

**CITY OF FLAGSTAFF**  
**Streetlight Code Compliant Luminaires**  
**BID NUMBER 2022-31**

**BID FORM**

Price per unit for a minimum of 25 units order per style of luminary.

		Manufacturer	Crossroads	Price Per Unit
		Brand	Crossroads	
COF lum type	LED type	target lumens	model #	
1A	NBA	2000	ASTROPHILE, 4000-PS1828-45-590	
1B	NBA	2000	ASTROPHILE, 4000-PS1828-45-590-III	
2	NBA	4000	ASTROPHILE, 4000-PS1828-90-590	
3	NBA	7500	ASTROPHILE, 4000-PS1828-125-590	
4	PCA	11250	ASTROPHILE, 4000-EPH58-100-1650	

		Manufacturer	Cooper	Price Per Unit
		Brand	Cooper	
COF lum type	LED type	target lumens	model #	
1A	NBA	2000	COOPER, NVN-SA2A-AMB-U-SL2-AP-20K-PR7-10X	
1B (3)	NBA	2000	COOPER, NVN-SA2A-AMB-U-SL3-AP-20K-PR7-10X	
2	NBA	4000	COOPER, NVN-SA4A-AMB-U-SL2-AP-20K-PR7-10X	
3	NBA	7500	COOPER, GAN-SA8A-AMB-U-SL2-MA-AP-20K-PR7-10X	
4	PCA	11250	COOPER, GAN-SA0A-AMB-U-SL2-ADJS-AP-20K-PR7-10X	

		Manufacturer	Signify	Price Per Unit
		Brand	Lumec	
COF lum type	LED type	target lumens	model #	
1A	NBA	2000	LUMEC, RFS-[108W32LEDTA-002]-G2-R2M-UNV-DMG-API-RCD7-SP2-GY3	174.63
1B	NBA	2000	LUMEC, RFS-[108W32LEDTA-002]-G2-R3M-UNV-DMG-API-RCD7-SP2-GY3	174.63
2	NBA	4000	LUMEC, RFS-[145W64LEDTA-001]-G2-R2M-UNV-DMG-API-RCD7-SP2-GY3	325.36
3	NBA	7500	LUMEC, RFL-[241W112LEDTA-002]-G2-R2M-UNV-DMG-API-RCD7-SP2-GY3	468.81
4	PCA	11250	LUMEC, RFL-[350W112LEDA-001]-G2-R2M-UNV-DMG-API-RCD7-SP2-GY3	580.04

		Manufacturer	American Electrical Lighting	Price Per Unit
		Brand	AEL & Lithonia	
COF lum type	LED type	target lumens	model #	
1A	NBA	2000	AEL, ATB0 P201 MVOLT R2 NL P7 RFD323775	
1B	NBA	2000	AEL, ATB0 P20X MVOLT R3 LWAMB NL P7 RFD323776	
2	NBA	4000	AEL, ATB2 P60X MVOLT R2 LWAMB NL P7 RFD323777	
3	NBA	7500	LITHONIA, DSX2 LED P4 AMBLW T2M MVOLT KMA8 PER7 DDBXD MEZ147911	
4	PCA	11250	AEL, ATB2 P60X MVOLT R2 PCAMB NL P7 RFD323778	

		Manufacturer	Hubbell	Price Per Unit
		Brand	Beacon Lighting	
COF lum type	LED type	target lumens	model #	
1A	NBA	2000	VPS/48L-45/AM/T2/UNV/MAF/LGS/PCR7-SC/SF2/GYS	
1B	NBA	2000	VPS/48L-45/AM/T3/UNV/MAF/LGS/PCR7-SC/SF2/GYS	
2	NBA	4000	VPL/80L-140/AM/T2/UNV/MAF/LGS/PCR7-SC/SF2/GYS	

**Tax Rate** 9.181

(All charges must be included; no extra charges will be considered at a later date. Miscellaneous charges will be considered in determining the low Bid)

*David Dillman*  
 \_\_\_\_\_  
 Signature of Person Authorized to Sign Bid

David\_Dillman \_\_\_\_\_  
 Printed Name

Manager \_\_\_\_\_  
 Title

01-09-2022 \_\_\_\_\_  
 Date

ARIZONA ELECTRIC SUPPLY

ARIZONA ELECTRIC SUPPLY, INC.

807 W. BROADWAY RD.

MESA AZ 85210

TEL: 480 834-8050 FAX: 480 969-4509

CONTACT: AMBER HACKETT

QUOTE FOR: COD

ACCT #: JA-00400 COD

SHIP NAME: CITY OF FLAGSTAFF

CREDIT CARD & CASH SALES NON-RETURN

MESA, AZ 85210

QUOTATION			PAGE 001 OF 001	
QUOTE # 1043410	DATE 01/08/22	REV # 005	REV DATE 01/09/22	
QUOTE EXPIRES 02/07/2022		PREPARED BY AH		
SLS 1508		INSL 1503		
FOB DESTINATION POINT		FREIGHT PREPAY & ALLOW		

CUS PO #: ROADWAY LTG RETROFIT
JOB NAME:

LN	QTY	MFR	CATALOG #	DESCRIPTION	PRICE	UOM	EXT AMT
01	1,000	LUM	RFS- (108W32LEDTA-002)-G2-R2 M-UNV-DMG-API	TYPE 1A	174.63	E	174,630.00
02	1,000	LUM	RFS- (108W32LEDTA-002)-G2-R3 M-UNV-DMG-API	TYPA 1B	174.63	E	174,630.00
03	750	LUM	RFL- (145W64LEDTA-001)-G2-R2 M-UNV-DMG-API	TYPE 2	325.36	E	244,020.00
04	750	LUM	RFL- (241W112LEDTA-002)-G2-R 2M-UNV-DMG-AP	TYPE 3	468.81	E	351,607.50
05	500	LUM	RFL- (350W112LEDA-001)-G2-R2 M-UNV-DMG-API	TYPE 4	580.04	E	290,020.00

	MDSE:	1,234,907.50
EST.	TAX:	113,376.86
	TOTAL:	1,348,284.36

PLEASE NOTE: THIS IS NOT AN OFFER TO CONTRACT, BUT MERELY A QUOTATION OF CURRENT PRICES FOR YOUR CONVENIENCE AND INFORMATION. ORDERS BASED ON THIS QUOTATION ARE SUBJECT TO YOUR ACCEPTANCE OF THE TERMS AND CONDITIONS LOCATED AT SALES.OUR-TERMS.COM, WHICH WE MAY CHANGE FROM TIME TO TIME WITHOUT PRIOR NOTICE. WE MAKE NO REPRESENTATION WITH RESPECT TO COMPLIANCE WITH JOB SPECIFICATIONS.

**TERMS AND CONDITIONS**

**Sales:**

All sales are expressly conditional on Buyer's agreement to the standard terms and conditions herein. Any of the terms and provisions of Buyer's order which are inconsistent with or in addition to the terms and conditions hereof shall not be binding on Seller and shall not be considered applicable to the sale or shipment of the merchandise referred to herein. Unless Buyer shall notify Seller in writing to the contrary as soon as practicable after Buyer's receipt hereof, acceptance of the terms and conditions hereof by Buyer shall be indicated, and, in the absence of such notification, the sale and shipment by Seller of the merchandise covered hereby shall be conclusively deemed to be subject to the terms and conditions hereof.

