The Municipal Corporation of the Town of Fort Erie

By-law No. 37-2016

Being a By-law to Adopt a Street Lighting Policy for the Town of Fort Erie and to Repeal By-law No. 141-04

Whereas By-law No. 141-04 was passed by the Municipal Council of the Town of Fort Erie on July 19, 2004, to establish a Street Lighting Policy for the Town of Fort Erie; and

Whereas Report No. IS-07-2016 was considered at the Council-in-Committee Meeting held on March 21, 2016, and subsequently approved by Council, to adopt a new Street Lighting Policy; and

Whereas it is deemed desirable to adopt a new Street Lighting Policy for the Town of Fort Erie;

Now therefore the Municipal Council of The Corporation of theTown of Fort Erie enacts as follows:

1. **That** the Street Lighting Policy attached as Schedule "A" and forming part of this by-law, is authorized, approved, and adopted.

2. **That** By-law No. 141-04 is repealed.

3. **That** the Clerk of the Town is authorized to effect any minor modifications, corrections or omissions, solely of an administrative, numerical, grammatical, semantical or descriptive nature to this by-law or its schedules after the passage of this by-law.

Read a first, second and third time and finally passed this 29th day of March, 2016.

_____
Mayor

_____
Clerk

I, Laura Bubanko, the Clerk, of The Corporation of the Town of Fort Erie certifies the foregoing to be a true copy of By-law No. 37-2016 of the said Town. Given under my hand and the seal of the said Corporation, this day of , 20

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THE CORPORATION OF THE TOWN OF FORT ERIE
STREET LIGHTING POLICY

Section 1. POLICY STATEMENT

This policy is to be used by Town Staff, the public, lighting designers and developers to govern the design and implementation of street lighting projects, and maintenance of the street lighting system to provide and maintain energy-efficient lights sufficient to meet the demands of traffic and pedestrian safety on Fort Erie streets.

Section 2. STREET LIGHTING EXTENSIONS AND IMPROVEMENTS

2.1 Within Urban Areas

Street lighting extensions and improvements within the urban area boundaries as described in the Town's Official Plan will be considered under the following conditions:

2.1.1 Street lighting must be located within a public traveled road allowance.

2.1.2 Subject to funding availability, street lighting will be provided at all street intersections, including street intersections with established public walkways and recreation trails, within the Town's Urban Areas.

Note: Illumination of intersections as per Table 2A or Table 2B, Appendix 2

2.1.3 Existing street lighting system additions, extensions and upgrading, where practical, will be considered on the basis of traffic volumes (both vehicular and pedestrian), public safety, public use and subject to budget restrictions. All improvements/extensions will also be limited to utilizing the existing poles and standard cobra-head fixtures.

2.1.4 Any additional area improvements of the street lighting fixture/system will be subject to a written request. Individual or area improvements will be subject to budget restrictions.

2.1.5 System extensions and construction for new developments shall be at the sole cost and expense of the subdivider/developer in accordance with terms set out in the subdivision/development agreement.

2.1.6 Developers (Applicant/Owner) of new lots created through the Consent process shall pay all associated costs, to the Town, for new streetlight installations, where the requirement for such an installation has been identified by the Director, Infrastructure Services or designate.

Note: The requirement for new or additional streetlights on existing streets as identified in this section, approximately equates to providing a streetlight on every second utility pole.

2.2 **Outside Urban Areas**

2.2.1 Street lighting in areas outside the Urban Area boundaries as defined in the Town's Official Plan will generally be limited to intersections only.

2.2.2 Street lighting must be located within a public traveled road allowance.

2.2.3 Street lighting extensions and improvements outside the urban area boundaries as described in the Town's Official Plan may be considered under the following conditions:

a) Change in street classification, or;

b) A development adjacent to a roadway or a street, or;

c) Areas with high night to day collision ratio, or;

d) Complex horizontal/vertical street geometry.

Section 3. <u>FINANCIAL</u>

All improvements and extensions to the existing street lighting system within the urban area will be financed as follows:

3.1 All intersection lighting of public traveled road allowances will be installed on a priority basis subject to availability of funding.

