Critical Research Method:

LEED rating as well as sustainability design have grown immensely in population. What began as a program for awareness quickly became the most popularly used rating system in the country. LEED is growing in popularity but is it the best rating system that can be used? Some owners such as the University of Maryland have actually decided to avoid LEED rating all together. Instead they are attempting to attain what they as a University and owner feel is both green and sustainable design. Rather than attempt a LEED rating they have decided to those LEED points and areas of design that most appropriately fit their circumstances. They do not believe in the complicated nature of LEED, but rather in the importance of sustainability and green.

Many rating systems have been discovered since that of LEED. One of the strongest and most different is that of Green Globes. Green Globes is a system that is questionnaire driven. At each stage of the design process the users are walked through a logical sequence of questions that allow them to assess the project and its level of sustainability. This process begins with the construction documents and continues all of the way through the completion of the project. It is step by step and attempts to walk the project team through the ability to attain a sustainable design.

This theory is very different than that of LEED. LEED chooses to value points at the end of the project that will be awarded and then will assign a rating at the end of the point system. Is LEED the most popular rating system simply because it was one of the founding father in the awareness of sustainability and brought green design to the next level? Many owner and contractors are not satisfied with LEED due to its complicated nature and lack of help throughout the project.

Green Globes is precisely the opposite, but is it not being used because it is not as recognizable as LEED. LEED ratings are highly recognizable and many people understand the differences in the ratings. Converting to a whole new rating system would cause contractors and owners to switch methodology and learn an entire new system.

Not only is switching to a new rating system available, but also the University of Maryland's alternative must be analyzed as well. Does it make more sense for Universities and other large owners to simply pick and choose from LEED and simply

allow for what they feel is both sustainable and green? This would save the owners up front cost while still attempting to help with future sustainability and the changing use of the buildings.

Through both interaction with owners, and contractors with both interviews and surveys it is important to determine what is considered important to each stakeholder in construction and give them options to determine which they feel is most appropriate for construction and the future of sustainability.

This topic is crucial for our industry as a whole. There are many misconceptions with LEED rating but also with many of the other systems to determine sustainability. If this is going to be the "future" of our industry than it is important to determine where rating will be in the future so that adjustments can begin to be made.

The ASHA building is attempting a LEED silver rating. This issue is critical to them because they are an inexperienced non-profit organization. Therefore, LEED rating was more than likely suggested to them without truly looking at other possible systems. If they had been given other options such as Green Globes they may have chosen to follow a different type of path for their building.

Value Engineering Analysis:

Although the ASHA has not had any concerns with the schedule or cost of the project other than a few concerns with permits there is always room for value engineering and changes on the project. The project is a mix of C.I.P. with a steel skeleton and a pre-cast façade with a glass curtain wall on the south face of the building. One concern of the Project Manager was the steel procurement. If the early permits had not been delayed, therefore pushing the start date of the project back, the delivery of the steel may have been a very serious concern for the project. The schedule is crucial for this project because while the construction is actually being completed the ASHA is paying rent back to the original building that was their headquarters. Therefore, any delay on the project that would prevent the ASHA from moving into the new headquarters on time could cost the owners money not only on the project but also in rent. In an area that is so densely populated with C.I.P. the project could have been designed as a C.I.P. This would have avoided any lead time and the possibility of losing valuable schedule time while waiting for deliveries. Not only could the schedule possibly been improved, but the cost of the project may have been lowered. If the steel columns had been replaced with C.I.P. due to the high availability in the area, skilled workers, and rising cost of steel a C.I.P. project may have saved money.

There will be a re-design of the structural steel system as a C.I.P. system to determine whether or not it would save money as well as schedule impacts, while maintaining a LEED silver rating. The ASHA is attempting LEED silver therefore with the change of the structural system it will still need to be shown that the project would be able to be LEED certified as concrete rather than steel.

