SECTION 22 05 19 METERS AND GAGES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes the requirements for water meters and gages primarily used for troubleshooting the system and to indicate system performance.
- B. A complete listing of all acronyms and abbreviations are included in Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.

1.2 RELATED WORK

- A. Section 01 00 00, GENERAL REQUIREMENTS.
- B. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- C. Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.
- D. Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.

1.3 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society of Mechanical Engineers (ASME): B40.100-2013.....Pressure Gauges and Gauge Attachments B40.200-2008.....Thermometers, Direct Reading and Remote Reading
- C. American Water Works Association (AWWA): C700-2009.....Standard for Cold Water Meters, Displacement

Type, Bronze Main Case

C701-2012.....Cold Water Meters-Turbine Type, for Customer Service

C702-2010.....Cold Water Meters - Compound Type

C706-2010.....Direct-Reading, Remote-Registration Systems for Cold-Water Meters

D. Institute of Electrical and Electronics Engineers (IEEE):

C2-2012.....National Electrical Safety Code (NESC)

E. International Code Council (ICC):

IPC-2012.....International Plumbing Code

- F. National Fire Protection Association (NFPA): 70-2011.....National Electrical Code (NEC)
- G. NSF International (NSF): 61-2012.....Drinking Water System Components - Health

Effects

372-2011.....Drinking Water System Components - Lead Content

1.4 SUBMITTALS

- A. Submittals, including number of required copies, shall be submitted in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES.
- B. Information and material submitted under this section shall be marked "SUBMITTED UNDER SECTION 22 05 19, METERS AND GAGES FOR PLUMBING PIPING", with applicable paragraph identification.
- C. Manufacturer's Literature and Data including: Full item description and optional features and accessories. Include dimensions, weights, materials, applications, standard compliance, model numbers, size, and capacity.
 - 1. Pressure Gages.
 - 2. Thermometers.
- D. Operations and Maintenance manual shall include:
 - 1. System Description.
 - 2. Major assembly block diagrams.
 - 3. Troubleshooting and preventive maintenance guidelines.
 - 4. Spare parts information.
- E. Shop Drawings shall include the following: One line, wiring and terminal diagrams including terminals identified, protocol or communication modules, and Ethernet connections.

1.5 AS-BUILT DOCUMENTATION

- A. Submit manufacturer's literature and data updated to include submittal review comments and any equipment substitutions.
- B. Submit copies of complete operation and maintenance data updated to include submittal review comments, substitutions and construction revisions shall be inserted into a three ring binder per the requirements of Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. All aspects of system operation and maintenance procedures, including piping isometrics, wiring diagrams of all circuits, a written description of system design, control logic, and sequence of operation shall be included in the operation and maintenance manual. The operations and maintenance manual shall include troubleshooting techniques and procedures for emergency situations. A list of recommended spare parts (manufacturer, model number, and quantity) shall be furnished. Information explaining any special knowledge or

tools the owner will be required to employ shall be inserted into the As-Built documentation.

PART 2 - PRODUCTS

- 2.1 DISPLACEMENT WATER METER: NOT USED
- 2.2 TURBINE WATER METER: NOT USED
- 2.3 COMPOUND WATER METER: NOT USED
- 2.4 WATER METER STRAINER: NOT USED
- 2.5 WATER METER PROGRAMMING: NOT USED
- 2.6 WATER METER COMMUNICATION PROTOCOL: NOT USED
- 2.7 REMOTE READOUT REGISTER: NOT USED

2.8 PRESSURE GAGES FOR WATER AND SEWAGE USAGE

- A. ASME B40.100 all metal case 115 mm (4-1/2 inches) diameter, bottom connected throughout, graduated as required for service, and identity labeled. Range shall be 0 to 1380 kPa (0 to 200 psig) gage.
- B. The pressure element assembly shall be bourdon tube. The mechanical movement shall be lined to pressure element and connected to pointer.
- C. The dial shall be non-reflective aluminum with permanently etched scale markings graduated in kPa and psig.
- D. The pointer shall be dark colored metal.
- E. The window shall be glass.
- F. The ring shall be brass or stainless steel.
- G. The accuracy shall be grade A, plus or minus 1 percent of middle half of scale range.
- H. The pressure gage for water domestic use shall conform to NSF 61andNSF 372.

2.9 THERMOMETERS

A. Thermometers shall be straight stem, metal case, red liquid-filled thermometer, approximately 175 mm (7 inches) high, 4 degrees C to 100 degrees C (40 degrees F to 212 degrees F). Thermometers shall comply with ASME B40.200.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Direct mounted pressure gages shall be installed in piping tees with pressure gage located on pipe at the most readable position.
- B. Valves and snubbers shall be installed in piping for each pressure gage.
- C. Test plugs shall be installed on the inlet and outlet pipes of all heat exchangers or water heaters serving more than one plumbing fixture.

- D. Pressure gages shall be installed where indicated on the drawings and at the following locations:
 - Suction and discharge of each domestic water pump or re-circulating hot water return pump.
- E. Thermometers shall be installed on the hot water return piping upstream of flow control/balancing valves.
- F. If an installation is unsatisfactory to the COR, the Contractor shall correct the installation at no cost to the Government.

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