

Executive Summary

The Emory Psychology Building has been a very successful project for both the construction manager, Holder Construction, and the owner, Emory University. Each party has been pleased with the quality and timeliness of the current construction. However, there are some aspects of the building that with further investigation and research may be able to improve the building as a whole. This report proposes four aspects of the building to be researched and analyzed that will maximize the building's potential.

Building Information Modeling (BIM) was used on this project for MEP clash detection and planning during preconstruction. In those ways, the building information model was used effectively. However, there are some applications of building information models that were not used. Unfortunately, this is a common theme throughout the construction industry. An analysis is proposed of the use of BIM on this project as well as the industry as a whole. Research will be conducted on the best practices of BIM by interviewing industry members and asking them what has worked well and what were some lessons learned from the BIM experience. Hopefully, by interviewing several companies, they will have different applications of BIM that can be consolidated into one guide that will be a summary of all the uses of BIM. Also, there will be research on how to create a facility management tool from the model that can be given to the owner for use in managing and monitoring their new building.

The next analysis proposed in this report is the addition of a green roof to the roof of the structure. A green roof is a roof that is partially or fully covered by vegetation or soil. In the proposed analysis there will be studies on how the existing structure will perform under the added weight of the roof and how the extra insulation will affect the HVAC loads of the building. Following that, there will be a cost analysis of the additional initial roof cost compared to the savings caused by the additional insulation in the roof. That analysis will provide a payback period for the roof, or how long the roof will take to pay for itself.

Following that analysis is a proposed investigation of prefabrication on the Psychology Building. Prefabrication generally saves time during construction and increases the quality of the finished product since the work is completed in a controlled environment and not on-site. The prefabrication will be specific to HVAC, plumbing, and structural steel connections. Each of these has the ability to save time by shipping them to site already constructed and limits the installation time. An analysis of the schedule savings will be completed to see how effective this method is.

The final proposed analysis is the consolidation of the air handling units themselves. There are currently four units for this building that will be consolidated into two. The consolidation will save time of installation, equipment cost, and hopefully based on analysis, operation costs. The results of the analysis will be compared to the actual installation on the building to see where a savings could have been found.

A weight matrix provides a breakdown of how the analyses will attempt to investigate research, value engineering, constructability, and schedule acceleration for the Psychology Building. Lastly, a conclusion sums up the proposed analyses and how each has the potential to improve this project.