

MANHOLE TYPE "A"

DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 3.0-6.0m. STEPS AND ACCESS ARRANGEMENTS OR OTHERWISE TO BE FITTED AS REQUIRED BY UNDERTAKER'S POLICY

Mortar haunching to M.H. cover and frame

Minimum clear access in accordance with Undertaker's policy

On manholes less than 1.50m dia. reducing slab not to be used and P.C. rings to continue up to cover slab

All in-situ concrete to be GEN3 (Designed to BRE Digest 1 Concrete in Aggressive Ground)

Lifting eyes in concrete rings to be pointed

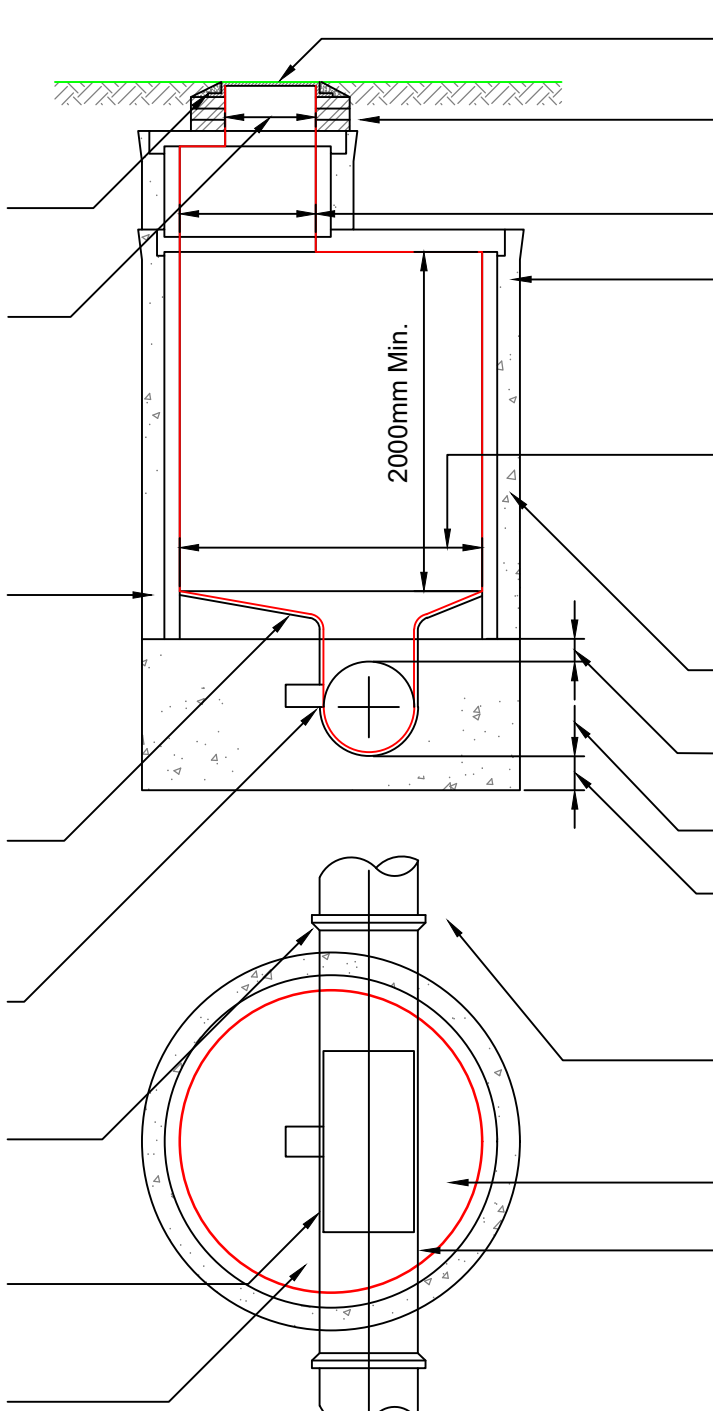
High strength concrete topping to be brought up to a dense smooth face neatly shaped and finished to all branch connections (min. thickness 20mm)

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

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

inverts to be formed using channel peices

Minimum width of benching for landing area to be 500mm



Cover and frame to be bedded on mortar

2-4 Courses Class B Engineering bricks, concrete blocks or pre-cast concrete cover frame seating rings

Shaft diameter 900mm if no ladder or step rugs - otherwise 1200mm

Precast concrete manhole sections and cover slab to be bedded on mortar, proprietary bitumen or resin mastic sealant

Largest pipe dia. >375mm 375-700mm 750-900mm >900mm
Manhole dia. 1200mm 1500mm 1800mm Consult Undertaker

Concrete surround 150mm thick

The bottom pre-cast section to be built into base concrete minimum 75mm

Benching slope to be between 1:10 and 1:30

225mm to barrel of pipe

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

Rocker pipes

Minimum width of benching to be 225mm

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

Note:

Opening to be located centrally over 900mm shaft and off-set approximately 200mm for 1200mm diameter shaft with rungs / ladder.

