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**Agrément Certificate**

**19/5622**

Product Sheet 2

## OSMADRAIN UNDERGROUND DRAINAGE SYSTEM

### OSMADRAIN 110 MM ADJUSTABLE BENDS

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to the OsmaDrain 110 mm Adjustable Bends, polypropylene adjustable bends for use in conjunction with pipes and fittings in underground domestic drainage of surface water or domestic waste water, as is permitted to be discharged into public sewers.

(1) Hereinafter referred to as 'Certificate'.

#### CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

#### KEY FACTORS ASSESSED

**Strength** — the products have adequate strength to resist loads associated with installation and with subsequent use (see section 6).

**Performance of joints** — joints between components will remain watertight and will not be adversely affected by thermal expansion (see section 7).

**Flow characteristics** — the products will not adversely affect the flow characteristics of the drainage system (see section 8).

**Resistance to elevated temperatures** — the products have adequate resistance to the temperatures likely to be found in domestic sewage (see section 10).

**Durability** — the products will have a service life in excess of 50 years (see section 13).



The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 3 June 2021

Originally certificated under BBA Certificate 87/1835

Hardy Giesler  
Chief Executive Officer

*The BBA is a UKAS accredited certification body – Number 113.*

*The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at [www.bbacerts.co.uk](http://www.bbacerts.co.uk)*

*Readers MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.*

*Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.*

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## Regulations

In the opinion of the BBA, the OsmaDrain 110 mm Adjustable Bends, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



### The Building Regulations 2010 (England and Wales) (as amended)

<b>Requirement:</b>	<b>H1</b>	<b>Foul water drainage</b>
Comment:		The products will convey the flow of foul water and minimise the risk of blockages and leaks. See sections 4.1, 6, 7, 8, 9, 10 and 11 of this Certificate.
<b>Requirement:</b>	<b>H3(3)</b>	<b>Rainwater drainage</b>
Comment:		The products will convey the flow of rainwater and minimise the risk of blockages and leaks. See sections 4.1, 6, 7, 8, 9, 10 and 11 of this Certificate.
<b>Regulation:</b>	<b>7(1)</b>	<b>Materials and workmanship</b>
Comment:		The products are acceptable. See section 13 and the <i>Installation</i> part of this Certificate.



### The Building (Scotland) Regulations 2004 (as amended)

<b>Regulation:</b>	<b>8(1)(2)</b>	<b>Durability, workmanship and fitness of materials</b>
Comment:		The use of the products satisfies the requirements of this Regulation. See section 13 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>9</b>	<b>Building standards applicable to construction</b>
Standard:	3.6(a)	Surface water drainage
Comment:		The products will meet the relevant requirements of this Standard, with reference to clauses 3.6.1 <sup>(1)(2)</sup> , 3.6.2 <sup>(1)(2)</sup> and 3.6.3 <sup>(1)(2)</sup> . See sections 4.1, 6, 7, 8, 9, 10 and 11 of this Certificate.
Standard:	3.7(b)	Wastewater drainage
Comment:		The products will meet the relevant requirements of this Standard, with reference to clauses 3.7.3 <sup>(1)(2)</sup> and 3.7.4 <sup>(1)(2)</sup> . See sections 4.1, 6, 7, 8, 9, 10 and 11 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The products can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
<b>Regulation:</b>	<b>12</b>	<b>Building standards applicable to conversions</b>
Comment:		All comments given for the products under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> .

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).



### The Building Regulations (Northern Ireland) 2012 (as amended)

<b>Regulation:</b>	<b>23</b>	<b>Fitness of materials and workmanship</b>
Comment:		The products are acceptable. See section 13 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>81</b>	<b>Underground foul drainage</b>
Comment:		The products will convey the flow of foul water and minimise the risk of blockages or leaks. See sections 4.1, 6, 7, 8, 9, 10 and 11 of this Certificate.

Regulation: 82

Rainwater drainage

Comment:

The products will convey the flow of rainwater and minimise the risk of blockages or leaks. See sections 4.1, 6, 7, 8, 9, 10 and 11 of this Certificate.

## Construction (Design and Management) Regulations 2015

## Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See section: 15 *General* (15.1) of the *Installation* part of this Certificate.

### Additional Information

#### NHBC Standards 2021

In the opinion of the BBA, OsmaDrain 110 mm Adjustable Bends, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 5.3 *Drainage below ground*.

