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HEALTH ACT, 1911.

Public Health Department,
Perth, 12th February, 1970.

HIS Excellency the Governor in Executive Council, acting pursuant to the powers conferred by the Health Act, 1911, has been pleased to cause the model by-laws set out in the schedule hereto to be prepared and published.

W. S. DAVIDSON,
Commissioner of Public Health.

Schedule.

Health Act (Local Authorities' Sewerage Undertakings) Model By-laws.

PART I.—PRELIMINARY.

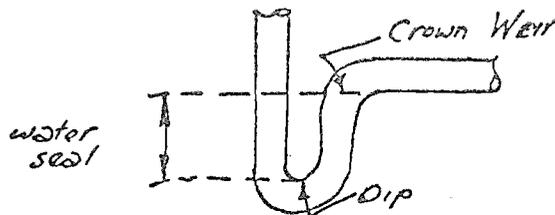
1. These by-laws may be cited as the Health Act (Local Authorities' Sewerage Undertakings) Model By-laws.
2. These by-laws are divided into parts as follows:—
 - Part I.—Preliminary—By-laws 1-3.
 - Part II.—Protection of Water, Grounds, Works, etc., from Trespass and Injury—By-laws 4-9.
 - Part III.—Licenses and Permits—By-laws 10-15.
 - Part IV.—Sewerage-Plumbing and House Connections—By-laws 16-179.
 - Part V.—Rates and Charges—By-laws 180-182.
 - Part VI.—General—By-laws 183-187.
 - Schedule A.—Method of computing the sizes of soil pipes, waste pipes, combined waste and vent pipes.

Interpretations.

3. In these by-laws unless the contrary intention appears—

- “Act” means the Health Act, 1911;
- “by-law” means one of these by-laws;
- “anti-siphonage vent” or “back vent” means any vent pipe from an individual trap to the open air, or to a main or branch vent pipe having for its purpose the prevention of loss of water seal in the trap;
- “bore”, “diameter”, or “size”, in reference to any pipe means the internal diameter thereof except for copper;
- “building” means any structure used as a work place, residence, place of business, place of amusement, or a place of human habitation, or used for the storage of food intended for human consumption, but does not include out-buildings unless such are used for any of the above purposes or are provided with plumbing fixtures;
- “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 discharges, and in which a common system of venting is used for all classes of pipe;
- “combined waste pipe” means any pipe which receives the discharge 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 connection with the “combined pipe system”;
- “disconnector trap” means a trap for isolating or disconnecting waste pipes from the drain and soil pipes, and for providing inlet ventilation to the waste pipe or pipes discharging into it;
- “external water closet” means any closet which is entered solely from an area of not less than nine square feet open to the sky;
- “educt vent” means a pipe designed or intended to permit the exit of air from a soil pipe, waste pipe, combined waste pipe or drain;
- “fittings” includes all pipes, cisterns, traps, manholes, ventilators and all other apparatus connected with any sewer or drain to secure its safe or proper working;
- “fixtures” means all apparatus other than pipes which may be attached to the plumbing or drainage system of any property for the collection or retention of any wastes or waste waters for ultimate discharge into the sewerage system, and includes closet pans, urinals, baths, sinks, basins and troughs connected with such 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;
- “interceptor trap”, or “boundary trap”, means a trap situated on the drain at some point between the sewer and the lowest inlet to the drain, for the purpose of preventing the passage of air or gases from the sewer to the drain;
- “induct vent” means an opening or pipe, for the admission of air to a soil pipe, waste pipe, combined waste pipe or drain;
- “internal closet” means any closet which is entered from or has an opening into any building. Internal closet means any closet other than an external water closet as herein defined.
- “pipe” includes any main, reticulation or service pipe used for or in connection with sewerage works;
- “property” includes house, building, tenement, land or premises;
- “ratepayer” includes a person named in the books of the local authority as a person liable to pay rates;
- “relief vent” means any vent which is connected below the level of the lowest fixture for the purpose of relieving the main vent;
- “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 all waste pipes are connected to the drain through a disconnector trap;

- "sewage" means faecal matter, urine and liquid wastes, whether domestic or otherwise;
- "soil pipe" means any pipe which conveys the discharge from water closets, slop hoppers, urinals, mortuaries, or operating theatres to the drain;
- "slop hopper" means any fixture, other than a closet pan or urinal, used for the discharge of soil or urine waters and provided with flushing apparatus;
- "stack" means any vertical line of soil, waste, combined waste or vent piping with its offsets if any;
- "trade waste" means waste other than ordinary domestic sewage;
- "trap" means any fitting, fixture or pipe designed to retain a quantity of water for the purpose of preventing the passage of air or gases through it or to prevent prohibited substances from entering the sewer or house drain;
- "waste pipe" means any pipe which conveys the discharge from any fixture, other than water closets, slop hoppers, urinals, mortuaries, or operating theatres, 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, as shown in sketch—



- "works" means any sewerage works constructed or maintained under the Act and includes surveys incidental thereto;
- "yard gully" means a drainage trap which is used externally and fitted with a basin top and grating.

PART II.—PROTECTION OF WATER, GROUNDS, WORKS, ETC., FROM TRESPASS AND INJURY.

4. No person shall trespass within the fenced-off ground adjacent to or reserved for sewerage works nor enter without proper authority any sewerage work not open to the public.
5. No person shall permit any dog of which he is the owner to trespass on any portion of the ground in the vicinity of any sewerage works.
6. No person shall leave loose paper or other refuse on any portion of the grounds in the vicinity of any sewerage works, except in the receptacles provided therefor.
7. No person shall post or distribute bills, advertisements, or other notices on any portion of any sewerage works, or on any portion of the works or ground in the vicinity thereof.
8. No person shall commit a nuisance on any portion of the grounds in the vicinity of any sewerage works.
9. No person shall in the vicinity of any works carry on or cause to be carried on any mining or quarrying operation, or make any excavation of any sort, or cause any explosion so as to injure any sewerage works, sewers, drains, pipes, or fittings, whatsoever.

PART III.—LICENSES AND PERMITS.

10. No person shall carry out any work in connection with sewerage or drainage on any property or in connection with any fitting or apparatus connected therewith unless he is duly licensed as a "Licensed Water Supply and Sanitary Plumber" by the Minister of Water Supply, Sewerage and Drainage in accordance with the by-laws made pursuant to the Country Towns Sewerage Act, 1948.

11. Any person who contravenes by-law 10 shall be guilty of an offence and liable on conviction to a penalty not exceeding twenty dollars.

Notices, Applications, Permits and Inspection of Works.

12. (1) Applications for permission to undertake work in connection with water supply, sewerage, or drainage or the extension or alteration or replacement thereof shall be made in writing at the local authority office by the owner or occupier of the property on which it is intended to undertake the work and if approved by the local authority a permit will be issued to the owner or occupier and, in the case of minor alterations and additions which in the opinion of the local authority do not require a sewerage plan, to a licensed water supply and sanitary plumber nominated by the owner or occupier.

(2) Any person licensed as a water supply and sanitary plumber may perform any specified work in connection with water supply, sewerage or drainage work, for which a permit has been issued by the local authority in any area whether sewered or unsewered.

(3) (a) No person shall perform any work as aforesaid unless a permit has been issued by the local authority covering such work. Where the permit has been issued to the owner or occupier it must be sighted by the licensed water supply and sanitary plumber who shall give not less than 48 hours' notice to the local authority of his intention to commence the work.

(b) In no case shall any water pipes, drains or apparatus in connection with water supply, sewerage or drainage be used until the said work has been inspected and tested by an officer authorised by the local authority and certified by him. No underground or enclosed work shall be covered up or concealed from view until the same has been duly inspected and passed by a responsible officer of the local authority, and for this purpose the licensed water supply and sanitary plumber shall immediately report any work which is ready for inspection or test, and every facility shall be afforded to such officer for making such inspection or test.

(4) Such permit shall not be issued by the local authority unless a duly licensed water supply and sanitary plumber shall be employed to carry out the work for which the permit is issued.

(5) If any person executes any work as aforesaid without having first obtained the permit from and given the proper notice to the local authority, then the local authority may in addition to exercising any other remedy, charge to and recover from such person an inspection fee in connection with such work.

13. Every licensed water supply and sanitary plumber shall execute any work he undertakes with reasonable despatch and if, by unnecessary delay in carrying out work, he causes inconvenience to the public or the local authority then the local authority may request the Minister of Water Supply, Sewerage and Drainage to suspend or cancel the license of that licensed water supply and sanitary plumber.

14. Damage caused by a licensed water supply and sanitary plumber or his employees to water, sewer, gas or other pipes shall be reported forthwith to the authority concerned, and immediate steps shall be taken to have repairs effected, and the cost of same shall be defrayed by such plumber.

15. Every licensed water supply and sanitary plumber shall, within forty-eight hours of any change in his address, give notice in writing thereof to the Minister of Water Supply, Sewerage and Drainage.

PART IV.—SEWERAGE—PLUMBING AND HOUSE CONNECTIONS.

Procedure for Connections to Sewer.

16. When a sewer is completed and ready for use, action may be taken under sections 72 and 73 of the Act.

Proof of Connections having been made.

17. The certificate of such officer as the local authority may appoint in writing, shall be *prima facie* evidence that water closet or water closets, or drains, appliances, apparatus and connections have been provided, or the works, matters, and things have been performed, as the case may be.

Work Carried out under System of Deferred Payment.

18. If any owner wishes to avail himself of the provisions of the Act regarding deferred payments, and the local authority has approved of his doing so, he shall sign an agreement to pay the costs incurred by the local authority in relation to such works and interest at the prescribed rate per annum on the amount remaining to be paid in accordance with the provisions of the Act.

Maintenance by Local Authority.

19. In the event of the local authority carrying out the work of providing such water closet or water closets and such drains, appliances, apparatus and connections, the owner or occupier is liable for the cost of repairs and maintenance, but the local authority shall, for a period of 12 months from the date of completion of the said work, and without charging the owner or occupier therefor, carry out any work of maintenance and repair which in the opinion of the local authority is necessary, and which is not, in the opinion of the local authority, occasioned by any neglect or wilful act of the owner or occupier.

