

鄉村地區住宅興建設圖樣微圖比賽 A 型－三代同堂住宅

一、設計基本資料

1.1 建築基地概述

本工程基地假設位於屏東縣東港鎮,爲一住宅新建工程。

樓層用途說明

樓 層	高 度	用 途
2F	3.90 M	住宅
1F	3.60 M	住宅

二、結構系統說明

- (1). 本工程採用鋼筋混凝土構造梁柱及鋼骨構造梁結構系統。
- (2). 基礎型式爲筏式基礎。
- (3). 本工程主要梁柱尺寸表(CM)

樓 層	柱 尺 寸	大 梁 尺 寸	小 梁 尺 寸	樓板厚度
RF		H350x175x7x11	H300x150x6.5x9	
2F	40 x 40	35 x 60 H400x200x8x13	25 x 50 H300x150x6.5x9	15
1F	40 x 40	35 x 140		15 35

三、結構材料規格

- (1). 鋼筋採用竹節鋼筋，其降伏強度(Fy)規定如下:
#5 以下(含#5)Fy=2800 Kgf/cm^2
#6 以上(含#6)Fy=4200 Kgf/cm^2
- (2). 混凝土第 28 天齡期之抗壓強度(fc')規定如下:
混凝土 fc'=245 Kgf/cm^2
基礎打底混凝土 fc'=140 Kgf/cm^2
- (4). 鋼料 樑柱及基座、加勁版採 ASTM A36 Fy=2400 Kgf/cm^2
高拉力螺栓採 ASTM A490 或 JIS S10T

基礎螺栓採 ASTM A307

焊材採 AWS E70xx

四、設計載重及分析

4.1 樓板載重

樓板荷重(kgf/m^2)	
樓板荷重(kgf/m^2)	
屋頂層：	鍍鋅鋼板 = 6 桁條 = 6 小梁 = 5 主構架梁及其他 = 33 裝飾材 =200
	靜載重 =250 kgf/m^2 活載重 =200 kgf/m^2
二層(室內)：	地磚(T=1.2cm) = 30 水泥砂漿粉刷(T=2.0cm) 20kg/m^2*2.0 = 40 鋼筋混凝土樓板(T=15cm) 2400kg/m^3*0.15 =360 天花板或粉刷 = 20 牆重(版上) =210
	靜載重 450+210 =660 kgf/m^2 活載重 =200 kgf/m^2
二層屋頂蓋：	鍍鋅鋼板 = 6 桁條 = 6 小梁 = 5 主構架梁及其他 = 33 裝飾材 =200
	靜載重 =250 kgf/m^2 活載重 =200 kgf/m^2

一層：	鋪面材	= 10
	水泥砂漿粉刷(T=2.0cm)	20kg/m ² *2.0 = 40
	鋼筋混凝土樓板(T=15cm)	2400kg/m ³ *0.15 =360
	管線	= 10
	牆重(版上)	=100
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	靜載重	= 520 kgf/m ²
	1F 活載重(室內)	= 500 kgf/m ²

4.2 法規地震力計算

水平向

$$V = I / (1.4 * a_y) * (S_aD / F_u) m * W$$

$$V^* = I F_u / (4.2 * a_y) * (S_aD / F_u) m * W$$

$$V_M = I / (1.4 * a_y) * (S_aM / F_{uM}) m * W$$

1> 本工程位於屏東縣東港鎮(第二類地盤)

工址週期設計水平譜加速度係數

$$S_{sD} = .50 \quad S_{1D} = .30 \quad S_{DS} = (F_a)(S_{sD}) = .55 \quad S_{D1} = (F_v)(S_{1D}) = .45$$

$$S_{sM} = .70 \quad S_{1M} = .40 \quad S_{MS} = (F_a)(S_{sM}) = .70 \quad S_{M1} = (F_v)(S_{1M}) = .52$$

$$T_{OD} = .818 \quad T_{OM} = .743$$

2> 用途係數 I=1.00

3> 起始降伏地震力放大係數 $a_y = 1.5$

4> 建築物基本振動週期 T

$$H_n = 7.50m$$

$$T_{code} = 0.07 * H_n^{0.75} = 0.07 * 7.50^{0.75} = 0.317 \text{ sec}$$

5> 容許韌性容量 R_a

$$R = 4.00 \quad R_a = 1 + (R - 1) / 1.5 = 3.00$$

6> 結構系統地震力折減係數 F_u

$$0.2T_{OD} \leq T_x \leq 0.6T_{OD} \quad F_{ux} = 2.236$$

$$0.2T_{OM} \leq T_x \leq 0.6T_{OM} \quad F_{uMx} = 2.646$$

$$0.2T_{OD} \leq T_y \leq 0.6T_{OD} \quad F_{uy} = 2.236$$

$$0.2T_{OM} \leq T_y \leq 0.6T_{OM} \quad F_{uMy} = 2.646$$

7> 工址設計水平譜加速度係數 S_aD

$$0.2T_{OD} \leq T_x \leq T_{OD} \quad S_{aDx} = .55$$

$$0.2T_{OM} \leq T_x \leq T_{OM} \quad S_{aMx} = .70$$

$$0.2T_{OD} \leq T_y \leq T_{OD} \quad S_{aDy} = .55$$

$$0.2T_{OM} \leq T_y \leq T_{OM} \quad S_{aMy} = .70$$

$$8> \quad V_x = 1.00 / (1.4 * 1.5) * (.55 / 2.236) m * W = .1171W$$

$$V_y = 1.00 / (1.4 * 1.5) * (.55 / 2.236) m * W = .1171W$$

$$9> \quad V^*_x = 1.00 * 2.236 / (4.2 * 1.5) * (.55 / 2.236) m * W = .0873W$$

$$V^*_y = 1.00 * 2.236 / (4.2 * 1.5) * (.55 / 2.236) m * W = .0873W$$

$$10> \quad V_{Mx} = 1.00 / (1.4 * 1.5) * (.70 / 2.646) m * W = .1260W$$

$$V_{My} = 1.00 / (1.4 * 1.5) * (.70 / 2.646) m * W = .1260W$$

垂直向

$$V_z = I / (1.4 * \alpha_y) * (S_{aD,v} / F_{uv}) m * W$$

$$1> \quad S_{aD,v} = 1 / 2 S_{aD} = .275$$

2> 用途係數 I=1.00

3> 起始降伏地震力放大係數 $a_y = 1.5$

4> 容許韌性容量 R_a

$$\text{結構系統韌性容量 } R = 3.0$$

$$R_a = 1 + (R - 1) / 1.5 = 2.33$$

5> 結構系統地震力折減係數 F_{uv}

$$F_{uv} = 1.559$$

$$6> \quad V_z = 1.00 / (1.4 * 1.5) * (.28 / 1.559) m * W = .0780W$$

4.3 地震力豎向分配

Structure Static Lateral Loads By R.O.C. Code

$V_x = .1260 * 198.04 = 24.953 \text{ tf}$

$V_y = .1260 * 198.04 = 24.953 \text{ tf}$

$F_{tx} = .000 \quad F_{ty} = .000$

DIAPHRAGM= 1

	Wi	BASE H	WiHi	Fx	STORY SHEAR	OVT-MOMENT
	(T)	(M)	(T-M)	(T)	(T)	(T-M)
RF	48.00	7.50	360.00	9.98	9.98	38.92
2F	150.04	3.60	540.14	14.97	24.95	128.75

198.04

	Wi	BASE H	WiHi	Fy	STORY SHEAR	OVT-MOMENT
	(T)	(M)	(T-M)	(T)	(T)	(T-M)
RF	48.00	7.50	360.00	9.98	9.98	38.92
2F	150.04	3.60	540.14	14.97	24.95	128.75

198.04

4.4 碰撞距離

$RF \text{ DISPL} = 0.48 \text{ cm}$

$\text{碰撞距離} = 0.6 \times 1.4 \times 1.5 \times 3.0 \times 0.48 = 1.81 \text{ cm}$

4.5 層間變位角檢討

STORY LEVEL DRIFT RATIOS FOR DIAPHRAGM 1

LEVEL	HEIGHT	X-DIR	Di	[Di -D(i-1)]/H(i)
	(M)		(M)	o/oo
RF	3.9000		.0048	.7436 <5 o/oo OK!
2F	3.6000		.0019	.5278

LEVEL	HEIGHT	Y-DIR	Di	[Di -D(i-1)]/H(i)
	(M)		(M)	o/oo
RF	3.9000		.0026	.3846 <5 o/oo OK!
2F	3.6000		.0011	.3056

4.6 梁、柱、版、基礎設計

本工程鋼梁使用鋼結構極限應力設計法(USD),配合載重組合,取最大應力做設計。

$U = 1.4D$

$U = 1.2D + 1.6L$

$U = 1.2D + 0.5L \pm 1.6W$

$U = 1.2D + 0.5L \pm E_x \pm E_y$

$U = 1.2D + 0.5L \pm E_y \pm E_v$

$U = 0.9D \pm E_y \pm E_v$

$U = 1.6D \pm 1.6W$

本工程 RC 梁柱使用鋼筋混凝土強度設計法(USD),配合載重組合,取最大應力做設計,詳計算報表。

$U = 1.4D + 1.7L$

$U = 0.75(1.4D + 1.7L \pm 1.87E_x)$

$U = 0.75(1.4D + 1.7L \pm 1.87E_y)$

$U = 0.9D \pm 1.43E_x$

$U = 0.9D \pm 1.43E_y$

$U = 0.75(1.4D + 1.7L \pm 1.87E_x \pm 0.3 \times 1.87E_v)$

$U = 0.75(1.4D + 1.7L \pm 1.87E_y \pm 0.3 \times 1.87E_v)$

$U = 0.75(1.4D + 1.7L \pm 1.87E_v \pm 0.3 \times 1.87E_x)$

$U = 0.75(1.4D + 1.7L \pm 1.87E_v \pm 0.3 \times 1.87E_y)$

$U = 0.9D \pm 1.43E_x \pm 0.3 \times 1.87E_v$

$U = 0.9D \pm 1.43E_y \pm 0.3 \times 1.87E_v$

$U = 0.9D \pm 1.43E_v \pm 0.3 \times 1.87E_x$

$U = 0.9D \pm 1.43E_v \pm 0.3 \times 1.87E_y$

五、基礎計算

F1

X DIM= 180CM Y DIM= 180CM D DIM=35CM
Pn= 22.10T Pu= 32.20T
CHECK BEAM SHEAR
 $\perp V_{cy}= 34.90T > V_{uy}= 7.60T$ $\perp V_{cx}= 34.90T > V_{ux}= 7.60T$ OK
CHECK PUNCH SHEAR $\perp V_c= 104.71T > V_u= 27.67T$ OK
X DIM $A_s = 5.50 \text{ cm}^2/\text{M}$
Y DIM $A_s = 5.50 \text{ cm}^2/\text{M}$

