

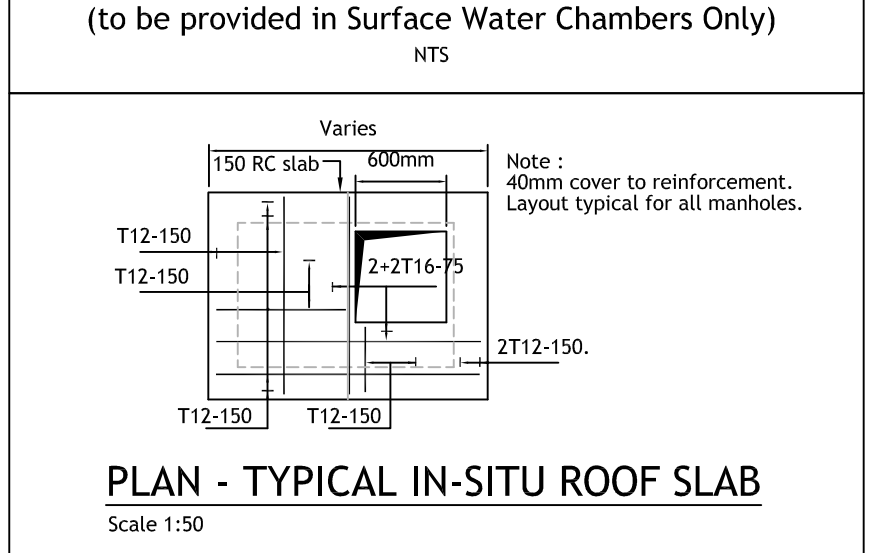
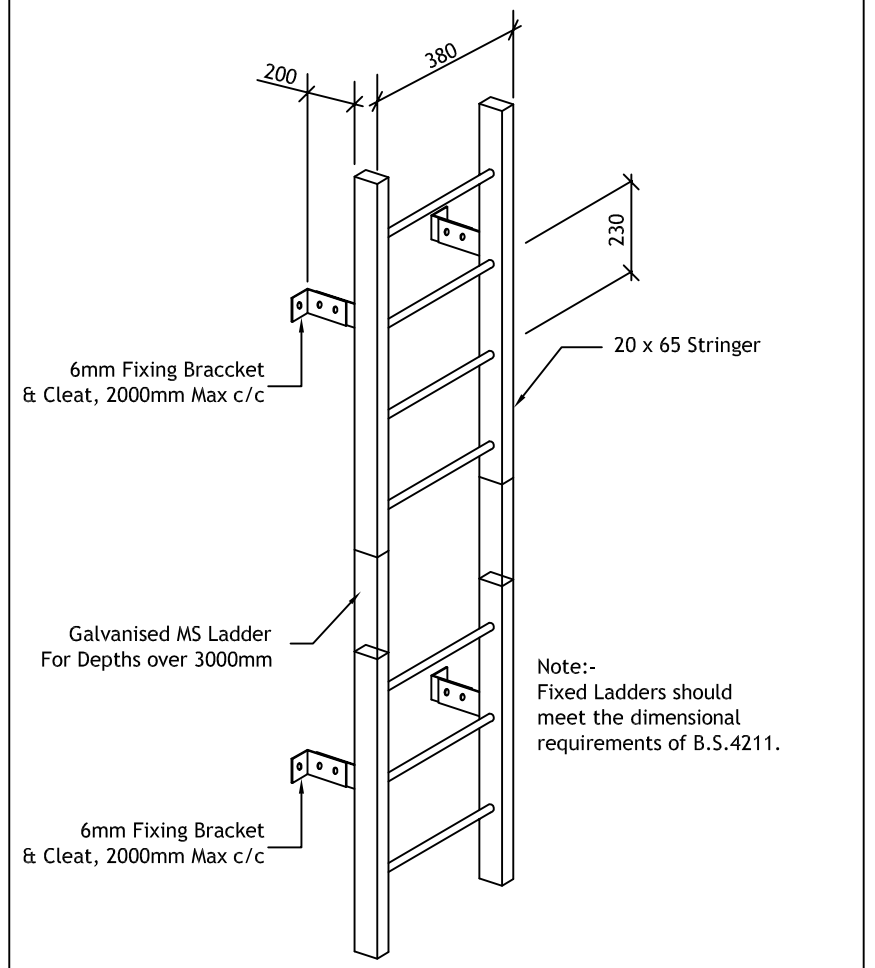
