section 26 27 13

meter centers and meter stacks

1. general
	1. Scope
		1. This section covers meter centers with meter socket stacks, with circuit breakers, fusible switches or lugs as the main device and circuit breakers as the feeder devices as specified herein and as indicated in the contract drawings.
		2. Provide complete, dead front-type meter centers with meter socket stacks as specified herein and as indicated in the contract drawings.
	2. Related DOCUMENTs
		1. Drawings and general provisions of the contract, including general and supplementary conditions as indicated in Division 01, apply to this section.
		2. Section (PROPER CSI SECTION #) – Circuit Breakers and Fusible Switches – Low Voltage
	3. References
		1. The meter centers and all components shall be designed, manufactured and tested in accordance with the latest applicable following standards:
			1. UL 50 and UL 50E
			2. UL 67
			3. UL 414
			4. UL 486A and UL 486B
			5. UL 489
			6. UL 869
			7. UL 1066
			8. NEMA AB 1
			9. NEMA PB 1
			10. NFPA 70 (National Electric Code).
			11. CSA C22.2 No. 5
			12. CSA C22.2 No. 29-11
			13. Canadian Electrical Code
			14. International Building Code, current edition in effect.
			15. California Building Code, current edition in effect.
	4. Submittals – for Review/approval
		1. The following information shall be submitted to the Engineer, for all meter center components. Provide letter/size “A” (8.5” x 11”) or tabloid/size “B” (11” x 17”) \*.pdf files for drawings. Manufacturing of equipment will not begin until submitted documents are noted “Approved” or “Approved as Noted” by the Engineer or End User, and officially released for manufacture by the Contractor or End User.
			1. Master drawing index
			2. Front and side view elevations
			3. Section views
			4. Floor plan view.
			5. Single line diagram
			6. Schematic diagram
			7. Component Bill of Materials.
			8. Product data sheets.
			9. Installation, operation, and maintenance manuals.
			10. Top view
			11. Bottom view, including conduit entry/exit locations
			12. Assembly ratings including:
				1. Short-circuit rating
				2. Voltage
				3. Continuous current
			13. Major component ratings including:
				1. Voltage
				2. Continuous current
				3. Interrupting ratings
			14. Cable terminal sizes
			15. Device sizing and layout
			16. Nameplates
			17. Any and all other information required to demonstrate compliance with contract documents.

## SUBMITTALS – FOR CONSTRUCTION

### The following information shall be submitted for record purposes:

#### Final as-built drawings and information for items listed in Paragraph 1.04, with all changes made during the manufacturing process incorporated. Provide letter/size “A” (8.5” x 11”) or tabloid/size “B” (11” x 17”) \*.pdf files for drawings. Drawings shall include front and floor plan views of each grouped meter center assembly, showing overall height, width, and depth dimensions.

#### Wiring diagrams

#### Installation information

* 1. Qualifications
		1. The manufacturer of the assembly shall be the manufacturer of the major components within the assembly.
		2. For the equipment specified herein, the manufacturer shall be ISO 9001 or 9002 certified.
		3. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years. When requested by the Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.
		4. Provide Seismic tested equipment as follows:
			1. The manufacturer shall certify the equipment based upon a dynamic and/or static structural computer analysis of the entire assembly structure and its components, provided it is based upon actual seismic testing from similar equipment. The analysis shall be based upon all applicable seismic requirements of the 2021 International Building Code (IBC) Site Classification \_\_\_\_\_\_, site Coefficient Fa = \_\_\_\_\_\_, FV = \_\_\_\_\_\_ and spectral response accelerations of SS = \_\_\_\_\_\_, S1 = \_\_\_\_\_\_g. The analysis shall be based upon a 5% damping factor, and a peak (SDS) of at least \_\_\_\_\_\_g’s (3 -12 Hz), applied at the base of the equipment in the horizontal direction. The forces in the vertical direction shall be at least 66% of those in the horizontal direction. The analysis shall cover a frequency range from 1 to 100Hz. Guidelines for the installation consistent with these requirements shall be provided by the equipment manufacture and based upon testing of representative equipment. Equipment certification acceptance criteria shall be based upon the ability for the equipment to be returned to service immediately after a seismic event within the above requirements without the need for repairs.
			2. The following minimum mounting and installation guidelines shall be met, unless specifically modified by the above referenced standards.
				1. The Contractor shall provide equipment anchorage details, coordinated with the equipment mounting provision, prepared and stamped by a licensed civil or structural engineer in the state. Mounting recommendations shall be provided by the manufacturer based upon the above criteriato verify the seismic design of the equipment.
				2. The equipment manufacturer shall certify that the equipment can withstand, that is, function following the seismic event, including both vertical and lateral required response spectra as specified in above codes.
				3. The equipment manufacturer shall document the requirements necessary for proper seismic mounting of the equipment. Seismic qualification shall be considered achieved when the capability of the equipment, meets or exceeds the specified response spectra.

