

Lloyd's Register of Shipping.

SURVEYS FOR FREEBOARD.

15324

Computation of Freeboard for Steamer, Sailing Ship, Tanker

having Prop Bridge & Forecastle.

(Type of Superstructures.)

Port of Survey Middlesbrough.

Date of Survey While lying shortlanded Jan 1935.

Name of Surveyor Cyril B. Seaver.

Particulars of Classification 100 A.1.

Ship's Name	Nationality and Port of Registry	Official Number	Gross Tonnage	Date of Build
<u>S. MATHURA.</u>	<u>BRITISH LIVERPOOL.</u>	<u>143690</u>	<u>8889.85</u>	<u>1920.12.</u>
Moulded Dimensions: Length <u>478.16'</u> Breadth <u>63.21'</u> Depth <u>38.37'</u>		Moulded displacement at moulded draught = 85 per cent. of moulded depth <u>20794 Tons</u>		
Coefficient of fineness for use with Tables <u>738</u>				

Depth for Freeboard (D)	Depth correction	Round of Beam correction
Moulded depth <u>38.37'</u>	(a) Where D is greater than Table depth (D - Table depth) R = $\frac{38.41 - 31.88}{3} \times 3 = +19.59$ ✓	Moulded Breadth (B) <u>63.62.</u>
Stringer plate <u>04.1'</u>	(b) Where D is less than Table depth (if allowed) (Table depth - D) R = ✓	Standard Round of Beam = $\frac{B \times 12}{50} = 15.27.$
Sheathing on exposed deck $T \left(\frac{L-S}{L} \right) =$	If restricted by superstructures	Ship's Round of Beam = <u>16"</u>
Depth for Freeboard (D) = <u>38.41'</u>		Difference <u>73</u>
		Restricted to
		Correction = $\frac{\text{Diff}}{4} \times (1 - \frac{S_1}{L}) = \frac{73}{4} \times \frac{45.04}{63.62} = 12.08$

DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S ₁)	Height	Height Correction	Effective Length (E)	
Poop enclosed <u>equant.</u>	<u>47.25</u>	<u>47.25</u>	<u>7.5</u>	✓	<u>47.25</u>	Standard Height of Superstructure <u>7.5</u>
" overhang ...	<u>2.00</u>	<u>1.00</u>		✓	<u>1.00</u>	" " R.Q.D.
R.Q.D. enclosed						Deduction for complete superstructure <u>42.0</u>
" overhang						Percentage covered $\frac{S}{L} = 57.66$
Bridge enclosed...	<u>137.17</u>	<u>137.17</u>	<u>7.95</u>	✓	<u>137.17</u>	" " $\frac{S_1}{L} = 54.96$
" overhang aft ...	<u>47.83</u>	<u>35.88</u>		✓	<u>35.88</u>	" " $\frac{E}{L} = 54.76$
" overhang forward						Percentage from Table, Line A.
Fore enclosed <u>open</u>	<u>41.50</u>	<u>41.50</u>	<u>7.00</u>	<u>+7.25</u>	<u>41.50</u>	(corrected for absence of fore-castle (if required))
" overhang ...			<u>+3.81</u>	<u>7.50</u>	<u>40.12</u>	Percentage from Table, Line B. <u>40.76</u>
Trunk aft ...						(corrected for absence of fore-castle (if required))
" forward ...						Interpolation for bridge less than 2L (if required)
Tonnage opening aft ...					<u>261.42</u>	Deduction = <u>42 x 40.76 = -17.20</u>
" forward					<u>262.80</u>	
Total ...	<u>275.75</u>	<u>262.80</u>				

SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product	
A.P. ...	<u>57.82</u>	1		<u>57.82</u>	<u>59.25</u>	<u>59.25</u>	1		<u>59.25</u>	Mean actual sheer aft = <u>Excess</u>
$\frac{1}{8}$ L from A.P. ...	<u>25.73</u>	4		<u>102.92</u>	<u>27.30</u>	<u>27.30</u>	4		<u>109.20</u>	Mean actual sheer forward = <u>Excess</u>
$\frac{2}{8}$ L " ...	<u>6.36</u>	2		<u>12.72</u>	<u>7.75</u>	<u>7.75</u>	2		<u>15.50</u>	Mean standard sheer forward
Amidships ...	-	4		-	0	0	4		-	Length of enclosed superstructure forward of amidships = <u>> 1L</u>
$\frac{3}{8}$ L from F.P. ...	<u>12.72</u>	2		<u>25.44</u>	<u>15.25</u>	<u>15.25</u>	2		<u>30.50</u>	" " aft of " = <u>> 1L</u>
$\frac{4}{8}$ L " ...	<u>51.46</u>	4		<u>205.84</u>	<u>58.25</u>	<u>58.25</u>	4		<u>233.00</u>	
F.P. ...	<u>115.63</u>	1		<u>115.63</u>	<u>128.25</u>	<u>128.25</u>	1		<u>128.25</u>	
Total ...	<u>520.38</u>			<u>520.37</u>					<u>575.70</u>	

Correction = $\frac{\text{Difference between sums of products}}{18} \left(\frac{75-S}{2L} \right) = \frac{55.33}{18} \left(\frac{75-2883}{4617} \right) = -1.42$

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.

Depth to Freeboard Deck = 38.41
Summer freeboard = 8.39
Moulded draught (d) = 30.02

Deduction for Tropical freeboard and addition for Winter freeboard = $\frac{d}{4}$ inches = 7.50 = 7 $\frac{1}{2}$
Addition for Winter North Atlantic Freeboard (if required) =

Deduction for Fresh Water.

Displacement in salt water at summer load water line
 $\Delta = 19030$
Tons per inch immersion at summer load water line
 $T = 60.0$

Deduction = $\frac{\Delta}{40T}$ inches
= $\frac{19030}{2400}$
= 7.92
= 8

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient

	+	-
Depth Correction ...	<u>19.59</u>	<u>-0.08</u>
Deduction for superstructures ...	<u>17.20</u>	
Sheer correction ...	<u>1.42</u>	
Round of Beam correction ...	<u>0.08</u>	
Correction for Thickness of Deck amidships ...		
Other corrections, scantlings, etc. ...		<u>58</u>
	<u>19.59</u>	<u>18.70</u>

Summer Freeboard = 100.7385

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

Tropical Fresh Water Line above Centre of Disc ...	<u>15$\frac{1}{2}$</u>	Tropical Fresh Water Freeboard ...	<u>7$\frac{1}{4}$</u>
Fresh Water Line " " ...	<u>8</u>	Fresh Water " " ...	<u>7$\frac{3}{4}$</u>
Tropical Line " " ...	<u>7$\frac{1}{2}$</u>	Tropical " " ...	<u>7$\frac{1}{4}$</u>
Winter Line below " " ...	<u>7$\frac{1}{2}$</u>	Winter " " ...	<u>9$\frac{1}{4}$</u>
Winter North Atlantic Line " " ...	<u>7$\frac{1}{2}$</u>	Winter North Atlantic " " ...	<u>9$\frac{1}{4}$</u>

PARTICULARS OF PROTECTION TO OPENINGS, ETC.

