



**ephesus**  
SPORTS LIGHTING



# **PLAYBOOK**

## **RETROFIT INSTALLATIONS**



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We are a team of insight-driven global innovators with an uncompromising commitment to transforming the places we live, work and play. We build and deliver high performance sports lighting solutions. We strive to provide exceptional customer service from idea to implementation.

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## SAFETY STATEMENT

### Before You Begin

This playbook is only a summary. It is not intended to be a detailed set of installation instructions. For detailed installation instructions, please refer to the relevant product installation manual(s). If you have any questions regarding the product or installation, contact Cooper Lighting Customer Service at 1-800-573-3600.

### Follow all safety items outlined here as well as any local safety procedures.

1. All electrical work must conform to National Electrical Code (NFPA 70), IEEE Emerald book, and all applicable local codes and ordinances.
2. Verify the capacity and integrity of existing power distribution system and correct branch circuit voltage before beginning installation.
3. Verify the structural capacity and safety of all facility/venue/pole supports and mounting apparatus before installation. See fixture specification sheet for weight and wind loading data.
4. In harsh settings where the system is subjected to factors such as extreme temperatures, high corrosion, hurricanes, or lightning, always follow local codes and additional protocols to ensure the cabling and other system components can withstand the environmental stress for the life of the system.
5. DO NOT make or alter any open holes in the luminaire. Do not modify the luminaire, internal wiring, or fixture mounting features. Opening or modifying the luminaire or bracket will void the warranty.
6. Use Personal Protective Equipment including hardhats, safety glasses, reflective vests, electrical safety gloves, fall protection equipment, and safety toe boots during installation, operation, and maintenance of luminaire.
7. Verify compliance with local standards to prevent access to the area below where installation activities are occurring to prevent injury from accidental drops of fixtures, tools or hardware.

### Disclaimer of Liability:

Cooper Lighting Solutions and Ephesus Sports Lighting assumes no liability for damages or losses of any kind that may arise from the improper, careless, or negligent installation, handling or use of these products.



# LOWEST TOTAL COST OF OWNERSHIP

Ephesus Luminaires combine interchangeable modular power, controls, and easy-to-install mounting options. An Ephesus Sports Lighting system delivers the optimum solution for every indoor and outdoor sports venue with industry-leading reliability.



