



Part 1 General

1.1 DESCRIPTION OF WORK

- .1 The work described herein shall consist of the construction of air release chambers, flushout chambers, valve chambers, meter chambers and/or combination chambers as shown on the Plans including: the supply and installation of a precast reinforced concrete structure or special manhole; the supply and installation of piping, valves, fittings, meters and related appurtenances; the supply and installation of miscellaneous metal; the sanding, priming and painting of all uncoated non-galvanized iron and steel products; the connection of the chamber to the pipeline or forcemain external to the chamber, and the testing of the completed works.

1.2 CLASSIFICATION OF WORK

- .1 AIR RELEASE CHAMBERS - shall be classified on the basis of the nominal inside diameter of the pipe passing through the chamber.
- .2 FLUSHOUT CHAMBERS - shall be classified on the basis of the nominal inside diameter of the pipe passing through the chamber.
- .3 VALVE CHAMBERS - shall be classified on the basis of the nominal inside diameter of the valve installed in the chamber.
- .4 METER CHAMBERS - shall be classified on the basis of the nominal inside diameter of the pipe passing through the chamber.
- .5 COMBINATION CHAMBERS - shall be classified on the basis of the nominal inside diameter of the pipe passing through the chamber, and on the basis of the combination of air releases, flushouts, valves and meters as may be required to be installed.

1.3 STANDARDS

The following organizations publish Standards which have been referred to in this Section:

- .1 CSA International
178 Rexdale Boulevard
Etobicoke, ON M9W 1R3
- .2 ASTM – American Society for Testing and Material
100 Barr Harbor Drive

Effective Date: March 2022



West Conshohocken, PA 19428-2959 USA

- .3 CGSB – Canadian General Standards Board
Lac Du Portage 111, 6B1
11 Laurier Street
Gatineau, QC K1A 1G6
- .4 AWWA – American Water Works Association
666W. Quincy Avenue
Denver, Colorado 8235 U.S.A.

1.4 REFERENCED STANDARD DETAILS

- .1 SD-36 Chamber

1.5 QUALITY ASSURANCE

- .1 CONCRETE - The Engineer shall carry out tests on concrete as he considers necessary in accordance with the current CSA Standard A23.2, Method of Test for Concrete. Such tests shall be at the expense of the Owner except that the Contractor shall provide any and all test samples free of charge.
- .2 LEAKAGE – The Contractor, under the Supervision of the Engineer, shall undertake infiltration and exfiltration testing of the completed chamber to ensure the manhole is watertight.
- .3 TESTING AND OPERATION – The Contractor and if required the suppliers of major components shall test the operation of the chamber under the direct supervision of the Engineer.
- .4 WELDED JOINTS – The Contractor shall supply a procedure for welded joints to the Engineer. The Engineer may test welded joints by x-raying or other means. If the welds are deemed to be faulty the costs to fix the welds shall be the responsibility of the Contractor. Welders shall hold a valid "Welder's Licence" in the Province of Manitoba and be certified by Provincial Regulator.
- .5 WELDED JOINTS – The Contractor shall supply a procedure for welded joints to the Engineer. The Engineer may test welded joints by x-raying or other means. If the welds are deemed to be faulty the costs to fix the welds shall be the responsibility of the Contractor. Welders shall hold a valid "Welder's Licence" in the Province of Manitoba and be certified by Manitoba Labour and Immigration.
- .6 PRESSURE TEST - The Contractor shall pressure test the piping in the chamber under the direct supervision of the Engineer.

Effective Date: March 2022



1.6 STORAGE AND HANDLING

- .1 Products and materials associated with the construction of the chamber shall be stored and handled in accordance with the recommendations of the manufacturer and in a manner approved by the Engineer.

1.7 INSPECTION

- .1 Inspection of the work described in this Section shall be organized by the Engineer.

Part 2 Products

2.1 APPROVED PRODUCTS

- .1 Products shall be supplied in accordance with the Listing of Approved Products in the attached Appendix, or shown on the Plans or Specified in Section 01 00 10, Special Provisions.

