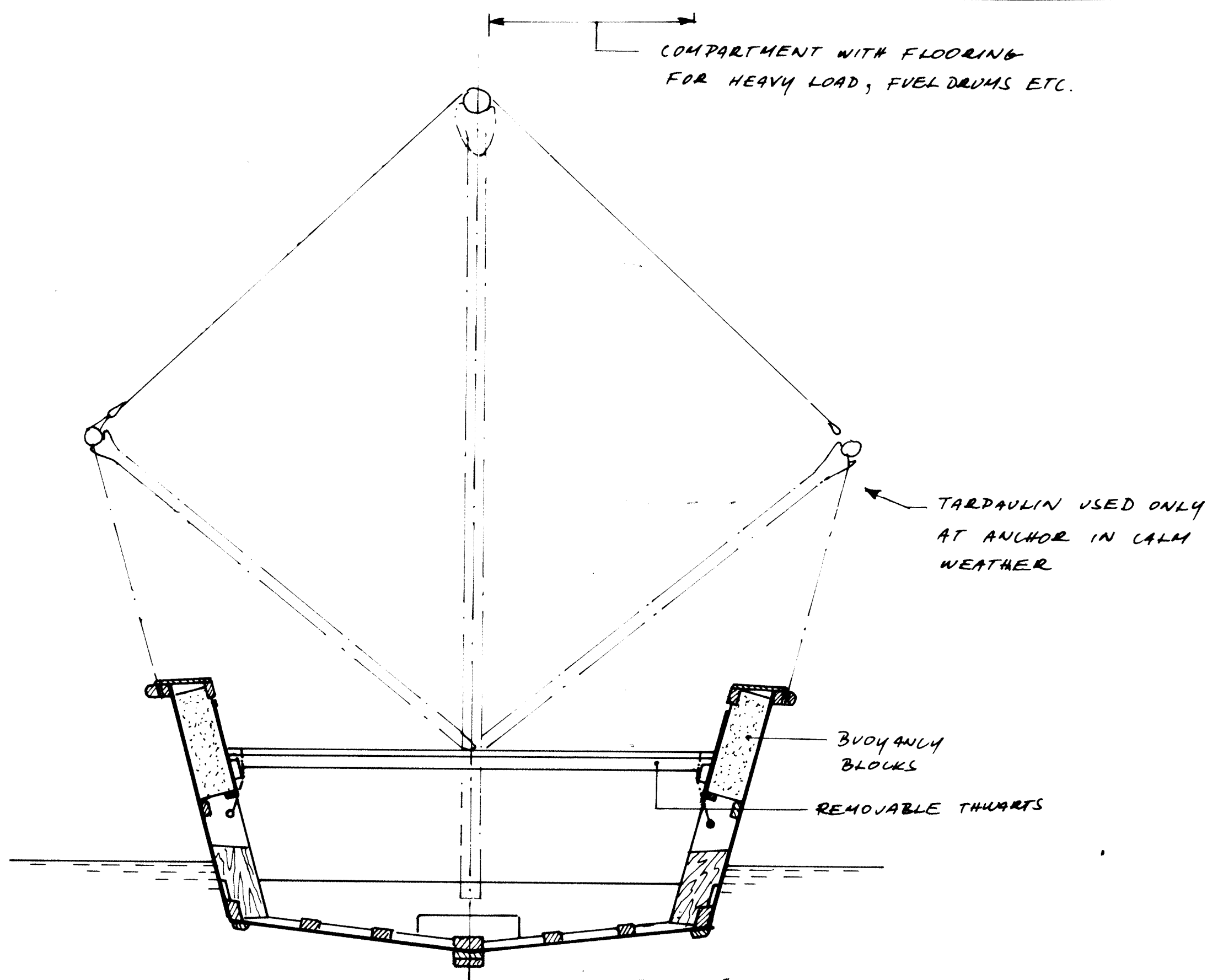
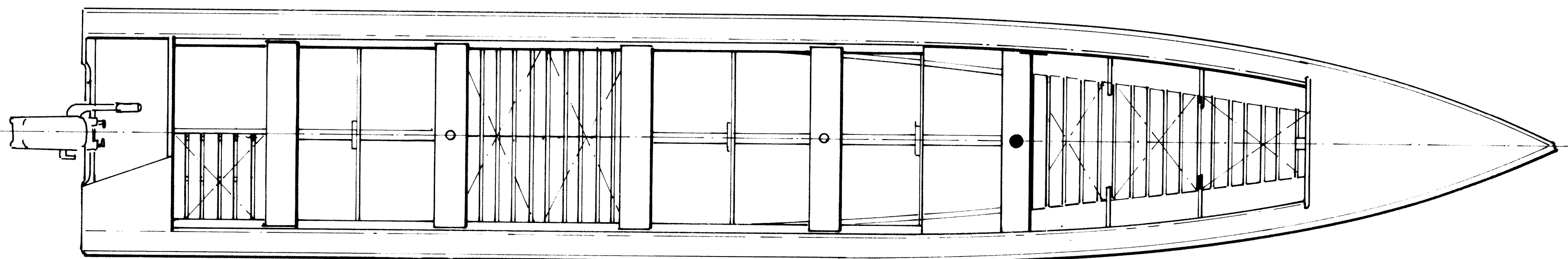
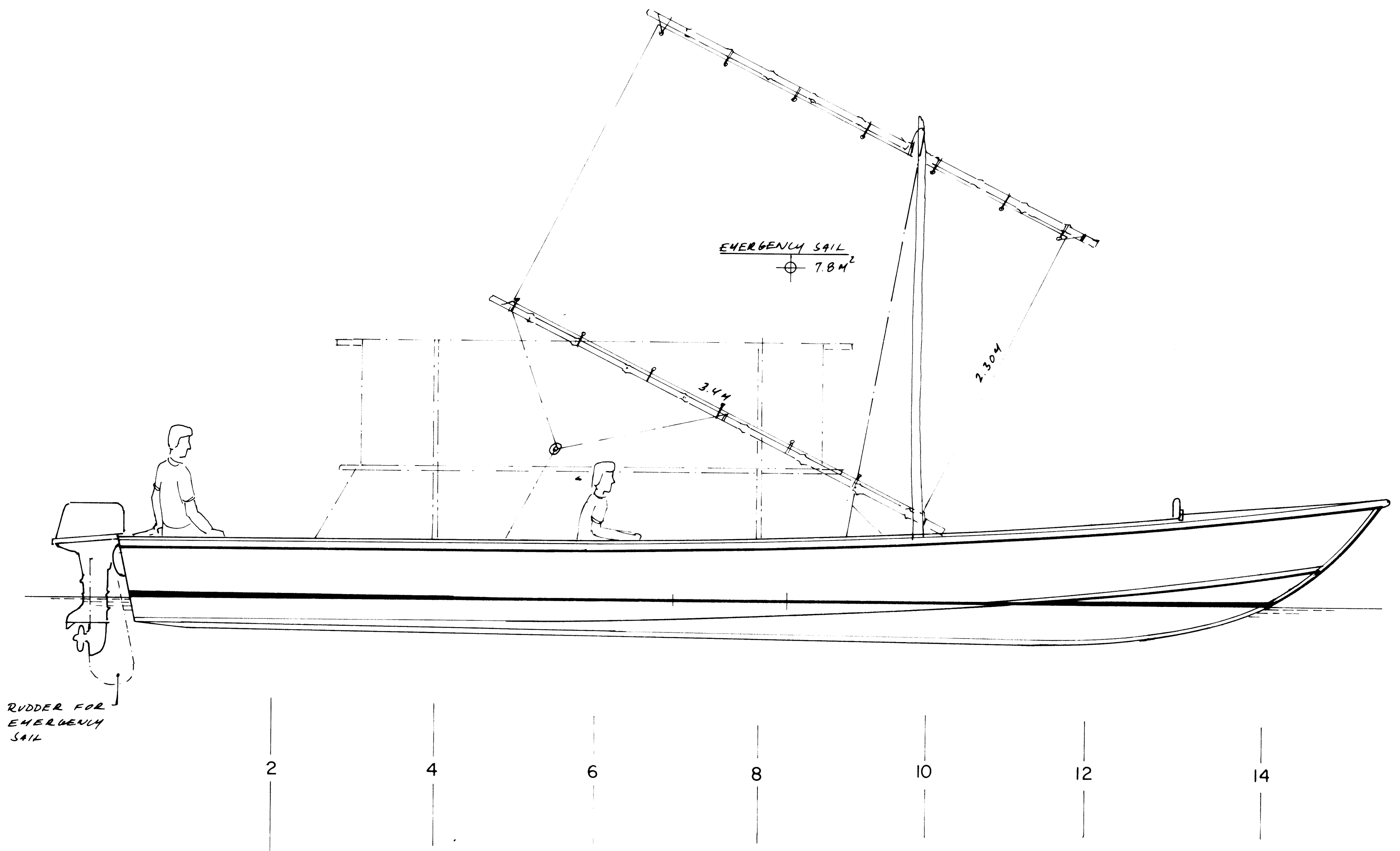
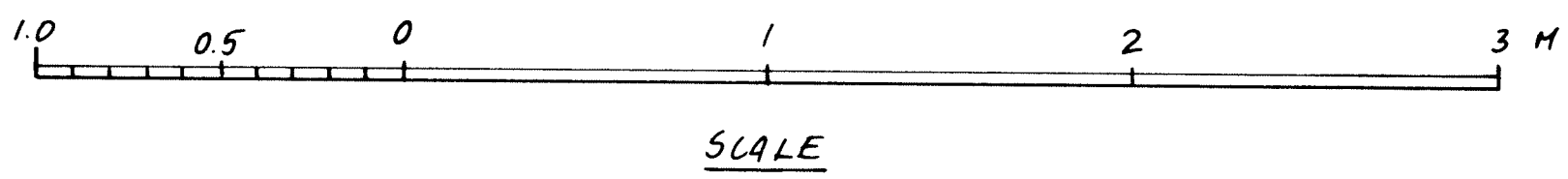


