

# Datasheet: **Light-Structure System™**

**TLC for LED®**

## **5 Easy Pieces™**

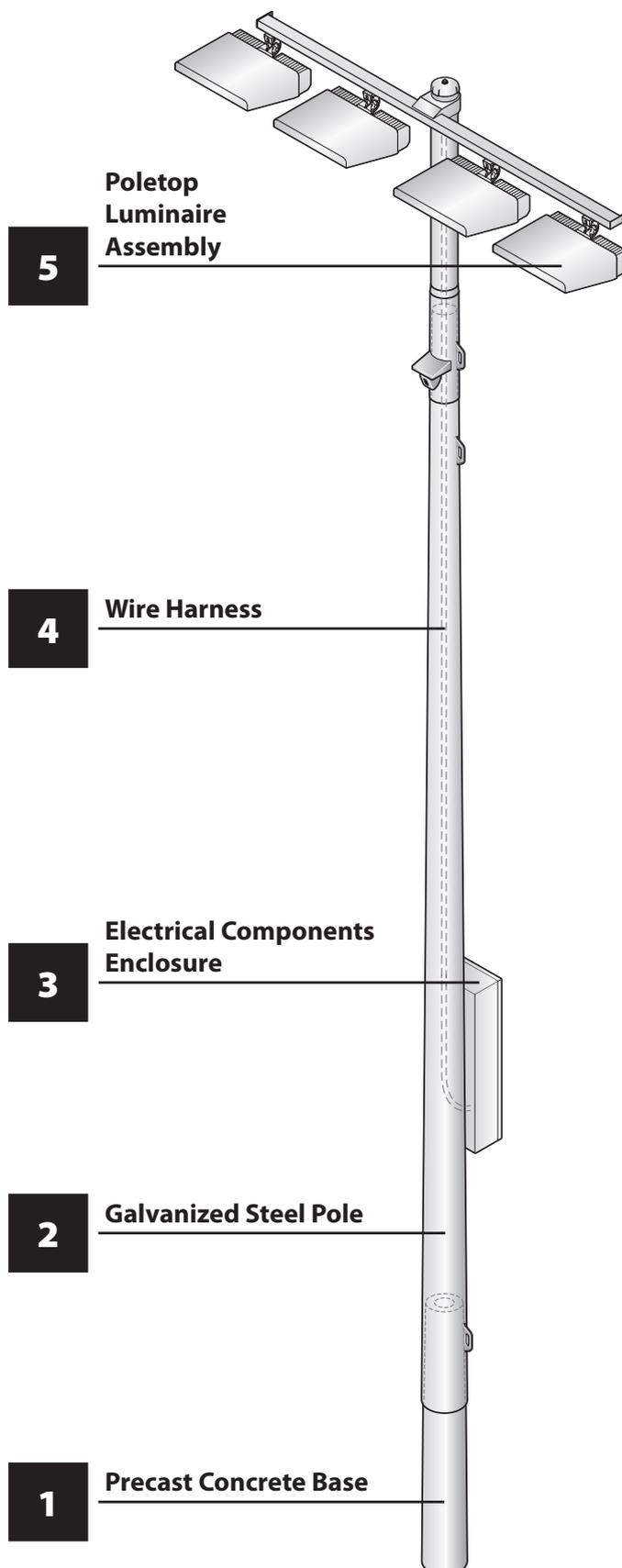
**Complete System from  
Foundation to Poletop**

Factory wired, aimed, and tested

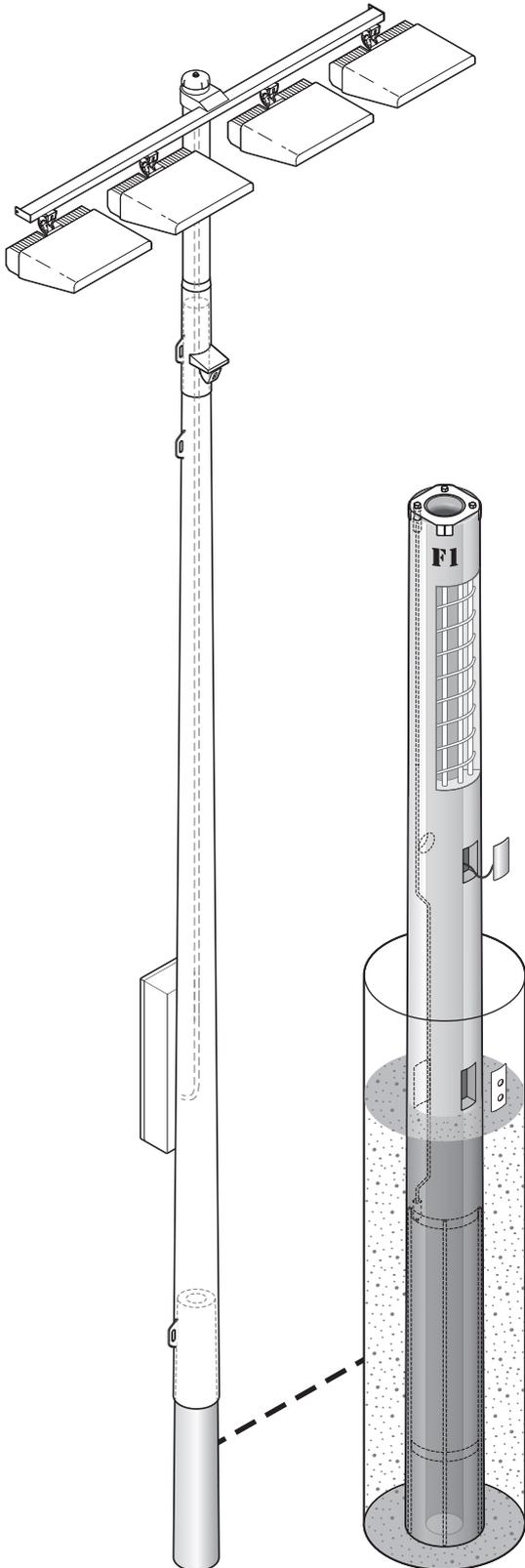
Fast, trouble-free installation

Comprehensive corrosion package

Integrated lightning ground



**TLC for LED® – Precast Concrete Base**



**Overview**

The precast concrete base is set directly into the ground and backfilled with concrete. The base includes an integrated lightning ground system.

**Features**

**Base**

- Set pole on base in 24 hours
- Tapered upper section for slip-fit steel pole
- Access holes for wire entry
- Epoxy-coated ends prevent water intrusion
- Lifting hole accepts load-rated steel rod provided by Musco

**Integrated Lightning Ground System**

- Complies with NFPA 780, UL 96A, and EN 62305 standards when installed per Musco installation instructions
- UL Listed, Class II Lightning Protection, file number E337467
- Tested up to 100 kA by independent laboratory
- Steel pole interfaces with integrated grounding system by means of the pole grounding connector
- 2/0 AWG (crosssectional area of 67.4 mm<sup>2</sup>) grounding electrode conductor
- Concrete-encased grounding electrode, 20 ft (6.1 m) total length, ½ in (12.7 mm) diameter

**Technical Specifications**

Base dimensions vary. For measurements refer to project-specific *Foundation and Pole Assembly Drawing*.

