社会開発調査部報告書

No. 04

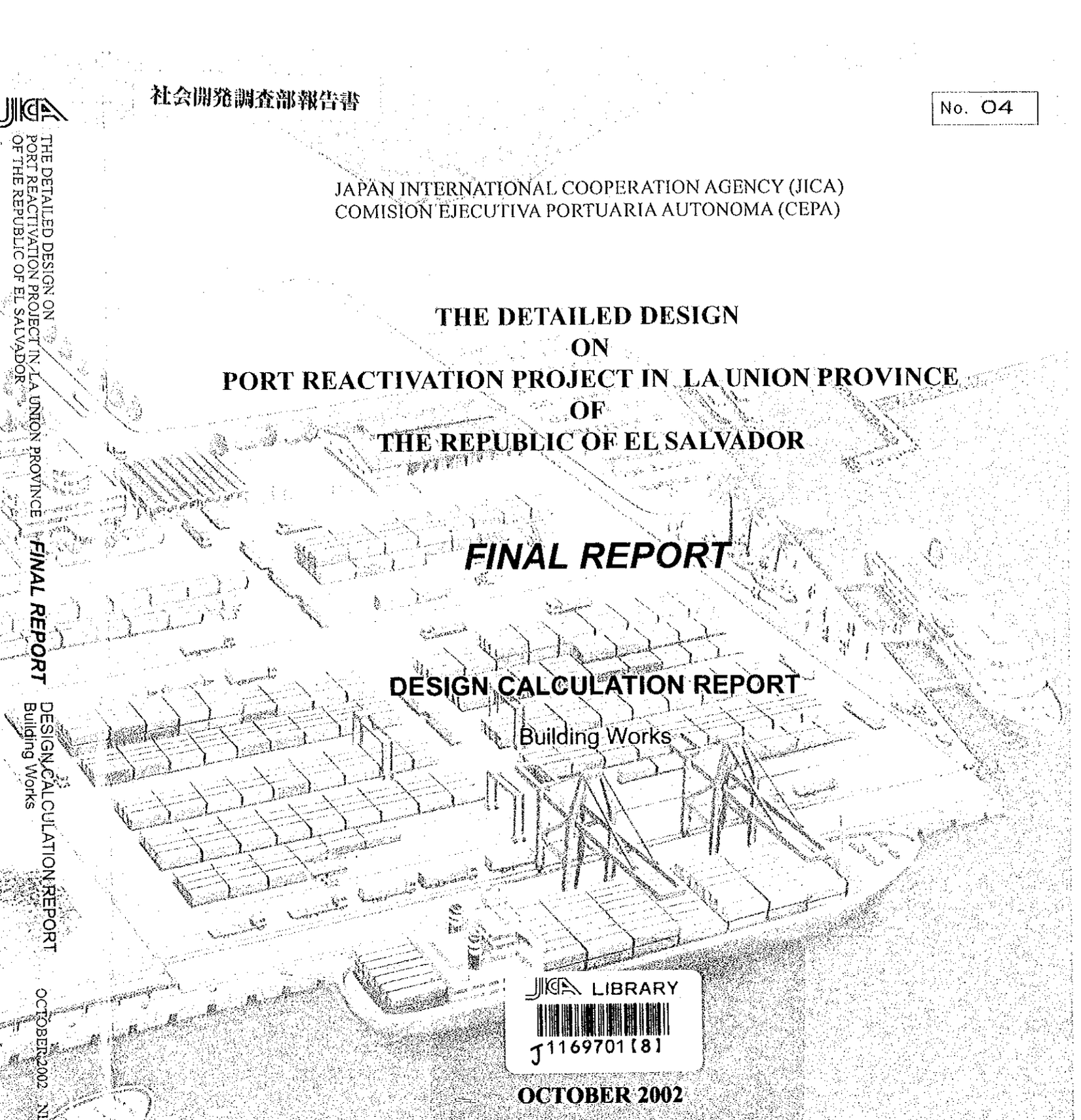
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

THE DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR

FINAL REPORT

DESIGN CALCULATION REPORT

Building Works



OCTOBER 2002

NIPPON KOEI CO., LTD.

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COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

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ON
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DESIGN CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province.	**Project Code**	JC1N004
Section	**BUILDING WORKS**	Calc. File No.	
Sub-Section	**GENERAL**	Calc. Index No.	

Subject:

STRUCTURAL DESIGN GENERAL NOTES

Calculation Objective:

References, Calculation Notes and Comments

Rev	Prepared		No. of	Checked		Reviewed		Superseded
	by	Date	Pages	by	Date	by	Date	by Calc No.
O	Rubén Martínez	Jul-02	4	A. MORIOKA	Jul-02	[signature]	Jul 2002	
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B								
C								

1. GENERAL

This document includes the structural design of the buildings of the project: " Detailed Design on Port Reactivation Project in La Union Province". All the building's main structure is supported by driven precast prestressed concrete piles, and the type of structure is described below:

Building	Type of Structure
Port Administration Building	Reinforced concrete frames
Container Freight Station (C.F.S.)	Structural steel frames
Maintenance & Repair Shop	Structural steel frames
Container and Cargo Gate	Reinforced concrete frames and structural steel for roof
Power Supply Station	Reinforced concrete frames

2. DESIGN CODES

All Structural Design conforms to Local and American Standards:

A) Technical Specification for Seismic Design, Ministry of Public Works, El Salvador, 2001.
B) Technical Specification for Wind Design, Ministry of Public Works, El Salvador, 1997.
C) Building Code Requirements for Structural Concrete (318M-99), American Concrete Institute (ACI).
D) UBC, Uniform Building Code, Volume 2: Structural Engineering Design Provisions, 1997.
E) AISC, American Institute of Steel Construction, ninth Edition, 1989.
F) Standard Specifications of the American Society for Testing Materials.

3. DESIGN CALCULATIONS.

All the structural analysis is performed only considering the stiffness of the steel or concrete frames, and is carry out by the use of the software: "STAAD-III rev 21.1W, RESEARCH ENGINEERS, Inc.".

The design calculations are presented by the use of MICROSOFT EXCEL worksheets constructed for the project, the design methods considerer are as follows:

Type of Structure	Design Method
Reinforced Concrete	Load Factor
Prestressed Concrete	Allowable Stress
Structural Steel	Allowable Stress

4. BASIC DESIGN DATA

a) Dead Load

Concrete, 2400 kg/m³
Structural Steel, 7800 kg/cm³

b) Live Load

ROOM	LIVE LOAD (kg/m²)	
	Wm	Wi
OFFICE	250	180
AUDITORIUM	350	150
HALLWALK	350	150
TOILET	170	120
MACHINE ROOM	600	125
MAINT. & REPAIR SHOP 1ST FLOOR	2000	1800
ROOF SLOPE < 5 %	100	50
ROOF SLOPE > 5 %	20	0

Wm : For gravity analysis
Wi : For Seismic analysis

c) Seismic Load

$V = Cs\ W$ $\qquad Cs = A\ I\ Co\ (To/T)^{2/3}$ (Local code)

Coefficient of aceleration, a=0.40 (zone I)
Importance factor, I =1.0 (1.2 for port administration building)
Coefficient of site, Co=3.0 To=0.9
Co=2.75 To=0.5 (FOR CONTAINER FREIGHT STATION)
Response modification factor, R=12.00 (System A)
Natural period of the structure, calculated by the computer program.

d) Wind Load

$P = Cp\ Cz\ K\ Po$ (Local code)

Basic pressure, Po=30 kg/m²
Correction factor for zone, K = 1.60
Correction factor for height

$Cz = 1.0$ FOR $H < 10$ m

$Cz = (H/10)^{2/a}$ FOR H>10 m, a = 7.0 (ZONE C)

Factor for shape, Cp (SEE Technical Specification for WIND Design)
For steel walls, Cp = 0.80. For Steel roofs, Cp = 0.70.

e) Load Factors

Load Combination	β	Load Factors				
		DL	LL	SL	WL	E
1	1	1.4	1.7	0	0	0
2	0.75	1.4	1.7	1.87	0	0
3	1	0.9	0	1.43	0	0
4	0.75	1.4	1.7	0	1.7	0
5	1	0.9	0	0	1.3	0
6	1	1.4	1.7	0	0	1.7
7	1	0.9	0	0	0	1.7
8	0.75	1.4	1.7	0	0	0
9	1	1.4	0	0	0	0

Load Combination = β (DL + LL + SL + WL + E)

DL	Dead Load	WL	Wind Load
LL	Live Load	E	Earth Pressure
SL	Seismic Load		

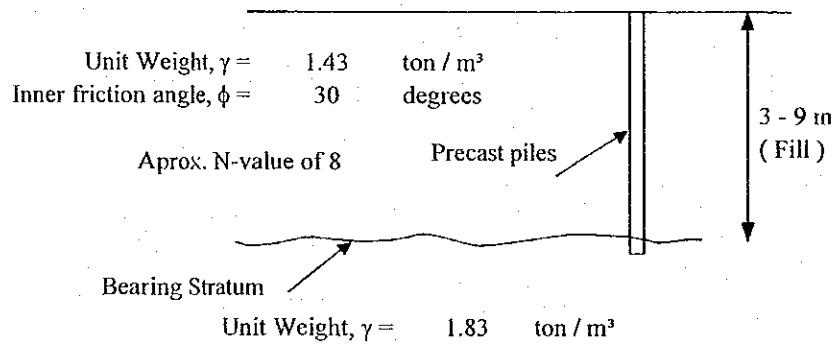
a) Example for group 1: 1.00(1.4DL+1.70LL)

b) For service load method (Allowable Stress) all the factors are equal to 1.

f) Soil Conditions

The buildings will be constructed on a fill, so the foundations have to extend to the bearing layer by the use of precast piles, the soil conditions and the bearing capacity of piles are as follows:

- Soil Conditions



- Bearing Capacity of piles

BUILDING	BEARING LAYER	PILE LENGHT	PILE BEARING CAPACITY (Ton) 40x40 (cm)	45x45 (cm)	50x50 (cm)
PORT ADMINISTRATION	Silty sand with N50	5 m	-	74.00	91.30
CONTAINER FREIGHT STATION	Silty sand with N50	7 m	80.60	101.90	-
MAINTENANCE & REPAIR SHOP	Silty sand with N50	4 m	47.40	60.00	-
CONTAINER GATE	Silty sand with N50	5 m	58.40	74.00	-
CARGO GATE	Gravelly sand with N30	10 m	46.60	65.20	-
POWER SUPLLY STATION	Silty sand with N50	7 m	80.60	-	-

f) Materials

- Concrete compresive strength (f'c)

Type of Concrete	f'c
Precast prestressed concrete piles	350 kg/cm²
Release strenght for piles	280 kg/cm²
Foundations (Below first floor level)	210 kg/cm²
Slabs, columns, beams & walls	280 kg/cm²
Precast prestressed slab	350 kg/cm²
Lean concrete	180 kg/cm²

- Reinforcing Steel

Deformed Bar, ASTM A-615 Grade 60 (fy = 4200 kg/cm²)

- Prestressing steel for piles.

Uncoated seven wire stress relieved strands for prestressed concrete, grade 1750, (Ultimate strength fpu =7,500 kg/cm²). Tension force to apply = 0.70 fpu.
Nominal diameter = 12.7 mm.

- Structural steel

ASTM A-36 (Fy = 2520 kg/cm²)
ASTM A-325

DESIGN CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province.	**Project Code**	JC1N004
Section	**BUILDING WORKS**	Calc. File No.	
Sub-Section	**PORT ADMINISTRATION BUILDING**	Calc. Index No.	

Subject:

STRUCTURAL DESIGN

Calculation Objective:

The objective of the calculation is to provide a safe structure for the ocupation of the building, by the use of the Republic of El Salvador and American design standards.

References, Calculation Notes and Comments

The Structural Analysis has been made using the program: "STAAD-III rev 21.1W, RESEARCH ENGINEERS, Inc.". The analysis of the structure considers only the concrete frames to resist the vertical and lateral forces, not considering the walls in the model.

Two models for the structure have been constructed:

1- For the calculation of the Dead & Live load.

2- For the calculation of the seismic forces.

The Key for the STAAD-III rev 21.1W program is attached for future convinience.

All the design has been made by calculations sheet created for the project in Microsoft Excel, and based in the following bibliography:

1. Building Code Requirements for Structural Concrete (318M-99), American Concrete Institute (ACI).

2. Technical Specification for Seismic Design, Ministry of Public Works, El Salvador, 2001.

3. AISC, American Institute of Steel Construction, ninth Edition, 1989.

4. UBC, Uniform Building Code, Volume 2: Structural Engineering Design Provisions, 1997.

Rev	Prepared		No. of	Checked		Reviewed		Superseded
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O	Rubén Martínez	Jul-02	232	A. MORIOKA	Jul-02		July 2002	
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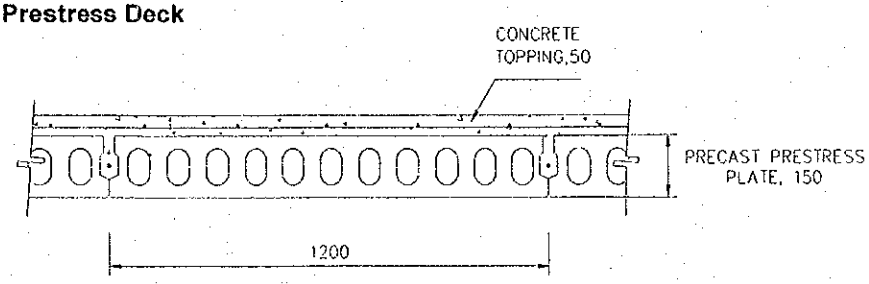
C								

- DEAD LOAD

Precast Prestress Deck



Precast deck thickness =	0.15	m	Weight =	225.00	kg/m²
Concrete topping thickness =	0.05	m	Weight =	120.00	kg/m²
Total weight =	345.00	kg/m²			

Reinforced Concrete Slab

Slab 1 thickness =	0.15	m	Weight =	360.00	kg/m²
Slab 2 thickness =	0.12	m	Weight =	288.00	kg/m²

Ceiling

The ceiling consists of cement fiber board with aluminium frame.

Weight = 20.00 kg/m²

Floor finish

The floor finish consists of Ceramic Tile.

Weight = 60.00 kg/m²

Asphalt protection.

The asphalt protection is used for the roof.

Weight = 15.00 kg/m²

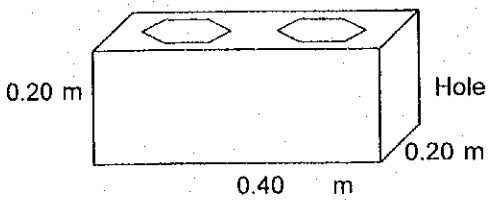
Concrete protection.

The concrete protection is used for the toilets and roof.

