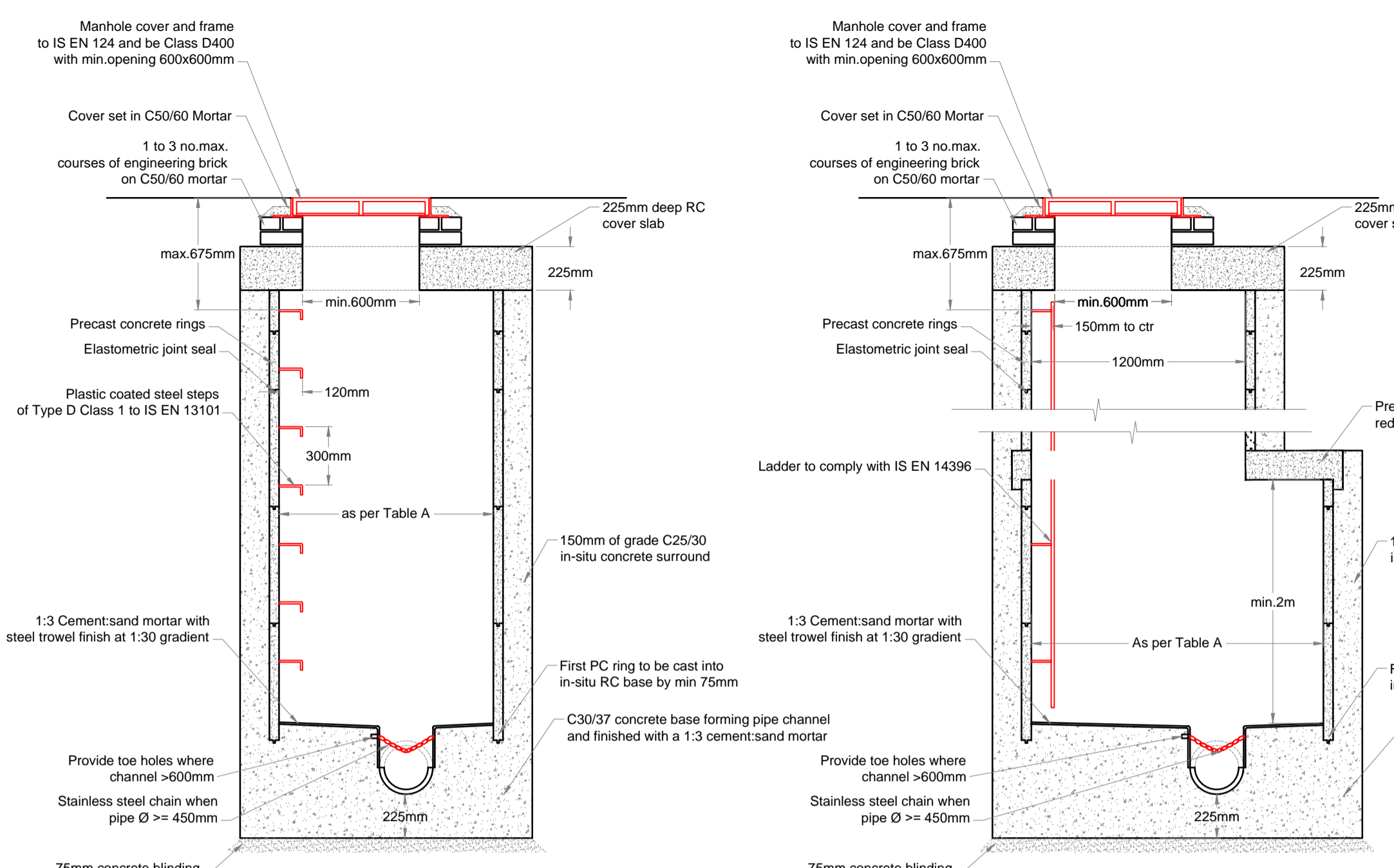


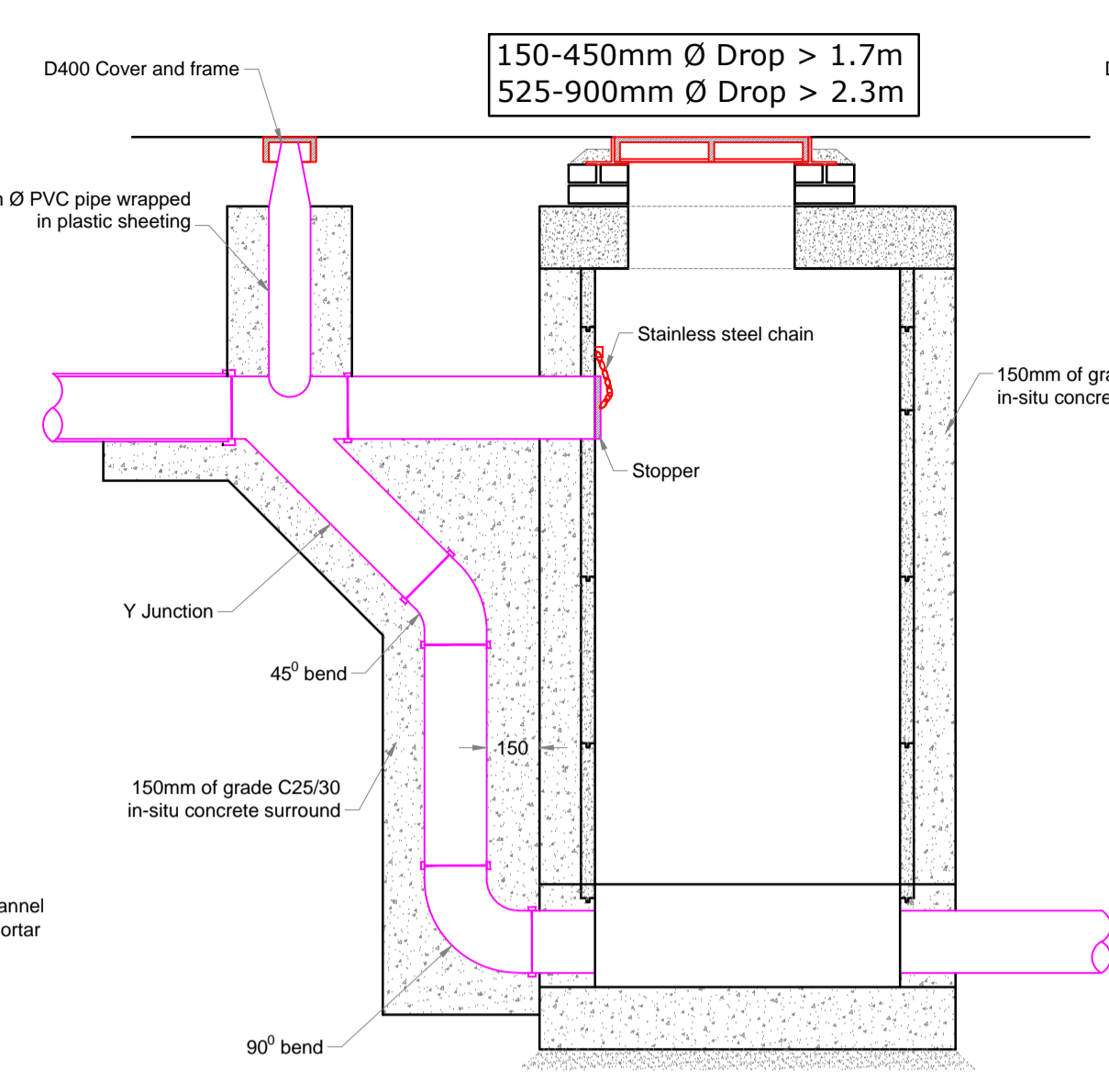
**NOTES:**

- Read in conjunction with all relevant Architect's & Engineer's drawings and cross read the detailed notes on the various manholes.
- The minimum diameter of manholes are as shown in Table A, but this may 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 150mmØ are used); for 2x150Ø + 1x225Ø pipes on one side, length = 1525mm (subject to minimum length)
- Access rungs shall be provided in manholes greater than 1m to the invert level of the pipe.
- A 200mm concrete surround, 100mm deep, shall be provided around manhole covers in grassed areas.
- Class U2 finish to the top of slabs. Reinforcement in the slabs to details or as directed by the Engineer.
- Manhole foundations to be 225mm C30/37 mass concrete with 75mm lean mix concrete blinding if required by site conditions.
- Use pre-formed half circle crown pipes through manholes but the pipeline may be laid through the manhole and the crown cut out to half diameter ensuring that flexible joints are located either side of manhole at max.600mm as measured from the inner face of manhole wall.
