Executive Summary

Boston University's Student Village Project design intent was to create a centralized location for active student life on campus. The ten acre site developed a connection between the east and west sides of campus, allowing students, faculty, and alumni to join together in array of activities. Incorporated into the new John Hancock Student Village is an Arena and a Recreation and Fitness Center, which will be the building project examined in my Capstone Project.

This report will include an in-depth study on a proposed light redesign for four major spaces in the building. I will provide recommendations for luminaires, ballasts, controls, and lamp information, as well as suggestions for fixture placement and design. Creating a new lighting scheme for an already well designed space was rather challenging. Be developing entirely new concepts, I was able to develop a plan for each lighting space that was unique but kept in line with the overall building concept.

An electrical depth analysis will also be included in this report. Within this section the four lighting spaces are re-circuited to accommodate the new lighting loads. Each space will also have a resized panelboard, overcurrent protection device, and distribution feeder. Also included in this section of the report, will be a comparison between the advantages and disadvantages of copper and aluminum wire. A study was also conducted analyzing the usage of energy efficient transformers. The research will look at the differences in initial costs, energy savings, payback periods, as well as greenhouse gas reduction. Lastly in this section, an examination of protective device coordination has been carried out.

In order to improve constructability and value engineering during the building construction process, a section of the lobby ceiling has been investigated, which is found in the construction management breadth of this report. The existing ceiling is an aluminum metal, highly reflective drop ceiling cut on a 40ft inner radius. The study will compare the exiting ceiling with a new acoustical ceiling tile. Labor costs, material costs, as well as scheduling will be taken into consideration.

Lastly, this report will include a mechanical breadth analysis. The new lighting design concept for the gymnasium incorporated maximizing daylight and minimizing electric lighting during day time hours. Clerestories were added to the gym roof structure in order to bring more daylight to the space. The addition of many windows will directly affect the heating and cooling loads required for the gymnasium. The analysis shows the difference between the existing and new mechanical loads required for this space.