

Depth of cover level to soffit of pipe 3 m to 6 m

675 mm x 675 mm clear opening cover complying with BS EN 124 and BS 7903 See Clause E2.32 (to be class D400 II within adopted highway)

Minimum clear access 675 mm

900 mm minimum clear access behind ladder

Shaft diameter 1200 mm

Precast concrete manhole sections and cover slab to be bedded with mortar, plasticiser or elastic sealant conforming to BS EN 1917 and BS 9911-3 See Clause E2.29

Concrete surround 150 mm thick

230 mm

2000 mm minimum

Clause B3.2.13 for PC ring diameter

The bottom precast section to be built into base concrete minimum 75 mm

Benching slope to be 1:10 to 1:30

Construction joint

Distance between top of pipe and underside of precast section to be minimum 50 mm to maximum 300 mm

225 mm to underside of channel

Joint to be as close as possible to face of manhole to permit satisfactory joint and subsequent movement

Minimum width of benching for landing area to be 500 mm from the edge of the ladder to the edge of the channel

Ladder complying with BS EN 14396 See Clause E2.37

Note: Opening to be located centrally over 900 mm shaft and offset approximately 200 mm for 1200 mm diameter shaft with ladder

See Figure B.14 and Clause E8.1.2 for rocker pipe details

Minimum width of benching to be 225 mm

Pipe joint with channel to be located minimum 100 mm inside face of manhole

Not to scale

Depth from cover level to soffit of pipe 3 m to 6 m

75 mm x 675 mm clear opening cover complying with BS EN 124 and BS 7903 (to be class D400 if within adopted highway)

See Clause E2.32

Minimum clear access 675 mm

900 mm minimum clear access behind ladder

Shaft diameter 1200 mm

Mortar bedding and haunching to cover and frame to Clause E5.7

Minimum 2 courses

Maximum 4 courses

of Class B engineering bricks or precast concrete cover frame seating rings

675 mm maximum to first ladder rung from cover level

On manholes less than 1.5 m diameter reducing slab not to be used and PC rings to continue up to cover slab

Lifting eyes in concrete rings to be pointed

230 mm

2000 minimum

Precast concrete manhole sections and cover slab to be bedded with mortar, plastomeric or elastomeric seal conforming to BS EN 1917 and BS 5911-3

Chamber wall to be minimum 125 mm

Clause B3.2.13 for PC ring diameter

Surface of benching and channel formed monolithically with high-strength concrete base or a proprietary liner

Benching slope to be 1:10 to 1:30

Self-cleaning toe holes to be provided where channel exceeds 600 mm wide

150 mm to underside of channel

Joint to be within chamber wall to permit satisfactory joint and subsequent movement

Minimum width of benching for landing area to be 500 mm from the edge of the ladder to the edge of the channel

Ladder complying with BS EN 14396

See Clause E2.37

Minimum width of benching to be 225 mm

See Figure B.14 and Clause E9.2 for rocker pipe details

te: Opening to be located centrally over 0 mm shaft and offset approximately 200 mm 1200 mm diameter shaft with ladder

Not to scale

Depth from cover level to soffit of pipe 3 m to 6 m

675 mm x 675 mm clear opening cover complying with BS EN 124 and BS 7903 See Clause E2.1 (to be class D400 if within adopted highway)

Mortar bedding and haunching to cover and frame to Clause E6.7

Minimum 2 courses Maximum 4 courses of Class 8 engineering bricks or precast concrete cover frame seating rings

675 mm maximum to first ladder rung from cover level

Minimum clear access 675 mm

900 mm minimum clear access behind ladder

In-situ concrete to be ST4 (designed to BRE Special Digest 1 - Concrete in Aggressive Ground)

230 mm

2000 minimum

Lifting eyes in concrete rings to be pointed

Precast concrete manhole sections and cover slab to be bedded with mortar, plasticomeric or elastomeric seal conforming to BS EN 1917 and BS 5911-3 See Clause E2.29

Concrete surround 150 mm thick

Clause B3.2.13 for PC ring diameter

High-strength concrete topping to be brought up to a dense, smooth face, neatly shaped and finished to all branch connections (minimum thickness 20 mm)

