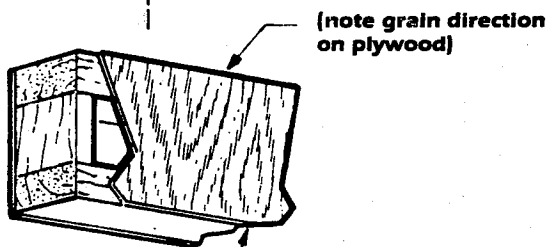
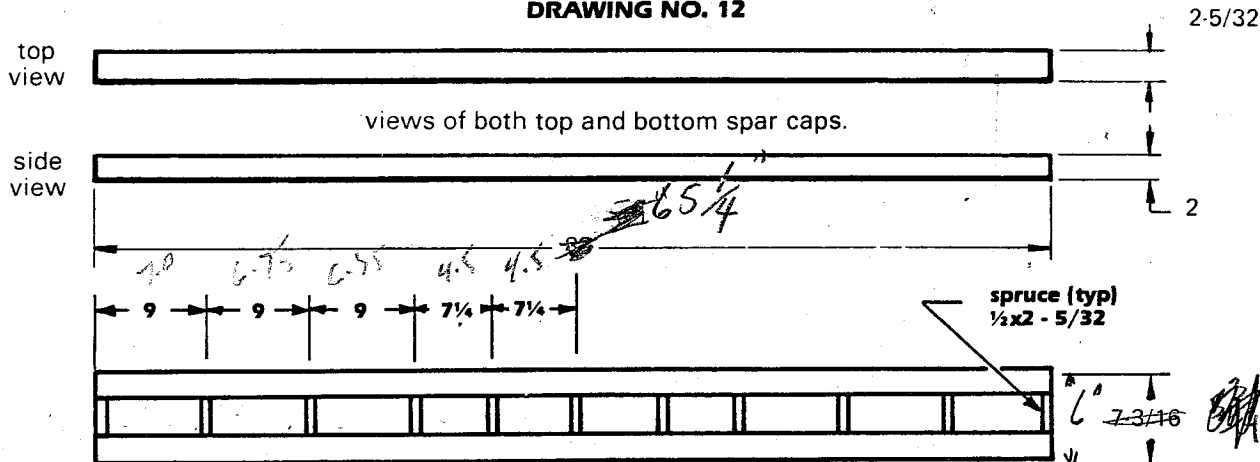


# SPARS

## CENTER SECTION SPARS:

The spar caps are sawed and sanded to the dimensions given. Select, scarf and glue plywood into strips long enough to use as the webs. See drawing no. 12 for direction of the wood grain of the plywood.

### CENTER SECTION FWD SPAR DRAWING NO. 12



3/32 plywood  
3 ply mahogany, birch or  
poplar center.  
plywood on both sides  
all spars - straight grain spruce

Attach guide blocks to the work table dimensioned to the depth of the spars. Lay waxed paper between the guide blocks. Fit vertical members. See drawing no. 12.

Lay the plywood in place and mark both sides for the spar cap and vertical members. Glue and staple locations.

Apply epoxy to spruce and plywood and staple in place. Use plenty of pressure on the staple gun.

When the epoxy is set, remove from the assembly guide. Trim plywood as necessary and reinstall spar plywood side down. Fit, mark and glue plywood web on second side.

**NOTE:** Before closing the spar, obtain an FAA inspection O.K.

When epoxy is set, trim the spar to the length and varnish both ends. This is to prevent checking.



