



## Wavin Plastics Limited

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**Agrément  
 Certificate  
 No 98/3472**  
 Third issue \*

Designated by Government  
 to issue  
 European Technical  
 Approvals

## ULTRARIB GRAVITY SEWER SYSTEM

Système d'égouts  
 Kanalisationssystem

# Product




- THIS CERTIFICATE REPLACES CERTIFICATES Nos 89/2268 AND 90/2563 AND RELATES TO THE ULTRARIB GRAVITY SEWER SYSTEM, THE COMPONENTS OF WHICH ARE REFERRED TO IN THE ACCOMPANYING DETAIL SHEETS.
- The system is for use in domestic drains and public and private sewers in accordance with WIS 4-35-01.
- The system meets the relevant conditions and standards given in Water UK/WRc plc Sewers for Adoption, 5th edition, July 2001.

continued

## Regulations — Detail Sheet 1

### 1 The Building Regulations 2000 (as amended) (England and Wales)

 The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of drainage systems with the Building Regulations. In the opinion of the BBA, the UltraRib Gravity Sewer System, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: H1(1)	Foul water drainage
Comment:	The system will convey the flow of foul or surface water and minimise the risk of blockages or leaks. See the tinted areas in the <i>General (Design Data), Strength, Performance of joints, Flow characteristics, Resistance to chemicals, Resistance to elevated temperatures, Practicability of installation and Rodding</i> sections of Detail Sheets 4 and 6.
Requirement: H3(3)	Rainwater drainage
Comment:	The system will convey the flow of rainwater and minimise the risk of blockages or leaks. See the tinted areas in the <i>General (Design Data), Strength, Performance of joints, Flow characteristics, Resistance to chemicals, Resistance to elevated temperatures, Practicability of installation and Rodding</i> sections of Detail Sheets 4 and 6.
Requirement: Regulation 7	Materials and workmanship
Comment:	The system is acceptable. See the tinted area in the <i>Durability</i> section of Detail Sheets 4 and 6.

continued

- Components of the system can be used individually or in combination as described in the Detail Sheets.

- This Certificate does not cover the use of the products for untreated trade effluents.

These Front Sheets must be read in conjunction with the accompanying Detail Sheets, which provide information for specific systems.

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## 2 The Building Standards (Scotland) Regulations 1990 (as amended)



In the opinion of the BBA, the UltraRib Gravity Sewer System, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations and related Technical Standards as listed below.

Regulation:	10	Fitness of materials and workmanship
Standard:	B2.1	Selection and use of materials, fittings, and components, and workmanship
Comment:		The product can contribute to a construction meeting this Standard. See the <i>Installation</i> part of this Certificate.
Standard:	B2.2	Selection and use of materials, fittings, and components, and workmanship
Comment:		The product is an acceptable material. See the tinted area in the <i>Durability</i> section of Detail Sheets 4 and 6.
Regulation:	24	Drainage
Standard:	M2.1	Drainage system — Wastewater and surface water drainage
Comment:		The system can meet the relevant requirements of this Standard. See the tinted areas in the <i>General (Design Data), Strength, Performance of joints, Flow characteristics, Resistance to chemicals, Resistance to elevated temperatures, Practicability of installation and Rodding</i> sections of Detail Sheets 4 and 6.

## 3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, the UltraRib Gravity Sewer System, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The system is acceptable. See the tinted area in the <i>Durability</i> section of Detail Sheets 4 and 6.
Regulation:	N4	Underground foul drainage
Comment:		See the tinted areas in the <i>General (Design Data), Strength, Performance of joints, Flow characteristics, Resistance to chemicals, Resistance to elevated temperatures, Practicability of installation and Rodding</i> sections of Detail Sheets 4 and 6.
Regulation:	N5	Rain-water drainage
Comment:		See the tinted areas in the <i>General (Design Data), Strength, Performance of joints, Flow characteristics, Resistance to chemicals, Resistance to elevated temperatures, Practicability of installation and Rodding</i> sections of Detail Sheets 4 and 6.

## 4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections: 1 *General* of Detail Sheet 3, 2 *Delivery and site handling* (2.2 of Detail Sheet 4 and 2.1 of Detail Sheet 6) and 12 *General* of Detail Sheets 4 and 6.

## Bibliography

WIS 4-35-01, Issue 1 : 2000 Specification for thermoplastic structured wall pipes, joints and couplers with a smooth bore for gravity sewers for the size range 150 to 900 inclusive

## Conditions of Certification

### 5 Conditions

5.1 This Certificate:

- (a) relates only to the product that is described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) is valid only within the UK;
- (d) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (e) is copyright of the BBA;
- (f) is subject to English law.

5.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

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

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine; and

(c) are reviewed by the BBA as and when it considers appropriate.

5.4 In granting this Certificate, the BBA is not responsible for:

- (a) the presence or absence of any patent, intellectual property or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the actual works in which the product is installed, used and maintained, including the nature, design, methods and workmanship of such works.

5.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.



In the opinion of the British Board of Agrément, the UltraRib Gravity Sewer System is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 98/3472 is accordingly awarded to Wavin Plastics Limited.

On behalf of the British Board of Agrément

A handwritten signature in black ink, appearing to read 'P. A. Hewitt', is written over a light grey background.

Date of Third issue: 17th December 2004

Chief Executive

*\*Original Certificate issued on 13th July 1998. This amended version includes reference to new Conditions of Certification.*

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**British Board of Agrément**

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For technical or additional information,  
contact the Certificate holder (see  
front page).  
For information about the Agrément  
Certificate, including validity and  
scope, tel: Hotline 01923 665400,  
or check the BBA website.



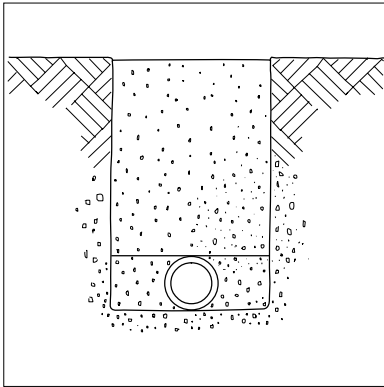
Wavin Building Products Ltd

Certificate No 98/3472

**ULTRARIB UNDERGROUND  
DRAINAGE SYSTEM – INSTALLATION**

**DETAIL SHEET 3**

## Product



• THIS DETAIL SHEET RELATES TO THE INSTALLATION OF WAVIN ULTRARIB PVC-U UNDERGROUND DRAIN PIPES AND FITTINGS CERTIFICATED BY THE BBA AS DESCRIBED IN THIS CERTIFICATE.