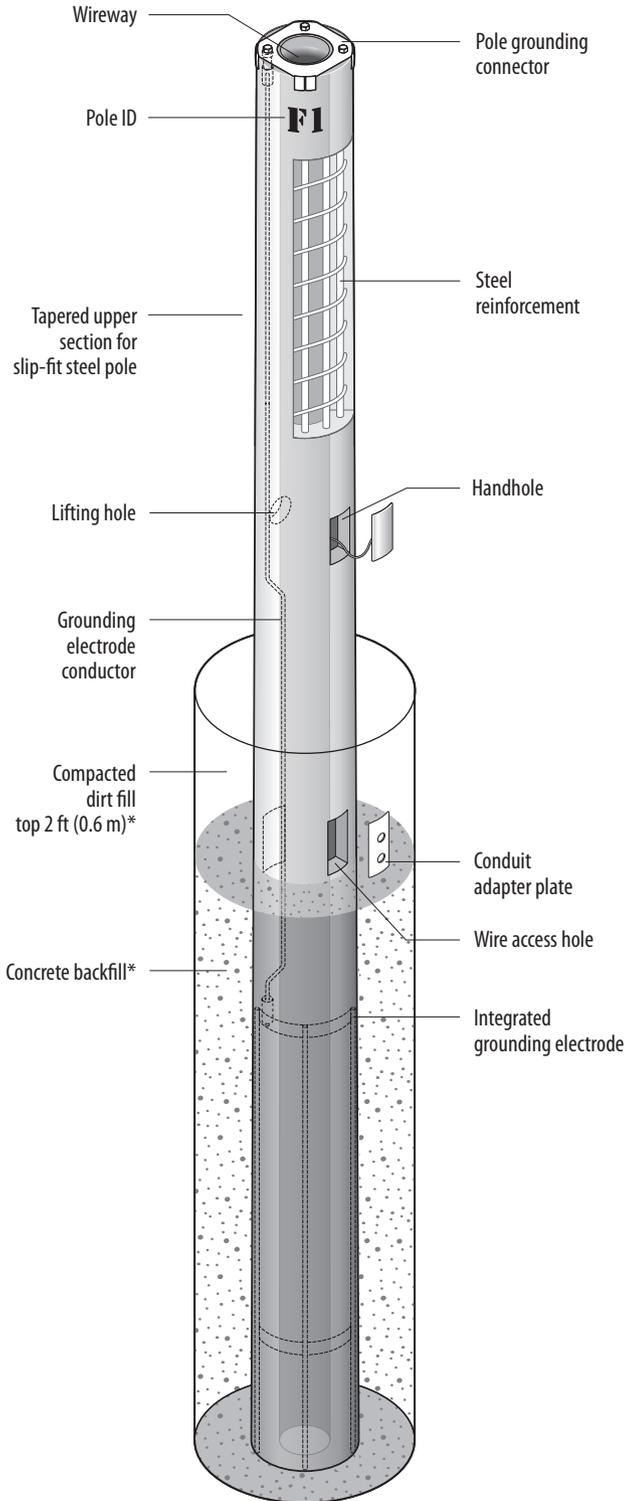
**Construction**

- Spun concrete construction
- Prestressed steel vertical strands and coil spiral for strength throughout base
- Minimum design strength is 9500 lb/in<sup>2</sup> (65.5 MPa) at 28 days
- Meets ASTM C1804 design requirements

**Quality Assurance Tests**

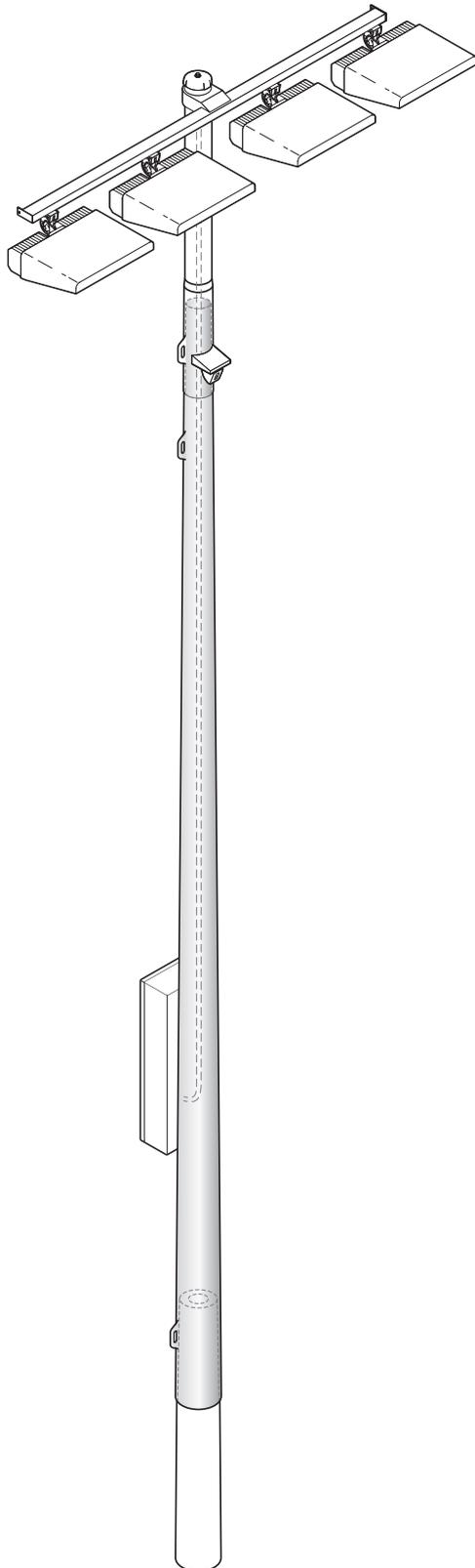
- 28-day compressive strength test on sample cylinder
- Bending moment capacity test on sample base
- Grounding system continuity
- Independent evaluation by ICC Evaluation Service, report #ESR-3765

**TLC for LED® – Precast Concrete Base**



\*Standard pier foundation shown. Foundation and/or backfill may vary per alternate foundation design.

**TLC for LED® – Galvanized Steel Pole**



**Overview**

The galvanized steel pole is designed to slip-fit together with the precast concrete base and the poletop luminaire assembly.

**Features**

- Slip-fit connection allows pole assembly with come-alongs
- Built-in hardware for attaching electrical components enclosure
- Wire access from inside the pole (no exposed wiring or conduit)
- Shipped in sections for easier handling
- Labeled with pole identification for location on field

**Technical Specifications**

Pole dimensions vary. For measurements refer to project specific pole configuration drawing.

