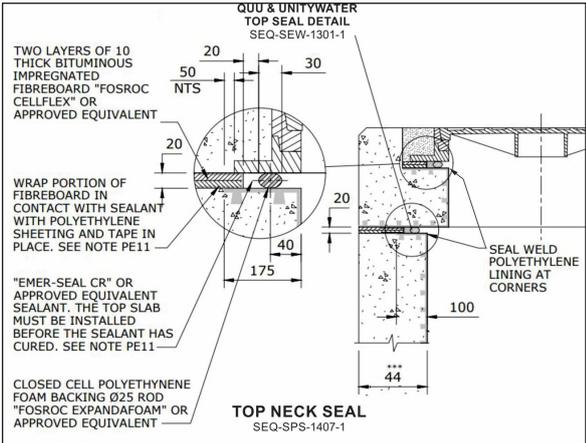
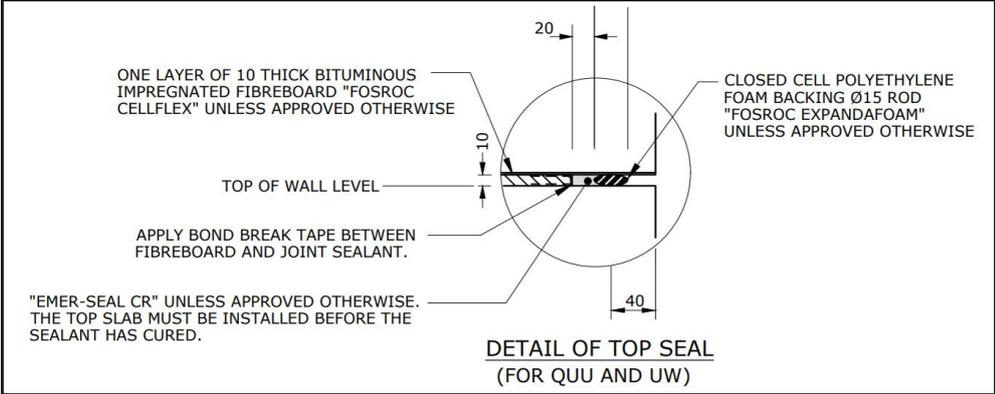


<b>GENERAL CONSTRUCTION NOTES</b>	
G1	Construction to comply with Unitywater's Accreditation and Certification Manual, Connections Policy, Specifications and the South East Queensland Water Supply and Sewerage Design and Construction Code and is not negotiable.
G2	All work to be undertaken in accordance with relevant Workplace Health and Safety Standards, including confined space entry, trench shoring etc.
G3	Levels of existing water/sewer services and connection points to be verified prior to commencing construction.

