

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

Rpt. C.11. 34542
35015
35093
35399
35848
Hanning Warrick
Loos Street
Hough Wood
Hough Ray
Hough Lane

181A

Computation of Freeboard for **SINGLE SCREW MOTOR** Tanker
having **SINGLE DECK, POOP, BRIDGE, FORECASTLE.**

Port of Survey **Odenia**

Date of Survey **September 1938**

Name of Surveyor **S. Sanderson**

Particulars of Classification **+100 A.1. CARRYING PETROLEUM IN BULK (CONTEMPLATED)**

Ship's Name "HØEGH RAY"	Nationality and Port of Registry NORWEGIAN. OSLO	Official Number 4500	Gross Tonnage ABOUT 9357	Date of Build 1937
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Moulded Dimensions: Length **480.0** Breadth **65.3** Depth **35.10**
Moulded displacement at moulded draught = 85 per cent. of moulded depth **(30.46 Ft.)** **21830** tons
Coefficient of fineness for use with Tables **.801**

Depth for Freeboard (D) Moulded depth ... 35.10 Stringer plate ... 10922% Sheathing on exposed deck NONE $T \left(\frac{L-S}{L} \right) =$ 35.90 Depth for Freeboard (D) = 10943%	Depth correction (a) Where D is greater than Table depth (D - Table depth) R = (35.90 - 32.00) 3 + 11.70" (b) Where D is less than Table depth (if allowed) (Table depth - D) R = If restricted by superstructures	Round of Beam correction Moulded Breadth (B) 65.3 = 14888% Standard Round of Beam = $\frac{B \times 12}{50} =$ 348% 15.66 Ship's Round of Beam = 400% 15.75 Difference Express .09 Restricted to Correction = $\frac{\text{Diff}}{4} \times \left(1 - \frac{S_1}{L} \right) =$ $\frac{.09}{4} \times .6343 = -.01$
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DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height in ft	Height Correction	Effective Length (E)	
Poop enclosed ...	98.23	98.23	7.67	2337	98.23	
" overhang ...	5.25	2.62			2.62	
R.Q.D. enclosed ...						
" overhang ...						
Bridge enclosed. <i>Equival.</i> ...	37.62	37.62	2286		37.62	
" overhang aft ...			7.50			
" overhang forward ...						
F'cle enclosed. <i>Equival.</i> ...	37.04	37.04	2286		37.04	
" overhang ...			7.50			
Trunk aft ...						
" forward ...						
Tonnage opening aft ...						
" " forward ...						
Total ...	178.14	175.51			175.51	

Standard Height of Superstructure **7.5'**
" " R.Q.D.
Deduction for complete superstructure **42.00"**
Percentage covered $\frac{S}{L} =$ **37.12%**
" " $\frac{S_1}{L} =$ **36.57%**
" " $\frac{E}{L} =$ **36.57%**
Percentage from Table, Line A Tanker **27.57%**
(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 = **42.00 x .2757 = 11.58"**

SHEER CORRECTION.

Station	Standard Ordinate	S M	Product	Actual Ordinate in ft	Effective Ordinate	S M	Product	
A.P. ...	58.00	1	58.00	47.44	47.44	1	47.44	
$\frac{1}{4}$ L from A.P. ...	25.81	4	103.24	9.84	9.84	4	39.36	
$\frac{3}{4}$ L " ...	6.38	2	12.76	0	0	2	0	
Amidships ...	0	4	0	0	0	4	0	
$\frac{3}{4}$ L from F.P. ...	12.76	2	25.52	0	0	2	0	
$\frac{1}{4}$ L " ...	51.62	4	206.48	30.12	30.12	4	120.48	
F.P. ...	116.00	1	116.00	100.20	100.20	1	100.20	
Total ...			522.00				307.48	

Mean actual sheer aft = **Deficient**
Mean standard sheer aft
Mean actual sheer forward = **Deficient**
Mean standard sheer forward
Length of enclosed superstructure forward of amidships = **Deficient**
" " aft of " = **Deficient**

Correction = $\frac{\text{Difference between sums of products}}{18} \left(.75 - \frac{S}{2L} \right) =$ **$\frac{214.52}{18} (.75 - .1856) = +6.73$**
If limited on account of midship superstructure. If limited to maximum allowance of $1\frac{1}{2}$ ins. per 100 ft.

