

# SECTION 15151 - IN-LINE PROPELLER METERS

## City of San Diego, CWP Guidelines

### PART 1 -- GENERAL

#### 1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing in-line propeller meters designed and fabricated for operation with [water] [and] [or] [treated wastewater].

#### 1.2 RELATED SECTIONS

- A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

- 1. Section 15150 Meters, General

### PART 2 -- PRODUCTS

#### 2.1 METERS

##### A. **General:**

- 1. Each propeller meter shall have a 4-pole magnetic-type drive preventing the process fluid from contacting any gears, over-run bearings or shafts within the meter. The rotation of the propeller shall be transmitted from the magnetic drive to the register and transmitter (where required) by means of a flexible connecting shaft.
- 2. Flowmeters shall be designed to operate continuously at flow rates within the rated range. Meter accuracy shall be plus or minus 2 percent of rate at flow from the minimum rating to 150 percent of maximum rating. The meter shall be wet-flow calibrated against a primary standard accurate to plus or minus 0.25 percent at the following ratings: minimum flow; midrange; and at the maximum. Meter-mounted indicators, totalizers, and transmitters shall be manufactured by the same manufacturer as the propeller meters. Where remote-mounted instrumentation is indicated, comply with Section 13300.

##### B. **Schedule:** The meters shall comply with the following:

<u>I.D. No.</u>	<u>Service</u>	<u>Flow Range ( [ ] )</u>
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]

#### 2.2 BASIC MATERIALS

- A. **Meterhead:** The meterhead shall be mounted on a flanged connection for ease of removal and for inspection or service. The meterhead shall consist of a cast iron or steel cover plate; bronze or cast iron gear box; stainless steel, delrin, hard rubber or ceramic wetted working parts; and shall include an injection molded thermoplastic propeller. The drive mechanism shall be by means of stainless steel worm, worm gear and shafting with O-ring packing or a right angle or ceramic radial sleeve magnetic drive, as indicated. The meter shall include [a 6-digit direct reading totalizer with center sweep test hand, protected by an all-metal or sealed, injection-molded plastic, register box and cover assembly, with locking hasp.] [a 6-digit direct reading totalizer, test hand, and instantaneous rate of flow indicator, protected by an all-metal, or sealed injection-molded plastic register box and cover assembly, with locking hasp.] [a 6-digit direct reading totalizer-transmitter (with center sweep test hand), with 4-20 mA-dc and scaled pulse output, protected by an all-metal, or sealed injection-molded plastic register box and cover assembly, with locking hasp.] External converters shall not be acceptable. Zero and span shall be field-adjustable and shall not cause loss of local totalization while in operation.
- B. **Metering Tube or Saddle:** Meters, 2-inch to 4-inch in size shall include straightening vanes in cast iron tubes lined with stainless steel or fusion epoxy coating. The ends shall be flanged. Meters 6-inch through 36-inch in size, shall include either saddles and straightening vanes, or flanged tubes with integral vanes. Tubes with straightening vanes shall be fabricated of carbon steel with AWWA Class D flanges. Tubes and straightening vanes shall be lined and coated with a 7-mil minimum coating of epoxy polyamide with the outside of the tube also protected by the manufacturer's standard protective coating. Meters, 42-inch to 72-inch in size, shall include saddles and straightening vanes. One dummy instrument plate shall be supplied for all propeller meters of same size which have top-mounted instrument plates.
- C. **Instrumentation:** Those meters requiring remote indication or recording shall be equipped with transmitters which will generate pulse-frequency signals. The pulse-frequency signal of 0 to 1000 contacts per minute shall be proportional to flow of zero to the maximum flow as indicated. A weatherproof or panel-mounting-type pulse converter shall be supplied to convert the 0 to 1000 contacts per minute to a 4-20 mA-dc signal proportional to the flow. The output load of the pulse converter shall be 750 ohms. Pulse converters shall be mounted in and powered from local panels. Instrumentation shall comply with Section 13300.

## 2.3 MANUFACTURERS

- A. Meters shall be manufactured by one of the following (or equal):

Badger Meter, Inc.  
McCrometer  
Rockwell International  
Sparling Instruments Co., Inc.

## PART 3 -- EXECUTION

### 3.1 INSTALLATION

- A. In-line propeller meters shall be installed in accordance with the manufacturer's installation instructions and Section 15150.

\*\* END OF SECTION \*\*