



1. Scope

This schedule covers the use of the circular polypropylene Pipex Universal Manhole product in the diameter range 1.2 to 1.8 metres and up to 6 metres in depth from ground level to chamber invert level.

Pipex Ltd markets a below-ground thermoplastic drainage system and want to demonstrate that it meets the requirements of Sewers for Adoption 6th Edition. A particular benefit of this system is its suitability for use in areas of high ground water levels where there is potential infiltration, some industrial discharges, contaminated brown field sites where potential leakage is an issue and also where speed of construction and site access are issues. The Universal Manholes may also be used to connect new drainage systems to public sewer systems. The Universal Manholes are delivered with all fittings installed and the installer adds an appropriate slab and cover.

The Universal Manholes are manufactured from polypropylene in sheet and profile form sourced from an external supplier. Fittings are also sourced from an external supplier. A special high grip surface can be added to the benching. The prefabricated plastic manhole unit is delivered to site in one piece and placed on a concrete base slab. The 1.2 metre diameter manholes can be installed without a concrete surround to carry A15 (1.5 tonnes) loadings or alternatively strengthened with a concrete surround for higher loading conditions.

The scope of this approval is limited to those products that are considered suitable to be put forward for adoption by sewerage undertakers. This schedule covers the following assessment areas in order to prove the "fitness for purpose" of this product:

- 2.1 general design requirements;
- 2.2 product type testing;
- 2.2 audit of the production quality control systems;
- 2.3 review of documentation and guidance for designers, installers and operatives;
- 2.4 operational practices.

The purchaser's designer should undertake a structural design to determine the thickness and any steel reinforcement required for the concrete base surround and slab. When surrounded in concrete the Universal Manholes can be installed to carry high road and carriageway loadings including D400 and F900. The Universal Manholes are designed to resist an external ground water hydrostatic pressure having a head equal to the manhole chamber depth. Note: Pipex can provide advice on the concrete surround required to the manholes to suit load bearing situations.

2. General Design Requirements

The documents Sewers for Adoption 6th Edition⁽¹⁾ and Sewers for Scotland⁽²⁾ provide design guidance and a specification for manholes that meet the requirements of the



sewerage undertakers in the UK. Standard manhole design guidance is covered by Clause 2.9 Design of Manholes and typical manhole detail drawings A, B, E and F and Part 5 Specification in Sewers for Adoption. In particular:

- minimum manhole diameter - 1200 mm;
- largest pipe shall be less than 375 mm diameter in 1200 mm diameter manhole;
- minimum width of benching – 500 mm;
- during construction the first manhole in new system shall be fitted with screen;
- rocker pipes;
- no junction less than 90° from outgoing sewer.

2. Type testing

The chamber shall comply with the test requirements of BS 7158⁽³⁾. Note: the Clause 7.7 load test is exempted for Universal Manholes surrounded in structural concrete. The testing carried out on a 1200mm diameter chamber are applicable to all diameters with the exception of Clause 7.8.

As an alternative to the Clause 7.8 vacuum test for chambers larger than 1200 mm diameter an inspection shall be made to witness the performance of a large diameter chamber (diameter 3 metres or greater) sited where the ground water depth rises at least 4 metres above the chamber floor. The internal plastic lining shall not exhibit any signs of damage or significant deformation that would have been caused by the external ground water pressure.

The following additional tests shall be carried out on a 1200 mm diameter chamber with 8 millimetres thick benching to prove the robustness of the manhole benching:

1. Load test to mimic operative working in chamber – 100 kg person standing in various positions in chamber without unsafe flexing of plastic benching.
2. An impact load test – lump hammer (>0.5 kg) dropped from 6 metres onto plastic benching without causing damage.

3. Production quality audit

An audit of the production quality control systems procedures of the Manufacturer shall be undertaken and a visit to the manufacturing premises made to witness the production process.

Quality control certification for the materials suppliers shall be available.

4. Documentation

The information provided to designers and installers shall be reviewed to check for completeness, accuracy and agreement with UK water industry requirements and general “fitness for purpose” requirements.

Documentation shall include:

- product details for designers;
- installation details for contractors;

WRc witnessed the installation of a manhole in accordance with Pipex installation instructions.

PT/257/0806 – AS (October 2006 - revised April 2007)

Assessment Schedule for Pipex Ltd's Universal Manholes for Drain and Sewer Systems



independent certification of your products & services

The installed product shall be inspected to check the general quality and “fitness for purpose” of the system. The pre-fabricated stub-pipes shall be precisely aligned in accordance with General Arrangement drawings for the works.

5. Operational practices

Test a sample of plastic pipe product with a wall thickness of 8 mm or less to represent the thinnest used in the product can meet the high pressure water jetting requirement detailed in WIS 4-35-01 Appendix C – Resistance to Water Jetting.

6. References

1. Sewers for Adoption 6th Edition, WRc March 2006;
2. Sewers for Scotland 1st Edition, WRc July 2001;
3. BS 7158: 2001 Plastics inspection chambers for drains and sewers. Specification.