MANHOLE TYPE "B"

MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 3.0m. STEPS OR OTHERWISE TO BE FITTED AS REQUIRED BY UNDERTAKER'S POLICY

Epoxy Resin Mortar haunching to M.H. cover and frame

2-4 Courses Class B Engineering bricks, concrete block or pre-cast concrete cover frame seating rings
Lifting eyes in concrete rings to be pointed

Step Rungs to be double width plastic encapsulated mild steel first rung to be a maximum of 675mm from the cover level and then 300mm between each step rung thereafter.

All in-situ concrete to be GEN3 (Designed to BRE 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 (min. thickness 20mm)

Construction joint

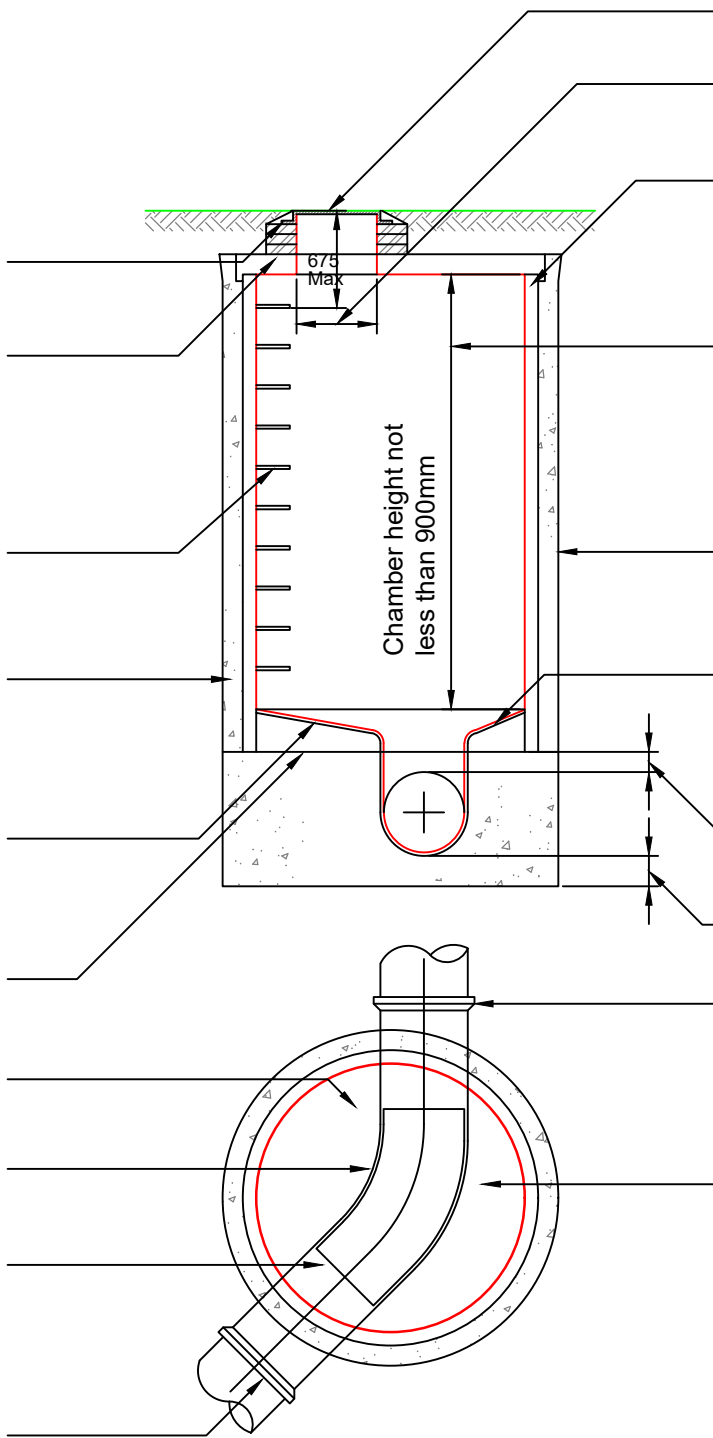
Self Cleansing toe holes to be provided where pipe diameter exceeds 600mm

