

# Learn How to Secure Your Space

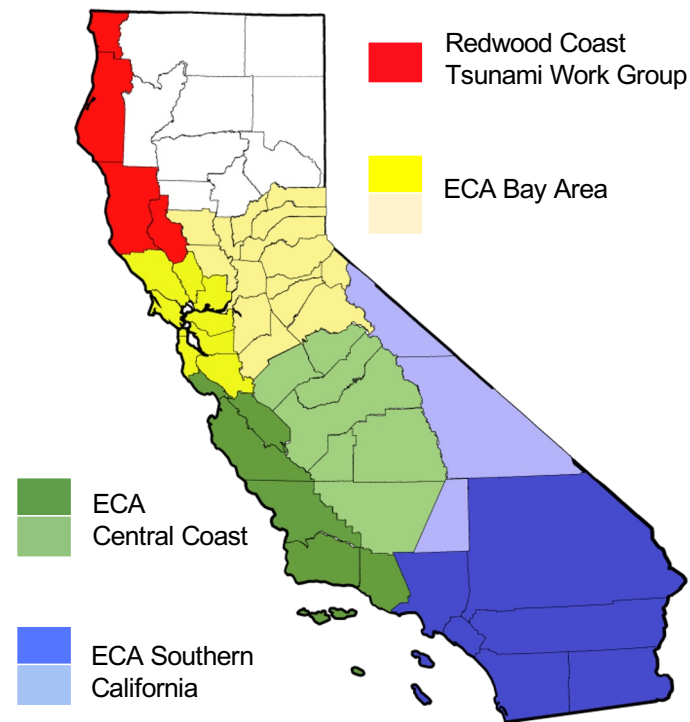


[EarthquakeCountry.org/step1](https://EarthquakeCountry.org/step1)

[Terremotos.org/paso1](https://Terremotos.org/paso1)

# Earthquake Country Alliance

- 4000+ *Public-Private-Grassroots* leaders
- Statewide *committees* develop resources and deliver programs
- *Regional Alliances* organize meetings and outreach activities
- California's Office of Emergency Services provides FEMA NEHRP funding for ECA earthquake mitigation activities
- USC's Statewide California Earthquake Center (SCEC.org) administers ECA



Join: [EarthquakeCountry.org/join](https://EarthquakeCountry.org/join)



# ECA Statewide Activities

Develop Messaging and Resources:

[EarthquakeCountry.org](http://EarthquakeCountry.org)  
[EarthquakeCountry.org/resources](http://EarthquakeCountry.org/resources)  
[Terremotos.org](http://Terremotos.org)



Support Tsunami Preparedness Week:

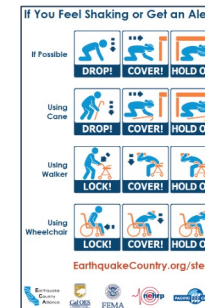
[TsunamiZone.org/california](http://TsunamiZone.org/california)



March  
22-30  
2025

Created and Coordinate  
The Great California ShakeOut:

[ShakeOut.org/california](http://ShakeOut.org/california)



Oct. 16  
2025

Webinars & other events

[EarthquakeCountry.org/calendar](http://EarthquakeCountry.org/calendar)

# Seven Steps To Earthquake Safety

**BEFORE**

**1. Secure Your Space**



**2. Plan To Be Safe**



**3. Organize Supplies**



**4. Minimize Financial Hardship**



**5. Drop, Cover, and Hold On**



**6. Improve Safety**



**AFTER**

**7. Reconnect and Restore**



[EarthquakeCountry.org/sevensteps](http://EarthquakeCountry.org/sevensteps)

[Terremotos.org/sietepasos](http://Terremotos.org/sietepasos)





# Disclaimer

Earthquakes have widely differing impacts based on the location and construction of buildings, and damage to non-structural furniture and other contents can vary widely from building to building, and even from room to room within a building.

As such, Earthquake Country Alliance, the University of Southern California (ECA's administrative home), our partners on today's call, and our state and federal sponsors do not offer any guarantees that the recommended actions and fastener products will prevent all earthquake damage, and do not warrant the performance or effectiveness of any products or guidance provided during this webinar or on listed websites.

All parties hereby disclaim any and all liability for any damages arising directly or indirectly from the guidance provided, which is provided as is, and without warranties.

