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Structural Option

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Erie Convention Center and Sheraton Hotel

Erie, Pennsylvania

Thesis Proposal

Submittal Date: 12 December 2005

Executive Summary

The Erie Convention Center and Sheraton Hotel, located in Erie, Pennsylvania is an eleven story steel building with a hollow-core precast concrete plank floor system. The hotel and convention center is 132,000 square feet, with 200 guest rooms on the upper nine and a half floors, with all of the amenities of a high class hotel on the bottom one and a half floors.

As with many hotels and convention centers, the bottom floors require large open, column free spaces for the ballroom and conference areas. The steel beam with concrete plank structure was designed in order to accommodate these needs, however there is another option. As the depth work of my thesis, I will investigate the use of a staggered truss system in lieu of steel beams and girders. Because the current structural system is a hybrid system comprised of both steel and precast concrete, coordination between trades during construction is very challenging. In order to address this concern, I will propose an alternative floor system of steel joists and a concrete slab in addition to an analysis of the current precast plank system. The staggered truss system will resist lateral loads in the North/South direction, but additional lateral support will need to be designed for the East/West direction.

In order to take advantage of the location of the site along the Presque Isle Bay, my breadth work will include a study of the savings in equipment and peak energy costs for an open loop heat rejection system. Also, in order to ensure the comfort of the guests, an acoustic analysis between two adjacent guest rooms will be completed to check for acceptable noise levels.

This report includes an in depth description of the current structural system of the Erie Convention Center and Sheraton Hotel and what needs are to be met both structurally and architecturally. A description of the proposed staggered truss system and the alternate floor systems is also included along with the methods that will be used to design this system. A complete list of the design procedures to be used, as well as a weekly schedule concludes this proposal.