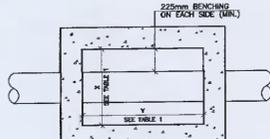


MANHOLE TYPE A1
DN 150# - 900#
UP TO 45° BEND
DEPTH FROM COVER TO SOFFIT OF PIPE <1.5m

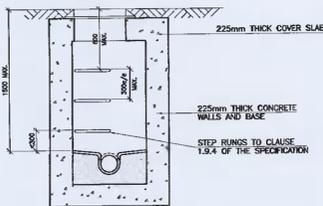


TYPICAL PLAN OF MANHOLE

DN OF LARGEST PIPE IN MANHOLE	MANHOLE DIMENSIONS		CLEAR OPE SIZES FOR COVER		NOTE
	X (mm)	Y (mm)	RECTANGULAR LENGTH x WIDTH	CIRCULAR DIAMETER	
< 150	675	1200	750x675 (NOTE 3)	600#	NOTE 4
225	675	1200	1200x675	600#	NOTE 4
300	750	1200	1200x675	600#	NOTE 4
375-450	900	1350	1200x675	600#	NOTE 4
500-700	1150	1500	1200x675	600#	NOTE 4
750-900	1350	1800	1200x675	600#	NOTE 4
>900	DN+450	1800	1200x675	600#	NOTE 4

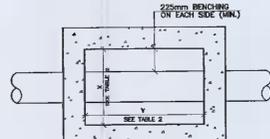
TABLE 1

- NOTES:
- WHERE THERE ARE MORE THAN TWO BRANCHES ENTERING THE MAIN LINE 'Y' IS THE LARGER OF 'Y' IN THE TABLE ABOVE OR 300mm FOR EACH INLET OR INLET ENTRY ON THE SIDE HAVING MOST BRANCHES PLUS AN ALLOWANCE AT THE DOWNSTREAM END FOR ANGLE OF ENTRY.
 - PIPES MAY BE POSITIONED OFF CENTRE BUT A MINIMUM WIDTH OF 225mm BENCHING MUST BE PROVIDED ON EACH SIDE OF THE PIPE.
 - MAY BE REDUCED TO 600x600 WHERE:
 - (i) THE CONTRIBUTION OF THE MANHOLE CHAMBER PERMITS A SAFE SYSTEM OF WORK
 - (ii) REQUIRED BY HIGHWAY LOADING CONSIDERATIONS SUBJECT TO A SAFE SYSTEM OF WORK SPECIFIED.
 - CIRCULAR OPE NOT PERMITTED DUE TO WORKING SPACE REQUIRED.
 - MANHOLES ON SURFACE WATER SEWERS MAY BE CONSTRUCTED IN SOLID BLOCKWORK IN ACCORDANCE WITH CLAUSE 1.9.1 OF THE SPECIFICATION.



TYPICAL SECTION THROUGH MANHOLE

MANHOLE TYPE A2
DN 150# - 900#
UP TO 45° BEND
DEPTH FROM COVER TO SOFFIT OF PIPE 1.5m - 3.0m

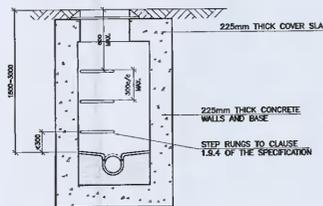


TYPICAL PLAN OF MANHOLE

DN OF LARGEST PIPE IN MANHOLE	MANHOLE DIMENSIONS		CLEAR OPE SIZES FOR COVER		NOTE
	X (mm)	Y (mm)	RECTANGULAR LENGTH x WIDTH	CIRCULAR DIAMETER	
225	725	1200	1000x600	600#	
300	1075	1200	600x600	600#	
375-450	1225	1350	600x600	600#	
500-700	1475	1500	600x600	600#	
750-900	1675	1800	600x600	600#	
>900	DN+775	1800	600x600	600#	

