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No. 67.] PERTH: MONDAY, 18th AUGUST. [1958

AT a meeting of the Executive Council held in the Executive Council Chamber, at Perth, on the 30th day of July, 1958, the following Order in Council was authorised to be issued:—

Municipal Corporations Act, 1906-1956.

Uniform General Regulations.

ORDER IN COUNCIL.

L.G. 158/58 "A."

WHEREAS it is enacted by section 338A of the Municipal Corporations Act, 1906-1956, that the Governor may by Order in Council prescribe uniform general regulations with respect to all or any of the matters in relation to which a Council may make by-laws under section 338 of the said Act: Now, therefore, His Excellency the Lieutenant-Governor and Administrator, acting with the advice and consent of the Executive Council, and in exercise of the powers conferred by the said Act, hereby makes the uniform general regulations set out in the Schedule hereto and prescribes that such regulations shall have the force of law on and after the 15th day of September, 1958, in each and every municipal district for the time being constituted under the said Act.

R. H. DOIG,
Clerk of the Council.

Schedule.

UNIFORM GENERAL BUILDING REGULATIONS.

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UNIFORM BUILDING REGULATIONS.

SECTION I.

1. In these uniform building regulations unless inconsistent with the context or subject matter, or some other meaning is clearly intended:—

"Act." The word "Act" shall mean the Municipal Corporations Act, 1906, and the Health Act, 1911, and any amendments of any of the said Acts.

The several words mentioned in the sixth section of the Municipal Corporations Act, and the third section of the Health Act shall have the same meaning as is attached to such words by the said sections and Acts.

"Adjoining occupier" means the occupier, or one of the occupiers, of land, buildings, storeys, or rooms adjoining those of the building owner.

"Adjoining owner" means the owner or one of the owners, of land, buildings, storeys, or rooms adjoining those of the building owner.

"Advertising device" shall mean and include sign, signboard, awning, blind, illuminated sign, hoarding, poster, or other advertisement.

"Alteration" includes alteration, addition and extension and "alter" has a corresponding interpretation.

"Approved" means approved by the surveyor.

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

"Area" applied to a building means the superficies of a horizontal section thereof made at the point of its greatest surface inclusive of the external walls and of such portions of the party walls as belong to the building.

"Attic" means any floor area built wholly or partly in the roof of a building but the attic shall not be regarded as a storey if it is wholly contained within a roof pitched at the level of the ceiling of the storey next below the attic.

"Base structure" means the structure below the level of the lowest floor which transmits the loads of the building to the footings.

"Builder" means the person or persons employed to erect or construct any building or structure, or to demolish alter or execute any work on a building or structure already erected, and shall include the owner or occupier of the land upon which any such building or structure is or is intended to be erected or constructed, or other persons 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.

"Building" means any structure or appurtenance thereto whether temporary or permanent and includes tent, fence, wall, water supply, and drainage.

"Business district" means an area or district set aside for business or commercial purposes under a zoning scheme of a local authority.

"Council" means the council of the municipality in whose municipal district the building is constructed or proposed to be constructed.

"Cubical extent" applied to the measurements of a building means the space contained within the external surfaces of its walls and the upper surface of the floor of its lowest storey and the topmost ceiling or the level of the top of the roof plate when there is no ceiling.

"Dangerous business" shall mean and include the manufacture of any substance liable to sudden explosion, inflammation or ignition.

"Dead load" of a building means the actual weight of all permanent structural and finishing work, including partition walls contained within the building.

"Duplex house" means a building comprising two dwellings each being complete and self-contained.

"**Dwelling**" means any building or portion of a building which is used or is intended, adapted, or designed for use for living purposes and is a self-contained unit.

"**Fire doors**," "**fire windows**" **and** "**fire shutters**" shall for the purpose of these regulations means fire doors, fire windows and fire shutters as defined in Section 13.

"**Fire resistance rating**" means the minimum period of time during which an element of a structure may be expected to function satisfactorily while subjected to the standard fire test as provided for in regulation 173.

"**Flat**" means that portion of a building used or intended, adapted or designed for use as a separate tenement in a building containing two or more such tenements.

"**Floor area**" means the aggregate superficial area of so many horizontal sections of a building as there are floors or storeys in the said building. The horizontal section of each floor shall be made at the point of its greatest surface dimensions, inclusive of external walls and of such portions of the party walls as belong to the building and also of all verandah and balcony floors, covered ways and light courts.

"**Footing**" means the construction by which the weight of the building or structure is transferred to the foundations.

"**Foundations**" means the ground upon which the footing of a building or structure is constructed.

"**Frontage**" means the boundary line between a site and the street upon which such site abuts, and when the site abuts on more than one street, then the boundary line between the site and the street to which any building that may be erected thereon fronts. (For measurement of width of frontage see regulation (38).)

"**Habitable room.**" The term "habitable room" shall be held to include every room in which any person sleeps or eats or carries on his usual domestic business or social vocations or avocations. Laundries, bathrooms, water closet compartments, serving and storage pantries and closets, boiler rooms, cellars, corridors and similar spaces used neither frequently nor during extended periods, shall be deemed as not coming within the scope of this term.

"**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.
In the case of buildings of Classes I and II, the height shall be measured from the mean level of the ground immediately in front of the building. ;

(b) in relation to a building when defined in terms of number of storeys means the number of storeys above the permanent footpath level, or, where there is a basement, above the basement;

(c) in relation to storeys means the measurement from one floor to the floor above or in the case of the topmost storey, the measurement from floor to ceiling, provided that if there is no ceiling, the height shall be measured from the floor to the underside of the roof tie or, if there is no tie, to the level of half the vertical height of the rafters or other support of the roof;

(d) in relation to a room means the height measured from the floor to ceiling, or where there is no ceiling to the underside of the rafters measured at the lowest level of such rafter, or of the floor joists of the floor next above.

"**High hazard occupancy**" means any occupancy in which are goods or materials which are liable to burn with extreme rapidity or from which poisonous fumes or explosions are likely to arise or occur in the event of fire.

"Incombustible." Incombustible material is one which neither burns nor gives off inflammable vapours in sufficient quantities to ignite at a pilot flame when heated in the manner specified in British Standard Specification No. 476-1932.

"Inflammable liquid" means liquid petroleum, kerosene and any oil, liquid, spirit or any similar liquid which will flash or emit an inflammable vapour at or below a temperature of 150 degrees Fahrenheit, Abel Close Test.

"Length of wall" in relation to requirements for wall thickness means the distance of any wall between the nearer faces of cross walls, external walls, or party walls bonded into such walls and constructed in accordance with these regulations.

"Live load" means all load other than dead load and includes wind load.

"Local Authority" means a municipality and the council thereof or a local board of health.

"Masonry" means stone, brick, terra cotta block, solid or hollow concrete block or other similar building unit or a combination of same laid up unit by unit and set in mortar.

"Mezzanine floor" means an intermediate floor placed in any storey provided that the area of all mezzanine floors in any storey or room shall not exceed one-third of the total floor area in that storey or room.

"New building" includes—

(a) any building erected after the date of commencement of these regulations;

(b) any building which has been taken down entirely or for more than one-half of its cubical extent, and has been re-erected, or commenced to be re-erected, wholly or partially, whether on the same site or elsewhere, after the commencement of these regulations; and

(c) any space between walls and/or buildings which is roofed or commenced to be roofed, after the commencement of these regulations.

"Owner" includes any person in possession or receipt either of the whole or 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.

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

"Partition" means a temporary or easily removable structure made of panelwork, wood framing, covered with metal, wood or plaster sheets or other similar material used for the subdivision of spaces within a building.

"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 occupations or occupancies.

"Plot ratio" means the ratio of the gross total of floor areas to the area of the land within the title boundaries excluding lifts, toilets and amenities, stairs, external wall thicknesses, plant rooms and the gross area of any floor space in basements or ground floor areas used for the parking of wheeled vehicles including access to and from such space within the building.

"Pylon" means a sign supported on one or more piers or columns but not attached to a building.

"Qualified engineer" means a corporate member of the Institution of Engineers, Australia, or a corporate member of any other civil and/or structural institution recognised by the Institution of Engineers, Australia, or any other engineer who possesses equivalent academic and professional qualifications.

"Reinforced concrete" means the concrete containing reinforcement embedded in such a manner that the two materials act together in resisting forces and complying with the requirements of regulation 157.

"Repair" means the reconstruction or renewal of any part of an existing building for the purpose of its maintenance but does not cover any change of construction.

"Roadway" in relation to any street or way, means and includes the whole space open for traffic, whether carriage traffic and foot traffic, or carriage or foot traffic only.

"S.A.A. code or specification" means the specified code or specification issued by the Standards Association of Australia.

"Sprinkler system" means an automatic sprinkler installation conforming to the requirements of the Fire and Accident Underwriters' Association of Western Australia.

"Shop front" means such portion of the structure of a shop on the ground storey as abuts or faces a street or way, or arcade and shall be deemed to include the frame and glass doors and door frame, ingo and ingo floors, facing to piers or pilasters, fascia wall, between head of shop front frame and underneath of verandah or lintel over openings, and any signs or trade marks incorporated in the design of the shop front.

"Square" applied to the measurement of any area means one hundred square feet.

"Storey" means the space or distance or portion of a building included between the underside of a concrete or fire-resisting floor or the floor joists of any other floor and the underside of the concrete or fire-resisting floor or floor joists next above it, or the underside of the tie beam, or collar tie, or half the vertical height of the rafters above, as the case may be, but a gallery or mezzanine floor shall not be deemed to divide a wall or building into storeys.

"Ground storey" means that storey closest to the ground level in which the height of the ceiling above the level of the adjoining ground is greater than the distance from such level to the floor measured at the centre of the building frontage.

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

"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.

"Topmost storey" means the uppermost storey whether constructed partly in the roof or not.

"Street" means—

(a) any public street or public road;

(b) any private street or private road which is dedicated to the public or which is vested in or under the control of the Council;

(c) any street, road, lane, footway, square, court or alley—

(i) to or over which the public has the right of access or use, or

(ii) over which there has been uninterrupted use by the public for at least five years and over which the public are permitted to have access.

"Street alignment" means the line of demarcation between any street or way or part thereof and any land abutting thereon.

"Surveyor" means building surveyor as defined in the Municipal Corporations Act.

"Town Clerk" means the Town Clerk of the municipality in whose district the building is constructed or proposed to be constructed.

"**Verandah**" includes any screen, awning, portico, porch, shade covering or other erection upon or over or across any public footway or part thereof together with the supports other than the building to or against which it is attached.

"**Walls**"—

"**Bearing wall**" means a wall which supports any load in addition to its own weight.

"**Cross wall**" means an internal wall dividing party or external walls into distinct lengths.

"**External wall**" means an outer wall or vertical enclosure of a building not being a party wall.

"**Fire wall**" means a wall which subdivides a building to resist the spread of fire.

"**Non-bearing wall**" is a wall which supports no load other than its own weight.

"**Panel wall**" is a non-bearing wall in frame construction built between columns or piers and wholly supported at each storey.

"**Partition wall**" means an internal vertical structure used solely for the purpose of subdividing any storey of a building into sections and which supports no load other than its own weight.

"**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.

"**Retaining wall**" is any wall used to resist the lateral displacement of any material.

SECTION 2.

ADMINISTRATION.

2. **Fees.**—The scale of fees, more particularly specified in Section 33 of these regulations, shall be the scale of fees to be paid by the builder in respect of any orders, licenses, matters and things required or permitted by the Local Authority or by these regulations.

3. **Interdepartmental Co-operation.**—Every builder who shall intend to erect, construct, or alter any buildings shall at the earliest convenient time, give notice of such intention to other authorities (e.g., Town Planning Board, Licensing Board, Water Supply, Sewerage and Drainage Departments, Public Health, Power and Light Supply Authority, Scaffolding, Shop and Factories, etc.), who may have power over portions of such operations and when required by the surveyor secure the approval of such authorities to his proposal to build, alter or add to such buildings in so far as those authorities' powers extend, before the building license is issued by the surveyor.

4. **Powers of Surveyor—**

(a) **Power to Cause Regulations to be Observed.**—The surveyor upon receipt of any such notice of the form set down in Schedule I and also upon any work being observed by, or made known to him, which work is affected by the provisions of these regulations, but in respect of which no notice has been given, and also from time to time during the progress of any work affected by such provisions as often as may be necessary for securing the due observance of such provisions, may inspect any such building, erection, structure, or work and cause all such provisions to be duly observed.

(b) **Power to Enter and Inspect.**—The surveyor or other authorised officer of the Council at all reasonable times during the progress and during the thirty days subsequent to receipt of notification of the completion of any buildings, erection, structure, or work affected by any of the provisions of these regulations, or by any terms or conditions on which the observance of any such provisions may have been dispensed with, may enter and inspect such building, erection, structure or work.

(c) **General Power of Entry.**—The surveyor, for the purpose of ascertaining whether any building, structure or erection is in such a situation or possesses such characteristics as are required in order that it may comply with or be exempt from the operations of any of the provisions of these regulations, may at all reasonable times and after reasonable notice enter any premises, and he may do therein all such things as are reasonably necessary for that purpose.

5. Services of Notices.—Any notice that in pursuance of these regulations is to be given by the Local Authority the surveyor or other officer of the Local Authority—

(a) shall be deemed to be properly given if left on or affixed to the land, building, structure or premises to which such notice relates or at the place of residence or business of the person to whom such notice is to be given or if sent by registered letter directed to the address of residence or business of such person;

(b) shall be deemed to have been given or received when left as aforesaid or when it would have reached its destination in due course of post; and

(c) may be signed by the chief executive officer if it is given by the Local Authority or by the surveyor or other officer respectively.

6. Exemptions.—The following buildings and work shall be exempt from the provisions of these regulations:—

(a) All buildings which are exempted by Statute.

(b) Temporary offices and sheds used by builders, on or about the site of any building being erected, repaired, altered or reinstated, or used by contractors in carrying out works for any public body or corporation on or about the site of such work and used exclusively for the purpose of such building or work. Such exemptions shall, however, only continue during the time occupied in completing such building or work, and in any case shall not exceed a period of six months, except by special permission of the Local Authority.

(c) Any building the plans of which were approved by the surveyor prior to the date of these regulations coming into operation provided that such building is completed within twelve calendar months from the date on which the plans were passed by the surveyor, or such further time as may be allowed in writing by the surveyor.

(d) Minor repairs not involving—

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

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

7. Standards.—Wherever in these regulations British or Australian Standard Specifications are mentioned for use, the latest revision of such specifications shall in each case apply. Where a British Standard Specification is utilised, such standard specification shall apply until such time as an Australian Standard Specification be issued, when such Australian Standard shall be utilised.

8. Loading Notice Plate.—On completion of any building of Class VI, VII, or VIII Occupancy constructed pursuant to a permit granted under these regulations, and before the occupation of any such building or portion of a building, the owner shall affix and subsequently maintain in conspicuous places on the walls thereof, not less than 3 feet above the floor, permanently attached plates in the following form showing the safe live load for which the floor has been designed.

SAFE FLOOR LOAD.

.....

Pounds per Square Foot Uniformly Distributed.

The minimum height of letters shall be 1 inch in the upper two lines and ½ inch in the remaining lines.

9. Change of Class.—Any builder or building owner who shall contemplate changing or converting a building of one class into a building of another class or using a building of one class as a building of another class, whether in such change any building operations are intended or not, shall first give notice

in writing to the surveyor of his intention, and shall subject to the provisions of Section 30 (Restoration of Buildings and Alteration to Existing Buildings) comply with all conditions prescribed for such other class.

10. Certificate of Occupancy.—Before a building license is issued for any building of Class 1 or 2 the building owner shall lodge with the surveyor a certificate of occupancy in the form set out in Schedule 2-6. Such certificate of occupancy shall be signed by the building owner.

11. Plans of Buildings may be Inspected with the Owner's Consent.—The owner or mortgagee of any building or any person authorised in writing by such owner or mortgagee shall be entitled to inspect the plans of such building during office hours.

SECTION 3.

APPLICATIONS AND GRANTING OF BUILDING LICENSES.

12. Application.—Every builder intending to erect or construct any building or alter, add to, repair or underpin, pull down or remove any building shall, before commencing to erect, construct, alter, add to, repair or underpin same, make written application to the Local Authority at the office of the surveyor for a building license in the form provided in Schedule 1 of these regulations, and deposit with the surveyor all necessary drawings, specifications, and other information as required hereunder.

13. Drawings, etc., to be Submitted.—Every builder making application for a building license shall deposit with the surveyor—

(a) two complete sets of drawings (to a scale of not less than 1 inch to every 8 feet) showing a plan of every storey, at least two elevations of external fronts and one or more sections, transverse or longitudinal, showing the heights of the storeys, depths of foundations, underpinning, levels of the ground, the construction of the walls, floors, roofs, etc., all clearly figured and dimensioned thereon in feet and inches together with any other information that the surveyor may require;

(b) a block and drainage plan (to a scale of not less than 1 inch to every 40 feet) showing street names, lot number and title reference of the proposed site with the north point; the size and shape of the block of land on which it is proposed to erect, alter or add to the building, alteration or additions, the dimensioned position of proposed new and existing buildings on the site; the relative levels of the site with respect to the street or way adjoining; the position and size of any existing sewers and existing stormwater drains, and the position of street trees, if any, between the site and the roadway;

(c) two copies of specification 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 specification comply with the provisions of these regulations;

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

(e) a statement in writing signed by the building owner setting out the purpose for which such building and lands are intended to be used and such building when erected or altered as the case may be and such lands as aforesaid shall not without the written consent of the Local Authority first having been obtained and subject to such conditions or provisions as the Local Authority may impose when granting such consent being fully complied with be used for any other purpose or purposes whatsoever;

(f) an estimate of the cost of the proposed construction and when so required by the surveyor the name and address of the registered architect and/or qualified engineer under whose supervision the construction is to be carried out.

The drawings referred to above shall be in ink on drawing paper or tracing cloth or shall be approved duplicate prints and shall not in any case be less in size than 16 inches long by 13 inches wide.

All new work is to be clearly delineated on the drawings as distinct from existing work by means of colouring or other suitable means.

14. Information to accompany Permit to Pull Down or Remove.—Every application for a permit to pull down or remove a building shall be accompanied by particulars of the location of the building and such other information as the Local Authority may require and, in the case of an application for a permit to remove a building for re-erection within the boundary of a district of a local authority by—

(a) complete plans and specifications of the building, including all proposed alterations and additions as would be required by these regulations in the case of a new building;

(b) a statement showing the purposes for which—

(i) the building has been used; and

(ii) the building is proposed to be used.

15. Copies for Record.—One copy of all drawings, plans, statements, specifications and calculations shall remain in the office of the building surveyor as a permanent record.

16. Commencement of Work.—No builder shall commence to erect, construct, alter, add to or underpin, pull down or remove any building until the surveyor shall have signified his approval to the drawings and specifications, etc., of such building by stamping the drawings and specifications with his official stamp showing the number of the application, the date of his approval and his written signature, and until the builder shall have obtained a license or special license in the form of Schedule 7 or 8 to these regulations and paid the prescribed fees assessed by the surveyor.

17. Examination of Drawings, etc.—The surveyor shall examine all drawings, and specifications deposited with him. If, however, any such drawings or specifications are in his opinion not in conformity with the requirements of Section 3 of these regulations or not clear or not easily legible or do not contain sufficient information, the surveyor may, within 14 days of their deposition with him, return them to the builder for amendment, and in such case the drawings and specifications shall be considered as not having been deposited with the surveyor until re-submitted by the builder.

18. Disapproval of Drawings, etc.—When the surveyor signifies his disapproval of the drawings and specifications, etc., notice of such disapproval shall be given in writing to the builder and the reasons for such disapproval shall be stated in the notice.

19. Issue of License.—When the building surveyor has given his approval to and stamped and signed the drawings and specifications, and after the payment by the builder of the prescribed fees, a license in the form of Schedule No. 7 of these regulations shall then be issued by the surveyor.

20. Lapsing and Cancellation of License.—Such license shall become void if the work covered by the license (of the building) is not substantially commenced within one year of the date of issue of the license; provided that, however, at any time thereafter the approval of the Local Authority to the drawings and specifications previously approved for such building may, if in conformity with the building regulations, be again obtained with or without the payment of any further fees and the lodging of such further drawings and specifications as the Local Authority may at its discretion require.

21. Departure from Drawings.—No variation from or alterations of approved plans and specification shall be made by any builder without the consent of the surveyor in writing having been first obtained, and such alterations or departures from the approved drawings and specifications shall be drawn, described, and endorsed on and in the drawings and specifications.

22. Submission of Preliminary Plans.—Notwithstanding anything contained in this Section any person having paid the fees prescribed in Section 33 may submit to the surveyor preliminary plans 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 such plans and specifications for examinations and report as to whether such proposal is capable of being executed in conformity with these regulations.

SECTION 4.

CLASSIFICATION OF BUILDINGS BY OCCUPANCY.

23. For the purpose of these regulations, buildings or parts of buildings now existing or hereafter erected, altered or enlarged shall be classified as follows:—

(a) **Class I—Private Dwellings.**—A private dwelling means any building designed or used or intended or adapted for use in single tenancy and includes a duplex house but does not include a flat.

(b) **Class II—Residential Flat Buildings.**—A residential flat building means a dwelling constructed or adapted for use as two or more tenancies.

(c) **Class III—Residential Buildings.**—A residential building means any building or portion of a building not being a building of Class I, 11 or IV Occupancy, used or intended, adapted or designed to be used for human habitation and includes a residential club, lodging and boarding houses, residential hotel, and residential portion of premises licensed under a publican's general license or a hotel license.

(d) **Class IV—Dwelling Attached to Buildings of Other Classes.**—A dwelling attached to a building of another class means that portion of a combined shop and dwelling, office and dwelling, warehouse and dwelling, or factory and dwelling, designed as a residence for occupiers of such shop, office, warehouse, or factory, and includes also that portion of any building designed as a residence for the caretaker of such building.

(e) **Class V—Office Buildings.**—Office building means any building or portion of a building used for professional or commercial purposes other than as a shop, warehouse, or factory and includes a bank, broadcasting studio, office, professional chambers, stock exchange, and the office section or sections in buildings of all classes of occupancy.

(f) **Class VI—Shops.**—Shop means any building or portion of a building required by the provisions of the Factories and Shops Act, 1920-1952, to be registered as a shop and also any tearooms, eating house, hotel bar, market, saleroom, motor repair shop, and service station and petrol selling station.

(g) **Class VII—Warehouse.**—A warehouse means any building or portion of a building used for the bulk storage and/or the display or sale of goods other than Class VI above and includes a fire station, public garage (other than a garage used solely for repair) hangar, showroom and storage building or any other building required to be registered as a warehouse.

(h) **Class VIII—Factories.**—Factory means any building or portion of a building in which goods or materials are manufactured, converted, stored or sold or any other building required by the provisions of the Factories and Shops Act, 1920, to be registered as a factory.

(i) **Class IX—Public Buildings**—Public buildings means—

(1) any church, chapel, and place of public worship;

(2) any public or assembly or dance hall, library, art gallery and museum, concert hall, exhibition hall, skating rink, stadium, circus or grandstand;

(3) any theatre, opera house and any building constructed or adapted for the exhibition of photographic or projected pictures either moving or still;

(4) any hospital, sanatorium, convalescent home, orphanage and other similar charitable institution, baby health centre, creche and other similar welfare institution;

(5) any school, college and similar educational institution;

(6) any other building, structure, tent, gallery, enclosure or platform whatsoever in or upon which numbers of persons are usually or occasionally assembled.

(j) **Class X—Outbuildings.**

24. **Buildings Not Specifically Classified.**—A building or portion of a building which is not included in any of the foregoing classes shall for the purpose of these regulations be classified by the surveyor as belonging to that class of occupancy which it most nearly resembles.

25. **Use Incidental to any Occupancy.**—Where a relatively small portion of a building is used for a purpose other than a purpose endorsed on the certificate of occupancy, but merely incidental to the class or classes of occupancy endorsed on the certificate of occupancy, such portion may, if such use does not involve a material increase in hazard to the remainder of such building, be regarded as being of the same class of occupancy as the occupancy to which such use is incidental.

SECTION 5.

TYPES OF CONSTRUCTION.

26. **Types of Construction.**—For the purpose of these regulations buildings shall be classified into types of construction based upon their resistance to fire:—

(1) Framed fire resisting construction.

(2) Bearing wall protected construction.

(3) Ordinary construction.

(4) Unprotected metal construction.

(5) Wood frame construction.

27. **Fire Resistance Rating.**—The types are in order of their resistance to fire, type (1) being deemed the most fire resistive and type (5) the least fire resistive type of construction.

28. **Construction to Accord with Requirements for Specified Type.**—Where a building is required by these regulations to be of any given type of construction, it shall be constructed in accordance with the requirements specified for that type.

29. **Buildings of Mixed Construction.**—A building may contain more than one type of construction but where two or more types of construction occur in the same building and are not separated by a complete fire separation conforming to the provisions of Section 25, the whole building shall be regarded as that one of such types of construction offering least resistance to fire.

30. **Supports in Buildings of Mixed Construction.**—Every building of mixed construction shall comply with the following:—

(a) The support to any wall shall have a fire resistance rating throughout at least equal to the fire resistance rating of such wall.

(b) The support to any floor or roof having a fire resistance rating for all its members shall have a fire resistance at least equal to the fire resistance rating of such floor or roof.

(c) The support to any wall, floor or roof referred to in paragraphs (a) and (b) hereof shall mean the direct support and shall not include any lateral member of a floor system connected to such wall, roof or floor and not essential for the normal structural stability of such wall, roof or floor.

31. **Type 1—Framed Fire Resisting Construction.**—Framed fire resisting construction means that type of construction in which the imposed loads are carried on columns and beams or on reinforced concrete walls where same are

used for shaft enclosures around stairs or lifts or other vertical openings and in which structural members are of incombustible materials having an ultimate fire resistance of not less than in the case of—

columns (including reinforced concrete walls acting as columns) internal structural members which carry walls and fire and party walls—4 hours.

exterior panel walls, beams, girders, trusses, floors, and roofs (except as qualified in regulation 301)—3 hours.

non-bearing shaft, enclosure, around stairs, lifts and other vertical openings—3 hours.

Panel walls on street frontages and walls set back not less than 10 feet from the boundaries of land in other occupation—2 hours; subject to the provision that such walls shall be separated at each floor level either by a horizontal floor projection of 18 inches beyond the wall alignment or a vertical wall not less than 3 feet in height having a fire resistance rating of not less than 3 hours in the case of buildings of Classes VI, VII and VIII.

In the case of buildings of Classes II, III, IV and V a similar separation having a fire resistance rating of not less than 2 hours shall be provided at each floor level between openings on the floors immediately above and below such floors.

32. **Type 2—Bearing Wall Protected Construction.**—Bearing wall protected construction means that type of construction in which the walls are of masonry or reinforced concrete and structural members are of incombustible materials, having an ultimate fire resistance of not less than in the case of—

external fire and party walls—4 hours;

bearing walls, piers, trusses other than roof trusses and columns and girders supporting walls—3 hours;

panel walls, columns and girders not otherwise specified and shaft enclosures around stairs, lifts and other vertical openings—2 hours;

roof trusses and roofs including beams and girders (except as qualified in regulation 300)—2 hours;

floors (including beams, girders and trusses)—2 hours.

33. **Type 3—Ordinary Construction.**—Ordinary construction means that type of construction in which the exterior walls have a fire resistance rating of 3 hours and in which the interior framing and construction are wholly or partly of wood or of unprotected steel, iron or reinforced concrete, supported on unprotected steel.

Note.—The term "ordinary construction" corresponds generally with that variously called "non-fire-resisting masonry walls and wooden joists," or "ordinary brick" construction.

34. **Type 4—Unprotected Metal Construction.**—Unprotected metal construction means that construction in which the imposed loads are carried by a skeleton framework of steel or other metal which is not fire protected and in which the exterior walls and roof are of asbestos, sheet metal or other incombustible material.

35. **Type 5—Wood Frame Construction.**—Wood frame construction means that type of construction in which structural parts and materials are of wood or are dependent upon a wood frame for support, including construction having an incombustible exterior veneer.

Exceptions.

36. **Roof Structures.**—Structures not exceeding 10 feet either in length or in width and not exceeding 8 feet in height and intended for the protection of lift ventilating machinery or for like purposes, may be erected above the level of the roof of a building of Type 1, 2, or 3 construction with external walls constructed in accordance with the provisions of regulation 233 and with a roof of impervious material.

37. **Mezzanine Floors.**—Mezzanine floors may be of timber on unprotected steel supports or of unprotected steel or iron as provided in regulation 292.

SECTION 6.

SITE REQUIREMENTS.

38. Interpretations.—

(a) **Frontage to Sites—General Conditions.**—For the purpose of these regulations the width of the frontage of any land shall be deemed to be the distance measured in a horizontal plane at right angles to one of the boundaries of the side of the land from its intersection with the alignment of the street to the opposite boundary of the land or a prolongation of the boundary.

In the event of the side boundaries of the land not being parallel the average of the distances so measured shall be the width of the frontage.

(b) **Frontage to Corner Sites.**—Where a corner of an allotment 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 allotment;

(ii) the area shall be calculated as if the land thereby excised were portion of the allotment.

(c) **Measurement of Distance from the Boundary.**—Wherever the minimum distance is provided for, such distance shall be measured horizontally from the boundary to the outermost projection from the exterior wall, except that where a chimney back, not more than 5 feet 6 inches in width is projecting, the extent of the projection shall be determined by the horizontal distance by which it exceeds 14 inches.

(d) For the purpose of this Section the length of a wall is its total length measured as if it were continuous in one plane, irrespective of any projections or set backs between the exterior faces of outside walls of the building.

Nothing in this Section shall prohibit the length of a portion of a wall containing windows of habitable rooms being measured independently from the portion of the wall not containing windows to habitable rooms.

39. Distance from Street alignments in Residential Districts.—

(a) No person shall erect or construct in a residential district any building or any addition to any building within the space, if any, between the street boundary of any site and the building line as fixed by the Local Authority for that particular street or part thereof. Where no building line has been fixed by the Local Authority the minimum distance between any building or any addition to any building and the boundary of the street it faces shall be 25 feet.

(b) Such building line shall, when fixed by the Local Authority be marked upon a plan or clearly described in a resolution of the Local Authority and such plan or resolution shall be open for inspection by the public free of charge during the office hours of the Local Authority.

(c) Alterations may be made by the Local Authority where levels or depth of the allotment or other exceptional conditions of the site or the nature of the building or position of existing adjoining building make it necessary or expedient to alter the building line in respect of any part of the building or buildings.

40. General Site Restrictions applying to Buildings of Class I, II also to Buildings of Class III where permitted by the Local Authority to be erected in Residential and Residential Flat Areas:—

(a) No person on any site on which one or more buildings of Class I, II or III occupancy have or shall be erected shall erect thereon any other buildings of any of such classes unless the said site shall be subdivided so as to provide a separate site satisfying all the requirements of the provisions of the Town Planning Act and these regulations for each of such existing buildings as well as for each of the buildings intended to be so erected.

(b) In any case where a building of any of the aforesaid classes has been or shall be erected at a distance from the frontage, no person shall erect a building of any kind in the space or any part of the space immediately between such former building and the frontage, otherwise than as an addition to, or extension of such building. Provided that this clause shall not prohibit the erection of a building on a site which is the subject of a Certificate of Title separate from the Certificate of Title to the site on which the firstmentioned building is erected.

(c) No eave shall be closer than 2 feet 6 inches to a site boundary. The eaves projection shall be measured at right angles from the external face of the wall to the back of the gutter.

(d) Outbuildings shall comply with the provisions of Section 28.

41. Site Restrictions for Buildings of Class I.—No person shall hereafter erect a building of Class I occupancy otherwise than in accordance with the following requirements:—

(a) Except as provided in regulation 46 (c) the site shall have an area of not less than 6,000 square feet and a frontage of not less than 49 feet 6 inches in the case of single occupancy dwellings and an area of not less than 8,000 square feet and a frontage of not less than 66 feet in the case of duplex houses.

(b) No building of Class I shall be constructed with any wall of any storey at a less distance from a boundary of the site other than a street boundary than 3 feet or in the case of buildings not exceeding two storeys in height or 50 feet in length such distances shall be increased by 1 foot for each 10 feet by which the wall exceeds 50 feet in length. Outbuildings shall comply with the provisions of regulation 342 and Section 28.

(c) No building of Class I occupancy including buildings appurtenant thereto shall hereafter be constructed in such a way that the total gross area of such building or buildings shall exceed a plot ratio of 0.33 ($\frac{1}{3}$) as provided in regulation 51 (d).

The area occupied by the building shall include the areas occupied by outbuildings but not unroofed terraces.

42. Site Requirements for Buildings of Class II—Residential Flat Buildings.—No person shall hereafter erect a building of Class II occupancy otherwise than in accordance with the following requirements:—

(a) Subject to compliance with the provisions of paragraph (e) of this regulation, the minimum distance of walls from the side or rear boundaries of the site shall be 10 feet for a building not exceeding three storeys or 30 feet in height and 40 feet in length. Such distance shall be increased by 2 feet 6 inches for each additional 10 feet or part thereof by which such wall exceeds 60 feet in length provided that no such wall shall be required to be at a greater distance than 35 feet from the side or rear boundaries.

The distance from the side boundary as required by this regulation, for a building not exceeding three storeys in height shall be increased by 5 feet for every additional storey or height of 10 feet by which such building exceeds three storeys in height.

(b) Walls in which there are no windows of habitable rooms may be located one half the distance from the side or rear boundaries required by paragraph (a) of this regulation provided that no such wall shall be erected closer than 5 feet from such boundaries in compliance with the provisions of paragraph (d) of this regulation.

(c) Walls of buildings not parallel with the side boundaries may be built so that their average distance from the boundaries complies with paragraphs (a) and (b) of this regulation irrespective of their length; provided that in no part of their length are they closer to the boundaries than is required for a wall of the same height not exceeding 40 feet in length.

(d) There shall be a drying area of at least 20 feet by 20 feet for each laundry. Such drying area shall be located at the rear or side of the building.

(e) No external walls facing each other, one or both of which contain windows of habitable rooms, shall be less than 20 feet apart. In the case of walls fronting opposite sides of courts or areas 20 feet or more in depth, the width of the court or area shall be increased to not less than twice the distance from the side boundary to the side walls required by paragraph (b) of this regulation.

(f) The Local Authority shall declare subject to the approval of the Minister, plot ratios not exceeding one to apply to the various portion of their area. (As provided in regulation 51 (d).)

(g) The Local Authority may prescribe frontages for flats provided that no residential flat building shall hereafter be erected on a site with a frontage of less than 66 feet.

43. Site Restrictions Applying to Buildings of Class III.—

(a) Where the zoning by-laws of a local authority permit the erection of buildings of Class III in residential flat areas, such buildings shall comply with the provisions of regulation 42.

(b) Every residential club or hotel erected in business and other areas zoned for commercial or similar purposes shall hereafter be constructed in such a way that it shall occupy not more than 66 per cent. of the total area of the site, which has a frontage to one street, 75 per cent. where there is a frontage to two streets, and 80 per cent. where there is a frontage to three streets.

The whole of the site may be occupied by the ground floor provided that no part of the ground floor shall be used for sleeping purposes, and that natural light is provided in accordance with the building regulations and adequate natural or artificial means of ventilation is provided in conformity with Section 10 to the approval of the surveyor.

44. Site Restrictions Applying to Buildings of Class IV Occupancy.—Every building of Class IV occupancy shall have constructed therewith for the use of the occupants a space open to the air without roof. Such open space—

(i) shall have an area of not less than 450 square feet;

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

(iii) shall be of a dimension of not less than 10 feet in any direction.

45. Site Restrictions for Buildings of Class VI Occupancy (Shops).—No person shall hereafter erect any building of Class VI occupancy otherwise than upon a site satisfying the following requirements:—

(a) The area of the site shall be not less than 2,000 square feet, and

(b) the width of the frontage of the site shall be not less than 16 feet 6 inches.

