

ABOUT **FORTISALBERTA**

FortisAlberta is an electricity distribution utility dedicated to delivering safe and reliable electricity to the homes, farms and businesses of more than half a million customers in central and southern Alberta. We own and operate more than 60 per cent of the

province's electricity distribution network with 122,000 kilometres of power lines. Our company has more than 1,100 employees who work and live in many of the 200 communities we serve across the province.



OVERVIEW

Street lighting is a vital part of any community, and when properly designed, street lighting can reduce automobile collisions, deter crime, and foster a sense of safety. Properly designed street lighting can also add aesthetic appeal, as well as contribute to the overall structural design of any community.

The purpose of FortisAlberta's street lighting catalogue is to help customers understand the standard street lighting process as well as the fixture options available.

FortisAlberta has standardized its street light fixtures as part of its commitment to provide exceptional customer service to the communities it serves. The Company selects fixtures from various manufacturers to ensure continued compatibility with existing poles, which allows for alternatives and substitutions when the time comes to replace those fixtures. Using FortisAlberta-approved street lighting fixtures provides faster repair times, lower operational and installation costs, while maintaining a high level of street lighting standards.

FortisAlberta supports initiatives that reduce light pollution and ecosystem disturbance while maintaining the public's sense of safety and security within communities.

The Company is continually researching new lighting technologies to provide its customers with the most reliable, cost effective, and functional lighting products.

GUIDELINES

FortisAlberta designs street lighting according to the Illuminating Engineering Society of North America's (IESNA) recommended practice, and where applicable, to the standards of the Transportation Association of Canada (TAC).

Although lighting can be customized to meet a community's requirements, IESNA standards are FortisAlberta's default practice.

Since 1946, IESNA has developed and refined its principles of street lighting design. FortisAlberta is a corporate sustaining member in the IESNA organization.



BUG RATING

For years, IESNA used the "cutoff" classification system (full, cutoff, semi cutoff and non cutoff) to rate the amount of light emitted from a luminaire in unwanted directions. However, in 2005, IESNA began its efforts to replace the cutoff classification system, ultimately resulting in the new BUG (Backlight, Uplight and Glare) rating methodology. This represents a comprehensive system that limits lamp lumens to values appropriate for the lighting zone.

Although the "cutoff" classification may be applied to some products, lighting designers, specifiers, engineers and operation are rapidly recognizing and adopting the BUG rating system standards to evaluate Light Emitting Diode (LED) luminaires.

The BUG rating system is based on the criteria outlined below:

Backlight creates light trespass onto adjacent sites. The B rating takes into account the amount of light in the secondary solid angle zones of low, medium, high and very high (BL, BM, BH and BVH), which are in the direction of the luminaire OPPOSITE from the area intended to be lighted.

Uplight causes artificial sky glow. The U rating takes into account the amount of light into the upper hemisphere with greater concern for the lower uplight angles (UL). Lower uplight (zone UL) causes the most sky glow and negatively affects professional and academic astronomy. Upper uplight (UH) is mostly energy waste.

100° 90° UL 90° 80° BH 60° BM 30° BL 60°

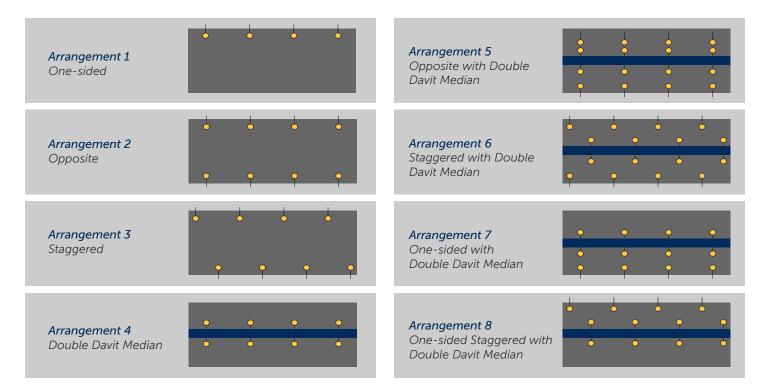
180°

Glare can be annoying or visually disabling. The G rating takes into account the amount of frontlight in the high and very high (FH and FVH) zones.

