

Today

**Submitted to:**

John Doe  
222 Right Here Dr.  
Bay Area  
444-4444

Dear

Thank you for the opportunity to submit a proposal for your property. This proposal is best understood when used interactively with our website, BayAreaRetrofit.com. Throughout this proposal you will be prompted to watch videos and read information from this website. We have found this to be very helpful to our clients in explaining what we do and why.

To find the appropriate content you will see prompts such as "Link to [Bayarearetrofit.com](http://Bayarearetrofit.com)" which will link you to relevant information on our website.

We made a webpage which has a description and video that contains a general overview of the material you will find in this proposal. If you go to this webpage now you will get a good sense of what we plan to do. Link to ["Retrofit Principles"](#) Be sure and watch the video.

**Below we have explained everything in more detail in case you desire further study.**

***The Rationale Behind your Design:*** Link to ["Base Shear"](#)

## **The Building Department**

It is important for you to know the role of the building department in the retrofit process. Link to [“Permits”](#)

The following couple of procedures address the part of your house without cripple walls.

**Attach Mudsill to Foundation with Foundation Anchors** Link to [“No Cripple Wall Retrofit”](#).

**FINDING:** The 6 inch vertical distance between the foundation and the floor prevents the installation of standard bolts because drilling equipment will not fit.

**RECOMMENDATION:** Install Foundation Anchors tested and approved for use as bolt substitutes by the International Code Council testing laboratories. There are 3 different types of Foundation Anchors we use depending on the exact conditions we find.

**Attach Joists to Mudsill with Shear Transfer Ties** Link to [“Transfer Ties”](#)

**FINDING:** The joists (pieces of wood directly on top of the mudsill) can slide off the mudsill. This can be corrected by attaching the joists to the mudsill with Shear Transfer Ties. There are 4 different types of Shear Transfer Ties that we use depending on the exact conditions we find.

**RECOMMENDATION:** Install laboratory tested Shear Transfer Ties.

These procedures address the part of your house with cripple walls.

**Install Bolts:** Link to [“Foundation Bolts”](#)

**FINDING:** Bolts are an integral part of any retrofit and the mudsills need to be bolted to the foundation.

**RECOMMENDATION:** Bolt the mudsill to the foundation at shear wall locations with laboratory tested foundation bolts.

**Install Mudsill Plates:** Link to [“Mudsill Plates”](#)

**FINDING:** Mudsills tend to split if the mudsill-to-bolt connection is not strengthened with Mudsill Plates. In addition, tests have shown mudsill plates increase the strength of a bolt by 59%.

**RECOMMENDATION:** Install Mudsill Plates on all new bolts.

**Install Plate Washers on all Bolts** Link to [“Plate Washers”](#)

**FINDING:** Plate washers increase a bolt’s capacity because it prevents mudsill splitting in a different way.

**RECOMMENDATION:** Install Plate Washers on all new bolts.

**Install Plywood:** Link to [“Plywood”](#) This webpage explains what scientists have discovered about making the strongest shear walls possible.

**RECOMMENDATION:** Install plywood manufactured and tested specifically for shear walls.

**Use the Flush Cut Method:** Link to [“Flush Cut”](#)

Wherever possible, cut the mudsill flush with the rest of the 2 by 4 wall framing and nail the plywood directly to the mudsill.

**Install Shear Transfer Ties on Cripple Walls:** Link to [“Retrofit Principles”](#) and watch minute 3:45 of the video.

**FINDING:** In order to complete the cripple-wall-to-shear-wall conversion process, the shear walls need to be connected to the floor with steel.

**RECOMMENDATION:** Install laboratory tested shear transfer ties.

**Install Hold Downs:** Link to [“Overturning”](#)

**FINDING:** Some, if not all, of the shear walls need hold-downs to resist overturning (tipping over)

**RECOMMENDATION:** Install hold-downs on shear walls to resist overturning.

**Removal of Plaster** Link to [“Plaster”](#) in the Search Box

**FINDING:** In order to access the wall framing and foundation plaster will need to be removed at certain locations. This may require removal of lead based paint. We are certified by the Environmental Protection Agency to safely remove lead based paint.

