Executive Summary

The Senior Thesis Final Report displays the research and findings of four analyses that were performed on the project. This project is a new construction high rise building located in a major city and is being built as it is an investment for the owner. The project is a $208 million job that has a construction schedule of approximately 26 months. The building is roughly 475,000 GSF large which gives it a cost per square foot of approximately $438. The goals of these analyses are to target schedule, coordination, and cost concerns.

Analysis #1: Guided Formwork to Self-Climbing
This first analysis looked into using a different formwork system for the construction of the concrete core of the building in order to decrease the schedule, and increase safety on the project. The current system used is the Xclimb 60 which requires 26 form walls for the project. Each form wall is individually lifted by hydraulic cylinders. The Super Climber was analyzed to be implemented and it was found that with the use of this system that it would save a total of 30 working days and roughly $1.5 million in General Conditions costs.

Analysis #2: Implementation of Photovoltaic Curtain Wall
This second analysis looked into replacing the current curtain wall glass with photovoltaic glass in order to add value to the building. After a solar study was conducted and confirmed the photovoltaic glass can be used, various cost analyses were conducted. It was found that the photovoltaic glass would roughly save potential tenants$1000 off the electric bill annually, along with a tax benefit based on an IRS private letter ruling and other energy benefits would significantly decrease the payback period to two years.

Analysis #3: SIPS
This analyses looking into breaking the concrete core schedule down to either the hour or minute. The purpose of this was for the benefit of the project team and the subcontractors, allowing them to be able to keep on track of the schedule and be responsible for getting the work done at a certain time. After increasing the crew size for the installation of rebar, the schedule was decreased by 30 working days, but the general conditions increased for this portion of the project.

Analysis #4: Integration of Material Tracking Technologies
This analysis looked into various material tracking technologies in order to enhance the coordination on the project and prevent delays in deliveries. After conducting a complete analysis, the material tracking system cost estimated $6,300, which is an minimal amount in order to prevent delays in deliveries and enhance coordination.