PROVEN 6/TM1500

FOUNDATION INSTRUCTIONS

Foundation Pack for Proven 6/TM1500

PACKING LIST

1 - GALVANISED BASE PLATE

15 – M30 FOUNDATION RODS WITH BOSSES FITTED & 15 M30 WASHERS

10 – M30 x 100 HIGH TENSILE BOLTS AND 10 WASHERS

10 – SPACER TUBE PIECES FOR INITIAL USE WITH M30 x 100 HT BOLTS (25mm LONG)

5 – M30 x 60 HIGH TENSILE BOLTS AND 5 WASHERS

1 – 30mm DIAMETER ANCHOR ROD/PIN & PLATE

1 set Foundation Pack

- 1 Pack Description (this page)
- 1 Standard foundation diagram
- 1 Anchor foundation diagram
- 1 Alignment/Access diagram
- 1 Foundation description (incl. concrete mixing details)

N.B. REINFORCING STEEL MESH SHEET IS ALSO REQUIRED FOR THE FOUNDATION WORK BUT IS NOT INCLUDED IN THE KIT SUPPLIED BY PROVEN

PROVEN 6/TM1500

FOUNDATION PREPARATIONS

The main foundation consists of a large block of high-strength concrete. Fifteen M30 foundation rods are set into the concrete and are attached to the Foundation Base Plate. The Base Plate includes the hinge-pin attachment, which is used to raise and lower the turbine (see diagrams). Preferably, the concrete should be prepared and the foundation prepared with one load of concrete. Where this is not possible, the top layer should be added before the bottom one has had time to set.

Important

Before setting the Base Plate and foundations into the concrete foundation consider which way your WT will be lowered/raised and position the hinge-pin accordingly

Don't 'Shutter & Backfill'

When preparing house foundations a mould is prepared into which the concrete is poured. Earth/rocks are then filled around the foundation after the concrete has set.

For WT foundations it is better to have an irregular shaped foundation than to have a perfect cube and then surround it with loose earth - just dig a hole and then fill it! This will produce a foundation with good stability.

Preparing the Base Foundation

The base foundation consists of $10m^3$ of strong-mix concrete. Normally this is prepared as a rough 3 x 3 x 1.2m cube, but where ground conditions dictate, a shallower wider foundation of the same volume may be used. As and when required soil analysis can be conducted to identify exactly what type and dimension of foundations are to be used in certain ground-types. Proven Energy Ltd. can provide basic information to give an idea as to what is required, however professional advice should be sought when an exact soil analysis is required.

Screw the 10 M30x100mm bolts into the foundation rod extension bosses through the 10 holes in a circular pattern in the middle of the base plate. These bolts will later be withdrawn and used to bolt the WT tower to the base plate, once concrete has cured. It is therefore necessary to place a 25mm spacer tube under the head of each bolt. (Please refer to diagram). Tighten bolts till the bosses are tight against the underside of the base plate.
Through the remaining 5 holes on the outer edge of the plate screw the 5 M30x60mm bolts into the foundation rod extension bosses, again till the bosses are tight against the underside of the base plate. No spacers are required for the outer 5 bolts.

Insert reinforcing mesh into hole and suspend foundation rod/base plate assembly into the hole **making sure that base plate is completely level**. Insert conduit or soil pipe used for wind turbine power cable from edge of hole up through centre of base plate. Add concrete (Readimix supplier is usually easiest for this type of volume) and use vibrating concrete poker as necessary to remove air bubbles. **Make sure that base plate is fully supported underneath by concrete**.

Clean the base plate of any excess concrete.

Winch Anchor Foundation

Refer to foundation diagrams for positioning. The anchor consists of a 1.5m x 1.5m x 1m cube or equivalent. It should be located on the opposite side of the base plate to the hinge pin attachment. **N.B. It is important that the anchor is placed exactly in line with the centre of the base plate and perpendicular to the line of the hinge brackets.** The pull on the anchor point for the Proven 6/TM1500 during raising and lowering is approximately 2500kg.

