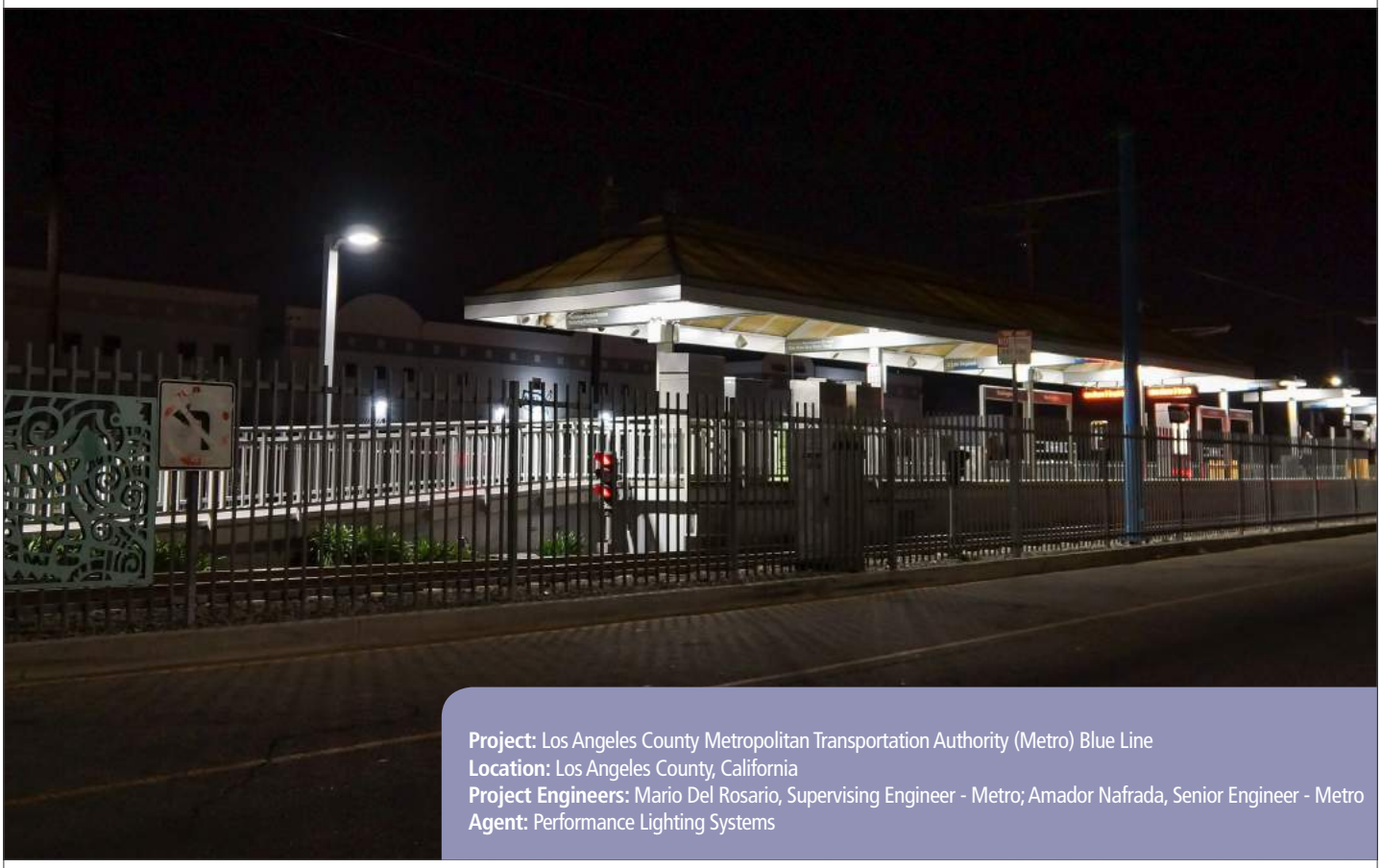
APPLICATION CASE STUDY | **LIGHTING CHALLENGE 143**

Transportation TR

TopDek™ LED Luminaires, Add Safety and Security to LA's Metro Blue Line



Project: Los Angeles County Metropolitan Transportation Authority (Metro) Blue Line
Location: Los Angeles County, California
Project Engineers: Mario Del Rosario, Supervising Engineer - Metro; Amador Nafrada, Senior Engineer - Metro
Agent: Performance Lighting Systems

"Metro is completely satisfied with the [TopDek™] product."

