SECTION 264500 - GROUNDING

PART 1 - GENERAL

1.1 SCOPE

A. This section deals with the grounding of service equipment, transformers, non-current carrying conductive surfaces of equipment, structures, and other equipment.

1.2 STANDARDS AND CODES

A. All grounding connections shall be installed in accordance with the National Electrical Code and applicable local code requirements. Such codes shall be considered minimum requirements and the installation of the grounding system shall insure freedom from dangerous shock exposure and shall provide a low impedance ground fault path to permit operation of overcurrent and ground fault protective devices.

1. NEC Article 250
2. National Electrical Safety Code

1.3 QUALIFICATIONS

A. Connections: Use approved exothermic welds, Cadweld or equivalent; or compression or mechanical type approved for grounding, Burndy Hyground or equivalent. All compression and mechanical connectors shall be U.L. Listed for direct burial applications.

1.4 SUBMITTALS

A. Submit product data for ground rods and connectors.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. All grounding conductors whether insulated or not shall be copper.

2.2 GROUND RODS

A. All ground rods shall be copper-clad steel, 5/8 inch by 10 foot sectional type.

2.3 GROUND CONNECTIONS

A. The connection of a grounding conductor to ground rods or ground conductor to ground conductor shall be by exothermic weld or by an approved system (compression or mechanical connectors) as manufactured by Burndy Hyground or Thomas & Betts (T & B).

B. Ground connections to equipment shall be bolted using T&B compression type lugs.

C. Grounding conductor connections at conduit terminations shall be made by approved listed grounding bushings or fittings.

PART 3 - EXECUTION

3.1 MAIN SERVICE GROUNDS

A. In accordance with NEC Article 250-52, if available on the premises, each of the following shall be bonded together to form the grounding electrode system:

1. Footing or foundation rebar.

B. Install grounding electrodes (ground rods). Provide two 20 ft. ground rods spaced 20 ft. apart. Ground rods shall be driven to 1 ft. below finished grade. Connect to grounding electrode conductors.

C. The grounding electrode system shall be connected to the grounded circuit conductor (neutral) at the service disconnecting means by a grounding electrode conductor. The grounding electrode conductor shall be sized as shown in Table 250.66 of the National Electrical Code or as shown on the Drawings, whichever is larger. Exceptions 250.66 (A) through (C) are not acceptable.

D. Where necessary, provide PVC conduit for physical protection of grounding conductors.

E. Provide PVC sleeves through equipment slabs for installation of ground rods and conductors where necessary.

3.2 TESTS

A. The resistance of the grounding electrode system shall be measured by the use of a Biddle Ground Megger or other instrument designed to measure ground resistance.

B. Each ground rod at each location shall be measured separately from the rest of the grounding electrode system and with all rods connected together. The ground resistance of the complete system with all elements connected together shall also be measured. The results of all measurements at each location shall be recorded.

C. The maximum resistance of the completed system shall be 10 ohms.

D. Resistance reading to ground shall only be taken after 2 days without rain. Reading shall be constant for at least 2 minutes.

3.3 FEEDER AND BRANCH CIRCUITS

A. All feeders, branch circuits, and motor control circuits shall have installed in the same raceway as the circuit conductors an insulated copper grounding conductor sized in accordance with Table 250.122 of the National Electrical Code unless such a grounding conductor is shown to be larger on the plans or specified to be larger elsewhere in the specifications.

3.4 EXPOSED NON-CURRENT CARRYING CONDUCTIVE SURFACES

A. All exposed non-current carrying conductive surfaces of electrical equipment shall be grounded to the equipment grounding conductor run with the circuit conductors or a separate ground as shown on the drawings.

B. Provide bonding to meet NFPA 70 and Regulatory Requirements (i.e., metal duct work, metal piping, gas piping, etc.).

C. Bond together metal siding not attached to grounded structure; bond to ground.

D. Bond to lighting protection system.

E. Bond all metal pull/junction box covers used with concrete plastic, fiberglass, composite or other non-metal pull boxes to the equipment grounding conductor with #8 CU minimum unless noted otherwise.

END OF SECTION 264500