## PRODUCT LINE



LUMADAPT 8

Integrated white & RGB Color LED



LUMASPORT 8

White LED



LUMASPORT 16

White LED



LUMAVISION

White LED

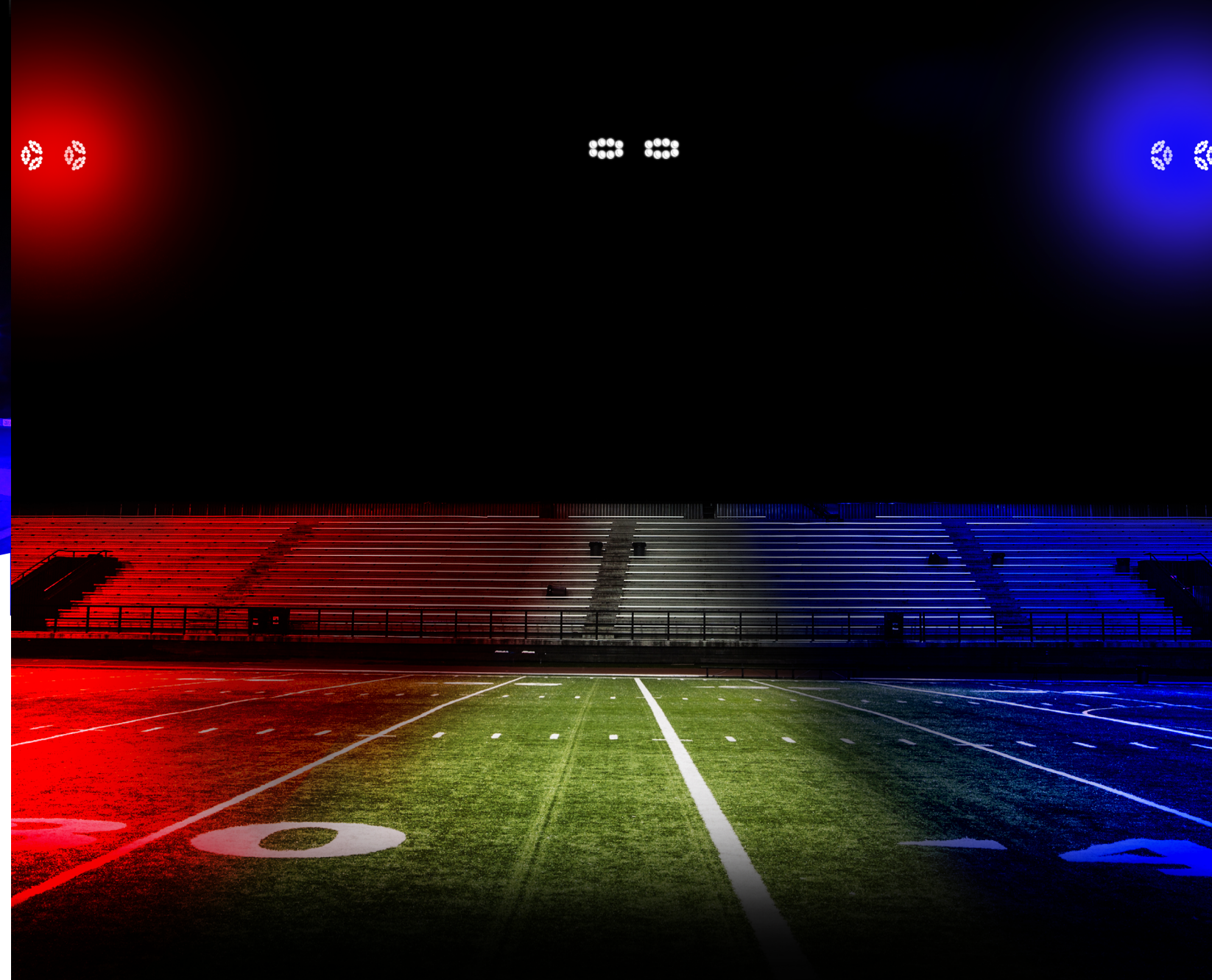


PRISM RGBA

RGBA Color LED

|             | LUMADAPT 8              | LUMASPORT 8                            | LUMASPORT 16                      | LUMAVISION        | PRISM RGBA                          |   |
|-------------|-------------------------|--|-----------------------------------|-------------------|-------------------------------------|---|
| USE         | INDOOR                  | Best                                   | Best                              | Best              | Best                                |   |
|             | OUTDOOR                 | Better                                 | Best                              | Best              | Best                                |   |
| APPLICATION | PROFESSIONAL            | Best                                   | Better                            | Good              | Best                                |   |
|             | COLLEGIATE              | Best                                   | Best                              | Best              | Best                                |   |
|             | RECREATIONAL/MUNICIPAL  | Good                                   | Best                              | Better            | Best                                |   |
|             | K-12 SCHOOLS            | Good                                   | Best                              | Better            | Best                                |   |
|             |                         |  |                                   |                   |                                     |   |
| PERFORMANCE | SYSTEM WATTAGE          | 400W                                   | 320W   640W                       | 1200W             | 180W - 550W                         | 675W                                      |
|             | LUMEN OUTPUT (lm)       | UP TO 50,000                           | 48,303 - 55,419   80,572 - 92,929 | 143,050 - 158,312 | 20,200 - 58,000                     | R>10,840   G>12,900<br>B>2,450   A>10,800 |
|             | INPUT VOLTAGE (LOW)     | 120-240VAC, 50/60 HZ                   | 120-277VAC                        | 208-277VAC        | 120-277VAC                          | 120-240VAC                                |
|             | INPUT VOLTAGE (HIGH)    | 277-480VAC, 50/60 HZ                   | 347-480VAC                        | 347-480VAC        | 347-480VAC                          | 277-480VAC                                |
|             | EFFICACY RANGE (lm/W)   | 110                                    | 140.4 - 163.5   117.5 - 139.3     | 113-123           | 111-121                             | —   |
|             | CRI (VALUES ARE +/- 2%) | >+ 85                                  | 70, 80                            | 80                | 70, 90                              | —   |
|             | CCT RANGE               | 5000K nominal<br>(3000K-6500K tunable) | 4000K, 5000K,<br>5700K            | 5700K             | 3000K-6000K                         | —   |
|             | DISTRIBUTION (NEMA)     | 3-5, 5-7                               | 3-5, 7                            | 2-3               | 1-6, Asymmetric & Symmetric Options | 2-5                                       |
|             | EPA (sq. ft.)           | 1.4                                    | 1.8                               | 2.9               | 1.61- 2.99                          | 1.4                                       |
|             | TLCI (+/- 3 POINTS)     | >70                                    | 75                                | 75                | 92                                  | —   |

KEY: Best Better Good



## TRANSFORMING THE GAME

Ephesus has developed the first true LED sports-lighting system, giving you more than just a fixture to power your performance. Today's venues demand lights that have proven performance at the highest levels. With crisp lighting and dynamic scenes for the fans at the game, Ephesus provides the most exciting game-day experience for your audience—and the best light for the athletes, so they can perform at their peak

CLICK OR SCAN TO WATCH





### SITE EVALUATION FACTORS

#### LUMINAIRE MOUNTING IS DIFFERENT

Gather existing system configuration details to provide appropriate accessories for a proper installation. (crossarm clearance and mounting)



#### POLE POSITIONING VARIES

Gather accurate site measurements for photometric design creation. (pole height, pole setback, pole spacing, crossarm height, etc.)

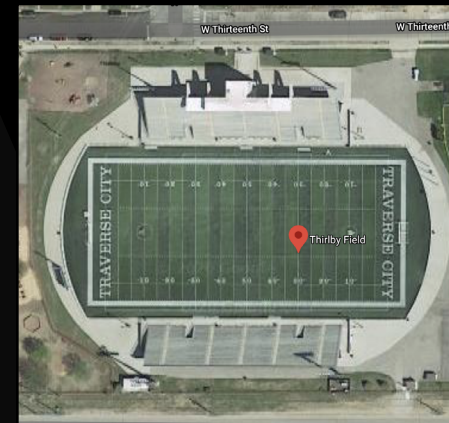


#### INFRASTRUCTURE IS OLD

Validate existing mechanical/electrical system can support a retrofit LED system. (provided by 3rd party)



### SITE PRE-ASSESSMENT CHECKLIST



AERIAL IMAGE OF FIELD (GOOGLE MAPS)



