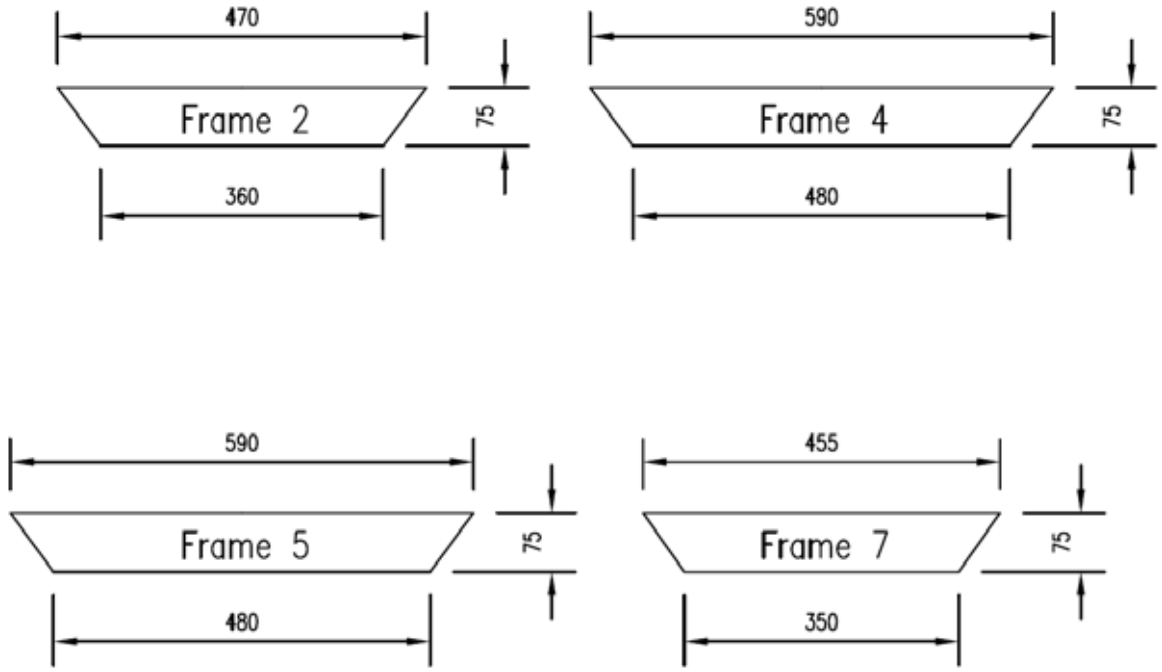
5. GUIDELINES FOR SELECTING AND USING TIMBER

Wood specification *	
Boat builder's preferred wood **	***Thin Gan*** (*Hopea Odorata Roxb*) Specific gravity – 0.68 (medium) Durability – very good Shrinkage – small Seasoning – easy
Alternative 1	***Ka Nyin*** (*Dipterocarpus* spp.) Specific gravity – 0.75 (medium) Durability – moderate Shrinkage – considerable Seasoning – moderately easy
Alternative 2	***Pyin Ma*** (*Lagerstroemia speciosa*) Specific gravity – 0.53 (light) Durability – good Shrinkage – moderate Seasoning – slowly
Length	If possible, it is recommended that boards be a minimum of 20 ft (6.1 m) long. Consideration should be given to the quantity of boats to be built in each size when ordering timber. If a board is not suitable for the larger boat due to damaged or split ends, it may be suitable for the smaller boat.
Sapwood	Sapwood, the outer and often lighter coloured part of the log, should never be used in boatbuilding. It is normally easy to distinguish this part of a board.
Seasoning	Seasoning is required for all boards. Boats should not be built with freshly sawn timber because shrinking and warping (bending) will occur. A minimum of four weeks during dry weather and more during the wet season are recommended for seasoning. It is recommended that the seasoning be as long as practical.
Storage	Freshly sawn boards should be selected and carefully stacked immediately after sawing. The ends should be painted to avoid splitting. The layers of planks should be separated by transverse battens of equal thickness (1" x 2"), spaced no more the 90 cm (3 ft) apart. The battens at the ends should be as close to the board ends as possible.