### Technical Specification

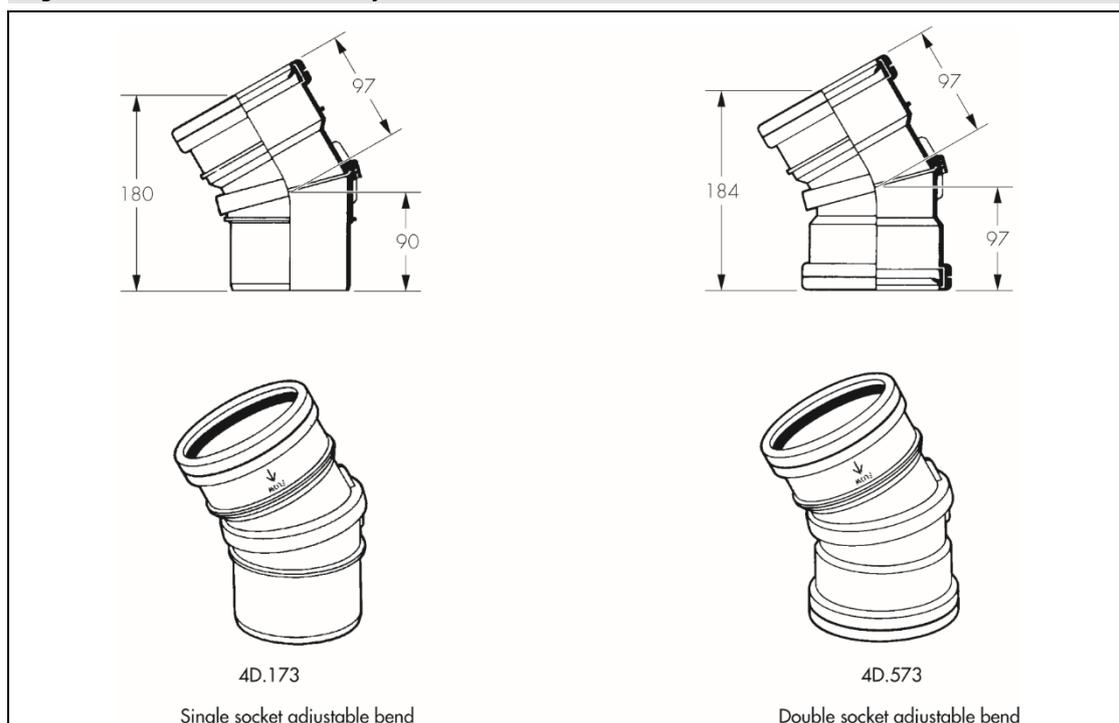
#### Description

1.1 The OsmaDrain 110 mm Adjustable Bends (see Figure 1) incorporate two mouldings pressed together to retain a sealing ring. The two components may be rotated to form any angle between 0° and 30°. The 4D 173 bend has a single socket inlet and spigot outlet, the 4D 573 bend is a double socket fitting. Each socket incorporates a ring seal retained by a snap cap. The products have an arrow indicating the direction of flow.

1.2 The fitting body and snap cap are injection moulded in polypropylene.

1.3 The adjustable bends' 110 mm diameter ring seal is Ethylene Propylene Diene Monomer (EPDM) rubber (4D 116) to BS EN 681-1 : 1996 Type WC.

Figure 1 OsmaDrain 110 mm Adjustable Bends



## 2 Manufacture

2.1 The products are manufactured by injection moulding process.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management systems of Wavin Ltd have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificate FM00217) and BS EN ISO 14001 : 2015 by Intertek (Certificate 042231).

## 3 Delivery and site handling

3.1 The products are delivered to site in polythene bags. This packaging should be retained during storage to minimise the risk of damage to component parts.

3.2 The products must have adequate protection against damage from site construction traffic and from agricultural or similar operations.

3.3 Each product is stamped with the manufacturer's name and product code number. A label bearing the BBA identification mark incorporating the number of this Certificate is attached to each fitting.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the OsmaDrain 110 mm Adjustable Bends.

