CHAPTER FIVE

5 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

After analyzing all the data we can clearly identify that there is a clear affect on houses due to vibration in construction activities. Majority of houses have the limit of less than 25% of the crack increment percentage due to the vibrations. Most of the affected houses are located less than 50 m from the highway trace. When we consider the blasting activities the affected range may go up to 200 m because of the high vibration generated by the powerful explosives which are used for blasting.

Most of the houses in the project area were built more than 10 years ago. So those houses are not designed for excessive vibration parameters. These fore the damage because of the vibrations are high more than newly built houses. Sometimes we can clearly observed it when the comparing of crack propagation between the older house and the modern house. Earth slip may be another result from excessive vibrations. We have identified some areas can be slipped because of the too much vibration generated by the construction activities.

Environmental Impact Analysis (EIA) was not identified some issues related with the ground vibration in designed stage. According to the EIA, ground vibration due to compaction is minimized by increasing the number of roller passes with low vibration in particular construction area. In practical purpose it can’t be used at the site in most of the time due to several reasons.

- Adverse weather condition - have to accelerate the soil compaction due to rain
- High volume of compaction - compacted soil heights may be more than 20 m from the ground
- Running out of the time - some areas are more critical for compaction. So have to use high vibrations.

After the considering all the date which we collected during this period is more
practical than the EIA predictions. EIA does not make much attention regarding the damages due to ground vibrations in nearly by houses. Actually EIA is not allowed to evacuate the people in nearby houses due to excessive ground vibration. For the practical reasons Road Development Authority (RDA) has made a decision to evacuate people by their expense. Evacuation free was paid by RDA to the affected people though the contractor. That was a major component of the project expenses. RDA was paid more than 500 million to the main contractor (KUMAGAI GUMI CO.LTD) from kurudugahahetekma to Pinnaduwa project trace.

In planning stage Southern highway project was proposed to finish with in 5 years. Due to some reasons finish of the project is delayed almost 3 years especially in project loans and adverse weather conditions. We can identify the few short comings in planning stage in this project.

- Didn't make sufficient attention regarding the ground vibrations
- Drainage pattern of the area was not considered much.
- Socio economic factors of the area.
- Introduce unrealistic designs to the project (especially the metal arch concept)
- Road access to nearby residences

Central Environment Authority (CEA) and Geological Survey & Mines Bureau (GSMB) are playing very vital role in this project. All the permits should take from these government institutes under rules and regulations of srilanka. Blasting parameters were designed after the test blast conducting in relevant location by CEA and GSMB. Other than the government institutes there are well experience geo technical experts and environmental engineers working with the project for the project success. Monthly meeting were arranged to discuss relevant issues regarding environments with experts.

Southern highway project was the first highway project in srilanka. So we can identify much more short comings during the project. By considering the situation in Srilanka more expressway projects will implement in future. Therefore southern expressway
should be a guild line for those future projects in srilanka. Finally we can do following suggestions for success of coming projects.

➢ Implement of the EIA project proposal process with the help of vast range of experts and relevant villages

➢ Evacuation should be done with the project trace over looking with future development

➢ Ground vibration can be minimized with the help of technology and introduce new construction techniques

➢ People around the project area should be educated regarding the importance of the project to minimize the project delays

➢ Try to implement new techniques that relevant to srilanka

➢ Road Development Authority (RDA) should be carefully monitored about the project progress