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# Thesis Proposal

Simmons College School of Management, Boston, Ma



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## **Executive Summary: Thesis Proposal**

The Simmons College School of Management is a newly constructed five story educational facility located in Boston, Massachusetts. The building is 65,000 SF and sits on the south east corner of a five level below grade parking garage. Accommodations have been made in the original design for a future expansion of the building which would top out at a nine story building.

The below grade parking garage is a post tensioned concrete system with a slurry wall as the exterior foundation wall system. Interior columns are W14 shapes extend into the ground to form load bearing element foundations. At the plaza level provisions were made for the use of a crane in the construction of the above grade building. The five story building is steel with composite floors and primarily uses wide flange shapes.

Originally the building was designed under the Massachusetts State Building Code, Sixth Edition. This report used ASCE 7-05 as the primary code to develop the loading and strength requirements for the structure. Therefore, it is expected that there will be variations between the original design and the analysis that appears in this report.

In the following semester work will primarily focus on the building expansion that is proposed for the west end of the building. This expansion will likely top out at nine stories and be structurally tied to the existing structure. Completing the study of the lateral force resisting system indicated that the loads from the future building were taken into account for the design of the current building.

The design of the existing structure and the future expansion will both be analyzed to assess the load carrying capacity of the system. Along with this assessment, the effects of building torsion will be analyzed once the expansion is complete. Modifications to the building, based on the new expansion will be assessed and redesigned as necessary.

Additionally, the building façade system will be analyzed and redesigned. Energy efficiency and the constructability of the current façade will be assessed. Likewise, the new façade design will address these two areas as primary goals for improvement of the system.

Further study will be performed to address the construction management of the expansion as well as the façade erection. The mobilization of erection equipment on the site will be a main item of concern during the expansion phase. Throughout the design process of the new façade system the reduction of field labor and improvement of safety will be maintained as primary criteria.

### **Breadth Study One: Façade Study**

The existing façade of the Simmons College School of Management will be investigated as one of the additional areas of study. Upon completion of this study it will be determined if there are further ways to increase the energy efficiency, waterproofing, and constructability of the curtain wall systems. If there are no clear options to improve the existing system a design for the expansion will be produced to maintain a similar energy efficiency of the wall system with considerations for the constructability of the system.

### **Breadth Study Two: Construction Management**

Constructability will be a key concern while performing the new expansion to the Simmons College School of Management. The ability to mobilize erection equipment will be assessed as it applies to the newly expanded areas of the building. Areas of the plaza level above the parking garage were designed to support construction loading during the initial construction. These areas will be checked along with other construction zones utilized as a review of the staging of equipment and materials.

The façade design will be assessed for constructability considerations. Reduction of field labor and improved construction safety will be primary focuses for the design of the façade system.