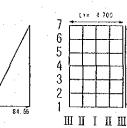
Ultimate limit state

284

Sidewall(perpendicular to levee normal) (1) While afloat

slab fixed on three sides and free on one side $P1 = 0.00(kN/m^2)$ P2 = 84.55(kN/m²) LX = 16.200 (m)LY = 4.700 (m)The ratio of a length of sides 16.200 - = 3.45 $\lambda = -$ 4.700 The coefficient table of $\lambda = 3.50$ is used.



200

5

ä

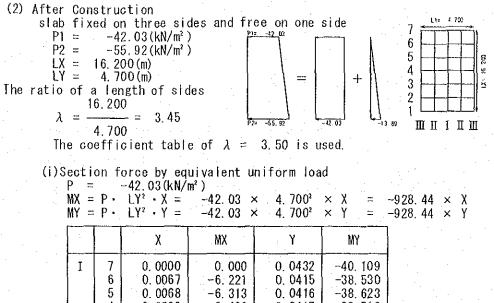
X Y x x

Section force by triangular distribution load $P = \frac{84.55(kN/m^2)}{2}$

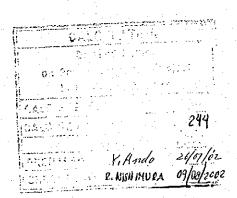
P =		84.55(KN/	m")			· ·
	Р• Р•	$LY^2 \cdot X = LY^2 \cdot Y =$		< 4. 700 ² < 4. 700 ²	× X = × Y =	1867.71 1867.71
	-	X	MX	Y	MY	
Ι	7 6 5 4 3 2 1	0.0000 0.0009 0.0022 0.0035 0.0055 0.0119 -0.0500	0.000 1.681 4.109 6.537 10.272 22.226 -93.386	0.0027 0.0071 0.0139 0.0209 0.0279 0.0278 -0.0083	5. 043 13. 261 25. 961 39. 035 52. 109 51. 922 -15. 502	
I	7 6 5 4 3 2 1	0. 0000 0. 0003 0. 0005 0. 0008 0. 0015 0. 0054 -0. 0303	0.000 0.560 0.934 1.494 2.802 10.086 -56.592	0. 0003 0. 0017 0. 0034 0. 0052 0. 0072 0. 0088 -0. 0050	0. 560 3. 175 6. 350 9. 712 13. 448 16. 436 -9. 339	
Ш	7 6 5 4 3 2 1	0.0000 -0.0019 -0.0045 -0.0072 -0.0098 -0.0104 0.0000	0.000 -3.549 -8.405 -13.448 -18.304 -19.424 0.000	-0. 0002 -0. 0112 -0. 0269 -0. 0429 -0. 0588 -0. 0622 0. 0000	-0. 374 -20. 918 -50. 241 -80. 125 -109. 821 -116. 172 0. 000	

(17)

CALCULATION Detailed Casign on Port Reactivation Present in La Union Province GALC FILE MOLT CALC INDER SO PAGE 243 DATE INITIAL YiAndo 26/071 PREPARED BY CHECKED BY R. NUSHIHURA 09/08/2002



I	7 6 5 4 3 2 1	0.0000 0.0067 0.0068 0.0069 0.0079 0.0132 -0.0564	0.000 -6.221 -6.313 -6.406 -7.335 -12.255 52.364	0. 0432 0. 0415 0. 0416 0. 0417 0. 0417 0. 0417 0. 0343 -0. 0094	-40. 109 -38. 530 -38. 623 -38. 716 -38. 716 -31. 846 8. 727
П	7 6 5 4 3 2 1	0. 0000 0. 0015 0. 0015 0. 0016 0. 0022 0. 0058 -0. 0335	0.000 -1.393 -1.393 -1.486 -2.043 -5.385 31.103	0. 0105 0. 0104 0. 0104 0. 0104 0. 0104 0. 0107 0. 0105 -0. 0056	-9. 749 -9. 656 -9. 656 -9. 656 -9. 934 -9. 749 5. 199
Ш	7 6 5 4 3 2 1	0. 0000 -0. 0142 -0. 0141 -0. 0141 -0. 0143 -0. 0125 0. 0000	0.000 13.184 13.091 13.091 13.277 11.606 0.000	-0. 0877 -0. 0851 -0. 0847 -0. 0846 -0. 0855 -0. 0750 0. 0000	81. 424 79. 011 78. 639 78. 546 79. 382 69. 633 0. 000



(18)

(ii) Section force by triangular distribution load $P = -13.89 (kN/m^2)$

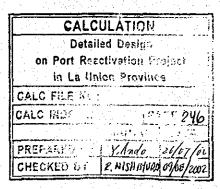
г		-10.09 (MM/				
MX = MY =		$LY^2 \cdot X = LY^2 \cdot Y =$		< 4. 700 ² < 4. 700 ²		-306.83 × X -306.83 × Y
		X	MX	Y	MY	
 Ι	7 6 5 4 3 2 1	0.0000 0.0009 0.0022 0.0035 0.0055 0.0119 -0.0500	0.000 -0.276 -0.675 -1.074 -1.688 -3.651 15.342	0. 0027 0. 0071 0. 0139 0. 0209 0. 0279 0. 0278 -0. 0083	-0. 828 -2. 178 -4. 265 -6. 413 -8. 561 -8. 530 2. 547	
Π	7 6 5 4 3 2 1	0. 0000 0. 0003 0. 0005 0. 0008 0. 0015 0. 0054 -0. 0303	0.000 -0.092 -0.153 -0.245 -0.460 -1.657 9.297	0. 0003 0. 0017 0. 0034 0. 0052 0. 0072 0. 0088 -0. 0050	-0. 092 -0. 522 -1. 043 -1. 596 -2. 209 -2. 700 1. 534	
Ш	7 6 5 4 3 2 1	0.0000 -0.0019 -0.0045 -0.0072 -0.0098 -0.0104 0.0000	0. 000 0. 583 1. 381 2. 209 3. 007 3. 191 0. 000	-0.0002 -0.0112 -0.0269 -0.0429 -0.0588 -0.0622 0.0000	0. 061 3. 436 8. 254 13. 163 18. 042 19. 085 0. 000	

(19)

CALCULATION Detailed Design on Port Reactivation Project In La Union Province GALC FRE KEL CALC PERCH NE 245 PREPARED BY Y.Anda 26/07/02 CHECKED BY P.NUNIAURA 07/02/2007

The sum total of (i) and (ii)

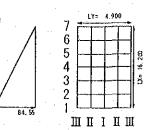
а 44		MX	MY
Ι	7	0.000	-40. 937
	6	-6.497	-40. 708
	5	-6.988	-42. 888
	4	-7.480	-45. 129
	3	-9.023	-47. 277
	2	-15.906	-40. 376
	1	67.706	11. 274
Π	7	0.000	-9. 841
	6	-1.485	-10. 178
	5	-1.546	-10. 699
	4	-1.731	-11. 252
	3	-2.503	-12. 143
	2	-7.042	-12. 449
	1	40.400	6. 733
	7	0.000	81. 485
	6	13.767	82. 447
	5	14.472	86. 893
	4	15.300	91. 709
	3	16.284	97. 424
	2	14.797	88. 718
	1	0.000	0. 000



287

(20)

Sidewall(parallel to centerline) (1) While affoat slab fixed on three sides and free on one side P1 = 0.00(kN/m²) P2 = 84.55(kN/m²) LX = 16.200(m) LY = 4.900(m) The ratio of a length of sides The ratio of a length of sides 16.200 λ = ----- = 3.31 4.900 The coefficient table of $\lambda = 3.25$ is used.

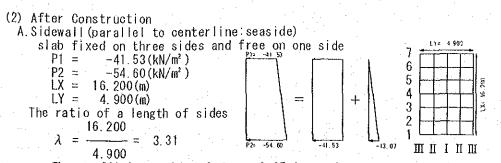


X Y

Section force by triangular distribution load $P = \frac{94}{55} \frac{55}{(m)} \frac{(m^2)}{m^2}$

P ≃		84.55 (kN/	m²)		e	+ · · ·
MX = MY =	Р • Р •	$\begin{array}{c} LY^2 \cdot X = \\ LY^2 \cdot Y = \end{array}$	84.55 >	< 4. 900 ² < 4. 900 ²	$\times X =$ $\times Y =$	2030.05 × 2030.05 ×
 . :		X	MX	Y	MY	
Ι	7 6 5 4 3 2 1	0.0000 0.0008 0.0022 0.0035 0.0059 0.0123 -0.0496	0.000 1.624 4.466 7.105 11.977 24.970 -100.690	0.0029 0.0071 0.0139 0.0209 0.0277 0.0263 -0.0083	5. 887 14. 413 28. 218 42. 428 56. 232 53. 390 -16. 849	
I	7 6 5 4 3 2 1	0.0000 0.0002 0.0005 0.0008 0.0018 0.0058 -0.0302	0.000 0.406 1.015 1.624 3.654 11.774 -61.307	0. 0003 0. 0017 0. 0034 0. 0052 0. 0072 0. 0086 -0. 0050	0. 609 3. 451 6. 902 10. 556 14. 616 17. 458 -10. 150	
Ш	7 6 5 4 3 2 1	0.0000 -0.0019 -0.0045 -0.0071 -0.0097 -0.0099 0.0000	0.000 -3.857 -9.135 -14.413 -19.691 -20.097 0.000	-0. 0008 -0. 0116 -0. 0271 -0. 0428 -0. 0583 -0. 0594 0. 0000	-1. 624 -23. 549 -55. 014 -86. 886 -118. 352 -120. 585 0, 000	

CALCU	ILATION				
Detailed Design on Port Reactivation Preject					
	in La Union Province				
GALC FILE NO.					
CALC INDEX NO.					
	10375 L 0375				
PREPARCO	Y. Ando 26/07/02				
CHECKED GY	R. NISHIMURA 09/08/2002				



The coefficient table of $\lambda = 3.25$ is used.

(i)Section force by equivalent uniform load

	P =		-41.53(kN/I	m²)			
			$LY^2 \cdot X = LY^2 \cdot Y =$		< 4.900 ² < 4.900 ²		-997.14 × X -997.14 × Y
•				-41.00 /	· 4. 500	~ I ~	~997.14 ^ [
			X	MX	Y	MY	
	Ι	7 6 5 4 3 2 1	0.0000 0.0067 0.0068 0.0070 0.0083 0.0136 -0.0565	0.000 -6.681 -6.781 -6.980 -8.276 -13.561 56.338	0. 0432 0. 0414 0. 0416 0. 0418 0. 0415 0. 0326 -0. 0094	-43.076 -41.281 -41.481 -41.680 -41.381 -32.507 9.373	
	Π	7 6 5 4 3 2 1	0. 0000 0. 0015 0. 0015 0. 0017 0. 0025 0. 0062 -0. 0338	0. 000 -1. 496 -1. 496 -1. 695 -2. 493 -6. 182 33. 703	0. 0105 0. 0104 0. 0104 0. 0105 0. 0105 0. 0107 0. 0103 -0. 0056	-10. 470 -10. 370 -10. 370 -10. 470 -10. 669 -10. 270 5. 584	
	Ш	7 6 5 4 3 2 1	0. 0000 -0. 0141 -0. 0141 -0. 0141 -0. 0141 -0. 0142 -0. 0120 0. 0000	0.000 14.060 14.060 14.060 14.159 11.966 0.000	-0. 0872 -0. 0847 -0. 0845 -0. 0846 -0. 0851 -0. 0720 0. 0000	86. 950 84. 457 84. 258 84. 358 84. 856 71. 794 0. 000	

(22)

CALCULATION	
Detailed Design	
on Port Reactivation Project	
in La Union Province	
CALC FILE No.	
CALC INDEX NO. 1940E 2	48
INTER EXT	
PREPARED Y. Ando 26/07	102
CHECKED BY P. NISHINORA 09/08/	ine

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UDSECTION	Torce.pv	Triangular	distribution	1020
	10100.01	0,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1 0 0 1

 $P = -13.07 (kN/m^2)$

	P۰	$LY^{2} \cdot X = LY^{2} \cdot Y =$	-13.07 >	< 4. 900 ² < 4. 900 ²	× X = × Y =	-313.81 × X -313.81 × Y
		X	MX	Ŷ	MY]
 Ι	7 6 5 4 3 2 1	0.0000 0.0008 0.0022 0.0035 0.0059 0.0123 -0.0496	0,000 -0,251 -0,690 -1,098 -1,851 -3,860 15,565	0. 0029 0. 0071 0. 0139 0. 0209 0. 0277 0. 0263 -0. 0083	-0. 910 -2. 228 -4. 362 -6. 559 -8. 693 -8. 253 2. 605	
 I	7 6 5 4 3 2 1	0.0000 0.0002 0.0005 0.0008 0.0018 0.0058 -0.0302	0.000 -0.063 -0.157 -0.251 -0.565 -1.820 9.477	0. 0003 0. 0017 0. 0034 0. 0052 0. 0072 0. 0086 -0. 0050	-0. 094 -0. 533 -1. 067 -1. 632 -2. 259 -2. 699 1. 569	
Ш	7 6 5 4 3 2 1	0.0000 -0.0019 -0.0045 -0.0071 -0.0097 -0.0099 0.0000	0. 000 0. 596 1. 412 2. 228 3. 044 3. 107 0. 000	-0. 0008 -0. 0116 -0. 0271 -0. 0428 -0. 0583 -0. 0594 0. 0000	0. 251 3. 640 8. 504 13. 431 18. 295 18. 640 0. 000	

(23)

CALCULATION				
Detailed Design				
on Port Reactivation Broject				
in La Union Province				
CALC FILE NO.:				
CALC INDER NO. PAGE 249				
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PREFARLO YAndo 26/07/02				
CHECKED BY E. WISHIMURA 09/08/200				

The sum total of (i) and (ii)

		MX	MY
I	7 6 5 4 3	0.000 -6.932 -7.471	-43, 986 -43, 509 -45, 843
	4	-8.078	-48, 239
	3	-10.127	-50, 074
	2	-17.421	-40, 760
	1	71.903	11, 978
П	7	0.000	-10, 564
	6	-1.559	-10, 903
	5	-1.653	-11, 437
	4	-1.946	-12, 102
	3	-3.058	-12, 928
	2	-8.002	-12, 969
	1	43.180	7, 153
Ш	7	0.000	87. 201
	6	14.656	88. 097
	5	15.472	92. 762
	4	16.288	97. 789
	3	17.203	103. 151
	2	15.073	90. 434
	1	0.000	0. 000

CALCULATION Datailed Design on Port Reactivation Project in La Union Province CALC FILE Not: CALC INDEX 10 PAGE 250 PREFARED BY PREMIURA 03/06/2002

(24)

B. Sidewall (parallel to centerline: landside) slab fixed on three sides and free on one side $P1 = -41.53 (kN/m^2)$ $P2 = -54.60 (kN/m^2)$ LX = 16.200 (m) LY = 4.900 (m)The vettice of elevently of sides LY= 4,900 7 6 5 4 3 2 1 LX= 15 200 LY = 4,900(m) The ratio of a length of sides 16.200 + $\lambda = \frac{1}{4.900} = 1$ 3.31 шпіпш P7= -54 60 -41 53 13.07 The coefficient table of $\lambda = 3.25$ is used.

