

Introduction

General

This Technical Booklet has been prepared by the Department of the Environment for Northern Ireland and provides for certain methods and standards of building which, if followed, will satisfy the requirements of the Building Regulations (Northern Ireland) 1990 ("the Building Regulations").

There is no obligation to follow the methods or comply with the standards set out in this Technical Booklet.

If you prefer you may adopt another way of meeting the requirements of the Building Regulations but you will have to demonstrate that you have satisfied those requirements by other means.

Other regulations

This Technical Booklet relates only to the requirements of Regulations N3, N5 and N7. The work will also have to comply with all other relevant Building Regulations.

British Standards and European Technical Specifications

In this introduction and throughout this Technical Booklet any reference to a British Standard shall be construed as a reference to a:

- (a) British Standard or a British Standard Code of Practice, or
- (b) national technical specification, of a Member State of the European Community, which provides an equivalent standard of protection or performance.

Materials and workmanship

Any work to which a requirement of the Building Regulations applies must, in accordance with Part B of the Building Regulations, be carried out with suitable materials and in a workmanlike manner. You can comply with the requirements of Part B by following an appropriate British Standard or you may demonstrate that you have complied with those requirements by other suitable means, such as an acceptable British Board of Agrément Certificate, Quality Assurance Scheme, Independent Certification Scheme or Accredited Laboratory Test Certificate.

Diagrams

The diagrams in this Technical Booklet supplement the text. They do not show all the details of construction and are not intended to illustrate compliance with any other requirement of the Building Regulations. They are not necessarily to scale and should not be used as working details.

References

Any reference in this Technical Booklet to a publication shall, unless otherwise stated, be construed as a reference to the edition quoted, together with any amendments, supplements or addenda thereto current at 31st December 1988.

Contents

	Page
Section 1 Sanitary Pipework	2
Section 2 Underground Foul Drainage	7
Section 3 Rain-water Drainage	13

Section 1 – Sanitary pipework

Materials for pipes, fittings and joints

1.1 The materials for sanitary pipework shall be in accordance with the relevant British Standard given in Table 1. Where different metals are used they shall be separated by non-metallic material to prevent electrolytic corrosion. Pipes shall be firmly supported without restricting thermal movement.

Capacity of pipes

1.2 The capacity of a sanitary pipework system shall be adequate to carry the expected flow at any point, provided that where a minimum size of pipe is stated in a paragraph, Table or Diagram that size of pipe shall be provided. The expected flow depends on the type, number and grouping of appliances and the flow rates given in Table 2 shall be assumed.

Water seals (traps)

1.3 All points of discharge into a system shall be fitted with a water seal (trap) to prevent air from the system entering the building. The minimum size of trap and depth of seal for an appliance shall be as given in Table 3.

Watertightness

1.4 The system shall be capable of withstanding an air or smoke test of a positive pressure of 38 mm on a water gauge for at least 3 minutes, and every trap shall maintain a water seal of at least 25 mm.

Access for cleaning blockages in traps

1.5 If a trap forms part of an appliance the appliance shall be removable. All other traps shall be fitted directly after the appliance and shall be removable or be fitted with a cleaning eye.

Ventilation

1.6 To prevent the water seal from being broken by the pressures which may develop in the system a branch pipe shall either be ventilated as described in paragraph 1.10 or constructed as described in paragraph 1.11.

Table 1 Materials for sanitary pipework

Material	British Standard
Pipes:	
cast iron	BS 416: 1973
copper	BS 864: Part 2: 1983, BS 2871: Part 1: 1971
galvanised steel	BS 3868: 1973 (1980)
uPVC	BS 4514: 1983
polypropylene	BS 5254: 1976
other plastic	BS 5255: 1976
Traps:	
plastic	BS 3943: 1979 (1988)

Table 2 Flow rates from appliances

Appliance	Flow rate (litres/sec)
wc (9 litre cistern)	2.3
washbasin	0.6
spray tap basin	0.06
sink	0.9
bath	1.1
shower	0.1
automatic washing machine	0.7
urinal (per person unit)	0.15

Table 3 Minimum trap sizes and seal depths

Appliance	Diameter of trap (mm)	Depth of seal (mm)
washbasin bidet	32	75*
sink bath shower food waste disposal unit urinal bowl	40	75*
wc	75	50
sanitary towel macerator	40	75
food waste disposal unit (industrial type)	50	75
urinal (1 to 6 person units)	65	50

* May be reduced to 40 mm for a washbasin, sink, bath or shower located on the ground floor and discharging into an external gully.

Overflow pipes

1.7 Where an overflow pipe discharges to a branch pipe or a stack it shall do so through a trap. In all other cases an overflow pipe shall discharge in a visible location and shall not cause dampness in, or damage to, any part of a building.

Branch pipes

1.8 A branch pipe shall be at least the same diameter as the appliance trap and where it serves more than one appliance and is unvented, it shall be of at least the diameter and gradient given in Table 4. A bend in a branch pipe shall have as large a radius as possible and never be less than 75 mm centre line radius. A junction on a branch pipe shall

be made either at 45° or with a minimum sweep of 25 mm radius. The connection of a branch pipe of 75 mm or more in diameter to a stack shall be made either at 45° or with a minimum sweep of 50 mm radius.

A branch pipe shall discharge into a stack:—

- (i) in a way which prevents cross-flow into another branch pipe (see Diagram 1), and
- (ii) not less than the relevant height, above the invert level at the foot of the stack, given in Diagram 1.

