

To: Professor Riley, December 8th, 2007

Concerning: Liberty Walk at East Gate
Mt. Laurel Township, New Jersey

Technical Report 3

PACE Roundtable



330 Fellowship Road

A Liberty Property Group Project

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Executive Summary

In this report you will find a summary of the PACE Conference. The PACE Conference mainly talked about Building Information Modeling, Workforce problems, and Prefabrication. It also talked about the issues plaguing our industry involved with these topics.

These topics are then applied to my current project as best as possible. Given the simplicity of the project, there was really no need to work out a 4 Dimensional Model. The brick panels on all sides of the building are precast, and out of all the choices to use precast systems in this building, it was the best choice. A workforce problem can apply to my project; however it probably applies to all projects.

I have listed several problems that did occur with my project. They are the Workforce problem, the Curtainwall problem, and a Fire Protection problem. The Fire Protection problem isn't necessarily a direct problem to this project, but an opportunity to make it better. I have listed the steps I expect to take to research the Workforce problem. Then I have summarized how I would solve the other two problems themselves. In my Thesis proposal, I will resubmit what I have written about the Workforce solution, as well as extrapolate my solution summaries to a similar format.

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Critical Industry Issues

The PACE Roundtable was held at the Nittany Lion Inn, on October 24th. On the previous night, the PACE dinner gave us the opportunity to speak to the industry members, as well as to catch up with old friends. Throughout the second day, several industry issues were discussed in a Panel board format, rather than an actual break out roundtable.

First Panel – Workforce Development.

The first topic broached was about the Workforce Development. It was commented on that with the distrust of contractors, and the inherent “Dirty Job” image of our kind, that it is not a highly demanded job. One industry member commented that the industry could start to promote more associate’s degrees at junior colleges, as well as recruit directly from High Schools.

There are also a few children’s programs to develop their mindset that Construction is a respectable profession. The biggest one that most people would be able to name off the top of their head is Bob the Builder with the famous motto of “Can we build it? Yes we can.” On top of that, even back to my own childhood, construction toys of the machinery were very popular. I remember my yellow Caterpillar Front End Loader and Backhoe. With the discussion in one of the Construction Management classes, we joked about how it was important to correctly name the equipment to the children. This was shown to have an effect even to this day, with most of the class (including myself) being unable to differentiate between an Excavator and a Backhoe, and why they are different.

As well as the childhood development, there are many shows that document the construction process, and not just that fake show on ABC. If you were to turn to the Discovery Channel, or even the History Channel, you would discover many shows documenting the huge construction projects that some of us hope to attain to.

Another problem with the current workforce is the foreign labor that has been constantly increasing, with the influx of illegal immigrants. Many are hired for their ability to work for less, though not at bottom rates like most people think they make. This creates some problems, namely in lack of communication and skill. Our jobs and the work required are assumed to be easy, but hard labor. While some basic labor is needed on the jobsite, most of

Critical Industry Issues

the work requires skilled men and women. With the communication factor, it may even be a safety problem with the inability to communicate on the jobsite.

Second Panel – Building Information Modeling

Building Information Modeling is always a big topic in the Construction Industry. With the propensity of field busts, and the difficulty of coordination of building space for all the services needed, it can save the contractors as well as the GC a lot of money to avoid these problems. This is often referred to as the shortened term “BIM.” The use of BIM has grown over the years to the point where a specific conference was called discussing BIM. This conference was named the CONVR (Con-vee-are) for the name of Construction Virtual Reality, and was held the day before the PACE Conference.

Third Panel – Prefabrication

It always cost more money to fabricate something on site, than it does to make it offsite. When it is made on site, it costs labor, space and time to get it built. However, if it is built off site, it can save money due to the product being made by computer guided machines, as well as on site space and time. All the prefabrication would require is a lead time from being ordered to when it is delivered and placed on site. While the reward for ease of installation and time gained on the schedule is great, any problems that arise are suddenly much worse, due to the lack of being able to adjust the construction on site.

Critical Issues Research Methods

Industry Problem

One topic I am very interested in is how businesses are run, especially construction Companies. It is my desire to make the operation of these companies run better through more efficient processes, and for doing so, earning recognition and pay.

