The Pipeline

Melbourne Retail Water Agencies Information Bulletin

Issue Date – December 2016

WELCOME TO THE NEW MRWA BULLETIN

Welcome to the latest bulletin from the Melbourne Retail Water Agencies (MRWA), including City West Water (CWW), South East Water (SEW) and Yarra Valley Water (YVW). This Bulletin has been established to provide you with an understanding of current, relevant issues associated with our adopted standards, design and construction practices and any changes evolving through our industry.

Topics in this edition include:

- MRWA Acceptance of Truncated Top Maintenance Hole (MH) Structures
- Acceptable Lifting Arrangements for MH Top Slabs
- Supplier Accreditation Update
- Construction Key Personnel Acceptable Pipeline Training
- Sewerage Mains in Private Property
- DN150 Commercial Industrial Sewers
- Revised MRWA Water Supply Standards
- Water Design Assurance Scheme Update
- Revised MRWA Water Quality Specification

The opportunity is always available for you to request future bulletin items to clarify a water agency's requirement for any design or construction process or practice. You can forward your suggestions to any of the MRWA contacts listed at the end of this bulletin.

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MRWA Acceptance of Truncated Top Maintenance Hole (MH) Structures

Following the implementation of the MRWA Sewerage Standards in January 2016, the selection of Maintenance Hole (MH) structure top construction was rationalised to either Conical and Flat-top arrangements as described in Standard MRWA-S-313. These MH structure types are suitable for most installation needs, however they have limitations where shallow reticulation sewers require a MH. Following a brief consultation period with industry stakeholders, the MRWAs will now allow the installation of Truncated top MHs as an alternative to the Flat-top arrangement for shallow reticulation sewers. These maintenance structure types were previously adopted in earlier Technical Standards and have been installed on shallow reticulation sewers for many decades.

Truncated MHs may be used as follows:

- For shallow reticulation sewers where the overall depth to the MH base nib wall is less than 2.0metres.
- In locations not subject to vehicular loading. (ie: not allowed in Type R situations (ref MRWA-S-201) or driveways).
- Where it is not practical or cost effective to install a smaller Maintenance Shaft or Maintenance Chamber structure.

The general arrangements for Truncated MHs are outlined in South East Water's MH Drawing MHTA-07 included as a drawing appendix with this bulletin. This information shall be read in conjunction with the 300 Series MRWA Sewer Standards and can now be installed on reticulation sewer projects where applicable. Flat-top MH arrangements can still be constructed for shallow MH structures where required and as described in MRWA Sewer Standard MRWA-S-313. This Drawing Appendix will remain current until the relevant MH Sewer Standards can be revised and published onto the MRWA Web Portal.

Acceptable Lifting Arrangements for MH Top Slabs

The MRWA has observed that some flat top maintenance hole top slabs have not been constructed with appropriate lifting anchors. Attachment points such as step irons, reinforcement bar or unspecified brackets are not suitable lifting points.

The standard for maintenance hole flat top slabs (MRWA-S-313) specifies that 4 correctly rated lifting anchours shall be installed as the manufacturer's requirements. There are a variety of lifting anchours available on the market that have been specifically designed and constructed for lifting concrete slabs.

Supplier Accreditation Update

The deadlines for all ARCUS applications have now expired and CWW and YVW are now processing the applications to identify those organisations and key personnel that have lodged conforming applications, meet all of the requirements and can be accredited. New accreditation lists have or will soon be lodged on the CWW and YVW web sites and these lists will be progressively updated as the backlog of applications is assessed.

It is highly recommended that you comply with all of the application requirements in the system and apply as soon as possible.

Construction Key Personnel Acceptable Pipeline Training

Letters have recently gone out to all accredited organisations to clarify the MRWA's position with respect to what Pipelaying training is to be accepted for WC1, WC2, SC1 and SC2 accredited Key Personnel.

If your organisation has not received a copy of this letter or are unclear on the requirements, please contact one of the Water Agency delegates for clarification.

Sewerage Mains in Private Property

As many of you may know, there has been a project underway for a number of years to look at the cost, developer, customer and water agency impacts of sewerage mains in private property. This issue has come to prominence as the size of lots and backyard access has declined.