Weight = 48.00 kg/m² th = 0.02 m

Walls

a) Concrete Hollow Block wall, th = 0.20 m



Area of block = 0.08 m²

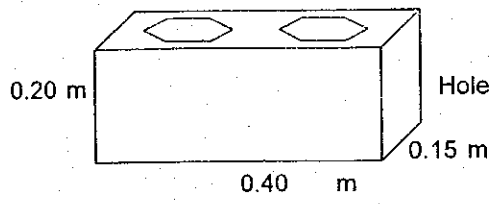
Weight of block = 14.06 kg

Hole filled with concrete = 9.41 kg

23.47 kg

Wall weight = 293.37 kg/m²

b) Concrete Hollow Block wall, th = 0.15 m



Area of block = 0.08 m²

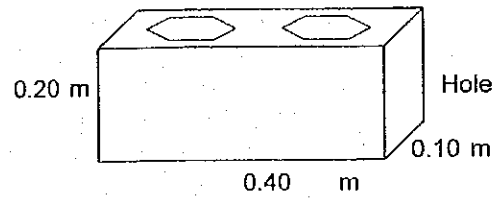
Weight of block = 11.34 kg

Hole filled with concrete = 6.72 kg

18.06 kg

Wall weight = 225.75 kg/m²

c) Concrete Hollow Block wall, th = 0.10 m



Area of block = 0.08 m²

Weight of block = 8.62 kg

Hole filled with concrete = 3.36 kg

11.98 kg

Wall weight = 149.73 kg/m²

d) Concrete wall

Thickness = 0.15 m Density = 2400 kg/m³

Wall weight = 360.00 kg/m²

Concrete block wall weights

Level	W height (m)	thickness (m)	W weight (kg/m²)	Dist. Weight (kg/m)
1	4.55	0.20	293.37	1334.82
2 to 6	3.20	0.20	293.37	938.78
1	4.55	0.15	225.75	1027.15
2 to 6	3.50	0.15	225.75	790.12
1	4.55	0.10	149.73	681.26
2 to 6	3.50	0.10	149.73	524.05

WEIGHTS PER LEVEL

Second Level

a) Roof

Concrete slab, th=0.12m	288.00			
Ceiling	20.00	Wd =	371.00	kg/m²
Asphalt protection	15.00			
Concrete protection	48.00			

b) Office

Precast Prestress slab	345.00			
Ceiling	20.00	Wd =	425.00	kg/m²
Floor finish	60.00			

c) Toilets & Kitchen

Concrete slab, th=0.15m	360.00			
Ceiling	20.00			
Concrete protection	48.00	Wd =	488.00	kg/m²
Floor finish	60.00			

Third Level

a) Office

Precast Prestress slab	345.00			
Ceiling	20.00	Wd =	425.00	kg/m²
Floor finish	60.00			

b) Toilets & Kitchen

Concrete slab, th=0.15m	360.00			
Ceiling	20.00			
Concrete protection	48.00	Wd =	488.00	kg/m²
Floor finish	60.00			

Fourth Level

a) Roof

Precast Prestress slab	345.00			
Ceiling	20.00	Wd =	473.00	kg/m²
Concrete protection	48.00			
Floor finish (future)	60.00			

b) Toilets & Kitchen

Concrete slab, th=0.15m	360.00			
Ceiling	20.00	Wd =	488.00	kg/m²
Concrete protection	48.00			
Floor finish	60.00			

c) Office

Concrete slab, th=0.15m	360.00			
Ceiling	20.00	Wd =	440.00	kg/m²
Floor finish	60.00			

Fifth & Sixth Level

a) Toilets & Kitchen

Concrete slab, th=0.15m	360.00			
Ceiling	20.00	Wd =	488.00	kg/m²
Concrete protection	48.00			
Floor finish	60.00			

b) Office

Concrete slab, th=0.15m	360.00			
Ceiling	20.00	Wd =	440.00	kg/m²
Floor finish	60.00			

PROJECT: Detailed Design on Port Reactivation Project in La Union Province	Calc. File No.		Prepared by	R.Martinez
SECTION: Port Administration Building	Calc. Index No.		Checked by	A.MORIOKA
SUBJECT: Dead & Live Load for Port Adm. Building	Date	July-02	Page	5/232

Roof

a) Roof

Concrete slab, th=0.12m	288.00	Wd =	371.00 kg/m²
Ceiling	20.00		
Asphalt protection	15.00		
Concrete protection	48.00		

- LIVE LOAD

Level	Room	Live load (kg/m²) Wm	Wi
2	Roof, slope < 5 %	100	50
	Office	250	180
	Hallwalk	350	150
	Machine room	600	125
3	Auditorium	350	150
	Office	250	180
	Hallwalk	350	150
	Machine room	600	125
4	Roof for meetings	350	150
	Office	250	180
	Hallwalk	350	150
	Machine room	600	125
5 & 6	Office	250	180
	Hallwalk	350	150
	Machine room	600	125
Roof	Roof, slope < 5 %	100	50

Notes:

Wm, Live load for gravity analysis.
Wi, Live load for seismic analysis.

Second Floor loads

- Roof

Beams between 1 & 2 Axis

Exterior beams

Tributary area =	6.75	m²	Wd =	417.4	kg/m
L beam =	6	m	Wwall =	0.00	kg/m
			Wdead =	417.4	kg/m
			Wlive =	112.5	kg/m

Interior beams

Tributary area =	13.5	m²	Wd =	834.8	kg/m
L beam =	6	m	Wwall =	0.00	kg/m
			Wdead =	834.8	kg/m
			Wlive =	225	kg/m

Beams in Axis 1 & 2

Tributary area =	3.33	m²	Wd =	318.8	kg/m
L beam =	3.875	m	Wwall =	0.00	kg/m
			Wdead =	318.8	kg/m
			Wlive =	85.94	kg/m

- Office

Beams in Axis C

Tributary width =	2.54	m	Wd =	1078.4	kg/m
			Wwall =	938.78	kg/m
			Wdead =	2017.2	kg/m
			Wlive =	634.38	kg/m

Beams between axis B & C

Tributary width =	3.86	m	Wd =	1641.6	kg/m
			Wwall =	0.00	kg/m
			Wdead =	1641.6	kg/m
			Wlive =	965.63	kg/m

Beams in Axis B

Tributary width office =	1.93	m	Wd =	1700.0	kg/m
Tributary width hallwalk =	2.08	m	Wwall =	0.00	kg/m
			Wdead =	1700.0	kg/m
			Wlive =	1207.50	kg/m

PROJECT: Detailed Design on Port Reactivation Project In La Union Province	Calc. File No.		Prepared by	R.Martinez
SECTION: Port Administration Building	Calc. Index No.		Checked by	A.MORIOKA
SUBJECT: Dead & Live Load for Port Adm. Building	Date	July-02	Page	7/232

Beams between Axis A & B from 2 to 5

Tributary width = 4.14 m

Wd = 1758.4 kg/m
Wwall = 0.00 kg/m
Wdead = 1758.4 kg/m
Wlive = 1034.38 kg/m

Beam between Axis A & B from 5 to 6

Tributary width = 1.14 m

Wd = 555.1 kg/m
Wwall = 0.00 kg/m
Wdead = 555.1 kg/m
Wlive = 398.13 kg/m

From 3m to 6m add :

Tributary width = 0.90 m

Wd = 439.2 kg/m
Wwall = 0.00 kg/m
Wdead = 439.2 kg/m
Wlive = 315.00 kg/m

Beam between Axis A & B from 6 to 7

Tributary width = 3.00 m

Wd = 1464.0 kg/m
Wwall = 0.00 kg/m
Wdead = 1464.0 kg/m
Wlive = 750.00 kg/m

Beam between Axis A & B from 7 to 8

Tributary width = 3.00 m

Wd = 1464.0 kg/m
Wwall = 0.00 kg/m
Wdead = 1464.0 kg/m
Wlive = 750.00 kg/m

From 3m to 6m add :

Tributary width = 2.50 m

Wlive = 875.00 kg/m Dist = (600-250)

Beams in Axis 2 & 8

Wwall = 938.78 kg/m
Wdead = 938.8 kg/m

Beams in Axis A, from 2 to 5

Tributary width = 2.06 m

Wd = 876.7 kg/m
Wwall = 938.78 kg/m
Wdead = 1815.5 kg/m
Wlive = 515.73 kg/m

Beams in Axis A, from 5 to 8

Tributary width = 2.06 m

Wd = 1006.5 kg/m
Wwall = 938.78 kg/m
Wdead = 1945.3 kg/m
Wlive = 515.63 kg/m

For beam 7 to 8 from 3m to 6m Add:

Tributary width = 2.08 m (600-250)

Wlive = 728.0 kg/m

Third Floor loads

- Office

Beams in Axis C, 2 to 5 and 6 to 8

Tributary width = 2.94 m

Wd =	1248.4	kg/m
Wwall =	938.78	kg/m
Wdead =	2187.2	kg/m
Wlive =	734.38	kg/m

Beam 5 to 6

Tributary width = 3.36 m

Wd =	1429.1	kg/m
Wwall =	0.00	kg/m
Wdead =	1429.1	kg/m
Wlive =	840.63	kg/m

Beams between Axis C & B, 2 to 5 Axis and 6 to 8

Tributary width = 3.86 m

Wd =	1641.6	kg/m
Wwall =	0.00	kg/m
Wdead =	1641.6	kg/m
Wlive =	965.63	kg/m

Beam 5 to 6

Tributary width for Office = 3.36 m
Tributary width for Toilet = 1.50 m

Wd =	2161.1	kg/m
Wwall =	0.00	kg/m
Wdead =	2161.1	kg/m
Wlive =	1215.63	kg/m

Beams in Axis B, 2 to 5 Axis and 6 to 8

Tributary width for Office = 1.93 m
Tributary width for Hallwalk = 2.08 m

Wd =	1700.0	kg/m
Wwall =	0.00	kg/m
Wdead =	1700.0	kg/m
Wlive =	1207.50	kg/m

Beam 5 to 6

Tributary width for Toilet = 1.50 m
Tributary width for Hallwalk = 2.08 m

Wd =	1613.9	kg/m
Wwall =	0.00	kg/m
Wdead =	1613.9	kg/m
Wlive =	1101.25	kg/m

Beams between Axis A & B, 2 to 5 Axis.

Tributary width = 4.14 m

Wd = 1758.4 kg/m
Wwall = 0.00 kg/m
Wdead = 1758.4 kg/m
Wlive = 1034.38 kg/m

Beam 5 to 6

Tributary width for Office = 1.14 m

Wd = 483.4 kg/m
Wwall = 0.00 kg/m
Wdead = 483.4 kg/m
Wlive = 398.13 kg/m

From 3m to 6m add :

Tributary width = 0.90 m

Wd = 439.2 kg/m
Wwall = 0.00 kg/m
Wdead = 439.2 kg/m
Wlive = 315.00 kg/m

Beam between Axis A & B from 6 to 7

Tributary width = 4.14 m

Wd = 2019.1 kg/m
Wwall = 0.00 kg/m
Wdead = 2019.1 kg/m
Wlive = 1034.38 kg/m

Beam between Axis A & B from 7 to 8

Tributary width = 4.14 m

Wd = 2019.1 kg/m
Wwall = 0.00 kg/m
Wdead = 2019.1 kg/m
Wlive = 1034.38 kg/m

From 3m to 6m add :

Tributary width = 2.50 m

Wlive = 875.00 kg/m Dist = (600-250)

Beams in Axis A, from 2 to 5

Tributary width = 2.06 m

Wd = 876.7 kg/m
Wwall = 938.78 kg/m
Wdead = 1815.5 kg/m
Wlive = 515.73 kg/m

Beams in Axis A, from 5 to 8

Tributary width = 2.06 m

Wd = 1006.5 kg/m
Wwall = 938.78 kg/m
Wdead = 1945.3 kg/m
Wlive = 515.63 kg/m

For beam 7 to 8 from 3m to 6m Add:

Tributary width = 2.08 m Wlive = 728.0 kg/m (600-250)

Fourth Floor loads

- Roof for ocasional meetings

Beams in Axis A from 2 to 4 and 6 to 8.

Tributary width = 3.06 m

Wd = 1448.6 kg/m
Wwall = 0.00 kg/m
Wdead = 1448.6 kg/m
Wlive = 1071.88 kg/m

Beams in Axis C from 2 to 4 and 6 to 8.

Tributary width = 2.94 m

Wd = 1389.4 kg/m
Wwall = 0.00 kg/m
Wdead = 1389.4 kg/m
Wlive = 1028.13 kg/m

Beams in Axis B from 2 to 4 and 6 to 8.

Tributary width = 4.00 m

Wd = 1892.0 kg/m
Wwall = 0.00 kg/m
Wdead = 1892.0 kg/m
Wlive = 1400.00 kg/m

Beams between Axis B-C from 2 to 4 and 6 to 8.

Tributary width = 3.86 m

Wd = 1827.0 kg/m
Wwall = 0.00 kg/m
Wdead = 1827.0 kg/m
Wlive = 1351.88 kg/m

Beams between Axis A-B from 2 to 4 and 6 to 8.

Tributary width = 4.14 m

Wd = 1957.0 kg/m
Wwall = 0.00 kg/m
Wdead = 1957.0 kg/m
Wlive = 1448.13 kg/m

- Floor for roof

Beams in Axis A, from 4 to 5 Axis.

Tributary area = 5.74 m²
L beam = 6 m

Wd = 466.9 kg/m
Wwall = 938.78 kg/m
Wdead = 1405.6 kg/m
Wlive = 239.17 kg/m

Beams in Axis A, from 5 to 6 Axis.

Tributary area = 5.74 m²
L dist = 6 m

Wd = 0.0 kg/m
Wwall = 938.78 kg/m
Wdead = 938.8 kg/m
Wlive = 0.00 kg/m

From 0 to 3 add:

Wd = 466.85 kg/m Wlive = 574.00 kg/m

Beams between Axis A & B, from 4 to 5 Axis.

Tributary area =	12.6	m²	Wd =	1024.8	kg/m
L dist =	6	m	Wwall =	524.05	kg/m
			Wdead =	1548.8	kg/m
			Wlive =	525.00	kg/m

Beams between Axis A & B, from 5 to 6 Axis.

Tributary area =	14.38	m²	Wd =	1054.5	kg/m
L dist =	6	m	Wwall =	0.00	kg/m
			Wdead =	1054.5	kg/m
			Wlive =	599.17	kg/m

Beam in Axis B, from 4 to 5 Axis.

Tributary area =	14.13	m²	Wd =	1149.2	kg/m
L dist =	6	m	Wwall =	524.05	kg/m
			Wdead =	1673.3	kg/m
			Wlive =	588.75	kg/m

Beam in Axis B, from 5 to 6 Axis.

Tributary area =	13.17	m²	Wd =	965.8	kg/m
L dist =	6	m	Wwall =	524.05	kg/m
			Wdead =	1489.8	kg/m
			Wlive =	548.75	kg/m

Beams between Axis B & C, from 4 to 6 Axis.

Tributary area =	12.63	m²	Wd =	926.2	kg/m
L dist =	6	m	Wwall =	0.00	kg/m
			Wdead =	926.2	kg/m
			Wlive =	526.25	kg/m

Beams in Axis C, from 4 to 6 Axis.

Tributary area =	1.83	m²	Wd =	268.4	kg/m
L dist =	3	m	Wwall =	0.00	kg/m
			Wdead =	268.4	kg/m
			Wlive =	152.50	kg/m

Beams in Axis 4, from A to B Axis.

Tributary area =	4.42	m²	Wd =	260.8	kg/m
L dist =	8.27	m	Wwall =	938.78	kg/m
			Wdead =	1199.6	kg/m
			Wlive =	133.62	kg/m

Beams in Axis 4, from B to center of B & C Axis

Tributary area =	3.38	m²	Wd =	386.3	kg/m
L dist =	3.85	m	Wwall =	0.00	kg/m
			Wdead =	386.3	kg/m
			Wlive =	219.48	kg/m

From 0 to 2.40 add:

Wd = 938.78 kg/m

Beams in Axis 4, from center of B & C to C Axis

Tributary area =	2.95	m²	Wd =	334.5	kg/m
L dist =	3.88	m	Wwall =	0.00	kg/m
			Wdead =	334.5	kg/m
			Wlive =	190.08	kg/m

Beams between Axis 4 & 5 and 5 & 6

Tributary area =	6.75	m²	Wd =	765.5	kg/m
L dist =	3.88	m	Wwall =	0.00	kg/m
			Wdead =	765.5	kg/m
			Wlive =	434.92	kg/m

Beams in Axis 5 from A to B Axis.

1st. section

Tributary area =	4.26	m²	Wd =	648.6	kg/m
L dist =	2.89	m	Wwall =	938.78	kg/m
			Wdead =	1587.4	kg/m
			Wlive =	626.47	kg/m

2nd. section

Tributary area =	2.96	m²	Wd =	486.0	kg/m
L dist =	2.68	m	Wwall =	938.78	kg/m
			Wdead =	1424.7	kg/m
			Wlive =	276.12	kg/m

3rd. section

Tributary area =	2.95	m²	Wd =	482.5	kg/m
L dist =	2.69	m	Wwall =	938.78	kg/m
			Wdead =	1421.3	kg/m
			Wlive =	274.16	kg/m

Beams in Axis 5 from B to C Axis.

1st. section

Tributary area =	8.10	m²	Wd =	925.7	kg/m
L dist =	3.85	m	Wwall =	0.00	kg/m
			Wdead =	925.7	kg/m
			Wlive =	525.97	kg/m

2nd. section

Tributary area =	7.15	m²	Wd =	817.1	kg/m
L dist =	3.85	m	Wwall =	0.00	kg/m
			Wdead =	817.1	kg/m
			Wlive =	464.29	kg/m

Fifth & Sixth Floor loads

Beams in Axis A, from 4 to 5 Axis.

Tributary area = 5.03 m²
L dist = 4.2 m

1st. section

Wd =	584.4	kg/m
Wwall =	938.78	kg/m
Wdead =	1523.2	kg/m
Wlive =	299.40	kg/m

Tributary area = 1.2 m²
L dist = 1.8 m

2nd. section

Wd =	325.3	kg/m
Wwall =	938.78	kg/m
Wdead =	1264.1	kg/m
Wlive =	166.67	kg/m

Beams in Axis A, from 5 to 6 Axis.

Tributary area = 2.9 m²
L dist = 3 m

1st. section

Wd =	471.7	kg/m
Wwall =	938.78	kg/m
Wdead =	1410.5	kg/m
Wlive =	580.00	kg/m

Tributary area = 0 m²
L dist = 1.8 m

2nd. section

Wd =	0.0	kg/m
Wwall =	938.78	kg/m
Wdead =	938.8	kg/m
Wlive =	0.00	kg/m

Beams between Axis A & B, from 4 to 5 Axis.

Tributary area = 8.15 m²
L dist = 4.2 m

1st. section

Wd =	947.0	kg/m
Wwall =	790.12	kg/m
Wdead =	1737.1	kg/m
Wlive =	485.12	kg/m

Tributary area = 1.37 m²
L dist = 1.8 m

2nd. section

Wd =	371.7	kg/m
Wwall =	0.00	kg/m
Wdead =	371.7	kg/m
Wlive =	190.42	kg/m

Beams between Axis A & B, from 5 to 6 Axis.

Tributary area = 3.90 m²
L dist = 3.00 m

1st. Beam

Wd =	634.4	kg/m
Wwall =	1326.00	kg/m
Wdead =	1960.4	kg/m
Wlive =	780.00	kg/m

Concrete wall thickness = 0.17 m
Height = 3.25 m
Wwall = 1326 kg/m

2nd. Beam

Tributary area = 7.50 m²
L dist = 6 m

Wd = 610.0 kg/m
Wwall = 1326.00 kg/m
Wdead = 1936.0 kg/m
Wlive = 437.50 kg/m

Beams in Axis B, from 4 to 5 Axis.