## Installation

### 1 General

Installation should be carried out in accordance with BS 5955 : Part 6 : 1980, BS 8301 : 1985, BS 8005 : 1987, BS EN 1610 : 1998, BS EN 752 : Parts 1 to 4, The Water Authorities Association documents *Sewers for Adoption*, and this Certificate.

### 2 Laying pipes

**On trench bottom in granular material** (see Figure 1)

2.1 Where the as-dug material is suitable\* for use as bedding, the bottom of the trench may be trimmed to form the pipe bed.

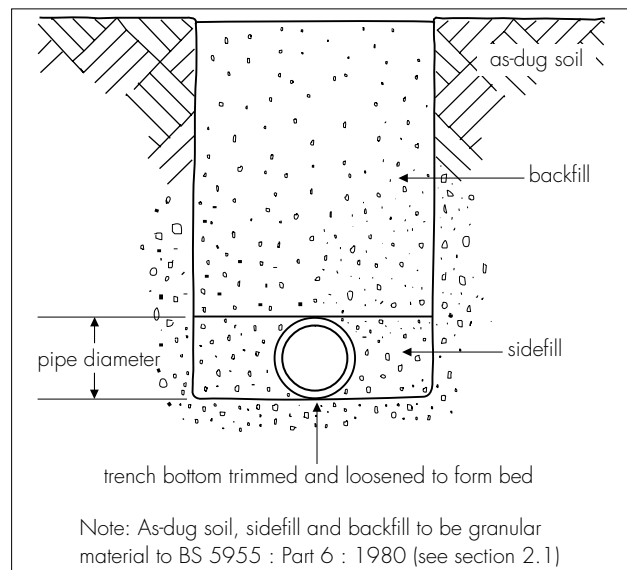
\*Suitable material is defined as granular material in accordance with the recommendations of BS 5955 : Part 6 : 1980, Table 2.

2.2 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.

2.3 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 barrels. Adjustment should never be made by local packing.

2.4 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.

Figure 1 Pipes laid on trench bottom



**On granular beds** (see Figures 2 and 3)

2.5 When the as-dug material is not suitable as a bedding, a layer of suitable granular material (see section 2.1) 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 barrels, in accordance with BS 5955 : Part 6 : 1980 (see Figure 2).

2.6 The trench formation should be prepared, the bedding placed and the pipes laid in accordance with BS 5955 : Part 6 : 1980 and BS 8301 : 1985.

2.7 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 3).

2.8 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 2.5.

Figure 2 Pipes laid on 100 mm minimum granular bedding

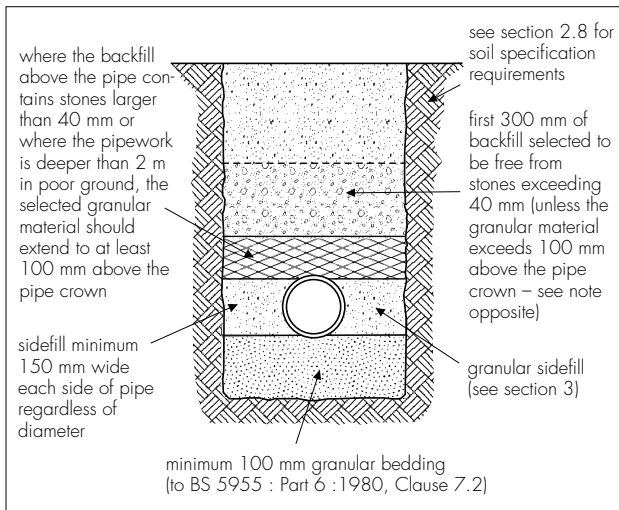
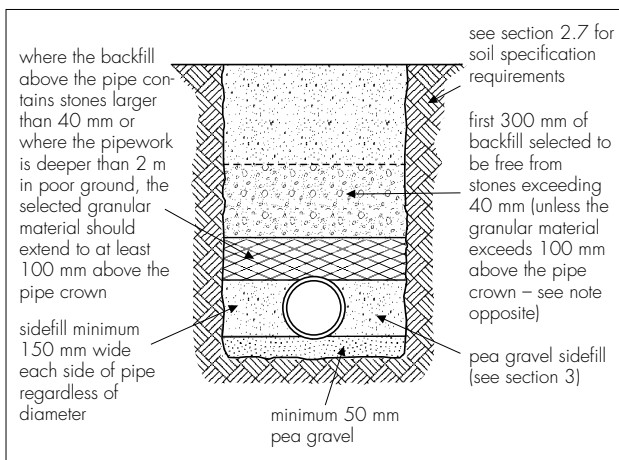


Figure 3 Pipes laid on 50 mm minimum pea gravel bedding



## 3 Sidefill

In all cases the sidefill must be of the same specification as the bedding material and extend to the level of the crown of the pipe and be placed and compacted in accordance with BS 5955 : Part 6 : 1980.

## 4 Backfill

Backfill above the level of the crown of the pipe must be in accordance with BS 5955 : Part 6 : 1980 (see Figures 1, 2 and 3).

## Bibliography

BS 5955 *Plastics pipework (thermoplastics materials) Part 6 : 1980 Code of practice for the installation of unplasticized PVC pipework for gravity drains and sewers*

BS 8005 : 1987 *Sewerage*

BS 8301 : 1985 *Code of practice for building drainage*

BS EN 752 *Drain and sewer systems outside buildings*

Part 1 : 1996 *Generalities and definitions*

Part 2 : 1997 *Performance requirements*

Part 3 : 1997 *Planning*

Part 4 *Hydraulic design and environmental considerations*

BS EN 1610 : 1998 *Construction and testing of drains and sewers*



On behalf of the British Board of Agrément

Date of issue: 13th July 1998

Director

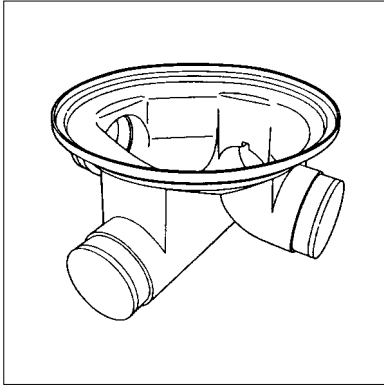


Wavin Building Products Ltd

Certificate No 98/3472

**WAVIN ULTRARIB OPEN CHANNEL  
MANHOLE FITTINGS AND MANHOLE BASE**
**DETAIL SHEET 4**

## Product



• THIS DETAIL SHEET RELATES TO WAVIN ULTRARIB OPEN CHANNEL MANHOLE FITTINGS AND MANHOLE BASES.

