

Executive Summary

The Emory Psychology Building is a 119,000 square foot academic building for Emory University in Atlanta Georgia. It has a total of five stories as well as a mechanical penthouse. The project started in late October, 2007 and completed major construction in March of 2009. Emory selected HOK as the architect for the project and Holder Construction as their construction manager. Emory and Holder agreed on a \$35,029,000 guaranteed maximum price for Holder to deliver the project. Emory is pursuing LEED Silver certification for this building and is currently the leader among universities for buildings with LEED certification.

Building Information Modeling (BIM) was implemented on this project by HOK and Holder Construction. It was not planned to be a BIM project by Emory and was not a requirement of the architect or construction manager. BIM was used to aid in design and visualization by HOK. Holder used BIM for planning, estimating, scheduling, visualization, and MEP clash detection. Emory was pleased with the use of BIM on this project and will further promote BIM usage on their projects in the future.

This report will assess unique aspects of BIM on this project. It will also provide a study of other construction managers BIM applications throughout the construction industry to determine the state of BIM use around the country. The construction managers involved in the study are considered to be well ahead of the curve in terms of BIM implementation and share their experiences of how they go about using BIM on their projects. Recommendations will be given to conclude the BIM study based on the industry member's responses.

A study on how or if a green roof would have been beneficial for the Psychology Building is also included. The overall green roof benefits are first identified to determine how a green roof could make the building friendlier to the environment and if the green roof has the potential to save the owner money. A green roof system was then selected and applied to the building to determine the direct affects of the change in roofing system.

The first study on the direct affect of the green roof will be on the existing structural system. The green roof is a very heavy system which will add a significant load to the building's structure. The structure will have to be modified to support the additional weight. The affects of the changed structure on the budget and schedule will be analyzed to determine indirect affects of the green roof.

The next study will be on mechanical system load reductions achieved by the green roof. The green roof is expected to help cool the building in the summer which will reduce the amount of air conditioning required in the building. The extent to which the green roof reduces the load and accompanying energy costs will be analyzed on an annual basis. The energy costs will be incorporated into a study of the life cycle costs of the both the proposed green roof and the designed white roof. Both roof's costs will be projected over 50 years to include installation, maintenance, energy, and re-roofing costs.

The last analysis will be the affect that the green roof has on the current LEED rating. The addition of a green roof has the potential to add LEED credits to the building's current score and push the building from silver to gold certification. Finally, the green roof's ability to benefit the Psychology Building will be analyzed and a recommendation will be made to either add a green roof or keep the current roofing system.