



The Ins and Outs of Bollard Lights

Introduction to Bollard Lighting

Bollard lights are outdoor light fixtures that are ideal for illuminating walkways, streets, and driveways of residential and commercial areas. Having both functional and aesthetic value, bollard lights generally consist of an enclosed light fixture mounted on top of a vertical column or post. They are commonly installed in locations such as hotels, schools, housing complexes, churches, and other places where decorative fixtures can accentuate landscaping and create visually appealing, comfortable settings.

What you should know when deciding which bollard lights to purchase.

- Construction
- Styles
- Sizes
- Materials
- Colors
- Lenses, reflectors and refractors
- Light Sources
- Efficacy
- Voltage
- Special Applications
- Bollard spacing
- Installation

Anatomy of a Great Bollard

Being outdoor fixtures, bollard light housings need to be durable because they will be subjected to the elements.

A high quality bollard housing shell should be made out of a resilient material such as extruded aluminum. The shell should be treated with a conversion coating to deter corrosion. Chromate conversion coating works extremely well with extruded aluminum because the chromate passivates the aluminum. Color should be applied to bollard lights using a powder coating process, through which paint is applied as a free flowing, dry powder. The powder coating does not require a solvent to keep the paint in a liquid suspension form. It can thus produce much thicker coatings without running. You should



Photo Courtesy of Access Fixtures

choose bollard lights that feature both conversion coatings and powder coating to get the most out of your purchase.

An alternative finish to conversion coatings and powder coating is stainless steel. Stainless steel provides a highly stylized and durable material without requiring an additional finish.

The bollard light should be set upon and attached to a mounting base that is firmly anchored to the ground. The mounting plate is typically bolted to a cement footing that has anchor bolts set in while the cement is wet.

The head of the bollard light should be cast aluminum and affixed using vandal resistant screws. The holes for the vandal resistant screws should be on the sides, as opposed to the top, to prevent pooling and water penetration.

Additionally, high quality bollard lights will be CSA wet location or UL wet location rated to ensure they withstand all types of weather and wet environments.



Styles

Bollard lights are available in different styles. The most common shapes are round and square. Round bollard lights are available with dome tops and flat tops. Square bollard lights come with flat tops only. Choose the design that best fits in your space. For instance, a restaurant may not want to use flat top bollards, as people may tend to place drinks on them and therefore spill drinks or break glasses. Dome top bollards tend to be the best option for a social setting. The style of your bollard will depend on the location of the install, including aesthetics, and the proposed function of the bollard light.

Sizes

Dimensions vary between brands and models. The most common diameters for durable commercial bollard lights are 6", 7" and 8". Typically, heights range between 40' and 44". Some manufacturers offer the option of cutting the bollard to achieve a custom height.

Materials

Bollard lights are made of many materials, but most quality bollard lights are made of aluminum or stainless steel. Aluminum bollard lights have tubes that are made of cast or extruded aluminum. All quality aluminum bollard lights will have durable cast aluminum tops that effectively hold the optics and lenses in place. Quality stainless steel bollard lights are typically made of formed 316 stainless steel, and are known for durability. Aluminum bollard lights can be painted, while stainless steel only comes in the steel finish.



**Stainless steel light bollard shown
with louver optics**

Colors

Bollard light housings typically are white, black, or architectural bronze. Some manufacturers offer custom colors too, and use RAL color codes. RAL is a worldwide color standard used by professionals in design and architecture industries. It currently includes over 2,300 colors with 70 metallic shades. Every color has an associated RAL code that enables you to specify your custom color when ordering your bollards. This will allow you to match your bollards to existing architecture or company colors. For instance, a condominium community in California was able to custom color their bollards to match to existing fence colors. Visit <http://www.ral-ggmbh.de> to learn more and view other available RAL colors.

