

CMT By valmont

MARATHON™

Composite Poles

Technical Information

and Specifications

Marathon Poles
Exclusive Lifetime Warranty

CMT warrants the subject products to be free of fiber-blooming (exposed structural glass that has degraded) for the LIFETIME of the original installation when used under normal conditions. Product that has been damaged due to handling, transportation, installation, or vandalism is not be covered under this warranty. CMT also warrants the subject product to be free of defects in material and workmanship for a period of three (3) years from the date of purchase, when used under normal conditions. CMT will repair or replace, at its sole option, any defective product during the warranty period.

The above constitutes fulfillment of CMT's obligation under this warranty and constitutes the buyer's sole remedy. CMT makes no other express or implied warranty, nor any warranty of fitness for a particular purpose or merchantability. CMT's obligation to repair or replace any defective product does not include any obligation to reimburse transportation, installation, removal, or any other expenses that may be incurred by the buyer or other parties in relation to any product defect, nor does CMT accept any responsibility for unauthorized repairs to any product. In no event shall CMT be liable for any consequential damages.

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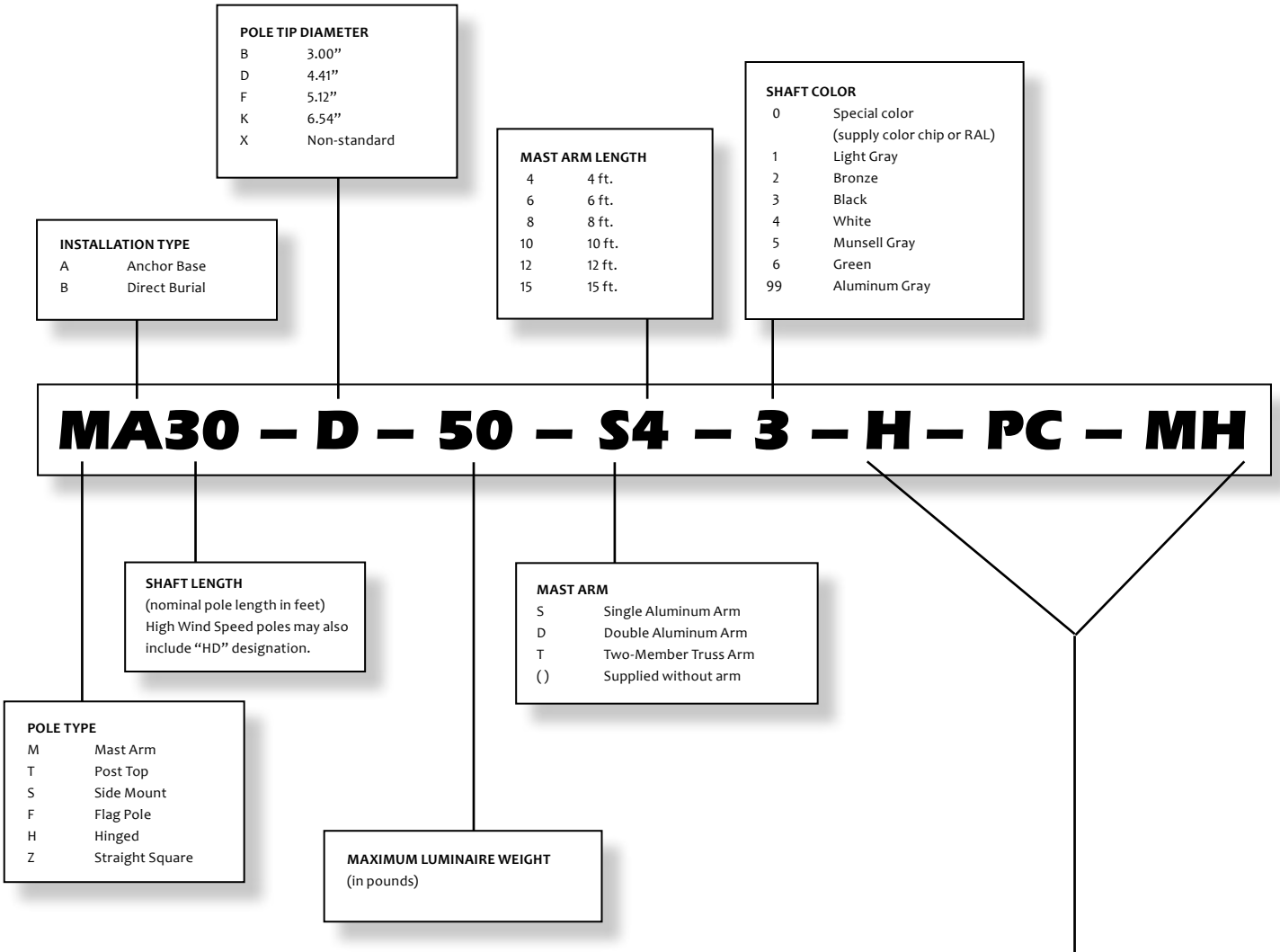
TABLE OF CONTENTS

