



# VICTORIA GOVERNMENT GAZETTE

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## BACCHUS MARSH SEWERAGE AUTHORITY.

BY-LAW No. 1.—RELATING TO CONSENTS, LICENCES, ETC., ALSO LEVELS, DIMENSIONS, CONSTRUCTION, MAINTENANCE, VENTILATION, AND CLEANSING OF SEWERS AND OTHER MATTERS RELATING TO HOUSE CONNEXION WORK.

THE Bacchus Marsh Sewerage Authority, pursuant to and in exercise of the powers and authorities conferred on it by the Sewerage Districts Acts and of any and every other power or authority in any wise enabling it in that behalf, doth hereby make and prescribe the following By-law, that is to say:—

In the construction and interpretation of this By-law, unless inconsistent with the context or subject-matter—

“Acts” means the Sewerage Districts Acts and any amendment thereof, and any Act incorporated therein, or amendment of such Acts.

“Anti-siphonage vent” (or “back vent”) means any vent pipe from any individual trap to the open air, or a main or branch vent pipe having for its purpose the prevention of loss of water seal in the trap.

“Approved” means approved by the Authority or its proper officer.

“Authority” means the Bacchus Marsh Sewerage Authority within the meaning of the Sewerage Districts Acts, within the Sewerage District of which the premises connected, or to be connected, to the sewers are situated.

“Bore, diameter, or size” in reference to any pipe means the nominal internal diameter thereof.

“Building” means any building used as a work place, residence, place of business, place of amusement, or place of human habitation, or for the storage of food intended for human consumption, but does not include outbuildings unless such are used for any of the above purposes.

“Combined pipe system” means that type of plumbing installation in which disconnector traps are omitted and both soil and waste pipes are connected directly to the drain or to a common pipe taking both soil and waste discharge, and in which a common system of venting is used for all classes of pipe.

“Combined waste pipe” means any pipe which receives the discharges from both soil and waste fixtures and conveys the same to the drain. Combined waste pipes are connected directly to the drain and are used only in connexion with the combined pipe system.

“Disconnector trap” means a trap for isolating or disconnecting waste pipes from the drain and soil pipes and providing inlet ventilation to the waste pipe or pipes discharging into it.

“Drain” means that portion of a drainage system, not vested in the Authority, which conveys the discharge from soil, waste combined waste, and other drainage pipes from any system to the sewer, and includes any drain for draining any group or block of houses by combined operation under order of Authority, but does not include stormwater drainage pipes.

“Educt vent” means an opening or pipe for the exit of air from, and the induction of draught in, a soil pipe, waste pipe, combined waste pipe, or drain.

“Engineer” means the Engineer of the Authority, and shall also include any officer or person appointed by the Authority for the purpose of discharging the duties or exercising the powers of the Engineer.

“External closet” means any closet other than an “internal closet”.

“Fittings” means all apparatus or appliances, together with their necessary appurtenances and connexions, for use in connexion with the plumbing or drainage system of any property, with the exception of fixtures and straight piping.

For the purpose of computing fees payable under this By-law “fitting” includes any sanitary or plumbing fixture or each piece of equipment which is connected to or discharges its waste water through a waste outlet or to a common outlet.

“Fixtures” means all apparatus or appliances, together with their necessary appurtenances and connexions, which may be attached to the plumbing or drainage system of any property, and

which are intended for the collection or retention of any wastes or waste waters for ultimate discharge into the sewerage system.

"Flat" means a suite of rooms used, or intended or adapted for use, as a separate habitation and comprised in a building containing one or more similar suites.

"Induct vent" means an opening or pipe for the admission of air to a soil pipe, waste pipe, or drain.

"Interceptor trap" (or "boundary trap") means a trap for preventing the passage of air or gases from the sewer to the drain at some point between the sewer and the lowest inlet to the drain.

"Internal closet" means any closet which is entered from or has an opening into any building.

"Occupier" means the person for the time being in actual or constructive occupation of the premises.

"Owner" includes the person for the time being who receives or is entitled to receive the rent of the lands or premises in connexion with which the word is used, whether on his own account or as an agent of or as trustee for any other person, or who if such lands or premises were let to a tenant at a rack rent would be entitled to receive the rack rent from the occupier thereof.

"Premises" includes any house and any building whatsoever and any part of any house or building and any garden, stable yard, or offices used together or in connexion with any house or building and every part thereof.

"Proper officer" means officer of the Authority authorized by such Authority in respect of, or whose duty it is to deal with or act in regard to, any acts, matters, or things in connexion with which the expression is used.

"Separate pipe system" means that type of plumbing installation in which separate pipes are provided for soil and waste discharges and for the ventilation of soil and waste fixtures and in which every waste pipe is connected to the drain through a disconnector trap.

"Sewer" means any conduit for the carriage of sewage, which is vested in the Authority.

"Sewerage District" means any area which under the Sewerage Districts Acts is proclaimed the Sewerage District of the Authority, and includes any area which is added to and forms part of such Sewerage District.

"Sewered property" means, as well as any sewered land or premises, any land or premises which have been declared by a general notice given by the Authority under the Acts to be deemed and taken to be a sewered property within the meaning of the Acts.

"Sewerage installation" of a property means all soil, waste, and combined waste pipes and drains conveying household drainage, sewage, and trade wastes to the sewers of the Sewerage Authority, and all vent pipes, fixtures, fittings, apparatus, and appliances connected thereto.

"Sewerage system" includes all sewers, fittings, fixtures, appliances, plant, machinery, and any other sewerage works vested in the Authority.

"Slop sink" means any fixture other than a closet pan or urinal used for the discharge of soil or urine waters and provided with a flushing apparatus.

"Soil pipe" means any pipe which conveys the discharge from water closets, slop sinks, mortuaries, operating theatres, or urinals to the drain.

"Stack" means any vertical line of soil, waste, combined waste, or vent piping, with its offsets, if any.

"Trade waste" means the liquid refuse from any business, trade, or manufacturing property, other than domestic sewage, storm water, or unpolluted water.

"Trap" means any fitting designed to retain a quantity of water to arrest the passage of air or gases through such fitting.

"Waste pipe" means any pipe which conveys the discharge from any fixture, except water closets, slop sinks, mortuaries, operating theatres, or urinals, to a disconnector trap in the case of the separate pipe system or directly to the drain in the case of the combined pipe system.

"Water seal" or "trap seal" means the vertical distance between the dip and the crown weir of a trap.

"Wrought iron" and "sheet iron" include mild steel sheet.

"Yard gully" means a drainage trap which is used externally and fitted with a dished top and grating.

#### INTERPRETATION.

In the construction of this By-law the meaning which, in the Acts, as assigned to any word shall be the meaning of the same word where occurring in this By-law, unless inconsistent with the subject-matter or context.

#### PART I.—GENERAL REGULATIONS.

##### DIVISION 1.—APPLICATIONS FOR CONSENTS, ETC.

*Section 1.*—Application for the Authority's consent to connect with the sewerage system or to do plumbing and drainage work connected therewith, must be made in writing by the owner of the property to be so connected or by his authorized agent.

*Section 2.*—Such application shall give the precise location of the property, the name of the owner, and the name of the person employed to do the work, and shall be in the form prescribed by the Authority. For any wilful misrepresentation in such application the owner or authorized agent as aforesaid shall be guilty of an offence against this By-law. No consent given by the Authority shall be deemed to authorize anything not stated in the application nor to confer or grant the right to lay a drain through any land intervening between the sewer of the Authority and the land proposed to be connected, and every owner or agent applying for the Authority's consent shall satisfy himself as to his legal right to drain through such intervening land and he shall be solely responsible for any trespass or damage thereon or thereto.

*Section 3.*—Consents to make connexions with the sewerage system will be issued only when the plumbing and draining in the property to be connected is planned to be made in accordance with the rules for plumbing and draining hereinafter prescribed, and after such plan has been inspected and approved of by the proper officer appointed by the Authority for the purpose, or, in the case of new buildings, when a proper plan of the plumbing and of the drainage of the building into the branch of which the Authority shall have fixed the position, has been approved of in writing by the Authority. All connexions with drains or sewers and all plumbing and drainage connexions therewith shall be made under the direction of the proper officer of the Authority. No person shall be engaged or employed as a workman in the actual performance of any plumbing or drainage work unless he is the holder of a licence or permit issued by the Authority authorizing him to do such work. Any person who shall at any time or at any place make up, form, affix, alter, or repair, any fitting, pipe, bend, trap, or other thing connected or intended to be connected with the Authority's sewerage system, unless he be the holder of a licence or permit from the Authority authorizing him to do such work, shall be liable to a penalty not exceeding Twenty pounds.

If any person, whether he is or is not, the holder of a plumber's licence or permit from the Authority, alters, removes, or in any way interferes with any drain, fitting, pipe, bend, trap, or other thing, which drain fitting, pipe, bend, trap, or other thing is connected with the Authority's sewerage system, he shall, unless he has previously received consent, in accordance with the provisions of this section for the execution of such work, and such consent is in full force and effect, be guilty of a breach of this By-law and shall be liable to a penalty of not more than Twenty pounds.

*Section 4.*—Where the sanction, permission, authority, consent, approval, satisfaction, order, direction, opinion, indication, or notice of, or from the Authority is necessary, whether specified in writing or otherwise, with regard to any act, matter, or thing mentioned in the By-law, the same may be given by and under the hand of the chairman of the Authority, or of the proper officer, personally or through an inspection officer appointed under him who severally shall be competent to give the same and be authorized on behalf of the Authority to prescribe any conditions attaching thereto, and subject to, and in accordance with which only the same shall be deemed to have been given.

*Section 5.*—If, after the receipt of a written application from the owner for modification or alteration of the By-law, the Authority shall be of the opinion that a compliance with any of the provisions of this By-law would in any particular case be vexatious or be needless in the interest of public health, it shall be lawful for the

Authority, by resolution, to dispense with or forbid such compliance in whole or in part as it shall think fit, or to authorize or direct such a modification or alteration of such provisions as shall, in its opinion, most nearly adapt the principle of those provisions to the particular case. It shall be unlawful to comply with any provision, or part of any provision, with which compliances shall have been forbidden, or to act contrary to or otherwise than as directed by such modification or alteration.

Notwithstanding the above stipulation, no technical provision or requirement of the By-law shall be modified or waived, except on the written recommendation of the Engineer.

#### DIVISION 2.—VARIATION OF BY-LAW.

Section 6.—Any permission for or approval of any variation of any of the provisions of this By-law which may be given by the Authority will be given only before the work in respect of which the variation is proposed has been commenced.

#### DIVISION 3.—PENALTIES, RECOVERY OF COST OF WORK, ETC.

Section 7.—Where anything is by this By-law directed to be done or forbidden to be done, or where any power is given to the Authority or any of its officers to direct or forbid anything to be done, and such act so directed to be done remains undone, or such act forbidden to be done is done, then, and in every such case, the person making default as to the said direction or prohibition respectively shall be guilty of an offence against this By-law.

Section 8.—Every person guilty of an offence against this By-law, not otherwise specially provided for by or under the authority hereof, shall be liable for every such offence, besides any costs or expenses 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 remedying such default, as particularly provided for in this By-law or the Acts, to a penalty not exceeding Twenty pounds, and to a further penalty of One pound for each day during which such offence is continued by such person after notice of the offence shall have been given by the Authority to him; and such penalty shall be recoverable notwithstanding that the Authority may not have chosen to exercise any power given to it by the Acts or by this By-law to remedy such default.

#### DIVISION 4.—HOUSE DRAINAGE PLANS—ALTERATIONS.

Section 9.—Copies of the Authority's plans and/or designs of individual house drainage will be furnished by the Authority upon application and payment for the same and subject to such conditions as follows:—

- (a)
  - (i) Where the Authority designs the work and has same carried out for the owner, a charge shall be made equal to ten per centum (10 per cent.) on the capital cost of the work for designing, specifying, letting contract, and supervising all details in connexion with such work.
  - (ii) Consent for additions to and/or amendments of approved plans or to works previously approved will be made only on the application of the owner or his authorized agent, and on payment of a fee of Fifteen shillings (15s.).
- (b) When the Authority designs the works for the owner and the owner then carries out his own work—
  - (i) For plan of design, a fee of Seven pounds (£7), plus Ten shillings (10s.) for each fitting.
  - (ii) For making and/or examining any alterations or additions to a plan previously issued or approved by the Engineer, a fee of Fifteen shillings (15s.) shall be made by the Authority for each fitting or drain altered or added.
  - (iii) For inspecting drains and testing by the Authority's inspector, a fee of Thirty shillings (30s.), plus Fifteen shillings (15s.) for each additional inspection necessary owing to faulty work.
  - (iv) For inspecting plumbing by the Authority's Inspector a fee of Thirty shillings (30s.) for each ten (10) fittings or part of ten fittings in the installation, plus Fifteen shillings (15s.) for each additional inspection necessary owing to faulty work.
  - (v) For the final inspection by the Authority's Engineer and charting the work on the Authority's plans, a fee of

Thirty shillings (30s.) for each ten fittings or part of ten fittings in the installation, plus Fifteen shillings (15s.) for each additional inspection necessary owing to faulty work.