The rating for the zone is determined by the highest classification in each of the zones (BUG) and is assigned a number from 0-5. The lower the number ie U0, the better the luminaire performs in this criteria.

In most cases the LED fixtures that were chosen by FortisAlberta qualify as dark sky friendly based on the BUG rating determined by the IESNA. For more information regarding BUG Ratings, please visit the IESNA web site at ies.org.

TYPICAL LIGHTING ARRANGEMENTS





ROAD AND PEDESTRIAN CLASSIFICATIONS

The principal purpose of roadway lighting is to produce quick, accurate and comfortable visibility at night. These qualities of visibility may safeguard, facilitate, and encourage vehicular and pedestrian traffic.

ROAD AREA CLASSIFICATIONS

When selecting a classification, the area or roadway should best fit the definitions below rather than how others may refer to the road area.

Major: This refers to part of the roadway system that serves as the principal network for through-traffic flow. These routes connect areas of principal traffic generation and important rural roadways leaving the city. These routes are often known as arterials, thoroughfares, or preferentials through municipalities. They are sometimes subdivided into primary and secondary; however, such distinctions are not necessary in roadway lighting.

Collector: Collector roadways service traffic between major and local streets. These are streets used mainly for traffic movements within residential, commercial and industrial areas. They do not handle long, through trips. Collector streets may be used for truck or bus movements and give direct service to abutting properties.

Local: Local streets are used primarily for direct access to residential, commercial, industrial, or other abutting property. They make up a large percentage of the total street system, but carry a small proportion of vehicular traffic.

PEDESTRIAN AREA CLASSIFICATIONS

The major, collector and local street classifications appropriately describe general conditions of vehicular traffic in urban areas. However, a second consideration, which is responsible for a disproportionate number of nighttime fatalities, is the vehicle/pedestrian interaction. There are three types of pedestrian classifications:

High: Areas with a significant number of pedestrians expected to be on the sidewalks or crossing the streets during darkness. Examples are downtown retail areas, near theaters, concert halls, stadiums, schools, recreation centres and transit terminals.

Medium: Areas where a lesser number of pedestrians utilize the streets at night. Typical are downtown office areas, blocks with libraries, apartments, neighborhood shopping, industrial, older city areas, and streets with transit lines.

Low: Areas with very low volumes of night pedestrian usage. These can occur in any of the cited roadway classifications but may be typified by suburban single family streets, very low density residential developments, and rural or semi-rural areas.

Source – (IESNA) The Lighting Handbook, 10th Edition

LED STREETLIGHT INFORMATION

As owner and operator of more than 100,000 streetlights in Alberta, FortisAlberta is committed to improving the energy efficiency of our infrastructure, while controlling costs for our customers. For more than five years, we have conducted various independent pilot programs to gather data and compile findings regarding new Light Emitting Diode (LED) Streetlight fixture technology. Based on our findings, LED fixtures provide several benefits:

- » Lower energy consumption (60 per cent more energy efficient)
- » Improved safety and night visibility (more vibrant, clear and accurate white light)
- » Increased life expectancy (20 years)
- » Reduced maintenance costs (bulb replacements not required)
- » Decreased environmental footprint (no mercury, lead or other known disposable hazards)
- » Dark sky friendly

As a result, we have changed our standard for Streetlights to LED for all new construction and are in the process of completing an LED conversion program. FortisAlberta will continue to evaluate new products on a continual basis.

STREETLIGHT STANDARD CHANGE

All new streetlight fixtures will be constructed with LED technology. These fixtures were selected based on photometric performance and competitive pricing. The LED fixtures that were chosen qualify as dark sky friendly based on the BUG Rating determined by the Illuminating Engineering Society of North America (IESNA). For more information regarding BUG Ratings, please visit the IESNA website at ies.org.

Beginning March 1, 2017, any new requests for High Pressure Sodium (HPS) lighting will only be available under a Nonstandard Lighting Agreement. Municipalities accepting new installations of non-standard lamps, luminaries, and/or poles will be responsible for the purchase and stocking of replacement materials for non-standard fixtures, luminaries and/or poles.

