

# Safe Work Practices

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## 1.0 TRANSPORTATION AND HANDLING

- 1.1 The composite utility poles are shipped via flatbed truck in bundles to ease the unloading process.
- 1.2 A typical package scheme weighs less than 5,000 lbs. and consists of a bundle of 8 to 10 poles. The package is designed to be lifted with a tow motor. However, the package can be picked with a crane or boom truck using a nylon sling. Special shipping requirements must be prearranged with the factory.
- 1.3 When receiving products, all items should be inspected for damage prior to acceptance. If damage has occurred, the user should immediately notify the delivering carrier and complete the necessary freight damage claims. The damage report should indicate what types and level of damage has occurred to the poles. The manufacturer must be notified to discuss the reported damage and help assess the structural integrity of the material for its intended use.

## 2.0 STORAGE

- 2.1 Composite utility poles can be stored outdoors or indoors.
- 2.2 Poles are delivered in bundles to assist in yard storage and minimize pole handling and movement prior to actual delivery to job location.
- 2.3 If it is necessary to unpack the poles from the original shipping crates, separate the poles from one another using a similar timber cribbing plan to avoid unnecessary damage to the pole surface.
- 2.4 The timber cribbing should also keep the pole high enough above the ground to allow nylon lifting straps to be easily slipped under and around the pole.

## 3.0 HANDLING INSTRUCTIONS

- 3.1 The identification tag contains the estimated weight of the pole.
- 3.2 Composite utility poles can be loaded/moved/unloaded using a forklift positioned perpendicular to the longitudinal axis of the pole and with the load in balance.
- 3.3 Care should also be taken in handling to prevent puncturing or cracking a pole with the forklift and to prevent Damaging the UV protective surface.
- 3.4 It is important to fully position the forklift under the load and lift the pole(s) rather than “slide” the forklift across the flat surface of the pole while in a lifting action.
- 3.5 All composite utility poles can be handled utilizing single pick points. The center of gravity on an unframed pole is typically at mid-point of the overall length due to its non-taper design. Significant hardware installations will affect the balance and location of pick when moving a pole. The user should evaluate these weights and adjust the pick point accordingly.

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- 3.6 Nylon slings should always be used in lieu of chains, cables or other metal hardware when lifting composite utility poles.
- 3.7 The minimal weight of the pole should eliminate the need to drag or skid the pole for any significant distance.
- 3.8 If dragging of the pole is necessary for extended lengths due to difficult terrain, the butt of the pole should be protected to avoid excessive damage to the FRP materials and base plug.
- 3.9 A formal risk assessment will be discussed and documented to identify hazards and barriers.
- 3.10 Composite utility poles are NOT solid in cross section. Care should be taken in the lowering of the pole to the ground to facilitate the removal of the handling slings.
- 3.11 Poles should not be dropped from distances or freely dumped from transportation trailers.
- 3.12 Poles should be rested to a firm surface with clearance allowed to easily remove the supporting slings.
- 3.13 For short distances, pole dollies and other pole handling vehicles can be used. If pole dollies are used, nylon straps should be used in lieu of metal chains to secure the pole.
- 3.14 Because composite utility poles are lightweight, some distribution size poles can be manually carried short distances between the staging area and the installation site. Craft persons using shorter nylon slings can carry the pole manually.
- 3.15 Pole climbing hardware is also a means of “handling” a pole for manual carry.

## 4.0 FRAMING

- 4.1 Most standard, non-cleat line hardware can be used on composite utility poles with conventional fasteners and practices.
- 4.2 In general, the poles will accept most of the hardware that is used on wood, steel, or concrete poles. However, washers that conform to the pole surface should be used beneath the bolt head and nut. CPI recommends washers matching the contour of the poles be used for all installations. Washer sizes should be selected by reviewing the Washer Pull Through Capacity charts on Page 15 of CPI’s brochure.
- 4.3 The preferred method of attachment is with through bolts.
- 4.4 There is no need to over torque the nuts as the dimensional characteristics of the composite utility pole will not change significantly due to moisture or temperature. The maximum torque applied is recommended not to exceed 50 ft-lbs. A good rule of thumb is that a lineman should hand tighten the nut and then turn the nut half to one complete turn for proper bolt tension. If over tightening occurs, the pole will oval shape and structural failure could occur.



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- 4.5** The following hardware features are not compatible with the CPI composite utility poles:
- Lag bolts: Use a through bolt instead.
  - Teeth: Hardware that is drawn into a wood pole should not be used on a composite utility poles. In almost every case, a similar piece of hardware exists that does not have teeth.
  - Nails and Staples: Use self-tapping screws.