1.07 Regulatory Requirements

A. The meter centers shall be UL listed and labeled.

1.08 Delivery, Storage and Handling

A. Equipment shall be shipped, handled and stored in accordance with manufacturer’s instructions. One (1) copy of these instructions shall be included with the equipment at time of shipment.

B. Inspect all equipment and report any concealed damage within forty-eight (48) hours of delivery. Assume all responsibility for claims with the shipper.

1.09 WARRANTY

 A. Manufacturer warrants meter centers to be free from defects in materials and workmanship for a period of one (1) year from date of installation, or eighteen (18) months from date of shipment, whichever occurs first. Equipment must be received, stored, and installed in accordance with installation and/or maintenance manuals to avoid nullifying this warranty.

 B. In the event that and warranty work needs to be performed, a manufacturer representative shall be notified in writing of the issue. The factory will then provide all required instructions and materials to correct the issue.

1.10 Field Measurements

 A. Field verify all dimensions indicated in design and installation drawings with actual installation area dimensions.

1.11 Operation and Maintenance Manuals

A. Equipment operation and maintenance manuals shall be provided with each assembly shipped and shall include instruction leaflets and instruction bulletins for the complete assembly and each major component.

1. products
	1. manufacturers
		1. The listing of specific manufacturers below does not imply acceptance of any products that do not meet the specified ratings, features and functions. Manufacturers listed below are not relieved from meeting these specifications in their entirety. Products in compliance with the specification and manufactured by others not named will be considered only if pre-approved by the Engineer and End User ten (10) days prior to bid date.
			1. ABB (Basis of Design)
			2. Equal, as approved by Engineer and End User.
	2. Ratings
		1. The assembly shall be rated to withstand mechanical forces exerted during short circuit conditions when connected directly to a power source having a minimum available fault current 65,000 amperes, or available fault current indicated on drawings (whichever is greater) symmetrical at rated voltage.
	3. Construction
		1. The entire assembly shall be front accessible and shall include [main lugs] [a main disconnect device].
		2. All tenant disconnecting means shall be wired for hot sequence and shall be actual overcurrent protection devices.
		3. The meter sockets shall be [ring] [ringless] type with a max amperage rating of [125 amperes] [225 amperes] and a continuous amperage rating of [125 amperes] [ 200 amperes] and a bypass [shall be] [shall not be] required. If required, the bypass shall be a [manual slider] [horn] [lever] [disconnect block-] type. The meter sockets and associated branch protective device positions shall be completely pre-wired and shipped ready for installation of the meters and tenant main circuit breakers. Meter sockets shall include covers with sealing provisions.
	4. Bus
		1. All bus bars shall be tin-plated. Main horizontal bus bars shall be mounted with all three phases arranged in the same vertical plane. Bus sizing shall be based on UL standard temperature rise criteria for multi-metering equipment.
		2. Provide a full capacity neutral bus where a neutral bus is indicated on the design drawings.
		3. All hardware used for bus bar connections shall be high-tensile strength, zinc-plated.
	5. WIRING/TERMINATION
		1. Provide crimp-type terminations for all line terminations, suitable for copper or aluminum cable and rated at 75 degrees C.
		2. Provide lugs in the incoming line section for connection of the main grounding conductor.
	6. MAIN PROTECTIVE DEVICES
		1. Provide main overcurrent protective devices with trip rating and trip unit type as indicated in design drawings.
	7. feeder protective devices
		1. Provide feeder overcurrent protective devices with trip ratings as indicated in design drawings. Trip unit type shall be thermal-magnetic.
	8. Tenant Utility Metering

a. If meter centers include electrical utility company metering equipment, provide all necessary devices and wiring such that utility requirements are met.

