pole base®

Technical Guide

The resources you need to take back control of your job site with Pole Base precast foundations.


Altec

Contents

The Pole Base Advantage

Take control of the job site and project schedule with Pole Base precast foundations. Manufactured to your specifications, Pole Base eliminates the headaches of cast-in-place concrete.

Installation made easy.

Simple & Efficient

No more waiting for concrete trucks, curing time, or weather windows. Even large-scale, site-lighting projects can be streamlined and simplified with precast. When Pole Base is delivered on site, all you have to do is:

Dig Place Backfill

Durable & Versatile

Produced in a controlled environment with 5,000 psi concrete for unparalleled durability, Pole Base is ideal for a multitude of applications and configurations like light pole, runway or taxiway light bases, sign foundations, and columns.

Backed by Expertise

Not only does Pole Base provide precast foundations built to your specifications, they also provide the tools and resources such as preliminary design charts, construction details, and CAD drawings to remove the guesswork.

Round Rusticated

Round Smooth

Ledgestone

Brickledge

Square

Finished from the Start

Available in multiple shapes and textures, Pole Base simplifies your work and adds visual appeal to your projects. The precast concrete foundations arrive on the job site with a finished look.

Precast as one piece - cap, texture and all.

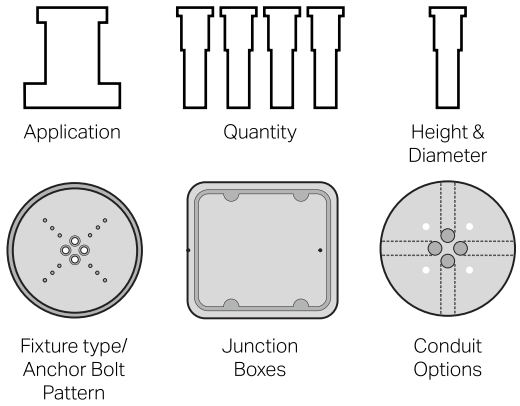
Available in several diameters and custom heights.

Manufactured with your specified bolt patterns, conduit placements, and junction box options.

How Does It Work?

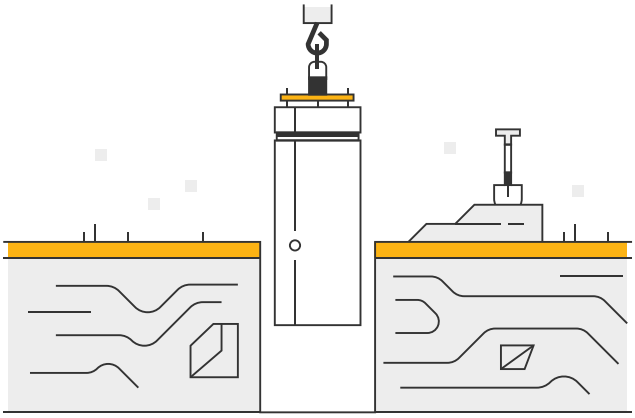
Step 1:
Contact Pole Base

Reach out to your nearest Pole Base manufacturer or visit polebase.com to obtain accurate pricing and lead times for your specific project.



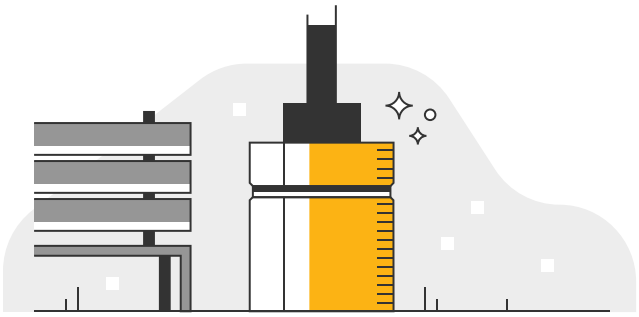
Step 2:
Confirm Specifications

Your Pole Base contact will work with you through the details of your project.



Step 3:
Install Like a Boss

Simply auger or excavate, place the base, and backfill. Depending on soil conditions and equipment used, a Pole Base unit can typically be installed in 45 to 90 minutes. See page 12 for full installation details.



Step 4:
Celebrate Your Success!

With Pole Base, you can stand the poles and run wire in the same day, saving valuable time and energy. The efficiencies of Pole Base allow you to focus on meeting demand, remaining competitive, and building your business!

Case Studies

The following projects highlight how the versatility of Pole Base can make any job more predictable and profitable. Precast and manufactured with your exact specifications, these durable concrete bases can be installed quickly, independent of weather or site constraints. Contact your local manufacturer today to start simplifying your work!

doTerra Office Expansion Uses 127 Custom Pole Bases

Customer:
doTerra

Electrical Contractor/Installer:
Rydalch Electric

Manufacturer:
Mountain West Precast

Location:
Pleasant Grove, Utah

When doTerra essential oils company underwent a massive, multi-phase campus expansion, 127 Pole Base light pole bases were installed outside of the new 67,055-square-foot (6,230-square-meter) office building, manufacturing facility, and medical clinic.

Local Pole Base manufacturer Mountain West Precast produced the custom bases according to specifications sent by the project's electrical contractor and delivered the bases on site ready to install.

Precast Concrete Bases for Corporate HQ Lighting Save Time & Money

Customer:
Agro-Culture

Engineer:
Hobbs & Black Associates Inc.

Installer:
JC Electric

Manufacturer:
MDC Contracting

Location:
St. Johns, Michigan

Pole Base precast concrete bases helped Agro-Culture Liquid Fertilizer save time and money on the construction of their new corporate headquarters parking lot.

The lot's 21 site light foundations were precast to spec with custom conduit and junction box configurations to integrate features like surveillance cameras. Delivered on site, contractors were able to quickly install the bases despite poor weather and soil conditions.

Pole Base offered time and cost savings and added a distinct finish to the site.

Pole Base Produces Efficiencies on Large-Scale Fulfillment Center Project

Customer:
Online Fulfillment Center

Manufacturer/Installer:
CalPortland Concrete Products

Electrical Contractor/Installer:
Collins Electric

Location:
Bakersfield, California

Pole Base provided the ideal site lighting solution for a 2.5-million-square-foot (233,000-square-meter) fulfillment center for an online retailer. On projects of this magnitude, reliable, quick installations are key to maintaining schedules and budgets.

The project's 135 precast light pole bases ranged in height from four to 11 feet (1.2 to 3.5 meters) tall. Pole Base expedited installation with custom conduit placements and anchor bolt patterns for each particular base and also provided a uniform and cohesive aesthetic to tie the site together.

Precast Taxiway Bases Meet DOT and FAA Regulations

Customer:
MDOT Aeronautical Division

Installer:
Windemuller Electric

Manufacturer:
Brutsche Concrete Products

Location:
Battle Creek, Michigan

When the FAA updated its criteria for airport taxiway configurations, W.K. Kellogg Airport in Battle Creek, Michigan, decided to utilize Pole Base to update its taxiway lighting in the process.

The project's engineering consultants and contractors proposed using Pole Base precast bases to meet regulations and expedite the job. The job's 184 light pole bases were custom manufactured in a controlled environment to the exact specifications needed to house the light bases and provide proper drainage.

The Pole Base foundations installed six times faster than a cast-in-place system, saving valuable time and lessening impact on airport users.

Concrete Pole Bases with Character Shine at King Louie Sports Complex Amphitheater

Customer:
King Louie Sports Complex

Manufacturer/Installer::
Pole Base/Redi-Rock KIT

Location:
Louisville, Kentucky

In creating a new amphitheater, the owners of the King Louie Sports Complex sought lighting that would look great, function well, and be a focal point of the complex.

Pole Base precast light pole bases were selected when on-site grade changes eliminated the option of using a traditional cast-in-place solution.

Pole Base was easy to install despite inclement weather and the Ledgestone bases complemented the amphitheater's Ledgestone retaining walls.

See more case studies on

polebase.com

Installation

With tips from a pre-construction checklist to step-by-step install instructions – none of which include using cardboard tubes or waiting for concrete trucks – Pole Base will help simplify your work. Using a precast solution solves onsite problems before they even happen!

Pre-Construction Checklist

Safety

- Personal Protective Equipment (PPE)
- Fall protection
- Rigging & lifting
- Maintain safe excavations
- Other relevant safety precautions

Engineering and Permits

- Review the detailed final design prepared by the Engineer/Architect of Record
- Review the project specifications
- Project design documents take precedence over these general recommendations
- Make sure necessary project approvals and permits are obtained

Project Plan Review

- Make sure you completely understand project plans, details, and specifications
- Ask the design engineer any questions you have about the project before starting
- Coordinate your work with the General Contractor and other trades
- Consider having a Pre-Installation meeting

Construction Planning

- Locate and mark all underground utilities; call 8-1-1 or online at www.call811.com
- Pole Base should be stored above the ground on wooden cribbing, keeping the units clean and separated from each other
- Ensure no damage of the texture, or staining, cracking, chipping, etc.
- Use approved lifting devices or padded slings; never use choke chains on the units
- Decide upon method of backfilling. Backfill options include crushed stone, granular backfill, or controlled low-strength material, or as required by the project specifications
- Verify weight of the units for safe lifting, transport, and installation

Equipment

- Lifting and setting equipment
- Nylon slings or lifting plate
- Excavator or rotary auger to create the hole
- Compactor and soil packing tools
- Shovels, rakes, hoes
- Level and measuring tapes

The Details

1. Mark Location

- Mark the center location
- Set two or more offset stakes
- Mark finish elevation of top of base

2. Auger

- Auger or excavate hole. Hole size should equal diameter of base plus 12 inches (300 mm)
- Hole depth should equal bottom of the base plus a minimum of 6 inches (150 mm) for the crushed stone foundation
- Check hole depth with level
- Bottom of excavation should be flat

3. Install Foundation

- Place, level, and compact crushed stone foundation
- Minimum thickness of crushed stone should be 6 inches (150 mm) thick
- Extend crushed stone foundation to the edge of excavation or a minimum of 6 inches (150 mm) from edge of the concrete Pole Base
- Verify embedment depth of Pole Base and top of foundation elevation with level; adjust as required

4. Place the Base

- Verify orientation of the Pole Base anchor bolt pattern and conduits compared to the site requirements and drawings
- Set Pole Base unit while in a plumb orientation into final location. DO NOT TILT-UP DURING INSTALLATION
- Set unit to proper elevation, ± ½ inch (12 mm) or project specifications
- Brace Pole Base as required to maintain unit level, true, and plumb until backfill has been placed and compacted

5. Backfill

- Place structure backfill per plans and specifications. Backfill is typically crushed ASTM No. 57 stone, clean granular fill (sand), or controlled low-strength material (flowable fill)
- Place backfill uniformly around perimeter of Pole Base in 6 inch (150 mm) lifts
- Compact each backfill lift to 90% relative density
- Backfill to conduit trench bottom elevation and install below grade electrical connections
- Finish backfilling and compacting in 6 inch (150 mm) lifts to the rough grade or as contract documents require

6. Clean Base & Erect Pole

- Remove all soil or stains from the exposed concrete
- Install lighting fixtures
- Take professional quality photographs for your completed project portfolio

Lifting Plate

The Pole Base Lifting Plate is intended to be used as an aid to safely set individual Pole Base units, connecting them to properly rated and installed rigging on construction machinery, such as a backhoe. The maximum working load limit for the Pole Base Lifting Plate is 10,000 lbs (4,535 kg). With proper use, inspection, and maintenance, the Pole Base Lifting Plate should function for several years. Contact your local Pole Base Manufacturer for more info on the Pole Base Lifting Plate.

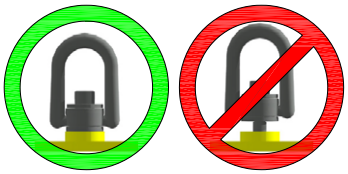
WARNINGS

- Do not exceed the 10,000 lbs (4,535 kg) working load limit of the lifting plate
- Only use the lifting plate to lift Pole Base units with properly designed and installed anchor bolts
- Do not modify in any way

1. Inspect

Inspect Pole Base Lifting Plate and do not use if there are signs of deflection, damage, and wear. As a minimum:

- ☐ Inspect paint for signs of overstress
- ☐ Inspect hoist ring for any signs of overstress
- ☐ Inspect chains and lifting hardware for defects or damage
- ☐ Check that the hoist ring is fully installed and snug-tight
- ☐ Check that the hoist ring rotates and pivots freely in all directions
- ☐ Check that Pole Base ID tag is attached and undamaged
- ☐ Check that the hoist ring ID tag is attached and undamaged



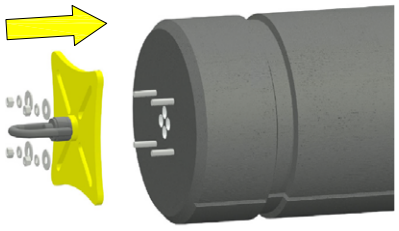
2. Review

Review your project safety plan before starting any work.