Deduction for Tropical Freeboard. Addition for Winter and Winter North Atlantic Freeboard. Ft. Depth to Freeboard Deck = 35.90 Summer freeboard = 8.08 Moulded draught (d) = 27.82 Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = 6.95 = 7.178% Addition for Winter North Atlantic Freeboard (if required) = 6.95 + 4.8 = 11.75 = 24.8%	Deduction for Fresh Water. Displacement in salt water at summer load water line $\Delta =$ 19880 Tons per inch immersion at summer load water line T = 65.20 Deduction = $\frac{\Delta}{40T}$ inches = 7.62 = 7.2% = 190%	TABULAR FREEBOARD corrected for Flush Deck (if required) Correction for coefficient $\frac{801 + .68}{1.36} = \frac{1.481}{1.36}$ <table border="1"> <tr> <th></th> <th>+</th> <th>-</th> </tr> <tr> <td>Depth Correction ...</td> <td>11.70</td> <td></td> </tr> <tr> <td>Deduction for superstructures ...</td> <td></td> <td>11.58</td> </tr> <tr> <td>Sheer correction ...</td> <td>6.73</td> <td></td> </tr> <tr> <td>Round of Beam correction ...</td> <td></td> <td>.01</td> </tr> <tr> <td>Correction for Thickness of Deck amidships ...</td> <td></td> <td></td> </tr> <tr> <td>Other corrections, scantlings, etc. ...</td> <td></td> <td></td> </tr> <tr> <td></td> <td>18.43</td> <td>11.59 + 6.84</td> </tr> <tr> <td>Summer Freeboard =</td> <td colspan="2">96.90"</td> </tr> </table>		+	-	Depth Correction ...	11.70		Deduction for superstructures ...		11.58	Sheer correction ...	6.73		Round of Beam correction01	Correction for Thickness of Deck amidships ...			Other corrections, scantlings, etc. ...				18.43	11.59 + 6.84	Summer Freeboard =	96.90"	
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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	14 1/2" = 368%	Tropical Fresh Water Freeboard	6 1/2" = 2096%
Fresh Water Line	12 1/2" = 190%	Fresh Water	7 1/2" = 2274%
Tropical Line	11 1/2" = 178%	Tropical	7 1/2" = 2286%
Winter Line below	11 1/2" = 178%	Winter	8 1/2" = 2642%
Winter North Atlantic Line	11 3/4" = 298%	Winter North Atlantic	9 0 3/4" = 2762%

PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS.									
Description of Hatchway			OIL TIGHT HATCHWAYS				GASTIGHT HATCH TO DRY GARGO HOLD FORMER		
Dimensions of Hatchway			1600 %	1225 %	ON FREEBOARD	DECK	2640 x 3454 %		
COAMINGS	{	Height above Deck	←		810 % ✓		→	}	760 % ✓
		Thickness } Sides	←		10 % ✓		→		11 % ✓
		Stiffeners	←		10 % ✓		→		
		Brackets, Stays	← HORIZONTAL 100.75 x 11 % F ✓ NO STAYS AND BRACKETS →						HORIZONTAL 180.75 x 11 % ✓ NO 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	}	STEEL PLATE	12.5 % THICK WITH	100 x 75 x 10 % STIFFS ✓	}	STEEL PLATE	
		Thickness							
		How fitted							
		Bearing Surface							
				HINGED AND PACKED	OIL TIGHT			PACKED GASTIGHT	
Spacing of Cleats			NO CLEATS. SCREWING DOWN BOLTS SPACED 335 % ✓				NO CLEATS, BOLTS SPACED 760 % ✓		
Number of Tarpaulins			NONE				NONE		
*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 :—

	PROTECTED BY POOP AND DECKHOUSE ON POOP					
6 VENTILATORS	840 $\frac{7}{8}$ " DIA.	WITH STEEL COAMING ^S .	RIVETED TO CASING TOP	AND FITTED WITH STEEL GOWLS		
2 "	380 $\frac{7}{8}$ "	" " " "	" " " "	" " " "	" " " "	" " " "
2 "	230 $\frac{7}{8}$ "	" " " "	" " " "	" " " "	" " " "	" " " "
MOTOR ROOM SKYLIGHT	MADE OF STEEL, RIVETED TO CASINGTOP, WITH HINGED STEEL FLAPS.					
FUNNEL COAMING OF 6-5 $\frac{7}{8}$ "	STEEL PLATE		RIVETED TO CASINGTOP,			

