

The Regent

950 N. Glebe Road
Arlington, VA



Architect: Cooper Carry Architects

Executive Summary Senior Thesis Final Report Spring 2006

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Option:	Structural
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Executive Summary

The Regent is a 12-story office building located at 950 North Glebe Road in Arlington, VA. There is retail space on the first floor and a 3-level concrete parking garage below grade.

This report provides an overview of and introduction to The Regent as well as a detailed description of the existing steel system design. Alternative floor system designs from Technical Report 2 are reviewed and a summary of the proposal introduces the structural depth and breadth topics.

The structural depth study included a design of The Regent using a cast-in-place concrete system with wide module joists. The scope of the design includes the CIP joists, CIP girders, CIP columns, CIP shearwall, representative spread footings, and the roof design.

There were two purposes for completing this structural depth study. The first purpose was to gain a better understanding of CIP structural system design through the study of design processes, design codes, structural analysis methods, and becoming more familiar with the use of structural analysis and concrete design software. The second purpose was to compare the CIP concrete system design with the existing structural steel system design in order to determine which system more effectively meets the project design team's goals which include minimal material, labor, and equipment costs, a quick erection schedule, and preservation of the architectural design intentions. It was predicted in the proposal that that steel system would better accommodate the design goals, and the system comparison results confirmed this prediction.

The construction management breadth study included a cost and schedule analysis for a typical floor and representative spread footings for both the steel and concrete systems. The costs for the concrete system were significantly higher than the costs for the steel system for both the typical floor costs and the spread footing costs. The concrete system takes approximately twice as long to erect as the steel system.

The mechanical breadth study included an analysis of the impact of the CIP concrete floor system depth on the existing mechanical layout for a typical floor. It was determined that the concrete system exceeded the allowable floor system depth by 4". It was concluded that if the CIP concrete system were to be used, there were three options; the mechanical ductwork would have to be reduced from a 12" depth to an 8" depth, the floor to floor height would be reduced from 9' to 8'-8", or the number of floors would have to be reduced in order to meet the 9' floor to ceiling height requirement and the overall building height limitations.

Overall, it was concluded that the steel system is a more efficient structural design for The Regent in terms of cost, schedule, and preservation of the architectural design.