

Extract of Dimensions and Tables of Offsets

from

Building a River Shannon Gandelow: Step-by-Step Guide with Plans

By Patrick Beutement

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About this Guide. The reason for writing this guide is to record and share the measurements and 'quirks' of rejuvenated gandelows; and to provide guidance to boat-builders who wish to recreate these elegant and functional craft. The boat described in this guide is a Limerick design, of the type used at Coonagh, and it is thought to be the first 23-foot gandelow to have been built for some time. In 2014 the new boats built by the Ilen School and Network for Wooden Boat Building were raced in Venice, Dublin and Limerick. If you decide to build a gandelow, the very best of good luck and I hope to see your boat racing in Limerick one day!

Note on terms used: Different terms are used for the same parts of a boat in various regions of the world. For example, in Ireland, the temporary patterns / structures put inside the boat to support it whilst it is being built are called moulds - in England they would be called frames. In Ireland the internal ribs are called knees - in England they are called ribs. In Ireland, a set of knees all together is called a frame! So, to save any confusion, where possible, **Irish terminology is used in this Guide.**

Copies of Photographs. High-resolution digital versions of the photographs in this Guide are available for a fee on request. Please email your name, address and a list of the photos required (by Figure number) to: books@beautement.com

Disclaimers. The author has applied best endeavour in trying to make the instructions, quantities, measurements and guidance as correct as possible, but please note that *minor inconsistencies may remain*. If you find any, I would be *most grateful* if you could email the corrections to me for inclusion in the next version of the Guide. Thank you.

Terminology. Please note that specialist boat-building terminology (scarf, rabbet etc) is explained in the text and listed in a glossary, whereas it is assumed that the reader is familiar with general boating and nautical terms (port, starboard, stem, stern, transom and so on). Descriptions of general woodworking or carpentry techniques common to all boatbuilding have *not* been included - please use your experience to fill these gaps where they occur - if in doubt, ask your local expert for advice.

This Guide is not for beginners. It is assumed that you, the reader, have already built a boat, or are working with someone who has.

INTRODUCTION TO THE GANDELOW - PLANS, MATERIALS AND TOOLS

This guide is for building the 23 foot (7 metre) gandelow and the measurements and details given here are for this boat. ¹ As far as is known, this is the first time that the dimensions of a traditional Shannon Estuary Gandelow have been recorded in detail, though the design here is but one example of the many types and varieties that would have been made by the different boat-builders down the years.