Minimum width of benching to be 500mm

Inverts to be formed using channel pieces

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

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



Cover and frame to be bedded on mortar

Minimum clear access in accordance with Undertaker's policy

Precast concrete manhole sections and cover slab to be bedded on mortar, proprietary bitumen or resin mastic sealant

Largest pipe dia. >375mm 375-700mm 750-900mm >900mm
Manhole dia. 1200mm 1500mm 1800mm Consult Undertaker

Concrete surround 150mm thick (gen 1)

Benching slope to be between 1:10 and 1:30

The bottom pre-cast section to be built into base concrete minimum 75mm

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

225mm to barrel of pipe

Rocker pipe

Minimum width of benching to be 225mm

ROCKER PIPES

Pipe dia. 150-600mm 675-750mm >750mm
Pipe length. 600mm 1000mm 1250mm

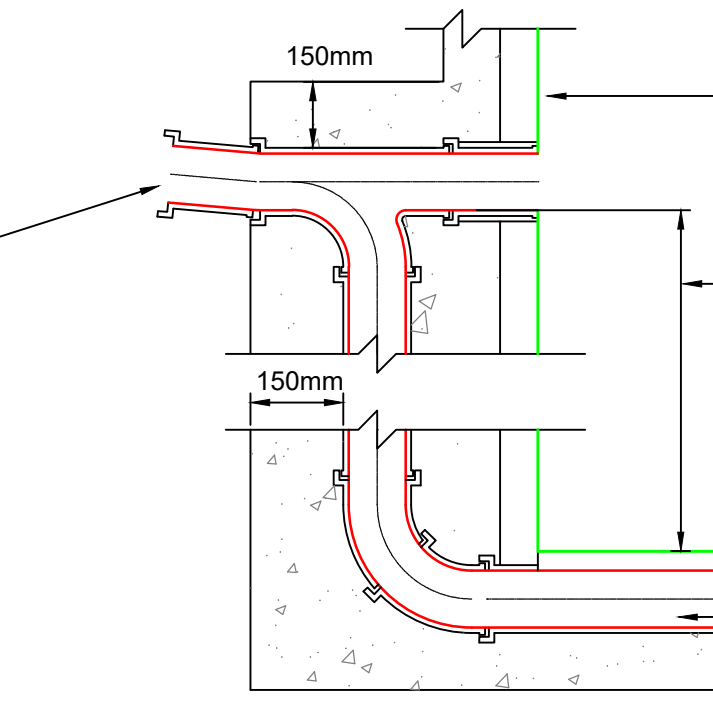
VERTICAL BACKDROP MANHOLE

STEEPER GRADIENTS ARE PREFERRED TO THE USE OF BACKDROPS

Additional rocker pipes may be necessary to accommodate transition of pipe gradient to vertical downpipe

Care to be taken to maintain flexibility

Rocker pipes



Pre-cast concrete manhole section

Invert of rodding eye to be not greater than 1.50m above top of benching (unless specific man access requirements are provided)

Straight outlet pipe for 150mm and 225mm diameter only. For larger diameters, bends are to be built through the manhole wall

Benching

To channel

Concrete base minimum 225mm thick

Two 45° bends 225mm minimum diameter (where pipe exceeds 300mm a 300mm 90° bend may be used)

In-situ concrete to be GEN3 (Designed to BRE Digest 1 Concrete in Aggressive Ground)

MANHOLE TYPE "C"

DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 1.0-1.5m

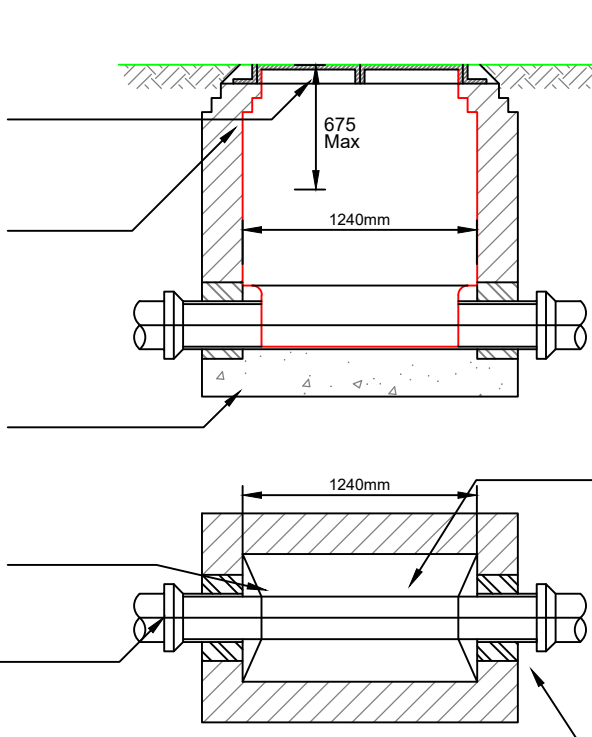
1220mm x 685mm Multiple ductile iron cover bedded on mortar

Brickwork or concrete blocks to be corbelled to suit cover

In-siut concrete to be GEN3 (Designed to BRE Digest 1 Concrete in Aggressive Ground)

Pipe joint with channel to be located inside face of manhole

Rocker pipes



Inverts to be formed using channel peices

Internal dimensions of manhole normally 1240x675mm but manhole width should be increased for pipes larger than 225mm diameter to give 225mm benching each side and brickwork / masonry units corbelled down to suit cover

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

MANHOLE TYPE "D"

DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE LESS THAN 1.00m

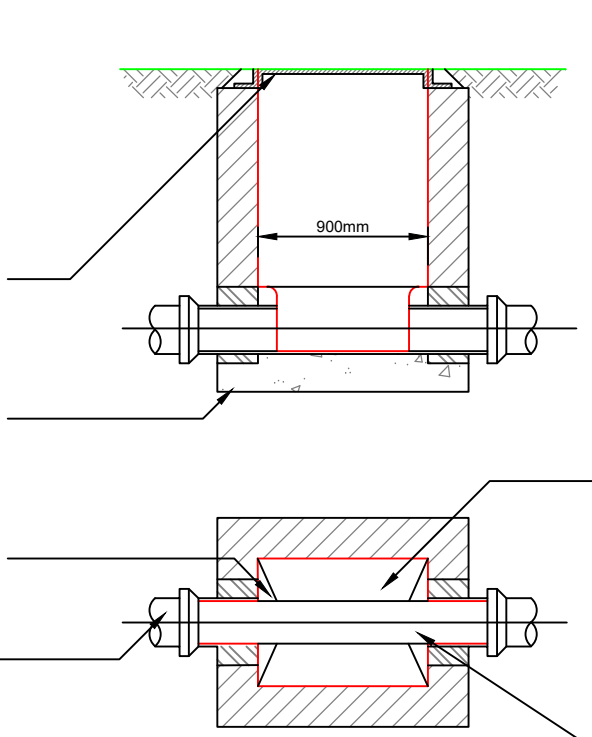
APPROVAL OF THE UNDERTAKER MUST BE GIVEN FOR INSTALLATION OF THIS TYPE OF MANHOLE

675mm x 675mm Minimum cover bedded on mortar

In-situ concrete to be GEN3 (Designed to BRE Digest 1 Concrete in Aggressive Ground)

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

Rocker pipes



Inverts to be formed using channel peices

Internal dimensions of manhole normally 900x675mm but manhole width should be increased for pipes larger than 225mm diameter to give 225mm benching each side and brickwork / masonry units corbelled down to suit cover

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

MANHOLE TYPE "E"

