

## Wavin Limited

Parsonage Way  
Chippenham  
Wiltshire SN15 5PN

Tel: 01249 766600 Fax: 01249 443286  
e-mail: info@wavin.co.uk  
website: www.wavin.co.uk

HAPAS Certificate  
**10/H151**  
Product Sheet 1

## ULTRARIB GRAVITY DRAINAGE AND SEWERAGE SYSTEM

### OSMA ULTRARIB 150 MM, 225 MM AND 300 MM INTERNAL DIAMETER PIPES AND FITTINGS

This HAPAS Certificate Product Sheet<sup>(1)</sup> is issued by the British Board of Agrément (BBA), supported by Highways England (HE) (acting on behalf of the Overseeing Organisations of the Department for Transport; Transport Scotland; the Welsh Government and the Department for Infrastructure, Northern Ireland), the Association of Directors of Environment, Economy, Planning and Transport (ADEPT), the Local Government Technical Advisers Group and industry bodies. HAPAS Certificates are normally each subject to a review every three years.

(1) Hereinafter referred to as 'Certificate'.

This Certificate relates to Osma UltraRib 150 mm, 225 mm and 300 mm Internal Diameter Pipes and Fittings, a range of PVC-U pipes and fittings for use in foul and surface water drains, suitable for use where pipes and fittings included in Table 5/1 of the *Manual of Contract Documents for Highway Works, Volume 1*, are normally used.

#### CERTIFICATION INCLUDES:

- factors relating to compliance with HAPAS requirements
- factors relating to compliance with Regulations 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 for the intended application (see section 6).

**Performance of joints** — the joints remain watertight under normal use (see section 7).

**Flow characteristics** — the products will have normal flow characteristics associated with PVC-U underground sewerage systems (see section 8).

**Resistance to chemicals** — the products have adequate resistance to the type of chemicals likely to be found in domestic sewage (see section 9).

**Durability** — the material from which the products are manufactured will not deteriorate significantly and the anticipated life will be in excess of 50 years (see section 11).



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



Paul Valentine

Technical Excellence Director



Claire Curtis-Thomas

Chief Executive

Date of Third issue: 8 November 2018

Originally certificated on 25 September 1989

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 are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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

#### British Board of Agrément

Bucknalls Lane  
Watford  
Herts WD25 9BA

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tel: 01923 665300  
[clientservices@bbacerts.co.uk](mailto:clientservices@bbacerts.co.uk)  
[www.bbacerts.co.uk](http://www.bbacerts.co.uk)

# Requirements

In the opinion of the BBA, Osma UltraRib 150 mm, 225 mm and 300 mm Internal Diameter Pipes and Fittings, when used in accordance with the provisions of this Certificate, will meet or contribute to meeting the following requirements of the *Manual of Contract Documents for Highways Works (MCHW)*<sup>(1)</sup>, Volume 1 *Specification for Highways Works (SHW)*.

(1) The MCHW is operated by the Overseeing Organisations: Highways England (HE), Transport Scotland, the Welsh Government and the Department for Infrastructure (Northern Ireland).

# Regulations

## 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 sections: 3 *Delivery and site handling (3.2)* and 13 *General* of this Certificate.

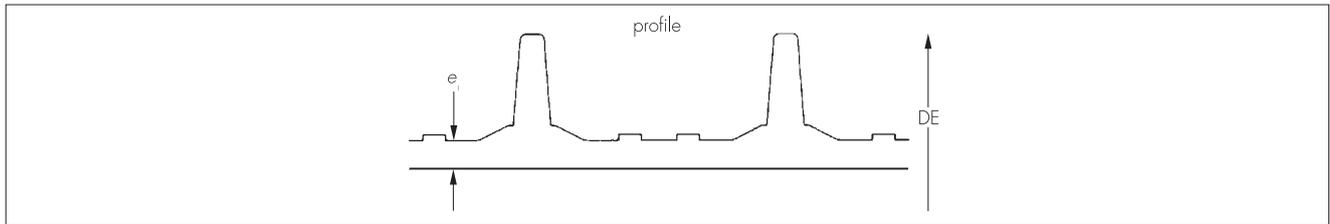
# Technical Specification

## 1 Description

Osma UltraRib 150 mm, 225 mm and 300 mm Internal Diameter Pipes and Fittings (see Tables 1 to 3) comprise:

