



Street Light Installation Specifications

425 East Baltimore Street
Hagerstown, MD 21740
Phone: (301) 790-2600
Fax: (301) 739-7958

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I. INTRODUCTION

These specifications are published as a reference for Contractors, Architects, Engineers, and other interested parties to outline the City of Hagerstown's standard requirements for roadway lighting. They apply **ONLY** to lighting installations for roads, streets, and alleys that are or will be dedicated to the City of Hagerstown, Maryland.

The specifications are subject to revision from time to time without notifications to keep pace with lighting developments and improvements.

In order to have an available supply of replacement parts, HLD has standardized on certain luminaries, poles, and other materials. Only these standard materials are to be used on new lighting systems. See **Section IV and Appendix A** for more details.

For new subdivisions or roadway projects, the Developer must contact HLD prior to site design for any additional specific requirements that may apply.

II. DEFINITIONS

Unless the context clearly indicates otherwise, certain words and phrases when used in this booklet shall be defined as shown below. For additional definitions, see the latest edition of the National Electrical Code.

AMPACITY - Current carrying capacity expressed in amperes.

APPROVED - Indicates approval by HLD Engineering Dept.

CITY - The City of Hagerstown, Maryland.

CONTRACTOR - Any individual paid by the Developer that would be responsible for the installation of the Streetlights.

DEVELOPER - Any present or prospective user of HLD or Potomac Edison services or their representative that will be required to install streetlights in a new or existing development or other project within the City of Hagerstown, Maryland.

FURNISHED AND INSTALLED BY DEVELOPER - Materials so specified shall be purchased and installed by the Developer at the expense of the Developer.

FURNISHED AND INSTALLED BY HLD - Either HLD or an authorized agent acting on its behalf shall provide labor and material at the expense of HLD for the items so specified.

FURNISHED BY HLD, INSTALLED BY DEVELOPER - Materials so specified shall be provided by HLD at no expense to the Developer and be installed at the expense of the Developer.

HLD - The City of Hagerstown, Maryland Light Department

NEC - National Electrical Code, NFPA 70E.

SERVICE POINT - Point of connection between the facilities of HLD or Potomac Edison and the Developer's wiring.

SUPPLIED AND INSTALLED BY HLD AND PAID FOR BY THE DEVELOPER - Either HLD or an authorized agent acting on its behalf shall provide labor and material at the expense of the Developer. Costs will be paid for in full before work is completed by HLD.

III. PROCEDURES FOR NEW DEVELOPMENT

A. INITIAL DESIGN

1. The Developer should first become familiar with these standards and requirements. The Developer must decide which type of lighting system to install (post-top, cobra head, etc).
2. The Developer next must complete the layout of a lighting system that provides adequate illumination and determine the locations and types of light poles and fixtures as well as the underground wiring system. Consult HLD to determine the required foot-candle and uniformity levels before starting detailed system design.
3. Design must be coordinated with HLD and possibly Potomac Edison, particularly as to the location of power supply point(s) for the system.
4. Easements shall be provided at no cost to the City for all facilities located outside of dedicated City rights-of-way.

B. SUBDIVISION PLAT AND SITE PLAN APPROVAL

HLD approval of the proposed lighting system will be necessary for the final approval of the Developer's subdivision plat and/or site plan. Furthermore, HLD approval must be secured prior to purchasing any materials or beginning any construction.

When getting bid prices for materials, the Developer must provide his suppliers with copies of the enclosed HLD purchase specifications to ensure that the correct materials are purchased.

The following information must be submitted to HLD for approval:

1. System layout drawing (to scale) showing locations of all light poles and underground junction boxes, location and depths of wiring and conduit runs, ground rods, and other major facilities.
2. Detailed constructions and installation drawings:
 - a. Typical pole and/or foundation installation.
 - b. Conduit and wire installations and sizes.
 - c. Wiring connection diagram and schematic; identifying each leg of the supply system as RED or BLACK, showing the neutral (WHITE), showing the ground (GREEN), and showing which leg each light is connected to. Also show fuse locations and sizes on the diagram.

3. List of proposed major materials, giving Manufacturer and Catalog No. of each item, including the following items:
 - a. Luminaries
 - b. Lamps
 - c. Photoelectric Controls
 - d. Poles
 - e. Anchor bolts and nuts (if any)
 - f. Junction Boxes
 - g. Wire and Cable
 - h. Connectors
 - i. Ground Rods and Clamps
 - j. Fuses and Fuse Holders

NOTE: Only HLD standard materials for new installations may be used. See **Section IV and Appendix A**.

4. Subdivision Plat or Site Plan drawing showing easements for lighting facilities located outside dedicated rights-of-way.
- C. Prior to construction, if the lighting system resides within the Potomac Edison electric service territory, the Developer must obtain the electrical layout drawings from Potomac Edison, indicating transformer, secondary, service, and distribution line locations, for HLD so that the electrical service connections to the lights can be obtained. HLD will not be held responsible for additional road crossings that may be needed to connect to the Potomac Edison padmounted transformer(s).
 - D. During construction, HLD Engineering approval must be obtained for any field changes from drawings or material lists as submitted to and approved by HLD. The Developer and his Contractor are responsible for keeping records necessary for preparation of as-built drawings.
 - E. During construction, HLD Engineering must inspect and approve the system installation, including the following:
 1. Verification that all materials being installed are as approved by HLD.
 2. ALL underground conduit and wiring installations must be approved prior to backfilling. One working day advance notice required.
 3. Any foundation or other concrete installation must be approved prior to pouring concrete. One working day advance notice required.

- F. The following items must be completed prior to energizing the streetlight circuits. NOTE: Final connections of lighting system to power supply shall be made ONLY by HLD or Potomac Edison personnel.
1. The completed installation must receive final approval and acceptance of HLD Engineering.
 2. The Electrical Inspector must approve the installation.
 3. The Developer must furnish HLD with complete as-build drawings showing the information outlined in Section B.2 above. In particular, locations and depths of underground conduits and wiring connections must be included. Show which leg of the supply (RED or BLACK) each light is connected to.
- G. When the lighting system is energized, HLD will amp-probe each leg to ensure lighting loads are properly balanced. The Developer must make any adjustments necessary to balance the loads at that time.
- H. The Developer is responsible for the purchase and installation, to approved HLD specifications, of the street light system. HLD shall furnish or contract to furnish electrical power during this time, at no charge to the Developer, and shall assume all operation and maintenance costs of the entire installed system; one (1) year after the City of Hagerstown assumes ownership of all streets and rights-of-way within the development. Until that ownership transpires, the Developer will be responsible for all aspects of the street light system. Upon assuming ownership, HLD has the manpower and equipment resources to serve this area. Electrical service will be provided by HLD or Potomac Edison being location dependent. Any maintenance problems not corrected by the Developer will be repaired by HLD, with the cost of all such work charged against the Developer's Guarantee Bond. Should any hazardous conditions develop, HLD reserves the right to disconnect the power supply until the problem is corrected.
- I. Approximately one (1) month following the conditions set in Section "H" above, a final field inspection will be made by HLD. Any problems such as leaning poles, unsatisfactory connections, burned-out lamps, etc. shall be corrected by the Developer or the necessary work will be performed by HLD with the costs charged against the Developer's Guarantee Bond.