### Design Considerations

## 4 Use



4.1 The OsmaDrain 110 mm Adjustable Bends have been assessed for use with pipes and fittings complying with BS EN 1401-1 : 2019, BS 4660 : 2000, BS EN 13598-1 : 2020 and BS EN 13598-2 : 2020, in domestic drains designed in accordance with BS EN 752 : 2017 for the conveyance, by combined or separate systems, of surface water and domestic sewage as is permitted to be discharged into public sewers by the Water Industry Act 1991, Chapter 56, and surface water and sewage as is permitted and defined by the Sewerage (Scotland) Act 1968 and the Water and Sewerage Services (Northern Ireland) Order 2006.

4.2 The fittings have not been assessed for use with untreated trade effluents and such use is outside the scope of this Certificate.

4.3 The fittings are for use with pipes complying with BS EN 1401-1 : 2019, BS 4660 : 2000, BS EN 13598-1 : 2020 and BS EN 13598-2 : 2020.

## 5 Practicability of installation

The products are designed to be installed by a competent contractor experienced in below-ground drainage work.

## 6 Strength



The adjustable bends have adequate strength to resist the loads associated with installation and subsequent use, in the locations defined in this Certificate.

## 7 Performance of joints



7.1 The performance of joints between components, when correctly made, will not be adversely affected by thermal expansion or contraction.

7.2 Joints between the adjustable bends and the pipeline will remain watertight under conditions of pipeline movement in excess of those expected to occur in normal good drainage practice.

## 8 Flow characteristics



When used in underground drainage systems designed and installed in accordance with the recommendations given in this Certificate, the adjustable bends will not adversely affect the flow characteristics of the drainage system.

## 9 Resistance to chemicals



The products are suitable for use where pipes and fittings to BS EN 1401-1 : 2019 and BS 4660 : 2000 are normally used. They have adequate resistance to the type and quantity of chemicals likely to be found in domestic sewage.

## 10 Resistance to elevated temperatures



The products are for use where pipes and fittings to BS EN 1401-1 : 2019, BS 4660 : 2000, BS EN 13598-1 : 2020 and BS EN 13598-2 : 2020 are normally used and have adequate resistance to the temperatures likely to be found in domestic sewage.

## 11 Rodding



Drains incorporating the products can be rodded easily using conventional flexible drain rods. Toothed root cutters, as used with some mechanical cleaning systems, could damage the fittings and should not be used.

## 12 Maintenance

As the products are confined within the soil and have suitable durability (see section 13), maintenance is not required.

## 13 Durability



In the opinion of the BBA, when used in the context of this Certificate, the materials from which the products are manufactured will not significantly deteriorate, and the products will have a service life in excess of 50 years.

## 14 Reuse and recyclability

The components contain polypropylene, which can be recycled.

## 15 General

15.1 Installation of the OsmaDrain 110 mm Adjustable Bends and related pipes must be in accordance with BS 8000-0 : 2014, BS 8000-14 : 1989, BS EN 1610 : 2015, BS EN 752 : 2017 and the current version of the Certificate holder's *OsmaDrain Installation Guide*.

