ANSI/EIA/EIA-607 (CSA T527)

Grounding and Bonding Requirements for Telecommunications in Commercial Buildings

The primary objective of this standard is to provide guidance around the issue of bonding and grounding as it relates to building telecommunications infrastructure.

Before reviewing the highlights of this standard, it is important to understand a few basic terms used through the bonding and grounding specifications.

Bonding means permanent joining of metallic parts for the purpose of forming an electrically conductive path to ensure electrical continuity and capacity to safely conduct any current likely to be imposed.

Bonding conductor for telecommunications is a conductor used to interconnect the telecommunications bonding infrastructure to the service equipment (power) ground of the building.

Effectively grounded refers to an intentional connection to earth through a ground connection(s) of sufficiently low impedance. It must have sufficient current carrying capacity to be able to prevent the buildup of voltages that could potentially result in unnecessary hazard to connected equipment or persons.

Ground is an intentional or accidental conducting connection between an electrical circuit or equipment and earth or conducting body serving in place of earth.

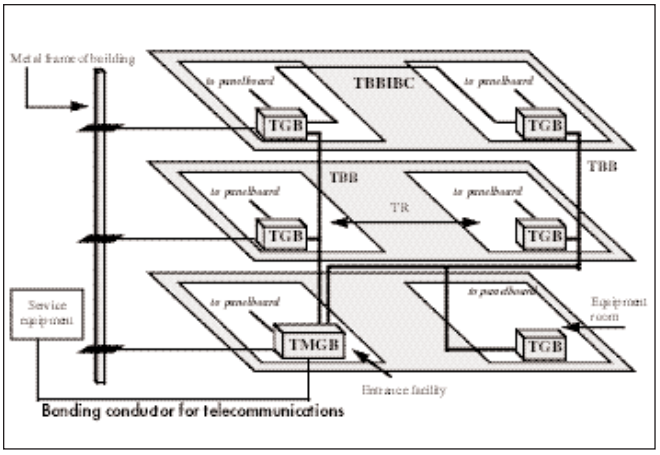
Ground electrode conductor is a conductor used to connect the grounding electrode to:

- The equipment grounding conductor
- The grounded conductor of the circuit at the service equipment
- The source of a separate system.

Telecommunications bonding backbone (TBB) is a copper conductor used to connect the telecommunications main grounding busbar to the telecommunications grounding busbar located on the floor farthest away.

Telecommunications bonding backbone interconnecting bonding conductor (TBBIBC) is a conductor used to interconnect telecommunications bonding backbones.

Telecommunications main grounding busbar (TMGB) refers to a busbar bonded to the service equipment (power) ground by the bonding conductor for telecommunications. The TMGB should be placed in a location that is convenient and accessible.



Scope of ANSI/TIA/EIA-607 (CSA T527)

BONDING AND GROUNDING COMPONENTS

Bonding Conductor for Telecommunications

This conductor is used to bond the TMGB to the service equipment (power) ground which is in turn connected to the grounding electrode conductor.

There are three important design considerations to remember about bonding conductors:

- The copper core conductor must be insulated and be at least No. 6 AWG in size
- These conductors should not be placed in metallic conduit. If this can not be avoided, the conductors must be bonded to each end of the conduit if the run is longer than 1 m (3 ft) in length
- Ensure that bonding conductors are marked appropriately by using a green label.

Telecommunications Bonding Backbone (TBB)

This is an insulated conductor used to interconnect all TGB's with the TMGB.

- The TBB starts at the TMGB and extends throughout the building using telecommunications backbone pathways. The TBB connects to TGB's in all telecommunication rooms and the equipment room.

The primary function of the TBB is to reduce or equalize differences between telecommunications systems bonded to it.

TBB design considerations include:

- Be consistent with the design of the telecommunications backbone cabling system
- Permit multiple TBBs as dictated by building size
- Plan route to minimize TBB length
- Do no use interior water pipe system of the building as a TBB
- Do not use metallic cable shield as a TBB in new installations
- Minimum conductor size is No. 6 AWG, consideration should be given to using a TBB as large as No. 3 AWG
- Multiple, vertical TBBs must be bonded together at the top floor and at a minimum of every third floor in between using a TBB interconnecting bonding conductor
- TBBs shall be installed without splices.

Telecommunications Bonding Backbone Interconnecting Bonding Conductor [TBBIBC]

The TBBIBC is a conductor that interconnects TBBs.

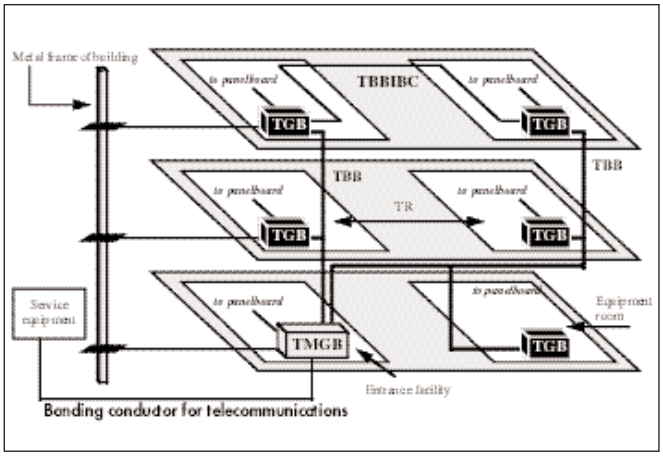
Telecommunications Main Grounding Busbar (TMGB)

The TMGB serves as a dedicated extension of the building grounding electrode system for the telecommunications infrastructure. It also acts as the central connection point for TBBs and equipment.

The following TMGB design considerations must be remembered.

- There is typically one TMGB per building. The TMGB can be extended by using and following the rules for TGBs
- TMGB must be located so that it is accessible to telecommunications personnel. It is often located in the entrance room or the main telecommunications room. A location should be chosen that minimizes the bonding conductor length for telecommunication connections
- The TMGB must be a pre-drilled copper busbar with standard NEMA bolt hole sizing and spacing for the type and size of conductor being used
- TMGBs are a minimum of 6 mm in thickness, 100 mm wide and of variable length.

Ensure the size of the bar allows for future growth.



Scope of ANSI/TIA/EIA-607 (CSA T527)

Telecommunications Grounding Busbar [TGB]

Located in a telecommunications room or equipment room, it serves as a common central point of connection for telecommunications systems and equipment in the area served by that TR or equipment room.

TGB characteristics:

- Pre-drilled copper busbar provided with standard NEMA bolt hole sizing and spacing for type of connectors to be used
- Minimum size 6 mm thick by 50 mm wide, variable length

TGB design considerations:

- TBBs and other TGBs located in same space must be bonded to the TGB
- Bonding conductors used between a TBB and TGB must be continuous and routed in the shortest, straight-line path possible
- Install the TGB as close as practical to the panelboard
- When a panelboard for telecommunications is located in the same room as the TGB, bond the panelboard's ACEG bus (when equipped) or the enclosure to the TGB
- Bond the TGB to the TBBIBC where required.

Bonding to the Metal Frame of a Building

In those buildings where metal frames (structural steel) are effectively grounded, bond each TGB to the metal frame within the room using a No. 6 AWG conductor.

- If the metal frame is external to room but readily accessible, bond the TGB to the metal frame using a No. 6 AWG conductor.