



Executive Summary

During the Spring 2007 Semester, I will be redesigning aspects of the lighting, electrical, and daylight control systems in the Geisinger Health System Center for Health Research and Rural Advocacy (CHRRA). I will also be researching and analyzing the feasibility of the changes based on constructability, initial cost, and payback period.

For my lighting depth, I will be redesigning the lighting for the main lobby, auditorium, open office and exterior circulation areas. The redesign will include concept sketches, renderings, illuminance and luminance calculations, fixture schedules, circuiting, and controls. The open office will require a detailed daylight study in order to optimize the energy and daylight from the south facing glass curtain wall façade.

For the electrical depth, I will be focusing on several different areas of the electrical distribution system. I plan to redesign the electrical circuiting and equipment for the five lighting redesign spaces. I also plan to change the lighting from a 120v system to a 277v system. I will be looking at changing the linear fluorescent lamps in the building from a T8 to a T5HO will be minimize the number of lamps and fixtures needed in each space and create additional energy savings.

For the breadth topics, I will be looking at the reduction in solar heat gain into the south facing open offices due to the addition of the automated window shade system researched in the lighting depth portion of the project. In addition, a case study will be performed analyzing seven different daylight control systems based on energy savings, cost, flexibility, maintenance, aesthetics, and occupant comfort. Based on these results, the most appropriate daylight control system, which best integrates the mechanical, electrical, and lighting components of the space, will be implemented in CHRRA.

For the construction management cost analysis portion of the report, I will be focusing on the associated material and labor costs of the changes made in the lighting, electrical, and daylight control portions of the thesis. I will then consider the feasibility of constructability and also the possible payback period associated with the design changes.