

Executive Summary

The past semester has been dedicated to providing an analysis of the existing mechanical conditions related to the Amini Medical Center. This report will briefly discuss the existing mechanical systems then address the depth and breadth redesign scenarios.

The mechanical redesign proposal replaces the existing primary-secondary chilled water system with a Variable-Primary-Flow chilled water system in an attempt to reduce the building's energy consumption. Many aspects will be evaluated including, plant size/equipment size, pipe sizing, control schemes, pressure drop, sequence of operation, flow rates, water supply/return temperature, operation & first cost, along with other factors.

The breadth proposals require changing the lighting and observing acoustical issues with the new chiller equipment and pumps. The lighting changes will require evaluation of cost, pay back, energy consumption, lighting quality, along with the effect on LEED and the mechanical system will be evaluated. The acoustical issues will take a look at equipment noise pollution to adjacent areas along with any vibration noises that could develop.

In order to compare these systems, assumptions and models will be made using the TraneTrace 700 simulation program. After all scenarios are researched and the energy models are complete, a comparison between the two systems will be made. Validation or rejection of the redesign will be the resulting conclusion of the comparison. A schedule for the work to be performed is presented at the end of this report.