F3

X DIM= 250CM Y DIM= 250CM D DIM=35CM
Pn= 43.20T Pu= 63.50T
CHECK BEAM SHEAR
 $\perp V_{cy}= 48.48T > V_{uy}= 19.68T$ $\perp V_{cx}= 48.48T > V_{ux}= 19.68T$ OK
CHECK PUNCH SHEAR $\perp V_c= 104.71T > V_u= 58.87T$ OK
X DIM $A_s = 8.25 \text{ cm}^2/\text{M}$
Y DIM $A_s = 8.25 \text{ cm}^2/\text{M}$

連續基腳設計

Pn= 22.60 tf
Pu= 34.04 tf

土壤容許承载力 $Q_a= 8 \text{ tf/m}^2$
 $r = 1.9 \text{ tf/m}^3$
Df= 1.2 m

設計基腳尺寸 180 cm * 345 cm * 35 cm
 $f_c'= 245 \text{ kgf/cm}^2$
 $f_y= 2800 \text{ kgf/cm}^2$
保護層= 5.0 cm
有效深度d= 30 cm

$$A_{req} = \frac{P_n}{Q_a - \gamma \times D_f} = 3.95 \text{ m}^2 < A_{prov} = 6.21 \text{ m}^2 \quad \text{OK}$$

設計地反力 $q_u = 5.48 \text{ tf/m}^2$

取單位1m寬度設計：

b= 100 cm

基腳單邊淨寬 $L_n = 0.75 \text{ m}$

$$M_u = \frac{1}{2} q_u L_n^2 = 1.542 \text{ tf-m}$$

$$R_n = \frac{M_u}{\phi b d^2} = 1.90 \text{ kgf/m}^2$$

$$m = \frac{f_y}{0.85 f_c'} = 13.45$$

$$\rho = \frac{1}{m} (1 - \sqrt{1 - \frac{2 m R_n}{f_y}}) = 6.83\text{E-}04 < \rho_{\min} = 0.002$$

$\rho= 0.002$

$$A_s = \rho b d = 6.0 \text{ cm}^2$$

<<< SEISMIC DESIGN GIRDER OF FRAME >>>

PROJECT : 9731 2008/05/21

Number of Stories = 2 LEVELS

Concrete Fc' = 245. Kg/Cm^2

Main Steel Fy = 4200. Kg/Cm^2

Shear Steel Fy = 2800. Kg/Cm^2

Cover T&B OF Steel= 6.5 Cm

MAX Steel Ratio = .02000

ALLOW-MAX Ratio = 0.025

NF= 1		LEVEL 2F					
BAY NO.1(1) L= 5.50 M		(2) L= 6.50 M					
MARK 2G1 (35X 60)		2G2 (35X 60)					
As T 6.2 6.2 6.2		6.7 6.2 6.2					
As B 6.2 6.2 6.2		6.2 6.2 6.2					
T1/T2 3/ 3/ 3/		3/ 3/ 3/					
Bar # 6							
B2/B1 /3 /3 /3		/3 /3 /3					
Av 4.4 4.4		4.4 4.4					
Stirrup #3 1-@12 ~1-@20		#3 1-@12 ~1-@20					

NF= 2		LEVEL 2F					
BAY NO.1(3) L= 5.50 M		(4) L= 6.50 M					
MARK 2G3 (35X 60)		2G4 (35X 60)					
As T 6.2 6.2 7.2		9.9 6.2 7.7					
As B 6.2 6.2 6.2		6.2 6.2 6.2					
T1/T2 3/ 3/ 4/		4/ 3/ 3/					
Bar # 6							
B2/B1 /3 /3 /3		/3 /3 /3					
Av 4.4 4.4		4.4 4.4					
Stirrup #3 1-@12 ~1-@20		#3 1-@12 ~1-@20					

NF= 3		LEVEL 2F					
BAY NO.1(6) L= 5.50 M							
MARK 2G5 (35X 60)							
As T 6.2 6.2 6.2							
As B 6.2 6.2 6.2							
T1/T2 3/ 3/ 3/							
Bar # 6							
B2/B1 /3 /3 /3							
Av 4.4 4.4							
Stirrup #3 1-@12 ~1-@20							

NF= 4		LEVEL 2F					
BAY NO.1(9) L= 6.50 M							
MARK 2G6 (35X 60)							
As T 6.7 6.2 7.2							
As B 6.2 6.2 6.2							
T1/T2 3/ 3/ 3/							
Bar # 6							
B2/B1 /3 /3 /3							
Av 4.4 4.4							
Stirrup #3 1-@12 ~1-@20							

NF= -5		LEVEL 2F					
BAY NO.1(20) L= 4.00 M		(21) L= 1.50 M					
MARK 2G7 (35X 60)		2G8 (35X 60)					
As T 6.2 6.2 6.2		6.2 6.2 6.2					
As B 6.2 6.2 6.2		6.2 6.2 6.2					
T1/T2 3/ 3/ 3/		3/ 3/ 3/					
Bar # 6							
B2/B1 /3 /3 /3		/3 /3 /3					
Av 4.4 4.4		14.8 14.0					
Stirrup #3 1-@12 ~1-@20		#3 2-@12 ~2-@12					

NF= -6		LEVEL 2F					
BAY NO.1(25) L= 4.00 M		(27) L= 3.30 M					
MARK 2G9 (35X 60)		2G10 (35X 60)					
As T 6.2 6.2 6.2		6.2 6.2 6.2					
As B 6.2 6.2 6.2		6.2 6.2 6.2					
T1/T2 3/ 3/ 3/		3/ 3/ 3/					
Bar # 6							
B2/B1 /3 /3 /3		/3 /3 /3					
Av 4.4 4.4		4.4 4.4					
Stirrup #3 1-@12 ~1-@20		#3 1-@12 ~1-@20					

NF= -7		LEVEL 2F					
BAY NO.1(32) L= 4.00 M		(33) L= 4.80 M					
MARK 2G11 (35X 60)		2G12 (35X 60)					
As T 6.2 6.2 6.2		6.2 6.2 6.2					
As B 6.2 6.2 6.2		6.2 6.2 6.2					
T1/T2 3/ 3/ 3/		3/ 3/ 3/					
Bar # 6							
B2/B1 /3 /3 /3		/3 /3 /3					
Av 4.4 4.4		4.4 4.4					
Stirrup #3 1-@12 ~1-@20		#3 1-@12 ~1-@20					

DESIGN By Y.Y.KANG

<<< STRENGTH DESIGN OF GIRDER >>

SYMBOL	UNIT	VALUE	NOTE
NTF	FRAME	2	Number of Total Frames
NST	STORY	1	Number of Stories
FC	Kg/Cm^2	245.	Strength of Concrete for 28 Days
FY	Kg/Cm^2	4200.	Strength of Main Steel Bar
FV	Kg/Cm^2	2800.	Strength of Shear Steel Bar
ES	Kg/Cm^2	2.04E+06	YOUNG'S Modulus of Steel Bar
IBOT-COV	Cm	6.0	Cover Depth of Steel for Bottom Side
ITOP-COV	Cm	6.0	Cover Depth of Steel for Top Side
RATIO		.5	Ratio of (MAX.AS-ASP)/(B*D)

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b1	(NO= 1)	LEVEL beam	(NO= 1)
BAY NO.	(1)	L= 270.0 Cm	
MARK	b	(25X 45)	
Mu T	.2	1.7	.2
Mu B	.4	2.9	.4
As T	.0	.0	.0
As B	3.3	3.3	3.3
T1	3	3	3
T2			
Bar # 6l			
B2			
B1	3	3	3
Vu	3.1	.3	.3 3.1
Stirrupl#3	1@18	1@18	1@18

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b2	(NO= 2)	LEVEL beam	(NO= 1)
BAY NO.	(1)	L= 450.0 Cm	
MARK	b	(25X 50)	
Mu T	.5	6.8	.5
Mu B	1.0	11.9	1.0
As T	.0	.0	.0
As B	3.7	7.7	3.7
T1	3	3	3
T2			
Bar # 6l			
B2			
B1	3	3	3
Vu	7.5	1.9	1.9 7.5
Stirrupl#3	1@20	1@22	1@20

