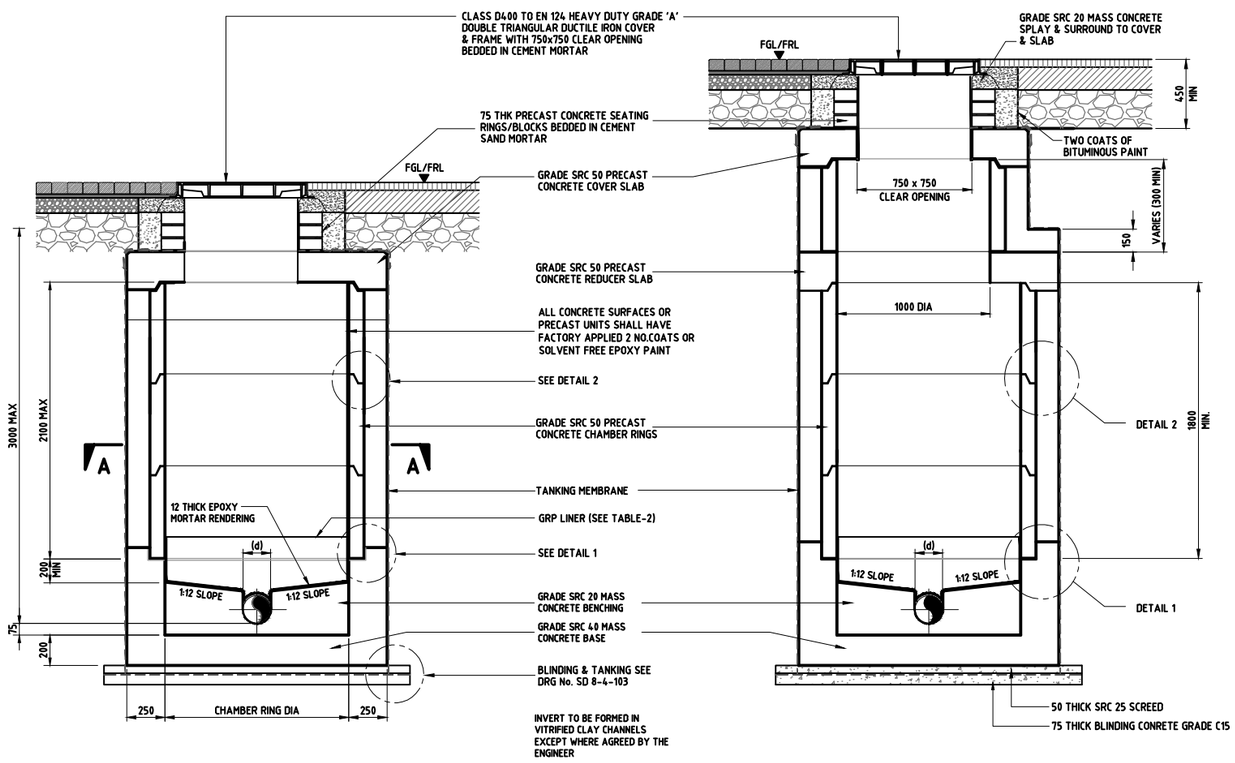
(COVER DETAILS SHOWN ARE FOR PAVED AREAS ONLY)



TYPICAL CROSS SECTION
PRECAST MANHOLE TYPE 1

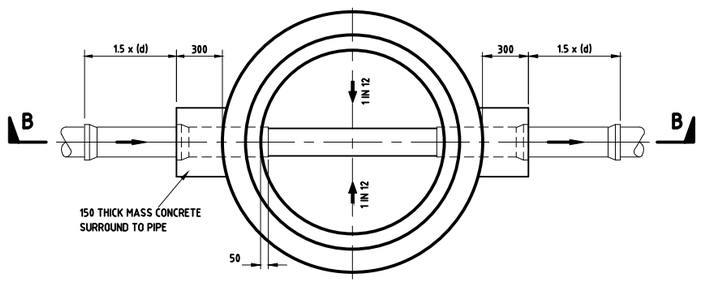
TYPICAL CROSS SECTION
PRECAST MANHOLE TYPE 2 WITH ACCESS SHAFT

TABLE 1

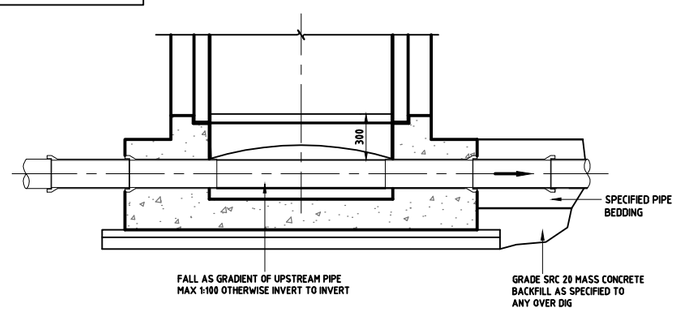
PRECAST MANHOLE DETAILS					
PIPE DIA (d)	150 - 300	350 - 450	500 - 800	900 - 1000	1100 - 1400
CHAMBER RING DIA	1200	1500	1800	2100	2400

