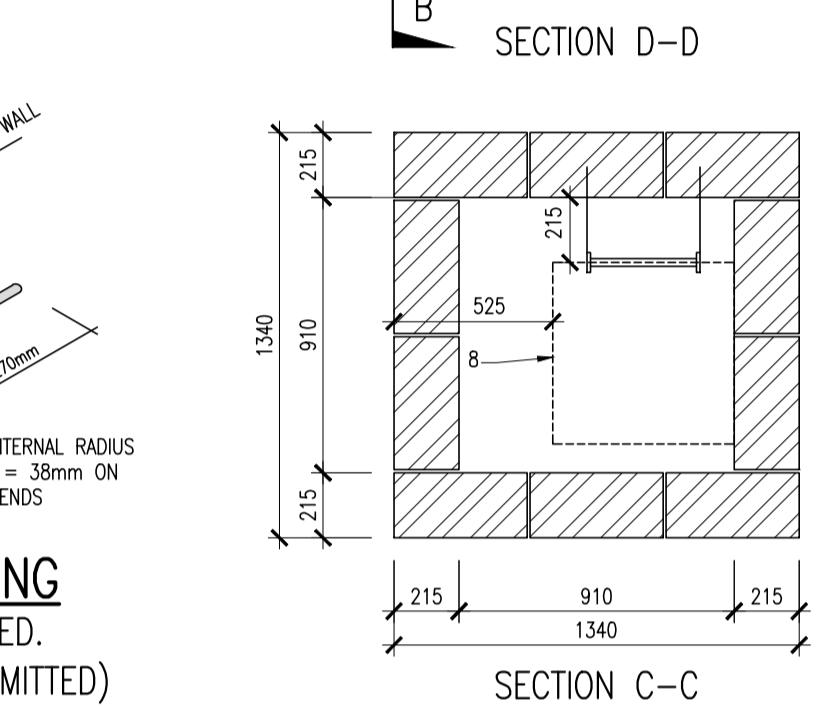
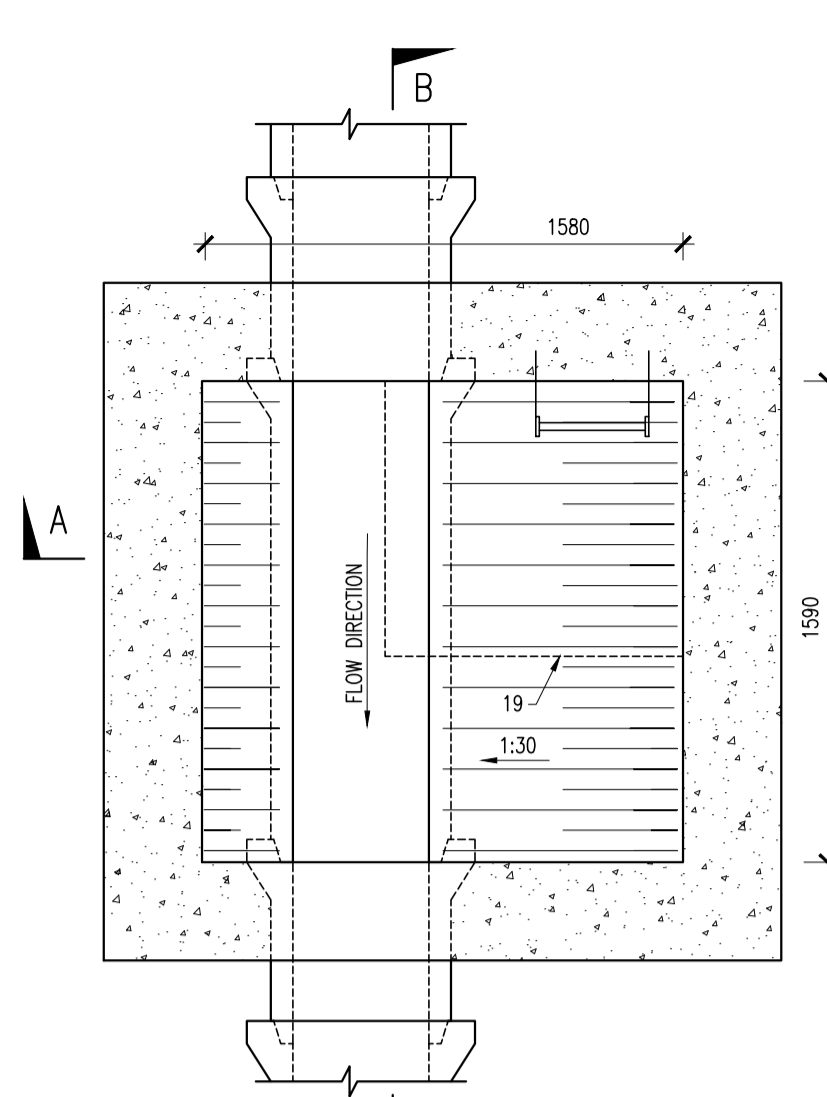
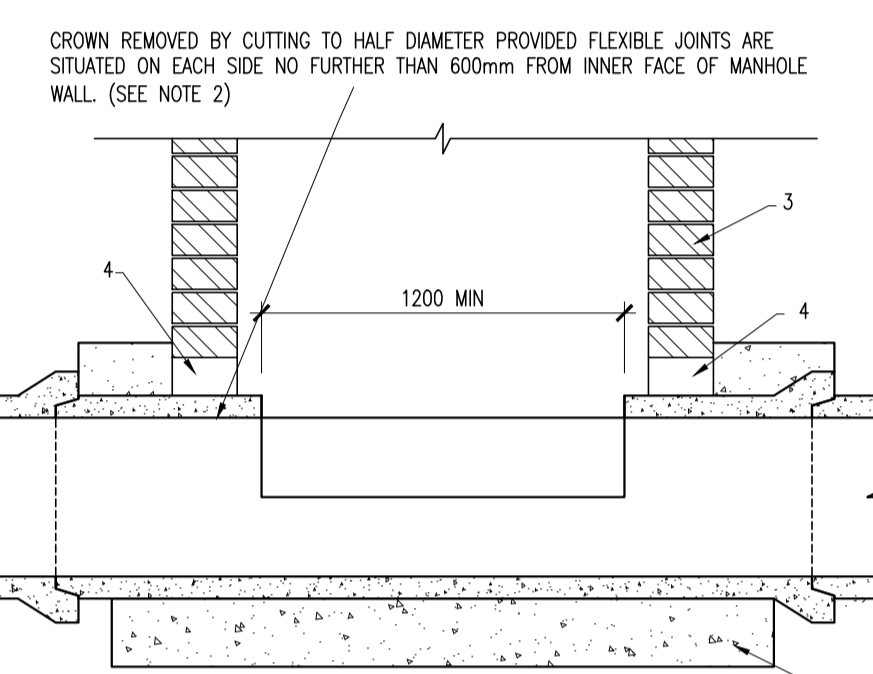