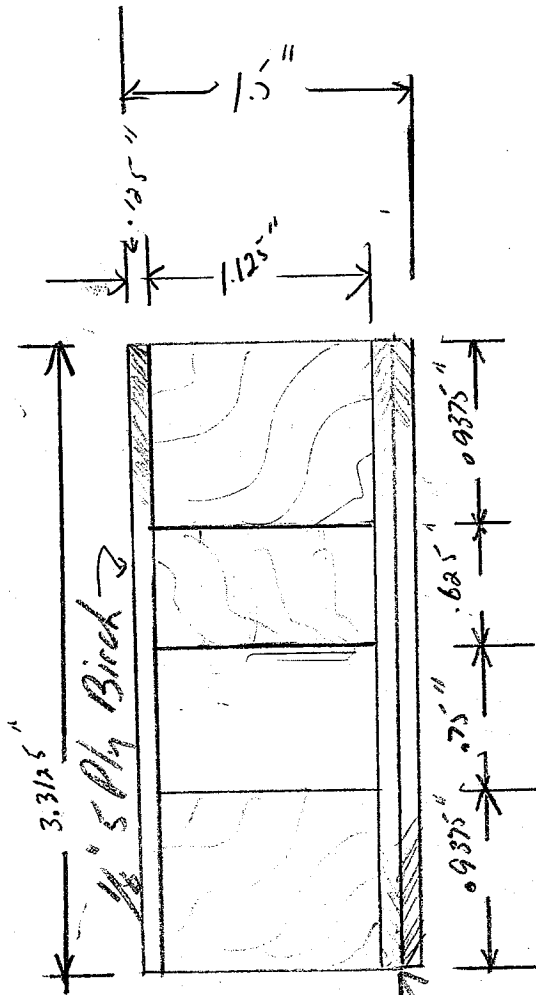
**Rand  
Robinson**

ENGINEERING, INC.

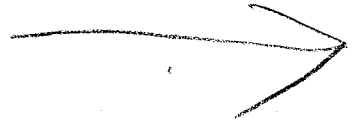
5842 K McFadden Ave.,  
Huntington Bch., CA 92649 714 898-3811

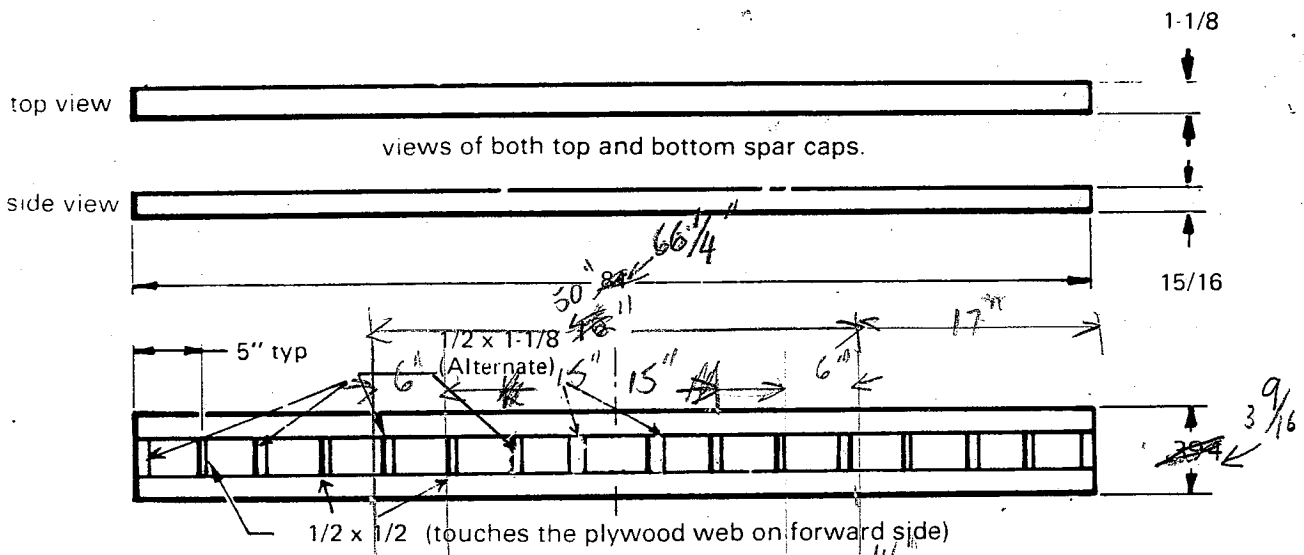
PAGE: 19

May, 1986

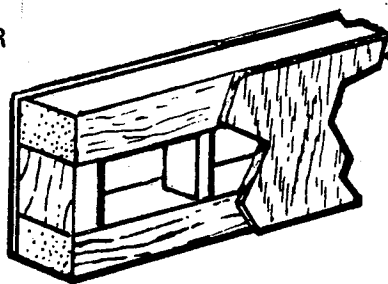


Double lapping  
 All Side





**CENTER SECTION AFT SPAR  
DRAWING NO. 13**



3/16  
3/32 ply (fwd face)  
(note grain direction of plywood)

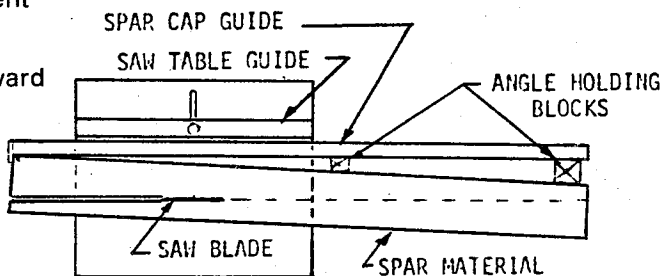
**OUTER WING SPARS:**

The outer wing spars are sawed and sanded to the dimensions given. Select, scarf, and glue plywood into strips long enough to use as the webs. See drawing no. 13. Note the grain direction for the webs.

