7.2.6

Dewatering and Centrifugal

Thickener Building

PROJECT : WASTE WATER TREATMENT PLANT

ITEM

: DEWATER BUILDING : 5

STRUCTURAL CALCULATION SHEET

STRUCTURAL ANALYSIS ITEMS:

- A. MAIN FRAME STRUCTURAL ANALYSIS
- B. ATTACHED RESULT SHEETS

STRUCTURAL CALCULATION SHEET

* Project :

Wastewater Treatment Plant

* Item:

Dewater Building

Part I: CALCULATION OF LOAD

A. DEAD LOAD:

SECOND FLOOR:

1. AREA-1(GRIDLINE 10~6)

No.	Material	Calculation	Applying load(kg/m²)
1	160 THK R.C slab	2500x0.16	400
2	60mm THK cement mortar	1800x0.06	108
3	Weight of machine	34.90/(4.90x8.40)	850
		TOTAL	g ^{tc} = 1358 kg/m ²

2. AREA-2(GRIDLINE 6'~1)

No.	Material	Calculation	Applying load(kg/m²)
1	140 THK R.C slab	2500x0.14	350
2	60mm THK cement mortar	1800x0.06	108
3	Others	-	50
		TOTAL	g ^{tc} = 558 kg/m ²

· ROOF;

No.	Material	Calculation	Applying load(kg/m²)
1	Steel purlin & roof sheet		40
2	Others	-	50
		TOTAL	g ^{le} = 90 kg/m ²

B. LIVE LOAD:

- Live load to be taken based on Vietnamese Standard TCVN 2737-1995 :
 - * Second floor : ptc = 400 kg/m2
 - * Roof : $p^{tc} = 75 \text{ kg/m}^2$
- Load safety factor was not mentioned on above calculation because it will be included in structural analysis progress (see attached calculation sheet)
- Uniform load applying to beam to be shown on attached calculation sheet

C. WIND LOAD:

С

 Wind load imposed on project to be calculated based on Vietnamese Standard TCVN 2737-1995

Wind load is calculated as follows:

 $W^{ic} = nxW^{ic}_0xkxC$, where :

W^k_o : standard wind pressure, area IIA, W_o^{lk} = 83 kg/m² k : factor due to affect of project height and topography

; factor of dynamic wind , C=0.8 for the area where wind load imposes

directly, C=0.6 for the opposite side

- Refer to calculation sheet for further informations

Part II: STRUCTURAL ANALYSIS PROGRESS

- The structure of Dewater Building to be calculated by structural analysis program SAP2000
- The structural diagram is modelled as a frame with rigid connection at first floor elevation
- All details about input load, beam and column section, static load case and load combination to be shown on calculation sheet
- Refer to attached result sheets for calculated value of stress, displacement, steel area for beam and column elements

Part III: LOAD COMBINATION

STATIC LOAD CASES:

1. AREA-1

Load case mark	Description
DEAD	Roof dead load
LIVE	Roof live load
CRANE1	Crane force at GL A~C frame
CRANE2	Crane force at GL C~E frame
LWIND	Wind load (from left to right)

LOAD COMBINATION

Load combination	Description		
COMBO1	DEAD+LIVE		
COMBO2	DEAD+LIVE+LWIND		
COMBO3	DEAD+LIVE+LWIND+CRANE1+CRANE2		
COMBO4	Envelop value of above combinations		

. STATIC LOAD CASES :

2. AREA-2

Load case mark	Description		
DEAD	Roof dead load		
LIVE	Roof live load		
WEIGHT1,2,3	Hanging weight P=1T		
LWIND	Wind load (from left to right)		
RWIND	Wind load (from right to left)		

LOAD COMBINATION

Load combination	Description		
COMBO1	DEAD+LIVE		
COMBO2	DEAD+LIVE+LWIND+WEIGHT1		
COMBO3	DEAD+LIVE+LWIND+WEIGHT2		
COMBO4	DEAD+LIVE+LWIND+WEIGHT3		
COMBO5	DEAD+LIVE+LWIND+WEIGHT1,2,3		
COMBO6	DEAD+LIVE+LWIND+WEIGHT1,2		
COMBO7	DEAD+LIVE+LWIND+WEIGHT1,3		
COMBO8	DEAD+LIVE+LWIND+WEIGHT2,3		
COMBO9	DEAD+LIVE+RWIND		
COMBO10	Envelop value of above combinations		