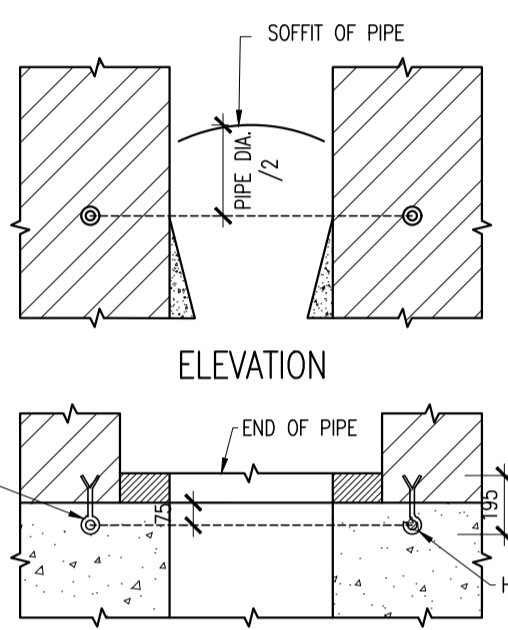
**SECTION A-A**  
**SECTION B-B**  
**TYPE A MANHOLE**  
MANHOLE DETAILS FOR PIPE DIA's 150, 225, 300, 375 & 450mm.  
DEPTH TO INVERT LESS THAN 1.0m.