**CURRENT CONSTRUCTION DIRECTIVES**

D1	<p><b><u>NuSewer PE lined converter slab installation requirement (where the MH is not being fully lined)</u></b></p> <p>Unitywater have relaxed the SEQ code requirement to install PE Lined converter slabs when installing a NuSewer maintenance hole but if a PE lined converter slab is installed onto a NuSewer or Riggs maintenance hole, it shall fully comply with the SEQ code standards, including the standard drawing SEQ-SEW-1301-1's QUU and Unitywater Top Seal Detail and the SEQ-SPS-1407-1's Top Neck Detail Seal. The PE lining in the neck shall be welded to the PE lining installed under the MH Cover frame. The installation of Megapoxy, Sikaflex or equivalent at the top of the maintenance hole neck will not be accepted by Unitywater.</p> <div style="text-align: center;">  </div> <div style="text-align: center; margin-top: 20px;">  </div> <p style="text-align: center; margin-top: 20px;">This directive was released in the uCERTIFY Newsletter – August 2020 Edition 10</p>
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D2	<p><b><u>PE WELD TESTING</u></b></p> <p>All Welding and testing of PE pipes (water and Sewer) shall comply with the following codes and specifications:</p> <ul style="list-style-type: none"> <li>• WSAA Gravity Sewer Code WSA02 SEQ Edition – Version 2.1 (September 2021)</li> <li>• WSA01_2004_3_1 - Polyethylene Pipeline Code</li> <li>• PIPA POP001 Electrofusion Jointing of PE Pipes and Fittings for Pressure Applications Issue 8.0</li> <li>• PIPA POP003 Butt Fusion Jointing of PE Pipes and Fittings Recommended Parameters Issue 7.0</li> <li>• PIPA POP014 Assessment of Polyethylene Welds Issue 1.1</li> <li>• Pr9875 - Specification for Non-Pressure Pipeline Construction</li> <li>• Pr9904 - Specification for Pressure Pipe Construction.</li> </ul> <p>Regardless of the jointing methodology undertaken by the contractor, testing of the welds should be integral to the contractor's QA system and clearly identified within the ITP. Unitywater expect the above testing of the PE welds to be submitted with the On-Maintenance/Certificate of Completion Submissions.</p> <p>Butt weld jointing is Unitywater's "preferred" weld jointing type (Pr9904 - Specification for Pressure Pipe Construction &amp; Pr9875 - Specification for Non-Pressure Pipeline Construction). All electrofusion Welding to be approved by Unitywater.</p>
D3	<p><b><u>PE LINED MAINTENANCE HOLE</u></b></p> <p>The PE Lining of all maintenance holes shall comply with following code and standard drawings:</p> <ul style="list-style-type: none"> <li>• WSAA Gravity Sewer Code WSA02 SEQ Edition – Version 2.1 (September 2021)</li> <li>• SEQ-SEW-1301-1 Version B</li> <li>• SEQ-SEW-1307-1 Version B</li> <li>• SEQ-SEW-1308-1 Version C</li> <li>• SEQ-SPS-1407-1 Version A</li> </ul> <p>The Top Seal (Wall to Converter slab Seal) &amp; Top Neck Seal (under the Cover frame) shall comply WSAA Gravity Sewer Code WSA02 SEQ Edition – Version 2.1 (September 2021) Section 17.2.6. Internal Coating of Concrete maintenance holes - For PE lining systems - These shall be installed in accordance with 17.2.5 Concreting for thermoplastics-lined works and as detailed in the SEQ-SPS-1407-1 drawing set, which is part of the Sewage Pumping Station Code.</p>
D4	<p><b><u>NuSEWER MAINTENANCE HOLE</u></b></p> <p>All Sewer maintenance holes are to have a PE lined Converter Slab.</p> <p>Where the trigger for PE lined MH occurs, the PE Lining of all NuSewer maintenance holes shall comply with following code and standard drawings:</p> <ul style="list-style-type: none"> <li>• WSAA Gravity Sewer Code WSA02 SEQ Edition – Version 2.1 (September 2021)</li> <li>• SEQ-SEW-1301-1 Version B</li> <li>• SEQ-SEW-1307-1 Version B</li> <li>• SEQ-SEW-1308-1 Version C</li> <li>• SEQ-SPS-1407-1 Version A</li> </ul> <p>The Top Seal (Wall to Converter slab Seal) &amp; Top Neck Seal (under the Cover frame) shall comply WSAA Gravity Sewer Code WSA01 Section 17.2.6. Internal Coating of Concrete maintenance holes - For PE lining systems - These shall be installed in accordance with 17.2.5 Concreting for thermoplastics-lined works and as detailed in the SEQ-SPS-1407-1 drawing set, which is part of the Sewage Pumping Station Code.</p>
D5	<p><b><u>PE LINED MAINTENANCE HOLES PIPE WALL PENTRATION</u></b></p> <p>If not demonstrated via a detail on the approved plan the detail shall be prepared and approved by Unitywater until such time as Unitywater have a standard detail available.</p>
D6	<p><b><u>HYDRANTS &amp; SPACING</u></b></p> <p>Hydrant Spacing on water mains shall strictly comply with the following requirements:</p> <ol style="list-style-type: none"> <li>a) Every property shall have a hydrant within 40 m of its front boundary</li> <li>b) hydrants shall be installed at a maximum spacing of 80 m;</li> <li>c) hydrants shall be installed at crests, low points and other points determined by the SEQ-SP for operational purposes.</li> </ol> <p>In urban areas, every property, other than properties that are part of a community title scheme, shall have a hydrant within 90 m of the furthest point of any existing, proposed or future Class 1 buildings, measured along the street to the property entrance and around the perimeter of the building (where this requirement cannot be met from hydrants on SEQ-SP mains in public streets, a private fire main must be provided on the property);</p>

