Preliminary Lighting Design Analysis Report

I-75 (SR 93) at Pine Ridge Road Interchange

Collier County, FL

FPID 445296-1-22-01

Prepared for FDOT District 1



801 N. Broadway Avenue Bartow, Florida 33830

December, 2020

FDOT District 1

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Prepared by:

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PE No. 58896

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1. Introduction

The purpose of the project is to provide operational improvements to the I-75/Pine Ridge Road Interchange. The intent of the project is to construct a diverging diamond interchange (DDI) on Pine Ridge Road under the existing bridges for I-75 within the limited access (LA) right of way, which will significantly reduce delays on Pine Ridge Road, increase storage capacity of the northbound and southbound off ramps, and reduce the number of conflict points to improve overall safety.

The purpose of the roadway lighting discipline for this project is to prepare a lighting design analysis report to modify existing high mast lighting and supplement with conventional lighting as needed to provide adequate roadway lighting for the proposed roadway geometry per FDOT Design Manual (FDM) requirements. The limits of the lighting analysis include the added capacity on the ramps, ramp-street terminals, the DDI portion of Pine Ridge Road within the LA right of way, and the roadway under the bridges. The lighting analysis should meet signalized intersection lighting requirements per FDM at the two ramp-street terminals. Underdeck lighting improvements should also be analyzed. It is assumed that the existing high mast lighting system to remain, add additional high mast lighting as needed and replace the existing high mast fixtures with light emitting diode (LED) fixtures. In addition, conventional light poles with LED fixtures will be added at the signalized ramp-street terminal intersections and for the widen ramps to meet FDM criteria. The project overview is depicted below in **Figure 1**.

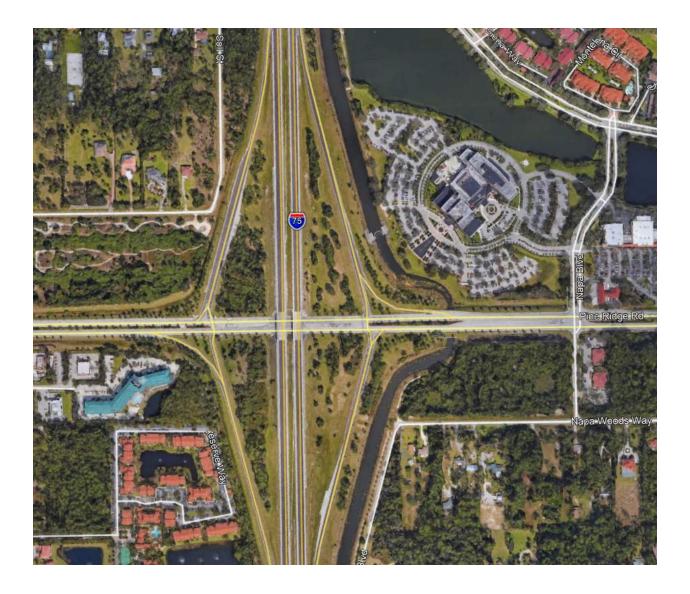


Figure 1: Project Overview

2. Existing Conditions

There are no lighting as-built plans available for the interchange of I-75/Pine Ridge Road. Based on limited visual inspections and record lighting plans of adjacent interchanges on I-75 corridor it was assumed that the existing roadway high mast lighting system consists of 120 feet high mast light poles each with four 1,000 watts high pressure sodium (HPS) luminaires. The sixteen existing high mast lighting assemblies at I-75/Pine Ridge Road interchange appear to be in good physical and operating conditions. The existing conventional lighting along Pine Ridge Road is outside the LA right of way and are not included in this project scope of work.

Within I-75 LA right of way there are six high mast lighting assemblies that are outside of the project limits, three are north of the project limits and three to the south.

The existing underdeck lighting luminaires are pendant mounted type, high pressure sodium with 150 watt lamps. There are four total underdeck luminaires, two luminaires on each of the two existing bridges one in each travel direction.

3. Proposed Conditions

In accordance with this project scope of work the existing HPS high mast lighting assemblies are proposed to be retrofitted with LED luminaires. Also conventional lighting assemblies with LED luminaires are proposed to be added as necessary to meet current FDOT Design Manual (FDM) lighting criteria.

The proposed interchange supplemental conventional lighting assemblies will consist of FDOT standard aluminum light poles, single bracket arms, and LED cobra head type luminaires. All luminaires for the entire project will be mounted with zero degrees tilt.

The existing underdeck pendant mounted luminaires which are HPS will be replaced with more efficient and sustainable LED wall/pier cap mounted luminaires to meet FDM requirements.

4. Roadway Lighting Criteria

The roadway lighting analysis was based on the following FDM roadway lighting design criteria as shown in **Tables 1 & 2**. The Limited Access Facilities conventional lighting criteria applies to the widened ramps and the roadway segments of Pine Ridge road within the project limits which also includes the underdeck lighting. The criteria for New Reconstruction facilities are applicable to the signalized intersections of this project.

Table 1: Roadway Lighting Criteria (Table 231.2.1 from 2020 FDM)

| Roadway Classification | Illumination Level Average Foot Candle | | Illuminatior Rat | Veiling Luminance Ratio | | | | |
|----------------------------------|---|----------------------|---------------------|-------------------------------|---------------------------------------|--|--|--|
| Or Project Type | Horizontal (H.F.C.) | Vertical (V.F.C.) | Avg./Min. | Max./Min. | L _{V(MAX)} /L _{AVG} | | | |
| | Conventional Lighting | | | | | | | |
| Limited Access Facilities | 1.5 | | | 10:1 or Less | | | | |
| Major Arterials | 1.5 | N/A 4:1 or Less | 4:1 or Less | | 0.3:1 or Less | | | |
| Other Roadways | 1.0 | | | | | | | |
| | | High Mast Ligh | nting | | | | | |
| All Roadway Classifications | 0.8 to 1.0 | N/A | 3:1 or Less | 10:1 or Less | N/A | | | |
| Signalized Intersection Lighting | | | | | | | | |
| New Reconstruction | 3.0 | 2.3 | 44 1 | 40-4 | N/A | | | |
| Lighting Retrofit | 1.5 Std. 1.0 Min. | 1.5 Std. 1.0 Min. | 4:1 or Less | 4:1 or Less 10:1 or Less | | | | |

Table 2: Minimum Mounting Heights Based on Maximum Candela (Table 231.2.2 from 2020 FDM)

| Ainimum Mounting Height (ft.) | | | | | |
|----------------------------------|-------------------|---------------------|--------------------|--|--|
| | Long Distribution | Medium Distribution | Short Distribution | | |
| 20 or Less | 5,000 | 10,000 | 15,000 | | |
| 25 | 10,000 | 15,000 | 20,000 | | |
| 30 | 15,000 | 20,000 | 25,000 | | |
| 35 | 20,000 | 25,000 | 30,000 | | |
| 40 | 25,000 | 30,000 | 35,000 | | |
| 45 | 30,000 | 35,000 | 40,000 | | |
| 50 | 35,000 | 40,000 | 45,000 | | |

5. Roadway Lighting Analysis

Since this project includes intersection lighting with a minimum horizontal foot candle average of 3.0 FC it is critical to have a transition area in between intersection lighting and I-75 existing high mast lighting which only requires a minimum of 0.8 FC average. The widened ramps from the intersection limits to the end of the ramp construction limits was selected to be used as a transition lighting area. The recommended criteria is for conventional lighting at the LA facilities which is 1.5 FC average and in between the intersection lighting criteria (3.0 FC) and the high mast criteria (0.8 FC minimum). The transition will provide time for the motorist eyes to adjust from the intersection lighting of 3.0 FC to the ramp lighting which is 1.5 FC or higher followed by I-75 lighting which comprised to an average of 0.8 to 1.0 FC. Additionally, the use of conventional lighting criteria on the widened ramps will enable maintaining acceptable uniformity ratios on those sections by avoiding extreme high intensity (near the intersections) and low intensity (under the high mast lighting) points in the same zone.

Roadway Segments

In accordance with FDM criteria, horizontal analysis zones were established for the:

- Mainline of Pine Ridge road in each direction of traffic
- The widen portion of the ramps
- And two intersections within the limited access right of way.

After the analysis zones were created, the existing high mast assemblies with LED luminaires were added and the horizontal photometric calculations were ran to identify where conventional lighting need to be added to meet the established lighting criteria. In areas with low spots of illumination conventional lighting assemblies with the appropriate setbacks and spacing were added to meet required lighting levels. In addition to the horizontal photometric calculations, the FDM lighting criteria includes the Maximum Veiling Ratio which is a measure of glare, which applies to straight segments of roadway. In this project there are three roadway segments where the Glare calculations do not apply:

- On the west side of the intersection the eastbound travel lanes adjacent to the intersection are curved therefore the Veiling Ratio (Glare Calculations) does not apply
- Also on the west side of the intersection the westbound roadway segment is too short to run glare calculations
- And on the east side of the intersection the eastbound roadway segment is also too short to run glare calculations.

Intersections

The vertical photometric lighting calculations for signalized intersections includes creating a photometric line grid in the middle of each crosswalk which represents a pedestrian. Then, establish the driver's viewing location using the posted speed (45 MPH) to select the minimum stopping sight distance (360 feet) in accordance with FDM table 210.11.1 for the near side/thru movement per FDM section 231.3.2. The signalized intersections also require vertical photometric lighting calculations for the right and left turn movements using the operating speed of the turning radius. However since the intersections are not typical intersections as shown in FDM Figures

231.3.1 through 231.3.4, the operating speed was conservatively selected as a 40 MPH speed with an associated stopping sight distance of 305 feet.

