

SECTION 270526- GROUNDING AND BONDING FOR TELECOMMUNICATION SYSTEMS

SECTION 270526 - GROUNDING AND BONDING FOR TELECOMMUNICATION SYSTEMS

PART 1 – GENERAL

1.1 GROUNDING AND BONDING DESCRIPTION

networks and personnel. The intent is to effectively and safely neutralize the potential differences between two metallic items within the Telecom Rooms.

1.2 RELATED DOCUMENTS

- A. BICSI Telecommunications Distribution Methods Manual (TDMM), Thirteenth Edition.
- B. LSU's Policy Statement – PS114.
- C. Section 270528 – “Pathways for Communications Systems.”
- D. Section 271300 – “Communications Backbone Cabling.”
- E. Section 271500 – “Communications Horizontal Cabling.”
- F. Appendix A Figures 7 & 8.

1.3 DEFINITIONS AND ACRONYMS

- A. BICSI: A professional association supporting the information technology systems (ITS) industry.
- B. RCDD: Registered Communications Distribution Designer
- C. TMGB: Telecommunications Main Grounding Busbar
- D. TGB: Telecommunications Grounding Busbar
- E. TBC: Telecommunications Bonding Conductor.
- F. NRTL: National Recognized Testing Laboratory.

SECTION 270526- GROUNDING AND BONDING FOR TELECOMMUNICATION SYSTEMS

- B. Testing Agency Qualifications: Member Company of NRTL.
 - 1. Testing Agency's Field Supervisor: Currently certified by current a member company of NRTL to supervise on-site testing.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in

SECTION 270526- GROUNDING AND BONDING FOR TELECOMMUNICATION SYSTEMS

spacing shall be 5/8" on center and the 7/16" hole spacing shall be 1" on center. The busbar shall meet EIA/TIA 607 standard.

2. Telecommunications Grounding Busbar (TGB): Shall be a minimum of 2" high x 12" long. The TMGB shall be equipped with a minimum of 6 pairs of pre-drilled 5/16" diameter holes and 3 pairs of 7/16" diameter holes. The 5/16" hole spacing shall be 5/8" on center and the 7/16" hole spacing shall be 1" on center. The busbar shall meet EIA/TIA 607 standard.

PART 3 - EXECUTION

3.1 HARDWARE:

- A. No building steel or pipes are to be used for grounding purposes.
- B. Conductors: No. 6 AWG green insulated stranded conductors will be installed and routed according to Appendix A Figures 7 & 8.
- C. Grounding Bus: Provide in telecommunication rooms, in rooms housing service equipment, and elsewhere as indicated.
 1. Provide bus on insulated spacers 2 inches minimum from wall, 6 inches above finished floor unless otherwise indicated.
 2. Where needed on both sides of doorways, route grounding conductor up to top of door frame, across top of doorway, and down to specified height above floor; connect to horizontal bus.
- D. Conductor Terminations and Connections:
 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectct-n2 re11 Tf0 0 1 1 TJ1

SECTION 270526- GROUNDING AND BONDING FOR TELECOMMUNICATION SYSTEMS

3.3 EQUIPMENT GROUNDING

A. Signal and Communication Equipment: In addition to grounding and bonding required by NFPA 70, provide an additional grounding system complying with requirements in TIA/ATIS J-STD-607-A.

1. For telephone, voice, data, and other communication equipment, provide No. 6 AWG minimum green insulated grounding conductor from main building grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
2. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a grounding busbar. For the Service Entrance Telecommunications Room (TR) provide a TMGB (section 2.4.B.1) and for all other Telecommunications Rooms provide a TGB (section 2.4.B.2).
3. In the Entrance TR all of the following must be bonded with a No. 6 AWG Bonding Conductor back to the TMGB:
 1. The vault splice closure for the entrance telephone cable
 2. The telephone building protectors
 3. All metallic conduits
 4. All data rel(a)-1100092 0 612 11 Tf620.11(g)11()5(g)11I

SECTION 270526- GROUNDING AND BONDING FOR TELECOMMUNICATION SYSTEMS

- C. Bonding Conductors:
 - 1. This is the conductor that connects the Busbar in each TR to the telecom equipment (racks, ladder tray, voice building protectors, etc.) in that TR.
 - 2. No bonding conductor shall leave the TR that it is servicing.
- D. Grounding to Steel Building Structure: The Telecommunications grounding system shall NOT be grounded using steel building structure.

3.5 LABELING

- A. Comply with requirements in Section 260553 "Identification for Electrical Systems" for instruction signs.
- B. Provide labels at the telecommunications bonding conductor and grounding equalizer and at the grounding electrode conductor where exposed.

3.6 TESTING

- A. Testing must be done to verify that the Telecommunications system is properly grounded and bonded to protect all equipment and personnel.
- B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- C. Testing and Inspection
 - 1. Inspect physical and mechanical conditions. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
 - 2. Testing methods:
 - a. True Root Mean Square (rms) Alternating Current Measurements:
 - 1) Measure the ac current on any bonding conductor for Telecommunications and that reading should be 0 amperes (A), but must be less than 1A.
 - b. Two-Point Bonding Measurement:
 - 1) Test the bonding connectors of the system using an AC earth ground-resistance tester.
 - 2) This test is performed by connecting the meter leads between the nearest available grounding electrode and the busbar in the Telecom Room. The recommended maximum value for the bonding resistance between these two points is 0.1 ohms (100 milliohms)
- D. Grounding system will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

END OF SECTION 260526