FIELD GROUND LEVEL



ALL POLE LOCATIONS



CROSS ARM CONFIGURATIONS



FIXTURE AND FIXTURE MOUNTING



POLE BASE



WIRE ACCESS OR POLE MOUNTED BOXES



POWER AND CONTROL INFRASTRUCTURE



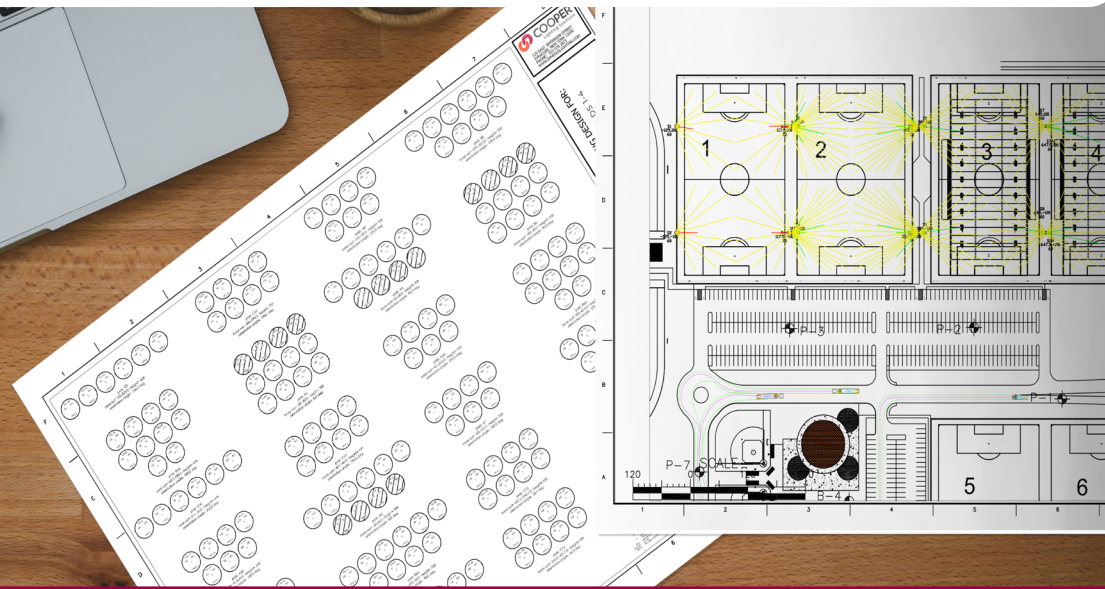
CURRENT SYSTEM AT NIGHT



# 1 DESIGN & DELIVER

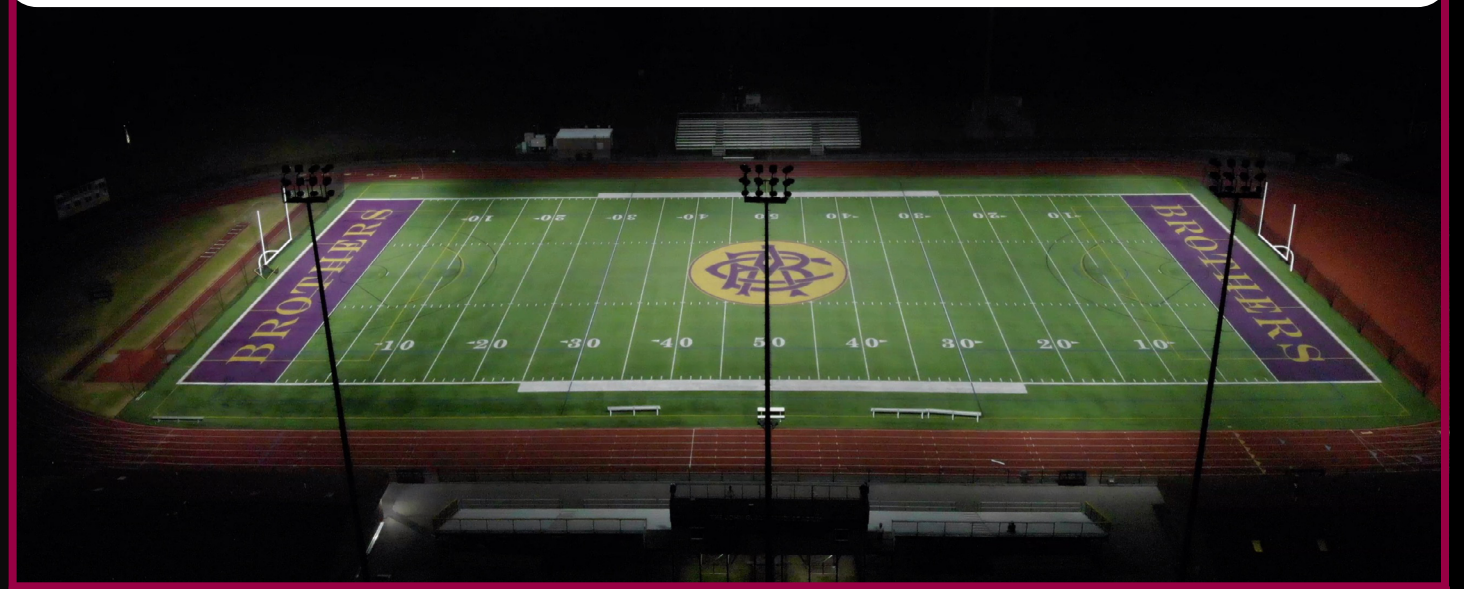
- **Lighting Design Proposal**
  - Quotation/ Bill of Materials (BoM)
  - Photometric Drawing Design Plan
  - Product Specification Sheets
  - Product Installation Manuals
  - Installation Drawings
  - Foundation Design
  - Project Management Services
  - Warranty & Order Confirmation Packet

- **Accept delivery**



# 2 INSTALL & TEST

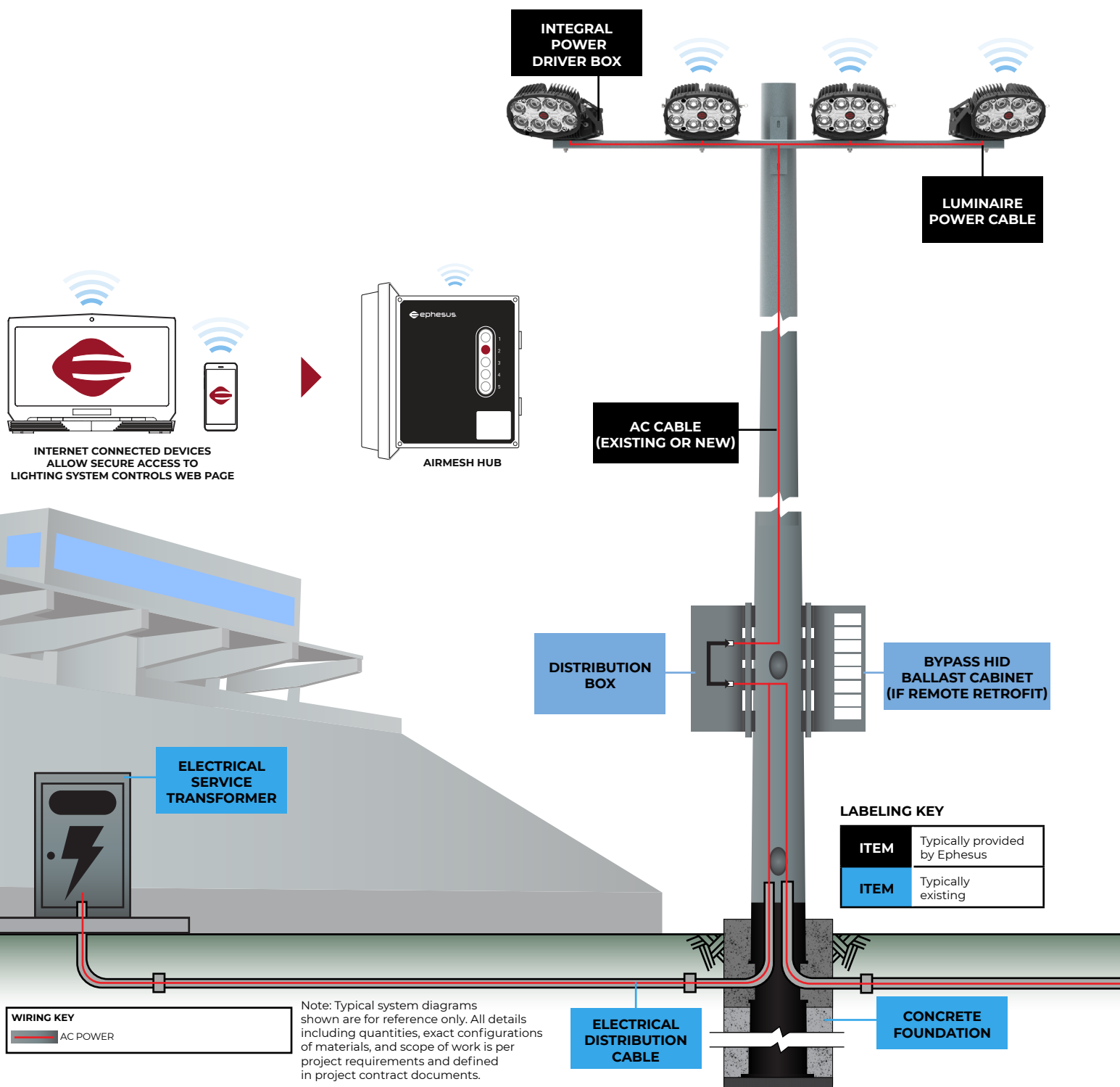
- **Disconnect system power**
- **Remove the existing lighting system and infrastructure as needed**
- **If applicable, install new crossarms and mounting accessories**
- **Mount and pre-aim Ephesus luminaires**
- **Finish luminaire and lighting system electrical connections in accordance with NEC and IEEE Emerald Standards**
- **Commission system controls and check light levels on site**



