

# **Earthquake-Resistant Building Design Challenge: Pre-Lab Prep**

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**Earth and Space Science  
Unit 2**

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## Earthquake-Resistant Building Design Challenge: Pre-Lab Prep

Adapted from NEES Teaching Demonstration: Shake Table Assembly by Jason Lloyd (2011)

### Materials to build large shake table:

- 1 sheet of fiberboard
- 2 wooden dowels
- 4 PVC pipes
- 4 PVC elbows
- 4 eye bolts with corresponding nuts
- 4 Hex bolts with nuts
- 4 #64 rubber bands

### Directions for building the shake table:

1. Cut the PVC pipes into two 30-inch pipes and two 24-inch pipes. Drill 5/16" holes two inches from each end of the 24-inch pipe sections. Join the pipes with the PVC elbows forming a rectangle.
2. Insert the eye bolts into the drilled holes on the 24-inch PVC pipes and fasten with the 1/4" nuts.



3. Drill 5/16" holes in the four corners of the fiberboard. Center the holes two inches from each edge. Insert the 1/4" hex bolts and corresponding nuts in these holes and fasten. Leave some room so that the rubber bands can be wrapped around the bolts.
4. Place the dowels on top of (perpendicular to) the 30 inch PVC pipes. Place the plywood on top of the dowels. Wrap one rubber band around each eye bolt and then around the hex bolt nearest it. Now tighten the hex bolt to a snug fit securing the rubber bands in place.

*See next page for a picture of the final product.*

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Final Product

Build small shake tables for each group—or create instructions for them to build their own, as shown below. Tip: Clipboards work well for the sides!