- (vi) The Engineer may during construction of the work order the owner to carry out such additions and/or amendments as may be necessary for the satisfactory completion of the work.

The house connexion will not be passed until the installation, together with the amendments ordered, have been completed to the Engineer's satisfaction.

- (c) Where an owner designs and carries out his own work—

- (i) For the supply of a block plan, a fee of One pound (£1).

For tenements exceeding 4,000 square feet in ground floor area and/or properties exceeding 2 acres in extent, an additional fee of Seven shillings and six pence (7s. 6d.) shall be charged for each additional 4,000 square feet, or part thereof, and/or for each additional 2 acres, or part thereof.

- (ii) The owner shall submit for examination a properly drawn design on tracing cloth or good quality paper and a typewritten specification. The design and specification shall be supplied to the Authority in triplicate. The work shall not proceed until the owner's design and specification have been approved by the Engineer and the third copy returned to him with the official endorsement.
- (iii) For the examination of the owner's plan of design and specification, a fee of Forty shillings (40s.) for each plan of from one to five fittings, plus Ten shillings (10s.) for every fitting over five.
- (iv) For examining any alterations or additions to a plan previously issued or approved by the Engineer, a fee of Ten shillings (10s.) shall be made by the Authority for each fitting or drain altered or added.
- (v) For inspecting drains and testing by the Authority's inspector, a fee of Thirty shillings (30s.), plus Fifteen shillings (15s.) for each additional inspection necessary owing to faulty work.
- (vi) For inspecting plumbing by the Authority's inspector, a fee of Thirty shillings (30s.) for each ten (10) fittings or part of ten fittings in the installation, plus Fifteen shillings (15s.) for each additional inspection necessary owing to faulty work.
- (vii) For the final inspection by the Authority's Engineer and charting work on the Authority's plans, a fee of Thirty shillings (30s.) for each ten fittings or part of ten fittings in the installation, plus Fifteen shillings (15s.) for each additional inspection necessary owing to faulty work.
- (viii) The Engineer may during construction of the work order the owner to carry out such additions and/or amendments as may be necessary for the satisfactory completion of the work.

The house connexion will not be passed until the installation together with the amendments ordered have been completed to the Engineer's satisfaction.

#### DIVISION 5.—MAINTENANCE AND DEFECTIVE WORK.

Section 10.—Any drain pipe, soil pipe, trap, water closet, urinal, sink, grease trap, or other fixture or fitting laid, used, or constructed otherwise than in accordance with this By-law or which shall in the opinion of the Authority, be or become bad or of defective quality, shall, upon notice in writing from the Authority to the owner or occupier of the property, be by such owner or occupier removed or repaired in the manner determined and within the time

fixed by the Authority, and in each case such owner or occupier fails to comply with the requirements of the notice, he shall be liable to prosecution and a penalty for an offence against the Acts, or the Authority may, if it thinks fit, remove or repair the said defective fitting and charge such owner or occupier of the premises with the cost so incurred, and will proceed for recovery of the same in a manner provided by the said Acts.

#### DIVISION 6.—LICENCES AND PERMITS.

**Section 11.**—(1) All plumbing work for sewerage shall be done and carried out only by Licensed Plumbers and/or by the persons in this section 11 hereinafter mentioned, but subject in all things to the conditions and terms of the said section.

(2) The Authority may, if it thinks fit, and subject to the provisions of sub-sections (3), (4), (7), and (8) of this section, issue a Plumber's Licence to any person who is the holder of a Certificate of Competency issued by the Sanitary Plumbers Examination Board of Victoria.

(3) The Authority before issuing such Plumber's Licence, may require the applicant to satisfy it that he possesses the requisite knowledge of the Laws, By-laws, and Regulations relating to the sewerage system of the Authority, and it shall appoint officers to examine the said applicant as to his knowledge, and, after the consideration of the report thereon of such officers, may refuse to grant such Licence, if, in its opinion, the applicant has not the requisite knowledge of such Laws, By-laws, and Regulations.

(4) Every person to whom a Plumber's Licence is to be issued shall, before the Licence is issued to him, sign in a register, to be kept by the Authority, a declaration that he will conform to and comply with the conditions of the Licence hereinafter contained and the By-laws and Regulations of the Authority.

(5) The Authority may, if it thinks fit, and subject to the provisions of sub-sections (7) and (10) of this section issue a permit to work as a plumber to any person who has passed the practical examination of the Sanitary Plumbers Examination Board of Victoria.

(6) In the event of the holder of a Permit to work as a plumber being granted a Certificate of Competence by the Sanitary Plumbers Examination Board of Victoria, the Authority may issue a Plumber's Licence to him subject to the provisions of sub-section (3), (4), and (7), of this section and upon his returning his Permit.

(7) The Authority may refuse to grant a Licence or Permit to any person, or may suspend or cancel any Licence or Permit previously granted, if, in its opinion—

- (a) such person has been guilty of an offence against the By-laws and Regulations of the Authority;
- (b) such person has failed to comply with the instructions issued by any responsible officer of the Authority;
- (c) such person at any time or place has so conducted himself as to warrant, in the opinion of the Authority, the refusal, suspension, or cancellation of such Licence or Permit.

(8) On application for renewal, the Authority may renew any such Licence or Permit.

(9) No person, other than a Plumber's Apprentice, Plumber's Improver, the holder of a Permit to work as a Plumber, or the holder of a Plumber's Licence, shall be engaged or employed as a workman in the actual performance of any of the plumbing work for sewerage.

(10) No such Plumber's Apprentice, Plumber's Improver, or holder of a Permit to work as a Plumber, shall be permitted to work in the actual performance of, or to do, any plumbing work for sewerage, except under the supervision of a Licensed Plumber, who shall be responsible for such work and for compliance with the By-laws and Regulations of the Authority in respect thereof.

(11) "Drainer's Licence."—The Authority may issue a "Drainer's Licence" to any person who is to the satisfaction of the Authority competent to carry out the work of drainer, and for that purpose may require such person to satisfy it as to his competency by passing an examination conducted by the Engineer and such other examiners as the Authority may appoint or in such other manner as the Authority may determine, or in any particular case may decide that he has a thorough knowledge of the following subjects:—

**Plans.**—The reading of plans and the meaning of scales and of elevation, plan, and section drawing.

**Levelling.**—The use of the straight-edge, spirit-level, and boning rods.

**Excavation, Timbering and Refilling.**—The use of tools for excavation, the protection of trenches by timbering, the treatment of different soils, tunnelling, and tunnel timbering, precautions near buildings, and manners of refilling trenches and tunnels.

**Drain-laying.**—The preparation of the bottom of trenches, the laying and jointing of stoneware, cement, concrete, and cast-iron pipes, cement, bitumen, lead, and self-filling joints, laying of drains under houses and in soft ground, and the depth of drains below surface.

**Drainage Details.**—Junction to sewers, diminishing of sizes of pipes, yard gullies, grease and other traps, inspection openings, and cast-iron drainage details.

**Drainage Works.**—Knowledge of the provisions of this By-law and of the Acts, in so far as same relate to the work and duties of drainers in regard to the construction, maintenance, and protection of the sewerage system and the construction and use of drains and drainage traps.

Candidates for Drainer's Licences shall give notice, in writing, to the Authority of their intention to submit themselves to examination, and this examination shall be at such a time and at such a place as shall be appointed by the Authority. Candidates must provide themselves with their own tools and materials, and pay a fee of 20s. for each examination.

**Section 12.**—The conditions upon which all Plumbers' Licences and Permits and Drainers' Licences will be issued are—

(1) That every Licence and Permit will be subject to suspension or cancellation at the will of the Authority, and that all such Licences or renewals thereof will expire on the 31st day of December next following.

(2) That every holder of a Licence from the Authority who shall have received the consent of the Authority to execute any works in connexion with sewerage or drainage, or who shall (where such consent of the Authority is not required before the execution of any such works) have notified the Authority of his intention to carry out such works—

- (a) shall obtain permission when necessary for the execution of such works on, over or through any private property, or any streets, roads, parks, reserves, or other public places or properties; and
- (b) shall pay any fees demanded by the Municipal Authority for opening any street, road, or thoroughfare, or otherwise in connexion with the work; and
- (c) shall execute such works in accordance with the provisions of the Acts and of the By-laws made thereunder, and of any special directions or orders given or issued by the Authority or its proper officer; and
- (d) shall use materials of good quality only and free from defects; and
- (e) shall employ only competent operatives or assistants; and
- (f) shall execute such works in a thorough and tradesmanlike manner to the satisfaction of the Authority as expeditiously as practicable, and leave site clean and undefaced; and
- (g) shall in the execution of such works take such proper and necessary precautions that no accident or damage or unnecessary inconvenience may be directly or indirectly occasioned thereby; and
- (h) shall restore any part of any street, road, or thoroughfare interfered with by the work to the satisfaction of the Municipal Authority having control thereof upon the completion of the work; and
- (i) shall restore any other property interfered with by the work to the satisfaction of the proper officer of the Authority; and
- (j) shall in all cases notify the proper officer immediately upon completion of any work in hand, promptly amend any defects therein, and again at once notify the said officer, and subsequently take steps forthwith to secure the certificates of satisfactory completion, and give the same to owner; and
- (k) shall not interfere, remove, cut, or in any way damage any portions of any electrical, gas, water, telephone installation, and/or any other municipal or public utility or service. When portion of any such installations, including earthwires, connexions, pipes, &c., interferes with properly laying house connexions and sewerage plumbing, the plumber shall communicate with the secretary or engineer of the utility or service concerned in order to arrange for that portion of the electrical, gas water, telephone installation, &c., to be so located as not to cause further interference; and

- (l) shall, when so directed by the Authority, make good at his own expense any defect found within twelve months of the date of completing of any such work which, in the opinion of the engineer is due to faulty workmanship, or defective material.

Section 13.—Prior to the issue of any Licence or Permit the person to whom the same is to be issued shall pay to the Authority the fee named hereunder:—

	s.	d.
For every Plumber's Licence ..	20	0
For every Permit to work as a plumber ..	10	0
For every Drainer's Licence ..	10	0
For the Renewal of any Licence ..	5	0

#### DIVISION 7.—NEW BUILDINGS, ADDITIONS, ETC.

Section 14.—Every person who shall intend to erect a building on any property within the Sewerage District, or to rebuild or to make any alterations or additions to any such buildings shall, before commencing such work, give to the Authority fourteen (14) days' notice, in writing, of such intention and obtain a permit from the Authority; and such notice shall be accompanied by plans and sections of such intended buildings, alterations, or additions showing their positions, dimensions, depths, and levels of foundations, cellars, or basements, all appurtenant walls, and fences, the intended lines of drainage, and the boundary of the land, which plans, &c., shall become the property of the Authority.

#### DIVISION 8.—GENERAL.

Section 15.—Any work or thing in respect of or in connexion with sewerage in the Bacchus Marsh Sewerage District shall conform to the requirements of Chapters 38 to 42 of the Uniform Building Regulations, Victoria, as amended from time to time, and to this By-law where not inconsistent therewith.

#### PART 2.—GENERAL REGULATIONS.

DIVISION 9.—USE OF SEWERS AND DRAINS.—PROHIBITION OF CERTAIN DISCHARGES.—FITTINGS TO BE ABOVE FLOOD LEVEL.

Section 16.—*Use of Sewers and Drains.*—The owner and the occupier of any sewerage property shall discharge into the sewerage system—

- all faecal matter, urine, household slops and household liquid refuse from such property, and such other polluted water from stables, washing areas, manure bins, basements, cellars, and roofed yards; and
- such trade or manufacturing liquid refuse as the Authority may authorize, subject in each and every case to such conditions as it may impose.

Section 17.—*Prohibited Discharges.*—The deposition or discharge of any of the following substances into any drain is prohibited—

- Any animal matter other than is specified in section 16, fleshings, wool, hair, dead animal, grease, dust, ashes, rubbish, garbage, offal, vegetable and fruit or their parings, rags, oil, silt, mud, sand, gravel, or like substances, or any other substances which is in the opinion of the Authority or its proper officer, liable to be injurious to any part of the sewerage system or to employees of the Authority engaged in the operation or maintenance of same.
- Any petrol or other inflammable or explosive substance, whether solid, liquid, or gaseous.
- Any rain, roof, surface, or flood waters, except by special permission of the Authority.
- The contents of any night-soil cart, cesspool, or privy.
- Any liquid, trade waste or other substance which has not been neutralized to the approval of the proper officer of the Authority, or which is above the temperature of 100 deg. Fahrenheit, or such lower temperature as may be prescribed by the Authority, having regard to the special circumstances of the case.
- Any liquid which contains such percentage of common salt or any other mineral, salt, acid, or gas, as is, in the opinion of the proper officer of the Authority, injurious to, or liable to form compounds injurious to, any part of the sewerage system or to employees of the Authority engaged in the operation or maintenance of same.

Section 18.—*Fittings to be Above Flood Level.*—No person shall place in position for use any fitting or appliance having an inlet or opening into any drain or

into any sewer of the Authority unless the inlet or opening is above the highest recorded flood level in the relevant area. Where any doubt is raised in connexion with any of the clauses of this By-law as to the highest flood level, the Engineer, after inquiry, shall fix such flood level, and his decision shall be final and conclusive.

