CITY OF WELLAND

SPECIAL PROVISIONS - SUPPLEMENTARY

WATERMAINS

AND

APPURTENANCES

NOTE: In the event of a conflict, these Special Provisions - Supplementary Watermains and Appurtenances, shall take precedence over the Special Provisions - Contract Items.

CITY OF WELLAND
WATERMAINS AND APPURTENANCES INDEX

MATERIALS FOR WATERMAINS

1. GENERAL

All Waterworks materials must meet AWWA current quality criteria standards and American National Standard ANSI/NSF Standard 61 no lead certification for waterworks material products. Only those products stamped mechanically with the letters NSF61 on the body or shipped in cartons bearing the marking ANSI/NSF Standard 61, certified by an accredited Laboratory, will be accepted by the Corporation.

All materials shall be as specified or equivalent as approved by the Contract Administrator. Lead and/or lead composite components are strictly prohibited.

All brass curb stops, corporation stops, service line valves, fittings and all other brass products used that come into contact with potable water must meet the requirements of ANSI/AWWA C800 Standard and contain no more than .09% lead by weight. These brass products shall meet NSF/ANSI Standard 61 and shall have the letter “NL” cast into the body for identification.

2. PIPE

100mm – 400mm (4” – 16”) DR18 PVC conforming to AWWA C900 or approved equivalent.

Bionax PVCO Pipe: Cast Iron outside diameter (CIOD). Associated with and third party certified to AWWA C909. Also associated with CSA Standard B137.3.1.

3. FITTINGS

MJ fittings as per ANSI/AWWA C153/A21.53 with cement or epoxy lining and coatings. Iron fittings, cast or ductile, shall be with ends specifically manufactured for use with asbestos cement pipe, ringtite or if required with hub, mechanical joint, flanged, tyton joint.

- All mechanical joints are to be fastened with stainless steel nuts and bolts.

4. VALVES

All gate and tapping valves shall have stainless steel stem, resilient seat and epoxy coated inside and out, and be either:

(a) Clow

(b) American AVK. Shall be manufactured in accordance with AWWA Standard C 509, interior spray coating to AWWA C550 and exterior polyurethane coating.

(c) EJ FlowMaster Resilient Wedge Gate Valve

Valve box specifications:

Sliding type with tracer wire attachment hole built in, able to accommodate 8 gauge wire, and support plate

Size: 108mm (4¼") diameter

Length: 0.3m above finished grade at full extension.

5. HYDRANT SETS

Hydrants shall be either:

(a) Bibby Sentinel
(b) Concord Compression
(c) Darling Century Compression
(d) McAvity M-67-B
(e) American AVK
(f) EJ Water Master 5BR250

Hydrant specifications:

Shall be manufactured in accordance with AWWA Standard C502, be of break flange traffic model type, and present a low profile with a modern design exterior;

Depth of bury: 1.8m (6');

Boot: to be epoxy coated internally and externally, 150mm (6") diameter mechanical joint;

Colour: red with silver dome and caps;

Boot to bottom flange with stainless steel bolts;

Dry barrel, shall be epoxy coated in compliance with AWWA Standard C502;

Pumper nozzle designation "SD" or 33B, thread detail 5-3/4 O.D. x 4, with 2 – 2 1/2" hose connections and 1 – pumper nozzle.

Where hydrants do not conform with the furnished ground grade the proper length extension will be inserted either at the drain ring flange before backfilling or the ground line flange with proper rod extension. Extension must be installed in strict accordance to manufacturer's specifications.

Should the hydrant require a shorter barrel due to a necessary grade change in the main the proper length barrel will be installed before backfilling the hydrant trench.

150mm (6") diameter secondary valves to conform to valve specifications.

Tee off watermain shall be anchor type. Secondary valve shall be bolted to the anchor tee. All piping required (from tee to valve to hydrant) shall be Class 150 P.V.C.

All Hydrants containing bronze or brass material must conform to AWWA Standard C800-05 and Ansi/NSF61 compliant.

6. CORROSION PROTECTION

All metallic pipe, fittings, appurtenances, etc., installed underground must be protected using Denso Anti-Corrosion Protection System, meeting ISO 9001 Standards, consisting of primer, mastic and tape in accordance with manufacturers recommendations. Corrosion protection must not cover the drain ring on fire hydrants.

Zinc cathodic protection to be installed where required.

7. TAPPING SLEEVES

Tapping sleeves shall be Robar 6606 stainless steel tapping sleeve or equivalent with T 304 stainless steel bolts or approved equivalent for C.I., A.C. and PVC pipe. Sizes 100mm (4") - 400mm (16") I.D.

OR

622 carbon steel tapping sleeve with fusion bonded Flexi – Coat epoxy as per AWWA C213. Flange to be of carbon steel per A36. Type AWWA C@ class D, (ANSI 150# hole pattern). Recesses for tapping per MSS-SP 60. Gasket to meet NSF 61 standards, Nitrile (Buna – N), compounded to resist water, oil, acids, alkalies, most (aliphatic) hydrocarbon fluids and many chemicals. Temp. range - 20F to 180F. Test plug to be ¾" carbon steel with square head, fusion bonded epoxy coated. Body and neck to be carbon steel per ASTM A283 C. Must meet AWWA C223 Standards. Must use stainless steel bolts.