SUGGESTED FIXTURES FOR TYPICAL USE:		
Suggested LED Fixture	Application	Page #
Cobra (FortisAlberta Standard)	Street and roadway lighting	10
Pendant	Decorative roadway and street lighting	11
Post Top	Decorative street, pathway lighting	12
Galleon	Decorative street, pathway, and area lighting*	13
Domus	Decorative street and pathway lighting	14
Traditionaire	Decorative street and pathway lighting	15
Contemporary	Decorative street and pathway lighting	16
Acorn	Decorative street and pathway lighting	17
Flood Light	Flood lighting	18
Yard Light	Security lighting	19

^{*}Area lighting, fixtures that can be mounted as a single or multiple head(s) in various orientations to light a large area such as a parking lot.



LED CONVERSION OPTION

This option covers all Rate 31 cobra head style fixtures and will require no up-front capital investment from municipalities to facilitate the conversion. Non-cobra head style fixtures or decorative fixtures and yard lights will not be available in the LED Conversion Option at this time.

STREETLIGHT REPAIRS

Moving forward, FortsiAlberta will replace failed HPS cobra-heads fixtures with LED fixtures.

ADDITIONAL INFORMATION

Municipal customers are encouraged to contact their Key Accounts Manager for further details, or call 310-WIRE (9473) for general inquiries.



KEY CONSIDERATIONS

MUNICIPALITIES CAN CHOOSE LOWER LIGHTING LEVELS THAN RECOMMENDED BY FORTISALBERTA

FortisAlberta employees are thoroughly trained and have the expertise to design and install street lighting in accordance with the Illuminating Engineering Society of North America (IESNA) and Transportation Association of Canada (TAC) guidelines to ensure the appropriate lighting levels for the roadway classification are met.

If a municipality chooses to divert from the IESNA (and FortisAlberta) recommended levels, the municipality will be asked to sign a waiver form for each applicable project, which can be obtained from you Key Accounts Manager. This must be completed by the municipality and returned the FortisAlberta quoting or design department. The intent of the waiver form is to ensure the municipality understands all the risks and liabilities associated with making such a decision.

If you require further information regarding the waiver form, please contact your Key Accounts Manager.

MUNICIPALITIES CAN CHOOSE A FIXTURE THAT IS NOT RECOGNIZED AS A FORTISALBERTA STANDARD

FortisAlberta assesses and reviews street lighting options to ensure a wide selection while maintaining product quality and a high level of service for its customers. If a municipality chooses a streetlight that is not outlined in the street lighting catalogue, the municipality is required to sign a "Non-Standard Lighting Agreement" with FortisAlberta.

The Non-Standard Lighting Agreement outlines the responsibilities of FortisAlberta and the municipality. Most important to note is that the municipality is responsible for ordering, supplying, stocking and maintaining initial and ongoing inventory, including replacements, for any of the non-standard lighting fixtures and equipment. All non-standard lighting fixtures must be reviewed and approved by FortisAlberta to ensure they meet required Codes and local requirements for wind loading, public safety and safe operations.

For municipalities where a franchise agreement is in place, the streetlight penalty time outlined in the agreement does not begin until FortisAlberta receives the equipment, supplies and materials for the non-standard streetlights for the municipality.

If you require further information regarding the Non-Standard Lighting Agreement, please contact your Key Accounts Manager.

BANNERS

If a developer is interested in banners on new streetlight poles it is important to note that approval is required from the municipality as well as FortisAlberta before proceeding.

The process is as follows:

- » Streetlight poles with banners will be installed such that the banners will parallel the road driving surface to avoid overhanging the driving surface and conflict with vehicles. If the desired design for the banner arms is to be 90 degrees to the driving surface, the pole setback will need to increase. The setback will need to be far enough so the banner arms do not overhang the driving surface of the road and edge of the banner should be minimum of 0.5 metres from the outside face of the curb. This setback is not always possible in all locations and may require special approval from the local municipality to change standard road cross-sections.
- » Approval for banner installation must first be obtained from the municipality. The municipality will also determine the length of time the banners may hang.
- » Upon receiving approval, the specifications of the banners must be sent to the FortisAlberta Key Accounts Manager to submit for review and approval. Assessment charges may apply.
- » Upon approval, the banners can be installed and remain hanging for the approved length of time.