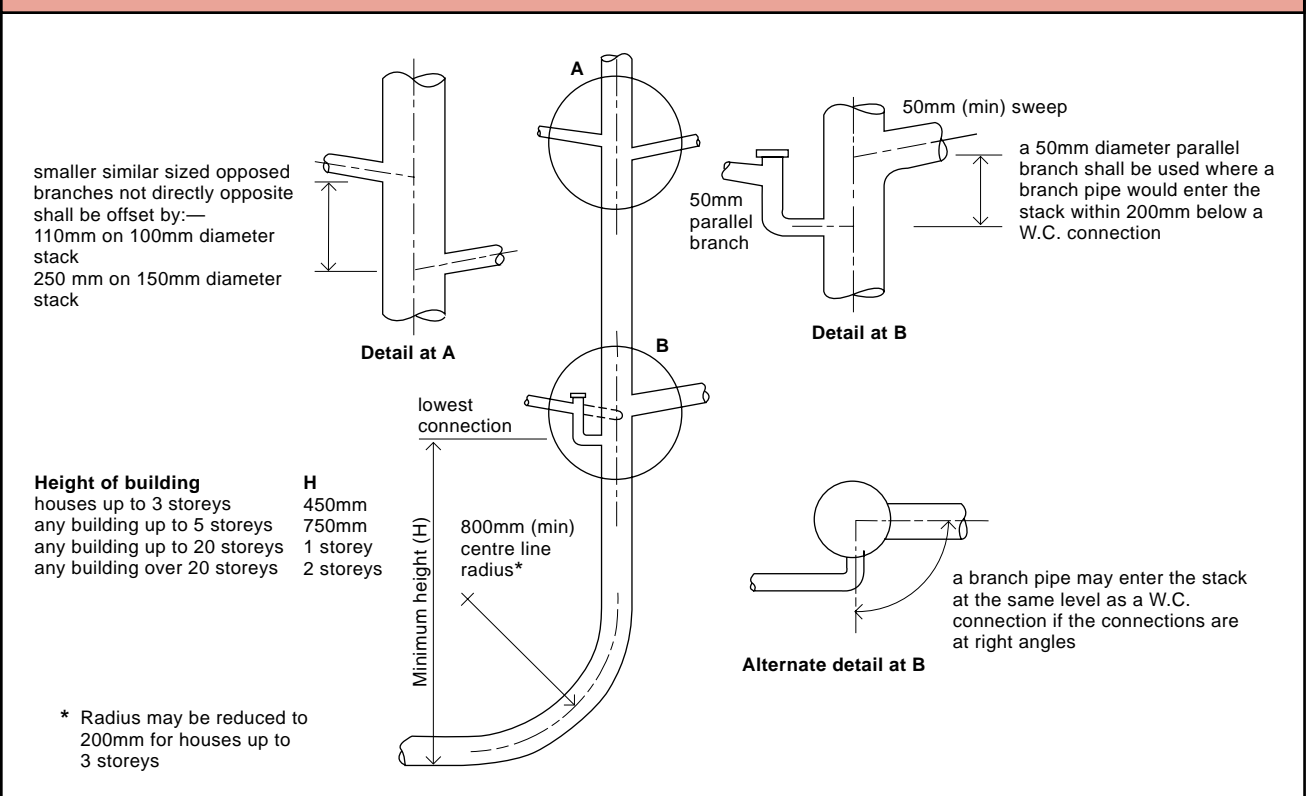
The branch pipe from an appliance on a storey above the ground storey shall discharge into another branch pipe or a discharge stack. An appliance on the ground storey may discharge into another branch pipe or a discharge stack, a stub stack, a drain or (if the appliance is for washing purposes only) a gully provided that:—

Table 4 Common branch discharge pipes (unvented)

Appliance	Max number to be connected		Max length of branch (m)	Min size of pipe (mm)	Gradient limits (fall per metre)		
	OR				min (mm)	to	max (mm)
wc's	8		15	100	9	to	90
urinals: bowls stalls	5		*	50	18	to	90
	6		*	65	18	to	90
washbasins	4		4 (no bends)	50	18	to	45

*No limitations as regards venting but should be as short as possible

Diagram 1 Branch connections to stacks



- (a) a branch pipe from a water closet shall discharge directly to a drain only if the drop is less than 1.5 m (see Diagram 2); and
- (b) a branch pipe shall discharge to a gully only between the grating and the top level of the water seal.

Access for clearing blockages in branch pipes

1.9 Rodding points shall be provided to give access to any length of branch pipe which cannot be reached by removing a trap.

Branch ventilating pipes

1.10 Subject to paragraph 1.11 a branch ventilating pipe shall be connected to a branch pipe within 300 mm of the trap (see Diagram 4) and shall be not less than 25 mm diameter or, where the length of the ventilating pipe exceeds 15 m or has more than 5 bends, not less than 32 mm diameter. A branch ventilating pipe shall:—

- (a) terminate in the external air at least 900 mm above any opening into a building within 3 m, with a cage or cover which does not restrict the air flow (see Diagram 3);
- (b) connect to a ventilated discharge stack above the “spillover” level of the highest appliance served (see Diagram 4); or
- (c) connect to a ventilating stack (see paragraph 1.12).

Unventilated branch pipes

1.11 A branch ventilating pipe shall not be required if the length and slope of a branch pipe does not exceed the maximum dimensions and gradients for the relevant pipe diameters given in Diagram 5.