Fees for Plans of Drainage.

20. Drainage plans may be obtained from the local authority upon application and on payment of a fee as determined by the local authority.

Plan to Remain the Property of Owner.

21. The plan supplied by the local authority shall be produced, whenever required during the progress of the work, to any officer of the local authority and any special instruction which may be written on the plan shall be strictly adhered to.

Notice and Plan of Intended New Building or Additions, etc., to Existing Building.

22. Every person intending to erect a building, or rebuild or to make any addition or alteration to any building adjacent to the local authority's sewers shall give to the local authority at least seven days' notice of such intention, and with such notice shall submit for approval plans and sections of such intended building, or additional alterations, drawn to a scale of not less than one inch to every 16 feet, showing the position of each proposed sanitary or plumbing fixture and the approaches thereto, and when required by the local authority, enlarged details to such scale as instructed shall be supplied.

Work Incidental to Sewerage Installations.

23. Any work of a structural nature in connection with a new building and additions or alterations to existing building, which is not part of either the actual plumbing or drainage installation but which is necessary in order to conform with these by-laws shall be carried out by the owner. This provision applies to lighting, ventilation, approaches and floors to water closets, slop hoppers, urinals, baths and similar conveniences.

Use of Drains.

24. Either the owner or the occupier of any sewered 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, subject to these by-laws in regard thereto, such trade wastes as may be authorised by the local authority.

Infectious Disease.

25. Solid or liquid discharge from patients suffering from typhoid fever or any other infectious or contagious disease shall not be emptied into any sewer or drain from any hospital, institution, or other private or public building, unless such discharge has been thoroughly disinfected.

Prohibited Discharges.

26. The deposition or discharge of any of the following substances into any drain or into any sewer shall be an offence against these by-laws:—

- (a) any animal matter, other than as mentioned in by-law 24, fleshing, wool, hair, dead animal, grease, dust, ashes, rubbish, garbage, offal, vegetable and fruit or their parings, rags, oil fat, mud, sand, gravel or like substance, or any other substance which is, in the opinion of the local authority, liable to be injurious to any part of the sewerage system or to employees of the local authority engaged in the operation or maintenance of the same;
- (b) any petrol or other inflammable or explosive substance, whether solid, liquid or gaseous;
- (c) any rain, roof, surface, river or flood waters, except by special permission in writing of the local authority;
- (d) the contents of any nightsoil cart, cesspool or privy unless special permission in writing by the local authority is obtained;
- (e) any substance or trade waste which has an acid reaction to litmus paper; and
- (f) any liquid which contains such percentage of common salt, or of any other mineral, salt, acid, or gas, as is, in the opinion of the local authority, injurious to, or liable to form compounds injurious to, any part of the sewerage system or to employees of the local authority engaged in the operation or maintenance of the same.

Trade Waste.

27. (1) (a) No trade waste shall be discharged directly or indirectly into any sewer of the local authority unless the local authority has entered into an agreement with the occupier of any property from which such trade waste is discharged to admit the same; and

(b) Where no such agreement as aforesaid has been entered into with the occupier of a property from which trade waste is discharged directly or indirectly into any sewer of the local authority, the local authority may by its officers, servants, agents, or workmen enter upon the property and every part thereof and carry out such works as may be necessary in order to prevent the discharge of such trade waste into its sewer. Any expense incurred by the local authority in carrying out such works shall be payable by the occupier and may be recovered in addition to any penalty for which he may be liable.

(2) Application to the local authority to enter into an agreement for the admission into any sewer of any trade waste from any property shall be made in writing to the local authority and shall set out—

- (a) any process of trade or manufacture from which trade waste is discharged or is proposed to be discharged into the local authority's sewer;
- (b) the nature of the trade waste from every such process;
- (c) the estimated maximum rate of discharge of trade waste from every such process;

- (d) the hours of the day and the days of the week during which discharge of trade waste from every such process would normally take place; and
- (e) the estimated maximum daily discharge of such trade waste into the local authority's sewer.

Such application shall be accompanied by detailed plans of the apparatus to be used for the treatment of the said trade waste, and by such other information regarding the processes of trade or manufacture, the quantities of raw materials or goods to be processed or manufactured, the nature, quantity, rates, and times of discharge, and any other matter required by the local authority.

(3) Any agreement made by the local authority with the occupier of any property to admit trade waste therefrom into any sewer of the local authority shall contain a covenant on the part of such occupier to comply with the terms, conditions and provisions of this by-law and shall be subject to the following conditions and such other conditions as may be required by the local authority, having regard to the special circumstances of the case:—

- (a) That if at any time in the opinion of the local authority—
 - (i) the quality, quantity, or rate of discharge of the said trade waste is not in compliance with the terms, provisions, or conditions of the said agreement;
 - (ii) the occupier is not duly and faithfully performing and observing the terms, provisions, and conditions of the said agreement or of this by-law or of any other by-law;
 - (iii) the treatment apparatus is not in efficient working order; or
 - (iv) a breach of the said agreement has been made,

the local authority may serve a notice, in writing, upon the occupier of the said property by leaving the same thereon or posting it, addressed to him at the said property in which notice reference will be made to such of the matters aforesaid in respect of which a breach has taken place, or as to which the occupier is in default or concerning which there is any complaint by the local authority, and the said occupier shall be required to make good the same in all things to the satisfaction of the local authority within a period to be stated therein, and if the requirements of the said notice have not been complied with on the expiration of the period mentioned therein the said agreement shall automatically terminate, and the same shall without further or other notice from the local authority be and be deemed to be at an end save and except as to the covenants on the part of the occupier to be performed and as to the power of entry by the local authority's officers as hereinafter set forth, and the occupier shall not be entitled to any compensation whatever in connection therewith;

- (b) the local authority shall be the sole judge as to the quality, quantity, and rate of discharge of such trade waste and as to whether such quality, quantity, or rate complies with the conditions of the said agreement and of the by-laws, and its decision in regard thereto shall be final and conclusive;
- (c) the maximum daily quantity of wastes, including, where there is a common discharge, both trade waste and ordinary domestic sewage, which may pass from any property into a sewer of the local authority, the maximum rate of discharge of such wastes, the size and capacity of the drain for conveying such wastes from the property to such sewer, and the hours during which such flow shall be permitted shall be determined by the local authority;
- (d) the occupier shall notify the local authority, in writing, of his desire to make any change in any process of trade or manufacture which may in any way affect—
 - (i) the nature of the trade waste from any process of trade or manufacture;
 - (ii) the quantity, quality, or rate of discharge of such trade waste from any such process of trade or manufacture; or

- (iii) the hours of the day and the days of the week during which trade waste is to be discharged from any such process, and no alteration or addition to the apparatus or machinery or to the method of treatment shall be made without the approval, in writing, of the local authority;
- (e) in all cases of change of the occupancy of any property from which is discharged trade waste, which the local authority has agreed to admit into its sewer, the occupier shall prior to such change give not less than 30 days' notice thereof, in writing, to the local authority and in default of such notice he shall remain liable for all charges and all other moneys payable to the local authority under the said agreement or terms of this by-law, which may after the change of occupancy be incurred in connection with the discharge of such trade waste;
- (f) the said agreement shall not be assigned or transferred except by permission, in writing, by the local authority;
- (g) the local authority may when thought necessary, without payment of any compensation therefor, exclude from its sewers all trade waste from any property during the repairing, examination, or maintenance of the said sewers or the carrying out by the local authority of any works in connection therewith; and
- (h) in addition to the rates normally levied by the local authority in respect of any sewer property, the occupier of any property or portion thereof, from which is discharged trade waste, which the local authority has agreed to admit into the sewer, shall pay on demand for each 10,000 gallons so admitted, an amount to be determined by the local authority.

28. Any person who discharges directly or indirectly or causes, permits, or allows so to be discharged from any property occupied by him into any sewer of the local authority any trade waste, unless the local authority has first entered into an agreement with him to admit such trade waste into its sewer or where such agreement has been entered into discharges directly or indirectly or causes, permits, or allows so to be discharged trade waste into such sewer otherwise than in conformity with the terms and conditions of such agreement, or in the event of such agreement being terminated continues to discharge directly or indirectly or to cause, permit, or allows so to be discharged trade waste into such sewer shall be guilty of a breach of this by-law and be liable to a penalty of not more than \$50 and to a penalty of not more than \$4 for each day during which such breach is continued, and such penalty shall be recoverable notwithstanding the local authority has not chosen to exercise any power given to it by this by-law to remedy such breach.

Steam Exhaust.

29. No steam exhaust, blow-off, or drip pipe shall be connected with any drain or any soil pipe, waste pipe, or combined waste pipe.

Sub-soil Water.

30. No sub-soil water shall be discharged into any drain or sewer except with the approval of the local authority and in accordance with such terms and conditions as may be required by the local authority.

Fittings, etc., to be above Flood Level.

31. (1) No inlets or openings shall be placed, or if already placed, shall be permitted to remain placed in such positions that any extraneous water due to rise of sub-soil water level, or from any river, bay, gully or creek, or any other source, whether in flood or otherwise, may gain access to the local authority's sewers.

(2) Without in any way limiting the generality of sub-by-law (1) of this by-law in areas liable to be flooded or affected by rise of sub-soil water level, no person shall place in position for use any fitting, fixture, or apparatus having

an inlet or opening into any drain or into any sewer of the local authority unless the inlet or opening is above a level fixed by the local authority for the particular district or locality, such level providing a safe margin above the highest known sub-soil water level or flood level.

Inspection—Tests—Maintenance.

32. All materials, pipes, bends, junctions, fittings, fixtures, and apparatus shall bear the test brand of the Metropolitan Water Supply, Sewerage and Drainage Board of Western Australia.

33. The responsible officer of the local authority shall require the application of the water or smoke test or such other tests as may be ordered or approved by the local authority.

34. The equipment, material, power and labour necessary for the inspection and tests shall be furnished by the licensed water supply and sanitary plumber.

