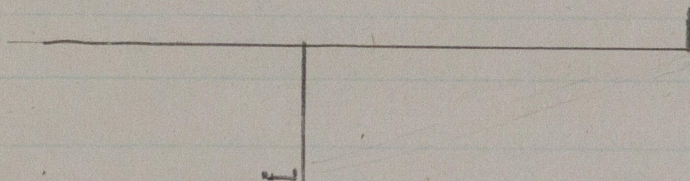


8/7/42

" Vestfold

Cantilevers at hatch side



Girder 36 x 47
with 7 x 3 x 40 J

$$\begin{aligned} \text{Load on hatch} &= \frac{10 \times 9.8 \times 5}{50} = 9.8 \text{ tons} & BM &= 9.8 \times 8.5 \times 12 = 1000 \\ \text{Distributed load at side} &= \frac{8.5 \times 9.8 \times 5}{50} = 8.5 & &= 8.5 \times 8.5 \times \frac{12}{2} = 435 \\ & & & \underline{1435} \end{aligned}$$

$$\frac{I}{y} \text{ required} = \frac{1435}{5} = 287$$

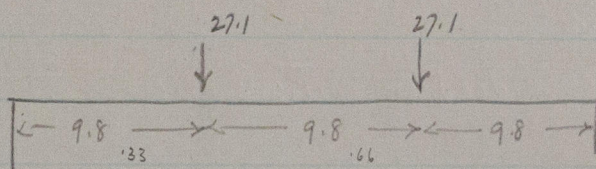
$$= 36 \quad \text{L} \quad 6 \times 3 \times 40 \text{ A.}$$

Girder between pillars supporting cantilevers

95-106 }
120-131 }

Load at each transverse

$$\frac{27.5 \times 9.8 \times 5}{50} = 27.1 \text{ tons}$$

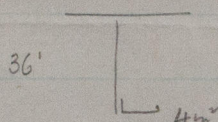


$$BM = .147 \times 27.1 \times 29.4 \times 12 = 1405$$

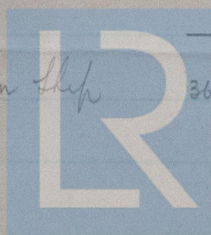
$$.076 \times 27.1 \times 29.4 \times 12 = 727$$

$$\underline{2132}$$

$$\text{at } 7 \text{ tons/m} \quad \frac{I}{y} \text{ required} = \frac{2132}{7} = 305$$



In ship



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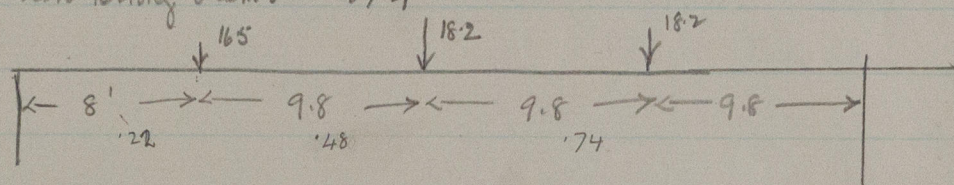
W270-0030(115)

106 + 120

143 - 156

Centre Girder

Span between strong beams = 37.4

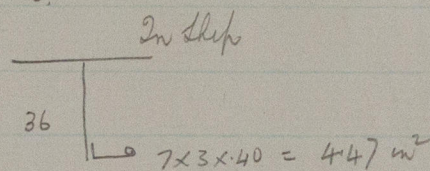
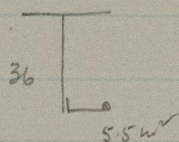


$$\text{Load at each transverse} = \frac{9.8 \times 37 \times 5}{50 \times 2} = 182$$

$$7 \quad \frac{8.9 \times 37 \times 5}{50 \times 2} = 16.5$$

$$\begin{aligned} B.M. &= .135 \times 16.5 \times 37.4 \times 12 = 1000 \\ &.130 \times 18.2 \times 37.4 \times 12 = 1060 \\ &.050 \times 18.2 \times 37.4 \times 12 = 410 \\ &\quad \underline{2470} \end{aligned}$$