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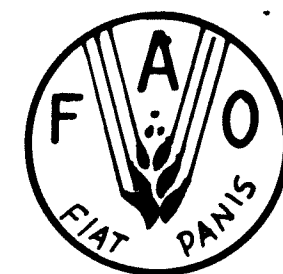


MIDSHIP SECTION

1:10

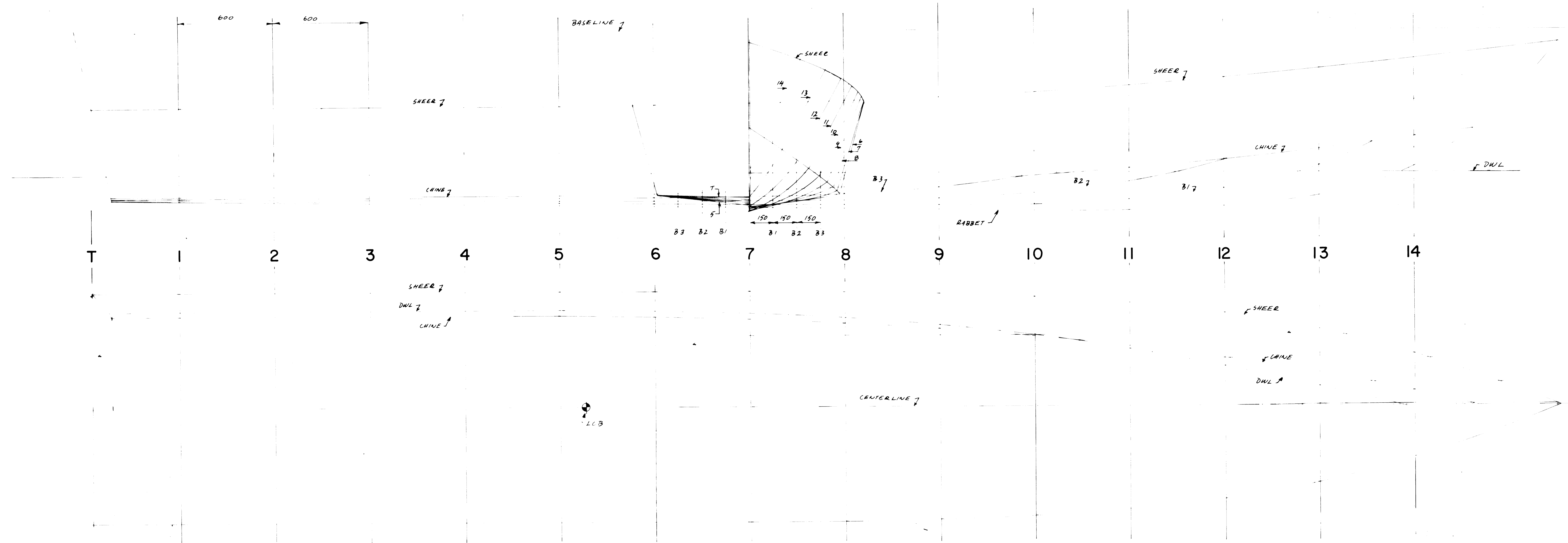
**PARTICULARS**

LENGTH OVER ALL	LOA = 9.30 M
BEAM MOULDED	B = 1.50 M
BEAM MAXIMUM	B <sub>MAX</sub> = 1.61 M
DEPTH MOULDED TO RABBIT	D = 0.65 M
W <sub>3</sub> BIC NUMBER LOA x B x D	LWD = 9.0 M <sup>3</sup>
LENGTH WATERLINE, DWL	LWL = 8.20 M
BEAM WATERLINE, DWL	BWL = 1.24 M
DRAFT MAXIMUM, DWL	T = 0.25 M
FREEBOARD MINIMUM, DWL	F = 0.44 M
WEIGHT EMPTY	= 500 kg
SERVICE LOAD, DWL	= 700 kg
DISPLACEMENT, DWL	= 1200 kg
MAXIMUM ALLOWED LOAD	= 1200 kg
ENGINE, MAXIMUM, OUTBOARD, 25-30 HP, 20" SHAFT	
SERVICE SPEED, DWL	V = 12 KNOTS
SAFETY FEATURES: TARPAULIN 7.8 M <sup>2</sup> USED AS EMERGENCY SAIL	
POSITIVE FLOTATION SUBMERGED = 390 kg	
OF WHICH IN BUOYANCY BLOCKS = 160 kg	

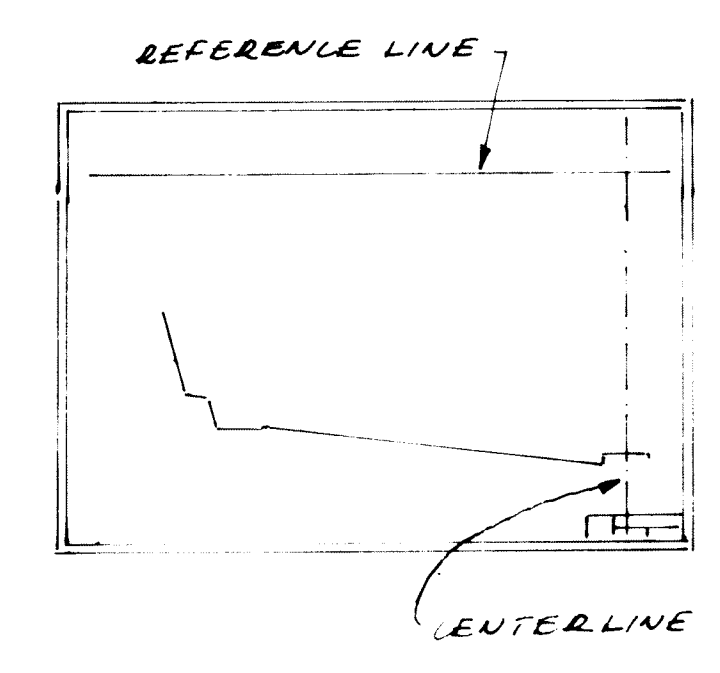


**9.3m Canoe  
GENERAL ARRANGEMENT**

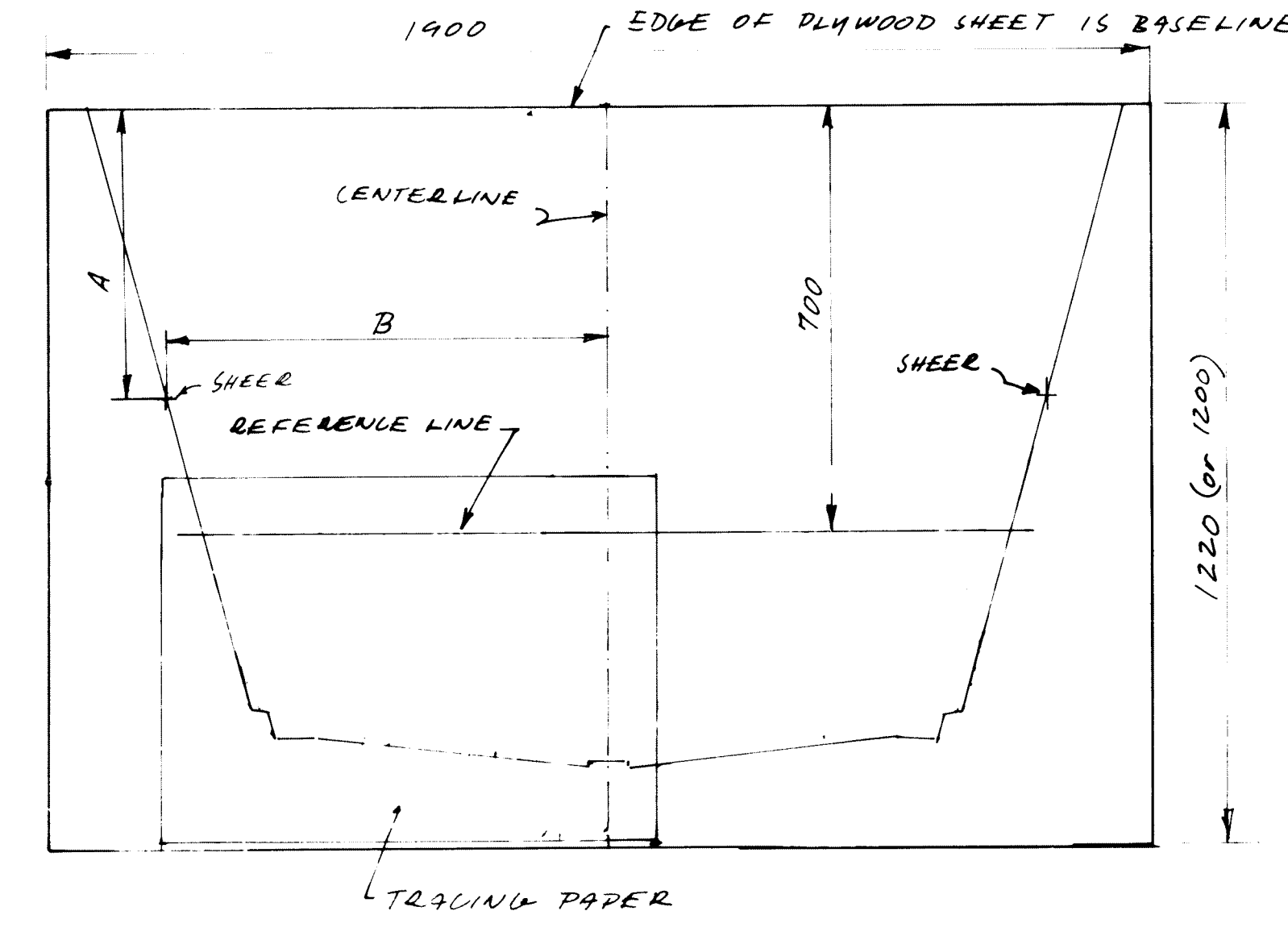
SCALE = 1:10, 1:20	DESIGN NO	DRWG. NO
DESIGN: P. GUTTORSEN	<b>PNG-8</b>	<b>I</b>
Ornsted, Feb-89		



