

Executive Summary

The following is a proposed study for the redesign of the existing structure of the Cambria Suites Hotel. Cambria Suites Hotel is approximately 120,000 square foot and is 7 levels above grade. The superstructure consists primarily of reinforced concrete masonry walls and precast hollow-core concrete planks, as well as an interior steel frame. Each story height ranges from 10' to 14', topping out at an overall building height of 102'-2". Typical concrete 10" plank with topping and vary in span length from 20' to 40'. The lateral force resisting system is comprised of masonry shear walls which are located around the staircases, elevator shafts, and other exterior building locations. The foundation incorporates drilled cast-in-place concrete caissons and grade beams to support the load bearing walls and columns.

After reviewing the existing conditions through the examination of alternate floor systems and verifying the current lateral system, it was determined the structural system meets all standards required by code. For the proposed design, the site location will remain the same as it serves as a popular attraction to visitors of the City of Pittsburgh and the new CONSOL Energy Center.

This thesis proposal thoroughly outlines the entire process of obtaining an optimized building design for the Cambria Suites Hotel. For the structural depth, the current concrete masonry structure will be modified to an all steel frame system which will still incorporate the use of precast concrete plank as the floor system. The lateral system will consist of shear walls surround the staircases and elevator shaft, with the possible use of braced frames for extra lateral support. The exterior shear walls will be replaced by either a curtain wall system or a structural panel façade. In addition, the existing foundation will be checked for the proposed structural design.

Breadth studies will focus on the architectural, cost, and scheduling impact of the proposed structural design. Due to the steel redesign, an architectural study will be conducted as it may result in minor architectural layout changes. In addition, a new façade will be chosen due to the elimination of the exterior masonry walls. A second breadth will cover construction management issues such as the construction schedule and cost of the building.

To stay organized and to be able to accomplish the proposed design on time, a complete breakdown of the tasks is provided within the proposal.