

BRANDO

A Catboat FOOTY

A 12-inch long Class Sailboat

Designed by
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Naval Architect, Genova Italy



The
WoodenBoat
STORE

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1
Cut topsides using 1/16" (1.5 mm) balsa, see plan page #4. Leave an extra part of wood near stern (to be removed later). Glue balsa vertical stiffeners 5/32" x 5/32" (4 mm x 4 mm) to topsides, to keep transom and aft bulkhead in place.



2
Join bow edges of topsides using adhesive tape. Cut forward and aft bulkheads using 1/8" (3 mm) balsa, see plan page #4. Make notches for longitudinal stringers at corners. Make transom using two layers of balsa 1/16" (1.5 mm) cross grained, cut stringer notches only on inner layer.



3
Keep transom temporary in place using rubber bands. Insert both bulkheads between topsides. Use a scrap block of wood as spacer between bulkheads. Glue bulkheads and transom to topsides. Glue vertical stiffeners to forward bulkhead.



4
Glue longitudinal stringers - sheer clamps and chine log - using four sticks of balsa 3/16" x 3/32" (5mm x 2mm).



5
Using a scrap piece of balsa make inner stem to fit angle between topsides. Glue inner stem from inside. Remove adhesive tape.



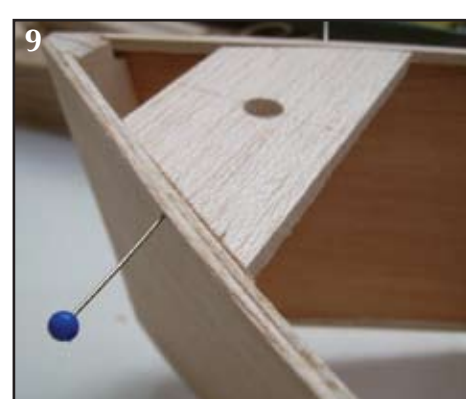
6
Make keel trunk spacer using plywood, or hardwood sticks with same thickness of fin keel, approx 5/32" or 3/16" (4 or 5 mm). Make two trunk sides using 1/16" (1.5 mm) birch plywood, see plan page #4 for details.



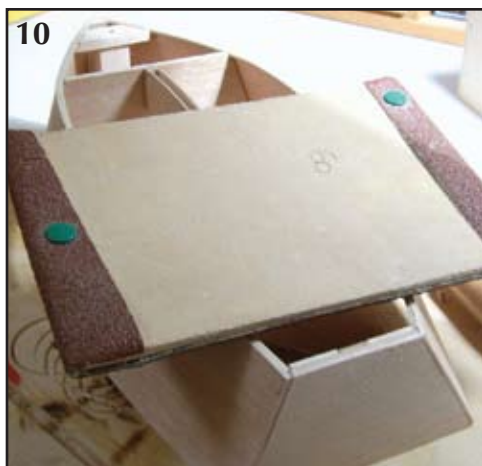
7
Glue keel case trunk between bulkheads.



8
Cut mast partner, mast step and mast box.



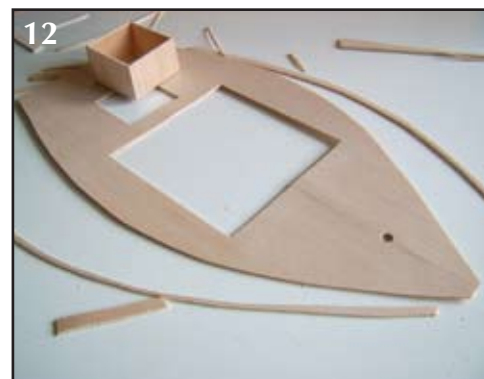
9
Glue partner to topsides. Glue mast step to keelson. Add the mast box between partner and step.



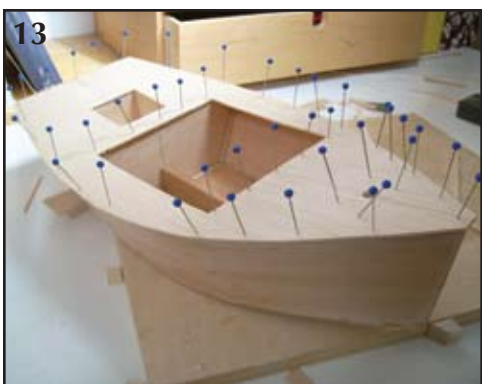
Sand topsides lower edge to have a good fit with bottom panel. Use a wide sanding block in order to have a well fitting joint surface.



Add the keelson, and glue it to transom, bulkheads and stem. Rough cut bottom panel and glue it to hull see plan page #5. Trim bottom flush with topsides.



Cut and glue cockpit well parts, and add it under deck, see plan page #2.



Give a coat of varnish to inner parts of hull and the deck. Glue deck to hull. Trim deck edge flush with topsides.



Cut the stem post from a scrap block of 1/4" (6mm) balsa. Make it slightly longer than needed, see plan page #2.



Check proper fit of post with bow profile before gluing it to the hull.



Cut wales (a bit longer than needed) using 1/16" (1.5 mm) balsa, glue them to hull sides. Cut stern side of planks flush with transom, see plan page #4.



Add an half round strip of balsa as rubrail. Make it by rounding the corners of a square section of balsa stick 1/8" x 1/8" (3 x 3mm).



Add toe rail - a square section strip of balsa 3/32" x 3/32" (2mm x 2mm). Make the shoe keel using a 1/16" (1.5 mm) balsa strip, and glue it below the bottom. Make skeg/sternpost using 3/16" (5 mm) balsa. Glue to the aft part of hull. Sand the forefoot flush with the bottom profile.



19
Cut and assemble five parts of deckhouse, using 3/32" (2mm) balsa, see plan sheet #6.



20
Adjust deckhouse sides for a proper fit with deck.



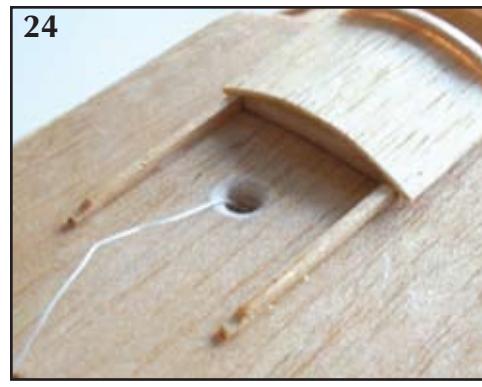
21
Another view....



22
Build removable deckhouse roof. Inner frame is made of 3/32" (2 mm) balsa. Roof is made of two layers of 1/16" (1.5 mm). Trim roof flush with deckhouse sides, and add half round strips along roof edges.



23
Make companionway and "fake" doors using scrap balsa, see plan page #6.



24
Make a hole for the mainsail sheet. Add a plastic bead or a hardwood ring below the roof, as sheet fairlead.



25
Add the name plate (thin birch ply) on deckhouse sides. Glue, from inside, two clear plastic sheets to close portlights.



26
Cut rudder blade using 5/32" - 3/16" (4 - 5 mm) plywood. File the fin to something resembling a foil, see plan page #7 for details.



27
Glue three or four thin strips of wood on a jig to build the laminated tiller. Use sandpaper to achieve a nice taper.



28 Add wooden servo control arm to rudder head (on left side!).



29 Make pintles and gudgeons using brass wire. Add a "hold down" metal strip to keep the rudder in place (a strip of beer can aluminum is okay).



30 Use a fishing sinker as a ballast bulb. Weight should be between 4.5 and 6.0 oz (130/180 grams).



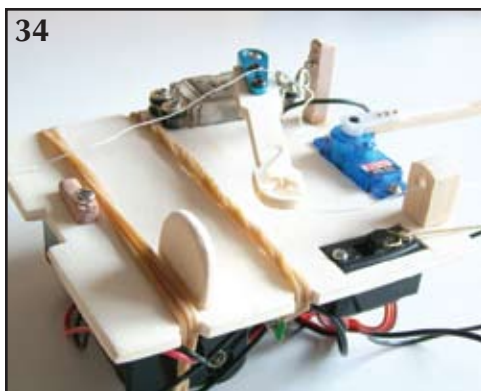
31 Improve bulb shape using a file and coarse sandpaper. Wear gloves! (Lead is poisonous.)



32 Cut a rectangular piece of 5/32" - 3/16" (4-5 mm) plywood as servo mounting plate. Check proper fit to inner sides of deckhouse, see plan page #9.



33 Glue four small blocks of wood to bulkheads, to keep the plank in place. Glue a small strip of hardwood on forward bulkheads, to be engaged by plate hold-down lock.



34 Cut holes for servos and switch according to their size. Keep position of servo center of rotation in same positions shown on plans. Add the handle, the hold down lock, and the two sheet guides.



35 Add a brass push rod to connect rudder servo and tiller arm. Add a short push rod to the on/off switch to use it without removing the deckhouse roof.



36 Cut dowels to proper size to make spars. Taper spar ends using sandpaper to reduce weight and improve their look, see plan page #8.



Add "first class" wooden jaws, or as "fast and rough" alternative use simple copper wire.



Add deck fittings (cleats, eyes and hooks).



Paint or varnish the hull and spars (not less than four coats).



Cut sail, see plan page #8. Build your favorite stand (table top or wall side), see plan page #11.



Make a "dry" working test of rudder and sail RC control.



Enjoy your first sea trial under a light breeze.



And, a few more views... overhead.



Profile.



Aft view.

Hull Marterials List

Balsa planks, thickness 1/16" (1.5 mm)	Topsides Deck Bottom Wales Transom Deckhouse roof Shoekeel
Balsa planks, thickness 3/32" (2 mm)	Deckhouse Keelson Cockpit well
Balsa planks, thickness 1/8" (3 mm)	Bulkheads
Balsa stringers, sides 5/32" x 5/32" (4mm x 4mm)	Vertical stiffeners
Balsa stringers, sides 3/16" x 3/32" (5mm x 2 mm)	Chine logs Sheer clamps
Balsa stringers, sides 3/32" x 3/32" (2mm x 2mm)	Toe rail
Balsa stringers, half round 1/8" x 1/8" (3mm x 3mm)	Rub rail
Plywood (okume or poplar), thickness 5/32" - 3/16" (4 - 5mm)	Fin keel Rudder blade Trunk spacer RC plate
Plywood birch, thickness 1/16" (1.5 mm)	Servo arm Trunk sides Spars jaws
Plywood birch, thickness 1/24" (1.0mm)	Rudder cheeks Name plates
Dowels (fir, ash, lime, samba, spruce) diameter 3/16" (5mm)	Gaff and boom
1/4" (6mm)	Mast

Tools

a sharp knife
steel rule
stick pins, clothes pins
sand paper / emery paper
razor saw
needle files
glue, paint, varnish

PLEASE NOTE: Purchase of the plans gives the builder rights to build this model for non-commercial purposes.

