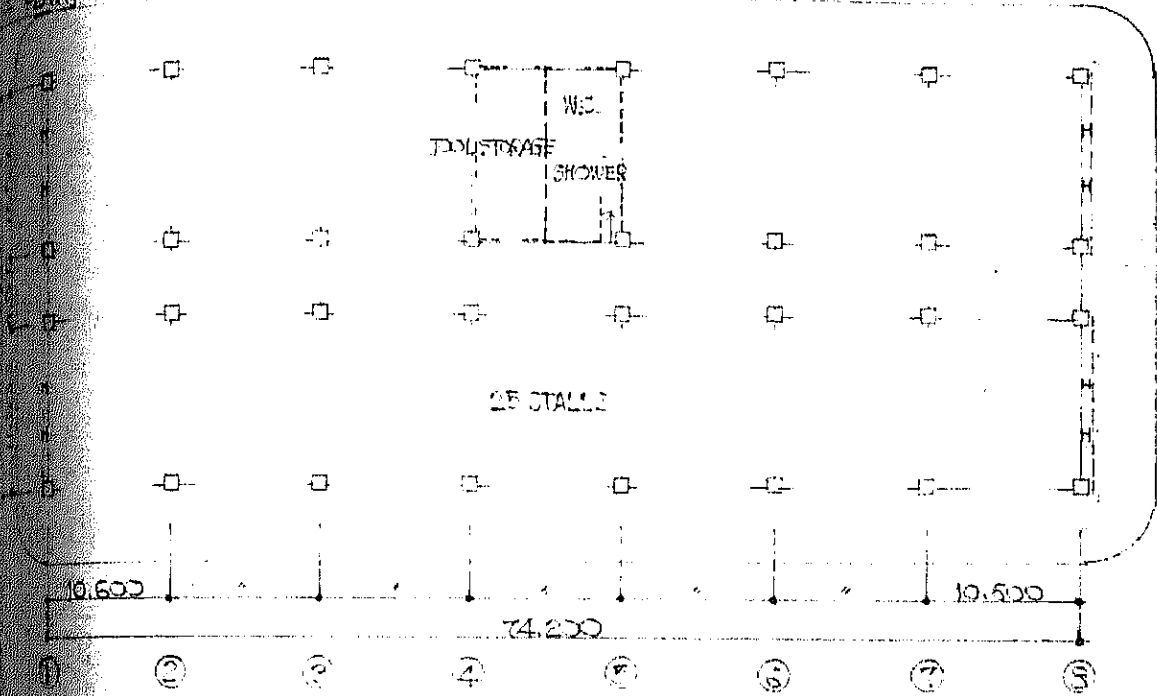


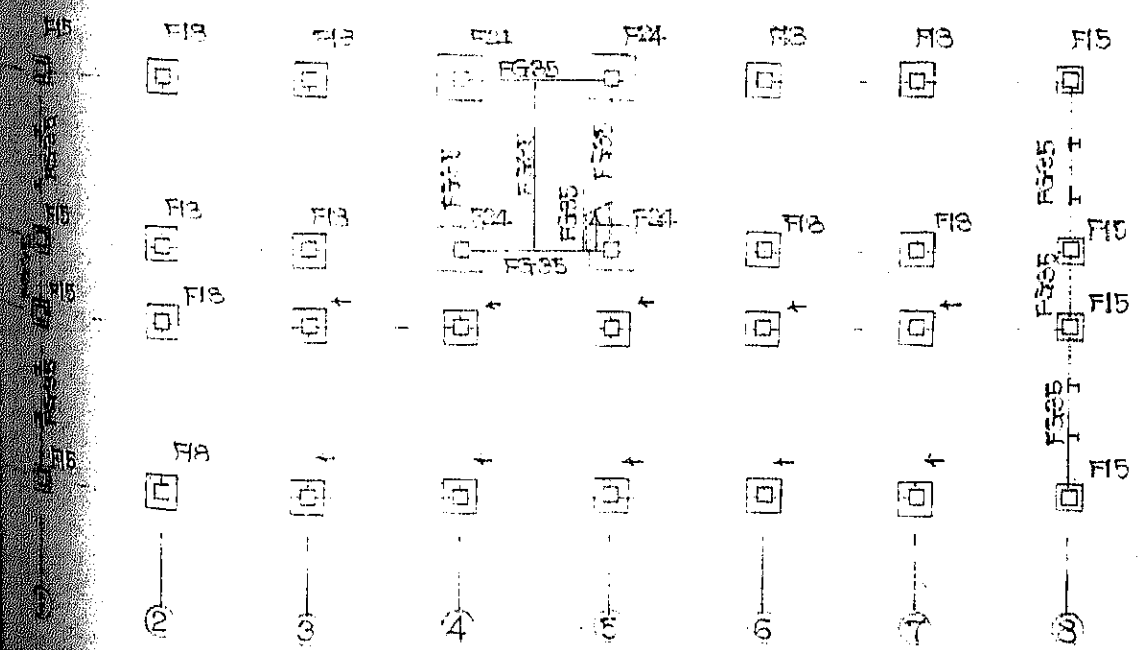
13 PERIODICAL REPAIR FACTORY

MECHANICAL REPAIR FACTORY

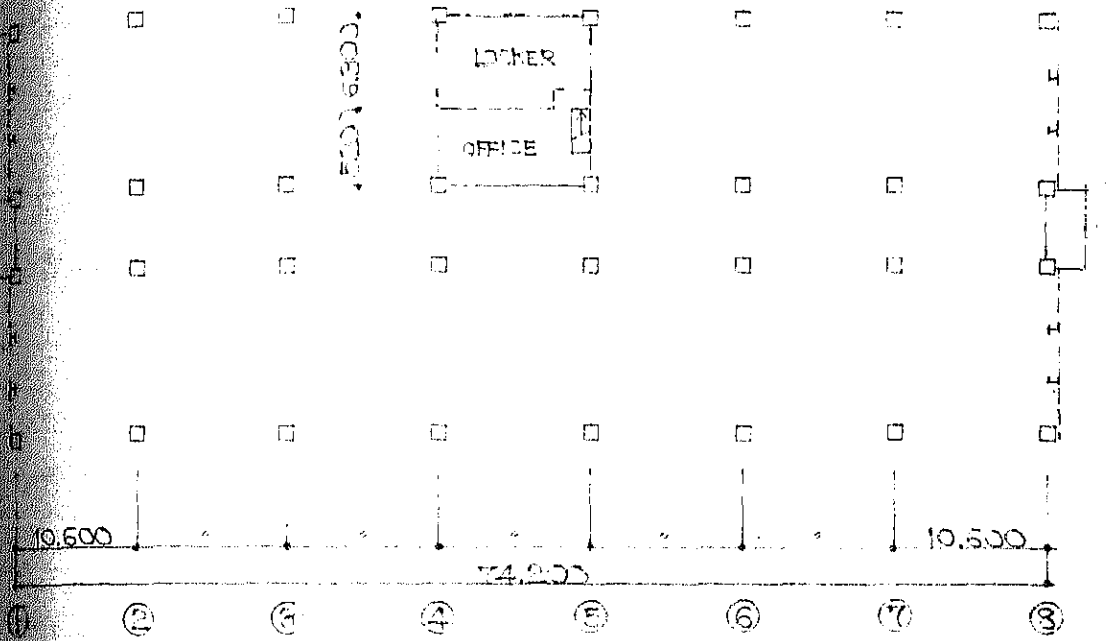
PLAN



KEY PLAN

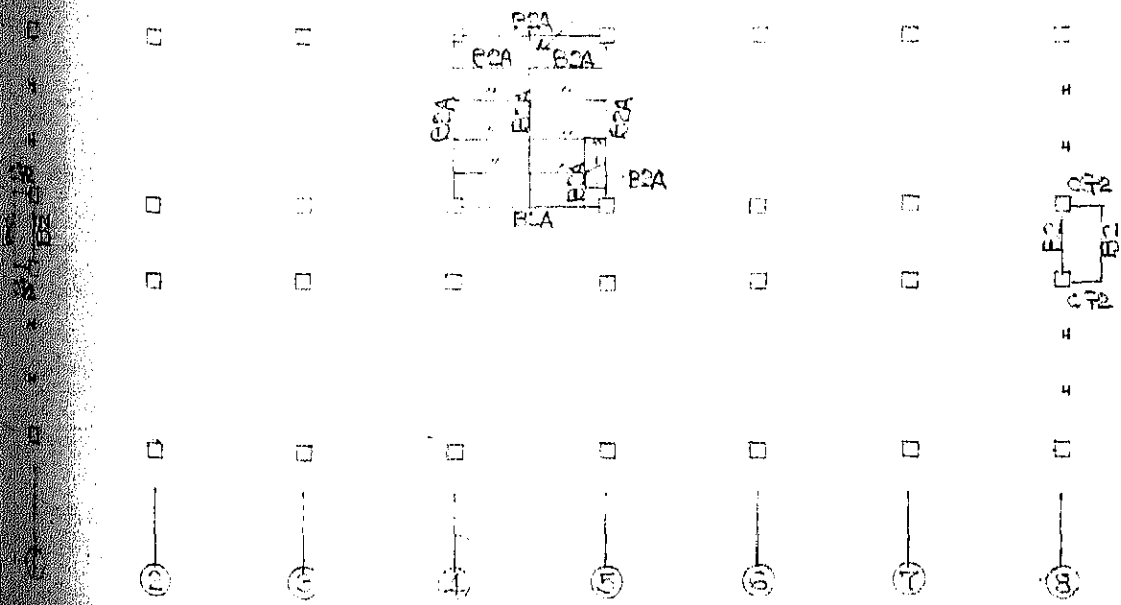


PLAN



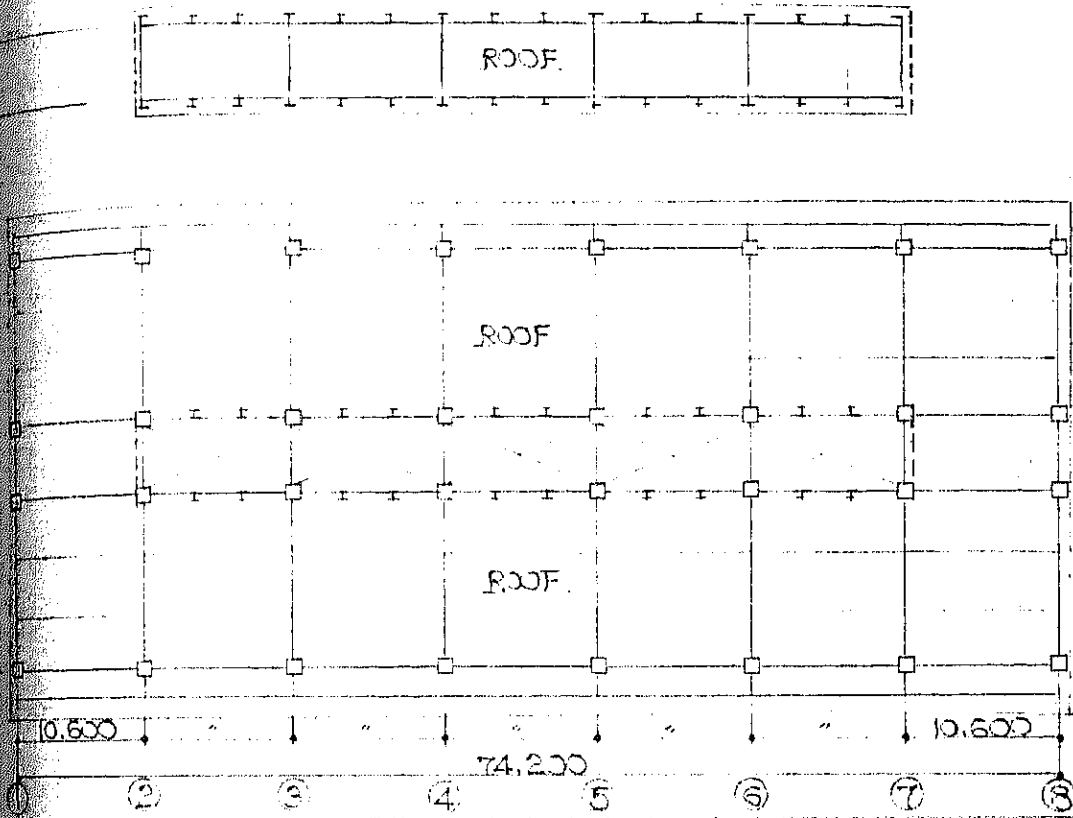
