



April 23, 2024

To All Proposers:

Subject: **Bid #: CR-8171-W4, Streetlight Maintenance Services / DPWP**

**ADDENDUM NO. 2**

To Whom It May Concern:

With reference to our proposal request relative to the above subject, please refer to the changes/modifications/clarifications to the original proposal request.

**PLEASE SEE BELOW QUESTIONS RECEIVED AND RESPONSES FROM CITY**

- 1 Bid item d2-17: please specify which decorative pole, fixture, and hardware this covers. There are more than 6 different combinations this could be in the city as variations

Answer: This item refers to the installed cost with incidentals for complete poles with one arm and associated light fixture (additional arms and light fixtures, including pedestrian light fixtures, not included) that contain *any* combination of the following:

**Poles:**

North Yorkshire style Cast Iron and Steel Pole

Part number - NYS 21 FTB 17S C04 BK

(About 90%+ of all decorative poles)

North Yorkshire style Cast Aluminum pole with Sitelink shaft

Part number - NYA 22 SL5 17S C04 BK

This pole has the channels running vertically up the square pole shaft.

**Arms:**

Camden Crossarm

Part number - CAM 72IN 1A TN CD5CD5 BK

This is the 6' straight arm



Shepard's Crook Arm

Part number - OUC 45IN 1A TN BK

- 2 Bid item d2-16: Please specify which deco combination this applies to

Answer: These two items refer to the furnished and installed cost, with all hardware and incidentals, for complete poles with one arm and associated light fixture (additional arms and light fixtures, including pedestrian light fixtures, not included) that contain *any* combination of the following:

**Poles:**

North Yorkshire style Cast Iron and Steel Pole

Part number - NYS 21 FTB 17S C04 BK

(About 90%+ of all decorative poles)

North Yorkshire style Cast Aluminum pole with Sitelink shaft

Part number - NYA 22 SL5 17S C04 BK

This pole has the channels running vertically up the square pole shaft.

**Arms:**

Camden Crossarm

Part number - CAM 72IN 1A TN CD5CD5 BK

This is the 6' straight arm

Shepard's Crook Arm

Part number - OUC 45IN 1A TN BK

- 3 Please further specify what is required under 6.3.b.iii. too open ended with not exactly what the city is expecting the contractor to perform.

Answer: "Inspection of all fixtures reported for outages, including foundations, poles, mast arms, and light heads, for damage, proper grounding, and stray voltage" refers to the Selected Bidder not leaving an outage report without noting any additional needed work related to ensure that the foundation, pole, mast arm, and light head are in safe and good condition, and that the pole is grounded and has no stray voltage. Additionally, that any immediate safety hazards are addressed or escalated as necessary. The pole cannot be left unsafe or unreported.



- 4 There is no mention or specs surrounding the contractor having to manage or integrate with the city's cimcon system , yet it is mentioned In 6.3.b.v. please confirm all entries into the cimcon system are handled by the city

Answer: The Selected Bidder shall maintain lists of all replaced CIMCON units, including location, pole number, and new and old SLC number and MAC address, and provide these lists to the City on a monthly basis or as requested. The City will work with CIMCON to have all nodes assigned to their respective Gateways.

- 5 Please confirm any "emergency mark outs " called in by the city will be in accordance with MA digsafe laws and regulations

Answer: The City of Worcester does not have the authority to determine if mark out requests meet MA state law.

- 6 Please further define spec for bid item c1 and c2. Timeframe ? What is actually required for work ? Etc

Answer: Section 6.2.c: A Street Light Out Emergency refers to wires that have been hit or pulled during excavation, hanging streetlight fixtures, detection of stray voltage, or any other street light-related emergency that is not a Street Light Knockdown or Takedown. The Selected Bidder shall respond to a Street Light Out Emergency request within one (1) hour from the time a call is placed to the Selected Bidders required 24/7 live person call center or received directly from WPD or DPWP. Selected Bidder will investigate and mitigate and make safe the outage to the extent possible, working with any on-site contractors available and the City as needed. In most cases, this item involves the repair of damaged underground street light cable, or the replacement of street light foundation pedestal. This item shall include all appropriate labor, time, and equipment needed to respond to a Street Light Out Emergency.

- 7 Where is fusing, splicing and wiring paid for ? If wiring is incidental to a given pay item , please consider revising as lengths of wiring being replaced varies. Please also provide spec for wiring (size and quantity). And same with splicing and fusing .....if you are making it incidental to a given pay item please consider revising, as not all repairs require splicing or fusing

Answer: Fusing, splicing, and wiring is paid for as time and materials except for when specified in item pricing. In general, all new additions have their length of wire included. For example, if a mast arm and head are being replaced on an existing pole and new wire needs to be brought to a hand hole, the charge for wire would be the length from the top of the pole to the



hand hole, with the length of wire in the arm and head covered in the installed price. If the pole is also being replaced, the charge for wire would be the length from the foundation to the hand hole. The same goes for fuses. If they are in the item being replaced, they are part of the installed price. We understand not all repairs require this.

Underground supply conductors shall be #6 AWG 7-strand copper (minimum) with RHH/RHW/USE-2 insulation. Conductors shall be color coded BLACK = Hot lead, WHITE + Neutral, as stated in the National Grid OUTDOOR LIGHTING CONSTRUCTION STANDARD page 9.

- 8 How long and size/type of wiring being installed as part of pay item d2-22?

Answer: Conductors shall be #4 AWG CU minimum as stated in the attached National Grid OUTDOOR LIGHTING CONSTRUCTION STANDARD, and shall be as long as necessary to achieve proper grounding.

- 9 Please confirm the wiring required in the d2 pay items just covers drop wiring and connection back to existing underground feed.

Answer: D2 pay items cover wiring and connection into existing underground or overhead feed for the length of the fixture being replaced. Additional wire shall be charged as time and materials.

- 10 D2-11 and d2-12 are for arms only with no fixture. So why is wiring mentioned in the item if there is no fixture ?

Answer: There shall be no charge for new wire in the changing of an arm for the length of the arm.

Bidders are requested to acknowledge and/or include this addendum with submission. All other terms, conditions and specifications remain unchanged.

Very truly yours,

Christopher J. Gagliastro  
Purchasing Director

NATIONAL GRID  
OUTDOOR LIGHTING CONSTRUCTION STANDARD  
UNDERGROUND SOURCED INSTALLATION

Excerpted Sections for Customer-Owned Equipment as of June 7, 2010

Section		Page
46.6	Electrical Design	46-15 through 46-17
46.9	Luminaire Ownership Identification	46.104
46.15	Pole Number and Reflector Installation	46-301 through 46-302
46.16	Precast Concrete Street Lighting Foundation	46-303 through 46-306
46.17	Handhole Installations Adjacent to Precast Street Lighting Foundation	46-307 through 46-308
46.18	Poured Concrete Foundations-Anchor Bolt Circle Requirements	46-309 through 46-310
46-19	Connections & Grounding for Underground Supplied Lighting	46-311 through 46-312

## 46.6 ELECTRICAL DESIGN

This Section provides information to aid in the design of underground circuits supplying outdoor luminaries.