3. Bolt Together

Place the Pole Base Lifting Plate over anchor bolts cast into an individual Pole Base unit. Place the washers and nuts shipped with the Pole Base unit on the anchor bolts and tighten to snug-tight.

Nuts, washers, Lifting Plate, and Pole Base unit must all be in direct contact. All nuts must be snug-tight and the lifting plate must not be free to move in any direction.



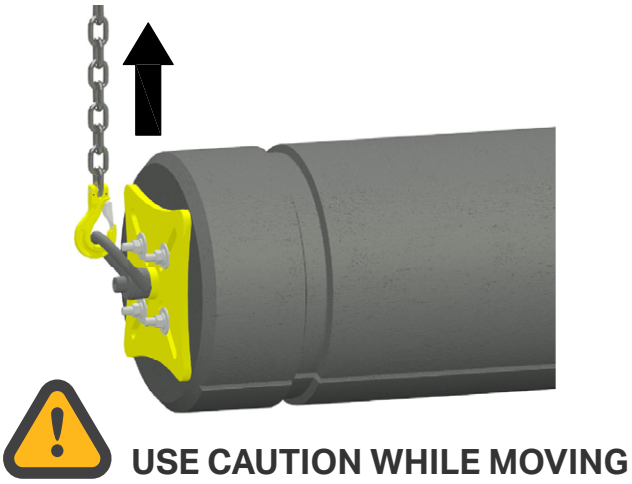
A snug tight condition is commonly obtained after a few impacts of an impact wrench or the full effort of an ironworker with an ordinary spud wrench. It is a simple analogy to say that a snug-tight bolt would be installed similarly to the lug nut on the wheel of a car; each nut is turned to refusal and the pattern is cycled and repeated so that all fasteners are snug.

4. Connect

Connect the Pole Base Lifting Plate to properly rated and installed rigging on the construction equipment.

5. Lift to Position

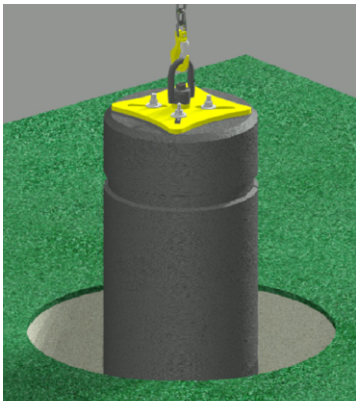
Slowly raise the Pole Base unit with the properly sized construction equipment with sufficient capacity to safely lift and move the Pole Base unit. Move the Pole Base unit to position and set the unit in a pre-augered hole. A person may be needed to stand next to the Pole Base unit and gently turn or guide the unit into final position. The Pole Base unit shall be placed level, true, and plumb in the proper alignment.



- Do not lift Pole Base units over people
- Never apply shock loads
- Use good lifting practices
- Always lift gradually
- Do not allow hoist ring to contact anchor bolts while lifting
- Do not swing the Pole Base unit on the rigging
- Keep hands clear of pinch points while setting the unit in place.
- Stand clear of the Pole Base unit during the entire lift.
- Never position your feet under the Pole Base unit during the lift.
- Personal Protective Equipment should include hard hats, steel toed safety shoes with metatarsal foot protectors.
- The operator shall not ride, or allow others to ride loads moved with the Pole Base Lifting Plate.

6. Disconnect

Properly backfill around the Pole Base unit as required in the project plans and specifications until the unit is secured in place and unable to move. Unbolt and remove the Pole Base Lifting Plate from the unit. Carefully move the construction equipment with the attached lifting plate to the next Pole Base unit to be set and repeat steps 3 through 6.



Annual Maintenance

The Pole Base Lifting Plate and hoist ring must be inspected annually. Magnetic particle inspection should be performed on the plate, hoist ring, and all welds. Chains, shackles, etc. must be inspected per OSHA or CSA requirements. All inspections must be performed again anytime shock loading occurs.

Design Charts

The design guidance in this section provides preliminary embedment estimates for design condition and load assumptions for planning your Pole Base installation.

These charts are for estimating and conceptual purposes only.

MINIMUM EMBEDMENT GUIDE

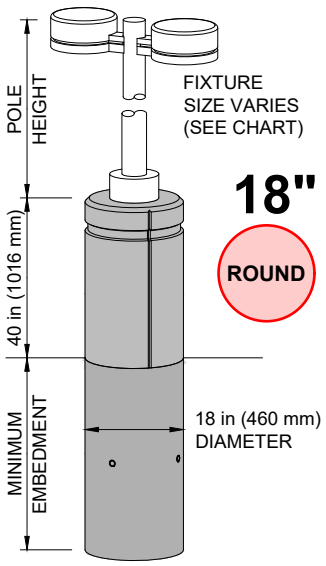
18 in (460 mm) DIAMETER ROUND POLE BASE UNITS [1] **6 in (150 mm) DIAMETER ROUND LIGHT POLE**

MINIMUM EMBEDMENT

POLE HEIGHT	SIGN OR FIXTURE AREA			
	2 ft² (0.186 m²)	**4 ft²** (0.372 m²)	**6 ft²** (0.557 m²)	**8 ft²** (0.743 m²)
BASES IN GRAVEL SOILS (GW, GP) [2] [7]				
15' (4.6 m)	**3'-6"** (1.1 m)	**4'-0"** (1.2 m)	**4'-0"** (1.2 m)	**4'-6"** (1.4 m)
20' (6.1 m)	**4'-0"** (1.2 m)	**4'-6"** (1.4 m)	**4'-6"** (1.4 m)	**5'-0"** (1.5 m)
25' (7.6 m)	**4'-6"** (1.4 m)	**5'-0"** (1.5 m)	**5'-0"** (1.5 m)	**5'-6"** (1.7 m)
30' (9.1 m)	**5'-0"** (1.5 m)	**5'-0"** (1.5 m)	**5'-6"** (1.7 m)	**6'-0"** (1.8 m)
35' (10.7 m)	**5'-6"** (1.7 m)	**5'-6"** (1.7 m)	**6'-0"** (1.8 m)	**6'-0"** (1.8 m)
BASES IN SANDY SOILS (SW, SP, SM, SC, GM, GC) [3] [7]				
15' (4.6 m)	**4'-0"** (1.2 m)	**4'-0"** (1.2 m)	**4'-6"** (1.4 m)	**4'-6"** (1.4 m)
20' (6.1 m)	**4'-6"** (1.4 m)	**4'-6"** (1.4 m)	**5'-0"** (1.5 m)	**5'-6"** (1.7 m)
25' (7.6 m)	**5'-0"** (1.5 m)	**5'-0"** (1.5 m)	**5'-6"** (1.7 m)	**6'-0"** (1.8 m)
30' (9.1 m)	**5'-6"** (1.7 m)	**5'-6"** (1.7 m)	**6'-0"** (1.8 m)	**6'-6"** (2.0 m)
35' (10.7 m)	**6'-0"** (1.8 m)	**6'-0"** (1.8 m)	**6'-6"** (2.0 m)	**7'-0"** (2.1 m)
BASES IN CLAYEY SOILS (CL, ML, CH, MH) [4] [7]				
15' (4.6 m)	**6'-6"** (2.0 m)	**7'-0"** (2.1 m)	**7'-6"** (2.3 m)	**8'-0"** (2.4 m)
20' (6.1 m)	**7'-0"** (2.1 m)	**8'-0"** (2.4 m)	**8'-6"** (2.6 m)	**9'-0"** (2.7 m)
25' (7.6 m)	**8'-0"** (2.4 m)	**9'-0"** (2.7 m)	**9'-6"** (2.9 m)	**10'-0"** (3.0 m)
30' (9.1 m)	**9'-0"** (2.7 m)	**10'-0"** (3.0 m)	**10'-6"** (3.2 m)	**11'-0"** (3.4 m)
35' (10.7 m)	**10'-0"** (3.0 m)	**11'-0"** (3.4 m)	**11'-6"** (3.5 m)	**12-0"** (3.6 m)

DESIGN FORCES

POLE HEIGHT	UNFACTORED SHEAR FORCE / OVERTURNING MOMENT [5] [6]			
15' (4.6 m)	**240 lb** (1.07 kN) **2,553 lb * ft** (3.46 kN * m)	**290 lb** (1.29 kN) **3,474 lb * ft** (4.71 kN * m)	**340 lb** (1.51 kN) **4,395 lb * ft** (5.96 kN * m)	**390 lb** (1.74 kN) **5,316 lb * ft** (7.21 kN * m)
20' (6.1 m)	**300 lb** (1.33 kN) **3,996 lb * ft** (5.42 kN * m)	**353 lb** (1.57 kN) **5,229 lb * ft** (7.09 kN * m)	**406 lb** (1.81 kN) **6,462 lb * ft** (8.76 kN * m)	**459 lb** (2.04 kN) **7,695 lb * ft** (10.43 kN * m)
25' (7.6 m)	**363 lb** (1.62 kN) **5,790 * ft** (7.85 kN * m)	**418 lb** (1.86 kN) **7,350 lb * ft** (9.97 kN * m)	**473 lb** (2.11 kN) **8,910 lb * ft** (12.08 kN * m)	**528 lb** (2.35 kN) **10,470 lb * ft** (14.20 kN * m)
30' (9.1 m)	**429 lb** (1.91 kN) **7,948 lb * ft** (10.78 kN * m)	**485 lb** (2.16 kN) **9,847 lb * ft** (13.35 kN * m)	**542 lb** (2.41 kN) **11,747 lb * ft** (15.93 kN * m)	**600 lb** (2.67 kN) **13,646 lb * ft** (18.50 kN * m)
35' (10.7 m)	**496 lb** (2.21 kN) **10,481 lb * ft** (14.21 kN * m)	**555 lb** (2.47 kN) **12,730 lb * ft** (17.26 kN * m)	**613 lb** (2.73 kN) **14,979 lb * ft** (20.31 kN * m)	**672 lb** (2.99 kN) **17,229 lb * ft** (23.36 kN * m)



Design Reference: *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, 6th Edition, 2013 (LTS-6).

[1] Calculations have been run for a 18" (460 mm) diameter round base 3'-4" (1016 mm) above grade with a 18" (460 mm) diameter bury portion in the soil.

[2] Assumed ϕ = 34°, γ = 130 lb/ft^3 (2080 kg/m^3), c = 0 lb/ft^2 (0 kPa).

[3] Assumed ϕ = 30°, γ = 120 lb/ft^3 (1920 kg/m^3), c = 0 lb/ft^2 (0 kPa).

[4] Assumed ϕ = 10°, γ = 130 lb/ft^3 (2080 kg/m^3), c = 250 lb/ft^2 (12.0 kPa).

[5] Calculations run with the following factors and assumptions:

Exposure Condition C	Drag Coefficient (Fixture), $C_{d\ fixture}$ = 1.2
Basic Wind Speed, V = 90 mph (40m/s)	Drag Coefficient (Pole), $C_{d\ pole}$ = 0.915
Importance Factor, I_r = 1.0	Drag Coefficient (Base), $C_{d\ base}$ = 0.45
Velocity Conversion Factor, C_v = 1.00	Height and Exposure Factor (Pole and Fixture), $K_{z\ pole}$ = 1.00
Gust Factor, G = 1.14	Height and Exposure Factor (Base), $K_{z\ base}$ = 0.86
Overload Factor = 2.5	Undercapacity Factor = 0.7

[6] Calculations assume a double light fixture with the total surface area of both fixtures equal to the value shown in the chart. Unbalanced loading from a single offset fixture is not included in this preliminary guide, and must be addressed in final design calculations if planned for use.

[7] Minimum recommended embedment shall be the calculated value, depth of local frost penetration, or 3'-0" (0.9 m), whichever is greater.

