

# Lloyd's Register of Shipping.

## SURVEYS FOR FREEBOARD.

(COMPUTATION FOR STEAMER, SAILING SHIP, TANKER.)

Hd 5059

Ship's Name <b>"EMPIRE BILLOW"</b>	Official Number	Nationality and Port of Registry	Gross Tonnage	Date of Build	Port of Survey <b>Northwich (Lancashire)</b>
Moulded Dimensions: Length <b>92'-8 1/4"</b> Breadth <b>23'-0"</b> Depth <b>10'-4"</b>					Date of Survey <b>Whilst Building</b>
Moulded displacement at moulded draught = 85 per cent. of moulded depth <b>(8'-9 1/2")</b> <b>376</b> tons					Surveyor's Signature <b>J.M. Boylan</b>
Coefficient of fineness for use with Tables <b>.703</b>					Particulars of Classification <b>+100A.1.</b> <b>"Water Carrier"</b>

<b>Depth for Freeboard (D).</b> Moulded depth ... <b>10.33'</b> Stringer plate ... <b>.04</b> Sheathing on exposed deck $T \left( \frac{L-S}{L} \right) =$ Depth for Freeboard (D) = <b>10.37</b>	<b>Depth correction.</b> (a) Where D is greater than Table depth $(D - \text{Table depth}) R =$ $(10.37 - 6.18) \cdot 713 = +2.99$ <b>4.19</b> (b) Where D is less than Table depth (if allowed) $(\text{Table depth} - D) R =$ If restricted by superstructures <input checked="" type="checkbox"/>	<b>Round of Beam correction.</b> Moulded Breadth (B) <b>23.0'</b> Standard Round of Beam = $\frac{B \times 12}{50} =$ <b>5.52</b> Ship's Round of Beam = <b>6.00</b> Difference <b>.48</b> Restricted to $\text{Correction} = \frac{\text{Diff}^2}{4} \times \left( 1 - \frac{S}{L} \right) =$ <b>48 \times 4155 = -.05</b>
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## DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S) FEET	Equivalent Enclosed Length (S <sub>i</sub> )	Height FEET	Height Correction	Effective Length (E)
Poop enclosed ...	<b>4.71</b>				
" overhang ...					
R.Q.D. enclosed ...	<b>40.98</b>	<b>40.71</b>	<b>3.0</b>		<b>40.71</b>
" overhang ...					
Bridge enclosed ...					
" overhang aft ...					
" overhang forward ...	<b>4.46</b>	<b>13.46</b>	<b>4.45</b>	<b>4.45/6.0</b>	<b>9.98</b>
F'cle enclosed ...	<b>13.30</b>				
" overhang ...					
Trunk aft ...					
" forward ...					
Tonnage opening aft ...					
" " forward ...					
Total ...	<b>54.17</b>	<b>54.17</b>			<b>50.69</b>

Standard Height of Superstructure **6.0**  
 " " R.Q.D. **3.0**  
 Deduction for complete superstructure **15.27**  
 Percentage covered  $\frac{S}{L} =$  **58.45**  
 " "  $\frac{S_i}{L} =$   
 " "  $\frac{E}{L} =$  **54.69**  
 Percentage from Table, Line A. **38.57**  
 (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 = **15.27 \times 38.57 = -5.89**

## SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	<b>19.27</b>	1		<b>19.27</b>	<b>22.00</b>	<b>22.00</b>	1		<b>22.00</b>
1/4 L from A.P. ...	<b>8.57</b>	4		<b>34.28</b>	<b>9.60</b>	<b>9.60</b>	4		<b>38.40</b>
1/2 L " ...	<b>2.12</b>	2		<b>4.24</b>	<b>2.40</b>	<b>2.40</b>	2		<b>4.80</b>
Amidships ...		4					4		
3/4 L from F.P. ...	<b>4.24</b>	2		<b>8.48</b>	<b>4.24</b>	<b>4.24</b>	2		<b>8.48</b>
1/4 L " ...	<b>17.14</b>	4		<b>68.56</b>	<b>17.14</b>	<b>17.14</b>	4		<b>68.56</b>
F.P. ...	<b>38.53</b>	1		<b>38.53</b>	<b>38.53</b>	<b>38.53</b>	1		<b>38.53</b>
Total ...				<b>173.36</b>					<b>180.77</b>

