

Executive Summary

During the 2013-2014 academic year, the University Engineering Building located at a Mid-Atlantic University was analyzed to identify key areas in which alternative solutions would enhance the project as a whole. The main topics for analysis in this report included: a study of the Clean Room coordination, a roof system study, a study of the underground spring and finally the information delivery between CMs and Facility Managers. It must be stated that this thesis is solely for educational purposes and is not intended in any way to be a critique of the project team.

Analysis 1: Clean Room Coordination

The first analysis topic studies the project organization of the UEB and how the coordination involving the Clean Room is affected. The contract situation was changed so that Hodess has a preconstruction contract with the University and a construction contract with Massaro. A coordination schedule was created focusing on the Clean Room to manage any potential constructability problems and save time during construction.

Analysis 2: Roof System Redesign

One of the main problems plaguing the project schedule was the fully-adhered roof system, which was delayed because of the extreme cold temperatures early in 2014. The final result was to switch the fully-adhered TPO system for Firestone's InvisiWeld system, which reduced costs, greatly reduced the scheduled activities and was easily constructed in the extreme cold weather from the 2014 winter. Finally the InvisiWeld system had the same warranty as the fully-adhered system, which is what the owner wanted. A built-up roof system was also studied as a possible alternate.

Analysis 3: Underground Spring Analysis

A unique feature of the UEB was the underground spring that along with rain caused delays and issues during excavation and foundations. The result of this analysis was to incorporate the sump pump that the project team used as a solution with a waterproofing membrane for the Lab wing foundation walls to add an extra layer of protection from moisture at Level 0 where the Clean Room is located. The waterproofing membrane does increase the cost by roughly \$20,000 but does not affect the schedule.

Analysis 4: CM to FM Information Delivery

The research topic for this thesis focused on the transfer of project information between the contractor and facility manager at the end of a project. It was discovered that the method of transfer was more important to the facility manager than the actual information. Since the owner of the UEB, like most, has not incorporated the amount of technology that Penn State has, an outline was created highlighting key areas for facility managers/owners to focus on in terms of beginning to incorporate new technologies for building turnover, operation and maintenance.