Tributary area = 10.50 m²
L dist = 6.00 m

Wd = 854.0 kg/m
Wwall = 790.12 kg/m
Wdead = 1644.1 kg/m
Wlive = 437.50 kg/m

Beams in Axis B, from 5 to 6 Axis.

Tributary area = 11.45 m²
L dist = 6.00 m

Wd = 931.3 kg/m
Wwall = 790.12 kg/m
Wdead = 1721.4 kg/m
Wlive = 576.25 kg/m

Area for Office live load = 5.50 m²
Area for hallwalk live load = 5.95 m²

Beams between Axis B & C, from 4 to 6 Axis.

1st. Beam

Tributary area = 2.70 m²
L dist = 1.95 m

Wd = 675.7 kg/m
Wwall = 0.00 kg/m
Wdead = 675.7 kg/m
Wlive = 346.15 kg/m

2nd. Beam

Tributary area = 4.27 m²
L dist = 3.00 m

Wd = 694.6 kg/m
Wwall = 0.00 kg/m
Wdead = 694.6 kg/m
Wlive = 355.83 kg/m

Beams in Axis 4, from A to B Axis.

Tributary area = 4.54 m²
L dist = 8.27 m

Wd = 267.9 kg/m
Wwall = 938.78 kg/m
Wdead = 1206.7 kg/m
Wlive = 137.24 kg/m

Beams in Axis 5, from A to B Axis.

1st Beam

Tributary area = 4.00 m²
L dist = 2.89 m

Wd = 675.4 kg/m
Wwall = 790.12 kg/m
Wdead = 1465.5 kg/m
Wlive = 612.46 kg/m

Area for Office live load = 1.80 m²
Area for hallwalk live load = 2.20 m²

2nd.& 3rd Beam

Tributary area = 2.20 m²
L dist = 3.11 m

Wd = 345.2 kg/m
Wwall = 1326.00 kg/m
Wdead = 1671.2 kg/m
Wlive = 176.85 kg/m

4th Beam

Tributary area = 2.00 m²
L dist = 2.27 m

Wd = 430.0 kg/m
Wwall = 790.12 kg/m
Wdead = 1220.1 kg/m
Wlive = 220.26 kg/m

Beams in Axis 6, from A to B Axis.

1st. Beam

Tributary area = 2.55 m²
L dist = 1.70 m

Wd = 0.0 kg/m
Wwall = 938.78 kg/m
Wdead = 938.8 kg/m
Wlive = 0.00 kg/m

From 4.30 to 6.00 add:

Wd = 732.0 kg/m
Wlive = 525.00 kg/m

2nd. Beam

Tributary area = 1.45 m²
L dist = 2.27 m

Wd = 311.7 kg/m
Wwall = 0.00 kg/m
Wdead = 311.7 kg/m
Wlive = 223.57 kg/m

Beams in Axis 5, from B to C Axis.

Tributary area = 9.15 m²
L dist = 7.70 m

Wd = 579.9 kg/m
Wwall = 0.00 kg/m
Wdead = 579.9 kg/m
Wlive = 297.08 kg/m

Beams between Axis 4 & 5 and 5 & 6, from B to C Axis.

Tributary area = 10.25 m²
L dist = 7.40 m

Wd = 675.9 kg/m
Wwall = 0.00 kg/m
Wdead = 675.9 kg/m
Wlive = 346.28 kg/m

Beams between Axis 4 & 5, from A to B Axis.

Tributary area = 10.10 m²
L dist = 8.27 m

Wd = 596.0 kg/m
Wwall = 790.12 kg/m
Wdead = 1386.1 kg/m
Wlive = 305.32 kg/m

Beams between Axis 5 & 6, from A to B Axis.

			1st. Beam	
Tributary area =	1.70	m²	Wd =	287.1 kg/m
L dist =	2.89	m	Wwall =	790.12 kg/m
			Wdead =	1077.2 kg/m
			Wlive =	352.94 kg/m

Beams between Axis 5 & 6, from A to B Axis.

			2nd. Beam	
Tributary area =	1.70	m²	Wd =	308.4 kg/m
L dist =	2.69	m	Wwall =	1326.00 kg/m
			Wdead =	1634.4 kg/m
			Wlive =	221.19 kg/m

Circular Beam

			Straight beam	
Tributary area =	1.00	m²	Wd =	234.6 kg/m
L dist =	2.08	m	Wwall =	820.00 kg/m
			Wdead =	1054.6 kg/m
			Wlive =	120.19 kg/m

			Circular beam	
Tributary area =	2.00	m²	Wd =	278.9 kg/m
L dist =	3.50	m	Wwall =	820.00 kg/m
			Wdead =	1098.9 kg/m
			Wlive =	142.86 kg/m

Roof loads

Parapet on Beams of 1-2 Axis & circular beams.

Area of parapet =	0.5	m²	Wd =	1200.0 kg/m

SEISMIC PARAMETERS

$V = Cs\ W$

$Cs = (A\ I\ Co\ /\ R)\ (To\ /\ T)^{2/3}$

Coefficient of Aceleration, A = 0.40

Importance Factor, I = 1.20

Response Modification Factor, R = 12.00 (For concrete frames system)

Soil Conditions Factors:

Co = 3.00

To = 0.90

Type of structure coefficient, Ct = 0.073 (For concrete frames system)

The Period of the Sructure and the Cs coefficient is calculated by the structural program (STAAD-III):

SEISMIC FORCE DIRECTION	Period T (sec.)	Coefficient Cs
X-Direction (Strong direction)	0.89	0.153
Z-Direction (Weak direction)	0.93	0.150

CALCULATION OF LOADS FOR SEISMIC ANALYSIS

Second Level

a) Roof

Wd = 371.00 kg/m²
Wi = 50.00 kg/m²

Area1 = 103.2 m²

Weight1D = 38.29 ton Weight1L 5.16 ton

Area2 = 201.98 m²

Weight2 D = 74.93 ton Weight2L 10.10 ton

b) Office

Wd = 425.00 kg/m²
Wi = 180.00 kg/m²

Area = 532.8 m²

Weight D = 226.44 ton Weight L = 95.90 ton

c) Toilets & Kitchen

Wd = 488.00 kg/m²
Wi = 150.00 kg/m²

Area = 129.6 m²

Weight D = 63.24 ton Weight L = 19.44 ton

d) Walls

Wall	W weight (kg/m)	Long. (m)	Weight (ton)
20 cm	938.78	104.00	97.63
15 cm	790.12	111.45	88.06
Concrete	1326.00	18.00	23.87

Total = 209.56 ton

2nd floor distribution of weights for Seismic Analysis			
Joints	# of joints	Load (ton)	Weight per Joint (ton)
Office and toilets 29 to 34, 37 to 46, 48 to 54 56 to 62, 64 to 70	37	614.59	16.610
Roof 1 28, 36, 47, 55, 63 29, 37, 48, 56, 64	10	43.45	4.345
Roof 2 75 to 94	20	85.03	4.252
	Total =	743.07	ton

For joints 29,37,48,56 & 64 the weight is = 20.955 ton

Third Level

a) Office

Wd = 425.00 kg/m²
Wi office = 180.00 kg/m²
Wi auditorium = 150.00 kg/m²

Area audi = 237.6 m²
Area office = 277.2 m²

Area = 514.8 m²

Weight Laudi = 35.64 ton
Weight D = 218.79 ton
Weight Loffice = 49.90 ton

b) Toilets & Kitchen

Wd = 488.00 kg/m²
Wi = 180.00 kg/m²

Area = 147.6 m²

Weight D = 72.03 ton
Weight L = 26.57 ton

c) Walls

Wall	W weight (kg/m)	Long. (m)	Weight (ton)
20 cm	938.78	104.00	97.63
15 cm	790.12	115.45	91.22
Concrete	1326.00	18.00	23.87
		Total =	212.72 ton

3rd floor distribution of weights for Seismic Analysis			
Joints	# of joints	Load (ton)	Weight per Joint (ton)
Office and toilets 95 to 134	40	615.64	15.391

Total = 615.64 ton

Fourth Level

a) Roof

Wd = 473.00 kg/m²
Wi = 150.00 kg/m²

Area = 470.4 m²

Weight D = 222.50 ton Weight L = 70.56 ton

b) Office, Toilets & Kitchen

Wd = 464.00 kg/m²
Wi = 180.00 kg/m²

Area = 235.2 m²

Weight D = 109.13 ton Weight L = 42.34 ton

c) Walls

Wall	W weight (kg/m)	Long. (m)	Weight (ton)
20 cm	938.78	20.00	18.78
15 cm	790.12	40.00	31.60
Concrete	1326.00	18.00	23.87
Window	318.00	18.95	6.03

Total = 80.27 ton

4th floor distribution of weights for Seismic Analysis			
Joints	# of joints	Load (ton)	Weight per Joint (ton)
Office and toilets 137to 139, 144 to 151, 156 to 158 163 to 165, 170 to172, 175 to 178	24	231.74	9.656
Roof 135 to 137, 139 to 144, 151 to 156 158 to 163, 165 to 170, 172 to 174	30	293.06	9.769
	Total =	524.80	ton

For joints 137,139,144,151,156
158,163,165,170,172 the weight is = 19.425 ton

Fitth & Sixth Level

a) Office, Toilets & Kitchen

Wd = 464.00 kg/m²
Wi = 180.00 kg/m²

Area = 190.05 m²

Weight D = 88.18 ton Weight L = 34.21 ton

b) Walls

Wall	W weight (kg/m)	Long. (m)	Weight (ton)
20 cm	938.78	20.00	18.78
15 cm	790.12	40.00	31.60
Concrete	1326.00	18.00	23.87
Window	318.00	18.95	6.03
		Total =	80.27 ton

5th floor distribution of weights for Seismic Analysis			
Joints	# of joints	Load (ton)	Weight per Joint (ton)
Office and toilets 179 to 211	33	202.67	6.141
	Total =	202.67	ton

6th floor distribution of weights for Seismic Analysis			
Joints	# of joints	Load (ton)	Weight per Joint (ton)
Office and toilets 212 to 244	33	202.67	6.141

Total = 202.67 ton

Roof

a) Office, Toilets & Kitchen

Wd = 371.00 kg/m²
Wi = 50.00 kg/m²

Area = 208.05 m²

Weight D = 77.19 ton Weight L = 10.40 ton

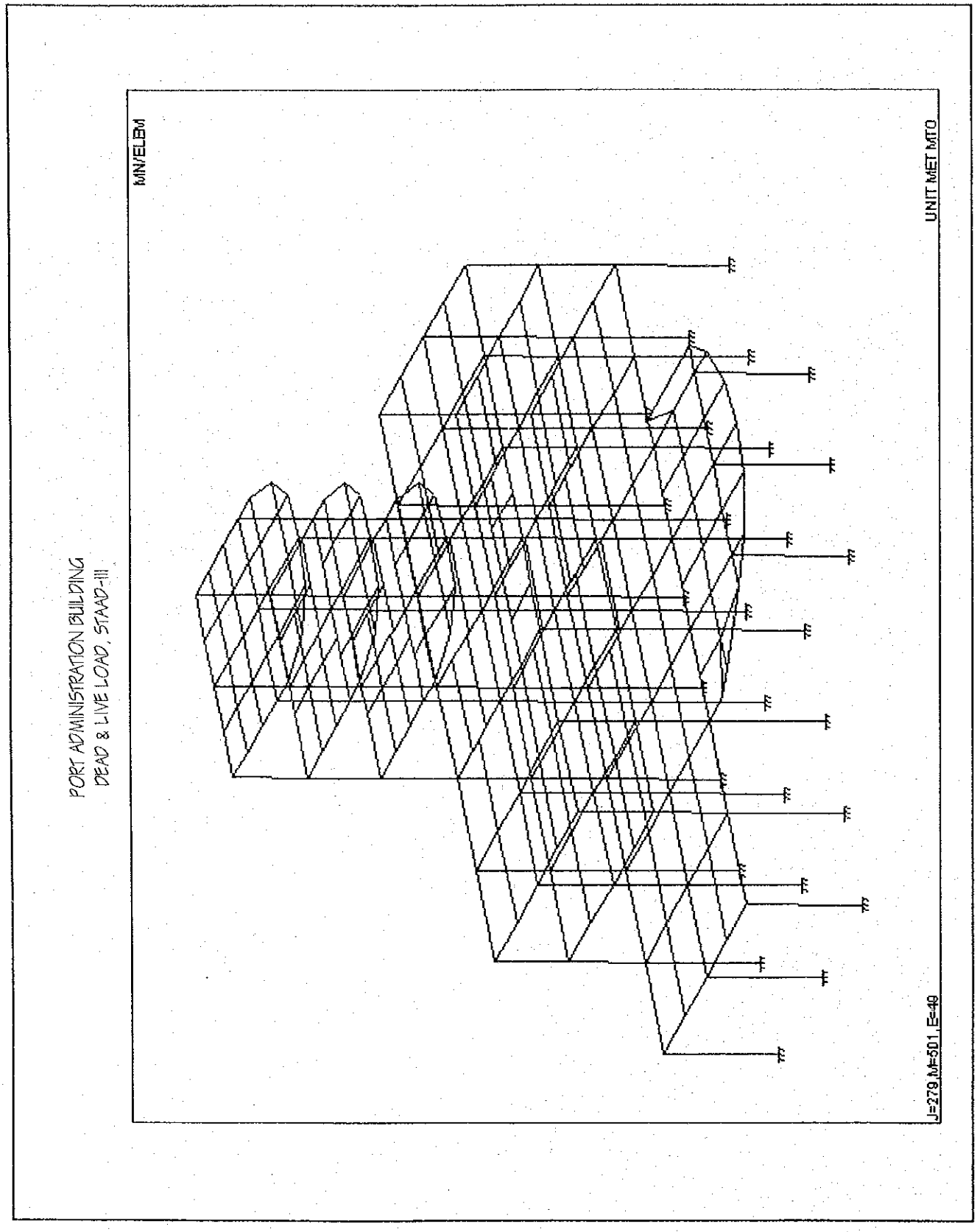
Roof distribution of weights for Seismic Analysis			
Joints	# of joints	Load (ton)	Weight per Joint (ton)
Office and toilets 245 to 277	21	87.59	4.171

Total = 87.59 ton

Level	Weight * (ton)
2nd Floor	743.07
3rd Floor	615.64
4th Floor	524.80
5th Floor	202.67
6th Floor	202.67
Roof	87.59

* The weight do not includes the beams and columns calculated by the program (STAAD III)

PROJECT: Detailed Design on Port Reactivation Project In La Union Province	Calc. File No.		Prepared by	R.Martinez
SECTION: Port Administration Building	Calc. Index No.		Checked by	A.MORIOKA
SUBJECT: Input for Dead & Live Load Model	Date	July-02	Page	23 /232



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            **************************************************
            *                                                *
            *           S T A A D - III                      *
            *           Revision 21.1W                       *
            *           Proprietary Program of               *
            *           RESEARCH ENGINEERS, Inc.             *
            *           Date=    MAY 15, 2002                *
            *                                                *
            **************************************************

