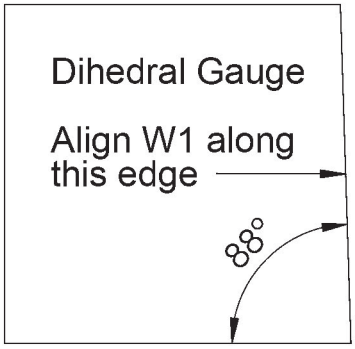
DIHEDRAL

The dihedral is set by installing center wing rib W1 at the angle provided by the Dihedral Gauge.

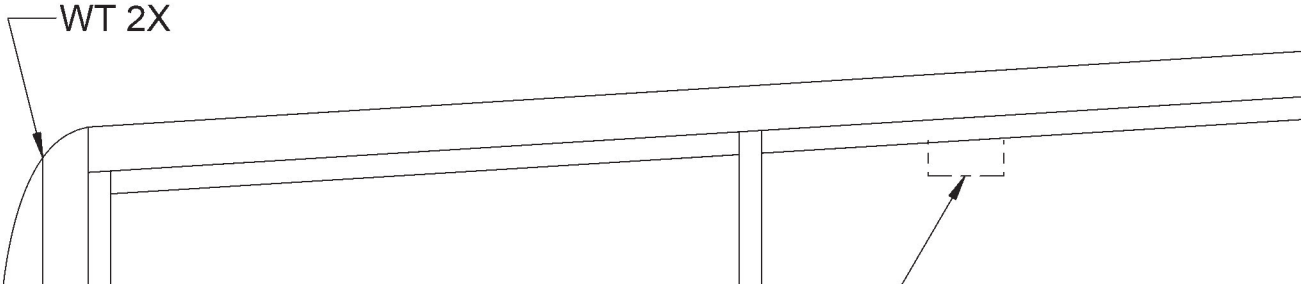
Completed wing assembly should be flat across the top from W10 to W10.



WING--ASSEMBLY ORDER:

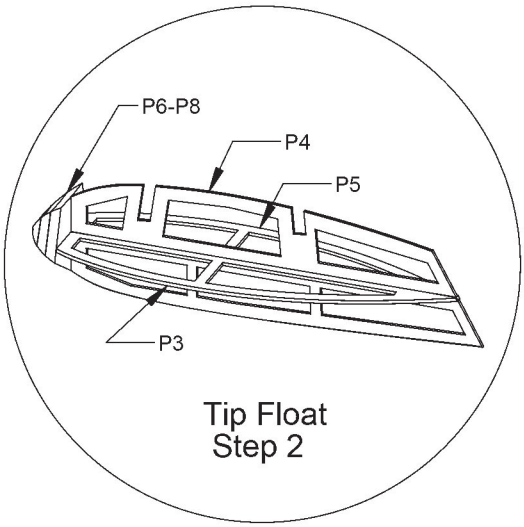
The wing is built flat against the board. Feet on the ribs and rear spar will set the washout angle.

1. Lower Main Spar and Rear Spar RS--pin to the board.
    1. Crack where shown--flood joint with CA.
2. Ribs W2 thru W10 perpendicular to board.
3. Rib W1--set angle with Dihedral Gauge.
4. Trailing Edge TE.
    1. Crack and raise the root end to meet W1.
5. Upper Main Spar, and Shear Webs S1 thru S8.
    1. S6 will sit on top of Float Pad P2--align with top of Main Spar.
6. Leading Edge LE.
    1. Crack and pull back to meet W1.
7. Aileron parts in numerical order.
    1. Glue A3 to RS only!
    2. A3 is a doubler to RS.
8. Wing Tip WT--stack two together and then attach to wing.
9. Upper Sheeting--sheet from Main Spar to LE with wing pinned flat to board to lock in the washout.
    1. See Right Wing on Page 3 for sheeting notes.
10. Float Pads--unpin assembly, attach P1 and P2 from the underside.
11. Lower Sheeting--remove the alignment feet from the wing bottom first.
12. 1/4" Soft balsa leading edge.
13. Join wings with ply Dihedral Brace.
14. Install a wing pin from 3/16" dowel where marked on ribs W1.

