Executive Summary

The following technical report it written about Memorial Vista, an office building for an undisclosed aviation tenant in northern Virginia. This report analyzes the schedule acceleration scenarios that the team encountered, items that were value engineered in the early phases of the project, and then the critical industry issues and feedback from an industry member that attended the Partnership for Achieving Construction Excellence (PACE) Roundtable event.

This report will first break down the critical path that Memorial Vista had to follow in order to turn the project over on the projected completion date. The first factor that was on the critical path is the permitting of the building and the equipment and systems that were to go in it. Following the permitting of the building and all the items surrounding it is the site utility relocations. These are critical due to the fact that relocations need to take place for excavation of the new buildings foundation and this process takes a substantial amount of time. Following the relocations is the concrete structure, and then the roofing and the façade to completely enclose the structure to become water tight. The last item that is on the critical path is the elevators within the building. These elevators are influential on the building's critical path due to the fact that there are fourteen of them and the installation process takes such a large amount of time.

After the critical path is established, the report will share how the Davis team was able to accelerate the schedule as needed to accomplish their goals of turning the building over on time. One of the initial problems was that during the site utility relocations, it was found that a sanitary sewer relocation and bypass must be performed. This process was not originally in the schedule because it was not known at the time what was below grade at the project site, but it quickly became apparent that the schedule needed to be adjusted to account for such an event. To get back on schedule, the concrete erection plan was transitioned from pouring the North wing first to doing the South wing first. This is due to the fact that the sewer main was located in the North wing, and was preventing any foundation work from being done in that area. To accelerate the pours, the team also consolidated the number of pours from six to three. This and other schedule acceleration scenarios will be further discussed in the report.

As the schedule was accelerated during the construction process to save time and money, value engineering was performed in the design phase to achieve the same goals as accelerating the schedule. A few of the items that were approved to be value engineered in the project to achieve the same job at a lower than budgeted price were changing the traffic coating in the garage levels to silane sealer to save around $440,000, changing the multipurpose space from pavers to colored concrete to save $37,000, eliminating the inner slab heat system in the Lobby space to save $25,000, and also change the thickness of the stone flooring in this space from 3 centimeters to only two centimeters to save $55,000. This and other value engineered items will be discussed in the report.

Not all of the value engineered material was approved. The report also includes items that were proposed by Davis to be value engineered but were not approved for various reasons. Some of the items that were proposed but rejected were changing the lobby structural glass fin walls to high span walls due to the cost reduction, changing the roof planters on the terraces from stone to cast-in-place concrete but the owner denied the idea to keep the quality of the building higher than average, and then the team also proposed changing the toilet partitions from the stainless steel that the drawings called for to a cheaper painted partition. Most of the ideas that were denied were due to the fact that the quality of the space was not kept, but all ideas were looked at to find what would best suite Memorial Vista.

The second part of the report reflects on the PACE Roundtable event. The critical industry issues sum up the sessions that William Gamble was able to be a part of. The two sessions that are included in the report deal with both safety and the prevention through design, and then the criteria and drivers for effective multi-trade prefabrication and modularization. The report will go into full detail of the sessions and how they can be applied to Memorial Vista.

The last part of the report is the feedback from the industry members from the Roundtable event. This session was a meeting with Bill Moyer from James G. Davis Construction, where he shared potential thesis topics that could be further studied due to the fact that they could possibly apply to Memorial Vista. Some of the ideas that were shared by Bill were to look further into having a checklist for safety in the design phases so designers could form a building that could be constructed in a safer manner. The next idea was to find a way to discover what utilities are below grade prior to the actual excavation process. This could save time later in the schedule due to the fact that team would know what exactly is below grade and could account for this in the schedule. Bill also stated it may be a good idea to look at the foundation of the North building due to the fact that the excavation of the site found that the precast piles would be ruled redundant. A potential idea would be to redesign a shallow foundation in lieu of the deep foundation called for and form a cost analysis. One of the last ideas that was shared by Bill was to study the sequencing of the project. Memorial Vista was scheduled in a way that the interior fit-out would not be bid out and started until the core and shell was to be finished. An area of study could be to linearly schedule the interior of the building in with the core and shell to see how much quicker and cheaper the building could be turned over. Further information will be discussed in depth in the report.