The new sewerage code has gone some way to resolving the concerns of the MRWA and we have since seen design consultants improve access to sewerage infrastructure. The sewerage code does say, however, that some level of exemption to the requirement for reasonable access may be provided by the Water Agency. In consultation with the UDIA and ALDE, the MRWA is working with a consultant to undertake a thorough review of the impacts of sewers with No Reasonable Access. The final report should enable the MRWA to specify a reasonable limit to the number of lots that can be designed without reasonable access to private property sewers. This project is nearing completion and the MRWA anticipates being able to provide a numerical limit to the exemption around the first quarter of 2017.

DN150 Commercial Industrial Sewers

Table 5.6 of the Sewerage Code indicates that DN150 sewers are not permitted in industrial commercial areas. This is not correct and DN150 industrial commercial sewers are permitted. Minimum and maximum industrial commercial lot areas for DN150 sewers of different grades can be easily calculated by referring to the minimum and maximum numbers of residential connections allowed and using the equivalency of 1 residential lot equals 500m^2 of industrial commercial land.

Revised MRWA Water Supply Standards

After an extensive period of consultation with water agency staff and a joint ALDE and CCF working team, the following standards have been revised and updated on the MRWA portal. As the changes are by and large clarifications, amendments to details or based on newly implemented MRWA Sewerage standards, the revised and new Water Supply standards are to come into effect immediately.

The Water Agencies will not issue non-conformances associated with these changes until 1 March 2017, however repeat observations of the same problem may still result in a non-conformance.

The revised standards have all adopted the same figure and table numbering convention and formatting as the new Sewerage standards to make referencing easier. The revised standards are also searchable to help you quickly find the information you are after.

The bold standards are new or substantially different.

- **Water Supply Design Calculators**.
  The PE pressure testing, restrained main and PE restraint calculators have been updated to provide a more consistent approach with more complete information. The PE pressure testing calculator in particular provides more information on how to test systems that have a range of PE sizes or mixed PE and non PE pipes.
  The change log associated with the calculators fully describes the changes.
- **MRWA-W-000**- *Water Supply Standards Index*.
  New Standard. This standard provides a concise reference to help users quickly understand the information which is available, what is relevant to them and where to find it.
- MRWA-W-101 to 102B- *Water Supply Design Templates and Examples*.
  These standards have been updated to remove errors, remove references to other standards and bring them up to date with all of the changes described below. The standard template has now been provided with a title block which is more appropriate for designers to use when submitting designs. The thrust restraint schedule format has also been modified.
- MRWA-W-103- *Pipe & Joint Requirements*.
  Filament Wound Glass Reinforced Polymer (FW GRP) has now been included and PE80 has been removed. High risk definitions have been updated and when lower order PE jointing preferences can be used has been clarified.
- **MRWA-W-104A**- *Pipeline Restraint Options & Fitting Arrangements*.
  Pipeline systems have now been separated into 3 systems: Rubber Ring Joint, restrained high shrinkage (PE) and restrained low shrinkage. PE is now to be the default pipe system for <=DN355 pipes where restrained pipework is required. Requirements for the restraint of some doglegs is now included along with the requirements for the separation of fittings on single and dual water systems.