### 46.6.10 Series Circuits

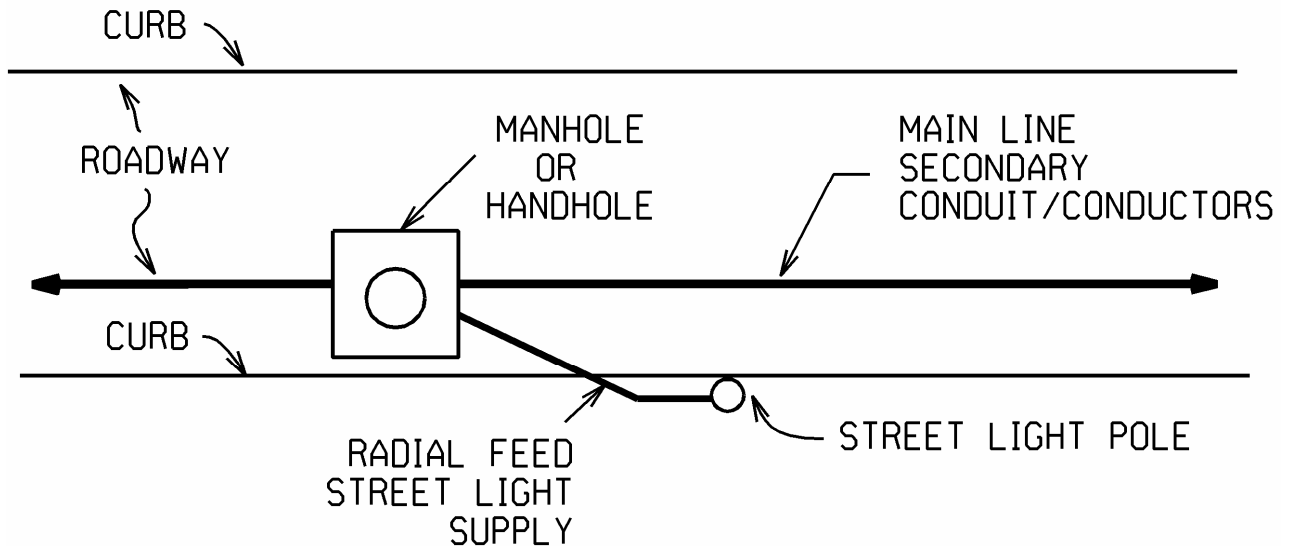
No new series street lighting circuits shall be installed. Existing series circuits shall be converted to multiple operation any time there is a major component failure, additional load to be added, or substantial maintenance is required.

### 46.6.20 Multiple Circuits

All new underground lighting circuits shall be a multiple design where each individual luminaire is operating on a standard system secondary voltage (120 Volts preferred) and each individual luminaire is controlled by its own individual photoelectric control.

### 46.6.30 Preferred Underground Supply

The preferred underground supply design is to tap existing secondary mains with an individual radial feed supply to each single street light pole location.

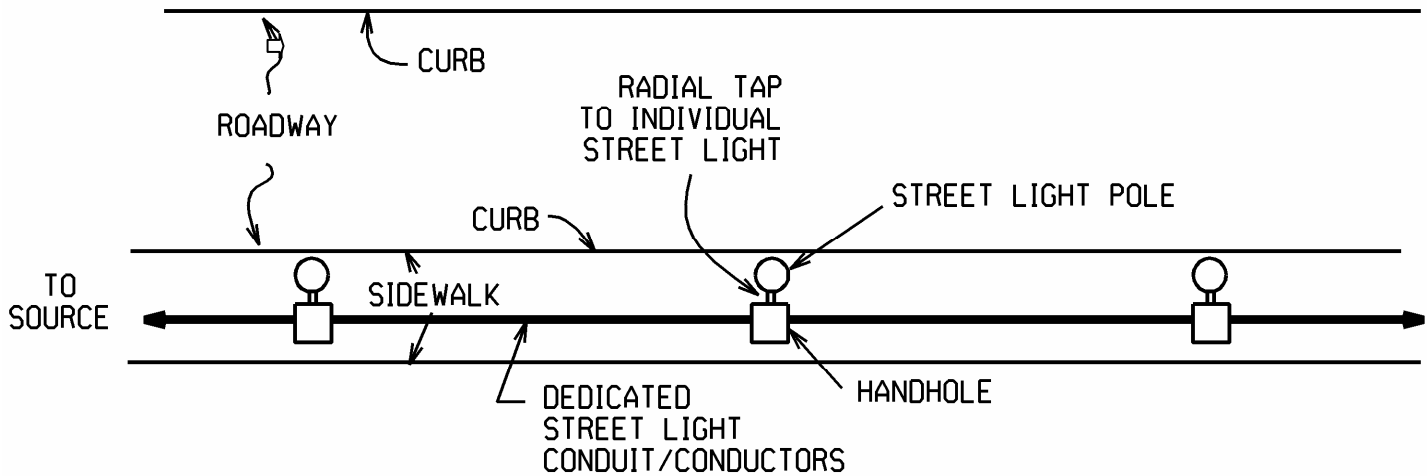


**Figure 10**  
**Street Light Supply from Existing Secondary Mains**

OUTDOOR LIGHTING – ELECTRICAL DESIGN			
nationalgrid	UNDERGROUND CONSTRUCTION STANDARD	PAGE NUMBER	ISSUE
		46-15	1/07

#### 46.6.40 Alternate Underground Supply

An alternate underground supply design is to provide a dedicated secondary main exclusively for outdoor lighting use and tap multiple luminaires onto this supply circuit at multiple locations.



**Figure 11**  
**Street Light Supply from Dedicated Secondary Mains**

#### 46.6.50 Underground Supply Conductors

The standard underground conductor supplying a single radial fed street light pole location shall be #6 copper (STD Item W27). This conductor is available as (2) conductor - (BLACK-WHITE), or (3) conductor - (BLACK-WHITE-RED) and is suitable for both direct burial and conduit applications.

Conductor assignment shall conform to the following color code:

BLACK	=	Hot Lead
RED	=	2 <sup>nd</sup> Hot Lead
WHITE	=	Neutral

The underground supply conductors for a dedicated street light supply circuit shall be sized to supply the lighting load with respect to voltage drop. The standard copper conductors available for customer secondary mains are available for applications where #6 is not adequate. Underground taps to individual street light pole locations shall use #6 copper (minimum).