KEY PLAN

- U-1.2

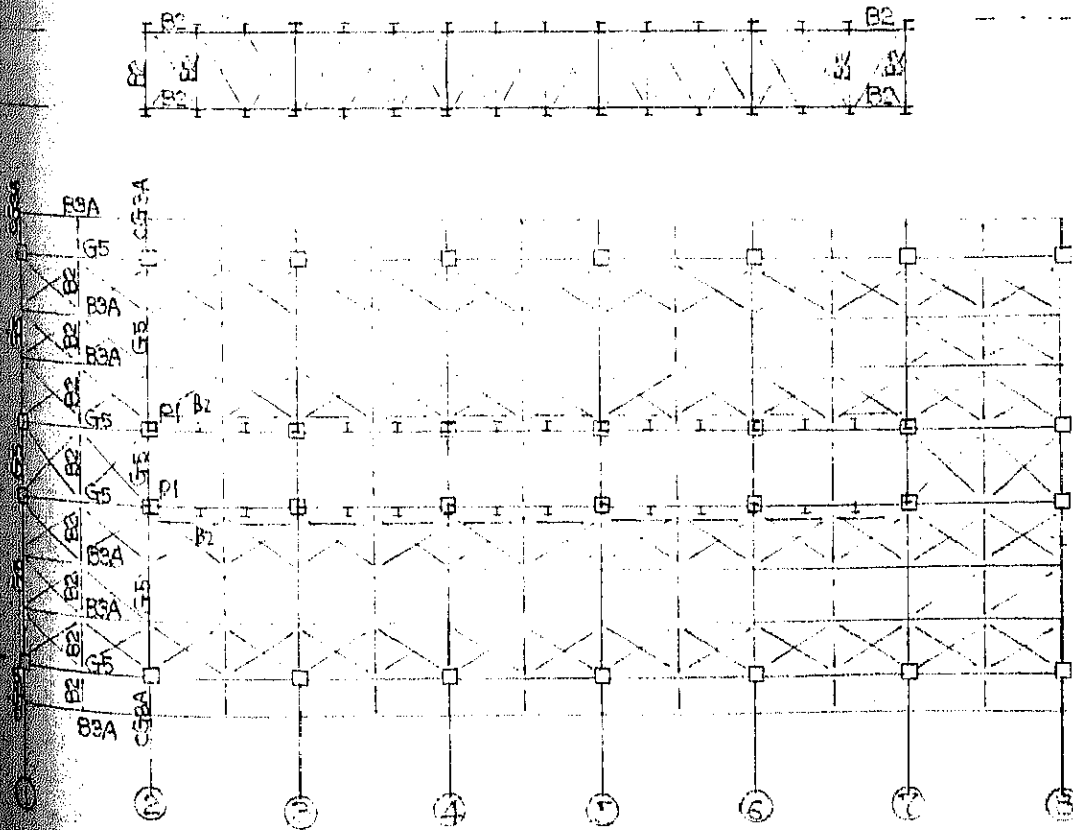


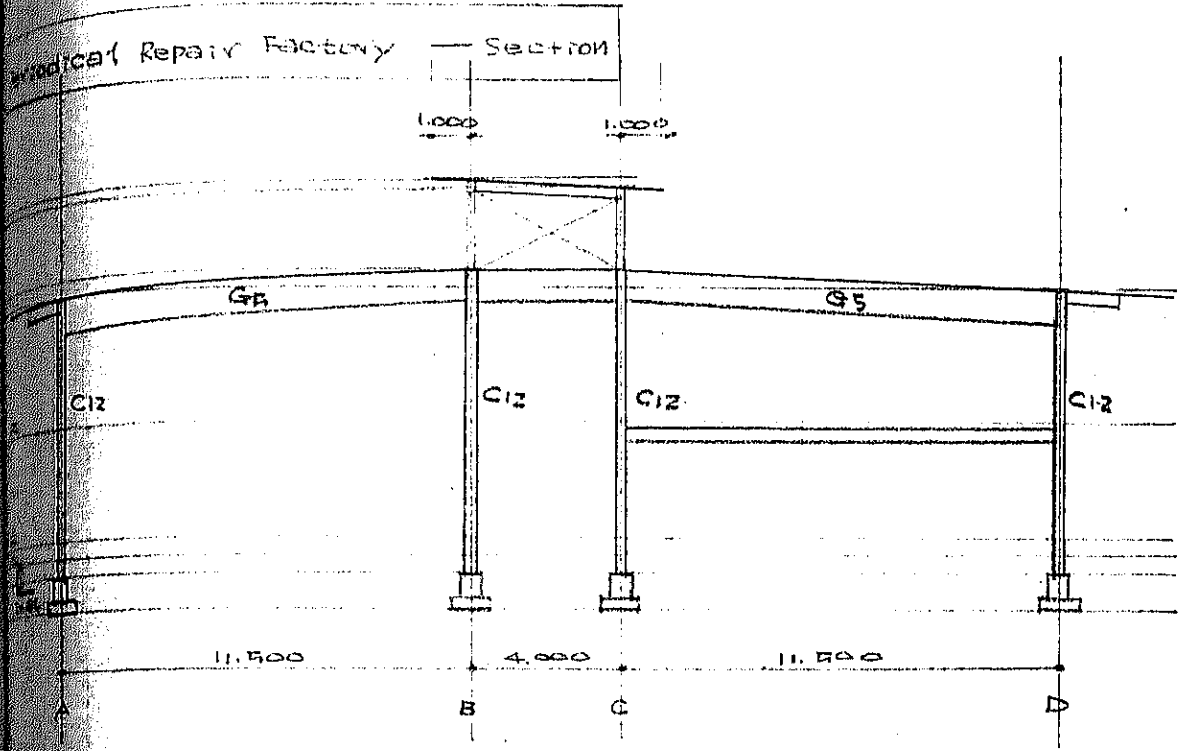
□ : C12
I : P3

PLAN



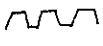


KEY PLAN





Unit Load

Floor

	D. L.		L. L.	T. L.	
	Shelf	0.02	S, B	0.09	0.11 (0.15)
	type		G, C, F	0.07	0.09 (0.13)
	Ycot		K	0.03	0.05 (0.09)
	Ceiling	(0.04)			
		0.02 (0.06)			
	Finish	0.15	S, B	0.30	0.51
	Deck	0.02	G, C, F	0.18	* 0.39
	Ceiling	0.04	K	0.08	0.29
			0.21		
				* With Above Ceiling	0.45
	Step	0.06	S, B	0.30	0.40
	String	0.04	G, C, F	0.18	0.28
			K	0.08	0.18
			0.10		