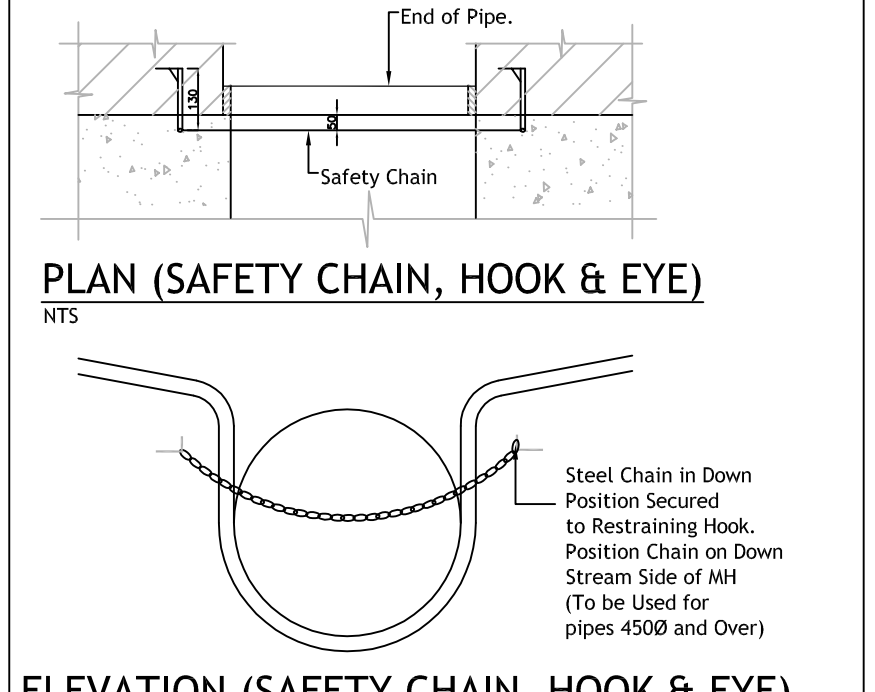
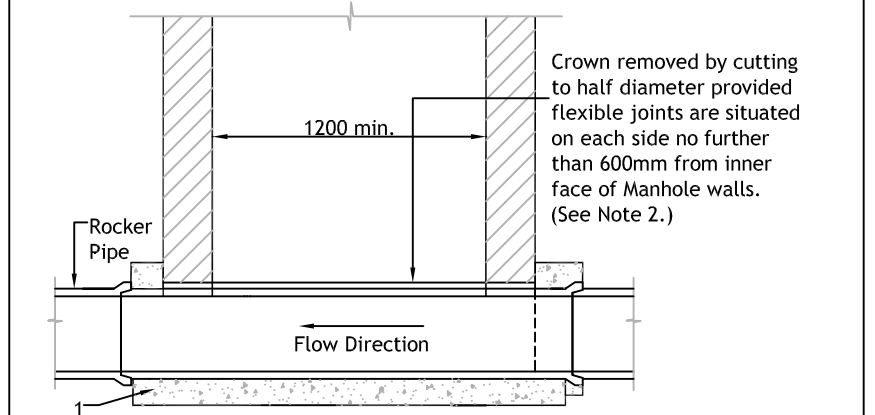