TABLE 2

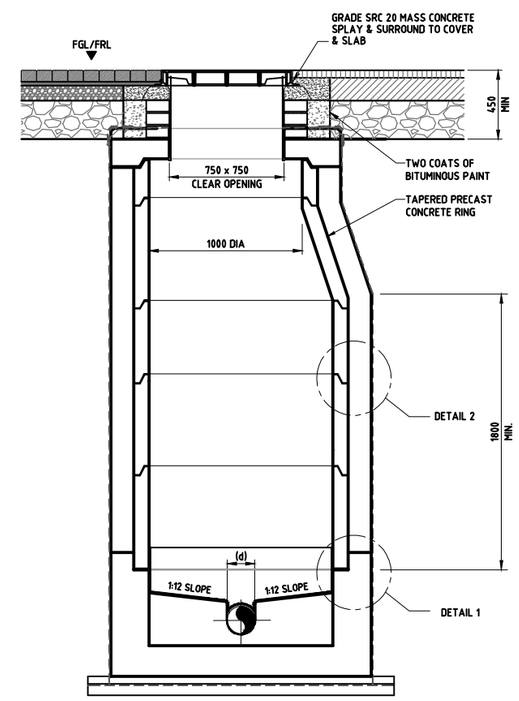
INTERNAL LININGS	
CONCRETE MANHOLES	GRP LINER TO WALLS AND BENCHING TO 300mm ABOVE INLET PIPE CROWN LEVEL THEN 2 COATS OF SOLVENT FREE EPOXY PAINT TO ALL REMAINING INTERNAL SURFACES
POLYMER RESIN CONCRETE (PRC) MANHOLES	NO LINING TO WALLS AND COVER SLAB REQUIRED. IF PRC NOT USED FOR BENCHING, GRP LINING TO BENCHING TO BE USED AS PER QCS.



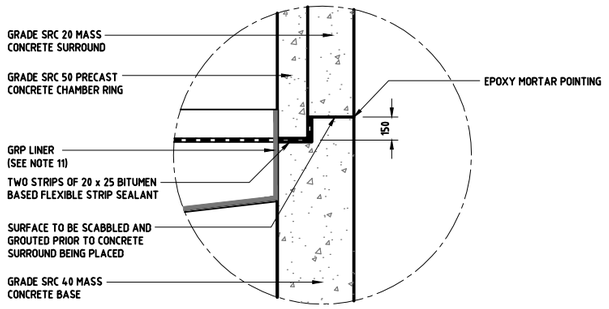
SECTION A-A



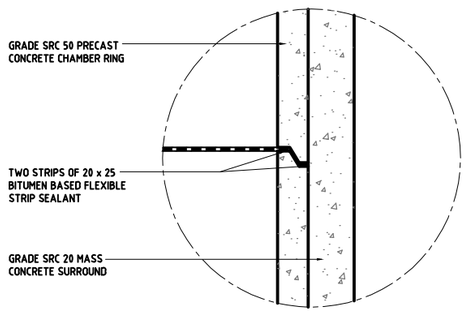
SECTION B-B



TYPICAL CROSS SECTION
PRECAST MANHOLE TYPE 3 WITH TAPERED ACCESS SHAFT



DETAIL 1



DETAIL 2

PRECAST CONCRETE CONSTRUCTION JOINT DETAILS

ALL JOINTING SURFACES TO BE PAINTED WITH PRIMER PRIOR TO APPLICATION OF STRIP SEALANT

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT Q.C.S. UNLESS OTHERWISE AGREED WITH THE ENGINEER.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRG Nos. SD 8-4-301 & SD 8-4-302.
4. ALL CONCRETE SHALL BE MANUFACTURED FROM SULPHATE RESISTING CEMENT.
5. MANHOLE COVERS SHALL BE LOOSE BOLTED TOGETHER.
6. SEE DRAWING No. SD 8-4-106 FOR STRUCTURAL NOTES AND DETAILS.