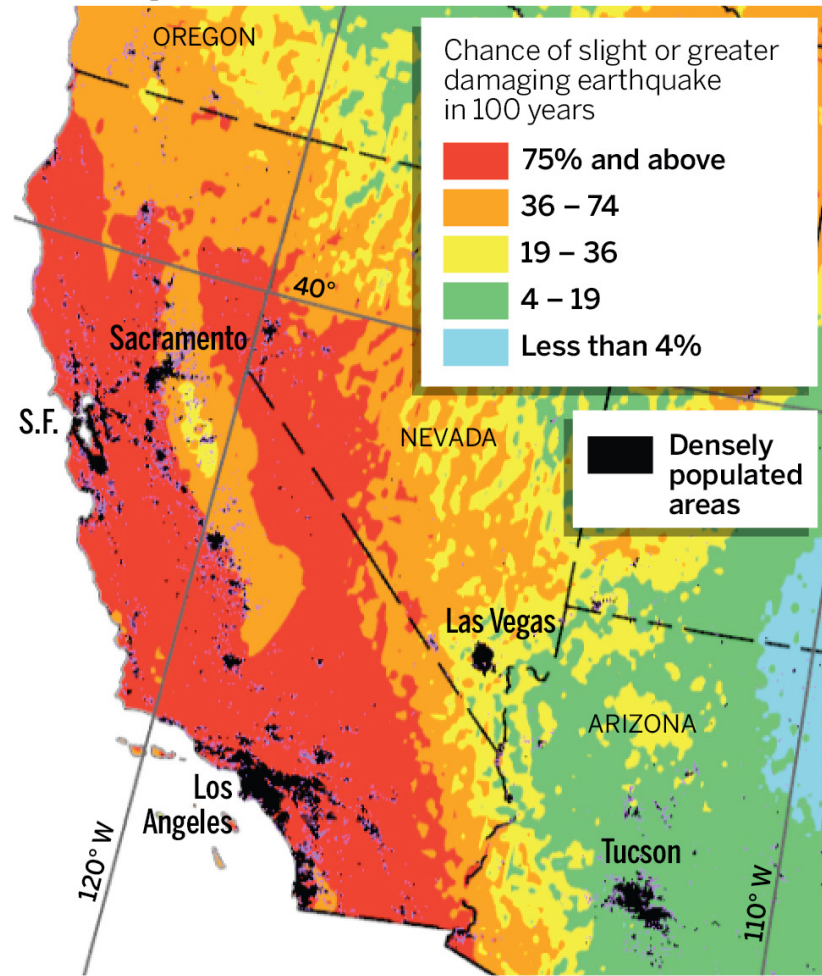
# Today's Presenters

- Glen Granholm  
(Vice President, Earthquake Consulting)
- Trevyn Reese  
(Vice President, Ready America)

# Today's Topics

- Non-structural earthquake damage mitigation – why?
- A brief history of non-structural anchorage
- Mechanical attachment vs. flexible fastening – recent testing
- Securing:
  - Large furniture in the home (anchor points)
  - Flat-screen televisions (mending)
  - Wall art and items on walls
  - Collectibles and figurines
  - Cabinet doors
  - Water Heaters
- Conclusion and Summary

## EARTHQUAKE POTENTIAL



Source: USGS

BAY AREA NEWS GROUP



# Why Non-Structural Retrofit?





## ***Making Buildings Safer from Nonstructural Earthquake Damage***

The Federal Emergency Management Agency (FEMA) estimates that non-structural aspects account for more than **75 percent** of the potential future earthquake-related losses and insurance claims

