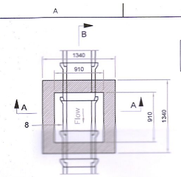
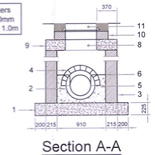



Plan

Scale 1:50

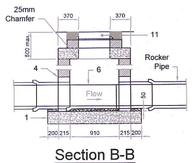
## MANHOLE - TYPE A

Details for pipe diameters 150, 225, 300, 375, 450mm Depth to invert less than 1.0m



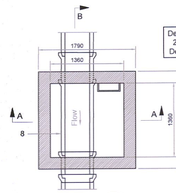

Section A-A

Scale 1:50




Section B-B

Scale 1:50

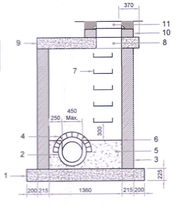



Plan

Scale 1:50

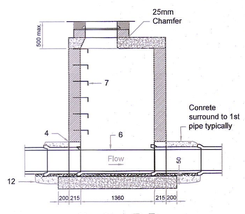
## MANHOLE - TYPE B

Details for pipe diameters 225, 300, 375, 450mm Depth to invert 1m to 3m



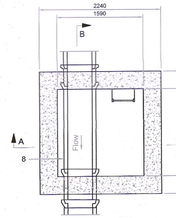

Section A-A

Scale 1:50




Section B-B

Scale 1:50

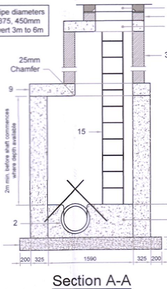



Plan

Scale 1:50

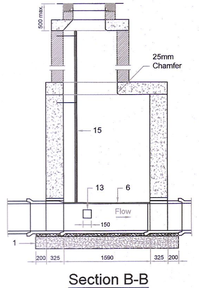
## MANHOLE - TYPE C

Details for pipe diameters 225, 300, 375, 450mm Depth to invert 3m to 6m



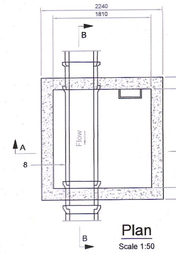

Section A-A

Scale 1:50




Section B-B

Scale 1:50



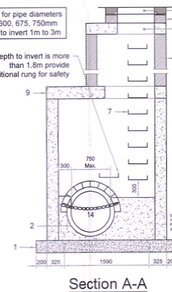

Plan

Scale 1:50

## MANHOLE - TYPE D

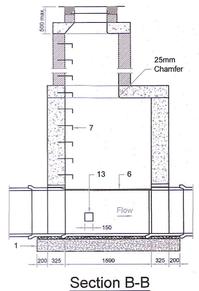
Details for pipe diameters 525, 600, 675, 750mm Depth to invert 1m to 3m

