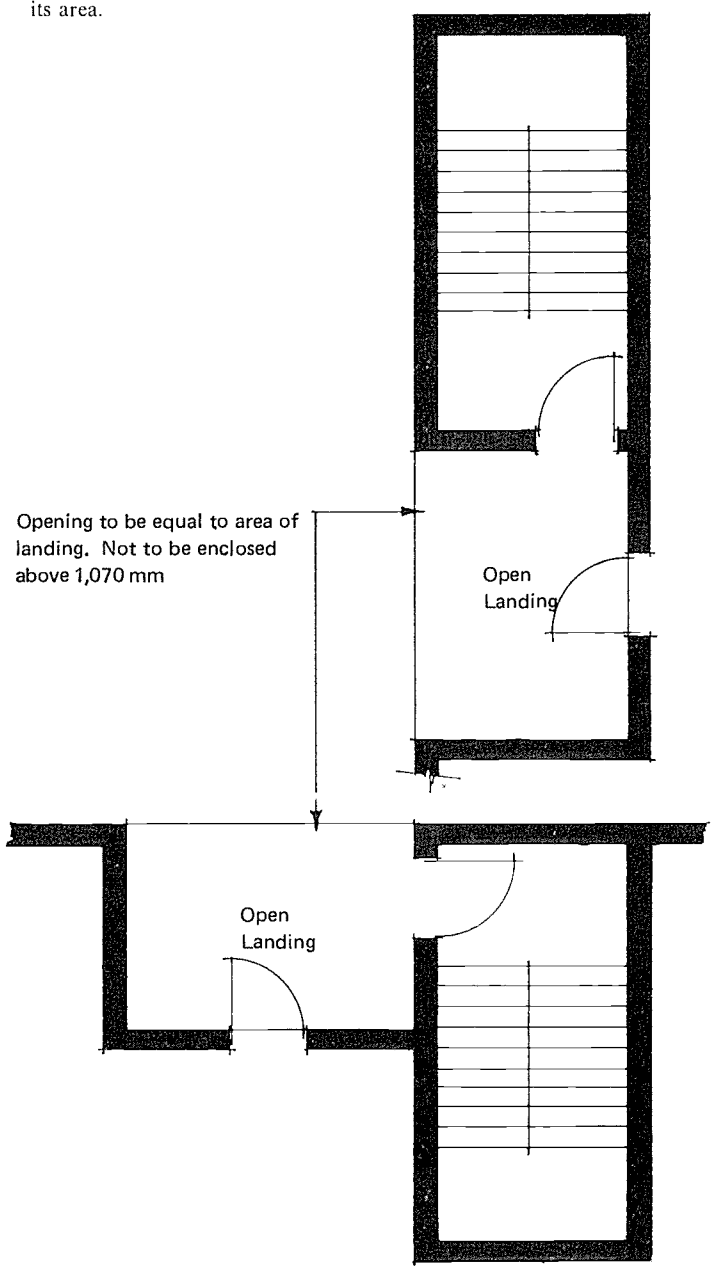
(4) As an alternative to complying with sub-bylaw (3) every means of access from within a building having a rise of more than six storeys to a fire-isolated stairway, fire-isolated ramp or fire isolated passageway shall be by way of an open access ramp or balcony complying with the following requirements—

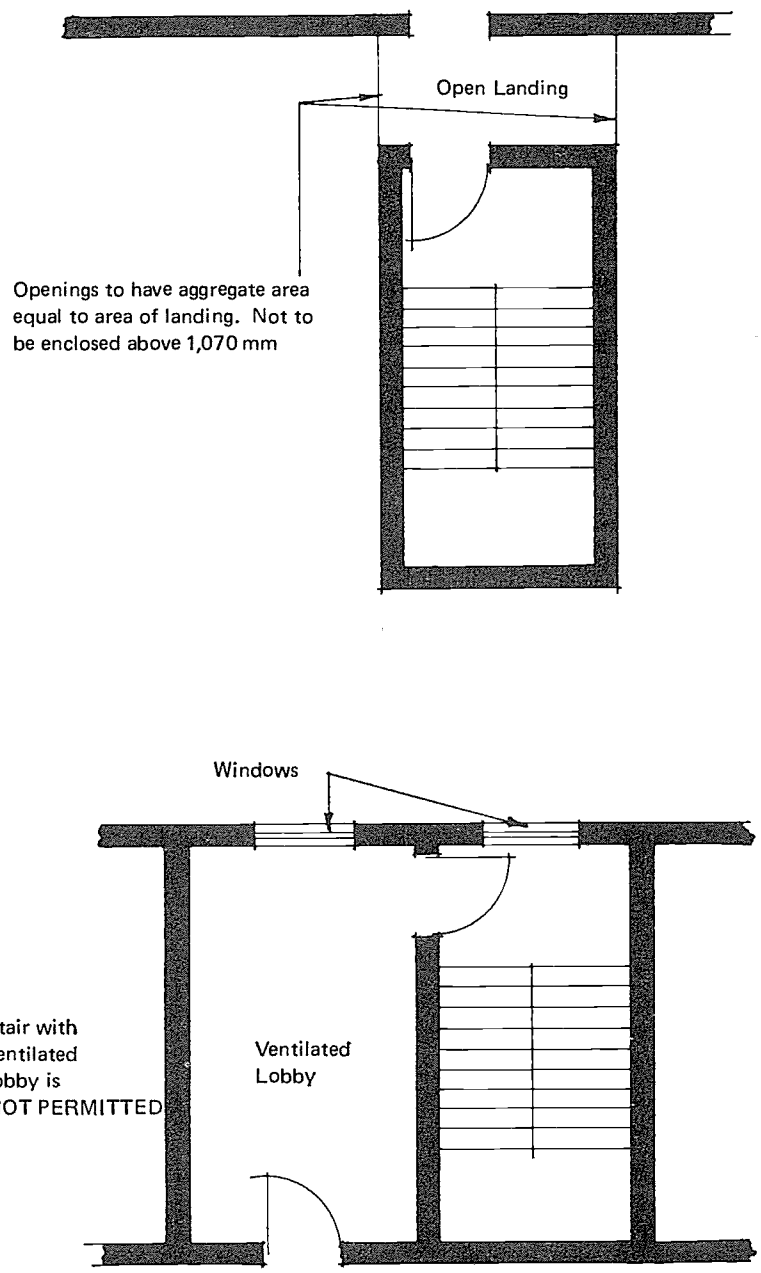
(a) It shall have an unobstructed ventilation opening to the outside air—

(i) of area not less than the floor area of the ramp or balcony; and

(ii) which is evenly distributed along the open sides of the ramp or balcony.

(b) It shall not be enclosed on its open sides above a height of 1070 mm except by an open grille or the like having a free air space of not less than 75 per cent of its area.





TYPICAL OPEN LANDING ACCESS–SEE 55.8–(4)

Lifts and Emergency Lifts

Buildings Exceeding Three Storeys in Height to have Lifts

55.9 (1) A lift shall be provided for use of the occupants of every building, whatever its Class, exceeding three storeys in height.

Certain Storeys not to be Counted

(2)(a) In the case of a Class II building—

(i) a basement that does not comprise habitable rooms; and

(ii) the ground storey, where a level access is provided from the street level to the first storey of the building,;

shall not be counted as a storey for the purposes of sub-bylaw (1).

(b) Where the uppermost flat in a Class II building contains more than one storey, any storey above the storey affording egress from the flat shall not be counted as a storey for the purposes of sub-bylaw (1).

Buildings with Floors Higher than 21 m to have Emergency Lift

(3) All buildings in which the floor of the topmost storey is more than 21 m above the floor of the lowest storey providing egress to a road or open space shall have at least one lift capable of becoming an emergency lift to serve all floors served by the lifts in the building.

Requirements for Emergency Lifts

(4) For the purposes of this Part an emergency lift, means a lift which has its operating controls so installed that it may be removed from normal automatic operation by means of a keyed switch located in the lift lobby of the main entrance storey of the building or other approved location.

Control of Emergency Lift

(5) An emergency lift installation shall be so designed that upon the operation of the keyed switch referred to in sub-bylaw (4)—

(a) the lift shall return to the floor of the storey in which the keyed switch is located and the doors shall open, and if the lift must stop and reverse in order to return to that storey the doors at the reversal floor shall not open;

(b) all light beam or electronic door protective devices on all emergency lifts shall be de-activated but the protection from door edge reopening devices shall be retained;

(c) the lift shall respond only to the controls within the car;

(d) the lift doors shall not open at any floor other than the floor of the storey in which the keyed switch is located unless the "Open Door" button is pressed and, when so opened, the doors shall remain open until the "Close Door" button is pressed;

(e) all lifts in the building shall return to the floor of the storey in which the keyed switch is located.

Emergency Communications

(6) Emergency lifts shall be provided with an emergency communication system which is operated from the car.

Type of System Required

(7) The system required by sub-bylaw (6) shall be either—

(a) a loudspeaker intercommunicator alarm system with the controls situated in the emergency control centre or lift lobby; or

(b) a telephone alarm system with controls terminating in the emergency control centre.

Lifts for Stretchers

(8) Every institutional building exceeding two storeys in height and design, constructed, or adapted as a home or institute for the aged, shall be provided with at least one lift capable of accommodating a stretcher with a patient lying thereon in a horizontal position.

Ventilation of Lift Shafts

Minimum Area

55.10 (1) The top of every lift shaft shall be ventilated to the outside air by unobstructed openings having an aggregate area of not less than 10 per cent of the cross sectional area of the shaft.

Exhaust Ventilation

(2) The unobstructed openings referred to in sub-bylaw (1) shall be so arranged as to induce exhaust ventilation of the shaft.

Warning Against Use of Lifts During a Fire

Signs to be Displayed

55.11 (1) A warning sign conforming with the details and dimensions of Figure 55.11 shall be displayed in a conspicuous position near every call button for a lift or group of lifts throughout a building.