	CX x	CY	Pt	AS	CM2/M	CM2/M	MAINSTEEL	NVx@10	NVy@10	NVx@15	NVy@15	des steel(Ny,Nx)
COL NO. 1												
RF	.40 x	.40	1.00	16.00	5.35	5.35	4.1-# 7	2.0-#4	2.0-#4	.6-#4	.6-#4	4-# 7 (2, 2)
2F	.40 x	.40	1.00	16.00	5.35	5.35	4.1-# 7	2.0-#4	2.0-#4	.6-#4	.6-#4	4-# 7 (2, 2)
COL NO. 2												
RF	.40 x	.40	1.49	23.80	11.00	5.35	6.1-# 7	2.0-#4	2.0-#4	1.3-#4	.6-#4	8-# 7 (3, 3)
2F	.40 x	.40	1.49	23.80	11.00	5.35	6.1-# 7	2.0-#4	2.0-#4	1.3-#4	.6-#4	8-# 7 (3, 3)
COL NO. 3												
RF	.40 x	.40	1.00	16.00	5.35	5.35	4.1-# 7	2.0-#4	2.0-#4	.6-#4	.6-#4	4-# 7 (2, 2)
2F	.40 x	.40	1.00	16.00	5.35	5.35	4.1-# 7	2.0-#4	2.0-#4	.6-#4	.6-#4	4-# 7 (2, 2)
COL NO. 4												
RF	.40 x	.40	1.49	23.91	5.35	10.70	6.2-# 7	2.0-#4	2.0-#4	.6-#4	1.3-#4	8-# 7 (3, 3)
2F	.40 x	.40	1.49	23.91	5.35	10.70	6.2-# 7	2.0-#4	2.0-#4	.6-#4	1.3-#4	8-# 7 (3, 3)
COL NO. 5												
RF	.40 x	.40	1.20	19.20	28.24	26.94	5.0-# 7	3.0-#4	3.0-#4	3.3-#4	3.2-#4	8-# 7 (3, 3)
2F	.40 x	.40	1.82	29.16	.18	.00	7.5-# 7	2.0-#4	2.0-#4	.0-#4	.0-#4	8-# 7 (3, 3)
COL NO. 6												
RF	.40 x	.40	1.20	19.20	28.24	26.94	5.0-# 7	3.0-#4	3.0-#4	3.3-#4	3.2-#4	8-# 7 (3, 3)
2F	.40 x	.40	1.38	22.03	6.32	10.70	5.7-# 7	2.0-#4	2.0-#4	.7-#4	1.3-#4	8-# 7 (3, 3)
COL NO. 8												
2F	.40 x	.40	1.20	19.20	28.24	26.94	5.0-# 7	3.0-#4	3.0-#4	3.3-#4	3.2-#4	8-# 7 (3, 3)
COL NO. 11												
2F	.40 x	.40	1.20	19.20	28.24	26.94	5.0-# 7	3.0-#4	3.0-#4	3.3-#4	3.2-#4	8-# 7 (3, 3)
COL NO. 12												
RF	.40 x	.40	1.20	19.20	28.24	26.94	5.0-# 7	3.0-#4	3.0-#4	3.3-#4	3.2-#4	8-# 7 (3, 3)
2F	.40 x	.40	1.35	21.59	5.73	10.42	5.6-# 7	2.0-#4	2.0-#4	.7-#4	1.2-#4	8-# 7 (3, 3)
COL NO. 13												
RF	.40 x	.40	1.00	16.00	5.85	5.35	4.1-# 7	2.0-#4	2.0-#4	.7-#4	.6-#4	4-# 7 (2, 2)
2F	.40 x	.40	1.00	16.00	5.85	5.35	4.1-# 7	2.0-#4	2.0-#4	.7-#4	.6-#4	4-# 7 (2, 2)
COL NO. 17												
2F	.40 x	.40	1.20	19.20	28.24	26.94	5.0-# 7	3.0-#4	3.0-#4	3.3-#4	3.2-#4	8-# 7 (3, 3)
COL NO. 18												
2F	.40 x	.40	1.20	19.20	28.24	26.94	5.0-# 7	3.0-#4	3.0-#4	3.3-#4	3.2-#4	8-# 7 (3, 3)
COL NO. 21												
2F	.40 x	.40	1.20	19.20	28.24	26.94	5.0-# 7	3.0-#4	3.0-#4	3.3-#4	3.2-#4	8-# 7 (3, 3)
COL NO. 22												
2F	.40 x	.40	1.20	19.20	28.24	26.94	5.0-# 7	3.0-#4	3.0-#4	3.3-#4	3.2-#4	8-# 7 (3, 3)

¶

<<< DESIGN OF SLAB >>>

Fc= 245. Kg/cm^2

Fy= 2800. Kg/cm^2

Es= 2.04E+06 Kg/cm^2

Cover Depth= 3.0 Cm

TYPE : (0)=0ND (1)=1ND (2)=2ND (3)=3ND (4)=4ND ND: NUMBER OF DISCONTINUOUS EDGES

	Si	SPAN	t	S	L	m	WD	WL	Wu	C	Mu	As	Steel Bar
			(Cm)	(M)	(M)		(T/M^2)	(T/M^2)	(T/M^2)		(T-M)	(Cm^2)	USE
		Short								.0695	1.41	4.78	#3@12
2S1	+	-----+	15.	4.00	5.50	.73	.66	.20	1.26	-----	-----	-----	-----
(2)		Long								.0490	.99	3.34	#3@20
		Short								.0765	1.55	5.27	#3@12
2S2	+	-----+	15.	4.00	6.50	.62	.66	.20	1.26	-----	-----	-----	-----
(2)		Long								.0490	.99	3.34	#3@20
		Short								.0850	.31	3.00	#3@20
2S3	+	-----+	15.	1.70	5.50	.50	.66	.20	1.26	-----	-----	-----	-----
(1)		Long								.0405	.15	3.00	#3@20
		Short								.0510	.34	3.00	#3@20
2S4	+	-----+	15.	2.30	3.00	.77	.66	.20	1.26	-----	-----	-----	-----
(0)		Long								.0330	.22	3.00	#3@20
		Short								.0605	.94	3.15	#3@20
2S5	+	-----+	15.	3.50	4.80	.73	.66	.20	1.26	-----	-----	-----	-----
(1)		Long								.0405	.63	3.00	#3@20

鋼小梁計算

鋼梁尺寸	=	H300*150*6.5*9	
自重(W _{D0})	=	0.0367	tf/m
長度(L)	=	4.50	m
斷面積(A)	=	46.78	cm ²
慣性矩(I)	=	7210.00	cm ⁴
斷面係數(S)	=	481.00	cm ³
降伏強度(Fy)	=	2400	kgf/cm ²
承受靜載重(W _D)	=	0.680	tf/m
承受活載重(W _L)	=	0.550	tf/m

彎矩 M

$$= \frac{1}{8} \quad *(W_{D0}+W_D+W_L) \quad *L^2 \quad = \quad \mathbf{3.21} \quad \text{tf-m}$$

剪力 V

$$= \frac{1}{2} \quad *(W_{D0}+W_D+W_L) \quad *L \quad = \quad \mathbf{2.85} \quad \text{tf}$$

應力檢討：

彎矩應力(fb)

$$= \frac{M}{S} = \quad \mathbf{666.60} \quad \text{kgf/cm}^2 \quad < \quad 0.6Fy = \quad \mathbf{1440.00} \quad \text{kgf/cm}^2 \quad \text{OK!}$$

剪應力(fv)

$$= \frac{V}{A} = \quad \mathbf{60.93} \quad \text{kgf/cm}^2 \quad < \quad 0.4Fy = \quad \mathbf{960.00} \quad \text{kgf/cm}^2 \quad \text{OK!}$$

變位檢討：

$$\delta = \frac{5W_L L^4}{384EI} = \quad \mathbf{0.1997} \quad \text{cm} \quad < \quad \frac{L}{360} = \quad \mathbf{1.250} \quad \text{cm} \quad \text{OK!}$$

鋼梁尺寸	=	H400x200x8x13	
自重(W _{D0})	=	0.0660	tf/m
長度(L)	=	5.50	m
斷面積(A)	=	84.12	cm ²
慣性矩(I)	=	23700.00	cm ⁴
斷面係數(S)	=	1190.00	cm ³
降伏強度(Fy)	=	2400	kgf/cm ²
承受靜載重(W _D)	=	0.560	tf/m
承受活載重(W _L)	=	0.450	tf/m

彎矩 M

$$= \frac{1}{10} \quad *(W_{D0}+W_D+W_L) \quad *L^2 \quad = \quad \mathbf{3.25} \quad \text{tf-m}$$

剪力 V

$$= \frac{1}{2} \quad *(W_{D0}+W_D+W_L) \quad *L \quad = \quad \mathbf{2.96} \quad \text{tf}$$

應力檢討：

彎矩應力(fb)

$$= \frac{M}{S} = \quad \mathbf{273.52} \quad \text{kgf/cm}^2 \quad < \quad 0.6Fy = \quad \mathbf{1440.00} \quad \text{kgf/cm}^2 \quad \text{OK!}$$

剪應力(fv)

$$= \frac{V}{A} = \quad \mathbf{35.18} \quad \text{kgf/cm}^2 \quad < \quad 0.4Fy = \quad \mathbf{960.00} \quad \text{kgf/cm}^2 \quad \text{OK!}$$

變位檢討：

$$\delta = \frac{5W_L L^4}{384EI} = \quad \mathbf{0.1109} \quad \text{cm} \quad < \quad \frac{L}{360} = \quad \mathbf{1.528} \quad \text{cm} \quad \text{OK!}$$

J O B C O N T R O L I N F O R M A T I O N

NUMBER OF STORIES----- 2
NUMBER OF FLOOR DIAPHRAGMS ON EACH LEVEL----- 1
NUMBER OF DIFFERENT FRAMES----- 1
NUMBER OF TOTAL FRAMES----- 1
NUMBER OF MASS TYPES----- 0
NUMBER OF LOAD CASES----- 0
NUMBER OF STRUCTURAL PERIODS----- 0

NUMBER OF MATERIAL PROPERTIES----- 5

NUMBER OF PROPERTIES FOR COLUMNS----- 24
NUMBER OF PROPERTIES FOR BEAMS----- 12
NUMBER OF PROPERTIES FOR FLOORS----- 5
NUMBER OF PROPERTIES FOR BRACES----- 0
NUMBER OF PROPERTIES FOR PANELS----- 2
NUMBER OF PROPERTIES FOR SUPPORTS/LINKS----- 0

CODE FOR STATIC LATERAL ANALYSIS----- 1
CODE FOR DYNAMIC LATERAL ANALYSIS----- 0
CODE FOR STRUCTURE TYPE----- 0
CODE FOR P-DELTA ANALYSIS ----- 1
CODE FOR FRAME JOINT STIFFNESS MODIFICATION-- 1
CODE FOR FRAME SELF WEIGHT LOAD CONDITION--- 1
CODE FOR TYPE OF UNITS----- 2

GRAVITATIONAL ACCELERATION----- 0.9810E+01
EIGEN CONVERGENCE TOLERANCE----- 0.1000E-03
EIGEN CUTOFF TIME PERIOD----- 0.0000E+00
P-DELTA FACTOR----- 0.1000E+01

CSI/ETABS - EXTENDED

PROJECT:9731 RC BULD 2008/05/21
DESIGN BY KANG YUEH-YINN

PROGRAM:ETABS/FILE:9731-1.EKO

STRUCTURAL STORY DATA . . .