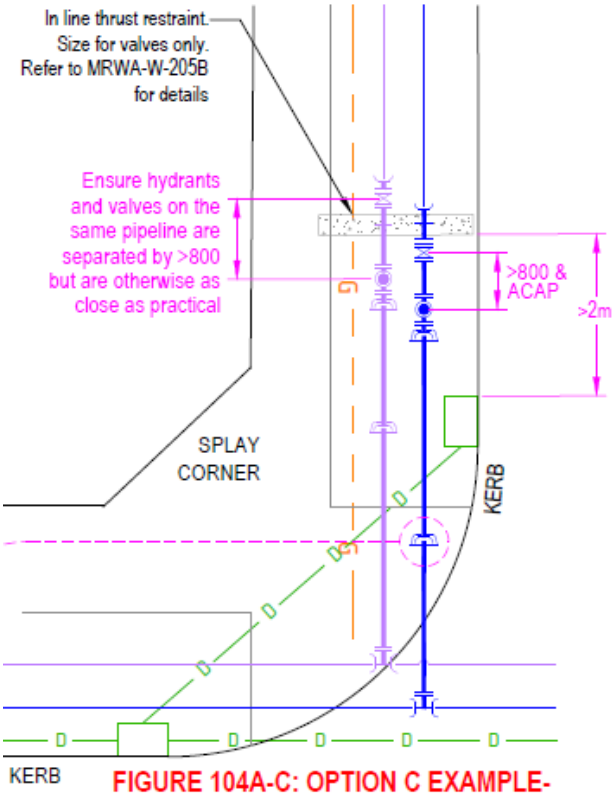
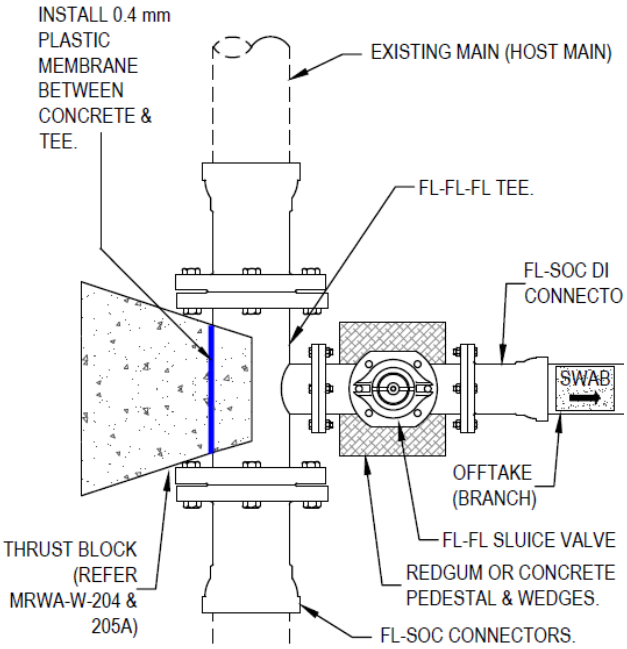


FIGURE 104A-C: OPTION C EXAMPLE- RESTRAINED LOW SHRINKAGE PIPEWORK

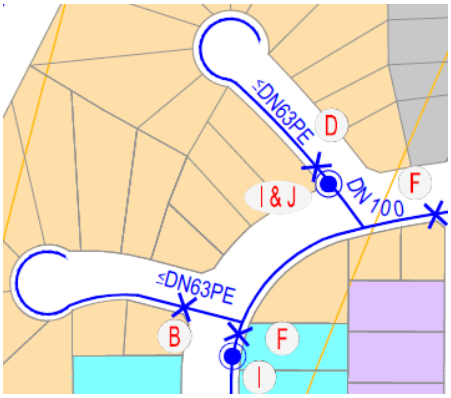
- MRWA-W-104B- *Concrete Thrust Restraint Branch & Bend Arrangements & PE intersections.*
  The minimum distance required between two opposing tees and bends while using plain restraints has been reduced due to a change in the calculation assumptions. The full PE intersection design has now been moved to this standard.
- MRWA-W-105- *Distribution Main Divide Valve & Bypass*.
  The potential for air valves &/or scour lines to be included or not included on bypass pipework has been clarified.
- **MRWA-W-106**- *Installation of >=DN100 Offtakes to Existing Mains*.
  Concrete restraint details for 3 or 4 part TUP clamps has altered. Steel main reinforcement for TUPs is now described in more detail and the requirement for FL-SOC connectors to be used with cut ins instead of Gibbault style couplings is now documented for smooth external pipe surfaced pipes.
- MRWA-W-107- *Installation of DN40PE to DN63PE Offtakes*.
  Formatting and visual improvements only.

- MRWA-W-108- *Dead End Polyethylene Reticulation*.
  End of court bowl fittings have been clarified for the different water agencies.
- MRWA-W-109- *Polyethylene Sub-main Details*.
  Formatting and visual improvements only.
- **MRWA-W-110**- *Residential Property Service Arrangements*.
  Road service conduits are now required to be extended to just before the property boundary. The requirements for locating tappings and property services have changed to make an allowance for the fact that trees will now usually be planted in the centre of most nature strips. Tappings will need to be kept clear of these trees. A new table has been included to describe how service connections of different sizes and construction method shall be installed.



