

Hampton Inn & Suites – National Harbor, MD



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Thesis Proposal

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Executive Summary

Structural System

The Hampton Inn & Suites in National Harbor, MD, is an eleven story hotel complex which reaches 130 feet in height. Each floor is constituted by a 10-1/2" concrete flat plate and 2-1/2" drop panels at column locations. All concrete is normal weight and ordinarily reinforced with 60ksi rebar. Lateral loads are absorbed and transferred to the foundation by twelve concrete shear walls. All shear walls are one foot thick, but have varying lengths. Foundations consist of spread or strip footings, or a combination of the two. Columns are all 12"x24" and each floor covers approximately 10,000 square feet.

Proposal

After analyzing the structure through the first three technical reports, it became clear that concrete was the correct material choice. Its span to depth ratio sets it apart from other materials, which allows more plenum space throughout the building. However, the thickness of the slab led to considerable seismic base shear. Instead of a normally reinforced 10-1/2" concrete flat plate, I propose to investigate the alternative solution of a thinner post-tensioned slab, and a possible redesign of the building's lateral elements.

Breadth Studies

An obvious breadth study relates directly to the proposed change of flooring systems, and that is a study of constructability. Material costs as well as scheduling issues must be addressed as the construction method is reanalyzed. A comparative cost analysis between the existing conditions and the proposed solution will be conducted, as well as an in depth scheduling investigation.

The second breadth topic that will be explored is the curtain wall system on the façade of the building. A general building envelope study will determine the effectiveness of the current system. An alternative system will be compared to the existing envelope, and cost and schedule factors will also be evaluated.