Mean actual sheer aft = **mean**  
 Mean standard sheer aft = **mean**  
 Mean actual sheer forward = **mean**  
 Mean standard sheer forward = **mean**  
 Length of enclosed superstructure forward of amidships = **Nil.**  
 " " aft of " = **.0394**

Correction =  $\frac{\text{Difference between sums of products}}{18} \left( \frac{.75 - S}{2L} \right) =$  **7.41 (-75 - 2923) = -.19**  
 If limited on account of midship superstructure. **.19 \times .0394 = -.04**  
 If limited to maximum allowance of 1 1/2 ins. per 100 ft. **.4577**

 Deduction for Tropical Freeboard.  
 Addition for Winter and Winter North Atlantic Freeboard.

 Depth to Freeboard Deck = **10.37**  
 Summer freeboard = **.54**  
 Moulded draught (d) = **9.83**  
 Deduction for Tropical freeboard and addition for Winter freeboard =  $\frac{d}{4}$  inches = **2.46 = 2 1/2**  
 Addition for Winter North Atlantic Freeboard (if required) = ☒

Deduction for Fresh Water.

 Displacement in salt water at summer load water line  
 $\Delta =$  **435**  
 Tons per inch immersion at summer load water line  
 $T =$  **4.35**  
 Deduction =  $\frac{\Delta}{40T}$  inches = **2.50**  
 = **2 1/2**

TABULAR FREEBOARD corrected for Fresh Deck (if required)

Correction for coefficient	$\frac{.703 + .68}{1.36} = \frac{1.383}{1.36}$	<b>9.27</b>
Depth Correction	<b>2.99</b>	
Deduction for superstructures	<b>5.89</b>	
Sheer correction	<b>.04</b>	
Round of Beam correction	<b>.05</b>	
Correction for Thickness of Deck amidships		
Other corrections, scantlings, etc.		
Summer Freeboard	<b>6.44</b>	

SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, **Wood, Steel, Deck:**
 Tropical Fresh Water Line above Centre of Disc ... **2 1/2**  
 Fresh Water Line ... **2 1/2**  
 Tropical Line ... **2 1/2**  
 Winter Line below ... **2 1/2**  
 Winter North Atlantic Line ... **2 1/2**

 Tropical Fresh Water Freeboard ... **0'-6 1/2"**  
 Fresh Water ... **0'-6 1/2"**  
 Tropical ... **0'-6 1/2"**  
 Winter ... **0'-6 1/2"**  
 Winter North Atlantic ... **0'-6 1/2"**



# "EMPIRE BILLOW"

A new form should be prepared if any alterations that affect the freeboard have been made. If no such alterations have been made, the Surveyor should endorse the form on this side with his signature and the date.

$$L/2 = 46.33 \quad 46.33$$

$$L/6 = \frac{15.44}{30.89} \quad F = \frac{13.46}{32.87}$$

shear at foremast foot

$$\text{Actual Shear at foremast foot} = 19.20 \times \left( \frac{32.87}{30.89} \right)^2 = 21.74$$

$$\text{Standard Shear at foremast foot} = 38.53 \times \left( \frac{32.87}{46.33} \right)^2 = 19.40$$

$$\text{Actual height foremast} = \frac{21.74}{2.34} = 9.29$$

$$\text{Virtual height foremast} = \frac{19.40}{2.34} = 8.29$$

$$L/2 = 46.33$$

$$Rd = \frac{40.71}{5.62}$$

$$L/10 - 5.62 = 9.27 - 5.62 = 3.65$$

$$\frac{3.65}{9.27} = .394$$

Trade of ship

Names of sister ships

Builder's name and yard number

Owners

Fee £

Yard No. 718.

Ministry of War Transport



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