PLANS AND MEASUREMENTS

23-foot Gandelow – Sketch Plan

Not to Scale

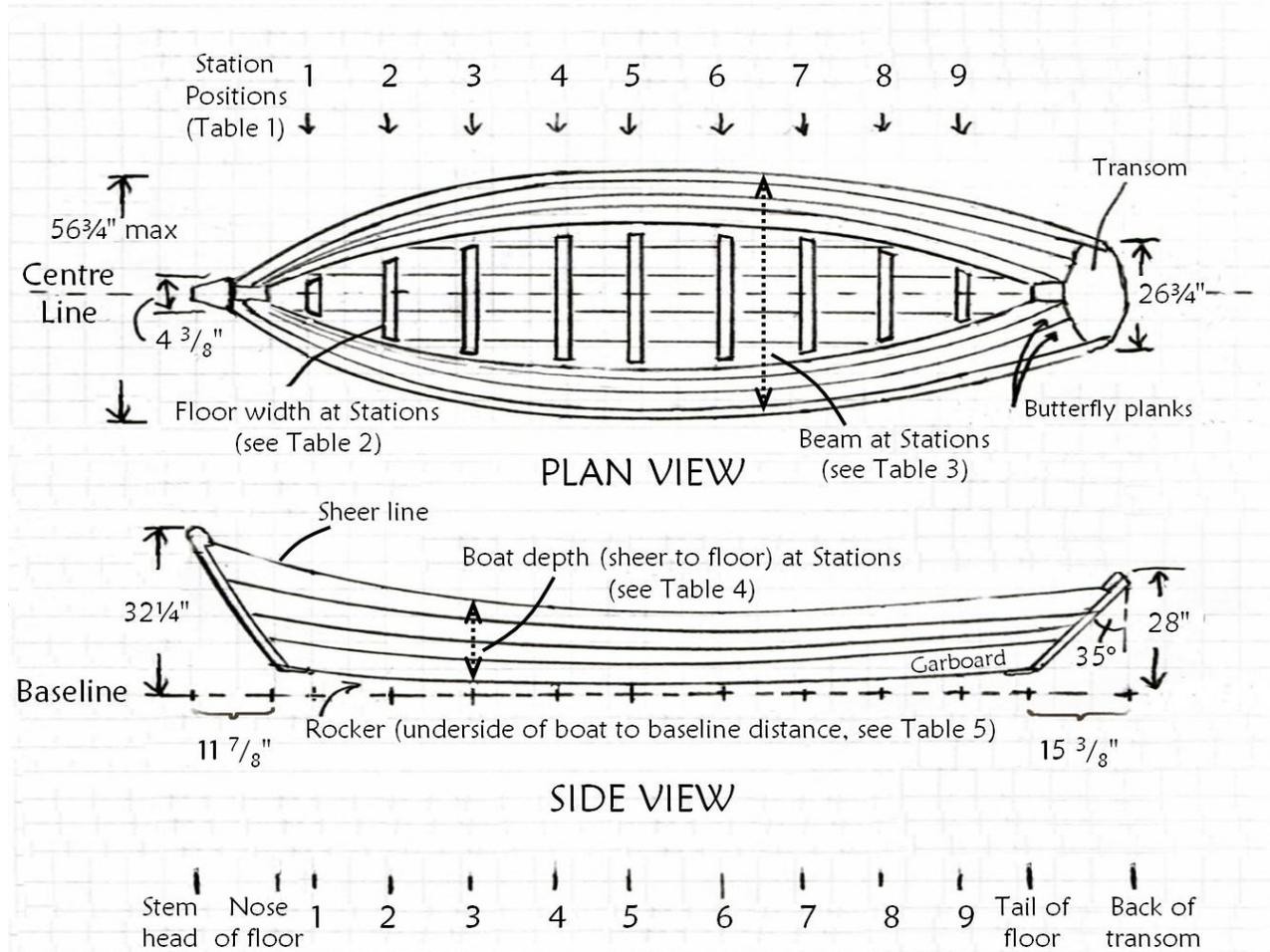


Figure 6 - Sketch plan and side view of the measurements (Imperial) of a Gandelow.

Plans. A not-to-scale sketch plan view and side view of a gandelow is shown in Figure 6. More measurements and details are included in the plans and diagrams in Appendix I [in the full book].

Conversion between Imperial and metric measurements. In this book, dimensions are in feet (') and inches (") - known as 'Imperial' sizes - metric equivalents will also be given (rounded to the nearest number). It is best to work entirely in either Imperial or metric - converting back and forth between the two just introduces errors. As a rule of thumb, $1" = 25\text{mm}$, $4" = 100\text{mm}$ and $40" = 1000\text{mm}$ (ie, one metre). Fractions are more difficult to convert, so links to online conversion tables are provided in the References at the end of the book. Sometimes in this book you will see $1\frac{1}{4}+$ " written, where the '+' means 'a little bit bigger than one and a quarter inches'. This is an example of the Irish approach.

¹ The A K Ilen Wooden Boat School have built a smaller gandelow, suitable for two rowers rather than the usual three, which is 15 feet (4.5 metres) long - basic plans for this boat are at the end of this Guide in Appendix 2.

Station positions. The distance from the nose (front) of the floor (before it is cut to fit the bottom of the stem post) to each of the Station lines are in Table 1.

