LPB™

A FORTE COMPANY

INSTALLATION PRODUCT MANUAL

The Future of Precast Light Pole Bases

LPB™

A FORTE COMPANY

Produced by The Precast Forte Group
Version 3.0 - December 2024
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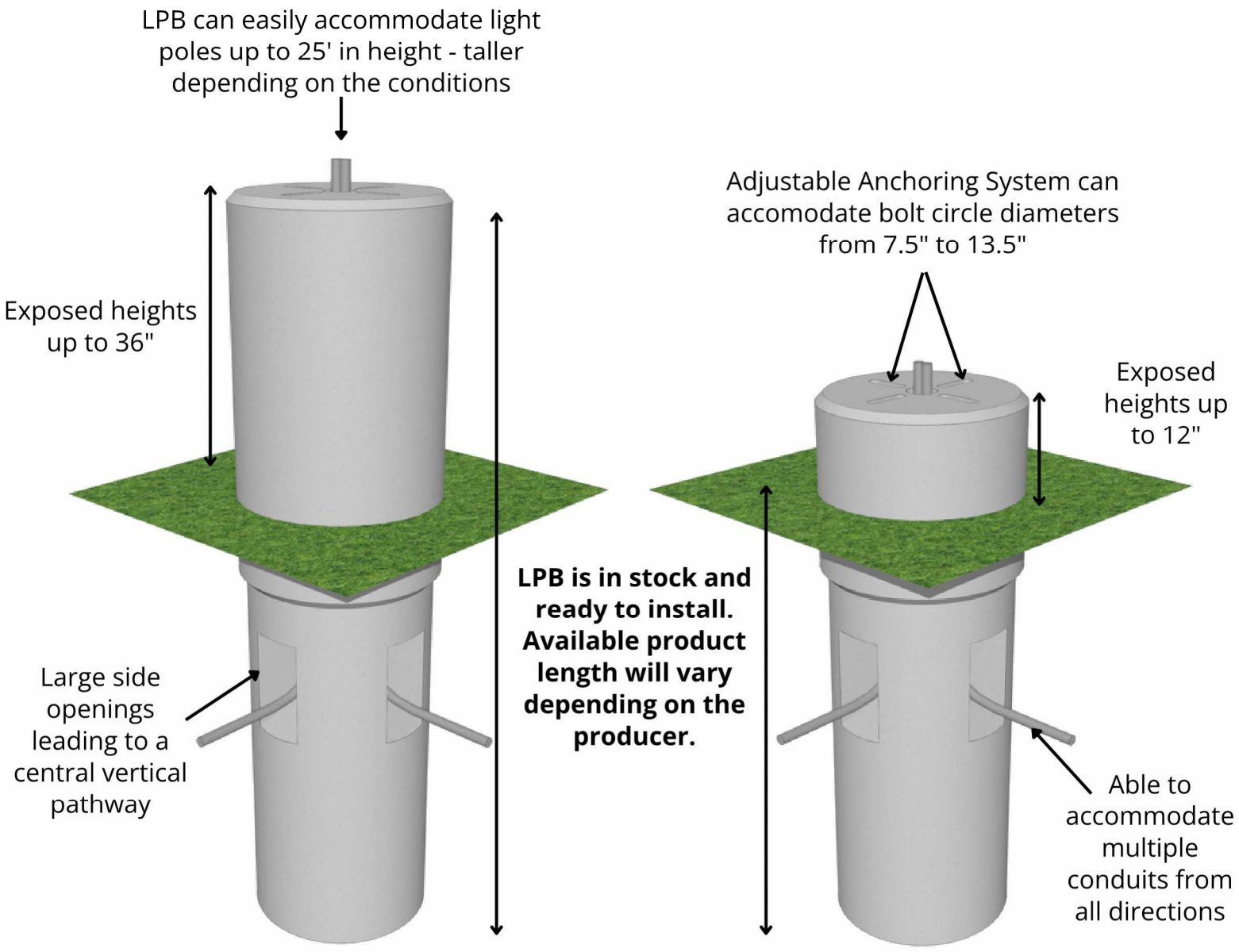
PRIMARY PRODUCT FEATURES



8-Foot Tall LPB Option

Approx. Weight 3500 lbs.
Concrete: Min. 5,000 psi
Diameter: 24"

6-Foot Tall LPB Option

Approx. Weight 2600 lbs.
Concrete: Min. 5,000 psi
Diameter: 24"

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IMPORTANT NOTICE TO INSTALLERS

