

SECTION 40 91 23.36 – LEVEL MEASURING SYSTEMS

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. General: The CONTRACTOR shall provide level measuring systems, complete and operable in accordance with the Contract Documents.
- B. “Smart” transmitters shall be furnished when or wherever possible.
- C. The requirements of Section 40 90 00 – Process Control and Instrumentation Systems apply to this Section.
- D. All instruments shall be FM-approved, or equal.

1.2 SUBMITTALS

- A. Furnish submittals in accordance with MASS Section 10.05 Article 5.6 and Section 40 90 00 – Process Control and Instrumentation Systems.

PART 2 - PRODUCTS

2.1 SUBMERSIBLE TRANSDUCER TYPE LEVEL MEASUREMENT (WASTEWATER)

- A. The level measurement system shall consist of:
 - 1. A loop-powered, submersible transducer/transmitter, support cord, and interconnecting cable with cable shield and vent tube for atmospheric reference.
 - 2. The vent tube shall be provided with a replaceable moisture barrier.
 - 3. The submersible transducer shall be suitable for sensing pressure equivalent to the liquid level range indicated at the specific well depth.
 - 4. The transducer shall have titanium or 316 stainless steel process wetted parts and shall be provided with a waterproof interconnecting cable.
 - 5. The transducer shall be suspended by a Kevlar strain relieving cord as provided by the manufacturer.
 - 6. The installation shall allow easy removal of the transducer and cable assembly for maintenance purposes.
 - 7. The electronic signal transmitter shall be incorporated in the transducer and shall produce a 4-20 mA DC signal linearly proportional to the operating pressure range.
 - 8. The physical size of the transducer shall be no more than 8 inches long and 0.7 inch in diameter.
 - 9. The interconnecting cable shall have a pull strength of 200 pounds, be factory attached to the transducer, and shall be terminated in a weatherproof enclosure furnished.
 - 10. The weatherproof enclosure shall house the vent tube moisture barrier.

11. The measurement system shall be rated NEMA 6 for operation over a temperature range of -5 to 140 degrees Fahrenheit with an accuracy of plus or minus 0.5 percent of span.
 12. Provide an additional 20 feet of cable with the level sensor.
- B. Submersible level transducers/transmitters for waste water service shall be **U.S. Filter Model A1000i**, or equal.
- C. The following submersible transducer level transmitters shall be provided:

Tag No.	Location	Well Depth below Pump Base (feet)	Span (feet)

2.2 SUBMERSIBLE TRANSDUCER TYPE LEVEL MEASUREMENT (WATER)

- A. The level measurement system shall consist of:
1. A loop-powered, submersible transducer/transmitter, support cord, and interconnecting cable with cable shield and vent tube for atmospheric reference.
 2. The vent tube shall be provided with a replaceable moisture barrier.
 3. The submersible transducer shall be suitable for sensing pressure equivalent to the liquid level range indicated at the specific well depth.
 4. The transducer shall have 316 stainless steel, Teflon-coated, process wetted parts, and shall be provided with a waterproof interconnecting cable.
 5. The transducer shall be suspended by a Kevlar strain-relieving cord, as provided by the manufacturer.
 6. The installation shall allow easy removal of the transducer and cable assembly for maintenance purposes.
 7. The electronic signal transmitter shall be incorporated in the transducer and shall produce a 4-20 mA DC signal linearly proportional to the operating pressure range.
 8. The physical size of the transducer shall be no more than 8 inches long and 4.5 inches in diameter.
 9. The interconnecting cable shall have a pull strength of 200 pounds, be factory attached to the transducer, and shall be terminated in a weatherproof enclosure furnished.
 10. The weatherproof enclosure shall house the vent tube moisture barrier.
 11. The measurement system shall be rated NEMA 6 for operation over a temperature range of 40 to 140 degrees Fahrenheit with an accuracy of plus or minus 0.5 percent of span.
 12. The span shall be 0-5 psi, and cable length shall be 60 feet, with cable suspension mounting fixture.
- B. Submersible level transducers/transmitters for water service shall be **Druck model PTX 1830**, or equal.

C. The following submersible transducer level transmitters shall be provided:

Tag No.	Location	Well Depth below Pump Base (feet)	Span (feet)

PART 3 - EXECUTION

3.1 GENERAL

A. Level measuring systems shall be handled, installed, calibrated, loop-tested, precommissioned, and performance tested according to Section 40.90.00 – Process Control and Instrumentation Systems.

3.2 INSTALLATION

- A. The submersible transducer interconnecting cable is to be terminated in a weather proof junction box that is to be mounted adjacent to the well head. The junction box is to contain DIN rail mounted connectors.
- B. Install the submersible level transducer in accordance with the Manufacturer's requirements.

END OF SECTION 40 91 23.36