WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project ..... Sheet No. 34 of ..... sheets
S. R. ..... Made by ..... Check by ..... Date 4/83 Supv. YFC/RTS

Rdwy slab (Ext. cell) – Member 2.

Moments @ Face of support – btwn $OL_2 \rightarrow .1L_2$ 21" Fillet.
21"–5" = 1.33' from OL_2.

–M Tension Top.

$-M_{OL} = 19.44^{K'} - (19.44 - 15.6)\frac{1.33}{1.483} = 15.99^{K'}$/Ft of Transv. slab.

$-M_{L+I} = 23.85 - (23.85 - 17.73)$ " $= 18.35^{K'}$/'

$-M_H = 5.50 - (5.50 - 4.79)$ " $= 4.86^{K'}$

$-M_{NW} = 3.0\%[22.03 - (22.03 - 19.16)$ " $] = 5.84^{K'}$

M_S:

case A = $\left(\frac{13.7^{K'}}{14.83'}\right)$ 4.26$^{K'}$ Top Tension, Bot. Tension $-M_S = 13.7 - (13.7 + 4.26)\frac{1.33}{14.83} = 12.09^{K'}$ –

case B = $\left(\frac{6.08^{K'}}{}\right)$ 2.85$^{K'}$ $-M_S = 6.08 - (6.08 + 2.85)$ " $= 5.28$

$-M_T = 5.73 - (5.73 - 4.94)\frac{1.33}{1.483} = 5.02^{K'}$

$t = 21"$ $y = .0026\left(\frac{21}{12}\right)^2 = .008' = .096"$

$e = \frac{21}{2} - y - 3 = 7.40"$

$M_{pe} = 76.27^{K'}\left(\frac{7.40}{12}\right) = 47.06^{K'}$

33003190

MEMBER 2

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project 3rd Lake Wash. Floating Bridge - Stage II Sheet No. ____ of ____ sheets
S. R. 90 Made by YMT. Check by ____ Date ____ Supv. YKC/RTS

Transverse Design — pontoon D near Wall 5
Section at Rdwy slab - Ext cell Face of support.

$t = 21$ $c = 7.4''$ $M_{pe} = 47^{k'}$
$A = 21(12) = 252$ $S = \frac{12}{6}(21)^2 = 882\ in^3$

Group S①: D + H + (L + I) + $M_{P/S}$ 100%

	Case A	Case B	Case C
M_D	$-15.99^{k'}$		
M_H	-4.86		
M_{L+I}	-18.35		
M_{pe}	47.06		
M_{2nd}	-12.09	-5.28	
	$-4.23^{k'}$		

Group S③: S① + .3 Wave 125%

	Case A	Case B	Case C
S①	-4.23	4.68	
.3W	-5.86	-5.86	
	-10.09	-1.18	

Group S④: S① + T 125%

	Case A	Case B	Case C
S①	-4.23	4.68	
T	-5.02	5.02	
	-9.25	$9.70^{k'}$	

Group S⑥: S③ + T 140%

	Case A	Case B	Case C
S③	-10.09	-1.18	
T	-5.02	-5.02	
	$-15.11^{k'}$	-6.20	

$f = -\frac{76.27^k}{252} \pm -\frac{15.11^{k'}(12)}{882} = -.303 \pm -.206^{ksi} = -.508^{ksi}$ Max $< 2.0^{ksi}$
$= -.097^{ksi}$ Min. 0^{ksi}
O.K.

Flood Damage

Group S⑦: S① + DM

	Case A	Case B	Case C
S①			
DM			

Group S⑨: S③ + DM

	Case A	Case B	Case C
S③			
DM			

$f = \_\_\_ \pm \_\_\_ = \_\_\_ \pm \_\_\_ = \_\_\_^{ksi}$ Max $< 2.0^{ksi}$
$= \_\_\_^{ksi}$ Min. $-.212^{ksi}$

33003191

Rdwy. slab Ext. cell, Moments @ .3L2

$M_D = -9.19^{k'}$ Tension top.

