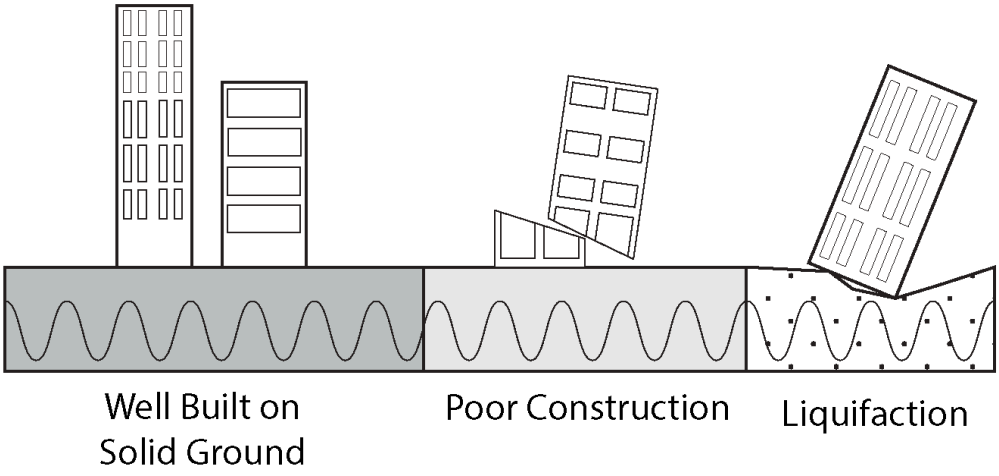
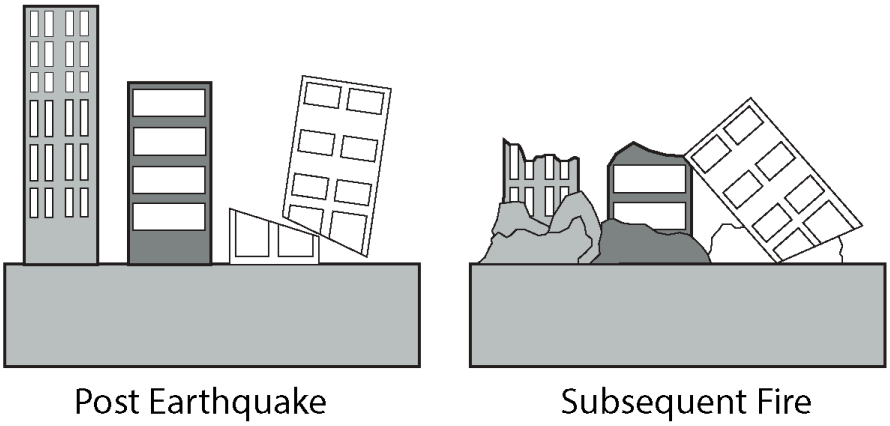
First some review of Earthquake Hazards:

Ground Motion



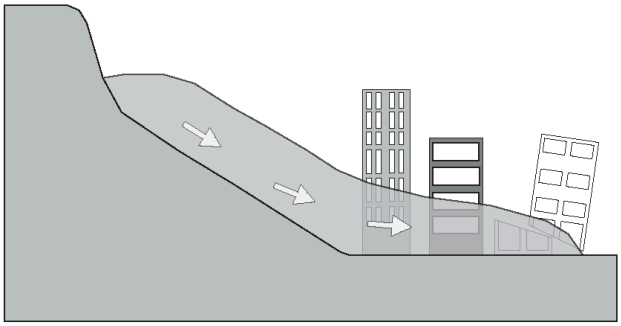
A major hazard associated with earthquakes is the effects that ground motion has on infrastructure. The saying goes: “earthquakes don’t kill people, buildings do”. The above is very schematic, but it brings attention to major considerations, such as if buildings are built on solid ground not susceptible to liquefaction, as well as if they are built to withstand earthquakes through reinforcement, flexible foundations and dampening measures where appropriate.