If you require further information regarding banner arms or the installation of banner arms on existing streetlight poles, please consult with a FortisAlberta representative.

RECEPTACLES AND FESTIVE LIGHTING

When considering the installation of receptacles on streetlight poles, it is important to keep in mind that additional lighting, such as festive lighting, is only available between the months of December through February.

As per Schedule A in FortisAlberta's Customer Terms & Conditions of Electric Distribution "Service Wattage" clause:

"Festive lighting service is available to municipalities that require decorative lighting for the holiday season during the months of December through February. A municipality may install festive lighting with a maximum increase of up to 15 per cent of their total street lighting wattage for a six week period at no charge. To capture consumption in excess of 15 per cent, an Excess Wattage charge of \$1 per kW per day will be applied, unless a streetlight service is separately metered. This will be charged directly to the municipality".

If you would like to explore the option of year-round festive lighting, additional load off the receptacles, or the installation of receptacles on existing streetlight poles, please call **310-WIRE** (9473) or **1-855-333-9473**.



Note: It is important for customers to understand that the manufacturer's engineering department will require additional time to review specific requests, in addition FortisAlberta's Engineering and Standards team will need time to review their findings along with work with our Operations team to plan and coordinate the installation. Customers will need to factor this additional time into the consideration for their projects to ensure that FortisAlberta will able to meet their in service date.

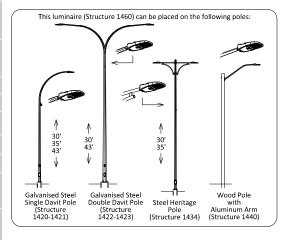
COBRA HEAD

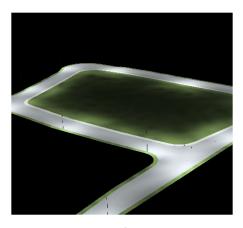
Fixture Structure Number 1458–1460

Application — street and roadway lighting

Wattage	70W Replacement	100W Replacement	150W Replacement	250W Replacement
Delivered Lumen, Type II	3,564 Lux	4,800 Lux	7,398 Lux	14, 868 Lux
Delivered Lumen, Type III				14,405 Lux
BUG Rating Type II	B1-U0-G1	B2-U0-G1	B2-U0-G1	B3-U0-G2
BUG Rating Type III				B2-U0-G2
Voltage	120 V			
ССТ	3,000 K			
Light Source	LED			
Housing	Die-Cast Aluminum			
Finish	Polyester Powder Coat			
Finish Color	Standard color is grey; however, other color options are available upon request		or options	
Estimated Cost	\$3,500 (includes pole, fixture and labour does not include secondary			







Residential Subdivision Local road with low pedestrian conflict

Estimated number of street lights required per KM

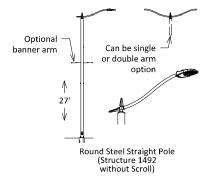
11m Local Road-20 lights

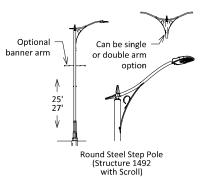
- » 100W replacement on 35' poles
- » one-sided lighting arrangement

16m Collector Road—20 lights

- » 150W replacement on 35' poles
- » one-sided lighting arrangement

This luminaire (Structure 1460) can be placed on the following poles:









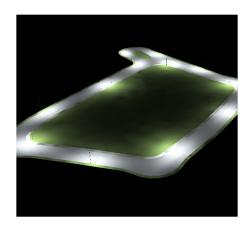
PENDANT

Fixture Structure Number 1475

Application — decorative street and roadway lighting

Wattage	70-100 W Replacement	100-150W Replacement	150-175W Replacement
Delivered Lumen Type III	6,509 Lux	8,102 Lux	9,402 Lux
BUG Rating	B1-U3-G1	B2-U0-G2	B2-U3-G2
Voltage	120 V		
ССТ	3000 K		
Light Source	LED		
Housing	Die-Cast Aluminum		
Finish	Polyester Powder Coat		
Finish Color	Standard color is black; however, other color options are available upon request		
Estimated Cost	\$7,900 (includes pole, fixture and labour does not include secondary conductor or any civil costs to install secondary)		