Underdeck

In accordance with FDM section 231.1.5 Underdeck Bridge Lighting the light levels for underdeck lighting should be equal to the adjacent roadway lighting. In this project, the under deck lighting is included in the lighting photometric calculations for the Pine Ridge Road segments.

Software Analysis

The lighting analysis was conducted using AGi32 version 19.1 lighting application design and analysis software from Lighting Analysts, Inc. A detailed point to point photometric analysis was performed for the entire project. All applicable FDM roadway lighting criteria for roadway segments including the signalized intersections, Pine Ridge Road segments, and the widening of all ramps meet or exceed the Roadway Lighting Criteria presented in section 4 of this report. All proposed luminaires are on the FDOT Approved Product List (APL).

Luminaire Selection

For this project, the Acuity Brands Autobahn LED ATB2 80 LED package luminaire was selected using type III distribution to accommodate the varying roadway widths and characteristics including the sidewalks adjacent to the roadway. The primary goal of the lighting design is to maintain a consistent lighting assembly throughout the project. The added conventional lighting was analyzed utilizing only one mounting height (40 feet), only one wattage and one type of distribution for all the conventional lighting luminaires of this project.

The luminaire selected to replace the existing high mast HPS luminaires with LED luminaires was the Acuity Brands Holophane HMLED3-PK4-40K-XXXX-X-AW which is supplied by the same representative as the conventional lighting luminaire and is included in FDOT APL list.

For the underdeck lighting, the Acuity Brands Holophane wall pack W4GLED 30 LED T3M luminaire was selected because it provides a good light output that will adequately serve the project needs. Also, it is widely used in Florida for underdeck lighting and it is supplied by the same lighting representative as the conventional and high mast lighting luminaires.

Luminaire models/ordering information, IES/Photometric Curve file names, wattage, mounting height and distribution type at different locations/roadway types throughout the project are provided in **Table 3**. **Table 4** provides maximum candela output along with mounting height and distribution type information of the proposed luminaires to ensure their compliancy with FDM requirements depicted in **Table 2** in section 4 of this report. Candela is a measure of the amount of light emitted in an angular span and can be calculated utilizing the lumen output of the proposed lighting fixtures shown in the manufacturer's data sheets. Since a light source emits light in all directions (360 degrees), the maximum candela can be approximated by dividing the total lumens by 12.57. However since the proposed luminaires for this project are full cutoff there would be no lighting emitted above the horizontal plane and the luminaire only emits light in a 180 degree angle. Therefore, the candela for the luminaires used is calculated by dividing the lumen output by 6.28 which gives the maximum candela values shown in **Table 4**.

Table 3: Lighting Fixtures

| Roadway Type | Luminaire Used | Wattage | Mounting Height (Feet) | IESNA Distribution | Photometric Curve |
|---|--------------------|-----------|------------------------------|-----------------------|-------------------------------|
| I-75 NB & SB and Pine Ridge Road Interchange | HMLED3 | 627 | 120' | Type V | HMLED3-PK4-40K- XXXXX-X-AW |
| Ramps Widen/Added Capacity Areas | ATB2 80 LED BIN | 268 | 40' | Type III | ATB2 80BLEDE10- R3-4K |
| Intersections | ATB2 80 LED BIN | 268 | 40' | Type III | ATB2 80BLEDE10- R3-4K |
| Pine Ridge Road EB & WB | ATB2 80 LED BIN | 268 | 40' | Type III | ATB2 80BLEDE10- R3-4K |
| Pine Ridge Road under I-75 Bridges (Underdeck) | Wallpack LED | D 104 18' | | Type III Medium | W4GLED_30C 1000_40K_T3M |

Table 4: Maximum Candela for Lighting Fixtures

| Luminaire Type | Longitudinal Distribution | IESNA Distribution | Mounting Heights Used (Feet) | Maximum Lumens | Maximum Candela |
|------------------|------------------------------|-----------------------|------------------------------------|-------------------|--------------------|
| ATB2 80 268 Watt | Medium | III | 40' | 32416 | 5162 |

6. Results and Recommendations

The Calculation results from the full photometric analysis are shown below in Tables 5 and 6.

Table 5: Lighting Calculation Results for Intersections

| Section | Foot Candle Average | Avg/Min | Max/Min | Veiling Ratio | |
|--|------------------------|---------|---------|---------------|--|
| Pine Ridge Road @ Ramp A & Ramp D Intersection | 3.07 | 2.05 | 3.67 | N.A. | |
| Pine Ridge Road @ Ramp B & Ramp C Intersection | 3.09 | 1.93 | 3.44 | N.A. | |
| Pine Ridge @ Ramp A&D Intersection EB RT (Vertical) | 2.58 | 1.29 | 1.45 | N.A. | |
| Pine Ridge @ Ramp A&D Intersection EB Thru (Vertical) | 2.62 | 1.38 | 1.63 | N.A. | |
| Pine Ridge @ Ramp A&D Intersection SB RT (Vertical) | 2.53 | 1.49 | 1.59 | N.A. | |
| Pine Ridge @ Ramp A&D Intersection WB Thru (Vertical) | 2.60 | 1.86 | 2.14 | N.A. | |
| Pine Ridge @ Ramp B&C Intersection EB Thru (Vertical) | 2.50 | 1.39 | 1.56 | N.A. | |
| Pine Ridge @ Ramp B&C Intersection NB RT (Vertical) | 2.35 | 1.38 | 1.71 | N.A. | |
| Pine Ridge @ Ramp B&C Intersection WB RT (Vertical) | 2.86 | 1.19 | 1.33 | N.A. | |
| Pine Ridge @ Ramp B&C Intersection WB Thru (Vertical) | 3.30 | 1.22 | 1.37 | N.A. | |

Table 6: Lighting Calculations Results for Pine Ridge Road and Ramps

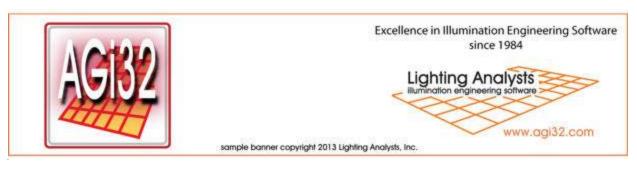
| Section | Foot Candle Average | Avg/Min | Max/Min | Veiling Ratio |
|-----------------------------------|------------------------|-----------|---------|------------------|
| Pine Ridge Road Center Segment EB | 2.17 | 2.71 | 6.13 | 0.16 |
| Pine Ridge Road Center Segment WB | 2.21 | 2.46 | 5.44 | 0.08 |
| Pine Ridge Road East Segment EB | 2.60 | 2.36 | 4.36 | N.A. |
| Pine Ridge Road East Segment WB | 2.17 | 2.17 5.50 | | 0.11 |
| Pine Ridge Road West Segment EB | 2.19 | 2.19 | 5.50 | 0.15 |
| Pine Ridge Road West Segment WB | 2.31 | 2.31 | 4.7 | N.A. |
| Ramp A | 1.66 | 2.08 | 6.00 | 0.09 |
| Ramp B | 1.88 | 2.35 | 6.13 | 0.16 |
| Ramp C | 1.65 | 2.75 | 7.67 | 0.07 |
| Ramp D | 1.80 | 2.00 | 5.22 | 0.22 |

The results summary of the computational analysis for Pine Ridge Road, intersections and ramps are placed on **Appendix A.** One roll plot with the roadway layout with the illuminance intensity values points modeled on the roadway surface for horizontal foot candles calculations, on line grids placed five feet above the roadway surface for the vertical calculations and grids for the glare calculations (veiling ratio) of all the required photometric grids are shown in **Appendix B.** The proposed luminaires catalog/cut sheets used for the analysis are shown in **Appendix C**.

Also, it is recommended to replace the existing HPS fixtures on the 6 high mast poles that are located outside the project limits with the same LED fixture that are proposed on the high mast poles within the project limits to maintain consistency.



Pine Ridge Road, Intersections and Ramps AGi32 Photometric Calculation Summary Results



Summary of Lighting Photometric Calculations for SR 93 (I-75) Modifications to I-75 Ramps and Pine Ridge Road

