

## Executive Summary:

The proposed thesis shall include information about the Towson Arena Addition. I will present areas of analysis of the Towson University Arena Addition. Finally I will discuss three different breadth options that I will cover for this project.

I have identified problems and solutions for several parts of the building. I will do a lighting redesign of certain spaces. I have chosen to analyze the court area, the press room, a reception area and the northwest exterior entrance. Each lighting redesign will go into my selections for luminaires and controls and will demonstrate my ideas through images and calculations.

Once the four lighting spaces were redesigned I went through the architect provided drawings in search of all the affected panelboards. For each panelboard I removed the existing lighting circuits that were removed and resized new circuits for my new lighting system. From there I then resized the panelboard and feeders.

Once the panelboard redesign was finished I performed a short circuit rating analysis on a single run of the electrical distribution system. I went through and found the time current curves for a comparison, and I went through the calculations to find the short circuit rating for each breaker.

Next I concentrated on two electrical depths of my choosing. I decided to do a cost analysis of the existing emergency generator system and build an SKM model of the existing system. I used RS Means 2010 for the cost comparison of using two generators instead of the existing three. The SKM model was built for ease of demand load and voltage drop calculations. The SKM software can also perform many other calculations once a model is built.

Then I went into my first breadth topic outside of my Lighting/Electrical concentration. I studied the court's acoustic properties for several different uses. I used reverberation time calculations to determine the fit of the space per use. Then recommendations were made for the space to better suit the acoustical needs.

My final breadth topic was a glazing analysis of the court space. A clerestory surrounds the top of the court. I built a model in Trace and chose five different glazing options to study the effects on the cooling load for the year. Depending on the glazing option, different rates of heat loss and gain were calculated with a major contributing factor being the sun.

This sums up the body of my report and I hope you enjoy. I have gained endless knowledge on each of the topics that I studied for countless hours. If there are any questions or comments, please do not hesitate to contact me.