**Warranties:**

The goods sold by Seller are products of recognized manufacturers sold under their respective brand or trade name in accordance with their terms and conditions. Seller shall use its best efforts to obtain from each manufacturer, in accordance with the manufacturer's warranty (copies of which will be furnished upon request) or customary practice, the repair or replacement of goods that may prove defective in material, design, or workmanship. The foregoing shall constitute the exclusive remedy of Buyer and the sole obligation of Seller. Except as to title, SELLER GIVES NO WARRANTY, EXPRESS OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR OTHERWISE. Seller shall not, under any circumstances be liable for any special, direct, indirect, incidental, exemplary, liquidated, or consequential damages to persons or property arising out of or connected with the transactions contemplated hereby or the design, manufacture, subsequent sale or use of the goods, including, but not limited to, loss of profit or revenues, loss of use of the products or any associated equipment, cost of capital, cost of substitute products, facilities, service or replacement power, down time, costs, or claims of Buyer's customers for such damages. Seller's maximum cumulative liability relative to all other claims and liabilities, including that with respect to direct damages and obligations under any indemnity, whether or not insured, will not exceed the cost of the goods or services giving rise to the claim or liability. Seller disclaims all liability relative to gratuitous information or services provided by, but not required of seller hereunder. If Buyer transfers title to or leases the products sold hereunder to any third party, Buyer shall indemnify and defend Seller and its suppliers against any such damages.

**Delivery, Title and Risk of Loss:**

Delivery dates are approximate and based upon receipt of all necessary information from Buyer. Unless otherwise specified by Seller, delivery will be made and title and risk of loss or damage will pass F.O.B. point of shipment to Buyer and each shipment or delivery shall be considered a separate and independent transaction.

**Excusable Delays:**

Seller will notify Buyer promptly of any material delay and will specify the revised delivery as soon as practicable. Seller shall not be liable for delays in delivery or performance, or for failure to manufacture, deliver or perform as a result of acts of God, fire, acts of civil or military authority, governmental priorities, strikes or other disturbances, floods, epidemics, war, riots, delays in transportation or car shortages, or inability on account of causes beyond the reasonable control of Seller to obtain necessary materials, components, services or facilities, or any other cause beyond Seller's reasonable control. In the event of any such delay there will be no termination and the date of delivery or performance shall be extended for a period equal to the time lost by reason of the delay.

**Returns:**

Merchandise is not returnable without the written consent of Seller. Requests for permission to return must be made within thirty days after receipt of shipment. Seller will assign an authorized number for approved returns which must appear on both the customer's shipping container and the related debit memo. Only current items in their original cartons standard package quantities are subject to return. All unauthorized returns will be sent back to Buyer at Buyer's expense. Return shipments must be pre-paid and shipped in accordance with the instructions set forth on the return authorization form. Credit will be issued, less any transportation charges and service charges to cover handling, inspection, counting, repacking, etc.

**Payments and Financial Conditions:**

Unless otherwise provided, deduct percentage cash discount shown in C/D column from total due (which is intended to include sales tax, if any is charged) if paid by 10th of the month following purchase, otherwise net payment is due by the 15th of the month following purchase.

A service charge of 1 1/2% per month, but not to exceed the highest amount allowed by applicable state law, shall be made on all sums due Seller which have not been paid within thirty (30) days from the invoice date, and Buyer agrees to promptly pay said service charge. If Seller commences litigation or employs attorneys to collect payment of any amounts due it from Buyer, Buyer agrees to pay reasonable attorney's sums which may be due.

Except to the extent otherwise specified by Seller in its quotation, prorata payments shall become due without setoff as shipments are made. If Seller consents to delay shipment after receipt of any specially ordered products, payment shall become due on the date when Seller is prepared to make shipment. In the event of any such delay, products shall be held at Buyer's risk and expense.

Any order for products by Buyer, shall constitute a representation that Buyer is solvent and has the ability to pay its obligations as they become due. In addition, upon Seller's request, Buyer will furnish a written representation concerning its solvency at anytime prior to shipment.

If Buyer's financial condition at any time does not justify continuance of the work to be performed by Seller hereunder on the agreed terms of payment, Seller may require full or partial payment in advance. In the event of Buyer's bankruptcy or insolvency, or in the event any proceeding is brought against Buyer, voluntary or involuntary, under any bankruptcy or insolvency laws, Seller shall be entitled to cancel any order then outstanding at any time during the period allowed for filing claims against the estate, and shall receive reimbursement for its proper cancellation charges. Seller's rights under this article are in addition to all rights as they are available to it at law or in equity.

**Disclosure of Information:**

Any information, suggestions or ideas transmitted by Buyer to Seller in performance hereunder are not to be regarded as secret or submitted in confidence except as may be otherwise provided in writing and signed by a duly authorized representative of Seller.

**Taxes:**

In addition to any price specified herein, Buyer shall pay the gross amount of any present or future sales, use, excise, value-added, or other similar tax applicable to the price, sale, or delivery of any product or services furnished hereunder, or to their use by Seller of Buyer, or Buyer shall furnish Seller with a tax exemption certificate acceptable to the taxing authorities.

**Claims Against Seller:**

In order to give Seller a reasonable opportunity for investigation, any claim by Buyer against Seller based wholly or in part upon or any manner related to this agreement and/or merchandise sold hereunder shall be made in writing and delivered to Seller within (30) days after the date of sale or occurrence giving rise to the claim, whichever shall be later; otherwise such claims shall be waived. Each notice of claims shall set forth fully the facts on which the claim is based. Any action based on such claim or otherwise arising hereunder, must be commenced and prosecuted within two years after the cause of action has accrued.

**General:**

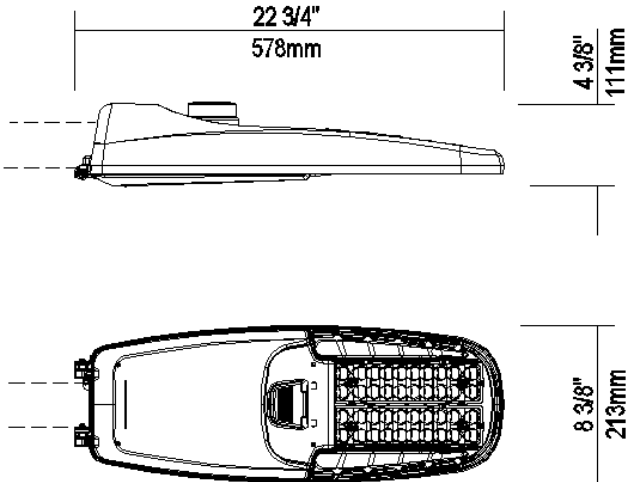
Any products delivered by Seller hereunder will be produced in compliance with the Fair Labor Standards Act of 1938 as amended and applicable. Seller will comply with applicable Federal, State, and local laws and regulations as of the date of any quotation, which relate to (i) non-segregated facilities and Equal Employment Opportunity (including the seven paragraphs appearing in Section 202 of Executive Order 11746 as amended) and (ii) Worker's Compensation. Price and, if necessary, delivery will be equitably adjusted to compensate Seller for the cost of compliance with any other laws and regulations.

The delegation or assignment by Buyer of any or all of its duties or rights hereunder without Seller's prior written consent shall be void. Any representation, promise, course of dealing or trade usage not contained or referred to herein, will not be binding on Seller. No modification, amendment, rescission, waiver or other change shall be binding on Seller unless assented to in writing by Seller's authorized representative. The validity, performance and all matters relating to the interpretation and effect of this agreement or any amendment hereto shall be governed by the Uniform Commercial Code as in effect in the state in which Seller's place of business is located. Waiver by Seller of any default by Buyer hereunder shall not be deemed a waiver by Seller of any default by Buyer which may thereafter occur.

**Paragraph Headings:**

Paragraph headings are inserted for convenience only and shall not be deemed to limit or affect the scope of the provisions contained therein.

**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**



EPA: 0.52 sq ft / weight: 9.4 lb (4.3 kg)  
 Note: 3D image may not represent color or option selected.  
 Logos above include link, click to access.