$M_{LI} = -12.6^{k'}$ or $+5.37$

$M_H = -3.36^{k'}$

$M_{NW} = 30\%(-13.42) = -4.03^{k'}$

M_S case A $-M_S = 13.7-(13.7+4.26)\cdot 3 = -8.312^{k'}$ tension top.
case B $-M_S = 6.08-(6.08+2.85)\cdot 3 = -3.40$

$M_T = -3.36^{k'}$

$t = 17.336'$ $\quad y = .0026\left[\frac{5}{12}+3(14.833)\right]^2 = .0616' = .74''$

$e = \frac{17.336}{2} - y - 3 = 4.929''$

$M_{pe} = 76.27\left(\frac{4.93''}{12}\right) = 31.33^{k'}$

33003192

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project 3rd Lake wash. Floating Bridge - Stage II Sheet No. ___ of ___ sheets
S. R. 90 Made by YMT. Check by ___ Date ___ Supv. YFC/RTS

Transverse Design — pontoon D near Wall 5
Section at Rdwy slab Member 2 $\cdot 36_2$

$t = 17.34''$ $e = 4.93''$ $M_{pe} = 31.33^{K'}$

$A = 17.34(12) = 208$ $S = \frac{12}{6}(17.34)^2 = 601$

Group S①: D + H + (L + I) + $M_{P/S}$ 100%

	Case A	Case B	Case C
M_D	$-9.19^{K'}$		
M_H	-3.36		
M_L	-12.6	$+5.37$	
M_{pe}	31.33		
M_{2nd}	-8.31 (10.47)	-3.40	
	(-2.13)	15.84	

Group S③: S① + .3 Wave 125%

	Case A	Case B	Case C
S①	-2.13	15.84	
.3W	-4.03	-4.03	
	-6.16	$11.81^{K'}$	

Group S④: S① + T 125%

	Case A	Case B	Case C
S①	-2.13	15.84	
T	-3.36	3.36	
	-5.49	19.20	

Group S⑥: S③ + T 140%

	Case A	Case B	Case C
S③	-6.16	11.81	
T	-3.36	3.36	
	-9.52	$15.17^{K'}$	

$f = -\frac{76.27}{208} \pm -\frac{19.20(12)}{601} = -.367 \pm -.384 = -.750^{ksi}$ Max $< 2.0^{ksi}$

$= +.017^{ksi}$ Min. 0^{ksi}
inside face.
O.K.

Flood Damage

Group S⑦: S① + DM

	Case A	Case B	Case C
S①			
DM			

Group S⑨: S③ + DM

	Case A	Case B	Case C
S③			
DM			

$f = \_\_\_ \pm \_\_\_ = \_\_\_ \pm \_\_\_ = \_\_\_^{ksi}$ Max $< 2.0^{ksi}$

$= \_\_\_^{ksi}$ Min. $-.212^{ksi}$

33003193

DOT Form 232-007

Rdwy slab ext. cell Member 2 .5L2

$M_{DL} = -4.48^{k'}$ tension top.

$M_{L+I} = -8.91^{k'}, +7.92^{k'}$

$M_H = -1.94^{k'}$

$M_{NW} = 30\%(-7.68) = -2.30^{k'}$

M_S Case A $-M_S = 13.7-(13.7+4.26).5 = 4.72^{k'}$ tension top.
Case B $-M_S = 6.08-(6.08+2.85).5 = 1.08$

$M_T = \pm 1.78^{k'}$

$t = 13.849$ $\quad y = .0026\left[\frac{5}{12}+.5(14.833)\right]^2 = .1595' = 1.9145''$

