

SECTION 15152 - OPEN-FLOW 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 open-flow 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:** Each propeller meter shall have a 4-pole magnetic-type drive preventing the process fluid from contacting any gears, overrun bearings, shafts, etc., 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. 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:** Meters shall comply with the following:

| <u>I.D. No.</u> | <u>Service</u> | <u>Pipe Size inches</u> | <u>Flow Range gpm</u> | <u>Riser Length inches</u> | <u>Type of Brackets</u> | <u>Direct or Mag. Drive</u> |
|---------------------|----------------|---------------------------------|-------------------------------|------------------------------------|---------------------------------|-------------------------------------|
| [] | [] | [] | [] | [] | [] | [] |
| [] | [] | [] | [] | [] | [] | [] |

2.2 BASIC MATERIALS

- A. **Meter:** Meters shall be of the open-flow type, designed for headwall mounting and to measure flows in submerged influent conduits. Meter shall consist of: injection molded thermoplastic propellers; bronze or cast iron gear boxes; bronze, epoxy-coated steel or stainless steel drop pipes; and stainless steel, delrin, hard rubber, or ceramic in contact with fluids. The drive mechanism shall include stainless steel worm gear and shafting or ceramic radial-sleeve magnetic drive with water-lubricated ceramic sleeve bearings and oil-filled sealed gear box. Shafts shall be stainless steel. The meter shall be equipped with [a 6-digit direct reading totalizer with center sweep test hand, protected by an all-metal or injection-molded plastic register box and cover assembly with locking hasp] [a 6-digit direct reading totalizer, test hand and instantaneous flow rate of flow indicator. The unit shall be protected by an all-metal or injection-molded plastic, register box and cover assembly with locking hasp.] [a 6-digit direct reading totalizer-transmitter (with test hand), with 4-20 mA-dc and scaled-pulse output protected by an all-metal or injection-molded plastic, register box and cover assembly with locking hasp.] External converters are not acceptable. Zero and span shall be field-adjustable and designed not to cause loss of totalization while in operation. Meters shall include straightening vanes designed to be mounted in the influent pipe immediately preceding the propeller and located in accordance with the manufacturer's installation instructions.
- B. **Mounting:** Meters 10 inches to 30 inches in size shall include bronze or cast iron rabbit-ear mounting brackets with the lower bracket designed to serve as a guide for positioning the meter on the lower-bracket locking pin when submerged. Meters 36 inches to 72 inches in size shall include bronze or cast iron scabbard mounting brackets or rabbit-ear mounting brackets. Where indicated, meters shall include revolving mounting frame and brackets designed for installation and removal of the meter when submerged in flowing fluids. Brackets shall permit removal of the meter by lifting the meter 6 inches, rotating it 180 degrees, and then extracting it vertically in guide rails. Mounting frames shall be fabricated from stainless steel, or hot-dipped galvanized carbon steel. Submerged supports and anchor bolts shall comply with Section 05500.

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. Meters shall be installed in accordance with the manufacturer's installation instructions and Section 15150.

** END OF SECTION **