S.I. 1983 No. 151

Barbados Water Authority Act, 1980
(Act 1980–42)

THE SEWERAGE REGULATIONS, 1982

The Board in exercise of the powers conferred on it by section 28 of the *Barbados Water Authority Act, 1980* makes the following regulations:

1. These regulations may be cited as the *Sewerage Regulations, 1982.* Short title

2. In these regulations Definitions

"biochemical oxygen demand" or "B.O.D." means the quantity of oxygen utilised in the biochemical oxidation of organic matter under standard laboratory procedure in five days at twenty degrees celsius, expressed in milligrams per litre;

"building sewer" means any culvert, pipe and accessory extending from a building for carrying off sewage or industrial waste to a public sewer;

"defined district" means an area served by a public sewer;

"garbage" means solid waste from domestic or commercial preparation, cooking and

dispensing of food, and from the handling, storage and sale of any produce;

"industrial waste" means the liquid waste from industrial manufacturing processes, *trade or business*;

"natural outlet" means any outlet into a water course, pond, ditch, lake or other body of surface or ground water;

"pH" means the logarithm of the reciprocal of the hydrogen ion activity in moles per litre at a given temperature;

"public sewer" means any sanitary sewer under the control of or maintained by the Authority for carrying off sewage or industrial waste from a building sewer;

"sanitary fixture" means any receptacle that receives water or other liquid or water-bourne waste and discharges it into a drainage system to which the fixture is directly or indirectly connected;

"sanitary sewer" means any artificial conduit used for the conveyance of sewage into which storm, surface and ground waters are not intentionally allowed to flow;

"sewage"

(a) means a combination of water carried waste, and

(b) includes

(i) human excreta and liquid waste discharged from sinks, basins, baths, and

(ii) water that has been used for domestic purposes;

"sewerage system" means the system of plant, works, sanitary sewers and their accessories and processes for the conveyance treatment and disposal of sewage and industrial waste;

"sewage treatment plant" means any arrangement of devices and structures used for treating sewage and industrial waste;

"sewage works" means facilities for collecting, pumping, treating and disposing of sewage and industrial waste;

"storm drain" means a conduit that carries storm and surface waters and drainage including unpolluted cooling water or

swimming pool drainage, but excluding sewage and industrial waste;

"suspended solids" means solids that either float on the surface of or are in suspension in water, sewage or other liquid, and that are removable by standard laboratory methods;

"water course" means a channel in which a flow of water occurs, either continuously or intermittently.

Right of domestic premises to service

3. Subject to the Act and these regulations the owner or occupier of any domestic premises or the owner of any private sanitary sewer within the defined district is entitled to have his sanitary sewer connected to a public sewer and to discharge sewage from a building sewer on the premises or from the private sanitary sewer.

Right of commercial and industrial premises

4. (1) Subject to the Act and these regulations the Authority shall permit commercial and industrial institutions in the defined district to carry liquids from their manufacturing processes into public sewers; but industrial waste shall not be discharged into a public sewer without the permission in writing, of the General Manager.

(2) The permission of the General Manager given under paragraph (1) is subject to such terms and conditions as he may specify in each particular case.

(3) Nothing in these regulations shall be construed as requiring the Authority

(a) to admit storm drainage or surface waters into a public sewer,

(b) to admit into a public sewer any liquid that would affect the sewer, or the treatment or disposal of the contents of the sewer, or would, from its temperature or otherwise, be injurious to health, or

(c) to provide the facilities referred to in paragraph (a) or (b) where a public sewer or sewage disposal works are inadequate.

Premises required to be connected

5. (1) The owner or occupier of any premises within a defined district shall connect all sources of waste water within the premises, excluding rain or surface water, to a public sewer, and the owner or occupier of the premises is liable to meet the costs of the connection.

(2) The Authority may by notice in writing require the owner or occupier of any premises referred to in paragraph (1) to connect the premises to the public sewer within such reasonable time not being less than ninety days as is specified in the notice.

(3) Where the notice referred to in paragraph (2) is not complied with, the Authority may carry out the necessary work and recover the expenses incurred from the person on whom the notice was served.

(4) In proceedings for the recovery of expenses mentioned in paragraph (3) the court may consider

(a) whether any requirement contained in a notice referred to in this regulation was reasonable, and

(b) whether the expenses ought to be borne wholly or in part by some person other than the defendant to the proceedings, and the court may make such order concerning the expenses or their apportionment as seems to the court to be just.

(5) A court may not order expenses referred to in paragraph (4) or any part of the expenses to be borne by any person other than the defendant to the proceedings unless the court is satisfied that the other person had due notice of the proceedings and an opportunity to be heard.

