Minimizing an Earthquake's Damaging Effects

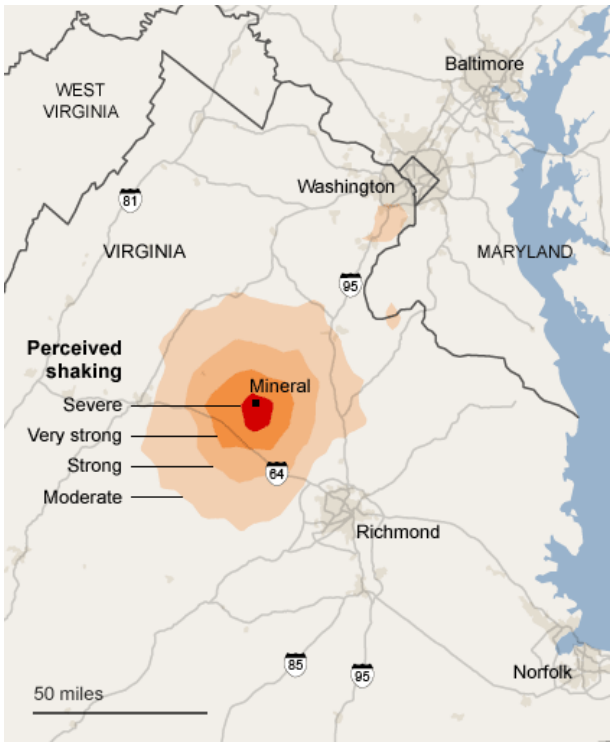
INTEGRO INSURANCE BROKERS

By Chuck Blazina

The recent 5.8 moment magnitude earthquake in Virginia reminds us that East coast earthquakes do occur and that preparation plays an important role in minimizing resulting damage.

According to the U. S. Geological Survey (USGS), "*The Virginia earthquake of 2011, August 23, occurred as reverse faulting on a north or northeast-striking plane within a previously recognized seismic zone, the 'Central Virginia Seismic Zone.' The Central Virginia Seismic Zone has produced small and moderate earthquakes since at least the 18th century. The previous largest historical shock from the Central Virginia Seismic Zone occurred in 1875. The 1875 shock occurred before the invention of effective seismographs, but the felt area of the shock suggests that it had a magnitude of about 4.8. The 1875 earthquake shook bricks from chimneys, broke plaster and windows, and overturned furniture at several locations. A magnitude 4.5 earthquake on 2003, December 9, also produced minor damage.*"

The rock that forms our earth's crust is much more solid in the eastern U.S. and therefore transmits energy more efficiently and for greater distances. In the western U.S., the rock is more fractured and absorbs energy resulting in more localized events. Again, from the USGS, "*Earthquakes in the central and eastern U.S., although less frequent than in the western U.S., are typically felt over a much broader region. East of the Rockies, an earthquake can be felt over an area as much as ten times larger than a similar magnitude earthquake on the West coast….*"



West coast earthquakes have historically been of greater magnitude and have occurred more frequently. However, because of the known frequency and severity, a focus on strengthening buildings and infrastructure to prevent damage has been underway since the 1970's and 80's. One major area of focus has been buildings constructed of unreinforced masonry (URM). These brick or concrete block buildings without structural steel reinforcements have been shown to suffer the greatest damage from sustained shaking as mortared joints lose their strength and the building blocks fall apart. This was a prevalent choice of construction in the west up to the 1980's but has continued elsewhere in the United States, impacting the earthquake damage risk to both

commercial and residential buildings.

Fortunately, most of the damage resulting from the Virginia quake has been superficial building damage: cracks in walls, broken windows, leaning or fallen chimneys, etc. Then there's the damage to a building's contents and belongings. Grocery stores with their broken stock in the aisles is a common sight; tall and slender furniture can topple over, endangering children and the elderly; and fragile belongings and keepsakes can fall from their displays and break.

Strengthening a building can be a major task carrying a relatively high cost. Buildings with a high level of importance are typically the ones that justify this cost. However, protecting contents and belongings is a fairly simple task that can reap huge rewards by preventing damage to irreplaceable and expensive items, as well as providing a safe environment for employees and occupants.

Our Federal Emergency Management Agency (FEMA) provides valuable basic guidelines on minimizing the affects from an earthquake. Most notably:

What to do before an earthquake:

http://www.fema.gov/hazard/earthquake/eq_before.shtm

What to do during an Earthquake:

http://www.fema.gov/hazard/earthquake/eq_during.shtm

And, what to do after an earthquake:

http://www.fema.gov/hazard/earthquake/eq_after.shtm

There have been a number of aftershocks in Virginia, providing stark reminders of nature's power. Too often disaster preparedness is overlooked or deferred. Let this event serve as both a warning and reminder that simple steps can and should be taken at your home and business to minimize the damaging effects of an earthquake and other natural disasters.

For More Information

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Chuck Blazina is a Principal and a senior member of the Property Department operating from Integro's San Francisco office. With his engineering background, one of Chuck's areas of specialty is in modeling earthquake exposures, and utilizing these modeling results to help clients make informed earthquake risk management decisions.

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