**RECOMMENDATION:** Remove plaster or sheetrock as required and replace with plywood. Once we are done, you will see bare plywood at the new shear wall locations. The plywood can be textured and painted exactly like sheet rock.

If we must remove plaster/sheet rock in the garage, the building department will require the new shear walls be covered with fire-resistant sheetrock. Sheetrock installation in garage only is INCLUDED and fire-taped, but not textured or painted.

**Install Lag bolts** Link to [“Lag Bolts”](#) in the Search Box

**FINDING:** The shear walls at plaster/sheet rock locations can be attached to the floor with non-invasive lag bolts. These do the same thing as Shear Transfer Ties

**RECOMMENDATION:** Otherwise strips of ceiling plaster will need to be removed and the ceiling repaired at greater cost.

**Possible Ceiling Replacement** Link to [“Ceiling”](#) in the Search Box

When the lag bolts mentioned above won't work, we will need to remove a strip of sheet rock 18 inches wide so we can use conventional Shear Transfer Ties. We charge an extra \$35 per linear foot for this including sheet rock replacement but no finishing.

**Connect Breaks in Upper Top Plate** Link to [“Top Plate”](#) in the Search Box.

**FINDING:** The horizontal 2 by 4's at the top of the cripple walls, (known as top plates) are not joined together. They will tend to separate where not connected together.

**RECOMMENDATION:** The top plates should be connected together with either nails or steel.

**Review of Retrofit Principles:** Link to [“Retrofit Review”](#) in the Search Box.  
This video is a good review of most everything found in your proposal

**Documentation and the Building Department**

For our records and quality control we take progress pictures during the installation and if requested will provide you with the photos on a DVD after full payment is made.

**Draw plans and submit to building department for review.**

Let us know if you desire a permit. As mentioned before, the pros and cons of procuring a permit are discussed on our home page under the [“Permits”](#) tab.

Oftentimes building inspectors have 15-20 inspections to do a day and can’t devote more than a few minutes to looking at your retrofit. This is rarely enough time to provide more than a cursory look.

We have found the best inspections are done by homeowner themselves. We encourage you to grab some old clothes and ask one of our highly trained technicians to show you what they are doing and why.

We charge \$275.00 for the time it takes to draw plans for a voluntary retrofit, submit the plans for review, and meet with the building inspector during the course of the job. In addition, City permits usually cost between \$400 and \$1,000.

**If you desire a permit, please add \$275.00 to the price below.**

**Total Contract Price: \$00,000.00**

Plus price of permit paid to city

- |   |
|---|
| <b>Job Summary:</b>                             |
| <b>00 Foundation Anchors</b>                    |
| <b>00 Shear Transfer Ties on Mudsill</b>        |
| <b>00 Linear Feet Plaster/Sheetrock Removal</b> |
| <b>00 Bolts</b>                                 |
| <b>00 Mudsill Plates</b>                        |
| <b>00 Plate Washers</b>                         |
| <b>00 Linear Feet Plywood</b>                   |
| <b>00 Linear Feet Flush Cutting if Required</b> |
| <b>00 Shear Transfer Ties on Cripple Wall</b>   |
| <b>0 Hold Downs</b>                             |
| <b>00 Lag Bolts</b>                             |
| <b>Top Plate Splices as Required</b>            |

*Design, placement, and quantities of retrofit components may vary on existing site conditions but every attempt shall be made to provide equal earthquake resistance on each side of the house.*



## **Smoke and Carbon Monoxide Detectors**

\*\*\*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. Please indicate how many you want us to install on the Terms and Signatures Page.

If fire safety is a concern of yours, one common approach is to install a gas shut off valve. We have found the company Quake Prepare at [QuakePrepare.com](http://QuakePrepare.com) to be a reliable and cost-effective company.