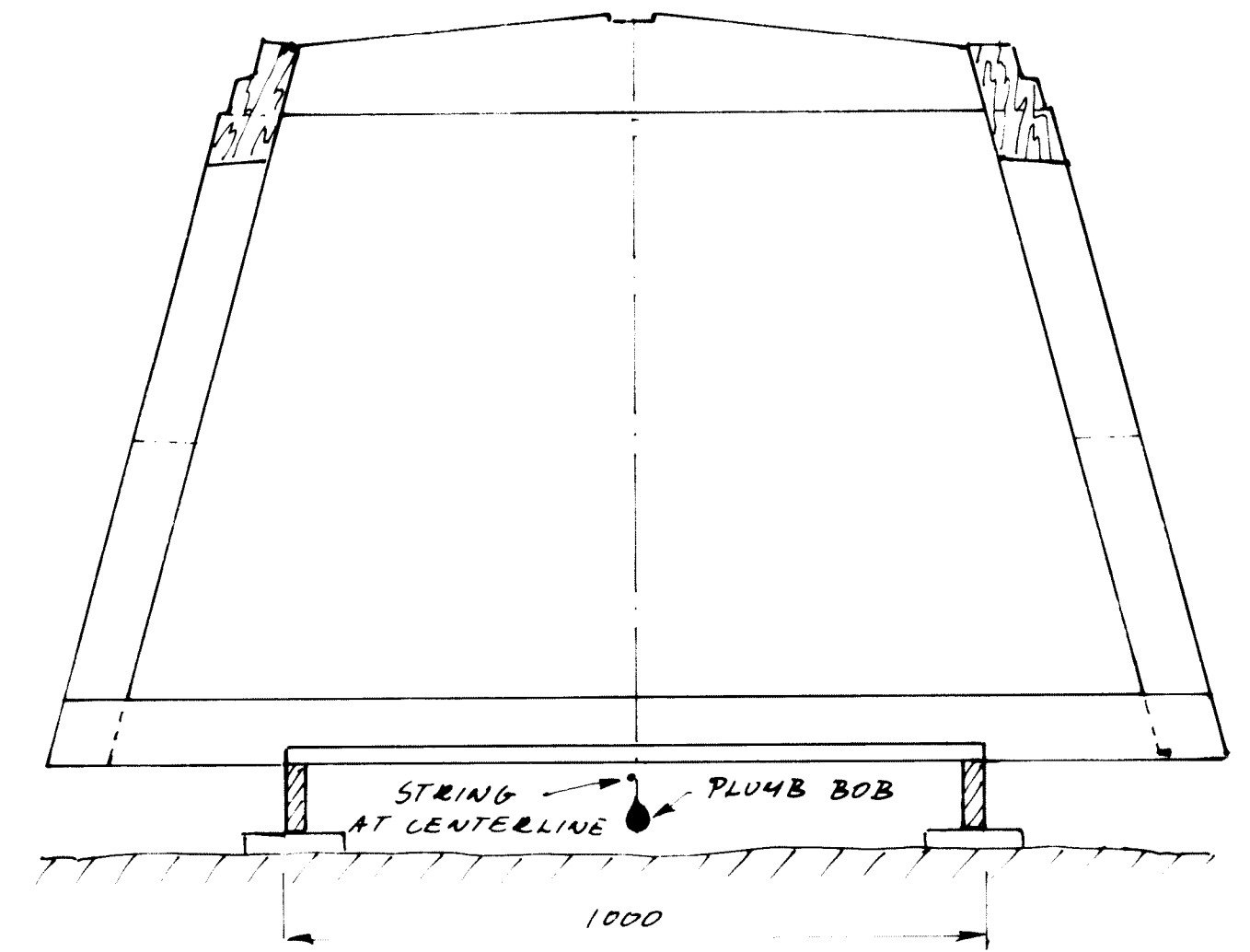
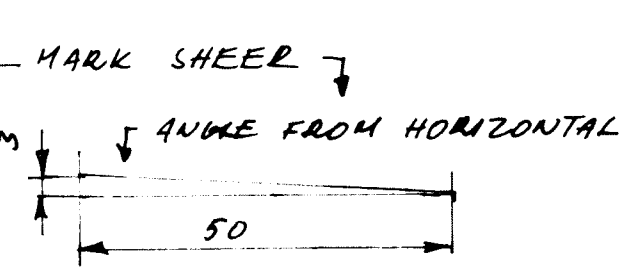
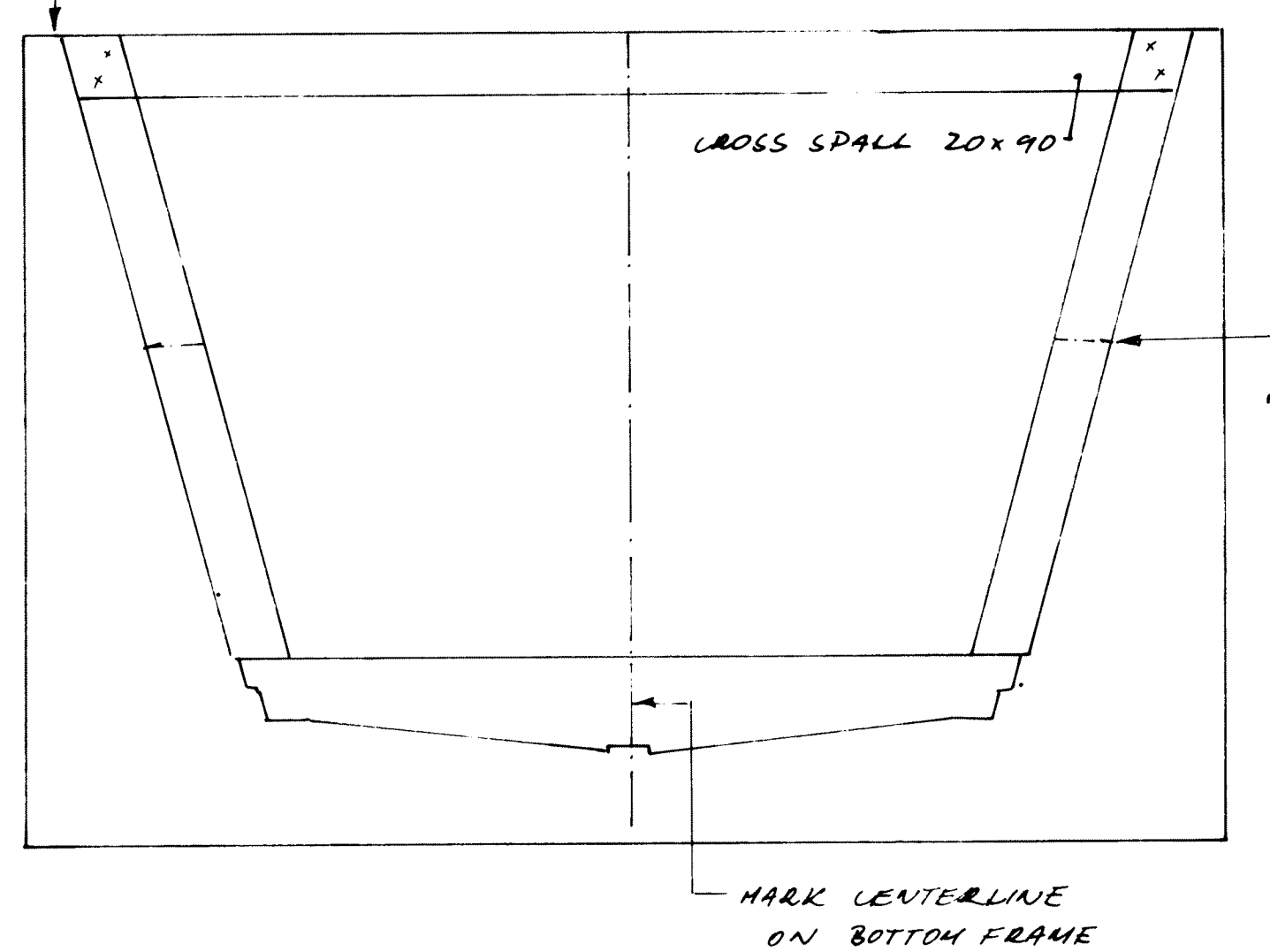
- 1) BUY A SHEET OF TRANSPARENT TRACING PAPER 60x80 CM
- 2) PUT THE FULLSCALE FRAME DRAWING (DRAWING NO 3) ON A FLAT FLOOR.
- 3) FIX THE TRACING PAPER FIRMLY TO THE DRAWING WITH TAPE OR PINS
- 4) TRACE OFF ALL THE FRAMES