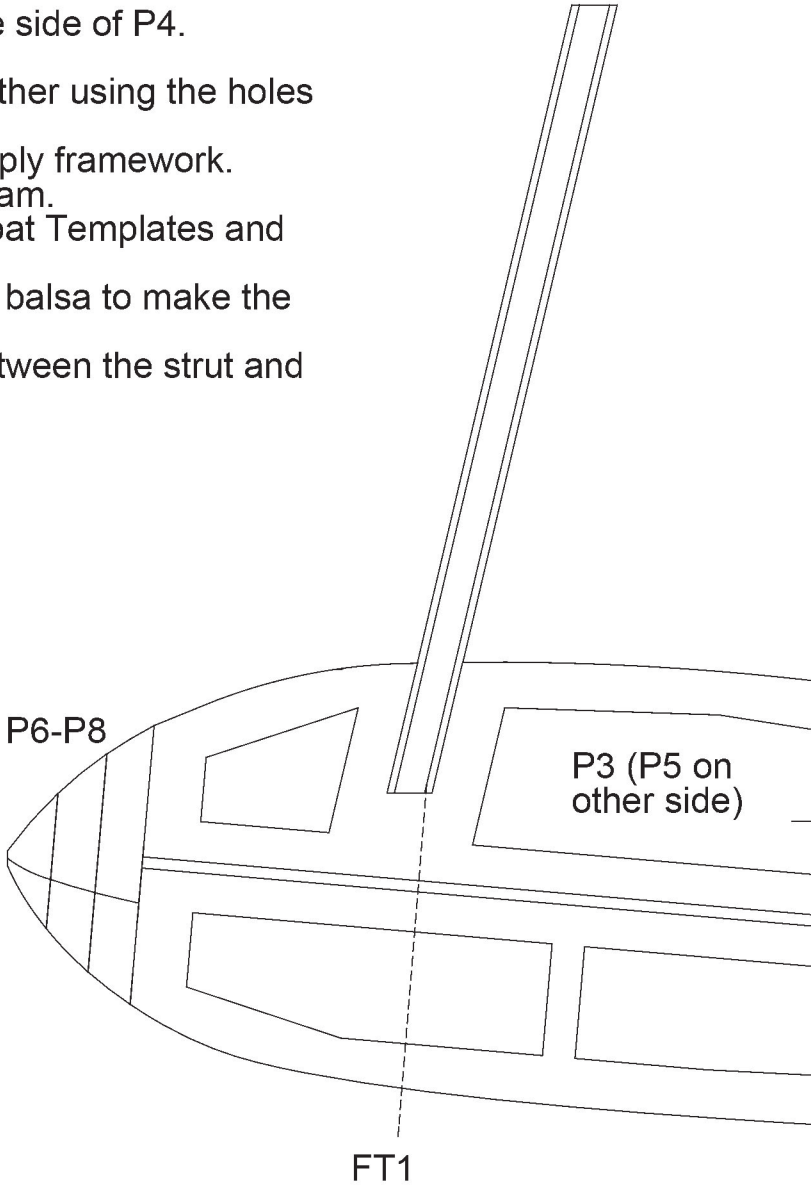


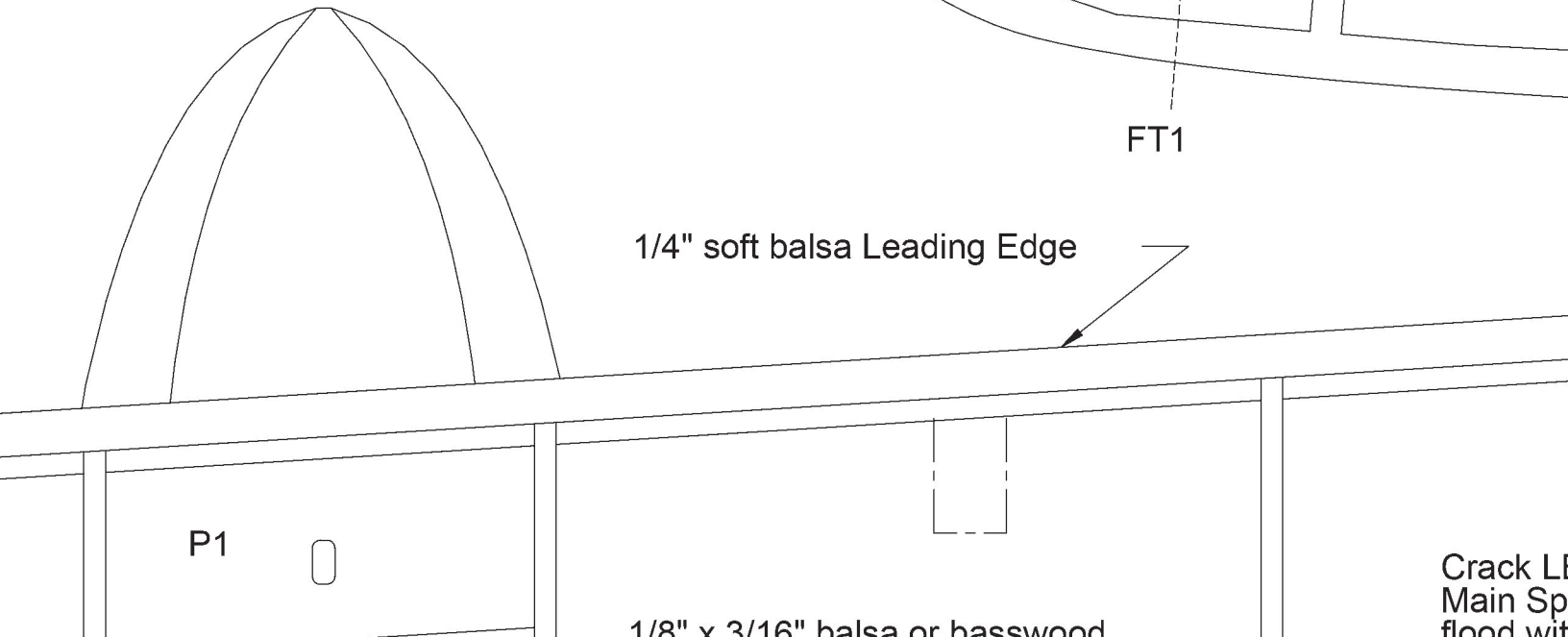
TIP FLOATS--ASSEMBLY ORDER

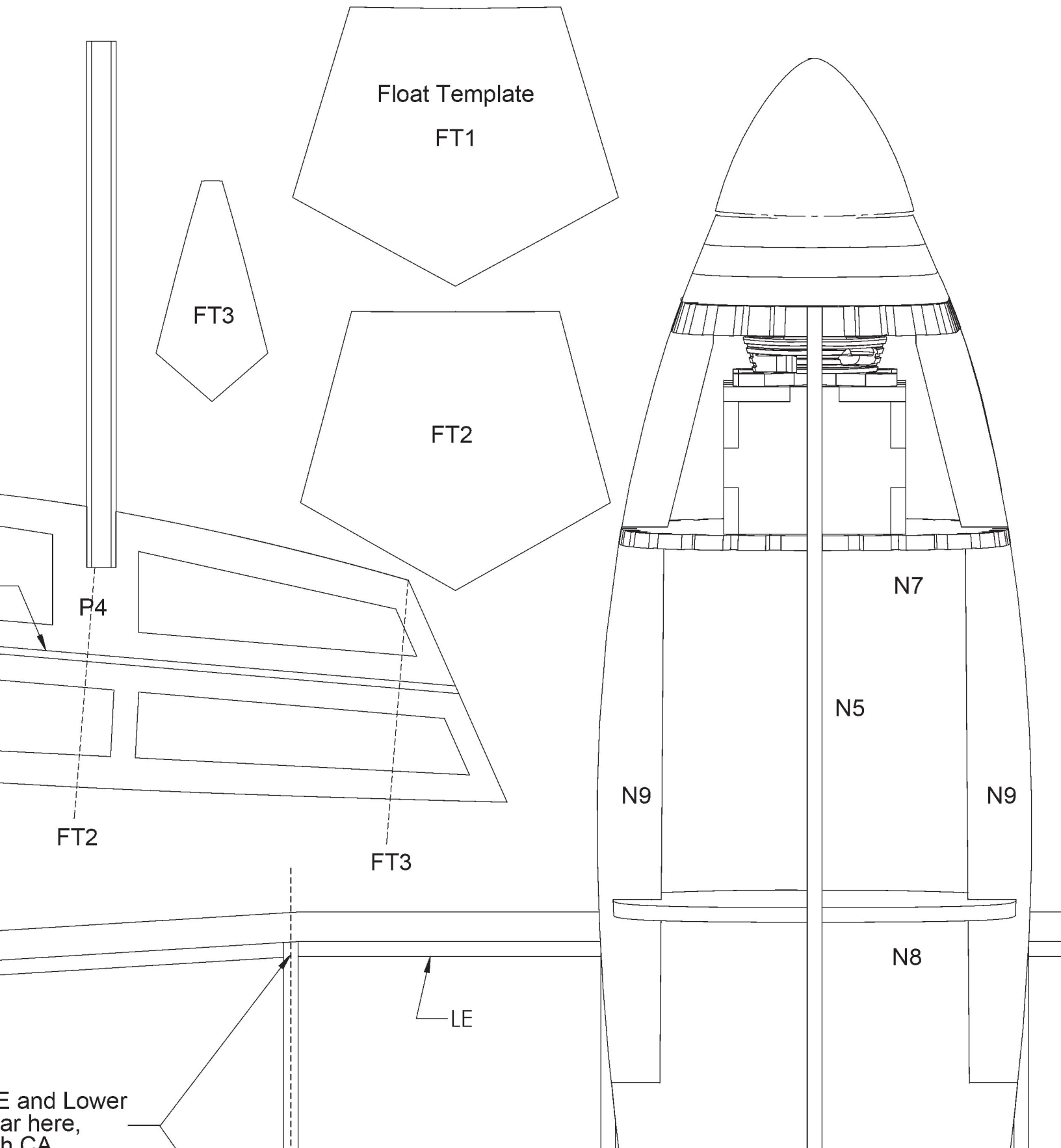
1. Ply Frame--glue a P3 perpendicular to one side of P4.
    1. Glue a P5 to the other side of P4.
2. Float Nose Formers P6 thru P8--glue together using the holes to align these parts.
    1. Glue this assembly to the front of the ply framework.
3. Fill the four quadrants with soft balsa or foam.
4. Sand the quadrants to shape using the Float Templates and the ply framework as guides.
5. Struts--use carbon fiber tube dressed with balsa to make the 1/8" x 1/4" struts.
6. Bracing Wires--use kevlar line to brace between the strut and the four pads in the wing.