- Use CL 20N/20 concrete for benching and pipe channel pipe surround.
- Benching to be finished in 1:3 cement-sand mortar with a smooth trowel finish, at 1 in 30 slope towards channel. Form a 25mm radius nosing on benching, level with crown of the pipe.
- Standard galvanised (BS 729) rungs to be positioned @ 300c/c vertically.
- Roof slab to have a min. 600mm square ope.
- 225thk. Precast R.C. Roof Slab in C30/37 Concrete. Cover to steel shall be 40mm.
- MH cover frame to be laid on 1 No. min to 3 No. max. courses of engineering bricks CL.B to 1:5.91:1983 set in C50/60 mortar
- MH cover and frames to be Class D400 to IS/EN 124. 150mm deep frame for roads, 100mm deep for footpaths and green areas. Class B250 manhole covers may be used in private areas accessible to light vehicular traffic. Non-rock design, closed keyways, manufactured from spheroidal graphite cast iron (ductile cast iron), 600x600 (or 600diam.) 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 80,000mm<sup>2</sup> min., frames shall be designed to prevent covers falling into manhole. Frames shall be bedded on C50/60 mortar to manufacturers instructions.
- Galvanised steel safety railings to be provided in benching of sewers greater than 450mm Ø and depth to invert-3m for access to invert. Toe holes of 230mm min. depth to be provided where channel >600mm.
- Safety chain to be provided on pipes that exceed 450mm Ø. Stainless steel safety chain shall be 10mm nominal size grade 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.
- 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 allow renewal.
- Socket of pipe to be cut flush with the inside surface of the manhole wall.
- Where manhole diameter changes in deep manholes, provide a 910mm square ope in the 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. Manholes are designed to BS.8005 and wall thicknesses to I.5325.
- Precast Manholes, Chamber walls and cover slab to be constructed to IS EN 1917 and IS 420 2004.
- Manhole ope 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 below PC 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 C25/30 concrete.



