

LLOYD'S REGISTER OF SHIPPING

CALCULATION OF SCANTLINGS.

(ENGLISH UNITS.)

Date _____

BUILDER KASTRIANI ex POLA II Yard No. _____

Owner _____ Similar Ships _____

Class _____

Type _____

Length (L.B.P. = 211.0, L.W.L. = _____ x .96 = _____) L = 211.0 ft

Breadth _____ B = 32.0 ft

Depth to Uppermost Continuous Deck _____ D₁ = 18.75 ft

„ „ Effective Superstructure _____ D₂ = _____

Draught _____ d = _____

Height of Effective Superstructure = _____ $\frac{L}{D_1}$ = _____

„ „ Upper 'Tween Deck = _____ $\frac{L}{D_2}$ = _____

„ „ Second „ „ = _____

Equipment Numeral = _____ $\frac{d}{D_1} = \frac{15.5}{18.75} = .827$

Frame Spacing Amidships = 22.5" $\frac{d}{D_2} =$ _____

SUMMARY.

ITEM.	RULE.	PROPOSAL.
W.T. Bulkheads—Number and Extent		
Frame Spacing—Peaks (Sec. 6, cl. 2. (b))		
„ „ —Forward of .2L (Sec. 6, cl. (c))... ..		
DOUBLE BOTTOM.		
Centre Girder—Height	<u>29.72"</u>	<u>32"</u>
„ „ —Thickness Amidships, Ends, B.R.	<u>.395"</u>	<u>.40</u>
Margin Plate—Depth Amidships, Aft.		
„ „ —Thickness Holds & E.R., B.R.		
Floors—Thickness Holds & E.R., B.R.	<u>.295"</u>	<u>.30"</u>
„ —Watertight		
Side Girders—Number		
„ „ —Thickness Holds, E.R., B.R.		
Inner Bottom, M.L. Strake—Width, Thickness Amidships, Ends		
„ „ Plating—Thickness Holds, E.R., B.R.		
Bracket Floors—Frame, Reversed Frame (+ .10 in B.R.)		
Tank Side Bracket—Height and Thickness (+ .10 in B.R.)		
Bottom Longitudinals (+ .10 in B.R.)		
Inner Bottom Longitudinals (+ .10 in B.R.)		

Summary—continued.

ITEM.	RULE.	PROPOSAL.
<u>SINGLE BOTTOM.</u>		
Floors—Depth		
„ —Thickness Holds, E.R., B.R.		
Reversed Frames—Holds & E.R., B.R.		
Centre Keelson Vertical Plate—Thickness Amidships, B.R., Ends		
Foundation Plate—Breadth, thickness Amidships, B.R., Ends ...		
Double Top Angles (+ 10 in B.R.)		
Side Keelson—Number and thickness (+ 10 in B.R.)		
„ „ —Single Top Angle (+ 10 in B.R.)		
<u>FRAMING.</u>		
Peaks		
Holds		
„		
„		
„ 25L—15L		
„ Panting		
Engine Room		
Boiler Room		
Cross Bunker		
Deep Tank		
Upper 'tween Deck Amidships		
Second „ „ „		
Third „ „ „		
<u>SHELL PLATING.</u>		
Keel—Width and thickness... ..		.54"
Garboard—Thickness Amidships, Ends		
Bottom—Amidships, clear of Superstructure39" (.39")	.44"
„ „ at Superstructure		
„ —Ends36"	.36"
Strengthening of Bottom Forward		
Side—Amidships, clear of Superstructure39" (.39")	.40"
„ „ at Superstructure		
„ —Ends36"	.36"
Increased for Panting		
„ „ Ice		

Summary—continued.

ITEM.	RULE.	PROPOSAL.
TOPSIDES AND DECKS.		
Clear of Superstructure:—		
Sheerstrake—Width and thickness... ..	50.1" x .45"	52" x .50"
Strength Deck—Stringer width, thickness } <i>asca.</i>	34.28 in ²	46.4 in ²
Plating	(35.92 in ²)	
Stringer Angle		
Second Deck—Stringer and Plating		
Third " " " "		
At Superstructure:—		
Sheerstrake—Width and thickness		
Strength Deck—Stringer width, thickness		
Plating		
Stringer Angle		
Second Deck—Stringer and Plating		
Third " " " "		
Beams		See page 14.
Deck Longitudinals		See page 15.