3.2 The maintenance/conversion or replacement of existing streetlights will be financed through the Annual Street Lighting Budget.

3.3 Costs for streetlights identified in Section 2.1.6 (Consents) will be based upon quotation from the Town's streetlight contractor.

3.4 System additions, extensions and upgrades on existing streets to meet the "every second pole criteria" shall be financed in the following manner:

- Requisitioning Property Owner(s). 75%
- Corporation 25%

3.5 Requested system improvements, extensions or additions on existing streets that will exceed Section 3.4 minimum streetlight spacing requirements shall be funded entirely (100%) by the Requisitioning Property Owner(s).

3.6 Payment for requested and approved installation(s) must be received by the Town prior to commencement of the installation(s).

3.7 Should the Traffic Coordinating Committee identify a safety concern that may be addressed by the installation of a streetlight(s), the Committee may waive or alter the above-noted funding mechanism, on a case-by-case basis.

3.8 Future upgrade to adaptive controls will be subject to funding availability.

Section 4. RESPONSIBILITY

4.1 Improvements and expansions of the street lighting system that are not associated with an approved development or a municipal capital project will be subject to review and recommendation by the Traffic Coordinating Committee.

4.2 As a best practice, for Town road reconstruction projects within the Town's urban areas, the existing street lighting within the project area will be reviewed. Substandard street lighting within project limits should be brought up to current standards (ANSI/IES RP-8-14), subject to funding availability.

4.3 Development related street lighting system improvements and expansions will be addressed through the Town's development process.

4.4 Maintenance of the Town's street light system will be administered by the Director, Infrastructure Services or delegate.

Section 5. STANDARDS ORGANIZATIONS

Illuminating Engineering Society of North America (IES) – The IES is a not-for-profit organization that produces a large number of recommended practice and design guides used in the North American lighting industry. The organization also provides education programs and certifications. The IES has committees, made up of engineers, manufacturers, Government staff, and others who commonly practice within the lighting industry, who author their documents. The IES is considered the foremost leader and most respected organization in regards to lighting in North America and much of their research and recommendations form the basis for many lighting standards.

Transportation Association of Canada (TAC) – TAC is a national association with a mission to promote the provision of safe, secure, efficient, effective, and environmentally and financially sustainable transportation services in support of Canada's social and economic goals. The association is a neutral forum for gathering or exchanging ideas, information and knowledge on technical guidelines and best practices.

International Dark Sky Association (IDA) – IDA is a not-for-profit organization that is dedicated to preserving the natural nighttime environment by educating policymakers and the public about night sky conservation and promoting eco-friendly outdoor lighting. The IDA has initiatives on Light Trespass.

Section 6. POLICY SCOPE

Street lighting shall be designed and applied as described by this policy. This policy is not intended to be completely comprehensive and must be used in association with the Transportation Association of Canada [TAC] – Guide for the Design of Roadway Lighting in conjunction with the ANSI/IES RP-8-14 American National Standard Practice for Roadway Lighting, and subsequent updates to these documents from time to time.

APPENDIX LIST FOR STREET LIGHTING POLICY

Appendix 1	Definitions, Street Classifications, Area Classifications.
Appendix 2	Recommended Design Criteria for Streets and Intersections. • Associated Documents • Table 1: Lighting Design Criteria for Streets • Table 2A: Illumination for Intersections on Continuously Lighted Streets • Table 2B: Illumination for Isolated Intersections
Appendix 3	Approved Town of Fort Erie Cobra Head Streetlights.
Appendix 4	Approved Town of Fort Erie Decorative Streetlights and Poles.
Appendix 5	Streetlight Maintenance Plan

APPENDIX "1"

Definitions
The following is a partial list of more commonly used definitions associated with this street lighting policy:

Lighting Terminology

 Lux (lx) – A unit of measurement for illuminance in the International System of Units (SI). It is defined in terms of lumens per meter squared (lm/m 2). The imperial equivalent of lux is the footcandle (fc).