LIFETIME Warranty	**Inside Front Cover**
General information	
How to order	2
Pole selection guide	3
Sample Specifications	4
Installation recommendations	6
U.S. Isotach Wind Map	8
The CMT Process	9
Hinged Poles	**10**

CMT By valmont

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How to order: Catalog Number Legend



ACCESSORIES

HS	2.5” x 5” Handhole with Cover (Standard)
H	4” x 12” Handhole with Cover (Optional)
T238	2.375” dia. x 4” Steel Tenon
T300	3” dia. x 4” Steel Tenon
SF	Slip Fit Tenon (Reinforced Pole Top as tenon)
PC	Pole Cap (removable)
MH	Galvanized Mast Arm Mounting Hardware
AR/P	Anti-rotational device (Direct Burial Poles)
BC	1-piece fiberglass Base Cover
BCR	2-piece retrofit fiberglass Base Cover
ABG	Galvanized Anchor Bolts with leveling nuts
TBF	Terminal Block and Fuse Holder
EO	Weatherproof Receptacle (110 VAC)
GFI	Weatherproof Receptacle (110 VAC) with Ground Fault Indicator
NP	ID Plate
85BK	Breakaway Poles, 1985 Breakaway Approved
BH-2	Double Bullhorn with 2.375” Tenon, primed and painted to match pole.
CH	Captive Strap for Handhole Cover

(Other bullhorn brackets available, see Accessories)

General

All lighting fixtures or luminaires must be properly fitted to a pole assembly to ensure that the total weight is supported and that the complete assembly will support the installation location's maximum wind velocity. The three criteria for proper pole selection are: total assembly weight (luminaire), Effective projected Area ("EPA" in ft^2), and tenon size (for top mounted luminaires).

Refer to your lighting manufacturer's product catalog. For most manufacturers, each luminaire has its weight, EPA, and required tenon size specified. Once you select your lighting fixtures, total the combined weight and total EPA. You must include any signage, decoration, or other non-lighting equipment to be used.

This publication lists weight capacity information for each CMT pole, along with supported EPA for various wind speed requirements. This is the maximum total for all luminaires, including any signage, decoration or other non-lighting equipment that may be attached to the pole.

Effective Projected Area (EPA)

The formula to calculate the force of wind on an object is the actual projected area of the object times the coefficient of drag times velocity pressure of the wind. EPA is the resulting product. When mounting a luminaire/light fixture, the center of gravity for the fixture should be no more than 18 inches above the pole top. Recommended maximum weights are listed for each wind velocity for every pole.

Pole Selection Instructions

1. Choose your lighting luminaire and any attachments.
2. Find the weight and EPA for all components from the manufacturers' catalogs.
3. Check the wind velocity map or other resource for the geographic area in which the poles are to be installed.
4. Select the pole type required: Mast Arm, Post Top, Anchor Base, or Direct Burial.
5. Determine the nominal mounting height required and the luminaire's required tenon size (for top-mounted poles).
6. If required, select the Mast Arm and Mast Arm length.
7. Choose the required color. For special colors, include a color chip or RAL.
8. Choose any accessories: GFI outlet, terminal block, base covers, etc. Check the pole order logic for codes required.
9. Refer to the poles specifications pages to select and confirm your selections.
10. Re-check that the weight and EPA totals do not exceed the specific pole's ratings. If they do not, you have selected the correct pole.

