

Computation of Freeboard for Steamer, Sailing Ship, Tanker  
having **Complete Superstructure without tonnage opening with a forecastle.**  
(Type of Superstructures.)

Ship's Name <b>TOKYO MARU.</b>	Nationality and Port of Registry <b>Japan Osaka.</b>	Official Number <b>41929</b>	Gross Tonnage <b>6486.01</b>	Date of Build <b>1936-8</b>
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Moulded Dimensions: Length **420** Breadth **57.4** Depth **36.08**  
Moulded displacement at moulded draught = 85 per cent. of moulded depth **14505.37** tons  
Coefficient of fineness for use with Tables **.687**

Port of Survey **KOBE.**

Date of Survey **while building**

Name of Surveyor **M.M. Parker.**

Particulars of Classification **† 100 A 1.**  
**"with free board."**

<p><b>Depth for Freeboard (D)</b></p> <p>Moulded depth ... .. <b>36.08</b></p> <p>Stringer plate ... .. <b>.06</b></p> <p>Sheathing on exposed deck <math>T \left( \frac{L-S}{L} \right) =</math> <b>no sheathing</b></p> <p>Depth for Freeboard (D) = <b>36.14</b></p>	<p><b>Depth correction</b></p> <p>(a) Where D is greater than Table depth (D-Table depth) R = <b><math>(36.14 - 28.00) \times 3 = +24.42</math></b></p> <p>(b) Where D is less than Table depth (if allowed) (Table depth-D) R = <b>-</b></p> <p>If restricted by superstructures <b>-</b></p>	<p><b>Round of Beam correction</b></p> <p>Moulded Breadth (B) <b>57.4</b></p> <p>Standard Round of Beam = <math>\frac{B \times 12}{50} =</math> <b>13.77</b></p> <p>Ship's Round of Beam = <b>11.8"</b></p> <p>Difference <b>1.97</b></p> <p>Restricted to <b>-</b></p> <p>Correction = <math>\frac{\text{Diff}^2}{4} \times \left(1 - \frac{S_1}{L}\right) =</math> <b><math>\frac{1.97^2}{4} \times .9095 = +.45</math></b></p>
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**DEDUCTION FOR SUPERSTRUCTURES.**

	Mean Covered Length (S)	Equivalent Enclosed Length (S <sub>i</sub> )	Height	Height Correction	Effective Length (E)
Poop enclosed ... ..					
"  overhang ... ..					
R.Q.D. enclosed ... ..					
"  overhang ... ..					
Bridge enclosed ... ..					
"  overhang aft ... ..	<del>4.0</del>		<del>2.85</del>		
"  overhang forward ... ..	<del>35.82</del>		<del>9.35</del>		
F'cle enclosed <i>equivalent</i> ... ..	<b>38.85</b>	<b>35.82</b>	<b>7.38</b>	$\times \frac{7.38}{7.5}$	<b>35.25</b>
"  overhang ... ..	<del>8.03</del>	<b>2.20</b>			<b>2.16</b>
Trunk aft ... ..					
"  forward ... ..					
Tonnage opening aft ... ..					
"  "  forward ... ..					
Total ... ..	<b>38.85</b>	<b>38.02</b>			<b>37.41</b>

Standard Height of Superstructure **7.5'**

" " R.Q.D. **-**

Deduction for complete superstructure **42**

Percentage covered  $\frac{S}{L} =$  **9.25**

" "  $\frac{S_i}{L} =$  **9.05**

" "  $\frac{E}{L} =$  **8.91**

Percentage from Table, Line A. **4.45**  
(corrected for absence of forecastle (if required))

Percentage from Table, Line B. **-**  
(corrected for absence of forecastle (if required))