• The products are for use in public and private sewers at depths of up to 10 metres, in conjunction with the pipes and fittings referred to in the accompanying Detail Sheets.

• The products provide a means of access to sewers for rodding and removal of debris.

• This Detail Sheet does not cover the use of the fittings for untreated trade effluent.

*This Detail Sheet must be read in conjunction with the Front Sheet, which gives Conditions of Certification and the products' position regarding the Building Regulations respectively.*

## Technical Specification

### 1 Description

#### Manhole fittings

1.1 The Wavin UltraRib range of open channel manhole fittings is shown in Table 1.

1.2 The screwed access covers are injection moulded in two parts in golden brown PVC-U. The caps incorporate a type WC ring-seal to BS EN 681-1.

1.3 The other fittings covered by this Detail Sheet are fabricated from plain-ended UltraRib pipe or the injection moulded fittings covered by Detail Sheet 2 of this Certificate.

1.4. Half-channel fittings are connected to UltraRib pipe by use of an UltraRib coupler or bend or with a standard UltraRib Type WC ring-seal to BS EN 681-1 : 1996.

#### Manhole bases

1.5 The Wavin UltraRib 150 mm manhole base has an internal diameter of 760 mm and an invert depth of 345 mm, and incorporates straight-through inlets and outlets (150 mm diameter spigot connections) and 45° and 90° branch inlet connections to each side (see Figure 1). Side channels within the bases have a fall of 1°, the central straight-through channel has a fall of 6.5°.

1.6 The type 6UR 875 manhole base has side entry spigots suitable for connection to 110 mm diameter pipe, the type 6UR 876 manhole base has side entry spigots suitable for connection to 150 mm UltraRib pipe, both via suitable pipe couplers or double socketed bends.

1.7 The Wavin UltraRib 225 mm manhole base has a nominal internal diameter of 760 mm and an invert depth of 370 mm, and incorporates straight-through inlets and outlets (225 mm diameter spigot connections) and a 90° branch inlet connection to either side (see Figure 1). Side channels within the bases have a fall of 1°, the central straight-through channel has a nominal fall of 1.5°.

1.8 The bases are supplied to Wavin Building Products Ltd's specification. They are rotationally moulded in medium density polyethylene and have a nominal wall thickness of 4 mm.

1.9 All inlet and outlet spigots have a factory-fitted standard UltraRib ring-seal to BS EN 681-1 : 1996 type WC for connection to UltraRib Pipe Couplers or Bends.

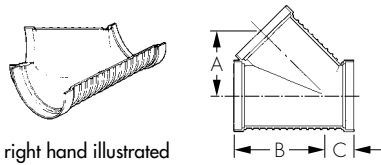
#### Quality control

1.10 Quality control carried out on the long radius Channel bends, adjustable Channel branch bend and the manhole bases includes visual examination and dimensional checks.

Table 1 Fittings

**SW/½S unequal channel access junction — 45°  
— level invert**

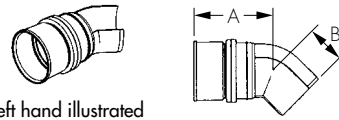
Nominal size	Part number	A	B	C
150×110	6UR.796 LH	150	188	32
225×110	6UR.797 RH	150	188	32



right hand illustrated

**P/E adjustable channel bends\*  
— ¾ section**

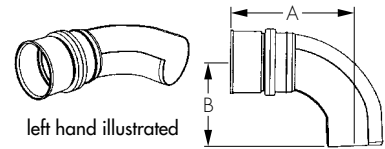
Nominal size	Part number	A	B
150	6UR.780 LH	238	118
150	6UR.781 RH	238	118



left hand illustrated

**S/S adjustable channel branch bend — 87½°  
— ¾ section**

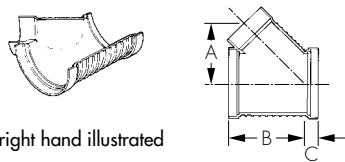
Nominal size	Part number	A	B
150	6UR.784 LH	322	196
150	6UR.785 RH	322	196



left hand illustrated

**SW/½S equal channel access junction — 45°  
— level invert**

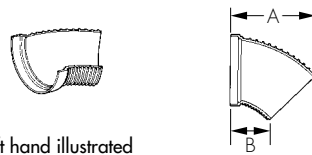
Nominal size	Part number	A	B	C
150	6UR.794 LH	162	230	66
150	6UR.798 RH	162	230	66
225	9UR.794 LH	?	?	?
225	9UR.798 LH	?	?	?



right hand illustrated

**SW/½S channel access bends — short — 45°  
— level invert**

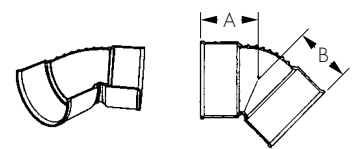
Nominal size	Part number	A	B
150	6UR.798 LH	210	74
150	6UR.799 RH	210	74



left hand illustrated

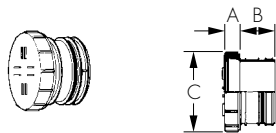
**SW/½S short radius channel bend — 45°  
— ½ section**

Nominal size	Part number	A	B
150	6UR.863	138	138
225	9UR.863	200	200



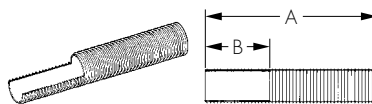
**S/S screwed access cover**

Nominal size	Part number	A	B	C
150	6UR.290	41	153	196



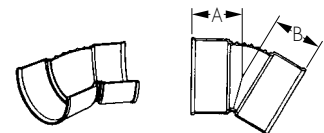
**SW/½S channel access pipe**

Nominal size	Part number	A	B
150	6UR.868	850	315
225	9UR.868	?	?