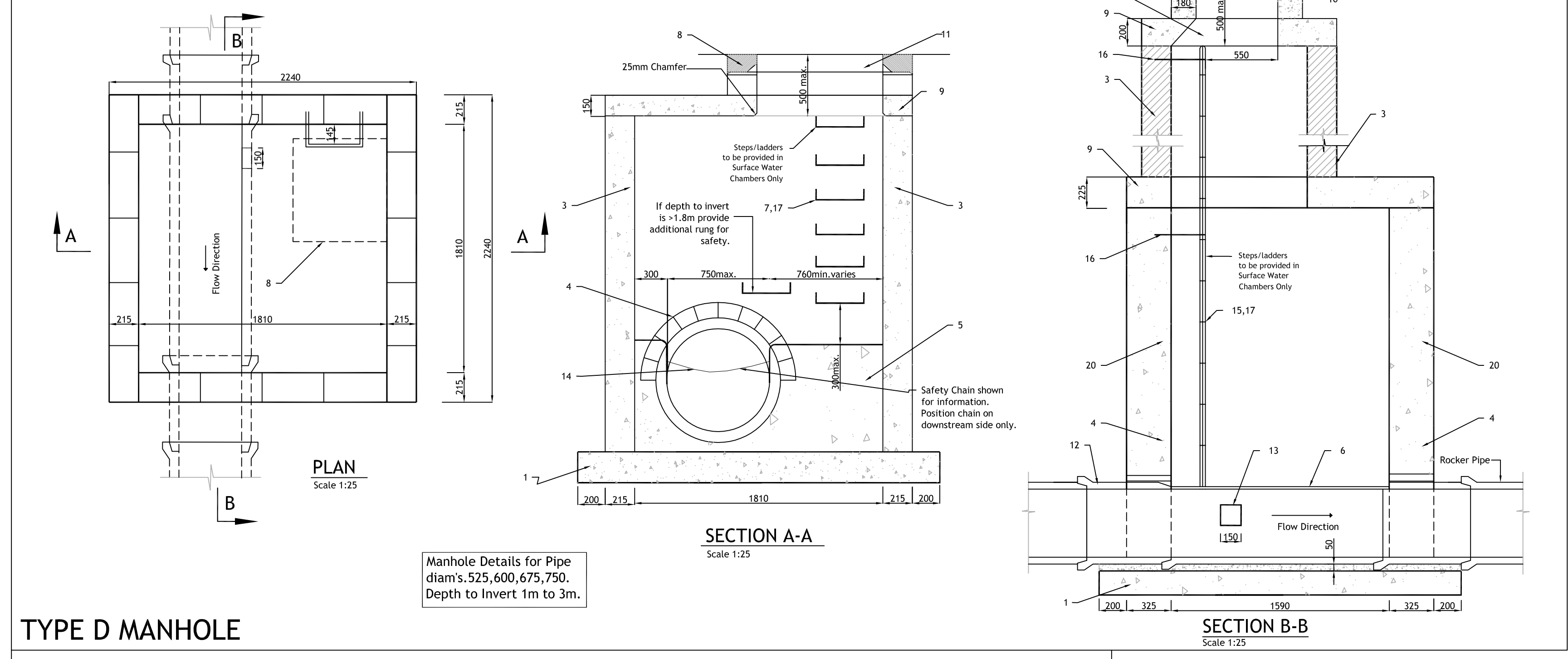
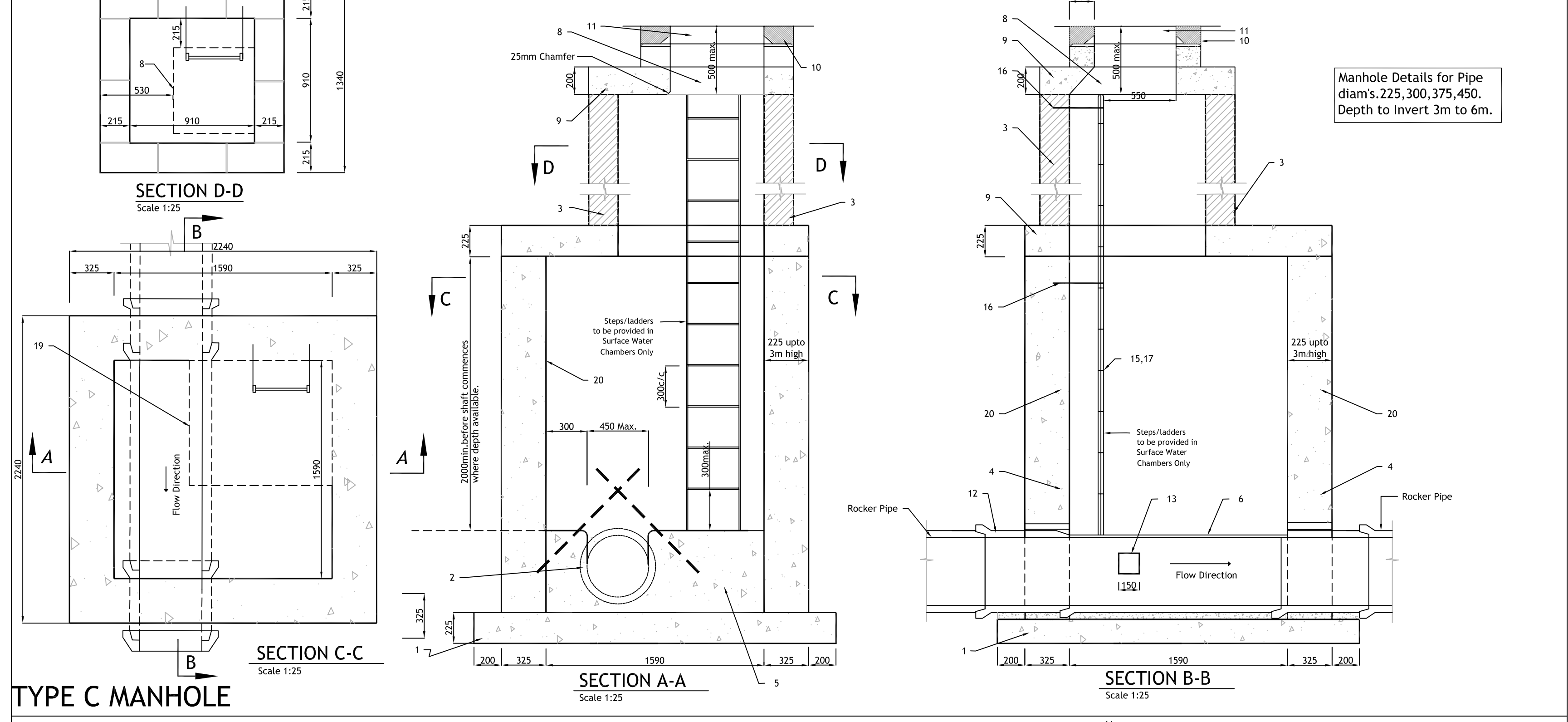