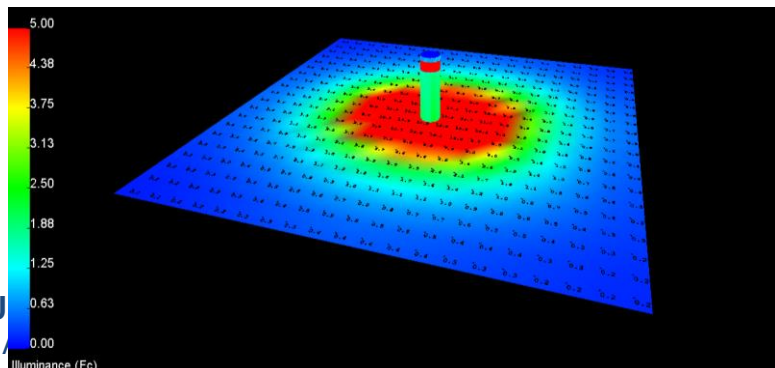


**A partial list
of RAL colors**

Lenses, Reflectors and Refractors

Bollard light optics should be selected based on application requirements. Keep in mind, optics will affect light levels and distribution. Louver and reflector optics obscure the light source and make the fixture easier on the eyes, but sacrifice efficacy and total lumen output. Type V (type 5) optics provide a view of the light source through borosilicate glass and have higher efficacy, supplying more lumens of light.

Louvers – Bollards with louvers control light distribution by restricting most of the light except the light going down towards the ground or surface. The light source is blocked from direct view. This enables a more powerful light



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source to be used than with IES Type V.

Standard Reflector – Bollards with adjustable reflectors provide an abundance of light around the bollard. The light source is inside the cone on the bottom. Light is bounced off the top reflector and then off the outside of the cone. The light source is hidden from direct view and the light is predominantly projected downward. This reduces light trespass.

IES Type V – Bollards with IES Type V Glass emit light through a prismatic borosilicate glass refractor. Light is projected 360 degrees around the bollard, on the walkway and on landscaping or objects near to the walkway. The effect is similar to a post lamp light fixture, albeit lower and behind prismatic glass. Efficacy is increased. If light trespass is an issue, an optional light shield is available to limit light where it is not wanted.

| | | |
|--|--|--|
|  |  |  |
| <p>Square Flat Top Bollard Louvers</p> | <p>Round Flat Top Bollard Standard Reflector</p> | <p>Round Dome Top Bollard Type V Glass</p> |

Lamp Types & Light Sources for Bollards

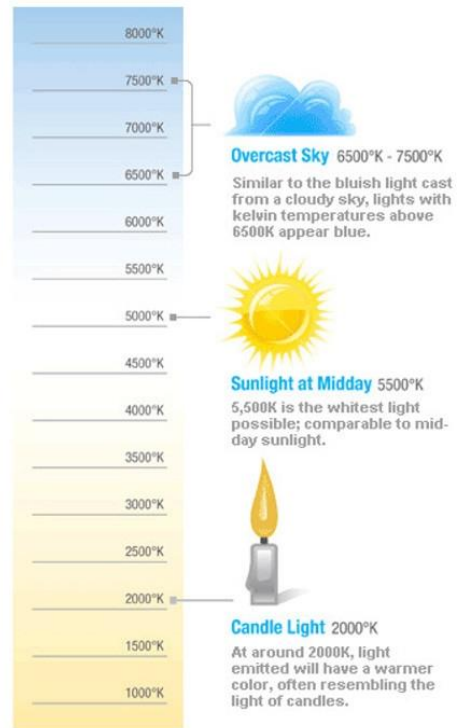
There are four major lamp type options to choose from when purchasing bollard lights: high-pressure sodium (HPS), pulse start metal halide (PSMH), compact fluorescent (CFL and PL), and light emitting diodes (LED). Each option works well in some situations and not in others. There is no best option, so choose the option that best fits your needs.

High Pressure Sodium – HPS lamps are commonly used in outdoor fixtures such as streetlights and wall packs. 50w to 100w HPS lamps last about 16,000 hours. A feature of HPS is the yellow hue emitted by the lamp is less attractive to insects than other whiter lamps. A negative is the abysmal CRI of about 20. CRI of 20 means colors will only be 20% accurate. The average Kelvin temperature for HPS lamps is 2200. HPS lamps require external ballasts.