Particulars of Flush Bunker Scuttles:— **NONE** ✓

Particulars of Companionways:— TWO PUMP ROOM CASINGS MADE OF 8.5 % STEEL PLATE RIVETED TO FREEBOARD DECK WITH W.T. STEEL SKYLIGHT ON TOP. — HINGED W.T. STEEL DOORS 1450x840mm CAPABLE OF BEING MANIPULATED FROM BOTH SIDES, HEIGHT OF SILL OF DOORWAYS 465 mm. — COMPANION TO FORWARD PUMP ROOM MADE OF 8mm STEEL PLATE RIVETED TO STEEL FREEBOARD DECK HINGED W.T. STEEL DOOR, HEIGHT OF SILL 380 mm

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

VENTILATOR COAMINGS ON	FORECASTLE DECK	OF STEEL PLATES	0.5 % THICK	415 % HEIGHT
"	FREEBOARD - 4"	"	8.5 % 12 % X	415 %
"	BRIDGE - 4"	"	8.5 %	415 %
"	POOP - 4"	"	8.0 % 9.0 % X	760 %

ALL VENTILATOR COAMINGS RIVETED TO STEEL DECK PROPERLY STIFFENED WHERE NECESSARY
FITTED WITH STEEL COWLS, WOOD PLUGS AND CANVAS COVERS.

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

ON UPPER DECK, MIN. 500 % HEIGHT ON SUPERSTRUCTURE DECKS,	GALV. STEEL PIPES 215 % MIGHT
AND WIRE GAUGE AND APPROVED CLOSING APPLIANCES:	FITTED WITH SWAN NECK



Particulars of Gangway Cargo and Coaling Ports:— **NONE**

FORECASTLE DECK :- 2 OFF 300 "M DIAM.

FREE BOARD - 1 : - 3 " - 300 " - " - -8.5% thick
4 " - 535 " - " - -12% thick (Derrick Posts)

BRIDGE - - - :- 2 - - - 300 - - - - -

Page - 4 - 255 - 4 - 4 -

230 -4- -4-

21 - n - 206 - n - - n - AND 1.2 OFF 380 M/N DIAM.

Particulars of Scuppers and Sanitary Discharge Pipes :- NO SANITARY OR DISCHARGE PIPES FROM SPACES BELOW FREEBOARD DECK. - PIPES FROM W.C.'s MADE OF STEEL WITH CAST STEEL STORM VALVES. OTHER SANITARY DISCHARGE PIPES MADE OF MILD STEEL WITH CAST STEEL STORM VALVES. SOIL PIPES FROM POOP ACC. DISCHARGE 300MM ABOVE LOAD W.L. SCUPPES FROM SPACES UNDER POOP FITTED WITH SCREW DOWN COVERING PLATES & STORMVALVES.

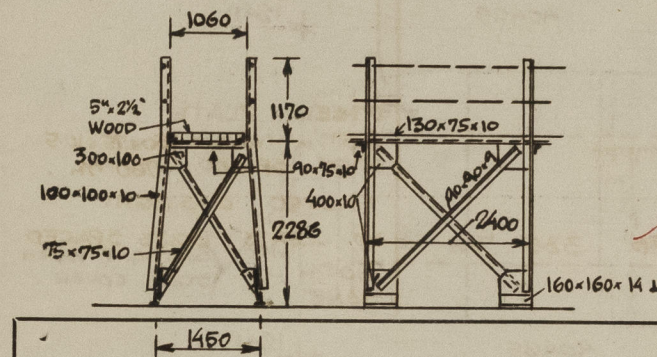
Particulars of Side Scuttles :—	N O	SIDE SCUTTLES BELOW FREEBOARD DECK
FORECASTLE BRIDGE POOP	250 7/8 250 7/8 250 7/8	SIDE SCUTTLES WITH 10 7/8 SECURIT GLASS AND HINGED STEEL STEEL DEADLIGHT

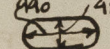
Particulars of Guard Rails:—

SPACED AB. 1400 mm	OPEN RAILS ON PART OF FREEBOARD DECK	1220 mm HIGH STEEL STANCHIONS
HIGH 6.5% THICK	4 STEEL RODS EQUALLY SPACED.	STEEL BULKWARK REMAINING PART 1220 mm
2 FRAME SPACES.	180 x 76 x 13	STAYS 180 x 75 x 9 WITH 75 x 75 x 4 2 SPACED 2 FRSP.
OPEN RAILS ON FORECASTLE DECK	1070 mm HIGH	ON FORE. PART OF FORE DECK = BULKWARK 1070 - 1220 mm HIGH
POOP DECK	1120 mm	6.8% THICK 180 x 76 x 13 3 RAIL BAR STAYS OF 4% PL PL. SPACED 1500% APART.
BRIDGE	1070 mm	STEEL STANCHIONS SPACED AB. 1400 mm
STEEL BULKWARKS SIDES AND FRONT OF BRIDGE DECK	1070 mm HIGH 6.5% THICK 180 x 76 x 13	3 STEEL RODS EQUALLY SPACED
		RAIL BAR STAYS 1100 APART.