FOOTY CLASS RULES for *radio* sailing

These are **open class rules** in which anything not specifically restricted or prohibited is permitted.

A. GENERAL

A.1 This class is administered by the Footy Class Association. The Footy Class Charter is posted at <http://footy.rcsailing.net.charter.php>

A.2 The metric dimensions relate to a boat approximately 1 foot long.

Full size insignia



B. PRIMARY MEASUREMENT RULE

B.1 With the exceptions listed below in B.2, B.3, B.4 and B.5 the **boat** in racing trim shall be capable of fitting into an open-topped rectangular measurement box of internal dimensions 305mm long, 305mm deep, 153mm wide, with 6.3mm wide slots for projecting **spars** and **rudder**, as shown in the diagram. Racing trim means all components of the **boat** shall be installed and be capable of the full motion used while racing, without being restricted by any part of the measurement box.

B.2 The following may project above the top of the measurement box: **sail(s)**, **mast(s)**, **spars**, **rigging**, aerial, wind indicator(s), associated fittings.

B.3 A **bowsprit** may project forward of the measurement box.

B.4 The following may project aft of the measurement box: bumpkin, **rudder**.

B.5 During measurement, rotation of a **rudder** extending through the slot is unnecessary.

C. CONDITIONS FOR RACING

C.1 Radio control is restricted to the use of no more than 2 channels.

C.2 Batteries shall be placed within the **hull**.

C.3 During an event, **ballast** shall not be changed, moved or rotated relative to the **hull**.

D. HULL

D.1 The **hull** registration number shall be clearly and legibly marked in an easily visible location either inside or outside on a non-removable part of the **hull(s)** by any of the following means: painting on, engraving in, bonding in, moulding in.

E. HULL APPENDAGES

E.1 The overhang of a **rudder** is restricted to 51mm aft of the measurement box.

E.2 Except for **rudder(s)**, the following are prohibited: retractable and or movable **hull appendages**.

E.3 The thickness of a **rudder** extending aft of the measurement box shall not exceed 6.3mm.

E.4 The density of composite materials for ballast shall not exceed that of lead (11300kg/m³). Composite materials are defined as a mixture of materials brought together to form a single component.

F. RIG

F.1 More than one **bowsprit** is prohibited. The **bowsprit spar cross section** shall fit within a 6.3mm diameter circle.

F.2 More than one bumpkin is prohibited. The bumpkin spar cross section shall fit within a 6.3mm diameter circle.

F.3 Fittings shall be no bigger than is reasonably required for their primary purpose(s).

G. SAIL IDENTIFICATION

G.1 Apply to the Footy Class registrar for registration number.

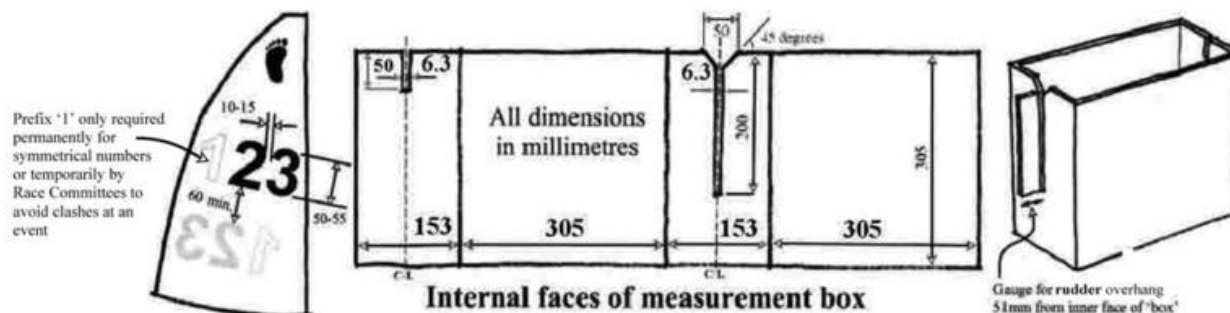
G.2 The class insignia shall be displayed on both sides of the mainsail as shown in the diagram. They may be handed and placed back to back.

G.3 Sail numbers shall comply with the current ISAF RRS with the following exceptions:

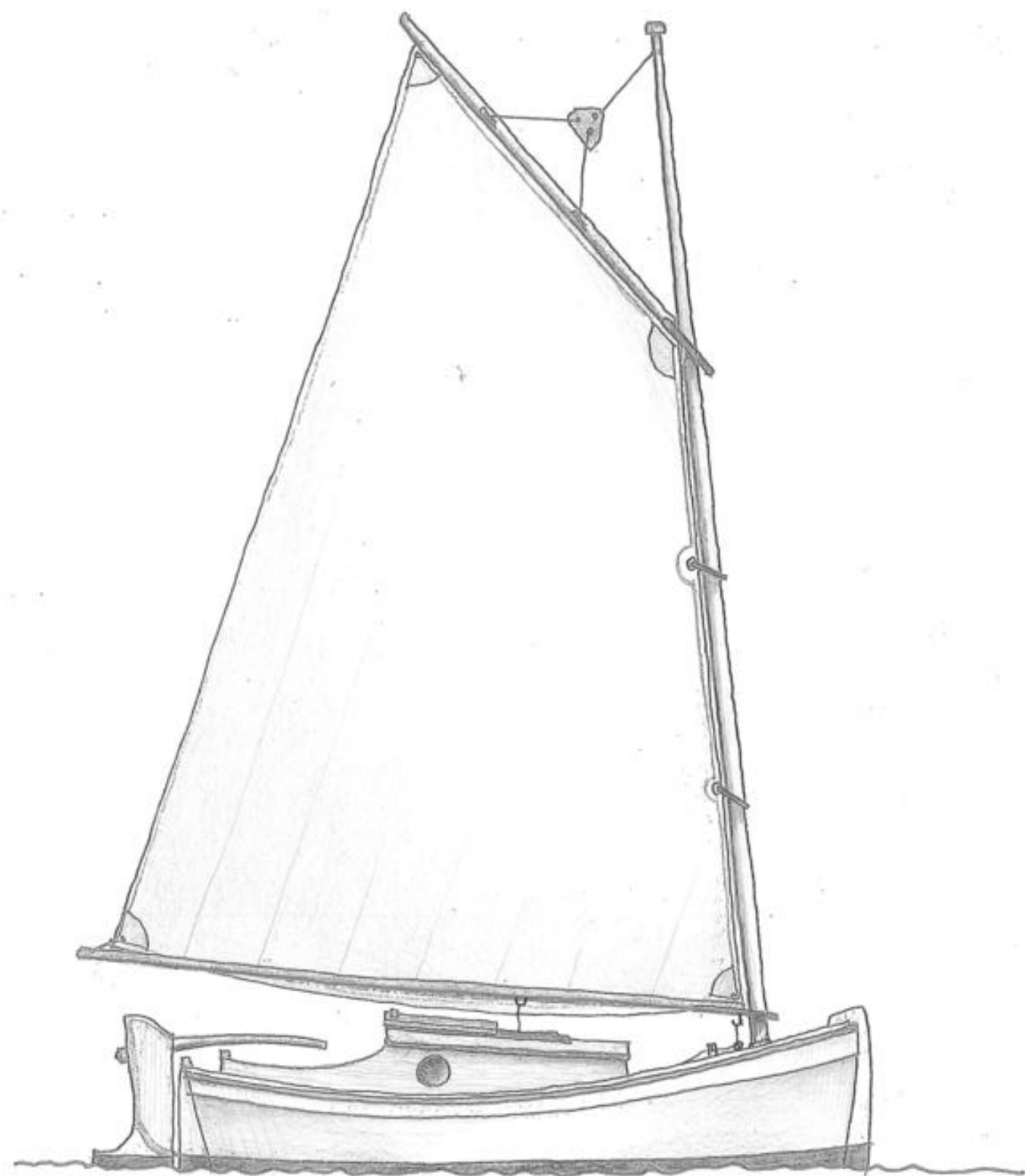
(a) all dimensions shall be divided by 2.

(b) sail numbers shall be displayed on mainsails only and need not comply with E6(c)3.

(c) **boats** with sail numbers 01,08,10,18,80 and 81 shall display a prefix '1', unless the number requires changing at an event due to a conflict.



These **class rules** use definitions from ISAF Equipment Rules of Sailing (ERS). Except where used in headings, a term is printed in **'bold'** when the definition in the ERS applies. See ISAF website for ERS & RRS - www.sailing.org/documentation.php