Note: This information is intended only as guidance. Please call your CMT representative for confirmation of your selection.

Sample Specification

Specifications for Fiberglass Reinforced Composite (FRC) Poles

1.0 MATERIAL OF CONSTRUCTION

1.0.1 The shaft shall be constructed of a commercial grade of "E" glass or better.

1.0.2 The surface of the shaft shall be smooth and consist of a saturated polyester surfacing veil of 18-20 mils minimum thickness and a 10 mil resin layer.

1.0.3 The resin shall be unsaturated polyester resin containing UV inhibitor and pigment throughout. A minimum of 1.5 mil urethane coating shall be applied to the surface of the pole shaft.

1.0.4 The surfacing veil and structural fibers shall be saturated in a singular process with the same resin, ensuring molecular bonding between structural layers and the protective layer.

2.0 CONSTRUCTION STANDARDS

2.0.1a All round tapered shafts shall be centrifugally cast to ensure a dense void-free wall and a smooth surface.

2.0.1b All square shafts shall be constructed by the pultrusion process from thermosetting polyester resin and contain a minimum of 65 percent "E" type fiberglass by weight.

2.0.2 The pole shall be designed for direct burial or anchor base mounting. Reference ANSI C136.20 for suggested burial depths.

2.0.3a Round tapered Anchor Base poles shall have a galvanized steel base with an internal sleeve design which provides a mechanical lock with the pole shaft.

2.0.3b Square Anchor Base poles shall have a cast A356-T6 aluminum, polyurethane coated base, which shall be permanently bonded to the outside of the fiberglass shaft.

2.0.4 Direct Burial poles shall have an anti-rotational device (if ordered) located 12 inches from the butt of the pole, consisting of a 2-in. diameter PVC pipe extending 2 inches from each side of the pole.

2.0.5 Direct Burial poles shall have two, 2.375-in. diameter wire entry holes, located 18 inches below ground line, 180 degrees apart. Either of these holes shall be 90 degrees from the side intended for mounting of the arm(s), where arms are applicable.

2.0.6 The pole surface shall be smooth and have a uniform taper of 0.216 inches per foot.

2.0.7 A handhole, 2.5 in. x 5 in., with a painted cover shall be supplied, including fasteners. (Optionally: The poles shall be supplied with a 4 in. x 12 in. nominal handhole cover equipped with non-metallic, vandal-resistant allenhead or slotted hex-head fasteners.) All handhole covers, fasteners and exposed handhole reinforcement shall be non-metallic.

2.0.8 Tenon Top type poles shall have a 2.375 in. or 3 in. diameter steel tenon permanently affixed. (Optionally: A slip-fit tenon affixed to the pole shall be provided whereby the top 6 inches of the pole shaft is reinforced with stainless steel mesh, so the tip of the shaft will serve as a tenon alone. Note, the slip-fit tenon is available only in 3-in. sizes.)

2.0.9 Mast arm poles shall be drilled at the factory to accept the applicable arm(s) specified.

2.0.10 Single member mast arms shall be made of Type 6061-T6-T4 aluminum with a 2-in. NPS slipfitter. The arms shall be secured to the pole by two, 5/8"-11 x 6", 8" or 10" bolts as appropriate, complete with two each curved washers and nuts.

2.0.11 The Shaft shall be constructed in one piece for lengths up to 53 feet.

2.0.12 (If applicable) A non-conductive pole cap shall be supplied for mast arm and side mount poles.

3.0 PERFORMANCE

3.0.1 The pole (and arm(s), if applicable) shall be able to withstand AASHTO Standards of 25-year mean recurrence interval wind velocities for the area where the pole is specified to be used.

3.0.2 Static deflection shall meet the following criteria:

1. Deflection shall not exceed one (1) percent of above ground pole length.

2. The difference in deflection within any 1-foot increment shall not exceed 0.35 in.

3.0.3 Under maximum specified wind conditions, the pole tip deflection shall not exceed 10 percent of above ground pole length.

3.0.4 The pole shall be resistant to long-term flexural fatigue failure. There shall be no significant change in visual appearance or mechanical properties after one million cycles of altering force applications, which force produces a deflection amplitude equal to or greater than the deflection produced by peak wind speed of 46 mph.