Calculation Summary

| Calculation Summary | | | | | | | | |
|----------------------------------|-------------------|---------|------|-----|-----|---------|---------|---------|
| Label | CalcType | Units | Avg | Max | Min | Avg/Min | Max/Min | LVRatio |
| Intersection Pine Ridge@RampA&D | Illuminance | Fc | 3.07 | 5.5 | 1.5 | 2.05 | 3.67 | N.A. |
| Intersection PineRidge@RampB&C | Illuminance | Fc | 3.09 | 5.5 | 1.6 | 1.93 | 3.44 | N.A. |
| Intersection PR@RampA&D_EB_RT | Illuminance | Fc | 2.58 | 2.9 | 2.0 | 1.29 | 1.45 | N.A. |
| Intersection PR@RampA&D_EB_Thru | Illuminance | Fc | 2.62 | 3.1 | 1.9 | 1.38 | 1.63 | N.A. |
| Intersection PR@RampA&D_SB RT | Illuminance | Fc | 2.53 | 2.7 | 1.7 | 1.49 | 1.59 | N.A. |
| Intersection PR@RampA&D_WB_Thru | Illuminance | Fc | 2.60 | 3.0 | 1.4 | 1.86 | 2.14 | N.A. |
| Intersection PR@RampB&C_EB Thru | Illuminance | Fc | 2.50 | 2.8 | 1.8 | 1.39 | 1.56 | N.A. |
| Intersection PR@RampB&C_NB_RT | Illuminance | Fc | 2.35 | 2.9 | 1.7 | 1.38 | 1.71 | N.A. |
| Intersection PR@RampB&C_WB RT | Illuminance | Fc | 2.86 | 3.2 | 2.4 | 1.19 | 1.33 | N.A. |
| Intersection PR@RampB&C_WB Thru | Illuminance | Fc | 3.30 | 3.7 | 2.7 | 1.22 | 1.37 | N.A. |
| Pine Ridge Center EB | Illuminance | Fc | 2.17 | 4.9 | 0.8 | 2.71 | 6.13 | N.A. |
| Pine Ridge Center EB Glare_Lumin | Luminance | Cd/Sq.m | 1.25 | 3.1 | 0.6 | 2.08 | 5.17 | N.A. |
| Pine Ridge Center EB Glare_Veil_ | Veiling Luminance | Cd/Sq.m | 0.10 | 0.2 | 0.1 | 1.00 | 2.00 | 0.16 |
| Pine Ridge Center WB | Illuminance | Fc | 2.21 | 4.9 | 0.9 | 2.46 | 5.44 | N.A. |
| Pine Ridge Center WB Glare_Lumin | Luminance | Cd/Sq.m | 1.33 | 2.6 | 0.7 | 1.90 | 3.71 | N.A. |
| Pine Ridge Center WB Glare_Veil_ | Veiling Luminance | Cd/Sq.m | 0.10 | 0.1 | 0.1 | 1.00 | 1.00 | 0.08 |
| Pine Ridge East End EB | Illuminance | Fc | 2.60 | 4.8 | 1.1 | 2.36 | 4.36 | N.A. |
| Pine Ridge East End WB | Illuminance | Fc | 2.17 | 5.5 | 1.0 | 2.17 | 5.50 | N.A. |
| Pine Ridge East End WB Glare_Lum | Luminance | Cd/Sq.m | 1.77 | 2.8 | 1.2 | 1.48 | 2.33 | N.A. |
| Pine Ridge East End WB Glare_Vei | Veiling Luminance | Cd/Sq.m | 0.18 | 0.2 | 0.1 | 1.80 | 2.00 | 0.11 |
| Pine Ridge West End EB | Illuminance | Fc | 2.19 | 5.5 | 1.0 | 2.19 | 5.50 | N.A. |
| Pine Ridge West End EB Glare_Lum | Luminance | Cd/Sq.m | 1.34 | 1.8 | 1.0 | 1.34 | 1.80 | N.A. |
| Pine Ridge West End EB Glare Vei | Veiling Luminance | Cd/Sq.m | 0.11 | 0.2 | 0.1 | 1.10 | 2.00 | 0.15 |
| Pine Ridge West End WB | Illuminance | Fc | 2.31 | 4.7 | 1.0 | 2.31 | 4.70 | N.A. |
| Ramp A | Illuminance | Fc | 1.66 | 4.8 | 0.8 | 2.08 | 6.00 | N.A. |
| Ramp A Glare Luminance | Luminance | Cd/Sq.m | 1.16 | 2.0 | 0.6 | 1.93 | 3.33 | N.A. |
| Ramp A Glare Veil Lum | Veiling Luminance | Cd/Sq.m | 0.10 | 0.1 | 0.1 | 1.00 | 1.00 | 0.09 |
| Ramp B | Illuminance | Fc | 1.88 | 4.9 | 0.8 | 2.35 | 6.13 | N.A. |
| Ramp B Glare Luminance | Luminance | Cd/Sq.m | 1.27 | 2.7 | 0.6 | 2.12 | 4.50 | N.A. |
| Ramp B Glare Veil Lum | Veiling Luminance | Cd/Sq.m | 0.12 | 0.2 | 0.1 | 1.20 | 2.00 | 0.16 |
| Ramp C | Illuminance | Fc | 1.65 | 4.6 | 0.6 | 2.75 | 7.67 | N.A. |
| Ramp C Glare Luminance | Luminance | Cd/Sq.m | 1.41 | 2.5 | 0.8 | 1.76 | 3.13 | N.A. |
| Ramp C Glare_Veil_Lum | Veiling Luminance | Cd/Sq.m | 0.06 | 0.1 | 0.0 | N.A. | N.A. | 0.07 |
| Ramp D | Illuminance | Fc | 1.80 | 4.7 | 0.9 | 2.00 | 5.22 | N.A. |
| Ramp D Glare Luminance | Luminance | Cd/Sq.m | 1.37 | 3.0 | 0.6 | 2.28 | 5.00 | N.A. |
| Ramp D Glare Veil Lum | Veiling Luminance | Cd/Sq.m | 0.09 | 0.3 | 0.0 | N.A. | N.A. | 0.22 |

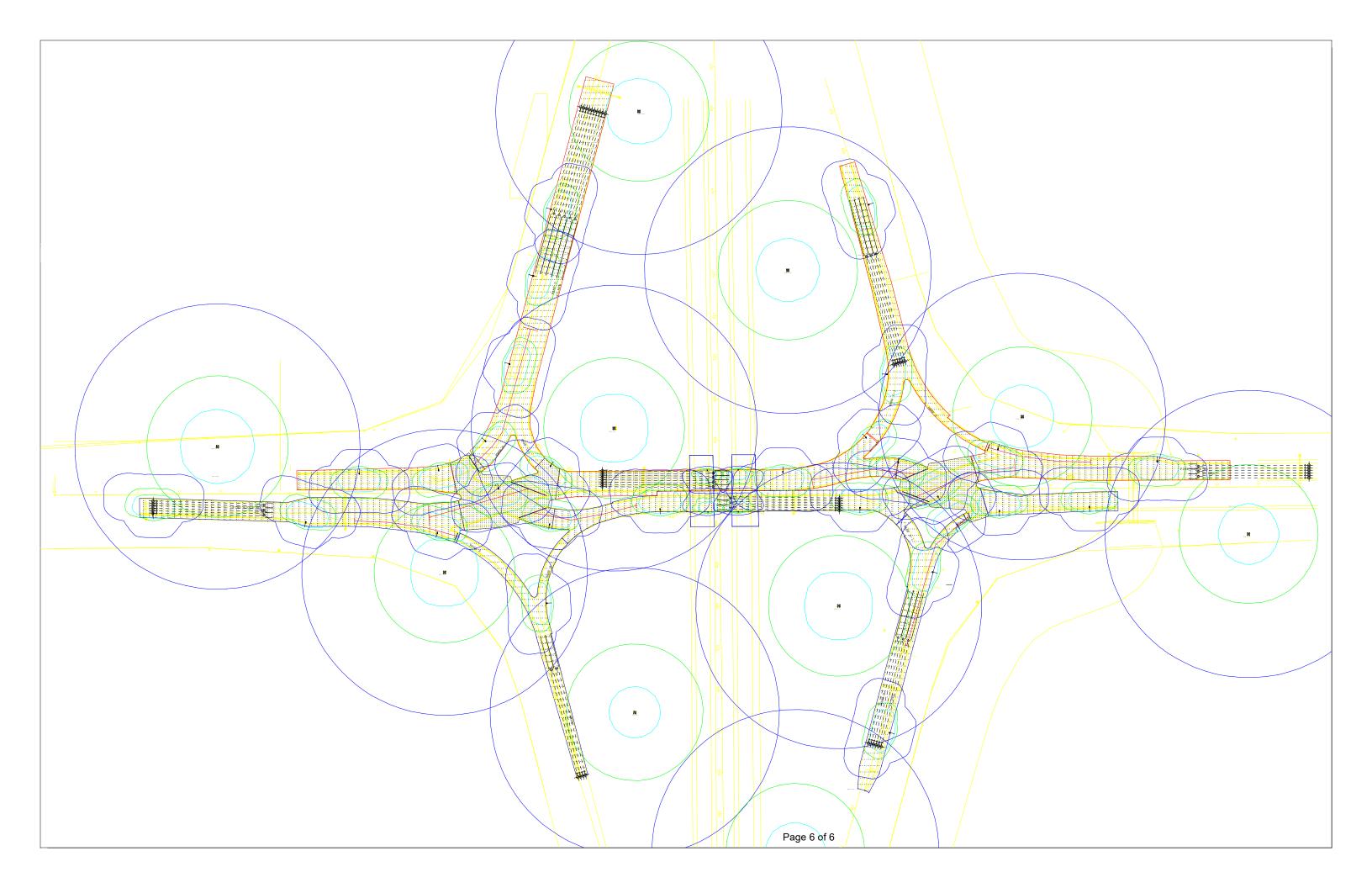
Luminaire Summary

| Luminaire Schedule | | | | | | | | |
|--------------------|-----|-------------------------------|----------------|-------------------|-------|-------------------------------|-------------|--|
| Symbol | Qty | Label | Arrangement | Total Lamp Lumens | LLF | Description | Lum. Lumens | |
| | 28 | ATB2_80BLEDE10_XXXXX_R3_4K_5K | SINGLE | N.A. | 1.000 | ATB2 80BLEDE10 XXXXX R3 4K_5K | 32415 | |
| <u> </u> | 4 | W4GLED_30C1000_40K_T3M | SINGLE | N.A. | 1.000 | W4GLED 30C1000 40K T3M | 8374 | |
| 000 | 10 | HMLED3_PK4_40K_XXXXX_X_AW | 4 @ 90 DEGREES | N.A. | 1.000 | HMLED3 PK4 40K XXXXX X AW | 83155 | |