* All timber should be legally cut and from sustainably managed sources with appropriate government clearances. The situation regarding timber supply is constantly changing and guidance on suitable species may be updated in the future.

** Thin Gan is facing a high risk of extinction in the wild in the medium-term future and is a reserved species in Myanmar for which government permission is needed before cutting. Alternatives should therefore be considered.

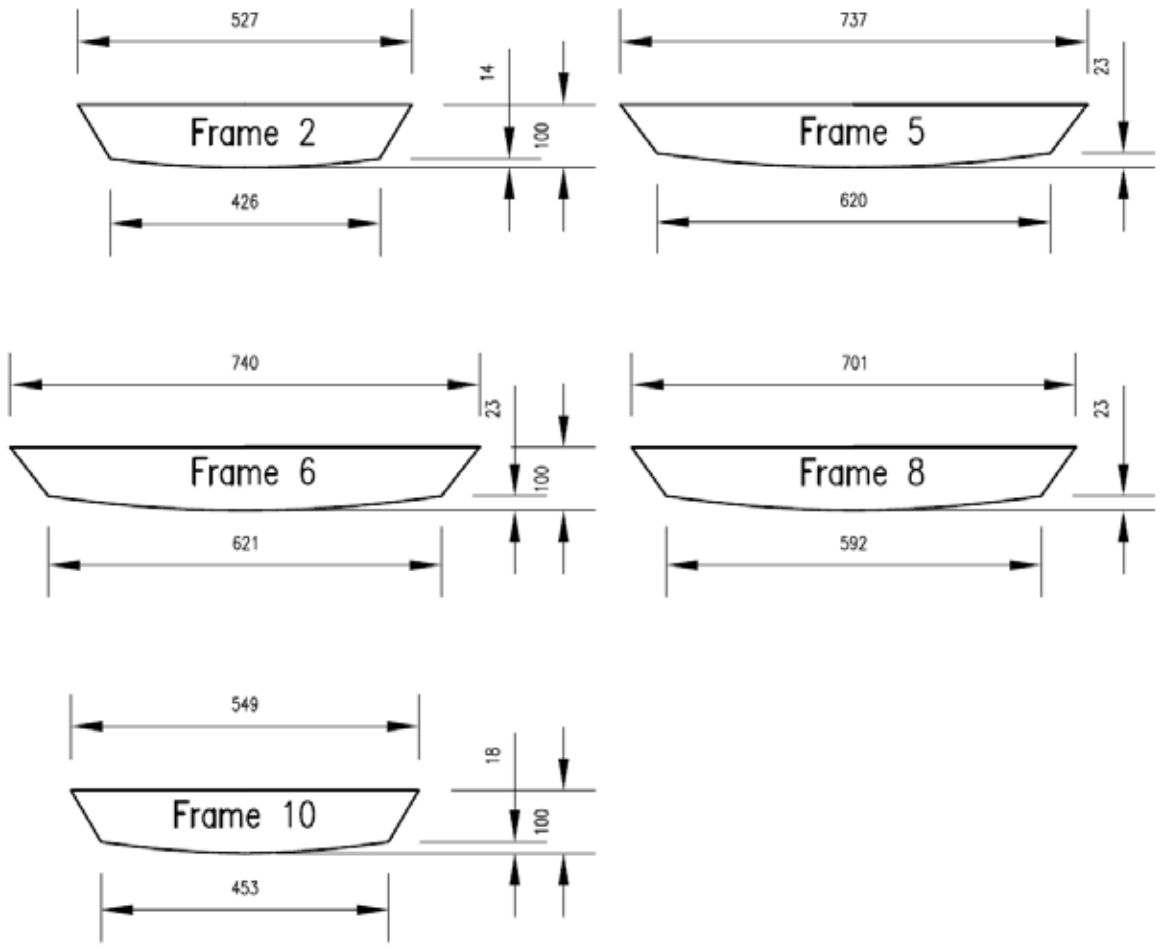
6. STEP-BY-STEP CONSTRUCTION METHOD

1	**12 ft & 18 ft** **<u>The floors</u>** The shape of the boat is generated from the floor timbers and the natural curve of the lower side planks (see step 12). **12 ft –** The dimensions of the necessary floor timbers are shown in step 2 and their positions are given in step 8. The timber required is: 38 mm x 75 mm. **18 ft –** The dimensions of necessary floor timbers are shown in step 3 and their positions are given in step 9. The timber required is: 38 mm x 100 mm. These shapes can be drawn onto paper for use as full-size templates or drawn directly onto the timber to be cut.
2	**12 ft** **<u>Floor dimensions</u>** Dimensions of floor timbers are as follows:  Note: The dimensions for floors at other frame positions may be determined once stem and transom are fitted (see step 19).

