Ultimate limit state

Sidewall(perpendicular to levee normal)

(1) While afloat

slab fixed on three sides and free on one side

P1 = 0.00(kN/m²)

P2 = 84.55(kN/m²)

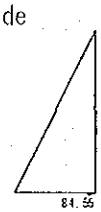
LX = 16.200(m)

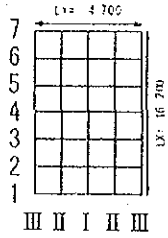
LY = 4.700(m)

The ratio of a length of sides

$$\lambda = \frac{16.200}{4.700} = 3.45$$

The coefficient table of λ = 3.50 is used.





Section force by triangular distribution load

P = 84.55(kN/m²)

MX = P・LY²・X = 84.55 × 4.700² × X = 1867.71 × X

MY = P・LY²・Y = 84.55 × 4.700² × Y = 1867.71 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0027	5.043
	6	0.0009	1.681	0.0071	13.261
	5	0.0022	4.109	0.0139	25.961
	4	0.0035	6.537	0.0209	39.035
	3	0.0055	10.272	0.0279	52.109
	2	0.0119	22.226	0.0278	51.922
	1	-0.0500	-93.386	-0.0083	-15.502
II	7	0.0000	0.000	0.0003	0.560
	6	0.0003	0.560	0.0017	3.175
	5	0.0005	0.934	0.0034	6.350
	4	0.0008	1.494	0.0052	9.712
	3	0.0015	2.802	0.0072	13.448
	2	0.0054	10.086	0.0088	16.436
	1	-0.0303	-56.592	-0.0050	-9.339
III	7	0.0000	0.000	-0.0002	-0.374
	6	-0.0019	-3.549	-0.0112	-20.918
	5	-0.0045	-8.405	-0.0269	-50.241
	4	-0.0072	-13.448	-0.0429	-80.125
	3	-0.0098	-18.304	-0.0588	-109.821
	2	-0.0104	-19.424	-0.0622	-116.172
	1	0.0000	0.000	0.0000	0.000

CALCULATION		
Detailed Design on Port Reactivation Project in La Union Province		
CALC FILE No.:		
CALC INDEX NO.		PAGE 243
	INITIAL	DATE
PREPARED BY	Y. Ando	26/07/02
CHECKED BY	E. NISHIHARA	09/08/2002

(2) After Construction

slab fixed on three sides and free on one side

P1 = -42.03(kN/m²)

P2 = -55.92(kN/m²)

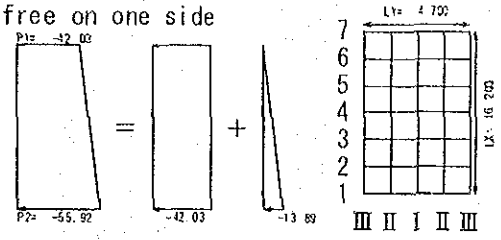
LX = 16.200(m)

LY = 4.700(m)

The ratio of a length of sides

$$\lambda = \frac{16.200}{4.700} = 3.45$$

The coefficient table of λ = 3.50 is used.



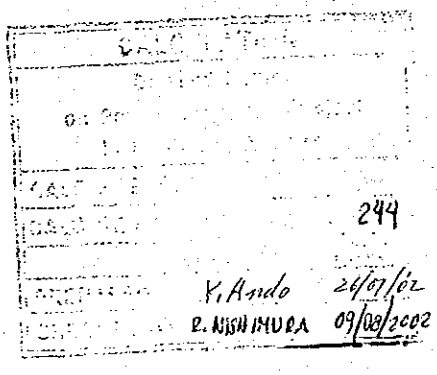
(i)Section force by equivalent uniform load

P = -42.03(kN/m²)

MX = P・LY²・X = -42.03 × 4.700² × X = -928.44 × X

MY = P・LY²・Y = -42.03 × 4.700² × Y = -928.44 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0432	-40.109
	6	0.0067	-6.221	0.0415	-38.530
	5	0.0068	-6.313	0.0416	-38.623
	4	0.0069	-6.406	0.0417	-38.716
	3	0.0079	-7.335	0.0417	-38.716
	2	0.0132	-12.255	0.0343	-31.846
	1	-0.0564	52.364	-0.0094	8.727
II	7	0.0000	0.000	0.0105	-9.749
	6	0.0015	-1.393	0.0104	-9.656
	5	0.0015	-1.393	0.0104	-9.656
	4	0.0016	-1.486	0.0104	-9.656
	3	0.0022	-2.043	0.0107	-9.934
	2	0.0058	-5.385	0.0105	-9.749
	1	-0.0335	31.103	-0.0056	5.199
III	7	0.0000	0.000	-0.0877	81.424
	6	-0.0142	13.184	-0.0851	79.011
	5	-0.0141	13.091	-0.0847	78.639
	4	-0.0141	13.091	-0.0846	78.546
	3	-0.0143	13.277	-0.0855	79.382
	2	-0.0125	11.606	-0.0750	69.633
	1	0.0000	0.000	0.0000	0.000



(ii) Section force by triangular distribution load

P = -13.89(kN/m²)

MX = P・LY²・X = -13.89 × 4.700² × X = -306.83 × X

MY = P・LY²・Y = -13.89 × 4.700² × Y = -306.83 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0027	-0.828
	6	0.0009	-0.276	0.0071	-2.178
	5	0.0022	-0.675	0.0139	-4.265
	4	0.0035	-1.074	0.0209	-6.413
	3	0.0055	-1.688	0.0279	-8.561
	2	0.0119	-3.651	0.0278	-8.530
	1	-0.0500	15.342	-0.0083	2.547
II	7	0.0000	0.000	0.0003	-0.092
	6	0.0003	-0.092	0.0017	-0.522
	5	0.0005	-0.153	0.0034	-1.043
	4	0.0008	-0.245	0.0052	-1.596
	3	0.0015	-0.460	0.0072	-2.209
	2	0.0054	-1.657	0.0088	-2.700
	1	-0.0303	9.297	-0.0050	1.534
III	7	0.0000	0.000	-0.0002	0.061
	6	-0.0019	0.583	-0.0112	3.436
	5	-0.0045	1.381	-0.0269	8.254
	4	-0.0072	2.209	-0.0429	13.163
	3	-0.0098	3.007	-0.0588	18.042
	2	-0.0104	3.191	-0.0622	19.085
	1	0.0000	0.000	0.0000	0.000

The sum total of (i) and (ii)

		MX	MY
I	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
II	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
III	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

CALCULATION
Detailed Design
on Port Reactivation Project
in La Union Province
CALC FILE NO.:
CALC NO.: 246
PREPARED BY: Y.Ando 26/07/01
CHECKED BY: R.NISHIMURA 09/08/2002

Sidewall(parallel to centerline)

(1) While afloat

slab fixed on three sides and free on one side

P1 = 0.00(kN/m²)

P2 = 84.55(kN/m²)

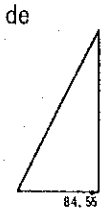
LX = 16.200(m)

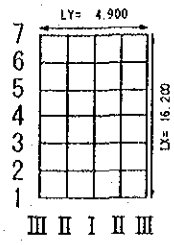
LY = 4.900(m)

The ratio of a length of sides

$$\lambda = \frac{16.200}{4.900} = 3.31$$

The coefficient table of λ = 3.25 is used.





Section force by triangular distribution load

P = 84.55(kN/m²)

MX = P・LY²・X = 84.55 × 4.900² × X = 2030.05 × X

MY = P・LY²・Y = 84.55 × 4.900² × Y = 2030.05 × Y

		X	MX	Y	MY
Ⅰ	7	0.0000	0.000	0.0029	5.887
	6	0.0008	1.624	0.0071	14.413
	5	0.0022	4.466	0.0139	28.218
	4	0.0035	7.105	0.0209	42.428
	3	0.0059	11.977	0.0277	56.232
	2	0.0123	24.970	0.0263	53.390
	1	-0.0496	-100.690	-0.0083	-16.849
Ⅱ	7	0.0000	0.000	0.0003	0.609
	6	0.0002	0.406	0.0017	3.451
	5	0.0005	1.015	0.0034	6.902
	4	0.0008	1.624	0.0052	10.556
	3	0.0018	3.654	0.0072	14.616
	2	0.0058	11.774	0.0086	17.458
	1	-0.0302	-61.307	-0.0050	-10.150
Ⅲ	7	0.0000	0.000	-0.0008	-1.624
	6	-0.0019	-3.857	-0.0116	-23.549
	5	-0.0045	-9.135	-0.0271	-55.014
	4	-0.0071	-14.413	-0.0428	-86.886
	3	-0.0097	-19.691	-0.0583	-118.352
	2	-0.0099	-20.097	-0.0594	-120.585
	1	0.0000	0.000	0.0000	0.000

CALCULATION		
Detailed Design on Port Reactivation Project in La Union Province		
CALC FILE No.		
CALC INDEX No.		PAGE 247
	INITIAL	DATE
PREPARED BY	Y.Ando	26/07/02
CHECKED BY	R.NISHIMURA	01/08/2002

(2) After Construction

A. Sidewall (parallel to centerline: seaside)

slab fixed on three sides and free on one side

P1 = -41.53(kN/m²)

P2 = -54.60(kN/m²)

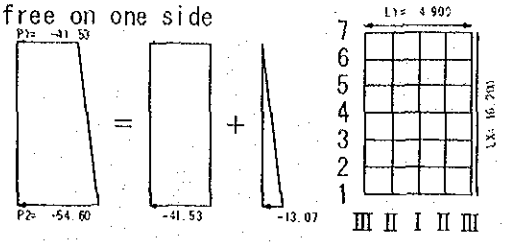
LX = 16.200(m)

LY = 4.900(m)

The ratio of a length of sides

$$\lambda = \frac{16.200}{4.900} = 3.31$$

The coefficient table of λ = 3.25 is used.



(i) Section force by equivalent uniform load

P = -41.53(kN/m²)

MX = P · LY² · X = -41.53 × 4.900² × X = -997.14 × X

MY = P · LY² · Y = -41.53 × 4.900² × Y = -997.14 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0432	-43.076
	6	0.0067	-6.681	0.0414	-41.281
	5	0.0068	-6.781	0.0416	-41.481
	4	0.0070	-6.980	0.0418	-41.680
	3	0.0083	-8.276	0.0415	-41.381
	2	0.0136	-13.561	0.0326	-32.507
	1	-0.0565	56.338	-0.0094	9.373
II	7	0.0000	0.000	0.0105	-10.470
	6	0.0015	-1.496	0.0104	-10.370
	5	0.0015	-1.496	0.0104	-10.370
	4	0.0017	-1.695	0.0105	-10.470
	3	0.0025	-2.493	0.0107	-10.669
	2	0.0062	-6.182	0.0103	-10.270
	1	-0.0338	33.703	-0.0056	5.584
III	7	0.0000	0.000	-0.0872	86.950
	6	-0.0141	14.060	-0.0847	84.457
	5	-0.0141	14.060	-0.0845	84.258
	4	-0.0141	14.060	-0.0846	84.358
	3	-0.0142	14.159	-0.0851	84.856
	2	-0.0120	11.966	-0.0720	71.794
	1	0.0000	0.000	0.0000	0.000

(ii) Section force by triangular distribution load

P = -13.07(kN/m²)

MX = P・LY²・X = -13.07 × 4.900² × X = -313.81 × X

MY = P・LY²・Y = -13.07 × 4.900² × Y = -313.81 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0029	-0.910
	6	0.0008	-0.251	0.0071	-2.228
	5	0.0022	-0.690	0.0139	-4.362
	4	0.0035	-1.098	0.0209	-6.559
	3	0.0059	-1.851	0.0277	-8.693
	2	0.0123	-3.860	0.0263	-8.253
	1	-0.0496	15.565	-0.0083	2.605
II	7	0.0000	0.000	0.0003	-0.094
	6	0.0002	-0.063	0.0017	-0.533
	5	0.0005	-0.157	0.0034	-1.067
	4	0.0008	-0.251	0.0052	-1.632
	3	0.0018	-0.565	0.0072	-2.259
	2	0.0058	-1.820	0.0086	-2.699
	1	-0.0302	9.477	-0.0050	1.569
III	7	0.0000	0.000	-0.0008	0.251
	6	-0.0019	0.596	-0.0116	3.640
	5	-0.0045	1.412	-0.0271	8.504
	4	-0.0071	2.228	-0.0428	13.431
	3	-0.0097	3.044	-0.0583	18.295
	2	-0.0099	3.107	-0.0594	18.640
	1	0.0000	0.000	0.0000	0.000

CALCULATION		
Detailed Design on Port Reactivation Project in La Union Province		
CALC FILE No.		
CALC INDEX No.		PAGE 249
	[illegible]	
PREPARED BY	Y.Ando	26/07/02
CHECKED BY	E. NISHIMURA	09/08/2002

The sum total of (i) and (ii)

		MX	MY
I	7	0.000	-43.986
	6	-6.932	-43.509
	5	-7.471	-45.843
	4	-8.078	-48.239
	3	-10.127	-50.074
	2	-17.421	-40.760
	1	71.903	11.978
II	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
III	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		
Detailed Design on Port Reactivation Project in La Union Province		
CALC FILE No.:		
CALC INDEX NO.		PAGE 250
	BY/AI	DATE
PREPARED BY	Y.A nao	24/07/02
CHECKED BY	E NISHIMODA	09/08/2002

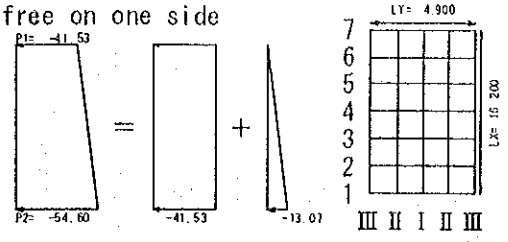
B. Sidewall (parallel to centerline: landside)
slab fixed on three sides and free on one side

P1 = −41.53 (kN/m²)
P2 = −54.60 (kN/m²)
LX = 16.200 (m)
LY = 4.900 (m)

The ratio of a length of sides

$$\lambda = \frac{16.200}{4.900} = 3.31$$

The coefficient table of λ = 3.25 is used.