This preliminary guide was prepared by Pole Base for estimating and conceptual purposes only. All information is believed to be true and accurage; however, Pole Base assumes no responsibility for the use of these preliminary guides for actual construction. Determination of the suitability of each recommendation is the sole responsibility of the User. Final designs for construction must be performed by a licensed Professional Engineer using the actual conditions of the site. *(Rev. May 12, 2021)*

MINIMUM EMBEDMENT GUIDE

24 in (610 mm) DIAMETER ROUND POLE BASE™ UNITS [1] **6 in (150 mm) DIAMETER ROUND LIGHT POLE**

MINIMUM EMBEDMENT

POLE HEIGHT	SIGN OR FIXTURE AREA			
	2 ft² (0.186 m²)	**4 ft²** (0.372 m²)	**6 ft²** (0.557 m²)	**8 ft²** (0.743 m²)
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15' (4.6 m)	**3'-0"** (0.9 m)	**3'-6"** (1.1 m)	**3'-6"** (1.1 m)	**4'-0"** (1.2 m)
20' (6.1 m)	**3'-6"** (1.1 m)	**4'-0"** (1.2 m)	**4'-0"** (1.2 m)	**4'-6"** (1.4 m)
25' (7.6 m)	**4'-0"** (1.2 m)	**4'-6"** (1.4 m)	**4'-6"** (1.4 m)	**5'-0"** (1.5 m)
30' (9.1 m)	**4'-6"** (1.4 m)	**4'-6"** (1.4 m)	**5'-0"** (1.5 m)	**5'-6"** (1.7 m)
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15' (4.6 m)	**3'-6"** (1.1 m)	**4'-0"** (1.2 m)	**4'-0"** (1.2 m)	**4'-6"** (1.4 m)
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BASES IN CLAYEY SOILS (CL, ML, CH, MH) [4] [7]				
15' (4.6 m)	**6'-6"** (2.0 m)	**7'-0"** (2.1 m)	**7'-6"** (2.3 m)	**8'-0"** (2.4 m)
20' (6.1 m)	**7'-6"** (2.3 m)	**8'-0"** (2.4 m)	**8'-6"** (2.6 m)	**9'-0"** (2.7 m)
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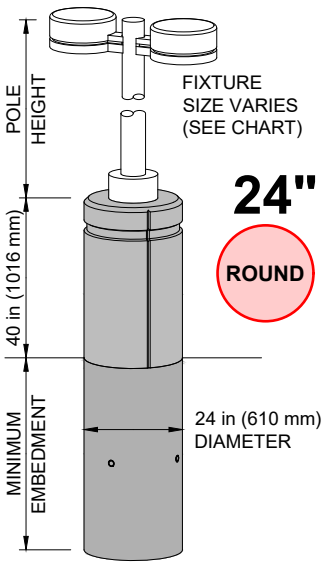
DESIGN FORCES

POLE HEIGHT	UNFACTORED SHEAR FORCE / OVERTURNING MOMENT [5] [6]			
15' (4.6 m)	**255 lb** (1.14 kN) **2,579 lb * ft** (3.50 kN * m)	**305 lb** (1.37 kN) **3,500 lb * ft** (4.75 kN * m)	**355 lb** (1.59 kN) **4,421 lb * ft** (5.99 kN * m)	**406 lb** (1.82 kN) **5,342 lb * ft** (7.24 kN * m)
20' (6.1 m)	**315 lb** (1.41 kN) **4,022 lb * ft** (5.45 kN * m)	**368 lb** (1.65 kN) **5,255 lb * ft** (7.12 kN * m)	**421 lb** (1.89 kN) **6,488 lb * ft** (8.80 kN * m)	**474 lb** (2.12 kN) **7,722 lb * ft** (10.47 kN * m)
25' (7.6 m)	**379 lb** (1.70 kN) **5,816 * ft** (7.89 kN * m)	**434 lb** (1.94 kN) **7,376 lb * ft** (10.00 kN * m)	**489 lb** (2.19 kN) **8,936 lb * ft** (12.12 kN * m)	**544 lb** (2.44 kN) **10,497 lb * ft** (14.23 kN * m)
30' (9.1 m)	**444 lb** (1.99 kN) **7,975 lb * ft** (10.81 kN * m)	**501 lb** (2.24 kN) **9,874 lb * ft** (13.39 kN * m)	**558 lb** (2.50 kN) **11,773 lb * ft** (15.96 kN * m)	**615 lb** (2.76 kN) **13,672 lb * ft** (18.54 kN * m)
35' (10.7 m)	**511 lb** (2.29 kN) **10,507 lb * ft** (14.25 kN * m)	**570 lb** (2.55 kN) **12,757 lb * ft** (17.30 kN * m)	**629 lb** (2.82 kN) **15,006 lb * ft** (20.34 kN * m)	**687 lb** (3.08 kN) **17,255 lb * ft** (23.40 kN * m)



Design Reference: *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, 6th Edition, 2013 (LTS-6).

[1] Calculations have been run for a 24" (610 mm) diameter round base 3'-4" (1016 mm) above grade with a 24" (610 mm) diameter bury portion in the soil.

[2] Assumed ϕ = 34°, γ = 130 lb/ft³ (2080 kg/m³), c = 0 lb/ft² (0 kPa).

[3] Assumed ϕ = 30°, γ = 120 lb/ft³ (1920 kg/m³), c = 0 lb/ft² (0 kPa).

[4] Assumed ϕ = 10°, γ = 130 lb/ft³ (2080 kg/m³), c = 250 lb/ft² (12.0 kPa).

[5] Calculations run with the following factors and assumptions:

- Exposure Condition C
- Basic Wind Speed, V = 90 mph (40m/s)
- Importance Factor, I_r = 1.0
- Velocity Conversion Factor, C_v = 1.00
- Gust Factor, G = 1.14
- Overload Factor = 2.5
- Drag Coefficient (Fixture), $C_{d\ fixture}$ = 1.2
- Drag Coefficient (Pole), $C_{d\ pole}$ = 0.915
- Drag Coefficient (Base), $C_{d\ base}$ = 0.45
- Height and Exposure Factor (Pole and Fixture), $K_{z\ pole}$ = 1.00
- Height and Exposure Factor (Base), $K_{z\ base}$ = 0.86
- Undercapacity Factor = 0.7

[6] Calculations assume a double light fixture with the total surface area of both fixtures equal to the value shown in the chart. Unbalanced loading from a single offset fixture is not included in this preliminary guide, and must be addressed in final design calculations if planned for use.

[7] Minimum recommended embedment shall be the calculated value, depth of local frost penetration, or 3'-0" (0.9 m), whichever is greater.

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MINIMUM EMBEDMENT GUIDE

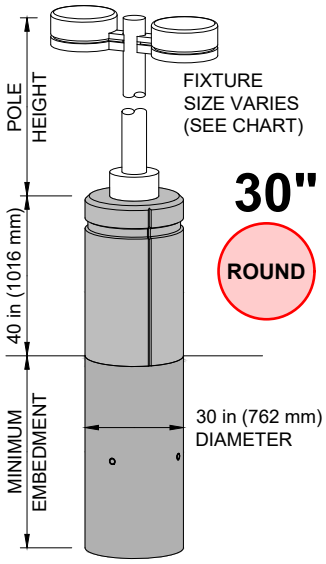
30 in (762 mm) DIAMETER ROUND POLE BASE UNITS [1] **6 in (150 mm) DIAMETER ROUND LIGHT POLE**

MINIMUM EMBEDMENT

POLE HEIGHT ft'	SIGN OR FIXTURE AREA			
	2 ft² (0.186 m²)	4 ft² (0.372 m²)	6 ft² (0.557 m²)	8 ft² (0.743 m²)
BASES IN GRAVEL SOILS (GW, GP) [2] [7]				
15' (4.6 m)	3'-0" (.91 m)	3'-6" (1.1 m)	3'-6" (1.1 m)	3'-6" (1.1 m)
20' (6.1 m)	3'-6 (1.1 m)	3'-6" (1.1 m)	4'-0" (1.2 m)	4'-0" (1.2 m)
25' (7.6 m)	4'-0" (1.2 m)	4'-0" (1.2 m)	4'-6" (1.4 m)	4'-6" (1.4 m)
30' (9.1 m)	4'-0" (1.2 m)	4'-6" (1.4 m)	4'-6" (1.4 m)	5'-0" (1.5 m)
35' (10.7 m)	4'-6" (1.4 m)	5'-0" (1.5 m)	5'-0" (1.5 m)	5'-6" (1.7 m)
BASES IN SANDY SOILS (SW, SP, SM, SC, GM, GC) [3] [7]				
15' (4.6 m)	3'-0" (.91 m)	3'-6" (1.1 m)	4'-0" (1.2 m)	4'-0" (1.2 m)
20' (6.1 m)	3'-6" (1.1 m)	4'-0" (1.2 m)	4'-6" (1.4 m)	4'-6" (1.4 m)
25' (7.6 m)	4'-0" (1.2 m)	4'-6" (1.4 m)	4'-6" (1.4 m)	5'-0" (1.5 m)
30' (9.1 m)	4'-6" (1.4 m)	5'-0" (1.5 m)	5'-0" (1.5 m)	5'-6" (1.7 m)
35' (10.7 m)	5'-0" (1.5 m)	5'-0" (1.5 m)	5'-6" (1.7 m)	6'-0" (1.9 m)
BASES IN CLAYEY SOILS (CL, ML, CH, MH) [4] [7]				
15' (4.6 m)	7'-0" (2.1 m)	7'-6" (2.3 m)	8'-0" (2.4 m)	8'-6" (2.6 m)
20' (6.1 m)	8'-0" (2.4 m)	8'-6" (2.6 m)	8'-6" (2.6 m)	9'-0" (2.7 m)
25' (7.6 m)	8'-6" (2.6 m)	9'-0" (2.7 m)	9'-6" (2.9 m)	10'-0" (3.0 m)
30' (9.1 m)	9'-0" (2.7 m)	9'-6" (2.9 m)	10'-0" (3.0 m)	10'-6" (3.2 m)
35' (10.7 m)	10'-0" (3.0 m)	10'-6" (3.2 m)	11'-0" (3.4 m)	11-6" (3.5 m)

DESIGN FORCES

POLE HEIGHT ft'	UNFACTORED SHEAR FORCE / OVERTURNING MOMENT [5] [6]			
15' (4.6 m)	270 lb (1.20 kN) 2,604 lb * ft (3.53 kN * m)	320 lb (1.42 kN) 3,525 lb * ft (4.78 kN * m)	371 lb (1.65 kN) 4,447 lb * ft (6.03 kN * m)	420 lb (1.87 kN) 5,368 lb * ft (7.28 kN * m)
20' (6.1 m)	331 lb (1.47 kN) 4,047 lb * ft (5.49 kN * m)	384 lb (1.71 kN) 5,281 lb * ft (7.16 kN * m)	436 lb (1.94 kN) 6,514 lb * ft (8.83 kN * m)	489 lb (2.18 kN) 7,747 lb * ft (10.50 kN * m)
25' (7.6 m)	394 lb (1.75 kN) 5,842 * ft (7.92 kN * m)	449 lb (2.00 kN) 7,402 lb * ft (10.04 kN * m)	504 lb (2.24 kN) 8,962 lb * ft (12.15 kN * m)	559 lb (2.49 kN) 10,522 lb * ft (14.27 kN * m)
30' (9.1 m)	459 lb 2.04 kN) 8,000 lb * ft (10.85 kN * m)	516 lb (2.30 kN) 9,899 lb * ft (13.42 kN * m)	573 lb (2.55 kN) 11,799 lb * ft (16.00 kN * m)	630 lb (2.80 kN) 13,698 lb * ft (18.57 kN * m)
35' (10.7 m)	527 lb (2.34 kN) 10,533 lb * ft (14.28 kN * m)	585 lb (2.60 kN) 12,782 lb * ft (17.33 kN * m)	644 lb (2.86 kN) 15,031 lb * ft (20.38 kN * m)	703 lb (3.13 kN) 17,281 lb * ft (23.43 kN * m)



Design Reference: *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, 6th Edition, 2013 (LTS-6).

[1] Calculations have been run for a 30 in (762 mm) diameter round base 40 in (1016 mm) above grade with a 30 in (762 mm) diameter bury portion in the soil.

[2] Assumed ϕ = 34°, γ = 130 lb/ft^3 (2080 kg/m^3), c = 0 lb/ft^2 (0 kPa).

[3] Assumed ϕ = 30°, γ = 120 lb/ft^3 (1920 kg/m^3), c = 0 lb/ft^2 (0 kPa).

[4] Assumed ϕ = 10°, γ = 130 lb/ft^3 (2080 kg/m^3), c = 250 lb/ft^2 (12.0 kPa).

[5] Calculations run with the following factors and assumptions:

Exposure Condition C	Drag Coefficient (Fixture), $C_{d\ fixture}$ = 1.2
Basic Wind Speed, V = 90 mph (40m/s)	Drag Coefficient (Pole), $C_{d\ pole}$ = 0.915
Importance Factor, I_r = 1.0	Drag Coefficient (Base), $C_{d\ base}$ = 0.45
Velocity Conversion Factor, C_v = 1.00	Height and Exposure Factor (Pole and Fixture), $K_{z\ pole}$ = 1.00
Gust Factor, G = 1.14	Height and Exposure Factor (Base), $K_{z\ base}$ = 0.86
Overload Factor = 2.5	Undercapacity Factor = 0.7

[6] Calculations assume a double light fixture with the total surface area of both fixtures equal to the value shown in the chart. Unbalanced loading from a single offset fixture is not included in this preliminary guide, and must be addressed in final design calculations if planned for use.

[7] Minimum recommended embedment shall be the calculated value, depth of local frost penetration, or 3'-0" (0.9 m), whichever is greater.