Where any buildings or premises are situated in any area liable to flooding at frequent intervals the Authority may suspend the operation of this clause subject to and so long as the following conditions are observed:—

- That the owner applies in writing for permission to fix an approved sluice valve in every drain connecting with a sewer of the Authority on which the inlet or opening is placed, and furnishes the Authority with an undertaking that such sluice valve will be fixed at his risk, and indemnifies the Authority against all damage suffered by such owner or any one claiming under him arising out of and incidental to such valve;
- That the owner undertakes whenever there is danger of flooding to close or cause to be closed every such valve before flooding occurs, and to keep closed or cause to be kept closed every such valve until the flood water shall have subsided to such an extent that there is no longer danger of the flood water entering the sewers;
- That pursuant to such permission and undertaking, an approved sluice valve shall have been fixed in every drain connecting with a sewer of the Authority and approved of by the Engineer;
- That the owner does whenever necessary close and keep closed every such valve and does exclude such flood water.

#### DIVISION 10.—TRADE WASTES.

Section 19.—*Condition of Discharge.*—No person shall discharge any trade or manufacturing liquid, refuse, or waste into any sewer, unless and until the following conditions are complied with:—

- Application for permission to discharge any such trade wastes shall be made, in writing, and accompanied by plans and specifications of the work to be done and of the apparatus to be used, and shall include such details concerning the nature of the waste and the quantity and rates of discharge of the proposed effluent as considered necessary by the proper officer of the Authority.
- The permission of the Authority, in writing, shall be obtained and an agreement containing a covenant to comply with the By-law and with any further stipulations required by the Authority, shall be executed. The volume of liquid refuse or waste discharged shall if ordered be measured and determined by meter or by some other approved means of measurement. The maximum daily aggregate quantity of effluent which may pass from any trade premises into a sewer, the maximum permissible rate of such discharge, the size and capacity of the drain or pipe for conveying such effluent from the trade premises to the sewer, and the hours during which such flow will be permitted shall be determined by the Authority.
- All such liquid refuse or waste shall be passed through such settling, screening, and/or neutralizing chambers and/or such other appliances and/or otherwise treated as ordered or approved by the Authority to ensure that the resulting effluents shall comply with the conditions of the agreement.
- Every settling, screening, neutralizing, or other chamber appliance, or apparatus for the treatment of trade wastes in accordance with this By-law shall be cleansed, operated, and maintained by the occupier at his own expense and at such intervals as may be considered necessary by the Authority, or its proper officer to ensure the efficient operation of such chamber, appliance, or apparatus and in no case shall such chamber, appliance, or apparatus be altered without the approval, in writing, of the Authority first being obtained.

#### DIVISION 11.—SUB-SOIL WATER.

Section 20.—The discharge of sub-soil water into sewers shall be prohibited except by permission of, and under conditions approved by, the Authority.

## DIVISION 12.—INSPECTION TESTS AND MAINTENANCE.

**Section 21.—Notice.**—The owner or his authorized agent, or the plumber, drainer or contractor, shall give at least forty-eight (48) hours' notice to the Authority, in writing, of his intention to commence work and of work ready for inspection. All work shall be left uncovered and accessible for examination until inspected and approved.

The contractor carrying out any work, shall within seven (7) days of the completion of such work, file in the office of the Authority on forms furnished for this purpose, a correct statement of the work done and the cost thereof. Such statement shall be countersigned by the proper officer of the Authority, and a certificate embodying such statement shall be forwarded to the contractor.

**Section 22.—Inspection.**—All drains, wastes, fittings, joints, fixtures, &c., will be inspected by the proper officer of the Authority to ensure compliance with the By-law and approved plan.

**Section 23.—Tests.**—Drains, whether laid by the Authority's workmen or others, must be thoroughly tested in every case before being passed by the Authority's officers. The proper officer of the Authority may require the application of the water or smoke tests, or such other tests as he may order or approve.

**Section 24.—Water Test.**—The water test may be applied to the drainage and/or plumbing systems and their fittings in their entirety or in sections. It shall be applied by hermetically sealing all openings below the top of the section to be tested. The system shall then be filled with water to a height of 6 feet above the highest point of the section, or if considered necessary to such additional height as the proper officer may order, and every joint carefully examined for leaks.

In testing drains the water shall be maintained at this height for a period of fifteen minutes by the addition of a measured quantity of water as required. The amount of water added in the fifteen minutes shall not exceed 2 gallons for every 50 joints of 4-in. drain or sewer, and shall not exceed 3 gallons, for every 50 joints of 6-in. drain or sewer, or proportionately for a lesser or greater number of joints.

**Section 25.—Smoke Test.**—The smoke test shall be applied by hermetically sealing all openings into the section to be tested, and forcing into the system thick smoke to a pressure equivalent to 1 inch of water, by means of a smoke test apparatus. Every joint shall then be carefully examined for leaks.

**Section 26.—Equipment, &c.**—The equipment, material, power, and labour necessary for the inspection and tests shall be furnished by the contractor, plumber, or drainer.

**Section 27.—Defective Work.**—Any pipes, fittings, fixtures, or other materials or apparatus found to be defective shall be removed and replaced by sound materials or apparatus; and all defective workmanship shall be made good to the satisfaction of the Engineer or his representative, and to comply in all respects with the provisions of the By-laws. Should the contractor fail to replace such defective materials or to make good such defective work within fourteen (14) days of his having been ordered, in writing, by the Engineer so to do, the work or replacement may be carried out by the Authority at the contractor's expense.

**Section 28.—Maintenance by Contractor.**—Every person who holds a licence from the Authority and who executes any work in connexion with sewerage, drainage, and/or sanitary plumbing, shall make good within fourteen (14) days and at his own expense, when directed by the Engineer so to do, any defects which occur in such works within twelve (12) months of the date of their completion, and which are, in the opinion of the Engineer, attributable to faulty workmanship or materials.

**Section 29.—Maintenance by Owner or Occupier.**—The owner or occupier of every premises shall, at his own expense, maintain in efficient working order and in a clean and hygienic condition the whole house connexion work, including all traps, neutralizers, or other appliances, installed on such premises. Should the owner or occupier of any premises fail or neglect satisfactorily to maintain and cleanse such appliances, the Authority may, after twenty-four (24) hours' notice, in writing, have the necessary work carried out at the expense of the owner or occupier.

## DIVISION 13.—MATERIALS AND WORKMANSHIP.

**Section 30.—Materials.**—All materials, pipes, bends, junctions, fittings, fixtures and apparatus shall be of the best of their respective kinds, sound and free from defects, and shall be approved by the proper officer.

**Section 31.—Testing.**—All materials, pipes, bends, junctions, fittings, fixtures, and apparatus shall be submitted for examination and/or test, and shall not be

placed in position until passed and stamped by the Authority. Such testing of materials shall be paid for by the person submitting same, whether passed or rejected, and shall be done at such time and place and at such rates, as may from time to time be fixed by the Authority.

**Section 32.—Workmanship.**—All work shall be executed in a thorough and workmanlike manner and to the satisfaction of the proper officer.

**Section 33.—Precautions.**—Adequate precautions shall be adopted by the person carrying out the work to prevent injury to workmen, property, or the public, and the Authority will accept no responsibility for claims for injury arising from the inadequacy of such precautions.

**Section 34.—Concrete.**—Concrete, unless otherwise ordered, shall consist of 1 part Portland cement, 2 parts clean, sharp sand and 4 parts hard metal, shingle, or gravel properly graded from  $\frac{3}{4}$  inch to not exceeding 1 inch gauge, and shall be thoroughly mixed with clean water to such consistency as ordered or approved by the Engineer of the Authority.

The cement, sand and aggregate shall be thoroughly mixed and the whole batch completely turned over three times in the dry and turned over again at least three times while the water is being added. If a concrete mixer is used the minimum time of mixing in the machine after all the materials have been added shall be two minutes. All concrete shall be placed within 20 minutes of the time of mixing.

**Section 35.—Cement Mortar.**—Cement mortar, unless otherwise ordered, shall consist of 1 part Portland cement and 2 parts clean, sharp sand, properly mixed with an approved portion of clean water. Cement mortar shall be used within 20 minutes of the time of mixing. Retempering is forbidden.

## PART 3.—DRAINAGE.

## DIVISION 14.—DRAINAGE, GENERAL.

**Section 36.**—(1) Every premises shall be separately drained unless a combined drain shall have been ordered or approved by the Authority. Owners desiring to have the drainage of their properties combined must sign a request for a combined drain, and obtain the approval of the Authority. In any case in which it appears to the Authority that any properties may be drained more advantageously in combination than separately, the Authority may order that those properties be drained by a combined operation.

(2) In any case where a combined drain serves two or more properties the Authority, with the consent of the owners of the properties served by such combined drain, may take over such combined drain, and thereafter such combined drain shall be and remain a sewer of the Authority.

(3) In every case of a combined drain the Authority will determine as between the respective owners and occupiers of the properties drained thereby, the proportions in which the cost of such combined drain shall be paid. In every case of the occurrence of an obstruction in a combined drain the Authority will also determine by whom and in what proportion the cost of removing such obstruction and/or effecting any necessary repairs to drains shall be paid.

(4) Owners and occupiers of premises are responsible for clearing stoppages in drains within their premises, or between their premises and the sewers into which the branches lead, but must employ only licensed plumbers or drainers to clear the same.

(5) Before a licensed plumber or drainer commences to clear a stoppage in a drain he must notify the Authority, in writing, of the time when he intends to clear the stoppage, so that the Authority's proper officer may attend and pass the work in accordance with the provisions of the Acts.

**Section 37.—Size of Drains.**—Every drain shall be of adequate size for the drainage of the property to be served, in accordance with the requirements of section 90, with a minimum diameter of 4 inches.

**Section 38.—Materials.**—All drain pipes, bends, junctions, and fittings used shall be of glazed stoneware, concrete, cast iron or other approved material, provided that the proper officer of the Authority may prohibit the use of any of the above-mentioned where the circumstances or conditions are considered unfavourable.

**Section 39.—Cast-iron Pipes.**—Cast-iron drainage pipes and their fittings shall comply with the standard approved by the Authority for cast-iron pipes and their fittings of similar diameter, but in the event of the issue by the Standards Association of Australia of an Australian Standard Specification for such pipes, and of the acceptance of such Standard Specification by the

Authority, all cast-iron pipes and fittings shall be in accordance with this Standard Specification from a date to be fixed by the Authority.

**Section 40.—Interceptor Traps.**—Where directed by the Authority, but not otherwise, an interceptor trap shall be fixed in the drain laid from any property to the sewer. Such a trap shall be fixed as near as practicable to the boundary, and wherever practicable shall be within the boundaries of the property. If required by the Authority the interceptor trap shall be extended to ground level and fitted with an approved cover or an inspection chamber shall be provided for the trap.

**Section 41.—Inspection Chambers.**—All drains shall, wherever directed by the Authority, join in an inspection chamber at least 3 feet long by 2 feet wide. The portions of the drains crossing the floor of the inspection chamber shall be connected either in a straight line or by curved junctions in the floor of the chamber. All inspection chambers shall be cement rendered (two part sand and one part cement) to a smooth surface, and made watertight. The inspection chamber shall be provided with a closed cover of approved type and special ventilation shall be provided if considered necessary by the Engineer.

**Section 42.—Inspection Openings.**—Every line of drain shall be provided with an inspection opening inside and within five (5) feet of the boundary line of the property, at each junction not provided with an inspection chamber, at each change of direction, at each fixture, and in no case greater than 30 feet intervals, and in paved areas these shall, if considered necessary by the proper officer of the Authority, be brought to the surface and furnished with approved airtight covers. The area of an inspection opening shall not be less than the area of the drain. Inspection openings, inspection junctions, or branches shall be set in an approved manner to facilitate rodding.

Inspection openings in stoneware or concrete drains shall be sealed by means of discs, approved by the Authority, fixed with cement mortar and capable of being easily removed without damage to the pipes, or otherwise as directed by the Authority.

**Section 43.—Gratings.**—Every inlet to a drain other than from a water closet shall be effectively protected by an approved grating of ample area. Gratings to disconnector traps and gully traps shall be securely fixed. The aggregate area of the apertures in any grating covering a ventilation opening shall be not less than the sectional area of the pipe or drain ventilated by such opening. Every opening for ventilation shall at all times be kept perfectly free from obstruction.

**Section 44.—Drain Openings Not in Use.**—The ends of all drains not immediately connected with the plumbing fixtures shall be securely closed with water-tight imperishable materials.

If such drains be of stoneware or concrete, a stoneware, cast iron, or other approved disc shall be cemented in; if of wrought iron, a plug shall be screwed on the end; if of cast iron, a cast iron plug shall be caulked in with lead.

**Section 45.—Replacing or Inserting Pipes.**—Where it becomes necessary to remove a pipe to clear a stoppage, or to insert a pipe or branch in an existing stoneware or concrete drain, the work shall be carried out by one of the following methods:—

(1) Removing a length of not less than three (3) pipes, replacing the centre pipe by an inspection pipe, and dropping the pipes back into place without springing or cutting.