(i)Section force by equivalent uniform load

	P =	P•	orce by eq -41.53(kN/ LY ² • X = LY ² • Y =	m²) -41.53 >	1.11	a × X = × Y =	-997.14 -997.14	X Y
			X	MX	Y	MY]	
· · ·	I	7 6 5 4 3 2 1	0.0000 0.0067 0.0068 0.0070 0.0083 0.0136 -0.0565	0.000 -6.681 -6.781 -6.980 -8.276 -13.561 56.338	0. 0432 0. 0414 0. 0416 0. 0418 0. 0415 0. 0326 -0. 0094	-43. 076 -41. 281 -41. 481 -41. 680 -41. 381 -32. 507 9. 373		
	Π	7 6 5 4 3 2 1	0. 0000 0. 0015 0. 0015 0. 0017 0. 0025 0. 0062 -0. 0338	0.000 -1.496 -1.496 -1.695 -2.493 -6.182 33.703	0. 0105 0. 0104 0. 0104 0. 0105 0. 0105 0. 0107 0. 0103 -0. 0056	-10. 470 -10. 370 -10. 370 -10. 470 -10. 669 -10. 270 5. 584		-
	Ш	7 6 5 4 3 2 1	0.0000 -0.0141 -0.0141 -0.0141 -0.0141 -0.0142 -0.0120 0.0000	0.000 14.060 14.060 14.060 14.159 11.966 0.000	-0. 0872 -0. 0847 -0. 0845 -0. 0846 -0. 0851 -0. 0720 0. 0000	86. 950 84. 457 84. 258 84. 358 84. 856 71. 794 0. 000		
	L	b	L	<u>L</u>	<u> </u>	· .	J	

CALC	ULATION
Detail	led Dasign
on Port Rea	ctivation Project
in La Un	ion Province
CALC FILE Ho .:	
CALC INDEX HO	177 SE 251
	Milai SATA
PREPARED BY	Yi Ando 126/07/02
CHECKED BY	P. WISHMURA DI OS/2002

ΎΡ			-13.07(kN/	m ²)		on roau	
M	X =	P۰	$LY^2 \cdot X = LY^2 \cdot Y =$	-13. 07 →	< 4. 900² < 4. 900²	× X = × Y =	-313, 81 -313, 81
			X	MX	Y	MY	
	I	7 6 5 4 3 2 1	0,0000 0,0008 0,0022 0,0035 0,0059 0,0123 -0,0496	0.000 -0.251 -0.690 -1.098 -1.851 -3.860 15.565	0, 0029 0, 0071 0, 0139 0, 0209 0, 0277 0, 0263 -0, 0083	-0. 910 -2. 228 -4. 362 -6. 559 -8. 693 -8. 253 2. 605	
	Π	7654321	0. 0000 0. 0002 0. 0005 0. 0008 0. 0018 0. 0058 -0. 0302	0.000 -0.063 -0.157 -0.251 -0.565 -1.820 9.477	0. 0003 0. 0017 0. 0034 0. 0052 0. 0052 0. 0072 0. 0086 -0. 0050	-0. 094 -0. 533 -1. 067 -1. 632 -2. 259 -2. 699 1. 569	
	Ш	7 6 5 4 3 2 1	0.0000 -0.0019 -0.0045 -0.0071 -0.0097 -0.0099 0.0000	0.000 0.596 1.412 2:228 3.044 3.107 0.000	-0. 0008 -0. 0116 -0. 0271 -0. 0428 -0. 0583 -0. 0594 0. 0000	0. 251 3. 640 8. 504 13. 431 18. 295 18. 640 0. 000	

(ii) Section force by triangular distribution load

CALCULATION					
Detailed Design					
on Port Reactivation Project					
in La Union Province					
ALC FILE No.:					
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PREPAREN Y. Ando 20/07/02					
CHECKED BY P. NISH MURA 09/08/2002					

× X × Y

The sum total of (i) and (ii)

10 11		MX	MY
I	7	0.000	-43. 986
÷	6	-6. 932	-43. 509
		-7.471	-45. 843
	4	-8. 078 -10. 127	-48. 239 -50. 074
•	2	-17. 421	-40. 760
	6 5 4 3 2 1	71. 903	11. 978
Ц	7	0.000	-10, 564
	6	-1. 559	-10. 903
	5	-1, 653	-11. 437
	7 6 5 4 3 2 1	-1.946 -3.058	-12. 102 -12. 928
		-8.002	-12. 969
	Ī	43. 180	7. 153
Ш	7	0. 000	87. 201
	6	14.656	88. 097
	5	15. 472	92.762
:	6 5 4 3 2 1	16. 288 17. 203	97. 789 103. 151
·		15.073	90. 434
1.	Ĩ	0.000	0.000

(27)

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CALCULATION					
Detail	led Design				
on Port Reactivation Project					
in La Union Province					
SALC FILE No :					
CALC INDER RE	: PAGE 253				
	HATIAL LATE				
PREPARED OF	Y. Ando 26/07/02				
CHECKED BY	R. NISHINOAA 01/08/2002				

Correction of the non-balance bending moment in a side wall corner

Non-balance arises in bending moment of a transverse direction on the intersection of side wall(perpendicular to levee normal) and side wall(parallel to centerline) Since it is calculated as slab fixed on three sides and free on one side, moment is distributed and corrected by the rigid ratio of slab. Correction is made about corner (IIIAxis) and the central part of span(IAxis)

Rigid ratio E1 - 11 E2 |2 K2 = -K1 = ---L2 L1 $E1 \approx E2$ 11 = 12 The relative share of moment 5 K1 4.900 - L2 e1 = ---0.510 K1 + K2 L1 + L2 4.900 + 4.700 K2 L1 -4.700 e2 = 0:490 K1 + K2 L1 + L2 4.900 + 4.700 Correction of moment in corner (IIIAxis) When referred to as (M1 > M2) $\Delta M = M1 - M2$ Correction moment $\begin{array}{rcl} \textbf{M1}' &= & \textbf{M1} & - & \Delta \textbf{M} & \cdot & \textbf{e1} &= & \textbf{M1} & - & 0, 510 & \cdot & \Delta \textbf{M} \\ \textbf{M2}' &= & \textbf{M2} & + & \Delta \textbf{M} & \cdot & \textbf{e2} &= & \textbf{M2} & + & 0, 490 & \cdot & \Delta \textbf{M} \end{array}$ Correction of the moment in the central part (IAxis) of span Let 50% of the quantity of corrections in II Axis be the quantity of corrections

The table of a correction moment

Sidewall	(perpendicular e1	to	levee normal)		Sidewall	(parallei e2	l to centerline)
I		ш				Π	I
Мі в Мі в	1/2·∆M·e1	M1 M1	> ∆M·e1 (ΔM)∆M·e2	M2 < M2'	1/2·∆M·e2 < M₂ ⁸ M₂ ⁸

(28)

CALC	ULATION					
Detailed Design						
	ctivation Project					
CALC FILE No .:						
CALC INDEA 160	S. 17.65 254					
	10 11 1 1 2 AE					
PESPARED FY	YAndo 26/07/01					
CHUCKED BY	E.NISHINURA 09 09 2002					

·					· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
Sidewall(perp	endicular to levee e1 = 0.510	normal:seasi	de) Front w		allel to ce e2 = 0		seaside)
I	Ш	· · · ·			Ш		I
7 5.043 > 7' 4.724	-0.374 0.319 > -1.012	0.638 (1. 250)	0.613	<-1.624 -1.011	0.306	< 5. 887 6. 193
6 13.261 > 6' 12.590	-20.918 0.671 > -22.260	1.342 (2. 631)	1.289	$<$ \sim $^{\circ}$	0.645	<14. 413 15. 058
5 25.961 > 5' 24.744	-50.241 1.217 > -52.675	2. 434 (4. 773)	2.339	-55.014 < -52.675	1.169	<28. 218 <29. 387
4 39.035 > 4' 37.311	-80.125 1.724 > -83.573	3.448 (6. 761)	3.313	00,000	1. 656	<42. 428 44. 084
3 52.109 > 3' 49.934	-109.821 2.175 > -114.172	4.351 (8. 531)	4.180	-118.352 < -114.172	2. 090	<56. 232 58. 322
2 51.922 > 2' 50.797	-116.172 1.125 > -118.423	2.251 (4. 413)	2.162			53.390 < 54.471
1 -15.502 > 1' -15.502	0.000 0.000 > 0.000	0.000 (0.000	< 0.000 0.000	0. 000	-16.849 < -16.849

(a) Sidewall(perpendicular to levee normal:seaside) and Front wall(parallel to centerline seaside)
 (1) While afloat

CALCULATION CALCULATION Port Automatics the Exclusion in the Union 255 PHOMERED F. Y. Ando 20/17/62-CHICKED BY P. MISHIMURA 09/08/2002

The moment after correction						
The moment after correction			· .		· .	
and the second	The	moment	after	correction		

Sidewall(perpendicular e1 =		ormal:seaside)	Front wall(p	arallel to cer e2 = 0.4	nter I ine : seas ide) 190
I	Щ			III	I
7' 5. 043	-1.012			-1.011	6. 193
6' 13. 261	-22.260			-22.260	15. 058
5' 25.961	-52.675			-52.675	29. 387
4' 39.035	-83.573			-83.573	44. 084
3' 52. 109	-114. 172			-114.172	58. 322
2' 51. 922	-118.423			-118.423	54. 471
1' -15. 502	0.000			0.000	-16. 849

CALCULATION							
Dotail	ed Dosig	1)					
on Port Reactivation Project							
In La Union Province							
CALC FILE No							
CALC INCEA :		PANE 256					
	1 1211:4	1 0/15					
PREPARED BY	Y. And	0 46/07/62					
CHECKED BY		es 09/0e/2002					

(30)

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(2) After Construction

Sidewall(perp	endicular to levee n e1 = 0.510	ormal:seaside)		rallel to ce e2 = 0	
I	Ш		.	Ш	I
7 -40. 937 > 7' -39. 479	81.485 1.458 > 84.400	2.915 (5.	716) 2.801	87.201 < 84.400	-43.986 1.400 < -45.386
6 ~40. 708 > 6' ~39. 267	82. 447 1. 441 > 85. 329	2.882 (5.	650) 2.769	88.097 < 85.328	1.384 <
5 -42.888 > 5' -41.391	86.893 1.497 > 89.886	2.993 (5.	869) 2.876	92.762 <89.886	-45. 843 1. 438 < -47. 281
4 -45.129 > 4' -43.579	91.709 1.550 > 94.810	3.101 (6.	080) 2.979	<97.789 <94.810	-48. 239 1. 490 < -49. 729
3 -47. 277 > 3' -45. 817	97.424 1.460 > 100.345	2.921 (5.	727) 2.806	103.151 < 100.345	-50. 074 1. 403 < -51. 477
2 -40. 376 > 2' -39. 938	88.718 0.438 > 89.593	0.875 (1.	716) 0.841	90.434 <89.593	-40. 760 0. 420 < -41. 180
1 11. 274 > 1' 11. 274	0.000 0.000 > 0.000	0.000 (0.	000) 0.000	< 0,000 0,000	0.000 < 11.978 11.978

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on Fort Raa:	elvation Project
	er Feranse
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PROF BUD AND	Y. Ando 26/07/02
CHECKED BY	E.NUSUIMURA 03/08/2002

The moment after correction

		e1 = (0. 510	ormal:lseaside)	Front	wall(pa	e2 = 0.490	l ine : seas ide)
·			11				Ш	I
7'	-40. 937	8	4. 400				84, 400	-45. 386
6'	-40. 708	8	5.329				85.328	-44. 893
5'	-42. 888	8	9.886				89.886	-47. 281
4'	-45. 129	94	4.810				94.810	-49. 729
3, -	-47. 277	100). 345				100.345	-51.477
!'	40. 376	89	. 593				89.593	-41. 180
•	11.274	0	. 000				0.000	11. 978

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	· · · ·						· .		
Sidewall(pe	erpendicular e1 =		rmal:lan	dside)	Rear	wall(para	llel to cen e2 = (: landside
I		II			1		Ш		Ι.
7 5.0 7' 4.7	> 0.319	-0.374 > -1.012	0. 638			0.613	-1.624 < -1.011	0.306	
6 13.2 6' 12.5	261 > 0.671		1. 342		631)	1.289	-23.549	0.645	14. 413 < 15. 058
5 25.9 5' 24.7	> 1.217	-50.241 > -52.675	2. 434	(4.	773)	2.339	-55.014 < -52.675		<28. 218 <29. 387
	> 1.724		3. 448		761)	3.313	-86.886 < -83.573	1.656	<42. 428 44. 084
3 52.1 3' 49.9	> 2.175	-109.821 > -114.172	4. 351	(8.	531)	4.180	-118.352 < -114.172		<56. 232 58. 322
2 51.9 2' 50.7	> 1.125	-116.172 > -118.423	2. 251	(4.	413)		-120.585 < -118.423	1. 081	53.390 < 54.471
1 -15.5 1' -15.5	502 > 0.000 502	0.000 > 0.000	0. 000				< 0.000 0.000		-16.849 < -16.849

(b) Sidewall (perpendicular to levee normal: landside) and Rear wall (parallel to centerline : landside)
 (1) While afloat

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The moment after correction

	and the second sec	1
andside) Rear wall(pa	arallel to centerlin e2 = 0.490	e:landside)
	Ш	I
	-1.011	6. 193
	-22.260	15. 058
	-52.675	29. 387
	-83.573	44. 084
	-114. 172	58. 322
	-118.423	54. 471
	0.000	-16, 849
	andside) Rear wall (p	e2 = 0.490 III -1.011 -22.260 -52.675 -83.573 -114.172 -118.423

CALC	ULATION				
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on Port Reactivation Project					
in La Union Province					
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	WITTAL ! DATE				
PREPARED CY	K. Ando 26/07/02				
CHECKED BY	R.NISHIMURA 09/06/2002				

(34)

(2) After Construction

side	wall (perper	e1 =		ormal:landside)	Kear wa	II (par	$e^2 = 0$: Lands Ide)
	I		Ш				Ш		I
7 7'	-40. 937 > -39. 479	1.458	81.485 > 84.400	2.915 (5.	716) 2	2. 801	87,201 < 84,400	1. 400	-43.986 < -45.386
6 6'	-40. 708 > -39. 267		82.447 > 85.329		650) 2	. 769	88.097 < 85.328	1. 384	-43.509 < -44.893
5 5'	-42.888 > -41.391	1.497	86.893 > 89.886		. 869) 2	. 876	92.762 < 89.886		-45.843 < -47.281
4 4'	-45. 129 > -43. 579	1.550	91.709 > 94.810	3. 101 (6.	080) 2	. 979	97.789 < 94.810	1. 490	
3, 3	-47.277 > -45.817	1.460		2.921 (5.	. 727) 2	. 806	103.151 < 100.345		
2 2'	-40. 376 > -39. 938	0.438	88.718 > 89.593	0.875 (1.	716) 0	. 841	90.434 < 89.593	0. 420	
1 1'	11. 274 > 11. 274	0.000	0.000 > 0.000	0.000 (0.	000) 0	. 000	< 0.000 0.000	0. 000	<11. 978 <11. 978

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The moment after correction

	ular to levee normal:landside) e1 = 0.510	Rear wall(parallel to cente e2 = 0.4	rline:landside) 90
	<u> </u>	Ш	I
7' -40. 937	84. 400	84. 400	-45. 386
6' -40, 708	85. 329	85.328	-44. 893
5' -42, 888	89.886	89.886	-47. 281
4' -45. 129	94.810	94. 810	-49. 729
3` -47. 277	100.345	100.345	-51. 477
2' -40. 376	89. 593	89. 593	-41. 180
' 11. 274	0.000	0.000	11. 978

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Detailed Design on Port Reactivation Project					
in La Union Province					
CALC FILE No .:		. K.			
CALC INDEX NO		PA	GE 262		
	HITIA	٤.	DATE		
PREPARED BY	Y. Ano	10	26/11/02		
CHECKED BY			09/08/2002		

Sidewall(perpendicular to levee normal seaside) Colligation of bending moment Top(left)side: +moment Bottom(right)side: -moment