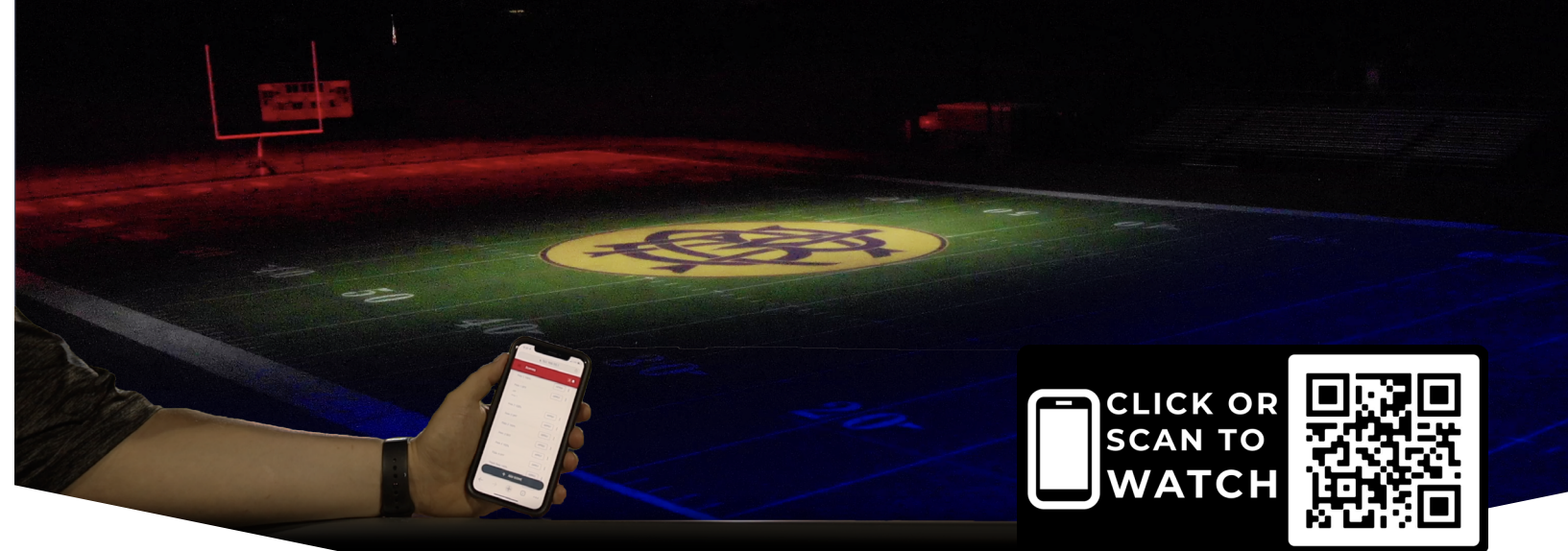


# WE HAVE YOUR SOLUTION

The Ephesus Retrofit System converts your existing remote or integral system to an integral LED sports lighting system with industry leading reliability and performance. In a existing remote power configuration the ballasts in the power box are typically located at the bottom of the pole. In an Ephesus Retrofit System the Ballasts in the power box are bypassed in order to bring AC power to the top of the pole. The diagram below illustrates a successful Ephesus Retrofit System.



# TAKE CONTROL OF YOUR SPORTS LIGHTING



## CONTROLS OVERVIEW

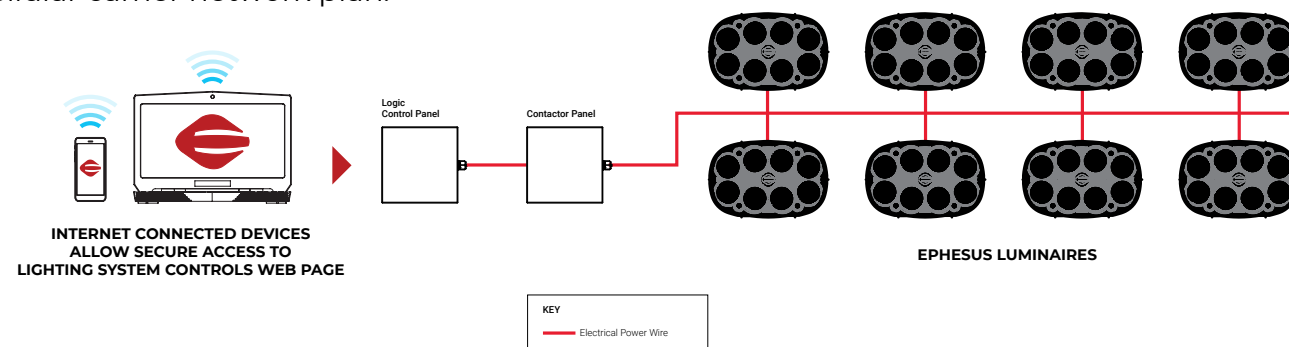
### EXAMPLE SYSTEM TOPOLOGY (WIRELESS AIRMESH CONTROLS)

Example system topology showing the LUMASPORT 8 System in a Wireless AirMesh Control Installation. Note: Laptop or mobile device not included. A cellular network connection requires a cellular carrier network plan.



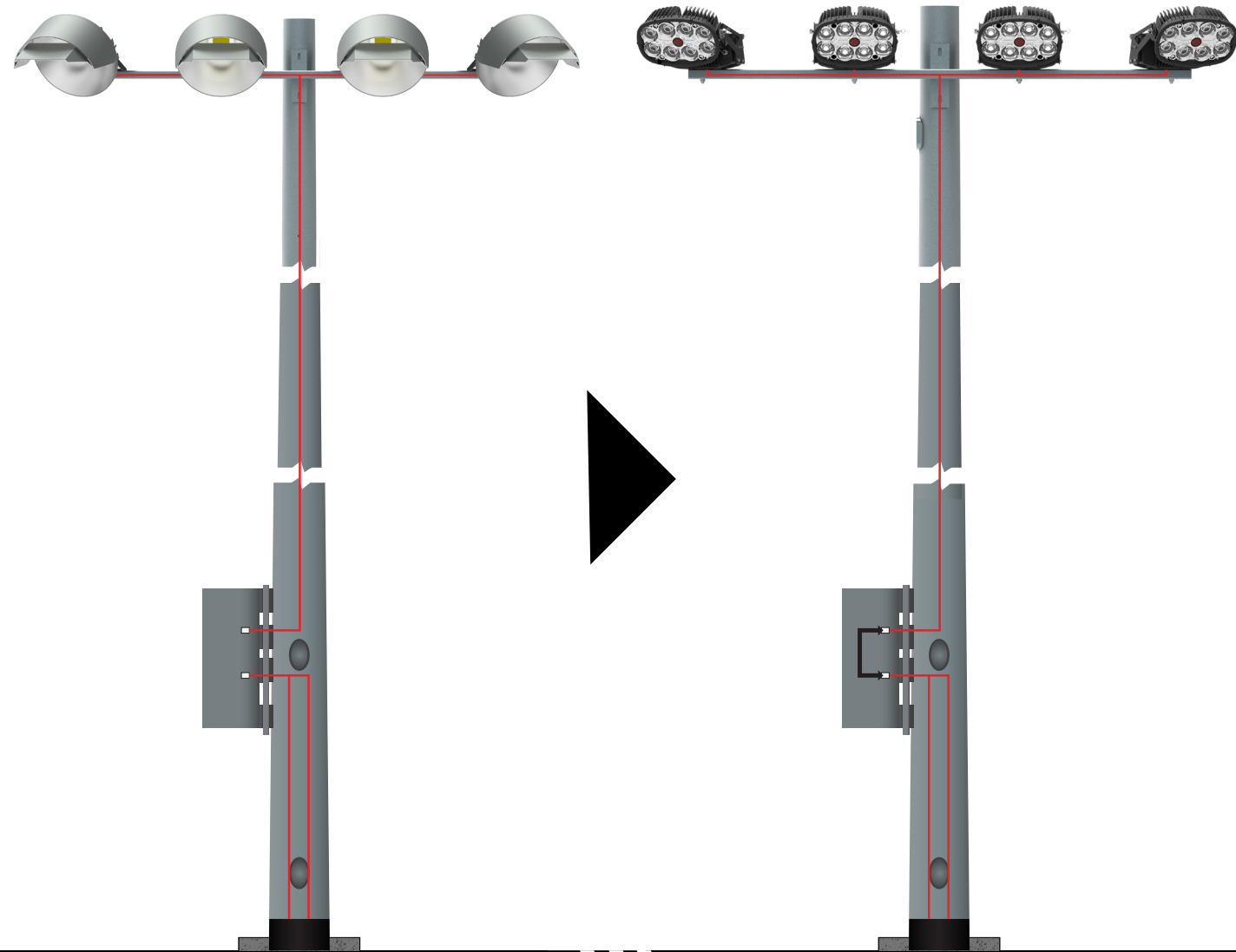
### EXAMPLE SYSTEM TOPOLOGY (CONTACTOR CONTROLS)

