

Executive Summary

This proposal contains four topics which will be researched throughout the spring semester Thesis coursework relating to The Scripps Research Institute Biomedical Research Building. Through this research alternative methods will be examined, and impacts to the cost, schedule and constructability of the project will be analyzed. The results of this research will promote value engineering ideas that arise during the analysis process.

The analyses described in this proposal are the result of issues identified on The Scripps Research Institute Biomedical Research Building project. My research will focus on the following topics which include a Mechanical and Electrical breadth.

- **Analysis I**

The first analysis focuses on researching the feasibility of pre-fabricating the MEP rough-in for the numerous islands on this project. Reducing the cost and schedule impacts that this activity has on the project is the key focus of this analysis.

- **Analysis II**

The second analysis focuses on re-designing the Emergency Generator System to a Co-Generation Plant. This includes a Mechanical and Electrical design breadth for the selection and sizing of the natural gas turbine system as well as the electrical distribution system connection with the utility grid. Analyzing the cost savings/payback period for this system will be the key focus of this analysis.

- **Analysis III**

The third analysis focuses on identifying alternate formwork methods to increase productivity of this phase of construction. Durations will be calculated and compared to those of the current structural system. Cost and schedule impacts associated with the alternate systems are the main focus of this analysis.

- **Critical Industry Issue**

This analysis is intended to research the impacts that the industry Transition to BIM is having on companies in the act of changing over. The positive impact of BIM having an effect in lending itself to pre-fabrication of systems from the model will also be researched. Interacting with the industry members necessary to perform this analysis will be critical.

Appendix A: Breadth Studies

Breadth 1: Co-Generation Mechanical Design

Re-designing this mechanical system by eliminating the Emergency Generators from the current design will require extensive mechanical system sizing and research to determine the most efficient natural gas turbine system for this three building project. The cost and schedule impacts of this system will be calculated and compared with that of the current backup generator design. The payback for this system will also be calculated.

Breadth 2: Electrical Connection to the Utility Grid

Re-designing this buildings backup generator system and replacing it with a Cogeneration system will require a well designed connection to the utility grid to export power to the grid and pull from it whenever necessary. Also locating this system in the most efficient place on the site for distribution purposes will require sizing of the electrical distribution system for this system as well.

