CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Earthquakes are the most devastating natural hazard to life on this planet. Through history they have destroyed cities on every continent. A feature of earthquake is that although the interval between events may be large, the total destruction that occurs and the suddenness of these events is such that they remain one of mankind’s most feared natural phenomena. Damage incurred is instantaneous and in many cases total.

Jabatan Mineral and Geosains Malaysia (JMGM) conduct a study related to the seismotectonic setting. Based on their study, Malaysia are country with low seismicity except for Sabah state. Nevertheless, the study also showed that Malaysia are surrounded by Indonesia and Philippines which is the most seismically active countries in the region with frequent earthquake events. From this situation the tendency of Malaysia at certain degree for having earthquake risk are higher, particularly in Sabah.

Most buildings in Malaysia does not implement earthquake specification when designing a structure. On 5 June 2015 Malaysian was shock by earthquake 6.0 on the Richter scale “It was the strongest earthquake ever recorded in Malaysia, striking Ranau at 7.15am on that fateful Friday and surpassing the 5.8 tremblor recorded“(malaymail ,2016). There are several serious damage cause by the earthquake
such as damage on the hostels and rest house near the summit of Mount Kinabalu. Some of resident houses near with Mount Kinabalu are effected, several houses are undergoes serious crack and damaging. The reported says there are 23 schools in six different districts are effected and mosque was also damaged due to the tremor.

**Figure 1.1:** Earthquake intensity risk zones and presence of UNISDR.


Figure 1.1 shows the intensity zones in accordance with version modified Mercallo Scale (MMS). The zones indicate where there is a probability of 20 percent that degrees of intensity shown on the map will be exceeded in 50 years (prevention web).

The main religion in Malaysia is Islam which is most of the citizen are practices Islam in their life. The number of people using mosque are higher since since most of citizen of Malaysia practising Islam in their life, especially on Friday the number of people will much higher compare to the other day. This study will include the effect of
shell structure which is widely used in Malaysia not only mosque, stadium, government buildings are also design using shell structure. Study should be conducted to see the effect of seismic load on shell structure especially in Sabah, Malaysia. To make the building are safe to used, the several study should be conducted on that building before designing, since the building are already built the study only focus the behaviour of the building when earthquake are hit the area.

1.2 PROBLEM STATEMENT

Malaysia is near to seismic zone and the neighbour with country such as Philippine and Indonesia which is always having an earthquake and the wave can be feel in Malaysia. From the tragedy June 2015 in Ranau Sabah show us the important including seismic design in our structure. Even the probability of earthquake happened in Malaysia are lower, but we must to ensure our building are safe to live during existing earthquake. Beside that, the citizen should learn how to act and handle when the earthquake hit the area, the study should be necessary to conducted because of most of our citizen are doesn’t know how to act during earthquake happened.

Shell structure widely use in Malaysia such as mosque, shopping mall, government buildings and etc, the buildings are the main focus of people. Example of existing building using dome structure is Putrajaya, Unimap Library and so on. We can see most of the building using dome structure are building will always be main focus by the citizen. The safety of people inside the building should be consider by designing the structure include all expect such as wind load and earthquake load. Earthquake load should be include inside the design of the building to make sure the buildings are safe to use.