



**CITY OF URBANA, ILLINOIS
DEPARTMENT OF PUBLIC WORKS**

ADMINISTRATIVE DIVISION

M E M O R A N D U M

TO: Mayor Laurel Lunt Prussing and Members of the City Council

FROM: William R. Gray, Public Works Director

DATE: May 21, 2008

RE: University District Street Lighting Equipment Standardizations – Revised Request for Proposals

Attached please find an updated Technical Specifications Lighting Assemblies Request for Proposal (RFP) along with the Photometric Requirements for Vendor Submittals. The revised RFP and attached photometric requirements we believe have addressed the concerns discussed at the last Committee of the Whole meeting.

Staff is seeking approval to release this RFP to qualified Vendors so that equipment submittals can be evaluated and determined to see if there is a product that meets our needs.

**UNIVERSITY DISTRICT STREET LIGHTING
EQUIPMENT STANDARDIZATION**

**REQUEST FOR PROPOSALS
RFP #UOI-71**

**TECHNICAL SPECIFICATIONS
LIGHTING ASSEMBLIES**

Description – The Lighting Assemblies shall be as generally described on Sheet A through Sheet G of the attached drawings and as detailed on the Request For Proposals (RFP #UOI-71) and in these technical specifications. The Vendor shall furnish all supervision, materials, equipment, accessories, handling, shipping and delivery to provide the specified Lighting Assemblies as detailed herein, complete with lamps, and with ground lug ready for grounding connections. All transportation, handling, shipping costs and manufacturer’s storage shall be included.

Luminaires – The proposed luminaires shall generally match the style and appearance of the Purchaser’s existing Campustown Lighting equipment as shown on the attached drawings, and shall equal or exceed the photometric performance as specified in the attached “Photometric Requirements for Vendor Submittals.”

Housing shall be made of cast 356 aluminum, and shall be formed by a permanent mold. Cast 356 aluminum one-piece frames and doors with integral latches and hinges shall provide access to the optical chamber and ballast compartments. Embedded one-piece silicone rubber memory retentive gaskets shall ensure weatherproofing.

Lenses for luminaires with induction lamps shall be vandal and impact resistant acrylic, UV stabilized to prohibit yellowing, white in color. Lenses for the luminaires with Metal Halide (MH) or High Pressure Sodium (HPS) lamps shall be one-piece, seamless, injection-molded borosilicate glass, having an inner prismatic surface complete with a semi-prismatic house-side shield and external glare-softening prisms, clear in color; or shall be one piece, seamless borosilicate glass, flat or sag lens. The HPS/MH luminaires shall have an IES Type 3 hyperextensive (asymmetrical) distribution optical system. Luminaire optical assemblies shall rotate street-side to 90, 180, 270 and 360 degrees to accommodate various placement scenarios.

The luminaires shall feature toolless entry to the optical chamber. The optical chamber shall be sealed when the lens is secured to the capital. MH or HPS lamps shall have porcelain mogul base. MH shall have 4kv pulse-rated socket. Induction lamp in pedestrian fixtures shall be Phillips QL System, 85 Watt 3000 degrees Kelvin CCT. Luminaire optical chamber shall have a minimum IP66 rating, and ballast compartment a minimum IP54 rating.

For “Pedestrian Luminaires” with glow-top hood, the hood shall be light-diffusing thermoformed opaline acrylic dome, mechanically assembled to the luminaire. For

luminaires without glow top hood, the hood shall be cast 356 aluminum, mechanically assembled to the luminaire.

Ballasts shall meet standards of the Certified Ballasts Manufacturers' Association. High intensity discharge ballasts shall be constant wattage autotransformer, high power factor type and shall be designed for reliable starting in -20 degrees F. Ballasts for metal halide lamps shall be pulse start. Acceptable manufacturers include Advance, Universal, and General Electric. Ballasts and induction generators shall be multi-tap and shall be delivered wired for 208 or 240 VAC operations as specified per order.

Finish of all fixture metallic parts shall be polyester powder coat paint as specified below under "Powder Coating Process," below.

Provide luminaires with a "street side" orientation mark located to be aligned perpendicular to the centerline of the street.