4.0 SHIPPING

4.0.1 The pole shall be wrapped with cardboard and covered with a suitable plastic wrapping envelope for shipping via commercial carriers. Poles shipped by flatbed may be wrapped in plastic and bundled, and do not require cardboard wrapping.





This document is available in text, Word, and WordPerfect electronic formats on CMT's website:

WWW.CMT-POLES.COM

Anchor Base Pole Installation Guide

Suggested Installation Procedure for Anchor Base Poles

1. The size of the required foundation depends on the soil's resistance and structural characteristics. A round or square foundation shape is acceptable, but round cylindrical shapes are most frequent.

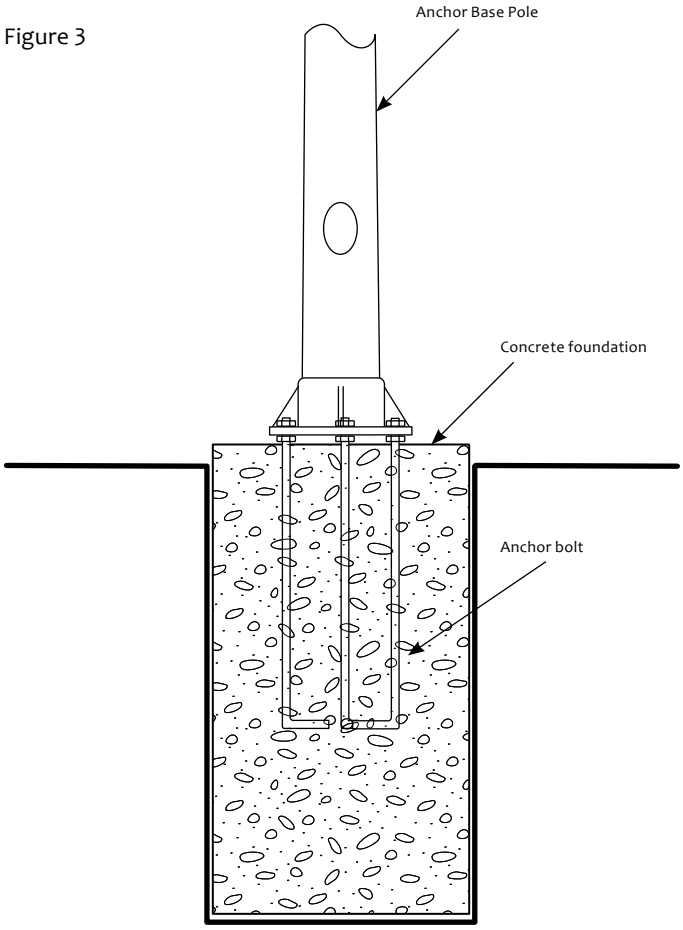
2. The foundation's required depth will depend on soil conditions. It is usually advisable to have a soil testing organization make test borings to determine soil structural qualities. The minimum diameter of the foundation should be wide enough to allow enough space between the outside walls and the bolt hole circle to accommodate steel rebars and the anchor bolt hooks, or about 12 inches plus the pole's bolt hole circle.

3. Minimum concrete compressive strength should be approximately 3000 psi after 28 days of curing. Reinforcing bars should be deformed steel, vertically embedded and wrapped with tie bars. Be sure to provide adequate steel reinforcing and allow sufficient drying time before attaching the poles, in order to reduce the likelihood of concrete cracking.

4. When the foundation is cured, attach nuts to the anchor bolts and use a large level to make sure all nuts are level to each other.

5. Thread the wiring into the pole as you set the pole onto the nuts and secure it with the second set of nuts. Tighten securely. Connect all wiring at the handhole.

Figure 3



Note: This information is intended only as guidance.

CMT does not assume any responsibility for pole installation.

Suggested Installation Procedure for Direct Burial Poles

1. Auger a hole that is a minimum of 6 inches wider than the butt of the pole. The suggested depth (dimension "A") is:

Up to 18 ft. mounting height:	3 ft.
18.1 to 25 ft.	4 ft.
25.1 to 40 ft.	5 ft.
40.1 to 50 ft.	6 ft.

