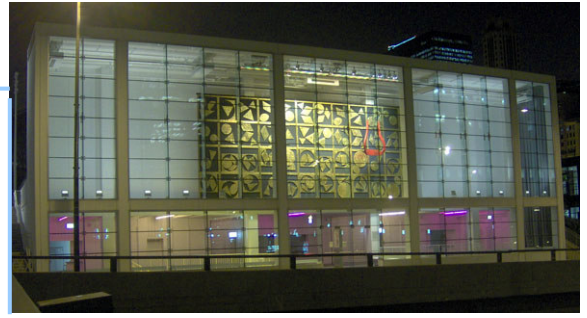


Lindsey Beane

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Professor Mistrick
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Chicago, IL

Thesis Proposal



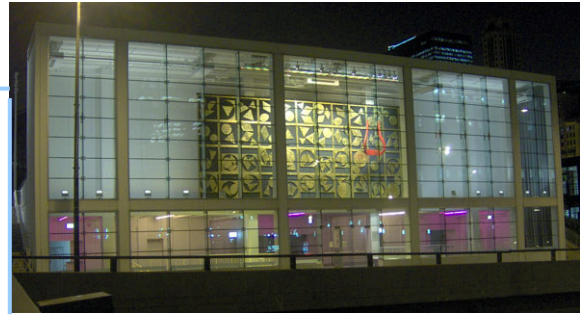
Executive Summary

The proposal includes ideas about the Depth and Breadth research areas for my senior thesis research in the spring semester 2006. The depth areas include redesign ideas for lighting and electrical systems of the Harris Theater for Music and Dance, and the breadth areas are to research other building systems at the theater. In order to integrate these new design ideas to the breadth work, I have described a cost analysis of some specific lighting and electrical equipment. The second area of breadth work will be an acoustical analysis of new materials in the auditorium space, because the curtain design interferes with the new lighting design scheme.

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Depth Work

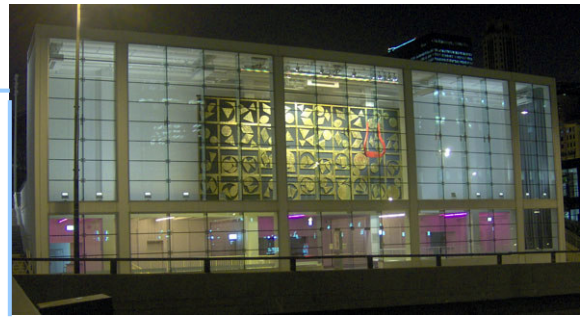
Lighting

For the lighting redesign I have chosen four spaces of the theater to completed redesign their architectural lighting. The four spaces I have chosen for redesign are the entrance, lobby, auditorium seating, and main offices. The existing problem and design criteria were laid out in Technical assignment #1. In my new design I will address lighting quality, power density, maintenance issues and cost. Schematic design ideas and images can be referenced in the Technical 3 presentation. In order to check the values of illuminance, luminance and uniformity I will do calculations in lighting software. To display the quality of redesign I will create realistic renderings in either lighting software or Photoshop images from real photographs of the space. Calculations will be completed for all the spaces, and the most realistic renderings will be completed for the entrance/lobby, and auditorium seating spaces.

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Depth Work Con't

Electrical

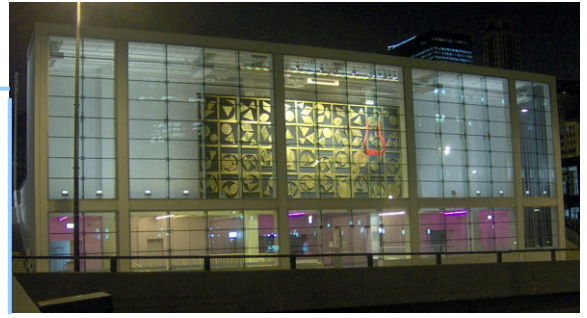
The electrical system at Harris Theater of Music and Dance has some redundancies that could be removed to reduce the complexity of the system. There are a total of 3 utility taps for 3 separate voltage sources and there are 4 main switchboards. I am going to research the reasoning for having two switchboards for the main mechanical 408/277 system and potentially change the system to only have one switchboard.

There are also a total of 13 distribution panels that are sized very small. I am going to research the possibility of consolidating some of these panels to reduce the total number of distribution panels. Many of the panels are 200A-300A in total size when they could in fact be closer to 600A. So I would like to reduce the number of distribution panels and resize feeders for those I redesign.

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Breadth Work

Acoustical

A reverberation time calculation for the auditorium space will be completed. The idea is to try moving fabric acoustical curtains from the side walls to another less visible area of the auditorium. The current design places the acoustical curtains in an area that obstructs placement of light fixtures for my new design them.

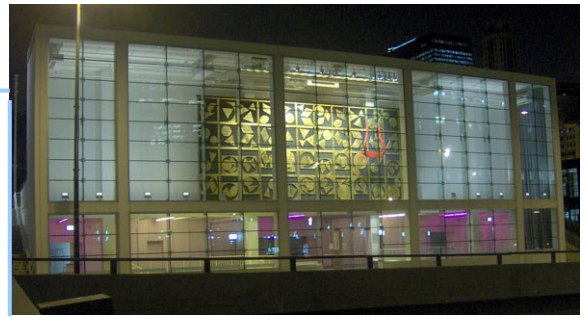
Construction Management

After completing a redesign for the lobby space, I would like to do a cost analysis of the fixture cost and installation. The lobby spans over 4 different floors and may have a significant savings from an installation standpoint. I plan to increase the efficiency and quality of the fixture, but additionally reduce the number of total fixtures. So, the new fixtures will probably be more expensive per fixture, but I plan to save mostly over the whole space.

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Schedule

Week	Schedule
January 11-15	Make revisions to schematic design based on Lutron comments, revise proposal, update schedule.
January 16-22	Update and finalize 3D Models, revise proposal, update
January 23-29	Collect cutsheets, IES files, ballast sheets. Import CAD models into AGI and check for errors.
January 30- February 5	Assign reflectances in AGI, place luminaires in each space, Run a quick calc for each space.
February 6-12	Consolidate distribution panels and research the two switchboards on the 480/277 system.
February 13-19	Resize new distribution panel feeders, continue to update lighting calculations.
February 20-26	Try adding textures and colors to lighting calculations and check electrical calculations.
February 27- March 5	Perform an acoustical analysis of reverberation time in the Auditorium seating area.
March 6-12	SPRING BREAK! NO THESIS WORK....
March 13-19	Finalize luminaire schedule, add wiring information and lighting zone controls.
March 20-26	Finalize electrical redesign, update lighting calculations and renderings, begin pricing research for new lobby lighting.
March 27-April 2	Begin final thesis report and start power point. Complete final rendering images, finish pricing for new lobby lighting and determine acoustical recommendations.
April 3-9	Complete final thesis report, finish power point presentation, rehearse presentation.
April 10-12	Thesis presentation.... then celebrate!