HATCHWAYS ON FREEBOARD AND SUPERSTRUCTURE DECKS													
			← UPPER DECK. →		← BRIDGE DECK →		← UPPER DECK →		← BRIDGE DECK →		← BRIDGE DECK →		
Description of Hatchway	Nº1	Nº2	Nº3	Nº4	Nº5	Nº6	Nº3	Nº4	BUNKER SIDE HATCH	BUNKER SIDE HATCH	BUNKER SIDE HATCH
Dimensions of Hatchway	22'-6"	34'-6"	15'-0"	17'-6"	35'-0"	22'-6"	15'-0"	17'-6"	8'-6"	14'-8"	18'-9"
COAMINGS	{	Height above Deck	36"	36"	30"	30"	33"	33"	9' B.A.	30"	45"	30"	30"
		Thickness { Sides	44"	44"	46"	42"	45"	40"	CUAMING,	44"	50"	40"	40"
		Ends	40	40	50	40	45	44		40	38	40	40
		Stiffeners ...	7' B.A.	7' B.A.	7' B.A.	7' B.A.	7' B.A.	7' B.A.	7' B.A.	NONE.	NONE.	NONE.	NONE.
Brackets, Stays	2.	4	NONE.	NONE.	3.	2.							
HATCH BEAMS	{	Number ...	4	7	2	3	6	4	2	3	1	SHOOT IN CR	
		Spacing ...	4'-6"	4'-8"	5'-0"	4'-4"	5'-0"	4'-6"	5'-0"	4'-4"	4'-3"	OPEN HATCH	
		Scantling and Sketch	17" x 44"	17" x 40"	13 1/2" x 40"	12 1/2" x 40"	19" x 40"	17" x 40"	19 1/2" x 40"	17" x 40"	4 1/2" x 44"		
		Bearing Surface	4" x 5"				44 DOUBLE TOP & BOTTOM.				DOUBLE AT TOP 5" x 4"		3 1/2"
FORE AND AFTERS	{	Number ...	NONE.										
		Spacing ...											
		Unsupported Lengths											
Bearing Surface													
HATCH COVERS	{	Material ...	W.P.										
		Thickness ...	2 3/4"										
		How fitted ...	SOLID.										
		Bearing Surface	3										
Spacing of Cleats	...	...	...	...	24"	✓	24"	24"	24"	31	24	24
Number of Tarpaulins	...	...	...	...	2.			1	2	2	2	2.

*Are wood fore and afters steel shod at all bearing surfaces? *NONE.*

Are battens and wedges efficient and in good condition? *YES.*

Are tarpaulins in good condition and in accordance with rule requirements? *YES.*

Are lashings provided in accordance with rule requirements? *RING BOLTS AND LASHINGS PROVIDED.*

Particulars of fiddley, funnel and ventilator coamings:—

Engine room skylight of steel strongly constructed on casing top.
 Tunnel and Ventilator openings in good condition.
 Sidely openings on casing top protected by strong hinged steel covers.

Particulars of Flush Bunker Scuttles:—

2. Bunker scuttles on bridge deck 18.18. 20" dia strongly constructed.
with bayonet joints (no chain attached) ✓

Particulars of Companionways :—

Steel companion on poop deck to crew space & steering house 4'-10" x 5'-3" x 5'-3" high.
with wood door 4'-6" x 2'-0" 1 1/2" thick with 6" sill operated from both sides.

Particulars of Ventilators in exposed positions on freeboard and superstructure decks

Particulars of Ventilators in exposed positions on freeboard and superstructure decks :-			
2	Ports on Fore deck to hold.	27" x 27" DIA	42" COAMING.
1	M.V. Under side to store.	10" x 12"	30"
2	OPV in fore well to hold.	9'0" x 26"	50" / STAYED.
1	VENT.	4'0" x 24" DIA	36" COAMING.
2		5'1" x 28"	34" STAYED.
2	Bridge deck to hold.	2'6" x 15"	28"
2		3'0" x 24"	30"
2	in after well to hold.	8'9" x 24"	40" STAYED.
4	OPV on bridge deck to hold suitably stayed.	4'2" x 24" DIA	32"
1	VENT.	3'0" x 18"	28"
3		3'0" x 10"	25"
2		2'3" x 15"	30"
1		2'4" x 18"	30"
1		2'4" x 24"	42"
1	in after well	2'4" x 24"	42"
1	on poop 14" to forward eye	2'0" x 28"	30"
4		Cross space 1'6" x 15"	26"

all Ventilators & Coaming
are constructed in
accordance with the
rules & closed with
wood plugs & canvas
Cotton ✓

