

WASHINGTON DC AREA

MULTI-USE HIGH RISE



EXECUTIVE SUMMARY

PSUAE

THE PENNSYLVANIA STATE UNIVERSITY
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EXECUTIVE SUMMARY

This final senior thesis report details four areas of technical analysis that investigates the means and methods of construction utilized for the construction of the Multi-Use High Rise, which is located in the Washington D.C. area. This complex project spans roughly 215,000 square feet, contains two buildings, one reaching ten stories and one reaching six, and a two-story underground parking garage. The buildings will be of multi-use function providing ground floor retail space with the remaining floors being apartments. The four areas of analysis aim to provide a better final product by decreasing cost and schedule duration, increasing sustainability and utilizing technology to save time and increase construction quality.

TECHNICAL ANALYSIS 1: MOBILE TECHNOLOGY INTEGRATION

Mobile technology is an ever-increasing technique in the construction industry, which enables the overall construction management process to be much more efficient. This analysis examines the LATISTA tablet computer program, and how its integration to various projects has been a success, in an effort to apply the appropriate implementation to the Multi-Use High Rise project. Mobile technology will benefit this project due to accessibility to drawings and coordination in the field, email and correspondence, and daily safety evaluations and checklists. Based on case studies, this project will potentially save \$2,028/week with a total savings of \$210,912. Over the entire project in costs, while increasing quality, efficiency, and customer service.

TECHNICAL ANALYSIS 2: BATHROOM MODULARIZATION

The Multi-Use High Rise project has an extremely tight and congested site, as well as a very tight schedule. Modularization will allow some of the work to be relocated to an offsite facility and allow the bathroom units to be constructed prior to their arrival to the site location. This will clear up some traffic on the project site, as well as time savings. Implementing bathroom modularization allows for more than ten weeks in time savings, as well as a cost increase of \$18,349.76.

TECHNICAL ANALYSIS 3: ALTERNATIVE STRUCTURAL SYSTEM

The Multi-Use High Rise project is currently utilizing a traditional, stick-built brick façade system. This analysis will implement a prefabricated panel façade system in exchange for the original façade. This new system will reduce the project duration, clear space on a cluttered jobsite, as well as affect the total cost. Implementing the prefabricated façade will speed up the schedule by 47 weeks, but increase total costs by \$830,304.80.

TECHNICAL ANALYSIS 4: GREATER SUSTAINABLE DESIGN

Sustainability is becoming an industry leading criteria for almost any project. The Multi-Use High Rise project is currently on track to receive a LEED certification, due to its sustainable efforts. There are several sustainable strategies that this project is missing out on, that can increase the project's LEED rating. Analysis four will focus implementing greater sustainable design methods to increase the LEED rating. With the recommended additions to the project, the LEED rating will be increased to a LEED Silver certification.