The bottom precast section to be built into base concrete minimum 75 mm

Benching slope to be 1:10 to 1:30

Self-cleaning toe holes to be provided where channel exceeds 600 mm wide

Construction joint

Inverts to be formed using channel pieces

Distance between top of pipe and underside of precast section to be minimum 50 mm to maximum 300 mm

225 mm to underside of channel

Joint to be as close as possible to face of manhole to permit satisfactory joint and subsequent movement

See Figure B.14 and Clause E6.6.2 for rocker pipe details

Minimum width of benching for landing area to be 600 mm from the edge of the ladder to the edge of the channel

Ladder complying with BS EN 14396 See Clause E2.37

Minimum width of benching to be 225 mm

Pipe joint with channel to be located minimum 100 mm inside face of manhole

Note: Opening to be located centrally over 900 mm shaft and offset approximately 200 mm for 1200 mm diameter shaft with ladder

Not to scale

Depth from cover level to soffit of pipe 3 m to 6 m

675 mm x 675 mm clear opening cover complying with BS EN 124 and BS 7903
See Clause E2.23
(to be class D400 if within adopted highway)

Mortar bedding and haunching to cover and frame to Clause E6.7
Minimum 2 courses
Maximum 4 courses
of Class B engineering bricks or precast concrete cover frame seating rings

Minimum clear access 675 mm

900 mm minimum clear access behind ladder

675 mm maximum to first ladder rung from cover level

230 mm

2000 mm minimum

Precast concrete manhole sections and cover slab to be bedded with mortar, plasticiser or elastomeric seal conforming to BS EN 1917 and BS 5911-3
Chamber wall to be minimum 125 mm

Lifting eyes in concrete rings to be pointed

Clause B3.2.13 for PC ring diameter

Surface of benching and channel formed monolithically with high-strength concrete base or a proprietary liner

Benching slope to be 1:10 to 1:30

Self-cleaning toe holes to be provided where channel exceeds 600 mm wide

150 mm to underside of channel

Joint to be within chamber wall to permit satisfactory joint and subsequent movement

See Figure B.14 and Clause E6.6.2 for rocker pipe details

Minimum width of benching for landing area to be 500 mm from the edge of the ladder to the edge of the channel

Ladder complying with BS EN 14396
See Clause E2.37

Minimum width of benching to be 225 mm

Note: Opening to be located centrally over 900 mm shaft and offset approximately 200 mm from 1200 mm diameter shaft with ladder

Not to scale

Maximum depth from cover level to soffit of pipe 3.0 m

765 mm x 765 mm clear opening cover complying with BS EN 124 and BS 7903
See Clause E2.32 (to be class D400 if within adopted highway)

Minimum clear access 675 mm

Precast concrete manhole sections and cover slab to be bedded with mortar, plasticmeric or elasticmeric seal conforming to BS EN 1917 and BS 5911-3
See Clause E2.29

150 mm concrete surround

Chamber height (not less than 900 mm)

Benching slope to be 1:10 to 1:30

The bottom precast manhole ring to be built into base concrete minimum 75 mm

Distance between top of pipe and underside of precast section to be minimum 50 mm to maximum 300 mm

225 mm to underside of channel

Clause B3.2.13 for PC ring diameter

675 mm maximum to first step rung from cover level

Lifting eyes in concrete rings to be pointed

In-situ concrete to be ST4 (designed to BRE Special Digest 1 Concrete in Aggressive Ground)

High-strength concrete topping to be brought up to a dense, smooth face, neatly shaped and finished to all branch connections (minimum thickness 20 mm)

Construction joint

Self-cleaning toe holes to be provided where channel exceeds 600 mm wide

Inverts to be formed using channel pipes

Joint to be as close as possible to face of manhole to permit satisfactory joint and subsequent movement

Pipe joint with channel to be located minimum 100 mm inside face of manhole

Double step rungs in accordance with BS EN 13101 See Clause E2.33 for double step details

500 mm minimum from edge of stepping

See Figure B.14 and Clause E6.6.2 for rocker pipe details

Minimum width of benching to be 225 mm

765 mm x 765 mm clear opening cover complying with BS EN 124 and BS 7903
See Clause E2.32
(to be class D400 if within adopted highway)