STORY LEVEL	STORY HEIGHT	NUMBER OF DIAPHRAGMS
RF	3.90	0
2F	3.60	0

CSI/ETABS - EXTENDED

PROJECT:9731 RC BULD 2008/05/21
DESIGN BY KANG YUEH-YINN

PROGRAM:ETABS/FILE:9731-1.EKO

MATERIAL PROPERTIES

ID	TYPE	ELASTIC MODULUS	POISSONS RATIO	UNIT WEIGHT	UNIT MASS	COEFF OF EXPANSION
1	C	0.2170E+07	0.2000	0.2400E+01	0.0000E+00	0.0000E+00
2	C	0.2360E+07	0.2000	0.2400E+01	0.0000E+00	0.0000E+00
3	C	0.2510E+07	0.2000	0.2400E+01	0.0000E+00	0.0000E+00
4	W	0.2510E+07	0.2000	0.2400E+01	0.0000E+00	0.0000E+00
5	S	0.2100E+08	0.3000	0.7900E+01	0.0000E+00	0.0000E+00

MATERIAL PROPERTIES FOR DESIGN

ID	TYPE	FY	FC	FYS	FCS	FBMAJ	FBMIN
1	C	0.000E+00	0.000E+00	0.000E+00	0.000E+00		
2	C	0.000E+00	0.000E+00	0.000E+00	0.000E+00		
3	C	0.000E+00	0.000E+00	0.000E+00	0.000E+00		
4	W	0.000E+00	0.000E+00	0.000E+00	0.000E+00		
5	S	0.000E+00				0.000E+00	0.000E+00

CSI/ETABS - EXTENDED

PROJECT:9731 RC BULD 2008/05/21
DESIGN BY KANG YUEH-YINN

PROGRAM:ETABS/FILE:9731-1.EKO

SECTION PROPERTIES FOR COLUMNS

ID	SECTION TYPE	MAT ID	MAJOR DIM	MINOR DIM	FLANGE THICK	WEB THICK
1	RECT	2	0.400	0.400	0.000	0.000
2	RECT	2	0.600	0.800	0.000	0.000
3	RECT	2	0.500	0.900	0.000	0.000
4	RECT	2	0.700	0.600	0.000	0.000
5	RECT	2	0.500	0.700	0.000	0.000
6	RECT	2	0.600	0.500	0.000	0.000
7	RECT	2	0.500	1.100	0.000	0.000
8	RECT	2	0.450	0.450	0.000	0.000
9	RECT	2	0.450	0.600	0.000	0.000
10	RECT	2	0.500	0.450	0.000	0.000
11	RECT	2	0.600	0.450	0.000	0.000
12	RECT	2	0.600	0.600	0.000	0.000
13	RECT	2	0.500	0.820	0.000	0.000
14	RECT	2	0.600	1.950	0.000	0.000
15	RECT	2	0.800	0.600	0.000	0.000
16	RECT	2	0.500	1.100	0.000	0.000
17	RECT	2	0.600	1.420	0.000	0.000
18	RECT	2	0.500	0.750	0.000	0.000
19	RECT	2	0.600	0.300	0.000	0.000
20	RECT	2	0.450	0.600	0.000	0.000
21	RECT	2	0.500	0.800	0.000	0.000
22	RECT	2	0.800	0.450	0.000	0.000
23	I-SECT	5	0.400	0.400	0.021	0.013
24	BOX	5	0.300	0.300	0.012	0.012

SECTION PROPERTY REDUCTION FACTORS FOR COLUMNS

ID	TORSION J	MAJOR I	MINOR I
1	1.000	1.000	1.000
2	1.000	1.000	1.000
3	1.000	1.000	1.000
4	1.000	1.000	1.000
5	1.000	1.000	1.000
6	1.000	1.000	1.000
7	1.000	1.000	1.000
8	1.000	1.000	1.000
9	1.000	1.000	1.000
10	1.000	1.000	1.000
11	1.000	1.000	1.000
12	1.000	1.000	1.000
13	1.000	1.000	1.000
14	1.000	1.000	1.000
15	1.000	1.000	1.000
16	1.000	1.000	1.000
17	1.000	1.000	1.000
18	1.000	1.000	1.000
19	1.000	1.000	1.000

CSI/ETABS - EXTENDED
PROJECT:9731 RC BULD 2008/05/21
DESIGN BY KANG YUEH-YINN

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SECTION PROPERTY REDUCTION FACTORS FOR COLUMNS

ID	TORSION J	MAJOR I	MINOR I
20	1.000	1.000	1.000
21	1.000	1.000	1.000
22	1.000	1.000	1.000
23	1.000	1.000	1.000
24	1.000	1.000	1.000

ANALYSIS SECTION PROPERTIES FOR COLUMNS

ID	AXIAL A	MAJOR AV	MINOR AV	TORSION J	MAJOR I	MINOR I
1	0.160	0.133	0.133	0.3605E-02	0.2133E-02	0.2133E-02
2	0.480	0.400	0.400	0.3110E-01	0.1440E-01	0.2560E-01
3	0.450	0.375	0.375	0.2448E-01	0.9375E-02	0.3038E-01
4	0.420	0.350	0.350	0.2441E-01	0.1715E-01	0.1260E-01
5	0.350	0.292	0.292	0.1633E-01	0.7292E-02	0.1429E-01
6	0.300	0.250	0.250	0.1240E-01	0.9000E-02	0.6250E-02
7	0.550	0.458	0.458	0.3276E-01	0.1146E-01	0.5546E-01
8	0.203	0.169	0.169	0.5775E-02	0.3417E-02	0.3417E-02
9	0.270	0.225	0.225	0.9841E-02	0.4556E-02	0.8100E-02
10	0.225	0.188	0.188	0.7047E-02	0.4687E-02	0.3797E-02
11	0.270	0.225	0.225	0.9841E-02	0.8100E-02	0.4556E-02
12	0.360	0.300	0.300	0.1825E-01	0.1080E-01	0.1080E-01
13	0.410	0.342	0.342	0.2119E-01	0.8542E-02	0.2297E-01
14	1.170	0.975	0.975	0.1132E+00	0.3510E-01	0.3707E+00
15	0.480	0.400	0.400	0.3110E-01	0.2560E-01	0.1440E-01
16	0.550	0.458	0.458	0.3276E-01	0.1146E-01	0.5546E-01
17	0.852	0.710	0.710	0.7510E-01	0.2556E-01	0.1432E+00
18	0.375	0.313	0.313	0.1834E-01	0.7813E-02	0.1758E-01
19	0.180	0.150	0.150	0.3708E-02	0.5400E-02	0.1350E-02
20	0.270	0.225	0.225	0.9841E-02	0.4556E-02	0.8100E-02
21	0.400	0.333	0.333	0.2038E-01	0.8333E-02	0.2133E-01
22	0.360	0.300	0.300	0.1576E-01	0.1920E-01	0.6075E-02
23	0.021	0.005	0.014	0.2644E-05	0.6536E-03	0.2241E-03

24 0.014 0.007 0.007 0.2867E-03 0.1914E-03 0.1914E-03

CSI/ETABS - EXTENDED
PROJECT:9731 RC BULD 2008/05/21
DESIGN BY KANG YUEH-YINN

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PROGRAM:ETABS/FILE:9731-1.EKO

SECTION PROPERTIES FOR BEAMS

ID	SECTION TYPE	MAT ID	DEPTH BELOW	DEPTH ABOVE	BEAM WIDTH	FLANGE THICK	WEB THICK
1	I-SECT	5	0.350	0.000	0.175	0.011	0.007
2	I-SECT	5	0.300	0.000	0.150	0.009	0.007
3	I-SECT	5	0.400	0.000	0.200	0.013	0.008
4	RECT	2	0.600	0.000	0.350	0.000	0.000
5	RECT	2	0.700	0.000	0.300	0.000	0.000
6	RECT	2	0.600	0.000	0.400	0.000	0.000
7	RECT	2	0.600	0.000	0.350	0.000	0.000
8	RECT	2	0.850	0.000	0.300	0.000	0.000
9	RECT	2	0.750	0.000	0.600	0.000	0.000
10	RECT	2	0.900	0.000	0.500	0.000	0.000
11	RECT	2	0.600	0.000	0.500	0.000	0.000
12	I-SECT	5	0.400	0.000	0.200	0.013	0.008

SECTION PROPERTY REDUCTION FACTORS FOR BEAMS

ID	TORSION J	MAJOR I	MINOR I
1	1.000	1.000	1.000
2	1.000	1.000	1.000
3	1.000	1.000	1.000
4	1.000	1.000	1.000
5	1.000	1.000	1.000
6	1.000	1.000	1.000
7	1.000	1.000	1.000
8	1.000	1.000	1.000
9	1.000	1.000	1.000
10	1.000	1.000	1.000
11	1.000	1.000	1.000
12	1.000	1.000	1.000

ANALYSIS SECTION PROPERTIES FOR BEAMS

ID	AXIAL A	MAJOR AV	MINOR AV	TORSION J	MAJOR I	MINOR I
1	0.006	0.002	0.003	0.1861E-06	0.1312E-03	0.9835E-05
2	0.005	0.002	0.002	0.1019E-06	0.7026E-04	0.5071E-05
3	0.008	0.003	0.004	0.3439E-06	0.2296E-03	0.1735E-04
4	0.210	0.175	0.175	0.5454E-02	0.6300E-02	0.2144E-02
5	0.210	0.175	0.175	0.4604E-02	0.8575E-02	0.1575E-02
6	0.240	0.200	0.200	0.7512E-02	0.7200E-02	0.3200E-02
7	0.210	0.175	0.175	0.5454E-02	0.6300E-02	0.2144E-02
8	0.255	0.213	0.213	0.5951E-02	0.1535E-01	0.1912E-02
9	0.450	0.375	0.375	0.2771E-01	0.2109E-01	0.1350E-01
10	0.450	0.375	0.375	0.2448E-01	0.3038E-01	0.9375E-02
11	0.300	0.250	0.250	0.1240E-01	0.9000E-02	0.6250E-02
12	0.008	0.003	0.004	0.3439E-06	0.2296E-03	0.1735E-04

