PART 1 - GENERAL

1.1 Description

.1 This section specify requirements for supplying, producing, placing, pre-cast catch basins and pipes, fittings including excavation, bedding, backfilling, frames, and covers.

1.2 References

.1 ASTM A48/A48M-08(R2012), Gray Iron Castings.

.2 ASTM C478M-13, Precast Reinforced Concrete Manhole Sections.

.3 ASTM D 3034-14 Standard Specification for Type PSM Poly Vinyl Chloride (PVC) Sewer pipe and fittings.

.4 Canadian Standards Association (CSA)
.1 CAN/CSA-B182.2-95 PVC Sewer Pipe and Fittings

1.3 Material Certification

.1 Upon request of Departmental Representative, submit manufacturer's test data and certification.

.2 Certification, date of manufacture and name or trademark of the manufacturer to be marked on catch basin.

1.4 Shop Drawing

.1 Submit shop drawings in accordance with Section 01 33 00 Submittal Procedures.

1.5 Scheduling of Work

.1 Schedule work to minimize interruptions to existing services and to maintain existing flow during construction.

.2 Submit schedule of expected interruptions for approval and adhere to approved schedule.

1.6 Measurement for Payment

.1 Catch Basin: Supply and installation of storm sewer piping and catch basin including excavation, testing and backfilling, granular bedding and surround will be measured as a lump sum price item.

.2 Granular bedding and surround will not be measured for payment but considered incidental to the work.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Cast-in-place concrete:
.1 To Section 03 30 00
.2 Precast catch basin sections: to ASTM C478M. Units are to have rubber gaskets at both inlet and outlet as indicated in detail drawings.
.3 Mortar:
.1 Aggregate: to CSA A82.56.
.2 Cement: to CAN/CSA A8.
.4 Adjusting rings: to ASTM C478M.
.5 Frames, gratings to dimensions as indicated and following requirements:
.1 Metal gratings and covers to bear evenly on frames. A frame with grating to constitute one unit. Assemble and mark unit components before shipment.
.2 Gray iron castings: to ASTM A48, strength class 30B.
.3 Castings: coated with two applications of asphalt varnish, sand blasted or Cleaned and ground to eliminate surface imperfections.
.4 Catch basin frame and grates: minimum 136 kg per set.
.5 bedding: As per Granular Base Section 31 23 10

.2 Plastic Pipe
.1 Type PSM Poly Vinyl Chloride (PVC): to CAN/CSA B1800.
.1 Standard Dimensional Ratio (SDR): 35
.2 Locked in gasket and integral bell system.
.3 Colour: white

2.1 MATERIALS (Cont'd)

.2 (Cont'd)
.1 (Cont'd)
.3 Pipe and Manhole Bedding
.1 Granular material to Section 31 23 10 and with following requirements.
.1 Crushed or screened stone or gravel.
.2 Gradation to be within the limits specified when tested to ASTM C136-06 an ASTM C117-13. Sieve sizes to CAN /CGSB-8.1

Sieve	% Passing
25 mm	-
19 mm	-
12.5 mm	100
9.5 mm	-
4.75 mm	50-100
2.00 mm	30-90
0.425 mm	10-50
0.180 mm	-
0.075 mm	0-10

PART 3 - EXECUTION

3.1 Preparation

.1 Clean pipes and fittings of debris and water before installation and remove defective materials from site to approval of the Departmental Representative.

3.2 Excavation and Backfill

.1 Excavate and backfill in accordance with Section 31 23 10 - Excavating and Backfilling as indicated.

.2 Obtain approval of Departmental Representative before installing catch basins.

3.3 Installation Catch Basin

.1 Construct units in accordance with details indicated, plumb and true to alignment and grade.

3.3 Installation Catch Basin (Cont'd)

.2 Dewater excavation to approval of Departmental Representative and remove soft and foreign material before placing concrete base.

.3 Set precast concrete base on 150 mm minimum of granular bedding compacted to 95% maximum density to ASTM D698.

.4 For storm sewer precast units:
.1 Set bottom section of precast unit in Granular Base Material (31.5 mm).
.2 Plug lifting holes with precast concrete plugs set in cement mortar or mastic compound.

.5 Compact granular backfill to 99% corrected maximum dry density.

.6 Set frame and grate to required elevation on either concrete risers (max. 300 mm) or steel adjustment rings.

.7 Clean units of debris and foreign materials. Remove fins and sharp projections. Prevent debris from entering system.

3.4 Pipe Laying

.1 Site Preparation
.1 Clean pipes and fittings of debris and water before installation, and remove defective materials from site to the approval of the Departmental Representative.