Luminaire Location Summary

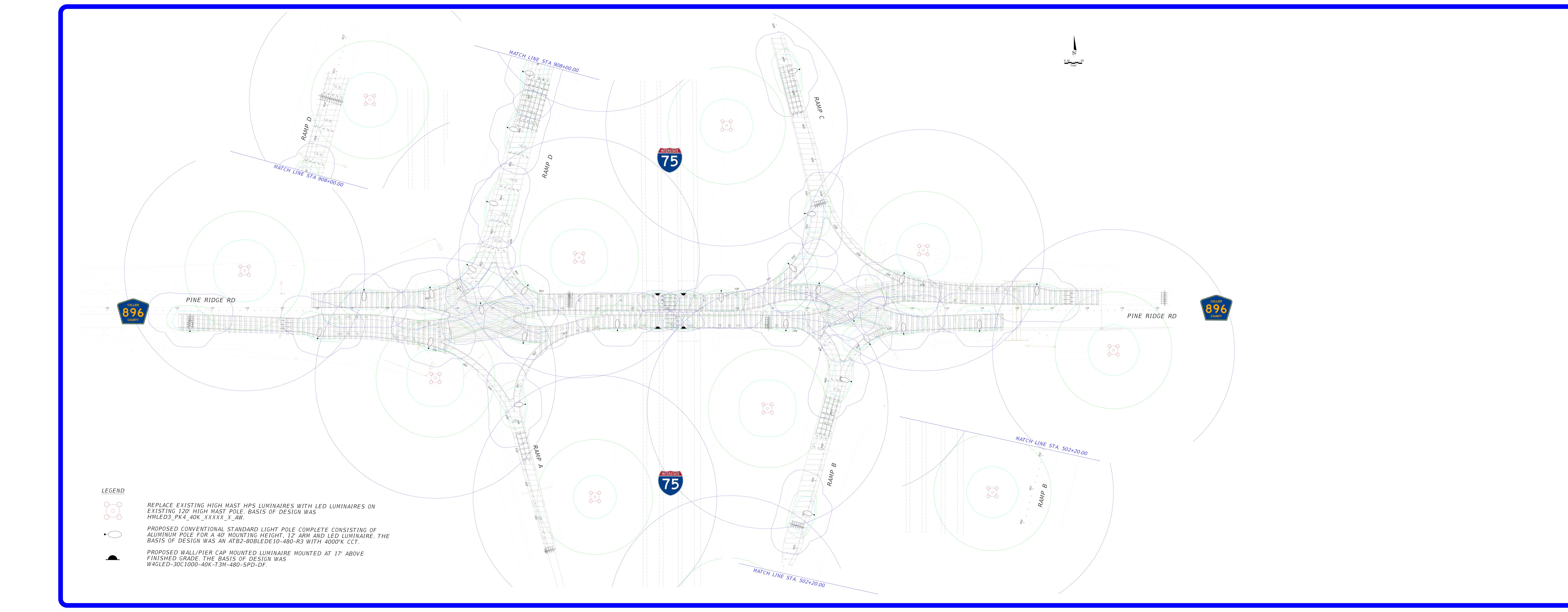
Coordinates In Feet

| Luminai | Luminaire Location Summary | | | | | | |
|---------|--------------------------------|----------|----------|-------|---------|------|--|
| LumNo | <u> </u> | Χ | Υ | Z | Orient | Tilt | |
| 1 | HMLED3 PK4 40K XXXXX X AW | 413610.1 | 683392.4 | 114.5 | 310.508 | 0 | |
| 2 | HMLED3 PK4 40K XXXXX X AW | 414157.4 | 683089.4 | 115 | 313.995 | 0 | |
| 3 | HMLED3 PK4 40K XXXXX X AW | 414615.6 | 682752.2 | 118.4 | 308.66 | 0 | |
| 4 | HMLED3 PK4 40K XXXXX X AW | 414565.8 | 683436.6 | 115 | 316.494 | 0 | |
| 5 | HMLED3 PK4 40K XXXXX X AW | 414984.4 | 683817.2 | 116 | 315.458 | 0 | |
| 6 | HMLED3_PK4_40K_XXXXXX_X_AW | 414625.5 | 684199.7 | 115.6 | 312.274 | 0 | |
| 7 | HMLED3_PK4_40K_XXXXXX_X_AW | 415107.2 | 683008.8 | 115 | 314.46 | 0 | |
| 8 | HMLED3_PK4_40K_XXXXXX_X_AW | 415002.6 | 682413.2 | 116.4 | 316.332 | 0 | |
| 9 | HMLED3_PK4_40K_XXXXXX_X_AW | 415549.3 | 683464.5 | 116 | 314.444 | 0 | |
| 10 | HMLED3_PK4_40K_XXXXXX_X_AW | 416094.5 | 683181.8 | 116.5 | 314.293 | 0 | |
| 11 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 414137.0 | 683173.6 | 40 | 73.781 | 0 | |
| 12 | ATB2_80BLEDE10_XXXXXX_R3_4K_5K | 414408.4 | 683194.0 | 40 | 81.737 | 0 | |
| 14 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 414285.0 | 683302.9 | 40 | 280.235 | 0 | |
| 15 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 414247.0 | 683413.0 | 40 | 321.107 | 0 | |
| 16 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 414419 | 683355.2 | 40 | 236.829 | 0 | |
| 17 | ATB2_80BLEDE10_XXXXXX_R3_4K_5K | 414140.5 | 683346.9 | 40 | 283.332 | 0 | |
| 19 | ATB2_80BLEDE10_XXXXXX_R3_4K_5K | 413455.2 | 683219.6 | 40 | 88.609 | 0 | |
| 20 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 413819.8 | 683199.5 | 40 | 74.328 | 0 | |
| 21 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 413951.9 | 683338.7 | 40 | 270.316 | 0 | |
| 22 | W4GLED 30C1000 40K T3M | 414791.9 | 683235.2 | 18 | 90.538 | 0 | |
| 23 | W4GLED 30C1000 40K T3M | 414865.6 | 683235.8 | 18 | 91.628 | 0 | |
| 24 | W4GLED 30C1000 40K T3M | 414864.5 | 683336.1 | 18 | 270.882 | 0 | |
| 25 | W4GLED_30C1000_40K_T3M | 414790.5 | 683335.4 | 18 | 269.645 | 0 | |
| 26 | ATB2_80BLEDE10_XXXXXX_R3_4K_5K | 415397.9 | 683195.5 | 40 | 122.966 | 0 | |
| 27 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 415251.8 | 683365.6 | 40 | 262.601 | 0 | |
| 28 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 415351.5 | 683262.0 | 40 | 117.844 | 0 | |
| 29 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 415494.2 | 683397.2 | 40 | 251.477 | 0 | |
| 30 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 415494.6 | 683226.0 | 40 | 93.04 | 0 | |
| 31 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 415874.2 | 683368.4 | 40 | 270.351 | 0 | |
| 32 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 415164.8 | 683422.4 | 40 | 314.91 | 0 | |
| 33 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 415158.0 | 683233.6 | 40 | 90 | 0 | |
| 34 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 414972.5 | 683342.7 | 40 | 269.656 | 0 | |
| 35 | ATB2 80BLEDE10 XXXXX R3 4K 5K | 414676.7 | 683230.5 | 40 | 90 | 0 | |
| 36 | ATB2_80BLEDE10_XXXXX_R3_4K_5K | 415711.1 | 683235.8 | 40 | 90.355 | 0 | |
| 37 | ATB2_80BLEDE10_XXXXX_R3_4K_5K | 415344.3 | 683087.6 | 40 | 164.993 | 0 | |
| 38 | ATB2_80BLEDE10_XXXXXX_R3_4K_5K | 415240.9 | 682700.6 | 40 | 165.588 | 0 | |
| 39 | ATB2_80BLEDE10_XXXXX_R3_4K_5K | 415211.3 | 683567 | 40 | 358.001 | 0 | |
| 40 | ATB2_80BLEDE10_XXXXX_R3_4K_5K | 415190.1 | 683978.8 | 40 | 197.194 | 0 | |
| 41 | ATB2_80BLEDE10_XXXXX_R3_4K_5K | 414414.7 | 683016 | 40 | 183.254 | 0 | |
| 42 | ATB2_80BLEDE10_XXXXX_R3_4K_5K | 414359.9 | 683806.6 | 40 | 344.606 | 0 | |
| 43 | ATB2_80BLEDE10_XXXXX_R3_4K_5K | 414302.8 | 683594.5 | 40 | 345.577 | 0 | |
| 44 | ATB2_80BLEDE10_XXXXX_R3_4K_5K | 414403 | 683967.2 | 40 | 344.086 | 0 | |