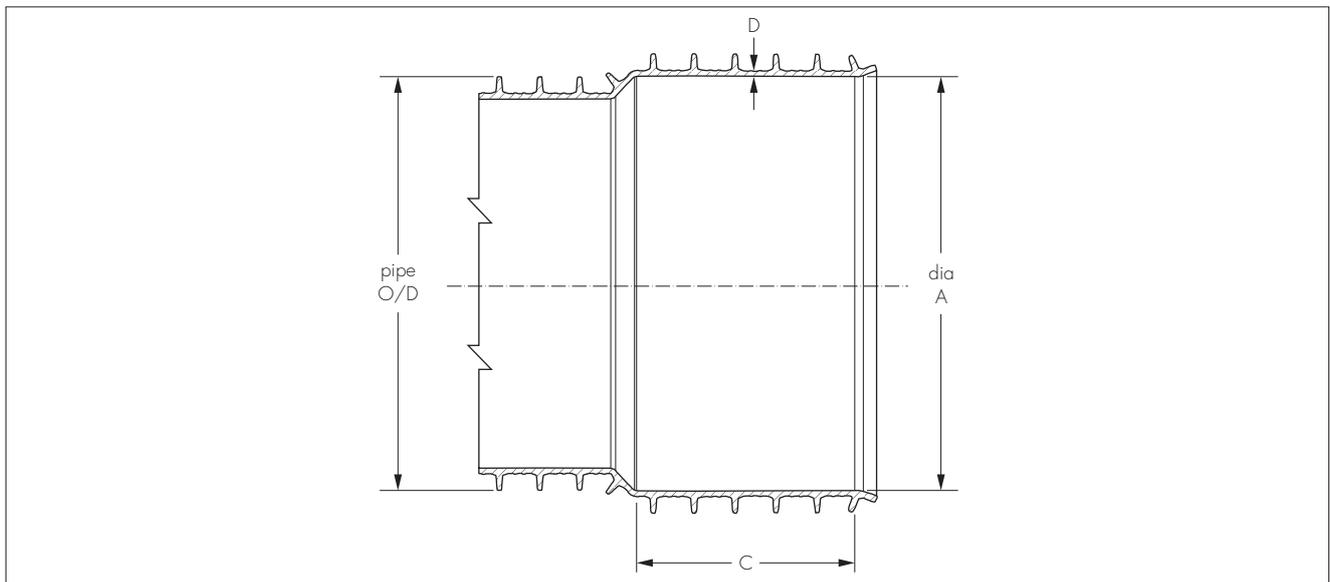
- solid wall pipes, extruded from PVC-U with a repeating pattern of radial ribs perpendicular to the axis of the pipe, to provide a housing for type WC elastomeric ring seals to BS EN 681-1 : 1996. The pipes are brown in colour and are produced in three diameters either with plain ends (spigot x spigot) or with one end socketed (socket x spigot)
- PVC-U or polypropylene (PP) fittings, brown in colour. The sockets of each fitting are not ribbed. The body of the fitting is ribbed where appropriate. The range of fittings covered by this Certificate is shown in Table 3
- two-part, screw fitted PVC-U access covers, brown in colour. The caps incorporate a type WC ring seal to BS EN 681-1 : 1996.