(i) Section force by equivalent uniform load

P = −41.53 (kN/m²)
MX = P・LY²・X = −41.53 × 4.900² × X = −997.14 × X
MY = P・LY²・Y = −41.53 × 4.900² × Y = −997.14 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0432	-43.076
	6	0.0067	-6.681	0.0414	-41.281
	5	0.0068	-6.781	0.0416	-41.481
	4	0.0070	-6.980	0.0418	-41.680
	3	0.0083	-8.276	0.0415	-41.381
	2	0.0136	-13.561	0.0326	-32.507
	1	-0.0565	56.338	-0.0094	9.373
II	7	0.0000	0.000	0.0105	-10.470
	6	0.0015	-1.496	0.0104	-10.370
	5	0.0015	-1.496	0.0104	-10.370
	4	0.0017	-1.695	0.0105	-10.470
	3	0.0025	-2.493	0.0107	-10.669
	2	0.0062	-6.182	0.0103	-10.270
	1	-0.0338	33.703	-0.0056	5.584
III	7	0.0000	0.000	-0.0872	86.950
	6	-0.0141	14.060	-0.0847	84.457
	5	-0.0141	14.060	-0.0845	84.258
	4	-0.0141	14.060	-0.0846	84.358
	3	-0.0142	14.159	-0.0851	84.856
	2	-0.0120	11.966	-0.0720	71.794
	1	0.0000	0.000	0.0000	0.000

CALCULATION		
Detailed Design on Port Reactivation Project in La Union Province		
CALC FILE No.:		
CALC INDEX No.:	PAGE 251	
	INITIAL	DATE
PREPARED BY	Y. Ando	26/07/02
CHECKED BY	E. NISHIMURA	07/08/2002

(ii) Section force by triangular distribution load

P = -13.07(kN/m²)

MX = P・LY²・X = -13.07 × 4.900² × X = -313.81 × X

MY = P・LY²・Y = -13.07 × 4.900² × Y = -313.81 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0029	-0.910
	6	0.0008	-0.251	0.0071	-2.228
	5	0.0022	-0.690	0.0139	-4.362
	4	0.0035	-1.098	0.0209	-6.559
	3	0.0059	-1.851	0.0277	-8.693
	2	0.0123	-3.860	0.0263	-8.253
	1	-0.0496	15.565	-0.0083	2.605
II	7	0.0000	0.000	0.0003	-0.094
	6	0.0002	-0.063	0.0017	-0.533
	5	0.0005	-0.157	0.0034	-1.067
	4	0.0008	-0.251	0.0052	-1.632
	3	0.0018	-0.565	0.0072	-2.259
	2	0.0058	-1.820	0.0086	-2.699
	1	-0.0302	9.477	-0.0050	1.569
III	7	0.0000	0.000	-0.0008	0.251
	6	-0.0019	0.596	-0.0116	3.640
	5	-0.0045	1.412	-0.0271	8.504
	4	-0.0071	2.228	-0.0428	13.431
	3	-0.0097	3.044	-0.0583	18.295
	2	-0.0099	3.107	-0.0594	18.640
	1	0.0000	0.000	0.0000	0.000

CALCULATION		
Detailed Design on Port Reactivation Project in La Union Province		
CALC FILE No.:		
CALC IND[illegible]	PAGE 252	
	[illegible] DATE	
PREPARED BY	Y. Ando	24/07/02
CHECKED BY	R. NISHIMURA	09/08/2002

The sum total of (i) and (ii)

		MX	MY
I	7	0.000	-43.986
	6	-6.932	-43.509
	5	-7.471	-45.843
	4	-8.078	-48.239
	3	-10.127	-50.074
	2	-17.421	-40.760
	1	71.903	11.978
II	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
III	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		
Detailed Design on Port Reactivation Project in La Union Province		
CALC FILE No :		
CALC INDEX No :		PAGE 253
	INITIAL	DATE
PREPARED BY	Y. Ando	26/07/02
CHECKED BY	E. Nishimoto	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(I Axis)

Rigid ratio

$$K1 = \frac{E1 \cdot I1}{L1} \qquad K2 = \frac{E2 \cdot I2}{L2}$$

$E1 = E2 \qquad I1 = I2$

The relative share of moment

$$e1 = \frac{K1}{K1 + K2} = \frac{L2}{L1 + L2} = \frac{4.900}{4.900 + 4.700} = 0.510$$

$$e2 = \frac{K2}{K1 + K2} = \frac{L1}{L1 + L2} = \frac{4.700}{4.900 + 4.700} = 0.490$$

Correction of moment in corner (ⅢAxis)

When referred to as (M1 > M2)

$\Delta M = M1 - M2$

Correction moment

$M1' = M1 - \Delta M \cdot e1 = M1 - 0.510 \cdot \Delta M$

$M2' = M2 + \Delta M \cdot e2 = M2 + 0.490 \cdot \Delta M$

Correction of the moment in the central part (I Axis) of span

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

Sidewall(perpendicular to levee normal) e1			Sidewall(parallel to centerline) e2		
I	Ⅲ		Ⅲ		I
$M_{1B} > M_{1B}'$	$M1 > M1'$	$\Delta M \cdot e1$ (ΔM)	$\Delta M \cdot e2$	$M2 < M2'$	$1/2 \cdot \Delta M \cdot e2 < M_{2B}'$ M_{2B}

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CHECKED BY	R.NISHIMURA	09/08/2002

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

Sidewall(perpendicular to levee normal:seaside) e1 = 0.510					Front wall(parallel to centerline:seaside) e2 = 0.490				
	I		III			III		I	
7	5.043		-0.374			-1.624		5.887	
	>	0.319	>	0.638 (1.250)	0.613	<	0.306	<	
7'	4.724		-1.012			-1.011		6.193	
6	13.261		-20.918			-23.549		14.413	
	>	0.671	>	1.342 (2.631)	1.289	<	0.645	<	
6'	12.590		-22.260			-22.260		15.058	
5	25.961		-50.241			-55.014		28.218	
	>	1.217	>	2.434 (4.773)	2.339	<	1.169	<	
5'	24.744		-52.675			-52.675		29.387	
4	39.035		-80.125			-86.886		42.428	
	>	1.724	>	3.448 (6.761)	3.313	<	1.656	<	
4'	37.311		-83.573			-83.573		44.084	
3	52.109		-109.821			-118.352		56.232	
	>	2.175	>	4.351 (8.531)	4.180	<	2.090	<	
3'	49.934		-114.172			-114.172		58.322	
2	51.922		-116.172			-120.585		53.390	
	>	1.125	>	2.251 (4.413)	2.162	<	1.081	<	
2'	50.797		-118.423			-118.423		54.471	
1	-15.502		0.000			0.000		-16.849	
	>	0.000	>	0.000 (0.000)	0.000	<	0.000	<	
1'	-15.502		0.000			0.000		-16.849	

The moment after correction

	Sidewall(perpendicular to levee normal:seaside) e1 = 0.510		Front wall(parallel to centerline:seaside) e2 = 0.490	
	I	III	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

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CHECKED BY	E. NISHIMURA	09/06/2002

(2) After Construction

Sidewall(perpendicular to levee normal:seaside) e1 = 0.510						Front wall(parallel to centerline:seaside) e2 = 0.490			
	I		III			III		I	
7	-40.937		81.485			87.201		-43.986	
	>	1.458	>	2.915 (	5.716)	2.801 <		1.400 <	
7'	-39.479		84.400			84.400		-45.386	
6	-40.708		82.447			88.097		-43.509	
	>	1.441	>	2.882 (	5.650)	2.769 <		1.384 <	
6'	-39.267		85.329			85.328		-44.893	
5	-42.888		86.893			92.762		-45.843	
	>	1.497	>	2.993 (	5.869)	2.876 <		1.438 <	
5'	-41.391		89.886			89.886		-47.281	
4	-45.129		91.709			97.789		-48.239	
	>	1.550	>	3.101 (	6.080)	2.979 <		1.490 <	
4'	-43.579		94.810			94.810		-49.729	
3	-47.277		97.424			103.151		-50.074	
	>	1.460	>	2.921 (	5.727)	2.806 <		1.403 <	
3'	-45.817		100.345			100.345		-51.477	
2	-40.376		88.718			90.434		-40.760	
	>	0.438	>	0.875 (	1.716)	0.841 <		0.420 <	
2'	-39.938		89.593			89.593		-41.180	
1	11.274		0.000			0.000		11.978	
	>	0.000	>	0.000 (	0.000)	0.000 <		0.000 <	
1'	11.274		0.000			0.000		11.978	

The moment after correction

Sidewall (perpendicular to levee normal : seaside) e1 = 0.510			Front wall (parallel to centerline : seaside) e2 = 0.490	
	I	III	III	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
1'	11.274	0.000	0.000	11.978

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CHECKED BY	E. NISHIMURA	09/08/2002

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

Sidewall(perpendicular to levee normal:landside) e1 = 0.510					Rear wall(parallel to centerline : landside) e2 = 0.490				
	I		III			III		I	
7	5.043		-0.374			-1.624		5.887	
	>	0.319	>	0.638 (1.250)	0.613	<	0.306	<	
7'	4.724		-1.012			-1.011		6.193	
6	13.261		-20.918			-23.549		14.413	
	>	0.671	>	1.342 (2.631)	1.289	<	0.645	<	
6'	12.590		-22.260			-22.260		15.058	
5	25.961		-50.241			-55.014		28.218	
	>	1.217	>	2.434 (4.773)	2.339	<	1.169	<	
5'	24.744		-52.675			-52.675		29.387	
4	39.035		-80.125			-86.886		42.428	
	>	1.724	>	3.448 (6.761)	3.313	<	1.656	<	
4'	37.311		-83.573			-83.573		44.084	
3	52.109		-109.821			-118.352		56.232	
	>	2.175	>	4.351 (8.531)	4.180	<	2.090	<	
3'	49.934		-114.172			-114.172		58.322	
2	51.922		-116.172			-120.585		53.390	
	>	1.125	>	2.251 (4.413)	2.162	<	1.081	<	
2'	50.797		-118.423			-118.423		54.471	
1	-15.502		0.000			0.000		-16.849	
	>	0.000	>	0.000 (0.000)	0.000	<	0.000	<	
1'	-15.502		0.000			0.000		-16.849	

The moment after correction

Sidewall (perpendicular to levee normal : landside) e1 = 0.510			Rear wall (parallel to centerline : landside) e2 = 0.490	
	I	III	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

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CHECKED BY	R. NISHIMURA	09/06/2002

(2) After Construction

Sidewall (perpendicular to levee normal : landside) e1 = 0.510					Rear wall (parallel to centerline : landside) e2 = 0.490			
	I		III			III		I
7	-40.937		81.485			87.201		-43.986
	>	1.458	>	2.915 (5.716)	2.801	<	1.400	<
7'	-39.479		84.400			84.400		-45.386
6	-40.708		82.447			88.097		-43.509
	>	1.441	>	2.882 (5.650)	2.769	<	1.384	<
6'	-39.267		85.329			85.328		-44.893
5	-42.888		86.893			92.762		-45.843
	>	1.497	>	2.993 (5.869)	2.876	<	1.438	<
5'	-41.391		89.886			89.886		-47.281
4	-45.129		91.709			97.789		-48.239
	>	1.550	>	3.101 (6.080)	2.979	<	1.490	<
4'	-43.579		94.810			94.810		-49.729
3	-47.277		97.424			103.151		-50.074
	>	1.460	>	2.921 (5.727)	2.806	<	1.403	<
3'	-45.817		100.345			100.345		-51.477
2	-40.376		88.718			90.434		-40.760
	>	0.438	>	0.875 (1.716)	0.841	<	0.420	<
2'	-39.938		89.593			89.593		-41.180
1	11.274		0.000			0.000		11.978
	>	0.000	>	0.000 (0.000)	0.000	<	0.000	<
1'	11.274		0.000			0.000		11.978

The moment after correction

Sidewall (perpendicular to levee normal: landside) e1 = 0.510			Rear wall (parallel to centerline: landside) e2 = 0.490	
	I	III	III	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
1'	11.274	0.000	0.000	11.978

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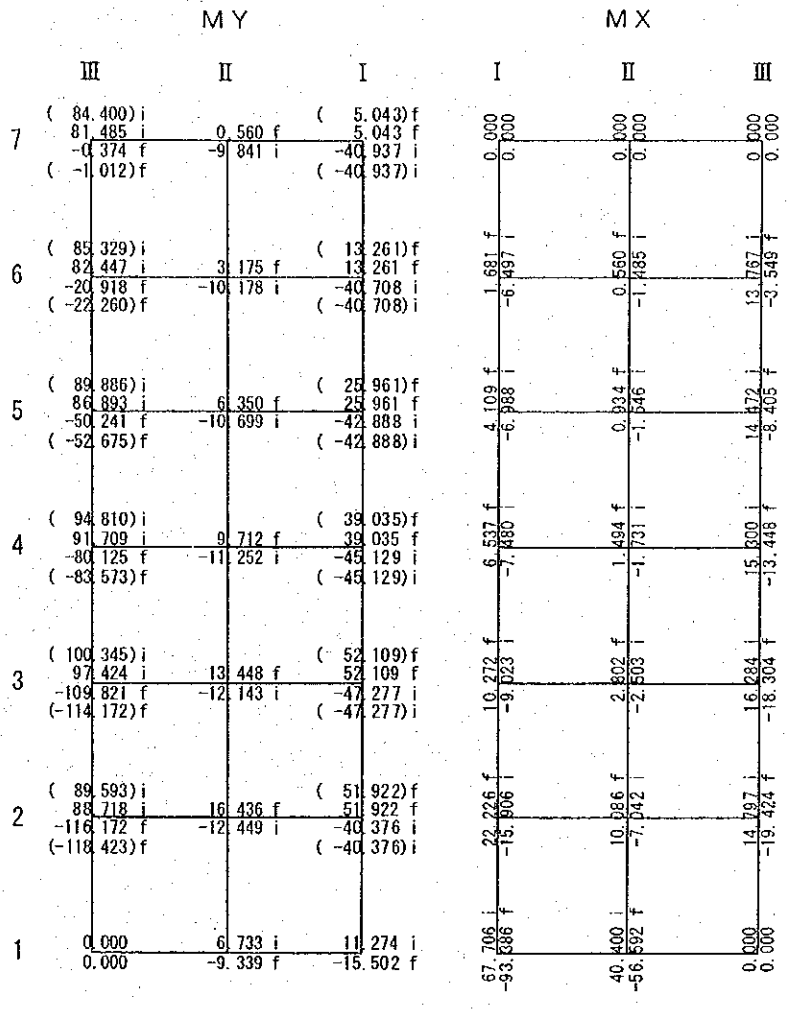
CHECKED BY	E. USHIJIMA	09/08/2002

Sidewall(perpendicular to levee normal,seaside) Colligation of bending moment
Top(left)side : +moment
Bottom(right)side : −moment
( ) : The moment after correction of corner



