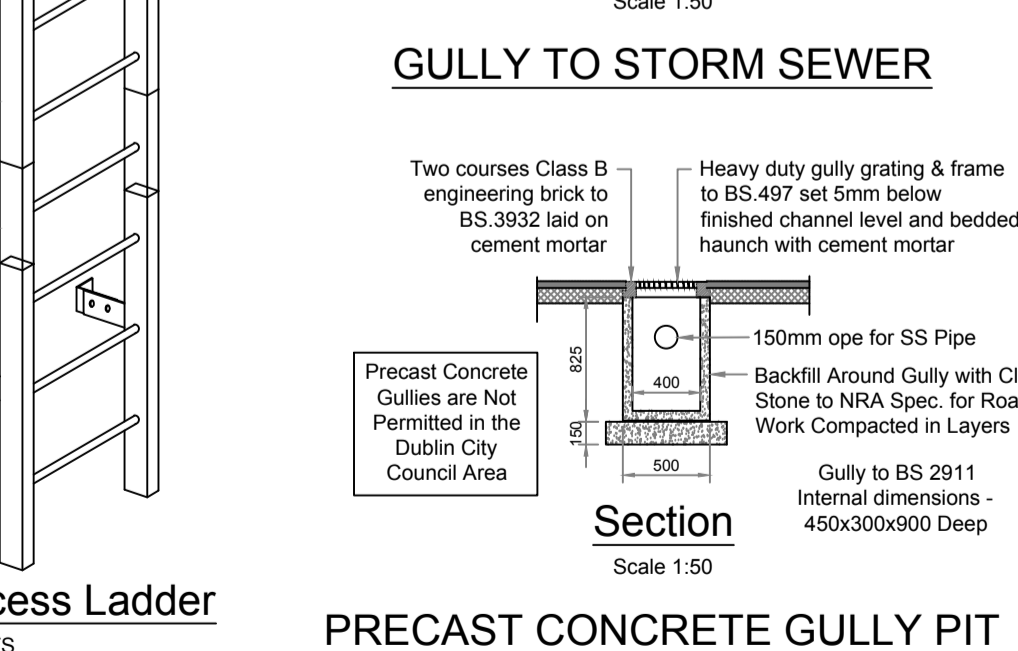
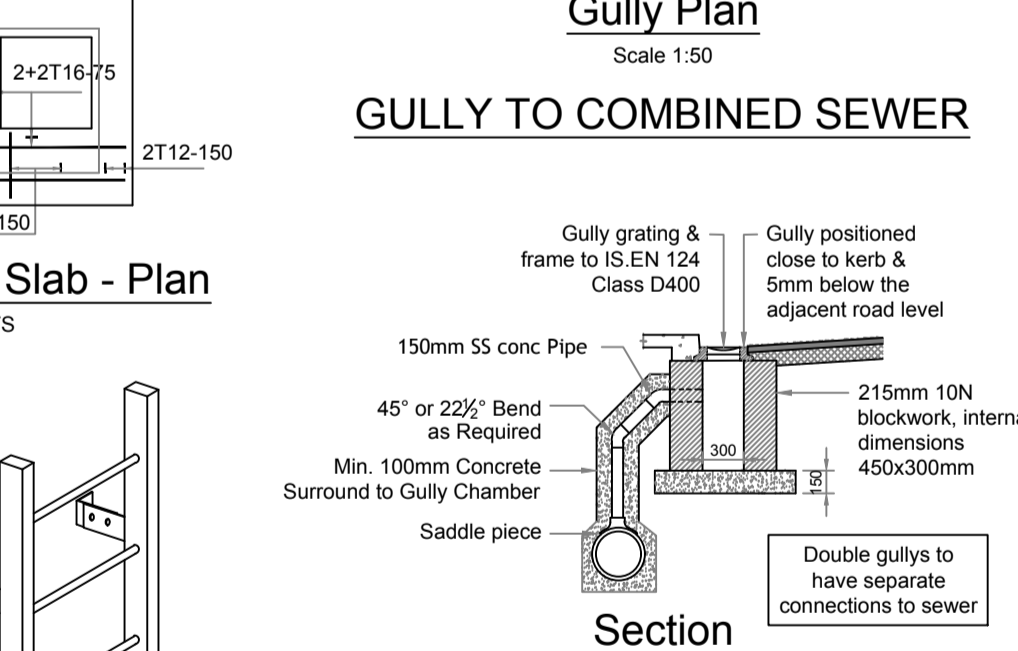