(): The moment after correction of corner

		MY	- - -		МХ	4 •
	ш	П	I	I	Ш	Ш
7	(84,400)i 81 <u>,485 i</u> -0(374 f (-1.012)f	<u>0,560 f</u> -9 841 i	(5.043) f 5.043 f -40 937 i (-40 937) i	000000000000000000000000000000000000000	0000	0.000
6	(85.329)i 82 <u>447 i</u> -20,918 f (-22 260) f	<u>3 175 f</u> -10 178 i	(13 261) f 13 261 f -40 708 i (-40 708) i	-6. 497 I	-1 (<u>5560</u> -1 (<u>485</u>	13, 767 1 -3, 549 f
5	(89.886) i 86.893 i -50.241 f (-52.675) f	<u>6,350 f</u> -10 699 i	(25,961)f 25,961 f -42,888 i (-42,888)i	- 6. 988 -	-1 546 -	14 172 1 -8.405 f
4	(94,810) i 91 <u>709 i</u> 80 125 f (-83 573) f	<u>9 712 f</u> -11 252 i	(39 035) f 39 035 f -45 129 i (-45 129) i	6.537 f -7.480 -	-1- -1- -1- -1- -1- -1- -1- -1- -1- -1-	15, 800 i ~13, 448 f
3	(100 345)i 97 424 i -109 821 f (-114 172)f	13 448 f -12 143 i	(52 109) f 52 109 f -47 277 i (-47 277) i	10. 272 f -9. 023 1	2.802 f	16.284 - 18.304 f
2	(89,593) i 88,718 i -116,172 f (-118,423) f	<u></u>	(51, 922) f 51, 922 f -40, 376 i (-40, 376) i	-15, 906 1	-7.042 -	14 197 i -19. 424 f
1	0 <u>000</u> 0.000	<u>6 733 i</u> -9.339 f	11, 274 i −15, 502 f	67. 706. i -93. <mark>586. f</mark>	40,400 i 56,592 f	000

f:While afloat

i: from inside After Construction

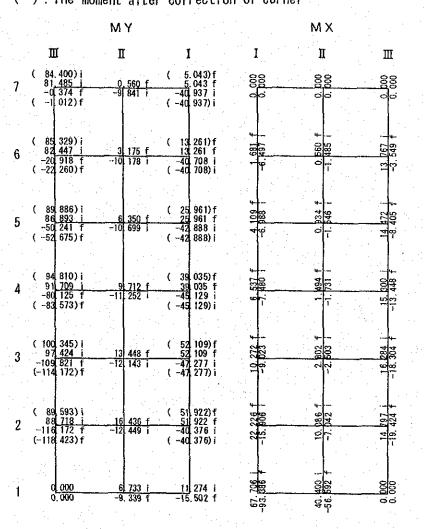
(37)

o: from outside After Construction

CALCULATION Detailed Design on Port Reactivation Project in La Union Province CALC FILE N. . CALC INDEX NO FAGE 263 INITIAL DATE PREPARED BY YAndo 261 CHECKED BY E NISHINURA 09/05/2002

Sidewall(perpendicular to levee normal, landside) Colligation of bending moment Top(left)side: +moment

Bottom(right)side: -moment (): The moment after correction of corner



f: While afloat i: from inside After Construction

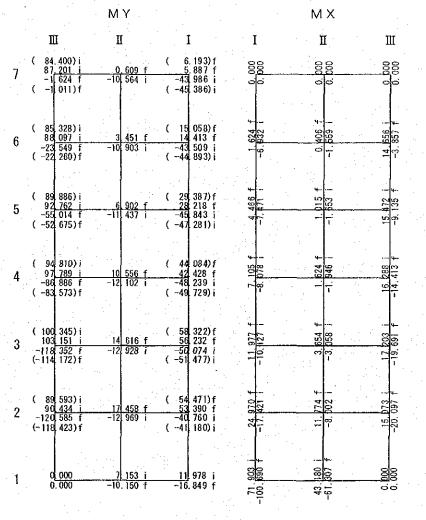
o: from outside After Construction

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PREPARED BY			21/07/02
CHECKED BY	R. NISH ISte	DA.	09/06/2002

(38)

Front wall(parallel to centerline, seaside) Colligation of bending moment Top(left)side: + moment Bottom(right)side: - moment

(): The moment after correction of corner

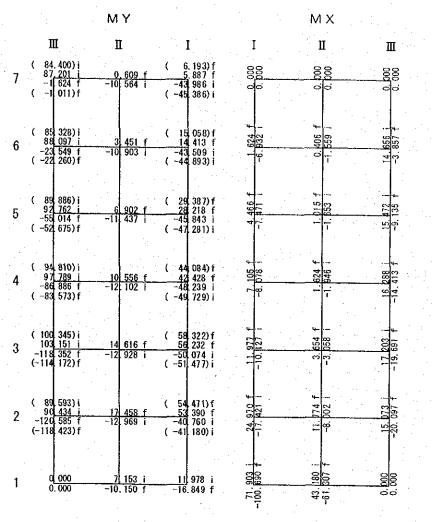


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f:While afloat i:from inside After Construction o:from outside After Construction

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PREPARED BY			26/07/8			
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Rear wall (parallel to centerline, andside) Colligation of bending moment Top (left)side : + moment Bottom(right)side : - moment (): The moment after correction of corner



f:While afloat i:from inside After Construction o: from outside After Construction

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(40)

Bottom slab		· .	
Bottom slab is	calculated as a	slab fixed on	four sides
Note) The mark	of bending moment	t (+)∶upper 1	tensile
	1. A.	(): downsi	de tensile

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(a) Under ordinary conditions A Room While afloat slab fixed on four sides P1 = 74.92(kN/m²) P2 = 74.92(kN/m²) LX = 4.700(m) LY = 4.900(m) The ratio of a length of sides 4.700 $\lambda = ----= 0.96$

λ = --= 0.96 4.900

LY= 4.900 5 4 3 2 4, 200 ž 1 шптпш

·χ Υ

74. 92

The coefficient table of $\lambda = 1.00$ is used.

Section	force	by	equival	lent	uniform	load
р.		14 6	19/1.01/2	N 1	28.000	(1) (1)

		74.92(kN/ LX ² • X = LX ² • Y =	74.92 >		× X = × Y =	1654.98 × 1654.98 ×
		X	MX	Ŷ	MY]
I	5 4 3 2 1	-0. 0513 0. 0096 0. 0206 0. 0096 -0. 0513	-84. 901 15. 888 34. 093 15. 888 -84. 901	-0. 0086 0. 0116 0. 0206 0. 0116 -0. 0086	-14. 233 19. 198 34. 093 19. 198 -14. 233	
Π	5 4 3 2 1	-0. 0324 0. 0059 0. 0116 0. 0059 -0. 0324	-53. 621 9. 764 19. 198 9. 764 -53. 621	-0.0054 0.0059 0.0096 0.0059 -0.0054	-8, 937 9, 764 15, 888 9, 764 -8, 937	
M	5 4 3 2 1	0.0000 -0.0054 -0.0086 -0.0054 0.0000	0.000 -8.937 -14.233 -8.937 0.000	0.0000 -0.0324 -0.0513 -0.0324 0.0000	0. 000 -53. 621 -84. 901 -53. 621 0. 000	

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310

A Room After Construction Upward Load (above) slab fixed on four sides P1 = $187.72 (kN/m^2)$ P2 = $217.54 (kN/m^2)$ LX = 4.700 (m)LY = 4.900 (m)187 72 -29. 82 5 4 3 2 1 The ratio of a length of sides $\frac{1}{P_{2}-217.54}$ 4.700 217.54 шптпш λ = -- = 0.96 4.900 The coefficient table of $\lambda = 1.00$ is used.

(i)Section force by equivalent uniform load $P = 217.54(kN/m^2)$

lγ ≕	<u>۲</u> ۰	$LX^2 \cdot Y =$	217.54 >	< 4. 700 ²	× Y =	4805.46
			MX	. Ү . с	MY	
Ι	5 4 3 2 1	-0. 0513 0. 0096 0. 0206 0. 0096 -0. 0513	-246. 520 46. 132 98. 992 46. 132 -246. 520	-0.0086 0.0116 0.0206 0.0116 -0.0086	-41. 327 55. 743 98. 992 55. 743 -41. 327	
I	5 4 3 2 1	-0. 0324 0. 0059 0. 0116 0. 0059 -0. 0324	-155. 697 28. 352 55. 743 28. 352 -155. 697	-0.0054 0.0059 0.0096 0.0059 -0.0054	-25, 949 28, 352 46, 132 28, 352 -25, 949	
Ш	5 4 3 2 1	0.0000 -0.0054 -0.0086 -0.0054 0.0000	0.000 -25.949 -41.327 -25.949 0.000	0. 0000 -0. 0324 -0. 0513 -0. 0324 0. 0000	0,000 -155.697 -246.520 -155.697 0,000	

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in La Uni	on Prov	inc	e		
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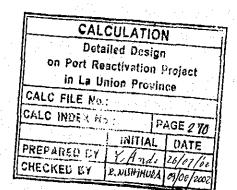
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X Y

	P == WX == WY ==	P۰	29.82(kN/ LX ² • X = LX ² • Y =	m²) −29.82 >	4. 700 ²	x X = x Y =	-658.72 × -658.72 ×
			X	MX	Y ·	MY	
	I	5 4 3 2 1	-0. 0334 0. 0080 0. 0103 0. 0015 -0. 0179	22. 001 -5. 270 -6. 785 -0. 988 11. 791	-0, 0056 0, 0069 0, 0103 0, 0047 -0, 0030	3, 689 -4, 545 -6, 785 -3, 096 1, 976	
	I	5 4 3 2 1	-0. 0223 0. 0052 0. 0058 0. 0006 -0. 0101	14. 690 -3. 425 -3. 821 -0. 395 6. 653	-0, 0037 0, 0040 0, 0048 0, 0018 -0, 0017	2. 437 -2. 635 -3. 162 -1. 186 1. 120	
	Ш	5 4 3 2 1	0.0000 -0.0036 -0.0043 -0.0019 0.0000	0.000 2.371 2.833 1.252 0.000	0. 0000 -0. 0208 -0. 0257 -0. 0116 0. 0000	0.000 13.701 16.929 7.641 0.000	

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(ii) Section force by triangular distribution load



X Y

311

The sum total of (i) and (ii)

		MX	MY
I	5	224, 519	-37.638
	4	40, 862	51.198
	3	92, 207	92.207
	2	45, 144	52.647
	1	234, 729	-39.351
П	5	-141.007	23. 512
	4	24.927	25. 717
	3	51.922	42. 970
	2	27.957	27. 166
	1	-149.044	-24. 829
Ĩ	5	0.000	0.000
	4	-23.578	-141.996
	3	-38.494	-229.591
	2	-24.697	-148.056
	1	0.000	0.000

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in La Uni	on Prov	Inc	e	
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PREPARED DY	Y.And			_
CHECKED BY	E.NISHIM	vRA	09/00/	200

(45)

B Room While affoat slab fixed on four sides P1 = 74.92(kN/m²) P2 = 74.92(kN/m²) LX = 4.600(m) LY = 4.900(m) The ratio of a length of sides $\frac{4.600}{12} = 0.94$ LY= 4 900 5 4 Ś 2 1 74 шпгпш $\lambda = \frac{4.600}{4.900} = 0.94$ The coefficient table of $\lambda = 1.00$ is used.

Section	force	by .	equival	ent	uniform	load
. n						

:.	P = MX = MY =	р.	74.92 (kN/ $LX^2 \cdot X = LX^2 \cdot Y =$	74.92 >			1585.31 × 1585.31 ×
- - - 1			Х	MX	Y	MY]
· · ·	I	5 4 3 2 1	-0.0513 0.0096 0.0206 0.0096 -0.0513	-81. 326 15. 219 32. 657 15. 219 -81. 326	-0.0086 0.0116 0.0206 0.0116 -0.0086	-13.634 18.390 32.657 18.390 -13.634	
	I	5 4 3 2 1	-0. 0324 0. 0059 0. 0116 0. 0059 -0. 0324	-51.364 9.353 18.390 9.353 -51.364	-0.0054 0.0059 0.0096 0.0059 -0.0054	-8, 561 9, 353 15, 219 9, 353 -8, 561	
	Ш	5 4 3 2 1	0.0000 -0.0054 -0.0086 -0.0054 0.0000	0. 000 -8. 561 -13. 634 -8. 561 0. 000	0.0000 -0.0324 -0.0513 -0.0324 0.0000	0.000 -51.364 -81.326 -51.364 0.000	

CALCULATION							
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on Port Rea	clivation	P:	oject				
in La Un	ion Provi	nc	e				
CALC FILE No ::							
CALC INDEX 110		۶Å	GE 272				
			DATE				
PREPARED BY	Y.Ando	1	26/07/02				
CHECKED BY	e. Nisy Brut						

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X Y

313

B Room

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314

After Construction Upward load (above) slab fixed on four sides P1 = 158.55 (kN/m²) P2 = 187.72 (kN/m²) LX = 4.600 (m) LY = 4.900 (m) The ratio of a length of sides $\lambda = \frac{4.600}{4.900} = 0.94$

The coefficient table of $\lambda = 1.00$ is used.

(i)Section force by equivalent uniform load $P = -\frac{187}{72} \frac{72}{(kN/m^2)}$

	P = MX = MY =	P۰	187.72(kN/ LX ² • X = LX ² • Y =	187.72 >	< 4. 600 ² < 4. 600 ²	$\begin{array}{c} \times X = \\ \times Y = \end{array}$	3972.16 × 3972.16 ×
			X	MX	Y	MY]
	Ι	5 4 3 2 1	-0. 0513 0. 0096 0. 0206 0. 0096 -0. 0513	-203. 772 38. 133 81. 826 38. 133 -203. 772	-0.0086 0.0116 0.0206 0.0116 -0.0086	34. 161 46. 077 81. 826 46. 077 34. 161	
	I	5 4 3 2 1	-0. 0324 0. 0059 0. 0116 0. 0059 -0. 0324	-128. 698 23. 436 46. 077 23. 436 -128. 698	-0.0054 0.0059 0.0096 0.0059 -0.0054	21. 450 23. 436 38. 133 23. 436 21. 450	
:	Ш	5 4 3 2 1	0.0000 -0.0054 -0.0086 -0.0054 0.0000	0.000 -21.450 -34.161 -21.450 0.000	0.0000 -0.0324 -0.0513 -0.0324 0.0000	0,000 -128,698 -203,772 -128,698 0,000	

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X Y

P ≈ MX ≃ MY ≂	. р.	-29.17 (kN/LX2 · X =LX2 · Y =	-29.17 >	1. A.	× X = × Y =	-617.24 -617.24
		X	MX	Y	MY	
I	5 4 3 2 1	-0. 0334 0. 0080 0. 0103 0. 0015 -0. 0179	20. 616 -4. 938 -6. 358 -0. 926 11. 049	-0. 0056 0. 0069 0. 0103 0. 0047 -0. 0030	3. 457 -4. 259 -6. 358 -2. 901 1. 852	
П	5 4 3 2 1	-0. 0223 0. 0052 0. 0058 0. 0006 -0. 0101	13. 764 -3. 210 -3. 580 -0. 370 6. 234	-0. 0037 0. 0040 0. 0048 0. 0018 -0. 0017	2. 284 -2. 469 -2. 963 -1. 111 1. 049	
Ш	5 4 3 2 1	0.0000 -0.0036 -0.0043 -0.0019 0.0000	0.000 2.222 2.654 1.173 0.000	0.0000 -0.0208 -0.0257 -0.0116 0.0000	0.000 12.839 15.863 7.160 0.000	

(48)

(ii) Section force by triangular distribution load

CALCULATION						
Detailed Design						
In La U	on Port Reactivation Project in La Union Provinca					
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The sum total of (i) and (ii)

			the second s
		MX	MY
 Ι	5 4 3 2 1	-183. 156 33. 195 75. 468 37. 207 -192. 723	30, 704 41, 818 75, 468 43, 176 32, 309
Π	5 4 3 2 1	-114.934 20.226 42.497 23.066 -122.464	-19. 166 20. 967 35. 170 22. 325 -20. 401
Ш	5 4 3 2 1	0.000 -19.228 -31.507 -20.277 0.000	0,000 -115,859 -187,909 -121,538 0,000