46. Site Restrictions for Buildings of Class I and VI Occupancy (Shops and Private Dwellings Combined).—

(a) No person shall hereafter erect any shop and dwelling house combined otherwise than upon a site satisfying the following requirements:—

(i) The area of the site shall be not less than 6,000 square feet, and

(ii) the width of the frontage of the site shall be not less than 49 feet 6 inches.

(b) No shop or shops shall be built or erected in front of any dwelling house unless the following conditions are complied with:—

(i) One such shop shall be connected to the dwelling house so that when completed the whole shall form one building and be in one occupation.

(ii) The dwelling house shall have a clear uninterrupted frontage of not less than 15 feet provided that the Local Authority may permit the dwelling house to be located on the first floor over the shops with an unobstructed frontage and a separate fire isolated staircase for the dwelling house leading to the street.

(iii) All lock-up shops shall be isolated from the combined shop and dwelling and from each other by horizontal and vertical party structures.

(c) The Local Authority may permit—

(i) a building of Class I occupancy (private dwellings) or a shop or a shop and dwelling combined, as the case may be, to be erected on any site smaller in area than hereinbefore prescribed, provided that such site comprises the whole of any lot shown on a plan of subdivision approved by the appropriate authority prior to the coming into operation of these regulations, or

(ii) a building of Class I or II occupancy or a shop and dwelling combined to be erected on a site not less than 4,000 square feet in area which has been reduced below that hereinbefore prescribed by severance due to resumption by the Local Authority for street widening or other purposes.

(d) Shops having dwellings attached shall be provided with open spaces as required for a private dwelling of Class I occupancy.

47. Buildings of Class V, VI, VII and VIII Occupancy.—In the case of buildings of Class V, VI, VII or VIII occupancy the Local Authority may permit the ground floor thereof to occupy the whole of the site, provided that lighting is provided in accordance with the building regulations and that adequate natural or artificial means of ventilation is provided to the approval of the surveyor.

48. Rear Access.—Every building of Class VI occupancy (shop) or a shop and dwelling combined or Classes VII or VIII hereafter erected shall be provided with means of access for the removal of rubbish and servicing to every separate tenement and/or shop, warehouse, or factory within the building. Such means of servicing shall be provided in such a manner that every separate tenement or occupancy can be serviced without passing through the front entrance thereof or through any other shop or tenement or in the case of arcades through the arcade street entrance.

SECTION 7.

BUILDING HEIGHT RESTRICTIONS.

49. Measurement of Height.—See definition in Section 1.

50. Width of Street.—The width of street shall be 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 street.

51. Maximum Building Height.—

(a) 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 such building vertically above the building line thereof at a height equal to twice the horizontal distance between such building lines.

(b) **Frontages to Two Streets of Equal Width.**—The maximum building height in respect to a site having a frontage of 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.

(c) **Frontages to Two Streets of Differing Widths.**—The maximum building height in respect of a site having frontages to two streets differing in width shall be determined by the wider street for a depth of twice the width of the street from such wider street and by the narrower street for any balance of the depth from such wider street.

(d) **Maximum Heights and Plot Ratio.**—The Local Authorities shall, with the approval of the Minister, fix plot ratios for various portions of their areas.

The heights of buildings and/or plot ratios shall not exceed the values set out hereunder:—

(i) In single occupancy residential districts so designated by the Local Authority 30 feet in height and a plot ratio of .33 ($\frac{1}{3}$) in the case of single occupancy dwellings and .5 ($\frac{1}{2}$) in the case of duplex houses.

(ii) In residential flat districts the plot ratio shall not exceed one.

(iii) In all other areas the plot ratio shall not exceed five.

52. Decorative Features.—The following erections shall not be included in measuring the height of buildings, namely—

Ornamental towers, spires, domes, architectural features or decorations, lift machinery rooms, bulkheads, pent houses, overstairs, or other super-structures erected above the main roof of the building.

Provided, nevertheless, that no such erection exceeding in width one-fourth of the frontage of the building shall project beyond the maximum height as prescribed in regulations 51, 53 and 54 of these regulations.

53. Height of Type 1 and Type 2 Construction.—

(a) **Framed Fire Resisting Construction.**—Buildings of Type 1 construction may be erected to the maximum height permitted by regulation 51.

(b) **Bearing Wall Protected Construction.**—Except as provided in regulation 52 hereof, no building of Type 2 construction shall be of a greater height than 90 feet.

54. Height of Other Types of Construction.—

(a) Subject to the provisions of regulation 24, buildings of Type 3, 4 or 5 construction shall not be erected to contain a greater number of storeys than that set out in Table 54.

(b) A building of Class IV occupancy shall not be constructed above the first floor in any building of Type 3 construction.

Table 54.

Type of Construction.	Class of Occupancy.	Maximum No. of Storeys.
Type 3 (ordinary construction).	I, II, III, IV, V, VI, VII, VIII, IX	2
Type 4 (unprotected metal construction).	VII, VIII where specially approved by Local Authority	1
Type 5.—Wood frame construction (where specially approved by Local Authority).	I	2
	VIII	1

(c) **Number of Storeys not to Include Basements.**—The number of storeys referred to in Table 54 shall be exclusive of a basement, provided that the ceiling of any such basement is not more than 4 feet above the pavement level at the front of the building.

(d) **Mezzanine Floors.**—Mezzanine floor complying with the requirements of regulation 292 shall not be considered as a storey.

(e) **Height of Storeys.**—For the purpose of Table 54 a storey exceeding 20 feet in height in a building of any class other than Class IX shall be considered as two storeys.

(f) **Ground Floors in Reinforced Concrete.**—Ground floors of all buildings of Classes V, VI, VII, VIII and IX constructed with basements shall be of reinforced concrete.

55. Additional Storeys to Floors of Existing Building.—Subject to the provisions of Section 30, additional storeys may be added to buildings of Type 3 construction provided such floors comply with the provisions of Table 54.

SECTION 8.

PROJECTION BEYOND STREET ALIGNMENT.

56. Construction of Projections.—(a) Except as provided in Section 27, every coping, cornice, string course, fascia, window dressing, portico, balconette, bridge connecting buildings, balustrade and 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 surveyor.

(b) No such projection shall form part of the structural design of the building.

(c) Eaves, soffits, and barge boards to any overhanging roof, if within 2 feet 6 inches of any adjoining building or land in other occupation shall be of fire resisting materials, unless separated by brickwork at least 9 inches thick, or reinforced concrete 4 inches thick, and projecting 4 inches beyond the woodwork.

(d) No pitched roof shall project over any street or way and all pitched roofs within 2 feet of any street or way shall be protected by a parapet constructed in accordance with the provisions of Section 18.

57. Minimum Height above Pavement.—No projection shall extend beyond the street alignment at any height less than 9 feet from the level of the public footway except as provided in paragraphs (a) and (b) hereunder:—

(a) This provision shall not apply to footings constructed in accordance with the provisions of regulation 224 or mouldings or shopfronts constructed in accordance with regulation 414.

(b) Plinths of buildings erected prior to the coming into force of these regulations not exceeding 2 feet in height may project 2½ inches beyond the street alignment. No face or plinth of any building hereafter erected shall project beyond the street alignment.

58. Limits of Projection.—No part of any projection shall extend beyond the street alignment more than—

(a) 3 feet in a street exceeding 40 feet in width.

(b) 2 feet in streets 40 feet or less in width.

No projection shall be permitted in streets or right-of-ways less than 20 feet in width.

59. Window Balconies, etc.—A balcony, balconette, window or turret may project not more than 3 feet beyond the street alignment in streets over 40 feet in width or more than 2 feet in streets from 33 feet to 40 feet in width provided that—

(a) no part of any such projection where it overhangs a street shall be less than 9 feet above the level of the street or be nearer than 4 feet to the centre of the nearest party wall or to any adjoining building or land not in the same occupation;

(b) the total width of any such projections taken together shall not exceed one-half of the length of the wall of the building on the level of the floor on which such projections are made;

(c) no projecting window shall exceed a total overall width of 12 feet and the distance between projecting windows shall not be less than one-half of the total overall width of each of such windows;

(d) projecting windows shall not be connected by a balcony any portion of which projects beyond the street alignment;

(e) every such projection shall be constructed of fire-resisting materials to the satisfaction of the surveyor. No such projection shall be permitted in streets under 33 feet in width.

60. Timber Window Shutters.—Notwithstanding the provisions of regulation 56, louvred window shutters shall be permitted provided they project not more than 2 inches beyond the street alignment when in the fully open position.

61. Cat Heads.—Cat heads or hoists shall not project over any street.

62. Service Pipes.—Service pipes may project 8 inches beyond the street alignment above a height of 9 feet from the level of the public footway. Rainwater heads may project 12 inches.

63. Pavement Lights and Cellars.—The owner of any building or premises shall fill up, secure or remove any pavement light cellar ways or openings which may be under any footway and are used in connection with or are appurtenant to such building or premises. whenever ordered by the Local Authority so to do.

64. Gates, Doors, etc., Abutting on Street.—No person shall construct or hang any gate, door window, or shutter in such a manner that any part of such gate, door, window, or shutter shall, when being opened, project over any street or public way at a height less than 9 feet above the level of the pavement.

65. Removal of Obstructions, etc.—The owner of any building or premises when ordered by the Local Authority so to do shall at his own expense remove any verandah, balcony or other obstruction used in connection with or appurtenant to such building or premises which shall obstruct the footway or street or is dangerous, whether such verandah, balcony or other obstruction shall have been erected before or after the commencement of the Municipal Corporations Act.

SECTION 9.

ROOM SIZES AND HEIGHTS.

66. Minimum Number of Rooms.—(a) Every building of Class I occupancy shall comply with the requirements of regulation 405.

(b) Every building of Class II occupancy shall comply with the requirements of regulation 406.

67. Minimum Size of Rooms.—(a) Except as provided elsewhere in these regulations, every habitable room shall have—

(i) a minimum floor area of not less than 80 square feet;

(ii) a height of not less that 9 feet.

(b) Every habitable room shall be not less than 8 feet wide in its minimum dimension, except a kitchen which may have a minimum width of 7 feet.

A kitchenette which is constructed in the form of an annex to a habitable room and separated therefrom by an unobstructed opening not less than five feet wide and seven feet high shall not be deemed to be a separate habitable room.

(c) In buildings of Class I. II and IV occupancy there shall be one living room with a superficial area of not less than 144 square feet and a minimum width of not less than 10 feet and one bedroom with a minimum area of not less than 120 square feet.

68. Minimum Height of Rooms in Class I, II, III and IV Occupancy.—Every habitable room shall be not less than 9 feet in height provided that coving, cornices and beams projecting below that height will be permitted subject to such coving, cornices and beams having a clear head room not less than 8 feet 6 inches and the total area of such projections below a height of 9 feet not exceeding 20 per cent. of the area of the room.

Ingle nooks and recesses for furniture may be added to such rooms with ceilings of less height than 9 feet provided that the ceilings of such ingle nooks shall not be less than 6 feet 8 inches in height.

69. Sleepouts.—Sleepouts shall comply with the provisions of regulation 83 as regards light and ventilation and shall have an average height of not less than 8 feet, a minimum height of not less than 7 feet, and a floor area of not less than 80 square feet.

70. Minimum Height of Rooms in Office Buildings.—In buildings of Class V occupancy, the height measured from floor to ceiling shall be in every part not less than 9 feet.

71. Minimum Height of Rooms in Shops.—The height or where the ceiling is pitched or sloping the minimum height from floor to ceiling, or if there is no ceiling to the underside of the rafters or underside of floor next above as the case may be in every room hereafter constructed or adapted in a building of Class VI occupancy shall not be less than 10 feet; provided that—

(a) in the case of a room not exceeding 450 square feet in area lighted and ventilated in conformity with the requirements of regulations 81 (a) or 85 the height may be reduced to 9 feet;

(b) where the ceiling is pitched or sloping the minimum height in any part shall not be less than 9 feet.

72. Minimum Height of Rooms in Warehouses.—The minimum height or where the ceiling is pitched or sloping, the minimum height from floor to ceiling or where there is no ceiling, the underside of the rafters or floor next above, in every room hereafter constructed or adapted in a building of Class VII occupancy shall not be less than 9 feet, provided that where the circumstances so warrant the Local Authority may require a greater ceiling height and/or the installation of a system of mechanical ventilation complying with the provisions of Section 10 of these regulations.

73. Minimum Height of Rooms in Factories.—The height or where the ceiling is pitched or sloping, the minimum height from floor to ceiling or where there is no ceiling to the underside of the rafters or underside floor next above, in every room hereafter constructed or adapted in a building of Class VIII occupancy shall not be less than 9 feet provided that the Local Authority may on the recommendation of the Chief Inspector of Factories in any particular case fix such greater height and/or the installation of a system of mechanical ventilation complying with the provisions of Section 10 of these regulations.

74. Public Buildings.—The size and height of rooms, passages, and corridors in public assembly and institutional buildings shall conform to the requirements of regulations made under Part VI of the Health Act.

75. Bathroom and Water Closets.—(a) Every bathroom shall be not less than 30 square feet in floor area with a minimum width of 5 feet and every water closet shall be not less than 13 square feet in area.

(b) Where the water closet is contained within the bathroom the floor area shall be not less than 40 square feet.

(c) The height of a bathroom or of a water closet shall be not less than 7 feet 6 inches.

76. Laundries.—Every laundry and wash-house shall have a floor area of not less than 50 square feet, and the walls of such building shall be an average of 8 feet in height from the floor level to the underside of the ceiling or if there be no ceiling the underside of the rafters.

77. Basements Used for Storage Purposes.—Cellars and basements used for storage purposes only shall have a minimum ceiling height of 9 feet with a minimum headroom under beams of 8 feet.

78. Outbuildings, Garages, etc.—Outbuildings and garages appurtenant to buildings of other classes shall comply as regards size and height with the provisions of Section 28.

79. Projections and False Ceilings.—Notwithstanding anything contained above in buildings of Class II, III, IV, V, VII or VIII occupancy—

(a) beams, service pipes, or ducts may project below the minimum height prescribed provided that the area in plan of such projections does not exceed 20 per cent. of the floor area of the room, with a minimum clear height of 8 feet, and

(b) false ceilings may be constructed at a height of 7 feet 6 inches in lavatory blocks, and at a height of 8 feet in corridors, passages and recesses;

(c) bay windows and window recesses with a clear headroom of 8 feet may be constructed provided such bay windows and window recesses do not exceed 25 per cent. of the area of the room to which they are appurtenant.

80. Mezzanine Floors.—Mezzanine floors shall comply with the requirement of regulation 292.

SECTION 10.

LIGHT AND VENTILATION.

Part I—Special Requirements for Buildings of Certain Classes.

Classes I, II, III and IV Occupancies.

81.—Habitable Rooms, Laundries and Bathrooms.—In every building of Class I, II, III or IV occupancy hereafter constructed or adapted—

(a) every habitable room and enclosed laundry shall—

(i) have one or more windows opening directly into the external air with superficial area clear of sash frames and free from any obstruction to the light equal to at least one-tenth of the floor area of the room and so constructed that a portion of such window equal to at least one-twentieth of such floor area is openable. Such opening shall extend to at least 6 feet 6 inches above the floor level;

(ii) in addition to the ventilation afforded by a window or door, each room shall be provided with air bricks, registers, vents, cowls, or ducts at or near the level of the ceiling and of which the total unobstructed area shall be not less than 24 square inches or 24 square inches for each 100 square feet of floor area whichever is the greater.

(b) every bathroom shall be lighted and ventilated in accordance with the provisions of paragraph (a) of this regulation, provided that bathrooms may be provided with artificial lighting and a system of mechanical ventilation complying with the requirements of Part III of this Section.

82. Common Dining Rooms and Kitchens, etc.—Notwithstanding the provisions of regulation 81, kitchens and common dining rooms, lounges and similar public rooms in buildings of Class III occupancy catering flats and kitchens of buildings of Class VI occupancy may be lighted

(a) by means of roof or ceiling lights having a total superficial area free from all obstructions to the light of not less than one-tenth of the floor area subject to the provision of an approved system of natural ventilation or of a system of mechanical ventilation complying with the requirements of Part III of this Section, or

(b) by means of artificial lighting and air-conditioned ventilation as required by these regulations.

83. Sleep-outs.—Specially constructed sleep-outs or enclosed verandahs complying with the requirements of regulation 69 attached to a dwelling may be approved provided a length not less than that of the longest side is enclosed above a dado which does not exceed 3 feet 6 inches in height with windows having a height of not less than 3 feet.

Not less than 50 per cent. of such windows shall be constructed with adjustable glass blade louvres.

Class V Occupancy—Office Buildings.

84. General Requirements.—Every room hereafter constructed or adapted in a building of Class V occupancy shall be provided with light and ventilation as prescribed in regulation 81 (a) except that—

(a) roof or ceiling lights may be substituted for or provided in addition to windows;

(b) no part of the floor of such building shall be distant more than 40 feet and no part of such building used as an office more than 30 feet from a clear unobstructed window or skylight; such distance being measured horizontally;

(c) where any part of the floor is distant from the nearest window more than twice the height of the head of the window above the floor every such part shall be lighted by roof or ceiling lights or by artificial lighting in conformity with Part II of this Section;

(d) where roof or ceiling lighting is provided an approved system of natural ventilation or a system of mechanical ventilation complying with the requirements of Part III of this Section shall be installed.

Class VI Occupancy—Shops.

85. General Requirements.—Every building of Class VI occupancy hereafter constructed or adapted other than hotel bars, eating houses, dining-rooms and kitchens shall be provided with natural light and ventilation in accordance with the provisions of regulation 81 (a) provided that—

(a) natural lighting from roof or ceiling lights may be substituted for windows;

(b) the clear unobstructed area of the windows or skylights may be reduced to one-twentieth of the floor area, one-half of which is openable and so located as to provide effective through ventilation;

(c) where any part of the floor is distant from the nearest window more than twice the height of the head of the window above the floor every such part shall be lighted by roof or ceiling lights or by artificial lighting in conformity with Part II of this Section;

(d) every lock-up shop in which the depth exceeds twice the width thereof, shall be provided with an approved system of mechanical or induced ventilation unless through natural ventilation approved by the surveyor can be obtained;

(e) an approved system of mechanical ventilation shall be provided where adequate natural ventilation cannot be provided;

(f) natural light and ventilation may be omitted, subject to the building being artificially lit in accordance with Part II of this Section, the installation of an approved system of mechanical ventilation or air conditioning complying with the requirements of Part III of this Section and the provision of an auxiliary power plant capable of lighting the building and operating the mechanical ventilating or air conditioning plant.

86. Hotel Bars, Eating Houses and Dining Rooms.—Every bar of a licensed hotel, eating house and dining room shall be provided with—

(a) natural light and ventilation as specified in regulation 81 (a) except that the registers, vents, cowls or ducts required shall be fixed in the ceiling and carried through above the roof, or

(b) (i) either natural light as prescribed in regulation 81 (a) or artificial lighting; and (ii) a system of mechanical ventilation or air conditioning complying with Part III of this Section.

Class VII Occupancy—Warehouses.

87. General Requirements.—(a) Every room used for the display or sale of goods shall be provided with light and ventilation as prescribed in regulation 85.

(b) No part of any floor of a room or portion of a building used for bulk storage only shall be distant more than 50 feet laterally from a window or roof light, the area of which shall be at least one-fifteenth of the floor area lighted by such window or roof light and ventilated by means of registers, vents, cowls or ducts having an effective way clear of all obstruction of not less than 12 square inches for each 100 square feet of floor area, except that natural ventilation may be dispensed with where a system of mechanical ventilation complying with Part III of this Section is installed.

(c) Where any part of the floor is distant from the nearest window more than twice the height of the head of the window above the floor every such part shall be lighted by roof or ceiling lights or by artificial lighting in conformity with regulations 92 and 93 of these regulations.

Class VIII Occupancy—Factories.

88. General Requirements.—Every room in a building of Class VIII occupancy shall be provided with light and ventilation in accordance with the regulations under the Factories and Shops Act, 1920-1952.

Class IX Occupancy—Public Buildings.

89. General Requirements.—Every public building shall be lighted and ventilated in accordance with the provisions of the regulations under Part VI of the Health Act.

Part II—General Provisions for Lighting and Ventilation.

90. Change of Use.—If the use or occupancy of any building is changed involving a change of class or use the said building shall be altered to provide light and ventilation as required by these regulations for such use or occupancy.

92. Artificial Lighting.—Where artificial lighting is required by these regulations or is installed in any building, such artificial lighting shall conform to the requirements of S.A.A. Code No. C.A. 30-1957, and all amendments thereof.

93. Minimum Value of Illumination.—(a) The illumination value shall not be less than the lower illumination value set out opposite the description of the particular task in Tables 2 and 3 of S.A.A. Code No. C.A. 30-1957, and amendment No. 1 thereof.

(b) Without prejudice to the additional illumination required by the nature of the task, a minimum value of illumination of 5 foot candles shall be provided over all the working area.

(c) A minimum value of illumination of 2 foot candles shall be provided for all passages, corridors, stairways, exits and spaces other than working areas.

94. Water Closets.—Water closets and air locks shall be lit and ventilated in accordance with the Metropolitan Water Supply, Sewerage and Drainage Department's by-laws and regulations.

95. Sub-floor Ventilation.—Sub-floor ventilation shall be in conformity with the provisions of regulation 294.

96. Lighting and Ventilation of Corridors, etc.—All corridors, passageways, starways and landings shall be provided with natural or artificial lighting except that artificial lighting shall be provided in all corridors, passageways, stairways and landings likely to be used at night.

97. Lighting and Ventilation of Basements.—Every basement or room below the level of the street shall be provided with light and ventilation as specified in these regulations for its class of occupancy, provided that where the requisite natural light and ventilation cannot be obtained in any such room a system of artificial lighting and a system of mechanical ventilation complying with the requirements of this Section shall be installed. Subject to the approval of the surveyor the provision of this regulation in relation to mechanical ventilation shall not apply or may be modified in the case of a room used solely for storage purposes.

98. Pavement Lights.—Pavement lights and gratings to areas shall be enclosed by solid masonry or brickwork surmounted by a proper stone kerb, and be covered with an approved horizontal iron grating, or be fitted with floor lights not over 4 inches square or less than $\frac{3}{4}$ inch thick set in metal frames, level with the surface of the footway, and secured to the kerbing by being run thereto with lead, zinc or other material approved by the surveyor and must be maintained in good order and condition, to the satisfaction of the surveyor. Prisms set in reinforced concrete may be used, subject to the approval of the surveyor. No such light or area shall extend beyond the building line under the footway in any public street. No such light or area shall be more than 6 feet in length unless supported by iron or steel or reinforced concrete joists or beams.

99. Skylights.—All skylights in verandahs and buildings and the sloping sides of all lantern lights shall be glazed in accordance with the provisions of regulation 354.

100. Exemptions.—A room used solely as a strongroom, or for purposes of storage only, such as a pantry, may be built without windows, provided that such room is adequately ventilated by natural or artificial means to the approval of the surveyor.

Provided that such ventilation may be omitted in the case of strongrooms not frequented by the public.

Part III.—Mechanical Ventilation.

101. General.—(a) A system of mechanical ventilation or air-conditioning shall be installed in all cases when required by these regulations or when natural ventilation in accordance with this requirement is not provided.

(b) By air change is meant the complete replacement of the air in a room or building by an equal quantity of fresh air drawn from outside such room or building from a source free from contamination and impurity.

(c) The requirements laid down in Table 101 shall determine the minimum capacity of the ventilating equipment which shall be installed.

(d) Where a system of mechanical ventilation is used in place of natural ventilation, such system shall be operated at all times when the area it ventilates is occupied.

(e) Under no circumstances will re-circulation of air be permitted in the case of bathrooms, sanitary compartments and water closets, garages and other rooms where noxious or dangerous fumes or gases are likely to occur, kitchens, hospitals for infectious diseases, laundries, dry cleaning establishments, or in any section of a building where the trade or occupation contaminates the air.

Re-circulation of other air may be permitted provided added fresh air is introduced in accordance with the requirements of this part.

TABLE 101.

Minimum Requirements for Mechanical Ventilation.

Class of Building.	No. of Air Changes per Hour.	Cubic Feet per Minute per Person	Remarks.
Class V.			
Offices	6	30	
Class VI.			
Shops, including Departmental Stores, Chain Stores, Sales Rooms and Basements	6	—	
Public Dining Rooms and Eating Houses	12	—	
Kitchens and Serveries	30	—	Kitchens and Serveries shall be so ventilated that there shall be no flow of air from such kitchen or severy to other rooms.
Garages and Service Stations	15	—	
Class VII.			
Warehouses	4	—	Additional number of changes per hour may be required having regard to the nature of the contents.
Class VIII.			
Factories	6	30	Where the process being carried out introduces contamination into the atmosphere or is liable to render the atmosphere injurious through heat and excessive moisture, special provisions shall be made to reduce such contamination, heat or moisture.
Class IX.			
Theatres and Auditoriums; Dance Halls	10	30	Installation to be in accordance with the requirements of the regulations under Part VI of the Health Act.
Special Cases.			
Laundries	15	—	
Bathrooms	—	50*	* Cubic feet per minute per bath.
Sanitary Compartments	10	50*	* Cubic feet per minute per toilet fixture.
Basements, general	6	—	Unless occupancy requires a greater number of air changes.
Hotel Bars	8	—	

102. Sources of Air.—All air for ventilating purposes shall be drawn from the exterior of the building, any intake being so located that the air entering the system will contain no more bacteria, dust, odours, toxic substances or moisture than the normal exterior air of the locality in which such building is situated.

103. Discharge of Foul Air.—Foul or vitiated air shall not be discharged from a mechanical exhaust ventilating system to any place where it may become a nuisance.

104. Design and Construction.—Every system of mechanical ventilation or air-conditioning shall be designed and constructed in accordance with accepted good commercial practice.

105. Air-conditioning.—When an air-conditioning plant is installed at least twelve and one half (12½) cubic feet per person per minute of fresh air shall be provided. Re-circulation of other air shall be permitted except in the case of uses where it is not permitted in regulation 101 (e).

The plant shall be tested with regard to conditions of temperature, humidity, and air movement to the satisfaction of the building surveyor.

Part IV.—Light Courts.

106.—Definitions.—In this part unless inconsistent with the context or subject matter—

"Light court" means a court or unoccupied space wholly open at the top constructed or adapted for admitting light to a building and includes such parts of light courts of an adjoining building abutting on the common boundary of such buildings as will when combined, form a common court provided that the reciprocal light easements thereover have been permanently created by endorsement on the titles of the land on which such buildings are erected and includes also a street, way or lane over which such building is permanently entitled to access of light.

"Totally enclosed court" means a light court enclosed on four sides by the walls of a building. Any boundary of the site on which an adjoining owner has the right to build shall for the purpose of this Section of these regulations be considered a wall of the building.

"Height of a light court" with reference to any wall of a light court means the vertical distance from the lowest part of any window or windows in such wall which permits light to be admitted through such window or windows into the room or floor lighted thereby.

Where the light court bottom is the roof of any storey having a skylight required for the provision of light or ventilation to such storey, the height shall be measured from the lowest point of the ceiling surrounding such skylight, or if there is no ceiling, from the lowest part of such skylight.

"Width of a light court" with reference to any wall of a light court means the shortest horizontal distance from the face of such wall at the level of the lowest window to the vertical plane of the face of the wall or parapet on the opposite boundary of the light court, or, if none, to the vertical plane of the opposite boundary of the light court.

"Angle of light" with reference to any window in a wall of a light court means the angle formed by the vertical plane of the face of such wall and a line drawn from a point in such vertical plane at the level of the lowest part of such window bisecting diagonally a rectangle having for two of its sides the height and the width of such light court.

107. Required Angle of Light.—Every window abutting on a light court other than windows lighting corridors, lavatories and sanitary conveniences, shall have an angle of light not less than the angle of light resultant from the ratio of height to width of light court in Table 107 hereunder applicable to such window and shall receive at such angle of light unobstructed light from the sky. Provided that where the opposite boundary of the light court

on which such window abuts is also the boundary of an adjoining property such window need not receive such unobstructed light but shall be deemed to have the required angle of light if a window at the same light level erected on such opposite boundary of the light court would have the angle of light required under Table 107.

TABLE 107.

Class of Building.	Angle of Light.
Buildings of Class I, II, also buildings of Class III erected in residential and residential flat areas	These buildings shall comply with the provisions of Section 6.
Buildings of Class III other than those erected in residential and residential flat areas, also buildings of Class IV, V and VIII occupancy.	3½ to 1.
Buildings of Class VI and VII.	5 to 1.

The provisions of Table 107 shall not apply to windows of buildings of Class III other than those erected in residential and residential flat areas, also buildings of Classes V, VI, VII and VIII which are lighted from a court with an open side on to a street or unoccupied space along the entire length of the side or rear of the building having an angle of light of 2 to 1, provided further that the width of such court is not less than one half of its depth measured from the face of the building.

108. Minimum Widths.—The minimum width of any light court shall comply with the following:—

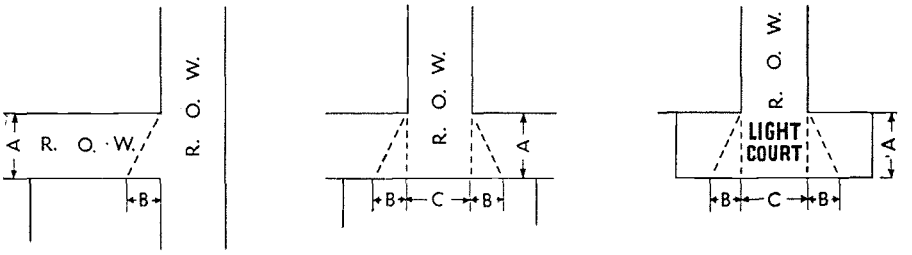
(a) For all buildings of more than one storey in height the minimum width shall be not less than 10 feet.

(b) The minimum width of all light courts having required windows in one or more walls shall be increased in width and length above the minimum width of 10 feet for the full height if necessary to comply with the provisions of Table 107.

(c) The width of any light court, lighting only corridors, lavatories, sanitary conveniences, etc., and not containing required windows shall be not less than one-sixth of the height and in no case less than 10 feet.

(d) Ventilating ducts serving lavatories and sanitary conveniences which are mechanically ventilated or air-conditioned, shall comply with the requirements of the Metropolitan Water Supply, Sewerage and Drainage Department's Regulations and By-laws.

109. Courts Formed by Streets or Rights-of-Way.—In the cases where a street or right-of-way being a light court abuts wholly or partly on a building and is intersected by or connected with another street or lane at right angles thereto the Surveyor may permit windows, not having the required angle of light, to be constructed in that section of the wall of the building abutting on the light court and located within a distance of half the width of such court on one or both sides of the intersecting street or right-of-way.



Illustrating Regulation 109.

Distance "B" = ½A.

Windows in space "B" may be treated as windows in space "C."

110. Ventilation of Totally Enclosed Light Courts.—Where a totally enclosed court, wholly or in part open at the top and constructed or used for admitting light and air to a building of Class I, II, III or V occupancy is constructed in connection with such building and the height of the court from the eaves or top of the parapet to the ceiling at the ground storey exceeds the length or breadth of such court, then ventilation shall be provided by means of—

(i) a system of mechanical ventilation capable of giving six changes of air per hour and designed to introduce plenum air from a clean source and to distribute the air from the bottom of the light court in such a manner as to ensure even distribution over all sections of the light well which are pierced by windows, louvres, or vents; or

(ii) A flue constructed between the lower end of the court and the outer air having a thoroughway, the least sectional area of which shall measure not less than 5 square feet or one-twentieth of the average horizontal area of such court, whichever is the greater, but in no case shall the maximum sectional area of the ventilating flue be required to exceed 20 square feet. The flue shall not be less than 18 inches across in any direction and be constructed in such a manner that it can be cleaned out.

Provided that when such court is situated upon an allotment boundary and when at the time of construction of such court the walls of buildings on adjoining allotments are not such as to make the provisions of this regulation applicable, either the flue required by paragraph (ii) hereof shall be provided during construction of such court or approved provision shall be made for the future installation, at such time as the court becomes completely enclosed, of the system of mechanical ventilation required by paragraph (1) hereof. The owner of the building in connection with which such light court is constructed shall, if and when called on by the surveyor, complete the installation of such system of mechanical ventilation. Provided further that such ventilation of totally enclosed light courts shall not be required for light courts of two or less storeys in height.

111. Access to Light Courts.—In all closed courts there shall be means of access at the lowest level.

112. Erections in Light Courts.—Vent ducts, flues, service pipes, and erections of like nature shall be permitted in light courts provided such erections are of fire-resisting materials, but where their combined area exceeds 10 per cent. of the area of such light court, the area of the light court shall be increased by the equivalent of such excess percentage. The area of such erections for the purposes of this regulation shall be their horizontal projection between any two floors of a building.

SECTION II.

MEANS OF EGRESS.

113. Provisions of Exits Generally.—(a) Exit facilities in accordance with the requirements of these regulations shall be provided to—

(i) every new building hereafter erected or constructed;

(ii) every existing building to which major alterations or repairs are made or which has its occupancy changed if required under the provisions of Section 30 to conform to the requirements of these regulations.

(b) If alterations other than those required by the provisions of Section 30 to make the building conform entirely with the provisions of these regulations are made to any existing buildings in which the means of egress do not comply with the requirements of these regulations and if in the opinion of the surveyor the alterations are such as to warrant additional means of egress, he may require such additional means of egress to be provided but not in excess of the requirements of these regulations for new buildings of similar construction and occupancy.

(c) In the case of any existing building or portion of a building which has no adequate alternative means of egress the Local Authority may, on the recommendation of the surveyor and the chief officer of fire brigades, require such adequate alternative means of egress to be provided.

114. Kinds of Exits.—Exits shall consist of interior stairways, fire-isolated stairways, ramps, horizontal exits, gangways, exterior stairways, passageways and doorways used either singly or in association to provide the necessary direct passage to a street, or to an open space leading to a street.

115. Position of Exits.—All exits shall be as far apart as practicable and when more than one exit is required they shall be distributed as uniformly as possible within or around the floor area or space they are to serve.

116. Distance to Exits.—(a) Except as provided in subregulation (b) hereof, exits shall be so located that no point in a floor area, room, or space served by them is distant from an exit more than—

(i) in unsprinklered buildings of high hazard occupancy—80 feet; in sprinklered buildings of high hazard occupancy—100 feet;

(ii) in unsprinklered buildings not having a high hazard occupancy—100 feet; in sprinklered buildings not having a high hazard occupancy—150 feet.

(b) The distance shall be measured from the most remote point to the exit except that where a building not having a high hazard occupancy is divided into rooms or apartments as in office or residential buildings the distance shall be measured from the corridor entrance of such rooms to the nearest exit.

(c) In buildings of Type 3, 4 and 5 construction, exits shall be so arranged that there are no pockets or dead ends in which occupants may be trapped.

117. Basements.—Except in a building of Class I occupancy, every basement shall have direct access to at least two independent exits, one of which shall be fire-isolated, provided that—

(i) where any such basement is used solely for the housing of mechanical equipment, the non-fire-isolated exit may be in the form of a fixed ladder or steepstair;

(ii) the alternative means of escape shall not be required where the floor does not exceed two thousand five hundred (2,500) square feet if a single stairway provided is a fire-isolated stairway.

118. Exits from Buildings of Class I Occupancy (Private Dwellings).—Every building of Class I occupancy of more than two storeys shall be provided with a fire escape stairway, provided that if a second internal staircase is provided it shall not be necessary to provide a fire escape.

119. Exits from Buildings of Class II and III Occupancy (Flats, Hotels, etc.).—(a) Every room intended for more than 50 persons shall have at least two doorways remote from each other, each of which serves as a direct exit or leads to an exit either direct or through another room or rooms through which there is unobstructed egress to an exit or exits.

(b) Every building of two or more storeys shall have alternative exits one of which shall be a fire-isolated stairway.