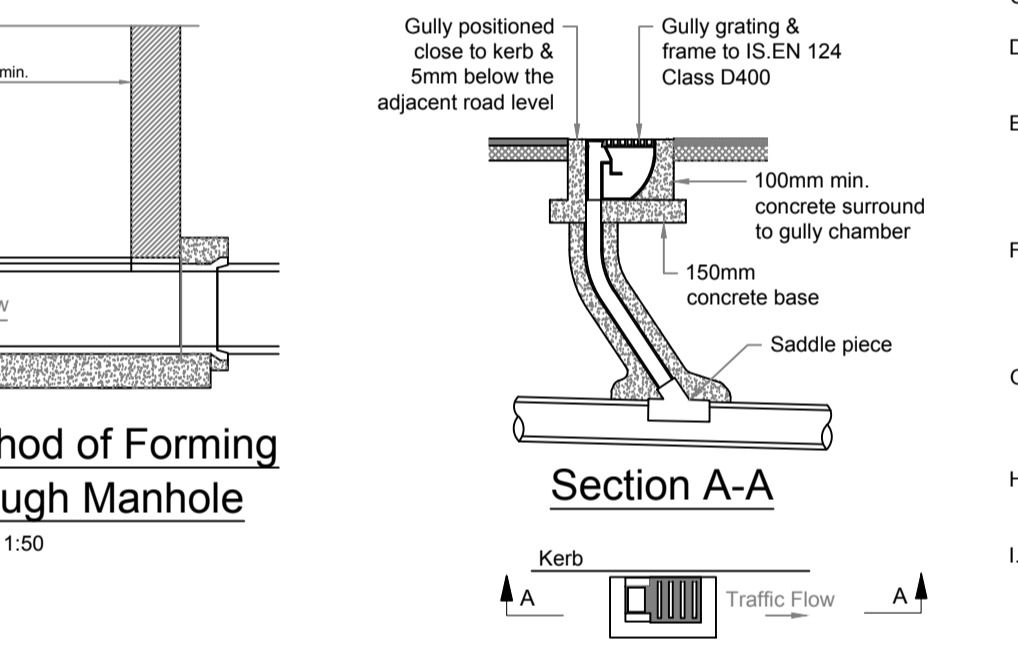