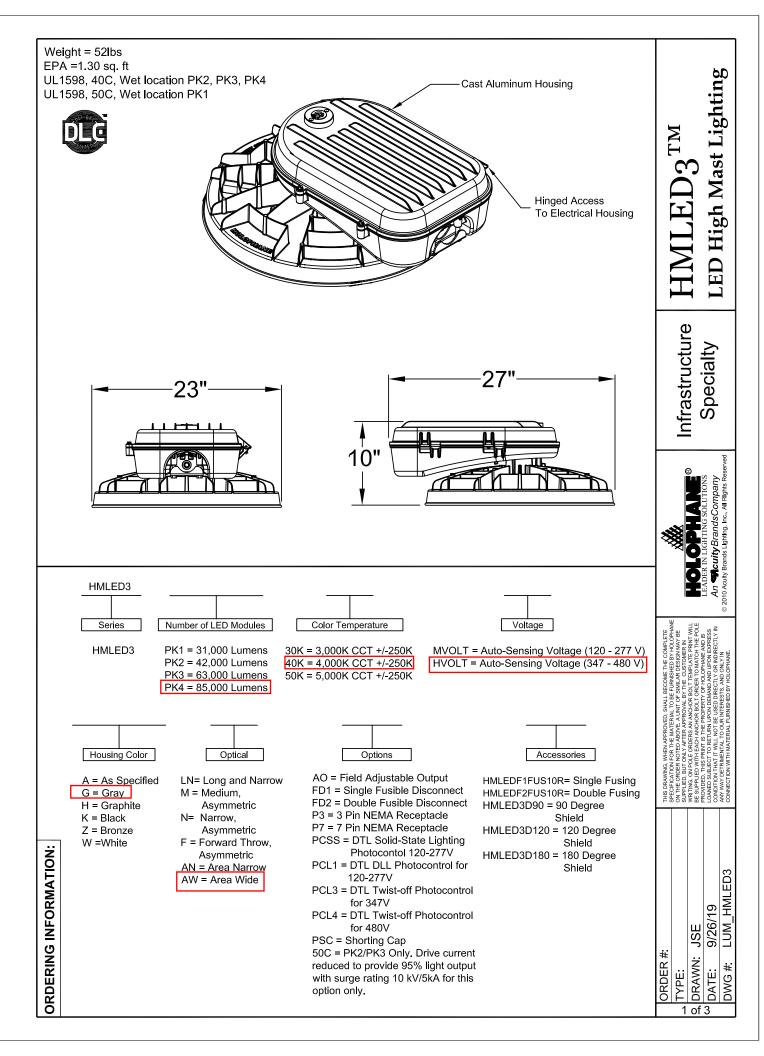
В

Roll Plot Photometric Calculation Results Layout





Luminaire Cut Sheets



Specifications

General Construction

Rugged die cast, low copper content aluminum 380 alloy electrical and optical housing are polyester powder coated with super durable paint for durability and corrosion resistance. Rigorous pre-treating and painting process yields a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5,000 hours exposure to salt fog chamber (per ASTM B117). Four bolt horizontal arm mount with +/- 5 degree vertical adjustment provides 3G vibration rating per ANSI C136. Mast arm mount is adjustable for arms from 1-1/4" to 2" (1-5/8" to 2-3/8"). Two captive bolts disengage top electrical cover for easy access to LED drivers, surge protection, and terminal block. IP66 rated LED modules, IP65 electrical assembly per IEC60068-2-3. Luminaire electrical and optical housing ship complete in one carton facilitating installation and minimizing carton disposal at jobsite.

Electrical

Quick disconnect connectors for ease of installation and maintenance. Extreme surge protection meets 20KV/10KA per ANSI/IEEEC62.41. Driver meets maximum total harmonic distortion (THD) of 20% and is ROHS compliant. A three stage terminal block is standard for ease of installation. Minimum operating temperature is -40C. Electronic driver has an expected life of 100,000 hours at 25C.

| | Input Operating Amps | | | | | | |
|-----|----------------------|------|------|------|------|------|--|
| | 120V | 208V | 240V | 277V | 347V | 480V | |
| PK1 | 1.77 | 1.01 | 0.90 | 0.79 | 0.62 | 0.45 | |
| PK2 | 2.69 | 1.54 | 1.34 | 1.13 | 0.90 | 0.98 | |
| PK3 | 3.99 | 2.28 | 1.99 | 1.73 | 1.40 | 1.01 | |
| PK4 | 5.29 | 3.05 | €.62 | 2.29 | 1.99 | 1.99 | |

Optical

PCB mounted LED technology comprised of multi-cluster LED's on single metal core board, Color temperature options of 3000K, 4000K and 5000K with CRI of 70 minimum. Borosilicate prismatic glass optics ensure longevity and minimize dirt depreciation. Zero uplight optics reduce sky glow and meets Dark Sky requirements. Prismatic glass optics provide overlapping pattern on application space eliminating dark spots. Prismatic glass optics minimize direct view of LED, reducing glare. Rotatable optic assembly provides alignment of asymmetric distributions to roadway.

Controls (Optional)

Controls options include the **P3 and P7** locking style photocontrol receptacles. The P7 receptacle option is factory pre-wired to dimming leads of drivers.

PCSS - Premium solid state locking style photocontrol (10 year rated life)

PCL1 - Extreme long life solid state locking-style photocontrol (20 year rated life)

Field Adjustable Output (AO) module - An onboard device that adjusts the light output and input wattage to meet site specific requirements, allowing a single fixture configuration to be flexibly applied in many different applications. The AO module is pre-set at the factory to position number 8.

Testing Compliance

See Holophane HMAO-LED Validation Test Specification - Luminaire conforms to following standards: ANSI/IEEE C62.41:2002 - Surge protection. ANSI C82.77:2002 - Harmonic distortion. ANSIC136.31:2001-Luminaire vibration. ASTM B 117:2003 - Salt spray test. FCC title 47 CFR Part 18 - Federal Communications Commission. IEC 60068 - Environmental testing. IEC 60529:1999 - Degrees of protection provided by enclosure (IP)IEC 61000 - Electromagnetic Compatibility testing (EMC). IEEE 519 - Harmonic control in Electrical Power systems. UL-1598, 40C, Wet Location - Safety listing. DesignLights ConsortiumR (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

Manufacturing

Manufactured in Crawfordsville, Indiana. ARRA compliant. Test 100% electrical of all luminaires before shipment. No less than five (5) years experience in manufacturing LED- based products.

Warranty

Five Year Limited warranty. Full warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

<u>Note</u>

Actual performance may differ as a result of end-user environment and application. Actual wattage may differ by +/- 8% when operating between 120-480V +/-10%. Specifications subject to change without notice.

$\mathrm{HMLED3^{TM}}$ LED High Mast Lighting

Infrastructure

LEADER IN LIGHTING SOLUTIONS
An Caruity Brands Lighting, An Rights Reserved

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DRAWN: JSE
DATE: 9/26/19
DWG #: LUM_HMLED3

ORDER

Lumens **HMAO LED III** 4000K Distribution **Input Watts LPW** PK1 32,718 209 LN 157 Ν 30,114 209 144 30,095 209 М 144 F 27,138 209 146 AN 32,836 209 157 AW 31,700 209 157 PK2 46,349 LN 319 146 Ν 42,662 319 134 М 42,635 319 146 F 38,445 319 121 AN 46,517 319 146 ΑW 44,908 319 141 PK3 LN 66,820 475 141 Ν 61,503 475 129 475 М 61,464 129 F 55,424 475 117 AN67,061 475 141 AW 64,741 475 136 PK4 85,840 LN 627 117 Ν 79,010 627 129 М 78,960 627 126 F 71,200 627 114 AN 86,150 627 137 AW 83,170 627 141 30K lumens = .95 40K

| AO Module | | | | | | | |
|------------|----------|--------------|--|--|--|--|--|
| AO setting | Lumens % | Wattage % | | | | | |
| 8 | 100% | 100% | | | | | |
| 2 | 100% | 100% | | | | | |
| 8 | 100% | 100% | | | | | |
| 5 | 88% | 85% | | | | | |
| 3 | 80% | \$ 5% | | | | | |
| 1 | 67% | 61% | | | | | |
| 2 | 67% | 25 % | | | | | |
| 1 | 41% | 34% | | | | | |

| | | LAT | _ | |
|------|------|------|------|------|
| 0C | 15C | 25C | 35C | 40C |
| 1.05 | 1.02 | 1.05 | 0.98 | 0.98 |

| LLD | | | | | | | | | | |
|---------------|------|------|------|------|--|--|--|--|--|--|
| Hours | PK3 | PK2 | PK3 | PK3 | | | | | | |
| 25,000 hours | 0.90 | 0.95 | 0.95 | 0.90 | | | | | | |
| 50,000 hours | 0.93 | 0.91 | 0.90 | 0.90 | | | | | | |
| 25,000 hours | 0.90 | 0.87 | 0.95 | 0.84 | | | | | | |
| 100,000 hours | 0.87 | 0.90 | 0.90 | 0.90 | | | | | | |

| HMLED3TM | LED High Mast Lighting

Infrastructure Specialty



SECTION FOR THE TATA THE STATE STATE SECTION FOR UNITY OF THE STATE STAT

| | OKDEK #: TYPE: DRAWN: DATE: |
|--------------|--------------------------------------|
| : LUM HMLED3 | DWG # |
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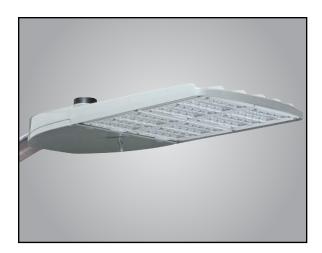
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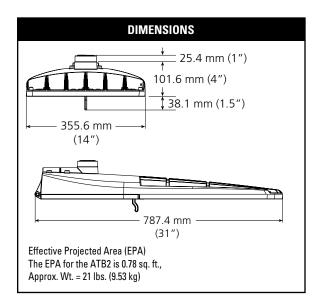
Autobahn Series ATB2 Roadway Lighting

PRODUCT OVERVIEW



Applications:

Roadways Off ramps Residential streets Parking lots



STANDARDS

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

Color temperatures of \leq 3000K must be specified for International Dark-Sky Association certification.

Rated for -40°C to 40°C ambient. CSA Certified to U.S. and Canadian standards Complies with ANSI: C136.2, C136.10, C136.14, C136.31, C136.15, C136.37

Features:

OPTICAL

Same Light: Performance is comparable to 250-400W HPS roadway luminaires.

White Light: Correlated color temperature - 4000K, 70 CRI minimum, 3000K, 70 CRI minimum or optional 5000K, 70 CRI minimum.

Unique IP66 rated LED light engines provided 0% uplight and restrict backlight to within sidewalk depth, providing optimal application coverage and optimal pole spacing.