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

Particulars of Air Pipes in exposed positions on freeboard, raised quarter, or superstructure decks:—			
1	air pipe led to fore peak under forecath.	3 dia 17 length.	2 air pipes led to O.B. tanks on Bridge deck. 2 1/2 dia 10 length.
3	O.B. tanks in fore well	2 1/2 - 18 -	2 - - - - - 3 1/2 - 17 -
2	-	3 - 17 -	4 - - - - - in after well 3 1/2 - 17 -
2	-	3 - 17 -	1 - - - - - after peak on poop deck. 3 - 17 -
2	-	3 - 8 -	
2	-	3 - 16 -	
2	-	2 - 14 -	
2	-	2 1/2 - 16 -	

Efficient means of closing air pipes
No snuffing holes fitted.

Particulars of Gangway Cargo and Coaling Ports:—

Steel lined W.T. door fitted P.S. 4' 6" x 4' 6" 12" above deck in bridge Tween decks.
Strongly constructed and fastened by seven bolts spaced 1' 6" apart. ✓

Particulars of Scuppers and Sanitary Discharge Pipes:—

all sanitary discharge pipes from officers & crew accommodation discharged above freeboard deck and are fitted with storm valves at ship's side ✓
Scuppers from enclosed bridge tween decks discharged overhead 3'0" below freeboard deck with storm valves at ship's side ✓
Scuppers from forward and after wells discharged 1'6" below freeboard deck open pipes.

Particulars of Side Scuttles:—

Side scuttles in forecabin and poop accommodation are fitted with hinged deadlights
There are 6 side scuttles fitted below freeboard deck in forward store room & steering compartment.
9' dia 1'6" below freeboard deck to bottom of light fitted with hinged deadlights.

Particulars of Guard Rails:—

Guard rails fitted on forecabin deck 3'4" high with 3 rails & stanchions 4'9" apart.
Poop. 3'6" 3 4'9"
Bridge deck in way of hatch & after end 3'6" high 3 rails & stanchions 5'0" apart.
A bulwark is fitted between hatches on bridge deck 3'6" high efficiently supported.
Steel bulwarks in wells 4'0" high efficiently constructed and supported. ✓


Particulars of Gangways, Lifelines, etc.:—

Lifelines are available for use in any part of the ship for the protection of the crew. ✓

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	91.5 139.83	4'0"	1 @ 2'6" x 1'2" 3 @ 3'6" x 1'4"	4	15.36'	18.30 18.30 ft.
Forward Well	110.91	4'0"	3'6" x 1'4"	3	12.81	22.20

State position of each freeing port from bridge and After Well:— 10'0" 86'6" 6'6" 86'6" } 14' above deck.
(F. and A. position and height above deck edge) Forward Well:— 20'6" 54'0" 76'0" }
State whether the freeing ports are fitted with shutters, bars, or rails, and give particulars of such:—
Six with 4x4 T & no shutters
one with 4x4 T - hinged shutter.

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	✓	40	7' x 3 1/2" x 48L	2'7"	none.	5'0" x 2'0"	18	7'6"
Raised Quarter Deck Bulkhead ...								
Bridge, After Bulkhead	✓	40	4" FLANGE	3'0"	None	7'3" x 5'0"	✓	7'11 1/2"
Bridge, Forward Bulkhead	✓	60	9' x 3 1/2" x 50 3	2'7"	Brackets top & bottom	none.	✓	7'11 1/2"
Forecastle Bulkhead	✓							
Trunk, Aft	✓							
Trunk, Forward	✓							
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...	✓							
Exposed Machinery Casings on Superstructure Decks	44	36	3' x 3' x 36'	3'9"	BRACKETS TOP & BOTTOM.	5'0" x 2'0"	16'	7'0"
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	✓	30	3" FLANGE 4' x 3' x 34'	3'0" 5'0"	RIVETED TO BEAM AT TOP.	5'0" x 2'6" 5'0" x 2'0"	18'	7'11 1/2"
Deckhouses on Flush Deck Ships ...								