- 5) CUT A SHEET OF PLYWOOD TO THE LENGTH OF 1900
- 6) THE EDGE OF THE PLYWOOD IS STRAIGHT AND CAN BE USED AS THE BASELINE. DRAW THE CENTERLINE EXACTLY AT RIGHT ANGLE TO THE BASELINE (MEASURE FROM THE STRAIGHT EDGE)
- 7) PLACE THE TRACING ON THE CENTERLINE AND WITH REFERENCE LINE 700 FROM BASELINE



- 8) FIX THE TRACING FIRMLY TO THE PLYWOOD AND TRANSFER THE LINES TO THE PLYWOOD BY PRICKING THROUGH THE PAPER
- 9) TURN THE TRACING PAPER OVER. ALIGN CAREFULLY WITH THE CENTERLINE AND THE REFERENCE LINE. PRICK THE LINES ON TO THE PLYWOOD
- 10) REMOVE TRACING PAPER. MARK SHEER POINTS. DRAW LINES BETWEEN POINTS
- 11) MARK AND CUT OUT SHAPE OF BOTTOM FRAME AND SIDEFAMES
- 12) FIX TOGETHER WITH GUSSETS OF 9 PLYWOOD AND CROSS SPALL 20x90



SHEER LINE															
	T*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
HEIGHT FROM BASELINE "A"	485	475	475	475	475	475	468	460	444	423	392	352	304	244	175
DISTANCE FROM "B" CENTERLINE	730	730	730	730	730	730	730	730	727	717	693	650	585	482	328

\* MEASURED ALONG TRANSOM

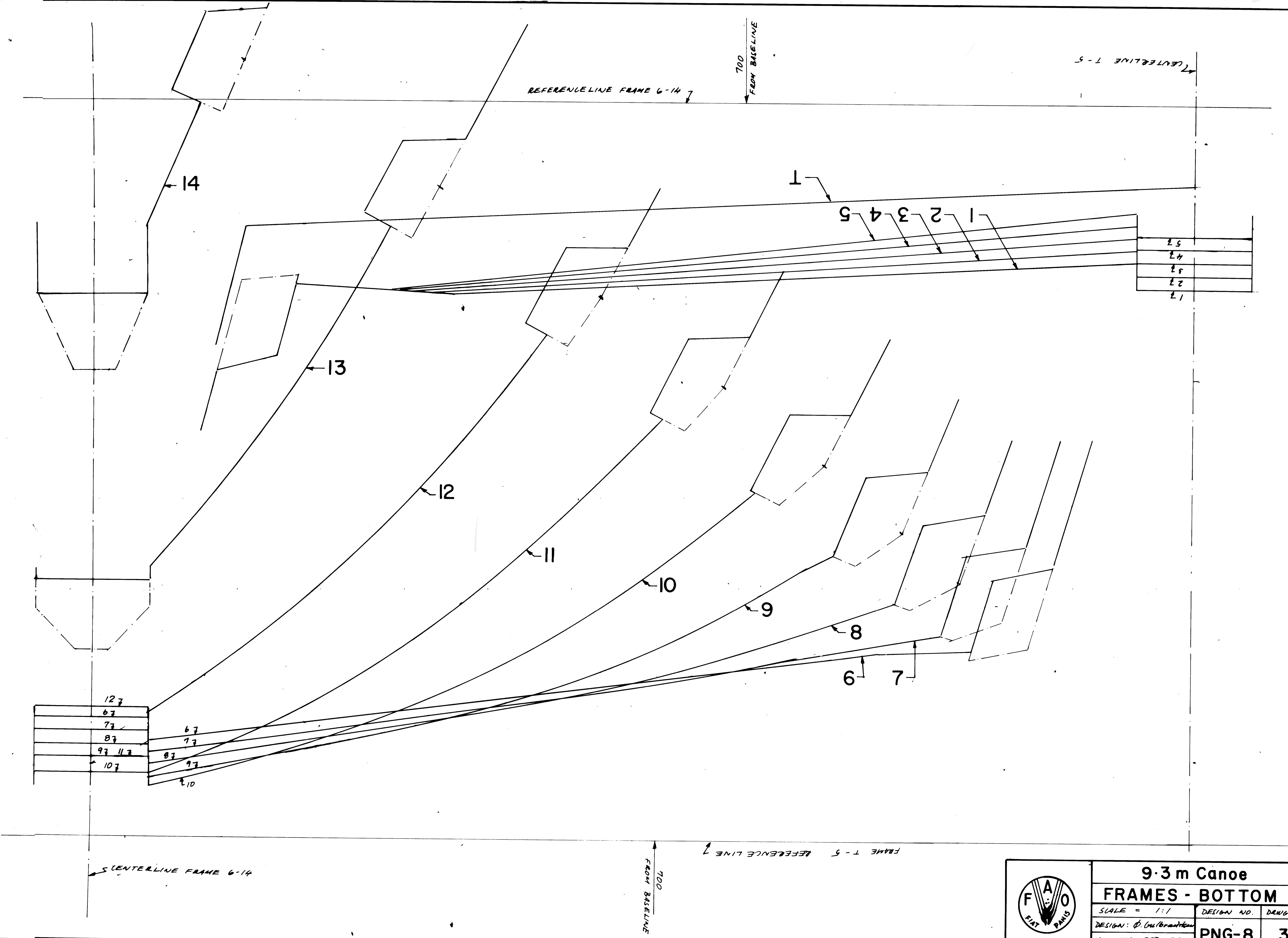
PARTICULARS	
LENGTH OVER ALL	LOA = 9,30 M
BEAM MOULDED	B = 1,50 M
DEPTH MOULDED	D = 0,65 M
CUBIC NUMBER LOA x B x D	CUBO = 9,0 M <sup>3</sup>
LENGTH, DWL	LWL = 8,2 M
BEAM, DWL	BWL = 1,24 M
DRAFT MOULDED	T = 0,21 M
DRAFT, MAXIMUM	T <sub>M</sub> = 0,25 M
WEIGHT, EMPTY WITH ENGINE	= 500 Kg
SERVICE LOAD	= 700 Kg
DISPLACEMENT, SERVICE, DWL	Δ = 1200 Kg
MAXIMUM LOAD	= 1200 Kg
MAXIMUM DISPLACEMENT	= 1700 Kg
FREEBOARD, FORWARD, DWL	= 0,83 M
FREEBOARD, MIDSHIP	= 0,46 M
FREEBOARD, AFT	= 0,44 M
COEFFICIENTS, DWL:	
	$\frac{1}{8} = 6,6$ , $\sqrt[3]{(0.12)^3} = 2,28$ , $\phi = 0,77$ , $\frac{1}{2} \times 12,5 = 6,25$
SERVICE SPEED = 12 KNOTS WITH 25 HP OUTBOARD	$\frac{1}{12} = 2,3$

### 9.3 m Canoe LINES

SCALE = 1:10    DESIGN NO.    DRWG. NO.