SECTION PROPERTIES FOR FLOORS

ELEMENT	MAT	FLOOR	FLOOR	FLOOR
ID TYPE	ID	T11	T22	T12
1 MEMB	2	0.150	0.150	0.150
2 MEMB	2	0.100	0.100	0.100
3 MEMB	2	0.220	0.220	0.220
4 MEMB	2	0.250	0.250	0.250
5 MEMB	2	0.300	0.300	0.300

SECTION PROPERTIES FOR PANELS

ELEMENT	MAT	PANEL	PANEL	PANEL	PANEL	PANEL	PANEL	PANEL	PANEL
ID TYPE	ID	TV	TH	TSHR	BI	DI	BJ	DJ	
1 MEMB	2	0.300	0.300	0.300	0.00	0.00	0.00	0.00	
2 MEMB	4	0.300	0.300	0.300	0.00	0.00	0.00	0.00	

FRAME CONTROL INFORMATION

/ 2F+ F / RC. BUILDING

FRAME ID NUMBER-----	1
NUMBER OF COLUMN LINES-----	30
NUMBER OF BEAM BAYS-----	48
NUMBER OF FLOOR BAYS-----	18
NUMBER OF JOINT LOAD PATTERNS-----	0
NUMBER OF BEAM SPAN LOAD PATTERNS-----	46
NUMBER OF FLOOR SURFACE LOAD PATTERNS-----	10
CODE FOR JOINT DATA-----	0
MAXIMUM NUMBER OF BRACE ELEMENTS-----	0
MAXIMUM NUMBER OF PANEL ELEMENTS-----	0
MAXIMUM NUMBER OF LINK ELEMENTS-----	0
MAXIMUM NUMBER OF LOADS PER BEAM SPAN-----	15

COLUMN LINE COORDINATES AND ORIENTATIONS

COLUMN	X-ORD	Y-ORD	ANGLE
1	1.200	0.000	0.00000
2	6.700	0.000	0.00000
3	13.200	0.000	0.00000
4	1.200	4.000	0.00000
5	6.700	4.000	0.00000
6	13.200	4.000	0.00000
7	0.000	5.500	0.00000
8	1.200	5.500	0.00000
9	6.700	5.500	0.00000
10	0.000	8.800	0.00000
11	1.200	8.800	0.00000
12	6.700	8.800	0.00000
13	13.200	8.800	0.00000
14	7.900	10.100	0.00000
15	13.200	10.100	0.00000
16	0.000	13.300	0.00000
17	1.200	13.300	0.00000
18	6.700	13.300	0.00000
19	7.900	13.300	0.00000
20	0.000	17.800	0.00000
21	1.200	17.800	0.00000
22	6.700	17.800	0.00000
23	7.900	17.800	0.00000
24	0.000	0.000	0.00000
25	14.500	0.000	0.00000

COLUMN LINE COORDINATES AND ORIENTATIONS

COLUMN	X-ORD	Y-ORD	ANGLE
26	0.000	4.000	0.00000
27	4.500	4.000	0.00000
28	14.500	4.000	0.00000
29	4.500	8.800	0.00000
30	14.500	8.800	0.00000

BEAM BAY CONNECTIVITY DATA

BAY	I -COLUMN	J -COLUMN	I-END DROP	BAY LENGTH
1	1	2	0	5.500
2	2	3	0	6.500
3	4	5	0	5.500
4	5	6	0	6.500
5	7	8	0	1.200
6	8	9	0	5.500
7	10	11	0	1.200
8	11	12	0	5.500
9	12	13	0	6.500
10	14	15	0	5.300
11	16	17	0	1.200
12	17	18	0	5.500
13	18	19	0	1.200
14	20	21	0	1.200
15	21	22	0	5.500
16	22	23	0	1.200
17	7	10	0	3.300
18	10	16	0	4.500
19	16	20	0	4.500
20	1	4	0	4.000
21	4	8	0	1.500
22	8	11	0	3.300
23	11	17	0	4.500
24	17	21	0	4.500
25	2	5	0	4.000
26	5	9	0	1.500
27	9	12	0	3.300
28	12	18	0	4.500
29	18	22	0	4.500
30	14	19	0	3.200
31	19	23	0	4.500
32	3	6	0	4.000
33	6	13	0	4.800
34	13	15	0	1.300
35	24	1	0	1.200
36	3	25	0	1.300
37	26	4	0	1.200
38	4	27	0	3.300
39	27	5	0	2.200
40	6	28	0	1.300

BEAM BAY CONNECTIVITY DATA

BAY	I -COLUMN	J -COLUMN	I-END DROP	BAY LENGTH
41	29	12	0	2.200
42	13	30	0	1.300
43	24	26	0	4.000
44	27	29	0	4.800
45	5	12	0	4.800
46	25	28	0	4.000
47	28	30	0	4.800
48	12	14	0	1.769

FLOOR BAY CONNECTIVITY DATA

FLOOR	I -COL	J -COL	K -COL	L -COL	IJ -DROP	NSF	NBAY	PROJ AREA
1	1	2	4	5	0	0	0	2.2000E+01
2	2	3	5	6	0	0	0	2.6000E+01
3	4	5	8	9	0	0	0	8.2500E+00
4	7	8	10	11	0	0	0	3.9600E+00
5	8	9	11	12	0	0	0	1.8150E+01
6	10	11	16	17	0	0	0	5.4000E+00
7	11	12	17	18	0	0	0	2.4750E+01
8	12	14	18	19	0	0	0	4.6200E+00
9	12	13	14	15	0	0	0	7.6700E+00
10	16	17	20	21	0	0	0	5.4000E+00
11	17	18	21	22	0	0	0	2.4750E+01
12	18	19	22	23	0	0	0	5.4000E+00
13	24	1	26	4	0	0	0	4.8000E+00
14	2	3	5	6	0	0	0	2.6000E+01
15	3	25	6	28	0	0	0	5.2000E+00
16	27	5	29	12	0	0	0	1.0560E+01
17	6	28	13	30	0	0	0	6.2400E+00
18	5	6	12	13	0	0	0	3.1200E+01

BEAM SPAN LOADING PATTERNS

ID	NCON	W1/L1	W2/L2	W3/L3	W4/L4			
1	1	0.00000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	0.45
2	1	0.00000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	0.30
3	1	0.00000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.33	0.45
4	1	0.00000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			

CSI/ETABS - EXTENDED

PROJECT:9731			RC BULD		2008/05/21				
DESIGN BY KANG YUEH-YINN									
							LOAD	DIST	VALUE
5	2	0.00000	0.00000	0.00000	0.00000		1	-0.33	0.30
		0.000	0.000	0.000	0.000				
							LOAD	DIST	VALUE
							1	-0.25	0.45
							2	-0.75	0.45
6	2	0.00000	0.00000	0.00000	0.00000				
		0.000	0.000	0.000	0.000				
							LOAD	DIST	VALUE
							1	-0.25	0.30
							2	-0.75	0.30
7	0	0.18750	0.00000	0.00000	0.00000				
		0.000	0.000	0.000	0.000				
8	0	0.15000	0.00000	0.00000	0.00000				
		0.000	0.000	0.000	0.000				
9	1	0.00000	0.00000	0.00000	0.00000				
		0.000	0.000	0.000	0.000				
							LOAD	DIST	VALUE
							1	-0.60	0.13
10	1	0.00000	1.58400	1.58400	0.00000				
		0.000	2.400	4.100	6.500				
							LOAD	DIST	VALUE
							1	-0.50	0.09
11	0	0.00000	0.48000	0.48000	0.00000				
		0.000	2.400	4.100	6.500				
12	0	0.00000	1.58400	0.00000	0.00000				
		0.000	2.400	4.800	0.000				
13	0	0.00000	0.48000	0.00000	0.00000				
		0.000	2.400	4.800	0.000				
14	1	1.12200	1.58400	0.00000	0.00000				
		0.000	0.500	3.300	0.000				
							LOAD	DIST	VALUE
							1	-0.33	0.06
15	0	0.34000	0.48000	0.00000	0.00000				
		0.000	0.500	3.300	0.000				
16	0	0.00000	1.12200	0.00000	0.00000				
		0.000	1.500	0.000	0.000				
17	0	0.00000	0.34000	0.00000	0.00000				
		0.000	1.500	0.000	0.000				
18	1	0.00000	0.00000	0.00000	0.00000				
		0.000	0.000	0.000	0.000				
							LOAD	DIST	VALUE
							1	-0.50	0.08
19	1	0.00000	0.00000	0.00000	0.00000				
		0.000	0.000	0.000	0.000				
							LOAD	DIST	VALUE
							1	-0.50	0.16
20	1	0.00000	0.00000	0.00000	0.00000				
		0.000	0.000	0.000	0.000				
							LOAD	DIST	VALUE
							1	-0.50	0.09
21	1	0.00000	0.00000	0.00000	0.00000				
		0.000	0.000	0.000	0.000				

						LOAD	DIST	VALUE
22	1	0.22000	0.00000	0.00000	0.00000	1	-0.50	0.08
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
23	1	0.22000	0.00000	0.00000	0.00000	1	-0.50	1.84
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
24	1	0.43000	0.00000	0.00000	0.00000	1	-0.50	1.55
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
25	1	0.14000	0.00000	0.00000	0.00000	1	-0.50	1.55
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
26	3	0.16000	0.00000	0.00000	0.00000	1	-0.50	0.81
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.25	0.34
						2	-0.50	0.75
						3	-0.75	0.34
27	1	0.09000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	0.26
28	1	0.20000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	1.37
29	1	0.14000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	0.81
30	1	0.14000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	0.81
31	1	0.93500	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	0.00
32	1	0.27500	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	0.00
33	1	0.41250	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	2.76
34	1	0.27500	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			