Interpolation for bridge less than 2L (if required) **-**

Deduction = **42 x .0445 = -1.87**

**SHEER CORRECTION.**

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ... ..	52.00	1	52.00	39.4"	39.4	1	39.40		
$\frac{1}{4}$ L from A.P. ... ..	23.14	4	92.56	10.68"	10.68	4	42.72		
$\frac{3}{8}$ L " ... ..	5.72	2	11.44	.43"	.43	2	.86		
Amidships ... ..	-	4	-	0	-	4	-		
$\frac{3}{8}$ L from F.P. ... ..	11.44	2	22.88	4.02"	4.02	2	8.04		
$\frac{1}{4}$ L " ... ..	46.28	4	185.12	32.80"	32.80	4	131.20		
F.P. ... ..	104.00	1	104.00	90.60"	90.60	1	90.60		
Total ... ..			468.00				312.82		

Mean actual sheer aft = **Deficient**  
Mean standard sheer aft = **Deficient (72.54% standard)**

Length of enclosed superstructure forward of amidships = **Nil**  
" " aft of " = **Nil**

Correction =  $\frac{\text{Difference between sums of products}}{18} \left( .75 - \frac{S}{2L} \right) =$   **$\frac{155.18}{18} \left( .75 - \frac{203.8}{203.8} \right) = +6.07$**

If limited on account of midship superstructure. **✓** If limited to maximum allowance of 1½ ins. per 100 ft. **✓**

<p><b>Deduction for Tropical Freeboard.</b></p> <p><b>Addition for Winter and Winter North Atlantic Freeboard.</b></p> <p>Depth to Freeboard Deck = <b>36.14</b></p> <p>Summer freeboard = <b>10.89</b></p> <p>Moulded draught (d) = <b>25.25</b></p> <p>Deduction for Tropical freeboard and addition for Winter freeboard = <math>\frac{d}{4}</math> inches = <b>6.31 = 1607</b></p> <p>Addition for Winter North Atlantic Freeboard (if required) =</p>	<p><b>Deduction for Fresh Water.</b></p> <p>Displacement in salt water at summer load water line</p> <p><math>\Delta =</math></p> <p>Tons per inch immersion at summer load water line</p> <p>T =</p> <p>Deduction = <math>\frac{\Delta}{40T}</math> inches =</p>	<p><b>TABULAR FREEBOARD</b> corrected for Flush Deck (if required)</p> <p>Correction for coefficient <math>\frac{.687 + .68}{1.36} = \frac{1.367}{1.36} =</math></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">+</td> <td style="text-align: center;">-</td> </tr> <tr> <td>Depth Correction ... ..</td> <td style="text-align: center;">24.42</td> <td style="text-align: center;">-</td> </tr> <tr> <td>Deduction for superstructures ... ..</td> <td style="text-align: center;">-</td> <td style="text-align: center;">1.87</td> </tr> <tr> <td>Sheer correction ... ..</td> <td style="text-align: center;">6.07</td> <td style="text-align: center;">-</td> </tr> <tr> <td>Round of Beam correction ... ..</td> <td style="text-align: center;">0.45</td> <td style="text-align: center;">-</td> </tr> <tr> <td>Correction for Thickness of Deck amidships</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td>Other corrections, scantlings <i>etc. (corrected for)</i></td> <td style="text-align: center;">23.48</td> <td style="text-align: center;">-</td> </tr> <tr> <td><i>with apparent moulded draught of 25.3</i></td> <td style="text-align: center;">52.42</td> <td style="text-align: center;">1.87</td> </tr> </table> <p style="text-align: right;"><b>77.80</b> <b>78.20</b></p> <p style="text-align: right; font-size: 1.5em;"><b>3320</b></p> <p style="text-align: right;">Summer Freeboard = <b>130.75 = 3320%</b></p>		+	-	Depth Correction ... ..	24.42	-	Deduction for superstructures ... ..	-	1.87	Sheer correction ... ..	6.07	-	Round of Beam correction ... ..	0.45	-	Correction for Thickness of Deck amidships	-	-	Other corrections, scantlings <i>etc. (corrected for)</i>	23.48	-	<i>with apparent moulded draught of 25.3</i>	52.42	1.87
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**SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, ~~Wood~~ Steel, Deck:**