DESIGN: *P. Gullerud*    PNG-8    2

GRANSTAD, JAN-89



REFERENCE LINE FRAME 6-14

700  
FROM BASELINE

CENTERLINE T-5

14

1

5

4

3

2

1

5
4
3
2
1

13

12

11

10

9

8

6

7

12
6
7
8
9
10

6
7
8
9
10

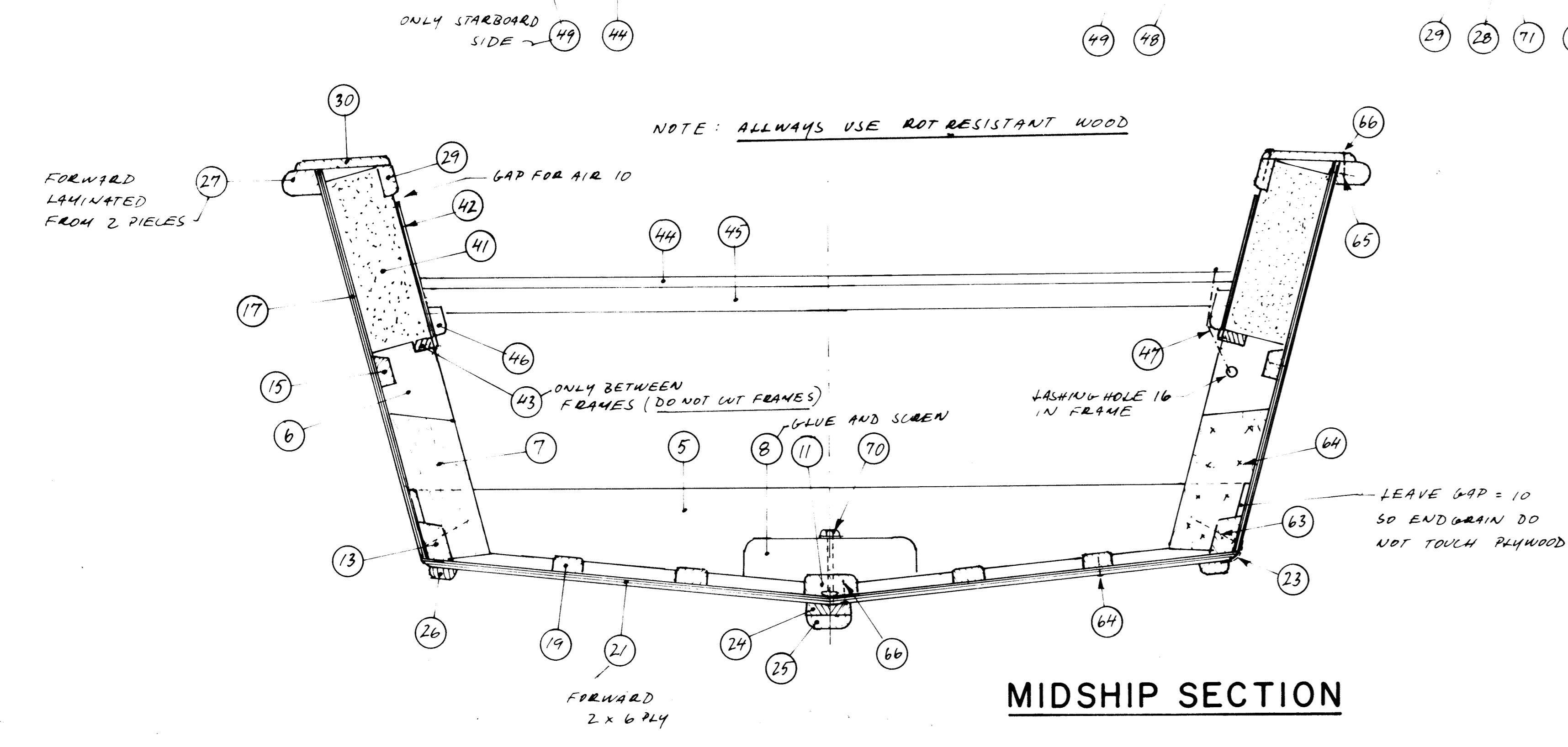
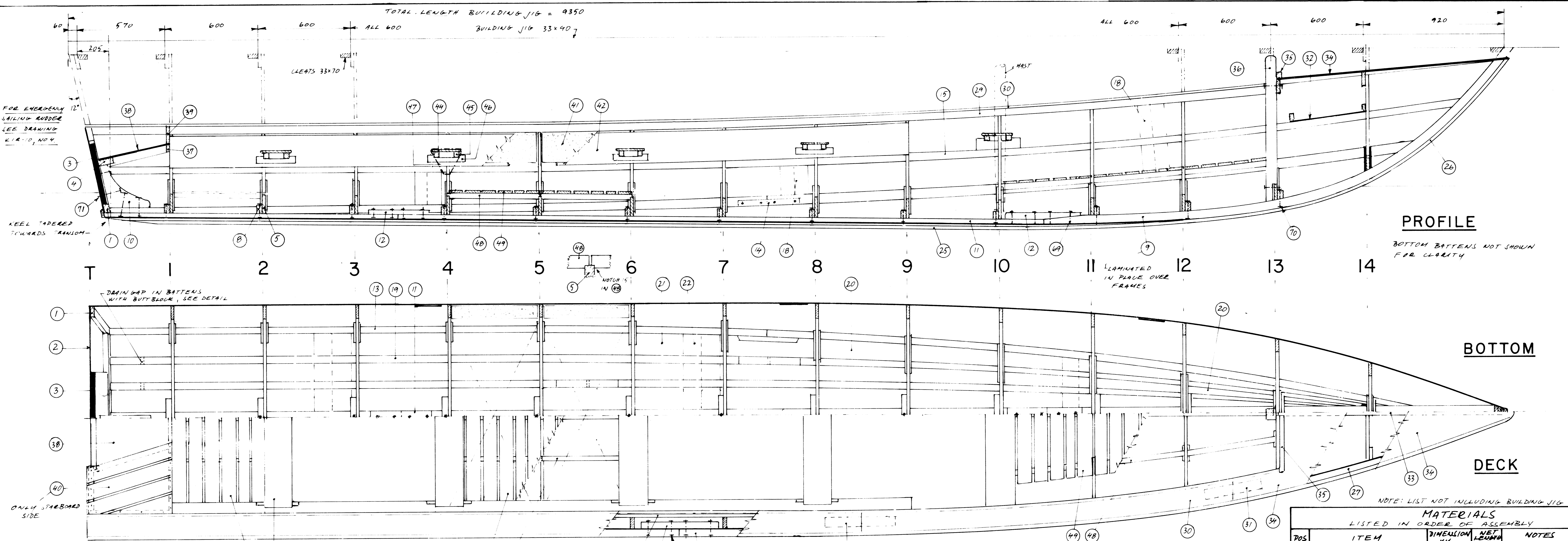
CENTERLINE FRAME 6-14

700  
FROM BASELINE

FRAME T-5 REFERENCE LINE



9.3 m Canoe		
FRAMES - BOTTOM		
SCALE = 1:1	DESIGN NO.	DRWG. NO.
DESIGN: P. Gulbraaten	PNG-8	3
GRANTED FEB-89		



GENERALLY USE NAILS FOR FASTENING THE PLYWOOD (+ GLUE)  
 SCREWS ONLY FORWARD WITH SEVERE BEND  
 NAIL SPACING ALONG EDGES: 4 MM PLYWOOD, SPACING = 80 MM  
 12 MM PLYWOOD SPACING = 100 MM  
 ALONG BATTELS SPACING = 150 MM  
 USE COPPER ROD THREADED FOR BRASS NUTS AND WASHER  
 RIVET HEAD OVER WASHER ON ONE SIDE.

POS	ITEM	DIMENSION	LENGTH	QUANT.	NOTES
60	WOOD SCREW SILICON BRONZE COUNTERSINK HEAD	4,2 (8.6)	32 (1 1/4")		FOR 9 PLY
61	"	4,2 (8.6)	38 (1 1/2")		12 PLY
62	"	4,9 (10.6)	45 (1 3/4")		BATTELS 20
63	"	5,6 (12.6)	75 (3")		CHINE
64	BARBED RINGNAILS SILICON BRONZE	2,7 (12.6)	25 (1")	0,5 kg	PLY TO PLY TO GUNWALE AND HOG
65	"	2,7 (12.6)	32 (1 1/4")	1,0 kg	9 PLY TO GUNWALE AND HOG
66	"	3,4 (10.9)	38 (1 1/2")	2,3 kg	12 PLY TO GUNWALE AND HOG
67	COPPER BOATNAILS SQUARE	2,6 (12)	25 (1")	0,5 kg	BUTTBLOCKS
68	"	2,6 (12)	32 (1 1/4")	0,5 kg	12 PLY
69	CARRIAGE BOLTS HOT DIP GALVANIZED	8 (5/16)	75 (3")	17 PC	
70	"	8 (5/16)	100 (4")	15 PC	
71	"	8 (5/16)	125 (5")	10 PC	
72	"	8 (5/16)	150 (6")	5	
73	WASHERS, STRUNG, GALV.	8 (5/16)		50	
74	GLUE, EPOXY OR RESORCINOL				

POS	ITEM	DIMENSION MM	NET LENGTH M	NOTES
1	FRAME - TRANSON	33 x 90	1,2	33-70-ONSIDES
2	PLANKING, TRANSON	12 PLY		
3	DOUBLING, TRANSON	12 PLY		
4	STIFFENER, TRANSON	33 x 90	1,3	
5	FRAME, BOTTOM	20 x 140	13	
6	FRAME, SIDE	20 x 90	30	
7	GUSSETS	9 PLY		OFFSETS
8	BLOCK - KEELBOLT	33 x 53	3	LENGTH = 250
9	STEM	14 x 70	11	3 LAMINATIONS
10	KNEE, TRANSON	33 x 200	0,5	
11	HOG	33 x 70	6,2	
12	BUTTBLOCK, HOG	33 x 70	1,0	LENGTH = 500
13	CHINE	33 x 70	18	
14	BUTTBLOCK, CHINE	33 x 50	0,8	LENGTH = 400
15	BATTEN, SIDE	20 x 45	19	
16	BUTTBLOCK, BATTEN	20 x 45	2,5	LENGTH = 400
17	PLANKING, SIDE	9 PLY	4 SHEETS	
18	BUTTBLOCK, PLY, SIDE	9		WIDTH = 180
19	BATTEN, BOTTOM	20 x 45	34	
20	PLANKING, BOTTOM FORWARD	6 PLY	4 SHEETS	2 LAYERS
21	PLANKING, BOTTOM, AFT	12 PLY	2 SHEETS	
22	BUTTBLOCK, PLY, BOTTOM	12 PLY		WIDTH = 240 WIDTH = 75
23	F.P. TAPE			
24	KEEL	20 x 35	15	2 LAMINATIONS
25	KEEL SHOE REPLACABLE	20 x 70	7,5	
26	RUBBING STRIP	20 x 45	12	TRANSON-FRAME 7 STEM
26A	SPRAY STRIP	20 x 45	14	

POS	ITEM	DIMENSION MM	NET LENGTH M	NOTES
27	RAIL	33 x 53	19	FORWARD LAMINATED
28	BUTTBLOCK, RAIL	33 x 53	1,0	
29	LOADING	20 x 45	16	
30	RAIL CAP	14 x 140	16	
31	BUTTBLOCK, RAILCAP	12 PLY		
32	SHELF	9 PLY		
33	BATTEN FOREDECK	20 x 45	1,5	
34	FORE DECK	9 PLY		
35	LOADING FOREDECK	33 x 33	0,8	
36	MOORING BITT	70 x 70	1,0	
37	STIFFENER, WELL	20 x 45	2,4	
38	PLANKING, WELL	9 PLY		
39	FRONT, WELL	20 x 120	1,3	
40	SEAT	14 x 90	2,3	
41	BODYBLOCK			POLYSTYRENE
42	PROTECTION BODYBLOCK	6 PLY	1 sheet	
43	STIFFENER, PROTECTION	20 x 45	10	ONLY BETWEEN FRAMES
44	THWART	20 x 185	6	
45	THWART STIFFENER	33 x 33	12	
46	THWART SUPPORT	20 x 45	2,5	
47	THWART LASHING	8 ROPE	2,5 M	
48	FLOOR STIFFENER	33 x 33	10	
49	FLOOR PLANKING	14 x 90	31	

