

# GRIDCORE™

COMPOSITE UTILITY POLES

INSTALLATION GUIDE



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# 1. INTRODUCTION

GridCore™™ Composite Utility Poles are engineered to enhance grid resilience as a more durable, lower-maintenance, and longer-lasting alternative to wood, steel, or concrete poles. They are also significantly lighter in weight, enabling safer and simplified installation.

## KEY PERFORMANCE ADVANTAGES INCLUDE:

### Lower Total System and Lifecycle Cost

With an expected service life of up to 80 years, GridCore™ poles are developed for durability and resilience. The extended lifecycle can result in overall cost savings compared to wood poles, which can require replacement every 30–40 years due to aging, damage, or failure.

### Low Maintenance, Pest-resistant, and Environmentally Friendly

Composite poles only need a visual inspection and are not susceptible to surface damage from woodpeckers or insects, reducing maintenance and repair costs. Superficial damage can often be repaired on-site, using recommended products and procedures available from MacLean Power. If damage to the pole wall laminate is suspected, consult your MacLean Power representative. And, unlike wood poles, GridCore™ poles are not chemically treated to prevent decay or infestation, and will not leach harmful chemicals into the surrounding environment.

### Engineered for Consistent Quality

Manufactured using a continuous pultrusion process, GridCore™ poles are engineered for consistent strength and uniform appearance to eliminate warping, shrinkage, or splintering. Our poles for the same height and class will have significantly higher strength versus wood. The one-piece pole construction and uniform diameter requires only one size through-bolt length to simplify assembly. As a natural material, wood poles are very inconsistent in strength and stiffness properties even among poles of the same wood species. Composite poles are manufactured for consistency and have much less variability. Unlike wood, which degrades over time, composite poles maintain the majority of their strength over their lifespan.

### Lightweight

Significantly lighter than wood and concrete poles, GridCore™ poles can be installed using light-duty equipment and without expensive cranes. Excellent dielectric strength allows for easy installation near energized lines.

### About MacLean Power Systems

MacLean Power Systems (MPS), headquartered in Fort Mill, SC, is LEADING THE WAY™ in delivering innovative, reliable, and resilient solutions for the electric utility, telecommunications, and civil infrastructure markets.

Since 1986, we've grown from a small subsidiary into a trusted industry leader—engineering and manufacturing the mission-critical components that keep the grid strong and communities powered.

With over 1,600 team members and nine production facilities across North America, MPS designs and delivers thousands of high-performance products, including insulators, surge arresters, anchoring systems, and pole line hardware. Our vertically integrated operations ensure consistent quality, dependable supply, and lasting performance across every product we make.

At MPS, we're LEADING THE WAY™ in building a stronger, more resilient future—through advanced manufacturing, safety-first practices, and an unrelenting commitment to excellence.

## 2. SAFETY

Below are some safety guidelines to consider along with your company's standard safety protocols.

- a. Wear eye protection when drilling or cutting. Goggles or a face shield may be preferred when cutting.
- b. A dust mask is recommended when cutting, and as needed when drilling. The dust created is considered a skin and respiratory irritant and has no proven long-term health effects due to exposure. An approved respirator meeting 42 CFR Part 84 standards should be worn if dusty conditions exist.
- c. Cut-resistant gloves are required when drilling or cutting.

## 3. POLE SETTING EQUIPMENT

- a. Digger derrick truck: This specialized truck is essential for setting poles. It features a digger to auger holes, and a long boom with a winch for lifting and setting poles. Some of these line trucks also have a bucket for transporting materials.
  - i. NOTE: When handling and installing composite poles, care should be taken not to damage the surface of the pole. Poles should not be dragged. Carefully lift the pole using either nylon straps or rubber grip slings to gently rest and rotate the pole base into the bottom of the augured hole; then plumb the pole, backfill, and tamp the hole. To prevent marring the surface of GridCore™ poles, metal components on the digger derrick truck such as the pole guide, tongs, and pole carrying racks should be padded with soft materials such as rubber line hose or other protective padding.
- b. Standard tools for digging and removing dirt from the hole include both regular and spoon shovels.
- c. Post-hole diggers can be used to create the initial hole for the pole, especially if the soil is compact or rocky.
- d. Tamping bars, drivers, and sledgehammers can be used to compact the soil around the pole and verify it is securely in place. Care should be taken to not damage the pole wall.