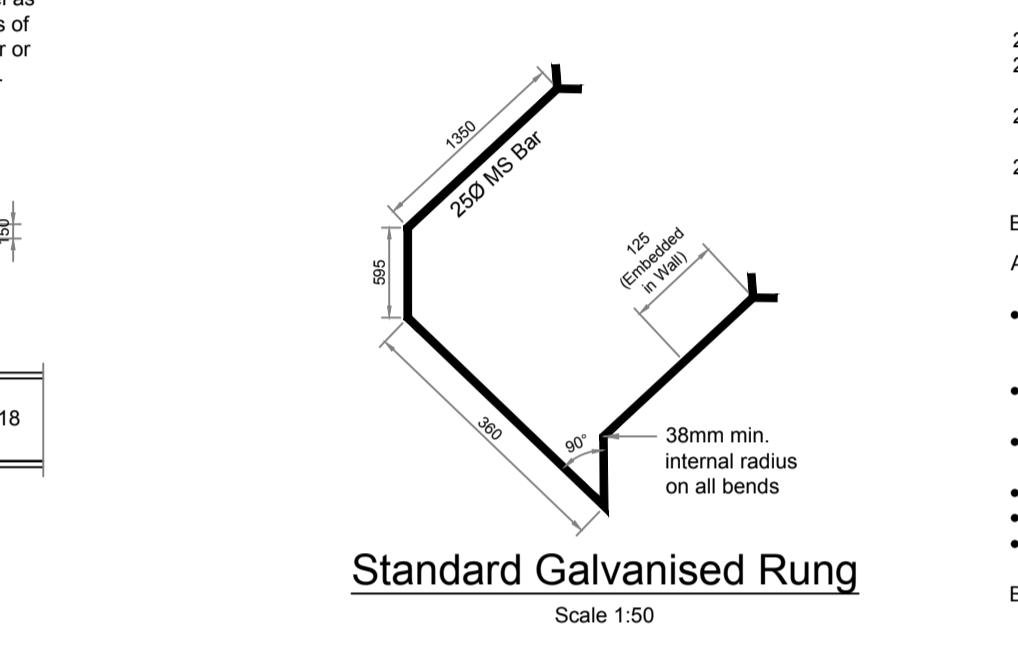
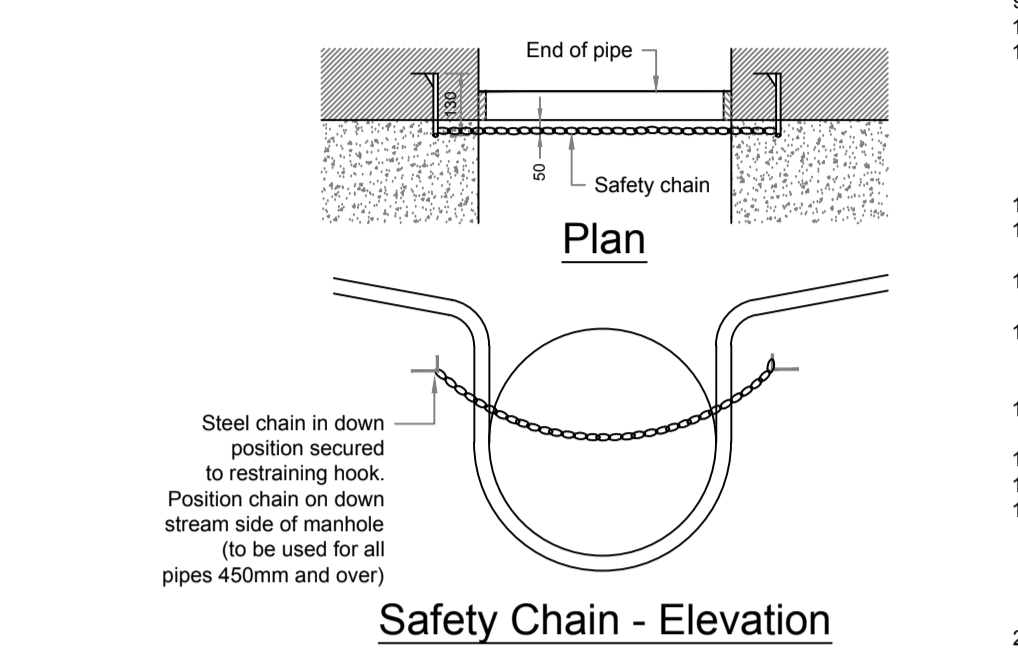