Ventilation stacks

1.12 A ventilation stack shall provide ventilation to branch ventilation pipes and may also provide ventilation to underground foul drainage (see paragraph 2.5). The lower end of a ventilation stack may be connected to a ventilated discharge stack below the lowest branch pipe connection. The upper end of a ventilation stack shall:—

- (a) terminate in the external air at least 900 mm above any opening into a building within 3 m, with a cage or cover which does not restrict the air flow (see Diagram 3);

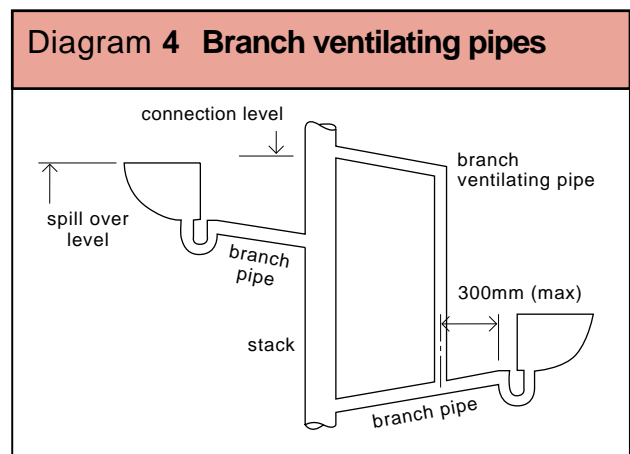
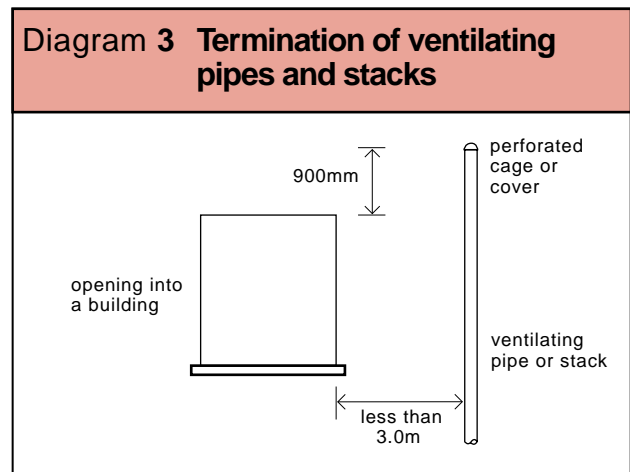
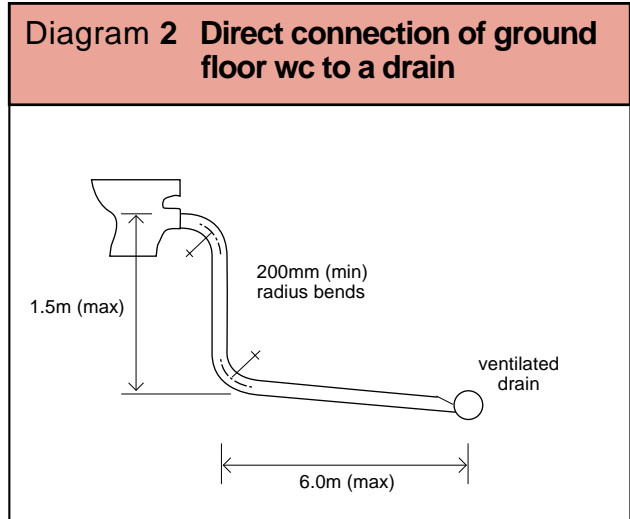
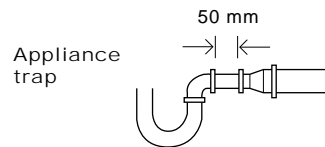
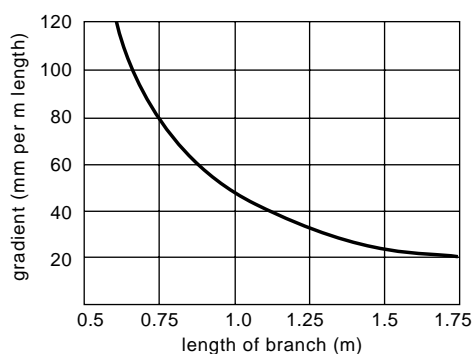
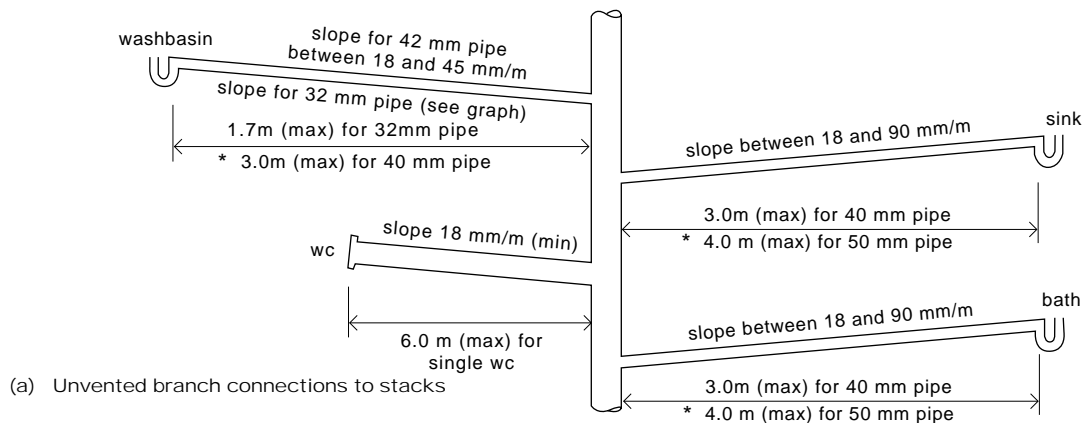