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

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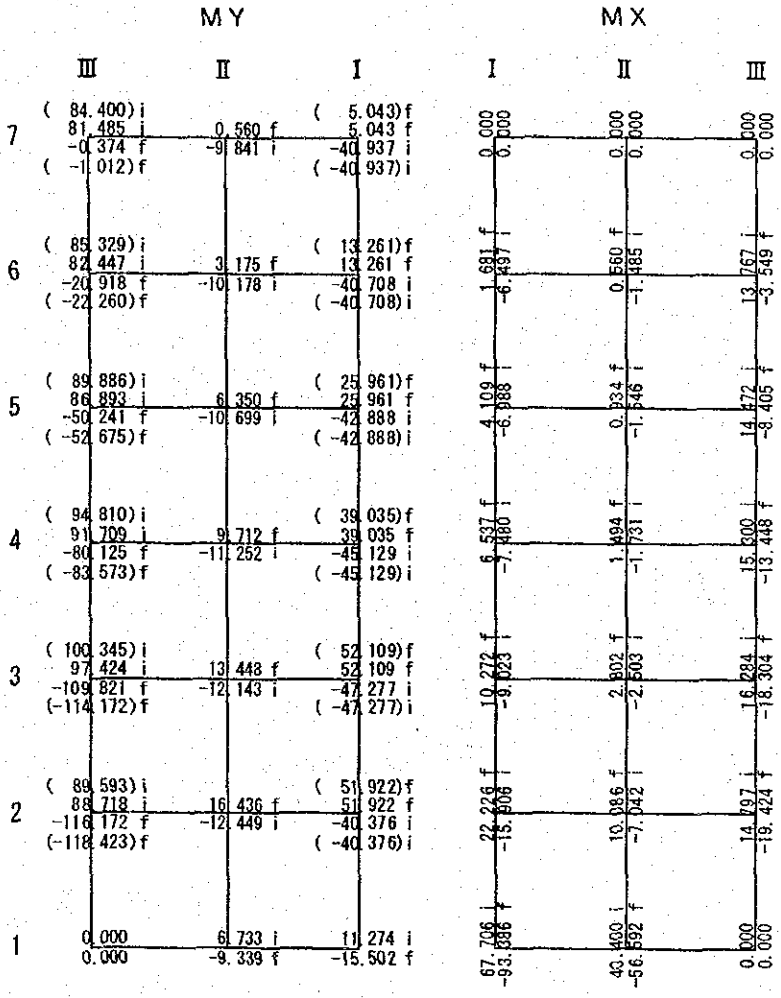
CHECKED BY	E. NISHIMURA	09/08/2002

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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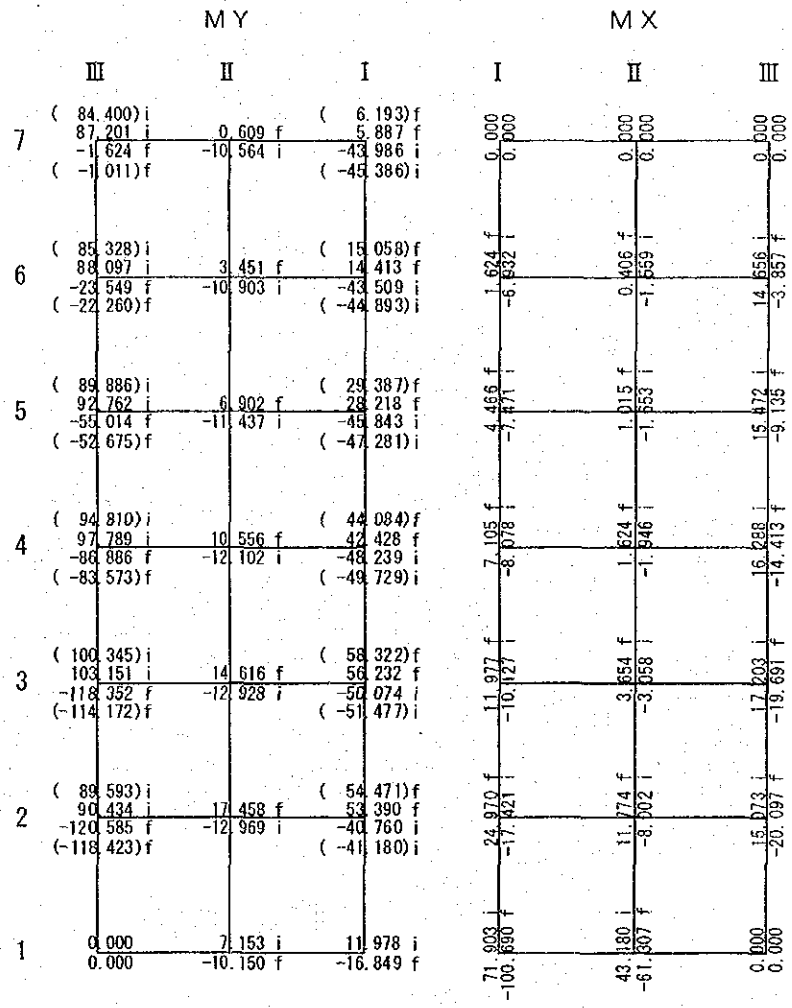
CHECKED BY	R. NISHIMODA	07/08/2002

Front wall(parallel to centerline,seaside) 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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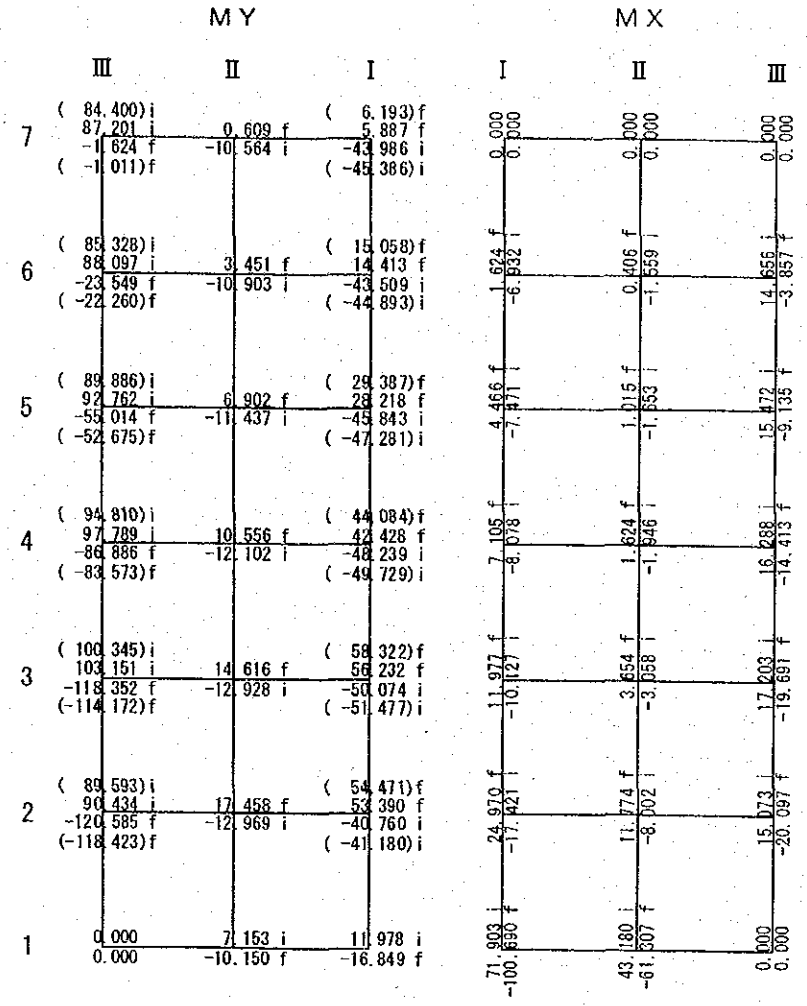
Rear wall(parallel to centerline, andside) Colligation of bending moment
Top(left)side : +moment
Bottom(right)side : −moment
( ) : The moment after correction of corner



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

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Bottom slab

Bottom slab is calculated as a slab fixed on four sides

Note) The mark of bending moment (+) : upper tensile
(-) : downside 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)

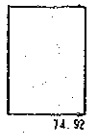
LX = 4.700(m)

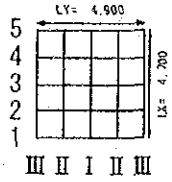
LY = 4.900(m)

The ratio of a length of sides

$$\lambda = \frac{4.700}{4.900} = 0.96$$

The coefficient table of λ = 1.00 is used.





Section force by equivalent uniform load

P = 74.92(kN/m²)

MX = P・LX²・X = 74.92 × 4.700² × X = 1654.98 × X

MY = P・LX²・Y = 74.92 × 4.700² × Y = 1654.98 × Y

		X	MX	Y	MY
I	5	-0.0513	-84.901	-0.0086	-14.233
	4	0.0096	15.888	0.0116	19.198
	3	0.0206	34.093	0.0206	34.093
	2	0.0096	15.888	0.0116	19.198
	1	-0.0513	-84.901	-0.0086	-14.233
II	5	-0.0324	-53.621	-0.0054	-8.937
	4	0.0059	9.764	0.0059	9.764
	3	0.0116	19.198	0.0096	15.888
	2	0.0059	9.764	0.0059	9.764
	1	-0.0324	-53.621	-0.0054	-8.937
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0054	-8.937	-0.0324	-53.621
	3	-0.0086	-14.233	-0.0513	-84.901
	2	-0.0054	-8.937	-0.0324	-53.621
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	E. NISHIMURA	01/08/2002

A Room

After Construction

Upward load (above)

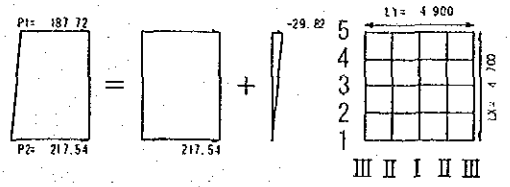
slab fixed on four sides

P1 = 187.72(kN/m²)

P2 = 217.54(kN/m²)

LX = 4.700(m)

LY = 4.900(m)



The ratio of a length of sides

$$\lambda = \frac{4.700}{4.900} = 0.96$$

The coefficient table of λ = 1.00 is used.

(i)Section force by equivalent uniform load

P = 217.54(kN/m²)

MX = P・LX²・X = 217.54 × 4.700² × X = 4805.46 × X

MY = P・LX²・Y = 217.54 × 4.700² × Y = 4805.46 × Y

		X	MX	Y	MY
I	5	-0.0513	-246.520	-0.0086	-41.327
	4	0.0096	46.132	0.0116	55.743
	3	0.0206	98.992	0.0206	98.992
	2	0.0096	46.132	0.0116	55.743
	1	-0.0513	-246.520	-0.0086	-41.327
II	5	-0.0324	-155.697	-0.0054	-25.949
	4	0.0059	28.352	0.0059	28.352
	3	0.0116	55.743	0.0096	46.132
	2	0.0059	28.352	0.0059	28.352
	1	-0.0324	-155.697	-0.0054	-25.949
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0054	-25.949	-0.0324	-155.697
	3	-0.0086	-41.327	-0.0513	-246.520
	2	-0.0054	-25.949	-0.0324	-155.697
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	E. NISHIMURA	09/08/2002

(ii) Section force by triangular distribution load

$P = -29.82(kN/m^2)$

$MX = P \cdot LX^2 \cdot X = -29.82 \times 4.700^2 \times X = -658.72 \times X$

$MY = P \cdot LX^2 \cdot Y = -29.82 \times 4.700^2 \times Y = -658.72 \times Y$

		X	MX	Y	MY
I	5	-0.0334	22.001	-0.0056	3.689
	4	0.0080	-5.270	0.0069	-4.545
	3	0.0103	-6.785	0.0103	-6.785
	2	0.0015	-0.988	0.0047	-3.096
	1	-0.0179	11.791	-0.0030	1.976
II	5	-0.0223	14.690	-0.0037	2.437
	4	0.0052	-3.425	0.0040	-2.635
	3	0.0058	-3.821	0.0048	-3.162
	2	0.0006	-0.395	0.0018	-1.186
	1	-0.0101	6.653	-0.0017	1.120
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0036	2.371	-0.0208	13.701
	3	-0.0043	2.833	-0.0257	16.929
	2	-0.0019	1.252	-0.0116	7.641
	1	0.0000	0.000	0.0000	0.000

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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
II	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
III	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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CHECKED BY	E.KIRIMURA	09/08/2002

B Room

While afloat

slab fixed on four sides

P1 = 74.92(kN/m²)

P2 = 74.92(kN/m²)

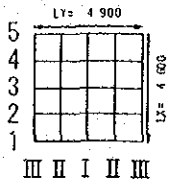
LX = 4.600(m)

LY = 4.900(m)

The ratio of a length of sides

$$\lambda = \frac{4.600}{4.900} = 0.94$$

The coefficient table of λ = 1.00 is used.



Section force by equivalent uniform load

P = 74.92(kN/m²)

MX = P・LX²・X = 74.92 × 4.600² × X = 1585.31 × X

MY = P・LX²・Y = 74.92 × 4.600² × Y = 1585.31 × Y

		X	MX	Y	MY
I	5	-0.0513	-81.326	-0.0086	-13.634
	4	0.0096	15.219	0.0116	18.390
	3	0.0206	32.657	0.0206	32.657
	2	0.0096	15.219	0.0116	18.390
	1	-0.0513	-81.326	-0.0086	-13.634
II	5	-0.0324	-51.364	-0.0054	-8.561
	4	0.0059	9.353	0.0059	9.353
	3	0.0116	18.390	0.0096	15.219
	2	0.0059	9.353	0.0059	9.353
	1	-0.0324	-51.364	-0.0054	-8.561
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0054	-8.561	-0.0324	-51.364
	3	-0.0086	-13.634	-0.0513	-81.326
	2	-0.0054	-8.561	-0.0324	-51.364
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	E.NISHIMURA	08/08/2002

B Room

After Construction

Upward load (above)

slab fixed on four sides

P1 = 158.55(kN/m²)

P2 = 187.72(kN/m²)

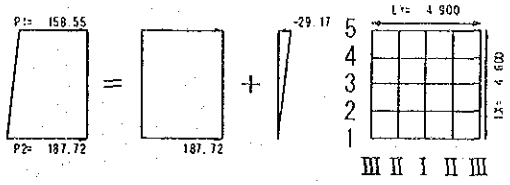
LX = 4.600(m)

LY = 4.900(m)

The ratio of a length of sides

$$\lambda = \frac{4.600}{4.900} = 0.94$$

The coefficient table of λ = 1.00 is used.