  1. STAAD SPACE PORT ADMINISTRATION BUILDING
  2. *MAY-2002, DEAD & LIVE LOAD MODEL
  3. INPUT WIDTH 72
  4. UNIT METER MTON
  5. JOINT COORDINATES
  6. *GROUND LEVEL
  7. 1 0 0 0 8 42 0 0
  8. 9 0 0 8.275 16 42 0 8.275
  9. 17 0 0 16 24 42 0 16
 10. 25 18 0 24 27 30 0 24
 11. *SECOND LEVEL
 12. 28 0 5.20 0 35 42.00 5.20 0
 13. 36 0 5.20 4.125 40 24.00 5.20 4.125
 14. 41 24.00 5.20 6.00 42 30.00 5.20 6.00
 15. 43 30.00 5.20 3.00 44 36.00 5.20 3.00
 16. 45 36.00 5.20 4.125 46 42.00 5.20 4.125
 17. 47 0 5.20 8.275 54 42.00 5.20 8.275
 18. 55 0 5.20 12.125 62 42.00 5.20 12.125
 19. 63 0 5.20 16.00 70 42.00 5.20 16.00
 20. 71 15.00 5.20 16.00 73 27.00 5.20 16.00
 21. 74 31.80 5.20 16.00
 22. 75 12.00 5.20 18.55
 23. 76 13.04 5.20 20.00 77 15.00 5.20 20.00
 24. 78 18.00 5.20 20.00 82 30.00 5.20 20.00
 25. 83 15.96 5.20 24.00
 26. 84 18.00 5.20 24.00 88 30.00 5.20 24.00
 27. 89 31.82 5.20 24.00
 28. 90 18.00 5.20 26.30 91 21.00 5.20 27.96
 29. 92 24.00 5.20 28.45 93 27.00 5.20 27.96
 30. 94 30.00 5.20 26.30
 31. *THIRD LEVEL
 32. 95 6.00 9.00 0 101 42.00 9.00 0
 33. 102 6.00 9.00 4.125 105 24.00 9.00 4.125
 34. 106 24.00 9.00 6.00 107 30.00 9.00 6.00
 35. 108 30.00 9.00 3.00 109 36.00 9.00 3.00
 36. 110 36.00 9.00 4.125 111 42.00 9.00 4.125
 37. 112 6.00 9.00 8.275 118 42.00 9.00 8.275
 38. 119 6.00 9.00 12.125 122 24.00 9.00 12.125
 39. 123 24.00 9.00 11.275 124 30.00 9.00 11.275
 40. 125 30.00 9.00 12.125 127 42.00 9.00 12.125
 41. 128 6.00 9.00 16.00 134 42.00 9.00 16.00
 42. *FOURTH LEVEL
 43. 135 6.00 12.80 0 141 42.00 12.80 0
 44. 142 6.00 12.80 4.125 143 12.00 12.80 4.125
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45. 144 18.00 12.80 2.89 145 18.00 12.80 4.125
46. 146 18.00 12.80 5.58
47. 147 24.00 12.80 2.89 148 24.00 12.80 5.58
48. 149 24.00 12.80 6.00 150 30.00 12.80 6.00
49. 151 30.00 12.80 4.125 153 42.00 12.80 4.125
50. 154 6.00 12.80 8.275 160 42.00 12.80 8.275
51. 161 6.00 12.80 12.125 167 42.00 12.80 12.125
52. 168 6.00 12.80 16.00 174 42.00 12.80 16.00
53. 175 21.00 12.80 12.125 176 27.00 12.80 12.125
54. 177 21.00 12.80 16.00 178 27.00 12.80 16.00
55. *FIFTH LEVEL
56. 179 18.00 16.60 0 181 30.00 16.60 0
57. 182 22.20 16.60 0 183 27.00 16.60 0
58. 184 18.00 16.60 2.89 185 22.20 16.60 2.89
59. 186 24.00 16.60 2.89 187 27.00 16.60 2.89
60. 188 18.00 16.60 5.58 189 22.20 16.60 5.58
61. 190 24.00 16.60 5.58 191 24.00 16.60 6.00
62. 192 27.00 16.60 6.00 193 30.00 16.60 6.00
63. 194 18.00 16.60 8.275 196 30.00 16.60 8.275
64. 197 21.00 16.60 8.275 198 27.00 16.60 8.275
65. 199 18.00 16.60 10.355 203 30.00 16.60 10.355
66. 204 19.05 16.60 13.855
67. 205 21.00 16.60 13.855 207 27.00 16.60 13.855
68. 208 28.95 16.60 13.855
69. 209 21.00 16.60 15.695 210 24.00 16.60 16.00
70. 211 27.00 16.60 15.695
71. 278 22.20 16.60 8.275
72. *SIXTH LEVEL
73. 212 18.00 20.40 0 214 30.00 20.40 0
74. 215 22.20 20.40 0 216 27.00 20.40 0
75. 217 18.00 20.40 2.89 218 22.20 20.40 2.89
76. 219 24.00 20.40 2.89 220 27.00 20.40 2.89
77. 221 18.00 20.40 5.58 222 22.20 20.40 5.58
78. 223 24.00 20.40 5.58 224 24.00 20.40 6.00
79. 225 27.00 20.40 6.00 226 30.00 20.40 6.00
80. 227 18.00 20.40 8.275 229 30.00 20.40 8.275
81. 230 21.00 20.40 8.275 231 27.00 20.40 8.275
82. 232 18.00 20.40 10.355 236 30.00 20.40 10.355
83. 237 19.05 20.40 13.855
84. 238 21.00 20.40 13.855 240 27.00 20.40 13.855
85. 241 28.95 20.40 13.855
86. 242 21.00 20.40 15.695 243 24.00 20.40 16.00
87. 244 27.00 20.40 15.695
88. 279 22.20 20.40 8.275
89. *ROOF
90. 245 18.00 24.20 0 249 30.00 24.20 0
91. 250 18.00 24.20 2.65 254 30.00 24.20 2.65
92. 255 18.00 24.20 5.45 259 30.00 24.20 5.45
93. 260 18.00 24.20 8.275 264 30.00 24.20 8.275
94. 265 18.00 24.20 10.355 269 30.00 24.20 10.355
95. 270 19.05 24.20 13.855
96. 271 21.00 24.20 13.855 273 27.00 24.20 13.85
97. 274 28.95 24.20 13.855
98. 275 21.00 24.20 15.695 276 27.00 24.20 15.695
99. 277 24.00 24.20 16.00
100. MEMBER INCIDENCES
101. * COLUMNS FIRST LEVEL
```

