

## SECTION 16170

### GROUNDING AND BONDING

#### PART 1 - GENERAL

##### 1.01 SECTION INCLUDES

- A. Grounding electrodes and conductors.
- B. Equipment grounding conductors.
- C. Bonding.

##### 1.02 RELATED SECTIONS

- A. Section 16010: Basic Electrical Requirements.

##### 1.03 PERFORMANCE REQUIREMENTS

- A. Grounding System Resistance: Conform to requirements of ANSI/NFPA 70. (N.E.C.). 25ohms.

##### 1.04 SUBMITTALS

- A. Submit Shop Drawings, Owner's Manuals, and Operating Instructions in accordance with Section 01300 - Submittals.
- B. Product Data: Provide data for grounding electrodes and connections.
- C. Manufacturer's Instructions: Include instructions for protection, examination, preparation and installation of exothermic connectors.

##### 1.05 GROUNDING ELECTRODE SYSTEM

- A. Metal underground water pipe at water service entrance.
- B. Minimum 4/0 copper home run from main panel to concrete-encased electrode in building footings.
- C. Metal structure of the building.
- D. Concrete-encased electrode in building footings.
- E. Rod electrode at pole and metering.

##### 1.06 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations of grounding electrodes.

#### PART 2 - PRODUCTS

##### 2.01 ROD ELECTRODE

- A. Manufacturers:
  - 1. ITT Blackburn

- B. Material: Copper-clad carbon steel.
- C. Diameter: 3/4 inch.
- D. Length: Sectional 10 feet.
- E. Use only "Acorn" style ground clamps for connections to rods.

## 2.02 EXOTHERMIC CONNECTIONS

- A. Manufacturers:
  - 1. Cadweld.
  - 2. Thermoweld.

## 2.03 WIRE

- A. Material: Copper.
- B. Foundation Electrodes: #4/0 AWG.
- C. Grounding Electrode Conductor: Size to meet NFPA 70 requirements, but not be smaller than indicated.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify that final backfill and compaction has been completed before driving rod electrodes.

### 3.02 INSTALLATION

- A. Install Products in accordance with manufacturer's instructions.
- B. Install rod electrodes at locations indicated. Install additional rod electrodes as required to achieve specified resistance to ground.
- C. Install ground wire from water entrance to main entrance switchboard. Provide additional ground wire from main service to building structural steel and 20 feet of 1/2" minimum re-bar or 4/0 copper conductor in concrete footing, as required by NEC. Enclose wire in PVC-40 where exposed.
- D. Equipment Grounding Conductor: Provide separate, 600 volt insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.
- E. Provide and install bonding conductor to each item of electrical equipment.
- F. Bonding conductors shall be continuous where possible. Where splices are required, provide T & B, or approved equal, compression connectors of approved pattern. Insulate connectors to equivalent thickness of conductors.
- G. Bond together reinforcing steel structures.

END OF SECTION