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# Lloyd's Register of Shipping.

## SURVEYS FOR FREEBOARD.

Index. No.  
(For London Office only.)

Computation of Freeboard for Steamer, Sailing Ship, Tanker

having *Forecastle and Bridge*

Port of Survey *London*

"*HENRIETTA*"

(Type of Superstructures.)

*14216* *14131* *1929-4*

Date of Survey *20<sup>th</sup> July 1932*

Ship's Name *HIGHLAND BRIGADE*  
Nationality and Port of Registry *British Belfast*  
Official Number *148164*  
Gross Tonnage *14131*  
Date of Build *1929-4*

Name of Surveyor *James Butler*

Moulded Dimensions: Length *520.0* Breadth *69.0* Depth *43.75*  
Moulded displacement at moulded draught = 85 per cent. of moulded depth *29175* tons  
Coefficient of fineness for use with Tables *765*

Particulars of Classification *+100A1 with ftd.*

Depth for Freeboard (D)		Depth correction		Round of Beam correction	
Moulded depth	<i>43.75</i>	(a) Where D is greater than Table depth (D - Table depth) R = <i>(43.87 - 34.67) 3 = +27.60</i>		Moulded Breadth (B)	<i>69.00</i>
Stringer plate	<i>.04</i>	(b) Where D is less than Table depth (if allowed) (Table depth - D) R =		Standard Round of Beam = $\frac{B \times 12}{50}$	<i>16.56</i>
Sheathing on exposed deck $T \left( \frac{L-S}{L} \right) = \frac{60 \times 25 + 262.25 \times 1.25}{12 \times 520}$	<i>.08</i>	If restricted by superstructures		Ship's Round of Beam	<i>6</i>
Depth for Freeboard (D) =	<i>43.87</i>			Difference	<i>10.56</i>
				Restricted to	
				Correction = $\frac{\text{Diff}}{4} \times (1 - \frac{S_1}{L})$	<i>= \frac{10.56}{4} (1 - \frac{225}{775}) = +2.05</i>

### DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S <sub>1</sub> )	Height	Height Correction	Effective Length (E)
Poop enclosed ...					
" overhang ...					
R.Q.D. enclosed ...					
" overhang ...					
Bridge enclosed ...	<i>96.75</i>	<i>48.37</i>	<i>8'6" + 2 1/2" wood</i>		<i>48.37</i>
" overhang aft ...					
" overhang forward ...					
Forecastle enclosed ...	<i>101.00</i>	<i>68.60</i>	<i>8'0" + 2 1/2" wood</i>		<i>68.60</i>
" overhang ...					
Trunk aft ...					
" forward ...					
Tonnage opening aft ...					
" forward ...					
Total ...	<i>197.75</i>	<i>116.97</i>			<i>116.97</i>

Standard Height of Superstructure *7.50*

" " R.Q.D.

Deduction for complete superstructure *42.00*

Percentage covered  $\frac{S}{L} = 38.03$

"  $\frac{S_1}{L} = 22.50$

"  $\frac{E}{L} = 22.50$

Percentage from Table, Line A. *11.25*  
(corrected for absence of forecastle (if required))

Percentage from Table, Line B. *14.27*  
(corrected for absence of forecastle (if required))

Interpolation for bridge less than 2L (if required) *11.25 + (3.02 \times \frac{.093}{.200}) = 12.65%*