***and also more than 2/3 of all injuries***

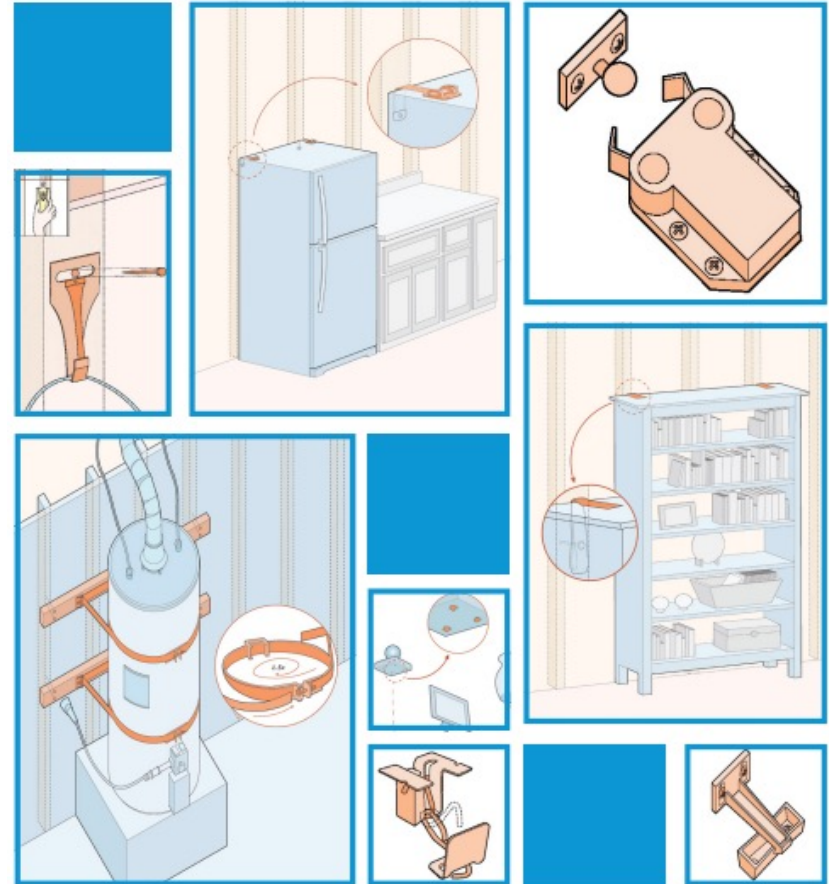
**Let's go on a Hazard Hunt...**

**[EarthquakeCountry.org/step1](http://EarthquakeCountry.org/step1)**





# It's Training Time!



# How We Got Here...

## A Brief History of Fastening



# How We Got Here...

## A Brief History of Fastening

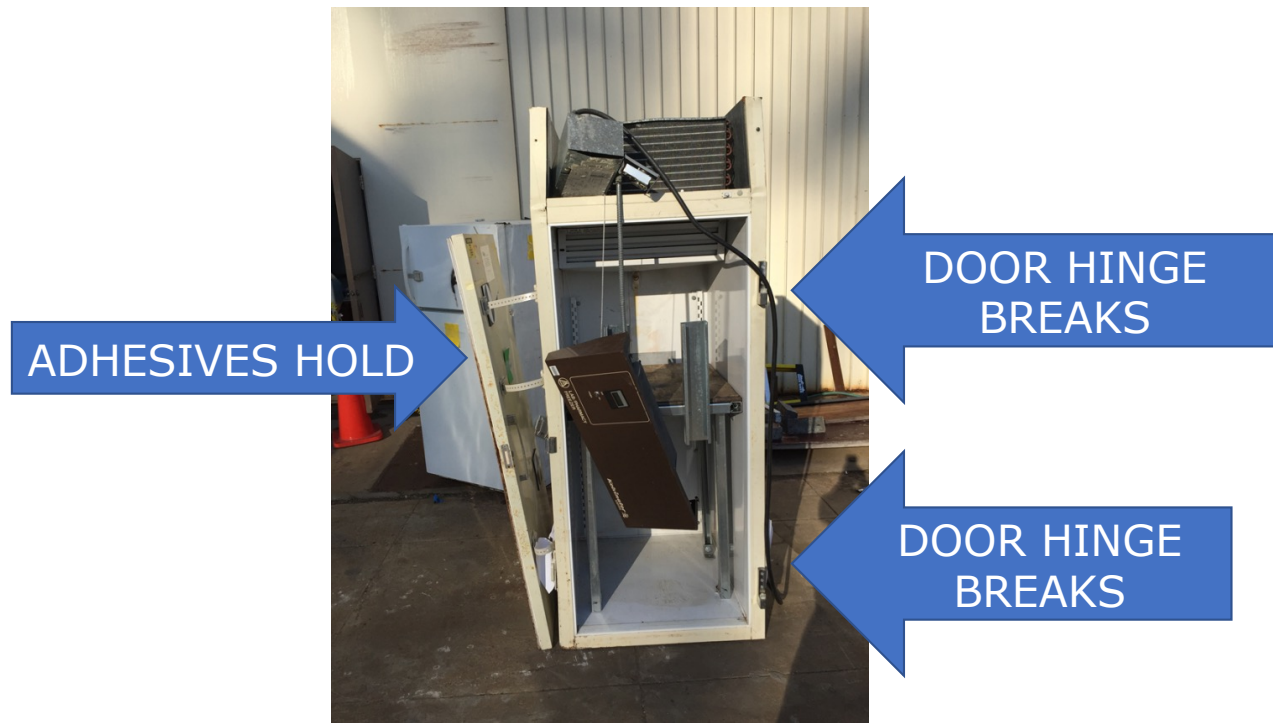






975 SM motion

# Shake Table Findings



# Question 1.1

What holds fasteners to the unit when a positive attachment is not used?

- Double-stick tape
- A quick drying glue
- **A very high bonding (VHB) adhesive tape**
- A silicone sealant

## Question 1.2

Today's training will review the best practices for using which of the following methods for securing equipment and furniture?

- Angle clips
- Through bolts
- Chain
- **Flexible fastening**



# WHAT DO I NEED TO GET STARTED?



## Question 2.1

What item do you NOT need to do your home fastening?

- Safety Goggles
- Power Drill
- **L-bracket**
- Studfinder

# Stacked Items in the Home (Mending)



## Question 3.1

What two concepts are critical to consider when securing furniture?

- **Anchor points and mending**
- Density and mass
- Refrigeration or heating
- Color and depth

# Find the Wall Stud – Epic Fail!



# Helpful Hints when Using VHB Adhesive Tape Fasteners



## Question 4.1

Under what circumstance would you use adhesives directly to drywall?

- You cannot find a wall stud
- The drywall is painted with a smooth glossy paint
- The room is a kitchen
- **Under no circumstances do you do this**

## Question 4.2

True or False. When securing a flat-screen TV, it is okay to use the straps to hang the TV right from the wall?