15.2 Various applications of the products are shown in Figures 2 and 3.

Figure 2 Installation details

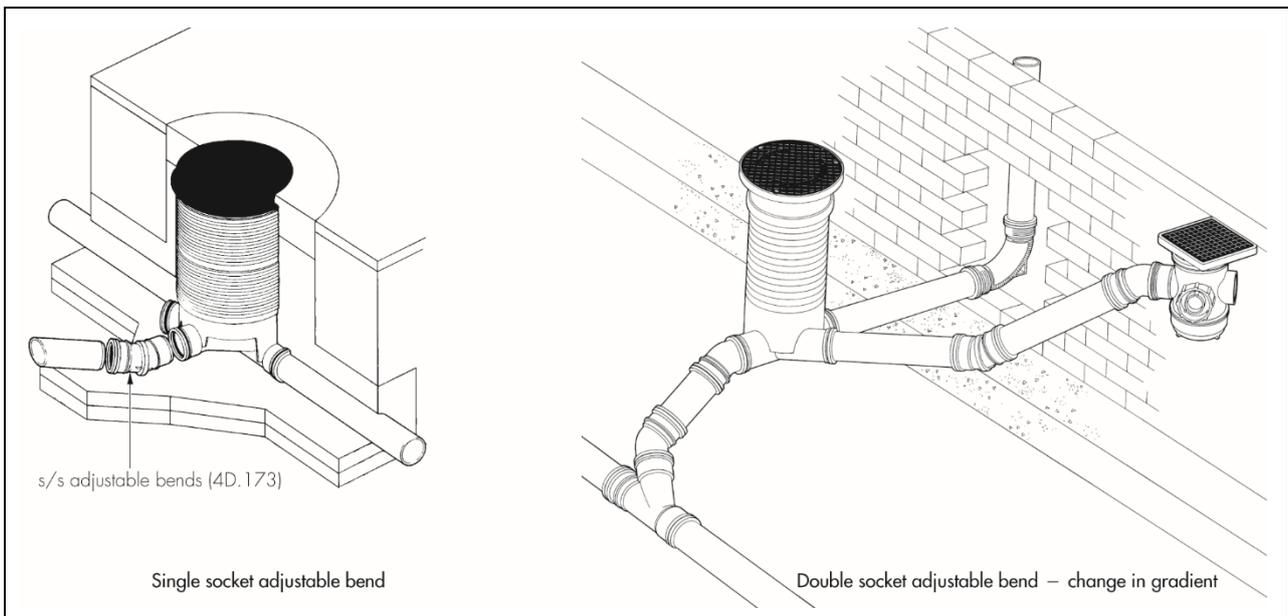
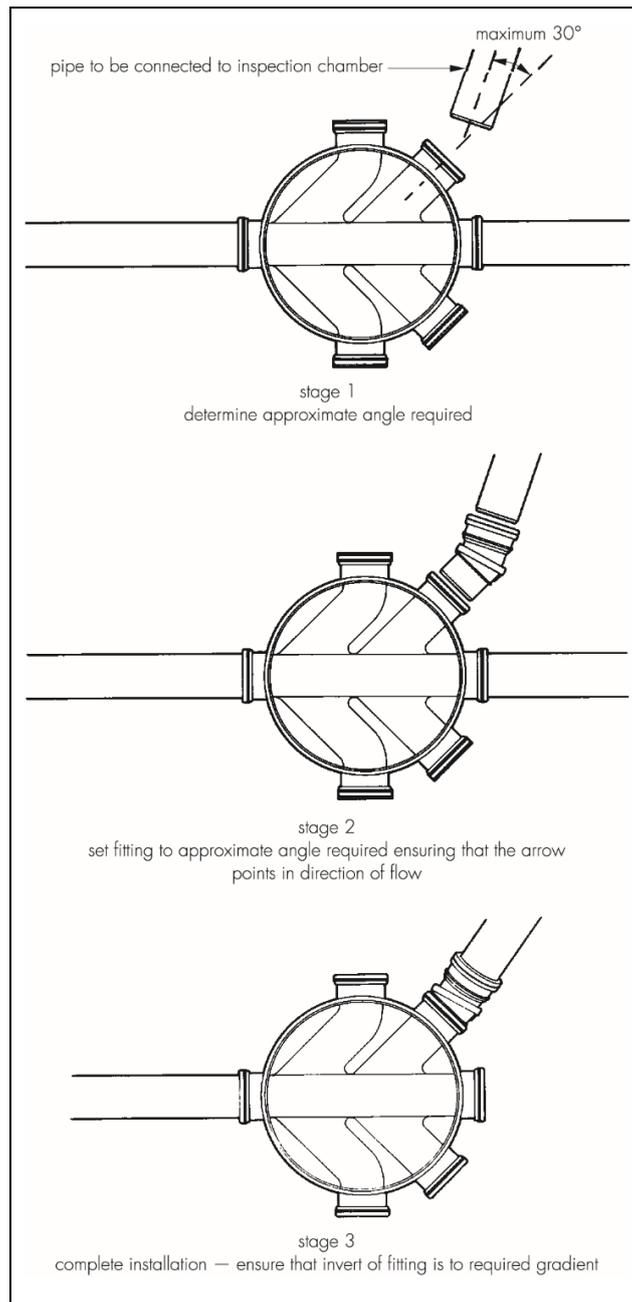


Figure 3 Installation procedure (typical)



## 16 Procedure for jointing

16.1 The components to be joined are lined up. The flow direction indicator must point in the direction of flow, afterwards the fitting is rotated to the approximate angle required.

16.2 Both socket and pipe or spigot are cleaned and the ring seal is put in place, ensuring that it is seated correctly. The recommended lubricant is applied to the pipe or spigot.