Details of Sign

(2) The warning sign shall consist of—

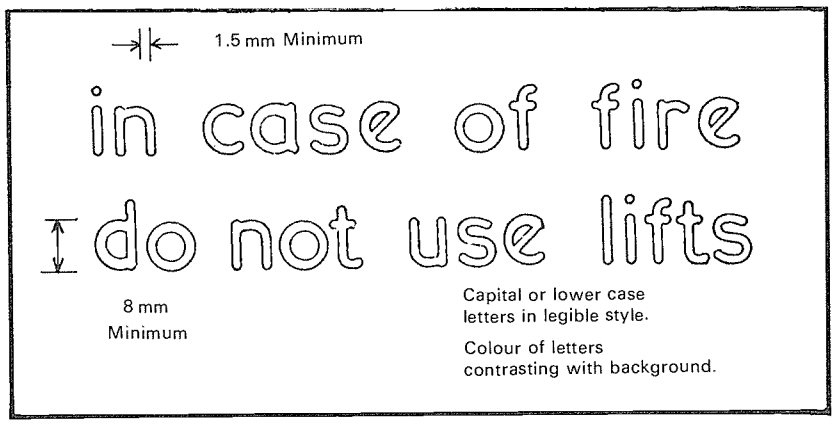
(a) incised, inlaid or embossed letters on a metal, wood, plastic or similar plate securely and permanently attached to the wall; or

(b) letters incised or inlaid directly into the surface of the material forming the wall.

Exceptions for Certain Small Lifts

(3) It shall not be necessary to install a warning sign for a small lift such as a dumb waiter or the like that is intended for the transport of goods only.

FIGURE 55.11.



Segregation of Lift Shafts

Not More than 3 Lifts

55.12 (1) Where there are not more than three lifts in a well they may be installed without fire-segregation between their shafts.

4 Lifts

(2) Where there are four lifts in a well they shall be arranged in at least two shafts, the shafts being fire-segregated from each other.

More than 4 Lifts

(3) Where there are more than four lifts in a well they shall be arranged so that there are not less than two nor more than four lifts per lift shaft, the shafts being fire-segregated from each other.

Escalators

55.13 One or more escalators for the transport of passengers may be installed in any building if every escalator, so installed is designed, constructed, installed and operated in conformity with the relevant provisions of Australian Standard CA3 being item 9 of the First Schedule.

Emergency Control Centre and Communication System

Where Required

55.14 (1) Where the floor of the topmost storey of a building is more than 21 m above the floor of the lowest storey providing egress to a road or open place, an emergency control centre and communication system shall be provided. Amended by *G.G.* 24/12/76, p. 5102.

Location

(2) The emergency control centre shall be located on the ground floor adjacent to the main entrance.

Equipment Required

(3) Provision shall be made for the following equipment to be located within the emergency control centre—

(a) all automatic fire alarm control panels including sprinkler system annunciator panels, or "Mimic" panels where there is a need for any control panel to be located elsewhere;

(b) emergency telephone switchboard;

(c) evacuation warning system controls;

(d) an exchange telephone;

(e) a control panel for emergency lift communications and alarm if such a panel is not located in the lift lobby;

(f) a complete set of building plans indicating the location of—

(i) any special fire risks, computers, etc.;

(ii) sprinkler stop valves;

(iii) hydrants and hose reel points;

(iv) fire service control valves;

(v) fire brigade booster connection inlets;

(vi) fixed fire pumps;

(vii) relay booster pumps;

(viii) main electrical switchroom and circuit breakers;

(ix) gas or fuel oil controls;

(g) the lift fire service key.

Provision of Sign

(4) The door of the emergency control centre shall be clearly marked with a sign reading:

"EMERGENCY CONTROL CENTRE"

Emergency Communication System

(5) The emergency communication system provided shall consist of—

Telephone

(a) an internal emergency telephone communication system installed as follows:

Handset Location

(i) The emergency telephone handsets shall be installed in or adjacent to fire equipment cabinets on each floor level and the fire brigade booster connection cabinet.

Connection to Control Centre

(ii) Each emergency telephone shall be connected on a separate line to the emergency control centre and the system shall be so designed that the operator in that centre can receive calls from, and call, each extension individually and identify the extension from which a call is received.

Additional Connection in Certain Buildings.

(iii) In buildings in which there is a switchboard location that is manned twenty-four hours a day every day, the emergency telephones may also be connected to that location so long as the system is designed so that in the event of fire the fire officer can take over control of the emergency telephones on an intermediate switchboard situated in the emergency control centre.

Labelling of Handsets.

(iv) (A) In buildings in which the emergency telephones are connected to a continuously manned switchboard location in accordance with subparagraph (iii) handsets shall be coloured red and prominently labelled "FIRE CALL ONLY".

(B) In all other buildings the handsets shall be coloured red and prominently labelled "FIRE BRIGADE USE ONLY".

System to be Self-contained.

(v) The system may incorporate the lift communication system but in all other respects shall be self-contained, independent of other telephone and electrical services in the building, and capable of operation if or when other telephones or electrical services fail or are cut off;

Evacuation Warning System

(b) an evacuation warning system to enable all occupants of the building to be warned of the need to evacuate the premises should this be necessary due to a fire or other emergency and installed as follows:

Manual Operation.

(i) The system shall be designed for manual operation.

Signal.

(ii) The design shall permit the transmission of either an "alert" signal or an "evacuation" signal to any selected storey or section of the building or to the whole building.

Type Required.

(iii) The system may be either an electrically operated bell or buzzer system or a loudspeaker broadcast system.

Controls.

(iv) Controls for the operation of the evacuation warning system shall be located in the emergency control centre and the method of operation shall be clearly indicated on the control panel; and

Lift Communication System

(c) a lift communication system installed in accordance with sub-bylaws (6) and (7) of by-law 55.9.

GROUP VIII.—ANCILLARY PROVISIONS

PART 56.—REPAIR, ALTERATION AND RESTORATION

General

56.1 Any alteration, addition, restoration or repair to a building shall conform with the provisions of these by-laws.

Additions over Sewerage or Drainage

56.2 An addition to a building shall not be constructed above a septic tank, sewerage gully trap, receptacle for drainage or drainage line if that addition— Amended by *G.G.* 3/11/78, p. 4201.

(a) obstructs free access to the septic tank, sewerage gully trap, receptacle for drainage or drainage line; or

(b) has walls on more than three sides.

Support

56.3 Where any alteration, addition, restoration or repair is to be made to a building, every part of the building likely to become structurally insecure by reason of the alteration, addition, restoration or repair, shall be adequately shored up and supported. Amended by *G.G.* 11/7/77, p. 2029.

Minor Alterations and Repairs

56.4 Minor repairs and alterations may be made with material of the type used in the original construction, but if more than 25 per cent of the roof or wall covering is replaced in any period of twelve months the entire roof or wall covering (as the case may be) shall be made to conform with the requirements of these by-laws.

Roofing

56.5 Any roofing complying with the requirements of these by-laws, may be placed over the existing roof when that existing roofing and the existing roof framing are such as to permit the new roofing to be properly supported and securely fastened.

Restoration of Buildings

Extensive Damage or Demolition

56.6 (1) If in the opinion of the council at least half the total volume of a building measured over the roof and external walls is destroyed or demolished that building shall not be restored, repaired, or reconstructed except in accordance with these by-laws.

Minister May Exempt Historic Buildings

(2) The Minister may direct that the provisions of sub-bylaw (1) of this by-law do not apply to old or historical buildings classified A, B or C by the National Trust of Australia (W.A.).

Buildings Over Prescribed Height Not to be Restored

(3) Where any building, exceeding the maximum height permitted by Part 14, is destroyed by fire or other calamity, that building shall not be reconstructed, except in comformity with these by-laws.

SCHEDULES

By-law 10.4

Substituted by *G.G.* 11/6/76, p.p. 1881-2.

Amended by *G.G.* 1/7/77, p. 2029; *G.G.* 9/12/77, p.p. 4582; *G.G.* 16/6/78, p. 1923; *G.G.* 28/9/79, p. 3001; *G.G.* 29/2/80, p. 681.

FIRST SCHEDULE

LIST OF STANDARDS, CODES AND SPECIFICATIONS REFERRED TO IN THESE BY-LAWS

Item	SAA or AS No. (if any)	Title
1.	A1530-1975	Part IV—Fire Tests on Building Materials and Structures.
2.	2118-1978	Code for Automatic Fire Sprinkler Systems.
3.	1905-1967	Fire Door Code Part I—Fire Doors.
4.	2185-1978	Specification for Fibrous Plaster Products.
5.	1480-1974	Concrete Structures Code (Metric).
6.	1481-1974	Prestressed Concrete Code.
7.	1288-1973	Installation of Glass in Buildings (Parts I and II).
8. (a)	1465-1974	Dense Natural Aggregates for Concrete.
(b)	1141-1974	Methods for Sampling and Testing Aggregates.
9.	CA3-1966	Lift Code.
10.	1691-1975	SAA Domestic Oil-fired Appliances Installation Code.
11.	1155-1971	Metric Units in Construction.
12.	CB1-1962	Rules for Design, Construction and Installation of Boilers and unfired Pressure Vessels, Pt. 1—Boilers other than Water tube boilers and locomotive boilers for railway purposes.
13.	1221-1976	Fire Hose Reels (Metric).
14.	1851-1976	Rules for Installation and Maintenance of Portable Fire Extinguishers and Fire Hose Reels.
15.	.....	.....
16.	A21-1964	Burnt Clay and Shale Building Bricks.
17.	1346-1973	Concrete Building Bricks (Metric Units).
18.	1653-1974	Calcium Silicate Bricks.
19.	1500-1974	Concrete Building Blocks.
20.	1640-1974	SAA Brickwork Code (Metric).
21.	A123-1963	Mortar for Masonry Construction.
22.	1170	Pt. I—1971 SAA Loading Code—Dead and Live Loads.
23.	1475-1977	SAA—Blockwork Code.
24.	2272-1979	Marine Plywood.
25.	087-1963	Plywood for Exterior Use.
26.	1250-1972	SAA Steel Structures Code (Metric).
27.	1538-1974	S.A.A. Cold Formed Steel Structures Code.
28.	1759-1975	Concrete Interlocking Roofing Tiles (With weathering check).
29.	1760-1975	Fixing of Concrete Interlocking Roofing Tiles (with weathering check).
30.	1757-1975	Concrete Interlocking Roofing Tiles (without weathering check).
31.	1758-1975	Fixing of Concrete Interlocking Roofing Tiles (without weathering check)
32.	2049-1977	Terra-Cotta Roofing Tiles.
33.	2050-1977	Fixing Terra-Cotta Roofing Tiles.
34.	1611-1973	Asbestos Cement Corrugated Sheets for Roofing and Cladding.
35.	1639-1974	Design and Installation of Corrugated Asbestos Cement Roofing.
36.	1445-1973	76 mm Pitch Corrugated Hot-Dipped Zinc Coated Steel Sheet.
37.	1736-1975	Code of Practice for Pliable Roof Sarking.
38.	Interim 326-1953	Bituminous Damp Proof Courses with Metal Centre.
39.	Interim 327-1953	Bituminous Damp Proof Courses with Fibre Felt Base.
40.	1684-1975	SAA Light Timber Framing Code.
41.	1720-1975	SAA Timber Engineering Code.
42.	2057-1977	Soil Treatment for Protection of Buildings against Subterranean Termites.