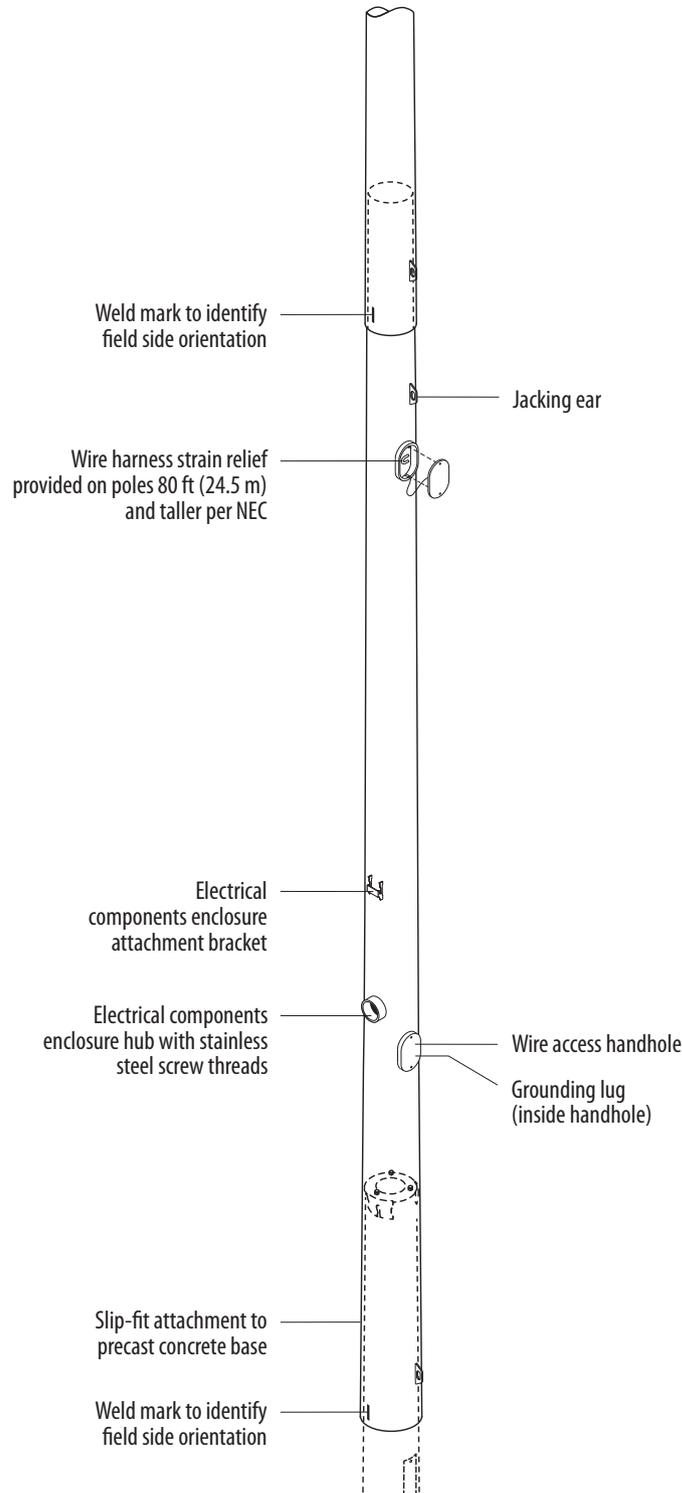
**Construction**

- Pole designs are tailored to meet the specific building codes and regulatory requirements of the project’s location and region
- High strength, low alloy, tapered, round steel pole
- Hot-dip galvanizing inside and outside after fabrication meets ASTM-A123 standard
- Grounding lug—rated for copper (CU) wiring
- Stainless steel fasteners passivated and coated

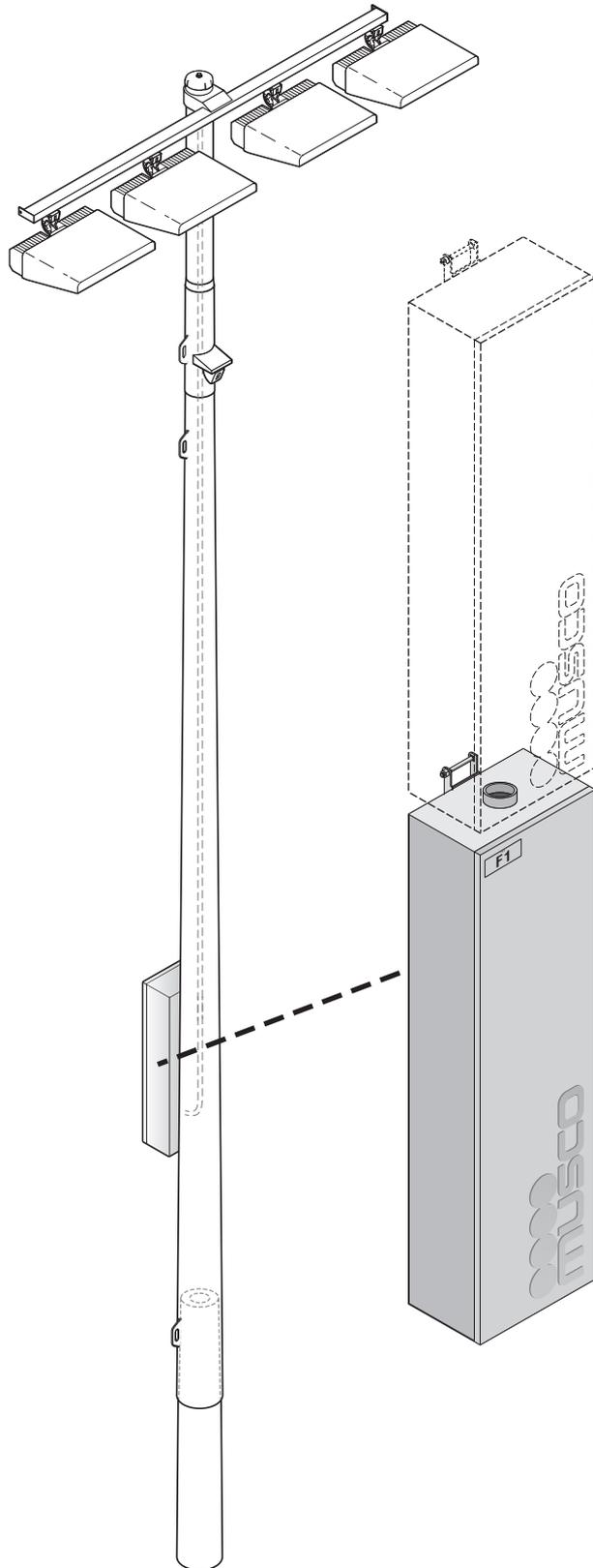
**Quality Assurance Tests**

- Material certifications are available upon notice prior to fabrication
- Straightness verification prior to shipment
- Galvanization thickness test

**TLC for LED® – Galvanized Steel Pole**



**TLC for LED® – Electrical Components Enclosure**



**Overview**

The electrical components enclosure contains all necessary equipment to operate luminaires. Built-in mounting hardware allows for easy attachment to the galvanized steel pole. Quick connect plugs fasten to the wire harness.