	<p>Hydrants must be installed in accordance with SEQ-WAT-1302-1. The hydrants shall comply with but not limited to the following requirements at both the on-maintenance and off maintenance inspections.</p> <ol style="list-style-type: none"> <li>a) Top of hydrant lugs/claws to be a maximum 225mm and minimum 75mm in depth</li> <li>b) Hydrants shall be located in line (+/- 200 mm) with the side real property boundary.</li> <li>c) Hydrant must be centralised within box</li> <li>d) Blue marker tape must be accessible from within the hydrant box</li> <li>e) Hydrants and hydrant boxes to be void of mud and dirt</li> <li>f) Hydrants are to be installed so that the lugs/claws are either side of the main.</li> </ol> <p>Hydrants at the end of lines shall be installed so that the lugs/claws and lid are at 90° to the main.</p> <p>Hydrants identification in accordance with SEQ-WAT-1300-1.</p> <ul style="list-style-type: none"> <li>• Blue Bi-Directional Raised Reflective Pavement marker (RRPM)</li> <li>• Golden Yellow (AS2700 Y14) Thermoplastic Reflective Direction Arrow.</li> </ul> <p>200m wide Golden Yellow (AS2700 Y14) Thermoplastic Kerb Marking Brass (only) "HP" Marker with inscribed (8mm high) distance.</p>
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## Sewer Main Construction

SA	<p>Construction Certifier must be notified to inspect installation of all sewer property connections.</p> <p>House connections: Minimum 0.5m into property Minimum 1m off sewer line</p> <p>Minimum 0.6m and Maximum 1.5m deep unless otherwise approved.</p>
SB	Minimum cover of sewer mains 600mm.
SC	The invert of all ends of all sewer lines and house connection are to be marked by single length, 2m long, diameter 40mm, orange, PVC conduit in accordance with SEQ-SEW-1106-2.
SD	<p>All SEQ Service Providers accept only <b>Plain Wall uPVC</b> for non-pressure sewerage system. Other type of uPVC such as foam core sandwich and solid core sandwich are not accepted.</p> <p>Ensure all fittings such as long radius bends, moulded oblique junctions, bends, inspection I.O junctions, shorts, sanded shorts, maintenance shaft rises, and maintenance shaft connections have been constructed from Plain Wall uPVC.</p>
SE	All Pipes and fittings to rubber Ringer Jointed; No glue joints allowed.
SF	<p>Pre-Cast Concrete maintenance holes are not acceptable in the following cases:</p> <ul style="list-style-type: none"> <li>• NUSEWERS (PE) systems.</li> <li>• Deeper sewer systems - greater than 6 meters</li> <li>• In areas subject to Q100 flooding</li> <li>• In areas where there is a risk of surcharge</li> <li>• in water charged ground</li> <li>• in conjunction with bolt down lids</li> <li>• in sulphide control sewer maintenance hole (e.g. rising main receiving maintenance holes)</li> <li>• in areas with unsuitable soil conditions.</li> </ul>
SG	Insitu and Pre-cast Concrete Sewer MH internal or external joints are <b>NOT</b> to be bagged or repaired, unless approved prior by Unitywater in accordance with SEQ-SEW-1300-1. No Epoxy to be used within Pre-Cast maintenance hole internal or external joints.
SH	Pre-cast Concrete Sewer MH - Apply a 150mm wide external bitumastic seal tape (DENZO) over a coat of manufacturer's recommended prime seal to all external joints in accordance with SEQ-SEW-1300-1.
SI	PE sewer pipe cannot be connected to Pre-Cast maintenance hole bases unless specific special detail has been approved by Unitywater.
SJ	Maintenance Shaft rises minimum DN300 diameter. DN225 diameter risers are not accepted.
SK	Rubber bungs are <b>NOT</b> to be used in maintenance shaft caps for both NU-sewer and for RIGGS. For UW, The Riser Cap shall comprise of a PVC Bayonet Cap with RRJ seal and a PVC RRJ socket. Refer to: SEQ-SEW-1315-1.
SL	All uPVC house connection branch fittings such as moulded oblique junctions, bends, inspection I.O.