6. (1) Ships within the territorial waters of Barbados shall dispose of their sewage to the public sewer. Ships to dispose of sewage to public sewer

(2) The Authority shall make provision at all harbours, ports and other havens within a defined district for the reception, storage and discharge to the public sewer of sewage from ships.

7. No person shall, in any defined district Prohibition of discharge to natural outlets, etc.

(a) discharge sewage or industrial waste to any natural outlet, the ocean, or the land, or

(b) construct new or rehabilitate old septic tanks, cesspools, privies or other facilities intended or used for the disposal of sewage or industrial waste.

8. Subject to these regulations, no person shall throw or deposit in, or cause or permit to be thrown or deposited in any vessel or receptacle connected to a public sewer, any matter except sewage or industrial waste. Only sewage to go into sewers

9. (1) No person shall throw, empty or turn, or suffer or permit to be thrown or emptied or to pass, into any public sewer, or into any sewer communicating with a public sewer Prohibition of certain discharges

(a) any matter likely to damage the sewer, to interfere with the free flow of its contents, or to adversely affect the treatment and disposal of its contents,

(b) any chemical refuse or waste steam, or any liquid of a temperature higher than forty-four degrees celsius being refuse or steam that, or a liquid that when heated, is, either along with or in combination with the contents of the sewer or drain, dangerous, the cause of a nuisance, or injurious to health, or

(c) any petroleum spirit, or carbide of calcium.

(2) In this regulation the expression "petroleum spirit" means

(a) any crude petroleum,

(b) any oil made from petroleum, or from coal, shale, peat or other bituminous substances, and

(c) any product of petroleum or any mixture containing petroleum that

when tested in an appropriate manner gives off an inflammable vapour at a temperature lower than twenty-three degrees celsius.

(3) No one shall discharge the substances specified in paragraph (4) into a public sewer unless their concentration

(a) is reduced by treatment at the source to a point that satisfy the requirements of these regulations, or

(b) does not adversely affect sludge digestion or any other bio-chemical, biological or other sewage treatment process.

(4) The substances refetrred to in paragraph (3) are

(a) steam or hot liquids with temperatures above forty-four degrees celsius,

(b) water or waste of pH less than 5.5 or greater than 9.0,

(c) industrial waste containing

(i) alcohol

(ii) antibiotics,

(iii) arsenic,

(iv) bromine, iodine, chlorine, fluorine,

(v) copper,

(vi) creosol or creosotes,

(vii) cadmium,

(viii) cyanides,

(ix) formaldehydes,

(x) lead,

(xi) mercury,

(xii) phenols and their derivatives,

(xiii) sulphonamides,

(xiv) zinc compounds,

(xv) strong oxidizing agents such as chromates, dichromates, permanganates and peroxide,

(xvi) chemical compounds producing toxic, inflammable or explosive gases, either upon acidification, alkalization, oxidation, or reduction,

(xvii) strong reducing agents such as nitrites, sulphides, sulphites and thiosulphates,

(d) highly coloured matters and those creating excessively offensive odours, and

(e) waste of whatever kind that cannot be satisfactorily purified by the normal processes of sewage treatment.

(5) No person shall discharge grease or any other noxious substance into any public sewer.

(6) Where a sink at a hotel, restaurant, boarding house, laundry or other place where grease or any other noxious substance is used is connected to the public sewer, the hotel, restaurant, boarding house, laundry or place shall be provided with a grease trap of a design approved by the General Manager.

(7) Industrial waste from garages, motor vehicle service stations or places where mechanical

vehicles or other machines are washed shall, before being discharged over a trapped gully basin, be drained through a properly constructed grease trap of a design approved by the General Manager.

(8) A grease trap shall be cleaned as often as may be necessary to maintain it in a sanitary condition.

Food grinders

10. Waste matter from commercial and domestic food-grinders and similar appliances may only be discharged into a public sewer with the permission of the Authority and under such conditions as the General Manager determines.

Swimming pools

11. Waste water from swimming pools may only be discharged into the public sewer under such conditions and at such rate of flow as the General Manager authorises in each particular case.

Authority's power of alteration and discontinuance

12. (1) The Authority

(a) may alter the size or course of any public sewer,

(b) may discontinue and prohibit the use of any public sewer, either entirely or for specified purposes.

(2) Before any person who is lawfully using the sewer referred to in paragraph (1) (b) is de-

prived by the Authority of the use of the sewer, the Authority shall provide a sewer as effective as the one discontinued, and shall at its expense carry out any work necessary to make the person's building sewer communicate with the sewer provided by the Authority

Notice to owner or occupier

13. (1) Where any building sewer or fixture

(a) has been constructed contrary to the directions of the Authority or these regulations,

(b) is in bad condition, or

(c) requires alteration or amendment,

the Authority shall forthwith give notice in writing to the owner or occupier of the premises requiring him forthwith, or within a reasonable time specified in the notice, to do the necessary work.

