

## Executive Summary

This report examines The Washington County Regional Medical Center, a new, replacement medical center in Washington County Maryland owned by the Washington County Health System. The medical center will serve as an acute medical care facility for the region's continuously growing population. The report provides analyses focus on adding value to the project, reducing costs, and shortening the project schedule. Specifically, the report examines the development of the old facility, a redesign of the deep foundation system, and a composite precast panel wall implementation.

The financial issues facing the market today create an industry issue when considering the owners, their money, and their financing strategies. Primarily, this project was funded purely from bonds that will start to mature shortly after the completion of the new medical center. The owner may be concerned with the ability to repay these bonds. Through market and local research a solution to generate additional money was produced. Washington County Health System owns the old hospital; developing this facility would generate additional income. Four development options were assessed: Develop to Sell, Develop to Run, Partially Develop to Run, and Develop to Lease. The best solution was to Partially Develop to Run which produced an internal rate of return of 31%, a sale price of \$74,264,614 in year 10, and a \$50,865,041 return on the investment. These numbers prove a valuable investment in developing the old hospital.

The second analysis looked at the deep foundation system. The system chosen was an array of caissons under the three bed towers. This proved to be costly and time consuming. Alternate options were considered based on constructability, value engineering, and schedule enhancement. The research showed that a minipile deep foundation system under the bed towers was an appealing alternative. Depending on load, the design produced a range of two to eight minipiles under each footer. The minipile system saved \$413,356 and, when compared to the caissons, a 48% schedule reduction was present. These numbers alone show that the minipile deep foundation system may have been a better option for the new medical center.

The third analysis examined the implementation of a composite precast wall panel. Through product research, a system called Metal Stud Crete® by Earl Corporation was chosen to perform the analysis. This system is comprised of a thin precast concrete exterior shell combined with exterior metal framing. The wall also contains insulation and options to create any exterior that the owner may want. The system was used to replace the brick on the new medical center. When analyzing the construction impacts, the composite precast system produced a 56% reduction in on-site construction time. The implementation also saved the project \$334,683 in upfront costs. A mechanical analysis comparison between the brick cavity wall and the composite wall system was also performed. The results showed a reduction in annual energy costs and life cycle costs, but did not allow a reduction in the sizes of mechanical equipment. With these figures, implementation of this composite system appears to be a good fit with the Washington County Regional Medical Center.