		-				
CALCULATION						
Detai	led Desig	n				
on Port Reactivation Project						
in La Un	ion Prov	inc	e			
CALC FME No						
CALC INDEN HE		P/	GE 275			
	I INITIA	١.	DATE			
PREPARED BY	Y.Ana	10	26/07/02			
CHECKED BY	E.NISHIHU	12A	09/08/200			

C Room While afloat slab fixed on four sides P1 = 74.92(kN/m²) P2 = 74.92(kN/m²) LX = 4.600(m) LY = 4.900(m) The ratio of a length of sides $\frac{4.600}{\lambda} = 0.94$ ficient table of $\lambda =$ 74. 92

EY= 4 900 54321 88 ä шппш

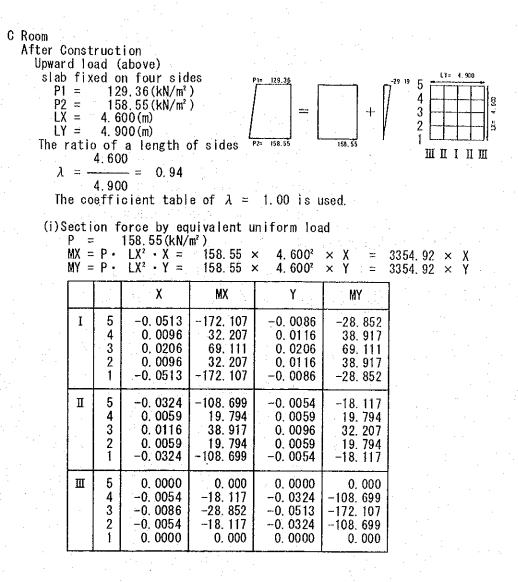
X Y

 $\frac{\lambda}{4.900} = 0.34$ The coefficient table of $\lambda = 1.00$ is used. n sa E •

Section	force by	equival	ent	uniform	load

P ≃ MX ≂ MY =		74.92(kN/ $LX^2 \cdot X = LX^2 \cdot Y =$	74.92 >		$\begin{array}{c} \times X = \\ \times Y = \end{array}$	1585.31 × 1585.31 ×
		Х	MX	Y	MY	
Ι	5 4 3 2 1	-0.0513 0.0096 0.0206 0.0096 -0.0513	-81. 326 15. 219 32. 657 15. 219 -81. 326	-0.0086 0.0116 0.0206 0.0116 -0.0086	-13. 634 18. 390 32. 657 18. 390 -13. 634	
Π	5 4 3 2 1	-0. 0324 0. 0059 0. 0116 0. 0059 -0. 0324	-51. 364 9. 353 18. 390 9. 353 -51. 364	-0. 0054 0. 0059 0. 0096 0. 0059 -0. 0054	-8.561 9.353 15.219 9.353 -8.561	
Π	5 4 3 2 1	0.0000 -0.0054 -0.0086 -0.0054 0.0000	0. 000 -8. 561 -13. 634 -8. 561 0. 000	0.0000 -0.0324 -0.0513 -0.0324 0.0000	0.000 -51.364 -81.326 -51.364 0.000	

CALCULATION Detailed Design				
in La Uni	ion Provin	63		
GALC FILE NO.: CALC INDEX NO.: PAGE 276				
PREPARED BY	Y. Ando	26/07/02		
CHECKED BY	P.NOHINURA	09/08/2002		



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CALCULATION					
Detailed Design					
on Port Reactivation Project					
in La Union Province					
ALC FILE No.:					
CALC INDEX No.: PA			GE 277		
	INITIA	L	DATE		
PREPARED BY	YiAnd	0	26/07/02		
CHECKED BY	E.NUMHU	MA	09/08/2002		

P = MX = MY =	p.	$-29.19 (kN/LX^2 \cdot X = LX^2 \cdot Y =$	-29.19 >		× X = × Y =	-617.66 × -617.66 ×
		Х	MX	Y	MY	
I	5 4 3 2 1	-0. 0334 0. 0080 0. 0103 0. 0015 -0. 0179	20. 630 -4. 941 -6. 362 -0. 926 11. 056	-0.0056 0.0069 0.0103 0.0047 -0.0030	3. 459 -4. 262 -6. 362 -2. 903 1. 853	
I	5 4 3 2 1	-0. 0223 0. 0052 0. 0058 0. 0006 -0. 0101	13. 774 -3. 212 -3. 582 -0. 371 6. 238	-0.0037 0.0040 0.0048 0.0018 -0.0017	2. 285 -2. 471 -2. 965 -1. 112 1. 050	
Ш	5 4 3 2 1	0.0000 0.0036 0.0043 0.0019 0.0000	0.000 2.224 2.656 1.174 0.000	0.0000 -0.0208 -0.0257 -0.0116 0.0000	0.000 12.847 15.874 7.165 0.000	

(ii) Section force by triangular distribution load

CALCULATION						
Detailed Design on Port Reactivation Project in La Union Province CALC FILE No.: CALC INDEX No.: PAGE 278						
					INITIAL	DATE
				PREPARED BY	Y.Ando	26/07/12
				CHECKED BY	E MISH/HURA	09/08/2002

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X Y

(52)

The sum total of (i) and (ii)

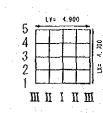
		MX	MY
Ι	5 4 3 2 1	-151.477 27.266 62.749 31.281 -161.051	-25. 393 34. 655 62. 749 36. 014 -26. 999
Π	5 4 3 2 1	-94. 925 16. 582 35. 335 19. 423 -102. 461	-15. 832 17. 323 29. 242 18. 682 -17. 067
1	5 4 3 2 1	0,000 -15,893 -26,196 -16,943 0,000	0,000 -95,852 -156,233 -101,534 0,000

(53)

320

CALCULATION Detailed Design on Port Reactivation Project In La Union Province CALC FILE NEW CALC INDEA PAGE 279 INDIAL DATE PREPARED BY Y.Ando 26/02/02 CHECKED BY E.NIHIMURA 09/08/2002

D Room While afloat slab fixed on four sides P1 = 74.92(kN/m²) P2 = 74.92(kN/m²) LX = 4.700(m) LY = 4.900(m) The ratio of a length of sides $\lambda = \frac{4.700}{4.900} = 0.96$ 4.900



X Y

14.9

The coefficient table of $\lambda = 1.00$ is used.

Section force by equivalent uniform load

P == MX == MY =	P	74.92(kN/ LX ² X = LX ² Y =	m²) 74.92 > 74.92 >	· · · · · · · · · · · · · · · · · · ·	$\begin{array}{c} \times X = \\ \times Y = \end{array}$	1654.98 × 1654.98 ×
		Х	MX	Y	MY	
Ι	5 4 3 2 1	-0.0513 0.0096 0.0206 0.0096 -0.0513	-84.901 15.888 34.093 15.888 -84.901	-0.0086 0.0116 0.0206 0.0116 -0.0086	-14. 233 19. 198 34. 093 19. 198 -14. 233	
 II	5 4 3 2 1	-0. 0324 0. 0059 0. 0116 0. 0059 -0. 0324	-53.621 9.764 19.198 9.764 -53.621	-0.0054 0.0059 0.0096 0.0059 -0.0054	-8. 937 9. 764 15. 888 9. 764 -8. 937	
Ш	5 4 3 2 1	0.0000 -0.0054 -0.0086 -0.0054 0.0000	0. 000 -8. 937 -14. 233 -8. 937 0. 000	0.0000 0.0324 -0.0513 -0.0324 0.0000	0. 000 -53. 621 -84. 901 -53. 621 0. 000	

(54)

CALC	ULATI	ON				
Detai	Detailed Design					
on Port Rea						
in La Un	ion Pro	vince				
CALC FILE NE :						
CALC INDEX 6.		PÃGE 280				
	INITI					
PREPARED BY	Y. And	do 26/07/62				
CHECKED BY		UR1 69/05/2002				
	_	the second s				

D Room After Construction Upward load (above) slab fixed on four sides P1 = 99.54(kN/m²) P2 = 129.36(kN/m²) LX = 4.700(m) LY = 4.900(m) The ratio of a length of sides $P_{Z=129.36}$ $\frac{4}{P_{Z=129.36}} = 1.00$ is used. $\frac{4.700}{120.36}$

(i)Section force by equivalent uniform load $P = 129.36 (k N/m^2)$

		Р•	129.36 (kN/ LX ² • X = LX ² • Y =	129.36 >	< 4. 700 ² < 4. 700 ²	× X = × Y =	2857.56 2857.56	× ×	X Y
			X	MX	Y	MY		۰.	
	I	54321	-0.0513 0.0096 0.0206 0.0096 -0.0513	-146. 593 27. 433 58. 866 27. 433 -146. 593	-0. 0086 0. 0116 0. 0206 0. 0116 -0. 0086	-24. 575 33. 148 58. 866 33. 148 -24. 575			
•	Π	5 4 3 2 1	-0. 0324 0. 0059 0. 0116 0. 0059 -0. 0324	-92. 585 16. 860 33. 148 16. 860 -92. 585	-0. 0054 0. 0059 0. 0096 0. 0059 -0. 0054	-15. 431 16. 860 27. 433 16. 860 -15. 431			
	Ш	5 4 3 2 1	0.0000 -0.0054 -0.0086 -0.0054 0.0000	0.000 -15.431 -24.575 -15.431 0.000	0.0000 -0.0324 -0.0513 -0.0324 0.0000	0,000 -92,585 -146,593 -92,585 0,000			

CALC	ULATIO	DN	
Detai	led Desi	gn	
on Port Rea			rolect
in La Un			
CALC FILE No.:			
CALC INDEX NO	••••	P/	GE281
			DATE
PREPARED 57			26/07/00
CHECKED BY	P. NUHIN	10s	09/06/2002

			and the second	
(ii) Continu	fauna hu	the inner law	distribution.	1
I D SECTION	FORCE DV	trianguiar	distribution	load -
5	00 004	17.15		

P = MX =	р.	29.82(kN/ LX²・X ≈		1 70.02	. v	0F0 70 ··· V
	р. Р.	$LX^2 \cdot Y =$	-29.82 > -29.82 >	< 4. 700 ² < 4. 700 ²	× X = × Y =	-658.72 × X -658.72 × Y
		X	MX	Y	MY	
I	5 4 3 2 1	-0. 0334 0. 0080 0. 0103 0. 0015 -0. 0179	22. 001 -5. 270 -6. 785 -0. 988 11. 791	-0.0056 0.0069 0.0103 0.0047 -0.0030	3. 689 -4. 545 -6. 785 -3. 096 1. 976	
Π	5 4 3 2 1	-0. 0223 0. 0052 0. 0058 0. 0006 -0. 0101	14. 690 -3. 425 -3. 821 -0. 395 6. 653	-0. 0037 0. 0040 0. 0048 0. 0018 -0. 0017	2. 437 -2. 635 -3. 162 -1. 186 1. 120	
Ш	5 4 3 2 1	0.0000 -0.0036 -0.0043 -0.0019 0.0000	0. 000 2. 371 2. 833 1. 252 0. 000	0. 0000 -0. 0208 -0. 0257 -0. 0116 0. 0000	0. 000 13. 701 16. 929 7. 641 0. 000	

(56)

CALC	ULATIC)N		
Detai	led Desig	gn		
on Port Rea	stivation	- I P	roject	۰.
in La Un				
CALC FILE No.:		: ,		_
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PREPARED BY				• • •
CHECKED BY	P.NISHIH	URS	09/08/2	W2

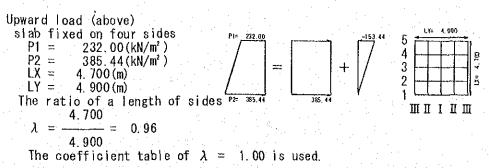
The sum total of (i) and (ii)

·		· · · · · · · · · · · · · · · · · · ·	·····
		MX	MY
I	5	-124.592	-20. 886
	4	22.163	28. 603
	3	52.081	52. 081
	2	26.445	30. 052
	1	-134.802	-22. 599
I	5	-77.895	-12.994
	4	13.435	14.225
	3	29.327	24.271
	2	16.465	15.674
	1	-85.932	-14.311
Ш	5	0,000	0.000
	4	-13,060	-78.884
	3	-21,742	-129.664
	2	-14,179	-84.944
	1	0,000	0.000

(57)

CALCULATION					
Detail	led Desig	IU			
on Port Rea	ctivation	Pr	ojact		
in La Un	ion Prov	inc	e		
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CALC INDEX No	.:	90	IGE 283		
	INITIA		DATE		
PREPARED SY					
CHECKED BY	R. NISHIM	ú2A	09/03/2002		

(b)During an earthquake A Room



(i)Section force by equivalent uniform load

		P۰	385.44(kN/ LX ² · X = LX ² · Y =	385.44 >		× X = × Y =	8514.37 × X 8514.37 × Y
			Х	MX	Y	MY	
•	Ĩ	5 4 3 2 1	-0.0513 0.0096 0.0206 0.0096 -0.0513	-436. 787 81. 738 175. 396 81. 738 -436. 787	-0.0086 0.0116 0.0206 0.0116 -0.0086	-73, 224 98, 767 175, 396 98, 767 -73, 224	
•	Π	5 4 3 2 1	-0. 0324 0. 0059 0. 0116 0. 0059 -0. 0324	-275. 866 50. 235 98. 767 50. 235 -275. 866	-0.0054 0.0059 0.0096 0.0059 -0.0054	-45. 978 50. 235 81. 738 50. 235 -45. 978	
· · · · · · · · · · · · · · · · · · ·	III	5 4 3 2 1	0.0000 -0.0054 -0.0086 -0.0054 0.0000	0. 000 ~45. 978 ~73. 224 ~45. 978 0. 000	0.0000 -0.0324 -0.0513 -0.0324 0.0000	0.000 -275.866 -436.787 -275.866 0.000	

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CALCULATION					
Detail	ed Desig	Ð			
on Port Rea	tivation	Project			
in La Un	ion Frov	ince			
CALC FPE No :					
CALC INCLY 5		PAGE 284			
		LIDATE			
PREPARED BY	Y. And	0 26/07/02			
CHECKED BY	P. NISHIHU	10A 09/08/2002			

(58)

(ii) Section force by triangular distribution load $P = -153.44 (kN/m^2)$

MX = MY =	P۰	$LX^2 \cdot X = LX^2 \cdot Y =$	-153 44 >			3389, 49 3389, 49	× ×	
		Х	MX	Y	MY			
I	5 4 3 2 1	-0. 0334 0. 0080 0. 0103 0. 0015 -0. 0179	113. 209 -27. 116 -34. 912 -5. 084 60. 672	-0.0056 0.0069 0.0103 0.0047 -0.0030	18, 981 23, 387 34, 912 15, 931 10, 168			
Π	5 4 3 2 1	0. 0223 0. 0052 0. 0058 0. 0006 -0. 0101	75. 586 -17. 625 -19. 659 -2. 034 34. 234	0. 0037 0. 0040 0. 0048 0. 0018 -0. 0017	12. 541 13. 558 16. 270 6. 101 5. 762			
Ш	5 4 3 2 1	0.0000 -0.0036 -0.0043 -0.0019 0:0000	0. 000 12. 202 14. 575 6. 440 0. 000	0.0000 -0.0208 -0.0257 -0.0116 0.0000	0.000 70.501 87.110 39.318 0.000		۰.	