Item	SAA or AS No. (if any)	Title
43.	1694-1974	Physical Barriers used in the Protection of Buildings against Subterranean Termites.
44.	1680-1976	Interior Lighting and the Visual Environment.
45.	1670-1974	Rules for Automatic Fire Alarm Installations.
46.	3000-1976	Rules for Electrical Equipment of Buildings, Structures and Premises "Part 1 Wiring Methods".
47.	.....	British Standard 336-1965 Fire Hose Couplings and Ancillary Equipment.
48.	1315-1973	Specification and Methods of Test for Portland Cement.
49.	1317-1972	Blended Cements.
50.	1316-1972	Masonry Cement.
51.	.....	British Standard 1042—Pt. 1—1964 Measurement of Fluid Flow in Pipes.
52.	K156-1965	Expanded Polystyrene for Thermal Insulation.
53.	Interim 350-1952	Minimum Design Loads on Buildings—Pt. II—Wind Loads.
54.	1152-1973	Test Sieves.
55.	1664-1975	Aluminium Structures Code.
56.	1859-1976	Flat Pressed Particleboard.

By-laws 6.1, 16.11 19.2 and 19.10

SECOND SCHEDULE

Amended by *G.G.* 29/2/80, p. 682.

GOODS, HANDICRAFTS, PROCESSES, MATERIALS AND SPACES OF ABNORMAL FIRE HAZARD

Part A.—Goods

Goods in which a principal material is one of the materials listed in Part E of this Schedule.

Part B.—Handicrafts

Handicrafts in which a principal material is one of the materials listed in Part E of this Schedule.

Part C.—Processes

A process—

(a) in or incidental to the making, assembling, altering, repairing, renovating, preparing, ornamenting, finishing, cleaning, washing, or adapting of goods; or

(b) performed or carried out in a laboratory,

in which a principal material is one of the materials listed in Part E of this Schedule.

Part D.—Spaces of Abnormal Fire Hazard

A space within a building—

(a) used for the storage of goods referred to in Part A of this Schedule, or the display of such goods for sale by wholesale;

(b) in which, in the opinion of the council, the potential severity of combustion that may occur (if there is an outbreak of fire) equals or exceeds that for a storage or display referred to in paragraph (a) of this Part;

(c) used for—
  (i) a handicraft referred to in Part B of this Schedule; or
  (ii) a process referred to in Part C of this Schedule; or

(d) in which, in the opinion of the council the potential severity of combustion that may occur (if there is an outbreak of fire) equals or exceeds that for a handicraft or process referred to in paragraph (c) of this Part.

Part E.—Materials

Bitumen, tar, or any product thereof, including—
- (a) asphalt;
- (b) caulking and sealing compounds; and
- (c) surfacing materials.

Cork.

Enamel, lacquer, paint, or varnish.

Explosive, fireworks, or matches.

Fibre or any fibrous product, including—
- (a) bristles, cloth, cord, felt, fur, raw fibres, straw, and thread; and
- (b) made-up products of cotton, flax, hemp, jute, silk, synthetic fibres, or wool, including bedding, carpets, and upholstery.

Flammable gas or flammable liquid, including—
- (a) liquified petroleum gas;
- (b) natural gas and coal gas; and
- (c) hydrogen.

Fodder or any foodstuff—
- (a) including grain and kernels (whether as cereal or crushed and milled); but
- (b) excluding fresh food such as fish, fruit, meat, and vegetables.

Gum, polish, resin, or wax, or any product thereof, including linoleum, oilcloth, and tarpaulin.

Inorganic chemical such as—
- (a) calcium carbide, potassium nitrate, and sodium nitrate;
- (b) metallic sodium and phosphorus; and
- (c) finely powdered metal.

Leather, skin, or any product thereof, including boots, shoes, furs, and clothing.

Oil (animal, mineral, or vegetable), including animal fats and refined oils, or any product thereof.

Organic chemical comprising—
- (a) alcohol or any alcoholic liquor;
- (b) any industrial solvent;
- (c) any synthetic resin;
- (d) any cellulose product;
- (e) any peroxide; or
- (f) any like material.

Paper or any paper product, including—
- (a) books, cardboard, and fibre containers; and
- (b) newsprint.

Plastic or any plastic product, including cellulose acetate and nitro-cellulose (such as celluloid or pyroxlyn).

Rubber (natural or synthetic) or any product thereof, including motor tyres, foamed rubber, and garments.

Timber or any timber product, including fibreboard, particleboard, and plywood.

THIRD SCHEDULE

FORMS

Amended by *G.G.* 28/9/79, p. 3001; *G.G.* 29/2/80, p. 682.

Form 1

By-law 6.3

Local Government Act 1960

Certificate Number.....

.....

(Name of Municipality)

CERTIFICATE OF CLASSIFICATION

Date of Certificate.....19.....

Reference to Building Application.....

This is to certify that the council has approved the use of the building situated at.....

.....

(description of land)

as a building of the class or classes specified herein.

Storey or Portion of Building	Class or Classes of Building

Signed.....

Town/Shire Clerk

NOTE: The use of the above building or any portion thereof for a purpose not covered by this certificate is an offence.

By-law 8.1

Form 2

Local Government Act 1960

Application No.....

.....

(Name of Municipality)

APPLICATION FOR BUILDING LICENCE

To the Building Surveyor:

As the builder or person causing and directing the works undermentioned to be executed, I hereby apply for a Building Licence for same.

The following are the particulars of the proposed works:—

Situation:

Ward..... Street.....
Town Lot.....Subdivision..... House No. .....
New Building to be used as.....
Additions and/or alterations to.....
The nature of the work is.....
.....
.....
Estimated value $ .....
Dimensions of building or structure .....
Area.....m^2, Depth.....:mm; Width.....mm; Height.....mm.
Number of Storeys.....
Owner: Name..... Address.....
Occupier: Name.....Address.....
Classification Number sought by owner if not previously classified or if change of use is sought .....
Signature of Applicant.....
Address .....
Date.....19.....

By-law 8.1

Form 3

Local Government Act 1960

Application No.....

.....

(Name of Municipality)

APPLICATION FOR DEMOLITION LICENCE

To the Building Surveyor:

Application is hereby made for a licence to demolish/remove the building referred to in the undermentioned particulars:—

Situation: Ward.....Street.....Street No.....
Town Lot.....Subdivision .....
Type of Building .....
(Here describe type of construction, i.e., Brick, Timber Frame, etc.)
Number of Storeys.....
(Note: If demolition is of part of building only, applicant should set out particulars of demolition work to be performed.)
Owner's Name And Address .....
.....
Demolition Contractor's
Name And Address .....
.....
Signature of Applicant .....
Date.....19.....

Form 4

Local Government Act 1960

By-law 8.1

Application No.....Date..... 19.....

.....

(Name of Municipality)

BUILDING LICENCE

Granted to.....
Address.....
Authorizing the construction of certain buildings in the .....Ward,
.....Street,Town Lot.....,Subdivision .....,
as per application No.....and in accordance with the approved plans, drawings and specifications and subject to the provisions of the Uniform Building By-laws 1974 made under the Local Government Act 1960.

Whenever required so to do by the Building Surveyor, the holder of this licence shall produce the approved plans, drawings and specifications for inspection.

This licence is void if the work covered by it is not substantially commenced within twelve months of the date of the issue of this licence.

.....
Building Surveyor.

Form 5

Section 399

Local Government Act 1960

Special Licence No.....Date..... 19.....

.....

(Name of Municipality)

SPECIAL LICENCE

(Issued in pursuance of the Local Government Act 1960, and the Building By-laws made thereunder).

The council hereby grants permission, subject, however, to the conditions set out hereunder to.....
to erect and maintain until the..... day of.....
19....., on Town Lot..... Subdivision .....
situate in.....Street, a building in accordance with the plans and specifications which have been lodged with the Building Surveyor.

CONDITIONS

1. The council may in its discretion on or after the .....day of .....next, and on or after the.....day of .....in each succeeding year, grant a licence, to be called a Special Renewal Licence, to maintain the above-described building for a further period of twelve months, upon payment by the abovenamed ..... of the appropriate fee in that behalf contained in Part 9 of these by-laws.

2. The council may at any time revoke this licence or any Special Renewal Licence granted in respect to the above-described building, and direct the removal of such building, and in default of such removal may proceed to enforce the provisions of any by-law made under the Local Government Act 1960, or under any other Act, in the same manner as if this licence had not been granted.

.....
Building Surveyor.

Form 6

Section 377

Local Government Act 1960

Licence No..... Date.....19.....

.....
(Name of Municipality)

LICENCE FOR EXCAVATION NEAR, AND DEPOSIT OF BUILDING MATERIAL ON, STREET

..... of .....
.....is hereby licensed to deposit building material on .....(name of street) for the purposes of building work to be carried out on .....(land description of building site) and to excavate, if required, on that portion of that land abutting or adjoining that street for a period commencing the..... day of.....19 ..... subject to the following conditions and also subject to the provisions of any by-laws made under the Local Government Act 1960, or under any other Act.

CONDITIONS

Every excavation shall be securely fenced off from the street to the satisfaction of the Building Surveyor.

Around that portion of the street on which the building materials are to be deposited, a hoarding and gangway shall be strongly and securely constructed of materials and to a design to be approved by the Building Surveyor, and the hoarding and gangway shall be maintained in good order and condition throughout the currency of this licence, and at any time during the currency the Building Surveyor may, if he thinks fit, order any alteration or additions to be made to the hoarding and gangway for the better protection and convenience of the public.

The gangway and all water channels shall at all times during the continuance of the licence be kept clear.

A sufficient light shall be displayed and maintained at the exterior angles of the hoarding each night from sunset to sunrise. The fee to be paid for this licence shall be the amount as set out in Part 9 of these by-laws, and shall be paid in advance.

A renewal of the licence may be granted at the discretion of the Building Surveyor, and the abovementioned fee shall be paid for such renewal.

The area to be enclosed shall be restricted to a frontage of .....metres, a maximum width of..... metres, height .....metres.

