

ARCHITECTURAL ENGINEERING SENIOR THESIS

George Mason University Student Union Building I Fairfax, VA

Thesis Proposal - Breadth Topics

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Breadth Topics

Mechanical Breadth

Based on the Mechanical Breadth Analysis rubric, I will research the effects of Emergency Power to the occupied GMU Student Health and Wellness Center. Through this research I will answer the following questions:

- How crucial is it to maintain operation during power outages?
- How quickly must the emergency power come on?
- How long should the emergency power be available for?
- What locations within the facility will and will not be powered by the emergency power?
- What Contingency Plan is already in place for the Health and Wellness Center?
- What are the GMU Testing procedures for Emergency Generators?

This research will also look at the minimum design, installation, and testing for the new emergency generator that will be installed on site.

Structural Breadth

The breadth areas that will be considered in the metal panel building envelope analysis will be structural. The structural system will be impacted due to the change from metal panels to either precast architectural panels or a prefabricated building envelope system. The new imposed loads will need to be considered when installing the new façade to the building. To accomplish this, an analysis of the load paths will be performed for the new systems. If the existing structural system is not capable of supporting the proposed new loads, one option is to resize the structural members to allow for the imposed loads. Both value engineering and schedule reduction are crucial when considering these façade and structural changes.