```
102. 1 1 28 8
103. 9 9 47 16
104. 17 17 63 24
105. 25 25 84
106. 26 26 86
107. 27 27 88
108. * COLUMNS SECOND LEVEL
109. 28 29 95 34
110. 35 48 112 41
111. 42 64 128 48
112. * COLUMNS THIRD LEVEL
113. 49 95 135 55
114. 56 112 154 62
115. 63 128 168 69
116. * COLUMNS FOURTH LEVEL
117. 70 137 179 72
118. 73 156 194 75
119. 76 171 210
120. * COLUMNS FIFTH LEVEL
121. 77 179 212 79
122. 80 194 227 82
123. 83 210 243
124. * COLUMNS SIXTH LEVEL
125. 84 212 245; 85 213 247; 86 214 249
126. 87 227 260; 88 228 262; 89 229 264
127. 90 243 277
128. * BEAMS SECOND LEVEL
129. 91 28 29 97
130. 98 47 48 104
131. 105 63 64 106
132. 107 65 71; 108 71 66; 109 66 72
133. 110 72 67; 111 67 73; 112 73 68
134. 113 68 74; 114 74 69; 115 69 70
135. 116 76 77 121; 122 83 84 127
136. 128 36 37 131; 132 41 42
137. 133 43 44; 134 45 46
138. 135 55 56 141
139. 142 28 36 146; 147 40 41; 148 41 51
140. 149 33 43; 150 43 42; 151 42 52
141. 152 34 44; 153 44 45; 154 45 53
142. 155 35 46; 156 46 54
143. 157 36 47 160
144. 161 47 55 168; 169 55 63 176
145. 177 71 77; 178 66 78; 179 72 79
146. 180 67 80; 181 73 81; 182 68 82
147. 183 78 84 187; 188 84 90 191
148. 192 65 75; 193 75 76; 194 76 83
149. 195 83 90; 196 90 91; 197 91 92
150. 198 92 93; 199 93 94; 200 94 89
151. 201 89 74; 202 88 94
152. * BEAMS THIRD LEVEL
153. 203 95 96 208; 209 112 113 214
154. 215 128 129 220; 221 102 103 223
155. 224 106 107; 225 108 109; 226 110 111
156. 227 119 120 229; 230 123 124
157. 231 125 126 232; 233 95 102 236
158. 237 105 106; 238 106 115
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159. 239 99 108; 240 108 107; 241 107 116
160. 242 100 109; 243 109 110; 244 110 117
161. 245 101 111; 246 111 118
162. 247 102 112 249; 250 112 119 252
163. 253 115 123; 254 123 122
164. 255 116 124; 256 124 125
165. 257 117 126 258; 259 119 128 262
166. 263 125 132 265
167. * BEAMS FOURTH LEVEL
168. 266 135 136 271; 272 154 155 277
169. 278 168 169 279; 280 170 177
170. 281 177 171; 282 171 178
171. 283 178 172; 284 172 173 285
172. 286 142 143; 287 143 145; 288 144 147
173. 289 146 148; 290 149 150
174. 291 151 152 292; 293 161 162 294
175. 295 163 175; 296 175 164
176. 297 164 176; 298 176 165
177. 299 165 166 300
178. 301 135 142 302; 303 137 144
179. 304 144 145; 305 145 146
180. 306 146 156; 307 138 147
181. 308 147 148; 309 148 149
182. 310 148 157; 311 139 151
183. 312 151 150; 313 150 158; 314 140 152 315
184. 316 142 154 317; 318 152 159 319
185. 320 154 161 326; 327 161 168 333
186. 334 175 177 335
187. * BEAMS FIFTH LEVEL
188. 336 179 182; 337 182 180; 338 180 183
189. 339 183 181; 340 194 197; 341 197 278
190. 342 278 195; 343 195 198; 344 198 196
191. 345 184 185 347; 348 188 189 349
192. 350 191 192 351; 352 199 200 355
193. 356 204 205 359; 360 179 184
194. 361 182 185; 362 180 186; 363 183 187
195. 364 181 193; 365 184 188 367
196. 368 187 192; 369 188 194; 370 189 278
197. 371 190 191; 372 191 195; 373 193 196
198. 374 194 199; 375 197 200; 376 195 201
199. 377 198 202; 378 196 203; 379 199 204 383
200. 384 204 209; 385 205 209 387
201. 388 208 211; 389 209 210 390
202. * BEAMS SIXTH LEVEL
203. 391 212 215; 392 215 213; 393 213 216
204. 394 216 214; 395 227 230; 396 230 279
205. 397 279 228; 398 228 231; 399 231 229
206. 400 217 218 402; 403 221 222 404
207. 405 224 225 406; 407 232 233 410
208. 411 237 238 414; 415 212 217
209. 416 215 218; 417 213 219; 418 216 220
210. 419 214 226
211. 420 217 221 422; 423 220 225
212. 424 221 227; 425 222 279; 426 223 224
213. 427 224 228; 428 226 229
214. 429 227 232; 430 230 233
215. 431 228 234; 432 231 235; 433 229 236
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216. 434 232 237 438; 439 237 242
217. 440 238 242 442; 443 241 244
218. 444 242 243 445
219. * BEAMS ROOF
220. 446 245 246 449; 450 250 251 453
221. 454 255 256 457; 458 260 261 461
222. 462 265 266 465; 466 270 271 469
223. 470 245 250 474; 475 250 255 479
224. 480 255 260 484; 485 260 265 489
225. 490 265 270 494; 495 270 275
226. 496 271 275; 497 272 277; 498 273 276
227. 499 274 276; 500 275 277; 501 276 277
228. ELEMENT INCIDENCES
229. *2ND FLOOR
230. 502 28 36 37 29; 503 36 47 48 37
231. 504 47 55 56 48
232. 505 55 63 64 56; 506 65 75 77 71
233. 507 75 76 77; 508 71 77 78 66
234. 509 66 78 79 72; 510 72 79 80 67
235. 511 67 80 81 73; 512 73 81 82 68
236. 513 68 82 74; 514 82 88 89 74
237. 515 76 83 77; 516 77 83 84 78
238. 517 78 84 85 79; 518 79 85 86 80
239. 519 80 86 87 81; 520 81 87 88 82
240. 521 83 90 84; 522 84 90 91 85
241. 523 85 91 92 86; 524 86 92 93 87
242. 525 87 93 94 88; 526 88 94 89
243. * ROOF
244. 527 245 250 251 246 TO 530
245. 531 250 255 256 251 TO 534
246. 535 255 260 261 256 TO 538
247. 539 260 265 266 261 TO 542
248. 543 265 270 271 266 TO 546
249. 547 270 275 271; 548 271 275 277 272
250. 549 272 277 276 273; 550 273 276 274
251. MEMBER PROPERTY AMERICAN
252. *COLUMNS
253. * COLUMNS FIRST LEVEL
254. 1 TO 3 7 TO 11 15 TO 20 PRI YD 0.65 ZD 0.7
255. 22 TO 27 PRI YD 0.65 ZD 0.70
256. 4 TO 6 12 TO 14 21 PRI YD 0.65 ZD 0.75
257. * COLUMNS SECOND LEVEL
258. 28 29 33 TO 36 40 TO 44 PRI YD 0.65 ZD 0.70
259. 46 TO 48 PRI YD 0.65 ZD 0.70
260. 30 TO 32 37 TO 39 45 PRI YD 0.65 ZD 0.75
261. * COLUMNS THIRD LEVEL
262. 49 50 54 TO 57 61 TO 65 PRI YD 0.65 ZD 0.70
263. 67 TO 69 PRI YD 0.65 ZD 0.70
264. 51 TO 53 58 TO 60 66 PRI YD 0.65 ZD 0.75
265. * COLUMNS FOURTH LEVEL
266. 70 TO 76 PRI YD 0.65 ZD 0.75
267. * COLUMNS FIFTH LEVEL
268. 77 TO 83 PRI YD 0.65 ZD 0.75
269. * COLUMNS SIXTH LEVEL
270. 84 TO 90 PRI YD 0.65 ZD 0.75
271. * BEAMS 2ND LEVEL
272. 91 TO 115 116 TO 122 127 PRI YD 0.65 ZD 0.30
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273. 142 157 161 169 177 TO 192 202 PRI YD 0.65 ZD 0.30
274. 123 TO 126 PRI YD 0.70 ZD 0.35
275. 128 TO 141 193 TO 201 PRI YD 0.55 ZD 0.30
276. 143 TO 156 158 TO 160 PRI YD 0.75 ZD 0.40
277. 162 TO 168 170 TO 176 PRI YD 0.75 ZD 0.40
278. * BEAMS 3RD LEVEL
279. 203 TO 220 PRI YD 0.65 ZD 0.30
280. 221 TO 232 PRI YD 0.55 ZD 0.30
281. 233 TO 265 PRI YD 0.75 ZD 0.40
282. * BEAMS 4TH LEVEL
283. 266 267 270 TO 273 PRI YD 0.65 ZD 0.30
284. 276 TO 279 284 285 PRI YD 0.65 ZD 0.30
285. 286 287 291 TO 294 PRI YD 0.55 ZD 0.30
286. 299 300 290 PRI YD 0.55 ZD 0.30
287. 288 289 334 335 PRI YD 0.40 ZD 0.25
288. 268 269 274 275 280 TO 283 PRI YD 0.60 ZD 0.35
289. 295 TO 298 301 302 314 TO 321 PRI YD 0.60 ZD 0.35
290. 325 TO 328 332 333 PRI YD 0.60 ZD 0.35
291. 303 TO 313 322 TO 324 PRI YD 0.75 ZD 0.40
292. 329 TO 331 PRI YD 0.75 ZD 0.40
293. * BEAMS 5TH LEVEL
294. 336 TO 344 360 362 364 365 PRI YD 0.60 ZD 0.35
295. 367 369 371 372 373 374 376 PRI YD 0.60 ZD 0.35
296. 378 379 381 383 384 386 PRI YD 0.60 ZD 0.35
297. 388 389 390 PRI YD 0.60 ZD 0.35
298. 345 TO 349 352 TO 359 PRI YD 0.40 ZD 0.25
299. 361 363 366 368 370 PRI YD 0.40 ZD 0.25
300. 375 377 380 382 385 387 PRI YD 0.40 ZD 0.25
301. 350 351 PRI YD 0.55 ZD 0.30
302. * BEAMS 6TH LEVEL
303. 391 TO 399 415 417 419 420 PRI YD 0.60 ZD 0.35
304. 422 424 426 TO 428 429 431 PRI YD 0.60 ZD 0.35
305. 433 434 436 438 439 441 PRI YD 0.60 ZD 0.35
306. 443 TO 445 PRI YD 0.60 ZD 0.35
307. 400 TO 404 407 TO 414 PRI YD 0.40 ZD 0.25
308. 416 418 421 423 425 PRI YD 0.40 ZD 0.25
309. 430 432 435 437 440 442 PRI YD 0.40 ZD 0.25
310. 405 406 PRI YD 0.55 ZD 0.30
311. * BEAMS ROOF
312. 446 TO 449 458 TO 461 PRI YD 0.60 ZD 0.35
313. 470 475 480 474 479 484 PRI YD 0.60 ZD 0.35
314. 472 477 482 PRI YD 0.60 ZD 0.35
315. 487 492 497 485 490 495 PRI YD 0.60 ZD 0.35
316. 500 501 499 494 489 PRI YD 0.60 ZD 0.35
317. 471 473 476 478 PRI YD 0.40 ZD 0.25
318. 481 483 486 488 PRI YD 0.40 ZD 0.25
319. 491 493 496 498 PRI YD 0.40 ZD 0.25
320. 450 TO 457 PRI YD 0.40 ZD 0.25
321. 462 TO 469 PRI YD 0.40 ZD 0.25
322. ELEMENT PROPERTY
323. 502 TO 550 TH 0.12
324. CONSTANT
325. E 2526713.3 ALL
326. DENSITY CONCRETE ALL
327. SUPPORT
328. 1 TO 27 FIXED
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329. LOAD 1 DEAD LOAD
330. SELFWEIGHT Y -1
331. *2ND FLOOR
332. ELEMENT LOAD
333. 502 TO 526 PRE GY -0.083
334. 527 TO 550 PRE GY -0.083
335. MEMBER LOAD
336. 91 105 UNI GY -0.417
337. 135 98 128 UNI GY -0.8348
338. 142 157 161 169 UNI GY -0.3188
339. 106 TO 115 UNI GY -2.017
340. 134 TO 141 UNI GY -1.700
341. 99 TO 104 UNI GY -1.2075
342. 129 TO 131 UNI GY -1.758
343. 132 UNI GY -0.555
344. 132 UNI GY -0.4392 3 6
345. 133 134 UNI GY -1.464
346. 143 158 162 170 155 156 168 176 UNI GY -0.9388
347. 92 TO 94 UNI GY -1.815
348. 95 TO 97 UNI GY -1.945
349. 146 147 149 150 UNI GY -0.790
350. 192 TO 201 UNI GY -0.145
351. *3RD FLOOR
352. 215 TO 217 219 220 UNI GY -2.187
353. 218 UNI GY -1.429
354. 227 TO 229 231 232 UNI GY -1.6416
355. 230 UNI GY -2.161
356. 209 TO 211 213 214 UNI GY -1.700
357. 212 UNI GY -1.1614
358. 221 TO 223 UNI GY -1.7584
359. 224 UNI GY -0.4834
360. 224 UNI GY -0.4392 3 6
361. 225 226 UNI GY -2.019
362. 203 TO 205 UNI GY -1.8155
363. 206 TO 208 UNI GY -1.9453
364. 233 247 250 259 UNI GY -0.93878
365. 245 246 258 265 UNI GY -0.93878
366. 253 TO 256 262 263 UNI GY -0.79012
367. 236 237 239 240 242 243 UNI GY -0.79012
368. *4TH FLOOR
369. 266 267 270 271 UNI GY -1.449
370. 278 279 284 285 UNI GY -1.389
371. 272 273 276 277 UNI GY -1.892
372. 293 294 299 300 UNI GY -1.827
373. 286 287 291 292 UNI GY -1.957
374. 268 UNI GY -1.406
375. 269 UNI GY -0.939
376. 269 UNI GY -0.467 0 3
377. 288 289 UNI GY -1.548
378. 290 UNI GY -1.054
379. 274 UNI GY -1.673
380. 275 UNI GY -1.490
381. 295 TO 298 UNI GY -0.926
382. 280 TO 283 UNI GY -0.268
383. 303 TO 306 UNI GY -1.200
384. 322 324 UNI GY -0.387
385. 329 331 UNI GY -0.335
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386. 334 335 UNI GY -0.766
387. 307 UNI GY -1.587
388. 308 TO 310 UNI GY -1.425
389. 323 UNI GY -0.926
390. 330 UNI GY -0.817
391. 311 312 UNI GY -0.939
392. 313 UNI GY -1.113
393. *FIFTH FLOOR
394. 336 UNI GY -1.523
395. 337 UNI GY -1.264
396. 338 UNI GY -1.410
397. 339 UNI GY -0.939
398. 345 348 UNI GY -1.737
399. 346 349 UNI GY -0.371
400. 347 UNI GY -1.961
401. 350 351 UNI GY -1.936
402. 340 TO 342 UNI GY -1.644
403. 343 344 UNI GY -1.722
404. 352 355 356 359 UNI GY -0.676
405. 353 354 357 358 UNI GY -0.695
406. 360 365 369 UNI GY -1.207
407. 362 UNI GY -1.466
408. 367 371 UNI GY -1.672
409. 372 UNI GY -1.220
410. 364 373 UNI GY -0.939
411. 364 UNI GY -0.732 4.3 6.0
412. 373 UNI GY -0.312
413. 376 381 386 UNI GY -0.58
414. 375 380 385 377 382 387 UNI GY -0.676
415. 374 378 UNI GY -1.055
416. 379 384 389 390 388 383 UNI GY -1.099
417. 361 366 370 UNI GY -1.386
418. 363 UNI GY -1.077
419. 368 UNI GY -1.634
420. *SIXTH FLOOR
421. 391 UNI GY -1.523
422. 392 UNI GY -1.264
423. 393 UNI GY -1.410
424. 394 UNI GY -0.939
425. 400 403 UNI GY -1.737
426. 401 404 UNI GY -0.371
427. 402 UNI GY -1.961
428. 405 406 UNI GY -1.936
429. 395 TO 397 UNI GY -1.644
430. 398 399 UNI GY -1.722
431. 407 410 411 414 UNI GY -0.676
432. 408 409 412 413 UNI GY -0.695
433. 415 420 424 UNI GY -1.207
434. 417 UNI GY -1.466
435. 422 426 UNI GY -1.672
436. 427 UNI GY -1.220
437. 419 428 UNI GY -0.939
438. 419 UNI GY -0.732 4.3 6.0
439. 428 UNI GY -0.312
440. 431 436 441 UNI GY -0.58
441. 430 435 440 432 437 442 UNI GY -0.676
442. 429 433 UNI GY -1.055
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443. 434 439 444 445 443 438 UNI GY -1.099
444. 416 421 425 UNI GY -1.386
445. 418 UNI GY -1.077
446. 423 UNI GY -1.634
447. 470 475 480 485 490 495 500 UNI GY -1.378
448. 474 479 484 489 494 499 501 UNI GY -1.378
449. 446 TO 449 UNI GY -1.3
450. LOAD 2 LIVE LOAD
451. ELEMENT LOAD
452. 502 TO 526 PRE GY -0.10
453. 527 TO 550 PRE GY -0.10
454. MEMBER LOAD
455. *2ND FLOOR
456. 91 105 UNI GY -0.1125
457. 135 98 128 UNI GY -0.225
458. 142 157 161 169 UNI GY -0.086
459. 106 TO 115 UNI GY -0.634
460. 134 TO 141 UNI GY -0.9656
461. 99 TO 104 UNI GY -1.2075
462. 129 TO 131 UNI GY -1.034
463. 132 UNI GY -0.3981
464. 132 UNI GY -0.315
465. 133 134 UNI GY -0.750
466. 134 UNI GY -0.875 3 6
467. 92 TO 94 UNI GY -0.5157
468. 95 TO 97 UNI GY -0.5156
469. 97 UNI GY -0.728 3 6
470. *3RD FLOOR
471. 215 TO 217 219 220 UNI GY -0.734
472. 218 UNI GY -0.8406
473. 227 TO 229 231 232 UNI GY -0.9656
474. 230 UNI GY -1.2156
475. 209 TO 211 213 214 UNI GY -1.2075
476. 212 UNI GY -1.1012
477. 221 TO 223 UNI GY -1.034
478. 224 UNI GY -0.3981
479. 224 UNI GY 0.315 3 6
480. 225 226 UNI GY -1.0343
481. 203 TO 205 UNI GY -0.5157
482. 206 TO 208 UNI GY -0.5156
483. 208 UNI GY -0.728 3 6
484. *4TH FLOOR
485. 266 267 270 271 UNI GY -1.072
486. 278 279 284 285 UNI GY -1.028
487. 272 273 276 277 UNI GY -1.400
488. 293 294 299 300 UNI GY -1.352
489. 286 287 291 292 UNI GY -1.448
490. 268 UNI GY -0.240
491. 269 UNI GY -0.574 0 3
492. 288 289 UNI GY -0.525
493. 290 UNI GY -0.5992
494. 274 UNI GY -0.589
495. 275 UNI GY -0.549
496. 295 TO 298 UNI GY -0.526
497. 280 TO 283 UNI GY -0.153
498. 303 TO 306 UNI GY -0.134
499. 322 324 UNI GY -0.220
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500. 329 331 UNI GY -0.190
501. 334 335 UNI GY -0.435
502. 307 UNI GY -0.627
503. 308 TO 310 UNI GY -0.277
504. 323 UNI GY -0.526
505. 330 UNI GY -0.465
506. 313 UNI GY -0.14
507. *FIFTH FLOOR
508. 336 UNI GY -0.300
509. 337 UNI GY -0.167
510. 338 UNI GY -0.580
511. 345 348 UNI GY -0.485
512. 346 349 UNI GY -0.191
513. 347 UNI GY -0.780
514. 350 351 UNI GY -0.438
515. 340 TO 342 UNI GY -0.438
516. 343 344 UNI GY -0.577
517. 352 355 356 359 UNI GY -0.347
518. 353 354 357 358 UNI GY -0.356
519. 360 365 369 UNI GY -0.373
520. 362 UNI GY -0.613
521. 367 371 UNI GY -0.177
522. 372 UNI GY -0.221
523. 364 UNI GY -0.525 4.3 6.0
524. 373 UNI GY -0.224
525. 376 381 386 UNI GY -0.297
526. 375 380 385 377 382 387 UNI GY -0.347
527. 374 378 UNI GY -0.120
528. 379 384 389 390 388 383 UNI GY -0.143
529. 361 366 370 UNI GY -0.306
530. 363 UNI GY -0.353
531. 368 UNI GY -0.222
532. *SIXTH FLOOR
533. 391 UNI GY -0.300
534. 392 UNI GY -0.167
535. 393 UNI GY -0.580
536. 400 403 UNI GY -0.485
537. 401 404 UNI GY -0.191
538. 402 UNI GY -0.780
539. 405 406 UNI GY -0.438
540. 395 TO 397 UNI GY -0.438
541. 398 399 UNI GY -0.577
542. 407 410 411 414 UNI GY -0.347
543. 408 409 412 413 UNI GY -0.356
544. 415 420 424 UNI GY -0.373
545. 417 UNI GY -0.613
546. 422 426 UNI GY -0.177
547. 427 UNI GY -0.221
548. 419 UNI GY -0.525 4.3 6.0
549. 428 UNI GY -0.224
550. 431 436 441 UNI GY -0.297
551. 430 435 440 432 437 442 UNI GY -0.347
552. 429 433 UNI GY -0.120
553. 434 439 444 445 443 438 UNI GY -0.143
554. 416 421 425 UNI GY -0.306
555. 418 UNI GY -0.353
556. 423 UNI GY -0.222
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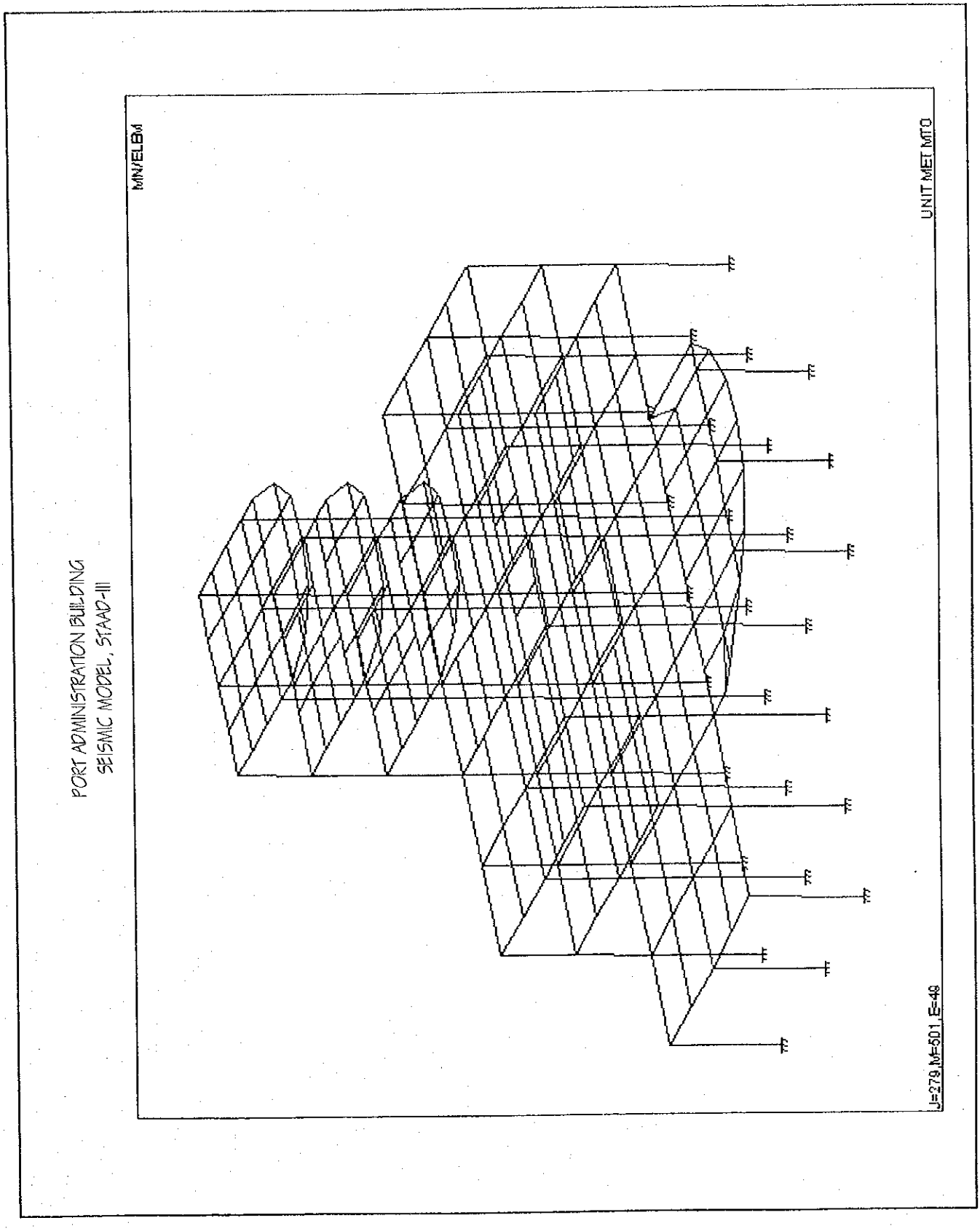
PROJECT: Detailed Design on Port Reactivation Project in La Union Province	Calc. File No.		Prepared by	R.Martinez
SECTION: Port Administration Building	Calc. Index No.		Checked by	A.MORIOKA
SUBJECT: Input for Seismic Load Model	Date	July-02	Page	34/232



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            *                                                *
            *           S T A A D - III                      *
            *           Revision 21.1W                       *
            *           Proprietary Program of               *
            *           RESEARCH ENGINEERS, Inc.             *
            *           Date=    MAY 15, 2002                *
            **************************************************

