



Executive Summary

The purpose of technical report one is to discuss the overall existing lighting conditions of the Center for Health Research and Rural Advocacy (CHRRRA) and to analyze in further detail the following five spaces: the first floor open office, the double height entrance lobby, the multipurpose space, the 400-seat ellipsoidal auditorium, and the exterior site lighting.

The lighting concept carried throughout the building is that of a sharp, streamline, and clean edge design. CHRRRA is architecturally a standout building on the Geisinger Health System campus; it is the only building with a glass façade and curvilinear footprint on the rectilinear campus. The aluminum and somewhat high-tech component of the existing luminaires is appropriate for the architectural aesthetic.

The open office has a south facing glass curtain wall demanding daylight controls in the space. The lighting is controlled in three separate zones by photocells that will dim the electric lighting depending on the daylight entering each of the zones. This system was to be integrated with automated shades spanning the entire south façade of the building. The shade system was not included in the final construction of CHRRRA leaving the integration between electric and natural light sources inadequate for the needs of the space. Direct glare from the daylight, veiling reflections on VDT's, and visual discomfort are all direct results of this design decision.

The auditorium's shape makes it a more difficult space to light. A curved cove lines the perimeter of the space while linear fluorescent direct luminaires illuminate the audience seating. The front of the auditorium has evenly spaced compact fluorescent downlights which illuminate both the speaker and the projection screen. The controls for this space allow all three systems to be dimmed separately making the area multifunctional. The illuminance levels on the audience and speaker are relatively the same, making the space washed out unless dimming is incorporated. The lighting is over designed in this space and fewer fixtures could be used. A more controlled lamp source is necessary for the speaker lighting; the current system creates a great deal of glare on the projection screen.

The lobby is a double height space with recessed induction lamp fixtures and compact fluorescent downlights in the breakout areas. Integration of daylight is important in this area due to the glass curtain wall spanning most of the space; however, the lighting in the lobby is not controlled by photocell and is not dimmed based on daylight. This leaves much room for improvement in the realm of energy savings and heating/cooling costs.

The multipurpose space can easily transformed from one large area to three smaller work spaces with moveable partitions. The lighting controls allow for easy operation of the lighting system depending on the size of the space. The linear fluorescent direct luminaires are also used in this area along with a dimmable cove fixture along the partitions and side walls. The accent lighting would be more effective on the front and back walls where it would not change depending on room layout. This space can also be used as a banquet area and does not provide an alternative lighting system for a more elegant setting.

The exterior lighting is dark sky compliant with minimal spill light on the site. Metal halide fixtures are used on the site but high pressure sodium are specified for roadways, making the road look yellow and hindering color rendering. This source can take away from occupants' feeling of security. Adding more accent lighting around the building on the non-glass surfaces may help to bring interest to the exterior of the building in a nighttime setting.

The main design criteria that should be addressed in the lighting systems for CHRRRA include: energy efficiency, versatility, pleasing aesthetics, and optimal daylight integration.