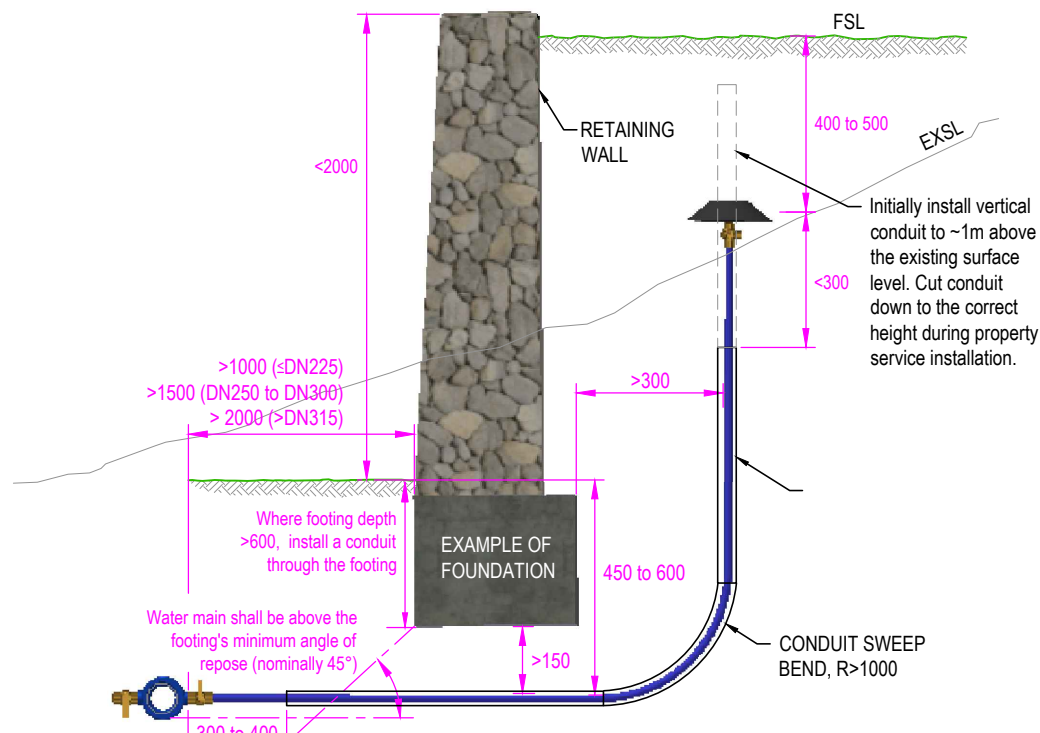
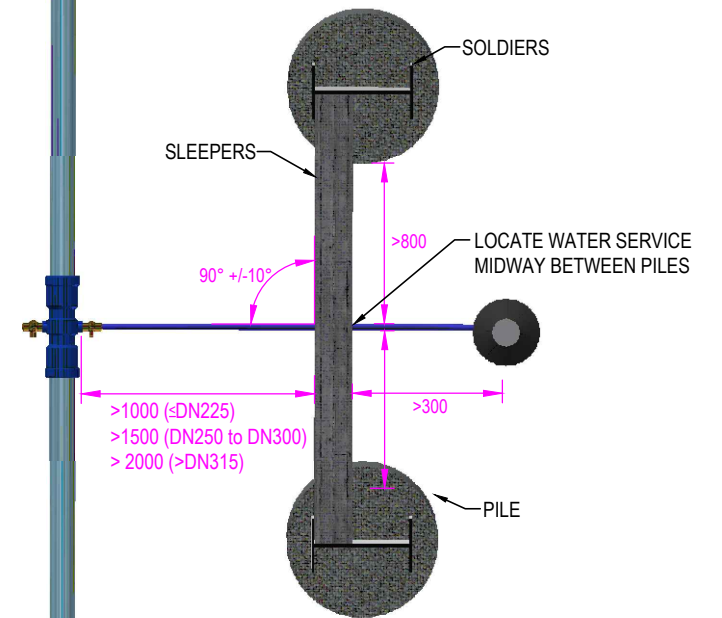


