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SPECIFICATIONS FOR COLD-WATER METERS
FIRE-SERVICE TYPE
REVISED SEPTEMBER 2014

1. SCOPE

This specification covers cold water fire-service type meters in sizes 3-inch (3") and larger designed for water works service.

2. GENERAL REQUIREMENTS

a) Except as otherwise modified or supplemented herein, AWWA Standard C703, AWWA for cold-water fire-service type meters or the latest revision thereof shall govern the materials, design, manufacture, and testing of all meters furnished under this specifications.

b) The San Antonio Water System (SAWS) reserves the right to limit the purchase of fire-service type meters from manufacturers who provide meters conforming to the provisions contained herein.

c) The manufacturer that the meter furnished complies with the requirements of this specification shall furnish Affidavit of Compliance.

d) A certificate of testing certifying the accuracy and the capacity of meter shall be furnished. The meter shall have an operating pressure of 150 psi and the accuracy of meter shall be 100 percent, plus or minus 3 percent.

3. SPECIFIC REQUIREMENTS

a) A fire-service type meter shall consist of a combination of a main line meter for measuring high flow rates and bypass meter for measuring low flow rates. A detector check valve shall direct the flow from the bypass meter to the mainline meter as flow rates increase and back to the bypass meter as flow rates decrease.

b) Meters not complying with all requirements of SAWS specifications shall be rejected.

c) All meters shall be Factory Mutual approved and be UL listed.

d) Bypass meters must meet NSF Standard 61 Certification (internal coating will not be allowed) and carry the NSF 61 mark on the housing. The bypass meter may be up to one-half the size of the mainline meter as per the following size chart:

12 x 10 x 6	8 x 4	6 x 3
12 x 10 x 2	8 x 2	10 x 2

4. MATERIAL REQUIREMENTS

a) Bypass/Mainline Casings

Casings shall be either of epoxy-coated steel or epoxy-coated cast iron that is protected by a corrosion-resistant coating or the anticorrosion treatment of an alloy containing not less than 75% copper.

b) Laying Length

The laying length of meters shall not exceed the following:

METER SIZE	LAYING LENGTH
6"	45"
8"	53"
10"	68"

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c) **Register**

Register shall be "Sealed Register" type with a straight reading 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 standard or printed on the register face with Arabic numerals. Registers for given manufacturer, size and like model shall be interchangeable.

The term "Seal Register" shall mean a register that is tamper proof, factory scaled, non-stop repairable, hermetically sealed against fogging, moisture and corrosion and mechanically disconnected from the measuring components. If the sealed register becomes defective, the register will be returned to the manufacturer for repairs or replacement. The manufacturer will hermetically seal all repaired or replaced registers.
The lens shall be of a high strength heat tested glass to minimize breakage. The register shall be secured to the meter case with a tamper-resistant locking device. The serial number shall be clearly stamped on the case as well as on the register cover.

d) **Fire Service Strainers**

All water meters using turbine-type (high velocity) main-meters shall include fire service type strainers. Strainers shall have a minimum straining area of least four times the open area of the pipeline. Strainer shall be NFPA and FM approved and is UL listed. Maximum loss of head across the strainer shall be 4 psi (28 kPa) at the safe maximum rated capacity. Strainers supplied under this standard shall operate without leakage at a working pressure of 175 psi (1200 kPa).

5. **GUARANTEES:**

The manufacturer shall unconditionally guarantee the meters as follows:

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

b) The mainline water meters shall perform to new meter accuracy standards of ninety-seven (97%) percent of low flow for a period of at least one (1) year from date of receipt. Whereas, the bypass water shall perform to new meter accuracy standard of 98.5% of low flow for a period of at least one (1) year.

c) That after one (1) year in active service, each of the new meters will meet repaired meter accuracy standards, AWWA Manual M6, latest revisions, for an additional four (4) years or the following quantities of cubic feet, whichever occur first:

MAINLINE METER SIZE	**REGISTRATION**
6"	6,000,000
8"	10,000,000
10"	10,000,000

BYPASS METER SIZE	**REGISTRATION**
3"	5,000,000
4"	10,000,000
6"	10,000.000

d) If the meter becomes defective (excluding foreign debris causing measuring chamber breakdown) within the time specified paragraphs 5.a, 5.b, and 5.d, the manufacturer shall reimburse the San Antonio Water System $500 per meter for labor cost to remove the meter from active service. The manufacturer will repair or replace the defective meter with a meter that meets the San Antonio Water Systems specifications. The defective meter removed from the field will be returned to the manufacturer, freight collect, and the manufacturer shall repair or replace the meter, freight prepaid.

e) Certified test results will be furnished with all returned meters.

6. **TESTS:**

a) The San Antonio Water System reserves the option to test all meters in accordance with AWWA Manual M6. The water temperatures for test purposes, the water temperature shall not be less than 77 degrees Fahrenheit, and the water pressure shall not exceed 150 pounds per square inch (psi). All meters tested at the low flow volume shall record between 97%-100% of the actual delivered volume. If the meter tested does not meet these specifications, the manufacturer shall reimburse the San Antonio Water System $200 for failing this test and the meter will be returned to the manufacturer, freight collect, and the manufacturer will replace the defective meter(s) with new meter(s), freight prepaid.

b) A tag indicating the factory accuracy test results of the meter on low, intermediate and high flows shall accompany all meters.

7. **QUALITY SYSTEM**

Manufacturers shall have an I.S.O. 9001 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.

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Approved Manufacturers and Models:

Manufacturer	**Model**
Badger Meter, Inc	FSAA-01 Sizes 6", 8", 10" Hersey
Meters	MFMII x MVR Sizes 6", 8", 10"
Neptune Technology	HP Protectus III Meter Sizes 6", 8", 10"
Sensus	Compact Fireline Assembly Sizes 6", 8", 10"

Previous Specification Date

AUGUST 1997
JANRUARY 1999
APRIL 2005
DECEMBER 2007
DECEMBER 2011