Residential Subdivision Local road with low pedestrian conflict

Estimated number of street lights required per KM

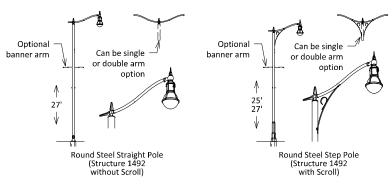
11m Local Road—19 lights

- » 100W replacement on 27' poles
- » staggered lighting arrangement

16m Collector Road—34 lights

- » 150W replacement on 27' poles
- » staggered lighting arrangement

This luminaire (Structure 1475) can be placed on the following poles:





For information regarding banner arms, receptacles, or festive lighting, please see page 9.

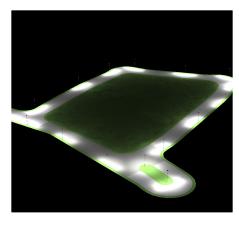
POST TOP

Fixture Structure Number 1482

Application — decorative street, pathway lighting

Wattage	70W Replacement	100W Replacement
Delivered Lumen Type II	3,168 Lux	4,248 Lux
Delivered Lumen Type V		4,943 Lux
BUG Rating Type II	B1-U3-G2	B1-U3-G2
BUG Rating Type V		B2-U3-G2
Voltage	120V	
CCT	3,000 K	
Light Source	LED	
Housing	Die-Cast Aluminum	
Finish	Polyester Powder Coat	
Fixture Colour	Standard color is grey; however, other color options are available upon request	
Estimated Cost	\$3,200 (includes pole, fixture and labour does not include secondary conductor or any civil costs to install secondary)	





With its old fashioned charm, the Post Top Luminaire is ideal for parks or pathway lighting.

Estimated number of street lights required per KM on decorative 20ft pole

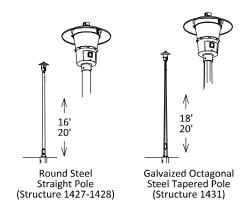
9m Local Road—30 lights

- » 70W replacement
- » one-sided lighting arrangement

11m Local Road—32 lights

- » 70W replacement
- » staggered lighting arrangement

This luminaire (Structure 1482) can be placed on the following poles:





For information regarding banner arms, receptacles, or festive lighting, please see page 9.

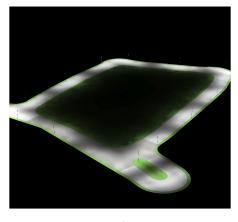
GALLEON

Fixture Structure Number 1471

Application — decorative street, pathway, and area lighting

Wattage	70W Replacement	100W Replacement	200W Replacement
BUG Rating	B1, U0, G1	B2, U0, G2	B3, U0, G3
Voltage		120V	
ССТ		3,000K	
Light Source	LED		
Housing	Die-Cast Aluminum		
Finish	Polyester Powder Coat		
Fixture Colour	Standard color is powder coated gloss black, if an alternate color is required, please specify at time of ordering.		
Estimated Cost	\$3,300 (includes pole, Luminaire and labour to install, does not include costs for secondary system or any material and civil costs to install system)		





Residential Subdivision Local road with low pedestrian conflict

Estimated number of streetlights required per KM on decorative 20ft pole

9m Local Road—22 lights

- » 70W replacement
- » one-sided lighting arrangement

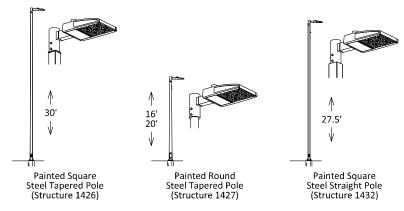
11m Local Road—23 lights

- » 70W replacement
- » staggered lighting arrangement

16m Collector Road—19 lights

- » 150W replacement on 30' poles
- » staggered lighting arrangement

This luminaire (Structure 1471) can be placed on the following poles:





For information regarding banner arms, receptacles, or festive lighting, please see page 9.