.2 Trenching
.1 Do trenching work in accordance with Section 31 23 10 - Excavating and Backfilling.
.2 Do not allow contents of any sewer or sewer connection to flow into trench.
.3 Trench alignment and depth to approval of Departmental Representative prior to placing bedding material and pipe.

.3 Granular Bedding
.1 Place bedding in unfrozen condition.
.2 Place granular bedding material in uniform layers not exceeding 150 mm compacted thickness to depth as indicated.

3.4 Pipe Laying (Cont'd)

.3 (Cont'd)

.3 Shape bed true to grade and to provide continuous, uniform bearing surface for pipe. Do not use blocks when bedding pipes.

.4 Shape transverse depressions as required to suit joints.

.5 Compact each layer full width of bed to at least 95% maximum density to ASTM D 698.

.4 Installation

.1 Lay and join pipe in accordance with manufacturer's recommendations and to approval of Departmental Representative.

.2 Handle pipe using methods approved by Departmental Representative. Do not use chains or cables passed through rigid pipe bore so that weight of pipe bears upon pipe ends.

.3 Lay pipes on prepared bed, true to line and grade with pipe inverts smooth and free of sags or high points. Ensure barrel of each pipe is in contact with shaped bed throughout its full length.

.4 Commence laying at outlet and proceed in upstream direction with socket ends of pipe facing upgrade.

.5 Do not exceed maximum joint deflection recommended by pipe manufacturer.

.6 Do not allow water to flow through pipe during construction except as may be permitted by Departmental Representative.

.7 Whenever work is suspended, install removable watertight bulkhead at open end of last pipe laid to prevent entry of foreign materials.

.5 Joints:

.1 Support pipes with hand slings or crane as required to minimize material pressure and maintain concentricity until pipe is properly positioned.

.2 Align pipes before joining.

.3 Maintain pipe joints free from mud, silt, gravel and other foreign material.

.4 Wrap each pipe joint with a strip of geotextile 600 mm wide and with an overlap of 600 mm.

.5 Complete each joint before laying next length of pipe.

3.4 Pipe Laying (Cont'd)

.5 (Cont'd)
.6 Minimize joint deflection after joint has been made to avoid joint damage.

.6 When any stoppage of work occurs, restrain pipes as directed by Departmental Representative, to prevent "creep" during down time.

.7 Plug lifting holes with Departmental Representative approved prefabricated plugs, set in shrinkage compensating grout for concrete pipe.

.8 Cut pipes as required for special inserts, fittings or closure pieces, as recommended by pipe manufacturer, without damaging pipe or its coating and to leave smooth end at right angles to axis of pipe.

.9 Make watertight connections to manholes and catch basins.

.10 Use "Insert a Tee" connections for connecting pipes to existing sewer pipes. Joint to be structurally sound and watertight.

.11 Temporarily plug open upstream ends of pipes with removable watertight concrete, steel or plastic bulkheads.

.12 Contractor shall use a laser to set horizontal and vertical alignments of piping. Any section having more than 3 mm in deviation shall be removed and reinstalled.

.13 Place surround material in unfrozen condition.

END OF SECTION

PART 1 - GENERAL

1.1 References

.1 CSA B137.5 Cross-linked Polyethylene (PEX) Tubing for Pressure Applications.

.2 ASTM F876, F877 and F2023.

.3 AWWA C904 and to SDR9 copper tube sizes (CTS).

1.2 Submittals

.1 Submit shop drawings in accordance with Section 01 33 00, Submittal Procedures.

1.3 Measurement Procedures

.1 The supply and installation of the new fresh water line as shown including all fittings, service connections, valve outlets and drain valves, fasteners, etc. will be measured as a fixed priced item. Supply and placement of restraint thrust blocks as required will not be measured for payment but considered incidental to the work. Extension of the valve box and water well casing to the new surface elevation will also be considered incidental to the work.

PART 2 - PRODUCTS

2.1 Materials

.1 Municipex 38mm nominal diameter, type A, potable tubing.

.2 Ball Valves; 2 piece full port stainless steel solid ball valves, teflon seats, stainless steel handle and nut.

2.2 Restraint Thrust Block

.1 Place restraining thrust blocks between valves, tees, bends, reducers as required by code.

PART 3 - EXECUTION

3.1 Installation

.1 Install piping as indicated and as per manucfacture's instructions.

.2 Pipe to be installed, allowing for drainage of all lines for winter. All piping to be sized as shown on plans.

3.2 Leakage Test

.1 A leakage test shall be conducted concurrently with the pressure test. The Contractor shall supply all equipment necessary for the conducting of this test.

3.3 Pressure Test

.1 All pipes shall be pressurized to 690Kpa and visually inspected. All faulty or leaking connections shall be corrected. Test to be witnessed by Departmental Representative.

END OF SECTION