SECTION 26 1116
SECONDARY UNIT SUBSTATIONS

PART 1 GENERAL

1.01 REFERENCE STANDARDS

PART 2 PRODUCTS

2.01 MANUFACTURERS
   C. Schneider Electric; Square D Products; ______: www.schneider-electric.us.

2.02 UNIT SUBSTATIONS
   A. Description: Secondary unit substation comprising air terminal primary section, transformer section, and medium-voltage switchgear secondary section.
   B. Configuration: Radial type, with indoor-outdoor arrangement.

2.03 SERVICE CONDITIONS
   A. Meet requirements for usual service conditions and for the specified unusual service conditions.

2.04 PRIMARY CIRCUIT BREAKER RATINGS

2.05 TRANSFORMER RATINGS

2.06 INCOMING SECTION EQUIPMENT

2.07 LIQUID-FILLED TRANSFORMERS
   A. Liquid-Filled Transformers: IEEE C57.12.00, three phase, pad mounted, self-cooled transformer unit.
   B. Cooling and Temperature Rise: IEEE C57.12.00; Class OA. 55 degrees C, self-cooled.
   C. Insulating Liquid: Oil.

2.08 OUTGOING SECTION EQUIPMENT

2.09 POWER CIRCUIT BREAKERS AND CIRCUIT BREAKER SWITCHGEAR
   B. Circuit Breaker Operator: Spring-charged stored energy with electric operator.
   C. Rated Maximum Voltage: 15.0 kV.
   D. Rated Voltage Range Factor: 1.3.
   E. Rated Frequency: 60 Hz.

2.10 PROTECTIVE RELAYS AND INSTRUMENTS
   A. Protective Relays: Provide relaying instruments as indicated for each circuit breaker.

2.11 FABRICATION
   A. Enclosure: Conform to the requirements of IEEE C57.12.28.
   B. Construction: Indoor.
   C. Main Bus: Copper.
PART 3 EXECUTION

3.01 INSTALLATION

A. Install substation plumb and level and with each section aligned properly.

B. Make electrical connections between equipment sections using connectors furnished by manufacturer.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
A. Liquid-filled pad-mounted distribution transformers.
B. Dry-type pad-mounted distribution transformers.

1.02 REFERENCE STANDARDS
C. IEEE C57.12.01 - IEEE Standard for General Requirements for Dry-Type Distribution and Power Transformers; 2015.
F. IEEE C57.94 - IEEE Recommended Practice for Installation, Application, Operation, and Maintenance of Dry-Type General Purpose Distribution and Power Transformers; 1982 (R2006).
I. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SUBMITTALS
A. Shop Drawings: Indicate electrical characteristics and connection requirements, outline dimensions, connection and support points, weight, specified ratings and materials.
B. Product Data: Provide electrical characteristics and connection requirements, standard model design tests, and options.
C. Project Record Documents: Include copy of manufacturer's certified drawings.

1.04 QUALITY ASSURANCE
A. Conform to requirements of NFPA 70.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Protect dry-type transformers from moisture by using appropriate heaters as instructed by the manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS
C. Schneider Electric; Square D Products: www.schneider-electric.us.
2.02 LIQUID-FILLED TRANSFORMERS
   A. Liquid-Filled Transformers: IEEE C57.12.00, three phase, pad-mounted, self-cooled transformer unit.
   B. Cooling and Temperature Rise; IEEE C57.12.00; Class OA. 55 degrees C, self-cooled.
   C. Insulating Liquid: Oil.

2.03 DRY-TYPE TRANSFORMERS
   A. Dry-Type Transformers: IEEE C57.12.01; single phase, pad-mounted, self-cooled transformer unit with solid-cast windings.
   B. Cooling and Temperature Rise: IEEE C57.12.01; Class AA. 220 degree C insulation class with 150 degree C rise over 40 degree C ambient.

2.04 ACCESSORIES
   A. Primary Terminations: Bushing wells to IEEE 386; provide three for radial feed. Include bushings for insulated loadbreak connectors.
   B. Primary Switching: Fused air switch, gang operated.
   C. Secondary Terminations: Spade lugs.

2.05 SOURCE QUALITY CONTROL
   A. Provide factory tests to IEEE C57.12.91 and IEEE C57.12.01. Include the routine tests as defined in the standards and the following other tests:

PART 3 EXECUTION

3.01 INSTALLATION
   A. Install in accordance with IEEE C57.94.
   B. Install plumb and level.
   C. Install safety labels to NEMA 260.

3.02 FIELD QUALITY CONTROL
   A. See Section 01 4000 - Quality Requirements, for additional requirements.
   B. Inspect and test in accordance with NETA ATS, except Section 4.
   C. Perform inspections and tests listed in NETA ATS, Section 7.2. In addition to the basic requirements of Section 7.2, include the following:

3.03 ADJUSTING
   A. Adjust primary taps so that secondary voltage is above and within 2 percent of rated voltage.

END OF SECTION
SECTION 26 1300
MEDIUM-VOLTAGE SWITCHGEAR

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Circuit breaker switchgear.

1.02 RELATED REQUIREMENTS
A. Section 03 3000 - Cast-in-Place Concrete: Pads for transformer support.

1.03 REFERENCE STANDARDS
D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate electrical characteristics and connection requirements, outline dimensions, connection and support points, weight, specified ratings and materials.
C. Manufacturer's Installation Instructions.
D. Project Record Documents: Include copy of manufacturer's certified drawings.
E. Maintenance Data: Include maintenance instructions for cleaning methods; cleaning materials recommended; instructions for circuit breaker removal, replacement, testing and adjustment, and lubrication.