LPB is a proprietary product that contains two distinct and unique features; the adjustable anchoring system and the large side openings in the concrete foundation that facilitate conduit installation. Since site conditions and project requirements vary, analysis of these two features is required for each job utilizing the LPB. Information that is pertinent to the designer in the analysis process may include, but is it not limited to:

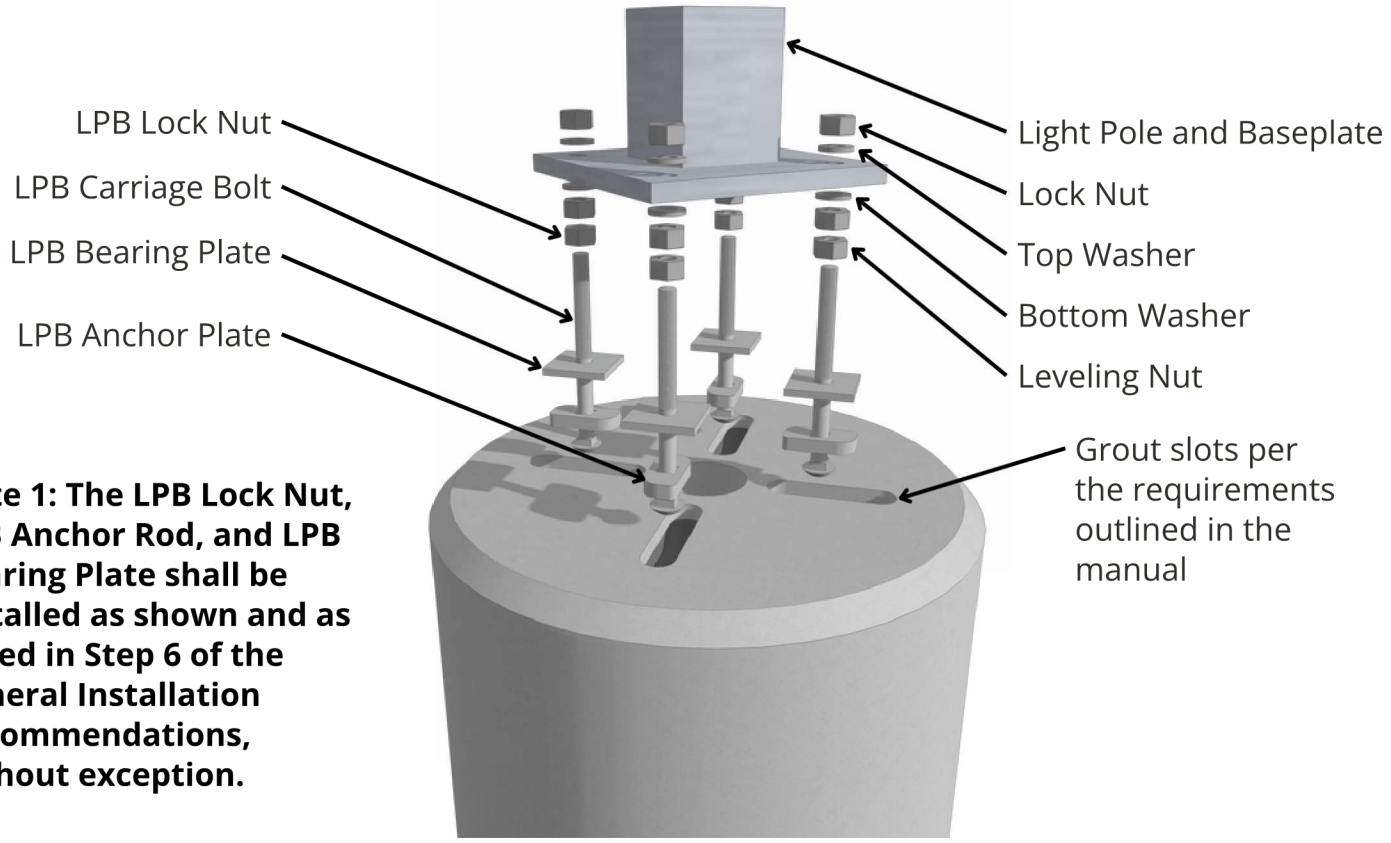
Area wind speed Pole height, shape and diameter/width
Site topography and exposure Site soil conditions
Fixture quantity and surface area

Final design, for construction purposes, must be completed by a Professional Engineer who is familiar with the project, the specific site conditions, and the specific light pole that will be installed. For additional information, or to assist in the design process, refer to the Engineering Reference Manual that is available at *www.lightpolebase.com*.