Luminaires shall be supplied from the factory with a quick-disconnect connector at the pole top and shall have sufficient length of 3#12 or 3#14 (blue, red and green ground) THWN or TEW wire to reach 18" out of handhole in pole base.

Arms – The arms for the "Pedestrian Luminaires" and the "Roadway Luminaires" shall be made from spun and tapered aluminum 6063-T4 (tempered to T6 after welding), formed into a vertically oriented ellipse of 4" (102mm) by 2-7/8" (73mm) welded onto a plate and mechanically fastened to mounting plate. Mounting plate shall be made from cast 356 aluminum, mechanically fastened to pole by two through-bolts.

Poles – Poles shafts shall be made from 6063-T6 tapered aluminum; minimum 0.188" (4.7mm) wall thickness (or thicker as required to handle structural loading), and include 16 sharp or rounded flutes. With the exception of diameter, the profile of the flutes shall match on all poles. Bolt heads shall be internal to pole. Provide ground lug. All fasteners shall be stainless steel. All exposed fasteners below 10 feet above grade shall have pinned Allen vandal-resistant heads.

The pole shall accommodate four 1-inch diameter anchor bolts arranged in a 12 inch bolt circle installed in a square with its sides parallel and perpendicular to the curbline (X-configuration). An access door shall be provided in the pole base secured with pinned-Allen head vandal proof fasteners.

Pole shaft shall be provided with a dedicated grounding lug easily accessible within the pole's access door prepared to receive a #6 bonding wire.

Poles shall be delivered to the job site with a factory applied shipping wrap of cardboard or other material to fully protect against scratches and coating stain. Poles shall be blocked and bundled in groups of multiple poles, or use other equivalent means to prevent shifting and damage during transport.

If a clamshell base is used, it shall be cast aluminum, have black oxide finished stainless steel fasteners, be fitted with internal alignment plates to ensure perpendicularity with the pole shaft, and shall include a cast aluminum access plate in the clamshell located directly over the access plate in the pole shaft.

Anchor Bolts – Manufacturer of pole shall provide anchor bolt template for installation and shall provide 1-inch hot-dipped fully galvanized steel anchor bolts in a length that exceeds the maximum wind rating of the pole.

Receptacle – An optional weatherproof duplex receptacle shall be factory installed 12 feet above grade. The duplex GFI receptacle shall be a ground fault circuit interrupting type, full gang size, polarized, duplex, parallel blade, U grounding slot, specification grade, rated at 20 amperes, 125 Vac and have screw terminals (use of push-in terminals is not acceptable). Receptacle cover plate shall be weatherproof with NEMA 3R with cord in place spring-loaded cast aluminum cover door that meets current NEC standards. Receptacle shall be supplied from the factory with a quick-disconnect connector at the receptacle and shall have sufficient length of 3#12 or 3#14 (black, white and green ground) THWN or TEW wire to reach 18” out of handhole in pole base.

Lamp – Furnish and install in the correct orientation according to manufacturer’s specifications a lamp in each luminaire.

For Metal Halide and High Pressure Sodium lamps, provide clear lamps with mogul base. For Metal Halide: provide pulse start UV shield lamps, color temperature: 4000 degrees K; Minimum CRI: 65; Minimum median rated life at 10+ hours/start: 15,000 hours. For High Pressure Sodium: color temperature: 2100 degrees K; Minimum CRI: 22; Minimum median rated life at 10+ hours/start: 24,000+ hours. All MH and HPS lamps on the project shall be by General Electric, Venture or Phillips, and (for each type) shall have the same color temperature and CRI.

Induction lamps shall be 85 watt, 3000K QL by Phillips and shall be furnished and installed in the luminaire by the manufacturer. The generator for the induction lamp shall be integral to the luminaire housing and shall be furnished and installed by the manufacturer.

Wiring – Color-code all conductors to designate neutral conductor and phases. Phases shall be blue and red, neutral shall be white and ground shall be green.

Vandal-Resistant Fasteners – The Purchaser’s standard vandal-resistant fasteners are a “pinned allen-socket” style requiring a specialized allen wrench to install and remove. The allen wrench contains a hole in the end to allow engagement with the vandal-resistant fasteners. All references to vandal-resistant shall imply the Purchaser’s standard vandal resistant fastener.