Example system topology showing the LUMASPORT 8 System in a Wired Contactor Controls Installation. Note: Laptop or mobile device not included. A cellular network connection requires a cellular carrier network plan.





# EXISTING INTEGRAL RETROFIT



**EXISTING INTEGRAL SYSTEM**

**EPHESUS RETROFIT SYSTEM**

Ephesus luminaires are designed to mount directly to the infrastructure that exists. In the cases where this is not possible, Ephesus has mounting accessories and a pre-wired crossarm solutions to accommodate the wide variety of existing structures. This includes solutions for platforms, cages, crossarms, as well as fastening hardware used to mount luminaires.

## 1 EXISTING 1:1 MOUNTING

- Keep crossarm
- Keep wiring
- Mount luminaires to existing mounting locations.

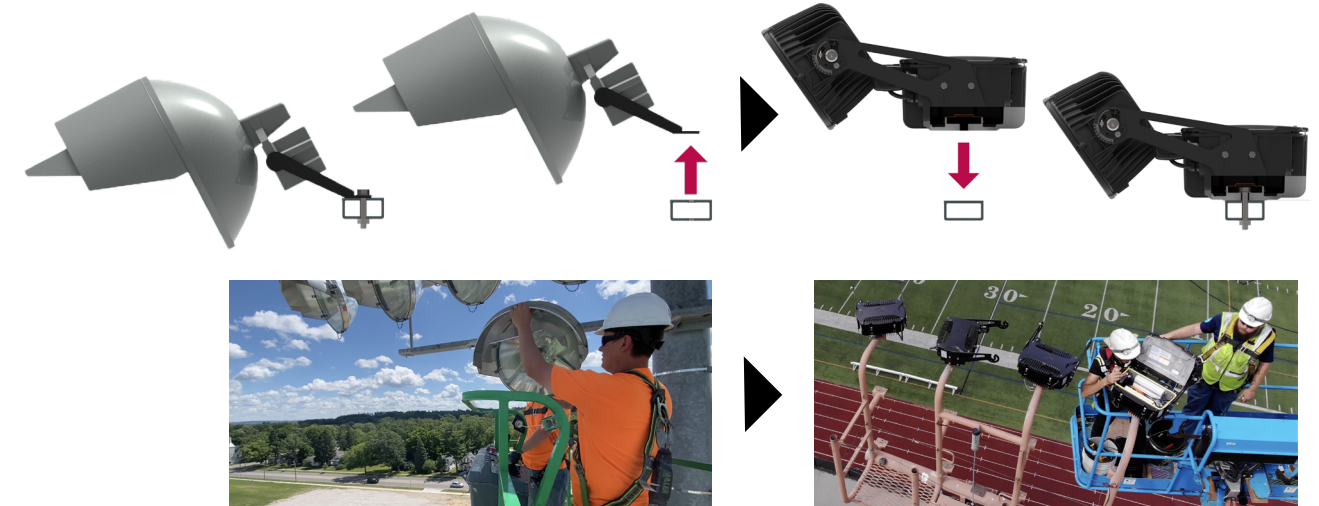
## 2 EXTENSION PLATE

- If needed, use the Extension Plate to create clearance

# MOUNTING SOLUTIONS

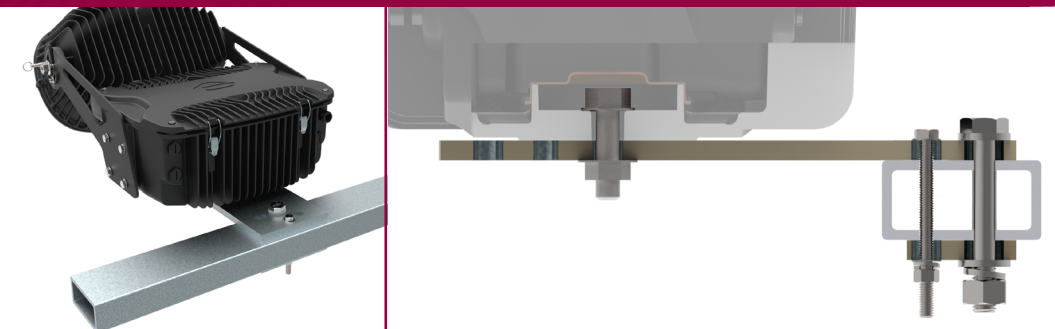
## EXISTING 1:1 MOUNTING

The existing luminaires are removed, and the remaining infrastructure is prepared for the retrofit installation. Your Ephesus luminaires arrive at the venue, ready to be installed.