**Features**

- Factory-built and tested as a unit
- Quick connect plug for easy field wiring
- Mounted 10 ft (3 m) above grade for servicing with ladder
- Labeled with pole identification and electrical information
- Drivers individually fused and spare fuses supplied
- Wire access from inside the pole (no exposed wiring or conduit)
- Disconnect per circuit

**Technical Specifications**

For amperage draws and circuitry refer to project specific document.

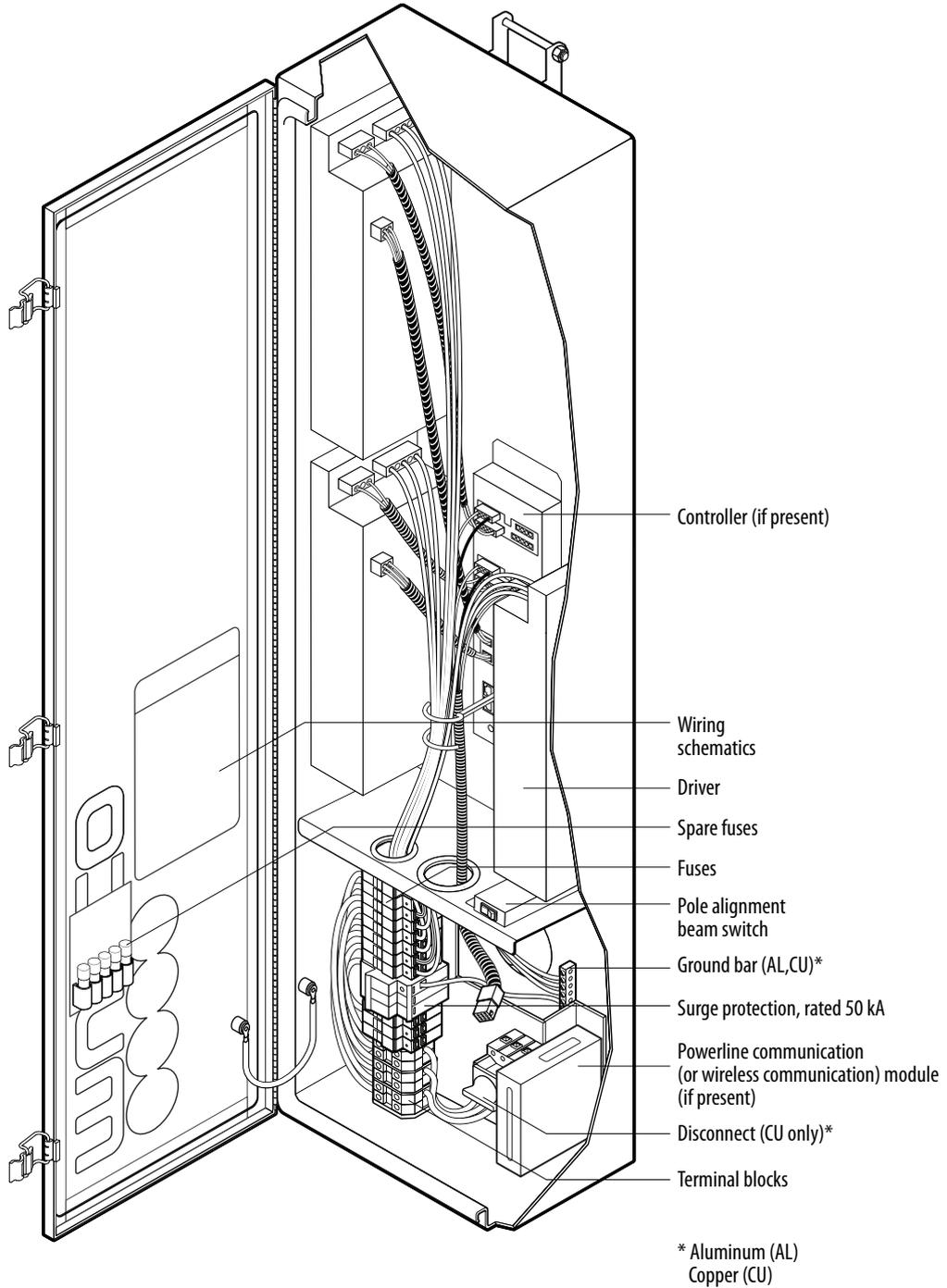
**Construction**

- 0.08 inch (2 mm) thick, powder-coated aluminum
- Enclosure ratings: NEMA 3R, IP54
- Designed to operate in up to 50° C (122° F) ambient temperature
- Full length stainless steel hinge
- All stainless steel fasteners passivated and coated
- Meets touchsafe standards
- Up to four drivers per enclosure
- Approximate weight 65 lb (29 kg)
- Lower enclosure size 14 in (356 mm) wide x 9 in (229 mm) deep x 52.5 in (1334 mm) high
- Upper enclosure size 14 in (356 mm) wide x 9 in (229 mm) deep x 40.5 in (1029 mm) high

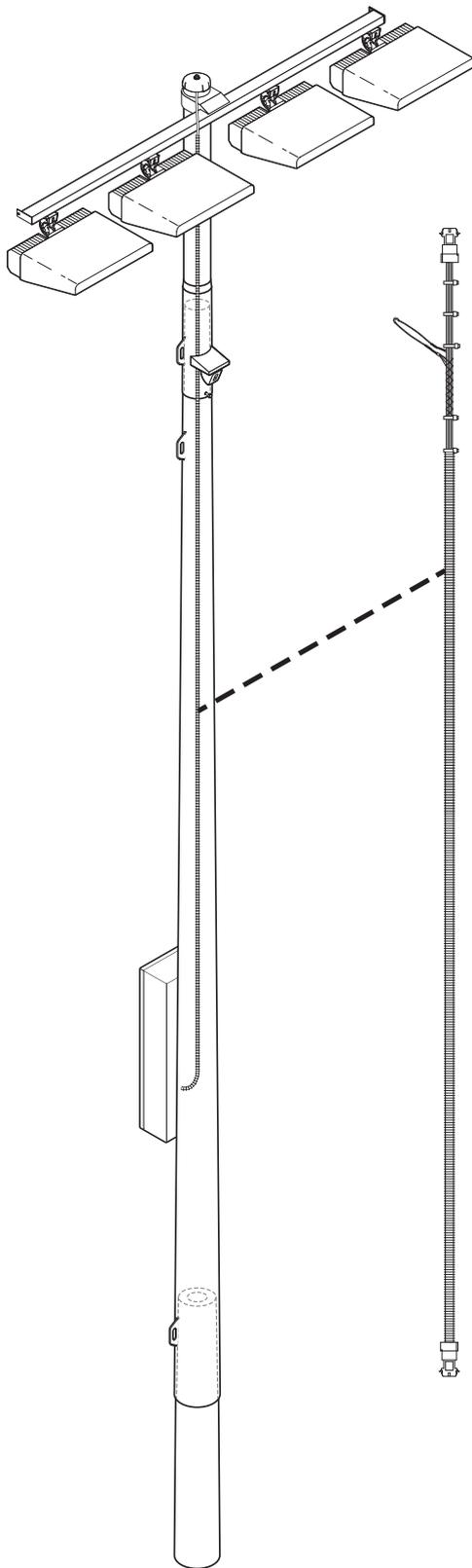
**Quality Assurance Tests**

- High potential dielectric withstand
- Full functionality test based on project’s voltage and simulated load

**TLC for LED® – Electrical Components Enclosure**



**TLC for LED® – Wire Harness**



**Overview**

The factory-built wire harness connects the electrical components enclosure to the poletop luminaire assembly.