As these spar caps are tapered the following sawing sketch may help to make them up using minimum time and material. By holding the spruce to be sawed to the spar CAP GUIDE, it can be pushed through either a circle saw or radial arm saw and perfectly tapered caps result. Just clean them up with a sanding block.

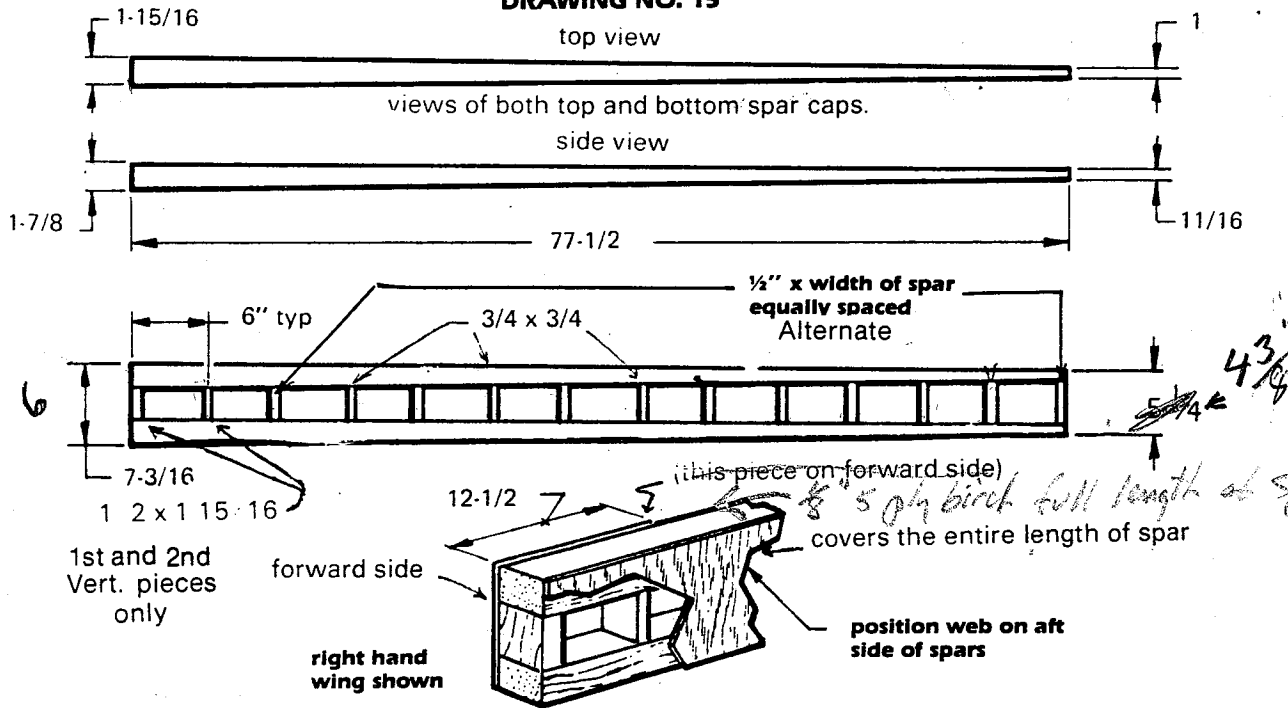
**Note:**  
Begin taper cut 7 inches from end of spar cap as this will allow for proper parallel alignment of wing attach fittings. This is only necessary for the outer wing forward spar top view.