- e. Depending on the location or specific requirements, other optional equipment like swamp mats, tracked vehicles, or mobile cranes may be needed for access and handling the pole.
- f. Proper safety gear/equipment, including hard hats, safety glasses, gloves, and appropriate footwear are essential for all installation crew members.

## 4. ACCESSORIES & HARDWARE

### Standard Accessories Supplied by MacLean Power

- a. Pole Cap
- b. Base Plate (pole-bearing plate)
- c. Nameplate
- d. Hole Plugs

### Optional Hardware Available Upon Request

- e. Pole Steps
- f. Drill Bits (fiberglass utility auger bits, hole saw, and pilot bits for field drilling)
- g. Lifting Straps

## 5. STORAGE

- a. Composite poles are intended to be in the elements and can be stored outdoors using proper racking.
- b. Do not stack poles directly on top of one another in order to prevent pole surface damage. We recommend the use of wood dunnage to separate poles and allow for lifting straps to be slid under poles for picking. Dunnage or chocks should be spaced no farther than 20 feet apart along the length of the pole.
- c. Recommended stacking height of the same diameter and pole profile is no greater than five poles in height.

## 6. HANDLING

Handling considerations when using composite poles are intended to protect the pole surface so as not to damage the UV-resistant veil and resin-rich pole surface.

- a. Do not drag the pole. Care should be given to prevent damage to the base plate during installation.
- b. Use nylon or fabric straps with an enhanced grip coating for lifting poles. Do not use chains, cables, or other metal rigging to lift poles.
- c. Plug any unused holes to prevent insects, birds, or rodents from entering.

## 7. POLE MARKINGS

### a. Groundline

Each pole is marked at its required groundline with yellow tape as shown in Figure 7.1. This location is typically 10% of the pole length plus 2 feet from the butt of the pole but can be customized. A short white line at the ground line level will indicate the center line of the holes drilled on that side of the pole.

### b. Center of Pole

Each pole is marked at its mid-length with a white or silver line as shown in Figure 7.2. When there is no attachment, this marking coincides with the center of gravity of the pole.



FIG. 7.1. Groundline marking - yellow tape

When attachments, such as crossarms, are field-installed, the center of gravity shall be reassessed by the installation supervisor.

### c. Top of Pole

Each pole will be marked 6 inches from pole top as shown in Fig. 7.3.

### d. Name Plate

Each pole is affixed with an engraved metal plate as shown in Fig. 7.4. Custom name plates can be made available upon request. The nameplate is to be located 6 feet above groundline, unless otherwise requested.

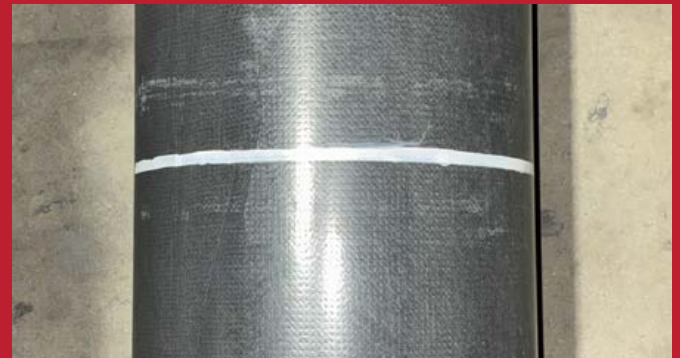


FIG. 7.2. Center of pole marking for lifting purposes



FIG. 7.3. Top of pole markings



FIG. 7.4. Name plate

## 8. FRAMING

- a. GridCore™ poles are compatible with most standard non-cleated hardware. Structural connections, such as those to crossarm gain plates, guy brackets, etc., are made with through-bolts, curved brackets, and curved washer plates. Contact MacLean Power for recommended maximum torque on your specific pole size and wall thickness.
- b. A top cap, baseplate, name plate, and hole plugs will be installed. Additional hardware is often supplied by a third party. When hardware is supplied by MacLean Power, they are packaged separately.
- c. Standard steel steps, which are common for hollow steel poles, can also be used for GridCore™ poles and can be similarly installed.



**FIG. 8.1.** Pole step



**FIG. 8.3.** Pole step test



**FIG. 8.2.** Crossarm connection



**FIG. 8.4.** Crossarm connection with other distribution products

- d. For non-structural connections, such as cap, base plate, grounding attachments, etc., galvanized self-tapping screws may be recommended and/or supplied with the pole. Some examples are shown in Figures 8.5 and 8.6.

