

# Large Area Lighting Solutions

Rail, Seaports, Airports,  
Construction, and Industrial

  
We Make It Happen.



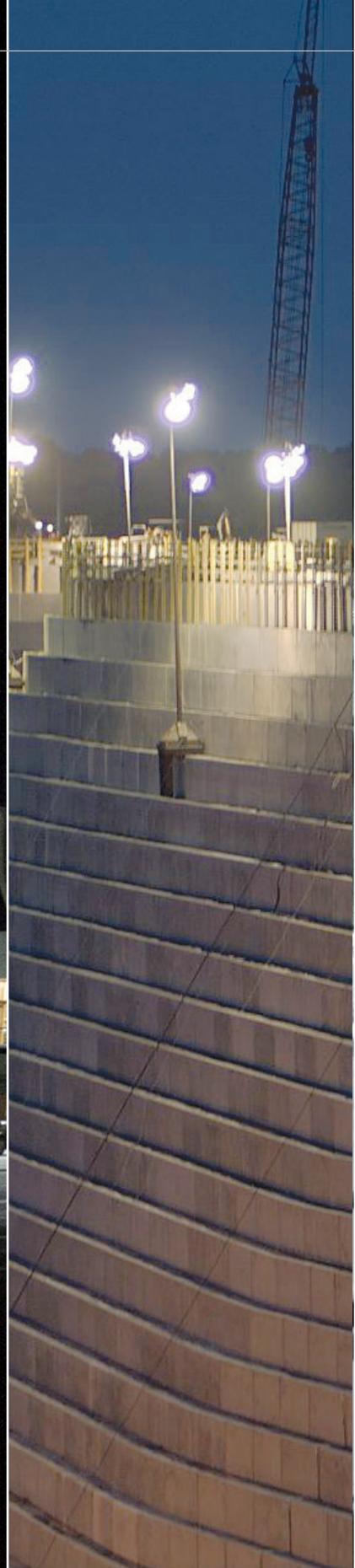
**Rail**



**Ports**



**Airports**



**Construction Sites**



**Industrial**



**Other Applications**

## Bringing Lighting Solutions to the World

Since 1976, Musco has established itself as the global leader in sports and large area lighting solutions. Little League® baseball fields. International speedways. The White House. San Francisco's Bay Bridge. NFL stadiums. The Olympics. And some of the largest ports in the world. When innovations in lighting systems are needed to enhance light quality, improve effectiveness, reduce spill light and glare, cut costs, and minimize the impact on our environment, customers turn to Musco.

With representatives in 34 countries and lighting projects in nearly 100 countries around the world, our team of engineering professionals, project managers, technicians, and build-to-order manufacturing capabilities are just part of what sets Musco apart. From the design of your system, to installation, to maintenance and performance monitoring, our Total Light Control — TLC for LED™ system provides a complete solution.

- Cuts energy consumption
- Reduces spill light and glare with total light control
- Eliminates 100 percent of routine maintenance for 10 years, provided by our global network of trained technicians

Our innovative lighting systems — with an LED or HID light source — have ushered in a new era for large area lighting and offer a solution complete from foundation to poletop.



**We Make It Happen.®**

## Santa Teresa Rail Yard

Santa Teresa, New Mexico, USA

### The Challenge

- Install a lighting system at one of the oldest and most important rail corridors in the U.S.
- Design a solution for a massive facility spanning nearly 12 miles and covering more than 2,200 acres
- Improve energy efficiency and cost effectiveness at Santa Teresa

### The Solution

- With experience developing systems for rail facilities around the world, Musco was uniquely positioned to deliver the best possible solution at Santa Teresa
- Musco engineered a solution with its Light-Structure System™ built from foundation to poletop in 5 Easy Pieces™, using Green Generation™ technology
- The new lighting system was customized to meet the specific operational and safety needs at Santa Teresa