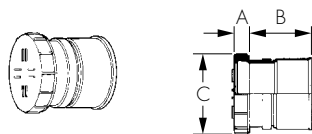
**SW/½S short radius channel bend — 30°  
— ½ section**

Nominal size	Part number	A	B
150	6UR.866	125	125
225	9UR.866	205	205



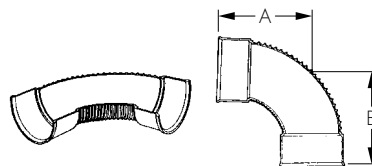
**P/E screwed access cover**

Nominal size	Part number	A	B	C
150	6UR.292	41	87	196



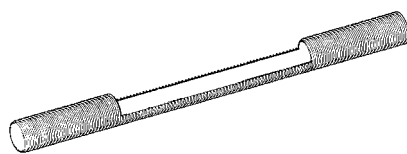
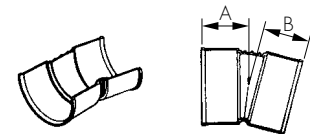
**SW/½S short radius channel bend — 87½°  
— ½ section**

Nominal size	Part number	A	B
150	6UR.861	265	265
225	9UR.861	300	300



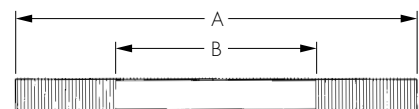
**SW/½S short radius channel bend — 15°  
— ½ section**

Nominal size	Part number	A	B
150	6UR.867	114	114
225	9UR.867	265	165



**P/E channel access pipe**

Nominal size	Part number	A	B
150	6UR.874	2000	1000
225	9UR.874	?	?
300	12UR.874	?	?



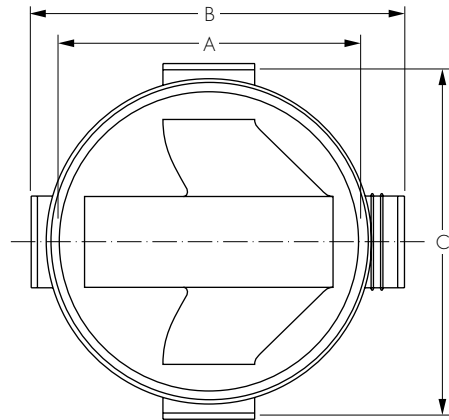
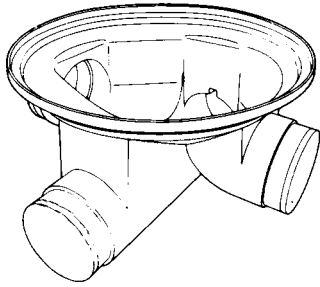
all dimensions in millimetres

Figure 1 Manhole bases (prefabricated)

P/E equal manhole base — 750 mm diameter — supplied with all inlets and outlets\* sealed

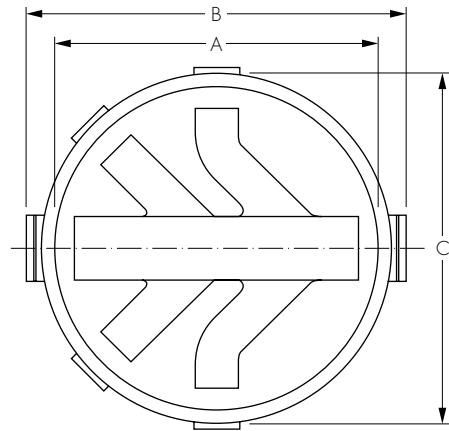
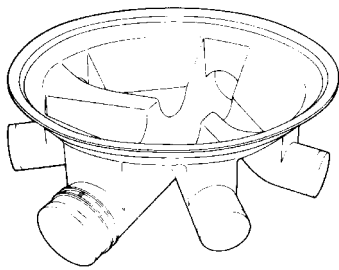
Nominal size	Part number	Invert depth	A	B	C
255	9UR.877	370	760	960	884

\*Fittings have prefixed sealing rings (see section 1.6)



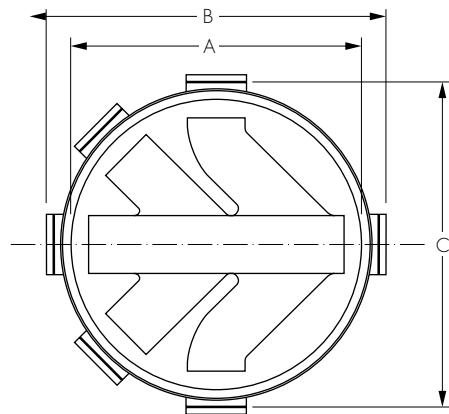
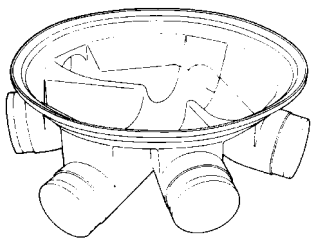
P/E unequal manhole base — 750 mm diameter — supplied with all inlets and outlets sealed

Nominal size	Part number	Invert depth	A	B	C
150x110	6UR.875	345	760	896	850



P/E equal manhole base — 750 mm diameter — supplied with all inlets and outlets sealed

Nominal size	Part number	Invert depth	A	B	C
150	6UR.876	345	760	890	854



## 2 Delivery and site handling

2.1 Fittings and bases are supplied in polythene bags bearing the manufacturer's mark and nominal size. The bases are supplied with the inlets and outlets sealed. The fittings and bases bear the BBA identification mark incorporating the number of this Certificate.

2.2 Handling, storage and transportation should be in accordance with BS 5955 : Part 6 : 1980.

2.3 If a long period of storage on site is envisaged, the components should be protected from direct sunlight and the bags opened to prevent a build-up of temperature.

2.4 Ring seals are supplied fitted to the base. Spare loose sealing rings should be stored in their original packing away from sunlight or conditions likely to cause weathering.

## Design Data

### 3 General

3.1 Wavin UltraRib Open Channel Manhole Fittings and Manhole Base are suitable for use in public and private sewers 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, the Sewerage (Scotland) Act 1968 and by the Water and Sewerage Services (Northern Ireland) Order 1973.

3.2 The products are suitable for use where pipes and fittings to SN4 or SN8 of BS EN 1401-1 : 1998.

### 4 Strength

The products have adequate strength to resist the loads associated with installation and subsequent use in the situations defined in this Detail Sheet.

### 5 Performance of joints

5.1 The performance of correctly assembled joints will not be adversely affected by thermal expansion or contraction.

5.2 Joints will remain watertight under conditions of pipeline movement in excess of those expected to occur in normal good drainage practice.

