



By **Richard Grunder**

Water Heater Earthquake Strap Requirements

of the installer.

In the 1990s, strapping requirements were upgraded. According to the newer code, "Strapping shall be at points within the upper one-third and lower one-third" of the water heater. To date, this is all the plumbing code has to offer on the subject. Two straps are required, but there are still no specifications as to techniques and materials to be employed.

Unknown to many, however, is the fact that the plumbing code, as it relates to water heater strapping, has been superceded by higher standards set forth by the California Health and Safety Code. In 1989, Assembly Bill 1890 was passed by the state legislature, establishing the following health and safety standards: (1) All water heaters sold in California shall be braced; (2) Manufacturers of water heaters must provide installation instructions for seismic straps with each fixture sold; and (3) The Office of the State Architect must prepare generic installation instructions with standard details illustrating minimum standards for earthquake strapping.

The State Architect's specifications, published in 1993, stand as the legal criteria

for adequate strapping of water heaters in California. Unfortunately, miscommunication occurred in informing building departments, home inspectors, and plumbing contractors in that new seismic standards had taken effect. Consequently, years have passed since the inception of current state guidelines. Violations and misapplications remain commonplace, even though information is more easily accessible today.

Basically, the effective standards are these:

- All water heaters must be strapped, whether gas or electric.
- Two straps are needed for tanks up to 52 gallons, one in the upper one-third and one in the lower one-third of the fixture.
- 75 gallon tanks require three straps. 100 gallon or larger tanks require four straps.
- Straps may consist of either 3/4-inch-wide plumbers' tape (at least 24 gauge) or half-inch diameter metal conduit.
- Straps should wrap all the way around the body of the water heater. (Note: Many of the strapping kits available in hardware stores fail to comply with this requirement.)
- Straps should be secured to adjacent walls and from opposing directions.
- Straps should be secured to the wall studs

using 1/4" diameter by 3" long lag bolts with washers.

• Approved flexible connections should be provided at both the water lines and the gas piping.

Much confusion is caused when a home inspector points out discrepancies to the above requirements. In many cases the installer is notified and educated of the requirements. More education needs to happen in order to get people up to the current standards.

**A source for this article was entitled "Earthquake Bracing of Water Heaters for Single-Family Home", published in January 1993 by the State and Consumer Services Agency, Department of General Services, Office of the State Architect, by Harry C. Hallenbeck, FAIA, State Architect.*

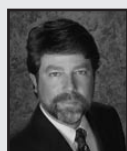
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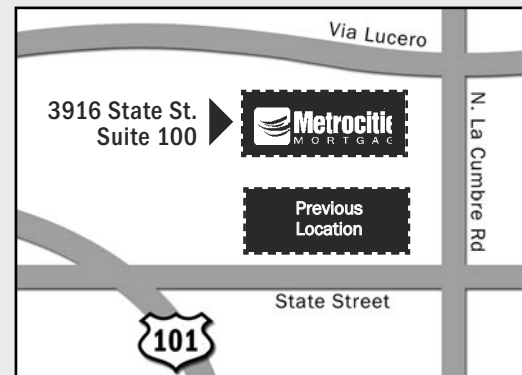
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