IV. INSTALLATION REQUIREMENTS

A. GENERAL

The street lighting system layout should generally be as shown in **Drawing H2**. Facilities are normally located in the grass utility strip between curb and sidewalk. Wiring is to be underground, in conduit, with an underground junction box at each light installation. Luminaries (light fixtures) are to be 120-Volt, complete with ballast and individual photoelectric control receptacle.

Streetlight supply will be 120/240 volt single phase 4-wire for the layout shown in **Drawing H2**. Connected load on one leg must not exceed 24A per leg. Maximum fuse size: 30A.

The locations of and spacing between lights will depend on the required average illumination levels and illumination uniformity according to IES accepted levels.

A minimum 4' horizontal clearance must be provided between any poles or junction boxes and other utilities at grade or underground (fire hydrants; water, sewer, or gas lines; other electric power lines; etc.). Maintain at least 6' clearance between poles or junction boxes and edges of driveways.

The entire lighting system must conform to the latest edition of the National Electrical Safety Code.

B. POLE INSTALLATIONS

1. GENERAL

All poles shall be vertical and plumb. Poles shall be located such that the closest part of the pole is not less than 2'-0" behind the curb. All poles and lights must be located close enough to the roadway to permit re-lamping and other maintenance by HLD's vehicles and equipment. Handholes (in fiberglass and aluminum poles) shall not be located on the side of the pole facing the curb.

In locations not protected by standard concrete curbs, only anchor base type poles are permitted.

2. DIRECT BURIAL FIBERGLASS POLES FOR POST-TOP LUMINARIES SEE **DRAWING H7**.

This type of installation is permitted only in grass areas where protected by concrete curb. It is not acceptable in paved areas, such as where the sidewalk is continuous out to the curb.

Wiring from the junction box to the pole may be direct buried. Install a spare UF cable from junction box to the pole.

C. LUMINAIRE INSTALLATIONS

Luminaires shall be installed in accordance with manufacturer's instructions. Cobra-head type luminaries must be properly leveled, and post top Luminaires must be securely fastened to the light pole in a vertical position.

Cobra head luminaries shall be installed at 25'-30' mounting height. Post top luminaries shall be installed at 14' mounting height.

D. JUNCTION BOX INSTALLATIONS

SEE DRAWING H3.

Junction boxes placed shall be of the type specified in Section V, - Line F.

A junction box must be provided adjacent to each light pole installation, and at each end of all street crossings.

ALL junction box lids shall be grounded if metallic in nature. Note that cast iron lids for sidewalk areas must be drilled to accommodate grounding connector. This note is for older streetlight handhole installations where metallic handhole lids may have been installed.

E. CONDUIT INSTALLATIONS

SEE DRAWING H8.

All wiring runs shall be in Schedule 40 PVC Conduit unless otherwise noted. Normally, the installations will be:

1. Conduits between lights: Two 2" conduits, 24" minimum cover.
2. Conduit from power source to first junction box: Two 2" conduits, 24" cover.
3. Street crossings: two 2" conduits, 24" minimum cover, **Schedule 80**.

Conduit runs shall be as straight as possible between junction boxes. No single run may exceed 300' in length or 270° total bends (including the 90° ells up into the junction boxes). Red "Caution" Tape must be furnished in the backfill 12" below final grade.

At least 12" vertical (at a crossing only) or 36" horizontal separation must be maintained between lighting conduits and other underground utilities (e.g. water, gas, telephone, power, etc.). In EXTREME cases, depending on the type of other utility, vertical separation at crossings may be reduced to 6", but only with the approval of HLD Engineering.

No foreign facilities such as private electrical wiring, telephone lines, etc. may be placed in the trench with the lighting facilities.

Note that HLD must inspect and approve all installations before backfilling. One working day advance notice is required.

F. ELECTRICAL WIRING AND GROUNDING

1. GENERAL

The maximum number of lights that can be connected to a single line depends on the light wattage and the spacing between lights. The connected load on either leg of the system must not exceed 30A. In addition, the voltage drop from the power source to the last light at the end of the wiring run must not exceed 5%. One circuit cannot normally run more than about 1800' from the power source.

If possible, the power source should be located toward the center of lighting system rather than at one end.

2. POWER SUPPLY

The Developer must consult HLD to determine how electricity will be supplied to the lighting system.

In some cases where an HLD underground power distribution system runs along the street, individual lights may be tapped directly into the HLD secondary handholes depending on the design.

Elsewhere and in Potomac Edison electric service territory the Developer must install a completely separate lighting circuit, fed from a single supply point (see **Drawing H2**). Such systems shall be installed to include an above ground non-metered pedestal, required by Potomac Edison. See Appendix A for acceptable devices.

In all cases, the final connections to the power supply will be made ONLY by HLD or Potomac Edison personnel.

3. FUSING

- a. General:
Fuses shall be sized for 80% of connected load.
Maximum fuse size shall be 30A.
- b. Overhead Power Source:
Where the source is overhead secondary lines atop a pole, HLD will install a street lighting relay or fuse box at cost to the developer. Consult HLD if this type of connection is necessary.
- c. Where the supply source is an HLD padmounted transformer or service handhole, both hot legs of the supply circuit are to be fused with cartridge fuses placed in waterproof fuse holders located within the first lighting junction box determined by HLD Engineering.
- d. Lighting systems fed from Potomac Edison padmount transformers are to have the fuses located within the first lighting junction box.
- e. Each lighting fixture shall be fused with a 10A fuse within each lighting handhole.

4. GROUNDING

A ground rod shall be provided for each streetlight, to be installed in each handhole. See **Drawing H4.1 or H4.2** for additional grounding details.

Ground rods should be installed in junction boxes with the head approximately 8" below the closed junction box lid. Rods should be driven before conduits are placed. A bare #6 copper jumper shall be connected from each ground rod and grounding conductor within the junction box, as shown on Drawings **H4.1 or H4.2**.