Additional strengthening strap on main deck height i.e.
top of "E" strake 12" x 0.92" extending from fr. - X.
to fr. 87½
also at ridge "C" strake rubbing strip ~ 21" x 1.10"
extending from fr. - X. to fr. - X.

$$\frac{15.50'}{14.23'} - 1.27' = \underline{15.25''} \text{ increase in draught}$$

DOUBLE BOTTOM.

d = 15.00 Frame Spacing—Amidships, Ship = For'd. 2L, Ship =
 d₀ = 12.66 " " " Table = " " Basic =
 2.34

Depth of Centre Girder = $28.55'' \pm (2.34 \times \frac{1}{2}) = 29.72''$

" " Margin Plate = × =

" " " " aft = × =

ITEM.	TABLE THICKNESS.	SPACING CORRECTION.	CORRECTED THICKNESS.
Margin Plate—Holds and E.R.			
" " —B.R.			
Floors—Holds and E.R.			
" —B.R.			
Inner Bottom—Holds, Amidships			
" " " Ends			
" " —E.R.			
" " —B.R.			
Tank Side Brackets—Holds and E.R.			
" " " —B.R.			

For remaining Items see Summary.

FRAMES ON BRACKET FLOORS :—

d = Draught Correction = × = ± % ∴ Factor =

d₀ = Frame Spacing " = =

SPAN.	TABLE MODULUS.	CORRECTION FACTORS.		CORRECTED MODULUS.	
		Draught.	Spacing.	Frame.	Reversed Frame.

BOTTOM LONGITUDINALS :—

d = Spacing—Amidships, Ship = For'd. 2L, Ship =

d₀ = " " Table = " " Basic =

 Draught Correction = × = % ∴ Factor =

 Spacing " = =

SPAN.	TABLE MODULUS.	CORRECTION FACTORS.		CORRECTED MODULUS.	
		Draught.	Spacing.	Bottom Longitudinals.	Inner Bottom Longitudinals.

SINGLE BOTTOMS.

d = _____ Frame Spacing—Amidships, Ship = _____ For'd. '2L, Ship = _____
 d_s = _____ " " " Table = _____ " " Basic = _____

Floors :— Depth = _____ ± (_____ × ½) = _____
 (+ 15% if brackets omitted.)

Thickness = _____ ± (T × .01) = _____
 For remaining Single Bottom Items see Summary.

SHELL PLATING.

Keel— 41.1 × .511
 Garboard— .85 × _____ = _____ For .05L at Ends = .85 × _____ = _____
 D₁ = 18.75 D_s = _____ d = 15.00 Frame Spacing Amidships, Ship = 22.50
 D_s = 17.10 D_s = _____ d_s = 12.66 " " " Table = 23.78
1.65 _____ 2.34 (2.84) 1.28 "
1.65 × .7% × .7% 2.34 × 1.5% 1.28 × .01
 = -1.155 % = _____ % = +3.51 % (+4.26 %) = 0.0128 "

BOTTOM SHELL.

	Clear of Superstructure.	At Superstructure.	Minimum.
Table	<u>.3910</u>	_____	_____
Depth Correction = <u>-1.155</u> % = <u>.0045</u> % = _____	_____	_____	_____
Draught Correction = <u>+3.51</u> % = <u>.0136</u> + <u>4.26</u> % = <u>+0.0165</u>	<u>.3865</u>	<u>.3865</u>	_____
Spacing Correction - = <u>.0128</u>	<u>.4001</u>	<u>.4030</u>	_____
Welded Construction	<u>.3873</u>	<u>.3902</u>	_____
	<u>.3873</u> "	<u>.3902</u> "	_____
For .05L at Ends, Table = _____			
Spacing Correction, if any = _____			

STRENGTHENING OF BOTTOM FORWARD.

Column 10 Thickness = _____ Addition Required by Sec. 8, cl. 2 = _____
 Addition = _____
 For Welded Construction = _____

Spacing Correction :—
 .25L to .2L = _____ ∴ Total Thickness = _____
 .2L " .05L = _____ ∴ " " = _____

PROPOSED AREA OF STRENGTH DECK.

