Public Works Department
Lighting District

Supplemental Specifications for
Solar School Flashing Beacon
Installation

October 2014
PURPOSE:
All work associated with the design and installation of a school flashing beacon shall conform to current Florida Department of Transportation (FDOT) Design Standards, the most current edition of the Manual on Uniform Traffic Control Devices (MUTCD), the National Electrical Codes (NEC), and/or the National Electric Safety Code (NESC) and this supplement. It is the intent of this supplement to detail installation requirements, dictated by the County, which exceed standard FDOT and NEC requirements. It is the Engineer of Record and Contractor’s responsibility to note these extended specifications and to adhere to the methods and requirements mandated in this document. Included within this document is a photo illustrating the intended appearance of the finished product.

WORKMANSHIP:
All work is to be performed in a workmanlike manner. It is the Contractor's responsibility to provide the labor, skilled in the appropriate areas, necessary to provide an acceptable and professional finished product. The Contractor and his personnel shall have, at all times, all the necessary paperwork needed to complete the job. It is expected that plumb surfaces shall be plumb. Spacing of multiple components, such as conduit stubs or straps, shall be in equal increments. All materials shall be in new or like-new condition.

All school flashing beacon poles shall be leveled to the satisfaction of the Lighting District Inspector.

QUALIFICATION OF SIGNAL CONTRACTOR PERSONNEL:
The contractor who is engaged in installing traffic signals within Charlotte County shall have all work performed under the supervision of a technician certified by the International Municipal Signal Association (I.M.S.A) as a Level II, Traffic Signal Technician Construction or Field. All cabinet-related work shall be performed by an International Municipal Signal Association (IMSA) Level II Technician, certified in traffic signals. This certification shall be presented at the pre-construction conference or upon request. This technician shall be present on-site during any traffic signal installation activities.

During all working hours, the Contractor shall have a responsible, English-speaking superintendent on the project, with the capabilities and authority required by FDOT Specifications, Section 5-8.
Employees shall be trained in and familiar with the safety related work practices, safety procedures, and other safety requirements that pertain to their respective job assignments per OSHA Standard 1910 – Electrical and Federal Register 29 CFR Part 1926 Cranes and Derricks in Construction; Final Rule. Employees shall also be trained in and familiar with any other safety practices, including applicable emergency procedures that are not specifically addressed, but are related to their work and are necessary for their safety.

RESPONSIBILITY OF SIGNAL CONTRACTOR PERSONNEL:
Charlotte County Lighting District Inspection staff shall be notified in writing either via form letter (to: Charlotte County Lighting District, 7000 Florida St., Punta Gorda, FL 33950) or e-mail (LightingInspector@CharlotteCountyFL.gov) a minimum of 72 hours prior to the commencement of jobs that include overhead or underground work that will be conducted as part of construction or maintenance projects within the Charlotte County or State road right of way.

Charlotte County Lighting District inspection staff shall be notified in writing either via form letter or e-mail (LightingInspector@CharlotteCountyFL.gov) a minimum of 24 hours prior to any and all daily work to be performed throughout the entire length of construction or maintenance projects. Any changes that necessitate the rescheduling of work that has been previously scheduled shall be provided in writing via e-mail no later than the morning that it was to be performed.

For new traffic control devices, conditional acceptance and inspection will be scheduled with Mr. Andrew Amendola of the Charlotte County Lighting District, 941.575.3648, before the signal is placed in the normal operational mode. Notification is also required before placing the signal into flash mode.

The Contractor shall submit cut sheets on all materials proposed for the installation of a traffic control device. The material submittal will be reviewed by Charlotte County for conformance and returned to the Contractor within five business days.

The Charlotte County Lighting District Inspector assigned to the project shall have the authority to make final determinations on whether workmanship, materials, and/or final product(s) meet the specifications contained herein.