Tropical Fresh Water Line above Centre of Disc ... ..	319	Tropical Fresh Water Freeboard ... ..	3007
Fresh Water Line " " ... ..	159	Fresh Water " " ... ..	3161
Tropical Line " " ... ..	160	Tropical " " ... ..	3160
Winter Line below " " ... ..	160	Winter " " ... ..	3280
Winter North Atlantic Line " " ... ..	-	Winter North Atlantic " " ... ..	-

PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS									
Description of Hatchway									
Dimensions of Hatchway									
COAMINGS	Height above Deck								
	Thickness	Sides							
		Ends							
	Stiffeners								
	Brackets, Stays								
HATCH BEAMS	Number								
	Spacing								
	Scantling and Sketch								
	Bearing Surface								
FORE AND AFTERS	Number								
	Spacing								
	Unsupported Lengths								
	Scantling* and Sketch								
	Bearing Surface								
HATCH COVERS	Material								
	Thickness								
	How fitted								
	Bearing Surface								
Spacing of Cleats									
Number of Tarpaulins									

\*Are wood fore and afters steel shod at all bearing surfaces?  
 Are battens and wedges efficient and in good condition?  
 Are tarpaulins in good condition and in accordance with rule requirements?  
 Are lashings provided in accordance with rule requirements?

Particulars of fiddley, funnel and ventilator coamings:—

Particulars of Flush Bunker Scuttles:—

Particulars of Companionways:—

Particulars of Ventilators in exposed positions on freeboard and superstructure decks:—

Particulars of Air Pipes in exposed positions on freeboard, raised quarter, or superstructure decks:—

Particulars of Gangway Cargo and Coaling Ports:—

Particulars of Scuppers and Sanitary Discharge Pipes —

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Particulars of Side Scuttles:

Particulars of Guard Rails:—

Particulars of Gangways, Lifelines, etc.:—

Particulars of Freeing Arrangements.						
	Length of Bulwark	Height of Bulwark	Size of Freeing Ports	Number each side	Area each side	Rule area each side
After Well ... ..						
Forward Well ... ..						

State position of each freeing port ... .. } After Well:—  
 (F. and A. position and height above deck edge) } Forward Well:—  
 State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such:—  
 Additional area where sheer is less than standard.