### The Result



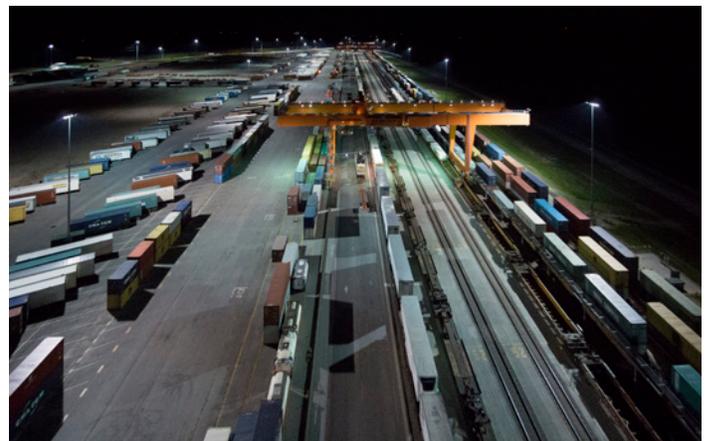
**Visibility** — The system delivered higher quality lighting with fewer luminaires, and its patented light control technology virtually eliminated glare and spill



**Energy Efficiency** — Energy consumption was reduced by 33 percent, providing a 10-year energy savings of \$1.5 million compared to typical 1,000-watt metal halide equipment