 Intensity (Candlepower) – Intensity (Candlepower) refers to the concentration of light in a particular direction, while lumens represent a total quantity of light emitted. Intensity is expressed in candelas (cd). The concentration of light will normally change for each direction of light emission.

 Illuminance – When light is incident upon a surface it will create "illuminance" on that surface. Illuminance is a measure of the light landing on a defined area. The more lumens on a given surface area, the higher the level of illuminance will be. The human eye does not see illuminance or the light incident on a surface; it sees only the proportion of the light reflected from the object back into the eye. Illuminance is measured in lux.

 Luminance – Luminance is the concentration of light (intensity) reflected towards the eyes per unit area of surface. Luminance represents the amount of illumination reflected into the eyes of the viewer and is dependant upon the reflectivity of the object that the light is reflecting from. Luminance is measured in candelas per square meter (cd/m2).

 Uniformity – Uniformity is the evenness of the light over a given area. Even lighting throughout an area would have a uniformity ratio of 1:1. A high degree of uniformity of roadway lighting has generally been accepted as desirable. As lighting calculations consist of a series of grid points with calculated luminance or illuminance levels, uniformity is expressed as the ratio of the average-to-minimum levels and/or the maximum-to-minimum levels.

 Veiling Luminance – Veiling luminance is a numeric evaluation of un-desirable (or disability) glare. Disability glare can alter the apparent brightness of an object and the background against which the object is viewed, resulting in reduced visibility. Increasing luminance levels will counteract this effect by reducing the eye's contract sensitivity. As glare limits visibility, veiling luminance is an important, however often omitted, consideration. Veiling luminance must be considered as a design criterion along with illuminance or luminance levels and uniformity. Veiling luminance is calculated in terms of a ratio of the maximum veiling luminance experienced by the observer to the average pavement luminance and is expressed as a ratio value.

 Colour Rendering Index (CRI) – Colour rendering index, is a measurement of a light source's accuracy in rendering different colours when compared to a reference light source with the same correlated colour temperature. Achieving a high CRI (70 or more) assists in visibility and many other factors associated with what would be deemed as a 'well lit environment'.

 Correlated Colour Temperature – Colour temperature is a description of the warmth or coolness of a light source. By convention, yellow-red colours (like the flames of a fire) are considered warm, and blue-green colours (like light from an overcast sky) are considered cool. Confusingly, higher Kelvin temperatures (3600-5500K) are what we consider cool and lower temperatures (2700-3000K) are considered warm.

 Roadway Lighting - Roadway lighting is provided for roads that are not intended to have significant (if any) pedestrian or cyclist activity. These roads are generally limited access roadways, such as freeways and express ways. The luminance method is recommended for design of roadway lighting.

 Street Lighting – Street lighting is provided for roads where pedestrians and cyclists are present. These roads can range from major to local streets and can require different lighting levels based on the expected pedestrian volumes. The design methodology employs luminance as the design criteria for the lighting system. The recommended values are in Table 3. Horizontal and vertical illuminances are used for pedestrian areas within the road allowance.
(see Tables 1, 2A, and 2B).

 Road Reconstruction – Road Reconstruction is a project that includes the full depth replacement or full depth rehabilitation of the granular road base along the project area. (A sewer or watermain project with trench reinstatement and asphalt overlay is not considered road reconstruction in the context of applying this policy).

 Requisitioning Property Owner - Requisitioning Property Owner is a person requesting an improvement to the street light system and who owns property adjacent to the street where the improvement is requested.

 Urban Area Boundaries - Urban Area Boundaries are boundaries as defined/illustrated in the Town of Fort Erie Official Plan.

Miscellaneous Right-of-way Definitions

 Sidewalk - The portion of the road allowance intended for pedestrian use, normally adjacent to the travelled portion of the road and separated by a curb. Sidewalks commonly consist of a linear paved slab-ongrade concrete construction.

