

7. GROUNDING AND BONDING

7.1 Grounding

- 7.1.1** All grounding and bonding shall be in accordance with the provisions in the latest adopted edition of the NEC, as well as all local, state, and federal regulations.
- 7.1.2** The grounding electrode conductor and equipment of the service entrance shall be effectively and permanently grounded, in accordance with, or exceeding, the latest adopted edition of the NEC, or in accordance with the requirements of applicable authorities having jurisdiction where any differences occur.
- 7.1.3** The grounding electrode conductor shall be solid or stranded, sized in accordance with the requirements of the latest adopted NEC, but shall, in no case, be less than No. 6 AWG copper or No. 4 AWG aluminum or copper-clad aluminum. Stranded conductors must be covered and bare conductors must be solid. Use of aluminum or copper-clad aluminum conductors for grounding will only be approved when installed in accordance with the latest adopted NEC and all local codes. In New York City, installation must be according to applicable city codes (e.g., #6 stranded copper in conduit).
- 7.1.4** All ground rods will be required to be minimum 1/2" x 8' copper weld or 5/8" x 8' copper plated only. No galvanized rods or piping will be accepted as a grounding electrode.
- 7.1.5** An approved ground shall be:
- A metal underground water pipe in direct contact with the earth for 10' or more (including any metal well casing effectively bonded to the pipe), in addition to a supplemental ground rod
 - Not less than two (2) driven ground rods placed at a minimum of 6' apart, when a non-metallic water piping system exists, or is to be installed; a separate grounding electrode conductor to each ground rod shall be utilized (as shown in Section 11 – see Drawing D7)
 - As outlined in the latest adopted NEC
- 7.1.6** Under no circumstances shall a gas or fuel oil piping system be used as a grounding electrode conductor, nor should any CATV, telephone, electric, or other bond wires be placed in contact with gas mains or service piping, gas meters, or regulators.
- 7.1.7** Where a continuous copper water system is installed from the street line to the interior of the building (which includes bonding of the water meter, whether located indoors or outdoors), grounding electrode system shall be accomplished by:
- Installing a grounding electrode conductor from the neutral block of the main switch to a point where the water pipe enters the building, before the first pipe weld or fitting
 - Installing a grounding electrode conductor from the neutral block of the main switch to a supplemental ground, namely, one (1) driven ground rod

- 7.1.8** Where a plastic water piping system is installed from the street line to the interior of the building, grounding shall be accomplished by:
- Installing two (2) separate grounding electrode conductors from the neutral block of the main switch to a supplemental ground, namely, two (2) driven ground rods (see Section 7.1.4)
 - A bonding conductor from the neutral block of the main switch to the interior water piping system is also required. If the interior water piping system within the building has not yet been installed at the time, PSEG Long Island makes the electric service connections, and accepts the two (2) ground rod configuration (regardless of whether a copper water service is planned for the building). It is the responsibility of the electrical contractor, as agent for the property owner, to install the bonding immediately upon water piping installation.
- 7.1.9** The meter enclosure shall not be used as a raceway for the grounding electrode conductor to either the water pipe or the ground rod connector.
- 7.1.10** Only zinc-coated, steel type connectors shall be used on iron water pipe.
- 7.2 Bonding**
- 7.2.1** Bonding shall be done in accordance with the National Electric Code. All metallic components shall be bonded, including line and load conduits, meter equipment, and main switch using a minimum bond wire of #8 solid AWG or #8 stranded AWG green 600 V factory insulated copper. Green tape is acceptable, if applied over an insulated conductor. Bonding jumpers shall be used around concentric and eccentric knockouts. Bonding does not apply to EMT containing SEU, unless the EMT is physically connected to the meter pan, whereby a bonding bushing must be used.
- 7.2.2** A triple neutral lug for a bonding conductor is required for all individual self-contained meter sockets.
- 7.2.3** Bonding applies to 120/208V and 277/480 services. (see Drawing D29).