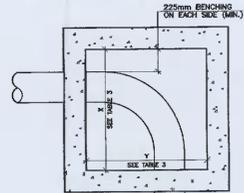
TABLE 2

- NOTES:
- WHERE THERE ARE MORE THAN TWO BRANCHES ENTERING THE MAIN LINE 'Y' IS THE LARGER OF 'Y' IN THE TABLE ABOVE OR 300mm FOR EACH INLET OR INLET ENTRY ON THE SIDE HAVING MOST BRANCHES PLUS AN ALLOWANCE AT THE DOWNSTREAM END FOR ANGLE OF ENTRY.
 - PIPES MAY BE POSITIONED OFF CENTRE BUT A MINIMUM WIDTH OF 225mm BENCHING MUST BE PROVIDED ON EACH SIDE OF THE PIPE.
 - MANHOLES ON SURFACE WATER SEWERS MAY BE CONSTRUCTED IN SOLID BLOCKWORK IN ACCORDANCE WITH CLAUSE 1.9.1 OF THE SPECIFICATION.



TYPICAL SECTION THROUGH MANHOLE

MANHOLE TYPE A3
DN 150# - 900#
45° TO 90° BEND
DEPTH FROM COVER TO SOFFIT OF PIPE <1.5m

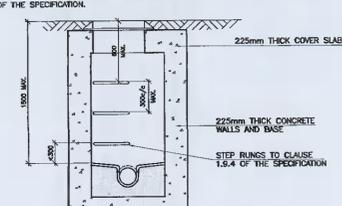


TYPICAL PLAN OF MANHOLE

DN OF LARGEST PIPE IN MANHOLE	MANHOLE DIMENSIONS		CLEAR OPE SIZES FOR COVER		NOTE
	X (mm)	Y (mm)	RECTANGULAR LENGTH x WIDTH	CIRCULAR DIAMETER	
< 150	1200	1200	750x675 (NOTE 3)	600#	NOTE 4
225	1200	1200	1200x675	600#	NOTE 4
300	1200	1200	1200x675	600#	NOTE 4
375-450	1350	1350	1200x675	600#	NOTE 4
500-700	1500	1500	1200x675	600#	NOTE 4
750-900	1800	1800	1200x675	600#	NOTE 4
>900	DN+450	DN+450	1200x675	600#	NOTE 4

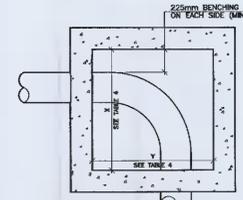
TABLE 3

- NOTES:
- WHERE THERE ARE MORE THAN TWO BRANCHES ENTERING THE MAIN LINE 'Y' IS THE LARGER OF 'Y' IN THE TABLE ABOVE OR 300mm FOR EACH INLET OR INLET ENTRY ON THE SIDE HAVING MOST BRANCHES PLUS AN ALLOWANCE AT THE DOWNSTREAM END FOR ANGLE OF ENTRY.
 - PIPES MAY BE POSITIONED OFF CENTRE BUT A MINIMUM WIDTH OF 225mm BENCHING MUST BE PROVIDED ON EACH SIDE OF THE PIPE.
 - MAY BE REDUCED TO 600x600 WHERE:
 - (i) THE CONTRIBUTION OF THE MANHOLE CHAMBER PERMITS A SAFE SYSTEM OF WORK
 - (ii) REQUIRED BY HIGHWAY LOADING CONSIDERATIONS SUBJECT TO A SAFE SYSTEM OF WORK SPECIFIED.
 - CIRCULAR OPE NOT PERMITTED DUE TO WORKING SPACE REQUIRED.
 - MANHOLES ON SURFACE WATER SEWERS MAY BE CONSTRUCTED IN SOLID BLOCKWORK IN ACCORDANCE WITH CLAUSE 1.9.1 OF THE SPECIFICATION.



TYPICAL SECTION THROUGH MANHOLE

MANHOLE TYPE A4
DN 150# - 900#
45° TO 90° BEND
DEPTH FROM COVER TO SOFFIT OF PIPE 1.5m - 3.0m

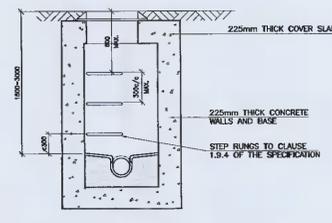


TYPICAL PLAN OF MANHOLE

DN OF LARGEST PIPE IN MANHOLE	MANHOLE DIMENSIONS		CLEAR OPE SIZES FOR COVER		NOTE
	X (mm)	Y (mm)	RECTANGULAR LENGTH x WIDTH	CIRCULAR DIAMETER	
225	1200	1200	600x600	600#	
300	1200	1200	600x600	600#	
375-450	1350	1350	600x600	600#	
500-700	1500	1500	600x600	600#	
750-900	1800	1800	600x600	600#	
>900	DN+775	DN+775	600x600	600#	

