

SECTION V_02
STANDARD FORMS

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General As-Built and Construction Certification

Project Name: _____

Project Number: _____

Note: This certification statement must be executed by a registered Commonwealth of Virginia Professional Engineer with experience in the design and construction of facilities similar in nature and scope to that certified to in this certification.

CERTIFICATION STATEMENT

Based upon (1) my assessment of the constructed facility, (2) my review of the as-built survey data, I hereby certify that the elements of the constructed facility are in compliance with the requirements of the infrastructure as proscribed in the approved construction drawings, approved design documents, and any approved modifications, except as noted in red on the as-built drawings. Furthermore, I certify that the red-noted exceptions do not adversely affect the required performance or public safety aspect of the infrastructure.

The following supporting documents are included in hard copy and digital formats:

(Note: all digital documents must be in PDF format unless indicated otherwise below)

1. An executed "General Certification."
2. One (1) copy of the approved construction drawings
3. One (1) copy of the as-built drawings.

Name: _____ Date: _____

License Number: _____



CONTRACT TO INSTALL STREET LIGHTING

THIS CONTRACT, made this _____ day of _____, 20_____, by and between the CITY OF RICHMOND, a municipal corporation of the Commonwealth of Virginia, hereinafter referred to as "City", and _____, hereinafter referred to as "Owner":

WITNESSETH:

That for and in consideration of the mutual benefits resulting from the undertakings of the parties hereto set forth in this contract, the City and Owner covenant and agree each with the other as follows:

1. That the Owner, will at his expense, furnish all material and install the street lights to serve: _____.
2. Easements will be granted for any portion not in dedicated rights of way.
3. This shall be done in compliance with the City of Richmond, Department of Public Utilities "Street Lighting and Electric Distribution System Standard Specifications and Details". All materials shall meet the current requirements of the City of Richmond. The work shall be done in accordance with plan approved by the Department of Public Utilities.
4. The City will inspect the work at its cost. Upon satisfactory completion and acceptance by the City, the street lighting and appurtenances shall become the property of the City and shall be maintained and operated by the City. Prior to acceptance the Owner shall furnish the City a statement of the cost of construction of the said facilities in accordance with the attached form.
5. That the Owner will not assign this contract or any of the rights, benefits, privileges, duties or obligations enured for/to, received, imposed or assumed under this contract.

IN WITNESS WHEREOF, The City has caused its name to be subscribed hereto by its Director of Public Utilities, and the Owner has hereto affixed his signature.

CITY OF RICHMOND

PROPERTY OWNER

BY: _____
Director of Public Utilities

BY: _____

APPROVED AS TO FORM:

TITLE: _____

BY: _____
City Attorney

CONTRACTOR RELEASE OF ASSETS – REQUIREMENTS

The following requirements are intended to provide the Maintenance Organization with all of the necessary documents, information, drawings, O&M Manuals, warranty information, spare parts and any special tools required to perform maintenance on an asset turned over from a contractor to the Department of Public Utilities. Here are the requirements that must be included but not limited to this list. Any additional information that is available should be included:

A. Shop Drawings:

1. Submit a complete set of shop drawings for each piece of equipment. Shop drawings shall include all electrical and mechanical requirements.

B. O&M Manuals:

1. Furnish to the Department one hard copy and one digital copy of complete operating and maintenance instructions for each piece of equipment released. The data shall consist of any catalogs, brochures, bulletins, charts, schedules, material safety data sheets, equipment numbers, nameplate data, wiring diagrams, and assembly drawings which shall describe location, operation, maintenance, operating weight, vendor lists, and other necessary information for the Department to establish a complete maintenance program.
2. Furnish detailed instructions for start-up, normal operation, shutdown procedures, and control techniques; and a guide to troubleshooting the system including manufacturer's written instructions.

C. Special Tools:

1. Supply one complete set of special tools necessary for the assembly, adjustment, and dismantling of the equipment. All tools shall be of best quality and furnished in labeled toolboxes of suitable design.

D. Lubricants:

1. Furnish specifications for the manufacturer recommended lubricants. This should include any lubrication charts applicable.

E. Spare Parts Listing:

1. Furnish a complete spare parts listing as recommended by the manufacturer, especially any parts subject to wear or frequent replacement.

F. Asset Information:

1. Provide a complete description of the asset. This is necessary to add the asset to the City of Richmond-DPU asset database. The data must be provided in an Excel spreadsheet format. The required data is:
 - a. Asset Description
 - b. Vendor Name

- c. Vendor Contact Person
- d. Vendor Phone
- e. Manufacturer
- f. Model Number
- g. Serial or Part Number
- h. Date Purchased
- i. Date Installed
- j. Estimated Asset Life
- k. Warranty Expiration Date

G. Spare Parts:

- 1. Clearly identify all spare parts released with the asset. All spare parts shall be properly labeled and identified with the name and number of the equipment to which they belong. The minimum required information is outlined in the attached spreadsheet (Attachment II). This is available as an electronic spreadsheet for your use as required.

H. Warranty Information:

- 1. Furnish all warranty information pertaining to the released piece of equipment. Including costs for extended warranties.

I. Service Provider(s):

- 1. Furnish a list of all authorized service providers for the piece of released equipment. This would include authorized providers of spare parts for the piece of equipment.

J. Documentation Format:

- 1. Unless otherwise expressed or implied, furnish all information in Digital Format. The City prefers PDF format for documents other than CADD drawings, which should be “.dwg” format.

K. Other Information:

- 1. Any recommended maintenance products

Pole Attachment Agreement

This Pole Attachment Agreement (hereinafter “Agreement”) is entered into this _____ day of _____, 20____, by and between _____ (hereinafter “Licensee”), and the City of Richmond (hereinafter “the City”). The purpose of this Agreement is to memorialize the understanding of the parties pursuant to the attachment of the Licensee’s Facilities to the City’s Utility Poles.

WHEREAS, Licensee desires to attach and maintain communication cables, fiber, attachments, equipment and other related facilities on the City’s Poles; and

WHEREAS, Licensee acknowledges that the City’s Poles are used, and will continue to be used, primarily for the City’s public service obligations (street lighting); and

WHEREAS, the City is willing to permit, to the extent it may lawfully do so, the placement of such communications cables, fiber, attachments, equipment and other related facilities on the City’s Poles.

NOW, THEREFORE, in consideration of the terms and conditions herein contained, the parties do hereby mutually agree as follows:

I. GENERAL TERMS AND CONDITIONS

The execution of this Agreement and the issuance of a license to Licensee by the City bind the parties of this Agreement to the terms set forth herein and create a contractual relationship between the parties. No such relationship exists prior to execution of the Agreement and the issuance of the license.

II. DEFINITIONS

1. Allocated Costs – Labor, material and equipment costs fully loaded with labor and material overheads as defined by DPU’s financial system. Costs will be tracked by DPU’s existing work order system.
2. Anchor(s) means an assembly secured to a fixed object to support a Guy.
3. Applicable Laws means the Telecommunications Act of 1996, as may be amended, and all related orders and regulations of the Federal Communications Commission (FCC), the laws and regulations of the Commonwealth of Virginia, and all local and municipal ordinances, restrictions, codes and other requirements.
4. Appurtenance(s) mean any article of equipment attached to a point on a Pole.
5. Attaching Entity means a communication company or other entity that provides information or telecommunications services that attaches to a Pole owned or controlled by the City.