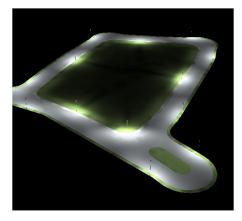
DOMUS

Fixture Structure Number 1488

Application — decorative street and pathway lighting

Wattage	70W Replacement	100W Replacement	150W Replacement
Delivered Lumen Type III	2,475 Lux	6,979 Lux	8,674 Lux
BUG Rating	B1-U0-G1	B2-U0-G2	B3-U1-G2
Voltage		120 V	
ССТ	3,000 K		
Light Source	LED		
Housing	Die-Cast Aluminum		
Finish	Polyester Powder Coat		
Finish Colour	Standard color is black; however, other color options are available upon request		
Estimated Cost	\$5,400 (includes pole, fixture and labour does not include secondary conductor or any civil costs to install secondary)		





Residential Subdivision
Local road with low pedestrian conflict

Estimated number of streetlights required per KM on decorative 20ft pole

9m Local Road—25 lights

- » 70W replacement
- » one-sided lighting arrangement

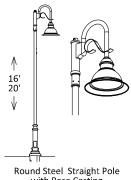
11m Local Road-23 lights

- » 70W replacement
- » staggered lighting arrangement

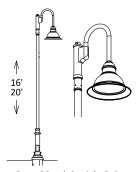
11m Collector Road—45 lights

- » 100W replacement
- » staggered lighting arrangement

This luminaire (Structure 1488) can be placed on the following poles:



Round Steel Straight Pole with Base Casting (Structure 1433 with Scroll)



Round Steel Straight Pole with Base Casting (Structure 1433 without Scroll)



For information regarding banner arms, receptacles, or festive lighting, please see page 9.

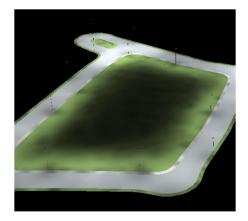
TRADITIONAIRE

Fixture Structure Number 1474

Application — decorative roadway and pathway lighting

Wattage	70 W Replacement	100 W Replacement	150 W Replacement
Delivered Lumen Type III	2,462 Lux	4,924 Lux	7,386 Lux
BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2
Voltage	120 V		
ССТ	3,000 K		
Light Source	LED		
Housing	Die-Cast Aluminum		
Finish	Polyester Powder Coat		
Finish Color	Standard color is black; however, other color options are available upon request		
Estimated Cost	\$5,700 (includes pole, fixture and labour does not include secondary conductor or any civil costs to install secondary)		





Residential Subdivision Local road with low pedestrian conflict

Estimated number of street lights required per KM

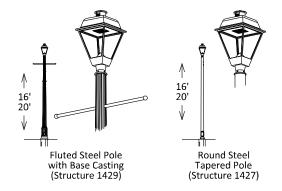
11m Local Road—28 lights

- » 100W replacement on 30' poles
- » one-sided lighting arrangement

16m Collector Road—37 lights

- » 150W replacement on 30' poles
- » staggered lighting arrangement

This luminaire (Structure 1474) can be placed on the following poles:





For information regarding banner arms, receptacles, or festive lighting, please see page 9.

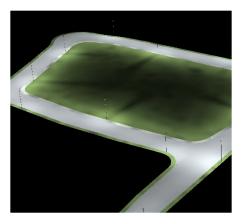
CONTEMPORARY COACH

Fixture Structure Number 1473

Application — decorative street and pathway lighting

Wattage	70W Replacement	100W Replacement	150W Replacement
Delivered Lumen Type III	2,886 Lux	4,091 Lux	6,034 Lux
BUG Rating	B1-U2-G1	B1-U3-G1	B2-U3-G2
Voltage	120 V		
CCT	3,000 K		
Light Source	LED		
Housing	Die-Cast Aluminum		
Finish	Polyester Powder Coat		
Finish Colour	Standard color is black; however, other color options are available upon request		
Estimated Cost	\$6,800 (includes pole, fixture and labour does not include secondary conductor or any civil costs to install secondary)		





Estimated number of street lights required per KM

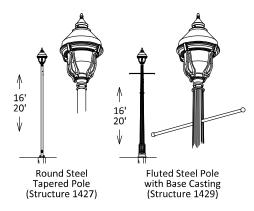
11m Local Road—24 lights

- » 100W replacement on 30′ poles
- » one-sided lighting arrangement

16m Collector Road—35 lights

- » 150W replacement on 30' poles
- » one-sided lighting arrangement

This luminaire (Structure 1473) can be placed on the following poles:





For information regarding banner arms, receptacles, or festive lighting, please see page 9.