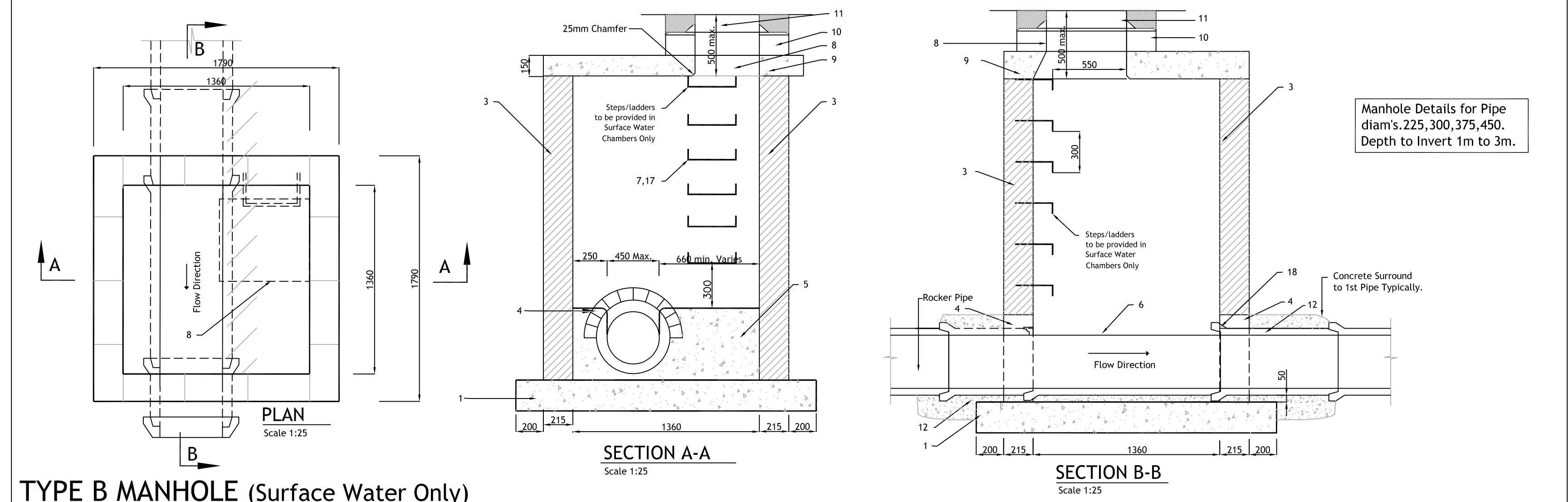
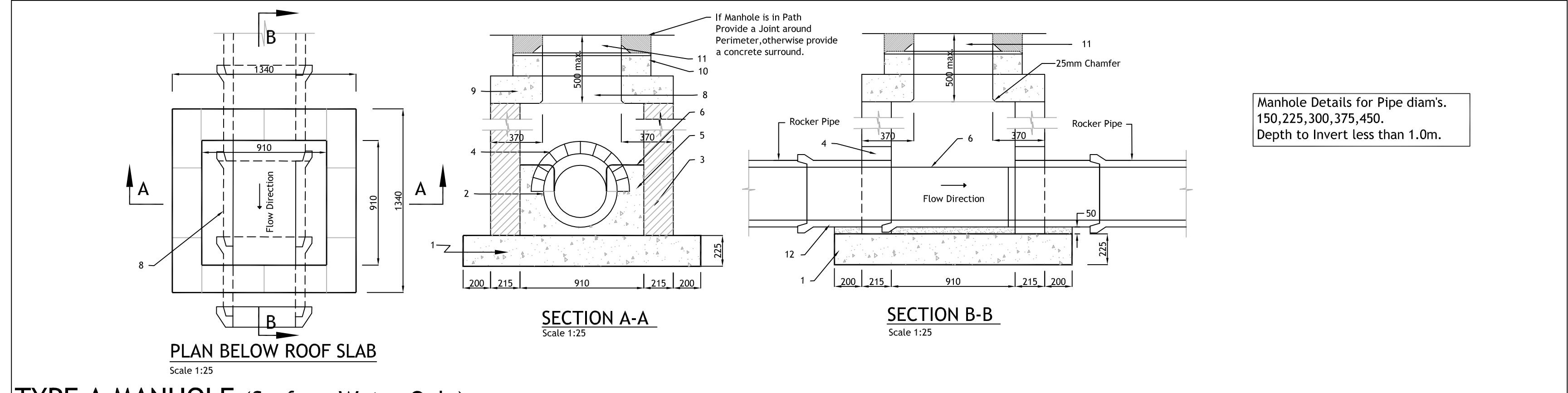
NOTES