The following shall be grounded:

- a. All Metal Poles
- b. All Junction Box Covers. Note that the round cast iron lids for 18" fiber junction boxes must be drilled to accommodate a grounding connector.
- c. ALL Luminaires.
Luminaires should be grounded using the ground wire in the UF supply cable.

5. WIRING

a. SYSTEMS WITH A COMMON LIGHTING SUPPLY CIRCUIT (per **Drawing H2**).

The 120/240 Volt, 4-Wire feeders between lights are to be either #2 or 1/0 aluminum URD triplex cable with separate ground conductor or 4-#6 THHN CU wire. Wiring from the junction box to each individual light is to be copper #10-2 UF cable (with ground).

At each access point (e.g. each junction box), exposed portions of the wiring shall be color-coded by tape to identify the neutral and each hot leg unless colored THHN is used. Throughout the entire system, the Neutral shall be colored WHITE, ground shall be colored GREEN, one Hot Leg shall be colored RED, and the remaining Hot Leg can be left without tape, this will be called BLACK on the drawings. Wiring must be color coded at the connection to the power supply, at the fuses, and at each individual light connection.

Lighting loads are to be evenly balanced on the two legs of the 120/240 supply. Alternate lights shall be connected to alternate legs of the triplex feeders.

SEE DRAWING H4.1 or H4.2 FOR WIRING CONNECTION DETAILS.

b. SYSTEMS WITH LIGHTS INDIVIDUALLY CONNECTED TO HLD LINES.

The supply to each individual light will be 120-volt, 3-wire. Wiring from HLD's padmount, transformer, service handhole, etc. To the light is to be copper #10-2 UF cable (with ground). At each access point (e.g. each junction box), exposed portions of the wiring shall be color coded to identify the neutral and the single hot leg. Color the neutral WHITE, and color the Hot Leg BLACK.

To facilitate the wiring installation, HLD will pull-in the run of UF cable from the Developer's street light junction box into HLD's padmount transformer or service handhole and make any connections and/or fuse installations needed inside the transformers or service handhole. The Developer should furnish the fusing and other materials to HLD and should coil up enough UF cable in the streetlight junction box to reach HLD's power supply point.

c. GENERAL

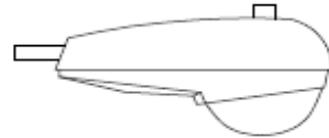
All wires shall be extended at least 30" into the underground junction boxes; coil up the slack.

All connections involving the hot and neutral legs shall be insulated and made watertight with TYCO GTAP-1 or GTAP-2 connectors depending on wire size, see section V – Line H.

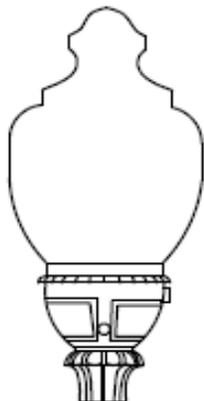
Grounding connections between bare COPPER grounding wires, to ground rods, and to junction box covers need not be taped.



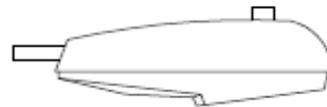
COBRAHEAD STYLE 108
WATT, 3000K LED



COBRAHEAD NON-CUTOFF
STYLE 250 WATT HIGH
PRESSURE SODIUM



WASHINGTON/ACORN POST TOP
ACORN 104 WATT, 3000K
LED



COBRAHEAD CUTOFF STYLE
250 WATT
HIGH PRESSURE SODIUM

**STANDARD HLD
LUMINAIRE**

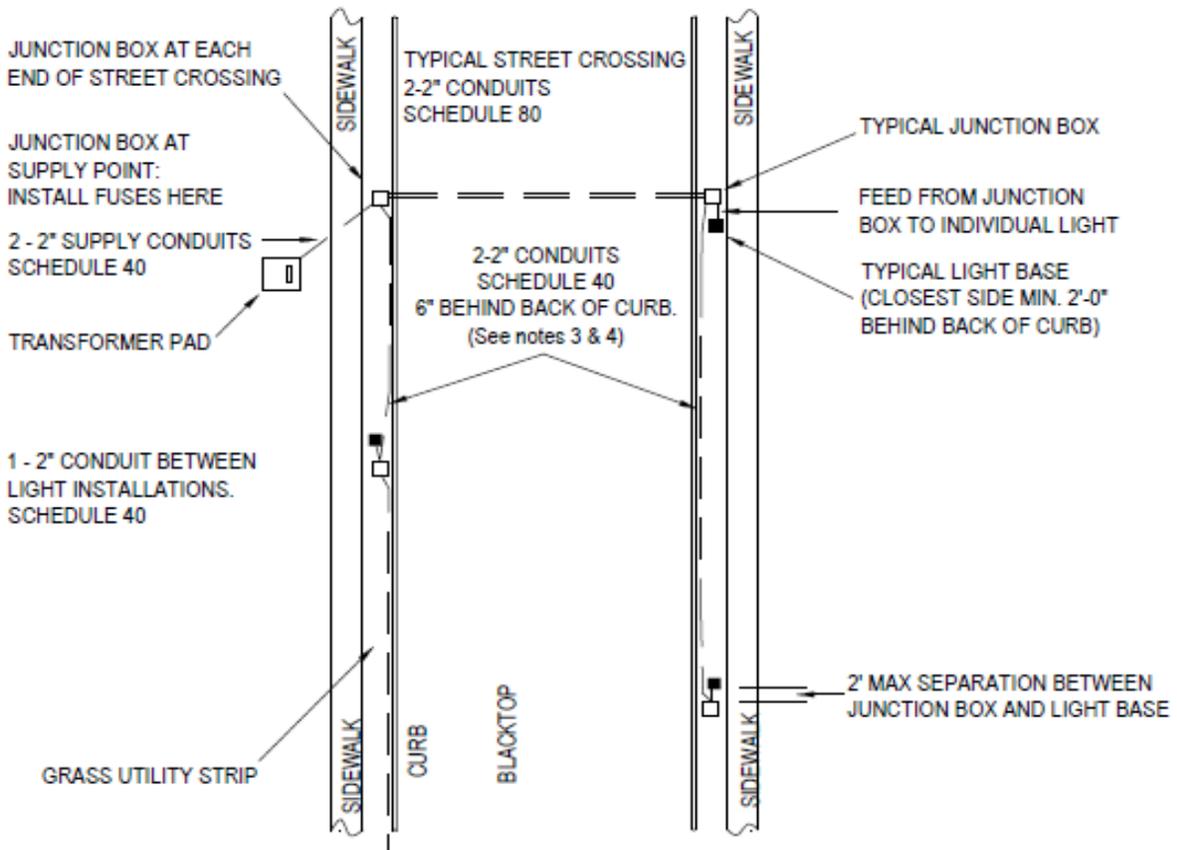
CITY OF HAGERSTOWN, MD.
ELECTRIC SYSTEM

DATE: 02/27/2018 DWN: BGS APP:

SCALE
NONE

CONSTRUCTION
STANDARDS

H1

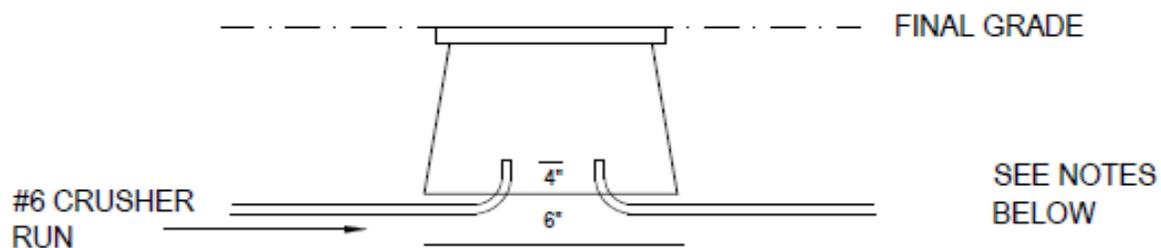


- NOTES:
1. SEE ALSO DETAIL DRAWING OF INDIVIDUAL INSTALLATIONS.
 2. ALL CONDUITS SHALL HAVE 24" MIN. COVER.
 3. CONDUITS ALONG THE STREET SHALL BE LOCATED 6" BEHIND THE BACK OF THE CURB.
 4. LINEAR ROOT DEFLECTORS ARE REQUIRED FOR ANY STREET TREE PLANTINGS WITHIN 5 FEET OF STREETLIGHT CONDUITS.
 5. IF POWER SOURCE IS IN POTOMAC EDISON TERRITORY, ABOVE GROUND PEDESTAL IS REQUIRED FOR POWER CONNECTION ADJACENT TO PE TRANSFORMER. SEE APPENDIX A FOR SPECIFICATION.

STREET LIGHTING: TYPICAL LAYOUT AREA

CITY OF HAGERSTOWN, MD. ELECTRIC SYSTEM		
DATE: 02/27/2018 DWN: JMB		APP:
SCALE NONE	CONSTRUCTION STANDARDS	H2

USE POLYCRETE CDR HANDHOLE, SIZE AS SPECIFIED



TURN CONDUITS UP THROUGH
OPEN BOTTOM INTO JCT. BOX

NOTES

1. PROVIDE MIN. 6" CRUSHED STONE BASE BENEATH & AROUND JCT. BOX FOR DRAINAGE.
2. SEAL ENDS OF ALL CONDUITS IN JCT. BOX WITH DUCT SEAL.
3. ALL WIRING SHALL EXTEND 30" MIN. INTO JCT. BOX, WITH EXTRA SLACK TO BE COILED IN BOX.
4. ALL CONNECTORS SHALL BE WATERPROOF.
5. SEE TRENCHING SPECIFICATIONS FOR 600V CABLE TRENCH DEPTH.

TYPICAL STREETLIGHT
JUNCTION BOX INSTALLATION

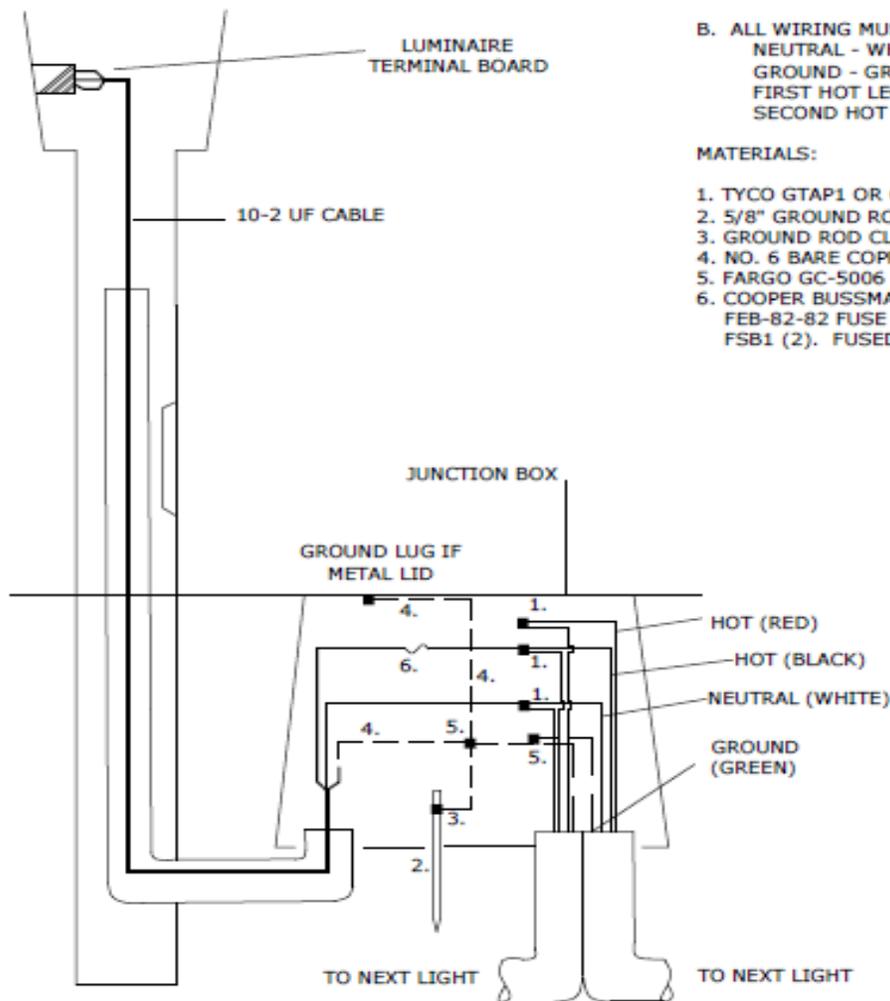
CITY OF HAGERSTOWN, MD.
ELECTRIC SYSTEM

DATE: 02/27/2018 DWN: JMB APP:

SCALE
NONE

CONSTRUCTION
STANDARDS

H3



NOTES:

- A. BRACKET ARMS, POLES, LUMINAIRES. & JUNCTION BOX LID IF METALLIC, SHALL BE CONNECTED TO THE GROUND ROD VIA #6 BARE COPPER.
- B. ALL WIRING MUST BE COLOR CODED:
 NEUTRAL - WHITE (WIRE OR TAPE)
 GROUND - GREEN (WIRE OR TAPE)
 FIRST HOT LEG - BLACK (WIRE OR TAPE)
 SECOND HOT LEG - RED (WIRE OR TAPE)

MATERIALS:

- 1. TYCO GTAP1 OR GTAP2 CONNECTOR.
- 2. 5/8" GROUND ROD.
- 3. GROUND ROD CLAMP ERICO CP58.
- 4. NO. 6 BARE COPPER. (#6CU).
- 5. FARGO GC-5006 BRONZE CONNECTOR.
- 6. COOPER BUSSMAN HEB-AA OR MERSEN FEB-82-82 FUSE HOLDER WITH BOOTS MERSEN FSB1 (2). FUSED WITH 10A FUSE.

