This master should be used by designers working on Port of Portland construction projects and by designers working for PDX tenants (“Tenants”). Usage notes highlight a few specific editing choices, however the entire section should be evaluated and edited to fit specific project needs.

SECTION 337173 - ELECTRIC UTILITY METERS

1. GENERAL
	* + 1. DESCRIPTION
				1. This section describes provision of electric meters used for electric utility cost allocation.
			2. RELATED WORK SPECIFIED ELSEWHERE
				1. Section 330900, Tenant Metering System
				2. Section 331233, Water Utility Meters
				3. Section 335133, Natural Gas Utility Meters
			3. REFERENCES
				1. ANSI/IEEE: American National Standards Institute/Institute of Electrical and Electronics Engineers

ANSI C12.1: Electricity Meters

ANSI C12.20: Electricity Meters 0.2 and 0.5 Accuracy Class

* + - * 1. FCC: Federal Communications Commission

FCC Part 15: Radio Frequency Devices

* + - * 1. NEC: National Electrical Code
				2. UL: Underwriters Laboratories

UL 61010-1: Electrical Equipment For Measurement, Control, and Laboratory Use

* + - 1. SUBMITTALS
				1. Submit technical data sheets, installation manuals, and/or user documentation manuals that describe product installation, operation and maintenance, physical data, capacities (Amps, kW), electrical characteristics (circuit voltage and number of phases), signal output (kWh/pulse), and connection requirements.
			2. WARRANTY
				1. Provide manufacturer’s standard one year warranty against defects in materials, fabrication, finishes, and installation commencing on date of substantial completion.
1. PRODUCTS
	* + 1. SINGLE CIRCUIT, ENCLOSED ELECTRIC METERS

For Tenant projects, keep Paragraph A and delete B.

For Port projects, keep Paragraph B and delete A.

* + - * 1. Acceptable Manufacturer and Model: Senva, Model EMX-ENC, no substitutions. Meter shall be furnished through Johnson Controls, Inc., local branch office located at 4011 S.E. International Way, Milwaukie, Oregon 97222.
				2. Acceptable Manufacturer and Model: Senva, Model EMX-ENC, or pre-bid approved equal.
				3. Applications: Provide enclosed electric meters at panelboards feeding tenant spaces.
				4. Description: Enclosed meter with LCD display and three factory matched and calibrated split-core current transformers (CTs) and potential leads. Meter housing shall be NEMA 4X, without lock and key.
				5. Accuracy: 0.2% (ANSI C12.20 Class 0.2 standards) of the rated current over a temperature range of -30 – 70ºC.
				6. Voltage and Amperage Range: Select meter to match the voltage and amperage rating of the circuit being metered.
				7. Current Transducer (CT): Senva Rogowski Current Transducer, Part #CT-F(XX). Select CTs (9, 15, 24, or 36 inch) to match the size of conductors being metered.
				8. Hardwired Output: Provide a normally-open pulse output with selectable pulse output rates.
			1. SINGLE CIRCUIT, SOCKET ELECTRIC METERS

For Tenant projects, keep Paragraph A and delete B.

For Port projects, keep Paragraph B and delete A.

* + - * 1. Acceptable Manufacturer and Model: Itron Sentinel Electronic Multi-Measurement Meter, no substitutions. Meter shall be furnished through Johnson Controls, Inc., local branch office located at 4011 S.E. International Way, Milwaukie, Oregon 97222.
				2. Acceptable Manufacturer and Model: Itron Sentinel Electronic Multi-Measurement Meter, or pre-bid approved equal.
				3. Application: Provide socket meters at bus duct taps and to replace existing socket meters.
				4. Description: Class 200 Socket meter with LCD display.
				5. Accuracy: Total system accuracy shall be a maximum +/- 0.2% in conformance to ANSI C12.20-2010 Class .2.
				6. Voltage and Amperage Range: Select meter to match the voltage and amperage rating of the circuit being metered.
				7. Socket Base: Provide Form 16S socket base for 3 phase, 4 wire, wye or delta circuit power monitoring, or as required by the application.
				8. Meter Output Description: Provide one solid state Form C KYZ,or equal, pulse output with a factory setting of 1 pulse per 100 watt hours.
1. EXECUTION
	* + 1. INSTALLATION
				1. Install all devices as required by code and the Authority Having Jurisdiction, and as recommended by the equipment manufacturer.
				2. Location: Install electric meters in secure, accessible locations and where shown on the drawings. Meter display shall be easily read from the floor with the top of the meter no higher than 72 inches above finished floor. Coordinate mounting elevation and other details with the Port.
			2. STARTUP AND TESTING
				1. Follow all manufacturer’s recommendations for startup and testing.
				2. Socket Electric Meters: Configure the pulse output rate to operate at less than 5 Hz, based on peak demand, typically set at 100 Wh/Pulse.
				3. After installation is complete, verify that the meter’s displayed kW matches the load as measured by a true-RMS clamp-on meter such as the Fluke Model 345 or 43B, or equal. Secure the meter cover by inserting a wire-tie through the security hasp.

END OF SECTION 337173