### 9.3m Canoe CONSTRUCTION

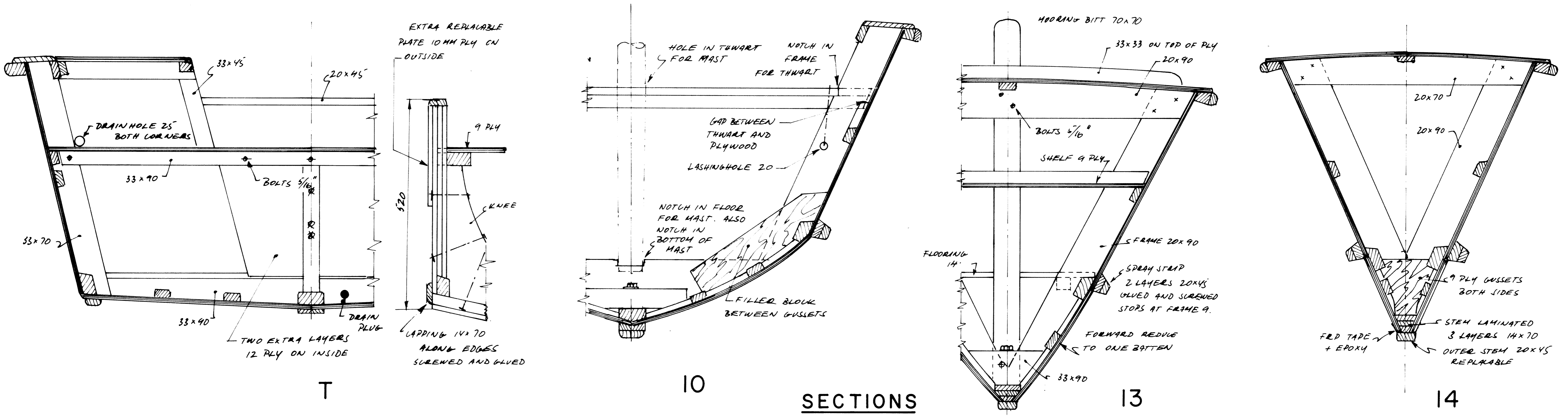
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DESIGN: G. Gullstrand

Göteborg, Feb - 89

DESIGN NO: PNG-8

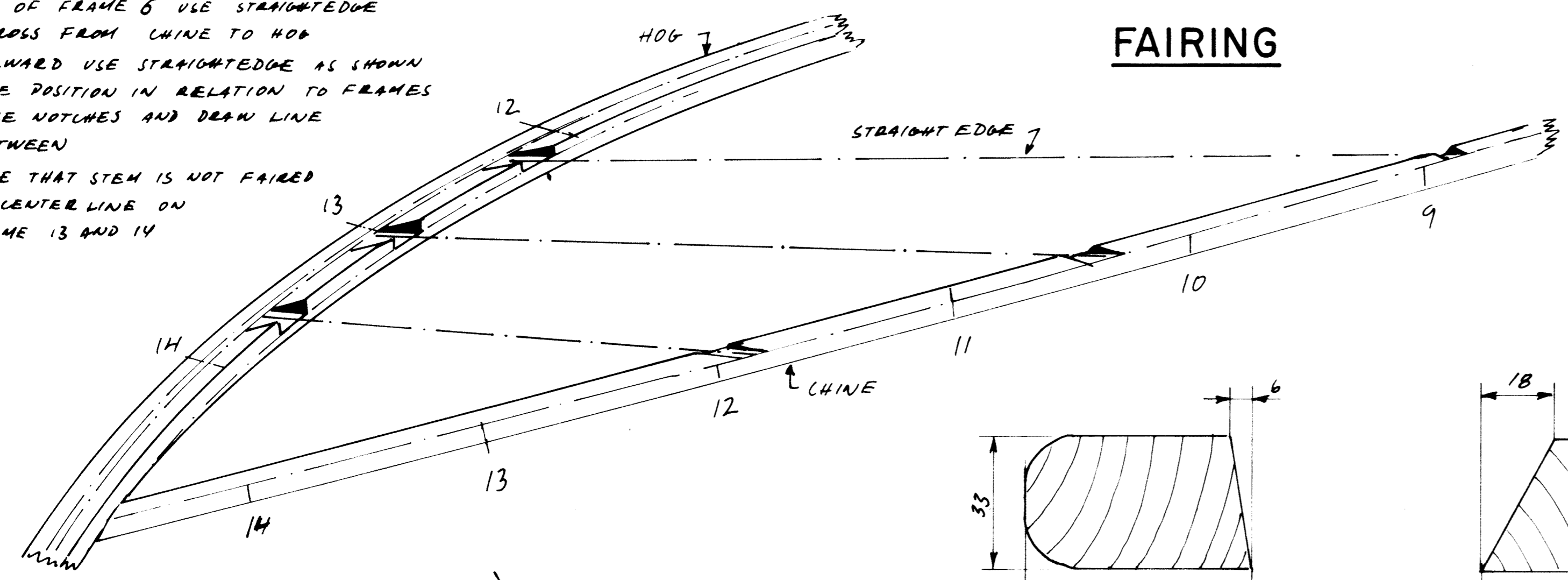
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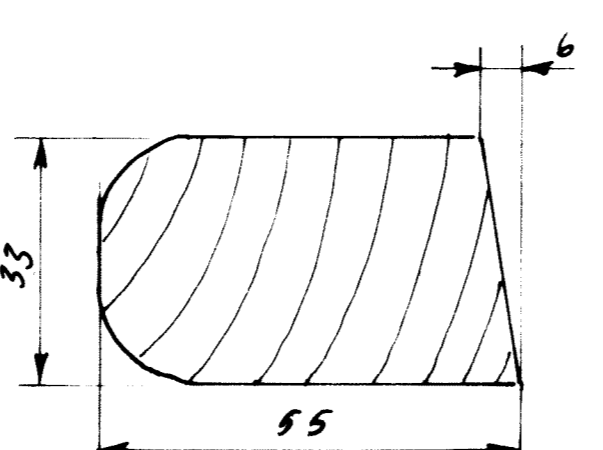
SECTIONS

1. AFT OF FRAME 6 USE STRAIGHTEDGE ACROSS FROM CHINE TO HOG
2. FORWARD USE STRAIGHTEDGE AS SHOWN NOTE POSITION IN RELATION TO FRAMES MAKE NOTCHES AND DRAW LINE BETWEEN
3. NOTE THAT STEM IS NOT FAIRED TO CENTER LINE ON FRAME 13 AND 14

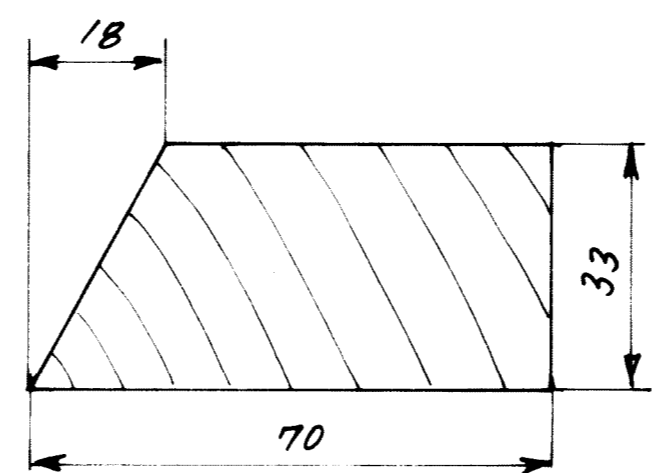
FAIRING



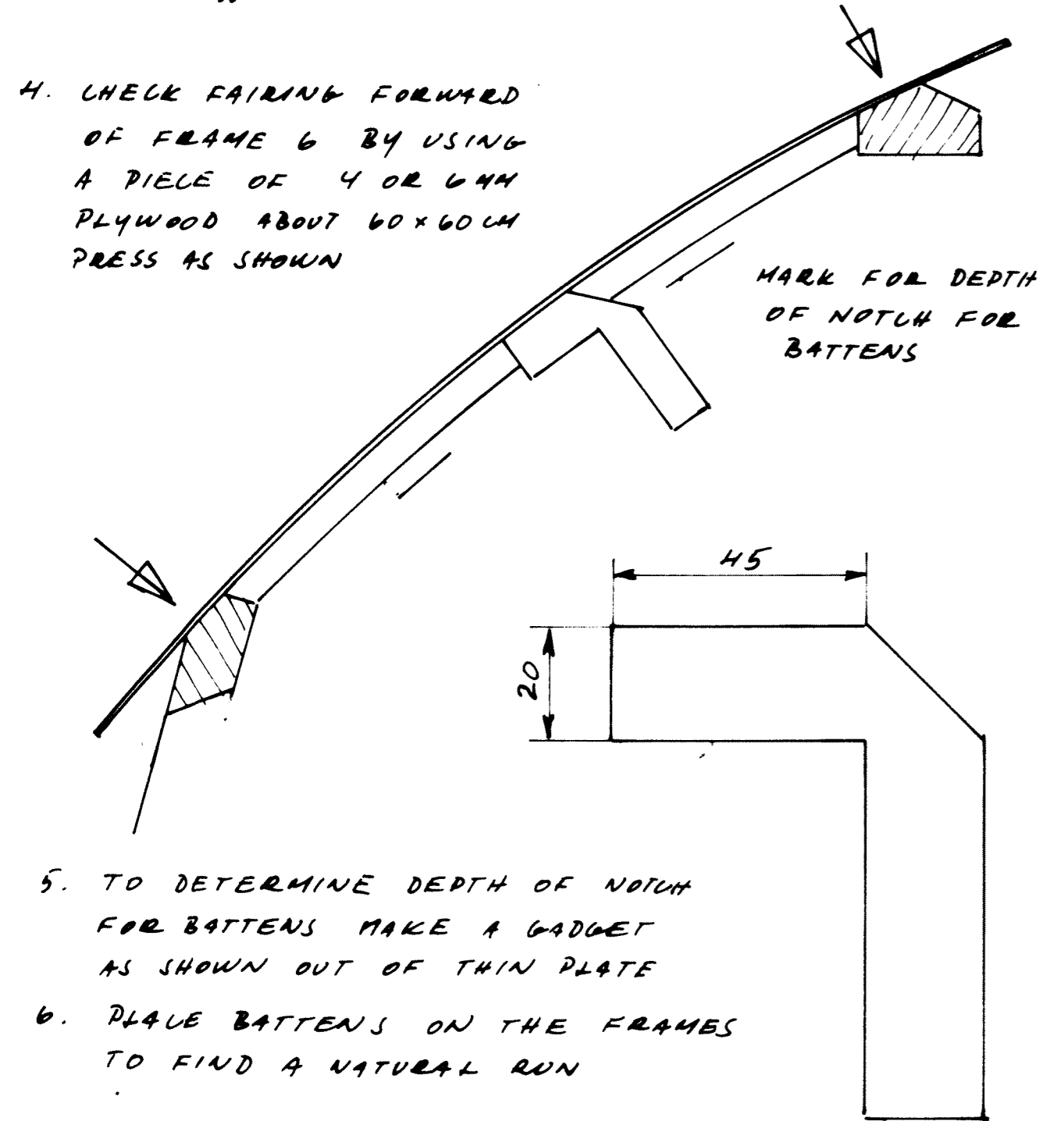
4. CHECK FAIRING FORWARD OF FRAME 6 BY USING A PIECE OF 4 OR 6MM PLYWOOD ABOUT 60x60CM PRESS AS SHOWN