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

Poop Bulkhead	Hinged steel doors manipulated both sides to crew & wood down 1 1/2" thick to A.C. lockers.
Raised Quarter Deck Bulkhead ...	✓
Bridge, After Bulkhead	23' storm boards in riveted channels. ✓
Bridge, Forward Bulkhead	none No openings.
Forecastle Bulkhead	✓
Exposed Machinery Casings on Freeboard or Raised Quarter Decks ...	✓
Exposed Machinery Casings on Superstructure Decks	Hinged steel doors manipulated both sides. ✓
Machinery Casings within Superstructures not fitted with Class I Closing Appliances	Hinged steel doors manipulated both sides. ✓
Deckhouses on Flush Deck Ships ...	✓



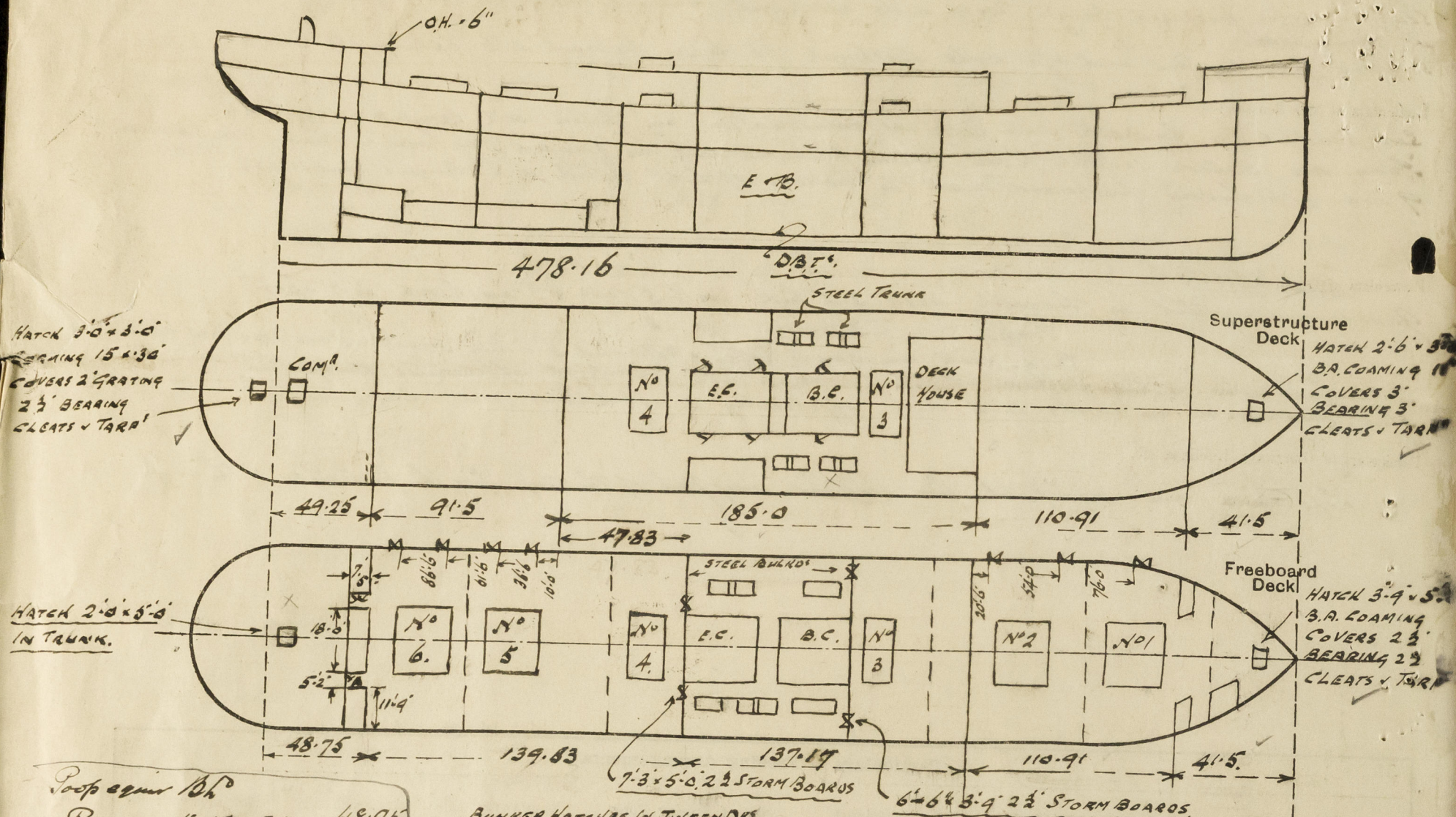
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Superstructure bulkheads, trunks, deckhouses, casings, cargo and coaling hatchways, extent and thickness of sheathing on the freeboard deck, gangway, cargo and coaling ports, and any other openings, etc., which would affect the seaworthiness of the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