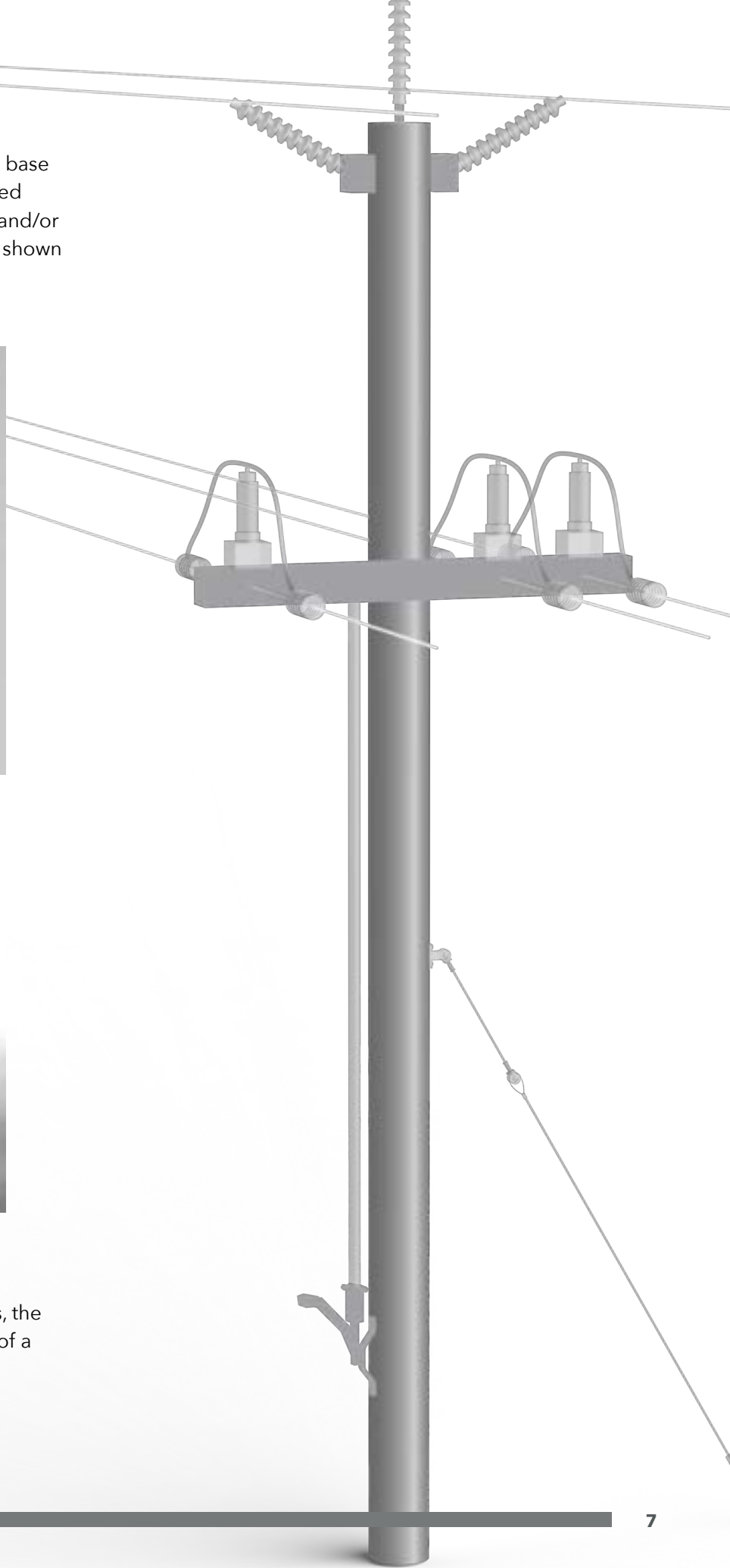


**FIG. 8.5.** Cap



**FIG. 8.6.** Base Plate

- e. Similar to lifting conventional material poles, the installer must evaluate the center of gravity of a framed pole before lifting and installing.



## 9. INSTALLATION

GridCore™ poles can be installed similarly to wood poles. Unlike treated wood poles, GridCore™ poles are chemically inert and do not leach harmful chemicals into the soil once installed.

### a. Lifting the Pole

Nylon straps or rubber belt grip slings, such as those supplied by MacLean Power, are recommended for lifting the poles. The straps should be looped around the pole, and one end is inserted through a loop on the other end in a choke, as shown in Figure 9.1. Metal chains or straps should not be used, as they may damage the surface of the poles.



