



# System Upgrade Solutions

Retrofit to TLC for LED® Technology



We Make It Happen®

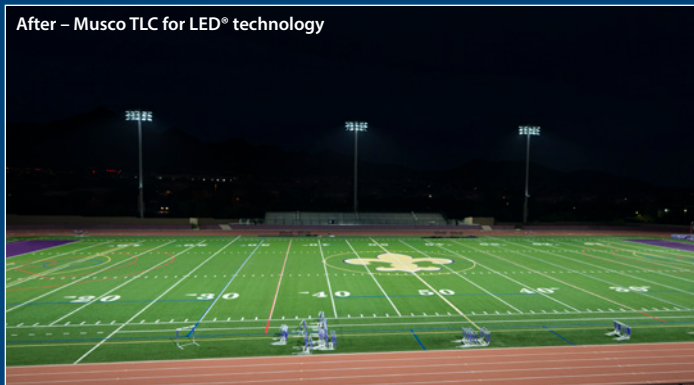


Before – other manufacturer's LED equipment



- ✗ Shut down by neighborhood glare concerns
- ✗ Unable to maintain light levels on the field

After – Musco TLC for LED® technology

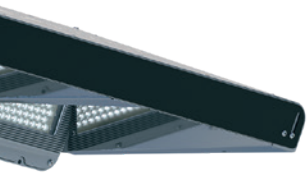


- ✓ Resolved neighborhood concerns
- ✓ Met light level and uniformity requirements for player safety

# Upgrading Your System With TLC for LED® Technology

The quality of LED sports lighting is only as good as the system that applies it. Sports venues of all sizes are discovering this every day.

At Musco, we're using our more than 45 years of experience in light and glare control to take advantage of the unique characteristics of the LED source to provide a system upgrade with benefits you won't find with other lighting equipment.



## **Better On-Field Lighting for Improved Playability**

Photometric designs and application expertise deliver the light levels, uniformity, and ability to track aerial balls for player safety and a better experience for fans.

## **Reduced Energy Consumption for Cost Savings**

TLC for LED® can reduce energy consumption by as much as 80 percent compared to HID.

## **Minimized Glare and Spill for Happy Neighbors**

Custom optics and patented luminaire visoring provides superior control, minimizes spill and glare, and creates a curtain of darkness around your field.

## **Complete System Design for Better Reliability**

Using existing poles saves money, and our system ensures that your poletop mounting structures will be reliable for the long term.

***With Musco's parts and labor warranty, you won't pay maintenance costs for 10 years or more. And the Control-Link® control system provides proactive system monitoring and call center support 24/7/365.***

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## **Notre Dame Preparatory High School • Scottsdale, AZ, USA**

Not long after Notre Dame Preparatory High School installed other LED lighting equipment, the school was forced to keep the lights off due to problems with spill light and glare affecting the neighbors. Musco replaced the lights with a TLC for LED® system upgrade, which provided neighbor-friendly light control while meeting required light levels on the field.

*"If we went back and replayed our decision on what company to go with, there's no doubt we would've gone with Musco from the very beginning."*

Jerry Zander, Principal, Notre Dame Preparatory High School

Learn more about the  
Notre Dame Preparatory  
High School project here.