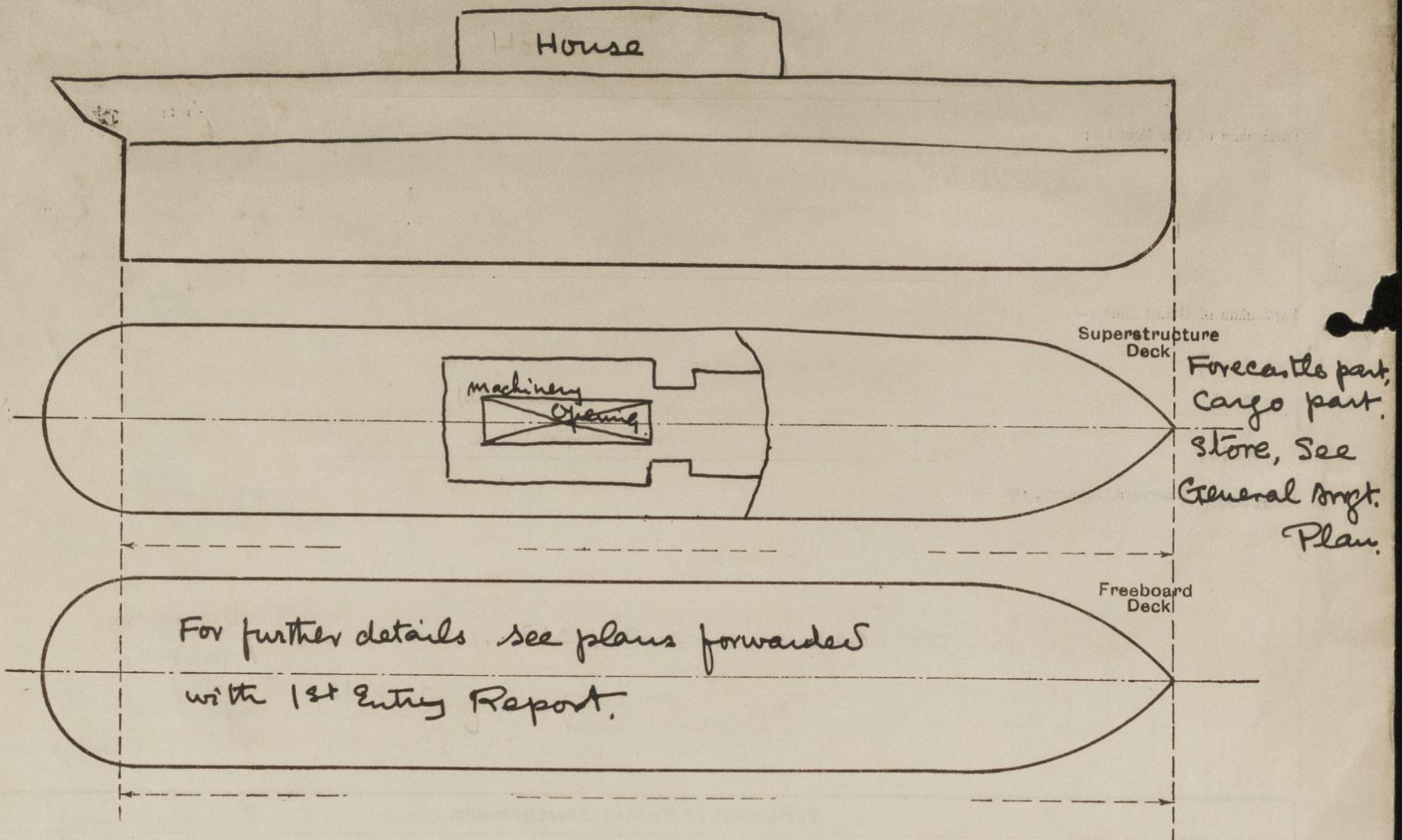
Particulars of Superstructures, Trunks, Casings, Deckhouses.								
	Coaming	Plating	Stiffeners	Spacing	End Attachments of Stiffeners	Size of Openings	Height of Sills	Height of Casings
Poop Bulkhead ... ..								
Raised Quarter Deck Bulkhead ...								
Bridge, After Bulkhead ... ..								
Bridge, Forward Bulkhead ... ..								
Forecastle Bulkhead ... ..								
Trunk, Aft ... ..								
Trunk, Forward ... ..								
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...								
Exposed Machinery Casings on Superstructure Decks ... ..								
Machinery Casings within Superstructures not fitted with Class I Closing Appliances ... ..								
Deckhouses on Flush Deck Ships ...								

Particulars of Closing Appliances (state if capable of being manipulated from both sides).

Poop Bulkhead ... ..	
Raised Quarter Deck Bulkhead ...	
Bridge, After Bulkhead ... ..	
Bridge, Forward Bulkhead ... ..	
Forecastle Bulkhead ... ..	
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...	
Exposed Machinery Casings on Superstructure Decks ... ..	
Machinery Casings within Superstructures not fitted with Class I Closing Appliances ... ..	
Deckhouses on Flush Deck Ships ...	

*Stormboards in riveted channels to Cargo Spaces, steel hinged doors & stores, etc. Hinged steel doors in Machinery Casings.*

Superstructure bulkheads, trunks, deckhouses, casings, cargo and coaling hatchways, extent and thickness of sheathing on the freeboard deck, gangway, cargo and coaling ports, and any other openings, etc., which would affect the seaworthiness of the ship are to be shown on the following sketches:—



State any special features in the construction of the ship:—

Builder's name and yard number No. 217. Mitani Busen Kaisha.

Names of sister ships No 216. Canberra Maru.

Owners Setten Shosen Kab. Kaisha. (Osaka Shosen Kab. Kaisha, Mgr.)

Fee £ : : Received by me



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