Available in Type II, III, IV, & V roadway distributions.

ELECTRICAL

Expected Life: LED light engines are rated >100,000 hours at 25°C, L70. Electronic driver has an expected life of 100,000 hours at a 25°C ambient.

Lower Energy: Saves an average of 40-60% over comparable HPS platforms.

Robust Surge Protection: Three different surge protection options provide a minimum of ANSI C136.2 10kV/5kA protection. 20kV/10kA protection is also available.

MECHANICAL

Easy to Maintain: Includes standard AEL lineman-friendly features such as tool-less entry, 3 station terminal block and quick disconnects. Bubble level located inside the electrical compartment for easy leveling at installation.

Rugged die-cast aluminum housing is polyester powder-coated for durability and corrosion resistance. Rigorous five-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 7 (per ASTM D1654) after over 5000 hours exposure to salt fog chamber (operated per ASTM B117).

Four-bolt mast arm mount is adjustable for arms from 1-1/4" to 2" (1-5/8" to 2-3/8" 0.D.) diameter and provides a 3G vibration rating per ANSI C136.31.

Wildlife shield is cast into the housing (not a separate piece).

CONTROLS

NEMA 3 Pin photocontrol receptacle is standard, with the Acuity designed ANSI 7 Pin receptacle optionally available.

Premium solid state locking sale photocontrol - PCSS (10 year rated life). Extreme long life sold state locking style photocontrol - PCLL (20 year rated life).

Optional onboard Adjustable Output module allows the light output and input wattage to be modified to meet site specific requirements, and can also allow a single fixture to be flexibly applied in many different applications.



Autobahn Series ATB2 Roadway Lighting

ORDERING INFORMATION

Example: ATB2 40LEDE70 MVOLT R2

Series ATB2 Autobahn LED Roadway

Performance Packages **40BLEDE70** 40B Chips, 700mA Driver 40B Chips, 1050mA Driver **40BLEDE10 40BLEDE13** 40B Chips, 1300mA Driver **40BLEDE15** 40B Chips, 1500mA Driver **60BLEDE70** 60B Chips, 700mA Driver **60BLEDE85** 60B Chips, 850mA Driver **60BLEDE10** 60B Chips, 1050mA Driver 60B Chips, 1300mA Driver **60BLEDE13 60BLEDE15** 60B Chips, 1500mA Driver **80BLEDE70** 80B Chips, 700mA Driver **80BLEDE85** 80B Chips, 850mA Driver 80B Chips, 1050mA Driver 80BLEDE10 80B Chips, 1200mA Driver **80BLEDE12 80BLEDE15** 80B Chips, 1500mA Driver

Voltage MVOLT Multi-volt, 120-277V 347V 347 **480** 480V

Optics R2 Roadway Type II R3 Roadway Type III Roadway Type IV R4 R5 Roadway Type V

| ptic | |
|------|--|
| | |

Single Unit (Standard)

Job Pack (24/Pallet)

| | | | Uptions | | |
|-----------------|----------------------------|-----------------------|--|------------|----------|
| Color Tem | perature (CCT) | Misc. (cont | inued) | Accessorie | es (fiel |
| (Blank) | 4000K CCT, 70 CRI Min. | UMR-XX | 8" Horizontal Arm for Round | ATB2HS40 | Light |
| 3K | 3000K CCT, 70 CRI Min. | | Pole, Painted to match Fixture | | Hous |
| 5K | 5000K CCT, 70 CRI Min. | UMS-XX | 8" Horizontal Arm for Square | ATB2SS40 | Light |
| 5 | | | Pole, Painted to match Fixture | | Stree |
| Paint | 0 (0 1 1) | UMR-GALV | 8" Horizontal Arm for Round | ATB2HS60 | Light |
| (Blank) | Gray (Standard) | | Pole, Galvanized | | Hous |
| BK | Black | UMS-GALV | 8" Horizontal Arm for Square | ATB2SS60 | Light |
| BZ | Bronze | | Pole, Galvanized | | Stree |
| DDB | Dark Bronze | 0 | | ATB2HS80 | Light |
| GI | Graphite | Controls | O.D. NEMA DI I | | Hous |
| WH | White | (Blank) | 3 Pin NEMA Photocontrol | ATB2SS80 | Light |
| Surge Prot | rection | D=2 | Receptacle (Standard) | | Stree |
| (Blank) | Standard 10kV/5kA SPD | P7 ² | 7 Pin Photocontrol Receptacle | | |
| 20 | 20kV/10KA SPD | ND | (Dimmable Driver Included) | | |
| MP ¹ | MOV Pack | NR AO2 | No Photocontrol Receptacle | | |
| IL ¹ | SPD with Indicator Light | AO ² DM | Field Adjustable Output 0V-10V Dimmable Driver | | |
| | 0. 2 mm. mareater 1.g | DIVI | * | | |
| Terminal B | <u>llock</u> | PCSS ¹ | (Controls by others) Solid State Lighting | Notes | |
| (Blank) | Terminal Block (Standard) | F033 | Photocontrol (120-277V) | | :1-61- |
| T2 | Wired to L1 & L2 Positions | PCLL | | 1. Not ava | |
| M* | | SH | Solid State Long Life Photocontrol Shorting Cap | 2. Not ava | ilable |
| Misc. | F | SII | Shorting Cap | | |
| BL | External Bubble Level | Packaging | | | |

Packaging

JP

(Blank)

eld installed):

ht Trespass Shield LEM 40 ıse Side ht Trespass Shield LEM 40 eet Side ht Trespass Shield LEM 60 ıse Side ht Trespass Shield LEM 60 eet Side ht Trespass Shield LEM 80 ıse Side ht Trespass Shield LEM 80 eet Side

e in 347 or 480V. e with DM option.



House-Side Shield

Not CSA Certified

Nema Label

Hingekeepers

HS

NL

XL

HK

Autobahn Series ATB2 Roadway Lighting

PERFORMANCE PACKAGE 4K/5K (4000K/5000K CCT, 70 CRI Min.) 3K (3000K CCT, 70 CRI Min.) LLD @ 25°C Drive Performance Package Input Watts **Optic** (mA) 25k 100k U Lumens LPW В G Lumens LPW В U G Hours Hours Hours 700 88 10,854 11,607 0.98 0.97 0.96 123 0 3 132 3 0 1050 133 15 565 117 3 0 3 16.360 123 3 n 3 0.97 0.95 0.92 R2 1300 171 18,361 107 3 0 3 19,544 114 3 0 0.93 0.90 0.88 1500 198 N 0.90 20 124 102 4 21 384 108 n 0.93 0.88 700 88 10,980 125 2 0 2 11,552 131 3 0 3 0.98 0.97 0.96 1050 133 15,607 117 3 0 3 16,249 122 3 0 3 0.97 0.95 0.92 R3 1300 171 18,428 108 3 0 3 19,462 114 3 0 3 0.93 0.90 0.88 108 1500 198 20 240 102 3 n 3 21 331 2 n 3 0.93 0.90 0.88 40B 700 88 10,905 124 2 0 2 11,768 134 3 0 3 0.98 0.97 0.96 117 3 n 3 3 0.97 0.95 0.92 1050 133 15 627 16 593 125 n 4 1300 171 18,405 108 3 0 4 19,877 116 3 0 4 0.93 0.90 0.88 198 102 n 4 n 2 1500 20 167 3 21 799 110 4 0.93 0.90 0.88 12,388 0.97 700 88 11,386 129 0 2 141 0 0.98 0.96 133 123 2 17,499 132 5 N 95 1050 16.355 4 0 n 3 0.97 N 92 R5 171 0 2 1300 19,319 113 4 20,795 122 5 0 3 0.93 0.90 0.88 1500 198 21,221 107 5 0 3 22,828 115 3 0 3 0.93 0.90 0.88 700 130 16,471 127 3 0 3 18,193 140 0 4 0.98 0.97 0.96 3 850 165 19,503 118 3 0 3 21,436 130 3 0 4 0.97 0.95 0.92 204 R2 23,034 113 3 0 4 24,940 122 3 0 4 0.97 0.95 0.92 1050 1300 254 27,088 107 3 0 4 29,357 116 3 0 5 0.93 0.90 0.88 1500 291 29 819 102 3 0 4 32 052 110 3 n 3 0.93 0.90 0.88 130 16,702 128 0 17,714 136 0.97 700 3 3 0 0.98 0.96 3 165 0 129 3 4 0.97 850 19 809 120 3 21 351 n 0.95 0.92 0 1050 204 R3 23,400 115 3 3 25,520 125 3 0 4 0.97 0.95 0.92 1300 254 27.541 108 3 0 4 29.991 118 3 n 4 0.93 0.90 0.88 1500 291 30,230 104 0 4 32,709 112 0 4 0.93 0.90 0.88 3 3 60B 700 130 16,725 129 3 0 3 17,984 138 3 0 4 0.98 0.97 0.96 850 165 19,831 120 3 0 4 21,446 130 3 0 4 0.97 0.95 0.92 1050 204 R4 23,421 115 3 n 4 25,423 125 3 0 5 0.97 0.95 0.92 108 3 0 4 29,898 118 0.90 1300 254 27.542 3 0 5 0.93 0.88 1500 291 30.221 104 3 0 5 32,527 112 4 0 2 0.93 0.90 0.88 700 130 17,413 134 4 0 2 18,561 143 5 0 3 0.98 0.97 0.96 850 165 20,634 125 5 0 3 22,402 136 5 0 3 0.97 0.95 0.92 1050 204 R5 24.359 119 5 0 3 26.128 128 5 0 4 0.97 0.95 0.92 1300 254 28,578 113 5 0 3 30,964 122 5 0 4 0.93 0.90 0.88 1500 291 31.214 107 0 4 33,922 0.93 0.90 0.88 5 117 3 0 4 177 3 0 4 23,037 3 4 0.97 700 22.056 125 130 0 0.98 0.96 0 4 27,086 850 214 25,663 120 3 127 3 0 5 0.97 0.95 0.92 R2 114 0 0.95 1050 268 30,443 3 5 31,920 119 4 0 5 0.97 0.92 34,512 105 5 4 0 1250 330 4 0 36,826 112 5 0.93 0.90 0.88 1500 388 39,529 102 4 0 5 40,326 104 3 n 3 0.91 0.87 0.84 0 700 177 21,936 124 3 3 23,934 135 3 0 4 0.98 0.97 0.96 850 214 25,512 119 3 0 4 26,879 126 3 0 4 0.97 0.95 0.92 R3 30.302 0 4 32,416 121 0.97 0.95 0.92 1200 330 35,047 106 4 0 4 37,042 112 4 0 5 0.93 0.90 0.88 0 1500 102 4 5 41.858 108 0 4 0.87 0.84 388 39,490 3 0.91 80B 700 177 22,180 125 3 0 4 23,230 131 3 0 4 0.98 0.97 0.96 4 850 214 25.842 121 3 0 27.263 127 3 0 5 0.97 0.95 0.92 R4 30,644 114 3 0 5 121 4 5 0.92 1050 268 32.329 0 0.97 0.95 330 106 0 5 4 n 0.90 1250 35,084 3 37,293 113 5 0.93 0.88 1500 388 39,816 103 4 0 41,611 107 5 0 3 0.91 0.87 0.84 177 22,895 140 0.98 0.97 700 129 0 3 24,776 0 3 0.96 850 214 26,608 124 0 3 28,865 135 5 0 4 0.97 0.95 0.92 1050 268 R5 31.557 118 5 0 4 34,319 128 5 n 4 0.97 0.95 0.92 1250 36,635 111 0 4 39,552 120 5 0 0.93 0.90 0.88