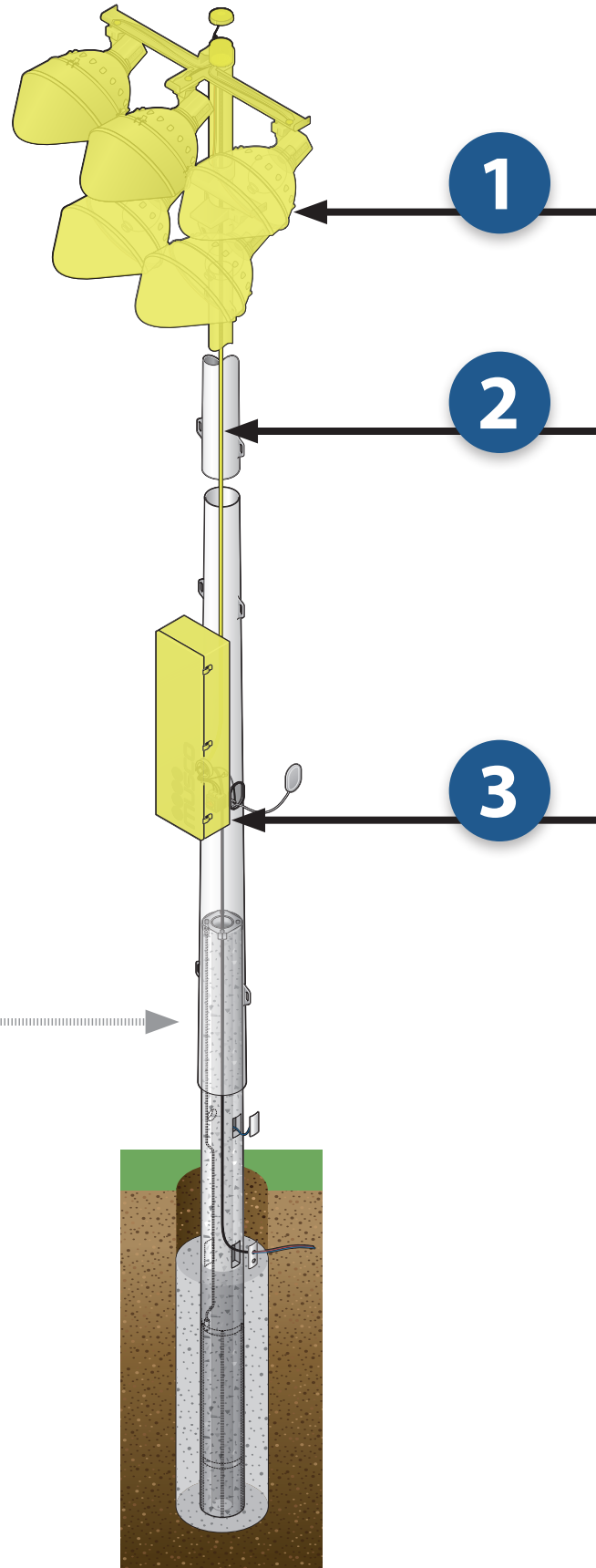
## Musco's TLC for LED® Retrofit System Upgrade

Our solutions are designed as a system with lighting, electrical, and structural components engineered to work together. We'll conduct a structural assessment of your current lighting and our system upgrade solution will include a new wire harness, a new electrical components enclosure, and a new poletop luminaire assembly to help ensure structural integrity and long-term reliability.

### Structural Inspection

- To assess integrity of existing support structure

### Existing Light-Structure System™





## System Upgrade to TLC for LED® Technology

### Poletop Luminaire Assembly

### Wire Harness

### Electrical Component Enclosure

- Patented optics and glare control for better on-field lighting and precise control
- New crossarms to replace existing support structure
- Factory wired, aimed, and tested
- Single aiming point for fast, reliable installation
- New factory-built wire harness
- Custom made per pole length and luminaire configuration
- Ensures no exposed wiring and solid connections with quick connect plug-ins
- Optional BallTracker® technology for aerial sports
- Located remotely for easy access
- Houses major electrical components
- Factory wired and tested, with surge protection and fusing for sensitive electronic components

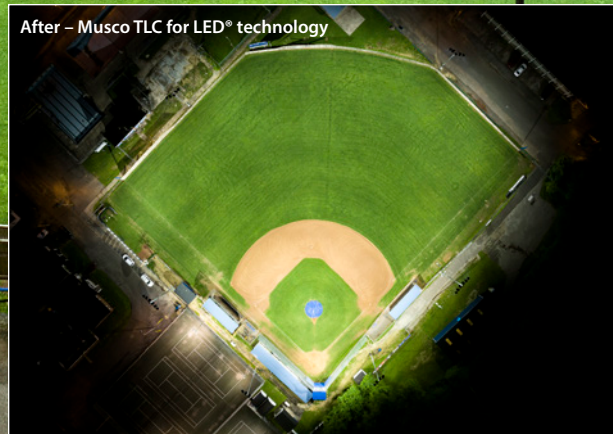
*"Musco's support is superb. They provided information on design, photometrics, and structural calculations. Any questions were quickly answered. They provided the most efficient design in terms of power usage with fixtures that weighed the least. I highly recommend them to anyone thinking of a retrofit upgrade."*

– Patricia J. Hayes  
P.E. Electrical Engineering





- ✗ Failed to meet KHSAA standards
- ✗ Negatively impacted player visibility



- ✓ Meets KHSAA standards and improves playability
- ✓ Nearly tripled on-field light levels



# Better On-Field Lighting

*TLC for LED®, along with our innovative BallTracker® technology, delivers a whiter and more uniform light, and allows players and fans to track the entire flight of the ball.*

## Paintsville High School

Paintsville, Kentucky, USA

At Paintsville High School in Kentucky, district leaders opted for non-Musco LED fixtures for a retrofit at their baseball stadium.