Fire



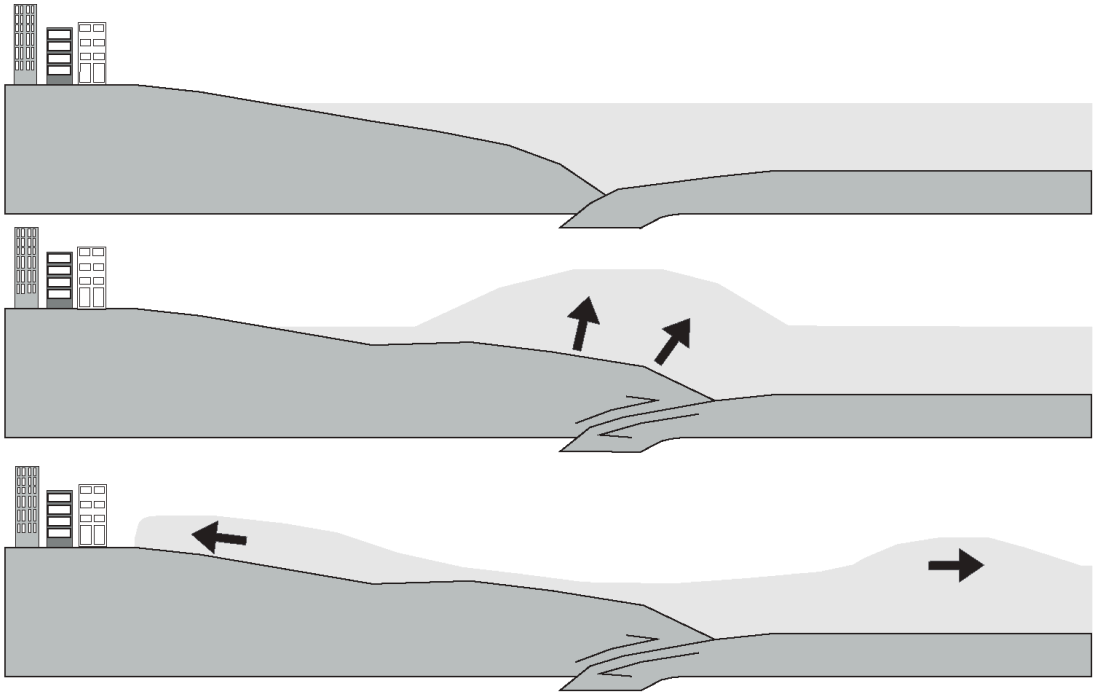
In the aftermath of a major earthquake, the disruption to utilities such as water for putting out fires can lead to major destruction with few ways to battle the flames.

Mass Wasting



In places an earthquake can trigger a mass wasting event, such as the landslide imaged here.

Tsunami



When released during an earthquake on the ocean floor, the energy may generate very large waves out at sea. Upon arriving near shore, the wave can be elevated significantly higher by the underlying topography.

Now, test your knowledge:

Briefly define the following terms:

liquefaction -

mass wasting -

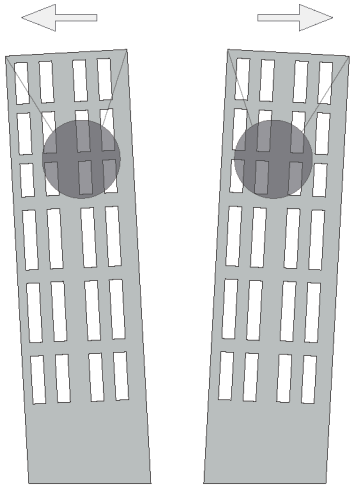
tsunami -

Answer the following:

1. What is the primary reason fire can be so destructive in an earthquake?
    A. Building materials become particularly dry during an earthquake.
    B. Water utility lines are severed during an earthquake, making fire-fighting efforts all but hopeless.
    C. Friction between grains in underlying soil will create enough heat to start buildings on fire.
    D. Lava is allowed to reach the surface along ruptured faults, igniting many buildings on fire.

2. When loose soil becomes inundated with water and can no longer support buildings, this is known as _____.
    A. a Tsunami
    B. a Secondary Wave
    C. Liquefaction
    D. a Fault
    E. Hydraulic Fracturing

3. Something to consider in determining the destructive effects of an earthquake would be _____.
    A. Building materials
    B. Building construction
    C. Duration of earthquake waves being felt
    D. The intensity of the earthquake shaking
    E. The subsurface that a building is built upon
    F. All of the above



4. True/False. A well-designed skyscraper might use a large counterbalance (weight) suspended near the top of the building to *dampen* or dissipate the energy as it sways like a pendulum.
    A. True
    B. False

5. Which substrate is generally the best for buildings to be built upon in earthquake prone areas.
    A. Loose soil
    B. Compacted soil
    C. Bedrock

6. True/False. We are able to predict earthquakes in a relatively short time frame. News stations in California have seismologists that discuss the earthquake forecast, and they usually come on right after the meteorologist discusses the weather forecast.
    A. True
    B. False

7. True/False. A Tsunami approaches land and breaks in a large curl.
    A. True
    B. False

Now, think deeper:

On your own:

8. Have you ever experienced an earthquake? If yes, describe the experience. If no, describe how you imagine it would feel.

9. Regardless of the potential for Earthquakes in your area, describe how you think your current dwelling would fare in a relatively large earthquake. What might be the weakest part of the structure? The strongest?

Working in groups of 2 or 3:

10. Discuss your answers to questions 9 and 10. Write down similarities and differences amongst your group partners for each of the questions.

11. Knowing what you know, discuss how the building you're located in currently would fare in a relatively large earthquake.