(i)Section force by equivalent uniform load

P = 187.72(kN/m²)

MX = P・LX²・X = 187.72 × 4.600² × X = 3972.16 × X

MY = P・LX²・Y = 187.72 × 4.600² × Y = 3972.16 × Y

		X	MX	Y	MY
I	5	-0.0513	-203.772	-0.0086	-34.161
	4	0.0096	38.133	0.0116	46.077
	3	0.0206	81.826	0.0206	81.826
	2	0.0096	38.133	0.0116	46.077
	1	-0.0513	-203.772	-0.0086	-34.161
II	5	-0.0324	-128.698	-0.0054	-21.450
	4	0.0059	23.436	0.0059	23.436
	3	0.0116	46.077	0.0096	38.133
	2	0.0059	23.436	0.0059	23.436
	1	-0.0324	-128.698	-0.0054	-21.450
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0054	-21.450	-0.0324	-128.698
	3	-0.0086	-34.161	-0.0513	-203.772
	2	-0.0054	-21.450	-0.0324	-128.698
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	R. NISHIMURA	09/08/2002

(ii) Section force by triangular distribution load

P = -29.17(kN/m²)

MX = P・LX²・X = -29.17 × 4.600² × X = -617.24 × X

MY = P・LX²・Y = -29.17 × 4.600² × Y = -617.24 × Y

		X	MX	Y	MY
I	5	-0.0334	20.616	-0.0056	3.457
	4	0.0080	-4.938	0.0069	-4.259
	3	0.0103	-6.358	0.0103	-6.358
	2	0.0015	-0.926	0.0047	-2.901
	1	-0.0179	11.049	-0.0030	1.852
II	5	-0.0223	13.764	-0.0037	2.284
	4	0.0052	-3.210	0.0040	-2.469
	3	0.0058	-3.580	0.0048	-2.963
	2	0.0006	-0.370	0.0018	-1.111
	1	-0.0101	6.234	-0.0017	1.049
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0036	2.222	-0.0208	12.839
	3	-0.0043	2.654	-0.0257	15.863
	2	-0.0019	1.173	-0.0116	7.160
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	R. NISHIHARA	09/08/2002

The sum total of (i) and (ii)

		MX	MY
I	5	-183.156	-30.704
	4	33.195	41.818
	3	75.468	75.468
	2	37.207	43.176
	1	-192.723	-32.309
II	5	-114.934	-19.166
	4	20.226	20.967
	3	42.497	35.170
	2	23.066	22.325
	1	-122.464	-20.401
III	5	0.000	0.000
	4	-19.228	-115.859
	3	-31.507	-187.909
	2	-20.277	-121.538
	1	0.000	0.000

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CHECKED BY	E.NISHIMURA	09/08/2002

C Room

While afloat

slab fixed on four sides

P1 = 74.92(kN/m²)

P2 = 74.92(kN/m²)

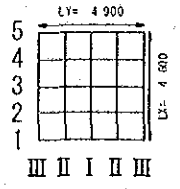
LX = 4.600(m)

LY = 4.900(m)

The ratio of a length of sides

$$\lambda = \frac{4.600}{4.900} = 0.94$$

The coefficient table of λ = 1.00 is used.



Section force by equivalent uniform load

P = 74.92(kN/m²)

MX = P・LX²・X = 74.92 × 4.600² × X = 1585.31 × X

MY = P・LX²・Y = 74.92 × 4.600² × Y = 1585.31 × Y

		X	MX	Y	MY
I	5	-0.0513	-81.326	-0.0086	-13.634
	4	0.0096	15.219	0.0116	18.390
	3	0.0206	32.657	0.0206	32.657
	2	0.0096	15.219	0.0116	18.390
	1	-0.0513	-81.326	-0.0086	-13.634
II	5	-0.0324	-51.364	-0.0054	-8.561
	4	0.0059	9.353	0.0059	9.353
	3	0.0116	18.390	0.0096	15.219
	2	0.0059	9.353	0.0059	9.353
	1	-0.0324	-51.364	-0.0054	-8.561
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0054	-8.561	-0.0324	-51.364
	3	-0.0086	-13.634	-0.0513	-81.326
	2	-0.0054	-8.561	-0.0324	-51.364
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	R. NOMURA	09/08/2002

C Room

After Construction

Upward load (above)

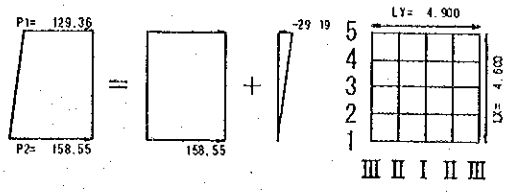
slab fixed on four sides

P1 = 129.36(kN/m²)

P2 = 158.55(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 λ = 1.00 is used.

(i)Section force by equivalent uniform load

P = 158.55(kN/m²)

MX = P・LX²・X = 158.55 × 4.600² × X = 3354.92 × X

MY = P・LX²・Y = 158.55 × 4.600² × Y = 3354.92 × Y

		X	MX	Y	MY
I	5	-0.0513	-172.107	-0.0086	-28.852
	4	0.0096	32.207	0.0116	38.917
	3	0.0206	69.111	0.0206	69.111
	2	0.0096	32.207	0.0116	38.917
	1	-0.0513	-172.107	-0.0086	-28.852
II	5	-0.0324	-108.699	-0.0054	-18.117
	4	0.0059	19.794	0.0059	19.794
	3	0.0116	38.917	0.0096	32.207
	2	0.0059	19.794	0.0059	19.794
	1	-0.0324	-108.699	-0.0054	-18.117
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0054	-18.117	-0.0324	-108.699
	3	-0.0086	-28.852	-0.0513	-172.107
	2	-0.0054	-18.117	-0.0324	-108.699
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	E. NISHIMURA	09/08/2002

(ii) Section force by triangular distribution load

P = -29.19(kN/m²)

MX = P・LX²・X = -29.19 × 4.600² × X = -617.66 × X

MY = P・LX²・Y = -29.19 × 4.600² × Y = -617.66 × Y

		X	MX	Y	MY
I	5	-0.0334	20.630	-0.0056	3.459
	4	0.0080	-4.941	0.0069	-4.262
	3	0.0103	-6.362	0.0103	-6.362
	2	0.0015	-0.926	0.0047	-2.903
	1	-0.0179	11.056	-0.0030	1.853
II	5	-0.0223	13.774	-0.0037	2.285
	4	0.0052	-3.212	0.0040	-2.471
	3	0.0058	-3.582	0.0048	-2.965
	2	0.0006	-0.371	0.0018	-1.112
	1	-0.0101	6.238	-0.0017	1.050
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0036	2.224	-0.0208	12.847
	3	-0.0043	2.656	-0.0257	15.874
	2	-0.0019	1.174	-0.0116	7.165
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	E. NISHIMURA	07/08/2002

The sum total of (i) and (ii)

		MX	MY
I	5	-151.477	-25.393
	4	27.266	34.655
	3	62.749	62.749
	2	31.281	36.014
	1	-161.051	-26.999
II	5	-94.925	-15.832
	4	16.582	17.323
	3	35.335	29.242
	2	19.423	18.682
	1	-102.461	-17.067
III	5	0.000	0.000
	4	-15.893	-95.852
	3	-26.196	-156.233
	2	-16.943	-101.534
	1	0.000	0.000

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CHECKED BY	E. NISHIKUBO	09/08/2002

D Room

While afloat

slab fixed on four sides

P1 = 74.92(kN/m²)

P2 = 74.92(kN/m²)

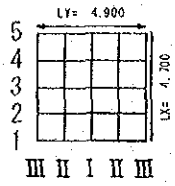
LX = 4.700(m)

LY = 4.900(m)

The ratio of a length of sides

$$\lambda = \frac{4.700}{4.900} = 0.96$$

The coefficient table of λ = 1.00 is used.



Section force by equivalent uniform load

P = 74.92(kN/m²)

MX = P・LX²・X = 74.92 × 4.700² × X = 1654.98 × X

MY = P・LX²・Y = 74.92 × 4.700² × Y = 1654.98 × Y

		X	MX	Y	MY
I	5	-0.0513	-84.901	-0.0086	-14.233
	4	0.0096	15.888	0.0116	19.198
	3	0.0206	34.093	0.0206	34.093
	2	0.0096	15.888	0.0116	19.198
	1	-0.0513	-84.901	-0.0086	-14.233
II	5	-0.0324	-53.621	-0.0054	-8.937
	4	0.0059	9.764	0.0059	9.764
	3	0.0116	19.198	0.0096	15.888
	2	0.0059	9.764	0.0059	9.764
	1	-0.0324	-53.621	-0.0054	-8.937
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0054	-8.937	-0.0324	-53.621
	3	-0.0086	-14.233	-0.0513	-84.901
	2	-0.0054	-8.937	-0.0324	-53.621
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	R. AGUILMOA	29/08/2002

D Room

After Construction

Upward load (above)

slab fixed on four sides

P1 = 99.54(kN/m²)

P2 = 129.36(kN/m²)

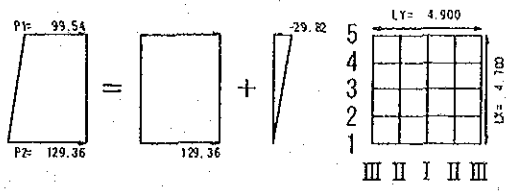
LX = 4.700(m)

LY = 4.900(m)

The ratio of a length of sides

$$\lambda = \frac{4.700}{4.900} = 0.96$$

The coefficient table of λ = 1.00 is used.



(i)Section force by equivalent uniform load

P = 129.36(kN/m²)

MX = P・LX²・X = 129.36 × 4.700² × X = 2857.56 × X

MY = P・LX²・Y = 129.36 × 4.700² × Y = 2857.56 × Y

		X	MX	Y	MY
I	5	-0.0513	-146.593	-0.0086	-24.575
	4	0.0096	27.433	0.0116	33.148
	3	0.0206	58.866	0.0206	58.866
	2	0.0096	27.433	0.0116	33.148
	1	-0.0513	-146.593	-0.0086	-24.575
II	5	-0.0324	-92.585	-0.0054	-15.431
	4	0.0059	16.860	0.0059	16.860
	3	0.0116	33.148	0.0096	27.433
	2	0.0059	16.860	0.0059	16.860
	1	-0.0324	-92.585	-0.0054	-15.431
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0054	-15.431	-0.0324	-92.585
	3	-0.0086	-24.575	-0.0513	-146.593
	2	-0.0054	-15.431	-0.0324	-92.585
	1	0.0000	0.000	0.0000	0.000

CALCULATION

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CHECKED BY	E. NISHITSUJI	09/08/2002

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(ii) Section force by triangular distribution load

P = -29.82(kN/m²)

MX = P・LX²・X = -29.82 × 4.700² × X = -658.72 × X

MY = P・LX²・Y = -29.82 × 4.700² × Y = -658.72 × Y

		X	MX	Y	MY
I	5	-0.0334	22.001	-0.0056	3.689
	4	0.0080	-5.270	0.0069	-4.545
	3	0.0103	-6.785	0.0103	-6.785
	2	0.0015	-0.988	0.0047	-3.096
	1	-0.0179	11.791	-0.0030	1.976
II	5	-0.0223	14.690	-0.0037	2.437
	4	0.0052	-3.425	0.0040	-2.635
	3	0.0058	-3.821	0.0048	-3.162
	2	0.0006	-0.395	0.0018	-1.186
	1	-0.0101	6.653	-0.0017	1.120
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0036	2.371	-0.0208	13.701
	3	-0.0043	2.833	-0.0257	16.929
	2	-0.0019	1.252	-0.0116	7.641
	1	0.0000	0.000	0.0000	0.000

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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
II	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
III	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

CALCULATION		
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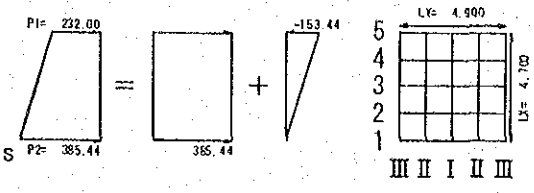
(b)During an earthquake
A Room

Upward load (above)
slab fixed on four sides
P1 = 232.00(kN/m²)
P2 = 385.44(kN/m²)
LX = 4.700(m)
LY = 4.900(m)
The ratio of a length of sides

$$\lambda = \frac{4.700}{4.900} = 0.96$$

The coefficient table of λ = 1.00 is used.



(i)Section force by equivalent uniform load
P = 385.44(kN/m²)
MX = P・LX²・X = 385.44 × 4.700² × X = 8514.37 × X
MY = P・LX²・Y = 385.44 × 4.700² × Y = 8514.37 × Y

		X	MX	Y	MY
I	5	-0.0513	-436.787	-0.0086	-73.224
	4	0.0096	81.738	0.0116	98.767
	3	0.0206	175.396	0.0206	175.396
	2	0.0096	81.738	0.0116	98.767
	1	-0.0513	-436.787	-0.0086	-73.224
II	5	-0.0324	-275.866	-0.0054	-45.978
	4	0.0059	50.235	0.0059	50.235
	3	0.0116	98.767	0.0096	81.738
	2	0.0059	50.235	0.0059	50.235
	1	-0.0324	-275.866	-0.0054	-45.978
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0054	-45.978	-0.0324	-275.866
	3	-0.0086	-73.224	-0.0513	-436.787
	2	-0.0054	-45.978	-0.0324	-275.866
	1	0.0000	0.000	0.0000	0.000

CALCULATION
Detailed Design
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CALC FILE No.:
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PREPARED BY	Y. Ando	26/07/02
CHECKED BY	P. NISHIHARA	09/08/2002

(ii) Section force by triangular distribution load

P = -153.44(kN/m²)

MX = P・LX²・X = -153.44 × 4.700² × X = -3389.49 × X

MY = P・LX²・Y = -153.44 × 4.700² × Y = -3389.49 × Y

		X	MX	Y	MY
I	5	-0.0334	113.209	-0.0056	18.981
	4	0.0080	-27.116	0.0069	-23.387
	3	0.0103	-34.912	0.0103	-34.912
	2	0.0015	-5.084	0.0047	-15.931
	1	-0.0179	60.672	-0.0030	10.168
II	5	-0.0223	75.586	-0.0037	12.541
	4	0.0052	-17.625	0.0040	-13.558
	3	0.0058	-19.659	0.0048	-16.270
	2	0.0006	-2.034	0.0018	-6.101
	1	-0.0101	34.234	-0.0017	5.762
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0036	12.202	-0.0208	70.501
	3	-0.0043	14.575	-0.0257	87.110
	2	-0.0019	6.440	-0.0116	39.318
	1	0.0000	0.000	0.0000	0.000

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PREPARED BY	Y. Ando	26/07/01
CHECKED BY	E. NISHIMURA	09/08/2002

The sum total of (i) and (ii)

		MX	MY
I	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
II	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
III	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

CALCULATION		
Detailed Design on Port Reactivation Project in La Union Province		
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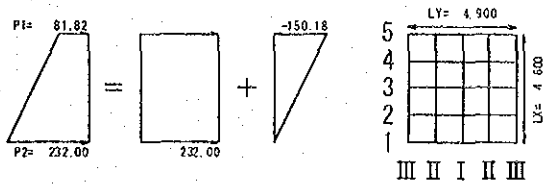
CALC INDEX No.:		PAGE 286
	INITIAL	DATE
PREPARED BY	Y.Ando	26/07/02
CHECKED BY	E. NISHIMURA	09/08/2002

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

$$\lambda = \frac{4.600}{4.900} = 0.94$$

The coefficient table of λ = 1.00 is used.



