

FIGURE 314-A (SECTION VIEW). LADDER INSTALLATION

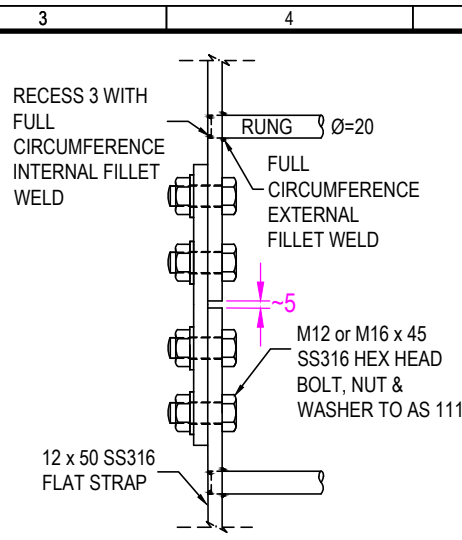


FIGURE 314-B (SECTION VIEW). SS LADDER JOIN DETAILS

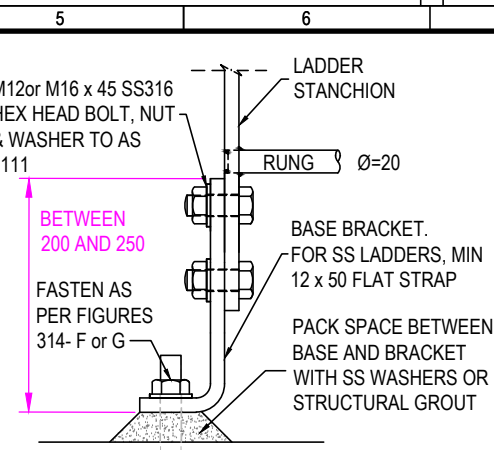


FIGURE 314-C (SECTION VIEW). FLOOR BRACKET

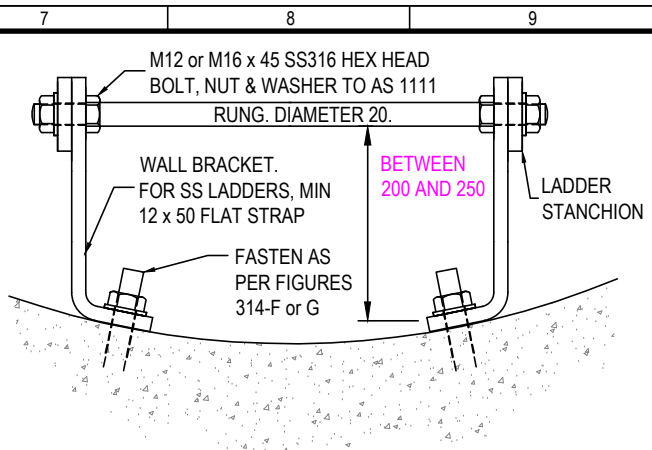


FIGURE 314-D (PLAN VIEW). CONCRETE WALL BRACKET

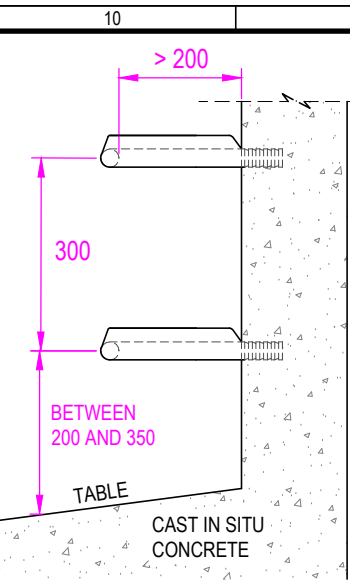


FIGURE 314-E (SECTION VIEW). STEP IRON INSTALLATION

- NOTES Regarding Step Irons:**
- Cast step irons into concrete if practicable.
 - Otherwise install as per the manufacturer's instruction, nominally ensuring:
 - Drill Ø28 holes at the required width.
 - Remove dust using air pressure.
 - Apply epoxy liberally to drilled holes.
 - Hammer in step irons at the corners (ie: not centre of rung).
 - Do not use until epoxy has cured.

NOTES Regarding Bracket Installation:

- For mass produced prefabricated ladders, use only the brackets provided or recommended by the manufacturer.
- For SS ladders, brackets are to be located midway between rungs.
- Brackets may fold outwards rather than inwards.