- MRWA-W-111-*Installation of DN25PE and DN32PE Offtakes*.
  Property service pipework may now be installed either under or over neighbouring dual water mains. The use of ferrules in property services is now clarified.
- **MRWA-W-201**-*Trenchfill*.
  Type F backfill is now permitted under driveways and Class 3 backfill is now permitted in lieu of Class 2. In deeper Type R scenarios, Class 3 is now required to the bottom of the sub-base, rather than to a depth of 600mm. All of this is still subject to road owner acceptance.
- **MRWA-W-202**- *Trench Dimensions & Arrangements*.
  Two new shared pipe trench profiles have been included which describe how the trench may be profiled to accommodate dual water offtakes where the depth of mains are staggered.
- **MRWA-W-203**- *Embedment*.
  Similar arrangements to what have been specified in the new MRWA Sewerage Standards are now specified for water supply assets. The designer is now required to specify the embedment system and the contractor is then able to select any material which complies with the specified system and pipe diameter. Pipe joints within concrete embedment now require neoprene wrapping.
- MRWA-W-204- *Thrust Restraint Area*.
  Text errors have been corrected and formatting and visual improvements have been made.
- **MRWA-W-205A**- *Single Main Concrete Restraints*.
  The requirement to have 2m of undisturbed ground behind restraints has been clarified. Temperature assumptions to be used in the calculation of PE thrust restraints have also been clarified and there is now the ability to reduce larger restraints by specifying a lower temperature at the time of connection. The Contractor is then required to meet the temperature limit at the time of connection.
  Restraint reinforcement for larger restraints has now been provided so that designers no longer need to obtain structural designs for larger restraints.
- MRWA-W-205B- *Dual Main Concrete Restraints*.
  Restraint reinforcement for larger restraints has now been provided so that designers no longer need to obtain structural designs for larger restraints.
- **MRWA-W-205C**- *Vertically Cantilevered Thrust Restraints*.
  Vertically cantilevered restraints are now shown as full trench width and as encasing all 3 mains as per a typical shared trench in-line restraint. This extra width dramatically reduces the depth required for the restraint making them more practical to construct. A structural calculation proof has also been included to explain how the formula for restraint depth was derived.
- **MRWA-W-206**-*Timber-Recycled Plastic Thrust Restraints & Valve Support*.
  A detail for the thrust restraint of pre-tapped connectors is provided for when there is significant deflection at the sockets. New details describing the required support for both small and larger valves is also provided.
- MRWA-W-208- *Sloping Mains & Trench Drainage*.
  Formatting, visual improvements and minor error correction only.
- MRWA-W-210- *Underground Crossings*.
  Reference to new Trenchless Construction standard included and sleeve standards have been altered to prefer non metallic sleeves.
- MRWA-W-211- *Bridge Crossings*.
  Formatting, visual improvements and minor error correction.

- **MRWA-W-212**- *Curves & Deflections*.
  There has been a change to the horizontal deviation preferences for >=4 pipe lengths. A deflection equation has now also been included for when there is a combination of both Ductile Iron and PVC pipe sockets.
- **MRWA-W-213**- *Trenchless Construction*.
  This is a new standard based on the Trenchless Construction standard that has been introduced with new the new MRWA Sewerage Standards. It provides information on the types of pipe and boring technology combinations that can be used and describes the limitations and requirements of each.
- **MRWA-W-214**- *Water Assets around Retaining Walls*.
  This is a new standard based on the Sewerage Assets around Retaining Walls standard that has been introduced with the new Sewerage Code. It requires that retaining walls be shown on the design plan.
  It is important that all water asset testing is completed after the structural part of the retaining wall has been constructed and that any services damaged during the construction of the retaining wall are replaced, not repaired.
- **MRWA-W-300A**- *Shut Off Block Design*.
  This is a new standard which has been introduced to clarify where valves and hydrants are required to be located. Location selection rules have been clearly defined and all maximum spacing and shut off block limits have been provided. This standard also includes an example of valve and hydrant placement in a sub-division with reference back to the selection rules.