INSTALLATION BILL OF MATERIALS (PER LBP)

1 - LPB (total length based upon design and required bury depth)
4 - 3/4" OR 1" diameter HDG carriage bolt (ASTM F1554 Grade 55)
4 - 3.1" x 1.65" x 5/8" thick anchor plates (ASTM A514)
4 - 3" x 3" x 1/4" thick HDG bearing plate (ASTM A36)
12 - 3/4" OR 1" diameter HDG heavy hex nuts (ASTM A194 Grade 2H)
8 - 3/4" OR 1" HDG hardened flat washer (ASTM F436)

Grout for filling the anchoring slots (Refer to Grout Mix and Water Recommendations section for additional information)
Figure 1 below, is a recommended bolting diagram that should be followed in the absence of guidance provided by the light pole manufacturer. Any guidance or requirements provided by the light pole manufacturer shall supersede the guidance in Figure 1, except as stated in Note 1 below.



Note 1: The LPB Lock Nut, LPB Anchor Rod, and LPB Bearing Plate shall be installed as shown and as noted in Step 6 of the General Installation Recommendations, without exception.

Figure 1: Recommended LPB Bolting Diagram

GENERAL INSTALLATION RECOMMENDATIONS

LPB STREAMLINES INSTALLATION WITH ITS ADJUSTABLE ANCHORING SYSTEM AND INCLUDED HARDWARE, ELIMINATING THE NEED FOR CUSTOM SOLUTIONS. THIS SAVES TIME, REDUCES LABOR, AND ENSURES A HASSLE-FREE PROCESS FOR CONTRACTORS.

STEP 1 - DETERMINE THE LOCATION FOR THE LPB

- Mark the center location in which the LPB will be installed.
- Install offset stakes to allow for relocating the center location after the hole has been augered or excavation is complete.

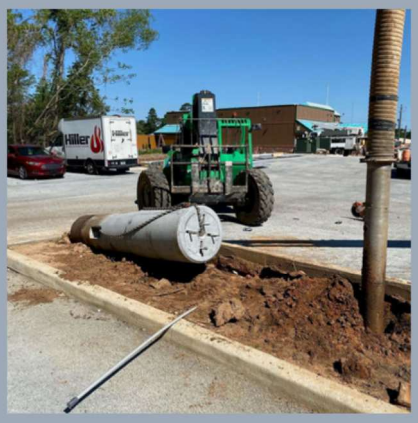
STEP 2 - AUGER OR EXCAVATE HOLE

- Auger or excavate hole at the marked location. Hole diameter should be 6 to 12-inches larger than the diameter of the LPB.
- Auger or excavate to the required embedment depth plus 6-inches. The additional depth will allow for installation of the base material. The required embedment depth will be specified by the design engineer and is based upon the actual site conditions.
- The bottom of the augered or excavated hole should be relatively flat.

GENERAL INSTALLATION RECOMMENDATIONS

STEP 3 - INSTALL BASE MATERIAL

- Place a minimum of 6-inches of crushed stone at the bottom of the augered or excavated hole.
- Crushed stone should be compacted, level, and extend to the edges of the hole.
- After placing the base material, ensure minimum embedment depth can still be achieved.



STEP 4 - PLACE THE LPB

- Lower the LPB into hole. The base can be lifted by threading two straps through the center of the LPB or by attaching chains to the anchors located along the sides.
- Ensure that the conduit openings are aligned properly for the site and installation requirements. Refer to Figures 2 and 3 on page 8 for additional information on final LPB orientation.
- Once the LPB is in place, ensure that it is plumb, the top of the foundation is level, and the top surface elevation is set to the project requirements.
- Brace the LPB as required to maintain location and level until the unit can be backfilled.

GENERAL INSTALLATION RECOMMENDATIONS

STEP 5 - INSTALL BACKFILL MATERIAL AND REQUIRED CONDUITS

- Place backfill material per the project requirements. It is recommended that all LPBs are backfilled using crushed stone or granular fill (sand).
- Backfill material should be placed uniformly around the LPB in 6 to 8-inch lifts and compacted to 95% standard proctor density.
- Initial backfill should be placed to an elevation just below the large side openings.
- Install the required conduits through the side openings and out the top of the LPB.
- After conduit installation is complete, install the rest of the backfill material to the finished grade elevation around the perimeter of the LPB.