Tip Float
Step 2






Float Template
FT1
FT3
FT2
P4
FT2
FT3
N7
N5
N9
N9
N8
LE
E and Lower
ar here,
h CA

NACELLE ASSEMBLY--Ranger Nacelle (MacKinnon is similar)

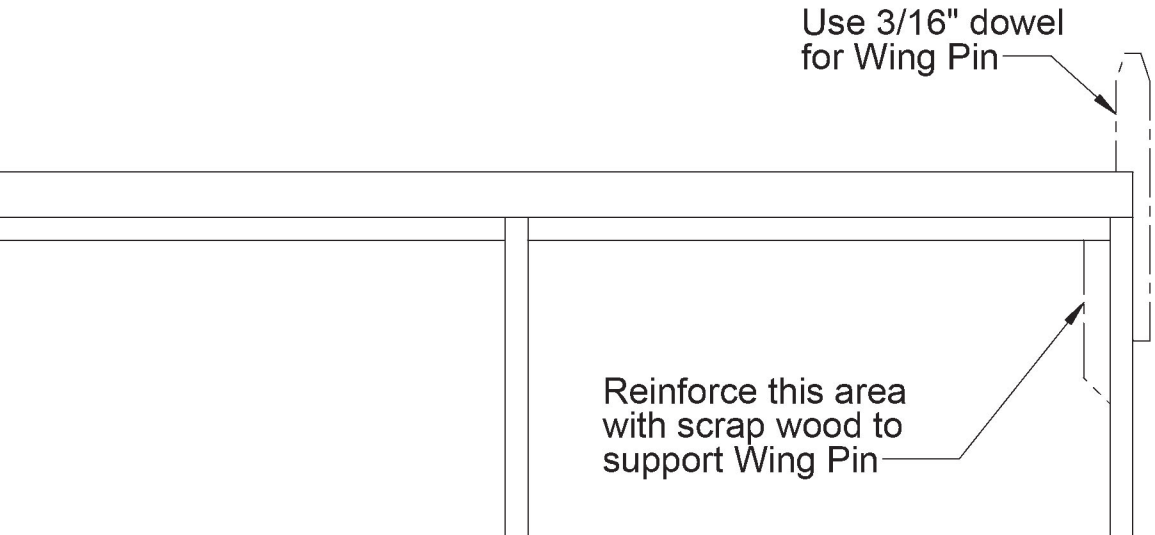
Begin framing the nacelles freehand from the front end.

1. Stack and glue Cowl Opening parts N1 thru N4.
    1. Use the openings to align these parts.
    2. The cowl opening can be made removeable to service the motor.
2. Epoxy the motor mounts to Firewalls N7.
3. Dry fit parts N5 thru N10.
    1. Align so that both N9s are parallel to one another and the inside edges are perpendicular to the faces of N6 and N7.
    2. Glue all of these parts together EXCEPT for Lower Keel N10.

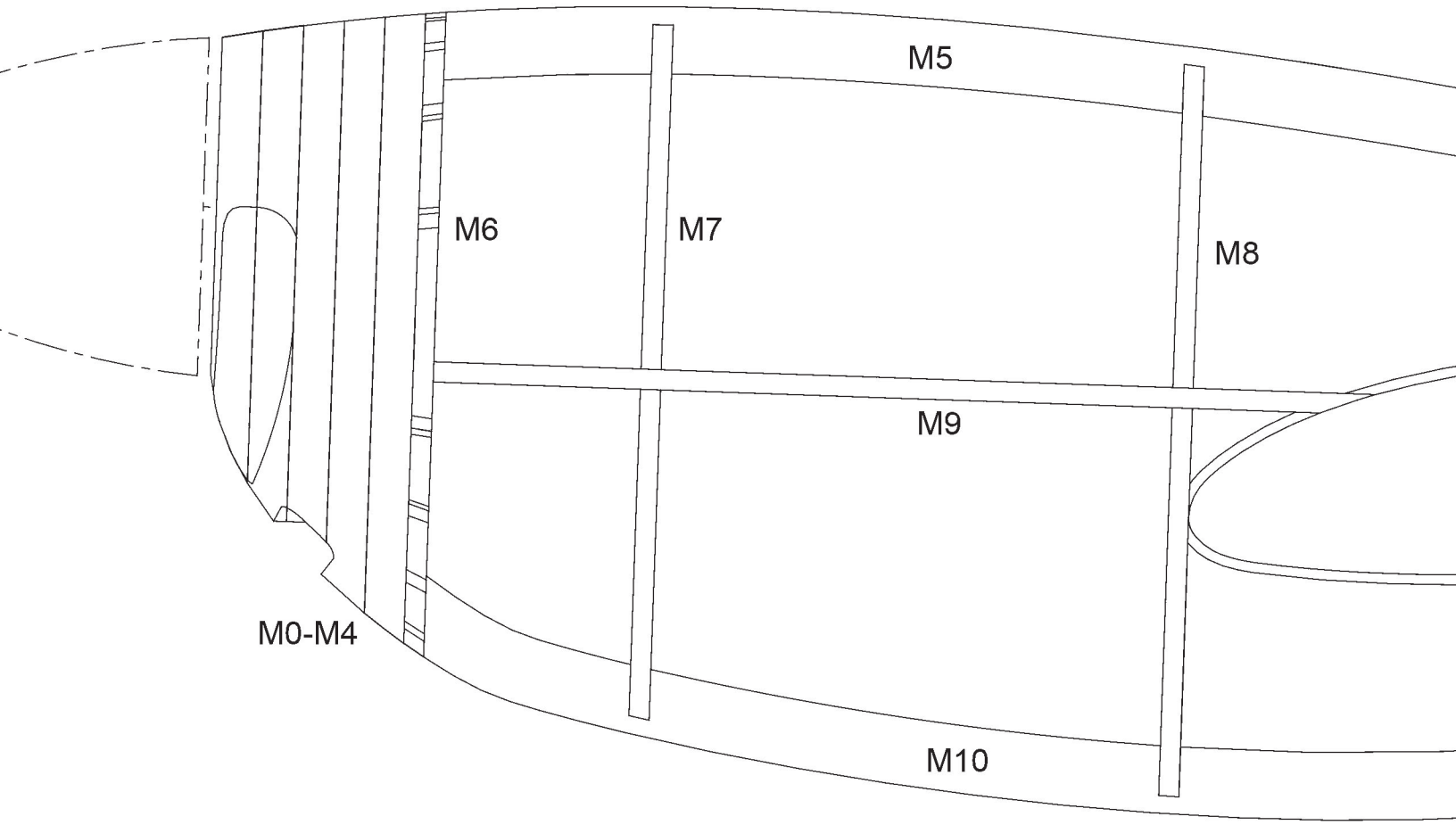
The rest of the nacelle assembly can be completed over the wing. This can be done easily after the wing center section is sheeted. Cover the center section with waxed paper and build up the nacelle.