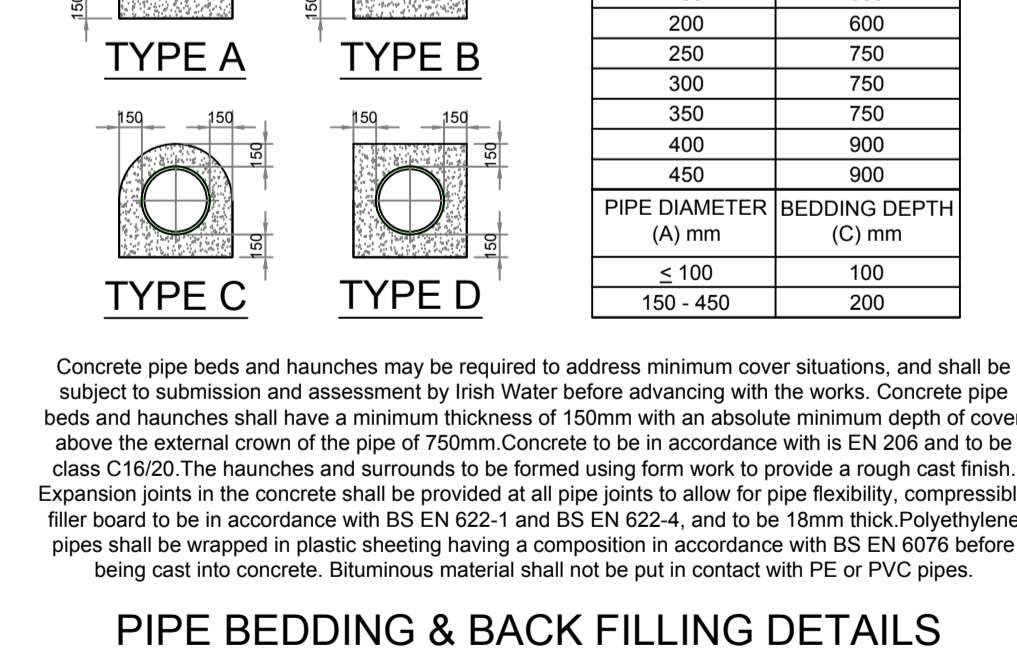