(59)

CALCULATION Detailed Design on Port Reactivation Project In La Union Province CALC FILE NOT CALC INDEX No : FAGE 285 DATE WITIA!. PREPARED IIY Y. Ando 16/07/01 CHECKED BY P. NISILMURA 09/02/2002

The sum total of (i) and (ii)

			· · · · · · · ·
		MX	MY
Ι	5	-323.578	-54.243
	4	54.622	75.380
	3	140.484	140.484
	2	76.654	82.836
	1	-376.115	-63.056
Ш	5	-200, 280	-33, 437
	4	32, 610	36, 677
	3	79, 108	65, 468
	2	48, 201	44, 134
	1	-241, 632	-40, 216
Ш	5	0.000	0.000
	4	-33.776	-205.365
	3	-58.649	-349.677
	2	-39.538	-236.548
	1	0.000	0.000

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ed Desig	រក						
on Port Reactivation Project							
in La Union Province							
		a sela					
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iNIT'A	L.	DAT	E				
KA na	10	26/07	/ir				
R. NISHI	HUQI	01/08/	12000				
	ed Desig ctivation ion Prov 	ion Provine PA iNIT:AL KAndo	ed Design ctivation Project ion Province				

327

B Room

Upward load (above) slab fixed on four sides P1 = 81.82(kN/m²) P2 = 232.00(kN/m²) LX = 4.600(m) LY = 4.900(m) The ratio of a length of sides $P^{2-232.00}$ = 1.00 is used. $\lambda = \frac{4.600}{4.900}$ The coefficient table of $\lambda = 1.00$ is used. (i) Section force by equivalent uniform load

	P = MX = MY =	P	232.00(kN/ LX ² • X = LX ² • Y =	232.00 >		$\begin{array}{c} \times X = \\ \times Y = \end{array}$	4909. 12 4909. 12	××	
			X	MX	Y	MY			
	I	5 4 3 2 1	-0.0513 0.0096 0.0206 0.0096 -0.0513	-251. 838 47. 128 101. 128 47. 128 -251. 838	-0.0086 0.0116 0.0206 0.0116 -0.0086	-42. 218 56. 946 101. 128 56. 946 -42. 218			
	I	5 4 3 2 1	-0. 0324 0. 0059 0. 0116 0. 0059 -0. 0324	-159.055 28.964 56.946 28.964 -159.055	-0.0054 0.0059 0.0096 0.0059 -0.0054	-26, 509 28, 964 47, 128 28, 964 -26, 509			·
•	Ш	5 4 3 2 1	0.0000 -0.0054 -0.0086 -0.0054 0.0000	0.000 -26.509 -42.218 -26.509 0.000	0.0000 -0.0324 -0.0513 -0.0324 0.0000	0.000 -159.055 -251.838 -159.055 0.000			

(61)

CALCULATION					
Detail	ed Dasig	jn			
on Port Rea	ctivation	Pr	oject		
in La Un	ion Prov	inc	e		
CALC FILE RO.:			<u>.</u>		
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	INITIA	1	DATE		
PREPARED BY	Y. And	0	26/07/02		
CHECKED BY	E.NBHIHO	RA	09/08/2002		

(ii) Section force by triangular distribution load $P = -150.18 (kN/m^2)$

	P٠	$LX^2 \cdot X = LX^2 \cdot Y =$	-150. 18 >			3177.81 × X 3177.81 × Y
		Х	MX	Y	MY	
Ι	5 4 3 2 1	-0. 0334 0. 0080 0. 0103 0. 0015 -0. 0179	106. 139 -25, 422 -32, 731 -4. 767 56, 883	-0.0056 0.0069 0.0103 0.0047 -0.0030	17.796 -21.927 -32.731 -14.936 9.533	
I	5 4 3 2 1	-0. 0223 0. 0052 0. 0058 0. 0006 -0. 0101	70.865 -16.525 -18.431 -1.907 32.096	-0. 0037 0. 0040 0. 0048 0. 0018 -0. 0017	11.758 -12.711 -15.253 -5.720 5.402	
Ш	5 4 3 2 1	0.0000 -0.0036 -0.0043 -0.0019 0.0000	0,000 11,440 13,665 6,038 0,000	0.0000 -0.0208 -0.0257 -0.0116 0.0000	0.000 66.098 81.670 36.863 0.000	

(62)

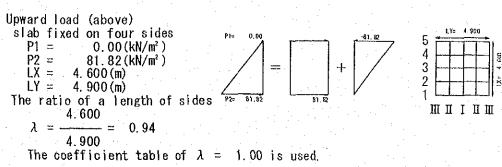
CALC	ULATIC)N	
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on Port Rea	ctivation	Fi	oject
in La Un	ion Prov	inc	8
CALC FILE No.			
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	1111710	11.	DATE
PREPARED ST	I Y.And	0	26/07/00
CHECKED BY	P. NOWIM	0 es	04/05/202

The sum total of (i) and (ii)

		MX	MY
I	5 4 3 2 1	-145.699 21.706 68.397 42.361 -194.955	-24.422 35.019 68.397 42.010 -32.685
Ш	5 4 3 2 1	-88. 190 12. 439 38. 515 27. 057 -126. 959	-14.751 16.253 31.875 23.244 -21.107
Ш	5 4 3 2 1	0.000 -15.069 -28.553 -20.471 0.000	0.000 -92.957 -170.168 -122.192 0.000

			<u> </u>			
CALC	CALCULATION					
Detail	ed Desig	n				
on Port Rea	ctivation	Pr	oject			
in La Un	in La Union Province					
CALC FILE No .:						
CALC INDEX No	a 16	P/	GE289			
	INITIA	L	DATE			
PREPARED BY	Y,And	¢	26/07/02			
CHECKED BY	R. NISHIHU	φA	09/08/2002			

C Room



(i)Section force by equivalent uniform load $P = 81.82(kN/m^2)$

• •	P = MX = MY =		81.82(KN) $LX^2 \cdot X =$ $LX^2 \cdot Y =$	· ~ 4 ~ ~ ~	< 4. 600 ² < 4. 600 ²	$\begin{array}{c} \times X = \\ \times Y = \end{array}$	1731.31 × 1731.31 ×
• •			X	MX	Y	MY	
	I	5 4 3 2 1	-0. 0513 0. 0096 0. 0206 0. 0096 -0. 0513	-88. 816 16. 621 35. 665 16. 621 -88. 816	-0.0086 0.0116 0.0206 0.0116 -0.0086	-14. 889 20. 083 35. 665 20. 083 ~14. 889	
	I	5 4 3 2 1	-0. 0324 0. 0059 0. 0116 0. 0059 -0. 0324	-56. 094 10. 215 20. 083 10. 215 -56. 094	-0.0054 0.0059 0.0096 0.0059 -0.0054	-9. 349 10. 215 16. 621 10. 215 -9. 349	
	Ш	5 4 3 2 1	0.0000 -0.0054 -0.0086 -0.0054 0.0000	0.000 -9.349 -14.889 -9.349 0.000	0.0000 -0.0324 -0.0513 -0.0324 0.0000	0.000 -56.094 -88.816 -56.094 0.000	

CALC	ULATIC)N	
Detail	ed Desig	gn.	
on Port Rea	ctlvation	Pr	ojest
in La Un	ion Prov	inc	e
CALC FILE No .:		· · ·	
CALC INDEX No		PA	GE 290
	INITIA	L	DATE
PREPARED BY	YAMA	6	26/07/02
CHECKED BY			05/26/2000

331

X Y

MX = MY =	P۰	$LX^2 \cdot X = LX^2 \cdot Y =$	-81.82		••	1731.31 1731.31	X Y
		Х	MX	Y	MY		
I	5 4 3 2 1	-0. 0334 0. 0080 0. 0103 0. 0015 -0. 0179	57.826 -13.850 -17.833 -2.597 30.990	-0.0056 0.0069 0.0103 0.0047 -0.0030	9. 695 -11. 946 -17. 833 -8. 137 5. 194		
 II	5 4 3 2 1	-0. 0223 0. 0052 0. 0058 0. 0006 -0. 0101	38. 608 -9. 003 -10. 042 -1. 039 17. 486	-0. 0037 0. 0040 0. 0048 0. 0018 -0. 0017	6. 406 -6. 925 -8. 310 -3. 116 2. 943		
Ш	5 4 3 2 1	0.0000 -0.0036 -0.0043 -0.0019 0.0000	0. 000 6. 233 7. 445 3. 289 0. 000	0.∞0000 -0. 0208 -0. 0257 -0. 0116 0. 0000	0, 000 36, 011 44, 495 20, 083 0, 000		

(65)

(ii) Section force by triangular distribution load $P = -81.82 (kN/m^2)$

CALC	ULATIO	V			
Detailed Design on Port Reactivation Project in La Union Province					
CALC FILE No .:					
CALC INDEX No	: F	AGE 291			
		DATE			
PREPARED BY	Y.Ando	26/07/02			
CHECKED BY		09/08/2002			

The	sum	total	of	(i)	and	(\mathbf{H})	

		MX	MY
Ι	5	-30, 990	-5. 194
	4	2, 771	8. 137
	3	17, 832	17. 832
	2	14, 024	11. 946
	1	-57, 826	-9. 695
П	5	-17. 486	-2.943
	4	1. 212	3.290
	3	10. 041	8.311
	2	9. 176	7.099
	1	-38. 608	-6.406
Ш	5	0.000	0, 000
	4	-3.116	-20, 083
	3	-7.444	-44, 321
	2	-6.060	-36, 011
	1	0.000	0, 000

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333

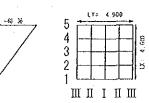
C Room

334

Downward load (below)

 $\begin{array}{r} \text{(herefore)}\\ \text{slab fixed on four sides}\\ \text{P1} = -68.36\,(\text{kN/m}^2)\\ \text{P2} = 0.00\,(\text{kN/m}^2)\\ \text{LX} = 4.600\,(\text{m})\\ \text{LY} = 4.900\,(\text{m})\\ \text{The ratio of a length} \end{array}$ The ratio of a length of sides 4,600 $\lambda = ---- = 0.94$

4.900



X Y

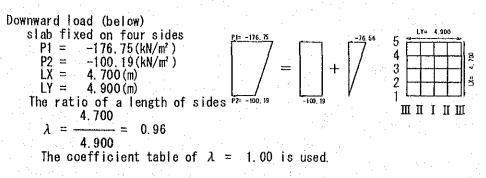
The coefficient table of $\lambda = 1.00$ is used.

Section force by triangular distribution load $P = -68.36 (kN/m^2)$

MX = MY =	P۰	$LX^2 \cdot X = LX^2 \cdot Y =$	-68.36 >		× X = ~ × Y = -	1446.50 × 1446.50 ×
		X	MX	Y	MY	
 I	5 4 3 2 1	-0. 0334 0. 0080 0. 0103 0. 0015 -0. 0179	48. 313 -11. 572 -14. 899 -2. 170 25. 892	-0.0056 0.0069 0.0103 0.0047 -0.0030	8. 100 -9. 981 -14. 899 -6. 799 4. 339	
Π	5 4 3 2 1	-0. 0223 0. 0052 0. 0058 0. 0006 -0. 0101	32. 257 -7. 522 -8. 390 -0. 868 14. 610	-0.0037 0.0040 0.0048 0.0018 -0.0017	5. 352 5. 786 6. 943 2. 604 2. 459	
Ш	5 4 3 2 1	0.0000 -0.0036 -0.0043 -0.0019 0.0000	0. 000 5. 207 6. 220 2. 748 0. 000	0.0000 -0.0208 -0.0257 -0.0116 0.0000	0.000 30.087 37.175 16.779 0.000	

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CHECKED BY	R.NISHIMO	QA.	09/08/2002		

D Room



(i)Section force by equivalent uniform load

		P۰	100.19 (kN/LX2 - X = LX2 - Y =	-100. 19 >	< 4. 700 ² < 4. 700 ²		2213.20 × 2213.20 ×
·			X	MX	Y	MY	
	I	5 4 3 2 1	-0.0513 0.0096 0.0206 0.0096 -0.0513	113. 537 -21. 247 -45. 592 -21. 247 113. 537	0. 0086 0. 0116 0. 0206 0. 0116 0. 0086	19. 033 -25. 673 -45. 592 -25. 673 19. 033	
	Π	5 4 3 2 1	-0. 0324 0. 0059 0. 0116 0. 0059 -0. 0324	71. 708 -13. 058 -25. 673 -13. 058 71. 708	-0.0054 0.0059 0.0096 0.0059 -0.0054	11. 951 -13. 058 -21. 247 -13. 058 11. 951	
	Ш	5 4 3 2 1	0.0000 -0.0054 -0.0086 -0.0054 0.0000	0. 000 11. 951 19. 033 11. 951 0. 000	0.0000 -0.0324 -0.0513 -0.0324 0.0000	0.000 71.708 113.537 71.708 0.000	

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CHECKED BY	P.N.SHRW	A 04/08/2002

X Y

(68)

· I	P = MX = MY =	P۰	$-76.56(kN/LX^2 \cdot X = LX^2 \cdot Y =$	-76.56 >			1691.21 1691.21	x x	X Y
			Х	MX	Y	MY			
	I	5 4 3 2 1	-0. 0334 0. 0080 0. 0103 0. 0015 -0. 0179	56. 486 -13. 530 -17. 419 -2. 537 30. 273	-0, 0056 0, 0069 0, 0103 0, 0047 -0, 0030	9. 471 -11. 669 -17. 419 -7. 949 5. 074			
	Π	5 4 3 2 1	-0, 0223 0, 0052 0, 0058 0, 0006 -0, 0101	37. 714 -8. 794 -9. 809 -1. 015 17. 081	-0. 0037 0. 0040 0. 0048 0. 0018 -0. 0017	6. 257 -6. 765 -8. 118 -3. 044 2. 875			
· · ·	Ш	5 4 3 2 1	0.0000 -0.0036 -0.0043 -0.0019 0.0000	0.000 6.088 7.272 3.213 0.000	0.0000 -0.0208 -0.0257 -0.0116 0.0000	0,000 35,177 43,464 19,618 0,000			

(ii) Section force by triangular distribution load $P = -76.56(kN/m^2)$

CALCULATION Detailed Design on Port Reactivation Project in La Union Province CALC FILE No .: CALC INDEX NO .: PAGE 295 INITIAL DATE Y.Ando 26/07/ PREPARED HY P. NUSHIMURS 09/08/2002

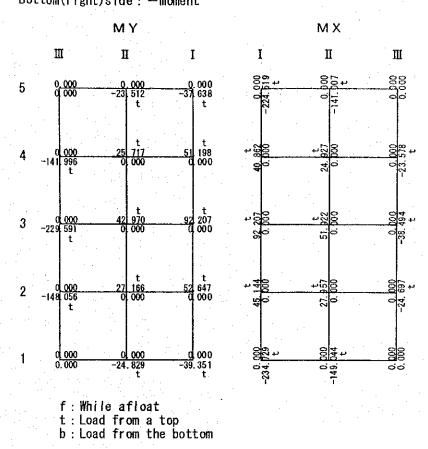
(69)

The sum total of (i) and (ii)

		MX	MY
I	5	170. 023	28.504
	4	-34. 777	-37.342
	3	-63. 011	-63.011
	2	-23. 784	-33.622
	1	143. 810	24.107
Ш	5	109. 422	18, 208
	4	-21. 852	-19, 823
	3	-35. 482	-29, 365
	2	-14. 073	-16, 102
	1	88. 789	14, 826
I	5	0.000	0.000
	4	18.039	106.885
	3	26.305	157.001
	2	15.164	91.326
	1	0.000	0.000

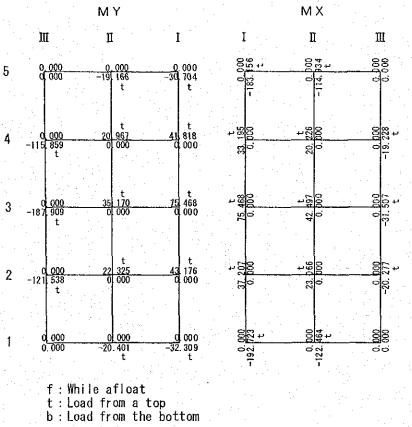
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PREPARED BY	Y. Ana	6	26/07/0	Ż.
CHECKED BY	P.NSHIM			

Under ordinary conditions Bottom slab A Room Colligation of bending moment Top(left)side: + moment Bottom(right)side: - moment



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PREPARED BY	Y. Amu	0	26/07/02		
CHECKED BY	P.NBHA	-			

Under ordinary conditions Bottom slab B Room Colligation of bending moment Top(left)side: +moment Bottom(right)side: -moment