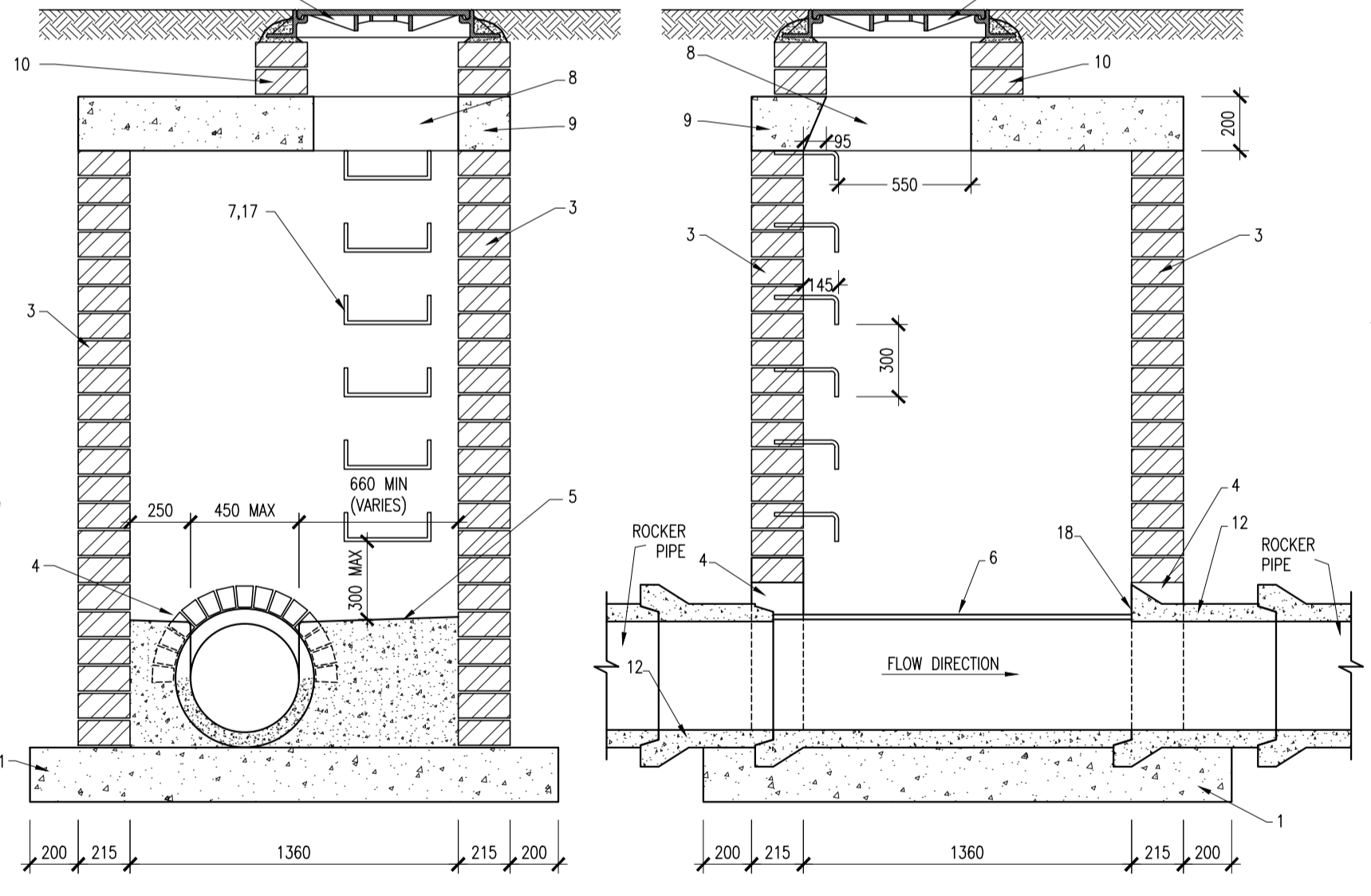
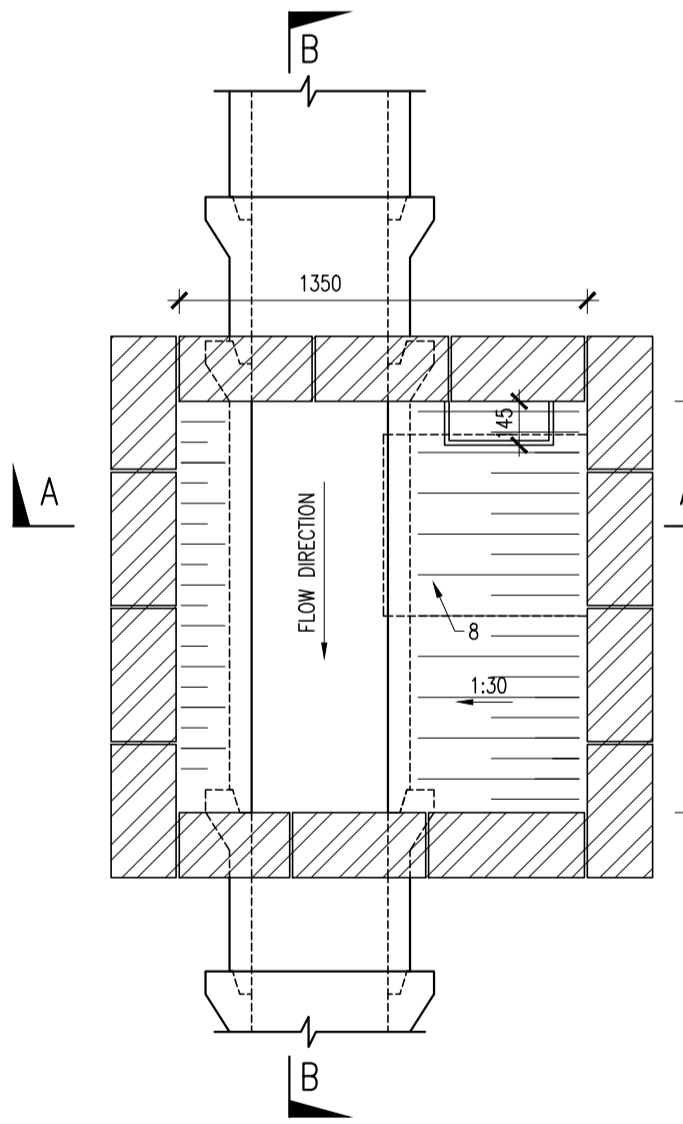
**SECTION C-C**  
**STANDARD RUNG**  
HOT DIP GALVANIZED.  
(IRON STEPS NOT PERMITTED)