Additional means of exit shall be provided where the distance of travel exceeds the limits prescribed by regulation 116. Where more than three stairways are required, at least two shall be fire-isolated, and where more than six stairways are required, at least three shall be fire-isolated.

(c) Notwithstanding the provisions of subregulation (b) of this regulation, means of egress shall be provided not further than 40 feet from the ends of all corridors and passages.

120. Exits from Buildings of Class IV Occupancy.—Every building of Class IV occupancy situated above the ground storey shall have direct unobstructed access to a fire-enclosed stairway.

121. Exits from Buildings of Class V, VI, VII and VIII Occupancy.—Every building of Class V, VI, VII or VIII occupancy shall have exits in accordance with the following requirements:—

(a) Every building not more than two storeys in height shall have an alternative means of escape: Provided that such alternative means of escape may be omitted in buildings of Type 1 or 2 construction

not exceeding 3,000 square feet in area on any floor, or Type 3 construction not exceeding 1,500 square feet in area on the first floor if the single stair is a fire-isolated stair.

(b) Every building more than two storeys in height shall have alternative means of egress, one of which shall be a fire-isolated stair.

(c) Additional means of exit shall be provided where the distance of travel exceeds the limit prescribed in regulation 116.

(d) Where more than three stairways are required by these regulations at least two shall be fire isolated, and where more than six stairways are required at least three shall be fire-isolated.

122. Relation of Population to Exits.—(a) The required total width of exits from any floor area shall be determined from the number of persons for whose accommodation such floor area is designed or intended, provided that in no case shall the number of persons be assumed to be less than the number obtained by dividing the floor area by the area per person prescribed in Table 122.

(b) For the purpose of this regulation, floor area means the total occupied area within the enclosing wall or partition.

(c) The number of persons accommodated on a mezzanine floor discharging on to a floor shall be added to the number of persons accommodated on the latter.

(d) Where any occupancy is not specified in Table 122 and in any case where the provisions of this regulation are inapplicable or where extraordinary circumstances would render its application unreasonable, the surveyor may determine the basis on which the width of exits shall be calculated.

Table 122.

Maximum Area of Floor Space per Person to be Assumed in Determining the Number of Persons to be Accommodated by Exits.

Occupancy.	Maximum Area of Floor Space per Person in Square Feet.
Restaurants, Eating Houses and Dining Rooms	15
Retail Shops and Markets—	
(a) Ground floor and sales basements	30
(b) Other floors	60
Office and Show Rooms	100
Warehouses, Bulk Stores, Public Garages and Show Rooms	300
Factories	60

123. Aggregate Width of Exits.—The required aggregate width of exits from any floor shall be sufficient to provide for the number of persons to be served by such exits on the basis of 3 feet 4 inches of width for from 1 to 100 persons and an additional width of 20 inches for each additional 100 persons or part thereof; provided that—

(i) in calculating the number of persons to be served by such exits, there shall be added to the number of persons accommodated on that floor 50 per cent. of the number accommodated on the floor immediately above, 25 per cent. of the number accommodated on the two floors above the lastmentioned floor, and 10 per cent. of the number accommodated on the two floors next above, such additional numbers being in each case persons having access to such exits;

(ii) such aggregate width of exits shall be increased by 20 per cent. in the case of unsprinklered buildings of Type 3 construction;

(iii) when fire-isolated stairs are required by these regulations, the total width thereof shall not be less than 50 per cent. of the aggregate width of exits required by these regulations.

124. Minimum Width of Exits.—Except as required by regulation 409, in the case of residential flats of Class II occupancy, every exit shall have a minimum width of 3 feet 4 inches, except that a stair serving a floor area accommodating not more than 25 persons may be reduced to 2 feet 8 inches in width.

125. Exits from Buildings of Class IX Occupancy (Public Buildings).—Exits from public buildings of Class IX occupancy shall be provided in accordance with the requirements of the regulations under Part VI of the Health Act.

126.—Change of Width of Exits.—No means of exit shall decrease in width in the direction of travel.

127. Construction of Stairs Generally.—

(a) **Winders**—The use of winders is prohibited in exit stairways except in buildings of Class I and Class IV occupancy.

(b) **Treads and Risers**—

(i) Treads and risers shall be of uniform dimensions throughout.

(ii) Treads and risers shall be so proportioned that the product of the width of tread exclusive of the nosing and the height of the riser in inches shall not be less than 65 nor more than 75; but risers shall not exceed seven (7) inches in height, and treads exclusive of nosing, shall not be less than ten (10) inches wide. Notwithstanding the above provision external escape stairs may be risers of not exceeding eight (8) inches in height and treads exclusive of nosing not less than nine (9) inches wide.

(c) **Headroom**—Every stairway shall have a headroom clearance of not less than 6 feet 8 inches, measured vertically above any landing or above a line connecting the nosings of the stair treads.

(d) **Landings**—

(i) **Stairs to be in Straight Flights.**—Except in winders or geometric stairs where permitted, every stair shall have straight flights with half-space or quarter-space landings at intervals of not more than 17 nor less than two risers, but no stair shall have more than 34 successive risers, whether in two or more flights, without a change of direction.

(ii) The length and width of landing shall be not less than the width of stairways on which they occur, except that in a straight flight the distance between risers on a landing may not be less than 36 inches.

(e) **Guards and Handrails**—

(i) Every stairway shall have a wall or a well secured balustrade or adequate guard on each side.

(ii) Every stairway when 40 inches or less in width shall have handrails on at least one side, and when more than 40 inches in width shall have handrails on both sides.

(iii) When the width of a stairway exceeds 80 inches or more, one or more intermediate handrails continuous between landings, shall be provided, the number and positions of intermediate handrails being such that there shall not be more than 60 inches between handrails.

(iv) Handrails shall be fixed at a vertical height of not less than 34 inches above the nosing of the tread and not less than 36 inches above the landing, and shall be so constructed that there will be no obstruction on or above them tending to break a hand hold.

128. Measurement of Width.—The width of stairs shall be measured—

(a) When the stairs are enclosed on each side with walls, between the finished surfaces of the walls;

(b) when a stair has a wall on one side only, between the finished surface of the wall and the inner side of the balustrade.

(c) when balustrades are provided on both sides, between the inner surfaces of the balustrade.

129. Space under Stairs.—Except in the case of stairs in a building of Class I, II, III or IV occupancy and in the case of reinforced concrete stairs, the space under stairs shall be left entirely open or shall be entirely closed without openings thereto.

130. Interior Stairways—

(a) **Generally**—Interior stairways shall conform to the requirements of regulation 127 (construction of stairs generally).

(b) In all buildings exceeding two storeys in height stairs and landings shall be constructed of fire resisting materials.

131. Fire-isolated Stairs—General.—Except as herein otherwise specified fire-isolated stairways shall conform to the requirements of regulation 127 (Construction of Stairs generally).

Construction.—(a) When a stairway is required to be fire-isolated, the walls, ceilings, floors and doors shall be so constructed as to provide complete enclosure of the stairways from the room or space served to the exterior of the building provided that—

(i) a stairway need not be enclosed on the uppermost storey except where it is the only means of exit from such storey or where it provides access to the roof of the building;

(ii) where a stairway is not enclosed on the uppermost storey a solid balustrading of incombustible material shall be constructed on such storey to a height of 3 feet above the level of the floor.

(b) Such walls, floors, ceilings and all construction which supports such walls, floors and ceilings or any part of a fire enclosed stairway or exit shall have a fire-resistance rating of two hours provided that in Type 1 construction the requirements of regulation 31 shall be observed.

(c) When any exit stairway leading from an upper floor to an exit from the building is continued past the level of such exit to provide access to any lower floor, such continuation shall be assumed to be part of such exit stairway and shall be fire-isolated if the exit stairway is required to be fire-isolated.

(d) Openings in enclosing walls of fire-isolated stairways shall conform to the requirements of regulation 349, except that doors opening on to a street or exterior passageway and not required to be protected pursuant to regulation 352 shall not be required to have a fire-resistance rating.

132. Electricity and Gas Service.—Electric and/or gas service, ducts and/or meters and/or switchboards shall not be within fire-isolated stairways.

133. Exterior Stairs—

(a) **General.**—Except as hereinafter specified, exterior stairways shall conform to the requirements of regulation 127 (Construction of Stairs generally).

(b) **Substitution for Fire-isolated Stairs.**—Exterior stairs may be substituted for fire-isolated stairs in buildings not exceeding six storeys in height.

(c) **Materials.**—Exterior stairs shall be constructed of metal not less than $\frac{1}{4}$ inch in thickness or reinforced concrete provided that in buildings not exceeding two storeys in height external stairs may be constructed of jarrah or other approved hardwood not less than $1\frac{3}{4}$ inch finished thickness.

(d) **Openings Protected.**—All doors and windows opening on, under or within five (5) feet of required exterior stairs shall be protected in accordance with the provisions of regulations 181, 182 and 183.

(e) **Overhanging Public Space.**—An exterior stairway shall not overhang any public space without the permission of the Local Authority and such permission shall not be given in relation to any road other than a back or side lane.

134. Ramps.—(a) Ramps may be substituted for stairways provided they conform to such of the requirements of this Section for stairways as are applicable.

(b) Ramps shall be in straight lengths with a landing at each change of direction having a length and a width at least equal to the width of the ramp.

(c) Ramps serving as exits or giving access to exits shall have a slo not greater than one in eight.

135. Outgoing Car Ramps.—For a distance of twelve (12) feet from the street alignment the grade of outgoing car ramps from buildings shall not exceed one (1) in fifteen (15).

136. Horizontal Exits—

(a) **Definition.**—A horizontal exit shall mean the connection by a bridge, balcony, vestibule, or doorway, of two floor areas at substantially the same level, such floor areas being located in the same building and entirely separated from each other by a construction having a fire-resistance rating of two hours.

(b) **Clear Width of Parts.**—When vestibules, open-air balconies, or bridges are used as parts of any horizontal exit, they shall be constructed of fire-resisting material and their clear width shall be at least as great as that of the total width of exit doorways opening into them, except that hand-rails may project into this clear width not more than 4 inches.

(c) **Gradients.**—In any horizontal exit where there is a difference in level between the connected floor areas, gradients shall not exceed those specified in regulation 134 for ramps. Stairs or steps shall not be used in a horizontal exit in conjunction with a gradient.

(d) **Doors.**—Every opening used in connection with a horizontal exit shall be protected by a two-hour fire door, provided that—

(i) when located in a fire wall, there shall be a two-hour fire door on each side of the wall, if practicable, a vestibule being provided on one side thereof.

(ii) no locks or fastenings shall be placed on such doors that would prevent them from being opened from either side.

(e) **Exits.**—There shall be at least one exit accessible to or from the space on each side of a horizontal exit.

137. Gangways.—Gangways or bridges may, with the consent of the Local Authority, be erected over private lanes or right-of-ways to connect buildings in the one occupation, provided that such gangways shall be constructed of fire-resisting materials and in the case of enclosed gangways doors complying with the requirements of regulation 359 shall be provided.

138.—Height of Exit.—Exits shall have a minimum clear height of 6 feet 8 inches throughout.

139. Aisles and Passages.—Access shall be provided to the exits from each floor by means of continuous aisles or passageways, which shall—

(a) be so arranged that the occupants of every compartment shall have convenient access at all times to every exit leading from the floor on which such compartment occurs:—

(b) have an aggregate width at least equal to the width required for the exit to which such aisles or passageways discharge, but in no case less than 3 feet 4 inches;

(c) be of a height throughout of not less than 8 feet, except that where such aisles or passages pass under stairs their height may be reduced to 6 feet 8 inches.

140. Doorways.—(a) The doors of exit doorways shall be so hung and arranged that when open they shall not diminish or obstruct the required width of the doorway, passageway, hallway, stairway, or other means of exit. Swinging doors in their swing shall not reduce the effective width of stairways or landings, nor shall they reduce the effective width of a passageway or hallway to less than the minimum width required.

(b) All doors in exit doorways shall open in the direction of exit travel, excepting doors in buildings of Class I, II or IV occupancy, and doors serving only a ground floor area of not more than 1,500 square feet, provided that this requirement shall not prohibit the use of doors swinging both inwards and outwards.

(c) Doors abutting on a street shall be recessed so as not to encroach on the public way, or they may open inwards, provided they be locked back.

(d) Except in the case of a door the sill of which is not more than 2 feet above ground level, no exit door shall open immediately on to a flight of stairs, but shall open on to a landing of which the width shall be not less

than the width of the door and the length in the direction of travel shall not be less than 3 feet or half the width of the door, whichever shall be the greater, provided that in no case shall the width of a landing when at right angles to the direction of travel be less than the width of the stair required by these regulations.

(e) Doors to fire-isolated stairways shall be self closing, except that any such door may be kept open by an approved fusible link, provided that an additional self-closing door constructed of hardwood not less than $1\frac{3}{4}$ inches in thickness or other material having equivalent fire-resisting qualities is fitted in the opening in such a manner as to cause no obstruction to the stairway when opened, and provided further that any glazing in such additional self-closing door shall be fire-resisting and shall not exceed in area 30 per cent. of the area of the door.

141. Door Fastenings.—

(a) Fastenings on any required exit door shall be such that the door may be readily opened from the inside without the use of keys.

(b) **Fastenings on Doors Across Passages.**—No fastening shall be used on a door across a passage except such as will allow the door to be intantly opened from either side without a key or other special appliance.

(c) **Fastenings to be in Order.**—All fastenings shall be maintained in good working order and state of repair.

(d) **Prohibition of Obstruction on Doors.**—No door, guard, lock, catch, handle, door pull or any similar appliance shall be affixed to the door of any exit so that when the door is in the fully opened position such appliance projects and to any extent obstructs the exit.

142. Maintenance of Exits.—All exits shall be maintained in an efficient condition and shall at all times during occupancy of the building be kept readily accessible and clear of obstructions.

143.—Safety Devices in Refrigerators, Cooling Chambers and Strong Rooms.—(a) Refrigerators and cooling chambers which are of sufficient size to permit the entry of a person shall be provided with a door which can at all times be operated from both sides without a key; such door to have a minimum height and width of two (2) feet.

(b) Strong rooms in buildings shall be provided with internal lighting; and also with a pilot light located outside the room but controlled from within the room, and also with an approved mechanical bell to be located outside but controllable from within the room.

144. Loading Docks.—Every building of Classes VI, VII or VIII hereafter constructed shall be provided with loading docks and access ways sufficient in size to wholly contain vehicles within the building or on the site occupied by such building and to permit the passage of vehicles from and on to the street without backing.

145. Revolving Doors.—Revolving doors may be used only in doorways giving direct access to a street, but in no case shall a revolving door form part of a means of exit required under these regulations.

SECTION 12.

MATERIALS AND WORKING STRESSES.

Part I.—Materials.

146. General Requirements.—(a) Materials of good quality only shall be used and shall conform to the requirements set out in this Section.

(b) No old or secondhand timber, bricks, iron, steel or other material shall be used in the construction of any building, unless of equal quality to new material and free from all defects resulting from its age or previous use.

147. Clay or Shale Bricks.—All bricks used in any building shall be wholly sound, hard and well burnt, and in conformity with the S.A.A. Interim 323, Burnt Clay and Shale Building Bricks.

147A. Sand lime (calcium silicate) bricks shall comply with S.A.A. Interim 315.

148. Pre-cast Concrete and Masonry Units.—(a) Concrete blocks and sand-cement bricks shall not be used in external, bearing or party walls without the written sanction of the surveyor. Such blocks and bricks shall conform to the requirements of S.A.A. Interim Specification for Pre-cast Concrete Masonry Units, No. S.A.A. Interim 306, subject to the provision that no pre-cast concrete masonry unit used in load bearing construction shall be less than 4 inches in thickness.

(b) Pre-cast concrete slabs shall have an ultimate strength of not less than 2,700 lb. per square inch at an age of 28 days and shall be prepared, stored and tested in accordance with S.A.A. Specifications No. A102 as incorporated in A100 to A110 "Making and Storing of Specimens of Concrete for Compression Test" and C.A. 2-1937 "Concrete in Building."

All such pre-cast slabs used for external walls of buildings when tested for absorption of water in accordance with S.A.A. Specification No. A35-1957 "Concrete Drainage Pipes" and the absorption shall not exceed 8 per cent. of the dry weight of the specimen.

149. Cast Stone.—Cast stone units for structural purposes shall comply with the S.A.A. Specification for Cast Stone with Portland Cement Base, No. A22-1934.

150. Hollow Blocks.—Hollow blocks for internal panel walls shall be made of concrete complying with the provisions of regulation 148 or of well-burnt clay or shale, or of gypsum, with an aggregate width of voids (measured horizontally at right angles to the face of the block as laid in the wall) of two-thirds the total thickness of the block and as a quality requirement shall have an average minimum ultimate compressive strength calculated on the gross area as follows:—

	Pounds per sq. in.
Hollow clay or shale blocks	450
Hollow gypsum blocks	75

In cases where the aggregate width of voids is less than the above ratio of two-thirds, the compressive strength shall be increased proportionately with the additional actual thickness of material.

151. Cement.—(a) Cement shall comply with the S.A.A. Specification for Portland Cement, No. A2-1953.

(b) For the purposes of these regulations, the weight per cubic foot of cement shall be accepted as 94 lb., the contents of the commercial bag of cement (24 to 1 ton).

152. Lime.—The lime used for lime mortar shall be either—

(a) freshly burnt quicklime in conformity with the tentative S.A.A. Specification for Quicklime No. A3-1928, subject to the combined calcium and magnesium oxides being at least 80 per cent., such quicklime being properly slaked before being mixed with the sand;

(b) hydrated lime in the form of fine white powder and in conformity with the tentative S.A.A. Specification for Hydrated Lime, No. A4-1928.

For the purposes of these regulations the weight per cubic foot of dry powdered hydrated lime shall be 40 lb.

153. Sand and Fine Aggregate.—(a) Fine aggregate for concrete shall consist of clean, hard, strong, durable uncoated grains, free from injurious substances and conforming to the requirements for fine aggregate set out in the S.A.A. Code for Concrete in Building, No. C.A. 2-1937. Sand shall comply with B.S. 1200-1944.

(b) Sand for mortar for brickwork, masonry or plastering shall conform to the requirements for fine aggregate set out in the S.A.A. Code for Concrete in Building, No. C.A. 2-1937, except the requirements for grading set out therein.

(c) For the purposes of these regulation, the weight per cubic foot of sand or fine aggregate shall be deemed to be 90 lb., except where actual weights per cubic foot of dry sand or aggregate can be ascertained by tests of the material being used in the construction work, when the actual weights so ascertained shall be used.

154. Coarse Aggregate for Concrete.—(a) Coarse aggregate for Grades "A" and "B" concrete as set out in Table 157 shall conform to the requirements for such set out in the S.A.A. Code for Concrete in Building, No. C.A. 2-1937.

(b) Coarse aggregate for grade "C" concrete shall consist of broken stone, clinker, broken well-burnt brick or terracotta of a maximum gauge of 3 inches and be free from injurious amounts of deleterious matter, honeycomb, weathered or disintegrated stone, flaky or elongated pieces, and dust. If considered necessary by the surveyor, coarse aggregate shall be washed before use.

155. Water.—Water used for mixing concrete and mortars shall conform to the requirements for such set out in S.A.A. Code for Concrete in Building, No. C.A. 2-1937.

156. Mortars.—(a) Lime mortar shall be made of one part of lime and not more than three parts of sand measured dry by volume. Wherever lime mortar is permitted for use in these regulations, mortar gauged one part of cement to five or less parts of sand measured dry by volume may be substituted for lime mortar.

(b) Composition mortar shall be composed of a mixture of cement with hydrated lime and dry sand not less than one part of cement shall be used to every two parts of lime, and the mortar shall contain not less than one part of cement-lime mixture to every three parts of sand. Only as much water as will render the mixture plastic shall be used. Sand shall comply with B.S. 1200-1944.

(c) Cement mortar shall be made of one part of cement and not less than three parts of dry sand with an allowable addition of hydrated lime not exceeding 10 per cent. of the cement by weight. The cement and sand shall be measured dry by volume. Only as much water as will render the mixture plastic shall be used. Sand shall comply with B.S. 1200-1944.

(d) Before water is added the other component parts of any type of mortar shall be accurately and separately measured and thoroughly mixed together. Mortar containing cement shall be used before initial setting has commenced, and without re-tempering by the addition of further cement and/or water.

157. Concrete.—Concrete shall—

(a) consist of cement, fine aggregate, coarse aggregate and water conforming to the requirements for such materials set out in regulations 151, 153 and 154;

(b) be proportioned preferably by weight the method of measuring being as set out in S.A.A. Code for Concrete in Building, No. C.A. 2-1937, provided that additional materials may be used with the approval of the surveyor to improve workability and that the use of materials in the proportions specified shall not detract from the necessity of compliance with paragraph (d) hereof;

(c) be of quaking consistency but not sloppy, the slumps when tested in accordance with the Australian Standard Method for Determination of Consistency of Cement Concrete, No. A. 101 as incorporated in A. 100 to A. 110, being not in excess of those set out in Table 157B;

(d) when tested for compressive strength 28 days after mixing by Australian Standard Method for Making Compressive Tests on Concrete, No. A. 27-1934, appended to S.A.A. Code No. C.A. 2-1937. If cubes are used for testing instead of cylinders, the compressive strength of such cubes for purposes of design shall be considered as 80 per cent. of the strength indicated by such tests.

Table 157A.

Grade of Concrete.	Concrete Proportions.			Required Compressive Strength in lb. per square inch.
	Cement.	Fine Aggregate.	Coarse Aggregate.	Concrete.
	lb.	cub. ft.	cub. ft.	
A	94	1½	3	2,500
B	94	2	4	2,000
C	94	2½	5	1,700

Table 157B.

Concrete.	Maximum Slump in Inches.
In sections not thicker than 6 inches requiring forms both sides	6
In columns, heavy sections, beams and slabs	5
In footings	4
If consolidated by vibration method	2

Concrete used in reinforced concrete is required to give a minimum compressive strength at 28 days of 2,000 lb. per square inch.

As a guide, concrete containing 94 lb. of cement, 190 lb. of dry sand, 380 lb. of coarse aggregate or its equivalent by volume, and not more than a total of 5 gallons of water per cubic foot of cement properly mixed, placed and cured, should comply with the above requirements.

Concrete of other strengths may be designed and used.

If the structural design is based on an ultimate strength greater than 2,000 lb. per square inch at 28 days, preliminary tests shall be made prior to the commencement of the work in addition to making tests at regular intervals of samples taken from the work to the satisfaction of the surveyor.

Allowance shall be made for the bulking of fine aggregate in accordance with Australian Standard No. A. 26-1934, Field Methods of Determining the Necessary Adjustment for the Bulking of Fine Aggregate, appended to S.A.A. Code for Concrete in Building, No. C.A. 2-1937.

158. Ready-mixed Concrete.—Where concrete used in the construction of any building is not mixed on the job, such concrete shall conform to the S.A.A. Specification for Ready-mixed Concrete, No. (E) A. 502-1941.

159. Reinforced Concrete.—Reinforced concrete shall—

(a) consist of concrete as prescribed in regulation 157 of these regulations and steel or other approved metal reinforcement combined;

(b) conform to the requirements of Section 21.

160. Steel.—Mild steel reinforcements for reinforced concrete and structural steel used in members subject to stress shall comply with the requirements of S.A.A. Specification No. A. 1-1956.

161. High Tensile Steel.—High tensile structural steel may be used in special cases where permitted by the surveyor. Such steel shall comply with the requirements of British Standard Specification No. 548.

162. Rivets.—Rivets shall—

(i) as to materials conform to the requirements of S.A.A. Specification for Structural Steel, No. A. 1-1956;

(ii) as to form and dimensions, conform to the requirements of the S.A.A. Specification for Dimensions of Rivets, No. A. 34-1938.

163. Bolts and Nuts.—

(i) All bright bolts and nuts shall conform to the requirements of S.A.A. B. 117 endorsed British Standard B.S. 1083, "Dimensions of Bolts, Nuts and Set-screws (Machine Bolts), B.S.W. and B.S.F."

(ii) All black bolts and nuts shall conform to the requirements of Australian Standard No. B. 100-1948, also B.S. 916-1953, "Black Bolts and Nuts, Hexagon and Square, B.S.W. and B.S.F."

164. Cast Iron.—All cast iron shall be made of clean, tough, grey iron and shall conform to the requirements of the S.A.A. Specification for Grey Iron Castings, No. B. 26-1942.

165. Castings.—Steel castings shall conform to the requirements of the S.A.A. Specification for Steel Castings, No. B. 27-1942.

166. Electric Arc Welding.—Electric arc welding shall be in conformity with Australian Standard Code for the use of Metallic Arc Welding in Steel Building, C.A. 8-1939 and S.A.A. Interim 352 and Electrodes No. B. 28-1955, shall conform to the requirements of S.A.A. Specification for Electrodes for Metallic Arc Welding in Mild Steel Construction.

167. Timber.—The timber of all structural timber work used in any building shall conform to the requirements and standards as set down in the S.A.A. Specification Australian Standard Grading Rules for Sawn and Hewn Structural Timbers, No. (E) O. 54-1942.

Jarrah and karri shall conform to Bulletin No. 56-1948, Appendices A and B of the Forests Department of Western Australia.

168. Galvanised Sheets.—Galvanised (zinc coated) sheets shall conform to the requirements set out for the appropriate class of sheets in S.A.A. Specification for Zinc Coated (Galvanised) Sheets, No. A. 20-1947.

169. Roofing Tiles.—(a) Cement concrete roofing tiles shall conform to the requirements of the S.A.A. Specification for Cement Concrete Roofing Tiles, No. A. 14-1952.

(b) Terra cotta roofing tiles shall conform to the requirements of the S.A.A. Specification for Terra Cotta Roofing Tiles, No. A. 13-1950.

170. Asbestos Cement.—Asbestos cement slates, unreinforced flat sheets and corrugated sheets shall conform to the British Standard Specification therefor, No. 690-1953, with the exception of dimensions of corrugated sheets, tests for resistance to acidic waters and transverse strength of corrugated sheets.

The minimum average breaking load per inch width of specimen tested in the manner prescribed in the Standard shall be 8 lb. in the case of small sections, and 15 lb. for large and angular sections.

Part II.—Permissible Working Stresses.

171. Permissible Working Stress.—Except where prescribed to the contrary in these regulations, the maximum stresses computed as prescribed by regulation 186 shall not exceed in the case of—

(a) structural steel members, the values prescribed in Section 21;

(b) steel or iron castings, the values prescribed in Section 21;

(c) reinforcing steel, the values prescribed in Section 21;

(d) brickwork, the values set out for the appropriate conditions in Appendix to S.A.A. Code for Structural Steel in Buildings, No. Interim 351, provided that the mortar shall be as specified in regulation 156, subregulation (a), (b) or (c), and that the maximum stresses in the case of brickwork in composition mortar shall be two-thirds of the maximum stresses in brickwork in cement mortar;

(e) reinforced brick masonry, the values set out in Part II of Section 21;

(f) stonework, the values set out in appropriate conditions in Appendix to S.A.A. Code for Structural Steel in Building, No. Interim 351;

(g) concrete blocks and sand-cement bricks, when laid in cement or composition mortar, values as follows:—
Solid blocks—175 lb. per square inch;
Hollow blocks—70 lb. per square inch of gross area;

(h) terra cotta blocks, when laid in cement or composition mortar, 70 lb. per square inch of gross area;

(i) gypsum blocks shall not be used to carry any load other than their own weight;

(j) concrete, the values set out in regulation 157, Section 21;

(k) foundations—loading on foundations by footings, the values set out in regulation 220 of these regulations;

(l) timber—with the exception of jarrah and karri, the values set out in the handbook of Structural Timber Design (third edition) being Technical Paper No. 32 issued by the Division of Forest Products of the Council for Scientific and Industrial Research.

Jarrah and Karri.—Value set out in Appendix "A" of Australian Standard Grading Rules for Jarrah, Karri and Wandoo (Australian Standard No. O. 10 to 45-1948);

(m) in the case of materials for which the allowable working stress is not presented in these regulations, the allowable unit working stress shall be taken as one-quarter of the ultimate strength for metals (other than castings) subject to tension or transverse forces, one-sixth of the ultimate strength for timbers and castings, and one-tenth for natural or cast stone.

172. Tests.—(a) The builder shall, when required by the surveyor, cause to be made such of the tests relating to materials set out in the various Australian Standard Specifications and Codes referred to in this Section as the surveyor may direct. When no applicable Australian Standard Specification or Code exists, the builder shall, when required by the surveyor, cause to be made such tests as the surveyor may direct. These tests shall be carried out in the presence of the surveyor.

(b) Frequent compression tests shall be made during the progress of the works of specimens of concrete taken from the place where it is being finally deposited in the work to enable the surveyor to ascertain if the concrete conforms to the requirements of these regulations.

(c) The work may be subjected by the surveyor to approved analytical tests made from samples taken from placed work, at the rate of not less than one test for each 2,000 square feet of floor area executed in concrete.

FIRE RESISTING MATERIALS.

SECTION 13.

173. General.—(a) Materials of construction and any combination of such materials shall be classified for fire-resistive purposes in terms of hours of resistance to destruction when subjected to the Standard Fire Test as set out in British Standard 476-1953.

(b) The materials or combinations of materials set out in this Section have or shall be deemed to have the fire-resistance ratings given. Other materials or combination of materials may be used in place thereof, provided that such materials or combinations of materials have, when subjected to the Standard Fire Test, a fire-resistance rating at least equal to that required by these regulations for the part of the structure in which it is proposed to use them, provided that the Standard Fire Test shall not be necessary when the materials or combinations of materials are shown by official reports issued by the Australian Commonwealth Experimental Building Section, The National Bureau of Standards in U.S.A., the Underwriters' Laboratories in the U.S.A., or the Joint Fire Research Organisation in Great Britain to have the required fire-resistance ratings.

(c) The thickness and sizes of materials and combinations of materials given in this Section are the minimum thicknesses and sizes which will be accepted for the purposes of fire resistance, but all such materials and methods of construction must, in addition, comply in all respects with all other provisions of these regulations.

174. Requirements for Materials.—Materials to be given the fire-resistance ratings set out in this Section shall comply with the relevant requirements of Section 12 hereof and with the requirements set down hereunder:—

(a) Bricks, terra cotta blocks and concrete blocks shall be laid in cement or composition mortar, except that lime mortar may be used in the case of buildings of one storey only.

(b) Gypsum blocks shall be laid in gypsum or lime mortar.

(c) Expanded metal as a base or reinforcement for plastering shall have not less than 2½ meshes per inch.

(d) Except where the use of gypsum plaster is permitted, plaster shall consist of cement mortar not less than ½ inch thick which may be finished in gypsum plaster or lime putty. Gypsum plaster shall consist of not less than two and a half parts of sand to one part of gypsum. In all cases where plastering is required, the thickness of plaster is additional to the thickness of material specified in regulation 176.

(e) Pre-cast concrete for steel encasement shall be in large units with metal re-inforcement equivalent to that specified for concrete encasement of steel work in S.A.A. Code for Concrete in Building, No. C.A. 2-1937, the method of jointing such units to be approved by the surveyor. (See also Table 176 (c).)

(f) Where gypsum vermiculite plaster is permitted for thicknesses up to one inch, it may be applied in one or two coats which shall consist of 2½ cubic feet of vermiculite (and for the first coat of 5 lb. of hydrated lime) to 100 lb. of gypsum plaster. For a thickness exceeding 1 inch, the plaster shall be applied in two coats,

of which the first shall consist of 2 cubic feet of vermiculite and 5 lb. of hydrated lime to 100 lb. of gypsum plaster, and second of 3 cubic feet of vermiculite to 100 lb. of gypsum plaster.

175. Protection of Columns.—In factories, garages and warehouses and other buildings in which the fire protection covering of columns may be injured by the movement of vehicles, materials or equipment, the surveyor may require such covering to be protected by metal or other suitable materials.

176. Fire Rating of Materials.—The fire-resistance rating of materials or combinations of materials when used for the purposes described shall be as set out in Tables 176A, B or C hereunder.

TABLE No. 176A.

MATERIALS, THICKNESSES AND RATINGS FOR FIRE-RESISTING WALLS AND PARTITIONS.

Material	Construction		Finished Thickness face to face in inches (Including any plaster).			
			4 hrs.	3 hrs.	2 hrs.	1 hr.
Brick, sand-lime brick or concrete blocks	Solid construction no plaster	A	8	8	6	6
		B	8	6	6	4
	Solid construction plastered both sides	B	....	....	5	4
	Solid construction plastered one side	B	....	....	....	3½
	Continuous cavity (two leaves each not less than 4 inches thick)—					
	(a) no plaster	A	....	....	10	10
		B	....	10	10	10
	(b) plastered both sides	A	11	11	11	11
	(c) plastered one side	A	....	10½	10½	10½
Ashlar Masonry	Solid	A	9	9	....	....
Concrete	Reinforced, no plaster (*see* Note (2))	A	6	5	4	4
		B	....	4	3	3
	Not reinforced	A	8	6	6	6
		B	....	5	4	4
Terra cotta or hollow concrete blocks	Plastered one side	B	....	8½	6½	5½
	Plastered both sides	B	9	7	7	4
Gypsum Blocks	Plastered both sides with gypsum plaster	C	....	....	4	4
Plaster on expanded metal	Portland cement plaster or gypsum plaster on expanded metal or wire lath on incombustible studding	C	....	....	....	2½

NOTES ON TABLE.

Note 1.—A—Bearing walls external and internal and party walls.
B—External panel walls and internal non-bearing walls, partitions, lift and stair enclosures.
C—Internal walls only.

Note 2.—Thickness includes plaster, if any, in Type A.

Note 3.—Where thicknesses in Table include plaster, the thickness of wall material exclusive of plaster shall not be less than the thickness given in Table, less ½ inch for walls plastered on one side, or 1 inch walls plastered on both sides.

TABLE 176B.
DETAILS AND RATINGS FOR FIRE RESISTING FLOORS, ROOFS AND CEILINGS.

Material	Construction	Minimum thickness in inches			
		4 hrs.	3 hrs.	2 hrs.	1 hr.
Reinforced concrete	Cover of reinforcement not less than $\frac{1}{2}$ inch	5	4	4	3
Ribbed floor construction (ribs not further apart than 2 feet 6 inches face to face)	With fillers of hollow terra cotta, gypsum or concrete blocks—Minimum thickness of fire resisting material, *i.e.*, thickness of slab plus thickness of shells	4	$3\frac{1}{2}$	3	3
	No fillers—Minimum slab thickness	$4\frac{1}{2}$	4	$3\frac{1}{2}$	$2\frac{1}{2}$
Pre-cast Concrete	Thickness of pre-cast reinforced concrete with concrete laid in situ above, the thickness given being exclusive of cavities and no portion of any concrete or pre-cast concrete being less than 1 inch thick	....	4	4	....
Wood Joist construction	Fire stopped by filling all openings around pipes and flues with incombustible material and covered with double board floor and ceiling of plaster or gypsum plaster on metal or wire lath weighing not less than 2·2 lb. per square yard—				
	Floor thickness	....	....	....	$1\frac{1}{2}$
	Plaster thickness	....	....	....	$\frac{3}{4}$
Light weight construction	Floor and beam construction consisting of 2 inches reinforced concrete floor on steel units mounted on steel beams, or steel joists or light steel construction carrying $2\frac{1}{2}$ inches reinforced concrete or gypsum slab, in each case having a securely suspended ceiling consisting of expanded metal lath weighing not less than 3 lb. per square yard covered with gypsum vermiculite plaster $\frac{3}{4}$ inch thick, as measured from the underside of the metal lath to the under surface of the plaster ceiling. The upper surface of the metal lath shall not be less than $\frac{3}{4}$ inch from the steel load-bearing members. The ceiling shall be continuous, but in any 100 square feet it may have duct openings of a total area not exceeding 70 square inches spaced not less than 8 inches clear from any load-bearing member, and one electrical outlet. All duct openings shall be protected by approved fire dampers	....	3	....	....
	Floor and beam construction consisting of 2 inch reinforced concrete floor on steel joists or light steel construction with a securely suspended ceiling consisting of $\frac{3}{8}$ inch perforated gypsum lath covered with gypsum-vermiculite plaster $\frac{3}{8}$ inch thick. The upper surface of the gypsum lath shall not be less than $\frac{3}{4}$ inch from the steel load-bearing members. The ceiling shall be continuous but in any 100 square feet it may have duct openings of a total area not exceeding 70 square inches spaced not less than 8 inches clear from any load-bearing member, and one electrical outlet. All duct openings shall be protected by approved fire dampers	....	....	....	1

TABLE No. 176C.

