

## SECTION 260526 – GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

### PART 1 - GENERAL

#### 1.1 SCOPE

- A. All grounding as indicated on the Drawings and as specified herein.

### PART 2 - PRODUCTS

#### 2.1 ELECTRODES

- A. Rods: Copper-clad, steel core, copper bonded exterior, 3/4 inch x 10 feet minimum size.
- B. Cables: Bare Copper.

#### 2.2 EQUIPMENT GROUNDING CONDUCTORS

- A. In Conduit: Insulated copper.
- B. Not in Conduit: #4 AWG and smaller, insulated copper. Larger than #4 AWG may be bare copper.
- C. Identification: #6 AWG and smaller, green insulation. In lieu of green insulation for sizes #4 AWG and larger, insulated grounding conductors may be identified with green tape wrap at all terminations, and at least one tape wrap per foot or part of foot in accessible enclosures. Tape shall make at least two full wraps around cable at each point.

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. Install grounding systems in accordance with the NEC, NFC-780, and as indicated on the Drawings, supplemented as required by applicable local codes.

#### 3.2 STRUCTURE ELECTRODE SYSTEMS

- A. Applicable Structures: All
- B. Method
  - 1. Install electrode systems as indicated on the Drawings and as specified below.
  - 2. Top of ground rods shall be minimum 1 foot below grade.

- C. Access to Electrode Systems: Provide means to connect to the electrode system from the following as applicable:
  - 1. Transformer secondary neutrals.
  - 2. Outdoor handrails.
  - 3. Metal equipment exposed to lightning.
  - 4. Building service equipment.

### 3.3 EQUIPMENT GROUNDING

- A. Transformers: Connect all transformer secondary neutrals.
- B. Distribution Equipment: Connect grounding busses to the respective source transformer neutral at the transformer, in the service entrance equipment, or at the first transformer secondary overcurrent protective device (separately derived systems).
- C. Equipment: Connect non-current carrying frames and enclosures to the respective source distribution grounding busses, except as otherwise specified or detailed.
- D. Conduits: Install a grounding conductor in each conduit or raceway. Size in accordance with NEC, or as indicated on the Drawings. Min. size #12 AWG. Exception: Conduits between buildings, and to light poles, where neutral must be grounded locally.
- E. Communications Backboards: Provide a #6 AWG copper wire from the serving panel board grounding bus.
- F. Light Poles: Ground light poles to local electrodes as shown on the Drawings.
- G. Equipment Exposed to Lightning: Ground fences, handrails and other metal equipment exposed to lightning directly to the structure electrode system where applicable, or to other electrodes as indicated on the Drawings.
- H. Fences: Provide a ground rod at each side of every gate, per NFC 780. Where fence is installed on non-metallic posts within 40 feet of an electric power line, provide ground rods spaced at 100 ft. intervals to approximately 100 ft. from vicinity of the power line.

### 3.4 CONNECTIONS

- A. Bolt grounding conductor to equipment with high copper alloy cable terminal and bolt.
- B. Bolt connectors may be used where connections are readily accessible for inspection. For hidden, buried, or concealed ground connections, use exothermic welds or approved compression connectors.

### 3.5 GROUND RESISTANCE MEASUREMENT

- A. Where ground resistance is specified, submit measurement readings to the Engineer. Include date, weather, and soil conditions.

Method: Utilize a direct reading earth resistance tester. The tester shall be the three terminal fall-of-potential type. Make measurements as shown in the Table below. For further information, see James Biddle Bulletin 25TZ or General Electric Bulletin GEJ-24D.

Electrode Width	Distance to Voltage Probe (P) (feet)	Distance to Current Probe (C) (feet)
1 ground rod	62	100
10'	100	160
20'	140	220
40'	200	320
80'	280	450
120'	340	550
200'	440	710

END OF SECTION 260526