(i)Section force by equivalent uniform load
P = 232.00(kN/m²)
MX = P・LX²・X = 232.00 × 4.600² × X = 4909.12 × X
MY = P・LX²・Y = 232.00 × 4.600² × Y = 4909.12 × Y

		X	MX	Y	MY
I	5	-0.0513	-251.838	-0.0086	-42.218
	4	0.0096	47.128	0.0116	56.946
	3	0.0206	101.128	0.0206	101.128
	2	0.0096	47.128	0.0116	56.946
	1	-0.0513	-251.838	-0.0086	-42.218
II	5	-0.0324	-159.055	-0.0054	-26.509
	4	0.0059	28.964	0.0059	28.964
	3	0.0116	56.946	0.0096	47.128
	2	0.0059	28.964	0.0059	28.964
	1	-0.0324	-159.055	-0.0054	-26.509
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0054	-26.509	-0.0324	-159.055
	3	-0.0086	-42.218	-0.0513	-251.838
	2	-0.0054	-26.509	-0.0324	-159.055
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	E. NISHIMURA	09/08/2002

(ii) Section force by triangular distribution load

P = -150.18(kN/m²)

MX = P・LX²・X = -150.18 × 4.600² × X = -3177.81 × X

MY = P・LX²・Y = -150.18 × 4.600² × Y = -3177.81 × Y

		X	MX	Y	MY
I	5	-0.0334	106.139	-0.0056	17.796
	4	0.0080	-25.422	0.0069	-21.927
	3	0.0103	-32.731	0.0103	-32.731
	2	0.0015	-4.767	0.0047	-14.936
	1	-0.0179	56.883	-0.0030	9.533
II	5	-0.0223	70.865	-0.0037	11.758
	4	0.0052	-16.525	0.0040	-12.711
	3	0.0058	-18.431	0.0048	-15.253
	2	0.0006	-1.907	0.0018	-5.720
	1	-0.0101	32.096	-0.0017	5.402
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0036	11.440	-0.0208	66.098
	3	-0.0043	13.665	-0.0257	81.670
	2	-0.0019	6.038	-0.0116	36.863
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	E. NISHIMURA	09/08/2002

The sum total of (i) and (ii)

		MX	MY
I	5	-145.699	-24.422
	4	21.706	35.019
	3	68.397	68.397
	2	42.361	42.010
	1	-194.955	-32.685
II	5	-88.190	-14.751
	4	12.439	16.253
	3	38.515	31.875
	2	27.057	23.244
	1	-126.959	-21.107
III	5	0.000	0.000
	4	-15.069	-92.957
	3	-28.553	-170.168
	2	-20.471	-122.192
	1	0.000	0.000

CALCULATION		
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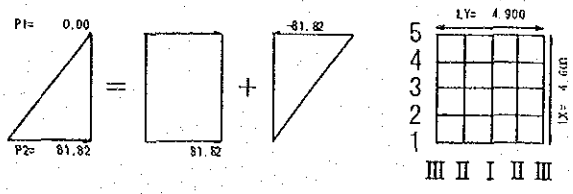
CHECKED BY	R. NISHIMURA	09/08/2002

C Room

Upward load (above)
slab fixed on four sides
P1 = 0.00(kN/m²)
P2 = 81.82(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 λ = 1.00 is used.



(i)Section force by equivalent uniform load
P = 81.82(kN/m²)
MX = P・LX²・X = 81.82 × 4.600² × X = 1731.31 × X
MY = P・LX²・Y = 81.82 × 4.600² × Y = 1731.31 × Y

		X	MX	Y	MY
I	5	-0.0513	-88.816	-0.0086	-14.889
	4	0.0096	16.621	0.0116	20.083
	3	0.0206	35.665	0.0206	35.665
	2	0.0096	16.621	0.0116	20.083
	1	-0.0513	-88.816	-0.0086	-14.889
II	5	-0.0324	-56.094	-0.0054	-9.349
	4	0.0059	10.215	0.0059	10.215
	3	0.0116	20.083	0.0096	16.621
	2	0.0059	10.215	0.0059	10.215
	1	-0.0324	-56.094	-0.0054	-9.349
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0054	-9.349	-0.0324	-56.094
	3	-0.0086	-14.889	-0.0513	-88.816
	2	-0.0054	-9.349	-0.0324	-56.094
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	E. MISHIMURA	05/08/2002

(ii) Section force by triangular distribution load

P = -81.82(kN/m²)

MX = P・LX²・X = -81.82 × 4.600² × X = -1731.31 × X

MY = P・LX²・Y = -81.82 × 4.600² × Y = -1731.31 × Y

		X	MX	Y	MY
I	5	-0.0334	57.826	-0.0056	9.695
	4	0.0080	-13.850	0.0069	-11.946
	3	0.0103	-17.833	0.0103	-17.833
	2	0.0015	-2.597	0.0047	-8.137
	1	-0.0179	30.990	-0.0030	5.194
II	5	-0.0223	38.608	-0.0037	6.406
	4	0.0052	-9.003	0.0040	-6.925
	3	0.0058	-10.042	0.0048	-8.310
	2	0.0006	-1.039	0.0018	-3.116
	1	-0.0101	17.486	-0.0017	2.943
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0036	6.233	-0.0208	36.011
	3	-0.0043	7.445	-0.0257	44.495
	2	-0.0019	3.289	-0.0116	20.083
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	R. NISHIMURA	09/08/2002

The sum total of (i) and (ii)

		MX	MY
I	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
II	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
III	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

CALCULATION		
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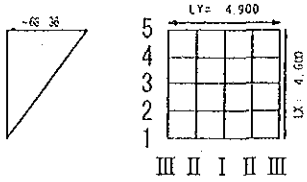
CHECKED BY	E. NOHIMOS	09/08/2002

C Room

Downward load (below)
slab fixed on four sides
P1 = -68.36(kN/m²)
P2 = 0.00(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 λ = 1.00 is used.



Section force by triangular distribution load
P = -68.36(kN/m²)
MX = P・LX²・X = -68.36 × 4.600² × X = -1446.50 × X
MY = P・LX²・Y = -68.36 × 4.600² × Y = -1446.50 × Y

		X	MX	Y	MY
I	5	-0.0334	48.313	-0.0056	8.100
	4	0.0080	-11.572	0.0069	-9.981
	3	0.0103	-14.899	0.0103	-14.899
	2	0.0015	-2.170	0.0047	-6.799
	1	-0.0179	25.892	-0.0030	4.339
II	5	-0.0223	32.257	-0.0037	5.352
	4	0.0052	-7.522	0.0040	-5.786
	3	0.0058	-8.390	0.0048	-6.943
	2	0.0006	-0.868	0.0018	-2.604
	1	-0.0101	14.610	-0.0017	2.459
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0036	5.207	-0.0208	30.087
	3	-0.0043	6.220	-0.0257	37.175
	2	-0.0019	2.748	-0.0116	16.779
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	R. NISHIMORA	09/08/2002

D Room

Downward load (below)

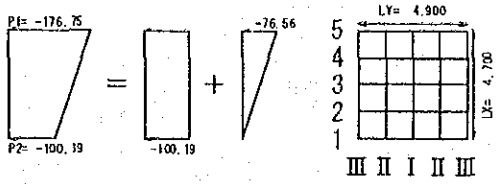
slab fixed on four sides

P1 = -176.75(kN/m²)

P2 = -100.19(kN/m²)

LX = 4.700(m)

LY = 4.900(m)



The ratio of a length of sides

$$\lambda = \frac{4.700}{4.900} = 0.96$$

The coefficient table of λ = 1.00 is used.

(i)Section force by equivalent uniform load

P = -100.19(kN/m²)

MX = P・LX²・X = -100.19 × 4.700² × X = -2213.20 × X

MY = P・LX²・Y = -100.19 × 4.700² × Y = -2213.20 × Y

		X	MX	Y	MY
I	5	-0.0513	113.537	-0.0086	19.033
	4	0.0096	-21.247	0.0116	-25.673
	3	0.0206	-45.592	0.0206	-45.592
	2	0.0096	-21.247	0.0116	-25.673
	1	-0.0513	113.537	-0.0086	19.033
II	5	-0.0324	71.708	-0.0054	11.951
	4	0.0059	-13.058	0.0059	-13.058
	3	0.0116	-25.673	0.0096	-21.247
	2	0.0059	-13.058	0.0059	-13.058
	1	-0.0324	71.708	-0.0054	11.951
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0054	11.951	-0.0324	71.708
	3	-0.0086	19.033	-0.0513	113.537
	2	-0.0054	11.951	-0.0324	71.708
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	E. NISHIMURA	09/08/2002

(ii) Section force by triangular distribution load

P = -76.56(kN/m²)

MX = P・LX²・X = -76.56 × 4.700² × X = -1691.21 × X

MY = P・LX²・Y = -76.56 × 4.700² × Y = -1691.21 × Y

		X	MX	Y	MY
I	5	-0.0334	56.486	-0.0056	9.471
	4	0.0080	-13.530	0.0069	-11.669
	3	0.0103	-17.419	0.0103	-17.419
	2	0.0015	-2.537	0.0047	-7.949
	1	-0.0179	30.273	-0.0030	5.074
II	5	-0.0223	37.714	-0.0037	6.257
	4	0.0052	-8.794	0.0040	-6.765
	3	0.0058	-9.809	0.0048	-8.118
	2	0.0006	-1.015	0.0018	-3.044
	1	-0.0101	17.081	-0.0017	2.875
III	5	0.0000	0.000	0.0000	0.000
	4	-0.0036	6.088	-0.0208	35.177
	3	-0.0043	7.272	-0.0257	43.464
	2	-0.0019	3.213	-0.0116	19.618
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	E. NISHIMURA	09/08/2002

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
II	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
III	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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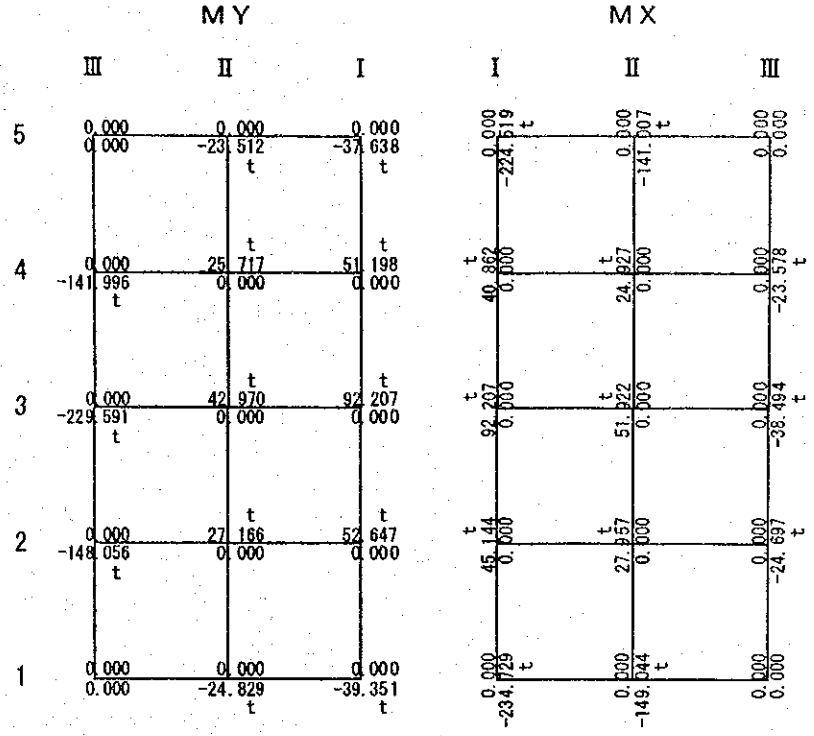
CHECKED BY	E. NISHINOMIYA	29/08/2002

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



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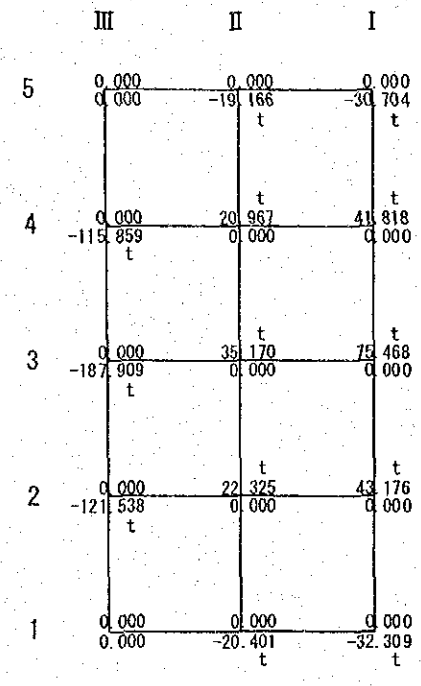
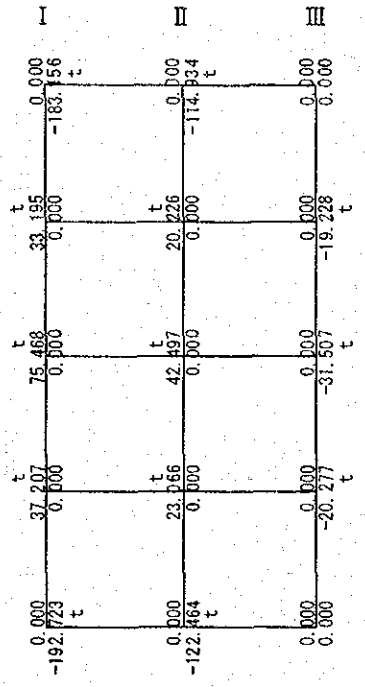
CHECKED BY	E. NISHIMURA	09/08/2002

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

MY



MX



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

CALCULATION		
Detailed Design on Port Reactivation Project In La Union Province		
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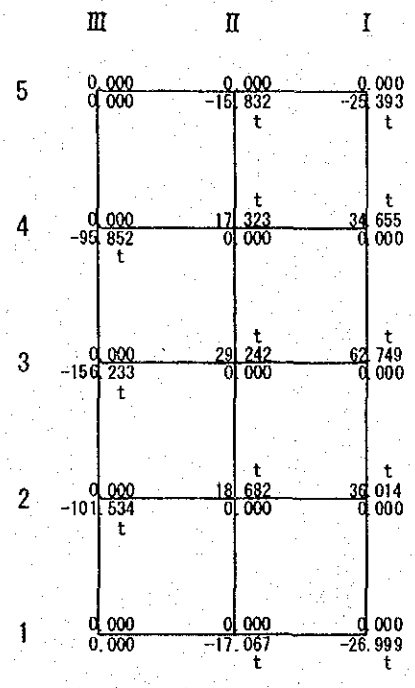
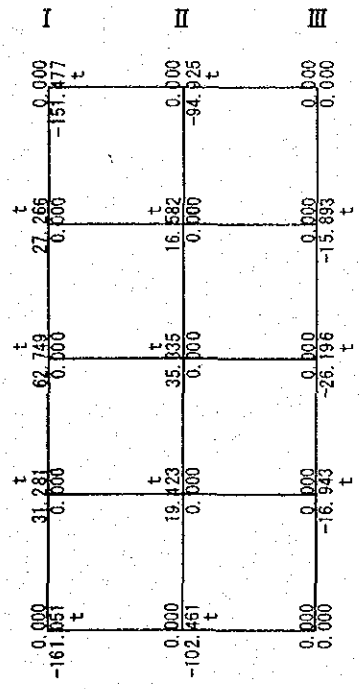
PREPARED BY	Y. Ando	26/07/02
CHECKED BY	R. NISHIHARA	01/08/2002