$e = \frac{13.849}{2} - y - 3 = 2.01''$

$M_{pe} = 76.27\left(\frac{2.01''}{12}\right) = 12.77^{k'}$

33003194

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BRIDGE & STRUCTURES BRANCH

Project 3rd Lake Wash. Floating Bridge - Stage II Sheet No. ____ of ____ sheets
S. R. 90 Made by YMT. Check by ____ Date ____ Supv. YFC/RTS

Transverse Design — pontoon D near Wall 5
section at Rdwy slab .962

$t = 13.85''$ $c = 2''$ $M_{pe} = 12.77^{k'}$

$A = 13.85(12) = 166^{in^2}$ $S = \frac{12}{6}(13.85)^2 = 384^{in^3}$

Group S①: D + H + (L + I) + $M_{P/S}$ 100%

	Case A	Case B	Case C
M_D	-4.48		
M_H	-1.94		
M_L	-8.91	+7.92	
M_{pe}	12.77		
M_{2nd}	-4.72 (1.63)	-1.08	
	-7.28	9.55	

Group S③: S① + .3 Wave 125%

	Case A	Case B	Case C
S①	-7.28	9.55	
.3W	-2.3	-2.30	
	-9.58	7.25	

Group S④: S① + T 125%

	Case A	Case B	Case C
S①	-7.28	9.55	
T	-1.78	1.78	
	-9.06	11.33	

Group S⑥: S③ + T 140%

	Case A	Case B	Case C
S③	-9.58	7.25	
T	-1.78	1.78	
	-11.36	10.03	

$f = \frac{-76.77^k}{166} \pm \frac{-11.36(12)}{384} = -.460 \pm -.355 = -.815^{ksi}$ Max $< 2.0^{ksi}$
$= -.105^{ksi}$ Min. 0^{ksi}

Flood Damage

Group S⑦: S① + DM

	Case A	Case B	Case C
S①			
DM			

Group S⑨: S③ + DM

	Case A	Case B	Case C
S③			
DM			

$f = \_\_\_ \pm \_\_\_ = \_\_\_ \pm \_\_\_ =$ ____ ^{ksi} Max $< 2.0^{ksi}$
$=$ ____ ^{ksi} Min. $-.212^{ksi}$

330031195

Rdwy slab Ext. cell .7L2

$M_{DL} = -1.22^{k'}$

$M_{L+I} = -5.21^{k'} \quad +5.15^{k'}$

$M_H = -.51^{k'}$

$M_{NW} = 30\%(-2.45) = -.74^{k'}$

M_S: case A $\quad -M_S = 13.7-(13.7+4.26).7 = 1.13^{k'}$ tension top.

case B $\quad -M_S = 6.08-(6.08+2.85).7 = -.17^{k'}$ tension Bot.

$M_T = -.20^{k'}$

$t = 12'' \quad e = \frac{12}{2} - 6.25 = -.25''$

$M_{Pe} = 76.27\left(\frac{.25}{12}\right) = 1.59^{k'}$ comp. Bot.

.530 .709

330031196

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project 3rd Lake wash. Floating Bridge - stage II Sheet No. 4 of sheets
S.R. 90 Made by YMT. Check by Date Supv. YFC/RTS

Transverse Design — pontoon D near Wall 5
Section at Rdwy Slab .762

$t = 12''$ $c = .25''$ below N.A. $M_{pe} = 1.59$ comp. Bot.
$A = 144$ $S = 288$

Group 5①: $D + H + (L + I) + M_{P/S}$ 100%

	Case A	Case B	Case C
M_D	-1.22		
M_H	-.51		
M_L	-5.21	5.15	
M_{pe}	-1.59		
M_{2nd}	-1.13		
	(-9.45)		
	-9.66	.70	

Group 5③: 5① + .3 Wave 125%

	Case A	Case B	Case C
5①	-9.66		
.3W	-.74		
	-10.40		

Group 5④: 5① + T 125%

	Case A	Case B	Case C
5①	-9.66		
T	-.20		
	-9.86		

Group 5⑥: 5③ + T 140%

	Case A	Case B	Case C
5③	-10.40		
T	-.20		
	10.60		

$$f = \frac{-76.27}{144} \pm \frac{10.60(12)}{288} = -.530 \pm -.442 = -.971 \text{ ksi Max} < 2.0 \text{ ksi}$$
$$= -.088 \text{ ksi Min.} \quad 0 \text{ ksi}$$
OK