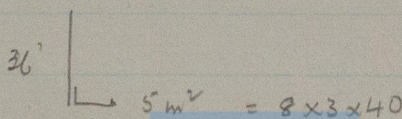
$$\text{at } 7 \text{ tons/m}^2 \quad \frac{I}{f} = \frac{2470}{7} = 353$$

say order 5 x 40End Beams73

$$\text{Load on Centre Girder} = \frac{23.5 \times 18.5 \times 5}{50} = 43.5 \text{ Tons}$$

$$B.M. \text{ on transverse beam } \frac{43.5 \times 37 \times 12}{8} = 2420$$

$$\frac{I}{f} \text{ required} = \frac{2420}{7} = 345$$



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84

$$\text{Load on Centre Girder} = \frac{22 \times 18.5 \times 5}{50} = 40.7 \text{ tons}$$

$$\text{BM on Transverse beam} = \frac{40.7 \times 37 \times 12}{8} = 2260$$

$$\frac{I}{y} \text{ required} = \frac{2260}{7} = 323$$

$$36 \quad \text{L} \quad 4.5 \text{ m}^2 = 7 \times 3 \times 40$$

89 8137

$$\text{Load on Centre Girder} = \frac{8 \times 18.5 \times 5}{50} = 14.8$$

if cantilever on No 91 neglect load on hatch coaming

$$\text{BM} = \frac{14.8 \times 37 \times 12}{8} = 820$$

$$\frac{I}{y} \text{ required} = \frac{820}{7} = 117$$

$$36 \quad \text{L} \quad 4.5 \text{ m}^2 = 7 \times 3 \times 40$$

If no cantilever on 91, $\frac{I}{y}$ as 162 or 174, = 316

106and 120.

$$\text{Load on Centre Girder} = \frac{18.5 \times 18.5 \times 5}{50} = 34.2 \text{ tons}$$

$$\text{BM} = \frac{34.2 \times 37 \times 12}{8} = 1900$$

$$+ \text{distributed load} = \frac{140}{2040}$$

$$\frac{I}{y} \text{ required} = \frac{2040}{7} = 291$$

$$36 \quad \text{L} \quad 3.5 \text{ m}^2 = 5 \times 3 \times 40$$

say $7 \times 3 \times 40$ same as others



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W270-0030(215)

142 & 156

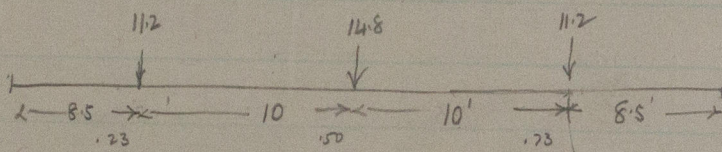
Load on Centre Girder

$$\frac{26 \times 18.5 \times 5}{50} = 48.1 \text{ tons}$$

$$BM = \frac{48.1 \times 37 \times 12}{8} = 2660$$

$$\frac{I}{y} \text{ required} = \frac{2660}{7} = 380$$

$$36 \text{ L } 6.3 \text{ m}^2 = 8 \times 33 \times 50$$

162 & 174

Load at centre
 ——— Coaming

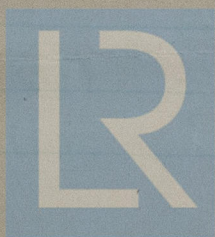
$$\frac{18.5 \times 8 \times 5}{50} = 14.8$$

$$\frac{14 \times 8 \times 5}{50} = 11.2$$

$$\begin{aligned} BM &= .138 \times 18.5 \times 37 \times 12 = 1130 \\ &= .125 \times 14.8 \times 37 \times 12 = 820 \\ &= .053 \times 11.2 \times 37 \times 12 = 265 \\ &\quad \underline{\underline{2215}} \end{aligned}$$

$$\frac{I}{y} \text{ required} = \frac{2215}{7} = 316$$

$$36 \text{ L } 4.5 \text{ m}^2 = 7 \times 3 \times 40$$



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all present pillars

$$\begin{array}{c} 24 \times .50 \\ \text{---} \\ \text{---} \end{array} \quad \begin{array}{c} 6 \times 3 \times 46 \\ 9 \times 32 \times 32 \times .46 \\ .524 \end{array}$$

