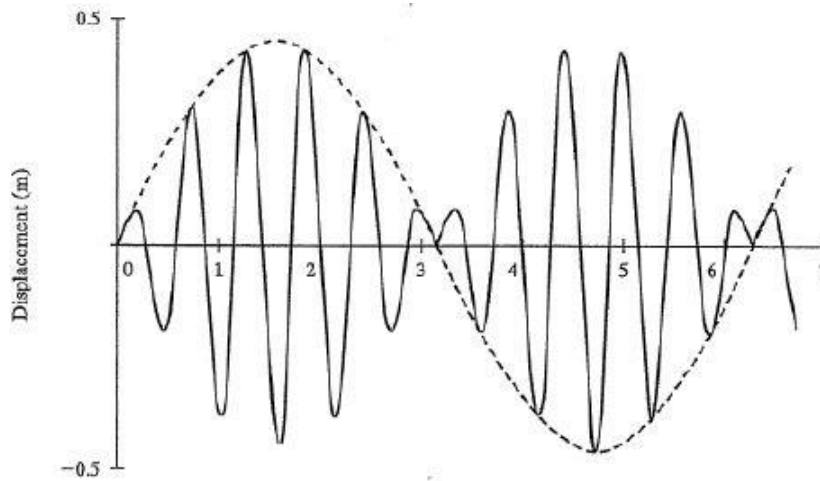
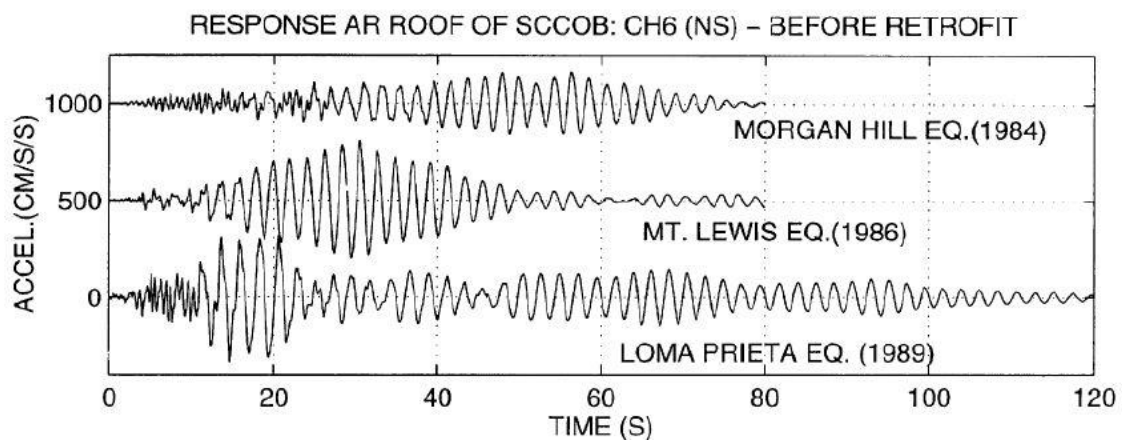


## Handout #10

Beating phenomenon can also be observed in lightly damped systems with close torsional and translational frequencies.



For example, the thirteen story steel framed Santa Clara County Office Building has a torsional frequency at 0.57 Hz and the translational frequency at 0.45 Hz. The proximity of these two natural frequencies causes the beating phenomena.



Response at the roof of SCCOB during the three earthquakes.

*Reference:*

Celebi and Liu, (1998). "Before and after retrofit- response of a building during ambient and strong motions," *Journal of Wind Engineering and Industrial Aerodynamics*, 77&78, 259-268.