Executive Summary JW Marriott

The JW Marriott is a 24 story hotel currently under construction in Grand Rapids, Michigan. The unique elliptical shape will create a strong presence in the otherwise conservative Grand Rapids skyline. The JW series offers the highest service level available from the Marriott Corporation. The stylistic hotel will have over 300 rooms with accommodations including a business center, restaurant, lounge, fitness center, and swimming pool. The JW Marriott welcomes its first guests in the fall of 2007.

Given its current location the JW Marriott is not likely to experience high seismic loads during its lifetime. However, if the owner wished to use the same design in Monterey, California, a seismically active location, the design would need to change. This thesis will study the structural redesign to withstand the new seismic forces. The depth study will focus on the design of new lateral system and post tension system. Two breadth studies will investigate the effects of the change on architecture, and construction cost.

After redesigning the JW Marriott for Monterey, CA it was evident significant structural, cost, and architectural changes accompany the relocation. The building was subjected to higher seismic loads and required a new lateral system. The new lateral system affected the choice of floor system, construction cost and duration, and interior architecture.

Although the post tension system is a viable alternative to the original system, the change would raise construction costs significantly. In light of this, it is unlikely that the owner would choose a post tension floor system in place of the original system. It is more economical to use the original floor system with the new core.

The lateral system achieved the desired nonlinear response. With plastic hinges located in the beams and near flexural yielding in the walls, the system maintains its lateral force resistance through large displacements and deforms evenly over the entire height. The stringent standards imposed in the design process make certain the lateral system surpasses code required performance and would easily pass the required peer review.