Concrete Specification

If using a Readimix supplier, ask for 35 Newton concrete. If mixing the concrete yourself, you should use the following proportions by volume

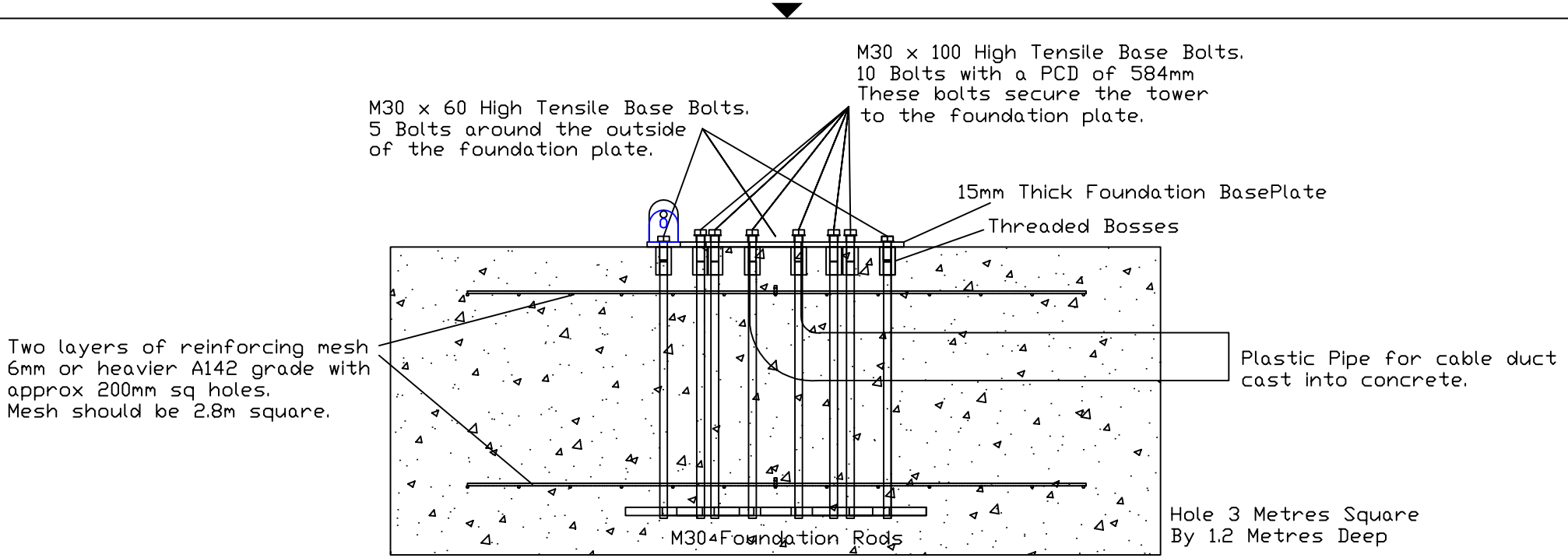
1:2:4
cement:sand:gravel

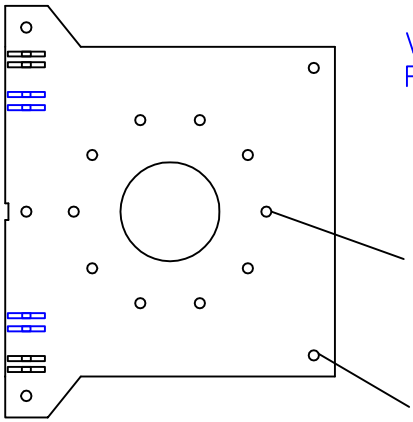
Approximate volumes and weights for a $1m^3$ foundation are

Cement:	310kg or 6.2 bags	(1 bag = 50kg)
Sand:	$0.43m^3$	(967 kg or approx 1.0 tonnes)
Gravel:	$0.86m^3$	(2150kg or approx 2.2 tonnes)

Hardening Time

You should allow plenty of time for the foundation to set and harden fully before erecting the turbine. We recommend a hardening period of approximately 2 weeks. For this reason, foundations are normally prepared in advance of the main installation. Note that the hardening time may be lengthened by poor weather conditions and shortened by the use of a quick-setting concrete additive.