- TRUE
- **FALSE**



# Finding Studs in Older Homes



# Finding Studs in Older Homes

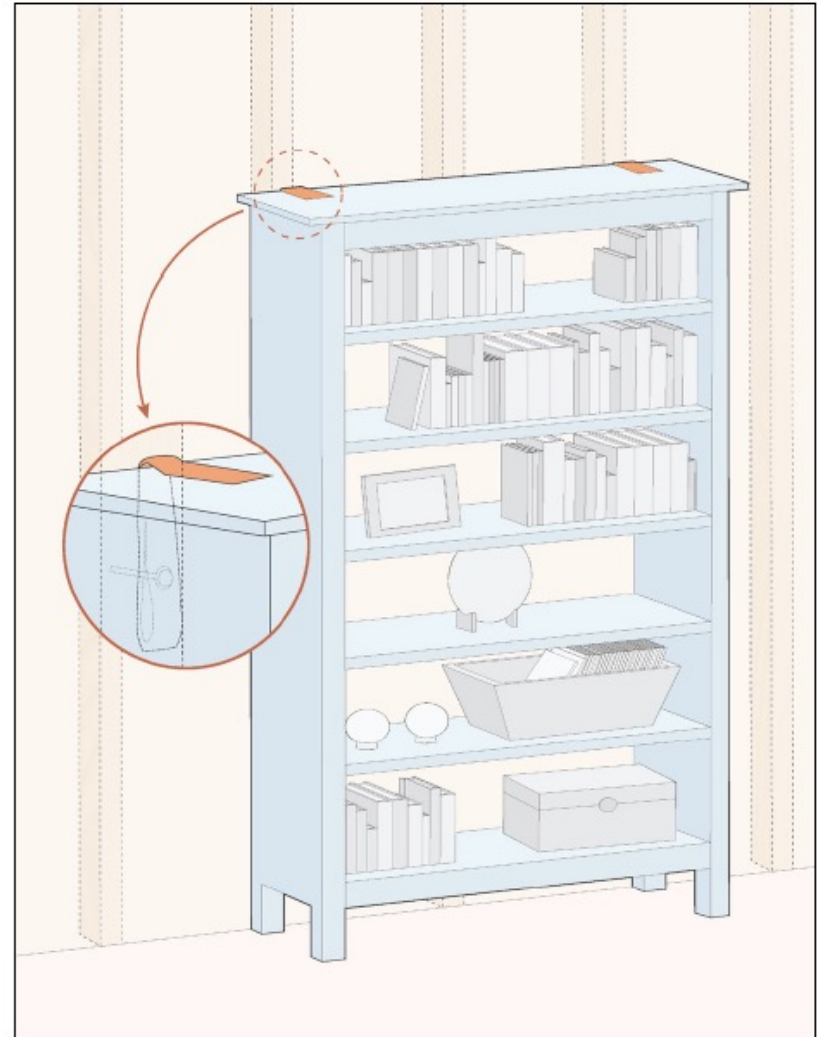
- Outlets are often mounted to the side of wall studs. Drill a small hole to find to either side to find the stud; then measure 16" or 24" left or right to find adjacent studs
- See if your stud finder can locate a nail on the bottom kick plate or framing piece. Often this is where the studs are nailed. Go up from there and try your pilot hole there
- Use a concrete/rebar floor scanner to find nails or studs

## Question 5.1

You want to secure an item in a room with studded walls but cannot locate the wall stud. Which of the following is your next best alternative to securing the item?

- Molly bolt
- Attach adhesive fastener to wall
- Toggle bolt
- **Secure to the floor**