The Contractor shall be responsible for coordinating with all utilities having overhead or underground facilities in close proximity or possible conflict with the Contractor’s excavations and underground cable installation. The Contractor shall notify all utility companies and maintaining agencies 48 hours in advance of commencing work. Hand digging will be required in all areas where the utilities stake or locate a possible conflict, or where hand digging is specified on the plans. The exact location of utilities shall be determined by the Contractor, when necessary, during construction.
TRANSFER OF MAINTENANCE:
Once the Contractor has begun any work on any portion of the project, all traffic control devices, including interconnect, within the project limits of this contract shall become the full responsibility of the Contractor.

Whenever a new traffic control device is to be installed at a location where no device exists, the installing Contractor will assume full responsibility for the maintenance of said device from the time of activation of the device until such time as a final inspection is completed by the County and the installation is accepted.

Should a signal malfunction occur, the Contractor shall respond within two hours of notification and repair the traffic control device so that it is operating in a safe manner. The Contractor shall be responsible for the permanent repair and shall notify the County of the completion of the repairs within 24 hours. If the Contractor fails to respond within two hours, the County reserves the right to either repair the malfunction or employ alternate personnel and charge all costs incurred by Charlotte County to the Contractor. Authorized Charlotte County personnel may, at any time, enter the controller cabinet in order to restore any and all signal equipment to proper operation, if the malfunction or non-function of such equipment poses a hazard or inconvenience to motorists or pedestrians. Such authorized entry may occur at any time within the period of the contract, and such authorized entry shall in no way relieve the Contractor or manufacturer of his respective warranties.

The Contractor shall be responsible for coordinating with all utilities having overhead or underground facilities in close proximity or possible conflict with the Contractor’s excavations and underground cable installation. The Contractor shall notify all utility companies and maintaining agencies 72 hours in advance of commencing work. Hand digging will be required in all areas where the utilities stake or locate indicates a possible conflict or where hand digging is specified on the plans. The exact location of utilities shall be determined by the Contractor, when necessary, during construction.

Traffic shall be maintained in accordance with the “Manual on Uniform Traffic Control Devices” and “Roadway and Traffic Design Standards” and as designated in the plans. Existing signalization shall remain in place to the longest extent possible and shall be used for maintenance of traffic as required. Except as approved by the County, there will be no lane closures or signal shutdowns during the following periods:

- Monday through Friday, from 7:00 a.m. until 9:00 a.m. and from 4:00 p.m. until 6:00 p.m., or as specified on the local agency permit documents.

The Contractor will be permitted to work in the roadway during all other time periods, unless informed otherwise by the County. In no case shall the Contractor close more than one lane without approval of the County.
CONCEALED WORK:
All work which will not be readily visible upon completion shall not be concealed until a County Lighting Inspector gives approval. In the event the below items are concealed, it will be the Contractor’s responsibility to expose the questioned item(s) for the Inspectors’ approval, at no additional cost to the County. This includes, but is not limited to:

- Buried or imbedded conduit
- Ground wire, rods, and array
- Leveling nuts before grouting

SURFACE TREATMENTS:
The application of the following materials to various solar school flashing beacon components shall be performed during assembly:

- Threaded Hardware: All non-electrical threaded hardware (i.e., all Astro Brac hardware, pole hardware, or any threaded surface) shall be coated with Ideal Noalox Anti-Oxidant Compound or County-approved equivalent. The amount of Noalox being applied shall be sufficient to be visibly seen.
- Gasketing Surfaces: All gasket surfaces shall be lightly coated with County-approved silicone grease.
- Electrical Connections: All mechanical/electrical connections shall have the various components of the splice or termination coated with a County-approved oxide inhibitor.
- Weatherproofing: Irregular mating surfaces shall be rendered weatherproof by applying an appropriate bead of clear silicone caulk, such as Silicone II or County-approved equivalent. The areas to be sealed are those which are typically prone to moisture infiltration.
- Cable Entry/Exit: Wherever a cable enters or exits a field-drilled hole, the hole shall be protected by a permanently-installed rubber grommet.