**FIGURE 213-A: WATER ASSETS AROUND RETAINING WALLS (ISOMETRIC)**



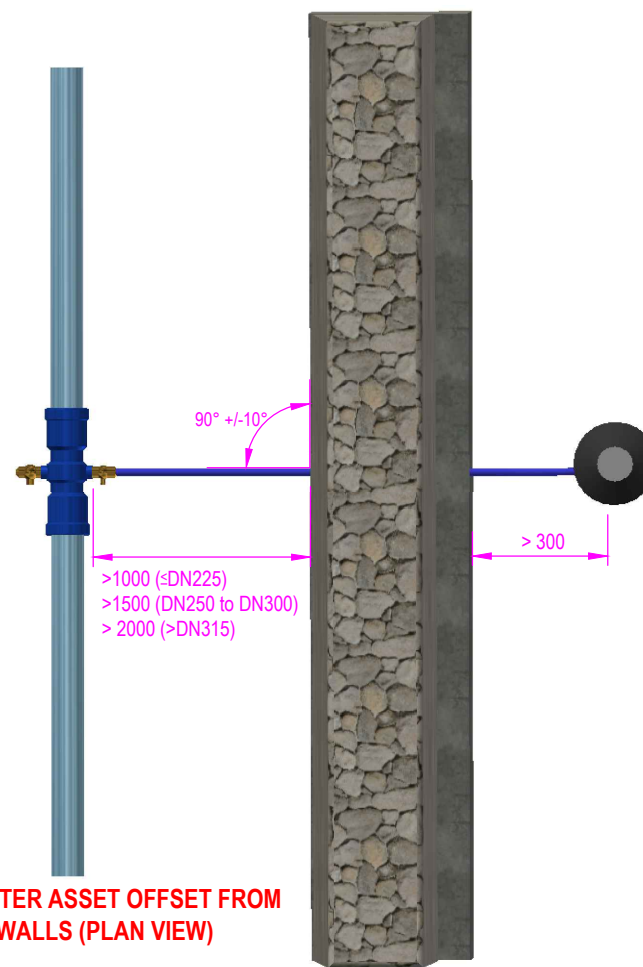
**FIGURE 213-B: WATER ASSETS AROUND RETAINING WALLS WITH FOOTINGS (ELEVATION)**



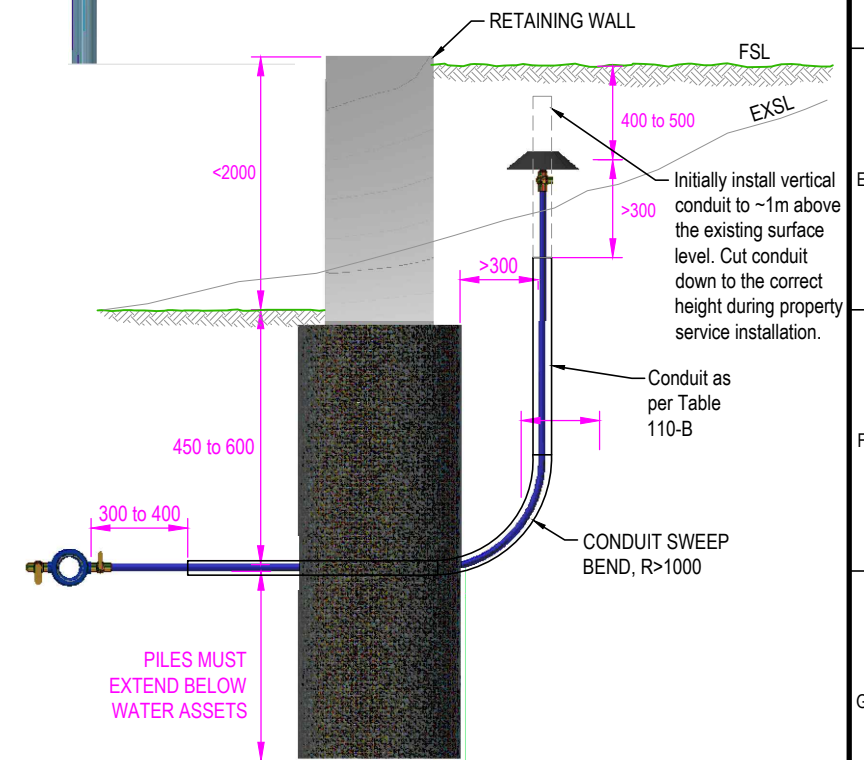
**FIGURE 214-D: WATER ASSETS AROUND RETAINING WALLS WITH PILES (PLAN)**

**NOTES Regarding Water Assets around Retaining Walls:**

1. Refer to MRWA document "Guidelines for Proposed Works Over / Adjacent to Water Authority Assets up to and including 225mm diameter" for further details and the principals of protection of water assets from loads of structures.
2. Build over approval for construction above existing water assets is required.
3. Build over approval is not required for retaining walls over new water assets where the conditions of this drawings are met.
4. The requirements of this document relate to retaining walls in all locations, whether they be in private or public land.
5. Key objectives of retaining wall and water designs shall be:
  - 5.1. Ensure structural integrity of the water assets throughout the life of the asset (ie: manage risk of water asset deflection and backfill subsidence).
  - 5.2. Ensure structural integrity of the retaining wall (ie: manage the risk of deflection, collapse or subsidence of the retaining wall).
  - 5.3. Ensure adequate access to water assets for operations, maintenance and plumbing activity.
6. Where there are retaining walls, water asset designs shall indicate/ include:
  - 6.1. The location of all retaining walls.
  - 6.2. The offset of all water assets within 2m of retaining walls.
  - 6.3. The location of all piles relative to water asset crossings.
  - 6.4. Foundation and retaining wall details including wall type, height, depth of foundations and locations of piers.
7. Requirements of the retaining wall:
  - 7.1. Height shall be < 2m tall.
  - 7.2. When piles are constructed after water assets, retaining wall foundations shall be bored and not driven.
  - 7.3. Retaining walls > 800 high shall be designed in accordance with AS4678 earth retaining structures.
8. Requirements of water asset crossing under retaining walls:
  - 8.1. Only ≤DN63PE mains or property service connections shall cross retaining walls.