Pulse Start Metal Halide – Low wattage PSMH lamp applications include vandal resistant luminaires, wall packs and, naturally, bollard lights. PSMH lamps have a Kelvin around 4000K and a CRI of 62; not exemplary but not poor either. Lamps between 50w and 100w are rated on average for 20,000 hours. PSMH lamps require external ballasts.

Compact Fluorescent – Compact fluorescent lamps for bollards come in two forms. The first is compact fluorescent lamps with an integrated ballast and medium screw in base (CFL) that use 120v line voltage. The other is plug in compact fluorescent (PL) lamps which plug into a socket and require a non-integrated ballast. CFLs last about 8,000 to 10,000 hours while PLs last between 12,000 and 20,000 hours depending on the wattage and quality. Both types, CFL and PL come in various Kelvin temperatures and offer superior color rendition of 80 or higher.

Light Emitting Diodes – LED light sources for light bollards include self-ballasted LED lamps with medium sockets and LED light modules powered by drivers. Subject to the optics, LED is typically far more efficient than any other light source. Energy used can be as little as 17% as compared to even pulse start metal halide. LED offers excellent color rendition; typically ranging from 70-90 CRI. Many LED options have a choice of Kelvin. LEDs last 25,000 to 50,000 for self ballasted LED lamps and over 50,000 hours for LED light modules such as LG and Xicato. Initial cost of an LED light bollard is sometimes higher than other light technologies, but considering energy savings, longer product life, and lower maintenance the payback is there.