Beam

	t/m			t/each				
	Skeleton	Finish	Σ	l				
GR	0.25	0	0.25					
SA	0.15	0	0.15					
SM	0.05	0	0.05					
	1.26	0	1.26					

Column

	t/m			t/each				
	Skeleton	Finish	Σ					
GR	0.20	0	0.25					
SA	0.15	0	0.15					
	0.05	0	0.05					

Wall

	t/m ²			t/m				
	Skeleton	Finish	Σ					
	0.01	0.01	0.02					
	0.01	0.07	0.08					
	0.01	0.04	0.05					
	0.49	0.11	0.60					

Pressure

Velocity of Wind

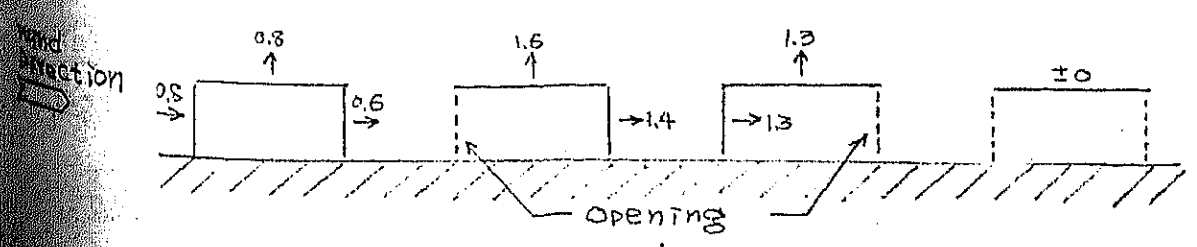
Cyclone 130 Miles/Hour = $130 \times 1609.34 / 3,600$
 = 58.1 m/sec
 → 60.0 m/sec (h = 15 m)

(In 1970, At Chitagon, recorded)
 103 m.p.h. = 46.0 m/sec

Velocity Pressure $q = \frac{1}{2} \rho v^2 = \frac{1}{2} \times \frac{1}{8} (60 \sqrt{\frac{h}{15}})^2$
 = $60 \sqrt{h}$

Block	Surface	[m]		[kg/m ²]	[lb/ft ²]
		\bar{h}	$60\sqrt{h}$	q	C _p
Heavy repair Factory	Monitor Roof	Roof	12.7	214	220
		Wall	10.5, 6.9, 1.94, 1.98	200, 160, 140, 120	
Parts storage	Monitor Roof	Roof	9.39 - 9.29	184 - 183	180
		Wall	7.36 - 7.00	163	160, 120
Inspection Factory	Monitor Roof	Roof	/	/	/
		Wall	7.20 - 7.00	161	160, 120
Periodical Repair Factory	Monitor Roof	Roof	9.33 - 9.23	183	180
		Wall	7.23 - 7.00	161	160, 120
Paint & Body Factory	Monitor Roof	Roof	9.41 - 9.31	184	180
		Wall	7.31 - 7.00	162	160, 120
Retreading & Metal Casting Factory	Monitor Roof	Roof	9.55 - 9.30	184	180
		Wall	9.30 - 7.00	162	160, 120

Coefficient of Wind Pressure












Axial Force

CL3 349

		D1		D2		D4		1 W	
S									
G,B									
C									
W									
Σ									
W.L.									
Σ'									
S	0.09 X 55.1	5.0		X 92.8	8.4	X 92.8	8.4		
G,B	0.015 X 11.1	1.7		XX 16.4	2.5	XX 16.4	2.5		
C	0.015 X 12.1	0.6		XX 11.2	1.1	XX 11.2	1.1		
W	0.15 X 6.7	1.0		X 6.7	1.0	X 3.7	0.6		
	0.00 X 10.5	0.2		XXX 0.0		XXX 0.0			
	0.00 X 10.5	0.2		XXX 0.0		XXX 0.0			
	0.00 X 10.5	0.2		XXX 0.0		XXX 0.0			
	0.00 X 10.5	0.2		XXX 0.0		XXX 0.0			
	0.00 X 10.5	0.2		XXX 0.0		XXX 0.0			
Σ		10.2	10.2		13.0	13.0		12.6	12.6
W.L.			0						0
Σ'		10.2	10.2		13.0	13.0		12.6	12.6
S						0.43 X 30.5	13.1		
G,B						0.05 X 19.0	1.0		
C						0.15 X 3.0	0.5		
W						0.00 X 0.0		X 5.4	0.1
						0.00 X 0.0			
						0.00 X 0.0			
						0.00 X 0.0			
						0.00 X 0.0			
Σ							27.2	14.6	[4/m] 0.9 0.9
W.L.								0	0
Σ'							27.2	+6	0.9 0.9
		C1		C2		C4		4 W	
S				0.09 X 17.4	1.6	X 31.2	2.9		
G,B				0.015 X 9.5	0.5	X 16.6	0.8		
C				0.015 X 4.0	0.2	X 6.0	0.3		
W				0.00 X 10.5	0.3	XXX 0.0			
				0.00 X 10.5	0.3	XXX 0.0			
				0.00 X 10.5	0.3	XXX 0.0			
				0.00 X 10.5	0.3	XXX 0.0			
				0.00 X 10.5	0.3	XXX 0.0			
Σ					3.1	3.1	5.1		5.1
W.L.				0.20 X 5.8	-1.5	X 10.0	-2.7		
Σ'					1.6	1.6	2.4		2.4
S	0.09 X 55.1	5.0		X 92.8	8.4	X 92.8	8.4		
G,B	0.015 X 11.1	1.7		XX 16.4	2.5	XX 16.4	2.5		
C	0.015 X 12.1	0.6		XX 11.2	1.1	XX 11.2	1.1		
W	0.15 X 6.7	1.0		X 6.7	1.0	X 3.7	0.6		
	0.00 X 10.5	0.2		XXX 0.0		XXX 0.0			
	0.00 X 10.5	0.2		XXX 0.0		XXX 0.0			
	0.00 X 10.5	0.2		XXX 0.0		XXX 0.0			
	0.00 X 10.5	0.2		XXX 0.0		XXX 0.0			
Σ		10.1	10.1		13.8	10.7		14.9	10.8
W.L.	0.20 X 4.0	-0.8							0
Σ'		9.3	9.3		12.3	10.7		13.2	10.8
S						0.43 X 30.5	13.1		
G,B						0.05 X 19.0	1.0		
C						0.15 X 3.0	0.5		
W						0.00 X 0.0		X 2.6	1.6
						0.00 X 0.0			
						0.00 X 0.0			
						0.00 X 0.0			
						0.00 X 0.0			
Σ							30.5	14.6	[4/m] 1.6 1.6
W.L.								0	0
Σ'							27.8	14.6	1.6 1.6