PROJECT

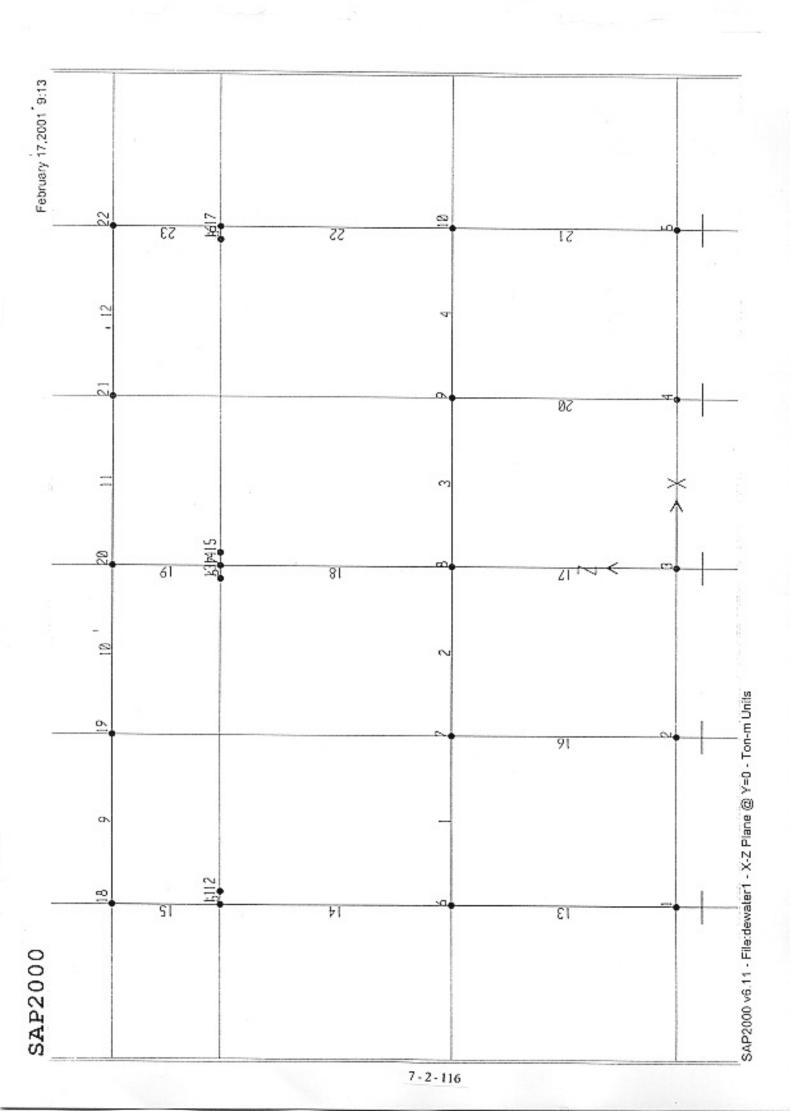
WASTE WATER TREATMENT PLANT

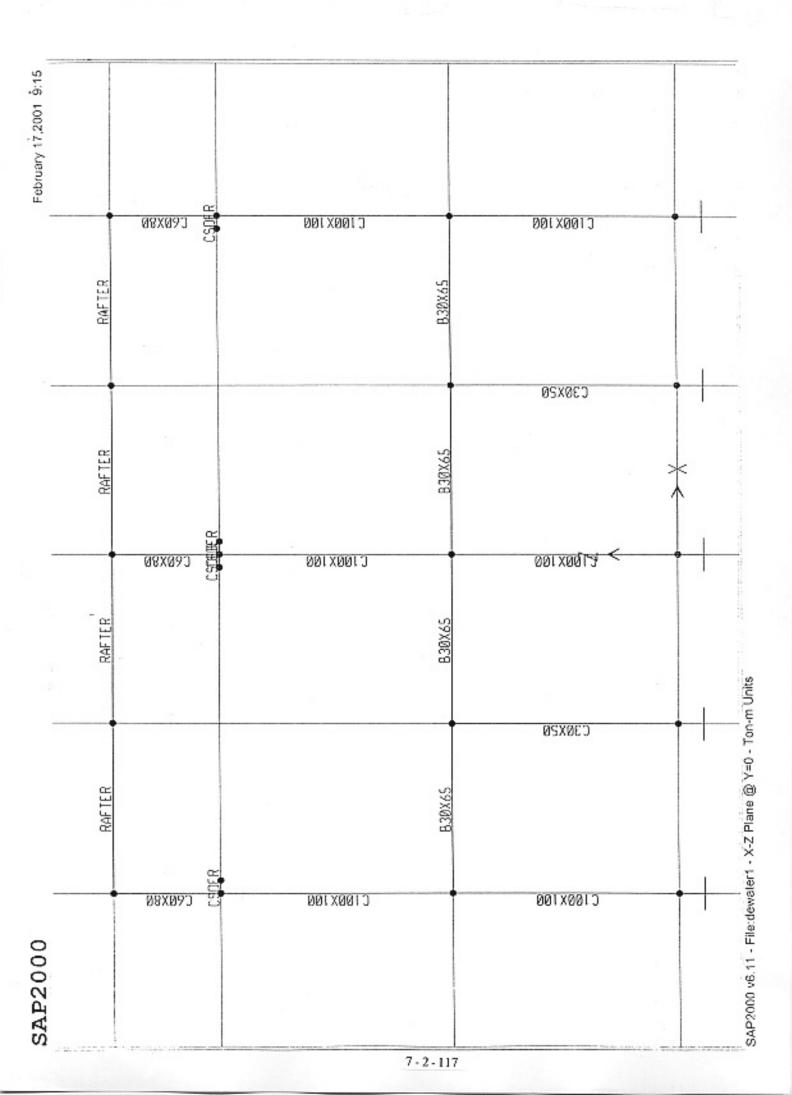
ITEM

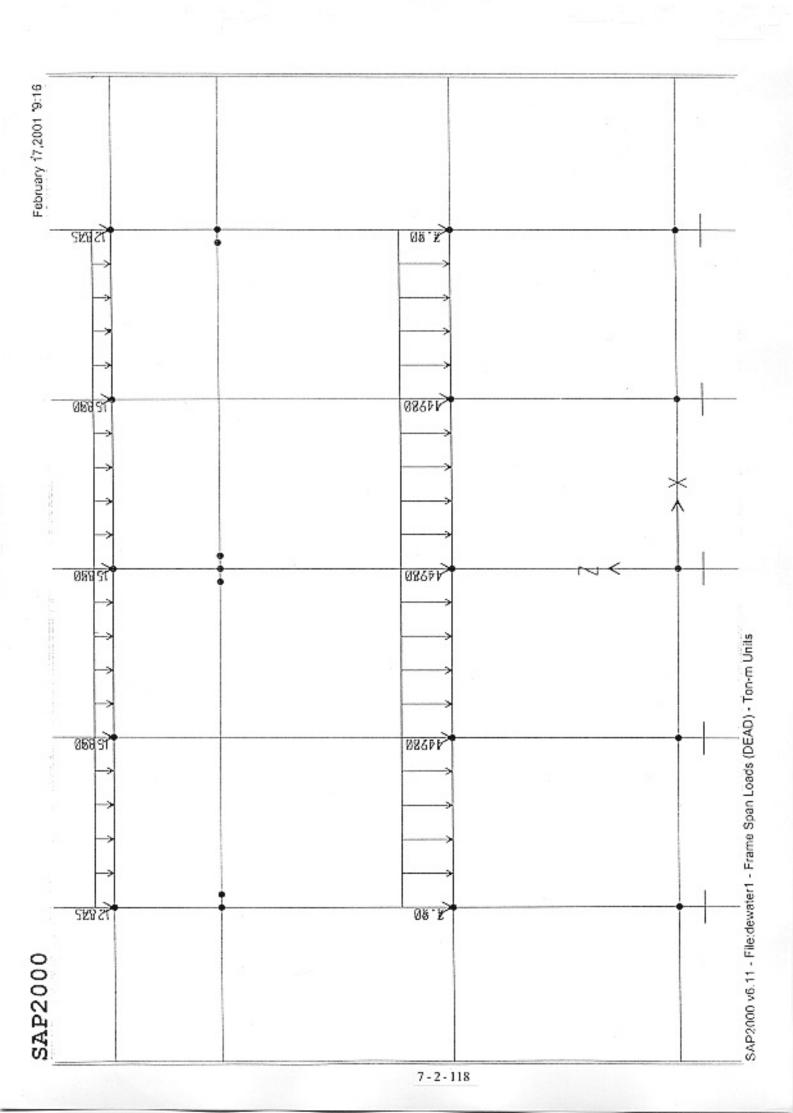
DEWATER BUILDING

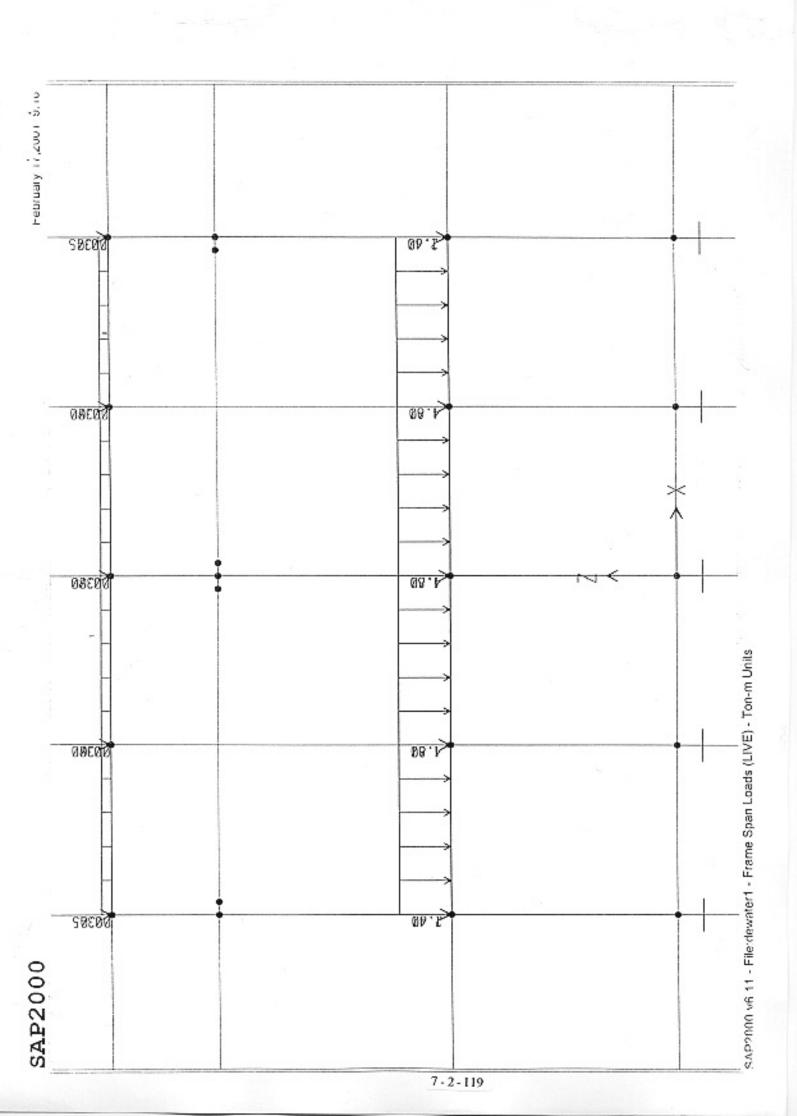
GRID LINE 10~6

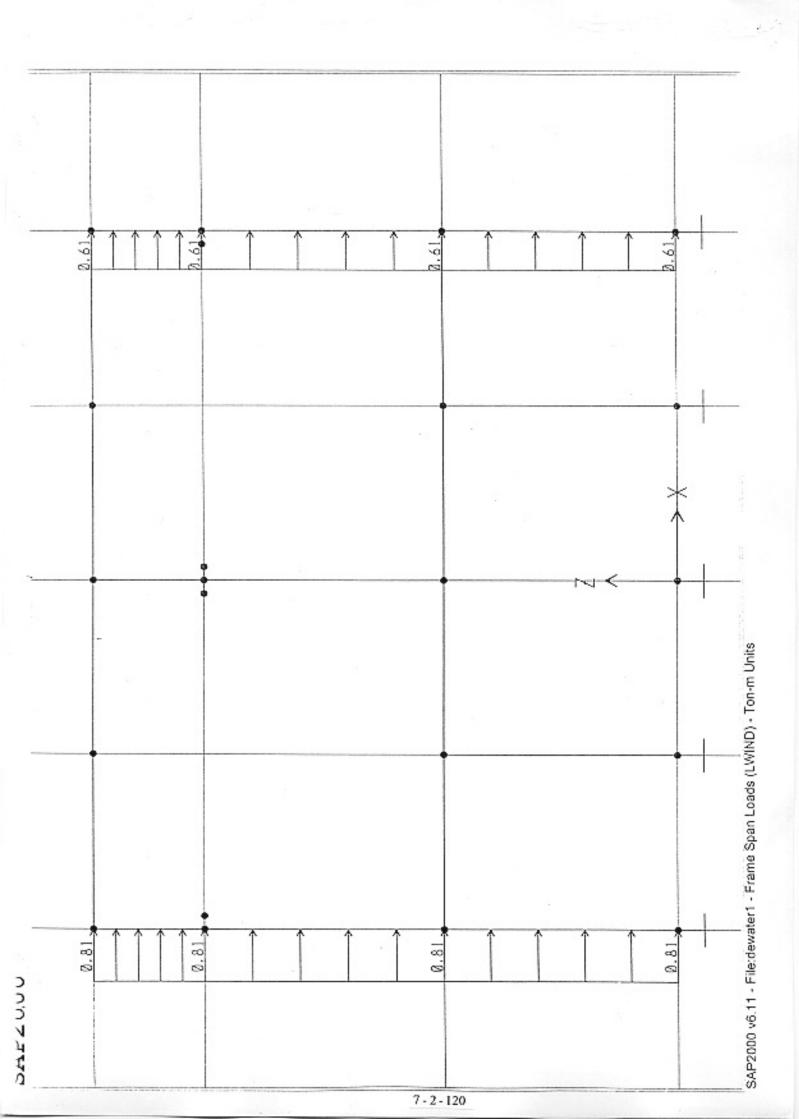
RESULT SHEETS



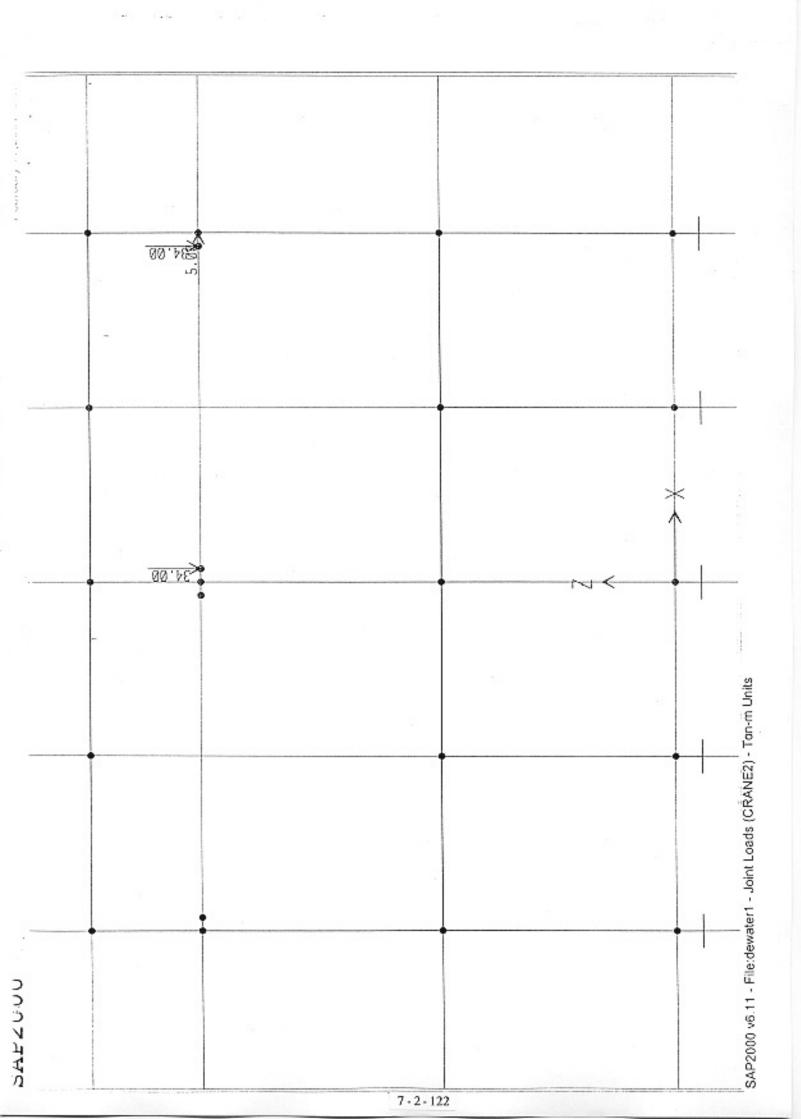


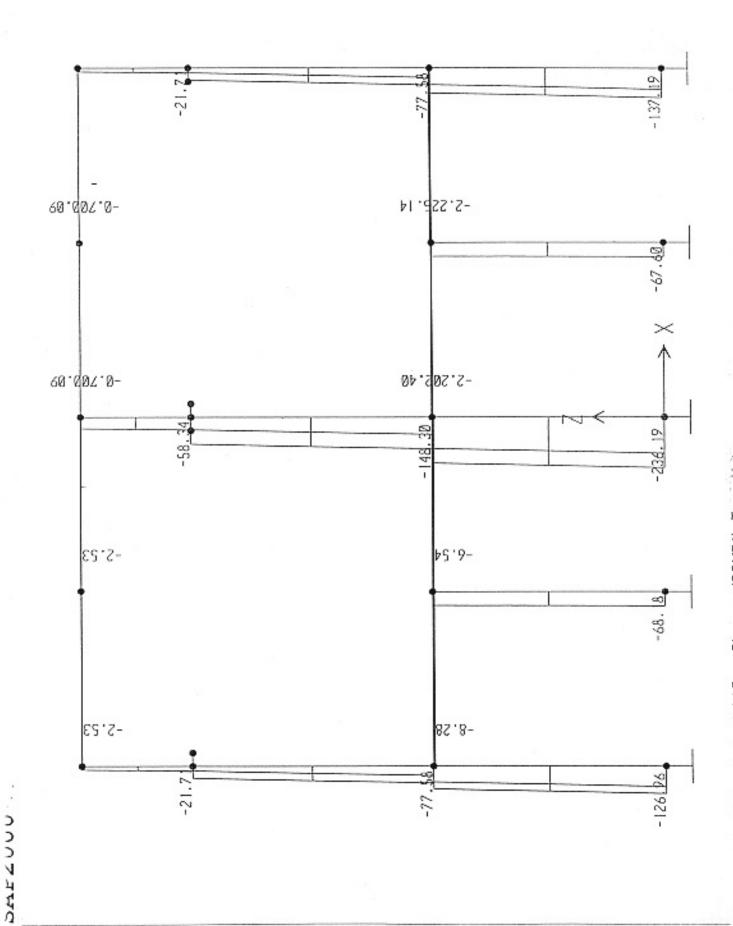






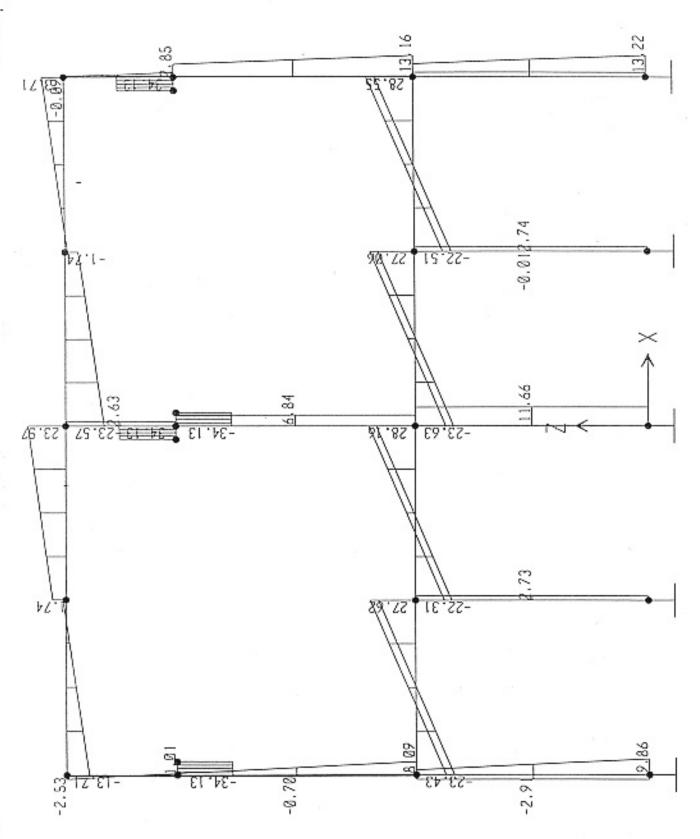
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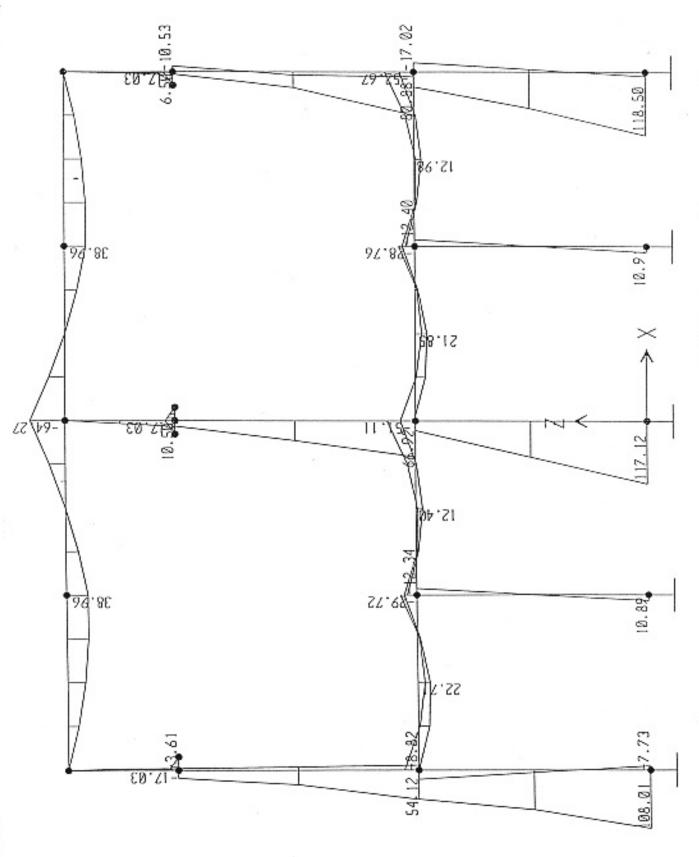


SAP2000 v6.11 - File:dewater1 - Axial Force Diagram (COMB4) - Ton-m Units

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SAP2000 v6.11 - File:dewater1 - Shear Force 2-2 Diagram (COMB4) - Ton-m Units



SAP2000 v6.11 - File:dewater1 - Moment 3-3 Diagram (COMB4) - Ton-m Units

REINFORCEMENT RESULT FOR FILE : D:\Watertreatment\cal\XETQUA\dewater1.txt FORCE UNIT : Ton LENGTH UNIT : n Eb =240000.00 Rb =100.00 Rk -8.00 2000.00 P.a -ID SEC FA-2 MUY-2 STIRR-2 FA-3 MUY-3 STIRR-3 1 0.00 1.44 0.05 ▶6a150/3 -21.430.74 D0a270/3 1 0.00 1.44 0.05 P6a150/3 12.17 0.42 b8a270/3 1 1.63 1.44 0.05 P6a150/3 1.95 0.07 Þ6a270/3 1.63 0.05 1.44 P6a150/3 25.03 0.87 Þ6a270/3 1 3.25 0.05 1.44 F6a150/3 10.56 0.37 P6a270/3 1 3.25 1.44 0.05 Þ6a150/3 22.24 0.77 Þ6a270/3 1 4.88 1.44 0.05 ≱6a150/3 4.74 0.16 P8a270/3 1 4,88 1.44 0.05 ≥6a150/3 4.96 0.17 P6a270/3 1 6.50 1.44 0.05 ≥6a150/3 -27.340.95 P8a270/3 6.50 1.44 0.05 ≥6a150/3 -14.700.51 ≱8a270/3 0.00 1.44 0.05 P6a150/3 -14.220.49 ▶8a270/3 2 0.00 0.05 1.44 ▶6a150/3 -5.70 0.20 58a270/3 2 1.63 1.44 0.05 b6a150/3 3.74 0.13 P6a270/3 2 1.63 1.44 0.05 b6a150/3 4.51 0.16 D6a270/3 2 3.25 1.44 0.05 ▶6a150/3 -1.440.05b6a270/3 2 3.25 1.44 0.05 P6a150/3 9.140.32 b6a270/3 2 4.88 1.44 0.05 P6a150/3 -19.730.69 Þ8a270/3 2 4.88 1.44 0.05 P6a150/3 -1.440.05 Þ8a270/3 2 6.50 0.05 1.44 D6a150/3 -63.89 2.22 P8a270/3 2 6.50 1.44 0.05 ≥6a150/3 -25.09 0.87 P8a270/3 3 0.00 1.44 0.05 ≥6a150/3 -24.02 0.83 №a270/3 3 0.00 1.44 0.05 ₽6a150/3 3.29 0.11 ▶8a270/3 3 1.63 1.44 0.05 P6a150/3 1.44 0.05 Þ6a270/3 3 1.63 1.44 0.05 Þ6a150/3 19.82 0.69 Þ6a270/3 3 3.25 1.44 0.05 b6a150/3 9.11 0.32 P6a270/3 3 3.25 1.44 0.05 ▶6a150/3 21.77 0.76 D6a270/3 3 4.88 1.44 0.05 P6a150/3 3.99 0.14b6a270/3 3 4.88 1.44 0.05 P6a150/3 8.51 0.30 ₽8a270/3 3 6.50 1.44 0.05b6a150/3 -18.300.64 P8a270/3 3 6.50 1.44 0.05 Þ6a150/3 -15.290.53 D8a270/3 4 0.00 1.44 0.05 P6a150/3 -15.400.53 D8a270/3 0.00 1.44 0.05 P6a150/3 -11.15 0.39 b8a270/3 4 1.63 1.44 0.05 16a150/3 1.44 0.05 ≥6a270/3 1.63 1.44 0.05 ≱6a150/3 4.60 Þ6a270/3 0.163.25 1.44 0.05 ≥6a150/3 -2.010.10№6a270/3 4 3.25 1.44 0.05 Þ6a150/3 10.49 0.36 56a270/3 4.88 1.44 0.05 Þ6a150/3 -20.570.71 ▶8a270/3 4.88 1.44 0.05 ₱6a150/3 2.16 0.08 ▶6a270/3 4 6.50 1,44 0.05 P6a150/3 -62.552.17 ▶8a270/3 4 6.50 1.44 0.05 P6a150/3 -20.85 0.72 ₱8a270/3 5 0:00 0.00 0.00 *STRETCH 0.00 * STRETCH 0.00 ß, 0.00 0.00 0.00 * STRETCH 0.00 0.00 *STRETCH 5 0.13 0.00 0.00 *STRETCH 0.00 0.00* STRETCH 5 0.13 0.00 0.00 *STRETCH 0.00 0.00 *STRETCH 5 0.25 0.00 0.00 *STRETCH 0.00 0.00 *STRETCH 0.25 0.00 0.00 *STRETCH 0.00 0.00 STRETCH 5 0.38 0.00 0.00 *STRETCH 0.00 0.00 *STRETCH 5 0.38 0.00 0.00 *STRETCH 0.00 0.00 STRETCH 5 0.50 0.00 0.00 *STRETCH 0.00 0.00 *STRETCH S 0.50 0.00 0.00 *STRETCH 0.00 0.00 *STRETCH 6 0.00 0.00 0.00 *STRETCH 0.00 0.00 STRETCH 6 0.00 0.00 0.00 *STRETCH 0.00 0.00 *STRETCH 6 0.13 0.00 0.00 *STRETCH 0.00 0.00 *STRETCH 6 0.13 0.00 0.00 *STRETCH 0.00 0.00 *STRETCH 6 0.25 0.00 0.00 *STRETCH 0.00 0.00 *STRETCH 6 0.250.00 0.00 * STRETCH 0.00 0.00 *STRETCH 6 0.38 0.00 0.00 *STRETCH 0.00 0.00 *STRETCH 6 0.38 0.00 0.00 *STRETCH 0.00 0.00 *STRETCH 6 0.50 0.00 0.00 *STRETCH 0.00 0.00 * STRETCH 6 0.50 0.00 0.00 *STRETCH 0.00 0.00 *STRETCH 0.00 0.00 0.00 'STRETCH 0.00 0.00 *STRETCH