35. Any materials, pipes, bends, junctions, fittings, fixtures, and apparatus found to be defective shall be removed and replaced by sound ones, and all defective joints made tight and every part of the work shall be made to conform to the by-laws and shall be subject to the approval of the local authority.

Maintenance by Licensed Water Supply and Sanitary Plumber.

36. Every person holding a water supply and sanitary plumber's license who shall execute any works in connection with either sewerage, drainage or sanitary plumbing shall, when so directed by the local authority make good at his own expense, any defect found within 12 months of the date of completion of any such work which defect is due, in the opinion of the local authority, to faulty workmanship.

Maintenance by Occupier.

37. Every silt trap, grease trap, oil trap or neutraliser, and such other appliance as the local authority may direct, shall be maintained by the owner or occupier at his own expense and shall be cleaned at such intervals as may be necessary to ensure that such trap or appliance operates in an efficient and hygienic manner.

Materials and Workmanship.

Materials.

38. 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 local authority.

Testing.

39. All materials, pipes, bends, junctions, fittings, fixtures and apparatus shall be submitted for either examination or test, and shall not be placed in position until either passed, marked or stamped by the local 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 ordered or fixed by the local authority.

Workmanship.

40. All work shall be executed in a thorough and workmanlike manner to the satisfaction of the local authority.

Protection of Workmen, etc.

41. Adequate precautions shall be adopted by the person carrying out the work, to prevent injury to workmen, property, or the public, and the local authority shall not be responsible for any injury arising from the inadequacy of such precautions.

Concrete.

42. Whenever it is used concrete, unless otherwise ordered, shall consist of one part Portland Cement, two parts clean, sharp sand and four parts hard metal, shingle or gravel not exceeding one and one-half inches gauge and shall be thoroughly mixed with clean water to such consistence as ordered or approved by the local authority.

Cement Mortar.

43. Whenever it is used cement mortar, unless otherwise ordered, shall consist of one part Portland Cement, and two parts clean, sharp sand properly mixed with an approved proportion of clean water.

Use of Concrete.

44. Concrete shall be used in each of the following cases:—

- (a) gully basins as specified in by-law 70;
- (b) around the top of educt vent and induct vent pipe sockets;
- (c) around interceptor trap covers and tops of disconnecter or other shafts;
- (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 responsible officer of the local authority, liable to be affected by tree roots;
- (f) drains under buildings as provided in by-law 65;
- (g) around drains having insufficient cover as provided for in by-law 63; and
- (h) floors under plumbing fixtures, where specified.

Cement Rendering.

45. Wherever any concrete work is exposed the surface shall be rendered in cement mortar.

Drainage General.

Separate or Combined Drains.

46. (1) Every property shall be separately drained unless a combined drain is ordered or approved by the local authority.

(2) Owners desiring to have the drainage of their properties combined shall sign a request for a combined drain, and if approved by the local authority, they shall complete an agreement as required by the local authority and comply with any other provision that the local authority may require from time to time.

Size of Drains.

47. Every drain shall be of adequate size for the drainage of the property to be served in accordance with the requirements of by-law 96 with a minimum diameter of four (4) inches.

Materials.

48. All drain pipes, bends, junctions and fittings used shall be of glazed stoneware, concrete, cast iron or other approved material.

Interceptor Traps.

49. Where shown on the plan supplied by the local authority, an interceptor trap shall be fixed in the drain laid from any property to the sewer. Such trap shall be fixed as near as practicable to the boundary, and wherever practicable shall be within the boundaries of the property. If ordered by the local authority, an approved inspection chamber shall be provided for the trap.

Inspection Chambers.

50. All drains shall wherever shown on the plan, join in an inspection chamber at least three feet long by two feet wide, fitted with a closed cover. 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.

Inspection Openings.

51. (1) Every line of drain shall be provided with an approved inspection opening at each junction not provided with an inspection chamber, at each change of direction, at each fitting, and in no case at greater than 60 feet intervals, and in paved areas a loose slab shall be provided vertically over the inspection opening.

(2) The area of an inspection opening shall be not less than the area of the drain where either the line of the drain is six feet long or less, or where the distance between inspection openings is six feet or less; but for lines over six feet in length the opening shall be not less than one foot long by the diameter of the pipe.

Gratings.

52. (1) Every inlet to a drain other than from a water closet shall be effectively protected by approved gratings of ample area.

(2) The aggregate area of the apertures in any grating covering a ventilation opening shall not be less than the sectional area of the pipe or drain ventilated by such grating.

(3) Every opening for ventilation shall at all times be kept by the occupier perfectly free from obstruction.

Drain Openings not in Use.

53. The ends of all drains not immediately connected with the plumbing fixtures shall be securely closed with watertight imperishable materials.

Inserting Junctions.

54. (1) Where it becomes necessary to insert a junction in an existing line of drain, a suitable length of drain shall be removed, and the junction, with an inspection opening on either side fitted back into position, and the line tested in the usual manner.

(2) Junctions in existing metal pipes shall not be made unless an approved closure pipe is used in each case.

Basement and Cellar Drainage.

Fixtures

55. No sink, trap, water-closet, urinal, or other fixture or apparatus shall be laid or fitted in any cellar or basement or on any floor below ground level unless the following conditions are complied with:—

- (a) the consent, in writing, of the local authority shall be first obtained, and shall be subject to revocation at any time as hereinafter provided;
- (b) the owner shall submit such information as may be required by the local authority and shall undertake, in writing, to accept all liability for damage that may occur;
- (c) the ventilation of such cellar or basement shall be in accordance with by-laws 133, 134, 135 and 136; and
- (d) such other conditions as may be required by the local authority having regard to the special circumstances of the case.

Risk of Back Flow.

56. Where such cellar, basement or floor below ground level is at such a level as may, in the opinion of the local authority, involve risk of back flow in the event of the sewer becoming overcharged, the sewerage from all fixtures therein shall be raised by ejector, siphon, or other approved mechanical appliance to such height as ordered, and discharged into the sewer as and where directed.

Seepage Drains.

57. 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 local authority. Where such discharge is permitted, the seepage shall be raised by ejector, siphon or other approved mechanical appliance to such height as ordered and discharged into the sewer as and where directed.

Laying Drains, etc.

Pipe Trenches.

58. (1) The trench for the drain from any property shall be so dug as to meet the local authority's sewer at the position provided, or to be provided, for the connection, in accordance with the drainage plan.

(2) The material from the trench shall be so placed as to cause the least possible obstruction and inconvenience to the public, and proper barriers and lights shall be maintained by the licensed water supply and sanitary plumber where necessary, to guard against accident during the progress of the work.

(3) In refilling the trench, selected filling shall first be deposited around and over the pipe to a depth of 9 inches and carefully consolidated, after which the remainder of the trench shall be filled in, in layers and rammed or flooded as ordered or approved by the responsible officer of the local authority.

(4) No stone shall be used in refilling until earth or gravel has been placed over the pipe to a depth of 9 inches, or more if directed.

(5) On no account shall any water, sand, earth, or other prohibited discharge be allowed to enter the sewer during the progress of the work.

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

Position and Line.

59. Every drain shall be laid and every fitting or apparatus connected therewith shall be fitted in the position shown on the drainage plan or as directed by the local authority. As far as possible all drains shall be laid in straight lines; where changes of direction occur they shall be made—

- (a) by oblique junction;
- (b) by suitable curved pipes, with inspection opening;
- (c) by a suitably curved pipe, with an inspection opening on each straight pipe next adjoining the curve; or
- (d) in inspection chambers.

Oblique Junctions.

60. Where any drain joins another drain or sewer the junction shall be made obliquely at any angle not greater than 45 degrees with the direction of flow of such drain or sewer.

Connection to Sewer.

61. The disc stopper at the point of connection to the sewer shall be carefully removed so as not to injure the socket or allow debris or other matter to get into the sewer.

Gradients.

62. (1) All drains shall be laid on an even grade and, except by permission of the local authority or where shown on drainage plans, such gradients shall, in no case, be less than the following:—

4-inch diameter	....	....	....	....	....	....	....	....	1 in 40.
6-inch diameter	....	....	....	....	....	....	....	....	1 in 60.
9-inch diameter	....	....	....	....	....	....	....	....	1 in 90.

(2) Where the grades of drains are steeper than 1 in 10, concrete anchor blocks shall be placed at intervals of not more than two times the gradient. The block shall have a minimum width of 12 inches along the pipe, and of such thickness that there shall be 3 inches of concrete above and below the pipe and shall extend at least 9 inches into the virgin ground at each side of the trench.

Depth of Drains.

63. (1) Drains of stoneware or concrete pipes, unless bedded on an encased in concrete, of not less than four inches thickness 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 thoroughfare, rights-of-way, or other places subject to vehicular traffic, 3 feet; and

(b) in private property not subject to vehicular traffic, 1 foot.

(2) No person being the owner or occupier of any land through which any drain runs shall alter the surface over or in the vicinity of any drain so as to deprive it of the minimum depth of cover specified by sub-by-law (1) of this by-law, or to affect the stability of its foundation, unless he shall encase the drain as may be approved by the local authority, and in any case written notice shall be given to the local authority before the work is proceeded with.

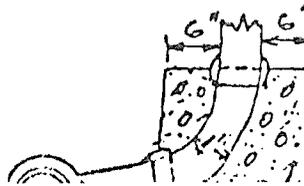
Laying Drains.

64. (1) All pipes shall be laid to such lines and grades as may be shown on the approved plans or as may be directed by the local authority, and except where otherwise ordered by the local authority, holes shall be cut in the bottom of the trenches to receive the sockets of the pipes, and all the pipes shall be carefully bedded with the barrel on the solid ground.

(2) In the case of rock or clay bottom trenches, or where directed by the local authority the pipes shall be laid on a concrete keel, reinforced with steel rods as follows:—

- 4 in. drains 6 in. x 3 in. concrete keel with three $\frac{3}{8}$ in. dia. steel rods.
- 6 in. drains 8 in. x 3 in. concrete keel with three $\frac{3}{8}$ in. dia. steel rods.
- 9 in. drains 12 in. x 4 in. concrete keel with four $\frac{3}{8}$ in. dia. steel rods.

