

Executive Summary

The following report analyses four areas of interest of the Charlottesville Community Hospital that are intended to be improved upon. This seven story building has a project cost of \$141 million and is expected to be completed by June 2014. A high standard exists from owners for quality finish materials and craftsmanship. Throughout the report a strong emphasis is placed on job site safety and site logistics due to congested site restraints and the surrounding urban environment.

Analysis one introduces the idea of using prefabricated brick panels instead of the traditional brick with CMU backup method. The panels would cover 24,417 square feet of the building façade and would take 13 days to erect compared to 240 days for the traditional method. For installation, the tower crane on site would be used to hoist each panel, which would eliminate the need for scaffolding. An additional cost of \$207,580 would be added to the project budget if prefabricated panels were used. A mechanical breadth was conducted to determine if the new façade would yield better thermal properties. It was found that both systems produce roughly the same annual BTU consumption rate, with a negligible advantage towards prefabrication.

The second analysis implements roof wind turbines into the structure of the penthouse roof surface. This addition would provide clean renewable energy directly into the building's main distribution panel. The apparatus will face the Southwest where the highest wind speeds impact the building. The total cost of the system is \$32,168 and should be installed during the months of February or March of 2014 after the penthouse roof membrane is applied and before substantial completion. The payback period was confirmed through an electrical breadth which reveals a timeframe of 11.5 years.

A third analysis investigates the possibility of using a temporary offsite storage facility to accept material deliveries. The structure would be located walking distance from the hospital where specific daily deliveries would be assembled and transported to the project's loading dock. The purpose of this strategy is to improve upon the logistics of delivery traffic and the material hoist necessity. The structure will cost \$360,000 and will be in place for two years from March 2012 to March 2014. With a lead time of four weeks, the erection of the facility will take five days to install. This work will not influence the project schedule since it is located offsite and will be erected by the warehouse distributors.

The final analysis presents a site specific safety plan that focuses on organizing interior construction means and methods. A material layout and staging plan is created to help visualize how material is dispersed throughout the 4th floor of the building. The goal of the analysis is to eliminate construction debris from corridors in order to prevent injuries and decrease time wasted from moving materials more than once. Additionally, material handling methods for items like drywall and metal stud were outlined to avoid injuries during transportation.