**Zero Maintenance** — Musco's long-term parts and labor warranty eliminated maintenance concerns and costs for 10 years



## BNSF Railway – Logistics Park Kansas City Intermodal Facility

Edgerton, Kansas, USA

# Solutions for *Rail Yards*



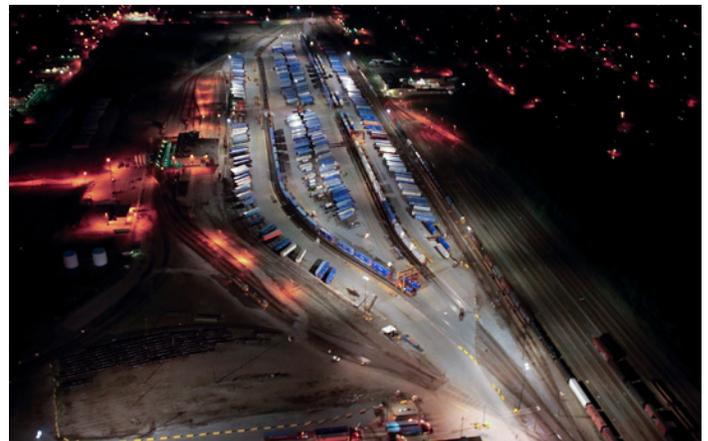
**Santa Teresa Rail Yard**

Santa Teresa, New Mexico, USA



**San Antonio Intermodal Terminal**

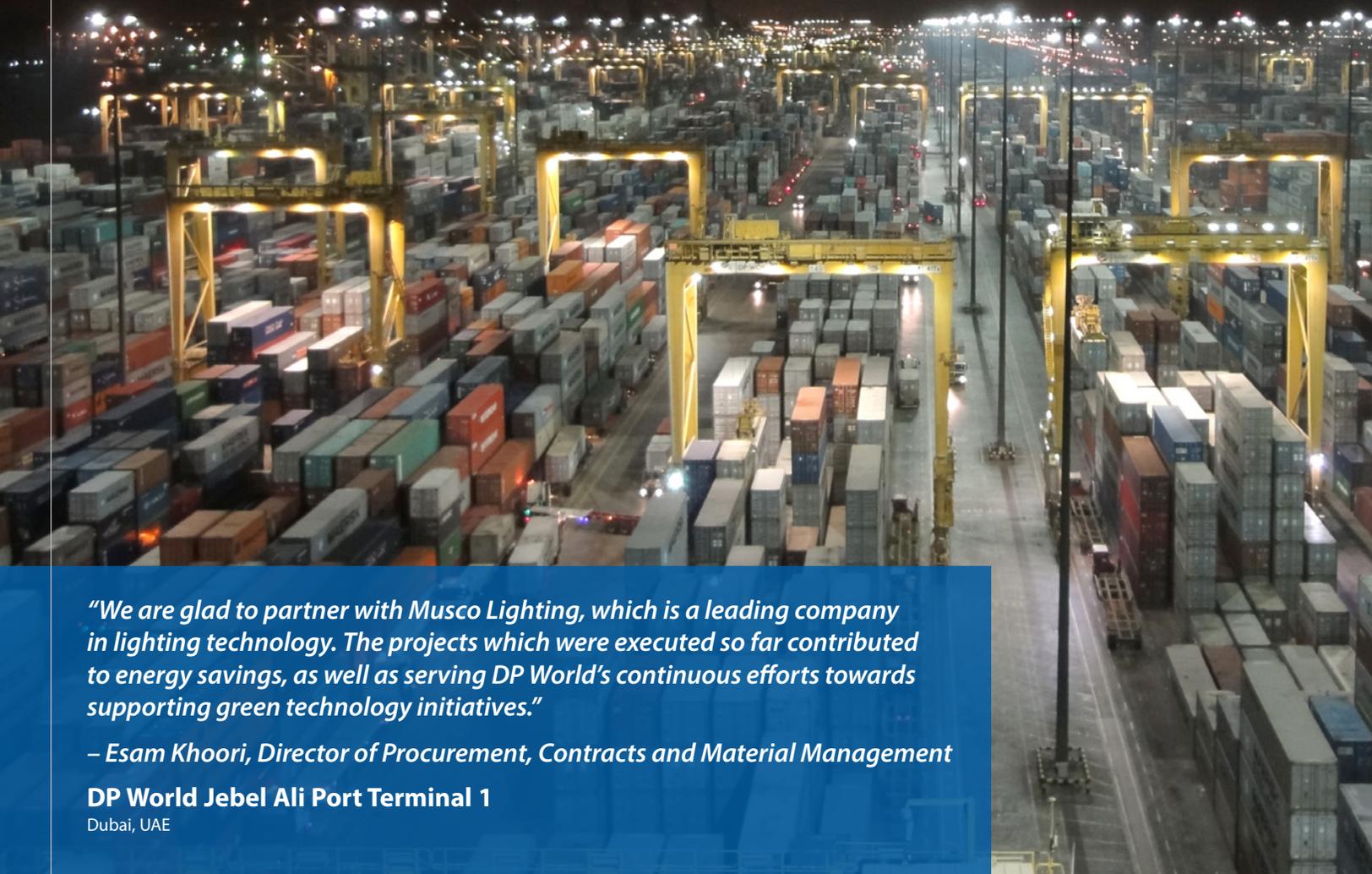
Van Ormy, Texas, USA



**Dolton Yard Center Intermodal Terminal**

Dolton, Illinois, USA

# Solutions for *Ports*

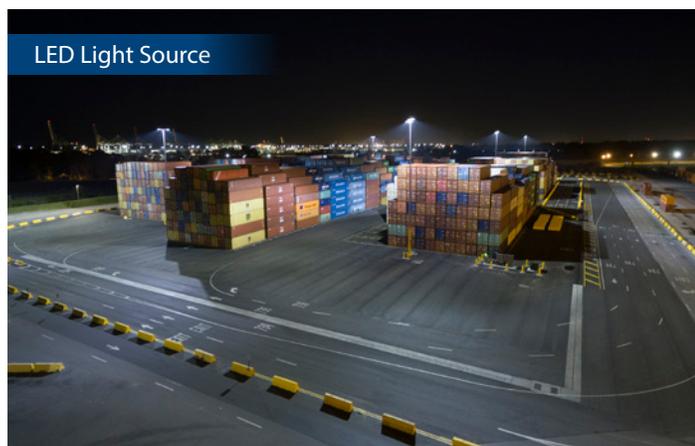


*"We are glad to partner with Musco Lighting, which is a leading company in lighting technology. The projects which were executed so far contributed to energy savings, as well as serving DP World's continuous efforts towards supporting green technology initiatives."*

