

Earthquake Damage

Grade 5 – Forces acting on structures and mechanisms

Earthquake Experiments

Vertical shaking

- 1. Build a structure several levels high on a shock absorber. Place play dough balls between each level. Place one hand on top of the structure and then shake the ground up and down.
 - a. Describe what happens:

b. What happens to the play dough balls compared to doing the experiment without a shock absorber?

c. What can you say about the forces acting on the building and within the building?

Building a base isolation model

One way would be to allow the building to slide back and forth as the ground moves underneath it. This is called base isolation. Follow the instructions to build a platform to do this for your building:

- 1. Tape four springs to the corners of one piece of cardboard.
- 2. Then place a second piece of cardboard on top and also tape the corners to the springs.



Horizontal shaking

- 1. Build a small structure on the top cardboard of your base isolation model.
- 2. Now shake the BOTTTOM cardboard back and forth gently.
 - o How is the building affected?

o How does it compare to when you had no base isolation?

3. Try shaking more or less, faster and slower. What do you notice?

4. Explain how base isolation helps to protect the building.