



5 Steps to a Safer and Stronger Home

Earthquake

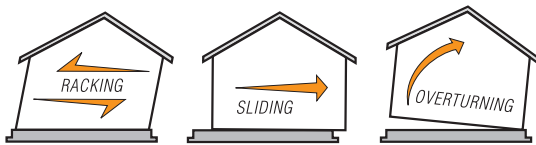
What you need to know to make your home earthquake resistant.

You might not think you live in earthquake country, but at least 39 states are considered at moderate to very high earthquake risk. As you evaluate your home's ability to withstand an earthquake and prepare for a retrofit, knowing these simple steps will help to ensure your home is structurally sound and earthquake resistant. We've included important questions to help determine when a seismic retrofit is needed and whether to hire a professional or do it yourself.

1. Get Seismic Smart

Knowing how seismic forces affect your home will help you make your home safer and more secure. There are two ways an earthquake can affect your home:

- Lateral (*or shear*) forces – horizontal forces that result in back and forth (*side to side*) movement, also known as racking. Lateral forces can shake the house and weaken its frame and cause it to slide off the foundation.
- Uplift forces – vertical forces that result in up and down movement. Uplift forces can cause the house to overturn and lift off the foundation.



How Earthquake Forces Affect a Home

2. Create a Path

A continuous load path, that is. A continuous load path is a method of construction that ties your house together from the roof to the foundation using a system of framing materials, metal connectors, fasteners (*like nails and screws*) and reinforced walls called shearwalls. This system connects and strengthens the structural frame of the house. If your home is built with a continuous load path, it will be better equipped to resist the forces of an earthquake by transferring these forces from the frame of the house to the foundation (*see diagram on page 2*).

3. Know Your Zone

Certain geographic areas are more prone to earthquakes than others; your house may be in a seismic zone and you may not know it. The best way to find out if you live in a seismic area is to call your local building department and ask if you live in a region of moderate or high seismic risk. You also can visit the U.S. Geological Survey website and review its seismic hazard maps at <http://earthquake.usgs.gov/research/hazmaps/>.

4. Be Ready to Retrofit

Many existing homes were constructed prior to new earthquake-resistant building code requirements. If your home was built prior to 1985, it's most likely in need of a seismic retrofit. A retrofit adds bracing and reinforcement to strengthen the critical connections within a home; bolting the home to its foundation is a key step. A home that has been retrofitted is able to resist greater earthquake forces and has a lower risk of being damaged.

5. Retrofit Your Home Right

Before starting a seismic retrofit project you'll need to inspect and evaluate the structural integrity of your home. Hiring a professional will help ensure the retrofit is done right. There are seismic improvements that you can do on your own to strengthen your home, however, some cases may require an engineer and contractor. Knowing what is needed from the beginning will set you on the right course to a safer, stronger home. Remember when hiring a retrofit specialist, be sure they are licensed and have a good reputation.



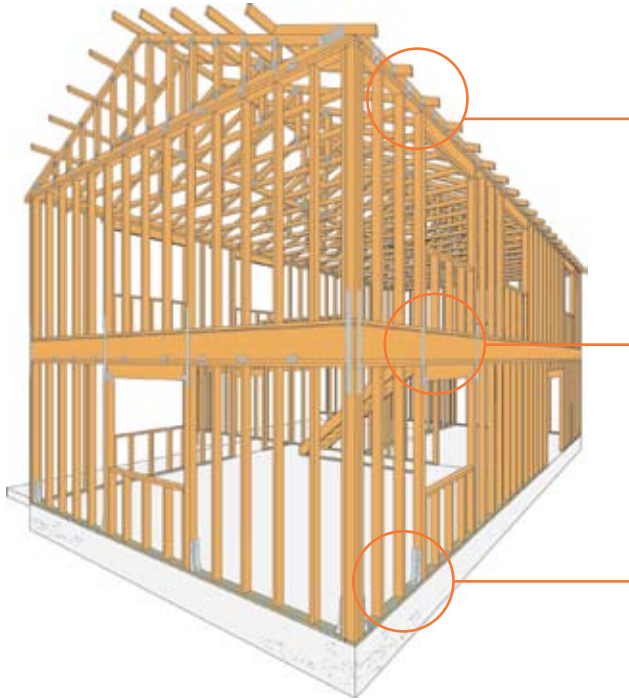
5 Steps to a Safer and Stronger Home

Earthquake

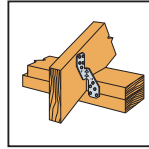
What you need to know to make your home earthquake resistant.

Continuous Load Path

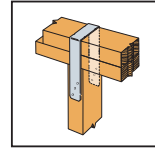
Ties your home together from the roof to the foundation with metal connectors



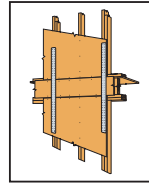
Roof to Top Plate Connection:
Fastens the roof to the top of the wall



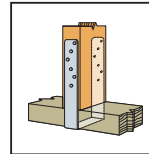
Top Plate to Stud Connection:
Ties the top of the wall to the wall studs



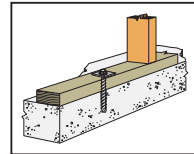
Floor to Floor Connection:
Ties the second story to the first story



Stud to Mudsill Connection:
Fastens the wall studs to the bottom of the wall (*mudsill*)



Mudsill to Foundation Connection:
Anchors the bottom of the wall (*mudsill*) to the foundation



Do I Need to Retrofit My Home? – 5 Questions to Ask Yourself

Certain types of homes are more likely to need a seismic retrofit than others. If you answer yes to any of these questions, you should consider retrofitting your home.

1. Am I living in an area prone to earthquakes?

Find out if you live in a moderate or high seismic area. Call your local building department and ask if you are in Seismic Design Category D, E or F.

2. Was my home built prior to 1985?

Homes built prior to 1985 are typically more vulnerable to earthquake damage. Most homes built after 1985 were designed to conform to stricter building codes and are most likely better equipped to resist the force of an earthquake.

3. Is my home built on a raised foundation?

If your house is not built on a concrete slab, chances are it's built on a raised foundation (*these homes typically have a crawl space*). This supporting structure

under the house may not have been built to resist seismic forces and can be highly susceptible to structural failure in an earthquake.

4. Is my home built on a hillside?

Homes built on a hillside typically have raised foundations and tend to have more severe failures because the structural framing supporting the house – posts and cripple walls – are built at different heights.

5. Do I have a garage?

Garage door openings create vulnerable areas in a house. The narrow walls on either side of the garage door must be carefully designed to resist earthquake forces. This is extremely important if there is a living space above the garage because these rooms add weight that the garage framing must support. (*Note: if you live in an older home with a living space above the garage or on a hillside, you'll need to consult with a licensed structural engineer for design solutions.*)

*It's important to prepare your home for an earthquake now so you can minimize damage later. Simpson Strong-Tie has developed a **Seismic Retrofit Guide** with step-by-step information to help you make sure your retrofit is done right. You can download the guide or request a copy at www.strongtie.com/safestronghome.*