# IV. Earthquake Safety

A. **Earthquake Risk:** Geologists can determine earthquake risk by locating where faults are active and where past earthquakes have occurred.

1. In the United States, the risk is highest along the western Pacific Coast of California, Washington and Alaska.
2. The eastern United States generally has a low risk of quakes because this region lies far from plate boundaries.
3. Scientists hypothesize that the continental plate forming most of North America is under stress that could disturb faults hidden under layers of soil and rock.

B. **How Earthquakes Cause Damage**

1. Causes of earthquake damage include shaking, liquefaction, aftershocks & tsunamis
   a. **shaking:** the shaking caused by seismic waves can trigger landslides or avalanches, damage buildings and bridges, topple poles, and fracture gas and water pipes
   b. **liquefaction:** the process by which an earthquakes violent movement suddenly turns loose soil into liquid mud.
   c. **aftershock:** an earthquake that occurs after a larger earthquake in the same area.
   d. **tsunami:** a giant wave usually caused by an earthquake beneath the ocean floor.

C. **Steps to Earthquake Safety**

1. The best way to protect yourself is to drop, cover, and hold
   a. If you are indoors when a quake strikes, crouch under a piece of furniture & hold onto it, or crouch against an inner wall & cover your head & neck with your arms. avoid windows, mirrors, wall hangings.
   b. If you are outdoors when a quake strikes, move to an open area; avoid vehicles, power lines, trees, & buildings; sit down to avoid being thrown down.
2. After a quake, water & power lines may fail; stores may be closed; travel may be difficult; people may have to wait days for services to be restored. To prepare, an earthquake kit with food, water, & 1st aid supplies should be stored where it is easy to reach.

D. **Designing Safer Buildings**

1. To reduce earthquake damage, new buildings must be made stronger & more flexible; buildings may be modified to withstand stronger quakes.
2. People can protect their homes by following tips that can make houses stronger and to keep objects from tipping or falling and causing injury.
3. Protecting Structures: The way in which a building is constructed determines whether it can withstand an earthquake
   a. Brick buildings and some wood-frame buildings may collapse if their walls have not been reinforced or strengthened.
   b. New homes built on soft ground should be anchored to solid rock below the soil
   c. Bridges and highway overpasses can be built on supports that go through soft soil to firmer ground.
   d. **base-isolated building:** a building mounted on bearings designed to absorb the energy of an earthquake.
4. Making Utilities Safer
   a. Earthquakes can cause gas & water pipes to break; flexible joints can be installed; automatic shut-off valves can be installed.