(2) A person who fails to comply with a notice referred to in paragraph (1) is liable on summary conviction to a fine of fifty dollars and thereafter to a further fine of fifty dollars in respect of each day the default continues after a conviction is first obtained.

(3) The Authority may, where a person fails to comply with a notice under paragraph (2), execute all necessary work and recover the expenses as a civil debt due by the person to the Authority.

(4) Paragraph (3) is in addition to any penalty imposed under paragraph (2).

Private sewers to comply with requirements of general systems

14. (1) Where a person proposes to construct a sanitary sewer, the Authority may, if it considers that the proposed sewer is, or is likely to be needed to form part of a general sewerage system that the Authority has provided or proposes to provide, require him to construct the sewer in a manner appropriate for its use as part of a general sewerage system; and he shall comply with the requirement of the Authority.

(2) A person aggrieved by any requirement mentioned in paragraph (1) may, within twenty-eight days after he has notice of the requirement, appeal to the Minister who may either disallow the requirement or allow it with or without modification.

(3) Where the Authority makes a requirement mentioned in paragraph (1), the Authority shall repay to the person constructing the sanitary sewer mentioned in that paragraph any additional expenses reasonably incurred by him in complying with the requirement, and until the sewer becomes a public sewer, the Authority shall also repay him so much of any expenses reasonably incurred by him in repairing or maintaining the sanitary sewer that are attributable to the requirement.

(4) Where any question arises as to the amount of any payment to be made to any person

under paragraph (3) the question may, on his application, be determined by a court of summary jurisdiction, or if he so requires, be referred to arbitration.

Private facilities

15. Every owner or occupier of premises on which any sanitary sewer, water closet, urinal, slop sink or other sanitary installation has been installed or is being installed, and every person who is or has been concerned in the installation of any sanitary sewer, water closet, urinal, slop sink or other sanitary installation on any premises shall ensure that the sanitary sewer, water closet, urinal, slop sink or other sanitary installation has been or is being installed and is maintained in accordance with these regulations.

No work to be done without consent of the Manager

16. No person shall, without the consent of the General Manager, install, alter or remove any building sewer, water closet, urinal, slop sink, bidet, lavatory, bath, cistern or any other sanitary fixture necessary for the conveyance of sewage, house slops, or waste water from any premises to a public sewer.

Authority to keep maps

17. (1) The Authority shall keep at its office, for inspection by any person at all reasonable hours, a map showing and distinguishing public sewers.

(2) The Authority may not charge a fee for inspection of the map referred to in paragraph (1).

Form of application

18. (1) Any person, hereinafter referred to as "the applicant" who, being the owner or occupier

of premises, wishes to execute at the premises any building sewer work, or to extend or alter old or new work, excluding the repair of leaks, connected with a public sewer shall apply to the General Manager for permission to execute the work.

First Schedule

(2) An application made pursuant to paragraph (1)

(a) must be in accordance with form A or B, as the case may be, in the First Schedule,

(b) must be accompanied by plans in quadruplicate showing the connections, locations and fixtures from the junction of the public sewer to the termination above the roof of the building, and

(c) must be accompanied by any incidental information the General Manager requires.

Approval of plans

19. (1) No person shall commence work on a building sewer mentioned in regulation 18 until the plans mentioned in that regulation have been approved by the General Manager and one copy of the plan is returned to the applicant.

(2) The plans mentioned in paragraph (1)

(a) must be signed by the applicant, and

(b) must be certified accurate and signed by the person who prepared them.

Requirements for plans

20. (1) Plans mentioned in regulation 19 must comply with the requirements of the Authority, and must have indicated thereon

(a) the site plan of all buildings within the premises, the boundaries of the applicant's land and the names of adjoining properties and of the proprietors thereof, and any adjoining roads,

(b) the position and dimensions of

(i) latrines, kitchens, bathrooms, rainwater channels or pipes, whether existing or proposed to be constructed,

(ii) building sewers, sinks, gullies, inspection chambers, manholes, and other appurtenances,

that the applicant proposes to construct, and

(c) the location and dimensions of any structure already existing on the premises.

(2) The nature of pavements and exposed surfaces and any other information that in the opinion of the General Manager is necessary for the purposes of these regulations must be noted on the plans mentioned in paragraph (1)

(3) The diameter and gradient of pipes and junctions proposed to be constructed and the levels of any points that might be required for the determination of the gradients must be clearly marked on the plans mentioned in paragraph (1).

