

Chapter 6

Conclusions

There are various aspects for complete health monitoring of structures in which the severity of the damage and the post damage remaining life of the structure can be evaluated. Conventionally different techniques are used for each aspect and also different types of sensors and hardware. This thesis emphasizes only the parameter such as vibration and deflection of beam which can be evaluated out for structural health monitoring and non-destructive evaluation using PZT knock and ultrasonic sensors only. The conventional approach is not only costly and complex but also less sensitive and less accurate to predict the location of damages.

It has been shown that vibration measurement via PZT knock sensors provides an effective and cheap solution for gathering information at the time of earthquake in the building. To validate the method, impact load have been applied on Steel beam to trigger vibration while taking vibration measurements via PZT sensors. An ultrasonic sensor can be utilized to detect the deflection if any at the time of any unforeseen event. Also based on the deflection value ,the theoretical load can be calculated which should be less than the designed load of structural element in order to declare it safe.

Proposed approach can be implemented for on-line monitoring of structure on a small scale and can be further extended on large scale real life structures such as buildings and bridges.