

**SAN ANTONIO WATER SYSTEM  
SAN ANTONIO, TEXAS**

**SPECIFICATIONS FOR TURBINE-TYPE WATER METERS**

**REVISED March 15, 2007**

**1. SCOPE**

This specification covers cold water turbine-type meters in sizes 2-inch (2") and larger designed for waterworks service.

**2. GENERAL DESCRIPTION**

Turbine water meters to be furnished shall be magnetic gear drive with sealed register of the current type more specifically described in other parts of this specification.

**3. GENERAL REQUIREMENTS**

- a. Except as otherwise modified or supplemented herein, AWWA Standard C701, AWWA Standard for Cold-Water Meters, Turbine-Type for Customer Service or the latest revision thereof shall govern the materials, design, manufacture, and testing of all meters furnished under this specification.
- b. The San Antonio Water System reserves the right to limit purchase of turbine-type meters from manufacturers and to the models specified, shown on Attachment I, latest revision, provided such meters conform to the provision contained herein.

**4. SPECIFIC REQUIREMENTS**

a. **Meter Case**

The main case shall be solid with removable top design and will be manufactured of **bronze**. **All meters must meet NSF Standard 61 Certification (internal coating will not be allowed) and carry the NSF 61 mark on the housing.** The register box and register cover shall be bronze and sidewalk mounted. The size, model and arrows indication direction of flow shall be cast in raised characters on the maincase or cover.

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b. **Serial Number**

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

c. **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 month the register is manufactured, by year, and size or model shall be stamped or printed clearly 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 tamper-resistant locking device.

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- d. Meter laying lengths will conform to the following table:

<b><u>Meter Size</u></b>	<b><u>Meter Laying Length</u></b>
2 inch	10 inches
3 inch	12 inches
4 inch	14 inches
6 inch	18 inches
8 inch	20 inches
10 inch	26 inches

In order to satisfy specified laying length meter may be furnished with appropriate spacer, which is securely mounted and will not conflict with attachment to strainer or associated service line piping.

**5. TESTS**

- a. The San Antonio Water System reserves the option to test all meters in accordance with AWWA Manual M6. If one percent (1%) of the meters tested in each shipment does not meet these quality standards herein will be grounds for rejecting the entire shipment. All meters that fail this test, along with the rejected shipment, will be returned to the manufacturer, freight collect and the manufacturer will replace the defective meter(s) with new meter(s), freight prepaid within thirty (30) days from receipt of the defective meter(s).
- b. A tag indicating the factory accuracy test results of the meter on low, intermediate and high flows shall accompany all meters.

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**6. GUARANTEES**

- a. The manufacturer shall unconditionally guarantee the 2” thru 10” meters 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 according to AWWA Manual M6, or the latest revision.

- b. Damage caused by vandalism, acts of God or willful or negligent means will be borne by the San Antonio Water System.
- c. If the meter becomes defective (excluding foreign debris causing measuring chamber breakdown) the manufacturer will repair or replace the defective meter according to meter size with a meter that meets the San Antonio Water System'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 within thirty (30) days from receipt of the defective meters.
- d. Certified results will be furnished with all returned meters.

**7. QUALITY SYSTEM**

Manufacturers shall have an I.S.O. 9001: 2000 registered quality systems. 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 San Antonio Water System's specifications. The defective meters will be returned to the manufacturer, freight collect, and the manufacturer shall replace the meter, freight prepaid within thirty (30) days from receipt of the defective meter. If San Antonio Water System audits, product inspection and performance data review in accordance with these specifications determine excessive meter non-compliance (in excess of 1% annually), the manufacturer will be subject to removal by the Products Standards Committee.

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**Attachment I**

**Approved Manufacturers and Models:**

<b><u>Manufacturer</u></b>	<b><u>Model</u></b>	<b><u>Size</u></b>
Badger Meter, Inc.	Recordall Turbo Series	2", 3", 4", 6", 8" 10"
Hersey Meters	MVR	2", 3", 4", 6"
Neptune Technology Group Inc.	HP Turbine	2", 3", 4", 6", 8", 10"
Elster AMCO Water, Inc.	T3000	2", 3", 4", 6", 8", 10"

**Previous Specification**

April 2005  
May 1992  
June 2001