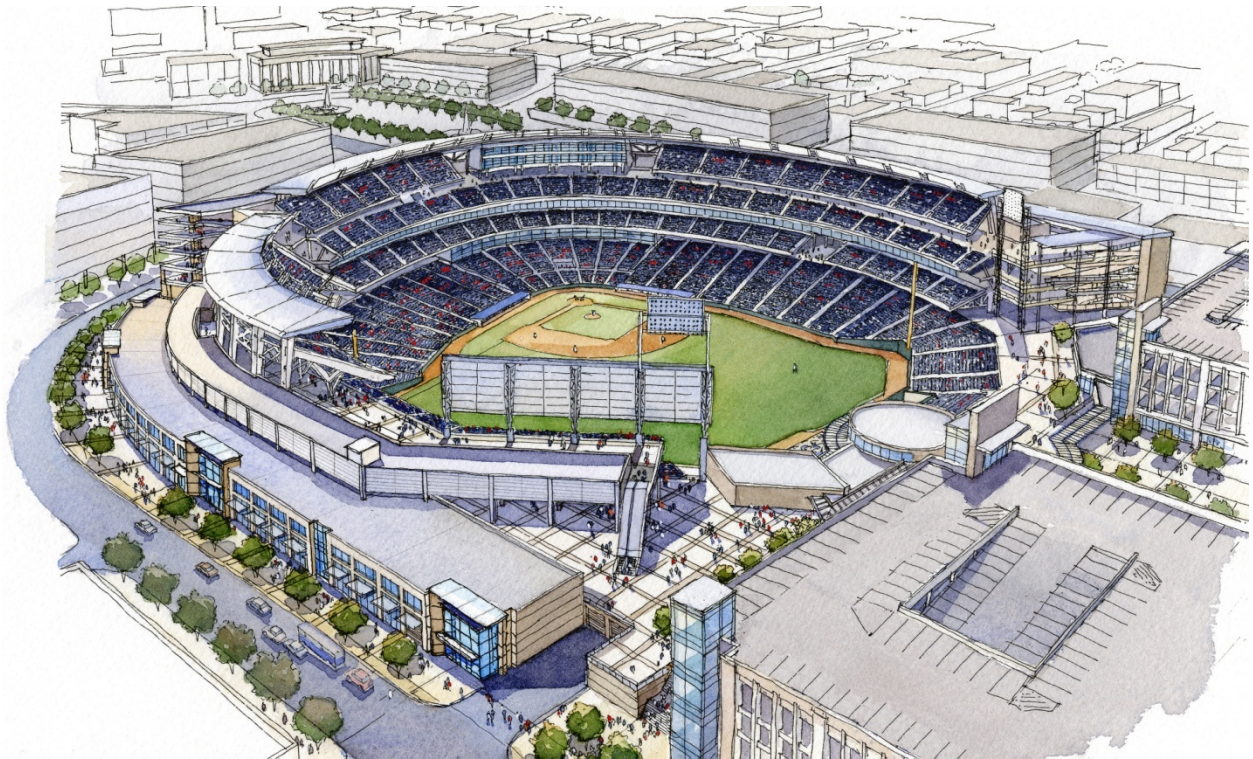


THE WASHINGTON NATIONALS BALLPARK
WASHINGTON, DC



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Thesis Proposal



Thesis Proposal

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Executive Summary

The Washington Nationals Ballpark is a fast-tracked design build baseball ballpark located in the SE of Washington, DC. The ballpark is set to be completed by opening day for Major League Baseballs Washington Nationals in April of 2008. Three major general contractors in the DC area formed “A Joint Venture” to become Clark / Hunt / Smoot, to oversee the ballparks erection. The ballpark is the creation of another joint venture in HOK Sport and Devroux and Purnell, the architects who came together to create the beautiful, and unique ballpark. The project has the largest construction cost ever to date for a Major League Baseball stadium with an overall project cost of \$611 million.

This is the proposal for the Spring 2008 Thesis on The Washington National Ballpark at The Pennsylvania State University. This will focus on four different areas of research:

Analysis 1 – Joint Ventures

The research is about how a joint venture was and can be used. It also looks at the advantages and disadvantage of having multiple construction companies as the general contractor working together as one project team.

Analysis 2 – LEED Improvement (Breath Topic)

This analysis will discover what could have been done to improve on the LEED Certified rating by looking at how they could achieve a LEED Silver or Gold rating, specifically looking at the lighting design criteria. There will be a redesign of the lighting in the luxury boxes, a major contribution to the ballparks income.

Analysis 3 – Structural Redesign (Breath Topic)

There will be a redesign of the structural systems specifically looking at using an all steel structural system and an all concrete structural system. It will look at the benefits and trade offs that will deal with the use of the different systems as well as cost impact and the project schedule impact that the 2 different structural systems will effect.

Analysis 4 – Site Congestion

The ballparks site has major issued with congestion. There are major concerns with not only access to the site but the site logistics as well. There is very limited space to use for material lay down areas.



Analysis 1 – Joint Ventures

Background

The ballpark is an extremely unique project that has many different companies coming together to form a joint venture to make the ballpark come to life. The project is being delivered as a fast-tracked design-build project. The design team of HOK Sport, and Devroux and Purnell, formed a joint venture to act as the architects of the project. Three major local general contractors, Clark, Hunt, and Smoot formed a joint venture to work together as one construction company and perform the work as the construction managers on the ballpark. They assumed the design team contract with the owner creating a large design build firm.

Problem Statement

How can creating a joint venture between multiple companies benefit or hurt the project?