Flood Damage

Group 5⑦: 5① + DM

	Case A	Case B	Case C
5①			
DM			

Group 5⑨: 5③ + DM

	Case A	Case B	Case C
5③			
DM			

$f = \_\_\_ \pm \_\_\_ = \_\_\_ \pm \_\_\_ = \_\_\_$ ksi Max < 2.0 ksi
$= \_\_\_$ ksi Min. -.212 ksi

3300319 7

Rdwy. Slab Ext. cell .8L2

$M_{DL} = -.06$

$M_{LL+I} = -3.37^{k'} \quad + 4.58^{k'}$

$M_H = .20$

$M_{WW} = 30\%(.94) = .28^{k'}$

M_S case A: $-M_S = 13.7-(13.7+4.26).8 = -.67^{k'}$ tension Bot

case B. $-M_S = 6.08-(6.08+2.85).8 = -1.06^{k'}$ tension Bot.

$M_T = .59^{k'}$

$t = 12'' \quad e = \frac{12}{2} - 6.25 = -.25''$

$M_{pe} = 76.27\left(\frac{.25}{12}\right) = 1.56^{k'}$ tension top.

330003198

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project 3rd Lake Wash. Floating Bridge - Stage II Sheet No. ___ of ___ sheets
S. R. 90 Made by YMT. Check by ___ Date ___ Supv. YFC/RTS

Transverse Design — pontoon D near Wall 5
Section at Rdwy slab 1862

$t = 12''$ $c = .25$ below N.A. $M_{pe} = 1.59^{k'}$ tension top.
$A = 144$ $S = 288$

Group S①: $D + H + (L + I) + M_{P/S}$ 100%

	Case A	Case B	Case C
M_D	+.06		
M_H	.20		
M_L	-3.37	4.58	
M_{pe}	-1.56		
M_{2nd}	+1.06 (-.36)		
	-3.73	4.22	

Group S③: S① + .3 Wave 125%

	Case A	Case B	Case C
S①	-3.73	4.22	
.3W	.28	.28	
	-3.45	4.50	

Group S④: S① + T 125%

	Case A	Case B	Case C
S①	-3.73	4.22	
T	-.59	.59	
	-4.32	4.81	

Group S⑥: S③ + T 140%

	Case A	Case B	Case C
S③	-3.45	4.5	
T	-.59	.59	
	-4.04	5.09	

$$f = -\frac{76.27}{144} \pm \frac{5.09(12)}{288} = -.530 \pm .212 = -.742^{ksi} \text{ Max} < 2.0^{ksi}$$
$$= -.318^{ksi} \text{ Min. } 0^{ksi}$$

Flood Damage

Group S⑦: S① + DM

	Case A	Case B	Case C
S①			
DM			

Group S⑨: S③ + DM

	Case A	Case B	Case C
S③			
DM			

$f = \_\_\_ \pm \_\_\_ = \_\_\_ \pm \_\_\_ = \_\_\_^{ksi}$ Max $< 2.0^{ksi}$
$= \_\_\_^{ksi}$ Min. $-.212^{ksi}$

33003199

Rdwy Slab Ext. cell .9L2

$M_{DL} = .73^{k'}$ tension Bot.

$M_{L+I} = -7.24^{k'}$ or $+4.01^{k'}$

$M_H = .92^{k'}$

$M_{NW} = 30\%(3.80) = 1.14^{k'}$

$M_T = 1.38^{k'}$

M_S Case A $-M_S = 13.7-(13.7+4.26).9 = -2.46^{k'}$ tension Bot.