NOTES Re Figures 314-F & G:

- Install fasteners min 75 clear of any construction joint.
- Install as per manufacturers instructions.
- Step 1: drill hole to required depth and diameter (as per manufacturers instruction).
- Step 2: clean out hole (using air pressure).
- For Figure 314-F:
 - Step 3: insert adhesive capsule.
 - Step 4: insert threaded rod and spin.
 - Step 5: wait for adhesive to set (nominally 30 mins).
 - Step 6: tension nut.
- For Figure 314-G:
 - Insert compression bolt.
 - Tension nut.

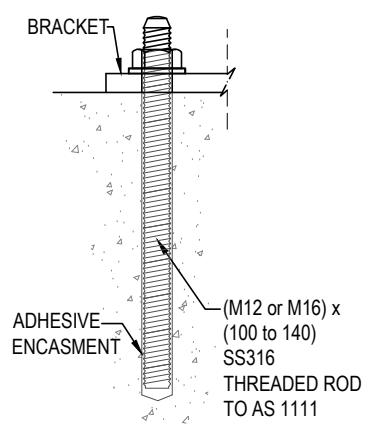


FIGURE 314-F (SECTION VIEW) ADHESIVE CAPSULE CONCRETE ANCHOR

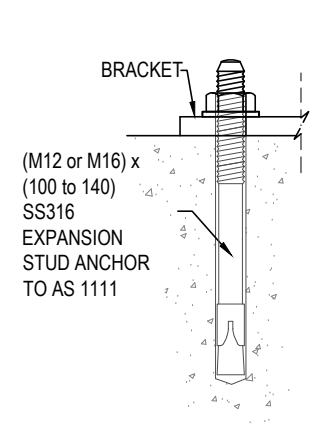


FIGURE 314-G (SECTION VIEW) EXPANSION CONCRETE STUD ANCHOR

NOTES Regarding Landings:

- Only approved pre-fabricated landings may be used.
- All maintenance holes requiring landings shall be ≥ 1200Ø.
- Install step iron, vertically aligned, adjacent to the ladder, 1000 above the landing.
- Landings shall not impede upon the ladder climbing space allowance.
- Support structure to be welded SS316 to finish 2B.
- Brackets may be packed up to 20mm where fitted to the wall.
- Landing to be 375 wide and a snug fit to the concrete wall.
- Where a landing can be located to enable work to be performed on a high level entry sewer, it shall be located 1200 down from the centre line of the sewer. In such cases the landing shall be 525 wide.