- **MRWA-W-300B**- *Shut Off Block Design Examples*.
  This is a new standard which complements MRWA-W-300A and has been introduced to provide further examples of valve and hydrant placement but with different maximum hydrant spacing and shut off block sizing. Each different shut off block has been indicated with different colour shading.
- MRWA-W-300- *Valve and Hydrant Marking Arrangements*.
  Hydrant patches no longer need to be placed across the kerb channel and pavement as previously described but can be located entirely on the road pavement.
- MRWA-W-301- *Valve & Hydrant Marking Details*.
  Valve and hydrant marking colours have been clarified, especially with respect to NDW covers. This standard is only relevant to CWW and SEW. YVW is currently preparing its own valve and hydrant marking standard which will be included with the MRWA standards at a later date.
- MRWA-W-302- *Valve Surface Arrangements*.
  The requirement for trafficable valve covers in residential and industrial – commercial nature strips has been clarified. The area of compacted crushed rock under non-trafficable valve covers now needs to be supported with cement to be spread over the surface to provide a solid surface to support the cover.
  YVW no longer allow the use of hinged lid trafficable covers.
- MRWA-W-303- *Hydrant & Washout Surface Arrangements*.
  The requirement for trafficable hydrant covers in residential and industrial – commercial nature strips has been clarified. The area of compacted crushed rock under non-trafficable hydrant covers now needs to be supported with cement to be spread over the surface to provide a solid surface to support the cover.
- **MRWA-W-304**- *Hydrant & Air Valve Arrangements*.
  Rather than specifying a selection process, all of the situations of use of potential hydrant and air valve arrangements have been specified in a table. Offset arrangements are now better illustrated to show how offset air valve and hydrant combinations should be installed. With the loss in availability of above ground L type drop ball hydrants, automatic air release through these fittings is no longer possible. It is therefore now a requirements that all mains >=DN450 have air valves fitted.
- **MRWA-W-304B**- *Hydrant & Air Valve Examples*.
  This is a new standard which has been included to support MRWA-W-304 by providing examples of the most common arrangements.
- MRWA-W-305- *Hydrant & Air Valve Fitting Details*.
  As above ground L type hydrants are no longer available, this detail has been removed from the standard.

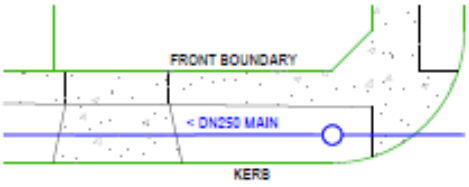


FIGURE 304B-A: CWW-SEW-YVW NON TRAFFICABLE MAIN <DN250
- IN LINE STANDARD HYDRANT

- MRWA-W-306A- *Flange Arrangements*.
  All fasteners (including those made from stainless steel) must now be sleeved with PE membrane and duct tape to keep grit out of fastener threads. The requirements of PE welded on puddle flanges has now been updated.
- MRWA-W-306B- *Flange Details*.
  Maximum as well as minimum torques have been included. Investigations of flange and tapping band failures has indicated that the most common cause of failure is the incorrect application of torque to fasteners, so it is important that these torque limits are correctly adhered to.
- MRWA-W-307- *Scour Arrangements*.
  Outlet arrangements are no longer provided in this standard but instead this standard refers to the sewerage standard MRWA-S-404 which includes a variety of connection arrangements to drains etc. Discharge pit design arrangements have been clarified.
- **MRWA-W-308**- *Swabbing & Extensions of New Mains*.
  "Gibbault" unrestrained couplings are no longer to be used in the connection of old and new pipework. Instead two back to back FL-SOC connectors are to be used. The situations in which temporary VS permanent valves are to be installed on >=DN225 pipelines has been clarified and the requirement that all permanent hydrants on >=DN300 dead end mains be valve controlled is now indicated.
- MRWA-W-400- *Steel Pipeline Jointing*.
  Formatting and visual improvements only.

MRWA Water Design Assurance Scheme Update

The DAS specification stipulates that 2 out of 3 designs submitted as part of the Part B assessment must be acceptable to pass DAS. If your first 2 submissions are not successful, a third submission should not be submitted until a future round of assessments is initiated. If you wish to undertake a further attempt at Part B, you will be required to pay another assessment fee at which time the assessment starts again and you would have to submit 2 out of 3 designs successfully.

The deadline for water design key personnel to successfully complete the water DAS program has now expired. The MRWAs are now reviewing the key personnel and organisational accreditation to WD1 and WD2 categories and we expect that a significant number of designers and organisations will lose their WD1 and WD2 accreditation as a result.