*– Esam Khoori, Director of Procurement, Contracts and Material Management*

**DP World Jebel Ali Port Terminal 1**

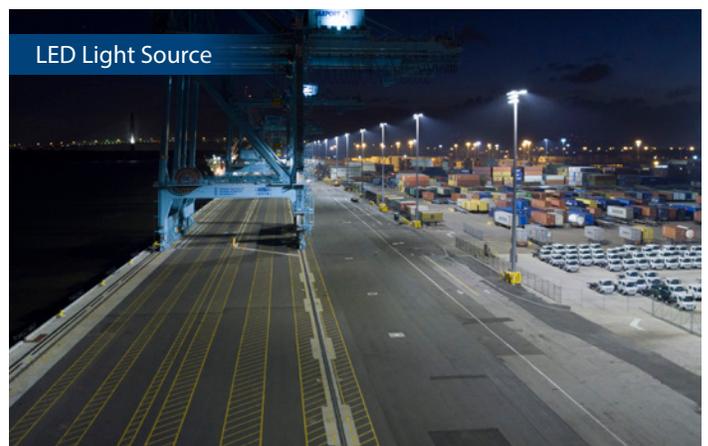
Dubai, UAE



LED Light Source

**Georgia Ports Authority – Mason Empty Yard**

Savannah, Georgia, USA



LED Light Source

**Jacksonville Port Authority – JaxPort Wharf Reconstruction**

Jacksonville, Florida, USA



## DP World Jebel Ali Port Terminal 2

Dubai, UAE

### The Challenge

- Install a state-of-the-art lighting system at one of the largest ports in the Middle East, allowing the facility to stay operational during the installation process
- Provide higher light quality and consistent light levels while reducing glare and off-site spill
- Improve energy efficiency and reduce massive operating costs due to energy consumption and maintenance

### The Solution

- Musco's experience lighting some of the world's biggest ports uniquely positioned the company to overcome the project's major challenges
- The solution involved custom-designing Musco's Total Light Control — TLC for LED™ technology
- Patented light and glare control delivers light precisely where intended while preserving darkness where light isn't wanted

### The Result



**Easy Installation** — The streamlined installation of Musco's TLC for LED technology onto existing poles allowed the port to stay operational during the retrofit process



**Improved Operations** — The system strategically lit the sides of stacks and roadways, helping to improve safety for truck and lift operators



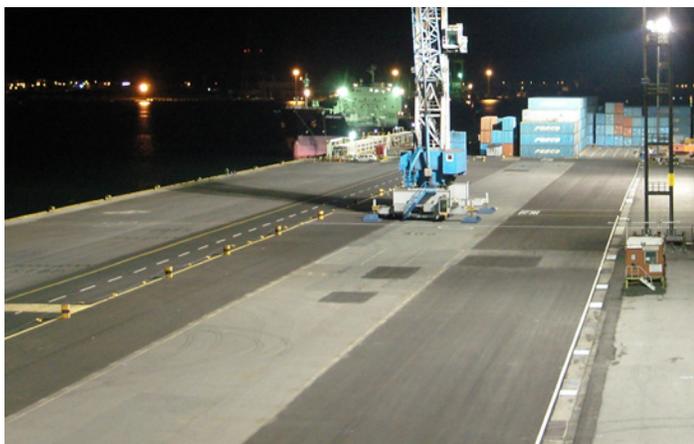
**Visibility** — The remarkable light control and cut off of TLC for LED resulted in higher quality and more uniform lighting precisely where intended



**Energy Efficiency** — Energy consumption was cut 66 percent, DP World would realize a savings of \$2.9 million in energy and operating costs, and maintenance was eliminated for 15 years



**Cost Effective** — DP World is expected to pay off its initial investment in the lighting in less than four years



## Ulsan Container Terminal

Ulsan, Korea

## Vancouver International Airport (YVR)

Richmond, British Columbia, Canada

### The Challenge

- Install an LED apron lighting system at the second busiest airport in Canada without disrupting the operations of YVR's ground crews
- Help improve safety of pilots, air traffic controllers, and ground staff by increasing light levels, improving uniformity, reducing glare, and preserving darkness around the airport
- Improve energy efficiency by making the system adaptive based on gate usage, reduce operating costs, and eliminate maintenance

### The Solution

- Having installed its LED solution at other major airports around the world, Musco was identified as the best partner for the project at YVR
- Musco's Total Light Control — TLC for LED™ system technology was retrofitted onto the existing support structures, and featured remote electrical component enclosures for easy access
- The system delivers unprecedented light control to apply a more uniform light precisely where intended, as well as instant on/off/dimming capabilities

