SECTION 15178 - ULTRASONIC LEVEL METERS

City of San Diego, CWP Guidelines

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

A. The WORK of this Section includes providing ultrasonic meters complete with sensor mounting hardware and transmitter to measure liquid levels.

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 13300 Instrumentation and Control
2. Section 15150 Meters, General

PART 2 -- PRODUCTS

2.1 GENERAL

A. **Basic Design:** The meter shall be a noncontact, ultrasonic echo-time measuring device, suitable for 120 volt, 60 hertz power supply. It shall consist of a piezoelectric transducer element assembly and a remote transmitter unit interconnected by manufacturer-supplied coaxial cable.

B. **Schedule**: Except as otherwise indicated, level meters shall comply with the following:

I.D. No.	Location	Service	Mounting Method	Distance to Liquid Level (minimum)	Distance to Liquid Level (maximum)
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

2.2 OPERATION

A. The system shall utilize 1500 volt peak minimum energy level on the transducer and shall be suitable for measuring liquid surfaces from 2 to 35 feet below the transducer. The meter shall incorporate a reference reflector to provide instantaneous sound velocity compensation and it shall utilize microprocessor circuitry to process echo times for elimination of stray echoes and, where indicated, to provide linearization functions.

B. The ultrasonic level meter shall produce a narrow beam angle of not more than 7 degrees total included angle. The ultrasonic sensor system shall have temperature compensation circuitry operable over the range of minus 40 degrees C to plus 50 degrees C, and shall be encapsulated to ensure a [Class 1, Division 1] [Class 1, Division 2] hazard rating. The sensor shall be unaffected by condensation and, if required, shall be provided with an integral heater. The transmitter shall be housed in a NEMA [4X] enclosure, have a six digit display

for level and "echo-lost" indication, and shall produce a 4-20 mA output signal into 800 ohms, maximum. The entire system shall be accurate within plus or minus 0.1 foot of true liquid level.

2.3 MOUNTING

A. The meter shall be provided with flange or pipe mounting accessories as indicated for the particular installation conditions.

2.4 MANUFACTURERS

A. Products of the type or model indicated shall be manufactured by one of the following (or equal):

1. TN/Manning

2. Milltronics, Inc.

PART 3 -- EXECUTION

3.1 INSTALLATION

A. **General**: Ultrasonic level meters shall be rigidly mounted approximately 2 feet above maximum liquid level and accurately leveled in accordance with the manufacturer's written instructions.

3.2 FIELD TESTING

A. Field calibration and testing of the meters shall be performed as indicated in Section 13300 for Instrumentation and Control.

** END OF SECTION **