'STRETCH

0.00

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0.00

7	0.13	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
7	0.13	0.00	0.00				
7				*STRETCH	0.00	0.00	*STRETCH
	0.25	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
7	0.25	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
7	0.38						
		0.00	0.00	*STRETCH	0.00	0.00	"STRETCH
7	0.38	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
7	0.50	0.00	0.00	*STRETCH	0.00		
						0.00	*STRETCH
7	0.50	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
8	0.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
8	0.00	0.00	0.00				
				*STRETCH	0.00	0.00	*STRETCH
8	0.13	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
3	0.13	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
8	0.25	0.00	0.00				
				*STRETCH	0.00	0.00	STRETCH
8	0.25	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
8	0.38	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
8	0.30	0.00					
			0.00	*STRETCH	0.00	0.00	*STRETCH
8	0.50	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
8	0.50	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
9	0.00						
		1.62	0.05	▶6a150/3	1.62	0.05	▶6a300/3
9	0.00	1.62	0.05	Þ6a150/3	1.62	0.05	₱6a300/3
9	1.63	1.62	0.05	Þ6a150/3	12.23	0.38	Þ6a300/3
9	1.63	1.62					
2			0.05	P6a150/3	12.26	0.38	P6a300/3
9	3.25	1.62	0.05	P6a150/3	21.03	0.65	P6a300/3
9	3.25	1.62	0.05	P6a150/3	21.09	0.65	1/6a300/3
9	4.38	1.62					
3			0.05	▶6a150/3	25.74	0.79	⊅6a300/3
9	4.38	1.62	0.05	Þ6a150/3	25.83	0.80	≽6a300/3
9	6.50	1.62	0.05	Þ6a150/3	25.94	0.80	Þ6a300/3
9							
	6.50	1.62	0.05	P6a150/3	26.06	0.80	№6a300/3
10	0.00	1.62	0.05	P6a150/3	25.94	0.80	№6a300/3
10	0.00	1.62	0.05	P6a150/3	26.06	0.80	26a300/3
10	1.63	1.62					
			0.05	16a150/3	14.37	0.44	№6a300/3
10	1.63	1.62	0.05	56a150/3	14.51	0.45	▶6a300/3
10	3.25	1.62	0.05	Þ6a150/3	-1.62	0.05	₽8a300/3
10	3.25	1.62	0.05				
				P6a150/3	-1.62	0.05	P8a300/3
10	4.88	1.62	0.05	P6a150/3	-19.27	0.59	₽8a300/3
10	4.00	1.62	0.05	P6a150/3	-19.07	0.59	№0a300/3
10	6.50	1.62	0.05	Þ6a150/3	-46.54	1.44	№0a300/3
10	6.50	1.62					
			0.05	▶6a150/3	-46.27	1.43	₽8a300/3
11	0.00	1.62	0.05	≥6a150/3	-46.54	1.44	₱8a300/3
11	0.00	1.62	0.05	P6a150/3	-46.27	1.43	P8a300/3
11	1.63	1.62	0.05				
				⊅6a150/3	-19.27	0.59	D8a300/3
11	1.63	1.62	0.05	Þ6a150/3	-19.07	0.59	b0a300/3
11	3.25	1.62	0.05	≱6a150/3	-1.62	0.05	\$8a300/3
11	3.25	1.62	0.05	Þ6a150/3	-1.62		
						0.05	P8a300/3
11	4.38	1.62	0.05	₽6a150/3	14.37	0.44	P6a300/3
11	4.88	1.62	0.05	▶6a150/3	14.51	0.45	1/6a300/3
11	6.50	1.62	0.05	Þ6a150/3	25.94		
						0.80	⊅6a300/3
11	6.50	1.62	0.05	▶6a150/3	26.06	0.80	⊅6a300/3
12	0.00	1.62	0.05	Þ6a150/3	25.94	0.80	D6a300/3
12	0.00	1.62	0.05	P6a150/3	26.06	0.80	
12							P6a300/3
	1.63	1.62	0.05	P6a150/3	25.74	0.79	Þ6a300/3
12	1.63	1.62	0.05	P6a150/3	25.83	0.80	P6a300/3
12	3.25	1.62	0.05	D6a150/3	21.03	0.65	P6a300/3
12	3.25	1.62					
			0.05	b6a150/3	21.09	0.65	⊁6a300/3
12	4.88	1.62	0.05	Þ6a150/3	12.23	0.38	≽6a300/3
12	4.88	1.62	0.05	P6a150/3	12.26	0.38	≥6a300/3
12	6.50						
		1.62	0.05	P6a150/3	1.62	0.05	≯6a300/3
12	6.50	1.62	0.05	1-6a150/3	1.62	0.05	P6a300/3
1.3	0.00	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
13	0.00	18.00	0.40				
				*CHECKOK	18.00	0.40	*CHECKOK
13	4.25	18.00	0.40	* CHECKOK	18.00	0.40	*CHECKOK
13	4.25	18.00	0.40	* CHECKOK	18.00	0.40	*CHECKOK
13	8.50	18.00	0.40	* CHECKOK	18.00	0.40	
13							*CHECKOK
	8.50	18.00	0.40	 CHECKOK 	18.00	0.40	*CHECKOK
14	0.00	18.00	0.40	 CHECKOK 	18.00	0.40	*CHECKOK
14	0.00	18.00	0.40	*CHECKOK	18.00	0.40	
14	4.35						*CHECKOK
		18.00	0.40	 CHECKOK 	18.00	0.40	*CHECKOK
14	4.35	18.00	0.40	 CHECKOK 	18.00	0.40	*CHECKOK
14	9.70	18.00	0.40	* CHECKOK	18.00	0.40	*CHECKOK
14	8.70	18.00					
			0.40	* CHECKOK	18.00	0.40	*CHECKOK
15	0.00	8.64	0.40	 CHECKOK 	3.64	0.40	*CHECKOK
1.5	0.00	8.64	0.40	* CHECKOK	8.64	0.40	*CHECKOK
15	2.00	8.64	0.40				
				*CHECKOK	8.64	0.40	*CHECKOK
15	2.00	8.64	0.40	*CHECKOK	8.64	0.40	*CHECKOK
15	4.00	8.64	0.40	* CHECKOK	8.64	0.40	*CHECKOK
				,			

15	4.00	8.64	0.40	*CHECKOK	8.64	0.40	LOUEGRON
16	0.00	6.48	0.40	*CHECKOK	6.48	0.40	CHECKOK
16	0.00	6.48	0.40	*CHECKOK		0.83	*CHECKOK
16	4.25	6.48	0.40	* CHECKOX	6.48	0.40	*CHECKOK
16	4.25	6.48	0.40	*CHECKOK	6.48	0.40	*CHECKOK
16	8.50	6.48	0.40	*CHECKOK	6.48	0.40	CHECKOK
16	8.50	6.48	0.40	*CHECKOK	14.58		*CHECKOK
17	0.00	18.00	0.40	*CHECKOK	18.00	0.90	CHECKOK
17	0.00	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
17	4.25	18.00	0.40	*CHECKOK	18.00		*CHECKOK
17	4.25	19.00	0.40	, CHECKOK	10.00	0.40	*CHECKOK
17	8.50	18.00	0.40	*CHECKOK	18.00		*CHECKOK
17	8.50	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
18	0.00	18.00	0.40	* CHECKOK	18.00		*CHECKOK
18	0.00	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
18	4.35	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
18	4.35	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
18	8,70	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
18	8.70	18.00	0.40	*CHECKOK	18.00	0.40	CHECKOK
19	0.00	8.64	0.40	*CHECKOK	8.64	0.40	, CHECKOK
19	0.00	8.64	0.40	*CHECKOK	8.64	0.40	*CHECKOK
19	2.00	8.64	0.40	*CHECKOK	8.64	0.40	*CHECKOK
19	2.00	9.64	0.40	*CHECKOK	8.64	0.40	*CHECKOK
19	4.00	8.64	0.40	*CHECKOK	8.64	0.40	*CHECKOK
19	4.00	8.64	0.40	* CHECKOX	8.64	0.40	*CHECKOK
20	0.00	2.70	0.40	*CHECKOK	2.70	0.40	
20	0.00	2.70	0.40	*CHECKOK	2.70	0.40	*CHECKOK
20	4.25	2.70	0.40	*CHECKOK	2.70	0.40	*CHECKOK
20	4.25	2.70	0.40	*CHECKOK	2.70	0.40	*CHECKOK
20	8.50	2.70	0.40	*CHECKOK	2.70	0.40	* CHECKOK
20	8.50	2.70	0.40	*CHECKOK	2.70	0.40	*CHECKOK
21	0.00	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
21	0.00	18.00	0.40	*CHECKOK	24.10	0.54	*CHECKOK
21	4.25	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
21	4.25	10.00	0.40	*CHECKOX	18.00	0.40	*CHECKOK
21	8.50	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
21	8.50	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
22	0.00	18.00	0.40	*CHECKOK	18.00	0.40	* CHECKOK
22	0.00	18.00	0.40	*CHECKOK	32.58	0.72	*CHECKOK
22	4.35	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
22	4.35	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
22	8.70	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
22	8.70	18.00	0.40	*CHECKOK	18.00	0.40	*CHECKOK
23	0.00	8.64	0.40	*CHECKOX	8.64	0.40	*CHECKOK
23	0.00	8.64	0.40	*CHECKOK	8.64	0.40	*CHECKOK
23	2.00	8.64	0.40	*CHECKOK	8.64	0.40	*CHECKOK
23	2.00	8.64	0.40	*CHECKOK	8.64	0.40	*CHECKOK
23	4.00	8.64	0.40	*CHECKOK	3.64	0.40	*CHECKOK
23	4.00	3.64	0.40	*CHECKOK	8.64	0.40	*CHECKOK
					~	6.46	SHOOKSK

