Executive Summary

This report will cover two breadth studies in the structural and mechanical option. They will also investigate areas of critical industry issue research, value engineering analysis, constructability review and schedule acceleration.

These analyses include:

1. Mat Slab Redesign (Lower Mat Slab and Extend Foundation Walls)
2. Green Roof Redesign (Extensive to Intensive)
3. Curtain Wall Redesign (Stick Built to Unitized)

The first analysis will meet the structural breadth and investigate into value engineering and constructability review. This analysis was chosen when it was discovered that competent rock was found at a lower elevation than planned. An alternative method of lowering the footing will be explored in this analysis.

The second analysis will meet the mechanical breadth and research critical industry issues and value engineering. Redesigning the green roof will lead to lower heating and cooling loads which can provide long term saving for the STEM Building. The long term savings and overall load reduction from installing the green roof will be investigated in this analysis. PV panels and green roof as an educational tool will also be analyzed, specifically how information will be relayed to students.

The third analysis of converting the stick built curtain wall system to a unitized curtain wall system will help cover the constructability review and schedule acceleration requirements. A unitized curtain wall system offers a quicker on site construction time and higher quality product.