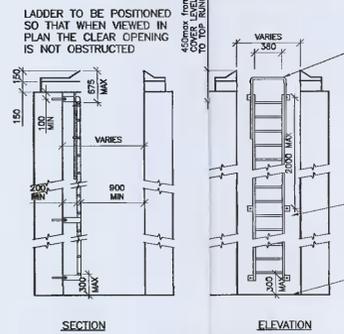
TABLE 4

- NOTES:
- WHERE THERE ARE MORE THAN TWO BRANCHES ENTERING THE MAIN LINE 'Y' IS THE LARGER OF 'Y' IN THE TABLE ABOVE OR 300mm FOR EACH INLET OR INLET ENTRY ON THE SIDE HAVING MOST BRANCHES PLUS AN ALLOWANCE AT THE DOWNSTREAM END FOR ANGLE OF ENTRY.
 - PIPES MAY BE POSITIONED OFF CENTRE BUT A MINIMUM WIDTH OF 225mm BENCHING MUST BE PROVIDED ON EACH SIDE OF THE PIPE.
 - MANHOLES ON SURFACE WATER SEWERS MAY BE CONSTRUCTED IN SOLID BLOCKWORK IN ACCORDANCE WITH CLAUSE 1.9.1 OF THE SPECIFICATION.



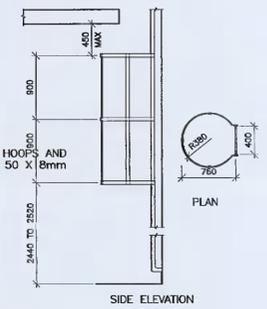
TYPICAL SECTION THROUGH MANHOLE

SAFETY ACCESS LADDER
(TO BE USED ON MANHOLES IN EXCESS OF 3m DEEP)



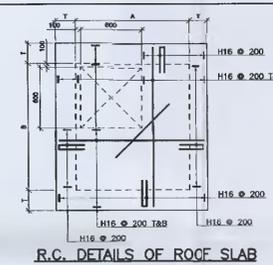
- STRINGERS SHALL BE NOT LESS THAN 65mm X 12mm SECTION.
- STRINGERS SHALL BE ADEQUATELY SUPPORTED AT THE MANHOLE WALLS AT INTERVALS OF NOT MORE THAN 3 METRES. STRINGER SUPPORTS SHALL NOT BE BUILT INTO THE MANHOLE WALL BUT BOLTED TO BUILT IN CLEATS TO FACILITATE REMOVAL.
- RUNGS SHALL NOT BE LESS THAN 22mm DIAMETER AT 300mm MAX. CENTRES WITH 300mm MIN BETWEEN STRINGERS.
- WHERE LADDERS ARE USED A MINIMUM WIDTH OF BENCHING OF 400mm SHALL BE PROVIDED BETWEEN THE LADDER RUNGS AND THE CHANNEL TO PROVIDE A SAFE WORKING AREA.

SAFETY HOOP DETAIL
(TO BE PROVIDED ONLY WHERE PERMITTED BY LOCAL AUTHORITY.)



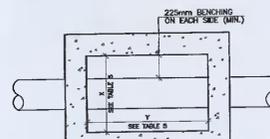
LADDER DETAIL (SEE CLAUSE 1.9.4 OF SPEC.)

