PART 1 - GENERAL

1.1. SUMMARY

A. The work covered under this Section shall consist of a design, furnishing of all material, labor, and installation for completion of an operable end to end structured cabling system. This includes grounding and bonding of all passive and active equipment supplied by contractor and owner.

B. This Section includes grounding of communications systems and equipment. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.

1.2. QUALITY ASSURANCE

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

1. Comply with UL 467.

1.3. RELATED DOCUMENTS

A. General and Supplementary Conditions

1.4. RELATED SECTIONS

A. Division 26 - Grounding and Bonding

B. Division 26 - Raceway and Boxes

C. Division 26 - Wiring Devices

D. Division 27 - Communications

PART 2 - PRODUCTS

2.1. MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by approved manufacturers listed in Division 26 section, “Grounding and Bonding for Electrical Systems.”

2.2. GROUNDING CONDUCTORS

A. For insulated conductors, comply with Division 26 Section “Conductors and Cables.”

B. Communications Copper Bonding Conductors: As follows:

1. Telecommunications Bonding Conductor (TBC) and Telecommunications Bonding Backbones (TBB): No. 3/0, stranded copper conductor, insulated.
2. Telecommunications Equipment Bonding Conductor (TEBC): No. 6 AWG, stranded copper conductor, insulated.

2.3. CONNECTOR PRODUCTS

A. Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.

B. Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

2.4. TELECOMMUNICATIONS GROUNDING BUSBAR

A. Comply with ANSI/TIA-607-B.

B. Telecommunications Main Grounding Busbar (TMGB): Electro-tin plated copper, minimum 1/4 inch thick by 4 inches wide by minimum 20” long, with holes sized, spaced and in minimum quantities as follows:

1. 5/16” holes at 5/8” spacing, minimum quantity of 27
2. 7/16” holes at 1” spacing, minimum quantity of 3
3. Provide longer TMGB as necessary to accommodate quantity of actual bonding connections required in field.

C. Telecom Grounding Busbar (TGB): Electro-tin plated copper, minimum 1/4 inch thick by 2 inches wide by minimum 12” long, with holes sized, spaced and in minimum quantities as follows:

1. 5/16” holes at 5/8” spacing, minimum quantity of 6
2. 7/16” holes at 1” spacing, minimum quantity of 3
3. Provide longer TGB as necessary to accommodate quantity of actual bonding connections required in field, per communications room.

PART 3 - EXECUTION

3.1. INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Bond metallic raceways used for routing of communications bonding conductors, to the communications bonding conductor at each end.

3.2. CONNECTIONS

A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
2. Make connections with clean, bare metal at points of contact.
3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.
5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

B. Equipment Grounding Conductor Terminations: Use pressure-type grounding lugs.

C. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

D. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

3.3. TELECOMMUNICATIONS GROUNDING AND BONDING

A. Comply with NEC, ANSI/TIA-607-B and UL 467.

B. Comply with telecommunications ground details and riser diagrams in Contract Drawings.

C. Telecommunications Grounding Busbars: TMGB and TMB within facility to provide for telecommunications grounding system.

1. Locate grounding terminals in each telecommunications room.

2. Mount on wall of telecommunications entrance facility, equipment room, and closet, with standoff insulators.

D. Bonding Conductors:

1. Extend a TBC from TMGB to electrical entrance facility and connect to grounding electrode system.
2. Extend a TBB from TMGB to each TGB.
3. Extend a TEBC from TGB to ground terminals at communication relay racks, wall-mount communication racks and cabinets, primary protection blocks, overhead ladder rack runway systems and cable basket tray systems.

E. Special Requirements:

1. Bonding conductors shall be insulated copper, sized as noted in Contract Drawings.
2. Bonding conductors shall be installed without splices unless as noted in telecommunications grounding riser diagram, or as approved by Architect because of special circumstances. Where splices are necessary, they shall be accessible. Splices shall be by irreversible compression connectors or by exothermic welding.

F. Primary Protectors

1. Primary protectors shall be installed on each cable end, in the appropriate building entrance protector.
2. Primary protector enclosure shall be bonded to the building grounding system utilizing a minimum #6 AWG ground wire.

G. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

END OF SECTION