Table 1 Pipe dimensions



Nominal size (DN/ID) (mm)	Outside dia (DE) (mm)	Mean bore (mm)	Effective length (m)			Thickness (e <sub>1</sub> )		Mean weight (kg·m <sup>-1</sup> )
			3 Plain ends	3 Socketed	6	nominal (mm)	min (mm)	
150	170	152.0	6URO73	6URO43	6URO46	1.9	1.5	2.1
225	250	226.0	9URO73	9URO43	9URO46	2.3	1.9	4.5
300	335	301.0	12URO73	12URO43	-	2.9	2.3	7.0

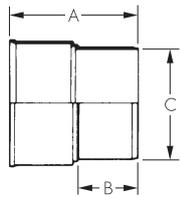
Table 2 Pipe socket dimensions



Nominal size (DN/ID) (mm)	Nominal pipe O/D (mm)	Socket inside dia A (mm)		Socket depth C (mm)	Min wall thickness D (mm)
		max	min		
150	170	170.5	171.6	83	1.3
225	250	250.8	252.0	100	1.6
300	335	336.1	337.6	110	1.9

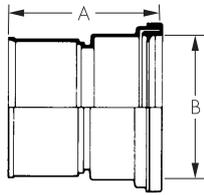
Table 3 Fittings<sup>(1)</sup>

S/S adaptor (150 mm socket x 160 mm BS EN 1401-1 spigot)



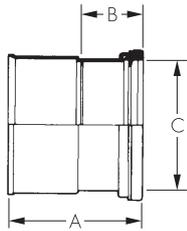
Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR141	150	180	84	160

D/S adaptor (to thin wall clay spigot)



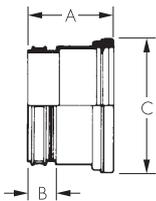
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR129	150	193	180

D/S adaptor (150 mm socket x 160 mm BS EN 1401-1 socket)



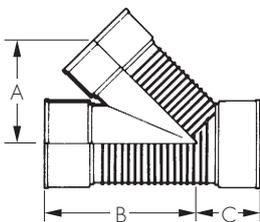
Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR142	150	173	86	161

S/S adaptor (150 mm spigot x 160 mm BS EN 1401-1 socket)



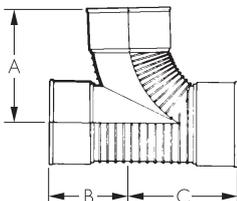
Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR143	150	125	42	161

D/S equal junctions 45°



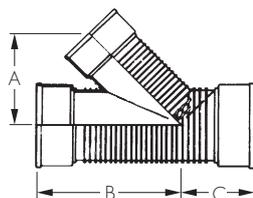
Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR213	150	210	304	126
9UR213	225	338	495	182
12UR213	300	410	600	270

D/S equal junction 87½° (to UltraRib spigot)



Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR193	150	246	180	225

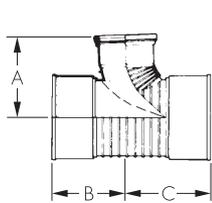
D/S unequal junctions 45°



Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR219	150 x 110	185	265	90
9UR224	225 x 110	240	410	130
9UR226	225 x 160	275	415	130
9UR227	225 x 150	287	422	120
12UR236	300 x 160	295	500	155
12UR237	300 x 150	335	497	162
12UR240	300 x 225	470	575	295

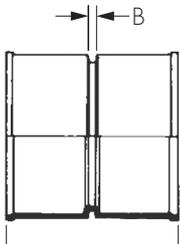
Table 3 Fittings<sup>(1)</sup> (continued)

D/S unequal junction 87½° (to BS EN 1401-1 spigot)



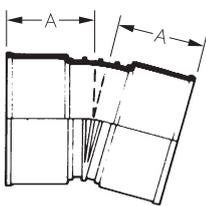
Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR199	150 x 110	174	163	177

D/S pipe couplers with central register



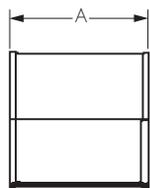
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR205	150	185	12
9UR205	225	235	12
12UR205	300	301	15