Diagram 5 Branch connections



* Where the larger branch pipe size is used and the diameter of the trap is not increased the tail of the trap shall be lengthened by 50mm before increasing the diameter

- (b) terminate with an air admittance valve which is the subject of a British Board of Agrément Certificate and is used in accordance with the terms and conditions of that certificate; or
- (c) connect to a ventilated discharge stack above the "spillover" level of the highest appliance served.

Discharge stacks

1.13 A stack shall discharge into a drain and be of at least the internal diameter given in Table 5. The diameter of a stack shall not reduce in the direction of flow, nor have an offset in any part carrying foul water. The bend at its foot shall have a centre line radius as large as possible but not less than 200 mm. A discharge stack in a building over 3 storeys shall be located internally.

Ventilation of discharge stacks

1.14 A discharge stack (other than a stub stack complying with paragraph 1.15) shall be ventilated. The diameter of the part of a stack

above the highest branch pipe may be reduced to 75 mm where the stack is of a greater diameter.

The upper end of a stack shall terminate either:—

- (a) in the external air at least 900 mm above any opening into a building within 3 m, with a cage or cover which does not restrict the air flow (see Diagram 3); or
- (b) with an air admittance valve which is the subject of a British Board of Agrément Certificate and is used in accordance with the terms and conditions of that certificate.

Table 5 Minimum diameter for discharge stacks

Peak flow rate (litres/sec)	Min diameter (mm)
1.2	50*
2.1	65*
3.4†	75
5.3	90
7.2	100

* no wcs

† not more than 1 siphonic wc permitted

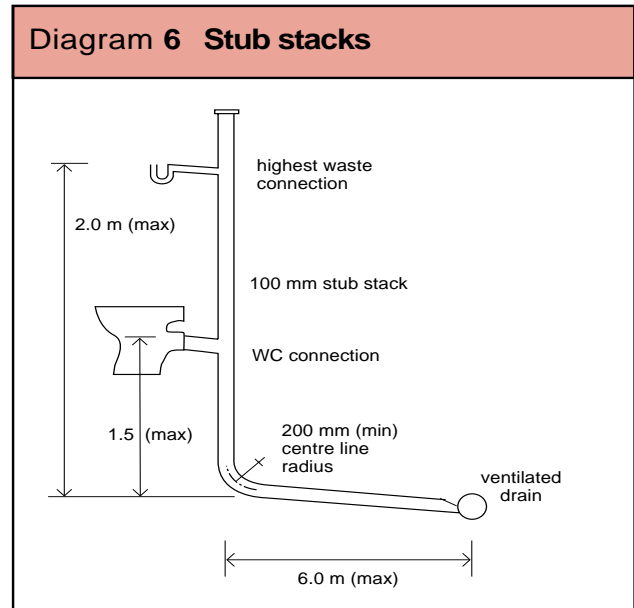
Unvented stub stacks

1.15 A stub stack may be unvented if it connects to a ventilated discharge stack or drain and is not more than 6 m from the discharge stack or drain. No branch pipe shall discharge into a stub stack at a height above the invert at the foot of the stack more than:—

- (a) 1.5 m where it is from a WC; or
- (b) 2 m where it is from another appliance (see Diagram 6).

Access for clearing blockages in stacks

1.16 Rodding points shall be provided to give access to a length of stack or discharge stacks which cannot be reached from another part of the system.



Section 2 – Underground foul drainage

Materials for pipes, fittings and joints

2.1 The materials for drains shall be in accordance with the relevant British Standards given in Table 6. Where different metals are used they shall be separated by non-metallic material to prevent electrolytic corrosion. Rigid pipes shall have flexible joints. All joints shall remain watertight under working conditions. Nothing in the pipes, joints or fittings shall project into the pipe line or cause an obstruction.

Layout of drainage system

2.2 The system shall have as few changes of direction and gradient as practicable, and access points (see paragraph 2.11) shall be provided at such changes. Drains shall be laid to an even gradient and in straight lines between access points (slightly curved drains may be acceptable in certain circumstances). Other than at the foot of the discharge stack (see paragraph 1.13) bends shall have as large a radius as practicable and be in or adjoining inspection chambers or manholes. Where a drain runs under or near a building special precautions to accommodate the effects of settlement shall be taken (see paragraph 2.9).

(Note: Water Service controls the connection of a drain to a sewer and may impose conditions thereon.)

Capacity of pipes

2.3 The capacity of a system shall be adequate to carry the expected peak flow at any point provided that the pipe diameter shall be not less than 100 mm where the drain carries water from a WC and 75 mm in all other cases. Table 7 gives the minimum gradient at which a pipe shall be laid for a given peak flow. Diagram 7 gives the capacities which shall be assumed for various diameters of drain laid at various gradients.