 Walkways – Walkways serve the same purpose as sidewalks but are not normally directly adjacent to a road. In the context of sidewalk and street lighting, walkways interconnect one street to another street.

 Roadway - A road that is not intended to have significant (if any) pedestrian or cyclist activity. These roads are generally limited access roadways, such as freeways and expressways.

 Street – A road where pedestrians and cyclists are present. These roads can range from major to local streets and can require different lighting levels based on the expected pedestrian volumes.

Street Classifications for Street Lighting

Major (Arterial): High volume streets serving as the principal link for traffic flow, e.g., Ridgeway Road, Concession Road, Bertie Street.

Collector: Streets servicing traffic between major and local streets, e.g., Burleigh Road, Crescent Road, Ridge Road South.

Local: Streets used for direct access to residential, commercial and industrial areas.

Alley: A narrow thoroughfare through the middle of a block that provides access to the rear of lots or buildings.

Lane: A narrow public way within a block, generally used for vehicular access to the rear of properties (maximum 20 foot road allowance), e.g., Jarvis Street north and south alleys.

Note: Street classification is for determining appropriate light levels only and is not directly comparable to other road classification methods such as TAC, OGRA, Minimum Maintenance Standards etc.

Area Classifications

Commercial: Areas in the municipality, with business development, in which there is a high volume of traffic, heavy demand for parking and a large number of pedestrians during business hours. This area can be in, as well as outside of, the central part of Town, e.g., Jarvis Street, Ridge Road.

Industrial: Areas in the municipality, with industrial or manufacturing development, in which there is a low to moderate volume of traffic, limited demand for parking and few pedestrians. This area is typically not close to residential or commercial areas. e.g., Commerce Parkway, Eagle Street, Industrial Drive.

Mixed: Areas in the municipality outside the downtown area but generally within the zone of influence of a business or medical/social/recreational activities, or industrial development. Generally, characterized by moderately heavy nighttime pedestrian traffic associated with medical/social/recreational activities and lower parking turnover than commercial areas, e.g., schools, hospitals, libraries, recreational centres. e.g., Ridge Road, Bertie Street.

Residential: Areas of residential development, or a mixture of residential and commercial establishments. Characterized by few pedestrians and a low parking demand or turnover at night, e.g., single family dwellings, small apartments.

Rural: All areas outside the Urban Area boundaries as defined in the Town of Fort Erie Official Plan.

APPENDIX 2

RECOMMENDED DESIGN CRITERIA FOR STREETS AND INTERSECTIONS

Associated Documents
The following is a list of resource material to be referenced by the designer.

- Transportation Association of Canada – Guide for the Design of Roadway Lighting;
- Transportation Association of Canada – Illumination of Isolated Rural Intersections;
- ANSI/IES RP-8-14 – American National Standard Practice for Roadway Lighting;
- IESNA DG-19-08 – Design Guide for Roundabout Lighting;

Table 1: Lighting Design Criteria for Streets

Street Classification	Pedestrian Area Classification	Average. Luminance L_{avg} (cd/m^2)	Average. Uniformity Ratio L_{avg}/L_{min}	Maximum Uniformity Ratio L_{max}/L_{min}	Maximum Veiling Luminance Ratio LV_{max}/L_{avg}
Major	HIGH	1.2	3.0	5.0	0.3
	MEDIUM	0.9	3.0	5.0	0.3
	LOW	0.6	3.5	6.0	0.3
Collector	HIGH	0.8	3.0	5.0	0.4
	MEDIUM	0.6	3.5	6.0	0.4
	LOW	0.4	4.0	8.0	0.4
Local	HIGH	0.6	6.0	10.0	0.4
	MEDIUM	0.5	6.0	10.0	0.4
	LOW	0.3	6.0	10.0	0.4

L_{avg} = minimum maintained average pavement luminance
L_{min} = minimum pavement luminance
LV_{max} = maximum veiling luminance