### The Result



**Easy Installation** — The system was installed at YVR in a streamlined manner that didn't disrupt regular operations at the airport



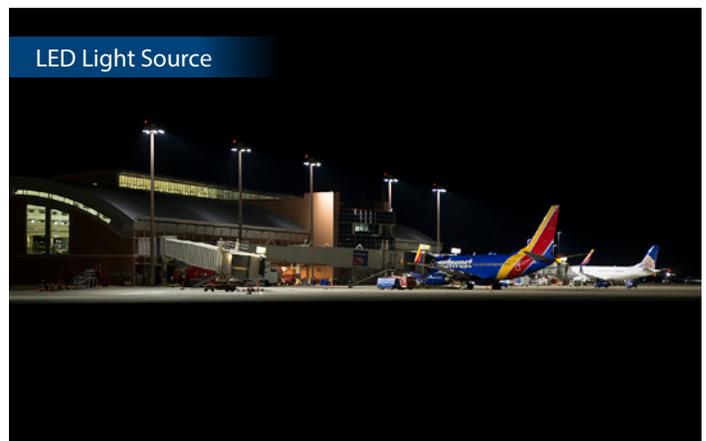
**Visibility** — The improved light quality and reduced glare helped enhance operational effectiveness and safety for ground crew, pilots, and air traffic controllers while also preserving darkness around YVR



**Energy Efficiency** — The system improved efficiency by adapting light levels at gates based on usage, reducing energy consumption at YVR by 715,000/kW hours per year



**Zero Maintenance** — Musco's long-term parts and labor warranty eliminates maintenance concerns and costs for 10 years



## Midland International Air & Space Port

Midland, Texas, USA

# Solutions for Airports

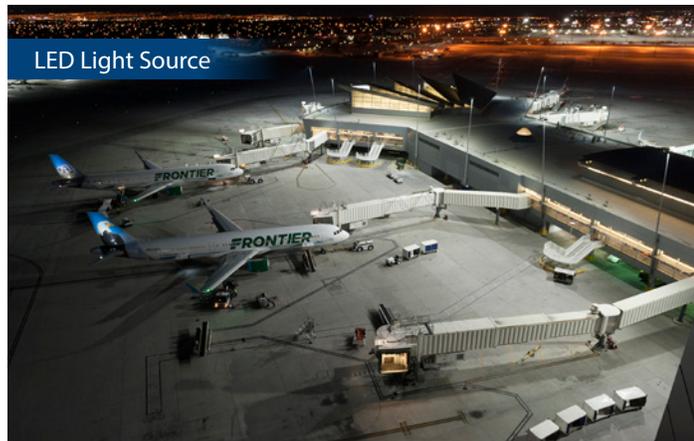
**Vancouver International Airport (YVR)**

Richmond, British Columbia, Canada

LED Light Source



PRIOR: HID LIGHT SOURCE



LED Light Source

**McCarran International Airport**

Las Vegas, Nevada, USA



**Xiamen Airport Terminal 3 Apron Relighting**

Xiamen, Fujian, China

# Solutions for *Construction*



## **Saluda Dam**

Lexington, South Carolina, USA



## **I-90 Albany**

Albany, New York, USA

# on Sites



## Saluda Dam

Lexington, South Carolina, USA

### The Challenge

- Provide high-quality lighting for the Saluda Dam Remediation Project for Barnard Construction Company
- Help Barnard workers complete the dam strengthening project to protect the state's capital, Columbia, on time and on budget
- Provide enough quality light for workers at night to help ensure their safety at a job site where they worked around two active power plants, five penstocks, two circulation pipelines, high-voltage transmission lines, and a high-pressure gas line

### The Solution

- Having developed the most powerful and efficient temporary lighting solutions in the world, Musco was an ideal partner and had worked with Barnard Construction Company on previous projects
- Musco's industry-leading lighting system was mounted on temporary structures to provide quality and efficient light throughout the night
- The solution allowed for the lighting of hard to reach areas at the job site

### The Result



**Improved Operations** — Musco's temporary lighting allowed construction at Saluda Dam to be fast-tracked with work happening at night



**Visibility** — The solution provided high-quality, efficient lighting that helped ensure a safer work environment for workers



