



## 1.0 EXECUTIVE SUMMARY

This report is designed to present the four analyses that were conducted as part of the final thesis report on the Government Office Center renovation and modernization project. In combination, the analysis topics offer insight into a fundamental theme of the importance of active owner involvement to the success of a construction project.

### *Analysis #1: Implementation of Building Information Modeling*

Although this project will significantly impact future facilities management efforts, very little information is being pushed downstream through BIM to support the needs of facilities management staff. This analysis evaluates the benefits of implementing BIM for field and facilities management purposes. While the results demonstrate that there is minimal need for added BIM applications in the field for the Government Office Center, this analysis also demonstrates the value added by two specific BIM for Facilities Management processes.

### *Analysis #2: SIPS Study for Curtain Wall Activities*

Since a major portion of the scope of this project involves the highly repetitive process of replacing the curtain wall systems, the project schedule can be directly reduced through the implementation of Short Interval Production Scheduling. This analysis demonstrates that the benefits of implementing SIPS for the activities that make up this demolition and replacement process include a 25-week schedule savings worth \$1.65 million to the owner. This analysis also incorporates an electrical breadth study through evaluation of the feasibility of an alternate building-integrated photovoltaic curtain wall system, and demonstrates a payback period under two years for this system.

### *Analysis #3: Integrated Processes*

As the construction industry moves toward more integrated solutions to unique and complex project delivery challenges, the teams that face these challenges would benefit from an investigation into the benefits of having an engaged owner, as well as the identification of the process and integration failures that can plague a high performance retrofit project. This analysis draws themes from the experiences of industry professionals and evaluates the impact of these failures on the delivery of systems critical to high performance retrofit projects, and clearly demonstrates the vital importance of an engaged owner to the success of such a project.

### *Analysis #4: Progressive Collapse*

The Government Office Center will eventually require structural upgrades to meet the federal requirements for progressive collapse prevention that were implemented decades after the original construction of the building. This analysis analyzes the cost and schedule impacts of adding a progressive collapse system to the scope of this renovation project or a future project, showing that such a system would be ideally included as part of the current renovation project. This analysis also incorporates a structural breadth study through the partial design of a theoretical section of this system.