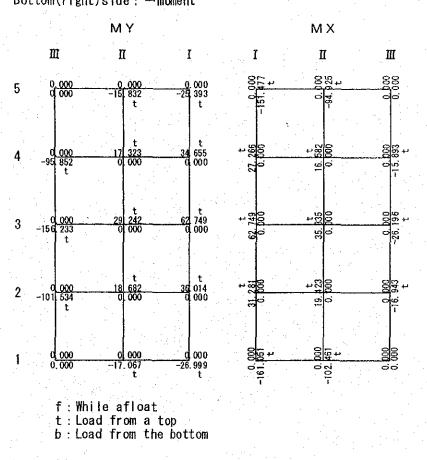


(72)

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CHECKED BY	P. NISYIH	1/A	61/08/2002

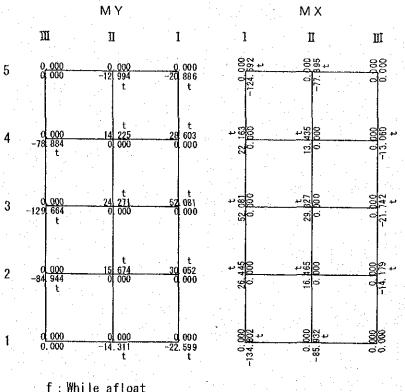
Under ordinary conditions Bottom slab C Room Colligation of bending moment Top(left)side: +moment Bottom(right)side: --moment

(73)



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CHECKED BY	R. NISHIN	M	09/08/2002

Under ordinary conditions Bottom slab D room Colligation of bending moment Top(left)side: + moment Bottom(right)side: - moment



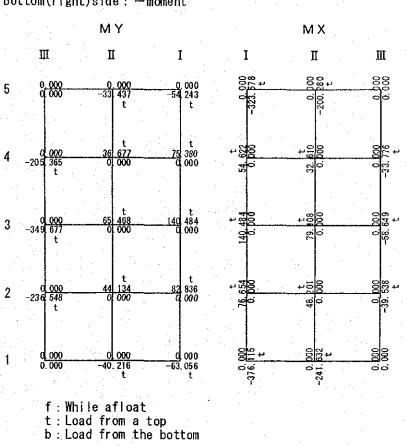
f:While afloat t:Load from a top b:Load from the bottom

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341

(74)

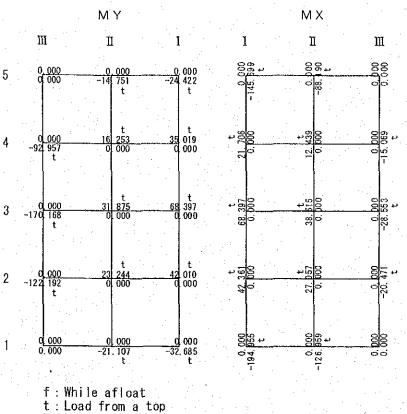
During an earthquake Bottom slab A Room Colligation of bending moment Top(left)side: +moment Bottom(right)side: -moment



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PREPARED BY	Y.Ando		26/07/02
CHECKED BY	e.Nishihi	τQA	09/08/2002

During an earthquake Bottom Top(left)side: +moment Bottom(right)side: -moment Bottom slab B Room

Colligation of bending moment



b : Load from the bottom

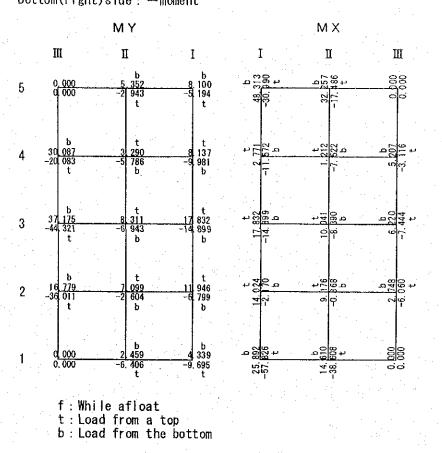
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(76)

During an earthquake Bottom slab C Room Colligation of bending moment Top(left)side: +moment Bottom(right)side: -moment



(77)

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During an earthquake Bottom slab D Room Top(left)side: + moment Bottom(right)side: - moment

5

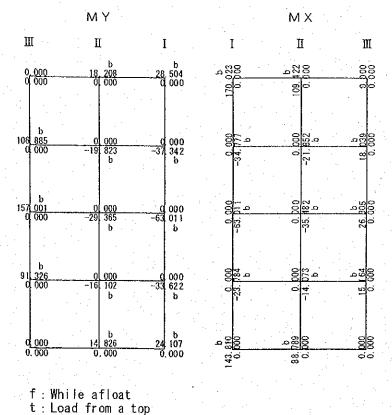
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Colligation of bending moment



b : Load from the bottom

CALCULATION Detailed Design on Port Reactivation Project In La Union Province CALC FILE No.: CALC INDEX Nc.: PAGE.304 INITIAL DATE PREPARED BY Y.Ando 26/67/62 CHECKED BY E. NISULINURA 09/08/2002

Footing

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Footing is examined as cantilever beam supported with the wall of before or back.

Bending moment and Shearing force are calculated by the lower formula.

Bending moment M = 1/6・L²・(2・P₁+P₂) せん断力 V = 1/2・L・(P₁+P₂)

Let the examination position of shearing force be the position which separated h/2 from the footing end

(a) Under ordinary conditions

Moment, Shearing force

Sea side Above $M = 1/6 \times$ $1.00^{2} \times (2 \times$ 0.00 + 0.00) 0.000 (kN·m/m) Ξ $\ddot{V} = 1/2 \times$ $0.65 \times (0.00 + 0.00)$ Ξ 0.000 (kN/m)Below $1.\,00^2$ \times (2 \times 346,58 + 337,73) 0.65 \times (346,58 + 340,83) $M = 1/6 \times$ ≂ 171.815 (kN-m/m) $V = 1/2 \times$ = 223.408 (kN/m) Land side Above M = 1/6 × 0.00) 0.717 (kN·m/m) Ξ $V = 1/2 \times$ ---0.943 (kN/m) Below $M = 1/6 \times$ $1.00^{2} \times (2 \times 10^{2})$ 0.00 ÷ 3.49) = 0.582 (kN·m/m) 0.65 × (0.00 + 2.27) $V = 1/2 \times$ Ξ 0.738 (kN/m)

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(b)During an earthquake

Moment , Shearing force Sea side

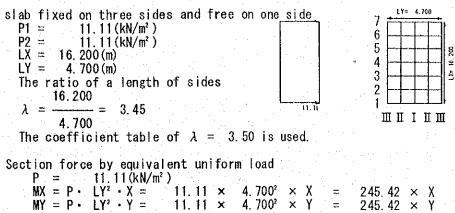
Sea side					,			
Above	er and	and the state		· · ·	1	1997 - 19	Mark Mark	
M = 1/6	X	1.00^2 ×	(2 ×	0.00 +	0.00)	· =	0.000	
V = 1/2	×	0.65 ×	(0.00	+ 0.00)	; =	0,000	(kN/m)
Below					1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	1 - E - E - E		
M = 1/6				14.42 +		=	291.305	(kN m/m)
V = 1/2	x	0.65 ×	(594.42	+ 571.39)	=	378.888	(kN/m)
Land side	2.1					pr 1	e prime de la R	
Above	· .				1.11.11			
M = 1/6	x	1.00 ² ×	(2 × 23	88.63 +	239, 41		119.445	
V = 1/2	X	0.65 ×	(238.63	+ 239, 14) .	=	155. 275	(kN/m)
Below					A A A A A A A A A A A A A A A A A A A		and the second second	n an an Arraigh Agus an Arraigh
∴ M = 1/6	x	1.00^{2} ×	(2 × 1	0.00 +	0,00	∣ं≂	0, 000	(kN·m/m)
$\tilde{V} = 1/2$	×			+ 0.00			0.000	(kN/m)
		1	1			1 () () () () () () () () () (1	

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Partition Wall

(1) Equivalent uniform load by the difference of the water level in during installation
 (a) Partition wall (perpendicular to levee normal)



		$LY^2 \cdot Y =$		< 4. 700 ²	$\hat{\mathbf{x}}$ $\hat{\mathbf{Y}}$ =
		X	MX	Y	MY
Ι	7 6 5 4 3 2	0.0000 0.0067 0.0068 0.0069 0.0079 0.0132	0, 000 1, 644 1, 669 1, 693 1, 939 3, 240	0. 0432 0. 0415 0. 0416 0. 0417 0. 0417 0. 0343	10. 602 10. 185 10. 209 10. 234 10. 234 8. 418
I	1 7 6 5 4 3 2	-0. 0564 0. 0000 0. 0015 0. 0015 0. 0016 0. 0022 0. 0058	-13. 842 0. 000 0. 368 0. 368 0. 393 0. 540 1. 423	-0. 0094 0. 0105 0. 0104 0. 0104 0. 0104 0. 0104 0. 0107 0. 0105	-2, 307 2, 577 2, 552 2, 552 2, 552 2, 626 2, 577
	1	-0. 0335	-8. 222	-0. 0056	-1. 374
	7 6 5 4 3 2 1	0. 0000 -0. 0142 -0. 0141 -0. 0141 -0. 0143 -0. 0125 0. 0000	0.000 -3.485 -3.460 -3.460 -3.510 -3.068 0.000	-0. 0877 -0. 0851 -0. 0847 -0. 0846 -0. 0855 -0. 0750 0. 0000	-21.523 -20.885 -20.787 -20.763 -20.983 -18.407 0.000

(81)

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(b) Partition wall (parallel to centerline)

slab fixed on three sides and free on one side	7 LY= 4.900
$P1 = 11.11(kN/m^2)$	
$P2 = 11.11(kN/m^2)$	
LX = 16.200 (m)	
LY = 4.900 (m)	
The ratio of a length of sides	
16.200	
$\lambda = = 3.31$	
4.900	шпппш
The coefficient table of $\lambda = 3.25$ is used	

The coefficient table of $\lambda = 3.25$ is used

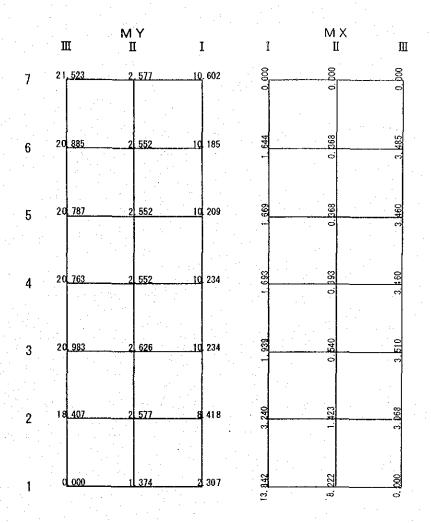
Section force by equivalent uniform load $P = 11.11 (kN/m^2)$

1		þ. p.	$\begin{array}{rcl} 11. & 11 & (KN/LY^2 \cdot X) = \\ LY^2 \cdot Y & = \end{array}$	11, 11 >	× 4. 900 ² × 4. 900 ²	× X = × Y =	266.75 × 266.75 ×
			Х	MX gen	Y	MY	
	Ι	7 6 5 4 3 2 1	0.0000 0.0067 0.0068 0.0070 0.0083 0.0136 -0.0565	0. 000 1. 787 1. 814 1. 867 2. 214 3. 628 -15. 071	0. 0432 0. 0414 0. 0416 0. 0418 0. 0415 0. 0326 -0. 0094	11. 524 11. 043 11. 097 11. 150 11. 070 8. 696 -2. 507	
	Π	7 6 5 4 3 2 1	0.0000 0.0015 0.0015 0.0017 0.0025 0.0062 -0.0338	0. 000 0. 400 0. 400 0. 453 0. 667 1. 654 -9. 016	0. 0105 0. 0104 0. 0104 0. 0105 0. 0107 0. 0107 0. 0103 -0. 0056	2. 801 2. 774 2. 774 2. 801 2. 854 2. 748 -1. 494	
	Ш	7 6 5 4 3 2 1	0.0000 -0.0141 -0.0141 -0.0141 -0.0141 -0.0142 -0.0120 0.0000	0.000 -3.761 -3.761 -3.761 -3.788 -3.201 0.000	-0. 0872 -0. 0847 -0. 0845 -0. 0846 -0. 0851 -0. 0720 0. 0000	-23. 261 -22. 594 -22. 540 -22. 567 -22. 701 -19. 206 0. 000	

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X Y

349

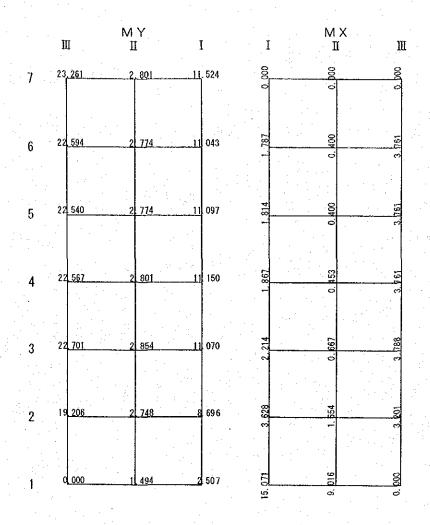


Partition wall (perpendicular to levee normal) Colligation of bending moment

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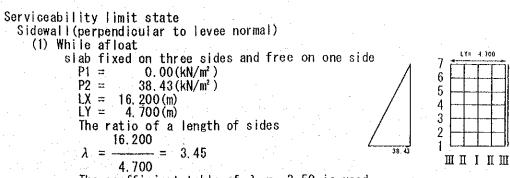
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(83)



Partition wall (parallel to centerline) Colligation of bending moment

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Detailed Design on Port Reactivation Project in La Union Province						
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PREPARED BY	Y. Ando E. Mishinuan	26/07/02				



The coefficient table of $\lambda = 3.50$ is used.