(2) A length of not less than three (3) pipes may be removed, and the two outer pipes replaced by inspection pipes and the pipes dropped back into place without springing or cutting.

**Section 46.—Use of Concrete.**—Concrete shall be used in each of the following cases:—

(a) Around and under yard gully basins—the exposed surfaces to be rendered in cement mortar;

(b) Around the top of educt vent and induct vent pipe sockets where exposed;

(c) Around interceptor trap covers and tops of disconnector traps where the surface is not paved;

(d) Under and around bends rising vertically off oblique branches, and under bases of all drainage traps;

(e) Around drains where such drains are, in the opinion of the proper officer, liable to be affected by tree roots;

(f) If required by the proper officer, for anchor blocks on steep grades, in bad or refilled ground, around jump ups, and in any place where the pipes have insufficient cover or are liable to be affected by traffic.

#### DIVISION 15.—BASEMENT AND CELLAR DRAINAGE.

**Section 47.—Fixtures.**—No water closet, urinal, and/or other fixture shall be placed in any cellar or basement or on any floor below ground level, unless by consent of the Authority previously obtained and subject to such conditions as the Authority may impose, and then only when, in the opinion of the Authority, other provision cannot be made. The owner shall submit such plans and/or other information as the Authority may require and shall undertake, in writing, to accept all liability for damage that may occur; provided always, that if such fixtures and their surrounding are not kept in a sanitary condition, or if the purpose for which such cellar, basement or floor below ground level is used, be changed, such consent may be revoked by the Authority at any time and that upon fourteen (14) days' notice of revocation such fixture shall be abolished by the owner.

**Section 48.—Risk of Back Flow.**—Where such cellar basement, or floor below ground level is at such a level as may, in the opinion of the responsible officer, involve risk of back flow in the event of the sewer becoming over-charged, the sewage from all fixtures therein shall be raised by ejector, syphon, or other approved mechanical appliance to such height as ordered and discharged into the sewer as and where directed.

**Section 49.—Seepage Drains.**—In no case shall seepage drains from cellars, basements, or any floor below ground level be discharged into a sewer without the consent of the Authority. Where such a discharge is permitted, the seepage shall be raised by ejector, syphon, or other approved mechanical appliance to such height as ordered, and discharged into the sewer or elsewhere as and where directed.

#### DIVISION 16.—POLLUTED AREAS.

**Section 50.—Connexion.**—The Authority may if it thinks fit, authorize or require that any of the following places, namely, stables, cow sheds, dairies, market places, abattoirs, areas for washing vehicles, and any other polluted place, be connected with the sewers, subject to such conditions as the Authority may impose.

**Section 51.—Conditions Governing Connexion.**—No such connexion shall be made unless the following conditions have been complied with:—

(a) The place to be connected shall, if required, be so roofed as to prevent the entry of rain water from it to the sewers, and in no case shall rain water be permitted to discharge on to such place from adjoining surfaces.

(b) The place to be connected shall be paved above the level of the yard with approved materials, and graded to the satisfaction of the proper officer of the Authority.

(c) The drain from any such place shall be provided with an approved silt trap with a removable grating and connected with the drain inside the boundary line of the property. A water tap connected with a satisfactory water service shall be provided in a suitable position over the area.

#### Section 52.—Manure Bins.

(a) Manure bins must be provided for all stables or cow yards, where the local Municipal By-laws demand their construction, or where the locality is closely built on.

(b) All the manure bins must have the inside surfaces rendered with cement mortar, and must be impervious throughout, and provided with an approved close-fitting cover. Walls of new manure bins must, unless otherwise approved by the Engineer, be at least nine (9) inches in thickness, built of brickwork laid in cement mortar. If an outlet pipe be provided for a manure bin, it must be properly connected with the Authority's sewers. Branches in house drains must be provided in all cases where manure bins exist for their connexion whenever the Authority shall deem it necessary.

#### DIVISION 17.—PIPE TRENCHES.

**Section 53.**—The trench for the house drain from any property shall be so dug as to meet the Authority's sewer at the position provided or to be provided for the connexion.



The material from the trench shall be so placed as to cause the least possible obstruction and inconvenience to the public.

Proper barriers and lights shall be maintained to guard against accident during the progress of the work.

In refilling the trench selected refilling shall first be deposited around and over the pipe to a depth of 12 inches and carefully consolidated, after which the remainder of the trench shall be filled in layers and rammed or flooded, as ordered or approved by the proper officer.

No stone shall be used in refilling until earth or gravel has been placed over the pipe to a depth of twelve (12) inches or more if directed.

On no account shall any water, sand, earth, &c., be allowed to enter the sewer during the progress of the work.

On completion of refilling the surface shall be restored as nearly as possible to the same condition as it was in before operations were commenced, unless the owner, in writing, otherwise requires.

#### DIVISION 18.—LAYING DRAINS, ETC.

*Section 54.—Position and Line.*—Every drain and every fitting, &c., connected therewith shall be laid and fixed where directed by the proper officer of the Authority. As far as possible all drains shall be laid in straight lines; where changes of direction occur they shall be made in manholes, or by a suitably curved pipe with an inspection opening on each straight pipe next adjoining the curve, or by installing an inspection branch in the curve itself, or by such other means as the proper officer may direct.

*Section 55.—Oblique Junctions.*—Where any drain joins another drain, or a sewer, the junction shall be made obliquely at an angle of not greater than forty-five (45) degrees with the direction of flow of such drain or sewer.

*Section 56.—Connexion to Sewer.*—The position of the Authority's connexion to any premises shall be located prior to the commencement of any drain excavation. The disc stopper at the point of connexion to the sewer shall be carefully removed so as not to injure the socket or allow any debris to enter the sewer.

The first length of the drain at the branch shall be an inspection opening.

*Section 57.—Gradients.*—All drains shall be laid on an even grade, and except by special permission, in writing, from the proper officer, such gradients shall not be less than the following:—

4-in. diameter	..	..	1 in 40
6-in diameter	..	..	1 in 60
9-in. diameter	..	..	1 in 80

In cases where the grades of drains are steeper than 1 in 15, concrete anchorage blocks shall be placed at intervals of not more than thirty (30) feet.

Such blocks shall be let into the sides of the trench at least six (6) inches on each side and shall extend not less than three (3) inches above and below the barrel of the pipe and for a length of twelve (12) inches along the pipe.

*Section 58.—Depth of Drains.*—Drains of stoneware or concrete pipes, unless bedded on and encased in concrete of not less than six (6) inches thick over any part of the drain, shall be laid at a depth to the top of the socket of the pipe of not less than the following:—

(a) In public thoroughfares, rights-of-way, or other open spaces subject to vehicular traffic—two (2) feet six (6) inches.

(b) In private property not subject to vehicular traffic—one (1) foot.

No person shall alter the surface over any drain, so as to deprive it of the minimum depth of cover specified by the preceding paragraph, unless approved measures are adopted to protect the drain.

*Section 59.—Laying Drains.*—All pipes shall be laid to such lines and grades as may be shown on the plans or directed, and except where otherwise ordered shall be bedded on approved sand or other approved bedding material up to one-third of the diameter of the pipe and so that there shall be at least two (2) inches of the bedding material below the barrel of the pipe in the case of earth-bottomed trenches and up to the horizontal diameter of the pipe, and so that there shall be at least three (3) inches of the bedding material below the barrel of the pipe where laid in trenches in rock.

In water-charged ground, or where the foundation is bad, or near the roots of trees, or where directed, the drain shall be formed of cast-iron pipes or, if of stoneware or concrete pipes, they shall be bedded on and encased in concrete as ordered, and if ordered, supported upon

approved timber foundations as directed. The thickness of concrete encasing and the form of concrete haunching shall be as directed by the proper officer.

Drops or bends in vertical or inclined drains shall have a concrete support placed under and around the drain as directed.

#### DIVISION 19.—DRAINS UNDER BUILDINGS.

*Section 60.*—Every drain shall, as far as practicable, be so constructed as not to pass under any building or out-building. When a drain does pass under a building or out-building it shall, if practicable, be laid in a direct line for the whole distance beneath such building or out-building, and shall have approved means of access for rodding outside the walls of the building or out-building and also, if directed, by the Authority, beneath the building or out-building. The pipes used shall be of stoneware or concrete, surrounded by not less than four (4) inches of concrete, or of cast-iron.

In any case in which pipes pass through or under walls, approved provision shall be made to prevent injury to the pipes by settlement, and, in outer walls, to prevent the ingress of vermin.

#### DIVISION 20.—JOINTS, DRAINAGE.

*Section 61.—Stoneware and Concrete Pipes.*—Joints between stoneware and concrete pipes and fittings shall be of plastic or other material of an approved type and quality.

*Section 62.—Cast-iron Pipes.*—All joints in cast-iron pipes must be stemmed with approved gaskets and so filled and caulked with lead or other approved material as to make them gas and watertight.

All connexions between stoneware or concrete pipes and cast-iron pipes shall be made as for joints in stoneware or concrete pipes.

#### DIVISION 21.—DRAINAGE TRAPS.

*Section 63.—Trapping of Inlets.*—Every inlet to any drain other than inlets provided for ventilation in accordance with this By-law shall be provided with an approved trap. No inlets to any drain connecting directly with a sewer shall be constructed within a building or out-building other than such inlets necessary for the apparatus of any water closet, urinal, or slop sink.

*Section 64.—Classes of Traps.*—Five classes of traps shall be used:—

- "Traps" for intercepting gases only, which shall be of round section and self-cleansing form, but not such as to empty by momentum or suction.
- "Silt Traps" for intercepting both gases and solids, which have slightly tapered sides, flat bottom, and rounded angles, and which shall be provided with approved means for catching and removing solids.
- "Grease Traps" for solidifying and collecting grease, fatty domestic wastes, and other semi-fluid or viscous material liable to foul the pipes. The grease trap shall be designed for the requirements of the particular drain. The design and capacity shall be to the approval of the Engineer. The interior surfaces shall be tiled, and it shall be equipped with non-corrodible baffles, the whole trap being designed for easy cleaning.
- "Acid Traps" or "Neutralizers" for neutralizing acid or other aggressive water prior to its entering the house drains.
- "Oil Traps" for collecting all kind of oil, which shall be of such form as approved.

The term "yard gully" is applied to traps (a) where they are used externally and fitted with dished tops and gratings. The tops of inlets of all disconnector traps must be at least six (6) inches above the surface of the surrounding ground.

*Section 65.—Water Seal.*—Every trap must have a water seal of at least half the diameter of the outlet pipe, but in no case of less than two (2) inches.

*Section 66.—Provision of Yard Gullies.*—A yard gully shall be provided in the yard of every property as near as practicable to the kitchen or back door, with a water tap connected with a satisfactory water service placed over it at a height of not less than two (2) feet. No yard gully shall be situated within a building or out-building.

*Section 67.—Details of Yard Gullies.*—Yard gullies shall be fitted with dished tops and gratings, the dished top being in one piece with the trap or jointed thereto by spigot and faucet, or as otherwise approved.



The depth of the dished top to the grating shall not be less than six (6) inches. The grating to every gully trap shall not be less than six and seven-eighths ( $6\frac{7}{8}$ ) inches over all, and the grating to every disconnector trap shall be convex in section, with an opening of suitable outlet capacity. Every grating shall be fixed down in an approved manner with bitumen or wedges of lead.

**Section 68.—Kerbing, &c., to Yard Gullies.**—Yard gully basins and the dished tops of silt traps shall be so surrounded with an approved impervious kerbing as to prevent the access of surface water to the drains, and, if directed, the wall at the rear of the gully or silt trap, if so brick or stone, shall be cement rendered to the height of the tap over same, and if of wood the wall shall be provided with an approved galvanized sheet-iron apron. The internal diameter of kerbing around gully traps measured from the face of cement rendering shall not be less than fifteen (15) inches, and shall be neatly rounded to meet the gully top.

#### DIVISION 22.—VENTILATION.

**Section 69.—Vents on Main Drain.**—The main drain shall be ventilated at its upper end by a pipe ventilator erected vertically and such ventilator may be a soil vent pipe or combined waste vent pipe.

If the drain is provided with an interceptor trap, there shall be in addition a ventilator connected to the interceptor trap shaft. In such cases there shall, wherever practicable, be a difference in height of not less than six (6) feet between the tops of the vents at the upper and lower ends of the drain, respectively.

**Section 70.—Vents on Branch Drains.**—Where the length of a branch drain measured along the centre line of pipes, including the drop, if any, from the centre line of the main drain to the centre of the outlet side of the water seal of the highest drainage trap exceeds twenty (20) feet, such branch drain shall be vented in accordance with the provisions of section 71.

**Section 71.—Size of Drainage Vents.**—Drainage vent pipes shall, unless otherwise ordered, be of not less than four (4) inches diameter in the case of educt vents and not less than three (3) inches diameter in the case of induct vents, with the provision that where more than one educt vent is provided the vent on the longest line of drains shall be of not less than four (4) inches diameter, and all others of not less than three (3) inches diameter, but in no case shall a drainage vent be of smaller diameter than necessary to comply with the requirements of section 91.