At the expiration of the period for which this licence is granted or renewed, the hoarding shall be cleared away and all necessary repairs shall be effected by the licensee to the footpath, kerbing, channelling, and road, and the same put in good order to the satisfaction of the Building Surveyor.

If default be made by the licensee in complying with the last condition or any part thereof, the work required may be done by the council and all expenses thereof may be recovered by the council from the licensee.

The licensee shall deposit with the Building Surveyor the sum of ..... as a security for the satisfactory performance of these conditions.

Dated this.....day of..... 19.....

.....
Building Surveyor.

Section 374A

Form 7

Local Government Act 1960

Licence No ..... Date..... 19.....

.....

(Name of Municipality)

DEMOLITION LICENCE

Granted to (Owner's Name).....
Address.....
Contractor.....
The abovenamed is hereby authorized to demolish the building or part of the building situated in.....Ward, ...Street, Town Lot.....Subdivision.....particulars of which proposed demolition work are set out in Application No.....

This licence is issued subject to the Uniform Building By-laws 1974, and more particularly to the following conditions:—

1. Before any demolition work commences a certificate shall be obtained from the Health Surveyor of the council certifying that the building to be demolished has been treated so as to ensure that it is not infested by rodents.

2. Where the building to be demolished comprises more than one storey, the demolition shall be effected by the complete removal of one storey after another, commencing with the uppermost storey and proceeding with the successive removal of the storeys in descending order.

3. No part of an external wall abutting on a street or road shall be demolished, except during such hours as are permitted by the Building Surveyor.

4. Unless otherwise authorized by the Building Surveyor, any material removed or displaced from the building shall not be placed upon a floor of the building but shall be immediately lowered to the ground and thereafter removed from the site, but in no case shall loading be such as to cause a floor to collapse.

5. Materials removed or displaced from the building shall not be placed in any street, road or right of way and, before commencing work, as the case may require, shall be kept sprayed with water so as to prevent any nuisance from dust.

6. Materials removed or displaced from the building being demolished or materials left standing shall not be burned on the demolition site.

7. Council shall be notified of the existence of any septic tank(s) on the demolition site seven days prior to the emptying and filling of such tank(s).

8. Any septic tank(s) on demolition site must be emptied and filled with clean sand or removed entirely and any soakwells, leach drains or similar apparatus must be removed or filled with clean sand.

9. Notification, within seven days of date of issue of this licence, shall be given to the State Energy Commission and Postmaster General's Department now Telecom and arrangements made for disconnection of these services.

10. Where the building being demolished is more than one storey in height, a hoarding and an overhead gantry shall be provided to protect pedestrians.

11. A footpath deposit shall be lodged with the council to cover the cost of any damage caused to footpaths during the demolition operation, against which the actual cost of repairing any damage will be charged and any unexpended balance refunded to the person taking out the licence. In the event of the cost of repairs being in excess of the deposit lodged, the person holding the licence shall, on demand, pay the amount of the excess to the council.

12. Where necessary, the holder of a licence shall construct a temporary crossing place over the footpath as specified by the council.

13. Demolition site shall be cleared, and left clean and tidy to the satisfaction of the Building Surveyor within 90 days of the date of commencement of the demolition work.

14. Fee for this licence;

Fee for structure of not more than 2 storeys—$2 per storey.

Fee for structure of more than 2 storeys—$4 per storey.

.....
Building Surveyor.

FOURTH SCHEDULE
SPECIFICATIONS

Amended by *G.G.* 27/3/75, p. 1031; *G.G.* 11/6/76, p. 1884; *G.G.* 1/7/77 pp. 2029-30, *G.G.* 9/12/77, p. 4582; G.G. 16/6/78, pp1923-4, *G.G.* 29/2/80, p. 682.

SPECIFICATION No. 1
FIRE WINDOWS

By-law 21.4

Scope

1. This specification relates to the construction and installation of windows of wired glass, in framing of galvanized steel, in window openings required by Part 22 to be protected by one-hour windows.

Dimensions

2. (1) An opening in which a fire window referred to in this specification is to be installed shall not exceed—

(a) 5.2 m^2 in area; and
(b) 2950 mm in height or width,

the measurements being taken between the jambs and between the sill and the lintel of the opening.

(2) The overall dimensions of a window, measured over the outer frame but not any part of an anchoring lug, shall be 12 mm less in both width and height than the intended inside dimensions of the opening in which it is to be installed.

Make-up of Windows

3. Each window shall comprise principally—

(a) an outer frame, and, in the case of a window having an openable sash—
  (i) a moveable frame as part of that sash; and
  (ii) a supplementary frame, housing the moveable frame and held to a fixed position within the window;
(b) glazing bars, if required under the limitation of this specification on sizes of panes of glass, or to support a supplementary frame;
(c) glazing beads; and
(d) a pane or panes of glass—
  (i) cut to size and shape;
  (ii) located within the frame or frames, or between the frame and any glazing bars;
  (iii) held (by way of glazing compound) by the glazing beads; and
  (iv) sealed at all edges by glazing compound.

Openable Sashes

4. An openable sash may be incorporated in a window if, in particular—

(a) the sash is the only one in the window;
(b) it is horizontally pivoted 76 mm above the levels of its centre;
(c) it is designed to close under its own weight, unassisted by any other agency; and
(d) the overall dimensions of its frame do not exceed—
  (i) 1 000 mm in width;
  (ii) 1305 mm in height.

Make-up of Openable Sashes

5. An openable sash shall comprise principally—

(a) the movable frame together with its particular parts of the pivots;
(b) glazing bars, if required under the limitations of this specification on sizes of panes of glass;
(c) glazing beads;
(d) the particular parts of a latching mechanism and a hold-open device, each in accordance with this specification, that are appropriate to the movable frame; and
(e) a pane or panes of glass—
  (i) cut to size and shape;
  (ii) located within the frame, or between the frame and any glazing bars;
  (iii) held (by way of glazing compound) by the glazing beads; and
  (iv) sealed at all edges by glazing compound.

Make-up of Supplementary Frames

6. A supplementary frame shall comprise the frame together with its particular parts of the pivots and other mechanical devices.

Maximum Clear Spans of Panes

7. Neither the width nor the height of the pane shall exceed—

(a) 610 mm if the pane is in an openable sash; or
(b) 762 mm otherwise,

the measurements being between the nearer edges of the supporting steel members.

Glass

8. The glass in the panes shall—

(a) have a thickness of 6 mm;
(b) have a mass per unit area of not less than 17 kg/m^2; and
(c) be reinforced, near the centre of its thickness, with steel wire not thinner than 0.45 mm in one of the following forms—
  (i) a square mesh, in which the wires are not more than 20 mm apart and are electrically welded at each intersection (the glass then being commonly known as "Georgian Wired");
  (ii) a hexagonal mesh, in which the average width of hexagon is not more than 23 mm and the wires are intertwined in one direction at their intersections (the glass then being commonly known as "Hexagonal Wired"); or
  (iii) a diamond mesh, in which the sides of the diamonds are not longer than 20 mm and the wires are electrically welded at each intersection (the glass then being commonly known as "Diamond Wired").

Steel

9. Frames, glazing bars, and glazing beads shall be of approximately uniform thickness and of solid rolled mild steel in conformity with the following—

(a) in outer frames, the steel shall be of modified T cross-section in which—
  (i) the top of the T is off-centre by 4.7 mm;
  (ii) the bottom of the T is extended to one side, to form a flange not less than 11 mm wide, parallel to the top of the T and off-centre in the same direction;
  (iii) the T has a height of 34.3 mm;
  (iv) the top of the T has a width of 33.3 mm; and
  (v) the area of the T is such that the steel section has a nominal mass per unit length of not less than 1.9 kg/m;
(b) in movable frames and supplementary frames, above the pivot points in each case, the steel shall be of modified L cross-section in which—
  (i) the top of the L is extended to each side, to form a flange 17.4 mm wide, parallel to the bottom of the L and widening the L by 9.5 mm;
  (ii) the L has a height of 31.7 mm;
  (iii) the bottom of the L has a width of 23.8 mm; and
  (iv) the area of the L is such that the steel section has a nominal mass per unit length of not less than 2.3 kg/m;
(c) in movable frames and supplementary frames, below the pivot points in each case, the steel shall be of modified unsymmetrical channel cross-section in which—
  (i) the top flange of the channel is 23.8 mm wide, and the bottom flange not less than 7.9 mm wide;
  (ii) a secondary top flange extends 9.5 mm backwards from the back of the channel, 4.7 mm below the main top flange;
  (iii) the channel has a height of 31.7 mm; and
  (iv) the area of the channel is such that the steel section has a nominal mass per unit length of not less than 2.3 kg/m;

(d) in glazing bars that are not in openable sashes, the steel shall be of T cross-section in which—
  (i) the T has a height of 34.9 mm;
  (ii) the top of the T has a width of 22 mm; and
  (iii) the area of the T is such that the steel section has a nominal mass per unit length of not less than 1.6 kg/m;

(e) in glazing bars that are in openable sashes, the steel shall be of T cross-section in which—
  (i) the T has a height of 26.9 mm;
  (ii) the top of the T has a width of 22 mm; and
  (iii) the area of the T is such that the steel section has a nominal mass per unit length of not less than 1.1 kg/m;

(f) in glazing beads, the steel shall be of 9.5 mm square cross-section.

Fabrication of Steel

10. The steel shall be fabricated as follows—

(a) in all frames—
  (i) the steel members shall be mitred and flash-butt-welded at all corners;
  (ii) glazing bars, if any, shall be tenoned into mortises in the frame, the ends of the tenons being extended through the frame members and expanded and secured by pressure-weld riveting; and
  (iii) all holes to be punched, drilled, or drilled and counter-sunk, but not to be tapped, shall be run through;

(b) in movable frames and supplementary frames—
  (i) the upper and the lower side members shall be flash-butt-welded at each pivot point, the meeting faces of the movable and the supplementary frames being so aligned as to ensure their close fitting when in service; and
  (ii) the frames shall be notched to receive the pivots;

(c) where glazing bars intersect—
  (i) one glazing bar shall be passed through a deformed mortise in the other; and
  (ii) the two bars shall be pressed together to reform the mortise and form a joint that tightly locks;

(d) glazing beads shall be drilled and countersunk for their fixing screws.

