Jason Salyer: Construction Management Option Thesis Adviser: Dr. Messner Thesis Proposal

## **Breadth Studies:**

My spring thesis project will demonstrate breadth in Architectural Engineering. The breadth studies will be imbedded into my analysis topics and will not become a separate study of their own. The breadth that I will be studying within the curriculum of Architectural Engineering will be structural and mechanical.

One of my analysis topics that I am proposing is to identify elements that can benefit from prefabrication. I plan to propose the use of a modular central plant to replace the current mechanical system. A modular plant is a very heavy load for the building's structural system to support. I will perform a STAAD analysis on the supporting beams to determine if they can support this load.

I will be proposing the use of high performance glazing on the façade to improve energy efficiency. A high performance façade will impact the building's mechanical system. The intent of the improved façade is to reduce the heating and cooling loads within the space. Successful implementation of a high performance building envelope will result in smaller less energy consuming air handling units and boiler unit. There is also a possibility that smaller ductwork can be used to deliver the conditioned air into the space. The new facade will reduce the load on the building's mechanical system. Energy modeling software will be used to estimate the energy savings.