16.3 The pipe is inserted fully into the socket and approximately 10 mm is withdrawn to allow for expansion and the invert of the fitting is checked to ensure it follows the required gradient.

# 17 Procedure for laying pipes

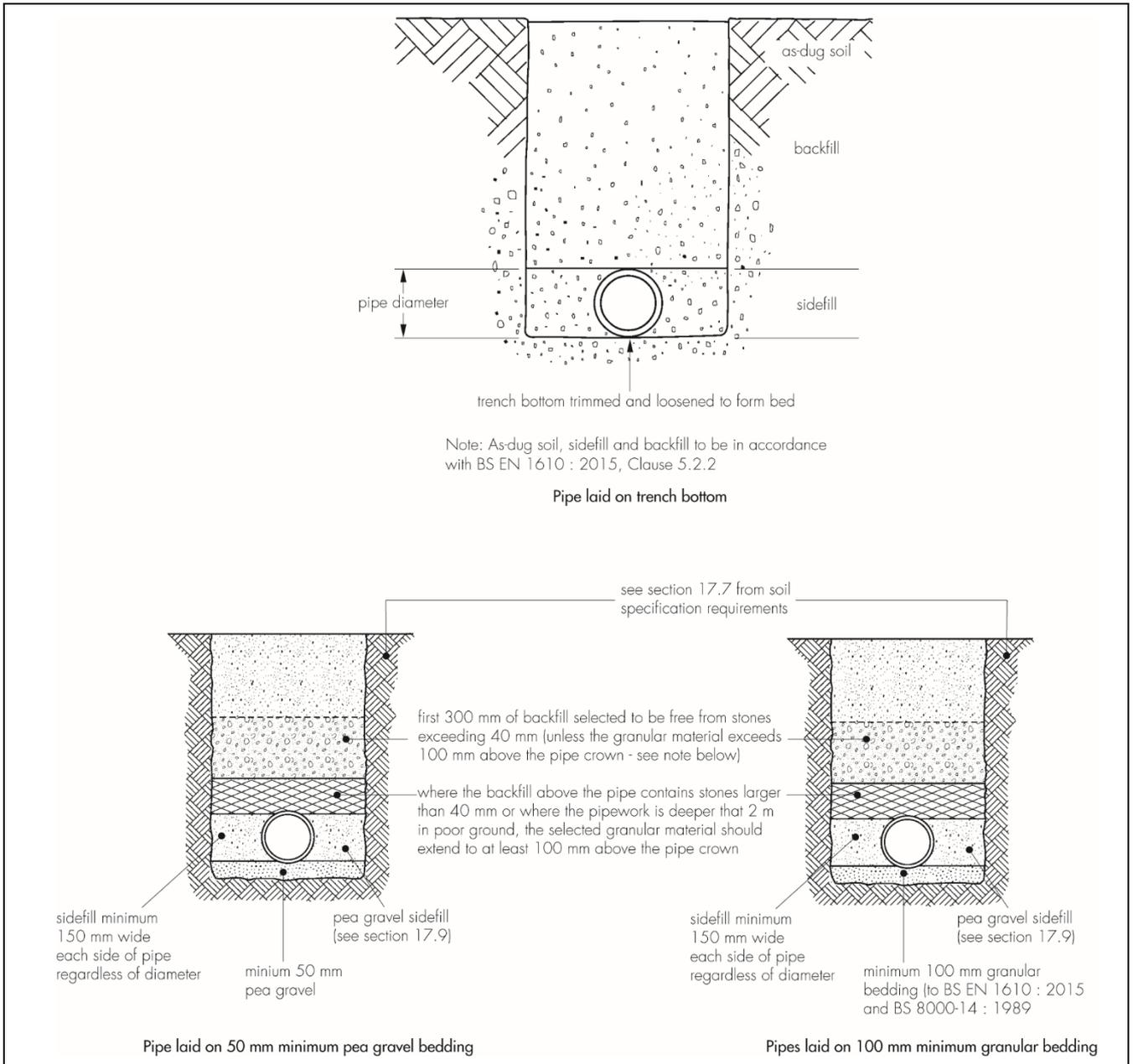
## On trench bottom in granular material (see Figure 4)

17.1 Where the as-dug material is suitable<sup>(1)</sup> for use as bedding, the bottom of the trench may be trimmed to form the pipe bed.