Load		Σ		N ₁₀		Q	
10.6	$(0.04 \times 399) + 0.17$	$0.04 \times 399 \times 10.6 / 2$	4.7	$\times / 8$	7.1	$\times 10.6 / 2$	2.7
10.6	$(-0.8 \times 0.16 - 0.07) \times 399$	$-0.8 \times 0.16 \times 399 \times 10.6 / 2$	4.7	$\times / 8$	7.1	$\times 10.6 / 2$	2.7
10.6			-7.3	$\times / 8$	-11.0	$\times 10.6 / 2$	-4.1
			-7.3		-11.0		-4.1
1.2	$0.17 \times 1/4$	$0.17 \times 1/4 \times 1.2$	1.6	$\times / 4$	3.1	$\times 1/2$	0.9
1.2		(1.6×1.5)	7.4				
1.2	$(0.3 \times 0.16 \times 399) \times 1.2$	$0.3 \times 0.16 \times 399 \times 1.2$	1.6	$\times / 8$	3.1	$\times 1/2$	0.9
1.2		$0.3 \times 0.16 \times 399 \times 1.2$	1.6	$\times / 8$	3.1	$\times 1/2$	0.9
1.2		(1.6×1.5)	7.4				
			1.6		3.1		0.9
			1.6		3.1		0.9

[tm, t]

Load		C		M ₀		Q	
	$\begin{matrix} 0.04 \times 15.4 \\ 0.05 \times 12.1 \end{matrix}$	P	2.76×1.5	4.1			$\times 1.0$ 2.8
	$\begin{matrix} (-1.6 \times 0.16 - 0.017) \\ \times 23.9 \end{matrix}$	P	-1.79×1.5	-11.7			$\times 1.0$ -7.8
	$\begin{matrix} (-0.04 \times 40.3) \\ (0.05 \times 10.6) \end{matrix}$	P Q	$4.16 \times 11.5/4.5$ $0.15 \times 11.5/12$	10.6 1.7	$\times 11.5/3$ $/8$	15.9 2.5	$\times 1.0$ 4.2 $\times 11.5/2$ 0.9
	$\begin{matrix} (-0.2 \times 0.16 - 0.017) \\ \times 40.3 \end{matrix}$	P	$-3.06 \times 11.5/4.5$	-20.4	$\times 11.5/3$	18.4 -30.7	$\times 1.0$ -8.0
	$\begin{matrix} 0.04 \times 2.3 \\ 0.05 \times 0.15 \end{matrix}$	Q	$0.71 \times 4.0/12$	0.9	$\times /8$	-30.7 1.4	-8.6 $\times 4.0/2$ 1.4
	$\begin{matrix} (-0.2 \times 0.16 - 0.017) \\ \times 5.3 \end{matrix}$	Q	$-1.05 \times 4.0/12$	-1.4	$\times /8$	1.4 -2.1	1.4 $\times 4.0/2$ -2.1
				-1.4		-2.1	-2.1
	$6.77 \times 1/4$	P	$1.7 \times 7.2/8$	1.6	$\times 1/4$	3.1	$\times 1/2$ 0.9
	$\neq 0$		$(1.6 \times 1.5$	2.4)			
				1.6		3.1	0.9
				0		0	0

Seismic Forces

[+]

	W	K	KW	Q
$1000 \times 53.5 \times 6.0$	16.1			
$1000 \times (83.0 \times 2) + (40 \times 16)$	8.5			
$1000 \times 2.1 \times 32$	3.4			
$1000 \times 9.5 \times 2.1 + (0.0001090 \times 2.1)$	12.2			
$\bar{w} = 40.8 / (53.5 \times 6.0) = 0.13 \text{ [1/ft]}$	40.8	0.10	4.1	5.0
$1000 \times (76.2 \times 33.0) + (73.0 \times 40)$	115.1			
$1000 \times (74.2 \times 4) + (70.0 \times 2)$	176.9			
$1000 \times (74.2 \times 6) + (65 \times 16) + (0.00017)$	22.9			
$1000 \times 6.9 \times 32$	10.0			
$1000 \times 6.9 \times 8$	1.4			
$1000 \times 5.8 \times 3.45$	3.8			
$\bar{w} = 246.7 / (76.2 \times 33.0) = 0.10 \text{ [1/ft]}$	246.7	"	24.7	30.0
$1000 \times 11.1 \times 12.0$	38.6			35.0
$1000 \times (10.6 \times 3) + (11.5 \times 6)$	5.0			1/2
$1000 \times (44.0 + 25.0) \times 4.1$	22.6			
$\bar{w} =$	66.2	"	6.7	

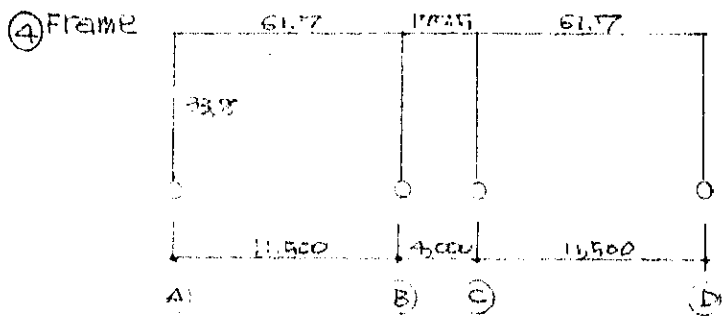
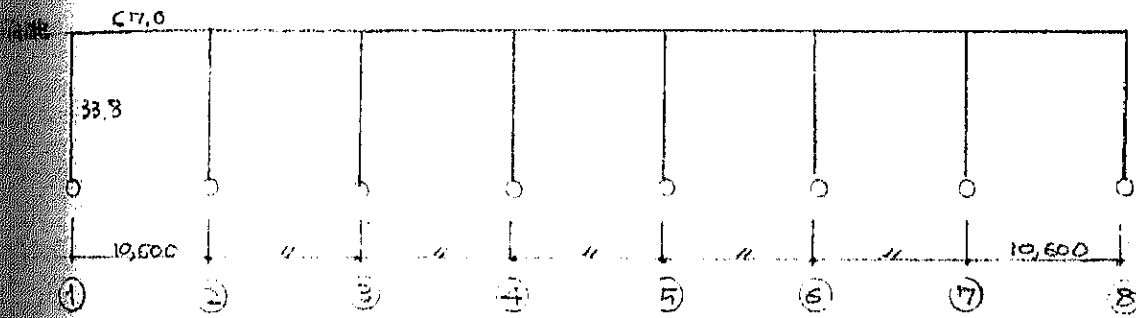
Wind Forces