Qty	2000	Type	Type 1A
		Luminaire	RFS-[108W32LEDTA-002]-G2-R2M-UNV-DMG-API-RCD7-SP2-GY3

**Description of Components:**

**Housing:** Made of a low copper die cast Aluminum alloy (A360), 0.100" (2.5mm) minimum thickness. Fits on a 1.66" (42mm) O.D. (1.25" NPS), 1.9" (48mm) O.D. (1.5" NPS) or 2 3/8" (60mm) O.D. (2" NPS) by 5 1/2" (140mm) minimum long tenon. Comes with a zinc plated clamp fixed by 2 zinc plated hexagonal bolts 3/8 16 UNC for ease of installation. Provides an easy step adjustment of +/- 5° tilt in 2.5° increments. Includes integral bubble level standard (always included). A quick release, tool less entry, single latch, hinged, removable door opens downward to provide access to electronic components and to a terminal block. Door is secured to prevent accidental dropping or disengagement. A clearance of 13" (330mm) at the rear is required in order to remove the door. Complete with a bird guard protecting against birds and similar intruders and an ANSI label as per C136.15-2015 to identify wattage and source (both included in box).

**Light Engine:** Composed of 4 main components: **Heat Sink / LED Module / Optical System / Driver**  
 Electrical components are RoHS compliant, IP66 sealed light engine.  
 LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

**Heat Sink:** Built in the housing, designed to ensure high efficacy and superior cooling by natural vertical convection air flow pattern always close to LEDs and driver optimising their efficiency and life. Product does not use any cooling device with moving parts (only passive cooling). Wide openings enable natural cleaning and removal of dirt and debris. Entire luminaire is rated for operation in ambient temperature of -40°C / -40°F up to +40°C / +104°F.

**LED Module:** Composed of 32 high performance True Amber LEDs (**GY CS8PM**) . Color temperature as per ANSI/NEMA bin Amber, 1200-1600 Kelvin nominal. **Dominant wavelength min. 583 nm - typ. 590 nm - max. 595 nm.**  
**[108W32LEDTA-002] Driver programmed @ 700mA for delivering 2,000 lumens.**



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**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**

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**Driver:** High power factor of 90% min. Electronic driver, operating range 50/60 Hz. Auto-adjusting universal voltage input from 120 to 277 VAC rated for both application line to line or line to neutral, Class 2, THD of 20% max. **Driver comes with dimming compatible 0-10 volts.**

The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built-in driver surge protection of 2.5kV (min).

**Driver Options: (DMG) Integrated Feature,** Dimming compatible 0-10 volts. For applicable warranty, certification and operation guide see Lumec dimmable luminaire specification document for unapproved device installed by other. To get document, click on this link: [Specification document](#) or go on web site on this address: [https://www.signify.com/b-dam/signify/en-us/brands/lumec/Lumec-un-approved-control-device-installed-by-others-7\\_d.pdf](https://www.signify.com/b-dam/signify/en-us/brands/lumec/Lumec-un-approved-control-device-installed-by-others-7_d.pdf)

**Luminaire Options: (API),** ANSI label pre-installed to identify system wattage and LED source. **(RCD7),** Receptacle with 7 pins enabling dimming and with two extra connections for future use (these connections are capped off at the factory - requires connections to be made in the field), can be used with a twist-lock control device or photoelectric cell or a shorting cap. Use of photocell or shorting cap is required to ensure proper illumination. **(SP2),** Integral surge protector tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure with elevated 20kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with U.S. DOE (Department of Energy) MSSLC (Municipal Solid-State Street Lighting Consortium) model specification for LED roadway luminaires electrical immunity requirements for High Test Level 10kV / 10kA.

**Luminaire Useful Life:** Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in-situ thermal testing in accordance with UL1598 and UL8750, System Reliability Tool. Advance data and LED manufacturer LM-80/TM-21 data, expected to reach 100,000 + hours with >L70 lumen maintenance @ 25°C. Luminaire Useful Life accounts for LED lumen maintenance AND all of these additional factors including: LED life, driver life, PCB substrate, solder joints, on/off cycles, burning hours and corrosion.

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**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**

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Miscellaneous

**Description of Components:**

**Wiring:** The connection of the luminaire is done using a terminal block connector 600V, 85A for use with #2-14 AWG. wires from the primary circuit, located inside the housing. Due to the inrush current that occurs with electronic drivers, recommend using a 10Amp time delay fuse to avoid unwanted fuse blowing (false tripping) that can occur with normal or fast acting fuses.

**Hardware:** All exposed screws shall be complete with Ceramic primer-seal basecoat to reduce seizing of the parts and offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

**Finish:** Color to be **medium grey (GY3)** and in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with  $\pm 1$  mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 5000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

**LED products manufacturing standard:** The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

**Vibration Resistance:** The RFS meets the **ANSI C136.31, 2010**, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications (Tested 3G over 100 000 cycles).

The RFS meets the **California Test 611, Testing durability of mast arm mounted luminaires**, specifications (a 2 000 000 cycles test).

**Service Tag:** Each individual luminaire is uniquely identifiable, thanks to the Service tag application. With a simple scan of a QR code, placed on the inside of the mast door, you gain instant access to the luminaire configuration, making installation and maintenance operations faster and easier, no matter what stage of the luminaire's lifetime. Just download the APP and register your product right away. For more details visit: [Signify.com/servicetag](http://Signify.com/servicetag)

**Warranty:** Luminaire comes with a warranty of 10 years on product and finish.

**Certifications and Compliance:** cULus Listed for Canada and USA. Luminaire meets DOE and MSSLC Model Specification for LED Roadway Luminaires. Small RoadFocus LED Cobra head luminaires are DesignLights Consortium qualified, consult DLC QPL to confirm your specific fixture selection is approved. Luminaire complies with or exceeds the following ANSI C136 standards: .2, .3, .10, .14, .15, .22, .25, .31, .37, .41.

**Web site information details:** Click on any specific information details you need: / [cULus Certification](#)

**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**

2200K LED LUMEN VALUES					Type R2M		Type R3M	
Ordering Code	Total LEDs	System Current (mA)	Color Temp.	Avg System Wattage (W)	Delivered Lumens	Efficacy (Lm/W)	Delivered Lumens	Efficacy (Lm/W)
RFS-25W16LED2.2K-G2-x	16	350	2200	24.9	2572	103.3	2563	102.9
RFS-55W32LED2.2K-G2-x	32	530	2200	53	5826	109	5808	108.6
RFM-80W48LED2.2K-G2-x	48	530	2200	81	8598	106.7	8632	107.1
RFM-120W60LED2.2K-G2-x	60	650	2200	122	12624	103.5	12692	104
RFM-160W48LED2.2K-G2-x	48	1050	2200	161	15024	93.5	15083	93.8
RFL-215W96LED2.2K-G2-x	96	700	2200	207	22245	107.5	22176	107.1



# Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)

## LED Wattage values

Ordering Code	Total LEDs	Average System Watts <sup>14</sup>	Wattage label <sup>15</sup>
RFS-15W12LED	12	14	10
RFS-20W12LED	12	19	20
RFS-25W12LED	12	25	20
RFS-25W16LED	16	24	20
RFS-30W16LED	16	29	30
RFS-35W16LED	16	38	40
RFS-45W16LED	16	45	50
RFS-50W16LED	16	50	50
RFS-54W16LED	16	53	50
RFS-60W16LED	16	61	60
RFS-20W20LED	20	20	20
RFS-40W20LED	20	40	40
RFS-65W20LED	20	64	60

Ordering Code	Total LEDs	Average System Watts <sup>14</sup>	Wattage label <sup>15</sup>
RFS-35W32LED	32	37	40
RFS-55W32LED	32	53	50
RFS-60W32LED	32	59	60
RFS-72W32LED	32	73	70
RFS-108W32LED	32	108	110
RFS-35W40LED	40	35	40
RFS-50W40LED	40	49	50
RFS-55W40LED	40	54	50
RFS-65W40LED	40	66	70
RFS-80W40LED	40	79	80
RFS-100W40LED	40	101	100