 1. STAAD SPACE PORT ADMINISTRATION BUILDING
 2. *MAY-2002, SEISMIC MODEL
 3. INPUT WIDTH 72
 4. UNIT METER MTON
 5. JOINT COORDINATES
 6. *GROUND LEVEL
 7. 1 0 0 0 8 42 0 0
 8. 9 0 0 8.275 16 42 0 8.275
 9. 17 0 0 16 24 42 0 16
10. 25 18 0 24 27 30 0 24
11. *SECOND LEVEL
12. 28 0 5.20 0 35 42.00 5.20 0
13. 36 0 5.20 4.125 40 24.00 5.20 4.125
14. 41 24.00 5.20 6.00 42 30.00 5.20 6.00
15. 43 30.00 5.20 3.00 44 36.00 5.20 3.00
16. 45 36.00 5.20 4.125 46 42.00 5.20 4.125
17. 47 0 5.20 8.275 54 42.00 5.20 8.275
18. 55 0 5.20 12.125 62 42.00 5.20 12.125
19. 63 0 5.20 16.00 70 42.00 5.20 16.00
20. 71 15.00 5.20 16.00 73 27.00 5.20 16.00
21. 74 31.80 5.20 16.00
22. 75 12.00 5.20 18.55
23. 76 13.04 5.20 20.00 77 15.00 5.20 20.00
24. 78 18.00 5.20 20.00 82 30.00 5.20 20.00
25. 83 15.96 5.20 24.00
26. 84 18.00 5.20 24.00 88 30.00 5.20 24.00
27. 89 31.82 5.20 24.00
28. 90 18.00 5.20 26.30 91 21.00 5.20 27.96
29. 92 24.00 5.20 28.45 93 27.00 5.20 27.96
30. 94 30.00 5.20 26.30
31. *THIRD LEVEL
32. 95 6.00 9.00 0 101 42.00 9.00 0
33. 102 6.00 9.00 4.125 105 24.00 9.00 4.125
34. 106 24.00 9.00 6.00 107 30.00 9.00 6.00
35. 108 30.00 9.00 3.00 109 36.00 9.00 3.00
36. 110 36.00 9.00 4.125 111 42.00 9.00 4.125
37. 112 6.00 9.00 8.275 118 42.00 9.00 8.275
38. 119 6.00 9.00 12.125 122 24.00 9.00 12.125
39. 123 24.00 9.00 11.275 124 30.00 9.00 11.275
40. 125 30.00 9.00 12.125 127 42.00 9.00 12.125
41. 128 6.00 9.00 16.00 134 42.00 9.00 16.00
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42. *FOURTH LEVEL
43. 135 6.00 12.80 0 141 42.00 12.80 0
44. 142 6.00 12.80 4.125 143 12.00 12.80 4.125
45. 144 18.00 12.80 2.89 145 18.00 12.80 4.125
46. 146 18.00 12.80 5.58
47. 147 24.00 12.80 2.89 148 24.00 12.80 5.58
48. 149 24.00 12.80 6.00 150 30.00 12.80 6.00
49. 151 30.00 12.80 4.125 153 42.00 12.80 4.125
50. 154 6.00 12.80 8.275 160 42.00 12.80 8.275
51. 161 6.00 12.80 12.125 167 42.00 12.80 12.125
52. 168 6.00 12.80 16.00 174 42.00 12.80 16.00
53. 175 21.00 12.80 12.125 176 27.00 12.80 12.125
54. 177 21.00 12.80 16.00 178 27.00 12.80 16.00
55. *FIFTH LEVEL
56. 179 18.00 16.60 0 181 30.00 16.60 0
57. 182 22.20 16.60 0 183 27.00 16.60 0
58. 184 18.00 16.60 2.89 185 22.20 16.60 2.89
59. 186 24.00 16.60 2.89 187 27.00 16.60 2.89
60. 188 18.00 16.60 5.58 189 22.20 16.60 5.58
61. 190 24.00 16.60 5.58 191 24.00 16.60 6.00
62. 192 27.00 16.60 6.00 193 30.00 16.60 6.00
63. 194 18.00 16.60 8.275 196 30.00 16.60 8.275
64. 197 21.00 16.60 8.275 198 27.00 16.60 8.275
65. 199 18.00 16.60 10.355 203 30.00 16.60 10.355
66. 204 19.05 16.60 13.855
67. 205 21.00 16.60 13.855 207 27.00 16.60 13.855
68. 208 28.95 16.60 13.855
69. 209 21.00 16.60 15.695 210 24.00 16.60 16.00
70. 211 27.00 16.60 15.695
71. 266 22.20 16.60 8.275
72. *SIXTH LEVEL
73. 212 18.00 20.40 0 214 30.00 20.40 0
74. 215 22.20 20.40 0 216 27.00 20.40 0
75. 217 18.00 20.40 2.89 218 22.20 20.40 2.89
76. 219 24.00 20.40 2.89 220 27.00 20.40 2.89
77. 221 18.00 20.40 5.58 222 22.20 20.40 5.58
78. 223 24.00 20.40 5.58 224 24.00 20.40 6.00
79. 225 27.00 20.40 6.00 226 30.00 20.40 6.00
80. 227 18.00 20.40 8.275 229 30.00 20.40 8.275
81. 230 21.00 20.40 8.275 231 27.00 20.40 8.275
82. 232 18.00 20.40 10.355 236 30.00 20.40 10.355
83. 237 19.05 20.40 13.855
84. 238 21.00 20.40 13.855 240 27.00 20.40 13.855
85. 241 28.95 20.40 13.855
86. 242 21.00 20.40 15.695 243 24.00 20.40 16.00
87. 244 27.00 20.40 15.695
88. 267 22.20 20.40 8.275
89. *ROOF
90. 245 18.00 24.20 0 247 30.00 24.20 0
91. 248 18.00 24.20 2.65 250 30.00 24.20 2.65
92. 251 18.00 24.20 5.45 253 30.00 24.20 5.45
93. 254 18.00 24.20 8.275 256 30.00 24.20 8.275
94. 257 18.00 24.20 10.355 259 30.00 24.20 10.355
95. 260 19.05 24.20 13.855 262 28.95 24.20 13.855
96. 263 21.00 24.20 15.695 264 27.00 24.20 15.695
97. 265 24.00 24.20 16.00
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 98. MEMBER INCIDENCES
 99. * COLUMNS FIRST LEVEL
100. 1 1 28 8
101. 9 9 47 16
102. 17 17 63 24
103. 25 25 84
104. 26 26 86
105. 27 27 88
106. * COLUMNS SECOND LEVEL
107. 28 29 95 34
108. 35 48 112 41
109. 42 64 128 48
110. * COLUMNS THIRD LEVEL
111. 49 95 135 55
112. 56 112 154 62
113. 63 128 168 69
114. * COLUMNS FOURTH LEVEL
115. 70 137 179 72
116. 73 156 194 75
117. 76 171 210
118. * COLUMNS FIFTH LEVEL
119. 77 179 212 79
120. 80 194 227 82
121. 83 210 243
122. * COLUMNS SIXTH LEVEL
123. 84 212 245 86
124. 87 227 254 89
125. 90 243 265
126. * BEAMS SECOND LEVEL
127. 91 28 29 97
128. 98 47 48 104
129. 105 63 64 106
130. 107 65 71; 108 71 66; 109 66 72
131. 110 72 67; 111 67 73; 112 73 68
132. 113 68 74; 114 74 69; 115 69 70
133. 116 76 77 121; 122 83 84 127
134. 128 36 37 131; 132 41 42
135. 133 43 44; 134 45 46
136. 135 55 56 141
137. 142 28 36 146; 147 40 41; 148 41 51
138. 149 33 43; 150 43 42; 151 42 52
139. 152 34 44; 153 44 45; 154 45 53
140. 155 35 46; 156 46 54
141. 157 36 47 160
142. 161 47 55 168; 169 55 63 176
143. 177 71 77; 178 66 78; 179 72 79
144. 180 67 80; 181 73 81; 182 68 82
145. 183 78 84 187; 188 84 90 191
146. 192 65 75; 193 75 76; 194 76 83
147. 195 83 90; 196 90 91; 197 91 92
148. 198 92 93; 199 93 94; 200 94 89
149. 201 89 74; 202 88 94
150. * BEAMS THIRD LEVEL
151. 203 95 96 208; 209 112 113 214
152. 215 128 129 220; 221 102 103 223
153. 224 106 107; 225 108 109; 226 110 111
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154. 227 119 120 229; 230 123 124
155. 231 125 126 232; 233 95 102 236
156. 237 105 106; 238 106 115
157. 239 99 108; 240 108 107; 241 107 116
158. 242 100 109; 243 109 110; 244 110 117
159. 245 101 111; 246 111 118
160. 247 102 112 249; 250 112 119 252
161. 253 115 123; 254 123 122
162. 255 116 124; 256 124 125
163. 257 117 126 258; 259 119 128 262
164. 263 125 132 265
165. * BEAMS FOURTH LEVEL
166. 266 135 136 271; 272 154 155 277
167. 278 168 169 279; 280 170 177
168. 281 177 171; 282 171 178
169. 283 178 172; 284 172 173 285
170. 286 142 143; 287 143 145; 288 144 147
171. 289 146 148; 290 149 150
172. 291 151 152 292; 293 161 162 294
173. 295 163 175; 296 175 164
174. 297 164 176; 298 176 165
175. 299 165 166 300
176. 301 135 142 302; 303 137 144
177. 304 144 145; 305 145 146
178. 306 146 156; 307 138 147
179. 308 147 148; 309 148 149
180. 310 148 157; 311 139 151
181. 312 151 150; 313 150 158; 314 140 152 315
182. 316 142 154 317; 318 152 159 319
183. 320 154 161 326; 327 161 168 333
184. 334 175 177 335
185. * BEAMS FIFTH LEVEL
186. 336 179 182; 337 182 180; 338 180 183
187. 339 183 181; 340 194 197; 341 197 266
188. 342 266 195; 343 195 198; 344 198 196
189. 345 184 185 347; 348 188 189 349
190. 350 191 192 351; 352 199 200 355
191. 356 204 205 359; 360 179 184
192. 361 182 185; 362 180 186; 363 183 187
193. 364 181 193; 365 184 188 367
194. 368 187 192; 369 188 194; 370 189 266
195. 371 190 191; 372 191 195; 373 193 196
196. 374 194 199; 375 197 200; 376 195 201
197. 377 198 202; 378 196 203; 379 199 204 383
198. 384 204 209; 385 205 209 387
199. 388 208 211; 389 209 210 390
200. * BEAMS SIXTH LEVEL
201. 391 212 215; 392 215 213; 393 213 216
202. 394 216 214; 395 227 230; 396 230 267
203. 397 267 228; 398 228 231; 399 231 229
204. 400 217 218 402; 403 221 222 404
205. 405 224 225 406; 407 232 233 410
206. 411 237 238 414; 415 212 217
207. 416 215 218; 417 213 219; 418 216 220
208. 419 214 226
209. 420 217 221 422; 423 220 225
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210. 424 221 227; 425 222 267; 426 223 224
211. 427 224 228; 428 226 229
212. 429 227 232; 430 230 233
213. 431 228 234; 432 231 235; 433 229 236
214. 434 232 237 438; 439 237 242
215. 440 238 242 442; 443 241 244
216. 444 242 243 445
217. * BEAMS ROOF
218. 446 245 246 447; 448 248 249 449
219. 450 251 252 451; 452 254 255 453
220. 454 257 258 455; 456 260 261 457
221. 458 245 248 460; 461 248 251 463
222. 464 251 254 466; 467 254 257 469
223. 470 257 260 472; 473 260 263
224. 474 261 265; 475 262 264
225. 476 263 265; 477 265 264
226. *ELEMENT INCIDENCES
227. * 2ND FLOOR
228. * 3RD FLOOR
229. * 4TH FLOOR
230. * 5TH FLOOR
231. * 6TH FLOOR
232. * ROOF
233. MEMBER PROPERTY AMERICAN
234. *COLUMNS
235. * COLUMNS FIRST LEVEL
236. 1 TO 3 7 TO 11 15 TO 20 PRI YD 0.65 ZD 0.70
237. 22 TO 27 PRI YD 0.65 ZD 0.70
238. 4 TO 6 12 TO 14 21 PRI YD 0.65 ZD 0.75
239. * COLUMNS SECOND LEVEL
240. 28 29 33 TO 36 40 TO 44 PRI YD 0.65 ZD 0.70
241. 46 TO 48 PRI YD 0.65 ZD 0.70
242. 30 TO 32 37 TO 39 45 PRI YD 0.65 ZD 0.75
243. * COLUMNS THIRD LEVEL
244. 49 50 54 TO 57 61 TO 65 PRI YD 0.65 ZD 0.70
245. 67 TO 69 PRI YD 0.65 ZD 0.70
246. 51 TO 53 58 TO 60 66 PRI YD 0.65 ZD 0.75
247. * COLUMNS FOURTH LEVEL
248. 70 TO 76 PRI YD 0.65 ZD 0.75
249. * COLUMNS FIFTH LEVEL
250. 77 TO 83 PRI YD 0.65 ZD 0.75
251. * COLUMNS SIXTH LEVEL
252. 84 TO 90 PRI YD 0.65 ZD 0.75
253. * BEAMS 2ND LEVEL
254. 91 TO 115 116 TO 122 127 PRI YD 0.65 ZD 0.30
255. 142 157 161 169 177 TO 192 202 PRI YD 0.65 ZD 0.30
256. 123 TO 126 PRI YD 0.70 ZD 0.35
257. 128 TO 141 193 TO 201 PRI YD 0.55 ZD 0.30
258. 143 TO 156 158 TO 160 PRI YD 0.75 ZD 0.40
259. 162 TO 168 170 TO 176 PRI YD 0.75 ZD 0.40
260. * BEAMS 3RD LEVEL
261. 203 TO 220 PRI YD 0.65 ZD 0.30
262. 221 TO 232 PRI YD 0.55 ZD 0.30
263. 233 TO 265 PRI YD 0.75 ZD 0.40
264. * BEAMS 4TH LEVEL
265. 266 267 270 TO 273 PRI YD 0.65 ZD 0.30
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266. 276 TO 279 284 285 PRI YD 0.65 ZD 0.30
267. 286 287 291 TO 294 PRI YD 0.55 ZD 0.30
268. 299 300 290 PRI YD 0.55 ZD 0.30
269. 288 289 334 335 PRI YD 0.40 ZD 0.25
270. 268 269 274 275 280 TO 283 PRI YD 0.60 ZD 0.35
271. 295 TO 298 301 302 314 TO 321 PRI YD 0.60 ZD 0.35
272. 325 TO 328 332 333 PRI YD 0.60 ZD 0.35
273. 303 TO 313 322 TO 324 PRI YD 0.75 ZD 0.40
274. 329 TO 331 PRI YD 0.75 ZD 0.40
275. * BEAMS 5TH LEVEL
276. 336 TO 344 360 362 364 365 PRI YD 0.60 ZD 0.35
277. 367 369 371 372 373 374 376 PRI YD 0.60 ZD 0.35
278. 378 379 381 383 384 386 PRI YD 0.60 ZD 0.35
279. 388 389 390 PRI YD 0.60 ZD 0.35
280. 345 TO 349 352 TO 359 PRI YD 0.40 ZD 0.25
281. 361 363 366 368 370 PRI YD 0.40 ZD 0.25
282. 375 377 380 382 385 387 PRI YD 0.40 ZD 0.25
283. 350 351 PRI YD 0.55 ZD 0.30
284. * BEAMS 6TH LEVEL
285. 391 TO 399 415 417 419 420 PRI YD 0.60 ZD 0.35
286. 422 424 426 TO 428 429 431 PRI YD 0.60 ZD 0.35
287. 433 434 436 438 439 441 PRI YD 0.60 ZD 0.35
288. 443 TO 445 PRI YD 0.60 ZD 0.35
289. 400 TO 404 407 TO 414 PRI YD 0.40 ZD 0.25
290. 416 418 421 423 425 PRI YD 0.40 ZD 0.25
291. 430 432 435 437 440 442 PRI YD 0.40 ZD 0.25
292. 405 406 PRI YD 0.55 ZD 0.30
293. * BEAMS ROOF
294. 446 447 452 453 458 TO 477 PRI YD 0.60 ZD 0.35
295. 448 TO 451 454 TO 457 PRI YD 0.40 ZD 0.25
296. *ELEMENT PROPERTY
297. *219 TO 268 TH 0.05
298. CONSTANT
299. E 2526713.3 ALL
300. DENSITY CONCRETE ALL
301. SUPPORT
302. 1 TO 27 FIXED
303. *SLAVE RIGID MASTER 1 JOINTS 28 TO 94
304. *SLAVE RIGID MASTER 2 JOINTS 95 TO 134
305. *SLAVE RIGID MASTER 3 JOINTS 135 TO 178
306. *SLAVE RIGID MASTER 4 JOINTS 179 TO 211 266
307. *SLAVE RIGID MASTER 5 JOINTS 212 TO 244 267
308. *SLAVE RIGID MASTER 6 JOINTS 245 TO 265
309. DEFINE UBC LOAD
310. ZONE 0.4 I 1.2 RWX 12 RWZ 12 S 3.00 CT 0.073 TS 0.90
311. SELFWEIGHT
312. JOINT WEIGHT
313. *2ND FLOOR
314. 33 34 38 TO 46 49 TO 54 55 TO 62 WEIGHT 16.61
315. 65 TO 70 WEIGHT 16.61
316. 29 37 48 56 64 WEIGHT 20.955
317. 28 36 47 55 63 WEIGHT 4.345
318. 75 TO 94 WEIGHT 4.252
319. *3RD FLOOR
320. 95 TO 134 WEIGHT 15.391
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321. *4TH FLOOR
322. 138 145 TO 150 157 164 171 175 TO 178 WEIGHT 9.656
323. 137 139 144 151 156 158 163 165 170 172 WEIGHT 19.425
324. 136 140 TO 143 152 TO 155 159 TO 162 WEIGHT 9.769
325. 166 TO 169 173 174 WEIGHT 9.769
326. *5TH FLOOR
327. 179 TO 211 WEIGHT 6.141
328. * 6TH FLOOR
329. 212 TO 244 WEIGHT 6.141
330. * ROOF
331. 245 TO 265 WEIGHT 4.171
332. LOAD 1 EQ X
333. UBC LOAD X 1
334. LOAD 2 EQ Z
335. UBC LOAD Z 1
336. PERFORM ANALYSIS PRINT LOAD DATA
```

LOADING 1 EQ X

LOADING 2 EQ Z

```
*************************************************************
*                                                           *
*  CALC/USED PERIOD FOR X  UBC =  0.8875/  0.8875 SEC       *
*  C, C-ALT =  0.0708 ,  1.9275, LOAD FACTOR = 1.000        *
*  UBC FACTOR V =  0.1528 X   3497.81 =     534.61 MTON     *
*                                                           *
*************************************************************


*************************************************************
*                                                           *
*  CALC/USED PERIOD FOR Z  UBC =  0.9278/  0.9278 SEC       *
*  C, C-ALT =  0.0692 ,  1.9275, LOAD FACTOR = 1.000        *
*  UBC FACTOR V =  0.1495 X   3497.81 =     522.82 MTON     *
*                                                           *
*************************************************************
```

JOINT		LATERAL LOAD (MTON),	LOAD - 1
			FACTOR - 1.000
28	FX	0.668	
29	FX	2.109	
30	FX	0.644	
31	FX	0.669	
32	FX	0.669	
33	FX	1.802	
34	FX	1.777	
35	FX	0.546	
36	FX	0.522	
37	FX	1.840	
38	FX	1.536	
39	FX	1.536	
40	FX	1.396	
41	FX	1.349	
42	FX	1.377	
43	FX	1.396	
44	FX	1.348	
45	FX	1.377	
46	FX	1.453	
47	FX	0.732	
48	FX	2.207	
49	FX	1.903	
50	FX	1.928	

