

Executive Summary

The following proposal serves as an outline for the research and analyses that I plan to conduct during the spring of 2010. The three analyses described below are a result of complications identified during the design and construction of the New Moon Area High School and District Administration Offices. Overall, the theme of the three analyses will be the use of Building Information Modeling during design and construction of new facilities.

Analysis 1: BIM Planning with Multiple Primes

The first analysis deals with the use and coordination of a Building Information Model. As a critical industry issue, the use of BIM can be very beneficial if properly executed. Research for this analysis will include the development of a strategy for the implementation of several BIM uses through a multiple prime contract scenario. This research will be completed with the guidance of the recently developed BIM Project Execution Planning Guide from the CIC Research Group at Penn State long with input from industry members.

Analysis 2: Concrete Foundation Wall Redesign (Structural Breadth)

As a result of the buildings split-level design there is a foundation wall that separates the ground floor of Areas C&E from the soil under the first floor. The installation requirements of the retaining wall have forced the building to be constructed in way that delays the achievement of a watertight structure. The goal of this analysis is to design an alternate foundation system for this area of the building that will help to accelerate the schedule and result in a more efficient construction sequence. This will also include the use of a BIM model to help create a new sequence of construction.

Analysis 3: Alternate Window System (Building Envelope Breadth/ M.A.E Study)

The final analysis requires investigation into alternate window and curtain wall systems. The systems that are currently specified require the building's brick veneer to be in place prior to their installation. Through research a new system will be selected that will eliminate this requirement and prevent the need for temporary enclosures. Also, as part of the research an attempt will be made to specify a new system that will have thermal and moisture properties superior to the current system. This analysis will incorporate information gathered from AE 542: Building Enclosure Science and Design.