FIRE-RESISTANCE RATING FOR VARIOUS THICKNESSES OF MATERIALS USED TO PROTECT STRUCTURAL MEMBERS.

Structural Member	Protective Material	Minimum net thickness in inches required to afford fire-resistance ratings indicated		
		4 hrs.	3 hrs.	2 hrs.
Steel Columns (*see* Notes (1) and (3))	Concrete—			
	Unplastered	2½	2	2
	Plastered	2	2	1½
	Pre-cast concrete (*see* Note (2))—			
	Unplastered	2½	2	1½
	Plastered	2	1½	1
	Brick	4½	3	3
	Solid concrete block—Grade A or B	4	3	2
	Terra cotta—plastered	4	3	2
	Hollow concrete block—plastered	4	3	2
Steel columns	Sprayed asbestos Gypsum Vermiculite and gypsum plaster (*see* Note (6))	2	1½	1
Steel beams, girders and trusses	Sprayed asbestos	2	1½	1
	Gypsum Vermiculite and gypsum plaster (*see* Note (7))			
Combination columns	Concrete cover over face of main steel members (*see* Note (3))	2	2	2
Reinforced concrete and composite columns	Concrete cover over the main reinforcement (*see* Note (4))—			
	Unplastered	2	1½	1
	Plastered	1½	1	1
Steel beams, girders and trusses	Concrete (*see* Note (3) and (5))—			
	Unplastered	2	1½	1
	Plastered	1½	1	1
Reinforced concrete beams, girders and trusses	Concrete cover over main reinforcement including stumps	1½	1½	1

NOTES ON TABLE 176C.

Note 1.—Thicknesses given are the minimum thicknesses exclusive of plaster measured from the face of steel column exclusive of rivet heads. In columns required to have a four hour or three hour rating, re-entrant or other accessible spaces behind the specified outer protection shall be filled with concrete or with the material of the outer protection.

Note 2.—Pre-cast concrete for fire-proofing shall have rebated or interlocking joints and sufficient projecting rods or wires to ensure adequate bond to poured concrete. The space between the steel and pre-cast concrete shall be filled with concrete.

Note 3.—In buildings of Class VI and Class VII occupancy the thicknesses given in the table shall be increased by ½ inch.

Note 4.—All structural steel must be covered at least 3 inches in buildings of Class VI and Class VII occupancy and 2½ inches in all other buildings.

Note 5.—Where the thickness of concrete fire-proofing on the soffit of steel beams and girders is less than 1/12th of the width of the bottom flange plus 1½ inches, such fire-proofing shall be—

(a) rammed in from the side, the bottom of the side forms being made removable for the purpose; or

(b) of pre-cast concrete.

Note 6.—

(i) 4 hours—

$1\frac{1}{2}$ inch gypsum-vermiculite plaster over expanded metal lath weighing not less than 3 lb. per square yard, spaced $\frac{1}{2}$ inch from the faces and edges of the steel by means of 16 gauge steel channels at 24 inch vertical spacings and expanded metal corner beads, the space between the resultant casing and column being not necessarily filled.

$1\frac{1}{2}$ inch of gypsum-vermiculite plaster over two layers of $\frac{1}{2}$ inch gypsum wall-board held by tie wires and wrapped with 1 inch 20 gauge wire netting and expanded metal corner beads, the space between the resultant casing and the column being not necessarily filled.

(ii) 3 hours—

1 inch of gypsum-vermiculite plaster over two layers of $\frac{1}{2}$ inch thick gypsum wall-board held by tie wires and wrapped with 1 inch. 20 gauge wire netting and expanded metal corner beads, the space between the resultant casing and the column being not necessarily filled.

(iii) 2 hours—

1 inch of gypsum-vermiculite plaster over one layer of $\frac{3}{8}$ inch perforated gypsum lath held by tie wires and expanded metal corner beads, the space between the resultant casing and the column being not necessarily filled.

(iv) All columns shall be cased solid up to a height of not less than 4 feet above floor level or to a greater height if liable to damage owing to the type of use for which the building is designed.

(v) Satisfactory provision shall be made for the prevention of penetration of damp or condensation of moisture on the metal surface of all columns and steelwork.

Note 7.—

(i) 4 hours—

$1\frac{1}{2}$ inch gypsum-vermiculite plaster in accordance with 4 hours rating under Note (6).

(ii) 3 hours—

1 inch gypsum-vermiculite plaster in accordance with 3 hours rating under Note (6).

(iii) 2 hours—

1 inch gypsum-vermiculite plaster in accordance with 2 hours rating under Note (6).

177. Lintels.—Lintels and beams shall have or shall be so protected as to have the same degree of resistance to fire as the walls and/or floors in which they occur, provided that steel or iron angles, plates, or bars carrying the outer portions of external walls and structural beams or lintels spanning over openings in walls and partitions of one or two-hour rating, or over openings in walls of Class I or Class II occupancy shall not be required to have a fire-resistance rating.

178. Base Structures.—A base structure shall have a fire rating at least equal to that of the portion of the building which it supports.

179. Stairs.—(a) The following materials shall be permitted for stairs other than fire-isolated stairs which shall be constructed of materials having fire-resistance ratings as required in regulations 31 and 131:—

(i) Reinforced concrete.

(ii) Iron or steel, not less than $\frac{1}{4}$ inch in thickness.

(iii) Jarrah or other approved hardwood having a finished thickness of not less than $1\frac{5}{8}$ inches except as provided in regulation 133 (c).

(b) The following materials will be permitted for ceilings or soffits of staircases:—

(i) $\frac{3}{4}$ inch plaster or gypsum plaster or expanded metal or wire lath.

(ii) Asbestos cement sheeting not less than 3/16 inch in thickness.

(iii) Tongued and grooved jarrah or other hard timber having a finished thickness of not less than $\frac{1}{2}$ inch.

(iv) Sheet metal, not less than No. 26 B.W.G. in thickness.

180. Fire-retardant Materials.—The following materials shall be classified as fire-retardant materials:—

(a) For roof coverings—

(i) sheet metal, not less than No. 26 B.W.G. in thickness;

(ii) slates;

(iii) terra cotta or cement roofing tiles;

(iv) asbestos cement sheets, not less than 3/16 inch in thickness;

(v) built-up roofing, consisting of successive layers of roofing felt, the final layer consisting of asbestos felt impregnated with tar or asphalt, or other roofing felt impregnated with tar or asphalt and covered with gravel or granulated slate or stone;

(vi) concrete, granolithic, terrazzo, cement mortar, and other similar incombustible materials.

(b) For internal construction—

(i) iron, steel, or copper sheets, not less than No. 26 B.W.G. in thickness;

(ii) asbestos cement sheets having a thickness of not less than 5/32 inch;

(iii) fibrous plaster sheets;

(iv) jarrah boarding dadoes ½ inch or more in thickness;

(v) any material specified under paragraph (a) (vi) of this regulation.

181. Fire Doors.—Fire doors shall be classified as two-hour or one-hour fire doors.

(a) Two-hour fire doors shall be wood-cored metal-clad doors complying with the specification for construction and installation of fire doors of the Fire and Accident Underwriters' Association of Western Australia, or any other type which will provide equivalent resistance to fire, the spread of fire and smoke, and transmission of heat when subjected to the Standard Fire Test, and which is otherwise suitable and approved by the Fire and Accident Underwriters' Association of Western Australia.

(b) One-hour fire doors shall be hollow metal or metal-clad doors, capable of providing a resistance of one hour to fire, to spread of fire and smoke, and to transmission of heat when subjected to the Standard Fire Test, and which are approved by the Fire and Accident Underwriters' Association of Western Australia.

(c) Where a one-hour fire door is required by these regulations, a properly framed solid or solid-core hardwood door of not less than $1\frac{3}{4}$ inch finished thickness, and of scantlings in no case less than $3\frac{5}{8}$ inches x $1\frac{5}{8}$ inches in sectional area shall be permitted.

(d) Where a one-hour fire door is required by these regulations, a door having a higher fire rating may be used in place thereof.

(e) Except as provided in regulations 346 and 348 and in special circumstances approved by the surveyor, no opening protected by a fire door shall exceed 56 square feet in area.

(f) Where glazing is permitted in fire doors elsewhere in these regulations, such glazing shall not exceed 2 square feet in superficial area, shall be secured with metal beads, and shall consist of—

(i) wired glass not less than ¼ inch thick;

(ii) electro copper glazing not less than ¼ inch thick, the area of each individual pane being not more than 16 square inches.

(g) All fixings, frames, sills, fastenings, and other details of fire doors shall be in accordance with the specification for construction and installation of fire doors of the Fire and Accident Underwriters' Association of Western Australia.

182. Fire Windows.—(a) One-hour fire windows shall be—

(i) electro-copper glazing or steel-framed windows glazed with wired glass, complying with the specification for construction and installation of fire windows and electro copper glazing of the Fire and Accident Underwriters' Association of Western Australia; or

(ii) glass masonry assembled, constructed, and installed in accordance with the requirements of the Fire and Accident Underwriters' Association of Western Australia.

(b) Two-hour fire windows shall consist of two one-hour windows built into the one opening, with an air space between.

(c) No opening protected by a fire window shall exceed 56 square feet in superficial area.

(d) One-hour wire glass skylights shall be similar in construction and glazing to fire windows, and shall be supported on steel or concrete kerbs. No skylight opening shall exceed 100 square feet in superficial area.

(e) All fixings, frames, sizes, fastenings and other details of fire windows and skylights shall be in accordance with the specification for construction and installation of fire windows, electro copper glazing, and wired glass skylights of the Fire and Accident Underwriters' Association of Western Australia.

183. Fire Shutters.—Fire shutters shall be tin-clad, steel-clad, iron or steel gauze shutters or steel interlocking roller shutters complying with the specification for construction and installation of fire shutters of the Fire and Accident Underwriters' Association of Western Australia.

SECTION 14.

LIVE AND DEAD LOADS.

184. Buildings to be Designed for Loading.—Every building and every portion thereof shall be designed to withstand the forces and to support the whole of the loads both live and dead to which it is subject, without exceeding the stresses allowed for the various materials elsewhere in the regulations.

185. Loading Notice Plates.—In buildings of Class VI, VII or VIII, notices conforming with the requirements of regulation 8 shall be kept posted on each floor stating the safe live loads such floor has been designed to carry safely.

186. Determination of Dimensions of Structural Members.—The method of determining the dimensions of structural members shall, except where prescribed to the contrary in these regulations—

(a) in the case of reinforced concrete structural members, be in conformity with the S.A.A. Code for Concrete in Building, No. C.A. 2-1937;

(b) in the case of structural steel members, be in conformity with the S.A.A. Code for Structural Steel in Building, No. Interim 351, or the S.A.A. Welding Code No. C.A. 8-1939, or S.A.A. Interim 352, whichever is applicable;

(c) in cases not provided for in the S.A.A. Codes specified in the preceding paragraphs, admit of a rational analysis and be in accordance with the established principles of mechanics and structural design;

(d) in the case of timber members, be in conformity with the Handbook of Structural Timber Design (third edition), being Technical Paper No. 32 issued by the Division of Forest Products of the Council for Scientific and Industrial Research, and in the case of jarrah and karri, Australian Standard No. O. 10 to 45-1948, so far as this standard is applicable.

187. Live Loads.—The minimum live load for which a building or portion of a building may be designed shall be the load specified in S.A.A. Interim 350 for the particular occupancy or for the occupancy most closely resembling same, but if the actual live loads to be imposed thereon exceed the loads specified in S.A.A. Interim 350, the design shall provide for the actual live loads.

188. Impact.—(a) In the design of all structures carrying machinery, cranes, conveyors, or any other apparatus liable to set up vibration or to cause impact effects, 20 per cent., or such greater allowance as the circumstances may require, shall be added to the stresses due to the effect of the static loads.

(b) In the case of buildings subject to heavy shocks the live loads shall be calculated in such manner as the surveyor shall determine.

189. Live Load Reduction.—In designing structures, reductions in live loads may be made in conformity with the provisions of S.A.A. Interim 350.

190. Weight of Materials.—The weight of materials actually employed in the structure under the provisions of these regulations shall be determined on the building and shall not exceed those used in the design without the approval of the surveyor.

The weights of materials given in S.A.A. Interim 350 may be taken as a guide only.

191. Partitions.—Partitions and other structures superimposed on floors may be included in the live load provided the weight of the partition or other structure per square foot of base does not exceed the permissible live load per square foot of floor area. Where the type and weight of partitions have not been determined, provision may be made in the design for an estimated weight and any partitions subsequently erected shall not exceed such estimated weight.

192. Maximum Loading during Construction.—The maximum stress imposed on any part or member of a structure during the course of erection shall not be more than 25 per cent. in excess of the working stress specified in these regulations.

193. Wind Loading.—All buildings or parts of buildings exposed to wind pressure shall be designed to resist safely all wind loads, both during erection and after completion.

194. Temperature Effect.—In special cases, such as long span roof trusses, provision shall be made for expansion and contraction.

195. Expansion Joints.—Where a building is divided up into sections by expansion and contraction joints each section must be considered separately in regard to wind pressure unless the sections are suitably anchored together.

196. Load on Roof Covering.—All roof coverings which are required to support loads incidental to maintenance shall be capable of carrying the following loads on any one square foot:—

Where the roof is flat or the slope is such that workmen could stand directly on the roof—200 lb. concentrated on any square foot.

Where the slope is such that workmen would have to use a ladder or similar support laid on the covering—100 lb. concentrated on any square foot.

SECTION 15.

PRECAUTIONS DURING BUILDING OPERATIONS.

197. Commencement of Work.—A builder shall not commence to erect, or proceed with any building work or alteration to or demolition of a building or to make any excavation or carry out any underpinning until the plans covering the work have been lodged with the surveyor and a license issued for such work in accordance with the requirements of Section 3.

198. Protection of Public and Provision of Protective Hoarding.—(a) Where a building is to be constructed or pulled down near to or adjacent to the building line of any street or footpath, precautions shall be taken by the builder to ensure the safety of the public using such street and particulars of such precautions shall be submitted to and approved by the surveyor before any work is commenced.

(b) A builder shall not commence to make any excavation near or adjacent to any street or footpath or do any act whereby such street or footpath may be obstructed or rendered dangerous or inconvenient to the public

until he has obtained a license from the Local Authority and a hoarding license in the form shown on Schedule 10 signed by the surveyor. He shall then erect a proper hoarding or fence to the satisfaction of the surveyor together with, if required, a platform and hand railing to serve as a suitable footway or traffic way.

During the progress of such excavation or construction such hoarding or fence shall be maintained in good condition and suitably painted if required by the surveyor. It shall be kept adequately lighted each and every night as a safety precaution, and on the completion of the building work or as soon as possible before or after completion, the builder shall remove the hoarding, repair all damage to the street or footpath and leave same in a condition satisfactory to the surveyor.

This hoarding may encroach under license from the surveyor over the building line to a distance not exceeding at the pavement level, half the width of the footway, but it may extend and shall extend when required by the surveyor in the form of a gantry to the kerb alignment or such an alignment as determined by the surveyor at a height of not less than 9 feet above the pavement. At the said height the additional encroachment over the footpath between the hoarding and the kerb or other alignment shall be floored over or suitably covered as a protection to passengers using the footway. Nothing however herein shall prevent the use of such floored space from being used by the builder as a working space for the purposes of the building constructed provided always that such space is protected by a closely boarded or other approved balustrade.

(c) The builder shall, in addition to the precautions already prescribed throughout all building operations, take every precaution necessary in order that the public may be subjected to the least possible danger or inconvenience. Where directed by the surveyor, the builder shall at his own expense, take any further precaution that the surveyor may deem necessary.

199. Protection of Workmen.—The builder shall make due provision for safe working throughout all building operations, so that no workmen are subjected to unnecessary risks or danger and shall put into effect at his own expense any further precautions that the surveyor may deem necessary.

200. Scaffolding.—When a scaffolding is necessary for any building operation, the footpath or ground adjacent to such scaffolding shall be covered over and kept covered over to the satisfaction of the surveyor until the completion of the work so that any person may not be endangered or inconvenienced by falling materials. The covered working space referred to under "hoarding" may constitute the covering herein referred to.

Such scaffolding shall be erected in conformity with the requirements of the Scaffolding Act and be maintained to the satisfaction of the surveyor and any other person having constituted legal authority over same and removed as soon as possible after completion of the work requiring its use. Where such scaffolding has been erected over or upon a public footpath, such footpath shall be reinstated, and all damaged portions made good or renewed and left in a condition satisfactory to the surveyor.

201. Protection of Adjacent Property.—(a) Where the excavation or demolition is to be made in proximity to an existing building, the walls of such building shall be shored and/or underpinned and/or protected as may be necessary to ensure stability.

(b) 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 shall be taken to ensure its stability to the satisfaction of the surveyor.

(c) Whenever the level of the foundation or any part thereof of a building to be erected or altered is below the foundation of an adjoining building as provided in regulation 223 under "Levels of Footings," such adjoining building foundation shall be underpinned in accordance with the provisions of section 310 of the Municipal Corporations Act, and in conformity with the requirements of regulation 240 of these regulations.

202. Protection of Excavation.—All excavations for buildings shall be properly guarded and protected and shall, where necessary, be sheetpiled so as to prevent the adjoining earth or pavement from caving in. In cases required by the surveyor, sheetpiling of approved type shall be utilised to protect the subsoil from damage by scour of subsoil or surface waters.

203. Demolition of Buildings.—Every person demolishing or removing any building or any part thereof shall comply with the following requirements:—

(a) Unless otherwise approved by the surveyor, storey after storey shall be completely removed.

(b) Materials being removed from any building shall not be placed upon the floor or floors of such building, but shall be lowered to the ground immediately upon displacement and removed from the site, unless otherwise permitted by the surveyor.

(c) No portion of any external wall abutting on any street or road shall be pulled down except between such hours as the surveyor may direct.

(d) Shall not cause or permit any material to be thrown on to any street or right-of-way.

(e) For the purpose of preventing or lessening nuisance from dust, material displaced from a building shall be kept sprayed with water.

204. Alterations to Buildings.—Where alterations are being made to any building, every portion of the building likely to become structurally insecure by reason of such alterations shall be adequately shored up and supported.

205. Storage of Materials.—No builder shall deposit or store any material whatsoever on a public street, footpath, or other public ground, except for the purpose of immediate transportation of such material onto the building site or ground being used for the purposes of building operations. In such case, the receipt 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 the traffic on the street or footpath and with due precautions for the public safety and convenience.

Any part of the street or footpath for which the builder has procured a license for use and enclosure by a hoarding shall be deemed part of the building site for the purposes of this portion of these regulations for the period covered by such license.

206. Height of Walls during Construction.—No wall or portion of a wall shall, during its construction, be built to a height greater than 5 feet or six times its thickness, whichever is the greater, unless it is supported by temporary shores, proper scaffolding or buttresses at intervals of length not greater than 30 times its thickness, until such time as roof or floor ties or cross walls are in position.

SECTION 16.

DAMPNESS AND DRAINAGE OF SITE.

207. Land Liable to Flooding.—No building shall be constructed upon any land defined by the Local Authority as liable to be flooded or inundated by water.

208. Land Without Proper Means of Drainage.—No building intended or adapted to be used wholly or partly for residential purposes shall be constructed upon land which cannot at all times be efficiently drained by gravitation into some adjoining street, channel, or drainage easement, on to, through, or over which such drainage may lawfully be discharged.

209. Drainage of Subsoil.—Where the surveyor considers such action necessary, the subsoil of the site of every new building shall be effectively drained by means of suitable earthenware subsoil drains, properly laid to an approved outfall. Where possible, drains shall be connected to the Local Authority's stormwater drains.

211. Stormwater Drains.—(a) Where roof drainage is required by regulation 299, every building or every existing building that is being altered or extended, shall be provided with a complete and effective system of stormwater drains to the satisfaction of the surveyor for the collection of stormwater discharged from the roof of the building, and where required by the Local Authority, for the interception and collection of storm and surface water from the allotment on which the building is erected, and for the conveyance of such storm and surface water to some point where it may be lawfully discharged.

(b) Such drains shall—

(i) be constructed of cast iron, brick, stone, salt-glazed earthenware or other material approved by the surveyor;

(ii) be constructed to regular falls and be at every point of sufficient capacity to carry the whole of the water collected;

(iii) when the line of any such drain crosses any public footway, be constructed in conformity with the requirements of the engineer.

(c) Downpipes connected to such drains for the collection of roof water may be exposed inside a building, provided they are constructed in cast iron or sheet metal of not less than 24 B.W.G.

(d) Downpipes, when inside a building and encased in such a manner as to be inaccessible, shall be copper, wrought iron, cast iron, or other approved non-corrodible material.

212. Damp Courses and Damp-proofing of Buildings.—See Section 18, Part VIII.

213. Seepage to be Diverted.—All retaining walls or brick or concrete fences shall have seepage diverted in a manner approved by the surveyor, but in no case shall seepage be discharged on to a public footpath.

SECTION 17.

EXCAVATIONS, FOUNDATIONS AND FOOTINGS.

214. Depth of Footing Excavation.—(a) Notwithstanding the provision of regulation 220 of these regulations excavations for footings shall be taken to such depth as will, in the opinion of the surveyor, give a foundation capable of effectively supporting the loads imposed thereon by the footings.

(b) No footing shall be less than 12 inches below the natural ground surface.

215. Inspection of Excavations.—Twenty-four hours' notice shall be given to the building surveyor of intention to place footings.

216. Retaining Walls.—All permanent excavations with slopes steeper than the angle of repose or natural slope of the soil shall have retaining walls of masonry or reinforced concrete of sufficient strength and stability to retain the embankment together with any surcharged loads.

217. Removal of Water from Excavations.—Water shall be removed from excavations before concrete is deposited, unless otherwise directed by the surveyor. Any flow of water into the excavation shall be diverted through proper side drains to a sump, or shall be removed by other approved methods which will avoid washing the freshly deposited concrete. Water and vent pipes and drains, if left in position, shall be filled by grouting or otherwise after the concrete has thoroughly hardened.

218. Excavations Adjacent to Adjoining Buildings.—See regulation 201 (precautions during construction).

219. Protection of Excavations.—See regulation 202 (precautions during construction).

220. Loading on Foundations.—The maximum loading per square foot which any footing shall be permitted to transmit to its foundation shall—

(a) where the bearing capacity of the foundation has been tested be not more than the bearing capacity disclosed by such test as prescribed by Appendix (f) of S.A.A. Code for Structural Steel in Building, No. Interim 351;

(b) where the bearing capacity of the foundation has not been tested, be not more than the allowable loading shown in Table 220 for the particular material comprising the foundation;

(c) comply with the following test to ascertain maximum bearing pressure.

Testing of foundations to ascertain the maximum bearing capacity shall be carried out as follows:—

(i) The area loaded shall not be less than 18 inches square.

(ii) Tests shall be made at the proposed level of the bearing surface.

(iii) The shaft of excavation shall be at least 2 feet larger all round than the bearing plate.

(iv) The working load shall be applied for 48 hours, and there shall be appreciable sinking in the last 24 hours. The working load shall be increased 50 per cent. at the end of 48 hours, and there shall be no appreciable settlement at the end of six days.

(v) The load shall be applied by increments of ½ ton per square foot every 24 hours. After the first 24 hours the permissible bearing pressure shall be taken as two-thirds the pressure at which there is no appreciable settlement, after making due provision for the ratio of the test area to the actual footing area to be employed the uniformity or non-uniformity of the subsoil and the class of building concerned.

Table No. 220 hereunder gives the maximum permissible loads in various subsoils, as a general guide to their safe bearing capacity, but the designer shall be responsible on consultation with the surveyor, for providing such trial holes, loading tests, or other measures as may be necessary to ascertain the safe bearing load of the ground concerned.

Intermediate values and values for other materials shall be agreed upon in consultation with the surveyor. The pressures given in the table may be exceeded by an amount equal to the weight of material in which the foundation is bedded and which is displaced by the foundation itself, measured downwards from the final finished lowest adjoining floor or ground level.

TABLE 220.

Table of Safe Bearing Values for Soils.

	Ton per Square Foot.
Alluvial soil and made ground	½
Soft clay and loam	1
Ordinary clay and clay-sand mixture	2
Very wet sand, where scour is prevented	2
Dry firm sand or dry clay	3
Hard firm clay	4
Shale rock	8
Local dune limestone or soft sandstone	6

221. Pile Foundations.—(a) Where the bearing capacity of the foundations is not adequate to support any portion of a building, such building or portion thereof may be erected on a footing of piles.

(b) Should pile footings be used boring of the soil shall first be made to determine the position of a suitable underlying stratum of hard material and the piles driven to each such stratum when practicable.

(c) The surveyor may select one or more piles for testing as set out in the next succeeding subregulation.

(d) In testing a pile in place, it shall be loaded to twice its proposed working load, by additions at not less than four-hour intervals of loads not more than five tons. Measurement of settlement shall be made and recorded immediately before and after the addition of each load. Such measurement shall be adjusted to compensate for the elastic compression of the pile. The pile shall be considered adequate to support the proposed working load if the total settlement so measured does not exceed ½ inch and if no further settlement occurs after a lapse of 48 hours.

(e) Piles shall not be spaced at less than 2 feet 6 inches centre to centre without the approval of the surveyor.

222. Footings.—(a) Every building shall have a complete and properly designed system of footings constructed of concrete, reinforced concrete, steel grillages encased in concrete, or piles of approved timber or reinforced concrete capable of transmitting the whole of the dead and live loads from the building in such a manner that the pressure on the foundations in no place exceeds that permitted by regulation 220 and the stresses in the materials of the footings do not exceed those permitted for such materials pursuant to Section 12 or as required elsewhere in these regulations.

(b) Footings of brick or stone may be substituted for concrete in buildings of Type 3 construction not exceeding one storey in height, erected on foundations of firm, dry sand.

(c) Where a wall has a continuous footing which is not suitably reinforced the minimum width and depth shall be as follows:—

(i) Width.—The footing shall be at least 8 inches wider or one and one-half times the thickness of the wall resting upon it, whichever is the greater.

The thickness of the wall shall be measured at the ground floor level and the footing shall extend equally on each side of the wall except where it adjoins a boundary or another wall.

(ii) Depth.—The diminution of the footings of every wall shall be formed in regular offsets and the height from the bottom of such footing to the base of the wall shall be at least equal to one-half the thickness of the wall at its base, but not less than 9 inches in the case of brick or concrete and 12 inches for stone.

(d) In all pier and column footings the centroid of pressure of each footing shall reasonably coincide with the centre of gravity of the load supported by the footing.

223. Levels of Footings.—Where two footings of a building abut or touch one another, the underside of the footings shall be placed at the same level unless specially otherwise permitted by the surveyor.

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 that the surveyor may, in any circumstance direct.

The underside of the underpinning of an adjoining building wall shall be a footing within the meaning of this regulation.

Nothing, however, in this regulation shall prevent the gradual stepping of footings when in long lengths as under walls.

224. Projection of Footings.—Footings shall not project beyond the street alignment except as follows:—

(i) Where the top of the footing is more than 2 feet 6 inches and less than 10 feet below the pavement level the footing may extend 12 inches beyond the street alignment.

(ii) Where the top of the footing is 10 feet or more below the pavement level the footing may extend thirty (30) inches beyond the street alignment.

SECTION 18.

WALLS AND PARTITIONS.

Part I.—General Provisions.

225. Materials.—Every building shall be enclosed with external walls of brick, masonry, concrete, reinforced concrete or other hard incombustible material, unless otherwise provided for in these regulations.

226. Hollow Masonry Blocks.—Hollow masonry blocks shall not be used in bearing walls except in one-storey buildings.

227. Wall Fulfilling more than One Function.—Where any wall is required to fulfil more than one of the functions specified in these regulations, it shall be constructed in accordance with the highest standard prescribed in any respect for any of its functions.

228. Permissible Tolerance.—A tolerance of $\frac{1}{4}$ inch will be permitted in each $4\frac{1}{2}$ inches of thickness for variation of brick sizes. This tolerance will not apply to foundation widths.

229. Framing into Walls.—Where structural steel beams or other metal members frame into external, party, or fire walls, the ends shall have protection against fire appropriate to the rating specified for the wall. Where wooden

joists, beams or other combustible members frame into such walls, the ends shall not project beyond the centre line of such walls, and shall be not less than 4½ inches from similar members framing into the opposite side of the wall.

230. Expansion Joints.—Expansion joints shall be provided in all masonry, concrete or reinforced concrete walls which continue for a distance of more than 100 feet in the case of masonry walls or 80 feet in the case of concrete or reinforced concrete walls without a set-off greater than three times the thickness of the wall.

231. Facings.—(a) Facings or veneerings shall consist of—

(i) stone or synthetic stone not less than 2 inches thick;

(ii) architectural terra cotta not less than 4 inches thick;

(iii) ceramic veneer not less than 1 inch thick;

(iv) flat tiles not less than 1 inch thick;

(v) other approved materials.

(b) Facings may be used on the outer face of reinforced concrete or masonry walls, provided that each unit of the facing shall be tied to the structural walling with substantial non-corrosive metal wall ties. This shall not be required in the case of tiles having a thickness of less than 1 inch, but such tiles shall not be used above a height of 11 feet from the level of the footpath.

(c) Facings required to contribute to the strength of a wall shall be not less than 4 inches in thickness in every part and shall be built concurrently with the wall and bonded into the backing for not less than 4 inches every third course. Such facings shall have an ultimate compressive strength equal to or greater than that of the masonry wall to which they are bonded and may be considered as part of the wall in computing the thickness and strength of such wall.

(d) Except when the provisions of the preceding subregulation (231 (c)) are complied with, facings shall not be considered as part of the wall in computing its strength or thickness.

(e) In the case of facings 2 inches or less in thickness, horizontal chases at not more than 18 inch centres shall be provided in the structural walling and vertical steel rods not more than 16 inches apart secured to non-corrosive metal anchors built into the walling. The facings shall be fitted in solid at the back with cement mortar.

(f) In the case of tile facings on reinforced concrete walls, open or mastic joints shall be provided at intervals of not more than 5 feet both horizontally and vertically.

(g) Where necessary additional fixings for the support of facings and flashings to prevent moisture penetrating behind the veneer shall be provided to the satisfaction of the surveyor.

232. Facing to Internal Wall Surfaces.—The surfaces of internal walls may be covered with timber panelling, the backing of which is either filled in solid with non-inflammable material or adequately firestopped to prevent the spread of fire behind the panelling.

233. Structures Above Level of Roof.—Notwithstanding anything contained in Section 5 or elsewhere in these regulations, structures not exceeding 10 feet either in length or in width, and not exceeding 8 feet in height, and intended for the protection of ventilating machinery or for a like purpose, may be constructed above the level of the roof of a building of Type 1, 2, or 3 construction with external walls of masonry not less than 4 inches in thickness, and with a roof of impervious material.

234. Arches and Lintels.—(a) Arches shall be constructed of masonry or reinforced concrete, shall be well built and keyed, and shall have good and sufficient abutments.

(b) Lintels shall be of stone, reinforced concrete, or reinforced masonry, or of iron or steel of approved sections. Pre-cast gypsum lintels may be used for internal walls only. Reinforced brick lintels must be built in accordance with Part II of Section 21.

(c) Where steel angles are used for lintels in external walls, the masonry shall bear at least 2¾ inches on such angles.

(d) Lintels shall have a bearing on the wall at each end measured in the direction of their length of not less than 9 inches.

235. Bonding.—Every masonry wall shall be properly bonded and solidly put together with mortar. All return walls shall be properly bonded together at junctions (see also regulation 242).

236. Corbelling.—No portion of any masonry wall supported on corbelling shall overhang any part below it to a greater extent than 9 inches, and then only provided the projection be well and solidly corbelled out and that the inside of the wall carrying such corbelling be carried up vertically in continuation of the lower face thereof to sufficient height to ensure stability.

Part II.—Base Structures.

237. Construction.—A base structure shall be a continuous wall or piers and beams capable of transmitting to the footings the whole weight of the building, together with the live loads, and shall be constructed of solid masonry, concrete, or reinforced concrete, provided that hollow masonry shall not be used below ground level, unless voids are filled with concrete or cement mortar.

238. Thickness.—Every base structure shall be of not less thickness than the wall it supports, and where it is constructed of solid masonry shall be built in cement or composition mortar. Where a base structure constructed as a continuous wall is of the same thickness as the wall it supports, and in addition supports a floor load, the structural members of such floor shall be carried, in the case of—

(a) base structures, 4½ inches or less in thickness, on 9 inch x 4½ inch piers at 4 feet 6 inch centres bonded into the base structure;

(b) base structures more than 4½ inches in thickness, on piers as required by paragraph (a) hereof or on offset or corbel courses provided that where the floor is continuous through the wall, offsets or corbels shall not be required.

For the purposes of this regulation, the inner portion of a hollow wall used as a base structure shall be deemed to be the base structure.

239. Hollow Wall.—Where a base structure supports a hollow wall, the base structure may be built as a hollow wall provided filling of concrete is placed therein, as the wall is built, to a height at least 3 inches above ground level.

240. Underpinning.—The underpinning of walls, piers, columns and chimneys shall be carried out in conformity with section 310 of the Municipal Corporations Act and

(a) shall rest upon solid ground or upon a footing conforming to the requirements of Section 17;

(b) shall be built of cement concrete or of brick or stone bedded in cement mortar and securely wedged up and/or caulked to the full thickness and length of the old wall or work or to an additional thickness if the increased height of the wall or additional soil pressure so requires;

(c) may, notwithstanding the provisions of the preceding paragraph, be carried out by a system of isolated piers or piers and beams.

241. Ventilation.—Base structures shall be ventilated in accordance with the provisions of regulation 294.

Part III.—External Bearing and Party Walls.

A.—Masonry Walls.

242. Bonding and Mortar.—All masonry, external bearing and party walls shall be properly bonded and solidly put together with cement or composition mortar except in the case of buildings of not more than one storey when lime mortar may be used provided that the thickness is not less than that shown in Figures 244A and B for a wall built in composition mortar.

243. Thickness of Walls.—The minimum thickness of every external and party wall in Type 2 and 3 construction shall be as shown in Figures 244A and B for the appropriate class and storey subject to the provisions of regulation 171 and to the modifications set out in regulations 244 to 249.