- NOTES:
- MANHOLE COVERS AND FRAMES SHALL HAVE MIN. CLEAR OPE AS DETAILED ON THIS DRAWING AND SHALL COMPLY WITH CLAUSE 1.9.7 AND SECTION 2 OF THE SPECIFICATION.
 - A THIRD PARTY TEST REPORT DETAILING COMPLIANCE WITH EN 124 SHALL BE PROVIDED BY THE CONTRACTOR FOR EACH TYPE OF MANHOLE COVER USED.
 - STEP RUNGS AND ACCESS LADDERS SHALL COMPLY WITH THE DETAILS ON THIS DRAWING AND WITH CLAUSE 1.9.4 OF THE SPECIFICATION.
 - ALL MANHOLE COVERS SHALL BE LOCKABLE.
 - WHERE DETAILED IN THE SPECIFICATION MANHOLE COVERS SHALL HAVE CUSTOMISED COVER MARKINGS DETAILING THE TYPE OF SEWERAGE SYSTEM AND COMPANY LOGO OR LOCAL AUTHORITY CREST.
 - POLYETHYLENE FRAME INSERTS OR EQUAL AND APPROVED DEVICES SHALL BE INCORPORATED INTO THE COVER MANUFACTURE TO PREVENT 'ROCKING'.
 - CHANNELS AND BENCHING TO COMPLY WITH CLAUSE 1.9.2 OF THE SPECIFICATION.
 - THE COVER FRAME SHALL BE BEDDED ON TWO TO FOUR COURSES AS NECESSARY OF ENGINEERING BRICKWORK AND HAUNCHED IN CLASS M1 MORTAR.
 - FOR MANHOLES DEEPER THAN 3m FIXED ACCESS LADDERS SHALL BE USED INSTEAD OF STEP RUNGS.
 - CONCRETE IN WALLS, ROOF, FLOOR AND BENCHING SHALL BE TO MIX 'C' (35N/mm²).
 - CONCRETE IN BLINDING TO BE MIX 'A' (10N/mm²) TO A MINIMUM DEPTH OF 75mm.
 - CONCRETE TO WALLS, ROOF, FLOOR AND BENCHING TO BE MIX 'W' IF MANHOLE INVERT LEVEL IS BELOW THE SURROUNDING WATER TABLE OR BELOW MEAN HIGH WATER SPRING TIDE LEVEL.
 - UNLESS OTHERWISE STATED WALLS OF MANHOLES A1-A4, B1 AND B2 TO BE REINFORCED WITH 1 LAYER OF A388 MESH TO EACH FACE. INTERLINKING H8 U-BARS (SHAPE CODE 21) TO BE PROVIDED AT EACH CORNER AT 200 CENTRES AND EACH LEG OF U-BAR TO PROVIDE 325mm LAP WITH MESH.
 - WALLS OF MANHOLE TYPES C1 AND C2 TO BE REINFORCED WITH 1 LAYER OF A388 MESH TO EACH FACE. INTERLINKING H8 U-BARS (SHAPE CODE 21) TO BE PROVIDED IN EACH CORNER AT 200 CENTRES AND EACH LEG OF U-BAR TO PROVIDE 400mm LAP WITH MESH.
 - UNLESS OTHERWISE STATED BASE SLABS OF ALL MANHOLES TO BE REINFORCED WITH 1 LAYER OF A388 (TOP AND BOTTOM) WHERE WALLS OF MANHOLE ARE TO BE REINFORCED WITH MESH H10 STARTER BARS (SHAPE CODE 11) TO BE PROVIDED FROM BASE AT 200mm CENTRES ON EACH FACE. EACH LEG OF STARTER BAR TO PROVIDE 400mm LAP WITH MESH IN WALL AND BASE.
 - REINFORCED IN WALLS & ROOF SHALL HAVE A MINIMUM COVER OF 40mm. CORNERS OF OPE IN ROOF SLABS SHALL BE REINFORCED WITH 2No. H12 STRAIGHT BARS x 400 LONG PLACED 1No. TOP AND 1No. BOTTOM DIAGONALLY ACROSS EACH CORNER.
 - ACCESS LADDERS SHALL BE FITTED WITH SAFETY HOOPS WHERE NO ACCESS SHAFT IS PROVIDED OR ACCESS SHAFT DIMENSIONS EXCEED 1200mm x 600mm.
 - 'DN' DENOTES PIPE DIAMETER.
 - ALL BACKDROP MANHOLES TO BE CONSTRUCTED WITH INSITU CONCRETE.



