

Thesis Proposal

Executive Summary

The proposed thesis will include a feasibility study with the design of progressive collapse beams to include the design of post-tensioning. It is intended to redesign the lateral system to include the existing shear walls and the addition of exterior moment resisting frames. The exterior moment resisting frames are going to be designed with post tension beams to increase the capacity with a smaller cross section. The exterior beams must also meet progressive collapse standards, provided post tension design is acceptable for progressive collapse design. The purpose of this thesis is to learn the concepts of progressive collapse design as well as integrating post tension design into the design of progressive collapse elements.

An advanced computer modeling techniques will be used to model the FDA OC/ORA Office building. Using ETABS and ADAPT to model various parts of the lateral system, and the building diaphragm the models can be used to determine the characteristics of the building under various loads. ETABS will be used to model the entire building to development the lateral system responses under loading. An ADAPT model will be researched and developed to model the building's post tension members.

The impact on the cost and schedule of the overall project will be performed to determine the feasibility of the change in the lateral systems. The scheduling changes that would involve the additional construction time for the jacking of the post tension strands will be considered and compared to the existing system.

Also an architecture study of the building façade will be performed to reevaluate the façade with architecture precast panels. The benefits of using precast panels are quality control, construction time. The change to precast panels would most likely increase the lead time but also increase construction time as well as quality control on the construction site.