- 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 CL510 of I.S.20 Part 1: 1987 or CL 30N/20 instu conc. Blockwork shall be bedded and jointed using Mortar designation three to 1.5:4:6. 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 Four Manholes must be faced in solid Engineering Brick (min.class A or B), or in-situ concrete for 1 metre above benching level. Brick to be bonded to Blockwork using English Garden Wall Bond.
- Reinforcing arch formed by 215x103x65 brick as per drawing. Reinforcing 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.
- Benching and pipe channel pipe surround - CL 20M/20 concrete.
- 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.
- Standard rungs at 300c/c vertically and galvanised to BS 729.
- 675mm square ope. in roof slab.
- 225th. Precast R.C. Roof Slab in C30/37 Concrete. Cover to steel shall be 40mm.
- 1 to 2 No. Engineering Bricks CL.B to I.S.91:1983 set in 1:3 (cement sand mortar)
- Class D400 manhole cover and frame to I.S/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 vehicular traffic. Non-rock design, closed keyways, manufactured from spheroidal graphite cast iron (ductile cast iron), 675x675 (or 675dia), 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.
- Short length pipe, pipe joint external to Manhole shall not exceed 600mm from the inner face of the Manhole wall.
- The holes of 230mm min. depth and galvanised steel safety railings to be provided in benching of sewers greater than 525mm diam. 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 gal(M/H) non calibrated chain, type 1, complying with B.S.4942 Part 2.
- When depth of Manholes to invert is greater than 3.0M, ladders shall be used, instead of rungs 25mm in diam. 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 (Surface Water Chambers Only).
- 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.
- All ladders, rungs, handrails, safety chains etc. shall be hot dip galvanised to B.S.729 (to be provided in Surface Water Chambers Only)
- 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 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 having a co-ordinating size of 450x225x100. Manholes are designed to B.5805 and wall thicknesses to I.5325
- Blockwork design reinforcement to slabs as 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.
- Manholes to be situated furthest from the nearest Carriageway. Manhole steps/access to be positioned to allow viewing of oncoming traffic.
- 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.
- Pre cast Manholes to be surrounded with a minimum of 150mm thick Grade C20/40 concrete.