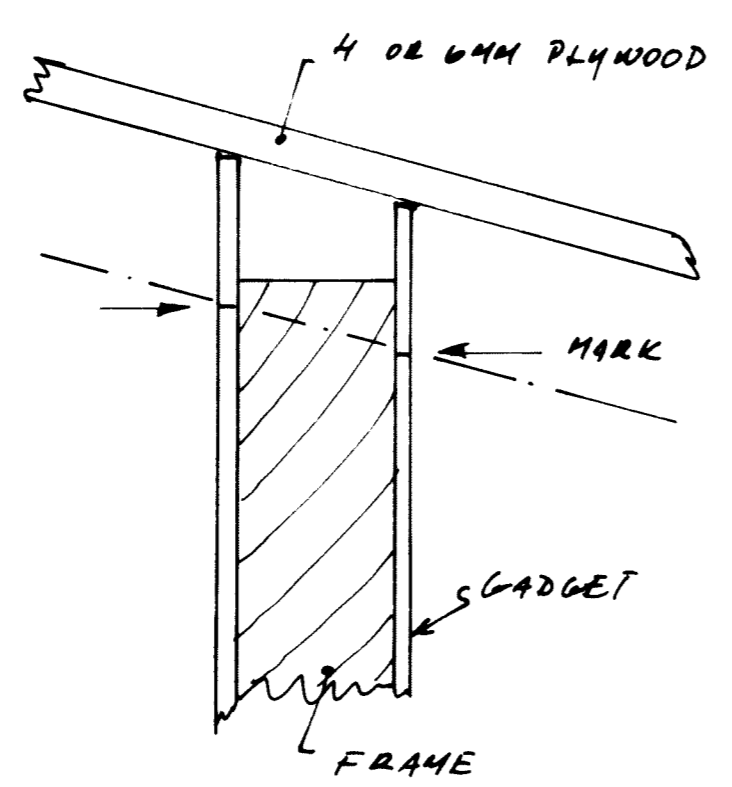
RAIL WITH SAME BEVEL ALL ALONG FORWARD LAMINATE FROM 1 PIECE 33x33 + 1 PIECE 20x33. FORWARD ALSO BEVEL ON TOP FOR RAILCAP.