– Amador Nafrada, Senior Engineer, Los Angeles County Metropolitan Transportation Authority (Metro)

Project Summary

Challenge: Retrofit existing LA Metro platforms with bright, uniform, vandal resistant luminaires that support the safety of security Metro patrons. Glare control also critical to prevent visibility issues for train conductors.
Solution: Retrofit 250W high pressure sodium lights with 112L TopDek™ TPD23 LED luminaires.
Benefit: Increased footcandles and excellent uniformity optimize safety and security of station patrons: textured acrylic lens eliminates glare. The new lights enhance the effectiveness of new security cameras and also qualify for rebates from the Los Angeles Department of Power and Water, which are provided to customers who replace less efficient fixtures with LED luminaires.

LIGHTING CHALLENGE 143

LA's Busy Blue Line Gets a Makeover

22 stations, 22 miles: The Los Angeles County Metropolitan Transportation Authority (Metro) Blue Line runs south from downtown Los Angeles to Long Beach, California. Frequently at capacity, it carries 26.4 million passengers per year and is the second busiest light rail line in the Metro system, and one of the ten busiest in the country.

Metro's Challenges

As with any public transit system, passenger security and safety is the number one priority. Lighting is a critical cornerstone in the $1.2 billion dollar upgrade to the system's oldest line: Metro's specifications include such items as reduced maintenance; vandal-resistance; marine-grade, copper-free housings; FCC 47 compliance and a minimum 20fc, with a 4:1 max to min ratio.

Prior to the platform improvements, there were a number of obstructions that prevented light levels from reaching the required 15fc at the platform edge. Additionally, some of the replacement lights had to fit in to an existing, twin-post arched pole.

An Elegant Solution

Engineers at Metro were already familiar with Kenall's excellent reputation for vandal-resistance, but with the help of lighting distributor Performance Lighting Systems, they compared fixtures from a number of manufacturers and eventually selected TopDek™ 112L LED luminaires to replace the existing 250W high-pressure sodium lights on 21 Blue Line ramps and platforms (the remaining stop, Willowbrook/Rosa Parks, is scheduled for a separate $66 million dollar renovation/upgrade).

The new light levels surpass Metro's requirements, delivering 21fc to the floor and a contrast ratio of 3.7:1. Thus, more light is delivered, but the new luminaires use less than half the input watts of the old fixtures. The rounded shape and clean styling of the luminaires also complement the existing platform architecture.

Along with efficiency and vandal-resistance, glare control is of significant concern, because some of the light poles being retrofitted are just 12 feet high and located near patron seating. Fortunately, Kenall designed TopDek luminaires with the same ground-breaking technology used in TekDek™, which reduces both discomfort and disability glare and prevents pixilation of the light when viewed directly. "Competitors do not have a lens to minimize glare to patrons," noted Amador Nafrada, a Senior Engineer with Metro.

To accommodate the retrofit of the existing twin-post, arched ramp poles, Kenall created custom-spun, fabricated housings to fit into the available space. For the station platforms, a standard TopDek fixture is used for a streamlined, glare-free appearance with no visible LED diodes or heat sink. The new lights have an L70 of more than 100,000 hours, which significantly reduces maintenance requirements for Metro.

The results? The Blue Line station improvements were finished on-budget and ahead of schedule, with both patrons and workers praising "a brighter and secured station platform," according to Nafrada.

Kenall TopDek Features:

- Die-cast, marine-grade aluminum housing
- Textured acrylic or polycarbonate lens
- Lumen packages from 10,084 – 28,720
- Minimum 65 CRI
- 80–150,000 hour LED lifetime (L70)
- Type II, III, IV, V-Narrow Round and V-Wide Square distributions
- Sealed optics with IESNA full-cutoff distribution
- Internal house-side shield for lower windloading
- ETL Certified IP65 per IEC 60598
- 10-year limited warranty

Benefits for Metro:

- Safety and security of light rail patrons
- 50% fewer input watts than incumbent technology
- Project qualifies for rebates from the Los Angeles Department of Power and Water
- Footcandles and contrast ratios exceed requirements
- Rugged fixtures resist adverse weather conditions, dirt, dust and attempts at vandalism—making them ideal for use in public areas
- Specialized optics reduce disabling glare, optimizing patron safety and comfort

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