(3) Bends rising vertically shall be protected as shown in sketch—



(4) In water charged ground or where the foundation is bad the drain shall be supported on pile and keel foundations, the keel to be six inches by two inches jarrah and the piles four inches by four inches jarrah at not more than three feet centre, and driven to a depth ordered by the local authority.

(5) In cases where it is considered that the drains are likely to be damaged by fibrous roots, the pipes, if stoneware or concrete, shall be bedded on and encased in four inches of concrete over any part of the drain, but in vertical shafts concrete or stoneware pipes shall not be used if the height from the under side of bend exceeds four feet, and in such cases cast-iron pipes shall be used.

Drains under Buildings.

65. (1) Every drain shall be so constructed as not to pass under any building, except in any case where any other mode of construction is impracticable; and if in any case a drain shall be so constructed as to pass under any building, such drain shall be laid in direct line for the whole distance beneath such building, and of such depth that there shall be a distance equal at least to a full diameter thereof between the top of such drain at its highest point and the surface of the ground under such building.

(2) The drain pipe in any such case shall be of cast-iron and joined with lead as is usual with water pipes as required for water supply purposes, or of stoneware or concrete bedded in and surrounded with concrete at least six inches thick. All drains carried through walls shall have a space of three inches left over the pipe.

(3) Stoneware or concrete pipes brought up inside a building for the purpose of connecting a water closet or slop hopper shall be surrounded with four inches of concrete, but the height of such pipes to be brought up from the drain shall not exceed four feet, and if the height exceeds four feet, cast-iron pipes shall be used.

Joints—Drainage.

Stoneware and Concrete Pipes.

66. Joints of stoneware and concrete pipes shall be filled in solidly with cement mortar or with other approved material, neatly splayed off to an angle of 45 degrees. After such joint is made the interior of the joint shall be wiped clear of surplus mortar.

Cast-iron Pipes.

67. All joints in cast-iron pipes must be stemmed with approved gaskets and so filled and caulked with lead or other approved materials so as to make them gas and watertight. Joints between cast-iron and stoneware or concrete pipes shall be made as for those between stoneware or concrete pipes.

Trapping of Inlets.

68. (1) Every inlet to any drain other than inlets provided for ventilation in accordance with these by-laws shall be provided with an approved trap.

(2) No inlets to any drain connecting directly with a sewer shall be constructed with a building, other than such inlets necessary for the apparatus of any water closet, urinals, slop hopper, or other approved fixtures, unless in the case of the combined pipe system.

Water Seal.

69. Every drainage trap shall have a water seal of two inches in depth.

Yard Gullies.

70. Yard gullies shall be installed to the approval and conditions laid down by the local authority.

Sealed Disconnecter Traps.

71. When approved by the local authority, sealed disconnecter traps may be affixed inside or outside a building or outbuilding, but in such cases breather pipes or fresh air inlets equal in area to the waste pipe or pipes discharging into the trap shall be taken to such height as directed and where the trap is inside, shall be led to the outside of the building or outbuilding. The material for such breather pipes shall be the same as for vent pipes. Inspection openings to such traps shall be sealed with screwed plugs, or as otherwise approved by the local authority.

Provision of Grease, Petrol and Oil Traps.

72. Wastes from the following fixtures and areas shall first discharge into an approved apparatus for retaining objectionable matter:—

- (a) every fixture or area from which petrol, benzine, or other inflammable or explosive substance, or grease, oil or greasy or oily matter, is likely to be discharged or conveyed into waste, combined waste, or soil pipes or into drains;
- (b) every sink in all food-packing houses, butchers' shops, lard rendering establishments, hotels, restaurants, boarding houses, and such other places as the local authority may direct; and
- (c) such other fixtures, areas, or apparatus as the local authority may direct.

Construction of Grease Traps

73. (1) Grease traps shall be fixed outside buildings or outbuildings wherever practicable.

(2) External grease traps shall be constructed of glazed stoneware, brick in cement, or other approved material.

(3) Internal grease traps shall be constructed of copper or other approved material, and, if directed, fixed upon a tray.

(4) The outlet from any grease trap shall be connected to a disconnecter trap.

(5) The occupier of any property in which a grease trap is fixed shall cleanse and maintain such grease trap so that it operates efficiently at all times and does not cause a nuisance.

Grease Trap Ventilation.

74. Every internal grease trap, and all external grease traps which are within 20 feet of any door, window, or other opening into a building, shall have approved independent provision made for inlet and outlet ventilation as provided for waste pipes in by-law 87.

Size of Grease Trap.

75. (1) The dimensions of grease traps shall be such as to ensure the retention of all grease entering the trap.

(2) The minimum size for grease traps serving either kitchen sinks or mechanical dishwashers shall be as follows:—

- (a) the capacity of the grease trap below the level of the invert of the outlet shall be not less than the total capacity of either the sinks or dishwashers served, and in accordance with the local authority's type drawings;
- (b) the height from the top of the outlet of grease trap to the vent take off shall not be less than four inches; and
- (c) the difference in level between invert of inlet and invert of outlet shall be not less than one inch.

(3) The capacity of a sink shall be measured to the over-flow level, or in the event of there being no over-flow level, or in the event of there being no overflow, to the top of the sink.

(4) The capacity of a dishwasher shall be taken as the capacity of the sump or water container.

Outlet Pipes from Grease Traps.

76. The outlet pipe from any grease trap shall be at least one size larger than the size of pipe which has a cross sectional area equivalent to the total area of incoming waste pipes and except by special permission no outlet pipe shall be less than 2½ inches in diameter.

Construction of Petrol and Oil Traps.

77. (1) Petrol and oil traps shall be constructed in accordance with the local authority's type drawings.

(2) Every such trap shall be connected to a disconnecter trap and shall be provided with independent ventilation in accordance with the provisions of by-law 74 for grease trap ventilation.

Construction of Silt Traps.

78. Silt traps shall be constructed in accordance with the local authority's type drawings.

Ventilation.

Vents on Main House Drain.

79. (1) The main drain shall be ventilated at its upper end by a pipe ventilator erected vertically and such ventilator may be a soil or combined waste soil vent pipe.

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

(3) A ventilator pipe shall also be provided on the sewer side of the interceptor trap.

Vents on Branch Drains.

80. Branch drains need not be vented if the drainage traps are within 15 feet from the main house drain measured along the line of pipes including the drop, if any, from the centre line of the main drain to the centre line of the outlet side of the water seal.

Size of Drainage Vents.

81. Drainage vent pipes shall be of not less than four inch diameter in the case of educt vents and not less than two inch 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 drain shall be of not less than four-inch diameter and all others not less than two inch. Every such vent pipe shall be provided with approved educt or induct cowl.

Materials, etc., for Drainage Vents.

82. (1) Drainage vent pipes, situated wholly outside buildings or outbuildings, shall be of cast-iron, galvanised wrought iron, galvanised sheet iron, asbestos or other approved material above ground and of stoneware or other approved material beneath the surface of the ground.

(2) Galvanised sheet iron vent pipes shall not be of less gauge than 20 for three-inch and four-inch diameter pipes and 18 for six-inch diameter pipes, but where, in the opinion of the local authority, they are liable to injury, the first six feet above the ground shall be of cast-iron or other approved material.

(3) Drainage vent pipes, inside a building or outbuilding, shall, unless otherwise approved, be of cast-iron of soil pipe strength, or of galvanised wrought iron, copper or brass as specified in by-law 38.

(4) All galvanised sheet iron vent pipes shall be double galvanised with longitudinal joints grooved, welded or riveted, and circumferential joints rivetted and soldered.

Vent Supports.

83. (1) Unattached posts shall be of not less than four inches by four inches (4 in. x 4 in.) rough dressed jarrah, properly strutted with four-inch by two-inch (4 in. x 2 in.) struts and sole pieces.

The struts and sole pieces shall be bolted to the post, and the post shall be let into the ground to a depth of one-quarter ($\frac{1}{4}$) its length.

The struts shall extend from sole pieces to one-third ($\frac{1}{3}$) of the length of the post above ground at an angle to the post of twenty-five (25) degrees.

(2) Vent posts attached to buildings shall be of not less than four-inch by four-inch (4 in. x 4 in.) dressed Jarrah, properly secured to top and bottom plates of the building with half-inch ($\frac{1}{2}$ in.) bolts of required length.

Vents in Outbuildings.

84. Galvanised sheet iron vent pipes may be used inside external water closets, stables or open outbuildings but, where liable to damage, shall be protected as directed by the local authority.

Length of Unvented Waste Pipes.

85. Except as provided in by-laws 100, 162 and 163, waste pipes need not be ventilated unless they exceed 12 feet in length provided that—

- (a) there is only one fixture attached to the waste pipe; and
- (b) the water seal of the trap is not reduced by siphonage or other cause.

Anti-siphonage Vents.

86. Loss of water seal in trap shall be prevented by proper ventilation.

Height of Vents.

87. (1) Every vent pipe extending upwards from a soil pipe, drain or combined waste pipe shall be carried not less than six feet higher than any door, window, or other opening into a building, within a distance of 30 feet thereof, and except as otherwise provided in by-law 88 every educt vent shall be carried at least 18 feet above ground level and six feet above the level of the eaves or coping.

(2) Every vent pipe extending upwards from a waste pipe shall be at least two feet above the level of the eaves or coping.

(3) Subject to the foregoing, any vent pipe which extends into a gable or a building shall be carried at least two feet above the point of intersection with the roof.

Vents near Chimneys.

88. (1) Vents shall, as far as possible, be kept away from chimneys and ventilating air shafts.

(2) Where a ventilator pipe terminates 10 feet or more from a chimney opening or ventilating air shaft, the requirements of by-law 87 shall apply, but where the distance is less than 10 feet the vent pipe shall, provided it is at least 18 feet long, terminate not less than two feet below or six feet above the top of such chimney or air shaft.

Combining of Vents.