Section force by triangular distribution load

P . =		38.43(kN/	m²)			
MX = MY =		$\begin{array}{c} LY^2 \cdot X = \\ LY^2 \cdot Y = \end{array}$		< 4. 700 ² < 4. 700 ²	\times X = \times Y =	848.92 848.92
		X	MX	Y	: MY	
 I	7 6 5 4 3 2 1	0.0000 0.0009 0.0022 0.0035 0.0055 0.0119 -0.0500	0.000 0.764 1.868 2.971 4.669 10.102 -42.446	0. 0027 0. 0071 0. 0139 0. 0209 0. 0279 0. 0278 -0. 0083	2. 292 6. 027 11. 800 17. 742 23. 685 23. 600 -7. 046	
Π	7 6 5 4 3 2 1	0. 0000 0. 0003 0. 0005 0. 0008 0. 0015 0. 0054 -0. 0303	0. 000 0. 255 0. 424 0. 679 1. 273 4. 584 -25. 722	0. 0003 0. 0017 0. 0034 0. 0052 0. 0072 0. 0088 -0. 0050	0. 255 1. 443 2. 886 4. 414 6. 112 7. 470 -4. 245	
Ш	7 6 5 4 3 2 1	0. 0000 -0. 0019 -0. 0045 -0. 0072 -0. 0098 -0. 0104 0. 0000	0.000 -1.613 -3.820 -6.112 -8.319 -8.829 0.000	-0. 0002 -0. 0112 -0. 0269 -0. 0429 -0. 0588 -0. 0622 0. 0000	-0. 170 -9. 508 -22. 836 -36. 419 -49. 916 -52. 803 0. 000	

(85)

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LY= 1.700

28

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X Y × ×

1					· ·		
P1 P2 LX LY The λ Th	fix = = = = 1 = -	ed o -3 -5 16.2 4.7 io of 6.20 4.70 effi	n three si 8.21(kN/m ² 0.84(kN/m ² 00(m) 00(m) a length of 0 -= 3.45 0 cient tabl	sides e of λ =	$= -\frac{38}{21} = \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	+ +	
	P ≕	· · ·	~38. 21 (kN/i	uivalent u m²)	nitorm loa	d	
	MX == MY =	P۰	LY² • X ≈	-38. 21 > -38. 21 >		× X = × Y =	-844.06 × X -844.06 × Y
			X	MX	Y	MY	
	I	7 6 5 4 3 2 1	0. 0000 0. 0067 0. 0068 0. 0069 0. 0079 0. 0132 -0. 0564	0.000 -5.655 -5.740 -5.824 -6.668 -11.142 47.605	0. 0432 0. 0415 0. 0416 0. 0417 0. 0417 0. 0343 -0. 0094	-36. 463 -35. 028 -35. 113 -35. 197 -35. 197 -28. 951 7. 934	
	II	7 6 5 4 3 2 1	0.0000 0.0015 0.0015 0.0016 0.0022 0.0058 -0.0335	0.000 -1.266 -1.266 -1.350 -1.857 -4.896 28.276	0. 0105 0. 0104 0. 0104 0. 0104 0. 0104 0. 0107 0. 0105 -0. 0056	-8. 863 -8. 778 -8. 778 -8. 778 -9. 031 -8. 863 4. 727	
	II	7 6 5 4 3 2 1	0.0000 -0.0142 -0.0141 -0.0141 -0.0143 -0.0125 0.0000	0.000 11.986 11.901 11.901 12.070 10.551 0.000	-0. 0877 -0. 0851 -0. 0847 -0. 0846 -0. 0855 -0. 0750 0. 0000	74. 024 71. 829 71. 492 71. 407 72. 167 63. 304 0. 000	

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CALC INDEX M		PAGE 3/2			
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PREPARED BY	Y. And	26/07/02			
CHECKED BY		22 09/08/200			

(ii) Section	force	by triang	ılar	distribution	load

$P = -12.63 (kN/m^2)$									
	MX = MY =		$\begin{array}{c} LY^2 \cdot X = \\ LY^2 \cdot Y = \end{array}$		< 4. 700 ² < 4. 700 ²	$\begin{array}{c} \times X = \\ \times Y = \end{array}$	-279.00 × -279.00 ×	X Y	
			X	MX	Y	MY]		
	I	7 6 5 4 3 2 1	0.0000 0.0022 0.0035 0.0055 0.0119 -0.0500	0.000 -0.251 -0.614 -0.976 -1.534 -3.320 13.950	0.0027 0.0071 0.0139 0.0209 0.0279 0.0278 -0.0083	-0. 753 -1. 981 -3. 878 -5. 831 -7. 784 -7. 756 2. 316			
	Π	7 6 5 4 3 2 1	0.0000 0.0003 0.0005 0.0008 0.0015 0.0054 -0.0303	0. 000 -0. 084 -0. 139 -0. 223 -0. 418 -1. 507 8. 454	0. 0003 0. 0017 0. 0034 0. 0052 0. 0072 0. 0088 -0. 0050	-0. 084 -0. 474 -0. 949 -1. 451 -2. 009 -2. 455 1. 395			
	1	7 6 5 4 3 2 1	0.0000 -0.0019 -0.0045 -0.0072 -0.0098 -0.0104 '0.0000	0.000 0.530 1.255 2.009 2.734 2.902 0.000	-0. 0002 -0. 0112 -0. 0269 -0. 0429 -0. 0588 -0. 0622 0. 0000	0.056 3.125 7.505 11.969 16.405 17.354 0.000			
•			$(M_{1,1},M_{2,2},M_{2,2})$	4 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -					

(87)

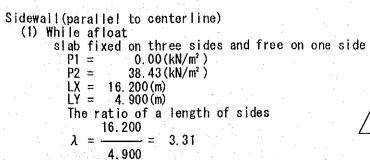
CALCULATION **Detailed Design** on Port Reactivation Project In La Union Province CALC FILE No .: CALC INDEX No .: PAGE 313 INITIAL Y, Ando DATE PREPARED BY 26/07/0 CHECKED BY E. NISHIHORA 09/02 hic

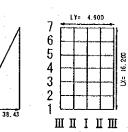
The sum total of (i) and (ii)

		MX	MY
I	7 6 5 4 3 2 1	0.000 -5.906 -6.354 -6.800 -8.202 -14.462 61.555	-37. 216 -37. 009 -38. 991 -41. 028 -42. 981 -36. 707 10. 250
Π	7 6 5 4 3 2 1	0,000 -1,350 -1,405 -1,573 -2,275 -6,403 36,730	-8. 947 -9. 252 -9. 727 -10. 229 -11. 040 -11. 318 6. 122
Ш	7 6 5 4 3 2 1	0.000 12.516 13.156 13.910 14.804 13.453 0.000	74. 080 74. 954 78. 997 83. 376 88. 572 80. 658 0. 000

(88)

CALC	ULATIO	N					
Detail on Port Rea	ied Desig ctivation						
in La Union Province							
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CHECKED BY		20 09/08/200.					





The coefficient table of $\lambda = 3.25$ is used.

Section force by triangular distribution load $P = -\frac{28}{43} \frac{43(\mu N/m^2)}{(\mu N/m^2)}$

	P ≕	· ·	- 38, 4 <u>3 (kN/</u>	m")			
•		Р • Р •	$\begin{array}{c} LY^2 \cdot X = \\ LY^2 \cdot Y = \end{array}$	38, 43 > 38, 43 >			922.70 × X 922.70 × Y
			X	MX	e ^{n en} Y es	MY	
	I	7 6 5 4 3 2 1	0,0000 0,0008 0,0022 0,0035 0,0059 0,0123 -0,0496	0. 000 0. 738 2. 030 3. 229 5. 444 11. 349 -45. 766	0.0029 0.0071 0.0139 0.0209 0.0277 0.0263 -0.0083	2. 676 6. 551 12. 826 19. 285 25. 559 24. 267 -7. 658	
• •	Π	7 6 5 4 3 2 1	0.0000 0.0002 0.0005 0.0008 0.0018 0.0018 0.0058 -0.0302	0. 000 0. 185 0. 461 0. 738 1. 661 5. 352 -27. 866	0. 0003 0. 0017 0. 0034 0. 0052 0. 0072 0. 0086 -0. 0050	0. 277 1. 569 3. 137 4. 798 6. 643 7. 935 -4. 614	
	Ш	7 6 5 4 3 2 1	0.0000 -0.0019 -0.0045 -0.0071 -0.0097 -0.0099 0.0000	0.000 -1.753 -4.152 -6.551 -8.950 -9.135 0.000	-0. 0008 -0. 0116 -0. 0271 -0. 0428 -0. 0583 -0. 0594 0. 0000	-0. 738 -10. 703 -25. 005 -39. 492 -53. 794 -54. 809 0. 000	

(89)

CALC	ULATIC	DN	TARK I SPILLE
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on Port Rea	ctivation	Pr	oject
in La Un	ion Prov	inc	•
GALC FILE No.:			1 - 1 - 1
CALC INDEX No).:	PA	GE 315
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and the second	•	1. Sec. 1. Sec		· · · ·
(2) After Construction				
A Sidewall (parallel to	center line: se	aside)		
slab fixed on three	sides and fre	e on one si	de	LY= 4.900
P1 = (-37.75) (kN/	′m²) <u>eu</u> =	<u>-3)</u> 75		
P2 = -49.64 (kN/	′m²)			
LX = 16,200 (m)				
LY = 24.900 (m)			₊₊ }	
The ratio of a length	of sides			3
16.200				
$\lambda = = 3.3$	31 <u> </u> P2=			
4.900	ræ			шигиш
		0 0r 1		

The coefficient table of λ = 3.25 is used.

(i)Section force by equivalent uniform load $P = -37.75 (k N/m^2)$

	P =		-37.75(kN/				
	MX = MY =		$\begin{array}{c} LY^2 \bullet X = \\ LY^2 \bullet Y = \end{array}$	-37.75 × -37.75 ×		$\times X = $ $\times Y = $	~906. 38 × X -906. 38 × Y
			X	MX	Y	MY	"
	Ι	7 6 5 4 3 2 1	0.0000 0.0067 0.0068 0.0070 0.0083 0.0136 -0.0565	0.000 -6.073 -6.163 -6.345 -7.523 -12.327 51.210	0. 0432 0. 0414 0. 0416 0. 0418 0. 0415 0. 0326 -0. 0094	-39. 156 -37. 524 -37. 705 -37. 887 -37. 615 -29. 548 8. 520	
•••	П	7 65 4 3 2 1	0. 0000 0. 0015 0. 0015 0. 0017 0. 0025 0. 0062 -0. 0338	0.000 -1.360 -1.360 -1.541 -2.266 -5.620 30.636	0. 0105 0. 0104 0. 0104 0. 0105 0. 0105 0. 0107 0. 0103 -0. 0056	-9. 517 -9. 426 -9. 426 -9. 517 -9. 698 -9. 336 5. 076	
	Ш	7 6 5 4 3 2 1	0. 0000 -0. 0141 -0. 0141 -0. 0141 -0. 0141 -0. 0142 -0. 0120 0. 0000	0.000 12.780 12.780 12.780 12.780 12.871 10.877 0.000	-0. 0872 -0. 0847 -0. 0845 -0. 0845 -0. 0851 -0. 0720 0. 0000	79.036 76.770 76.589 76.680 77.133 65.259 0.000	

CALCULATION Detailed Design on Port Reactivation Project in La Union Province				
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(90)

r –		-11.09(KM/	0.1	1. 11 A.				
		$\begin{array}{c} LY^2 \cdot X = \\ LY^2 \cdot Y = \end{array}$	-11.89 > -11.89 >		× X = × Y =	-285.48 -285.48	× ×	X Y
		X	MX	Y	MY]		
 I	7 6 5 4 3 2 1	0.0000 0.0008 0.0022 0.0035 0.0059 0.0123 -0.0496	0.000 -0.228 -0.628 -0.999 -1.684 -3.511 14.160	0. 0029 0. 0071 0. 0139 0. 0209 0. 0277 0. 0263 -0. 0083	-0. 828 -2. 027 -3. 968 -5. 967 -7. 908 -7. 508 2. 369			
	7 6 5 4 3 2 1	0.0000 0.0002 0.0005 0.0008 0.0018 0.0058 -0.0302	0,000 -0.057 -0.143 -0.228 -0.514 -1.656 8.621	0. 0003 0. 0017 0. 0034 0. 0052 0. 0072 0. 0086 -0. 0050	-0. 086 -0. 485 -0. 971 -1. 484 -2. 055 -2. 455 1. 427			
 M	7 6 5 4 3 2 1	0.0000 -0.0019 -0.0045 -0.0071 -0.0097 -0.0099 0.0000	0.000 0.542 1.285 2.027 2.769 2.826 0.000	-0. 0008 -0. 0116 -0. 0271 -0. 0428 -0. 0583 -0. 0594 0. 0000	0. 228 3. 312 7. 736 12. 219 16. 643 16. 957 0. 000			

(ii) Section force by triangular distribution load $P = -11.89(kN/m^2)$

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in La Uni						
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		MX	MY
I	7	0.000	-39.984
	6	-6.301	-39.551
	5	-6.791	-41.673
	4	-7.344	-43.854
	3	-9.207	-45.523
	2	-15.838	-37.056
	1	65.370	10.889
	7	0.000	-9.603
	6	-1.417	-9.911
	5	-1.503	-10.397
	4	-1.769	-11.001
	3	-2.780	-11.753
	2	-7.276	-11.791
	1	39.257	6.503
Ш	7	0.000	79.264
	6	13.322	80.082
	5	14.065	84.325
	4	14.807	88.899
	3	15.640	93.776
	2	13.703	82.216
	1	0.000	0.000

The sum total of (i) and (ii)

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e. NISHIMUPA	09/08/2001
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B. Sidewall (parallel to center line: landside) slab fixed on three sides and free on one side P1 = $-37.75(kN/m^2)$ P2 = $-49.64(kN/m^2)$ LX = 16.200(m) LY = 4.900(m) The ratio of a length of sides LY= 4.900 7 6 5 4 3 2 16, 200 ╋ 붯 The ratio of a length of sides 16.200 1 λ 3.31 = -- = шигиш -19 64 -37, 75 11.89 4.900

The coefficient table of λ = 3.25 is used.

(i)Section force by equivalent uniform load

P == MX == MY =	· P = .	-37.75(kN/ LY ² · X = LY ² · Y =	-37. 75 >	 4. 900² 4. 900² 	× X = × Y =	-906. 38 × -906. 38 ×
		X	MX	Y	MY	
I	7 6 5 4 3 2 1	0. 0000 0. 0067 0. 0068 0. 0070 0. 0083 0. 0136 -0. 0565	0.000 -6.073 -6.163 -6.345 -7.523 -12.327 51.210	0. 0432 0. 0414 0. 0416 0. 0418 0. 0415 0. 0326 -0. 0094	-39. 156 -37. 524 -37. 705 -37. 887 -37. 615 -29. 548 8. 520	
I	7 6 5 4 3 2 1	0. 0000 0. 0015 0. 0015 0. 0017 0. 0025 0. 0062 -0. 0338	0. 000 -1. 360 -1. 360 -1. 541 -2. 266 -5. 620 30. 636	0. 0105 0. 0104 0. 0104 0. 0105 0. 0105 0. 0107 0. 0103 -0. 0056	-9. 517 -9. 426 -9. 426 -9. 517 -9. 698 -9. 336 5. 076	
Ш	7 6 5 4 3 2 1	0. 0000 -0. 0141 -0. 0141 -0. 0141 -0. 0141 -0. 0142 -0. 0120 0. 0000	0. 000 12. 780 12. 780 12. 780 12. 780 12. 871 10. 877 0. 000	-0. 0872 -0. 0847 -0. 0845 -0. 0846 -0. 0851 -0. 0720 0. 0000	79.036 76.770 76.589 76.680 77.133 65.259 0.000	

(93)

CALCULATION **Detailed Design** on Port Reactivation Project in La Union Province CALC FILE No .: PAGE 319 CALC INDEX NO .: INITIAL DATE 26/67 Y Ando 10<u>2</u> PREPARED 'Y 09/08/200 e. Nishihura CHECKED BY

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(ii) Section force by triangular distribution load

P =		-11.89(kN/	m²)	. · · ·		
		$LY^2 \cdot X =$	= -	< 4. 900 ²	× X =	-285.48 ×
MY =	P	$LY^2 \cdot Y =$	-11.89	< 4. 900 ²	× Y =	-285.48 ×
		X	MX	Y ,	MY]
 I	7 6 5 4 3 2 1	0.0000 0.0008 0.0022 0.0035 0.0059 0.0123 -0.0496	0. 000 -0. 228 -0. 628 -0. 999 -1. 684 -3. 511 14. 160	0.0029 0.0071 0.0139 0.0209 0.0277 0.0263 -0.0083	-0. 828 -2. 027 -3. 968 -5. 967 -7. 908 -7. 508 2. 369	
П	7 6 5 4 3 2 1	0. 0000 0. 0002 0. 0005 0. 0008 0. 0018 0. 0058 -0. 0302	0. 000 -0. 057 -0. 143 -0. 228 -0. 514 -1. 656 8. 621	0.0003 0.0017 0.0034 0.0052 0.0072 0.0086 -0.0050	-0. 086 -0. 485 -0. 971 -1. 484 -2. 055 -2. 455 1. 427	
Ш	7 6 5 4 3 2 1	0.0000 -0.0019 -0.0045 -0.0071 -0.0097 -0.0099 0.0000	0. 000 0. 542 1. 285 2. 027 2. 769 2. 826 0. 000	-0. 0008 -0. 0116 -0. 0271 -0. 0428 -0. 0583 -0. 0594 0. 0000	0. 228 3. 312 7. 736 12. 219 16. 643 16. 957 0. 000	

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en Port Reactle	vation	Pr	oject
in La Union	Provi	nce	
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(94)

The sum total of (i) and (ii)