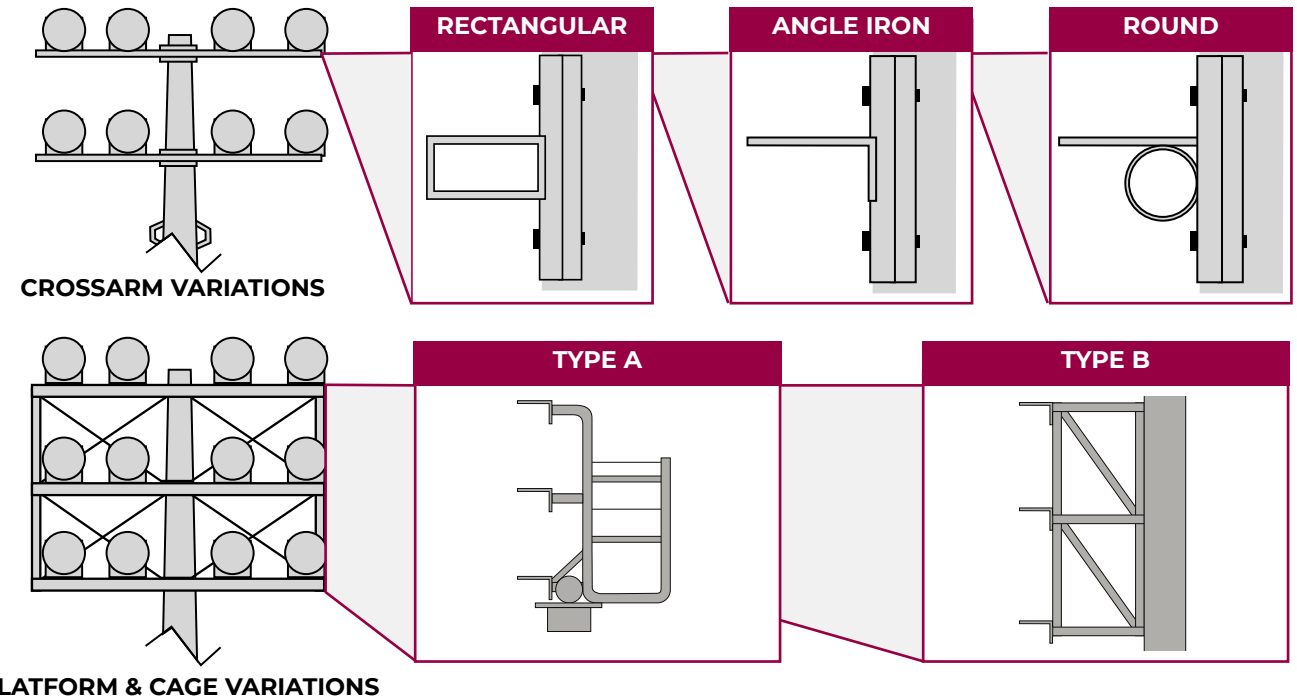


## EXTENSION PLATE

Extends and creates clearance at an existing mounting location by fastening and clamping to crossarms & platforms

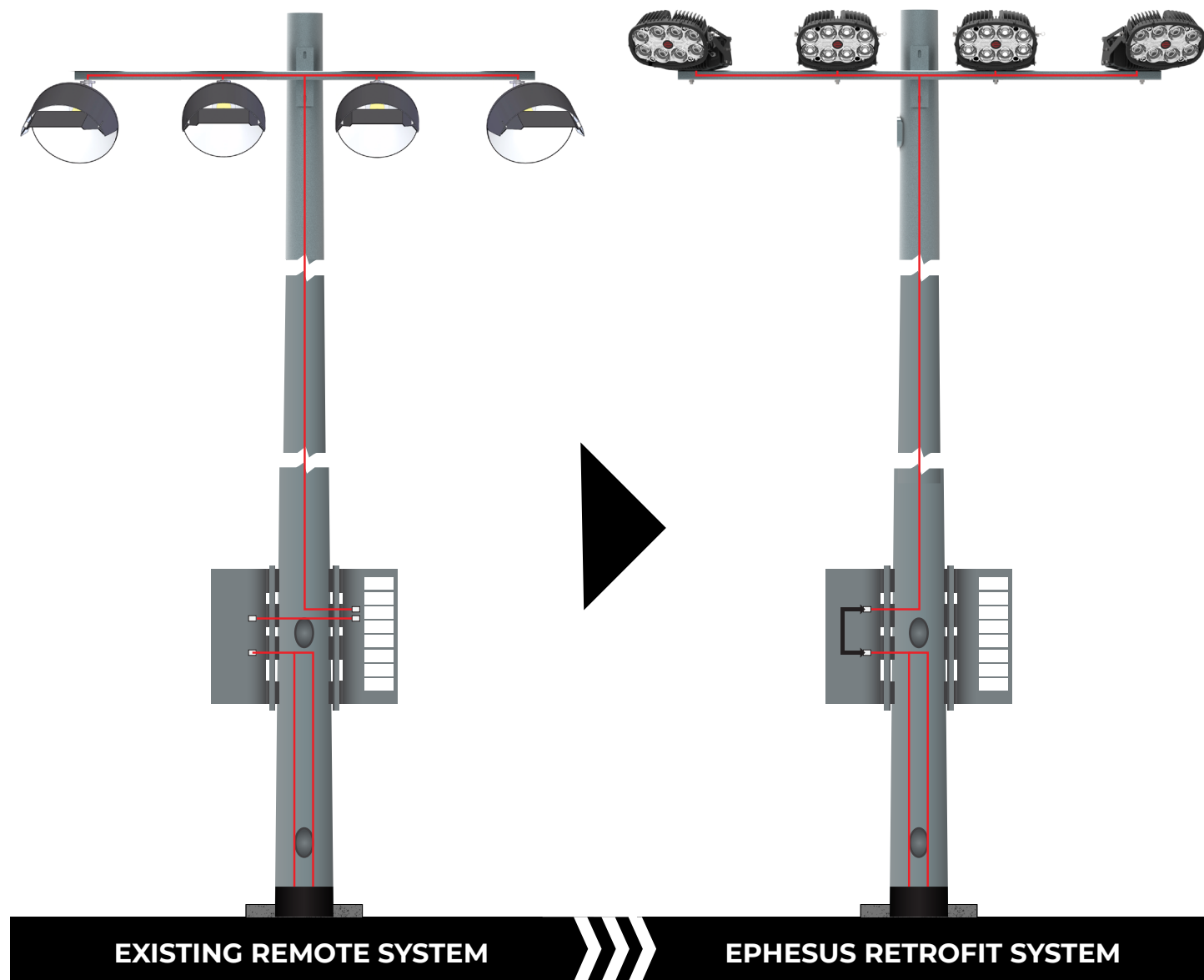


SOLVES FOR:





# EXISTING REMOTE RETROFIT



Ephesus luminaires are designed to mount directly to the infrastructure that exists. In the cases where this is not possible, Ephesus has mounting accessories and a pre-wired crossarm solutions to accommodate the wide variety of existing structures. This includes solutions for platforms, cages, crossarms, as well as fastening hardware used to mount luminaires.

## 1 NEW PRE-WIRED CROSSARM

- Remove existing crossarm
- Remove existing wiring
- Mount luminaires to Pre-Wired crossarm
- Attach Pre-Wired crossarm to Pole
- Bypass existing Ballast

## 2 DIVING BOARD

- Keep existing crossarm
- Keep existing wiring
- Mount luminaires with Diving Board
- Bypass existing Ballast

# MOUNTING SOLUTIONS

## PRE-WIRED CROSSARM

The existing luminaires and crossarms are removed, and the remaining infrastructure is prepared for the retrofit installation. Your Ephesus luminaires and pre-wired crossarms arrive at the venue, ready to be installed.

