



Asset International Ltd

Stephenson Street
Newport
Gwent NP19 4XH
Tel: 01633 271906 Fax: 01633 290519
e-mail: info@assetint.co.uk

**Roads and Bridges
Agrément Certificate
No 01/R124**

Designated by Government
to issue
European Technical
Approvals

WEHOLITE SURFACE WATER DRAINAGE SYSTEM

Système de canalisations d'évacuation
Abflußleitungen

Product



- THIS CERTIFICATE RELATES TO THE WEHOLITE SURFACE WATER DRAINAGE SYSTEM.

- The pipes are for use in highway drainage for the collection and disposal of surface and sub-surface water.

Department for Transport, Local Government and the Regions, Highways Agency Requirements

1 Requirements

1.1 The general requirements for drains are contained in the DTLR, HA Manual of Contract Documents for Highway Works MCHW, Volume 1 (May 2001) *Specification for Highway Works*.

1.2 Further information and guidance is given in MCHW, Volume 2 (May 2001) *Notes for guidance on the specification for Highway Works* and Volume 3 *Highway Construction Details* (Drawing Numbers F1 and F2).

1.3 Additional site requirements may be included on particular contracts.

Technical Specification

2 Description

2.1 Weholite Surface Water Drainage System filter and carrier (slotted and unslotted) pipes are manufactured in black polyethylene. They are formed by spirally winding a preformed profile around a heated steel mandrel and the adjacent sections welded together. The welded pipe is then reheated and trimmed to form a flat external surface.

2.2 The pipe is available in four sizes. Details and dimensions are given in Table 1 and Figure 1 and Table 2.

Figure 1 Details of pipe

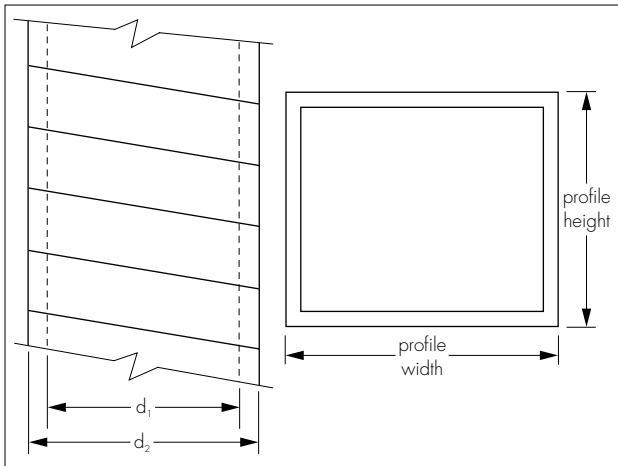


Table 1 Pipe details(1)

Internal pipe diameter, d_1 (mm)	External pipe diameter, d_2 (mm)	Profile height (mm)	Profile width (mm)	Nominal length (m)	Weight (minimum) (kgm^{-1})
450	506	28.0	35.0	6	13
600	675	37.5	46.9	6	22
750	838	44.0	54.7	6	34
900	1013	56.5	70.3	6	46

(1) Nominal values unless otherwise stated.

Table 2 Details of holes

Internal pipe diameter (mm)	No of holes per m run	Nominal hole diameter (mm)	Permeable area (mm^2m^{-1})
450	16	10	1256
600	15	10	1178
750	18	10	1413
900	21	10	1649

Perforated pipes comply with the minimum requirement of $1000 \text{ mm}^2\text{m}^{-1}$.

2.3 The pipes are joined by fusion welding on site.

2.4 Pipes can be supplied either perforated or unperforated. Perforated pipes incorporate 10 mm diameter holes distributed in three rows 60° apart and may be placed at the crest or crown of the pipeline.

2.5 Continuous quality control is exercised during manufacture. Checks include:

Pipes

dimensional accuracy
short-term stiffness.

2.6 A label bearing the BBA identification mark incorporating the number of this Certificate is attached to each pipe length or to each pack of pipes.

