

PART E
SPECIFICATIONS

PART E - SPECIFICATIONS

GENERAL

E1. GENERAL

E1.1 These Specifications shall apply to the Work.

E2. GOODS

E2.1 The Contractor shall supply and deliver cold water meters (5/8", 3/4" and 1") in accordance with the requirements hereinafter specified.

E2.2 The meters shall conform to the American Water Works Association (AWWA) Standard C700-95 Standard for Cold Water Meters - Displacement Type, Bronze Main Case including Appendix A and Appendix B - Supplemental Information. If there is any inconsistency between any clause contained in the aforementioned AWWA Standard and any clause contained in this specification, this specification shall prevail.

E2.3 Meters shall be of the nutating disc style (AWWA C700-95).

E2.4 The Contractor shall provide an affidavit of compliance (AWWA C700-95, Sec.6.3) for each meter size within ten (10) Working Days of award of Contract to the Contract Administrator.

E2.5 The following requirements are specified (AWWA C700-95, Sec. 4.2):

- (a) the meters will perform to new meter accuracy standards (AWWA C700-95, Sec. 4.2.8.) for a period of one (1) Year after being placed in service by the City.

Meter Size	Accuracy at Maximum Flow Rate	Accuracy at Intermediate Flow Rate	Accuracy at Minimum Flow Rate
5/8" (15mm)	15 gpm 98.5 – 101.5%	2 gpm 98.5 – 101.5%	.25 gpm 95 – 101%
3/4" (19mm)	25 gpm 98.5 – 101.5%	3 gpm 98.5 – 101.5%	.5 gpm 95 - 101%
1" (45mm)	40 gpm 98.5 – 101.5%	4 gpm 98.5 – 101.5%	.75 gpm 95 – 101%

- (b) the meters listed below will meet or exceed the minimum accuracy limits for "repaired" meters as contained in Table 5-3 of AWWA manual M6. Accuracy shall be maintained from either the date of purchase or the registration of the number of cubic meters passed through the meter, whichever occurs first;

Meter Size	Years from Date of Purchase	Cubic Meters Passed	Accuracy at Maximum Flow Rate	Accuracy at Intermediate Flow Rate	Accuracy at Minimum Flow Rate
5/8" (15mm)	15	5,700	15 gpm 98.5 – 101.5%	2 gpm 98.5 – 101.5%	.25 gpm 90% min.
3/4" (19mm)	15	8,000	25 gpm 98.5 – 101.5%	3 gpm 98.5 – 101.5%	.5 gpm 90% min.
1" (45mm)	15		40 gpm 98.5 – 101.5%	4 gpm 98.5 – 101.5%	.75 90% min

- (c) should a meter not perform as specified, the Contractor shall replace it at no cost to the City of Winnipeg. A meter shall be determined to not performing as specified if it fails to pass an accuracy test, conducted by the City of Winnipeg according to AWWA Standards. The warranty shall not apply to meters that have been damaged due to abnormal circumstances. It is intended that the warranty is applicable to meters that have been subjected to normal operating practices within the rated capacity of the meter.

- E2.6 Should cast iron frost protection devices be provided, internal corrosion protection shall be provided (AWWA C700-95, Sec.4.2.5).
- E2.7 Meters in sizes 5/8" (15mm) 3/4" (19mm) and 1" (45mm) shall be frost-protection-type design (AWWA C700-95, Sec.4.3.1.1). If the frost protection plate fails and as a result internal damage occurs, the Contractor shall replace the damaged meter at his cost for a period of ten years from date of supply.
- E2.8 Meters shall be furnished with top or bottom covers constructed from cast iron, stainless steel or copper alloy (AWWA C700-95, Sec.4.2.9.2).
- E2.9 Meter sizes 5/8" (15mm) 3/4" (19mm) and 1" (45mm) shall not require coupling nuts and tailpiece.
- E2.10 The straight reading permanently sealed registers (AWWA C700-95 Sec. 4.3.3) to be furnished with each meter shall be as follows:
- register shall read in cubic meters;
 - register shall be of the magnetic drive type (AWWA C700-95 Sec. 4.3.3.1);
 - register shall contain six (6) numeral wheels;
 - the register shall be attached to the meter body such that it can accept a tamper seal wire or shall be sealed at the factory such that any tampering is easily detected or prevented;
 - the faceplate of the register shall be labelled with the manufacturer's name;
 - odometers shall be set to zero (000000) at time of shipping to the City of Winnipeg;
 - the register shall be equipped with a low flow indicator; and
 - for the purpose of this Bid Opportunity a permanently sealed register shall be a register protected by a formed joint that can only be unsealed by destroying one or more of the components forming the joint.
- E2.11 When installed by the City, all meters will be sealed using a copper seal wire. Meters supplied shall meet one of the following provisions:
- where bayonet mount register is provided, meters shall be supplied to accept a three-point seal to the register, through a bolt with a hole in the head of the bolt, which bolt secures the bottom cover, and to the upstream coupling nut/flange; or

