

This document supports a complete article on the building, by GMT Composites of Bristol, Rhode Island, of a mast for the sailing vessel *Morgan's Cloud*. It should be read in conjunction with the article, available at:

http://www.morganscloud.com/gear_failures_fixes/gfmast.htm

To learn more about *Morgan's Cloud* and her owners, Phyllis Nickel and John Harries, go to:

www.morganscloud.com

We set *Morgans Cloud's* mast resting mainsail track down in four "V" jack stands. The spreaders were mounted, and the mast held in position with cedar wedges atop saw horses at the winches.

We used a self-leveling laser level to establish a Datum line above the spar. The mast was leveled so the mainsail track at the top of the mast was level with the mainsail track above the gooseneck, and there was no sag in the spar.

The mast is fitted with a slotted heel that mates with a fore and aft tongue on board. John has a series of digital photos showing that when the slot is plumb, the port spreaders are forward of an implied "zero sweep" line, and the starboard spreaders are aft of that line. There is a noticeable twist in the spar which we set out to quantify.

We cut a female pattern of the front half of the mast from a CAD template which GMT supplied for the mast heel fabricator. The drawing (attached) included a fore and aft centerline, which we extended another 6". I taped a framing square to the centerline of the template, and a digital level to the axis perpendicular to the fore and aft centerline.

We fit the template to five points along the front of the mast, and recorded the digital level readings. These values are only significant relative to each other, but show **a total twist in the section of 7.8 degrees over 60' 7"**. The twist is gradual over the distance. See attached "Digital Level Readings".

We then used a 48" drywall square fitted with a tongue to snugly mate with the heel slot. We rotated the mast until the slot was plumb by a digital level. We measured from the Datum line of the laser level to the forward side of each spreader tip. See two sketches attached.

We then measured from the Datum line to the forward edge of the port and starboard cap shroud tang clevis pins:

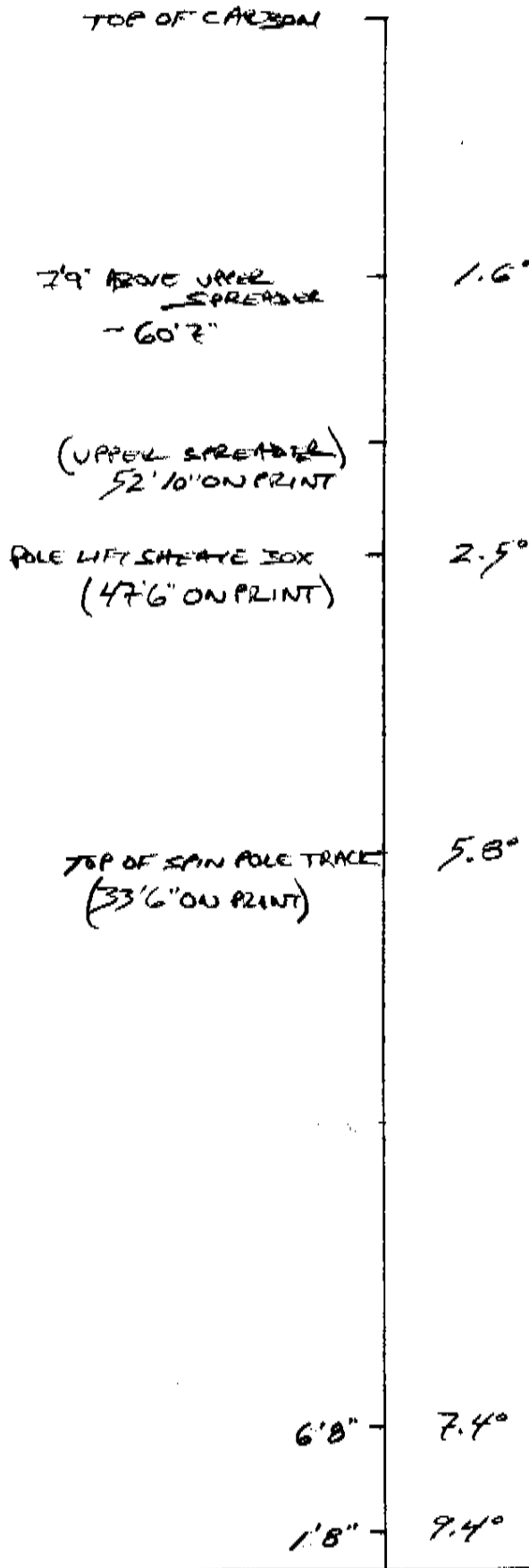
Distance to port pin was 12 5/8".

Distance to starboard pin was 13 7/8"

Digital photos will highlight the impact of this data.