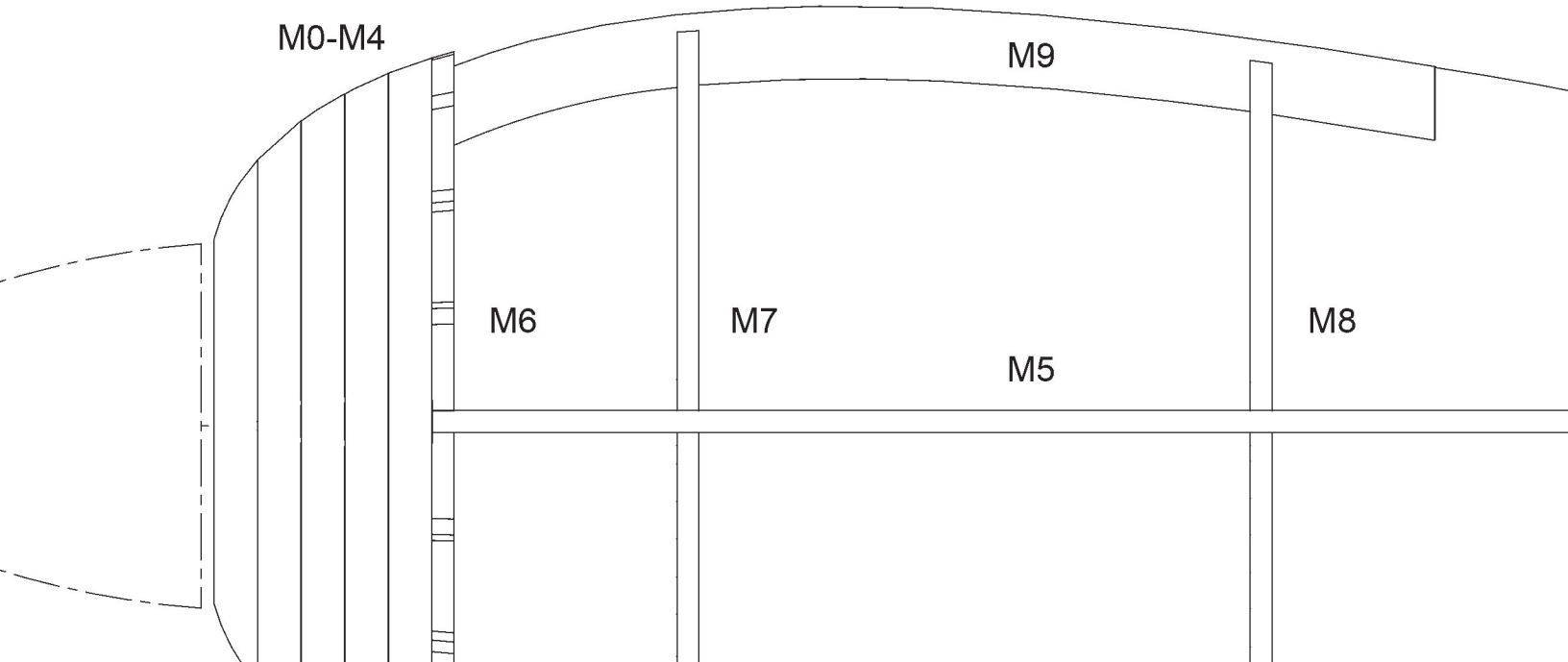
4. Preassemble the upper and lower Nacelle Pads by gluing the N11 parts together, and the N13 parts together.
5. Tape the Nacelle Pads to the wing.
    1. Dampening the outside surfaces of the pads will help them curve into position.
6. Attach Former N12 to the upper Nacelle Pad, and then the nacelle assembly.
7. Attach Formers N14 and N15 to lower Keel N10.
    1. Attach N10 to the nacelle assembly.
8. Stringers--1/8" square balsa strip stock.
    1. Dampen the stringers with water and alternate the installation order from side to side to avoid warping the nacelle structure.