INSTALLATION ORIENTATION FIGURES

In most cases, project requirements will dictate the placement and orientation of the light pole fixtures and light pole base plate. To get the proper orientation of these elements, initial placement of the LPB is critical. The figures below show how the LPB should be placed in the ground, and which conduit openings to use, when alignment and orientation of the light pole fixtures and baseplate are mandated by other project requirements.

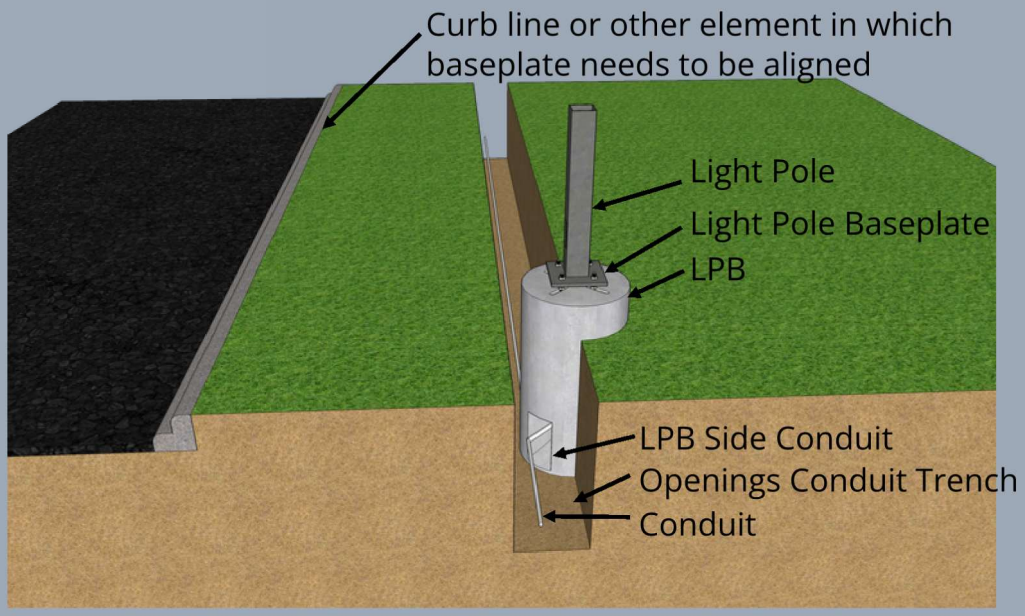


Figure 2: LPB Installation Orientation

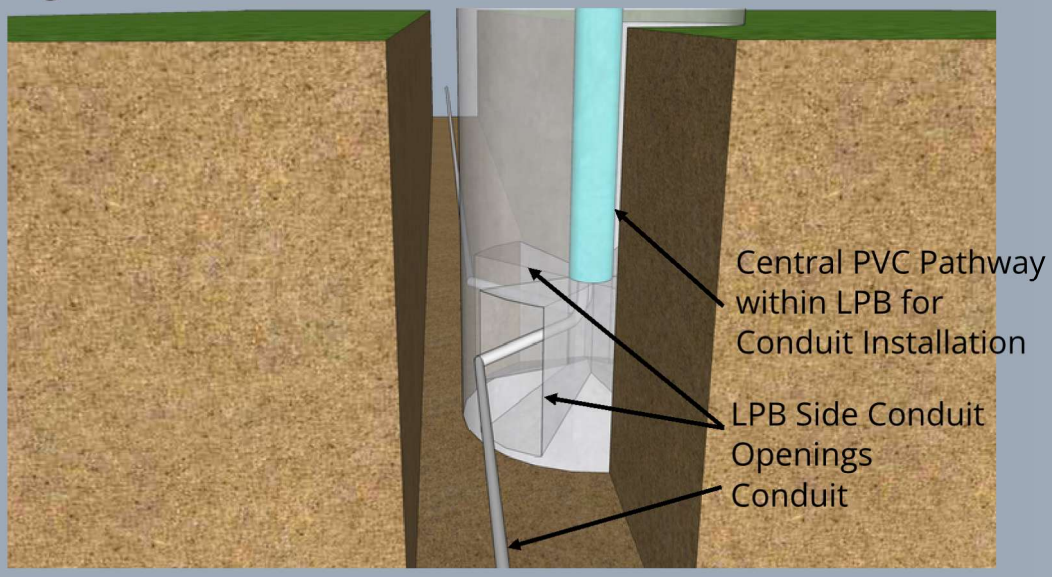


Figure 3: LPB Conduit Opening Detail

INSTALLATION ORIENTATION FIGURES

STEP 6 - SETTING UP THE ANCHORING RODS AND GROUTING

- Place a single anchor plate onto a carriage bolt and slide the plate down until the square hole seats onto the collar of the bolt. The proper orientation of the anchor plate (top up) is with the more extreme rounded corners in the top right and bottom left once placed onto the bolt.
- Lower the carriage bolt and anchoring plate into the slot until it reaches the bottom and then turn them clockwise 90 degrees.
- Place one bearing plate washer over the bolt and thread on a heavy hex nut. At this point, leave the nut loose enough to allow for adjustment along the slot.
- Repeat steps 1 through 3 for the remaining slots.
- Using a template, slide the each bolt setup along the slot to achieve the required bolt circle diameter.
- Once the setups are in the correct location, tighten the hex nuts against the bearing plate washer to lock the bolts in place. Nuts should be installed to hand tight using a standard cresent wrench.
- Using your template, recheck the position of each bolt to ensure it did not move during the set up process.
- Pour fluid grout into each slot. Be sure to fill each slot completely and trowel off any excess. Refer to the grouting process in this manual for additional information.

INSTALLATION ORIENTATION FIGURES

STEP 7 - INSTALL LIGHT POLE

- The light pole and base plate should be installed using the Recommended Bolting Diagram, previously shown in Figure 1 on page 5, in the absence of guidance provided by the light pole manufacturer. Any guidance or requirements regarding bolting from the light pole manufacturer shall supersede those shown in Figure 1, except as stated in Note 1 of Figure 1.
- Ensure that the light pole is installed plumb using leveling nuts and that the bottom of lowest leveling nut is in contact with the top of the LPB Lock Nut. Leaving a space, or having a pole that is out of plumb, can create excess stress on the anchor rods.