DISTANCE FROM BTM OF CARBON

DIGITAL LEVEL READING



MALONEY CLOUDS
1-12-06

Approx. Scale: 1/8" = 1'

$$\begin{array}{r}
 9.4^\circ \\
 - 1.6^\circ \\
 \hline
 7.8^\circ \text{ OF TWIST} \\
 \text{OVER } 60' 7"
 \end{array}$$

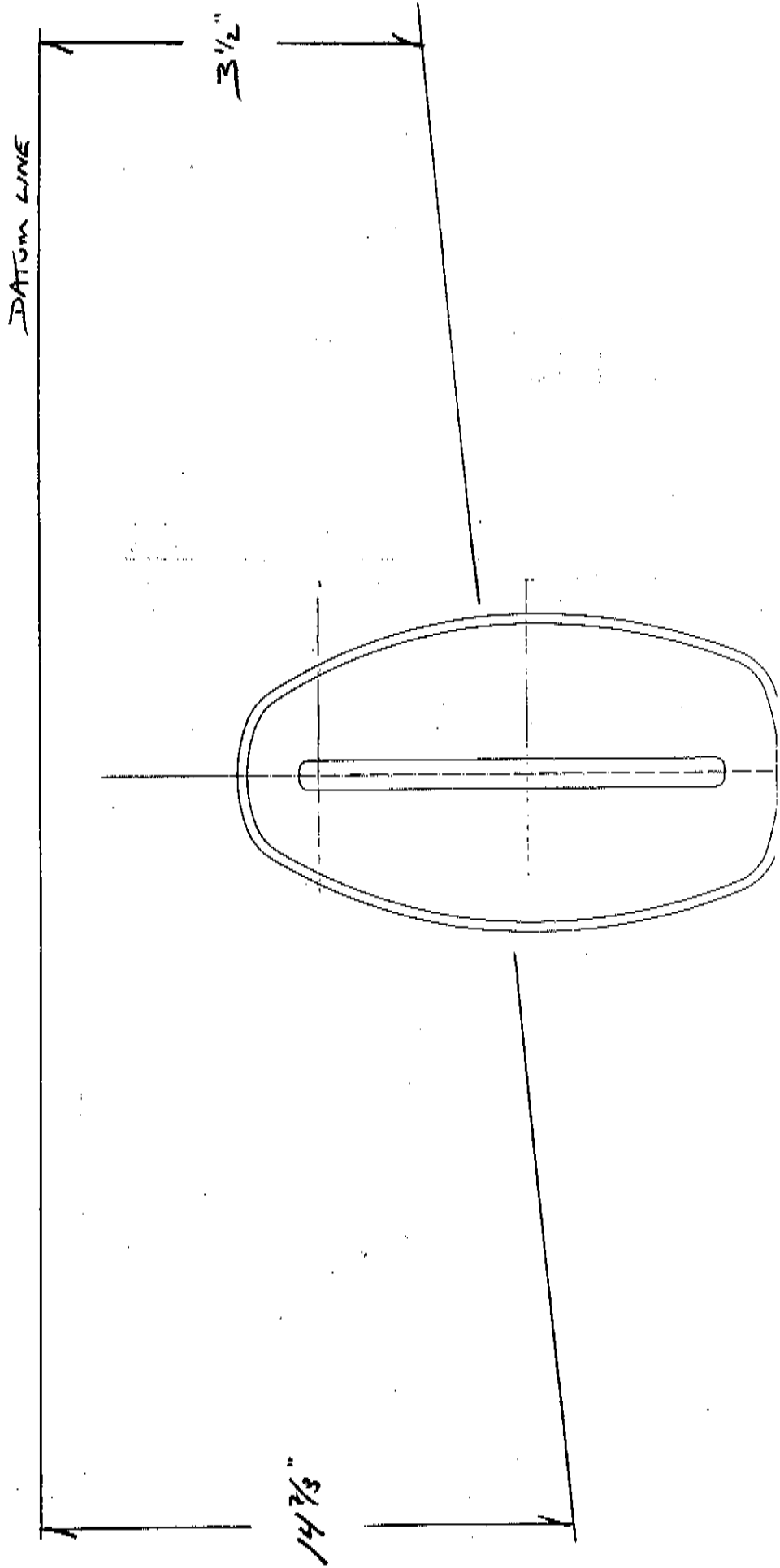
Maloney Marine Rigging, Inc.
 PO Box 364
 Southport, ME 04576