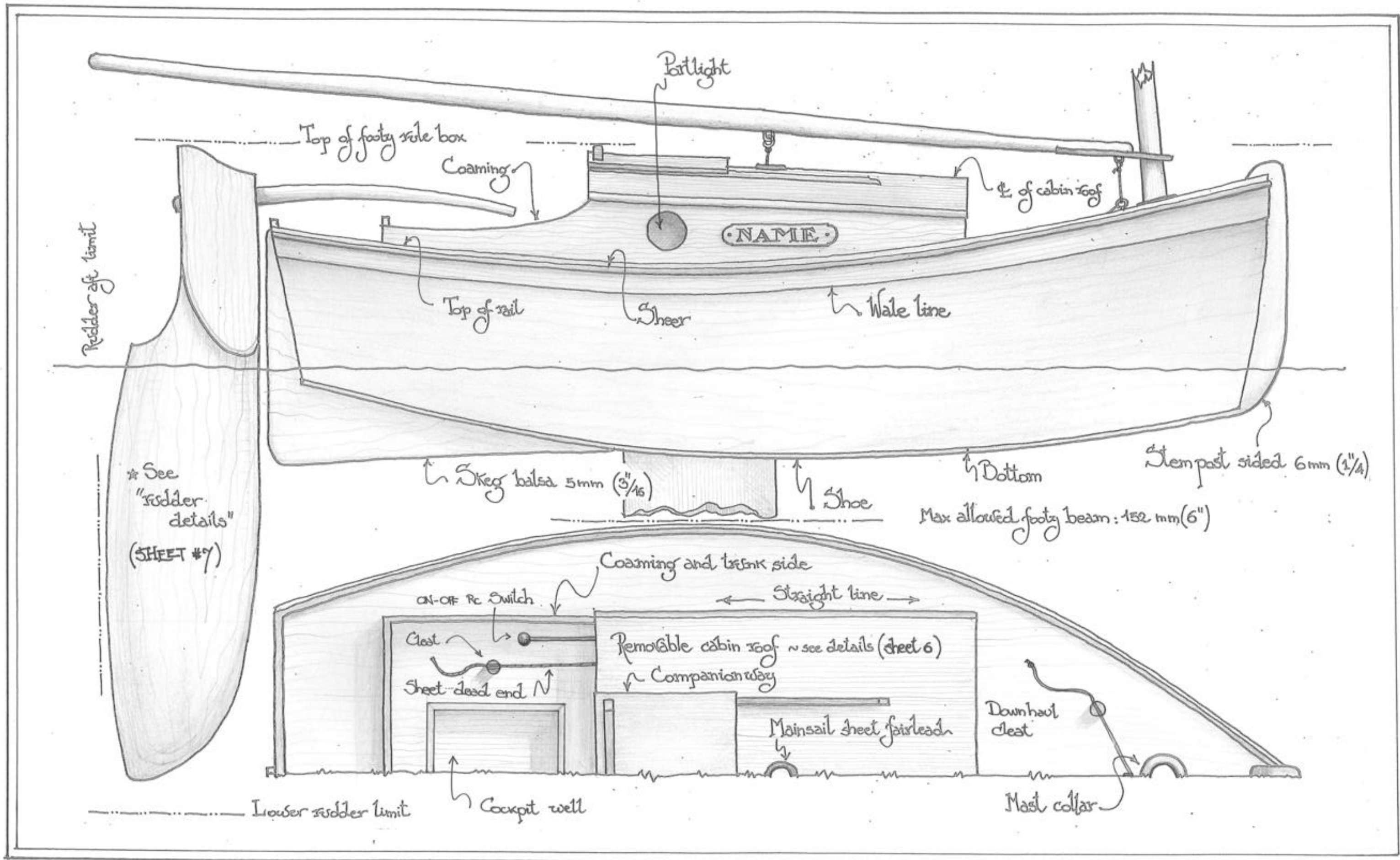
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Catboat foaly

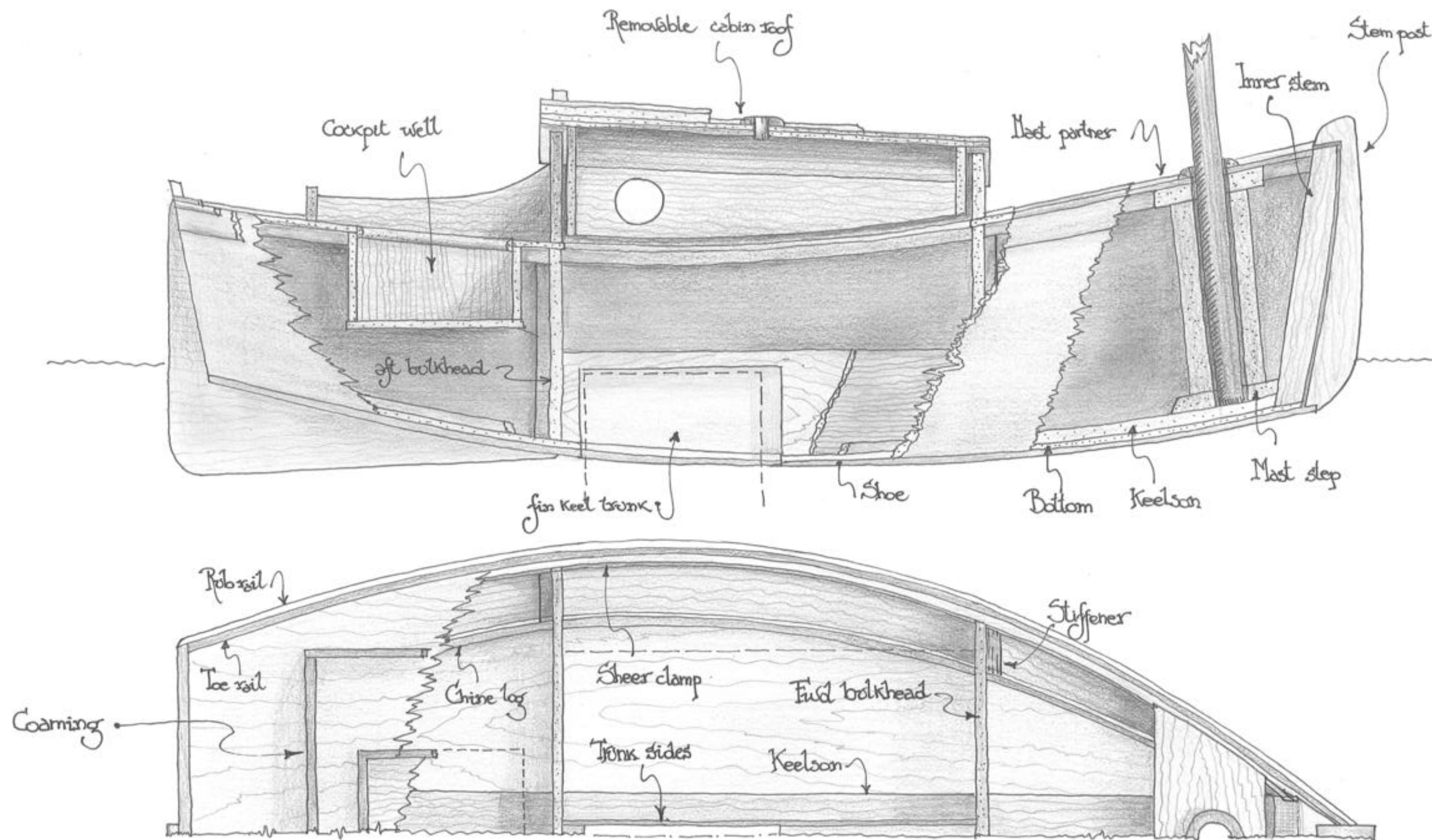
for WoodenBoat Magazine
by Flavio Faloci Nihil Architect

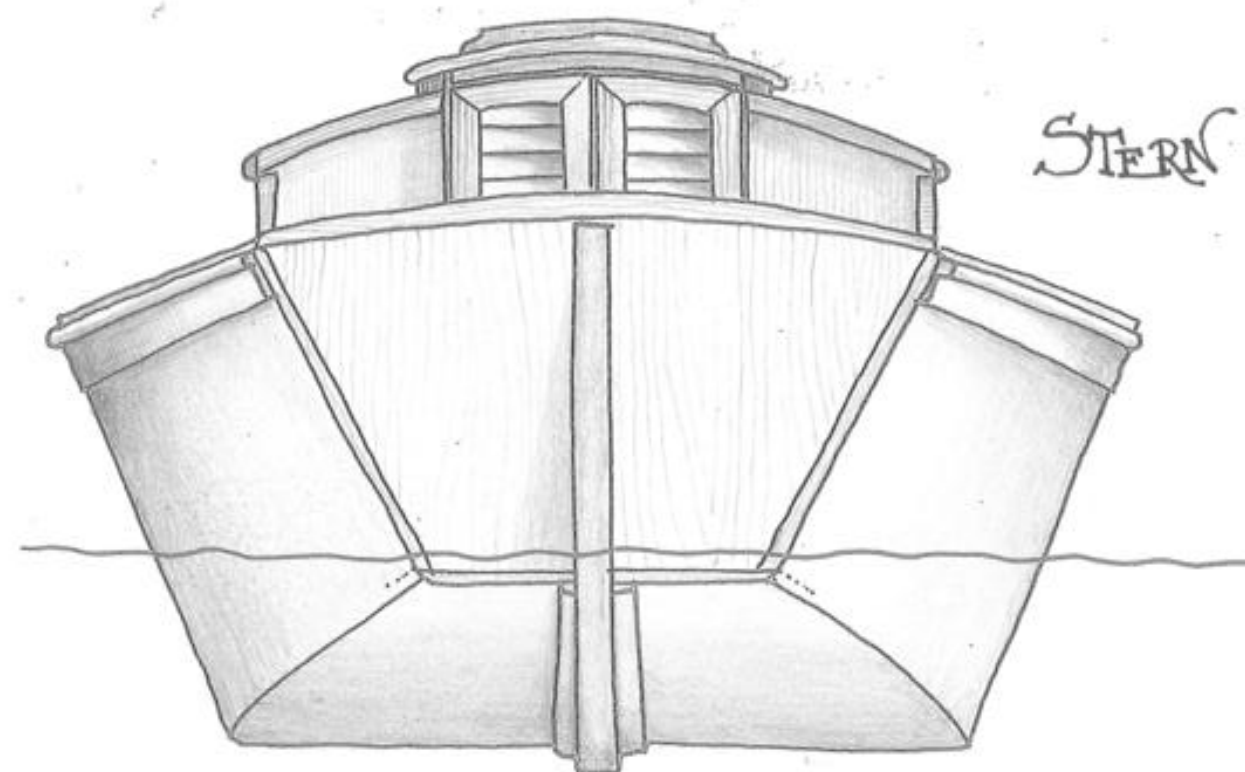
Length	305 mm	(12")
Beam	152 mm	(6")
Displacement	470 gr	(13.4 oz)
Ballast	180 gr	(5.1 oz)
Sail area	8.1 dm ²	(125 sq. in)