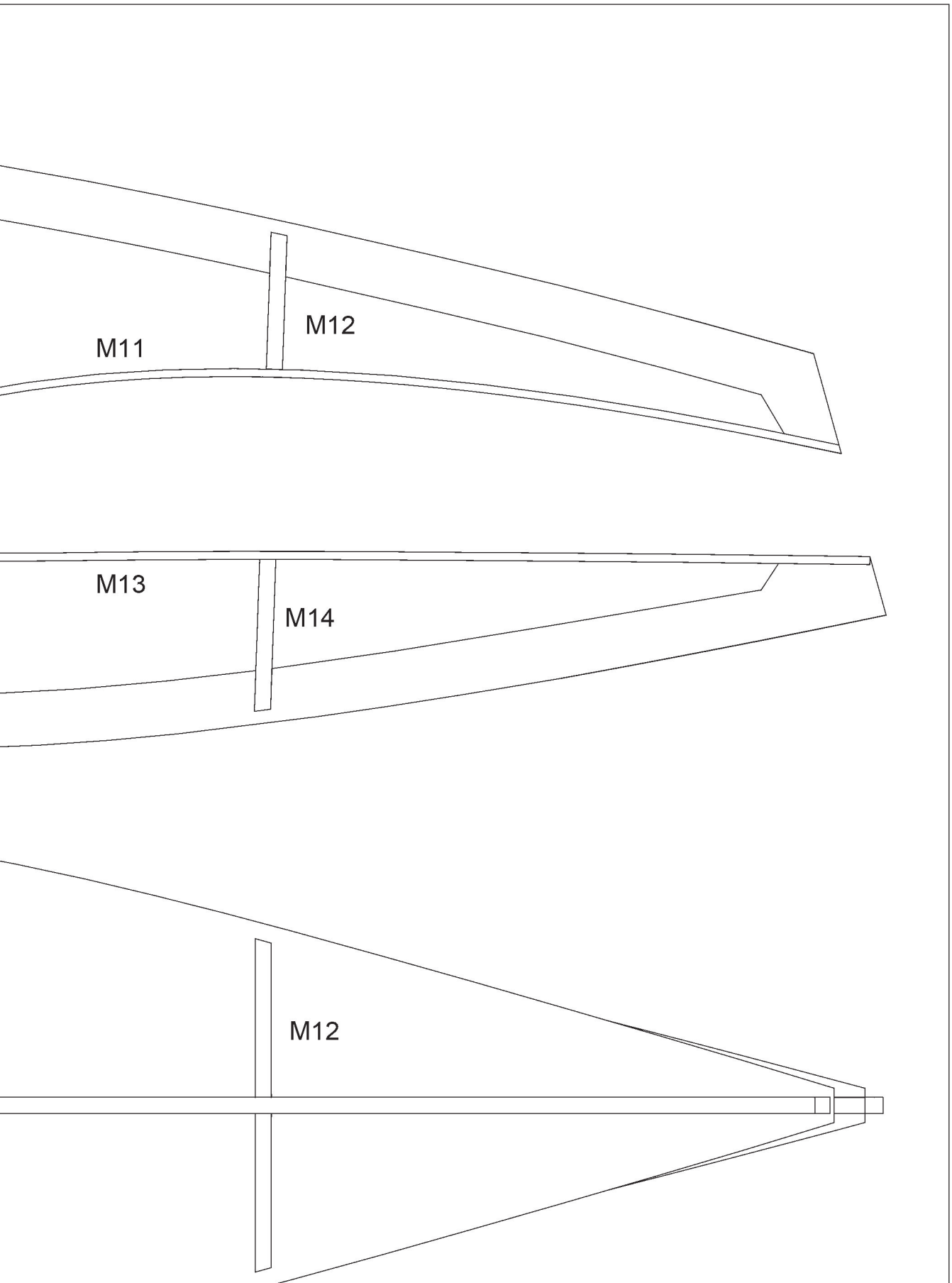
After the nacelle assembly is fully cured, slide it off of the wing center section. Now the wing and the nacelle can be covered before final assembly.