(4) The paper or cloth on which plans are drawn or printed must, where practicable, conform with one of the sizes specified by the General Manager.

Examination and verification of plans

21. (1) The General Manager

(a) shall examine and verify plans referred to in regulation 20, and

(b) shall make such alterations or corrections, if any, as he considers necessary.

(2) Where the General Manager examines any plans and, after visiting the premises to which the

plans relate, finds the plans inaccurate, a fee of ten dollars is payable by the applicant to the Authority if so demanded for every subsequent visit the General Manager makes to the premises for the purpose of correcting the plans or ascertaining their correctness.

Plans to be the property of the Authority

22. Where the General Manager approves plans under regulation 19 he shall

(a) send one copy of the plans to the applicant,

(b) send one to the Ministry of Health, and

(c) retain the other copies for the purposes of the Authority.

Approved plans to be adhered to

23. (1) Plans approved by the General Manager, shall be strictly adhered to in the execution of the work.

(2) No deviation from the approved plans may be made, except with the consent in writing of the General Manager, and any deviation sanctioned by him shall be clearly marked on the plan and initialled by the General Manager.

Levels to be referred to a fixed datum

24. Where necessary, levels inscribed on plans mentioned in these regulations shall be referred to the datumplane adopted by the Authority, and the

Authority shall furnish on request the elevations of *relevant available bench-marks.*

The level and position of the point of junction

25. (1) The approximate level and position of the point of junction of proposed work with a public sewer shall be furnished by the General Manager on application in writing being made to him.

(2) The exact level mentioned in paragraph (1) shall be determined by opening the ground if necessary and exposing the pipe; and building sewers shall be so designed as to connect properly with the point of junction.

Notice prior to commencement of work

26. (1) Where building sewer plans are approved by the General Manager and returned to an applicant, the applicant shall, by notice in writing inform the General Manager of the date on which the applicant intends to begin the work.

(2) After pipes and other appurtenances have been laid, but before pipe-trenches have been filled in or before the pipes and other appurtenances have been covered or concealed in any manner, the applicant or his accredited agent shall give notice in writing to the General Manager that the work is ready for inspection.

(3) The General Manager shall within two working days of the receipt of the notice referred to in paragraph (2), inspect and test the work and if he approves the work he shall issue to the applicant a

certificate of approval and the applicant shall cover the work.

(4) Where before the expiration of the two working days mentioned in paragraph (3) any work has been covered before it has been inspected and approved, the applicant shall, at his own cost, upon the request of the General Manager, immediately uncover the work.

Notice that defects have been remedied

27. (1) Any defects discovered by the General Manager in any work executed pursuant to these regulations shall be made good to his satisfaction before the ground is filled in or the pipes covered or otherwise concealed.

(2) Where defects mentioned in paragraph (1) have been made good, the applicant or his accredited agent shall give notice to the General Manager that the work is ready for inspection.

(3) Where the General Manager approves work referred to in paragraph (2) he shall immediately issue to the applicant a certificate of approval and the applicant shall cover the work.

(4) The General Manager may, after issuing a certificate of approval inspect and test the work in respect of which the certificate was issued and any defect discovered by him shall be made good to his satisfaction at the cost of the applicant.

Final certificate

28. After work has been completed and finally inspected, and approved by the General Manager, he shall issue to the applicant a final certificate to that effect.

Fee for inspection under certain circumstances

29. Where the applicant fails to remedy any defects or to complete any work, or for any other reason, the General Manager finds it necessary to visit the work more than twice then, the applicant shall pay to the Authority on demand a fee of twenty dollars for each additional visit.

Specifications of materials

30. (1) Specifications of materials, appurtenances and fixtures to be used in a building sewer shall be prepared by the Authority and may be inspected at the office of the General Manager.

(2) No pipes, materials, fixtures or other appliances of a quality inferior to the specifications mentioned in paragraph (1) shall be used in any building sewer.

Minimum quality of materials

31. An applicant may appeal to the Board against the decision of the General Manager respecting the minimum quality of material and the construction or pattern of appurtenances to be used in a building sewer.

Construction and maintenance Second Schedule

32. The Second Schedule has effect respecting the standards and specifications for construction and maintenance of sewers, sewerage works and fixtures to which these regulations apply.

Junction pipes installed by the Authority

33. (1) A side junction for building sewers for each premises shall be inserted as required in all sewer mains in streets and lanes, and in every case a pipe shall be laid by or at the expense of the Authority from the sewer to a point on the boundary of the premises at which point the junction of the building sewer shall be met with the pipe.

(2) The position and level of each point of junction shall be fixed by the General Manager.

More than one junction to be paid for by the applicant

34. (1) The Authority shall provide, free of cost, one junction and pipe from a main sewer for any one premises.