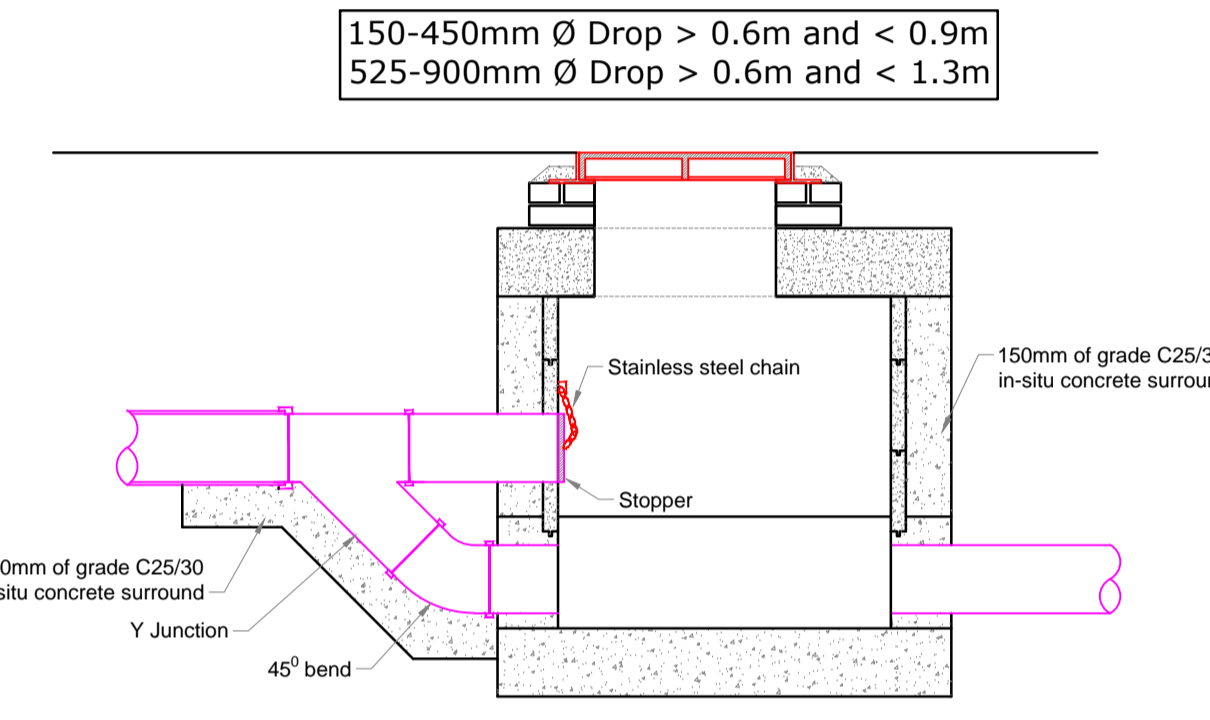
**Section A-A Type A < 3m depth**  
Scale 1:20