### 6 Flow characteristics

The products will have normal flow characteristics associated with PVC-U underground drainage systems.

### 7 Resistance to chemicals

7.1 The products have adequate resistance to the type and quantity of chemicals likely to be found in domestic sewage.

7.2 Details of the chemical resistance of PVC-U and polyethylene are given in CP 312 : Part 1 : 1973.

### 8 Resistance to elevated temperatures

The products have adequate resistance to the temperatures normally found in domestic sewage.

### 9 Practicability of installation

The products are installed easily under normal site conditions.

### 10 Rodding

Drains and sewers 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 pipe and fittings and should not be used.

### 11 Durability

In the opinion of the BBA, no significant deterioration of the products will take place provided they are used in the context of this Detail Sheet. The installation will have a life equivalent to conventional PVC-U drainage systems.

## Installation

### 12 General

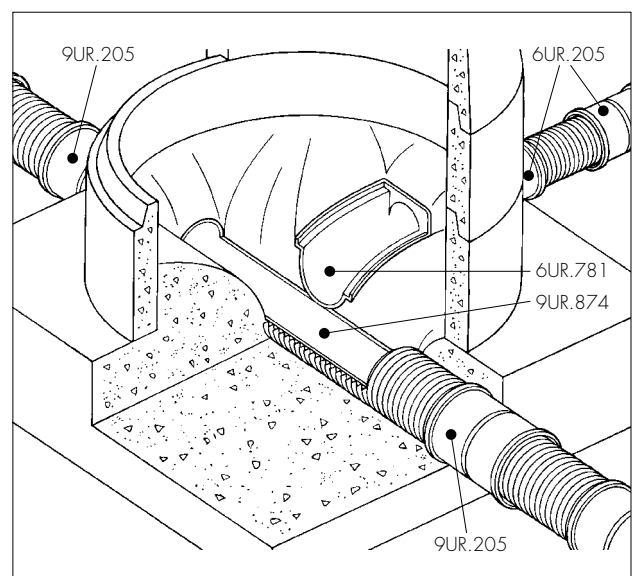
Installation must be carried out in accordance with the *Osmadrain and Osmo UltraRib Installation Guide* and, where appropriate, BS 5955 : Part 6 : 1980, BS 8005 : Part 1 : 1987, BS 8301 : 1985, BS EN 1610 : 1998, and BS EN 752 : Parts 1 to 4.

### 13 Procedure

#### Long radius Channel bends and adjustable Channel branch bends

13.1 Typical installation for an open channel manhole using long radius Channel bends or adjustable Channel branch bends is shown in Figure 2.

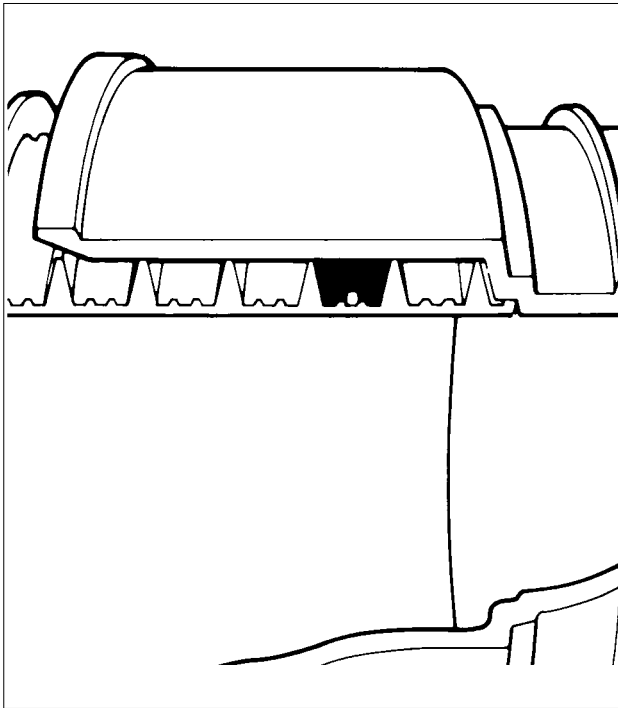
Figure 2 Manhole base — constructed using open channel manhole fittings. Typical installation



13.2 Fittings are for building into chambers of brick or concrete construction.

13.3 The fittings are bedded in cement mortar on a suitable concrete base. The Channel access junctions are lap-jointed to either channel access bends or channel access pipes. Detail of a joint is shown in Figure 3.

Figure 3 Joint detail for channel access fittings



13.4 Long radius Channel bends or adjustable Channel branch bends are connected to UltraRib pipe by using an UltraRib Coupler or Bend. Lubricant is applied to the inside of the socket of the coupler or bend, and the socket is offered up to the spigot of the channel fitting. Connection to UltraRib is then made in the normal way using a standard UltraRib ring-seal to BS EN 681-1 : 1996.

13.5 Adjustable branch bends can be cut to provide angles of entry into a manhole between 30° and 90°. They are positioned so that the discharge from the bend is in the direction of flow of the main channel.

13.6 Screwed access covers are for use in backdrop manholes as shown in Figure 4.

## Manhole bases

13.7 The spigot end of any required inlet or outlet is removed using a fine-toothed saw; a pre-marked line shows the position of the cut. Swarf is removed and the edge of the spigot chamfered.

13.8 The base is connected to the drain run by the use of UltraRib Pipe Couplers or Double-Socketed Bends. The base spigots and the connectors' ring-seals must be clean and free from dust and dirt before lubricant is applied to the spigot. The connectors are then pushed fully home onto the spigots. Connection to UltraRib Pipe is then made

in the normal way using a standard UltraRib Type WC ring-seal to BS EN 681-1 : 1996.

13.9 To ensure the central straight-through channel has adequate fall, the base must be installed with the top flanges level.

13.10 The base should be supported to allow the required depth of concrete to be placed beneath and around it to the level of the top flange. The concrete must extend a sufficient distance from the flange of the manhole base to provide support for a brick or concrete manhole shaft and to fully enclose the connections to the manhole base.