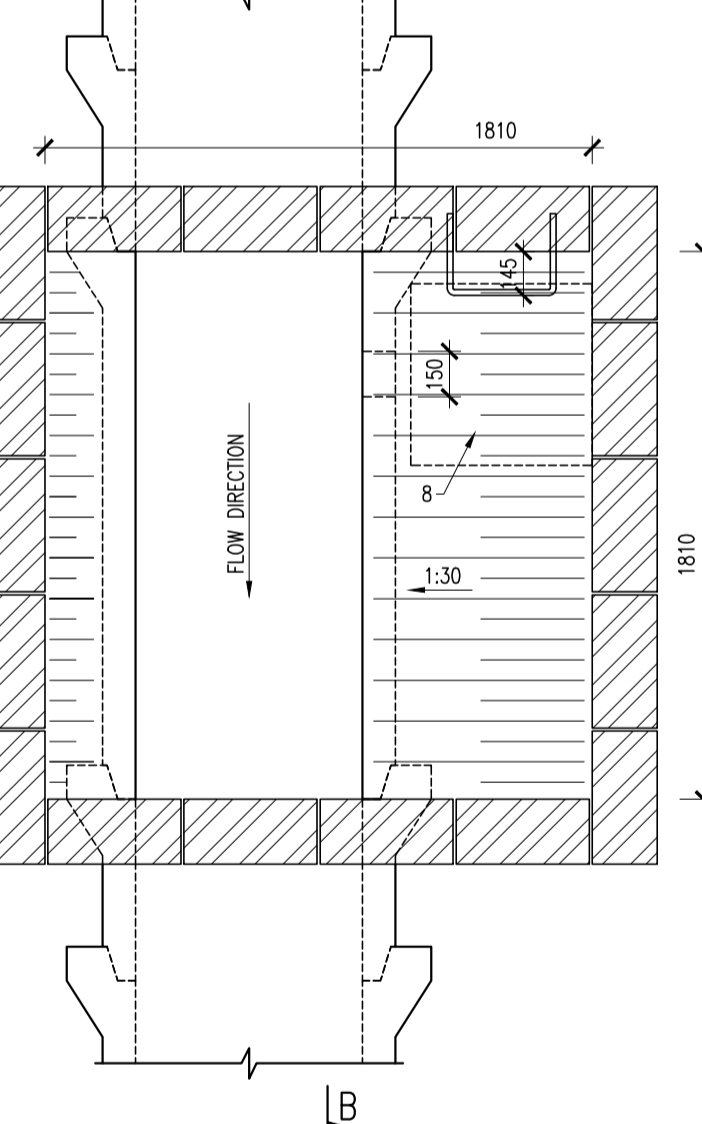
**ALTERNATIVE METHOD OF FORMING CHANNEL THROUGH MANHOLE**



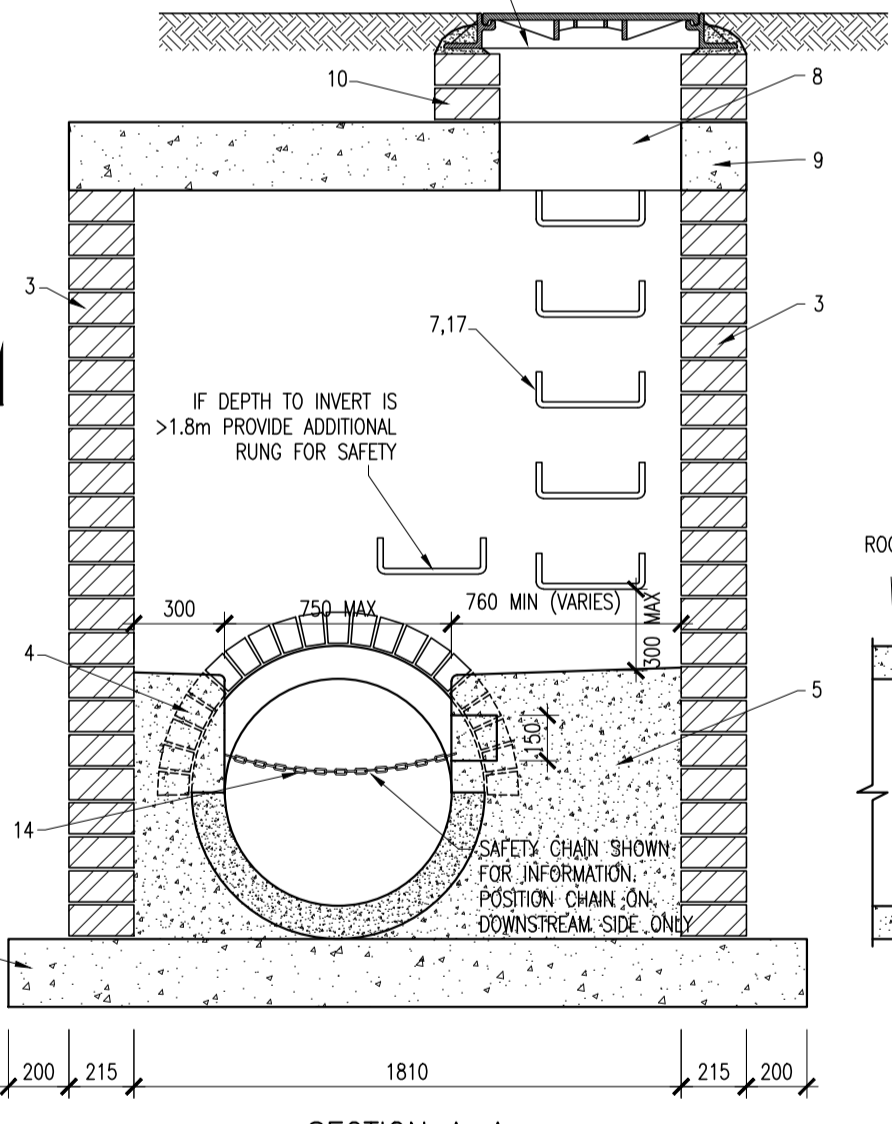
**SAFETY CHAIN, HOOK AND EYE PLAN**



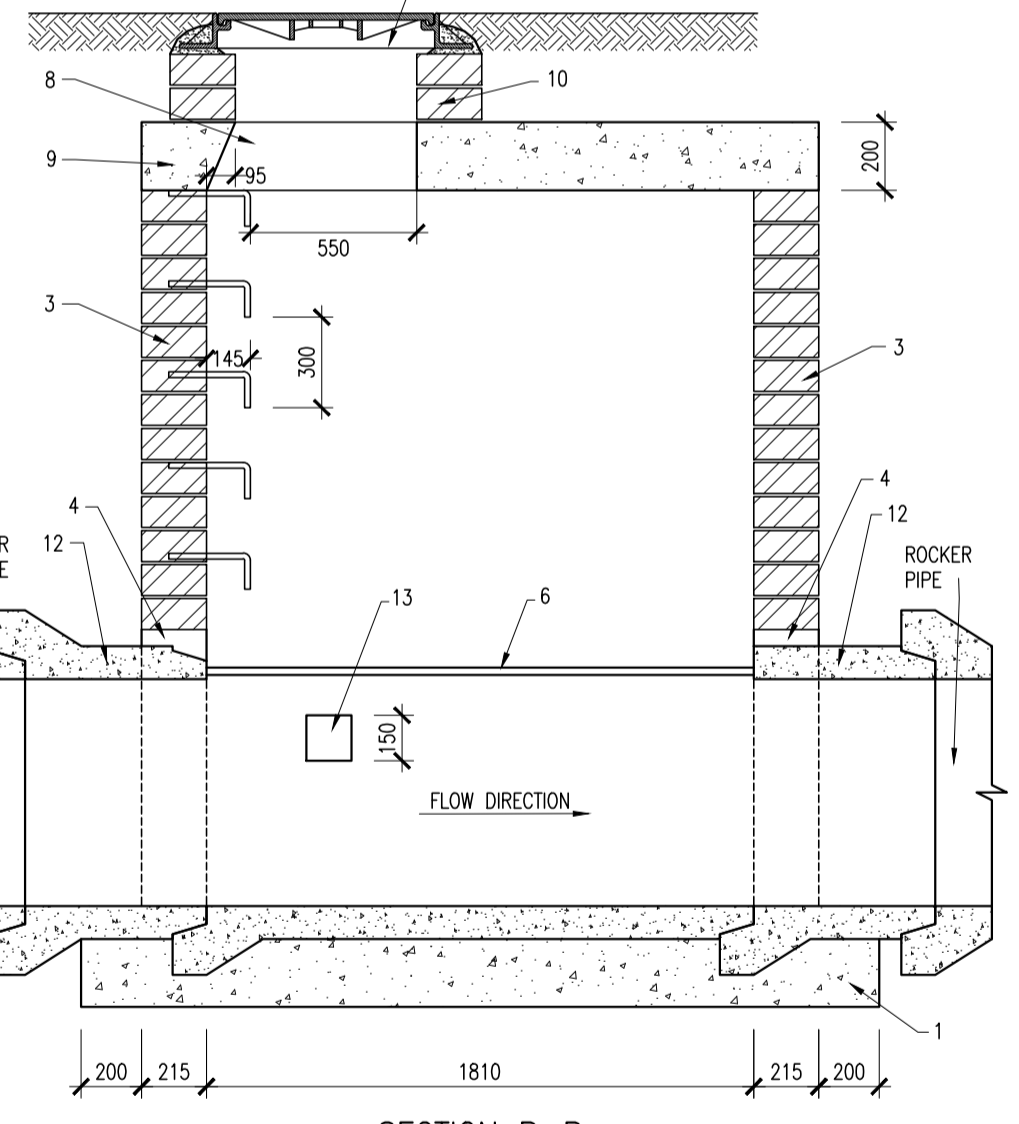
**SECTION A-A**  
**SECTION B-B**  
**TYPE B MANHOLE**  
MANHOLE DETAILS FOR PIPE DIA's 225, 300, 375 & 450mm.  
DEPTH TO INVERT GREATER THAN 1.0m & LESS THAN 3.0m.