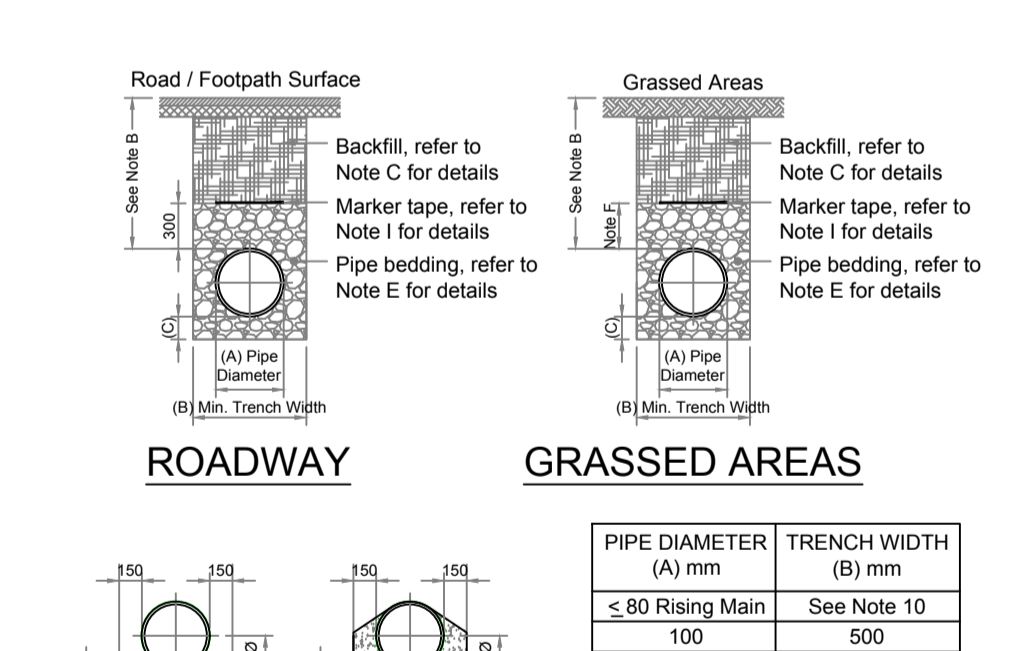
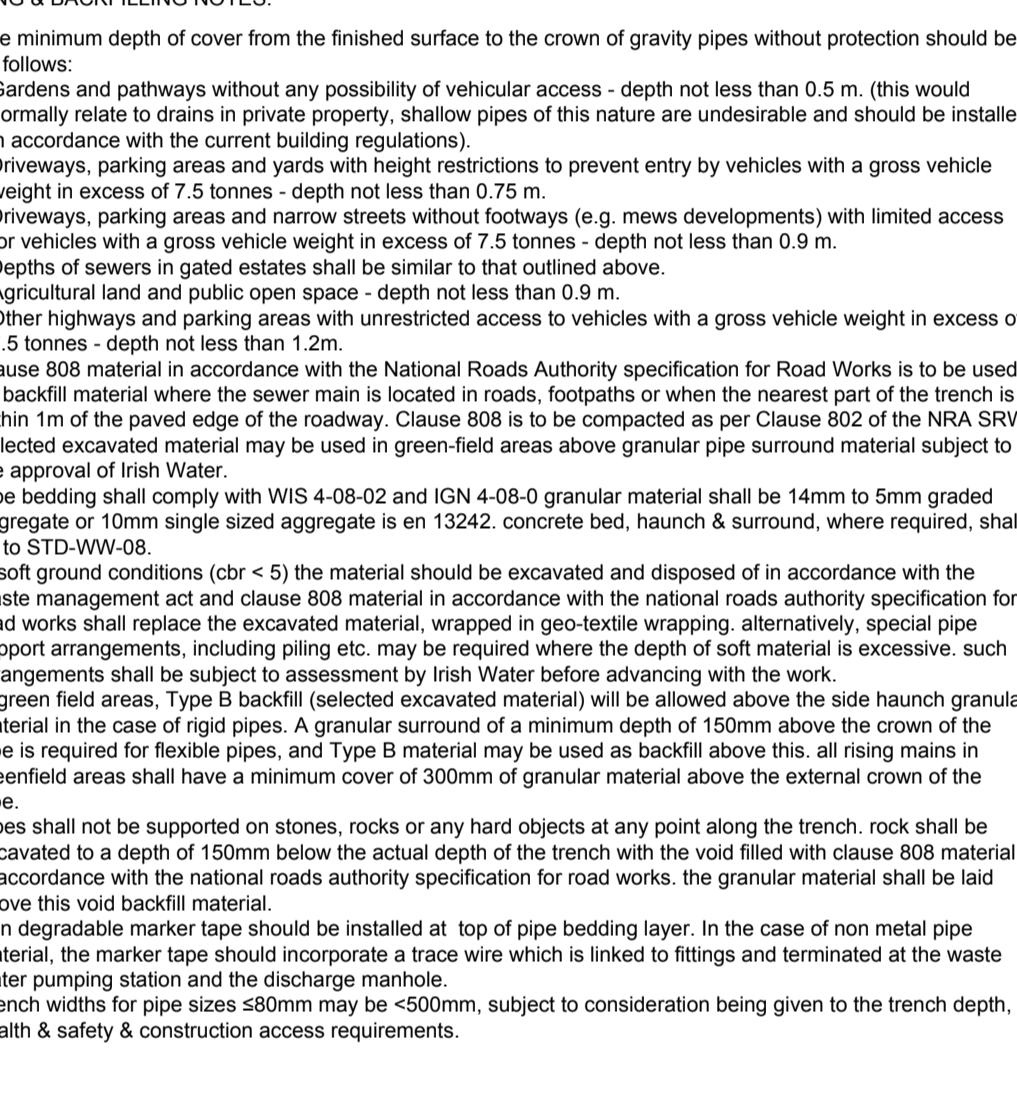