13.11 Typical installation of a prefabricated manhole base is shown in Figure 5.

Figure 4 Manhole with backdrop — typical installation of screwed access cover

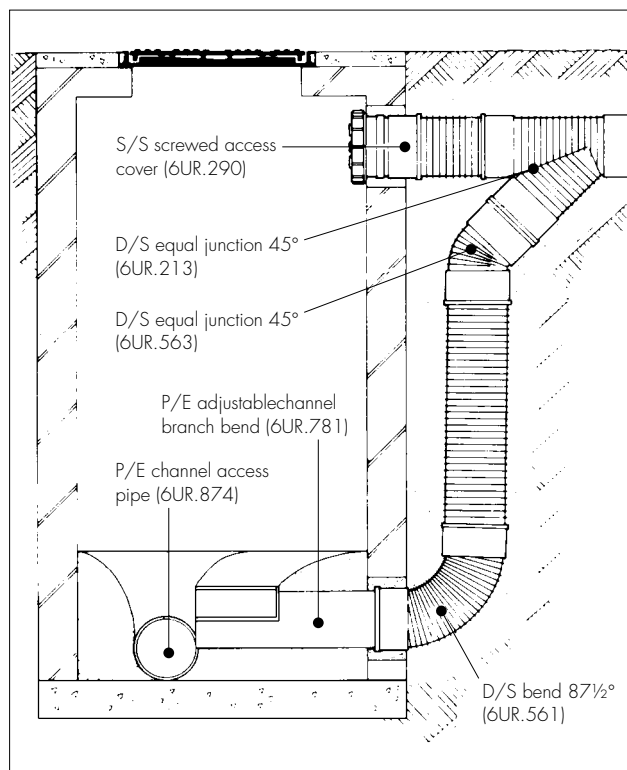
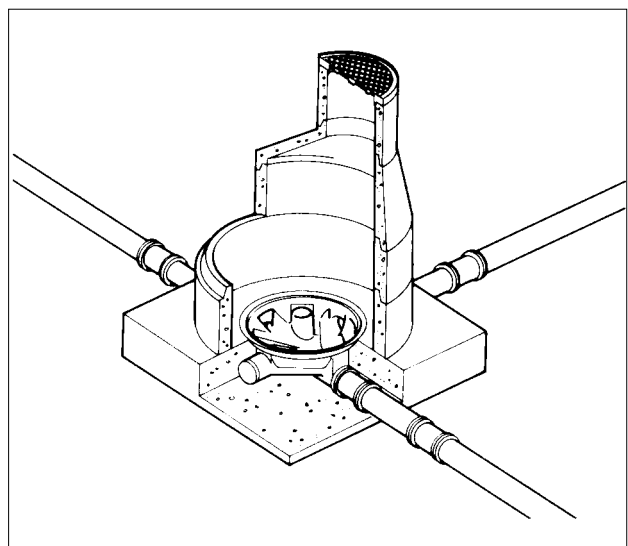


Figure 5 Manhole base — typical installation



## Technical Investigations

The following is a summary of technical investigations carried out in relation to Wavin UltraRib Open Channel Manhole Fittings and Manhole Bases.

### 14 Tests

Tests were carried out to determine:  
dimensional accuracy  
ease of jointing  
watertightness of joints  
practicability of rodding.

### 15 Other investigations

15.1 Data relating to the following were examined:

strength  
performance of joints  
flow characteristics  
resistance to chemicals  
resistance to elevated temperatures  
practicability of installation  
ease of rodding  
durability  
resistance to damage before installation  
material properties.

15.2 The manufacturing processes were examined, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

## Bibliography

- BS 5955 *Plastics pipework (thermoplastics materials)*  
Part 6 : 1980 *Code of practice for the installation of unplasticized PVC pipework for gravity drains and sewers*
- BS 8005 : 1987 *Sewerage*  
Part 1 : 1987 *Guide to new sewerage construction*
- BS 8301 : 1985 *Code of practice for building drainage*
- BS EN 681 *Elastomeric seals. Material requirements for pipe joint seals used in water and drainage application*
- BS EN 681-1 : 1996 *Vulcanized rubber*
- BS EN 752 *Drains and sewer systems outside buildings*  
Part 1 : 1996 *Generalities and definitions*  
Part 2 : 1997 *Performance requirements*  
Part 3 : 1997 *Planning*  
Part 4 *Hydraulic design and invironmental consideration*
- BS EN 1401 : 1998 *Plastics piping systems for non-pressure underground drainage and sewerage — Unplasticized poly (vinyl chloride) (PVC-U)*
- BS EN 1401-1 : 1998 *Specifications for pipes, fittings and the system*
- BS EN 1610 : 1998 *Construction and testing of drains and sewers*
- CP 312 *Code of practice for plastics pipework (thermoplastics material)*  
Part 1 : 1973 *General principles and choice of material*



On behalf of the British Board of Agrément

Date of issue: 13th July 1998

Director



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**British Board of Agrément**

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scope, tel: Hotline 01923 665400,  
or check the BBA website.



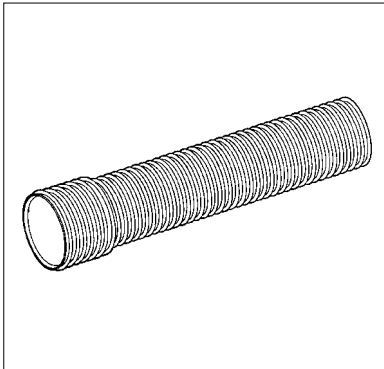
Wavin Plastics Limited

Certificate No 98/3472

**ULTRARIB 150 mm, 225 mm  
AND 300 mm PIPES AND FITTINGS**

**DETAIL SHEET 6**

## Product



- THIS DETAIL SHEET REPLACES DETAIL SHEET 5 AND RELATES TO THE WAVIN ULTRARIB 150 mm, 225 mm AND 300 mm PIPES AND FITTINGS.
- The UltraRib pipes and fittings are for use in domestic drains and public and private sewers at depths of up to 10 metres.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the Conditions of Certification and the product's position regarding the Building Regulations.

## Technical Specification

### 1 Description

1.1 UltraRib pipes have a solid wall and a repeating pattern of radial ribs perpendicular to the axis of the pipe. The ribs provide a housing for type WC elastomeric ring seals to BS EN 681-1 : 1996.

1.2 The pipes, golden brown in colour, are extruded in PVC-U and produced in three diameters with either plain ends (spigot x spigot) or with one end socketed (socket x spigot). The pipes are Kitemarked to WIS 4-35-01. Dimensions of the pipe and pipe sockets are given in Tables 1 and 2.

1.3 UltraRib fittings are golden brown in colour and are either injection moulded in PVC-U or polypropylene (PP), or thermomoulded in PVC-U. The sockets of each fitting are not ribbed. The body of the fittings is ribbed where appropriate. The range of fittings covered by this Detail Sheet is shown in Table 3.