6. Attachment(s) means the cables and/or associated equipment, hardware, antennas, communication devices and related facilities, which are in any manner supported by the City's Poles for the purposes set forth in this Agreement, whether referred to singly or collectively. The sag of Licensee's Facilities will be included in determining the pole space utilized. Such Attachments do not include items used for signage, banners or security cameras.
7. City Facilities means the Department of Public Utilities (DPU) Utility Poles, Anchors, Guys and/or wires owned or controlled by the City, whether referred to singly or collectively.
8. Guy(s) means a metal cable attached to a Utility Pole and/or Anchor for the purpose of reducing stress.
9. Joint User(s) means any utility (utilities) that has (have) the right to use any of the Utility Poles by virtue of joint usership or a pole attachment agreement.
10. Licensee's Facilities means the Attachments, including but not limited to, the communications cables, fiber and all associated equipment and hardware, whether referred to singly or collectively, to be installed for and operated by Licensee. Examples of Licensee's Facilities, as typical and acceptable equipment types and installation configurations, are shown in the drawings attached hereto as Exhibit E and incorporated herein by reference.
11. Make-Ready Work means work, if any, to be performed which is required to accommodate Licensee's proposed attachment of Licensee's Facilities, including but not limited to, rearrangement of existing Attachments or City Facilities, Utility Pole replacements, pre-construction surveys and inspections, construction surveys and inspections, and post-construction surveys and inspections. Such Make-Ready work shall be initiated by the City and shall be performed by the owner(s) of the Attachments, unless specifically stated otherwise. Similar work required after initial attachment to a Utility Pole shall be referred to as "Additional Make-Ready". Make-Ready Work shall not include actions required to bring pre-existing Attachments to a Utility Pole into compliance with applicable safety rules, regulations, design standards, or codes.
12. Non-Usable Space means the space other than Usable Space occupied by facilities on a Utility Pole.
13. Usable Space means the total space on a Utility Pole above the minimum ground clearance level that is usable for Attachments.
14. Utility Pole(s) or Poles applies only to those utility poles that carry cable of voltage 240v AC or less for the City owned by the City and used to support the City Facilities, the facilities of a Joint User, and/or the Attachments of authorized Licensees. Distribution pole(s) mean a utility pole(s), excluding towers, used by a pole owner to support mainly

overhead electric distribution wires or cables. In general the following spacing standards apply to Utility Poles:

- i. Average pole height equals 35 feet
- ii. Usable space per Pole equals 11 feet
- iii. Unusable space per Pole equals 24 feet
- iv. Space used by an Attaching Entity:
 1. An electric pole Attachment is 6.5 feet;
 2. A telecommunications pole Attachment is 1.0 foot
 3. A cable television pole Attachment is 1.0 foot; and
 4. An electric, cable or telecommunications secondary pole Attachment is 1.0 foot.

III. ESTABLISHING THE POLE ATTACHMENT RELATIONSHIP

The pole attachment relationship shall be established when the City and the Attaching Entity have executed the approved Agreement and a license associated with the pole attachment request is issued.

IV. PROCEDURES AND REQUIREMENTS

1. Application for Permission to Attach

Prior to Licensee attaching Licensee's Facilities to any Utility Pole owned by the City, Licensee shall make written application for and receive an executed, revocable, non-exclusive License from the City. The application and License shall be on the form attached hereto as Exhibit A and Exhibit A-1, respectively. Licensee may be required by the City to make concurrent application(s) to obtain a license from a Joint User of the Utility Pole. The application must be accompanied by an application fee and, if applicable, a pre-construction survey fee (Exhibit B), which is subject to adjustment by the City on an annual basis. The City must grant permission before Licensee may attach Licensee's Facilities to existing Poles. The City will determine if the Poles are available for such Attachment by conducting a pre-construction survey within forty-five (45) days of the application filing date. The City shall make the results of the pre-construction survey available to the Applicant within five (5) business days of completing the survey.

2. Specifications

Licensee shall install Facilities in accordance with all requirements of the City, the National Electric Safety Code, the Occupational Safety and Health Administration, all applicable laws, and any rules and regulations now in effect or that hereafter may be issued by any other governmental authority whose standards are referenced in this Agreement. This includes, but is not limited to, all requirements for proper bonding, grounding, clearances, guying and anchoring of Licensee's Facilities. Licensee's Facilities shall not physically, electronically, or inductively interfere with the City Facilities or operations. If Licensee's Facilities do not conform to these requirements,

the City may require Licensee to correct the condition at Licensee's expense, and, if Licensee does not do so after thirty (30) days written notice, in addition to such remedies pursuant to this Agreement, the City may perform the work and bill Licensee for the City's actual (fully allocated) costs. The City reserves the right at all times to specify the type and methods of design, construction, and maintenance of Licensee's Facilities on the City Facilities, and Licensee shall comply with such specifications. Notwithstanding, if Licensee's Facilities pose an immediate threat to the physical integrity of the City Facilities or in an emergency situation, the City may perform such work and/or take such action that the City deems necessary without prior written notice to Licensee, the actual (fully allocated) cost for all such work shall be borne by Licensee.

3. Inspections

- A. The City shall have the right to conduct reasonable inspections of Licensee's construction. The City shall require Licensee to submit, on a regular schedule as determined by the parties, the exact locations where Licensee's Facilities are being constructed. The City, at the expense of the Licensee, shall conduct inspections of Licensee's construction in progress, which shall be in addition to post-construction surveys. The City shall bill the Allocated Costs of such inspections to Licensee upon completion of the inspections. Such inspections shall not be performed unnecessarily.
- B. Licensee shall mark near each point of attachment of Licensee's Facilities to the Utility Pole in such a manner as to clearly identify its ownership of that particular facility. Such identifying mark shall be visible and clear so that identification of Licensee's Facility can be made from the ground. The City's inspections of Licensee's Facilities may not be relied upon for any other purpose other than that of the City's requirements for attachment.

4. Make-Ready Work Procedures

- A. Upon receipt of the application for a License and the payment in full to cover the cost of performing a pre-construction survey, the City shall make such survey of the Utility Poles, as listed in the Application Attachment (Exhibit A-1) submitted by Licensee with its application for a License, within forty-five (45) days of the date of receipt.
- B. The City shall notify Licensee in writing of the date and time of the pre-construction survey no less than five (5) business days prior to the commencement of the survey. Licensee shall have the right to be present.
- C. The City shall determine, within fourteen (14) days after completion of the pre-construction survey, whether to accommodate the attachment of Licensee's Facilities, and whether any rearrangements or changes are necessary to the City Facilities (so as to meet DPU's standards, including but not limited to, not less

than the 40-inch clearance between Licensee's Facilities and the nearest conductor, or the 60-inch clearance from a primary conductor, or the 30-inch or more clearance from a conductor at mid-span) or to the facilities of other Joint Users or third parties with attachment rights.

- D. The pre-construction surveys shall determine whether in order to accommodate Licensee's Facilities as proposed: a) any of the Utility Poles proposed to be used by Licensee require strengthening (guying and anchoring); b) any Utility Poles proposed to be used by Licensee require placement or replacement; c) any Attachment(s) are to be relocated; and d) the Licensee's Facilities need to be bonded or grounded to the City Facilities.
- E. The City inspections of Licensee's Facilities may not be relied upon by Licensee for any purpose other than satisfying the City's own requirements and in no way diminish Licensee's obligations under the specifications of this Agreement. The inspection only applies to Utility Poles.
- F. The City, in its sole discretion, may elect not to perform any pre-construction survey.
- G. If the City rejects during the pre-construction survey any application(s), the City shall state in writing the reasons for the rejection. Licensee may appeal to the Director of the Department of Public Utilities in the event Licensee does not agree that the City's reason(s) is (are) sufficient grounds for rejection. The appeal shall be submitted within thirty (30) days of the receipt of notice of the rejection by the City, and the Director of the Department of Public Utilities shall act on the appeal within thirty (30) business days of submittal.

5. Performance

- A. The City will make reasonable efforts to perform Make-Ready Work in a timely manner; provided that, the Licensee's application gives the City a minimum of sixty (60) days prior notice of its desired attachment schedule; and provided that, such Make-Ready Work does not interfere with the City's power delivery to street lights obligations, which in all events, shall take priority over any such Make-Ready Work. If the application(s) for attachment requires more Make-Ready Work than can be handled by the City, or the City cannot meet Licensee's proposed time frame for the completion of Make-Ready Work, then the City shall make all reasonable attempts to use contractors, as far as practical, to supplement its available resources. If the City cannot use a contractor, then, with prior written approval of the City, Licensee, at its sole cost, may complete the Make-Ready Work using a contractor approved in advance by the City. The City shall notify Licensee in writing if the City determines that the proposed schedule for performing Make-Ready Work cannot be met.