#### 46.6.60 Luminaire Supply Conductors

Use #10 AWG stranded copper conductors (STD Item W29) in all outdoor lighting installations to connect the luminaire. In underground supplied installations, (on aluminum or fiberglass poles) use #10 conductors from the pole access handhole – up the pole - to the luminaire. Use #10 conductors on all wood pole, overhead supplied installations to connect the luminaire to the secondary supply.

Conductor assignment shall conform to the following color code:

BLACK	=	Hot Lead
WHITE	=	Neutral
GREEN	=	Luminaire Housing Ground

Supersedes 1/07 Issue – Revised paragraphs 46.6.50 and 46.6.60.

### OUTDOOR LIGHTING – ELECTRICAL DESIGN

ISSUE	PAGE NUMBER	UNDERGROUND CONSTRUCTION STANDARD	nationalgrid
07/09	46-16		

#### 46.6.70 Electrical Connections

- A. Black Lead (hot) – Use an in-line fuse holder (STD. Item SX31) to connect the underground supply conductors to the luminaire supply conductors. The in-line fuse holder is supplied with a solid copper link. A cartridge type fuse can be substituted when fusing is desired. The in-line fuse holder is designed to pull apart, in the event of a pole knockdown, and leave no exposed energized wires.
- B. Neutral Lead – Use a gel-wrap connector (STD. Item SX30) to connect the underground supply conductors to the luminaire supply conductors.

#### 46.6.80 Fusing

- A. Radial Supplied Pole Locations – A 10 A midget cartridge fuse (STD. Item F10A10), installed in the in-line fuse holder, is recommended to provide elevated voltage protection in the event of a short circuit in the luminaire supply conductors.
- B. Dedicated Underground Supply Circuits – Cartridge style fuses in watertight housings shall be installed at strategic circuit locations in dedicated underground lighting supply circuits as a sectionalizing device to add in finding underground faults. Fuses shall be sized with respect to the conductor size.

Supersedes 1/07 Issue – Removed Table 8

OUTDOOR LIGHTING – ELECTRICAL DESIGN			
nationalgrid	UNDERGROUND CONSTRUCTION STANDARD	PAGE NUMBER	ISSUE
		46-17	07/09

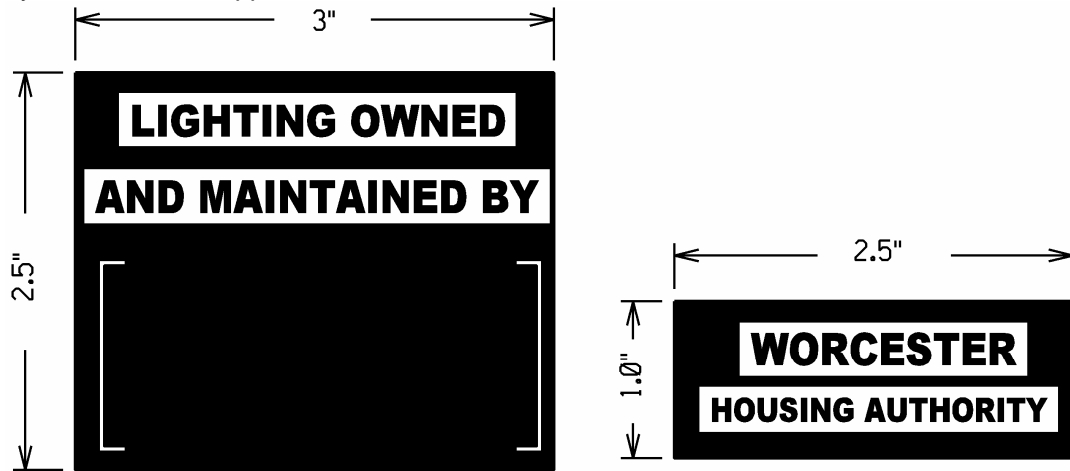


## 46.9 LUMINAIRE OWNERSHIP IDENTIFICATION

This Section covers the labeling system used on all luminaires to identify the luminaire owner and / or party responsible for maintenance.

### 46.9.10 Customer Owned & Maintained Luminaires

Customer owned and maintained luminaires that are installed on Company poles are identified by two customer supplied labels detailed as follows:



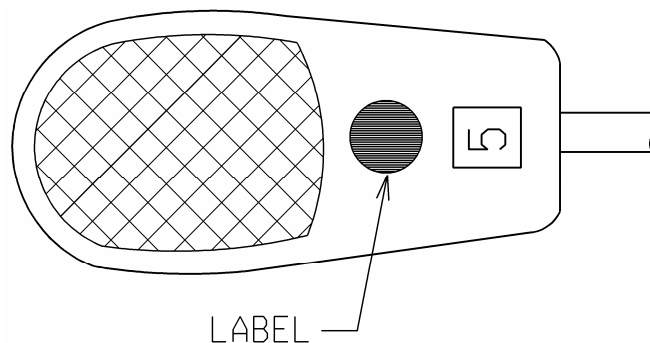
**Figure 13**  
**Customer Owned & Maintained Luminaire Label Example**

Both labels shall have a black background and reflective silver legend. The label identifying the owner shall be applied within the brackets of the larger label.

### 46.9.20 Rate S2 Luminaires (Portions Of Massachusetts Only)

Under the S2 Rate, the customer is responsible to provide all materials for the outdoor lighting installation. All materials must be in compliance with the applicable Company Material Specifications and Standards. The Company is responsible for the installation, removal and maintenance of these luminaries.

S2 Rate luminaires are field identified by a 4 inch circular, red, decal applied to the luminaire adjacent to the NEMA color coded lamp wattage identification label.