# Securing Furniture to Walls

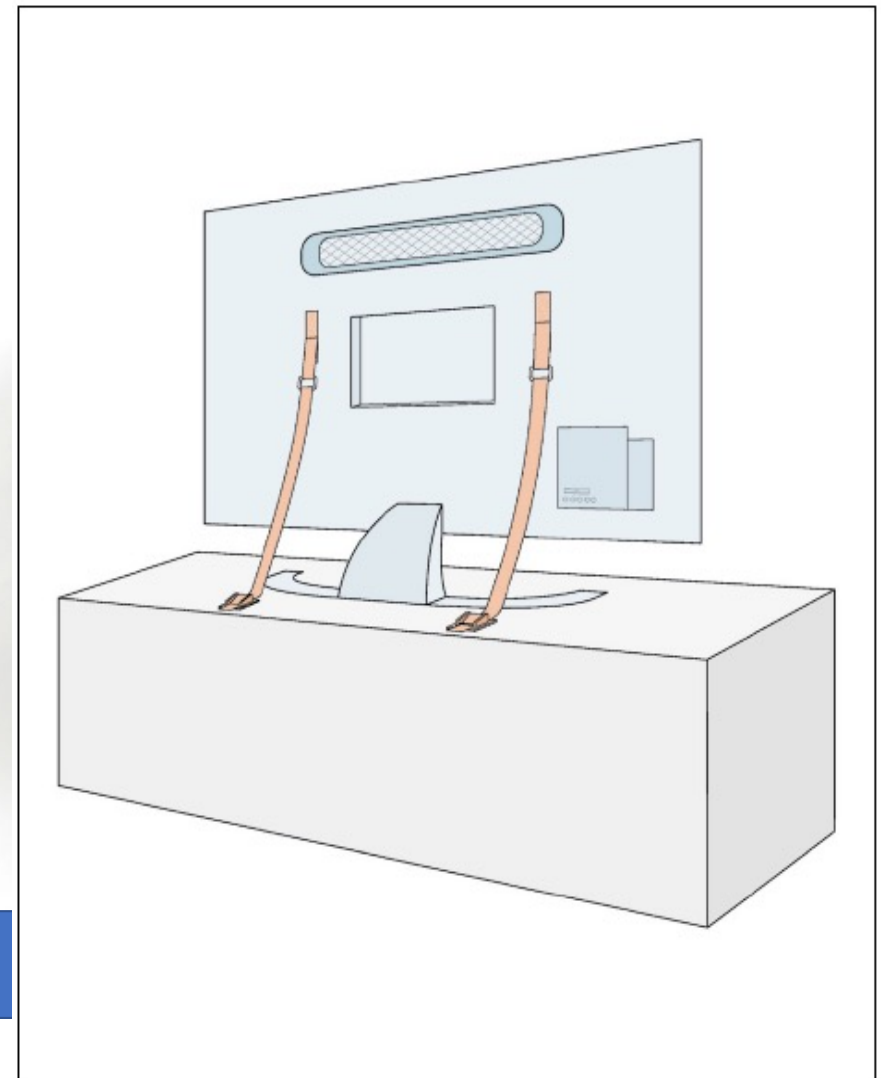




Trevyn Reese

2021-01-27 10:45:39

# Securing Televisions (Mending)







Trevyn Reese

2021-01-27 10:59:40

## Question 6.1

Which type of surface is best on which place adhesive tape fasteners?

- **Smooth and flat**
- Concave and rigid
- Rough and unfinished
- Moist and convex



## Question 6.2

Onto which of the following surfaces will the VHB bond NOT set?

- Metal
- Plastic
- **Unfinished (Rough) Wood**
- Painted/Sealed Wood Surfaces

# Questions?





# Adhesive Protocol

- Clean
- Sand and clean again (if needed)
- Let dry
- Peel of backing (don't touch adhesive)
- Press (30 seconds)
- Test (30 minutes)

Always use on a smooth, flat, clean surface

Keep out of direct sunlight

Never use on unfinished wood or drywall



## Question 7.1

Which of the following is the correct protocol for preparing a surface before placing a fastener?

- **Clean first, then sand, then clean again, then apply the fastener**
- Sand first, then apply the fastener
- Apply the fastener then clean
- Clean first then sand then apply the fastener

## Question 7.2

Which of the following is the correct protocol after applying the fastener?

- **Press firmly on the fastener for thirty seconds**
- Simply peel and stick and the fastener is set
- Once the fastener is in place, set the bond with a heat gun
- Once the fastener is in place, use electrical tape over the top of the fastener for four hours

**Let's talk...**



## Question 8.1

Which of the following is a NOT good rule of thumb to follow when deciding which type of fastener to use?

- Fasteners should always be multi-directional
- Adhesives hold around 40 lbs. per square inch of fastener size
- Fasteners should always be able to be secured to either the structure or to an element that is secured to the structure.
- **Always ask the sales clerk at the home store which is the best fastener**



## Question 8.2

When securing heavy equipment and furniture to limit earthquake forces, which two bracing methods do engineers never use?

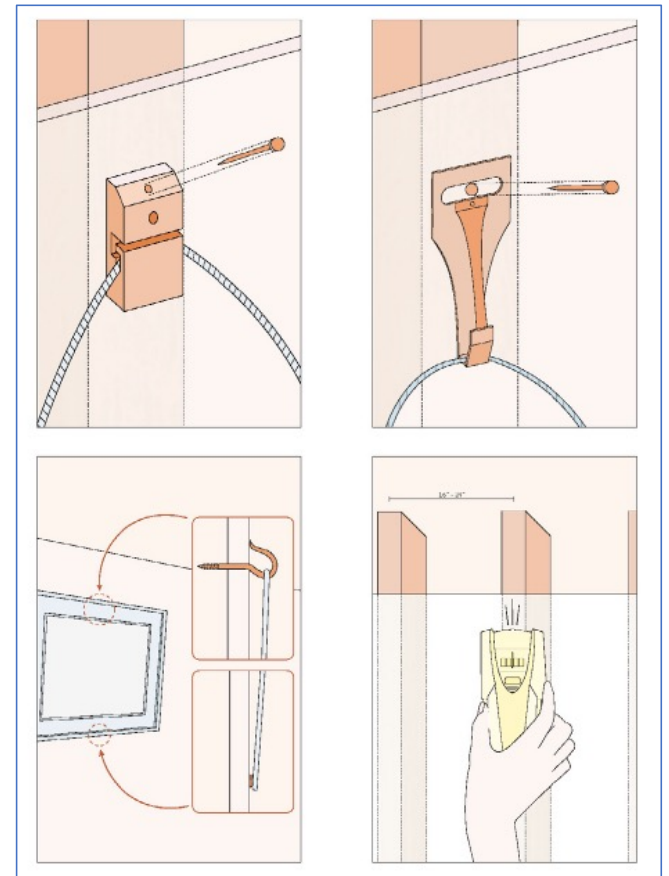
(CHOOSE 2 ANSWERS)