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

MY



MX



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

CALCULATION		
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PREPARED BY	Y. Ando	26/07/02
CHECKED BY	R. NISHIMURA	07/26/2002

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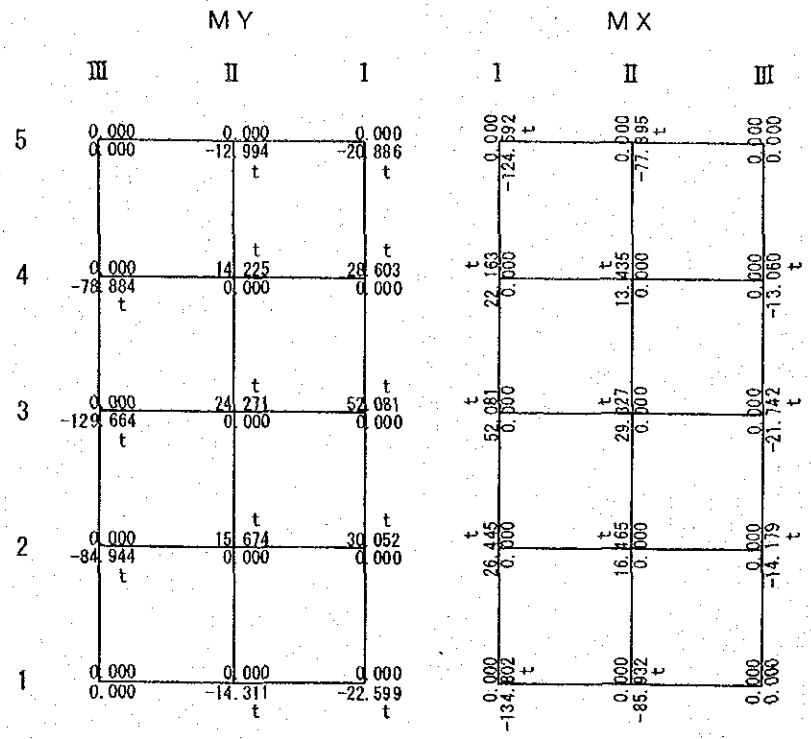
Under ordinary conditions Bottom slab D room Colligation of bending moment
Top(left)side : +moment
Bottom(right)side : −moment



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

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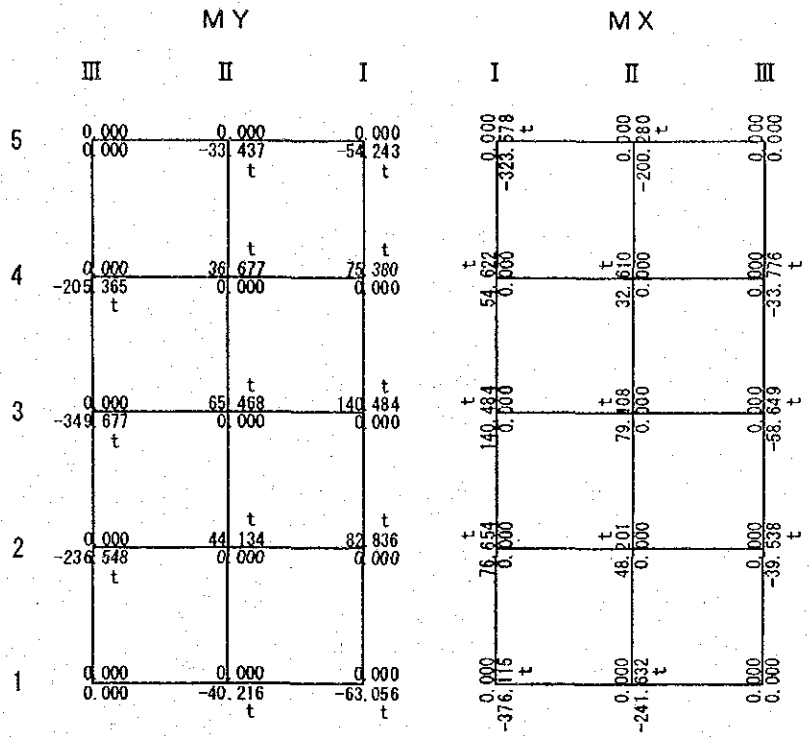
CHECKED BY	E. NISHIHARA	09/08/2002

During an earthquake　Bottom slab A 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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PREPARED BY	Y. Ando	26/07/02
CHECKED BY	E. NISHIMURA	09/08/2002

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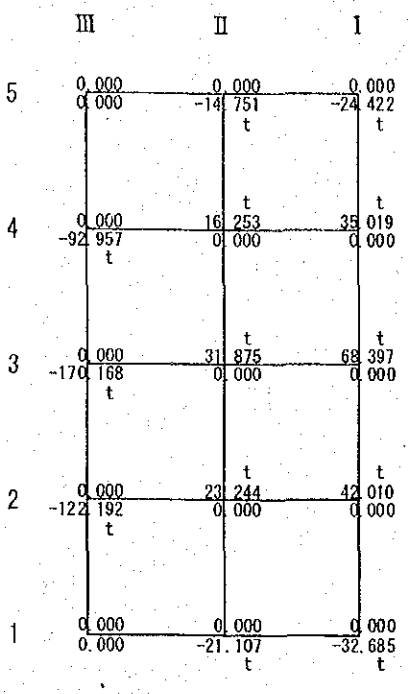
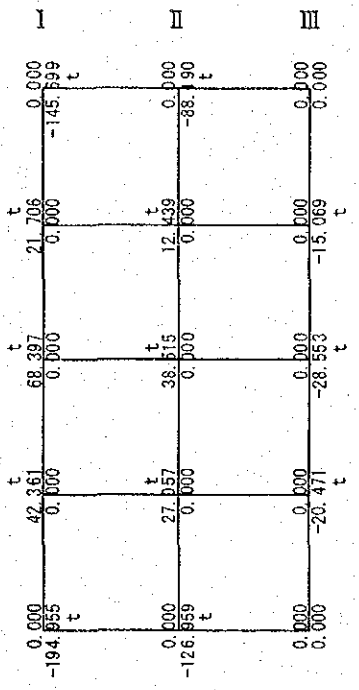
During an earthquake　Bottom slab B Room　Colligation of bending moment
Top(left)side : +moment
Bottom(right)side : −moment

MY



MX



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

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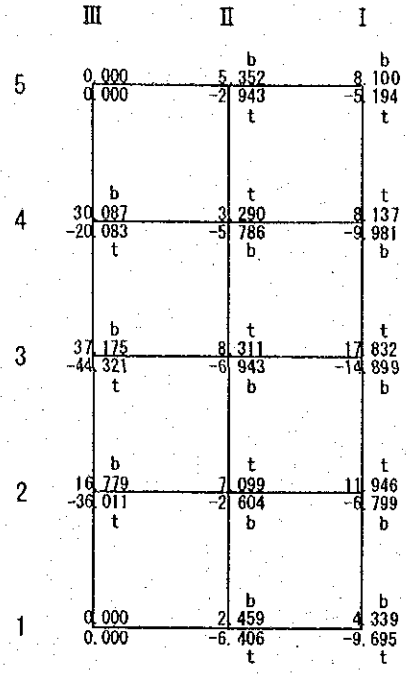
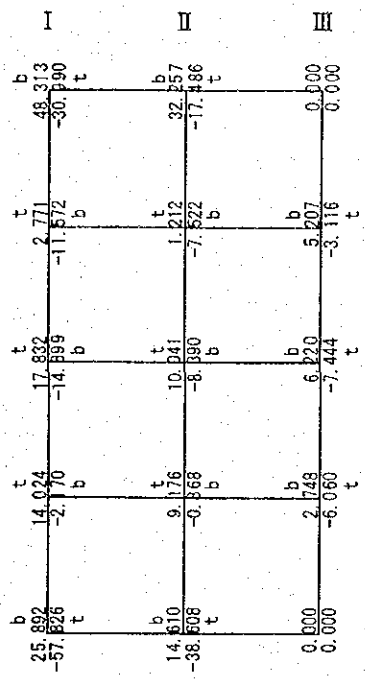
During an earthquake　Bottom slab C Room　Colligation of bending moment
Top(left)side : +moment
Bottom(right)side : −moment

MY



MX



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

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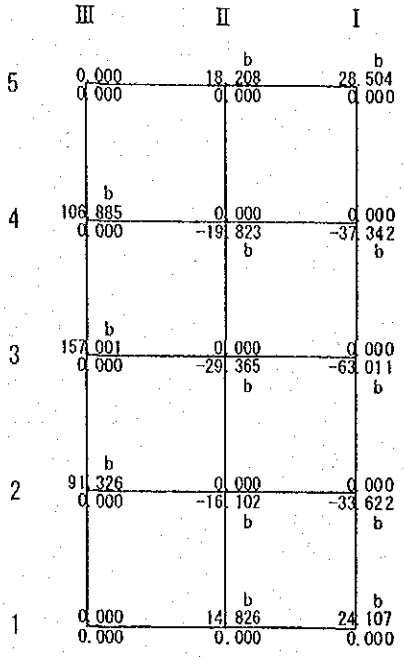
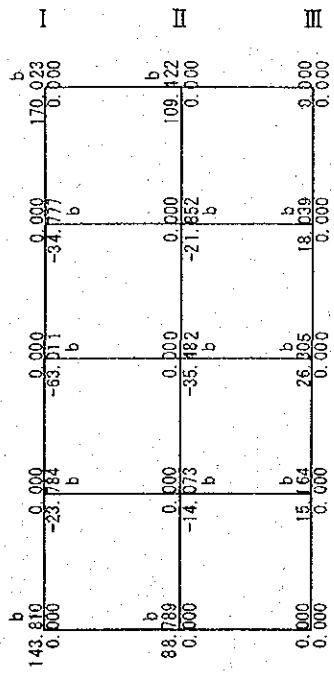
CHECKED BY	E. NISHIMURA	07/08/2002

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

MY



MX



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

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Footing

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

$M = 1/6 \cdot L^2 \cdot (2 \cdot P_1 + P_2)$

せん断力

$V = 1/2 \cdot L \cdot (P_1 + P_2)$

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 × 1.00² × (2 × 0.00 + 0.00) = 0.000 (kN·m/m)

V = 1/2 × 0.65 × (0.00 + 0.00) = 0.000 (kN/m)

Below

M = 1/6 × 1.00² × (2 × 346.58 + 337.73) = 171.815 (kN·m/m)

V = 1/2 × 0.65 × (346.58 + 340.83) = 223.408 (kN/m)

Land side

Above

M = 1/6 × 1.00² × (2 × 2.15 + 0.00) = 0.717 (kN·m/m)

V = 1/2 × 0.65 × (2.15 + 0.75) = 0.943 (kN/m)

Below

M = 1/6 × 1.00² × (2 × 0.00 + 3.49) = 0.582 (kN·m/m)

V = 1/2 × 0.65 × (0.00 + 2.27) = 0.738 (kN/m)

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(b) During an earthquake

Moment , Shearing force

Sea side

Above

M = 1/6 × 1.00² × (2 × 0.00 + 0.00) = 0.000 (kN·m/m)

V = 1/2 × 0.65 × (0.00 + 0.00) = 0.000 (kN/m)

Below

M = 1/6 × 1.00² × (2 × 594.42 + 558.99) = 291.305 (kN·m/m)

V = 1/2 × 0.65 × (594.42 + 571.39) = 378.888 (kN/m)

Land side

Above

M = 1/6 × 1.00² × (2 × 238.63 + 239.41) = 119.445 (kN·m/m)

V = 1/2 × 0.65 × (238.63 + 239.14) = 155.275 (kN/m)

Below

M = 1/6 × 1.00² × (2 × 0.00 + 0.00) = 0.000 (kN·m/m)

V = 1/2 × 0.65 × (0.00 + 0.00) = 0.000 (kN/m)

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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)

slab fixed on three sides and free on one side

P1 = 11.11(kN/m²)

P2 = 11.11(kN/m²)

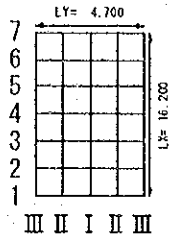
LX = 16.200(m)

LY = 4.700(m)

The ratio of a length of sides

$$\lambda = \frac{16.200}{4.700} = 3.45$$

The coefficient table of λ = 3.50 is used.



Section force by equivalent uniform load

P = 11.11(kN/m²)

MX = P・LY²・X = 11.11 × 4.700² × X = 245.42 × X

MY = P・LY²・Y = 11.11 × 4.700² × Y = 245.42 × Y

		X	MX	Y	MY
Ⅰ	7	0.0000	0.000	0.0432	10.602
	6	0.0067	1.644	0.0415	10.185
	5	0.0068	1.669	0.0416	10.209
	4	0.0069	1.693	0.0417	10.234
	3	0.0079	1.939	0.0417	10.234
	2	0.0132	3.240	0.0343	8.418
	1	-0.0564	-13.842	-0.0094	-2.307
Ⅱ	7	0.0000	0.000	0.0105	2.577
	6	0.0015	0.368	0.0104	2.552
	5	0.0015	0.368	0.0104	2.552
	4	0.0016	0.393	0.0104	2.552
	3	0.0022	0.540	0.0107	2.626
	2	0.0058	1.423	0.0105	2.577
	1	-0.0335	-8.222	-0.0056	-1.374
Ⅲ	7	0.0000	0.000	-0.0877	-21.523
	6	-0.0142	-3.485	-0.0851	-20.885
	5	-0.0141	-3.460	-0.0847	-20.787
	4	-0.0141	-3.460	-0.0846	-20.763
	3	-0.0143	-3.510	-0.0855	-20.983
	2	-0.0125	-3.068	-0.0750	-18.407
	1	0.0000	0.000	0.0000	0.000

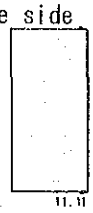
(b) Partition wall(parallel to centerline)

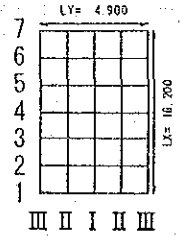
slab fixed on three sides and free on one side

P1 = 11.11(kN/m²)
P2 = 11.11(kN/m²)
LX = 16.200(m)
LY = 4.900(m)
The ratio of a length of sides

$$\lambda = \frac{16.200}{4.900} = 3.31$$

The coefficient table of λ = 3.25 is used.