Prop equal 10'

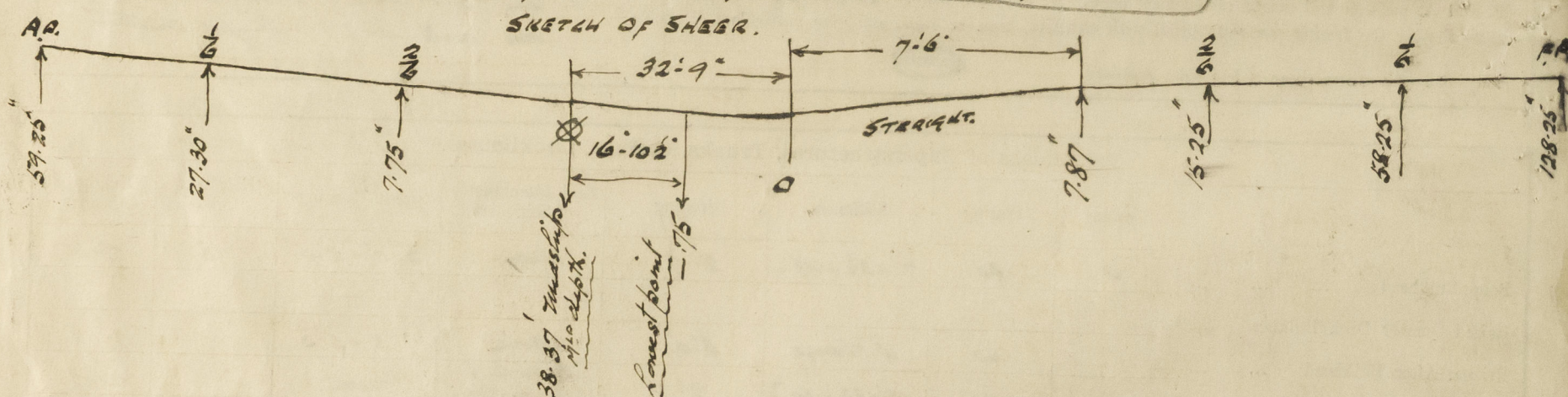
$$\begin{array}{r} \text{Recess } 5.17 \times 7.5 = 48.75 \\ 25.91 \quad 47.25 \end{array}$$

BUNKER HATCHES IN TWEEN DECK
7'-3" 17'-3" 7'-6" 17'-3" x 4'-4"
B.A. COAMINGS.
COVERS 3' BEARING 2'-3"
CLEATS & TARPULINE.

The side houses on the after deck and the bridge and bulkhead have been removed. The coaming of No 4 hatch in the bridge have been increased.

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

The survey was held while the vessel was in dry dock for alterations, 37'-6" in length midships being removed, from stoke hold forward.



The following displacement particulars given by Repairers

Displacement at 30'-0" draft. 18910 tons T.P.I. 60.00 tons
31'-0" 19630 - 60.25 -
32'-61" 20794 - 60.25 -

Builder's name and yard number C. Connell & Co. Glasgow, Yard No 377.

Names of sister ships

Owners Thos & Jno Brocklebank & Co.

Fee £

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