" B " $= 6.08-(6.08+2.85).9 = -1.96^{k'}$

$t = 14.425''$ $e = \frac{14.425}{2} - 6.25 = .96''$

$M_{pe} = 76.27\left(\frac{.96}{12}\right) = 6.12^{k'}$ tension Bot.

$t = 12''$ (14" @ Face of support) $e = \frac{12.01''}{2} - 6.25 = -.29''$ $M_{pe} = -1.55^{k'}$ tension top.

38003200

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project 3rd Lake wash. Floating Bridge - Stage II Sheet No. [illegible] of ____ sheets
S. R. 90 Made by YMT. Check by ____ Date ____ Supv. YFC/RTS

Transverse Design — pontoon D near Wall 5
Section at Rdwy Slab .962

$t = 14.425''$ $e = .96''$ $M_{pe} = 6.12^{k'}$ Tension Bot.

$A = 14.425(12) = 173$ $S = 416 \text{ in}^3$

Group S①: D + H + (L + I) + $M_{P/S}$ 100%

	Case A	Case B	Case C
M_D	.73 k' Tension Bot.		
M_H	.92		
M_L	-7.24	4.01	
M_{pe}	6.12		
M_{2nd}	2.46 (10.23)		
	2.99	14.24	

Group S③: S① + .3 Wave 125%

	Case A	Case B	Case C
S①	14.24		
.3W	1.14		
	15.38		

Group S④: S① + T 125%

	Case A	Case B	Case C
S①			
T			

Group S⑥: S③ + T 140%

	Case A	Case B	Case C
S③	15.38		
T	1.38		
	16.76		

$f = -\frac{76.27}{173} \pm -\frac{16.76(12)}{416} = -.441 \pm -.484 = -.924^{ksi}$ Max < 2.0 ksi

$= +.043^{ksi}$ Min. 0 ksi
Tension inside face (small)

Flood Damage

Group S⑦: S① + DM

	Case A	Case B	Case C
S①			
DM			

Group S⑨: S③ + DM

	Case A	Case B	Case C
S③			
DM			

$f = \_\_\_ \pm \_\_\_ = \_\_\_ \pm \_\_\_ = \_\_\_$ ksi Max < 2.0 ksi

$= \_\_\_$ ksi Min. -.212 ksi

33003201

DOT Form 232-007

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project 3rd Lake wash. Floating Bridge - stage II Sheet No. 1 of ___ sheets
S. R. 90 Made by YMT. Check by ___ Date ___ Supv. YFC/RJS

Transverse Design — pontoon D near Wall 5
Section at $.9L_2$

$t = 12''$ $e = -.24''$ $M_{pe} = -1.55^{k'}$
$A = 144$ $S = 288$

Group 5①: $D + H + (L + I) + M_{P/S}$ 100%

	Case A	Case B	Case C
M_D	.73		
M_H	.92		
M_L	-7.24 9.01		
M_{pe}	-1.55		
M_{2nd}	2.46 (2.56)		
	-4.68 6.57$^{k'}$		

Group 5③: 5① + .3 Wave 125%

	Case A	Case B	Case C
5①	6.57		
3W	1.14		
	7.71$^{k'}$		

Group 5④: 5① + T 125%

	Case A	Case B	Case C
5①			
T			

Group 5⑥: 5③ + T 140%

	Case A	Case B	Case C
5③	7.71		
T	1.38		
	9.09$^{k'}$		

$f = -\frac{76.27}{144} \pm -\frac{909(12)}{288} = -.530 \pm -.379 = -.908^{ksi}$ Max $< 2.0^{ksi}$
$= -.151^{ksi}$ Min. 0^{ksi}
o.k. –

Flood Damage

Group 5⑦: 5① + DM

	Case A	Case B	Case C
5①			
DM			

Group 5⑨: 5③ + DM

	Case A	Case B	Case C
5③			
DM			

$f = \_\_ \pm \_\_ = \_\_ \pm \_\_ = \_\_^{ksi}$ Max $< 2.0^{ksi}$
$= \_\_^{ksi}$ Min. $-.212^{ksi}$