## **5.0 FIELD DRILLING HOLES AND CUTTING POLES**

- 5.1** CPI will pre-drill holes per customer specifications in the production plant with Computer Numerical Control (CNC) equipment.
- 5.2** Holes can be drilled in the field with either hardened high-speed steel (HSS) twist drills, carbide tipped twist drills or self-centering hole-saws. Diamond coated hole saws, carbide tipped twist drill bits and brad-point HSS twist drills perform best.
- 5.3** The number of holes needed determines drill selection. Carbide or diamond type drills are recommended for quantities above 20. CPI recommends B & A Manufacturing Company (<http://www.bamanufacturing.com>), FGH series drill bits, for applications that require multiple holes in a short period of time. Many contractors and utilities have had success when utilizing the FGH series drill bits. The bits will save time and drill thousands of holes before needing to be replaced.
- 5.4** Minimum hole spacing shall be selected by referencing the Edge Distance Chart on Page 14 of CPI's brochure.
- 5.5** Composite utility poles can be field cut with a concrete, skill, or reciprocating saw. An abrasive blade should always be used. Concrete saws work the best and can be utilized with a standard concrete cutting blade.
- 5.6** During drill and sawing operations dust will be emitted. The dust is considered a nuisance dust, which can irritate your eyes and skin. Therefore, safety glasses, gloves and long sleeve shirts are recommended during the cutting and drilling process. As documented by Occupational Safety & Health Administration (OSHA), FRP dust millings have potential to cause eye, skin, and upper respiratory tract irritation.
- Cause- mechanical-irritant properties of the glass fibers.
  - FRP particulate is non-hazardous.
  - FRP particulate is greater than 6 microns; therefore, it cannot reach the alveoli.
  - The International Agency for Research on Cancer (IARC) classified FRP particulate as non-cancer causing in June of 1987.

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- 5.7 For additional information involving OSHA’s dust statement visit the following web sites:
- [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9994](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9994)
  - [http://www.osha.gov/dsg/topics/silicacrystalline/dust/chapter\\_1.html](http://www.osha.gov/dsg/topics/silicacrystalline/dust/chapter_1.html)

## 6.0 CLIMBING

- 6.1 Climbing provisions are available as permanent or removable steps.
- 6.2 CPI offers an array of step options that can be viewed in the Hardware Options Section of their brochure.
- 6.3 Climbing positions are usually vertically spaced every 15 to 18 inches and are oriented at 180 degrees (each side of a pole) to each other.
- 6.4 “Stepping” positions and “working” positions (steps at the same elevation) can be specified by the user at the time of order. The holes can then be factory drilled and steps attached prior to delivery of the poles.

## 7.0 SETTING

- 7.1 Composite utility poles are generally faster and safer to install than wood, steel or concrete poles.
- 7.2 Conventional equipment and practices can be used as required for the terrain and site conditions.
- 7.3 They can be erected using a single pick point as determined by the weight of the pole and any framed hardware.
- 7.4 Nylon chokers should be used by the method of “choking the pole” to secure the pole to the lifting cable; this Practice avoids scratching and gouging the pole finish. Never use a chain or steel choker to pick or unload a composite utility pole. A nylon strap, preferably with a neoprene skin, is recommended. This will reduce the chance of the pole sliding during the picking process. CPI prefers to use handling slings, made by Lift-It® (<http://www.lift-it.com>). The slings must be double wrapped and the manufacturer’s recommendations must be followed.

## 8.0 DIRECT EMBEDMENT

- 8.1 CPI composite utility poles have been designed to be directly embedded in the ground in the same manner as wood poles.
- 8.2 Composite utility poles are inert. Therefore, the poles will not adversely affect the environment nor do they require special protective coatings or treatments before being embedded. Composite utility poles can be directly embedded using the same burial depth as would be used for most other types of poles unless special loading or soil conditions dictate otherwise.
- 8.3 Once the pole is placed in the hole, the hole can be backfilled with any material normally used, such as native soil, crushed aggregate, concrete, or structural foam.

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- 8.4** Backfill tools and techniques for CPI composite utility poles are typically the same as those used for wood poles. Care should be taken to avoid impacting the pole wall with tools during backfill and tamping operations.
- 8.5** Similar to all tubular poles, a bottom plug is provided to prevent further settling after the composite utility pole has been installed.

## 9.0 POLE GROUNDING

- 9.1** Ground wires can be fastened to the pole with copper ground clips and self-tapping screws. Plastic wire molding strips can also be used to secure the ground wire to the pole. These strips contain the ground wire and are easily secured to the pole with a self-tapping screw.
- 9.2** Ground wires can also be positioned inside of the pole to discourage theft.
- 9.3** A cluster bar on a FRP would be installed hand tight and then tightened with a screwdriver one quarter of a turn.

## 10.0 END OF SERVICE LIFE DISPOSAL

- 10.1** CPI composite utility poles have several disposal options, including:
  - Recycle into FRP fillers
  - Repurpose
  - Landfill (Toxicity Characteristic Leaching Procedure or TCLP) will not leach

For more information visit CPI's website and see utility poles:

<https://www.creativepultrusions.com/index.cfm/fiberglass-pultruded-systems/composite-utility-poles/>

Developed by: Creative Pultrusions, Inc., Brian Gould	Approved by: SWP Committee Stan Hartin, Neil Lyons, Ryan Fysh, Brian Gould
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