Note: Individual fixture performance may vary. Specifications subject to change without notice.

| ATB2 | 15°C | 20°C | 25°C | 30°C | 35°C | 40°C |
|-----------------------|------|------|------|------|------|------|
| LLD Multiplier | 1.02 | 1.01 | 1 | 0.99 | 0.97 | 0.96 |

107

41 534

To calculate the LLD for a temperature other than 25°C, multiply the LLD @ 25°C (shown in the performance package table) by the LLD multiplier for the selected temperature.

4

44,747

115



1500

0

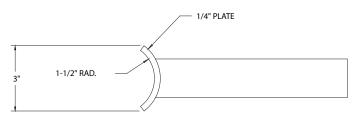
0.91

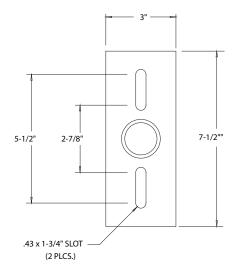
0.87

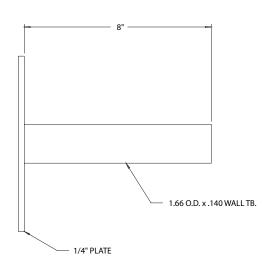
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UMR POLE ADAPTOR

RECOMMENDED FOR USE WITH POLES OF 4" DIAMETER OR SMALLER







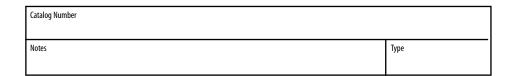
UMS POLE ADAPTOR



Wallpack[®] LED







Description

Perimeter and security lighting requires excellent control and uniformity while minimizing light trespass and glare. The W4GLED/W4PLED Wallpack LED luminaires excel at this, requiring fewer luminaires to achieve required light levels in infrastructure, industrial and municipal applications. With energy cost reductions up to 77% and expected service life of over 20 years, Wallpack LED provides the latest lighting technology from the company that introduced the very first Wallpack to the market.

Optics

- The W4G uses a tempered glass lens and the W4P uses a protective polycarbonate lens that covers the light engine's precision-molded proprietary acrylic lenses.
- Type 3 medium
- Type 3 short (IP66 rated light engine)

Mechanical

- The housing is constructed of die-cast aluminum and is fully gasketed for ease of maintenance
- The LED driver is mounted to the front casting to thermally isolate it from the light engine for low operating temperature and long life
- Housing is completely sealed against moisture and environmental contaminants, IP55
- Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering.
- A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling.

Electrical

- Light engine(s) consist of 10-30 high-efficacy LEDs mounted to a metal-core circuit board and integral aluminum heat sink to maximize heat dissipation and promote long life
- The dimmable electronic driver has a power factor of >90%, THD <20%
- SPD: 20kV/10kA standard
- CCT: 3000K, 4000K, 5000K
- CRI: 70CRI
- · Integrated emergency backup on W4GLED with T3M option

Installation

- Top 3/4" threaded wiring access
- Back access through removable 3/4" knockout
- Feed-thru wiring can be achieved by using a condulet tee

Certification and Standards

- UL listed for wet locations. Rated for -40°C to 40°C ambient, refer to page 4 for details
- Designlights ConsortiumÆ (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at <u>www.designlights.org/QPL</u> to confirm which versions are qualified.
- · LM-79 compliant
- The projected LED Lumen Maintenance shall be based only on IES LM-80-08 and TM-21

Warranty

5-year limited warranty. Complete warranty terms located at: <u>www.acuitybrands.com/CustomerResources/Terms_and_</u> Conditions.aspx.

Note: Actual performance may differ as a result of end-user environment and application.

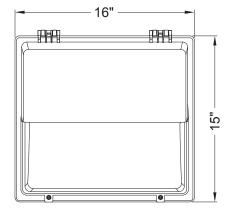
All values are design or typical values, measured under laboratory conditions at 25°C.

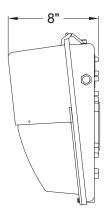


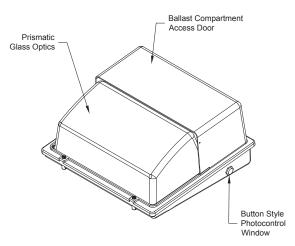




DIMENSIONAL DATA









ORDERING INFORMATION Italicized and Blue INDICATES OPTIONS ONLY AVAILABLE WITH W4GLED

Example: W4GLED 30C1000 40K T3S MVOLT SPD P7 BZSDP

| Series | Performance Package | Color Temperature | Distribution | Voltage | Surge Protection |
|--------------------------------|---------------------|---------------------|---------------------|--------------------------------|--------------------------|
| W4GLED Wallpack IV Glass LED | 10C1000 10 LED | 30K 3000 series CCT | T3M Type III Medium | MVOLT Multi-volt: 120-277 volt | SPD 20kV/10kA (Standard) |
| W4PLED Wallpack IV Plastic LED | 20C1000 20 LED | 40K 4000 series CCT | T3S Type III Short | 120 120 Volt | |
| | 30C1000 30 LED | 50K 5000 series CCT | | 208 208 Volt | |
| | 10C700 10 LED | | | 240 240 Volt | |
| | 20C700 20 LED | | | 277 277 Volt | |
| | 30C700 30 LED | | | 347 347 Volt | |
| | | | | 480 480 Volt | |

| Control Options | Options | | Super Durable Paint | | | | |
|--|-----------------------------------|---|----------------------------------|--|--|--|--|
| PE Button Style Photoelectric Cell P3 N.E.M.A. Twistlock 3-pin Receptacle - Control not included P7 N.E.M.A. Twistlock 7-pin Receptacle - Control not included | AO SF DF TP NOM ELSW ELCW LWG LVG | Field Adjustable Output Single Fusing Double Fusing Tamper resistant screws NOM Certified Emergency Battery Backup (Standard 0°C) Emergency Battery Backup (Cold Weather -20°C) Wire Guard Vandal Guard | BKSDP BZSDP GYSDP WHSDP | Black Super Durable Paint Bronze Super Durable Paint Grey Super Durable Paint White Super Durable Paint | | | |

| Accessor | ies: Order | as senar | nte catalo | na numher |
|----------|------------|----------|------------|-----------|
| | | | | |

DLL127F 1.5 JU Photocell - SSL Twist-Lock (120-277V)
DLL347 1.5 CUL JU Photocell - SSL Twist-Lock (347V)
DLL480 1.5 CUL JU Photocell - SSL Twist-Lock (480V)