PROJECT

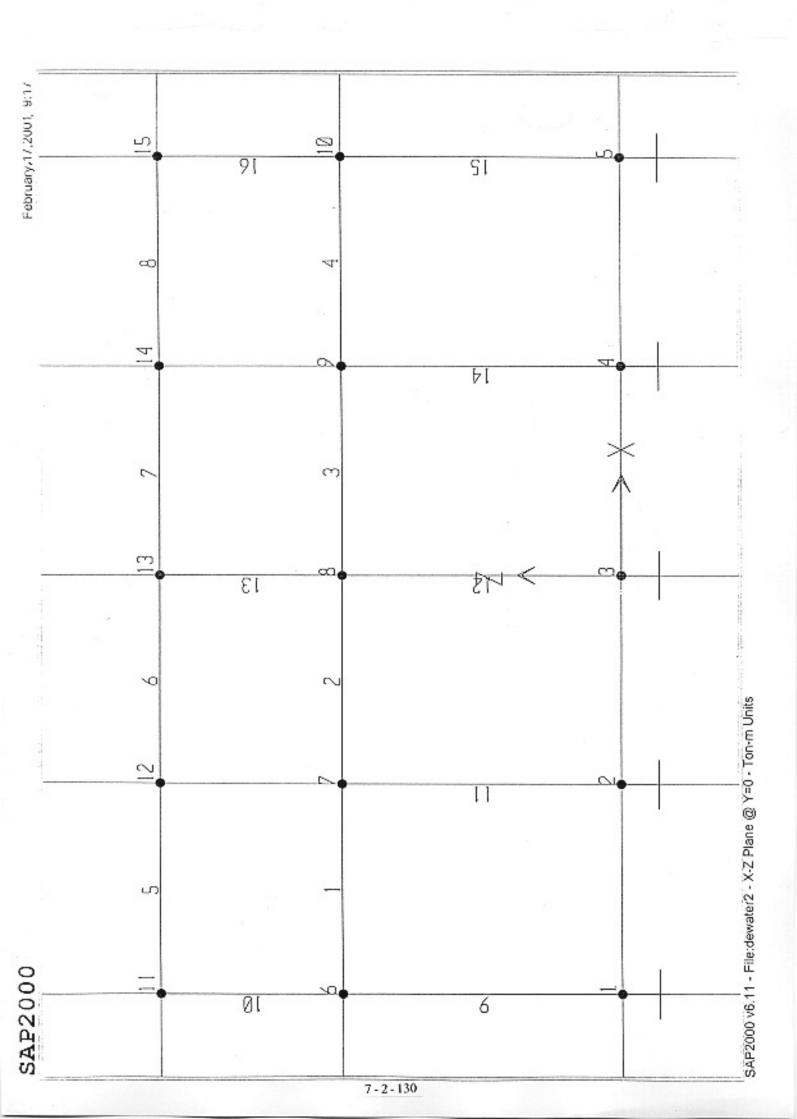
WASTE WATER TREATMENT PLANT

ITEM

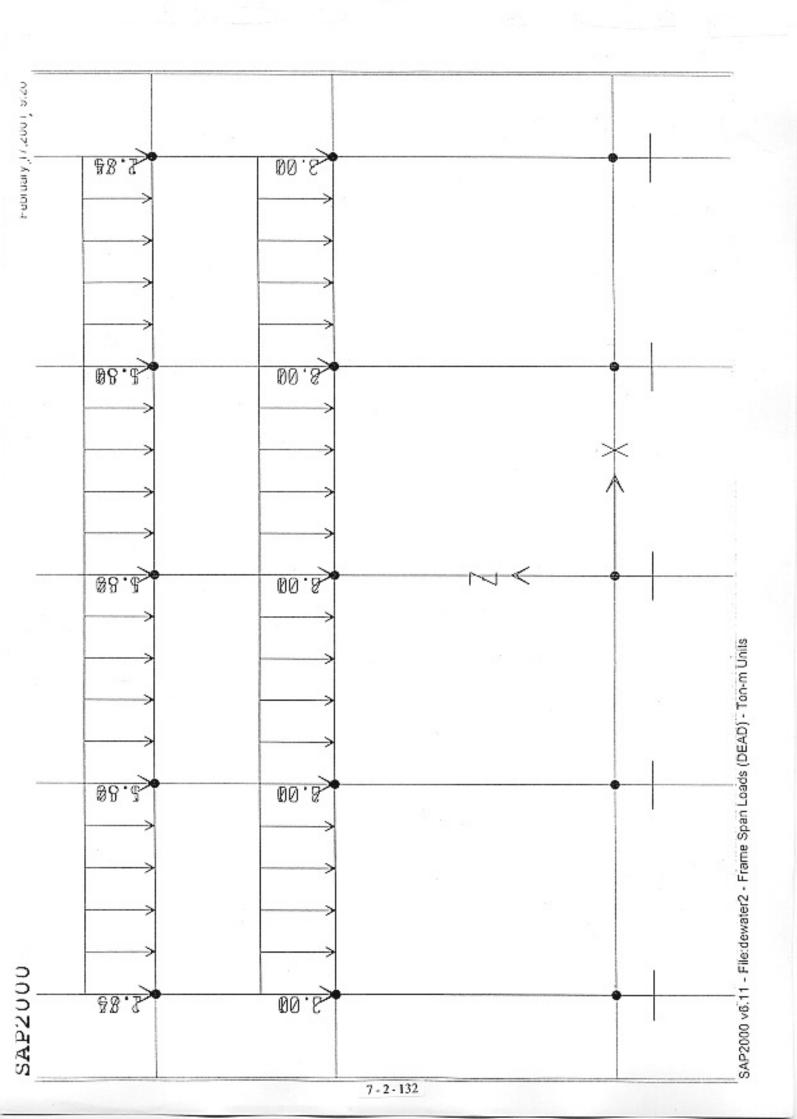
DEWATER BUILDING

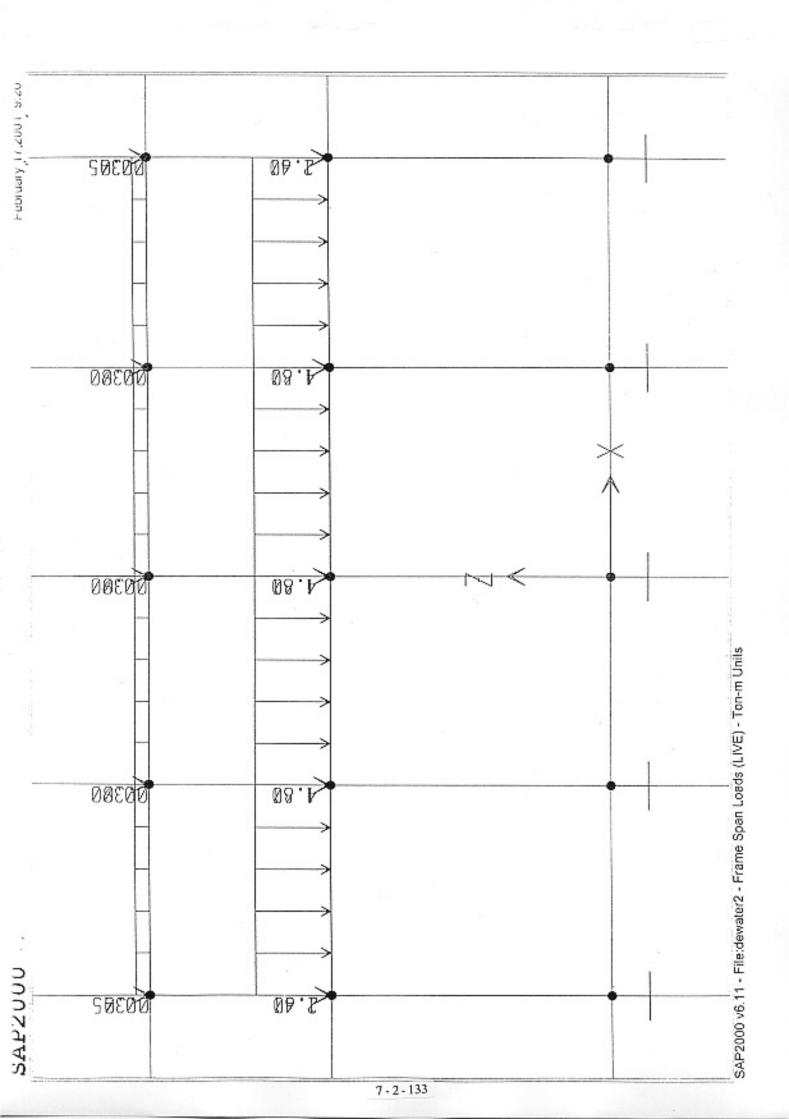
GRID LINE 6'~1

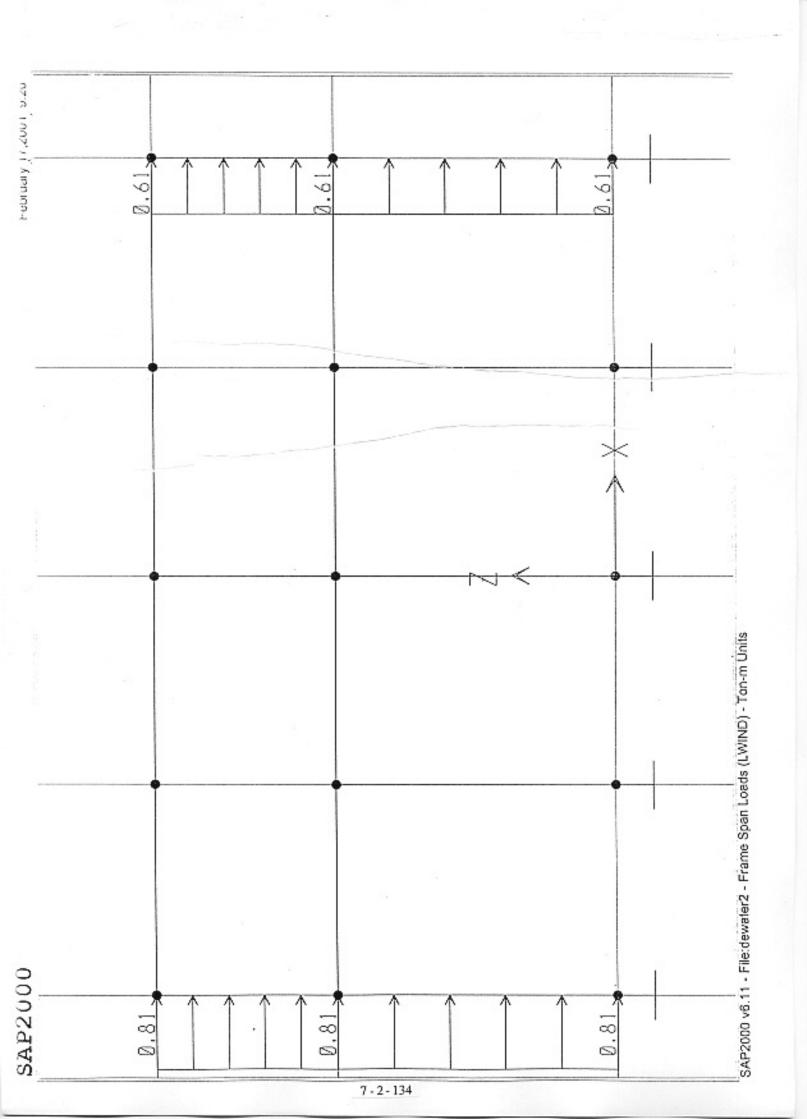
RESULT SHEETS

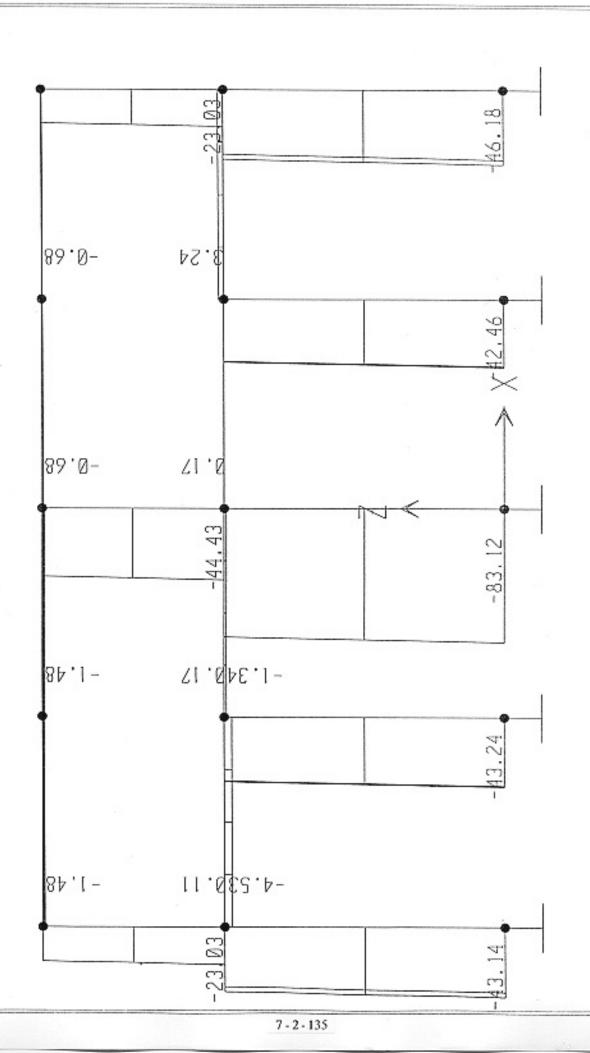


	Ø5XØ8	·1	C30x20	
			03/0003	
97776		B25X65		
			C30X20	
0 7 1 1 0		B25X65		*
	ØSXØE	20	oskod>~	-
07170	NHT - CN	B25X65		8.
			C30X20	
077.0	AH LEA	B25X65		
	ØSXØ8	20	C30X20	

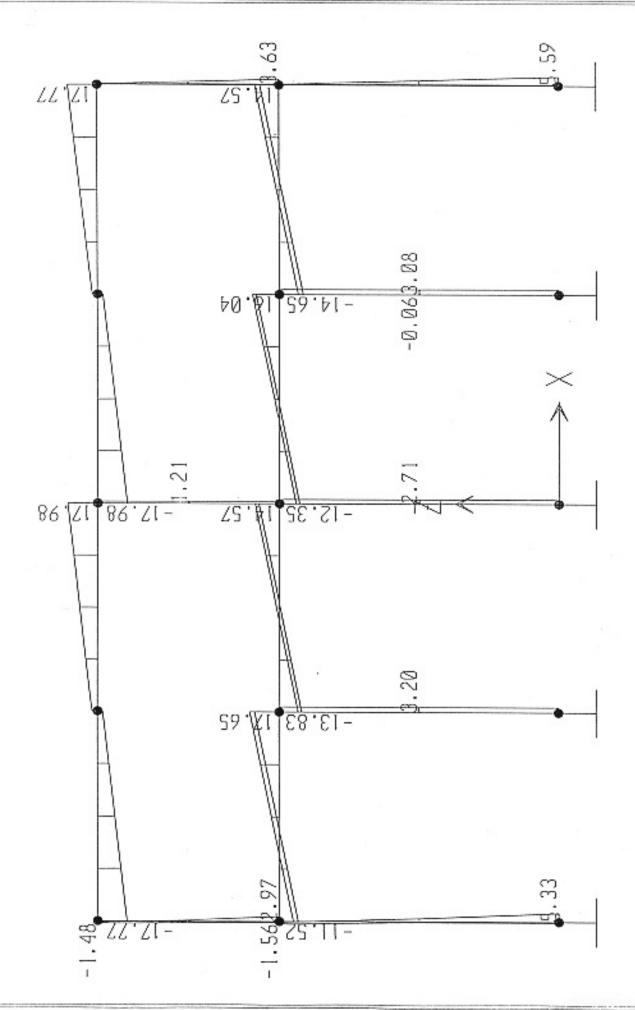




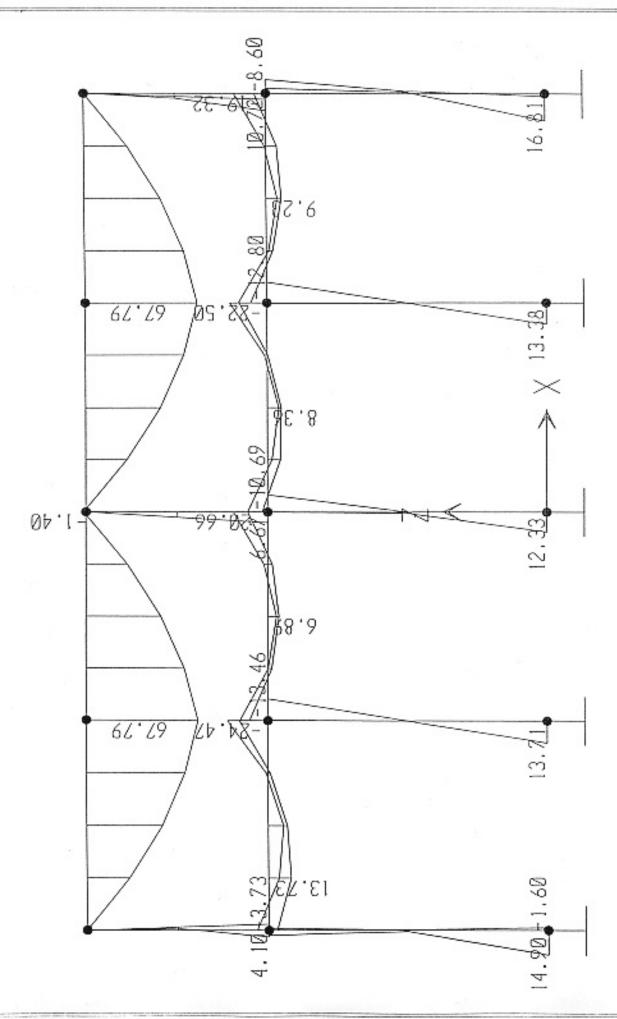




SAP2000 v6.11 - File:dewater2 - Axial Force Diagram (COMB3) - Ton-m Units



SAP2000 v6.11 - File:dewater2 - Shear Force 2-2 Diagram (COMB3) - Ton-m Units



SAP2000 v6.11 - File:dewater2 - Moment 3-3 Diagram (COMB3) - Ton-m Units

SAPSTEEL V 1.2 - COPYRIGHT02000 BY CIDBOO WRITTEN BY NGUYEN TRUONG THANH

REINFORCEMENT RESULT FOR FILE : D:\Watertreatment\cal\KETQUA\dewater2.txt FORCE UNIT : Ton LENGTH UNIT : m Eb = 240000.00 Rb = 100.00 Rk -8.00 Ra -2000.00 ID SEC FA-2 MUY-2 STIRR-2 FA-3 MUY-3 STIRR-3 0.00 0.95 0.05 Þ6a150/3 0.60 -11.42P6a230/2 1 0.00 0.95 0.05 P6a150/3 4.15 0.22 ▶6a230/2 0.81 0.95 0.05 P6a15D/3 -3.38 0.18 №6a230/2 0.81 0.95 0.05 P6a150/3 3.59 0.19 b6a230/2 1.63 0.95 0.05 P6a150/3 -2.350.12 b6a230/2 1.63 0.95 0.05 Þ6a150/3 8.08 0.43 Þ6a230/2 0.07 2.44 0.95 0.05 >6a150/3 -1.32 P6a230/2 2.44 0.95 0.05 ≥6a150/3 10.42 0.55 P6a230/2 3.25 0.95 0.05 Þ6a150/3 -0.950.05 D6a230/2 3.25 0.95 0.05 Þ6a150/3 10.36 0.55 p6a230/2 0.00 0.95 0.05 №6a150/3 -0.950.05 P6a230/2 0.00 0.95 0.05 ▶6a150/3 10.36 0.55 D6a230/2 0.31 0.95 0.05 Þ6a150/3 -0.95 0.05 Þ6a230/2 2 0.81 0.95 0.05 D6a150/3 6.95 0.37 Þ6a230/2 2 1.63 0.95 0.05 16a150/3 -1.73 0.09 ≱6a230/2 1.63 0.95 0.05 ▶6a150/3 3.73 0.20 P6a230/2 2 2.44 0.95 0.05 Þ6a15D/3 -7.860.42 b6a230/2 2 2.44 0.95 0.05 P6a150/3 2.75 0.15 b6a230/2 2 3.25 0.95 0.05 P6a150/3 -19.651.04 ▶6a230/2 2 3.25 0.95 0.05 P6a150/3 3.80 0.20 P6a230/2 3 0.00 0.95 0.05 №6a150/3 -17.250.91 P6a230/2 3 0.00 0.95 0.05 ≥6a150/3 3,21 0.17 P6a230/2 0.01 0.95 0.05 ▶6a150/3 -7.40 0.39 D6a230/2 0.81 0.95 0.05 ≥6a150/3 2.43 0.13 D6a230/2 1.63 0.95 0.05 №6a150/3 -1.630.09 D6a230/2 3 1.63 0.95 0.05 D6a150/3 2.75 0.15 Þ6a230/2 3 2.44 0.95 0.05 ₽6a150/3 -0.95 0.05 P6a230/2 3 2.44 0.95 0.05 D6a150/3 5.94 0.31 ⊅6a230/2 3 3.25 0.95 0.05 b6a150/3 -0.95 0.05 P6a230/2 3.25 0.95 0.05 b6a150/3 6.88 0.36 P6a230/2 0.95 4 0.00 0.05 P6a150/3 -0.95 0.05 №6a230/2 0.00 0.95 0.05 P6a150/3 6.88 0.36 ₱6a230/2 4 0.81 0.95 0.05 I-6a150/3 -0.95 0.05 ▶6a230/2 0.81 0.95 0.05 Þ6a150/3 5.60 0.30 ₱6a230/2 1.63 0.95 0.05 b6a150/3 -1.38 0.07 ₱6a230/2 4 1.63 0.95 0.05 ≥6a150/3 3.21 0.17 D6a230/2 2.44 0.95 0.05 ≥6a150/3 -6.100.32 P6a230/2 2.44 0.95 0.05 ≥6a150/3 ₱6a230/2 2.14 0.11 3.25 0.95 0.05 ≥6a150/3 -15.700.83 P6a230/2 3.25 0.95 0.05 ≱6a150/3 2.90 0.15 D6a230/2 0.00 0.95 0.05 ₽6a150/3 -16.780.89 b6a230/2 0.00 5 0.95 0.05 ▶6a150/3 4.48 -0.24P6a230/2 5 0.81 0.95 0.05 Þ6a150/3 -6.77 0.36 P6a230/2 0.81 0.95 0.05 ₱6a150/3 3.09 0.16 P6a230/2 1.63 0.95 0.05 P6a150/3 -1.710.09 b6a230/2 1.63 0.95 0.05 ₽6a150/3 3.77 0.20 ≯6a230/2 5 2.44 0.95 0.05 D6a150/3 -0.950.05 ≱6a230/2 5 2.44 0.95 0.05 D6a150/3 5.92 0.31 ≱6a230/2 5 3.25 0.95 0.05 ▶6a150/3 -0.970.05 №6a230/2 5 3.25 0.95 0.05 P6a150/3 6.99 0.37 Þ6a230/2 0.00 0.95 0.05 D6a150/3 -0.970.05 ▶6a230/2 6 0.00 0.95 0.05 56a150/3 6.99 0.37 Þ6a230/2 6 0.81 0.950.05 b6a150/3 -2.34 0.12 06a230/2 6 0.81 0.950.05 Þ6a150/3 7.07 0.37 D6a230/2 6 1.63 0.95 0.05 Þ6a150/3 -3.900.21 b6a230/2 6 1.63 0.95 0.05 P6a150/3 4.84 0.26▶6a230/2 6 2,44 0.95 0.05 P6a150/3 -11.790.62 ₱6a230/2 2.44 0.95 0.05 >6a150/3 5.11 0.27 №6a230/2 6 3.25 0.950.05 ≱6a150/3 -23.35 1.24 b6a230/2 6 3.25 0.95 0.05 \$6a150/3 6.54 0.35 b6a230/2 0.00 0.95 0.05 ▶6a150/3 -25.351.34 ₱6a220/2