Genova, Italy, October 2009

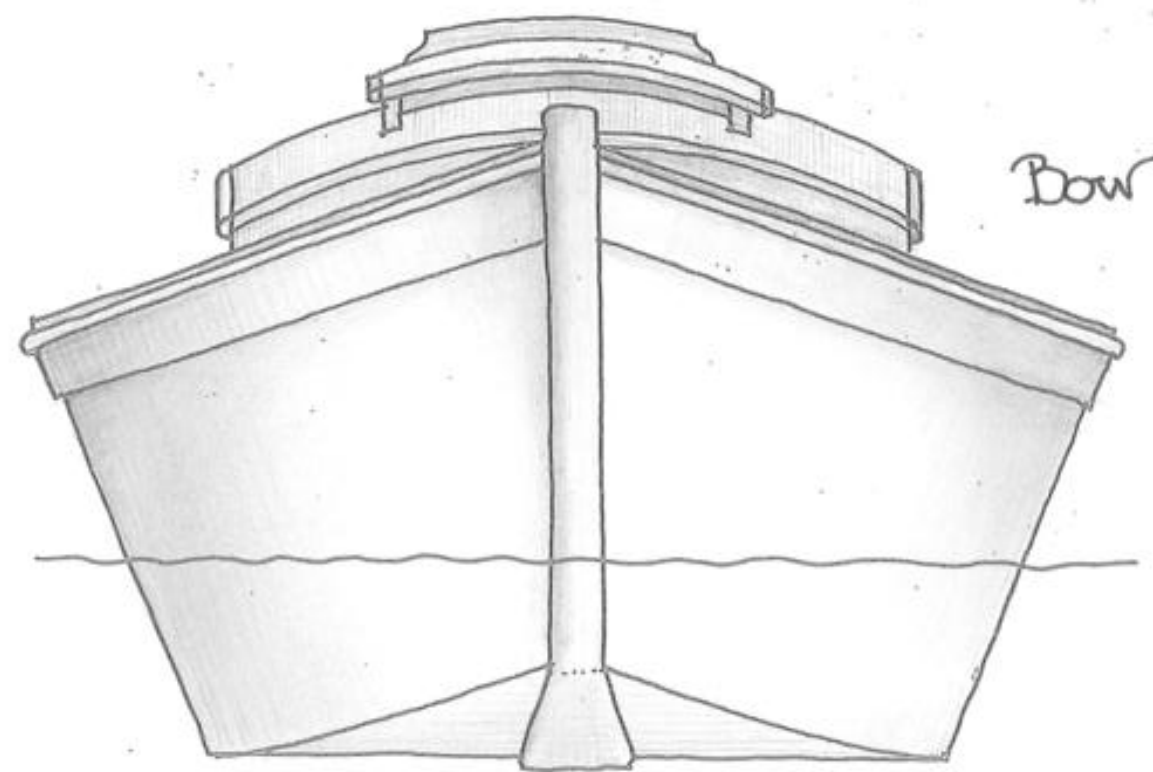


BRANDO Catboat Footy Designed by Flavio Faloci for WoodenBoat ~ EXTERNAL VIEW ~

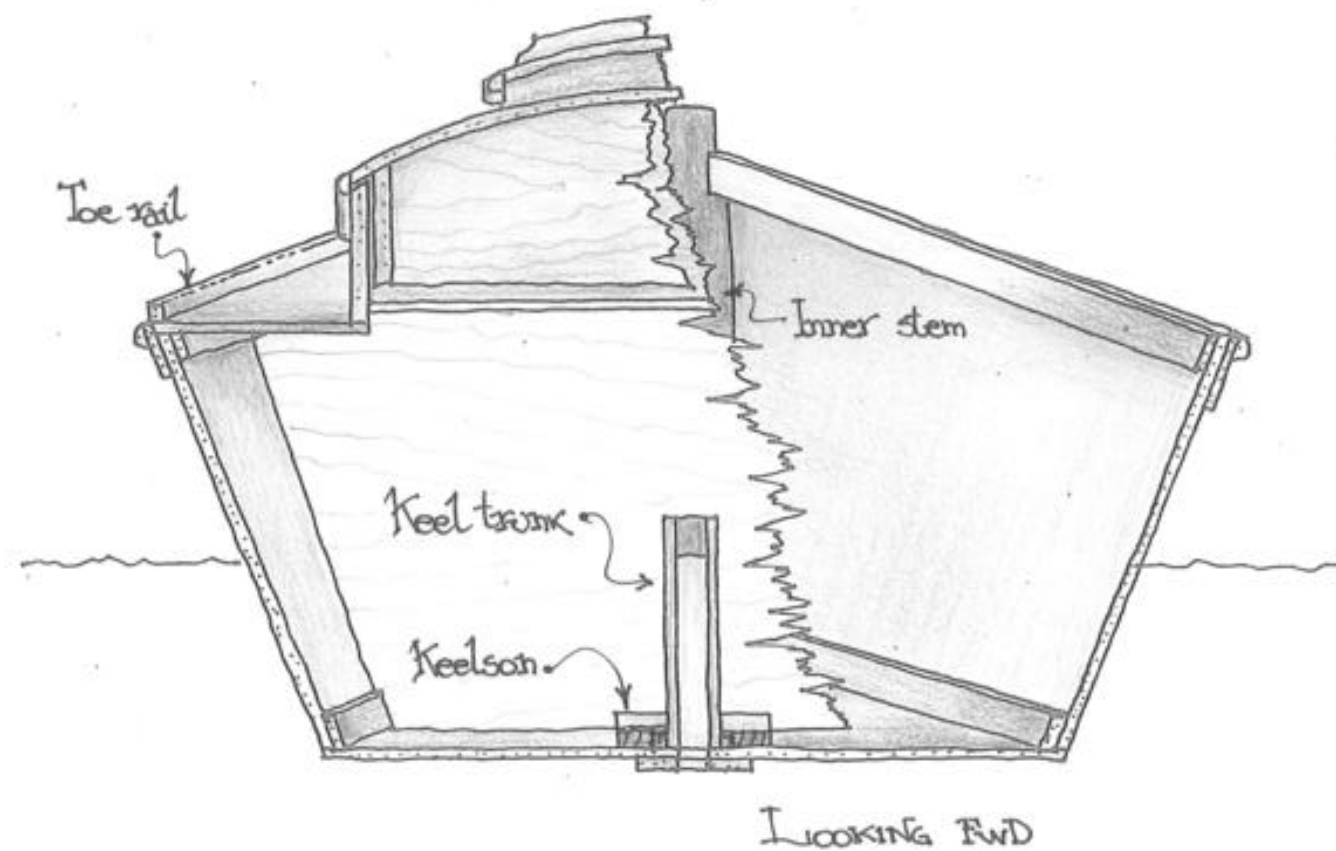
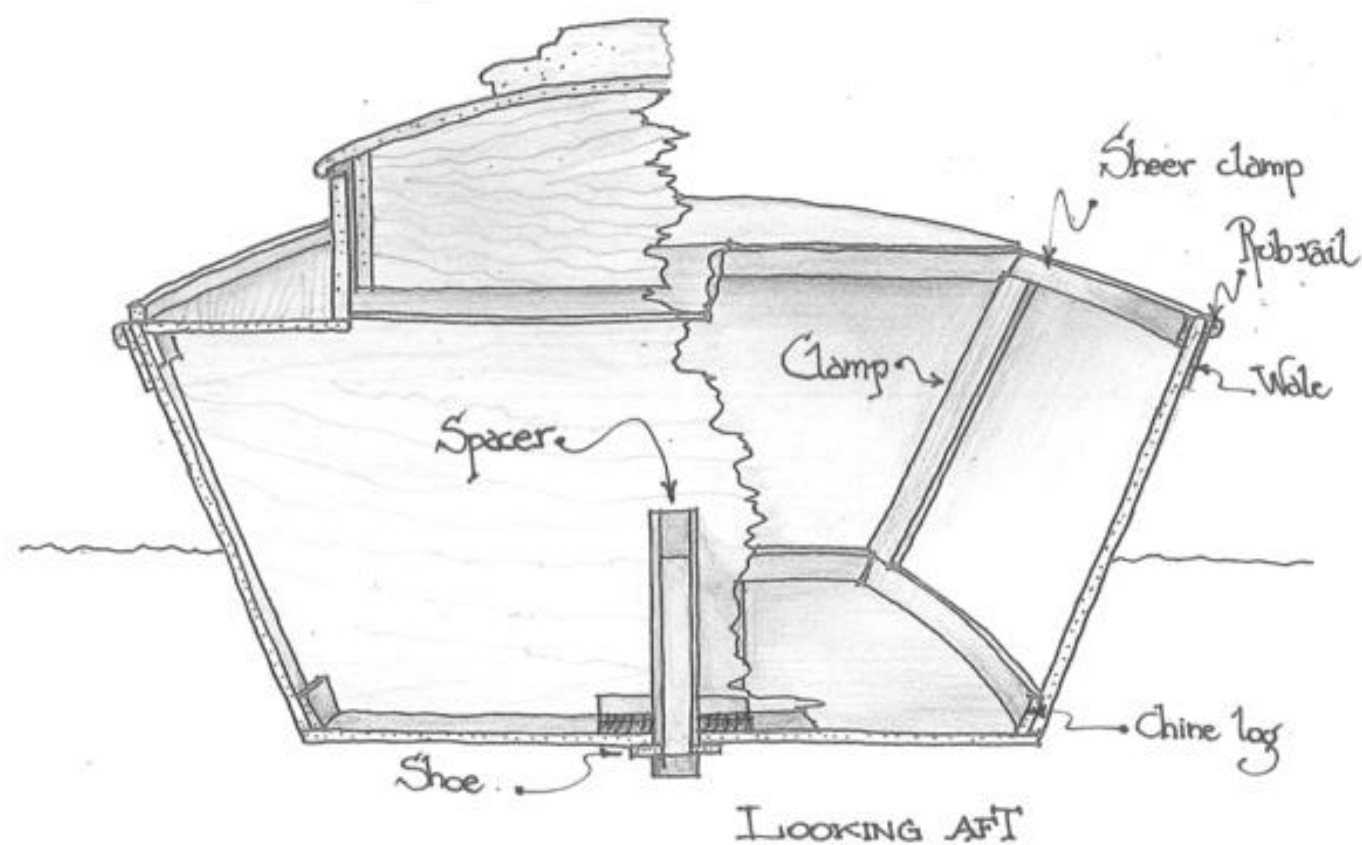