3 Delivery and site handling

3.1 Handling, storage and transportation should be in accordance with MCHW and the manufacturer's instructions.

3.2 When long-term storage is envisaged, Weholite pipes must be protected from direct sunlight. If protection cannot be provided, consideration must be given to the effects of daily exposure to direct sunlight:
Up to 3 months — negligible UV degradation but possible extreme surface temperatures of up to 80°C may cause some localised distortion

3 to 12 months — may have significant effect on the impact resistance and physical properties

Over 12 months — damage will occur unless protection provided.

3.3 Pipes should be suitably supported at a minimum of two places when being lifted. Protected slings should preferably be used, but if metal hooks or chains are used then padding should be placed between them and the pipes.

3.4 Pipes should be stored on a flat surface, free from sharp projections, stones or other protuberances. They are generally delivered as loose lengths and should not be stacked more than 4 m high. Care should be taken to avoid dropping the pipes on their ends, particularly during cold weather conditions.

Design Data

4 General

The Weholite Surface Water Drainage System, when installed in accordance with the recommendations given in this Certificate, are suitable for use for the collection and disposal of surface and sub-surface water.

5 Strength

5.1 The product has adequate strength to resist loads associated with installation and with subsequent use. The ring stiffness of the pipe exceeds the minimum requirement of 6 kNm^{-2} and has a creep ratio of less than 4.0 (see section 14.1).

5.2 For safe bedding depth purposes the pipes may be assumed to have a stiffness of greater than 6 kNm^{-2} .

5.3 The pipes have adequate resistance to impact loads to which they may have been subjected during installation and in service. Care should be taken during site handling and installation to avoid dropping the pipes on their ends, particularly during cold weather conditions.

6 Performance of joints

Correctly made, the welded joints remain watertight.

7 Flow characteristics

7.1 The pipes will have normal flow characteristics associated with thermoplastic pipes.

Electronic Copy

7.2 An appropriate value of roughness coefficient should be selected when designing the drainage system.

8 Practicability of installation

The pipes are installed easily using traditional drain-laying methods. The lengths in which the pipes are available and their lightness in weight are a significant advantage in handling and installation. Jointing of the pipes is achieved using fusion welding by Asset International Ltd's approved contractors.

9 Resistance of chemicals

The pipe will be unaffected by those types and quantities of chemicals likely to be found in surface water.

10 Maintenance

10.1 Access to the system for cleaning should be provided by conventional methods.

10.2 The system can be rodded easily using flexible drain rods. In common with other standard plastic drainage systems, toothed root cutters and rods with metal ferrules, as used with some mechanical cleaning systems, could damage the pipe and joints and should not be used.

10.3 The system can be cleansed using low-pressure, high-volume flushing in accordance with the HA recommendations.

11 Durability

In the opinion of the BBA, when used in the context of this Certificate, the material from which the pipes are manufactured will not significantly deteriorate and the anticipated life of the system will be in excess of 50 years.

Installation

12 General

12.1 Installation must be in accordance with the recommendations of MCHW, Clause 518, and HA 40 *Determination of pipe and bedding combinations for drainage works*.

12.2 Pipe and couplings must be protected against damage from site construction traffic.

13 Procedure

13.1 The pipes must be prepared and fusion welded by trained operatives in accordance with Asset International Ltd's documented procedures.

13.2 The pipe can be cut easily using conventional hand tools and should be cut square.

13.3 The pipe edge to be welded should be chamfered using an abrasive disc and the oxide layer removed.

13.4 The pipes should be raised on timbers, butted together leaving a gap of between 10 mm and 20 mm and tack welded.

Note: Hand-held extruders should be allowed to warm up for between 20 mins and 30 mins prior to use, dependent on ambient temperature.