DEPTH FROM COVER TO SOFFIT OF PIPE 1.0m TO 1.50m. MAXIMUM 375mm PIPE

SELECTION OF THIS TYPE OF MANHOLE RESTRICTED TO LOCATIONS WHERE GRADE B COVERS ARE TO BE USED

Mortar haunching to manhole cover and frame

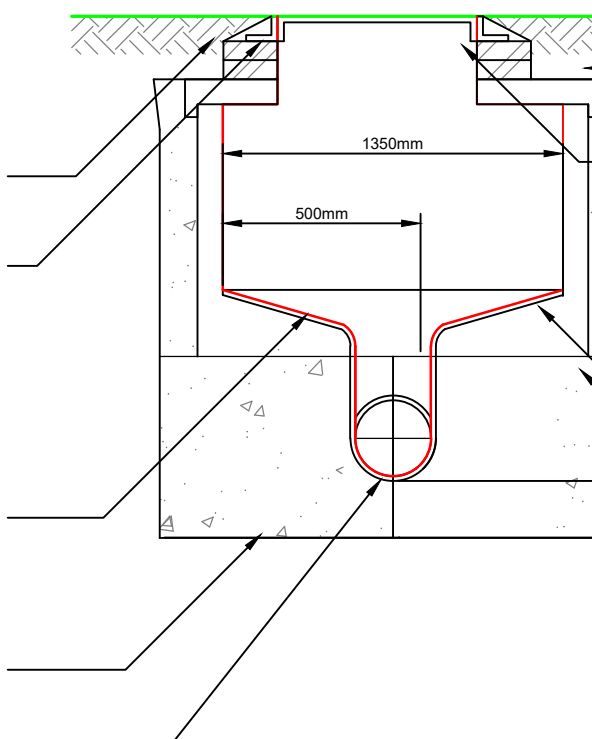
675x675mm cover bedded on mortar

Cover slab bedded on PC chamber section with mortar, proprietary bitumen or resin mastic sealant

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

In-situ concrete to be GEN3 (Designed to BRE Digest 1 Concrete in Aggressive Ground)

Inverts formed using channel pipes



2-4 Courses Class B Engineering bricks, concrete blocks or pre-cast concrete cover frame seating rings

675x675mm opening in cover slab

Lifting eyes in concrete rings to be pointed

Benching slope to be 1:10 to 1:30

Bottom precast concrete ring to be built into base concrete minimum 75mm

225mm to barrel of pipe

Distance between top of pipe and underside of PC chamber to be 50mm minimum to 300mm maximum

NOTE:

ALL ADOPTABLE DRAINAGE WORKS TO BE IN ACCORDANCE WITH SEWERS FOR ADOPTION 6th EDITION.

EXTERNAL RAMPED BACKDROP MANHOLE

WHERE THE BACKDROP IS NOT EXCESSIVE A 45° DROP PIPE MAY BE USED

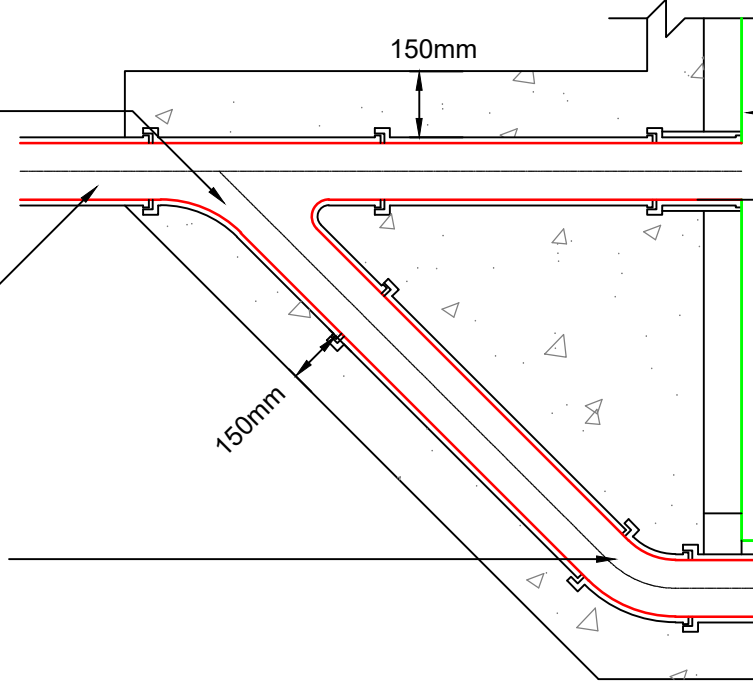
Tumbling bay to be a 45° or 55° oblique junction (actual details dependent upon the pipe type used)

Care to be taken to maintain flexibility

Rocker pipes

45° short bend 225mm minimum diameter

In-situ concrete to be GEN3 (Designed to BRE Digest 1 Concrete in Aggressive Ground)



Pre-cast concrete manhole section

Invert of rodding eye to be not greater than 1.50m above top of benching (unless specific man access requirements are provided)

Straight outlet pipe for 150mm and 225mm diameter only. For larger diameters, bends are to be built through the manhole wall