D/S short radius bends 15°



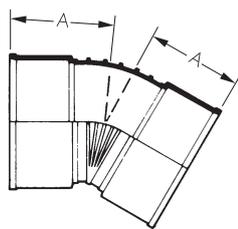
Product code	Nominal size	Dimensions (mm)
		A
6UR567	150	112
9UR567	225	135
12UR567	300	190

D/S slip couplers



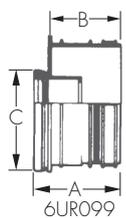
Product code	Nominal size	Dimensions (mm)
		A
6UR105	150	185
9UR105	225	270
12UR105	300	325

D/S short radius bends 30°



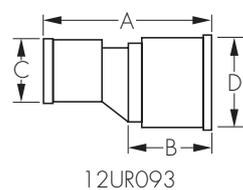
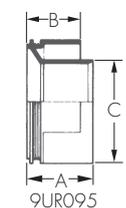
Product code	Nominal size	Dimensions (mm)
		A
6UR566	150	125
9UR566	225	150
12UR566	300	210

S/S reducers level invert



Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR099	150 x 110	115	95	110

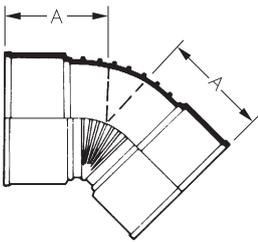
S/S reducers level invert



Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
9UR095	225 x 150	142	122	170	
12UR093	300 x 225	405	205	275	365

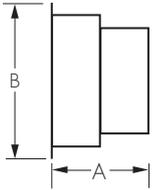
Table 3 Fittings<sup>(1)</sup> (continued)

D/S short radius bends 45°



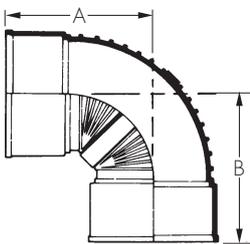
Product code	Nominal size	Dimensions (mm)	
		A	
6UR563	150	140	
9UR563	225	170	
12UR563	300	235	

Socket plugs



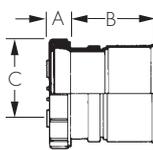
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR296	150	95	195
9UR296	225	95	320
12UR296	300	170	340

D/S short radius bends 87½°



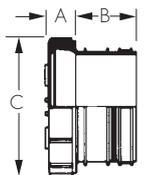
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR561	150	262	262
9UR561	225	600	600
12UR561	300	685	710

S/S screwed access cover



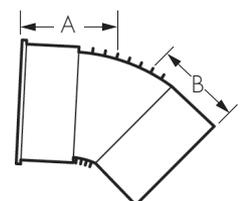
Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR290	150	40	185	196

P/E screwed access cover



Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR292	150	40	85	196

S/S short bend radius 45°



Product code	Nominal size	Dimensions (mm)	
		A	B
6UR163	150	138	128

(1) Dimensions are for guidance only, with a tolerance of ±5 mm.

(2) Polypropylene (PP) fittings (all others are PVC).

## 2 Manufacture

2.1 The pipes and fittings are produced by injection moulding or by thermoforming from PVC-U material, and are brown in colour.

2.2 Continuous quality control is exercised during manufacture to maintain product quality and includes checks for dimensional accuracy, impact resistance and weight of the pipes, and for dimensional accuracy and stress resistance of the fittings.

2.3 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.

2.4 The management system of Wavin Ltd has 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).

2.5 BSI Kitemark licence No. KM 56705 has been issued to Wavin UK (Holdings) Ltd, for the manufacture of pipes to BS EN 13467-3 : 2007 and WIS 4-35-01 : 2008.

## 3 Delivery and site handling

3.1 Each pipe length and fitting is engraved, marked or labelled with the Certificate holder's name, the pipe's internal diameter, product code (fittings only) and the BBA logo and/or the number of this Certificate.