Unless otherwise ordered or approved by the Authority, every such vent pipe shall be without return bend and provided with approved basket end, educt, or induct cowl as directed by the Authority.

**Section 72.—Materials, &c., for Drainage Vents.**—Drainage vent pipes situated wholly outside of buildings or outbuildings shall be of cast iron, galvanized wrought iron, galvanized sheet iron, or other approved material above ground, and of stoneware or concrete or other material approved by the Authority beneath the surface of the ground.

All galvanized sheet iron vent pipes shall be double galvanized with longitudinal joints grooved, welded, or riveted, and circumferential joints riveted and soldered, and shall be of not less gauge than twenty for 3-in. and 4-in. diameter pipes and eighteen for 6-in. pipes. Where ordered by the proper officer, the first six (6) feet above ground shall be of cast iron or other approved material.

Drainage vent pipes inside a building or outbuilding shall, unless otherwise approved, be of cast iron, or soil pipe strength, or of galvanized wrought iron.

**Section 73.—Induct Vents.**—Every induct vent shall be securely supported in a manner approved by the Authority or its proper officer.

**Section 74.—Materials, &c., for Vents of Soil or Waste Pipes.**—Vent pipes shall be of cast iron, wrought iron, lead, solid drawn copper, or brass, except that where the vent pipe is entirely outside a building, grooved sheet copper or grooved welded or riveted double galvanized sheet iron vent pipes may be used, but such sheet copper or sheet iron vent pipes shall not be used at a level lower than two (2) feet above the level of the highest fixture served thereby.

Lead vent pipes shall be of not less than 7 lb. lead for use with water closets, urinals, or slop sinks, and of not less than 6 lb. lead for use with other fixtures.

Solid drawn copper or brass vent pipes shall comply with the requirements of section 103 for waste or soil pipes.

External vent pipes of sheet copper or galvanized sheet iron shall be of a gauge not less than the following:—

1½-in., 2-in., 2½-in. diameter	.. 22 gauge.
3-in. and 4-in. diameter	.. 20 gauge.
6-in. diameter	.. 18 gauge.

**Section 75.—Soil Vent Pipes.**—In all cases the upward extension from the soil or combined waste pipe for ventilation shall pass in as direct a manner as possible above and, if necessary, through the roof.

**Section 76.—Anti-Syphonage Vents.**—(a) Loss of water seal in traps must be prevented by proper ventilation in accordance with the requirements of section 90. Such anti-syphonage vents from fixtures shall be carried up in accordance with section 77 or joined to the branch or main vent above the level of the fixture, unless special permission to the contrary is granted by the Authority.

(b) These vent pipes shall connect to the waste, combined waste, or soil pipe on the opposite side of the water seal to the fixture at a point not less than three (3) inches nor more than twelve (12) inches from the crown of the trap, except in the case of baths and closet pans, when the vent pipe shall be not more than four (4) feet from the crown of the trap. No other fixture shall be connected to the soil waste or combined waste pipe between anti-syphonage vent and the fixture which it serves.

(c) Individual anti-syphonage vents may be omitted on the waste pipes of lavatory basins, sinks, baths, showers, and other flat-bottomed fixtures, provided that—

- (i) the trap on the outlet of the fixture is of an approved non-syphoning type; and
- (ii) the length of the waste pipe from the outlet of the trap to the disconnector trap or vertical waste pipe does not exceed a length approved by the Authority.

**Section 77.—Height of Vent Pipes.**—Except as provided in section 80, every vent pipe extending upwards from a soil or drain pipe shall be carried not less than six (6) feet higher than any door, window, or other opening into a building within a distance of thirty (30) feet thereof, and in every case every educt vent shall be carried at least eighteen (18) feet above ground level and six (6) feet above the level of the eaves or coping.

Every vent pipe extending upwards from a waste or combined waste pipe or disconnector trap shall be carried four (4) feet above any door, window, or other opening into a building within fifteen (15) feet thereof, and in any case at least two (2) feet above the level of the eaves or coping.

Any vent pipe which extends into a gable of a building shall be carried at least two (2) feet above the point of intersection with the roof. Where necessary, in the opinion of the Authority or its proper officer, vents shall be carried to such additional heights as may be required to prevent effectually the escape of foul air into any building within the vicinity.

Vent pipes shall, where necessary, be provided with sufficient clips or stays to support them effectively.

**Section 78.—Ground Vents.**—Ground vents may be used on boundary traps when situated not less than thirty (30) feet from any window, door, or other opening into a building.

**Section 79.—Chimneys.**—No chimney shall be used as a ventilator to any drain, soil, combined waste, or waste pipe.

**Section 80.—Vent Near Chimneys.**—Vents must, as far as possible, be kept away from chimneys and ventilating air shafts.

Where a ventilator pipe terminates six (6) feet or more from a chimney opening or ventilating air shaft, the requirements of section 77 shall apply, but where the distance is less than six (6) feet the vent pipe shall, provided it is at least eighteen (18) feet long, terminate not less than two (2) feet below the top of such chimney or air shaft.

**Section 81.—Vent Pipe Grades.**—All vertical lines of vent pipe shall connect, full size, at their bases with a soil, waste, combined waste, or drain pipe at an angle of not less than forty-five (45) degrees to the horizontal and shall extend in undiminished size above the roof or be connected to the soil, waste, or vent stack, in compliance with the requirements of section 82, on a grade of not less than 1 in 40.

All offsets shall be at a grade of not less than forty-five (45) degrees to the horizontal.

Vent pipes shall not be used as waste or soil pipes.

**Section 82.—Combining of Vents.**—The various vents may be combined by branching together, or vent pipes may be branched into a soil, combined waste, or waste

pipe above the level of the highest fixture, provided that, in the case of the separate pipe system, only vents which serve traps of the same class shall be branched together, and that soil vents are branched into soil pipes and waste vents into waste pipes only.

**Section 83.—Galvanized Sheet Iron Vent Branches.**—Where a branch is required to an existing galvanized sheet iron vent pipe, a brass saddle piece, bolted and soldered to the vent, shall be used.

**Section 84.—Vents in Outbuildings.**—Galvanized sheet iron vent pipes may be used inside external water closets, stables, or open outbuilding, but where liable to damage shall be protected as directed by the proper officer.

**Section 85.—Pipe Clips, &c.**—There shall be at least one pipe clip to each 6-ft. length of vent pipe.

For cast iron pipe without lugs, or wrought iron pipe, approved coated wrought iron clips, and for galvanized sheet iron pipe one and one-half (1½) in. x 14 gauge galvanized band iron clips, or approved pipe hooks shall be provided.

Whenever it is necessary to fix pipes clear of the wall, approved extension clips shall be used. Clips, in the case of cast iron pipes, must be placed tight up against the head or underside of the collar.

**Section 86.—Attachment to Walls.**—Unless otherwise directed by the proper officer, where a galvanized sheet iron pipe with or without offset is carried up above the brick wall of a building or outbuilding it shall be secured by a galvanized wrought iron clip leaded into the wall near the top wherever possible and bolted against the vent pipe, or by other approved means.

All band iron clips of vent pipes to brick walls shall be fastened with nuts and bolts leaded in, or by means of T-headed bolts, passed through the brick joints and turned at right angles to the joints, or by other approved means.

**Section 87.—Supporting Vents.**—Wherever a vent pipe with offset extends more than ten (10) feet above such offset, it shall be stayed, as directed by the proper officer, with ½-in. galvanized wrought iron piping.

An unsupported length of not more than fifteen (15) feet above the highest clip of straight vent pipe, without offset, will be permitted.

**Section 88.—Vents Adjoining High Buildings.**—In any case in which a building is erected next to an existing building of less elevation and any windows of the new building are located within thirty (30) feet of any existing vent stack on the lower building, the owner of such new building shall defray the cost of such alterations to the vents of the previously existing building as are necessary to conform with section 77.

The owner of the lower or existing building shall make such alterations upon the receipt of money, or security therefor sufficient for the purpose, from the owner of the new or higher building, or shall permit at the election of the owner of the new or higher building the making of such alteration by the owner of such new or higher building.

#### PART 4.—PIPE CAPACITIES.

##### DIVISION 23.—CAPACITIES OF SOIL, COMBINED WASTE, DRAIN, AND VENT PIPES.

**Section 89.—Fixture Units.**—For the purpose of determining the size of any soil, waste, combined waste, drain, or vent pipe, the following equivalent fixture units shall be adopted, unless otherwise directed by the Authority, and the least nominal outlet diameter shown hereunder for any fixture shall be the minimum outlet diameter for such fixture, except as provided in section 131 for water closet pans.

Fixture.	Nominal Outlet Diameter.	Fixture Units.
	Inches.	
One lavatory basin .. .. .	1½	1
One lavatory basin .. .. .	1½	1½
For each lavatory basin over 20 served by such pipe .. .. .	..	½ for each basin
One kitchen sink (up to 6 inches depth to overflow) .. .. .	2	3
One bath (with or without overhead shower) .. .. .	1½	4
	2	6
One wash trough set with common trap .. .. .	1½	3
	2	5
One urinal or group of urinals draining to a common trap .. .. .	2	3
	2½	3
One slop sink .. .. .	3	4
One shower compartment .. .. .	2	3
One water closet .. .. .	4	6
Group of fixtures contained in one apartment—		
Bath and lavatory basin .. .. .	..	6
Bath, lavatory basin, and shower .. .. .	..	6
Bath, lavatory basin, shower and water closet .. .. .	..	6

For fixtures other than those shown, the equivalent fixture units to be adopted shall be determined by the proper officer.

**Section 90.—Sizes of Soil, Waste, Combined Waste, and Drain Pipes.**—The sizes of soil, waste, and combined waste

pipes computed in accordance with the methods set out in the appendix to this chapter shall be not less than the sizes determined on the basis of the total number of fixture units drained or likely to be drained in accordance with the following table:—

#### PERMISSIBLE MAXIMUM NUMBER OF FIXTURE UNITS.

Grade not less than—

Diameter of Pipe.	1 in. 60.	1 in. 40 (a).	1 in. 30.	1 in. 25.	1 in. 20.	1 in. 15.	1 in. 12 (b).	1 in. 4 (c).	Vertical Stacks.
Inches									
1½ .. .. .	..	..	..	..	..	6	6	8	9
2 .. .. .	..	..	..	..	9	10	12	17	24
2½ .. .. .	..	..	..	14	16	18	20	28	36
3 .. .. .	..	..	20	22	24	27	30	40	50
4 .. .. .	..	100	108	115	125	135	150	210	260
6 .. .. .	420	490	560	600	650	740	820	1,150	1,400

(a) Corresponds to 88½° fittings. (b) Corresponds to 85° fittings. (c) Corresponds to 75° fittings.

Provided that—

(a) Soil, waste, and combined waste pipes shall not be diminished in the direction of flow.

(b) The diameter of trap, soil, waste, or combined waste pipe receiving the discharge from any fixture shall in no case be less than the nominal

outlet diameter of such fixture with a minimum of one and one-half (1½) inches, nor shall any soil pipe be less than three (3) inches in diameter.

(c) Not more than two closet pans shall discharge into any 3-in. grade soil or combined waste pipe.

(d) For the purpose of this section, offsets in vertical stacks may be treated as though vertical, provided the length of offset does not exceed five (5) feet measured horizontally.

(e) Where forty-five (45) degrees fittings are used throughout for connexions to any stack, the "permissible maximum number of fixture units for vertical stacks" in the above table may be increased by 50 per centum (50%).

(f) Not more than one-half (½) of the total permissible number of fixture units for a vertical stack, in accordance with the above table, shall be connected to such stack in any 8-ft. length thereof.

(g) Soil, waste, and combined waste pipes shall be as direct and free from bends as practicable; where bends are unavoidable, approved provision shall, if necessary, be made to safeguard fixtures connected immediately above or below such bends.

#### Section 91.—Sizes of Vents.—

(a) Length of Vent.—For the purposes of this clause, the length of any vent shall be defined as follows:—

(i) Length of main vent shall be the height of the building, in storeys, above the floor on which are situated the lowest fixtures served by such vent.

(ii) Length of branch vent shall be the height of the building, in storeys, above the floor on which are situated the lowest fixtures served by such vent, plus an additional storey for each 12 feet, or part of twelve (12) feet, in the length of the branch vent, measured horizontally from the main vent to the fixture in question.

(b) Main and Branch Vents.—The sizes of main and branch vents, computed in accordance with the method set out in the appendix to this part, shall be not less than the sizes determined from—

(i) the size of soil, waste, or combined waste pipe or stack to be vented.

(ii) The total number of fixture units served by the main vent, or by that portion of the branch vent under consideration; and

(iii) the length of the vent, in accordance with the following table:—

MINIMUM PERMISSIBLE SIZES OF MAIN OR BRANCH VENTS (INCHES).