2. Remove any protective wrapping from the pole and place the butt end of the pole in the center of the hole (Figure 1). As the pole is lowered into the hole, feed the underground wiring through the cable entrance hole(s) toward the handhole.

3. Hold the pole upright while backfilling the hole according to soil conditions as follows:

   a. Poor soil: If the area is sandy or often retains water, a crushed aggregate material or concrete may be needed for backfill.

   b. Good soil: If the soil is firm and does not retain water, the soil that was removed while augering the hole can be used as backfill.

4. Place approximately 4 to 6 inches of backfill into the hole. Plumb the pole from two positions, 90 degrees apart. To plumb the pole, hold a plumb-bob at a suitable distance from the pole and align it with the plumb-bob. Once the pole is plumbed, tamp the backfill thoroughly. Continue supporting the pole.

5. Add another 4 to 6 inches of backfill and tamp thoroughly. Re-plumb the pole two to three times before the backfill level reaches the ground line.

6. Place an additional 2 to 3 inches of backfill above the ground line (Figure 2) and tamp thoroughly.

7. Connect all wiring at the handhole.

Figure 1

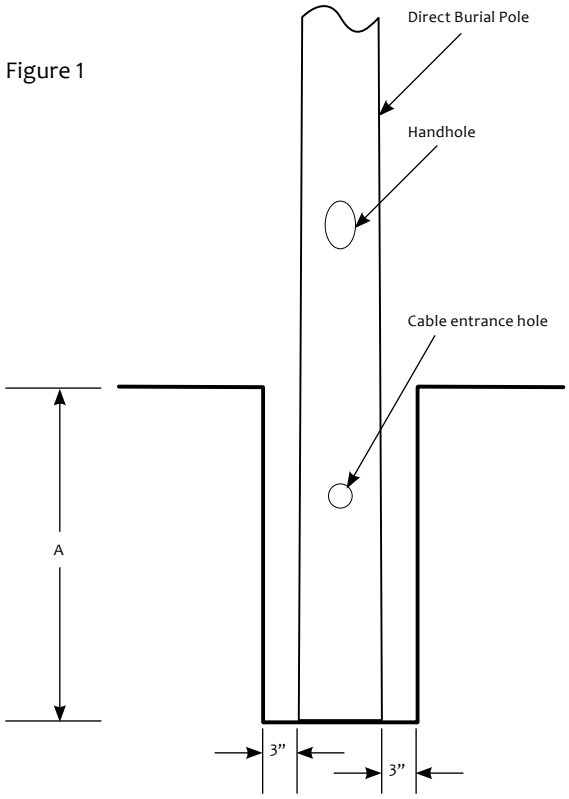
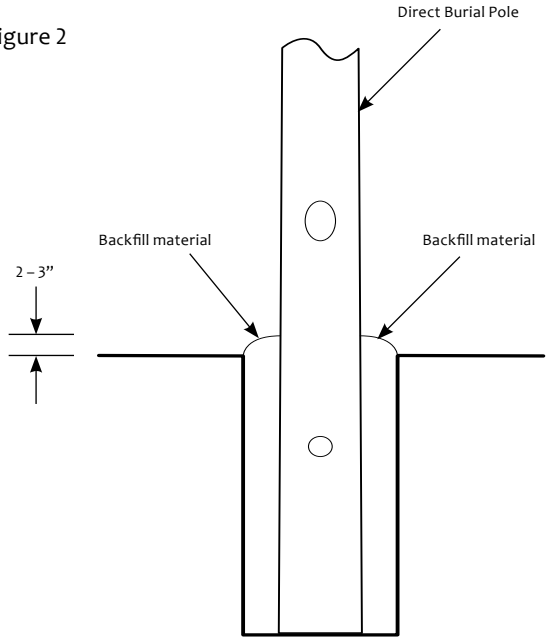


