OPPIN STATE UNIVERSITY
HEALTH & HUMAN SERVICES BUILDING
BALTIMORE, MARYLAND

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Proposal

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A. Executive Summary

This document is intended to outline the issues I plan to research in the spring. Two technical issues and one industry issue will be explored throughout the spring semester. The technical issues will focus on Coppin State University's Health and Human Services Building's solar heat gain from an existing sunshade and the redesign of the lighting scheme for the overhead pedestrian bridge. The industry research will discuss ways to protect a guaranteed maximum price (GMP) or estimate in the current market by focusing on controlling the risk of escalating material prices.

Breadth #1 – Solar Shading

The technical research will focus on the effects of lowering an existing sunshade to reduce solar heat gain. Once the sunshade is lowered the optimal length of the sunshade will be calculated to minimize initial and operating costs.

Breadth #2 – Overhead Pedestrian Bridge Illumination

The technical research will focus on developing a new lighting scheme for the overhead pedestrian bridge to create a prestigious symbol for the college while maintaining illuminance levels.

Industry Issue – Material Cost Escalation

The risk of a GMP due to volatile material prices will be assessed by analyzing the trends in the cost of steel, concrete, and drywall.

B. Breadth #1
Solar Shading Technical Analysis

Problem

The existing sunshade on the fifth floor is located 4'-1 ¾" above the head of the window. The sunshade currently serves as a capitol to complete an aesthetic look the architect is trying to achieve.

Goal

The goal is to lower the sunshade to the head of the window to reduce the amount of solar heat gain. Once the sunshade is lowered the optimal length to reduce initial and operating costs will be calculated.

Methodology

1. Develop a Microsoft Excel program that will calculate the current solar heat gain of the existing sunshade.
2. Speak to the sunshade manufacturer to find the properties of the existing sunshade.
3. Calculate the differences when the sunshade is lowered.
4. Consider the structural effects of lowering the sunshade.
5. Find the savings and costs from the sunshade.
6. Compare savings of extending the sunshade for each additional foot.

Tools

-Microsoft Excel
-Professor Moses Ling
-Reynolds "Mechanical and Electrical Systems for Buildings"

Expected Outcome

The redesign of the sunshade will decrease the about of solar heat gain for a first year savings and a continual yearly savings. The increase in materials and labor of extending the sunshade may ore may not prove to be a beneficial cost savings.

C. Breadth #2
Illumination Technical Analysis

Problem

Coppin State University has many programs that serve the community including an outpatient health clinic and an early childhood development center. The overhead pedestrian bridge spans North Avenue and connects new campus to old campus. The Health and Human Services Building is the first of many buildings located in new campus. The bridge can be seen by everyone who drives up and down the four lane street of North Avenue. The current lighting scheme is ordinary and industrious.

Goal

To redesign the lighting scheme to create a prestigious symbol for the college that will highlight their efforts to build a connection to the community. This will be accomplished by hiding the light source while highlighting the structure and architecture of the bridge. The illuminance levels recommended by the IESNA Illumination Handbook will be maintained.

Methodology

1. Build a three dimensional model of the bridge in AutoCAD.
2. Develop renderings of the existing conditions using AGI.
3. Choose fixtures for the new lighting scheme.
4. Develop renderings of the redesign conditions using AGI.
5. Consider the electrical impacts of the redesign.

Tools

-IESNA Illumination Handbook
-Microsoft Excel
-AGI
-AutoCAD
-Fixture Manufacturers'' Websites

D. CRITICAL INDUSTRY ISSUE
MATERIAL ESCALATION

Problem

The volatility of construction materials in the current market has increased the risk of a GMP. This was especially true for the budget of The Health and Human Services Building at Coppin State University because the project was bid in three phases over a ten month period and Hurricane Katrina hit weeks after the estimate was performed.

Goal

The goal of the research is to track the trends of different material prices and create a tool to help assess the risk associated with each material. The materials chosen to research are steel, concrete, and drywall.

Methodology

-Compare prices of each material over the past five years.
-Review literature about the changes of material prices after natural disasters occur.
-Compare the trends of material escalation to the escalation of gas prices.
-Compile results to create a tool that will help to identify the risk of each material.

Tools

-Microsoft Excel
-ENR Database
-AGC Material Escalation Report

Expected Outcome

The tool created from this research will allow owners, designers, construction managers, and contractors to assess the risks of the proposed materials for the job trying to be completed.

E. Weight Matrix

The matrix below depicts how I plan to distribute the time spent on my senior thesis.

Description	Research	Value Engineering	Constructability Review	Schedule Reduction	Total
Analysis 1 - Solar Shading	10%	5%	45%	40%	100%
Analysis 2 - Illumination	5%	60%	20%	15%	100%
Issues Research - GMP Protection	85%	5%	5%	5%	100%
Total	100%	70%	70%	60%	