[8] Embedment provided in '-" = ft-in

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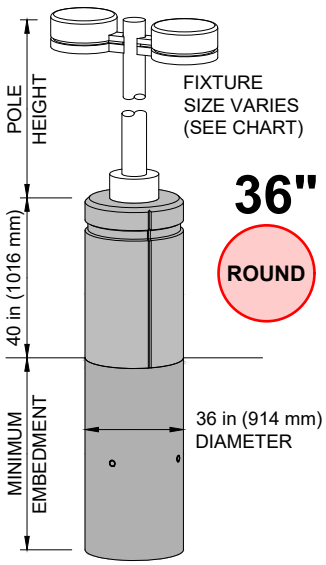
MINIMUM EMBEDMENT GUIDE

36 in (914 mm) DIAMETER ROUND POLE BASE UNITS [1] **6 in (150 mm) DIAMETER ROUND LIGHT POLE**

MINIMUM EMBEDMENT	SIGN OR FIXTURE AREA			
POLE HEIGHT ft'	4 ft² (0.372 m²)	6 ft² (0.557 m²)	8 ft² (0.743 m²)	12 ft² (1.115 m²)
BASES IN GRAVEL SOILS (GW, GP) [2] [7]				
20' (6.1 m)	3'-6" (1.1 m)	3'-6" (1.1 m)	4'-0" (1.2 m)	4'-6" (1.4 m)
25' (7.6 m)	4'-0" (1.2 m)	4'-0" (1.2 m)	4'-6" (1.4 m)	4'-6" (1.4 m)
30' (9.1 m)	4'-0" (1.2 m)	4'-6" (1.4 m)	4'-6" (1.4 m)	5'-0" (1.5 m)
35' (10.7 m)	4'-6" (1.4 m)	5'-0" (1.5 m)	5'-0" (1.5 m)	5'-6" (1.7 m)
40' (12.2 m)	5'-0" (1.5 m)	5'-0" (1.5 m)	5'-6" (1.7 m)	5'-6" (1.7 m)
BASES IN SANDY SOILS (SW, SP, SM, SC, GM, GC) [3] [7]				
20' (6.1 m)	4'-0" (1.2 m)	4'-0" (1.2 m)	4'-6" (1.4 m)	4'-6" (1.4 m)
25' (7.6 m)	4'-0" (1.2 m)	4'-6" (1.4 m)	5'-0" (1.5 m)	5'-0" (1.5 m)
30' (9.1 m)	4'-6" (1.4 m)	5'-0" (1.5 m)	5'-0" (1.5 m)	5'-6" (1.5 m)
35' (10.7 m)	5'-0" (1.5 m)	5'-0" (1.5m)	5'-6" (1.7 m)	6'-0" (1.8 m)
40' (12.2 m)	5'-6" (1.7 m)	5'-6" (1.7m)	6'-0" (1.8 m)	6'-0" (1.8 m)
BASES IN CLAYEY SOILS (CL, ML, CH, MH) [4] [7]				
20' (6.1 m)	8'-6" (2.6 m)	9'-0" (2.7 m)	9'-6" (2.9 m)	10'-0" (3.0 m)
25' (7.6 m)	9'-6" (2.9 m)	10'-0" (3.0 m)	10'-0" (3.0 m)	11'-0" (3.4 m)
30' (9.1 m)	10'-0" (3.0 m)	10'-6" (3.2 m)	11'-0" (3.4 m)	11'-6" (3.5 m)
35' (10.7 m)	10'-6" (3.2 m)	11'-0" (3.4 m)	11-6" (3.5 m)	12'-6" (3.8 m)
40' (12.2 m)	11'-6" (3.5 m)	12'-0" (3.7 m)	12-6" (3.8 m)	13'-0" (4.0 m)

DESIGN FORCES	UNFACTORED SHEAR FORCE / OVERTURNING MOMENT [5] [6]			
20' (6.1 m)	399 lb (1.77 kN) 5,306 lb * ft (7.19 kN * m)	452 lb (2.01 kN) 6,539 lb * ft (8.87 kN * m)	505 lb (2.25 kN) 7,773 lb * ft (10.54 kN * m)	610 lb (2.71 kN) 10,239 lb * ft (13.88 kN * m)
25' (7.6 m)	464 lb (2.06 kN) 7,427 lb * ft (10.07 kN * m)	519 lb (2.31 kN) 8,987 lb * ft (12.18 kN * m)	574 lb (2.55 kN) 10,547 lb * ft (14.30 kN * m)	684 lb (3.04 kN) 13,667 lb * ft (18.53 kN * m)
30' (9.1 m)	531 lb (2.36 kN) 9,925 lb * ft (13.46 kN * m)	588 lb (2.62 kN) 11,824 lb * ft (16.03 kN * m)	645 lb (2.87 kN) 13,723 lb * ft (18.61 kN * m)	759 lb (3.38 kN) 17,522 lb * ft (23.76 kN * m)
35' (10.7 m)	600 lb (2.67 kN) 12,807 lb * ft (17.36 kN * m)	659 lb (2.93 kN) 15,057 lb * ft (20.41 kN * m)	718 lb (3.19 kN) 17,306 lb * ft (23.46 kN * m)	835 lb (3.71 kN) 21,805 lb * ft (29.56 kN * m)
40' (12.2 m)	671 lb (2.98 kN) 16,084 lb * ft (21.81 kN * m)	731 lb (3.25 kN) 18,693 lb * ft (25.34 kN * m)	792 lb (3.52 kN) 21,302 lb * ft (28.88 kN * m)	912 lb (4.06 kN) 26,521 lb * ft (35.96 kN * m)



Design Reference: *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, 6th Edition, 2013 (LTS-6)

[1] Calculations have been run for a 36 in (914 mm) diameter round base 40 in (1016 mm) above grade with a 36 in (762 mm) diameter bury portion in the soil.

[2] Assumed $\phi = 34°$, $\gamma = 130$ lb/ft^3 (2080 kg/m^3), $c = 0$ lb/ft^2 (0 kPa).

[3] Assumed $\phi = 30°$, $\gamma = 120$ lb/ft^3 (1920 kg/m^3), $c = 0$ lb/ft^2 (0 kPa).

[4] Assumed $\phi = 10°$, $\gamma = 130$ lb/ft^3 (2080 kg/m^3), $c = 250$ lb/ft^2 (12.0 kPa).

[5] Calculations run with the following factors and assumptions:

- Exposure Condition C
- Basic Wind Speed, V = 90 mph (40m/s)
- Importance Factor, $I_r = 1.0$
- Velocity Conversion Factor, $C_v = 1.00$
- Gust Factor, G = 1.14
- Overload Factor = 2.5
- Drag Coefficient (Fixture), $C_{d\ fixture} = 1.2$
- Drag Coefficient (Pole), $C_{d\ pole} = 0.915$
- Drag Coefficient (Base), $C_{d\ base} = 0.45$
- Height and Exposure Factor (Pole and Fixture), $K_{z\ pole} = 1.00$
- Height and Exposure Factor (Base), $K_{z\ base} = 0.86$
- Undercapacity Factor = 0.7

[6] Calculations assume a double light fixture with the total surface area of both fixtures equal to the value shown in the chart. Unbalanced loading from a single offset fixture is not included in this preliminary guide, and must be addressed in final design calculations if planned for use.

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[8] Embedment provided in '-" = ft-inches

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(Rev. Oct. 8, 2021)

Specifications

Let Pole Base deliver exactly what you order. The following specifications describe the Pole Base product design, composition materials and components, as well as installation requirements. Here, you'll also find guidance on the procurement, delivery, storage, handing, and installation of your Pole Base orders.

Product Data Sheets

POLE BASE™ PRECAST CONCRETE LIGHT POLE BASE UNITS

Pole Base™ units are machine-placed, wet-cast, precast light pole bases. The bases are manufactured from air-entrained, structural grade concrete mixes in accordance with ASTM C94 or ASTM C685 that produce a finished product with excellent resistance to deterioration from freeze-thaw cycles and deicing chemical exposure. The bases are available in multiple diameters and textures, providing superior aesthetics over traditional site cast alternatives. All Pole Base™ units are manufactured and distributed through an international network of individually owned licensed precast concrete manufacturers. The controlled, factory conditions in which the bases are manufactured produce consistent, high quality products with tight dimensional tolerances on the concrete unit, reinforcing steel, anchor rods, and electrical conduits. A full listing of Pole Base™ units, detailed construction installation recommendations, design recommendations, application details, and customization options are available at www.polebase.com.

TEXTURE OPTIONS

ROUND SMOOTH	SQUARE
ROUND RUSTICATED	BRICK LEDGE
LEDGESTONE	

CONCRETE MIX PROPERTIES (1)

PORTLAND CEMENT (2)	MINIMUM 28 DAY COMPRESSIVE STRENGTH (3)	MAXIMUM WATER CEMENT RATIO	NOMINAL MAXIMUM AGGREGATE SIZE	AGGREGATE CLASS DESIGNATION (6)	AIR CONTENT (7)
TYPE I OR III	5,000 psi (34.5 MPa)	0.40	1 inch (25 mm)	4S	6.0% ± 1.5%
MAXIMUM WATER-SOLUBLE CHLORIDE ION (Cl^-) CONTENT IN CONCRETE, PERCENT BY WEIGHT OF CEMENT (8)					0.15
MAXIMUM CHLORIDE AS Cl^- CONCENTRATION IN MIXING WATER, PARTS PER MILLION					1000
MAXIMUM PERCENTAGE OF TOTAL CEMENTITIOUS MATERIALS BY WEIGHT (9) (VERY SEVERE EXPOSURE CLASS ONLY)					
FLY ASH OR OTHER POZZOLANS CONFORMING TO ASTM C618					25
SLAG CONFORMING TO ASTM C989					50
SILICA FUME CONFORMING TO ASTM C1240					10
TOTAL OF FLY ASH OR OTHER POZZOLANS, SLAG, AND SILICA FUME (10)					50
TOTAL OF FLY ASH OR OTHER POZZOLANS AND SILICA FUME (10)					35
ALKALI-AGGREGATE REACTIVITY MITIGATION PER ACI 201					

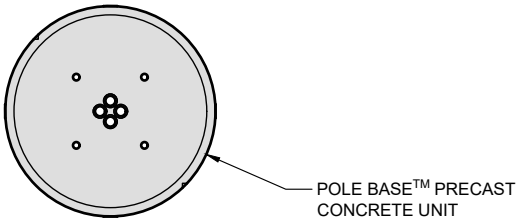
(1) Concrete mix properties are in general accordance with ACI 318 durability requirements. Research has shown that concrete manufactured to these standards demonstates good durability and performance. When these requirements are followed, specific freeze thaw testing of the concrete is typically NOT required.
(2) Defined in ASTM C150.
(3) Test method ASTM C39.
(6) Defined in ASTM C33 Table 3 *Limits for Deleterious Substances and Physical Property Requirements of Coarse Aggregate for Concrete*.
(7) Test method ASTM C231.
(8) Test method ASTM C1218 at age between 28 and 42 days.
(9) The total cementitious material also includes ASTM C150, C595, C845, and C1157 cement. The maximum percentages shall include:
(a) Fly ash or other pozzolans in type IP, blended cement, ASTM C595, or ASTM C1157.
(b) Slag used in the manufacture of an IS blended cement, ASTM C595, or ASTM C1157.
(c) Silica fume, ASTM C1240, present in a blended cement.
(10) Fly ash or other pozzolans and silica fume shall constitute no more than 25 and 10 percent, respectively, of the total weight of the cementitious materials.

POLE BASE™ PRECAST CONCRETE LIGHT POLE BASE UNITS

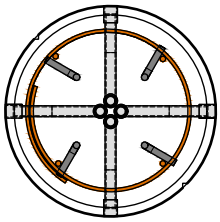
OTHER MATERIALS

MINIMUM STEEL REINFORCING BARS - ASTM A615 OR ASTM A706 (LOW ALLOY "WELDABLE"), GRADE 60	
VERTICAL BARS	(4) #5 (16 mm) BARS, 1.5" (38 mm) MINIMUM COVER (OR PER PROJECT SPECIFICATIONS)
HORIZONTAL ROUND TIES	#3 (10 mm) BARS, TOP (3) SPACED AT 6" (150 mm), BALANCE SPACED AT 12" (300 mm) TO BOTTOM OF BASE
ANCHOR RODS	
STANDARD OPTION	SPECIFIED RODS, INSTALLED TO SPECIFIED PATTERN AND PROJECTION
PVC ELECTRICAL CONDUIT	
CUSTOM OPTION	CONDUIT NUMBER, DIAMETER, CONFIGURATION, AND MATERIAL INSTALLED PER PROJECT SPECIFICATIONS
STANDARD OPTION	(4) 1" (25 mm) DIA. CONDUITS WITH 90° BENDS, ASTM F512, INSTALLED AT CARDINAL POINTS, AND COUPLERS,
	ASTM F512, AT ALL CONDUIT EXIT POINTS ON TOP AND SIDES OF BASE. CONDUITS TERMINATE AT THE
	SIDES OF THE BASE 24" (610 mm) BELOW THE FINISHED TEXTURE PORTION OF THE UNIT.
JUNCTION BOXES	
CUSTOM OPTION	CARLON CURVED LID J-BOX NO. E88C24 OR NO. E1212C24 AVAILABLE FOR 24-IN (300mm) ROUND BASES
	OTHER CUSTOM INSERTS AVAILABLE. CONTACT YOUR LOCAL MANUFACTURER.

