Executive Summary

This proposed thesis is comprised of two depth studies and two breadth studies. Firth the redesign of the lighting system will take place in four spaces. They include the exterior porch entry, welcoming lobby, news history gallery, and Freedom Forum offices. Feedback from lighting designers after a presentation of the schematic design will be taken into consideration while redesigning these four spaces. The electrical system will also be designed for these four spaces. In addition to the redesign of these four spaces, electrical analyses include the change from standard transformers to energy efficient transformers, and adding wind turbines to assist in providing energy to the building. Breadth analyses for the Newseum and Freedom Forum Headquarters includes an architectural study and redesign of the roof level to help incorporate the use of wind turbines. The mechanical system in the News History Gallery will also be looked at and redesigned with a main focus being on the humidity controlled display cases.

Breadth: Architecture

With the incorporation of wind turbines with the electrical system, an analysis of the architecture of the roof will have to be performed. It will also have to be changed in order to allow the turbines to fit into the overall architecture of the building. There must still be a very modern feel to the building. They can not just be placed on top of the building and expected to work with the overall feel. I will conduct a cost study looking at the additional materials needed to make the new design work and combine it with the cost study of the turbines themselves to see how long it will take for the whole addition to pay for itself.

Breadth: Mechanical

The News History Gallery has an interesting mechanical system because it must incorporate the use of controlled humidity exhibit cases for the historic artifacts. I will perform an analysis of the existing system and look into any better ways to supply these cases with controlled air. Recommended values for humidity surrounding museum artifacts will be taken into consideration. Calculations of incoming humidity and humidity ratios will also be performed to ensure an accurate environment. The redesign of the cases might also be an option to create a better system. After the redesign, a cost-benefit analysis will be performed to determine if it will be a better option.