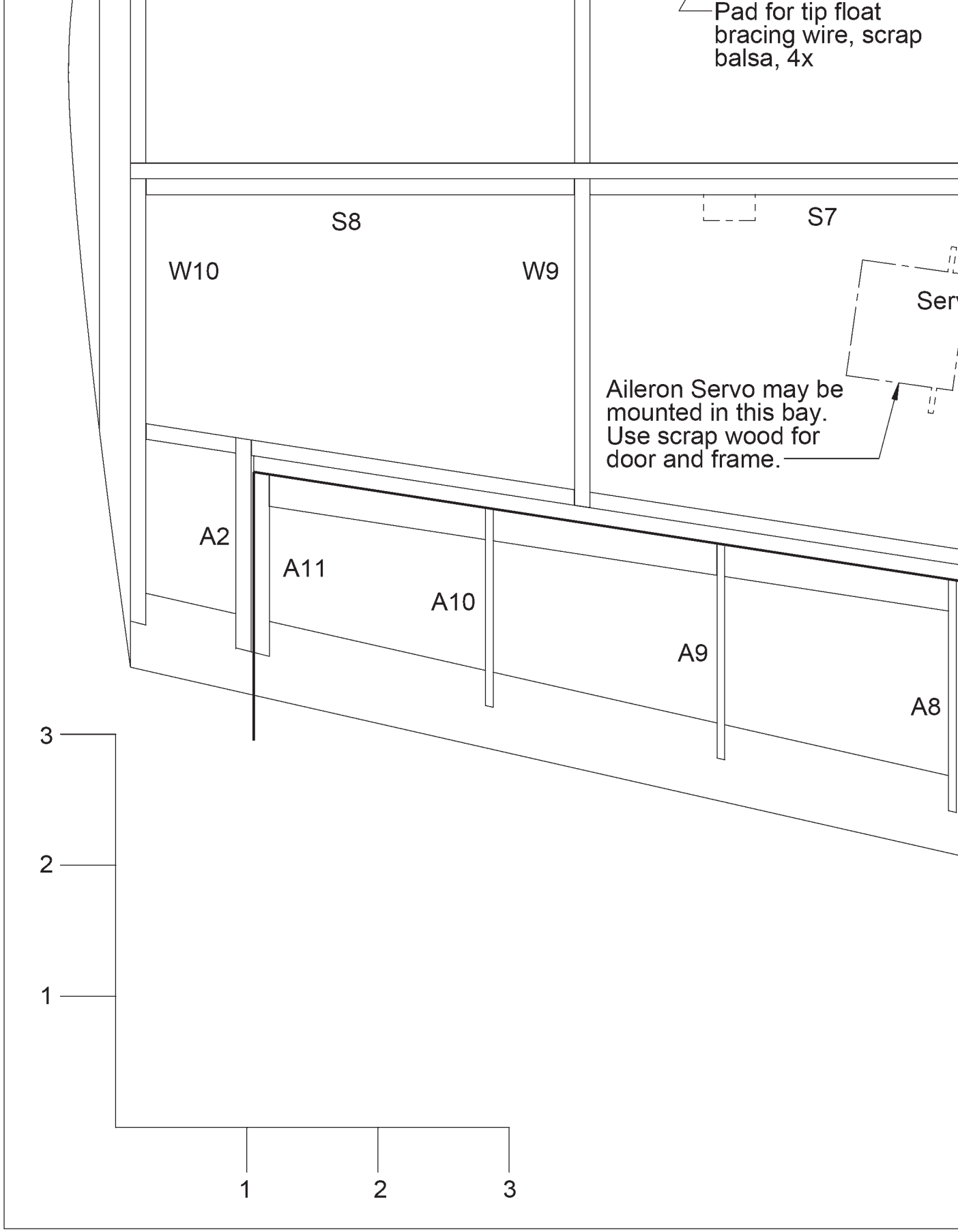


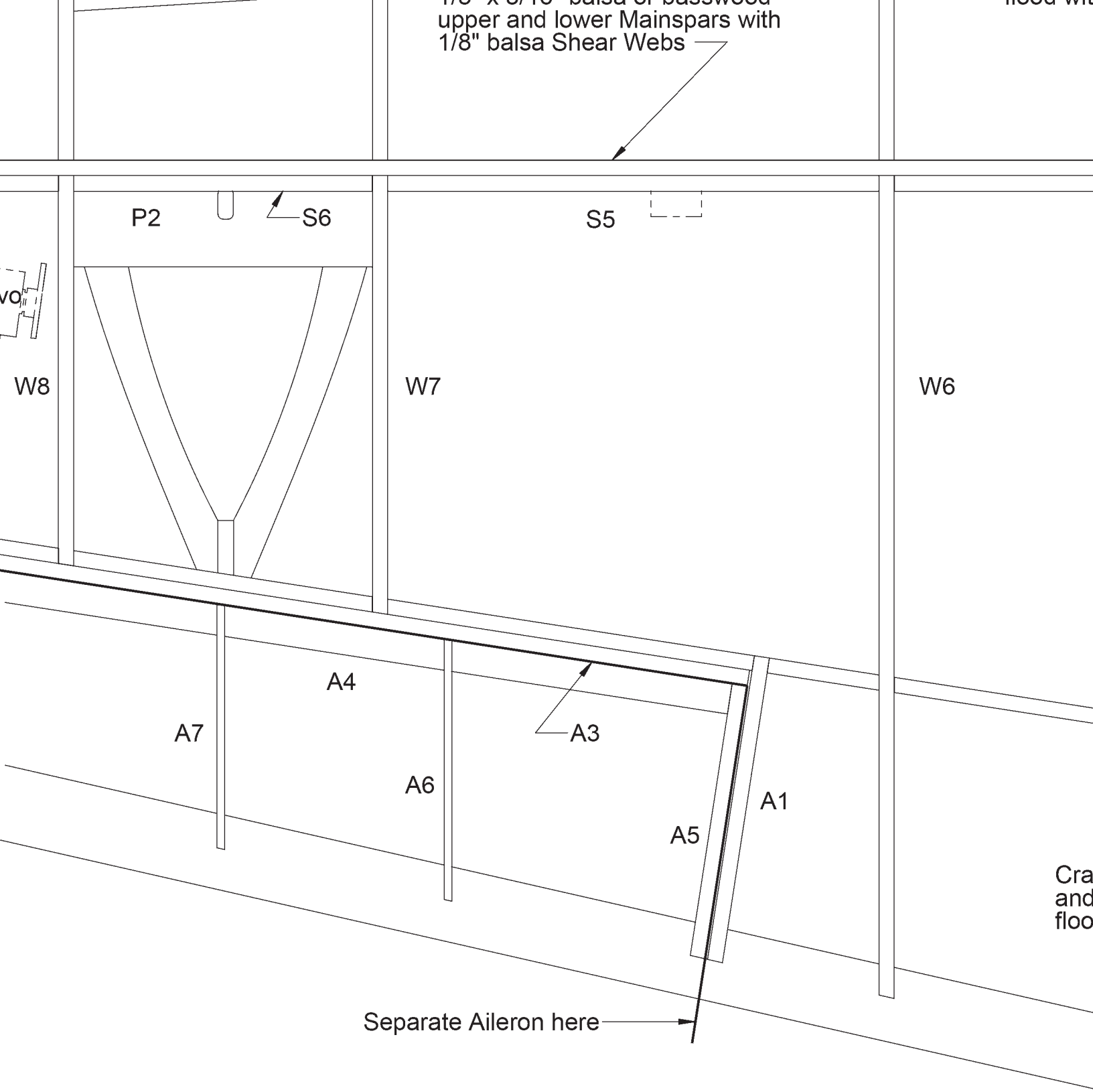
MACKINNON UPGRADE--all parts are 1/8" balsa unless noted otherwise.

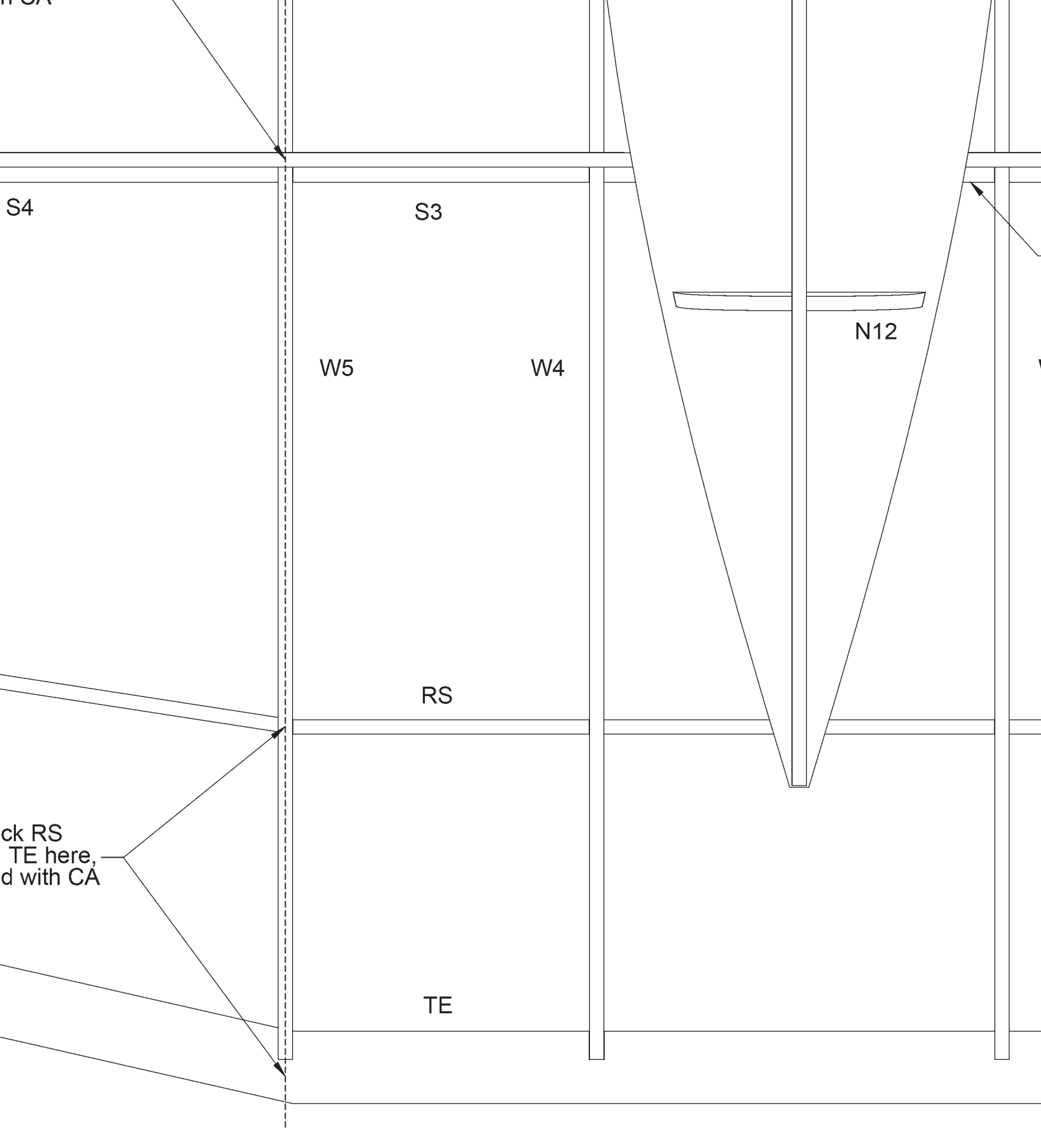





M11
M12
M13
M14
M12


Pad for tip float bracing wire, scrap balsa, 4x
S8
S7
W10
W9
Ser
Aileron Servo may be mounted in this bay. Use scrap wood for door and frame.
A2
A11
A10
A9
A8
3
2
1
1
2
3


upper and lower Mainspars with
1/8" balsa Shear Webs
P2
S6
S5
W8
W7
W6
A4
A7
A3
A6
A1
A5
Separate Aileron here