₽6a150/3

9.29

0.49

▶6a230/2

0.00

0.95

0.05

7	0.81	0.95	0.05	Þ6a150/3	-12.24	0 65	P.C-000 (0
7	0.81	0.95			-12.24	0.65	Þ6a230/2
ź			0.05	Þ6a150/3	6.76	0.36	Þ6a230/2
	1.63	0.95	0.05	▶6a150/3	-4.29	0.23	P6a230/2
7	1.63	0.95	0.05	Þ6a150/3	6.49	0.34	P6a230/2
7	2.44	0.95	0.05	P6a150/3	-1.92	0.10	Þ6a230/2
7	2.44	0.95	0.05	Þ6a150/3	8.35	0.44	P6a230/2
7	3.25	0.95	0.05				
7	3.25	0.95		Þ6a150/3	-0.95	0.05	P6a230/2
			0.05	≯6a150/3	7.85	0.42	№6a230/2
8	0.00	0.95	0.05	≱6a150/3	-0.95	0.05	⊅6a230/2
8	0.00	0.95	0.05	≥6a150/3	7.85	0.42	≱6a230/2
8	0.81	0.95	0.05	\$6a150/3	-2.77	0.15	≱6a230/2
8	0.81	0.95	0.05	b6a150/3	9.31	0.49	
8	1.63	0.95					≱6a230/2
3			0.05	P6a150/3	-5.18	0.27	№6a230/2
	1.63	0.95	0.05	▶6a150/3	8.92	0.47	P6a230/2
8	2.44	0.95	0.05	№6a150/3	-9.06	0.48	D6a230/2
8	2.44	0.95	0.05	1-6a150/3	7.52	0.40	P6a230/2
8	3.25	0.95	0.05	P6a150/3	-20.06	1.06	D6a230/2
8	3.25	0.95	0.05	16a150/3	10.04	0.53	b6a230/2
9	0.00	1.08	0.05	Þ6a150/3			
9					-3.57	0.17	₽6a270/2
	0.00	1.08	0.05	P6a150/3	1.08	0.05	Þ6a270/2
9	1.63	1.00	0.05	P6a150/3	-1.00	0.05	P6a270/2
9	1.63	1.08	0.05	16a150/3	2.79	0.13	D6a270/2
9	3.25	1.08	0.05	▶6a150/3	-1.08	0.05	Þ6a270/2
9	3.25	1.08	0.05	Þ6a150/3	4.34	0.20	Þ6a270/2
9	4.88	1.08	0.05	Þ6a150/3			
9					-1.08	0.05	16a270/2
	4.88	1.08	0.05	P6a150/3	1.86	0.09	1/6a270/2
9	6.50	1.08	0.05	▶6a150/3	-6.38	0.30	≱6a270/2
9	6.50	1.08	0.05	▶6a150/3	1.08	0.05	P6a270/2
10	0.00	1.08	0.05	P6a150/3	-6.92	0.32	⊅6a270/2
10	0.00	1.08	0.05	1-6a150/3			
10					1.08	0.05	b6a270/2
	1.63	1.08	0.05	▶6a150/3	-1.08	0.05	≱6a270/2
10	1.63	1.08	0.05	b6a150/3	1.47	0.07	▶6a270/2
10	3.25	1.08	0.05	Þ6a150/3	-1.08	0.05	₱6a270/2
10	3.25	1.08	0.05	Þ6a150/3	3,30	0.15	P6a270/2
10	4.88	1.00	0.05	Þ6a150/3	-1.00	0.05	Þ6a270/2
10	4.88	1.00	0.05	P6a150/3	1.63		
10	6.50					0.08	16a270/2
		1.09	0.05	D6a150/3	-6.06	0.28	№6a270/2
10	6.50	1.08	0.05	№6a150/3	1.08	0.05	▶6a270/2
11	0.00	1.08	0.05	b6a150/3	-6.12	0.28	Þ6a270/2
11	0.00	1.08	0.05	Þ6a150/3	1.08	0.05	Þ6a270/2
11	1.63	1.08	0.05	≯6a150/3	-1.08	0.05	P6a270/2
11	1.63	1.03	0.05	≥6a150/3	1.48	0.07	
11	3.25	1.08					P6a270/2
			0.05	P6a150/3	-1.08	0.05	16a270/2
11	3.25	1.08	0.05	P6a150/3	3.09	0.14	₽6a270/2
11	4.88	1.08	0.05	₽6a150/3	-1.08	0.05	26a270/2
11	4.08	1.08	0.05	b6a150/3	1.26	0.06	≱6a270/2
11	6.50	1.08	0.05	Þ6a150/3	-8.42	0.39	⊅6a270/2
11	6.50	1.08	0.05	Þ6a150/3	1.66	0.08	
12	0.00	1.08	0.05	Þ6a150/3			16a270/2
12	0.00				-8.90	0.41	Þ6a270/2
		1.08	0.05	P6a150/3	1.84	0.09	№6a270/2
12	1.63	1.00	0.05	P6a150/3	-1.00	0.05	▶6a270/2
12	1.63	1.00	0.05	P6a150/3	1.36	0.06	№6a270/2
12	3.25	1.09	0.05	P6a150/3	-1.08	0.05	b6a270/2
12	3.25	1.08	0.05	Þ6a150/3	3.47	0.16	Þ6a270/2
12	4.38	1.08	0.05	P6a150/3	-1.00	0.05	D6a270/2
12	4.88	1.08	0.05				
12				P6a150/3	2.81	0.13	P6a270/2
	6.50	1.08	0.05	P6a150/3	-5.78	0.27	P6a270/2
12	6.50	1.08	0.05	1·6a150/3	1.52	0.07	b6a270/2
13	0.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
13	0.00	2.70	0.40	* CHECKOK	9.12	1.35	*CHECKOK
13	2.25	0.00	0.00	*STRETCH	0.00	0.00	
13	2.25	2.70					*STRETCH
			0.40	*CHECKOK	2.70	0.40	*CHECKOK
13	4.50	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
13	4.50	2.70	0.40	*CHECKOK	2.70	0.40	* CHECKOK
14	0.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
14	0.00	2.70	0.40	*CHECKOK	2.70	0.40	*CHECKOK
14	2.00	0.00	0.00	*STRETCH	0.00	0.00	
14	2.00	2.70					*STRETCH
			0.40	*CHECKOK	2.70	0.40	*CHECKOK
14	4.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
14	4.00	2.70	0.40	*CHECKOK	2.70	0.40	*CHECKOK
15	0.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
15	0.00	2.70	0.40	*CHECKOK	9.42	1.25	*CHECKOK
15	2.75	0.00	0.00	*STRETCH	0.00	0.00	
15	2.75	2.70	0.40	*CHECKOK			*STRETCH
15					2.70	0.40	*CHECKOK
1.0	5.50	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH

15	5.50	2.70	0.40	*CHECKOK	4 75	0.70	
16	0.00	0.00	0.00	*STRETCH	0.00	0.70	*CHECKOK
16	0.00	2.70	0.40	*CHECKOK	2.70	0.00	*STRETCH
16	2.25	0.00	. 0.00	* STRETCH	0.00	0.00	*CHECKOK *STRETCH
16	2.25	2.70	0.40	*CHECKOK	2.70	0.40	*CHECKOK
16	4.50	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
16	4.50	2.70	0.40	*CHECKOK	2.70	0.40	*CHECKOK
17	0.00	0.00	0.00	*STRETCH	0.00	0.00	* STRETCH
17	0.00	2.70	0.40	* CHECKOK	2.70	0.40	*CHECKOK
17	2.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
17	4.00	2.70	0.40	*CHECKOK	2.70	0.40	*CHECKOK
17	4.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
10	0.00	2.70 0.00	0.40	, CHECKOK	2.70	0.40	CHECKOK
19	0.00	2.70	0.40	STRETCH	0.00	0.00	STRETCH
18	2.75	0.00	0.00	'CHECKOK 'STRETCH	2.70	0.40	*CHECKOK
18	2.75	2.70	0.40	*CHECKOK	0.00 2.70	0.00	*STRETCH
18	5.50	0.00	0.00	STRETCH	0.00	0.40	*CHECKOK
18	5.50	2.70	0.40	*CHECKOK	2.70	0.40	*STRETCH *CHECKOK
19	0.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
19	0.00	2.70	0.40	*CHECKOK	2.70	0.40	*CHECKOK
19	2.25	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
19	2,25	2.70	0.40	*CHECKOK	2.70	0.40	*CHECKOK
19	4.50	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
19	4.50	2.70	0.40	* CHECKOK	2.70	0.40	*CHECKOK
20	0.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
20	0.00	2.70	0.40	 CHECKOK 	2.70	0.40	*CHECKOK
20	2.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
20 20	2.00	2.70	0.40	*CHECKOK	2.70	0.40	* CHECKOK
20	4.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
21	0.00	0.00	0.40	*CHECKOK	2.70	0.40	*CHECKOK
21	0.00	2.70	0.00	*STRETCH	0.00	0.00	*STRETCH
21	2.75	0.00	0.00	*CHECKOK *STRETCH	2.70	0.40	*CHECKOX
21	2.75	2.70	0.40	*CHECKOK	0.00 2.70	0.00	*STRETCH
21	5.50	0.00	0.00	STRETCH	0.00	0.40	*CHECKOK
21	5.50	2.70	0.40	*CHECKOK	2.70	0.40	*STRETCH *CHECKOK
22	0.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
22	0.00	6.48	0.40	*CHECKOK	9.25	0.57	*CHECKOK
22	2.25	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
22	2.25	6.48	0.40	*CHECKOK	6.48	0.40	* CHECKOK
22	4.50	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
22	0.00	6.48	0.40	*CHECKOK	6.48	0.40	* CHECKOK
23	0.00	0.00	0.00	STRETCH	0.00	0.00	*STRETCH
23	2.00	0.00	0.40	* CHECKOK	6.48	0.40	*CHECKOK
23	2.00	6.48	0.40	*STRETCH *CHECKOK	0.00	0.00	*STRETCH
23	4.00	0.00	0.00	*STRETCH	0.00	0.40	*CHECKOK
23	4.00	6.48	0.40	*CHECKOK	14.31	0.00	*STRETCH
24	0.00	0.00	0.00	* STRETCH	0.00	0.00	*CHECKOK *STRETCH
24	0.00	6.48	0.40	*CHECKOK	6.48	0.40	* CHECKOK
24	2.75	0.00	0.00	*STRETCH	0.00	0.00	STRETCH
24	2.75	6.48	0.40	CHECKOK	6.48	0.40	*CHECKOK
24	5.50	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
24	5.50	6.49	0.40	* CHECKOK	6.48	0.40	*CHECKOK
25 25	0.00	0.00	0.00	*STRETCH	0.00	0.00	* STRETCH
25	2.25	6.48	0.40	*CHECKOK	51.79	3.20	" *OVER**
25	2.25	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
25	4.50	0.00	0.40	*CHECKOK	6.48	0.40	 CHECKOK
25	4.50	6.48	D.00 D.40	*STRETCH	0.00	0.00	*STRETCH
26	0.00	0.00	0.00	*CHECKOK *STRETCH	6.48	0.40	CHECKOK
26	0.00	6.48	0.40	*CHECKOK	0.00 6.48	0.00	STRETCH
26	2.00	0.00	0.00	*STRETCH	0.00	0.40	*CHECKOK
26	2.00	6.48	0.40	* CHECKOK	6.48	0.00	*STRETCH
26	4.00	0.00	0.00	*STRETCH	0.00	0.00	*CHECKOK *STRETCH
26	4.00	6.48	0.40	*CHECKOK	10.32	0.64	*CHECKOK
27	0.00	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
27	0.00	6.48	0.40	*CHECKOK	7.80	0.48	*CHECKOK
27	2.75	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
27	2.75	6.48	0.40	*CHECKOX	6.48	0.40	*CHECKOK
27 27	5.50	0.00	0.00	*STRETCH	0.00	0.00	*STRETCH
21	5.50	6.48	0.40	* CHECKOK	6.68	0.41	* CHECKOK

7.2.7
First Fermentation Tank

PROJECT ITEM

WASTEWATER TREATMENT PLANT

FIRST FERMENTATION TANK : 6

SUB-STORAGE VESSEL

STEEL STRUCTURE CALCULATION SHEET

JOB NO :	DATE: 13/01/2001		
DESIGNED BY :	CHECKED BY :		
REV NO :	REV. DATE :		

ITEM	DESCRIPTION				PAGE		
1.	Building(s) Description				D2		
2.	Design Criteria & Material Specifications				D3		
3.	Design Loads				D4		
4.	Main Frame Analysis & Design				D5		
5.	Design Sketches				S1 - S3 S1 - S3		
6.	Applicable Section Properties and Load Tables:						
	 Rib Sheeting Purlins & Girts Eave Strut (1 : 10) Cee Section Properties Base & Cap Channel Hot-Rolled Section Properties 		Pag	ges	Page 21 120 - 121 Page 123 Page 124 Page 125 Page 126		

- 7. Computer Shell Output
- 8. Computer Frame Output
- 9. CONNECTION DETAILS

DATE: 13/01/2001 JOB NO : Q - 25431 CHECKED BY: DESIGNED BY : REV. DATE: REV NO: DESCRIPTION: Building's Description

Building : FIRST FERMENTATION TANK

Type

: BC - 2

Width

: 45.80 Meters C/C

Length

; 88.80 Meters C/C

Clear Height : 3.50 Meters

No. of Main Ends : Two

Roof Slope : 1 : 10

Roof Covering : Rib Sheeting 26 GA

Wall Covering : N/A as fully open for B/W by others

Building : SUB. STORAGE VESSEL

Type

: R.F.

Width

: 20.00 Meters C/C

Length

: 15.00 Meters C/C

Clear Height : 3.00 Meters

No. of Main Ends : Two

Roof Slope : 1:10

Roof Covering : Rib Sheeting 26 GA

Wall Covering : N/A as fully open for B/W by others

JOB NO :	DATE: 13/01/2001
DESIGNED BY :	CHECKED BY :
REV NO :	REV. DATE :

Design Criteria :

a)	American Institute of Steel Construction Manual	(AISC)
b}	American Iron & Steel Institute Specifications	(AISI)
c)	Metal Building Manufacturers Association Manual	(MBMA)
d)	American Welding Society Specifications	(AWS)

Material Specifications:

(All materials conform to the following specifications or equivalent)

a)	Built-Up Sections	- ASTM A 570 Gr 50	(Fy = 50 Ksi)
b)	Hot-Rolled Sections	- ASTM A 572 Gr 50	(Fy = 50 Ksi)
c)	Rod-Bracing	- ASTM A 36	(Fy = 36 Ksi)
d)	Tubes	- ASTM A 500 Gr 'C'	(Fy = 50 Ksi)
e)	Cold-Formed Sections	- ASTM A 570 Gr 'D'	(Fy = 50 Ksi)
f)	Roof & Wall Sheetings	- ASTM A 792 50 'B'	(Fy = 50 Ksi)
g)	High Strength Bolts	- ASTM A 325	(Fy = 92 Ksi)
h)	Anchor Bolts	- ASTM A 36	(Fy = 36 Ksi)

Design Sheet

Page D4

OB NO :	DATE: 13/01/2001
ESIGNED BY :	CHECKED BY :
REV NO :	REV. DATE :

Frame:

: 0.10 KN/M² + Self weight of structure for frame Dead Load

: 0.57 KN/M² Live Load

Wind Speed : 31.0 M/Sec

JOB NO :	DATE: 13/01/2001
DESIGNED BY :	CHECKED BY :
REV NO :	REV. DATE :
DESCRIPTION : Main Frame A	nalysis & Design

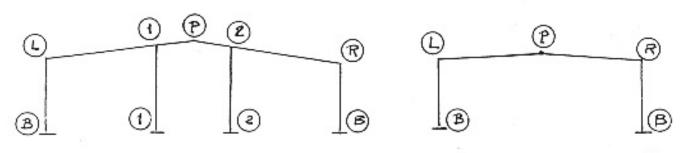
Design Assumptions (Main Frame)

- a) Exterior columns are pinned at base and rigid at haunch connection.
- Rafter is continuous throughout the length.
- c) Interior columns are pinned both ends, top & bottom.

Design:

The primary structure was designed by input into Kirby Building Systems' Computers. Design program is PACE II Structural Analysis & Design & Synercom, in accordance with AISC and MBMA specifications. The results of the run are attached.

For Frame Joint numbering system as listed on computer print-out



FIRST FERMENTATION TANK
BLOG 'A"

SUBSTORAGE VESSEL

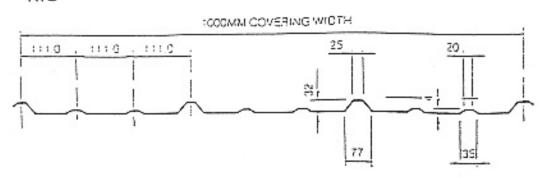
For Frame analysis, please refer to Computer output.

PROPERTIES AND ALLOWABLE LOADS

PAGE

DATE

RIB



MINIMUM SPECIFIED YIELD STRESS (Fy) = 34 5 KN/CM2 (50 K.S.II)

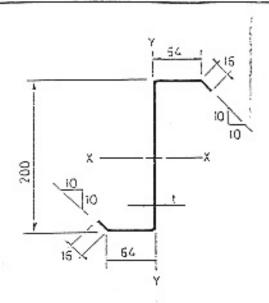
	P	ANEL PROP	ERTIES			
PANEL THICKNESS	GIATH	WEIGHT	TOP FLAT	IN COMP.	BOT, FLAT	IN COMP.
(NOMINAL) (mm)	mm	kg/m	lx cm²	-Sx cm3	Ix cm²	Sx cm ¹
0.50 (25 GA)	1146.71	4.767	5.205	1,982	4.850	2.170
0.64 (24 GA)	1146.71	5.942	9.642	3.873	4.850	3.530

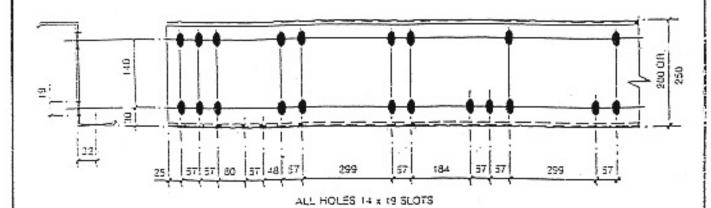
SECTION PROPERTIES ARE CALCULATED IN ACCORDANCE WITH THE 1977 EDITION OF THE AMERICAN IRON AND STEEL IN-STITUTE SPECIFICATIONS (ALISLI)

			ALLO	WABLE	UNIFO	DRM LC	AO KN	/m²			
PANEL	TYPE OF					CLEAR	R SPAN	(m)			
THICKNESS (NOMINAL)	SPAN	0.70	0.90	1.10	1.20	1.50	1.70	1.90	2.10	2.30	2.50
	TWO	7,44	4.50	3.01	2.15	1,52	1.26	1,01	0.83	0.69	0.58
0.50 (നന	SPANS	31.66	14.90	8,16	4,94	3.22	2.21	1.58	1.17	8.39	0.70
	THREE OR	9.31	5.63	3.77	2.70	2.03	1.58	1.25	1.03	0.86	0.73
	MORE SPANS	24.79	11.66	5.39	3.87	2.52	1.73	1.24	0.92	0.70	0.54
	TWO	11.92	9.12	4.82	3.46	2.59	2.02	1.52	1.33	1.10	0.94
0.64 (mm)	5PANS	45.77	22.14	12.13	7.35	4.76	3.28	2.35	1.74	1.33	1.03
	THREE OR	14,90	11.40	5.03	4.32	3.24	2.53	2.02	63.1	1.38	1.17
	MORE SPANS	35.82	17.33	9.49	5.75	3.74	2.57	:.34	1.36	1.04	0.81

TOP VALUES ARE BASED ON BENDING BOTTOM VALUES ARE BASED ON DEFLECTION OF 11180

DATE





STANDARD ZEE PUNCH - LEFT ENG.