Combined systems

2.4 The capacity of a system carrying both foul water and rain-water shall be adequate for the combined peak flow.

Table 6 Material for underground foul drainage

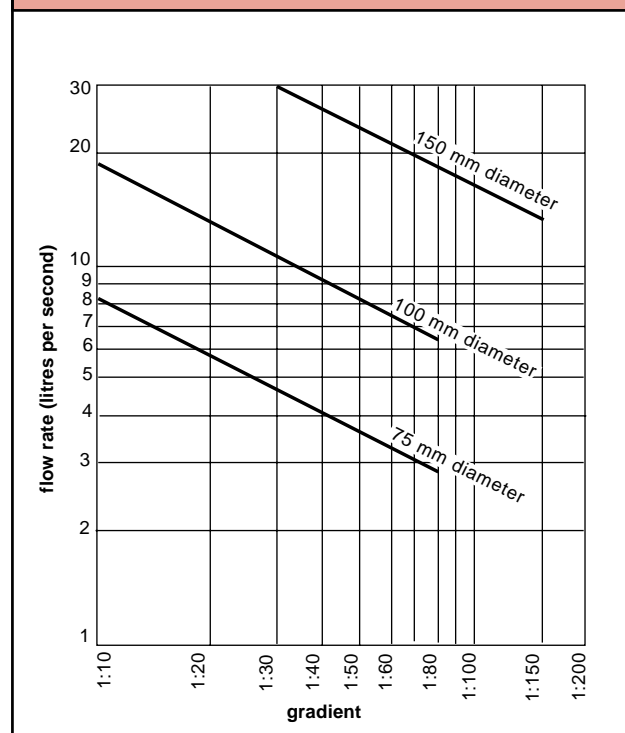
Material	British Standard
Rigid pipes:	
asbestos cement	BS 3656: 1981
vitrified clay	BS 65: 1988
concrete	BS 5911: Part 1: 1981, BS 5911: Part 2: 1982
grey iron	BS 437: 1978
Flexible pipes:	
uPVC	BS 4660: 1973 BS 5481: 1977

Table 7 Minimum gradients

Peak flow (litres/sec)	Pipe size (mm)	Minimum gradient
less than 1	75	1:40
	100	1:40
greater than 1	75	1:80
	100	1:80*
	150	1:150†

* Minimum of 1 wc
† Minimum of 5 wc's

Diagram 7 Discharge capacities of drains running at 0.75 proportional depth



Ventilation

2.5 The system shall be ventilated at or near the head of a main drain, and a branch drain longer than 10 m. A ventilation stack (see paragraph 1.12) or, a ventilated discharge stack (see paragraph 1.14) a separate ventilation pipe shall be used. Where a separate ventilation pipe is used it shall terminate either—

- in the external air at least 900 mm above any opening into a building within 3 m, with a cage or cover which does not restrict the air flow (see Diagram 3); or
- with an air admittance valve which is the subject of a British Board of Agrément Certificate and is used in accordance with the terms and conditions of that certificate.

Depth of pipe cover

2.6 A drain shall be laid either at a depth which will protect it from damage or with special protection over it (see paragraph 2.8). The maximum and minimum depths of cover for standard strength rigid pipes given in Table 8 shall be used in conjunction with the types of bedding given in Diagram 8.

The depth of cover for flexible pipes used in conjunction with the bedding given in Diagram 9 shall be:—

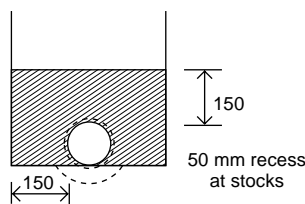
- a minimum of 600 mm under a vehicle area and 300 mm under other areas, and
- a maximum of 10 m under all areas.

The side cover for all types of pipe shall be 150 mm or the diameter of the pipe, whichever is the greater.

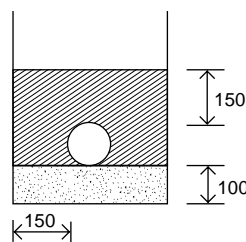
Table 8 Limits of cover for standard strength rigid pipes in any width of trench

Pipe diameter (mm)	Bedding type	Fields and gardens		Light traffic roads		Heavy traffic roads	
		Min (m)	Max (m)	Min (m)	Max (m)	Min (m)	Max (m)
100 or less	A	0.4	4.2	0.7	4.1	0.7	3.7
	B	0.3	5.8	0.5	5.8	0.5	5.5
	C	0.3	7.4	0.4	7.4	0.4	7.2
150	A	0.6	2.7	1.1	2.5	—	—
	B	0.6	3.9	0.7	3.8	0.7	3.3
	C	0.6	5.0	0.6	5.0	0.6	4.6

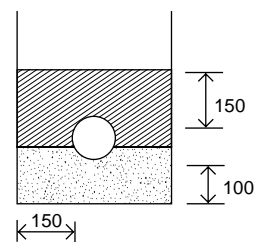
Diagram 8 Bedding for rigid pipes



Type A shall only be used where the floor of the trench has been accurately hand trimmed by shovel

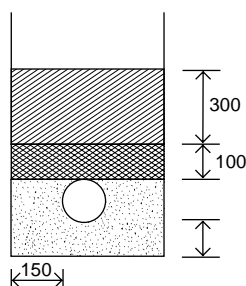


Type B generally suitable in all soil conditions





Type C generally suitable in all soil conditions granular fill to half depth of pipe


Diagram 9 Bedding for flexible pipes



Key to Diagrams 8 and 9

 selected fill; free from stones larger than 40 mm, lumps of clay over 100 mm, timber, frozen material and vegetable matter

 selected fill or granular material

 granular material; shall conform to BS 882 : 1983 Table 4 or BS 8301 : 1985 Appendix D

Notes to Diagrams 8 and 9

- Provision shall be required to prevent ground water flow in open trenches
- The barrel of the pipes shall have continuous barring the floor of the trench or the granular fill.