2.2 PRECAST CONCRETE MANHOLE CHAMBER

- .1 CHAMBERS OVER 1200 mm IN DIAMETER - Chamber structures shall be precast reinforced concrete manholes conforming to ASTM C478 Standard for Pre-cast Manhole Section complete with: precast reinforced base and top slab, each designed for 700 kg live load, with stainless steel, painted steel, composite or aluminium access hatch frame and cover unit, complete with hasp and padlock, cast-in-place with the top slab; tongue-in-groove manhole section joints with deformable bituminous gaskets ("Ram-nek" or approved equal); cast-in-place openings as required; and cast-in-place stainless steel or aluminium manhole rungs. The exterior of the pre-cast manhole section shall be wrapped with 16 mil polyethylene plastic.
- .2 CHAMBERS 1200 mm IN DIAMETER – Chamber structures shall be precast reinforced concrete manholes conforming to ASTM Standard C478, Standard for Pre-cast Manhole Section. The base section shall be 1200 mm in diameter, 1.2 metres high, with a precast floor and cast-in-place openings as required. The flat top reducer shall be 1200 mm x 750 mm x 1.05 metres high. The riser shall consist of 750 mm diameter sections. Base, reducer and riser sections shall have tongue-in-groove joints with deformable bituminous gaskets ("Ram-nek" or approved equal) and cast-in-place stainless steel or aluminium manhole rungs. A stainless steel, painted steel, composite or aluminium access hatch frame and cover unit, complete with hasp and padlock, cast in place with the top section shall be provided for access.

Effective Date: March 2022



- .3 PRECAST CONCRETE CHAMBERS - Precast concrete chamber structures other than manholes shall be supplied and installed by the Contractor to the dimensions shown on the Plans, SD-36 of the Standard Construction Drawing Appendix, or as specified in Section 01 00 10, Special Provisions. A stainless, painted steel, composite or aluminium access frame and cover, complete with lockable mechanism and gasket, shall be provided as shown on the Plans. An external 225 mm wide manhole “chimney seal assembly” shall be provided to seal the joint between the access manhole and the chamber (Note: chimney seal should be installed under polywrap).
- .4 RURAL PIPELINE METER CHAMBER - The Contractor shall install the precast chamber with the holes/sleeves cast into the chamber to provide for the installation of a link seal. The vertical riser on the top of the chamber shall be installed with deformable bituminous gasket “Ram-nek” or approved equal, grouting, and mechanical external manhole chimney seal to prohibit ground water from entering the chamber. The exterior of the meter chamber shall be damp-proofed with asphaltic compound meeting the requirements of CGSB 37-GP-2B Emulsified Asphalt Compounds or CGSB 37-GP-6C Asphalt Cut-Back.

2.3 CONCRETE GROUT

- .1 Concrete grout shall be non shrink type in accordance with Clause 2.7.6 of Section 03 30 00, Cast- in-Place Concrete, or as specified in Section 01 00 10, Special Provisions.

2.4 PIPE AND FITTINGS

- .1 Pipe and fittings shall be supplied in accordance with the Listing of Approved Products and Section 15 05 00, Basic Materials and Methods, and as indicated on the Plans or specified in Section 01 00 10, Special Provisions.

2.5 VALVES, METERS APPURTENANCES

- .1 Valves, meters and appurtenances shall be supplied in accordance the Listing of Approved products and Section 15 05 00, Basic Materials and Methods, and as indicated on the Plans or Specified in Section 01 00 10, Special Provisions.

2.6 CONNECTIONS TO LINE

- .1 The internal flanged steel, iron or PVC piping shall be connected to the water pipeline (or forcemain) by means of suitable adaptors or couplings approved by the Engineer. If the pipeline (or forcemain) is polyethylene, the connection shall be made by means of a polyethylene flange assembly (polyethylene stub end of the same size as the pipeline, with ductile iron epoxy coated backup ring, full

Effective Date: March 2022



faced red rubber gasket and all stainless steel nuts, bolts and washers). If the pipeline (or forcemain) is PVC, the connection shall be made by means of a PVC flange, full faced red rubber gasket, and all stainless steel nuts, bolts and washers. The pipeline passing through the precast chamber flat wall shall utilize a precast flange or a link seal assembly.