e	q	A	H	Q	
58+0.6	0.18	4.5 x 2.1	9.5	2.4	3.0
"	0.12	27.5 x 3.5	46.0	10.2	20.0 < KL
"	"				
58+0.6	0.18	53.5 x 2.1	112.4	3.5	29.0
"	0.12	11.1 x 3.5	38.9	6.5	36.0 # KL
"	"	↑			

Stress Ratio

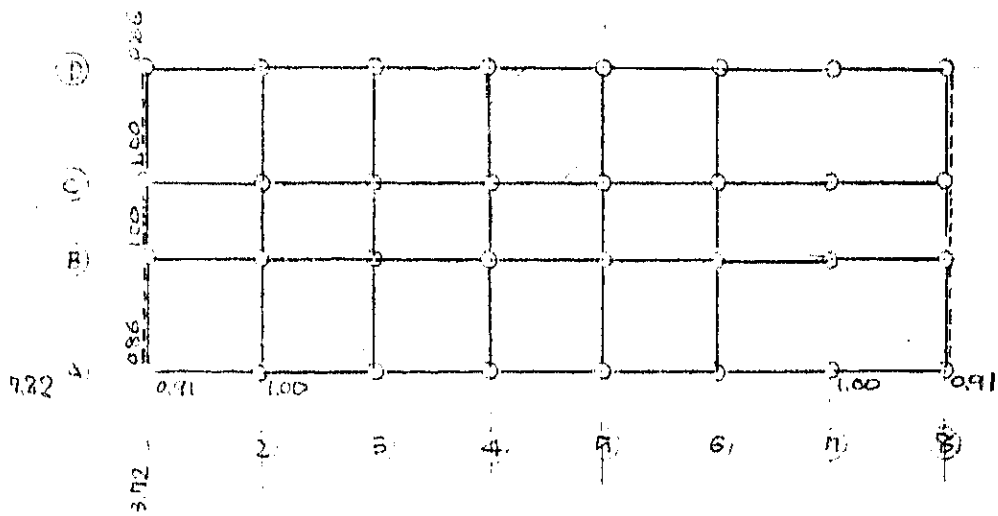
	J	R/A	1060	1150	400		645
MAXIMUM	71,000		57.0	61.7	107.5		
MIN	29,100 ~ 22,500						45.1 (X0.15 = 33.8)

$$J_e = \mu J_{max} = 0.20 + 0.80 \left(\frac{22,500}{29,100} \right)^3 J_{max} = 1.00 J_{max}$$



Distribution Factor & Inflection Point

K.L.	D				Y				P	K.L.			W.L.		
	K	a	D	D'	Y ₀	Y ₁	X ₂₃	ZY		Q	MU	ML	Q	MU	ML
3172	2.42	0.21	5.74	0.91	0			0	5.45	1.2	8.6	0	0.6	4.7	0
3172	4.84	0.23	6.28	1.00	0			0	"	1.3	9.5	0	0.7	5.1	0
3172	2.28	0.20	5.66	0.86	0			0	"	1.4	11.3	0	2.2	16.3	0
3172	8.64	0.24	6.57	1.00	0			0	"	1.8	13.1	0	2.6	19.0	0



Joint Stress

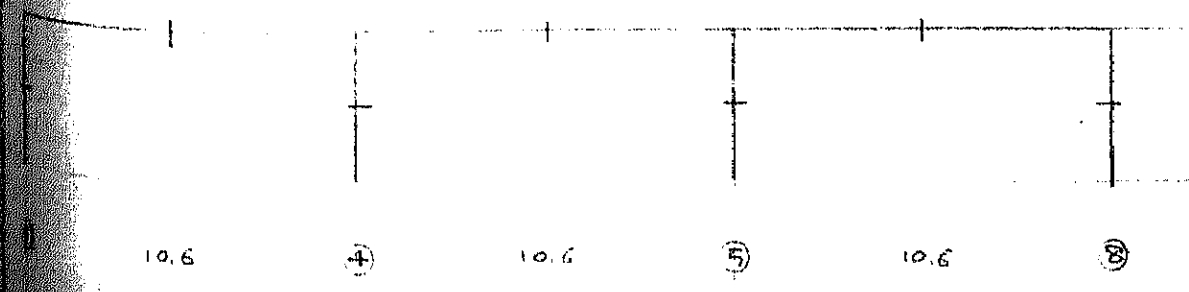
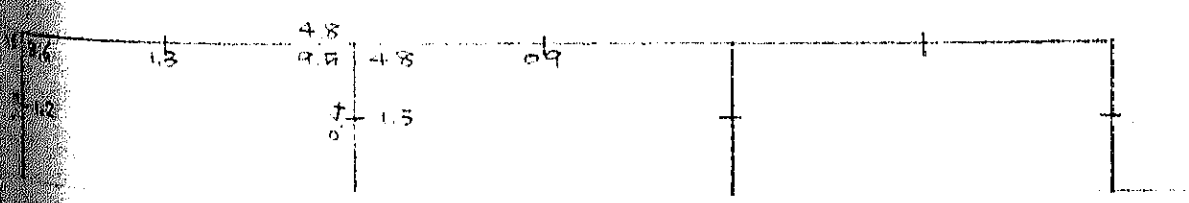
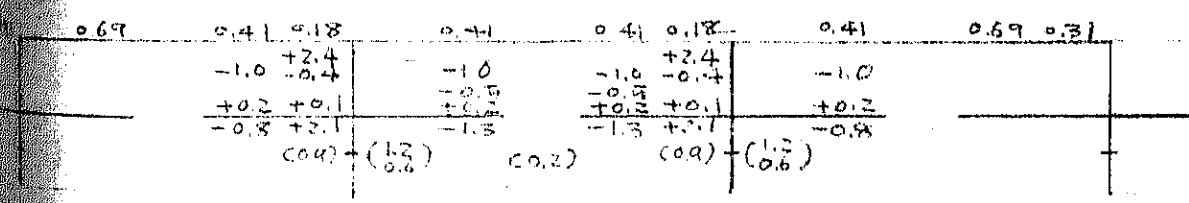
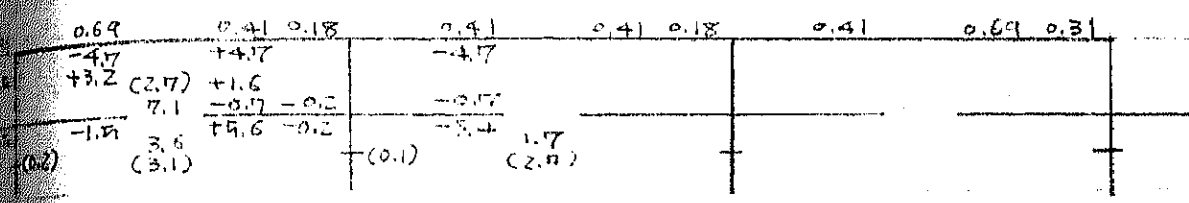
K.L.	Total			C / 4 Frame			Total			C / 4 Frame			
	Q	ΣD	Q/ΣD	Q	ΣD	Q/ΣD	Q	ΣD	Q/ΣD	Q	ΣD	Q/ΣD	
3172	31.28	1.2		1.4	7.82	1.3	20.0	31.28	0.7	5.0	7.82	0.7	
3172	29.76		1.2	6.4	3.72		1.8	36.0	29.76	1.3*	9.4	3.72	2.6

