SECTION 260526 – GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. This Section specifies the grounding and bonding of electrical systems for buildings and structures.

2. Provide all labor, materials, and equipment as necessary to complete all work as indicated on the drawings, and as specified herein.

B. Related Sections include the following:

1. Applicable sections of Division 26 - Electrical

1.3 SUBMITTALS

A. Grounding test reports.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70, “National Electrical Code”

C. Comply with applicable requirements of U.L. Standards 467 pertaining to electrical grounding and bonding. Provide grounding products that are U.L. listed and labeled.

PART 2 - PRODUCTS

2.1 GROUND RODS

A. Ground bus shall be solid 98% conductivity, electrical grade copper.

2.2 CONDUCTORS USED FOR GROUNDING

A. Conductors used for grounding shall be stranded copper, THWN/THHN, the same as the feeder conductors and/or branch circuit conductors. Conductors buried in concrete shall have RHW or THW insulation.

B. Grounding conductors shall have green insulation the entire length. Isolated grounding conductors shall have green insulation with a yellow tracer the entire length.

PART 3 - EXECUTION

Install a 1/4" x 2" x 8'copper ground bus on one wall of the room approximately 12 inches above the floor. Connect all ground rods, and each major piece of equipment to this ground bus with #4/O AWG THW copper wire.

3.1 TRANSFORMER VAULTS AND MAIN ELECTRICAL ROOMS

A. Ground Rods

1. At each location the rods shall be tied together by means of no. 4/0 AWG THW, stranded copper cables welded to each rod. Welded connections shall be Cadweld or Burndy Hyground.

2. The tops of the ground rods shall be below the finished floor slab with the 4/0 AWG THW ground wire brought up close to the wall.

B. Ground Bus

1. A 1/4 inch x 2 inch x 8 foot ground bus shall be installed approximately 12 inches above the floor on one wall. All joints shall be thoroughly cleaned and trimmed on both sides and edges, wiped smooth and bright, and bolted in approved manner.

C. Ground Connections

1. From the ground bus in the electrical room, run two ground cables to the ground rods located on the drawing and one ground cable to cold water main. Provide jumpers at all

water meters. Provide ground cable from ground bus to underground duct system ground. All ground cable shall be 4/0 AWG THW, stranded copper.

2. All conduit, pipe racks, switches, supports, wiring troughs, cable sheaths, cabinets, transformers, special equipment, and non-current carrying parts shall be permanently and effectively grounded to one of these ground systems.

3. Make ground connections at equipment with grounding devices manufactured for this purpose equal to Burndy Engineering Co. fittings. No soldered ground connections shall be used on grounding circuits at any point, except where ground conductor is attached to the lead sheathed cables. Primary grounds and secondary neutral shall be connected to ground bus with approved mechanical connectors.

4. Primary and secondary neutrals of transformers shall be connected to the ground bus with approved mechanical connectors.

5. An equipment grounding conductor shall be installed with feeders and branch circuits and connected to all devices and equipment.

6. Conductors used for grounding that are installed separately in electrical rooms or other locations shall be installed in conduit in areas where they are subject to physical damage. The conduit shall be bonded to the conductor.

3.2 COMMUNICATION ROOMS

A. Install a 1/4" X 2" X 24" copper ground bus with predrilled holes on the two longest walls of all communication rooms.

1. Connect each cable tray and equipment cabinet/rack to the ground bus each with a #6 AWG green insulated conductor.

B. Main Communication Rooms

1. Bond each ground bus of the Telephone Utility Room, Broadband Utility Room, and User Communication Room together with a No. 4 AWG THWN/THHN bonding conductor in conduit.

2. Install a No. 4 AWG THWN/THHN grounding conductor in conduit from the ground bus in the Telephone Utility Room to the ground grid in the main electrical room.

3. Install a separate isolated ground bus and No. 4 AWG THWN/THHN isolated grounding conductor in conduit from the Telephone Utility Room to the ground grid in the main electrical room.

C. Floor Communication Rooms

1. Stand-Alone Communication Rooms

a. Connect each ground bus of stand-alone Floor Communication Rooms or User Floor Communication Rooms with a No. 4 AWG THWN/THHN grounding conductor in conduit to the ground grid in the main electrical room.

2. Side-by-Side Communication Rooms

a. Bond the ground bus in side-by-side Floor Communication Rooms and User Floor Communication Rooms with a No. 4 AWG THWN/THHN bonding conductor in conduit.

b. Install a No. 4 AWG THWN/THHN grounding conductor in conduit between the ground bus in each Floor Communication Room, and install a No. 4 AWG THWN/THHN grounding conductor in conduit from the ground bus in the Floor Communication Room nearest the Telephone Utility Room to the ground bus in the Telephone Utility Room.

3.3 Other Building Spaces

A. Install a 1/4 x 2 inch solid copper ground bus with predrilled holes where shown on the drawing. Length shall be 12" or longer as noted on the drawings. Connect each ground bus with a No. 4 AWG THWN/THHN grounding conductor in conduit to the ground grid in the main electrical room.

3.4 Isolated Grounding Conductors

A. Isolated grounding conductors shall be identified with its associated circuit at both ends and at all accessible points in the conduit/raceway system.

3.5 Grounding Conductors in Conduit

A. A grounding conductor shall be installed in all conduits and raceways containing lighting and/or power circuits. Size the grounding conductor per the NEC for the associated circuit unless noted otherwise on the drawings.

END OF SECTION 260526