	junctions and Maintenance shaft connections shall be Plain Wall uPVC, rubber ringed and fibreglass reinforced in accordance with SEQ-SEW-1104-1.
SM	Detectable cream marker tape “SEWER” shall be provided either above the embedment zone of the sewer main or 1000mm below the F.S.L., whichever is closest to F.S.L.
SN	Vacuum Testing of all sewer mains and maintenance holes, and Pressure Testing of rising mains to be undertaken by a NATA accredited testing agent. Major Certifier & Construction Certifier must be notified of scheduled test time. Refer to “Unitywater Testing Requirements Summary”. maintenance holes and sewers are to be tested after all earthworks have been completed and large machinery has been removed from site.
SO	<p>CCTV of all sewers and accompanying independent consulting RPEQ report and certification to be forwarded to Unitywater with both the on and off-maintenance application submissions. <b>Unitywater’s CCTV Review Technical Specification is to be used and followed for the RPEQ and contractor review of the CCTV survey information.</b></p> <p>All CCTV inspections in general shall be carried out in accordance with the latest version of the WSAA Conduit Inspection Reporting Code of Australia WSA 05.</p> <p>Maintenance holes and sewers are to be CCTV surveyed after all earthworks have been completed and large machinery has been removed from site.</p> <p>The CCTV surveys shall comply with but not limited to the following requirements:</p> <ol style="list-style-type: none"> <li>a) The CCTV survey shall be carried out from the centre of the start maintenance structure to the centre of the finish maintenance structure. Each maintenance structure shall be fully scanned using the pan/tilt and zoom functions of the CCTV camera and the video footage recorded as part of the overall CCTV survey.</li> <li>b) All pipe joints shall be scanned by a 360-degree pan.</li> </ol> <p>Refer to “Unitywater Testing Requirements Summary” for the general CCTV requirements. All the requirements shall be complied with.</p> <p>The operator shall use Appendix F to highlight all unacceptable defects in the CCTV report.</p>
SP	Proving Tool (Ovality) testing of all sewer lines to be undertaken by NATA accredited testing agent. Refer to attached “Unitywater Testing Requirements Summary”. All the requirements shall be complied with. Do not conduct deflection testing until at least 14 days after completion of placement and compaction of trench and embedment fill material and not before all earthworks have been completed and large machinery has been removed from site.
SQ	Compaction test results of all embedment, trench fill and site filling works in accordance with WSAA requirements. Please take special note of trafficable testing requirements. Refer to “Unitywater Testing Requirements Summary”. All of the requirements shall be complied with. Please take note that all maintenance holes & maintenance shafts require testing within 300mm.

## Water Main Construction

WA	All water main fittings are to be fusion powder coated.
WB	All new water mains shall start and finish with temporary hydrants. The temporary hydrants will be removed by Unitywater when completing the live connection and left for contractor to remove from site.
WC	Water service connections to use pre-tapped connectors (i.e. Ready Taps) in accordance with SEQ-WAT-1108-2. Tapping bands are not an approved product and are not to be installed on water mains.
WD	<p>Approved water meters in accordance with Appendix A of the ‘South East Queensland Water Supply and Sewerage Design and Construction Code’ to be provided to each lot in accordance with SEQ-WAT-1108 series drawings.</p> <p>An excel spread sheet file of lot No’s and their associated water meter No’s is to be forwarded to Unitywater as part of the on-maintenance application submissions.</p> <p><b>All water meters are to have a Unitywater coded number as per Unitywater’s Pr10068 Specification for Water Meters (All Unitywater meters numbers will begin with a letter “U”).</b></p>