14. Typical values, rounded.  
 15. As per ANSI C136.15-2015. Consult factory for other labeling needs.

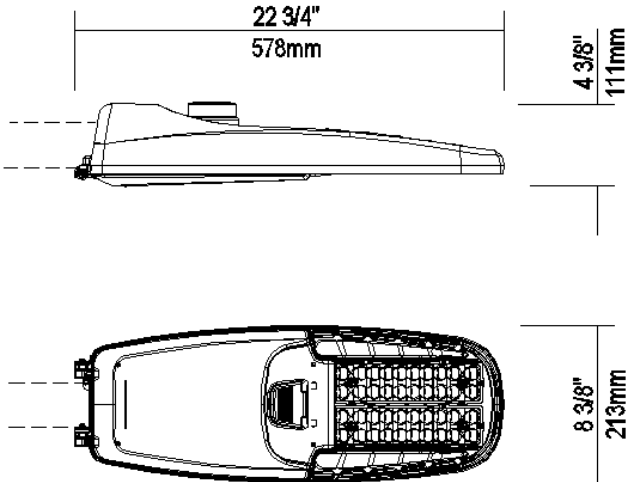
## 4000K LED Lumen values

Ordering Code	Color Temp.	Type R2M			Type R2S			Type R3M			Type R3S			Type 4			Type 5		
		Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFS-15W12LED	4000	1,863	132	B1-U0-G1	1,940	138	B1-U0-G1	1,858	132	B1-U0-G1	1,882	134	B1-U0-G1	1,849	131	B1-U0-G1	1,924	137	B1-U0-G1
RFS-20W12LED	4000	2,525	130	B1-U0-G1	2,629	136	B1-U0-G1	2,518	130	B1-U0-G1	2,552	132	B1-U0-G1	2,506	129	B1-U0-G1	2,606	134	B1-U0-G1
RFS-25W12LED	4000	2,887	116	B1-U0-G1	3,005	121	B1-U0-G1	2,878	116	B1-U0-G1	2,916	117	B1-U0-G1	2,864	115	B1-U0-G1	2,979	120	B1-U0-G1
RFS-25W16LED	4000	3,323	137	B1-U0-G1	3,458	143	B1-U0-G1	3,312	137	B1-U0-G1	3,357	139	B1-U0-G1	3,296	136	B1-U0-G1	3,429	142	B1-U0-G1
RFS-30W16LED	4000	3,764	130	B1-U0-G1	3,918	136	B1-U0-G1	3,752	130	B1-U0-G1	3,802	132	B1-U0-G1	3,735	129	B1-U0-G1	3,884	135	B1-U0-G1
RFS-35W16LED	4000	4,810	127	B1-U0-G1	5,007	132	B1-U0-G1	4,795	126	B1-U0-G1	4,859	128	B1-U0-G1	4,772	126	B1-U0-G1	4,964	131	B1-U0-G1
RFS-45W16LED	4000	5,497	121	B1-U0-G1	5,722	126	B1-U0-G1	5,480	121	B1-U0-G1	5,554	123	B1-U0-G1	5,454	121	B1-U0-G1	5,673	125	B1-U0-G1
RFS-50W16LED	4000	5,825	116	B2-U0-G1	6,064	121	B2-U0-G1	5,807	116	B2-U0-G1	5,885	117	B2-U0-G1	5,780	115	B2-U0-G1	6,012	120	B2-U0-G1
RFS-54W16LED	4000	6,356	120	B2-U0-G1	6,616	125	B2-U0-G1	6,336	120	B2-U0-G1	6,421	121	B2-U0-G1	6,306	119	B2-U0-G1	6,560	124	B2-U0-G1
RFS-60W16LED	4000	6,929	113	B2-U0-G1	7,213	118	B2-U0-G1	6,907	113	B2-U0-G1	7,000	115	B2-U0-G1	6,875	113	B2-U0-G1	7,151	117	B2-U0-G1
RFS-20W20LED	4000	2,553	130	B1-U0-G1	N/A	N/A	N/A	2,567	131	B1-U0-G1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-40W20LED	4000	5,083	128	B1-U0-G1	N/A	N/A	N/A	5,110	129	B1-U0-G1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-65W20LED	4000	7,827	122	B2-U0-G2	N/A	N/A	N/A	7,869	123	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-35W32LED	4000	5,197	141	B1-U0-G1	5,410	146	B1-U0-G1	5,181	140	B1-U0-G1	5,250	142	B1-U0-G1	5,156	139	B1-U0-G1	5,364	145	B1-U0-G1
RFS-55W32LED	4000	7,528	141	B2-U0-G1	7,836	147	B2-U0-G1	7,504	140	B2-U0-G1	7,605	142	B2-U0-G1	7,469	140	B2-U0-G1	7,770	145	B2-U0-G1
RFS-60W32LED	4000	7,630	130	B2-U0-G1	7,943	136	B2-U0-G1	7,607	130	B2-U0-G1	7,709	132	B2-U0-G1	7,571	129	B2-U0-G1	7,875	134	B2-U0-G1
RFS-72W32LED	4000	9,408	129	B2-U0-G2	9,794	134	B2-U0-G2	9,379	128	B2-U0-G2	9,505	130	B2-U0-G2	9,336	128	B2-U0-G2	9,711	133	B2-U0-G2
RFS-108W32LED	4000	13,025	121	B3-U0-G2	13,559	126	B3-U0-G2	12,984	120	B3-U0-G2	13,158	122	B3-U0-G2	12,924	120	B3-U0-G2	13,443	124	B3-U0-G2
RFS-35W40LED	4000	5,472	155	B1-U0-G1	N/A	N/A	N/A	5,502	156	B1-U0-G1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-50W40LED	4000	7,319	150	B2-U0-G2	N/A	N/A	N/A	7,359	151	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-55W40LED	4000	7,675	141	B2-U0-G2	N/A	N/A	N/A	7,716	142	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-65W40LED	4000	9,024	137	B2-U0-G2	N/A	N/A	N/A	9,073	137	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-80W40LED	4000	10,546	133	B2-U0-G2	N/A	N/A	N/A	10,603	134	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-100W40LED	4000	12,861	127	B3-U0-G3	N/A	N/A	N/A	12,930	128	B3-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Actual performance may vary due to installation variables including optics, mounting/ceiling height, dirt depreciation, light loss factor, etc.; highly recommended to confirm performance with a layout - contact Applications at [signify.com/outdoorluminaire](mailto:signify.com/outdoorluminaire). Consult DLC QPL to confirm your specific fixture selection is DLC approved.

Note: Some data may be scaled based on tests of similar but not identical luminaires.

**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**



EPA: 0.52 sq ft / weight: 9.4 lb (4.3 kg)  
 Note: 3D image may not represent color or option selected.  
 Logos above include link, click to access.

Qty	300	Type	Type 1B
		Luminaire	RFS-[108W32LEDTA-002]-G2-R3M-UNV-DMG-API-RCD7-SP2-GY3

**Description of Components:**

**Housing:** Made of a low copper die cast Aluminum alloy (A360), 0.100" (2.5mm) minimum thickness. Fits on a 1.66" (42mm) O.D. (1.25" NPS), 1.9" (48mm) O.D. (1.5" NPS) or 2 3/8" (60mm) O.D. (2" NPS) by 5 1/2" (140mm) minimum long tenon. Comes with a zinc plated clamp fixed by 2 zinc plated hexagonal bolts 3/8 16 UNC for ease of installation. Provides an easy step adjustment of +/- 5° tilt in 2.5° increments. Includes integral bubble level standard (always included). A quick release, tool less entry, single latch, hinged, removable door opens downward to provide access to electronic components and to a terminal block. Door is secured to prevent accidental dropping or disengagement. A clearance of 13" (330mm) at the rear is required in order to remove the door. Complete with a bird guard protecting against birds and similar intruders and an ANSI label as per C136.15-2015 to identify wattage and source (both included in box).

