SECTION 16345
MEDIUM VOLTAGE SWITCHGEAR

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Circuit breaker switchgear.

1.02 REFERENCES

A. Where appropriate, refer to Current ANSI and NEMA Standards for material ratings.

B. Institute of Electrical and Electronic Engineers (IEEE)


1.03 SUBMITTALS

A. Require submittals under the provisions of Section 16010 - Basic Electrical Requirements and Section 01300 - Submittals.

B. Submit coordination and relay settings calculations.

C. Submit shop drawings indicating outline dimensions, connection and support points, weight, specified ratings and materials.

D. Submit product data indicating standard model design tests and options.

E. Submit manufacturer’s installation instructions under provisions of Section 01300.

1.05 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data under provisions of Sections 01700, 01730, 16010 Division I.

B. Include procedures for cleaning unit and replacing components.

1.06 QUALITY ASSURANCE

A. Manufacturer: Company specializing in distribution transformers with three (3) years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store and protect products under provisions of Sections 01600 and 16010.
B. Protect dry type transformers from moisture by using appropriate heaters as instructed by the manufacturer.

PART 2   PRODUCTS

2.01   EQUIPMENT

A. Circuit Breaker Switchgear:

1. Metal clad switchgear assembly including draw-out vacuum circuit breakers in free-standing cubicles, bolted together to form an integrated structure.
2. Assembly shall meet requirements for ambient conditions as follows:  temperature - standard; altitude - 6000’.
3. Nominal Voltage, 13.8 kV, 3Ø, 60 Hz with neutral.
4. Specify main bus capacity on Drawings.
5. Specify short circuit rating and fault current availability on One-Line Drawing and coordination and relay settings.
6. Copper bus.
7. Copper ground bus.

B. Circuit Breakers:

1. Circuit Breaker:
   a. ANSI/IEEE C37.04.
2. Circuit Breaker Operator:
   a. Spring-charged stored energy.
3. Rated Maximum Voltage:
   a. 15 kV
4. Rated Voltage Range Factor:
   a. 1.3
5. Rated Frequency:
   a. 60 Hz
6. Specify rated continuous current on Drawings.
7. Rated Permissible Tripping Delay:
   a. Five (5) cycles.
8. Specify short circuit rating required based on available fault current (per ANSI/IEEE C37.06)

C. Instruments:

1. Current Transformers:
   a. 5 ampere secondary, with single or multi-ratio secondary winding and shorting device, primary/secondary ratio as required, 60 Hz. If c.t.’s are also to be used for kWh metering, refer to Section 16430 2.02 A. 7a.
2. Potential Transformers:
   a. 120V, single secondary, disconnecting type with integral fuse mountings, primary/secondary ratio as required, 60 Hz, Ratio 2.4:1 Y Primary, Y Secondary on 480/277 Volt systems and with kWh metering type 9S.
3. Circuit Breaker Lifting Device:
   a. Carriage and track on top of each switchboard with lifting device to serve draw-out circuit breakers. Where these devices are specified, prohibit top entry conduits which may interfere with carriage operation.

D. Housing:

1. Coordinate requirements for outdoor raintight or indoor installation.
2. Paint outdoor housing including aluminum and factory finished items with color approved by UCB staff.

PART 3 EXECUTION

3.01 INSTALLATION

A. Require installation in accordance with manufacturer’s recommendations.

B. Install on concrete support pad for outdoor locations or on concrete housekeeping pads for indoor installations.

3.02 FIELD QUALITY CONTROL

A. Perform insulation resistance test on each phase to ground and from phase to phase using manufacturer’s recommended test voltage.

B. Perform contact resistance tests across each contact. Reject contacts with losses in excess of 150 microhms.

C. All bus connections at shipping splits to be torqued to manufacturers recommendations.

D. Torque all cable connections to bus connections.

E. Require tests to be performed in the presence of a representative of the Department of Facilities Management.

END OF SECTION 16345