



Executive Summary: Thesis Proposal

The thesis proposal outlines and defines the work that will be completed for the various redesigns of systems in William H. Gates Hall during the Spring 2007 semester. Both the depth and breadth will look at the building systems from an integrated standpoint, to best determine systems that will be effective in not just one building system, but beneficial to all systems. The depth analysis work will be completed in the areas of lighting and electrical design.

The depth work for the lighting design portion of the thesis project will look at redesigning the lighting systems for four different spaces within the building. These spaces will include the Marion Gould Gallagher Law Library (reading area), the Senator Warren G. Magnuson & Senator Henry M. Jackson Trial Courtroom, the Jeffery & Susan Brotman Galleria, and the terrace. While aiming to produce an aesthetically pleasing lighting design that complements the architecture of the building, the design will also strive to meet standards set forth by IESNA and ASHRAE 90.1. In addition to this, a daylighting analysis will be conducted for the law library and galleria.

In addition to a lighting redesign, the depth work will also include an electrical analysis portion. In the electrical work, several topics will be explored. These topics will include a coordination and redesign of the electrical system due to lighting changes; a transformer redesign using distributed transformers; the design of a motor control center for all the building's air handling units, and a protective device coordination study.

The Breadth topics will look at the feasibility of implementing a rain water catchment system in order to offset the cooling tower makeup water requirements for William H. Gates Hall. The LEED Breadth topic will look at what requirements are needed for such a system, the amount of collectible rain fall, and the makeup water requirements of the cooling towers. The Construction Management Breadth topic will serve to determine if a rainwater catchment system is justifiable by analyzing the cost of such a system and the payback compared to the amount of water cost savings that will be incurred.