Goal

The goal of the research is to see how the joint venture was used and the advantages and disadvantage of having multiple construction companies as the general contractor. The audience will be future companies interested in forming a joint venture to win projects. The study will be on how the design team and the construction managers team worked together to create a successful project. It will look at issues that arose from a creating a joint venture by different companies and the advantages and disadvantages they had dealing with working together.

Steps

1. Contact members of project team for the ballpark that work for Clark, Hunt, and Smoot and gather their opinions about working on the joint venture by creating a survey they can complete.

Sample Survey Questions:

- How many joint venture project have you worked on before? Project name, and companies involved in the joint venture.
- What did you feel were the advantages of the joint venture?



- What did you feel were the disadvantages of the joint venture?
 - What was the project delivery system of the joint venture project?
2. Research other projects where companies have come together and formed a joint venture.
 3. Contact members of those projects discovered in Step 2 and send out the sample survey.
 4. Compare results from the ballpark and the other project team's answers for the survey.
 5. State recommendations and issues discovered from the results.

Expected Outcome

By creating a successful survey that can be given to both the design team and the construction team that are involved with the ballpark as well as members of projects teams that work together in other project on a joint venture, a better understanding can be gained about the benefits and issues they had as working together as a joint venture.



Analysis 2 – LEED Improvement (Breath Topic)

Background

The Nationals Ballpark is working toward achieving a Leadership in Energy and Environmental Design (LEED) Certification. Clark, Hunt, and Smooth are trying to make it the most sustainable professional ballpark in the country when it gains the ranking of Certified by the U.S. Green Building Council. There are many critical issues that can arise when trying to accomplish a LEED Certified Rating.

The ballpark will contain:

- Enhanced sandfilters to screen organic debris (peanut shells, hot dogs) and re-direct bowl wash-down sanitary system
- Reserved parking for fuel efficient vehicles and carpools
- Low emitting materials in the paint, carpet and adhesives
- High efficiency field lighting – 21% energy savings
- 20% recycled content in construction materials

Problem Statement

How can they improve on the LEED certified rating?

Goal

The goal would be to discover what could have been done to improve on the LEED Certified rating by looking at how they could achieve a LEED Silver or Gold rating, specifically looking at the lighting design criteria.

Steps

1. Review what points the ballpark is using to achieve a LEED Certified rating.
2. Look for areas of improvement to help achieve a LEED Silver rating



3. Specifically look at the lighting systems selected and see where they can be used to improve the LEED Rating.
4. Look into the redesign of the luxury boxes lighting systems that will decrease energy consumption and still create an optimum lighting design.
5. Recommend the lighting design for the luxury boxes
6. Recommend ways to improve the LEED rating

Expected Outcome

The expected outcome is that a great LEED rating can be achieved by redesigning the lighting systems.



Analysis 3 – Structural Redesign (Breath Topic)

Background

The ballpark is a combination of steel and cast in place concrete. The structural steel is unique because it is only located in the structures above the Club Level as well as in the scoreboard in the right field. Cast in place concrete was used for the load bearing foundation walls below the Club Level.

Problem Statement

All Steel vs. All Concrete vs. Combination of Steel and Concrete

I would like to look into using an all steel structural system and also into the use of an all concrete structural system.

Goal

I want to look at the benefits and trade offs that will deal with the use of the different systems. I will specifically look at the cost impact and the project schedule impact that the 2 different structural systems will effect.

Steps

1. Review the existing structural system that was selected by the design team for The Washington National Ballpark. Specifically look at the analysis of the cost from Technical Report 2: Alternative Methods and Research.
2. Find a typical bay for the redesign of the structural system.
3. Redesign the typical bay with an all steel structural system.
4. Develop an overall cost that relates to the redesign for an all steel structural system.
5. Look at the cost issues related to the redesign of an all steel structural system.
6. Create a schedule breakdown for the proposed steel structural system.
7. Redesign the typical bay with an all concrete structural system.



8. Develop an overall cost that relates to the redesign for an all concrete structural system.
9. Create a schedule breakdown for the proposed concrete structural system.
10. Compare the results for the different benefits and drawbacks to selecting the different structural systems

Expected Outcome

The expected outcome is that I will discover a cheaper and faster way for the construction of the ballparks structural systems by the analysis of the alternative options selected.



Analysis 4 – Site Congestion

Background

The ballpark site has major issues with site congestion. The site itself is packed along the Anacostia water front with only one main road surrounding the ballpark. In the June of 2007 the city of Washington, DC closed the main access bridge so it could be reconstructed to handle the new ballpark traffic. There are major concerns with not only access to the site but the site logistics as well. There is very limited space to use for material lay down areas.

Problem Statement

Due to the ballpark's major congestion issues I would like to propose multiple solutions to the issues concerning the little space available.

Goal

I believe that by proposing different solutions there could be some better uses to the space available on site.

Steps

1. Analyze the existing site conditions for the ballpark after the playing field is no longer able to be utilized as a lay down area.
2. Research how other downtown DC construction sites make the most of their site.
3. Come up with alternative solutions to the existing site issues.

Expected Outcome

If the site is greater utilized there will be fewer obstructions that the individual trades will deal with on a daily basis.

Weight Matrix

Description	Research	Value Engineering	Constructability Review	Schedule Reduction	Total
Joint Venture	15	5	X	X	20
LEED Improvement	5	10	10	X	25
Structural System	5	10	10	10	35
Site Congestion	5	10	X	5	20
Total	30%	35%	20%	15%	100%