Galvanizing of Steel

11. All steel shall be galvanized by hot-dipping after fabrication.

Pivots

12. Each pivot shall consist of two brass cups, 3 mm thick, and one working inside the other—

(a) the outer cup having an inside diameter of not more than 44.5 mm and an inside depth of not less than 9.5 mm, and being riveted to the supplementary frames; and

(b) the inner cup having an inside depth of approximately 12.5 mm and being riveted to the movable frame,

the rivets being of cadmium-plated steel and not fewer than two to a cup.

Fixing of Supplementary Frames

13. Supplementary frames shall be fixed, within the window, to—

(a) a glazing bar; or

(b) a member of the outer frame,

by M6 galvanized or cadmium-plated screws along each edge, at points not more than 75 mm from a corner and elsewhere not more than 230 mm apart.

Fixing of Glazing Beads

14. Glazing beads shall be fixed to frames and glazing bars by countersunk M5 galvanized or cadmium-plated screws, at points not more than 100 mm from an end and elsewhere not more than 400 mm apart.

Glazing Compound

15. All glazing compound shall be a non-setting mastic that does not harden except at a surface exposed to the air.

Tolerances on Sizes of Panes

16. After selvage is removed, each pane shall fit the rebates of the supporting steel with a clearance—

(a) not more than 2.5 mm; and
(b) not less than 1.5 mm,

at every point on its perimeter.

Latching Mechanism

17. The latching mechanism shall—

(a) be located at the top of the openable sash concerned;
(b) incorporate latchbolts located not more than 150 mm from each side thereof;
(c) have keeps that will engage the latchbolts by not less than 9.5 mm;
(d) be self-latching in a manner that will ensure it will remain fully latched if there is any mechanical failure at any time; and
(e) be of stainless steel or nickel-silver.

Hold-open Device

18. The hold-open device—

(a) shall incorporate a thermal-release unit—
  (i) actuated by fusing, shattering, or burning; and
  (ii) capable of meeting the relevant requirements of Australian Standard 1905 being item 3 of the First Schedule;
(b) shall on operation of that unit allow the openable sash to close itself;
(c) shall not provide for the openable sash to be held at less than 30 degrees off vertical;
(d) shall be located in a position, near the top of the sash; and
(e) shall not be accompanied by any other device that can be made to hold the sash open.

Anchoring of Outer Frame

19. The outer frame shall be anchored within its opening in the wall by either Method A or Method B that follows, the points of anchoring being—

(a) along each edge of the frame; and
(b) not more than 175 mm from a corner thereof and elsewhere not more than 610 mm apart, but not more than 100 mm on one or other side of a glazing bar that supports the supplementary frame around an openable sash:
Method A The construction around the opening shall be—
  (i) drilled; and
  (ii) fitted with all-metal masonry anchors, but not any incorporating aluminium, lead, or tin,
  and the frame shall be screwed towards the anchors, using M6 galvanized or cadmium-plated screws, until the anchors and frame are all firmly locked.
Method B Lugs of—
  (i) galvanized 25.4 mm × 6.3 mm steel flat, not less than 255 mm long and bent sideways by 20 mm at one end for screwing to the frame; or
  (ii) galvanized deformed 16 mm reinforcing bar, not less than 230 mm long and drilled endwise at one end and tapped for screwing to the frame,
  shall be screwed thereto, using M8 galvanized or cadmium-plated screws, and built into the construction around the opening.

Mortar Packing Around Outer Frame

20. The whole of the space between the outer frame and the construction around its perimeter shall be packed with cement or composition mortar.

SPECIFICATION No. 2

HOLLOW GLASS-BLOCK WINDOW PANELS

By-law 21.4

Scope

1. This specification relates to the construction and installation of window panels of hollow glass blocks in window openings required by Part 22 to be protected by one-hour fire windows.

Dimensions

2. An opening in which a glass-block window panel referred to in this specification is to be installed shall not exceed—

(a) 5.2 m^2 in area;
(b) 2415 mm in height; and
(c) 2375 mm in width.

Form of Window Panels

3. Each window panel shall—

(a) be constructed of glass blocks, jointing mortar, and joint reinforcement; and
(b) have an expansion joint, across its top and down its sides, in recesses in the wall at these positions.

Glass Blocks

4. The hollow glass blocks shall—

(a) not support any load additional to their own weight;
(b) not exceed 197 mm in height or width;
(c) be not less than 98 mm thick;
(d) have face shells of which the average thickness is not less than 6.3 mm;
(e) have a sanded finish, to provide a key for mortar, on each of the sides and top and bottom faces; and
(f) be manufactured by casting two half-blocks and fusing these together to form a unit—
  (i) seamless at the back and front; and
  (ii) partially evacuated of air.

Jointing Mortar

5. The jointing mortar shall be a mortar obtained by mixing portland cement, hydrated lime, and well graded clean sand in the proportions of—

(a) 1 m^3 of cement of mass not less than 1505 kg;
(b) 1 m^3 of hydrated lime of mass not less than 560 kg; and
(c) 4 m^3 of sand,

no part of the mixture containing any ingredient detrimental to the strength or setting of the whole.

Joint Reinforcement

6. The joint reinforcement shall be strips of galvanized steel-wire mesh—

(a) 63 mm wide; and
(b) of wires not thinner than 2 mm and not more than 13 mm apart, both parallel and perpendicular to the length of the strip.

Expansion-joint Infilling

7. All expansion-joint infilling shall be—

(a) a non-hardening material incapable of resisting sustained loading; and
(b) 25 mm thick when ready to be placed in position.

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Glazing Compound for Expansion Joints

8. All glazing compound for expansion joints shall be a non-setting mastic that does not harden except at a surface exposed to the air.

Recesses in Wall

9. The jambs and the lintel of the opening for the window panel shall be recessed—

(a) 57 mm deep; and

(b) to a width of 22 mm more than the thickness of the glass bricks,

to accept the sides and top of the panel, the expansion-joint filling, and the asbestos-rope edge-sealing concerned.

Coating of Sill

10. Before the first course of glass blocks is laid, the sill concerned shall be coated with a bituminous emulsion, or with a like material.

Construction of Window Panel

11. The construction of the window panel shall be in conformity with the following—

(a) bedding joints, including that of the first course, shall be of jointing mortar 6 mm thick;

(b) perpends shall be 6 mm wide and filled with jointing mortar;

(c) every third bedding joint shall incorporate a strip of joint reinforcement—

(i) extending the whole length of the joint; and

(ii) secured lengthwise at each end of the adjacent part of the wall, by either—

(A) being carried not less than 230 mm into that part, at the same or a slightly higher level; or

(B) being spliced by an overlap of 230 mm, in the window panel, to a strip of joint reinforcement so carried into that part;

(d) the top and the two edges of the panel shall be finished short of the surrounding construction by 25 mm, except for the joint reinforcement;

(e) the gaps so left between the panel and the parts of the wall in which it stands shall be—

(i) filled with expansion-joint infilling;

(ii) caulked at each edge with 12 mm asbestos-rope; and

(iii) sealed outside the rope with glazing compound.

SPECIFICATION No. 3

FIRE-RESISTANT ROLLER SHUTTERS

By-law 21.5

Scope

1. This specification relates to the construction and installation of metal roller shutters installed in openings in concrete or masonry walls where 2-hour fire shutters are permitted by Part 22 to be installed in place of required fire doors.

Dimensions

2. An opening in which a fire shutter referred to in this specification is to be installed shall not exceed 3600 mm in width or 13.9 m^2 in area.

Make-up

3. Each shutter shall comprise principally—

(a) a curtain of horizontal interlocking metal slats;

(b) two vertical guides, one at each side of the opening between which the curtain can be raised and lowered; and

(c) a horizontal barrel, above the opening, on which the curtain will be rolled while being raised to clear the opening.

Slats

4. The slats shall be in conformity with the following—

(a) they shall be of steel strip not less than 0.90 mm in thickness;

(b) each shall be rolled to form a curl of not less than 300° at each edge, so that the curls of successive slats will interlock to form hinges that extend the full width of the curtain;

(c) they shall be so formed that the curtain in the closed position will be capable of withstanding a pressure at right angles to itself of not less than—

(i) 575 Pa if the curtain is to be used on an external wall; or

(ii) 383 Pa if it is to be used on an internal wall.

Ends of Slats

5. End pieces of steel or malleable iron shall be constructed and fitted to the slats in conformity with the following—

(a) they shall be at no part less than 3 mm thick, and shall be suitably formed to fit the contours of the slats and fill the vertical guides as completely as is consistent with movement of the curtain within the guides;

(b) one shall be fitted at each end of each slat, or at each end of each alternate slat, being riveted or welded in position;

(c) where rivets are used, they shall be iron or steel not less than 3.2 mm diameter, and not fewer than two shall be used to fix each end piece.

Bottom of Curtain

6. A bottom rail shall be constructed and fitted to the curtain in conformity with the following—

(a) the rail shall comprise—

(i) two mild steel angles, each not less than 38 mm × 38 mm × 3 mm in cross section; or

(ii) a mild steel T not less than 76 mm × 76 mm × 3 mm in cross section and mild steel backing strip not less than 63.5 mm × 3 mm in cross section; or

(iii) other like construction in mild steel that is at least as strong;

(b) the two parts of the rail shall be fixed to opposite sides of the bottom slat, being bolted, riveted, or spot-welded to position by bolts, rivets, or spot welds at not more than 300 mm pitch;

(c) where bolts or rivets are used they shall be of mild steel not less than M8;

(d) the rail shall extend between the guides, and be formed to make close contact, over its whole length with the threshold of the opening.

Lifting Handles

7. Four rigid lifting handles shall be fitted to the bottom rail, two on each side and centred not more than 760 mm apart.

Vertical Guides

8. Each vertical guide shall be in conformity with the following—

(a) it shall be of U cross-section, not less than 57 mm × 25 mm in overall size, in mild steel not less than 3 mm thick, one side of the U being intended to be held against the wall and the other to face away from the wall;

(b) it shall extend continuously from a level not less than 76 mm above the top of the opening to a level between 20 mm and 30 mm above the threshold of the opening, and shall have a flared lead-in at the top;

(c) it shall have fixing lugs—

(i) welded to it at not more than 685 mm pitch, the top lug being centred not more than 152 mm from the top of the guide; and

(ii) conforming with the details and dimensions of Figure 8.1;

(d) the fixing lugs shall be of mild steel not less than 40 mm wide x 6 mm thick, and they shall be L-shaped and—

(i) in holding the guide to position on the wall, one leg shall bear against the wall at positions not less than 40 mm clear of the U; and

(ii) the other leg shall extend across not less than three-quarters of that side of the guide that faces away from the wall;

(e) each fixing lug shall be drilled to take a fixing bolt not less than 9.5 mm in diameter, not more than 3 mm clear of the base of the U, and centred on the centre-line of the lug.