Bollard Light Efficacy Based on Light Source and Bollard Light Optics

| Optics Type | Lamp System | | Lamp | Lamp | | Lamp | | Luminaire | | Luminaire | |
|---------------------|-------------|-------|---------------|----------------|-------------|-------------|----------|----------------|-------------|-------------|----------|
| | Watts | Watts | Life in Hours | Initial Lumens | Mean Lumens | Initial LPW | Mean LPW | Initial Lumens | Mean Lumens | Initial LPW | Mean LPW |
| Reflector | | | | | | | | | | | |
| 50w MH | 50 | 70 | 10,000 | 3400 | 2000 | 48.6 | 28.6 | 816 | 480 | 11.7 | 6.9 |
| 70w MH | 70 | 85 | 10,000 | 6000 | 4400 | 70.6 | 51.8 | 1440 | 1056 | 16.9 | 12.4 |
| 100w MH | 100 | 129 | 10,000 | 8500 | 5500 | 65.9 | 42.6 | 2040 | 1320 | 15.8 | 10.2 |
| 50w HPS | 50 | 64 | 16,000 | 4000 | 3600 | 62.5 | 56.3 | 960 | 864 | 15.0 | 13.5 |
| 70w HPS | 70 | 91 | 24,000 | 6300 | 5350 | 69.2 | 58.8 | 1512 | 1284 | 16.6 | 14.1 |
| 100w HPS | 100 | 129 | 24,000 | 9500 | 8550 | 73.6 | 66.3 | 2280 | 2052 | 17.7 | 15.9 |
| 42w PL Fluorescent | 42 | 42 | 17,000 | 3200 | 2670 | 76.2 | 63.6 | 768 | 641 | 18.3 | 15.3 |
| 57w PL Fluorescent | 57 | 57 | 12,000 | 4100 | 3587 | 71.9 | 62.9 | 984 | 861 | 17.3 | 15.1 |
| 84w PL Fluorescent | 84 | 84 | 17,000 | 6400 | 5340 | 76.2 | 63.6 | 1536 | 1282 | 18.3 | 15.3 |
| 23w CFL | 23 | 23 | 8,000 | 1700 | 1365 | 73.9 | 59.3 | 408 | 328 | 17.7 | 14.2 |
| 10w Directional LED | 10 | 10 | 25000 | 860 | 688 | 86.0 | 68.8 | 206 | 165 | 20.6 | 16.5 |
| 12w LG LED | 12 | 12 | 50,000 | 1345 | 1076 | 112.1 | 89.7 | 834 | 667 | 69.5 | 55.6 |
| 30w Xicato LED | 30 | 30 | 50,000 | 2140 | 1712 | 71.3 | 57.1 | 1177 | 942 | 39.2 | 31.4 |
| Louvers | | | | | | | | | | | |
| 50w MH | 50 | 70 | 10,000 | 3400 | 2000 | 48.6 | 28.6 | 918 | 540 | 13.1 | 7.7 |
| 70w MH | 70 | 85 | 10,000 | 6000 | 4400 | 70.6 | 51.8 | 1620 | 1188 | 19.1 | 14.0 |
| 100w MH | 100 | 129 | 10,000 | 8500 | 5500 | 65.9 | 42.6 | 2295 | 1485 | 17.8 | 11.5 |
| 50w HPS | 50 | 64 | 16,000 | 4000 | 3600 | 62.5 | 56.3 | 1080 | 972 | 16.9 | 15.2 |
| 70w HPS | 70 | 91 | 24,000 | 6300 | 5350 | 69.2 | 58.8 | 1701 | 1445 | 18.7 | 15.9 |
| 100w HPS | 100 | 129 | 24,000 | 9500 | 8550 | 73.6 | 66.3 | 2565 | 2309 | 19.9 | 17.9 |
| 42w PL Fluorescent | 42 | 42 | 17,000 | 3200 | 2670 | 76.2 | 63.6 | 864 | 721 | 20.6 | 17.2 |
| 57w PL Fluorescent | 57 | 57 | 12,000 | 4100 | 3587 | 71.9 | 62.9 | 1107 | 968 | 19.4 | 17.0 |
| 84w PL Fluorescent | 84 | 84 | 17,000 | 6400 | 5340 | 76.2 | 63.6 | 1728 | 1442 | 20.6 | 17.2 |
| 23w CFL | 23 | 23 | 8,000 | 1700 | 1365 | 73.9 | 59.3 | 459 | 369 | 20.0 | 16.0 |
| Type V Glass | | | | | | | | | | | |
| 50w MH | 50 | 70 | 10,000 | 3400 | 2000 | 48.6 | 28.6 | 1768 | 1040 | 25.3 | 14.9 |
| 70w MH | 70 | 85 | 10,000 | 6000 | 4400 | 70.6 | 51.8 | 3120 | 2288 | 36.7 | 26.9 |
| 100w MH | 100 | 129 | 10,000 | 8500 | 5500 | 65.9 | 42.6 | 4420 | 2860 | 34.3 | 22.2 |
| 50w HPS | 50 | 64 | 16,000 | 4000 | 3600 | 62.5 | 56.3 | 2080 | 1872 | 32.5 | 29.3 |
| 70w HPS | 70 | 91 | 24,000 | 6300 | 5350 | 69.2 | 58.8 | 3276 | 2782 | 36.0 | 30.6 |
| 100w HPS | 100 | 129 | 24,000 | 9500 | 8550 | 73.6 | 66.3 | 4940 | 4446 | 38.3 | 34.5 |
| 42w PL Fluorescent | 42 | 42 | 17,000 | 3200 | 2670 | 76.2 | 63.6 | 1664 | 1388 | 39.6 | 33.1 |
| 57w PL Fluorescent | 57 | 57 | 12,000 | 4100 | 3587 | 71.9 | 62.9 | 2132 | 1865 | 37.4 | 32.7 |
| 84w PL Fluorescent | 84 | 84 | 17,000 | 6400 | 5340 | 76.2 | 63.6 | 3328 | 2777 | 39.6 | 33.1 |
| 23w CFL | 23 | 23 | 8,000 | 1700 | 1365 | 73.9 | 59.3 | 884 | 710 | 38.4 | 30.9 |
| 12w Omnidirectional | 12 | 12 | 25000 | 860 | 688 | 71.7 | 57.3 | 447 | 358 | 37.3 | 29.8 |
| 12w LG LED | 12 | 12 | 50,000 | 1345 | 1076 | 112.1 | 89.7 | 740 | 592 | 61.6 | 49.3 |
| 30w Xicato LED | 30 | 30 | 50,000 | 2140 | 1712 | 71.3 | 57.1 | 1177 | 942 | 39.2 | 31.4 |

Lamp watts are the watts of the lamp.