S4
S3
N12
W5
W4
RS
TE

S1

BRACE

S2

W3

W2

W1

1/4" Through
Hole in sheeting
for Wing Bolt

MACKINNON UPGRADE

Even when the Widgeon
from each of it's two Ran
engines was considered
nearly all remaining Widg
with bigger powerplants.

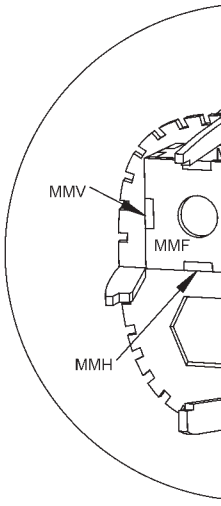
MacKinnon Enterprises c
"Super Widgeons" by ins
flat sixes. For builders pr
Widgeon, outlines for the
nacelle are found to the r

MOTOR MOUNTS:

When the nacelles are as
the wing as shown, the m
upthrust to help the Widg

NOTE: Assemble the mo
to Firewall N7 before ass
nacelles. It will be a tight
the formers and stringers

See arrangement in deta



:

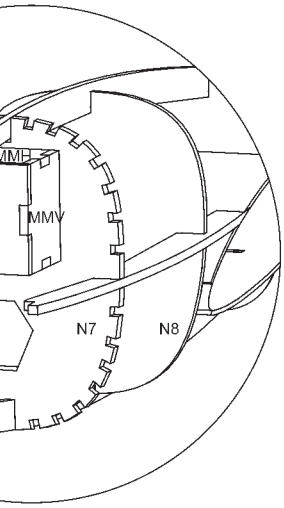
was new, the 200hp
ger inverted six-cylinder
marginal. Over time,
geons have been upfitted

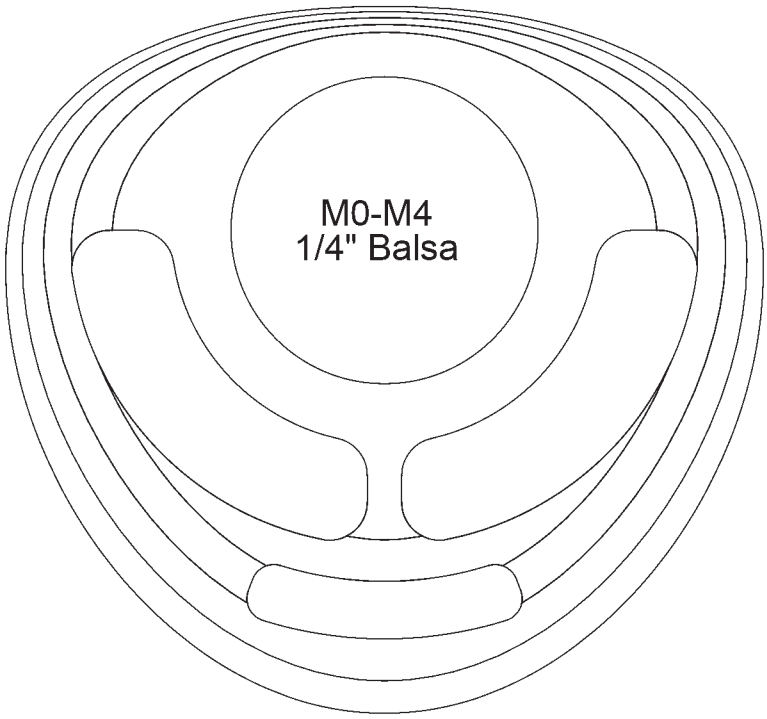
converted many to
talling 270hp Lycoming
referring a more modern
e larger MacKinnon
right--->

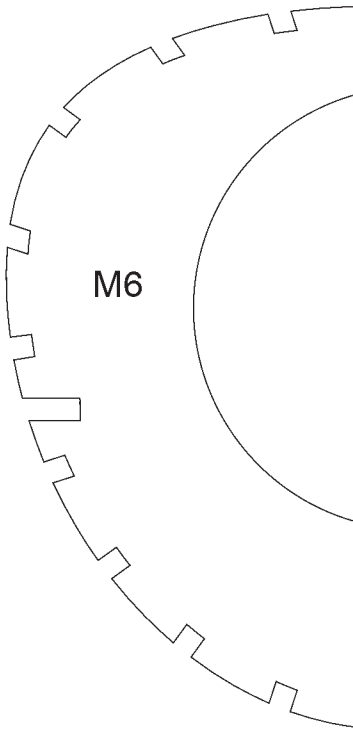
ssembled and fastened to
notors will have 2 degrees of
geon rise from the water.

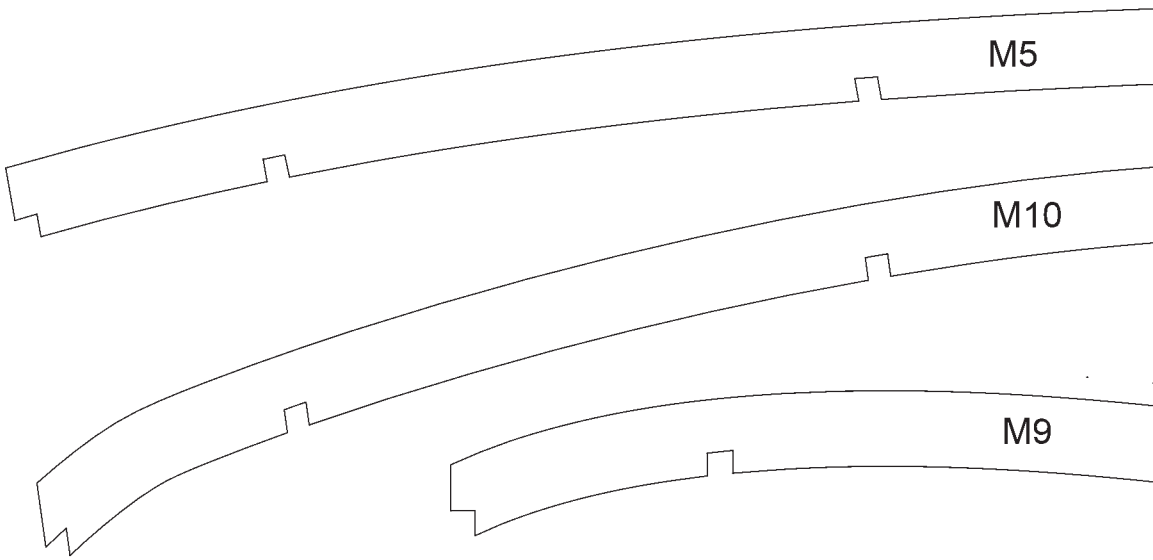
otor mounts and then attach
embling the rest of the
t fit inside the nacelle after
s are in place.

