

The Legislative Plaza Parking Garage is an underground parking facility located directly beneath the War Memorial and Legislative Plaza union of structures. The garage is operated by the State of Tennessee and operates twenty four hours per day, seven days per week, and fifty two weeks per year.

Cumberland Distributors was contracted by Double R construction to provide all of the material and to install a new lighting system in the two level garage consisting of 100% LED (Light Emitting Diode) lighting technologies. Cumberland Distributors partnered with Stones River Electric to install the new fixtures to make this a turnkey project. The project was specified by Smith Seckman Reid, Inc. and value engineered by Cumberland Distributors.

The existing lighting system consisted of all T12 fluorescent lamps and magnetically ballasted fixtures. This technology created continuous maintenance problems for the staff as well as creating a sizable utility bill due to its inefficiencies. The various size fluorescent fixtures were fitted with conversion kits allowing the standardization of a single length LED lamp, in a linear T8 fluorescent footprint. These conversion kits were then fitted with linear 4 foot LED lamps. Only one-half the quantities of the energy efficient LED lamps were needed in comparison to the previous T12 fluorescent system counterpart. In addition to a 75% reduction in continuous lighting load, the new LED lighting system utilizes lamps that are rated at 100,000 hours of use, alleviating the maintenance problems the facility was experiencing. This LED lamp life is five times greater than the previous fluorescent lamp technology.

The entrance to the garage and ramps were lit with a mixture of existing metal halide lamps of various sizes and wattages. This technology was completely removed and fitted with new LED canopy fixtures. This created the appropriate light level for the entrance area and ramps while drastically improving the color rendition.

The project also added many luminaires around the perimeter of the facility to raise the illumination levels in many dark parking spaces. Since these areas have sporadic occupancy, these added fixtures were fitted with individual infrared technology occupancy sensors allowing them to only operate when needed.

The existing light levels in the space were very inconsistent varying from near 0 to upwards of 15 foot-candles. After the installation the space was illuminated from 15-20 foot-candles consistently. The minimum light level at any point in the space is now 2 foot-candles creating a quality 10:1 maximum to minimum ratio. Overall these lighting levels and this max to min ratio meets both criteria recommended by the IES, the Illuminating Engineering Society of North America. This new LED lighting system creates a much safer atmosphere for the occupants while dramatically improving the quantity and quality of light in the space.

The total connected load of the lighting system was substantially reduced from 136.82 kW down to a frugal 32.85 kW, which represents a 75% reduction of lighting energy, saving 103.96 kW. The overall project represents an annual savings of 933,699 kWh, which results in a utility cost savings of \$110,399.74 per year!