System watts include the watts of the lamp and ballast.

Lamp Life is average rated life in hours.

Initial lumens are lumens emitted when the light source is new.

Mean Lumens is the average lumens emitted by the system.

LPW is lumens per watt, lumens of light emitted per watt of energy used

Voltage

It is essential that managers of commercial facilities know the line voltage where the fixture is to be installed. Line voltage is the voltage provided by a power line at the point of use. While U.S. residences almost always are 120v, line voltage varies in commercial facilities. In fact, the line voltage in a commercial application may vary within the same building. It is essential that the voltage be known before purchasing fixtures. Fixtures that do not match the line voltage will not function properly. For instance you cannot use a 240v fixture on a 277v line.

Since voltage information may not be known or in some instances information may be incorrect, purchasing a fixture that handles multiple voltages may be prudent. Many fixtures have ballast options that enable the fixture to function on multiple line voltages. Fixtures with the Quad Tap option, after being set up properly, will operate on 120v, 208v, 240v, or 277v lines.

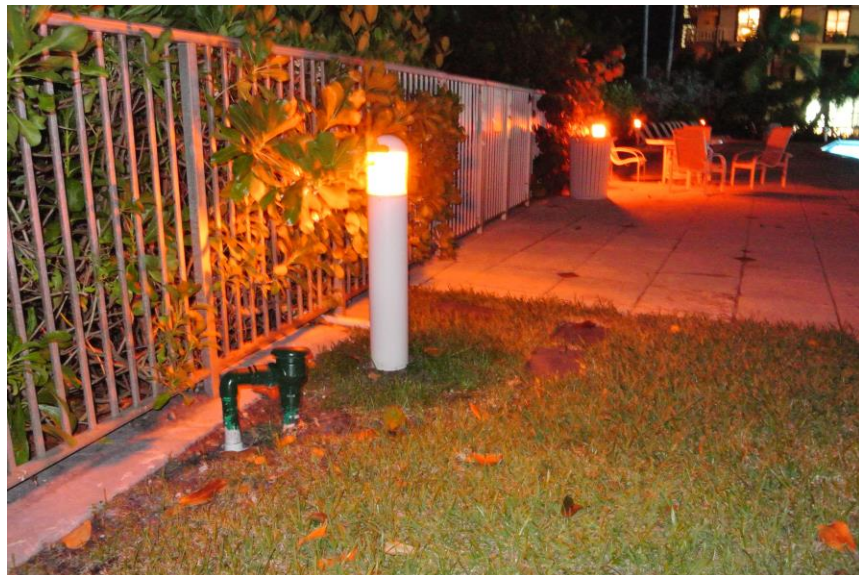
Bollard lights are also available in 12-volt [low voltage versions](#). Low voltage makes it easy run wiring. Low voltage installations do not require an electrical contractor, and are frequently installed by landscapers, general contractors and property managers.

Special Applications

Some applications have unique requirements, such as low voltage areas or light that needs to be wildlife safe. Many manufacturers have found solutions to help serve clients with these unique requirements. For instance, LED bollards are now offered with a low voltage option, allowing those with line voltage of 12v-24v to take advantage of the LED energy savings and efficiency, while using the most common light bollards. In addition, low voltage bollards can be installed without an electrician.

Also, lamp manufacturers have developed an LED lamp that have a kelvin temperature so low it is considered safe for use along coast lines where sea turtles are prominent. The LED lamp will provide amber light that will not attract the turtles. This allows for the turtles to recognize the white light from the moon and follow it back to the ocean. For more information on turtle safe lighting, [click here](#).

Round dome top bollards with Type V optics located by the coast in Florida using wildlife safe lamps to protect turtle hatchlings.