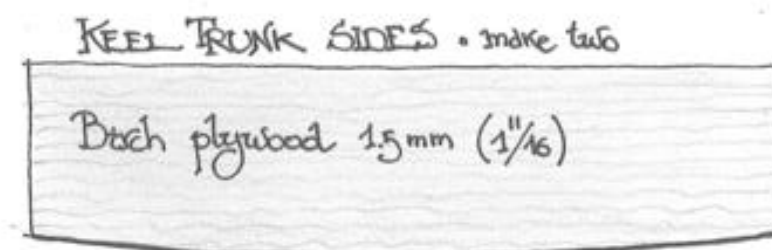
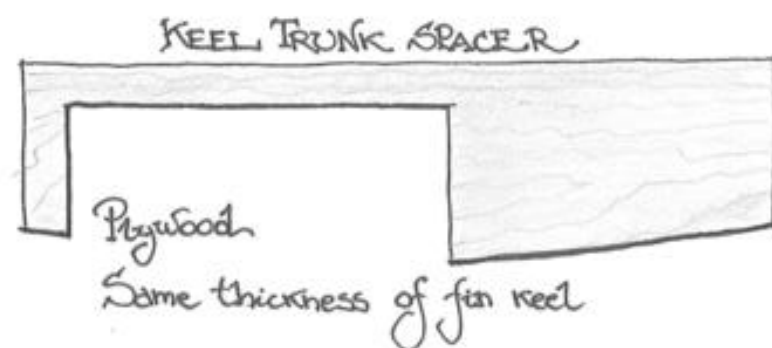
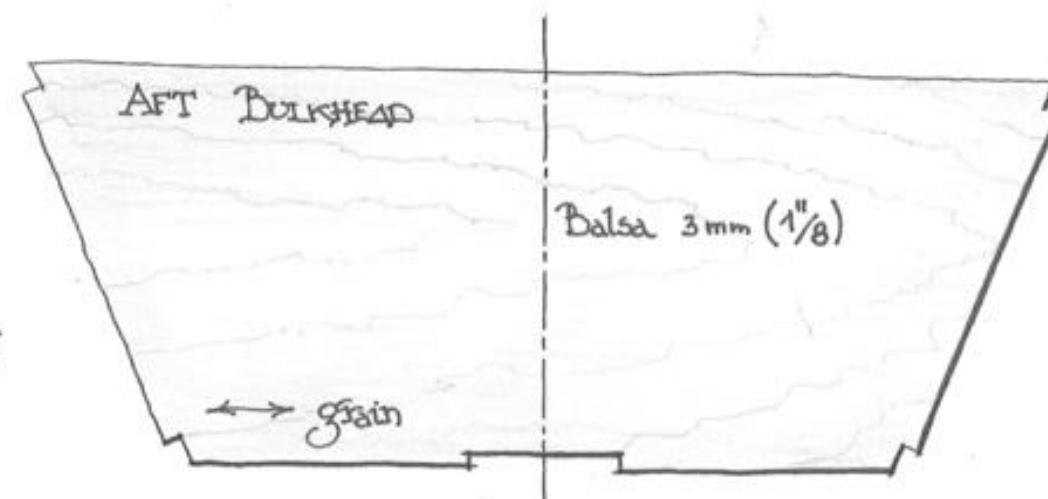
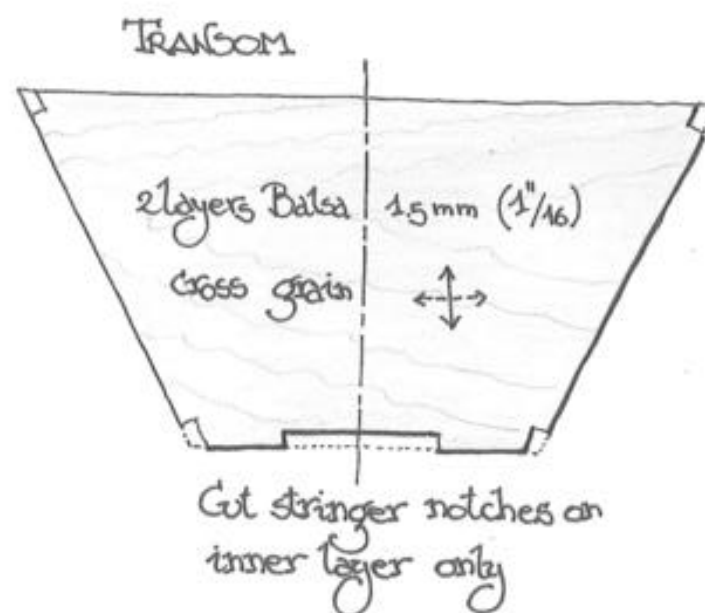
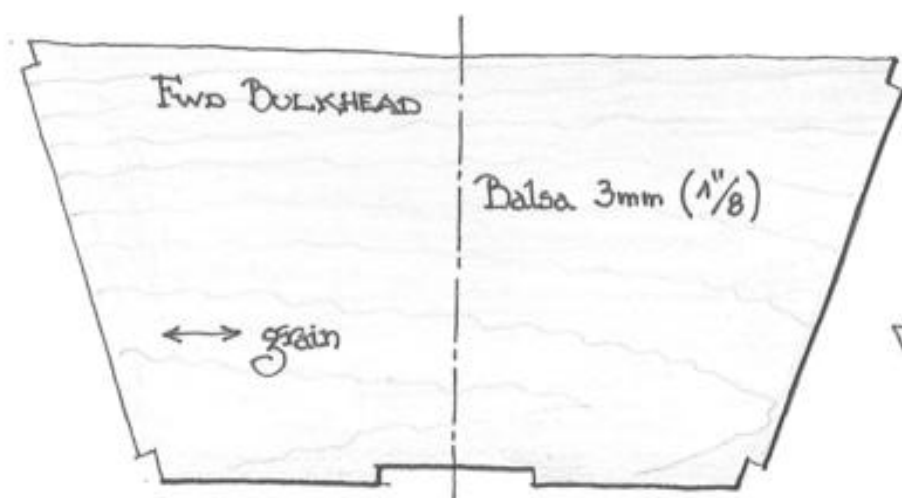
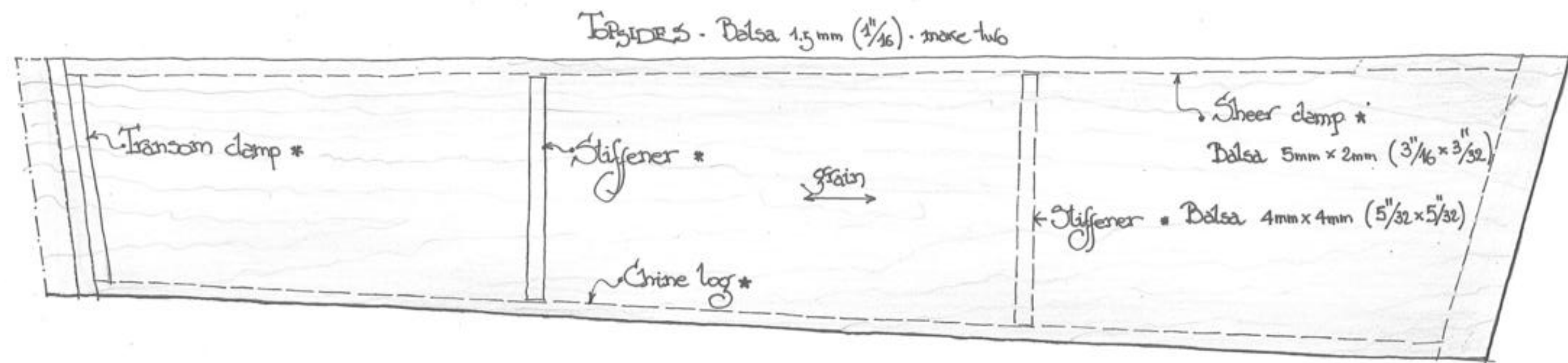
STERN



