

## **Executive Summary:**

This report will focus on a lighting design depth, an electrical analysis depth, a structural breath, and an acoustical breadth. These studies were also examined for their integration with each other. By looking at these systems and how they are put together, a thorough overall design was completed. The five spaces that will be focused on are: The exterior and grounds, the solarium, the café, the auditorium, and a second floor gallery.

The grounds and exterior of the museum was left largely intact, with just a few adjustments to walkway lighting that further enhanced the minimal architecture. The solarium was transformed into a piece of art. By using the wind and sun to its advantage, the space was converted to a place of visual interest much like the LED light installation found at the buildings entrance. The café, using existing lines of architecture and forms, was made into a glowing leaf that promotes warmth and comfort. By bringing in daylight to the auditorium, the space feels more bright and alert, while adding some visual interest. Being the main attraction, the gallery space needed to focus on the art. By hiding the track fixtures into the grazed fabric panels, the art is allowed to stand out and not compete with lines of track fixtures carving into the ceiling.

The electrical system was also redesigned for those areas touched by the lighting depth. A branch circuit redesign, short circuit study provides the safety needed for overcurrent and power outages. These analyses were imperative to make sure the new lighting was up to date and reasonable at an engineering perspective. Integration between the solar protection system in the solarium and a wind power harvesting system was also studied as part of an art installation. While this power system may not generate a lot of useable electricity for the building, its connection to the power of the wind and time of day, will prove to be an informative form of art.

A structural redesign was also needed to fully realize the lighting concept in the auditorium. By introducing skylights into the space, the joists needed to span more, creating the need to resize the metal roof deck, and joists above the ceiling in the auditorium.

Due to the redesigned ceiling in the auditorium and the added PVC material, a study into how these ceiling panels would affect the acoustics of the space was needed. It was found that the absorptive quality of these panels lowered the RT too far. The back wall also needed to be redesign to another material in order for the whole room to function acoustically.