Deduction = *42.00 \times .1265 = -5.31*

### SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product
A.P. ...	<i>62.00</i>	<i>1</i>		<i>62.00</i>	<i>45.5</i>	<i>45.00</i>	<i>1</i>		<i>45.00</i>
1/2 L from A.P. ...	<i>27.59</i>	<i>4</i>		<i>110.36</i>	<i>18.5</i>	<i>18.56</i>	<i>4</i>		<i>74.24</i>
2/3 L " ...	<i>6.82</i>	<i>2</i>		<i>13.64</i>	<i>4.5</i>	<i>4.63</i>	<i>2</i>		<i>9.26</i>
Amidships ...	<i>-</i>	<i>4</i>		<i>-</i>	<i>0</i>	<i>-</i>	<i>4</i>		<i>-</i>
2/3 L from F.P. ...	<i>13.64</i>	<i>2</i>		<i>27.28</i>	<i>11.5</i>	<i>11.33</i>	<i>2</i>		<i>22.66</i>
1/2 L " ...	<i>55.18</i>	<i>4</i>		<i>220.72</i>	<i>45.5</i>	<i>45.41</i>	<i>4</i>		<i>181.64</i>
F.P. ...	<i>124.00</i>	<i>1</i>		<i>124.00</i>	<i>110</i>	<i>110.00</i>	<i>1</i>		<i>110.00</i>
Total ...				<i>558.00</i>					<i>442.80</i>

Correction =  $\frac{\text{Difference between sums of products}}{18} \left( .75 - \frac{S}{2L} \right) = \frac{115.2}{18} \left( .75 - \frac{1901}{5599} \right) = +3.58$

If limited on account of midship superstructure.

Mean actual sheer aft = *DEFICIENT.*  
Mean standard sheer aft

Mean actual sheer forward = *DEFICIENT. 848.*  
Mean standard sheer forward

Length of enclosed superstructure forward of amidships = *✓*

" " aft of " = *✓*

### FORWARD SHEER.

STANDARD	ACTUAL
<i>13.64 3 40.92</i>	<i>11.33 3 33.99</i>
<i>55.18 3 165.54</i>	<i>45.41 3 136.23</i>
<i>124.00 1 124.00</i>	<i>110.00 1 110.00</i>
<i>330.46</i>	<i>280.22</i>

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

Depth to Freeboard Deck = *44.00*  
Summer freeboard = *15.40*  
Moulded draught (d) = *28.60*

Deduction for Tropical freeboard and addition for

Winter freeboard =  $\frac{d}{4}$  inches = *7.15 7/4*

Addition for Winter North Atlantic Freeboard (if required) =

Deduction for Fresh Water.

Displacement in salt water at summer load water line

$\Delta = 21733$

Tons per inch immersion at summer load water line

$T = 73.2$

Deduction =  $\frac{\Delta}{40T}$  inches

= *7.42*

*7 1/2"*

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient  $\frac{765 + .68}{1.36} \cdot \frac{1.445}{1.36}$

Depth Correction ... *27.60*

Deduction for superstructures ... *5.31*

Sheer correction ... *3.58*

Round of Beam correction ... *2.05*

Correction for Thickness of Deck amidships ... *1.54*

Other corrections, scantlings, etc. AND TO CORRESPOND TO APPROVED MOULDED WINTER DRAUGHT OF 28'0"

Summer Freeboard = *184.75*

SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, *Wood, Steel, Deck*

Tropical Fresh Water Line above Centre of Disc ...	<i>14 3/4"</i>	Tropical Fresh Water Freeboard ...	<i>14 3/4"</i>
Fresh Water Line " " ...	<i>7 1/2"</i>	Fresh Water " " ...	<i>14 - 9 1/2"</i>
Tropical Line " " ...	<i>7 1/4"</i>	Tropical " " ...	<i>14 - 9 1/2"</i>
Winter Line below " " ...	<i>7 1/4"</i>	Winter " " ...	<i>16 - 9 1/2"</i>
Winter North Atlantic Line " " ...	<i>✓</i>	Winter North Atlantic " " ...	<i>✓</i>

27 JUL 1932

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A passenger line to be marked *7 1/4"* below the centre of disc  
*13/11/4*