8. SERVICE SADDLES

Service saddle clamps for taps up to 50mm (2") in size for cast iron pipe, asbestos cement pipe and P.V.C. pipe of up to 2" diameter, shall be A.W.W.A. standard thread outlet Model #403 broad bend saddle, all stainless steel or approved equivalent. Service saddle clamps for all PVC pipe greater than 2" in diameter shall be Style SC-2 double bolt all stainless steel saddle clamps for service tapping up to 50mm (2") in size. Tapping saddle shall consist of 304 stainless steel, complete with 18-8 stainless steel nuts and bolts and SBR rubber gasket or as per ASTM D2000 AA4 15 rubber. Saddle clamp to accommodate nominal PVC pipe size from 3" to 12 "in diameter

All service saddles must conform to AWWA Standard C800-05.

9. THRUST RESTRAINTS

All thrust restraints are to be mechanical joint type with secondary concrete thrust blocking, as required:

- EBAA Iron Series 2000 PV
- Uni-Flange Series 1300
- Megalug
- Grip Ring Pipe Couplings

- TufGrip Dual Wedge Series 1500

Safety factor 2:1

High strength ductile iron per ASTM A536, Grade 65-45-12 and ASTM 536-80.

10. TRACER WIRE

Tracer wire shall be either 8-gauge, 7 strand copper insulated wire or #10 AWG Solid steel core soft drawn high strength tracer wire as supplied by Copperhead, or approved equal, as specified in the Form of Tender.

All PVC watermains shall include the installation of a continuous wire, properly taped and fastened onto pipe. All services shall include the installation of a continuous wire connected to wire at watermain and brought to the surface along curb box, where it is to be fastened with a stainless steel gear clamp to the stand pipe immediately underneath the lid. All Hydrant locations shall have a continuous wire from the watermain to the Corbra T3 (T1-01) or equivalent test station located on the Hydrant grade flange using an HDPE bracket. Test Station to be installed as per City Standard drawing Tracer Wire Test Station Installation on Hydrants

Tracer wire for watermains installed by Horizontal Directional Drilling shall be *Copperhead, 12 AWG-Solid EHS-CCS Horizontal Directional Drill Tracer Wire, 45 Mil HDPE, 30 Volt, Direct Burial Only* or approved equal. Twin application of tracer wire shall be installed for the entire length of Horizontal Directional Drilled watermain.

11. CORPORATION FITTINGS

Main Stop

Main Stop shall be the same size as the service line, bronze, round way.

- service saddle is required

For sizes 20mm diameter and 25mm diameter:

- tapping must not exceed 15° from horizontal centre line of main.

For sizes 38mm diameter and 50mm diameter:

- tapping must be at horizontal to centre line of main;
- AWWA standard thread inlet and female iron pipe thread outlet;
- plastic pipe to iron coupling or adapter.

All main stops consisting or containing bronze or brass material must meet the requirements of ANSI/AWWA C800 Standard and contain no more than .09% lead by weight. These brass products shall meet NSF/ANSI Standard 61 and shall have the letter “NL” cast into the body for identification.

Curb Stop

Curb valve to be compatible (same size) as new service:

- bronze type shall be “0” ring type with both ends compression

- ball – type valve only.

All curb stops on the open end must be protected with the use of a plastic cap or plug.

All curb stops consisting or containing bronze or brass material must meet the requirements of ANSI/AWWA C800 Standard and contain no more than .09% lead by weight. These brass products shall meet NSF/ANSI Standard 61 and shall have the letter "NL" cast into the body for identification.

12. COUPLING AND ADAPTORS

All couplings and adaptors shall be as follows:

(a) For PE Tubing - Bronze with one piece combination nut and tail, compression type with stainless steel insert (heat flaring of tubing is not allowed).

(b) For P.V.C. pipe: Bronze, brass or P.V.C. with spigot, bell compression joint or iron pipe thread ends or any combination of these:

Bell to Bell - Johns-Manville P.V.C. double bell coupling

Bell to Male Iron Pipe - Johns-Manville P.V.C. male adaptor (threaded)
Spigot to Male Iron Pipe - 200mm (8") long schedule 80 grade 1 type 1 P.V.C. nipple, one end with standard iron pipe thread, other beveled 8° x 3/8".

Compression joints for 38mm and 50mm (1½" and 2") P.V.C., I.P. size is acceptable in the following fittings: curb stops, P.V.C. to P.V.C. compression couplings, P.V.C. to I.P. male couplings, and P.V.C. to I.P. female couplings.

NOTE: Couplings and adaptors employing heat fusion on PE tubing or solvent weld on P.V.C. pipe may only be used if factory made.

All couplings and adaptors consisting or containing bronze or brass material must meet the requirements of ANSI/AWWA C800 Standard and contain no more than .09% lead by weight. These brass products shall meet NSF/ANSI Standard 61 and shall have the letter "NL" cast into the body for identification.

