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November 20, 2006

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WHITING-TURNER

EXECUTIVE SUMMARY

Technical assignment 3 covers the alternative methods and research part of my thesis project. The first part of the report covers a summary of the PACE Roundtable event that was held for the construction management students at the Penn Stater Hotel and Conference Center. This meeting was very beneficial for sharing ideas between many construction companies, the Penn State faculty and the construction management students. The rest of the report outlines a critical issue that I wish to research during the spring semester of my thesis project as well as several construction problems that I have identified and will further research as part of my technical analysis investigation. At the end of this report you will find a weight matrix that illustrates how I plan on dedicating my time and efforts into my project during the spring semester.

CRITICAL INDUSTRY ISSUES

This years PACE Roundtable was themed after building respect during the construction process. The day was broken down into three sessions and then a final team building exercise at the end of the day. The first session that I attended was Green Building Materials. I went to this because I am working on a LEED rated building and I was looking for some insight to see what the industry professionals had to say about it. We learn about the principles and the ideas behind green building design and it seems good in theory but there are a lot of challenges in the workplace that many people don't realize until they hear it first hand from the people who have experienced it. I thought it was really cool to hear the thoughts of the industry people and find out the challenges they have had. Many of them said it is difficult to get owners to want a green building because of the high initial cost, getting materials and developing a schedule around working with local suppliers that match the detailed materials, and to get subcontractors who understand the process behind building a green building. I was surprised to see how many of the industry people do like the idea behind a green building because I was under the impression that not many people like them because of the challenges and costs involved and that my generation was one of the first to start being educated behind the principles and so it would be our job to try and incorporate our knowledge to the older generations of construction companies. The second session that I went to was on Building Information Modeling (BIM), a fairly new concept that allows a construction project to be placed in time, a fourth dimension is added to help different disciplines like mechanical and plumbing to detect problems during the design process by modeling the project in 3-D and developing it over time. This idea has been highly developed at Penn State by Dr. John Messner and so many of the students who have had his class knew what it was about so it was interesting to see the students being teachers to many of the industry people because not many of them have been exposed to this concept. I really like the

idea of putting the construction process to a visual time oriented design. Many people in the discussion didn't see the benefits of spending money on developing the BIM but this is due to the fact they have not seen it in an application and would be a lot more eager to know more about it if they did. I wish that Dr. Messner would have done a brief presentation on it so that more people would have an understanding of what it was before the discussions took place. Towards the end of our discussion period I do believe that most people had a better understanding and were interested to use it at least a little bit in their companies. The last session that we did was a Brainstorming discussion in which I attended the one about Building Respect with specialty contractors. This discussion mainly covered ideas of how we as construction managers have to work together with all of the contractors on the job. We need to maintain a balance of control between everyone so that the job can be delivered in a timely manner.

On thing that I enjoyed was talking one-on-one with the industry people both at lunch as well as during the team building exercise at the end of the day. It broke down the fear that I had to enter the workplace and to see that everyone is willing to offer a helping hand. I was very surprised to see how open many of the industry people were to discussing ideas with the students and that they were very eager to help us out with anything that we had questions about.

All in all I really enjoyed participating in the PACE Roundtable event and I think that it helps everyone out that attends. I really believe in the interaction of all of the different companies to share ideas and learn from each other. I think that the faster these new ideas can be spread, such as green building design and building information modeling, the more of a positive effect that it can become in the construction process. When everyone understands the benefits we can start working as a unit to make a positive influence on the industry and give future generations something to look forward to.

CRITICAL ISSUES 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 out-weight 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.

PROBLEM IDENTIFICATION

Air Quality Control

- 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.

Constructability Review

- Infill of section A has to be turned over early in the project; this could pose potential accessibility and cleanliness problems as workers will need to access the floors directly above the infill area.
- Possible schedule adjustments could correct this problem or manage a better solution for worker paths.

LEED Certification

- 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.

TECHNICAL ANALYSIS METHODS

Analysis 1 – 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 alternative green design ideas mentioned in the Problem Identification section.

Analysis 2 – Air Quality Control 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.

Analysis 3 – 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.

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	20%	10%	10%		40%
Analysis 2	20%		10%		30%
Analysis 3		10%	10%	10%	30%
Total	40%	20%	30%	10%	100%