Deflection by Horizontal Force

K.L.	W.L.	Q	ΣD	$\frac{h_0^2}{12EI} F_0$	δ	δ/h ₀
K.L.	W.L.	35.0	31.28 × 6.28	$\frac{645^2}{12 \times 2100}$	2.94	1/219
K.L.	W.L.	20.0	"		1.68	1/384
K.L.	W.L.	35.0	29.76 × 6.57		2.96	1/218
K.L.	W.L.	36.0			3.04	1/212

stress

(h=7.50)



0.169	0.41	0.158	0.41	0.41	0.158	0.41	0.69	0.31	(2.6)
+7.3	-7.3		+7.3	-7.3		+7.3	-7.3	+1.2	
-6.1	(4.1)	-3.1	(4.1)		(4.1)	+2.1	(4.1)	+4.2	+1.7
+1.2	11.0	+1.3	+0.7	+1.3	11.0	-0.9	-0.3	+8.5	11.0
(1.2)	(3.4 - 4.8)	(0.1)	(0.6)	(4.1)	(0.1)	(4.6 - 3.6)	(1.0)	(1.4)	(0.6)

4.7	6.7	2.6	5.1	2.6	(0.9)			
(6.6)		(0.7)						

4.8	5.4	2.6	5.6	6.3	1.6
(4.1 - 4.1)	5.0	11.2	(4.6 - 3.6)	5.4	11.1
(0.2)	8.7	(0.6)		0	(0.8)
					2
10.6	(4)	10.6	(5)	10.6	(8)

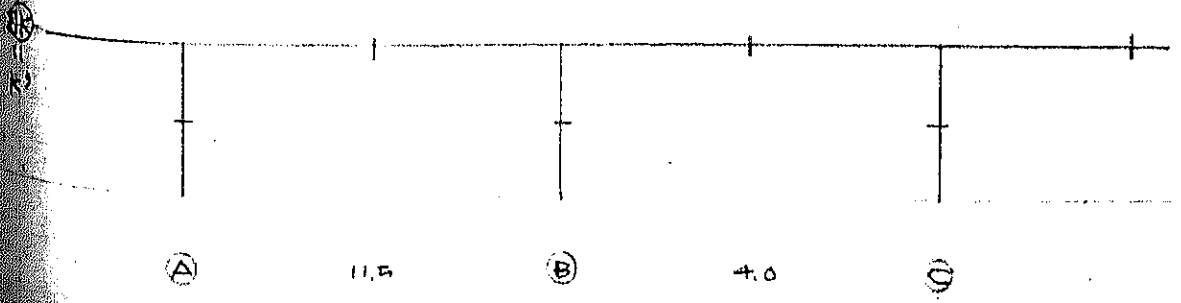
④ Frame (h=7.30)

	0.33	0.67	0.23	0.11	0.66	0.66	0.11	0.23
(1)	+4.1	-12.3	+12.3		-0.9	+0.9		
(2)	+2.7	+9.5	-7.5	-1.3	-7.5	+7.5		
	+0.4	-1.3	+2.8	-0.8	+3.8	-3.8		
	+4.1 + 3.1	+2.7	18.4	-1.5	-1.3	1.4	+4.3	
		-7.2	9.3	+11.0	-2.1	-8.9	+8.9	
		(0.4)	(5.4)		(0.3)	(1.4)		

$$\begin{aligned}
 &2Q = 5.1 \times 2 = 10.2 \\
 &\eta = 10.2 / 11.8 = 0.89 \\
 &\delta = \frac{5 \times 0.0089 \times 1150^4}{374 \times 2,100 \times 71,000} - \frac{(720 + 1100) \times 1150^2}{16 \times 2,100 \times 71,000} = 1.36 - 1.00 = 0.36 < 2.00 \\
 &\delta_{span} = 0.36 / 1150 = 1/3194 \\
 &H - 488 \times 300 \times 11 \times 18, \quad J = 71,000
 \end{aligned}$$

	0.33	0.67	0.23	0.11	0.66	0.66	0.11	0.23
			-0.6	+2.4	-1.6	-1.6	+2.4	-0.6
			+0.2	-0.2	+0.8	+0.8	-0.2	+0.2
			-0.4	+0.1	+0.5	+0.5	+0.1	-0.4
			(0.4)	(0.6)	(1.0)	(0.9)	(1.2)	(0.5)

	11.3	11.3	(1.5)	3.4	9.7	(4.9)	9.7
	$\frac{M}{m}$	$\frac{M}{m}$		$\frac{M}{m}$	$\frac{M}{m}$		$\frac{M}{m}$
	(1.5)			(1.8)			

