Executive Summary

Construction on the Phoenixville Area Middle School began in June of 2010, and is scheduled for completion by June of 2012. Phoenixville, Pennsylvania is a town located in Eastern Pennsylvania. The project is an 188,500 square foot building costing roughly $40 million. Upon its completion, the existing middle school will be demolished. This report is an analysis of the project, as well as four in depth studies on topics based on it.

The first analysis will examine the Separations Act of 1913, a Pennsylvania State law requiring school districts to deliver projects using the multiple prime delivery method. In this study, I will be examining the history of this law, recent changes, and the current status of legislation. Also included will be a comparison between single and multiple prime delivery in terms of risk, responsibility, cost, and other factors. In the end I will give my recommendation on the future of the Separations Act for the best possible solution to the law that has caused so much controversy.

In the second depth study I propose an alternative HVAC system for the middle school. By implementing a geothermal heat pump design over the current water source system, I will attempt to prove that it provides better long term value for the project. This will be done by examining the schedule, constructability, cost, and performance differences between the two systems. Includes is a mechanical breadth study analyzing the energy use differences between the two systems. Ultimately, I will show whether or not a geothermal heat pump system would benefit the project.

The third topic concerns the use of BIM in delivering the Phoenixville Area Middle School. The project team use BIM in minimum areas, only to model the architectural and structural design of the building. By examining the constraints of multiple prime delivery in using BIM, as well as addressing issues on the project that would have benefitted from its uses, I will choose uses from the BIM Execution Plan developed by Penn State that would have been helpful.

The fourth and final research area concerns the implementation of a precast façade in certain areas of the middle school. This will replace the masonry and metal stud assembly. I will design the precast system and determine all the requirements that go with it. This will include examining the schedule, cost, and constructability impacts, as well as others. In the end I will weigh the schedule reduction against any cost increases, and determine whether it could have benefitted the project. Included in this section is my second breadth study, a structural redesign of the strip footings for the weight of the precast panels.