Powder Coating Process – Equipment, materials, luminaires and poles that are specified to be "powder coated" shall be polyester powder coated in a “textured” finish with a UV resistant powder designed for outdoor use without color fade. The polyester powder

coating pre-treatment process shall have at least the following steps: hot alkaline wash, clear water rinse, hot phosphoric acid etching, clear water rinse, and chemical seal (for aluminum) or zinc-phosphate application (for steel). The polyester powder coating shall be electrostatically applied thermosetting polyester resin powder coating to a minimum thickness of 100 microns.

The manufacturer shall coat luminaires and poles in its own facility. Out-sourcing of the powder coating process is not allowed.

Warranty – The manufacturer shall warranty the Metal Halide ballast and Induction lamp system for a period of 5 years from the date of installation. The manufacturer shall handle and resolve all freight claims and/or damages associated with the shipping of the material to the Owner’s designated receiving location.

In addition to the standard product warranty, all surfaces featuring a powder-coat finish shall carry a 5-year finish warranty. The coatings on all new poles and luminaries shall carry this 5-year finish warranty from date of installation. This warranty shall provide protection against:

Peeling, Cracking and/or Fading: UV damage and fading of more than 10% of the original color (tint).

Discoloration: Discoloration in excess of 5 E units (CIE 1976 CIELAB) as measured using procedure ASTM D 2244, latest revision, comparing an unexposed sample to an exposed surface after removal of dirt and chalk.

Gloss retention: A minimum of 30 % gloss retention as measured using procedure ASTM D 523, latest revision, comparing an unexposed sample to an exposed surface after removal of dirt and chalk.

Corrosion and lack of adhesion: Corrosion and lack of adhesion in excess of Rust Grade 5, as measured using procedure ASTM D 610, latest revision, based on the complete product assembly. For the purpose of this warranty, this procedure applies to both aluminium and steel.

Warranty shall provide for the full cost of refinishing in the event of a coating failure. Manufacturer shall submit full warranty information with a specific letter for this proposal, detailing the warranty terms and conditions in accordance with this specification.

UNIVERSITY OF ILLINOIS
FACILITIES & SERVICES

**UNIVERSITY DISTRICT STREET LIGHTING EQUIPMENT
STANDARDIZATION**

**REQUEST FOR PROPOSALS
RFP #UOI-71**

**PHOTOMETRIC REQUIREMENTS
FOR VENDOR SUBMITTALS**

The Vendor shall include in its proposal the photometric information necessary to respond to the following requirements.

All luminaires shall be IES cutoff or full cutoff designation in accordance with IESNA RP-8. The only exception to this requirement is the pedestrian luminaire with the induction lamp to be used only in the Campustown business district. Vendor shall submit IES cutoff designation and luminaire spherical lumen distribution plot in accordance with IESNA TM-15, for each type of luminaire and wattage.

Vendor shall submit calculations showing the optical and energy performance of the proposed lighting assemblies for typical street configurations as detailed herein. Vendor shall submit IES photometric files for each of the proposed luminaires (on CD). All calculation results shall be in maintained footcandles. Submit documentation to support the light loss factors and ballast loss factors that have been used in the calculations. Sidewalk calculation grid shall be single at centerline for 5' wide sidewalks and shall be double at ¼ points for sidewalks wider than 5'.

Vendor shall provide a spreadsheet summarizing the data which includes at least the following information: Configuration number, lighting assembly type, luminaire type, lamp type, wattage of lamp, mean lumens of lamp, light loss factors used in calculations, horizontal photometric result, vertical photometric result, pole spacing and number of poles required per 500' to meet photometric requirement, equipment cost per pole, equipment cost per 500' street length, energy use per pole (including all ballast losses), energy use per 500' street length.

Calculations shall be based on the following lamps:

Lamp – K: 400 Watt Pulse Start MH, Clear UV Shield, 4000 KCCT. 33,000 mean lumens.

Lamp – M: 320 Watt Pulse Start MH, Clear UV Shield, 4000 KCCT. 25,000 mean lumens.