1.05 QUALITY ASSURANCE
A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS
C. Schneider Electric; Square D Products: www.schneider-electric.us.

2.02 DESCRIPTION
A. Switchgear: IEEE C37.20.1, metal-clad switchgear assembly including horizontal draw-out circuit breakers in free-standing cubicles formed into an integrated structure.

2.03 SERVICE CONDITIONS
A. Meet requirements for usual service conditions described in IEEE C37.20.1 and for the specified unusual service conditions.
B. Meet requirements for use as service disconnecting means.

2.04 CIRCUIT BREAKERS
A. Circuit Breaker: IEEE C37.04, air-magnetic type.
B. Circuit Breaker Operator: Spring-charged stored energy with electric operator.

2.05 PROTECTIVE RELAYS AND INSTRUMENTS
A. Protective Relays: Provide relaying instruments as indicated for each circuit breaker.
2.06 ACCESSORIES
   A. Surge Arrestors: Station class, rated _____ kV; mount in incoming line compartment.
   B. Circuit Breaker Lifting Device: Portable, floor supported, elevating carriage with a roller base, for movement of circuit breakers in and out of switchboard structure.

2.07 FABRICATION
   A. Construction: Indoor.
   B. Main Bus: Aluminum.

2.08 FACTORY FINISHES
   A. Clean surfaces before applying paint.
   B. Apply corrosion-resisting primer to all surfaces.
   C. Apply finish coat of baked enamel paint to 2 mils thick.
   D. Finish Color: Manufacturer's standard gray finish.

2.09 SOURCE QUALITY CONTROL
   A. See Section 01 4000 - Quality Requirements, for additional requirements.
   B. Test in accordance with IEEE C37.20.1.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that support pads furnished under Section 03 3000 are ready to receive products.
   B. Verify that field measurements are as indicated on shop drawings.

3.02 INSTALLATION
   A. Install in accordance with IEEE C37.20.1.
   B. Install switchgear plumb and level and with each section aligned properly.
   C. Make electrical connections between equipment sections using connectors furnished by manufacturer.

3.03 FIELD QUALITY CONTROL
   A. See Section 01 4000 - Quality Requirements, for additional requirements.
   B. Inspect and test in accordance with NETA ATS, except Section 4.
   C. Perform inspections and tests listed in NETA ATS, Section 7.1 and 7.6.

3.04 ADJUSTING
   A. Adjust protective relays in accordance with recommendations in Owner's coordination study.
   B. Adjust protective relays as directed.

3.05 CLOSEOUT ACTIVITIES
   A. Demonstrate operation of circuit breakers.

END OF SECTION
SECTION 26 1321
AIR INTERRUPTER SWITCHES

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Medium-voltage air interrupter switches.
B. Medium-voltage fuses.
1.02 RELATED REQUIREMENTS
A. Section 03 3000 - Cast-in-Place Concrete: Concrete pads and foundations.
B. Section 26 0573 - Power System Studies: Additional criteria for the selection and adjustment of equipment and associated protective devices specified in this section.
1.03 REFERENCE STANDARDS
A. IEEE C37.20.3 - IEEE Standard for Metal-Enclosed Interrupter Switchgear (1 kV-38 kV); 2013.
B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate outline dimensions, enclosure construction, shipping splits, lifting and supporting points, electrical single line diagram, and equipment electrical ratings.
1.05 QUALITY ASSURANCE
A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS
2.01 MANUFACTURERS
C. Schneider Electric; Square D Products; _____: www.schneider-electric.us.
D. Substitutions: See Section 01 6000 - Product Requirements.
2.02 AIR INTERRUPTER SWITCHES
A. Description: IEEE C37.20.3, switchgear assembly of individual air interrupter switches in free-standing cubicles, securely bolted together to form an integrated structure, suitable for installation where accessible by general public.
B. Enclosure: Indoor.
   1. Include continuous ground bus through switchgear assembly, securely connected to frame of each cubicle.
   2. Finish: Manufacturer’s standard baked enamel paint 2 mils thick.
2.03 COMPONENTS
A. Interrupter Switch: Nonfused two position load interrupter switch.
2.04 ACCESSORIES
A. Surge Arrestors: Station class, rated ____ kV; mount in incoming line compartment.
B. Incoming Cable Terminations: Clamp-type.
C. Electric Switch Operator: 48 volts AC; operable manually with removable handle or through motor and gear train. Interlock fuse compartment door to prevent opening with switch in CLOSED position.
2.05 MEDIUM-VOLTAGE FUSES
A. Manufacturers:
3. Substitutions: See Section 01 6000 - Product Requirements.

B. Description: Enclosed current limiting, non-expulsion type suitable for use indoors in enclosure.
C. Fuse Rating: E rated fuse, size as indicated.
D. Voltage: 2.4 kV.

2.06 SOURCE QUALITY CONTROL
A. See Section 01 4000 - Quality Requirements, for additional requirements.
B. Provide factory inspection and testing in accordance with IEEE C37.20.3.

PART 3 EXECUTION

3.01 INSTALLATION
A. Install in accordance with manufacturer's instructions.
B. Install on concrete pad as indicated on Drawings.

3.02 FIELD QUALITY CONTROL
A. See Section 01 4000 - Quality Requirements, for additional requirements.

END OF SECTION