Stn No:	Nose of floor	1	2	3	4	5	6	7	8	9	Tail end of floor
Nose to saddle front (inches)	-	15	41 ³ / ₈	67 ³ / ₄	94 ¹ / ₈	120 ¹ / ₂	146 ⁷ / ₈	173 ¹ / ₄	199 ⁵ / ₈	226	251 ¹ / ₂
Nose to saddle front (cm)	-	38	105	172	239	306	373	440	507	574	639

Table 1 - Distances to Stations (to the front of saddles) from the nose of the floor.

Boat widths. The widths of the boat at each Station are shown in Table 2. The width of the floor is measured *inside the boat across the top of the floor*. If you want the outer width add 1¹/_{4"}, 32mm (for the two outer planks). The widths in the next table, Table 3 below, are the beam at each Station, measured to the *outer edges of the sheer planks across the top* (for the inner edges at the sheer, subtract about 1", 25mm).

Stn No:	Foot of Stem post	1	2	3	4	5	6	7	8	9	Foot of stern post
Width of top of floor (inches)	3	13	26 ¹ / ₈	31 ³ / ₈	33 ¹ / ₈	32 ¹ / ₂	32 ¹ / ₄	29 ⁷ / ₈	24 ³ / ₈	14 ³ / ₄	3
Width of top of floor (cm)	7.6	33	66.4	79.6	84.2	82.6	82	75.8	62	37.4	7.6

Table 2 - Width of top of the floor of the boat at each Station.

Stn No:	Rear of Stem	1	2	3	4	5	6	7	8	9	Rear of transom
Outer width at sheer (inches)	4 ³ / ₈	29 ¹ / ₂	46 ³ / ₄	55	56 ³ / ₄	56 ⁵ / ₈	55 ¹ / ₈	52 ¹ / ₈	47	39 ³ / ₄	26 ³ / ₄
Outer width at sheer (cm)	11.1	74.9	118.7	139.7	144.2	143.8	140	132.4	119.4	101	68

Table 3 - Width of the top of the boat at each Station (ie, the beam at the sheer).

Boat height. Table 4 lists the height at each Station, measured *inside the boat vertically down at the centreline*, from the top of sheer plank to the top of the floor. Add 1" (2.5cm) to the underside of the floor.

Stn No:	At nose of floor	1	2	3	4	5	6	7	8	9	At tail of floor
Depth to top of floor (inches)	21 ⁷ / ₈	20 ³ / ₄	18 ³ / ₄	17 ¹ / ₂	16 ³ / ₄	16 ¹ / ₂	16 ³ / ₈	16 ³ / ₈	16 ¹ / ₄	16 ¹ / ₂	16 ³ / ₄
Depth to top of floor (cm)	55.6	52.7	47.6	44.5	42.5	41.9	41.6	41.6	41.3	41.9	42.5

Table 4 - Depth of the boat at each Station to top of sheer plank (to top of gunwale is 1/2" more).

Rocker curve under floor. The size of the rocker gap underneath the boat at each Station, measured from the underside of the floor down to a baseline, level with the lowest point, is shown in Table 5.

Stn No:	Nose of floor	1	2	3	4	5	6	7	8	9	Tail of floor
Rocker size (inches)	4 ³ / ₈	3	1 ³ / ₄	³ / ₄	³ / ₁₆	0	¹ / ₈	¹ / ₂	1 ¹ / ₄	2 ¹ / ₂	4
Rocker size (cm)	11.1	7.6	4.4	1.9	0.5	0	0.3	1.3	3.2	6.3	10.2

Table 5 - Size of the under floor rocker curve at Stations.

