Detailed Maintenance Hole Designs Required When:

The designer is required to produce a scale plan view drawing for concrete MHs with the following:

1. Diameter ≥1500, or
2. 3 or more incoming sewers, or
3. 2 or more drops, or
4. A drop ≥DN300, or
5. Sewer intersection offset from MH centre, or
6. A landing, or
7. New connections are being made to an existing MH.
   In the case of 7, the scale plan shall show existing details and the proposed modifications necessary to ensure structural integrity while achieving the requirements outlined below.
   Existing MHs should be inspected as part of the design process to ensure that they are suitable for connection.

LEGEND:
- SHAFT CENTRE POINT
- PROJECTED SEWERAGE PIPE INTERSECTION

TABLE 308-A: CONCRETE MAINTENANCE HOLE PLAN VIEW DESIGN REQUIREMENTS:

REQUIREMENT ID		REQUIREMENT	REQUIREMENT DETAILS
	A	GRID NORTH	
	B	SCALE	NOMINATE SCALE (RECOMMENDED 1:25 AT A3 SIZE)
GROUND LEVEL	C	FOOTWAY OR ROAD PAVEMENT EDGE	SHOW ANY PAVEMENT EDGE WITHIN 1m OF NECK PERIMETER
	D	OPENING	REFER MRWA-S-313
	E	NECK INSIDE AND OUTSIDE DIAMETER	REFER MRWA-S-313
SHAFT & BASE	F	SHAFT CENTER	EASTING AND NORTHING TO 3 DECIMAL PLACES, MGA ZONE 55
	G	SHAFT INSIDE DIAMETER	SHALL BE AS SMALL AS POSSIBLE WHILE COMPLYING WITH ALL REQUIREMENTS
	H	SHAFT OUTSIDE DIAMETER	EQUALS SHAFT INSIDE DIAMETER + 2 x WALL THICKNESS
	I	BASE DIAMETER	WHERE REQUIRED, EXTEND BASE DIAMETER TO COUNTERACT FLOATATION
	J	VENT PENETRATIONS AND PIPEWORK	IF REQUIRED. NOMINATE INVERT LEVEL AND LOCATION OF VENT & CONNECTION
OPERATIONS AND MAINTENANCE	K	2 X 250 DIAMETER STANDING AREAS	STANDING AREA CANNOT BE ENCUMBERED BY LADDER, DROP PIPE OR CHASE
	L	1 X 750 DIAMETER WORK AREA	WORK AREA CANNOT BE ENCUMBERED BY LADDER OR DROP PIPE
	M	LADDER / STEP IRONS	PROVIDE 375 X 200 AREA ABOVE A CLEAR AREA OF THE BASE
	N	LANDING	REQUIRED IF DEPTH TO TABLE > 9m (YVW or CWW) OR >6m (SEW)
	O	STANDING PLANK	REQUIRED WHERE INVERT OF HIGH LEVEL ENTRY SEWER > 1.8m ABOVE BASE
	P	STANDING PLANK STEP IRON	NOMINATE LEVEL AND ORIENTATION. REFER STANDARD MRWA-S-314
PIPEWORK AND CHASE	Q	PIPE CENTER LINES (EXTENDED)	EXTEND PIPE CENTER LINES UNTIL THEY INTERSECT
	R	PIPE CENTER LINE INTERSECTIONS	PROVIDE EASTING AND NORTHING OF EACH PROJECTED INTERSECTION
	S	SEWER INVERTS	NOMINATE IL'S OF ALL SEWERS AT THEIR PROJECTED INTERSECTIONS
	T	ANGLE OF SEWERS	NOMINATE ANGLE OF ALL INFLOW SEWERS RELATIVE TO OUTFLOW SEWER
	U	INTERSECTION OFFSETS FROM SHAFT CENTER	NOMINATE OFFSET OF SHAFT CENTER FROM ALL PROJECTED INTERSECTIONS. THERE ARE NO OFFSET LIMITATIONS (PROVIDED ALL OTHER REQ'S ARE MET)
	V	CHASE OUTLINE (ON GRADE SEWERS)	NOMINATE INNER RADIUS. SHALL BE ≥ INFLOW SEWER DIAMETER AND ≥ 300
	W	CHASE OUTLINE (DROP PIPE)	STRAIGHT CHASE
	X	OUTLINE OF EXTERNAL BENDS	INDICATE ORIENTATION OF EXTERNAL BENDS CONNECTING DIRECTLY TO M.H
	Y	DROP PIPE LOCATIONS	INDICATE INTERNAL OR EXTERNAL DROP PIPE'S REDUCED DIAMETER
	Z	EXTERNAL DROP PIPE ENCASEMENT	NOMINATE THICKNESS OF CONCRETE AROUND EXTERNAL DROPS

ADDITIONAL NOTES Regarding Table 308-A items:

Item E. Where practicable, ensure that neck of MH lies either completely inside or completely outside of a paved surface.
Maintain min 100 clearance between outline of neck and any pavement edge.
Locate ladder / step irons where neck and shaft internal diameters intersect.