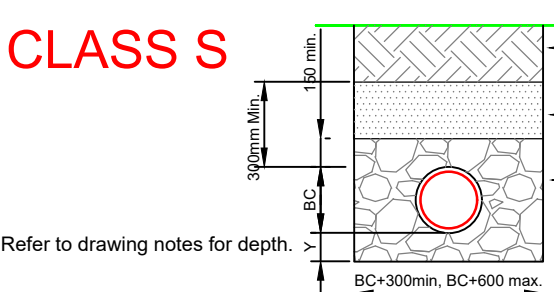
Benching

To channel

Concrete base minimum 225mm thick

BEDDING DETAILS

CLASS S

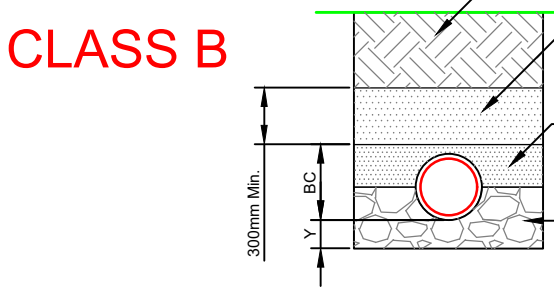


Main backfill (Class 6F5 (W75) in highway trenches

Selected fill Type B

Selected fill Type A

CLASS B



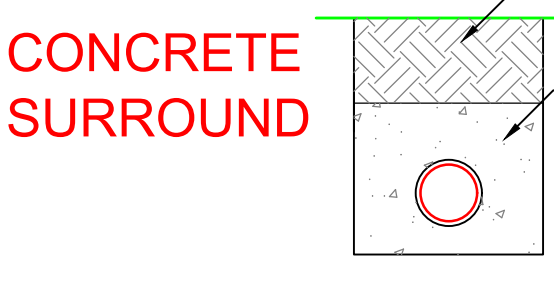
Main backfill (Class 6F5 (W75) in highway trenches

Selected fill Type B lightly compacted by hand

Selected fill Type B carefully compacted

Selected fill Type A carefully compacted

CONCRETE SURROUND

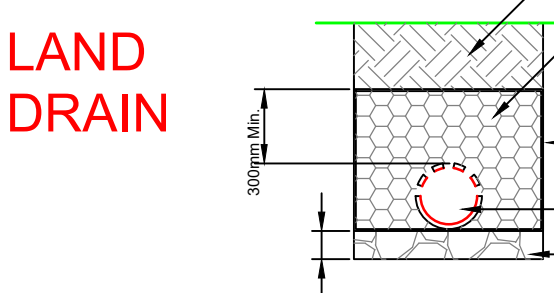


Main backfill (Class 6F5 (W75) in highway trenches

Min. 150mm concrete surround

NB. Concrete surround to be separated at each pipe joint by expanded polystyrene or other approved material

LAND DRAIN



Main backfill (Class 6F5 (W75) in highway trenches

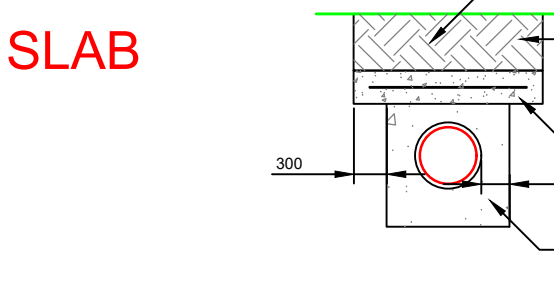
Clean filter material lightly compacted

Geotextile

Perforated land drain

Selected fill Type A

SLAB



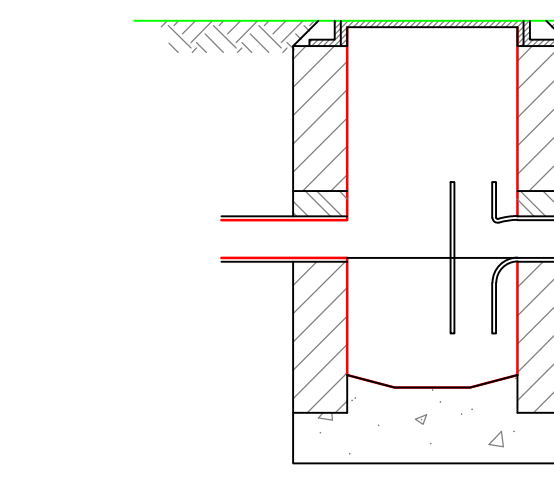
Main backfill (Class 6F5 (W75) in highway trenches

Type 1 backfill where under carriageway

175mm C20 concrete slab with A393 mesh with 50mm cover to top

Class S fill and surround

CATCHPIT DETAIL



Class B Engineering bricks

"T" shape dip pipe to outfall

All in-situ concrete to be C20 with sulphate resisting cement unless otherwise agreed

DRAWING NOTES
This drawing is subject to Section 104 Approval from Severn Trent Water. All details are to be checked by the contractor prior to any construction taking place.