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MARKING FORM

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21 SEP 1932

004321-004325-0271 1/2



# PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS						
Description of Hatchway	N.1	N.2	N.3	N.4	N.5	N.6
Dimensions of Hatchway	22'6" x 16'0"	24'9" x 16'0"	24'9" x 16'0"	20'3" x 16'0"	20'3" x 16'0"	20'3" x 16'0"
COAMINGS						
Height above Deck	19 3/4"	6 1/2"	22 3/4"	16 3/4"	16 3/4"	16 3/4"
Thickness	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
Stiffeners	None	None	None	None	None	None
Brackets, Stays	None	None	None	None	None	None
HATCH BEAMS						
Number	3	2	3	3	2	2
Spacing	3'9"	7'6"	4'1 1/2"	4'1 1/2"	6'9"	6'9"
Scantling and Sketch	3" x 3" x 62	3 1/2" x 3" x 62	3 1/2" x 3" x 62	3 1/2" x 3" x 62	3 1/2" x 3" x 62	3 1/2" x 3" x 62
Bearing Surface	3"	3"	3"	3"	3"	3"
FORE AND AFTERS						
Number						
Spacing						
Unsupported Lengths						
Scantling and Sketch		None				
Bearing Surface						
HATCH COVERS						
Material	W.P.	W.P.	W.P.	W.P.	W.P.	W.P.
Thickness	3"	2 1/2"	3"	3"	3"	3"
How fitted	7 x 2	7 x 2	7 x 2	7 x 2	7 x 2	7 x 2
Bearing Surface	3"	3"	3"	3"	3"	3"
Spacing of Cleats	22'6" x 24"	22'6" x 24"	22'6" x 24"	22'6" x 24"	22'6" x 24"	22'6" x 24"
Number of Tarpaulins	3	3	3	3	3	3

Particulars of fiddle, funnel and ventilator coamings:—

Engine skylight of teakwood strongly constructed.  
Funnel, and fiddle vents in efficient condition.  
No exposed gratings.

Particulars of Flush Bunker Scuttles:—

None.

Particulars of Companionways:—

None.

For particulars of Entrances to spaces below Freeboard deck see page 4

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

Forecastle deck: One to fore peak 15" dia. Coaming 2'9" x 4'0". Three to hold - two at 18" dia. one at 24" dia.  
Coamings 2'9" x 4'4".  
Upper deck: Six to hold 24" dia. Coamings 10'5" x 14'4" efficiently supported. Four to hold 24" dia.  
Coamings 2'6" x 4'4". Fifteen 12" x 3" to 15" x 4". Coamings 2'6" to 3'0" x 3'0" led to below freeboard deck.  
Bridge deck: Fifteen 12" x 3" to 15" x 4". Coamings 2'6" x 3'0" led to below freeboard deck.  
Officers Bridge deck: Two to hold 24" dia. Coamings 2'9" x 4'4".  
Deck house aft: Two to hold 18" dia. Coamings 2'4" x 3'8". Three to steering compartment 12" dia. Coamings 2'4" x 3'8".  
Two fan vents to funnel 15" dia. Closing appliances fitted to hold vents only.

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

Forecastle deck: One to fore peak 2'0" x 4 1/2" dia. Five to D/B tanks 2'4" to 2'6" x 3" to 4 1/2" dia.  
One to duct keel 12'0" x 4" dia efficiently supported.  
Upper deck: Fifteen to D/B tanks + aft peak 1'6" to 2'3" x 3" to 4 1/2" dia.  
Bridge deck: Twelve to D/B tanks + keel 1'10" to 2'0" x 2 1/2" to 4" dia.  
No closing appliances fitted to above air pipes.

Particulars of Gangway Cargo and Coaling Ports:—

Two W.T. gangway doors between upper + 2<sup>nd</sup> decks on port + starboard sides.  
One at 6'0" x 3'10" and one at 3'0" x 3'10" efficiently constructed.

Particulars of Scuppers and Sanitary Discharge Pipes:—

Eight Collinsons scuppers each side from upper deck. Ten pipe scuppers on starboard side and three pipe scuppers on port side from upper deck. No storm valves fitted.  
One refuse shoot from galley on starboard side fitted with non-return valve near inner end and a steel hinged W.T. flap at top of hopper.  
All scuppers and sanitary discharge pipes from spaces below freeboard deck fitted with non-return valves at ships side + efficient traps at inner ends, with exception of several Collinsons scuppers from 2<sup>nd</sup> deck which are closed by accessible W.T. screw down plugs.

Particulars of Side Scuttles:—

All side scuttles below freeboard deck fitted with strong hinged or portable dead lights.  
The vertical distance of the sill of the lowest side scuttle below top of steel freeboard deck at side amidships is 7'7 1/2". Fore + aft position 244'7" aft of midships.