Mortar bedding and haunching to cover and frame to Clause E6.7
Minimum 2 course
Maximum 4 courses
of Class B engineering bricks or precast concrete cover frame seating rings

675 mm maximum to first step rung from cover level

Lifting eyes in concrete rings to be pointed

Clause B3.2.13 for PC ring diameter

Precast concrete manhole sections and cover slab to be bedded with mortar, plasticomeric or elastomeric seal conforming to BS EN 1917 and BS 5911-3

Chamber wall to be minimum 125 mm

Chamber height (not less than 900 mm)

Benching slope to be 1:10 to 1:30

Precast base unit

150 mm to underside of chamber

Surface of benching and channel formed monolithically with high-strength concrete base or a proprietary liner

Self-cleaning toe holes to be provided where channel exceeds 600 mm wide

Joint to be within chamber wall to permit satisfactory joint and subsequent movement

Double step rungs in accordance with BS EN 13101
See Clause E2.33 for double step details

See Figure B.14 and Clause E6.6.2 for rocker pipe details

Minimum width of benching to be 225 mm

500 mm minimum from edge of stepping

Not to scale

Sectional Plan

Rigid pipes built into manhole should have a flexible joint as close as feasible to the external face of the structure and the length of the next rocker pipe should be as shown.

Nominal diameter (mm)	Maximum effective length (m)
150 - 600	0.6
601 - 750	1.00
over 750	1.25

All pipes entering the bottom of the manhole to have soffits level.

Diagram illustrating the connection of an External Ramped Backdrop to a channel. The backdrop is shown as a sloped structure with a 45° short bend. Key dimensions and labels include:

- Top horizontal section:** 150 mm dimension.
- Sloped section:** 150 mm dimension.
- Bottom horizontal section:** 225 mm dimension.
- Labels:**
 - Tumbling bay to be a 45° or 55° oblique junction (actual details will be dependent on the type of pipe used)
 - In-situ concrete to be ST4 (designed to BRE Special Digest 1 Concrete in Aggressive Ground)
 - 45° short bend 210 mm minimum radius
 - External Ramped Backdrop
 - Concrete
 - To channel
 - For larger diameters are to be built through manholes
 - Straight outlet pipe for 150 mm and 225 mm diameters
 - Invert of rodding eye not greater than above top of backdrop (unless specific manhole requirements are provided)

NOTE - Backdrop connections are not to be made for type 3 and 4 inspection chambers.

Not to scale, dimensions in millimetres

Plastic chambers and rings shall comply with BS EN 13598-1 and BS EN 13598-2 or have equivalent independent approval

Manhole cover to suit BS EN 124 loading
Highways - Class D400
600 mm clear opening

Access opening restricted to 350 mm diameter or 300 mm x 300 mm if depth of chamber to invert is > 1 m

Class B engineering brickwork or precast concrete cover frame seating rings

DOT Type 1 sub base (thickness varies)

Minimum internal dimensions 450 mm diameter or 450 mm x 450 mm

DOT Type 1 sub base (thickness varies or concrete surround)

Base unit to have all connections with sufficient levels set no lower than that of the main pipe

Granular bedding material

Invert of connecting pipe at least 50 mm above that of the main pipe

Joint to be as close as possible to face of chamber to permit satisfactory joint and subsequent movement

Joints between base and shaft and between shaft components to be fitted with watertight seals

Temporarily cap shaft during construction

Flexible seal

Precast concrete slab or in-situ concrete slab to support cover and frame

Base course

Binder course

Surface course

Mortar bedding and haunching to cover and frame to Clause E6.7

Not to scale

Note: Where the access chamber is in the highway the Highway Authority can have specific requirements

Rev	Date	Description		By										
Dimensions to be verified on site. This drawing should not be scaled. Use figured dimensions only. Any discrepancies should be referred to the Engineer prior to work being put in hand. This drawing is copyright.														
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Client														
														
Project														
LLANWERN 4E & 4G														
Title														
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Drawing Status														
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