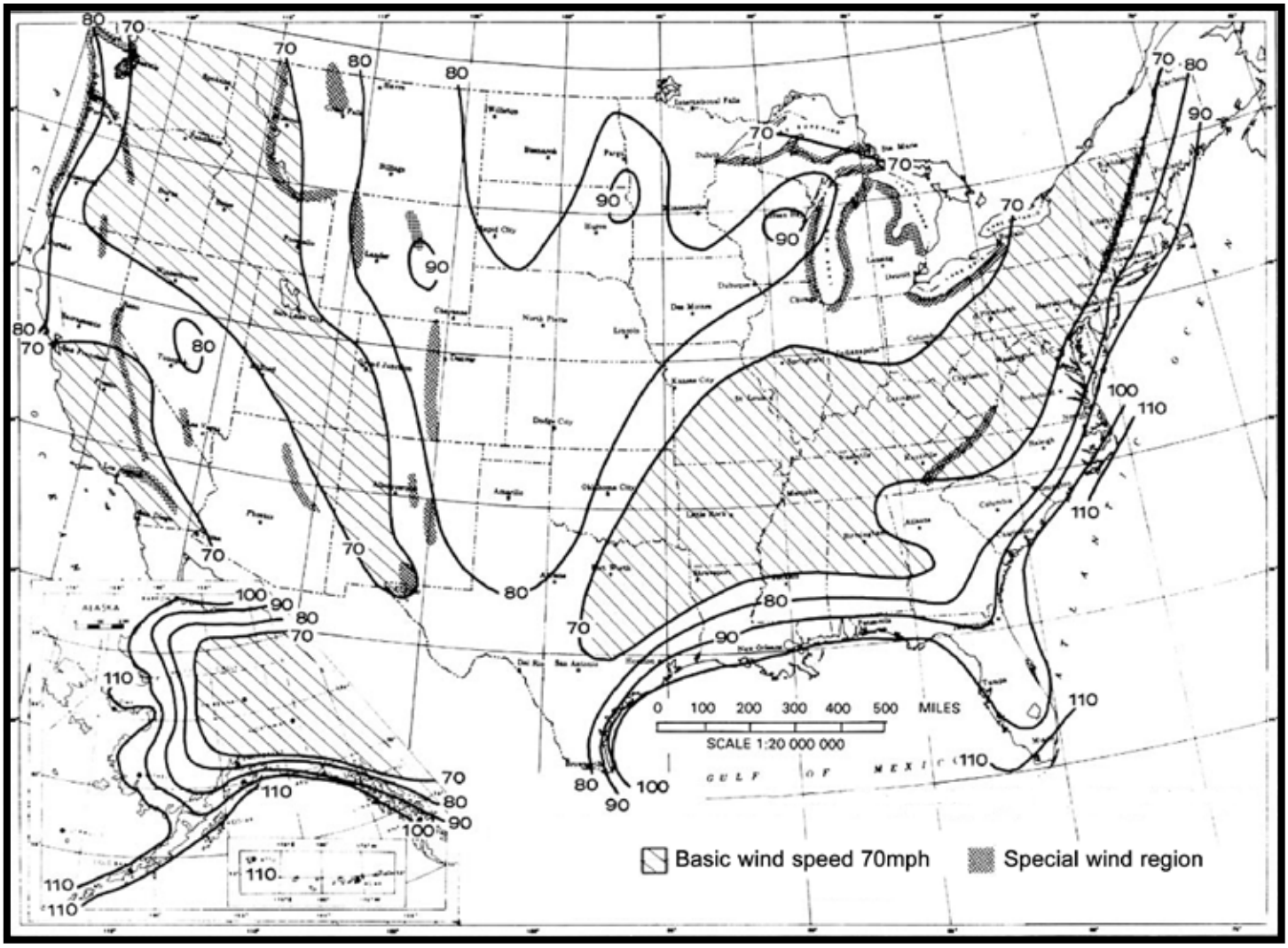
Figure 2



Note: This information is intended only as guidance.

CMT does not assume any responsibility for pole installation.

U.S. Isotach Wind Map



Notes:

1. Values are fastest-mile speeds at 33 ft. (10 m) above ground for exposure category C (open terrain with scattered obstructions of generally less than 30 feet, including flat, open country and grasslands), and are associated with an annual probability of 0.02. For more information, refer to American Society of Civil Engineers ACSE Standard 7-93 and amendments, *Minimum Design Loads for Buildings and Other Structures*.
2. Linear interpolation between wind speed contours is acceptable.
3. Caution is advised in using wind speed contours in mountainous regions of Alaska, in Florida, and in hurricane prone regions.
4. **CMT calculates EPA specifications to include a 30% gust factor.**

The CMT process



1.