Particulars of Guard Rails:—

Forecastle deck: 3'6" high, 3 rods, and steel tube rail. Stanchions 5'1" apart.  
Bridge deck: 3'4" high, 3 rods, and teakwood rail. Stanchions 4'9" apart.  
Upper deck: 3'6" high, 4 rods, and steel tube rail. Stanchions 4'0" to 5'0" apart.  
Upper deck aft end: 3'6" high, 3 rods, and teakwood rail. Stanchions 4'6" apart.

Particulars of Gangways, Lifelines, etc.:—

A portable gangway fitted from fore end of bridge to aft end of Officers bridge.  
No lifelines fitted.  
The crew are berthed forward.

## 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	90'0"	4'4"	1'9" x 12"	One	1.53 sq ft	

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:— 3 bars.  
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	30	30	5 x 2 1/2 bulwark	29"	None	6'0" x 2'7"	6"	8'6"
Bridge, Forward Bulkhead	14 1/4	14 1/4	9 1/2 x 3 1/2 x 50 I	30"	Lugs	5'0" alleyway	None	8'6"
Forecastle Bulkhead	30	30	3 1/2 x 3 x 3/8	30"	None	3'0" side alleyway	11"	8'0"
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	50	25	3 1/2 x 2 1/2 x 1/40	27"	Top to beams	6'0" x 3'2"	10"	8'6"
Deckhouses on Flush Deck Ships	—	—	—	—	Bottom	None	6'0" x 2'3"	—

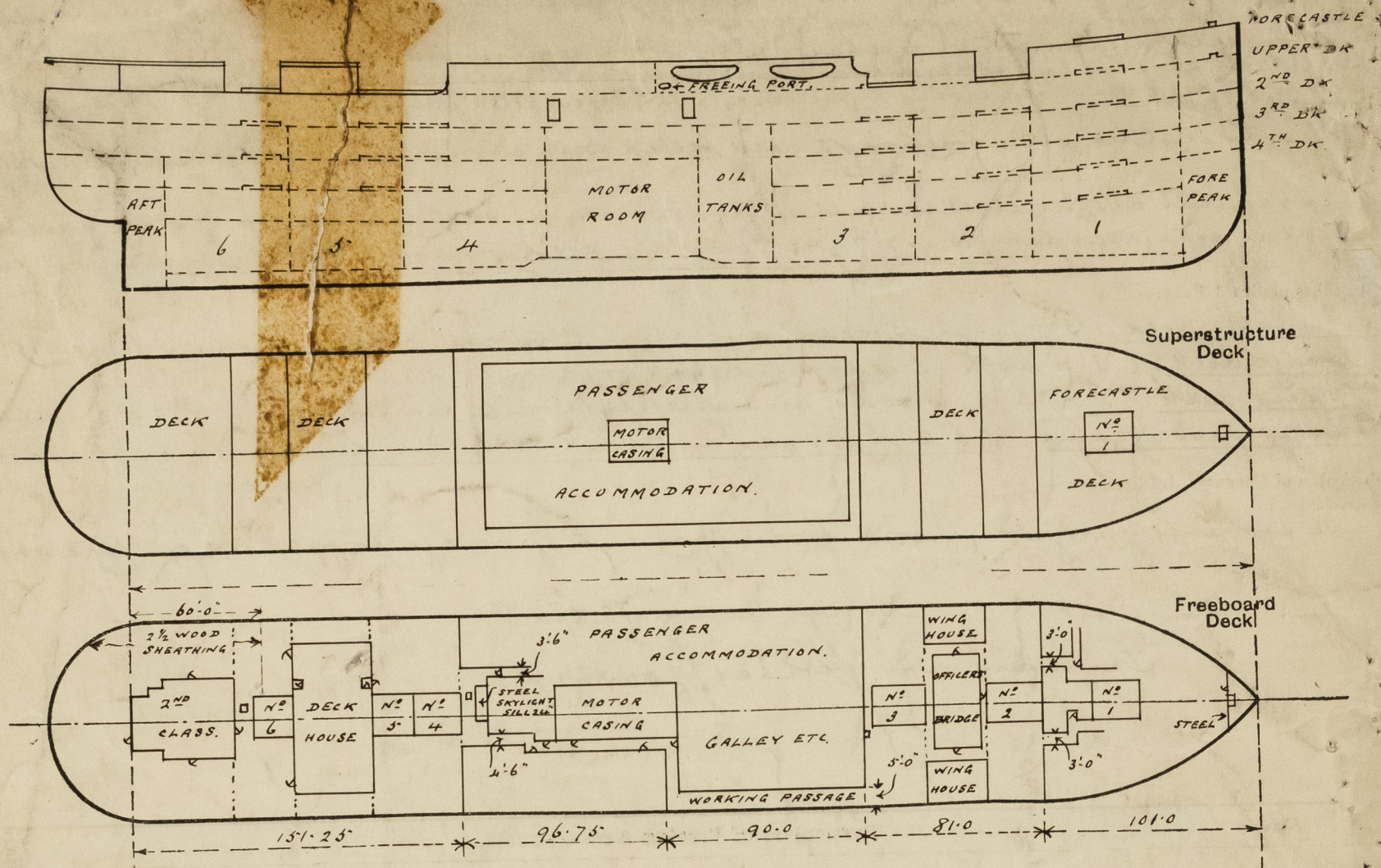
## Particulars of Closing Appliances (state if capable of being manipulated from both sides).