Bollard Spacing

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The placement, or spacing, of bollards is dependent on the site requirements, ambient light levels, bollard optics, and a client's preferences. The optics available for bollard lights can affect the spacing of your fixtures. Lighting requirements vary depending on where light bollards are used. Reaching required light levels may dictate the use of a specific optic along with specific spacing. Also, many areas have other light sources such as wall packs, streetlights, and other luminaires that augment the light level. This may cause you to require more or less bollards to reach the desired look and light level of the area.

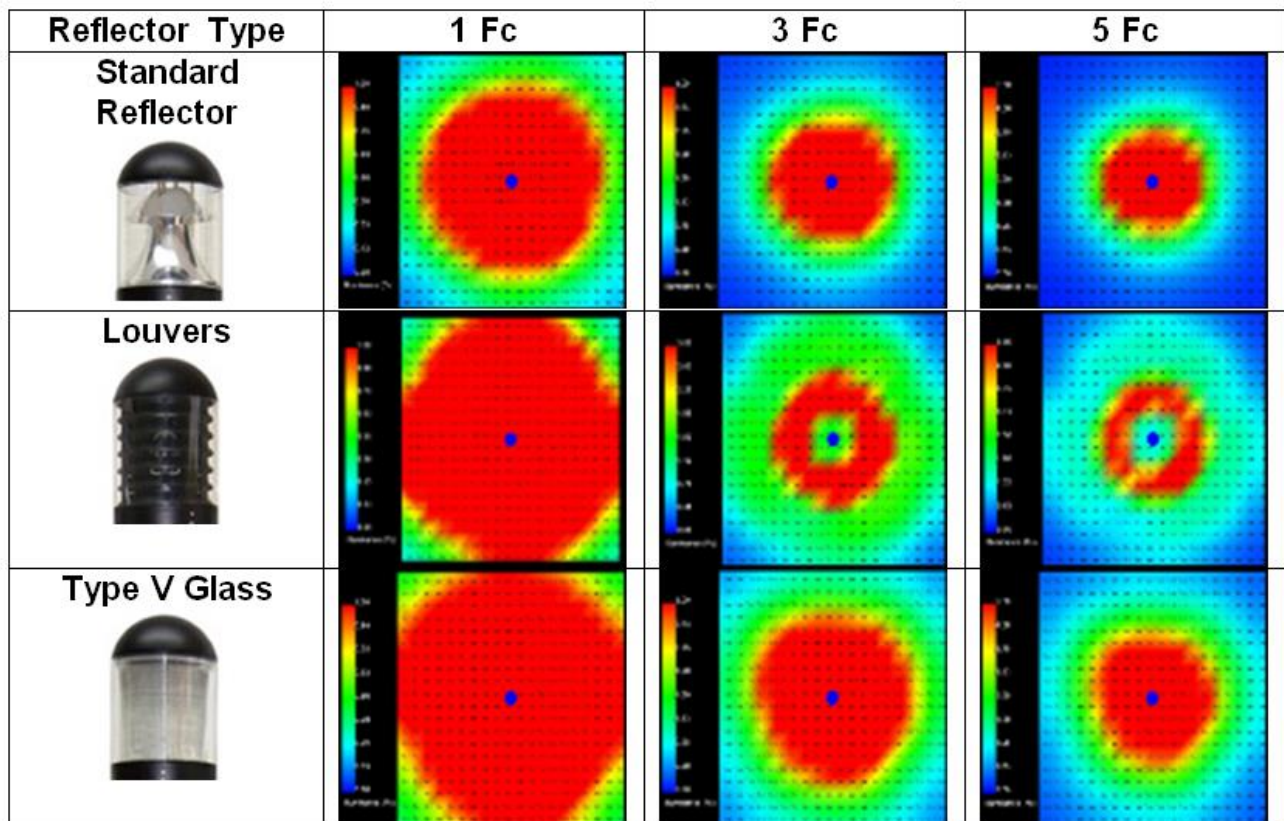
There is not a clear-cut answer when it comes to bollard spacing. IESNA (Illuminating Engineering Society of North America)

recommends light levels presented in the chart on the right for common areas lit by bollard lights as a guideline.