**Features**

- Quick connect plugs for easy field wiring
- Factory-assembled support grip alleviates strain on connections
- Spiral wound cable eliminates slippage
- Protective sleeve prevents wire damage
- All internal wiring, no exposed wires
- Labels identify pole and luminaires

**Technical Specifications**

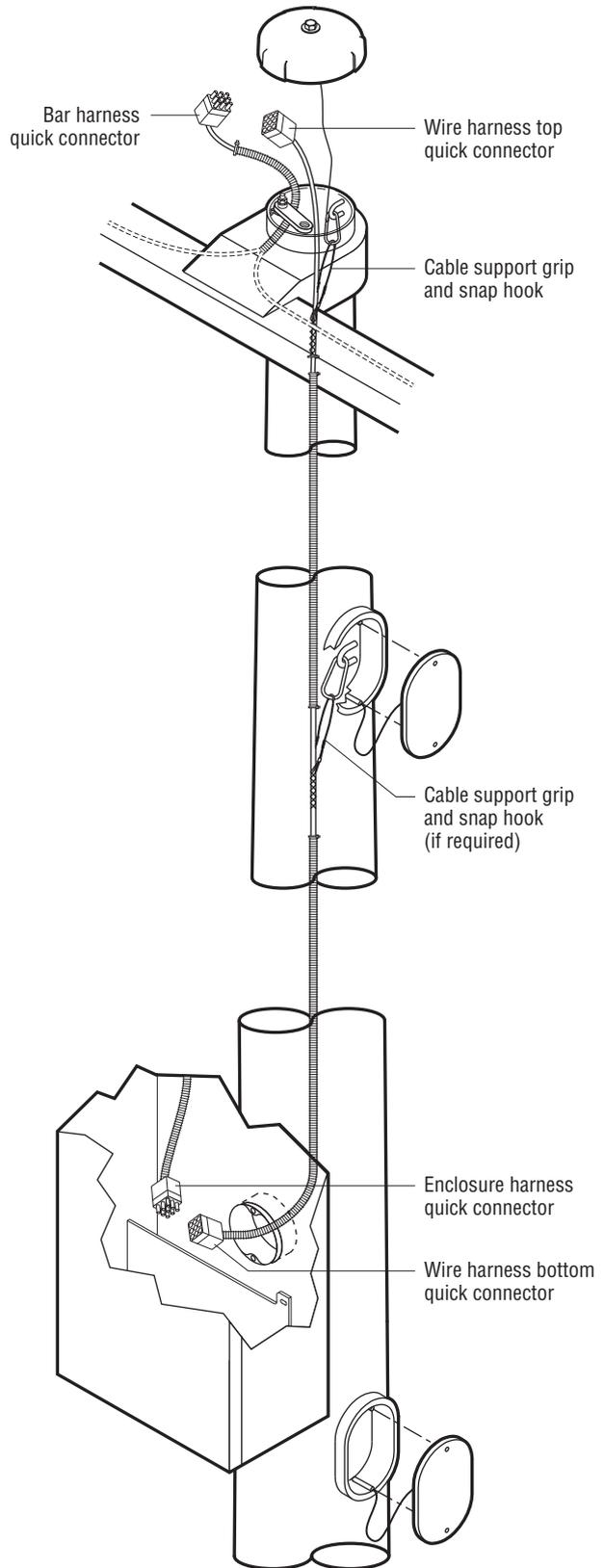
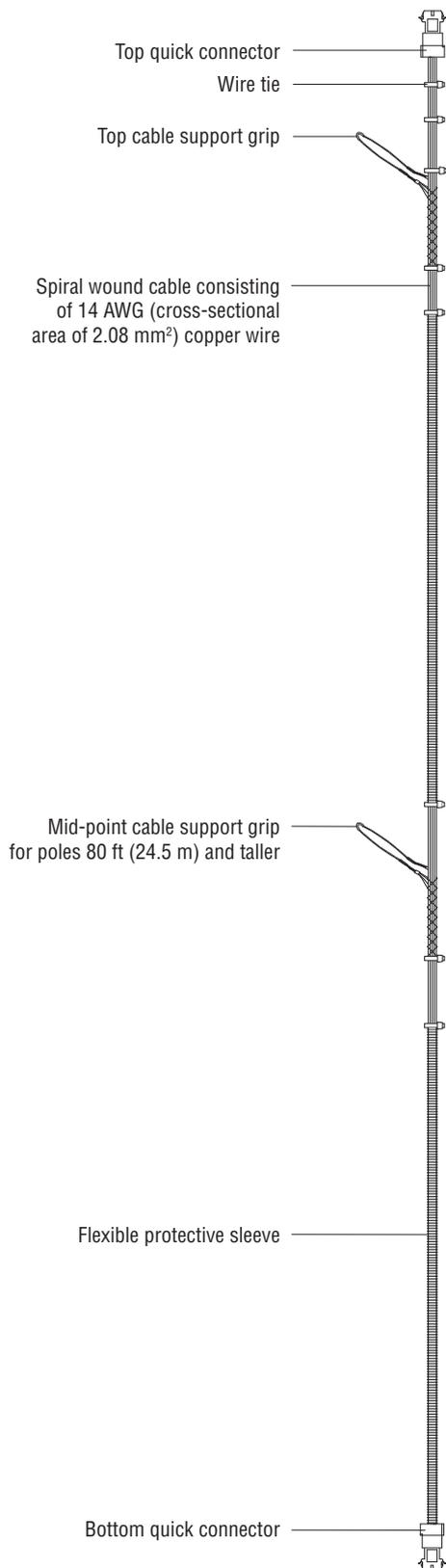
**Construction**

- Spiral wound, wrapped cable, 14 AWG (cross-sectional area of 2.08 mm<sup>2</sup>) copper wire
- Integral cable support grip
- Each harness supports up to four drivers
- Multiple top connectors may be present if required for number of luminaires