- (b) where the register is mounted inside the top cover, a two (2) point seal to the top cover and to the upstream coupling nut/flange; or
 - (c) some alternate sealing wire technique as may be proposed by the Bidder that is acceptable to the City. Such alternate sealing wire technique must be approved by the City **prior** to the Bid Opportunity closing time, in accordance with B5. Substitutes.
- E2.12 With respect to Table 1 in AWWA Standard C700-95, revise "Maximum Pressure Loss at Safe Maximum Operating Capacity" from fifteen (15) PSI to thirteen (13) PSI.
- E2.13 Registration accuracy shall meet or exceed requirements of AWWA C700-95, Sec. 4.2.8. Accuracy testing of each meter and register shall be performed. Each meter shall be factory tested for accuracy of registration at flow rates and test flow quantities in accordance with Section 4.2.8 of AWWA C700-95 and AWWA Manual M6. The manufacturer shall furnish a certificate(s) showing that each meter and register has (have) been tested for accuracy of registration and that the meter assembly complies with the accuracy and capacity requirements of AWWA C700-95.
- E2.14 The City may, at its discretion, randomly test up to five (5%) percent of the water meters in any given shipment in accordance with the foregoing. The City will test each meter at three flow rates, these being "minimum test flow" and the upper limit and lower limit for "normal test flow limits" as listed in Table 1 AWWA C700-95, Section 4.2.8. Should the City test a meter and find that it does not meet the specified accuracy requirements, the following shall apply:
 - (a) up to ten (10%) percent of the shipment quantity shall be accuracy tested by the City, at the Contractor's expense. This applies to all costs of testing following discovery of a non-conforming meter.
 - (b) should **any** other meter be found not to meet the specified accuracy requirements the entire shipment shall be replaced or adjusted by the Contractor at the Contractor's expense.
- E2.15 Meters and registers supplied under this tender become the property of the City of Winnipeg and the Contractor acknowledges that the City may use these meters and registers in any way that the City shall decide. Without limiting the foregoing, the City will be able to read any meters or meter registers purchased under this tender using meter interface units manufactured or otherwise provided by any supplier, vendor or manufacturer of the City's choice at any time in the future. The Contractor acknowledges that such use would not be an infringement on any patent or any other intellectual property rights as may be claimed by the Contractor in any such meters or registers.
- E2.16 The meters to be supplied under this Contract are for use in residential buildings and commercial buildings. Meters are often installed in close proximity to the daily activities of the inhabitants. Accordingly, noise levels emitted from the meter should be such that they do not impact on the inhabitant's lifestyles.
- E2.17 All meter main cases shall be made of a lead-free brass containing a minimum of eighty-five (85%) percent copper that meet NSF 61 standard. The serial number should be stamped between the outlet port of the main case and the register. Main case markings shall be cast raised and shall indicate size, model, direction of flow and NSF 61 certification. Plastic main cases are not acceptable.
- E2.18 All lead-free brass main cases shall be guaranteed free from manufacturing defects in workmanship and material for the life of the meter.

E3. DELIVERY

E3.1 Goods shall be delivered within thirty-five (35) Business Days of the placing of an order, and delivered in accordance with the terms of the Contract, f.o.b. destination, freight prepaid, to:

Water and Waste Stores
598 Plinquet Street
Winnipeg, MB

E3.2 Goods shall be delivered between 8:00 a.m. and 3:30 p.m. on Business Days.

E4. EXPERIENCE OF MANUFACTURER

E4.1 Further to B9.1 each meter supplied must have been manufactured by a company which has produced water meters of the size and type (bronze case positive displacement) offered for not less than ten (10) Years, and further each specific meter model(s) offered shall have been produced for not less than five (5) Years, minor modifications excepted.

E5. APPROVED PRODUCTS

E5.1 All products supplied under this Contract shall be products approved for use in The City of Winnipeg at the time of closing of the Bid Opportunity, as per the City of Winnipeg Standard Construction Specifications - Division 3, Approved Products. This information is available in Adobe Acrobat (.pdf) format at The City of Winnipeg Materials Management internet site <http://www.winnipeg.ca/matmgt/info.stm>.