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**Senior Thesis Breadth Work Study:  
Construction Management & Mechanical Options**

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**BREADTH WORK EXECUTIVE SUMMARY**

The structural depth work proposed for the redesign of Gateway Plaza includes a total material change using concrete. The floor slabs will be post-tensioned, columns and beams will be cast-in-place, and lateral elements will be either cast-in-place or precast shearwalls. A redesign of this magnitude will have a major impact on all of the other systems in the building. For this reason, construction management and mechanical studies will be performed to evaluate the systems compatibility.



**Construction Management**

Since the post-tensioned concrete framing redesign will have a significant impact on scheduling, a detailed study of these changes will be performed. Using scheduling software, such as Primavera, a new schedule will be created and using estimating software, such as MC2, a new cost estimate will be compiled. The overall timetable, coordination of trades, and other factors will be considered in this study in order to determine the constructability of the redesign.

**Mechanical**

With the increased push in conserving energy, a smaller floor depth may allow for a more efficient layout of ductwork. Thus, new ductwork will be laid out and if possible, a new, smaller, fan will be selected. These changes are aimed at making the air circulation system more efficient. With the expected gain in efficiency, sustainability will be studied by comparing the new design with LEED standards.