						LOAD	DIST	VALUE
35	1	0.72000	0.00000	0.00000	0.00000	1	-0.50	2.76
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
36	1	0.24000	0.00000	0.00000	0.00000	1	-0.50	0.00
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
37	1	0.27423	0.00000	0.00000	0.00000	1	-0.50	0.00
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
38	1	0.11426	0.00000	0.00000	0.00000	1	-0.50	0.00
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
39	1	0.84000	0.00000	0.00000	0.00000	1	-0.50	0.00
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	0.00
40	1	0.35000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	0.00
41	0	0.65000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
42	0	0.26000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
43	0	1.25000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
44	0	0.50000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
45	1	0.48000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	8.50
46	1	0.00000	0.00000	0.00000	0.00000			
		0.000	0.000	0.000	0.000			
						LOAD	DIST	VALUE
						1	-0.50	1.70

FLOOR LOADING PATTERNS

ID	VERTICAL W	LATERAL WX	LATERAL WY
1	0.30000	0.00000	0.00000
2	0.20000	0.00000	0.00000
3	0.00000	0.00000	0.00000
4	0.20000	0.00000	0.00000
5	1.20000	0.00000	0.00000
6	0.12000	0.00000	0.00000
7	0.25000	0.00000	0.00000
8	0.30000	0.00000	0.00000

FLOOR LOADING PATTERNS

ID	VERTICAL W	LATERAL WX	LATERAL WY
9	0.12000	0.00000	0.00000
10	0.20000	0.00000	0.00000

INPUT AND/OR GENERATED COLUMN PROPERTY TYPES

LEVEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RF	1	1	1	1	1	1	0	0	0	0	0	1	1	0	0
2F	1	1	1	1	1	1	0	1	0	0	1	1	1	0	0

LEVEL	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
RF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2F	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0

INPUT AND/OR GENERATED COLUMN PINS (MAJOR/MINOR)

DATA FOR THIS OPTION IS ALL 0

INPUT AND/OR GENERATED BEAM PROPERTY TYPES

LEVEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RF	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0
2F	4	4	4	4	1	4	1	3	4	2	1	3	1	1	3

LEVEL	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
RF	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
2F	1	2	2	2	4	4	1	3	1	4	4	4	3	1	2

LEVEL	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
RF	0	1	1	0	1	1	1	1	1	1	1	2	2	2	1
2F	2	4	4	1	0	0	0	0	0	0	0	0	0	0	0

LEVEL	46	47	48
RF	2	2	0
2F	0	0	1

INPUT AND/OR GENERATED BEAM PINS (MAJOR/MINOR)

LEVEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2F	0/0	0/0	0/0	0/0	0/0	0/0	0/0	3/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0

LEVEL	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2F	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0

LEVEL	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
2F	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0

LEVEL	46	47	48
2F	0/0	0/0	0/0

INPUT AND/OR GENERATED BEAM I-END FLEXIBILITY

DATA FOR THIS OPTION IS ALL 0

INPUT AND/OR GENERATED BEAM J-END FLEXIBILITY

DATA FOR THIS OPTION IS ALL 0

INPUT AND/OR GENERATED FLOOR PROPERTY ID*S

LEVEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RF	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
2F	1	1	1	2	2	2	2	2	2	2	2	2	0	0	0

LEVEL	16	17	18
RF	2	2	2
2F	0	0	0

INPUT AND/OR GENERATED BEAM LOADS ... LOAD CONDITION I

LEVEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RF	5	0	0	9	0	0	0	0	9	0	0	0	0	0	0
2F	0	0	0	10	0	0	0	18	10	0	0	19	0	0	20

LEVEL	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
RF	0	0	0	0	7	0	0	0	0	7	0	0	0	0	0
2F	0	0	0	0	0	0	0	0	0	0	16	14	0	0	0

LEVEL	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
RF	0	0	0	0	0	0	0	1	3	0	0	0	0	0	21
2F	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0

LEVEL	46	47	48
RF	0	0	0
2F	0	0	0

INPUT AND/OR GENERATED BEAM LOADS ... LOAD CONDITION II

LEVEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RF	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2F	0	0	0	11	0	0	0	0	11	0	0	0	0	0	0

LEVEL	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
RF	0	0	0	0	8	0	0	0	0	8	0	0	0	0	0
2F	0	0	0	0	0	0	0	0	0	0	17	15	0	0	0

LEVEL	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
RF	0	0	0	0	0	0	0	2	4	0	0	0	0	0	0
2F	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0

LEVEL	46	47	48
RF	0	0	0
2F	0	0	0

INPUT AND/OR GENERATED BEAM LOADS ... LOAD CONDITION III

DATA FOR THIS OPTION IS ALL 0

INPUT AND/OR GENERATED FLOOR LOADS ... LOAD CONDITION I

LEVEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RF	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
2F	1	1	1	3	3	3	3	3	3	3	3	3	0	0	0

LEVEL	16	17	18
RF	3	3	3
2F	0	0	0

INPUT AND/OR GENERATED FLOOR LOADS ... LOAD CONDITION II

LEVEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RF	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4
2F	2	2	2	4	4	4	4	4	4	4	4	4	0	0	0

LEVEL	16	17	18
RF	4	4	4
2F	0	0	0

INPUT AND/OR GENERATED FLOOR LOADS ... LOAD CONDITION III

DATA FOR THIS OPTION IS ALL 0

INPUT AND/OR GENERATED FLOOR LOADS ... LOAD CONDITION A

DATA FOR THIS OPTION IS ALL 0

INPUT AND/OR GENERATED FLOOR LOADS ... LOAD CONDITION B

DATA FOR THIS OPTION IS ALL 0

INPUT AND/OR GENERATED FLOOR LOADS ... LOAD CONDITION C

DATA FOR THIS OPTION IS ALL 0

SUMMATION OF FRAME LOADING (VERTICAL DOWNWARDS)

LEVEL	/-----LOAD CONDITIONS-----/					
ID	I	II	III	A	B	C
RF	33.13	19.20	0.00	0.00	0.00	0.00
2F	128.80	37.49	0.00	0.00	0.00	0.00
BASELINE	9.68	0.00	0.00	0.00	0.00	0.00

TOTALS 0.172E+03 0.567E+02 0.000E+00 0.000E+00 0.000E+00 0.000E+00

SUMMATION OF FRAME LOADING (LATERAL-X)

LEVEL	/-----LOAD CONDITIONS-----/					
ID	I	II	III	A	B	C
RF	0.00	0.00	0.00	0.00	0.00	0.00
2F	0.00	0.00	0.00	0.00	0.00	0.00
BASELINE	0.00	0.00	0.00	0.00	0.00	0.00

TOTALS 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00

SUMMATION OF FRAME LOADING (LATERAL-Y)

LEVEL	/-----LOAD CONDITIONS-----/					
ID	I	II	III	A	B	C
RF	0.00	0.00	0.00	0.00	0.00	0.00
2F	0.00	0.00	0.00	0.00	0.00	0.00

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DESIGN BY KANG YUEH-YINN

BASELINE	0.00	0.00	0.00	0.00	0.00	0.00
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TOTALS	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
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SUMMATION OF FRAME ELEMENT WEIGHTS

LEVEL	/-----ELEMENT TYPE-----/				
ID	COLUMN	BEAM	BRACE	PANEL	FLOOR
RF	5.990	3.340	0.000	0.000	20.160
2F	15.667	30.883	0.000	0.000	44.274
BASELINE	9.677	0.000	0.000	0.000	0.000

TOTALS	0.313E+02	0.342E+02	0.000E+00	0.000E+00	0.644E+02
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SUMMATION OF FRAME ELEMENT MASSES

LEVEL	/-----ELEMENT TYPE-----/				
ID	COLUMN	BEAM	BRACE	PANEL	FLOOR
RF	0.000	0.000	0.000	0.000	0.000
2F	0.000	0.000	0.000	0.000	0.000
BASELINE	0.000	0.000	0.000	0.000	0.000

TOTALS	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
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PROJECT:9731RC BULD 2008/05/21

DESIGN BY KANG YUEH-YINN

FRAME POSITION DATA

FRAME	FRAME	/----FRAME ORIENTATION----/			/-----FRAME HEADING-----/	
COUNT	ID	X-ORD	Y-ORD	ANGLE		
1	1	0.00	0.00	0.000	SPACE	FRAME

PROJECT:9731RC BULD 2008/05/21

DESIGN BY KANG YUEH-YINN

DIAPHRAGM MASS DATA
RESULTANTS OF STORY & TRIBUTARY ELEMENT MASSES

STORY LEVEL	DIAPHRAGM NUMBER	DIAPHRAGM MASS	DIAPHRAGM MMI	DIAPHRAGM X-M	DIAPHRAGM Y-M
RF	1	0.000	0.0000E+00	0.00	0.00
2F	1	0.000	0.0000E+00	0.00	0.00

CSI/ETABS - EXTENDED PAGE 23
PROGRAM:ETABS/FILE:9731-1.EKO
PROJECT:9731 RC BULD 2008/05/21
DESIGN BY KANG YUEH-YINN

USER DEFINED LATERAL LOADS

STRUCTURAL LATERAL LOAD CONDITION A . . .

LEVEL	DIA	FX	FY	X	Y	MZ
RF	1	9.98	0.00	9.45	3.76	0.00
2F	1	14.97	0.00	6.61	7.13	0.00

CSI/ETABS - EXTENDED PAGE 24
PROGRAM:ETABS/FILE:9731-1.EKO
PROJECT:9731 RC BULD 2008/05/21
DESIGN BY KANG YUEH-YINN

USER DEFINED LATERAL LOADS

STRUCTURAL LATERAL LOAD CONDITION B . . .

LEVEL	DIA	FX	FY	X	Y	MZ
RF	1	0.00	9.98	9.45	3.76	0.00
2F	1	0.00	14.97	6.61	7.13	0.00

CSI/ETABS - EXTENDED PAGE 25
PROGRAM:ETABS/FILE:9731-1.EKO
PROJECT:9731 RC BULD 2008/05/21
DESIGN BY KANG YUEH-YINN

USER DEFINED LATERAL LOADS

STRUCTURAL LATERAL LOAD CONDITION C . . .

