SECTION 262200 – LOW VOLTAGE DRY TYPE TRANSFORMERS

1.0 ASHRAE 90.1 Compliance: University of Pennsylvania buildings shall comply with the Commercial Energy Efficiency Requirements of ASHRAE Standard 90.1-2016. The ASHRAE 90.1-2016 compliance paths shall be followed instead of the International Energy Conservation Code (IECC) requirements as permitted by 2018 IECC Section 401.2 Application.

2.0 The transformers shall meet the applicable requirements of NEMA ST-20 and ANSI/IEEE C57.12.01 and C57.12.91, and shall be listed and labeled for conformance to UL 1561.

3.0 ASHRAE 90.1-2016 Compliance Requirements: Low-voltage transformers must comply with the provisions of the Energy Policy Act of 2005, where applicable. Transformers that meet any of the exclusions of the Energy Policy Act of 2005 based on the United States Department of Energy (DOE) as stipulated in 10 CFR 431 are not required to comply.

4.0 Transformer enclosures shall be formed, painted steel, NEMA 2 type for indoor applications, and NEMA 3R for indoor wet or outdoor applications. Provide permanent fungicidal treatment for coil and core for wet and outdoor applications.

5.0 Transformer cores shall be fabricated from electrical grade, non-aging silicon steel.

6.0 Transformer sound levels shall be a minimum of 3db lower than specified by NEMA ST 20, when tested according to IEEE C57.12.91.

7.0 Transformer windings shall be continuous wound copper without splices except for tap connections. Full capacity primary taps at $\pm$ 2.5% and $\pm$5% of nominal rated primary voltage shall be provided.

8.0 Transformers indicated for k-rating shall comply with UL 1561 requirements for nonsinusuidal load current handling capability to the degree defined by k-rating.

9.0 Transformers shall be sized for connected load with demand factors as allowed by NFPA 70. Transformer sizing shall also take into consideration planned future loads that may be placed on the transformer. Include thirty (30) percent spare capacity above the calculated demand load where the possibility for undefined future load addition exists.

10.0 Transformer insulation shall be rated for a total temperature of 220 degrees C, Class H, and the rated temperature rise shall not exceed 115 degrees C over a maximum ambient temperature of 40 degrees C. The design professional is responsible for coordinating the ventilation and cooling requirements for the transformer installation.

11.0 Provide vibration isolation and proper grounding for all transformers. Where required, seismic restraints shall be provided. Wall mounting of transformers shall be permitted only when manufacturer-supplied wall mounting brackets are utilized.