33003202

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project..... Sheet No..... of..... sheets

S. R. ..... Made by ..... Check by ..... Date ..... Supv. .....

Rdwy slab (Ext. cell)

Moments @ Face of support — between .9L2 & 1.0L2 (3½" from ℄ int. web)

$M_{DL} = 1.11^{k'} - (1.11 - .73)\frac{3\frac{1}{2}/12}{1.483} = 1.04^{k'}$ Tension Bot.

$-M_{L+I} = 13.39 - (13.39 - 7.24)\frac{3\frac{1}{2}/12}{1.483} = -12.18$ Tension Top

$+M_{L+I} = 1.99 - (1.99 - 1.12)\frac{3\frac{1}{2}/12}{1.483} = 1.82^{k'}$

$M_H = 1.63 - (1.63 - .92)$ " $= 1.49^{k'}$

$M_{NW} = 20\%\left[8.30 - (8.30 - 4.72)\frac{3\frac{1}{2}/12}{1.483}\right] = 2.28^{k'}$

$M_T = 2.17 - [2.17 - 1.38]\frac{3\frac{1}{2}/12}{1.483} = 2.10^{k'}$

M_S case A $= 13.7 - (13.7 + 9.26)\frac{1.483 - 3\frac{1}{2}/12}{1.483} = -3.91^{k'}$ Tension Bot.

B $= 6.08 - (6.08 + 2.85)$ " $= -2.67^{k'}$ Tension Bot.

$t = 18''$ $e = \frac{18}{2} - 6.25 = 2.75''$

$M_{pe} = 76.27\left(\frac{2.75}{12}\right) = 17.48^{k'}$

Try $t = 16''$ $e = \frac{16}{2} - 6.25 = 1.75''$ $M_{pe} = 76.27\left(\frac{1.75}{12}\right) = 11.12^{k'}$

$t = 14''$ $e = \frac{14}{2} - 6.25 = .75''$ $M_{pe} = 4.77^{k'}$

$t = 13''$ $e = \frac{13}{2} - 6.25 = .25$ $M_{pe} = 1.59^{k'}$

$t = 15''$ $e = \frac{15}{2} - 6.25 = 1.25''$ $M_{pe} = 7.94^{k'}$

33003203

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project 3rd Lake Wash. Floating Bridge - Stage II Sheet No. 4 of ____ sheets
S.R. 90 Made by YMT. Check by ____ Date ____ Supv. YFC/RTS

Transverse Design — pontoon D near Wall 5
Section at Rdwy. slab (Ext. cell) Face of support near 1.0 L_2

$t = 18''$ $e = 2.75''$ $M_{pe} = 17.48^{k'}$ tension bot

$A = 18(12) = 216^{in^2}$ $S = \frac{12}{6}(18)^2 = 648^{in^3}$

Group 5①: $D + H + (L + I) + M_{P/S}$ 100%

	Case A	Case B	Case C
M_D	1.04 k' bot. tension		
M_H	1.49		
M_L	-12.18 +1.82		
M_{pe}	17.48		
M_{2nd}	3.91 (23.92)		
	11.74 25.74		

Group 5③: 5① + .3 Wave 125%

	Case A	Case B	Case C
5①	11.74 25.74		
3W	2.28 2.28		
	28.02 NG.		