(NOTE: The depth of cover will normally depend on the levels of the connections to the drain, the gradient and the ground levels. If the depth is too little then imposed loads, agricultural activities, etc, or frost could cause damage. If the depth is too great then the weight of the backfilling could cause damage. A change of pipe material, bedding or backfilling may obviate the need for special protection against ground loads, and guidance is given in BS 8301: 1985.)

Backfilling

2.7 Backfilling shall not displace the drain from its line and level and shall be compacted in layers. Mechanical compaction equipment shall not be used until there is a minimum of 450 mm compacted material above the top of the drain.

Special protection — ground loads

2.8 Where a rigid pipe of:—

- (a) less than 150 mm diameter has less than 300 mm depth of cover, or
- (b) 150 mm or more diameter has less than 600 mm depth of cover,

it shall be surrounded with concrete either 100 mm or the diameter of the pipe, whichever is the greater, in thickness and have movement joints, at not more than 5 m centres (see Diagram 10).

Where a flexible pipe has less than 300 mm depth of cover under an area other than a vehicular area, it shall have concrete paving slabs laid as bridging on granular or other flexible filling at least 75 mm above the top of the pipe. Where a flexible pipe has less than 600 mm depth of cover under a vehicular area it shall have a reinforced concrete slab laid as bridging in a similar manner (see Diagram 11).

Special protection — settlement

2.9 A drain which runs under a building shall be surrounded by at least 100 mm of granular or other flexible filling.

A drain which passes through a wall or foundation shall either:—

- (a) pass through an opening giving at least 50 mm clearance all round as shown in Diagram 12(a); or
- (b) be built in with, on each side, flexible joints within 150 mm and rocker pipes of maximum length 600 mm as shown in Diagram 12(b).

Diagram 10 Concrete encasement for rigid pipes

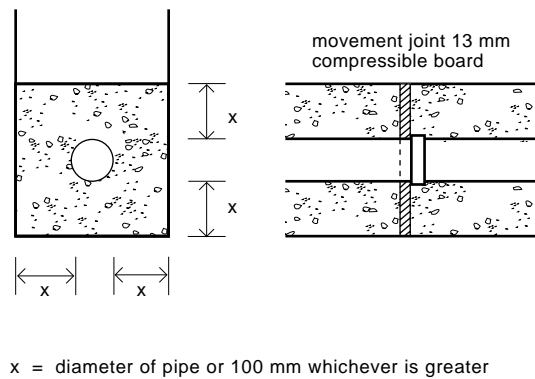


Diagram 11 Protection for flexible pipes

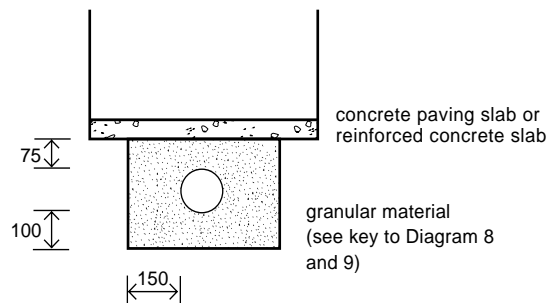
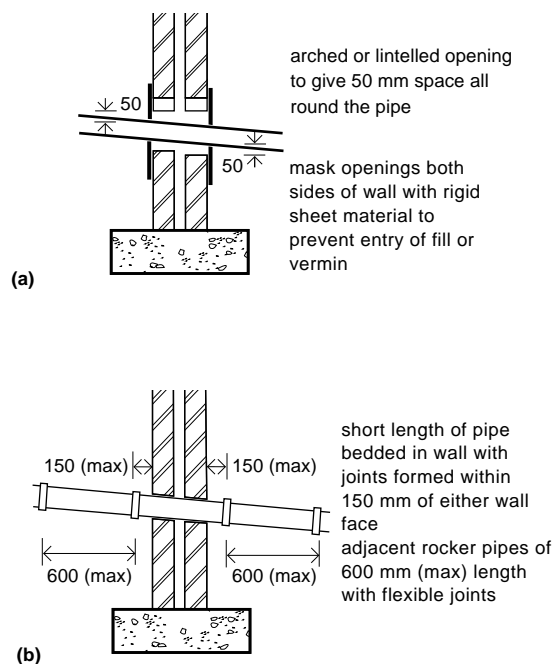


Diagram 12 Pipes penetrating walls



A drain which is at a level lower than the foundations of a building shall either:—

(i) where the trench is within 1 m of the foundations, be filled with concrete up to the level of the underside of the foundations as shown in Diagram 13(a);
or

(ii) where the trench is more than 1 m from the foundations, be filled with concrete to a level, below the level of the underside of the foundations, equal to the distance from the foundations less 150 mm as shown in Diagram 13(b).

Flexible pipes shall be wrapped in polythene before surrounding in concrete. The minimum thickness of the concrete surround shall be 150 mm or the diameter of the pipe whichever is the greater.

(NOTE: where a drain is to pass under a foundation, be supported on piles, or where the ground is unstable, specialist advice should be sought on the protective measures needed.)