**Section A-A Type B 3-6m depth**  
Scale 1:20

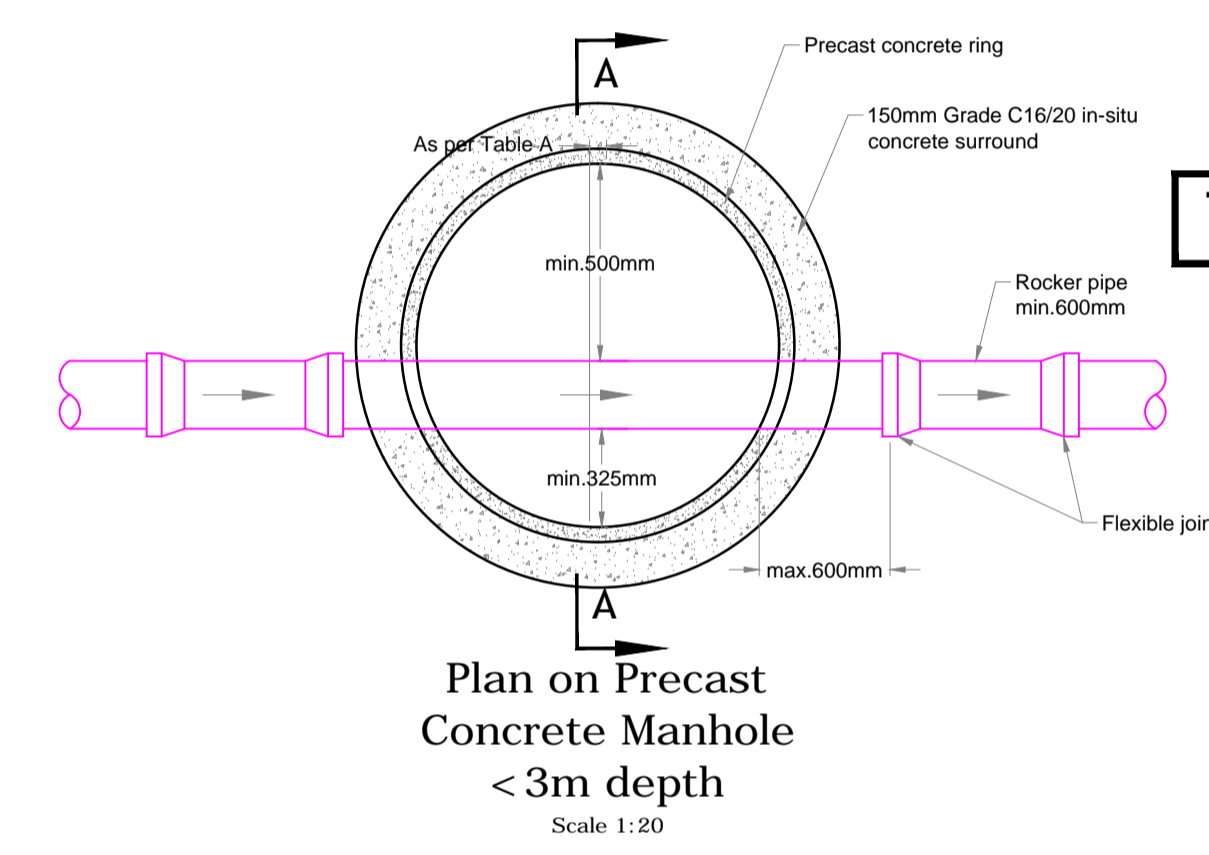


**Backdrop Manhole Type 1**  
Scale 1:20

**Backdrop Manhole Type 2**  
Scale 1:20



**Backdrop Manhole Type 3**  
Scale 1:20



**Plan on Precast Concrete Manhole < 3m depth**  
Scale 1:20

**TYPICAL MANHOLE DETAIL**

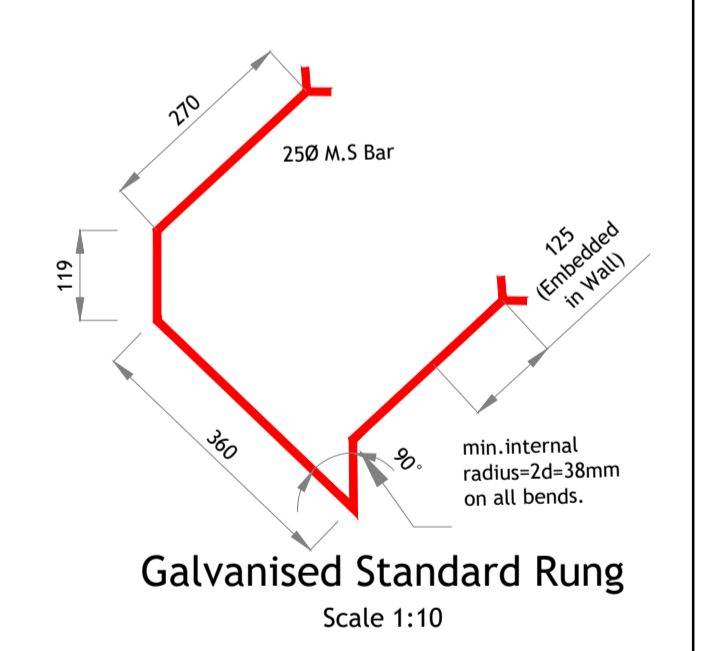
TABLE A		PIPE DIAMETER (mm)				
DEPTH (m)	TYPE	150	225	300	375	450
0-1	PRECAST	A 1050Ø	A 1200Ø	A 1200Ø	A 1200Ø	A 1200Ø
1-3	PRECAST	A 1050Ø	A 1200Ø	A 1200Ø	A 1350Ø	A 1350Ø
3-6	PRECAST	B 1200Ø	B 1200Ø	B 1200Ø	B 1350Ø	B 1500Ø