**SPAR CAP-TAPER  
SAWING FIXTURE  
DRAWING NO. 14**

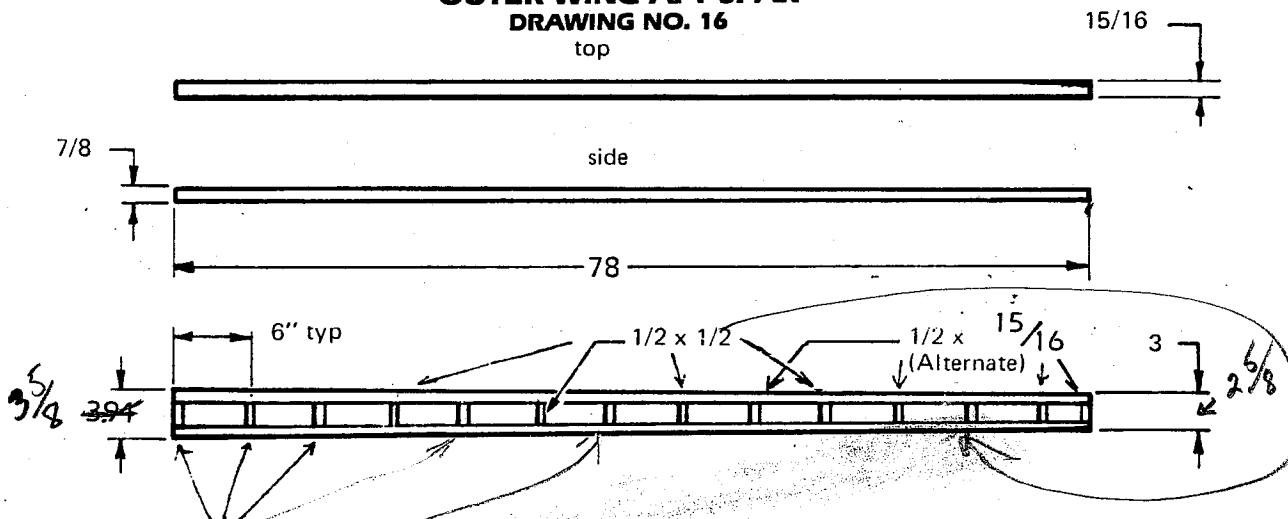


$$\begin{array}{r} 310 \\ 312 \\ \hline 118 \\ 120 \\ \hline 560'' = 47.57 \end{array}$$

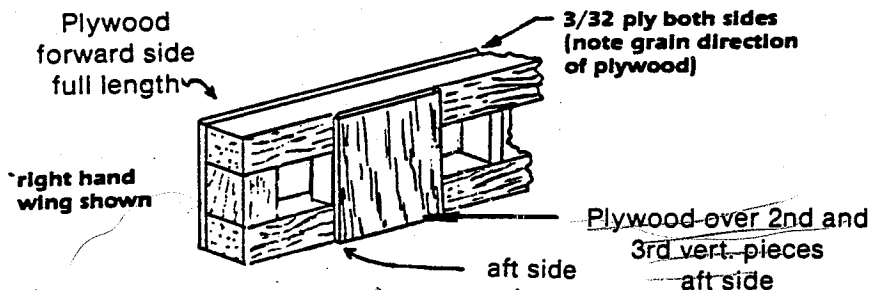
**OUTER WING FWD SPAR  
DRAWING NO. 15**



**OUTER WING AFT SPAR  
DRAWING NO. 16**



1st 3 separators 1/2 x 15/16



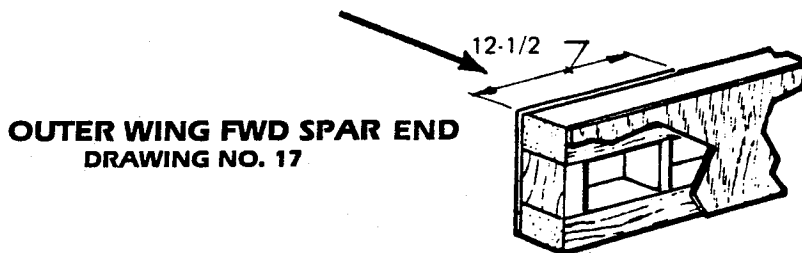
Attach guide blocks to the work table dimensioned to the depth of the spars. Install waxed paper. Install spar caps and fit vertical members.

Lay plywood web in place and mark both sides for glue and staple locations. Remove the vertical members that are not full width of the spar cap. (To be installed after the first web side is in position.)

Apply glue to spruce and identical marked area of plywood and staple the web in place using lots of pressure on the staple gun. Remove the spar from the guide blocks when epoxy has cured. Trim plywood as required and reinstall with plywood side down.

Apply glue to plywood as marked and install vertical members previously removed. Use appropriate weights to apply pressure on the vertical members until epoxy has cured.

Fit and glue the inboard piece of plywood to the forward face of the inboard end of the spar. Staple in place.



**NOTE:** The front outer spars have web full length only on the aft face. The aft outer spars have web full length only on the forward face.