- **Friction**
- Heavy duty steel
- **Gravity**
- Lassos

# Secure Each Item The Same Way



# Securing Wall Art and Items on Walls





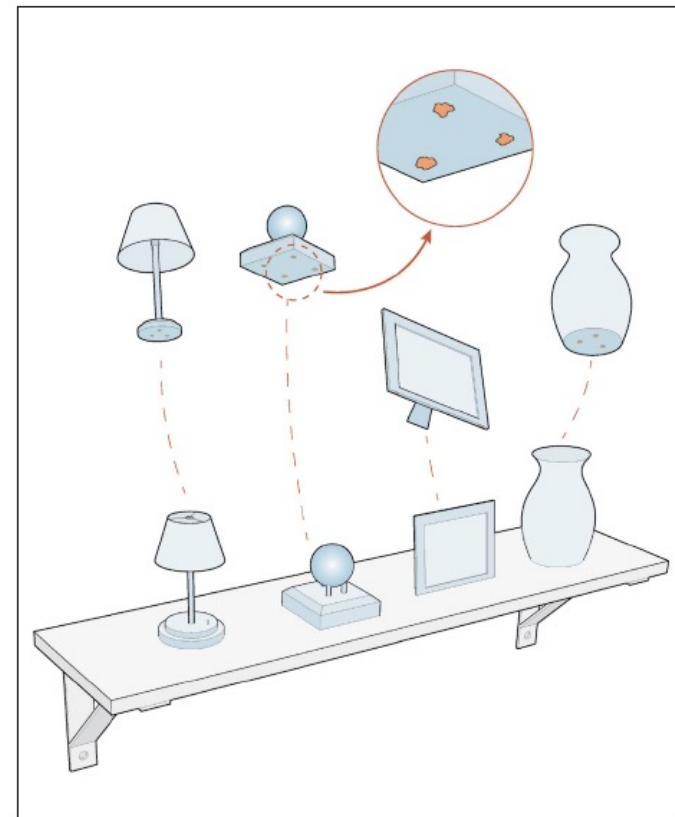
Treyvyn Reese Ready America

## QUESTION 9.1

Closed Picture Hooks and devices such as the Amazing Picture Hook can hold up to 50 pounds when:

- Installed with a hollow wall anchor
- **Screwed /nailed into a stud**
- Glued in place