	Clear of Superstructure.	At Superstructure.
B/2	<u>16.0</u>	_____
Tumble Home	<u>0.1</u>	_____
Half Breadth of Deck	<u>15.9</u>	_____
Half Width of Opening	<u>9.0</u>	_____
Width Abreast Opening	<u>6.9</u> Feet	_____ Feet
	= <u>82.8</u> Inches	= _____ Inches
Width of Stringer	<u>82.8</u>	_____
Width of Deck Plating	—	_____
Seams _____ x _____	= —	x _____ = _____
Area of Stringer Plate $82.8 \times .56$	<u>46.4</u>	_____
.. .. Deck Plating	—	_____
Total Area	<u>46.4</u>	_____

$$82.8 \times .40 = 33.1 \text{ in}^2$$

Minimum allowable thickness = 0.32"

$$82.8 \times .32 = 26.5 \text{ in}^2$$

$$\text{Req. A: } 34.28$$

$$26.50$$

$$\text{Missing } 7.78 \text{ in}^2$$

say 8 in^2 i.e. 16×0.50 "
strap each side

STRINGER AND TIES.

Minimum Width of Stringer for .4 L Amidships = _____

" " " " .1 L at Ends = _____

" Thickness of Stringer and Ties (a) Column 20 = _____

(b) .85 x Sheerstrake = _____

" Width of Ties = _____

STRENGTH DECK.

Number of Effective Decks—Clear of Superstructure = _____

“ “ “ “ —At Superstructure = _____

Corrections.

Clear of Superstructure. *d = 15.0'*

At Superstructure. *d = 15.5'*

For Depth	$1.75 \times 8.4 = -14.7\%$	_____ \times _____ = _____%
For Draught	$2.34 \times 12.1 = +28.3\%$	$2.84 \times 12.1 = 34.4\%$
For Beam	$4.0 \times 4.0 = -16.0\%$	_____ \times _____ = _____%
For Height of Uppermost 'tween Deck	_____ $\times 4.0 =$ _____%	_____ $\times 4.0 =$ _____%

Clear of Superstructure.

At Superstructure.

Table Area	= <u>35.30</u>	= _____
Depth Correction	$-14.7\% = -5.19$	_____ % = _____
	<u>30.11</u>	<u>30.11</u>
Draught Correction	$+28.3\% = +8.52$	$+34.4\% = +10.35$
	<u>38.63</u>	<u>40.46</u>
Beam Correction	$-16.0\% = -6.18$	$-16.0\% = -6.47$
	<u>32.45</u>	<u>33.99</u>
'Tween Deck Height Correction	_____ % = _____	_____ % = _____
For Omission of Stringer Angle (<i>see below</i>)	_____	_____
	<u>32.45</u>	<u>(33.99)</u>

Minimum for STRINGER PLATE.

- (1) .85 \times Sheerstrake—(a) Clear of Superstructure = _____
- (b) At Superstructure = _____
- (2) Column 18 + .04 inch (corrected for Spacing and Sheathing) = _____
- (3) Width for .4L = _____
- (4) Width for .1L at Ends = .60 \times _____ = _____

STRINGER ANGLE.

Clear of Superstructure = _____ Area = _____

At Superstructure = _____ Area = _____

If Deck Framed LONGITUDINALLY.

Thickness = _____

Correction per Table 18, Note 8 = _____

MINIMUM DECK PLATING.

	For .4L Amidships.		For 1L Ends.	
	Outside Openings.	Inside Openings.	Stringer.	Plating.
Table	_____	_____	_____	_____
Sheathing	_____	_____	_____	_____
Beam Spacing	_____	_____	_____	_____
	_____	_____	_____	_____

LOWER DECKS.

	Outside Openings.		Table	Minimum.	
	Second Deck.	Third Deck.		Second Deck.	Third Deck.
Table Area	_____	_____	_____	_____	_____
" " $\times \frac{B}{B_0} =$	_____	= _____	Sheathing - 10%	_____	_____
			Beam Spacing +	_____	_____
(a) Inside Openings	}	Table	_____	_____	_____
(b) For 1L from Ends		Sheathing - 10%	_____	_____	_____
(c) Platform Decks			_____	_____	_____

SHORT SUPERSTRUCTURES.

$\frac{d}{D_1} =$ _____

ITEM	TABLE THICKNESS	REDUCTION FOR		CORRECTED THICKNESS
		Sheathing 10%	Height of Platform 10%	
Side Plating—Poop			
Bridge			
Forecastle			
Stringer and Ties—Poop			
Bridge			
Forecastle			
Plated Deck—Poop			
Bridge			
Forecastle			

Width of Stringer = _____

Width of the Plate = _____