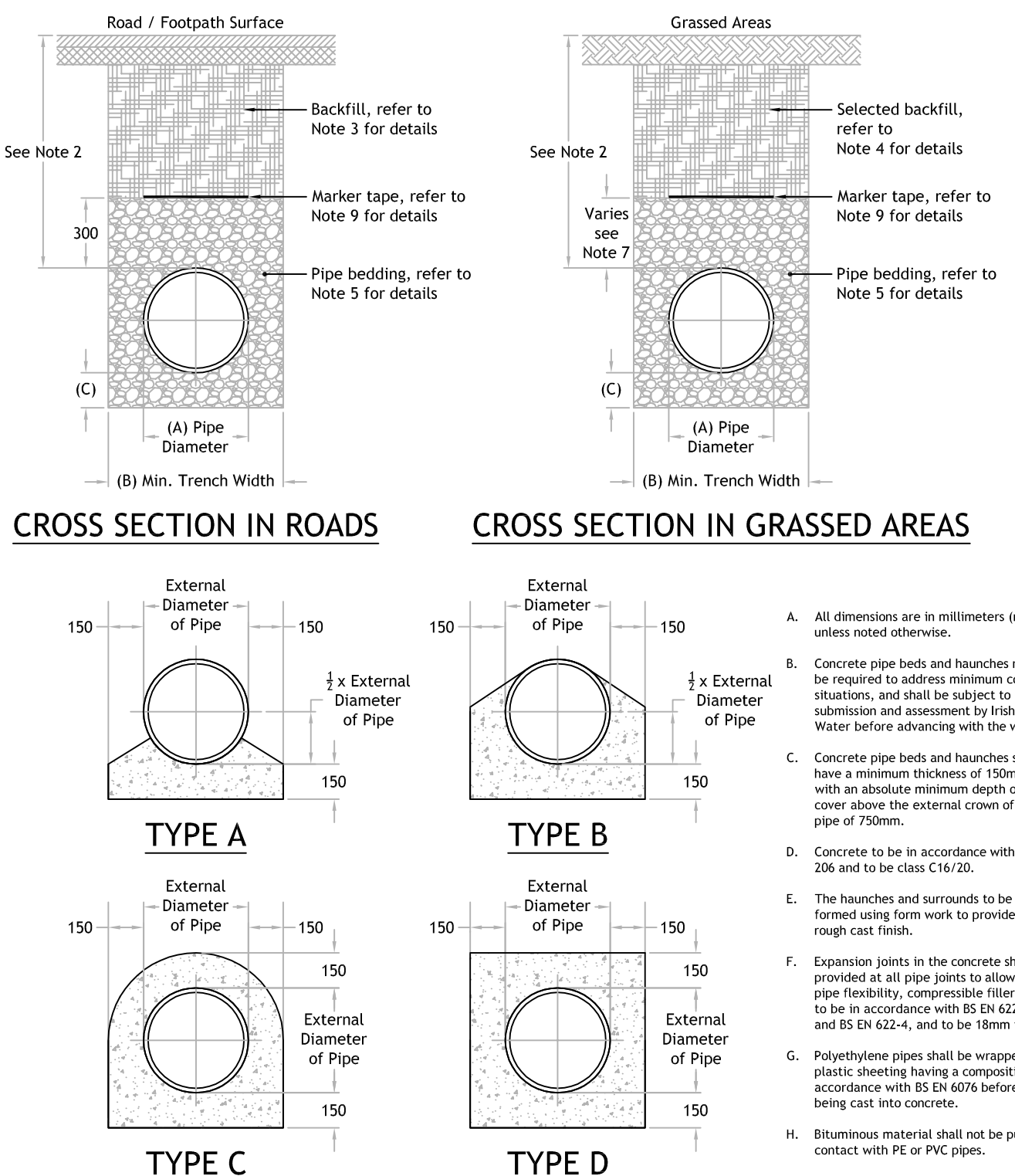
Manhole Details for Pipe diam's. 150, 225, 300, 375, 450. Depth to Invert less than 1.0m.