WT6000 15m Proven Mast
Foundation Baseplate

10 OFF DRILLED HOLES CLEARANCE
CLEARANCE FOR M30 BASE BOLTS
(32mm DIAMETER) PCD 584mm

5 OFF DRILLED HOLES
FOR M30 FOUNDATION
RODS. (32mm DIAMETER)

ZONE	REV	DESCRIPTION REVISIONS	DATE	APPROVED
	1	MODIFICATION TO SHOW NEW BOSS ARRANGEMENT	15/01/03	–
	2	MODIFICATION TO SHOW NEW SHAPE AND LUGS	15/01/04	–
	3	MODIFICATION – REMOVAL OF 3 OUTSIDE HOLES	04/04/05	–

PREPARED BY PH | CHECKED BY RC

FSCM NO. | DWG NO. 6000 FO 012.dwg | REV 3

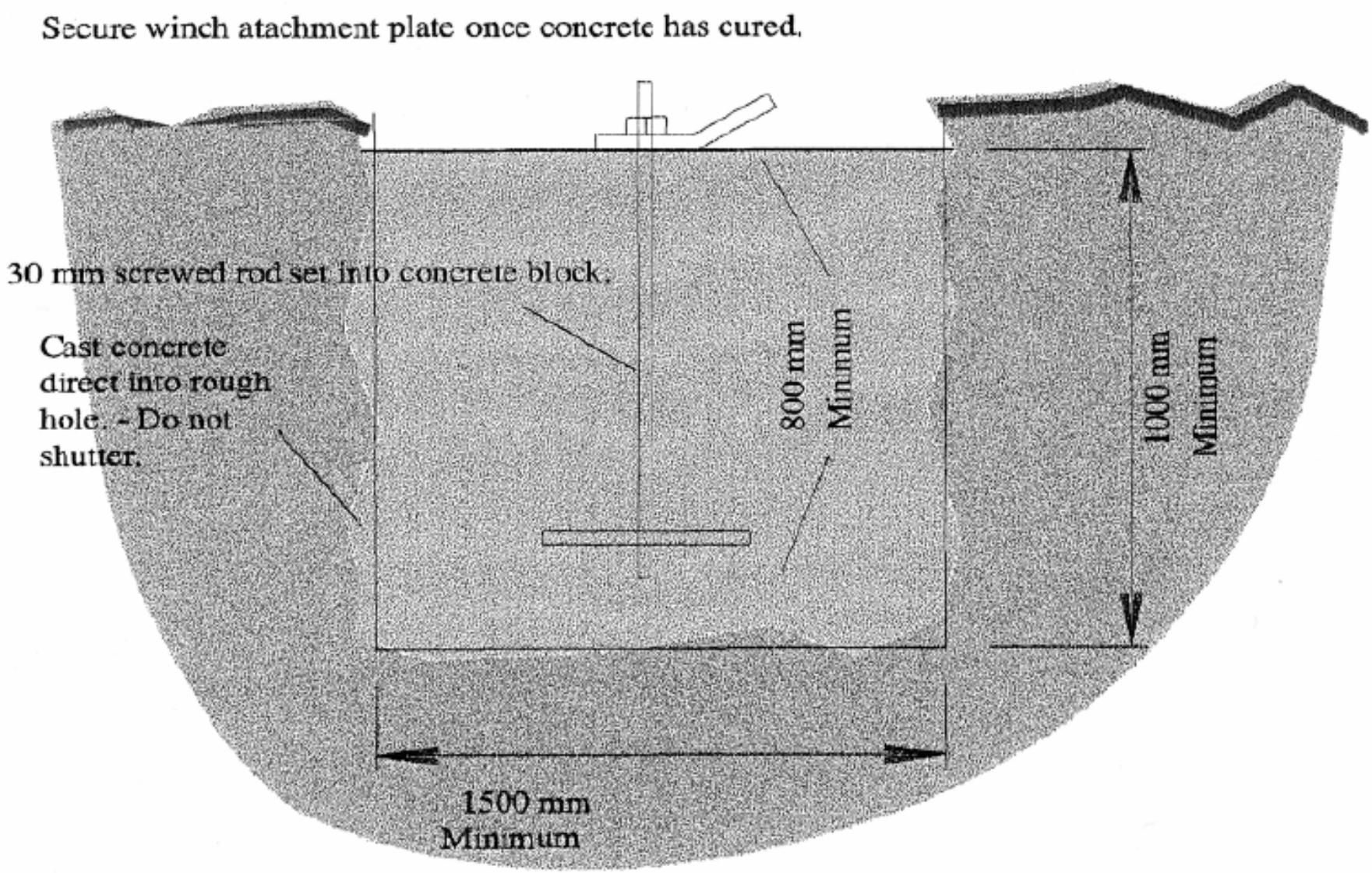
SCALE | DATE 23/11/06 | SHEET N/A

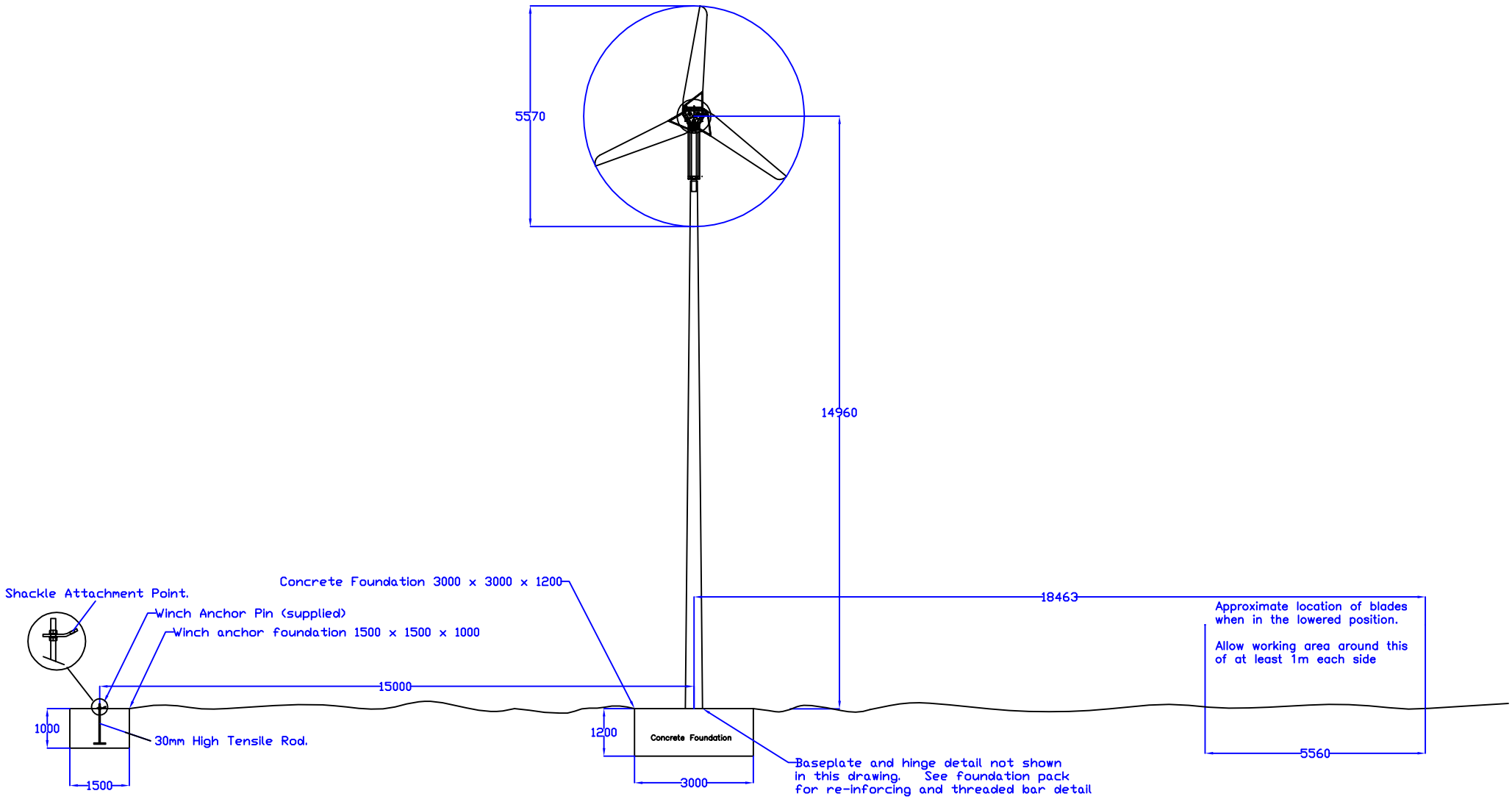
PROVEN ENERGY

Drawing Title

6kW 15m TOWER FOUNDATION DIAGRAM