**Figure 14**  
**"S2 Rate" Ownership Label**

LUMINAIRE OWNERSHIP IDENTIFICATION			
ISSUE	PAGE NUMBER	UNDERGROUND CONSTRUCTION STANDARD	nationalgrid
1/07	46-104		

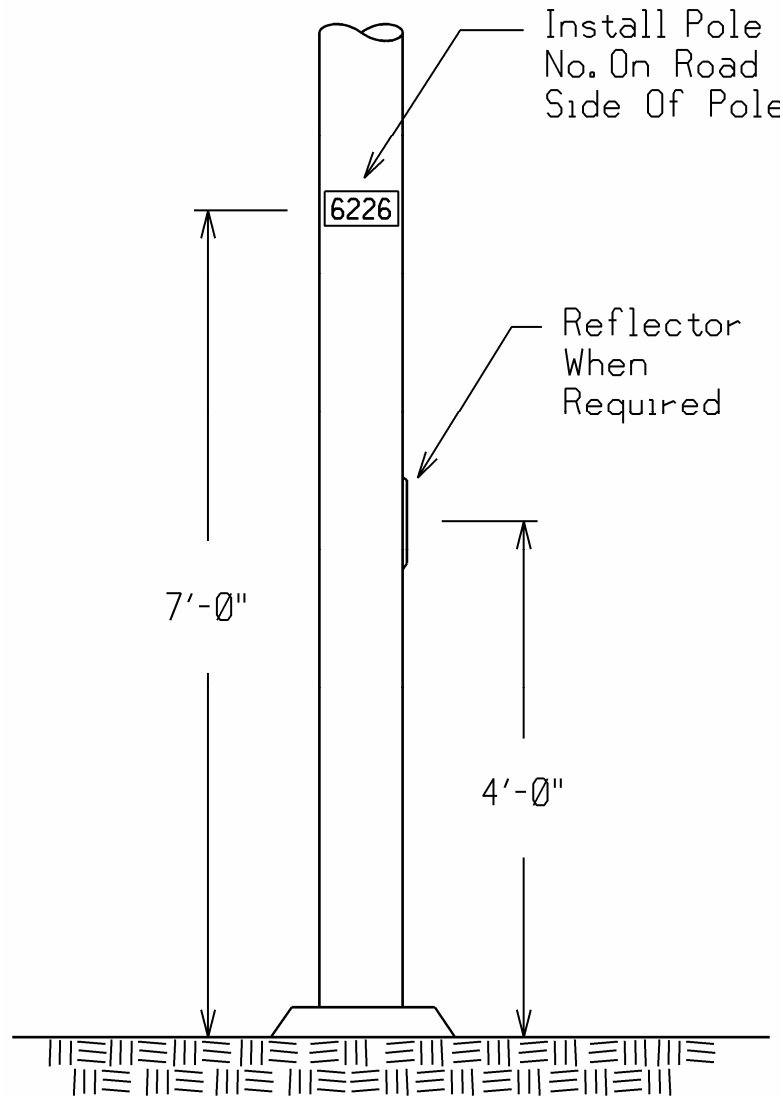
## 46.15 POLE NUMBER AND REFLECTOR INSTALLATION

This Section covers requirements for installing pole number decals and pole reflectors on all metal and fiberglass lighting poles.

### 46.15.10 Pole Numbers

Every pole shall be numbered using 1¾ inch x 3 inch, high intensity white, reflective pole number decals. (STD Item SX20). Pole surface must be clean and dry. Install pole number decals on the roadway side of the pole, 7 feet above finished grade.

**Install pole number decals horizontal to each other, - not vertical.**



**Figure 19**  
**Pole Number Installation**

POLE NUMBER & REFLECTOR INSTALLATION			
nationalgrid	UNDERGROUND CONSTRUCTION STANDARD	PAGE NUMBER	ISSUE
		46-301	1/07

## 46.15.20

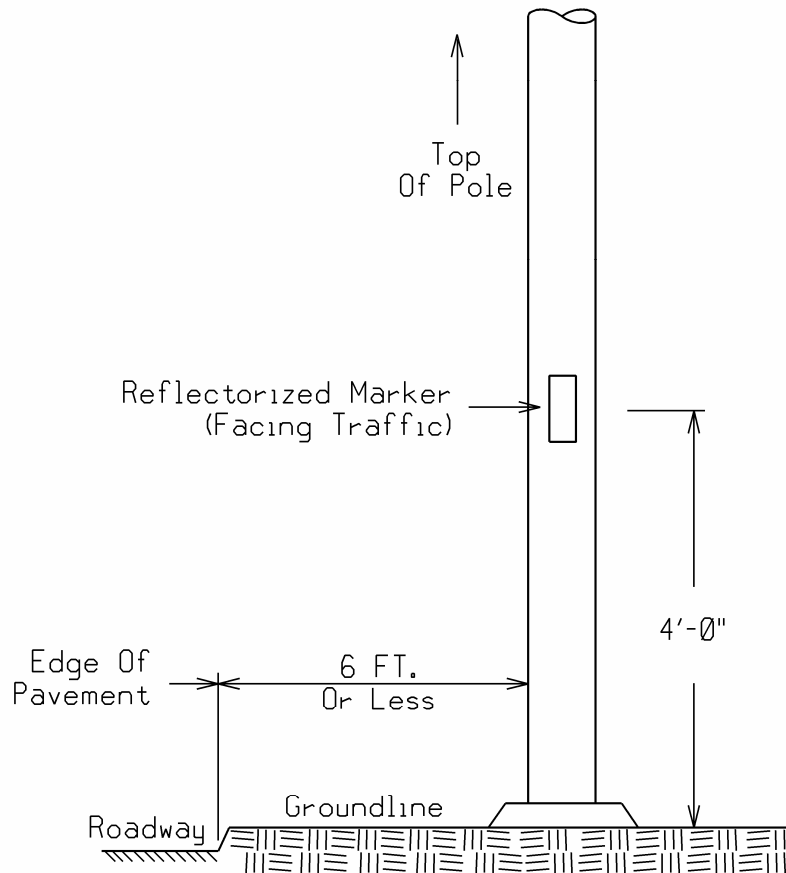
### Pole Reflectors

In Massachusetts, pole reflectors (STD Item SX21) are required on all poles located on state highways within 6 feet of the traveled way, not protected by a guardrail. Maintenance work on existing poles shall include pole reflector installation whenever the above requirements are met.

The pole surface shall be clean and dry. Install 3 inch x 10 inch adhesive high intensity pole reflectors, vertically, facing traffic, centered 4 feet above grade

#### A. Reflector Color

On ramps, freeways, divided highways, and one way streets, reflective material shall face oncoming traffic and shall be colored white on the right side of the roadway and yellow on the left side of the roadway. On two way undivided roadways, reflective material shall be colored white and shall be placed on poles to the right of, and facing, oncoming traffic on each side of the road.



**Figure 20**  
**Pole Reflector Installation**

Supersedes 1/07 Issue – Deleted Table 16. Revised paragraph 46.15.20.

### POLE NUMBER & REFLECTOR INSTALLATION

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## 46.16 **PRECAST CONCRETE STREET LIGHTING FOUNDATION**

This Section provides details for installation of a precast concrete lighting foundation.

### 46.16.10 **Foundation Design**

All precast concrete lighting foundations have a built-in slotted opening to facilitate conduit or direct buried supply conductors.

### 46.16.20 **Anchor Bolt Size**

Precast concrete foundations with  $\frac{3}{4}$  inch diameter anchor bolts are designed for use with post top poles 16 feet and under in height. They shall not be used to support taller poles.

Precast concrete foundations with 1 inch diameter anchor bolts are available for use with 25 foot and taller poles.

### 46.16.30 **Foundation Location**

The precast foundation should be placed within the area between the sidewalk and edge of the roadway. Utilize the utility corridor or grass strip when available. When possible, place pole 6 to 12 inches away from the roadway edge to provide protection from vehicles and snowplows, etc. When installed within the sidewalk area, be sensitive to wheelchair access.

