

EXECUTIVE SUMMARY

The Maryland State Highway Administration (SHA) Headquarters is located in downtown Baltimore and occupies two office buildings, 707 and 211, which were both originally built in 1959. This report's focus is on the 707 N. Calvert Street building, a 6 story office building with two levels of parking in the Basement and Subbasement; the Basement level also includes a print shop as well as some office space. With each floor approximately 29,000 square feet, the total renovation cost is \$4,435,500.

Over the past semester, this thesis has been dedicated to the research and analysis of The Maryland State Highway Administration (SHA) Headquarters 707 Building's existing mechanical system. In Technical Report I, the building was analyzed and found that it exceeded the minimum ventilation requirements set forth in ASHRAE Standards 62.1 and 90.1. Trane TRACE 700 was used in Technical Report II to provide a building load and energy analysis of the current system; thus allowing heating and cooling loads to be calculated and annual energy consumption and operating cost to be estimated. The existing conditions of the complete HVAC systems that were installed in the 707 Building and a LEED analysis were performed in Technical Report III.

The objective of this Thesis Proposal is to explore design alternatives, ultimately applying changes that would, in some way, enhance the present system. A critique of the renovated system can be found later in this report. Active chilled beams were determined to be the best replacement of the current 534 perimeter induction units since they themselves are modern induction units. Interchanging the active chilled beams in the office space will lead to an increase in building usable square footage.

Two breadth topics were also evaluated based off of the implementation of this redesign. A lighting/electrical breadth will examine the benefits of multiservice integration within the chilled beams in the office space. The other breadth, construction management, will evaluate the potential cost and schedule savings of integrating the lighting and/or sprinkler systems into the one single active chilled beam.