Anchor Block Layout for PROVEN 6 with TM1500 Mast





ZONE	REV	DESCRIPTION REVISIONS	DATE	APPROVED
	2	Converted to A4/dims changed	5/3/02	BR
	–	–	–	–
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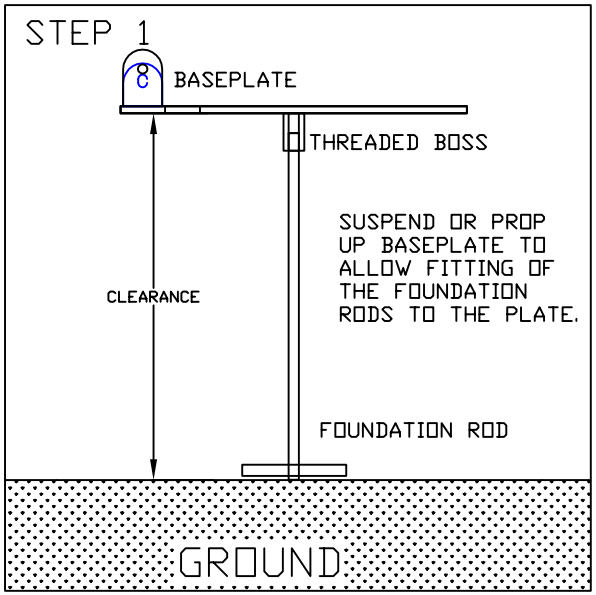
PREPARED BY BR | CHECKED BY

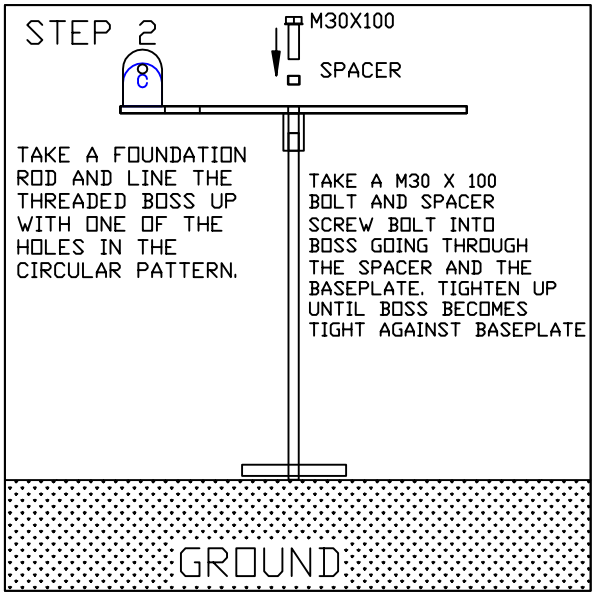
FSCM NO. | DWG NO. 6000 FO 017 rev 3.dwg | REV 3