FIG. 9.1. Rubber belt grip sling

It is important that the lifting point is:

- Properly selected in accordance with the center of gravity of the pole, with or without attachments and framing.
- Securely prevented from slipping. This can be achieved by placing the strap below an attachment.

The condition of the rubber belt grip must be inspected before each lift. During lifting and installation, care should be taken to prevent dragging the pole on the ground or hitting the pole on other hard objects.

### b. Pole Alignment and Embedment

The pole alignment should be performed the same as that for a wood pole. The standard embedment depth of a GridCore™ pole is the same as that for a wood pole, which is 10% of the length of the pole plus 2 feet in normal soil conditions. If not pre-installed by MacLean Power, a baseplate must be installed prior to pole setting to prevent the pole from sinking into the soil under the pole's own weight.

### c. Backfill

Backfill can be done with native soil, sand, and/or gravel of 1 inch or finer grade, concrete, or pole-setting foam. If setting in concrete, expansion material should be used at the ground line to prevent point loads. Caution should be taken during backfilling and/or consolidation to prevent damage to the hollow pole. Metal objects, such as shovels, vibrators, and tamping tools, should not make an impact with the pole. Inquire with MacLean Power for additional details.

### d. Grounding

Grounding wires can be secured to the outside of the pole using standard clips and self-tapping screws. For enhanced security, grounding wires can also be placed inside the hollow pole to avoid copper theft. GridCore™ poles can be furnished with predrilled holes to accommodate wire entries. Please contact MacLean Power for specific guidance

- i. NOTE: Customer to specify the location of enter/exit holes required to run wires internally to pole.

## 10. Holes

### a. Pre-Drilled Holes

MacLean Power will predrill holes per customer specification. Unused holes must be plugged using hole plugs or similar style plastic plugs to prevent pest infestation.

### b. Holes and Field Drilling Guidelines

The customer shall submit drawings to MacLean Power to clearly define the holes, which may be drilled by MacLean Power or the customer, in the factory or in the field.

A no-drill zone is required from the embedded base to 8 feet above the ground line to maintain structural integrity of the pole.

Up to eight additional holes that are not defined in the original print (i.e. four through holes) outside the no-drill zone are permitted without approval from MacLean Power. The minimum spacing between adjacent holes is six times the diameter of the hole.

Small holes created for or by non-structural fasteners such as self-drilling screws (up to 1/4 inch diameter) are not considered "holes" defined above and are allowed up to a quantity of thirty per pole, with a minimum spacing of 3 inches. There is no no-drill zone for these small holes.

If a customer needs to drill holes that deviate from these guidelines, written approval from MacLean Power must be obtained prior to work.

### c. On-Site Hole Drilling

MacLean Power recommends the following personal protective equipment (PPE) be used when field drilling holes:

- Cut-resistant gloves Level 4 or similar
  - ANSI Z87.1 safety glasses
  - Disposable N65 dust mask or better
  - Long-sleeve shirt and pants
- i. NOTE: For installer safety while drilling, a standard drill with a side handle or an impact drill are recommended to avoid the drill catching.



FIG. 10.1. Hole example



FIG. 10.2. Hole plug installed

## 11. DRILL BITS

MacLean Power recommends using Milwaukee® SHOCKWAVE Impact Duty™ Lineman's Fiberglass Drill Bits<sup>1</sup>; these bits are built for composite pole applications. Care should be taken to align the drill if attempting to drill through both sides.

## 12. REPAIR

Damage assessment guidance, repair consultation, and instructions are available upon request. Contact MacLean Power for more information.

## 13. DISPOSAL

Composite utility poles have various disposal options when they reach the end of their service life or have sustained irreparable damage from a catastrophic event. Some options include, but are not limited to:

- Reuse & repurpose
- Landfill disposal

Contact your MacLean Power representative for more information about local regulations and recommendations.

<sup>1</sup>Milwaukee® is a trademark of Milwaukee Electric Tool Corporation.

## 14. ADDITIONAL SUPPORT SERVICES

MacLean Power is committed to providing exceptional customer service and addressing any questions that may arise during the processing, handling, and installation of our composite utility poles.

Please contact your MacLean Power representative for additional support.

Visit our website at [macleanpower.com](http://macleanpower.com) to explore more of our GridCore™ Composite Utility Poles resources.







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