**Light Engine:** Composed of 4 main components: **Heat Sink / LED Module / Optical System / Driver**  
 Electrical components are RoHS compliant, IP66 sealed light engine.  
 LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

**Heat Sink:** Made of cast aluminum optimising the LEDs efficiency and life. Product does not use any cooling device with moving parts (only passive cooling device).

**LED Module:** Composed of 32 high performance True Amber LEDs (**GY CS8PM**) . Color temperature as per ANSI/NEMA bin Amber, 1200-1600 Kelvin nominal. **Dominant wavelength min. 583 nm - typ. 590 nm - max. 595 nm.**  
**[108W32LEDTA-002] Driver programmed @ 700mA for delivering 2,000 lumens.**

**Driver:** High power factor of 90% min. Electronic driver, operating range 50/60 Hz. Auto-adjusting universal voltage input

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**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**

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from 120 to 277 VAC rated for both application line to line or line to neutral, Class 2, THD of 20% max. **Driver comes with dimming compatible 0-10 volts.**

The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built-in driver surge protection of 2.5kV (min).

**Driver Options: (DMG) Integrated Feature**, Dimming compatible 0-10 volts. For applicable warranty, certification and operation guide see Lumec dimmable luminaire specification document for unapproved device installed by other. To get document, click on this link: [Specification document](#) or go on web site on this address: [https://www.signify.com/b-dam/signify/en-us/brands/lumec/Lumec-un-approved-control-device-installed-by-others-7\\_d.pdf](https://www.signify.com/b-dam/signify/en-us/brands/lumec/Lumec-un-approved-control-device-installed-by-others-7_d.pdf)

**Luminaire Options: (API)**, ANSI label pre-installed to identify system wattage and LED source. **(RCD7)**, Receptacle with 7 pins enabling dimming and with two extra connections for future use (these connections are capped off at the factory - requires connections to be made in the field), can be used with a twist-lock control device or photoelectric cell or a shorting cap. Use of photocell or shorting cap is required to ensure proper illumination. **(SP2)**, Integral surge protector tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure with elevated 20kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with U.S. DOE (Department of Energy) MSSLC (Municipal Solid-State Street Lighting Consortium) model specification for LED roadway luminaires electrical immunity requirements for High Test Level 10kV / 10kA.

**Luminaire Useful Life:** Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in-situ thermal testing in accordance with UL1598 and UL8750, System Reliability Tool. Advance data and LED manufacturer LM-80/TM-21 data, expected to reach 100,000 + hours with >L70 lumen maintenance @ 25°C. Luminaire Useful Life accounts for LED lumen maintenance AND all of these additional factors including: LED life, driver life, PCB substrate, solder joints, on/off cycles, burning hours and corrosion.

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**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**

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Miscellaneous
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**Description of Components:**

**Wiring:** The connection of the luminaire is done using a terminal block connector 600V, 85A for use with #2-14 AWG. wires from the primary circuit, located inside the housing. Due to the inrush current that occurs with electronic drivers, recommend using a 10Amp time delay fuse to avoid unwanted fuse blowing (false tripping) that can occur with normal or fast acting fuses.

**Hardware:** All exposed screws shall be complete with Ceramic primer-seal basecoat to reduce seizing of the parts and offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

**Finish:** Color to be **medium grey (GY3)** and in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with  $\pm 1$  mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 5000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

**LED products manufacturing standard:** The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

**Vibration Resistance:** The RFS meets the **ANSI C136.31, 2010**, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications (Tested 3G over 100 000 cycles).

The RFS meets the **California Test 611, Testing durability of mast arm mounted luminaires**, specifications (a 2 000 000 cycles test).

**Service Tag:** Each individual luminaire is uniquely identifiable, thanks to the Service tag application. With a simple scan of a QR code, placed on the inside of the mast door, you gain instant access to the luminaire configuration, making installation and maintenance operations faster and easier, no matter what stage of the luminaire's lifetime. Just download the APP and register your product right away. For more details visit: [Signify.com/servicetag](http://Signify.com/servicetag)

**Warranty:** Luminaire comes with a warranty of 10 years on product and finish.

**Certifications and Compliance:** cULus Listed for Canada and USA. Luminaire meets DOE and MSSLC Model Specification for LED Roadway Luminaires. Small RoadFocus LED Cobra head luminaires are DesignLights Consortium qualified, consult DLC QPL to confirm your specific fixture selection is approved. Luminaire complies with or exceeds the following ANSI C136 standards: .2, .3, .10, .14, .15, .22, .25, .31, .37, .41.

**Web site information details:** Click on any specific information details you need: / [cULus Certification](#)

**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**

2200K LED LUMEN VALUES					Type R2M		Type R3M	
Ordering Code	Total LEDs	System Current (mA)	Color Temp.	Avg System Wattage (W)	Delivered Lumens	Efficacy (Lm/W)	Delivered Lumens	Efficacy (Lm/W)
RFS-25W16LED2.2K-G2-x	16	350	2200	24.9	2572	103.3	2563	102.9
RFS-55W32LED2.2K-G2-x	32	530	2200	53	5826	109	5808	108.6
RFM-80W48LED2.2K-G2-x	48	530	2200	81	8598	106.7	8632	107.1
RFM-120W60LED2.2K-G2-x	60	650	2200	122	12624	103.5	12692	104
RFM-160W48LED2.2K-G2-x	48	1050	2200	161	15024	93.5	15083	93.8
RFL-215W96LED2.2K-G2-x	96	700	2200	207	22245	107.5	22176	107.1



# Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)

## LED Wattage values

Ordering Code	Total LEDs	Average System Watts <sup>14</sup>	Wattage label <sup>15</sup>
RFS-15W12LED	12	14	10
RFS-20W12LED	12	19	20
RFS-25W12LED	12	25	20
RFS-25W16LED	16	24	20
RFS-30W16LED	16	29	30
RFS-35W16LED	16	38	40
RFS-45W16LED	16	45	50
RFS-50W16LED	16	50	50
RFS-54W16LED	16	53	50
RFS-60W16LED	16	61	60
RFS-20W20LED	20	20	20
RFS-40W20LED	20	40	40
RFS-65W20LED	20	64	60

Ordering Code	Total LEDs	Average System Watts <sup>14</sup>	Wattage label <sup>15</sup>
RFS-35W32LED	32	37	40
RFS-55W32LED	32	53	50
RFS-60W32LED	32	59	60
RFS-72W32LED	32	73	70
RFS-108W32LED	32	108	110
RFS-35W40LED	40	35	40
RFS-50W40LED	40	49	50
RFS-55W40LED	40	54	50
RFS-65W40LED	40	66	70
RFS-80W40LED	40	79	80
RFS-100W40LED	40	101	100