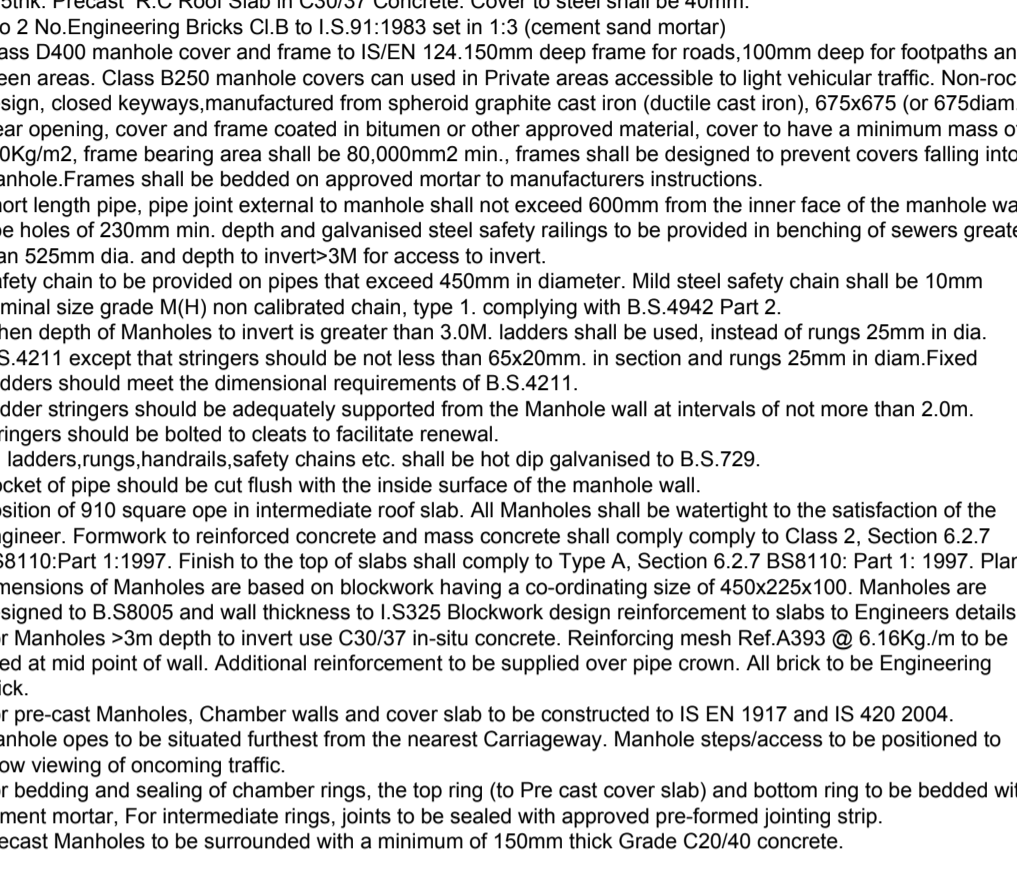
**GENERAL NOTES:**