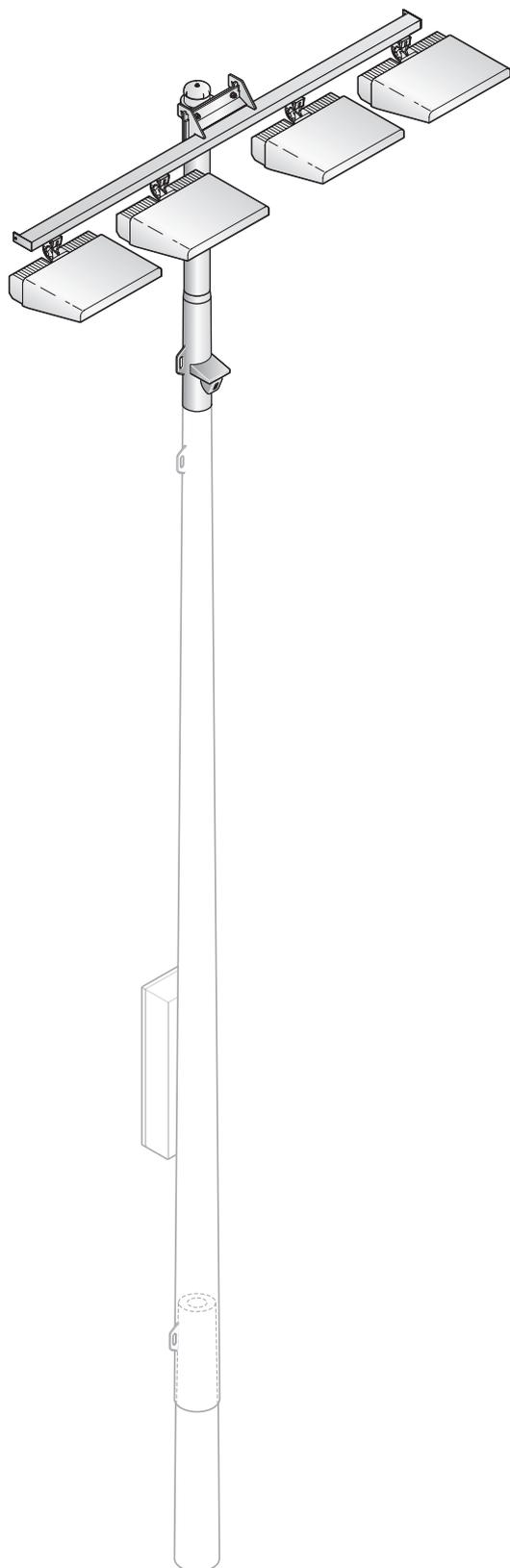
**Quality Assurance Tests**

- Connector to connector continuity test
- High potential dielectric withstand
- Machine applied termination crimp

**TLC for LED® – Wire Harness**



**TLC for LED® – Poletop Luminaire Assembly, Bolt On**



**Overview**

The factory-aimed poletop luminaire assembly is the upper section of the pole and slip-fits together with the galvanized steel pole. Crossarms are removed for shipping and assembled in the field.

**Features**

- Each luminaire is factory-built, tested, and ships as a unit
- Luminaires are factory-aimed to 0.3 degree of accuracy
- Luminaire mounts and connects to wire harness in a single step
- Slip-fit connection allows assembly with come-alongs
- All luminaires are factory-wired to a quick connect harness for easy installation
- Labels identify pole and luminaire location
- No exposed wiring or conduit
- Factory-set pole alignment beam allows easy field alignment
- Retaining hook crossarm attachment design

**Technical Specifications**

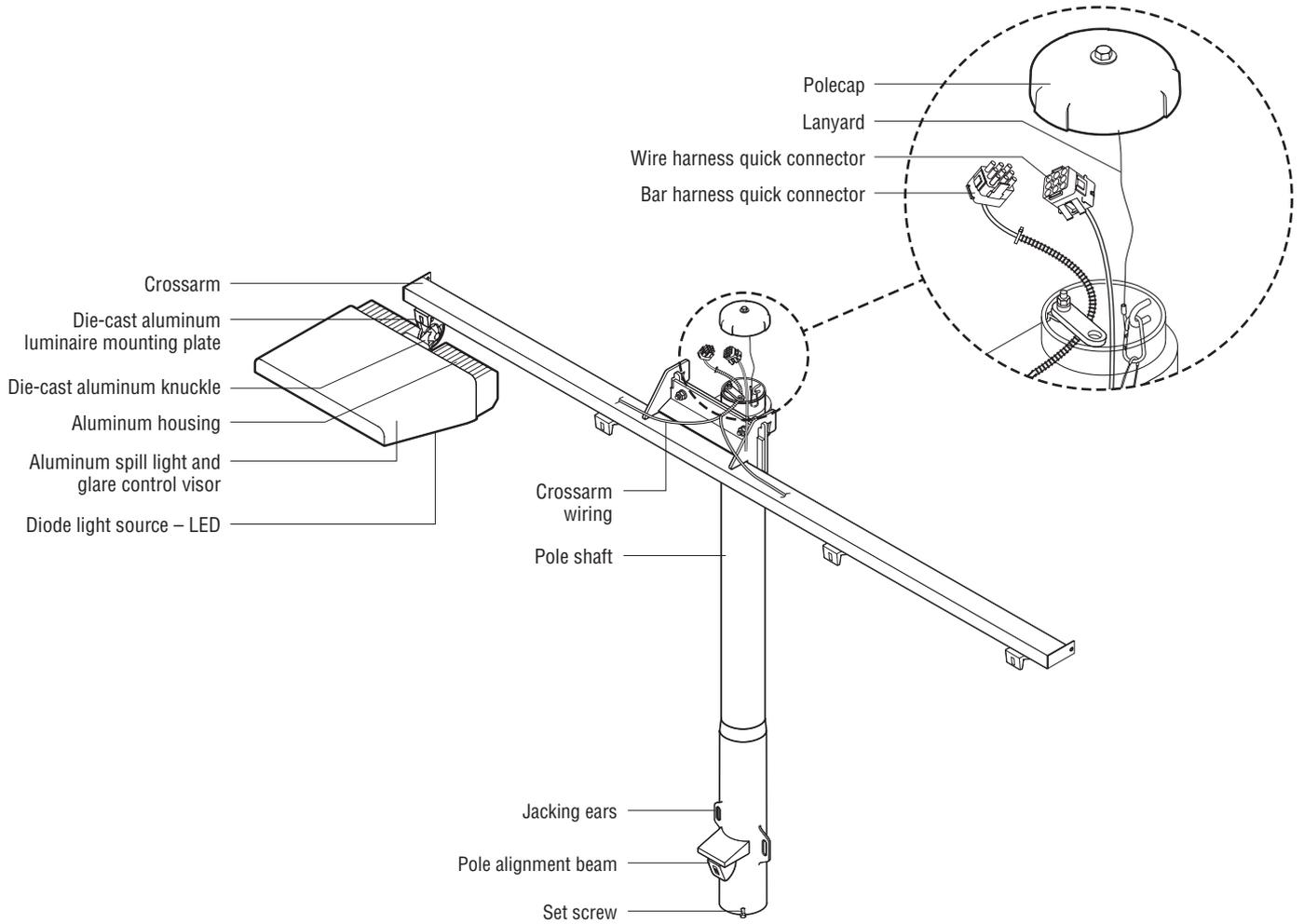
**Construction**

- Crossarms and pole shaft hot-dip galvanizing inside and outside after fabrication meets ASTM-A123 standard
- All aluminum components are powder-coated or anodized to mil-A-8625F
- Luminaire and knuckle are powder-coated aluminum
- All stainless steel fasteners are passivated and coated
- Crossarms are constructed of rectangular steel tubing
- Polecap is attached with stainless steel lanyard and securing bolt
- Structural-grade fasteners with DTI (Direct Tension Indicating) washers attach crossarms to poletop