89. Vent pipes may be branched into a soil pipe or waste pipe, above the level of the highest fixture; provided that in the case of the separate pipe system, soil vents are branched into soil pipes and waste vents into waste pipes only.

Pipe Clips, etc.

90. (1) There shall be at least one pipe hook or clip to each six feet length of vent pipes.

(2) Clips, in the case of cast-iron pipes, shall be placed tight up against the bead or underside of the collar.

Attachment to Walls.

91. Where a galvanised 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 galvanised wrought iron clip, leaded into the wall near the top, or by other approved means.

Supporting of Vents.

92. Wherever a vent pipe, with offset, exceeds nine feet in length above the offset, it shall be stayed, as directed, with $\frac{1}{2}$ -inch galvanised wrought iron piping, provided that an unsupported length of 15 feet, above the highest clip of straight vent pipe, without offset, shall be permitted.

Vents Adjoining High Buildings.

93. 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 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 necessary to conform with by-law 87.

Down and Relief Venting.

94. In special cases, which must be approved by the local authority, vent pipes may be installed on the "down venting" principle. That is the vent pipe from the fixture trap may be taken below the level of the fixture and under the floor to an external wall or into a pipe duct and then carried up in accordance with the requirement of by-law 97. An approved fitting shall be provided at the lowest point of such vent for the purpose of draining off any water of condensation collected therein.

Capacities of Soil Pipes, Waste Pipes, and Vent Pipes.

Fixture Units.

95. For the purpose of determining the size of any waste pipe, soil pipe or vent pipe, the following equivalent fixture units shall be adopted, unless otherwise directed:—

Fixture	Nominal Outlet Diameter inches	Fixture Units
One lavatory basin	1½	1
For each lavatory basin over 20 served by such pipe	—	½ for each basin
One kitchen sink (up to six-inch depth to overflow)	2	3
One bath (with or without overhead shower)	{ 1½ 2	4 6
One wash trough set with common trap	2	5
One urinal or group of urinals draining to a common trap	2	3
One slop hopper	3	4
One shower compartment	2	3
One water closet	4	5
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
Bidets	1½	1
Bedpan and bottle slop sink	3	4
Glass and teapot washers	1½	1
Foot baths	½	2
Dishwashers	2	6
Cleaner's and caretaker's sinks	2	3

For fixtures other than those shown the equivalent fixture units to be adopted shall be determined by the local authority.

Sizes of Soil, Waste, Combined Waste and Drain Pipes.

96. The sizes of soil pipes, waste pipes, combined waste pipes and drain pipes, computed in accordance with the method set out in Schedule "A" to these by-laws 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:—

Diameter of Pipe	Permissible Maximum number of Fixture Units				
	Grade not less than—				
	Minimum Permissible Grade	1 in 40	1 in 12	1 in 4	Vertical Stacks
inches					
1½	6	...	6	8	9
2	9	...	12	17	24
2½	14	...	20	28	36
3	20	...	30	40	50
4	100	100	150	210	260
6	420	490	820	1,150	1,400

Provided that—

- (a) waste pipes, combined waste pipes, soil pipes and drain pipes shall not be diminished in the direction of flow;
- (b) diameter of the trap, waste pipe, combined waste pipe, or soil pipe receiving the discharge from any fixture shall in no case be less than the nominal outlet diameter of such fixture, nor shall any soil pipe be less than three inches in diameter;
- (c) not more than two closet pans shall discharge into any 3-inch graded soil 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 feet measured horizontally;
- (e) where 45-degree fittings are used throughout for connections to any stack the "permissible maximum number of fixture units for vertical stacks" in the table may be increased by 50 per cent.;
- (f) no more than one-half of the total permissible number of fixture units for a vertical stack, in accordance with the table, shall be connected to such stack in any 8-foot length thereof; and
- (g) soil pipes, combined waste pipes and 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.

Sizes of Vents.

97. (1) For the purposes of this by-law, the length of any vent shall be defined as follows:—

- (a) 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; and
- (b) 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 12 feet, in the length of branch vent, measured horizontally from the main vent to the fixtures in question.

(2) The sizes of main and branch vents, computed in accordance with the method set out in Schedule "A" to these by-laws, shall not be less than the sizes determined from—

- (a) the size of soil, combined waste, and waste pipe or stack to be vented;
- (b) the total number of fixture units served by the main vent, or by that portion of the branch vent under consideration; and
- (c) the length of vent; in accordance with following table:—

Minimum Permissible Sizes of Main or Branch Vents (inches).

Diameter of Soil or Waste Pipe (inches)	Total No. of Fixture Units Served	Total Length of Vent in Storeys:—										
		1	2	3	4	5	6	7	8	9	10 and over	
1½	Up to—	8	1¼	1¼	1¼	1½	1½	...	...	...	...	...
		14	1¼	1¼	1½	...	...	...	...	...	...	...
2	Up to—	12	1½	1½	1½	1½	2	2	2	...	...	...
		18	1½	1½	1½	2	2	2	2	...	...	...
		36	1½	1½	1½	2	2	2	2	...	...	...
2½	Up to—	6	1½	1½	1½	1½	1½	2	2	2½	2½	2½
		12	1½	1½	1½	1½	2	2	2	2½	2½	2½
		24	1½	1½	1½	1½	2	2	2	2½	2½	2½
		36	1½	1½	1½	1½	2	2	2	2½	2½	2½
		54	1½	1½	1½	2	2	2½	2½	2½	2½	2½

Minimum Permissible Sizes of Main or Branch Vents (inches)—(cont.).

Diameter of Soil or Waste Pipe (inches)	Total No. of Fixture Units Served	Total Length of Vent in Storeys :—										
		1	2	3	4	5	6	7	8	9	10 and over	
3	Up to—	12	1½	1½	2	2	2	2	2	2	2	2½
		18	1½	2	2	2	2	2½	2½	2½	2½	2½
		24	2	2	2	2½	2½	2½	2½	2½	2½	2½
		30	2	2	2	2½	2½	2½	2½	2½	2½	3
		42	2	2	2½	2½	2½	2½	2½	3	3	3
		60	2	2	2½	2½	2½	2½	3	3	3	3
		75	2	2½	2½	2½	2½	3	3	3	3	3
4	Up to—	12	2	2	2½	2½	2½	2½	2½	2½	2½	2½
		24	2	2½	2½	2½	2½	2½	2½	3	3	3
		36	2	2½	2½	2½	2½	2½	2½	3	3	3
		48	2½	2½	2½	2½	2½	3	3	3	3	3
		72	2½	2½	2½	2½	3	3	3	3	3	3
		120	2½	2½	2½	3	3	3	3	3	3	3
		180	2½	2½	3	3	3	3	3	3	3	3
		300	2½	3	3	3	3	3	3	4	4	4
		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
		1,300	4	5	5	5	5	5	5	5	6	6
		2,100	4	5	5	5	5	6	6	6	6	6

Provided that—

- (i) no vent shall be less than 1¼ inches in diameter, and in no case shall a main or branch vent have a diameter less than one-half that of the soil pipe, or waste pipe which it serves;
 - (ii) for 2-inch and 2½-inch waste pipes the main or branch vent shall have a diameter of not less than 1½ inches;
 - (iii) no branch vent need be larger in diameter than the soil pipe, or waste pipe which it serves.
- (3) The sizes of individual anti-siphonage 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-Siphonage Vent	Diameter of Fixture Trap	Minimum permissible size of Anti-Siphonage Vent
inches	inches	inches	inches
....	....	2½	2
1½	1¼	3	2
2	1½	4	2

Plumbing—General.

Waste Pipes.

98. Separate waste pipes shall be provided for each of the following classes of polluted water:—

- (a) dirty water from baths, sinks, lavatory basins, and wash troughs and other waters containing a small proportion of either soap or dirt; and
- (b) greasy water from either kitchen and scullery sinks or other fixtures, in such cases where grease traps are ordered or required.

Soil Pipes.

99. Except as provided in by-law 100, soil pipes shall be provided for soil water from closets and other waters containing faecal matter and for urinal waters from slop hoppers and urinals, and, where directed, for discharges from operating theatres and mortuaries.

Combined Pipe System.

100. If it thinks fit the local authority may approve of the adoption of the combined pipe system for plumbing installations subject to the following conditions and such other conditions as may be necessary in any particular case:—

- (a) an interceptor or boundary trap shall be provided in the house drain as provided for by by-law 49;
- (b) all fixture traps shall be vented as provided by by-law 97; and
- (c) in order to prevent fouling of traps as much as possible by the discharge from water closets, slop hoppers and urinals, in the event of a blockage in the combined waste pipe—the waste pipe from baths and shower compartments or other fixtures, as determined, shall be branched into the combined waste stack.

Connections to Drain.

101. (1) All waste pipes shall discharge under the grating of a yard gully or into a disconnecter trap.

(2) All soil pipes, including those for urinals and slop hoppers, must be connected direct to the drain.

Internal Cocks.

102. Cocks delivering water shall not be fixed internally unless a sink, lavatory basin or other approved fixture, or a properly drained impervious floor is provided underneath.

Pipes through Roof.

103. In all cases where a vent, waste, combined waste or soil pipe passes through any roof a suitable collar worked out of 4 lb. sheet lead shall be soldered or otherwise fixed to the pipe and to the roof in such a manner as shall make the roof perfectly watertight.

Soil Pipes, Combined Waste Pipes and Waste Pipes.

General.

104. All lines of soil pipes, combined waste pipes and waste pipes shall be as direct as possible.

Materials.

105. Soil pipes, combined waste pipes and waste pipes shall be subject to the approval of the local authority as provided in by-law 38.

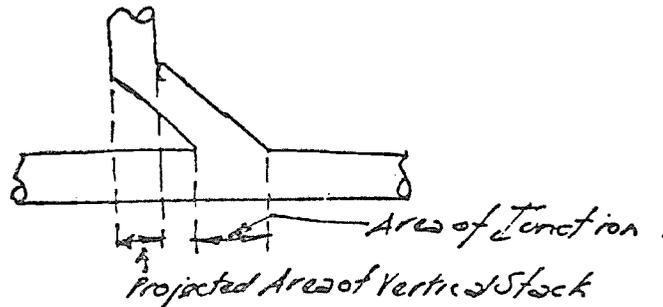
Minimum Permissible Gradient.