- B. Pursuant to Licensee's application(s), should Make-Ready Work be required, the City shall provide a cost estimate and a construction timeline in writing to Licensee. For all approved application(s), the Licensee shall provide the City written notice of acceptance or rejection of the Make-Ready Work estimate and Make-Ready construction time line within five (5) business days of receipt of the same.

6. Issuance of License

Upon completion of the City's Make-Ready Work, the City will: a) inform Licensee of such completion within five (5) business days; and b) issue any applicable License to the Licensee. Licensee shall not commence attachment to any pole until all Make-Ready work has been completed and the license has been issued.

7. Post Construction Survey

The City may, at its discretion, perform a post-construction survey on completed Attachments. The City shall notify Licensee of such survey no less than five (5) business days prior to the start of the survey. Licensee shall have the right to be present. The purpose of the survey is to inspect for compliance with prior agreed-to Attachment locations and compliance with the requirements of this Agreement. The City shall inform Licensee in writing within five (5) business days after completion of post-construction survey, as to any additional work which the City identifies needs to be performed. Any post-construction work required as a result of such survey will be completed at Licensee's expense, for actual (fully allocated) costs incurred, within thirty (30) days of written notification. All work to be performed as a result of violations of power line clearance requirement(s) shall be performed by qualified high voltage line personnel.

8. Operations and Maintenance

- A. Licensee agrees, at its sole cost and expense, at all times, to operate and maintain its Facilities safely and in good repair consistent with the terms of this Agreement and the specifications of the City.
- B. No tree trimming shall be performed by Licensee in connection with its Facilities unless a written request has been submitted to the City and its Urban Forestry Division within the Department of Public Works, and the Licensee has received written approval from the Urban Forestry Division and DPU.
- C. The City reserves the right to maintain the Poles and its Facilities in such a manner that will enable the City to fulfill its public service requirements.
- D. The City does not make any representation or warranty as to present or future strength, condition, or state of repair to any Pole, Guy, Anchor or related equipment. If Licensee determines the integrity or safety of any Pole is in question,

Licensee will notify the City verbally and in writing. Until such conditions are addressed, Licensee will refrain from: a) ascending the Pole, b) making any attachment to that Pole or c) attaching any equipment to any cable attached to the Pole.

V. RATES, CHARGES AND REQUIREMENTS

1. Fees

Fees associated with this Agreement, including but not limited to, application, pre-construction survey, Make-Ready Work, and post-construction survey, are attached hereto as Exhibit B, Fee Structure. The annual Pole Attachment Rental Rate to be charged is described in Exhibit C, Pole Attachment Rental Rate.

2. Summary of Fees, Rates and Charges

Licensee shall pay the City the following rates and charges for attaching Licensee's Facilities to the City Facilities.

- A. Attachment Rates and Billing – The annual attachment rate for the first year of the Agreement shall be prorated for the remaining time commencing with the date of issuance of the License until December 31 of that calendar year. For every year, thereafter, the City shall bill Licensee on December 31 of that calendar year.
- B. Make-Ready Charges and Billing – The City shall issue in writing an invoice or an estimate to Licensee for any Make-Ready Work within fifteen (15) days of completion of the pre-construction survey. The City shall provide Licensee with an official schedule of fees related to any such Make-Ready Work. Upon completion of construction, the actual (fully allocated) cost for Make-Ready Work will be determined, and an adjustment invoice or a credit shall be issued in writing.
- C. Unauthorized Attachments – If the City determines that Licensee has made unauthorized attachment to the City Facilities, in addition to remedies to correct unauthorized attachment, Licensee shall pay the City a one-time unauthorized attachment fee equal to five (5) times the current Pole Attachment Rental Rate.
- D. Performance Security – Prior to attaching Licensee's Facilities to any Pole, the City may require Licensee to furnish a performance bond or other satisfactory evidence of financial security in the amount specified to guarantee the payment of any sum which may become due to the City for attachment fees or other charges of work performed for Licensee by the City, including the removal of Licensee's Facilities or termination of any license.
- E. Payment – Unless otherwise communicated to Licensee by the City, all invoices are payable by Licensee within thirty (30) days from the date of the invoice. In the event Licensee fails to pay the amount due within the period of time set forth for

payment, interest shall accrue on the unpaid balance at the rate of one and one-half percent (1.5%) per month until payment is received.

VI. PERMITS AND EASEMENTS

1. Permits

Prior to making any attachment to the City's Poles, Licensee must obtain all required permits, permissions and/or consents to attach Licensee's Facilities to the City's Poles, and Licensee shall comply with the terms of such permits, permissions and/or consents.

2. Easements

Licensee's access to the City's Poles pursuant to this Agreement is subject to any agreements or easements that would prohibit the City from providing Licensee access to any specific pole space, easement, or right-of-way. If the City determines that access to specific pole space, easement, or right-of-way is precluded by an agreement or easement, Licensee shall have the right to review the pertinent provisions of the agreement or easement.

VII. LIABILITY AND INDEMNIFICATION

1. Licensee shall indemnify and hold harmless the City against third party claims for any disruption in service and/or use of a Utility Pole, whether that disruption affects the City's or a Joint User's customers, that results from any Make-Ready Work or attachment of Licensee's Facilities, unless the City is grossly negligent in the conduct of said Make-Ready Work or attachment.
2. Licensee further agrees that, in the course of maintaining a Utility Pole which Licensee has attached its Facilities to, if the City causes a disruption to Licensee's network or business operation, that Licensee shall assume all risk and assume liability and indemnify the City against any potential claim of a third party, except where the disruption was due to the City's gross negligence.
3. Licensee, at its sole cost and expense, shall carry and maintain a policy or policies of commercial general liability insurance insuring Licensee against liability for injury to persons or property occurring in or about the Premises. Licensee shall provide a Certificate of Insurance to the City that lists the City as an Additional Insured. The Certificate shall indicate that general liability insurance coverage with at least one million dollars

(\$1,000,000) Combined Single Limit coverage on an occurrence basis is in force prior to any exercise of Licensee's rights under this License. Licensee agrees to maintain such insurance for five (5) years from the date of expiration or termination of this License.

4. Any contractor, licensee, or other party engaged by Licensee to assist with Licensee's activities permitted under this License shall likewise provide the City with a Certificate of Insurance listing the City as an Additional Insured as a condition precedent to entering the Property. The Certificate shall indicate that general liability insurance coverage with at least one million dollars (\$1,000,000) Combined Single Limit coverage on an occurrence basis is in force prior to any exercise of rights under this or any other License. The contractor, licensee, or other party engaged by Licensee to whom this paragraph pertains shall maintain such insurance for five (5) years from the date of expiration or termination of this License.

VIII. TERMINATION AND REMOVAL

1. This Agreement shall have an initial term of two (2) years. Upon the expiration of the initial term, the Agreement shall automatically renew from year to year from the date of the issuance of the License. Either party can terminate this Agreement prior to the expiration of the then-current term by delivering written notice to the other party, at a minimum, thirty (30) days prior to the end of the then-current term. The termination shall become effective upon the expiration of the then-current term. Should the Agreement be terminated by either party, Licensee shall have 60 days from the expiration of the Agreement to remove its Facilities from the City's Poles. Notwithstanding anything to the contrary, the City shall not terminate this Agreement absent good cause.
2. Licensee may at any time remove its Facilities from the City's Utility Poles, but it shall give the City clear written notice of its intention to remove its Facilities ten (10) days prior to beginning such work. Such notification shall include completing and submitting the Notification Attachment Removal Sheet (Appendix D) attached hereto. No credit or refund of any rate, fee or charge shall be allowed to Licensee for removal.
3. In the event of relocation and displacement, Licensee understands and acknowledges that the City may require Licensee to relocate Licensee's Facilities on one or more of the City Facilities. Upon forty-five (45) days written notice to Licensee, Licensee, at the City's direction, shall relocate such Licensee's Facilities, whenever the City reasonably determines that the relocation is needed for any of the following purposes: (a) if required for the construction, completion, repair, relocation, or maintenance of a project by the City; (b) because the Licensee's Facilities are reasonably considered to be interfering with or adversely affecting proper operation of the City Facilities; or (c) to protect or preserve the public health or safety. In any such case, the City shall use its best efforts to afford Licensee a reasonably equivalent alternate location. If Licensee shall fail to relocate Licensee's Facilities as requested by the City within a reasonable time under the circumstances in accordance with the foregoing provision, the City shall be entitled to remove or relocate Licensee's Facilities, without further notice to Licensee. To the extent the City has actual knowledge thereof, the City will attempt promptly to inform Licensee in

writing of the displacement or removal of any Pole on which any Licensee's Facilities are located.