LEVEL	DIA	FX	FY	X	Y	MZ
RF	1	0.00	0.00	0.00	0.00	0.00
2F	1	0.00	0.00	0.00	0.00	0.00

E T A B S / S T E E L E R

Steel Frame Stress Check Processor for ETABS

Version P6.13

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CSI/ETABS - EXTENDED

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It is the responsibility of the user to verify all
results produced by this program
22 May 2008 09:54:25

CSI/ETABS - EXTENDED PAGE 2
ETABS_FILE:9731-1.PST/STEELER_FILE:9731-1.STL
9731 USD 2008/05/21
FRAME DESIGN STEEL FRAME (LRFD) UNITS : KG-M

CODE CHECK IDENTIFIER----- 4 (AISC 1993 LRFD)

NUMBER OF FRAMES TO BE CHECKED----- 1
NUMBER OF STRESS CHECK LOAD COMBINATIONS----- 11
ETABS LIVE LOAD CONDITION NUMBER----- 2

NUMBER OF REPLACED MATERIAL PROPERTIES----- 1
NUMBER OF REPLACED COLUMN PROPERTIES----- 0
NUMBER OF REPLACED BEAM PROPERTIES----- 0
NUMBER OF REPLACED BRACE PROPERTIES----- 0

TYPE OF UNITS (ENGLISH, MKS OR SI)----- M

EXECUTION MODE----- 0

INTERACTION STRESS RATIO CUTOFF----- 0.0000
SHEAR STRESS RATIO CUTOFF----- 0.0000

COLUMN INTERACTION DETAIL FLAG----- 1
BEAM INTERACTION DETAIL FLAG----- 1
BRACE INTERACTION DETAIL FLAG----- 0
COLUMN SHEAR STRESS CHECK FLAG----- 1
BEAM SHEAR STRESS CHECK FLAG----- 1
BRACE SHEAR STRESS CHECK FLAG----- 0

MAP OF COLUMN INTERACTION STRESS RATIOS FLAG---- 1
MAP OF BEAM INTERACTION STRESS RATIOS FLAG----- 1
MAP OF COLUMN CONTINUITY PLATES FLAG----- 0
MAP OF COLUMN DOUBLER PLATES FLAG----- 0

DESIGN LOADING COMBINATION DATA

LOAD TYPE	I	II	III	A	B	C	D1	D2
1	01400.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	01200.000	1600.000	0.000	0.000	0.000	0.000	0.000	0.000
3	01200.000	500.000	0.000	1500.000	0.000	0.000	0.000	0.000
4	01200.000	500.000	0.000	*****	0.000	0.000	0.000	0.000
5	01200.000	500.000	0.000	0.000	1500.000	0.000	0.000	0.000
6	01200.000	500.000	0.000	0.000	*****	0.000	0.000	0.000
7	0 900.000	0.000	0.000	1500.000	0.000	0.000	0.000	0.000
8	0 900.000	0.000	0.000	*****	0.000	0.000	0.000	0.000
9	0 900.000	0.000	0.000	0.000	1500.000	0.000	0.000	0.000
10	0 900.000	0.000	0.000	0.000	*****	0.000	0.000	0.000
11	01300.000	500.000	0.000	0.000	0.000	0.000	0.000	0.000

MATERIAL PROPERTIES

ID	TYPE	ELASTIC MODULUS {Kg/sqm}	POISSONS RATIO	UNIT WEIGHT {Kg/cum}	UNIT MASS	COEFF OF EXPANSION
1	C	0.2170E+07	0.2000	0.2400E+01	0.0000E+00	0.0000E+00
2	C	0.2360E+07	0.2000	0.2400E+01	0.0000E+00	0.0000E+00
3	C	0.2510E+07	0.2000	0.2400E+01	0.0000E+00	0.0000E+00
4	W	0.2510E+07	0.2000	0.2400E+01	0.0000E+00	0.0000E+00
5	S	0.2170E+11	0.3000	0.7800E+04	0.7950E+03	0.0000E+00

MATERIAL PROPERTIES FOR DESIGN

ID	TYPE	YIELD FY {Kg/sqm}	STRENGTH FC(FM) {Kg/sqm}	YIELD FYS {Kg/sqm}	STRENGTH FCS(FMS) {Kg/sqm}	ALLOWABLES FBMAJ {Kg/sqm}	FBMIN {Kg/sqm}
1	C	0.000E+00	0.000E+00	0.000E+00	0.000E+00		
2	C	0.000E+00	0.000E+00	0.000E+00	0.000E+00		
3	C	0.000E+00	0.000E+00	0.000E+00	0.000E+00		
4	W	0.000E+00	0.000E+00	0.000E+00	0.000E+00		
5	S	0.253E+08				0.000E+00	0.000E+00

SECTION PROPERTIES FOR COLUMNS

ID	SECTION TYPE	MAT ID	MAJOR DIM {mm}	MINOR DIM {mm}	FLANGE THICK {mm}	WEB THICK {mm}
1	RECT	2	400.000	400.000	0.000	0.000
2	RECT	2	600.000	800.000	0.000	0.000
3	RECT	2	500.000	900.000	0.000	0.000
4	RECT	2	700.000	600.000	0.000	0.000
5	RECT	2	500.000	700.000	0.000	0.000
6	RECT	2	600.000	500.000	0.000	0.000
7	RECT	2	500.000	1100.000	0.000	0.000
8	RECT	2	450.000	450.000	0.000	0.000
9	RECT	2	450.000	600.000	0.000	0.000
10	RECT	2	500.000	450.000	0.000	0.000
11	RECT	2	600.000	450.000	0.000	0.000
12	RECT	2	600.000	600.000	0.000	0.000
13	RECT	2	500.000	820.000	0.000	0.000
14	RECT	2	600.000	1950.000	0.000	0.000
15	RECT	2	800.000	600.000	0.000	0.000
16	RECT	2	500.000	1100.000	0.000	0.000
17	RECT	2	600.000	1420.000	0.000	0.000
18	RECT	2	500.000	750.000	0.000	0.000
19	RECT	2	600.000	300.000	0.000	0.000
20	RECT	2	450.000	600.000	0.000	0.000
21	RECT	2	500.000	800.000	0.000	0.000
22	RECT	2	800.000	450.000	0.000	0.000
23	1SECT	5	400.000	400.000	21.000	13.000
24	BOX	5	300.000	300.000	12.000	12.000

ANALYSIS SECTION PROPERTIES FOR COLUMNS

ID	AXIAL A {mm_2}	MAJOR AV {mm_2}	MINOR AV {mm_2}	TORSION J {1e3mm_4}	MAJOR I {1e6mm_4}	MINOR I {1e6mm_4}
1	160000.000	133333.333	133333.333	0.3605E+07	0.2133E+04	0.2133E+04
2	480000.000	400000.000	400000.000	0.3110E+08	0.1440E+05	0.2560E+05
3	450000.000	375000.000	375000.000	0.2448E+08	0.9375E+04	0.3038E+05
4	420000.000	350000.000	350000.000	0.2441E+08	0.1715E+05	0.1260E+05
5	350000.000	291666.667	291666.667	0.1633E+08	0.7292E+04	0.1429E+05
6	300000.000	250000.000	250000.000	0.1240E+08	0.9000E+04	0.6250E+04
7	550000.000	458333.333	458333.333	0.3276E+08	0.1146E+05	0.5546E+05
8	202500.000	168750.000	168750.000	0.5775E+07	0.3417E+04	0.3417E+04
9	270000.000	225000.000	225000.000	0.9841E+07	0.4556E+04	0.8100E+04
10	225000.000	187500.000	187500.000	0.7047E+07	0.4688E+04	0.3797E+04
11	270000.000	225000.000	225000.000	0.9841E+07	0.8100E+04	0.4556E+04
12	360000.000	300000.000	300000.000	0.1825E+08	0.1080E+05	0.1080E+05
13	410000.000	341666.667	341666.667	0.2119E+08	0.8542E+04	0.2297E+05
14	1170000.000	975000.000	975000.000	0.1132E+09	0.3510E+05	0.3707E+06
15	480000.000	400000.000	400000.000	0.3110E+08	0.2560E+05	0.1440E+05

ANALYSIS SECTION PROPERTIES FOR COLUMNS

ID	AXIAL A {mm_2}	MAJOR AV {mm_2}	MINOR AV {mm_2}	TORSION J {1e6mm_4}	MAJOR I {1e6mm_4}	MINOR I {1e6mm_4}
16	550000.000	458333.333	458333.333	0.3276E+08	0.1146E+05	0.5546E+05
17	852000.000	710000.000	710000.000	0.7510E+08	0.2556E+05	0.1432E+06
18	375000.000	312500.000	312500.000	0.1834E+08	0.7813E+04	0.1758E+05
19	180000.000	150000.000	150000.000	0.3708E+07	0.5400E+04	0.1350E+04
20	270000.000	225000.000	225000.000	0.9841E+07	0.4556E+04	0.8100E+04
21	400000.000	333333.333	333333.333	0.2038E+08	0.8333E+04	0.2133E+05
22	360000.000	300000.000	300000.000	0.1576E+08	0.1920E+05	0.6075E+04
23	21454.000	5200.000	14000.000	0.2644E+04	0.6536E+03	0.2241E+03
24	13824.000	7200.000	7200.000	0.2867E+06	0.1914E+03	0.1914E+03

STRESS CHECK SECTION PROPERTIES FOR COLUMNS

ID	MAJOR S {1e3mm_3}	MINOR S {1e3mm_3}	MAJOR Z {1e3mm_3}	MINOR Z {1e3mm_3}	MAJOR R {mm}	MINOR R {mm}
23	3268.079	1120.328	3600.133	1695.126	174.545	102.196
24	1276.232	1276.232	1493.856	1493.856	117.678	117.678