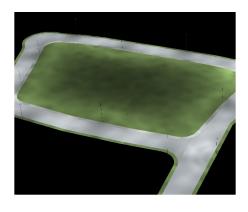
ACORN

Fixture Structure Number 1472

Application — decorative street and pathway lighting

Wattage	100 W Replacement	150 W Replacement
Delivered Lumen Type III	4,990 Lux	7,076 Lux
BUG Rating	B2,U4,G4	B2,U4,G4
Voltage	120 V	
ССТ	3,000 K	
Light Source	LED	
Housing	Die-Cast Aluminum	
Finish	Polyester Powder Coat	
Finish Color	Standard color is black; however, other color options are available upon request	
Estimated Cost	\$6,200 (includes pole, fixture and labour does not include secondary conductor or any civil costs to install secondary)	





Residential Subdivision Local road with low pedestrian conflict

Estimated number of street lights required per KM

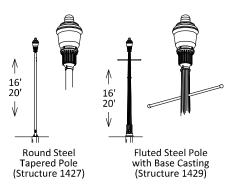
11m Local Road—38 lights

- » 100W replacement on 30' poles
- » one-sided lighting arrangement

16m Collector Road—43 lights

- » 150W replacement on 30' poles
- » one-sided lighting arrangement

This luminaire (Structure 1472) can be placed on the following poles:





For information regarding banner arms, receptacles, or festive lighting, please see page 9.

FLOOD LIGHT

Fixture Structure Number 1478

Application — flood lighting

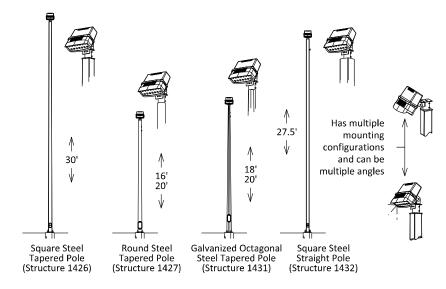
Wattage	100 W Replacement	
Delivered Lumen	9,297 Lux	
Voltage	120 V	
ССТ	3.000 K	
Light Source	LED	
Housing	Die-Cast Aluminum	
Finish	Polyester Powder Coat	
Finish Color	Standard color is Carbon Bronze	
Estimated Cost	\$3,700 (includes pole, fixture and labour does not include secondary conductor or any civil costs to install secondary)	



The Flood Light is ideal for many outdoor area lighting situations, including parking lots, construction and storage sites, rail yards, light industrial locations and outdoor ice rinks.

This fixture is not equipped with a twist-lock photo control therefore an externally mounted photo control must be supplied and installed by the customer.

This luminaire (Structure 1478) can be placed on the following poles:



YARD LIGHT

Fixture Structure Number 1446

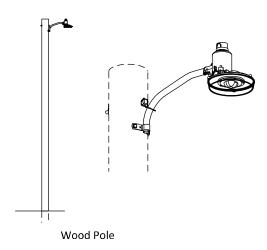
Application — area lighting

Wattage	100W Replacement	
Delivered Lumen, Type V	3,867 Lux	
BUG Rating	B2-U0-G1	
Voltage	120 V	
ССТ	4000 K	
Light Source	LED	
Housing	Die-Cast Aluminum	
Finish	Raw finish	
Finish Colour	Unpainted	
Estimated Cost	\$3,500 (includes pole, fixture and labour does not include secondary conductor or any civil costs to install secondary)	



The Yard Light is ideal for security lighting.

This luminaire (Structure 1446) can be placed on the following pole type:





QUESTIONS?

We're here for you, 24/7, for power outages and emergencies. Call us at **310-WIRE** (9473) or toll-free at: **1-866-717-3113**.

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