FIGURE 244 A

THICKNESS of EXTERNAL and PARTY WALLS in TYPES 2 & 3 CONSTRUCTION BUILDINGS of CLASSES I. II. III. IV. V. X. occupancies

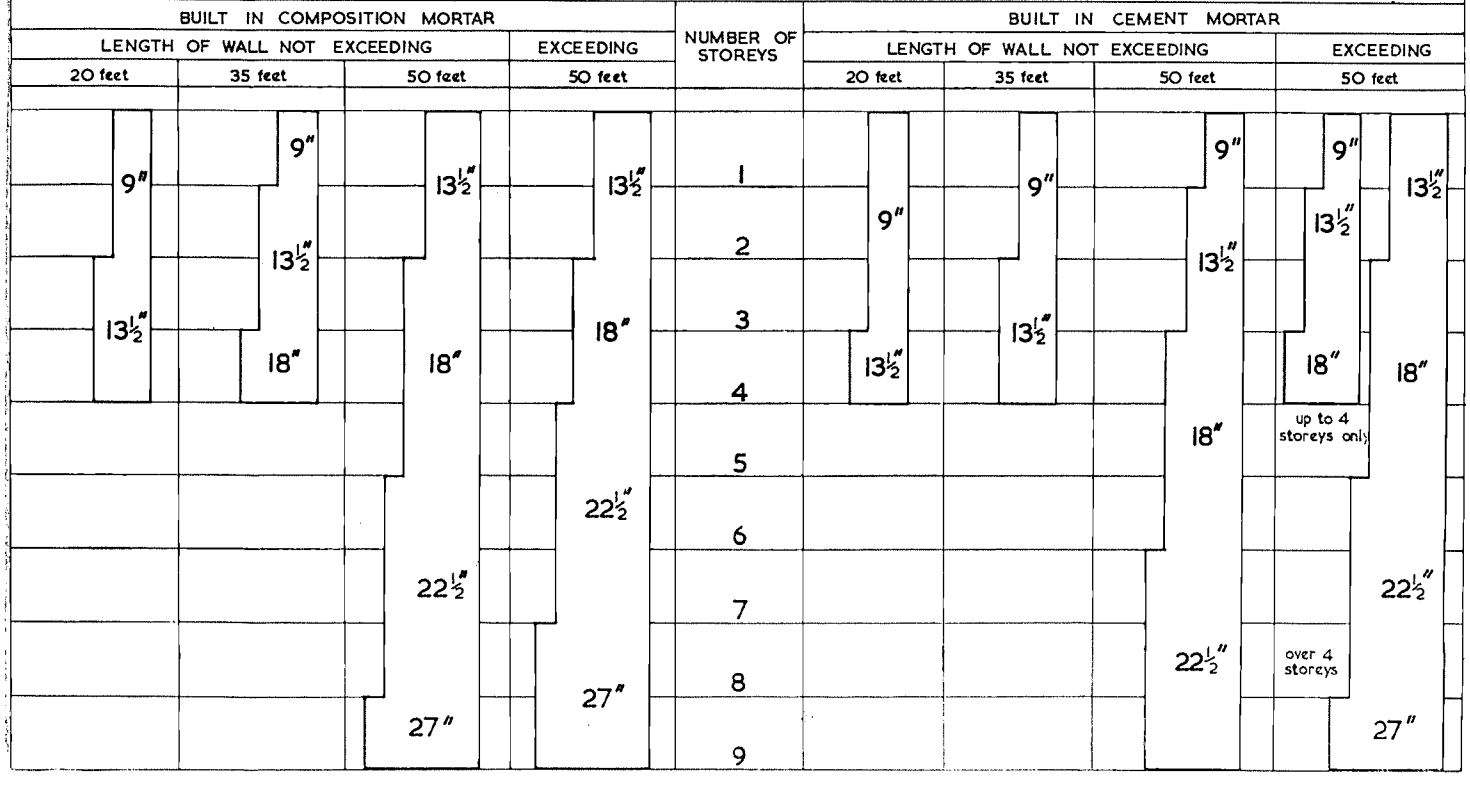
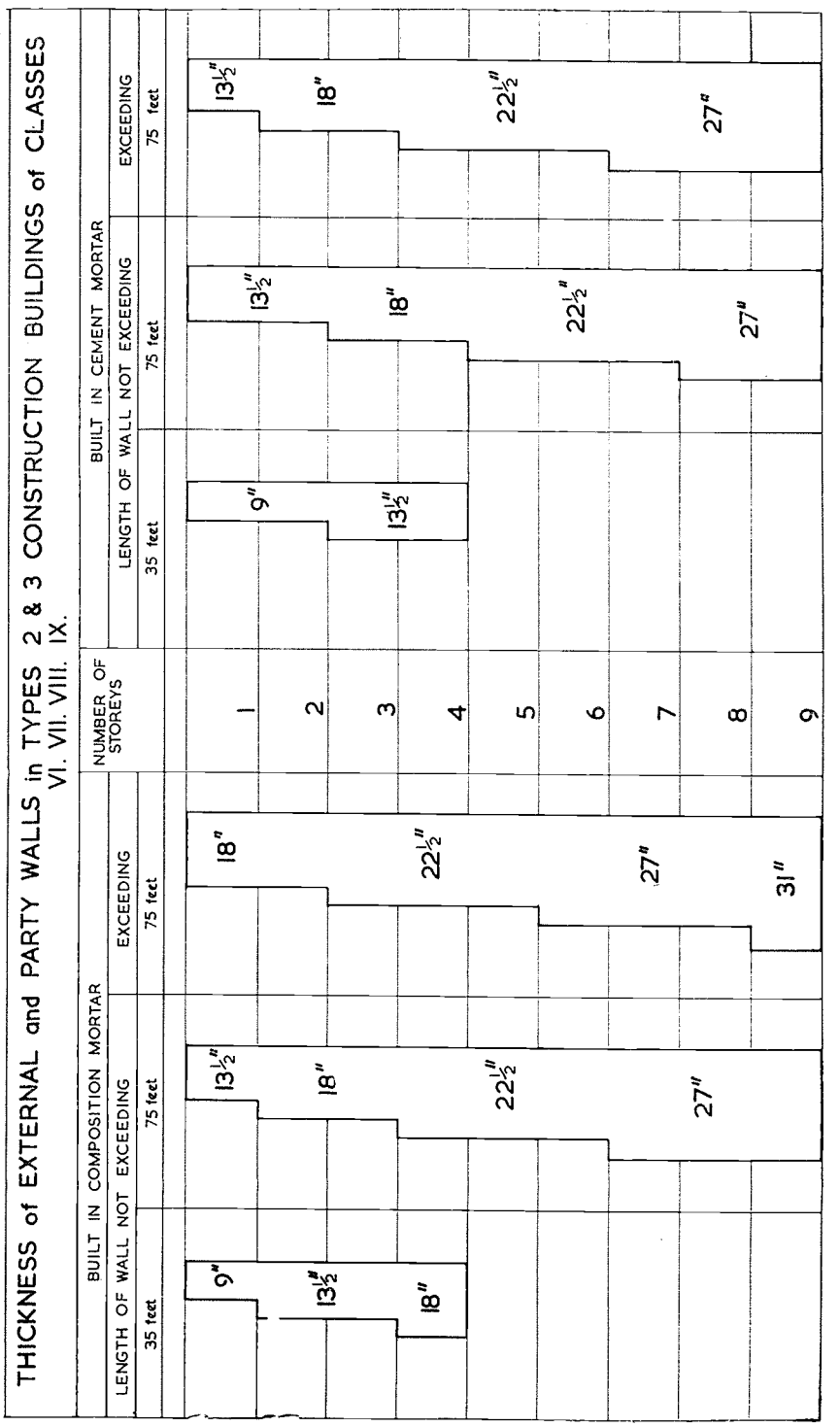


FIGURE 244 B


THICKNESS of EXTERNAL and PARTY WALLS in TYPES 2 & 3 CONSTRUCTION BUILDINGS of CLASSES VI. VII. VIII. IX.
BUILT IN COMPOSITION MORTAR
LENGTH OF WALL NOT EXCEEDING
35 feet
75 feet
EXCEEDING
75 feet
BUILT IN CEMENT MORTAR
LENGTH OF WALL NOT EXCEEDING
35 feet
75 feet
EXCEEDING
75 feet
NUMBER OF STOREYS
1
2
3
4
5
6
7
8
9
9"
13½"
18"
22½"
27"
31"

244. Additional Thickness by Piers.—Where in Figures 244 A walls exceeding 50 feet in length are required to have a greater thickness than walls not exceeding 50 feet in length, and where in Figures 244 B walls exceeding 75 feet in length are required to have a greater thickness than walls not exceeding 75 feet in length, such additional thickness may be in the form of equally spaced piers projecting 4½ inches provided the aggregate width of the piers shall amount to at least one-quarter part of the length of the wall.

245. Reductions in Thickness of Walls.—(a) In buildings of Type 2 construction the thickness required by Figures 244 A for walls exceeding 50 feet in length may be reduced to that required for walls from 35 feet to 50 feet in length and the thickness required by Figures 244 B for walls exceeding 75 feet in length may be reduced to that required for walls not exceeding 75 feet in length.

(b) In buildings of Types 2 and 3 construction the thickness of external or party walls of reinforced brick masonry may be 4½ inches less than that prescribed by Figures 244; provided that the walls are constructed in accordance with the requirements of regulations 316, 318, 319 and are not in any case less than 9 inches in thickness.

246. Thickness in Relation to Height of Storey.—If any storey exceeds in height 18 times the thickness prescribed for the walls of such storey, the thickness of every external wall and party wall throughout such storey shall be increased to one-eighteenth part of the height of such storey, and the thickness of every such wall below that storey shall be increased to a similar thickness, but 4½ inches of such additional thickness may be confined to piers properly distributed and having an aggregate width of not less than one-fourth part of the length of the wall.

247. Walls in Classes VII and VIII Occupancies.—In buildings of Classes VII and VIII occupancies containing not more than one storey, walls from 35 feet to 75 feet in length may be constructed to a thickness of 9 inches; provided that—

(a) they shall be strengthened by equally spaced piers projecting 4½ inches and having an aggregate width of not less than one-fifth part of the length of the walls; and

(b) the height of such walls shall not exceed 12 feet when built in lime mortar or 13 feet 6 inches when built in cement or composition mortar.

248. Buildings of One Storey.—A building containing not more than one storey and not intended or adapted for habitable purposes may be enclosed with external walls not less than 4½ inches in thickness built in cement or composition mortar provided that—

(a) the building does not exceed five squares in area;

(b) the width of the building measured in the direction of the span of the roof shall not exceed 25 feet and the height of the walls shall not exceed 9 feet;

(c) piers measuring not less than 9 inches by 4½ inches properly bonded to the walls shall be formed at intervals of not more than 9 feet;

(d) the roof shall be so constructed that the walls are not subject to any thrust therefrom;

(e) such walls shall not be required to support any load other than the distributed load of the roof.

249. Hollow Walls.—External walls of buildings of all classes of occupancy may be constructed as hollow or cavity walls provided that—

(a) the inner and outer leaves of the wall shall be separated by a cavity which shall be of width throughout not greater than 3 inches, except in the case of panel walls;

(b) the inner and outer leaves of the wall shall be tied together with not less than four ties per square yard of wall area with rust-proof ties of adequate strength so placed that their vertical spacing is approximately half their horizontal spacing. The cavity must be kept clear during construction;

(c) no hollow wall 11 inches or less in thickness shall be of greater superficial extent than three squares in any one storey unless strengthened by a cross wall, fireplace, or projecting pier to the satisfaction of the Surveyor;

(d) the aggregate thickness of the two parts, excluding the width of the cavity, shall be throughout not less than the minimum thickness prescribed in figures 244A and 244B for solid walls of the same height and length and for the same class of building;

(e) where the roof of a building of Class I, II, III or IV occupancy having 11 inch hollow walls, is supported by a roof truss, or girders having a span of more than 25 feet, piers or stanchions shall be provided under the ends of such roof truss or girders.

250. Structural Piers.—Structural piers shall be provided where necessary under the ends of all roof principals, beams, girders and other concentrated loads. Such piers shall be of sufficient strength to transmit the load bearing thereon and shall, except as provided in regulation 247, have a minimum width of 13½ inches, and a thickness of not less than 13½ inches, including wall thickness (e.g., in the case of an 11 inch cavity wall the projection shall not be less than 9 inches).

251. Cavity Walls Required for Residential Buildings.—The external walls of all habitable rooms including sleep-outs and sleep-out dadoes, also bathrooms and laundries constructed as an integral part of brick or masonry buildings of Classes I, II, III, IV and V shall be constructed with a continuous cavity.

This provision shall not apply to detached wash-houses, laundries and W.Cs., garages, or to garages attached to dwellings and outbuildings which may have external walls 4½ inches thick in compliance with regulation 248.

252. Recesses and Openings.—Recesses and/or openings may be made in an external or party wall, provided that—

(a) the back of every such recess is not less than 9 inches in thickness;

(b) an arch of at least two rings of brickwork, an approved reinforced concrete lintel of the full depth of the recess, or an approved steel section shall be constructed over each recess, except a recess formed for a lift, on every storey. Where a recess does not exceed 5 inches in depth and where the back of the recess is of not less thickness than is required for the next highest storey, corbelling in brick or stone may be substituted for the arch or lintel;

(c) the total area of recesses and/or openings in any storey of such wall does not exceed one-half of the whole elevational area of such wall in that storey if segmental arch or lintel construction is used, or three-fifths of such area if approved semi-arch or continuous lintel construction is used;

(d) the recesses do not come closer than 13 inches to the nearer face of any abutting external or party wall;

(e) the aggregate width of recesses in any storey does not exceed three-quarters of the whole length of the wall in that storey if segmental arch or lintel construction is used, or four-fifths of such length if approved semi-arch or continuous lintel construction is used;

(f) the openings comply with the provisions of Sections 24 and 25;

(g) an arch or lintel conforming to regulation 234 be constructed over such opening;

(h) piers between openings in any wall shall not be less than one-third of the full sectional area of such wall on plan in case of segmental arch or lintel construction, or one-fourth in the case of continuous lintel or semi-arch construction. These limits shall not apply to any shop front or show window constructed to the approval of the surveyor;

(i) the foregoing requirements as to sectional area shall not apply to a shop front;

(j) shop fronts or other large openings may be framed wholly or partly in structural steel or reinforced concrete to give the necessary strength and stability, provided that all parts are properly tied or bonded to one another.

253. **Chases.**—Chases may be made in any external or party wall, provided that—

(a) chases shall be constructed so as not to impair the strength of any part of the building;

(b) at least 9 inches of solid material remains at the back of each chase;

(c) chases are not more than 14 inches wide or more than 4½ inches deep, measured from the face of the wall;

(d) chases are at least 7 feet apart if on the same side of the wall and 5 feet apart if on the opposite sides.

254. **Designed Walls.**—Compliance with the provisions of regulations 244 to 249 and paragraphs (c), (d) and (h) of regulation 252 may be dispensed with provided that detailed computations are submitted demonstrating that the walls of a building have the necessary strength and stability and otherwise conform to the requirements of these regulations.

255. **Hollow Concrete Blocks and Pre-cast Concrete Slabs.**—A building containing not more than one storey may be enclosed above the base structure with external walls constructed of pre-cast concrete blocks not less than 6 inches in thickness (inclusive of cavities) or pre-cast concrete slabs not less than 4 inches in thickness complying with the requirements of regulation 148 provided that—

(a) the walls of such building excluding parapets shall not exceed 12 feet in height;

(b) the length of any wall shall not exceed 20 feet unless strengthened by cross walls or external walls bonded into such walls or by a fireplace or projecting piers to the satisfaction of the surveyor;

(c) the blocks shall be bedded and jointed in composition or cement mortar;

(d) trusses, joists and beams shall rest on templates let into the walls in such a manner as to transfer the loads to an adequate bearing area of concrete;

(e) in the case of walls required by regulation 251 to be built with a continuous cavity which are constructed of hollow concrete blocks such blocks shall be designed and laid so as to maintain a cavity not exceeding 2 inches in width at the joints between the blocks;

(f) in the case of walls built of pre-cast concrete slabs such slabs shall extend in a single length for the full height of the wall.

B.—Concrete Walls.

256. **Concrete Walls.**—Concrete walls, unreinforced, shall be of the same thickness as required by these regulations for masonry walls based on a unit thickness of 4 inches.

257. **Reinforced Concrete Walls.**—Every reinforced concrete wall shall have a thickness of at least 1/25th of its height or length between supports, whichever is the shorter but in no case of less than 4 inches, and shall have the necessary strength and stability. A built-in pier or pilaster introduced to reduce the length between supports shall be not less in width or depth than 1/12th of the height of such pier or pilaster. A horizontal support introduced to reduce the height between supports shall consist of a concrete slab joining the wall for the full length on at least one side or of a reinforced concrete beam of a width equal to at least 1/16th of the span.

258. **Reinforcement.**—Every reinforced concrete wall shall have in each direction an amount of reinforcement of not less than .0025 of the cross-sectional area, but the amount of reinforcement in any direction may be varied in special circumstances provided the total reinforcement is not less than .005 of the cross-sectional area.

259. **Chases and Recesses.**—No chase or recess shall be cut or formed in any concrete or reinforced concrete wall which would impair the stability of the wall or reduce its minimum thickness to less than 4 inches.

Part IV.—External Non-bearing Walls.

260. Panel Walls.—(a) External panel walls may be constructed of masonry laid in composition or cement mortar provided that—

(i) where the unsupported area of such wall does not exceed 300 square feet the wall shall have a thickness of not less than 9 inches if a solid wall or 11 inches if a cavity wall;

(ii) where the unsupported area exceeds 300 square feet the wall shall have a thickness of not less than 13½ inches if a solid wall or 15½ inches if a cavity wall;

(iii) the unsupported area between structural members shall not exceed 500 square feet;

(iv) the outer 4½ inches of such wall may be supported on continuous steel angles bolted to the face of the structural framework bearing on such steel angles for not less than 3 inches;

(v) any panel wall constructed as a hollow wall shall be securely tied as specified in regulation 249 (b);

(vi) veneered walls or ashlar facing to such walls shall be permitted on condition that the total thickness shall not be less than 13 inches in the solid unless bonded as prescribed in regulation 231 (c).

(b) External panel walls may be constructed of reinforced concrete, provided that such reinforced concrete—

(i) is not less than 4 inches thick in any part;

(ii) is of not less thickness in any part than 1/30th of the unsupported height between successive floors or beams unless laterally supported by cross walls, piers, or built-in columns at intervals not exceeding 30 times the thickness of the wall.

(c) 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, the requirements of subregulations (a) and (b) as to minimum thicknesses may be waived.

Part V.—Cross Walls, Fire Walls, and Internal Bearing Walls.

A.—Masonry Walls.

261. Materials.—Every cross wall shall be constructed of the same kind of material and in the same manner as the wall to which it provides lateral support, or be constructed so as to act in an equivalent manner.

262. Construction.—Every cross wall, fire wall, or internal bearing wall constructed of masonry shall be properly bonded and solidly put together with composition or cement mortar or as provided in regulation 242 with lime mortar, and walls shall be properly bonded at junctions. Every cross wall shall be carried up to the plate level of the topmost storey.

263. Thickness of Walls.—Where computations covering design of cross walls, fire walls, and internal bearing walls are not submitted, the following requirements shall be observed:—

(a) **General Provisions.**—Every such wall shall have a thickness of not less than two-thirds the thickness required in Figures 244 A and 244 B for external and party walls of the same dimensions and in the same class of building except that—

(i) where the external or party wall is required by such table to be 9 inches in thickness a cross wall or an internal bearing wall may be 4½ inches in thickness in the topmost and second topmost storeys of buildings of Classes I, II, III, IV and V and in the upmost storey only of buildings of Classes VI, VII, VIII and IX;

(ii) every fire wall shall have a thickness of not less than 9 inches;

(iii) wherever a cross wall becomes in any part an external wall, the external portion of such cross wall shall be of the thickness required for an external wall of the same height and length and belonging to the same class of building.

(b) **Thickness in Relation to Height of Storey.**—If any storey exceeds in height 32 times the thickness prescribed by paragraph (a), the thickness of every cross wall, fire wall and internal bearing wall shall be increased to 1/32nd part of the height of such storey, and the thickness of every such wall below that storey shall be increased to a similar thickness provided that, except in the case of cross walls 4½ inches of such additional thickness may be confined to piers properly distributed, the aggregate widths of which amount to at least 1/4th part of the length of the wall.

(c) **Recesses and Openings.**—The aggregate superficial area of all recesses and openings in cross walls, fire walls, and internal bearing walls shall not exceed that permitted for external and party walls constructed of similar materials, except that if a cross wall is carried on a girder across the ground storey and is supported by piers to the satisfaction of the surveyor; it shall be deemed to be a cross wall for the purpose of these regulations.

B.—Concrete Walls.

264. Concrete walls, unreinforced shall be of the same thickness as required by these regulations for masonry walls based on a unit thickness of 4 inches.

265. Junctions.—Where a reinforced concrete cross wall joins a masonry external wall such walls shall be bonded to the satisfaction of the surveyor with steel reinforcing rods spaced at intervals of not more than 13½ inches.

266. Reinforcement.—Every reinforced concrete wall shall have in each direction an amount of reinforcement of not less than .0025 of the cross sectional area, but the amount of reinforcement in any direction may be varied in special circumstances provided the total reinforcement is not less than .005 of the cross sectional area.

267. Chases and Recesses.—No chase or recess shall be cut or formed in any concrete or reinforced concrete wall which would impair the stability of the wall or reduce the minimum thickness to less than 3 inches, or, in the case of a fire wall, 4 inches.

Part VI—Internal Non-bearing Walls, Partition Walls and Partitions.

268. Internal Non-bearing Walls.—Internal non-bearing walls not required to be party or fire walls shall be constructed of masonry, concrete or reinforced concrete and except as regards thickness shall comply with the requirements of Part V of this Section.

(a) If constructed of masonry or concrete, any such wall shall be sufficiently thick to withstand the stresses to which it may be subjected, but shall not be less than the following minimum thickness:—

	Brick or Concrete. in.	Stone. in.
Topmost two storeys	4½	8
Three storeys next below	9	12

For additional storeys, an increase must be made of not less than 4½ inches for each three storeys, including the basement.

(b) If constructed of reinforced concrete, the minimum thickness shall be 3 inches.

269. Partition Walls.—(a) Partition walls which are not required to have a higher fire rating may be constructed of brickwork, concrete blocks, terra cotta, gypsum blocks or any material shown on Table 176A as having a fire rating of one hour.

(b) The minimum thickness of every partition wall constructed of masonry or concrete shall be as determined by the following formula, provided that the length of the wall may be reduced by the introduction of stiffening piers to the approval of the surveyor:—

$$T = \frac{3H + L}{200}$$

Where T = thickness in inches.
H = height in inches.
L = length in inches.

(c) No partition wall shall be of less thickness than 3 inches unless anchored at each end.

(d) Partition walls shall be supported on reinforced concrete floors or steel or reinforced concrete beams unless designed and constructed so as to be self-supporting.

(e) Partition walls not required by these regulations to have a fire rating, may have the upper portion glazed, provided such glazing does not exceed 8 feet in height unless constructed of steel frames glazed with wired glass.

270. Partitions.—Partitions not exceeding 7 feet 6 inches in height may be constructed of any material specified in regulation 180 (b), provided that—

(a) the upper portion of such partition may be glazed above a dado 3 feet or more in height;

(b) 12 lineal inches of partition for each 100 square feet of floor area in the case of unsprinklered buildings or 15 lineal inches of partition for each 100 square feet of floor area in the case of sprinklered buildings may, with Local Authority approval, be built to the height of the underside of the ceilings, or where there is no ceiling, the roof plate level. Such approval shall be granted only where the provision of light and ventilation to all portions of the building is in conformity with the provisions of Section 10;

(c) this regulation does not prohibit the construction of partitions from floor to ceiling of glass in either timber or metal frames within tenancies subject to the provision of light and ventilation in accordance with the provisions of these regulations.

Part VII.—Parapets.

271. When Required to External Walls and Roofs.—Every external wall built within 3 feet of land not in the same occupation or within 3 feet of any adjoining building or within 2 feet of any street shall be carried up to form a parapet and shall have a fire-resistance of three hours except in the case of outbuildings appurtenant to buildings of Classes I, II or III occupancy, which shall have a fire-resistance rating of not less than one hour.

Every roof built within 2 feet 6 inches of land not in the same occupation or within 2 feet 6 inches of any adjoining building or within 2 feet of any street shall be protected by means of a parapet wall having a fire rating of three hours except in the case of outbuildings appurtenant to buildings of Classes I, II or III occupancy which shall have a fire rating of one hour.

Provided that the parapet may be omitted in the case of buildings with reinforced concrete roofs with a fire rating of three hours subject to the provisions of regulation 307.

272. In Party and Fire Walls.—Party and fire walls shall be carried up to form parapets except that a party wall separating residential flats of Class II occupancy may be finished at the ceiling level of the topmost storey.

273. Construction.—Every parapet shall be constructed of—

(a) masonry set in cement or composition mortar properly weathered on top, and of a thickness not less than 1/8th of its height or 8 inches whichever is the greater except in the case of single storey buildings permitted by regulation 242 to be constructed in lime mortar where the thickness shall be not less than 1/6th of its height or 8 inches whichever is the greater;

(b) in the case of buildings of one storey permitted by regulation 248 to be constructed with external walls 4½ inches in thickness the parapets may be 4½ inches thick;

(c) concrete of a thickness not less than 1/10th of its height or 6 inches whichever is the greater; or

(d) where the parapet is connected to a reinforced roof or wall, reinforced concrete not less than 4 inches in thickness.

274. Minimum Heights.—Every parapet in a building of Classes I, II, III, IV, V, VI, VII, VIII, IX and X occupancy shall be carried to a height of 15 inches from its 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.

275. Parapets above Dormers.—Parapets on external and party walls shall be carried up above any dormer, lantern light, skylight or other erection of combustible material, fixed above the roof or flat on any building within 4 feet of such parapet wall, and to the thickness required by regulation 273.

276. Damp Proofing.—Every masonry parapet shall have a horizontal damp course as required by regulation 279.

Part VIII.—Damp Courses.

277. Horizontal Damp Courses.—(a) Every masonry wall and fire place shall have a complete and continuous damp course, constructed of approved durable material impervious to moisture, beneath the level of the lowest floor and at a height of not less than 3 inches above the surface of the ground adjoining the wall or chimney.

(b) When factory premixed damp course is used, the requisite gauging water only shall be added on the site.

278. Crushing Strength of Mortar.—Damp-proofing mortar shall have a crushing strength of at least equal to that of the mortar in which the wall is built.

279. Damp Proofing of Parapets.—Where a wall is finished with a parapet, a damp-proof course, as prescribed in regulation 277, shall be inserted at the base of the parapet unless the parapet is effectively rendered with cement or composition mortar on both sides and on the top.

280. Vertical Damp Course.—Where any portion of the walls of the lowest storey of a building is below the level of and in contact with the ground adjacent to such walls, such portion shall be enclosed with walls impervious to moisture or with cavity walls, having an intervening cavity between such walls of a width of not less than 2 inches and extending from the base of such walls to a height of not less than 6 inches above the surface of the ground immediately adjoining the exterior of such storey. The cavity shall be effectively drained. A continuous horizontal damp course, as described in regulation 277 shall be inserted in such wall at the base and the top of the vertical damp course or cavity.

281. Junction of Damp Courses.—Where a horizontal damp course provided in a wall or floor meets any vertical damp course such damp course shall be effectively junctioned.

282. Flashings of approved material shall be provided about door and window and other openings in external walls (such as beneath sills and over heads of frames) in a manner that will effectively prevent the passage of moisture from outside to inside.

Part IX.—Existing Walls and Buildings.

283. Approval Required to Increase Thickness.—No existing wall shall be increased in thickness without the approval of the surveyor.

284. Construction.—Where an increase in the thickness of an existing wall is approved, the additional thickness shall (unless otherwise approved by the surveyor)—

(a) have a minimum thickness of 4½ inches;

(b) be constructed of material similar to that of the existing wall; and

(c) be bonded into the existing wall to a depth of not less than 4 inches and for at least one-fourth of its area.

285. Additional Storey on an Existing Building.—Where the walls of an existing building are already the minimum allowable by these regulations an additional storey may be constructed on an existing building without the walls of such building being increased in thickness subject to the approval in writing of the surveyor and provided that—

(i) the walls and floor of such storey shall be constructed of reinforced concrete; or of framed fire resisting construction with panel walls;

(ii) the roof shall be constructed of reinforced concrete or the tops of opposite walls shall be effectively tied together with reinforced concrete to the approval of the surveyor;

(iii) special provision shall be made for reinforcing the junctions of columns and of roof and floor beams and slabs; and

(iv) the additional storey shall in all respects comply with the provisions of these regulations;

(v) the total height of the building does not exceed the maximum height permitted by these regulations;

(vi) the total load on any portion of the building and the bearing on the soil shall not exceed that permitted by these regulations.

Note.—For walls of lift wells see regulation 441.

SECTION 19.

FLOORS.

286. Floors in Types 1 and 2 Construction.—In buildings of Types 1 and 2 construction, floors required to have a fire resistance rating of two or three hours shall be constructed in accordance with the requirements of Sections 13 and 21.

287. Floor Fulfilling more than One Function.—When any floor is required to fulfil more than one of the functions specified in these regulations, it shall be constructed in accordance with the highest standard prescribed in any respect for any of its functions.

288. Structural Steel Floors.—All structural steel in floors shall be designed in accordance with the provisions of Section 21.

289. Concrete Floors not Required to have a Fire-resistance Rating.—Floors constructed of concrete, steel and concrete, or rib and hollow block construction and not required to have a fire-resistance rating shall be designed in accordance with the provisions of Section 21.

290. Timber Floors.—Timber floors shall conform as regards construction and sizes with the requirements of Section 23.

291. Timber in Floors of Fire-resisting Construction.—Timber may be used in floors of fire-resisting construction for the construction or securing of floor or ceiling coverings, provided that—

(i) the prescribed thickness of fire-resisting material is maintained throughout the whole area of the floor;

(ii) in eating houses, and any other buildings required by the Local Authority, the intervening spaces between battens beneath the wooden flooring shall be completely filled with fire-resisting materials.

292. Mezzanine Floors.—Mezzanine floors or galleries may be constructed of timber and/or unprotected steel, subject to the following conditions:—

(a) Mezzanine floors shall not be constructed in any storey with a clear height from floor to ceiling of less than 15 feet.

(b) The heights, widths, and areas of mezzanine floors shall be in conformity with the following table:—

Use	Minimum Ceiling Height	Maximum Width	Maximum Area of Mezzanine Floors
	ft. in.	ft. in.	
Storage and display	7 0	15 0	$\frac{1}{3}$ area of room.
Purposes other than storage and display	7 6	10 0	$\frac{1}{5}$ area of room.
Do. do. do.	8 3	12 0	$\frac{1}{4}$ area of room.
Do. do. do.	9 0	15 0	$\frac{1}{3}$ area of room.

(c) Mezzanine floors shall not exceed the widths set out in paragraph (b) or the widths in subparagraphs (1), (2) and (3) hereunder, whichever is the lesser.

(1) When placed along both sides of a room, one-sixth of the width of the room.

(2) When placed along one side of a room only, one-third of the width of the room.

(3) When placed across the end of a room, one-third the length of the room.

(d) Mezzanine floor areas must be provided with light and ventilation in accordance with these regulations.

(e) Mezzanine floors shall not be enclosed above a height of 5 feet 6 inches. The upper 2 feet of such enclosures shall consist of glass or louvres securely fitted in proper frames.

(f) Mezzanine floors with a ceiling height of less than 9 feet will not be approved for the purpose of providing accommodation for extra operatives where such extra operatives would cause the number of such operatives to exceed those allowed under the Factories Regulations.

293. Protection of Floors from Damp.—The ground floor of all dwellings or other buildings, also the floors of all basements, cellars, or other rooms below the level of the ground immediately adjoining the building must be constructed of 4 inch concrete with air space to permit the provision of sub-floor ventilation, subject to such floors being provided with an efficient damp course when required by the surveyor.

Sub-soil drains complying with the requirements of regulation 209 shall be provided when considered necessary by the surveyor.

294. Sub-floor Ventilation.—When the lowest floor in any building is constructed clear of the ground, the space between the bottom of the bearers and the ground immediately below shall be not less than 6 inches and shall be ventilated—

(a) by openings in the external walls properly protected by rat-proof air-bricks or gratings of a sufficient size to provide a net ventilating area of $1\frac{1}{2}$ square inches per foot run of external wall;

(b) by openings in the internal base walls of a net area of 3 square inches per foot run of base wall.

The openings required by paragraphs (a) and (b) of this regulation shall be arranged so as to permit a continuous circulation of air to pass beneath the whole of the flooring.

295. Openings through Floors.—Where openings are formed through floors, every such opening shall be trimmed for, with trimmers and trimming joists of sufficient size to support the additional loads.

296. Floors of Bathrooms, Laundries and W.Cs.—The floor of every bathroom, laundry and W.C. shall be constructed of concrete not less than 3 inches in thickness, properly surfaced and graded to an approved floor outlet.

Provided that in the case of brick veneer and wood-framed construction buildings, approved materials as specified in by-laws under the Health Act may be used.

297. Residential Flats.—The floors of residential flat buildings shall comply with the provisions of regulation 408.

298. Construction of Floors under Gas or Electric Stoves.—The floor under any oven or stove heated by gas or electricity shall be formed of incombustible and non-conducting materials, unless a space of not less than 6 inches is provided between the floor and the bottom of the oven or stove.

SECTION 20.

ROOFS AND ROOF STRUCTURES.

299. Drainage from Roofs.—Drainage from roofs shall be provided in accordance with the by-laws of the Local Health Authority.

300. Fire-resisting Roofs.—Any building exceeding three storeys in height built in an industrial or business district shall have a flat roof with a fire-resistance rating of not less than three hours, provided that a pitched roof not having a fire-resistance rating may be constructed above the roof with the fire-resistance rating, subject to the provision of a flat walkway not less than 8 feet in width around such pitched roof. Such pitched roofs not having a fire-resistance rating may be constructed over caretakers' quarters. The provisions of this regulation shall not apply to buildings erected at a greater distance than 20 feet from the boundaries of the site.

301. Roof Coverings.—(a) Concrete roofs with a fire rating shall, unless otherwise permitted, be covered with mineral asphalt not less than half an inch in thickness, or with two layers of approved bituminous roofing felt and a surface covering of bituminous roofing material, or with other approved impervious material.

(b) Every roof not required to have a fire-resistance rating, together with every flat and gutter forming part thereof, and every turret, dormer, lantern light, skylight, and other erection placed thereon, shall be externally covered with fire-retardant materials, as defined for the purpose in regulation 180 (a), securely fixed to withstand wind loads, except that—

(i) cornices and barge boards of dormers, if not exceeding 12 inches in depth, and the doors, door-frames, windows and sash frames of dormers, turrets, lantern lights, skylights and other erections other than those at the bottom of light courts may be of wood;

(ii) flat roofs shall be covered externally with sheet metal of thickness not less than 26 gauge or with two layers of approved felt and a surface covering of bituminous roofing material, or with such other materials as may be approved by the surveyor.

302. Only One Storey in Roof.—Not more than one storey shall be constructed in the roof of any building.

303. Pent Houses or Bulkheads on Roofs.—Pent houses, bulkheads or any structures above the roof of a building, whether used to enclose a stairway, tank, lift machinery or other apparatus, or for any other purpose including shafts extending above the roof, but excluding aerial supports under 10 feet high, flag poles, cooling towers or other structures excluded by the surveyor shall in buildings of four or more storeys in height be constructed with walls and roofs having a fire-resistance rating of not less than two hours unless required by these regulations to have a higher fire rating.

Unless the walls of such structure are supported by walls which conform to the requirements of Section 18 for external walls, they shall be supported by fire-protected encased steel or reinforced concrete girders.

All such roof structures which are not required to have a fire rating shall be constructed of approved fire-retardant materials.

304. Tanks.—(a) Tanks to contain water or other fluid on or above the roof of any building shall be supported on masonry, structural steel, or reinforced concrete except that the decking supporting iron tanks may be of jarrah not less than 2 inches in thickness.

(b) Tanks containing more than 500 gallons shall, if placed in or on a building, be supported by structural members having a fire rating as specified in Table 176 (c) or not less than two hours.

(c) Covers on top of water tanks placed on roofs shall slope towards the outer edges and if of wood shall be covered with metal.

(d) Facilities shall be provided for cleaning out and for emptying tanks in case of emergency.

305. Access to Roof Space.—Convenient access by means of a manhole or otherwise shall be provided to the space between the ceiling and the roof and to the space above false ceilings in the case of buildings where the clear air space above such ceiling or false ceiling and the roof or floor over exceeds two feet in height.