Manhole Details for Pipe diam's. 225, 300, 375, 450. Depth to Invert 1m to 3m.

Manhole Details for Pipe diam's. 225, 300, 375, 450. Depth to Invert 3m to 6m.



- All dimensions are in millimetres (mm) unless note otherwise.
- The minimum depth of cover from the finished surface to the crown of gravity pipes without protection should be as follows:
 - A. gardens and pathways without the 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).
 - B. 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 0.2m
 - C. driveways, parking areas and narrow streets without footways (e.g. new developments) with limited use of this nature are undesirable and clause B shall apply in excess of 7.5 tonnes - depth not less than 0.5 m.
 - D. depths of sewers in gated estates shall be similar to that outlined above.
 - E. agricultural land and public open space - depth not less than 0.9 m.
 - F. 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.
- 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 to roads, footpaths or 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 SPW.
- Selected excavated material may be used in green-field areas above granular pipe surround material subject to the approval of Irish Water.
- Pipe bedding shall comply with MS 408(C) and IS 408(D) granular material shall be 14mm to 5mm graded aggregate or 10mm single sized aggregate in 1324 concrete bed, haunch & surround, where required, shall be to STD-W-08.
- In soft ground conditions (dr > 3) 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 grilling etc. may be required where the depth of soft material is excessive, such arrangements shall be subject to approval by Irish Water before advancing with the work.
- 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 to 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.
- 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.
- 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 fitting and consideration being given to the trench depth, health & safety & construction access requirements.



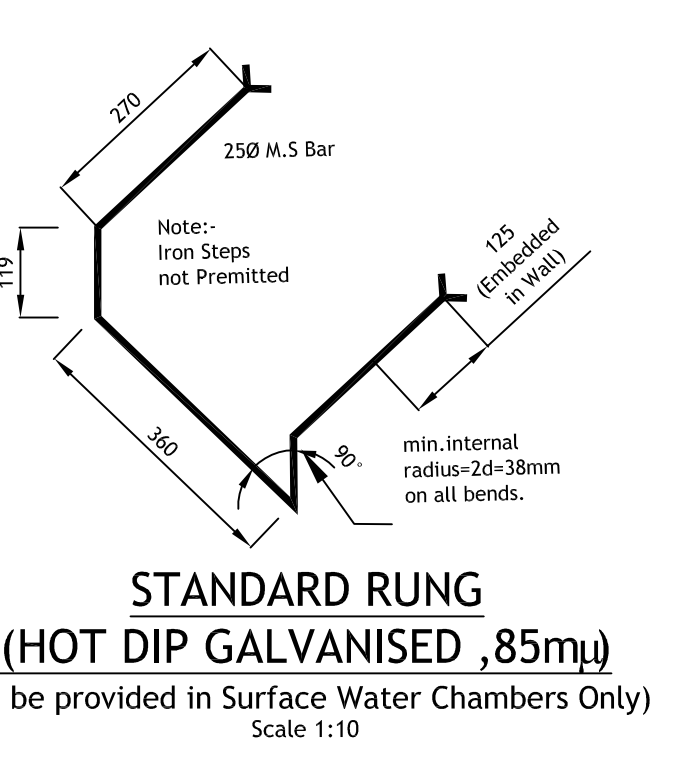
PIPE DIAMETER (A) (mm)	TRENCH WIDTH (B) (mm)
≤ 80 Rising Main	See Note 10
100	500
150	600
200	600
250	750
300	750
350	750
400	900
450	900

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

TABLE 1: MANHOLE TYPES AND SIZES

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 105000	J 120000	J 120000	J 135000	J 135000	J 150000	J 150000	J 150000	J 180000	P160x900	P160x900
	INSITU/BLOCK	B 1360x1360	B 1360x1360	B 1360x1360	B 1360x1360	B 1360x1360	B 1810x1810	B 1810x1810	B 1810x1810	B 1810x1810	P160x900	P160x900
1-3	INSITU/BLOCK	K 115000	K 120000	K 120000	K 135000	K 135000	K 150000	K 150000	K 150000	K 180000	P160x900	P160x900
	PRECAST*	K 120000	K 120000	K 120000	K 135000	K 135000	K 150000	K 150000	K 150000	K 180000	P160x900	P160x900

* Precast Concrete Manholes are Not Permitted in the Dublin City Council Area



REV. DATE DESCRIPTION

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PROJECT
 PROSPEROUS

DRAWING TITLE
 STANDARD MANHOLE DETAILS
 SHEET 1 of 2

ARCHITECT	STAGE
MCORM	PART 8

DATE	CHECKED	DRAWN	SCALES	DWG NO.	REV.
FEB 2017	PM	CB	AS SHOWN	1642-106	0