5

Pillars

$$L = 12.$$

73

$$\frac{23.5 \times 48 \times 5}{100} = 56.3$$

$$\begin{array}{c} 10 \times .40 \\ \text{---} \\ 9 \times 32 \times 32 \times .46 \end{array}$$

84

$$\frac{22 \times 48 \times 5}{100} = 52.8$$

$$\begin{array}{c} 10 \times .40 \\ \text{---} \\ 8 \frac{1}{2} \times 32 \times 32 \times .44 \end{array}$$

89 new.

$$\frac{14.7 \times 48 \times 5}{100} = 35.0$$

$$\begin{array}{c} \text{---} \\ 8 \times 4 \times 4 \times .50 \end{array}$$

95
as 84

$$\frac{22 \times 48 \times 5}{100} = 52.8$$

$$\begin{array}{c} 10 \times .40 \\ \text{---} \\ 8 \frac{1}{2} \times 32 \times 32 \times .44 \end{array}$$

106

$$\frac{32.5 \times 48 \times 5}{100} = 78.0$$

$$\begin{array}{c} 12 \times .48 \\ \text{---} \\ 11 \times 32 \times 32 \times .48 \end{array}$$

say reverse bar
on channel.

120

as W 106

131

$$\frac{22 \times 48 \times 5}{100} = 52.8$$

see W 84.

as 84

137

$$\frac{14.7 \times 48 \times 5}{100} = 35.0$$

see W 89.

new, as 89



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W270-0030 (315)

$$\frac{142}{1}$$

$$\frac{26 \times 48 \times 5}{100} = 62.4$$

$$\frac{11 \times 142}{92 \times 32 \times 32 \times 48}$$

$$\frac{153}{20 \times 142}$$

$$\frac{26 \times 48 \times 5}{100} = 62.4$$

"

$$\frac{162}{1}$$

$$\frac{21.5 \times 48 \times 5}{100} = 51.6$$

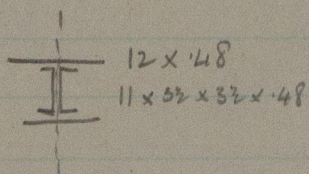
See W 84

$$\frac{174}{20 \times 162}$$

$$\frac{21.5 \times 48 \times 5}{100} = 51.6$$

"



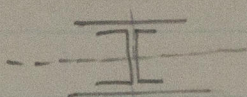


$$\begin{aligned} \frac{1}{12} \times 4.8 \times 12^3 \times 2 &= 137.0 \\ 888 \times 91^2 \times 2 &= 14.6 \\ + 9 \times 2 &= 18.0 \\ \hline I &= 169.6 \end{aligned}$$

$$\begin{aligned} 12 \times 4.8 \times 2 &= 115.2 \\ J \times 2 &= 17.66 \\ \hline A &= 29.18 \end{aligned}$$

$$k^2 = \frac{169.6}{29.18} = 5.8$$

$$P = \frac{21.4 \times 29.18}{1 + \frac{1}{30,000} \cdot \frac{144^2}{5.8}} = \frac{624}{1 + .12} = 557$$



$$\begin{aligned} 12 \times 4.8 \times 5.74^2 \times 2 &= 378 \\ J \quad 1492 \times 2 &= 298 \\ \hline I &= 676 \end{aligned}$$

$$k^2 = \frac{676}{29.18} = 23.4$$

$$P = \frac{21.4 \times 29.18}{1 + \frac{1}{30,000} \cdot \frac{144^2}{23.4}} = \frac{624}{1 + .03} = 605$$

over

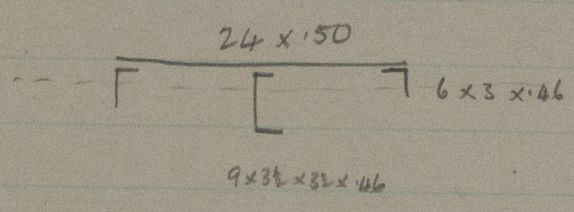


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W270-0030(45)