| Footcandles (Fc) | Commercial | Intermediate | Residential |
|--------------------|------------|--------------|-------------|
| Sidewalks by Roads | 0.9 Fc | 0.6 Fc | 0.2 Fc |
| Walkways and Paths | 2.0 Fc | 1.0 Fc | .05 Fc |
| Building Entrances | 5.0 Fc | - | - |
| Building Grounds | 1.0 Fc | - | - |
| Parking Areas | 1.0 Fc | - | - |
| Attendant Parking | 2.0 Fc | - | - |

The chart below demonstrates the area lit by a 70w

pulse start-metal halide lamp inside a bollard using the available optics. The images depict the light levels achieved within a 20-foot by 20-foot square area. The red coloration shows the area achieving the light level specified at the top of each column.



Installation

This text is provided as an overview and in no way is comprises exhaustive installation instructions. Installation instructions vary by brand. All installations must be completed in compliance with local building codes. Your community may require professional installation including the services of a licensed contractor and/or a licensed electrician.

With that stated, understanding the installation process will help you make an educated decision about your bollard lighting purchase. The first thing to consider is that you will need to bury electric wires to power the bollard lights. Make sure that your intended location has this capability. Wiring should be run in advance of installation so the wires can be run up through the center of the mounting plate.

1. Dig a hole deep enough to hold the cement and bollard light in place. Cold areas and wetter locations frequently require increased depth so the light bollard is not pushed out of the ground by expansion and contraction. A depth of even 4 feet may be required. Local code may determine the correct depth.
2. Run appropriate wiring from the power source to the hole. The wire should be appropriate for safe burial and long life in the ground. Be sure to leave enough length on both ends to connect to the power source on one end. On the other end leave enough wire to run up through the cement and the bollard. Later on you will need enough slack to be able to connect the wiring to the ballast or socket at the top of the bollard light.
3. Place a sonotube in the hole. The top of the sonotube should be just above the level of the ground. Place rocks as ballast inside and outside of the sonotube to hold the sonotube as upright as possible.
4. Run the wire up through the center. Some choose to place the wire in a plastic conduit. This holds the wire in place and keeps it away from the cement. A board at the top can keep the plastic conduit upright.
5. Set up the jay bolt anchor bolts and have them ready by each sonotube.
6. Fill the sonotube with cement. Be sure to keep the conduit and wire centered.
7. Sink the anchor bolts into the cement leaving the threaded portion above the cement.



In images above and two below, the wiring should be coming out of the plastic conduit and should be long enough to be wired to the socket or ballast with ease.



8. Level the plastic piece that holds the anchor bolts in position and wait for the cement to harden.
9. Place the mounting plate down over the bolts and bolt down the mounting plate and make sure it is level.
10. Remove the bollard head from the bollard housing. This reduced the weight of the bollard and reduces chances of scratching or breakage.
11. Wire the socket, ballast or driver to the wiring.
12. Attach the bollard body to the base. The bollard housing will slide onto the mounting plate and will be fastened into place with screws. Make sure the bollard body is level.
13. Install the lamp in the socket.
14. Install the bollard head on the bollard body.
15. Connect the wiring to the power source.
16. Turn on the power at the source.
17. Your bollard light(s) are ready for use.



The mounting bracket is shown below will be bolted down to the bolts sticking out of the cement in the sonotube. It is important that the mounting plate be level.



**Do you still have questions about bollard lights?
Talk to a lighting specialist at Access Fixtures.
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About Access Fixtures

Access Fixtures is factory direct commercial and sports lighting for less. With custom manufacturing capabilities, Access Fixtures can competitively build and custom finish luminaires and poles to the performance specifications you require. Luminaire types include wall packs, area lights, bollard lights, garage lighters, vandal resistant, exit and emergency, high bay, low bay, linear fluorescent, and track lighting. For more information about bollard lighting, contact Access Fixtures at 888.521.2582, sales@accessfixtures.com or visit our [website](http://www.accessfixtures.com).