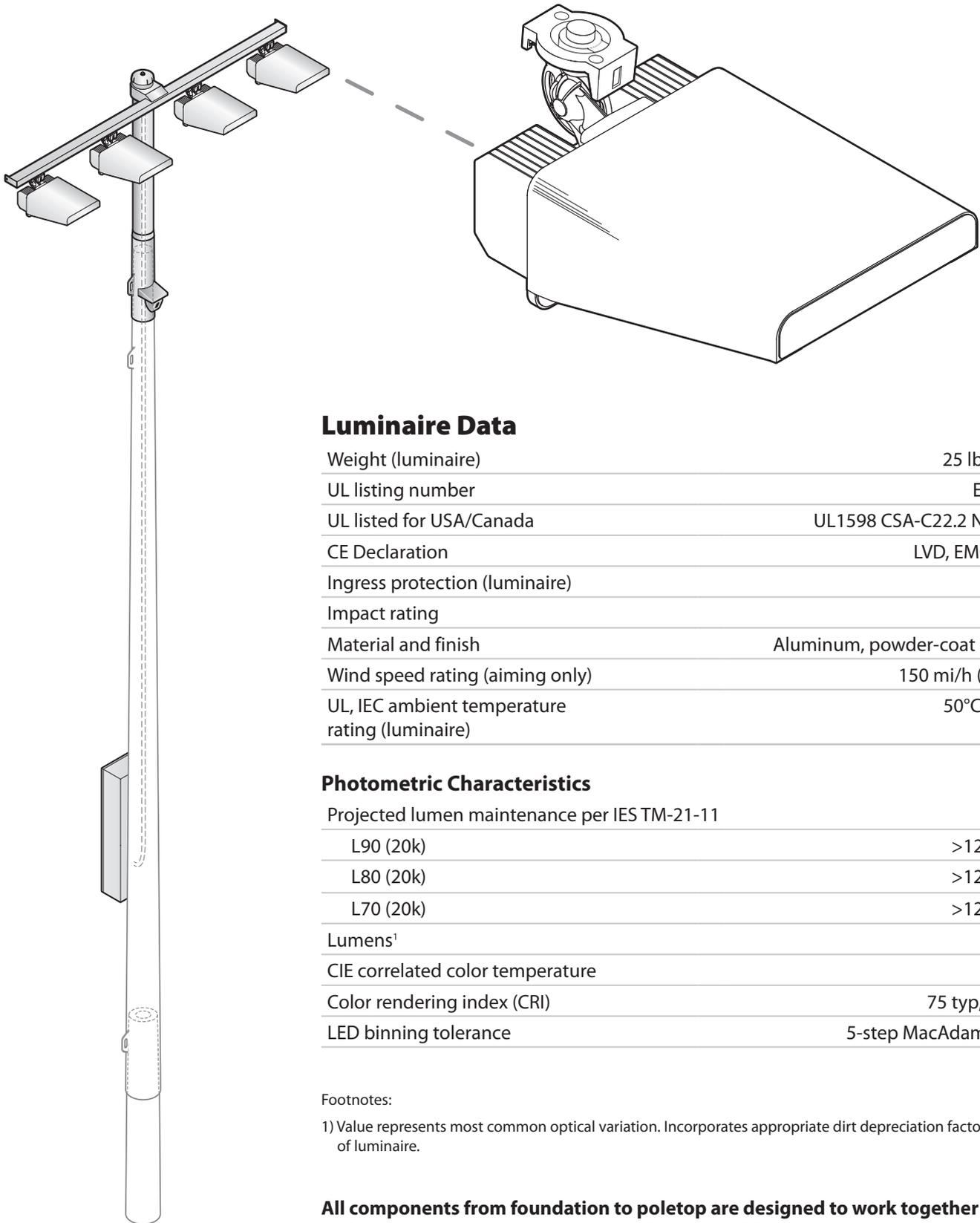
**Quality Assurance Tests**

- Galvanizing thickness
- High potential dielectric withstand
- Connector to connector continuity test
- Grounding continuity
- Luminaire functionality test

**TLC for LED® – Poletop Luminaire Assembly, Bolt On**



## TLC-LED-550 Luminaire and Driver



### Luminaire Data

Weight (luminaire)	25 lb (11 kg)
UL listing number	E338094
UL listed for USA/Canada	UL1598 CSA-C22.2 No.250.0
CE Declaration	LVD, EMC, RoHS
Ingress protection (luminaire)	IP66
Impact rating	IK07
Material and finish	Aluminum, powder-coat painted
Wind speed rating (aiming only)	150 mi/h (67 m/s)
UL, IEC ambient temperature rating (luminaire)	50°C (122°F)

### Photometric Characteristics

Projected lumen maintenance per IES TM-21-11	
L90 (20k)	>120,000 h
L80 (20k)	>120,000 h
L70 (20k)	>120,000 h
Lumens <sup>1</sup>	67,000
CIE correlated color temperature	5700 K
Color rendering index (CRI)	75 typ, 70 min
LED binning tolerance	5-step MacAdam Ellipse

#### Footnotes:

1) Value represents most common optical variation. Incorporates appropriate dirt depreciation factor for life of luminaire.

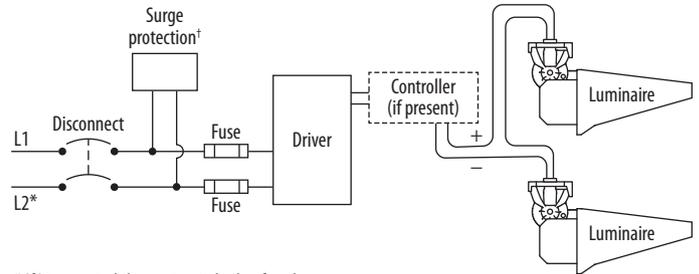
**All components from foundation to poletop are designed to work together in Light-Structure System™ to ensure reliable, trouble-free operation.**

## TLC-LED-550 Luminaire and Driver

### Electrical Data

Rated wattage <sup>1</sup>	
Per driver	1080 W
Per luminaire	540 W
Number of luminaires per driver	1 - 2
Starting (inrush) current	<40 A, 256 μs
Fuse rating	15 A
UL, IEC ambient temperature rating (electrical components enclosure)	50°C (122°F)
Ingress protection (electrical components enclosure)	IP54
Efficiency	95%
Dimming mode	optional
Range, energy consumption	15 - 100%
Range, light output	20 - 100%
Flicker	<2%
Total harmonic distortion (THD) at full output	<20%

### Typical Wiring



\* If L2 is neutral then not switched or fused.  
 † Not present if indoor installation.