14. Typical values, rounded.  
 15. As per ANSI C136.15-2015. Consult factory for other labeling needs.

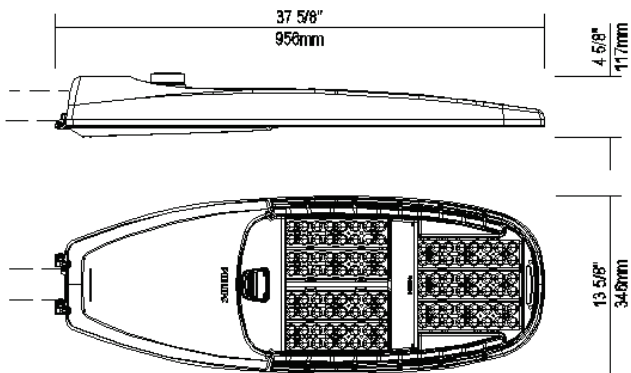
## 4000K LED Lumen values

Ordering Code	Color Temp.	Type R2M			Type R2S			Type R3M			Type R3S			Type 4			Type 5		
		Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFS-15W12LED	4000	1,863	132	B1-U0-G1	1,940	138	B1-U0-G1	1,858	132	B1-U0-G1	1,882	134	B1-U0-G1	1,849	131	B1-U0-G1	1,924	137	B1-U0-G1
RFS-20W12LED	4000	2,525	130	B1-U0-G1	2,629	136	B1-U0-G1	2,518	130	B1-U0-G1	2,552	132	B1-U0-G1	2,506	129	B1-U0-G1	2,606	134	B1-U0-G1
RFS-25W12LED	4000	2,887	116	B1-U0-G1	3,005	121	B1-U0-G1	2,878	116	B1-U0-G1	2,916	117	B1-U0-G1	2,864	115	B1-U0-G1	2,979	120	B1-U0-G1
RFS-25W16LED	4000	3,323	137	B1-U0-G1	3,458	143	B1-U0-G1	3,312	137	B1-U0-G1	3,357	139	B1-U0-G1	3,296	136	B1-U0-G1	3,429	142	B1-U0-G1
RFS-30W16LED	4000	3,764	130	B1-U0-G1	3,918	136	B1-U0-G1	3,752	130	B1-U0-G1	3,802	132	B1-U0-G1	3,735	129	B1-U0-G1	3,884	135	B1-U0-G1
RFS-35W16LED	4000	4,810	127	B1-U0-G1	5,007	132	B1-U0-G1	4,795	126	B1-U0-G1	4,859	128	B1-U0-G1	4,772	126	B1-U0-G1	4,964	131	B1-U0-G1
RFS-45W16LED	4000	5,497	121	B1-U0-G1	5,722	126	B1-U0-G1	5,480	121	B1-U0-G1	5,554	123	B1-U0-G1	5,454	121	B1-U0-G1	5,673	125	B1-U0-G1
RFS-50W16LED	4000	5,825	116	B2-U0-G1	6,064	121	B2-U0-G1	5,807	116	B2-U0-G1	5,885	117	B2-U0-G1	5,780	115	B2-U0-G1	6,012	120	B2-U0-G1
RFS-54W16LED	4000	6,356	120	B2-U0-G1	6,616	125	B2-U0-G1	6,336	120	B2-U0-G1	6,421	121	B2-U0-G1	6,306	119	B2-U0-G1	6,560	124	B2-U0-G1
RFS-60W16LED	4000	6,929	113	B2-U0-G1	7,213	118	B2-U0-G1	6,907	113	B2-U0-G1	7,000	115	B2-U0-G1	6,875	113	B2-U0-G1	7,151	117	B2-U0-G1
RFS-20W20LED	4000	2,553	130	B1-U0-G1	N/A	N/A	N/A	2,567	131	B1-U0-G1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-40W20LED	4000	5,083	128	B1-U0-G1	N/A	N/A	N/A	5,110	129	B1-U0-G1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-65W20LED	4000	7,827	122	B2-U0-G2	N/A	N/A	N/A	7,869	123	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-35W32LED	4000	5,197	141	B1-U0-G1	5,410	146	B1-U0-G1	5,181	140	B1-U0-G1	5,250	142	B1-U0-G1	5,156	139	B1-U0-G1	5,364	145	B1-U0-G1
RFS-55W32LED	4000	7,528	141	B2-U0-G1	7,836	147	B2-U0-G1	7,504	140	B2-U0-G1	7,605	142	B2-U0-G1	7,469	140	B2-U0-G1	7,770	145	B2-U0-G1
RFS-60W32LED	4000	7,630	130	B2-U0-G1	7,943	136	B2-U0-G1	7,607	130	B2-U0-G1	7,709	132	B2-U0-G1	7,571	129	B2-U0-G1	7,875	134	B2-U0-G1
RFS-72W32LED	4000	9,408	129	B2-U0-G2	9,794	134	B2-U0-G2	9,379	128	B2-U0-G2	9,505	130	B2-U0-G2	9,336	128	B2-U0-G2	9,711	133	B2-U0-G2
RFS-108W32LED	4000	13,025	121	B3-U0-G2	13,559	126	B3-U0-G2	12,984	120	B3-U0-G2	13,158	122	B3-U0-G2	12,924	120	B3-U0-G2	13,443	124	B3-U0-G2
RFS-35W40LED	4000	5,472	155	B1-U0-G1	N/A	N/A	N/A	5,502	156	B1-U0-G1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-50W40LED	4000	7,319	150	B2-U0-G2	N/A	N/A	N/A	7,359	151	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-55W40LED	4000	7,675	141	B2-U0-G2	N/A	N/A	N/A	7,716	142	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-65W40LED	4000	9,024	137	B2-U0-G2	N/A	N/A	N/A	9,073	137	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-80W40LED	4000	10,546	133	B2-U0-G2	N/A	N/A	N/A	10,603	134	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFS-100W40LED	4000	12,861	127	B3-U0-G3	N/A	N/A	N/A	12,930	128	B3-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Actual performance may vary due to installation variables including optics, mounting/ceiling height, dirt depreciation, light loss factor, etc.; highly recommended to confirm performance with a layout - contact Applications at [signify.com/outdoorluminaires](mailto:signify.com/outdoorluminaires). Consult DLC QPL to confirm your specific fixture selection is DLC approved.

Note: Some data may be scaled based on tests of similar but not identical luminaires.

**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**



EPA: 0.92 sq ft / weight: 27.3 lb (12.4 kg)  
 Note: 3D image may not represent color or option selected.  
 Logos above include link, click to access.

		<b>Type 2</b>	
Qty	100	Luminaire	<b>RFL-[145W64LEDTA-001]-G2-R2M-UNV-DMG-API-RCD7-SP2-GY3</b>

**Description of Components:**

**Housing:** Made of a low copper die cast Aluminum alloy (A360), 0.100" (2.5mm) minimum thickness. Fits on a 1.66" (42mm) O.D. (1.25" NPS), 1.9" (48mm) O.D. (1.5" NPS) or 2 3/8" (60mm) O.D. (2" NPS) by 7" (178mm) minimum long tenon. Comes with 2 zinc plated clamp fixed by 4 zinc plated hexagonal bolts 3/8 16 UNC for ease of installation. Provides an easy step adjustment of +/- 5° tilt in 2.5° increments. A quick release, tool less entry, hinged, removable door opens downward to provide access to electronic components and to a terminal block. Door is secured to prevent accidental dropping or disengagement. A clearance of 17" (432mm) at the rear is required in order to remove the door. Complete with a bird guard protecting against birds and similar intruders and an ANSI label as per C136.15-2015 to identify wattage and source (both included in box).

**Light Engine:** Composed of 4 main components: **Heat Sink / LED Module / Optical System / Driver**  
 Electrical components are RoHS compliant, IP66 sealed light engine.  
 LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

**Heat Sink:** Made of cast aluminum optimising the LEDs efficiency and life. Product does not use any cooling device with moving parts (only passive cooling device).

**LED Module:** Composed of 64 high performance True Amber LEDs (**GY CS8PM**). Color temperature as per ANSI/NEMA bin Amber, 1200-1600 Kelvin nominal. **Dominant wavelength min. 583 nm - typ. 590 nm - max. 595 nm.**  
**[145W64LEDTA-001]: Driver programmed @ 700mA for delivering 4,000 lumens.**

**Driver:** High power factor of 90% minimum. Electronic driver, operating range 50/60 Hz. Auto-adjusting universal voltage

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**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**

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input from 120 to 277 VAC rated for both application line to line or line to neutral, Class 1, THD of 20% max. **Driver comes with dimming compatible 0-10 volts.**

The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built-in driver surge protection of 2.5kV (min).