1.4 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 relief on the fittings.

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

### 2 Delivery and site handling

2.1 Handling, storage and transportation should be in accordance with BS 5955-6 : 1980.

2.2 When long-term storage is envisaged, the pipe and fittings must be protected from direct sunlight.

Table 1 Pipe dimensions

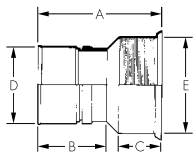
Nominal size	Outside dia (DE) (mm)	Mean bore (mm)	Effective length (m)	Thickness ( $e_1$ ) (mm)		Mean weight ( $\text{kgm}^{-1}$ )
				nominal	min	
150	170	152.0	3 to 6	1.9	1.5	2.1
225	250	226.0	3 to 6	2.3	1.9	4.5
300	335	301.0	3 to 6	2.9	2.3	7.0

Table 2 Pipe socket dimensions

Nominal size	Nominal pipe O/D (mm)	Socket inside dia A (mm)		Socket depth C (mm)	Min wall thickness D (mm)
		min	max		
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

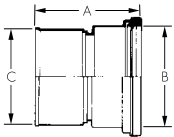
**Table 3 Fittings**

S/S adaptor (to cast iron and clay spigot)



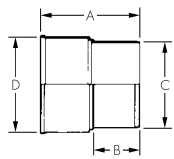
Product code	Nominal size	Dimensions (mm)				
		A	B	C	D	E
6UR128	150	275	154	95	170	216

D/S adaptor (to thinwall clay spigot)



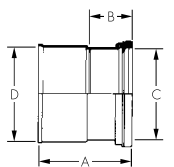
Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR129	150	193	180	170

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



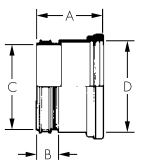
Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
6UR141	150	180	84	160	170

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



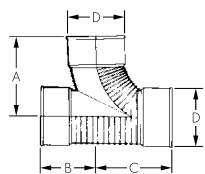
Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
6UR142	150	170	76	161	170

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



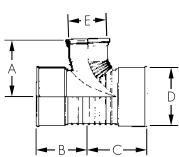
Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
6UR143	150	121	42	161	161

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



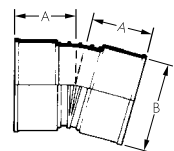
Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
6UR193	150	246	180	229	170

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



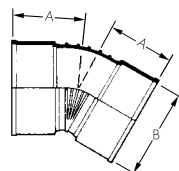
Product code	Nominal size	Dimensions (mm)				
		A	B	C	D	E
6UR219	150 x 110	174	166	177	170	160

D/S short radius bends 15°



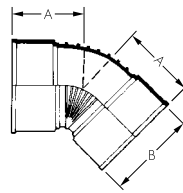
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR567	150	114	170
9UR567	225	232	225
12UR567	300	192	335

D/S short radius bends 30°



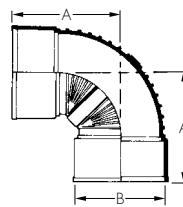
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR566	150	125	170
9UR566	225	150	250
12UR566	300	210	335

D/S short radius bends 45°



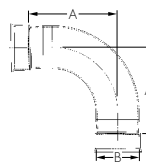
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR563	150	138	170
9UR563	225	168	250
12UR563	300	230	335

D/S short radius bends 87½°



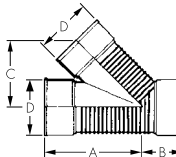
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR561	150	265	170

D/S long radius bends 87½°



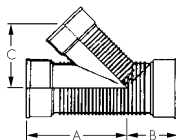
Product code	Nominal size	Dimensions (mm)	
		A	B
9UR561	225	300	250
12UR561	300	365	335

D/S equal junctions 45°



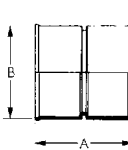
Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
6UR213	150	299	136	210	170
9UR213	225	495	162	345	250
12UR213	300	660	220	460	335

D/S unequal junctions 45°



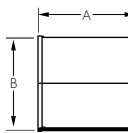
Product code	Nominal size	Dimensions (mm)		
		A	B	C
6UR199	150 x 110	257	102	166
9UR224	225 x 110	340	198	250
9UR227	225 x 150	370	168	270
9UR226	225 x 160	370	168	270
12UR236	300 x 160	425	225	300
12UR237	300 x 150	425	225	300
12UR240	300 x 225	425	225	300

D/S pipe couplers with central register



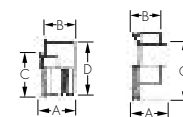
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR205	150	185	170
9UR205	225	262	250
12UR205	300	301	335

D/S slip couplers



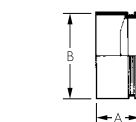
Product code	Nominal size	Dimensions (mm)	
		A	B
6UR105	150	185	170
9UR105	225	269	250
12UR105	300	327	335

S/S reducers level invert



Product code	Nominal size	Dimensions (mm)			
		A	B	C	D
6UR099	150 x 110	115	95	111	170
9UR095	225 x 150	142	122	170	
12UR093	300 x 225	165	155	250	

Socket plugs



Product code	Nominal size	Dimensions (mm)	
		A	B
6UR296	150	92	195 <sup>(1)</sup>
9UR296	225	110	250 <sup>(1)</sup>
12UR296	300	155	335 <sup>(1)</sup>

(1) Polypropylene (PP) fittings (all others are PVC)

## Design Data

### 3 General

The UltraRib pipes and fittings are for use as sewerage systems designed in accordance with BS EN 752-1, -2, -3 and -4 : 1996, 1997, 1997 and 1998, 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 1973.

### 4 Strength

4.1 The fittings have adequate strength for use in situations when pipe to WIS 4-35-01 is suitable.

4.2 For installation purposes, the pipe may be assumed to have a standard dimension ratio (SDR) equivalent of not greater than 41.

4.3 The nominal short-term stiffness is not less than  $8 \text{ kNm}^{-2}$ .

### 5 Performance of joints

5.1 The performance of joints will not be adversely affected by thermal expansion or contraction when correctly made.

5.2 Joints on the pipeline remain watertight under conditions of pipeline movement in excess of those expected to occur in normal good drainage practice.

