



RESIDENTIAL GROUNDING AND BONDING

THESE REQUIREMENTS ARE FOR PERMITS ISSUED ON OR AFTER JANUARY 1, 2008

BUILDING SERVICES DEPARTMENT REQUIREMENTS

Any work involving adding sub-panels, upgrade of electrical service, change of water service (if using a less conductive material than is existing), re-piping of a structure, or adding circuits (if no grounding system exists) will require upgrading of the grounding and bonding of the electrical service. A building permit is required for each of these upgrades/remodels. Following are the grounding and bonding requirements based on the 2007 California Electrical Code.

Grounding

Grounding shall consist of a continuous grounding electrode conductor run from the panel to a ground rod (grounding electrode) and to the cold water pipe. Grounding of the electrical service at the main water line must be within the first 5' of water piping into the building. The underground water service shall not be used as the grounding electrode without supplemental electrode. [Article 250.53 (d)]

For existing structures and additions not affecting the main electrical service panel location, the grounding electrode shall be nonferrous (copper), listed, and not be less than ½" in diameter. The electrode shall be installed such that at least 8' of length is in contact with the soil. The upper end of the electrode shall be flush with or below ground level unless the above-ground end and the grounding electrode conductor attachment is protected against physical damage.

The required grounding electrode conductor (from electrode to panel) size is listed in the following table:

GROUNDING ELECTRODE CONDUCTOR SIZING (Table 250.66)		
Size of Main Panel	Copper Conductors	Aluminum or Copper-Clad Aluminum
100 Amps	#8 AWG	#6 AWG
125 Amps	#8 AWG	#6 AWG
150 Amps	#6 AWG	#4 AWG
200 Amps	#4 AWG	#2 AWG

Bonding

Bonding shall consist of a continuous bond jumper installed at the water heater between the hot, cold, and gas lines. The bonding jumper shall be sized based on the following table:

BONDING JUMPER SIZING (Table 250.122)		
Size of Main Panel	Copper Conductors	Aluminum or Copper-Clad Aluminum
100 Amps	#8 AWG	#6 AWG
125 Amps	#6 AWG	#4 AWG
150 Amps	#6 AWG	#4 AWG
200 Amps	#6 AWG	#4 AWG