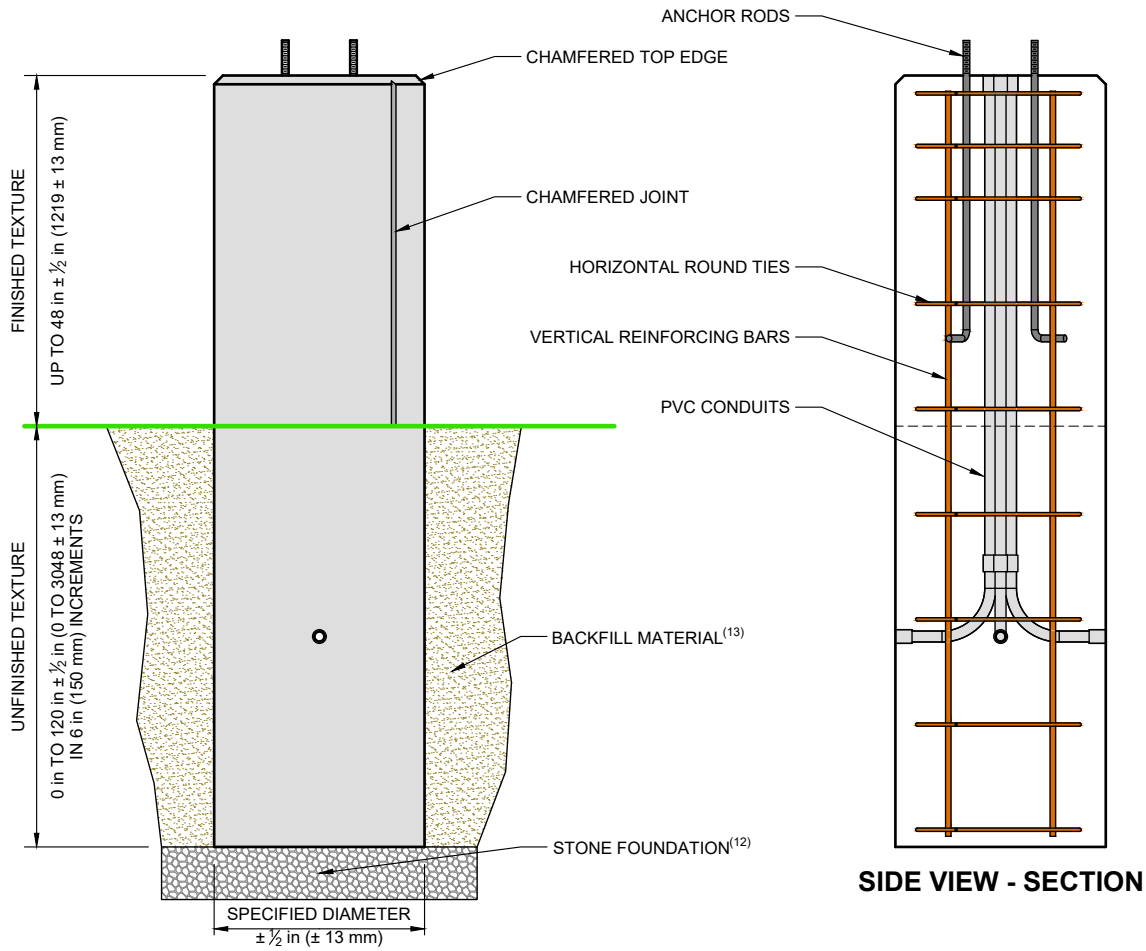
POLE BASE™ ROUND SMOOTH PRECAST CONCRETE LIGHT POLE BASE UNITS



TOP VIEW



TOP VIEW - SECTION



SIDE VIEW - INSTALLATION

SIDE VIEW - SECTION

BASE DIAMETER	CONCRETE VOLUME	SHIPPING / HANDLING WEIGHT (11)
18-INCH (457 mm)	1.77 ft^3/ft (0.16 m^3/m) OF TOTAL LENGTH	253 lb/ft (378 kg/m) OF TOTAL LENGTH
24-INCH (610 mm)	3.14 ft^3/ft (0.29 m^3/m) OF TOTAL LENGTH	449 lb/ft (671 kg/m) OF TOTAL LENGTH
30-INCH (762 mm)	4.91 ft^3/ft (0.46 m^3/m) OF TOTAL LENGTH	702 lb/ft (1049 kg/m) OF TOTAL LENGTH
36-INCH (914 mm)	7.07 ft^3/ft (0.66 m^3/m) OF TOTAL LENGTH	1011 lb/ft (1510 kg/m) OF TOTAL LENGTH

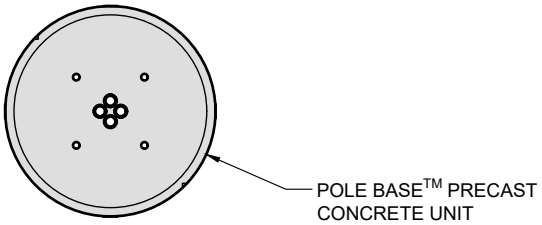
(11) Based on an assumed concrete unit weight of 143 lb/ft^3 (2300 kg/m^3). Actual weights will vary.

(12) Stone foundation shall conform to ASTM C33 No. 57. Compact to 90% relative density determined per ASTM D4253 and D4254 or on-site performance testing. Stone to be minimum of 6" (150 mm) thick and extend 6" (150 mm) beyond base all around.

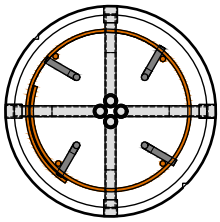
(13) Backfill material shall be one of the following: crushed stone, granular material, or controlled low-strength material. Crushed stone, Size 57 per ASTM C33, compacted to 90% relative density per ASTM D4253 & D4254. Granular material shall be soil types GW, GP, SW, or SP per ASTM D2487, compacted to 95% maximum density per ASTM D698. Controlled low-strength material shall be per ACI 229, maximum compressive strength of 100 psi (0.7 MPa) per ASTM D4832, flow consistency per ASTM D6103, minimum uniform spread of 8" (200 mm) with no segregation.

Revised 10/20/21

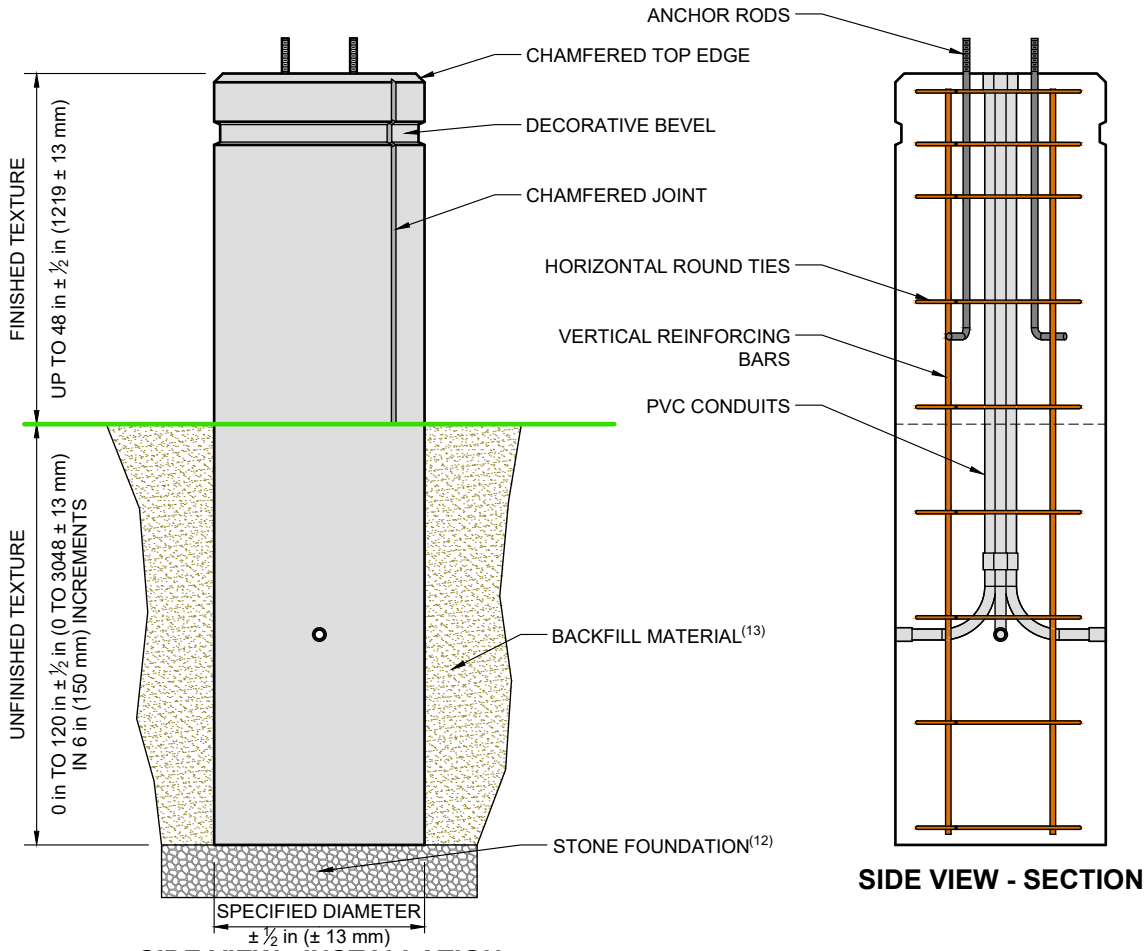
POLE BASE™ ROUND RUSTICATED PRECAST CONCRETE LIGHT POLE BASE UNITS



TOP VIEW



TOP VIEW - SECTION



SIDE VIEW - INSTALLATION

SIDE VIEW - SECTION

BASE DIAMETER	CONCRETE VOLUME	SHIPPING / HANDLING WEIGHT (11)
18-INCH (457 mm)	1.77 ft^3/ft (0.16 m^3/m) OF TOTAL LENGTH	253 lb/ft (378 kg/m) OF TOTAL LENGTH
24-INCH (610 mm)	3.14 ft^3/ft (0.29 m^3/m) OF TOTAL LENGTH	449 lb/ft (671 kg/m) OF TOTAL LENGTH
30-INCH (762 mm)	4.91 ft^3/ft (0.46 m^3/m) OF TOTAL LENGTH	702 lb/ft (1049 kg/m) OF TOTAL LENGTH
36-INCH (914 mm)	7.07 ft^3/ft (0.66 m^3/m) OF TOTAL LENGTH	1011 lb/ft (1510 kg/m) OF TOTAL LENGTH

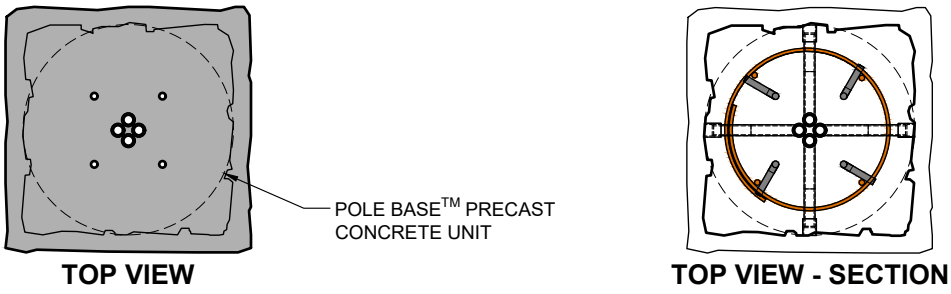
(11) Based on an assumed concrete unit weight of 143 lb/ft^3 (2300 kg/m^3). Actual weights will vary.

(12) Stone foundation shall conform to ASTM C33 No. 57. Compact to 90% relative density determined per ASTM D4253 and D4254 or on-site performance testing. Stone to be minimum of 6" (150 mm) thick and extend 6" (150 mm) beyond base all around.

(13) Backfill material shall be one of the following: crushed stone, granular material, or controlled low-strength material. Crushed stone, Size 57 per ASTM C33, compacted to 90% relative density per ASTM D4253 & D4254. Granular material shall be soil types GW, GP, SW, or SP per ASTM D2487, compacted to 95% maximum density per ASTM D698. Controlled low-strength material shall be per ACI 229, maximum compressive strength of 100 psi (0.7 MPa) per ASTM D4832, flow consistency per ASTM D6103, minimum uniform spread of 8" (200 mm) with no segregation.