## Terms and Signature Page

\* Owner understands that seismic strengthening does not guarantee the structural performance of this building. Earth movement from earthquakes and a building's ability to withstand that movement are beyond the control of contractor. Contractor hereby disclaims any express or implied warranties that the seismically strengthened building will be able to withstand an earthquake without damage to its structure or contents.

**Initial** \_\_\_\_\_

\* Contractor not responsible for incidental damage that may occur in adjacent to work such as pipes that are severely rusted and break while being moved out of the way, etc. If it is a minor repair, we will repair it as a matter of course. It is extremely uncommon for this sort of thing to happen but we want it clear that we cannot be responsible for the rest of the house.

**Initial** \_\_\_\_\_

### Proposal:

Bay Area Retrofit hereby proposes to do the work indicated above at the prices shown. Price includes all labor and materials.

### Payment:

Full payment is due upon completion of work. Payable by: cash, check, or credit card plus the credit card company's 3% service charge.

### Acceptance:

I have read and understand the information above, initialed where listed, and hereby accept this proposal for the amount of \$\_\_\_\_\_. The specifications, prices, and conditions outlined in this proposal are satisfactory. I authorize Bay Area Retrofit to complete this contract.

I desire a permit and am willing to pay a \$275.00 handling fee and the City permit fee. **Initial** \_\_\_\_\_

I do not desire a permit. **Initial** \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

Print Name \_\_\_\_\_ E-mail \_\_\_\_\_

Phone:

Address:



## Professional Affiliations

Course Instructor: “*Principles and Practice of Earthquake Retrofitting*” for the Association of Bay Area Governments. 2006 and 2010.

Lecturer: “*Retrofit Principles and Practice for the Home Inspection Industry.*” Sponsored by the Golden Gate Chapter of the American Society of Home Inspectors

Keynote speaker “*The Preservation of Historical Wood-Framed Buildings*” Sponsored by The City of Victoria Heritage Foundation in British Columbia.

Residential Earthquake Damage Inspector, FEMA. 1989-1994.

Mayoral Appointee to the Berkeley Disaster Commission

Guest Lecturer: “*Retrofit Principles and Practice for the Canadian Home Inspection Industry.*” Sponsored by the Canadian Association of Home and Property Inspectors

Member Associations:

- Earthquake Engineering Research Institute
- Structural Engineering Association of Northern CA
- City of Oakland Apartment Building Retrofit Committee

Publications:

- Contributor: Wood-Framed Shear Wall Construction: An Illustrated Guide. Matteson, Thor, Structural Engineer. Illinois: The International Code Council, 2010.
- Co-Author with Wendy, Allen, Engineer for Simpson Strong Tie, “Retrofit Mudsill Anchorage Systems”, 2007
- “*Seismic Retrofit for Cripple Walls*”, The Journal of Light Construction. April, 2006
- Co-Author and currently updating Bay Area’s Retrofit Guidelines: “Standard Plan A, Residential Seismic Strengthening Plan”, The International Code Council, 2005.
- “Homeowner’s Guide to Seismic Retrofitting”
- Many other publications available in the PDF Library at [Bayarearetrofit.com](http://Bayarearetrofit.com)

Featured Contractor in PBS Documentaries and New York Times:

- “*The Coming Bay Area Earthquake*”, PBS/News Hour
- “*Seismic Retrofits Offer Shaky Assurance*” New York Times, Dec. 23, 2011
- “*The Hayward Fault. Predictable Peril.*” KQED, Channel 9.

## References

Earthquake retrofitting is the art of applying structural engineering principles to a building so that it can withstand the violent shaking caused by earthquakes. The people below know us well and can confirm our understanding of these engineering principles and our ability to apply them. Our primary consulting structural engineer is Thor Matteson. Mr. Matteson specializes in residential seismic retrofitting and wrote [a 180 page book on shear walls](#) published by the prestigious International Code Council. For his work he was given an award for “Excellence in Structural Engineering” by the Structural Engineers of California. He too can attest to our competence.

Nels Roselund

Structural Engineer with over 50 years experience specializing in structural engineering for repair and strengthening of old buildings and co-author of the Los Angeles retrofit standard.

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50 years experience

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