Particulars of Gangways, Lifelines, etc. :-

GANGWAY BETWEEN POOP AND BRIDGE AND FORECASTLE		SCANTLING	
AS PER SKETCH	RAIL STANCHIONS OF STEEL	1040 % HIGH	
SPACED 2400	2 STEEL RODS		



Particulars of Freeing Arrangements.							
	Length of Bulwark in ft	Height of Bulwark in ft	Size of Freeing Ports	Number each side	Area each side	Rule area each side	
After Well	25430	1220		1	0.426 M ² 8 25.59m open rails	1/2 open rails	
Forward Well	18650	1220	DO	1	0.426 M ² 8 21.775m open rails	1/2 open rails	

State position of each freeing port } After Well:— FRAMES 44, 94, 107
(F. and A. position and height above deck edge) } Forward Well:— — 122, 162 } HEIGHT ABOVE DECK 385% & 326%

State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such:— 3 VERTICAL 22% ROPS EQUALLY SPACED

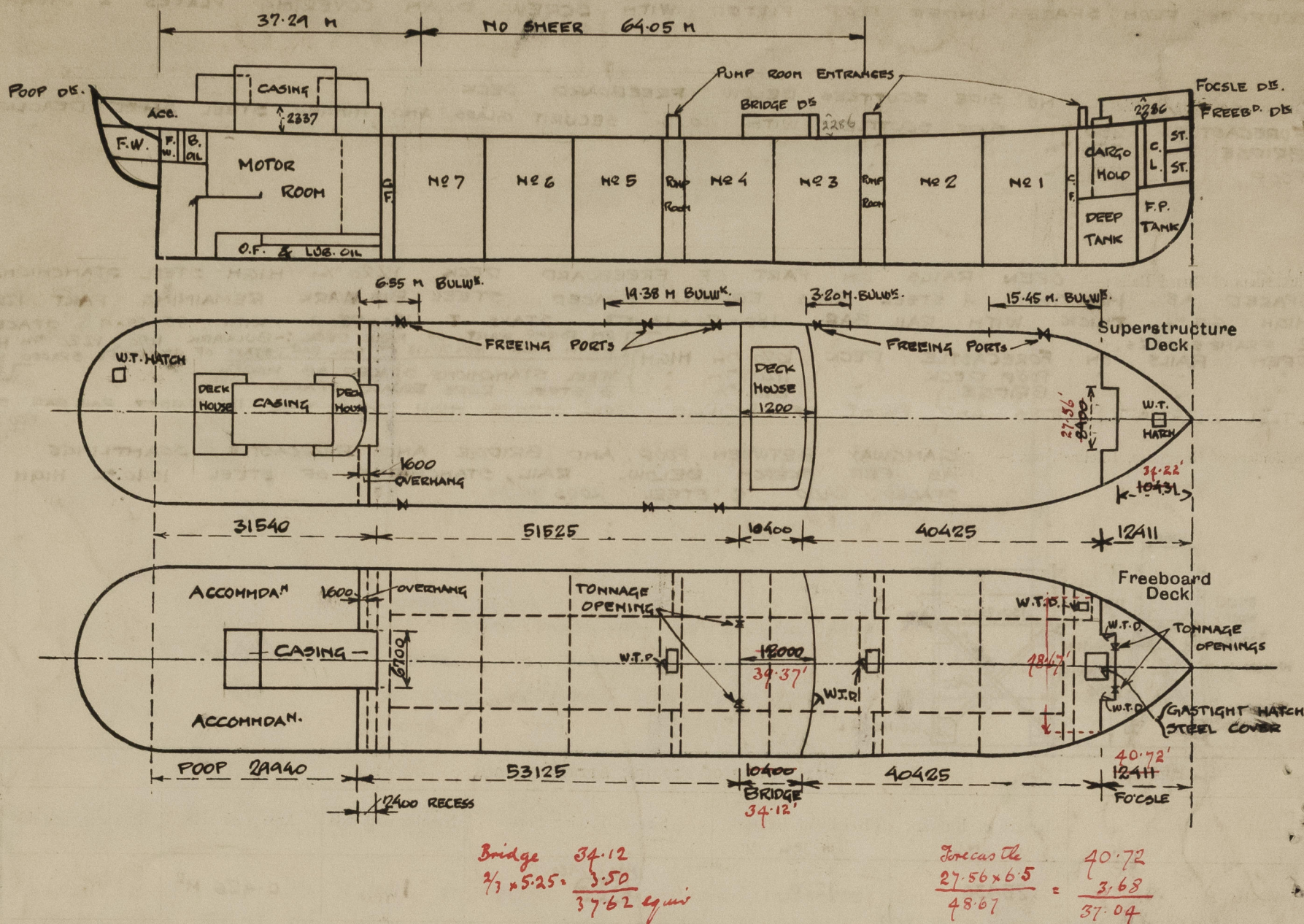
Additional area where sheer is less than standard.