**PIPE BEDDING & BACK FILLING NOTES:-**

- Pipe backfill to be granular material to C1804/808 in accordance with the NRA Specification for Road Works. Use only CL.808 material when within 500mm of cement bound materials such as concrete kerbs/paths/haunching.
- Backfill material to be well compacted in accordance with CL.802 of the NRA specification compacted in layers of not greater than 150mm.
- Back filling in open spaces shall consist of suitable selected excavated material, shall be free from stones greater than 25mm in size, builders rubbish, vegetable matter and lumps of clay greater than 75mm in size and shall be compacted in 150mm layers. It shall meet the requirements of "Acceptable material" as defined in Clause 601 of the NRA Specification for Road Works.
- Pipe bedding shall be in accordance with WIS 4-08-02 and IGN 4-08-01. Granular material to be 5mm to 14mm graded aggregate or 10mm single sized aggregate to ISEN 13242.
- All pipes to have a 150mm Concrete surround where the cover is less than 900mm in Landscaped/Pedestrian areas. Use concrete bed & surround details if cover is < 1.2m trafficked areas. All other pipework to be to bedding details as shown.
- Concrete for pipe bedding, haunching and surrounds shall be grade C16/20 and have expansion joints at all pipe joints using 18mm filler board.
- Formwork to Reinforced Concrete and mass concrete shall be class F2.
- Wrap PE pipes in plastic sheeting before casting into concrete

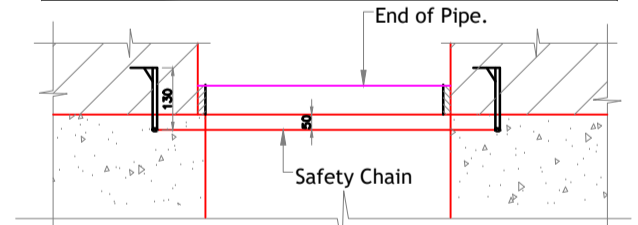
All pipe/manhole details to be compliant with Irish Water's Wastewater Infrastructure Standard Details document July'20 (Rev'04)