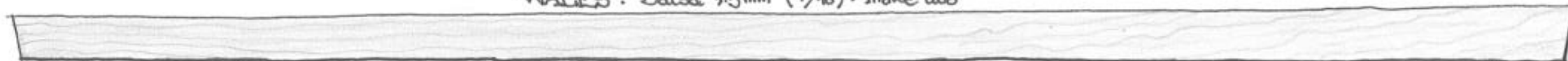
Bow

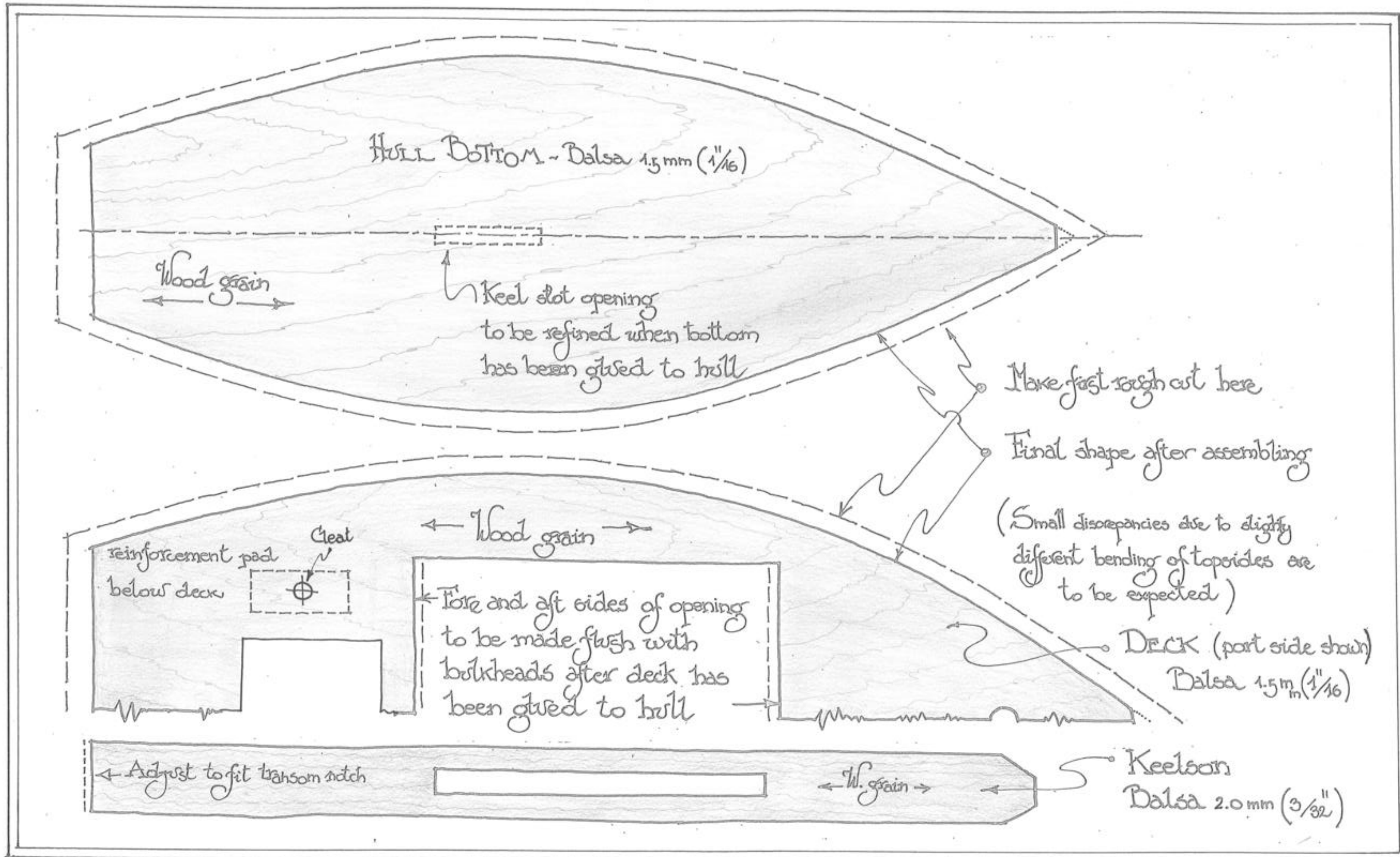


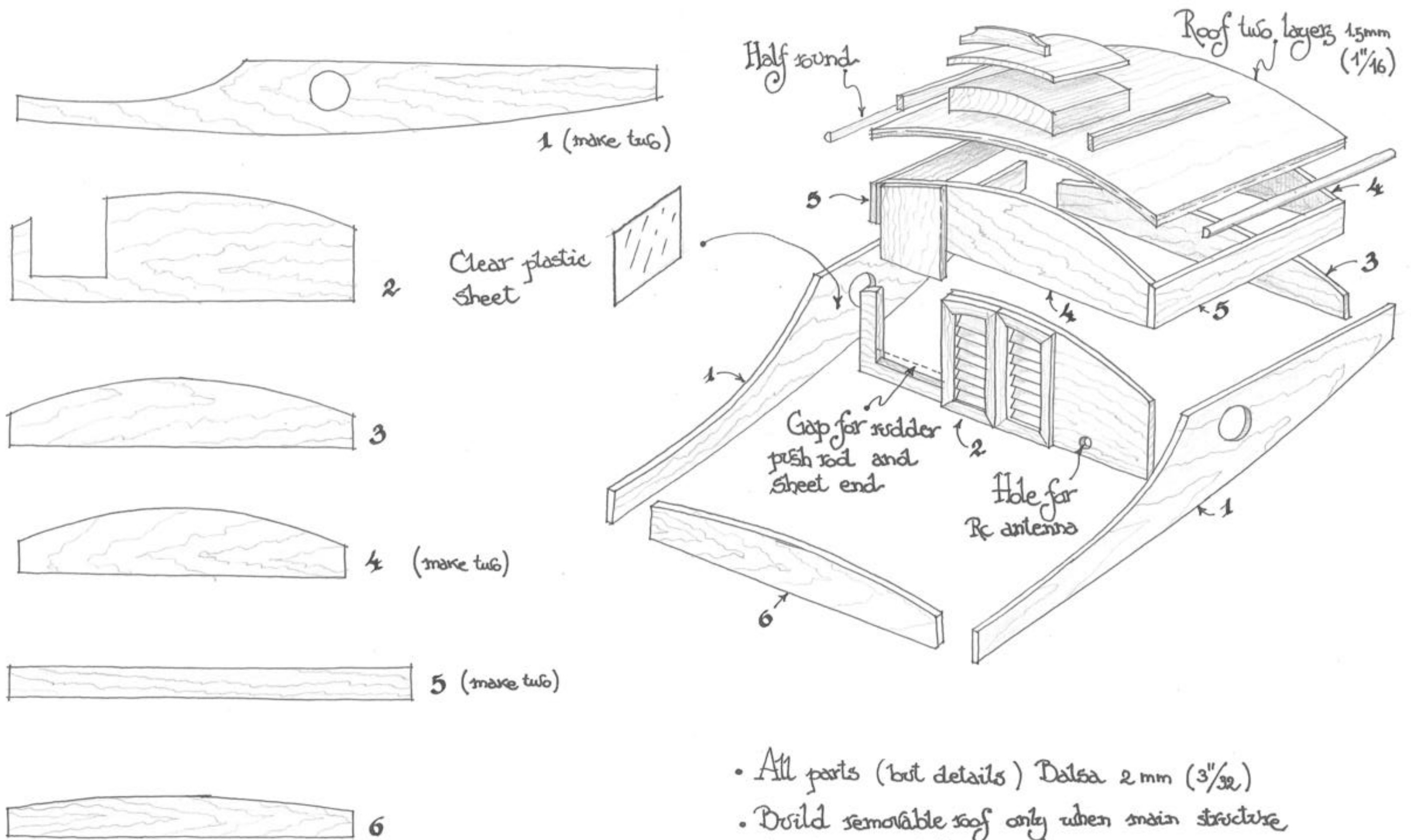
BRANDO Catboat Footy Designed by Flavio Faloci for WoodenBoat ~ SECTIONS ~



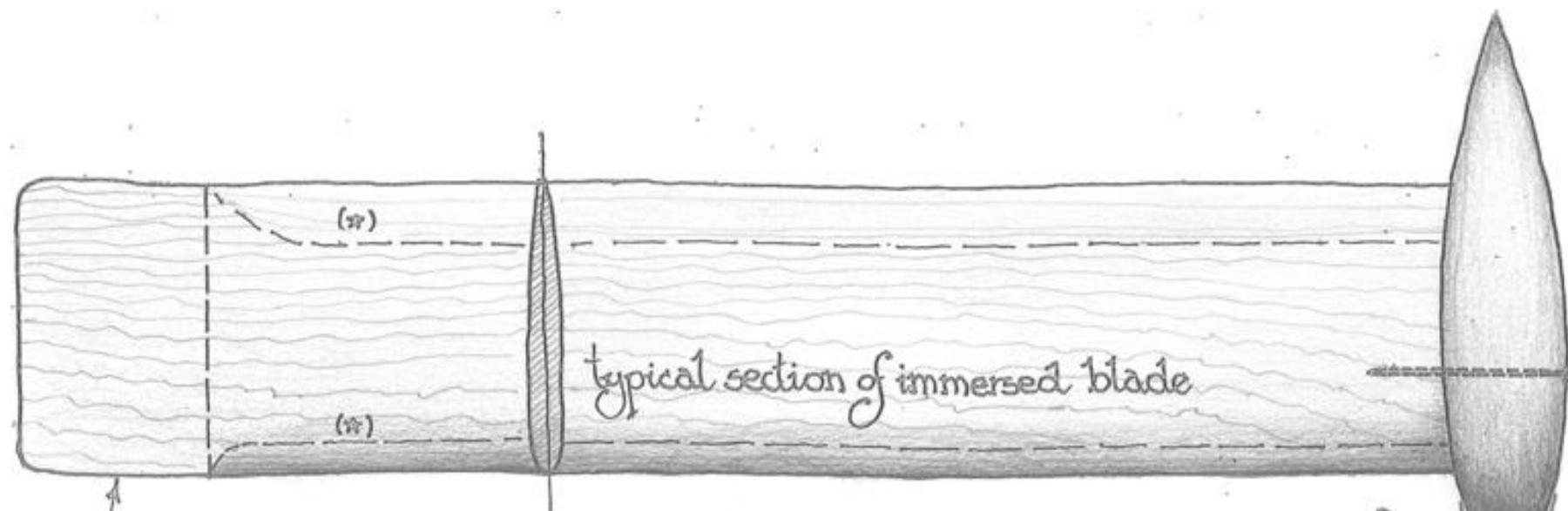
WALES - Balsa 1.5 mm ($\frac{1}{16}$) - make two







- All parts (but details) Balsa 2mm (3/32)
- Build removable roof only when main structure has been installed on deck



Flat sides in the area housed in the case

* Approx. taper guidelines - Fair off to smooth curve

• Tapered tiller 3 layers of ash strips (or sawn plywood)

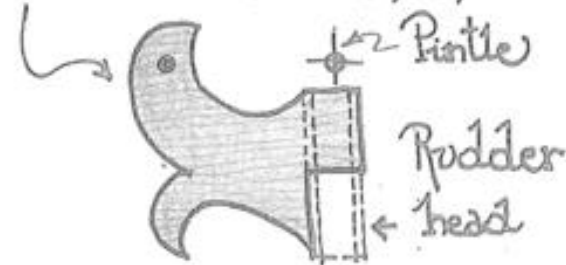
Notch for rudder servo arm

• Lead bulb - fishing sinker approx weight 150 ~ 200 gr (4.5 ~ 6.0 oz)

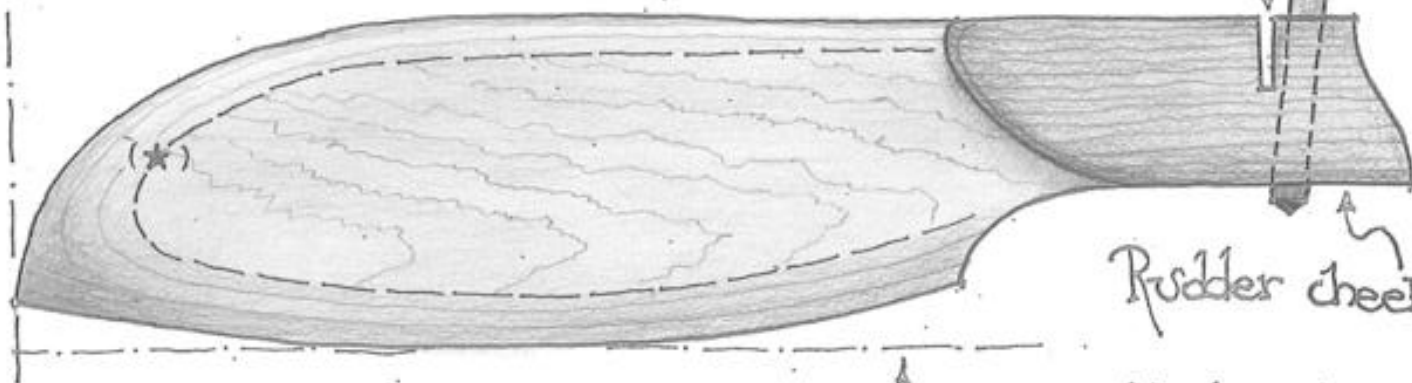
• Glue bulb to fin using epoxy or cyano, add a nail for extra strength