(2) Where it is necessary to provide more than one junction and pipe mentioned in paragraph (1) the cost of the additional junction and pipe shall be borne by the applicant.

(3) The applicant shall pay the cost of providing any additional junction and pipe before

(a) the plan relating to any work to be done in connection with the provision of the junction and pipe is returned to the applicant, and

(b) any work in connection with the junction and pipe is carried out.

(4) The position of every additional pipe mentioned in paragraph (1) as shown on the plan shall be indicated on the ground by the applicant.

Penalty

35. Any person who contravenes any of these regulations is guilty of an offence and is liable on summary conviction to a fine of $1,000 or imprisonment for twelve months or both; and in the case of a continuing offence to a further fine of $100 *for each day or part thereof during which the offence* continues after a conviction is first obtained.

FIRST SCHEDULE

(Regulation 18(2))

THE BARBADOS WATER AUTHORITY ACT 1980
(Act 1980-42)

FORM A

Application for premises to be connected to Public Sewer

1. Situation of premises . . . . . .
   Name and Number on Street . . . . . .

2. Name and address of owner . . . . . .
   . . . . . .

3. Name of Tenant and . . . . . .
   Nature of tenancy . . . . . .

4. Description of premises and . . . . . .
   whether dwelling, store, etc., ...
   state if there is an open yard in . . . . . .
   connection with the street or . . . . . .
   lane . . . . . .

5. Number of persons residing or . . . . . .
   employed on the premises . . . . . .

6. Nature and extent of proposed . . . . . .
   sanitary arrangements . . . . . .

7. Description of water closet . . . . . .
   and flush tank to be used . . . . . .

FIRST SCHEDULE – *Cont'd*

FORM A

8. Name and address of Sanitary Constructor by whom the work is to be executed . . . . . .

9. General remarks: . . . . . .

(Signature of Applicant) . . . . . .

(Address) . . . . . .

(Date)

The General Manager,
Barbados Water Authority,
Pine, St. Michael.

Note: Plans in quadruplicate showing clearly the location of all proposed building *sewers, water closets, waste pipes, gully traps, grades and depths of sewers, etc.*, must accompany this application and no work must be commenced until the plans have been approved.

FIRST SCHEDULE - *Cont'd*

FORM B

Application for Extension, Alteration or Repair of Building Sewer

1. Situation of premises . . . . . .
   Name and Number on Street . . . . . .

2. Name and address of owner . . . . . .
   . . . . . .

3. Name of tenant and nature . . . . . .
   of tenancy . . . . . .

4. Nature and extent of proposed . . . . . .
   extensions, alterations or re- . . . . . .
   pairs to closet, drain or . . . . . .
   sanitary appliances or fittings . . . . . .

5. Description of water closet and . . . . . .
   flush tank to be used . . . . . .

6. *Name of Sanitary Constructor* . . . . . .
   by whom the work is to be . . . . . .
   executed . . . . . .

7. *General remarks* . . . . . .
   . . . . . .
   . . . . . .

(Signature of applicant) . . . . . .
(Address) . . . . . .
. . . . . .

(Date) . . . . . .

Note: Plans in quadruplicate showing the location of existing sewers etc., and indicating the proposed alterations, or extensions, must accompany this application and no work must be commenced until such plans have been approved.

SECOND SCHEDULE

(Regulation 32)

CONSTRUCTION SPECIFICATIONS

General requirements for sewer

1. (1) Building sewers shall be laid in straight lines from point to point and shall in no part have gradients less than those specified in this Schedule.

(2) A sufficient number of inspection chambers and *cleaning eyes and such other necessary appurtenances shall be* provided to the satisfaction of the General Manager, to enable the interior of the pipe to be inspected during construction *and*, to provide at all times means for the removal of obstructions without breaking or dislocating the pipes.

(3) The minimum internal diameter of building sewers must be 100 millimetres.

Reduction of gradients when permissible

2. (1) Building sewers must have throughout a gradient of not less than one in one hundred, but with the consent of the General Manager a lesser gradient may be used.

(2) Any reduction in the gradient mentioned in subparagraph (1) shall be made in the portion of the building sewer nearest to the outlet, and shall be made in the main line of the pipe and not in the branches.

Provision for flushing

3. If the gradient of a building sewer is less than one in one hundred then, special means of flushing the sewer shall be provided if required by the General Manager.

Depth below ground and roadway

4. (1) Unless otherwise permitted by the General Manager all underground pipes shall be placed at a depth of not less than 900 millimetres below any roadway, and not less than 450 millimetres below any other ground level.

(2) Where pipes are permitted to be laid at any less depth they shall be properly protected in such manner and with such materials as the General Manager directs.