The recently-installed LED lights were removed and replaced with Musco's TLC for LED® system, which nearly tripled on-field light levels, satisfying KHSAA's standards.

Patented BallTracker® technology targets controlled light upward to allow players and fans to easily track the flight of the aerial ball at night.

*"The deficiencies created by our previous lighting system created an extremely unsafe playing field for all of our baseball programs. Our Board of Education selected Musco to solve our problems based on Musco's long history of being the standard bearer for field lighting. The new lighting is top of the line and resolves any safety issues we had previously."*

– David Gibson  
Superintendent, Paintsville Independent Schools

Learn more about the  
Paintsville project here.





# Reduced Energy Consumption

*Musco's TLC for LED® system upgrade can reduce energy consumption by as much as 80 percent compared to HID.*

## **Everly-Montgomery Field**

St. Vrain Valley School District  
Longmont, Colorado, USA

St. Vrain Valley School District in Longmont, Colorado, needed an LED retrofit at its Everly-Montgomery Field that would reduce energy consumption and qualify for an energy efficiency rebate.

Project leaders opted for a TLC for LED® retrofit system upgrade from Musco.

In addition to improving light levels, the new system cut energy consumption by 60 percent compared to the previous HID lights, earning the district a \$30,000 rebate through the local Efficiency Works program.

*"Musco's system was very easy to install and went together quickly. All of the fixtures were numbered, pre-aimed, and bolted to the crossarms; and the wire harnesses were numbered and easily plugged together. The tech and site support from Musco was excellent and very accessible."*

– James Wakefield  
Project Superintendent, Duro Electric







Learn more about the  
Everly-Montgomery Field project here.





# Minimized Glare and Spill

*The patented light control technology of TLC for LED® delivers a level of precision never before possible, re-directing previously wasted light onto the field and minimizing glare and spill.*

## **Ravsten Stadium**

Idaho Falls, Idaho, USA

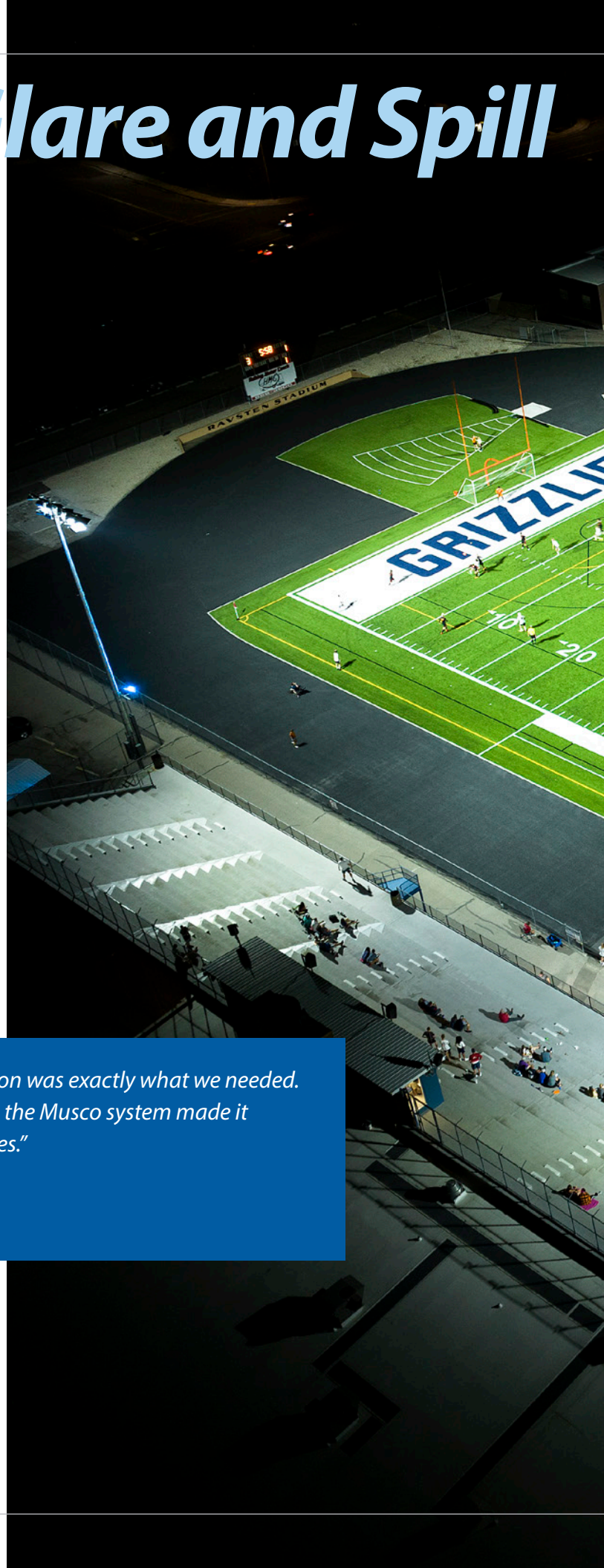
In Idaho Falls, Idaho, protecting dark nighttime skies from light pollution was a key consideration for school leaders when they wanted to update lighting at the district's Ravsten Stadium.