Pillars in ship

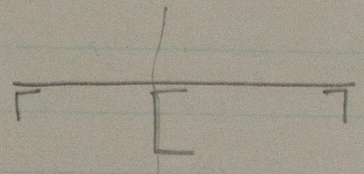


$24 \times .50$	12.0	.25	3	—	
$\Gamma \times 2$	7.86	2.65	20.8	55.3	28.9
\sqsubset	7.63	5.00	38.2	191.0	89.9
	<u>27.49</u>		<u>59.3</u>	<u>246.3</u>	<u>118.8</u>
			2.16	118.8	
				<u>365.1</u>	

$$k^2 = \frac{499.1}{27.49} = 18.1$$

$$\frac{134.0}{499.1}$$

$$P = \frac{21.4 \times 27.49}{1 + \frac{1}{30,000} \cdot \frac{144^2}{18.1}} = \frac{588}{1 + .04} = \underline{565}$$



$$\begin{aligned} \frac{1}{12} \times .50 \times 24^3 &= 576 \\ L \quad 3.93 \times 11.6^2 &= \underline{528} \\ &= 1104 \end{aligned}$$

$$k^2 = \frac{1104}{27.49} = 40.8$$

$$P = \frac{21.4 \times 27.49}{1 + \frac{1}{30,000} \cdot \frac{144^2}{40.8}} = \frac{588}{1 + .02} = \underline{578}$$

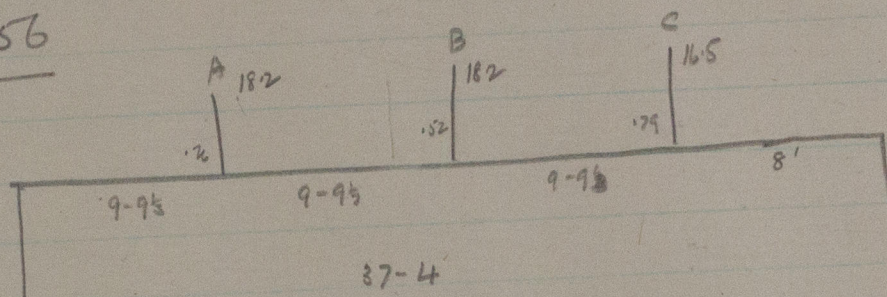
20/7/42

"Vestfold"

Girders at Centro Line

106 - 120

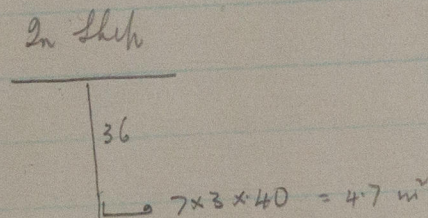
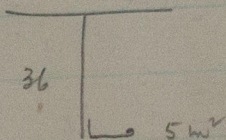
142 - 156



$$\begin{array}{lcl} A & 9.8 \times 18.5 \times \frac{5}{50} & = 18.2 \text{ tons} \\ B & " & = 18.2 " \\ C & 8.9 \times 18.5 \times \frac{5}{50} & = 16.5 " \end{array}$$

$$\begin{array}{rcl} \text{B.M.} & = & .142 \times 18.2 \times 37.33 \times 12 = 1160 \\ & & .120 \times 18.2 \times " = 980 \\ & & .035 \times 16.5 \times " = 260 \\ & & \hline & & 2400 \end{array}$$

$$\text{at } 7 \text{ tons/m}^2 \quad \frac{I}{y} \text{ reqd} = \frac{2400}{7} = 343.$$



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Foundation (515)