

Executive Summary

The Army National Guard Readiness Center is an eight story joint headquarters building located in Arlington, Virginia. Its purpose is to provide extra office space for the increase in employment as well as provide additional special purpose spaces. The following report analyzes various existing design conditions and proposes research on possible redesigns.

Four spaces were studied and redesigned as part of a lighting depth analysis. The spaces include an open office area, the auditorium, prefunction area, and the outdoor plaza/ green roof.

For each of the previously mentioned spaces, a redesign of the panelboards that serve the normal and emergency power was also conducted. Two electrical depth analyses were conducted which include an SKM Power Tools analysis on the entire electrical system and a transformer consolidation take-off. A hand calculation of the short circuit currents through a single path in the electrical distribution system was also conducted.

In addition to the lighting and electrical depth topics, two breadth topics outside of the lighting/electrical option were researched. The first is an acoustical analysis of the auditorium where T_{60} degradation time was analyzed and suggestions were made for improvements. The second topic is an analysis of the heat load difference between the existing incandescent luminaires with the compact fluorescents proposed in the new design.

The contents of this report are the results the studies conducted on each of the previously mentioned design topics. All conclusions are suggestions on an already functioning design.