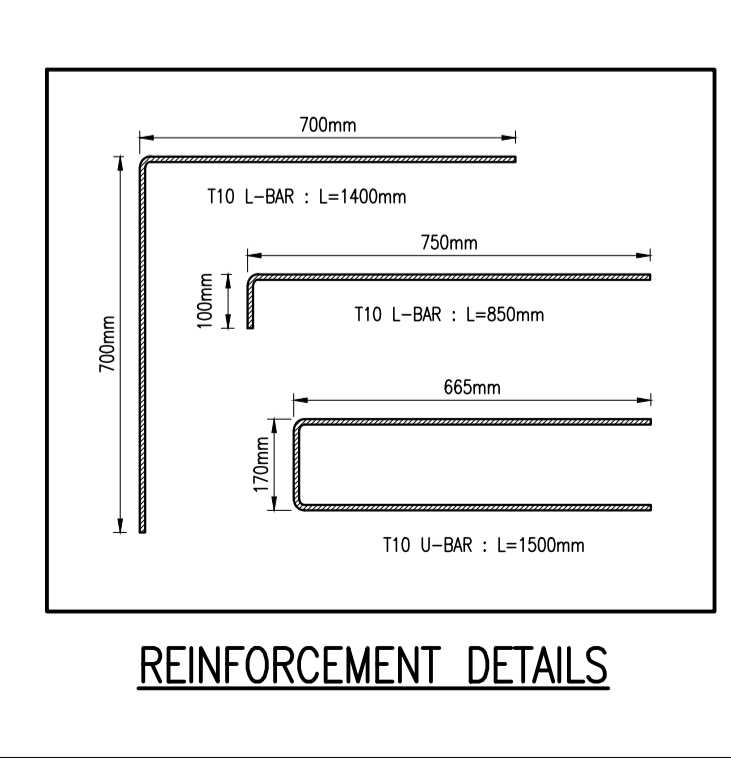
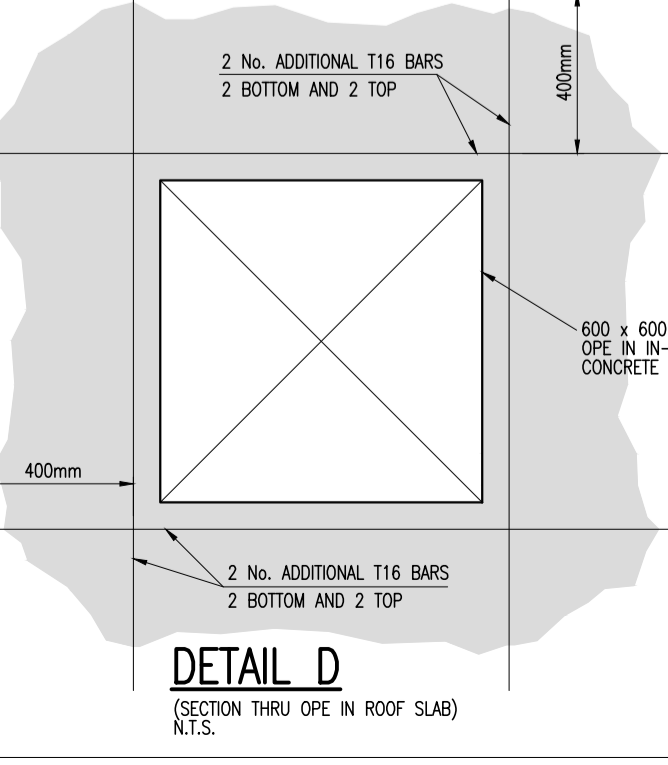
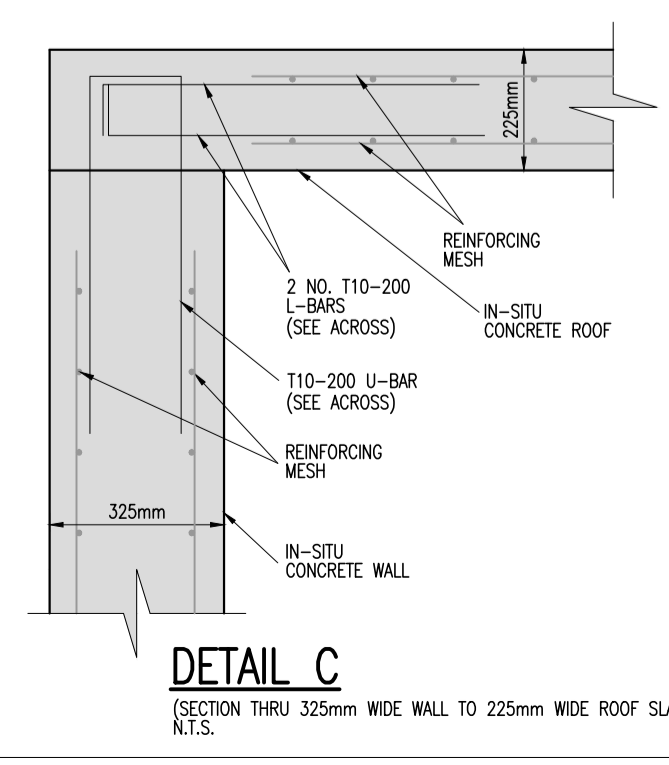
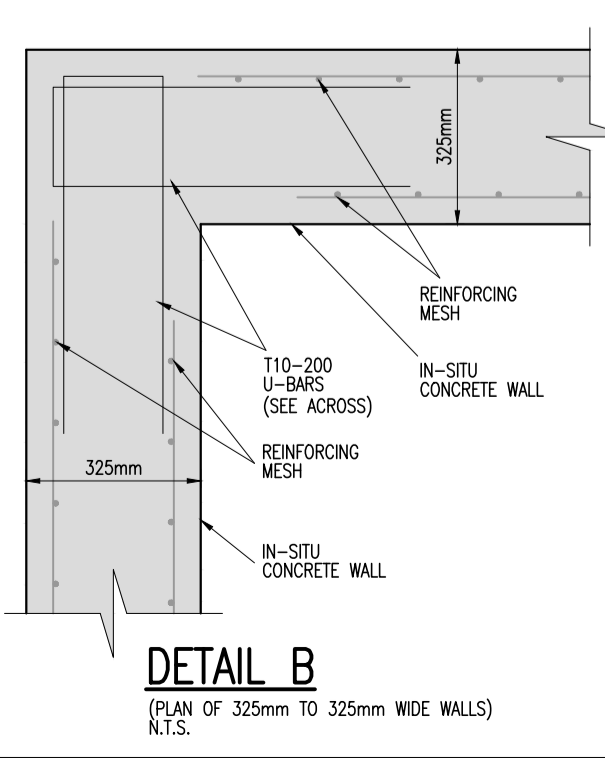
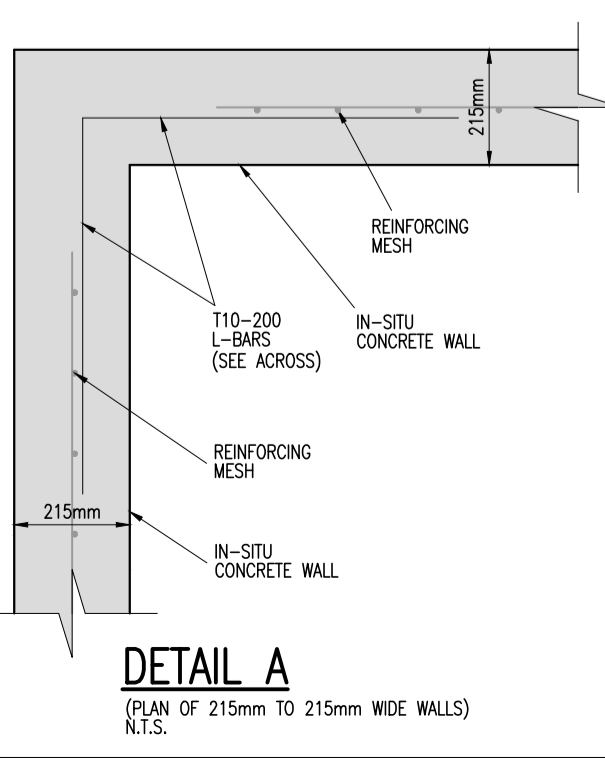
**PLAN BELOW ROOF SLAB**



