

# BEXAR METROPOLITAN WATER DISTRICT MATERIALS SPECIFICATIONS

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## Section 015

### Cold Water Meter Displacement Type

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#### 015.1 Scope of Work

This specification covers cold-water displacement meters one and one-half inches (1-1/2") and smaller in size designed for waterworks service.

#### 015.2 General Description

Water meters to be furnished shall be magnetic drive, sealed register, disc or piston type meters more specifically described in other parts of this specification.

#### 015.3 General Requirements

1. Except as otherwise modified or supplemented herein, the latest revision of AWWA Standard C700, "AWWA Standard for Cold-Water Meters - "Displacement Type" shall govern the material, design, manufacture, and testing of all meters furnished under this specification.
2. The BMWD reserves the right to limit purchase of meters one and one half inches (1-1/2") or smaller in size to the manufacturers and to the models specified, shown on Attachment I, latest revision, provided such meters conform to the provision contained herein.

#### 015.4 Specific Requirements

##### 1. Meter Case

The main case shall be solid with removable top or bottom design and will be manufactured of bronze. In either case, the top or bottom shall be bolted to the housing. The register box and register cover shall be bronze. The meter shall be so constructed that the main case (including meter spuds) will withstand internal pressure and external stress to eliminate distortion, cracking and breaking, which will cause leakage, damage to other components, or interfere with the proper operation of the meter in general.

##### 2. Serial Number

The serial number of the meter shall be imprinted on the outer case as well as on the register box cover.

##### 3. Meter Registers

The meter register shall be a "Sealed Register" type with straight reading indicator with a minimum of six numbered wheels (dials) and shall indicate in cubic feet. All digits shall be black on white background except the right two digits. The right digits shall be white numerals on black background (dials or fixed digits). There shall be a test index circle which

shall be divided into 100 equal parts, each tenth numbered.

The index circle shall be located on the outer periphery of the face, equipped with a center sweep test hand. The date the register is manufactured, by month and year, and size or model shall be stamped or printed on the register face with Arabic numerals. The register shall also have a "low flow" indicator. Registers for given manufacturer, size and like model shall be interchangeable.

As used in these specifications, the term "Sealed Register" shall mean a register that is tamper proof, factory sealed, non-shop repairable, hermetically sealed against fogging, moisture and corrosion and mechanically disconnected from the measuring components. If the sealed register becomes defective or vandalized, the register will be returned to the manufacturer for repairs or replacement. The manufacturer will hermetically seal all registers repaired or replaced.

The lens shall be of a high strength heat tested glass or impact-resistant glass designed to minimize breakage.

The register shall be secured to the meter case with a temper-resistant locking device.

4. Measuring Chamber Assembly

The measuring chamber shall be made of a suitable polymeric material. All shafts or spindles attached to the disc, piston or measuring chamber shall be made of series 316 stainless steel. The maximum allowed disc nutation or piston oscillations per cubic food as shown below:

Size	Maximum Nutation/Oscillations
5/8"	435
3/4"	250
1"	115
1-1/2"	50

5. Strainers

Each meter shall be provided with a stainless steel strainer or strainer of a suitable non-corrosive material. It shall fit snugly in the casing and shall be rigid and easy to remove.

6. Length

Size	Length - Inches
5/8"	7-1/2
3/4"	9
1"	10-3/4
1-1/2"	13

**015.5 Accuracy**

The manufacturer shall guarantee that all new meters will test at least ninety-seven percent (97%) accurate at the "low flow" rate and conform to AWWA Manual M6 for accuracy at intermediate and high flow rates on a meter size for size basis.

**015.6 Test**

The BMWD reserved the option to test all meters in accordance with AWWA Manual M6. The water temperatures for test purpose will be approximately seventy-seven degrees (77F) and the pressure will be approximately seventy-five (75) psi. All meters tested on the low flow of 1/4 gpm for 5/8 inch, 1/2 gpm for 3/4 inch, 3/4 gpm for 1 inch, and 1-1/2 gpm for 1-1/2 inch shall test at least ninety-seven percent (97%) accurate. If three percent (3%) of the meters tested in each shipment do not meet these specifications, the manufacturer shall reimburse the BMWD \$7.50 for each meter that fails this test. All meters that fail this test will be returned to the manufacturer, freight collect and the manufacturer will replace the defective meter(s) with new meter(s), freight prepaid.

**015.7 Guarantees**

1. The manufacturer shall unconditionally guarantee the 5/8", 3/4" and 1" meters as follows:

That the "Sealed Register" unit will operate accurately for a period of fifteen (15) years from the date of receipt.