3.2 Handling, storage and transportation should be in accordance with BS 8000-0 : 2014, BS 8000-14 : 1989 and BS EN 1610 : 2015. When long-term storage is envisaged, the pipes and fittings must be protected from direct sunlight.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Osma UltraRib 150 mm, 225 mm and 300 mm Internal Diameter Pipes and Fittings.

## Design Considerations

### 4 Use

4.1 Osma UltraRib 150 mm, 225 mm and 300 mm Internal Diameter Pipes and Fittings are for use in combination as sewerage systems 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 This Certificate does not cover the use of the products for untreated trade effluents.

### 5 Practicability of installation

The products are designed to be installed by a competent contractor experienced with these types of products.

### 6 Strength

6.1 The pipes can be used as an alternative to the plastic pipe for foul and surface water drains in Table 5/1 of the MCHW, Volume 1.

6.2 For the determination of safe bedding depth the pipes may be assumed to have a standard dimension ratio (SDR) equivalent to or not greater than 41.

6.3 Nominal short-term stiffness of the pipes and fittings is not less than 8 kN-m<sup>-2</sup> and the creep ratio is ≤ 2.5.

### 7 Performance of joints

7.1 Performance of correctly assembled joints will not be adversely affected by thermal expansion or contraction.

7.2 Joints in the pipeline remain watertight under conditions of pipeline movement in excess of those expected to occur in normal good drainage practice and comply with the MCHW, Volume 1, Clause 504.3.

## 8 Flow characteristics

8.1 The products will have the normal flow characteristics associated with PVC-U underground sewerage systems.

8.2 Full bore discharges and velocities are available from H R Wallingford and D I H Barr *Tables for Hydraulic Design of Pipes, Sewers and Channels*, Volume 2, 8th edition. The values are based on the Colebrook-White equation.

## 9 Resistance to chemicals

The products are suitable for use where pipes and fittings included in the MCHW, Volume 1, Table 5/1 are normally used. They have adequate resistance to the type and quantities of chemicals likely to be found in surface water.

## 10 Maintenance

10.1 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 pipes and fittings and should not be used.

10.2 The products have adequate resistance to water cleansing using pressure jetting equipment. It is recommended that low-pressure, high-volume systems are utilised in accordance with the MCHW, Volume 1, Clause 520.

## 11 Durability

In the opinion of the BBA, when used in the context of this Certificate, no significant deterioration of the products will take place and installations will have a life in excess of 50 years.

## 12 Reuse and recyclability

The pipes and fittings are manufactured from PVC-U and PP materials, which are readily recyclable.