The district's electrical engineer on the project, Musgrove Engineering, knew of Musco's capabilities and opted for a TLC for LED® retrofit system upgrade.

With the new system in place, Ravsten Stadium received a Community Friendly Outdoor Sports Lighting Program designation from the International Dark-Sky Association. The system also includes Musco's Show-Light® special effects technology, enhancing game nights at the stadium with exciting light shows.

*"Musco has been great to work with, and the turnkey solution was exactly what we needed. Having all the Dark Sky and light control options built into the Musco system made it simple for the school district to meet state and local statutes."*

– Matthew Bradley  
Principal, Musgrove Engineering







Learn more about the  
Ravsten Stadium project here.







Before – other manufacturer's LED



- ✗ Failed to perform reliably when needed
- ✗ Spilled excessive light onto the Severn River

After – Musco TLC for LED® technology



- ✓ Delivered reliable, trouble-free operation
- ✓ Minimized spill light and glare



# Complete System Design

*Musco's complete system design, parts and labor warranty backed by regional technicians, and 24/7 support of Control-Link® control system ensure your field is always ready for play.*

## **U.S. Naval Academy**

Annapolis, Maryland, USA

The U.S. Naval Academy in Annapolis, Maryland, originally retrofitted 10 recreational and athletic fields with another manufacturer's LED lights, but started experiencing reliability issues after only a few years of operation.

The Academy called in Musco to replace the previously retrofitted LED lights with Musco's TLC for LED® system, featuring lighting, electrical, and new structural crossarms designed to work together.

The new system upgrade from Musco provided trouble-free operation. Musco's long-term parts and labor warranty eliminates maintenance costs for the Academy well into the future.

*"Our Musco systems not only provide fantastic performance, but are robust and reliable. In terms of product quality, Musco's system is in a class of its own. Pole top fixtures are manufactured to a high standard and substantial. They are built to last a lifetime and it shows. Control systems are located at a serviceable height (not requiring a lift) and the components are industrial grade. We have experience with a number of sports field lighting products at the United States Naval Academy, Musco is the only sports field lighting provider that has delivered the performance and service required to accomplish our mission."*

– Jabe H. Nekula, PE  
NAVFAC Washington, Public Works Department, Annapolis

Learn more about the  
U.S. Naval Academy project here.





## All LED Retrofits Are Not Created Equal

At sports fields and stadiums of all shapes and sizes, poorly planned and designed LED retrofits have created problems with light levels, spill and glare, and reliability.

At many, those recently installed LED fixtures have had to be removed and replaced with our TLC for LED® system to resolve the issues.

### St. Mary's Stadium – Southampton FC • Southampton, UK

Before – other manufacturer's LED



After – Musco TLC for LED® technology



The original LED retrofit at St. Mary's Stadium from another manufacturer created reliability issues and glare. It was replaced with Musco's TLC for LED® system upgrade, improving reliability and creating a better playing and viewing experience.

### Hawkins Field – Vanderbilt University • Nashville, Tennessee, USA

Before – other manufacturer's LED



After – Musco TLC for LED® technology



The recently-installed LED fixtures at Vanderbilt University's baseball stadium were a source of glare for players and produced uneven light levels, making it difficult to see the ball. Musco's TLC for LED® system upgrade with BallTracker® technology resolved the issues with glare and enabled players to see the ball better.

