



Protecting Your Property From Earthquakes

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARE YOU AT RISK?

If you aren't sure whether your house is at risk from earthquakes, check with your local building official, city engineer, or planning and zoning administrator. They can tell you whether you are in an earthquake hazard area. Also, they usually can tell you how to protect yourself and your house and property from earthquakes.

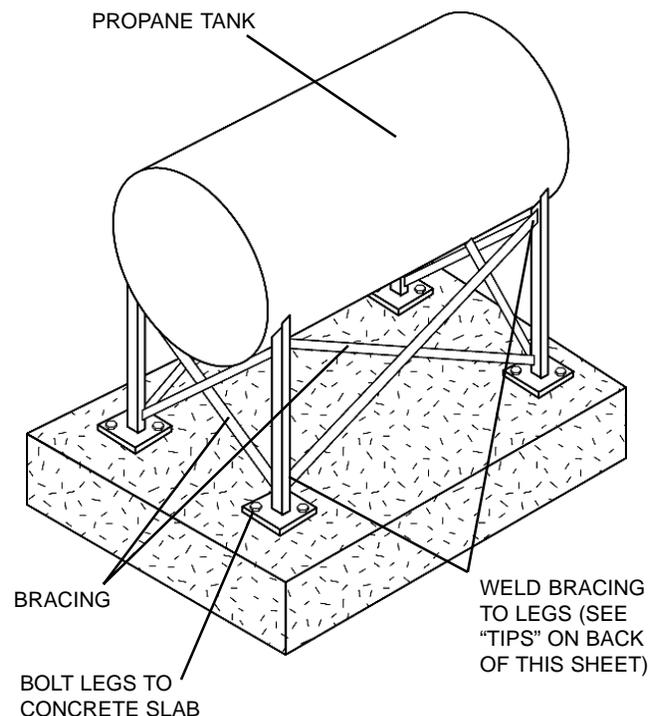
WHAT YOU CAN DO

Earthquake protection can involve a variety of changes to your house and property – changes that can vary in complexity and cost. You may be able to make some types of changes yourself. But complicated or large-scale changes and those that affect the structure of your house or its electrical wiring and plumbing should be carried out only by a professional contractor licensed to work in your state, county, or city. Examples of earthquake protection are anchoring and bracing propane tanks and compressed gas cylinders. These are things that skilled homeowners can probably do on their own.

ANCHOR AND BRACE PROPANE TANKS AND GAS CYLINDERS

During earthquakes, propane tanks can break free of their supporting legs. When a tank falls, there is always a danger of a fire or an explosion. Even when a tank remains on its legs, its supply line can be ruptured. Escaping gas can then cause a fire. Similar problems can occur with smaller, compressed gas cylinders, which are often stored inside a house or garage.

One way to prevent damage to propane tanks and compressed gas cylinders is to anchor and brace them securely. The figure shows how the legs of a propane tank can be braced and anchored. Using a flexible connection on the supply line will help reduce the likelihood of a leak. Compressed gas cylinders, because they have to be periodically replaced, cannot be permanently anchored. But you can use chains to attach them to a wall so that they will remain upright.



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Anchor and Brace Propane Tanks and Gas Cylinders

TIPS

Keep these points in mind when you anchor and brace propane tanks or compressed gas cylinders:

- ✓ Before you alter your propane tank in any way, make sure that the tank is your property and not rented from the propane supplier. Before welding new bracing to the tank legs, you **MUST** remove the gas from the tank. You should also check with your propane supplier to find out whether additional precautions are necessary.
- ✓ Clear the area around the propane tank to ensure that there are no tall or heavy objects that could fall on the tank or rupture the supply line.
- ✓ Keep a wrench near the shutoff valve and make sure the members of your family know how to turn off the supply line if they smell a gas leak. On larger tanks, such as farm tanks, consider installing a seismic shutoff valve that will automatically turn off the gas during an earthquake.
- ✓ Provide a flexible connection between the propane tank and the supply line and where the supply line enters the house. But keep in mind that adding a flexible connection to a propane tank line should be done by a licensed contractor, who will ensure that the work is done correctly and according to all applicable codes. This is important for your safety.
- ✓ To attach a compressed gas cylinder to a wall, use two lengths of chain around the cylinder — one just below the top of the cylinder and one just above the bottom. The chains should be attached to eye hooks that are screwed into the wall. In wood-frame walls, the eye hooks must be long enough to penetrate not just the wall but the studs behind it as well. In concrete or masonry block walls, the eye hooks should be installed with expansion anchors or toggle bolts.

ESTIMATED COST

Bracing and anchoring a propane tank will cost about \$250. Having flexible connections installed on the tank and at the house will cost about \$75. Attaching one gas cylinder to the wall will cost about \$50.

OTHER SOURCES OF INFORMATION

Seismic Retrofit Training for Building Contractors and Building Inspectors: Participant Handbook, FEMA, 1995

Reducing the Risks of Nonstructural Earthquake Damage: A Practical Guide, FEMA-74, 1994

Protecting Your Home and Business from Nonstructural Earthquake Damage, FEMA, 1994

To obtain copies of these and other FEMA documents, call FEMA Publications at 1-800-480-2520. Information is also available on the World Wide Web at <http://www.fema.gov>.