

Executive Summary

The following report includes specific details concerning the work that was completed during the entire spring 2011 semester for the AE Senior Thesis Capstone Project. It contains a brief background and project description of the Hotel and Conference Center, a recently opened hotel on the outskirts of one of Virginia's finest universities.

For the lighting depth, four spaces were redesigned, including an exterior space, a circulation space, a special purpose space, and a large work space. The new lighting design incorporates concepts regarding the architect's vision of bringing the exterior Virginia landscape indoors into every space. Using data and information from the technical reports completed in the fall of 2010, a complete solution was specified for each of the four types of rooms. Design criteria was set out for each space, lighting plans and mounting details were completed, equipment was selected, calculations were done using lighting software, controls were selected, and the overall performance of each system was evaluated.

The existing electrical design was then modified to meet the change in lighting design for each room. Branch circuiting panels, feeders, and voltage drop was resized for each design. The short circuit was also calculated for one electrical path. Two other depth topics were considered here as well, including an analysis of aluminum versus copper feeders and whether or not a photovoltaic array should be implemented for the building.

Two other separate breadths were completed per requirement of the program. As a part of the Ballroom's lighting design concept, daylight was brought into the Ballroom by the use of clerestories. With their placement, two structural columns had to be moved. The column heights and framing was checked after this move, too.

The proposed lighting design changes are not only aesthetically pleasing, but integrate the initial design concepts and goals from start to finish. Energy efficiency, flexibility, and overall pleasing lighting design generally drove the design from start to finish.