That the new water meters will perform to new meter accuracy standards of ninety-seven percent (97%) at low flow for a period of at least one (1) year from date of receipt.

That after one (1) year in service the new meter will meet repaired meter accuracy standards, AWWA Manual M6, latest revision for an additional fourteen (14) years or the following quantities of cubic feet, whichever occurs first:

Meter Size	Registration
5/8"	200,000 cubic feet
3/4"	300,000 cubic feet
1"	400,000 cubic feet

- The manufacturer shall unconditionally guarantee the one and one half inch (1-1/2") meter as follows:

That the "Sealed Register" unit will operate accurately for a period of fifteen (15) years from date of receipt.

That the new water meters will perform to new meter accuracy standards under the provisions of AWWA Manual M6, latest revision, for a period of at least one (1) year from date of receipt. That after one (1) year in service the new meters will meet repaired meter accuracy standards, AWWA Manual M6, latest revision, for an additional nine (9) years or 500,000 cubic feet, whichever occurs first.

- Damage caused by vandalism, acts of God or willful or negligent means will be borne by the BMWD.
- If the meter becomes defective (excluding register defects and/or foreign debris causing measuring chamber breakdown) within the time specified in paragraph 7.a and 7.b above, the manufacturer shall replace the defective meter according to meter size with a meter that meets the BMWD's specifications. The defective meter removed from the field will be returned to the manufacturer, freight collect, and the manufacturer shall replace the meter, freight prepaid.
- Certified results will be furnished with all returned meters.

### **015.8 Factory Repair/Exchange Program**

Each bid shall provide, in writing, an exchange/repair program and the cost of the program to the BMWD for furnished meters for a period of at least ten (10) years following the expiration of the unconditional guarantee specified in paragraphs 7.a and 7.b. The BMWD will pay freight charges both ways for any meters covered by this program. The manufacturer shall state in his bid the closest service facility that will service BMWD meters under the provisions of the program.

### **015.9 Bid Proposal Guarantees**

The bidder shall provide, for consideration, his proposed prices and guarantees as follows:

Unit price for the furnishing of meters under these specifications and an executed written agreement providing the guarantees as outlined herein, or any additional features being offered in connection with guarantees.

Unit price for repairing or exchanging each meter under the repair/exchange program for a minimum period of ten (10) years with statement as to the period of time such price or prices will remain firm and the basis or formula to be used in adjusting such price or prices over ten years, either upward or downward, if bidder requires that such adjustment be made.

Unit prices for replacement of meters or assemblies that have been damaged and are not covered by the guarantee described earlier.

#### **015.10 Quality System**

Manufacturers shall have an I.S.O. 9000 registered quality system. If on receipt of meters they are found to be non-compliant the manufacturer shall replace the defective meters according to meter size with a meter that meets the BMWD's specifications. The defective meters will be returned to the manufacturer, freight collect, and the manufacturer shall replace the meter, freight prepaid. If BMWD audits, product inspection and performance data review in accordance with these specifications determine excessive meter non-compliance (in excess of 2%), the manufacturer will be subject to removal by the Products Standards Committee.

#### **015.11 General**

No exceptions to or deviations from these specifications will be allowed.

Guarantees and the exchange program offered by bidders will be carefully considered and will be an important factor, along with the prices quoted, in evaluating bids for the purpose of making an award.

Since only that information regarding such guarantees or repair/exchange program is actually submitted with bids can be given consideration, the bidder should carefully and clearly state in his proposal all of the terms and conditions of his guarantees and exchange program, such as, but not limited to, the following:

The period of time the entire meter will be guaranteed and/or replaced under the repair/exchange program.

The cost for such replacement in connection with the repair/exchange program.

Conditions and price at which replacement of meters or assemblies that have been damaged and are not covered by the guarantee will be made during any of these periods of time.

Any other information that might be considered helpful in assisting the BMWD in evaluating such guarantees or exchange programs.

Bidder shall also furnish an executed written agreement signed by a qualified responsible officer of his firm providing the guarantees as outlined herein, or any additional features being offered in connection with the guarantees. This is necessary to assure the BMWD that the guarantees and exchange program, as quoted and accepted by the BMWD, will be honored by the vendor for the periods of time indicated regardless of any changes in vendor personnel or vendor policy in the future.

Bidder's attention is again called to the fact that such written guarantee policy and replacement

program must be fully and clearly stated in his proposal as the BMWD will evaluate such written guarantee and exchange program policy as submitted with bid with no charges or negotiations after bids have been received.

**015.12 Approved Manufacturers and Models:**

Manufacturer	Model	Size
Schlumberger Inc.	Trident 10	5/8" thru 1-1/2"
Sensus	SR	5/8" thru 2"

END OF SECTION