**WIRING SPECIFICATIONS FOR
FIBERGLASS POLE INSTALLATION**

CITY OF HAGERSTOWN, MD.
ELECTRIC SYSTEM

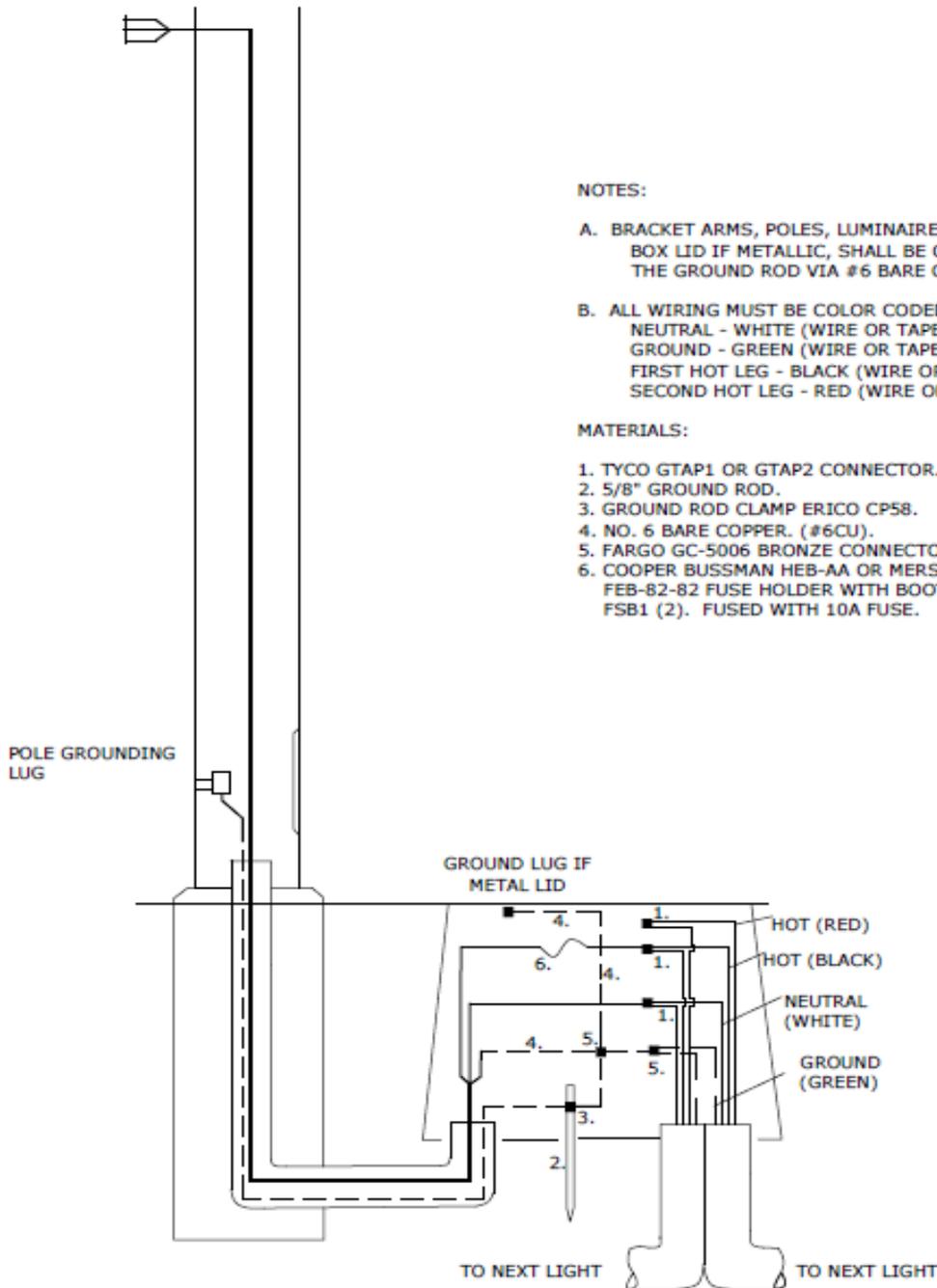
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SCALE
NONE

CONSTRUCTION
STANDARDS

H4.1

TO LUMINAIRE
TERMINAL BOARD



NOTES:

- A. BRACKET ARMS, POLES, LUMINAIRES. & JUNCTION BOX LID IF METALLIC, SHALL BE CONNECTED TO THE GROUND ROD VIA #6 BARE COPPER.
- B. ALL WIRING MUST BE COLOR CODED:
 NEUTRAL - WHITE (WIRE OR TAPE)
 GROUND - GREEN (WIRE OR TAPE)
 FIRST HOT LEG - BLACK (WIRE OR TAPE)
 SECOND HOT LEG - RED (WIRE OR TAPE)

MATERIALS:

1. TYCO GTAP1 OR GTAP2 CONNECTOR.
2. 5/8" GROUND ROD.
3. GROUND ROD CLAMP ERICO CP58.
4. NO. 6 BARE COPPER. (#6CU).
5. FARGO GC-5006 BRONZE CONNECTOR.
6. COOPER BUSSMAN HEB-AA OR MERSEN FEB-82-82 FUSE HOLDER WITH BOOTS MERSEN FSB1 (2). FUSED WITH 10A FUSE.