### 46.16.40 **Bollards**

Poles installed adjacent to parking lots or other locations with direct exposure to backing motor vehicles shall be protected by bollard(s). Use a 3 inch galvanized steel pipe filled with concrete and painted yellow.

### 46.16.50 **Excavation**

Excavate hole to required depth. Foundation should rest on undisturbed earth.

### 46.16.60 **Backfill**

Backfill material should consist of good compactable materials such as approved native soils, sand or select backfill material. Backfill in 6 inch segments and tamp thoroughly. Avoid large rocks.

### 46.16.70 **Conduit System**

Foundations with a 5 inch x 5 inch conduit opening are designed to accept (2) two inch diameter conduits oriented 180 degrees apart. This allows the underground supply to be extended to the next pole location without the need of a handhole adjacent to the foundation.

### 46.16.80 **Grounding**

Install ground rod and grounding conductor at each pole location. Always connect grounding conductor to all metal conduits.

### 46.16.90 **Protection**

Install temporary foundation cover (Std. Item SF40) if pole is to be installed at a later date.

PRECAST CONCRETE STREET LIGHTING FOUNDATION – INSTALLATION			
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#### 46.16.100 All Precast Foundations

Anchor bolt projection above the top of the concrete = 2¾ inches.

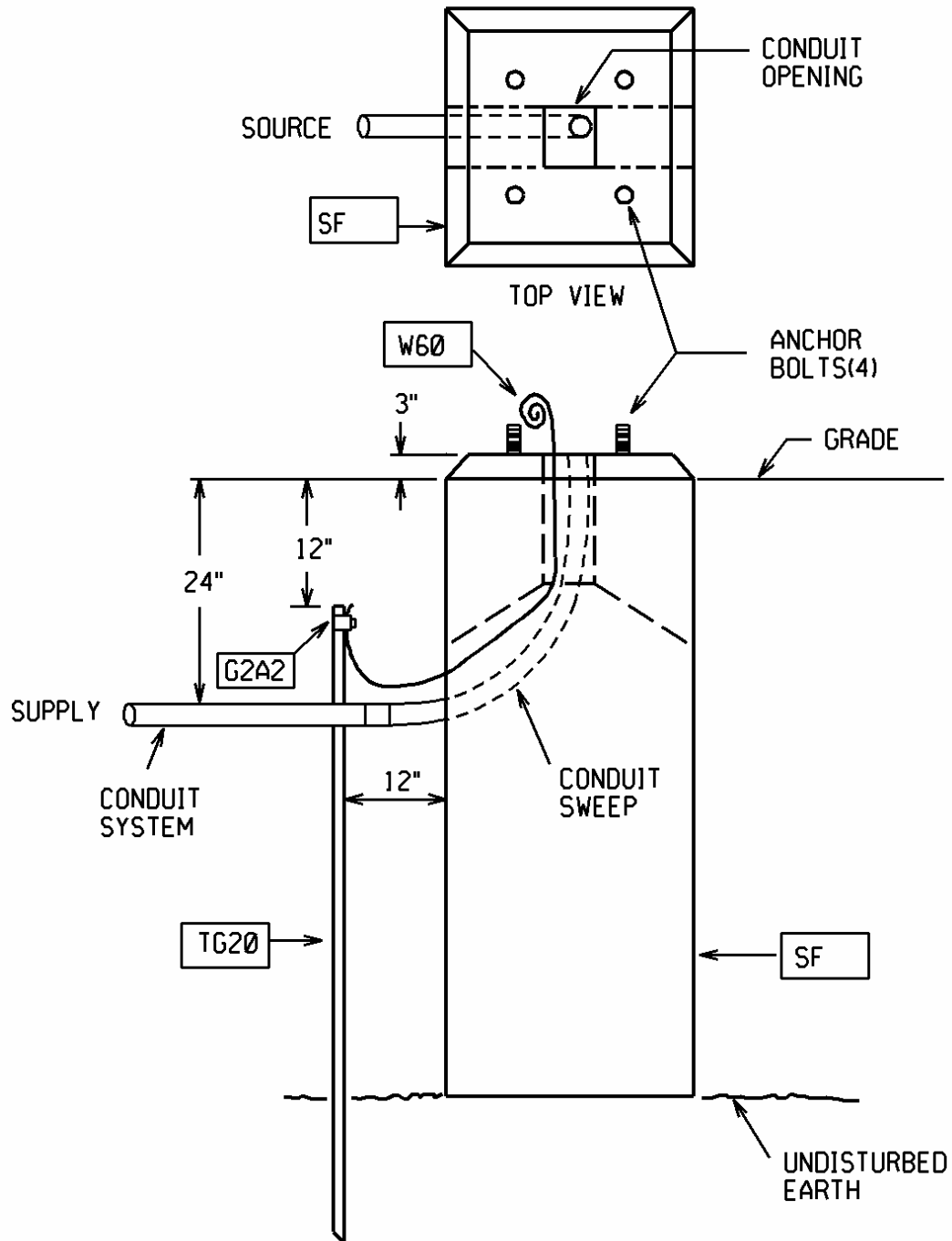
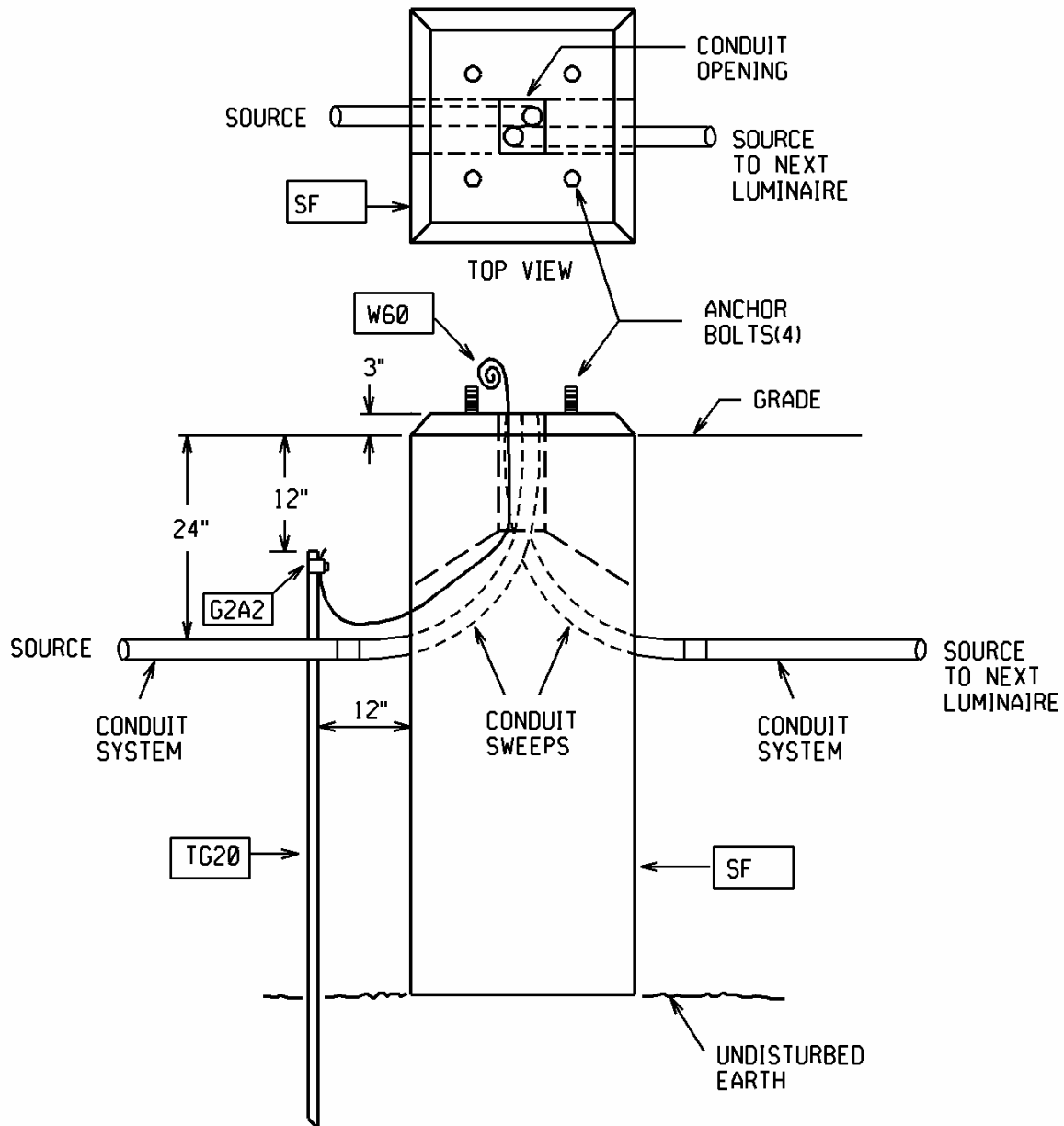