4. In the event Licensee desires to relocate any of its Facilities from one Pole to another, Licensee shall so advise the City. The City will use its best efforts to accommodate Licensee by making another reasonably equivalent Pole available for use in accordance with and subject to the terms and conditions of this Agreement.

IX. MISCELLANEOUS PROVISIONS

1. No Interference

Licensee, in the performance and exercise of its rights and obligations under this Agreement, shall not interfere in any manner with the existence and operation of any and all Utility Poles, City Facilities, or the Attachments of another telecommunications provider or utility, without the express written approval of the owner or owners of the affected property or properties, except as permitted by applicable laws or this Agreement. The City agrees to require the inclusion of the same or a similar prohibition on interference as that stated above in all agreements the City may enter into after the effective date with other communications or information providers and carriers.

2. Contacting Licensee

Licensee shall be available to the staff employees of the City having jurisdiction over Licensee's activities twenty-four (24) hours a day, seven (7) days a week, regarding problems or complaints resulting from the attachment, installation, operation, maintenance, or removal of Licensee's Facilities. The City may contact Licensee's network control center operator at telephone number _____ regarding such problems or complaints.

X. NOTICES

All written notices to be given by the City or Licensee shall be sent via fax and regular mail, overnight delivery service, hand delivery, or certified or registered mail to the following addresses:

If to the City:

City of Richmond, Department of Public Utilities
400 Richmond Highway
Richmond, Virginia 23224
Telephone: (804) 646-3000
Fax: (804) 646-8595
Attention: Technical Services, Street Lights

With a copy to:

April Bingham
City of Richmond Virginia
Director Department of Public Utilities
730 E. Broad Street, 6th Floor
Richmond, Virginia 23219
804-646-5205

If to Licensee:

Licensee Company Name _____
Address Line 1 _____
Address Line 2 _____

With copy which shall not constitute legal notice to:

Company/Persons Name _____
Address Line 1 _____
Address Line 2 _____

SIGNATURES ON FOLLOWING PAGE

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed.

Chief Administrative Officer
City of Richmond, Virginia

Date

Signature

Date

Name

Title

Licensee Company Name

Approved as to Form:

Assistant City Attorney, City of Richmond

EXHIBIT A
POLE ATTACHMENT LICENSE APPLICATION
License #: _____

To: City of Richmond, Department of Public Utilities
400 Richmond Highway
Richmond, VA 23224

In accordance with the terms and conditions of the POLE ATTACHMENT AGREEMENT (“Agreement”) by and between the City and Licensee, executed as of _____, this application is hereby made for a licensed Attachment(s) to the City’s Utility Poles. The Attachment(s) is (are) as indicated on the attached Application Attachment (Exhibit A-1 of the Agreement). Each application, limited to a maximum of 100 poles, requires a location, a pole identification number, and a description of all facilities, including quantities, sizes and types of cable, fiber and equipment to be installed. The application(s) shall be prioritized to reflect the order in which each application should be processed.

The enclosed payment shall include the application fee, which reflects the application fee per attached pole, and the amount for the pre-construction survey fees, which reflects the Licensee unit price for each pole listed.

In accordance with the Agreement, each Pole will be subject to an annual Pole Attachment Rental Rate to be prorated as necessary at the time of the licensing. Each Pole may also be subject to a Make-Ready Work fee which shall be invoiced in writing to Licensee.

All referenced fees, with the exception of the Make Ready Work Fee, are listed in Exhibit B, Fee Structure, of the Agreement and are subject to annual adjustments that must be approved by the Richmond City Council. The Make Ready Work Fee will be determined following the pre-construction survey and adjusted after completion of Make Ready Work.

THE LICENSEE AGREES TO NOT ATTACH TO THE CITY’S POLES UNTIL THE MAKE-READY WORK IS COMPLETE.

Licensee (Company Name)

By: _____

Title: _____

Date: _____

EXHIBIT A
POLE ATTACHMENT LICENSE APPLICATION
License #: _____

This revocable and non-exclusive License (License Number _____) is hereby granted for Attachment(s) to the Poles listed on the attached Application Attachment with revisions as noted. This License is issued under the terms and conditions of the above referenced Pole Attachment Agreement.

City of Richmond
Department of Public Utilities

By: _____

Title: _____

Date: _____

EXHIBIT A-1

APPLICATION ATTACHMENT – LICENSE#: _____

Governing Application: DPU Pole Attachment Agreement dated _____, _____. Each application, limited to a maximum of 100 poles, requires a location, a pole identification number, and a description of all facilities, including quantities, sizes and types of cable, fiber and equipment to be installed.

ATTACHMENT (CHECK ONE)

NEW

MODIFICATION

APPLICANT INFORMATION: [Licensee]

Name: _____

Address _____

City/State/Zip code _____

Contact Person Name/Title _____

Contact Person Phone # [office/mobile/Fax] _____

Email Address _____

Licensee: _____

Licensor: _____ Date: _____

Item	Pole Number	Address of the Attachment [Location]	Space Req'd	Number & Type of Attachment	Description of Installation	Attachment Location on Pole	Proposed Route	Proposed schedule	Physical Characteristics of Attachments
				Pole / Conduit					
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									

EXHIBIT B FEE STRUCTURE

This exhibit establishes a fee structure for the Pole Attachment Agreement by and between the City (as pole owner) and the attaching Licensee. The City, in its sole discretion, may elect to modify the rates and charges pertinent to the Pole Attachment Agreement.

Fees due at the time a Pole Attachment License Application (to include Exhibits A and A-1) is submitted:

1. Application fee, established at \$1.00 per attached pole.
2. Pre-Construction survey fee, established at \$32.00 per attached pole.

Fees due prior to the start of any Make-Ready Work by the City of Richmond (the City) shall establish an internal work order for tracking costs related to this work):

1. Post-Construction fee, established at \$1.00 per attached pole.
2. Inspection costs, to be billed by the City at the hourly labor rate for DPU Street Light Inspectors as established in the City's Schedule of Fees.
3. Make-Ready Work, to be billed by the City to cover labor, equipment and materials cost as established by the City's Schedule of Fees.

Fees to be billed annually:

1. The Annual Pole Attachment Rental Rate shall be billed as determined under the Annual Pole Attachment Rental Rate (Exhibit C).

EXHIBIT C
ANNUAL POLE ATTACHMENT RENTAL RATE

RENTAL RATES

Cable television companies and telecommunications carriers have federal rights of access to a utility's poles, ducts, conduits or right-of-way. Moreover the Federal Communications Commission (FCC) has promulgated regulations that establish formulas for determining just and reasonable rates for Attachments to poles and placements in conduits.

Electric cooperatives and federal, state and municipal entities providing utility services are specially exempted from the definition of electric utility and thus are not subject to FCC pole attachment jurisdiction.

In general rates must be just and reasonable. A rate is just and reasonable if it assures a utility the recovery of its incremental costs (additional costs of providing Attachments) plus its fully allocated costs (that is, an amount determined by multiplying the percentage of usable pole space which is occupied by the Attachment, by the sum of the operating expenses and actual capital costs of the utility attributable to the entire pole).