# Securing Collectibles and Figures







Emergency Shut-Off Tool

READY AMERICA

**BIG SHAKE**  
ENTERPRISES, LLC.

**READY AMERICA**  
THE DISASTER SUPPLY PROFESSIONALS

**SHAKE HOLD!**

**MAYDAY**

**AQUA**

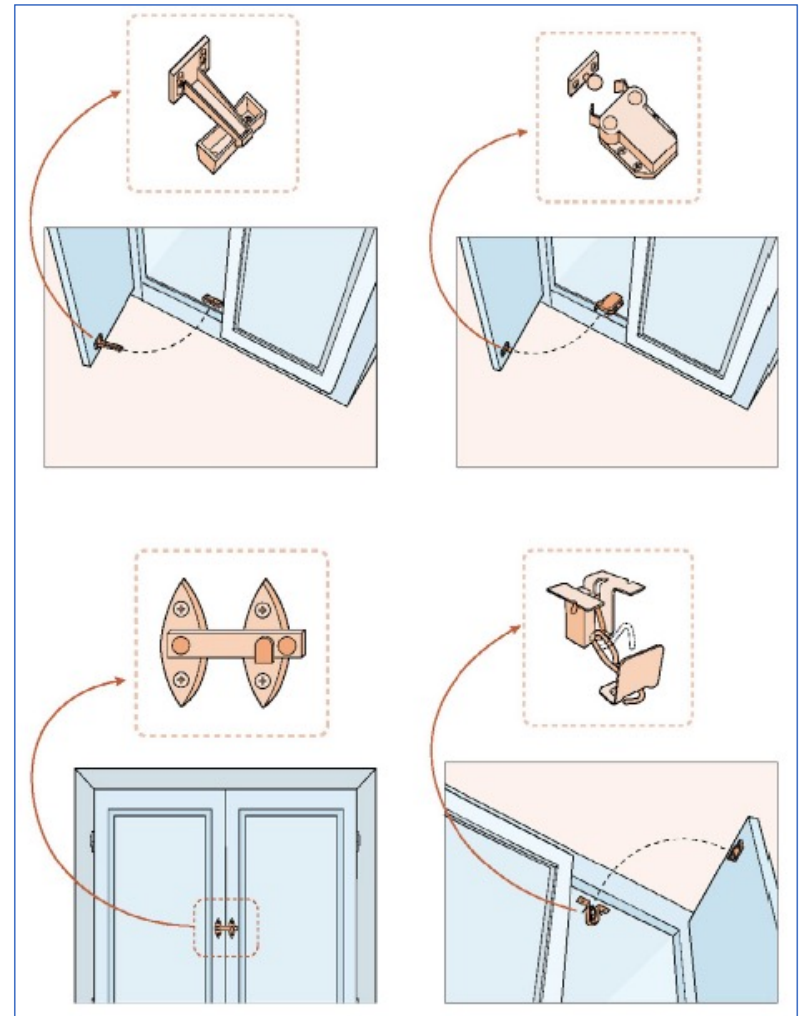
**A-Maze-ing Picture Hook**

Prevent frames from falling!