Item I. Refer Table 307-B for details.

Item K. One standing area shall be directly in front of the ladder / step irons.

Item M. Where possible, ladder shall be located to allow standing plank access to all high level sewers.
standing plank spans a ladder's rung to a step iron on the other side of shaft. Refer mrwa-s-314.

Item N. Nominate level & position. Refer standard MRWA-S-314 for details.

Item O. Locate 1200 below centre line of high level entry into shaft.
Standing plank position shall be indicated. 350 wide.
Not a permanent fixture. Brought on site as required.
Spans from a ladder / step iron rung to a step iron on the other side of the MH.

Item P. Locate opposite and at the same level as a ladder / step iron rung.

Item T. Max anglular deflection within a chase is 90°.
Maximum angle of incidence of a high level sewer to the MH shaft wall shall be 25° from perpendicular.
Any greater angular deflection shall be accommodated using a bend external to the MH.

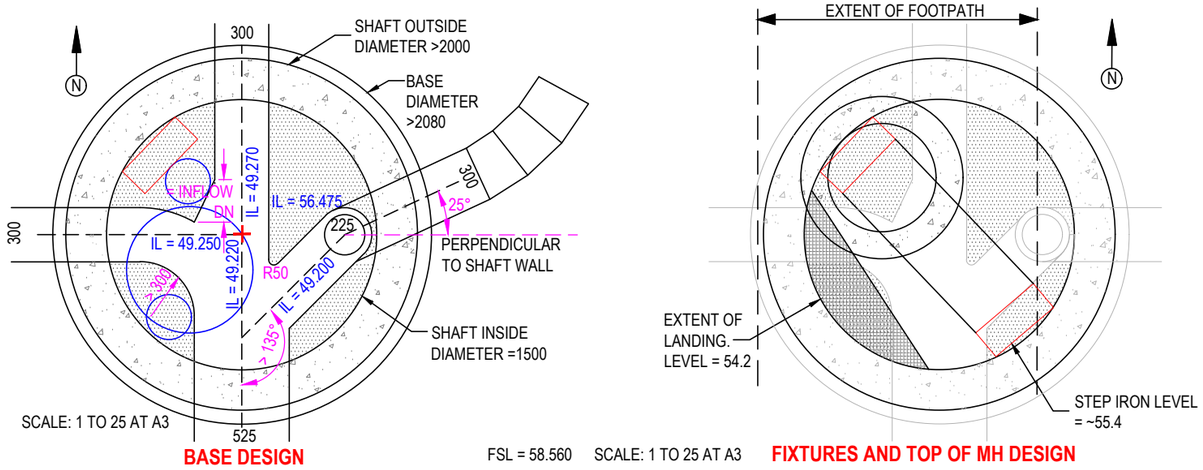
Item V. Outer radius shall be inner radius + inflow pipe ID.
- All curves shall be tangential to both the inflow and outflow sewers.
- Tangent curves shall be contained within the inner shaft circumference.
- Angular deflection of a chase is limited to 90°.
- External bends are preferred to increasing a MH's size to provide for more angular deflection within the MH.

Item W. Preferred that a chase from a drop pipe be at ≥ 135° to the outflow.

Item X. External bends shall be as per MRWA-S-104B.

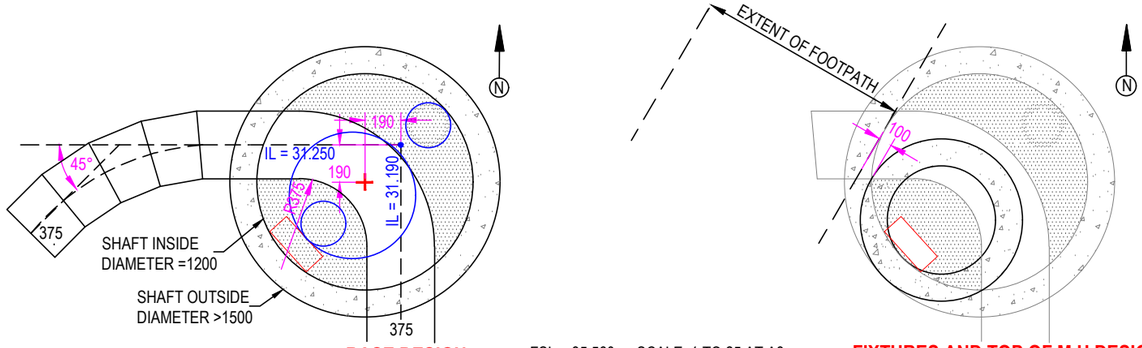
Item Y. Clearance equal to the diameter of the drop pipe is required from a drop pipe to any ladder, other drop pipe or other fixture.

