
Thesis Proposal

Executive Summary

The purpose of this report is to present and explain the proposed thesis investigation for Park Potomac Office Building “E”. Office Building “E” is a seven story, roughly 100 feet tall office building located in Potomac, MD. The seven office levels are each roughly 25,000 square feet and sit on top of two large levels of mostly underground parking. The structure is made up of post-tensioned concrete, which is used not only to transfer gravity loads, but to resist lateral loads as well.

The floor plan, as designed, successfully minimizes the number of columns obstructing the rental spaces. This is an important consideration when designing rental spaces. To obtain this feature, long spans up to 45’ were required. This was completed successfully using post-tensioned concrete, which achieved the long spans, as well as minimized deflections. However, the concrete structure produced a large building self weight, requiring the use of large mat foundations to transfer the large gravity load to the soil.

A lighter steel composite system is a possible alternative to the current design. As explored in previous reports, a composite steel system could result in significant savings from the downsizing of structural members including columns and the current mat foundations beneath the office levels.

The proposed steel system would require a complete redesign of the lateral and gravity systems, which will be completed using RAM Structural System and ETABS. After the completion of the design and the verification of all requirements, detailed cost and scheduling concerns will be addressed and compared.

The change to a steel building will cause structural floor depth alterations and the need for a new lateral system. The impact on the building’s architecture will need to be taken into account with the redesign of the structural system. Additionally, several typical steel connections will be investigated and designed for the proposed steel system.