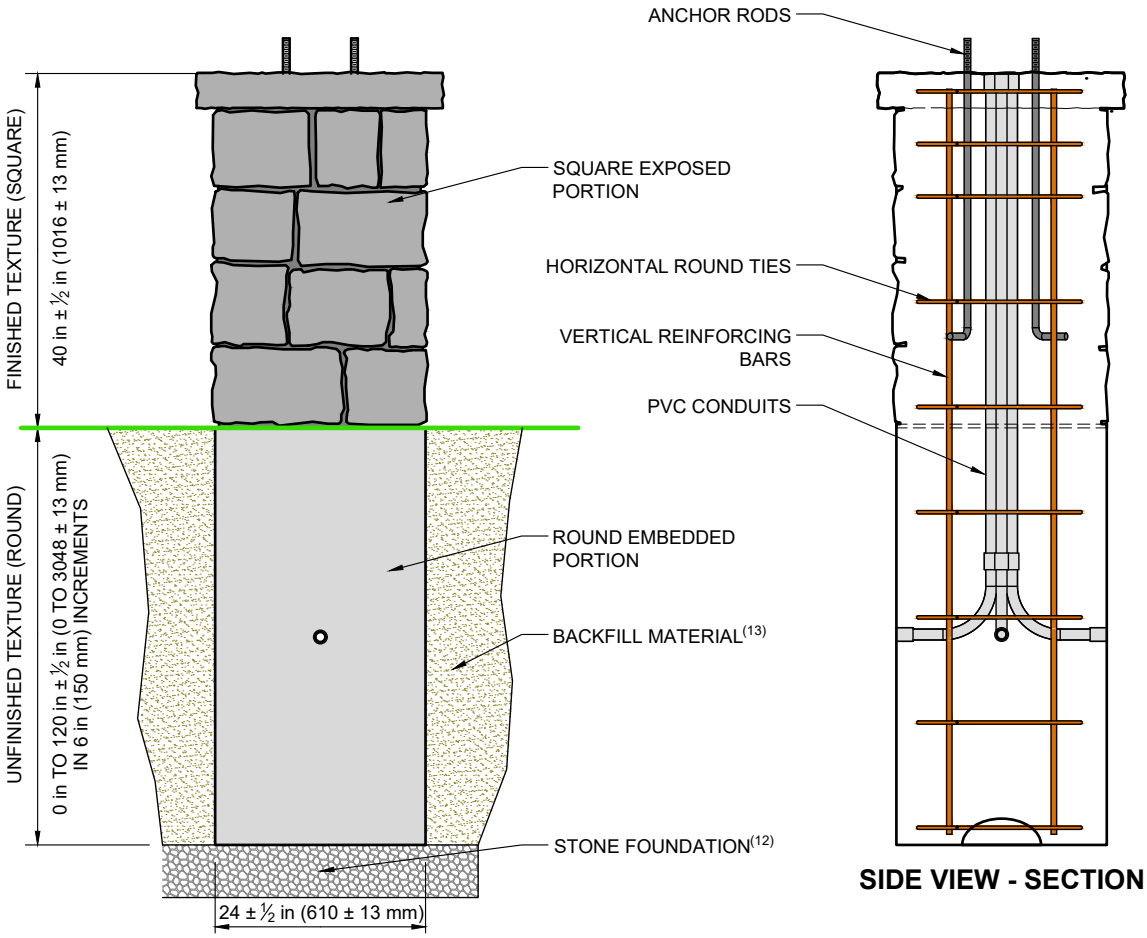
Revised 10/20/21

POLE BASE™ LEDGESTONE PRECAST CONCRETE LIGHT POLE BASE UNITS



TOP VIEW

TOP VIEW - SECTION



SIDE VIEW - INSTALLATION

SIDE VIEW - SECTION

	CONCRETE VOLUME	SHIPPING / HANDLING WEIGHT (11)
FINISHED TEXTURE PORTION	13.20 ft^3 (0.374 m^3)	1890 lb (860 kg)
UNFINISHED TEXTURE PORTION	1.57 ft^3 (0.044 m^3) FOR EACH 6" (0.150 m) INCREMENT	225 lb (102 kg) FOR EACH 6" (0.150 m) INCREMENT

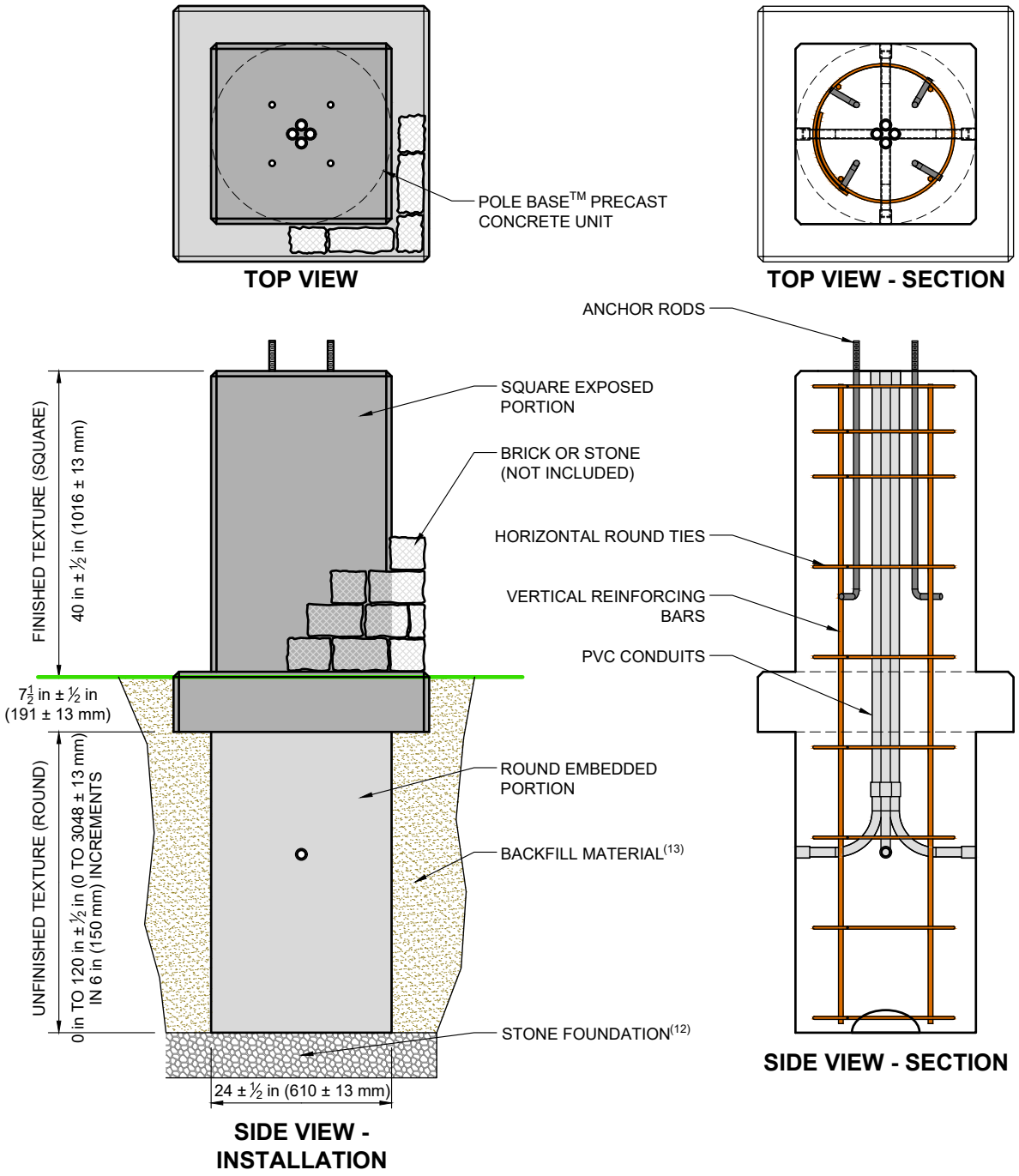
(11) Based on an assumed concrete unit weight of 143 lb/ft^3 (2300 kg/m^3). Actual weights will vary.

(12) Stone foundation shall conform to ASTM C33 No. 57. Compact to 90% relative density determined per ASTM D4253 and D4254 or on-site performance testing. Stone to be minimum of 6" (150 mm) thick and extend 6" (150 mm) beyond base all around.

(13) Backfill material shall be one of the following: crushed stone, granular material, or controlled low-strength material. Crushed stone, Size 57 per ASTM C33, compacted to 90% relative density per ASTM D4253 & D4254. Granular material shall be soil types GW, GP, SW, or SP per ASTM D2487, compacted to 95% maximum density per ASTM D698. Controlled low-strength material shall be per ACI 229, maximum compressive strength of 100 psi (0.7 MPa) per ASTM D4832, flow consistency per ASTM D6103, minimum uniform spread of 8" (200 mm) with no segregation.

Revised 10/20/21

POLE BASE™ BRICK LEDGE PRECAST CONCRETE LIGHT POLE BASE UNITS



	CONCRETE VOLUME	SHIPPING / HANDLING WEIGHT (11)
FINISHED TEXTURE PORTION + BRICK LEDGE	18.32 ft^3 (0.519 m^3)	2620 lb (1190 kg)
UNFINISHED TEXTURE PORTION	1.57 ft^3 (0.044 m^3) FOR EACH 6" (0.150 m) INCREMENT	225 lb (102 kg) FOR EACH 6" (0.150 m) INCREMENT

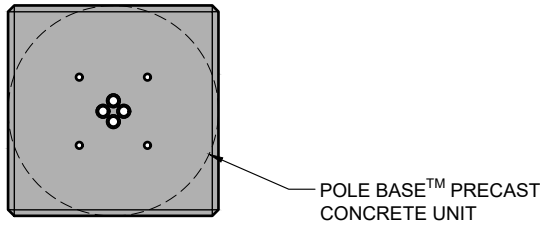
(11) Based on an assumed concrete unit weight of 143 lb/ft^3 (2300 kg/m^3). Actual weights will vary.

(12) Stone foundation shall conform to ASTM C33 No. 57. Compact to 90% relative density determined per ASTM D4253 and D4254 or on-site performance testing. Stone to be minimum of 6" (150 mm) thick and extend 6" (150 mm) beyond base all around.

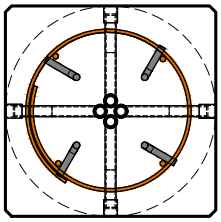
(13) Backfill material shall be one of the following: crushed stone, granular material, or controlled low-strength material. Crushed stone, Size 57 per ASTM C33, compacted to 90% relative density per ASTM D4253 & D4254. Granular material shall be soil types GW, GP, SW, or SP per ASTM D2487, compacted to 95% maximum density per ASTM D698. Controlled low-strength material shall be per ACI 229, maximum compressive strength of 100 psi (0.7 MPa) per ASTM D4832, flow consistency per ASTM D6103, minimum uniform spread of 8" (200 mm) with no segregation.

Revised 10/20/21

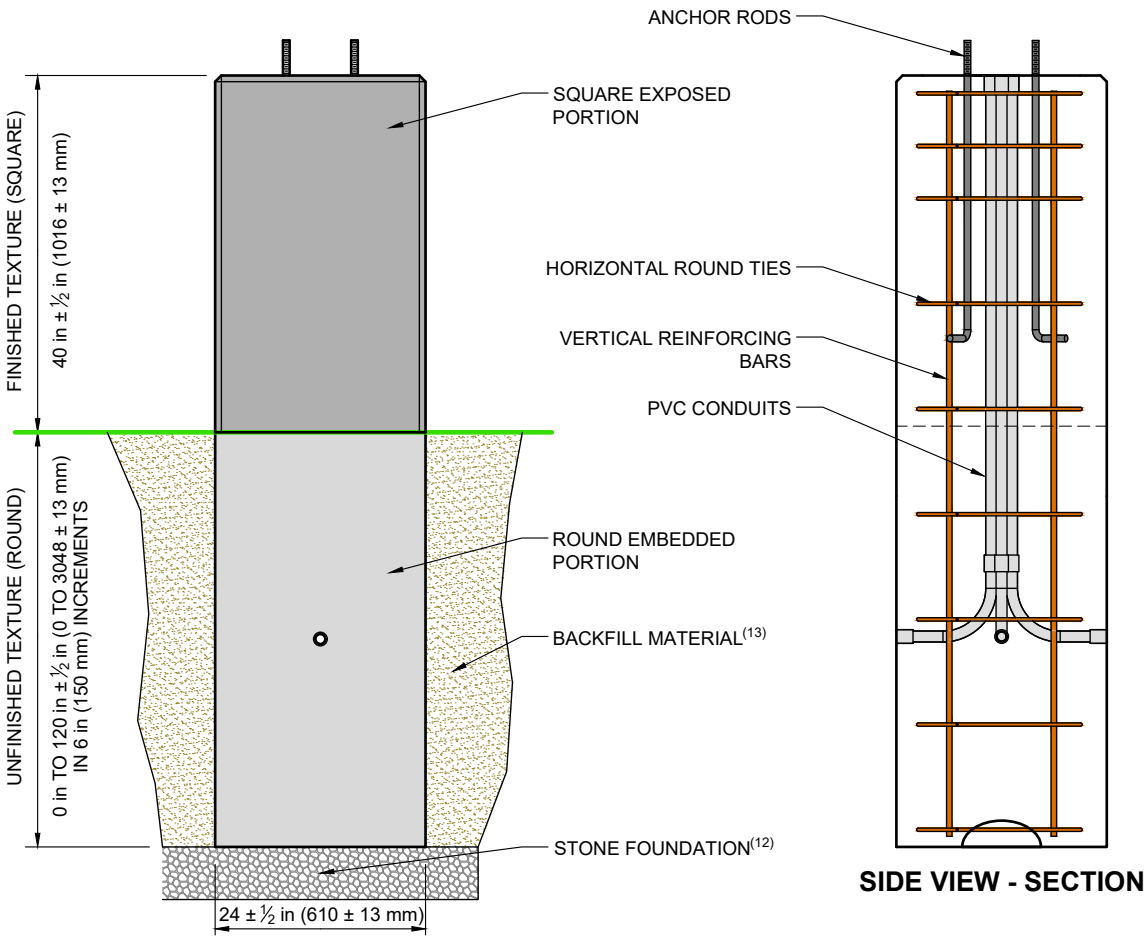
POLE BASE™ SQUARE PRECAST CONCRETE LIGHT POLE BASE UNITS



TOP VIEW



TOP VIEW - SECTION



SIDE VIEW - INSTALLATION

SIDE VIEW - SECTION

	CONCRETE VOLUME	SHIPPING / HANDLING WEIGHT (11)
FINISHED TEXTURE PORTION	13.31 ft^3 (0.377 m^3)	1900 lb (860 kg)
UNFINISHED TEXTURE PORTION	1.57 ft^3 (0.044 m^3) FOR EACH 6" (0.150 m) INCREMENT	225 lb (102 kg) FOR EACH 6" (0.150 m) INCREMENT