**SECTION A-A**  
**TYPE D MANHOLE**  
MANHOLE DETAILS FOR PIPE DIA's 525, 600, 675 & 750mm.  
DEPTH TO INVERT 1.0m TO 3.0m.



**SECTION B-B**



**NOTE:**  
ALL MANHOLE COVERS, DUCT COVERS, VALVE COVERS, etc. IN VERTICES / SLOPES TO HAVE 225 WIDE x 150 DEEP CONCRETE SURROUND.

ON ORIGINAL  
0 10 20 30 40 50mm

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NO CHANGES OF WHATSOEVER NATURE ARE TO BE MADE TO ANY DETAILS SET OUT OR CONTAINED IN ANY DBFL SPECIFICATIONS OR DRAWINGS UNLESS THE EXPRESS CONSENT HAS BEEN OBTAINED IN ADVANCE, IN WRITING, FROM DBFL.

NOTES:

SOURCE = GREATER DUBLIN REGIONAL CODE OF PRACTICE V6.0

- 225mm THK CL 200/20mm CONCRETE FOUNDATIONS WITH 1 NO. LAYER OF A393 REINFORCING MESH.
- PRE-FORMED HALF DUCT 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 THE MANHOLE WALL.
- MANHOLE CONSTRUCTION:
  - FOR SURFACE WATER MANHOLES HIGH-DENSITY BLOCKS TO CL.510 OF I.S.20 PART 1: 1987 OR CL.30N/20mm INSITU CONCRETE.
  - BLOCKWORK SHALL BE BEDDED AND JOINTED USING MORTAR TO I.S.406E. BEDS AND VERTICAL JOINTS SHALL BE COMPLETELY FILLED WITH MORTAR AS A BLOCK AND JOINT.
  - JOINTS SHALL BE FLUSH POINTED AS THE WORK PROCEEDS.
  - ALL TOLL MANHOLES MUST BE FACED IN SOLID ENGINEERING BRICK (MIN. CLASS A OR B), OR INSITU CONCRETE FOR 1 METRE ABOVE BENCHING LEVEL.
  - BRICK TO BE BONDED TO BLOCKWORK USING ENGLISH GARDEN WALL BOND.
  - WHERE BRICK IS BONDED TO BLOCKWORK, INTERNAL MANHOLE DIMENSIONS SHOWN ARE MEASURED FROM THE INSIDE FACE OF BRICKWORK.
  - WHERE MANHOLES ARE CONSTRUCTED OF IN-SITU CONCRETE A MINIMUM OF 1 NO. LAYER OF A393 REINFORCING MESH TO BE PROVIDED IN WALLS AND SLABS.
  - RELIEVING ARCH FORMED BY 215x103x65 SOLID ENGINEERING BRICK CLASS A OR B AS PER DRAWING. RELIEVING ARCHES USED IN BRICK OR BLOCK WORK MANHOLES TO EXTEND OVER FULL THICKNESS OF WALL. A DOUBLE ARCH IS TO BE FORMED FOR PIPE DIAMETERS GREATER THAN 600mm.
  - BENCHING FINISHED IN 2:1 SAND-CEMENT MORTAR WITH A SMOOTH TROWEL FINISH, AT 1 IN 30 SLOPE TOWARDS CHANNEL.
  - STANDARD RINGS AT 300 CRS VERTICALLY AND GALVANIZED TO LATEST VERSION OF BS 729 OR EQUIVALENT. NOTE: STEP IRONS ARE NOT ACCEPTABLE.
  - 600mm SQUARE OPE IN ROOF SLAB.
  - PRECAST R.C. ROOF SLAB SHALL BE 200mm THICK IN CLASS 30N/20mm, WITH 40mm COVER TO STEEL.
  - ROOF SLAB = 35N/20mm INSITU CONCRETE, CEMENT CONTENT 300kg/m<sup>3</sup>, WATER/CEMENT RATIO 0.6. PROVIDE 2 LAYERS OF REINFORCING MESH REF. A393 @ 6.16kg/m WITH MIN. 50mm COVER.
  - 1 TO 2 COURSES OF SOLID ENGINEERING BRICKS CL.8 TO I.S.91:1983 SET IN 1:3 CEMENT AND MORTAR.
  - CHAMBER BRICKS LOCKED OR SIMILAR APPROVED CLASS D400 OR E600 CIRCULAR MANHOLE COVER AND FRAME TO IS/EN 124, 150mm DEEP FRAME FOR ROADS AND 100mm DEEP FOR FOOTPATHS AND GREEN AREAS. NON-HOOK DESIGN, 7 CLOSED KEYWAYS IN EACH COVER, MANUFACTURED FROM SPHEROIDAL GRAPHITE CAST IRON (DUCTILE CAST IRON), 600 x 600 (600 DIA) CLEAR OPENING. COVER AND FRAME COATED IN BITUMEN OR OTHER APPROVED MATERIAL. COVER TO HAVE A MINIMUM MASS OF 14kg/m<sup>2</sup>. FRAME BEARING AREA SHALL BE 80,000mm<sup>2</sup>. FRAMES SHALL BE DESIGNED TO PREVENT COVERS FALLING INTO MANHOLE. FRAMES SHALL BE BEDDED ON APPROVED MORTAR TO MANUFACTURERS INSTRUCTIONS.
  - SHORT LENGTH PIPE AND PIPE JOINT EXTERNAL TO MANHOLE SHALL NOT EXCEED 600mm FROM THE INNER FACE OF MANHOLE WALL.