Although LEED was used as the rating system for the project it may have been due to the inexperience of an owner and what was explained to them as the most popular system. Although LEED is currently the most popular rating system it is intriguing to determine why this project decided to have not only a LEED rating but also a LEED silver rating. If Green Globes had suggested could it possibly become the system used by the ASHA. Also if at the end of the project a silver rating is unable to be attained then

perhaps Green Globes could have been the system used which would have prevented mistakes from occurring or slight over sites that cost the project points.

The owner will be surveyed and asked about the importance of LEED and why it was selected as well as given the opportunities to examine Green Globes and understand the differences between the two and determine which was seen more fit for the project. Since Green Globes walks through the entire project from the beginning money may have been able to be saved in value engineering while maintaining sustainability. Also the potential to avoid problems with LEED that may cause a delay or late start could have been taken advantage of by the use of another system.

Another concern that may fall into the hands of an inexperienced owner, what was suggested and finally used, was the procurement method. A traditional design – bid – build method was used even with such importance placed on the project schedule. Davis attempted to convince the owner to go design – build however due to the inexperience of the owner and reliability that is believed to exist in a traditional method it was selected by the owner.

Design – build provides the opportunity for value engineering to occur and mistakes to be corrected before they occur in the field. If the project had been design – build the CM would have been able to be apart of the design, work with the LEED rating but also adjust the design to affect the schedule and cost. It is of interest to determine why design – build was avoided and then to look at the schedule of the project as design – build and how it may have been affected. Davis may have had ideas for design – build and why it would have been more effective in all levels. It would also be helpful to determine why so many owners still shy away from design – build and what needs to change in the industry for the importance of design – build to be determined.

Constructability Review:

Although there have not been any true coordination problems since the project is still early in construction. The steel could have presented a concern. If permits had not delayed the project the steel may have delayed the project. Since the project is occurring on fifteen acres of land lay down area as well as machine storage is not a concern. Therefore if the project had been all C.I.P. there is plenty of area to provide space to construct forms, place them and then pour. A small batch plant could have even been placed on site to improve the speed of the project. Multiple cranes including a tower crane were both brought onto and then removed from site depending on the use of C.I.P., steel, or pre-cast. Some of these crane changes could have been avoided on site if the system had remained highly consistent throughout the building.

Although the building is attempting a LEED certification the mechanical system is one of the only ways they are attempting to be energy efficient. The building has an entire glass curtain wall that faces primarily south. The glass however in this curtain wall is primarily for aesthetics, although it does help with energy absorption for the building and for heat. That however is not the only option to conserve energy in the building. The finishes on the other side of that curtain wall with also play a large role in the consumption of energy for the building as well as other glass options that were not considered. The mechanical system is of a medium size located in the basement of the building however it could have been made even smaller if slight adjustments had been made to the finishes and glass used. There is a new type of glass that actually has a type of solar panel in it and is quite proven. This would increase the upfront costs of the building however if sustainability and energy are the long term goals this could help greatly. Also it makes a statement that a non-profit organization that is not only concerned about those with disabilities is also concerned about the environment and how it is affected in the future.

Schedule Reduction/Acceleration Proposal:

Although the project schedule has been running smoothly there is always room for improvement. The switch from steel to C.I.P. could improve the schedule depending on how it was handled on site. If the procurement had become a concern then the C.I.P. would have greatly helped. Since the site is so large a small batch plant could be used forms could be created and ready on site and the pours could occur quickly.

The procurement method however is where true time could have been saved. If design – build was selected it would have allowed the CM firm to be involved in the beginning. Any opportunities to resolve conflicts that may occur in the future or strange aspects of the design that could have been value engineered and improved were lost due to the method procurement. The schedule will be re-examined from a design – build aspect and mistakes that may happen in the future will be examined as whether or not they could have been avoided in a design – build project.

Trade conflicts will also be continually analyzed as the project continues. Trades are just beginning to work on the project and any conflicts will be noted, and analyzed as to why they occurred and how they could have been avoided before the trades even arrived at the job, which would help the schedule greatly.