Table 2

Table 2A: Illumination for Intersections on Continuously Lighted Streets

Functional Classification	Average Maintained Illumination at Pavement by Pedestrian Area Classification in Lux/fc			Uniformity Ratio E_{avg}/E_{min}
	High	Medium	Low	
Major/Major	34.0/3.4	26.0/2.6	18.0/1.8	3.0
Major/Collector	29.0/2.9	22.0/2.2	15.0/1.5	3.0
Major/Local	26.0/2.6	20.0/2.0	13.0/1.3	3.0
Collector/Collector	24.0/2.4	18.0/1.8	12.0/1.2	4.0
Coolector/Local	21.0/2.1	16.0/1.6	10.0/1.0	4.0
Local/Local	18.0/1.8	14.0/1.4	8.0/0.8	6.0

Table 2B: Illumination for Isolated Intersections

Road Classification	Pavement Classification			Uniformity Ratio E_{avg}/E_{min}
	R1 Lux/fc	R2 & R3 Lux/fc	R4 Lux/fc	
MAJOR	6.0/0.6	**9.0/0.9**	8.0/0.8	3.0
COLLECTOR	4.0/0.4	**6.0/0.6**	5.0/0.5	4.0
LOCAL	3.0/0.3	**4.0/0.4**	4.0/0.4	6.0

APPENDIX 3

Figure 1 – Typical Standard Cobra Head Light Fixtures

<table>
<tr><th>Pole</th><th>Mount</th><th>Luminaire</th></tr>
<tr><td>Round, Concrete, Class A, CSA Certified, +/-9.0m Stresscrete or approved equivalent</td><td>Side Mounted Tapered Elliptical Aluminum Arm Stresscrete #126 or approved equivalent

OPSD 2420.01, 2250.01</td><td>Gray Cobra Head
Local Roads – 25 W, 41 W Type I, IV
Collector Roads – 41 W, 70 W Type I, IV
Major Roads – 91 W, 135 W Type I, IV, II/III

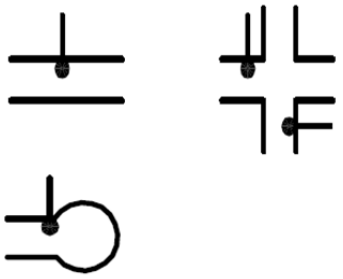
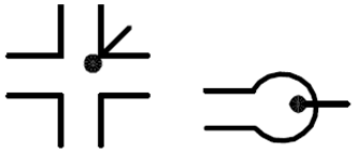
 

Light sizes listed above are applicable to streets inside and outside the Town 's Urban Boundaries.</td></tr>
<tr><td></td><td></td><td>(Make, Model, Watts, Distribution Pattern)
GE ERL1-0-03-A1-40-A-GRAY-RIL 25, Type I
GE ERL1-0-03-D1-40-A-GRAY-RIL 25, Type IV
GE ERL1-0-03-A1-40-A-BLCK-RIL 25, Type I