106. The following are the minimum gradients to be adopted for soil pipes or waste pipes:—

Diameter of Pipe	Minimum Gradient	Diameter of Pipe	Minimum Gradient
inches	inches	inches	inches
....	....	3	1 in 30
1½	1 in 15	4	1 in 40
2	1 in 20	6	1 in 60
2½	1 in 25	....	....

Junctions.

107. (1) Where a waste stack is branched into a graded waste pipe, the branch fitting shall have an angle of not less than 45 degrees to the graded pipe and the length of the branch of the fitting 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.



(2) Where a soil stack is branched into a graded soil pipe or drain it shall enter the same on the horizontal at an angle of 45 degrees.

Sealing of Pipes.

108. Wherever a fixture is abolished, the soil pipes, combined waste pipes, waste vent pipes and water supply pipes to such fixture shall be removed, or, if allowed by the local authority to remain, the end of the pipes shall be sealed with a screwed plug. Cast-iron pipe may have the end securely closed with a wiped joint; stoneware pipe may have a stoneware disc cemented in.

Pipe Clips, etc.

109. There shall be at least one pipe hook or clip to each six feet length of soil pipe, combined waste pipe, or waste pipe, in accordance with the provisions of by-laws 90 and 91 for vent pipes.

Concealment of Pipes.

110. (1) All soil pipes, combined waste pipes, waste pipes, and main vent pipes and traps shall be reasonably accessible at all times for inspection and convenience of repairing.

(2) In hospitals and similar institutions, all soil pipes, waste pipes, combined waste pipes and main vent pipes, where practicable, shall be fixed on the outside of external walls or in pipe ducts having a minimum width of two feet, and minimum area of nine square feet (measured clear of all pipes or other obstructions), and shall be so arranged as to facilitate inspection and maintenance at all times. Such pipe ducts shall be provided with access doors so placed as to permit ready inspection of every straight line of waste pipe, combined waste pipe, soil pipe, or main vent pipe.

(3) In buildings other than hospitals or similar institutions, if soil pipes, waste pipes, combined waste pipes, or main vent pipes are concealed within pipe ducts or recesses in walls, such pipe duct or recess shall be provided with approved means of access.

(4) Branch and anti-siphonage vent pipes may be concealed in hollow walls, or may be built in lime mortar in wall chases, provided the pipes and fittings are made of brass or copper in accordance with requirements of by-law 38.

(5) All inspection or access openings to concealed pipes shall be finished throughout with smooth surfaces, and shall be of such size and shape as to permit the entrance of cleaning tools, as required, to the pipe.

Concealed Standing Wastes.

111. Concealed standing wastes shall not be permitted.

Provision for Inspection and Cleaning.

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

Inspection Openings on Soil Pipes, etc.

113. In all cases where the vertical stack of soil pipe or combined waste pipe provided for water closets is six feet or more above ground level, measured from floor level of the water closet to ground level at the foot of the stack, an inspection opening, eight inches in length and of sufficient width to take four-inch testing plug and having a cover fixed to a flange with non-corrodible bolts or studs, shall be provided near the foot of the stack.

Lead Pipe.

114. All joints in lead pipe shall be plumber's wiped joints.

Wrought Iron Pipe.

115. The screwed ends and sockets of wrought iron pipes shall be so formed, and the threads so cut, that the ends of the pipes shall 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.

Wrought Iron Pipe to Lead Pipe.

116. All joints between wrought iron and lead pipes shall be made by means of brass unions screwed to iron and wiped to lead.

Brass or Copper Pipes.

117. Joints on brass or copper pipes shall be made by means of brazing to the satisfaction of the local authority or in accordance with the Australian standard specification for "Compression joints and copper alloy screwed fittings for standard copper tubes", or by other approved means.

Lead Pipe to Cast-iron Pipe.

118. The connection of lead pipes or traps to cast-iron pipes shall be made by means of brass sleeves; the brass sleeve 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 sleeve in the socket thereof and making the joint in the same way as in cast-iron pipe.

Sheet-iron Pipe to Cast-iron Pipe.

119. All connections of galvanised sheet iron to cast-iron pipes shall be made with molten lead, lightly but tightly caulked into the cast-iron socket.

Sheet-iron Pipe to Wrought-iron Pipe.

120. All galvanised sheet-iron pipes shall be connected to wrought-iron pipes by means of brass unions or thimble soldered to the sheet-iron and screwed to the wrought-iron.

Sheet-iron Pipe to Lead Pipe.

121. Connections of sheet-iron pipes to lead pipes shall be made by means of brass thimbles wiped to the lead pipe and soldered to the sheet-iron pipe.

Welded Joints.

122. Welded joints may be permitted provided the method of welding and a sample of the work is submitted to the local authority for approval.

Vent Pipe to External Closet Pan.

123. (1) Vent pipe shall be connected to the vent horn of the water closet trap by an approved lead cap piece with approved packing.

(2) 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.

(3) In the case of an internal closet pan the joint shall be of the metallic-ceramic type or approved equivalent.

Outlet Fittings to Fixtures.

124. (1) Connections between outlet fittings and baths, sinks, basins, troughs, and like fixtures, when the latter are constructed of cast-iron, plate-iron, ceramic ware, or concrete shall be made with locknuts.

(2) The outlet fittings shall in all cases be connected to the waste pipe by means of a union.

(3) When approved fixtures are made of sheet metal lighter than 20-gauge soldered connections may be used in lieu of locknuts.

Waste Pipes to Troughs.

125. Connections of waste pipes to wash-troughs shall be made to the approval of the local authority.

Fixture Traps.

Fixtures to be Trapped.

126. (1) Every fixture shall be effectively trapped unless otherwise permitted, in writing, by the local authority.

(2) Separate traps shall be provided for each fixture, except lavatory basins or sinks which may be connected in pairs if they are situated in detached outbuildings, open verandahs or in well ventilated sanitary blocks, and if the length of the waste pipe between the two fixtures does not exceed three feet.

Position of Traps.

127. The traps in each case shall be placed, unless otherwise directed, as near the outlet of fittings as possible.

Materials.

128. The materials used in traps for fixtures shall be as provided in by-law 38.

Depth of Water Seal.

129. Every trap shall have a water seal of two inches.

Gratings.

130. Non-corrodible outlet gratings, of approved design and material, shall be provided for all urinals and slop hoppers, and for all fixtures not discharging faecal matter.

Water Closets, Slop Hoppers, Urinals and Flushing Apparatus.

Provision of Water Closets.

131. (1) At least one water closet approved by the local authority shall be provided for each house, building or land required by notice from the local authority to be connected with the sewer, and for each flat.

(2) In every licensed victualler's property, restaurant, boarding house, lodging house, school, shop, factory, office, public building, or building used for public entertainment, water closet and urinal accommodation shall be provided in accordance with the requirements of either the Health Act, 1911, or the Factories and Shops Act, 1963, whichever is applicable to the case, and of any regulations made thereunder; provided that, in any property, other than a house or flat, which is not provided for in either of the Acts aforesaid, separate water closet accommodation shall be provided for males and females, one water closet for each ten or portion of ten persons for whom water closet accommodation is required.

(3) Water closets and urinals shall be so placed, either within or outside the building, as to ensure the due observance of decency and to be easily accessible to the occupiers of such building.

Airlocks for Water Closets.

132. (1) Except as provided in sub-by-law (2) of this by-law no water closet within a building shall be entered directly from any room used for human habitation or for the manufacture, preparation or storage of food for human consumption, or used as a factory, workshop or work place. In cases where such closet would otherwise be directly entered an ante-chamber or airlock shall be provided for any such room, having a floor area of not less than 20 square feet and lighted and ventilated in accordance with the provisions of by-law 134. A hall, passage, lobby, or staircase may be considered as an airlock, provided it has a floor area of not less than 20 square feet and complies with the requirements of by-law 134.

(2) The airlock may be omitted when a water closet within any building is entered from a bedroom provided that by-law 133 is complied with in regard to lighting but the ventilation shall be so arranged that a current of air is in circulation through the water closet independently of the room from which it opens off and the door of the closet shall be fitted with an approved self-closing device.

(3) Where a water closet or a urinal is ventilated in accordance with by-law 136 then no air-lock shall be required for that water closet or urinal.

Lighting and Ventilation of Water Closets.

133. Except as provided in by-law 135 every water closet apartment within a building shall comply with the following conditions:—

- (a) one of its sides shall be an external wall of such building, abutting on to a street or lane, or an open space within the property having a width of not less than four feet and an area of not less than the following:—
 - for first storey above floor level of open space—36 sq. feet,
 - for second storey above floor level of open space—72 sq. feet,
 - for all other storeys above floor level of open space—100 sq. feet;
- (b) each water closet shall be provided with a window in such external wall, having a clear light area of not less than two square feet per closet pan and capable of being opened;
- (c) each water closet shall be provided with direct ventilation to the open air from a point near the ceiling level. Such ventilation shall be provided by a vent or vents, carried as direct to the open air as is practicable and boxed throughout, and having a minimum clear area at any point of not less than 24 square inches per closet pan; and
- (d) glazed louvres may be used in lieu of windows and ventilators, subject to their providing a clear light area of not less than two square feet per closet pan and a clear ventilation area of not less than 24 square inches per closet pan. The position of a louver shall be as laid down in paragraph (c).

Lighting and Ventilation of Airlocks.

134. (1) Each airlock shall be—

- (a) provided with a window on an external wall, having a clear area of not less than two square feet for each 100 square feet, or part of 100 square feet, of floor area of airlock; or
- (b) separately lighted by electricity and provided with a switch within the airlock.

(2) Every airlock shall be provided with direct ventilation to the open air from a point near ceiling level. Such ventilation shall be provided by a vent, or vents, carried as direct to the open air as is practicable, and boxed throughout, and having a minimum clear area at any point of not less than 24 square inches for every 100 square feet, or part of 100 square feet, of floor area or airlock.

