OLYMPIA-MARU.

Nos 428.

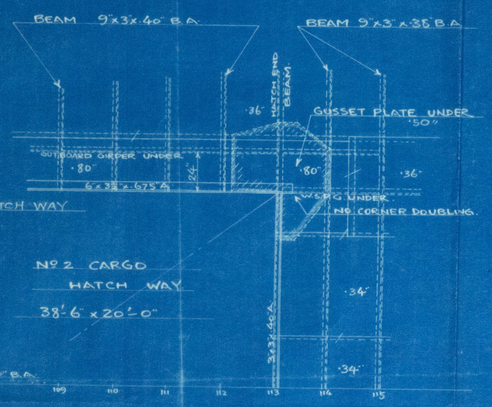
DETAIL SKETCH OF TWIN GIRDERS ABREAST No 2 CARGO HATCH ON 2ND DK.

NOTE:- TINTED PARTS SHOWING AMENDMENTS

2ND DECK PLAN.

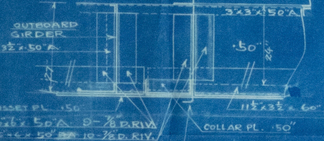
SCALE ¼ INCH TO ONE FOOT.

EACH CORNER TO BE SYMMETRY.



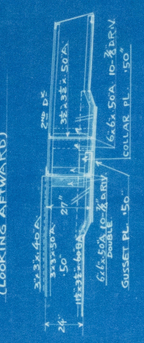
SKETCH SHOWING CONNECTION OF HATCH WAY SIDE COAMING TO HATCH END BEAM.

SCALE: ½" = 1FT

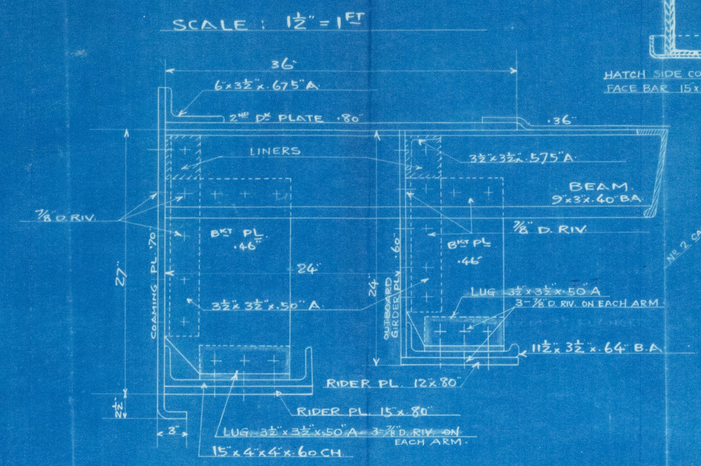


SECTIONAL ELEVATION OF HATCH SIDE COAMING & W.S.P. GIRDER.

OUTBOARD GIRDER (LOOKING TO PORT SIDE)