Pipe connected with building sewer

5. (1) Every pipe connected with a public sewer, whether the pipe is made of earthenware, cast iron or other approved material must be sound and impervious in all its parts, and must be jointed in the best manner.

(2) No cement or other jointing material may project from the joints, and the pipes shall be cleared from all internal projections and obstructions.

Joints in earthenware pipes

6. (1) The joints of earthenware pipes must be made of good quality hemp or jute gasket followed by lead or lead wool millimetres deep and must be so caulked that the joints are gas and water tight.

(2) Special jointing compounds, other than lead may, with the consent of the General Manager, be used.

(3) Flanged rubber compression ring or other mechanical joints when approved by the General Manager may be used in special circumstances.

Joints of iron pipes

7. (1) The joints of iron soil, waste and ventilating pipes, except where screw joints are used shall be formed with good quality hemp or jute followed by lead at least 30 mm deep which shall be so caulked that the joints are gas and water tight. Special jointing compounds, other than lead may, by permission of the General Manager be used.

(2) Flanged rubber compression ring or other mechanical joints when approved by the General Manager may be used in special circumstances.

Screwed joints

8. (1) In the case of screwed wrought iron or steel joints, red lead or other approved jointing compound approved by the General Manager must be used in making the joint.

(2) No paint or putty or running threads shall be used in making screwed joints.

Copper pipes

9. Joints on copper pipes may be of the soldered sleeve type or of such mechanical or compression type as the General Manager approves.

Connection of iron and lead pipes

10. (1) All connections of lead pipes with iron pipes must be made with a brass sleeve or ferrule of the same size as the lead pipe.

(2) The lead pipe shall be attached to the ferrule by a wiped solder joint.

Location of inspection chambers

11. Inspection chambers shall be provided in the following positions:

(a) at every point in a building sewer where two or more sewer lines converge, but in certain cases, with the permission in writing of the General Manager, underground connections may be made by means of 'Y' branches,

(b) at every point in a building sewer where any angle, bend, change in gradient or alteration in size occurs,

(c) at every point in the sewer line where there occurs a change in the type of pipe such as from metal to non-metal or from non-metal to metal pipes, and

(d) at such points in the building sewer so that no part of the sewer line is more than fifteen metres from the centre of an inspection chamber unless a greater distance is approved in writing by the General Manager.

Design of inspection chambers

12. (1) Every inspection chamber or manhole

(a) must be not less than 900 millimetres horizontally and 750 millimetres internally, *and*

(b) must be fitted with a strong cast iron manhole frame and movable cover of adequate size, design and construction approved by the General Manager and the cover must be fixed not lower than the surface of the adjoining ground or floor.

(2) The frame must be securely bedded on cement mortar made of one part cement and three parts sand with an adequate fillet around the exterior so that the frame cannot move.

(3) The minimum size of clear opening for covers on inspection chambers is 450 millimetres.

(4) The weight and type of manhole cover must in all cases be such that they are sufficiently strong to bear any traffic likely to pass over them.

(5) The interior corners of manholes and inspection chambers must be rounded off on a radius of not less than 50 millimetres with a fillet of mortar of the same quality as specified in paragraph (2).

(6) The concrete in floors or inverts of manholes and inspection chambers must be brought to a fine smooth surface properly floated and well worked in with a steel trowel.

(7) Suitable channels and benchings must be formed in the floors of the said manholes to collect, conduct or convey sewage or industrial waste.

(8) The surface of the channels must be rendered smooth and true in order to offer the least possible resistance to the flow of the sewage or industrial waste.

(9) Concrete in walls or arches must be moulded true on the exposed surface, and must be brought to a smooth and impervious surface.

(10) Concrete walls, arches and slabs of inspection chambers and manholes must be reinforced with steel bars of such size and set in such manner as the General Manager may require.

13. All 90 degree bends, duckfoot bends or tee pieces set at the base of a vertical soil or ventilating pipe must be bedded in a block of concrete not less than 375 millimetres square and 225 millimetres in depth.

Waste pipes to be trapped

14. All waste pipes must be trapped at each separate fixture and as close as possible to the fixture.

No trap

15. No trap shall be placed at the foot of a vertical soil or vent pipe.

Soil, waste or ventilating pipe

16. In no case shall a soil, waste or ventilating pipe be connected with a chimney or smoke stack either internally or externally.

Ventilating pipes

17. (1) Ventilating pipes must be of cast iron, asbestos cement, specially enamelled steel or of some other material approved by the General Manager.

(2) No earthenware or sheet metal shall be used for ventilating pipes.

