SECTION 26 22 13 - TRANSFORMERS

PART I - GENERAL

1.1 GENERAL

A. For power distribution transformers requirements, see Section 26 11 16 - Secondary Unit Substations.

B. Manufacturers: Eaton, GE, Square D, ABB Group, Cooper Industries.

C. Location: Transformer, the Primary switch and the Secondary switch shall be located in an electrical room on the First floor, in new buildings, if possible; otherwise, an area well should be located by the basement electrical room. The area well shall be large enough to facilitate the delivery of the transformer to the electrical room.

PART 2 - PRODUCTS

2.1 [Note to PSC: PROCEDURE TO ESTABLISH TRANSFORMER CAPACITY]

A. Occupancy Type: Unit loads per square feet shall be based on the type of occupancy and use in accordance with Table 220 3(a) of the National Electrical Code as a minimum standard.

B. General Lighting: 100% demand factor shall be used for all general lighting.

C. Receptacle Loads: Demand factor for receptacle loads shall be applied with consideration for the type of usage.

D. Future Growth: Total KVA demands shall be increased 25 percent for reasonable future growth and subsidiary loads.

E. Review Load Calculations: Review the load calculations data and transformer KVA capacities with the Owner before proceeding with final design layouts.

F. Power Load Demands: Power load demands shall be studied for each individual building condition and applied to the total building transformer demand.

2.2 INDOOR DRY TYPE TRANSFORMER (Primary over 600 Volts);

a. Windings shall be copper.

b. The cooling air temperature shall not exceed 40 degree C (104 degree F), and the average temperature of the cooling air for any 24-hour period shall not exceed 30 degrees C (86 degree F).

c. The minimum ambient temperature shall not be lower than -30 degree C (22 degree F).

d. The transformer shall be manufactured in accordance with UL standard “UL 1562”.

e. Transformer insulation shall be in accordance with 220 degree C UL insulation system.

f. The transformer shall have an average temperature of 80 degree C, in a 40 degree C maximum, 30 degree C average ambient as defined by IEEE C57.12.01.

g. Transformer shall be forced-air-cooled with fans installed in the transformer.

h. Transformer shall have Four (4) 2.5% taps below rated, nominal voltage.
i. Transformer impedance target shall be 5.75%.

2.3 INDOOR LIQUID-FILLED TYPE TRANSFORMER (Primary over 600 Volts):

a. Sound Level; Sound level of transformer without fans shall be a minimum of 3 db less than NEMA TR-1 standard sound levels.

b. Insulating Liquid: Less flammable, biodegradable and nontoxic.

c. Insulation Temperature Rise: 65 degree C, based on an average ambient temperature of 30 degree C, over 24 hours with a maximum ambient temperature of 40 degree C.

d. Taps: Full voltage taps of four (4) nominal 2.5% taps, 2 above and 2 below rated primary voltage, with externally operable tap changer for de-energized use and with position indicator and padlock hasp.

e. Cooling System; Class self-cooled.

f. Removable radiators.

g. Impedance: 5.75%

h. Accessories: Liquid-level gage, pressure-vacuum gage, liquid temperature indicator, drain and filter valves, and pressure relief device.

2.4 OUTDOOR PAD-MOUNTED, LIQUID-FILLED: See Section 261219 Pad Mounted, Medium -Voltage transformers.

PART 3 - EXECUTION

3.1

END OF SECTION 26 22 13

This section of the *U of I Facilities Standards* establishes minimum requirements only. It should not be used as a complete specification.