### REMOVE EXISTING



### PREPARE NEW CROSSARM



### LIFT TO LOCATION



### FASTEN & WIRE

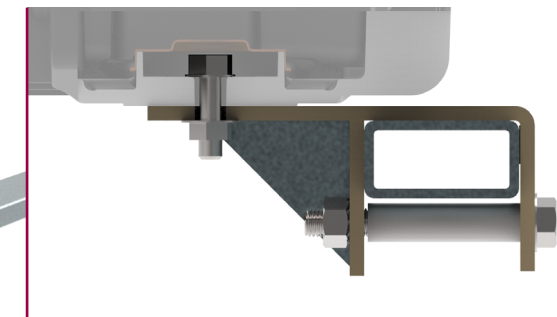


### FINISH INSTALL

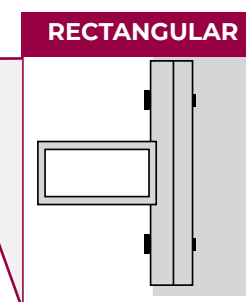
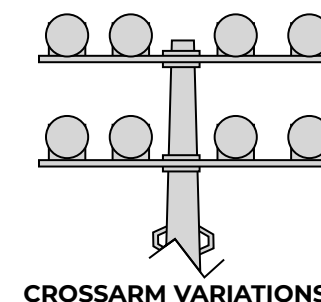


## DIVING BOARD

Creates a new mounting platform location by clamping to industry standard 2in x 4in rectangular crossarms

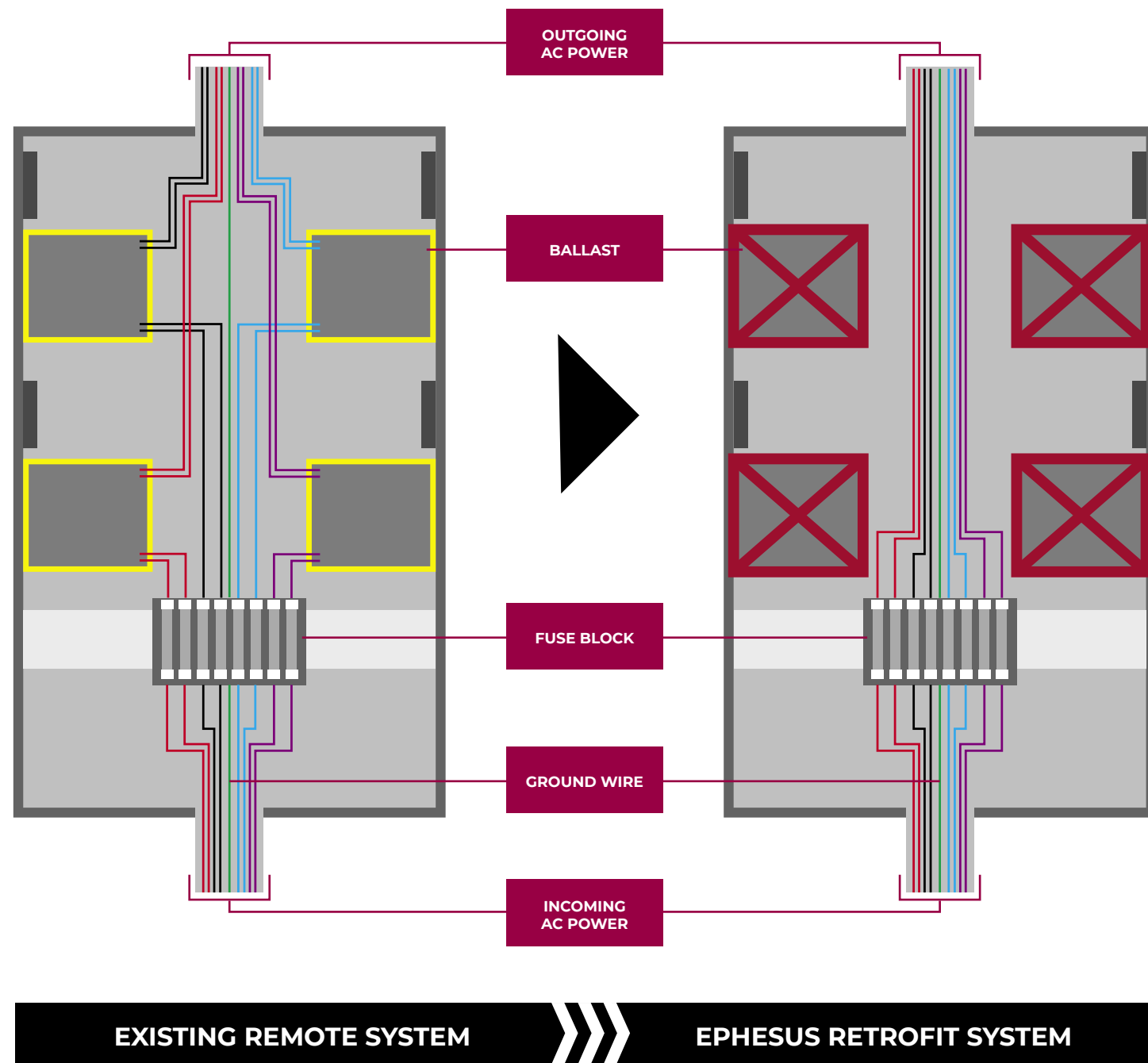


SOLVES FOR:





# DISTRIBUTION BOX BYPASS DIAGRAM



Typical existing remote systems utilizing an electrical components enclosure that houses the HID ballasts. Each HID ballast powers one light head and is individually fused and grounded for electrical protection of the system. When converting to the Ephesus integral system the ballasts are electrically bypassed in order to bring power to the Ephesus luminaires at the top of the pole.

1. Disconnect the old ballast wiring
2. Inspect current existing system to ensure it's properly rated for the incoming AC power.
3. Connect the existing fixture circuit wiring directly into the fuse blocks, bypassing the ballasts
4. This provides line voltage up to the fixture location

# WIRING OVERVIEW

## IN THE BALLAST BOX



1. **Reconfigure wiring to feed branch circuits directly up to fixtures.**
  - a. Wire directly from fuse block to fixtures (bypass ballasts)
  - b. This sends line voltage up to fixtures
  - c. Cut/disconnect wiring from fuse blocks to ballasts and from ballasts to fixtures, leaving as much slack in fixture feeds as possible
  - d. Splice/reconnect wires from fuse blocks to fixture feeds
  - e. Inspect fuse terminals to ensure there is no corrosion