**Project Efficiency** — Barnard Construction Company completed the project at Saluda Dam ahead of schedule



## Miami of Ohio Athletic Facility Construction

Oxford, Ohio, USA

## Des Moines Wastewater Reclamation Authority

Des Moines, Iowa, USA

### The Challenge

- Install a lighting system that would help the Wastewater Reclamation Authority reduce energy consumption while treating an average of 59,000,000 gallons per day
- Reduce light spill and glare, and provide dimming capabilities, as other ways to improve energy efficiency
- Keep up-front costs down, reduce energy and operating costs, and eliminate maintenance at the plant

### The Solution

- Musco's experience designing lighting solutions for applications of all sizes—from small parking lots to major transportation structures—made it an ideal fit for the project
- The solution involved retrofitting Musco's Total Light Control — TLC for LED™ technology onto the facility's existing poles
- The Authority received an energy rebate for choosing Musco's energy efficient LED system, helping to offset initial costs

### The Result



**Energy Efficiency** — Musco's solution reduced energy consumption at the Wastewater Reclamation Authority by 73 percent



**Dimming Controls** — With dimming controls, the system allowed the facility to further enhance efficiency while also having security lighting in place

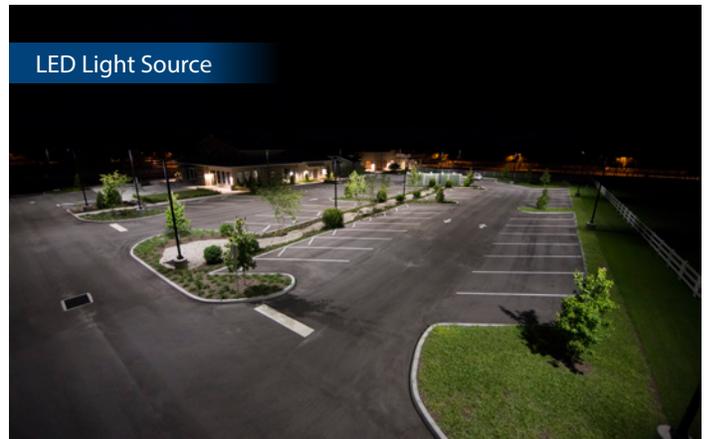


**Light Quality** — Off-site spill and glare was virtually eliminated



**Zero Maintenance** — Operating costs have been cut \$121,000 over the next decade, and maintenance costs and concerns were eliminated for 10 years

# Solutions for In Large Area App



LED Light Source

## Harmony Retail Center

Harmony, Florida, USA

# *Industrial* and other applications



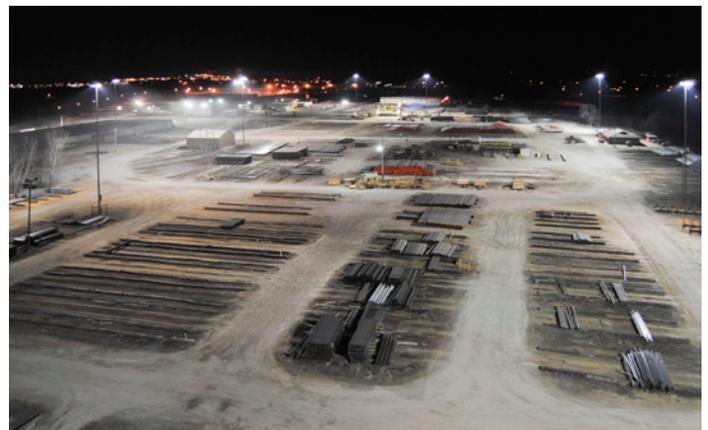
**Des Moines Wastewater Reclamation Authority**  
Des Moines, Iowa, USA

LED Light Source



LED Light Source

**San Francisco-Oakland Bay Bridge**  
Oakland, California, USA



**TMK IPSCO Steel Tubulars**  
Camanche, Iowa, USA

# System Technology

## A Complete System or Retrofit Solution

### 5 Easy Pieces™

Light-Structure System™ is designed in 5 Easy Pieces from foundation to poletop to provide a complete solution for lighting, electrical, and structural needs.