13. PIPE FITTINGS AND NIPPLES

All pipe fittings and nipples must be brass, bronze, P.V.C. or stainless steel as follows:

Fittings

- screwed P.V.C., Grade 1 type 1, schedule 80
- bronze with one piece combination nut and tail, compression type joint with stainless steel insert, Class 160
- bell and spigot joint P.V.C., class 160

Threaded Nipples

- P.V.C., grade 1 type 1, schedule 80

NOTE: Cast bronze solder fittings are not acceptable. Teflon pipe thread tape must be used on all threaded P.V.C. joints.

All pipe fittings and nipples consisting or containing bronze or brass material must meet the requirements of ANSI/AWWA C800 Standard and contain no more than .09% lead by weight. These brass products shall meet NSF/ANSI Standard 61 and shall have the letter “NL” cast into the body for identification.

14. CURB BOX

Curb boxes are to be stainless steel and shall be the extension type with regular ribbed cover marked “WATER”, hexagon plug, 0.9m minimum height S/S operating rod, stainless steel cotter pin and suitable for a 1.5m (5’) to 1.8m (6’) trench.

For 25mm (1”) curb stops, the curb box, Series D1 Style #8.

For 38mm (1½”) and 50mm (2”) curb stops the curb box, Series D-2 Style #8.

Full assembly is to consist of stainless steel stand pipe.

When the service lines are installed in a subdivision or any other location where the pipe is not continued past the curb stop into a building, the locations of the curb box must be indicated. At such curb box location, 1.5mm (5’) long 50mm x 50mm (2” x 2”) wooden stake shall be planted and shall have 0.90m (3’) bury. Stakes shall be painted blue and each shall bear, on its broad side above the ground, the letter “W” painted in white.

15. SERVICE INSTALLATION

- Type ‘K’ Soft Copper 20mm (3/4”) – 50mm (2”) I.D. – water service tubing, CSA Standard HC-76 and AWWA Standard C800-05.
- Municipex (PEXa) pipe or equivalent conforming to CSA B137.5 and NSF Standard 14 & 61, and current AWWA standards. Installation of this product will be in accordance with manufacturers specifications, or equivalent, previously approved by the Contract Administrator, prior to installation.

16. GROUNDING

Where the existing metallic water service is believed to be used for electrical grounding, and/or the foundation wall of the dwelling is less than 3 metres away from property line, copper tubing is to be used for the replacement of the water service lateral from the watermain to the curb stop.

CONSTRUCTION OF WATERMAINS

1. INTERRUPTION OF SERVICE

Unless directed by the Contract Administrator and under the direct supervision of a MOE licensed water operator, the contractor is not allowed to operate valves, hydrants, blow-offs or curb stops.

2. CONFLICTING UTILITIES

If the elevation of any existing utilities is doubtful, it must be checked early enough to allow for adjustment in the elevation of the watermain to accommodate. No down time claim will be considered resulting from such delays.

3. SETTING VALVES AND FITTINGS

Valves shall operate freely prior to installation. Boxes shall be carefully set over the bonnet with the shaft truly vertical and the top at the proper elevation.
Valve boxes shall be braced to the sides of the trench prior to backfilling in order to maintain their setting. Guide plates shall be used with all boxes.

4. SETTING HYDRANTS

Where hydrants are set in a bank, the slopes shall be graded within a 1.8m (6') radius from 75mm (3") below the ground flange not steeper than 1:2.

5. TAPPING

Tapping for sizes 100mm (4") and greater to existing watermains and to new watermains by means of tapping sleeve and valve will be carried out by City forces or others as deemed necessary by the contract administrator. It is the contractor's responsibility to notify the Sewer and Water Division of the City at least two (2) working days in advance to the operation required.

Excess time related expenditures incurred by City forces resulting from mis-coordination of events by contractor will be charged against the contractor. No down time claim will be entertained resulting from such delays.

6. SWABBING

Prior to flushing, all newly constructed watermain is to be swabbed with industry proven method and material, preferable in both directions, until the colour of dirty water is eliminated.

7. DISINFECTION OF WATERMAINS

New watermains are to be disinfected in accordance to MOECC Specification: Watermain Disinfection Procedure, November 2015 (as amended). A copy of this specification can be found on the City of Welland website (http://www.welland.ca/Eng/ENGStandards.asp).

8. WATER DISTRIBUTION SYSTEM WORK SUPERVISION

All work performed to the water distribution system must be carried out in accordance to the latest version of Standard Operating Procedures for All Watermain Distribution Repair & Installation and be directly supervised by a MOE certified operator. No work shall commence except in the presence of such qualified municipal official.

9. EXPOSED BUILDING FOUNDATION

All exposed foundation cracks are to be caulked or grouted in addition to the entrance hole for the service entering the building, where applicable.

10. EXCESSIVE JOINTS

No joint may be introduced to new main section which is less than 6m in length except for the installation of pre-manufactured service saddle, valve, elbow and existing main connection.

11. GROUNDING RELATED SAFETY MEASURE

Due to the potential usage of existing copper services for household electrical grounding, proper pre-cautionary measure of re-routing of electrical current must be exercised by the contractor.