SECTION 15122 – METERS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK INCLUDED

A. All meters and flow elements.

B. Secure all permits and local/state approvals for the installation of all components included under this Section.

1.3 RELATED SECTIONS

A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

1.4 REFERENCES

A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this Section, and are hereby incorporated into, and made a part of the Contract Documents.

B. ASME: American Society of Mechanical Engineers

C. ANSI: American National Standards Institute

1. B16.1: Cast Iron Pipe Flanges and Flanged Fittings
2. B16.3: Malleable Iron Threaded Fittings
3. B16.4: Cast Iron Threaded Fittings
4. B16.5: Pipe Flanges and Flanged Fittings
5. B16.22: Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
6. B31.1: Power Piping

1.5 SUBMITTALS

A. See Section 15050 and General Conditions for additional requirements.

B. Product Data: Include steam/condensate specialties, pipe fittings and accessories. Provide manufacturers catalogue information.

C. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.

D. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.

1.6 QUALITY ASSURANCE

A. Installer: Company specializing in performing work of the type specified in this section, with documented experience.

1.7 REGULATORY REQUIREMENTS

A. Conform to ASME B31.9 code for installation piping systems.

B. Welding Materials and Procedures: Conform to ASME (BPV IX) and applicable state labor regulations.

1.8 DELIVERY, STORAGE AND HANDLING

A. Provide temporary end caps and closures piping and fittings. Maintain in place until installation.

B. Protect piping systems and specialties from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.9 ENVIRONMENTAL

A. Do not install equipment when environmental conditions are outside the specific limitations of the referenced codes and manufacturer's recommendations.

PART 2 – PRODUCTS

2.1 GENERAL

A. Provide flow elements and meters as indicated and or specified.

2.2 WATER TREATMENT END BLEED METERS

A. See water treatment section of the specification.

2.3 FLOW ELEMENTS (Flow Indicating Assemblies)

A. Acceptable manufacturers subject to compliance with the specifications.

1. Preso
2. Ellison Instrument Div.
3. Dieterich Standard Corp.
4. Barco
5. Onicon
6. Foxboro

B. Sensing system components

1. Provide self-averaging annular sensor flow metering stations

a. At each pump
b. At each chiller
c. At each cooling tower
d. At each air handling unit coil
e. At mains
f. All major piping distribution branches.
g. Where shown on drawings
h. Exceptions:

1) Hydronic Locations with flow control balancing valves with meter taps.

2. Flow metering systems shall include annular sensors with self-averaging interpolating tube design at each flow station and a portable meter set supplied by one manufacturer.
3. Each annular measuring station shall be complete with safety shutoff valves, quick coupling connections, and a tag showing designed flow rates, meter readings for designed flow rates, metered fluid, line size and tag, and station or location number.
4. Annular measuring sensor shall be made of 304 stainless steel.

5. Stations shall be either nipple suction or weld insert type, rated to 300 psi at 400°F. Annular measuring stations shall be rotable sensing elements so that all pressure sensing ports can be pointed downstream when station is not in use.
6. Permanent pressure loss to the system shall not exceed 5" of water column (0.42 foot) of head on sizes over 1 1/2". Accuracy of the flow measuring elements shall be ±2.3%, as verified by independent laboratory reports.

C. Furnish portable differential pressure meter sets compatible with the primary elements capable of measuring direct differential pressure which shall then be converted to flow rate from a master chart.

1. Differential pressure meter sets shall be as follows:

a. Meter sets shall be of the single diaphragm type not requiring a fill fluid, shall have a 6" dial pointer indicator, and shall have wetted metal parts of only 304 stainless steel.
b. Meter set shall include a variable pulsation dampening control, an integral equalizing valve, and (2) bleed valves.

1) Each meter set shall be supplied complete with a master chart for direct conversion of meter readings to GPM, rustproof carrying case, and (2) 10'-0" rubber test hoses with brass valves for quick connections to annular sensors.
2) Meter shall become property of the Owner immediately after balancing and completion of work under this Contract is completed.
3) Submit a signed receipt of delivery of meter to the Architect for his records.

PART 3 – EXECUTION

3.1 FLOW ELEMENTS INSTALLATION

A. Shall be installed in accordance with manufacturer recommendations, Contract Drawings and reviewed submittals.

B. Shall be provided with a chained cap.

C. Each location shall be labeled.

D. Gauges and thermometers subject to vibration or physical damage shall be adequately supported and protected.

3.2 METERS

A. Install in accordance with manufacturer's instructions.

END OF SECTION