### Watsco Center – University of Miami • Miami, Florida, USA

Before – other manufacturer's LED



After – Musco TLC for LED® technology



The University of Miami's Watsco Center experienced problems with reliability and frequent maintenance on its recently installed LED fixtures. They were replaced with Musco's TLC for LED® system upgrade, improving reliability and maintenance concerns while creating a more stage-like atmosphere for television broadcasts.

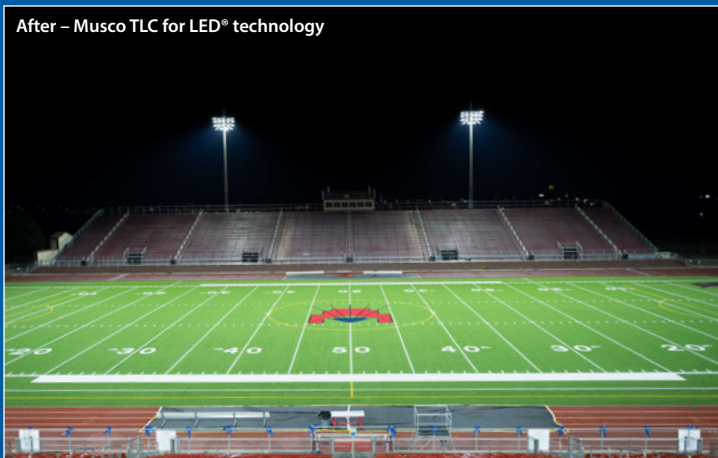


## La Joya High School • La Joya, Texas, USA

Before – other manufacturer's LED



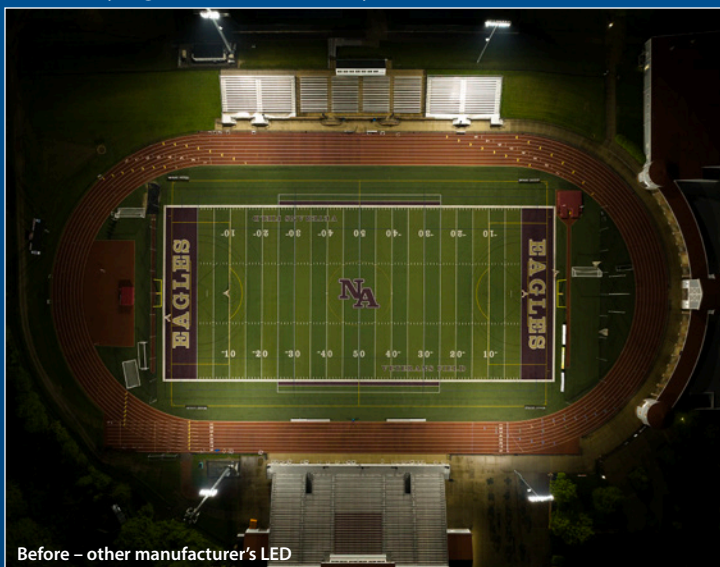
After – Musco TLC for LED® technology



When La Joya's LED fixtures from another manufacturer were damaged from heavy rain storms, the school was told its warranty wouldn't cover repairs or replacement lighting. Musco's TLC for LED® retrofit system upgrade was installed, improving light quality and glare control, while also being backed by a long-term warranty covering every part and all labor.

## New Albany High School • New Albany, Ohio, USA

Before – other manufacturer's LED



After – Musco TLC for LED® technology



After another manufacturer retrofitted LED fixtures at New Albany High School's football stadium, on-field light levels were significantly lower than was needed for optimal visibility and playability. The school had them removed and replaced with Musco's TLC for LED® retrofit system upgrade, increasing light levels and improving uniformity across the field.

## Ed Radice Park • Tampa, Florida, USA

Before – other manufacturer's LED



After – Musco TLC for LED® technology



The recently-installed LED retrofit at Ed Radice Park in Tampa, Florida, created disturbing glare for players and produced inadequate light levels. With Musco's TLC for LED® system upgrade, the facility gained much improved light levels and uniformity while also minimizing glare from the LED fixtures.





Vanderbilt Baseball Hawkins Field  
Nashville, Tennessee, USA



Bakersfield College Memorial Stadium  
Bakersfield, California, USA

## Musco's TLC for LED® Retrofit System Upgrade

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

UCCS Alpine Field  
Colorado Springs, Colorado, USA



**We Make It Happen®**

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