



Executive Summary

The following report contains an in depth discussion and redesign for the lighting and electrical systems in the Franklin Care Center. The feasibility of the new electrical system was determined in a cost analysis that served as a Construction Management Breadth work. An additional breadth study includes calculations and a design to earn LEED Indoor Environmental Quality Credits 6.1 and 6.2, credits the future LEED rated building was not anticipating achievement of.

The lighting redesign concentrated on the Main Entrance Lobby, Chapel, Physical Therapy Suite and Exterior Courtyard. The variation in the types of spaces chosen made for an interesting discussion of separate design criteria and goals for each space. The goals set for each space had to be met while adhering to the design criteria, making the space appropriate for the challenges of the elderly eye, and meeting energy codes set by ASHRAE 90.1. Special consideration needed to be given to daylight, dimming controls and optimization of energy since this will be a LEED rated building. Daylighting studies were performed where appropriate, and a control system was designed.

The electric depth focused on the two 277/120V distribution panelboards in the Franklin Care Center. The two existing transformers that serve each distribution panelboard were relocated from the utility room in the cellar, to the rooms where each panel is located. Additional transformers were added so a transformer is located directly before each panelboard, rather than having one transformer serves several panelboards. This allowed for the use of smaller conductors, conduits and circuit breakers, but at the expense of the addition of many smaller sized transformers. To analyze the feasibility of the redesigned electrical system a cost analysis was done comparing the cost of the equipment that would be changed in the redesign. The cost of equipment was determined using *RS Means 2006, Electrical Construction Data*.

An additional breadth work was performed to redesign elements of the Franklin Care Center to earn another LEED credit. A perimeter and non-perimeter control system was designed for regularly occupied spaces to obtain LEED Indoor Environmental Quality Credits 6.1 and 6.2. By earning these credits the Franklin Care Center has a better chance at receiving LEED gold certification.

In conclusion, the depth and breadth studies were carefully thought out and designed to optimize energy and cut the operation cost of the Franklin Care Center.