Group 5④: 5① + T 125%

	Case A	Case B	Case C
5①			
T			

Group 5⑥: 5③ + T 140%

	Case A	Case B	Case C
5③			
T			

$f = \underline{\quad} \pm \underline{\quad} = \underline{\quad} \pm \underline{\quad} = \underline{\quad}^{ksi}$ Max $< 2.0^{ksi}$
$= \underline{\quad}^{ksi}$ Min. 0^{ksi}

Flood Damage

Group 5⑦: 5① + DM

	Case A	Case B	Case C
5①			
DM			

Group 5⑨: 5③ + DM

	Case A	Case B	Case C
5③			
DM			

$f = \underline{\quad} \pm \underline{\quad} = \underline{\quad} \pm \underline{\quad} = \underline{\quad}^{ksi}$ Max $< 2.0^{ksi}$
$= \underline{\quad}^{ksi}$ Min. $-.212^{ksi}$

33003204

DOT Form 232-007 Sheet No.

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project 3rd Lake Wash. Floating Bridge - Stage II Sheet No. ____ of ____ sheets
S.R. 90 Made by YMT. Check by ____ Date ____ Supv. YFC/RTS

Transverse Design — pontoon D near Wall 5
section at Face of support near 1.0 L_2

$t = 16''$ $e = 1.75''$ $M_{pe} = 11.12^{k'}$

$A = 16(12) = 192$ $S = \frac{12}{6}(16)^2 = 512^{in^3}$

Group S①: D + H + (L + I) + $M_{P/S}$ 100%

	Case A	Case B	Case C
M_D	1.04 not tension		
M_H	4.49		
M_L	-12.18 +1.82		
M_{pe}	11.12		
M_{2nd}	3.91		
	(17.56)		
	5.38 19.38		

Group S③: S① + .3 Wave 125%

	Case A	Case B	Case C
S①	19.38		
3W	2.28		
	21.66		

Group S④: S① + T 125%

	Case A	Case B	Case C
S①			
T			

Group S⑥: S③ + T 140%

	Case A	Case B	Case C
S③	21.66		
T	2.10		
	23.76		

$f = -\frac{76.27}{192} \pm -\frac{23.76(12)}{512} = -.397 \pm -.557 = -.954^{ksi}$ Max $< 2.0^{ksi}$
$= +.160^{ksi}$ Min. 0^{ksi}
NG

Flood Damage

Group S⑦: S① + DM

	Case A	Case B	Case C
S①			
DM			

Group S⑨: S③ + DM

	Case A	Case B	Case C
S③			
DM			

$f = \_\_\_ \pm \_\_\_ = \_\_\_ \pm \_\_\_ = \_\_\_^{ksi}$ Max $< 2.0^{ksi}$
$= \_\_\_^{ksi}$ Min. $-.212^{ksi}$

33003205

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project 3rd Lake Wash. Floating Bridge - Stage II Sheet No. ____ of ____ sheets
S. R. 90 Made by YMT. Check by ____ Date ____ Supv. YFC/RTS

Transverse Design — pontoon D near Wall 5
section at Face of support near 1.062
$t = 15''$ $c = 1.25''$ $M_{pe} = 7.94^{k'}$
$A = 15(12) = 180$ $S = 450\ in^3$

Group S①: D + H + (L + I) + $M_{P/S}$ 100%

	Case A	Case B	Case C
M_D	1.04		
M_H	1.49		
M_L	-12.18	1.82	
M_{pe}	7.94		
M_{2nd}	3.91 (1.428)		
	(2.20)	16.20	

Group S③: S① + .3 Wave 125%

	Case A	Case B	Case C
S①	16.20		
.3W	2.28		
	18.48		

Group S④: S① + T 125%

	Case A	Case B	Case C
S①			
T			

Group S⑥: S③ + T 140%

	Case A	Case B	Case C
S③	18.48		
T	2.10		
	20.58 k'		

$$f = -\frac{16.27}{180} \pm \frac{20.58(12)}{450} = -.424 \pm .549 = -.973^{ksi}\ \text{Max} < 2.0^{ksi}$$
$$= +.125^{ksi}\ \text{Min.}\ 0^{ksi}$$
tension inside Bot. face.

