

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 proposed redesign of the Amini Center's mechanical system will begin by taking the system off the central and providing an independent chiller and pump package to serve as the buildings primary loop. This remodeled system will serve as the buildings existing system for comparison. From there three ice storage scenarios will be evaluated to decrease the annual cost seen by the building owner. The ice storage system will decrease the demand load from chiller during the high priced on-peak hours by shifting the load to non-peak hours where energy is cheaper.

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 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.

One breadth area I propose will be reducing the lighting power densities while maintaining light levels prescribed by IESNA. The other breadth topic will include a structural analysis adding the chillers to the roof structure. The lighting changes will require evaluation of cost, energy consumption and lighting levels on the work plain. The structural study will focus on the bay where the chillers will be located. I will re-evaluate the loads and determine if the beams are sized correctly.