

## Common Structural Failures



When strong shaking occurs, serious damage can result if a building is not attached to its foundation, like this house after the 1946 earthquake on Vancouver Island.



This home fell six feet when the crawl space walls failed. Notice the position of the stairs. The walls, plumbing, & electrical wiring suffered catastrophic damage.



The garage walls of this house were not reinforced sufficiently to withstand the horizontal rocking or the vertical load placed upon them.



## Home Inspections “On the House” (FREE!)

As we live along the active and potentially devastating Cascadia plate boundary, we feel it is critical you know your options. That is why our inspections are FREE.

We will show you:

- ✓ How quakeworthy your house is right now
- ✓ What reinforcements will stop it from sliding and collapsing
- ✓ Exactly what it will cost to perform the recommended work
- ✓ How to compare the cost & benefits of a retrofit to the alternatives



Toll Free: 1 (855) 540-SAFE (7233)

Victoria: (250) 590-8544

[www.quakesafe.ca](http://www.quakesafe.ca)

Become an Authorized QUAKESAFE Dealer

We are accepting applications for a limited number of qualified Authorized Dealers on Vancouver Island and the Lower Mainland. Contact us for more information.

## If An Earthquake Shakes Your Home Off Its Foundation...



### Where Else Would You Live?

If your house was built before 1980, bolting it securely to the foundation is the **SINGLE MOST IMPORTANT STEP** you can take to help ensure that:

- ⚠ it will NOT slide off, collapse and cause injury, or worse, to anyone inside or close by
- ⚠ you will NOT need emergency shelter
- ⚠ you WILL have access to food, water and clothes
- ⚠ you will NOT be burdened by a mortgage on a house you can't live in, plus interim costs
- ⚠ you will NOT have an enormous insurance deductible to overcome before rebuilding
- ⚠ you will NOT have to wait months or years for builders & materials to become available

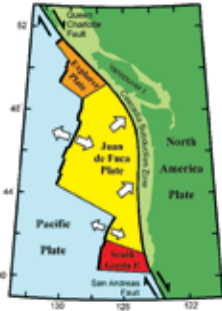
**Call Today For A FREE Inspection**



**Toll Free: 1 (855) 540-SAFE (7233)**

## The Reality We Need To Take Seriously

As much as we would rather not think about it, we live in an earthquake prone region - the Cascadia Subduction Zone. The reality of an earthquake from the Cascadia Subduction Zone region draws nearer each day.



As the Juan de Fuca tectonic plate subducts beneath the North American plate it pushes against the edge of the North American plate, generating stress and earthquakes both within the North American plate and within the subducted, or downgoing, portion of the Juan de Fuca plate.

Small earthquakes within these two plates occur daily, and several large and damaging earthquakes occurring in southwestern British Columbia and northern Washington state over the past 150 years. In addition, the entire Cascadia plate boundary (along the edge of the Juan de Fuca and North American plates) has ruptured in giant earthquakes (greater than magnitude 8) 19 times in the past 10,000 years. Any of these 3 regions can produce a damaging earthquake at any time, so now is the time to prepare.

## Learning From Our Neighbours' Experience

The vulnerability of our wood frame houses is comparable to that of California homes. Insurance claims from the 1994 magnitude 6.7 earthquake in Northridge revealed over \$25 billion in losses, 50% of which was caused by damage to single family homes. Over 40,000 were left uninhabitable. Much of this damage could have been easily prevented and for a fraction of the restoration cost.



## Seismic Retrofits: The Only Insurance That Makes Practical Sense

During an earthquake, the violent shaking of the ground can cause older houses to slide off their foundations because they have not been bolted down. This results in major structural damage and, frequently, total collapse.

The goal of seismic retrofitting is to keep your house intact on its foundation. For a small fraction of what your insurance premiums would mount to, you will avoid a deductible upwards of \$50-100,000 and the expense of temporary housing until builders and materials become available. This is earthquake protection worth paying for!

## Key Structural Elements of a Retrofit



## The 3 Essential Steps of a Retrofit

- 1) Connecting the Sill Plate to the Foundation**  
The addition of bolts and washer plates prevents the house from sliding off the foundation.
- 2) Reinforcing the Cripple Walls**  
Adding plywood panels will prevent the outside walls of your crawl space from collapsing.
- 3) Attaching Cripple Walls to the Floor Frame**  
Your home is now able to bear the load of an earthquake's downward and horizontal forces.

## We Know Retrofits Work

In 1984, architect Michael O'Hearn purchased two identical Victorian style homes in Santa Cruz, California with the intent to retrofit them both. The twin homes were built by the same builder with identical materials and construction techniques. Only one retrofit had been completed when the 1989 Loma Prieta earthquake struck. That home suffered \$5,000 worth of minor damage and remained fit to lived in. The other was devastated and cost \$260,000 to jack up, repair and slide back onto its foundation.



## The QUAKESAFE Retrofit System



The QUAKESAFE retrofit system was designed by Victoria's Mike Ursel, P Eng, CA, in consultation with West Vancouver structural engineer Thomas Day, P Eng. All field crew have been specially trained under their professional supervision.

## What Our Customers Are Saying

- "Your retrofit team were most courteous"*
- "I would describe the work done as excellent."*
- "The work was done with minimal disruption to our family."*
- "The crew left the work area clean and tidy"*