If depth to invert is more than 1.8m provide additional rung for safety



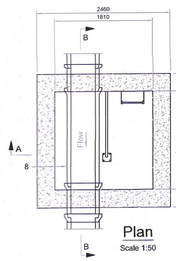

Section A-A

Scale 1:50




Section B-B

Scale 1:50

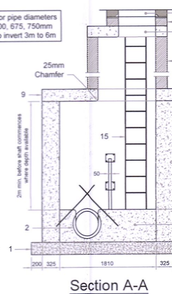



Plan

Scale 1:50

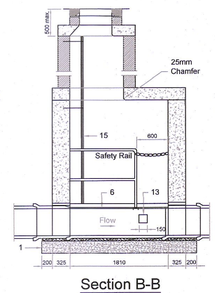
## MANHOLE - TYPE E

Details for pipe diameters 525, 600, 675, 750mm Depth to invert 3m to 6m



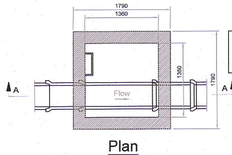

Section A-A

Scale 1:50




Section B-B

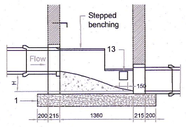
Scale 1:50




Plan

Scale 1:50

Ramp manhole for pipe diameters 150, 225, 300, 375mm Drop less than 750mm



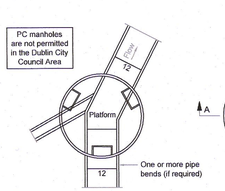

Section A-A

Scale 1:50

Where Drop 'H' is greater than the max. value shown, use Back-Drop Manhole

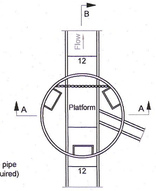
| Inlet Dia. mm | H(max) mm |
|---|---|
| 225 | 600 |
| 300 | 600 |
| 375 | 750 |
| 450 | 750 |
| 525 | 750 |
| 600 | 750 |
| 750 | 750 |

## MANHOLE - TYPE F (Ramp)




Plan on Curved Invert

Scale 1:50

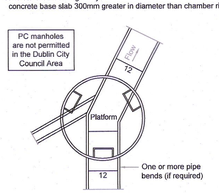



Plan on Straight Invert

Scale 1:50

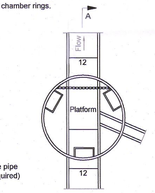
Integral in-situ 20/20 concrete base walls, benching and base slab with precast channel as shown or in-situ formed inverts alternative. Walls to extend 150mm beyond outer faces of chamber ring. Alternatively precast concrete chamber rings may be bedded in a mortar or on in-situ 20/20 concrete base slab 300mm greater in diameter than chamber rings.

## MANHOLE - TYPE J



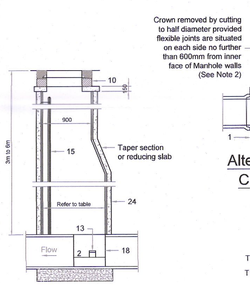

Plan on Curved Invert

Scale 1:50




Plan on Straight Invert

Scale 1:50

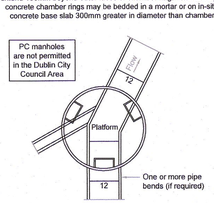



Section A-A

Scale 1:50

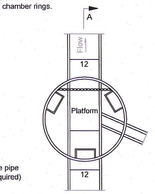
Integral in-situ 20/20 concrete base walls, benching and base slab with precast channel as shown or in-situ formed inverts alternative. Walls to extend 150mm beyond outer faces of chamber ring. Alternatively precast concrete chamber rings may be bedded in a mortar or on in-situ 20/20 concrete base slab 300mm greater in diameter than chamber rings.

## MANHOLE - TYPE K



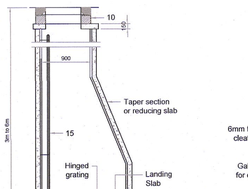

Plan on Curved Invert

Scale 1:50




Plan on Straight Invert

Scale 1:50




Section A-A

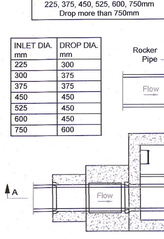
Scale 1:50

Integral in-situ 20/20 concrete base walls, benching and base slab with precast channel as shown or in-situ formed inverts alternative. Walls to extend 150mm beyond outer faces of chamber ring. Alternatively precast concrete chamber rings may be bedded in a mortar or on in-situ 20/20 concrete base slab 300mm greater in diameter than chamber rings.

