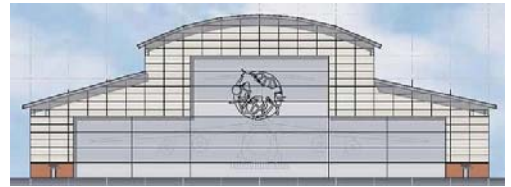


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C-5 Fuel Cell Facility
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EXECUTIVE SUMMARY

This document is a comprehensive collection of the technical analyses which have been performed on the C-5 Fuel Cell Facility project in Martinsburg, WV as part of the Penn State AE Senior Thesis assignment. Its contents include background information to the project such as: client information, local conditions, an explanation of the project delivery method that was used, project costs, and the project schedule among other items. Also included are the four topics of analysis which have been researched and developed over the past semester, as well as two topics of breadth study outside of the construction management option. Each of these analyses is directed at studying productivity on a construction project with respect to alternative methods and design options.

The first analysis that is discussed is the installation of a solar collection system to the roof of the C-5 Fuel Cell Facility. Specifically, the system produced by Solyndra, Inc. has been analyzed in order to determine the electrical output that could be expected from such an addition and then compared to the expected total power usage of the building. The second analysis involves changing all CMU walls on the project to precast concrete or prefabricated walls. The exterior façade is examined primarily on the basis of a quality finished product and the interior load-bearing walls are analyzed based on structural design. In both instances, cost and schedule impacts are discussed, as well as site congestion. The third area of analysis focuses on finding the most efficient sequence for constructing the slab on grade in the hangar area. The expectation of producing a quality product while maintaining high productivity is the key measurement, along with cost and schedule impact. The fourth analysis explores the affect that using the design-build delivery method has on project productivity, specifically on the management and design side of the project.

The breadth topics that will be discussed in this document focus on the electrical and structural options of Architectural Engineering. The breadth in electrical will come from the analysis of the solar collection system by calculating the approximate quantity of energy that could be produced and then determining the building's overall power usage. The structural breadth analysis will be part of the study on changing the interior load-bearing CMU walls to a precast concrete system. Design of a concrete wall structure based on the current loads will be completed.