RETROFIT Improvements

Anchorage of Appliances

Making Homes Safer in Disasters

Retrofit Opportunity

- Appliances such as refrigerators, stoves, dishwashers, and washing machines can be anchored at anytime

Hazards

Wind | Rain | Flood | **Seismic** | Fire | Snow

Purpose

- To secure appliances to wall to minimize the amount of property damage or injury caused by a seismic event
- To secure appliances to wall as a precaution to children misusing them (i.e. range door misused as step to stovetop)

Benefits

- Increases occupant safety
- Decreases risk of damage to home and appliances

Summary

Appliances such as refrigerators, stoves, dishwashers, and washing machines may shift and/or tip over during an earthquake. Anchorage of appliances can greatly reduce the risk of injury, damage, and inconvenience as a result of an earthquake. Appliance hoses and/or pipes are attached to water and gas lines that may be wrenched loose by the movement of the appliance. To decrease the possibility of this dangerous situation from occurring, anchor large appliances to the wall using safety cables or straps and screw eye fasteners attached to studs or structural members. Locate the restraint in the mid-to-upper portion of the appliance to provide the greatest resistance to overturning. Replace rigid gas or water connections with flexible connectors, and install automatic shut-off valves for both the gas and water supply system. This will further reduce the possibility of a water or gas line break.

Most ranges are shipped with anti-tip brackets that mount to the wall and snap into the rear of the range to prevent tipping. Inspect to see that these are in place, by opening the oven door and pushing down on it. Dishwashers, too, are usually attached to the counter with L-brackets to prevent the unit from tipping forward. Inspect and verify that the dishwasher is secured to the counter and that the counter is secured to the base cabinets. Built-in refrigerators come with brackets and instructions for anti-tilt installation. L-brackets can be installed against the front legs of roll-in refrigerators to secure these in place. A cabinet or shelf securely installed within 2″ above the refrigerator will serve as an anti-tilt block, as well.

Top loading washers can be secured with heavy duty eyehooks screwed into structural members on either side of the appliance and perforated metal strapping tape or heavy cable wrapped around the machine and secured at the eyehooks. Front loading machines may be secured with L-brackets against the wall and/or floor.

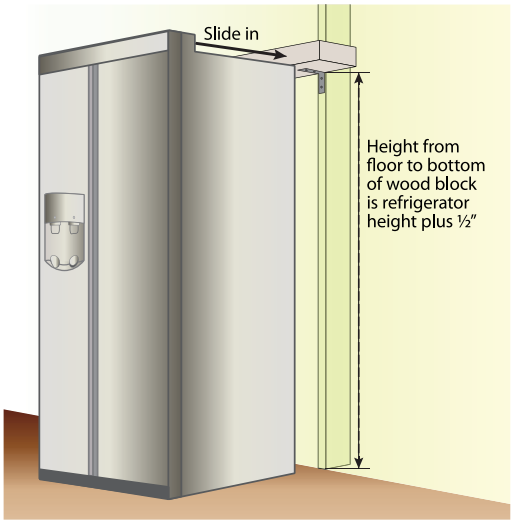
The cost of generic L-brackets, fasteners, screw eyes, and perforated metal strapping tape to secure appliances is under $25. Manufacturer's brackets usually come with the appliances.

Illustration

Retrofit

Typical refrigerator anti-tip installation

- Cut a 2″ × 4″ wood block the same width as refrigerator and secure the block to the L-brackets using #12 or #14 wood screws.
- Secure the brackets with wood block to the back wall so that it is ½″ higher that the refrigerator. Use #12 or #14 wood screws.
- Screws must penetrate at least 1″ into vertical wall studs.
- Slide the unit into the installation space.
- Place excess slack in the power cord on top of the refrigerator.
- Use care to ensure the power cord is not pinched behind the unit.



Potential Damage

Photo: www.fema.gov

Key Steps

- Access for this retrofit is available at anytime.
- Brace major appliances when they are originally installed using manufacturer's hardware, if available. Refer to manufacturer's bracing instructions, if available.
- Your contractor may have additional ideas on how to improve the safety of your home.
- For more details about this retrofit improvement, please refer to the list of Resources in the section below.

Resources

Earthquake Country Alliance, *Dare to Prepare*
http://www.earthquakecountry.info/daretoprepare/

Example of Anti-Tip Hardware
http://www.mendingshed.com/antitip.html

FEMA, *Homebuilders' Guide to Earthquake-Resistant Design and Construction*
http://www.fema.gov/library/viewRecord.do?id=2103

Insurance Institute for Business & Home Safety, *Interior Seismic Protection*
http://www.disastersafety.org/publicPolicy/legislation/article;jsessionid=FDB25484CEC0722F2012210E151786A9?articleId=5036