Executive Summary

The Senior Thesis Project is the culmination of the past 5 years in the Architectural Engineering Program. The thesis is a highlight of a particular building, unique to each individual, from which thorough analysis and redesign are completed over the course of the 5th year. Existing systems are investigated, new designs are proposed, and then those designs are tested for feasibility and compared to the initial design with hopes of implementing the new design as a more efficient and oftentimes cost effective alternative.

The thesis project in this document focuses on Cathedral Place in Milwaukee, Wisconsin. Cathedral Place is a multi-use building completed in 2004. The analysis of this building comes as a particular interest given the author's thorough knowledge of the area and easy accessibility between semesters. Cathedral Place, like most buildings, has its share of design flaws and successes and the thesis proposal investigated some of those flaws and analyzed a number of alternatives – many of which were theoretical.

Cathedral Place was analyzed mainly for its Electrical system, Architectural designs and methodologies, and the application of Lighting design to those architectural forms and absences. Furthering the investigation of the building's systems and the use of 5-years worth of knowledge, a brief Structural system breadth (as a result of certain Lighting design elements), and minor Mechanical breadth were also completed. All of the preceding analyses were somehow interconnected and relationships between them could not be ignored, much the same way it would have to be done on a real project.

This thesis focused on a number of theoretical lighting design elements, co-operational electrical and mechanical system components, analysis of external factors (utility company regulation, services, and rate structures), and complimentary architectural forms and functions. These many topics, brought together in as comprehensive a manuscript as possible, is the result of the pursuit of as many building system interests as could be applicable to the building.

Complexity in the designs and sheer volume of information prevent all of the acquired knowledge from being presented. The knowledge obtained from this thesis project far surpasses what can all be illustrated or described below. While the end-result of this thesis – this report – is mainly for the author's benefit and use, anyone having interest in topics that have been researched here have an excellent base from which to further their knowledge.