(11) Based on an assumed concrete unit weight of 143 lb/ft^3 (2300 kg/m^3). Actual weights will vary.
(12) Stone foundation shall conform to ASTM C33 No. 57. Compact to 90% relative density determined per ASTM D4253 and D4254 or on-site performance testing. Stone to be minimum of 6" (150 mm) thick and extend 6" (150 mm) beyond base all around.
(13) Backfill material shall be one of the following: crushed stone, granular material, or controlled low-strength material. Crushed stone, Size 57 per ASTM C33, compacted to 90% relative density per ASTM D4253 & D4254. Granular material shall be soil types GW, GP, SW, or SP per ASTM D2487, compacted to 95% maximum density per ASTM D698. Controlled low-strength material shall be per ACI 229, maximum compressive strength of 100 psi (0.7 MPa) per ASTM D4832, flow consistency per ASTM D6103, minimum uniform spread of 8" (200 mm) with no segregation.

Revised 10/20/21

General Specifications

SECTION 31 66 13

PRECAST ARCHITECTURAL CONCRETE LIGHT POLE BASE UNITS

PART 1 – GENERAL

1.01 Summary

A. Work under this section includes furnishing and installing architectural finished precast concrete light pole base units as a special load-bearing foundation for the support of electrical utility poles, flag poles, or signage supports. The pole base units shall be furnished together with all necessary anchor rods for structural attachment and integral components necessary for the connection and intended operation of any utilities otherwise affixed to the pole ready for installation into the ground upon delivery to the jobsite.

B. Specifications for poles and structures to be supported by precast concrete pole base units are not covered by this section.

1.02 Price And Payment Procedures

A. Allowances. No allowance shall be made in the price of the precast concrete pole base unit for excavation beyond the limits required for installation as shown on the project plans. All costs associated with site access shall be the responsibility of the Contractor. Removal of unsuitable soils and replacement with select fill shall be as directed and approved in writing by the Owner or Owner's representative and shall be paid under separate pay items.

B. Measurement and Payment. The unit of measurement for furnishing the precast concrete pole base units shall be each unit installed. Payment shall be made for the total quantity of units acceptably installed in accordance with this specification. No separate payment will be made for excavation or structure backfill placement related to the installation of the pole base units.

1.03 References

A. Design

1. ACI 318-14/318R-14 Building Code Requirements for Structural Concrete and Commentary, American Concrete Institute (2011).

3. IBC 2012 International Building Code, International Code Council, Inc. (2012).
4. AASHTO Standard Specifications for Structural Supports for Highway Luminaries and Traffic Signals, 6th Edition (2013), American Association of State Highway Transportation Officials.
5. AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 1st Edition (2015), American Association of State Highway Transportation Officials.

B. Reference Standards

1. ASTM A36/A36M Specification for Carbon Structural Steel
2. ASTM A123/A123M Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
3. ASTM A615/A615M Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
4. ASTM A706/A706M Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
5. ASTM A767/A767M Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement
6. ASTM A775/A775M Specification for Epoxy-Coated Steel Reinforcing Bars
7. ASTM C33/C33M Specification for Concrete Aggregates
8. ASTM C39/C39M Test Method for Compressive Strength of Cylindrical Concrete Specimens
9. ASTM C94/C94M Specification for Ready-Mixed Concrete
10. ASTM C138/C138M Test Method for Density (Unit Weight), Yield and Air Content (Gravimetric) of Concrete
11. ASTM C143/C143M Test Method for Slump of Hydraulic Cement Concrete
12. ASTM C150/C150M Specification for Portland Cement
13. ASTM C173/C173M Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
14. ASTM C231/C231M Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
15. ASTM C685/C685M Specification for Concrete Made by Volumetric Batching and Continuous Mixing
16. ASTM C1611/C1611M Test Method for Slump Flow of Self-Consolidating Concrete
17. ASTM D422 Standard Test Method for Particle-Size Analysis of Soils
18. ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort
19. ASTM D4253 Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
20. ASTM D4254 Standard Test Methods for Minimum Index Density and Calculation of Relative Density
21. ASTM D6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods
22. ASTM F512 Standard Specification for Smooth-Wall Poly(Vinyl Chloride) (PVC) Conduit and Fittings for Underground Installation

1.04 Coordination

A. The Contractor shall coordinate the size and configuration of the anchor rods to be cast in the precast concrete base unit for attachment of the pole specified.

B. The Contractor shall coordinate the size and location of grounding wire, electrical conduits, and any other embedded items for use in work specified elsewhere.

C. Installation of the precast concrete pole base units shall be concurrent with the installation of any site utilities that may be required to connect through the pole base unit. The Contractor shall be responsible for coordination of this work.

D. The Contractor is responsible for coordinating the testing verification of the soil site conditions at the precast concrete Pole base unit installation locations to assure they are consistent with the Geotechnical Report.

E. The Contractor is responsible for the coordination of testing and inspection of the backfill materials and compaction associated with the installation of the precast concrete pole base units.

1.05 Submittals

A. Product Data. At least 30 days prior to installation of the precast concrete pole base units, the Contractor shall submit 4 copies of the precast concrete pole base product submittal package to the Owner for review and approval. The submittal shall include the manufacturer's product data and technical specifications detailing the physical properties and manufactured dimensions of the pole base units, handling weights, recommended installation procedures and color photographs depicting the texture and color of the exposed surfaces of the actual units to be furnished. The product data shall also include representative test results of the concrete mix-design as follows:

1. 28-Day Compressive Strength per ASTM C39
2. Air Content per ASTM C138, ASTM C173 or ASTM C231

B. Structural Calculations and Construction Detail Drawings. In addition to the product data, at least 30 days prior to installation of the precast concrete pole base units, the Contractor shall furnish 4 sets of construction detail drawings and upon request supporting structural calculations for the internal reinforcement and soil embedment of the pole base units to be furnished for the specified jobsite conditions. The construction detail drawings shall illustrate all pertinent aspects of the construction of pole base unit as well as the means and fixed location of attachment between the pole base unit and the pole or poles approved for use on the project. The structural calculations shall be prepared in accordance with the design references listed in paragraph 1.03 A of this section and demonstrate that the factored structural capacity of the pole base unit exceeds all project specific design requirements. The structural calculations and construction detail drawings shall be sealed by a registered professional engineer licensed to practice in the project jurisdiction.

1.06 Delivery, Storage and Handling

A. Delivery. The Contractor shall inspect the materials upon delivery to ensure that the proper type and size of pole base units with the approved exposed surface texture and color have been delivered.

B. Storage. The precast pole base units shall be stored in an area with positive drainage away from the units. Support pole base units on adequate dunnage and bracing. Provide covering and protect units to prevent soil contact, staining, cracking, or other physical damage. The Contractor shall take care to protect the exposed surfaces of the pole base units from chipping or breakage as well as contact with mud. At no time shall the pole base units be stacked in direct contact with each other.

C. Handling. The Contractor shall handle the pole base units in accordance with the manufacturer's recommendations and in a manner that prevents damage to the units using manufacturer's approved methods and techniques. Choke chains shall never be used.

PART 2 – PRODUCTS

2.01 Manufactured Units

A. Manufacturers. All precast concrete pole base units furnished for the project shall be produced by the same licensed manufacturer. The manufacturer shall be licensed by and a member of a national network of independently owned companies authorized to produce the pole base units by the unit patent holder/licensor.

B. Preapproved Manufacturers.

1. Pole Base, LLC. of Petoskey, Michigan. Telephone No. 844-866-9097; Website: www.polebase.com
2. Engineer approved equal.

C. Substitution. Technical specifications and product data demonstrating conformance with the requirements of this section for alternative precast concrete pole base units must be submitted to the Owner's agent for preapproval at least fourteen (14) days prior to the bid date. Acceptable pole base units found to be in conformance with this section, shall be approved in writing by the Owner's agent seven (7) days prior to the bid date. The Owner and Owner's agent reserve the right to provide no response to submissions made out of the time requirements of this section or to submissions of products that are deemed to be unacceptable to the Owner.

D. Value Engineering Alternatives. Alternative precast concrete pole base products may be submitted to the Owner for consideration as a value engineering alternative up to seven (7) days following the award of the contract. Value engineering alternative submittals shall include all of the elements required in paragraph 1.05 as well as a summary statement of the net advantages to the Owner that the alternative pole base product or technology offers. In addition to the technical submittal, all value engineering alternatives will be evaluated based upon

conformance with the overall aesthetic requirements of the project and the net cost savings the system or technology offers to the Owner. Value engineering alternatives that do not offer the Owner a net reduction in the overall Contract price will not be considered. The Owner and Owner's agent reserve the right to reject submissions made out of the time requirements of this section without consideration.

2.02 Description

A. The precast concrete pole base unit shall be cast as a single, continuous monolithic unit complete with embedded electrical wiring conduits and couplers, structural steel reinforcement and structural connection devices. The pole base unit shall have an architectural textured finish for a total height above grade of up to 40 inches (1.0m) and a below ground embedded portion. Units shall have a nominally consistent exterior horizontal dimension above grade. The above grade section of the pole base unit shall consist of an architectural exterior finished upper portion (further described in Section 2.05). The pole base unit shall include a set of up to (4) customized steel anchor bolts and up to (4) PVC electrical conduits (detailed in Section 1.05B) be provided at the top of the pole base unit for attachment to the pole flange. The anchor bolts and conduits shall be permanently cast into the concrete.

B. The monolithically cast lower portion of the pole base unit shall have a uniformly shaped cylindrical shape for embedment below grade. The below grade portion of the pole base shall be of consistent cross section without formed voids, sleeves, protrusions, or indentions except for the integrally cast electrical conduit and form stripping insert. The uniform buried sidewall shape shall be maintained to provide uniform lateral soil bearing for the entire embedment depth.

2.03 Design Criteria

A. In addition to the requirements set forth in the design references listed in paragraph 1.03A, the design of the precast concrete pole base unit shall consider soil parameters appropriate to the project site conditions and the specific loading requirements for the poles to be supported in accordance with local building codes and manufacturer recommendations.

2.04 Materials

A. Concrete: Concrete used in the production of the precast pole base units shall be fresh, first-purpose, production mix architectural grade concrete. No returned, reconstituted, or waste concrete shall be allowed. The concrete shall be manufactured in accordance with the requirements of ASTM C94 or ASTM C685 and exhibit the following minimum physical properties:

1. Portland cement ASTM C150, Type I or III.
2. Maximum fly ash or other pozzolans, in accordance with ACI 318-11, Table 4.4.2
3. Coarse Aggregate per ASTM C33, Size 57, Class 4S.
4. Minimum 28-day compressive strength of 5,000 psi (34.5MPa).

5. Maximum water to cementitious materials ratio = 0.40 Maximum slump of 5 inches +/- 1½ inches (127±38mm) per ASTM C143 for conventional concrete mix designs before the addition of any water-reducing admixtures.
6. The maximum water-soluble chloride ion concentration shall be less than 0.15% by weight of cement. Admixtures shall not contain chloride.
7. Air-entrainment in concrete as measured per ASTM C173, shall be in accordance with the appropriate climate zone provided in ASTM C94.
8. Slump flow for self-consolidating concrete (SCC) mix designs shall be between 18 and 32 inches (460-810mm) as tested in accordance with ASTM C1611.