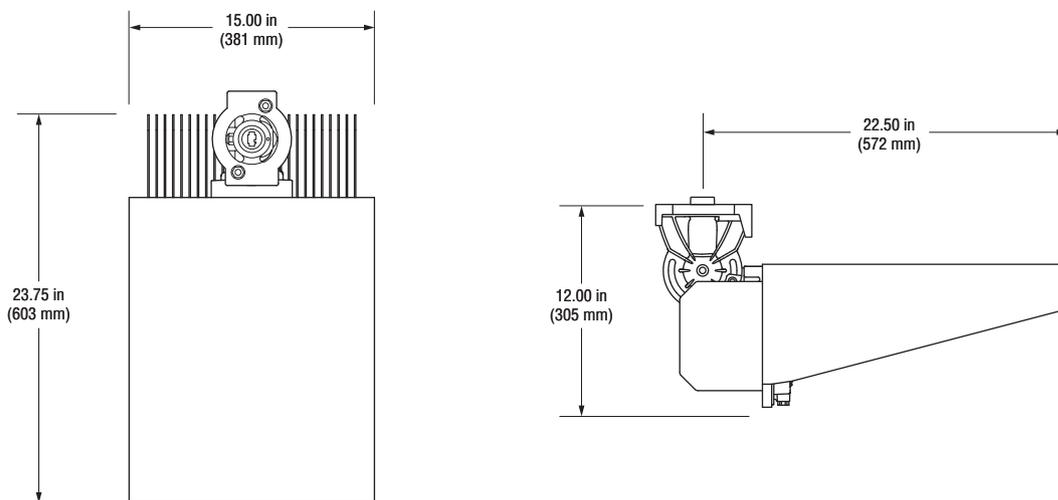
	200 Vac 50/60 Hz	208 Vac 60 Hz	220 Vac 50/60 Hz	230 Vac 50 Hz	240 Vac 50/60 Hz	277 Vac 60 Hz	347 Vac 60 Hz	380 Vac 50/60 Hz	400 Vac 50 Hz	415 Vac 50 Hz	480 Vac 60 Hz
<b>Max operating current per luminaire<sup>2</sup></b>	3.32 A	3.19 A	3.02 A	2.89 A	2.88 A	2.40 A	1.92 A	1.75 A	1.66 A	1.60 A	1.39 A

### Footnotes:

- 1) Rated wattage is the power consumption, including driver efficiency losses, at stabilized operation in 25°C ambient temperature environment.
- 2) Operating current includes allowance for 0.90 minimum power factor, operating temperature, and LED light source manufacturing tolerances.

### Notes

1. Use thermal magnetic HID-rated or D-curve circuit breakers.
2. See *Musco Control System Summary* for circuit information.



# Safety: UL Product Certification

## UL Product Certification for:

Musco Sports Lighting, LLC  
 211 2nd Ave W  
 PO Box 808  
 Oskaloosa, IA 52577  
 USA



UL Category	Covers	UL Number
<b>High-Intensity Discharge Surface-Mounted Luminaires</b>	<ul style="list-style-type: none"> <li>Green Generation™ luminaires and remote ballast assemblies</li> <li>SportsCluster® and SportsCluster-2® luminaires and remote ballast assemblies</li> <li>Light-Structure 2™ and Light-Structure System™ luminaires and remote ballast assemblies</li> <li>1000 W Light-Pak™ and Light-Pak indoor luminaires with Multi-Watt™ control system</li> <li>1000 W Show-Light™ and Show-Light Green™ luminaires with hooded light actuator system and remote ballast assemblies</li> <li>2000 W Mirtran™ luminaire</li> <li>Stadium 2K Fixture™ 2000 W luminaire and Hot Restrike Green™ 2000 W hot restrike luminaire</li> </ul>	E33316
<b>Management Equipment, Energy</b>	Lighting control systems for: <ul style="list-style-type: none"> <li>Control-Link® control and monitoring system</li> <li>Control-Link retrofit control system</li> </ul>	E139944
<b>Industrial Control Panels</b>	Control panels and enclosures for: <ul style="list-style-type: none"> <li>Control-Link® control and monitoring system</li> <li>Control-Link retrofit control system</li> <li>Lighting contactor cabinets</li> <li>Multi-Watt™ control systems</li> </ul>	E204954
<b>Emergency Lighting and Power Equipment</b>	<ul style="list-style-type: none"> <li>Auxiliary Lighting Interface Cabinet (ALIC)</li> </ul>	E311491
<b>Luminaire Fittings</b>	Galvanized steel poles 12 ft (3.7 m) or less for: <ul style="list-style-type: none"> <li>Poles for Mirtran™ luminaire mounting</li> <li>Rooftop poles</li> <li>Special applications</li> </ul>	E132445
<b>Luminaire Pole in Excess of 12 ft (3.7 m)</b>	Galvanized steel poles greater than 12 ft (3.7 m) for: <ul style="list-style-type: none"> <li>Light-Structure System™ luminaire mounting</li> <li>Sportspole™ structure or mounting system and special applications</li> </ul>	E325078



## Safety: UL Product Certification

UL Category	Covers	UL Number
<b>Devices, Scaffolding</b>	Service platforms for: <ul style="list-style-type: none"><li>• Light-Structure System™ luminaires and remote ballast assemblies</li><li>• SportsCluster® System luminaires and remote ballast assemblies</li></ul>	SA7004
<b>Lightning Conductors, Air Terminals, and Fittings</b>	<ul style="list-style-type: none"><li>• Light-Structure System™ pole structure concrete base</li></ul>	E337467
<b>Light-Emitting-Diode Surface-Mounted Luminaires</b>	<ul style="list-style-type: none"><li>• LED luminaires and driver assemblies</li><li>• LED auxiliary luminaires</li></ul>	E338094

A copy of the UL Certificate of Compliance is available upon your request.

# Manufacturer's Certification of Corrosion Protection for Light-Structure System™ and SportsCluster® Lighting Systems

The following standard corrosion protection is provided on your equipment:

- All exposed components are constructed of corrosion-resistant material and/or coated to protect against corrosion.
- All exposed carbon steel is hot-dip galvanized, meeting ASTM A123 and ISO/EN 1461.
- All exposed aluminum is powder-coated with high-performance polyester or anodized. All exterior reflective inserts are anodized, coated with a clear, high-gloss, durable fluorocarbon, and protected from direct environmental exposure to prevent reflective degradation or corrosion.
- All exposed hardware and fasteners are stainless steel, passivated, and coated with an aluminum based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Alternately, for hardware in non-stressed applications, an electroless nickel coating meeting ASTM B733 may be used. Pole strapping used to mount certain equipment to light poles is annealed grade 304 stainless steel and passivated.
- Certain structural fasteners are carbon steel, galvanized meeting ASTM A153 and ISO/EN 1461 (for hot-dip galvanizing), or ASTM B695 (for mechanical galvanizing).

This corrosion protection package only applies to equipment manufactured by Musco.

Musco Sports Lighting, LLC



Tony Benson  
Executive Director of Engineering