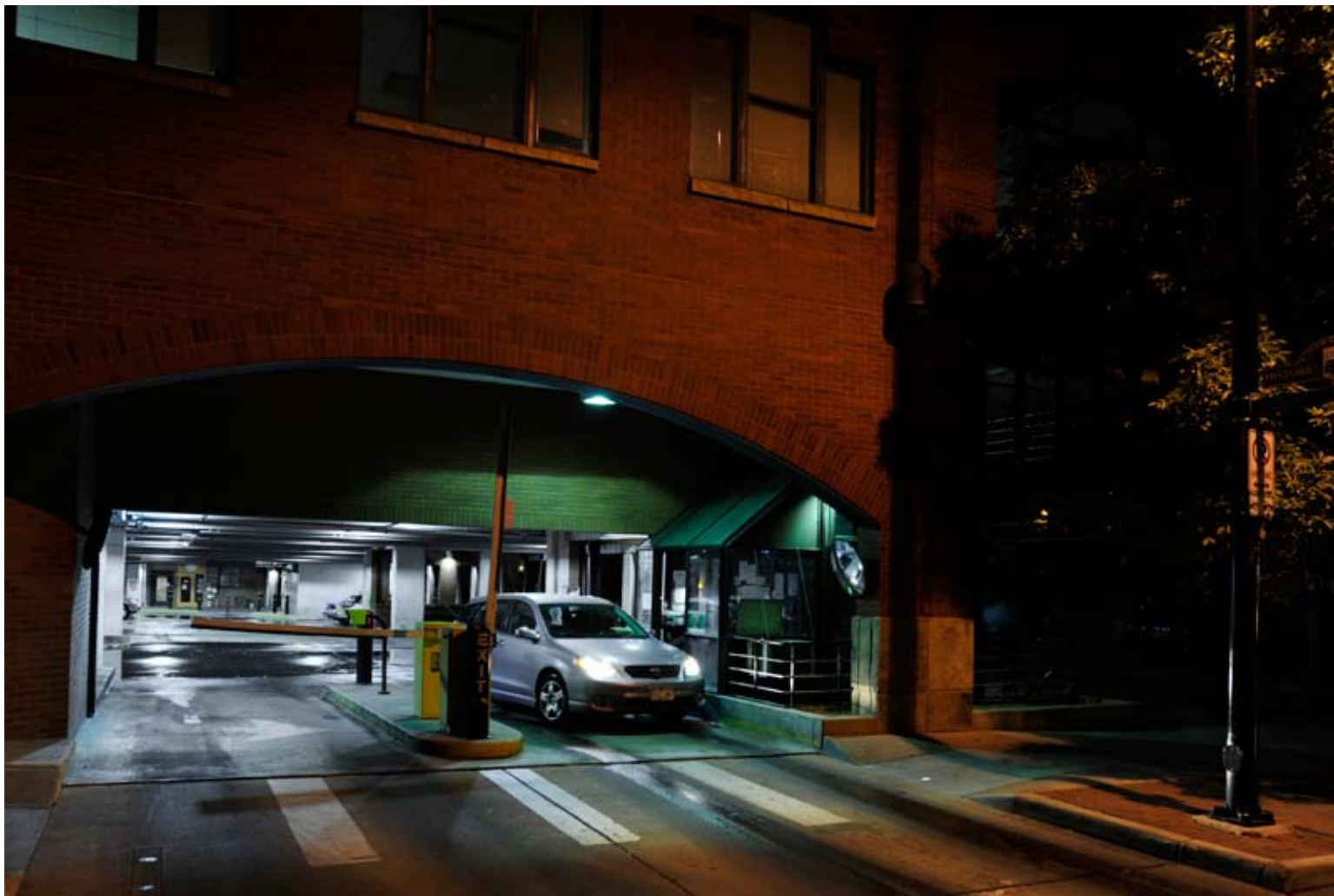


BetaLED® Project Brief Overview

Municipal Parking Garage – City of Boulder, Colorado



PROJECT SUMMARY

“The BetaLED luminaires made it possible for us to **easily adapt the amount of light** necessary for every area by using different fixtures installed with **just the amount of LED light bars needed to create a uniform and bright space.**”