FACILITIES, ASSISTANCE NEEDED AND SAFETY

Facilities. These gandelows were traditionally built outside in the open air or in a rough shed or under temporary cover. You *could* do the same if you wished, though at least *the following is recommended*:

- **Site.** Find an area of flat ground or the concrete base of a workshop a minimum of 30 feet long by 20 feet wide (9 metres by 6 metres), preferably under cover.
- **Storage.** A separate storage area for tools, timber and other supplies is required. These days, this will probably need to have a stout lock.
- **Power.** Light (and a little heating by the tea area) are a good idea. Power and water are essential.
- **Assistance.** At least one extra pair of hands are required for most of building of the floor and fitting of the planks (two assistants are even better for this). The rest of the boat could be built by one person if a helper can be called on occasionally. Building the whole boat on your own, though theoretically possible, is not recommended.
- **Safety is important!** At a minimum, have a First Aid kit on hand, wear gloves when using glues, paints and solvents and wear a face mask and goggles when there are fumes, dust and flying fragments. Use ear defenders when using noisy machines. Make sure that your admiring visitors are safe too! Clean up rubbish on the floor as you go along as it saves tripping over offcuts and such like. This is especially important as fire is always a serious risk in workshops - keep solvents stored in ventilated areas and, I suggest, *ban smoking and naked flames in and around your workshop.*

ESTIMATES OF COST

At the time of writing (2015) the estimated cost (in GB pounds, excluding purchase tax, VAT) of the timber and materials listed below is about £1800. However, prices vary depending on where you live. There are also many opportunities for making savings if you are reusing materials or buying second-hand.

Marking out. Use sash cramps to hold the boards together as shown in Figure 10. Now draw a centreline from one end to the other of the centre plank (eg, using a chalked string). The edge of the front end of the plank will be the nose of the floor. Now draw the positions of the Stations back from the nose using the dimensions from Table 1 on page 6 of the Introduction. Use a roofers square to make sure that the Station lines are at a right-angle to the centreline, as shown in Figure 11.

Marking the offsets. Draw half-breadth offsets (dimensions in Table 6 below) from the centreline out towards *each* edge of the floor at each Stations as James Madigan, right, shows. Do not forget the bearding line² offsets - 3" (75mm) from the nose and tail of the floor (at the foot of the stem and stern posts, see Figure 12).

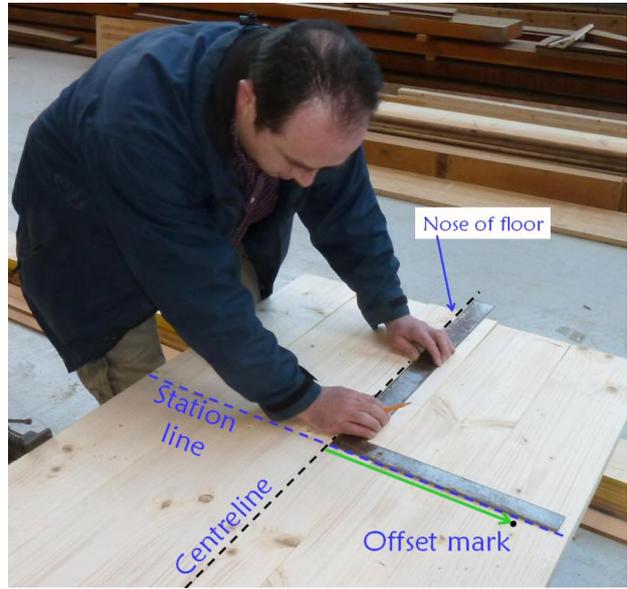


Figure 11 - Marking out stations / offsets.

Stn No:	Foot of Stem post	1	2	3	4	5	6	7	8	9	Foot of stern post
Half-breadth of floor (inches)	1½	6½	13 ¹ / ₁₆	15 ¹¹ / ₁₆	16 ⁹ / ₁₆	16¼	16 ¹ / ₈	14 ¹⁵ / ₁₆	12 ³ / ₁₆	7 ³ / ₈	1½
Half-breadth of floor (cm)	3.8	16.5	33.2	39.8	42.1	41.3	41	37.9	31	18.7	3.8

Table 6 - Half-breadths offsets of floor of boat at each Station.