Special protection — surcharging

2.10 Where a drain is liable to surcharge, protective measures as described in BS 8301: 1985 shall be used.

Access for clearing blockages

2.11 Access shall be provided for clearing a blockage in any length of drain, though access need not necessarily be provided for rodding in the direction of flow.

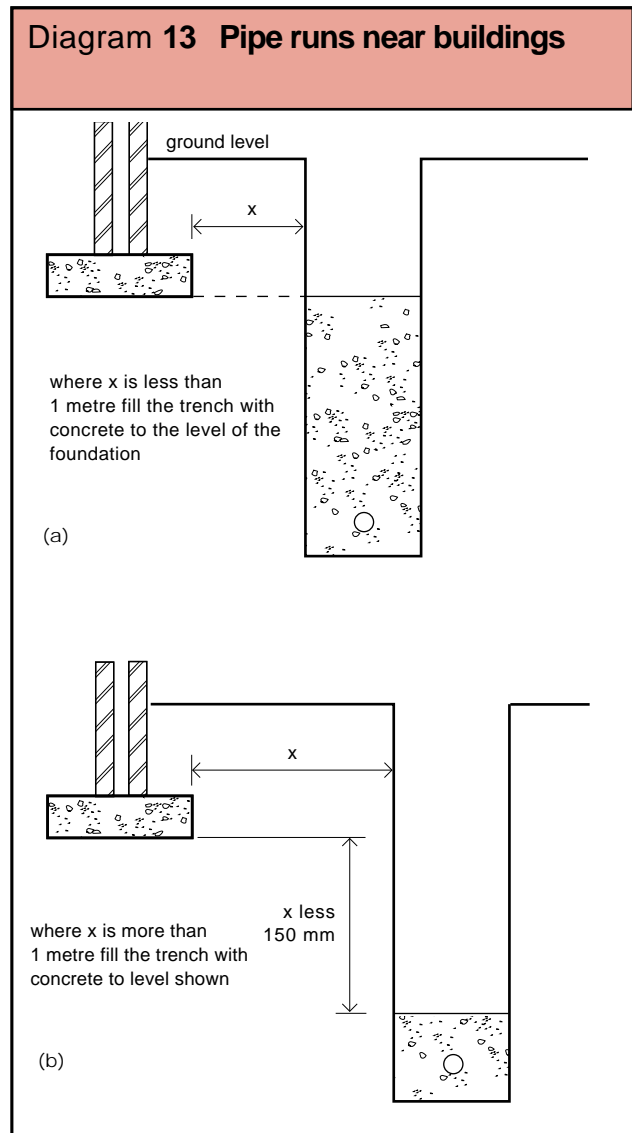


Table 9 Minimum dimensions for access fittings and chambers

Type	Depth to invert (m)	Internal sizes		Cover sizes	
		Length × width (mm × mm)	Circular (mm)	Length × width (mm × mm)	Circular (mm)
Rodding eye	—	As drain but min 100	—	—	—
Access fitting					
small	0.6 or less	150 × 100	150	150 × 100	150
large		225 × 100	—	225 × 100	—
Inspection chamber					
0.6 or less	0.6 or less	—	190*	—	190*
1.0 or less	1.0 or less	450 × 450	450	450 × 450	450†
Manhole					
1.5 or less	1.5 or less	1200 × 750	1050	600 × 600	600
over 1.5	over 1.5	1200 × 750	1200	600 × 600	600

Manholes over 2.7 m deep should have a chamber 2 m deep accessed by a shaft 900 × 840 mm or 900 mm in diameter.

* drains up to 150 mm.

† for clayware or plastic chambers the clear width may be reduced to 430 mm to provide support for cover and frame

An access point shall comply with the limiting depth and dimensions given in Table 9. The types of access are:—

- (a) rodding eye — a capped extension of the pipe;
- (b) access fitting — a small chamber on (or on an extension of) a drain but not with an open channel;
- (c) inspection chamber — a chamber with an open channel but not with working space at drain level;
- (d) manhole — a chamber with an open channel and working space at drain level.

Siting of access points

2.12 An access point shall be provided at the following:—

- (a) at or near the head of each length of drain;
- (b) at a bend;
- (c) at a change of gradient;
- (d) at a change of pipe size;
- (e) at a junction;
- (f) on long lengths of drain at not greater than the distance given in Table 10; and
- (g) within 12 m of the connection to a sewer unless access is provided at the connection.

Construction of access points

2.13 An access point shall contain the foul water under working conditions, restrict the entry of ground water and rain-water, and be either—

- (a) constructed of a material given in Table 11; or
- (b) the subject of a British Board of Agrément Certificate and used in accordance with the terms and conditions of that certificate.

An inspection chamber or manhole constructed under (a) shall have a half round channel with any branch drain discharging into the channel at or above the level of its horizontal diameter and at not more than 90° to the direction of flow. Where the angle of a branch drain is more than 45° a three-quarter section branch shall be used. The channel and any branches shall be benched up, at least to the top of the outgoing drain, at a slope of 1 in 12 and the benching shall be rounded with a radius of at least 25 mm.

Every external access point shall have a removable non-ventilating cover of durable material and suitable strength.