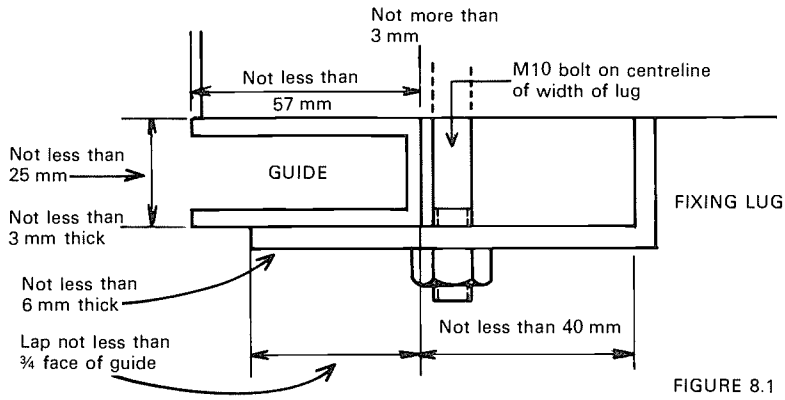

FIGURE 8.1

Barrel

9. The barrel shall comprise a mild steel tube in which are mounted two mild steel axles, one at each end of the tube, the sizes of the tube and axles being not less than shown in Table 9 for the particular width of opening to be protected by the shutter, except that tubes of larger diameter that are thinner but at least as strong in longitudinal bending may be used.

TABLE 9

MINIMUM SIZES OF BARREL TUBES AND AXLES

Width of Wall Opening, Measured Between Jambs (mm)	Minimum Sizes of Tube		Minimum Diameter of Axle (mm)
	Outside Diameter (mm)	Thickness (mm)	
Not exceeding 2 590	101.6	4.8	28.5
Exceeding 2 590 but not 2 745	101.6	5.9	31.7
	114.3	3.6	
Exceeding 2 745 but not 2 895	114.3	4.5	31.7
Exceeding 2 895 but not 3 050	114.3	8.0	34.9
	127.0	4.0	
Exceeding 3 050 but not 3 200	127.0	6.3	34.9
	139.7	4.5	
Exceeding 3 200 but not 3 350	139.7	4.9	38.1
Exceeding 3 350 but not 3 505	139.7	8.0	38.1
	152.4	4.8	
Exceeding 3 505 but not 3 660	152.4	6.3	38.1
	165.1	4.5	

Mounting of Barrel

10. Each axle shall be set in two iron or steel bearings, one at the end of the barrel tube and the other not less than 610 mm from that end, and be concentric with the tube.

Brackets For The Barrel

11. The barrel shall be supported on brackets that are in conformity with the following—

(a) the brackets shall be of steel or cast or malleable iron, forming bearings of an enclosed type for the axles;

(b) they shall project beyond the curtain when this is fully rolled onto the barrel, so as to protect the edges of the curtain and the operating mechanism from possible damage by impact or like cause.

Connection of Curtain to Barrel

12. The curtain shall be connected to the barrel by either Method A or Method B that follows—

Method A

(i) A series of rings or collars of ferrous metal, gun metal, or phosphor bronze shall be screwed or bolted to the barrel at positions not more than 1 065 mm apart, centre-to-centre, and, as relevant, not more than 405 mm from the edges of the curtain.

(ii) A mild steel bar not less than 25 mm x 6 mm in cross section shall be attached to each of the rings or collars by screws or bolts not less than M8.

(iii) The top slat of the curtain shall be attached to the bar by screws or bolts not less than M8 and at not more than 300 mm pitch.

Method B

(i) A series of steel-strip chains shall be screwed to the barrel at positions not more than 300 mm apart, centre-to-centre, and, as relevant, not more than 100 mm from the edges of the curtain, using screws not less than M8.

(ii) The chains shall each have a minimum cross-sectional area at any part of 64.5 mm^2, and have steel connecting pins not less than 4.7 mm in diameter between their links.

(iii) They shall each be attached to the top slat of the curtain by not fewer than two black-iron or tinned rivets not less than 4.7 mm in diameter.

Operating Mechanism

13. The barrel shall be fitted with an operating mechanism to raise and lower the curtain as required in normal service.

Automatic Operation of Operating Mechanism

14. The operating mechanism shall incorporate a heat-actuated device that—

(a) will operate automatically at a temperature of not more than 88°C when the door is in any position; and

(b) in so operating will cause the curtain to descend to the threshold of the opening.

Height of Barrel

15. The height of the centre of the barrel above the head of the opening shall be not less than 254 mm.

Length of Curtain

16. The length of the curtain shall be such that, when the shutter has descended to the threshold, the curtain is in contact with the barrel not less than half-way and not more than three-quarters way round the barrel, measured to the centre, of the top slat.

Width of Curtain

17. The curtain shall overlap the jamb at each side of the opening by not less than 63 mm.

Threshold

18. The threshold shall be of concrete or other non-combustible material for a distance of not less than 155 mm on each side of the line between the centres of the bottoms of the vertical guides.

Mounting of Barrel Brackets

19. The brackets to support the barrel shall be fixed to the wall by not fewer than two mild steel bolts, not less than M12, that—

(a) pass through the wall and each have a mild steel washer, not smaller than 65 mm square x 5 mm thick, providing bearing beneath its head; or

(b) are embedded not less than 155 mm into the wall—

(i) by being cast therein; or

(ii) by being set in parallel-sided holes neatly cut therein and rammed hard with stiff 2 : 1 portland cement mortar.

Mounting of Vertical Guides

20. The vertical guides shall be mounted on the wall in conformity with the following—

(a) they shall be so located that the curtain and its end pieces enter the guides, at every part of the height of the guides, to within not more than 6 mm from the bottoms of the grooves, measured simultaneously at both guides;

(b) the fixing lugs of the guides shall each be fixed to the wall by a mild steel bolt—

(i) not less than M10; and

(ii) embedded not less than 63 mm into the wall, being set in a parallel-sided hole neatly cut therein and rammed hard with stiff 2 : 1 portland cement mortar.

SPECIFICATION No. 4

FIRE MAINS, HYDRANTS, HOSE REELS AND ASSOCIATED WATER SUPPLY

By-Laws 27.2, 27.3, 27.4

Fire Mains

1. A fire main where required shall be designed so that—

(a) the pressure shall not vary from the following criteria—

(i) 275 kPa minimum running pressure at every hydrant;

(ii) 650 kPa maximum running pressure at every hydrant;

(iii) 1 MPa maximum static pressure, at every hydrant;

(iv) 200 kPa minimum running pressure at the nozzle end of every hose reel when fully extended;

(b) subject to paragraph (c) the minimum flow rate shall be not less than 4 l/s simultaneously at every hydrant; and

(c) where the topmost storey of a building is more than 21 m above the floor of the lowest storey providing egress to a street or open space the minimum flow rate shall be the lesser of—

(i) a simultaneous flow rate of 4 l/s at every hydrant; or

(ii) (A) a flow rate calculated according to the number of hydrants per storey so as to provide 23 l/s for the first hydrant per storey, 15 l/s for the second hydrant, 10 l/s for each of the third to fifth hydrants, 6 l/s for each of the sixth to ninth hydrants and nil for any hydrant in excess of nine; or

(B) where the building is fitted with an approved sprinkler system, or other approved inbuilt protection system, throughout all floors: a flow rate calculated according to the number of hydrants per storey so as to provide 23 l/s for the first hydrant per storey, 10 l/s for the second hydrant, 5 l/s for each of the third to fifth hydrants and nil for any hydrant in excess of five.

2. (1) The minimum diameter of a fire main on which only hose reels are installed shall not be less than—

(a) 25 mm, where one or two hose reels are connected;

(b) 38 mm, where three or four hose reels are connected;

(c) 50 mm, where five or six hose reels are connected.

(2) The minimum diameter of a fire main on which a hydrant is installed shall not be less than—

(a) 100 mm, where one fire hydrant is connected; or

(b) 150 mm, where—

(i) two fire hydrants per storey are connected and the floor of the topmost storey of the building is more than 21 m above the floor of the lowest storey providing egress to a street or open space; or

(ii) the topmost storey of the building is more than 60 m above the floor of the lowest storey providing egress to a street or open space.

3. A 6 mm gauge test cock with a lever handle shall be provided on the fire main adjacent to the highest or furthermost hydrant.

4. When the maximum permissible static pressure would be exceeded, approved pressure reducing devices shall be installed.

5. (1) Where the floor of the topmost storey of a building is more than 21 m above the floor of the lowest storey providing egress to a street or open space—

(a) if single rising or dropping mains are provided, the main shall be fitted with control valves at intermediate levels of approximately 5 storeys;

(b) if more than one rising or dropping main is provided, the main shall be interconnected and valved off, to enable sections of any main to be fully isolated in the event of damage being sustained during a fire.

(2) The valves referred to in subclause (1) of this clause shall be—

(a) wheel operated gate valves which open by counter clockwise rotation;

(b) locked in the fully open position at all times other than when required to be brought into operation during a fire or during repairs or maintenance;

(c) located within fire equipment cabinets.

6. Where the height of any fire service exceeds 75 m the system shall be segregated into separate zones and a relay booster fire pump installed on the fire main between zones to enable required flows and pressures to be obtained at upper levels when the fire service is charged by the fire brigade pumps. No zone shall exceed 75 m in height. Where basement levels are supplied through a separate fire main connected direct to the street main, the lowest zone may be commenced at the level of the fire brigade booster connection.

7. (1) Where any pump is installed between a fire brigade booster connection and a hydrant, provision shall be made for the water supply from the fire brigade booster connection to by-pass the fire pump.

(2) Where a relay booster fire pump is interposed between zones, provision shall be made to enable the fire brigade to utilize a portable fire pump.

8. (1) Where minimum permissible running pressures can not be achieved by the normal water supply, a permanently primed fire pump shall be connected to the fire main. The pump shall provide the flow rates and pressures required at the hydrants and hose reels.

(2) Where a header tank serves only hose reels, a permanently primed hose reel fire pump having a rate of capacity of not less than 3 l/s and capable of supplying a minimum flow pressure at the uppermost hose reel connection of 275 kPa shall be provided.

