1.0 Executive Summary

Senior Thesis Final Report is intended to identify four analyses that will be utilized on 7700 Arlington Blvd. Each analysis either addresses all or some of four investigation areas; Critical Issues Research, Value Engineering Analysis, Constructability Review, and/or Schedule Reduction. The expected outcome and overall theme for the four analyses is defining and creating more efficient means to construction collaboration.

Analysis #1 | Simplifying the Integrated Project Delivery Approach

Material procurement was a challenge for this project and it involved detailed coordination amongst trades in order to reach project start-up. Additional time and money were required to achieve the necessary material due to the type of project delivery method used for 7700 Arlington Blvd. The goal of this analysis was to create a way to improve showing an owner, contractor, and architect how to implement an integrated project delivery approach on a project through the use of a process map. The map shows the different levels of coordination and communication throughout the entire project lifetime and the map will be a way to streamline the process for all parties involved throughout a project.

Analysis #2 | New Mechanical System in the Northwest Building

The Northwest Building was the only building that did not receive a new mechanical system due to the owner's budget. Therefore, the goal for this analysis was to create a TRACE 700 model for the Northwest Building that collected data for a comparison between a water source heat pump system and a VAV system. The same VAV system that was used in the Southwest Building was utilized in the TRACE 700 model. Based on the owner's goals, the VAV system would have been chosen because it costs $6,393,552.88, takes 8-10 months to install, and lasts 25 years. Two breadths can be extracted from this analysis; ***Breadth #1*** being the ***TRACE 700 analyses*** and ***Breadth #2*** being two ***raised platform designs*** for the additional roof top units if the VAV system were to be installed in the Northwest Building.

Analysis #3 | Creating a Short Interval Production Schedule

There were many coordination issues that occurred on 7700 Arlington Blvd. due to the complex schedule. There was not enough time allotted for demolition, which directly impacted the structural steel erection schedule. The goal for this analysis was to create an efficient SIP Schedule that could be utilized in the field for the demolition and structural system aspect of the project. As a result a new phasing plan was created to achieve an overall reduction of 11 weeks and a general condition's savings of $438,535.90.

Analysis #4 | BIM Implementation into the Field

Due to the coordination issues that happened with this project, the utilization of BIM in the field could have possibly prevented certain issues. Continuing with the same issue as in Analysis #3, the goal for this analysis is to look at the influence of flow diagrams and process charts for use in the field. A high-tech work station that incorporates the use of an Apple iPad as well as the use of BIMsight technology was explored to figure out the applicability for workers in the field. The use of the work station and BIMsight technology will increase collaboration on the jobsite as well as create safer working conditions due to the availability of the station to get the correct information.