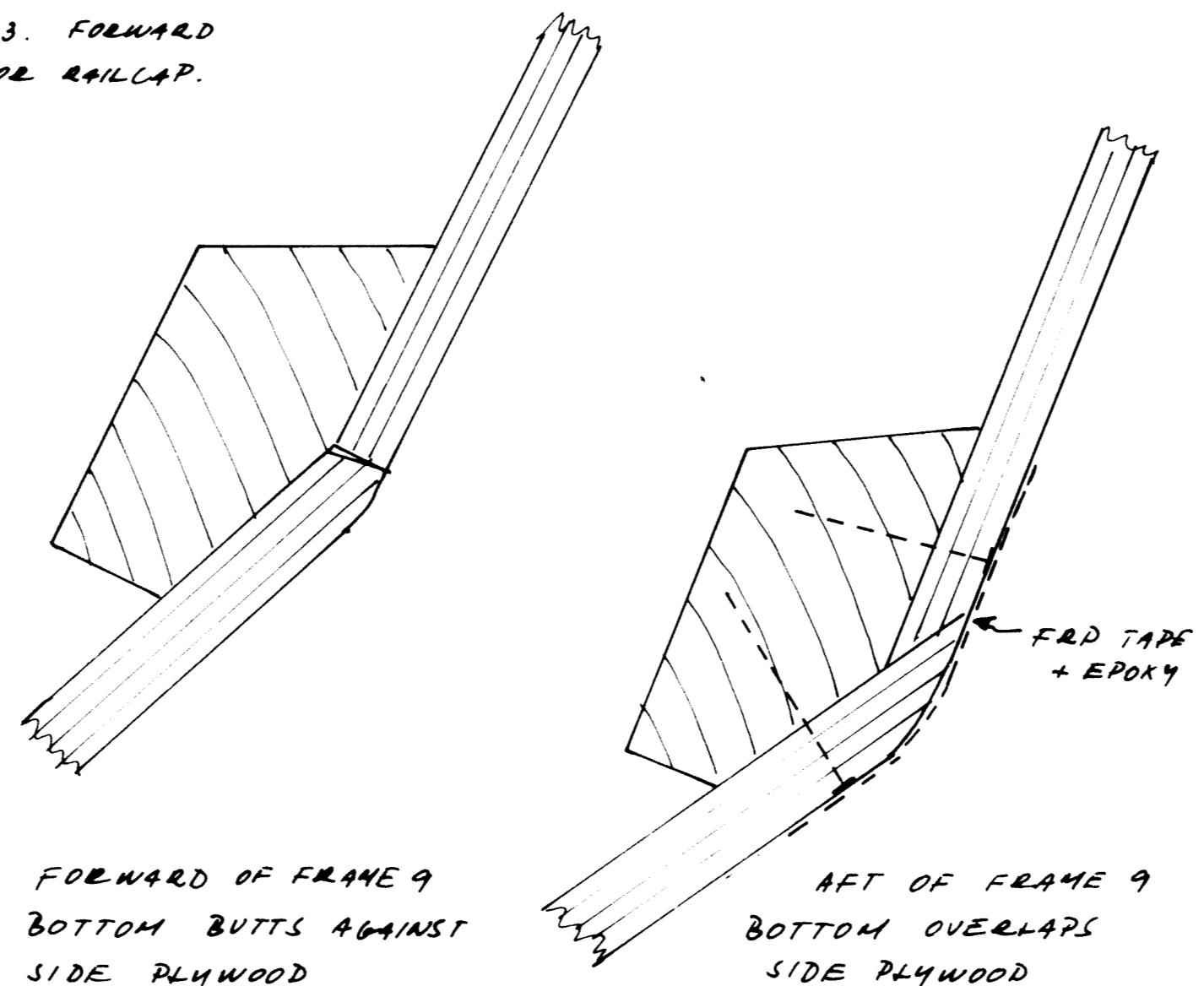
CHINE BEVELED ON TOP ALL ALONG



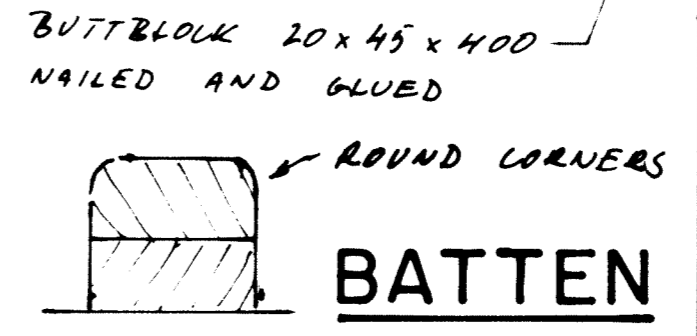
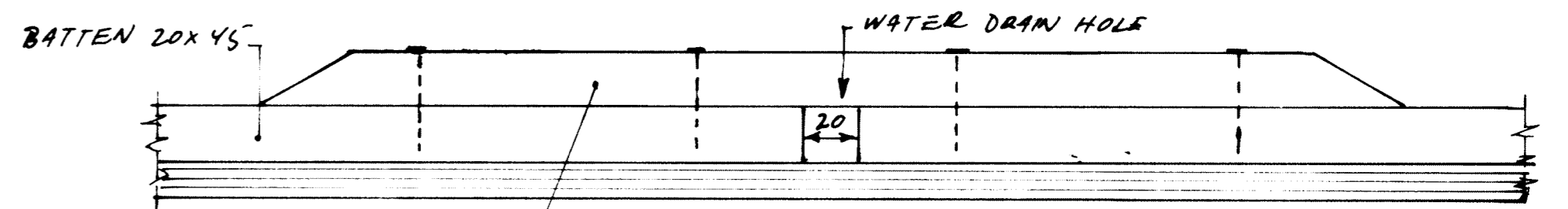
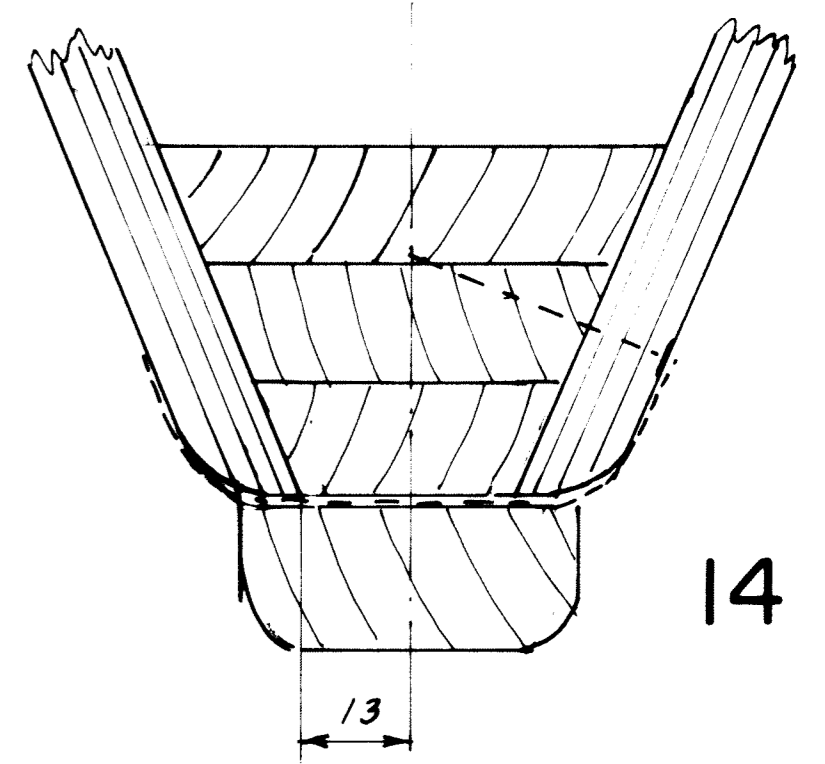
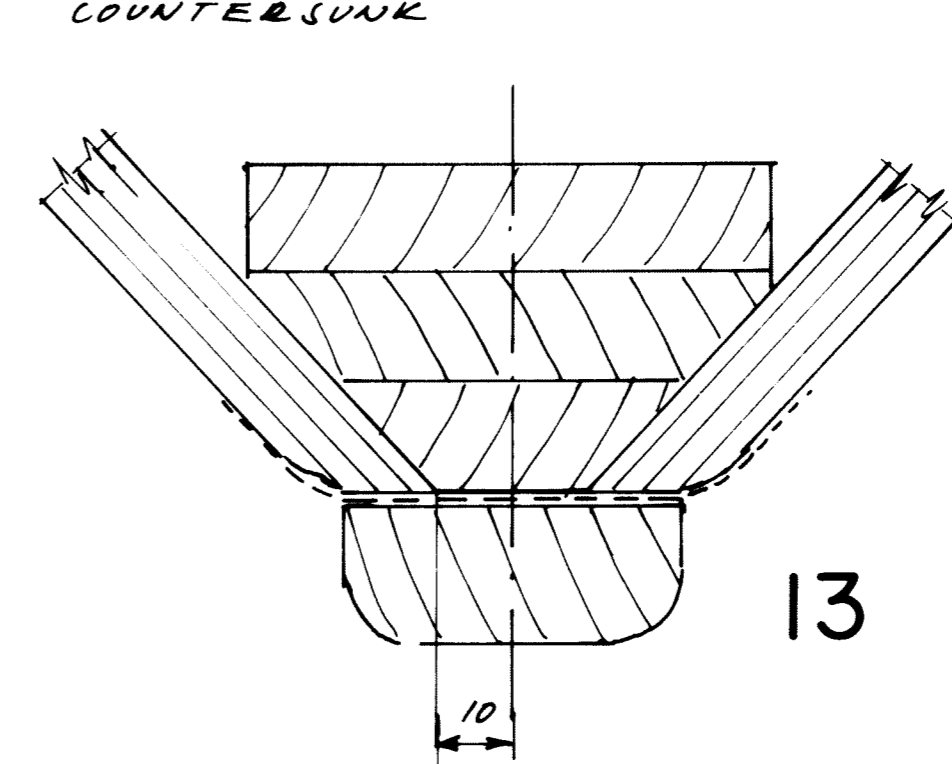
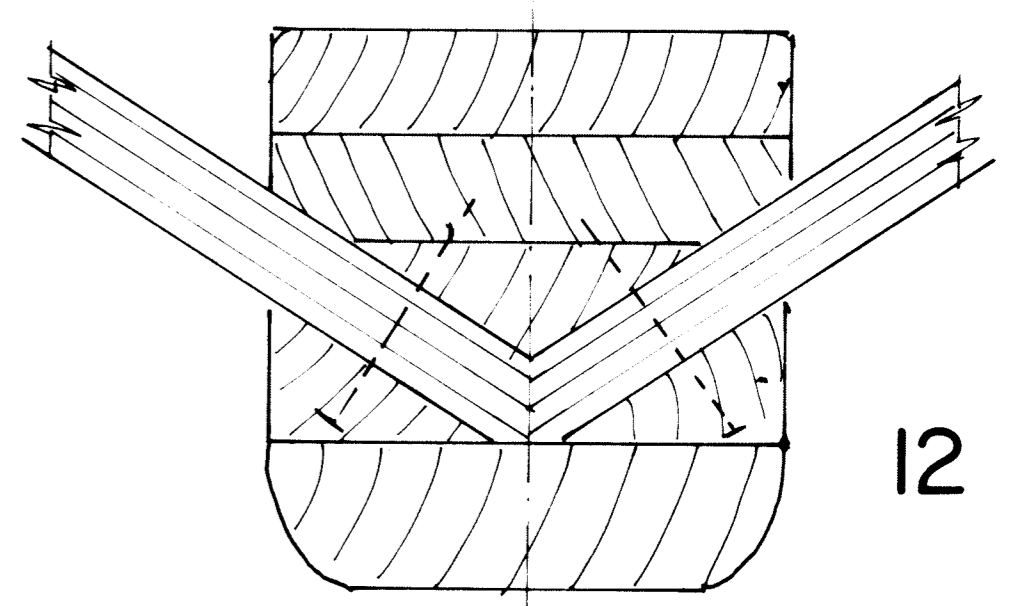
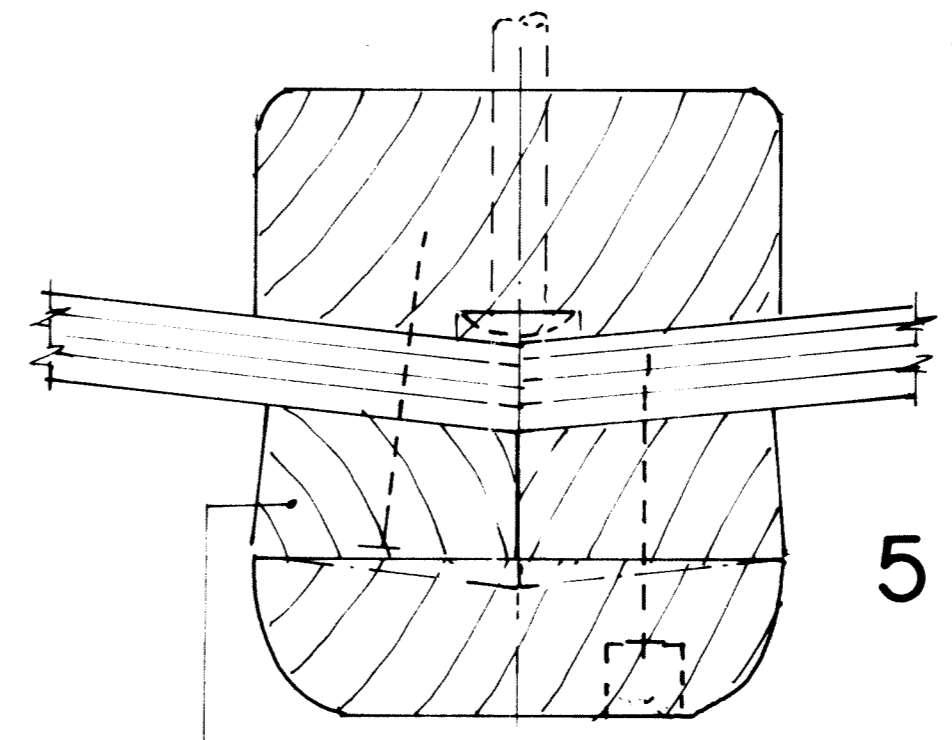
5. TO DETERMINE DEPTH OF NOTCH FOR BATTENS MAKE A GADGET AS SHOWN OUT OF THIN PLATE
6. PLACE BATTENS ON THE FRAMES TO FIND A NATURAL RUN



DETERMINING BEVEL FOR NOTCH ON FORWARD FRAMES



KEEL



<b>9.3m Canoe DETAILS</b>		
SCALE = 1:1, 1:5	DESIGN NO.	DRAWG. NO.
DESIGN: P. Gulbrandsen	<b>PNG-8</b>	<b>5</b>
GRM/TAD, FEB-89		