### 6 Flow characteristics

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

6.2 Full bore discharges and velocities are available from H R Wallingford and D I H Barr *Table for Hydraulic Design of Pipes, Sewers and Channels*, Volume 2, 7th edition. The values are based on the Colebrook-White equation.

### 7 Resistance to chemicals

7.1 The products are suitable for use where pipe to WIS 4-35-01 and fittings to BS EN 1401-1 : 1998 are normally used. They have adequate resistance to the type and quantities of chemicals likely to be found in domestic sewage.

7.2 Details of the chemical resistance of PVC-U are given in CP 312-1 : 1973.

### 8 Resistance to elevated temperatures

The products are for use where pipe to WIS 4-35-01 and fittings to BS EN 1401-1 : 1998 are normally used and have adequate resistance to the temperatures likely to be found in domestic sewage.

### 9 Practicability of installation

The products are installed easily under normal site conditions.

### 10 Rodding

10.1 Drains incorporating the product 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.

10.2 The system has adequate resistance to water cleansing using pressure jetting equipment. It is recommended that low-pressure, high-volume systems are utilised in accordance with WIS 4-35-01.

### 11 Durability

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

## Installation

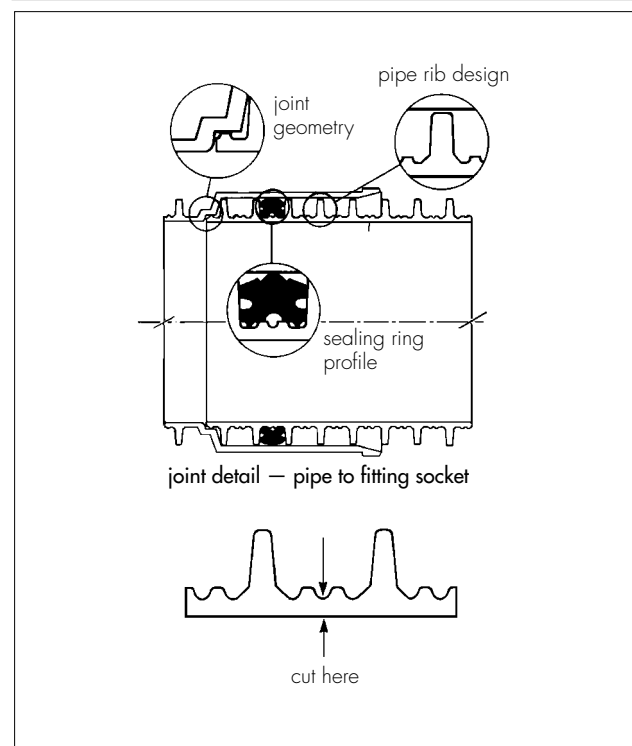
### 12 General

Installation must be in accordance with the *UltraRib Product Guide* and, when appropriate, BS 5955-6 : 1980, BS EN 752, Parts 1 to 4, and Water UK/WRC *plc Sewers for Adoption*, 5th edition, July 2001.

### 13 Procedure

13.1 The pipe is cut midway between the ribs as shown in Figure 1.

Figure 1 Joint details



13.2 Swarf is removed from the pipe end.

13.3 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.

13.4 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.

13.5 The pipe is offered to the socket, aligned and pushed fully home.

13.6 Jointing to other materials must be carried out in accordance with the *UltraRib Product Guide*.

13.7 The pipes and fittings must have adequate protection against damage from site traffic.

## Technical Investigations

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

### 14 Tests

14.1 As part of the assessment leading to the issue of the previous Detail Sheet, tests were carried out on pipe and couplers to determine:

- flexibility and pipe ring stiffness to WIS/IGN No 4-31-05, Appendix E
- long-term stiffness to WIS/IGN No 4-31-05, Appendix D
- short-term stiffness to WIS/IGN No 4-31-05, Appendix B
- impact to WIS/IGN No 4-31-05, Appendix A
- dimensional accuracy to ISO 11922-1 : 1997
- stress rupture to BS 4728 : 1971
- resistance to penetration by simulated sharp aggregate
- Vicat softening temperature to BS 2782.120B : 1990.

14.2 Pipe, socketed pipe and couplers are Kitemarked to WIS 4-35-01.

14.3 Tests were carried out on joints between pipe and fittings to determine:

- combined temperature and external load to WIS 4-35-01, Appendix A
- leaktightness whilst under angular deflection and diametric distortion to WIS 4-35-01
- ease of jointing
- dimensional accuracy to ISO 11922-1 : 1997
- rodding resistance to WIS 4-35-01, Appendix B
- 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.

### 15 Investigations

15.1 An examination was made of data relating to:

- resistance to cleansing using pressure jetting equipment
- practicability of installation
- chemical resistance
- design method
- flow capacities.

15.2 A user survey was carried out to evaluate the performance of the products in use.

15.3 The manufacturing process was examined, 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 5955-6 : 1980 *Plastics pipework (thermoplastics materials) — Code of practice for the installation of unplasticized PVC pipework for gravity drains and sewers*

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

BS EN 752-1 : 1996 *Drain and sewer systems outside buildings — Generalities and definitions*

BS EN 752-2 : 1997 *Drain and sewer systems outside buildings — Performance requirements*

BS EN 752-3 : 1997 *Drain and sewer systems outside buildings — Planning*

BS EN 752-4 : 1998 *Drain and sewer systems outside buildings — Hydraulic design and environmental considerations*

BS EN 1401-1 : 1998 *Plastics piping systems for non-pressure underground drainage and sewerage.*

*Unplasticized poly(vinylchloride) (PVC-U) — Specifications for pipes, fittings and the system*

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*

CP 312-1 : 1973 *Code of practice for plastics pipework (thermoplastics material) — General principles and choice of material*

ISO 11922-1 : 1997 *Thermoplastics pipes for the conveyance of fluids — Dimensions and tolerances — Metric series*

ISO 13967 : 1998 *Thermoplastic fittings — Determination of ring stiffness*

WIS4-35-01, Issue 1 : 2000 *Specification for thermoplastic structured wall pipes, joints and couplers with a smooth bore for gravity sewers for the size range 150 to 900 inclusive*

WIS/IGN No 4-31-05 *Specification for solid wall concentric external rib-reinforced uPVC sewer pipe*



On behalf of the British Board of Agrément

Date of issue: 17th December 2004

A handwritten signature in black ink, appearing to read 'P. C. Hewson', is positioned above the title 'Chief Executive'.

Chief Executive