



STANFORD
SCHOOL OF MEDICINE

Health & Safety Programs

Building Considerations After an Earthquake

Lisa Pelletier
October 20, 2011

What to Expect During an Earthquake



Housing Vulnerable to Earthquakes

- Wood Frame Multi-family Buildings
- Soft Story Problems



<http://quake.abag.ca.gov/residents/>



Housing Vulnerable to Earthquakes

- Single Family Homes
- Cripple Wall Problems



Housing Vulnerable to Earthquakes

- Unreinforced Masonry Buildings





Conditions to Observe from Outside

- Collapse, partial collapse, off foundation
- Building or story noticeably leaning
- Obvious severe damage or distress
- Chimney, parapet, or other falling hazard
- Severe ground or slope movement present
- Severe window glass breakage or 'X' cracks between windows
- Indication of fire/smoke
- Indication of hazardous materials release

Not to supersede the professional opinion of building inspectors, engineers & architects



Dangerous Effects from Earthquakes



Light Damage

- Superficial
- Broken windows
- Superficial cracks or breaks in wall surface
- Minor damage to the interior contents



Moderate Damage

- Visible signs of damage
- Decorative work damaged or fallen
- Many visible cracks or breaks in wall
- Major damage to interior contents
- Building still on foundation



Heavy Damage

- Partial or total collapse
- Tilting
- Obvious structural instability
- Building off foundation



Do not enter a building with heavy damage under any circumstances

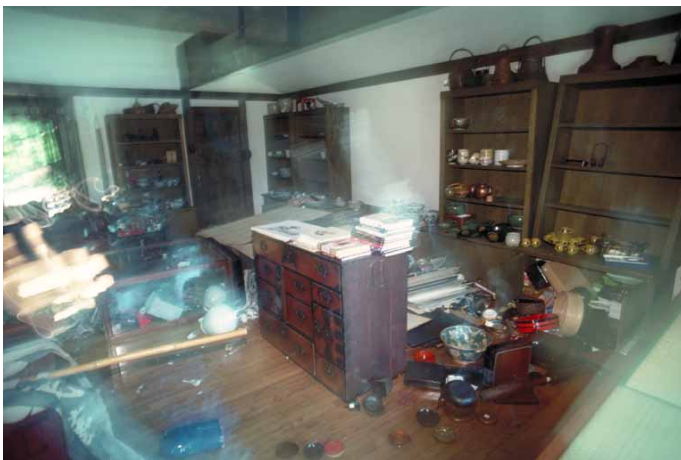


Building Assessment



- Request building inspection from jurisdiction
- Only trained building inspectors, engineers & architects can 'tag' a building
- Volunteer responders can report the condition of buildings to city

