

Prince
Frederick
Hall

Tech Three

Construction, Sowers, 15 November 2013, PSU AE
University Park, Maryland

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Executive Summary

This technical report addresses ideas to improve Prince Frederick Hall's schedule and value. It also presents ideas derived from PACE breakout sessions.

The schedule, while controlled by the Universities regulations, is accelerated once trades begin working floor by floor. Unfortunately it is also at risk from acts of God and student body activities among other unforeseeable events. However a plan to implement double shifts on site until the schedule is recovered should help to mitigate any delays caused by such events.

The University of Maryland has already done most of the value engineering work through other buildings on campus. At this point their master plan reflects exactly what they want and how they want it. However Clark Construction was still able to push the LEED certification to Gold despite the University requesting only Silver certification.

The PACE roundtables presented complementary ideas of creating effective teams and multi-trade prefabrication. While the prefabrication strayed into a conversation about the desired working conditions on site and in factories, the effective team breakouts sparked the idea to assemble a manual to hand to the University that explains all the features of Prince Frederick Hall. When suggested to Patrick Harrison, the idea of a 'building manual' was very well received.

Schedule Acceleration

The schedule for Prince Frederick Hall is truly controlled by the University of Maryland. They request there to be no work on commencement days and near final exams. Then request for work to occur at ‘reasonable’ times of the day was requested due to the proximity of the site to student housing. Despite this Clark Construction is still able to accelerate the schedule by having the trades overlap as they go through each floor.

Prince Frederick Hall is repetitive dormitory floors from the third floor up. Clark Construction was able to take advantage of this repetition to accelerate the schedule slightly. As one trade moved from the third floor up to the fourth, a new trade can move into the third floor. The repetitive nature of the floors will help each crew to become more efficient as they rise up the building. Unfortunately this will result in a large number of labors on site at any given time. Their safety is thus put back in the spotlight to ensure this method to accelerate the schedule doesn’t accidentally delay it further due to injury.

Delay Factors

Another means of “accelerating” a schedule is to have contingency plans for unexpected events. These events can range from weather to site injury to student riots. Each location can contribute unique delay factors.

Weather and other acts of God wouldn’t normally require a unique plan beyond the typical to get back on schedule. However, within the last five years the Washington D.C. area has not only experienced being in the direct path of Hurricane Sandy but also felt a 5.8 magnitude earthquake in 2011. There is no reason not to expect a repeat event. Having a plan for each phase to prepare the site would help prevent delays from material

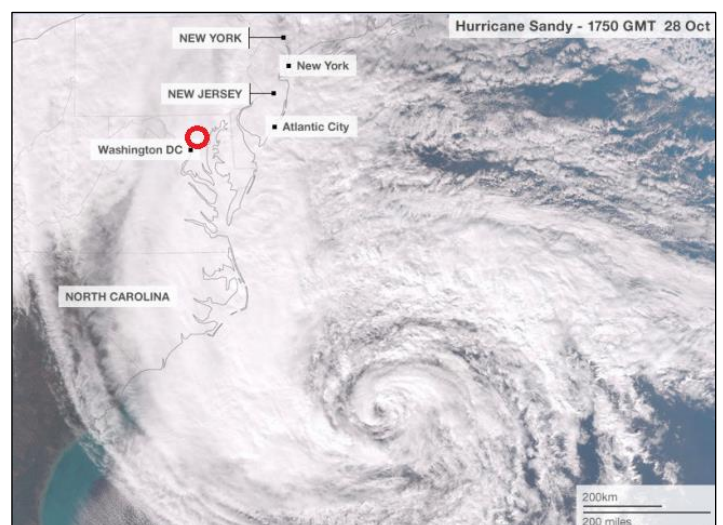


Figure 1: Hurricane Sandy with site location marked.

damage. Following up with a contact tree to ensure clear communication to contractors, staff and laborers would also ensure work resumes as soon as is safe.

Unique to a college campus is potential delays from the student body. Riots, celebration and other spontaneous events could pose a risk to the construction schedule and the safety of the site due to the proximity to student residences. Prince Frederick Hall is being built right next to four currently inhabited dorm buildings. Though riots are not common at the University of Maryland they generally occur on Route 1, thankfully a far distance from the site. However the student residents in the south quad of campus, if moving in a direct line to Route 1, go right over the site.



Figure 2: Map of South Quad with respect to Route 1

Scheduling two shifts per day should help to recover the schedule should one of the above occur and significantly delay Prince Frederick Hall. The University of Maryland has good reason for their time constraint on construction. While un-ideal working two shifts into the acceptable time frame per day would help to accelerate and recover the desired schedule.

Value Engineering

The University of Maryland places heavy emphasis on sustainability and the campus master plan. Because of this many of the value engineered ideas present in Prince Frederick Hall were merely carried over from other projects on campus. However this does paint a clear picture of the University valuing responsibility and sustainable options over monetary gain.