Section force by equivalent uniform load

P = 11.11(kN/m²)
MX = P・LY²・X = 11.11 × 4.900² × X = 266.75 × X
MY = P・LY²・Y = 11.11 × 4.900² × Y = 266.75 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0432	11.524
	6	0.0067	1.787	0.0414	11.043
	5	0.0068	1.814	0.0416	11.097
	4	0.0070	1.867	0.0418	11.150
	3	0.0083	2.214	0.0415	11.070
	2	0.0136	3.628	0.0326	8.696
	1	-0.0565	-15.071	-0.0094	-2.507
II	7	0.0000	0.000	0.0105	2.801
	6	0.0015	0.400	0.0104	2.774
	5	0.0015	0.400	0.0104	2.774
	4	0.0017	0.453	0.0105	2.801
	3	0.0025	0.667	0.0107	2.854
	2	0.0062	1.654	0.0103	2.748
	1	-0.0338	-9.016	-0.0056	-1.494
III	7	0.0000	0.000	-0.0872	-23.261
	6	-0.0141	-3.761	-0.0847	-22.594
	5	-0.0141	-3.761	-0.0845	-22.540
	4	-0.0141	-3.761	-0.0846	-22.567
	3	-0.0142	-3.788	-0.0851	-22.701
	2	-0.0120	-3.201	-0.0720	-19.206
	1	0.0000	0.000	0.0000	0.000

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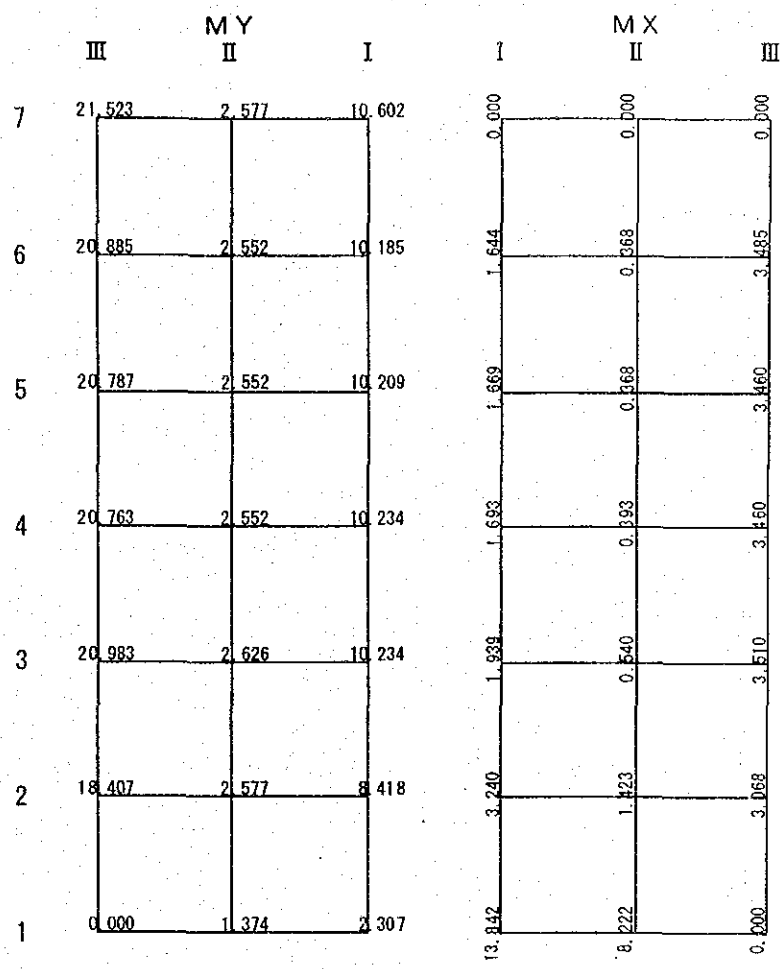
Partition wall(perpendicular to levee normal) Colligation of bending moment



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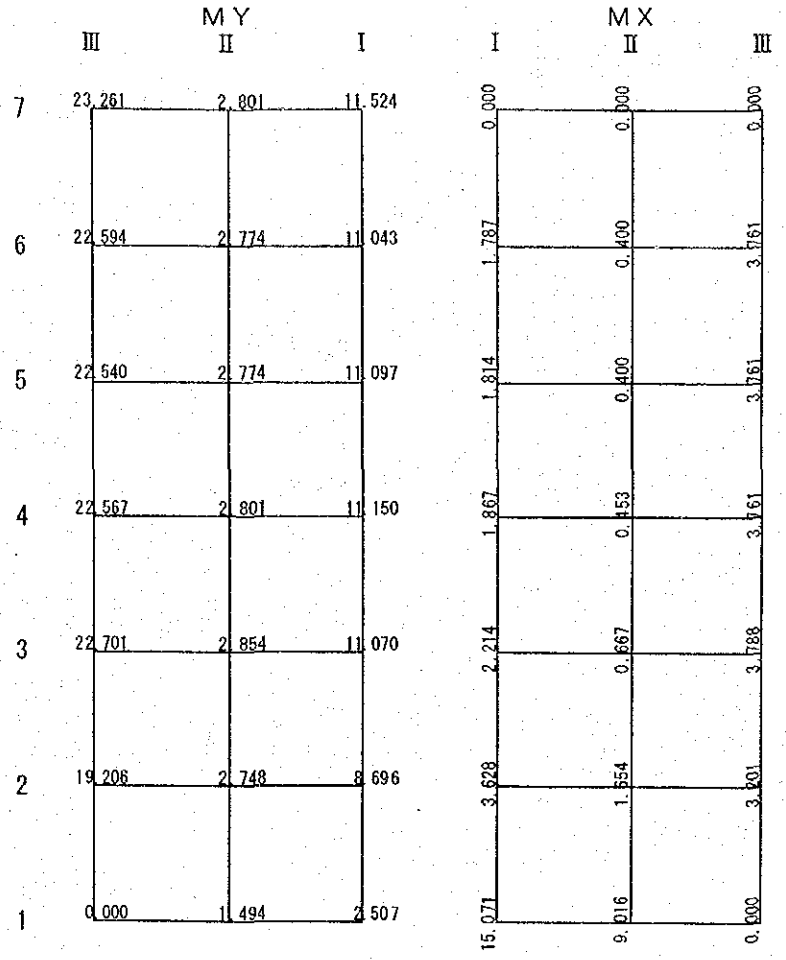
Partition wall(parallel to centerline)　Colligation of bending moment



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Serviceability limit state

Sidewall(perpendicular to levee normal)

(1) While afloat

slab fixed on three sides and free on one side

P1 = 0.00(kN/m²)

P2 = 38.43(kN/m²)

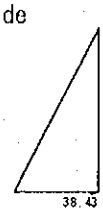
LX = 16.200(m)

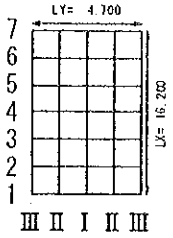
LY = 4.700(m)

The ratio of a length of sides

$$\lambda = \frac{16.200}{4.700} = 3.45$$

The coefficient table of λ = 3.50 is used.





Section force by triangular distribution load

P = 38.43(kN/m²)

MX = P・LY²・X = 38.43 × 4.700² × X = 848.92 × X

MY = P・LY²・Y = 38.43 × 4.700² × Y = 848.92 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0027	2.292
	6	0.0009	0.764	0.0071	6.027
	5	0.0022	1.868	0.0139	11.800
	4	0.0035	2.971	0.0209	17.742
	3	0.0055	4.669	0.0279	23.685
	2	0.0119	10.102	0.0278	23.600
	1	-0.0500	-42.446	-0.0083	-7.046
II	7	0.0000	0.000	0.0003	0.255
	6	0.0003	0.255	0.0017	1.443
	5	0.0005	0.424	0.0034	2.886
	4	0.0008	0.679	0.0052	4.414
	3	0.0015	1.273	0.0072	6.112
	2	0.0054	4.584	0.0088	7.470
	1	-0.0303	-25.722	-0.0050	-4.245
III	7	0.0000	0.000	-0.0002	-0.170
	6	-0.0019	-1.613	-0.0112	-9.508
	5	-0.0045	-3.820	-0.0269	-22.836
	4	-0.0072	-6.112	-0.0429	-36.419
	3	-0.0098	-8.319	-0.0588	-49.916
	2	-0.0104	-8.829	-0.0622	-52.803
	1	0.0000	0.000	0.0000	0.000

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(2) After Construction

slab fixed on three sides and free on one side

P1 = -38.21(kN/m²)

P2 = -50.84(kN/m²)

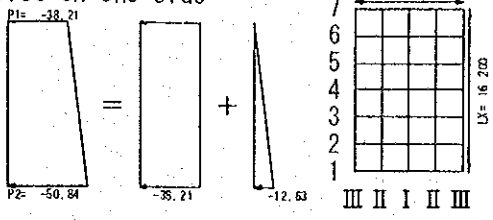
LX = 16.200(m)

LY = 4.700(m)

The ratio of a length of sides

$$\lambda = \frac{16.200}{4.700} = 3.45$$

The coefficient table of λ = 3.50 is used.



(i)Section force by equivalent uniform load

P = -38.21(kN/m²)

MX = P・LY²・X = -38.21 × 4.700² × X = -844.06 × X

MY = P・LY²・Y = -38.21 × 4.700² × Y = -844.06 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0432	-36.463
	6	0.0067	-5.655	0.0415	-35.028
	5	0.0068	-5.740	0.0416	-35.113
	4	0.0069	-5.824	0.0417	-35.197
	3	0.0079	-6.668	0.0417	-35.197
	2	0.0132	-11.142	0.0343	-28.951
	1	-0.0564	47.605	-0.0094	7.934
II	7	0.0000	0.000	0.0105	-8.863
	6	0.0015	-1.266	0.0104	-8.778
	5	0.0015	-1.266	0.0104	-8.778
	4	0.0016	-1.350	0.0104	-8.778
	3	0.0022	-1.857	0.0107	-9.031
	2	0.0058	-4.896	0.0105	-8.863
	1	-0.0335	28.276	-0.0056	4.727
III	7	0.0000	0.000	-0.0877	74.024
	6	-0.0142	11.986	-0.0851	71.829
	5	-0.0141	11.901	-0.0847	71.492
	4	-0.0141	11.901	-0.0846	71.407
	3	-0.0143	12.070	-0.0855	72.167
	2	-0.0125	10.551	-0.0750	63.304
	1	0.0000	0.000	0.0000	0.000

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(ii) Section force by triangular distribution load

P = -12.63(kN/m²)

MX = P・LY²・X = -12.63 × 4.700² × X = -279.00 × X

MY = P・LY²・Y = -12.63 × 4.700² × Y = -279.00 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0027	-0.753
	6	0.0009	-0.251	0.0071	-1.981
	5	0.0022	-0.614	0.0139	-3.878
	4	0.0035	-0.976	0.0209	-5.831
	3	0.0055	-1.534	0.0279	-7.784
	2	0.0119	-3.320	0.0278	-7.756
	1	-0.0500	13.950	-0.0083	2.316
II	7	0.0000	0.000	0.0003	-0.084
	6	0.0003	-0.084	0.0017	-0.474
	5	0.0005	-0.139	0.0034	-0.949
	4	0.0008	-0.223	0.0052	-1.451
	3	0.0015	-0.418	0.0072	-2.009
	2	0.0054	-1.507	0.0088	-2.455
	1	-0.0303	8.454	-0.0050	1.395
III	7	0.0000	0.000	-0.0002	0.056
	6	-0.0019	0.530	-0.0112	3.125
	5	-0.0045	1.255	-0.0269	7.505
	4	-0.0072	2.009	-0.0429	11.969
	3	-0.0098	2.734	-0.0588	16.405
	2	-0.0104	2.902	-0.0622	17.354
	1	0.0000	0.000	0.0000	0.000

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The sum total of (i) and (ii)

		MX	MY
I	7	0.000	-37.216
	6	-5.906	-37.009
	5	-6.354	-38.991
	4	-6.800	-41.028
	3	-8.202	-42.981
	2	-14.462	-36.707
	1	61.555	10.250
II	7	0.000	-8.947
	6	-1.350	-9.252
	5	-1.405	-9.727
	4	-1.573	-10.229
	3	-2.275	-11.040
	2	-6.403	-11.318
	1	36.730	6.122
III	7	0.000	74.080
	6	12.516	74.954
	5	13.156	78.997
	4	13.910	83.376
	3	14.804	88.572
	2	13.453	80.658
	1	0.000	0.000

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Sidewall(parallel to centerline)

(1) While afloat

slab fixed on three sides and free on one side

P1 = 0.00(kN/m²)

P2 = 38.43(kN/m²)

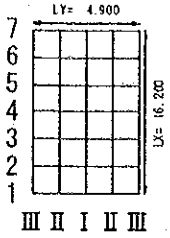
LX = 16.200(m)

LY = 4.900(m)

The ratio of a length of sides

$$\lambda = \frac{16.200}{4.900} = 3.31$$

The coefficient table of λ = 3.25 is used.



Section force by triangular distribution load

P = 38.43(kN/m²)

MX = P・LY²・X = 38.43 × 4.900² × X = 922.70 × X

MY = P・LY²・Y = 38.43 × 4.900² × Y = 922.70 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0029	2.676
	6	0.0008	0.738	0.0071	6.551
	5	0.0022	2.030	0.0139	12.826
	4	0.0035	3.229	0.0209	19.285
	3	0.0059	5.444	0.0277	25.559
	2	0.0123	11.349	0.0263	24.267
	1	-0.0496	-45.766	-0.0083	-7.658
II	7	0.0000	0.000	0.0003	0.277
	6	0.0002	0.185	0.0017	1.569
	5	0.0005	0.461	0.0034	3.137
	4	0.0008	0.738	0.0052	4.798
	3	0.0018	1.661	0.0072	6.643
	2	0.0058	5.352	0.0086	7.935
	1	-0.0302	-27.866	-0.0050	-4.614
III	7	0.0000	0.000	-0.0008	-0.738
	6	-0.0019	-1.753	-0.0116	-10.703
	5	-0.0045	-4.152	-0.0271	-25.005
	4	-0.0071	-6.551	-0.0428	-39.492
	3	-0.0097	-8.950	-0.0583	-53.794
	2	-0.0099	-9.135	-0.0594	-54.809
	1	0.0000	0.000	0.0000	0.000

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(2) After Construction

A.Sidewall(parallel to centerline:seaside)

slab fixed on three sides and free on one side

P1 = -37.75(kN/m²)

P2 = -49.64(kN/m²)

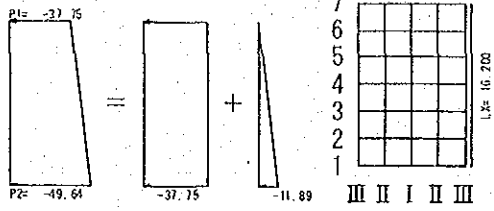
LX = 16.200(m)

LY = 4.900(m)

The ratio of a length of sides

$$\lambda = \frac{16.200}{4.900} = 3.31$$

The coefficient table of λ = 3.25 is used.