Sewers to be water-tight and air-tight

18. (1) Building sewers

(a) must be water-tight and air-tight, and

(b) must be tested for water-tightness and air-tightness by hydraulic pressure or by such other means as the General Manager directs.

(2) Where any defective pipes are discovered they must be removed and replaced by sound pipes.

(3) Defective joints must be made water-tight and every part of the work must comply with these regulations and is subject to the approval of the General Manager.

Gully basins etc. inside buildings

19. (1) Where it is impracticable for any gully basin or inspection chamber to be located outside a building or where, on account of subsequent building extensions or alterations, a gully basin or inspection chamber falls within any building, covered way or area, the gully basin must be fitted with a specially sealed cover.

(2) A cover must be both water-tight and air-tight and must be bolted or so secured to the frame of the basin or chamber that it may be readily removed and replaced when necessary for inspection or cleaning.

(3) Notwithstanding paragraphs (1) and (2) cast iron accesses with bolted water-tight covers of a design approved by the General Manager may be securely fitted in the chamber frame instead of a sealed cover.

(4) Every sealed gully basin must be adequately ventilated by means of a pipe not less than 50 millimetres in internal diameter.

Pipes in soft ground

20. Where sewer pipes are run through soft or yielding ground they shall be laid with the use of such materials and methods and with such conditions as the General Manager directs.

Sewers not to be run under buildings

21. No person shall lay a sewer under any building, unless the General Manager certifies in writing that in his opinion it is impracticable or inexpedient to do otherwise.

Sewer under building

22. Where it is necessary to lay any sewer under a building the sewer shall be laid with the use of such materials and methods and with such conditions as the General Manager directs.

Building shall not be constructed over sewers

23. No person shall construct a building over an existing building sewer except with the written permission of the General Manager.

No rain water pipe to be used for sewage or industrial waste

24. A pipe used for carrying off rain water from the roof of any building shall not be used

(a) for carrying off sewage or industrial waste or

(b) as a ventilating pipe or antisiphon pipe for any sewer, soil pipe or trap.

Rain water to be excluded from gullies and inlets

25. (1) *Gullies or other inlets connected with building* sewers

(a) must be raised above ground level, and

(b) must be surrounded with a concrete kerb not less than *150 millimetres high* or otherwise protected against the ingress of rain or surface water.

(2) Condensation and waste cooling water from air conditioning plants shall be discharged over trapped gully basins.

(3) No rain or surface water shall be allowed to enter any sanitary sewer.

Sump pumps or ejectors

26. Where the use of sump pumps or ejectors is necessary in installations that lie below the level of a public sewer the following conditions of construction and operation apply:

(a) the sump must be constructed of water-proof concrete adequately reinforced or of cast iron,

(b) the sump must be of sufficient capacity to receive the peak sewage or waste flow for thirty minutes,

(c) sump discharge pipes to the public sewers must be provided with a check or non-return valve and a gate valve,

(d) the sump must be provided with a gas and air-tight metal cove, securely fastened in place,

(e) the sump must be adequately ventilated in accordance with these regulations, and

(f) the entire installation including ejector or pump together with the prime mover must be installed in well ventilated and easily accessible compartments.

Ventilating mutters

27. (1) A ventilating shaft not less than 100 millimetres in internal diameter,

(a) shall be erected at the termination of all building sewers, and

(b) shall be not less than 600 millimetres above the eaves of the highest building within a radius of 6 metres of the ventilating pipe.

(2) A ventilating wire cage, guard, cowl, or similar protection

(a) shall be fitted to the top of all ventilating pipes, and

(b) shall be of such a form as to protect the ventilating pipe from being choked with leaves and other obstructions.

(3) The total area of the openings in the guard or cowl must be at least equal to the area of a cross-section of the ventilating pipe to which it is fitted.

Branches exceeding 5 metres

28. Where building sewers have branches exceeding five metres in length, each branch shall, in respect of ventilation, be regarded as a separate building sewer unless the General Manager otherwise directs.

Back ventilating

29. (1) All trapped pipes that are likely to be subjected to syphonage or back pressure shall be fitted with a ventilation pipe from the crown of the trap.

(2) Every ventilating pipe from any water closet trap must have an internal diameter of not less than 50 millimetres and where ventilating pipes from more than four water closet traps are combined the diameter of the ventilating pipe must be not less than 75 millimetres.

(3) Ventilating pipes from water closet traps may be connected to a main soil and ventilating pipe only if the connection is made at a point above all other connections.

30. (1) Where two or more fixtures are attached to a single waste pipe all traps shall be back ventilated. Two or more traps

(2) Ventilating pipes shall be run separately or combined together to a point at least 600 millimetres above the eaves of the building.

