

STREET LIGHTS

****From Bristol HES 021-1(28)(Re-advertised)**

- xx. DESCRIPTION. This work shall consist of furnishing and installing street light assemblies, complete with lamp, wiring, fuses, and fuse holders internal to the pole handhole, with ground rod installed, grounding connections, and all other items necessary to provide a complete and operational system.

The work under this Section shall be performed in accordance with these provisions, the Plans, and Section 679 of the Standard Specifications.

- xx. GENERAL. The street light assemblies shall be as generally shown and as specified in the Contract Documents. The Contractor shall furnish all supervision, materials, equipment, accessories, handling, shipping, and delivery to provide the specified street lighting assemblies as specified, complete with all appurtenances.

- xx. MATERIALS. The Lighting Assembly shall be provided as classified by types detailed in the Contract Documents.

(a) Lamp. Furnish and install in the correct orientation according to manufacturer's specifications for LED in each luminaire.

(b) Fuses. Luminaire and pole mounted fuses shall be current limiting, time delay fuses rated at 100,000 Amps interrupting current.

(c) Fuseholders. For mounting in the pole base for the luminaire fuses shall be rated at 20 amperes and shall have waterproof boots. Provide one two-pole in-line fuse holder per 240/208V circuit, and one single pole fuse holder per 120V circuit. Fuse holders shall allow quick changing of fuses without affecting permanent wiring connections. Wiring connections to fuse holders shall be mechanical compression type ordered specifically for the wire sizes installed. Fuse holders shall have weatherproofing rubber boots supplied by the fuse holder manufacturer installed over all of the wires and terminations.

(d) Ground Rods. Ground rods shall be 5/8 inch diameter by 10 feet long and be copper clad steel.

(e) Ground Rod Conductor Connections. Ground rod connections shall be thermal weld type or shall be made with a UL listed hydraulically applied (12 ton minimum) compression connector (hydraulic compression tool and UL listed for grounding ground rod tap connector). Follow manufacturer's written instructions for installing ground rod connections. Do not exceed the rated wire bundle capacities of the type of ground rod connection used.

(f) Wiring. Exterior and underground wiring in poles, conduit, and grounding conductors: 98% conductivity copper 600 volt insulation, XHHW, THHN/THWN, or THWN-2. Streetlight pole

internal wiring: 98% conductivity copper 600 volt insulation, MTW, XHHW, THWN-2, or THHN/THWN.

- (g) Color Code. All conductors shall have color-coded insulation to designate ground, neutral conductor, and phases. Colored tape alone is not acceptable. Phases shall be blue and red, receptacle branch circuit shall be black, neutral shall be white, and ground shall be green.
- (h) Wire Markers. Wire markers shall be plastic cable wrap type with marking tag for permanent tagging. Plastic tag shall have controller and circuit number written on it with permanent ink marking pen per tag manufacturer's directions.

xx. SPLICES AND JUNCTIONS.

- (a) All splices and junctions shall be made waterproof by a UL approved method. Conductor splice shall be made by UL listed compression type butt splice kit. Waterproofing method shall be by heat shrink, by sealant in waterproof splice cap, or by sealant in cold shrink.
- (b) #10 AWG or smaller, above grade: UL listed compression type connectors.
- (c) #8 AWG or larger, above grade: UL listed mechanical compression connector.
- (d) Splices and junctions shall not be buried or installed in conduit.
- (e) Splices in junction boxes shall be UL listed hydraulic compression (12 tons minimum) type butt or two-wire stub splice with UL listed heat shrink waterproof splice cover.
- (f) End caps shall be used to seal and insulate the ends of 1/C wires. End caps shall be waterproof of thermally stabilized, modified polyolefin heat shrink material with mastic sealant inside UL listed 600 Volt, 90°C.
- (g) Wet location splices and junctions shall be accomplished with UL listed heat shrink 600 Volt, 90°C, waterproof splice kits.

- xx. CONSTRUCTION DETAILS. Install poles plumb and true on the foundation and in strict accordance with the manufacturer's instructions. If needed, use stainless steel flat washers or stainless steel horseshoe shims to plumb the poles. Do not seal under the pole base (to allow for drainage). Tolerance in plumb: ¼ inch in 8 feet.

Factory applied shipping wrap of cardboard or other material shall remain in place throughout handling and installation to protect pole finish (to be removed only after final pole installation). Pole grips, truck arms, jaws, trailers, and any other surfaces that contact poles prior to or during installation shall be fully and thickly padded to prevent scratching poles. Before final acceptance of the project, provide repair or touch-up on poles that have been

damaged during construction, using a method approved by the manufacturer.

Each streetlight pole shall be provided with its own separate ground rod adjacent to its foundation and bonded to the pole's grounding lug as shown in the Contract Documents.

Install luminaires with the correct optical system orientation, socket position, and inclination angle to meet the specified photometric requirements. Align luminaires vertical and perpendicular (or tangent) to the centerline of the street, and clean luminaire components of all construction dirt, dust, and fingerprints prior to final completion.

Handle lighting fixtures carefully to prevent breakage, denting, or scoring of fixture finish. Do not install damaged lighting fixtures. Replace with undamaged units and return damaged units to equipment manufacturer. Install luminaire, fusing, and wiring complete. Install a wattage identification sticker inside the pole handhole. No other identifying numbers except the manufacturer's nameplate shall be installed on the poles, arms, or luminaries.

Splices and junctions shall be made only in pole handholes and underground handhole junction boxes. Perform no more splices than needed. Do not splice or junction any wires that continue through a pole or junction box, i.e. those conductors without a termination to the adjacent pole. Use junction box as a pulling point only. Cable pulled through poles or junction boxes shall be marked as specified herein and shall have sufficient loop to extend 18 inches beyond handhole or junction box lid for future maintenance, but shall not be spliced. All splices in junction boxes shall be made waterproof by a UL listed heat shrink splice cover. All splices and junctions shall be considered incidental to the work under this Section.

Install a tie wrap type permanent wire marker on each and every pair of conductors passing through every junction box or pole handhole (bundle circuit pairs together). Mark controller number, circuit letter, and pole number on each tie wrap and designate home runs as encountered. Install markers in each pole handhole.

xx. METHOD OF MEASUREMENT. The quantity of Special Provision (Street Light) of the type specified to be measured for payment will be for each street light assembly installed in the complete and accepted work.

xx. BASIS OF PAYMENT. The accepted quantity of Special Provision (Street Light) of the type specified will be paid for at the Contract unit price per each. Payment will be full compensation for furnishing, transporting, handling, and placing the materials specified including poles, luminaries, bracket arms, and photocells; for providing a complete street light assembly, wired in place; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Light pole bases will be paid separately under Contract item 679.21.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.620 Special Provision (Street Light, Type A)	Each
900.620 Special Provision (Street Light, Type B)	Each
900.620 Special Provision (Street Light, Type C)	Each