Division 261316
Air Interrupter Switches
DESIGN GUIDE

1 General

1.1 Introduction

A. This section applies to the following:

1. 15kV Metal Enclosed Switchgear.
2. 15kV Pad Mounted Air Interrupter Switches
3. Medium Voltage Fuses

B. CWU employs metal enclosed switchgear at multiple campus owned substations to create separate feeders for campus owned 12.47kV primary distribution.

C. CWU employs pad mounted medium voltage switches to distribute campus owned 12.47kV primary feeders throughout the campus. Typically, each switch contains (2) switch compartments and (2) fused switch compartments for the following:

1. Switch Compartments: In/Out campus feeder.
2. Fused Switch Compartments: Out building feeder.

D. Pad switch locations shall be clear of surrounding landscape and structures. Provide minimum 10 feet clear on service sides of pad switch and minimum 4 feet clear on non-service sides of pad switch.

2 Materials

2.1 Metal Enclosed Switchgear

A. Manufacturer: S&C, Custom Fabrication.

B. Main bus shall be copper, rated for 1200 amps.

C. Fused switch sections shall be rated for 600 amps.

D. Include copper ground bus within switchgear assemblies, securely connected to frame of each cubicle.

E. Maximum design voltage shall be 15kV.

F. Short Circuit Rating shall be 25000 rms symmetrical amperes.

G. Incoming cable terminations shall be stress cone bolted type.

H. Operating handle shall lock in both positions, interlocked to prevent opening fuse compartment door with switch in CLOSED position. Trip indicator to be provided in door.

I. Current sensor ratio shall be confirmed with the ELSM.

J. Provide shorting blocks for metering connections.

K. Provide (1) meter for each switch bay section. Metering shall be Square D Power Meter with copper/fiber media converter. Meter shall be mounted within the S&C meter section within the substation switchgear. Meter make and model to be approved by the ELSM.

L. Switch enclosures shall be weatherproof construction with door-in-door construction.

M. Finish color shall be light gray.

2.2 Air Interrupter Switches

A. Manufacturer: S&C Pad Mount Switchgear, Model PMH series w/ meter cabinet mounted to exterior.

B. Main bus shall be copper, rated for 600 amperes, continuous.

C. Maximum design voltage shall be 15kV.

D. Short Circuit Rating shall be 12500 rms symmetrical amperes.

E. Incoming cable terminations shall be stress cone bolted type.

F. Operating handle shall lock in both positions, interlocked to prevent opening fuse compartment door with switch in CLOSED position. Trip indicator to be provided in door. Operating handles for pad mount switchgear shall be removable.

G. Current sensors shall be 50:5 ratio or 100:5 dependent on the load.

H. Provide shorting blocks for metering connections.

I. Provide (2) meters for each pad mounted switch. Metering shall be Square D Power Meter with copper/fiber media converter. Both meters shall be mounted within the S&C meter cabinet located on the side of the switch enclosure. Meter make and model to be approved by the ELSM.

J. Switch enclosures shall be weatherproof construction.

K. Finish color shall be olive green.

2.3 Medium Voltage Fuses

A. Manufacturer:

1. S&C Model SML-5 Power Fuses at Metal Enclosed Switchgear.
2. S&C Model SML-4 Power Fuses at Pad Mount Switchgear.

B. Voltage: 15 kV.

C. Interrupting Rating: 14,000 amperes rms symmetrical.

D. Current Rating: Size fusing to match the feeder and load served.

3 Execution

3.1 Installation

A. Where new substations are being installed, provide precast concrete pull vault below switchgear. Provide precast concrete top with 30" round steel access cover and cable blockouts.

B. Install precast concrete pull vault below each pad switch with precast top. Equal to Utility Vault 810-LA. Provide precast top with 30" round steel access cover and cable block outs. Provide grounding and bonding of vault interior. Field apply ocal spray plastic coating on all exposed metal hardware and metal supports after vault interior grounding is complete.

C. Cables shall be terminated in pad switch compartments as follows:

1. Compartment 1 A-B-C Left to Right
2. Compartment 2 C-B-A Left to Right
3. Compartment 3 C-B-A Left to Right
4. Compartment 4 A-B-C Left to Right

D. Provide fiber connectivity to metal enclosed switchgear for campus networking of metering equipment. Minimum of (2) 2-strand multimode fiber per switch bay section. Route fiber to nearest building that has multimode outside plant backbone fiber.

E. Provide fiber connectivity to each pad switch for campus networking of metering equipment. Minimum of (4) 2-strand multimode fiber per pad switch location. Route fiber to nearest building that has multimode outside plant backbone fiber.

F. Provide protective posts in proximity to the pad switches and metal enclosed switchgear with smooth yellow plastic sleeve cover over the protective posts.

3.2 Testing

A. Inspect and test in accordance with NETA ATS, except Section 4.

B. Perform inspections and tests listed in NETA ATS, Section 7.5.

4 Appendix

4.1 Reserved for future.