Executive Summary

The Hauptman-Woodward Medical Research Institute is a 3 story, 73,000 square foot building which provides a full service biomedical research lab as well as supporting office and classroom spaces to the Buffalo-Niagara Medical Campus in Buffalo, New York. This report develops a detailed evaluation of the existing mechanical systems and equipment for the Hauptman-Woodward Medical Research Institute. Major equipment and system components are discussed in detail in preparation for the upcoming senior thesis proposal.

Design objectives and requirements are discussed to gain a better understanding of what dictated the mechanical system design. At the Hauptman-Woodward Medical Research Institute, there were many factors which influenced building design. Energy sources and rates, mechanical equipment first costs, and maintenance costs were all considered in the design.

In addition to design objectives, the design ventilation requirements from the ASHRAE Standard 62.1-2004 study are included for all air handling systems. Design heating and cooling loads for major equipment were calculated using Trane TRACE-700 and compared with actual design loads from construction documents. Energy consumption was also estimated with Trane TRACE as well, based upon utility data from the city of Buffalo.

Schematic drawings were developed for all major systems at the Hauptman-Woodward Medical Research Institute, including air handling units, heating and cooling loops, heat recovery systems and the atrium smoke exhaust system. In addition, schedules pertaining to major equipment were condensed in this report, taken from design documents by Cannon Design.

Once all of the design information was organized and compiled, the sequences of operation for all major systems were analyzed, including air handling units, terminal reheat boxes, atrium smoke exhaust system, laboratory heat recovery system and all hydronic piping systems. Based upon this information, an evaluation of the existing mechanical system was completed with a critique of major components and possible areas of study for the senior thesis project.