THIS IS A PLANNING DRAWING AND IS FOR THE APPROVAL OF IRISH WATER

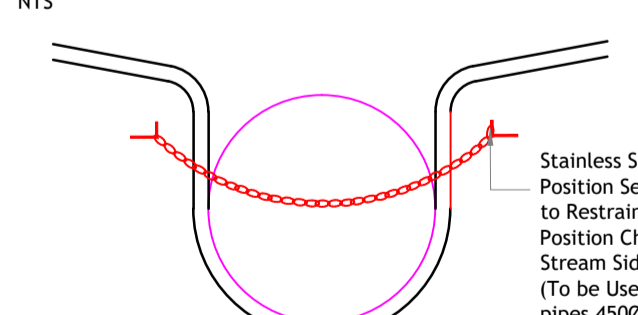


**Galvanised Standard Rung**  
Scale 1:10

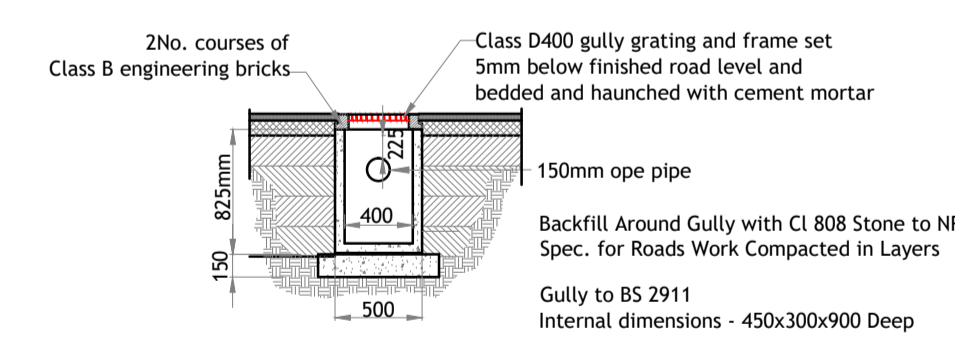
**LADDER & CHAIN DETAILS**



**PLAN (SAFETY CHAIN, HOOK & EYE)**  
NTS

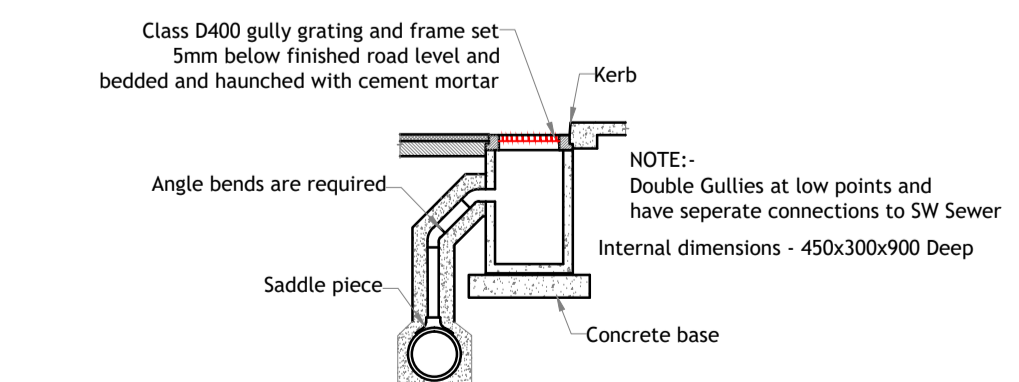


**ELEVATION (SAFETY CHAIN, HOOK & EYE)**  
NTS



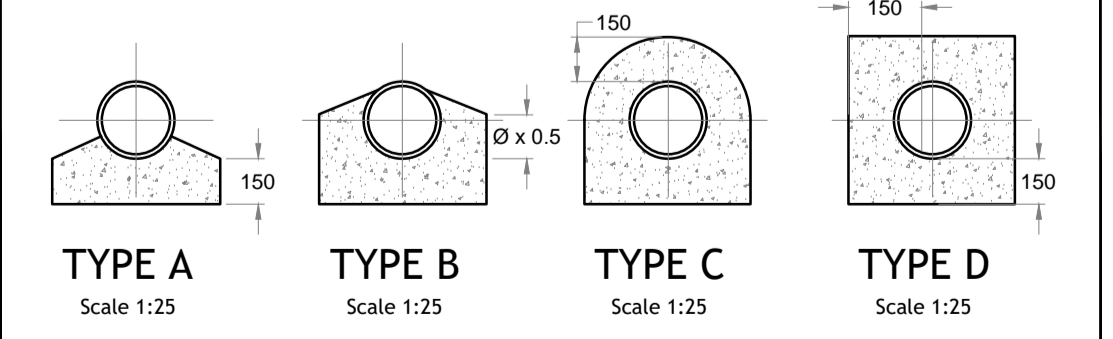
**Precast Concrete Gully Pit**  
SCALE 1:50

NOTE: All gullies to be positioned at low points and no ponding of S/W is acceptable. Adjustment to suit site conditions to be discussed with RMA where variation to drawings occurs