(i)Section force by equivalent uniform load

P = -37.75(kN/m²)

MX = P・LY²・X = -37.75 × 4.900² × X = -906.38 × X

MY = P・LY²・Y = -37.75 × 4.900² × Y = -906.38 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0432	-39.156
	6	0.0067	-6.073	0.0414	-37.524
	5	0.0068	-6.163	0.0416	-37.705
	4	0.0070	-6.345	0.0418	-37.887
	3	0.0083	-7.523	0.0415	-37.615
	2	0.0136	-12.327	0.0326	-29.548
	1	-0.0565	51.210	-0.0094	8.520
II	7	0.0000	0.000	0.0105	-9.517
	6	0.0015	-1.360	0.0104	-9.426
	5	0.0015	-1.360	0.0104	-9.426
	4	0.0017	-1.541	0.0105	-9.517
	3	0.0025	-2.266	0.0107	-9.698
	2	0.0062	-5.620	0.0103	-9.336
	1	-0.0338	30.636	-0.0056	5.076
III	7	0.0000	0.000	-0.0872	79.036
	6	-0.0141	12.780	-0.0847	76.770
	5	-0.0141	12.780	-0.0845	76.589
	4	-0.0141	12.780	-0.0846	76.680
	3	-0.0142	12.871	-0.0851	77.133
	2	-0.0120	10.877	-0.0720	65.259
	1	0.0000	0.000	0.0000	0.000

(ii) Section force by triangular distribution load

P = -11.89(kN/m²)

MX = P・LY²・X = -11.89 × 4.900² × X = -285.48 × X

MY = P・LY²・Y = -11.89 × 4.900² × Y = -285.48 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0029	-0.828
	6	0.0008	-0.228	0.0071	-2.027
	5	0.0022	-0.628	0.0139	-3.968
	4	0.0035	-0.999	0.0209	-5.967
	3	0.0059	-1.684	0.0277	-7.908
	2	0.0123	-3.511	0.0263	-7.508
	1	-0.0496	14.160	-0.0083	2.369
II	7	0.0000	0.000	0.0003	-0.086
	6	0.0002	-0.057	0.0017	-0.485
	5	0.0005	-0.143	0.0034	-0.971
	4	0.0008	-0.228	0.0052	-1.484
	3	0.0018	-0.514	0.0072	-2.055
	2	0.0058	-1.656	0.0086	-2.455
	1	-0.0302	8.621	-0.0050	1.427
III	7	0.0000	0.000	-0.0008	0.228
	6	-0.0019	0.542	-0.0116	3.312
	5	-0.0045	1.285	-0.0271	7.736
	4	-0.0071	2.027	-0.0428	12.219
	3	-0.0097	2.769	-0.0583	16.643
	2	-0.0099	2.826	-0.0594	16.957
	1	0.0000	0.000	0.0000	0.000

CALCULATION

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CHECKED BY	E. NISHIMURA	01/08/2002

The sum total of (i) and (ii)

		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
II	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
III	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

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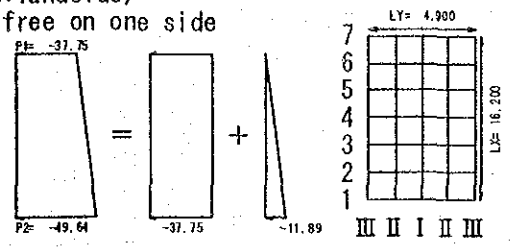
CHECKED BY	E. NISHIMURA	09/08/2002

B. Sidewall (parallel to centerline: landside)
slab fixed on three sides and free on one side

P1 = -37.75 (kN/m²)
P2 = -49.64 (kN/m²)
LX = 16.200 (m)
LY = 4.900 (m)
The ratio of a length of sides

$$\lambda = \frac{16.200}{4.900} = 3.31$$

The coefficient table of λ = 3.25 is used.



(i) Section force by equivalent uniform load

P = -37.75 (kN/m²)
MX = P・LY²・X = -37.75 × 4.900² × X = -906.38 × X
MY = P・LY²・Y = -37.75 × 4.900² × Y = -906.38 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0432	-39.156
	6	0.0067	-6.073	0.0414	-37.524
	5	0.0068	-6.163	0.0416	-37.705
	4	0.0070	-6.345	0.0418	-37.887
	3	0.0083	-7.523	0.0415	-37.615
	2	0.0136	-12.327	0.0326	-29.548
	1	-0.0565	51.210	-0.0094	8.520
II	7	0.0000	0.000	0.0105	-9.517
	6	0.0015	-1.360	0.0104	-9.426
	5	0.0015	-1.360	0.0104	-9.426
	4	0.0017	-1.541	0.0105	-9.517
	3	0.0025	-2.266	0.0107	-9.698
	2	0.0062	-5.620	0.0103	-9.336
	1	-0.0338	30.636	-0.0056	5.076
III	7	0.0000	0.000	-0.0872	79.036
	6	-0.0141	12.780	-0.0847	76.770
	5	-0.0141	12.780	-0.0845	76.589
	4	-0.0141	12.780	-0.0846	76.680
	3	-0.0142	12.871	-0.0851	77.133
	2	-0.0120	10.877	-0.0720	65.259
	1	0.0000	0.000	0.0000	0.000

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(ii) Section force by triangular distribution load

P = -11.89(kN/m²)

MX = P・LY²・X = -11.89 × 4.900² × X = -285.48 × X

MY = P・LY²・Y = -11.89 × 4.900² × Y = -285.48 × Y

		X	MX	Y	MY
I	7	0.0000	0.000	0.0029	-0.828
	6	0.0008	-0.228	0.0071	-2.027
	5	0.0022	-0.628	0.0139	-3.968
	4	0.0035	-0.999	0.0209	-5.967
	3	0.0059	-1.684	0.0277	-7.908
	2	0.0123	-3.511	0.0263	-7.508
	1	-0.0496	14.160	-0.0083	2.369
II	7	0.0000	0.000	0.0003	-0.086
	6	0.0002	-0.057	0.0017	-0.485
	5	0.0005	-0.143	0.0034	-0.971
	4	0.0008	-0.228	0.0052	-1.484
	3	0.0018	-0.514	0.0072	-2.055
	2	0.0058	-1.656	0.0086	-2.455
	1	-0.0302	8.621	-0.0050	1.427
III	7	0.0000	0.000	-0.0008	0.228
	6	-0.0019	0.542	-0.0116	3.312
	5	-0.0045	1.285	-0.0271	7.736
	4	-0.0071	2.027	-0.0428	12.219
	3	-0.0097	2.769	-0.0583	16.643
	2	-0.0099	2.826	-0.0594	16.957
	1	0.0000	0.000	0.0000	0.000

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CHECKED BY	E. NISHIHARA	09/08/2002

The sum total of (i) and (ii)

		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
II	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
III	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

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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

$$K1 = \frac{E1 \cdot I1}{L1} \qquad K2 = \frac{E2 \cdot I2}{L2}$$

$$E1 = E2 \qquad I1 = I2$$

The relative share of moment

$$e1 = \frac{K1}{K1 + K2} = \frac{L2}{L1 + L2} = \frac{4.900}{4.900 + 4.700} = 0.510$$

$$e2 = \frac{K2}{K1 + K2} = \frac{L1}{L1 + L2} = \frac{4.700}{4.900 + 4.700} = 0.490$$

Correction of moment in corner (ⅢAxis)

When referred to as (M1 > M2)

$$\Delta M = M1 - M2$$

Correction moment

$$M1' = M1 - \Delta M \cdot e1 = M1 - 0.510 \cdot \Delta M$$

$$M2' = M2 + \Delta M \cdot e2 = M2 + 0.490 \cdot \Delta M$$

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 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

Sidewall(perpendicular to levee normal) e1			Sidewall(parallel to centerline) e2		
Ⅰ	Ⅲ		Ⅲ		Ⅰ
$M_{1B} > M_{1B}'$	$M1 > M1'$	$\Delta M \cdot e1$ (ΔM)	$\Delta M \cdot e2$	$M2 < M2'$	$1/2 \cdot \Delta M \cdot e2 < M_{2B} > M_{2B}'$

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CHECKED BY	E. NISHIMURA	01/08/2002

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

Sidewall(perpendicular to levee normal:seaside) e1 = 0.510					Front wall(parallel to centerline:seaside) e2 = 0.490			
	I		III			III		I
7	2.292		-0.170			-0.738		2.676
	>	0.145	>	0.290 (0.568)	0.278	<	0.139	<
7'	2.147		-0.460			-0.460		2.815
6	6.027		-9.508			-10.703		6.551
	>	0.305	>	0.609 (1.195)	0.586	<	0.293	<
6'	5.722		-10.117			-10.117		6.844
5	11.800		-22.836			-25.005		12.826
	>	0.553	>	1.106 (2.169)	1.063	<	0.531	<
5'	11.247		-23.942			-23.942		13.357
4	17.742		-36.419			-39.492		19.285
	>	0.784	>	1.567 (3.073)	1.506	<	0.753	<
4'	16.958		-37.986			-37.986		20.038
3	23.685		-49.916			-53.794		25.559
	>	0.989	>	1.978 (3.878)	1.900	<	0.950	<
3'	22.696		-51.894			-51.894		26.509
2	23.600		-52.803			-54.809		24.267
	>	0.512	>	1.023 (2.006)	0.983	<	0.491	<
2'	23.088		-53.826			-53.826		24.758
1	-7.046		0.000			0.000		-7.658
	>	0.000	>	0.000 (0.000)	0.000	<	0.000	<
1'	-7.046		0.000			0.000		-7.658

The moment after correction

Sidewall (perpendicular to levee normal: seaside) e1 = 0.510			Front wall (parallel to centerline: seaside) e2 = 0.490	
	I	III	III	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

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The moment after correction

Sidewall (perpendicular to levee normal: seaside) e1 = 0.510			Front wall (parallel to centerline: seaside) e2 = 0.490	
	I	III	III	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

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(2) After Construction

Sidewall (perpendicular to levee normal: seaside) e1 = 0.510						Front wall (parallel to centerline: seaside) e2 = 0.490				
	I		III				III		I	
7	-37.216		74.080				79.264		-39.984	
	>	1.322	>	2.644	(5.184)	2.540	<	1.270	<	
7'	-35.894		76.724				76.724		-41.254	
6	-37.009		74.954				80.082		-39.551	
	>	1.308	>	2.615	(5.128)	2.513	<	1.256	<	
6'	-35.701		77.569				77.569		-40.807	
5	-38.991		78.997				84.325		-41.673	
	>	1.359	>	2.717	(5.328)	2.611	<	1.305	<	
5'	-37.632		81.714				81.714		-42.978	
4	-41.028		83.376				88.899		-43.854	
	>	1.408	>	2.817	(5.523)	2.706	<	1.353	<	
4'	-39.620		86.193				86.193		-45.207	
3	-42.981		88.572				93.776		-45.523	
	>	1.327	>	2.654	(5.204)	2.550	<	1.275	<	
3'	-41.654		91.226				91.226		-46.798	
2	-36.707		80.658				82.216		-37.056	
	>	0.397	>	0.795	(1.558)	0.763	<	0.382	<	
2'	-36.310		81.453				81.453		-37.438	
1	10.250		0.000				0.000		10.889	
	>	0.000	>	0.000	(0.000)	0.000	<	0.000	<	
1'	10.250		0.000				0.000		10.889	

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CHECKED BY	E. NISHIMURA	09/08/2002

The moment after correction

Sidewall(perpendicular to levee normal:seaside) e1 = 0.510		Front wall(parallel to centerline:seaside) e2 = 0.490	
I	III	III	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

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

Sidewall (perpendicular to levee normal : landside) e1 = 0.510						Rear wall (parallel to centerline : landside) e2 = 0.490				
	I		III				III			I
7	2.292		-0.170				-0.738			2.676
	>	0.145	>	0.290 (	0.568)	0.278	<	0.139	<	
7'	2.147		-0.460				-0.460			2.815
6	6.027		-9.508				-10.703			6.551
	>	0.305	>	0.609 (	1.195)	0.586	<	0.293	<	
6'	5.722		-10.117				-10.117			6.844
5	11.800		-22.836				-25.005			12.826
	>	0.553	>	1.106 (	2.169)	1.063	<	0.531	<	
5'	11.247		-23.942				-23.942			13.357
4	17.742		-36.419				-39.492			19.285
	>	0.784	>	1.567 (	3.073)	1.506	<	0.753	<	
4'	16.958		-37.986				-37.986			20.038
3	23.685		-49.916				-53.794			25.559
	>	0.989	>	1.978 (	3.878)	1.900	<	0.950	<	
3'	22.696		-51.894				-51.894			26.509
2	23.600		-52.803				-54.809			24.267
	>	0.512	>	1.023 (	2.006)	0.983	<	0.491	<	
2'	23.088		-53.826				-53.826			24.758
1	-7.046		0.000				0.000			-7.658
	>	0.000	>	0.000 (	0.000)	0.000	<	0.000	<	
1'	-7.046		0.000				0.000			-7.658

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CHECKED BY	R. NISHIMURA	09/08/2002

The moment after correction

	Sidewall (perpendicular to levee normal : landside) e1 = 0.510		Rear wall (parallel to centerline : landside) e2 = 0.490	
	I	III	III	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

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PREPARED BY	Y. Ando	26/07/02
CHECKED BY	E. DUMAUAS	03/08/2002

(2) After Construction

Sidewall (perpendicular to levee normal : landside) e1 = 0.510					Rear wall (parallel to centerline : landside) e2 = 0.490			
	I		III			III		I
7	-37.216		74.080			79.264		-39.984
	>	1.322	>	2.644 (5.184)	2.540	<	1.270	<
7'	-35.894		76.724			76.724		-41.254
6	-37.009		74.954			80.082		-39.551
	>	1.308	>	2.615 (5.128)	2.513	<	1.256	<
6'	-35.701		77.569			77.569		-40.807
5	-38.991		78.997			84.325		-41.673
	>	1.359	>	2.717 (5.328)	2.611	<	1.305	<
5'	-37.632		81.714			81.714		-42.978
4	-41.028		83.376			88.899		-43.854
	>	1.408	>	2.817 (5.523)	2.706	<	1.353	<
4'	-39.620		86.193			86.193		-45.207
3	-42.981		88.572			93.776		-45.523
	>	1.327	>	2.654 (5.204)	2.550	<	1.275	<
3'	-41.654		91.226			91.226		-46.798
2	-36.707		80.658			82.216		-37.056
	>	0.397	>	0.795 (1.558)	0.763	<	0.382	<
2'	-36.310		81.453			81.453		-37.438
1	10.250		0.000			0.000		10.889
	>	0.000	>	0.000 (0.000)	0.000	<	0.000	<
1'	10.250		0.000			0.000		10.889

The moment after correction

Sidewall (perpendicular to levee normal : landside) e1 = 0.510		Rear wall (parallel to centerline : landside) e2 = 0.490	
I	III	III	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

CALCULATION		
Detailed Design on Port Reactivation Project in La Union Province		
CALC FILE No.:		
CALC INDEX No.:		PAGE 330
	INITIAL	DATE
PREPARED BY	Y. Ando	12/07/02
CHECKED BY	E. KUSHIMOTO	07/08/2002