Lamp – N: 100 Watt Pulse Start MH, Clear UV Shield, 3200 KCCT. 5,500 mean lumens.

Lamp – O: 85 Watt QL Induction, 3000 KCCT. 4,800 mean lumens.

Lamp – Q: 200 Watt Pulse Start MH, Clear UV Shield, 4000 KCCT. 16,000 mean lumens.

If the wattages of lamps shown above do not provide the photometric result specified, the manufacturer may vary the wattage/lumens shown (utilizing the same lamp type) to reach an optimal result, and clearly indicate the change along with the specific lamp type proposed for that configuration in the submittal.

For the purposes of this submittal, there are 4 types of luminaries to consider, as follows:

Luminaire S (L-S): Roadway type with larger housing, clear glass lens, MH.

Luminaire T (L-T): Pedestrian type, smaller housing, clear glass lens, no glow top, MH.

Luminaire U (L-U): Pedestrian type, smaller housing, white acrylic lens, glow top, induction lamp.

Luminaire V (L-V): Pedestrian type, smaller housing, white acrylic lens, no glow top, induction lamp.

For the purposes of this submittal, setback shall be considered to be 24" back of curb. Arm length shall be as shown on the attached equipment drawings. Arm orientation shall be as follows: Roadway Luminaire arms shall be oriented perpendicular toward street; Pedestrian Luminaire arms shall be oriented perpendicular away from street.

Provide point-by-point illuminance calculations per IES grid specifications (grid length = 500' street length) for each of the following Configurations:

Configuration #1 – Campus Business District Major Roadway (Green Street in Champaign – MH/Induction): Lighting Assembly A with Luminaires S (with Lamp K) one-side and Lighting Assembly G with Luminaire U (with Lamp-O) alternating on the same side at mid-points between LA-A's. Across the street, locate LA-G's at mid-points between poles on the other side of street. Grid: 500' of street length, 3@12' lanes (center turning) for a 36' curb-to-curb plus 15' sidewalk each side. Roadway photometric requirement: 1.7 fc avg. @ 3.0 to 1 avg/min uniformity. Sidewalk photometric requirement: 2.0 fc avg. @ 4.0 to 1 avg/min uniformity plus 1.0 min vert fc at 5-1/2 ft above ground.

Configuration #2 –Major Roadway (Green Street in Urbana – MH/MH): Lighting Assembly A with Luminaires S (with lamp-K) & T (with Lamp-N) one-side and Lighting Assembly G with Luminaire T (with Lamp-N) alternating on the same side at mid-points between LA-A's. Across the street, locate LA-G's at mid-points between poles on the other side of street. Grid: 500' of street length, 4@11' lanes (no median) for a 44' curb-to-curb plus 10' grass parkway plus 15' sidewalk each side. Roadway photometric requirement: 1.7 fc avg. @ 3.0 to 1 avg/min uniformity. Sidewalk photometric requirement: 1.0 fc avg. @ 4.0 to 1 avg/min uniformity plus .5 min vert fc at 5-1/2 ft above ground. No parkway photometric requirement.

Configuration #3 –Collector (First Street in Champaign – MH): Lighting Assembly E with Luminaire S (with Lamp-M) both sides alternating. Grid: 500' of street length, 2@12' lanes (no median) plus 2@8' parking lanes for a 40' curb-to-curb plus 6' grass parkway plus 5' sidewalk each side. Roadway photometric requirement: 1.2 fc @ 4.0 to 1 avg/min uniformity. Sidewalk photometric requirement: 1.0 fc avg. @ 4.0 to 1 avg/min uniformity plus .5 min vert fc at 5-1/2 ft above ground. No parkway photometric requirement.

Configuration #4 –Local (Various Locations – MH): Lighting Assembly E with Luminaire S (with Lamp-Q) both sides alternating. Grid: 500' of street length, 2@12' lanes (no median) for a 24' curb-to-curb plus 6' grass parkway plus 5' sidewalk each side. Roadway photometric requirement: .9 fc @ 6.0 to 1 avg/min uniformity. Sidewalk photometric requirement: .5 fc avg. @ 4.0 to 1 avg/min uniformity plus .2 min vert fc at 5-1/2 ft above ground. No parkway photometric requirement.