Should you or your organisation lose your accreditation to WD1 or WD2 categories, you will not be able to sign work agreements which specify one of these categories of work.

Part A assessments will continue to be run over 2017, although at a lower rate than what has been conducted throughout 2015 to 2016. If you wish to undertake the course or assessment, please follow the below link to express an interest:

http://www.eventgate.com.au/Event/6128/Expressions-of-Interest-201617---WSAA-Design-Assurance-Scheme-DAS-Water-Supply-Training-Course.

For those that have successfully completed the Part A assessment, Part B assessments can still be submitted at any time and you may still have the ability to obtain accreditation to WD1 or WD2 in the short term.

Revised MRWA Water Quality Specification

A revised version of the MRWA Water Quality Compliance Specification 04-02-2.1 can now be down loaded from the Standards page of the MRWA Web Portal. Refer to:

http://mrwa.com.au/Documents/Standards/Construction_and_Connection_of_New_Water_Mains_04-02-2.1.pdf

Alterations have been made to the sample results notification table to clarify Coliform and HPC results interpretation. The "New Main" results are to be compared directly to the "Existing Main", irrespective of what the existing main results are. This is to ensure the new main's water quality is not significantly worse than the existing main's. Any high results in the existing main will be dealt with by the water authority.

The column referencing the ADWG limits has been removed as this caused some confusion. The ADWG limits are now in a separate table under section 9.1 as they are relevant to the existing main only.

This updated specification will come into effect immediately on all new construction works although the MRWA Water Agencies will provide an amnesty on issuing non-conformances associated with these changes until 1 March 2017. Repeat observations of the same problem may still result in a non-conformance.

Section 11 Competency and Training:

The Safe Drinking Water Regulations 2015 specifies that employees and contractors of a water agency should be appropriately skilled and trained in water supply systems in order to take responsibility for the monitoring and management of hazards and risks to water quality. Consultants may be requested by individual water agencies to undertake specific training to fulfil this regulatory requirement.

Section 7 Sampling:

The requirement to collect samples after chlorination and neutralisation of water mains has been clarified.

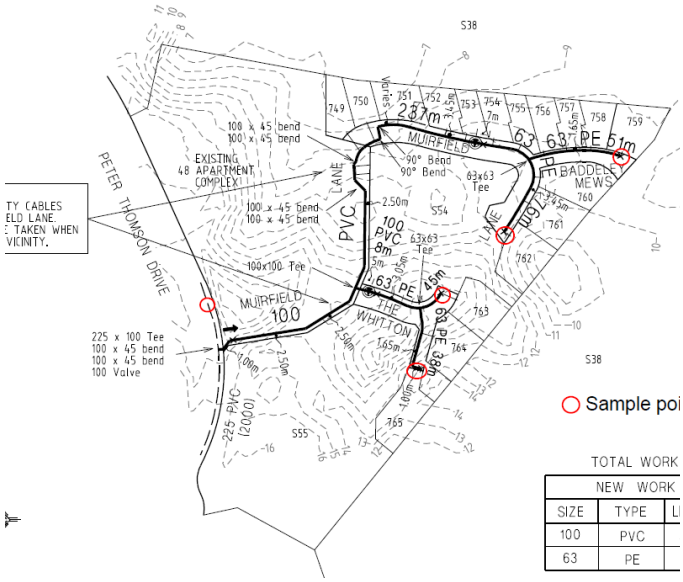
Section 7.1 Sample – Existing Mains:

Samples shall be taken from customer front taps wherever possible. No samples are to be taken from hydrants as this has sometimes caused false results in the past.

Section 7.2 Sample – New Mains:

A minimum of one sample is to be taken from each new main at the downstream end point. CWW and YVW do not require sampling of dead end mains <25m long and on application, SEW may grant exemptions to sampling these mains. This is to ensure the samples taken are representative of all the water in the new mains. The addition of Appendix 4 has been provided as an example of appropriate sample locations. The consultant is now required to identify all sampling locations on the design plans and provide appropriate unique sampling identification references. As part of the design verification process, the Water Agency may provide advice on the required sampling locations prior to sample collection.