# Installation

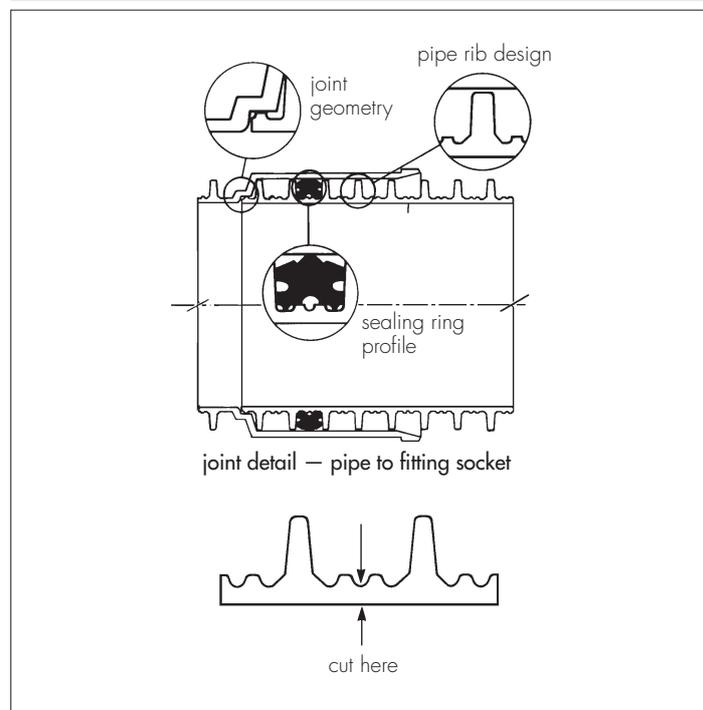
## 13 General

Installation must be in accordance with the Certificate holder's Installation Manual, the general requirements and any additional specific site requirements (see the *Requirements* part of this Certificate).

## 14 Procedure for jointing pipe

14.1 The pipes are cut midway between the ribs as shown in Figure 1.

Figure 1 Joint details



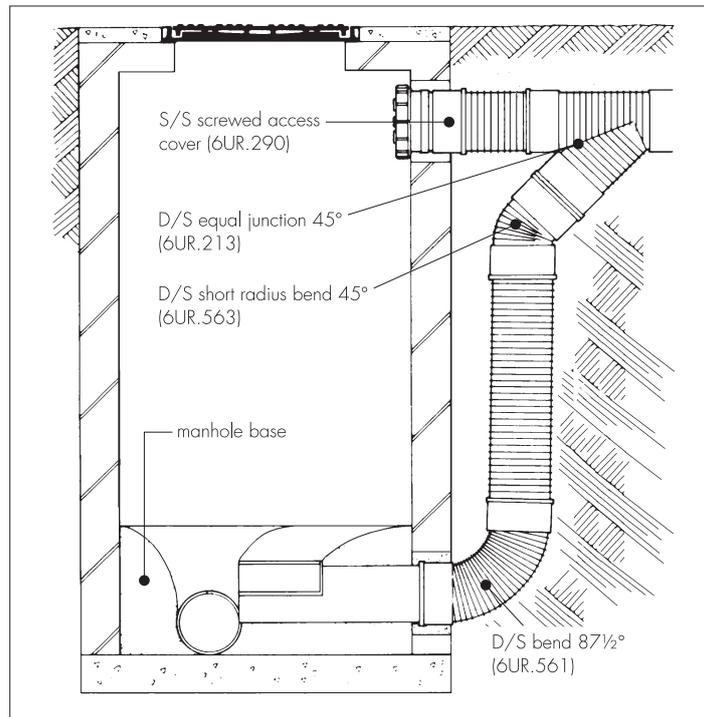
14.2 Swarf is removed from the pipe end.

14.3 The pipe spigots and sockets are cleaned and the sealing ring is checked to ensure that it is correctly seated (not twisted) between the second and third ribs of the pipe end.

14.4 The manufacturer's lubricant is applied generously to the whole of the inside area of the socket, ensuring that it does not subsequently become contaminated with dirt.

- 14.5 The pipe is offered to the socket, aligned and pushed fully home.
- 14.6 Joining to other materials must be carried out in accordance with the Certificate holder's Installation Manual.
- 14.7 The pipes and fittings must have adequate protection against damage from site traffic.
- 14.8 Screw-fitted access covers are for use in backdrop manholes (see Figure 2).