3 **18 ft**

Floor dimensions

Dimensions of floor timbers are as follows:



Note: The dimensions for floors at other frame positions may be determined once stem and transom are fitted (see step 19).

4	**12 ft & 18 ft** **<u>Mark out floors</u>** Draw the shape of the floors on the timber. **12 ft –** The timber required is: 38 mm x 75 mm. **18 ft –** The timber required is: 38 mm x 100 mm.	
5	**12 ft & 18 ft** **<u>Cut floors</u>** Cut the floor timbers to the required sizes. Shape the bottom of the floor with the required curve. **12 ft –** The bottom curve is: zero. **18 ft –** The bottom curve is: up to 23 mm (see step 3).	
6	**12 ft & 18 ft** **<u>Prepare lower side planks</u>** Cut two planks to the same size and shape to ensure symmetry of the boat; this is done by clamping the planks together while working. **12 ft –** The timber required is: 180 mm x 16 mm x 3 840 mm. **18 ft –** The timber required is: 220 mm x 19 mm x 5 360 mm.	

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12 ft & 18 ft
Mark lower side planks

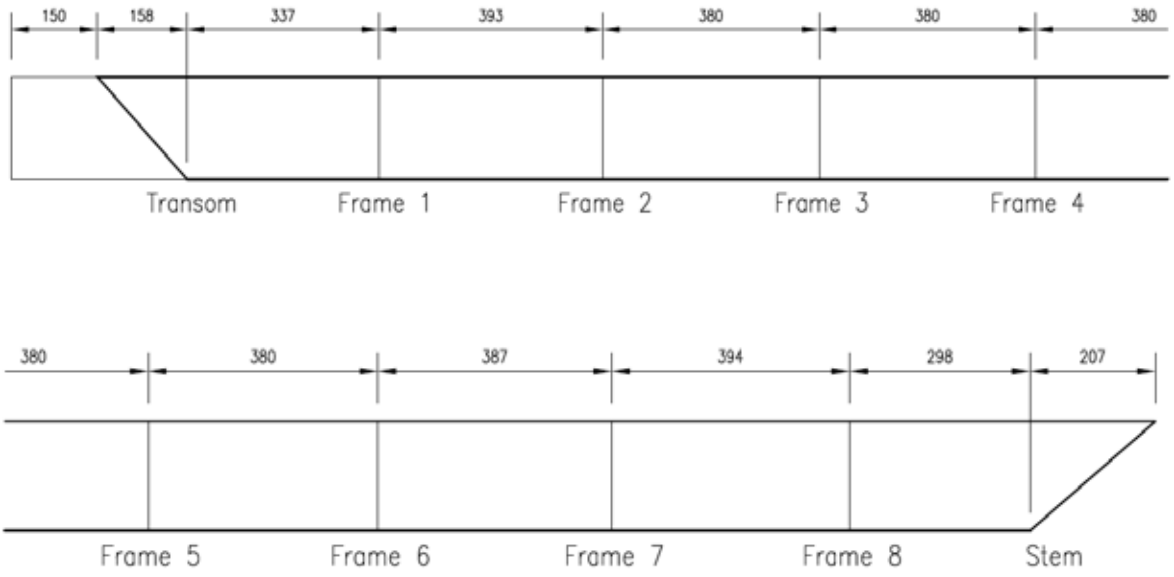
The positions of the frames and the angles of the ends of the planks are marked on the prepared planks. The required dimensions are given in steps 8 and 9.

Note: The forward (stem) end of the planks should be cut to the correct angle, whereas the aft end (transom) is not cut yet. This is left long to be cut later; the additional length should be about 150 mm, to suit local preferences.

