

The Arts & Humanities Instructional Building  
Howard Community College  
Columbia, MD

**TECHNICAL ASSIGNMENT #3**

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### **Executive Summary**

The following technical assignment begins to address some areas of interest to investigate more thoroughly in the future. The PACE Roundtable proved to be an excellent place to learn about emerging topics in the construction industry. A brief summary of the issues addressed are submitted in this document.

After some research into the Arts and Humanities Instructional Building, a few areas of interest have been presented. A closer look at these issues is performed to identify specific areas of study for the future. Along with analysis of particular problems, a research issue is identified.

The critical issue identified is sustainability, which cannot be overlooked. Green buildings and sustainable methods of construction are emerging topics and will only continue to grow. A closer look at how this can be incorporated into the analysis is presented in the following report. Researching how to make the AHIB a green building is the basis for research.

Three technical analysis activities are examined for additional research. They are site planning, sustainability, and constructability of the structural steel system. The AHIB will be studied to address how the analysis of the three topics can improve the value, constructability, and schedule of the project.

## *Critical Industry Issues*

### Executive Summary

Attending the PACE Roundtable was a great educational as well as personal experience. The two sessions I attended were both on Team Building. Team building is a very interesting topic since it can be applied to all projects. After the discussions in each session it is clear that the importance of team building can not be overlooked. Every project team has the ability to make a given project more successful. While different teams may function and act differently, all teams can affect the outcome of a project. Learning and communication are two of the most important aspects of team building. A team member needs to learn as much about other internal team members as well as project team members from different companies and backgrounds. Learning about your team members can better help you communicate and work with them and also motivate them. A clear communication path needs to exist for any project team to work well together. Communication can be enhanced through both formal and informal meetings. Many issues can affect how a team functions, but identifying them early in a project and understanding that they need to be addressed is a good step to having a profitable team.

Sessions attended were Team Building I and II

## SUMMARY:

### **Team Building I:**

#### **In-house teams and business development**

- Construction teams in the building industry are unique
- Teams are often changed from project to project
- The “best” team for one project may not be the best for another
- Experience can be passed down from veteran team members to new team members
- The industry sometimes feels that owners do not set realistic goals during the proposal phase of projects
- Know your owner to understand the level of technology required for a proposal team
- Don’t allow technology to control the team and the team’s direction
- A great way to learn about your team members is informal
- Companies employ a mentorship program to introduce new members to more experienced members
- Motivating individuals is both personally unique and position unique
- Surveys are sometimes used to assess the effectiveness of a team
- Teams can work together better by having a knowledge of everyone in the team
- As a team member, especially a new team member, identify a sponsor as well as a mentor
- Certain personality types can be placed together on a team to help a project team
- Some companies use personality tests to better understand their employees
- A project team needs to understand fully the proposal
- Project teams can work best together if they stay with one project for a long duration
- Realistically the best project team can’t be assembled for every project

## **Team Building II:**

### **Project-level team development**

- The best way a team can achieve success is through communication
- Past experiences can help and also hurt a project team
- Know the owner to understand the best way to communicate
- Learn the other project member's jobs to understand what they go through
- Spend time with the owner and get to know personally
- Learn where the funds for a project are coming from to better understand the projects goals
- Train people from within the company
- As a student, attend not only CM lectures but also hear from other areas of the industry such as architects or developers
- Try to develop better communication skills as a leader or team member
- Technical issues are easy to fix while poor communication hurts projects
- The best leadership style depends on situation as well as personality
- Different goals exist for different teams members, designers have different goals then builders and engineers
- Prequalification can help projects
- Learn from past experiences and projects

The most surprising aspect of the discussion was the openness of the industry members. Everyone was willing to help the students and talked to the students as individuals. It was an intimidating situation as first knowing that the attendees have many more years experience. However, it was clear from the beginning that everyone was willing to help.