Figure 21  
Precast Concrete Foundation – Single Source

PRECAST CONCRETE STREET LIGHTING FOUNDATION – INSTALLATION			
nationalgrid	UNDERGROUND CONSTRUCTION STANDARD	PAGE NUMBER	ISSUE
		46-305	1/07



**Figure 22**  
**Precast Concrete Foundation – Twin Source**

# PRECAST CONCRETE STREET LIGHTING FOUNDATION – INSTALLATION

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CONSTRUCTION STANDARD

**nationalgrid**

## 46.17 HANDHOLE INSTALLATION ADJACENT TO PRECAST STREET LIGHTING FOUNDATION

This Section provides details for installation of a polymer concrete handhole adjacent to a precast concrete lighting foundation.

### 46.17.10 Application

Installation of a polymer concrete handhole (STD Item SG10) provides an alternate location to make underground supply conductor electrical connections when it is undesirable, or impractical, to make the connections inside the pole access handhole. The connections to the #10 luminaire wiring shall always be made inside the pole access handhole.

### 46.17.20 Location

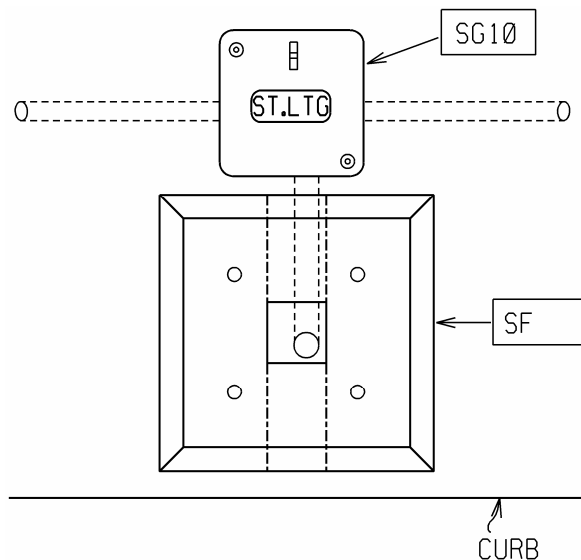
A typical installation would place the polymer concrete handhole adjacent to or behind a precast lighting foundation such that the conduit system can sweep directly into the conduit slot in the foundation.

### 46.17.30 Installation

A typical installation would place the polymer concrete handhole adjacent to or behind a precast lighting foundation such that the conduit system can sweep directly into the conduit slot in the foundation.