  - TOE HOLES OF 230mm MINIMUM DEPTH AND GALVANIZED STEEL SAFETY RAILINGS TO BE PROVIDED IN BENCHING OF SEWERS GREATER THAN 525mm DIA. AND DEPTH TO INVERT >3m FOR ACCESS TO INVERT.
  - A SAFETY CHAIN IS TO BE PROVIDED ON PIPES THAT EXCEED 450mm IN DIAMETER. MILD STEEL SAFETY CHAIN SHALL BE 10mm NOMINAL SIZE GRADE M10 NON-CALIBRATED CHAIN, TYPE 1, COMPLYING WITH BS.4942 PART 2 OR EQUIVALENT. WHEN DEPTH OF MANHOLES TO INVERT IS GREATER THAN 3m, LADDERS SHALL BE USED INSTEAD OF RUNGS TO BS.4211 OR EQUIVALENT EXCEPT THAT STRINGERS SHOULD BE NOT LESS THAN 85mm x 12mm IN SECTION AND RUNGS 25mm IN DIAMETER. FIXED LADDERS SHOULD MEET THE DIMENSIONAL REQUIREMENTS OF BS.4211 OR EQUIVALENT.
  - 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 LADDERS, RUNGS, HANDRAILS, SAFETY CHAINS ETC. SHALL BE HOT DIP GALVANIZED TO BS.729 OR EQUIVALENT.
  - PIPE SHOULD BE CUT FLUSH WITH THE INSIDE SURFACE OF THE MANHOLE WALL SO THAT THE CHANNEL EXTENDS THE FULL LENGTH OF THE MANHOLE.
  - ALL MANHOLES SHALL BE WATER TIGHT TO THE SATISFACTION OF THE ENGINEER.
  - FORMWORK TO REINFORCED CONCRETE AND MASS CONCRETE SHALL COMPLY WITH CLASS 2, SECTION 6.2.7, B.S.8110: PART 1: 1997.
  - FINISH TO THE TOP OF THE SLABS SHALL COMPLY WITH TYPE A, SECTION 6.2.7, B.S.8110: PART 1: 1997.
  - PLAN DIMENSIONS OF MANHOLES ARE BASED ON BLOCK WORK HAVING A CO-ORDINATING SIZE OF 450 x 225 x 100.
  - MANHOLES ARE DESIGNED TO BS.8005 AND WALL THICKNESS TO BS.365 BLOCK WORK DESIGN CODE TAKING GRANULAR FILL PRESSURE AND H.B. SURCHARGE.
  - REINFORCEMENT TO SLABS TO ENGINEERS DETAILS.
  - FOR MANHOLES >3m DEPTH TO INVERT USE 30N/20mm INSITU CONCRETE. PROVIDE 2 LAYERS OF REINFORCING MESH REF. A393 @ 6.16kg/m WITH MIN. 50mm COVER.
  - ADDITIONAL REINFORCEMENT TO BE SUPPLIED OVER PIPE CROWN.
  - MANHOLE OPENINGS TO BE SITUATED FURTHEST FROM THE NEAREST CARBARIWAY. MANHOLE STEPS / ACCESS TO BE POSITIONED TO ALLOW VIEWING OF INCOMING TRAFFIC.
  - PROVIDE 2 NO. 300mm LONG T10 DOWELS @ 200mm c/c FROM FOUNDATIONS TO WALLS.
  - PROVIDE REINFORCEMENT TO WALL INTERSECTIONS TO DETAIL SHOWN.
  - WHERE IN-SITU ROOF SLAB IS PROVIDED USE REINFORCEMENT TO WALLS TO DETAIL SHOWN.

GENERAL NOTES:

- ALL BRICK TO BE SOLID ENGINEERING BRICK CLASS A OR B.
- DISTANCE FROM THE TOP RUNG OF THE LADDER TO GROUND LEVEL MUST BE MAXIMUM OF 500mm.

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|--------------------------|------------|---------------------|-----|-------|
| 0                        | 10-06-22   | ISSUED FOR PLANNING | CDC | LMCL  |
| rev                      | date       | description         | by  | chkd. |
| STATUS CODES             |            |                     |     |       |
| purpose                  | acceptance |                     |     |       |
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project ref.  
**MIXED USE DEVELOPMENT-CHADWICKS. SWORDS ROAD, SANTRY.**

drawing title  
**SURFACE WATER DETAILS SHEET 1 OF 6**

client  
**DWYER NOLAN DEVELOPMENTS**

|                                   |          |       |            |
|-----------------------------------|----------|-------|------------|
| designed by                       | author   | scale | sheet size |
| LMCL                              | DCH      | VALUE | A1         |
| drawing no.                       | revision |       |            |
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