Poop Bulkhead	
Raised Quarter Deck Bulkhead	
Bridge, After Bulkhead	Hinged teakwood door on port side. Open alleyway starboard side.
Bridge, Forward Bulkhead	No openings in bulkhead. Open alleyway starboard side.
Forecastle Bulkhead	Open alleyways. No closing appliances.
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	Hinged teakwood doors operated from both sides.
Deckhouses on Flush Deck Ships	



# Highland Brigade

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:—



## Deck Sheathing

Forecastle & Bridge decks sheathed with 2 1/2" pitch pine.  
 Upper deck where exposed sheathed with 2 1/2" pitch pine from stern to 60 ft forward of A.P. and the remainder coated with 1 1/4" Asphalt.  
 Upper deck where not exposed sheathed with 2 1/2" pitch pine.

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

## Entrances to spaces below Freeboard deck.

Inside Forecastle: Two with teakwood hinged doors and 12" sills.  
 Deckhouse in forward well: One each side with hinged teakwood doors and 12" sills. One at fore end with hinged steel door and 12" sill.  
 Working Passage: One to galley &c with hinged steel door and 12" sill. Two on starboard side to stairways with hinged teakwood doors and 12" sills. Two on port side to motor room and refrigerating machinery with hinged teakwood doors and 12" sills.  
 Deckhouse between No. 3 & 4 hatchways: One at fore end to No. 5 hold with hinged teakwood door and 12" sill and an inner steel door with 6" sill. Two at aft end with hinged teakwood doors and 12" sills. One at aft end to tunnel with hinged steel door and 12" sill.  
 2nd Class deck house: One each side and one at fore end with hinged teakwood doors and 10" sills. One at aft end to steering gear with hinged teakwood door and 10" sill protected by hinged steel storm door on outside.

All doors operated from both sides except the door to Tunnel which is operated from inside only.

## Small hatchways.

Forecastle deck: Hatch to fore peak 3'0" x 3'0". Coaming 8" x 36 with steel hinged W.T. cover.  
 Upper deck: Hatch to fore peak 3'6" x 3'3". Angle coaming and wood cover. No battening down arrangements fitted.  
 Access hatches to No. 3, 4, & 6 holds 2'6" to 3'0" x 1'10". Coamings 2'6" x 36 wood covers, battens, and tarpaulins &c fitted.  
 Vessel examined afloat and survey confined to Freeboard.

Builder's name and yard number. Harland & Wolff Ltd. No. 812

Names of sister ships "Highland Chieftain", "Highland Princess", "Highland Patriot", "Highland Monarch"

Owners Nelson Lin. Nav. Co. Ltd.

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