

## **SPECIFICATION CODE: 3 NBS REFERENCE :R12**

### **PRODUCT DETAILS 3:1**

#### **GENERAL 3:1:1**

All 82mm, 110mm and 160mm pipes and fittings to be Terrain PVCu Underground drainage system. All pipes and fittings to either comply in all respects with the requirements of British Standard BS4660 or BS EN 1401 and where applicable bear the BSI kitemark.

All 82 mm diameter fittings and any other components not covered by the above mentioned standard to be covered by British Board of Agreement Certificate Numbers 94/3049 & 95/3086.

The method of jointing to be employed shall be by seal ring socketed fittings. Jointing to other materials shall be made in the manner specified by the manufacturer.

The pipe and fittings shall be colour golden brown approximating to British Standard 381C: No. 414. The rubber for seal joints shall be to the material requirement of British Standard BS 2494.

### **INSTALLATION REQUIREMENTS 3:2**

#### **GENERAL 3:2:1**

The installation, method of jointing and fixing shall comply in all respects to the Terrain Underground installation guide. The design must comply in all respect with the requirements of BS EN 752, Drain and sewer systems outside buildings & BS 5955 part 6, Code of Practice for Plastic pipework for gravity drains & sewers.

#### **BASE OF SOIL STACK 3:2:2**

The base of soil and vent stack connection to the buried drain shall be made with a Terrain 4D21 Long Radius bend of minimum centre line radius of 200mm or 2 No.45 degree bends.

#### **MEANS OF ACCESS 3:2:3**

Access for rodding and testing must be provided at all changes of direction, both horizontally & vertically and at any increases in pipe diameter. In addition access must also be provided within 12 metres of any junction between 2 drain runs. For long runs of drain the maximum spacing between access points must be:

Distance from	To access fitting	To junction or branch	To inspection chamber	To manhole
Start of ext. drain	12 metres	-	22 metres	45 metres
Rodding eye	22 metres	22 metres	45 metres	45 metres
Access fittings	-	12 metres	22 metres	22 metres
Inspection chamber	22 metres	22 metres	45 metres	45 metres
Manhole	-	-	45 metres	100 metres

Shallow access chambers up to 600mm deep to be Terrain 4DI600 fittings with a 4DIFC1 top unit.

# TERRAIN

Inspection chambers up to 1200mm deep to be Terrain 4DI240B base unit plus up to 3 raising units reference 4DI235R and a circular frame & cover reference 4DIFC3 for pedestrian traffic.

Access to be provided using Terrain Marscar Bowl system giving provision of up to 4 lateral connections fitting reference 4DM1, at shallow depth ( max. 1000mm) and connection to deeper drain via 33 degree sloping connection from base of Bowl unit reference 4DMB and outlet bend reference 4DM2, to either a head of drain bend, reference 4DM4 or junction reference 4DM3 (64DM3 110mmX160mm).

Access to be provided using Terrain access junctions, references 4DA33DL/R, 64DA33DL/R, 4DAD47, 64DAD33D, 64DAD33, 4DA60 or 6DA60 built in to a insitu constructed chamber.

## TRENCH REQUIREMENTS 3:2:4

The trench specification shall be either:

Trenches shall be excavated to a sufficient depth to allow a 100mm minimum bed below the underside of the pipe. Trench width shall be not less than the outer diameter of the pipe plus 300mm and not wider than necessary.

Or

Trenches shall be excavated to a sufficient depth to allow a 50 mm minimum bed below the underside of the pipe: Provided it complies with a current Agreement Certificate, trench width shall be not less than the outer diameter of the pipe plus 300mm and not wider than necessary.

The base of the trench shall be such that even support is given to the pipe for its full length. Soft spots shall be removed and replaced with compacted granular material.

High spots and rocks shall be removed to allow full bed depth. Pipe barrels shall be in continuous contact with the trench bed when laid.

The side filling of pipes shall be composed of hard granular material. Side fillings must be placed equally on both sides of the pipe and compacted, so as to buttress the pipes against the trench walls. Sidefillings shall continue up to pipe crown level as a minimum and above this level if required by the engineer. The bed shall be composed of granular material as described below and shall cover the full trench width and length and be boned to gradient.

The first 300mm of backfill above crown level shall be taken from selected trench spoil all passing 25mm sieve. It shall be placed in two 150mm layers each firmly tamped or at least the first 100mm of backfill above the crown of the pipe shall be composed of granular material as described below:

- Above the 300mm level mechanical filling and compacting may be used.
- Where cover is less than 600mm the pipe shall where necessary be covered with 75mm of selected material laid to support a concrete tile or slab indicating the presence of a service.

Granular material for use for bedding pipes should comply with one of the requirements set below. The greater the proportion of fines in the material the greater is the care needed in compaction.

(a) Nominal single sized aggregate to table 4 of:

BS 882: 1983 as follows:

DN 100	10mm size
DN 150	10mm or 14mm size
DN 200 and above	10mm, 14mm or 20mm size

(b) Graded aggregate to table 4 of BS 882 : 1983

as follows:

DN 150 pipes	graded 14mm to 5mm
DN 200 pipes and above	graded 20mm to 5mm or graded 14mm to 5mm

(c) Granular material having a compaction fraction value not greater than 0.3 when tested in accordance with appendix D. of BS 8301, Particle size should not exceed 20 mm.

The material may be composed of crushed stone, clinker, quarry scalplings, ballast, gravel, shingle or all-in aggregate to British Standard 882.

## PIPE GRADIENTS 3:2:5

Pipes and fittings shall be laid true to gradient in straight lines and jointed in accordance with Terrain instructions. All pegs used for alignment and other purposes must be removed after use and before sidefilling.

Minimum gradients to be as follows:

Diameter	Criteria	Minimum gradient
110mm	No WC connected	1:40
110mm	At least 1 WC connected	1:80
160m	At least 5 WC connected	1:50