• Sharp end of bulb should be rounded

• Servo arm 1.5 mm (1/16) birch ply



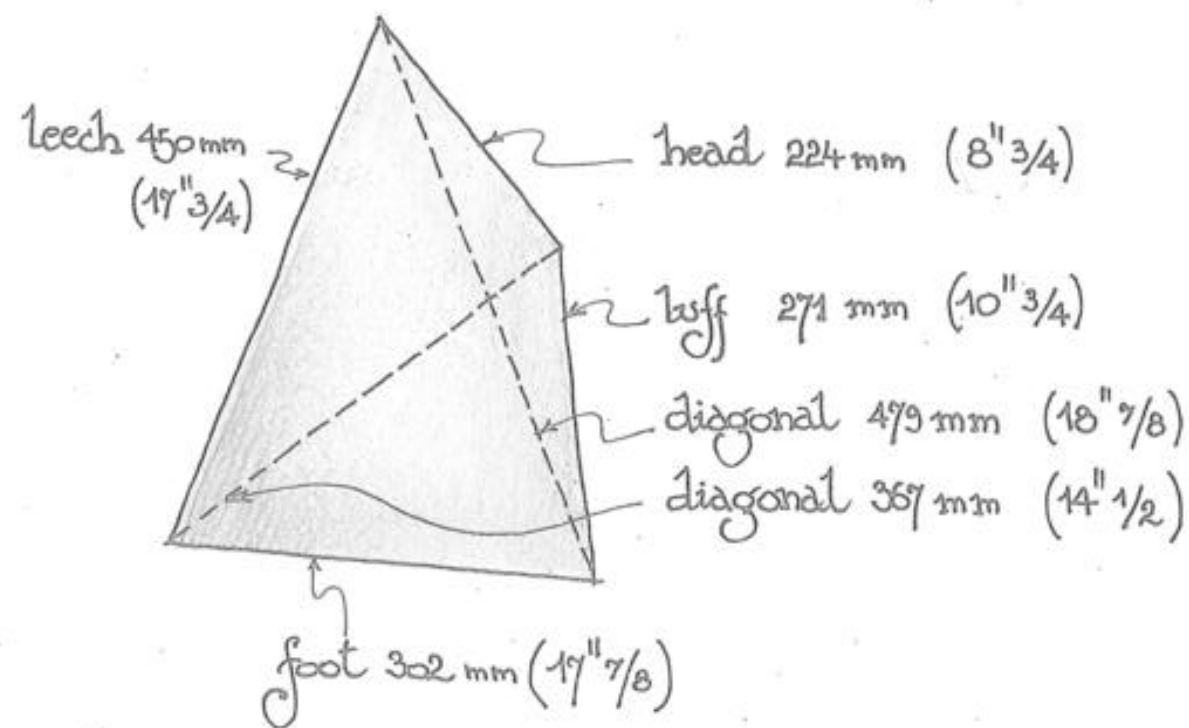
Rudder tip must not be deeper than 200 mm (8") below top of 'ruler box'.



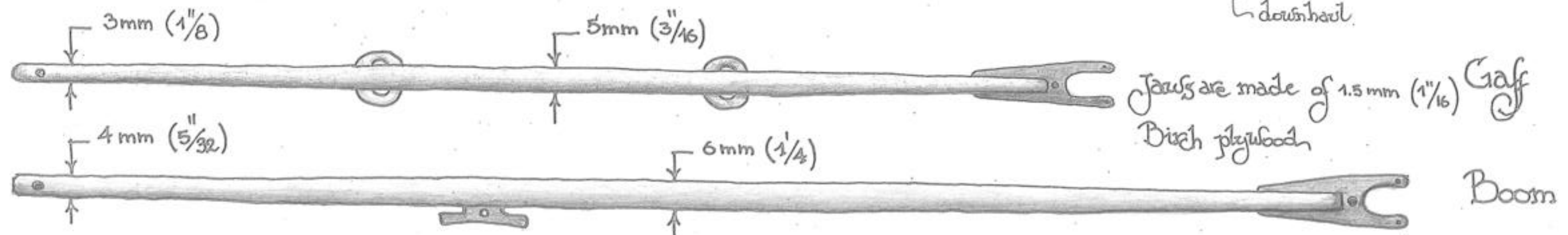
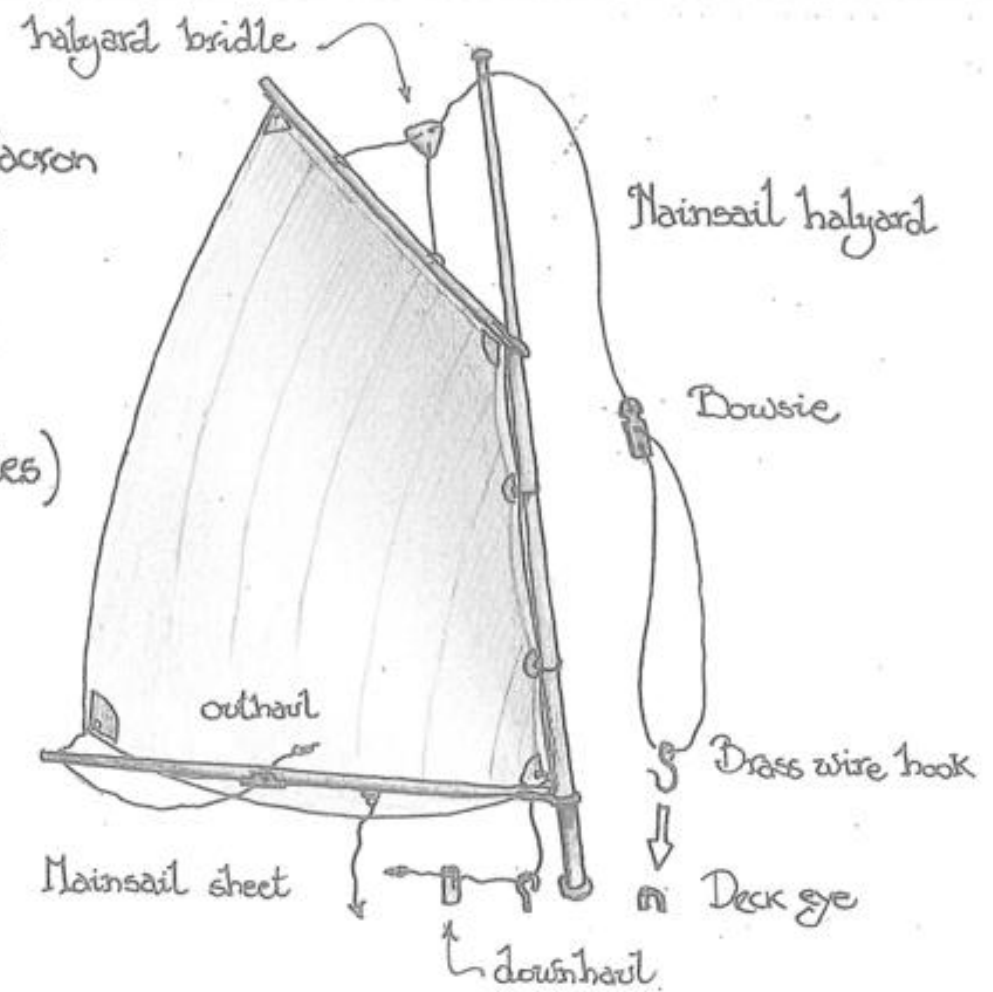
Rudder cheeks 1mm (1/24) Birch plywood

Keel and rudder thickness 4 ~ 5 mm (5/32 ~ 3/16") of plywood (Poplar, Okume, Birch)

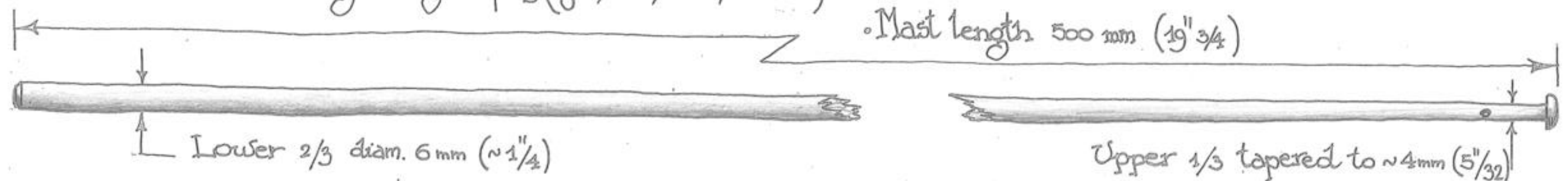
• Rudder trailing edge must be within 52 mm (4") from transom

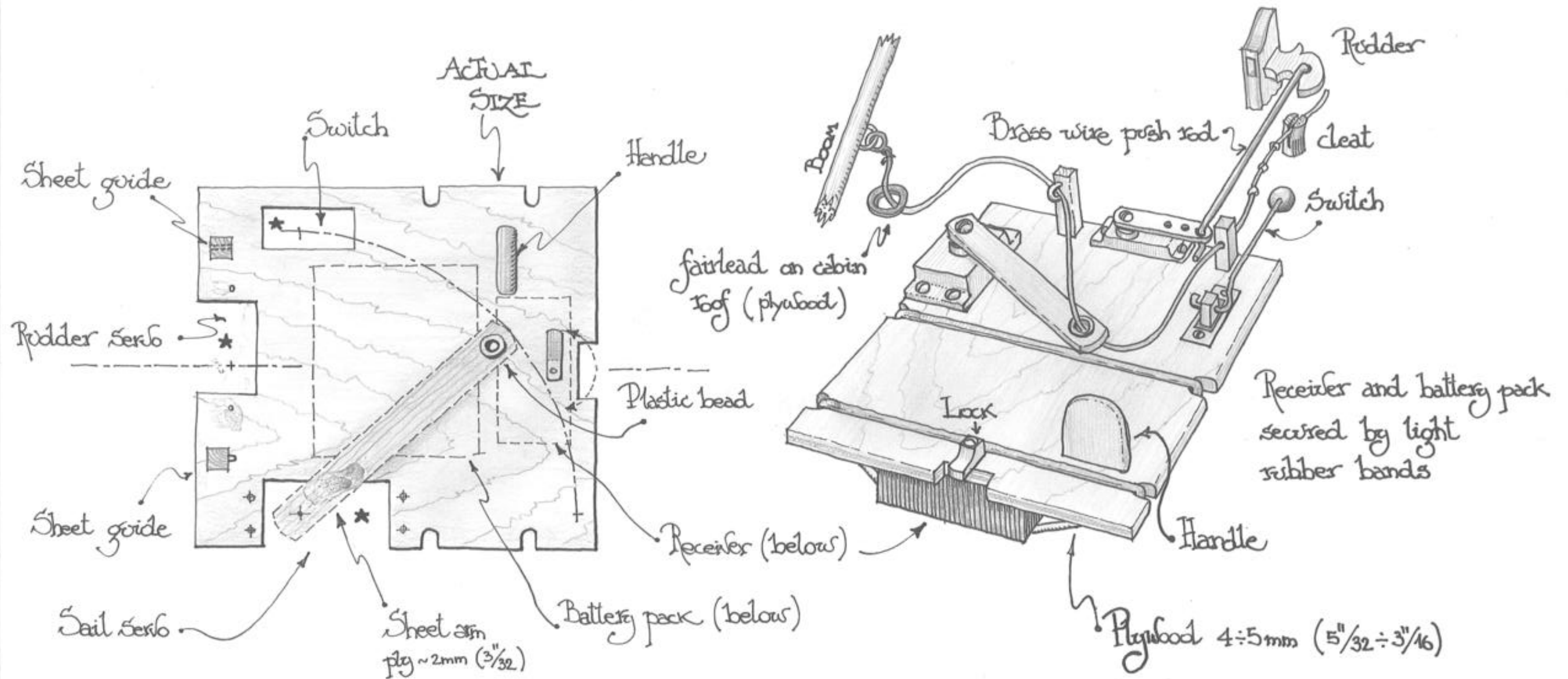


Use light spinnaker dacron cloth for mainsail
 $\sim 40 \div 50 \text{ gr/m}^2$
 $\sim 3/4 \div 1 \text{ oz/sq yd}$
 (usually used for kites)