LEED

Since the University of Maryland is pushing for LEED silver in all new buildings it is a point of pride that Prince Frederick Hall achieved Gold status. While the vast majority of the LEED points were derived from materials, Environmental quality, and innovative design; the sustainable site category is where the value engineering makes an appearance. It is difficult to quantify how much time and money

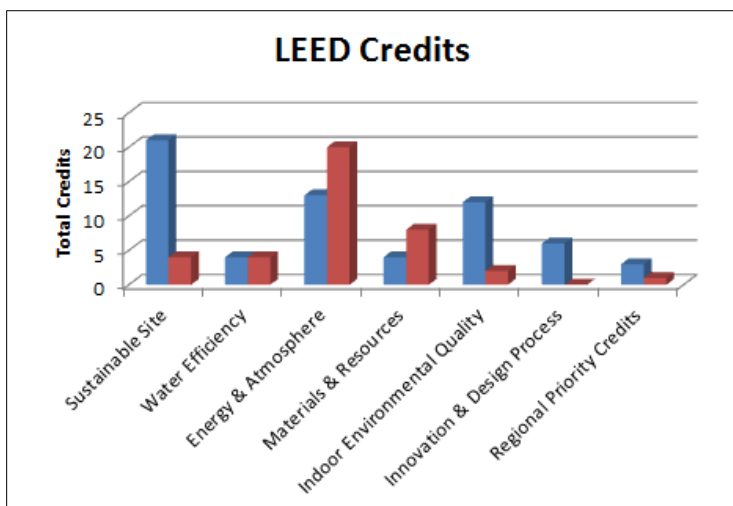


Figure 3: Current LEED points compared by Category

will be saved on final landscaping due to smart storm water management controlling runoff and preventing massive losses of topsoil on site. The variety of transportation options is also difficult to quantify. Also difficult to quantify is the value to the relationships between the University of Maryland, Clark Construction, and local suppliers since most materials used were local.

Campus Policy

As mentioned above, the University of Maryland has very specific ideas about what they want. The University has become comfortable with certain contractors and requests they be used. Since appearance is critical to the University of Maryland there is little to be done that largely impacts the visual image of the building. Unfortunately this controlled appearance is not limited to the exterior but goes all the way down to the appliances used and the door jams. The appliances present in each dorm room were briefly considered as a potential area to save money and energy. However the University

requested that all appliances be General Electric and Whirlpool respectively. While eliminating potential cheaper alternatives this does uphold established sustainability goals.

PACE Roundtable

Assembling Effective Cross Functional Teams

The first breakout attended dealt with the concept of how to assemble effective teams. The conversation centered not on how to make a team effective but instead how to find individuals who mesh well. The interview approach was examined at length. Initially the idea was to have an already effective team pulled together to present to the owner to give the owner more confidence in the team to be working on the project. By the end of the breakout the conversation had even touched on the idea of presenting mock projects for the assembled teams to demonstrate their effectiveness upon. It would be a day/half-day interview process per team but would give a great deal of initial feedback on the effectiveness of a proposed team before the actual project was even begun.

Since Prince Frederick Hall is already under construction it would be a waste to suggest reviewing the team currently assigned. However, the team to whom the dorm will be handed over will be a newly formed team. While there is no CM control over who the University places in this building there can be a 'cheat sheet' of building features to ensure the new team responsible for the building really understand what all is available and built into Prince Frederick Hall enabling them to be efficient right from the start.

Multi-trade Prefabrication

The second breakout approached the very broad topic of multi-trade prefabrication. It was distinguishable in that the focus was on MEP and other aspects of a building requiring input from multiple subcontractors. The discussion, though overpopulated with students, resolved in the idea that everything in a building *can* be prefabricated, but maybe shouldn't be on certain projects. Long distance transportation, site restrictions and worker mentalities were suggested as reasons to build on site instead of prefabricating. Still, the suggestion that, somewhere, everything in a building can be prefabricated and then assembled on site was supported.

Due to the repetitive nature of Prince Frederick Hall suggesting prefabrication efforts on the residential levels is obvious. However the lower floors and sheer amount of concrete would provide arguments against prefabrication. The access road may also provide argument against large prefabricated sections. Prefabricated MEP units per room however may still be a viable option. Not only would such prefabrication help to speed up the schedule, it would also simplify repairs due to the standardized nature of prefabrication.

Industry Leader Breakout

Patrick Harrison, the main speaker for the 2013 Fall PACE Conference was kind enough to offer feedback on the potential breadth ideas above. He was especially supportive of the idea of presenting a manual on the building to the team that will be responsible for Prince Frederick Hall. He voiced the opinion that often Owners don't fully understand all the features of the building they are receiving. Unfortunately there was little time to discuss other potential breadth ideas.

Conclusion

Prince Frederick Hall is a relatively simple building. It is sustainable and has many technological features, but it is repetitive with a fairly long schedule and a knowledgeable owner. However there are many breadth opportunities derived from the breakout topics presented at the PACE conference.