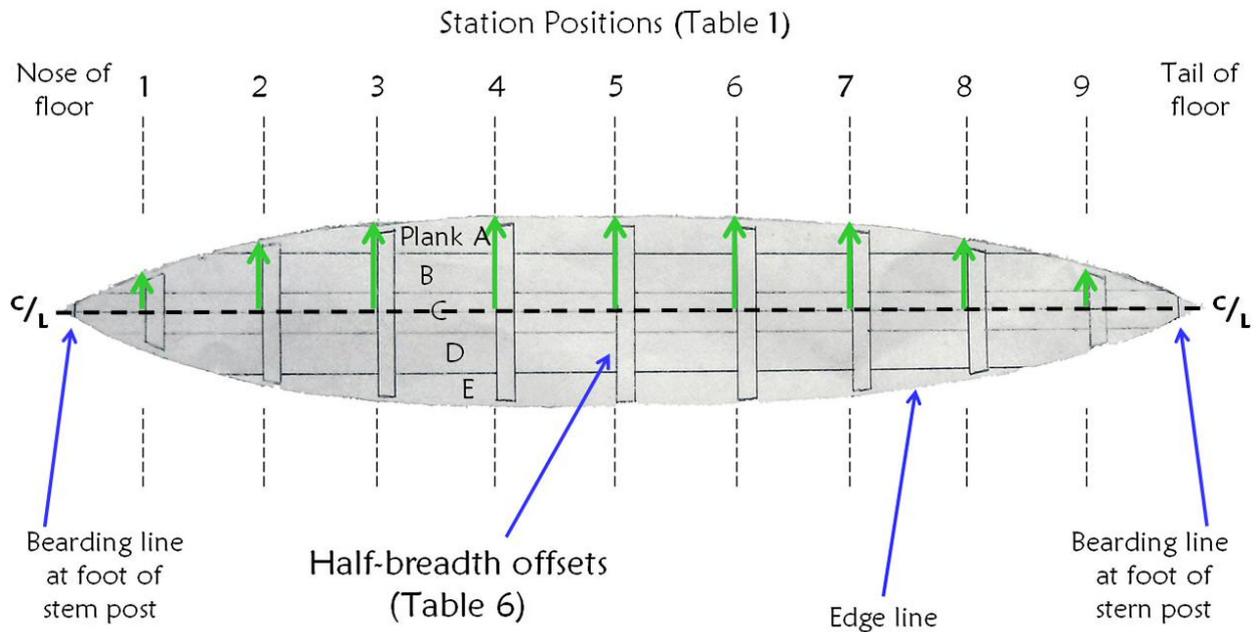


Figure 12 - Position of Stations and dimensions of half-breadth offsets.

Joining up the offsets. Put a small nail in each of the marked offset points and run a flexible batten along them to mark out the curve of the edge of the floor. It is VERY important to get a 'fair' line (ie, one that is smooth and looks 'right'). The edge of the floor sets the shape of the whole boat - a wobbly line will make a wobbly boat! Make sure you draw the line clearly, especially if you are working in poor light. The edge line is needed to guide both the sawing out and the planing of the edge level of the floor planks.

² A bearding line is the name for the place where the edges of two pieces of wood meet.

Sawing the planks to the outline of the floor. Using a jigsaw, cut along *just outside* the edge line, taking off the sash cramps as you go. You need to cut outside the line as you will need to be able to see it for cutting the bevel along the outside edge of the floor (see the last sub-task in this Task below).

Planing the Caulking bevel. The floor planks are not glued together as they need to be able to expand and contract as they get damp and dry out. However, to keep them as watertight as possible, 'caulking' (made usually of cotton wadding) is hammered between the planks once the boat is assembled. The caulking fits into wedge-shaped slots on the underside made by planing all along the edges of the floor planks as shown in Figure 13 - note that *only* the centre plank has both sides bevelled!