The largest problem I have identified is the problems with the Workforce. Currently with the flood of unskilled and illegal workers into our country, as well as a dwindling amount of skilled workers, it is argued over what is best for us. Are several less skilled workers who work for less pay worth more than one highly skilled worker?

Goal of Research

My biggest goal for researching the workforce is to arrive at a conclusion whether or not a group of unskilled workers can outperform a skilled worker in any or all categories of Quality, Schedule, and Finances. Like stated above, it is a perceived problem in the industry that we are having trouble attracting skilled workers. If I can quantify the difference between both a skilled worker and an unskilled worker for one or several different trades, then a business could make a more educated decision whether or not they can hire anyone, or even if it might be worth it to ship in workers from some other place.

Steps of Research

- 1.) Locate various projects throughout the immediate area to have a basis of comparison against my own project. Goal of 5.
- 2.) Pick one or two trades to compare throughout the projects.
- 3.) Collect information regarding scheduling, costs and quality.
- 4.) Perform take offs, and estimates. Try to estimate unit cost of the work being performed.
- 5.) Try to remove all factors except for skilled or unskilled that could skew the findings.
- 6.) Report findings

Problem Statements

Fire Protection

Safety has always been a concern for all in the building trades, as well as the owners. The current Fire Protection schemes are merely stop gap measures to prolong building and exit longevity for the occupants to leave the building. While this ensures as much safety for those who were in the building, it can be very hazardous for those who have to go in to save it. Firefighters can choose to risk their lives to save a building, or let it burn to the ground. After having talked to a few, I have even learned that there are several building types in which they will refuse to enter because of the direct danger to them.

Fire proofing isn't really fire proof, but fire resistant. Its goal is to delay the effects of the fire. A building owner or general contractor can make the building literally fire proof, but at an enormous expense to them, way above and beyond what a building should be worth. So the owner accepts some risk of the building being irrevocably damaged in a fire, while saving the cost of the building several times over. What if we could make the structure more secure and safe for the fire fighters to save our buildings?

Curtain Wall Delays

When I first picked this project, it was supposed to be very late in the construction stages. However, upon going on a site visit, I noticed that they were practically at the same stage as they were when I started. This problem was the delays in the entire construction phase of the glass curtain wall system. It has pushed back the date on which the clients can start their fit out process, or even dates for leases. If someone has already signed with Liberty Property Trust, then it hurts the relationship or bond between the two companies. Liberty relies heavily on the promise of good service.

Technical Analysis Methods

New Fire Protection Scheme

After having taken a class in Fire Protection, I became interested in a scheme discussed between the professor and myself. The premise of this scheme is changing how the sprinkler system is run throughout the building. Instead of running the sprinkler pipes up a central riser, and then branching off at each floor to cover the required floor area, the pipes would run up each and every column. Then it would branch off to cover the immediate area around the columns. This would make the running water near the columns act as a heat sink. The water will remove heat from the columns, prolonging their life in a fire. This could possibly reduce the danger to firefighters, and make the building safer after a fire.

For this, I will have to research how much heat a pipe could extract from the steel columns. I will also have to perform a cost evaluation because it is most likely more expensive. The big question would then be, if it works, does its performance outweigh the increased costs?

Curtain Wall Solutions

The biggest problem to fix with the curtain wall is that it needs to have its schedule accelerated. With the winter rapidly approaching, not only will the assembly of the glass portions become more difficult, but there would be cost ramifications to both delays of procurement, and general conditions costs. The General conditions would go up as the months add on for the cost of staffing, as well as possible heating costs. The expense of running over the projected finish time might not be so bad if none of the leasing contracts were yet signed. I will quantify all of these penalties, as well as search for options to speed up the process, or possibly even pick better curtainwall glass. If no viable solutions are to be found, I will accelerate other parts of the schedule.

Weight Matrix

Description	Research	Value Eng.	Const. Rev.	Sched. Red.	Total
Work Force	10	15		10	35
Fire Protection	25	10	10		45
Curtain Wall	10	5		5	20
Total	45	30	10	15	100