```
    51      FX          1.881
    52      FX          1.881
    53      FX          1.903
    54      FX          1.805
    55      FX          1.675
    56      FX          2.987
    57      FX          1.522
    58      FX          1.522
    59      FX          1.522
    60      FX          1.522
    61      FX          1.522
    62      FX          1.439
    63      FX          0.664
    64      FX          2.103
    65      FX          1.792
    66      FX          1.767
    67      FX          1.791
    68      FX          1.747
    69      FX          1.770
    70      FX          1.701
    71      FX          0.164
    72      FX          0.164
    73      FX          0.164
    74      FX          0.209
    75      FX          0.364
    76      FX          0.423
    77      FX          0.444
    78      FX          0.527
    79      FX          0.527
    80      FX          0.527
    81      FX          0.527
    82      FX          0.477
    83      FX          0.442
    84      FX          0.694
    85      FX          0.551
    86      FX          0.758
    87      FX          0.551
    88      FX          0.691
    89      FX          0.479
    90      FX          0.425
    91      FX          0.452
    92      FX          0.454
    93      FX          0.452
    94      FX          0.423
      *          -----------
      * TOTAL =      76.190 AT LEVEL      5.200 METE
      *
    95      FX          2.715
    96      FX          2.885
    97      FX          2.921
    98      FX          2.921
    99      FX          2.872
   100      FX          2.836
   101      FX          2.715
   102      FX          2.367
   103      FX          2.511
```

104	FX	2.511
105	FX	2.268
106	FX	2.187
107	FX	2.236
108	FX	2.268
109	FX	2.186
110	FX	2.236
111	FX	2.367
112	FX	2.884
113	FX	3.054
114	FX	3.090
115	FX	2.971
116	FX	2.971
117	FX	3.054
118	FX	2.884
119	FX	2.343
120	FX	2.487
121	FX	2.487
122	FX	2.212
123	FX	2.174
124	FX	2.174
125	FX	2.212
126	FX	2.487
127	FX	2.343
128	FX	2.704
129	FX	2.874
130	FX	2.874
131	FX	2.910
132	FX	2.874
133	FX	2.874
134	FX	2.704
*		----------
* TOTAL =		104.649 AT LEVEL 9.000 METE
*		
135	FX	0.778
136	FX	2.702
137	FX	4.791
138	FX	3.128
139	FX	4.867
140	FX	2.702
141	FX	2.460
142	FX	2.245
143	FX	2.450
144	FX	3.723
145	FX	2.033
146	FX	2.043
147	FX	2.132
148	FX	2.146
149	FX	1.893
150	FX	2.124
151	FX	3.920
152	FX	2.450
153	FX	2.245
154	FX	2.628
155	FX	2.870
156	FX	5.017

```
157      FX          3.355
158      FX          4.991
159      FX          2.870
160      FX          2.628
161      FX          2.221
162      FX          2.426
163      FX          4.157
164      FX          2.401
165      FX          4.157
166      FX          2.426
167      FX          2.221
168      FX          2.449
169      FX          2.691
170      FX          4.313
171      FX          2.929
172      FX          4.313
173      FX          2.691
174      FX          2.449
175      FX          2.002
176      FX          2.002
177      FX          2.002
178      FX          2.002
   *              ----------
   * TOTAL =     125.042 AT LEVEL    12.800 METE
   *
179      FX          2.763
180      FX          2.797
181      FX          2.871
182      FX          1.786
183      FX          1.786
184      FX          1.797
185      FX          1.681
186      FX          1.813
187      FX          1.612
188      FX          1.786
189      FX          1.676
190      FX          1.594
191      FX          1.655
192      FX          1.719
193      FX          1.969
194      FX          2.802
195      FX          2.879
196      FX          2.778
197      FX          1.663
198      FX          1.764
199      FX          1.774
200      FX          1.681
201      FX          1.846
202      FX          1.681
203      FX          1.774
204      FX          1.780
205      FX          1.647
206      FX          1.849
207      FX          1.647
208      FX          1.780
209      FX          1.741
```

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210       FX          2.824
211       FX          1.741
266       FX          0.241
   *              -----------
   * TOTAL =       65.197 AT LEVEL     16.600 METE
   *
212       FX          3.396
213       FX          3.437
214       FX          3.528
215       FX          2.195
216       FX          2.195
217       FX          2.209
218       FX          2.066
219       FX          2.229
220       FX          1.981
221       FX          2.195
222       FX          2.059
223       FX          1.959
224       FX          2.034
225       FX          2.113
226       FX          2.420
227       FX          3.443
228       FX          3.539
229       FX          3.414
230       FX          2.044
231       FX          2.168
232       FX          2.180
233       FX          2.066
234       FX          2.268
235       FX          2.066
236       FX          2.180
237       FX          2.187
238       FX          2.023
239       FX          2.273
240       FX          2.023
241       FX          2.187
242       FX          2.139
243       FX          3.471
244       FX          2.139
267       FX          0.296
   *              -----------
   * TOTAL =       80.122 AT LEVEL     20.400 METE
   *
245       FX          4.638
246       FX          5.457
247       FX          4.638
248       FX          3.388
249       FX          3.778
250       FX          3.388
251       FX          3.412
252       FX          3.802
253       FX          3.412
254       FX          4.946
255       FX          5.764
256       FX          4.946
257       FX          3.427
```

258	FX	3.796
259	FX	3.427
260	FX	3.441
261	FX	3.668
262	FX	3.441
263	FX	3.032
264	FX	3.032
265	FX	4.574

* TOTAL = 83.407 AT LEVEL 24.200 METE

LOAD - 2
FACTOR - 1.000

JOINT		LATERAL LOAD (MTON),
28	FZ	0.652
29	FZ	2.057
30	FZ	0.628
31	FZ	0.652
32	FZ	0.652
33	FZ	1.757
34	FZ	1.733
35	FZ	0.532
36	FZ	0.509
37	FZ	1.794
38	FZ	1.498
39	FZ	1.498
40	FZ	1.361
41	FZ	1.315
42	FZ	1.343
43	FZ	1.361
44	FZ	1.315
45	FZ	1.343
46	FZ	1.417
47	FZ	0.713
48	FZ	2.152
49	FZ	1.856
50	FZ	1.880
51	FZ	1.834
52	FZ	1.834
53	FZ	1.856
54	FZ	1.760
55	FZ	1.633
56	FZ	2.913
57	FZ	1.484
58	FZ	1.484
59	FZ	1.484
60	FZ	1.484
61	FZ	1.484
62	FZ	1.403
63	FZ	0.648
64	FZ	2.051
65	FZ	1.747
66	FZ	1.722
67	FZ	1.746
68	FZ	1.703

69	FZ	1.726
70	FZ	1.659
71	FZ	0.160
72	FZ	0.160
73	FZ	0.160
74	FZ	0.204
75	FZ	0.355
76	FZ	0.412
77	FZ	0.433
78	FZ	0.513
79	FZ	0.513
80	FZ	0.513
81	FZ	0.513
82	FZ	0.466
83	FZ	0.431
84	FZ	0.677
85	FZ	0.537
86	FZ	0.739
87	FZ	0.537
88	FZ	0.673
89	FZ	0.467
90	FZ	0.414
91	FZ	0.440
92	FZ	0.443
93	FZ	0.440
94	FZ	0.413
*		----------
* TOTAL =		74.286 AT LEVEL 5.200 METE
*		
95	FZ	2.647
96	FZ	2.813
97	FZ	2.848
98	FZ	2.848
99	FZ	2.800
100	FZ	2.765
101	FZ	2.647
102	FZ	2.308
103	FZ	2.448
104	FZ	2.448
105	FZ	2.211
106	FZ	2.133
107	FZ	2.180
108	FZ	2.211
109	FZ	2.132
110	FZ	2.180
111	FZ	2.308
112	FZ	2.812
113	FZ	2.978
114	FZ	3.013
115	FZ	2.897
116	FZ	2.897
117	FZ	2.978
118	FZ	2.812
119	FZ	2.285
120	FZ	2.425
121	FZ	2.425

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      122      FZ          2.157
      123      FZ          2.120
      124      FZ          2.120
      125      FZ          2.157
      126      FZ          2.425
      127      FZ          2.285
      128      FZ          2.637
      129      FZ          2.802
      130      FZ          2.802
      131      FZ          2.837
      132      FZ          2.802
      133      FZ          2.802
      134      FZ          2.637
        *              ----------
        * TOTAL =     102.034 AT LEVEL      9.000 METE
        *
      135      FZ          0.759
      136      FZ          2.634
      137      FZ          4.671
      138      FZ          3.050
      139      FZ          4.746
      140      FZ          2.634
      141      FZ          2.398
      142      FZ          2.189
      143      FZ          2.389
      144      FZ          3.630
      145      FZ          1.982
      146      FZ          1.992
      147      FZ          2.079
      148      FZ          2.092
      149      FZ          1.845
      150      FZ          2.071
      151      FZ          3.822
      152      FZ          2.389
      153      FZ          2.189
      154      FZ          2.562
      155      FZ          2.798
      156      FZ          4.892
      157      FZ          3.271
      158      FZ          4.867
      159      FZ          2.798
      160      FZ          2.562
      161      FZ          2.166
      162      FZ          2.365
      163      FZ          4.053
      164      FZ          2.341
      165      FZ          4.053
      166      FZ          2.365
      167      FZ          2.166
      168      FZ          2.388
      169      FZ          2.623
      170      FZ          4.205
      171      FZ          2.855
      172      FZ          4.205
      173      FZ          2.623
      174      FZ          2.388
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175      FZ          1.952
176      FZ          1.952
177      FZ          1.952
178      FZ          1.952
   *           ------------
   * TOTAL =     121.917 AT LEVEL     12.800 METE
   *
179      FZ          2.694
180      FZ          2.727
181      FZ          2.799
182      FZ          1.741
183      FZ          1.741
184      FZ          1.752
185      FZ          1.639
186      FZ          1.768
187      FZ          1.572
188      FZ          1.742
189      FZ          1.634
190      FZ          1.554
191      FZ          1.614
192      FZ          1.676
193      FZ          1.920
194      FZ          2.732
195      FZ          2.807
196      FZ          2.709
197      FZ          1.621
198      FZ          1.720
199      FZ          1.730
200      FZ          1.639
201      FZ          1.800
202      FZ          1.639
203      FZ          1.730
204      FZ          1.735
205      FZ          1.605
206      FZ          1.803
207      FZ          1.605
208      FZ          1.735
209      FZ          1.697
210      FZ          2.754
211      FZ          1.697
266      FZ          0.235
   *           ------------
   * TOTAL =      63.568 AT LEVEL     16.600 METE
   *
212      FZ          3.311
213      FZ          3.351
214      FZ          3.440
215      FZ          2.140
216      FZ          2.140
217      FZ          2.154
218      FZ          2.014
219      FZ          2.173
220      FZ          1.931
221      FZ          2.140
222      FZ          2.008
223      FZ          1.910
```

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      224      FZ          1.983
      225      FZ          2.060
      226      FZ          2.360
      227      FZ          3.357
      228      FZ          3.450
      229      FZ          3.329
      230      FZ          1.992
      231      FZ          2.114
      232      FZ          2.125
      233      FZ          2.014
      234      FZ          2.211
      235      FZ          2.014
      236      FZ          2.125
      237      FZ          2.132
      238      FZ          1.973
      239      FZ          2.216
      240      FZ          1.973
      241      FZ          2.132
      242      FZ          2.086
      243      FZ          3.384
      244      FZ          2.086
      267      FZ          0.289
        *          -----------
        * TOTAL =      78.119 AT LEVEL     20.400 METE
        *
      245      FZ          4.610
      246      FZ          5.423
      247      FZ          4.610
      248      FZ          3.367
      249      FZ          3.755
      250      FZ          3.367
      251      FZ          3.391
      252      FZ          3.778
      253      FZ          3.391
      254      FZ          4.915
      255      FZ          5.729
      256      FZ          4.915
      257      FZ          3.406
      258      FZ          3.772
      259      FZ          3.406
      260      FZ          3.420
      261      FZ          3.646
      262      FZ          3.420
      263      FZ          3.013
      264      FZ          3.013
      265      FZ          4.545
        *          -----------
        * TOTAL =      82.893 AT LEVEL     20.400 METE
        *
```

VERTICAL LOADS AT COLUMNS SUPPORTS

		Dead load		Live load		Seismic load	
Joint	Column	1st Floor	2nd - Roof	1st Floor	2nd - Roof	X-Dir.	Z-Dir.
1	1-A	13.00	17.07	1.80	1.99	12.71	0.98
9	1-B	20.00	31.11	3.00	5.69	14.67	0.18
17	1-C	11.30	18.87	1.20	3.21	11.42	0.92
2	2-A	28.10	66.51	4.00	12.93	23.99	14.19
10	2-B	38.90	102.50	6.50	26.80	28.68	2.07
18	2-C	22.80	69.50	3.70	15.07	22.66	16.25
3	3-A	33.33	82.52	4.10	23.58	2.08	22.11
11	3-B	30.80	111.55	5.30	44.86	2.67	1.67
19	3-C	30.30	92.01	3.70	25.61	0.84	22.32
4	4-A	19.20	156.91	3.00	29.59	43.72	89.18
12	4-B	20.40	230.70	4.00	58.94	64.35	16.24
20	4-C	20.40	98.54	3.60	24.58	3.89	51.21
25	4-D	7.70	37.30	1.60	3.98	3.17	13.36
5	5-A	32.10	194.48	2.70	33.20	1.79	92.60
13	5-B	41.10	269.68	5.10	66.38	4.61	6.32
21	5-C	28.00	219.17	4.30	41.45	0.00	110.81
26	5-D	31.50	40.28	5.50	4.94	0.06	10.67
6	6-A	34.40	147.39	5.20	21.09	40.87	88.84
14	6-B	47.60	231.05	7.10	55.28	69.91	15.85
22	6-C	30.60	96.52	3.60	24.17	4.14	49.63
27	6-D	16.70	32.62	1.90	3.25	4.18	10.47
7	7-A	32.00	91.81	5.50	26.48	2.22	22.37
15	7-B	54.10	113.50	7.10	45.14	0.60	1.83
23	7-C	16.90	83.95	2.20	24.62	2.89	24.53
8	8-A	14.40	60.38	1.60	16.35	38.01	14.90
16	8-B	38.10	84.12	4.20	22.97	44.64	2.01
24	8-C	13.80	57.08	1.40	11.30	34.38	16.98

LOAD COMBINATIONS

		COMBINATIONS (ton)			MAX.
Joint	Column	D + L	D+L+Sx	D+L+Sz	LOAD
1	1-A	33.86	35.02	34.84	35.02
9	1-B	59.80	55.99	45.10	59.80
17	1-C	34.58	34.59	26.69	34.59
2	2-A	111.54	101.90	94.53	111.54
10	2-B	174.70	152.92	132.91	174.70
18	2-C	111.07	100.55	95.73	111.07
3	3-A	143.53	109.48	124.54	143.53
11	3-B	192.51	146.75	146.00	192.51
19	3-C	151.62	114.63	130.78	151.62
4	4-A	208.70	189.79	223.97	223.97
12	4-B	314.04	284.50	248.33	314.04
20	4-C	147.12	113.54	149.12	149.12
25	4-D	50.58	40.41	48.08	50.58
5	5-A	262.48	198.70	266.98	266.98
13	5-B	382.26	290.88	292.17	382.26
21	5-C	292.92	220.24	303.56	303.56
26	5-D	82.22	61.86	69.84	82.22
6	6-A	208.08	187.18	223.25	223.25
14	6-B	341.03	308.98	268.33	341.03
22	6-C	154.89	119.57	153.77	154.89
27	6-D	54.47	44.10	48.83	54.47
7	7-A	155.79	118.80	133.95	155.79
15	7-B	219.84	165.74	166.67	219.84
23	7-C	127.67	98.17	114.44	127.67
8	8-A	92.73	98.30	80.92	98.30
16	8-B	149.39	145.89	113.83	149.39
24	8-C	83.58	88.69	75.61	88.69

Note: The combinations for seismic design are reduced 133%

NUMBER OF PILE PER COLUMN

Joint	Column	FOTING LOAD	TOTAL LOAD	PILE PROVIDED	PILE CAPACITY	N° OF PILES	N° OF PILES PROVIDED
1	1-A	4.90	39.92	45x45	74.00	0.54	1
9	1-B	4.90	64.70	45x45	74.00	0.87	1
17	1-C	4.90	39.49	45x45	74.00	0.53	1
2	2-A	8.49	120.03	50x50	91.30	1.31	2
10	2-B	8.49	183.19	50x50	91.30	2.01	2
18	2-C	8.49	119.56	50x50	91.30	1.31	2
3	3-A	8.49	152.02	50x50	91.30	1.67	2
11	3-B	9.30	201.81	45x45	74.00	2.73	4
19	3-C	8.49	160.11	50x50	91.30	1.75	2
4	4-A	13.00	236.97	45x45	74.00	3.20	5
12	4-B	13.00	327.04	45x45	74.00	4.42	5
20	4-C	8.49	157.61	50x50	91.30	1.73	2
25	4-D	4.90	55.48	45x45	74.00	0.75	1
5	5-A	13.00	279.98	45x45	74.00	3.78	5
13	5-B	15.60	397.86	50x50	91.30	4.36	5
21	5-C	13.00	316.56	45x45	74.00	4.28	5
26	5-D	4.90	87.12	50x50	91.30	0.95	1
6	6-A	13.00	236.25	45x45	74.00	3.19	5
14	6-B	13.00	354.03	45x45	74.00	4.78	5
22	6-C	8.49	163.38	50x50	91.30	1.79	2
27	6-D	4.90	59.37	45x45	74.00	0.80	1
7	7-A	8.49	164.28	50x50	91.30	1.80	2
15	7-B	9.30	229.14	45x45	74.00	3.10	4
23	7-C	8.49	136.16	50x50	91.30	1.49	2
8	8-A	8.49	106.79	50x50	91.30	1.17	2
16	8-B	8.49	157.88	50x50	91.30	1.73	2
24	8-C	8.49	97.18	50x50	91.30	1.06	2