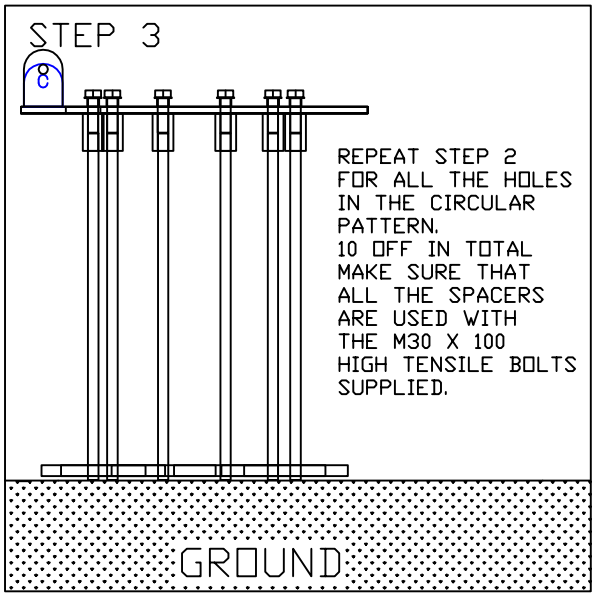
DATE REV OCT '03 | SHEET 1

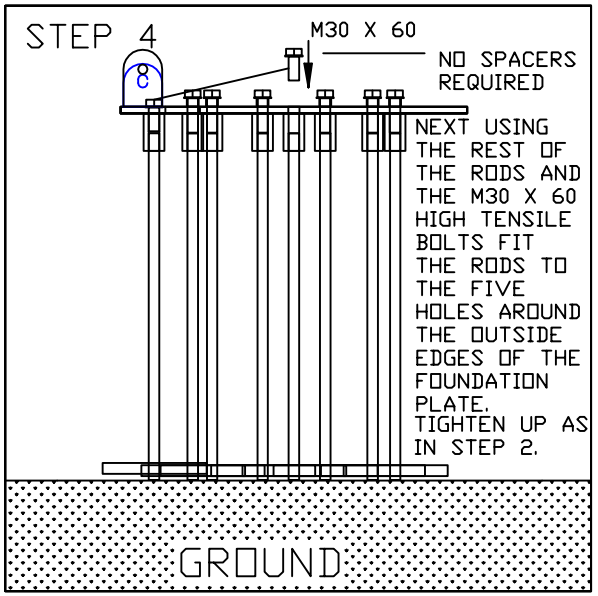
PROVEN ENERGY

Proven 6 Wind Turbine with TM15000 Tilt up Tower









ZONE	REV	DESCRIPTION REVISIONS	DATE	APPROVED
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PREPARED BY PH | CHECKED BY RC

FSCM NO. | DWG NO. 6000 F0 013.dwg | REV 3

SCALE | DATE 23/11/06 | SHEET N/A

PROVEN ENERGY

Drawing Title

6kW 15m TOWER FOUNDATION ASSEMBLY STEPS

Dear Sir/Madam,

PROVEN CUSTOMER FOUNDATION CONFIRMATION

Please read the following statement. On completion of your foundation work please sign the statement and return to Proven Energy Ltd, at the above below.

I CERTIFY THAT THE FOUNDATIONS FOR THE WIND TURBINE AND TOWER (TO BE INSTALLED AT THE ADDRESS BELOW) ARE COMPLETED AS PER PROVEN INSTRUCTIONS*. I UNDERSTAND THAT I MAY BE CHARGED FOR ADDITIONAL INSTALLATION WORK IF REQUIRED DUE TO ANY DEVIATION FROM THE PROVEN SPECIFICATION**.

SIGNED: …….

DATE: ……..

NAME (CAPITALS): ……...

SITE ADDRESS: ……..

……

…….

* Foundation specification for each wind turbine model is available from Proven Energy Ltd. Please check that you have the current Proven Foundation Pack for your particular wind turbine and tower combination.

** e.g. lack of anchor block, wrong hinge orientation etc.

N.B. This form need only be completed and returned if your system is being installed by Proven Engineers. If your system is being installed by others e.g. Proven Authorised Distributor, consult them directly regarding foundation requirements.

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