**WIRING SPECIFICATIONS FOR
METAL POLE INSTALLATION**

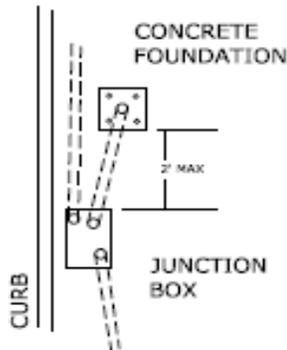
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SCALE
NONE

CONSTRUCTION
STANDARDS

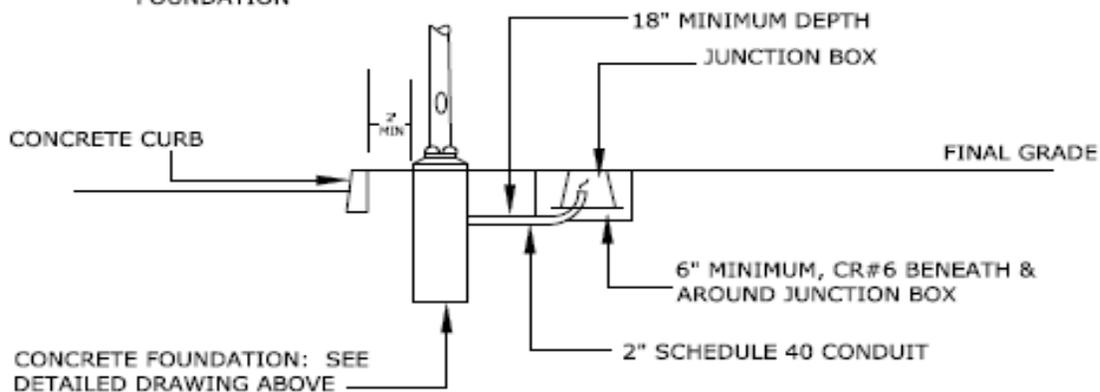
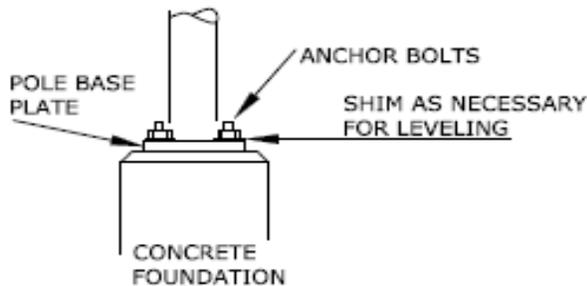
H4.2



NOTES:

1. ALL CONCRETE SHALL BE 3000 PSI MINIMUM.
2. ALLOW SUFFICIENT TIME FOR CONCRETE CURING BEFORE INSTALLING POLE. 7 DAYS MINIMUM.
3. OBTAIN ANCHOR BOLT TEMPLATE FROM POLE MANUFACTURER BEFORE STARTING CONSTRUCTION.
4. METAL POLE SHALL BE GROUNDED USING GROUND LUG PROVIDED WITHIN POLE.
5. CONCRETE FOUNDATION SHALL EXTEND UP AN ADDITIONAL 24" (TOP TO BE 28" A,F,G,) FOR INSTALLATIONS NOT PROTECTED BY CONCRETE CURBING.
6. INSTALLATION OF BREAKAWAY TRANSFORMER BASE (NOT SHOWN) MAY BE REQUIRED SUBJECT TO HLD REVIEW. INSTALL AS SPECIFIED PER LOCATION.

ANCHORAGE DETAIL



CONCRETE FOUNDATION INSTALLATION

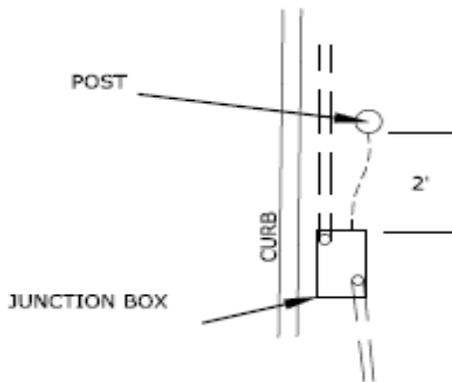
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SCALE
NONE

CONSTRUCTION
STANDARDS

H5

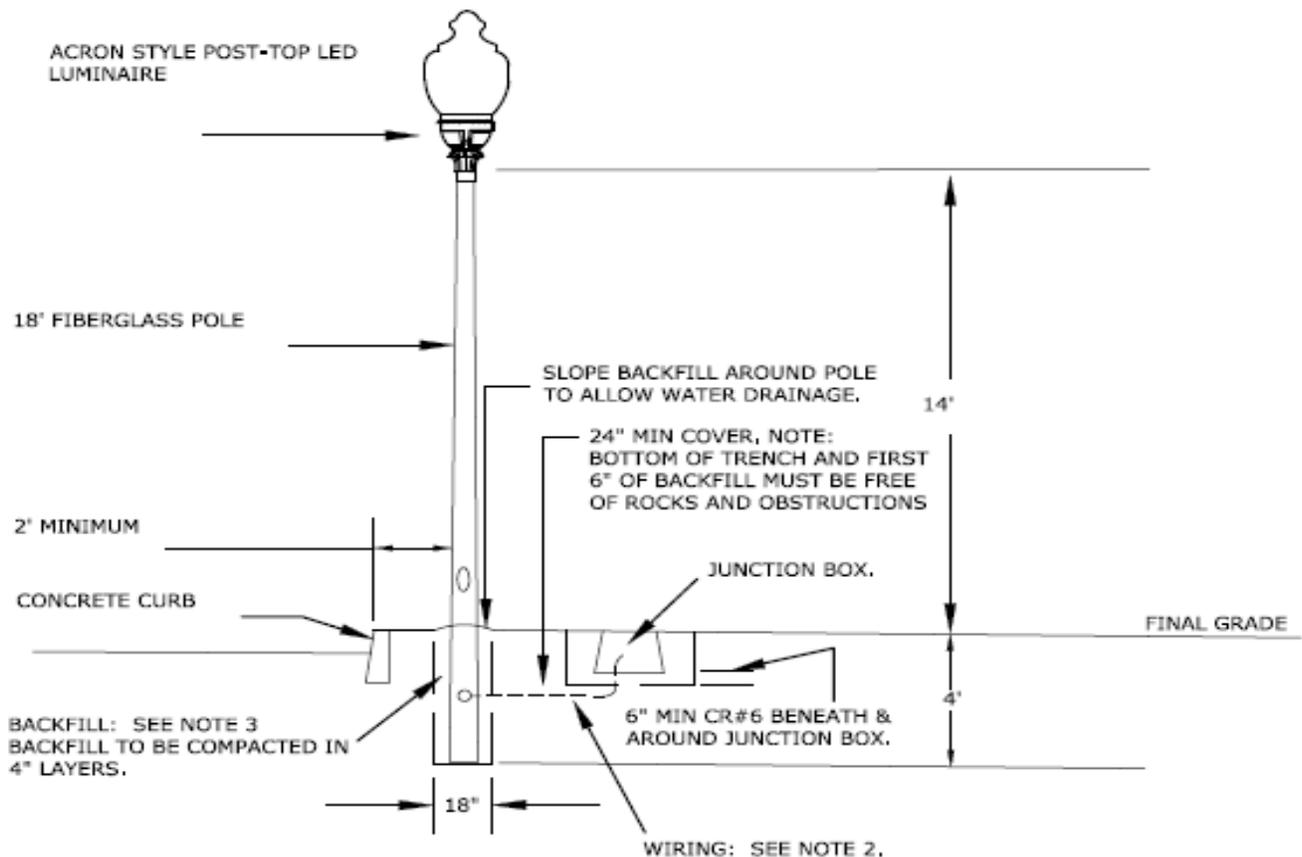


NOTES:

1. THIS DIRECT BURIAL INSTALLATION IS TO BE USED ONLY IN GRASS AREAS PROTECTED BY A CONCRETE CURB. OTHERWISE USE ANCHOR BASE, WOOD, OR CONCRETE LIGHT POSTS.

2. WIRING: INSTALL 2 - #10-2 (WITH GROUND) UF CABLES AND FUSES (SEE DRAWING H5 FOR MORE DETAILS). CONNECT FIXTURE WITH ONE. EXTEND SPARE UP POLE 2' BEYOND HANDHOLE IN SIDE OF POST.

3. POLES SHALL BE BACKFILLED WITH CRUSHED AGGREGATE BACKFILL CONSISTING OF 50% FINES AND 50% CHIPS WITH MAXIMUM OF 1 1/2" CHIP SIZE. **DIRT REMOVED FROM HOLE IS NOT ACCEPTABLE BACKFILL!**



**DIRECT BURIED FIBERGLASS POLE
INSTALLATION.**

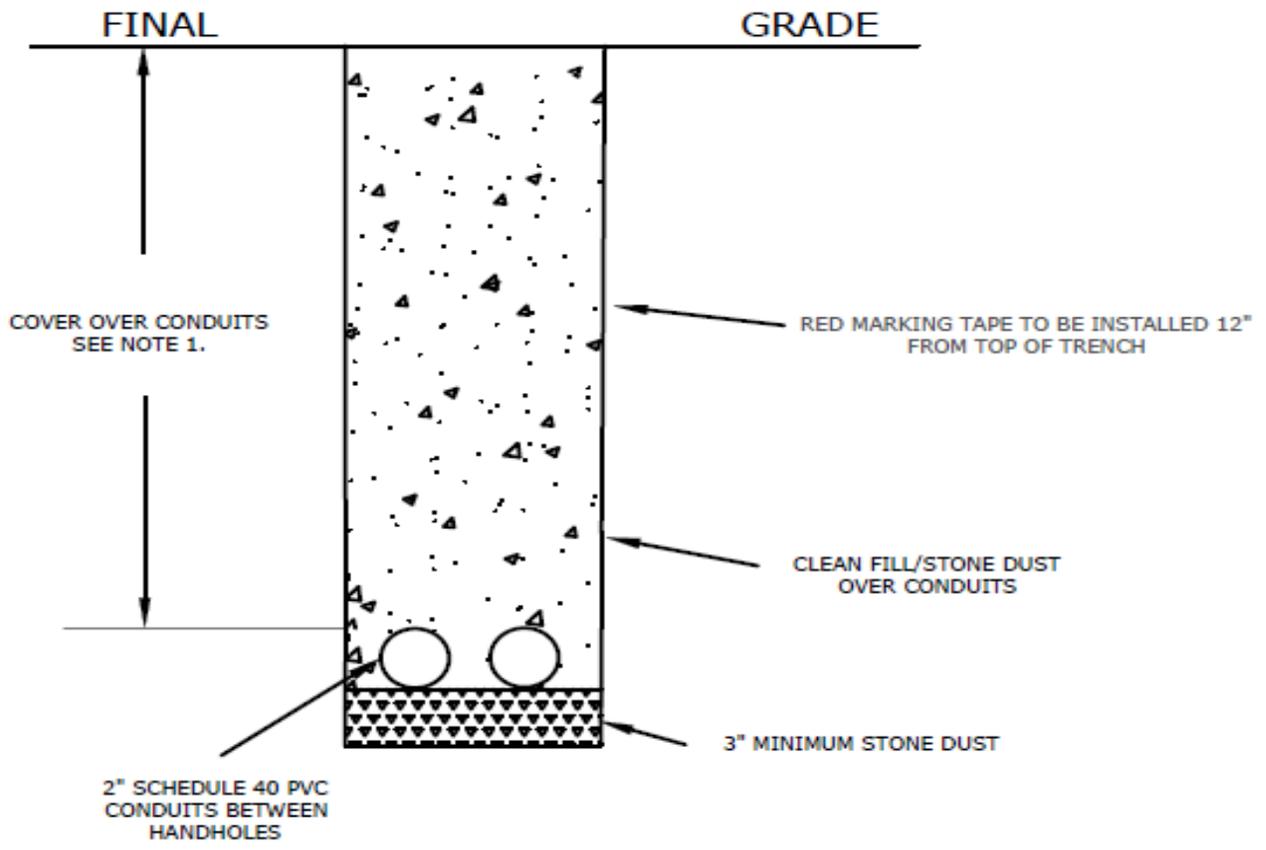
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SCALE
NONE

CONSTRUCTION
STANDARDS

H7



- NOTES:
1. MINIMUM COVER IS 24".
 2. TRENCH TO BE BACKFILLED WITH CLEAN FILL AND/OR STONE DUST.
 3. WHERE WIDTH OF TRENCH PERMITS, CONDUITS ARE TO HAVE 2" OF HORIZONTAL SEPARATION.

**STREETLIGHT TRENCHING SPECS
WITHOUT CONCRETE**

CITY OF HAGERSTOWN, MD. ELECTRIC SYSTEM		
DATE: 02/27/2018 DWN: JMB APP:		
SCALE NONE	CONSTRUCTION STANDARDS	H8

V. MATERIALS

In order to have an available supply of replacement parts, HLD has standardized on certain materials for new lighting systems. Only the standard materials outlined below are acceptable.

All materials used shall be new, not rebuilt.

A. LUMINAIRES---All per specifications in **Appendix A**.

1. Bracket-arm Type

- a. 250 Watt High Pressure Sodium Cobra head Style; SEMI CUTOFF DESIGN, per specifications.
- b. 250 Watt High Pressure Sodium Cobra head Style; FULL CUTOFF DESIGN, per specifications.
- c. 108 Watt LED, 3000K, Cobra head Style; per specifications.