GROUNDING:
Minimum size of all ground/bond wire will be stranded #6 AWG. Bare wire will not be accepted inside a conduit. Ground wire shall be attached to the ground rod by means of a grounding acron with a hex bolt. Exothermic bonding of ground wire to ground rods will not be acceptable. Multiple conductors shall not be joined together with a grounding acron. One conductor shall be terminated under the acron, and all others shall be joined with a split bolt. The grounding wire shall be attached to the pole base by means of a solderless lug.

All ground rods shall be 5/8" x 10', copper clad bonded to a steel core.

BASE AND POLE:
Unless otherwise specified, solar school flashing beacons shall be mounted onto a square pedestal base with an aluminum door using Pelco, part #PB 5334. The base assemblies shall be equipped with Pelco, part #PB 5325 pole and base collar.
assembly. All poles are to be 4 ½” O.D. aluminum and shall have a spun finish. The length of the pole shall be sufficient to mount the sign so that the bottom of the sign is 7’ above the edge of pavement elevation. All signal, solar collector, and sign mounting hardware shall be manufactured by Pelco Products Inc.

The pedestal base shall be mounted on a concrete base. The minimum size for pedestal base mounted solar beacons shall be 24” inch round x 30” inch deep. Anchor bolts shall be manufactured by Pelco, part #PB-5306-GLV. Square washers are required.

**SIGNAL EQUIPMENT:**
Each school flashing beacon shall have a three-section traffic signal display, with two displays facing forward and one facing rearward. Each of the three sections shall utilize a tunnel visor. Each signal indication shall have a 12 volt DC, 12” yellow LED module insert, as manufactured by Gelcore. The signal displays shall be mounted to the aluminum pole or mast arm structure by means of products manufactured by Pelco Products, Inc. The two forward facing signal indications shall flash alternately.

Each solar beacon shall be equipped with a minimum of one (1)-65 watt solar panel. The solar panel shall be mounted to the pole by means of an aluminum slip fitter collar or appropriate hardware as manufactured by Pelco Products, Inc. The antenna shall be mounted on the solar panel. A Beldon cable shall be installed between the solar panel and the flasher cabinet.

The solar panel shall face in a southerly direction.

**CABINET:**
Each solar beacon shall be equipped with a solar flasher cabinet as manufactured by Transportation Control Systems, located at 1030 86th Street, Tampa, Florida 33619, Phone 813.630.2800. The solar flasher cabinet to be used is part number TCSFLN202FT.

Each cabinet shall contain a Powersonic 103 AH sealed, deep-cycle battery, part #PG12V103FR or other County approved equivalent.

The time clock shall be an RTC brand CPR2102 cellular programmable time switch. The time switch shall utilize a RTC model TSC-2G Cellular Communications Modem utilizing an external omni antenna.

**SIGN:**
The sign shall be mounted to the aluminum poles by means of 4½” O.D. U bolt sign clamp assembly with 5/16” hardware as manufactured by Pelco Products, Inc.

Signs mounted upon mast arm structures shall utilize a FTP-31-06 sign and signs mounted upon ground mounted beacons shall utilize a S5-1 sign.
Example:
Solar school flashing beacon
Pelco offers aluminum, iron, and plastic bases in various sizes as well as poles in aluminum and steel. Pelco’s cast aluminum square base is FHWA certified and meets or exceeds AASHTO break-away requirements. Plastic replacement doors offer an economical way to deter vandalism.