- Read in conjunction with all relevant Architect's & Engineer's drawings and cross read the detailed notes on the various manholes.
- The minimum length of manholes as shown, however this may need to 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 + 100mm to the invert level of the pipe.
- Access Rungs shall be provided in MH greater than 1000mm to the invert level of the pipe.
- A 300mm concrete cover shall be provided around manhole covers in grassed areas.
- All Manholes covers and gullies shall be approved Local Authority type and to their standard pattern.
- All Drainage work shall be Constructed Strictly in accordance with the requirements of the Local Authority & Building Regulations.
- Class U2 finish to the top of slabs. Reinforcement in the slabs to details or instructed by the Engineer.



**NOTES RELATED TO MANHOLE DETAILS:**

- 225mm Thick C30/37 Mass Concrete Foundations (Over 75mm concrete blinding if required by site conditions)
- 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.
- For Surface Water Manholes high density blocks to CI.510 of I.S.20 Part 1: 1987 or CI 30N/20 insitu conc. Blockwork shall be bedded and jointed using Mortar designation three to 1:4:06. Beds and vertical joints shall be completely filled with mortar as the blocks are laid. Joints shall be flushed against the work proceeds (Blockwork not to be used in areas where a high water table is prevalent). All 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.
- Relieving arch formed by 215x10x65 brick set as per drawing. Relieving arches used in brick or blockwork manholes to cover full thickness of wall. Double arch to be formed for pipe diameters greater than 600mm.
- Benching and pipe channel pipe surround CI. 20N/20 conc.
- Benching finished in 2:1 sand-cement mortar with a smooth trowel finish at 1 in 3 slope towards chamber. 25mm radius Nose on Benchings to be level with Crown of Pipe.
- Standard rungs at 300mm vertically and galvanised to BS 729.
- 675mm square ope. In roof slab.
- 225thk. Precast R.C Roof Slab in C30/37 Concrete. Cover to steel shall be 40mm.
- 1 to 2 No Engineering Bricks C18 to IS 911:1983 set in 1:3 (cement sand mortar)
- 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 be used in Private areas accessible to light vehicle traffic. Non-rock design, closed keyways, manufactured from spheroidal graphite cast iron (ductile cast iron), 675x675 (or 675diam) clear opening, cover and frame coated in bitumen or other approved material, cover to have a minimum mass of 140Kg/m<sup>2</sup>, frame bearing area shall be 60,000mm<sup>2</sup> min., frames shall be designed to prevent covers falling into manhole. Frames shall be bedded on approved mortar as manufacturer's instructions.
- Short length pipe, pipe joint external to manhole shall not exceed 600mm from the inner face of the manhole wall.
- 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.
- Safety chain to be provided on pipes that exceed 450mm in diameter. Mild steel safety chain shall be 10mm nominal size grade M1H non calibrated chain, type 1, complying with BS 4942 Part 2.
- When depth of Manholes to invert is greater than 3.0M, ladders shall be used, instead of rungs in 25mm dia. fixed BS 4211 except that stringers shall not be less than 65x200mm. In section and rungs 25mm in diam. Fixed Ladders should meet the dimensional requirements of BS 4211.
- 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 removal.
- All ladder rungs/handrails/safety chains etc. shall not dip galvanised to BS 729.
- Socket of pipe should be cut flush with the inside surface of the manhole wall.
- 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 with Class 2, Section 6.2.7 BS 110 Part 1:1997. Final slabs shall comply to Type 1, Section 6.2.7 BS 110 Part 1:1997. Plan dimensions of Manholes are based on blockwork having a co-ordinating size of 450x225x100. Manholes are designed to B.S.8005 and wall thickness to 1325 Blockwork design reinforcement to slabs to Engineers details.
- For Manholes > 3m depth to invert use C30/37 in-situ concrete. Reinforcing mesh Ref A393 @ 6.16kg/m to be fixed at mid point of wall. Additional reinforcement to be supplied over pipe crown. All brick to be Engineering Brick.
- For pre-cast Manholes, Chamber walls and cover slab to be constructed to IS EN 1917 and IS 420 2004.
- Manhole ope. to be situated further from the nearest Chambering. Manhole steps/access to be positioned to allow viewing of on-road traffic.
- For bedding and sealing of chamber rings, the 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.
- Precast Manholes to be surrounded with a minimum of 150mm thick Grade C20/40 concrete.



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	-	-	-	-	-	-	-
1-3	PRECAST J 1050x1050	J 1200x1200	J 1200x1200	J 1350x1350	J 1350x1350	J 1500x1500	J 1500x1500	J 1500x1500	J 1800x1800	PipeØ-900	PipeØ-900	PipeØ-900
3-6	INSITU/BLOCK C 1590x1590	C 1590x1590	C 1590x1590	C 1590x1590	C 1590x1590	E 1810x1810	E 1810x1810	E 1810x1810	E 1810x1810	E 1810x1810	E 1810x1810	E 1810x1810
	PRECAST K 1200x1200	K 1200x1200	K 1200x1200	K 1350x1350	K 1350x1350	K 1500x1500	K 1500x1500	K 1500x1500	K 1800x1800	PipeØ-900	PipeØ-900	PipeØ-900

TABLE 1 - MANHOLE TYPES & SIZES

Rev.	Date	Description	By

Project Title  
**DOCKLANDS INNOVATIONS PARK  
EAST WALL ROAD, DUBLIN 3**

Architect  
**MCORM**

Date	By	Checked	Scale @ A1
SEP 2019	AL	PM	AS SHOWN

Drawing Title  
**SURFACE WATER MANHOLE  
AND DRAINAGE DETAILS**

Drawing Status  
**PLANNING**

Job No.	Drawing No.	Issue
1731	111	PO

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