GE ERL1-0-05-A1-40-A-GRAY-RIL 41, Type I
GE ERL1-0-05-D1-40-A-GRAY-RIL 41 , Type IV

GE ERL1-0-D3-A1-40-A-GRAY-RIL 70, Type I
GE ERL1-0-D3-D1-40-A-GRAY-RIL 70, Type IV

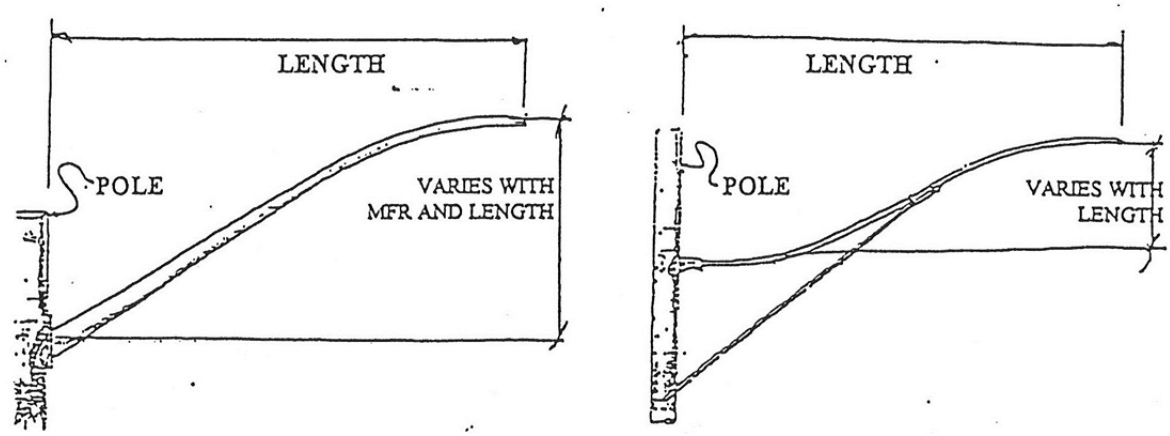
GE ERL1-0-E3-A1-40-A-GRAY-RIL 91, Type I
GE ERL1-0-E3-D1-40-A-GRAY-RIL 91, Type IV

GE ERS1-0-H2-E1-5-40-A-GRAY-DLIR 135, Type II/III
GE ERS1-0-H2-D1-5-40-A-GRAY-DLIR 135, Type IV</td></tr>
<tr><td></td><td></td><td> 
Type I</td><td> 
Type IV</td></tr>
</table>

NOTES:

1) Luminaire spacing is typically subject to existing pole placement. Typically, spacing based on a streetlight on every 2nd pole, including new lots created by Consent.
2) Mounting height is subject to existing plant on poles.
3) This is a generalized guideline and actual design may vary considerably due to site specifics.

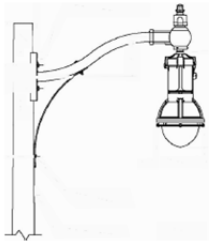
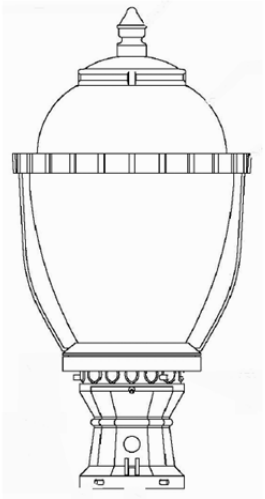
Figure 4 – Street Light Arms

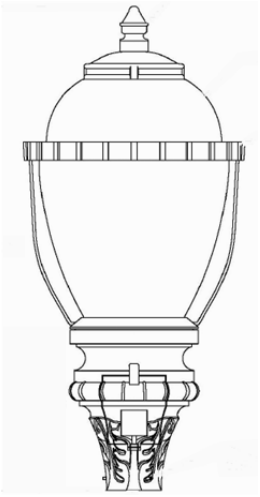
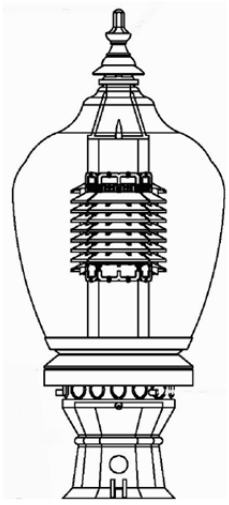


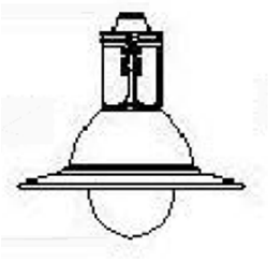
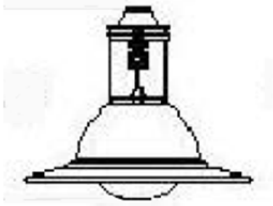
TAPERED ELLIPTICAL BRACKET 1.2 m – 4.3m (4' To 14')	DOUBLE BEND UPSWEEP WITH DOUBLE UNDER BRACE 4.3m TO 4.9 (14' To 16') Requires approval from Director, Infrastructure Services