9. (1) The hose reel fire pump shall operate automatically upon flow through one hose reel.

(2) All fire main pumps serving hydrants shall be started by means of electric remote control start buttons. Start buttons shall be located at the emergency control centre, the fire brigade booster connection and at every fire equipment cabinet, and shall be mounted behind a glass panel and clearly indicated "FIRE PUMP START".

(3) Relay booster fire pumps shall be provided with stop/start buttons located within the fire brigade booster connection cabinet and shall be clearly indicated "RELAY BOOSTER PUMP START" and "RELAY BOOSTER PUMP STOP".

10. The power supply to all electrically driven fire pumps shall be provided in accordance with by-law 55.1.

Fire Hydrants and Hose Reels

11. Hydrants and hose reels installed in a recess or cabinet shall be located in a conspicuous and readily accessible position and their location shall be clearly indicated.

If located within a cabinet the doors shall—

(a) be capable of being opened without the use of a key; and

(b) have the words "FIRE EQUIPMENT" in red letters not less than 25mm high on a white background painted or affixed to it.

12. Every required hydrant shall be a copper alloy wheel operated valve designed to open by counter clockwise rotation, and fitted with 63.5 mm instantaneous female couplings conforming with British Standard 336 being item 47 of the First Schedule.

13. Hydrants shall be installed—

(a) at a height of approximately 750 mm above floor level;

(b) in a position where they have sufficient all round clearance to be easily accessible; and

(c) with the valve outlet facing outwards in a horizontal plane or at not more than 35° below horizontal, preferably with the single twist-release lug uppermost.

14. A fire hose reel shall be installed at each hydrant point within a building.

15. (1) A hose reel sited in a recess or cabinet shall be so installed, that when required for use the hose reel will swing freely out of the recess or cabinet when the hose is unwound. The hose reel may be either—

(a) the swing type;

(b) a fixed type carried on a swing cradle;

(c) a door mounted in accordance with the details set out in the Australian Standard 1221 being item 13 of the First Schedule.

(2) The stop valve and nozzle assembly shall be mounted in an accessible position at a height of between 900 mm and 1500 mm from the floor level.

Water Service

16. Where the normal water service is not available in sufficient supply, or pressure to provide the flow rate required in the fire main, the council may on the recommendation of the Fire Brigades Board require the provision of a water storage tank.

17. Where the topmost floor of a building is more than 21 m above the floor of the lowest storey providing egress to a street or open space—

(a) the water storage tank shall be of a sufficient size to provide—

(i) the amount of water necessary to supply water for 20 minutes at a simultaneous flow rate of 4 l/s at every hydrant;

(ii) the amount of water necessary to supply water for 20 minutes at a flow rate calculated in the manner set out in clause 1 (c) (ii) (A) of this Specification; or

(iii) the amount of water necessary to supply 2.5 l to every square metre of the floor area served by the tank,

whichever is the least amount;

(b) the capacity of a storage tank may, depending on the water supply rate, be decreased to not less than 50 per cent of the size required by paragraph (a) of this clause. The decrease in capacity shall not exceed the quantity of water replenished at the normal supply rate within a period of 20 minutes;

(c) where practicable the water storage tank shall be sited at roof level;

(d) where the main water storage tank is sited other than at roof level a fire hose reel header tank shall be installed at roof level to supply fire hose reels. The minimum quantity of water required to be available solely for hose reels shall be either 450 l plus 45 l for every hose reel connected to the tank, or a 20 minute supply at 1.5 l/s, whichever is the lesser.

18. (1) A fire brigade booster connection shall be provided to the fire main—

(a) where the topmost floor of a building is more than 21 m above the floor of the lowest floor providing egress to a street or open space; or

(b) when recommended by the Fire Brigades Board after assessing the normal water supply and the location of street hydrants.

(2) A fire brigade booster connection shall be installed on the fire main in a location approved by the Chief Fire Officer. The inlet shall be sited in a weather-proof cabinet located on the external wall of the building approximately 750 mm above ground level. The fire brigade booster connection should also be sited so that fire brigade pump appliances can be brought within sight of the booster connections, no more than 8 m distant.

(3) The installation design of the fire brigade booster connection must permit the fire main to be pressurized without the need to operate control valves. Any control valves fitted to the fire brigade booster connection, except drain valves, shall be wheel operated full flow gate valves, which open by counter clockwise rotation and the valves shall be locked in the open position except when repair or maintenance work is being effected. The unit shall be so designed and located within the cabinet to permit easy removal of the blank caps and ready operation of hydrant valves. A pressure gauge 0-2 MPa shall be fitted to the fire brigade booster connection.

(4) A 101.6 mm diameter fire main shall be fitted with two inlets and a 152.4 mm diameter fire main with four inlets, each inlet consisting of a 63.5 mm instantaneous male coupling conforming with British Standard 336 being item 47 of the First Schedule. Each inlet shall be protected by a blank cap fitted with a drain cock to permit the release of any pressure which may build up between the non-return valve and the blank cap due to leakage of water past the non-return valve. The blank caps shall be provided with a single twist release lug, not the twin lug, pull release type.

(5) A pillar fire hydrant, having a corresponding number of delivery outlets to connector inlets required by the fire brigade booster connections, shall be provided on a supply main terminating within the fire brigade booster connection cabinet. The main size shall be 101.6 mm diameter for two delivery outlets and 152.5 mm diameter for 4 delivery outlets. Should a street fire hydrant of suitable dimensions be located on the same side of the street and within 15 m of the fire brigade booster connection, the provision of a pillar fire hydrant within the fire brigade booster connection cabinet will not be required.

(6) The cabinet shall be of sufficient size to house all necessary equipment, including a telephone handset, and permit ease of operation of all fittings. The door shall—

(a) be fitted with a "budget" type lock, or similar type, openable with an identical key;

(b) have the words "FIRE BRIGADE BOOSTER CONNECTION" in 50 mm high red letters on a white background, painted or affixed to it. The lettering should be in a self-luminous paint or other self-luminous or reflective material.

19. To prevent back flow when fire mains are charged by fire brigade pumps, non-return valves shall be fixed to all supply mains from water storage tanks, town mains, or any other source.

SPECIFICATION NO. 7 By-law 55.7

AIR HANDLING SYSTEMS

Scope

This Specification relates to the construction and installation of air handling (mechanical ventilation or air-conditioning) systems required by these by-laws and is divided into three Divisions as follows—

DIVISION 1—AIR QUANTITIES
DIVISION 2—FIRE PRECAUTIONS IN BUILDINGS WITH AIR HANDLING SYSTEMS
DIVISION 3—FIRE DAMPERS

DIVISION 1—AIR QUANTITIES

Ventilation

Sanitary Compartments, Bathrooms, etc.

1. (1) Where natural ventilation according to Part 50 is not provided, air shall be extracted from bathrooms, shower rooms, water closets and laundries at the rate of not less than 10 l/s per square metre of floor area.

Spaces Having Harmful Products

(2) Where, in the opinion of the council, harmful products such as dust, noxious fumes, vapours, odours, gases, and the like are generated in any room or other space within a building, air shall be extracted—

(a) at the rate of not less than 10 l/s per square metre of floor area, or such greater rate as the council considers necessary in the particular case; and

(b) from a position as near to the source of contamination as possible.

Recirculation Not Allowed and Extract Requirements

2. In the rooms and other spaces referred to in clause 1 of this Specification—

(a) there shall not be recirculation of any extracted air; and

(b) where there is likely to be a concentration of any harmful products near floor level at least one-half of the air shall be extracted through openings which have their lowest part not more than 300 mm above the floor.

Fresh Air Quantities

3. (1) In rooms and other spaces except those referred to in clause 1 of this Specification, fresh air shall be supplied at the rate of not less than 5 l/s per person.

(2) For the purposes of subclause (1) of this clause the number of persons deemed to occupy a room or other space shall be calculated according to Part 24 (By-law 24.28).

Relief Openings

4. Where a mechanical ventilation system is designed to—

(a) supply air only; or

(b) exhaust air only,

relief venting shall be provided and air shall not pass through the relief openings at a velocity exceeding 4 m/s.

DIVISION 2—FIRE PRECAUTIONS IN BUILDINGS WITH AIR-HANDLING SYSTEMS

Fire Dampers

Required in Certain Ductwork

5. (1) Where the ductwork of an air-handling system passes through a wall or floor that is required to have a fire-resistance rating, fire dampers complying with Division 3 of this Specification shall be mounted within the ductwork at every point at which it passes through such wall or floor except as otherwise permitted by subclauses (3), (4) or (5) of this clause.

Required Behind Certain Grilles

(2) Where a grille forming part of an air-handling system is installed within a wall that is required to have a fire-resistance rating, a fire damper complying with Division 3 of this Specification shall be mounted immediately behind that grille except as otherwise permitted by subclause (5) of this clause.

Horizontal Supply Branch Ducts

(3) It shall not be necessary to install a fire damper in accordance with subclause (1) of this clause in the case of a horizontal supply branch duct passing through a wall if—

(a) the opening in the wall to accommodate the ductwork—

(i) has a cross-sectional area of not more than 20×10^3 mm^2; and

(ii) is not at any part more than 1200 mm above floor level or less than 6 m from any other unprotected ductwork opening in the room;

(b) the duct at the point at which it passes through the wall, and any continuation ducting within 1200 mm of that part is of non-combustible material with a fusing temperature of not less than 980°C; and

(c) the space between the duct and the perimeter of the opening in the wall is packed solid with a non-combustible material with a fusing temperature of not less than 980°C; and

(d) the air which passes through the duct is discharged at heights of not more than 1200 mm above floor level.

Return-air Shafts

(4) It shall not be necessary to install a fire damper in accordance with subclause (1) of this clause where the duct passes through a wall and discharges air into a fire-isolated return-air shaft where the following conditions are observed—

(a) the opening in the wall of the return-air shaft to accommodate the duct shall have a cross-sectional area of not more than 52×10^3 mm^2;

(b) the section of duct discharging into the return-air shaft shall be of non-combustible material with a fusing temperature of not less than 980°C;

(c) except where the system is designed to draw return air downwards in the return-air shaft, the section of duct discharging into the shaft shall have a vertical upstand within the return-air shaft of not less than 510 mm measured from the upper side of the horizontal duct to the point of discharge;

(d) the space between the duct and the perimeter of the opening in the wall of the return-air shaft shall be packed solid with non-combustible material with a fusing temperature of not less than 980°C.