Diameter of Soil, Waste or Combined Waste Pipe.	Total Number of Fixture Units Served.	Total Length of Vent in Storeys—									
		1.	2.	3.	4.	5.	6.	7.	8.	9.	10 and Over
Inches											
1½ .. ..	Up to 8 ..	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
	9-14 ..	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
2 .. ..	Up to 12 ..	1½	1½	1½	1½	2	2	2	2	2	2
	13-36 ..	1½	1½	1½	1½	2	2	2	2	2	2
2½ .. ..	Up to 12 ..	1½	1½	1½	1½	2	2	2	2½	2½	2½
	13-36 ..	1½	1½	1½	1½	2	2	2	2½	2½	2½
	37-54 ..	1½	1½	1½	2	2	2½	2½	2½	2½	2½
3 .. ..	Up to 12 ..	1½	1½	2	2	2	2½	2½	2½	2½	2½
	13-24 ..	2	2	2	2½	2½	2½	2½	2½	2½	2½
	25-42 ..	2	2	2½	2½	2½	2½	2½	3	3	3
	43-75 ..	2	2½	2½	2½	2½	3	3	3	3	3
4 .. ..	Up to 12 ..	2	2	2	2½	2½	2½	2½	2½	2½	2½
	13-24 ..	2	2½	2½	2½	2½	2½	2½	2½	3	3
	25-36 ..	2	2½	2½	2½	2½	2½	2½	3	3	3
	37-48 ..	2½	2½	2½	2½	2½	3	3	3	3	3
	49-72 ..	2½	2½	2½	2½	3	3	3	3	3	3
	73-120 ..	2½	2½	2½	3	3	3	3	3	3	3
	121-180 ..	2½	2½	3	3	3	3	3	3	3	3
	181-300 ..	2½	3	3	3	3	3	3	4	4	4
	301-390 ..	3	3	3	3	3	4	4	4	4	4
6 .. ..	Up to 600 ..	4	4	4	4	5	5	5	5	5	5
	601-1,300 ..	4	5	5	5	5	5	5	5	6	6
	1,301-2,100 ..	4	5	5	5	5	6	6	6	6	6

Provided that—

(i) No vent shall be less than one and one-quarter (1¼) inches in diameter, and in no case shall a main or branch vent have a diameter less than one-half (½) of that of the soil or waste pipe which it serves.

(ii) For 2-in. and 2½-in. waste pipes the main or branch vent shall have a diameter of not less than one and one-half (1½) inches.

(iii) No branch vent need be larger in diameter than the soil or waste pipe which it serves.

(c) Individual Anti-syphonage Vents.—The sizes of individual anti-syphonage vents shall be not less than the sizes determined from the diameter of the fixture trap served, in accordance with the following table:—

Diameter of Fixture Trap.	Minimum Permissible Size of Anti-Syphonage Vent.	Diameter of Fixture Trap.	Minimum Permissible Size of Anti-Syphonage Vent.
Inches.	Inches.	Inches.	Inches.
1½	1½	3	2
2	1½	4	2
2½	2	..	..

**Section 92.—Waste Pipes.**—Except as provided in section 94, separate waste pipes shall be provided for each of the following classes of polluted water, viz.:—

- (a) Water from baths, sinks, lavatory basins, wash troughs, and grease traps where such are ordered or required, and other waters containing a small proportion of soap and/or dirt.
- (b) Water from kitchen and scullery sinks or other fixtures, to grease traps where such are ordered or required.

**Section 93.—Soil Pipes.**—Except as provided in section 94, soil pipes shall be provided for soil water from closets and other waters containing faecal matter, and for urinal waters from slop sinks and urinals, and, where directed, for discharges from operating theatres and mortuaries.

**Section 94.—Combined Wastes.**—The proper officer may approve of the adoption of the combined pipe system for plumbing installations subject to the following conditions and such other conditions as he may think necessary in any particular case, viz.:—

- (a) Application shall be made in writing by the owner or his authorized agent, who shall submit with such application—
  - (i) plans showing clearly all floors and basements (if any) upon which fixtures are or are proposed to be installed, the nature and position of all fixtures, the size and arrangement of all soil, waste, combined waste, and vent pipes, and the position, size, and approximate depth of all drains, and the intended use of each room in which a fixture is, or is proposed to be installed, and of each room from which a water closet or urinal is entered directly;
  - (ii) sectional line diagrams showing clearly each soil, waste, combined waste, or vent pipe or stack, together with their sizes and the positions of all fixtures connected thereto, and, where required, the gradients of the soil, waste, or combined waste pipes;
  - (iii) such other information as the proper officer may require.
- (b) The size and arrangement of all soil, waste, combined waste drain, and vent pipes shall be approved by the proper officer.

**Section 95.—Connexions to Drains.**—Except as provided in section 94, all waste pipes shall, unless otherwise permitted, discharge under the grating of a yard gully or into a disconnector trap.

All soil and combined waste pipes, including those for urinals and slop sinks, shall be connected direct to the drain.

#### APPENDIX.

METHOD OF COMPUTING THE SIZES OF SOIL, WASTE, COMBINED WASTE, VENT PIPES IN ACCORDANCE WITH THE REQUIREMENTS OF DIVISION 23.

##### Fixtures.

1. In accordance with section 89, classify the various fixtures and determine the maximum number of fixture units to be provided for in each portion of the system under consideration. Cleaners' sinks and floor wastes, which are not regularly in use during the period of maximum use of other fixtures, need not be included in determining the number of fixture units to be provided for.

##### Sizes of Graded Soil and Waste Pipes.

2. (a) By reference to section 90, determine from the maximum number of fixture units served at the point under consideration the required sizes and grades of the soil, waste, and combined waste pipes in each portion of the system.

(b) Compare the sizes so obtained with the minimum permissible sizes for the particular case and adopt the larger.

##### Sizes of Vertical Soil and Waste Stacks.

3. (a) By reference to section 90, determine from the maximum number of fixture units served at the point under consideration the required sizes of the vertical soil, waste, and combined waste stacks.

(b) Ascertain whether the number of fixture units connected to the stack within any 8-ft. length is within the permissible limits of provision (f) of section 90, if not, adopt such larger size stack as will comply with this requirement.

(c) Compare sizes so obtained with the minimum permissible sizes for the particular case and adopt the larger sizes, subject to provision (a) of section 90.

##### Sizes of Main Vents.

4. (a) Determine the vertical length of the main vent in storeys from its connexion at its lower end with a soil, waste, or combined waste pipe, or drain to the ceiling level of the top floor.

(b) From the table of permissible sizes in section 90, determine for the maximum number of fixture units served by the vent the required size for a vent of such a length.

(c) Compare the sizes so determined with minimum permissible sizes and adopt the larger.

##### Sizes of Branch Vents.

5. (a) Determine the approximate vertical length in storeys of the main vent from the point of connexion of the branch vent under consideration to the ceiling level of the top floor.

(b) Determine the horizontal length of the branch vent from its connexion with the main vent to the furthestmost end of the portion under consideration.

(c) Allowing one storey for each 12 feet, or part of 12 feet, in horizontal length of branch vent, as determined by rule 5 (b) above, add this length in storeys to the length in storeys determined by rule 5 (a) above.

(d) Determine the number of fixture units served by the portion of branch vent under consideration.

(e) From the table of permissible sizes in section 90, determine the minimum size of vent required for the above number of fixture units and for the total length of vent in storeys as determined by rule 5 (c) above.

(f) Compare the sizes so determined with the minimum permissible sizes and adopt the larger, subject to the provision that no vent need be larger than the soil, waste, or combined waste pipe which it serves.

#### PART 5.—PLUMBING.

##### DIVISION 24.—GENERAL.

**Section 96.—Flashing.**—Unless otherwise directed by the Authority, all troughs, sinks, baths, and other fixtures which are placed less than six (6) inches from any wall, except those provided with wall skirtings as part of the fixture, shall be flashed with 4 lb. lead, 24-gauge copper, bronze, brass, nickel-silver, or monel metal, or other approved material. Galvanized sheet iron may be used for fixtures other than sinks.

All such flashings shall be turned up the walls at least four (4) inches, or be tucked one (1) inch into a joint and cemented water-tight, except where the walls are tiled, when the flashing shall be carried up at least one-quarter (¼) inch behind the tiles.

Baths and other fixtures, having turned-up flanges for use against tiled walls in lieu of sheet metal flashing shall be properly supported to prevent settlement, and the flange shall lap at least one-quarter (¼) inch behind the tiles, which shall be brought hard down on to the surface of the fixture.

All flashings shall be properly secured and made water-tight, and shall be bedded for a width of not less than one (1) inch along the edge nearer the fixture, in red or white lead.

**Section 97.—Pipes Through Roof.**—In all cases where a vent, waste, combined waste, or soil pipe passes through any roof, a suitable lead collar or flashing shall be soldered or otherwise fixed to the pipe and also the roof in such manner as shall make the roof perfectly water-tight.

##### DIVISION 25.—SOIL, WASTE, AND COMBINED WASTE PIPE.

**Section 98.—General.**—All lines of soil, waste, and combined waste pipes shall be as direct as possible.

**Section 99.—Materials.**—No material shall be used for soil or combined waste pipes other than cast iron, lead, or brass, or other approved materials, and for waste pipes other than wrought iron, cast iron, lead, brass, copper, or other approved materials.

**Section 100.—Lead Pipes.**—The minimum permissible weight of lead for soil or combined waste pipes shall be 7 lb. per square foot, and for waste pipes 6 lb. per square foot.

**Section 101.—Wrought Iron Pipes.**—All wrought iron pipes and their fittings shall be of approved standard weight and quality and galvanized or lined to the approval of the Authority.

**Section 102.—Cast Iron Pipes.**—All cast iron pipes shall be sound, free from holes and cracks, and coated with approved bituminous composition or lined with glass enamel or other material to the approval of the Authority.

Cast iron pipes and their fittings, where laid in the ground, shall comply with the standard approved by the Authority for cast iron water pipes and their fittings of similar diameter.

Cast iron pipes for use in other situations shall have a minimum thickness of 3/16 inch, measured without the enamel or other lining, and their fittings shall

correspond with them in weight and quality. All junctions shall be curved; right-angled junctions shall not be made.

**Section 103.—Copper and Brass Pipes.**—Copper or brass waste pipes shall be seamless solid drawn tube, and shall be of a diameter and thickness not less than those given in the following table:—

Nominal Internal Diameter.	Minimum Permissible Actual Internal Diameter.	Minimum Permissible Wall Thickness (S.W.G.).		British Standard Pipe Thread for Screwed Connexions.
		Screwed Connexions.	Brazed or Compression Joints.	
Inches.	Inches.			Inches.
1½	1½	12	16	1½
1½	1½	12	16	1½
2	2	11	16	2
2½	2½	11	14	2½
3	3	10	14	3
4	4	8	12	4

**Section 104.—Use of Lead Pipes.**—Lead pipes shall not be used where liable to damage.

**Section 105.—Supporting Lead Pipes.**—Lead pipes shall be supported by cast lead tacks of approved dimensions, wiped on to the pipe or by other approved fastenings, and such fastenings shall be arranged as nearly as possible thus—

	Centres.
4-in. vertical lead pipes .. ..	2 ft. 6 in.
4-in. inclined lead pipes .. ..	2 ft. 0 in.
Less than 4-in. vertical pipe ..	3 ft. 0 in.
Less than 4-in. inclined pipe ..	2 ft. 3 in.

Two (2) pairs of tacks, fixed opposite, are sufficient for fixing lead flush pipes from cisterns with lugs.

**Section 106.—Length of Unvented Waste Pipes.**—Except as provided in section 166, waste pipes need not be ventilated unless they exceed seven (7) feet in inclined lengths and/or eighteen (18) feet in vertical length, provided that there is only one fixture attached to the waste pipe, and provided that the water seal of the trap is not reduced by siphonage or other cause.

Where there is more than one fixture or the water seal is reduced, a vent pipe shall be supplied to the fixture trap or traps.

**Section 107.—Junctions.**—Where a soil, waste, or combined waste stack is branched into a graded soil, waste, combined waste, or drain pipe, the branch fitting shall have an angle of not less than forty-five (45) degrees to the graded pipe, and the length of the branch of the fittings shall be such that the vertical projection of the attached stack will be wholly outside of the area of the junction with the graded pipe. Junctions shall not be built into walls except with the approval of the Authority or its proper officer.

**Section 108.—Sealing of Pipes.**—Wherever a fixture is abolished, the soil, waste, combined waste, vent, and water supply pipes to such fixture shall be removed, or, if allowed by the Authority to remain, the ends of the pipes shall be sealed with water-tight imperishable materials.

Wrought iron pipe may be sealed with a screwed plug; cast iron pipe may have a cast iron plug caulked in with lead; lead pipe may have the end securely closed with a wiped joint; stoneware pipe may have a stoneware disk cemented in.

**Section 109.—Sheet Metal Bends and Offsets.**—All sheet metal bends and offsets, for flush and vent pipes, shall be bent or pressed. Mitred elbows will not be permitted.

**Section 110.—Painting.**—All external plumbing work and all cast-iron cisterns and brackets, woodwork in connexion with plumbing installations, sheet iron flush pipes, and sheet iron storage tanks and trays shall be painted, to the approval of the proper officer. In no case shall painting of any portion of the plumbing work be carried out unless and until such work has been inspected and approved.

