

**Assignment: “Earthquake Effects on Structures”**

**Part I:**

Step 1:

Visit the website Geotechnical Earthquake Engineering Earthquake Reconnaissance Website:  
<http://www.geerassociation.org/>

Step 2: Select one of the earthquakes at [http://www.geerassociation.org/Post\\_EQ\\_Reports.html](http://www.geerassociation.org/Post_EQ_Reports.html)  
Hint: might be easier to work out of one of the available pdf files such as (for instance):

[http://www.geerassociation.org/GEER\\_Post%20EQ%20Reports/Darfield%20New%20Zealand\\_2010/GEER\\_Darfield\\_2010\\_11-14-2010.pdf](http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Darfield%20New%20Zealand_2010/GEER_Darfield_2010_11-14-2010.pdf)

[http://www.geerassociation.org/GEER\\_Post%20EQ%20Reports/Maule\\_Chile\\_2010/GEER\\_Report\\_Chile\\_2010\\_FinalV3.pdf](http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Maule_Chile_2010/GEER_Report_Chile_2010_FinalV3.pdf)

[http://www.geerassociation.org/GEER\\_Post%20EQ%20Reports/Haiti\\_2010/0-GEER%20Web%20Report%20Version%201/Haiti%20Report%202010.pdf](http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Haiti_2010/0-GEER%20Web%20Report%20Version%201/Haiti%20Report%202010.pdf)

[http://www.geerassociation.org/GEER\\_Post%20EQ%20Reports/Italy\\_2009/GEER%20report%20v.%202.pdf](http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Italy_2009/GEER%20report%20v.%202.pdf)

[http://www.geerassociation.org/GEER\\_Post%20EQ%20Reports/Kocaeli\\_1999/Report3.1Kocaeli.pdf](http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Kocaeli_1999/Report3.1Kocaeli.pdf)

[http://www.geerassociation.org/GEER\\_Post%20EQ%20Reports/Northridge\\_1994/Northridge%20Reportweb.pdf](http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Northridge_1994/Northridge%20Reportweb.pdf)

[http://www.geerassociation.org/GEER\\_Post%20EQ%20Reports/Loma%20Prieta\\_1989/Loma%20Prieta%2009-05.pdf](http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Loma%20Prieta_1989/Loma%20Prieta%2009-05.pdf)

Step 3: Write a 4 page summary of your impressions about this report (ok to cut and paste figures, with proper reference and acknowledgement of the original source)

**Part II**

**Answer any 15 of the following questions:**

1. In your own words, discuss the concerns related to a structure being located near an active fault.
2. What is the major significance of the 1811 – 1812 New Madrid Earthquakes?
3. What was the most devastating event associated with the 1906 San Francisco earthquake?

4. Which type of building was most heavily damaged by the 1933 Long Beach earthquake?
5. What is the peak ground acceleration (approximately) from the well know 1940 Imperial Valley S00E Acceleration time history?
6. Describe in your own words some of the damage associated with the 1960 Chile Earthquake.
7. Describe two main destructive mechanisms associated with the 1964 Alaska Earthquake.
8. Describe the conditions which were necessary for the unusual damage associated with the 1985 Mexico City earthquake.
9. Describe the mechanism associated with building collapse during the 1999 Turkey earthquake.
10. Describe in your own words why unreinforced masonry performs poorly during an earthquake
11. Describe a possible unexpected seismically-induced damage pattern in steel structures.
12. Following an earthquake, why is locating and assessing a weld condition in a steel structure usually very difficult?
13. What is meant by soft story and what might be its consequences during an earthquake?
14. In bridge structures, what retrofit technique has been widely implemented in California to help improve the seismic performance of the columns?
15. In your own words, describe “pounding” damage to a bridge or building.
16. What is a typical mode of deformation in large liquid storage tanks supported on the ground surface?
17. Describe the mechanism of Soil Liquefaction and its consequences
18. Mention two earthquakes that generated major tsunamis
19. In the field of seismic retrofit, mention some directions that researchers have been working on.