SC U Shorting Cap W4GVGU Vandal Guard W4GWGU Wire Guard



OPTIONS MATRIX

| Davan | neters | Voltage Op | tions by LEC |) Package | | | | | | SELECTE | O OPTION | | | | | |
|-------------|---------|------------|--------------|-----------|-----|-----|-----|-----|-----|---------|----------|------|------|------|-----|-----|
| Falai | neters | 10Схххх | 20Схххх | 30Схххх | A0 | PE | Р3 | P7 | SF | DF | TP | NOM | ELSW | ELCW | LWG | LVG |
| | 10Cxxxx | | | | N | Υ | W4G | W4G | Υ | Υ | Υ | T3M | W4GM | W4GM | Υ | W4G |
| LED Package | 20Cxxxx | | | | Υ | Υ | W4G | W4G | Υ | Υ | Υ | T3M | W4GM | W4GM | Υ | W4G |
| | 30Cxxxx | | | | Υ | Υ | W4G | W4G | Υ | Υ | Υ | T3M | N | N | Υ | W4G |
| | MVOLT | Υ | Υ | Υ | Υ | Υ | W4G | W4G | Υ | N | Υ | T3M | W4GM | W4GM | Υ | W4G |
| | 120 | Y | Y | Y | Y | Y | W4G | W4G | Y | Y | Υ | T3M | W4GM | W4GM | Υ | W4G |
| | 208 | Υ | Υ | Υ | Υ | Υ | W4G | W4G | Υ | Υ | Υ | T3M | W4GM | W4GM | Υ | W4G |
| Voltage | 240 | Υ | Υ | Υ | Υ | Υ | W4G | W4G | Υ | Υ | Υ | T3M | W4GM | W4GM | Υ | W4G |
| | 277 | Y | Y | Y | Υ | Y | W4G | W4G | Υ | Υ | Υ | T3M | W4GM | W4GM | Υ | W4G |
| | 347 | N | Y | Y | Y | Y | W4G | W4G | Y | Υ | Y | T3M | N | N | Υ | W4G |
| | 480 | N | Y | Y | Υ | N | W4G | W4G | Υ | Υ | Υ | T3M | N | N | Υ | W4G |
| Optic | T3M | | | | Y | Y | W4G | W4G | Y | Y | Y | T3M | W4GM | W4GM | Υ | W4G |
| Optic | T3S | | | | W4G | Y | W4G | W4G | Υ | Υ | Υ | N | N | N | Υ | W4G |
| | AO | | | | | Υ | W4G | W4G | Y | Υ | Υ | T3M | W4GM | W4GM | Υ | W4G |
| Controls | PE | | | | Υ | | N | N | Y | N | Υ | T3M | N | N | Υ | W4G |
| Controls | P3 | | | | W4G | N | | N | W4G | W4G | W4G | W4GM | N | N | W4G | W4G |
| | P7 | | | | W4G | N | N | | W4G | W4G | W4G | W4GM | N | N | W4G | W4G |
| | SF | | | | Y | Y | W4G | W4G | | N | Υ | T3M | W4GM | W4GM | Υ | W4G |
| | DF | | | | Y | Y | W4G | W4G | N | | Υ | T3M | W4GM | W4GM | Υ | W4G |
| | TP | | | | Y | Y | W4G | W4G | Y | Y | | T3M | W4GM | W4GM | Υ | W4G |
| Options | NOM | | | | Υ | W4G | W4G | W4G | Υ | Υ | Υ | | W4GM | W4GM | N | W4G |
| options | PTIONS | | | Υ | N | N | N | W4G | W4G | W4G | T3M | | | W4G | W4G | |
| | ELCW | | | | Υ | N | N | N | W4G | W4G | W4G | T3M | | | W4G | W4G |
| | LWG | | | | Υ | Υ | Υ | Υ | Υ | Υ | Υ | T3M | W4GM | W4GM | | N |
| | LVG | | | | W4G | W4G | W4G | W4G | W4G | W4G | W4G | W4GM | W4GM | W4GM | N | |

LEGEND

N = Not available with W4GLED & W4PLED

Y = Valid combination with W4GLED & W4PLED

T3M = Only available on W4GLED & W4PLED with T3M distribution

W4G = Only available with W4GLED

W4GM = Only available on W4GLED with T3M distribution

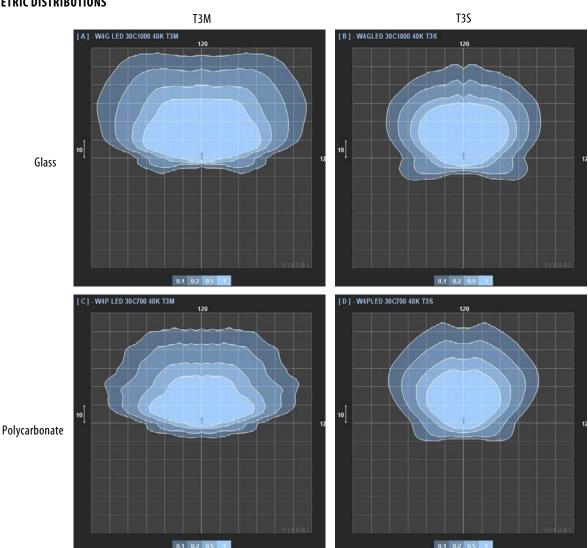


OPERATIONAL DATA

Operating Characteristics

| Series | LED Package | System Watts | atts Distribution Tyoe | | | 30K (3000K, 70 CRI) | | | | | 10K (400 | OK, 70 | CRI) | | 50K (5000K, 70 CRI) | | | | |
|--------|-------------|--------------|------------------------|-------------------|------|---------------------|---|---|---|--------|----------|--------|------|---|---------------------|-----|---|---|---|
| Selles | LED Fackage | System watts | Distribution | Distribution Type | | LPW | В | U | G | Lumens | LPW | В | U | G | Lumens | LPW | В | U | G |
| | 10C1000 | 39 | | | 3140 | 81 | 0 | 3 | 3 | 3377 | 87 | 0 | 3 | 3 | 3398 | 87 | 0 | 3 | 3 |
| W4G | 20C1000 | 72 | | | 6495 | 90 | 1 | 3 | 4 | 6983 | 97 | 1 | 3 | 4 | 7027 | 98 | 1 | 3 | 4 |
| | 30C1000 | 104 | T3M | | 7789 | 75 | 1 | 3 | 4 | 8375 | 81 | 1 | 3 | 5 | 8427 | 81 | 1 | 3 | 5 |
| | 10C700 | 26 | 13M | | 2030 | 78 | 0 | 3 | 2 | 2183 | 84 | 0 | 3 | 2 | 2197 | 85 | 0 | 3 | 2 |
| W4P | 20C700 | 45 | | | 3912 | 87 | 0 | 3 | 3 | 4207 | 93 | 1 | 3 | 3 | 4233 | 94 | 1 | 3 | 3 |
| | 30C700 | 67 | 1 | | 4813 | 72 | 1 | 3 | 3 | 5176 | 77 | 1 | 3 | 4 | 5208 | 78 | 1 | 3 | 4 |
| | 10C1000 | 28 | | | 3206 | 115 | 0 | 3 | 2 | 3485 | 124 | 0 | 3 | 2 | 3485 | 124 | 0 | 3 | 2 |
| W4G | 20C1000 | 57 |] | | 6507 | 114 | 1 | 3 | 2 | 7073 | 124 | 1 | 3 | 3 | 7073 | 124 | 1 | 3 | 3 |
| | 30C1000 | 77 | Tac | T3S | 8477 | 110 | 1 | 3 | 3 | 9214 | 120 | 1 | 3 | 3 | 9214 | 120 | 1 | 3 | 3 |
| | 10C700 | 27 | 133 | | 2709 | 100 | 0 | 3 | 2 | 2944 | 109 | 0 | 3 | 3 | 2944 | 109 | 0 | 3 | 3 |
| W4P | 20C700 | 38 | | | 3299 | 87 | 0 | 3 | 3 | 4017 | 106 | 1 | 3 | 3 | 4017 | 106 | 1 | 3 | 3 |
| | 30C700 | 49 | | | 4203 | 86 | 1 | 3 | 3 | 5173 | 106 | 1 | 3 | 3 | 5173 | 106 | 1 | 3 | 3 |

PHOTOMETRIC DISTRIBUTIONS





OPERATIONAL DATA

Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a 25°C ambient, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Lumen Maintenance Factor with TM3 Optic Option

| Operating Hours | 0 | 25,000 | 50,000 | 100,000 |
|---|------|--------|--------|---------|
| Glass Lumen Maintenance Factor | 1.00 | 0.969 | 0.935 | 0.870 |
| Polycarbonate Lumen Maintenance Factor | 1.00 | 0.998 | 0.993 | 0.982 |

Lumen Maintenance Factor with T3S Optic Option

| Operating Hours | 0 | 25,000 | 50,000 | 100,000 |
|---|------|--------|--------|---------|
| Glass Lumen Maintenance Factor | 1.00 | 1.00 | 0.977 | 0.925 |
| Polycarbonate Lumen Maintenance Factor | 1.00 | 1.00 | 0.977 | 0.925 |

The italicized is extrapolated beyond the TM-21 standard. E= (LM) x (LAT) x (LLD)

Lumen Ambient Temperature (LAT) Multipliers

Use this factors to determine relative lumen output for average ambient temperatures from 0-40° C (32-104°F)

| Ambient | | Lumen Temperature | |
|---------|--------|-------------------|---------------|
| | | LEDs with T3M | LEDs with T3S |
| 0° C | 32° F | 1.02 | 1.05 |
| 10° C | 50° F | 1.01 | 1.03 |
| 20° C | 68° F | 1.00 | 1.01 |
| 25° C | 77° F | 1.00 | 1.00 |
| 30° C | 86° F | 1.00 | 0.99 |
| 40° C | 104° F | 0.98 | 0.97 |

Ambient Temperature Ratings

| Distribution | LED Package | Temperature |
|--------------|-------------|-------------|
| T3M | 10C1000 | 40° C |
| | 20C1000 | 35° C |
| | 30C1000 | 35° C |
| | ELSW Option | 30° C |
| | ELCW Option | 30° C |

| Distribution | LED Package | Temperature |
|--------------|-------------|-------------|
| T3M | 10C700 | 40° C |
| | 20C700 | 40° C |
| | 30C700 | 40° C |

| Distribution | LED Package | Temperature |
|--------------|-------------|-------------|
| T3S | 10C700 | 40° C |
| | 20C700 | 40° C |
| | 30C700 | 40° C |
| | 10C1000 | 40° C |
| | 20C1000 | 40° C |
| | 30C1000 | 40° C |