The pole attachment rental rate is the Attaching Entity's share of the actual (fully allocated) costs, which include:

1. That portion of operating expenses and capital costs that a utility incurs in owning and maintaining poles and right-of-way.
2. Pole cost is the depreciated original installed cost of an average bare pole minus accumulated deferred taxes. The FCC allows a means of determining pole cost.
 - a. Gross cost means the original investment (purchase price of poles and fixtures excluding cross-arms and appurtenances) divided by the number of poles represented in the investment.
 - b. Net cost means original investment, less depreciation, deferred taxes associated with the pole investment, and the cost of appurtenance not used or useful for pole Attachments (such as cross arms) (presumed to be 15% of gross investment), divided by the number of poles in the investment amount. If net cost is a negative value, then the pole owner may use gross cost.
3. The carrying charge is expressed as a percentage of the following expense elements for the most current calendar year.
 - a. Administrative – total general and administrative expenses expressed as a percent of net investment in plant in service
Maintenance – maintenance of pole expense as a percent of net investment in poles and related accounts
 - b. Depreciation – pole-related depreciation expense which equals depreciation rate adjusted for net pole investment

- c. Taxes – taxes as a percent of net plant in service
- d. Cost of money – rate of return on investment allowed or cost of debt

MAXIMUM RENTAL RATE

MAXIMUM RATE = \$4.44

APPENDIX D - NOTIFICATION ATTACHMENT REMOVAL SHEET

LICENSE NUMBER: _____ Licensee: _____ Date _____

Licensee Contact information: Name: _____

Name/Title

Address _____

City/State/Zip Code

Phone #: _____
_____ office/mobile/Fax

Email Address: _____

Item	Pole Number	Address of the Attachment [Location]	Attachment Removal	Remarks
			[Description]	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				

EXHIBIT E
LICENSEE'S FACILITIES/ATTACHMENTS/EQUIPMENT

Note: Meter attachment not allowed on City Poles.

POLE ATTACHMENT REQUEST FORM
APPLICATION ATTACHMENT – LICENSE #:

ATTACHMENT: NEW

MODIFICATION

APPLICANT INFORMATION: [Licensee]

Name: _____

Address _____

City/State/Zip code _____

Contact Person Name/Title _____

Contact Person Phone # [office/mobile/Fax] _____

Email Address _____

Licensee: _____

Licenser: _____ Date: _____

Item	Pole Number	Address of the Attachment [Location]	Space Req'd	Number & Type of Attachment	Description of Installation	Attachment Location on Pole	Proposed Route	Proposed schedule	Physical Characteristics of Attachments
				Pole / Conduit					
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									

POLE ATTACHMENT REMOVAL REQUEST FORM

LICENSE NUMBER: _____ Licensee: _____ Date _____

Licensee Contact information: Name: _____

Name/Title

Address _____

City/State/Zip Code

Phone #: _____
_____ office/mobile/Fax

Email Address: _____

Item	Pole Number	Address of the Attachment [Location]	Attachment Removal	Remarks
			[Description]	
1				
2				
3				
4				
5				
6				
7				
8				
9				
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12				
13				
14				
15				
16				
17				
18				
19				



CITY OF RICHMOND
DEPARTMENT OF PUBLIC UTILITIES



STREET LIGHTING & ELECTRIC DISTRIBUTION
CITY OF RICHMOND
DEPARTMENT OF PUBLIC UTILITIES

CHECKLIST FOR STREET LIGHT INFORMATION TO PROJECT

Project Title: _____

- ___ 1) DPU design/drawing requirements and construction standards (include as-built procedure).
- ___ 2) Applicable DPU standard drawings
- ___ 3) Clear list for separation of construction responsibilities
- ___ 4) Estimate for DPU portion of work via deposit letter
- ___ 5) Provide General As-Built and Construction Certification form
- ___ 6) Provide Contractor Release of Assets - Requirements
- ___ 7) Provide Standard Easement Form (where applicable)



STREET LIGHTING & ELECTRIC DISTRIBUTION
CITY OF RICHMOND
DEPARTMENT OF PUBLIC UTILITIES

CHECKLIST FOR STREET LIGHT AND ELECTRIC DISTRIBUTION PLAN SUBMITTALS

Project Title: _____

- ___ 1) Virginia Registered engineer's stamp, signature and date.
- ___ 2) Preliminary Engineering report including a System Layout Plan has been submitted.
- ___ 3) Street Lighting system is designed to provide adequate roadway lighting in accordance with City Standards.
- ___ 4) Residual Voltage at last fixture: _____
- ___ 5) Information Sheet for Preparation of Street Lighting Special Tax Assessment Agreement has been submitted (when applicable).
- ___ 6) Plan and profile sheets are on 24" x 36" paper. Drawing organization and format comply with City DPU Standards.
- ___ 7) A Cover sheet is provided which includes the Owner/Developer name and address, project vicinity map, and Standard Street Lighting and Electric Distribution Notes.
- ___ 8) ANSI/IESNA street light computations are shown on plans (where applicable).
- ___ 9) All utilities crossings are profiled, and the means for crossing and resolving any conflicts are clearly shown.
- ___ 10) All off-site easements necessary for the completion of this project have been acquired, recorded and their Deed Book and Page references are shown on the plans.
- ___ 11) A list of the appropriate material quantities to be used and the latest material notes are shown on the plans.
- ___ 12) Plans comply with all applicable Local, State and Federal regulations including City and State erosion control and application has been made for all required permits.

I have reviewed this checklist for accuracy and hereby certify that the street lighting plans as submitted have been designed in accord with the latest City Standards. The plans have been reviewed for completeness and accuracy and are herewith submitted for approval.

Signature

Certificate Number

Name (Typed or Printed)

Date



CITY OF RICHMOND
DEPARTMENT OF PUBLIC UTILITIES



MEGGER TEST RECORD

For Street Light Underground Electric Distribution Cable

- 1) Date: _____
- 2) Ambient Temp: _____ °F
- 3) Asset: ☐ Cable ☐ Transformer
- 4) Humidity: _____ %
- 5) Dew Point: _____ °F
- 6) Manufacturer: _____
- 7) Voltage Class: ☐ 600V ☐ Other _____
- 8) Configuration: ☐ 3-Wire ☐ Other _____
- 9) Conductor: ☐ Copper ☐ Aluminum
- 10) Manufacture Date: _____

Catalog No: _____

Reel No: _____

Test Voltage: _____ kVDC

Equipment Temp: _____ °C

Temperature Correction Factor to 20°C: TCF _____

Readings - Megohms

- ☐ 3 Wire Cable: Two insulated conductors (A and B), cabled with a bare ground (G)

A to B:	A to G:	B to G:
----------------	----------------	----------------

- ☐ Other:

Test Equipment Used: _____

Tested By: _____

Comments:

Deficiencies:

I have reviewed the Insulation Resistance readings and hereby certify that the resistance falls within the acceptable range of expected Megohms of resistance for the given materials per the DPU Standard.

Signature _____

Date _____

This form is kept, as record, on file in the office of the Street Light Engineer for five (5) years and then destroyed.