Phone: 207-633-6788

email: maloney@gwi.net

1/12-06

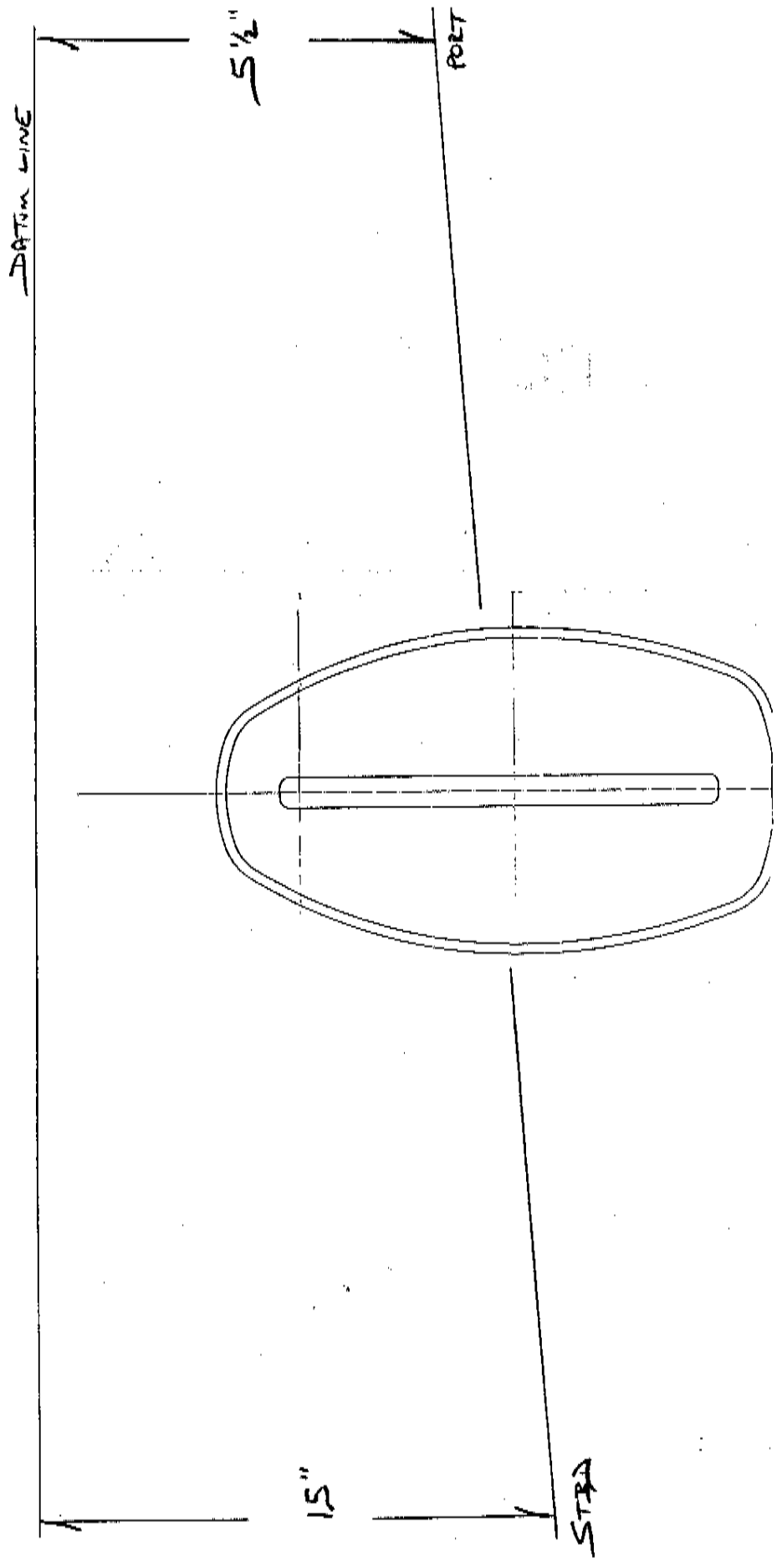
DISTANCE FROM DATUM LINE TO FOREWARD SJE OF LOWER SPREADER TIPS,
HEEL SLOT IS PLUMB



Maloney Marine Rigging, Inc.
PO Box 364
Southport, ME 04576
Phone: 207-633-6788
email: maloney@gwi.net

MORGAN'S CLOUD
1-12-06

DISTANCE FROM DATUM LINE TO FORWARD SIDE OF UPPER SPREADER TIPS.
HEEL SLOT IS PLUMB.



Maloney Marine Rigging, Inc.
PO Box 364
Southport, ME 04576
Phone: 207-633-6788
email: maloney@gwi.net

Maloney Marine Rigging, Inc.
P.O. Box 364
Southport, ME 04576

Phone: 207-633-6788
Mail: maloney@gwi.net

MORGANS CLOUD
1-12-06.

Pattern used for template
to quantify twist in
spar section.

Actual size.