#### DIVISION 26.—JOINTS.

**Section 111.—Lead Pipe.**—All joints in lead pipe shall be plumbers' wiped joints.

**Section 112.—Wrought Iron Pipe.**—The screwed ends and sockets of each particular size of wrought iron or wrought steel pipe shall be so formed and the threads so cut that the ends of the pipe will butt against each other when screwed home in the sockets; bends, junctions, and similar fittings shall be similarly formed and screwed so that when the pipe ends are screwed home the bore will be continuously uniform and without breaks or pockets.

The burr shall be neatly filed off on the inner edge of all pipe ends. All screwed joints shall be made with approved jointing material.

**Section 113.—Wrought Iron Pipe to Lead Pipe.**—All joints between wrought iron and lead pipes shall be made by means of brass unions screwed to the iron pipe and wiped to the lead pipe.

**Section 114.—Brass or Copper Pipes.**—Joints of brass or copper pipes shall be made by means of brazing to the satisfaction of the proper officer or in accordance with the S.A. Specification B.36, "Compression Joints and Copper Alloy Screwed Fittings for Standard Copper Tubes."

**Section 115.—Lead Pipe to Cast Iron Pipe.**—The connexion of lead pipes or traps to cast iron pipes shall be made by means of brass ferrules; the brass ferrule shall be lined with and connected to the lead pipe or trap by means of a wiped joint and connected to the cast iron by inserting the ferrule in socket thereof and making the joint in the same way as in cast iron pipe.

**Section 116.—Sheet Iron Pipe to Cast Iron Pipe.**—All connexions of galvanized sheet iron to cast iron pipes shall be made with molten lead, lightly but tightly caulked into the cast iron sockets or with other approved material, or with a brass sleeve soldered to the sheet iron pipe and caulked with lead.

**Section 117.—Sheet Iron Pipe to Wrought Iron or Steel Pipe.**—Galvanized sheet iron pipes shall be connected to wrought iron or steel pipes by means of brass unions or sleeves soldered to the sheet iron and screwed to the wrought iron.

**Section 118.—Sheet Iron Pipe to Lead Pipe.**—Connexions of sheet iron pipes to lead pipes shall be made by means of brass sleeves wiped to the lead pipe and soldered to the sheet iron pipe.

**Section 119.—Lead Pipe to Concrete or Stoneware Pipe.**—Connexions of lead pipe to stoneware or concrete pipe shall be made by means of a brass ferrule connected to the lead pipe by means of a wiped joint and connected to the stoneware or concrete pipe by inserting it in the socket thereof and making a cement mortar joint.

**Section 120.—Concrete or Stoneware Traps to Lead Pipe.**—The connexion of a stoneware or concrete trap to a lead pipe shall be by means of a cast lead or brass socket, and the joint made with bitumen or other approved material; the lead pipe shall be connected to the tail end of the brass or lead socket by means of a plumbers' wiped joint.

**Section 121.—Connexion of Closet Pan Traps to Soil Pipe or Drain.**—Connexion of a closet pan to a soil or drain pipe shall be made by means of a bituminous jointing material, consisting of a mixture of approved bitumen and finely graded inert mineral filler in equal proportions, filled in solidly into socket of soil or drain pipe and neatly played off, or by other approved method. In the case of lead soil pipes, a cast lead or brass socket shall be used, connected to the lead pipe by means of a wiped joint.

**Section 122.—Cistern Flush Pipe to Closet Pan.**—The flush pipe from cistern shall be connected to the water closet pan by a lead cap piece of not less than 4 lb. lead, packed with red lead or other approved material, or the connexion may be made by other approved method. The cap piece shall be jointed to galvanized sheet iron, copper, brass, or drawn steel pipe by means of a soldered joint, and to lead flush pipe by a wiped or soldered joint.

The connexion of the flush pipe to cistern shall be by means of a brass union, wiped to lead pipe or soldered to sheet iron pipe, or by other approved method. Copper or brass pipe shall be connected to cistern by means of a brass ring, with nut brazed to pipe or by other approved means.

**Section 123.—Vent Pipe to Closet Pan.**—Vent pipes shall be connected to the vent horn of the water closet trap by a lead cap piece with red-lead packing, or by other approved methods.

The cap piece shall be jointed to copper or brass pipe by means of a soldered joint, and to lead pipe by a soldered or wiped joint.

**Section 124.—Outlet Fittings to Fixtures.**—Connexion between outlet fittings and such fixtures as baths, sinks, basins, &c., when the latter are constructed of cast iron, sheet iron, ceramic ware, or concrete shall be made with lock nuts. The outlet fitting shall in all cases be connected to the waste pipe by means of a union. When these fixtures are made of sheet metal lighter than 20-gauge, soldered connexions may be used in lieu of lock nuts.

**Section 125.—Waste Pipes to Troughs.**—Connexions of waste pipes to wash troughs shall be made as under:—

- (a) Cement troughs, unless otherwise approved, shall have approved cast-in outlets.
- (b) Sheet metal troughs shall be connected to the waste pipes in compliance with section 124.
- (c) For wooden troughs, lead, copper, or brass waste pipes shall be connected in compliance with section 124, or shall have flanges connected to the waste in accordance with the provisions of this By-law, and fastened to the underside of the trough with copper tacks. The waste pipe shall then be turned over inside the trough and the plug casting bedded over it with red-lead putty and screwed to trough with brass wood-screws.

Where wrought iron or other screwed pipes are used, the plug casting must be connected to the trough by means of a locknut in lieu of flange.

#### DIVISION 27.—FIXTURE TRAPS.

**Section 126.—Fixtures to be Trapped.**—Every fixture shall be effectively trapped, except as provided in section 127, or unless otherwise specially permitted by the Authority. Separate traps shall be provided for each fixture, except lavatory basins, sinks, or troughs in the same apartment which may be connected in pairs.

**Section 127.—Omission of Traps.**—Baths, lavatory basins, wash troughs, and sinks may remain untrapped where fixed in the open air or in a detached outbuilding not used as a living room, work room, or room for the preparation, cooking, or storage of food and not connected directly by openings with the main building or residence, provided that the length of the waste pipe, measured in the case of wash troughs from centre of furthest inlet to end of waste-pipe outlet, does not exceed six (6) feet.

**Section 128.—Position of Traps.**—Traps shall be placed as near the fixtures as possible, and in no case shall a trap be more than two (2) feet from its fixture, except as provided in section 164, unless otherwise specially permitted by the Authority.

**Section 129.—Materials.**—Traps for all fixtures other than water closets, slop sinks, and urinals, shall be of copper, brass, or drawn lead.

**Section 130.—Depth of Water Seal.**—Every trap shall have a water seal of not less than two (2) inches.

**Section 131.—Closet Pan Traps.**—Outlets from closet pan traps shall be of not less than 3½-in. nor more than 4-in. diameter, except in the case of siphonic pans, which shall be as directed by the Authority.

**Section 132.—Sealed Disconnector Traps.**—Where approved by the Authority, sealed disconnector traps may be fixed inside or outside the building, but in such cases breather pipes or fresh-air inlets of same diameter as disconnector trap shall be taken to such height as directed, and where trap is inside shall be led to the outside of the building. The material for such breather pipes shall be the same as for vent pipes, except that sheet iron will not be allowed. Inspection openings to such traps shall be sealed with screwed plugs, or as otherwise approved by the Authority.

**Section 133.—Form of Trap.**—The P. form of trap shall be used in preference to the S. form where, in the opinion of the proper officer, it is equally suitable for the situation.

**Section 134.—Lead Traps.**—All lead traps must be of the weights specified in section 100 for lead pipes of the same class.

#### DIVISION 28.—GRATINGS.

**Section 135.—Gratings.**—Non-corrodible metal outlet gratings of approved design and material in accordance with the S.A.A. Specification No. B.38, "Metal Alloy Sanitary Fittings," shall be provided for all fixtures other than a water closet. If for the fixture in question there is no S.A.A. Specification, the grating shall be to the approval of the Authority.

#### DIVISION 29.—CLEANING EYES AND INSPECTION OPENINGS.

**Section 136.—Provision for Inspection and Cleaning.**—Inspection and cleaning eyes shall be provided in such positions on all soil, combined waste, and waste pipes as will provide access for proper inspection and cleaning of the entire length of pipe.

Traps for fixtures other than urinals, water closets, and slop sinks shall, in each case, be provided with an approved screwed brass plug for cleaning purposes.

**Section 137.—Inspection Openings on Soil and Combined Waste Pipes.**—In every case where a vertical stack of soil or combined waste pipe provides for a closet or closets four (4) feet or more above ground level, measured from floor level of any such water closet to ground level at foot of stack, an inspection opening, eight (8) inches by four (4) inches, having a cover fixed to a flange with non-corrodible bolts or studs, shall be provided near foot of stack in such position as directed by the proper officer.

**Section 138.—Washers for Inspection Openings.**—Inspection openings to soil, waste, and combined waste pipes shall be provided with approved washers.

#### DIVISION 30.—GREASE, PETROL, AND OIL TRAPS.

**Section 139.—Provision of Grease, Petrol, and Oil Traps.**—Every fixture or area from which grease, oil or greasy or oily matter or petrol, benzine, or other inflammable or explosive substance is likely to be discharged or conveyed into waste, combined waste, or soil pipes or house drains, and every sink in all such places as food packing-houses, butchers' shops, lard-rendering establishments, hotels, restaurants, and boarding-houses, and such fixtures, areas, apparatus or appliances, as the Authority may direct, shall first discharge into an approved apparatus for retaining the objectionable matter. Such apparatus shall be of such dimensions, design, and construction and in such positions as the Authority or its proper officer may in each case approve.

**Section 140.—Construction of Grease Traps.**—Grease traps shall be fixed outside buildings or outbuildings wherever practicable. Wherever a grease trap is used inside a building or outbuilding it shall, where not readily accessible for removal of grease, be so constructed and fitted as to be easily portable.

Non-portable grease traps shall be constructed of glazed stoneware, concrete, brick in cement, or other approved material.

Portable grease traps shall be constructed of copper or other approved material, provided with a close-fitting cover, and, if directed, fixed upon a tray. The outlet from any grease trap shall be connected to a disconnector trap.

**Section 141.—Grease Trap Ventilation.**—Unless otherwise approved, every internal grease trap and all external grease traps which are within thirty (30) feet of any door, window, or other opening into a building shall, unless fitted with an approved air-tight cover, have independent provision made for inlet and outlet ventilation.

Every such vent shall be carried not less than six (6) feet above any window, door, or other opening to any building within a distance of thirty (30) feet thereof, and in any case at least two (2) feet above the eaves or coping, or to such additional height as may be necessary to prevent effectually the escape of foul air into any building within the vicinity.

In all cases there shall be a difference in height of at least 6 feet between the tops of the inlet and outlet vents.

The size of such vents shall be in compliance with the requirements for main vents in section 90, the diameter of waste pipe being taken as that of the outlet from the grease trap, and the number of fixture units equivalent to number represented by the sinks served by the grease trap.

**Section 142.—Size of Grease Trap.**—The dimensions of grease trap to be provided shall be such as to ensure the retention of all grease entering such trap.

**Section 143.—Outlet Pipes.**—The outlet pipe from any grease trap must be at least one size larger than that size of pipe which has a cross-sectional area equivalent to the total area of incoming waste pipes. In no case, except by special permission, shall the outlet pipe be less than 3-in. diameter.

**Section 144.—Maintenance.**—Every grease trap shall be maintained by the occupier at his own expense, and shall be cleaned daily, to ensure that such trap operates in an efficient and hygienic manner.

**DIVISION 31.—WATER CLOSETS AND FLUSHING APPARATUS.**

**Section 145.—Fixing Closet Pan.**—On concrete floors, or floors of tiles set in concrete, the closet pan shall be securely bedded upon concrete or cement mortar, and fixed with brass screws to approved lead dowels set in the floor or by other approved means.

Where the floor is of timber, covered with an approved impervious material, the closet pan shall be secured to the timber by means of brass screws as directed, or by other approved means.

**Section 146.—Closet Pans.**—Every water closet shall be furnished with a pan conforming to the requirements of S.A.A. Specification for glazed sanitary pedestal pans, No. A.50-1946, or with any other type of pan approved by the Authority.

Water closet pans and fittings shall be entirely open for inspection and without any enclosures.

**Section 147.—Closet Pan Seats.**—Where a seat is provided, it shall conform to the requirements of S.A.A. Specification for seats "full round" type for sanitary pedestal pans, No. A.51-1946, or to open front or other specialized design of seat approved by the Authority.

**Section 148.—Flushing Apparatus.**—There shall be provided in every water closet either a flushing cistern conforming to the requirements of S.A.A. Specification for sanitary flushing cisterns, No. A.52-1946, or of any other type approved by the Authority, or flushing apparatus conforming to the requirements of section 150 of this By-law.

**Section 149.—Flush Pipes.**—Flush pipes to closet pans shall be of brass, copper, 6-lb. lead, galvanized iron of not less than 22-gauge, or other approved material, and shall have a minimum diameter of one and one-quarter (1¼) inch. Flush pipes shall be fitted with an approved buffer and buffer block where the closet pan is provided with a hinged seat.