(1) Suitable material is defined in BS EN 1610 : 2015, section 5.2.2.

17.2 Small depressions should be made to accommodate the pipe sockets or couplings. After the pipe has been laid these should be carefully filled to ensure that no voids remain under, or around, the socket.

Figure 4 Pipes laying methods



17.3 When the formation is prepared, the pipes should be laid upon it true to line and level within the specified tolerances. Each pipe should be checked and any necessary adjustments to level made by raising or lowering the formation, ensuring that the pipes finally rest evenly on the adjusted formation throughout the length of the installation. Adjustment should never be made by local packing.

17.4 Where the formation is low and does not provide support, it should be brought up to the correct level by placing and compacting suitable material.

#### **On granular beds (see Figure 4)**

17.5 When the as-dug material is not suitable as a bedding, a layer of suitable granular material as defined in BS EN 1610 : 2015, section 5.2.3.2, must be spread evenly on the trimmed trench bottom before the pipes are installed. The trench should be excavated to allow for a minimum thickness of 100 mm granular bedding under the pipes (see Figure 4).

17.6 The trench formation should be prepared, the bedding placed and the pipes laid in accordance with BS EN 1610 : 2015 and BS 8000-14 : 1989.

17.7 Where the as-dug material can be hand trimmed by shovel and is not puddled when walked upon, a 50 mm depth of bedding material may be used. In this case, the material must be nominal 10 mm single-sized aggregate with no sharp edges, i.e. pea gravel (see Figure 4).

17.8 When the pipes are to be laid on rock, compacted sand or gravel requiring mechanical means of trimming should be used, or, in very soft or wet ground, the bedding should be as detailed in section 17.5.

17.9 In all cases, the sidefill material must be of the same specification as the bedding material, extending to the level of the crown of the pipe and be placed and compacted in accordance with BS EN 1610 : 2015 and BS 8000-14 : 1989.

17.10 Backfill material above the level of the crown of the pipe must be in accordance with BS EN 1610 : 2015, section 5.3 (see Figure 4).

## **Technical Investigations**

### **18 Tests**

Tests were carried out and the results assessed to determine:

- dimensional accuracy
- tensile strength
- compressive strength
- impact strength
- effect of combined hot and cold water discharges through the product whilst subjected to a loading of 35 kN
- Vicat softening point
- watertightness of joints under conditions of pipe deformation and hydrostatic pressure of 0.35 bar
- watertightness of joints under conditions of vertical displacement and a hydrostatic pressure of 0.35 bar
- ease of jointing and rotating to angle required
- watertightness of central joint when subject to shear loads
- effect of rodding using polypropylene drain rods with various rodding heads.

### **19 Investigations**

19.1 An evaluation of existing data was made to assess the following:

- resistance to chemicals
- flow characteristics
- durability.

19.2 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

19.3 A visit was made to a system under construction to assess the practicability of installation.

## Bibliography

BS 4660 : 2000 *Thermoplastics ancillary fittings of nominal sizes 110 and 160 for below ground gravity drainage and sewerage*

BS 8000-0: 2014 *Workmanship on construction sites. Introduction and general principles*

BS 8000-14 : 1989 *Workmanship on building sites — Code of practice for below ground drainage*

BS EN 681-1 : 1996 *Elastomeric seals — Material requirements for pipe joint seals used in water and drainage applications — Vulcanized rubber*

BS EN 681-2 : 2000 *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Thermoplastic elastomers*

BS EN 752 : 2017 *Drain and sewer systems outside buildings— Sewer system management*

BS EN 1401-1 : 2019 *Plastics piping systems for non-pressure underground drainage and sewerage — Unplasticized poly(vinylchloride) (PVC-U) — Specifications for pipes, fittings and the system*

BS EN 1610 : 2015 *Construction and testing of drains and sewers*

BS EN 13598-1 : 2020 *Plastics piping systems for non-pressure underground drainage and sewerage — Unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) — Specifications for ancillary fittings including shallow inspection chambers*

BS EN 13598-2 : 2020 *Plastics piping systems for non-pressure underground drainage and sewerage — Unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) — Specifications for manholes and inspection chambers*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

BS EN ISO 14001 : 2015 *Environmental management systems — Requirements with guidance for use*

### 20 Conditions

20.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

20.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

20.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

20.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

20.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

20.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.