B. Steel Reinforcing Bars: All steel reinforcing bars provided as reinforcement in the precast concrete pole base units shall exhibit a minimum yield strength of 60 ksi (420MPa). Deformed or plain bars used as reinforcement in precast concrete pole base units shall meet the requirements of ASTM A615. Reinforcing from bars manufactured in accordance with ASTM A615 shall NOT be welded. Low-Alloy reinforcing bars that are connected in the desired reinforcement configurations by arc welding shall meet the requirements of ASTM A706. Zinc-coated (galvanized) steel reinforcing bars shall meet the requirements of Specification A767 and epoxy-coated steel reinforcing bars shall meet the requirements of Specification A775. Minimum concrete cover over steel reinforcing bars shall be 2 inches (51mm) for reinforcing bars that are size #6 (#19) and larger and 1-1/2 inches (38mm) for reinforcing bars that are size #5 (#16) and smaller.

C. Anchor Rod Connectors:. Use anchor rods provided by light pole manufacturer. Otherwise, anchor rods for attachment to the pole flange shall be manufactured from carbon steel in accordance with ASTM A36 and hot-dip galvanized in accordance with ASTM A123, Class C. The anchor rod assembly shall be sized and positioned in the factory to match the connection requirements of the pole flange. Field locating or grouting / caulking of anchor rod connections is not permitted.

D. Electrical Conduit: PVC electrical conduit and fittings integrally cast with intimate contact with the precast concrete pole base unit, and shall meet the requirements of ASTM F512. The embedded Electrical conduit shall incorporate couplings located within 1 inch of the face of the concrete pole base unit for field connection to the site lighting conduit. Open electrical raceways are not permitted.

E. Lifting Devices: Lifting device(s) embedded in the concrete for use in handling of the precast concrete pole base unit shall be manufactured from smooth, round carbon steel rod and shall be capable of supporting at least four times the maximum intended load applied or transmitted to them. Embedded lifting devices intended for final placement of the precast pole base unit shall be hot-dip galvanized in accordance with ASTM A123 with a minimum coating thickness grade of 60 or greater.

F. Crushed Stone Foundation: Material shall be a durable crushed stone conforming to No. 57 size per ASTM C33 with the following particle-size distribution requirements per ASTM D422:

Gradation per U.S. Standard (Metric) Sieve Size:		Percentage Passing
1 ½ in	(38.1mm)	100% passing
1 in	(25.4mm)	95-100%
½ in	(12.7mm)	25-60%
#4	(4.76mm)	0-10%
#8	(2.38mm)	0-5%

2.05 Exterior Finishes

A. Ledgestone Texture: This monolithic unit features a 40-inch (1.0m) tall square column with 24-inch (610mm) wide sides and an integral 4-inch (102mm) tall cap that has all exposed surfaces textured to simulate a natural Ledgestone appearance, similar to the look of stacked cut field stones. The Ledgestone texture shall exhibit relief of 3 to 5 inches (76 to 127mm) over any dimension of the exposed vertical face.

B. Brick Ledge: This monolithic unit features a 40-inch (1.0m) tall square column with 24-inch (610mm) wide sides, light texturing that functions as either an artistic accent or for enhanced bonding to masonry mortar. Around the bottom of the above grade portion, is a 5-inch (127mm) wide concrete brick ledge to accommodate a site installed natural stone or brick veneer to match surrounding buildings or environments.

C. Round Smooth: This monolithic unit is a smooth finished 24-inch (610mm) diameter cylinder up to 48 inches (1.2 m) tall above grade. A helical texture or visible screw-like pattern is not acceptable.

D. Round Rusticated: This monolithic unit is a smooth finished 24-inch (610mm) diameter cylinder up to 48 inches (1.2 m) tall above grade, with a chamfer and horizontal rustication strip near the top of the unit to create a capitol appearance above grade. A helical texture or visible screw-like pattern is not acceptable.

E. Square: This monolithic unit features a 40-inch (1.0m) tall square column with 24-inch (610mm) wide sides, light texturing that functions as either an artistic accent or for enhanced bonding to masonry mortar, and 1-inch chamfer on exposed edges.

F. Custom: This unit is as shown in accordance with architectural drawings and specifications.

G. Color. Color of the exposed surfaces of the precast concrete pole base unit shall be selected by the Owner from the manufacturer's full range of color options available.

2.06 Structure Backfill

A. Crushed Stone Backfill Material: Crushed stone backfill material for the precast concrete pole base unit shall be durable crushed stone conforming to No. 57 per ASTM C33.

B. Granular Backfill: Granular soil meeting the requirements of USCS soil type GW, GP, SW or SP per ASTM D2487 or alternatively by AASHTO Group Classification A-1-a or A-3 per AASHTO M 145. The backfill shall exhibit a minimum effective internal angle of friction, ϕ = 32 degrees at a maximum 2% shear strain and meet the following particle-size distribution requirements per ASTM D422.

Gradation per U.S. Standard (Metric) Sieve Size:		Percentage Passing
2 in	(51mm)	100% passing
#4	(4.76mm)	20-100%
#40	(0.420mm)	0-60%
#200	(0.074mm)	0-10%

C. Controlled Low-Strength Material. Controlled low-strength material (CLSM), also known as flowable fill, may be used as structure backfill for precast concrete pole base units. The CLSM shall be a manufactured Portland cement concrete material exhibiting the following properties:
   1. 28-day compressive strength between 50 psi (0.34MPa) and 100 psi (0.69MPa)
   2. Wet Density between 115 and 145 pcf (18.1 and 22.8 kN/m^3)

2.07 Source Quality Control

A. Dimensional Tolerance. All manufactured dimensions of the precast concrete pole base unit shall be uniform and consistent. Maximum dimensional deviations shall be no more than 1% of the stated dimension in any single unit exclusive of the architectural surface texture.

B. Concrete Finish:

   a. Standard Grade for exposed above grade portion: Normal plant-run finish produced in forms that impart a smooth finish to concrete. Surface holes smaller than 3/4 inch (19mm) caused by air bubbles, normal color variations, form joint marks, and minor chips and spalls are acceptable. Fill all air holes that measure greater than 1/2 inch (12 mm). Major or unsightly imperfections, honeycombs, or structural defects are not permitted. Allowable form joint offset limited to 3/16 inch (5 mm).

   b. Commercial Grade for buried portion: Remove large fins and protrusions and fill large holes. Rub or grind ragged edges. Faces are to be true, well-defined surfaces. Air holes, water marks, and color variations are acceptable. Allowable form joint offsets are limited to 1/4 in. (6mm).

C. Cracks and Chips. Continuous cracks less than 1/32 inch (0.8mm) in width and/or extending less than 25% of any given exposed face dimension of the unit shall not be grounds for rejection of the unit. Likewise, repairable chips less than 1-1/2 inches (38mm) in the largest dimension shall not be grounds for rejection of the unit. However, through-cracks in the pole base unit and cracks that penetrate to the reinforcing steel may not be repaired and the individual unit exhibiting these cracks shall be rejected.

PART 3 – EXECUTION

3.01 Examination

A. Verification of Conditions. The Contractor shall verify the suitability of site conditions and site access for proper installation of the precast concrete pole base units. The Contractor shall notify the Owner if the site conditions, including soil shear strength (through the Testing Agency), are not sufficient for proper installation of the pole base units.

2.02 Preparation

A. Excavation. Excavation for the placement of the precast concrete pole base units may be accomplished through conventional open-cut excavation or auger drilling. The Contractor shall excavate to the lines and grades required for installation of the precast concrete pole base units as shown on the construction drawings. The Contractor shall minimize over-excavation. Excavation support, if required, shall be the responsibility of the Contractor. If auger drilling is selected by the Contractor as the method of excavation, the minimum foundation hole for placement of the pole base unit shall create at least a 6-inch (150mm) annular space around the perimeter of the base.

B. Over Excavation. Over excavation necessary for the removal of rock or frozen, low shear strength, deleterious, contaminated or otherwise unsatisfactory soils shall be as directed and quantified by the Owner's inspector. No payment shall be made for over excavation that is not inspected and directed in writing by the Owner.

C. The base of the excavation shall be flat, horizontal, and compacted before setting the 6-inch (200mm) thick stone setting base below the bottom of the precast pole base unit. The stone base shall extend at least 6-inch (150mm) beyond the perimeter of the base of the unit.

3.03 Installation

A. The Contractor shall coordinate the attachment of any electrical conduits and/or ground wires to the unit before locating the precast concrete pole base unit into its final position.

B. The pole base unit shall be lifted in alignment with the vertical axis of the unit (plumb orientation) and placed into the intended position. At no time shall the unit be tilted-up into its final position.

C. The precast pole base unit shall be set to grade within a tolerance of plus or minus ½ inch (13mm). The elevation of the unit shall be such that the final finished grade corresponds with the base of the textured/exposed upper portion of the unit.

D. The pole base unit shall be supported in a vertical position as necessary to maintain the unit as level, true and plumb until the structure backfill has been placed and is sufficiently consolidated or cured. If CLSM structure backfill is selected, the Contractor shall exercise all necessary precautions to prevent the dislocation or floating of the pole base unit during the CLSM backfill placement. The CLSM shall be protected from freezing for a minimum of 24 hours following placement.

E. Granular backfill material for the pole base unit shall be compacted in place with a maximum of 6-inch (150mm) thick lifts. Consolidate with a minimum of three passes with a minimum 18-inch (460mm) wide, walk-behind vibrating plate compactor capable of delivering at least 2,000 pounds (8.9kN) of centrifugal force. Additional compaction effort or adjustments to the moisture level of the soil shall be used as needed. The granular backfill shall be compacted to a minimum of 95% of its maximum dry density determined in accordance with ASTM D698 (Standard Proctor). In-place density of the granular backfill should be confirmed using ASTM D6938.

F. Crushed stone backfill material for the pole base unit shall be compacted in place with a maximum of 6-inch (150mm) thick lifts. Consolidate with a minimum of three passes with a minimum 18-inch (460mm) wide, walk-behind vibrating plate compactor capable of delivering at least 2,000 pounds (8.9kN) of centrifugal force, additional passes shall be used as needed to meet density requirements. The crushed stone backfill shall be compacted to a minimum 90% relative density of the stone determined in accordance with ASTM D4253 & D4254. In place density of the stone fill should be confirmed using ASTM D6938.

G. The Testing Agency shall test and verify specified backfill compaction density is achieved adjacent of the unit.

3.04 Repair

A. Exposed Surfaces. Exposed surfaces shall be finished as specified in this section. All other surfaces shall exhibit a smooth cast-bed finish. Bug holes between ½ inch (12mm) and ¾ inch (19mm) in diameter, chips less than 1-1/2 inches (38mm)in its largest dimension or cracks less than 1/32 inch (0.8mm) in width and less than 1 inch (25mm) in depth on the exposed face may be repaired. Acceptable repair materials include Type N mortar with shake-on color hardener or liquid color stain to blend the repair location with the remainder of the surface texture.

3.05 Field Quality Control

A. Non-Conforming Work. Precast concrete pole base units that are not sufficiently level, true and plumb as to allow the installation of the pole within acceptable construction tolerance shall be rejected. Defects to the architectural surface texture or color that cannot be repaired shall also be grounds for rejection of the unit in accordance with this specification.

PART 4 – AVAILABILITY

4.01 Contact Information

A. Pole Base, LLC
2940 Parkview Drive
Petoskey, MI 49770
Telephone: 1-844-866-9097
Website: www.polebase.com

Custom Solutions

The versatility of Pole Base extends beyond light pole bases. Consider Pole Base precast bases for runway & taxiway edge lighting, sign foundations, columns, and more.

Fully customizable with an array of textures and colors and options for junction boxes and conduit configurations, let Pole Base simplify and beautify your next project!

Quick Sign Install with Precast Ledgestone Foundations

Businesses located in high-traffic areas are smart to invest in effective and appealing signage. When the project developer for Harbor Plaza decided to upgrade its road front signage, it was imperative that the design aesthetic include the sign's foundation.

Pole Base was selected to ensure that the sign's foundation was both durable and attractive. The precast and pre-configured Ledgestone foundations were delivered on site, installed quickly and looked great without the pitfalls of cast-in-place methods.

Pole Base Columns Tie Together Residential Wall

A Michigan homeowner selected Pole Base Ledgestone texture columns to complete a retaining wall project. The columns topped the wall, also in Ledgestone texture, and facilitated a fencing application that wouldn't disrupt the surrounding scenic views.

All 19 columns were manufactured with two pieces of conduit to be used for the wire fencing system. The precast Pole Base columns, delivered on site and set in a single day, served both a functional and aesthetic addition to the property.

Pole Base for Compressed Natural Gas Fueling Station

CalPortland building materials company in California used Pole Base to construct natural gas fueling stations for its new fleet of 24 compressed natural gas (CNG) trucks.

The Pole Bases for this innovative project were manufactured with conduit to allow for the natural gas tubing and wiring required at each of the 24 fueling stations. Precast and delivered on site ready to install, Pole Base saved valuable time and ensured a smooth installation.


Contact your local
manufacturer to
get a quote!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YMCA


Red Wing
Pizza

TECHNICAL GUIDE
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