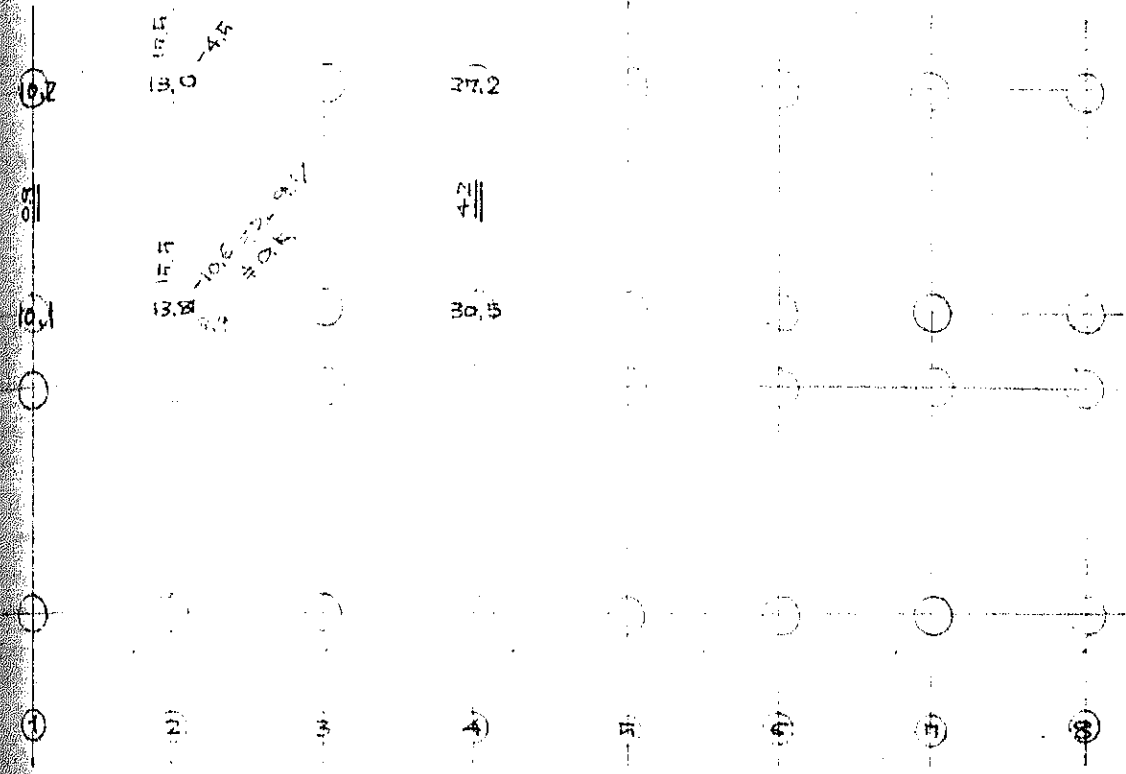


	0.33	0.67	0.23	0.11	0.66	0.66	0.11	0.23
(18)	-11.7	+20.4	-20.4	+2.1	+1.4	-1.4		
	-2.9	-5.8	+4.4	+2.1	+2.5	-2.5		
	-0.7	+1.8	-2.9	+1.0	-6.3	+6.3		
	-11.7	+15.3	-16.8	+3.1	+6.1	-6.1		
		14.7	-16.8	+3.1	+13.7	-13.7	-3.1	+16.8
	(0.5)	(7.9 - 8.1)		(0.4)	(2.1)			(0.4)

	16.3	16.3	(1.8)	4.9	14.1	14.1	4.9
		(2.2)		(2.6)			(2.6)

	11.7	31.6	2.0	13.9	27.8	11.6	0.4	20.4	1.0
(18)	19.9	(9.7 - 6.3)		15.9	(9.2 - 5.0)		22.1	(10.0 - 6.0)	12.7
	5.2	(2.7)		15	(2.2)		15.0	(3.0)	8
									13
	(A)	11.5		(B)	4.0		(C)		(14)

8000g



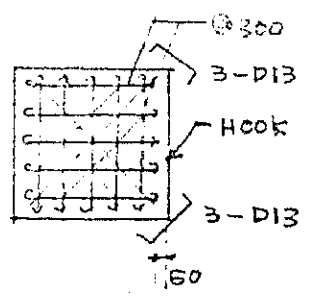
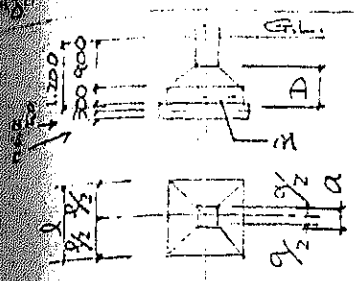
Ident Footing

fe	feq	An	ln	l	Type	-N	ΔN	-N(ΔN)
1	5.4	1.89	1.38	15	Fix			
2		2.41	1.86	18	Fix	-4.5	9.7	0.45
3		5.04	2.25	24	Fix			
4		1.87	1.37	15	Fix			
5		2.56	1.60	18	Fix	-1.2	9.7	0.45
6		5.65	2.52	24	Fix			

Column Footing

fe	feq	An	Bn	B	Type
1	3.2	0.29	0.29	0.55	FGI
2	"	0.26	0.26	"	"

Design of Independent Footing



	A	fea	Na	a	$\frac{p}{a}$	$\frac{M}{Na}$	$\frac{Q}{N}$	M	Q	D	\bar{j}	cat	Cp	ZD+a	QA	M
10-900	54	48.6	550	5.45	0.365	0.243	9.8	11.8	800	62.1	7.9	12.7	215	66.8	10-D13 @300	
10-729	48	39.4	550	4.91	0.285	0.240	6.2	9.4	700	53.4	5.0	10.1	175	52.0	9-D13	
10-976	54	31.1	550	4.36	0.240	0.238	4.1	7.4	700	53.4	3.8	9.2	175	52.0	8-D13	
10-644	48	23.8	550	3.82	0.197	0.233	2.6	5.5	600	44.6	2.4	6.9	175	39.0	7-D13	
10-724	48	17.5	550	3.27	0.160	0.229	1.5	4.0	600	44.6	1.7	6.0	175	39.0	6-D13	
10-127	48	12.2	550	2.73	0.110	0.217	0.7	2.6	600	44.6	0.8	3.9	175	39.0	5-D13	