## MANHOLE - TYPE L

Backdrop manhole for pipe diameters 225, 375, 450, 525, 600, 750mm Drop more than 750mm

| INLET DIA. mm | DROP DIA. mm |
|---|---|
| 225 | 300 |
| 300 | 375 |
| 375 | 375 |
| 450 | 450 |
| 525 | 450 |
| 600 | 450 |
| 750 | 600 |




Plan

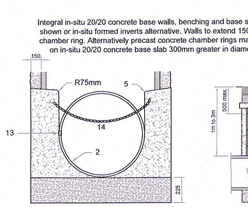
Scale 1:50

Section B-B

Scale 1:50

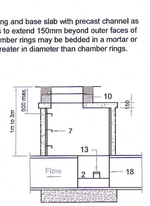
## MANHOLE - TYPE G (Backdrop)

Integral in-situ 20/20 concrete base walls, benching and base slab with precast channel as shown or in-situ formed inverts alternative. Walls to extend 150mm beyond outer faces of chamber ring. Alternatively precast concrete chamber rings may be bedded in a mortar or on in-situ 20/20 concrete base slab 300mm greater in diameter than chamber rings.




Section A-A

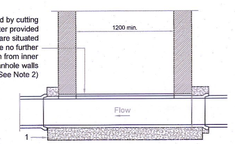
Scale 1:25




Section B-B

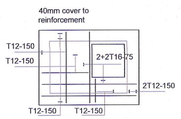
Scale 1:50

Crown removed by cutting to half diameter provided flexible joints are situated on each side no further than 600mm from inner face of Manhole walls (See Note 2)



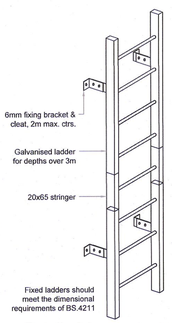

## Alternative Method of Forming Channel Through Manhole

Scale 1:50




## In-situ Roof Slab - Plan

NTS




## Detail of Access Ladder

NTS

GENERAL NOTES:

A. Read in conjunction with all relevant Architect's & Engineer's drawings and cross read the detailed notes on the various manholes.
B. The minimum length of manholes are as shown, however this may need be increased subject to the number of branches, this is made up as follows:
- For pipes up to 150mmØ, provide the sum of the branches + 200mm per branch + 300mm
- For pipes over 150mmØ, provide the sum of the branches + 300mm per branch + (300mm if no pipes up to 150mm are used) eg: for 2x150Ø + 1x225Ø pipes on one side, length =1525mm (subject to minimum length)

C. Access Rungs shall be provided in MH greater than 1000mm to the invert level of the pipe.
D. A 300mm concrete surround shall be provided around manhole covers in grassed areas.
E. All Manholes covers and gullies shall be approved Local Authority type and to their standard pattern.
F. All Drainage work shall be Constructed Strictly in accordance with the requirements of the Local Authority & Building Regulations.
G. Class U2 finish to the top of slabs. Reinforcement in the slabs to details or instructed by the Engineer.

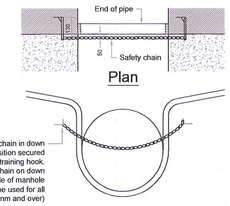
NOTES RELATED TO MANHOLE DETAILS:

1. 225mm Thick C30/37 Mass Concrete Foundations (Over 75mm concrete blinding if required by site conditions)
2. Preformed half circle Channel pipes. The pipeline may where practicable, be laid through the manhole and the crown cut out to half diameter, provided flexible joints are situated on each side no further than 600mm,from the inner face of Manhole wall.
3. For Surface Water Manholes high density blocks to CLS10 of LS.20 Part 1: 1987 or Cl 30N/20 insitu conc. Blockwork shall be bedded and jointed using Mortar designation three to LS406, Beds and vertical joints shall be completely filled with mortar as the blocks are laid. Joints shall be flush pointed as the work proceeds (Blockwork not to be used in areas where a high water table is prevalent). All Foul Manholes must be faced in solid Engineering Brick (min.class A or B), or in-situ concrete for 1 meter above benching level. Brick to be bonded to Blockwork using English Garden Wall Bond.
4. Relieving arch formed by 215x102x65 brick as per drawing. Relieving arches used in brick or blockwork manholes to extend over full thickness of wall. Double arch to be formed for pipe diameters greater than 600mm.
5. Benching and pipe channel pipe surround Cl. 20N/20 concrete.
6. Benching finished in 2:1 sand-cement mortar with a smooth trowel finish,at 1 in 30 slope towards channel. 25mm radius Nose on Benching to be level with Crown of Pipe.
7. Standard rungs at 300ctc vertically and galvanised to BS 729.
8. 675mm square ope. in roof slab.
9. 225thk. Precast R.C Roof Slab in C30/37 Concrete, Cover to steel shall be 40mm.
10. 1 to 2 No.Engineering Bricks CLB to LS.911983 set in 1:3 (cement sand mortar)
11. Class D400 manhole cover and frame to IS/EN 124.150mm deep frame for roads,100mm deep for footpaths and green areas. Class B250 manhole covers can used in Private areas accessible to light vehicular traffic. Non-rock design, closed keyways,manufactured from spheroid graphite cast iron (ductile cast iron), 675x575 (or 675diam.) clear opening, cover and frame coated in bitumen or other approved material, cover to have a minimum mass of 140Kg/m2, frame bearing area shall be 80,000mm2 min., frames shall be designed to prevent covers falling into manhole.Frames shall be bedded on approved mortar to manufacturers instructions.
12. Short length pipe, pipe joint external to manhole shall not exceed 600mm from the inner face of the manhole wall.
13. Toe holes of 230mm min. depth and galvanised steel safety railings to be provided in benching of sewers greater than 525mm dia. and depth to invert>3M for access to invert.
14. Safety chain to be provided on pipes that exceed 450mm in diameter. Mild steel safety chain shall be 10mm nominal size grade M(H) non calibrated chain, type 1, complying with B.S.4942 Part 2.
15. When depth of Manholes to invert is greater than 3.0M, ladders shall be used, instead of rungs 25mm in dia. B.S.4211 except that stringers should be not less than 65x20mm. in section and rungs 25mm in diam.Fixed Ladders should meet the dimensional requirements of B.S.4211.
16. Ladder stringers should be adequately supported from the Manhole wall at intervals of not more than 2.0m. Stringers should be bolted to cleats to facilitate renewal.
17. All ladders,rungs,handrails,safety chains etc. shall be hot dip galvanised to B.S.729.
18. Socket of pipe should be cut flush with the inside surface of the manhole wall.
19. Position of 910 square ope in intermediate roof slab. All Manholes shall be watertight to the satisfaction of the Engineer. Formwork to reinforced concrete and mass concrete shall comply comply to Class 2, Section 6.2.7 BS8110:Part 1:1997. Finish to the top of slabs shall comply to Type A, Section 6.2.7 BS8110: Part 1: 1997. Plan dimensions of Manholes are based on blockwork laying a co-ordinating size of 450x225x100. Manholes are designed to B.S8005 and wall thickness to LS325 Blockwork design reinforcement to slabs to Engineers details.
20. For Manholes >3m depth to invert use C30/37 in-situ concrete. Reinforcing mesh Ref.A393 @ 8.16Kg./m to be fixed at mid point of wall. Additional reinforcement to be supplied over pipe crown. All brick to be Engineering Brick.
21. For pre-cast Manholes, Chamber walls and cover slab to be constructed to IS EN 1917 and IS 420 2004.
22. Manhole opes to be situated furthest from the nearest Carriageway. Manhole steps/access to be positioned to allow viewing of oncoming traffic.
23. For bedding and sealing of chamber rings, the top ring (to Pre cast cover slab) and bottom ring to be bedded with cement mortar, For intermediate rings, joints to be sealed with approved pre-formed jointing strip.
24. Precast Manholes to be surrounded with a minimum of 150mm thick Grade C20/40 concrete.

