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THESIS PROPOSAL

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EXECUTIVE SUMMARY

In this report you will find an outline of what is to be accomplished in the final thesis proposal. The Lehigh Valley Hospital is going for a Silver LEED rating which is the main reason this project was chosen. There are four analyses that will be covered during the thesis process covering a critical industry issue, and three technical analyses that will also include some breadth requirements.

Analysis 1- Research of Critical Industry Issue

In this analysis a look at what issues determine whether or not a LEED rating is a goal on projects. A survey will be conducted in order to assess what factors hold a project from being designed for a LEED rating and a conclusion outlining what needs to be done for more buildings to be designed with greener principles.

Analysis 2 – Gain more points for LEED rating

The Lehigh Valley Hospital had been alternating between being only certified and the goal of a Silver rating. This analysis will look into ways that can solidify a Silver rating and possibly accomplish a Gold rating. A rain water retention system to be used for grey water applications, solar panel feasibility as well as waterless urinals will be proposed as systems that could help achieve a higher rating.

Analysis 3 – Infection Control Risk Assessment

With this project being done a hospital the need for an air quality assessment will be conducted to analyze precautions and procedures that can be implemented in order to protect the patients and employees of the existing building.

Analysis 4 – Alternate Floor System

This analysis will look at the impacts using a hollow-core pre-cast concrete floor system over the slab on deck method that is currently being used on the project. There will be a cost, labor, material and schedule comparison between the two systems that will be evaluated in a graphical representation of the analysis.

ANALYSIS I - RESEARCH METHOD

Problem Statement

With the growing demand for more environmentally friendly buildings, I believe that there needs to be a stronger push for LEED rated building to start emerging. In order for this to happen there has to be more of a desire of people in the industry to educate the people who have not been opened up to the benefits of a LEED rated building so that they understand that even though costs might be higher in the initial stages, will benefit them in the long run.

Research Goal

The goal of my research will be to find out why an organization might steer away from getting a LEED certified building, where the main conflicts occur within that organization and develop a strategy that will allow more industry people to be oriented towards the same goal of creating environmentally friendly buildings. I would like to outline for an organization the benefits and costs balances of doing a LEED rated building. This can be accomplished in a weighted matrix to graphically demonstrate where the costs savings could be developed. This process, I believe will also work to educate industry leaders who do not believe in the benefits of doing a LEED rated building and that the struggle to earn points during the design and construction phases will outweigh the long term cost savings.

Research Methods

In order to obtain a concrete understanding of why more organizations do not adopt a LEED rated building, I will create a questionnaire as to what issues hold them back such as the building type, costs, schedule and education. I will then process the information gathered by the questionnaire into a matrix in order to graphically display my information so that anyone can understand where the problems arise. During this process I would like to find ways that we can better educate everyone on the issues of green building design and steps that need to be taken so that a higher percentage of buildings that are constructed in the United States are built with higher standards when it comes to the environment.

TECHNICAL ANALYSIS METHODS

Analysis 2 – Gaining a Higher LEED Rating on the Lehigh Valley Hospital

I would like to develop this analysis to look at more ways that this project could gain a higher LEED rating. This project is originally designed for a Silver rating, but has bounced between being only certified and the Silver rating. I would like to ensure at least a Silver rating or even a Gold rated building with other alternative green design ideas.

- There is a current goal for Silver LEED rating on the project; I would like to explore different alternatives to allow for a higher LEED rating.
- If different choices of materials were selected as well as roof designs and solar panels or heating system might be ideas that can be researched to allow for a higher rating.
- Since there are going to be bathrooms in each patient room, I would also like to look into the benefits of waterless urinals and a roof rain water recovery system that could be used for grey water applications.

Analysis 3 – Infection Control Risk Assessment to Prevent Illness

With this analysis, I would like to design an alternative phasing schedule that will allow for greater control of contaminants that enter the existing structure during construction. I will also suggest alternative ideas that will prevent contaminants that will enter the structure during construction by the workers physically or by the work they are performing.

- Ensuring that during construction the highest degree of care is made to protect the patients that occupy the existing hospital so that no dust or particulate matter can enter.
- Different phasing of the project might allow for a better barrier between the existing building and the expansion so that a higher degree of protection can be established.

Analysis 4 – Benefits of an Alternative Pre-cast Floor System

I would finally like to look at the schedule impact and project cost that a hollow core pre-cast concrete flooring system would have on the project. I would like to develop a detailed schedule to show the results of placing the hollow core pre-cast concrete flooring system on the schedule and then develop a cost comparison of the labor hours and materials between the two systems.

- Develop a detailed schedule impact of using hollow-core pre-cast concrete floor system over slab on metal deck.
- Do a cost comparison of materials, labor and schedule between the two systems and illustrate the results in a chart.

WEIGHT MATRIX

Below is a weight matrix that will illustrate how I plan to distribute my efforts among the different analyses that I have proposed for the spring.

Description	Research	Value Engineering	Constructructability Review	Schedule Reduction	Total
Analysis 1 - LEED Research	25%	—	—	—	25%
Analysis 2 - Higher LEED Points	—	10%	10%	—	20%
Analysis 3 - ICRA	15%	—	10%	—	25%
Analysis 4 - Alternate Floor System	—	10%	10%	10%	30%
Total	40%	20%	30%	10%	100%