

SECTION 26 21 00 - MEDIUM-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 DESIGN REQUIREMENTS

- A. Primary Transformers:
 - 1. Electrical transformers will be included as part of the project design and will be located during the design phase.
 - 2. Transformers used to step down from the university 13.2KV primary voltage to building utilizable voltage shall be non-PCB liquid-cooled and insulated and installed in accordance with Article #450 of the National Electric Code (NEC).
 - 3. Where building transformer is to be furnished under the building contract, the size is to be determined by the Engineer. All sizing is to be approved through the University Project Manager.
 - 4. Primary Voltage 13.2 KV 3-phase delta with wye secondary. Specify with (2) 2 1/2% above and (2) 2 1/2% below normal taps with externally-operated no load trip charger.
 - 5. Provide exterior pad mounted transformers adjacent to building being served. Coordinate location with the University Project Manager during Design Development Phase.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subjects to compliance with requirements, provide products by the following:
 - 1. Primary Transformers: Cooper, ABB, GE, Square D.

2.2 MATERIALS, GENERAL

- A. Primary Pad Mounted Transformers:
 - 1. Liquid-filled Transformers: ANSI C57.12.22; three phase, pad mounted, self-cooled, copper wound transformer unit, 98KV BIL.
 - 2. Transformer capacity, primary voltage, secondary voltage, and impedance shall be as specified on the drawings.
 - 3. Provide standard primary taps, with externally operated tap changer.
 - 4. Cooling and Temperature Rise; ANSI C57.12.22; Class OA. 65 degree C, self-cooled.
 - 5. Liquid: Electrical Grade Mineral Oil.
 - 6. Accessories: ANSI C57.12.22 standard accessories including magnetic liquid level pressure gauge and dial type thermometer.
 - 7. Primary Terminations: Bushing wells to ANSI/IEEE 386; provide radial or loop feed as specified on drawings. Include bushings for insulated load break connectors.
 - 8. Primary Switching and Protection: As indicated on drawings.
 - 9. Secondary terminations: Spade lugs.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Install in accordance with drawings and manufacturer's recommendations.
- B. Install safety labels to NEMA 260.
- C. Transformer clearances shall comply with Xcel Energy requirements.
- D. Provide loop feed to all transformers.

- E. Keep conduits/conductors clear from oil test port. Provide exterior mounted test port if clearance cannot be maintained.

3.2 TESTING, CLEANING, AND CERTIFICATION

- A. Test dielectric liquid to ASTM D877, using 25,000 volts minimum breakdown voltage, after installation and before energizing from system.
- B. Test transformer to ANSI/IEEE C57.12.90.
- C. Cable Testing: Perform DC high potential test of each conductor in accordance with NEMA WC 3. Connect untested conductors in circuit to ground during test. Apply test voltage in at least eight equal increments to maximum test voltage. Record leakage current at each increment. Allowing for charging current decay. Hold maximum test voltage for ten minutes.

END OF SECTION 26 21 00