TABLE I: Minimum Acceptable Insulation Resistance Values for 600V Cable

Length of Cable	Minimum Acceptable Insulation Resistance Value
Ft.	MΩ
100	16
200	8
300	5.3
400	4
500	3.2

TABLE II: Temperature Correction Factors

TEMP.		ROTATING EQUIP.		OIL-FILLED TRANSFORMERS	CABLES							
°C	°F	CLASS A	CLASS B		CODE NATURAL	CODE GR-S	PERFORMANCE NATURAL	HEAT RESIST. NATURAL	HEAT RESIST. & PERFORM. GR-S	OZONE RESIST. NATURAL GR-S	VARNISHED CAMBRIC	IMPREGNATED PAPER
0	32	0.21	0.40	0.25	0.25	0.12	0.47	0.42	0.22	0.14	0.10	0.28
5	41	0.31	0.50	0.36	0.40	0.23	0.60	0.56	0.37	0.26	0.20	0.43
10	50	0.45	0.63	0.50	0.61	0.46	0.76	0.73	0.58	0.49	0.43	0.64
15.6	60	0.71	0.81	0.74	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
20	68	1.00	1.00	1.00	1.47	1.83	1.24	1.28	1.53	1.75	1.94	1.43
25	77	1.48	1.25	1.40	2.27	3.67	1.58	1.68	2.48	3.29	4.08	2.17
30	86	2.20	1.58	1.98	3.52	7.32	2.00	2.24	4.03	6.20	8.62	3.20
35	95	3.24	2.00	2.80	5.45	14.60	2.55	2.93	6.53	11.65	18.20	4.77
40	104	4.80	2.50	3.95	8.45	29.20	3.26	3.85	10.70	25.00	38.50	7.15
45	113	7.10	3.15	5.60	13.10	54.00	4.15	5.08	17.10	41.40	81.00	10.70
50	122	10.45	3.98	7.85	20.00	116.00	5.29	6.72	27.85	78.00	170.00	16.00
55	131	15.50	5.00	11.20			6.72	8.83	45.00		345.00	24.00
60	140	22.80	6.30	15.85			8.58	11.62	73.00		775.00	36.00
65	149	34.00	7.90	22.40				15.40	118.00			
70	158	50.00	10.00	31.75				20.30	193.00			
75	167	74.00	12.60	44.70				26.60	313.00			

Prepared by and after recording return to:
City of Richmond
Dept. of Public Utilities
Technical Services Div.
400 Jefferson Davis Hwy.
Richmond, VA 23224
Attn: [Name]

Tax exempt per VA Code Sec.58.1-811(A)(3)
Tax Map Reference No:
City of Richmond: 00-0000000

DEED OF UTILITY EASEMENT

THIS DEED OF EASEMENT (this "Deed") is made this ____ day of _____, 20____, by and between _____, to be indexed as grantor (the "GRANTOR"), and the **CITY OF RICHMOND**, a municipal corporation organized under the laws of the Commonwealth of Virginia, to be indexed as grantee (the "GRANTEE").

EXEMPTION FROM TAXES

This conveyance is exempt from Recordation Taxes pursuant to Section 58.1-811(A)(3) of the Code of Virginia (1950) as amended.

WITNESSETH:

WHEREAS, GRANTOR holds fee simple title to certain real property situated in Richmond, Virginia, designated as Tax Parcel Nos. _____, and being a portion of the same real estate conveyed to GRANTOR by deed recorded in the Clerk's office of the Circuit Court of Richmond, Virginia, as Instrument No. _____, or in Deed Book ____ at page ____ (the "Property"); and

WHEREAS, GRANTEE, by its Street Lighting Utility, desires to install and operate street lights and electric distribution lines and associated appurtenances (the "Improvements") on the Property and, pursuant to the provisions of Section 8-33 of the 2015 Richmond City Code, requests from GRANTOR a ____-foot permanent easement within the Property for such purposes, which easement GRANTOR is willing to convey.

NOW, THEREFORE, in consideration of the foregoing recitals, incorporated herein and made a part hereof, and in consideration of the sum of One Dollar (\$1.00) and other good and valuable consideration, receipt of which is hereby acknowledged, GRANTOR does hereby convey to GRANTEE, with General Warranty of Title, a ____ -foot permanent easement (the "Easement") upon, over, under and across the land owned by GRANTOR for the construction, reconstruction, operation, maintenance and repair of Street Lighting and associated appurtenances, the location of which Easement is more particularly shown on the plat entitled, "**Plat Showing a X' City of Richmond Street Lighting Easement Across a Parcel of Land Lying on the south side of a named road,**" prepared by _____, dated _____, and marked as Attachment A, attached hereto and incorporated herein.

The Easement shall be SUBJECT to the following conditions:

GRANTOR may make any use of the land and space within the Easement that is not inconsistent with the rights herein conveyed to GRANTEE; provided, however, that GRANTOR shall not construct, place or plant, or allow to be constructed, placed or planted, any natural or manmade structure, improvement or obstruction, or any portion thereof or appurtenance thereto, with the exception of ground cover, within the Easement without obtaining the prior written approval of the Director of Public Utilities of the City of Richmond, Virginia.

GRANTEE will have full and free use of the Easement for the purposes named herein and, when reasonably necessary for such use, GRANTEE may use the land abutting the Easement; provided, however, that GRANTEE's exercise of its right to use such abutting land will only be to the minimum extent necessary. GRANTEE will have the right to trim, cut and remove any natural or manmade structure, improvement or obstruction in or near the Easement that GRANTEE deems to interfere with its exercise of the Easement. If there are no public roads or alleys reasonably convenient to the Easement, GRANTEE will have the right of ingress and egress over the lands of GRANTOR adjacent to the Easement.

GRANTEE hereby covenants with GRANTORS that upon completion by GRANTEE of any construction, reconstruction, operation, maintenance, repair or removal of the Improvements, GRANTEE will restore or replace, to its immediately prior condition as far as is practicable and consistent with GRANTEE's rights herein conveyed, whatever land and the surface thereof within the boundaries of the Easement GRANTEE disturbs while performing such construction, reconstruction, operation, maintenance, repair or removal.

This Deed shall run with the land and be binding upon GRANTOR's heirs, successors and assigns in title. Each individual executing this Deed represents that he or she is duly authorized to bind GRANTOR or GRANTEE, as the case may be, to the terms and provisions of this Deed.

SIGNATURES ON NEXT PAGES

IN WITNESS WHEREOF, GRANTOR has hereunto affixed their signature and seal as of the day and year first hereinabove written.

BY: _____ (GRANTOR)
(Print)

(Signature)

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF _____, to-wit:

I, _____, Notary Public in and for the City/County and State aforesaid, do hereby certify that _____ whose name is signed to the foregoing deed of easement, bearing date _____ day of _____, 20____, personally appeared before me in my City/County and State aforesaid and acknowledged the same to be their act and deed.

Given under my hand this _____ day of _____, 20_____.

Notary Public

Notary Registration Number: _____

My commission expires: _____

This foregoing Deed of Easement from _____ is hereby accepted the ____ day of _____, 2016, pursuant to authority granted by Section 8-33 of the 2015 Richmond City Code.

CITY OF RICHMOND (GRANTEE)

BY: _____

[Name]

Chief Administrative Officer

City of Richmond, Virginia

COMMONWEALTH OF VIRGINIA

CITY/COUNTY OF _____, to-wit:

I, _____, Notary Public in and for the City/County and State aforesaid, do hereby certify that _____, whose name is signed to the foregoing deed of easement, bearing date _____ day of _____, 20____, personally appeared before me in my City/County and State aforesaid and acknowledged the same to be their act and deed.

Given under my hand this _____ day of _____, 20____.

Notary Public

Notary Registration Number: _____

My commission expires: _____

Approved as to Form:

By: _____

Assistant City Attorney

City of Richmond, Virginia



CITY OF RICHMOND
DEPARTMENT OF PUBLIC UTILITIES



DPU STREET LIGHT REQUEST

STREET LIGHTING & ELECTRIC DISTRIBUTION

CITY OF RICHMOND

DEPARTMENT OF PUBLIC UTILITIES

Request Initiated By (Name): _____

Date of Request: _____

Contact Information:

Telephone #: _____ (M) _____ (FAX) _____

Email: _____

Address: _____ Organization: _____

Light Request Location Information:

Street Name: _____ Street Address Number: _____

Cross Streets: _____ and _____

Lighting Type Requested:

Standard Cobrahead & Overhead ☐ Ornamental ☐

Research Results and Project Status Information (For Record):

Description of Street Lighting Items Needed:

Cost Estimate

Estimated Cost: \$ _____

Estimate Attached: Yes ☐ No ☐

Preliminary Estimate ☐

Final Estimate/Contractor ☐

Dominion VA Power Estimate ☐

Next Steps:

Comments:

Assignment:

Date Assigned: _____

Assigned To: _____

Date Completed: _____

Follow-up/Action Items

SECTION VI:
APPENDIX

SECTION VI

APPENDIX

TABLE OF CONTENTS

I. APPENDIX

01. Street Light Service Area Map
02. LED Specifications for Cobrahead
03. Drafting Symbols and Descriptions

APPENDIX A

Street Lighting Service Areas

COR - The entire street lighting system is installed and serviced by DPU Street Light Utility, including the power supply system, poles and lights. The city distributes power from DPU owned and operated substations. Dominion Energy supplies power to the substations. The City pays for the power at the meter rate for Dominion Energy distribution systems

DVP1 - The entire street lighting system is installed and serviced by Dominion Energy, including power supply system, poles and lights. The city is charged a flat rate per street light.

