Handout P.03
Earthquake Restraints and Seismic Requirements for Water Heaters

What Can Happen During an Earthquake if a Water Heater is not Properly Restained?

A 50-gallon water heater weighs between 500 and 600 pounds when filled. During an earthquake the water heater can move or tip over if not properly restrained. This can result in water leaks, damaged electrical wiring, gas line leaks, fire, and possible explosion, all of which could cause significant and costly property damage or even loss of life.

What are the Code Requirements to Seismically Restraining a Water Heater?

The Uniform Plumbing Code requires that water heaters installed in seismic design categories C, D, E, and F, shall be anchored or strapped to resist horizontal displacement due to earthquake motion. Strapping shall be at points within the upper one-third and lower one-third of its vertical dimensions. At the lower point, a distance of not less than 4 inches shall be maintained from the controls with the strapping.

Additional Items to Consider When Securing a Water Heater

- Earthquake seismic strapping shall be listed and labeled for the application. The strapping kit must be approved by The Department of General Services, State of California, Division of the State Architects. Look for this designation on the packing or strap.
- Water heaters shall be installed per manufacturer’s instructions and meet all required clearances to combustible materials such as the wall(s) adjacent to the water heater.
- Earthquake seismic strapping shall be fastened to solid backing (wood or metal), whichever is approved by the strapping manufacturer to ensure proper anchorage and support.
- Use the hardware provided with the earthquake seismic kit. Use of anything other than what is provided is not approved and may not perform to the required standard.
- Water heaters shall be installed tight against the wall or proper approved blocking to resist displacement during an earthquake.
- Some water heaters require a minimum 1” inch clearance to combustibles, while others allow 0” clearance. Water heaters with 1” inch clearance requirements will require noncombustible blocking, such as Unistrut or similar noncombustible material. You can find the clearance requirements on the rating label affixed to the water heater.

(PLEASE SEE THE ILLUSTRATION ON THE BACK)

Robert Doehl, Building Official
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- **Water Heaters Requiring 1" Clearances to Combustibles**: Fasten 1½" Unistrut to wall studs. Fasten straps to wall studs at side wall.

- **Water Heaters with Zero Clearance to Combustibles**: Fasten straps to wall studs at wall corner.

Water heater shall be braced to resist displacement during earthquake with solid backing or support at strap location to prevent movement.

Listed and approved earthquake restraints installed within the top and bottom 1/3 of water heater. Bottom strap minimum 4" above the controls.