BEDDING & BACKFILLING NOTES:

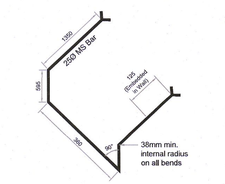
A. The minimum depth of cover from the finished surface to the crown of gravity pipes without protection should be as follows:
- Gardens and pathways without any possibility of vehicular access - depth not less than 0.5 m. (this would normally relate to drains in private property, shallow pipes of this nature are undesirable and should be installed in accordance with the current building regulations).
- Driveways, parking areas and yards with height restrictions to prevent entry by vehicles with a gross vehicle weight in excess of 7.5 tonnes - depth not less than 0.75 m.
- Driveways, parking areas and narrow streets without footways (e.g. mews developments) with limited access for vehicles with a gross vehicle weight in excess of 7.5 tonnes - depth not less than 0.9 m.
- Depths of sewers in gated estates shall be similar to that outlined above.
- Agricultural land and public open space - depth not less than 0.9 m.
- Other highways and parking areas with unrestricted access to vehicles with a gross vehicle weight in excess of 7.5 tonnes - depth not less than 1.2m.

B. Clause 808 material in accordance with the National Roads Authority specification for Road Works is to be used as backfill material where the sewer main is located in roads, footpaths or when the nearest part of the trench is within 1m of the paved edge of the roadway. Clause 808 is to be compacted as per Clause 802 of the NRA SRW.
C. Selected excavated material may be used in green-field areas above granular pipe surround material subject to the approval of Irish Water.
D. Pipe bedding shall comply with WIS 4-08-02 and IGN 4-08-0 granular material shall be 14mm to 5mm graded aggregate or 10mm single sized aggregate is en 13242. concrete bed, haunch & surround, where required, shall be to STD-WW-08.
E. In soft ground conditions (cbr < 5) the material should be excavated and disposed of in accordance with the waste management act and clause 808 material in accordance with the national roads authority specification for road works shall replace the excavated material, wrapped in geo-textile wrapping. alternatively, special pipe support arrangements, including piling etc. may be required where the depth of soft material is excessive. such arrangements shall be subject to assessment by Irish Water before advancing with the work.
F. In green field areas, Type B backfill (selected excavated material) will be allowed above the side haunch granular material in the case of rigid pipes. A granular surround of a minimum depth of 150mm above the crown of the pipe is required for flexible pipes, and Type B material may be used as backfill above this. all rising mains in greenfield areas shall have a minimum cover of 300mm of granular material above the external crown of the pipe.
G. Pipes shall not be supported on stones, rocks or any hard objects at any point along the trench. rock shall be excavated to a depth of 150mm below the actual depth of the trench with the void filled with clause 808 material in accordance with the national roads authority specification for road works. the granular material shall be laid above this void backfill material.
H. Non degradable marker tape should be installed at top of pipe bedding layer. In the case of non metal pipe material, the marker tape should incorporate a trace wire which is linked to fittings and terminated at the waste water pumping station and the discharge manhole.
I. Trench widths for pipe sizes ≤80mm may be <500mm, subject to consideration being given to the trench depth, health & safety & construction access requirements.



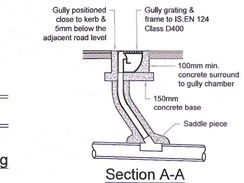

## Safety Chain - Elevation

NTS




## Standard Galvanised Rung

Scale 1:50

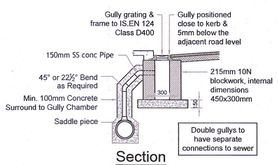



## Section A-A


## Gully Plan

Scale 1:50

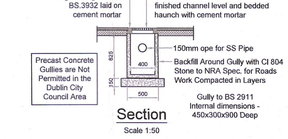
## GULLY TO COMBINED SEWER




## Section

Scale 1:50

## GULLY TO STORM SEWER



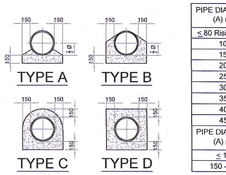

## Section

Scale 1:50

## PRECAST CONCRETE GULLY PIT


## ROADWAY

## GRASSED AREAS




| PIPE DIAMETER (A) mm | TRENCH WIDTH (B) mm |
|---|---|
| ≤ 80 Rising Main | See Note 10 |
| 100 | 500 |
| 150 | 600 |
| 200 | 600 |
| 250 | 750 |
| 300 | 750 |
| 350 | 750 |
| 400 | 900 |
| 450 | 900 |