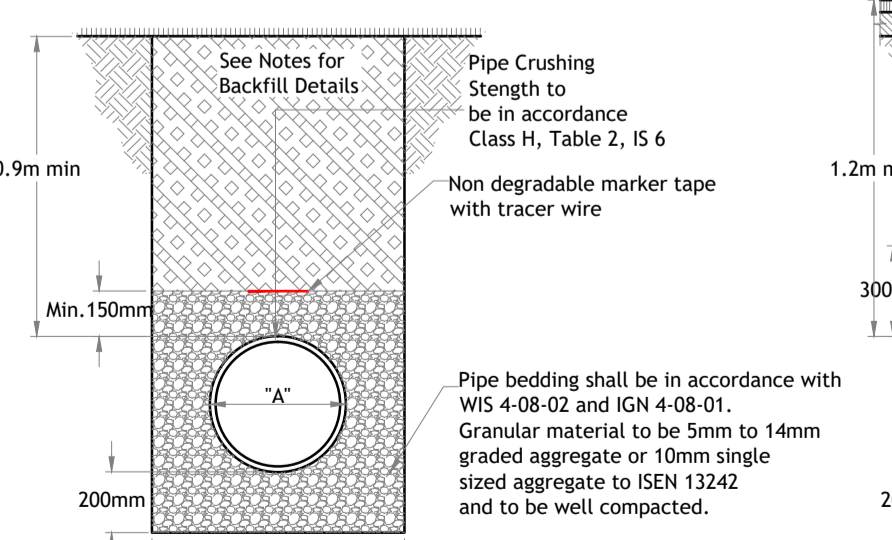


**Gully Connection**  
SCALE 1:50

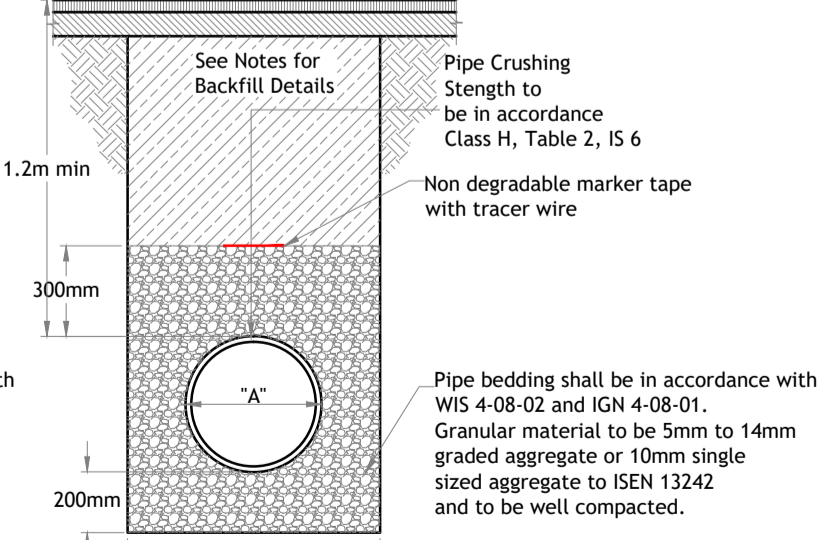
**CONCRETE BED/HAUNCH/SURROUND DETAILS**



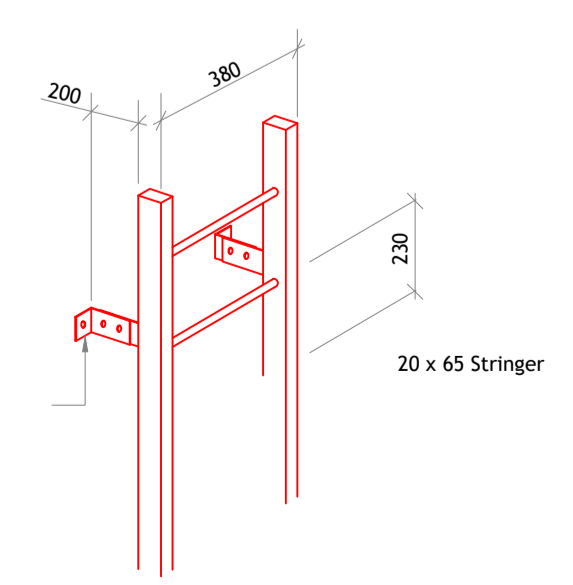
**TYPE A TYPE B TYPE C TYPE D**  
Scale 1:25



**CROSS SECTION GRASSED AREA Granular Bed & Surround**  
Scale 1:25



**CROSS SECTION ROADS Granular Bed & Surround**  
Scale 1:25



20 x 65 Stringer

REV	DATE	DESCRIPTION

**ROGER MULLARKEY & ASSOCIATES**  
Consulting Structural and Civil Engineers

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**Project**  
**BOHERBOY**

Drawing Title	Architect
MANHOLE DETAILS	MCORM & Davey Smith

Date	Drawn By	Scales	Dwg.No.	Stage	Rev
May'20	RM	As Shown	1324B/329	PLANNING	