8

12 ft – Lower side plank dimensions

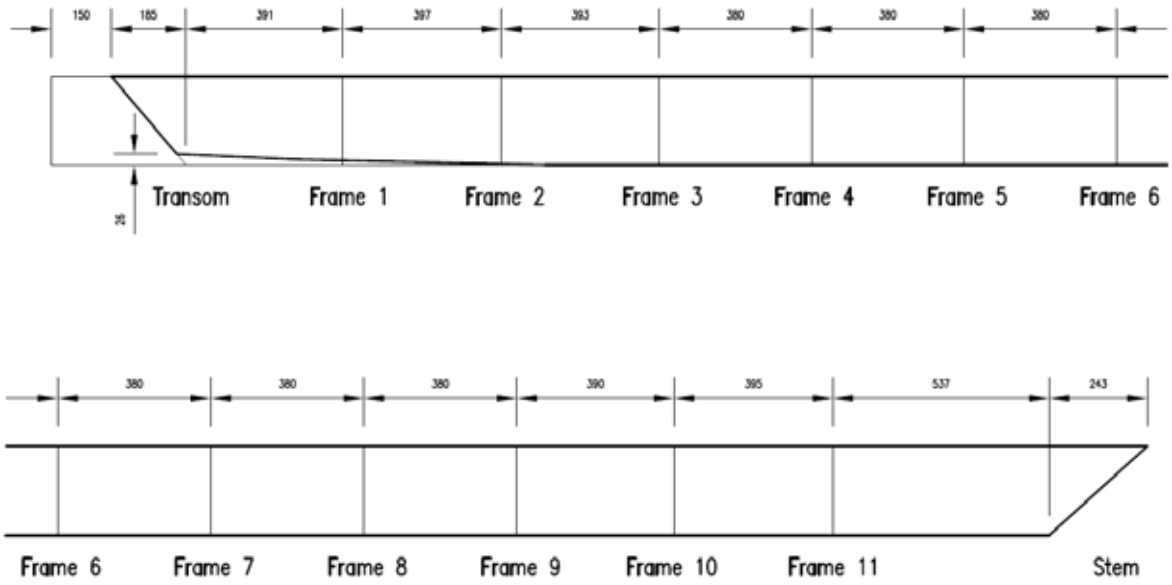
The lower side plank is marked out to the following dimensions:



9

18ft – Lower side plank dimensions

The lower side plank is marked out to the following dimensions:



10

12 ft
Install floor at frame 4

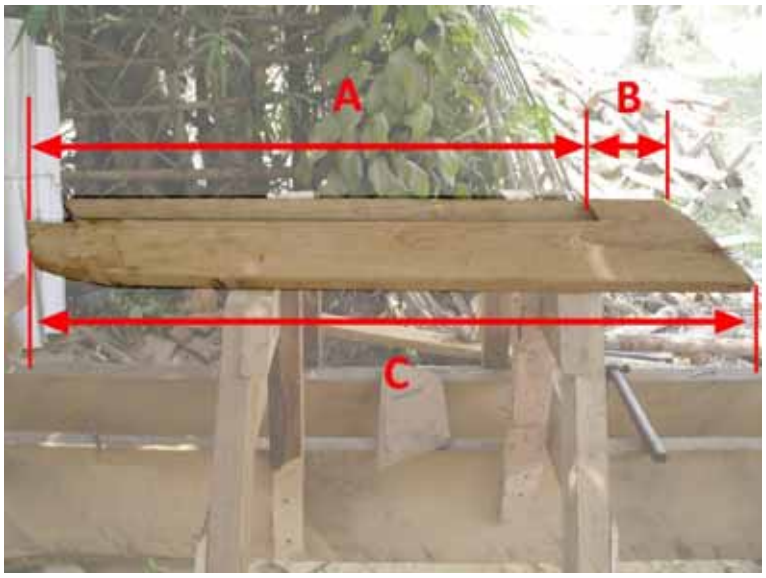
18 ft
Install floor at frame 5

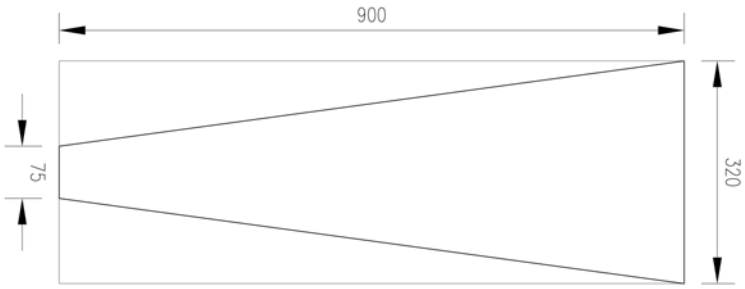
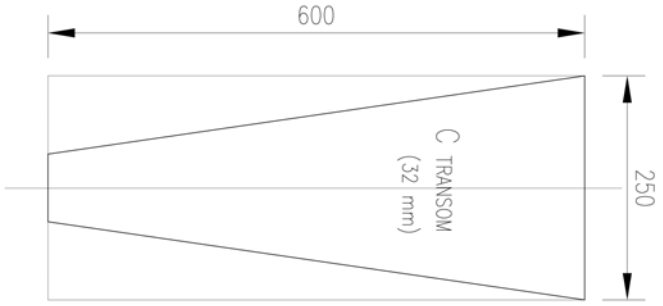
Align the floor to the line marked on plank. Pre-drill two nail holes (see step D in Section 6.1) and fasten the planks to each end of the floor.

Note: The floor is fitted aft of the marked line (see step 11).

12 ft & 18 ft – The fastenings required are: 2 mm x 50 mm nails for each frame.

11	**12 ft** **<u>Install floor at frame 5</u>** **18 ft** **<u>Install floor at frame 6</u>** Repeat step 10. Note: The floor should be fitted in front of the marked line. In general, the floors in the forward part of the boat are fitted in front of the marked line and those in the aft part behind the marked line.	
12	**12 ft & 18 ft** **<u>Set up lower side planks</u>** Place the assembly of planks and floors the right way up on the build frames. See how the angle of the floors defines the curve in the bottom of the boat as the ends are brought together. Note: This curve may be adjusted a little to suit local preference. If significant change is required, the lower side planks will need shaping at the ends.	
13	**12 ft & 18 ft** **<u>Prepare stem</u>** **12 ft –** The timber required is: 100 mm x 75 mm x 600 mm. **18 ft –** The timber required is: 125 mm x 100 mm x 950 mm.	

14	**12 ft & 18 ft** **<u>Shape stem</u>** The stem has the following dimensions: **12 ft –** The dimensions are: A = 490 mm, B = 25 mm, C = 600 mm. **18 ft –** The dimensions are: A = 750 mm, B = 90 mm C = 950 mm. Note: The rebate is cut to suit the planking thickness and angle.	
15	**12 ft & 18 ft** **<u>Assemble stem & lower side planks</u>** The stem is offered up to the lower side planks. A rope may be used to draw the ends of the planks together. Note: The angle of the stem is set by the angle of the cut at the end of the lower side plank (see note 7).	
16	**12 ft & 18 ft** **<u>Fit stem</u>** A clamp should be used to ensure a good fit and to hold the planks in place. Pre-drill the nail holes (see step D in section 6.1) and fasten the stem to one plank and then to the other. **12 ft & 18 ft –** The fastenings required are: 2 x 50 mm nails for each plank. Note: Take care not to split plank ends when fastening.	

17	**12 ft & 18 ft** **<u>Mark & cut transom</u>** **12 ft –** The timber required is: 250 mm x 32 mm x 600 mm. **18 ft –** The timber required is: 320 mm x 40 mm x 900 mm.	**12 ft – <u>Transom dimensions</u>**  **18 ft – <u>Transom dimensions</u>** 
18	**12 ft & 18 ft** **<u>Fit transom</u>** A clamp should be used to hold the planks in place. Pre-drill the nail holes (see step D in section 6.1) and fasten the transom to one plank and then the other. **12 ft & 18 ft –** The fastenings required are: 2 mm x 50 mm nails for each plank. Notes: 1) The angle of the transom is set by the angle marked on the lower side planks (see steps 8 & 9). 2) Take care not to split the plank ends. 3) The ends of the planks are left long to be cut later.