306. Timber Roof Construction.—Sizes and spacings of roof timber shall be as prescribed by Section 23.

307. Enclosure of Flat Roofs.—Every flat roof to which access is provided by lift or stairs shall be enclosed by a parapet conforming to the requirements of Part VII of Section 18 except that such parapet shall either be continued to a height of 3 feet 6 inches or be surmounted by an approved metal guard railing to a total height of 3 feet 6 inches above the roof. The parapet may be replaced by a railing not less than 3 feet 6 inches high.

References.—

For requirements of roofs above furnaces see Section 26.

For requirements relating to roofs of buildings of unprotected metal and timber frame construction see Section 23.

SECTION 21.

STEEL FRAME, REINFORCED CONCRETE AND REINFORCED BRICK MASONRY CONSTRUCTION.

Part I.

308. Structural Steel and Steel Frame Construction.—Except where prescribed to the contrary in these regulations all structural steel and steel frame construction in any building shall be designed, fabricated and erected in accordance with the requirements of S.A.A. Interim 351 and/or S.A.A. Interim 352 or C.A.A. 8-1939, whichever is applicable.

309. Reinforced Concrete Construction.—All reinforced concrete construction shall except where prescribed to the contrary in these regulations, conform to the requirements of the S.A.A. Code for Concrete in Building, No. C.A. 2-1937.

310. Drawings and Calculations to be Prepared by Qualified Persons.—No structural drawings or calculations of the stresses of a steel-framed or reinforced concrete structure shall be accepted unless such drawings and calculations have been prepared by or under the control of a qualified engineer or architect who has had experience in the design and construction of such framed construction.

311. Working Stresses.—Subject to the provision of regulations 308 and 309 working stresses shall not exceed, in the case of—

(a) structural steel members, the values set out in the S.A.A. Interim 350 and Interim 351;

(b) reinforcing steel, the values set out in S.A.A. Interim 350 and S.A.A. Code for Concrete in Building, No. C.A. 2-1937;

(c) steel or iron castings, the values set out in S.A.A. Interim 350;

(d) concrete, the values set out in S.A.A. Code for Concrete in Building, No. C.A. 2-1937.

312. Variations from S.A.A. Code.—The following variations from the S.A.A. Code for Concrete in Building, No. C.A. 2-1937 shall be adopted in these regulations—only special anchorage as specified in Section 96 shall be permitted.

313. Pre-cast Concrete Units.—(a) The use of pre-cast reinforced concrete units shall be permitted in the construction of floors and other suitable portions of buildings subject to compliance with the provisions of these regulations in regard to—

(i) quality of materials;

(ii) loading and stresses on the materials; and

(iii) workmanship;

if it be shown that the building has the necessary strength and stability.

(b) The stress limitations prescribed in these regulations shall not apply to pre-cast reinforced concrete units where the following requirements are complied with:—

(i) The units shall be manufactured under approved factory conditions and competent engineering control, and are branded with a permanent identification mark of the manufacturer.

(ii) Proper testing facilities shall be provided for testing units.

(iii) At the age of delivery, the units shall be capable of sustaining, without damage a superimposed test load calculated as half the dead load plus one and a half times the live load.

(iv) Tests shall be carried out by the manufacturer in the presence of the surveyor when so required. Up to 10 per cent. of the units may be tested to the loading prescribed in the preceding paragraph and shall all pass this test. In addition, 1 per cent. may be tested to the point beyond which the unit will sustain no further load. In this case the load at failure shall not be less than two and one-half times the design load, consisting of dead load plus live load. Specimens for test shall be selected by the surveyor. Failure to pass these tests shall cause rejection of the batch of units represented by the test.

314. Reinforcement in Hydraulic Works.—In hydraulic works the tensile stress in the steel reinforcement must be reduced sufficiently to keep cracks in the concrete within the limits required for water tightness.

Part II.—Reinforced Brick Masonry.

315. Working Stresses.—The allowable unit working stresses in reinforced brick masonry constructed under the supervision of a qualified engineer, shall not exceed the values given in Table 315.

TABLE 315.

Types of Stress.	Allowable Unit Working Stress lb. per sq. in.
Compression (extreme fibre stress in bending)	400
Direct compression on piers	300
Shear (no web reinforcement)	25
Shear (with web reinforcement taking entire shear)	50
Bond—deformed bars, horizontal and vertical	60
Modulus of elasticity, E.	1,200,000

315A. Design.—The formulæ, assumptions and requirements used in the design of reinforced brick masonry shall, as far as practicable, be the same as set out in these regulations for reinforced concrete.

316. Mortar.—Mortar shall be mixed in the following proportions:—1 part cement to 3 parts of sand and 1/10th part slaked lime. Lime shall be in the form of lime putty or sound hydrate, or may be added to the mixing water. Mortar shall be used within 60 minutes of mixing.

317. Reinforcement.—All reinforcement shall be round mild steel rods or high tensile wire.

318. Construction.—All joints shall be completely filled with mortar and all reinforcing steel shall be entirely bedded in the mortar. The clearance between the bar and the brick shall be at least one-half the diameter of the bar.

Reinforcement shall be braced and held in place firmly enough to prevent the breaking of the bond while the brickwork is being laid.

All reinforced brick masonry shall be laid with full header courses at least every fourth course in height, or there shall be at least one full header in every 60 square inches of wall surface, except that in brickwork laid up with all interior joints, flushed headers need not be used.

In lieu of the headers, metal ties may be substituted in the number of one tie for every two headers. These metal ties shall consist of not less than $\frac{1}{4}$ inch hot drawn mild steel wire with hooks at both ends, or of $\frac{3}{8}$ inch corrugated steel bars without hooks, extending to within not less than $\frac{3}{4}$ inch of the wall faces, in number of one per stretcher in every sixth course.

319. Reinforced Brick Masonry Walls.—

(a) **Thickness—**

(i) Reinforced brick masonry walls shall be designed to resist any lateral or other pressure to which they may be subjected, including eccentric loads.

(ii) No reinforced brick masonry wall shall be less than $4\frac{1}{2}$ inches thick.

(iii) Reinforced brick masonry bearing walls shall have a minimum thickness of 1/25th of the unsupported height. Buttresses, built-in columns, or piers, may be designed to carry all the vertical loads.

(iv) non-bearing panel walls of reinforced brick masonry shall have a thickness of not less than 9 inches and not less than 1/30th of the unsupported height.

(v) Subject to the other requirements of this Section, reinforced brick masonry walls shall have a thickness at least equal to that specified elsewhere in these regulations for reinforced concrete bearing walls.

(b) **Working Stresses.**—The working compressive stresses in such walls shall not exceed 75 lb. per square inch when the wall is 25 times the thickness in height, proportionately increasing to 150 lb. per square inch when the wall is 15 times the thickness in height.

(c) **Reinforcement.**—Such walls shall be reinforced with at least one-quarter of 1 per cent. of steel in each direction, vertical and horizontal. Walls more than 9 inches thick shall have the reinforcement for each direction placed in two layers or planes parallel to the wall faces, not less than 2 inches nor more than one-third of the wall thickness from the exterior face, and not less than 1 inch nor more than one-third of the wall thickness from the interior wall face. The vertical steel shall not be relied on to carry load unless tied and arranged as in columns. The reinforcing bars shall not be spaced further apart than 18 inches nor shall they be smaller than the equivalent of $\frac{3}{8}$ inch round bars.

Part III—Tests.

320. Tests.—(a) Where tests carried out in any portion of a building indicate deficiency in the construction to such an extent as to unduly reduce the factor of safety, that portion of the work shall be subjected to a load test in which the superimposed load shall be equal to one-half the dead load plus one and one-half times the live load. The load shall be left in position for a period of 24 hours before removal.

(b) The structure shall be considered to have passed the test if the maximum deflection at the end of the 24-hour period does not exceed the value of D as given by the following:—

$$D = \frac{.001\ L^2}{12t}$$

in which—

L is the span, t is the total depth of the slab or beam, and D is the maximum deflection—all expressed in the same units.

(c) If the deflection exceeds the value of D as given in the above formula, the construction shall be considered to have passed the test if within 24 hours after the removal of the load the slabs or beams show a recovery of at least 75 per cent. of the observed deflection.

(d) Any construction which does not pass the test shall be reconstructed and reinstated in accordance with the provisions of these regulations.

SECTION 22.

REINFORCED CONCRETE AND MASONRY VENEER CONSTRUCTION.

321. Limitation.—Private dwellings of Class I occupancy may be constructed with external walls of reinforced concrete or masonry veneer in accordance with the provisions of this Section.

322. Limitation of Height.—Buildings of veneer construction shall not exceed one storey in height.

323. Wall Construction.—The external walls of a building of veneer construction shall consist of an inner framework of timber construction conforming with the requirements of regulation 343 and an outer veneer of masonry or reinforced concrete.

324. Loading on Timber Framework.—The timber framework of the external walls, together with that of the internal walls, shall sustain and transmit to the base structure the live loads prescribed by Section 14, together with the dead load of the building exclusive of the masonry or concrete veneer.

325. Supports of Timber Framework.—The timber framework of external walls shall—

(a) rest upon—

(i) stumps of jarrah or other approved timber not less than 4 inches x 4 inches in size, spaced at 4 foot centres, securely braced and resting upon the footings of the masonry or concrete veneer; or

(ii) masonry piers 8 inches x 4 inches in size, spaced at not more than 5 foot centres and bonded to the outer veneer;

(iii) masonry not less than 8 inches in thickness carried to the level of the underside of bearer plates;

(b) otherwise conform to the requirements of Section 23.

326. Construction of Outer Veneer of External Walls.—The outer veneer of external walls shall consist of masonry or reinforced concrete, which shall be—

(a) constructed on footings not less than 15 inches wide and 10 inches deep and otherwise conforming to the requirements of Section 17;

(b) not less than 4 inches in thickness;

(c) in the case of masonry veneer, constructed with cement or composition mortar;

(d) bonded to the timber framework with approved galvanised wire or other approved non-corridible wall ties spaced not further apart than 24 inches horizontally and 18 inches vertically; and

(e) so constructed as to leave a clear airspace between the veneer and the timber of not less than 1 inch and not more than 2 inches.

327. Requirements for Base Structures.—Base structures of external walls shall be provided with—

(a) ventilation openings as prescribed in regulation 294 (a), and

(b) dampcourse below floor plates as prescribed in Part VIII of Section 18.

328. Fixings for Pipes in Veneer Walls.—Except where approved types of fixings are used, flashing to a depth of $1\frac{3}{4}$ inches and bolts for the full thickness of the wall shall be built in during the construction of veneer walls to provide adequate fixings for down-pipes, vents and sewer pipes.

329. Maximum Dimensions of Veneer Walls.—No veneer wall having a thickness of $4\frac{1}{2}$ inches or less shall be constructed—

(a) to a greater height than 14 feet; or

(b) to a greater length than 24 feet, unless a set-off of at least 2 feet 6 inches is made or adequate stiffening piers are introduced.

No brick veneer wall shall have a less thickness of brickwork than $4\frac{1}{2}$ inches.

330. Distance of Veneer Walls from Boundary.—Walls having timber framework and outer veneer of masonry or concrete in accordance with the provisions of this Section shall not be constructed within 3 feet of the boundary of any allotment of land not in the same occupation.

331. Internal Linings.—Internal linings of walls and ceilings shall conform to the requirements therefor set out in Section 23.

SECTION 23.

UNPROTECTED METAL AND WOOD FRAME CONSTRUCTION.

332. General.—Buildings of wood framed or unprotected metal construction when approved by the Local Authority under the provisions of section 311 of the Municipal Corporations Act, shall comply with the provisions of this Section.

333. Buildings to be Wholly in One Occupation.—Every such building shall be constructed or adapted for one occupation only, except in the case of duplex houses where the two dwelling units are separated by a party wall having a fire rating of not less than three hours, carried up to the underside of the roof covering.

334. Height of Walls.—The external walls of such buildings shall not exceed in height 15 feet measured from the floor level to the top of the wall plate, nor be more than one storey in height, except in the case of industrial buildings, where the particular use or manufacturing process necessitates a building of greater heights.

335. Support for Framework.—The framework of walls shall rest upon

(a) sleeper walls of masonry or concrete not less than 4 inches in thickness, provided that where the height of such sleeper wall exceeds 3 feet 6 inches such walls shall be stiffened with piers not less than 8 inches in width and 4 inches thicker than and bonded into the sleeper walls. Piers shall also be provided under all concentrated loads;

(b) piers of masonry or concrete measuring not less than 9 inches square;

(c) reinforced concrete piers not less than 5 inches square with integrally cast sole plates having a bearing area of not less than 72 square inches;

(d) stumps of jarrah or other approved timber not less than 4 inches square sunk to a depth below the natural surface of the ground equal to one-fourth of their length, but in no case less than 18 inches, and resting upon and securely fastened to—

(i) a base of concrete not less than 72 square inches in area;

(ii) a base of masonry constructed in cement mortar 9 inches square by 6 inches thick;

(iii) a sole plate of jarrah or other approved timber not less than 72 square inches in area and 2 inches in thickness.

All stumps projecting more than 4 feet above the surface of the ground shall be adequately braced.

336. Ant Stopping.—Every wood-framed building of Type 5 shall be adequately ant stopped, including stumps, sleeper walls, chimneys and piers with non-corrodible sheet metal projecting not less than 1 inch and turned down at an angle of 45 deg. to the horizontal.

337. Damp Course.—Where the framework of walls is supported upon sleeper walls, a damp course conforming to the requirements of Part VIII of Section 18 shall be provided.

338. Vermin Plates.—Vermin plates shall be provided in all cases where the floor is of timber construction.

339. External Covering for Walls.—Every building of Type 4 or 5 construction, unless otherwise provided in these regulations, shall be enclosed externally with—

(a) weatherboard or other approved class of boarding having not less than an average thickness of $\frac{1}{2}$ inch;

(b) asbestos cement sheets not less than 3/16 inch in thickness;

(c) stucco or roughcast fulfilling the requirements of composition or cement mortar as prescribed in regulation 156 (b) (c) and (d);

(d) other durable materials having a satisfactory resistance to the penetration of moisture and approved by the surveyor.

340. Stucco or Roughcast.—Stucco or roughcast shall be applied in accordance with good commercial practice in three coats, unless it is pneumatically placed, in which case two coats shall be sufficient.

The minimum thickness of stucco from the face of the base shall be ¾ inch at every point.

Stucco shall be applied to metal lathing or reinforcement weighing not less than 3 lb. per square yard, except where approved strengthening is provided behind the stucco, where the weight of sheathing may be 1.8 lb. per square yard.

All metal lathing or reinforcement shall be galvanised or otherwise effectively protected against corrosion.

Before stucco is applied the timber frame shall be covered with a 3-ply waterproof paper with central ply consisting of some bituminous compound or other approved waterproof substance.

341. Internal Wall and Ceiling Lining.—The internal lining of all walls and ceilings shall be lath and plaster finished to a hard surface, hardwood panelling, T. and G. timber lining, plaster sheets or asbestos and cement sheets or other material approved by the surveyor.

342. Distance of Walls from Boundary.—Walls of buildings of unprotected metal and wood-framed construction shall not be constructed closer to the boundary of any allotment of land not in the same occupation than 4 feet, provided that the Local Authority may require such distance to be not less than 10 feet or the height of the walls, whichever is the greater, in the case of buildings erected in commercial or industrial areas.

343. Re-erection of Removed Buildings.—Every building or erection removed or transported shall, when re-erected, comply with all the provisions of these regulations relating to new buildings of the appropriate class of occupancy and type of construction.

344. Outbuildings (Distance from Dwellings).—Outbuildings appurtenant to a dwelling and detached therefrom shall be at least 5 feet from such dwelling.

345. Minimum Sizes and Spacing of Materials.—In the construction of wood-frame or other buildings where timbers are used, the minimum sizes, dimensions and maximum spacings of such timbers shall, in the case of dwellings or other similar buildings, be in conformity with the requirements of S.A.A. Code for Dimensions of Structural Timbers, No. O. 56-1948, but not less than the dimensions and spacings set out in Table 345.

TABLE 345.

Minimum Dimensions and Maximum Spacing of Timbers in Dwellings and Similar Buildings.

Stumps—4 inches by 4 inches at not more than 4 foot centres.

Bearers—4 inches by 3 inches, fixed on edge and spaced not more than 5 foot centres apart.

Floor Joists—4 inches by 2 inches, spaced not more than 18 inch centres; double joists are to be fixed in all cases where joists are parallel to the vermin plates; all floor joists are to be supported at least every 5 feet.

Wall Framing—

Either (a)—

Vermin plates and top plates—4 inches by 2 inches, housed ⅜ inch for studs.

Intermediate studs—4 inches by 2 inches, spaced up to 24 inch centres and housed ⅜ inch into plate.

Corner studs—4 inches by 4 inches or two 4 inches by 2 inches.

Openings—heads, sills and studs to all openings not less than 4 inches by 2 inches.

or (b)—

Vermin plates and top plates—3 inches by 2 inches, housed ⅜ inch for studs.

Intermediate studs—3 inches by 2 inches, spaced up to 18 inch centres and housed ⅜ inch into plates.

Corner studs—3 inches by 3 inches or two 3 inch by 2 inch.

Ceiling joists—3 inches by 2 inches, spaced up to 18 inch centres.

Angle stops—2 inches by 1¼ inches.

Hangers—not less than 8 inches in depth by 1¼ inches in thickness, spaced up to 6 foot on centres with hanging straps to joists of either No. 16 gauge galvanised hoop iron or 1¼ inch square hardwood securely spiked to hangers and joists.

Rafters—For tile or slate or similar roofs, 4 inches by 2 inches, spaced not more than 24 inch centres.

For sheet metal roofs, the spacing may be 4 inches by 2 inches increased to 36 inches, or 3 inches by 2 inches spaced not more than 30 inch centres.

Roof battens—for tile roofs, a bearing batten of 2 inches by 1 inch to each row of tiles, and tiles shall be securely wired to such tie battens.

For sheet metal roofs, battens 3 inches by 1½ inches shall be used, spaced up to 36 inch centres.

Roof purlins—4 inches by 3 inches.

Roof struts—3 inches by 3 inches.

Collar ties—3 inches by 2 inches.

Valleys, barge boards and fascias—7 inches by 1¼ inches.

Ridges, hips—7 inches by 1 inch.

Flooring boards—shall not exceed 6 inches in width nor be less than 9/16 inch thick and shall be tongued and grooved, well cramped up and securely nailed and cleaned off.

Weatherboards—shall have a lap of not less than 3/16 inch for each inch of the board width.

Bracing—the framework of all external and internal walls shall be well braced with battens not less than 3 inches by ⅝ inch. All gable roofs shall be braced against lateral movement with timber not less than 1½ inches in width.

Sashes and doors—the minimum thickness for sashes shall not be less than 1⅜ inches and for panelled doors not less than 1¼ inches.

Unsupported floors—the floor joists for all unsupported floors of residential buildings shall not be less than 8 inches by 2 inches where the span is less than 10 feet; 9 inches by 2 inches then for spans up to 13 feet; and 10 inches by 2 inches then for spans up to 16 feet, and to the approval of the surveyor for greater spans than 16 feet; such joists shall not be spaced at more than 18 inches on centres and shall be laterally supported by herringbone or other approved strutting or bridging.

SECTION 24.

FIRE PROTECTION OF OPENINGS.

346. Doorways in Party Structures.—Doorways will be permitted in party structures provided that—

(a) such doorways open on to staircase landings or passageways;

(b) the net area of each of such doorways shall not exceed 56 square feet without the express permission of the surveyor;

(c) the total width of such openings in any one storey shall not exceed 50 per cent. of the length of the wall;

(d) such doorways are protected with fire doors hung in such a manner as not to obstruct the landings or passage-ways and having a fire-resistance rating of two hours.

347. Windows in Party Structures.—Glazed openings in party structures will be permitted, provided that—

(a) such openings are provided with two-hour fire windows;

(b) no such opening exceeds 15 square feet in area;

(c) the glazing in each opening is divided into panels not exceeding 5 square feet in area; and

(d) the total area of the openings in any one storey does not exceed 20 per cent. of the area of the wall in that storey.

348. Openings in Fire Walls.—(a) Where fire walls are required to limit the floor area of a building as prescribed in regulation 366, openings will be permitted in such walls, provided that the net area of any such opening shall not exceed 56 square feet in area, except in sprinklered buildings, where the opening may be 80 square feet in area. The width of such opening or openings when together shall not exceed one-half of the length of the wall in which they occur.

(b) Where openings larger than those permitted by subregulation (a) of this regulation are essential, they may be constructed subject to the approval of the Local Authority.

(c) Such openings shall be protected with automatic double fire-doors which when combined will have a fire-resistance rating of four hours.

349. Openings in Walls of Fire-isolated Stairways.—Openings in walls of fire-isolated stairways shall be protected by one-hour fire doors as defined in regulation 181 (b), and conforming with the requirements of regulation 140, or by glazing in conformity with the provisions of regulation 347. The provisions of this regulation shall not apply to openings in external walls which are not required to be protected pursuant to regulation 352.

350. Openings near Exterior Stairways.—(a) All window openings within 5 feet of an exterior exit stairway shall be fitted with self closing windows or shutters with a fire resistance rating of one hour complying with the provisions of regulation 182.

(b) All doors within 5 feet of any such stairway shall conform to the requirements for doors to fire isolated stairways prescribed in regulation 349.

351. Doorways to Lift Shafts.—Doorways to lift shafts of all buildings of Types 1 and 2 construction and buildings of Type 3 construction over three storeys in height including basement shall be fitted with—

(a) approved roller shutters;

(b) one-hour fire doors and glazing therein conforming to the provisions of regulation 181 (f).

352. Openings in External Walls.—(a) Every building except buildings of Class I, II and III not more than three storeys in height, shall have one-hour fire doors, fire shutters or one-hour fire windows complying with the requirements of regulations 181, 182 or 183, fitted to every opening in the external walls when such opening is less than 20 feet distant in a direct line from an opening in another building.

(b) Openings in the external walls of buildings built within 3 feet of and overlooking land in other occupation and all openings in external walls abutting on enclosed light courts common to separate buildings shall either be—

(i) fitted with one-hour fire windows, or

(ii) protected with tin clad or wire gauze shutters, provided that the provisions of this regulation shall not apply in the case of—

(1) show windows on a street front;

(2) shop fronts in an arcade building fitted with an automatic sprinkler system approved by the surveyor, or having window backs and shop doors with a one-hour fire rating.

(c) For the purpose of this regulation when a building is divided into two or more sections by fire walls each section shall be regarded as a separate building.

353. Vertical Separation.—In buildings of Types 1 and 2 construction, openings in external walls which are situated vertically above one another and are not protected with one-hour fire doors, one-hour fire windows, or shutters complying with the requirements of regulations 181, 182 or 183 shall have not less than three (3) feet of solid masonry or concrete between the top of one opening and the bottom of the one next above.

Provided that this separation may be a horizontal projection beyond the face of the wall. Such separation shall have a fire-resistance rating of not less than two hours in buildings of Classes I, II, III and IV occupancy and not less than three hours in the case of buildings of Classes V, VI, VII and VIII occupancy.

354. Skylights.—(a) All skylights which are placed in courts or wells constructed in buildings, or which are constructed on roofs of fire-resisting construction, shall be constructed with glazed metal or glazed concrete frames having a fire resistance rating of one hour.

(b) Every skylight not required to comply with subregulation (a) of this regulation shall be glazed with wired glass or shall be protected by a substantial wire screen placed below the skylight.

355. Openings Connecting Dwelling with Trade Building.—When the walls or floors separating a portion of a building used for purposes of trade or manufacture from that used for dwelling purposes are required by regulation 363 to have a fire-resisting rating, then all door openings in such walls or floors shall be protected by fire doors and fire windows as required for party structures by regulations 346 and 347 of these regulations.

SECTION 25.

UNITING OF BUILDINGS AND SUBDIVISION OF BUILDINGS BY FIRE RESISTING STRUCTURE.

356. United Buildings.—(a) Buildings shall be deemed to be united when any opening fitted with an approved door is made in the party wall or the external walls of such buildings, or when such buildings are so connected that there is access from one building to the other without passing into the open air.

(b) Buildings shall not be united except where they are wholly in one occupation.

(c) Buildings shall not be united if, when so united and considered as one building only, the buildings would not be in conformity with the provisions of these regulations.

(d) United buildings shall be connected on every floor except where specially exempted by the Local Authority and such exemption shall only be granted if the means of egress from every portion of the building complies with the requirements of these regulations.

357. Procedure when Buildings no longer United.—When any buildings deemed to be united to form one building cease to be in one occupation, the owner thereof, or if the buildings are the property of different owners, then each such owner shall—

(a) give notice thereof 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 regulations;

(c) have such work carried to completion as early as practicable after issue of building permit by the Local Authority.

358. Stopping up of Openings.—All openings and gangways connecting openings between buildings deemed to be united to form one building shall be maintained until the consent of the Local Authority has been obtained to their being stopped up and such consent shall not be given unless and until each such building conforms to the requirements of these regulations.

359. Buildings may be Connected.—Buildings not deemed to be united may with the approval of the Local Authority be connected by—

(a) doorways in external walls or party structures opening on to stairways, landings or passages, provided that such doorways do not exceed 56 square feet in area and are protected with two-hour fire-resisting doors complying with the requirements of regulation 181 and such doors are hung so as not to obstruct the egress space of the landings or passages;

(b) open gangways or bridges of fire-resisting construction.

360. Separation of Flats.—In every building of Class II occupancy hereafter constructed (including every existing building hereafter converted to a building of Class II occupancy) every flat shall be separated from every other flat and from common entrance halls, stair wells, and corridors by—

(a) walls having a fire-resistance rating of three hours;

(b) floors having a fire-resistance rating of two hours.

Such floors and walls shall comply with the requirements of regulations 407 and 408.

361. Subdivision of Residential and Institutional Buildings.—All walls and partitions between rooms and between a room and corridor in buildings of Class III and institutional buildings of Class IX occupancy shall have a fire-resistance rating of one hour in the case of buildings of Types 1 and 2 construction and of two hours in the case of buildings of Type 3 construction. Openings in such walls and partitions shall not be required to have a fire-resistance rating.

362. Separation of Occupancy in Other Buildings.—(a) In buildings of Class VI, VII and VIII occupancy different occupancies shall be separated by party structures having a fire-resistance rating of one hour.

(b) In assembly buildings of Class IX occupancy different occupancies shall be separated by party structures having a fire-resistace rating of four hours in the case of walls and three hours in the case of floors.

363. Separation of Different Classes of Occupancy within a Building.—(a) In any building constructed in part as a dwelling of Class I or IV occupancy and in part to be used for business purposes of Class V, VI, VII, or VIII occupancy, such parts shall be separated by a party structure when the floor area of the part used for business purposes exceeds 2,000 square feet. Such party structure shall have a fire-resistance rating of two hours.

(b) In any building constructed in part as a building of Class II or Class III occupancy and in part to be used for business purposes, such parts shall be separated by a party structure having a fire-resistance rating of three hours in the case of walls and two hours in the case of floors and ceilings.

(c) In any building constructed to contain in part an assembly building of Class IX occupancy, such part shall be separated from the remainder of the building by a party structure having a fire-resistance rating of four hours in the case of walls and three hours in the case of floors or ceilings.

(d) In any building containing mixed occupancies of Class VI, VII or VIII, the various classes of occupancy shall be separated by a party structure conforming to the requirements of regulation 362 (a) unless otherwise approved by the Local Authority.

364. Garages Attached to Buildings.—(a) No commercial garage, motor repair shop or petrol selling station shall be located within or attached to another building unless it is separated from every other occupancy by party structures having a fire-resistance rating of four hours in the case of walls and three hours in the case of floors.

(b) (i) Private garages may be attached to buildings of Class I, II, or III occupancy of Type 1, 2 or 3 construction provided such garage shall be separated therefrom by a wall having a fire-resistance rating of one hour and/or by a floor having a fire-resistance rating of two hours. No openings shall be constructed in such wall except in compliance with subregulation (b) (iii) of this regulation.

(ii) In the case of private dwellings of Class I occupancy and Type 5 (wood frame) construction, the Local Authority may approve such garages provided they are lined internally on walls and ceilings with 3/16th inch asbestos. No opening shall be permitted between the garage and the dwelling and no room be constructed over such garage.

(iii) Except in the case of a building of Class III occupancy or wood-framed dwellings of Class I occupancy, a doorway not more than 3 feet wide shall be permitted in the wall separating the garage from the residence, provided the door sill is raised at least 6 inches above the garage floor and the doorway is fitted with a self-closing metal-clad door.

(iv) Private garages may be attached to buildings of other classes, provided such garages are separated therefrom by walls having a fire-resistance rating of four hours and floors or ceilings of three hours' fire-resistance rating. Openings in such walls shall be protected by self-closing fire doors with a fire-resistance rating of two hours.

Door sills between the occupancies shall be raised at least 12 inches.

(c) The floors of all garages shall be of concrete or other hard incombustible material.

(d) Where fire-resistance ratings of four hours for walls and three hours for floors are required in this regulation, these may be reduced to three hours and two hours respectively if a sprinkler system is installed in accordance with the requirements of the Fire Underwriters' Association.

365. Separation of Different Types of Construction.—When different types of construction in a building are separated by a fire-resisting structure, such structure shall have a fire-resistance rating of four hours in the case of a wall and of three hours in the case of a floor, including beams, girders and trusses.

366. Limitation of Floor Area.—(a) No building or portion of a building of Type 3, 4 or 5 construction used a a shop, warehouse or factory shall extend to more than 35,000 square feet total floor area, or where a sprinkler system is installed, to more than 55,000 square feet, whether on one or more floors, unless divided by walls having a fire-resistance rating of four hours or by floors having a fire-resistance rating of three hours, in such a manner that the total floor area within any division shall not exceed 35,000 and 55,000 square feet respectively, except that—

(i) the Local Authority may consent to a larger area, subject to satisfactory provision being made and maintained for lessening as far as reasonably practicable danger from fire, but so that such consent shall expire when the building ceases to be used for the purpose in respect of which the consent was given;

(ii) this provision shall not apply to assembly shops and similar buildings one storey in height where the manufacturing process requires an undivided area.

(b) Staircases and lift wells connecting two or more divisions shall be fire-isolated by walls having a fire-resistance rating of three hours.

(c) Doors opening on to such staircases and lift wells shall be two-hour fire doors.

367. Additions to Existing Buildings.—No building shall hereafter be added to or extended on any site so as to exceed the limits of undivided area as fixed in this Section, but this shall not prohibit the extension of any building heretofore lawfully erected which exceeds the limiting area as set forth in this Section, provided that such extension complies with the area limitations fixed by this Section and is separated from the existing building by a fire wall.

SECTION 26.

CHIMNEYS, FLUES, FIREPLACES, ETC.

Part I—General Provisions.

368. Materials for Chimneys.—Every chimney shall be constructed of—

(a) reinforced concrete;

(b) solid masonry properly bonded and solidly put together with mortar; or

(c) other approved, good, hard, durable, non-inflammable, fire-resisting material, properly and solidly put together, and this requirement as to material shall be deemed to be satisfied by the use of any material which complies with the list for materials for flues, furnace casings, hearths, and similar purposes prescribed in S.A.A. Specification No. A. 30-1935.

369. Construction of Chimney.—Every chimney shall be—

(a) built upon solid foundations with footings complying with the requirements of Section 17;

(b) carried upon steel girders bearing directly upon walls having the necessary strength and stability; or

(c) carried upon corbels of masonry, steel, concrete, or reinforced concrete, the work so corbelled being constructed for the full width of the jamb and projecting not more than 14 inches from the face of the wall.

370. Construction of Hearths.—(a) A hearth constructed of stone, slate, bricks, tiles, cement or other approved non-inflammable fire-resisting material shall be fixed under and in front of every fireplace opening.

(b) Every hearth shall—

(i) be solidly and securely supported;

(ii) have a thickness of not less than 4 inches;

(iii) extend not less than 6 inches beyond each end of the fireplace opening;

(iv) project not less than 14 inches from the face of the chimney breast; and

(v) be so laid that its surface is not lower than the floor of the room in which the hearth is situated.

371. Jambs of Fireplaces.—The jambs of every fireplace opening shall be at least 8 inches in thickness on each side of the opening thereof.

372. Fireplace Backs.—The back of every fireplace opening from the hearth up to a height of 12 inches above the arch or lintel shall be constructed of—

(a) solid masonry at least 8 inches thick;

(b) reinforced concrete at least 6 inches thick; or

(c) reinforced concrete faced with masonry or fire-brick of a total thickness of 6 inches.

Provided that openings for stoves or fire-brick grates may be of brickwork 4 inches thick.

373. Chimney Breasts.—The breast of every chimney shall be of incombustible material at least 4 inches in thickness.

374. Arches and Lintels.—An arch of brick, stone, or concrete or lintel of steel or reinforced concrete of sufficient strength shall be built over the opening of every fireplace to support the breast thereof.

375. Location of Steam Pipes, etc.—A pipe for conveying steam or smoke or other products of combustion shall not discharge into a street, or be fixed against any building on the face adjoining any street.

376. Distance of Steam Pipes from Combustible Material.—Pipes for conveying steam or air at a temperature exceeding 212 degrees Fahr., shall not be fixed nearer than 6 inches to any combustible material and any lagging used shall be of incombustible material.

377. Cutting Away of Chimney Breast in Party Walls.—A chimney breast or shaft built with or in any party wall shall not be cut away, unless the surveyor certifies that it can be done without injuriously affecting the stability of any building.

378. Gas Cooking Stoves.—Every gas cooking stove which is not situated in a fire place or fire recess shall be provided with a hood or canopy, the receptive area of which shall not be less than the total area of the top of the stove. The top of such hood or canopy shall slope upwards at an angle of not less than 20 degrees from the horizontal to a flue which shall be carried through the roof to the open air and be fitted with a cowl to prevent down draughts.

Provided that in single occupancy dwellings of Class I and duplex houses where the surveyor is satisfied that adequate ventilation exists in the roof space under all conditions, the flue may discharge into the roof space without a cowl. Provided further, that in all cases where the eaves of the residence or duplex house are "boxed in" or of a closed type, such vent must be taken direct to the open air.

Every such vent pipe shall have a diameter not less than—

(i) 4 inches in the case of buildings of Classes I, II, III and IV.

(ii) 7 inches in the case of buildings of Classes VI, VIII and IX.

Provided however that such hood or canopy shall not be required if a mechanical exhaust be provided,

379. Flue Pipes for Gas Appliances.—Flue pipes for gas appliances shall be constructed in accordance with the requirements of the State Electricity Commission.

380. Flue Pipes for Fuel Bath Heaters and Portable Coppers.—Flue pipes for fuel bath heaters shall be carried through the roof to a height of not less than 18 inches. The projecting portion of the flue pipe shall be provided with an outer casing 2 inches clear of the flue pipe commencing at the ceiling level and terminating in an approved cowl, cap, or terminal.

381. Prevention of Emission of Smoke.—(a) Every furnace and chimney shall be so used and managed as to prevent as far as possible the emission of smoke.

(b) If in the opinion of the surveyor any furnace or chimney emits an unreasonable amount of smoke, the Local Authority may serve notice on the owner or occupier of the land on which such furnace or chimney exists, requiring the carrying out of any specified alterations or additions thereto in order to minimise the emission of smoke within a time specified in such notice.

(c) Every owner or occupier served with a notice under the last preceding subregulation shall comply therewith to the satisfaction of the surveyor.

Part II.—Chimneys Not Used for Trade Purposes.

382. Height of Chimneys.—Every chimney shaft shall be carried up not less than 1 foot above any part of the roof structure within a horizontal distance of 12 feet and no chimney shall be built higher above the roof, flat, or gutter adjoining thereto than a height equal to six times the least width of such chimney shaft, at the level of such highest point in the line of junction, unless such chimney shaft is built with, and bonded to, another chimney shaft not in the same line with the first, or is otherwise rendered secure.

383. Inclination of Chimneys and Flues.—Chimneys and flues shall not be inclined at a less angle than 45 degrees to the horizontal and every angle shall be properly rounded; provided that in the case of chimneys and flues having soot doors (approved by the surveyor), of not less than 40 square inches, the surveyor may sanction in writing any other angle.