DVP2 - The city installs and services the street lighting system, including 120/240 V power supply system, poles and lights. Dominion Energy provides power to the street light system from master meters connected to the DVP distribution system. The City pays for the power at the meter rate for Dominion Energy distribution systems.

DVP3 - The City installs and services the street lights, which are powered directly from the Dominion Energy distribution system. The City's light is mounted on the Dominion Energy distribution system pole and the light power supply does not include a power meter. The City pays Dominion Energy a flat rate per street light. There are approximately 4,000 streetlights in DVP – 2 and DVP – 3 areas combined.

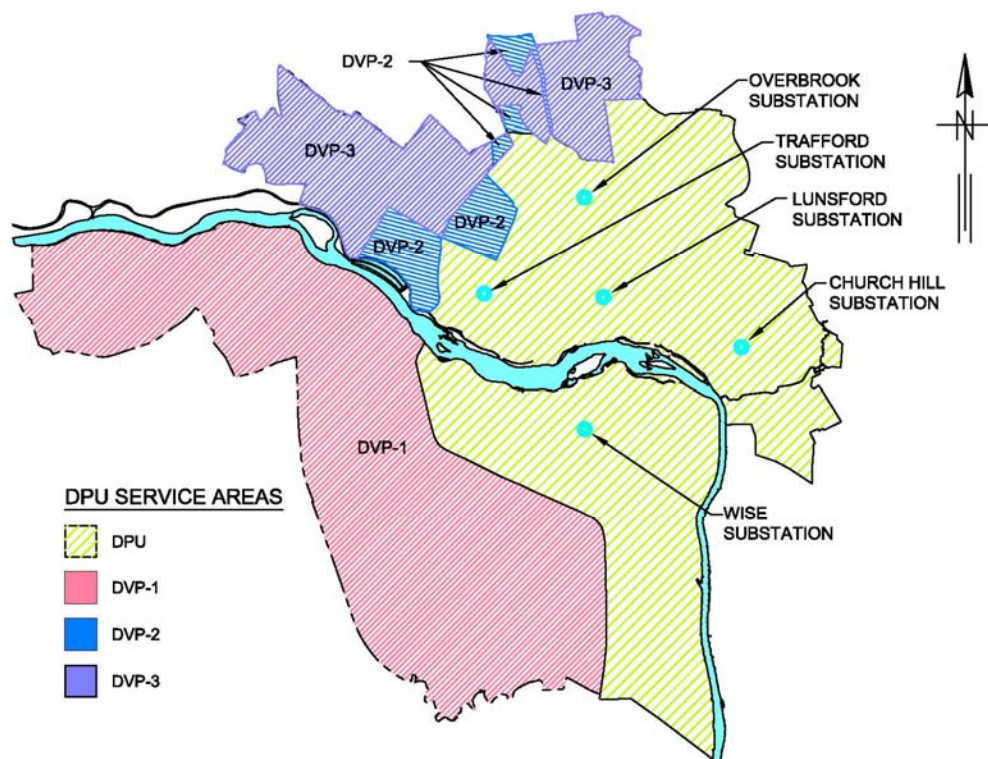


Figure 1: Street Light Service Area Boundaries

APPENDIX B

LED Lighting Specifications

DPU Standard Cobra Head Style Luminaires

Application:

The LED cobra head luminaire may be used for:

- 1) New installations.
- 2) Replacing existing HPS/MH luminaires on existing poles.

Correlated Color Temperature (CCT):

- 1) 3000-4000K, acceptable LM80 test results shall be provided.

Color Rendering Index (CRI):

- 1) Minimum 70.

Operating Environment:

- 1) Ambient -40°C to +40°C (-40°F to 104°F).

Voltage:

- 1) 240V for COR & DVP2 service areas
- 2) 120V for DVP3 service area.

Cooling System:

- 1) Passive heat sink with no fans, pumps, or liquids, and shall be resistant to debris build-up that does not degrade heat dissipation performance.

Housing:

- 1) The housing shall be constructed of die-cast aluminum and be rust resistant.
- 2) Luminaire housing shall allow tool-less entry.
- 3) All screws shall be stainless steel.
- 4) No parts shall be constructed of polycarbonates.

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Department of Public Utilities

- 5) Luminaire housing shall be provided with an internal level bubble to aid in installation.
- 6) Luminaire door shall be securely hinged and incapable of involuntary separation from housing.
- 7) Luminaire shall be attached by means of a four (4) bolt slip- fitter connection to a 2.0" IPS bracket.
- 8) The slip-fitter shall include means for securely attaching the luminaire and shall also provide for tilt adjustments 5° above and below horizontal.
- 9) The slip fitter shall be totally enclosed in luminaire housing.
- 10) The housing shall be equipped with a latching access door assembly.

Paint:

- 1) Finish shall be powder-coated gray, or as directed by the City of Richmond, Department of Public Utilities, Street Lighting & Electric Distribution division.
- 2) The paint finish shall exceed a rating of six (6), per ASTM D 1654, after 1000 hours of testing, per B117.
- 3) Painted or finished luminaire components exposed to the environment shall exhibit no greater than 30% reduction of gloss per ASTM D523, after 500 hours of UV testing at ASTM G154 cycle 6.

LED Power Supply / Driver:

- 1) Power Factor:
 - a. Minimum 0.90
- 2) Driver Output Current:
 - a. Milliamp (mA) variable
- 3) Dimming Signal (Optional):
 - a. Control range, VDC 0 to 10
- 4) Surge protection device shall comply with ANSI c136.37, ANSI/IEEE c62.41.2. Each surge protection device shall be internally mounted inside housing and specified for 240V

operation with a minimum 10 kV/10kA surge protection. The surge protection device shall be a UL 1449 3rd edition type 4 recognized component for use in type 2 locations.

- 5) LED driver shall be mounted inside the housing, be replaceable, and shall be pre-wired to 240V ready for installation. Driver and LED arrays shall be designed for multi-current input operations with 0-10v driver adjustable output.
- 6) The LED driver shall comply with FCC rules and regulations, Title 47 CFR part 15 non-consumer (Class A).
- 7) The LED driver shall tolerate sustained open circuit and short circuit output conditions without damage.
- 8) The LED driver shall have an independently verified and documented failure rate of < 0.01% per 1000 hours wiring inside the housing shall comply with 600V/105°C rating or higher.
- 9) The LED driver shall have a Class “A” sound rating. Power supply/driver shall be UL recognized for dry and damp locations.
- 10) All other electrical components shall be UL listed or recognized for wet locations.
- 11) Output operating frequency must be > 120Hz and input operating frequency of 60Hz.
- 12) The LED driver shall be RoHS compliant.

LED Module / Array Requirements

- 1) LED module(s)/array(s) shall deliver a minimum of 70% of initial lumens when installed for 100,000 hours and meet IESNA L70 standards. Lighting distribution shall be in accordance with “IESNA Lighting Distributions”.
- 2) Lamp Lumen Depreciation (LLD) factor shall be supported by TM-21 data at 25°C for 50,000 hours.
- 3) Luminaire Dirt Depreciation (LDD) shall be 0.85 for UV stabilized acrylic optics and 0.90 for glass optics. It is the responsibility of each manufacturer to provide a calculation of LLD.
- 4) Light loss factor used in photometric layout calculations shall be the product of LDD and the manufacturer’s projected LLD at 100,000 hours at 25°C ambient temperature.