Use medium density wood for spars (fir, ash, lime, samba)

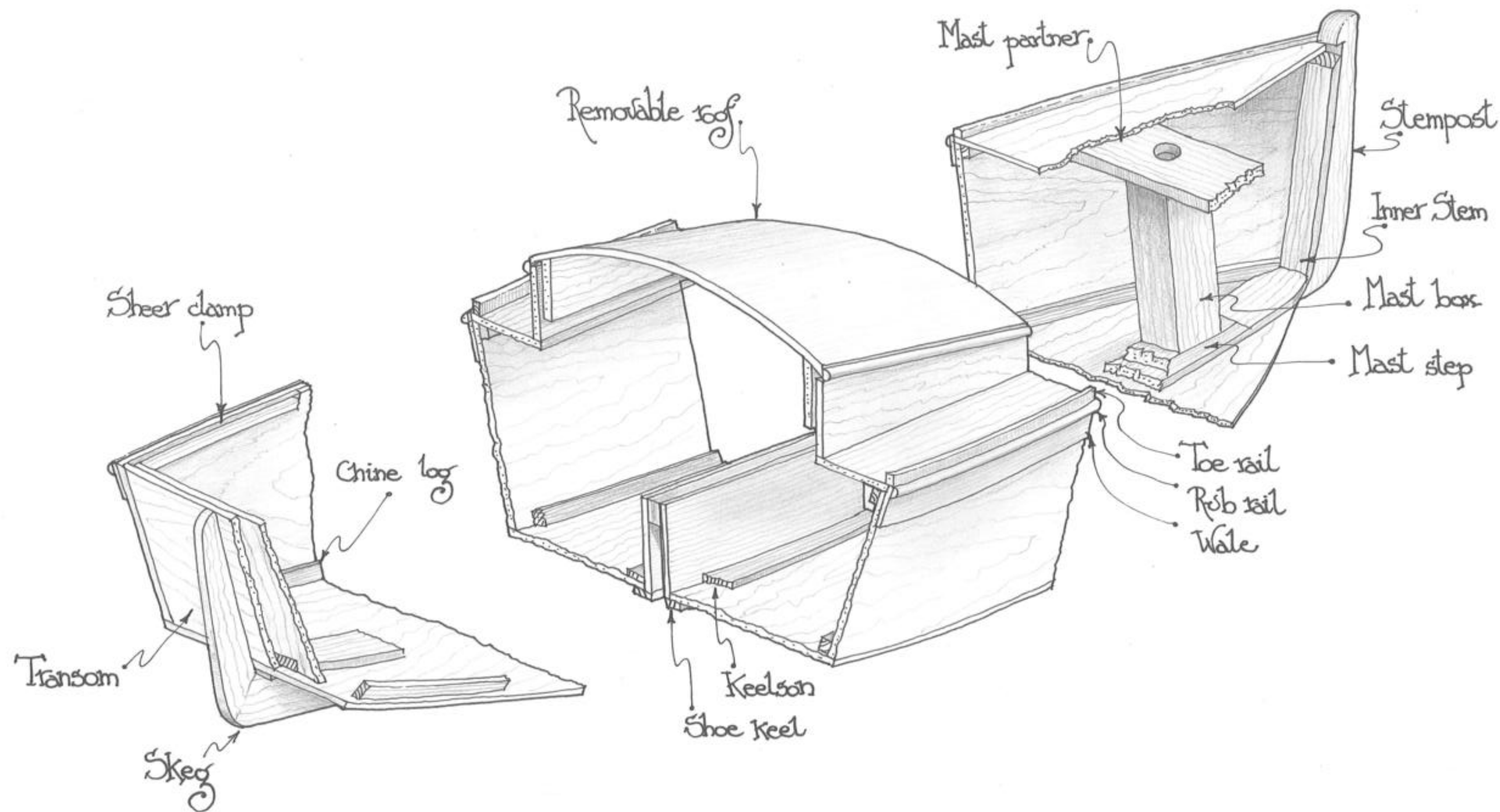




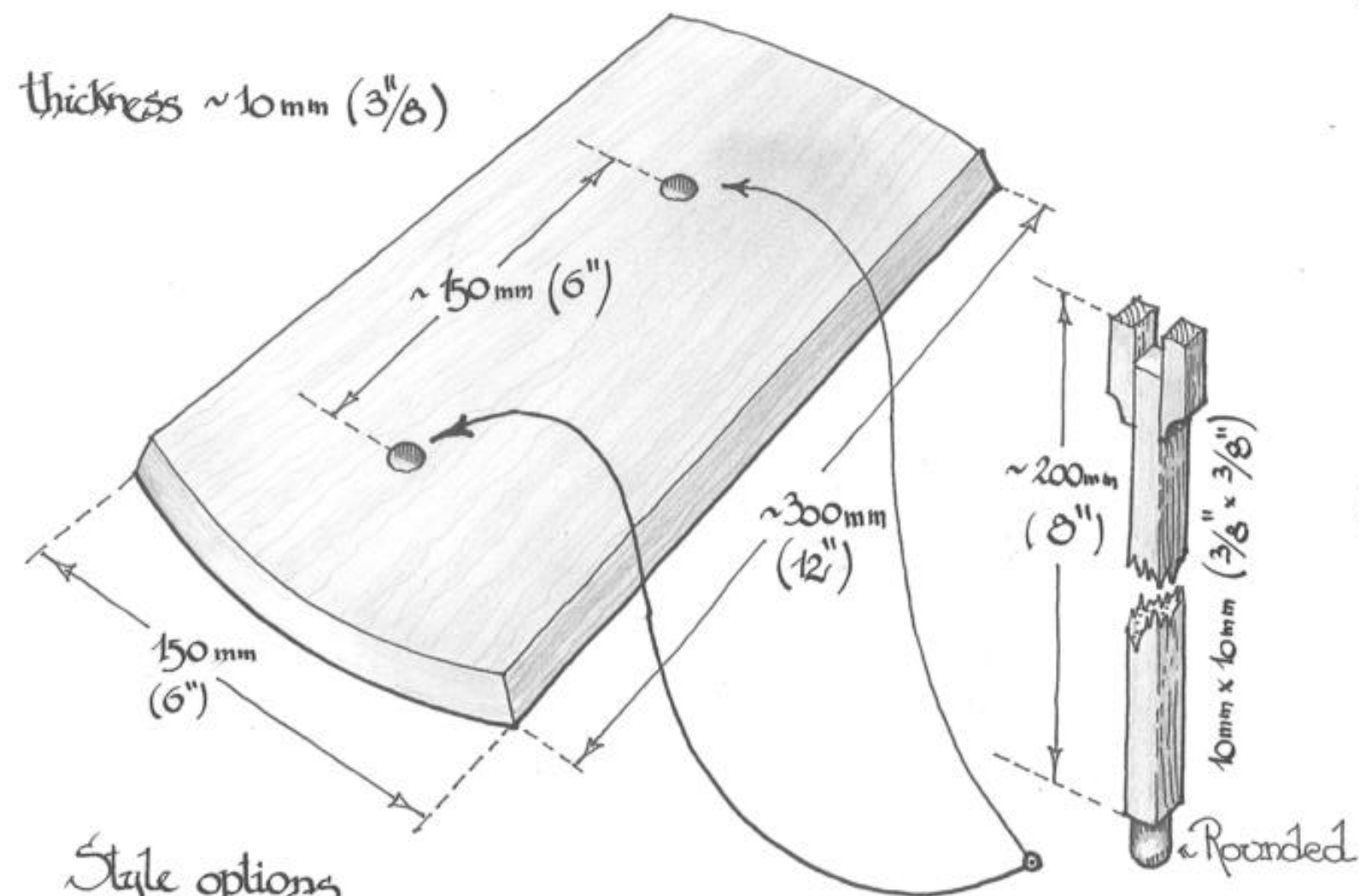
• RC EQUIPMENT •

Receiver	~ Micro lightweight FM	- recommended :	HITEC HFS-05 MS
Sail Servo	~ Torque ~ 5 kg cm (~70 oz in)	"	: HITEC HS-225 MG
Rudder Servo	~ Torque ~ 1 kg cm (~15 oz in)	"	: HITEC HS-55
Battery Pack	~ 4 x 1.5 V AAA type	"	: ENERGIZER Ultimate Lithium L92

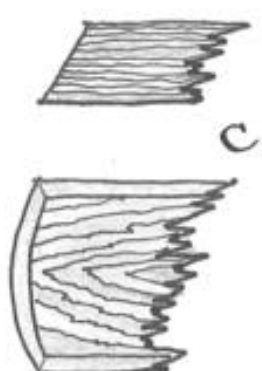
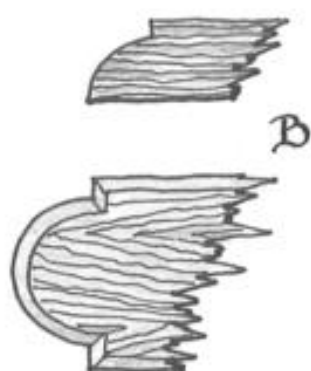
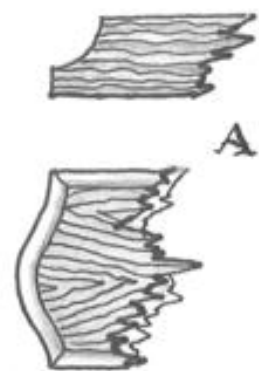
★ Notice - Size of cut-outs to be adjusted according installed equipment dimensions



~ Tabletop stand ~



Style options



chamfer

top view

~ Sidewall stand ~