Particulars of Superstructures, Trunks, Casings, Deckhouses.								
	Coaming IN 7/8	Plating IN 7/8	Stiffeners IN 7/8	Spacing IN 7/8	End Attachments of Stiffeners	Size of Openings IN 7/8	Height of Sills IN 7/8	Height of Casings IN 7/8
Poop Bulkhead	11 ✓	11 ✓	250 x 40 x 11 5	600 - 750	BRACKETS AND LUGS ✓	NO OPENING ✓	-	-
Raised Quarter Deck Bulkhead ...								
Bridge, After Bulkhead	10 ✓	9 ✓	180 x 75 x 9 5	815 - 823 ✓	LUGS BOTTOM ✓	TWO 1245 x 940 ✓	465 ✓	-
Bridge, Forward Bulkhead	11 ✓	11 ✓	230 x 40 x 11.5 5	815 - 823 ✓	BRACKETS -- ✓	ONE 1465 x 725 ✓	465 ✓	-
Forecastle Bulkhead	9 ✓	9 ✓	180 x 75 x 9 5	700 - 755	LUGS ✓	TWO 1245 x 840 ✓	465 ✓	-
Trunk, Aft						TWO W.T. DOORS 1465 x 580 ✓	485 ✓	
Trunk, Forward								
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...	8.5 ✓	8.5 ✓	115 x 65 x 7 5	840 ✓	NONE ✓	ONE 1450 x 840 ✓	455 ✓	2286 ✓
Exposed Machinery Casings on Superstructure Decks	9.5 ✓	8.5 ✓	80 x 65 x 7 5	840 ✓	BRACKET AT TOP NONE AT FOOT ✓	HINGED STEEL DOORS EACH SIDE 1470 x 710 ✓	480 ✓	3436 ✓
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	NO OPENINGS ✓
Raised Quarter Deck Bulkhead ...	
Bridge, After Bulkhead	TWO TONNAGE OPENINGS WITH 65% WOOD PLANKS IN RIVETED CHANNELS ; FULL HEIGHT. ✓
Bridge, Forward Bulkhead	ONE W.T. HINGED STEEL DOOR , CAPABLE OF BEING MANIPULATED FROM BOTH SIDES. ✓
Forecastle Bulkhead	TWO TONNAGE OPENINGS WITH 65% ^{WOOD} PLANKS IN RIVETED CHANNELS ; FULL HEIGHT; TWO W.T. STEEL ^{DOORS} ✓
Exposed Machinery Casings on Freeboard Exposed Machinery Casings on Superstructure Decks	ONE HINGED STEEL DOOR IN EACH CASING CAPABLE OF BEING MANIPULATED FROM BOTH SIDES ✓
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	HINGED STEEL DOORS IN HALVES CAPABLE OF BEING MANIPULATED FROM BOTH SIDES ✓
Deckhouses on Flush Deck Ships ...	

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:— COMBINED LONGITUDINAL AND TRANSVERSE FRAMING SYSTEM
TWO LONGITUDINAL BULKHEADS

ON APPROXIMATE LOAD LINE : ABOUT 28'-0"

EXTREME DISPLACEMENT = 19880 TONS AT 35 CUB. FT.

TONS PER INCH IMMERSION = 65.20 TONS AT 35 CUB. FT.

Builder's name and yard number ODNSE STAALSKIBBYVERFT YED A.P. MØLLER YARD NO 66

Names of sister ships "HENNING MÆRSK" "LOOSDRECHT" "HØEGH HOOD"

Owners LEIF HØEGH, OSLO.

Fee £ : : Received by me



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