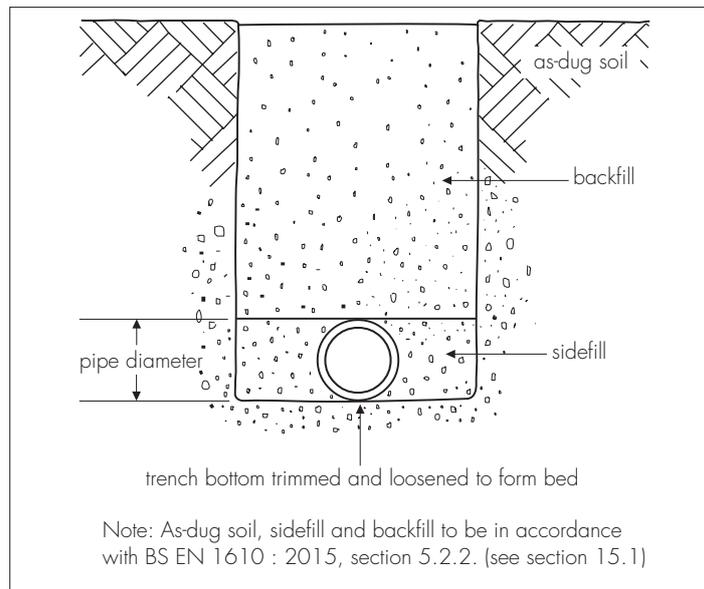
Figure 2 Manhole with backdrop — typical installation of screwed access cover



## 15 Procedure for laying pipes

### Trench bottom in granular material

Figure 3 Typical trench detail



15.1 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.

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

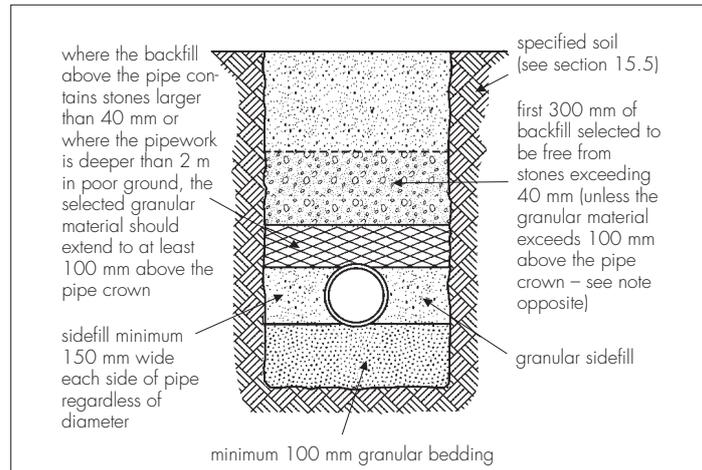
15.3 When the formation is prepared, the pipes should be laid upon it true to line and level within the specified tolerances. Each pipe should be checked and any necessary adjustments to level made by raising or lowering the formation, ensuring that the pipes finally rest evenly on the adjusted formation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

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

### On granular beds

15.5 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 5.2.3.1, 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).

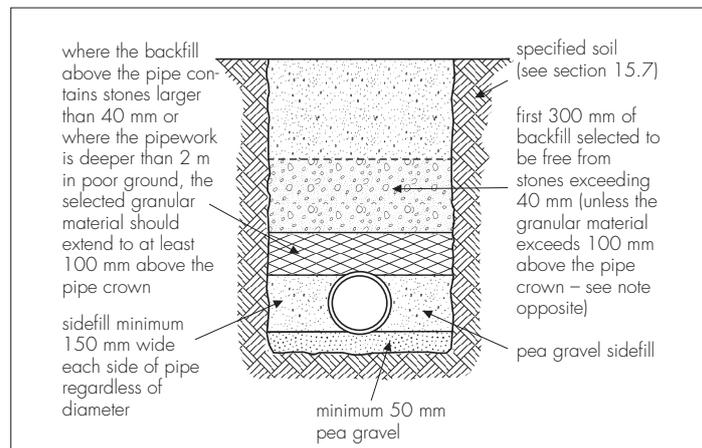
Figure 4 Pipes laid on 100 mm minimum granular bedding



15.6 The trench formation should be prepared, the bedding placed and the pipes laid in accordance with BS EN 1610 : 2015, BS 8000-0 : 2014 and BS 8000-14 : 1989.

15.7 For 150 mm pipes and fittings, and 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, ie pea gravel (see Figure 5).