**Driver Options: (DMG) Integrated Feature**, Dimming compatible 0-10 volts. For applicable warranty, certification and operation guide see Lumec dimmable luminaire specification document for unapproved device installed by other. To get document, click on this link: [Specification document](#) or go on web site on this address: [https://www.signify.com/b-dam/signify/en-us/brands/lumec/Lumec-un-approved-control-device-installed-by-others-7\\_d.pdf](https://www.signify.com/b-dam/signify/en-us/brands/lumec/Lumec-un-approved-control-device-installed-by-others-7_d.pdf)

**Luminaire Options: (API)**, ANSI label pre-installed to identify system wattage and LED source. **(RCD7)**, Receptacle with 7 pins enabling dimming and with two extra connections for future use (these connections are capped off at the factory - requires connections to be made in the field), can be used with a twist-lock control device or photoelectric cell or a shorting cap. Use of photocell or shorting cap is required to ensure proper illumination. **(SP2)**, Integral surge protector tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure with elevated 20kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with U.S. DOE (Department of Energy) MSSLC (Municipal Solid-State Street Lighting Consortium) model specification for LED roadway luminaires electrical immunity requirements for High Test Level 10kV / 10kA.

**Luminaire Useful Life:** Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in-situ thermal testing in accordance with UL1598 and UL8750, System Reliability Tool. Advance data and LED manufacturer LM-80/TM-21 data, expected to reach 100,000 + hours with >L70 lumen maintenance @ 25°C. Luminaire Useful Life accounts for LED lumen maintenance AND all of these additional factors including: LED life, driver life, PCB substrate, solder joints, on/off cycles, burning hours and corrosion.

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**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**

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Miscellaneous
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**Description of Components:**

**Wiring:** The connection of the luminaire is done using a terminal block connector 600V, 85A for use with #2-14 AWG. wires from the primary circuit, located inside the housing. Due to the inrush current that occurs with electronic drivers, recommend using a 10Amp time delay fuse to avoid unwanted fuse blowing (false tripping) that can occur with normal or fast acting fuses.

**Hardware:** All exposed screws shall be complete with Ceramic primer-seal basecoat to reduce seizing of the parts and offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

**Finish:** Color to be **medium grey (GY3)** and in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with  $\pm 1$  mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 5000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

**LED products manufacturing standard:** The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

**Vibration Resistance:** The RFL meets the **ANSI C136.31, 2010**, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications (Tested 3G over 100 000 cycles).

The RFL meets the **California Test 611, Testing durability of mast arm mounted luminaires**, specifications (a 2 000 000 cycles test).

**Service Tag:** Each individual luminaire is uniquely identifiable, thanks to the Service tag application. With a simple scan of a QR code, placed on the inside of the mast door, you gain instant access to the luminaire configuration, making installation and maintenance operations faster and easier, no matter what stage of the luminaire's lifetime. Just download the APP and register your product right away. For more details visit: [Signify.com/servicetag](http://Signify.com/servicetag)

**Warranty:** Luminaire comes with a warranty of 10 years on product and finish.

**Certifications and Compliance:** cULus Listed for Canada and USA. Luminaire meets DOE and MSSLC Model Specification for LED Roadway Luminaires. Large RoadFocus LED Cobra head luminaires are DesignLights Consortium qualified, consult DLC QPL to confirm your specific fixture selection is approved. Luminaire complies with or exceeds the following ANSI C136 standards: .2, .3, .10, .14, .15, .22, .25, .31, .37, .41.

**Web site information details:** Click on any specific information details you need: / [cULus Certification](#)

**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**

2200K LED LUMEN VALUES					Type R2M		Type R3M	
Ordering Code	Total LEDs	System Current (mA)	Color Temp.	Avg System Wattage (W)	Delivered Lumens	Efficacy (Lm/W)	Delivered Lumens	Efficacy (Lm/W)
RFS-25W16LED2.2K-G2-x	16	350	2200	24.9	2572	103.3	2563	102.9
RFS-55W32LED2.2K-G2-x	32	530	2200	53	5826	109	5808	108.6
RFM-80W48LED2.2K-G2-x	48	530	2200	81	8598	106.7	8632	107.1
RFM-120W60LED2.2K-G2-x	60	650	2200	122	12624	103.5	12692	104
RFM-160W48LED2.2K-G2-x	48	1050	2200	161	15024	93.5	15083	93.8
RFL-215W96LED2.2K-G2-x	96	700	2200	207	22245	107.5	22176	107.1



# Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)

## LED Wattage values

Ordering Code	Total LEDs	Average System Watts <sup>15</sup>	Wattage label <sup>16</sup>
RFL-145W64LED	64	137	140
RFL-135W80LED	80	136	140
RFL-180W80LED	80	174	170
RFL-270W80LED	80	268	270
RFL-215W96LED	96	207	210
RFL-85W100LED	100	88	90
RFL-105W100LED	100	106	110
RFL-165W100LED	100	165	170
RFL-225W100LED	100	224	220
RFL-305W100LED	100	306	310
RFL-190W112LED	112	188	190
RFL-241W112LED	112	243	240
RFL-350W112LED	112	340	340

Ordering Code	Total LEDs	Average System Watts <sup>15</sup>	Wattage label <sup>16</sup>
RFL-130W120LED	120	133	130
RFL-200W120LED	120	196	200
RFL-270W120LED	120	269	270
RFL-155W140LED	140	154	150
RFL-230W140LED	140	229	230
RFL-310W140LED	140	311	310

15. Typical values, rounded.  
 16. As per ANSI C136.15-2015. Consult factory for other labeling needs.

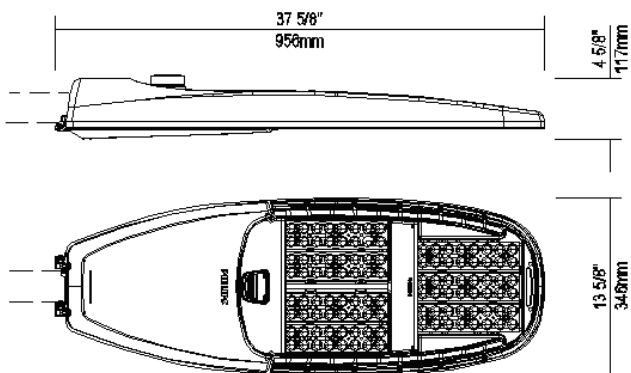
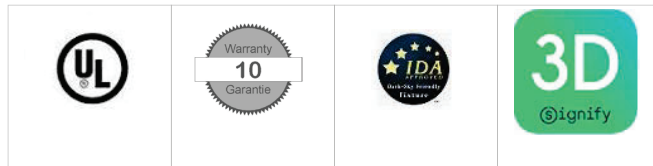
## 4000K LED Lumen values