Addition of Appendix 4:



MRWA Documentation

All MRWA standards, included those described in this bulletin are available on the MRWA website at:

http://www.mrwa.com.au/Pages/Standards.aspx

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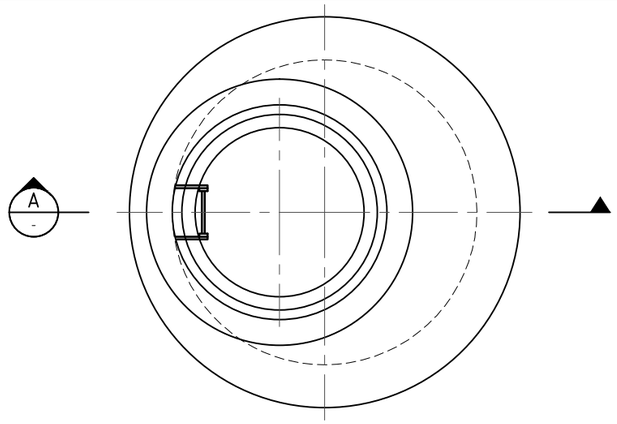
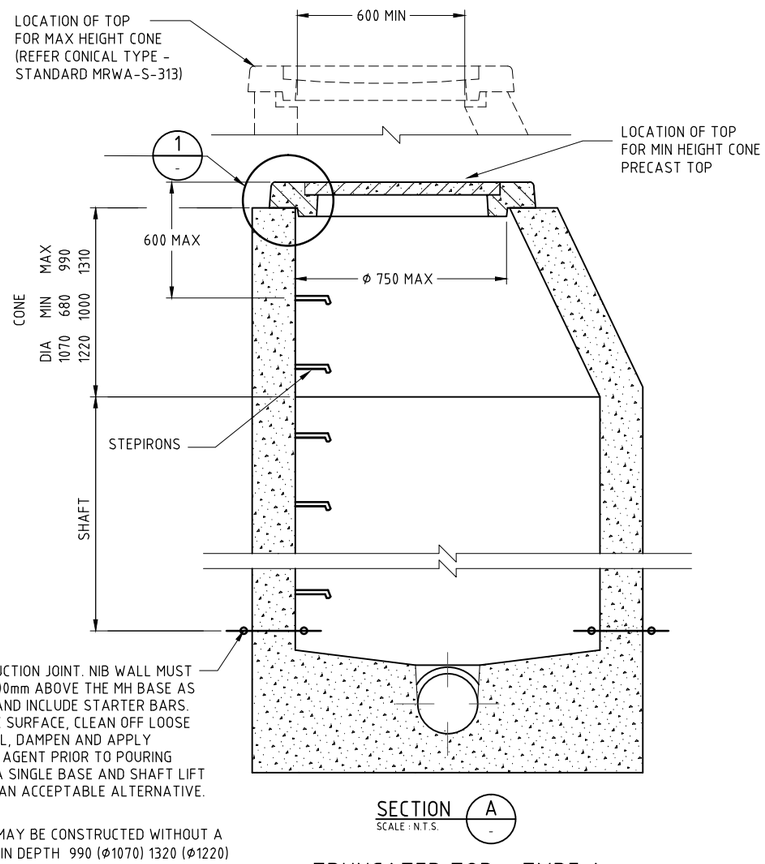


PLAN
SCALE : N.T.S.

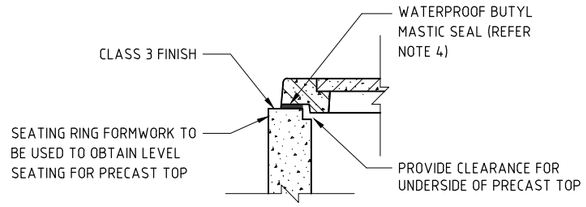
TRUNCATED TOP
CIRCULAR COVER



SECTION A
SCALE : N.T.S.