**Section 150.—Flushing Apparatus Other than Cisterns.**—Notwithstanding anything contained in this By-law, closet pans in any building may be flushed by means of any apparatus which—

(a) automatically controls the amount of water used, and/or

(b) is approved by the Authority.

**Section 151.—Storage Tanks.**—Except where otherwise allowed by the Authority on the written request of the owner, who shall accept all responsibility in the matter, internal water closets shall be provided with storage tanks capable of holding the equivalent of two flushes of water for each occupant of the building, with a minimum of twenty (20) flushes per closet for all buildings except private residences, which shall have a minimum capacity of ten (10) flushes. These tanks may be constructed of 22-gauge sheet iron or 24-gauge corrugated iron.

Unless otherwise approved by the Authority, the storage tank shall be placed in the water closet apartment itself, on the roof, over a flat or gutter, or in an accessible place between the ceiling and the roof, in which latter case a safe of galvanized iron, lead, or other approved impervious material with overflow, shall be fixed under the storage tank. The storage tank shall be provided with a separate overflow which shall not discharge on to the safe, but may be combined with the safe overflow below the safe.

**Section 152.—Venting Closet Pans.**—Unless otherwise directed or permitted by the Authority, every closet pan on an upstairs floor shall discharge into a soil ventilator pipe or combined waste ventilator pipe, except that where there are no other fixtures connected to the soil stack the pan may be ventilated by an anti-siphonage vent only, in accordance with the requirements of sections 76 and 91, and discharge into a soil pipe or combined waste pipe without extension as a ventilator pipe.

Every external closet pan in which siphonage occurs and every internal closet pan shall be ventilated by an anti-siphonage vent in accordance with the requirements of section 91, sufficiently close to prevent siphonage, and in no case more than eighteen (18) inches from trap, except in the case where there is only one closet pan

on the branch and where such pan is not more than four (4) feet from the soil ventilator pipe or combined waste ventilator pipe to which it is connected, measured horizontally between centre of soil ventilator pipe or combined waste ventilator pipe and centre of pan, in which case the anti-siphonage vent may be omitted.

**Section 153.—Grouped External Closets.**—Where there are more than three (3) external water closet pans grouped on the ground floor or in the yard of any premises, the drain, combined waste, or soil pipe shall be separately ventilated for every group, or part of group, of three (3) closet pans. The size of vent shall be in accordance with the requirements of section 91.

**DIVISION 32.—URINALS AND FLUSHING APPARATUS.**

**Section 154.—Details of Construction, &c.**—Except by special permission of the Authority, only round-backed stall-type urinals made of glazed fire clay or salt-glazed stoneware and of approved construction shall be used.

The soil or combined waste pipes shall be of lead, stoneware, or glass enamelled or coated cast iron or other approved material, and shall be kept as short and free from bends as possible. Inspection openings shall be provided on soil or combined waste pipes in accordance with the requirements of section 136. The urinals shall be provided with approved flushing apparatus, and in every public urinal a hose tap shall be provided in a suitable position for hosing down.

**Section 155.—Flushing Apparatus.**—Chain-operated flush cisterns, or other approved apparatus operated by hand, shall be fixed on all urinals, except where automatic flushing cisterns are permitted or directed by the Authority.

**Section 156.—Flushing Cisterns.**—The discharge from a cistern shall be as directed by the Authority.

The height of a cistern shall, unless otherwise allowed by special permission of the Authority, be at least 6 ft. 6 in. from the floor to the bottom of the cistern. The cistern shall be so fixed that the ball tap is accessible.

Every urinal flushing cistern shall be provided with a separate stop tap.

**Section 157.—Flush Pipes.**—Flush pipes for urinals shall have a minimum diameter of one and one-quarter (1¼) inch, except that flush pipes for automatic flushing cisterns generally shall not exceed—

For 1-gallon cistern, ¾-in. internal diameter;

For 2-gallon cistern, 1-in. internal diameter;

For 2½ and 3-gallon cistern, 1½-in. internal diameter, with branches as directed by the proper officer.

**DIVISION 33.—SLOP SINKS.**

**Section 158.—General.**—Slop sinks shall be made of approved impervious material, and provided with approved flushing apparatus as directed by the Authority.

**Section 159.—Bibcock Over Slop Sink.**—A bibcock shall be fixed directly over a slop sink, and at least eighteen (18) inches above such sink.

**DIVISION 34.—WASH TROUGHS.**

**Section 160.—General.**—Wash troughs shall be securely fixed and shall conform to the requirements of Australian Standard Specification for cement concrete wash troughs, No. A.17-1946, or shall be of any other pattern or material approved by the Authority.

**Section 161.—Support for Lead Waste Pipe.**—Where the distance between outlets on troughs exceeds twenty-one (21) inches, and lead waste pipe is used, the pipe shall be supported either by a lead tack wiped on the top of the pipe or by a wooden block screwed to the bottom of the trough and clamped to the pipe.

**DIVISION 35.—SINKS, BATHS, LAVATORY BASINS, AND SHOWERS.**

**Section 162.—Fixing Sinks.**—(a) All new sinks shall be fixed on a frame or on brackets and traps and wastes left readily accessible.

(b) Every combination metal sink and metal draining board of the type usually made of stainless steel or monel metal shall have a ½-in. x 3/16-in. diameter threaded brass stud brazed to the side of the bowl near one of the lower rear corners. The bowl shall be bonded to the metallic piping of the cold water supply system by means of a stranded bare copper conductor not smaller than 7/029 inch, one end of which shall be terminated at the cold water piping in an approved type of earthing clip, and the other in an approved type non-spread washer connected and locked to the brazed stud on the bowl.



**Section 163.—Galvanized Sheet Iron Baths.**—The bottoms of galvanized sheet iron baths shall be effectively supported on legs. Such baths shall not be enclosed. Longitudinal joints in the bottoms of baths shall not be permitted.

**Section 164.—Bath Traps.**—Where a bath trap is fixed on the outside of a wall it shall in no case be more than 3 feet from the outlet of the bath, unless by special permission of the Authority.

**Section 165.—Baths Without Flashing.**—Where pedestal baths are fixed, and it is not desired to flash them, they shall be fixed with a space of at least 6 inches clear of walls.

**Section 166.—Venting of Lavatory Basins.**—All lavatory basins, placed singly, shall be provided with anti-siphonage vents. Where the length of waste pipe does not exceed 4 feet, measured from crown of trap to outlet end of waste pipe, and siphonage does not occur, the anti-siphonage vent may be omitted.

In ranges of lavatory basins, ventilation by means of a single vent pipe at the upper end of the range will be permitted, provided that the vent and main waste pipe are sufficiently large to prevent siphonage.

**Section 167.—Tip-up Basins.**—Tip-up lavatory basins shall not be permitted.

**Section 168.—Showers.**—All shower compartments shall be provided with drainage in accordance with the requirements for baths, and every drainage outlet provided with a non-corrodible metal grating.

#### DIVISION 36.—SAFES AND OVERFLOWS.

**Section 169.—Safes Required.**—Unless the floor is constructed of concrete not less than 3 inches in thickness or of other approved impervious material and graded to a suitable outlet or is completely covered with rubber or linoleum  $\frac{1}{4}$  inch in thickness or other approved material, safes of lead or other approved impervious material shall be fitted under all slop sinks and internal water closets and in such other positions as may be directed by the Authority.

**Section 170.—Lead Safes in Water Closets.**—All lead safes shall be laid with sheet lead weighing not less than 5 lb. per square foot, and where the whole floor is not covered with lead, the safe shall extend 12 inches beyond the sides and 15 inches beyond the front of the pan, measured from the outside of the basin, and shall extend back to and 3 inches up the wall. The roll of such safe shall be 2 inches wide and  $\frac{1}{4}$  inch high. In lieu of a roll the safe may be recessed at least  $\frac{1}{4}$  inch below the general floor level and graded to the safe outlet.

**Section 171.—Safe Overflows.**—Unless otherwise permitted by the Authority, every safe shall be drained by a separate 2-in. diameter pipe provided at the inlet with a brass grating and at the outlet into the open air with a flap valve of brass or other approved metal, and shall not connect with any waste pipe, soil pipe, combined waste pipe, drain or sewer.

#### DIVISION 37.—EXISTING FIXTURES, FITTINGS, ETC.

**Section 172.—Existing Fixtures, Fittings, &c.**—All existing fixtures, fittings, and appliances not in accordance with these Regulations, which the owner may desire to remain unaltered and undisturbed, and which, in the opinion of the Authority will be inoffensive, may remain only at the request of the owner, in writing, until such time as the Authority shall otherwise order. Existing fixtures, fittings, and appliances which, in the opinion of the Authority, are offensive shall be removed at once.

#### PART 6.—WATER SUPPLY.

##### DIVISION 38.—WATER SERVICES TO SANITARY FIXTURES.

**Section 173.—General.**—Any work or thing in respect of or appurtenant to the installation of water supply in connexion with the sewerage of any property in the Bacchus Marsh Sewerage District shall conform to the requirements of By-law No. 56 of the Melbourne and Metropolitan Board of Works as amended from time to time and to this By-law where not inconsistent therewith.

**Section 174.—Supply of Water to Fixtures.**—All water closets and other plumbing fixtures shall be provided by the owner with a sufficient supply of water for flushing purposes to keep them at all times in a proper and cleanly condition.

Every owner of premises who desires, or who has been ordered by the Authority, to provide sanitary appliances for his premises, and to connect his premises with the sewers of the Authority, shall, before or at the commencement of the work of making such connexion, provide piping approved by the Authority for the conveyance of

water, and shall cause the piping to be joined to the most convenient water supply main in accordance with the water supply by-laws of the district within which the premises are situated. Such piping shall be of capacity sufficient to supply all sanitary fixtures on the premises freely and continuously, and convey to the flushing cistern, flushing tank, or other flushing apparatus of each water closet upon the premises enough water to fill the same at a rate of not less than one-half ( $\frac{1}{2}$ ) gallon per minute, and the owner shall cause such piping to be connected with the cistern before the completion of the work.

The water supply to any fixture shall be so arranged that there shall be an actual physical discontinuity between the water stored or used in any such fixture and that in the water service pipes.

The water supply for water closets or urinals shall not be taken from a storage tank serving a hot-water system.

**Section 175.—Material, Condition, Capacity, &c., of Water Supply Piping.**—The entire length of the water supply piping from its connexion with the water supply main to the water closet flushing cistern or other fixture shall be such as is, in the opinion of the Authority, suitable in regard to material, condition, and capacity to convey a sufficiency of water for the sanitary requirements of the particular premises. The owner shall keep the piping from becoming, whether by reason of corrosion or other cause, of insufficient capacity for such requirements.

**Section 176.—Fixtures not Connected with Sewers.**—No water service pipe shall be laid to supply any fixture in any premises in any sewered area unless such fixture is connected with the sewers of the Authority; or unless special permission, in writing, has been previously given to lay such service pipe.

**Section 177.—Storage Tanks.**—Water supply pipes to storage tanks for internal closets shall be of not less than  $\frac{1}{2}$ -in. diameter and be provided with stop taps and with high pressure ball valves, except where the available pressure from the water supply system is not sufficient to allow of high pressure ball valves being used. In such cases the permission of the Authority shall be obtained to fix low pressure ball valves.

The water supply pipes from storage tanks to cisterns shall be not less than the following diameters:—

For 1 or 2 cisterns ..	..	$\frac{3}{4}$ -in. diameter.
For 3 to 6 cisterns ..	..	1-in. diameter.
For 7 to 25 cisterns ..	..	1 $\frac{1}{2}$ -in. diameter.
For 26 to 50 cisterns ..	..	2-in. diameter.

Provided that, where more than 50 cisterns are supplied, or where more than ten cisterns supplied are subject to a head of less than 20 feet—measured vertically from the top water level of the storage tank to the level of the point of discharge into the cistern—the case shall be submitted to the Authority for decision.

The overflow from a storage tank shall be  $\frac{1}{4}$  inches in diameter. Where the flushing apparatus of more than two fixtures is connected to a storage tank, a full-way gate valve shall be provided on the outlet of the tank.

Where the head of water supply from the storage tank or other source of supply to the flushing cistern is less than 20 feet, a low pressure ball valve shall be provided to the cistern.

Except by special permission of the Authority, the head of water supply shall in no case be less than 10 feet measured vertically from the top-water level of the storage tank to the level of the point of discharge into the cistern.

**Section 178.—Supply Pipe Connexion with Flushing Cistern.**—In all water closets, where directed, a piece of lead or annealed copper pipe not less than 12 inches in length shall be used between the flushing cistern and the stopcock on the supply pipe.

The above By-law was made and passed by the Bacchus Marsh Sewerage Authority on the 13th day of November, 1961, and confirmed on the 11th day of December, 1961.

In witness whereof the common seal of the Authority was affixed hereto, in the presence of—

(SEAL)

T. L. McMAHON, Chairman.  
VANCE DICKIE, Member.  
A. W. BOND, Secretary.

Approved by the Governor in Council, 16th January, 1962.—N. G. WISHART, Acting Clerk of the Executive Council.