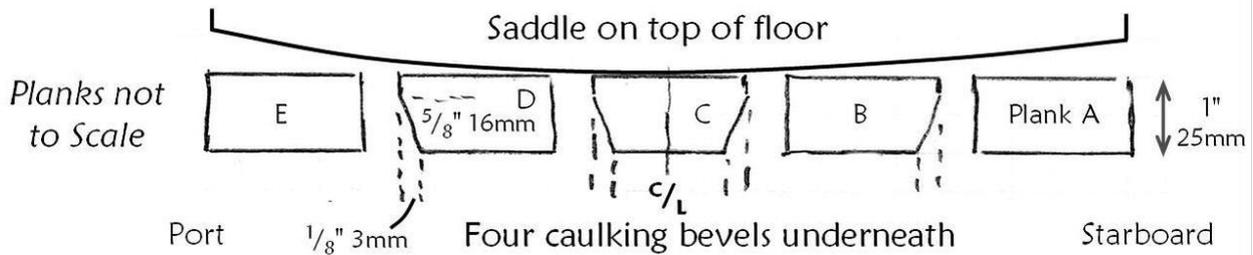


Figure 13 - Dimensions of caulking bevels - section viewed from the stern.

Preparing and making the saddles. The saddles hold the floor planks together and will act as a support for the knees (ribs). The saddles are made from pieces of white deal 36" (91.5cm) long, planed to a finished size of 3 7/8" (98mm) wide and 1 3/4" (45mm) thick. The underside of each piece is then planed to a smooth curve using top-to-bottom dimensions marked on the side of the saddle as shown in Figure 14. The smooth curve is important as it sets the shape of the bottom planks of the boat. The rear top edge of each saddle is then bevelled off as shown in the cross-section.

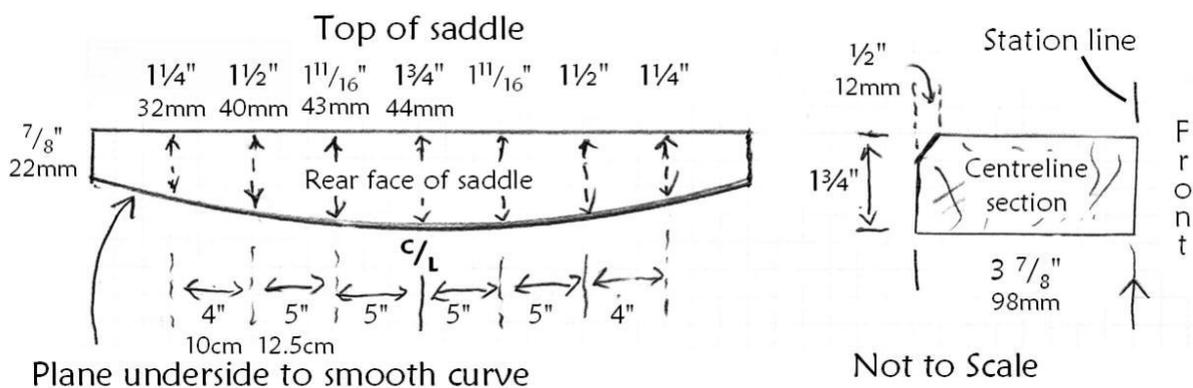


Figure 14 - Saddle dimensions.

Cutting the saddles to length. With a square, draw a line all round the centreline of each saddle. Mark each saddle clearly with its Station number on the top and bottom. Now place the floor planks back on the working frame, top uppermost and clamped lightly together with the sash cramps. The saddles are positioned on the planks with their front edges aligned with the Station lines and the centrelines lined up. The outer ends of the saddles are marked 3/4" (19mm) in from the edge of the floor and the waste wood is sawn off them, see Figure 15 [see full book]. Cutting the saddles this way leaves a gutter along the edges of the floor which enables water to move freely so that the boat can be easily bailed out or drained. This gap at the chine³ between the saddles and the side planks is called a limber⁴.

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³ The 'chine' is the usual name for the sharp edge where the side planks meet the floor of a flat-bottomed boat (as opposed to the continuous curve, often called the bilge, of round-bottomed boats).

⁴ The 'limber' is the name for any gaps left inside so that water doesn't get trapped (otherwise rot would start).