WE	<p>Water Meters shall be installed in accordance with SEQ-WAT-1108-1 to 3. The Water Meters construction shall comply with but not limited to the following requirements at both the on-maintenance and off-maintenance inspections.</p> <ul style="list-style-type: none"> <li>a) Ball Valve must be lockable and unobstructed within the box. Lockable ball valve, water meter and meter box to be approved fitting as per SEQ code IPAM List.</li> <li>a) Ball Valve must be 500mm from front boundary and 300 from side boundary.</li> <li>b) Meter box lid shall have nonslip pattern, lettering cast into lid indicating "water meter" and be black in colour.</li> <li>c) Meter box lid to be left so that it sits flush with turf surround.</li> <li>d) Turf surround to extend a minimum of 600 mm on all sides of meter box.</li> <li>e) Geotextile fabric to be laid around and underneath meter box taped each side &amp; around pipe to prevent ingress of sand, soil, and mud.</li> <li>f) Water Meter Box must be void of all sand, soil, and mud at on maintenance inspection.</li> <li>g) Water meters must be clean of all mud and facing straight upwards.</li> <li>j) Water Meter components to sit high, level &amp; centered within the box with a min. 20mm air gap between the bottom of the water meter and bottom of the water meter box.</li> </ul>												
WF	<p>Water Service Pipes shall be installed in accordance with SEQ-WAT-1108-1 to 3: The Water Service Pipes shall comply with but not limited to the following requirements.</p> <ul style="list-style-type: none"> <li>b) Water service pipework shall be PE100 PN16 black polyethylene pipe with blue stripe in accordance with AS/NZS 4130.</li> <li>c) DN25 pe100 pn16 pipe with blue stripe for service &lt; 20 m long.</li> <li>d) DN32 pe100 pn16 pipe with blue stripe for service &gt; 20 m long.</li> <li>e) Any pipework showing signs of kinking or strain from over bending will be rejected.</li> <li>f) All connections to polyethylene pipe to be approved brass or plastic mechanical fittings.</li> <li>g) PE100 pipe shall be laid with 100 mm minimum surround of sand or approved granular material.</li> <li>h) PE100 pipe must be continuous without joints. No Joints permitted between the ready tap/tapping saddles and water meters.</li> </ul>												
WG	<ul style="list-style-type: none"> <li>• Detectable blue marker tape, thrust blocks and strapping of valves required to all PVC mains in accordance with SEQ Code.</li> </ul>												
WH	<p><b>Minimum cover to water main:</b></p> <table border="1" data-bbox="212 1249 1489 1442"> <thead> <tr> <th>Location</th> <th>&lt;=150NB</th> <th>&gt;=200NB</th> </tr> </thead> <tbody> <tr> <td><b>Non-roadways /Sealed Roads</b></td> <td>600</td> <td>1000</td> </tr> <tr> <td>Major Roads/embankment</td> <td>750</td> <td>1000</td> </tr> <tr> <td>Freeway</td> <td>1200</td> <td>1200</td> </tr> </tbody> </table>	Location	<=150NB	>=200NB	<b>Non-roadways /Sealed Roads</b>	600	1000	Major Roads/embankment	750	1000	Freeway	1200	1200
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Freeway	1200	1200											
WI	No bending or curving of oPVC pipes.												
WJ	Polythene sleeving of D.I.C.L. pipe and fittings as per manufacturer's specifications. Century Plus DI Pipe Installation (Mandatory for Water Main construction) is mandatory training for pipe layers.												
WK	<p>Maximum 1° deflection out of a RRJ oPVC spigot joint or 105mm over 6 metre. Maximum 5° deflection out of DICL fittings or 502mm over 6 metre. Unitywater prefer the use of DICL RRJ Connectors when there is a requirement to deflect pipes within joints. Deflection out of RRJ oPVC spigot joints requires an approved certified design, detailing lengths and offset distances. Pipes deflected without this approved certified design will be required to be removed from the trench.</p>												
WL	Water mains (future extensions) must be constructed and terminated in accordance with SEQ-WAT-1303-1.												
WM	<p>Valve must be installed in accordance with SEQ-WAT-1301-1. The valves shall comply with but not limited to the following requirements at both the on-maintenance and off maintenance inspections:</p> <ul style="list-style-type: none"> <li>• Top of valve spindle to be a maximum 225mm and minimum 75mm from FSL.</li> <li>• Valves must be centralised within box.</li> <li>• Blue marker tape can be installed such that it is accessible from within the valve box.</li> </ul>												

	Valve and valve box to be void of mud and dirt.
WN	<p>Valves identification in accordance with SEQ-WAT-1300-1:</p> <ul style="list-style-type: none"> <li>• White (AS2700 Y35) Thermoplastic Reflective “V” and Direction Arrow.</li> <li>• 200m wide White (AS2700 Y35) Thermoplastic Kerb Marking.</li> <li>• Brass (only) “V” Kerb Marker.</li> </ul>
WO	Pavement marking paint shall be of an approved thermoplastic reflective paint, incorporating applied glass beads, manufactured, and applied as per the requirements of Main Roads MRTS45. Refer to attached <a href="#">“Unitywater Testing Requirements Summary”</a> .
WP	<p>Pressure Testing of reticulation water mains to 1200 KPA, as close as practicable to the lowest point of the main by NATA accredited testing agent at completion of all water main works.</p> <p>Refer to “Unitywater Testing Requirements Summary”.</p>