

August 2003

# BASIC TOWER REQUIREMENTS

## For the BWC XL.1 Wind Turbine

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**Customer supplied towers for the BWC XL.1 Wind Turbine should meet the following minimum requirements:**

**Tower Height:** 9 m (30 ft) minimum, though we recommend 18 m (60 ft) or higher

**Design Wind Speed:** 54 m/s (120 mph)

**Turbine Weight:** 34 kgs (75 lbs)

**Maximum Turbine Thrust Load:** 890 N (200 lbs) @ 54 m/s (120 mph)

**Blade Clearance:** Top 1.1 m (44 in) of the tower must not exceed 12.7 cm (5 in) radius from the tower center line

**Dynamics:** Not considered due to variable rotor speed

**Stiffness:** Tower top should not deflect more than 15 cm (6 in) @ 54 m/s (120 mph)

**Turbine Mounting:** Cylindrical, 108 mm (4.25 in) Outside Dia. See attached drawing

**Tower Climbing:** On non-tilting towers, provisions must be made to allow the tower to be climbed for inspections and possible maintenance. Climbing pegs should be removable if they do not meet the blade clearance requirement. On lattice-type towers, we recommend the use of horizontal laterals to facilitate climbing. We recommend the use of anti-fall devices for towers requiring climbing.

**Materials:** We recommend low-carbon steel towers, with careful attention given to weld quality. Stress risers and brittle materials must be avoided because of the possibility of fatigue and cracking. We do not recommend aluminum be used due to the risk of cracking. Fasteners should be U.S. Grade 2 or Grade 5 or equivalent.

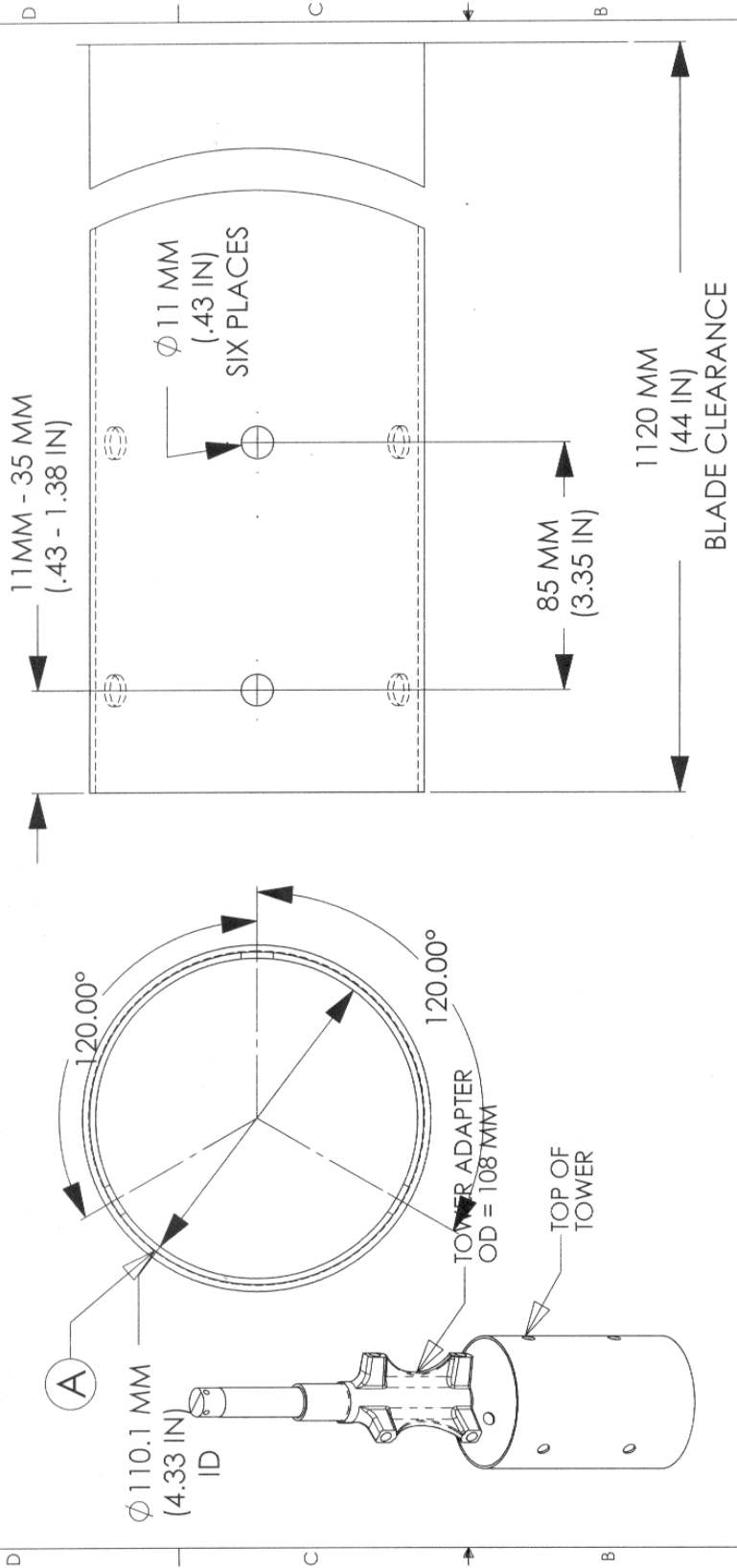
**Finish:** We recommend hot-dip galvanizing after fabrication

**Pipe / Tubing Sizes:** The following standard steel tubing sections have ID and OD dimensions that are compatible with the BWC XL.1 (shipped after Sept. 2003):

- 4.5 in. OD, 0.095 in. wall thickness
- 4 in. pipe, 0.120 in. wall thickness
- 120 mm OD, 5.0 mm wall thickness
- 120 mm OD, 2.5 mm wall thickness

REV	DESCRIPTION	DATE	APP
A	UPDATE DRAWING TO REFLECT LARGER TOWER ADAPTER	7/15/03	TEH

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF BERGEY WINDPOWER CO. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF BERGEY WINDPOWER CO. IS PROHIBITED.



NOMINAL OD 115 MM (4.5 IN)  
 BLADE CLEARANCE: MAX OD 255 MM (10 IN) FOR UPPER 1120 MM (44 IN) OF TOWER

TURBINE OUTPUT LEADS (2) RUN INSIDE TOWER TUBE  
 TOWER ADAPTER MOUNTING BOLTS - SIX M10 x 1.5

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM TOLERANCES ARE: X ± .5 MM XX ± .5 MM XXX ± .25 MM	CAD GENERATED DRAWING. DO NOT MANUALLY UPDATE		DATE
	APPROVALS	DATE	
MATERIAL MILD STEEL FINISH ---	DRAWN	TEH	5/18/00
	CHECKED	SPW	5/18/00
DO NOT SCALE DRAWING	RESP	ENG	
	MFG	ENG	
SCALE	QUAL	ENG	
	SCALE	FILE	
SIZE	DWG. NO.	6600	REV. A
SCALE	CAD FILE		SHEET 2 OF 2

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