



Bay Area Retrofit
www.bayarearetrofit.com

510-548-1111

Workers' Comp. 2246
Contractors Lic. #558462
Bond #6334450

D

Howard Cook
737 Page St.
Berkeley, CA 94710

Dear,

Your home has a living area above a garage and these are extremely susceptible to collapse in earthquakes. Rather than explaining everything as a narrative, this proposal also includes some photographs that illustrate why living areas above a garage can be hazardous.



Imagine what would have happened if one, two, or three stories of living space had been built over this garage. This is why living areas above a garage are so dangerous.

Submitted to:

N
A
C
P

My examination of your home showed a need for a cantilevered column which is based on the following findings.

FINDING: This home has living area above a garage. The floor above the garage door opening has nothing under it to prevent the floor from swaying back and forth and possibly even collapsing.

RECOMMENDATION: Where shown on the enclosed drawing, install a thick steel column based on the engineer's specifications. This must be embedded in concrete at its base and attached to the floor at the top.

FINDING: The new foundation will require excavation work. We will need to dig out a trench approximately 18 inches deep and 2 feet wide extending from the moment column to the other side of the garage 16 feet.

RECOMMENDATION: Cut out an 18 inch wide section of concrete floor in garage and dig out dirt and haul to landfill.

FINDING: Rebar will need to be installed in the trench in order to reinforce the concrete at the base of the steel column.

RECOMMENDATION: Install rebar as specified by a structural engineer.

FINDING: Fill the trenches with minimum 3000 psi concrete (This means the concrete can resist 3,000 pounds of force per square inch).

RECOMMENDATION: Fill trenches with concrete as shown in the attached drawing.

The Building Department

Draw plans and submit to building department for review.

Total Contract Price: 00.000

***As of July 1, 2011 California State law **REQUIRES** both smoke detectors and carbon monoxide detectors installed in your home.

Please indicate on the terms and signatures page if you have one smoke detector inside each bedroom, in the hallway outside the bedrooms, on each additional floor in a common area, and in the basement. You will also need a carbon monoxide detector installed outside each sleeping area in the immediate vicinity of the bedrooms, on each additional story, and in the basement.

If they are missing, please install them or the Building Department will not give final approval of your retrofit. If you need additional detectors we can install them for \$75 each.

This proposal is based on a preliminary discussion with structural engineer Thor Matteson, www.shearwalls.com. The engineering has not been completed and will need to be done, but I have enough information to give you a price. If you decide to proceed I will get you in contact with him so that you can develop your own services contract.

This proposal is based on my evaluation after which I concluded the only imperative is preventing the garage from collapsing.

If you wish to proceed, please fill out the Terms and Signature page, write in the dollar amount of the contract, sign and date it. You can then mail it to the above address or fax it.

If you have any questions, please do not hesitate to call.

Sincerely,

A handwritten signature in black ink that reads "Howard Cook". The signature is written in a cursive style with a large, prominent "H" and "C".

Howard Cook
Office: 510-548-1111
Fax: 510-704-4448



Again, by way of illustration of a simple engineering concept, the narrow walls on either side of the garage can tip over.



This house pulled away from the house on the right. The building on the left had to be demolished. This is an extreme example of what can happen and is given here to illustrate a principle.



Embedding a very rigid large steel beam (the black upright column to the left) into concrete and attaching it to the floor above the garage door opening addresses this weakness. These are known as cantilevered columns.

Does Retrofitting Really Work?



Even though this is not a San Francisco house, it illustrates an important principle: If the house remains on its foundation structural damage can be quite minimal.

Notice the top of the stairs of this home relative to the position of the floor. This home fell six feet in a 7.1 earthquake in Ferndale California. None of the windows are cracked and the house is fully intact in every way except the damage to the interior was so extensive it probably should have been torn down. The damage to this home would have been quite minimal if it had been retrofitted and not fallen off its foundation.

An actual laboratory test of retrofitting:

An architect owned two identical Santa Cruz homes. In 1989 he retrofitted one of them. Before retrofitting the other one the 7.1 Loma Prieta earthquake struck. The retrofitted one cost \$5,000 to repair for minor interior plaster cracks. The other one cost \$260,000 to repair because the cripple walls collapsed and it fell off its foundation.

Professional Affiliations

Author: “*Seismic Retrofit for Cripple Walls*”, The Journal of Light Construction.
15 April, 2006

Former member and current consultant The Structural Engineer’s Association’s
Existing Buildings Committee on residential wood-frame retrofit procedures.

Featured Contractor: “*The Coming Bay Area Earthquake*”_PBS, the NewsHour
with Jim Lehrer, April, 2006

Featured Contractor: “*The Hayward Fault. Predictable Peril.*” KQED, Channel 9.
October 2008

Co-Author: Bay Area’s Retrofit Guidelines: Standard Plan A, Residential Seismic
Strengthening Plan, San Francisco Bay Area: The International Code Council,
2005.

Lecturer on Retrofit Principles and Practice for the American Society of Home
Inspectors

Course Instructor: “*Principles and Practice of Earthquake Retrofitting*” for the
Association of Bay Area Governments

Co-Author: Wendy, Allen P.E. Anchorage Systems Engineer for Simpson
StrongTie and Howard Cook, “*Retrofit Mudsill Anchorage Systems*” *Unpublished*,
2007

Residential Earthquake Damage Inspector for the Federal Emergency
Management Agency. 1989-1984

Mayoral Appointee to the Berkeley Disaster Commission 2005 and 2006 as an
advisor on Berkeley’s Earthquake Retrofit programs.

Five time graduate of the course “Earthquake Retrofit for Wood-Frame Homes”
presented by the Association of Bay Area Governments, starting with the first
course in 1995.

Volunteer on City of Oakland committee to upgrade/improve Standard Plan A and
ABAG Multi-Family Soft Story inventory survey of Oakland