SECTION 26 05 26
GROUNDING SYSTEM

PART 1 - **GENERAL**

1.1 DESCRIPTION

A. Provide grounding system in accordance with the Contract Documents.

1.2 QUALITY ASSURANCE

A. Utility company approval of service installation.

1.3 REFERENCE STANDARDS

A. Published specifications standards, tests or recommended methods of trade, industry or governmental organizations apply to work in this Section where cited below:

B. UL – Underwriters Laboratories Inc.
   1. UL 467 Grounding and Bonding Equipment

C. ANSI – American National Standards Institute
   1. ANSI C1 Specification of General Requirements for a Quality Program

D. IEEE – Institute of Electrical and Electronic Engineers
   1. IEEE 142 Recommended Practice for Grounding of Industrial and Commercial Power System

E. NEC – National Electrical Code

F. National Electrical Safety Code

G. Utility company requirements

1.4 SUBMITTALS

A. Field test report

1.5 FIELD TESTING

A. Resistance testing of ground rod system indicating maximum 5 ohms resistance to ground.

PART 2 - **PRODUCTS**

2.1 GENERAL

A. Grounding connections shall be brazed molded exothermic welded, bolted clamp terminal, or pressure connector type.

2.2 GROUNDING ELECTRODE SYSTEM

A. Provide the following grounding electrodes, bonded together to form the grounding electrode system:
   1. Metal underground water pipe in direct contact with earth for 10 feet or more and electrically continuous to the points of connection of the grounding electrode conductor and the bonding conductors.
   2. The metal frame of the building, where effectively grounded.
   3. Concrete-encased electrode (Ufer ground) consisting of a minimum of 20 feet of bare copper conductor (size #4 AWG minimum) encased by a minimum of 2 inches of concrete, located within and near the bottom of a concrete foundation or footing that is in direct contact with

the earth.

4. Ground rod of copper clad steel, minimum ¾-inch diameter, minimum 10 feet long, driven full length into the earth. If a maximum resistance to ground of 5 ohms cannot be obtained with a single ground rod, provide additional ground rods installed not closer than 6 feet apart until a maximum resistance to ground of 5 ohms is obtained.
5. Other grounding electrodes as shown on the Drawings.

2.3 GROUND BUS CABINETS

A. Provide a main ground bus cabinet in the main switchboard room. Provide ground bus cabinets in other locations shown on the Drawings.

B. Ground bus cabinets shall be NEMA 1 enclosure with drilled copper bus on stand off insulators.

2.4 TELECOMMUNICATIONS GROUNDING SYSTEM

A. Provide a continuous insulated #6 AWG (minimum) copper grounding conductor between each telecom terminal backboard and telecom terminal cabinet. Bond the telecommunications grounding system to the grounding electrode system and to the nearest available structural steel on each floor.

PART 3 - **EXECUTION**

3.1 GENERAL

A. Metallic raceways, cable trays, cable armor, cable sheath, enclosures, equipment frames, fittings, and other metallic noncurrent-carrying equipment parts and surfaces shall be effectively bonded to the grounding system. Nonconductive paint, enamel, or similar coating shall be removed at threads and contact surfaces to preserve grounding continuity or fittings shall be provided to make such removal unnecessary.

B. The grounded service conductor (neutral) of each service shall be connected to the grounding electrode system with an appropriately sized grounding electrode conductor.

C. The grounded conductor (neutral) of each separately derived system shall be connected to the nearest interior cold water pipe in the area served by each separately derived system with an appropriately sized grounding electrode conductor. Separately derived systems include the following:
   1. Step-down transformers.
   2. Engine generator set(s).
   3. UPS system(s).

C. Neutral wiring shall be grounded at the system point of origin only and shall be isolated from downstream grounding systems.

D. Provide an insulated, isolated grounding conductor for branch circuits serving isolated ground type receptacles. Isolated grounding conductors shall be isolated from other grounding systems back to the system point of origin.

E. Provide an insulated grounding conductor for all segments of branch circuits serving motors controlled by variable frequency drive controllers.

F. Bond interior metal piping systems to the grounding electrode system. Where metallic piping and duct systems are rendered metallically non-continuous by nonconductive couplings, provide bonding jumpers to provide grounding continuity.

G. Receptacles and lighting fixtures shall be grounded to the outlet box by means of a bonding jumper between the outlet box and the receptacle or lighting fixture grounding terminal.

H. Feeders and branch circuits shall be provided with an insulated grounding conductor run with the circuit conductors. This grounding conductor shall be in addition to the ground path provided by the continuously grounded metallic raceway system that encloses the phase and neutral conductors.

I. Provide bolted clamp terminal connectors where connected to removable equipment.

K. Provide brazed molded exothermic welded connections to ground rods and connections to concrete embedded steel reinforcing bar.

end of SECTION 26 05 26

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