

Homework 1

(Due Tuesday September 11th, 2018, in class)

Problem 1

The recurrence interval for design purposes for a project has been established at 2000 years. The expected life of the structure is 70 years. What is the probability that design earthquake would occur: (a) during the life of the structure? (b) in any given year?

Problem 2

List two indices for assessing the magnitude of an earthquake and indicate their benefits and limitations. List two indices of the intensity of ground shaking and indicate their benefits and limitations.

Problem 3

List the 10 largest earthquakes in terms of Moment Magnitude for which ground motions records are available.

Pick one of those earthquakes and describe:

- 1- The tectonic environment (plates and boundaries)
- 2- the faulting type
- 3- Depth of epicenter
- 4- Dip of fault
- 5- Length of rupture
- 6- Human losses (deaths and injuries) and main sources of the losses
- 7- Typical structural damage
- 8- How would you mitigate the seismic risk for that region and scenario

You will find the information on the USGS website.