

# Job Aid Approved Grounds

An approved ground is the closest acceptable medium for grounding the building entrance protector, entrance cable shield, or single-point ground of electronic telephony equipment. If more than one type of approved ground is available on the premises, the grounds must be bonded together as required in Article 250:50 of the National Electrical Code 2002 or equivalent code for installations outside the United States.

**For AC Input:** Two safety grounds are required to ensure safe operation of the media gateways:

- The ground conductor that is part of the AC power cord
- The field-installed green/yellow conductor referred to as the Supplementary Ground Conductor (SGC)

Both safety grounds must be connected to an approved ground.

**For DC Input:** The DC source provided for DC input to the media gateway must be grounded at the source to an approved ground. In addition, the SGC must be installed on the media gateway and connected to an approved ground.

 **WARNING:**

Make sure that the media gateway has a reliable earth ground connection, whether it is connected directly to a branch circuit or to a power distribution strip.

 **WARNING:**

An Avaya G600 or G650 Media Gateway requires a media gateway ground connection directly to an approved ground.

## Approved grounds

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**Grounded Building Steel** — The metal frame of the building where it is effectively grounded by one of the following grounds: acceptable metallic water pipe, concrete encased ground, or a ground ring.

**Acceptable Water Pipe** — A metal underground water pipe, at least 1/2 inch (1.3 centimeters) in diameter, in direct contact with the earth for at least 10 feet (3 meters). The pipe must be electrically continuous (or made electrically continuous by bonding around insulated joints, plastic pipe, or plastic water meters) to the point where the protector ground wire connects. A metallic underground water pipe must be supplemented by the metal frame of the building, a concrete-encased ground, or a ground ring. If these grounds are not available, the water pipe ground can be supplemented by 1 of the following types of grounds:

- Other local metal underground systems or structures — Local underground structures such as tanks and piping systems
- Rod and pipe electrodes — A 5/8-inch (1.6-centimeters) solid rod or 3/4-inch (2-centimeters) conduit or pipe electrode driven to a minimum depth of 8 feet (2.4 meters)

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- Plate electrodes — Must have a minimum of 2 square feet (0.185 square meter) of metallic surface exposed to the exterior soil

**Concrete Encased Ground** — An electrode encased by at least 2 inches (5.1 centimeters) of concrete and located within and near the bottom of a concrete foundation or footing in direct contact with the earth. The electrode must be at least 20 feet (6.1 meters) of one or more steel reinforcing bars or rods 1/2-inch (1.3 centimeters) in diameter, or at least 20 feet (6.1 meters) of bare, solid copper, 4 AWG (26 square millimeters) wire.

**Ground Ring** — A buried ground that encircles a building or structure at a depth of at least 2.5 feet (76.2 centimeter) below the earth's surface. The ground ring must be at least 20 feet (6.1 meter) of 2 AWG (35 square millimeters), bare, copper wire.

## Approved floor grounds

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 **WARNING:**

If the approved ground is inside a dedicated equipment room, the connections must be made by a qualified electrician.

Floor grounds are those grounds on each floor of a high-rise building that are suitable for connection to the ground terminal in the riser closet and to the chassis single-point ground terminal. Approved floor grounds may include:

- Building steel
- The grounding conductor for the secondary side of the power transformer feeding the floor
- Metallic water pipes
- Power-feed metallic conduit supplying panel boards on the floor
- A grounding point specifically provided in the building for the purpose