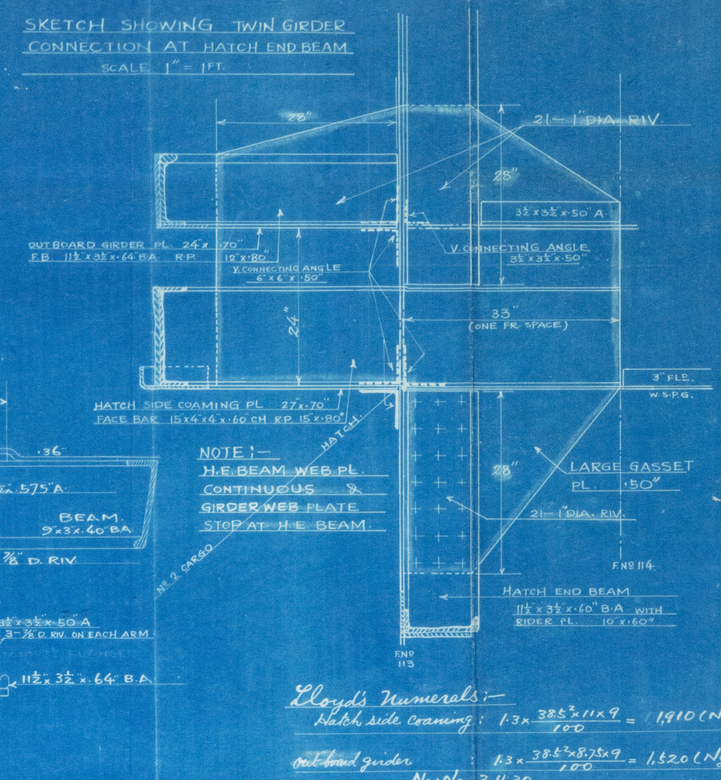


SCALE: 1½" = 1FT



SKETCH SHOWING TWIN GIRDER CONNECTION AT HATCH END BEAM.

SCALE 1" = 1FT.



NOTE:-
H.E. BEAM WEB PL. CONTINUOUS & GIRDER WEB PLATE STOP AT H.E. BEAM.

Calculation of moment of inertia & modulus of resistance of reinforced No 2 Cargo hatch side coaming on 2nd dk.

Hatch Way side coaming

(assumed neutral axis at the top of deck.)

Items	Size	Sectional area	Lever	Moment	Moment of inertia	Moment of inertia about its own C.G.
Coaming angle	6"x3½"x.675"	6.0	-.90	-5.40	5	6
Deck plate	12"x.80"	9.6	.40	3.84	2	–
Coaming/plate & Deck (under)	3½"x.70"	2.45	-1.75	-4.29	8	3
" (under)	27.6"x.70"	20.72	14.80	306.65	4538	1,513
Flange Face Bar (channel)	3"x.70"	2.10	29.95	62.89	1,884	–
	15"x4"x4"x60	13.43	26.04	349.70	9,106	13
Rider plate	15"x.80"	12.0	27.40	328.80	9,008	–
		66.30		1,042.19	24,551	1,535
				15.72	+1,535	
					26,086	

$66.30 \times 15.72^2 = 16,384$ ⟶ $-16,384$

Moment of inertia about neutral axis ⟶ 9,702 (in.)⁴ (required I 8910)

$y = 15.72 + 3.5 = 19.22$

Modulus of resistance $\frac{I}{y} = \frac{9702}{19.22} = 505\ (in.)^3$ (required $\frac{I}{y}$ 507)

Outboard Girder.

(assumed neutral axis at the top of deck.)

Items	Size	Sectional area	Lever	Moment	Moment of inertia	Moment of inertia about its own C.G.
Deck plate	105"x.36"	37.8	.18	7	1	–
Vertical Web	142"x.60"	8.52	16.46	140	2,304	143
Face bar (bulb angle)	11½"x3½"x.64	10.64	22.94	242	6,850	–
Rider plate	12"x.80"	9.6	23.96	230	5511	–
		66.46		619	13,366	143
				9.32	+143	
					13,509	

$66.46 \times 9.32^2 = 5790$ ⟶ $-5,790$

Moment of inertia about neutral axis ⟶ 7739 (in.)⁴ (required I 7,090)

$y = 24.36 - 9.32 = 15.04$

Modulus of resistance $\frac{I}{y} = \frac{7,739}{15.04} = 515\ (in.)^3$ (required $\frac{I}{y}$ 403)

Lloyd's Numerals:-

Hatch side Coaming: $1.3 \times \frac{38.5^2 \times 11 \times 9}{100} = 1,910\ (N_c)$

Outboard girder: $1.3 \times \frac{38.5^2 \times 8.75 \times 9}{100} = 1,520\ (N_g)$

$N_c + N_g = 3,430$

$Z_c = 910 \times \frac{1910}{3430} = 507\ (in.)^3$ Hatch side

$Z_g = 910 - 507 = 403\ (in.)^3$ girder

$I_c = 16,000 \times \frac{1910}{3430} = 8910\ (in.)^4$ Hatch side

$I_g = 16,000 - 8910 = 7,090\ (in.)^4$ girder.

May 24th 1926.

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