Exhaust Ducts Serving Sanitary Compartments, Bathrooms

(5) It shall not be necessary to install a fire damper in accordance with subclause (1) or subclause (2) of this clause in the case of a grille or horizontal exhaust branch duct serving only as a means of exhausting air from a bathroom, shower room, water closet, or laundry into a fire-isolated shaft if—

(a) the shaft is designed to operate at negative pressure;

(b) the grille or section of duct exhausting into the shaft—

(i) is of non-combustible material with a fusing temperature of not less than 980°C; and

(ii) has attached to it a vertical upstand within the shaft of not less than 510 mm measured from the upper side of the grille or duct to the point of discharge; and

(c) the space between the grille or duct and the perimeter of the opening in the wall of the shaft is packed solid with non-combustible material with a fusing temperature of not less than 980°C.

Vertical Air Ducts

6. Vertical air ducts that perforate two or more consecutive floors—

(a) in a building of Type 1 construction shall be contained in a shaft having a fire-resistance rating of not less than—

(i) 1½ hours in Class II, III or V buildings; or

(ii) 2 hours in Class VI, VII or VIII buildings; and

(b) in a building of Type 2 construction shall be contained in a shaft having a fire-resistance rating of not less than 1 hour.

Fire-rated Floor-ceiling or Roof-ceiling Construction

Ducting

7. (1) The space above a suspended ceiling which forms part of a fire-rated floor-ceiling or roof-ceiling construction shall not contain ducting unless ducting was incorporated in a prototype that qualified for the required fire-resistance rating, in which case the ducting shall be identical with that incorporated in the tested prototype.

Openings

(2) Openings in the ceiling, including openings to enable the ceilings to be used as a plenum, shall be protected by fire dampers identical with those used in the tested prototype and such openings in the ceiling shall be so arranged that—

(a) no opening is greater in area than that corresponding in the prototype test panel;

(b) the aggregate area of the openings per unit ceiling area does not exceed that of the prototype test panel; and

(c) the proximity of any opening to any structural member is not less than that in the prototype test panel.

Fire-isolated Stairs and Passageways

8. A fire-isolated stairway, fire-isolated passageway, or fire-isolated ramp shall not be used as a plenum to introduce air into or extract air from other areas except when air-handling systems are brought into operation to control the flow of smoke in a fire situation.

Duct Heaters

9. Duct heaters shall be designed and installed in accordance with the following requirements—

(a) all elements shall be sheathed;

(b) the temperature of the element shall be so controlled that rise in temperature above the designed maximum working temperature shall cause the heating element to be de-energised;

(c) the duct shall be insulated for a distance of not less than 255 mm on both sides of the heater with non-combustible material of thermal conductance not greater than 30 W/m^2 K at 93.3°C.

Air Filters

10. Air filters shall be designed and installed in accordance with the following requirements—

(a) liquid-adhesive coatings shall have a flash point not less than 163°C· as measured in a Cleveland Cup Tester;

(b) electrostatic air filters which are not preceded by or followed by fabric or liquid-adhesive type filters shall be provided with lint screens readily accessible or removable for cleaning and not coarser than a sieve of aperture size 1.00 mm according to Australian Standard 1152-1973, being item 54 of the First Schedule;

(c) where the building has a system of smoke detectors installed, smoke detectors of a type suitable for monitoring the presence of smoke in air streams shall be installed in the air-handling system on the discharge side of the filters;

(d) where the building has a sprinkler system installed, air filters, other than electrostatic filters, shall be sprinkler protected.

Duct Materials

11. (a) Ducts for pressurisation of fire-isolated stairways, fire-isolated ramps and fire-isolated passageways shall be of non-combustible construction having a fire-resistance rating of not less than 1 hour.

(b) A duct that passes through a wall or floor required to have a fire-resistance rating shall be constructed of rigid non-combustible material extending on both sides of the wall or floor for a distance of not less than three times the diagonal or diameter of the duct, as the case requires, the distance being measured from the surface of the wall or floor concerned.

Duct Linings

12. Internal duct linings shall comply with one of the following alternative requirements—

(a) the linings shall be fully encased in sandwich panel unperforated-metal sheeting continuous around all edges, with seams which form effective seals and where gaskets are used the joints shall be completely covered on both faces by strips of metal to seal the joint completely;

(b) the linings, including adhesives and surfacing materials, shall have a Spread-of-Flame Index not greater than 0 and a Smoke Developed Index not greater than 5, both as determined in the Standard Fire Test.

Return-air Systems

13. Return-air systems shall be so designed and constructed that—

(a) their integrity as a continuously enclosed system of air passages is preserved, from all points of entry to the point of discharge; and

(b) the aerodynamic design ensures that, under all circumstances of operation, the air pressure at all points of entry is 37 Pa greater than at the point of discharge.

DIVISION 3—FIRE DAMPERS

Fire Damper—Interpretation

14. A fire damper means a device manufactured completely of non-combustible materials (except for paints and similar finishes) and which consists of one or more blades arranged to pivot or slide when released by a sensing device so as to restrict the passage of fire and products of combustion.

Fire Dampers

Construction

15. (1) A fire damper required by this Specification to be mounted within the ductwork of an air-handling system shall—

(a) be located centrally within the thickness of the wall or floor at the point through which the ductwork passes and where necessary—

(i) the wall or floor adjacent to the damper shall be increased in thickness to accommodate the damper; or

(ii) the projection of the damper outside the plane of the wall or floor shall be encased in fire-protective material equal to the fire-resistance rating of the wall or floor;

(b) be attached to ductwork in such a manner that any deformation or collapse of the ductwork under fire conditions will not dislodge the damper or affect its operation or performance; and

(c) have a fire-resistance rating of not less than that required for the wall or floor through which the relevant section of the ductwork passes.

Use of Fire Doors as Dampers

(2) Nothing in this Division shall be deemed to prohibit the use of a fire door as a fire damper where the circumstances so require.

Damper to be a Replica of Prototype

16. Every damper shall be a replica of the tested prototype and—

(a) shall not have a mounting area greater than that of the prototype;

(b) shall not have blades that are—

(i) longer than those of the prototype; or

(ii) greater than 1.125 or less than 0.9 times the width of the prototype; and

(c) shall not have any of its components of a lesser thickness than those of the prototype.

Hinge Mechanism

17. Hinge mechanisms and blade assemblies shall be so designed and manufactured that operation of the fire damper will not be affected by corrosion or the accumulation of dust.

Access to Release Mechanism

18. Where a release mechanism is incorporated in the design of a fire damper—

(a) convenient access shall be provided to facilitate removal of the release mechanism for inspection and replacement; and

(b) no device shall be incorporated which will prevent the damper from closing while the release mechanism is removed.

Locking Device for Gravity-operated Dampers

19. A positive action locking device shall be provided for each gravity-operated damper to retain automatically the blades in the closed position when the damper is operated, and a convenient means of access shall be provided to enable hand resetting of the locking device.

Motorised Dampers

20. A motorised damper—

(a) shall operate on the principle that, in the event of loss of motive power, the damper will close;

(b) shall have a drive that is either direct or by means of a rigid linkage to the damper blade or shaft; and

(c) shall have its drive mechanism mounted either completely inside or completely outside the damper.

Volume Control Mechanism

21. Where a damper is used for the purposes of both air volume control and fire-protection the volume control mechanism—

(a) shall not restrict the automatic operation of the damper as a fire damper; and

(b) shall be mounted either completely inside or completely outside the damper.

Testing

Type of Test According to Material

22. (1) Each fire damper submitted for test shall comply with the following tests in the order stated—

(a) when steel parts used in the pivot assembly are manufactured of stainless steel having a corrosion resistance of not less than the 300 series of stainless steels:
  (i) dust test (subclause (3));
  (ii) air-leakage test (subclause (4)); and
  (iii) fire-resistance test (subclause (5));

(b) when steel parts used in the pivot assembly are not manufactured of stainless steel having a corrosion resistance of not less than the 300 series of stainless steels:
  (i) corrosion test (subclause (2));
  (ii) dust test (subclause (3));
  (iii) air-leakage test (subclause (4)); and
  (iv) fire-resistance test (subclause (5)).

Corrosion Test

(2) The corrosion test shall be carried out as follows—

(a) the fire damper shall be completely degreased by treatment with an organic solvent prior to the test;

(b) a salt solution consisting of 20 per cent by weight of sodium chloride and 80 per cent of water and having a pH between 6.5 and 7.2 and specific gravity at 35°C between 1.126 and 1.157 shall be sprayed in the form of a fine mist at 35°C to come into contact with all of the interior surfaces of the fire damper for three minutes at three hourly intervals three times per day for three days;

(c) the fire damper shall then be allowed to dry for not less than 24 hours at ambient air temperature;

(d) the fire damper shall be operated after the test and shall close in the manner in which it is designed to close in normal use;

(e) the fire damper shall then be subjected to and shall comply with the dust test described in subclause (3) of this clause.

Dust Test

(3) The dust test shall be carried out as follows—

(a) dust of particle size not greater than 50 μm shall be poured over the pivot assembly with the damper blades in the open position until no more dust can be retained on the pivot assembly;

(b) the fire damper shall then be closed;

(c) the procedure described in paragraphs (a) and (b) shall be repeated fifty times;

(d) the fire damper shall be operated after the test and shall close in the manner in which it is designed to close in normal use.

Air-leakage Test

(4) The air-leakage test shall be carried out as follows—

(a) the damper shall be closed and a differential pressure shall be applied across the damper;

(b) the rate of flow through the damper, measured in m^3/min—
  (i) shall be measured by a method conforming with BS 1042, being item 51 of the First Schedule;
  (ii) shall not be greater than the face area of the damper in square metres multiplied by the following factors:

16 at 1.245 kPa
15 at 0.996 kPa
13 at 0.747 kPa
10 at 0.498 kPa
6 at 0.249 kPa

Fire-resistance Test

(5) The fire-resistance test shall be carried out in accordance with Australian Standard 1530, being item 1 of the First Schedule, Part 4, Fire Resistance Test of Structures.

Marking

23. The following information shall be marked in a permanent and legible manner on a durable and corrosion-resistant plate permanently attached to the fire damper in a location where the information can be viewed after the fire damper has been installed—

(i) manufacturer's identification;
(ii) fire-resistance rating in hours;
(iii) maximum temperature for operation of the release mechanism;
(iv) critical instructions regarding installation, such as direction of air flow, top of damper, maximum air velocity, whether lintel beam is required in installation.

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