Alternative Methods of Lighting and Ventilating.

Water Closets and Airlocks.

135. Subject to the approval in writing of the local authority first being obtained, water closets and airlocks in buildings, other than hospitals and similar institutions, may be ventilated by ventilating air shafts.

Mechanical Ventilation of Water Closets.

136. (1) Every system of mechanical ventilation shall be approved by the local authority, and be capable of changing the air contents of the water closets served at least ten times per hour.

(2) In every such case, the ventilating fan, and the power unit operating same, shall be in duplicate, unless the main air shaft shall in the opinion of the local authority be designed to act as an efficient natural vent in the event of the mechanical equipment failing.

(3) Any such mechanical system shall be open to inspection by the officers of the local authority at all reasonable times, and shall be subject to such tests as the local authority shall from time to time direct.

(4) The owner shall be deemed to commit an offence whenever—

- (a) there is any failure to comply with any of the requirements of this by-law; or
- (b) the ventilating system fails, for a period longer than 48 hours, to operate continuously and efficiently.

Floors, Walls, etc., for Water Closets and Slop Hoppers.

137. (1) In any water closet or slop hopper apartment within a building, unless the floors are constructed of concrete of not less than four inches thickness, or of other approved impervious material, graded as directed, safes of lead, or of other approved impervious material in accordance with the requirements of by-laws 172, 174 and 175 shall be provided.

(2) The floor of every external water closet shall be constructed of concrete or other approved impervious material not less than four inches thick, and shall have a slope of one-half inch to each foot towards the door.

(3) Closets for different sexes shall not adjoin each other, unless separated by a wall of brick, stone or concrete of approved thickness, such wall may be the wall of one closet or common to both.

(4) The door of every external water closet or urinal shall be properly screened at least six feet high, and reaching to the ground; and if required a screen shall be fixed to prevent the water closet or urinal being visible from overlooking windows.

(5) Any water closet for the use of females shall have a separate entrance behind such screen and such entrance shall not be within 12 feet from the entrance of any water closet intended for the use of males.

Fixing Closet Pan.

138. (1) On concrete floors or floors of tiles set in concrete, the closet pan shall be securely fixed with brass screws to approved lead dowels set in the floor or by other approved means. Where pans are fixed on wooden floors such floors shall be covered with lead or approved composition.

(2) The base of the pan shall be secured with brass screws to a raised block covered with lead or composition finishing $1\frac{1}{4}$ inches above floor level and the block shall not extend beyond the base of the pan.

Closet Pans and Seats.

139. Closet pans and seats shall be of approved type.

Flushing Apparatus.

140. (1) Approved apparatus shall be provided for the effective application of water to the closet pan, and for the efficient flushing and cleansing of the pan, and the removal therefrom of any solid or liquid matter which may, from time to time be deposited therein.

(2) Such apparatus shall have a flushing capacity of two gallons and shall be so constructed, fitted and placed as to supply water for use in the pan without any direct connection from the pan to any water service pipe upon the property.

Flush Pipes.

141. Flush pipes to closet pans shall be of brass, copper, 6 lb. lead or drawn galvanised steel, of not less than 22 gauge, or other approved material, and shall have a minimum diameter of $1\frac{3}{8}$ inches.

Flushing Apparatus other than Cisterns.

142. Flush valves shall be of a type approved by the local authority and in each case shall be provided with a fullway stop cock fixed in such position as to be easily accessible.

Storage Tanks.

143. (1) Provision for the storage of water for flushing purposes shall be made in schools, hotels, hospitals, public institutions and other buildings when directed and whenever flushing valves are installed.

(2) The storage tank shall have a capacity of not less than 10 gallons for each water closet, slop hopper or urinal stall and any other approved fixture required to be flushed, with a minimum of 50 gallons when directed by the local authority.

(3) Where the capacity of a tank exceeds 50 gallons it shall be fitted with a fullway valve on the main feed to valves.

(4) Flush valves installed in private residences and self-contained flats shall be provided with independent storage tanks.

(5) In no case shall plumbing fixtures be served with water from a storage tank supplying a hot water system, unless the supply is taken off at a point in the cistern where it will not lessen the storage capacity required for the plumbing fixtures.

(6) Unless otherwise approved by the local authority, the storage tanks shall be placed 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 galvanised iron, lead, or other approved impervious material, with at least a $1\frac{1}{2}$ inch overflow, shall be fixed under the storage tank.

(7) Every storage tank shall be provided with an approved cover.

(8) The head of water measured vertically from the top water level of storage tanks to the level of the point of discharge into a cistern shall be not less than 10 feet, but the head in the case of discharge into a flush valve shall be such that the flush valve will operate to the test required by the local authority.

(9) 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. dia.
For 3 to 6 cisterns	.....	.....	.....	.....	.....	.....	1 in. dia.
For 7 to 25 cisterns	.....	.....	.....	.....	.....	.....	$1\frac{1}{2}$ in. dia.
For 26 to 50 cisterns	.....	.....	.....	.....	.....	.....	2 in. dia.

(10) Where more than 50 cisterns are supplied, or where more than 10 cisterns 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 local authority for decision.

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

Venting Closet Pans, Slop Hoppers and Urinals.

144. (1) Unless otherwise directed or permitted, every closet pan, slop hopper, or urinal which is not connected directly to a drain, shall discharge into a soil ventilator pipe or combined waste ventilation pipe except in the case where there are no other fixtures connected to the soil pipe or combined waste pipe in which case discharge will be permitted into a soil pipe or combined waste pipe without extension as a ventilator pipe, provided the fixture is ventilated by an anti-siphonage vent in accordance with the requirements of by-laws 86 and 97.

(2) Except as hereinafter provided every internal closet pan, slop hopper or urinal and every external closet pan, slop hopper, or urinal, the outlet of which is over 10 feet from vented drain, or where siphonage occurs, shall be ventilated by an anti-siphonage vent in accordance with by-laws 86 and 97, provided that the installation of an anti-siphonage vent shall be optional if—

- (a) the outlet of the fixture is within 4 feet of soil vent pipe or combined waste pipe;
- (b) no closet pan, slop hopper, bath, wash-troughs or group of other fixtures of total discharge rate exceeding eight fixture units is connected to such soil pipe or combined waste stack at a higher level; and
- (c) no siphonage occurs.

Grouped External Closets.

145. Where there are two or more external water closet pans grouped and connected directly to a drain, the drain shall be separately ventilated for every group of not more than six pans with vents in accordance with the requirements of by-law 97 for branch vents, or each closet pan may be ventilated by means of an anti-siphonage vent in accordance with the requirements of by-laws 88 and 97.

Urinals.

146. Every restaurant, boarding-house, lodging-house, school, shop, factory, office, public building, or building used for public entertainment and any premises licensed under the Liquor Act, 1970, shall be provided with urinal accommodation in accordance with the requirements of either the Health Act, 1911, or the Factories and Shops Act, 1963, whichever is applicable to the case, and of any regulations made thereunder.

Internal Urinals.

147. The position, approaches, arrangement of lighting, ventilation, etc., for internal urinals shall comply as nearly as possible with the provisions as to internal water closets, but the ventilation shall be such that at least 50 square inches clear opening for each stall shall be provided.

Treatment of Floors.

148. The floor in front of a urinal shall be covered with approved impervious material for a width of not less than one foot six inches and graded to drain to urinal.

Hose Taps for Urinals.

149. Every public urinal shall be provided with a tap suitable for hosing of floors.

External Urinals.

150. (1) External urinals shall be constructed in an approved position of approved slabs of slate or other impervious material and channels.

(2) The slabs shall be fixed against a brick or concrete wall in an approved manner, and shall be at a height of at least four feet from the floor.

(3) All fastenings shall be of brass, and channels shall be of stoneware six inches wide, of semicircular section and graded with an even fall to outlet.

(4) An outlet shall be provided for each 10 feet of channel or part thereof.

(5) The floor in front of every urinal shall consist of approved impervious materials for a width of one foot six inches as provided in by-law 148 and shall be graded towards the channel with a fall of one half inch to the foot.

Flushing Apparatus.

151. Flushing cisterns fitted with approved apparatus operated by hand shall be fixed on all urinals.

Flushing Cisterns.

152. (1) The discharge from a urinal flushing apparatus shall be not less than one gallon for each urinal stall, or for every two feet width of slab back urinal.

(2) The height of a cistern shall, unless otherwise permitted, be at least six feet six inches from the floor to the bottom of the cistern.

(3) The cistern shall be so fixed that the ball cock is accessible.

(4) A separate stop-tap shall be provided for each urinal cistern.

Flush Pipes.

153. (1) Flush pipes for urinals shall be constructed of copper or brass of the following diameters:—

For 1 gallon cistern— $\frac{3}{4}$ in. diameter (external).

For 2 gallon cistern—1 in. diameter (external).

For 3 gallon cistern— $1\frac{1}{4}$ in. diameter (external).

(2) Where permission is given to instal cisterns of greater capacity the size of the flush pipes shall be as directed by the local authority.

(3) (a) If the discharge pipe from the cistern used is $\frac{3}{4}$ in. in diameter, one spreader only shall be permitted.

(b) If the pipe used is 1 in. in diameter, two spreaders shall be permitted.

(c) If the pipe used is $1\frac{1}{4}$ in. in diameter, three spreaders shall be permitted.

(4) Saddle or bridge pieces shall be of approved diameter where same are necessary, and flush pipe clips, bolts, and screws used in fixing flush pipes and cisterns shall be of brass or copper.

(5) Where wall urinals are permitted the distance between spreaders shall not exceed two feet unless approved by the local authority.

Flush Valves for Urinals.

154. (1) Every urinal flush valve shall be supplied from a storage tank which shall comply with the requirements of by-law 143.

(2) Urinal flush valves may be supplied from a storage tank serving water closets, or to the supply pipes therefrom, provided that the above storage capacity shall be provided in addition to that required for the water closets.

(3) A full-way stop-cock shall be provided for each flush valve in such a position as to be easily accessible.

Slop Hoppers.