SECTION PROPERTIES FOR BEAMS

ID	SECTION TYPE	MAT ID	DEPTH BELOW {mm}	DEPTH ABOVE {mm}	BEAM WIDTH {mm}	FLANGE THICK {mm}	WEB THICK {mm}
1	ISECT	5	350.000	0.000	175.000	11.000	7.000
2	ISECT	5	300.000	0.000	150.000	9.000	7.000
3	ISECT	5	400.000	0.000	200.000	13.000	8.000
4	RECT	2	600.000	0.000	350.000	0.000	0.000
5	RECT	2	700.000	0.000	300.000	0.000	0.000
6	RECT	2	600.000	0.000	400.000	0.000	0.000
7	RECT	2	600.000	0.000	350.000	0.000	0.000
8	RECT	2	850.000	0.000	300.000	0.000	0.000
9	RECT	2	750.000	0.000	600.000	0.000	0.000
10	RECT	2	900.000	0.000	500.000	0.000	0.000
11	RECT	2	600.000	0.000	500.000	0.000	0.000
12	ISECT	5	400.000	0.000	200.000	13.000	8.000

ANALYSIS SECTION PROPERTIES FOR BEAMS

ID	AXIAL A {mm_2}	MAJOR AV {mm_2}	MINOR AV {mm_2}	TORSION J {1e3mm_4}	MAJOR I {1e6mm_4}	MINOR I {1e6mm_4}
1	6146.000	2450.000	3208.333	0.1861E+03	0.1312E+03	0.9835E+01
2	4674.000	2100.000	2250.000	0.1019E+03	0.7026E+02	0.5071E+01
3	8192.000	3200.000	4333.333	0.3439E+03	0.2296E+03	0.1735E+02
4	210000.000	175000.000	175000.000	0.5454E+07	0.6300E+04	0.2144E+04
5	210000.000	175000.000	175000.000	0.4604E+07	0.8575E+04	0.1575E+04
6	240000.000	200000.000	200000.000	0.7512E+07	0.7200E+04	0.3200E+04
7	210000.000	175000.000	175000.000	0.5454E+07	0.6300E+04	0.2144E+04
8	255000.000	212500.000	212500.000	0.5951E+07	0.1535E+05	0.1913E+04
9	450000.000	375000.000	375000.000	0.2771E+08	0.2109E+05	0.1350E+05
10	450000.000	375000.000	375000.000	0.2448E+08	0.3038E+05	0.9375E+04
11	300000.000	250000.000	250000.000	0.1240E+08	0.9000E+04	0.6250E+04
12	8192.000	3200.000	4333.333	0.3439E+03	0.2296E+03	0.1735E+02

STRESS CHECK SECTION PROPERTIES FOR BEAMS

ID	MAJOR S {1e3mm_3}	MINOR S {1e3mm_3}	MAJOR Z {1e3mm_3}	MINOR Z {1e3mm_3}	MAJOR R {mm}	MINOR R {mm}
1	749.913	112.399	840.847	172.456	146.126	40.003
2	468.397	67.607	532.017	104.705	122.605	32.937
3	1148.243	173.493	1285.952	265.984	167.431	46.020
12	1148.243	173.493	1285.952	265.984	167.431	46.020

FRAME NUMBER-----1

FRAMING TYPE-----1 (ORDINARY MOMENT)

COLUMN PROPERTY REPLACEMENT CODE-----0

BEAM PROPERTY REPLACEMENT CODE-----0

BRACE PROPERTY REPLACEMENT CODE-----0

FRAME ID NUMBER-----1

NUMBER OF COLUMN LINES-----30

NUMBER OF BEAM BAYS-----48

NUMBER OF FLOOR BAYS-----18

NUMBER OF JOINT LOAD PATTERNS-----0

NUMBER OF BEAM SPAN LOAD PATTERNS-----46

NUMBER OF FLOOR SURFACE LOAD PATTERNS-----10

MAXIMUM NUMBER OF BRACE ELEMENTS-----0

MAXIMUM NUMBER OF PANEL ELEMENTS-----0

MAXIMUM NUMBER OF LINK ELEMENTS-----0

MAXIMUM NUMBER OF LOADS PER BEAM SPAN-----15

FRAME ID SPACE FRAME

LEVEL ID RF

AISC SPECIFICATION, LRFD 1993

BEAM AXIAL FORCE AND BIAXIAL MOMENT INTERACTION STRESS CHECK

BEAM ID	SECTION TYPE	CHECK TYPE	STRESS RATIO	STRESS POINT	AISC <LC> EQUATION	MAXIMUM AXIAL {T}	CON-SHR END-I {T}	CON-SHR END-J {T}	SECTION TYPE
1	I-SECT	(T)	0.185	END-I	< 4> (H1-1b)	0.0	1.9	1.8	COMPACT
2	I-SECT	(T)	0.229	END-J	< 3> (H1-1b)	0.0	2.9	2.9	COMPACT
4	I-SECT	(T)	0.358	END-J	< 3> (H1-1b)	0.0	5.9	6.0	COMPACT
9	I-SECT	(T)	0.295	END-I	< 4> (H1-1b)	0.0	3.4	3.1	COMPACT
20	I-SECT	(T)	0.129	END-I	< 6> (H1-1b)	0.0	2.2	2.1	COMPACT
25	I-SECT	(T)	0.170	END-I	< 6> (H1-1b)	0.0	2.6	2.8	COMPACT
32	I-SECT	(T)	0.209	END-J	< 5> (H1-1b)	0.0	2.9	3.2	COMPACT
33	I-SECT	(T)	0.221	END-J	< 5> (H1-1b)	0.0	3.1	3.0	COMPACT
35	I-SECT	(T)	0.043	END-J	< 2> (H1-1b)	0.0	0.7	1.0	COMPACT
36	I-SECT	(T)	0.037	END-I	< 2> (H1-1b)	0.0	0.8	0.5	COMPACT
37	I-SECT	(T)	0.043	END-J	< 2> (H1-1b)	0.0	0.7	1.0	COMPACT
38	I-SECT	(T)	0.043	END-J	< 2> (H1-1b)	0.0	2.2	1.3	COMPACT
39	I-SECT	(T)	0.214	END-I	< 4> (H1-1b)	0.0	1.7	2.9	COMPACT
40	I-SECT	(T)	0.234	END-J	< 3> (H1-1b)	0.0	2.7	2.1	COMPACT
41	I-SECT	(T)	0.136	END-I	< 2> (H1-1b)	0.0	1.3	2.2	COMPACT
42	I-SECT	(T)	0.181	END-J	< 2> (H1-1b)	0.0	1.0	0.7	COMPACT
43	I-SECT	(T)	0.050	END-I	< 2> (H1-1b)	0.0	0.7	0.7	COMPACT
44	I-SECT	(T)	0.090	1/2-PT	< 2> (H1-1b)	0.0	1.3	1.3	COMPACT
45	I-SECT	(T)	0.249	1/2-PT	< 2> (H1-1b)	0.0	3.2	3.0	COMPACT
46	I-SECT	(T)	0.196	END-J	< 5> (H1-1b)	0.0	0.5	1.0	COMPACT
47	I-SECT	(T)	0.265	END-J	< 2> (H1-1b)	0.0	1.1	0.7	COMPACT
		(T)	0.265	END-I	< 2> (H1-1b)	0.0			

FRAME ID SPACE FRAME
LEVEL ID 2F

AISC SPECIFICATION, LRFD 1993
BEAM AXIAL FORCE AND BIAXIAL MOMENT INTERACTION STRESS CHECK

BEAM ID	SECTION TYPE	CHECK TYPE	STRESS RATIO	STRESS POINT	AISC <LC> EQUATION	MAXIMUM AXIAL {T}	CON-SHR END-I {T}	CON-SHR END-J {T}	SECTION TYPE
5	I-SECT	(T)	0.030	END-J	< 2> (H1-1b)	0.0	0.5	0.7	COMPACT
7	I-SECT	(T)	0.081	END-J	< 2> (H1-1b)	0.0	1.3	1.8	COMPACT
8	I-SECT	(T)	0.265	1/2-PT	< 2> (H1-1b)	0.0	4.4	4.4	COMPACT
10	I-SECT	(T)	0.226	1/2-PT	< 2> (H1-1b)	0.0	1.1	1.1	COMPACT
11	I-SECT	(T)	0.113	END-J	< 2> (H1-1b)	0.0	2.0	2.4	COMPACT
12	I-SECT	(T)	0.196	END-J	< 3> (H1-1b)	0.0	4.7	4.7	COMPACT
13	I-SECT	(T)	0.117	END-I	< 2> (H1-1b)	0.0	2.5	2.0	COMPACT
14	I-SECT	(T)	0.038	END-J	< 2> (H1-1b)	0.0	0.6	0.9	COMPACT
15	I-SECT	(T)	0.141	END-I	< 4> (H1-1b)	0.0	2.7	2.7	COMPACT
16	I-SECT	(T)	0.036	END-I	< 2> (H1-1b)	0.0	0.8	0.6	COMPACT
17	I-SECT	(T)	0.165	END-J	< 3> (H1-1b)	0.0	0.5	0.7	COMPACT
18	I-SECT	(T)	0.386	END-J	< 2> (H1-1b)	0.0	0.7	0.9	COMPACT
19	I-SECT	(T)	0.386	END-I	< 2> (H1-1b)	0.0	1.0	0.6	COMPACT
22	I-SECT	(T)	0.099	END-J	< 5> (H1-1b)	0.0	1.6	1.7	COMPACT
23	I-SECT	(T)	0.107	END-J	< 5> (H1-1b)	0.0	2.4	2.6	COMPACT
24	I-SECT	(T)	0.139	END-I	< 6> (H1-1b)	0.0	2.5	2.2	COMPACT
28	I-SECT	(T)	0.125	END-I	< 6> (H1-1b)	0.0	2.6	2.6	COMPACT
29	I-SECT	(T)	0.156	END-I	< 6> (H1-1b)	0.0	2.6	2.3	COMPACT
30	I-SECT	(T)	0.243	END-J	< 2> (H1-1b)	0.0	0.2	0.9	COMPACT
31	I-SECT	(T)	0.243	END-I	< 2> (H1-1b)	0.0	1.0	0.6	COMPACT
34	I-SECT	(T)	0.073	END-I	< 2> (H1-1b)	0.0	1.4	1.1	COMPACT
48	I-SECT	(T)	0.123	END-I	< 2> (H1-1b)	0.0	1.9	1.2	COMPACT