		MX	MY
I	7 6 5 4 3 2 1	0.000 -6.301 -6.791 -7.344 -9.207 -15.838 65.370	-39.984 -39.551 -41.673 -43.854 -45.523 -37.056 10.889
Π	7 6 5 4 3 2 1	0.000 -1.417 -1.503 -1.769 -2.780 -7.276 39.257	-9, 603 -9, 911 -10, 397 -11, 001 -11, 753 -11, 791 6, 503
Ш	7 6 5 4 3 2	0.000 13.322 14.065 14.807 15.640 13.703 0.000	79. 264 80. 082 84. 325 88. 899 93. 776 82. 216 0. 000

CALCULATION Detailed Design on Port Reactivation Project In La Union Provinca CALC FILE No.: CALC INDEX No.: PAGE 321 INITIAL DATE PREPARED BY Y.Ando 26/02/62 CHECKED BY R.NEWIMUNA 09/06/2002

(95)

Correction of the non-balance bending moment in a side wall corner

Non-balance arises in bending moment of a transverse direction on the intersection of side wall(perpendicular to levee normal) and side wall(parallel to centerline) Since it is calculated as slab fixed on three sides and free on one side, moment is distributed and corrected by the rigid ratio of slab. Correction is made about corner (IIIAxis) and the central part of span(IAxis)

Rigid ratio E1 - 11 K2 = ---K1 = -L1 L2 E1 = E2|1| = |1||2|The relative share of moment K1 L2 4.900 e1 = --- = 0.510 L1 + L2 L1 K1 + K24.900 + 4.700 K2 4.700 e2 = 0.490 K1 + K2 L1 + L24.900 +4.700 Correction of moment in corner (IIIAxis) When referred to as (M1 > M2) $\Delta M = M1 - M2$ Correction moment Correction of the moment in the central part (IAxis) of span Let 50% of the quantity of corrections in III Axis be the quantity of corrections

Let 50% of the quantity of corrections in III Axis be the quantity of corrections However, when a correction value is smaller than the original moment, a safe value is taken, and the value before correction is used. $M_{1B} = M_{1B} - 1/2 \cdot \Delta M \cdot e1 = M_{1B} - 0.255 \cdot \Delta M$ $M_{2B} = M_{2B} + 1/2 \cdot \Delta M \cdot e2 = M_{2B} + 0.245 \cdot \Delta M$

The table of a correction moment

· · · ·				100 - 100 D. N.		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -		
Sidewall(perpendicular to levee normal) e1				Sidewall	(parall e2	el to ce	nter	line)
I	ш				Ξ	tin tu		I
M _{1 e} > 1/2·∆M·e1 M _{1 B} '	M1 >∆ M1	.M-e1 (ΔM)∆M·e2	M2 < M2	1/2・∆М	•e2	< М _{2 в} М _{2 в}

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en Port Rea	ctivation	P	oject	- 1 3
in La Un	ion Prov	inc	e	
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	INITIA	L	DAT	
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			1 2	

Side	Sidewall(perpendicular to levee normal:seaside) e1 = 0,510					nt wall(pa	rallel to c e2 = 0	
	I	· .	ш				Ш	I
7 7 7'	2. 292 > 2. 147	0.145	-0.170 > -0.460	0.290 (0). 568)	0.278	<-0.738 -0.460	$0.139 < \frac{2.676}{2.815}$
6 6'		0.305	-9.508	0.609 (1	. 195)	0.586	-10.703 < -10.117	6.551 0.293 <
5 5'	11. 800 > 11. 247	0.553	-22.836 > -23.942	1. 106 (2	. 169)			$0.531 < \begin{array}{c} 12.826 \\ 13.357 \end{array}$
4 4'	17.742 > 16.958		-36.419 > -37.986	1.567 (3	. 073)	1.506	<	$0.753 < \frac{19.285}{20.038}$
3 3	23.685 > 22.696	0.989	-49,916 > -51,894	1.978 (3			< .	25,559 0.950 < 26,509
2	23. 600 > 23. 088	0.512	-52.803 > -53.826	1.023 (2	. 006)	0.983		0. 491 <24. 267 24. 758
1	-7. 046 > -7. 046	0.000	0.000 > 0.000	0.000 (0	. 000)	0.000	< 0.000 0.000	0. 000 < -7. 658 -7. 658

(a) Sidewall(perpendicular to levee normal:seaside) and Front wall(parallel to centerline:seaside)
 (1) While afloat

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Detail	ed Desig	in	
on Port Rea	ctivation	Pr	oject
in La Un			
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	INITIA	L	DATE
PREPARED BY	YiAnd	0	26/07/02
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The moment after correction

all (nour					
	el = 0,510	ormal:seaside)	Front wall (p	arallel to cente e2 = 0.49	erline:seaside) O
I	<u> </u>			Щ	1
2. 292	-0.460			-0.460	2. 815
6. 027	-10.117			-10.117	6. 844
11.800	-23.942			-23.942	13, 357
17. 742	-37.986			-37.986	20. 038
23. 685	-51.894			-51, 894	26. 509
23. 600	-53.826			-53.826	24. 758
7.046	0.000			0.000	-7. 658
	I 2. 292 6. 027 11. 800 17. 742 23. 685 23. 600	$\begin{array}{c} 1 & 1 \\ \hline 1 & 1 \\ \hline 2.292 & -0.460 \\ \hline 6.027 & -10.117 \\ \hline 11.800 & -23.942 \\ \hline 17.742 & -37.986 \\ \hline 23.685 & -51.894 \\ \hline 23.600 & -53.826 \\ \hline \end{array}$	I III 2. 292 -0. 460 6. 027 -10. 117 11. 800 -23. 942 17. 742 -37. 986 23. 685 -51. 894 23. 600 -53. 826	I III 2. 292 -0.460 6. 027 -10.117 11. 800 -23.942 17. 742 -37.986 23. 685 -51.894 23. 600 -53.826	I II II 2. 292 -0.460 -0.460 6. 027 -10.117 -10.117 11. 800 -23.942 -23.942 17. 742 -37.986 -37.986 23. 685 -51.894 -51.894 13. 600 -53.826 -53.826

Detail on Port Rez In La Un		n Pi	
CALC FILE No .:			
CALC INDEX NO		P/	GE 324
	INITI	AL.	DATE
PREPARED BY	Y. And	10	26/07/02
CHECKED BY	R. HOUD	HU?A	09/08/2002

The moment after correction

all (nour					
	el = 0,510	ormal:seaside)	Front wall (p	arallel to cente e2 = 0.49	erline:seaside) O
I	<u> </u>			Щ	1
2. 292	-0.460			-0.460	2. 815
6. 027	-10.117			-10.117	6. 844
11.800	-23.942			-23.942	13, 357
17. 742	-37.986			-37.986	20. 038
23. 685	-51.894			-51, 894	26. 509
23. 600	-53.826			-53.826	24. 758
7.046	0.000			0.000	-7. 658
	I 2. 292 6. 027 11. 800 17. 742 23. 685 23. 600	$\begin{array}{c} 1 & 1 \\ \hline 1 & 1 \\ \hline 2.292 & -0.460 \\ \hline 6.027 & -10.117 \\ \hline 11.800 & -23.942 \\ \hline 17.742 & -37.986 \\ \hline 23.685 & -51.894 \\ \hline 23.600 & -53.826 \\ \hline \end{array}$	I III 2. 292 -0. 460 6. 027 -10. 117 11. 800 -23. 942 17. 742 -37. 986 23. 685 -51. 894 23. 600 -53. 826	I III 2. 292 -0.460 6. 027 -10.117 11. 800 -23.942 17. 742 -37.986 23. 685 -51.894 23. 600 -53.826	I II II 2. 292 -0.460 -0.460 6. 027 -10.117 -10.117 11. 800 -23.942 -23.942 17. 742 -37.986 -37.986 23. 685 -51.894 -51.894 13. 600 -53.826 -53.826

Detail on Port Rez In La Un		n Pi	
CALC FILE No .:			
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CHECKED BY	R. HOUD	HU?A	09/08/2002

(2) After Construction

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Sid	ewall(perpe	ndicular e1 =	to levee n 0.510	ormal:seaside)	Front wal	l(parallel to e2 = (centerline:seasid).490
· .	the L ine s		Ш		.	m	I
7 7'	-37. 216 > -35. 894	1.322	74.080 > 76.724	2.644 (5.	184) 2.54	40 <	-39, 98 1. 270 < -41. 254
6 6'	-37. 009 > -35. 701	1.308	74.954 > 77.569		128) 2.5		-39, 55 1. 256 < -40, 80
5 5	-38. 991 > -37. 632	1.359		2.717 (5.	328) 2.6	84.325 11 < 81.714	-41. 673 1. 305 < -42. 978
4 4'	-41. 028 > -39. 620		83.376 > 86.193	2.817 (5.	523) 2.7(88.899 06 < 86.193	-43.854 1.353 < -45.201
3 3'	-42. 981 > -41. 654	1.327	88.572 > 91.226	2.654 (5.	204) 2.5		-45. 523 1. 275 < -46. 798
2 2'	-36. 707 > -36. 310	0. 397	80.658 > 81.453	0.795 (1.	558) 0.76	53 <	-37.056 0.382 < -37.438
1 1'	10. 250 > 10. 250	0.000	0.000 > 0.000	0.000 (0.	000) 0.00	0.000 < 0.000	0.000 < 10.889

CALCHER CONTRACTOR								
Detail	Detailed Design							
on Port Rea	on Port Reactivation Project							
in La Un	lot	n Prov	inc					
CALC FILE No .:								
CALC INDEX No).:		P/	GE 325				
		INITIA	λL.	DATE				
PREPARED BY		Y. Ana	10	26/67/02				
CHECKED BY	e.	NUM	UAD	09/03/20				

(99)

Side	ewall(perpendicula e1		wall(parallel to cente e2 = 0.490	rline:seaside)
	1	Ш	Ш	I
7'	-37. 216	76. 724	76.724	-41. 254
6'	-37, 009	77.569	77.569	-40. 807
5'	-38. 991	81.714	81.714	-42. 978
4	-41. 028	86. 193	86.193	-45. 207
3'	-42. 981	91.226	91.226	-46. 798
2'	-36. 707	81. 453	81.453	-37. 438
1'	10. 250	0.000	0.000	10. 889

The moment after correction

CALC	ULATIC	N	
Detail on Pert Rea in La Un		P	
CALC FILE No :	the second s		
CALC INDE		PA	GE 326
	INITIA	Ľ,	DATE
PREFARED : V	LAnd	0	26/07/02
CHECKED BY			09/08/2002

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Sidewall(perpen	dicular to levee n e1 = 0.510	ormal:landside)	Rear wall(par	allel to cen e2 = 0	terline : landside) .490
e de la I de la composición	Ш			III	ľ
7 2. 292 > 7' 2. 147	-0.170 0.145 > -0.460	0. 290 (0.	568) 0.278	< ^{-0.738} -0.460	$0.\ 139\ <\ \begin{array}{c} 2.\ 676\\ 2.\ 815\end{array}$
6 6. 027 > 6' 5. 722	-9.508 0.305 > -10.117	0.609 (1.	195) 0.586	-10.703 < -10.117	$0.293 < \frac{6.551}{6.844}$
5 11. 800 > 5' 11. 247	-22.836 0.553 > -23.942	1. 106 (2.	169) 1.063	-25.005 < -23.942	0. 531 < 13. 357
4 17.742 > 4' 16.958	-36.419 0.784 > -37.986	1.567 (3.	073) 1.506	-39.492 < -37.986	0. 753 < 20. 038
3 23.685 > 3' 22.696	-49.916 0.989 > -51.894		878) 1.900	53, 794 < -51, 894	25.559 0.950 < 26.509
2 23. 600 > 2' 23. 088	-52.803 0.512 > -53.826	1. 023 (2.	006) 0.983	-54.809 < -53.826	0.491 <
1 -7.046 > 1' -7.046	0.000 0.000 0.000	0.000 (0.0	000) 0.000	<	0.000 < -7.658 -7.658

(b) Sidewall (perpendicular to levee normal: landside) and Rear wall (parallel to centerline : landside) (1) While afloat

CALC	ULATIO	N			
Detailed Design on Port Reactivation Project in La Union Province					
CALC FILE No .:					
CALC INDEX No		PA	GE 327		
	INITIA	L	DATE		
PREPARED BY	KAn	do	26/07/02		
CHECKED BY	L NISHIM	WRA	19/08/200		

(101)

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The moment after correction

Sidev		cular to levee no e1 = 0.510	mal:landside)) Rear wall(parallel to centerline : land e2 = 0.490			
	I	Ш			Щ	I	
7'	2. 292	-0.460			-0.460	2. 815	
6	6. 027	-10.117			-10.117	6. 844	
5	11, 800	-23.942			-23.942	13. 357	
4'	17. 742	-37.986			-37.986	20. 038	
3'	23. 685	-51.894			-51.894	26.509	
2'	23. 600	-53.826			-53.826	24. 758	
1'	-7. 046	0.000			0.000	-7.658	

CALC	ULATIC)N	
Detail	ed Desig	IN	
on Pert Rea	ctivation	P	oject
in Lo Co	on Pray	Inc	•
CALC FILE No .:		5. ¹	nda Ne
CALC INDEX (Io		P/	GE 328
	INITIA		DATE
PREPARED BY	YiAna	6	26/07/02
CHECKED BY	l. NUAMO	QA	07/08/200

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(2) After Construction

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		4	. <u> </u>	·		· · · · · · · · · · · · · · · · · · ·			
Side	ewall (perpe	endicular to e1 =	levee no 0, 510	ormal:landside)	Rear	wall(para		nterline , 490	: landside
	I		Ш				Ш		I
7 7'	-37. 216 > -35. 894	1.322	74.080 > 76.724	2.644 (5.	184)	2.540	<79.264 <76.724		-39.984 < -41.254
6 6	-37.009 > -35.701	1.308	74.954 > 77.569	2.615 (5.	128)	2.513	<80.082 <77.569		-39. 551 < -40. 807
5 5'	-38. 991 > -37. 632	1.359	78.997 > 81.714	2.717 (5.	328)	2.611	<84.325 81.714	1. 305	-41. 673 < -42. 978
4 4'	-41. 028 > -39. 620	1.408	83.376 > 86.193	2.817 (5.	523)	2.706	< 88.899 86.193	1. 353	
3 3'	-42. 981 > -41. 654		88.572 > 91.226	2.654 (5.			93.776 <91.226		-45.523 < -46.798
2	-36. 707 > -36. 310	0.397	80.658 > 81.453	0.795 (1.	558)	0.763	82.216 <81.453	0. 382	-37.056 < -37.438
1 1'	10.250 > 10.250	0.000	0.000 > 0.000	0.000 (0.	000)	0.000	< 0.000 0.000	0. 000	10.889 < 10.889

CALCULATION						
Datailed Design						
on Port Reactivation Project In La Union Province						
CALC FILE No .:						
CALC INDEX NO	.: P/	AGE 329				
	INITIAL	DATE				
PREPARED BY	Y, Ando	26/07/02				
CHECKED BY	e.Nishinvea	<u>↓</u>				

The moment after correction

Side	ewall(perpendicul e1	ar to levee normal = 0.510	:landside)	Rear wall(paral	lel to cente e2 = 04	erline : landside) 190
· · ·	I	Щ	······································		Ш	I
: 7'	-37. 216	76.724			76.724	-41. 254
6'	-37. 009	77.569			77.569	-40. 807
5'	-38. 991	81.714			81.714	-42. 978
4'	-41.028	86.193			86.193	-45. 207
3'	-42. 981	91.226	· · ·		91.226	-46. 798
2'	-36. 707	81.453			81. 453	-37. 438
· —	10. 250	0.000			0.000	10. 889

حاربي محصب المعادلا	رجرا والمحمصية فال		مراجعهم المتراسية ال
CALC	ULATIO	N	
Detail	ed Desig	in.	
on Port Rea	ctivation	P	ojact
in La Un	ion Prev	Inc	e staat
CALC FILE No .:			
CALC INDEX No	<u></u>	P/	GE 330
	INITIA	L	DATE
PREPARED BY			26/07/02
CHECKED BY	L. FUSIHIAU	¢Α	07/08/2002

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