- The remaining portions of the light pole and fixtures should be installed per the manufacturer's recommendations.

GROUT MIX REQUIREMENT

LPB requires the use of a high-strength, non-shrink grout to fill the anchoring slots. While the grout is non-structural, it is still essential for proper installation. The grout must have a minimum compressive strength of 8,000 psi at 28 days when mixed to a fluid consistency (see photos below). One recommended option is Quikrete's Non-Shrink Precision Grout mix, though other grouts meeting these requirements may also be used. All grout should be mixed and installed according to the manufacturer's specific instructions. The Grout Mix Quantities table is based on the mixing recommendations for Quikrete's Non-Shrink Precision Grout.

GROUT MIX AND WATER QUANTITIES

Number of LPBs	Number of Slots (4 per LPB)	Required Grout Mix (lb) (5.15 lb per Slot)	Required Water (oz) (18.1 oz per Slot)
1	4	20.6	72.4
2	8	41.2	144.8
3	12	61.8	217.2
4	16	82.4	289.6
5	20	103.0	362.0
6	24	123.6	434.4
7	28	144.2	506.8
8	32	164.8	579.2
9	36	185.4	651.6
10	40	206.0	724.0
11	44	226.6	796.4
12	48	247.2	868.8
13	52	267.8	941.2
14	56	288.4	1013.6
15	60	309.0	1086.0
16	64	329.6	1158.4
17	68	350.2	1230.8
18	72	370.8	1303.2
19	76	391.4	1375.6
20	80	412.0	1448.0

(Note: Required grout mix and water quantities shown include a 5% waste factor)

MANUFACTURER'S PRODUCT WARRANTY

Each LPB shall have a 28-day compressive strength of at least 5,000 psi for 15 years after proper installation. If an LPB does not meet this warranty standard, please notify the manufacturer in writing. If after it has been determined that the LPB has not met the specifications, the manufacturer will have shipped to you, a replacement LPB which shall be the manufacturer's sole remedy for breach of this warranty. However, neither the manufacturer nor The Precast Forte Group shall have any obligation to install such replacement LPB.

This warranty shall not apply to any LPB which is damaged, defective or fails to meet the warranty standard due to improper installation of the LPB, chemical contact, or excessive and unforeseen site conditions beyond the manufacturer's or LPB - A Forte Company's control.

The above warranty is the exclusive limited product warranty. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE DISCLAIMED.

LPB™

A FORTE COMPANY

LPB is produced and marketed pursuant to a license agreement with:

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Patents Issued: US 8,991,122 and US 9,624,640

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