* + 1. For EUSERC serviced areas, meter centers shall incorporate metering sections with tenant feeder circuits using ring-type meter sockets with max amperage ratings of [125] [225] amperes and continuous amperage ratings of [125] [200] to meet local utility and/or customer requirements.

-- OR --

* + 1. For non-EUSERC serviced areas, meter centers shall incorporate metering sections with tenant feeder circuits using [ring-] [ringless-] type meter sockets with max amperage ratings of [125] [225] [400] amperes and continuous amperage ratings of [125] [200] [320] to meet local utility or customer requirements. Provide meter sockets with individual covers having sealing provisions.
		2. Meter sockets for non-EUSERC serviced areas shall have manual slider bypass (if required, per Paragraph 2.03C above) and optional internal barriers.
	1. METER EQUIPMENT GROUP (MEG)
		1. In areas serviced by electrical utility companies that are members of the MEG, construct all components of the meter centers in compliance with MEG requirements.
		2. Affix “MEG Approved” label to all MEG-approved devices, upon approval by utility company.
	2. Surge Protection Device
		1. The Surge Protection Device (SPD) shall be mounted at the service entrance location between the main circuit breaker module or main lug module and the meter stack(s) and shall provide surge protection for downstream group metering.
		2. The SPD enclosure shall be NEMA 3R rainproof with a pad-lockable cover and a window for surge status viewing. Boxes and trims shall be primed and finished with ANSI 61 light gray enamel.
		3. The SPD shall include a circuit breaker wired in-line with the device as a disconnecting means. The circuit breaker and the TVSS device shall be of the same manufacturer and shall be tested as a complete assembly. The SPD shall incorporate removable fuses with a 200,000 AIC rating. The assembly shall be rated to withstand mechanical forces exerted during short circuit conditions when connected directly to the Utility power source.
		4. The SPD shall draw a maximum of 10 watts to power the internal power supply and leakage current to ground shall be 200 microamperes or less. The device shall be grounded through the enclosure and a ground lug shall be provided for equipment grounding when needed.
		5. The SPD shall have UL approval and product specifications shall be in accordance with applicable UL standards.
		6. The SPD shall be manufactured by the same company as all other meter center components, and shall be as outlined below:
			1. Surge Current per Phase: [50] [80] [100] [120] [160] [200] [250] [300] [400]kA.
			2. System: [\_\_\_\_Volts,1-Phase] [\_\_\_\_Volts, 3-Phase]
			3. Diagnostic Package: [Basic] [Standard= audible alarm, alarm contacts, EMI, RFI filtering] [Standard + Surge Counter].
	3. Enclosures
		1. NEMA 3R Surface-Mounted Enclosure.
	4. Finish
		1. Boxes and trims shall be primed and finished with textured ANSI 61 light gray.

PART 3 execution

* 1. Factory Testing

A. Standard factory tests shall be performed on the equipment provided under this section. All tests shall be in accordance with the latest version of ANSI and NEMA standards.

* 1. Field Quality Control
	2. MANUFACTURER’S CERTIFICATION
	3. Training

A. The Contractor shall provide a training session for up to five (5) owner’s representatives for \_\_\_\_\_ normal workdays at a job site location determined by the owner.

B. A manufacturer’s qualified representative shall conduct the training session. The training program shall consist of instruction on the operation of the assembly, circuit breakers, fused switches, meters, and major components within the assembly.

* 1. Installation
		1. The Contractors shall install all equipment per the manufacturer’s recommendations and the contract drawings.
		2. Provide all necessary hardware to secure the assembly in place.
	2. field adjustments

3.07 Field Testing