Table 10 Maximum spacing of access points (m)

From	to	Access fitting		Inspection chamber	Manhole
		Small	Large		
start of drain*		12	12	22	45
rodding eye		22	22	45	45
access fitting:					
small		—	—	22	22
large		—	—	45	45
inspection chamber		22	45	45	45
manhole		22	45	45	90

* connection from ground floor appliances or stacks

Table 11 Materials for access points

Material	British Standard
Inspection chamber and manholes:	
Clay bricks and blocks	BS 3921: 1985
Vitrified clay	BS 65: 1988
precast concrete	BS 5911:Part 1 1981, BS 5911:Part 2 1982
in-situ concrete	BS 8110:Part 1 1985
Rodding eyes and access fittings (excluding frames and covers)	as pipes (see Table 6)

Every access point within a building shall have a mechanically fixed airtight cover unless the drain itself has a watertight access cover.

Any manhole deeper than 1.0 m shall have metal step irons or a fixed ladder.

Watertightness

2.14 A drain of diameter less than 300 mm shall be capable of withstanding a test either:—

- (a) by water to a pressure equal to 1.5 m head of water measured above the invert at the top of the drain; or
- (b) by air to a maximum loss of head on a manometer, in a period of 5 minutes, of 25 mm for a 100 mm gauge, or 12 mm for a 50 mm gauge.

A drain which is to be water tested shall be divided into sections so that the head of water at the lower end of the section shall not exceed 4 m.

The section of drain shall be filled, left standing for 2 hours, topped up and the

leakage measured after a further 30 minutes. The leakage during the 30-minute test period shall not exceed 0.5 litres per meter diameter of pipe per metre run.

For example:—

- (i) for a 100 mm drain — 0.05 litres per metre run of drain (a drop of 6.4 mm per metre run); or
- (ii) for a 150 mm drain — 0.08 litres per metre run of drain (a drop of 4.5 mm per metre run).

Section 3 – Rain-water drainage

Materials for gutters, rainwater pipes and joints

3.1 The materials for gutters and rain-water pipes shall be either:—

- (a) in accordance with the relevant British Standards given in Table 12; or
- (b) the subject of a British Board of Agrément Certificate and used in accordance with the terms and conditions of that certificate.

Where different metals are used they shall be separated by non-metallic material to prevent electrolytic corrosion. Gutters and rain-water pipes shall be firmly supported without restricting thermal movement.

Capacity of the system

3.2 The capacity of the system shall be adequate to carry the expected flow at any point and an intensity of rainfall of 75 mm per hour shall be assumed.

Area to be drained

3.3 The area to be drained shall be calculated using the factors given in Table 13.

Gutters and outlets

3.4 A gutter shall be laid with a slight fall towards the outlet. Where the outlet is not at the end, the gutter shall be sized for the larger of the areas draining into it. The gutter shall be laid or constructed so that any overflow will discharge clear of the building.

The flow capacity of a gutter is dependent upon its cross sectional area, length, bends (if any) and the shape of the outlet.

Table 14 gives the maximum effective areas which can be drained into the common sizes of true half-round eaves gutters with sharp-edged outlets. The Table also gives the minimum sizes of outlets which shall be used with the gutters and the flow capacities for use with paragraph 3.6.

Table 12 Materials for gutters and rainwater pipes

Material	British Standard
aluminium	BS 2997: 1958 (1980)
cast iron	BS 416: 1973, BS 460: 1964 (1981)
copper	BS 1431: 1960 (1980)
galvanised steel	BS 5493: 1977
lead	BS 1178: 1982
low carbon steel	BS 5493: 1977
pressed steel	BS 1091: 1963 (1980)
uPVC	BS 4514: 1983, BS 4576: Part 1: 1970 (1982)
zinc	BS 1431: 1960 (1980)

Table 13 Calculation of area drained

Surface	Design area (m ²)
1 roofs 0° up to 10°	plan area of relevant portion
11° up to 30°	plan area of portion × 1.15
31° up to 45°	plan area of portion × 1.40
46° up to 70°	plan area of portion × 2.00
over 70°	elevation area × 0.5
2 walls	elevation area × 0.5

Table 14 Gutter and outlet sizes for true half-round eaves gutters

Max effective roof area (m ²)	Gutter Size (mm dia)	Outlet Size (mm dia)	Flow capacity (litres/sec)
6.0	—	—	—
18.0	75	50	0.38
37.0	100	63	0.78
53.0	115	63	1.11
65.0	125	75	1.37
103.0	150	89	2.16

Rain-water pipes

3.5 A rain-water pipe shall discharge to a drain, a gully, a gutter, or to another surface if it is drained. A rain-water pipe which discharges to a combined sewer shall do so through a trap. The size of a rain-water pipe shall be at least that of the outlet from the gutter. Where a rain-water pipe serves more than one gutter it shall have an area at least as large as the combined areas of the outlets.

Rain-water drains

3.6 The capacity which shall be assumed for rain-water drainage pipes laid at various gradients is given in Diagram 14 and the minimum diameter of such pipes shall be 75 mm. Materials for pipes, fittings and joints shall be as paragraphs 2.1 or 3.1. The layout of the system shall be as paragraph 2.2. Combined systems shall be as paragraph 2.4. Backfilling shall be as paragraph 2.7. Special protection, if required shall be as paragraphs 2.8, 2.9 and 2.10.

Access for clearing blockages shall be as paragraphs 2.11 and 2.12.

Watertightness

3.7 Gutter joints shall remain watertight under working conditions. A rain-water pipe inside a building shall be capable of withstanding the test described in paragraph 1.4. A rain-water drain (other than a soakaway) shall be capable of withstanding either of the tests described in paragraph 2.14.

Diagram 14 Discharge capacities of rainwater drains running full