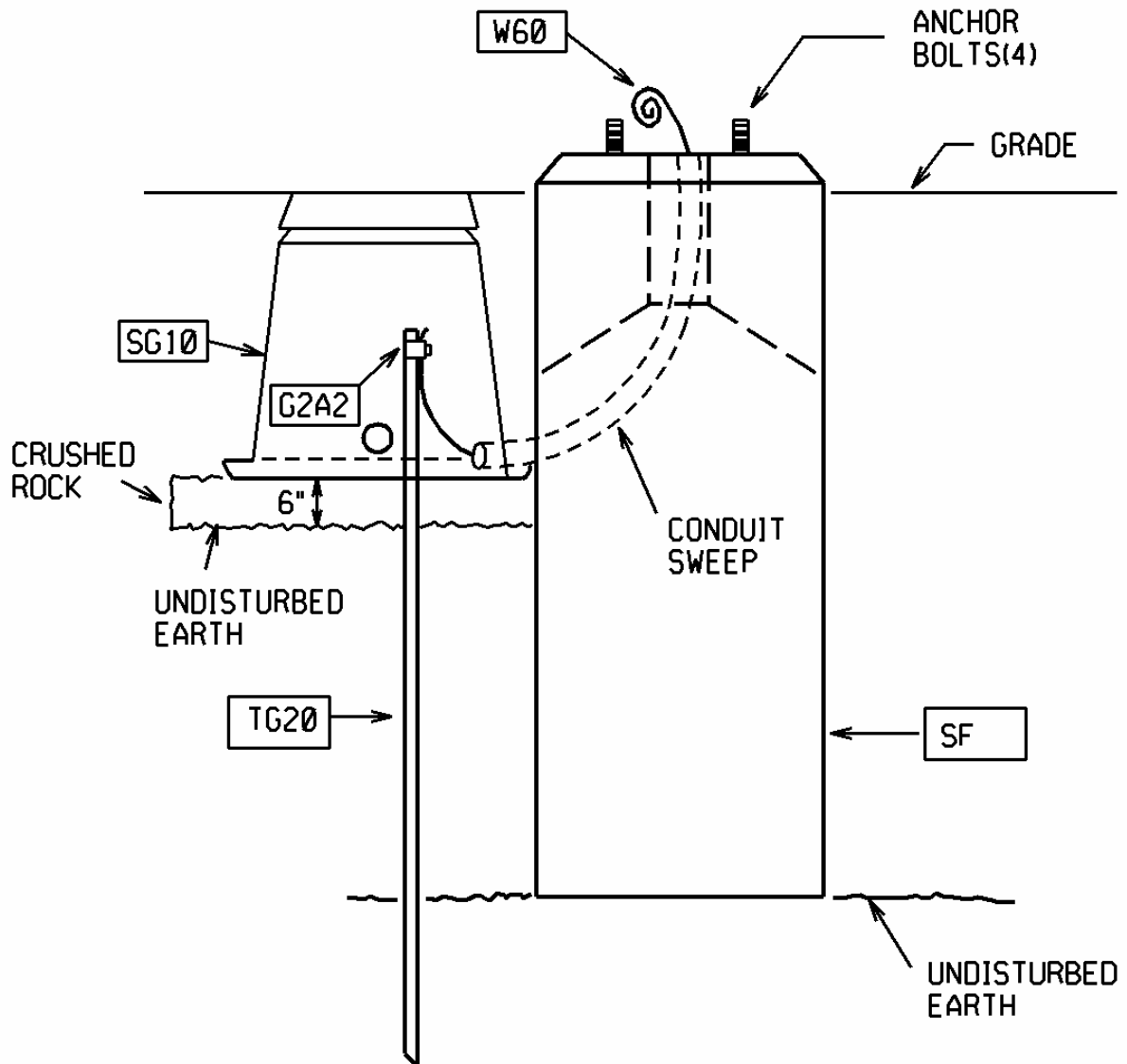
### 46.17.40 Restrictions

Polymer concrete handholes are rated for use in grass areas, sidewalks, driveways, and parking lots. They are not rated for use in roadways or in any location subject to heavy traffic.



**Figure 23**  
**Handhole Installation Adjacent to Precast Concrete Lighting Foundation – Top View**

HANDHOLE INSTALLATION ADJACENT TO PRECAST LIGHTING FOUNDATION			
nationalgrid	UNDERGROUND CONSTRUCTION STANDARD	PAGE NUMBER	ISSUE
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**Figure 24**  
**Handhole Installation Adjacent to Precast Concrete Lighting Foundation – Side View**

# HANDHOLE INSTALLATION ADJACENT TO PRECAST LIGHTING FOUNDATION

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CONSTRUCTION STANDARD

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## 46.18 **POURED CONCRETE FOUNDATIONS – ANCHOR BOLT CIRCLE REQUIREMENTS**

The Company Standard is to use precast concrete foundations for all underground supplied outdoor lighting applications. In those rare cases where field conditions prohibit the use of a precast concrete foundation, a poured in place concrete foundation may be used. This Section provides general guidance to aid in foundation design and anchor bolt circle requirements for standard Company lighting poles.

### 46.18.10 **Poured In Place Concrete Foundations**

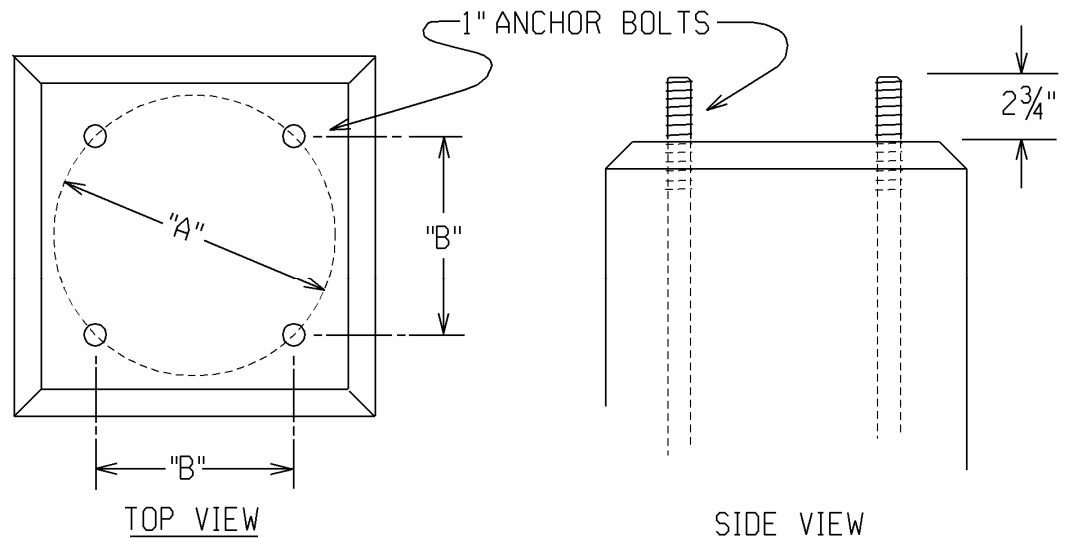
Poured in place concrete foundations shall be field designed so as to duplicate the equivalent precast concrete foundation with respect to physical size and materials. Each foundation requires (4) anchor bolts (STD Item SF30 or SF31). Foundation conduit sweeps shall be a minimum 24 inch radius using 2 inch conduit. See STANDARDS Section 46.16 for precast concrete foundation dimensions and Company Material Specification Standards for detailed drawings.



**Figure 25**  
**Anchor Bolt for Poured-In-Place Concrete Foundations**

### 46.18.20 **Anchor Bolt Circle Requirements**

All anchor base poles require a concrete foundation with four galvanized steel anchor bolts arranged in accordance with Figure 26 and Tables 15 or 16, as applicable.



**Figure 26**  
**Anchor Bolt Circle Requirements**

## POURED CONCRETE FOUNDATIONS – ANCHOR BOLT CIRCLE REQUIREMENTS

**nationalgrid**

**UNDERGROUND  
CONSTRUCTION STANDARD**

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**Table 15  
Roadway Poles**

Std. Item	Description	Anchor Bolt Circle Diameter (Dimension "A")	Anchor Bolt Distance (Dimension "B")	Anchor Bolt Diameter
ST01	"Pendant" Pole - Aluminum	11½ Inch	8⅞ Inch	1"
ST02	"Pendant" Pole - Fiberglass	11½ Inch	8⅞ Inch	1"
ST03	"Pendant" Pole - Steel	11½ Inch	8⅞ Inch	1"
ST04	"Davit" Pole - Aluminum	11½ Inch	8⅞ Inch	1"
ST05	"Davit" Pole - Steel	11½ Inch	8⅞ Inch	1"
ST06	"Manchester" Pole - Aluminum	11½ Inch	8⅞ Inch	1"
ST08	"Niagara" Pole - Aluminum	11½ Inch	8⅞ Inch	1"
SU01D	"Architectural" Pole – Aluminum 16 Foot	11½ Inch	8⅞ Inch	¾"
SU01F	"Architectural" Pole – Aluminum 25 Foot	15-Inch	10⅝ Inch	1"
SX80	Transformer Base	15-Inch	10⅝ Inch	1"