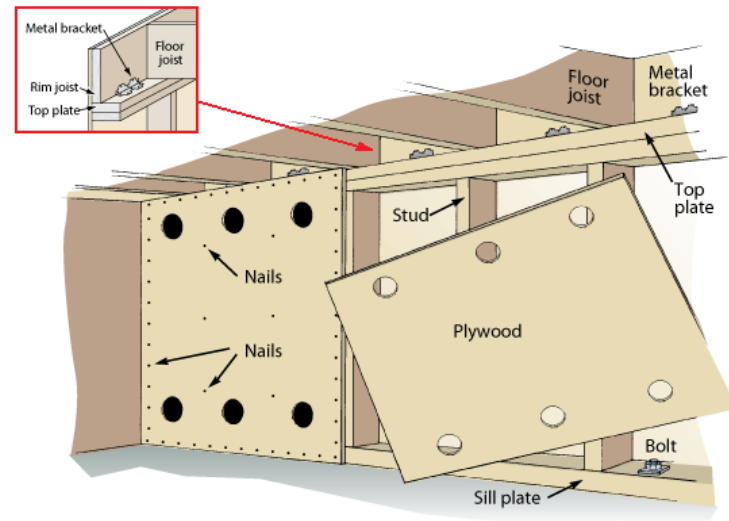
Inside as Well as Outside





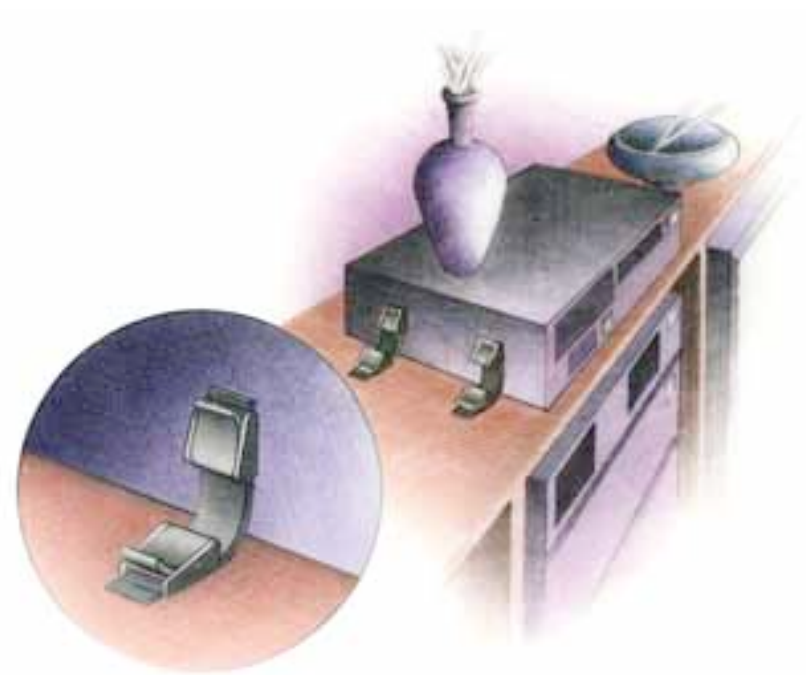
Structural Hazard Mitigation

- Bolting home to foundation
- Strengthen cripple walls
- Reinforce or replace unreinforced masonry
- Contact a qualified engineer or architect

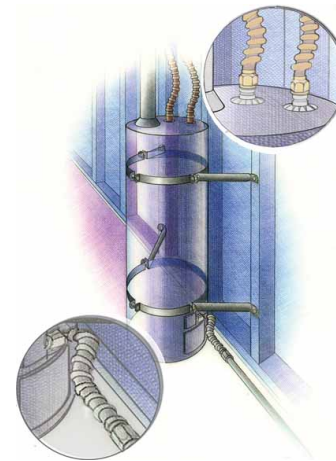
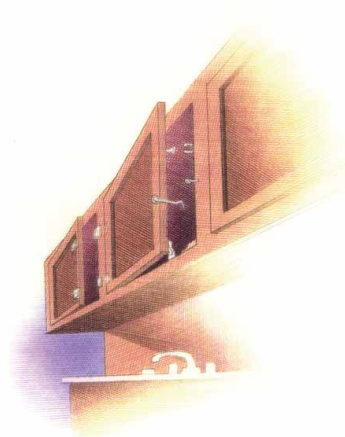
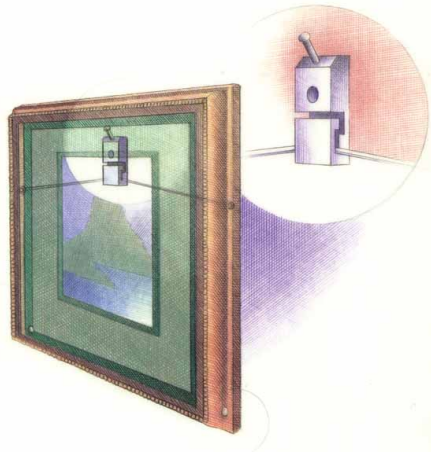


Non-Structural Hazard Mitigation

- Identify potential hazards in your office/home and begin to fix them
 - Hanging Objects
 - Objects on open shelves and tabletops
 - Furniture, home electronics and appliances
 - Cabinet doors
 - Water and gas pipelines



Non-Structural Hazard Mitigation



My Favorite Emergency Websites

- Hazards in your area
 - <http://quake.abag.ca.gov/>
- Everything you ever wanted to know about earthquakes
 - <http://www.earthquakecountry.info/>
- All Hazards Planning
 - www.72hours.org
 - www.ready.gov (online family emergency plan tool)
- FEMA Are you Ready? Course
 - <http://training.fema.gov/EMIWeb/IS/is221st.asp>
- American Red Cross
 - <http://www.redcross.org/>



Thank You for Attending

Questions?

Contact:

Lisa Pelletier

Health and Safety Programs Office

650-721-6269

lisa.pelletier@stanford.edu