31. An adequate air-gap shall be provided through free atmosphere between the lowest opening from any pipe or delivery cock supplying water to any tank, plumbing fixture or other device and the flood level rim or overflow of the receptacle. Air-gap in fixtures

WATER CLOSETS AND FIXTURES

32. (1) All water closets, bidets and fittings connected therewith Pattern to be approved

(a) must conform with standards laid down by the General Manager, and

(b) must be of patterns approved by the Authority.

(2) Each water closet

(a) must be capable of being kept clean with a flush of water of not more than 9 litres for each time the closet is used, and

(b) shall be provided with a trap or siphon, placed near to the pan and capable of maintaining a sufficient and effective water seal.

33. Every water closet shall be provided Flush tank

(a) with a siphonic waste-preventing flush tank of *satisfactory pattern, or*

(b) with a flush-tank of such other type as the General Manager approves.

Maximum capacity

34. No person shall use a tank giving a greater flush than 9 litres per closet.

Stop cock

35. The water service pipe to every flush tank shall be provided with a stop cock.

Overflow pipe

36. Every flush tank shall be provided with an overflow pipe, which must discharge into the open air, and not into the soil pipe, and the overflow pipe shall be arranged in such a manner as to act as a warning pipe.

Flushing valves

37. Where automatic flushing valves or flushometres are used, the valves must be of a waste-preventing type and must be supplied by a pipe of adequate size from a tank giving a volume of water under sufficient head to allow the flushing valves to operate satisfactorily and discharge at each separate operation of volume of water of not more than 9 litres per closet.

Water closets on upper floors

38. (1) Water closets installed on upper floors shall be connected to soil pipes of cast iron or steel or such other material as the General Manager approves.

(2) The soil pipes mentioned in sub-paragraph (1)

(a) must be not less than 100 millimetres in diameter,

(b) must be jointed with lead and gasket or such other jointing compound as the General Manager approves, and

(c) must be, wherever practicable outside the building or in a pipe duct within the building.

Ventilation of sewers not to be obstructed

39. There shall be no trap or obstruction to the free circulation of air through the whole course of a building sewer or soil pipe.

Fixtures to have traps

40. Baths, wash basins, lavatories and sinks, including slop sinks, shall be fitted with traps attached as close as possible to the fixture.

Size of waste pipe from basins and sinks

41. (1) The main waste pipe of wash basins, lavatories or sinks, other than slops sinks, must be not less than 35 millimetres in diameter.

(2) Waste pipes must be not less than 75 millimetres in diameter from slop sinks.

Size of waste pipes from baths

42. The main waste water pipe of each bath must, throughout its length, have an internal diameter of not less than 50 millimetres.

Tee fittings

43. (1) Tee fittings may be used only in connections made to vertical pipes.

(2) Connections to pipes, other than vertical pipes must be made with angle branches.

Waste pipe

44. (1) A waste pipe having an internal diameter of more than 50 millimetres may not be of lead unless the waste pipe is protected by suitable casings, in which case, lead pipes having a maximum internal diameter of 75 millimetres might be permitted.

(2) A tank shall be so installed as to be separate and distinct from any tank used for drinking water.

(3) Every flush tank must be capable of being filled in not more than twenty-five minutes or such less period as might be necessary for the satisfactory cleansing of the fixture; and the supply pipe to every such tank shall be fitted with two effective stop cocks in easily accessible positions, one stop cock being of the screw down type for regulating the supply to the tank and the other for shutting off the supply.

Made by the Board this 20th day of July 1982.

F. ODLE
Chairman
Board of Directors
Barbados Water Authority

Approved by the Minister this 3rd day of August 1982.

DONALD G. BLACKMAN
Minister responsible for the Barbados Water Authority.

(2) Baths, wash basins and sinks shall be provided with adequate overflows, the diameter of which must be not less than those specified for waste pipes.

URINALS

Construction of urinals

45. (1) Every urinal shall be fitted with a basin or stall of glazed material.

(2) A urinal of the basin type, shall be separately connected with the soil pipe by means of

(a) a pipe of lead, copper, cast iron effectively protected from corrosion, galvanized wrought iron, or galvanized malleable iron, or

(b) such other material, having a trap of an internal diameter of not less than 50 millimetres, as the General Manager approves.

(3) Where a urinal is of the stall type, a properly graded glazed channel shall be provided along the bottom of the stall and the channel shall lead to a glazed trap having an internal diameter of not less than 100 millimetres.

(4) Traps

(a) must have a deep and effective water seal and effective access for cleaning, and

(b) must be covered with a strong movable grid.

Automatic flush tank

46. (1) Every urinal shall be fitted with a suitable and efficient automatic flush tank with a capacity of 4.5 litres for each basin, or for each 685 millimetres of length of stall.