**Table 16  
Post Top Poles**

Std. Item	Description	Anchor Bolt Circle Diameter (Dimension "A")	Anchor Bolt Distance (Dimension "B")	Anchor Bolt Diameter
SW01	"Suburban" Post Top Pole Fiberglass	11½ Inch	8⅞ Inch	¾"
SW01C1	"Suburban" Post Top Pole Fiberglass	8½ Inch	6 Inch	¾"
SW05	"Armory Square" Post Top Pole Aluminum	15 Inch	10⅝ Inch	¾"
SW06	"Essex" Post Top Pole Aluminum	8½ Inch	6 Inch	¾"
SW07	"Villager" Post Top Pole Aluminum	8½ Inch	6 Inch	¾"
SW08	"Presidential" Post Top Pole Fiberglass	15 Inch	10⅝ Inch	¾"
SW09	"Washington" Post Top Pole Aluminum	8½ Inch	6 Inch	¾"

Supersedes 1/07 Issue – Revised Tables 15 and 16.

**POURED CONCRETE FOUNDATIONS – ANCHOR BOLT CIRCLE REQUIREMENTS**

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## 46.19 CONNECTIONS AND GROUNDING FOR UNDERGROUND SUPPLIED LIGHTING

This Section provides connections and grounding details for all underground supplied lighting installations where connections are made inside the pole access handhole.

### 46.19.10 Connection Rules

Figures 27 – 32 provide details on the most common connection and grounding combinations. The following connection and grounding rules apply to all pole installations, and shall be applied in cases where the connection combination required is not shown in Figures 27 – 32.

- A. Ground Rod: Every pole installation requires a driven ground rod and # 6 AWG grounding connection. The #6 AWG grounding conductor shall always be connected to the system neutral conductor inside the pole access handhole.
- B. Metal Poles: Every metal pole shall be grounded by connecting the #6 AWG grounding conductor to the metal pole shaft. This connection shall be made inside the pole access handhole, or inside the transformer base, as applicable.
- C. Non-Metallic Poles: The metal housing on every luminaire installed on a non-metallic pole shall be grounded. Always install a separate # 10, GREEN conductor inside the pole shaft for each luminaire. Whenever possible, luminaires are supplied with a three terminal connection block with the middle terminal factory connected to the luminaire housing by a green grounding conductor. Use this middle terminal for the housing grounding connection when available. Otherwise, connect the #10 Green conductor directly to the luminaire housing. Follow manufacturers instructions supplied with every luminaire.

CONNECTIONS & GROUNDING FOR UNDERGROUND SUPPLIED LIGHTING			
nationalgrid	UNDERGROUND CONSTRUCTION STANDARD	PAGE NUMBER	ISSUE
		46-311	1/07

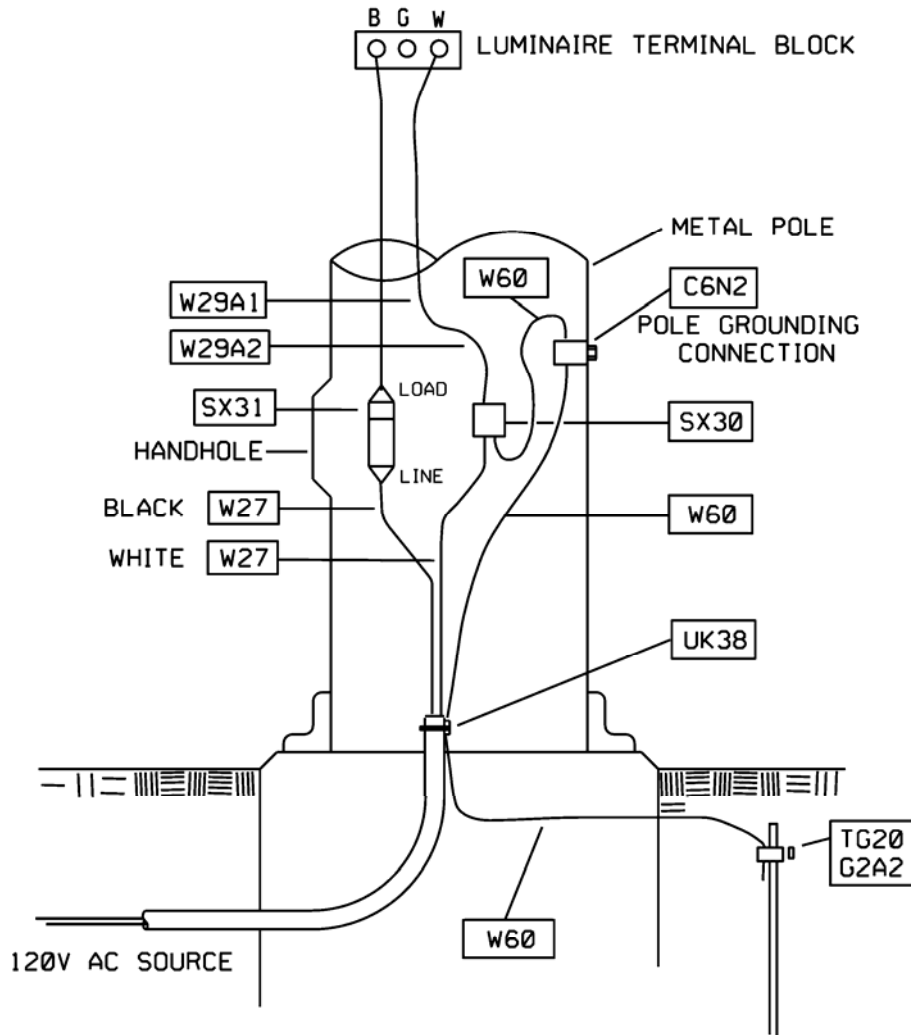


Figure 27

Notes:

1. Always use an in-line fuse holder as the connection between the #6 source wiring and the #10 luminaire wiring. In-line fuse holders are designed to separate when the pole is broken by a motor vehicle and leave no exposed energize wiring. The in-line fuse holder housing must be installed properly with respect to "Line End" and "Load End" as marked on the rubber housing. Follow manufacturers instructions packaged with every fuse holder.
2. Always pull conductors outside of the pole access handhole to make connections. Allow sufficient slack for future maintenance. Push completed connections and slack conductors back inside handhole and secure cover with tamper resistant hardware.
3. Connect equipment grounding conductor to metal conduit sweep, when available, and then to a driven ground rod. For direct buried cable installations or when conduit sweep is non-metallic, install grounding conductor direct to the driven ground rod.

CONNECTIONS & GROUNDING FOR UNDERGROUND SUPPLIED LIGHTING

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