PORT ADMINISTRATION BUILDING
DEAD & LIVE LOAD MODEL

SUPPORT REACTIONS -UNIT MTON METE STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
1	1	0.84	17.07	2.68	4.35	-0.01	-1.52
	2	0.14	1.99	0.46	0.78	0.00	-0.31
2	1	0.32	66.51	2.47	4.15	-0.01	-0.66
	2	0.18	12.93	0.55	0.97	-0.01	-0.39
3	1	0.09	82.53	1.52	2.10	0.01	-0.25
	2	0.04	23.58	0.63	1.05	0.00	-0.14
4	1	0.14	157.47	1.46	1.79	0.02	-0.31
	2	0.04	29.59	0.66	1.07	0.00	-0.13
5	1	-0.11	194.48	1.40	1.50	0.03	0.16
	2	-0.03	33.20	0.45	0.67	0.01	0.01
6	1	-0.03	147.96	1.14	1.06	-0.09	0.07
	2	0.04	21.09	0.34	0.49	-0.02	-0.10
7	1	-0.07	91.82	2.12	3.39	-0.03	0.19
	2	0.14	26.48	0.92	1.52	0.00	-0.25
8	1	-1.18	60.38	1.92	3.12	-0.02	2.13
	2	-0.56	16.35	0.75	1.21	0.00	0.96
9	1	1.50	31.11	0.58	0.86	0.01	-2.56
	2	0.33	5.69	0.49	0.83	0.00	-0.61
10	1	-0.30	102.55	0.27	0.31	0.02	0.49
	2	0.21	26.86	0.28	0.50	0.00	-0.42
11	1	0.06	111.59	-0.62	-1.64	0.01	-0.14
	2	0.03	44.86	-0.14	-0.30	0.00	-0.10
12	1	0.12	232.30	-0.88	-2.31	0.01	-0.21
	2	0.02	58.94	-0.15	-0.34	0.00	-0.07
13	1	-0.04	269.99	-0.77	-2.30	0.02	0.10
	2	0.02	66.38	-0.08	-0.25	0.00	-0.05

SUPPORT REACTIONS -UNIT MTON METE STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
14	1	-0.33	232.65	-0.86	-2.49	-0.03	0.65
	2	-0.11	55.28	0.05	-0.03	-0.01	0.20
15	1	0.01	113.54	-0.49	-1.19	0.01	0.11
	2	0.10	45.14	-0.26	-0.53	0.01	-0.13
16	1	-1.13	84.11	-0.73	-1.51	0.02	2.10
	2	-0.73	22.97	-0.52	-0.98	0.01	1.31
17	1	1.06	18.87	-3.56	-6.08	0.05	-1.92
	2	0.25	3.21	-1.04	-1.74	0.01	-0.47
18	1	0.20	69.50	-2.91	-5.17	0.04	-0.47
	2	0.09	15.07	-0.83	-1.42	0.00	-0.20
19	1	0.38	92.01	-0.27	-1.11	0.03	-0.75
	2	0.08	25.61	-0.38	-0.75	0.00	-0.19
20	1	0.18	98.62	-0.64	-1.85	0.03	-0.39
	2	0.03	24.58	-0.37	-0.74	0.00	-0.09
21	1	0.10	221.28	-0.81	-2.47	0.04	-0.25
	2	0.02	41.45	-0.40	-0.82	0.00	-0.06
22	1	-0.21	96.59	-1.28	-3.15	0.02	0.30
	2	-0.02	24.17	-0.48	-0.95	0.01	0.01
23	1	-0.08	83.95	-1.65	-3.26	-0.06	0.13
	2	0.00	24.62	-0.59	-1.12	-0.01	-0.01
24	1	-0.95	57.08	-1.41	-2.74	-0.02	1.67
	2	-0.29	11.30	-0.27	-0.57	-0.01	0.51
25	1	0.10	37.30	-0.37	-1.38	0.04	-0.39
	2	0.09	3.98	-0.17	-0.39	0.00	-0.20
26	1	0.34	40.28	1.41	1.51	0.03	-0.79
	2	0.06	4.94	0.08	0.02	0.00	-0.16
27	1	-0.98	32.62	0.29	-0.50	0.03	1.45
	2	-0.18	3.25	0.00	-0.13	0.00	0.26

PORT ADMINISTRATION BUILDING
SEISMIC MODEL

SUPPORT REACTIONS -UNIT MTON METE STRUCTURE TYPE = SPACE

JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
1	1	-20.74	-12.71	-0.22	-0.02	-1.04	69.97
	2	-0.24	-0.98	-2.31	-9.07	1.34	0.79
2	1	-20.52	-23.99	0.67	2.37	-2.22	70.31
	2	-0.28	-14.19	-12.13	-43.06	1.44	0.84
3	1	-20.74	-2.08	2.02	5.88	-1.38	71.29
	2	-0.28	-22.11	-17.88	-63.27	1.98	0.82
4	1	-22.18	-43.72	-1.32	-4.62	-1.94	76.78
	2	-0.24	-89.18	-22.48	-92.28	1.65	0.69
5	1	-22.50	1.79	-0.59	-1.88	-1.96	77.63
	2	-0.12	-92.60	-24.70	-101.75	0.30	0.36
6	1	-22.79	40.87	-0.32	-0.13	-2.48	78.37
	2	-0.02	-88.84	-24.92	-99.61	-1.90	0.09
7	1	-22.14	2.22	0.25	0.88	-1.71	74.67
	2	0.03	-22.37	-17.17	-61.62	-2.14	-0.06
8	1	-17.75	38.01	-0.04	-0.65	-2.09	67.07
	2	0.00	-14.90	-12.24	-43.81	-1.05	-0.01
9	1	-23.45	-14.67	0.25	0.77	0.14	78.40
	2	-0.09	-0.18	-3.29	-10.75	0.79	0.31
10	1	-23.49	-28.68	0.84	2.67	0.47	79.27
	2	-0.10	-2.07	-15.10	-48.22	0.61	0.33
11	1	-23.80	-2.67	2.42	6.69	0.68	80.49
	2	-0.07	-1.67	-22.23	-70.93	0.84	0.28
12	1	-25.44	-64.35	-1.53	-5.03	0.69	86.65
	2	-0.11	16.24	-28.58	-102.58	0.67	0.36
13	1	-26.01	-4.61	-0.67	-2.06	0.83	87.98
	2	-0.11	-6.32	-31.61	-113.38	0.09	0.36

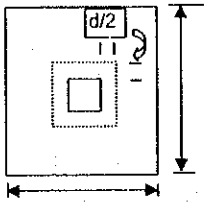
JOINT	LOAD	FORCE-X	FORCE-Y	FORCE-Z	MOM-X	MOM-Y	MOM Z
14	1	-26.13	69.91	-0.35	-0.21	0.79	88.35
	2	-0.12	15.85	-31.32	-110.51	-0.85	0.37
15	1	-25.09	0.60	0.32	1.00	0.77	83.66
	2	-0.16	-1.83	-21.47	-69.05	-0.98	0.44
16	1	-20.46	44.64	-0.44	-1.37	0.87	75.65
	2	-0.10	-2.01	-15.36	-49.23	-0.13	0.35
17	1	-18.31	-11.42	0.51	1.23	1.29	61.75
	2	-0.13	0.92	-2.38	-9.22	1.25	0.52
18	1	-18.03	-22.66	0.67	2.41	2.79	61.87
	2	-0.32	16.25	-12.36	-43.50	1.34	0.87
19	1	-18.24	0.84	2.23	6.62	3.62	62.70
	2	-0.60	22.32	-19.89	-67.12	0.99	1.43
20	1	-19.01	-3.89	-1.41	-4.49	2.80	64.37
	2	-0.41	51.21	-23.17	-82.69	0.93	1.14
21	1	-19.66	0.00	-0.87	-2.49	2.50	68.11
	2	-0.43	110.81	-29.21	-108.30	0.06	1.24
22	1	-19.43	4.14	-0.22	-0.11	1.90	65.56
	2	-0.55	49.63	-25.87	-90.12	-0.08	1.46
23	1	-19.24	-2.89	0.34	1.05	2.37	65.35
	2	-0.39	24.53	-17.80	-62.73	-2.50	1.25
24	1	-15.64	34.38	-0.61	-1.68	2.83	59.16
	2	-0.38	16.98	-12.49	-44.28	-0.71	1.23
25	1	-7.46	-3.17	-1.69	-5.27	-0.69	23.55
	2	0.77	13.36	-24.07	-82.67	1.57	-3.97
26	1	-9.11	-0.06	-0.51	-1.83	0.26	26.33
	2	2.40	10.67	-26.69	-91.53	0.52	-6.77
27	1	-7.23	4.18	0.24	0.50	-0.43	23.21
	2	2.06	10.47	-26.12	-89.21	1.28	-6.30

FOOTING DESIGN

Design for foundation F-1

a) Punching N/T

For Column (Not to consider because there is a pile below in center of column)



ϕ= 0.85

Dead load PD =	269.68	ton
Live load PL=	66.38	ton
Seismic PS =	6.32	ton
1.4D + 1.7L =	490.40	ton
0.75(1.4D + 1.7L + 1.87S) =	376.66	ton
Pu=	490.40	ton
d =	68.69	cm
Column width =	75.00	cm
Column base =	65.00	cm
bo=4(c+d)=	574.76	cm

Th = 80 cm

f'c = 210 kg/cm² (20.59 Mpa)

Concrete shear strength, Vc ACI 11.12

$Vc1 = \phi(1+2/\beta c)\sqrt{f'c}\ bod/6 =$ 707.65 ton

βc = 1.154

$Vc2 = \phi(2+\alpha sd/bo)\sqrt{f'c}\ bod/12 =$ 320.78 ton

αs = 40

$Vc3 = \phi(1/3)\sqrt{f'c}\ bod =$ 517.79

Vc = --- > --- ---

For Pile ϕ= 0.85

Distance from edge = 27.50 cm

βc = 1 αs = 20

Dead load PD =	65.28	ton/pile
Live load PL=	14.30	ton/pile
Carga sismica PS =	1.26	ton/pile
1.4D + 1.7L =	115.69	ton
0.75(1.4D + 1.7L + 1.87S) =	88.54	ton
Pu=	115.69	ton
d =	43.73	cm
Pile width =	50.00	cm
Pile base =	50.00	cm
bo=4(c+d)=	374.92	cm

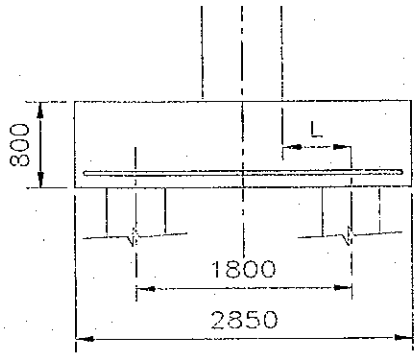
$Vc1 = \phi(1+2/\beta c)\sqrt{f'c}\ bod/6 =$ 322.54 ton

$Vc2 = \phi(2+\alpha sd/bo)\sqrt{f'c}\ bod/12 =$ 383.36 ton

$Vc3 = \phi(1/3)\sqrt{f'c}\ bod =$ 215.03

Vc = 215.03 > 115.69 o.k!!!

b) Reinforcing Steel



fy = 4200 kg/cm²

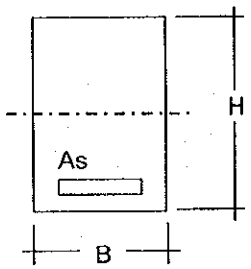
Moment generated by pile reaction

M = Pp x L

L = 0.60 m

M1 = 1.4D + 1.7L = 69.42 ton-m

M2 =0.75(1.4D + 1.7L + 1.87S) = 53.13 ton-m



H = 80.00 cm

b = 142.50 cm

f'c = 280 kg/cm²

fy = 4200 kg/cm²

Force for design: Mu z-z = 69.42 ton-m

d = 62.62 cm Clear cover = 5.00 cm

$fy^2/1.7bf'c\,As^2 - fyd\,As + Mu/\phi = \quad \phi = 0.90$

$260.06\,As^2 262999\,As + 7712923.7 = 0$ As = 30.23 cm²

Asmin = (4/3)Asreq :

(4/3)Asreq = 40.31 cm²

(14/fy) b d = 29.74 cm²

Asmin = 29.74 cm²

Asmax : ρb = 0.0459 Asmax (0.75ρb) = 307.50 cm²

As = 30.23 cm² o.k!! As < Amax

Bar denomination, N = 7 Bar Area (Av) = 3.88 cm²

Number of bars = 7.79 Use 8 - N7

Pitch = 18.25 cm **7 @ 18 cm**

- Shrinkage and temperature reinforcement, ACI 7.12.

Minimun Gross area ratio = 0.180%

Base = 285 cm Height = 80 cm

Total area of steel = 41.04 cm²
Area by layer = As/2 = 20.52 cm²

Minimum spacing for ties, ACI 11.5.4.

S1 = d/2 = 31.31 cm
S2 = 60.00 cm
} Use S = 30.00 cm

Bar denomination, N = 4 Bar Area (Av) = 1.27 cm²

Number of bars = 16.20 Use17 - N4

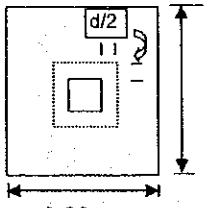
Pitch = 16.95 cm **17 - N 4 @ 16.5 cm**

FOOTING DESIGN

Design for foundation F-2

a) Punching N/T

For Column (Not to consider because there is a pile below in center of column)



ϕ= 0.85

Dead load PD =	231.05	ton
Live load PL=	55.28	ton
Seismic PS =	69.91	ton
1.4D + 1.7L =	417.45	ton
0.75(1.4D + 1.7L + 1.87S) =	411.13	ton
Pu=	417.45	ton
d =	69.03	cm
Column width =	75.00	cm
Column base =	65.00	cm
bo=4(c+d)=	576.12	cm

Th = 80 cm

f'c = 210 kg/cm² (20.59 Mpa)

Concrete shear strength, Vc ACI 11.12

$Vc1 = \phi(1+2/\beta c)\sqrt{f'c}\ bod/6 =$ 712.83 ton

βc = 1.154

$Vc2 = \phi(2+\alpha sd/bo)\sqrt{f'c}\ bod/12 =$ 323.29 ton

αs = 40

$Vc3 = \phi(1/3)\sqrt{f'c}\ bod =$ 521.59

Vc = --- > --- ---

For Pile

ϕ= 0.85

Distance from edge = 27.50 cm

βc = 1 αs = 20

Dead load PD =	48.81	ton/pile
Live load PL=	11.06	ton/pile
Carga sismica PS =	13.98	ton/pile
1.4D + 1.7L =	87.12	ton
0.75(1.4D + 1.7L + 1.87S) =	84.95	ton
Pu=	87.12	ton
d =	38.73	cm
Pile width =	45.00	cm
Pile base =	45.00	cm
bo=4(c+d)=	334.92	cm

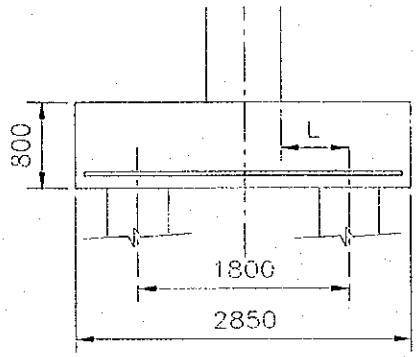
$Vc1 = \phi(1+2/\beta c)\sqrt{f'c}\ bod/6 =$ 255.19 ton

$Vc2 = \phi(2+\alpha sd/bo)\sqrt{f'c}\ bod/12 =$ 303.03 ton

$Vc3 = \phi(1/3)\sqrt{f'c}\ bod =$ 170.12

Vc = 170.12 > 87.12 o.k!!!

b) Reinforcing Steel



fy = 4200 kg/cm²

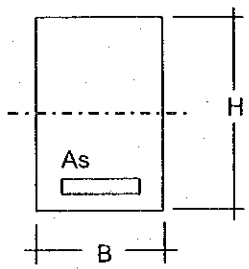
Moment generated by pile reaction

M = Pp x L

L = 0.50 m

M1 = 1.4D + 1.7L = 43.56 ton-m

M2 =0.75(1.4D + 1.7L + 1.87S) = 42.48 ton-m



H = 80.00 cm

b = 130.00 cm

f'c = 280 kg/cm²

fy = 4200 kg/cm²

Force for design: Mu z-z = 43.56 ton-m

d = 62.62 cm Clear cover = 5.00 cm

$fy^2/1.7bf'c\,As^2 - fyd\,As + Mu/\phi = \quad \phi = 0.90$

$285.07\,As^2 - 262999\,As + 4840187.6 = 0$ As = 18.79 cm²

Asmin = (4/3)Asreq :

(4/3)Asreq = 25.05 cm²

(14/fy) b d = 27.13 cm²

Asmin = 25.05 cm²

Asmax : ρb = 0.0459 Asmax (0.75ρb) = 280.53 cm²

As = 25.05 cm² o.k!! As < Amax

Bar denomination, N = 7 Bar Area (Av) = 3.88 cm²

Number of bars = 6.46 Use 7 - N7

Pitch = 19.21 cm **7 @ 19 cm**