R.C. DETAILS OF ROOF SLAB

MANHOLE TYPE B1
DN 150# - 900#
UP TO 45° BEND
DEPTH FROM COVER TO SOFFIT OF PIPE 3.0m TO 4.0m
WALL AND COVER SLAB THICKNESS TO BE 225mm
MANHOLE TYPE C1
DN 150# - 900#
UP TO 45° BEND
DEPTH FROM COVER TO SOFFIT OF PIPE EXCEEDING 4.0m
WALL AND COVER SLAB THICKNESS TO BE 300mm

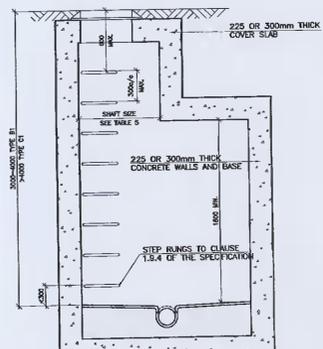


TYPICAL PLAN OF MANHOLE

DN OF LARGEST PIPE IN MANHOLE	MANHOLE DIMENSIONS		CLEAR OPE SIZES FOR COVER		SHAFT SIZE
	X (mm)	Y (mm)	RECTANGULAR LENGTH x WIDTH	CIRCULAR DIAMETER	
225	1000	1200	600x600	600#	NO SHAFT
300	1075	1200	600x600	600#	NO SHAFT
375-450	1225	1350	600x600	600#	800x1350
500-700	1475	1500	600x600	600#	800x1500
750-900	1675	1800	600x600	600#	800x1800
>900	DN+775	1800	600x600	600#	800x1800

TABLE 5

- NOTES:
- WHERE THERE ARE MORE THAN TWO BRANCHES ENTERING THE MAIN LINE 'Y' IS THE LARGER OF 'Y' IN THE TABLE ABOVE OR 300mm FOR EACH INLET OR INLET ENTRY ON THE SIDE HAVING MOST BRANCHES PLUS AN ALLOWANCE AT THE DOWNSTREAM END FOR ANGLE OF ENTRY.
 - PIPES MAY BE POSITIONED OFF CENTRE BUT A MINIMUM WIDTH OF 225mm BENCHING MUST BE PROVIDED ON EACH SIDE OF THE PIPE.



TYPICAL SECTION THROUGH MANHOLE

MANHOLE TYPE B2
DN 150# - 900#
45° TO 90° BEND
DEPTH FROM COVER TO SOFFIT OF PIPE 3.0m TO 4.0m
WALL AND COVER SLAB THICKNESS TO BE 225mm
MANHOLE TYPE C2
DN 150# - 900#
45° TO 90° BEND
DEPTH FROM COVER TO SOFFIT OF PIPE EXCEEDING 4.0m
WALL AND COVER SLAB THICKNESS TO BE 300mm

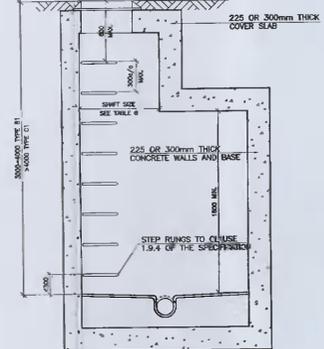


TYPICAL PLAN OF MANHOLE

DN OF LARGEST PIPE IN MANHOLE	MANHOLE DIMENSIONS		CLEAR OPE SIZES FOR COVER		SHAFT SIZE
	X (mm)	Y (mm)	RECTANGULAR LENGTH x WIDTH	CIRCULAR DIAMETER	
225	1200	1200	600x600	600#	NO SHAFT
300	1200	1200	600x600	600#	NO SHAFT
375-450	1350	1350	600x600	600#	800x1350
500-700	1500	1500	600x600	600#	800x1500
750-900	1800	1800	600x600	600#	800x1800
>900	DN+775	DN+775	600x600	600#	800xDN+775