2.7 INSULATION

- .1 Insulation shall be 50 mm thick rigid polystyrene in conformance with the current CGSB-51-GP-20M or CAN/ULC S701 type 4 or approved equal and shall be fastened in accordance with the manufacturer's recommendations or as shown on the Plans or Specified in Section 01 00 10, Special Provisions. Miscellaneous metal shall be supplied in accordance with Section 05 90 00 Miscellaneous Metal, and as indicated on the Plans and in Section 01 00 10, Special Provisions.

2.8 MISCELLANEOUS METAL

- .1 PIPE SUPPORT STRAPS – Shall be all stainless steel with all stainless steel nuts, bolts, and washers.
- .2 VENTILATION PIPING – shall be seamless black steel thin wall pipe with light gauge welded fittings.
- .3 ACCESS HATCH – shall be a galvanized steel, painted steel or light aluminum hinged frame with a continuous gasket and lockable cover unit.

Part 3 Execution

3.1 EXCAVATION BEDDING AND BACKFILLING

- .1 This portion of the work shall be undertaken in accordance with Section 02 21 90, Structural Excavation, Backfilling and Compaction, and with Section 02 21 80, Pipe Excavation, Bedding and Backfilling.

3.2 ALIGNMENT AND GRADE

- .1 The chamber shall be constructed to the alignment and grade shown on the Plans or as staked on the ground by the Engineer.

3.3 JOINING SECTIONS

- .1 When the chamber requires assembly of precast concrete sections then all precast concrete slabs and sections shall be sealed with a deformable bituminous gasket "Ram-nek" or approved equal. The sections and top slab shall be joined such that the ladder rungs line up vertically and align properly with the access hatch frame

Effective Date: March 2022



and cover unit. All joints shall be grouted in the interior and exterior of the chamber with approved non shrink concrete grout.

3.4 GROUTING

- .1 All holes, joints, and pipe passing through the chamber walls shall be grouted with non shrink grout.

3.5 CUTTING PIPE

- .1 Pipe shall be saw-cut to the correct lengths and the edges bevelled (or squared as in the case of polyethylene and steel pipe) for joining purposes.

3.6 WELDING

- .1 Welding of pipe and fittings shall conform with the current AWWA C206, Standard for Field Welding of Steel Water Pipe.

3.7 JOINING PIPE AND FITTINGS

- .1 All flanged pipe, valves, and fittings shall be bolted together with a rubber gasket between the flange faces. Nuts, bolts and washers joining pipe shall be all stainless steel.

3.8 PIPELINE CONNECTIONS

- .1 The water pipeline (or forcemain) shall be connected to flanged piping and fittings by a method approved by the Engineer. Where pressure pipelines pass through walls of the chamber, the Contractor shall ensure that no ground water infiltration occurs. The Contractor shall utilize a sleeve cast into the wall of the chamber with sleeve inside diameter conforming to the correct approved link seal for the diameter of pipe being installed.

3.9 INSULATION

- .1 Insulation shall be fastened in accordance with the manufacturer's recommendations and as shown on the Plans and described in Section 01 00 10, Special Provisions.

3.10 HYDROSTATIC TESTING

- .1 The piping in the completed chamber shall be pressure tested in accordance with Section 02 70 60, Pressure Pipelines. Contractor shall test the chamber hydraulically. The Contractor shall provide water for filling the chamber at his own expense. The chamber shall be filled with water up and shall be maintained for a period of 24 hours to permit absorption by the concrete. Any leakage shall

Effective Date: March 2022



be noted. The chamber will be topped up and the leakage test shall commence. The leakage from the chamber shall not exceed a 4 mm drop in water level during the 24 hour test period. The Contractor shall repair all visible leaks both inside and exterior of the chamber and areas of dampness, as directed by the Engineer, as soon as possible after emptying the chamber. This test shall thereafter be repeated as necessary until leakage has been eliminated to the satisfaction of the Engineer. Any defects shall be corrected by the Contractor at his own expense. Chambers consisting of a single piece precast unit shall have no leakage into the chamber or through sleeved connections for pipeline, watermain, or forcemain.

Effective Date: March 2022