Ordering Code	Color Temp.	Type R2M			Type R2S			Type R3M			Type R3S			Type 4			Type 5		
		Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFL-145W64LED	4000	19,162	140	B3-U0-G3	19,841	145	B3-U0-G2	19,102	139	B3-U0-G2	19,358	141	B2-U0-G3	19,012	139	B2-U0-G3	19,777	144	B4-U0-G2
RFL-135W80LED	4000	18,819	138	B3-U0-G3	19,486	143	B3-U0-G2	18,761	137	B3-U0-G2	19,012	139	B2-U0-G3	18,673	137	B2-U0-G3	19,423	142	B4-U0-G2
RFL-180W80LED	4000	23,952	138	B3-U0-G3	24,800	143	B3-U0-G2	23,877	137	B3-U0-G3	24,197	139	B3-U0-G3	23,765	137	B3-U0-G4	24,721	142	B5-U0-G3
RFL-270W80LED	4000	32,506	121	B3-U0-G3	33,658	126	B4-U0-G3	32,405	121	B3-U0-G3	32,839	122	B3-U0-G4	32,254	120	B3-U0-G4	33,549	125	B5-U0-G3
RFL-215W96LED	4000	28,742	139	B3-U0-G3	29,760	144	B3-U0-G2	28,653	138	B3-U0-G3	29,037	140	B3-U0-G4	28,519	138	B3-U0-G4	29,664	143	B5-U0-G3
RFL-85W100LED	4000	13,504	154	B3-U0-G3	N/A	N/A	N/A	13,576	155	B3-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-105W100LED	4000	16,168	153	B3-U0-G2	N/A	N/A	N/A	16,255	153	B3-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-165W100LED	4000	22,561	137	B3-U0-G3	N/A	N/A	N/A	22,683	137	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-225W100LED	4000	28,600	128	B4-U0-G4	N/A	N/A	N/A	28,753	128	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-305W100LED	4000	37,480	122	B4-U0-G4	N/A	N/A	N/A	37,681	123	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-190W112LED	4000	26,347	140	B3-U0-G3	27,280	145	B3-U0-G2	26,265	140	B3-U0-G3	26,617	142	B3-U0-G3	26,143	139	B3-U0-G4	27,192	145	B5-U0-G3
RFL-241W112LED	4000	32,955	136	B4-U0-G3	34,122	140	B4-U0-G3	32,853	135	B3-U0-G3	33,293	137	B3-U0-G4	32,699	135	B3-U0-G4	34,012	140	B5-U0-G3
RFL-350W112LED	4000	42,515	125	B4-U0-G4	44,021	130	B4-U0-G3	42,382	125	B4-U0-G4	42,950	127	B3-U0-G4	42,184	124	B3-U0-G5	43,879	129	B5-U0-G4
RFL-130W120LED	4000	19,401	146	B3-U0-G3	N/A	N/A	N/A	19,505	147	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-200W120LED	4000	27,073	138	B4-U0-G3	N/A	N/A	N/A	27,219	139	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-270W120LED	4000	34,319	128	B4-U0-G4	N/A	N/A	N/A	34,504	128	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-155W140LED	4000	22,635	147	B3-U0-G3	N/A	N/A	N/A	22,756	148	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-230W140LED	4000	31,586	138	B4-U0-G4	N/A	N/A	N/A	31,756	139	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-310W140LED	4000	40,039	129	B4-U0-G4	N/A	N/A	N/A	40,255	129	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Actual performance may vary due to installation variables including optics, mounting/ceiling height, dirt depreciation, light loss factor, etc.; highly recommended to confirm performance with a layout - contact Applications at [signify.com/outdoorluminaires](mailto:signify.com/outdoorluminaires). Consult DLC QPL to confirm your specific fixture selection is DLC approved.  
 Note: Some data may be scaled based on tests of similar but not identical luminaires.



**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**



EPA: 0.92 sq ft / weight: 27.3 lb (12.4 kg)

Note: 3D image may not represent color or option selected.  
Logos above include link, click to access.

Qty	425	Type	3
		Luminaire	RFL-[241W112LEDTA-002]-G2-R2M-UNV-DMG-API-RCD7-SP2-GY3

**Description of Components:**

**Housing:** Made of a low copper die cast Aluminum alloy (A360), 0.100" (2.5mm) minimum thickness. Fits on a 1.66" (42mm) O.D. (1.25" NPS), 1.9" (48mm) O.D. (1.5" NPS) or 2 3/8" (60mm) O.D. (2" NPS) by 7" (178mm) minimum long tenon. Comes with 2 zinc plated clamp fixed by 4 zinc plated hexagonal bolts 3/8 16 UNC for ease of installation. Provides an easy step adjustment of +/- 5° tilt in 2.5° increments. A quick release, tool less entry, hinged, removable door opens downward to provide access to electronic components and to a terminal block. Door is secured to prevent accidental dropping or disengagement. A clearance of 17" (432mm) at the rear is required in order to remove the door. Complete with a bird guard protecting against birds and similar intruders and an ANSI label as per C136.15-2015 to identify wattage and source (both included in box).

**Light Engine:** Composed of 4 main components: **Heat Sink / LED Module / Optical System / Driver**

Electrical components are RoHS compliant, IP66 sealed light engine.

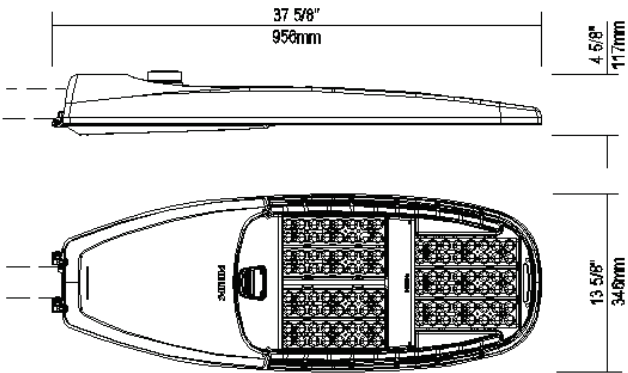
LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

**Heat Sink:** Built in the housing, designed to ensure high efficacy and superior cooling by natural vertical convection air flow pattern always close to LEDs and driver optimising their efficiency and life. Product does not use any cooling device with moving parts (only passive cooling). Wide openings enable natural cleaning and removal of dirt and debris. Entire luminaire is rated for operation in ambient temperature of -40°C / -40°F up to +40°C / +104°F.

**LED Module:** Composed of 112 high performance True Amber LEDs (GY CS8PM). Color temperature as per ANSI/NEMA bin Amber, 1200-1600 Kelvin nominal. **Dominant wavelength min. 583 nm - typ. 590 nm - max. 595 nm.**

**[241W112LEDTA-002]: Driver programmed @ 700mA for delivering 7,500 lumens.**

**Philips Roadway - Arizona DOT SFDC 400150024 City of Flagstaff Roadway lighting retrofi (66485)**



EPA: 0.92 sq ft / weight: 27.3 lb (12.4 kg)  
 Note: 3D image may not represent color or option selected.  
 Logos above include link, click to access.

		<b>TYPE 4</b>	
Qty	<b>800</b>	Luminaire	<b>RFL-[350W112LEDA-001]-G2-R2M-UNV-DMG-API-RCD7-SP2-GY3</b>

**Description of Components:**

**Housing:** Made of a low copper die cast Aluminum alloy (A360), 0.100" (2.5mm) minimum thickness. Fits on a 1.66" (42mm) O.D. (1.25" NPS), 1.9" (48mm) O.D. (1.5" NPS) or 2 3/8" (60mm) O.D. (2" NPS) by 7" (178mm) minimum long tenon. Comes with 2 zinc plated clamp fixed by 4 zinc plated hexagonal bolts 3/8 16 UNC for ease of installation. Provides an easy step adjustment of +/- 5° tilt in 2.5° increments. A quick release, tool less entry, hinged, removable door opens downward to provide access to electronic components and to a terminal block. Door is secured to prevent accidental dropping or disengagement. A clearance of 17" (432mm) at the rear is required in order to remove the door. Complete with a bird guard protecting against birds and similar intruders and an ANSI label as per C136.15-2015 to identify wattage and source (both included in box).

**Light Engine:** Composed of 4 main components: **Heat Sink / LED Module / Optical System / Driver**  
 Electrical components are RoHS compliant, IP66 sealed light engine.  
 LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

**Heat Sink:** Built in the housing, designed to ensure high efficacy and superior cooling by natural vertical convection air flow pattern always close to LEDs and driver optimising their efficiency and life. Product does not use any cooling device with moving parts (only passive cooling). Wide openings enable natural cleaning and removal of dirt and debris. Entire luminaire is rated for operation in ambient temperature of -40°C / -40°F up to +40°C / +104°F.

**LED Module:** Composed of 112 high performance amber LEDs. Color temperature as per ANSI/NEMA bin Phosphor Corrected Amber, 1800 Kelvin nominal, CRI 30 Min.  
**[350W112LEDA-001] Driver programmed @ 400mA for delivering 11,250 lumens.**