384. Thickness of Flues.—Every chimney, smoke flue or chimney shaft shall be carried up in solid masonry not less than 4 inches in thickness throughout provided that when the upper side of any such chimney or flue is constructed at an angle of less than 45 degrees with the horizontal the thickness of such upper side shall not be less than 9 inches.

385. Soot Doors.—Every soot door shall be distant at least 15 inches from any woodwork.

386. Rounding of Angles.—Every angle at a change of direction in a chimney shall be properly rounded.

387. Lining of Flues.—The inside of every flue, and also the outside where passing through any floor or roof or space enclosed by the roof or behind or against any woodwork, shall be rendered or pargetted, or lined with fire-resisting piping or stoneware.

388. Plugs in Chimneys.—Wooden plugs shall not be driven nearer than 5 inches or iron fastenings nearer than 2 inches to the inside of any flue or chimney opening.

389. Timber near Chimneys.—Timber or woodwork shall not be placed—

(a) under any chimney opening within 6 inches from the upper surface of the hearth of such chimney opening; or

(b) within 2 inches from the face of the brickwork or stonework about any chimney or flue, unless the face of such brickwork or stonework is rendered.

390. Flashings of Chimney Stacks.—Every chimney stack shall be effectively flashed at its junction with the roof.

391. Construction near Boiler or Furnace.—(a) Every floor or portion of a floor under or within a distance of 6 inches from any boiler or furnace shall be constructed of materials having a fire-resistance rating of two hours.

(b) Every portion of a ceiling over and within 6 feet from a furnace shall be constructed of materials having a fire-resistance rating of two hours.

(c) Every portion of a wall within a distance of 6 feet from any boiler or furnace shall be constructed of materials having a fire-resistance rating of one hour.

(d) Where the heating unit is adequately self-insulated the provision of subregulations (b) and (c) shall not apply.

392. Construction of Floors near Fuel Stoves.—The floor under every stove not heated by gas or electricity and the floor surrounding same for a space of 15 inches in front of every fire and 9 inches elsewhere shall be formed of materials of an incombustible and non-conducting nature having a thickness of not less than 3 inches.

Notwithstanding anything contained in Parts I and II of this Section, insulated solid fuel burning stoves and slow combustion space heating appliances of a type and construction approved by the surveyor may be installed in a dwelling or residential flat, subject to the following conditions:—

(a) **Hearths.**—Every such stove or space heating appliances shall stand on a hearth or slab of concrete not less than 3 inches in thickness or other approved durable material providing not less than the same measure of thermal resistance (having a fire-resistance rating of 1½ hours).

(b) **Backing Wall.**—The backing wall shall have a fire-resistance rating of not less than 2 hours over an area of not less than the back of the appliance unless separated therefrom by a space of not less than 12 inches. This space may be reduced to 6 inches in the case of appliances and stoves with an approved insulated back, subject to the space at the rear being enclosed along its top and sides with heavy gauge wire mesh or perforated metal to prevent the entry of combustible materials when the back of the stove or appliance is within 12 inches of the backing wall.

(c) **Hoods.**—Every free standing stove shall be provided with a hood or canopy of cross sectional area not less than the area of the top of the stove.

(d) **Flues.**—(i) The flue shall provide not less than 20 square inches of airway with no cross sectional dimension less than 4 inches and shall be connected directly to the smoke outlet of the stove or appliance and be carried up continuously and vertically to a point not less than 12 inches above the highest part of the roof at the point of emergence.

(ii) In the case of stoves, the flue shall be surrounded throughout its full height from the top of the stove or from the top of the hood or canopy over the stove to a height not less than 6 inches above the roof with a sleeve or casing providing not less than 2 inches of clear airway between the flue and the casing.

(iii) The flue shall be of steel not thinner than 20 S.W.G. or asbestos cement pipe not thinner than 5/16 inch. The casing shall be of steel not less than 20 S.W.G. or asbestos cement pipe not less than 5/16 inch in thickness in the case of stoves and in the case of space heaters the casing shall be of asbestos not less than ½ inch in thickness.

(iv) The flue shall be constructed in such a manner that it is removable for replacement and be held in position centrally in the casing by metal spacers of the minimum cross sectional area necessary for stability.

(v) No combustible material shall be placed within 2 inches of the flue casing or 9 inches of the outlet or flue of a space heating appliance where it passes through the external wall of a timber framed building.

(vi) External flues shall be carried up 6 inches clear of combustible materials.

Part III—Factory Chimneys and Chimneys Used for Commercial Purposes.

393. Flues Generally.—A flue used for the purpose of any factory, trade or business, or for the range or cooking apparatus of any hotel, tavern or eating-house shall be surrounded with brickwork at least 9 inches thick, or by reinforced concrete 6 inches thick, from the floor of the storey on which any oven, furnace, steam boiler or other fire is situated, to 18 inches above the highest part of the roof structure.

394. Construction of Masonry Chimney Shafts.—Every brick or masonry factory or commercial chimney shaft shall be constructed in conformity with the following provisions:—

(a) Every detached shaft shall be carried up throughout in masonry or brickwork and if detached shall be built with a batter from the base of the top of the shaft at the rate of at least 1¼ inches in 10 feet of height.

(b) The thickness of brickwork at the top of the shaft, and for 25 feet below the top, if the external dimension at the top does not exceed 5 feet shall be at least 9 inches. For chimneys of greater dimension the thickness shall be at least 14 inches and every chimney shall be increased at least one-half brick for every additional 25 feet measured downwards.

(c) Every cap, cornice, pedestal, plinth, string course or other variation from plain brickwork shall be provided as additional to the thickness of brickwork hereinbefore required. The foundation of the shaft shall be on concrete or other sufficient foundation.

(d) The footings inside and outside the shaft shall spread all round the base by regular offsets to a projection at least equal to the thickness of the enclosing brickwork at the base of the shaft.

(e) The width of the base of the shaft, if square or rectangular, shall be at least one-tenth of the proposed height of the shaft, or, if the same be round or of any other shape, then one-twelfth of the height, but the footing shall also be so proportioned so as not to exceed the allowable pressure on the soil.

(f) The height of the shaft shall be measured from the top of the footings to such shaft.

(g) The top six courses of the shaft shall be laid in cement mortar.

395. Chimney Shafts Constructed of Materials other than Masonry.—Chimney shafts of reinforced concrete, steel or any material conforming to the requirements of regulation 368 (c) shall be constructed in accordance with plans and computations approved by the surveyor.

396. Distance of Flues from Combustible Material.—No flue for conveying smoke or other products of combustion shall be placed nearer than 9 inches to any combustible material and any lagging used shall be of incombustible material.

397. Lining of Flues.—The inside of every chimney shall be rendered or pargetted or lined with approved fire-resisting material.

All fire-brick lining built inside the lower portion of any such chimney shaft shall be additional to and independent of the thickness of the masonry thereof prescribed by these regulations and shall not be bonded therewith.

398. Construction of Floors and Ceilings near Ovens, Boilers or Furnaces.—(a) Every floor or portion of a floor under or within 6 feet of any oven, boiler or furnace shall be constructed of materials having a fire-resistance rating of not less than three hours.

(b) Any floor, ceiling, or roof or portion thereof above and within a distance of 6 feet from any oven, boiler or furnace, shall be constructed of materials having a fire-resistance rating of not less than three hours.

(c) Where the heating unit is adequately self-insulated the provisions of subregulation (b) hereof shall not apply.

399. Construction of Walls near Ovens, Boilers, or Furnaces—Every wall of any room or enclosure housing or surrounding any oven, boiler or furnace shall have a fire-resistance rating not less than the following:—

(i) Four hours in the case of any wall or portion of a wall within a distance of 6 feet from such oven, boiler or furnace.

(ii) One hour in the case of every wall or portion of a wall distant more than 6 feet from such oven, boiler or furnace.

400. Boiler Rooms.—Notwithstanding the provisions of regulations 398 and 399, the Local Authority may require any oven, boiler or furnace, to be housed within a room constructed of materials having a fire-resistive rating of three hours in the case of floors, walls and ceilings.

SECTION 27.

SPECIAL CLASS REQUIREMENTS INCLUDING FLATS.

General Provisions—Residential Buildings of Classes I, II and IV Occupancies.

401. Kitchens.—Every kitchen shall comply with the requirements of regulations 67 (a) and 67 (b) and have a minimum width of 7 feet. Notwithstanding the provisions of this regulation a kitchen may be replaced by a kitchen annexe in a dwelling of Class I occupancy or a duplex house, provided one wall is an external wall and such annexe has a floor area of not less than 50 square feet and is separated from a living room by an opening having a width of not less than 5 feet and a height of not less than 7 feet.

402. Bathrooms.—(a) Every bathroom shall comply with the provisions of regulation 75.

(b) The floor of every bathroom shall be constructed of concrete not less than 3 inches thick complying with the provisions of regulation 296.

403. Water Closets.—Every water closet shall comply with the requirements of regulations 75 and 429.

404. Laundries.—Every laundry or wash-house shall be enclosed by walls to provide protection against storm and rainwater and comply with the provisions of regulation 76.

Class I.—Private Dwellings.

405. Minimum Number of Rooms and Size.—Every dwelling hereafter erected, altered or extended shall conform to the following requirements:—

(a) The minimum accommodation shall comprise four habitable rooms complying with the requirements of regulation 67 in addition to any bathroom, laundry or water closet required to be provided by the Health By-laws.

Provided a Local Authority, by special resolution, may approve of lesser accommodation.

(b) Where an existing dwelling is converted into a duplex house the floor area of each dwelling unit of such duplex house shall not be less than 600 square feet.

Class II.—Residential Flat Buildings.

406. Minimum Accommodation.—Every residential flat hereafter erected, constructed or adapted or altered shall comprise not less than three habitable rooms complying with the requirements of regulation 67 in addition to any bathroom, laundry or water closet required to be provided by the Health By-laws.

406A. Single Unit Flats.—Notwithstanding the provisions of regulation 406 a Local Authority may prescribe areas by zoning where single unit flats may be erected comprising a bed-sitting-room of not less than 180 square feet, a kitchen of not less than 50 square feet together with any bathroom, laundry or water closet required to be provided by by-laws under the Health Act.

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407. Floors.—The floors of residential flat buildings shall be so constructed as to minimise the passage of impact and air-borne noises.

Reinforced concrete floors shall not be less than 4 inches in thickness.

408. Walls Separating Flats.—Walls dividing separate flats or separating flats from common halls or passages shall comply with the requirements of regulation 260 and be taken up to the underside of the roof unless the ceilings of the adjoining flats are insulated with the equivalent of 2 inches of approved sound insulating material.

Note.—If constructed of brick this requires a thickness of 9 inches.

409. Stairs.—No stairway other than an alternative escape stair shall be less than 3 feet 4 inches in width and no stairway serving more than one flat and/or no common hall or passageway shall be less than 4 feet in width. Escape or back service stairways shall be not less than 2 feet 8 inches wide and all kitchens of residential flats shall have direct access to the escape stairs.

All external access stairways to flats shall be constructed in brick or reinforced concrete and shall have treads not less than 10 inches and risers not more than 7 inches and every flat not situated on a ground floor shall have an escape stair or unobstructed access at all times to a stairway providing an alternate means of escape.

Class IV Occupancy—Dwellings Attached to Buildings of Other Classes.

410. Minimum Accommodation.—Every building of Class IV occupancy hereafter erected, constructed, adapted or altered shall comprise not less than three habitable rooms complying with the requirements of regulation 67 in addition to any bathroom, laundry or water closet required to be provided by the Health By-laws.

Class III Occupancy—Residential Buildings.

411. Lodging and Boarding Houses, Residential Clubs, etc.—Lodging and boarding houses, residential clubs, etc., shall be provided with bathrooms, washbasins, water closets, laundries, etc., in accordance with the provisions of the Health By-laws.

412. Residential Hotels.—Residential portions of hotels licensed under a publican's general license or a hotel license shall be provided with bathrooms, washbasins, water closets, laundries, etc., in conformity with the requirements of the Licensing Court and Health By-laws.

413. Kitchens and Dining-rooms.—Every building of Class III occupancy hereafter erected, constructed, adapted or altered shall be provided with a kitchen, dining-room and sitting-room of sufficient size to serve the persons accommodated therein in accordance with the requirements of the Health By-laws, and in the case of licensed hotels, with the requirements of the Licensing Court.

Class VI Occupancy—Shops.

414. Shop Fronts.—(a) No part of any shop front shall be fixed—

(i) nearer than 3 inches to the centre line of a reinforced concrete party wall;

(ii) nearer than 4 inches to the centre of a masonry party wall;

(iii) nearer than 4 inches to a wall of adjoining premises when such premises have a separate wall.

(b) Shop fronts within a distance of 20 feet from an opening in an external wall of another building shall be constructed in conformity with the provisions of regulation 352, provided that the shutters may be in the form of window backs not more than 2 feet from the building line.

(c) The upper section of a shop front may, providing such portion is constructed not less than 9 feet above the pavement, project—

(i) not more than 18 inches if the street which such shop front faces be 33 feet or more in width; or

(ii) not more than 12 inches if the street which such shop front faces be less than 33 feet in width.

(d) Mouldings shall not project more than ½ inch beyond the street alignment in any portion of the shop front at a lesser height than 9 feet above the pavement.

415. Show Cases and Mirrors.—Mirrors and show cases shall be affixed flat against a wall, pier, or pilaster in such a way that no portion shall project beyond the street alignment.

416. Stall-boards.—Stall-boards under shop fronts shall be constructed of brickwork, stonework, concrete or other materials having a fire-resistance rating of not less than one hour, and provided with sub-floor ventilation.

417. Shop Fronts Abutting on Exits.—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 such passage or lobby, such shop front shall be protected by a sprinkler system, approved self-coiling rolling corrugated steel shutters running in metal grooves and fitted with proper appliances on the outside thereof suitable for raising and lowering, or by material having a fire-resistance rating of one hour.

418. Floors and Walls in Shops used for the Sale of Perishable Foodstuffs, Eating Houses, etc.—The floor and walls of all such premises hereafter erected, constructed or adapted shall comply with the requirements of the Health By-laws.

419. Openings in Shops Close to Street.—No opening in any wall, shop front, or window for the purpose of sale at retail of any goods or articles shall be made within 4 feet 6 inches of any street or public way.

420. Kiosks.—(a) No kiosk shall be placed within 4 feet 6 inches of a street or public way.

(b) Kiosks may, subject to approval of Local Authority, be placed in arcades, and every such kiosk shall have—

(i) a minimum height of 8 feet measured from the floor to the ceiling;

(ii) a minimum internal dimension of 3 feet 6 inches, and a minimum floor area of 16 square feet;

(iii) adequate ventilation communicating directly with the external air;

(iv) a minimum floor area of 20 square feet per person when occupied by more than one person.

(c) For the purpose of this regulation, a kiosk means a stall or enclosed apartment for the sale or distribution of goods and which the public do not enter.

421. Class VIII Occupancy—Factories—General.—All factories shall comply with the requirements of the Chief Inspector of Factories.

422. Sanitation—Buildings of Classes IV, V, VI, VII and VIII Occupancies.—Buildings of Classes IV, V, VI, VII and VIII occupancies shall have water closets, urinals, wash basins, etc., provided in conformity with the requirements of the Health By-laws.

423. Class IX Occupancy, Public Buildings.—Every public building within the meaning of Part VI of the Health Act shall be constructed in conformity with the requirements of the regulations made under the said Act.

SECTION 28.

OUTBUILDINGS AND FENCES.

Part I—Outbuildings Appurtenant to Private Dwellings of Class I, Duplex Houses, Lodging and Boarding Houses of Class III and Buildings of Class IV.

424. Construction.—(a)The Local Authority may by by-law declare special areas where all outbuildings must be constructed of brick.

(b) No outbuilding other than kennels, aviaries, and fowl houses shall be less than 7 feet in height from the floor to the ceiling, and where there is no ceiling, from the floor to the underside of the rafters at the lowest point, provided that in the case of wash houses the minimum height shall be 8 feet.

(c) In brick areas all outbuildings exceeding four squares in area shall be built of masonry.

(d) All brick outbuildings shall comply with the provisions of regulations 248 and 251.

(e) (i) Except as provided in paragraph (ii) of this subregulation, no outbuilding shall be built closer than 3 feet to a boundary of a site.

(ii) Outbuildings may be erected on a rear or side boundary of a site up to the rear of any dwelling to which they are appurtenant.

(iii) A wall of an outbuilding which is erected within 3 feet of a boundary must be constructed of brick, stone or concrete, and must have a fire rating as prescribed by these regulations, and must be carried up as a parapet 15 inches in height above the roof, flat or gutter of the outbuilding. But the boundary walls may be of material other than brick, stone or concrete if they abut a right-of-way or lane over which the owner of the outbuilding has rights.

425.—Stables.—Stables containing not more than two stalls may be built provided—

(a) the external walls do not exceed 10 feet in height from the level of the ground to the top plate of the wall or the underside of the eaves;

(b) the floor is laid with hard bricks, blue-stone pitchers, or wood blocks jointed in cement mortar, or of sleepers grouted in tar, or with cement, concrete, or other approved impervious material;

(c) the building, of whatever material constructed—

(i) is distant not less than 80 feet from the property alignment of the street or road to which such property has the main frontage;

(ii) is distant not less than 30 feet from any other street or road to which such property has a frontage;

(iii) is distant not less than 3 feet from the boundary of the site other than a street boundary, unless the external wall adjoining such boundary shall be carried up as a parapet at least 15 inches in height above the roof, flat or gutter of such building;

(iv) is distant not less than thirty (30) feet or any greater distance required by the Health By-laws from any other building used as a dwelling-house, whether on the same allotment of land or on any adjoining allotment;

(d) the provisions of the Health By-laws of the Local Authority relating to stables are complied with.

426. Private Workshops, Sheds, etc.—Outbuildings for use as private workshops which are not required to be registered under the Factories and Shops Act, 1920-1937, sheds, and similar structures may be built, provided that such structures comply with the following requirements:—

(a) If attached to the main building, they shall be constructed of similar materials to such main buildings and conform to the requirements as to distance from the boundaries prescribed by these regulations for the main building.

(b) If detached from the main building, they shall be distant not less than—

(i) 6 feet from any dwelling on the same allotment;

(ii) 50 feet from the boundary of the street or road to which the land upon which such structure is to be constructed has the main frontage;

(iii) 20 feet from any other street or road to which such land has a frontage, unless especially approved by the Local Authority.

(c) The floor area of such outbuildings shall not exceed $2\frac{1}{2}$ squares.

427. Wash-houses.—Detached wash-houses not exceeding $1\frac{1}{2}$ squares in superficial area may be built as appurtenant to any dwelling, and if distant 6 feet or more from the main building, shall comply with all the conditions in regard to sheds as provided in the preceding regulation with the exception of paragraph (b) (i) and (c) but, if built within a distance of 6 feet from the main building or attached thereto, then such wash-house shall comply with the conditions as to distance from boundaries as apply to the main building.

428. Garages.—Private motor garages may be built in accordance with the following requirements:—

(a) No portion of a garage shall project in advance or be nearer to the alignment of the street to which the lot has the principal frontage than is set out in subparagraphs (i), (ii) and (iii) of paragraph (a) of this regulation, except where the physical configuration of the site thereof renders it impossible or impracticable to comply with this requirement of these subparagraphs.

In such cases the Local Authority may grant permission for the erection of a garage at a lesser distance from the street alignment.

(i) In the case of a garage built as an integral part of the dwelling to which it is appurtenant, the front of the dwelling or the building line prescribed in regulation 39, whichever is the lesser.

(ii) In the case of a detached brick garage the front of the dwelling or the building line prescribed in regulation 39, whichever is the lesser.

(iii) In the case of a garage of Type 4 or 5 construction, the rear of the dwelling except in optional areas where the Local Authority may approve of the erection of such garage provided no portion thereof projects in advance of the dwelling to which it is appurtenant or the building line prescribed in regulation 39, whichever is the lesser.

(b) No portion of a detached garage shall be distant less than 20 feet from any other street or road alignment to which the site has a frontage except by approval of the Local Authority.

(c) The external walls of any garage not exceeding four squares in area shall be not more than 10 feet in height.

(d) The external walls of private garages of a greater superficial area than four squares or exceeding 15 feet in height to the highest point of the roof, other than private garages appurtenant to wood framed dwellings of type 5 construction erected in areas where such dwellings may be approved by the Local Authority under section 311 of the Municipal Corporations Act, shall be built of brick or concrete, and shall comply with all other conditions applying to buildings of these materials. Provided, however, that if such private garage is built at a less distance than 6 feet from any dwelling-house or other building, or is attached to, or forms part of any such building, then such garage shall comply with all the conditions as to distance from boundaries and from other buildings as apply to the main building itself.

(e) The floors of all motor garages shall be constructed of approved incombustible material.

(f) Every private garage attached to or forming part of any dwelling-house, shop or other building shall comply with the requirements of regulation 364.

(g) No garage shall be built so that the doors open over or upon or obstruct any street, footpath or right-of-way.

428A. Car Ports.—(i) Car ports comprising open-sided garages without doors may be located in conformity with the requirements for garages as set out in regulation 428.

(ii) Provided that where a building of Class I has been erected on the site before the coming into force of these regulations a local authority may permit the erection of car ports in positions other than that prescribed for garages.

(iii) A car port referred to in subregulation (ii) of this regulation may be of pergola type of flat roofed construction supported by posts or columns, but without walls or doors, complying with the following requirements:—

Timber (Jarrah Dressed)—

Spans up to 8 feet—4 inch by 4 inch.

Spans over 8 feet—5 inch by 5 inch.

Steel Piping—

Brickwork or masonry—9 inch by 9 inch.

Concrete—6 inch by 6 inch reinforced.

429. Water Closets and Urinals.—Water closets and urinals not forming part of a main building may be built in the yard or area appurtenant to each building, provided that—

(a) such water closet, or urinal is distant not less than fifty (50) feet from the building line of the street or road, to which the land upon which it is intended to erect it has the main frontage, and 20 feet from the boundary of any other street or road to which the site has a frontage and, if built within 3 feet of the boundary of any adjoining allotment of land, is separated therefrom by a wall of brick, or concrete, not less than 4 inches in thickness, carried up to a height of 12 inches above the level of the roof as a parapet wall;

(b) such water closet or urinal is properly screened from public view;

(c) every such water closet or urinal shall be constructed with walls of brick, or concrete not less than 4 inches in thickness and floored and roofed to the requirements of the surveyor. Nothing in this clause shall prevent the erection of a water closet attached to or within a dwelling-house or other building, subject to all conditions governing such building in these regulations.

430. Conservatories, Shade Houses, Pigeon Lofts and Aviaries.—Conservatories, shade houses, pigeon lofts and aviaries may be constructed subject to the Local Authority's approval of the location, design and materials of construction, and compliance with the Health By-laws.

431. Fowlhouses, Kennels, etc.—Fowlhouses, kennels, etc., may be constructed provided that such structures—

(a) shall have a height not exceeding 8 feet and a total superficial area not exceeding 100 square feet;

(b) shall be distant not less than 60 feet from the boundary of any street or road to which the building has a frontage except in cases where the Health By-laws permit any lesser distance;

(c) shall comply with the requirements of the Health By-laws.

Part II.—Outbuildings Appurtenant to Buildings of Other Classes.

432. General.—Except as provided for in regulations 433-435 hereunder, all outbuildings shall comply with requirements set out in Part I of this Section.

433. Outbuildings to be of Brick.—All outbuildings shall be constructed of brick provided that the Local Authority may approve by special license of garages and sheds of wood frame construction appurtenant to buildings in areas where the erection of buildings of Types 4 and 5 is permitted by the Local Authority.

434. Location from Boundaries.—No outbuilding shall be built nearer to the street alignment than the alignment of the front of the building to which it is appurtenant or closer than 20 feet to any other street to which the site has a frontage, provided that the Local Authority may, if the circumstances so warrant, grant special approval for outbuildings closer to the street frontages.

Part III.—Fences.

435. Corner Fences.—No fence erected on the frontage or side of an allotment at the intersection of two streets shall exceed the height of 4 feet for a distance of 30 feet from the intersection. The fence on the side street shall be constructed for a distance of from the corner at least 25 feet along that street, of design and material similar to those of the fence along the frontage of the allotment.

436. Hoods, etc.—Hoods, pergolas and ornamental heads to gateways or fences shall be constructed in accordance with the design and of the materials shown on a plan submitted to and approved by the surveyor. But no part of any such projection shall project more than 12 inches beyond the alignment of any street or be within 8 feet of the footpath level at such structure.

437. Barbed Wire.—No person shall erect or affix or allow to continue upon any building or fence owned or occupied by him any barbed wire or other wire with spiked or jagged projections, unless such wire is distant horizontally not less than 12 inches from the building line of the street, road or right-of-way, or unless such wire is not less than 7 feet vertically above the level of any street, road or right-of-way.

438. Fences in Front of Duplex Houses. No dividing fence whatever shall be erected between the separate units of a duplex house between the front of such duplex house and the street alignment.

SECTION 29.

SERVICES AND EQUIPMENT.

439. Gas Installations.—Where any gas appliance is installed in any building such installation shall be in accordance with the rules and regulations of the State Electricity Commission and Gas Department. Gas cooking stoves shall be installed in accordance with the provisions of regulation 378 of these regulations.

440. Electrical Installations.—All electric apparatus and wiring for lighting, heating or power supply or other application of electricity shall be in accordance with the regulations of the State Electricity Commission and the S.A.A. wiring rules.

441. Lifts and Lift Shaft.—

(a) A lift shall be provided for the use of the occupants in every building exceeding three storeys in height.

(b) **Lift Installation.**—Every lift installation shall conform to the requirements of the S.A.A. Lift Code No. C.A. 3-1954 and the requirements of the Chief Inspector of Machinery.

(c) **Lift Shafts.**—(i) Except as provided in paragraph (ii) hereof, the shaft of every lift shall be constructed and enclosed throughout its height with walls having a fire-resistance rating of two hours. Such shaft shall be enclosed at the bottom in cases where it is not carried down to the foundations of the building, and at the top in cases where it is not carried up to the roof, with material having a similar fire-resistance rating.

(ii) Notwithstanding the provisions of regulation 347, the shaft of any passenger lift constructed within the well hole of a fire-resisting stair enclosure may be enclosed with open metal grilles or guards and open metal doors.

(d) **Goods Lift.**—A goods lift shall not be constructed in or communicate directly with a fire-isolated stairway.

(e) **Doors to Lift Shafts.**—See regulation 351.

(f) Glazed openings may be inserted in walls of lift wells subject to compliance with the requirements of regulation 347.

442. Escalator Installations.—One or more escalators for the transport of passengers may be installed in any building, provided that every such escalator shall be designed, constructed, installed and operated in conformity with the relevant provisions of the S.A.A. Lift Code No. C.A. 3-1954.

443. Fire Services in Buildings.—(a) Fire services as prescribed in regulation 444 shall be provided in—

(i) every residential flat building of Class II occupancy exceeding three storeys in height of Type 1 or 2 construction, or exceeding two storeys of Type 3 construction;

(ii) every building of Class III occupancy exceeding one storey in height in which more than 25 persons usually reside;

(iii) every building of Class V, VI or VII occupancy of two or more storeys in height;

(iv) every building of Class VIII occupancy.

(b) Every public building shall be provided with fire services as required by the regulations made under the Health Act, 1911-1956.

444. Equipment.—Every building specified in regulation 443 shall be provided with the following equipment for fire extinction:—

(a) Pipes not less than 4 inches diameter conducting water from a street water main to pipes and rising mains with a diameter of not less than 3 inches fitted with 2½ inch fire hose cocks (hydrant valves) and hoses in such number and such position as the Chief Fire Officer may direct, and/or chemical extinguishers as required by the Chief Fire Officer, but in the proporition of not less than one to every 2,250 square feet of floor area, with not less than two on any one floor.

445. Exemption.—Where in the opinion of the surveyor and, in the case of factories, of the Chief Inspector of Factories, after consultation with the Chief Fire Officer, the application of any of the provisions of regulation 444 is unnecessary or unsuitable, having regard to the occupancy of any particular building, such provisions may be dispensed with or alternative requirements for such building may be prescribed.

446. Timber and Storage Yards, Buildings over Three Storeys in Height, etc.—Every timber or storage yard, every building more than three storeys in height and not coming within the provisions of the foregoing regulations, and every other building where, by reason of the construction of the building, the nature of its use, the nature of its contents or any other special circumstances the Chief Fire Officer so directs, shall be provided with a water supply service and such equipment for fire extinction purposes as may be required by the Chief Fire Officer.

447. Fire Service in High Buildings.—All buildings exceeding 80 feet in height and any other building where required by the Chief Fire Officer, shall be provided with a rising main of not less than 4 inches in diameter with the exception of the three topmost floors, which may be protected by means of 3 inch diameter rising mains. All such rising mains shall have outlets fitted with approved 2½ inch cocks and hoses on each floor and the roof in positions approved by the Chief Fire Officer.

A booster connection shall be installed on the fire service in all such buildings when required by the Chief Fire Officer.

448. Fire Extinguishers.—(a) Chemical fire extinguishers required by the foregoing provisions of this Section shall be of a type approved by the Fire and Accident Underwriters' Association of Western Australia.

(b) The owner of any building fitted with a fire service shall arrange with the Fire Brigades Board for the periodical testing and inspection of all appliances for the extinction of fire and fire alarm systems, if any, and in the event of any such appliance or fire alarm system being found defective by the inspecting officer of the said Board shall, on receipt of a report to that effect, immediately cause the defects to be rectified.

(c) The owner of the building shall maintain in proper order and condition all appliances required by these regulations to be provided for the control or extinction of fire or for the saving of life at fires.

449. Certain Buildings to be Connected to a Fire Station.—(a) Every public building required by regulations under the Health Act, 1911.

(b) Every other building in which the Local Authority, after consultation with the Chief Fire Officer considers that such provision is necessary by reason of—

(i) the construction of the building;

(ii) the nature of its use;

(iii) the nature of its contents; or

(iv) any other special circumstances;

shall be connected by direct telephone alarm with the nearest fire brigade station. The position and numbers of alarms in any building shall be determined by the Chief Fire Officer and the installation shall be carried out to his satisfaction.

450. Sprinkler Installation.—A sprinkler system complying with the requirements of the Fire Underwriters' Association of Western Australia shall be provided in—

(a) every building more than two storeys in height used as a parking station or public garage;

(b) every building of Class VI, VII or VIII occupancy, unless specially exempted by the Local Authority after consultation with the Chief Fire Officer, which has a floor area on any floor exceeding 15,000 square feet in the case of a building of Type 1 or 2 construction or 12,000 square feet in the case of a building of Type 3, 4 or 5 construction. The provision of this paragraph shall not apply to buildings with floors subdivided into cells less than 10,000 square feet in area and separated by walls having a fire rating of two hours.

451. Sewerage and Drainage.—To be in accordance with the requirements of the Local Health Authority.

452. Hot Water Installation.—(a) For requirements relating to flues, see Section 26.

(b) For requirements relating to construction of boiler rooms, see regulations 391, 398, 399 and 400.

453. Mechanical Ventilation.—For requirements relating to systems of mechanical ventilation, see Part II of Section 10.

SECTION 30.

RESTORATION OF BUILDINGS AND ALTERATION TO EXISTING BUILDINGS.

454. Restoration of Buildings.—If in the opinion of the surveyor any building be destroyed, demolished or pulled down to the extent of more than 50 per cent. of its cubic content, exclusive of foundation, such building shall not be restored, reconstructed or repaired except in accordance with the provisions of these regulations.

455. Re-erection of Buildings.—In the event of the destruction by fire, or other unforeseen cause, of any building which exceeds the maximum height permitted under Section 7 of these regulations, such building shall not be reconstructed except in conformity with these regulations.

456. Other Reconstruction.—If any external wall, external enclosure or floor be at any time destroyed or demolished or pulled down for the height of one storey or for an area equal to one-half of its whole surface, the whole of such wall, enclosure, or floor shall be made to conform in all respects with the requirements of these regulations.

457. Alterations and Additions to Buildings.—

(a) **General.**—All alterations, additions and repairs to buildings shall conform to the provisions of these regulations.

(b) **Major Alterations and Repairs.**—(i) If alterations and/or repairs in excess of 50 per cent. of the cubic content of an existing building are made to such building within any period of three years, the entire building shall be made to conform to the requirements of these regulations.

(ii) Any building which for any reason whatsoever requires repairs, at any one time, in excess of 50 per cent. of the value thereof, not deducting from such value any loss caused by fire or any other reason, shall be made to conform to the requirements of these regulations or shall be demolished.

(c) **Changed Occupancy.**—(i) If the existing use or occupancy of a building is changed and the building does not conform to the requirements of these regulations for the proposed new occupancy, the entire building shall be brought into conformity with these regulations, except that if the use or occupancy of only portion of the building is changed and such portion is separated from the remainder of the building in accordance with the provisions of Section 25, then such portion only need be made to comply with these regulations.

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(ii) Any existing building not covered by the preceding paragraph which has its floor area or its number of storeys increased or its use or occupancy changed shall be provided with exits and fire-protection facilities as required by these regulations for the proposed new occupancy or occupancies.

(d) **Minor Alterations and Repairs.**—Minor alterations and repairs not covered by the preceding subregulations may be made with the same type of materials as used in the original construction, provided that not more than 25 per cent. of the roof or wall covering of any building shall be replaced in any period of 12 months unless the entire roof or wall covering is made to conform to the requirements of these regulations. New roofing meeting the requirements of these regulations may be placed over existing roofing when such existing roofing and the roof framing are such as to permit the new roofing to be properly supported and securely fastened.

458. **Procedure in the Case of Ruinous and Dangerous Buildings and Verandahs, etc.**—(a) The surveyor may where necessary in his opinion after inspection cause any dangerous building or portion of a building to be protected by a hoarding or fence and/or shored up, or otherwise made safe.

(b) The owner of any building or premises shall, when ordered by the Local Authority so to do, at his own expense remove any verandah, balcony, or other obstruction used in connection with or appurtenant to such building or premises which shall obstruct the footway or street or is dangerous, whether such verandah, balcony, or other obstruction shall have been erected before or after the commencement of the Municipal Corporations Act, 1906-1954.

(c) The owner or occupier shall upon notice from the surveyor remove within the time specified any blind or screen which has become dilapidated or unsightly.

SECTION 31.

STREET VERANDAHS.

459. **License Required.**—No verandah, awning or portico shall be constructed over the footway of any street unless a license for such construction in the form set out in Schedule 9 has first been obtained from the Local Authority.

460. **Plans to be Submitted.**—Any person desiring to obtain the consent of the Local Authority to the erection of such a verandah, awning or portico, shall deposit with the building surveyor drawings comprising a plan elevation, section, and a specification showing in detail the proposed construction of such verandah, awning or portico and the manner in which it is proposed to secure it to the building to which it is proposed to be attached. Calculations proving the stability of the structure shall be submitted when required by the surveyor.

461. **Types Permitted.**—(a) All verandahs, awnings and porticos when practicable shall be of suspended awning or cantilever form and, unless otherwise permitted by the Local Authority, the fascia shall finish flush with the face of the kerb or 10 feet 6 inches from the building line, whichever is the lesser.

(b) Every such verandah hereafter erected shall be of a standard design, to be seen at the office of the surveyor, or of such materials and design as shall be in the opinion of the surveyor better for the particular circumstances of the case in accordance with a plan and specification submitted to and approved by the surveyor.

(c) All verandahs in a street shall be erected of a uniform height and width and subject to regulations 461 (b) and 464 the standard height and width of verandahs in each street shall be fixed by the Local Authority.

462. **Construction.** In the construction of every such verandah the following conditions shall be complied with:—

(a) All girders, rafters and framing other than purlins and battens shall be of steel of dimensions approved by the surveyor and connections must be of standard type. Purlins and battens for fixing roof covering and fascia may be of jarrah or other approved hardwood.

(b) The roof shall be covered with 24 gauge galvanised corrugated iron with a fall of ½ inch per foot towards the building.