2.

3.

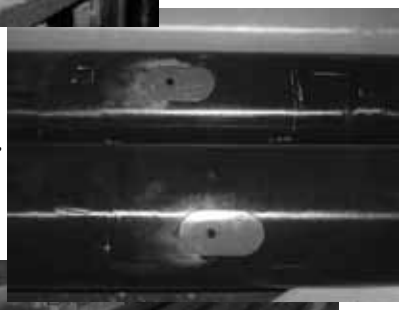


4.

Centrifugally Cast Fiberglass Composites

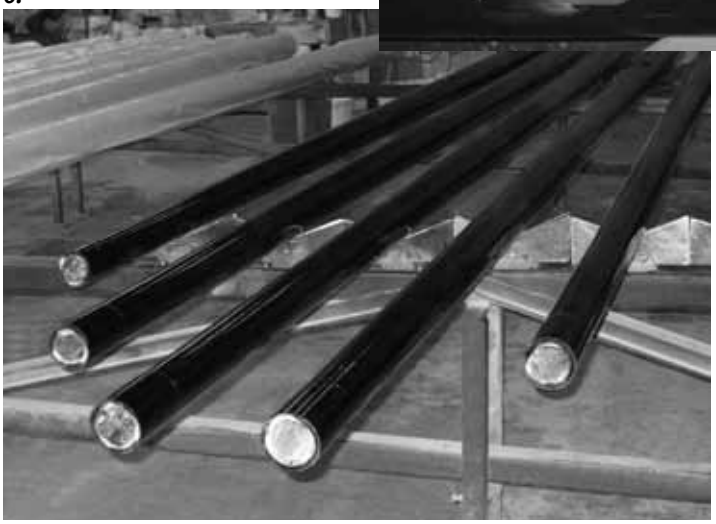
CMT employs a centrifugal casting process to make our round tapered composite poles. Each pole starts with a layer of polyester veil to provide a smooth exterior finish and lifetime warranty against fiber blooming. Then a knitted fiberglass fabric is cut to size and laid over the veil. We select the layers of fiberglass and other content according to the strength and other factors required in the finished pole. We then insert the pattern into one of our spin-casting machines.

As the machine spins, we introduce our specially formulated resin. From the centrifugal force, the resin immediately moves through the fiberglass to the outside of the spinning mold. After some curing time, the finished pole is removed from the machine. It then moves through the operation to receive custom drilling, handholes, tenons, and paint, all to customers' specifications. The final step is to wrap the poles for shipment to the customer.



5.

6.



Top to bottom, left to right:

1. *CMT tenon top poles waiting for painting.*

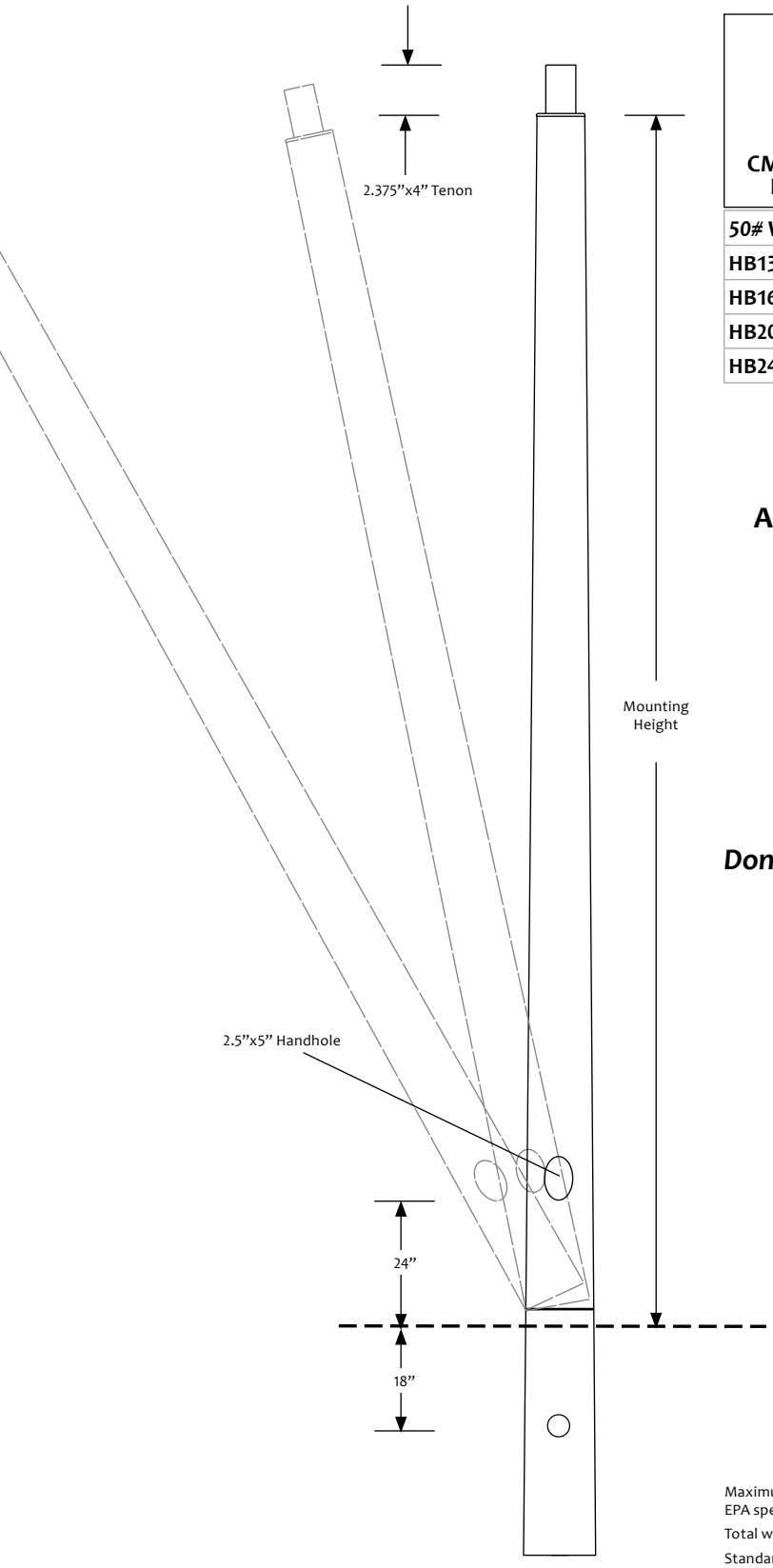
2. *A stack of direct burial poles ready to be cut to length.*

3. *A machine operator assembles the fiberglass cloth that forms the basis for a CMT fiberglass pole.*

4. *A section of one of our centrifugal casting machines.*

5. *Newly cast round poles fitted with handholes before going to the paint station.*

6. *Painted poles fresh from the dryer, awaiting wrapping and bundling.*



CMT Catalog Number	Nominal Mounting Height (ft.)	Shaft Length (ft.)	Weight of Pole (lb.)	Tip O.D. (in.)	Butt O.D. (in.)	Maximum EPA		
						80 MPH	100 MPH	120 MPH
50# Vertical Load								
HB13-B-50	10	13	60	3.00	5.84	6.0	4.0	3.3
HB16-B-50	14	16	76	3.00	6.56	6.0	4.0	3.3
HB20-B-50	16	20	90	3.00	7.27	6.0	4.0	3.3
HB24-B-50	20	24	127	3.00	8.18	6.0	4.0	3.3

Anchor Base Hinged Poles up to 30' are available per individual request.

Don't see what you need? Call us. We can build it!

Maximum EPA is calculated using wind velocities shown with a 1.3 gust factor. Poles are available with other EPA specifications. Contact factory.

Total weight of fixture(s) and bracket(s) should not exceed vertical load shown above.

Standard features are as shown on drawing. Available optional features are listed in the order grid on Page 2, and in the Accessories pages.

Slip-fit tenon to be used only with 50# vertical load series.

Tenon-mounted side arm brackets should be used only in symmetrical double, triple, or quad arrangements. Available bullhorn brackets are listed in the Accessories section.

3-in. slip-fit tenon available.

Hinged base secured by penta-head bolt.





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