

SECTION 2-3

SECTION SUMMARY

Earthquake Hazards and Safety

Guide for Reading

- ◆ What kinds of damage does an earthquake cause?
- ◆ What can be done to reduce earthquake hazards?

The severe shaking produced by seismic waves can damage or destroy buildings and bridges, topple utility poles, and fracture gas and water mains. Earthquakes can also trigger landslides, avalanches, and huge water waves.

Seismic waves transmit their energy from solid rock to loose soil, which shakes violently. Structures built on solid rock shake less than structures built on loose soil. **Liquefaction** occurs when an earthquake's violent shaking turns loose, soft soil into liquid mud. As the ground gives way, structures collapse and landslides may occur. Structures that have been weakened by an earthquake may collapse during an **aftershock**, a smaller earthquake that occurs after a larger earthquake in the same area.

An earthquake on the ocean floor causes the floor to rise slightly and push water out of its way. This creates a large wave called a **tsunami**. The tsunami spreads out from the earthquake's epicenter and rushes across the ocean. When it reaches shallow water near land, the tsunami's height increases. Sometimes, a huge wall of water hits the land.

Most deaths and injuries in earthquakes are caused by damage to buildings and other structures. **To reduce earthquake damage, new buildings must be made stronger and more flexible. Older buildings must be modified to withstand stronger quakes.** The amount of damage that a structure suffers during an earthquake depends on the structure's location and its construction. People should avoid building on steep slopes, filled land, or near a fault. Existing structures can be reinforced to strengthen them. **Base-isolated buildings** are designed to reduce the amount of energy that reaches the building during an earthquake. These buildings rest on shock-absorbing materials that reduce shaking during an earthquake.

The main danger to people during an earthquake is from falling objects and flying glass. **The best way to protect yourself is to drop, cover, and hold.** People who live in an area at high risk for damaging earthquakes should prepare an emergency kit and store it where it can be reached easily.

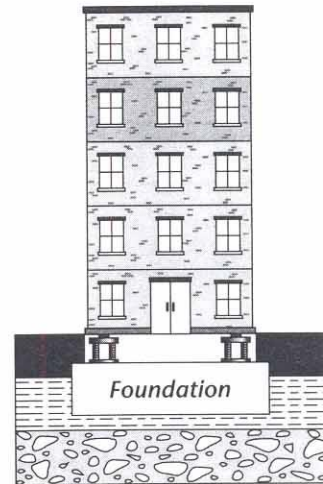
SECTION 2-3**REVIEW AND REINFORCE**

Earthquake Hazards and Safety

◆ Understanding Main Ideas

Answer the following questions on a separate sheet of paper.

1. What types of damage do earthquakes cause?
2. How do ground conditions affect earthquake damage to buildings?
3. Why are aftershocks dangerous to buildings after a large earthquake?
4. Why do tsunamis grow into larger waves when they approach land?
5. If an earthquake strikes while you are indoors, what should you do?
6. Why should people living in earthquake regions prepare emergency kits?
7. What kind of building design is shown in this figure? Explain how the design helps reduce earthquake damage.



◆ Building Vocabulary

Write a word to complete each sentence correctly.

8. The water displaced by a strong earthquake on the ocean floor forms large waves called _____.
9. _____ occurs when an earthquake's violent shaking suddenly turns loose, soft soil into liquid mud.
10. A(n) _____ is an earthquake that occurs after a large earthquake centered in the same area.