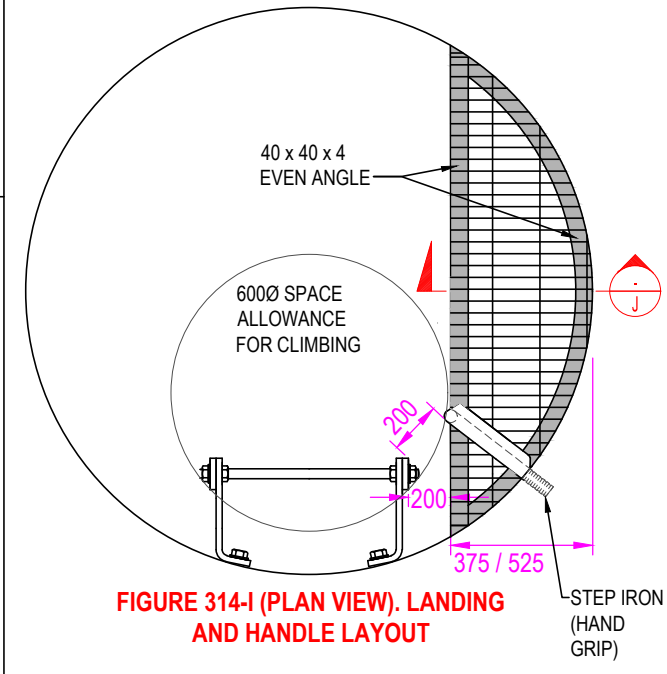


FIGURE 314-I (PLAN VIEW). LANDING AND HANDLE LAYOUT

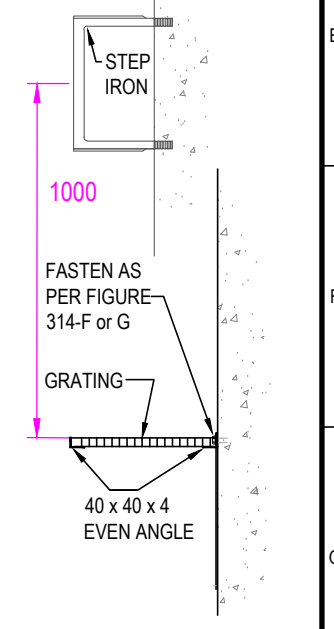


FIGURE 314-J (SECTION VIEW). LANDING STRUCTURE AND HANDLE

- Installation Notes:**
- Ladders, step irons and landings to be constructed of SS316 (or better) (AS1449 & finish class 2B), FRP or plastic encapsulated steel (P.E.S)
 - Ladders shall:**
 - For mass produced prefabricated ladders, comply with the manufacturers instructions. If there is insufficient instruction, comply with the requirements described in this drawing.
 - Retractable stanchions not required unless there is electrical or mechanical equipment inside the MH.
 - Not be built with cages.
 - Have rungs spaced between 250 and 300 apart.
 - Consist of a continuous vertical run from top to bottom with no overhangs or offsets.
 - Be fastened at the top, base (table) and at intervals < 1.5m as per Figures 314-B, C & D.
 - Be no closer to the wall than 200.
 - Be clear of the neck & a max of 600 from FSL.

- Step irons shall be:**
 - Only used in maintenance holes < 6m deep.
 - Only used with cast in situ maintenance holes.
 - Cast into the wall where practicable.
 - Aligned vertically.
 - Equi-spaced (- 8).
 - Clear of the neck.
 - Maximum of 600 from top surface level.
 - Landings shall be:**
 - Only installed for maintenance holes > 9m deep (CWW / YVW) or > 6m deep (SEW).
 - Equi-spaced between table and surface.
 - Installed >2m above the table.
 - Require 2 if > 18m deep to table.
 - Installed to facilitate maintenance of high level entry sewers if practical.
- "depth" is height from table to surface.

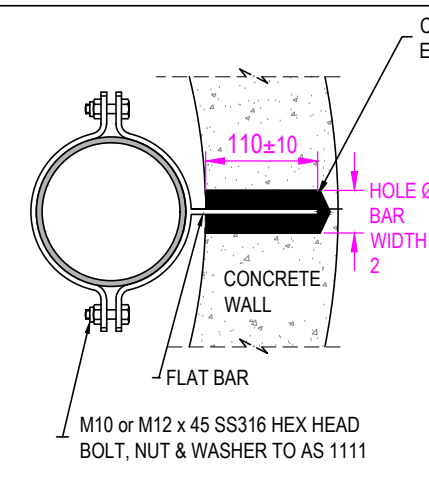


FIGURE 314-H: INTERNAL DROP PIPE SUPPORT BRACKET FOR DROP PIPES ≤DN225

NOTES Regarding Drop Pipe Supports:

- Locate clamps immediately below sockets where practical.
 - Minimum one clamp required per pipe length / pipe fitting at a maximum spacing of 1500
 - All brackets, clamps and fasteners shall be constructed from SS316 to finish 2B.
- Clamps and brackets to be constructed of min 30 x 5 flat bar.
 - For supports for drop pipes ≥DN300, refer MMBW drawing C:6.098.03.1.

REV	DESCRIPTION	DATE	APPROVED
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DRAWN:	R. JAGGER	DATE:	1 JULY 2015
CHECKED:	NAME	DATE	APPROVED: NAME
<input checked="" type="checkbox"/>	CWW	D. MOORE	01/09/15
<input checked="" type="checkbox"/>	SEW	C. PAXMAN	01/09/15
<input checked="" type="checkbox"/>	YVW	K. DAWSON	01/09/15
<input checked="" type="checkbox"/>	CWW	R. CARRUTHERS	01/09/15
<input checked="" type="checkbox"/>	SEW	D. O'DONOVAN	01/09/15
<input checked="" type="checkbox"/>	YVW	J. TOMASI	01/09/15
ISSUED	2015	VERSION	1

MELBOURNE RETAIL WATER AGENCIES

MRWA SEWERAGE STANDARDS

MAINTENANCE HOLE ANCILLARY STRUCTURE INSTALLATION

NOT TO SCALE

MRWA-S-314

Planning	Design	Construction
	✓	✓✓✓✓