13.5 The tack welds should be allowed to set and the oxide layer removed with an abrasive disc.

13.6 Root weld should be laid around the joint with an angled weld tip. The oxide layer should be removed with an abrasive disc when the weld has set. The joint should be capped using a 'half-moon' shaped head attachment.

Note: In sub-zero temperatures and rain, joints should be tented off.

13.7 Joints can be welded either in the trench, depending on the depth of dig and relevant Health and Safety Regulations, or above the trench and lifted into place after welding.

13.8 Proper equipment should be used when lifting a welded string of pipes and the pipeline should be slung so as to avoid excessive strain on the welded joints.

13.9 Care should be taken during backfill to maintain the line and level of the pipelines. If necessary, the pipe should be restricted to prevent uplift.

Technical Investigations

The following is a summary of the technical investigations carried out on the Weholite Surface Water Drainage System.

14 Tests

14.1 The following tests were carried out to determine the characteristics of the pipe and the pipe material: impact test to MCHW, Clause 518 requirements at 0°C and 23°C

pipe stiffness to BS EN ISO 9969 : 1995

creep ratio to BS EN ISO 9967 : 1995

tensile properties to BS EN ISO 527-1 : 1996 and BS EN ISO 527-2 : 1996

oxygen induction to BS EN 728 : 1997

melt flow rate to BS EN ISO 1133 : 2000

density to BS EN ISO 1183-3 : 1999

heat reversion to ISO 12091 : 1995

ring flexibility to BS EN 1446 : 1996

internal puncture to MCHW, Clause 518

tensile strength of seam to MCHW, Clause 518.

14.2 Tests were carried out on joined pipe to establish watertightness of joints to BS EN 1277 : 1996, Method 4 : Condition A.

14.3 Tests were carried out to establish the dimensional accuracy of the pipe.

15 Other investigations

15.1 An examination was made of data in relation to the effect of the production tolerances on the performance of the products.

15.2 An evaluation of existing data was made to assess material properties, chemical resistance and durability.

15.3 Calculations were carried out to determine the slot area.

15.4 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 EN 728 : 1997 *Plastics piping and ducting systems. Polyolefin pipes and fittings. Determination of oxidation induction time*

BS EN 1277 : 1996 *Plastics piping systems. Thermoplastics piping systems for buried non-pressure applications. Test methods for leaktightness of elastomeric sealing ring type joints*

BS EN 1446 : 1996 *Plastics piping and ducting systems. Thermoplastics pipes. Determination of ring flexibility*

BS EN ISO 527 *Plastics. Determination of tensile properties*

BS EN ISO 527-1 : 1996 *General principles*

BS EN ISO 527-2 : 1996 *Test conditions for moulding and extrusion plastics*

BS EN ISO 1133 : 2000 *Plastics. Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics*

BS EN ISO 1183 *Plastics. Methods for determining the density of non-cellular plastics*

BS EN ISO 1183-3 : 1999 *Gas pycnometer method*

BS EN ISO 9967 : 1995 *Thermoplastics pipes. Determination of creep ratio*

BS EN ISO 9969 : 1995 *Thermoplastics pipes. Determination of ring stiffness*

ISO 12091 : 1995 *Structured wall thermoplastics pipes — Oven test*

Conditions of Certification

16 Conditions

16.1 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) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;

(d) is copyright of the BBA.

16.2 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, shall be construed as references to such publication in the form in which it was current at the date of this Certificate.

16.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabricating process(es) 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 by the BBA or its agents;
- (c) are reviewed by the BBA as and when it considers appropriate; and
- (d) remain in accordance with the requirements of the Department for Transport, Local Government and the Regions, Highways Agency.

16.4 In granting this Certificate, the BBA makes no representation as to:

- (a) the presence or absence of any patent 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 nature of individual installations of the product, including methods and workmanship.

16.5 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 Weholite Surface Water Drainage System is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 01/R124 is accordingly awarded to Asset International Ltd.

On behalf of the British Board of Agrément

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

Date of issue: 20th August 2001

Chief Executive