| PIPE DIAMETER (A) mm | BEDDING DEPTH (C) mm |
|---|---|
| ≤ 100 | 100 |
| 150 - 450 | 200 |

Concrete pipe beds and haunches may be required to address minimum cover situations, and shall be subject to submission and assessment by Irish Water before advancing with the works. Concrete pipe beds and haunches shall have a minimum thickness of 150mm with an absolute minimum depth of cover above the external crown of the pipe of 750mm.Concrete to be in accordance with is EN 206 and to be class C16/20.The haunches and surrounds to be formed using form work to provide a rough cast finish. Expansion joints in the concrete shall be provided at all pipe joints to allow for pipe flexibility, compressible filler board to be in accordance with BS EN 622-1 and BS EN 622-4, and to be 16mm thick.Polyethylene pipes shall be wrapped in plastic sheeting having a composition in accordance with BS EN 6076 before being cast into concrete. Bituminous material shall not be put in contact with PE or PVC pipes.

## PIPE BEDDING & BACK FILLING DETAILS

| DEPTH (m) | | PIPE DIAMETER (mm) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 150 | 225 | 300 | 375 | 450 | 525 | 600 | 675 | 750 | 900 | 1050 | 1200 |
| 0-1 | INSITU/BLOCK | A 910x910 | A 910x910 | A 910x910 | A 1360x1360 | A 1360x1360 | - | - | - | - | - | - | - |
| | PRECAST | J 1050Ø | J 1200Ø | J 1200Ø | J 1350Ø | J 1350Ø | J 1500Ø | J 1500Ø | J 1500Ø | J 1800Ø | Pipeø3+900 | Pipeø3+900 | Pipeø3+900 |
| 1-3 | INSITU/BLOCK | B 1360x1360 | B 1360x1360 | B 1360x1360 | B 1360x1360 | B 1360x1360 | D 1810x1810 | D 1810x1810 | D 1810x1810 | D 1810x1810 | - | - | - |
| | PRECAST | J 1050Ø | J 1200Ø | J 1200Ø | J 1350Ø | J 1350Ø | J 1500Ø | J 1500Ø | J 1500Ø | J 1800Ø | Pipeø3+900 | Pipeø3+900 | Pipeø3+900 |
| 3-6 | INSITU/BLOCK | C 1590x1590 | C 1590x1590 | C 1590x1590 | C 1590x1590 | C 1590x1590 | E 1810x1810 | E 1810x1810 | E 1810x1810 | E 1810x1810 | - | - | - |
| | PRECAST | K 1200Ø | K 1200Ø | K 1200Ø | K 1350Ø | K 1350Ø | K 1500Ø | K 1500Ø | K 1500Ø | K 1800Ø | Pipeø3+900 | Pipeø3+900 | Pipeø3+900 |

## TABLE 1 - MANHOLE TYPES & SIZES



| Rev. | Date | Description | By |
|---|---|---|---|

Project Title
PHASE 3
TUBBER LANE - ADAMSTOWN

Architect
DAVEY & SMITH ARCHITECTS

| Date | By | Checked | Scale @ A1 |
|---|---|---|---|
| APR 2021 | AL | PM | AS SHOWN |

Drawing Title
SURFACE WATER MANHOLE AND DRAINAGE DETAILS

Drawing Status
PLANNING

| Job No. | Drawing No. | Issue |
|---|---|---|
| 20065 | 116 | P0 |

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