FIGURE 308-A: EXAMPLE 1. DEEP MH DESIGN WITH INTERNAL DROPS



BASE DESIGN — FSL = 58.560 — SCALE: 1 TO 25 AT A3 — FIXTURES AND TOP OF MH DESIGN

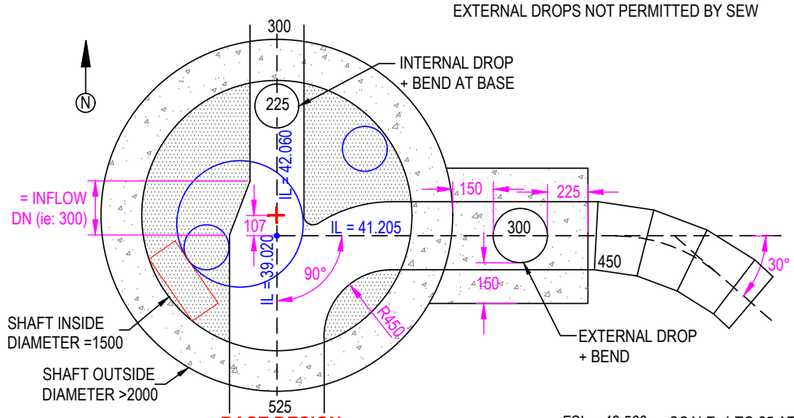
FIGURE 308-B: EXAMPLE 2. MH DESIGN WITH HIGH ANGULAR DEFLECTION



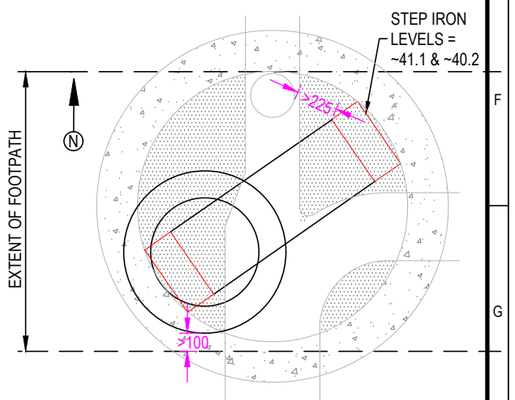
BASE DESIGN — FSL = 35.560 — SCALE: 1 TO 25 AT A3 — FIXTURES AND TOP OF M.H DESIGN

FIGURE 308-C: EXAMPLE 3. MH DESIGN WITH EXTERNAL DROP

EXTERNAL DROPS NOT PERMITTED BY SEW



BASE DESIGN — FSL = 43.560 — SCALE: 1 TO 25 AT A3



FIXTURES AND TOP OF M.H DESIGN

ALL DIMENSIONS IN mm UNLESS STATED OTHERWISE			
2	PUBLISHED FIRST ISSUE	01/10/15	CP / JT / KD / RJ
1	PRE-PUBLISHED DRAFT	01/03/15	CP / JT / KD / RJ
REV	DESCRIPTION	DATE	APPROVED

DESIGNED: R. JAGGER DATE: 1 JULY 2015
DRAWN: R. JAGGER DATE: 1 JULY 2015

CHECKED:	NAME	DATE	APPROVED:	NAME	DATE
☒ CWW	D. MOORE	01/09/15	☒ CWW	R. CARRUTHERS	01/09/15
☒ SEW	C. PAXMAN	01/09/15	☒ SEW	D. O'DONOVAN	01/09/15
☒ YVW	K. DAWSON	01/09/15	☒ YVW	J. TOMASI	01/09/15

ISSUED 2015 — VERSION 1

MELBOURNE RETAIL WATER AGENCIES
City West Water™ · South East Water · Yarra Valley Water

MRWA SEWERAGE STANDARDS

CONCRETE MAINTENANCE HOLE DETAILED DESIGNS

NOT TO SCALE

MRWA-S-308

Planning	Design	Construction
		✓ ✓ ✓ ✓