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## *Thousands of Dollars of Work Offers Shaky Assurance*



Noe Balderan, left, and Walter Gallaread of Bay Area Retrofit working to support an Oakland house's foundation. Peter DaSilva for The Bay Citizen

By Carol Pogash

Dec. 22, 2011

Craig Irving just bought a 1920s bungalow in the Rockridge neighborhood of Oakland last October “and the house starts to move,” he said. The fact that his new house had been seismically retrofitted — a common procedure to reinforce older buildings in the Bay Area against possible earthquake damage — had been a selling point, he said, but even so his first thought was, “Please don’t let this be the big one.”

A home inspector he hired gave him the bad news: A part of the previous retrofit job was “virtually decorative.” Mr. Irving, who is in the catastrophic risk insurance business, said his house is 1.3 miles from the [Hayward Fault Zone](#), and his wife is five months pregnant. He said it will cost \$7,500 to have the house re-retrofitted.

Many homeowners are paying to have their houses seismically retrofitted after the recent swarm of earthquakes along the Hayward Fault Zone. But the owners may be unaware that California does not have mandatory state-sanctioned standards for seismic retrofits, and does not offer specific licenses for retrofit contractors.

“As long as a contractor doesn’t do something that will hurt the house, anything is allowed,” said Peter I. Yanev, a structural and earthquake engineer in Orinda and co-author of the book “[Peace of Mind in Earthquake Country](#).”

Three years ago Carol Dutra-Vernaci paid a contractor thousands of dollars to do seismic retrofits of both her rental property and her office.

“Everything was fine,” she said, until this year, when Thor Matteson, a structural engineer, crawled underneath.

The hardware used by the contractor was “only 20 percent as strong as I would want to see in a retrofit,” Mr. Matteson said after inspecting the previous work. Ms. Dutra-Vernaci, who is in charge of Union City’s disaster preparedness program, said she was unhappy to have to pay an additional

\$12,000 to strengthen the two structures that she thought had already been retrofitted properly. But now, she said, “I have peace of mind.”

Bay Area residents in older homes who have paid for seismic retrofits “live with a false sense of security,” said Danielle Hutchings, an engineer who coordinates the earthquake and hazards program at the Association of Bay Area Governments. By her estimate, one-third to two-thirds of home retrofits in the Bay Area are inadequate to prevent structural damage in the event of a major earthquake.

When the next big quake hits — one is predicted in the next 30 years — Ms. Hutchings’s agency warns that 150,000 homes will be left uninhabitable and thousands will be homeless.

“It’s not a great message if we were to come out and say strongly, ‘Your house is retrofitted but it was probably done wrong and you need to do it again,’ ” Ms. Hutchings said.

But that is indeed the message homeowners need to hear, according to structural and seismic engineers and local building officials.

Although many governmental agencies have a stake in earthquake preparedness, none oversees the seismic retrofit industry. Even though California issues contractor licenses for painting, dry walls, fencing and landscaping, there is no license for seismic retrofitting. Contractors can and do make unsubstantiated claims and use substandard hardware. The state’s seismic retrofit code is voluntary. Building inspectors approve projects as long as houses are not left weaker than before.

In 2006, The Contra Costa Times commissioned two veteran building officials and seismic safety experts to inspect 35 retrofitted houses along the Hayward Fault in Oakland, Berkeley, El Cerrito and Albany. Only 11 of the houses “would probably withstand the shaking of a high magnitude temblor,” they concluded.

Little has changed since 2006, said William Schock, one of the inspectors

in the newspaper's study and the chief building official in San Leandro. San Leandro offers training and classes in seismic retrofitting for contractors and homeowners.

Kelly Cobeen, a structural engineer with Wiss, Janney, Elstner Associates in Emeryville, said some contractors are qualified to do retrofits and some are not. "Lots of times a contractor will say, 'I know things I can do that make it better,' and sometimes they do and sometimes they don't," she said.



Anchor bolts used in the project. Peter DaSilva for The Bay Citizen

Homeowners can be attracted by impressive Web sites. For example, Earthquakesafety.com asserts that its "highly skilled inspectors attend regular training programs," and lists programs from four federal, state and local agencies. Two of the agencies no longer exist. Of the remaining two, one has not offered a class in five years, the other in two years.

In a phone interview, Wayne Harrison, the owner of Earthquake Safety in Berkeley, described the information on his Web site as “marketing.”

“There is no formal training for retrofitting,” Mr. Harrison said. What counts, he said, is experience. Earthquake Safety has been in business since 1984, and has retrofitted thousands of homes, he said.

But a history of retrofitting is no guarantee that the houses will be protected.

Many retrofit contractors, including Mr. Harrison, use angle irons to anchor floors to foundations, even though they are not as effective as other hardware that costs about the same.

Mr. Harrison said he has to work within homeowners’ budgets. “We use decent solutions that are not perfect,” he said.

If a one- or two-story house sits on flat land, retrofitting can be a do-it-yourself effort. A simple retrofit might consist of bracing the short wall between the floor and the foundation with plywood, bolting it to the foundation and connecting it to the floor. Directions can be found on the Internet.

Staeppan Snyder bought his house in Berkeley in 2008, and found that the previous retrofit was insufficient.

“It’s pretty unbelievable,” Mr. Snyder said. “We have standards for electrical and plumbing, and I understand this is a more difficult area,” Mr. Snyder said. “It’s kind of disturbing that there are no regulations in place or inspection standards.”

The state adopted a seismic retrofit code last year but it is voluntary and applies only to simple houses on flat land. Contractors are not required to follow the state code, said Janiele Maffei, chief mitigation officer for the California Earthquake Authority.

The earthquake authority is a publicly managed organization created by the Legislature in 1996 to offer catastrophic earthquake insurance policies and to educate homeowners on earthquake safety. Through its member insurance companies, it sells most of the residential insurance policies in the state.

Ms. Maffei said the authority will begin a pilot project next year offering rebates to homeowners who retrofit their homes, but the agency will not address the issue of training and testing contractors, she said.

“There are others that do that,” she said, pointing to training by the Association of Bay Area Governments.

The association halted its contractor retrofit training nearly six years ago, after the organization learned that some of the contractors it had trained were responsible for some of the poorly retrofitted homes in The Contra Costa Times article, Ms. Hutchings said.

“We will revamp and strengthen it and do it again,” Ms. Hutchings said of the training programs, adding, “We are not in the business of testing and licensing. The state really should take this up.”

“A lot of bad stuff is going on,” said Tom Anderson, a mechanical engineer who has specialized in seismic work for 22 years.

“That’s the kicker,” he said. “If a contractor does substandard work, you won’t know it until after the earthquake.”

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