MINIMUM SPECIFIED YIELD STRESS (Fy) = 34.5 kN/cm^2 (50 KSI)

TABLE OF PROPERTIES OF Z SECTIONS

MATERIAL	t mm	WEIGHT kg/m	AREA cm²	tx cm ⁴	Sx cm ³	cm	ly cm²	Sy	ry cm	lxv cm*	c min.
200 Z	1.50	4.07	5.18	309.4	30.94	7.73	46,48	5.23	3,00	38.21	1,95
200 Z	1.75	4,74	5.03	359.0	35.90	7.71	53.75	7.22	2.98	102.17	1,94
200 3	2.20	5.41	5.38	407,9	40.79	7,70	50.38	3,19	2.98	115,95	1.93
200 Z	2.50	5.72	8.55	504.1	50.41	7.67	74.75	10.09	2.96	142.53	1.92
iso I	Z.50	7.7:	9,31	355.4	58.57	2.35	74.75	10.09	2.76	179.57	1.90

ALLOWABLE LOAD TABLES

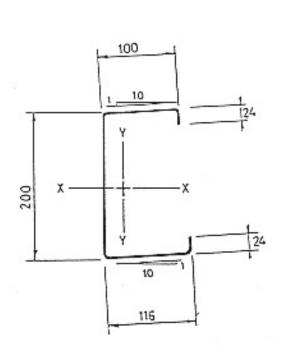
ALLOWABLE TOTAL LOAD (D.L + LL) IN KILONEWTON/METER

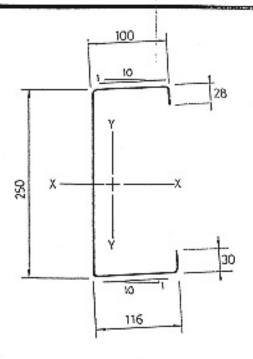
			200 Z 1.5		1 2	00 Z 1.75		1	200 Z Z.C			200 Z Z.S	
SPAN	EAY TYPE	SPAN	107mm CAP	706mm LAP	SIMPLS:	LAP	706mm LAP	SIMPLE SPAN	IO7mm UAP	TOSmm LAP	SIMPLE SPAN	607mm LAP	LAP
5	ENO	2.175	2.240	2,809	2.502	Z.788	2,318	2.957	3.354	4.756	1.579	4.310	5.744
"	ROIESTAL		2.775	4.110		2,997	≤.719		3,586	7.274		4.551	9.598
	ENO	1.800	1.818	2.355	2.150	2,345	3.146	2452	2.507	3.860	2.958	7.449	5,046
5.5	ROIFSTAI	1.500	1.562	2.345	-133	2.502	4.533		2.972	5.645		3.740	7.513
. 1	END	1.512	1.553	2.001	1,807	1,998 1	2.529	Z.050	2.375	1.158	2,485	2,588	4,107
6	NORSTAL	1.112	1.576	2.763	1.201	2.118 1	3,571		2.501	4.490		1.125	5.846
	ENO		1.357	1,715		1.721	2.275	1,755	2/134	2,573	2.116	2544	3,425
3.5	пунати	1.2053	1,445	2.111	1.539	1,514	3.020	1.,,	2.132	1.645	2110	2.652	4.875
	ENO		1,158	1,484		1.495	1,905	: 514	1.751	2.271	1,825	2.192	2.568
7	INTERICA	1,111	1.259	1.957	1.127	1.571	2.423		1.638	1.015	1,020	2,277	3.524
	ENO	1	1048	1.295	1	1.112	1,547	1.319	1.539	1.952	1.590	r.908	2,448
7,5	путения	0.968	1,106	1.674	1.1\$E	1.372	2,125		1.501	2.535		1.975	1.188
	END	1	0.931	1.125		1,150 1	1.437	:,159	1.355	1,595	1.398	1.575	2,114
3	INTERICR	0.851	0.978	1,445	1.016	1,228	1.529		1 405	2,158	1_136	1,731	2.694
	END		CRIZ	1.007		1.032	1,254	1.027	1.203	1,485	1 224	1.462	1 544
3.5	ROIGSTAL	0.753	0.871	1.251	1900	1.072	1.552	1.122	1.245	1.856	1.235	1.529	2,338
	ENO		0.747	0.597	1 1	0.924	r. 120	0.916	1,074	1111	1.105	t.321	1.522
9.0	INTERICA	0.672	0.780	1,108	a.eas	0.557	1,352	33.0	1,109	1.517	1.103	1.350	2.000

250 Z 2.5

		ALL	OWABLE T	OTAL LOA	40 (D.L. +	LL) IN KIL	ONEWTO	N/METER	
	SPAN m	7G6mm	1412mm	SFAN m	706mm	1412mm	SPAN m	706mm	1412mm
END BAY		2.178 1.938 1.735	2.859 2.503 2.209	10.5 11.0 11.5	1,562 1,414 1,285	1.963 1.755 1.579	12.0 12.5 13.0	1.173 1.075 0.989	1.427 1.297 1.183
INI. BAY	9.0	2,587 2,350 2,089	4.864 4.090 3.485	10.5 11.0 11.5	1,861 1,669 1,504	3.004 2.615 2.295	12.0 12.5 13.0	1.363 1.241 1.134	2.033 1.812 1.625

EAVE STRUT - 1:10 SLOPE SECTION PROPERTIES





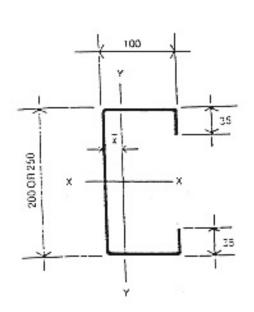
1:10 EAVE STRUT

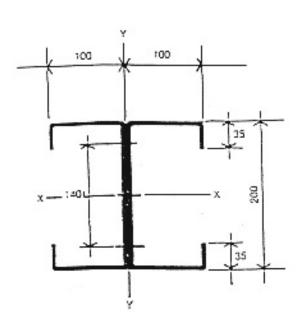
MINIMUM SPECIFIED YIELD STRESS (Fy) = 34-5 KN (Cm2 (50 K.S.I) SECTION IS COLD FORMED

TA	BLE OF	PROP	ERTIES	FOR	1 10	EAVE	STRUT	
MATERIAL			cm 4		cm si	ty cm(Sy ==	S.Cm.
200 x 1-8 mm	6-31	8-04	490-08	44.81	8.00	129-41	16-27	4-01
200 x 2-5mm2	8.65	11 - 02	715-48	55-47	8 · 10	175-37	27-43	3-99
250 x 3·5mm	13.68	17-44	1700	125-80	9-87	232 - 69	30-82	3.65

CEES SECTION PROPERTIES

DATE





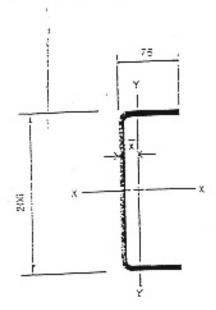
MINIMUM SPECIFIED YIELD STRESS (Fy) = $34.8~\rm KN/CM^{3}$ (50 K.S.I) SECTION IS COLO FORMED

TABLE OF PROPERTIES FOR C SECTION

MATERIAL	mm ,	WT:GHT	AREA cm²	!x cm*	5x cm²	em Lx	ly cm*	LIP IN TEN. Sy! cm ³	CDM. - Sye cm ³	ry cm	ž cm
200 x 100 C	: 50	5.33	5.79	1 2217 1	44.17	5.07	:03.00	16.66	28.74	3.90	3.58
	1.75	5.20	7.50	1 5:2.4	51,24	3.06	119.20	18.58	33.25	3.89	3.58
200 x :00 □					58.23	3.04	135.00	21.05	37.67	3.87	3.58
200 x 100 C	2.00	7.06	9.00	583.2	30.42		!				2 50
200 x 100 []	2.50	3.73	11.19	719.6	71.98	3.02	165.90	25.85	46.28	3.85	3.58
250 x :00 □1	3.50	13.52	:7.25	1667.7	132.62	9.80	242,40	35.85	74.90	3.75	3.24

TABLE OF PROPERTIES FOR JE SECTION

MATERIAL	t mm	WEIGHT kg/m	AREA cm²	tx cm4	5x	cm	cm ⁴	Sy cm [‡]	em
200 x 100 3E	· E0	1 '0.65	13.57	383.4	58.34	8.07	380.50	38.05	5.30
200 x 100 EE	1.75	1 2.40	15.79	:024.6	:C2.48	3.06	441.20	±4 12	5.29
300 × 100 3E1	2.00	1413	15.00	1164.6	118.45	3.04	501.30	50.13	5.28
130 v :00 ICI	1.50	1 58	:2.39	::39.2	143.92	3.02	619.10	61.91	5.26



MINIMUM SPECIFIED YIELD STRESS (Fy) = 34.5 KN/cm^2 (50 K.S.I) SECTION IS COLD FORMED

TABLE OF PROPERTIES OF CAP CHANNEL

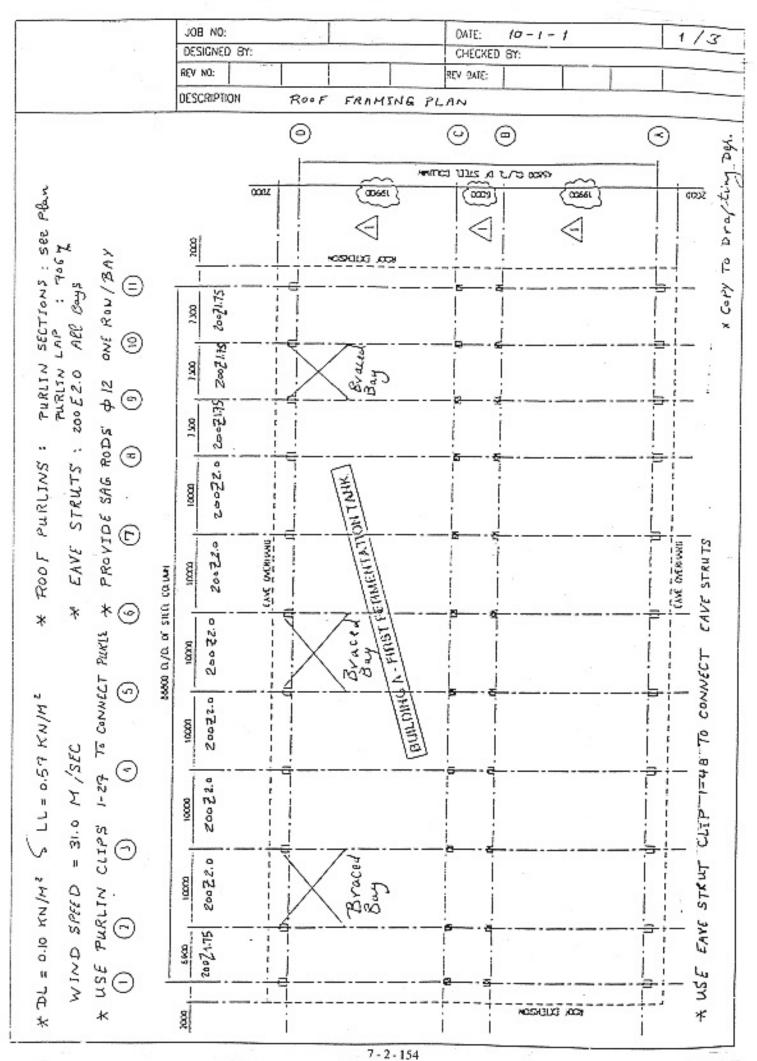
MATERIAL	n m	WEIGHT	AREA cm²	fx cm4	Sx cm²	cm.	ly cm4	LIP IN TEN. Syt	COM. Syc	ry cm	z cm
	:.50	4.12	5.24	333.7	1 22.40	7.99	23,81	4.68	15.95	2.25	1.70
208 : 75 C	-		3.10	397.6	37.63	7.97	33.44	5.55	19.57	2.24	1,77
205 ± 75 €	1.75	4,79		440.9	-2.3	7.99	35.02	ā.4ā	22.12	2.34	:.72
20a : 7a □	2,00	5.47	6,95	1		7.94	47.04	3.03	27.06	2.33	1.74
208 x 78 □	2.50	5.31	8.57	346.1	53.02	1.34	1 -1.04	4.44	4	1	-

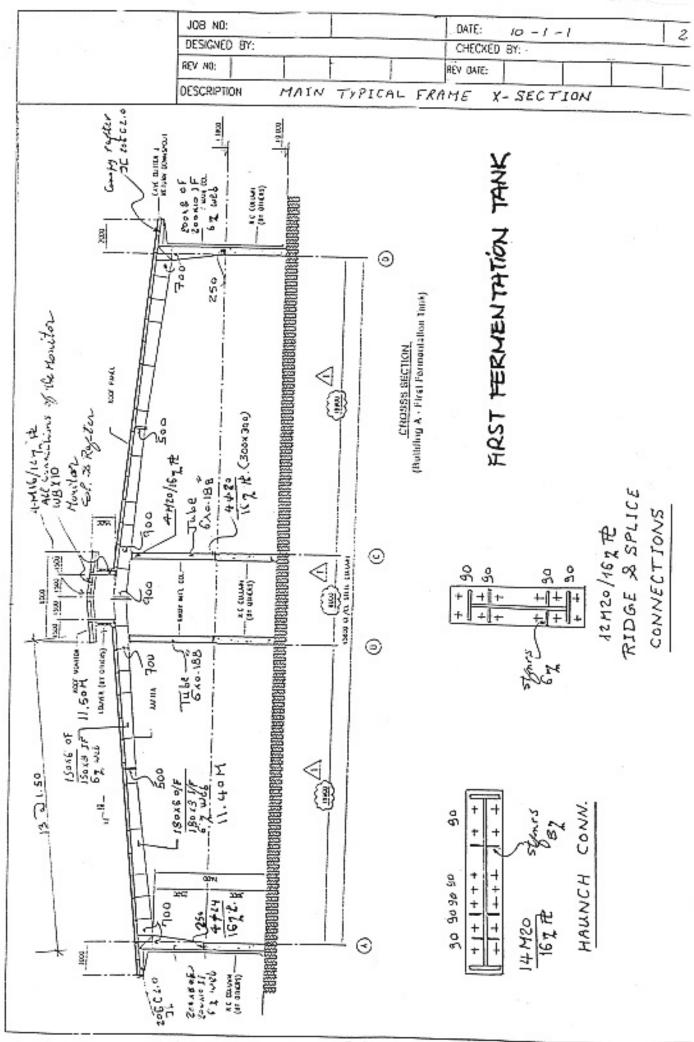
- AVAILABLE IN 1.5, 1.75, 2.0 & 2.5 mm THICKNSSS
- PAINTED ONE COAT SHOP PRIMER
- NO PUNCHING
- + MINIMUM LENGTH 1500
- MAXIMUM LENGTH 7500

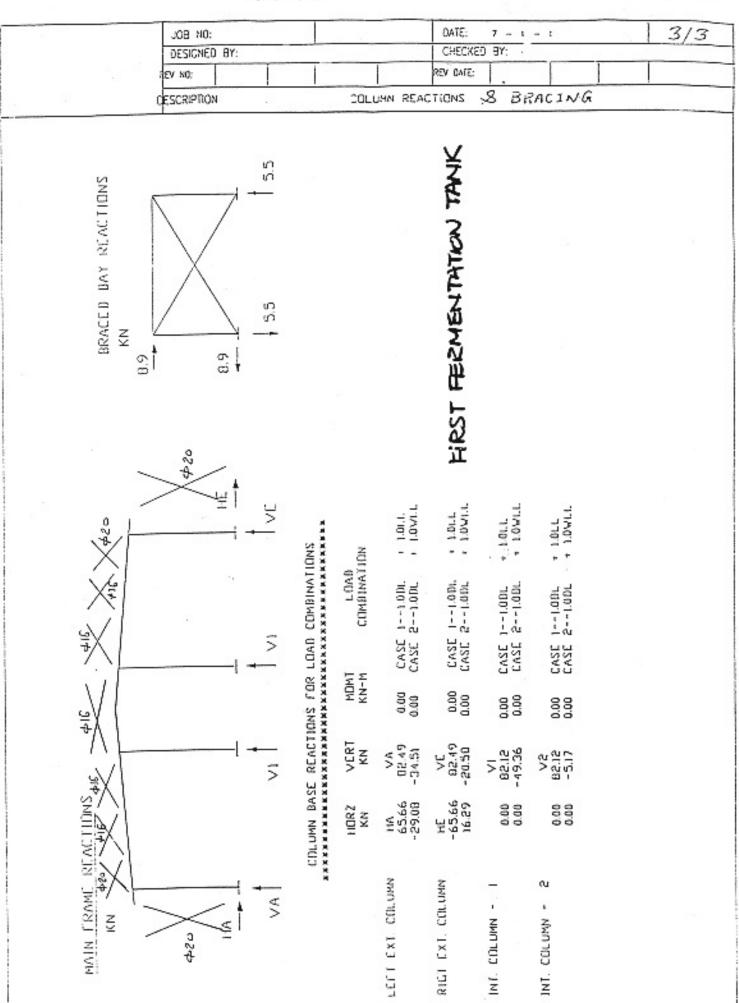
I.D. NO	OESCRIPTION	WEIGHT kg/m
06-0010	C 206 x 1.5	4.12
06-0011	C 206 x 1.75	4.79
06-0012	C 206 x 2.0	5.47
08-0013	C 206 x 2.5	5.31

