Public Utility District No. 1 of Benton County

Specification 2011-01

15kV Deadfront Padmounted Switchgear

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REV.		**BY**	**APPROVED BY**	**DATE**

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15kV Deadfront Padmounted Switchgear

1.0 GENERAL

1.1 This specification covers the furnishing and delivery, F.O.B. Kennewick, Washington, of metal enclosed, manually operated deadfront padmounted switchgear with load interrupting switches. These will be used on the District's 12.47kV grounded wye distribution system.

1.2 Only those manufacturers who have demonstrated their capabilities of manufacturing three-phase 15 kV, deadfront padmounted switchgear will be considered.

1.3 Items with fuse compartments are to be bid with fuse end fittings. Fuses shall not be included in the bid.

1.4 The dimensions of the padmounted switchgear shall not exceed 75" in width by 73" in depth.

1.5 Refer to Bid Schedule for switch diagram and quantities.

2.0 INFORMATION TO BE SUBMITTED WITH PROPOSAL

2.1 General Information

2.1.a Weight

Approximate net weight of cabinet.

2.1.b Outline Dimensions

Outline dimensions including overall height, length, width, and bottom opening. Drawings showing the dimensions shall accompany the proposal.

2.1.c Location of high voltage cable terminations relative to mounting pad.

2.1.d Insulation System

Description of insulation system. Switches containing oil as insulation are not acceptable and will not be considered. Insulation design test

reports shall be submitted verifying switch meets or exceeds the stated BIL.

2.1.e Description of switch operation.

2.1.f Certified test reports shall be furnished showing the finished unit meets or exceeds ANSI C37.74, latest revision.

2.2 Performance Characteristics

2.2.a Voltage Ratings
- Nominal rated voltage
- Maximum design voltage
- Impulse withstand voltage (BIL)
- 60 Cycle withstand, dry
- RIV threshold voltage

2.2.b Current Ratings
- Continuous current
- Load interrupting current
- Momentary current
- Make and latch current

3.0 INSTALLATION DRAWINGS, OPERATING, AND MAINTENANCE INSTRUCTIONS

Upon receipt of order, the successful bidder shall prepare and submit in quadruplicate to the District the following:

a. Installation drawings showing dimensions and related information.

b. Complete operating and maintenance instructions.

4.0 REFERENCE STANDARDS

The switch supplied shall meet all applicable requirements of latest version American National Standards, Institute of Electrical and Electronics Engineers, National Electrical Manufacturers Association, and American Society for Testing and Materials Standards.

5.0 RATINGS

The switchgear shall have the following ratings:

Nominal Voltage	14.4kV
Maximum Voltage	17kV
BIL	95kV
Main Bus Continuous Current	600A
Max Fuse (SMU-20)	200E
Three-Pole Interrupter Switches:	
Continuous Current	600A
Load Dropping Current	600A
Short Circuit Current:	
One-Second Short Time Withstand, RMS Sym.	25kA
Peak Withstand, Peak	65kA
Three-Time Duty-Cycle Fault-Closing	
RMS, Symmetrical	25kA
Peak	65kA
MVA 3-Phase Sym. at Rated Voltage	350MVA

6.0 INTERRUPTER SWITCHES

a. Switches must be dry type gang-operated through an operating handle external to the enclosure. See section 5.0 for minimum switch ratings. Currently approved switches: S&C Mini-Rupter.

b. Interrupter switches shall utilize a quick-make quick-break mechanism installed by the switch manufacturer. It shall assure high speed closing and opening of the switches independent of the speed of the manual switch operating handle.

c. Interrupter switches shall be operated by means of an externally accessible switch operating hub. The switch operating hub shall be located within a recessed pocket mounted on the side of the enclosure. The switch operating handle shall be secured to the inside of the switch operating hub pocket by a corrosion-resistant chain.

d. The switch operating hub pocket shall include a padlockable access cover that shall use a hood to protect the padlock from tampering. Stops shall be provided on the switch operating hub to prevent overtravel and guard against damage to the switch mechanism. Labels to indicate switch positions shall be provided in all switch operating hubs.

e. Viewing windows will be provided in the switch termination compartments to allow visual verification of the switch position.

f. Provision to padlock switch-operating hub in the open or closed position shall be provided.

7.0 BUSHINGS AND TERMINALS

a. Switch terminals shall be equipped with 600A rated bushings with removable studs in accordance with ANSI/IEEE Standard 386.

b. Fuse terminals shall be equipped with 200A rated bushing wells in accordance with ANSI/IEEE Standard 386. Shall also include factory installed bushing inserts, Cooper Cat. # LBI215.

c. Bushings and terminals shall be identified with phase and circuit designation.

d. Parking stands shall be provided adjacent to each bushing.

e. Provisions shall be made for terminating the neutral of high voltage cables.

f. Provisions shall be made for easy installation of safety grounds as needed.

8.0 FUSES

a. When fuse compartments are required they shall be type SME-20, configured to accept SMU-20 fuse units. Fuse end fittings shall incorporate brass ring and latch mechanisms to ensure fuse is positively retained during fuse mount closing/opening. Fuse end fittings shall be included in the quantity required based on the switchgear configuration.

b. Fuses shall only be accessible when de-energized and isolated. Each fuse mounting shall be an integral part of the fuse handling mechanism that does not allow access to the fuse until the elbow for that fuse has been disconnected. The opening into the component compartment shall be covered by a panel in both the open and closed position to prevent inadvertent access to high voltage.

c. Cable guides shall be provided to assist in cable training and prevent cables from interfering with fuse handling mechanisms.

d. Viewing window shall be provided in the fuse compartment to allow inspection of the blown-fuse indicator on power fuses.

9.0 ENCLOSURE

a. The enclosure shall meet the enclosure integrity and tamper resistance requirements of ANSI C57.12.28. The switchgear cabinet shall be of unitized construction. All medium voltage switch and fuse compartments shall be completely encased in an inner grounded steel compartment both for electrical isolation and protection from contamination. The compartment shall have a galvanized steel floor to keep out foliage and animals.

b. The enclosure shall guard against unauthorized or inadvertent entry. Enclosure construction shall not utilize any externally accessible hardware.

c. Access to the termination compartments shall be provided by a Penta-Latch mechanism which provides automatic door latching and permits padlocking only when the door is securely latched. The door can be opened only with a pentahead socket tool.

d. The roof of the cabinet shall be designed to prevent collection of water. A heavy coat of insulating “no-drip” compound shall be applied to the inside surface of the roof to reduce condensation. Roof sections over the cable compartments shall be hinged to allow easy cable pulling during installation.

e. Construction of the unit shall be such that it can be lifted into place on the mounting pad, without disturbing entrance cables and associated equipment.

f. A means shall be provided for anchoring the unit to the pad.

g. The enclosure shall have a corrosion resistant finish that meets or exceeds the coating system requirements of ANSI C57.12.28. The color of the final coat shall be manufacturer's standard dark green, weather resistant transformer paint.

h. A resilient closed-cell gasket on the enclosure bottom flange shall be provided to protect the finish from being scratched during installation and isolate it from the alkalinity of a concrete foundation.

10.0 LABELING

a. A stainless steel nameplate shall be provided.

b. Labels shall be provided showing unit ratings, switch position diagram, and operating instructions.

c. NEMA approved warning signs shall be placed on all external doors and inside each door. All signs shall be applied and located in accordance with the latest NEMA standards.

11.0 PACKAGING

a. The vendor shall protect the padmounted switchgear and any exposed parts during transit. Any damage in transit is the vendor's responsibility.

END