- Unique reflector system and optic design provide optimal energy efficiency and light control
- Patented glare control technology keeps light away from neighboring facilities
- Durable system delivers trouble-free operation
- Small structural footprint maximizes the available area around the poles

### Unique considerations for large area lighting

- Musco offers modular light solutions for existing poles, specialty-use poles, and roof-mounted structures

### Lighting Control and Management

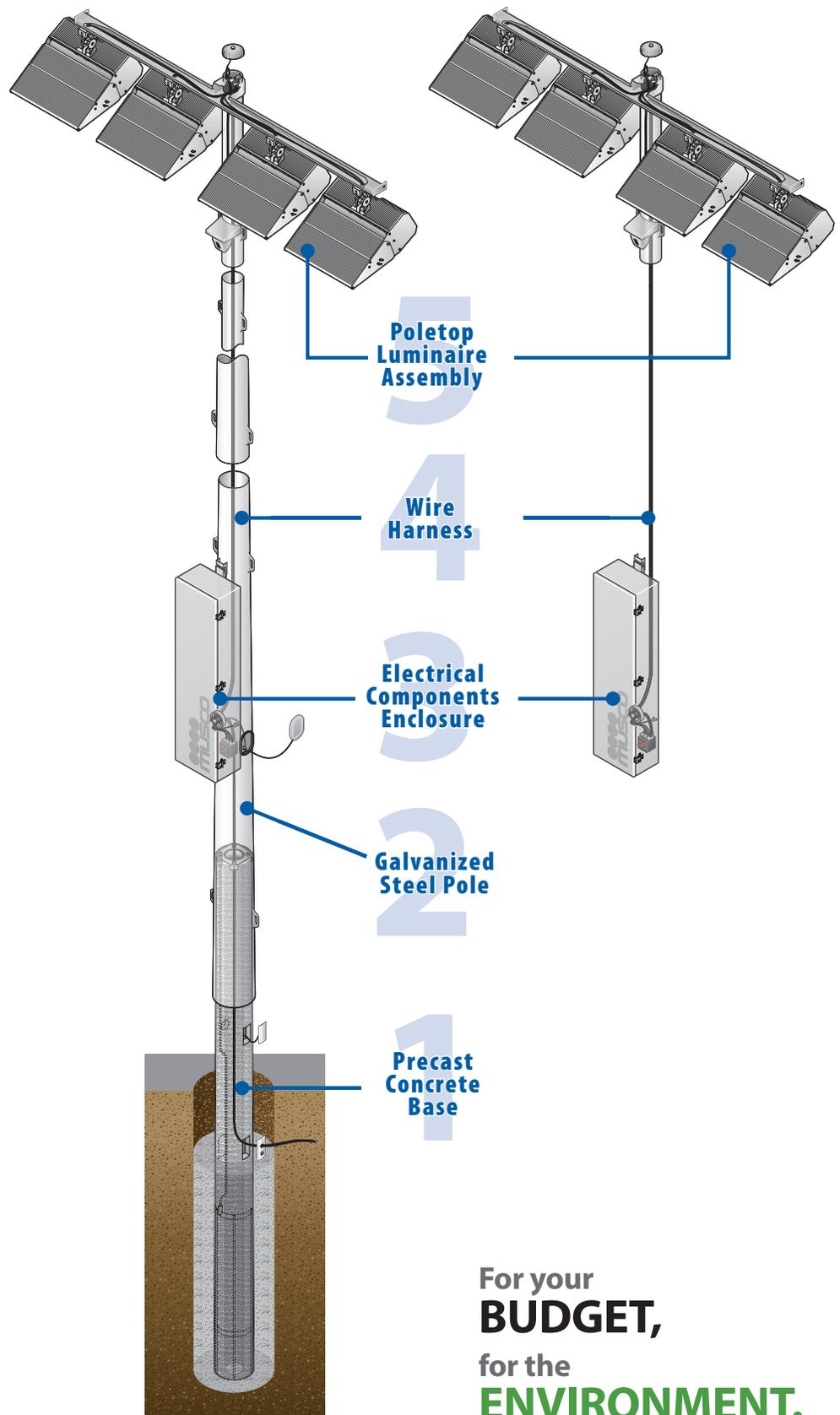
- Control-Link® controls and monitoring system manages facility lighting and other electrical equipment