Pre cast concrete manhole rings will not be cut under any circumstances.

PIPE BEDDING AND FILL MATERIAL

1. Granular bedding Type A for pipes and back fill material for temporary drains (trench sub-drains) shall consist of free draining, hard, clean, chemically stable gravel, crushed stone or crushed slag. Shall be aggregates from natural or sintered pulverised fuel ash complying with the relevant provisions of BS 3797 Part 2, respectively sized in accordance with the following:
Nominal bore of pipe (mm) Single size Graded
100 10 -
150 10 or 14 14 to 5
225-300 10, 14 or 20 14 to 5 or 20 to 5
375-525 14 to 20 14 to 5 or 20 to 5
<525 14, 20 or 40 14 to 5, 20 to 5 or 40 to 5

2. Selected fill Type B, whether selected from locally excavated material or imported, shall consist of uniformly readily compatible material, free from vegetable matter, building material and frozen material or materials susceptible to spontaneous combustion and excluding clay of liquid limit greater than 55 and materials of excessively high moisture content. Clay lumps and stones shall be retained on 75mm and 375mm sieves respectively.
3. Pipe bedding and fill materials to concrete pipes shall not contain more than 0.3 percent sulphate expressed as sulphur trioxide.
4. Sand for bedding pipes shall comply with the provisions of BS 882 Table 5 for Grading Zone C.
5. Dimension Y:-
In rock or mixed soils containing rock boulders, large flints or stones or irregular hard spots that result in an uneven trench bottom.
Y=200mm minimum but sufficient to provide 150mm minimum under sockets.
In soils that permit an even trench bottom Y=100mm minimum but sufficient to provide 50mm minimum under sockets.

VITRIFIED CLAY PIPES

Vitrified clay pipes and fittings shall have flexible mechanical joints. Pipes for foul and surface water sewers shall comply with the relevant requirements of BS EN 295 and BS 65 (surface water pipes only)

CONCRETE PIPES

Unreinforced and reinforced concrete pipes and fittings with flexible joints shall comply with the relevant provisions of BS 5911: Part 100 and 110, respectively. All pipes and fittings shall have gasket-type joints of spigot and socket or rebated form, unless otherwise agreed.

PLASTIC PIPES

Plastic pipes to comply with BS EN 1401-1: 2009. All components need to be kitemarked.

COMPRESSIBLE FILLER AND PACKING FOR PIPELINES

Compressible filler for interrupting concrete protection to pipes shall consist of bitumen impregnated insulating board to BS 1142, BS EN 120 and BS EN 317, or other equally compressible material in accordance with the following:
Pipe diameter. Compressible filler thickness.
<450mm 18mm
450-1200mm 36mm
>1200mm 54mm
Compressible packing for use between pipes and precast concrete seating blocks shall consist of bitumen damp-proof sheeting complying with BS 743.

MANHOLE COVERS AND FRAMES

Manholes covers and frames shall comply with the relevant provisions of BS EN 124. They shall be of a non-rocking design which does not rely on the use of cushion inserts. Covers and frames must be kitemarked.

Precast manhole rings are not to be cut or core-drilled under any circumstances.

Class D 400 covers shall be used in carriageways of roads (including pedestrian streets), hard shoulders and parking areas used by all types of road vehicles.

Class B 125 covers shall be used in footways, pedestrian areas and comparable locations. All covers shall be the non-ventilating type and shall have closed keyways.

Rev	Description	Date	By	Chkd
Preliminary				
Client Name: Harron Homes Yorkshire				
Project Name: Great Houghton, Barnsley				
Drawing Title: Manhole Construction Details				
Scale: NTS	Box: A1	First Issue Date: July 2021	Initial: JC	Check: RAA
Project No: RED115	Drawing No: 420	Rev: *		
 Civil Design Consultants		35 Timbertree Road Cradley Heath West Midlands B64 7LF Tel: 07702 096 771 Email: admin@redcivils.com Web: www.redcivils.com		