*Kevin Yingling
Project Engineer
Innovative Electrical Systems, Inc.*

End User:	City of Boulder, Colorado
Application:	City parking structure (retrofit)
Products:	337 THE EDGE™ luminaires from BetaLED® <ul style="list-style-type: none">• One canopy luminaire• Three area round luminaires• 154 security wall mount luminaires• 180 parking luminaires fit with 12-inch pendant mount kit
Benefits:	<ul style="list-style-type: none">• Light levels increased at the structure entry from 60 foot candles to a high of 100 foot candles with an average of 45.• Energy consumption was reduced in the areas remodeled from the original 70,000 watts to 32,000 watts.• An approximate 50 percent energy savings at total cost savings of \$2.66 per hour is achieved when all the luminaires are on.• Annually, the city expects to save at least \$15,000 on energy costs for the parking structure.



BetaLED® Project Brief Overview

Municipal Parking Garage – City of Boulder, Colorado



BetaLED provides safe, cost-effective lighting solution



In an effort to create a more cost-effective parking structure that's safer and easier to navigate, City of Boulder manager of parking services Kurt Matthews sought a better lighting solution for the existing downtown location at Eleventh and Spruce Streets. Using a BetaLED retrofit solution, the city improved visibility and safety in the parking structure while reducing energy consumption. Maintenance costs for THE EDGE luminaires will also be reduced as a result of extended lumen life.

The existing structure is a 120,000 square-foot six-level garage that was previously lit with 175-watt metal halide garage style luminaires with vertical lamp orientation in the drive and parking areas.

The challenge: The perimeter utilized 50-watt metal halide luminaires with black honeycomb baffles. There were 60 foot candles at the entrance and general lighting throughout the garage was 40 foot candles, directly below the 175-watt metal halide fixtures, to .3 foot candles between those fixtures, giving a maximum to minimum light level ratio of about 133 to one. The perimeter walls were dark and signage was very difficult to read.

The solution: In a one-for-one replacement, 337 metal halide luminaires were substituted with BetaLED luminaires.

Innovative Electrical Systems, Inc., a full service electrical consulting engineering company with LEED accredited staff, designed and installed the new lighting system using existing rough-in locations and branch circuit wiring. The firm used of the same wiring locations throughout the existing garage. With 79- and 55-watt LED, achieved an average of 4 foot candles with a

maximum to minimum light level ratio of 11 to 1 and an average to minimum light level ratio of 3.8 to 1. These light levels and light level ratios exceed IESNA recommendations. The lighting improvement was accomplished while reducing energy consumption in the areas remodeled from the original 70,000 watts to 32,000 watts. With savings of 32 kilowatts and energy at +/- .07 per kilowatt hour, the total savings per hour will be \$2.66 when all luminaires are on. The city expects to save at least \$15,000 annually on parking fixture energy costs, the majority of which are lit 24 hours per day, seven days a week.

IES project engineer Kevin Yingling designed the lighting and led the installation. "There were remodel design challenges in the dark and unevenly lit space. Our customer didn't want us to run any new wiring anywhere," said Yingling. "The BetaLED luminaires made it possible for us to easily adapt the amount of light necessary for every area by using different fixtures installed with just the amount of LED light bars needed to create a uniform and bright space. Any concerns we had about glare were taken care of by properly mounting fixtures for the space."

The vast majority of multi-level parking garages stay brightly lit 24-hours per day, seven days per week. To reduce energy, more parking garage structures are switching from metal halide fixtures to LED for the significant savings realized in these applications that require light for long periods of time throughout the day and night. The high efficiency and light quality delivered by BetaLED luminaires requires less energy demand than traditional lighting sources.