### Pedestal Poles

1. **Pedestal Pole, 4” Sch 40, Spun Alum No Threads**  
   PB-5101 - Length - Coating
   PNC=Process No Color
   
P_ _=Paint

2. **Pedestal Pole, 4”- 8 NPT Sch 40, Spun Alum w/ Pelican ID**  
   PB-5100 - Length - Coating
   PNC=Process No Color
   
P_ _=Paint

Pedestal Pole, 4”- 8 NPT Sch 80, Spun Alum

PB-5102 - Length - Coating
   PNC=Process No Color
   
P_ _=Paint

Pedestal Pole, 4”- 8 NPT Sch 40, Steel

PB-5201 - Length - Coating
   
P_ _=Paint

Pedestal Pole, 4”- 8 NPT Sch 40, Galv Steel

PB-5200 - Length - GLV - Coating
   Blank=Galvanized Only
   
P_ _=Paint over Galvanized

3. **Pedestal Pole, Welded, 4”- 8 NPT w/ 2-3/4” Nipple Length, Steel**  
   PB-5218 - Length - Coating
   GLV=Galvanized
   
P_ _=Paint

**Pedestal Pole, Welded, 4”- 8 NPT w/ 5-1/2” Nipple Length, Steel**  

PB-5219 - Length - Coating
   GLV=Galvanized
   
P_ _=Paint

**Note:** 1. Standard poles are typically sold in 1 foot increments. For other lengths contact sales.  
2. See Reference Section for available paint colors.
Pole & Base Accessories

Pole and base collar assemblies, for both square and octagonal bases, are available in highwind areas to add strength and help prevent loosening of connection.

Pole & Base Collar Assembly, Alum Square Base

PB-5325 - Coating
PNC=Process No Color
P_ _=Paint

Pole & Base Collar Assembly, Alum Octagonal Base

PB-5326 - Coating
PNC=Process No Color
P_ _=Paint

Pedestal Adapter, 4” (4-1/2” OD Pole), Alum 6-1/2” Bolt Circle

SE-3104 - Coating
PNC=Process No Color
P_ _=Paint

Note: 1. All assemblies are supplied standard with stainless steel fasteners.
2. Specify options when ordering.
3. See Reference Section for available paint colors.
Anchor Bolts

Anchor bolt cages allow the critical bolt circle dimensions to be maintained when the steel is cast into the concrete. These cages may be used instead of anchor bolt sets.

PB-5305-GLV  **Anchor Bolt Set of 3 w/ Hardware**
3/4”-10NC, Galv

Note: Includes 3 Bolts, 6 Washers and 6 Nuts.

PB-5306-GLV  **Anchor Bolt Set of 4 w/ Hardware**
3/4”-10NC, Galv

Note: Includes 4 each: Bolts, Washers and Nuts.

PB-5518-GLV  **Anchor Bolt Set of 4 w/ Double Hdwr**
3/4”-10NC, Galv

Note: Includes 4 Bolts, 8 Washers and 8 Nuts.

AP-1095-GLV  **Anchor Bolt Cage, w/ Hardware**
3/4”-10 x 18”, 36” Rebar
13” Bolt Circle, Galv

![Diagram of anchor bolt cage](image)
Pelco offers aluminum, iron, and plastic bases in various sizes as well as poles in aluminum and steel. Pelco’s PB-5334 and PB-5335 cast aluminum square bases are FHWA certified and meets or exceeds AASHTO break-away requirements. Plastic replacement doors offer an economical way to deter vandalism.

Square Pedestal Bases
Aluminum

Pelco’s PB-5334 and PB-5335 cast aluminum square bases are FHWA certified and meets or exceeds AASHTO break-away requirements. Plastic replacement doors offer an economical way to deter vandalism.

Square Base Assembly, Alum w/ Alum Door

Square Base Assembly, Alum w/ Plastic Door

Square Base Assembly, Alum Heat Treated w/ Alum Door

Square Base Assembly, Alum Heat Treated w/ Plastic Door

Note: 1. AASHTO Certified Square Aluminum Base: PB-5334 and PB-5335 aluminum square bases above are available with AASHTO certifications and FHWA approval. Please specify by adding the Certification Part No. C-1001 in addition to the base part number.
2. All assemblies are supplied standard with stainless fasteners.
3. See Reference Section for available paint colors.