EXECUTIVE SUMMARY

The purpose of the Final Report is to review the research and potential solutions of the four analyses that were performed on Phase 1 of the General Services Administration (GSA) Headquarters Modernization. Located in Washington, D.C., Phase 1 of the project consists of nine total stories at approximately 362,000 square feet with an additional 67,000 square feet of new office space positioned in the building's East Courtyard. These four analyses will focus on problematic areas relating to schedule, cost, and constructability concerns.

ANALYSIS 1: NEW ADDITION FAÇADE REDESIGN

The first analysis explores the possibility of downsizing the curtain wall on the south façade of the New Addition and measuring the outcomes. The designed 78-foot truss columns created various issues in terms of delivery and coordination. Downsizing the overall size of the curtain wall and truss columns resulted in $2,856,085.85 in savings. Furthermore, this alternate design resulted in three days of acceleration and eliminated concerns with delivery. An acoustical breadth was completed within this analysis to examine the alternate façade's performance.

ANALYSIS 2: NEW ADDITION FOUNDATION SYSTEM

The second analysis proposes the idea of using an alternate foundation system for the New Addition. The current system is composed of caissons that total $1.56M, or roughly 30 percent of the structural system. In contrast, the existing foundation is composed of spread footings, which will serve as an alternate design for the New Addition. Implementing spread footings resulted in a $1,551,142.22 in savings as well as 12 days of acceleration. A structural breadth was completed in conjunction with this analysis.

ANALYSIS 3: THREE-DIMENSIONAL (3D) LASER SCANNING IMPLEMENTATION

The third analysis considers the implementation of 3D laser scanning as the current as-built drawings contain outdated and inaccurate information. Introducing the Leica ScanStation C10 and the Leica Cyclone 3D point cloud processing software on the project may provide assistance in terms of coordination concerns, which could improve production in the field and lower the overall cost. The process costs a minimum of $217,200 to administer on the project and takes 19 days to scan and process the entire building.

ANALYSIS 4: OPERATION AND MAINTENANCE OF ENERGY

The fourth analysis examines the industry issue of the operation and maintenance of energy during the operational phase. Utilizing Building Dashboard by Lucid Design Group would enable occupants to receive feedback on their resource consumption information and allow them to share and compare their data amongst their coworkers. Energy reductions may reach as high as 56 percent with the implementation of Building Dashboard during the operation phase.