## AT THE LUMINAIRE



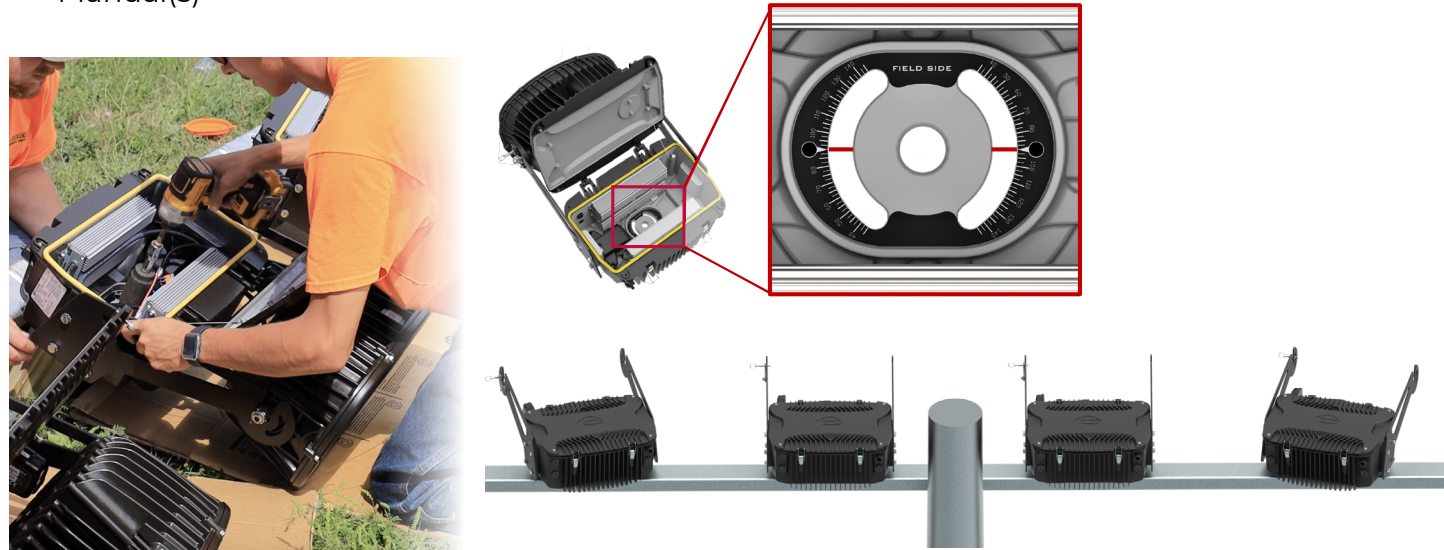
1. **Use the diving boards at fixture locations**
2. **Use cap to plug hole on underside of crossarm**
  - a. Drill hole through center of plug for new fixture wires
3. **Make electrical connections**
  - a. Feed new fixture wires through center of cap
  - b. Splice new fixture wires to existing fixture feeds
  - c. Fixture must have ground wire (EGC) back to power source
  - d. Push splices/wire nuts up into crossarm
  - e. Set plug into crossarm, making sure not to pinch wires.



# MOUNT & PRE-AIM

## STEP 1: MOUNT DRIVER BOX WITH ORIENTATION

- Mount driver boxes to crossarm, laterally Pre-Aim driver boxes according to the provided Photometric Design Plan and connect power according to the provided luminaire Installation Manual(s)



## STEP 2: SET "QUICK MOUNT YOKE" FOR TILT

- Vertically Pre-Aim Mounting Arms according to provided Photometric Design Plan, place the Light Heads into the Mounting Arms and tighten Tilt Lock Screws.



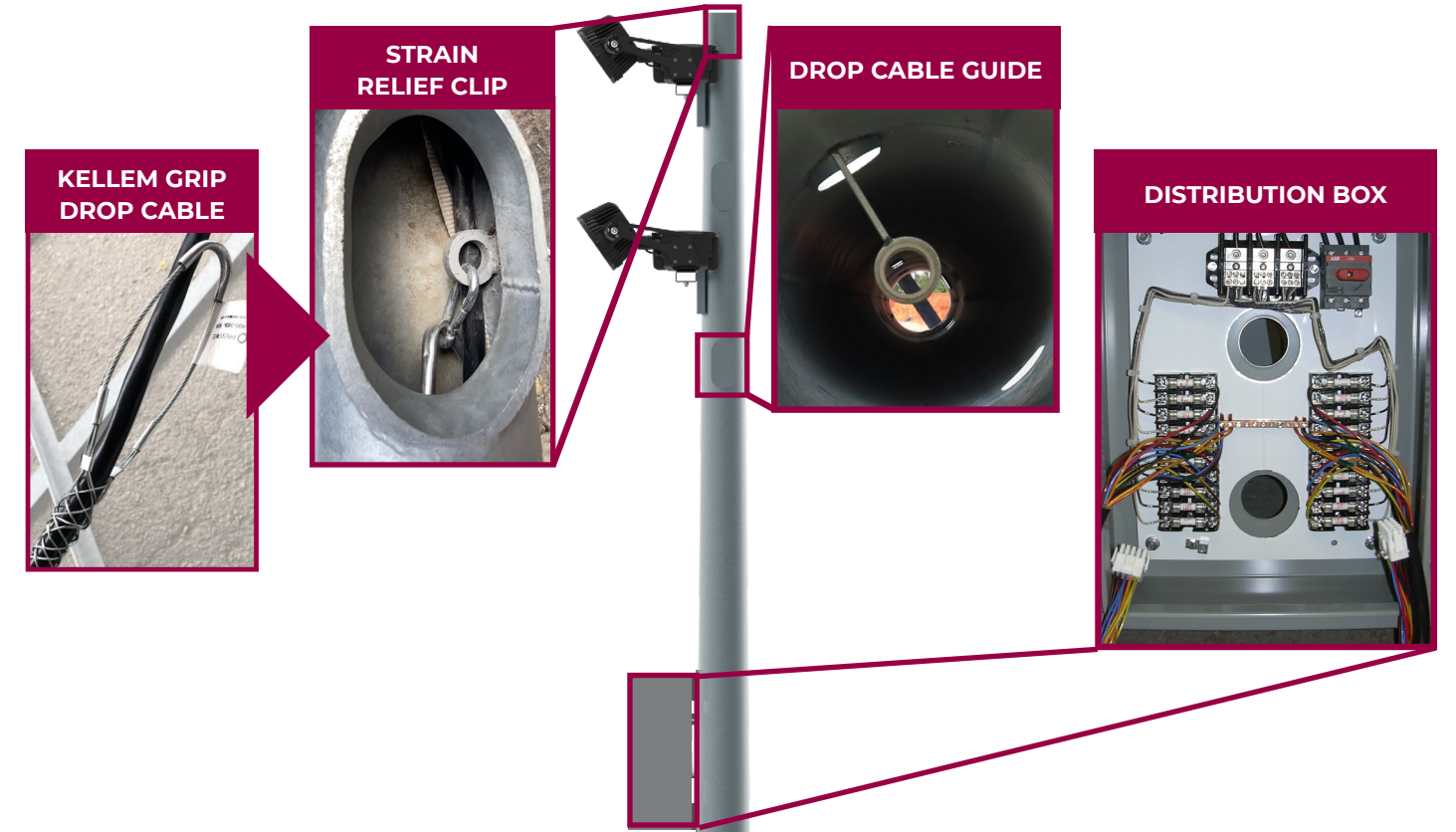
# PLUG & PLAY

## STEP 3: CONNECT POWER

- Wire the Pre-wired crossarm to the Driver Box and connect the Light Head to the Driver Box



- Attach all Kellm Grip Drop Cables to the Strain Relief Clips located above each Pre-Wired crossarm and connect electrical with the Multi-Pin Quick Connectors in the Distribution Box at Pole Base.







GET STARTED  
**HERE**



CLICK OR  
SCAN TO  
WATCH

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