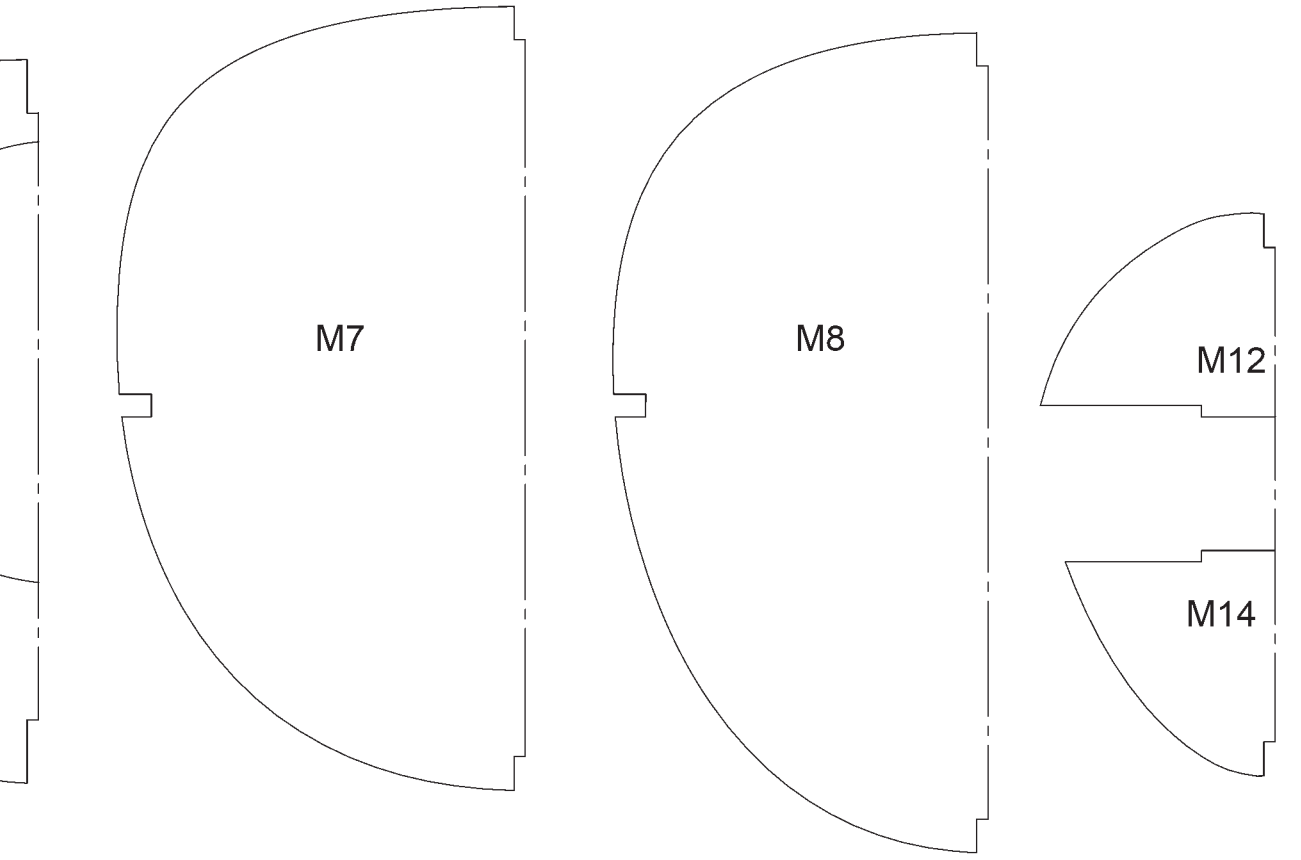
il below:

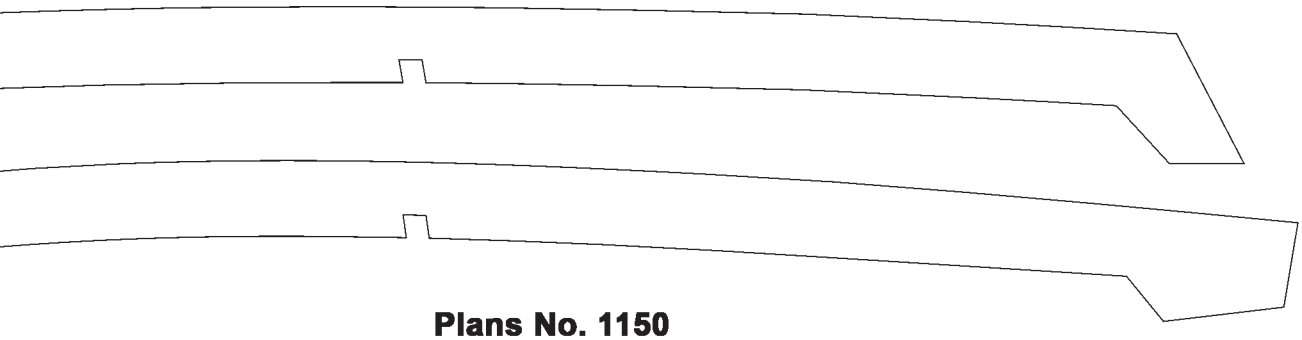


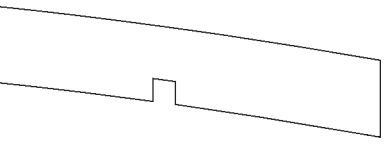












Plans No. 1150

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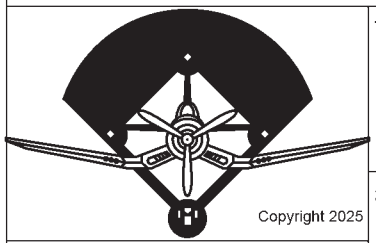

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Title

60" Grumman Widgeon

Size	Dwg. No.	Rev
X	G44 Widgeon.sdrw	B

Scale: 1:1	Weight: 56-60oz	Sheet 2 of 4