Flood Damage

Group S⑦: S① + DM

	Case A	Case B	Case C
S①			
DM			

Group S⑨: S③ + DM

	Case A	Case B	Case C
S③			
DM			

$f =$ ____ ± ____ = ____ ± ____ = ____ ksi Max < 2.0 ksi
= ____ ksi Min. -.212 ksi

33003206

Form 232-007

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project 3rd Lake Wash. Floating Bridge - Stage II Sheet No. 1 of sheets
S. R. 90 Made by YMT. Check by Date Supv. YFC/RTS

Transverse Design — pontoon D near Wall 5
Section at Face of support near 1.0 L_2

$t = 14''$ $c = .75''$ $M_{pe} = 4.77^{k'}$ tension Bot.

$A = 14(12) = 168$ $S = \frac{12}{6}(14)^2 = 392^{in^3}$

Group S①: $D + H + (L + I) + M_{P/S}$ 100%

	Case A	Case B	Case C
M_D	1.04		
M_H	1.89		
M_L	-12.18 +1.82		
M_{pe}	4.77		
M_{2nd}	3.91		
	(11.21)		
	-.97 13.03		

Group S③: S① + .3 Wave 125%

	Case A	Case B	Case C
S①	13.03		
.3W	2.28		
	15.31		

Group S④: S① + T 125%

	Case A	Case B	Case C
S①			
T			

Group S⑥: S③ + T 140%

	Case A	Case B	Case C
S③	15.31		
T	2.10		
	17.41		

$f = \frac{76.27}{168} \pm \frac{17.41(12)}{392} = .454^{ksi} \pm .533 = -.987^{ksi}$ Max $< 2.0^{ksi}$
$= +.079^{ksi}$ Min. 0^{ksi}
tension inside face

Flood Damage

Group S⑦: S① + DM

	Case A	Case B	Case C
S①			
DM			

Group S⑨: S③ + DM

	Case A	Case B	Case C
S③			
DM			

$f = \frac{\quad}{\quad} \pm \frac{\quad}{\quad} = \quad \pm \quad = \quad^{ksi}$ Max $< 2.0^{ksi}$
$= \quad^{ksi}$ Min. $-.212^{ksi}$

33003207

DOT Form 232-007 Sheet No. 17

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
BRIDGE & STRUCTURES BRANCH

Project 3rd Lake Wash. Floating Bridge - Stage II Sheet No. 52 of ____ sheets
S. R. 90 Made by YMT. Check by ____ Date ____ Supv. YFC/RTS

Transverse Design — pontoon D near Wall 5
Section at Face of support near 1.0 L_2

$t = 13''$ $e = .25''$ $M_{pe} = 1.59^{k'}$
$A = 13(12) = 156$ $S = \frac{12}{6}(13)^2 = 338^{in^3}$

Group S①: D + H + (L + I) + $M_{P/S}$ 100%

	Case A	Case B	Case C
M_D	1.04		
M_H	1.49		
M_L	-12.18 1.82		
M_{pe}	1.59		
M_{2nd}	3.91 (8.03)		
	-4.15 9.85		

Group S③: S① + .3 Wave 125%

	Case A	Case B	Case C
S①	9.85		
.3W	2.28		
	12.13		

Group S④: S① + T 125%

	Case A	Case B	Case C
S①			
T			

Group S⑥: S③ + T 140%

	Case A	Case B	Case C
S③	12.13		
T	2.10		
	14.23		

$f = -\frac{76.27}{156} \pm \frac{14.23(12)}{338} = -.489 \pm -.505 = -.994^{ksi}$ Max < 2.0 ksi
$= +.016^{ksi}$ Min. 0 ksi
Tension inside Face

Flood Damage

Group S⑦: S① + DM

	Case A	Case B	Case C
S①			
DM			

Group S⑨: S③ + DM

	Case A	Case B	Case C
S③			
DM			

$f = \quad \pm \quad = \quad \pm \quad =$ ksi Max < 2.0 ksi
$=$ ksi Min. -.212 ksi

33003208

DOT Form 232-007 Sheet No.