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Lighting / Electrical
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Natty Boh Building
Baltimore, Maryland



Thesis Proposal: Fall 2005

Executive Summary

In the spring, I will be addressing in depth the lighting and electrical systems of the Natty Boh building. The four spaces I chose will be redesigned from a lighting standpoint with comfort and efficiency as my primary goals. The electrical work will then be resized and redistributed as necessary.

In addition to the depth work, I plan to determine the feasibility of implementing a solar system on the roof to help shoulder the energy demand. I will also examine the existing mechanical equipment and how it interacts spatially with the electrical, solar, and lighting equipment.



Background

Brewers Hill is located on the corner of Dillon and Conkling streets in the Inner Harbor district of Baltimore, Maryland. The site spans 150 acres and contains ten buildings that housed the Gunther Brewing Company for 60 years during the first half of the 20th century. The entire site is now being renovated into a “downtown” district in an attempt to re-energize the area.

One of the buildings being renovated is known as the Natty Boh Building. It is going to house a multitude of different clients, including self storage, day care center, and offices with plans to include retail and possibly restaurants on the street level.





Depth Work: Lighting Design

In each of the four unique spaces within the Natty Boh building the lighting will be redesigned. The spaces are the day care center, conference room, lobby, and parking & rear façade.

The goal is to achieve the proper light intensity while maintaining a comfortable atmosphere; and to address the individual needs of each space in an efficient manner. The design goals for each space were explored in Technical assignments #1 and #3, and further expanded upon during the presentations at Lutron (comments can be found on updated tech #3). The spaces also need to adhere to the latest ASHRAE standards for energy consumption.

The luminaires for each space will be chosen and analyzed in AGI32 to insure that the design goals are met with lighting levels and ratios. Hand calculations will be done to insure that energy consumption standards are met. Detailed renderings of select spaces will then be created to get a feel for what the spaces will actually be like with my design implemented.

Breadth Work: Solar PV System

With the increasing energy costs and environmental concerns related to conventional energy methods, I plan on evaluating the feasibility of using a photovoltaic array on the roof of the Natty Boh building to help meet the energy demands of the building. Some of the factors to be considered are energy load capability with the current roof area, initial cost, and simple payback period.



Depth Work: Electrical

The possible use of a photovoltaic system and my desire to implement more flexibility into the lighting in the spaces may dramatically change the layout and size of the electrical distribution system within the building.

The electrical system will be resized based on the new design loads due to changes in the lighting and control systems. It will then be integrated with the pv system to allow for uninterrupted energy supply regardless of weather. Electrical equipment may also be relocated depending on the exact needs of the pv system and lighting controls.

Breadth Work: Mechanical

The mechanical equipment within the Natty Boh building will be affected considerably by the changes in the lighting and electrical work, specifically the space above the conference room ceiling and the roof. I plan on increasing the ceiling height within the conference room, and the Solar system will need as much space on the roof as I can manage. Therefore, I will be evaluating the mechanical equipments layout and location and relocating as needed to achieve a single, cohesive design.



Tentative Schedule

Week	Tasks
12.16.05 - 1.08.06	Christmas Break
1.09.06 - 1.15.06	Finalize Autocad Models
1.16.06 - 1.22.06	Select Lighting Fixtures and Secure .ies Files
1.23.06 - 1.29.06	Import Autocad Models into AGI & Complete Lighting Analysis
1.30.06 - 2.12.06	Design Photovoltaic Array for Solar Breadth Work
2.13.06 - 2.19.06	Calculate Building Loads
2.20.06 - 2.26.06	Resize and Relocate Electrical Equipment
2.27.06 - 3.05.06	Relocate Mechanical Equipment
3.06.06 - 3.12.06	Spring Break
3.13.06 - 3.19.06	Complete Unfinished Tasks
3.20.06 - 3.26.06	Prepare Final Thesis Booklet
3.27.06 - 4.02.06	Prepare Powerpoint Presentation
4.03.06 - 4.09.06	Presentation Practice
4.10.06 - 4.16.06	Thesis Presentations