The topics discussed were very interesting. They are issues concerning every project team for any project. The topics and discussions are very important since they can be applied anywhere and any time. What was surprising was the topics although they seemed complicated the answers proved to be quite simple. Little things like communication and getting to know coworkers personally can have dramatic effect on the outcome of a project. It was also surprising that many of the members in the session agreed what could help and hurt project teams. Many companies also had systems in place to address some of the issues, while some were individualized to a specific project.

The issues which may be applied to my project are the issues with assembling a team. Every project is different as well as every team and I am interested to learn how the in-house team for the construction manager was assembled. I am also interested to know how the type of owner has affected the way the project is being delivered. The construction manager has past experience with the owner and I'd like to investigate how much of an impact that had on the current project. An interesting question to look at further is how technology has helped or hurt my particular thesis project.

## **Problem Identification**

The Arts and Humanities Instructional Building has a few interesting construction issues that could be a possibility of research. Listed below are just a few features that could be pursued for additional analysis.

- The new AHIB is being attached to the existing Smith Theatre. A topic of investigation could be the structural interface between the existing structure and the new building. Additional load will be placed on the existing structure from construction loads and the new building loads. How this is addressed in design and construction is a possibility for additional analysis. Also, the additional coordination for the CM involved in attaching a new building to an existing structure. This could include a look at how the existing building is shut down and restricted for construction to occur. Coordination for the construction on this site is important. The considerations of constructing on a collegiate campus. The AHIB is constructed near a busy intersection of the campus as well as very near the entrance. Traffic problems may occur with students and other traffic.
- The coordination process between the construction manager and the owner. This particular owner does not have much experience with building construction. The role the owner plays on this project can be discussed. How involved the owner is on the design as well as construction update meetings can be used to identify what type of owner is considered better or worse from a design or construction standpoint.
- The AHIB is not designed to be a sustainable building. A detailed analysis of what it would take to make it sustainable is of interest. Topics such as recycling of material and construction waste would be considered. How the construction manager is able to manage recycling. The construction of the skylights. Specifically, the amount of day light that enters the building and what is required to be recognized as sustainable. Also, what it will take to replace the existing roof with a green roof.



## **Technical Analysis Methods**

### **Analysis 1: Site planning**

A detailed analysis of the site is among the topics of study for the AHIB. The site will be analyzed to determine the best scheme for the construction of the structural system. A study of the site may indicate a better construction sequence, a more efficient crane placement, and a better steel lay-down area. An analysis will be performed on how time can be saved if a new strategy is used. In addition, the site is on a college campus and deserves special consideration. Pedestrian traffic as well as neighboring buildings is the primary concern. Talking to the construction manager will help to determine what the current strategy for construction is.

### **Analysis 2: Sustainability**

An analysis of sustainability is the second study of the AHIB. Currently the AHIB does not have a sustainable roof. The study will focus on what it will take to change the roof of the AHIB to become a green roof, which requires a detailed look at how the green roof will impact the rest of the structure. In addition to the structural impact, the costs associated with designing and constructing a green roof will be considered. Research into green roofs and the construction methods used will be the starting point for this analysis. Talking to industry professionals who have designed a green roof or constructed one will aid in the study for the AHIB. Additional research will be done on other areas of sustainability such as recycling, using local materials, and pre-manufacturing.

**Analysis 3: Constructability**

The AHIB is attaching to an existing structure; this introduces a few design concerns. First, the existing footings may not be designed to meet the loads of a new building. Second, loads produced on the footings and existing building during the construction phase need to be addressed. A calculation of what the existing footings are designed for is required for this analysis. The study will be to determine if another structural system will cause fewer problems for site congestion and if the new system can minimize the loads on the existing structure.

**Weight Matrix**

Description	Research	Value Eng.	Const. Rev	Sched Red.	Total
Site Planning	10	10	10	10	40
Sustainability	15	10	-	5	30
Constructability	10	5	10	5	30
Total	35	25	20	20	100