TRUNCATED TOP - TYPE A
NORMAL SEATING RANGE FOR TOP

TYPE A MAY BE CONSTRUCTED WITHOUT A SHAFT MIN DEPTH 990 (ø1070) 1320 (ø1220) TRUNCATED MH TYPE A SHALL NOT BE USED IN LOCATIONS SUBJECT TO VEHICLE LOADING

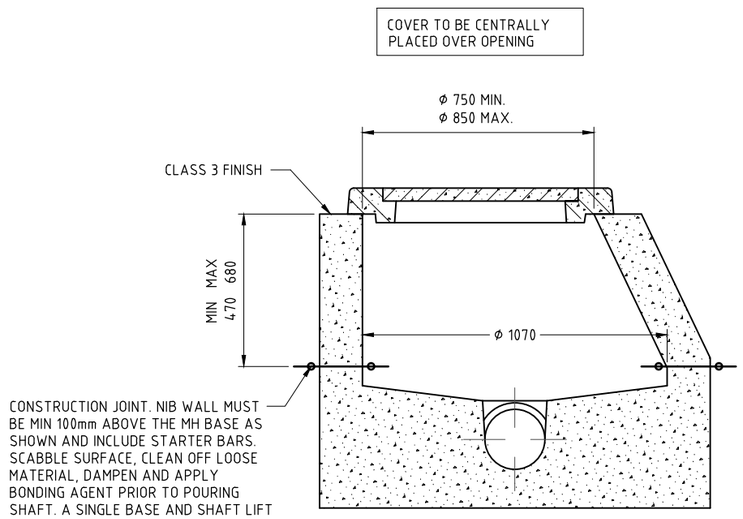


DETAIL 1
SCALE : N.T.S

DETAIL OF JOINT

NOTE

1. REFER TO STANDARD MRWA-S-300 FOR GENERAL REQUIREMENTS.
2. TRUNCATED TOP MAINTENANCE HOLES ARE CONSTRUCTED WITH THE SAME FORMWORK AS CONICAL MAINTENANCE HOLES, HOWEVER THE DEPTH OF THE CONE CAN BE REDUCED AS SHOWN AND PRECAST COVERS MAY BE USED.
3. STEPIRONS ARE NOT REQUIRED FOR MAINTENANCE HOLES WITH LESS THAN 900 FROM COVER LEVEL TO TABLE.
4. A WATERPROOF SEAL MUST BE ACHIEVED BY PAINTING BOTH CONTACT FACES WITH ROCLA MANHOLE ADHESION PRIMER (OR EQUIVALENT) AND PLACING BUTYL MASTIC SEAL.
5. A MAXIMUM DEPTH OF 2.0m APPLIES TO TYPE A. HOWEVER WHERE THE SEWER IS DEEP ENOUGH CONICAL TYPE SHOULD BE USED IN PREFERENCE TO TRUNCATED TYPE .
6. THIS DRAWING IS READ IN CONJUNCTION WITH STANDARDS MRWA-S-307, MRWA-S-311, MRWA-S-313 AND MRWA-S-314.



TRUNCATED TOP - TYPE B
REDUCED SEATING
ARRANGEMENT FOR TOP

MIN DEPTH 790
MAX DEPTH 990
DIAMETER OF BOTTOM 1070

NOTE 1. SHALL NOT BE USED IN LOCATIONS SUBJECT TO VEHICULAR LOADING

2. MUST NOT BE CONSTRUCTED WITH SHAFT

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE MRWA EDITION VERSION 2.0 OF THE WSAA SEWERAGE CODE WSA02-2014-3.1, ASSOCIATED MRWA STANDARDS AND WSAA PRODUCT SPECIFICATIONS.

REV	ZONE	DESCRIPTION	DATE	DESIGNED	DRAWN	DES. CHK.	DRAFT CHK.
0		INTERIM MRWA DRAWING APPENDIX	11/2016	COLIN P.	CAMERON D.	COLIN P.	COLIN P.

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MELWAY REF: N/A | SHEET SIZE: A1 (FULL SIZE PLOT) | APPROVED: COLIN P.

SOUTH EAST WATER CORPORATION
MAINTENANCE HOLE DRAWING APPENDIX
TRUNCATED TOP DETAILS

PLAN TYPE: CIVIL
SCALE: N.T.S.
DRAWING NUMBER
MHTA-07 | 0
NUMERAL | REV

THE ORIGINAL DRAWING WAS HAND SIGNED BY THE PERSON WHOSE NAME OR INITIALS APPEAR PRINTED AND MARKED THUS (#) IN THE SIGNATURE BLOCKS.