155. Slop hoppers shall be made in one piece of approved impervious material and provided with approved flushing apparatus of two-gallon capacity similar to that set out for water closets in by-laws 140, 141, 142 and 143.

Ventilation, Light, etc.

156. The position, approaches, arrangement of light, and ventilation of slop hopper appointments shall comply, as nearly as practicable, with the requirements for water closets as set out in by-laws 132 to 136 inclusive.

Bib-cock over Slop Hopper.

157. A bib-cock shall be fixed directly over a slop hopper and at least 18 inches above such hopper.

Sinks, Baths, Lavatory Basins and Shower Compartments.

Fixing Sinks.

158. All sinks and approved combined sinks and draining boards shall be effectively supported and traps and waste pipes shall be left readily accessible for inspection and cleaning.

Galvanised Sheet-iron Baths.

159. Galvanised sheet iron baths shall not be enclosed and the bottom of each bath shall be effectively supported on legs.

Shower Compartments.

160. (1) The floors of shower compartments shall be graded to an approved two-inch diameter trapped outlet, and shall be constructed of not less than four inches of concrete, trowelled smooth or covered with tiles set in cement mortar, or of other approved impervious materials, or, if constructed of timber shall be covered with enamelled cast-iron, approved non-corrosive sheet metal, or other approved material, turned up at the edges and properly flashed.

(2) The level of the grating on the outlet shall be at least two inches below the level of the floor outside and adjoining the shower compartment, or where a kerb is provided, two inches below the level of the kerb.

(3) The walls of shower compartments shall be finished with cement mortar rendered to a smooth surface, or covered with tiles set in cement mortar, or shall be lined with approved non-corrosive sheet metal, or other approved impervious material.

Showers over Baths.

161. Showers shall not be fixed over baths unless bath or bathrooms comply with the following conditions:—

- (a) walls within a radius of three feet from shower to be of an impervious nature; and
- (b) approved impervious floor graded to an outlet provided with approved flap valve.

Venting of Lavatory Basins.

162. All lavatory basin wastes shall be provided with anti-siphonage vents, unless anti-syphon traps are used.

Venting of Kitchen Sinks Discharging into Grease Traps.

163. All kitchen sinks discharging into grease traps shall be vented irrespective of the length of waste.

Lavatory Basins and Sinks.

164. (1) All basins and sinks shall be of approved type.

(2) Tip-up lavatory basins shall not be permitted unless by special permission of the local authority.

(3) Basin brackets shall be bolted to wall in an approved manner.

(4) Unless otherwise requested in writing to the local authority pillar taps shall be provided attached to basins.

Bed Pans, Bottle Slop Sinks, Bidets, Dental Units, Glass Washers, Teapot Washers and Foot Baths.

165. Bed pans and bottle slop sinks, bidets, dental units, glass washers, teapot washers, foot baths and other fixtures of a similar type shall be submitted for approval before fixing.

Bed Pan and Bottle Slop Sinks.

166. (1) Bed pan and bottle slop sinks shall be provided with approved flushing apparatus and shall be connected and vented to a soil pipe or drain in a similar manner as for connection of a water closet.

(2) The water supply to jets shall not be connected direct from the supply, but from a storage tank fixed at approved height.

(3) The service pipe to the jets shall be provided with a spring valve. Where a steam jet is used in such fixtures for sterilising purposes an approved vent pipe shall be taken off the fixture.

Bidets.

167. Bidets shall be provided with not less than 1½ in. waste pipe, trapped and vented in a similar manner to lavatory basins.

Dental Units.

168. (1) Dental units shall be provided with 1½ in. waste pipe, trapped and vented.

(2) The trap may be placed at floor level provided that the waste pipe between the trap and the fixture is one inch diameter copper or brass and free from bends.

(3) The water supply to the fixture shall be provided with a stop-cock and check valve which shall be fixed as near to the fixture as possible.

(4) The water supply pipe serving the dental unit shall not pass through the waste recesses of the unit.

Glass and Teapot Washers.

169. (1) The waste water from glass and teapot washers shall discharge into an approved 24 gauge copper or brass funnel which shall be trapped and vented in a similar manner as for baths and troughs.

(2) The waste pipe attached to the fixture shall terminate one inch above the top of the funnel.

(3) An independent stop-cock shall be provided for each fixture.

Foot Baths.

170. Approved foot baths shall be provided with not less than 1½ inch waste pipe trapped and vented, similarly to wash troughs and baths and the dimensions of such baths shall be approved by the local authority.

Safes and Overflows.*Safes—where required.*

171. Unless the floor is constructed of concrete of not less than four inches thickness or of other approved impervious material, graded as directed, safes of lead or other approved impervious material shall be fitted under slop hoppers and water closets, and under baths and wash troughs, where in the opinion of the local authority, there is a likelihood of damage being caused by the bath or troughs over-flowing.

Safe Overflows.

172. Unless otherwise permitted, every safe shall be drained by a separate two-inch 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, drain or sewer.

Cistern Overflows.

173. Every cistern supplied with water shall have an over-flow pipe of adequate size discharging in such a position that it will not cause damage and will act as a warning pipe.

Discharge from Safe Overflows.

174. (1) Overflows may discharge into the open air above ground level only when the discharge, in the opinion of the local authority will not cause any inconvenience or nuisance.

(2) In all other cases the pipes shall be brought nearly to the ground surface, or be arranged to discharge where they will not prove a source of annoyance or inconvenience.

Existing Floors under Fixtures.

175. Where necessary, in the opinion of the local authority, every existing floor under a fixture shall be regraded, and a proper discharge pipe with flap valve fixed.

Existing Fixtures and Fittings, etc.

176. All existing fixtures, fittings and apparatus not in accordance with these by-laws and which in the opinion of the local authority are unsatisfactory shall be removed or replaced by approved fittings.

Supply of Water to Fixtures.

177. All water closets and other plumbing fixtures shall be provided by the owner with a sufficient supply of water from the service provided by the Minister of Water Supply, Sewerage and drainage or other service approved by the Minister, for flushing purposes to keep them at all times in a proper and cleanly condition.

Fixtures not Connected with Sewer.

178. No water service pipe shall be laid to supply any plumbing fixture in any property connected to the local authority's sewer unless such fixture is connected with the said sewers, or unless the local authority has previously given special permission, in writing, to lay such service pipe.

Standard Drawings for Fixtures and Fittings.

179. (1) Approved standard drawings of fixtures and fittings will be exhibited at the local authority's office.

(2) Due consideration shall be given by the local authority to the claims of any other fittings which may be presented for approval, and, if considered satisfactory, the same may be placed among and become one of the approved standard fittings.

(3) The local authority, may, from time to time, amend, alter, or cancel any or all of the standard fittings or type drawings, and replace them by other approved fittings or drawings.

PART V.—RATES AND CHARGES.

180. Sewerage rates shall become due and payable in each year in advance as from the date of making and levying of such sewerage rate.

181. Where sewage is discharged by measure by the owner or occupier of land, whether rated or otherwise, payment for same shall become due and payable within fourteen days after due service of the account unless otherwise agreed upon.

182. (1) Annual fees to be determined by the local authority shall be payable by the owner for sewerage services to non-rateable properties.

(2) For any sewerage service to rateable land before a rate is made a charge shall be payable by the owner of such land calculated on the same basis as if such land were rated.

PART VI.—GENERAL.

Division (1)—Sewerage Services.

Sewerage Services to Non-rateable Properties.

183. Applications for sewerage services to non-rateable properties shall be made to the local authority which may provide a service on payment of the determined annual fees, the cost of the extending of the sewer to the land if the sewer is not extended thereto, and installing the drain to the boundary of land. The applicant shall also bear the cost of maintaining the drain and of having it sealed when the service is no longer required.

The annual fee shall take the place of a sewerage rate and the general provisions of these by-laws shall apply to such services.

Division (2)—Offences and Penalties.

Gratuities Prohibited.

184. Officers, workmen, or agents of the local authority shall not solicit or receive any fee or gratuity whatever.

Interference with Pipes, etc.

185. No person shall make any connection or interfere with any pipe, sewer, or fitting of the local authority or with any sewer, or drain communicating therewith, at any other place than shall be approved of by the local authority, and the main shall only be tapped by the workmen of the local authority.

Penalties.

186. Any person committing a breach of any of the provisions of these by-laws, to which no specific penalty is attached, shall be liable on summary conviction to a penalty not exceeding \$40 and in addition may be ordered to pay any expense incurred by the local authority in consequence of such breach.

In the case of a continuing breach the offender shall be liable in addition to the fine and payment of expenses to a daily penalty not exceeding \$4 for each day the breach continues after notice thereof has been given by or on behalf of the local authority to the offender.

Division (3)—Miscellaneous.

Notice of Intention to Build.

187. The owner or occupier of any land adjacent to a sewer who shall erect or make, or cause to be erected or made any building or addition to an existing building on such land, shall, before the commencement of same, give notice in writing thereof to the local authority.

Schedule A.

METHOD OF COMPUTING THE SIZES OF SOIL PIPES, WASTE PIPES, COMBINED WASTE AND VENT PIPES, IN ACCORDANCE WITH THE REQUIREMENTS OF BY-LAWS 95, 96 AND 97.

Fixtures.

1. In accordance with by-law 95, 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 to be included in determining the number of fixture units to be provided for.

Sizes of Graded Soil Pipes, Waste Pipes and Combined Waste Pipes.

2. (a) By reference to by-law 96, determine from the maximum number of fixture units served at the point under consideration the required sizes and grades of the soil pipes, waste pipes, 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, Waste, and Combined Waste Stacks.

3. (a) By reference to by-law 96, determine from the maximum number of fixture units served at the point under consideration, the required sizes of vertical soil, waste, and combined waste stacks.

(b) Ascertain whether the number of fixture units connected to the stack within an 8 ft. length is within the permissible limits of paragraph (f) of by-law 96 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 paragraph (a) of by-law 96.

Size of Main Vents.

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

(b) From the table of permissible sizes in by-law 97 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 connection 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 connection 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 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 by-law 97 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 pipe or waste pipe which it serves.