**SHAKE HOLD!**

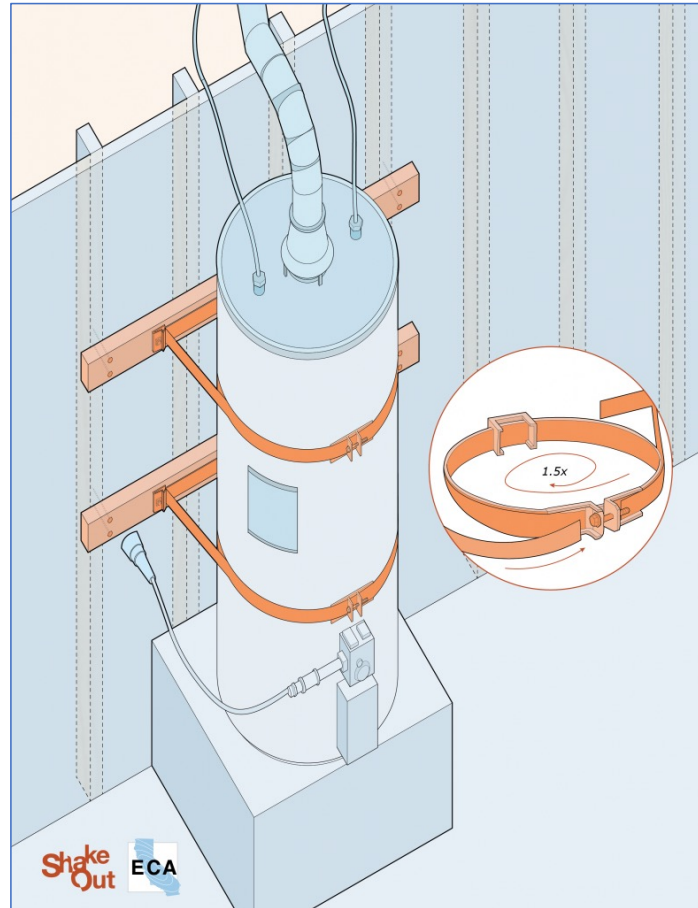


# Securing Cabinet Doors





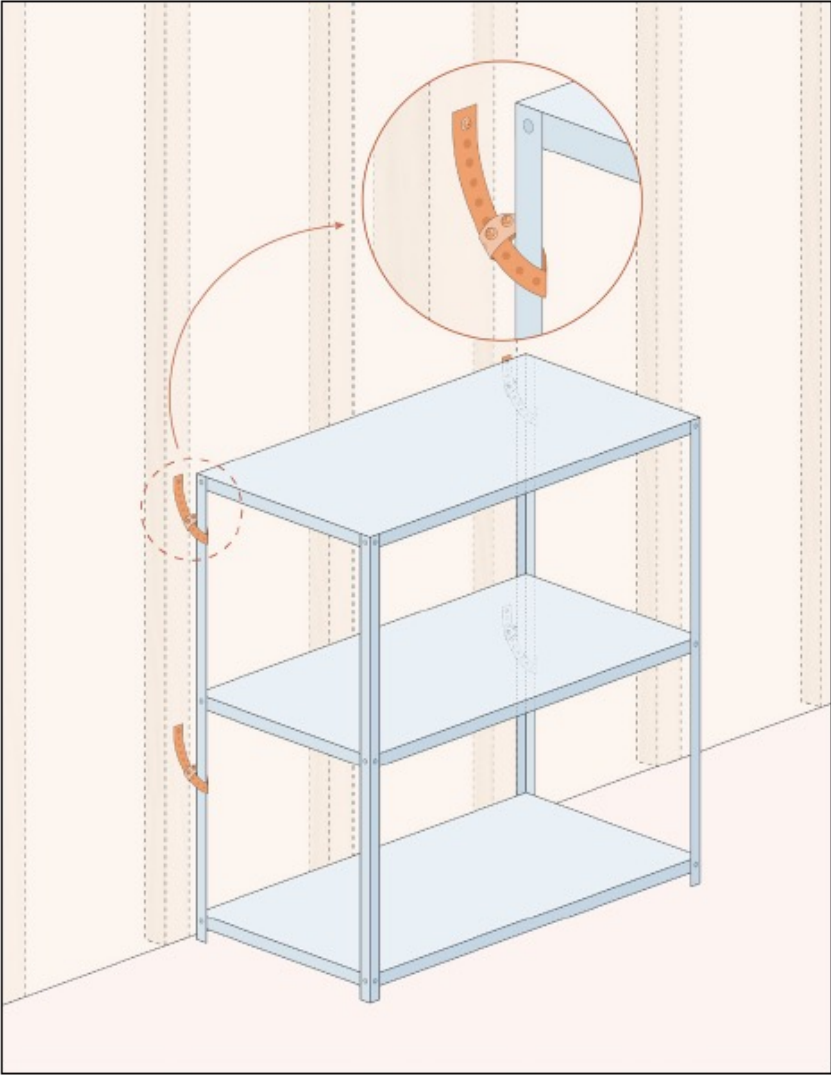
# Securing a Water Heater








# Securing a Storage Rack



# New Secure Your Space Instructions!

**Step 1: Secure Your Space**  
How to prevent items from falling during earthquakes

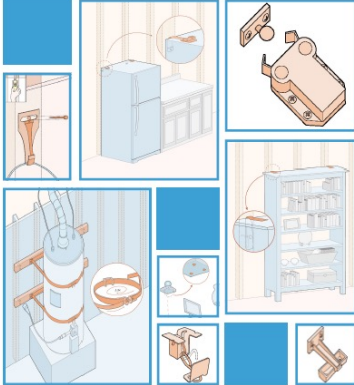


Imagine your entire home or workplace being picked up and shaken during an earthquake – even heavy objects can fall or be thrown around! This usually causes the most injuries during earthquakes, and replacing items or repairing damages can also be very costly.

These issues can be prevented through simple actions to secure furniture and other items in place. That's why "Secure Your Space" is Step 1 of the Seven Steps to Earthquake Safety!

Start now by moving tall furniture like bookcases away from beds, sofas, or other places where people spend a lot of time. Move heavy objects to lower locations.

Then continue by securing things such as televisions, dressers, water heaters, cabinet doors, hanging objects, and small objects, following the instructions within this document. Try securing at least one item every weekend until you get everything done. You may need to ask others for help or to borrow tools. Perhaps you might help them too. We're all in this together!



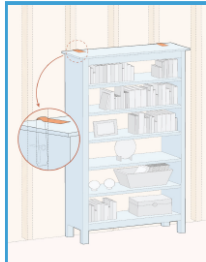
Learn more at [EarthquakeCountry.org/Step1](https://EarthquakeCountry.org/Step1)



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**Secure Your Tall Furniture**

Furniture such as bookcases, china hutches, and dressers are top-heavy and can fall over during earthquakes causing damage and injuries, and possibly blocking exits. Flexible fasteners allow furniture to sway slightly without falling over.

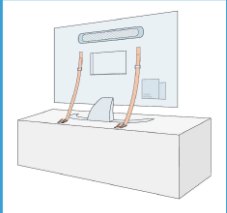


- Nylon strap kits available in stores or online screw to the wall at one end and have adhesive pads that stick to the furniture with either velcro or buckle fasteners.
- These must be screwed into wall studs; identify where these are with a stud finder.
- Screw nylon straps to wall studs near each side of the furniture through a pre-punched hole in the strap. These can be hidden behind the furniture.
  - If taller than 6 feet, secure straps to the sides, at 2/3 the height.
- Attach the adhesive end of the strap to the furniture, following the kit's instructions.

**Secure Your Television**

Televisions can easily tip over or fall during earthquakes. Here are two options to prevent this.

**Option 1: Attach the TV to furniture (as shown)**



- Use flexible nylon strap packages, with buckle or velcro fasteners, available at hardware stores and online.
- Stick one end of each strap onto the furniture as shown, following the package's instructions.
- Connect the other end to the back of the TV by screwing the strap into TV mount holes, or by sticking adhesive fasteners onto the TV.
- If the furniture the TV is on is tall, properly secure it to studs in the wall using a stud finder to find the correct locations.

**Option 2: Attach the TV to a wall with a mounting kit (available where TVs are sold or online).** Carefully follow the manufacturer's instructions.

Page 2 of 5

Step 1: Secure Your Space  
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[EarthquakeCountry.org/step1](https://EarthquakeCountry.org/step1)

Thanks for attending ECA's workshop on how to

# Secure Your Space

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Please take our survey:

**[SurveyMonkey.com/r/RS2NRNZ](https://www.surveymonkey.com/r/RS2NRNZ)**

Questions?

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