TABLE 6

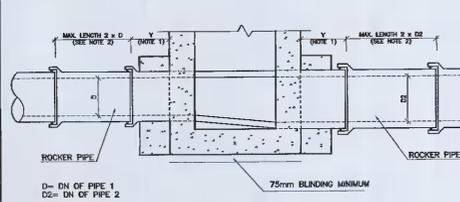
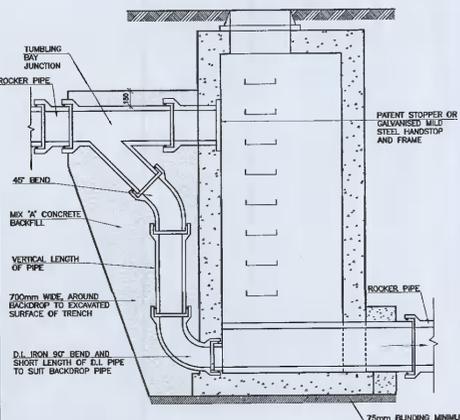
- NOTES:
- WHERE THERE ARE MORE THAN TWO BRANCHES ENTERING THE MAIN LINE 'Y' IS THE LARGER OF 'Y' IN THE TABLE ABOVE OR 300mm FOR EACH INLET OR INLET ENTRY ON THE SIDE HAVING MOST BRANCHES PLUS AN ALLOWANCE AT THE DOWNSTREAM END FOR ANGLE OF ENTRY.
 - PIPES MAY BE POSITIONED OFF CENTRE BUT A MINIMUM WIDTH OF 225mm BENCHING MUST BE PROVIDED ON EACH SIDE OF THE PIPE.



TYPICAL SECTION THROUGH MANHOLE

BACKDROP DETAIL UP TO 375mm DIA.
(To be read in conjunction with standard manhole types)

Diameter of incoming sewer	Diameter of vertical pipe
100mm	100mm
150	150
225	225
300	225
375	225

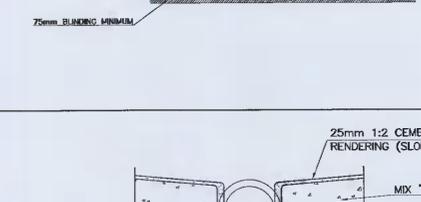
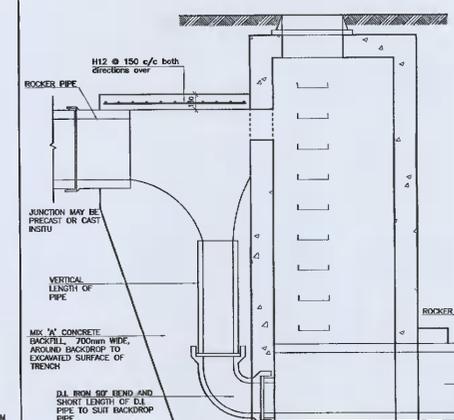


TYPICAL MANHOLE BASE DETAIL

- NOTES:
- 'Y' SHORT LENGTH OF PIPE PROJECTING NOT MORE THAN 450mm BEYOND THE EXTERNAL FACE OF THE MANHOLE. BUILT INTO THE MANHOLE WALLS AND SURROUNDED WITH 150mm THICK 300mm LONG MIX 'A' CONCRETE.
 - ROCKER PIPES DIMENSION '2d' MAY BE VARIED SO AS NOT TO EXCEED 750mm FOR PIPES UP TO 450# AND 1m FOR PIPES UP TO 750#.

BACKDROP DETAIL GREATER THAN 375mm DIA.
(To be read in conjunction with standard manhole types)

Diameter of incoming sewer	Diameter of vertical pipe
450mm	300mm
525	300
600	450
675	450
750	450



BENCHING DETAIL (SEE CLAUSE 1.9.2 OF SPEC.)

STEP RUNG DETAIL (SEE CLAUSE 1.9.4 F SPEC.)

CO1	AP	ISSUED FOR PLANNING	18.11.2021
REV	SUIT	DESCRIPTION	DATE
DRAWING STATUS: ISSUED FOR PLANNING			
CHECKED BY: RON	REVIEWED BY: JM	APPROVED BY: JM	
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CORRIG HOUSE, CORRIG ROAD, SANDYFORD, DUBLIN 18. Tel: 01-295 2321 Fax: 01-295 4541 Email: tjoc@tjoc.ie Web: www.tjoc.ie			
PROJECT: PROPOSED RESIDENTIAL DEVELOPMENT AT GORDON PARK			
CLIENT: GREENWALK DEVELOPMENT LTD.			
DRAWING TITLE: IN-SITU MANHOLE DETAILS			
SCALE: N.T.S.			(A1)
PROJECT - ORIGINATOR - VOLUME - LOCATION - TYPE - ROLE - NUMBER 21003-TJOC-ZZ-ZZ-DR-C-0077			REV: c01