### Retrofit Applications

- Includes new cross arms
- Factory wired, aimed, and tested
- New wire harnesses ensures no exposed wiring and solid connections with quick connection plug-ins
- Electrical Components Enclosure is located remotely for easy access

## Complete Solution Light-Structure System™

## Retrofit Solution

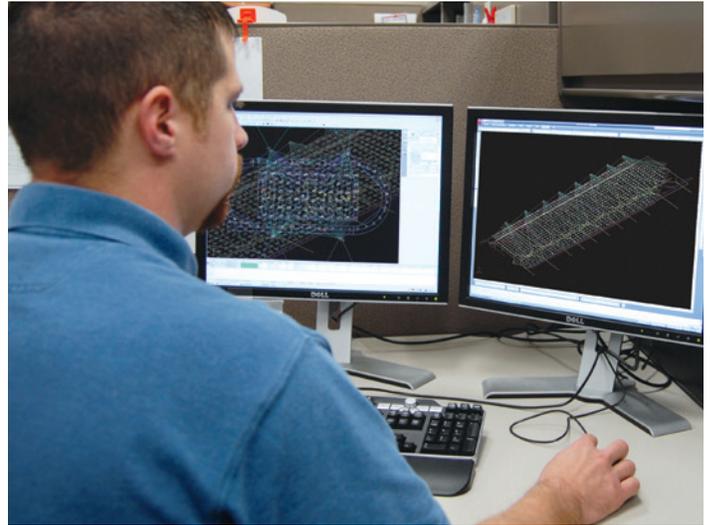


For your  
**BUDGET,**  
for the  
**ENVIRONMENT.**

## Design Expertise

Our team of certified lighting engineers will work with you to design a custom lighting solution to:

- Reduce your facility's energy use
- Deliver superior working light by optimizing light aiming angles and reducing disruptive glare
- Provide controlled light per specified light levels
- Control off-site spill light and glare
- Minimize the number of poles needed to light an area
- Ensure structural requirements for poles and foundations



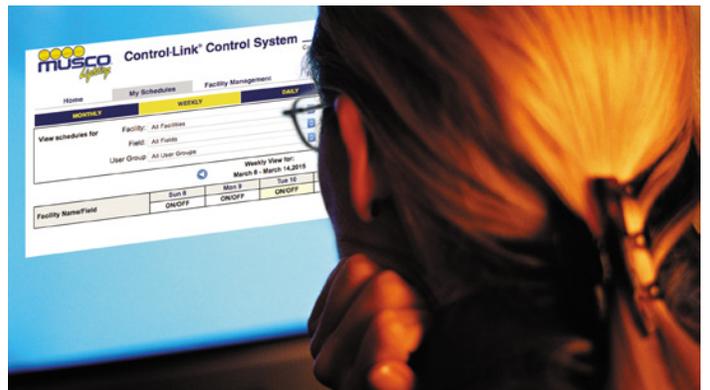
## Installation Services and Project Management

- Full installation services available from electrical to structural
- Network of more than 1,800 trained contractors
- Experienced project managers available throughout the installation process
- Minimize disruption to ongoing operations



## Controls & Monitoring Systems

- Control-Link® manages the scheduling for lighting and other electrical equipment via an easy to use website, smartphone app, email, and 24/7 call center
- This system schedules nearly 5 million events each year, helping to reduce energy usage, cut labor expenses, and provide usage information
- Alerts Musco's service team of any potential problems with the lighting components
- Compatible with existing or other control systems



## Warranty and Support

- Musco's comprehensive warranties are backed by a service and warranty team that includes more than 160 members
- Musco monitors the performance of its lighting systems in facilities around the world to ensure they are always ready for operation
- Each year Musco's technicians provide field maintenance, perform warranty work, and consult on temporary lighting needs at more than 5,000 facilities





**Unequaled performance . . .**  
*for your budget, for the environment.*



**We Make It Happen.®**

[www.musco.com](http://www.musco.com)  
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