CONSTRUCTION NOTES:

7. MANHOLES TO BE CONSTRUCTED FROM PRECAST CONCRETE CHAMBER RINGS WITH IN-SITU MASS CONCRETE SURROUND. A COMBINATION OF 300 & 600mm DEEP RINGS TO BE USED TO SUIT DEPTH TO INVERT. FURTHER VARIATIONS TO MANHOLE HEIGHT MAY BE MADE BY VARYING THE HEIGHT OF IN-SITU WALL ABOVE CROWN OF PIPE AND/OR SUPPORT TO FRAME, WITHIN STATED LIMITS.
8. CONSTRUCTION JOINTS IN CONCRETE SURROUND SHALL BE FORMED ONLY AT MID-HEIGHT OF CHAMBER RINGS OR 150mm ABOVE SHAFT REDUCER SLABS.
9. ALTERNATIVELY MANHOLES MAY BE CONSTRUCTED FROM IN-SITU MASS CONCRETE. THE CONTRACTOR MUST SUBMIT FULL DETAILS FOR APPROVAL BY THE ENGINEER.
10. ALL EXTERNAL FACES OF CONCRETE TO BE TANKED AS SHOWN ON DRG No. SD 8-4-103.
11. FOR DETAILS OF BENCHING & BRANCH PIPES SEE DRG No. SD 8-4-301.
12. ALL INCOMING AND THE OUT GOING PIPES SHALL BE LAID SOFFIT TO SOFFIT UNLESS NOTE-13 APPLIES.
13. WHERE THE INVERT OF ANY INCOMING BRANCH PIPE IS GREATER THAN 600mm ABOVE THE INVERT OF THE OUTGOING PIPE THE FOLLOWING DETAILS WILL APPLY :-
    a. DIFFERENCE IN INVERT 600-1200mm - RAMP CONNECTION (SEE DRG. SD 8-4-302)
    b. DIFFERENCE INVERT GREATER THAN 1200mm - BACKDROP CONNECTION (SEE DRG. No. SD 8-4-302)
16. PREFABRICATED GRP RINGS MAY BE USED AS AN ALTERNATIVE TO CONCRETE AND SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER.
17. WHERE MANHOLES ARE LOCATED IN A CARRIAGEWAY WITH A POSTED SPEED LIMIT OF 100KM/HR. OR GREATER, CLASS E600 COVERS ARE TO BE USED.

NOTES APPLICABLE TO BACKDROP MANHOLES:

FOR SURFACE WATER ONLY SYSTEMS OF 600 DIAMETER OR LESS A BACKDROP IS NOT REQUIRED. A BACKDROP SHALL BE PROVIDED FOR PIPES 700 DIAMETER AND ABOVE.

FOR SURFACE WATER SYSTEMS THAT INCLUDE GROUND WATER FLOWS, BACKDROPS SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING CRITERIA.

WHERE THERE IS A DIFFERENCE IN LEVEL BETWEEN THE INVERT LEVEL OF THE INCOMING AND OUTGOING PIPES THE FOLLOWING RULES APPLY:

a) WHERE THE DIFFERENCE IN LEVEL IS LESS THAN 600 THE PIPE CONNECTION MAY BE DIRECT THROUGH THE MANHOLE, OR GRADIENT ADJUSTED TO SUIT. DIRECT CONNECTION SHALL NOT DISCHARGE ONTO THE BENCHING

b) WHERE THE DIFFERENCE IN LEVEL IS GREATER THAN 600 AND LESS THAN 1200 A RAMP BACKDROP SHALL BE CONSTRUCTED

c) WHERE THE DIFFERENCE IS GREATER THAN 1200 AND LESS THAN 8000 A VERTICAL BACKDROP SHALL BE CONSTRUCTED.

d) EXTERNAL BACKDROPS ARE PREFERRED. INTERNAL BACKDROPS MAY BE USED WHERE AN EXTERNAL BACKDROP IS NOT POSSIBLE, SUBJECT TO THE APPROVAL OF THE ENGINEER. INTERNAL BACKDROPS SHALL BE MAXIMUM 300 DIAMETER.

e) VORTEX DROP TO BE USED WHEN DIFFERENCE IN LEVEL IS GREATER THAN 8000 AND FLOW IS GREATER THAN 30 L/SEC OR VELOCITY IS GREATER THAN 12M/S. TYPE OF VORTEX DROP AND DESIGN TO BE APPROVED BY THE ENGINEER

f) WHEN FLOWS AND VELOCITIES ARE SUCH THAT BACKDROPS AND VORTEX DROPS ARE NOT APPROPRIATE OTHER STRUCTURES, EG STEPPED CASCADE, CHUTES, BAFFLED PIPELINES ETC. MAY BE PROPOSED FOR THE APPROVAL OF THE ENGINEER. REFER TO DRAWING SD 8-4-320 FOR GUIDANCE ON SELECTION OF STRUCTURES

Rev.	Date	Revision Details	Appd.
5	OCT 19	ISSUED FOR USE	
4	APR 19	ISSUED FOR USE	
3	01 MAR 19	UPDATED ISSUE	
2	01MAY16	ISSUED FOR USE	
1	01DEC15	ISSUED FOR USE	

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QCS Section:
Section 8 - Drainage Works
Part 4 - Pipe Installation

Drawing Title:
SURFACE WATER PRECAST MANHOLE DETAILS

Approved:	Sheet No: 1 OF 1
Date: OCT 2019	Scale: 1:20 on A1
Drawing Number: SD 8-4-307	Revision: 5