

Dan Baker  
Construction Management  
Faculty Advisor: Dr. Riley  
Bed Bath & Beyond/  
Christmas Tree Shops  
100 Ikea Drive  
Paramus, New Jersey

# Thesis Proposal

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## Executive Summary

In this proposal, you will find three analyses that will be conducted on the Bed Bath & Beyond / Christmas Tree Shops in Paramus, NJ as well as the retail market in general. The purpose of this document is to give the reader an understanding of each of these analyses in regards to their goals, methodologies and expected outcomes. The overall themes of these analyses are investigating the integration of sustainable building methods into the retail market. They will focus on making an appeal to an owner to improve their buildings with LEED certifications without compromising the values they currently have for the construction of their retail locations. The following analyses will be summarized in this proposal

### Analysis 1 – Critical Issues Research - Sustainable Buildings and the Owner

This will include the research to compile the values of retail market owners, as well as the life-cycle benefits of LEED buildings over industry standard buildings.

### Analysis 2 – Technical Analysis – Project Acceleration

This will look at the cost of reducing the buildings schedule by 10-15%. Additionally the importance of reducing a schedule to help aid a LEED rated building avoid late completion penalties will be addressed.

### Analysis 3 – Technical Analysis – Value Engineering

An Investigation will be conducted to find aspects of the building that can be changed to reduce the overall project cost without impacting the quality of the building.

# Analysis 1 - Critical Issues Research

## Sustainable Buildings and the Owner

### *Depth*

#### **The Problem:**

LEED rated buildings are being built at a record pace and are starting to make their way into many different portions of the construction industry. The retail portion of the industry however, has yet to follow this trend. The most simple reason for this is owners are concerned with the initial cost and project duration above all else. Buildings are built from designed prototypes and then put out for bid to General Contractors, therefore there are not many design-build opportunities and the appeal to build sustainably must be made to the owner.

#### **The Goal:**

To more fully understand the values and concerns of owners in the retail market in regards to LEED projects and attend to them with a compilation of research.

#### **The Methodology:**

1. Provide data on past projects, built under LEED certifications using the United States Green Building Council (USGBC) and the U.S. Department of Energy. This data on LEED rated and non-LEED rated projects from D4 Cost databases will include:
  - Square Footage
  - Initial Cost
  - Life-Cycle Cost
  - Overall Project Savings
2. Compile information that establishes the potential long term benefits of building green in regards to building energy performance and building function performance.
3. Originally I intended to create a questionnaire for construction companies to find out their problems and successes with LEED projects, but the feedback of my oral proposal have led me to focus on questioning retail owners alternatively. Their feedback is very important in understanding what values a LEED project must follow to appeal to them and make progress in the retail market

#### **Expected Results:**

I expect to find that retail company owners place their values in having a high quality building that is as schedule and initial cost focused as possible, however I do believe that cheaper life-cycle costs will appeal to them greatly and as long as projects can be completed in a similar time frame and budget they would be willing to go along with a LEED agenda. I believe that data collected from past LEED rated projects will prove them to be very cost efficient throughout their life-cycle.

## **Analysis 2 – Technical Analysis**

### **Project Acceleration**

#### ***Breath***

#### **The Problem:**

With sustainable construction methods, an accelerated schedule may be necessary to compensate for some of the additional durations of trying new green construction methods. Some of these construction methods and materials are unfamiliar to specialty contractors; time for a learning curve would be beneficial. In sustainable projects, usually there must be extra scheduled time for additional commissioning and ventilating periods. Additionally scheduled tasks may be detrimental to a project that needs to be completed quickly and owners will not be interested in green projects if they prove to compromise their grand opening dates.

#### **The Goal:**

I intend to provide a cost analysis to reduce the project duration by 10-15% and make a comparison between that cost and the cost savings from similar LEED projects from the previous analysis. Allowing the owner to see the direct cost of accelerating a project can possibly put to rest some of their concerns in relation to project duration.

#### **The Methodology:**

1. Determine the cost of accelerating a project by increasing crew sizes as well as increasing man hours and accounting for overtime wages. The wage rates can be found using R.S. Means literature and programs.
2. Analyze the project specific penalties for late completion and compare them to the cost of accelerating the project
3. Analyze the project specific incentives for early completion and compare them to the cost of accelerating the project.
4. Create alternate phasing plans to accelerate the project without increasing the cost substantially.

#### **Expected Results:**

I anticipate there will be a consistent increase in the cost of a scheduled task by accelerating it, however I believe in the majority of the cases the increase in cost will be significantly lower than the penalty for completing the project late. Another aspect of completing a project on schedule, that can't be quantified with a cost value, is the maintaining of a good relationship between the owner and the general contractor as well as maintaining a good reputation.

## **Analysis 3 – Technical Analysis**

### **Value Engineering**

#### *Breath*

#### **The Problem:**

The retail market spends a lot of money to insure that their retail locations reflect the quality of the products they sell. They are displaying their company logo all over the building and can't afford to reduce the quality of their building just to save money. This situation will direct my efforts to portions of the construction that won't have visible downgrades associated with their cost reduction. Additionally, LEED rated projects sometimes come with a premium price tag and in an effort to appeal to an owner these premiums must be counteracted with value engineering ideas.

#### **The Goal:**

To provide substantial cost savings via value engineering in order to not deter an owner from pursuing LEED certifications on a project.

#### **The Methodology:**

1. As per the recommendation of Mr. Holland I will analyze some cost reduction opportunities to the fixtures of the retail spaces. They typically contain a higher percentage of overall project cost for retail projects than other types of buildings.
2. Analyze other portions of the building for value engineering opportunities including; MEP and structural portions of the design. Any changes that would decrease the visible quality of the building will not be considered. R.S. Means literature and programs will again be used for cost information
3. Determine the constructability of any changes and their potential impact on the projects schedule.

#### **Expected Results:**

I anticipate that, although the building has been professionally and thoughtfully designed, there will be portions of the design and construction that have more efficient solutions. I also believe that there are enough value engineering opportunities on the project to offset a high percentage of any additional costs for getting LEED certification.

## Research Weight Matrix

Description	Research	Value Eng.	Const. Rev.	Sched. Reduc.	Total
Sustainable Construction Issues Research	50.00%	0.00%	0.00%	0.00%	50.00%
Value Engineering Analysis	0.00%	15.00%	10.00%	0.00%	25.00%
Project Acceleration Analysis	0.00%	0.00%	0.00%	25.00%	25.00%
<b>Total</b>	50.00%	15.00%	10.00%	25.00%	100.00%