APPENDIX 4

Figure 2 – Typical Decorative Light Fixtures

Area/Street	Luminaire	
North Shore Dr	KING K704-P4SH-III-30(SSL)-7030-120:277V S/F KPL20-PR7-#4 30W	 LED PENDANT
***Fort Erie East** Veteran's Way	KING K135R- P4AR-III-40(SSL)-7030-120:277-K14-PR7-SST C/W DONUT 40W KING K135R-P4AR-III-60(SSL)-7030-120:277-K14-PR7-SST C/W DONUT 60W	
***Fort Erie East** Queen St River Walk Lakeshore Rd Bardol Ave Celebration Dr Buttonwood Dr Lakebreeze Crt Helena St (South End Parking Lot)	KING K135R-P4AR-III-40(SSL)-7030-120:277-6/K9-PR7-SST 40W	 LED POST TOP

***Fort Erie East** Garrison Rd - Arm Mount	KING K135R-P4AR-III-40(SSL)-7030-120:277-K14-PR7-SST 40W	LED ARM MOUNT 
***Fort Erie East** Garrison Road King St - Post Mount	KING K135-P4AR-III-60(SSL)-7030-120:277-K14-PR7-SST 60W	LED POST TOP
***North Service Road** Travel Centre Court North Service Road	KING K135R-P4AR-III-40(SSL)-7030-120:277-K14-PR7-SST 40W	LED POST TOP
***Fort Erie North, Crystal Beach** Jarvis St, west of Central Derby Rd Erie Rd Jarvis St, East of Central Ave - Doubles Jarvis St, East of Central Ave - Singles	KING K199R-B3AR-IV-40(SSL)-1036-120:277-K6/K9-PR7 40W KING K199R-B3AE-IV-40(SSL)-1036-120:277-K14-PR7 40W KING K199R-B3AR-IV-60(SSL)-1036-120:277-K6/K9-PR7 60W	 LED POST TOP

Nautical / Marine Look **Waterfront Commercial**	King K707 – Shallow Lense	
Waterfront Residential	King K707 – Sag or Flat Lense (Detailed product code not available at time of policy draft)	

***** Indicates the location of existing decorative street lights in the Town of Fort Erie.

Pictures are for illustrative purposes only, see Infrastructures Services Decorative Street Light Binder for specific information on decorative light lense,capitals, finials, arms and other mounting specifics that are unique to certain locations or types of poles.

Use of approved decorative streetlights (poles and luminaries) may be considered with prior approval from the Director, Infrastructure Services. For decorative streetlights, the Developer shall supply a spare pole and two luminaries to the Town's Infrastructure Services Operation Centre for inventory spare stock for every twenty five lights proposed.

Use of decorative streetlights is only permitted within the Town's Urban Boundaries.

Use of decorative streetlights within a residential neighbourhood is not recommended due to light trespass issues. Decorative streetlights may be considered if shields are available to effectively reduce light trespass onto residences or fixtures from the above list are used with lenses that are Dark Sky compliant.

APPENDIX 5

Streetlight Maintenance Plan

5.1 Inspection

Inspect all Town streetlights twice per year, to confirm lights are working.

One inspection in the fall, completed by October 31.

One inspection in the spring, completed by April 30.

5.2 Repair Timelines – Town Cobrahead Streetlights

The following timelines are effective after the Town becomes aware of a Town cobrahead streetlight not working.

a) Investigate and fix within 28 days, any issue directly attributed to a light fixture.
b) Investigate and initiate repair within 28 days, any issue related to a pole or streetlight electrical distribution system.

5.3 Repair Timelines – Town Decorative Streetlights

The following timelines are effective after the Town becomes aware of a Town decorative streetlight not working

a) Investigate and fix within 28 days, any issue directly attributed to a light fixture.
b) Investigate and initiate repair within 28 days, any issue related to a pole or streetlight electrical distribution.

5.4 Notes:

Timelines for repairs involving poles or electrical distribution will be subject to availability of poles or other specialty parts and/or time for coordination of work for underground servicing or by the local electrical utility.