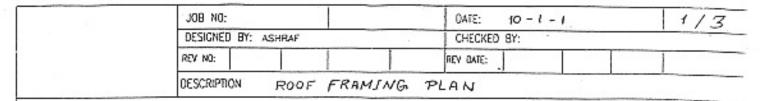
		PAGE 126									
х		x x t,	ď	-		d x		- t.,	×		
SIZE	1	tf	bf	tw	A	I-xx	S-xx	r-xx	I-yy	S-yy	F-YY
SIZE	in I	in	in	in	in-2	in-4	in-3	in	in-4	in-3	in
	i										
W8x10	7.890	0.205	3.940	0.170	2,960	30.300	7.810	3.220	2,090	1.060	0.84
W8x18	8.140	0.330	5.250	0.230	5.260	61,900	15.200	3.430	7.970	3.040	1.23
W8x24	7.930	0.400	6.495	0.245	7.080	82.800	20.900	3.420	18.300	5.530	1.61
W8x31	8.000	0.435	7.995	0.285	9.130	110.000	27.500	3.470	37,100	9.270	2.02
							1	4.500	2 200	1.190	0.75
W12x14	11,910	0.225	3.970	0.200	4.150	88.600	14,900	4.620	2.360 4.660	2.310	0.75
W12x22	12.310	0.425	4.030	0.260	6.480	156.000	25.400	4,910	4.000	2.310	0.04
				1							-
			2.200	1 0 770	3.380	32.600	8.140	3.110	1.320	0.781	0.62
[8x11.5]	8.000	0,390	2.260	0.220	4.490	57.400	13.500	3.870	2.280	1.160	0.71
10x15.3		0.436	2.600	0.240	6.090	129,000	21.500	4.610	3.880	1.730	0.79
12x20.7		0.501	3.400	0.400	9.960	315.000	42:000	5.620	8,130	3.110	0.90
(15x33.9)	15.000	0.000	3.400	0.400	3.300	370,230				1	1

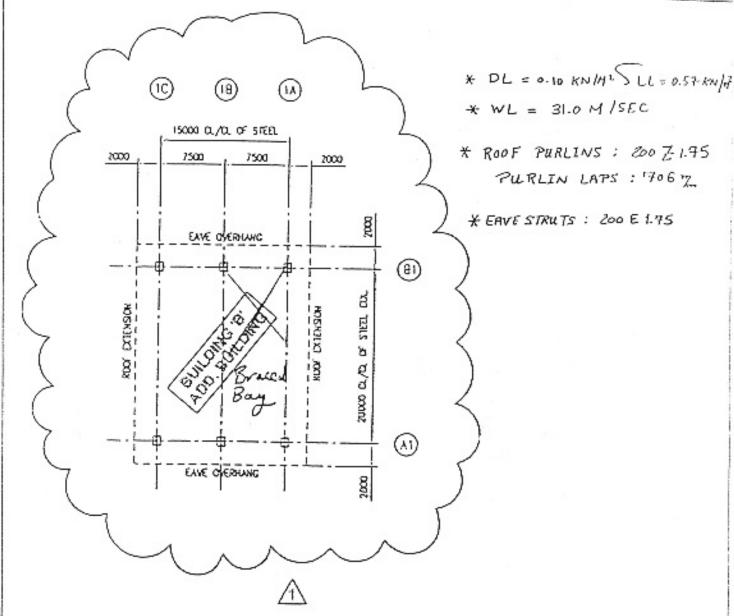
SIZE	d i	tf I	bf -1	tw	AI	I-xx	S-xx	r-xx	l-yy	S-yy	r-yy
1	mm	mm	mm	mm	cm-2	cm-4	cm-3	cm	cm-4	cm-3	Ctts
		4 007	+00.070	4 210	19.097	1281.593	127.983	8,179	86.992	17.370	2.136
W8x10	200.406	5.207	100.076	4.318 5.842	33.935	2576,473	249.083	8,712]	331.736	49.817	
W8x18 W8x24	206.756 201.422	10.150	164.9731	6.223	45.677	3446,396	342.490	8.687	761.704	92.259	
V8x31	203.200	11.049	203.0731	7.239	58.903	4578.546	450.544	8.814	1544.219	151.908	5.131
W12x14	302.514	5.715	100.838	5.080	26.839	3687.810	244.167	11.735	98.231	19.501	t,913
W12x22		10.795	102.362	6.604	41.806	6493.210	416.231	12.471	193.964	37.854	2.151
(3x11.5	203.200	9,906	57.404	5.588	21,806	1356.914			54,943	12.798	1,588
	254.000	11.074	56.040	6.096	28,968	2805.400	221.225	9.830	94.901	19.009	1.811
	304.800	12,725	74.727	7.163	39.290	5369,385	352.322	11,709	161.498	28,350	2.029
	381,000	16.510	86,350	10.160	64.258	13111.290	688.257	14,275	338.396	50,964	2.296







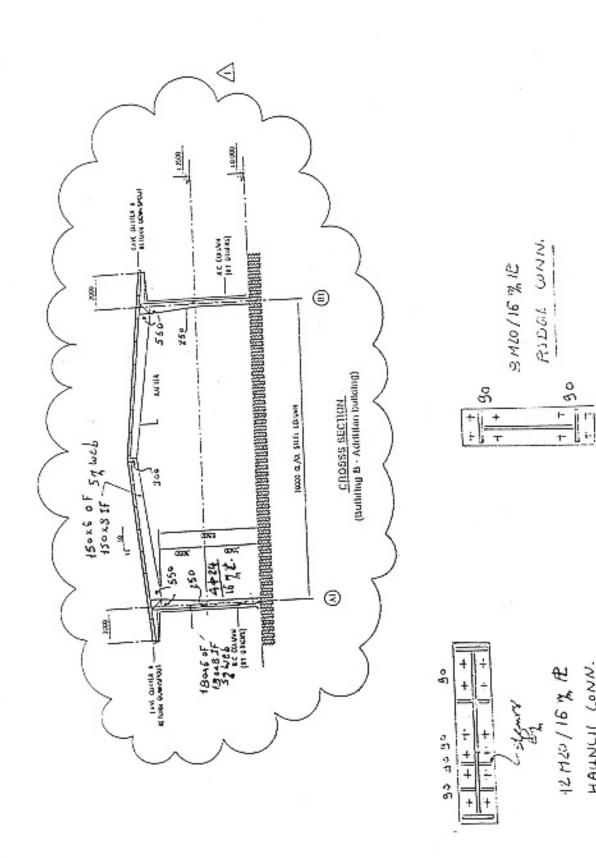




SUB-STORAGE VESSEL

* COM to Drayling 391.

108 NO:	OATE: 10 - 1 - 1 2 / 3
DESIGNED BY:	REV DATE: -
REV NO:	TCAL FRAME X-SECTION

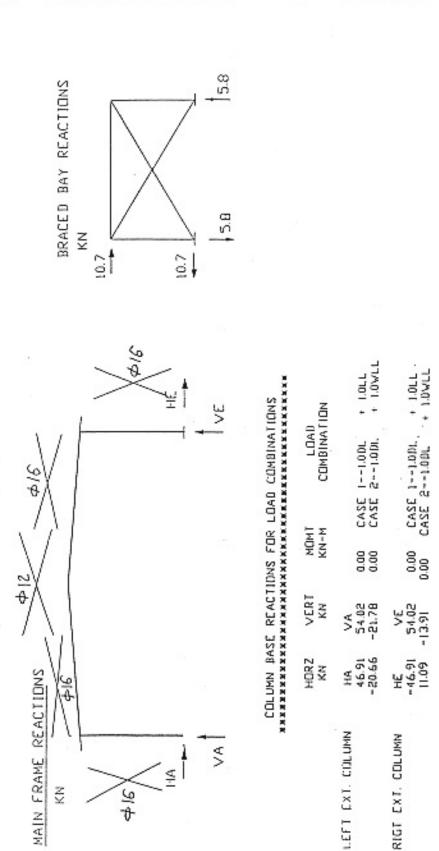


SUR-STURAGE VESSEL

HAUNCII CONN.

3:35

0.000	J08 NO:	DATE:	3/3	
	DESIGNED BY:	CHECKED) 8Y:	
	REV NO:	REV BATE:		
	DESCRIPTION	COLUNN REACTIONS 5	& BRACING	



SUB_STORAGE VESSEL

```
2 25431 - REV. 1
SLOC. A - FIRST FERMENTATION TANK
SHELL ANALYSIS AND DESIGN
                           : L0-01-01
DATE OF ENTRY
END CLIENT NAME
BUYER'S NAME
PROJECT NAME
'SELLING DISTRICT
                          : SWR
                          : 3LDG.A -- REV.1
                          . VIETNAM
ng. 100.
DISTRICT CODE
                                               MEZZANINE SYSTEM : N
CRANE SYSTEM
 STRUCTURAL PARTITION : N
 ---GEOMETRY---
                                               NUMBER OF BAYS : 10
ROOF SLOPE (7:10) : 1.0
                           45.80
 (N) HTGIN
                           88.80
 LENGTH (M)
                                 4.40
 EAVE HEIGHT (M)
                           : 1 9 6.90 6 9 10.00 3 9 7.30
 BAY SPACING (M)
                          : LO PROF GF
: N
 SGAL DAIGHTINE
 CNSYMMETERICAL BLDG. : N
NO. OF INT. COL. SPACI: 1
UNEO. INT. COL. SPACIN: Y
  ---LOADS--
 BUILDING CODE | 36 MBMA

BOOF LIVE LOAD [kpa] : 0.57

TRIBUTARY REDUCTION : If

COLLATERAL LOAD [kpa] : 0
                                                WIND LOADS (kga)
                                                WIND VELOCITY (m/s) : 31.0
  LEFT INDWALL : MAIN FR NO E PURLIN SPACING (m) : 1.500
RIGHT ENDWALL : MAIN FR NO E PLUSH SIDEWALL GIRTS : N
FLUSH ENDWALL GIRTS : Y
   --- FRAME COL. SPACINGS---
                            : 19.90
  SPAN 1
SPAN 2
                                  5.00
                             : 19.90
  SPAN )
  --- OTHER OFFICES---
MIN. 6 MM PLATE THICK : N
                                                MIN. WEB PLATE THICK : 5 YM
  GALVANIZED PURLINS : M
GALVANIZED ENDWALLS : M
                                                GALVANIZED GIRTS
                                                                             : 23
  SAGRODS # PURLINS : 1 PER BAY - SIZE : 12 MM
SAGRODS # GIRTS : 0 PER BAY - SIZE : 12 MM
   --- ROOF PANEL---
                                                 GAUGE
                                                                             : 26
                            : 83.
   PANEL TYPE
                                                                             : STANDARD
                             : GALVALUME
                                                  FASTENERS
   CCLOR
    ...WALL PANEL---
                            : KNXOIOWS
                                                  GAUGE
   PANEL TYPE
                                                                             CLR MATCH
                                                  FASTEMERS
- COLOR
    --- EAVE OPTIONS---
                                                                             : GU-502
                                                  GUTTER
    MIRT SVAE
    SUTTER END CAPS (pair): 2
RETURN FOR 1.0M CANOPY: 0
                                                  STUDGENKOG
                                                  RETURN FOR 1.5M CANOPY :
    RETURN FOR 1.0M CAMONY: 0
    --- BASE OPTIONS---
                                                                             : 30
    BASE ANGLE TYPE
BASE CLOSURES
                            : ANGLE
                                                 BASE PLASHINGS
                                                  RAKE CLOSURES
                              : 20
                                                   TOUCH UP PAINT PANEL
    TOUCH UP PAINT STRUCT .: N
                                   ACCESSORIES
                                    ------
                                  BUILDING OFFICES
                                  ************
     ...CANDPIES---
                SECTIONING BAY EMPING BAY ELEVATION
     5228
                                                  .......
                . . . . . . . . . . . . . .
                                                  AT EAVE
                                                  AT SAVE
                                      1.1
      2.0 m
                              : VS BELOW BAVE
      SOFFIT PANEL
```

CORNER CANDRY 1 CORNER CANORY 2

2.0 0

2.3 m 2.2 =

: NO SOFFIT

--- GABLE EXTENSIONS---

2.0 m

2.0 m

LOCATION SIZE

LEFT

SOFFIT PANEL

RIGHT

7-2-160

```
: CONTINUOUS BY PASS
SIDEMALL GIRT TYPE
                                                    SEMPLE SPAN FLUSH
ENDMALL GIRT TYPE
                                                 CONTINUOUS BY PASS
PURLIN TYPE
REAR STOEWALL PANEL OPENING HEIGHT (m)
PRORT SIDEWALL PANEL OPENING MEIGHT (MI
FRONT SIDEWALL PANEL OPENING MEIGHT (MI
5.W. GIRT SPACING OPTION (BOTTON TO TOP):
5.00 0.00 0.00 0.00 0.00 0.00
S.W. GIRT SPACING OPTION (BOTTOM TO TOP):
                                                                         0.00
                                                  0.00 0.00
                                          0.00
                                                                        0.00
  5.00 0.00 0.00 0.00 0.00 0.00
                                                                 0.00
                                                 0.00
SECONDARY DESIGN OPTIONS:
     STRESS RATIOS:
       PURLIN- L.00
        GIRT = 1.00
COL./RAFT. = 1.00
     DEFLECTION
             PUBLIN-L/120
          GIRT -L/ 90
SW COL. -L/ 60
SW RAFT. -L/120
DESIGN CRITERIA:
 BUILDING CODE : 1986 MBMA
VELOCITY PRESSURE (KPA) : 0.471
WIND VELOCITY (M/S) : 31.000
ROOF (MCLINATION (DEGREE) : 5.711
    AIN FRAME SUD ZONE COEFF. 1,2,3.4 : 0.50 -1.40 -0.80 -0.70 SUD ZONE COEFF. : 0.25 -1.00 -0.65 -0.55
    IN FRAME COEFF. 1,2,3.4 0.25 INTERIOR ZONE COEFF. 6.10
  MAIN FRAME
  ( MI SHOT GRB
  Z STREP MALLS AND ROOF (M 1:
  NUMBER STRIPS ON ROOF PARALLEL TO LENGTH: 1
   LOAD COMBINATIONS:
   ( D - M )X1.0
| D - W |X1.0
   (D-3+.59 1XL.0
   0-12( W-32.40)
     DEAD LOAD
      MAXIMUM OF LIVE LOAD AND SNOW LOAD
   D
   24
   S : SNOW LOAD
W : WIND LOAD
                                                         ---- ROOF PURLIN DESIGN -----
                                                 ANALYSIS/DESIGN SUMMARY
                                                                                          SX
                                                                                9V\Lambda
         SPAN LENGTH LAP LT SIDE LAP RT SIDE
                                                                                        (CM-31
                                                                               (MPA)
                                                         SECTION
                                                                      (ASK)
                                             (24)
                          (8)
             (H)
                                                                       .....
                                         0.353
                                                                                         35.90
                                                                       145.0
                                                                               345.0
                         0.000
0.706
0.353
0.353
                                                         20021.75
                                                                                         40.79
                                                                      345.0
                                                                               145.0
    1
                                                         20022.03
                                                                               345.0
             10.000
                                                                       345.0
                                                         20072.00
                                             0.353
                                                                                          40.79
                                                                               345.0
             10.000
                                                                       145.0
                                                         20022.00
    3
                                             0.353
                                                                                         40.79
                                                                                345.0
             10,000
                                                         20022.00
                                                                       $45.0
                                             0.353
                             0.353
                                                                                345.0
                                                                                         40.79
             10.000
                                                                       345.0
                                                         20022.00
                            0.353
                                             0.353
                                                                                          40.79
                                                                                145.9
              10.000
                                                                       345.0
                                             0.353
                                                          20022.00
                                                                                         35.90
                                                                                345.0
             10.000
                                                         200Z1.75
200Z1.75
                                                                       345.0
                             0.353
               7.300
                                                                       345.0
                                                                                345.0
     8.
                                             0.706
                              0.353
                                                                                145.0
              7.300
                                                                       345.0
                                                         20021.75
                                             0.000
                              0.353
               5.947
    10
                                                                      CRETERIA
                                               - COVDING
                                                                    GROUP 3
                                                      GROUP 2
                                         GROUP L
                                 PROB
       MOLTANIEMED GAGS
                                                                   .......
                                                     ......
                                         ......
                                                                  1.000 COL
1.000 COL
      .....
                                 ....
                                                                               0.000
                                                      1.000 LL
                                        1.000 06
                                 1.00
      1. DEAD - LIVE
                                                                                0.000
                                                      J. 000 Wt.
                                         1.000 DL
                                 1.00
      2. DEAD . WIND
                                                                          END LOAD
                                             BEGIN LOAD
                                                                   DISTANCE AND INTENSITY
                                      DISTANCE AND ENTERSITY
                                                                   IMI (600; 8/M)
                         APPLIED
                   جددن
    CUDAD GROUP
                                                     (32f: 37/M)
                                        190
                           CN SPRA
                   252.2
       MAME
                                       .....
                                                                    6.547
                                                                                  73.79
                           .....
                                                 73.73
73.79
       ......
                                        0.000
                                                                                  73.73
                   CNIF
                                                                    10.300
         DL.
                                        0.000
                               2
                                                                                  73.78
                                                                    10.000
                   CM17
         D£.
                                                       73.78
                                                                                  T3.79
                   UNITE
                                                                    10,000
         24.
                                                      73,78
                                         0.000
                                4
                   UNIEF
                                                                    10.000
         DL
                                                       73.79
                                         0.000
                               5
                                                                                   73.75
                   UNIF
                                                                    10.000
         ЭL
                                                       73.78
                                         0.000
                               ÷
                                                                    10,000
                                                                                   T3.78
                    UNIZ
         2.7
                                                       73,73
                               7
                                         0.000
                                                                                   73.78
                    UNIF
                                                                      7,300
         DI.
                                                       73.78
                                         0.000
2.000
0.000
                                θ
                                                                                   73.75
                    UNIF
                                                                      7.300
          DL
                                                       73.79
                                                                                   73.78
          CL.
                    CNIE
                                                                      6.947
                                                        73.78
                               :0
                                                                                  850.71
                    INTE
          DL
                                                                      6.547
                                                      850.71
                                          0.200
```