Figure 5 Pipes laid on 50 mm minimum pea gravel bedding



15.8 When the 150 mm pipes are to be laid on rock, compacted sand or gravel requiring mechanical means of trimming, or in very soft or wet ground, the bedding should be as detailed in section 15.5.

## Technical Investigations

### 16 Tests

16.1 Tests were carried out on pipes and couplers to determine:

- flexibility and pipe ring stiffness to WIS/IGN No 4-31-05, Appendix E
- effect of combined temperature and external load to WIS/IGN No 4-31-05, Appendix F
- long-term stiffness to WIS/IGN No 4-31-05, Appendix D
- short-term stiffness to WIS/IGN No 4-31-05, Appendix B

- heat reversion to BS 5481 : 1977, Appendix A
- impact to WIS/IGN No 4-31-05, Appendix A
- dimensional accuracy to BS ISO 11922-1 : 1997
- stress rupture to BS 4728 : 1971
- resistance to penetration by simulated sharp aggregate
- Vicat softening temperature to BS 2782-1.120B : 1990
- impact resistance at 0°C BS EN 1411 : 1996
- longitudinal bending to WIS 4-35-01 Issue 2 : 2008 Annex C
- resistance to water jetting to WIS 4-35-01, Issue 2 : 2008.

16.2 Pipe, socketed pipe and couplers are kitemarked to WIS 4-35-01 : 2008 and BS EN 13476-3 : 2007.

16.3 Tests were carried out on the products to determine:

- combined temperature and external load to WIS 4-35-01, Appendix A
- leaktightness whilst under angular deflection and diametric distortion to BS EN 1277 : 1996, Methods 4C and 4D
- rodding resistance to the MCHW, Volume 1, Clause 518.12.

16.4 Tests were carried out on the fittings to determine:

- dimensional accuracy to BS ISO 11922-1 : 1997
- short-term ring stiffness to ISO 13967 : 1998
- drop test (fabricated fittings) to BS EN 12061 : 1999
- mechanical strength and flexibility (fabricated fittings) to BS EN 12256 : 1998.

## 17 Investigations

17.1 An evaluation of data was made to assess:

- practicability of installation
- chemical resistance
- design method
- flow capacities
- ease of jointing.

17.2 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.

## Bibliography

BS 2782-1.120B : 1990 *Methods of testing plastics — Thermal properties — Determination of Vicat softening temperature of thermoplastics*

BS 4728 : 1971 *Method for determination of the resistance to constant internal pressure of thermoplastics pipe*

BS 5481 : 1977 *Specification for unplasticized PVC pipe and fittings for gravity sewers*

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 752 : 2017 *Drain and sewer systems outside buildings*

BS EN 1277 : 1996 *Methods of testing plastics — Thermoplastics pipes, fittings and valves — Plastics piping systems — Thermoplastics piping systems for buried non-pressure applications — Test methods for leaktightness of elastomeric sealing ring type joints*

BS EN 1401-1 : 2009 *Plastic piping systems for non-pressure underground drainage and sewerage — Unplasticized poly(vinyl chloride) (PVC-U) — Specifications for pipes, fittings and the system*

BS EN 1411 : 1996 *Plastics piping and ducting systems — Thermoplastics pipes — Determination of resistance to external blows by the staircase method*

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

BS EN 12061 : 1999 *Plastics piping systems — Thermoplastics fittings — Test method for impact resistance*

BS EN 12256 : 1998 *Plastics piping systems — Thermoplastics fittings — Test method for mechanical strength or flexibility of fabricated fittings*

BS EN 13476-3 : 2007 *Plastics piping systems for non-pressure underground drainage and sewerage — Structured wall piping systems of unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) — Specifications for pipes and fittings with smooth internal and profiled external surface and the system, Type B*

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

BS EN ISO 14001 : 2015 *Environmental management systems — Requirements*

## Conditions of Certification

### 18 Conditions

18.1 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.

18.2 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.

18.3 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.

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

18.5 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.

18.6 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.