(c) Box gutters shall be formed at or near the building line, lined with galvanised plain iron not lighter than 24 gauge and to a capacity sufficient to carry off all rain or storm water. Such capacity shall in no case be less than 27 square inches.

(d) Downpipes shall be of sufficient capacity to efficiently discharge rainwater falling on roofs. The bottom 6 feet length of pipes shall be wrought or cast iron. Pipes shall be chased into walls or piers to a height of 9 feet or set back so as not to project beyond the face of the building, and shall discharge under the footway into the street channel or be connected up to underground stormwater drains.

(e) The ceiling shall be of plain galvanised iron, stamped metal, fibrous plaster or other approved non-inflammable materials securely fixed to wood joists, which shall be not less than 4 inches by 2 inches spaced not more than 2 feet centres running parallel with the footpath and secured to the steel framing. All ceilings to be flat and level.

(f) The hanging bolts are to be not less than 1 inch diameter, properly attached to the framing and securely anchored or bolted to the building, to the approval of the surveyor, and provided with a union screw and shall be back-stayed or anchored as may be necessary for stability. Hanging bolts shall be not more than 12 feet apart unless specially designed fascias are provided and computations submitted.

(g) The fascia shall be lined with plain galvanised iron, stamped metal or other approved non-inflammable material on jarrah framing. The finished overall depth of fascias for verandahs over footpaths more than 9 feet wide shall be 24 inches and for those over footpaths 9 feet wide or less shall be 18 inches. Pediments constructed with fascias of verandahs shall, in all cases, be subject to the approval of the Local Authority. Flashing to be 5 lb. lead where required, to approval.

463. Verandah Ends.—(a) Whenever a proposed verandah will abut on to an existing verandah, it shall be so finished as to prevent rain from falling between such verandahs. Provided that when the existing verandah is not more than 6 inches shorter than the frontage of the building to which it is attached, the person erecting the new verandah shall make the necessary extension to the existing one. When, however, any such existing verandah is shorter by more than 6 inches, the owner shall, on requisition by the Local Authority, continue such verandah up to the building line of such existing building.

(b) Whenever the end of a verandah abuts on to the end of a right-of-way, street, or public place, the fascia shall be returned along such end to the satisfaction of the surveyor.

464. Height above Pavement.—(a) The height of verandah ceilings shall except in special cases be 11 feet above the pavement level. Where there are existing verandahs, the new verandahs must conform thereto subject in all cases to the approval of the Local Authority.

(b) Where necessary, verandahs must be stepped to conform with the grade of the footpaths. Such steps shall not exceed 1 foot in depth without special permission.

465. Time of Erection of Verandah.—Cantilever verandahs shall not be erected except during such hours as shall be appointed or prescribed by the surveyor.

466. Verandahs to be Kept in Repair.—The owner or occupier for the time being of any building against or in front of which there is any verandah, whether constructed before or after the passing of these regulations, shall keep the verandah clean, painted, watertight and in good repair, and it shall be lawful for the surveyor to give notice to the owner or occupier of the said building to clean, paint, or repair such verandah whenever in his opinion such cleaning, painting, or repairing is required; and every owner or occupier who neglects or refuses within seven days after the serving of such notice to effect such cleaning, painting or repair shall forfeit a sum not exceeding 40s. for every day during which he fails to effect the same, but not exceeding in all the sum of £20.

467. Blinds under Verandahs.—Blinds may be permitted under verandahs subject to the following conditions:—

(a) Such blinds shall be hung from the outer edge of the verandah parallel to the kerb, and when specially approved by the Local Authority at discontinuous ends of verandahs.

(b) Such blinds shall be so constructed that they cannot hang lower than 7 feet 6 inches above the level of the footway, and when down shall be fixed rigidly in position.

(c) Blinds shall be of a colour to be approved by the surveyor and shall be maintained in a proper state of repair to the satisfaction of the surveyor.

468. Verandahs may be Prohibited in Certain Streets.—The Local Authority may prescribe streets in which no awning or verandah may be erected over a footpath or roadway.

469. Power to Approve Awnings of Special Design.—Notwithstanding anything contained in this Section, the Local Authority may approve awnings or verandahs of a design not complying with the provision of regulations 461 and 462.

SECTION 32.

STORAGE OF INFLAMMABLE LIQUIDS, DANGEROUS GOODS, ETC.

484. Inflammable Liquids.—Inflammable liquids are subdivided into Classes A and B as hereunder:—

Class A: shall include those liquids which will flash or emit an inflammable vapour at or below a temperature of 73 degrees Fahrenheit, Abel Close Test.

Class B: shall include those liquids which will neither flash nor emit an inflammable vapour at a temperature less than 73 degrees Fahrenheit, Abel Close Test.

485. Storage of Inflammable Liquids in Buildings.—Inflammable liquids in quantities exceeding either 50 gallons of Class A or 250 gallons of Class B shall not be stored in any room or building, except in accordance with the following conditions:—

(a) Such room or building shall be adequately ventilated.

(b) Such room or building shall be constructed with walls having a fire-resistance rating of four hours and floors and ceilings having a fire-resistance rating of three hours.

(c) External doors of such rooms, if within 20 feet of any door or window or other opening not in the same wall as, and parallel to, such firstmentioned door, also all internal doors of such rooms shall be two-hour fire doors complying with the requirements of regulation 181 of these regulations.

(d) Where such Class A inflammable liquid is to be stored in quantities of less than 250 gallons, the door shall, if possible, open directly into the outer air, but where this is impracticable, the floor shall be sunk below the level of the adjoining floors to the approval of the surveyor, but in no case less than 12 inches.

(e) Where the quantity of inflammable liquid of either class to be stored exceeds 250 gallons, in bulk or in containers of capacity exceeding 50 gallons, the total storage capacity of the room or building below the level of the lowest opening in the wall of such building shall exceed by at least one-eighth the total quantity for which storage permission is granted. Where, however, the whole of a ground floor is to be used for storage, this storage capacity (including one-eighth excess) may be provided by means of an external well formed by a wall of brick, stone or concrete completely surrounding such storage floor. Openings will not be permitted for any purpose in this enclosing wall and in no case shall the top of this wall be less than 1 foot above the level to which the stored liquid would rise if permitted to run free.

(f) Where the quantity of inflammable liquid of either class to be stored exceeds 250 gallons, all in containers of capacity less than 50 gallons, the total storage capacity of the room or building below the level of the lowest opening shall be not less than 50 per cent. of such storage.

Provided that this storage capacity may be obtained by the use of an external well similarly as in the last preceding paragraph (e).

(g) In such areas and sites as are specially approved by the Local Authority, buildings of Type 4 unprotected metal construction may be permitted subject to the provision of a protective screen wall or dam complying with the requirements of regulation 488 (a) (ii).

486. Storage of Inflammable Liquids in Underground Tanks—of under 1,000 Gallons Capacity.—Inflammable liquids in quantities not exceeding 1,000 gallons may be stored in an underground tank or tanks provided that such is in accordance with the following provisions:—

(a) The site for each tank shall be first approved by the Local Authority for that purpose.

(b) Such tanks shall be constructed of steel plate of not less than 14 gauge thickness unless otherwise approved in cases of very small tanks, and shall be placed not less than 2 feet below the lowest floor of any building under which such tank may be situated. Sand or other approved filling materials, shall be filled in over the tank to the level of the ground or floor as the case may require. Such tanks shall be adequately and individually ventilated and every opening at or near ground level shall be fitted with a gas tight cover cap. Except in special circumstances and then only with the approval of the surveyor, filling pipes may only be placed in an approved position within the boundaries of the site and then only so as not to cause any obstruction to the traffic whilst the tanks are being filled.

(c) Batteries of two or more such tanks, the aggregate capacity of which exceeds 1,000 gallons, shall be placed so that there will always be a thickness of not less than 1 foot of filling material between such tanks.

487. Storage of Inflammable Liquids in Underground Tanks exceeding 1,000 Gallons Capacity.—Inflammable liquids in quantities exceeding 1,000 gallons may be stored in an underground tank provided that such is in accordance with the following provisions:—

(i) The site for each tank shall be first approved by the Local Authority for the purpose.

(ii) The construction of the tank shall be subject to the approval of the surveyor.

488. Storage of Inflammable Liquids in Surface Tanks.—(a) Inflammable liquids in quantities exceeding either 50 gallons of Class A or 250 gallons of Class B shall not be stored in a surface tank except in accordance with the following provisions:—

(i) The site for each tank shall be first approved by the Local Authority for that purpose.

(ii) Any tank upon or above the surface of the ground or partly below and partly above the surface of the ground shall be enclosed by a compound wall of brick, stone or concrete or an earthen dam of approved construction.

The height of such wall or dam shall be such that the capacity able to be retained is not less than one-eighth in excess of the total capacity for which permission is granted as tank storage but in no case shall the top of such dam, where an earthen dam is used, be less than 2 feet above the level to which the liquid would rise if permitted to run free from the tanks, unless the profile of such earthen dam be protected by stone pitching concrete facing or other permanent protection approved by the surveyor.

(iii) Any opening made in the compound wall to permit access to the tank shall contain a liquid tight door, either sliding or opening inwards, made of incombustible material and of sufficient strength to resist any pressure which may be brought to bear on such door by the bursting of the tank enclosed by such wall.

(b) Storage of Inflammable Liquids not in Buildings, etc.—Where inflammable liquids in quantities exceeding 50 gallons in the case of Class A liquids or exceeding 250 gallons in the case of Class B liquids are to be stored in places other than in buildings or underground tanks of less than 1,000 gallons capacity as hereinbefore prescribed, such liquids shall not be stored or kept within the distances prescribed in Table 488 from any building or land on which a building may be erected.

Condition 1 shall mean where the storage is not in tanks or where all the inflammable liquid is not contained in metallic drums or tins each containing not more than 50 gallons.

Condition 2 shall mean where the storage is in tanks surrounded by the necessary compound wall as hereinbefore provided or where all the inflammable liquid is contained in metallic drums or tins each containing not more than 50 gallons.

TABLE 488.

Minimum Distance to a Building or Land on which a Building may be Erected.	Number of Gallons Permitted to be Stored. Condition 1.	Condition 2.
Within 10 feet	400	4,000
Over 10 feet and not over 15 feet	1,000	10,000
Over 15 feet and not over 20 feet	2,000	20,000
Over 20 feet and not over 30 feet	4,000	40,000
Over 30 feet and not over 40 feet	6,000	80,000
Over 40 feet and not over 50 feet	8,000	100,000
Over 50 feet and not over 60 feet	10,000	Unlimited
Over 60 feet and not over 75 feet	15,000	Unlimited
Over 75 feet and not over 100 feet	20,000	Unlimited
Over 100 feet and not over 150 feet	50,000	Unlimited
Over 150 feet	Unlimited	Unlimited

489. High Flash Point Oil and Grease.—In the case of storage of lubricating or other oils that will flash or emit an inflammable vapour at not below a temperature of 150 degrees Fahrenheit, not more than 10,000 gallons of such oil shall be stored on any site or in any building unless the site of such storage or building shall first be approved by the Local Authority for that purpose.

490. Fuel Oil.—The installation of fuel oil systems and the storage of fuel oils shall be carried out in conformity with the provisions of S.A.A. Code No. C.B. 5-1957 for Fuel Oil Installations.

491. Petrol Pumps.—Petrol pumps shall only be permitted to be erected in approved positions within the boundaries of the site, and then only so as not to cause any obstruction to the traffic whilst being used.

492. Storage of Dangerous Materials in Buildings.—Calcium carbide in quantities exceeding 5 cwt. or similar quantities of other highly inflammable or dangerous materials (excluding inflammable liquids) shall not be stored in any room or building except in accordance with the following provisions:—

(a) The site shall be first approved by the Local Authority for the purpose.

(b) Such room or building shall be of a construction fire-protected with walls having a fire-resistance rating of four hours, and floors and ceilings having a fire-resistance rating of three hours, but in such areas and sites as are specially approved by the Local Authority, buildings of unprotected metal construction may be permitted.

(c) In the case of buildings already erected, the design, construction and fire-proofing or the alteration of such building shall first be approved by the surveyor, and no such building shall be used for such storage purposes until the approval of the surveyor has been received.

493. Storage of Dangerous Material in Open Spaces.—Calcium carbide in quantities exceeding 5 cwt. or similar quantities of other highly inflammable or dangerous materials (excluding inflammable liquids) shall not be stored or kept in any place (other than in a building of fire-resisting construction as required by regulation 492 (b)), within a distance of 50 feet from any other building, and then only in sites first approved by the Local Authority for the purpose.

494. Nitro-Cellulose Products.—In this part, unless inconsistent with the context or subject matter—

"cabinet" means a cabinet constructed in accordance with the provisions of this part;

"film" means inflammable motion picture photographic or x-ray film having nitro-cellulose as a main constituent;

"nitro-cellulose product" means celluloid or any other inflammable solid substance having nitro-cellulose as a main constituent and includes film;

"fireproof room" means fireproof room constructed with walls having a fire-resistance rating of four hours and floors and ceilings having a fire-resistance rating of three hours, and in accordance with the provisions of this part;

"workroom" means any room in which nitro-cellulose product is manufactured, examined or repaired;

one thousand lineal feet of standard motion picture film shall be deemed to weigh 5 lb.

495. Storage of Nitro-cellulose Product.—No person shall, without the consent in writing of the Local Authority, store or permit the storage of nitro-cellulose product exceeding 20 lb. in weight unless he shall comply with the following requirements:—

(1) (a) The storage shall be in cabinets or fireproof rooms.

(b) Not more than 500 lb. of nitro-cellulose product shall be stored in a cabinet.

(c) Not more than 1,000 lb. of nitro-cellulose product shall be stored in any building or place, unless—

(i) the storage shall be in a fireproof room;

(ii) the building in which such nitro-cellulose product is stored shall not be situated within 50 feet of any school, hospital, theatre or public building;

(iii) such building shall not be used in part as a building of Classes I, II, III or IX occupancy;

(iv) such building shall be lighted by electricity and by no other artificial means. Such building shall be of Type 1 or Type 2 construction;

(v) no inflammable liquids shall be stored in such building.

(d) Not more than 1,000 lb. of nitro-cellulose product shall be stored in any fireproof room being part of a building, unless such room is situated either—

(i) on the topmost floor or roof of a building more than one storey in height, or

(ii) on the ground floor of a building not more than two storeys in height and used solely for the purpose of a film exchange.

(e) Not more than 10,000 lb. of nitro-cellulose product shall be stored in any fireproof room.

(2) (a) Every reel of inflammable motion picture film shall, when not in use, be kept in a separate metal container, and every such container containing film shall, when not in use, be placed on edge in a rack constructed as hereinafter required.

(b) All doors of cabinets and fireproof rooms shall, while containing any nitro-cellulose product, be kept closed, except during such time as is required for the deposit or removal of nitro-cellulose product.

(c) All fire extinguishers and all automatic sprinklers in fireproof rooms and cabinets shall be maintained in good working order.

496. Nitro-cellulose Product Workrooms.—No person shall examine, repair or manipulate any nitro-cellulose product except in a work-room. Every person in charge or having control of a workroom shall comply with the following requirements:—

(a) All furniture, apparatus and other materials in any workroom shall be so arranged as to afford unimpeded egress in case of fire for all persons likely to be therein.

(b) All electrical devices, including wiring and switches in any work-room, shall comply with the requirements of S.A.A. Code C.C. 1-1955, Supply Authorities' Regulations.

(c) All automatic sprinklers in any workroom shall be maintained in good working order.

(d) The following things shall not be brought into any workroom, nor kept or suffered to remain therein:—

(i) More than a day's supply of any compound of collodion and amyl acetate or other inflammable cement.

(ii) Any nitro-cellulose product in excess of the quantity immediately required.

(iii) Any naked flame.

(iv) Any gas or oil stove.

(v) Any matches or material for smoking.

(vi) Any other thing likely to ignite or decompose nitro-cellulose product.

(e) Waste nitro-cellulose product shall not be allowed to accumulate in any workroom but shall be collected frequently during each day and placed in water in a strong metal receptacle fitted with a close-fitting lid and marked "N.C.P. Waste."

497. Prohibition of Smoking.—(a) No person shall smoke or permit other persons of whom he is in charge or control to smoke in or upon any work-room or any place where nitro-cellulose product is stored.

(b) Every person having the custody or control of such workroom or place where nitro-cellulose product is stored shall cause to be displayed prominently therein a notice with the words "No Smoking" printed thereon.

498. Exemptions.—Except in the case of hospitals, whether public or private, the provisions of these regulations with regard to storage shall not apply to—

(a) the storage of any nitro-cellulose product not exceeding 25 lb. weight;

(b) the storage in any one premises of unexposed photographic and/or x-ray film in its original packages in quantities not exceeding 50 cubic feet in bulk;

(c) the storage of unexposed photographic and/or x-ray film in its original packages in quantities not exceeding 500 cubic feet in bulk in a room separated from other parts (if any) of the building by fire-resisting partitions and doors and equipped with a system of automatic sprinklers.

499. Construction of Fireproof Rooms, Cabinets, etc.—The following requirements shall be complied with in regard to the construction of fireproof rooms, cabinets or workrooms, and no fireproof room, cabinet or workroom whether constructed before or after the passing of these regulations shall be deemed a fire-proof room, cabinet or workroom, within the meaning of this section, unless it complies with the following requirements:—

(a) **Construction of Fireproof Rooms.**—(i) The cubic capacity of such rooms shall not exceed 750 cubic feet.

(ii) The walls of every fireproof room shall have a fire-resistance rating of four hours.

(iii) The floor and roof of every fireproof room shall have a fire-resistance rating of three hours.

(iv) Every doorway of a fireproof room shall be provided with double two-hour fire doors, one on each face of the wall, complying with the requirements of Section 13.

(v) Every fireproof room shall be ventilated to the outside air by an opening or openings constructed as follows, and shall have no other skylight or windows:—

Such openings or such opening taken together shall have a minimum effective sectional area of 15 square inches for every 100 lb. of film capacity of the room. Every such opening shall be provided with a metal frame, a glazed sash made to open automatically in case of fire, and a light wire screen and guard all made and fitted in accordance with the specifications of the Fire Underwriters' Association. Every such opening shall open on to a street, lane or other open space not being an enclosed light area, and shall not be within 25 feet of any fire escape or stairway. Every such opening shall be so placed that no flame or gas issuing from it in case of fire will be likely to endanger the safety of the building or adjacent premises. Provision shall be made to prevent films and containers being forced against ventilation openings.

(vi) Any flue inside a building used for ventilating a fireproof room shall be constructed of not less than 5 inch reinforced concrete.

(vii) All racks for the storage of films in any fireproof room shall be of metal or other fire-resisting material and shall be so placed as not to obstruct any ventilation opening.

(viii) No fireproof room shall be artificially lighted otherwise than by a permanent system of incandescent electric lighting. Every lamp shall be enclosed within an additional casing of glass or similar material. There shall be placed immediately outside every fireproof room a pilot light indicating whether or not the lamps in the room are alight.

(ix) There shall be in every fireproof room a system of automatic sprinklers installed in accordance with the specifications of the Fire Underwriters' Association.

(x) Every fireproof room in a building shall be so situated that no fire occurring therein will be likely to endanger any workroom, ventilating shaft, stairway, passage or exit in any such building.

(xi) No fireproof room shall have a door opening directly into a room where men are employed, unless such door is suitably screened.

(b) **Construction of Cabinets.**—(i) No cabinet shall have a capacity greater than 100 cubic feet.

(ii) Every cabinet having a capacity greater than 250 lb. of nitro-cellulose product shall be divided into at least two compartments by a substantial airtight partition, and each such compartment shall have a separate door.

(iii) Every cabinet shall be constructed entirely of incombustible material.

(iv) Every cabinet shall have its top, bottom, walls and partitions constructed either—

(1) of $\frac{1}{4}$ inch asbestos boards on a framework of $1\frac{1}{4}$ inch by $1\frac{1}{2}$ inch by $\frac{1}{8}$ inch angle iron, or

(2) of 18-gauge sheet steel or iron double walled on iron framework with $1\frac{1}{2}$ inch air space.

(v) All doors of cabinets shall be provided with catches at three points and shall be fitted sufficiently tightly to prevent the entrance of fire.

(vi) All flues of cabinets shall be of riveted sheet metal of not less than 18-gauge or material equivalent thereto covered with 1 inch of heat-insulating material, and no such flue shall be situated within 9 inches of any combustible material.

(vii) Every compartment of a cabinet shall be separately ventilated to the outer air by means of a ventilator having a minimum effective sectional area of 15 square inches for every 100 lb. of film capacity of the cabinet, or be placed in an approved room ventilated in accordance with regulation 500.

(viii) Every cabinet having a capacity greater than 100 lb. of nitro-cellulose product shall when used for the storage of nitro-cellulose production other than infiammable motion picture film be provided with one sprinkler in each compartment of such cabinet unless the capacity of each such compartment shall not exceed 30 lb.

(ix) Every cabinet having a capacity greater than 50 lb. of nitro-cellulose product and used for storing infiammable motion picture films shall be provided with at least one automatic sprinkler in each compartment.

(x) All racks and shelves for the storage of films in any cabinet shall be of metal or other fire-resisting material approved by the surveyor and shall be arranged for the storage of films on edge.

500. Construction of Workrooms.—(a) Every workroom shall be constructed of fire-resisting material.

(b) All fittings of any workroom shall be of fire-resisting material and all doors shall be self-closing one-hour fire doors.

(c) There shall be in every workroom a system of automatic sprinklers installed in accordance with the specifications of the Fire Underwriters' Association of Western Australia.

(d) There shall be in every workroom a chemical extinguisher for every 20 squares of floor area.

(e) No workroom shall be artificially lighted otherwise than by a permanent system of incandescent electric lighting, installed and wired in accordance with the rules of the Fire Underwriters' Association and S.A.A. Code C.C. 1-1955 and the regulations of the supply authority. Electric resistances including the heating elements of electric heaters and radiators, shall be so guarded or enclosed as to prevent ignition or decomposition of nitro-cellulose product, and the top of every such enclosure or guard shall be sloped at an angle of not less than 45 degrees to the horizontal. Such apparatus shall be so constructed that no external part of the enclosure or guard shall at any time exceed 212 degrees Fahr. in temperature.

(f) Every workroom and every building containing a workroom shall be provided with adequate means of escape in case of fire. Such means of escape shall not be deemed adequate unless—

(i) at least two separate safe exits are provided from every such room and two safe means of escape from the building are available for all persons employed in such workroom or building.

(ii) all doors in such exits and means of escape are so arranged as readily to open outwards, and

(iii) the word "Exit" is conspicuously written above every escape door in every workroom and in dark rooms provided with adequate means of illumination.

(g) All hatchways, lift wells and similar openings out of workrooms shall be so fitted, constructed and arranged as to prevent the escape through such openings of fire or products of combustion of any nitro-cellulose product in such rooms.

501. Approval of Drawings of Workrooms, etc.—Notwithstanding, and in addition to compliance with the foregoing provisions of this section, no person shall use any building or any part thereof, whether constructed before or after the passing of these regulations, for the manufacture, examination or repair of nitro-cellulose product, and no person shall construct or cause to be constructed any building or part thereof intended to be so used or materially alter or add to any building so used or intended to be so used or use any building as so altered or added to unless and until drawings of the premises to be so used or of such alterations or additions as the case may be, together with full particulars of the arrangements for such use and for compliance with the provisions of this section have been submitted to and approved in writing by the surveyor.

502. Dangerous Businesses.—No building, whether erected or constructed before the passing of these regulations or afterwards, which is situated at a less distance than 40 feet from any public way or any vacant land in other occupation, or at a less distance than 50 feet from any other building, shall from and after the coming into operation of these regulations be used for the purpose of carrying on a dangerous business.

Where a dangerous business is in existence, at the time of passing these regulations, in a building which complies with the provisions of this regulation, no other building shall be erected within 50 feet thereof.

503. Noxious Businesses.—Every builder or other person shall comply with the following requirements as to noxious businesses:—

(a) **Site and Location of Building.**—Such building shall be on a site approved by the Local Authority and shall not be situated at a less distance than 50 feet from any dwelling-house or at a less distance than 40 feet from any public way.

(b) **Proximity of Dwellings.**—In the case of a noxious business existing at the time of the coming into operation of these regulations, no dwelling-house shall hereafter be erected nearer than 50 feet thereto.

SECTION 33.

SCHEDULE—FEES.

504. Scale of Fees.—The scale of fees set out hereunder shall be chargeable by and received by the Local Authority for any license issued on services rendered or provided under these regulations.

Note.—In the interpretation of this Schedule—

(a) the expression "floor area" applied to a building shall mean the aggregate superficial areas of so many horizontal sections thereof as there are floors in the said building. The horizontal section of each floor shall be made at the point of the greatest surface dimensions, inclusive of external walls and of such portions of the party walls as belong to the building, and also of all verandah and balcony floors, covered ways, and light courts;

(b) the expression "square" applied to the measurement of the area of a building, means the area of 100 superficial feet.

SCALE OF FEES.

	£	s.	d.
1. For application form in every case	0	1	0
2. For a license for a new building and additions to an existing building—			
(a) For each square or portion of a square up to 50 squares (with a minimum fee of £1)	0	6	0
(b) For each additional square or portion of a square up to 100 squares	0	5	0
(c) For each additional square or portion of a square in excess of 100 squares	0	4	0
3. For a license for alterations to an existing building—			
(a) For each square or portion of a square up to 100 squares (with a minimum fee of £1)	0	4	0
(b) For each additional square or portion of a square in excess of 100 squares	0	2	6
(c) For cutting an opening in an external, internal or party wall when no other work is undertaken at the same time	0	15	0

SCALE OF FEES—*continued.*

		£	s.	d.
4.	For a license 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 75 feet	3	0	0
	(b) If the height exceeds 75 feet but does not exceed 100 feet	4	0	0
	(c) If the height exceeds 100 feet for every additional 10 feet or portion of 10 feet	0	12	0
5.	For a license to carry a flue from an oven, stove, steamboiler, furnace or close fire into an existing flue	1	0	0
6.	For examination and report on preliminary plans—25 per cent. of the fee for a license to carry out the work described in such plans.			
7.	For a license to install a new shop front—			
	(a) If no structural alteration is required	1	10	0
	(b) If new girders or columns are required, for each foot thereof (with a minimum fee of £3)	0	1	6
8.	For a license for a verandah awning over a footway, for each lineal foot measured along the frontage of the building (with a minimum fee of £1)	0	1	0
9.	For a license to erect a tent, for each week or part of a week	1	0	0
10.	For a license to erect a transmitting wireless mast attached to a building, for each foot	0	1	0
11.	For survey and report on a dangerous structure	3	0	0
12.	(a) In the case of buildings of reinforced concrete or steel framed construction—			
	(i) 6s. per square for the first 50 squares or part thereof, with a minimum of £1.			
	(ii) The fee per square shall be reduced by 2d. per square for each additional 50 squares by which the area of the building exceeds 50 squares in area, with a minimum charge of 3s. 6d. per square.			
	(b) In the case of buildings 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 purposes of calculating computation fees, a square means 100 square feet 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 area covered by such alterations.			
	(e) For reinforced concrete or fire-resisting floors, including girders and beams	2	0	0
	(f) For reinforced concrete or fire-resisting floors, without girders or beams	1	0	0
13.	For a license for deposit of building material on a street, sixpence for each month or part of a month, for each superficial yard of the area of the street enclosed by any hoarding or fence as required by regulation 198, and three pence for each superficial yard for each week of any renewal of such a license.			
14.	Fees for signs—			
	For painted signs on verandah awning fascias—5s.			
	For roof signs—3d. per square foot, with a minimum of £2 per annum.			
	For illuminated box signs under verandahs—5s. per annum.			
	For all other illuminated signs—10s. per annum.			
	Provided that one-half only of the above fees shall be payable for any license issued after the sixth month in any financial year.			
	For bill posters—7s. 6d. per month; £4 per annum.			

SECTION 34.

PENALTIES.

505. Penalties.—Where anything by these regulations is directed to be done or forbidden to be done, or where authority is given to any officer to direct anything to be done or to forbid anything to be done, and such act so directed to be done remains undone, or such act forbidden to be done is done, in every such case the person making such default, as to such direction and prohibition respectively shall be deemed guilty of a breach of these regulations. And every person guilty of a breach of these regulations shall be liable for every such offence, besides any costs which may be incurred in the taking of proceedings against such person guilty of such offence, as well as any costs or expenses which may be incurred in the execution of the work directed to be so executed, and not so executed, to a penalty not exceeding twenty pounds for every breach of any such regulation and/or to a penalty not exceeding two pounds for each day during which such breach shall be committed or continued.

APPENDIX.

LIST OF AUSTRALIAN AND OTHER STANDARD SPECIFICATIONS AND CODES REFERRED TO IN THESE REGULATIONS.

A. 1-1956—Structural Steel and Rolled Steel Sections for Structural Purposes.
A. 2-1953—Portland Cement.
A. 3 and 4-1928T—Quicklime and Hydrated Lime. No. A. 3 Quicklime and A. 4 Hydrated Lime.
A. 13-1950—Terra Cotta Roofing Tiles.
A. 14-1952—Concrete Interlocking Roofing Tiles with Weathering Check.
A. 20-1947—Zinc Coated (Galvanised) Sheets (Plain and Corrugated).
A. 22-1934—Cast Stone (with Portland Cement Base).
A. 26-1934—Field Method of Determining the Necessary Adjustment for the Bulking of Fine Aggregate. (Under revision.)
A. 34-1938—Dimensions of Rivets from $\frac{1}{2}$ inch to $1\frac{3}{4}$ inch Diameter.
A. 35-1957—Concrete Drainage Pipes (Pre-cast).
A. 101 and A. 102 (incorporated in A. 100 to A. 110)—Making and Storing Specimens of Cement Concrete for Compression Test.
C.A. 2-1937—Australian Standard Rules for the Design, Fabrication and Erection of Concrete in Building (known as the S.A.A. Code for Concrete in Building). (Under revision.)
C.A. 3-1954—Australian Standard Rules for the Design and Installation, Testing and Operation of Lifts and Escalators (known as the S.A.A. Lift Code).
C.A. 8-1939—Australian Standard Rules for the Design and Application of Metallic Arc Welding (Hand or Machine) to Mild Steel Construction. (Partly superseded by S.A.A. Interim 352.)
C.A. 30-1957—Code for Interior Illumination of Buildings by Artificial Light.
B. 26-1942—Grey Iron Castings.
B. 27-1942—Carbon Steel Castings.
B. 28-1955—Covered Electrodes for Metal Arc Welding of Carbon Steel.
B. 100-1948—Black Bolts and Nuts, Hexagon and Square, B.S.W. and B.S.F. (later British Standard No. B.S. 916-1953.)
B. 117—Dimensions of Bolts, Nuts and Set-screws (Machine Bolts) (B.S.W. and B.S.F.) (Endorsed British Standard B.S. 1083.)
C.B. 5-1957—Fuel Oil Installations.
O. 10 to 45-1948—Australian Standard Grading Rules for Jarrah, Karri and Wandoo.
(E) A. 502-1941—Ready-mixed Concrete.
(E) O. 54-1942—Grading Rules for Sawn and Hewn Structural Timbers. (Partly superseded by Interim 360 to Interim 367.)
S.A.A. Interim 306—Precast Concrete Building Units.
S.A.A. Interim 315—Calcium Silicate Bricks.
S.A.A. Interim 323—Burnt Clay and Shale Building Bricks.
S.A.A. Interim 350—Minimum Design Loads on Buildings.
S.A.A. Interim 351—Use of Structural Steel in Buildings.
S.A.A. Interim 352—Metallic Arc-welding in Building Construction.
S.A.A. Interim 353—Artificial Lighting of Dwellings.

2.—British Standard Specifications.

No. 476-1953—Fire Tests on Building Materials and Structures, Divided into Part I of 1953 and Part II of 1955.

No. 548-1934—High Tensile Steel.

No. 690-1953—Asbestos Cement Sheets.

3.—Division of Forest Products of the Council of Scientific and Industrial Research.

Handbook of Structural Timber Design (Third Edition), being Technical Paper No. 32.

4.—Forests Department of Western Australia.

Bulletin No. 56-1948, Appendices A and B.

Australian Standard Grading Rules for Jarrah, Karri and Wandoo.

(Name of Local Authority.)

BUILDNG SURVEYOR'S OFFICE.

SCHEDULE No. 1.

Application Form No..... Date.....195.....

To the Building Surveyor—

As the builder or person causing and directing the work undermentioned to be executed, I hereby apply for a Building License 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.....feet; Depth.....feet; Width.....feet; Height.....feet;

Number of storeys.....

Owner: Name..... Address.....

Occupier: Name..... Address.....

Signature of person giving notice.....

Address .....

SCHEDULE No. 2.

Lot. No.....

Street.....

This building is being erected as a residence of one occupancy only.

.....Owner.

.....19.....

SCHEDULE No. 3.

Lot. No.....

Street.....

This building is being erected as a Duplex House of two occupancies only.

.....Owner.

.....19.....

SCHEDULE No. 4.

Lot. No.....

Street.....

This building is being converted into a Duplex House of two occupancies only.

.....Owner.

.....19.....

SCHEDULE No. 5.

Lot. No.....
Street.....

This building is being converted into.....flats each for one occupancy only.

.....Owner.
.....19.....

SCHEDULE No. 6.

Lot. No.....
Street.....

This building is being erected to contain.....flats each for one occupancy only.

.....Owner.
.....19.....

SCHEDULE No. 7.

.....
(Name of Local Authority)

BUILDING LICENSE.

Date....., 19.....

No.....
Granted to.....
Address.....

Authorising the erection of certain buildings in the.....
Ward,.....Street, Town Lot.....,
Subdivision.....as per application No.....and in accordance with the plans and specifications approved by the Surveyor, and subject to the provisions of these Building Regulations.

Whenever required so to do by the Building Surveyor, the holder of this license shall produce the approved plans for inspection.

.....
Building Surveyor.

Schedule No. 8.

.....
(Name of Local Authority.)

SPECIAL LICENSE.

(Issued in pursuance of the provisions of these Building Regulations.)

Date....., 19.....

No.....

In pursuance of the powers in that behalf contained in these Building Regulations the Local Authority 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 and approved by him.

Conditions.

1. The Local Authority may in its discretion on or after the..... day of.....next, and on or after the..... day of.....in each succeeding year, grant a license, to be called a Special Renewal License, to maintain the above described building for a further period of twelve months, upon payment by the abovenamed .....of the approximate fee in that behalf contained in Section 33 of these Regulations.

2. The Local Authority may at any time revoke this license or any Special Renewal License 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 its Local Governing Act and these regulations, in the same manner as if this license had not been granted.

.....
Building Surveyor.

Schedule No. 9.

VERANDAH LICENSE.

Date....., 19.....

No.....

This is to certify that the Local Authority consents to the erection by ....., of....., of a verandah, in accordance with the standard design, in front of the premises known as.....situate on part of Town Lot.....

The verandah shall be.....in height from the top of the kerb to the underside of the signboard, and shall be.....in length and.....in width.

This license is issued subject to the regulations for the time being in force regulating the erection and construction of verandahs over public footways.

.....

Building Surveyor.

Schedule 10.

.....

(Name of Local Authority.)

LICENSE FOR DEPOSIT OF BUILDING MATERIAL ON STREET

.....of.....is hereby licensed to deposit building material on that portion of..... Street abutting on Town Lot.....subdivision.....and to excavate if required, on such portion of the said.....for a period commencing the.....day of..... and ending the.....day of..... 19....., subject to the following conditions and also subject to the provisions of its Local Governing Act, and to these Regulations.

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 license, 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 license 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 license shall be the amount as set out in Section 33 of these Regulations, which fee shall be paid in advance.

A renewal of the license 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..... lineal feet, a maximum width of.....feet, height.....feet.

At the expiration of the period for which this license 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 Local Authority and all expenses thereof may be recovered by the Local Authority 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.

15300/8/58 By Authority: ALEX. B. DAVIES, Government Printer, Perth.