2. Post-Top Style

- a. 104 Watt LED, 3000K--- Acorn Style; per specifications

B. LAMPS – All per specifications in **Appendix A**.

1. 250 Watt High Pressure Sodium—Type S50VA-250

C. PHOTOCELL CONTROL--- 120V per specifications in **Appendix A**.

D. POLES – All per specifications in **Appendix A**.

1. Poles for Post –Top Luminaires, per specifications.

- a. 18' Direct-Burial Fiberglass Poles, black, per specifications.

2. Aluminum anchor-base pole with bracket arm for cobra head luminaire, per specifications.

- a. 30' mounting height.

E. ANCHOR BOLTS AND HARDWARE

1. For 30' Bracket Arm Poles (4 bolts per pole): Anchor bolts shall be 36"- 40" long, with a 4" right-angle hook at the unthreaded end. They shall incorporate 1"-8NC threading for a minimum length of 6". Anchor bolts and nuts shall be 50,000 PSI yield steel. All nuts, washers, and exposed portion of anchor bolts shall be hot dip galvanized.

F. UNDERGROUND JUNCTION BOXES

1. For grass/sidewalk areas: Rectangular poly-crete enclosure, Cover to include recessed penta-head locking bolt and "Electric" logo, flared base design.

a. 12" x 12" x 12"

Cover: Hubble Catalog No. C10121202A017 "Electric"
Box: Hubble Catalog No. B10121212A

Or Approved Equal

b. 13" x 24" x 18"

Cover: Hubble Catalog No. C10132402A017 "Electric"
Box: Hubble Catalog No. B10132418A

Or Approved Equal

c. 17" x 30" x 18"

Cover: Hubble Catalog No. C10173002A017 "Electric"
Box: Hubble Catalog No. B10173018A

Or Approved Equal

G. WIRE AND CABLE

1. Supply Feeders: #2 aluminum tri-plex with single grounding conductor or (4) - #6 copper 600 Volt URD Cable (insulation type XLP, THHN). Black phase wires and yellow striped neutral wire for tri-plex. Hot legs shall be marked RED and BLACK at source and in handboxes with tape if tri-plex is used.
2. Individual Light Wiring: #10-2 solid copper Type UF Cable with full size ground.
3. Grounding Jumpers: #6 Solid Bare soft-drawn copper.

H. CONNECTORS

1. #14 - #2 AL or CU direct burial/handhole/pedestal/vault, four (4) port design, polypropylene, UV stable, snap-lock, impact resistant cover, silicone gel filled.

TYCO. No. GTAP-1

2. #14 - #2/0 AL or CU direct burial/handhole/pedestal/vault, four(4) port design, polypropylene, UV stable, snap-lock, impact resistant cover, silicone gel filled.

TYCO. No. GTAP-2

3. #10 Copper: Copper screw-type.

Blackburn Cat. No. 6N

I. GROUNDING

1. RODS: NEMA Standard 5/8" diameter x 8' long, hot dip galvanized steel.
2. Ground Rod Clamps: Bronze collar-type.

Anderson Cat. No. GC-5

Erico Cat. No. CP58

J. FUSING

1. Fuse Holders-Underground

- a. Waterproof In-Line 30A 600V Holder for 13/32" x 1-1/2" fuses, complete with insulating boots.

(1) #2 Aluminum or #6 Copper Line and Load:

MERSEN, Cat. No. FEB-82-82-BA, Complete with 2 insulating boots FSB1.

(2) #10 Copper Line and Load:

MERSEN, Cat. No. FEB-11-11, complete with 2 insulating boots FSB1.

2. Fuses---for Underground Holders

- a. 5-30A, 600V, 100,000A interrupting, fast-acting small dimension (13/32" x 1-1/2") cartridge fuse.

MERSEN, Type ATDR(**)

APPENDIX A
MATERIALS PURCHASE SPECIFICATIONS

CITY OF HAGERSTOWN
HAGERSTOWN LIGHT DEPARTMENT

MARCH 2018

Specifications for: 250W High Pressure Sodium Luminaire, Horizontal Burning, Cobra head SEMICUTOFF Type

A. Luminaire shall be as follows, no substitutions:

1. General Electric Co. Type M-400A POWR/DOOR:

Catalog No. MDRA25S1M22RMS22

Specifications for: 250W High Pressure Sodium Luminaire, Horizontal Burning, Cobra head FULL CUTOFF Type

A. Luminaire shall be as follows, no substitutions:

1. General Electric Co. Type M-400A POWR/DOOR CUTOFF:

Catalog No. MDCA25S1M22FMC32

Specifications for: 108W LED Luminaire, Horizontal, Cobra head Type

A. Luminaire shall be as follows, no substitutions:

1. Phillips Road Focus

Catalog No. RFM-108W32LED3K-G2-R3M-UNIV-PHXL-GY3

Specifications for: 104 Watt LED Luminaire, Post-Top Acorn, Type III Optics

A. Luminaire shall be as follows, no substitutions:

1. Phillips Catalog No. C14447.

Specifications for: 250 Watt High Pressure Sodium Streetlight Lamp

A. Lamp shall be one of the following or an approved equal:

1. General Electric Catalog No. LU250.
2. Sylvania Catalog No. LU250.
3. Phillips Catalog No. C250S50

Specifications for: 120 Volt Photoelectric Control for Streetlights

A. Photoelectric Control shall be one of the following or an approved equal:

1. For HID type lighting:
 - i. Fisher Pierce: FP7571B-ECBA
 - ii. Precision Multiple Cont: EC120-BC-TD
 - iii. Lumatrol: L120-1.5-SBT
 - iv. DTL: DP1241.51704J50

2. For LED type lighting:
 - i. Ripley: 6390LL-BK
 - ii. DTL – DLL127 1.5 BK

Specifications for: Fiberglass Pole for Post-top Streetlight; Direct Burial; Black

A. Poles shall be as follows, or an approved equal:

1. PLP Products, D315-T7(3X3.5)-BLK-H2 (4FT BELOW) (14FT ABOVE)

Specifications for: Aluminum Pole with Bracket for Cobra head Streetlight:

A. Pole shall be the following or an approved equal:

1. 30' Mounting Height, 8' Arm, 11" Bolt Circle.
 - a. Hapco Co. Catalog No. 21-578.

Specifications for: Aluminum Transformer Base for 30 foot Aluminum Pole (where required):

A. Transformer base shall be the following or an approved equal:

1. Aluminum Transformer Base, 11" bolt circle top and bottom, with mounting hardware.
 - a. HAPCO Catalog No. TB2-17.
 - b. Valmont Catalog No. TB2-17.