  - 8.2. Conduits shall cross retaining wall at a 90° angle +/- 10°, > 600 from retaining wall piles if possible.
  - 8.3. All water asset testing shall be completed after the structural part of the retaining wall (footings or piles) has been fully constructed.
  - 8.4. Where water mains or services are damaged during the construction of the retaining wall, they shall be fully replaced (not repaired).
9. Clearances and minimum offsets:
  - 9.1. Minimum vertical clearance between pipe and retaining wall of 150.
  - 9.2. Property connections end ball valves shall be kept at least 300 clear of retaining walls.
  - 9.3. All pipe and fittings shall be located above the angle of repose from the bottom of retaining wall footings where possible.
  - 9.4. Water assets adjacent to but not crossing a retaining wall shall have a minimum offset from the wall of 1.0m (where ≤DN225), 1.5m (where >DN225& ≤DN300) and 2.0m (where >DN300).
10. Where pier and beam foundations to a level below the water assets are **not** used:
  - 10.1. Provide details which demonstrate that the retaining wall will tolerate a 1m wide trench being excavated adjacent to or underneath the retaining wall without negative affect. Signoff from a suitably qualified and experienced engineer shall be provided with these details.
  - 10.2. Provide structural calculations for walls > 600 high which shall include live construction and static loads from the retaining wall.



**FIGURE 213-C: WATER ASSET OFFSET FROM RETAINING WALLS (PLAN VIEW)**



**FIGURE 214-E: WATER ASSETS AROUND RETAINING WALLS WITH PILES (ELEVATION)**

DESIGNED: R. JAGGER				DATE:			
DRAWN: R. JAGGER				DATE:			
CHECKED:	NAME	DATE	APPROVED:	NAME	DATE		
<input checked="" type="checkbox"/>	CWW	B. VANOS	<input checked="" type="checkbox"/>	CWW	R. CARRUTHERS	01/09/16	
<input checked="" type="checkbox"/>	SEW	C. PAXMAN	<input checked="" type="checkbox"/>	SEW	D. O'DONOVAN	01/09/16	
<input checked="" type="checkbox"/>	YVW	J. TOMASI	<input checked="" type="checkbox"/>	YVW	D. ERREY	01/09/16	
2	PUBLISHED FIRST ISSUE	01/12/16	CP / JT / RJ				
1	FIRST DRAFT	01/05/16	CP / JT / RJ				
REV	DESCRIPTION	DATE	APPROVED				

MELBOURNE RETAIL WATER AGENCIES

MRWA WATER SUPPLY STANDARDS

**WATER ASSETS AROUND RETAINING WALLS**

NOT TO SCALE

**MRWA-W-214**

ISSUED 2016 VERSION NO. 2