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- 5) Lumen maintenance shall be a minimum of 70% over 100,000 hours of life when operating at temperatures of 40°C (104°F) or less. The luminaire shall continue to operate and maintain the minimum optical performance criteria for the particular application in which it is installed.
- 6) Optical system components shall be rated at IP66 to protect against water, dirt, and insect infiltration, and be RoHS compliant.
- 7) Luminaire circuitry shall include quick connect/disconnect for easy separation.

Testing / Certification / Standards / Recommended Practices

- 1) Luminaire shall comply with:
 - a. ANSI C136:31 2010 (or latest) for 100,000 cycles at 3G acceleration for normal road and bridge applications.
 - b. UL/CUL listed, suitable for wet locations per UL 1598 OR CSA C22.2 Number 250.
- 2) The LED optical assembly and driver shall be IP66 rated per IEC 60529.
- 3) Luminaire components and applied finishes shall comply with the 1000 hour salt/fog test per ASTM B117 Standard.
- 4) LM-79 optical performance tests shall be conducted in accordance with IESNA standard practices for solid state lighting.
- 5) Luminaire shall be certified with a BUG rating (Backlight, Uplight, and Glare)
- 6) IESNA LM-80-15 (or latest)
- 7) ANSI C136.41-2013 (or latest)
- 8) ANSI C136.37 2011 (or latest)
- 9) ANSI C136.22 -2004 (or latest)
- 10) IEC 60529(or latest)
- 11) IEEE C62.41.2-2002 (or latest)
- 12) IESNA TM-15-11 (or latest)
- 13) RoHS
- 14) ANSI C136.10-2010 (or latest)
- 15) ANSI C78.377-2008 (or latest) (Chromaticity of solid state lighting products)

- 16) TM-21-11 (or latest)
- 17) ASTM D1654-08 (or latest)
- 18) IES LM-79-08 (or latest)
- 19) UL 1449 (Surge Protection Devices)

Warranty:

- 1) The warranty shall provide for the full replacement of the entire luminaire assembly, which includes the power supplies/driver, defective electrical and non- electrical parts, and light source for a period of ten (10) years from date of acceptance.
- 2) The luminaire shall be covered for part replacement of defective luminaires during the warranty period. Negligible light output from more than 10 percent of the LED packages constitutes luminaire failure.

Weight

- 1) Luminaire shall not weigh more than 30 pounds.

Effective Projected Area (EPA):

- 1) Luminaire shall not have an EPA of more than 1.0 sq. Ft.

Delivery:

- 1) LED luminaires shall be delivered to the job site as to not cause damage or required repairs.
- 2) Luminaires shall be 100% factory tested prior to shipment.
- 3) Delivery of material shall be coordinated with other trades to avoid delays.

Storage of Materials:

- 1) Material shall be stored in strict compliance with manufacturer's recommendations.

Handling:

- 1) Handle all products with care. Only sound, undamaged products shall be accepted.

Installation:

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- 1) The luminaires shall be installed on brackets as shown on the DPU Standard drawings and the manufacturer's specifications/recommendations.
- 2) Orientation and leveling of the units shall be so as to provide for uniform appearance, maximum lighting efficiency and ease of maintenance.

Internal Labeling:

- 1) A visible label shall be permanently attached to the inside surface of each luminaire housing. The internal label shall meet the requirements of ANSI c136.22 – 2011(or latest). The label shall include the following:
 - 2) Manufacturer's name and catalog number
 - 3) Month and year of manufacture
 - 4) Line input voltage
 - 5) Frequency (if over 60 hertz)
 - 6) Driver type (may be on driver)
 - 7) Luminaire type, wattage and voltage (may be on driver)
 - 8) Descriptive wiring diagram showing input terminals, driver, capacitors, starting aid, photo-control receptacle and LED array.

External Labeling:

- 1) External labels shall be per ANSI c136.15-2011 (or latest).

Submittals:

- 1) The following shall be provided with each fixture:
 - a. Luminaire submittal form
 - b. Utilization curves
 - c. Lux lines of horizontal foot-candles
 - d. Isocandle curves from photometric tests
 - e. Luminaire cut sheet
 - f. LED light source specification sheet
 - g. LED driver cut sheet

- h. Surge protection device specification sheet
 - i. LM-79 test report
 - j. LM-80 test report
 - k. TM-21 test report
- 2) At the time of the substantial completion / acceptance of the project, the contractor shall submit the manufacturer's ten (10) year warranty documentation.

Spare Parts:

- 1) The contractor shall provide 3% of the construction quantities of the complete luminaire, rounded up to the nearest whole number and shall be a minimum of 2 luminaires – each.
- 2) All spare parts shall be warranted by the product manufacturer for form, fit, and function and shall be fully compatible with the product supplied.
- 3) In addition, all spare parts shall be warranted against failure for a period not less than 10 years.
- 4) Spare parts shall be packaged to prevent corrosion or deterioration during long-term storage and delivered undamaged to the DPU Operations Center Storeroom located at:

400 Jefferson Davis Hwy

Richmond, Virginia, 23224

- 5) The receipt of delivery shall be considered part of the substantial completion requirement.
- 6) All packaging shall be clearly labeled with the product manufacturer's name and part number.
- 7) Electronic parts shall be packed in sealed plastic wrappers or hermetically-sealed containers.
- 8) Desiccant-cartridges shall be included in the packaging.















Recommended Manufacturers:

CITY OF RICHMOND

Department of Public Utilities

- 1) The following manufacturers are recommended to provide LED cobra head style luminaires or approved equal.
 - a. American Electric Lighting (Autobahn Series ATBM)
 - b. Philips Lumec (Roadway Roadfocus Series)
 - c. Cree Lighting (LEDway Series)
- 2) Additional recommended approved manufacturers may be available. Contact the DPU Street Light Engineer for manufacturer additional references.

APPENDIX C

<div></div> <div>Drafting Symbols and Descriptions</div> <div>Dept. Of Public Utilities – Street Lighting</div> <div>Rev. 03/2018</div>		
NO.	Description	Symbolology
1	Primary/Overhead/Exist	<u>PRIMARY O/H</u>
2	Primary/Overhead/Proposed	<u>PRIMARY O/H (PROP)</u>
3	Primary/Underground/Active	<u>PRIMARY U/G</u>
4	Primary/Underground/Proposed	<u>PRIMARY U/G (PROP)</u>
5	Secondary/Overhead/Single/Exist	<u>SECONDARY O/H</u>
6	Secondary/Overhead/Single/Proposed	<u>SECONDARY O/H (PROP)</u>
7	Secondary/Underground/Single/Active	<u>SECONDARY U/G</u>
8	Secondary/Underground/Single/Proposed	<u>SECONDARY U/G (PROP)</u>
9	Luminaire/Existing	
10	Luminaire/Proposed	
11	Pole/DPU/Existing	
12	Pole/DPU/Proposed	
13	Pole/Dominion Energy/Existing	
14	Pole/Dominion Energy/Proposed	
15	Pole/Verizon/Existing	
16	Pole/Verizon/Proposed	
17	Pole/DPW Traffic/Existing	
18	Pole/DPW Traffic/Proposed	
19	Pole/Comcast/Existing	
20	Manhole/Electric/Existing or Proposed	
21	HandHole/Electric/Existing or Proposed	

APPENDIX C



Drafting Symbols and Descriptions

Dept. Of Public Utilities – Street Lighting

Rev. 03/2018

NO.	Description	Symbology
22	Distribution Transformer/Existing or Proposed	
23	Meter/Existing or Proposed	
24	Recloser/Existing or Proposed	
25	Riser/Existing or Proposed	
26	Photocell/Existing or Proposed	
27	Feeder Breaker/Existing or Proposed	
28	Fuse/Existing or Proposed	
29	Switch/Existing or Proposed	
30	Splice Point/Existing or Proposed	
31	Sectionalizer/Existing or Proposed	
32	Substation/Existing or Proposed	
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