والمراجع والمراجع والمتعارض والمتعار

UNIF

LL	UNITE	2	0.000	350.71	10.000	850.71		
LL	UNIF	1	0.000	850.71	10.000 -	950.7L		
LL	UNIF	4	0.000	850.71	10.000	850.71		
LL	UNIF	5	0.000	850.71	10.000	850.7L		
t.L	UNIF	- 6	0.000	850.71	10.000	850.71		
C.L.	UNIF	7	0.000	850.71	10.000	850.71		
1.6	CMIF	5	0.000	850.7L	7.300	850.71		
LL	UNIF	9	0.000	950.71	7.100	850.71		
t.L	UNIF	1.0	0.000	850.71	6.947	850.71		
ML	CRITE	1	0.000	-915.68	6.547	-815.68		
MC.	UNIF	2	0.000	-815.68	10.000	-815.53		
ME	UNITE	3	0.000	-815.68	10.000	-815.68		
ME	UNIF	4	0.000	-815.64	10.000	-815.68		
ML	UNIF	5	0.000	-815.68	10.000	-815.63		
MC.	UNIEF	6	0.000	-815.58	10.000	-815.63		
HC.	UNIEP	7	0.000	-815.68	10.000	-815.68		
WE	UNIEF	а	0.000	-815.68	7.300	-815.68		
W.C.	UNIEF	9	0.000	-815.68	7.300	-815.68		
WE	UNIE	10	0.000	-815.68	6.947	-815.68		
DL	UNIF	1	0.000	46.25	6.547	46.25	MEMBER WEIGHT	
DL	UNIF	2	0.000	52.79	10.000	52.79	MEMBER WEIGHT	
DL	UNIF	3	0.000	52.79	10.000	52.79	MEMBER WEIGHT	
DL	UNIF	4	0.000	52.79	10.000	52.79	MEMBER WEIGHT	
DI.	UNIF	5	0.000	52.79	10.000	52.79	HEMBER WEIGHT	
DL	COST	5	0.000	52.79	10.000	52.79	MEMBER MEIGHT	
DL	UNITE	7	0.000	52.79	10.000	52.79	MEMBER WEIGHT	
DL.	UNIT	9	0.000	45.25	7,300	46.25	MEMBER WEIGHT	
DL.	17417	9	0.000	46.25	7.300	45.25	MEMBER WEIGHT	1
DL	UNIF	1.0	0.000	46.25	6.947	46.25	MEMBER WEIGHT	
	-4-41	-						

DESIGN DATA

: DEAD * LIVE 1 1.500 : 1.000/10 : 0.049 . 0.570 LOAD CASE DESIGN SPACING (M) ROOF SLOPE ROOF LOAD (KPA) LIVE LOAD (KPA)

			9.222.00										
970			SUPPORT	LAP		X-CORD	LAP	RIGHT .	SUPPOR	r Lap	LA2	SUPPOS	T
					2.203	2.154	-5.910	-7.263 *			-3.944	-4.287	
1	5.933		0.000	-4.161	4.224	4:365		-8.742 *				-5.034	
2	28.875		-0.742	-7.063	3.694	5.000		-8.303 *				-4.852	
_	21.913		-8.742	-6.645	3.328	5.000		-8.472 *				-+.263	
9	23.650		-3.472	-6.301	3.347	5.000	-5.609	-8.266 *				-4.866	
5	23.134				3.542	5.000		-8.883 *				-4.948	
5	21.229		-9.266	-5.624			-5.150		5.101			-4.672	
7	31.223		-3.383	-7.143	4.429	5.211							
8	2.461		-5.738	-5.395	1.406		-2.538	2.2.2					
9	6.205		-3.575	-2.490	1.844	1.397	-3.294		3.245			-3.942	-
10	15.101		-5.754	-4.332	3.331	4.281		u.000 •	4.200	3.858		-2.544	
935	SECTION	DESIGN	ACTUAL	ALLOW.	MAX. LOC	TATEON MAX.	MAX.	ALLOW.	MAX.	LOCATION C	OMBINE LOCAL	rica	WE
	-		BENDTAG	SENDING	BENDING	SHEAR	SEEAR	SHEAR	SHEAR	8:	ENDING	car	223
			STRESS	STRESS	RATIO		STRESS		RATIO		SKEAR	1827	
		(334-M)	(MPA)	(MPA)		(320)	(MPA)	(MPA)			RATIO		
													-
										_		2 0.515	
_	20021.75	-5.910	-151.946	207.000	0.782	16 -1.94	4 -11.471	45.555	0.252	R	0.808	g 0.522	
								C3 004	0.200	8.	0.011	R 0.411	
2	20022.00	-7.026	-172.250	207.000	0.832	2 -4.68	9 -11.963	59.804	0.200	×	0.811	X 0.411	
										11210			
3	20022.00	-7.063	-173.L49	207.000	0.836	£ 4.56	11.697	59.804	0.196	L	0.814	C 0.425	•
4	20022.00	-6.802	-166.768	207,000	0.006	2 -4.55	8 -11.529	59.804	0.194	R.	0.785	2 0.416	,
					market disk	300 300000		0.000000	6 0000 p. ett.)	2000	200220 ER		
5	20022.30	-6.901	-156.736	207.000	0.885	L 4.56	2 11.638	59.404	0.195	i.	0.735	L 0.420	7
5	20022.00	-7.197	-176.448	207.000	0.852	R -4.60	13 -11,743	59.804	0.196	13;	0.829	9 0.419	5
7	20022.00	·7.143	-175.L26	207.000	0.846	G 4.75	66 12.132	59.804	0.203	L	0.824	6 0.430)
9	20021.75	. 5 395	-190.278	207.000	0.726	L 3.63	10.567	45.555	0.232	ī.	0.749	5 0.450)
-	40000.79	-3.3.3	-20.0.0										
	20021.75	. 3 . 2 2 2	-91 475	207 000	0.442	2 -3.15	6 -9:179	45.535	0.201	2.	0.473	3 0.35	3
,	20021.73	13.254	-74.472	207.000	4.414								
	20021.75		120 000	207 000	0.503	7 3 90	8 11.213	45 455	0.246	E.	0.623	L 0.44	,
10	20021.75	-4.332	-120.009	201.000	0.551		20 11.610	43.333	41540		0.523	u 0.44	

DESEGN DATA
LOAD CASE
DESIGN SPACING (M)
ROOF SLOPE
ROOF LOAD (KPA) 1.500 - WIND : 1.500 : 1.000/to 0.049

MONSNT'S (XN-N) SHEAR (KN) DEFLECTION (MM) REGIST * LEFT 1.227 9 TOUT LEFT LEFT SPAN SUPPORT - SUPPORT 6.82 LAP MEDSPAN X-CORD LAP SUPPORT -1.490 4.113 0.000 -1.596 2.154 -4.944 2 4.947 6.156 -3.345 -2.459-2.9574.865 2.962 5.152 -23.294 2 4.972 -2.507 5,000 4.694 5.857 -3.475 -3.232 -17.777 6.155 4.688 -2.599 5.000 4.795 5.973 -3.434 -3.191 -19.151 5.857 5.830 -3.460 -3.2174,795 -2.712 5.000 4.562 5.973 -19.351 6.257 -3.403 -3.160 5.068 4.672 -2.570 5.000 5.830 -17.217 4.775 -3.594 -3.350 3.654 5.211 6.257 5.031 -1 114 -25.2141.831 2.577 -2.940 -2.595 4.100 4.775 3.816 -1.623 -2.101 3 3.397 2.351 4.119 -2.328 -2.082 1.799 -1.3172.577 -5.043 -2.389 4.281 0.000 -1.009-2.764 3.100 4.119 1.0 -12.158 MAX. ALLOW. MAX. LOCATION COMBINE LOCATION MAX. LOCATION MAX. ALLOW. DESIGN ACTUAL SPAN SECTION SHEAR SHEAR SHEAR BENDING BENDENG BENDING SHEAR TRISMOM STRESS STRESS RATIO STRESS RATIO STRESS (308) (MPA) (MPA) [MPA] (KM-M) (ASM) 2.819 8.196 60.740 0.135 2 4.113 114.582 276,080 0.415 1 20021.75 79.719 0.106 8.425 4.947 121.279 276.000 0.419 2 3.303 20022.00 79.739 0.103 L -8.245 -3.232276.000 131.890 0.442 E. 4.972 3 20072.00 10 8.199 79.739 0.103 0.426 g; 3.214 117.565 276.000 4 20022.00 20 0.103 5 0.425 -1.217 -3.205 79.739 117.542 275.000 5 20022.00 4.795 00 79.739 0.104

0.450

0.447

0.305

0.313

0.237 -

2

f.

3.

L

RS - RIGHT SUPPO R . RIGHT LAP L . LEFT LAP P - MIDSPAN LS + LEFT SUPPORT

1.245

-3.350

-2.595

2.259

-2.764

.... ROOF PURLEN CESICN (EDGE STRIP)

276.000

123.344 276.900

65.481 275,000

36.358 275.000

124.257

1.316 106.296 276.000

5.059

5.031

2.351

3.100

5 20022.00

7 20022.00

9 200Z1.75

9 20021.75

12 20021.75

30

15

0.0

20

ANALYSIS/DESIGN SUMMARY

8.273

-8.547

-7.545

6.570

-3.037

79.719

50.740

60.740

60.740

0.107

0.124

0.108

0.132

1

я.

RIGHT

LAP

3.303

3.172

3.214

1.188

3.245

1.054

1.992

2.259

BENDING

SKEAR

RATIO

0.429

0.428

0.439

0.415

0.415

0.438

0.435

0.198

0.257

0.334

: 2.819

RIGHT

SUPPORT

3.054

3.546

3.416

3.45T

3.431

3.488

1.297

2.238

2.750

1.823

생모다

CRIPPLIN

RATIO

LEFT RIG

0.000 0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.0

0.000

0.000

0.000

0.000

0.000

0.000

0.000

0.000

0.000 0.0

2.

L

R

æ

T.

L.

SPAN	SPAN LENGTH	LAP LT SEDE	LAP RT SIDE	section	FY (MPA)	(APA)	5X (CM-31
27740							
1	5.347	0.000	0.353	20021.75	345.0	345.0	35,90
-	10.020	0.706	0.353	20022.00	145.0	345.0	40.79
	10.000	0.153	0.353	20022.00	345.0	345.0	40.79
-		0.353	0.353	200Z2.00	145.0	345.0	40.79
4	10.303		0.353	20022.00	345.0	145.0	40.79
5	10.000	0.353	0.353	20072.00	345.0	145.0	40.79
6	10.200	0.353		******		345.0	40.79
7	10.000	0.353	0.353	20022.00	345.0		
	7.300	0.353	0.353	200ZL.75	345.0	345.0	35.90
		0.153	0.706	200Z1.75	345.0	345.0	35,90
3	7.310			20021.75	345.0	345.2	35.90
1.2	6.947	0.353	0.000	20021.13	345.0	343.4	22.00

DRIGADA CRITTRAIA

LOAD COMBINATION	93.0B	GROUP 1	GROUP 2	GROUP 3	GROUP 4
1 3830 - HTT	1.90	1.000 00	1.000 WE	1.000 COL	0.000

			9.500	M LOAD	END LOAD				
LOAD GROUP SAME	10AD TYPE	APPLIED ON SPAN	DISTANCE A		DESTANCE AND IMI	INTENSITY (30% N.M)			
					4 6 7	46.76			
26	UNIF	4	0.000	46.76	6.547				
tr.	CXTT	2	0.000	46.76	10.000	46.76			
27	2222	3	0.000	46.76	10.000	46.75			
25	CHIE	4	0.000	46.76	to.000	46.79			
DL	13/19	5	0.000	46.76	10.000	46.76			
DL	CNIF	6	0.000	46.76	10.300	46.76			
oL.	STIF	7	0,000	46.76	10.000	46.76			
CL.	UNIF	8	0.000	46.16	7,300	46.75			

DESIGN DATA
LOAD CASE
DESIGN SPACING (MI
ROOF SLOPE
ROOF LOAD (KPA)
WIND LOAD (KPA)
WIND COEF. 0.951 0.951 1.000/10 0.049 0.471 -1.162

MEMD C	UEF.													
		. candi			0 M E 2	7 5 1KM	-051				SHEA	3 (324)		
SPAN	DEFLECTION		LEFT	LEFT	MICSPA	y x-cos		LAP :	RIGHT *	LEFT SUPPORT	LEFT	RIGHT	5	RIGHT
			SUPPORT						4.174	. 210		2.296		2.485
			0.000		-1.297	2.19		1.332	4.982 *	-2 209	-2.314	2.573		2.970
:	-4.024		4.174	2.401	-2.401			4.004	4.742	-2 911	-2.616	2.566	ŝ	2.765
2	-10.333		4.993	4.024	-2.111	5.30		3.800	4.915	2.717	-2.583			2.798
3	-14.396		4.742	3.795	-2.185	5.30		3.992	4.720 *	-2.100				2,779
-	-15.533		4.835	3.981	-2.195	9.00		3.774	4.720	2.301	-2.558			2.824
5	-15.564		4.720	3.782	-7.081	5.00		4.L02	5.054 *	2 202				2.670
5	-13.941			4.073	-2.520			2.961	3.368 *	-2.909				1.317
	-23.394		3	3.090	-0:331			1.447	2.093	-2.303				2.235
3	-1.721		3.968	1.461	-1.059		97	1.907	3.341	-1.889				1,479
	-4.235		2.093	2.515	-1.938	_			2.000 -	-2.441	-2.242			
13	-10.029	•	3.341	2.349										
											LOCATION C	mention to	eserce.	•:
	sgorton	DESIGN	ACTUAL	ALLOW.		LOCATION	MAX.	MAX. SHEAR	SHEAR	MAX.	COCATION C	ENDING		07.5
5772	9000000	MOMENT	BESIDING	BENDING	BENDING		SHEAR	Shinar	40					
9								573288	STRESS	SATEO		SHEAR		1225
_			STRESS	STRESS	SATIO		1220	(MRA)	(M2A)			CITAE		
		(300-90)		(MPA)										
HT.														
							2.296			9.107	9.	0.248	R.	1.12
٠.	20021.75	3.532	92,805	276.000	9.336	2.	2.299	0.04.	20.					
	20000						. 493	4.819	79.719	0.036	3.	3.147	3.	2.22
0.0	20022.00	4.004	98.155	276.000	0.156	3	2.671	9.423	.,,,,,,,					
	20022.00	.,						-6.574	79.739	0.094	L	0.348	E.	3.75
36	***** **	4.324	99.547	276.000	3.357	드	-2.515	-0.07	7237					
	20022,00	4.024						4 411	79.739	0.083	3.	0.336	R.	0.000
0.0		3.462	95.165	276.000	0.345	R	2.402	4.637	19.122	4,043				
	29622.00	3,002	,,,,						79.739	0.083	L	0.336	E.	0.00
0.0	**	3.381	95 146	276,000	0.345	£	-2.604	-6.647	, ,,,,,,	4.005	_			
	20022.00	1.301							79.739	0.054	3	0.354	9.	3.30
-30		4.102	100 567	276.000	0.354	3	2.627	6.70	19.729	9,404	-			
	30022.30	4,102	200.20							0.087	L	0.352	C.	0.00
3.0			34 430	276,000	0.362	C.	-2.753	-6.91	9 79.739	4.04.	_			
	20022.00	4.072	99.430	2101000							L	0.322	L	9.90
0.0			05 027	276.000	0.312	L	-2.10-	+ -6.11	8 60,740	0.101		4.5/44		
	3 20021.75	3.690	80.001	2.0.200							. 2	0.208	3.	0.00
00				275.900	0.192	2	1,63	3 5.32	9 60.740	0.088		9,200		
	9 20021.75	1.90	55.11.	275.900								0.271	L	0.00
20				276 600	0.254		-2.24	2 -6.52	0 60.740	0.10		4.2.4	_	
	1 20021-75	2.51	5 70,043	275,000										
3.3														
100													35	 3,090
					13		2 - 92	CSPAN		2 - 310	DH. LAP			
5.5	* 12FT SUPPO	25	,	C - CEFT L	-0.5									
3.7														

FURLIN SPACINGS

---- LONGITUDINAL SEALUNG DESIGN ----1200F & SIDEWALLS)

MIND LOAD (KPA)

3.471

END ZONE INTERIOR ZONE

WIND PASSSURE COEF. MIND SUCTION CORF.

: 0.900 0.650 : -0.300 -0.150

: 3 : 2 5 9 NUMBER OF BRACED BAYS REQD

BRACED AT BAY #

STRUT PURLIN SPACINGS (MI : 4.901 5.000 5.000 5.660

AXIAL FORCES	IN	STRUTS	(300)	
--------------	----	--------	-------	--

ENDWALL COLUMN NO.	LOAD (KN) ON COLUMNS		1		γ NO. 1	4	5	6	7	a	9	10
(REAR S.W.! 1 2 3 4 5 (RIDGE)	3.128 5.731 6.200 4.877 7.216	1		10.152 10.715 9.532 6.790 5.863	1.303 2.909 2.97L 3.295 3.458	1.303 2.909 2.971 3.295 3.458	9,109 8,47L 6,465 4,498 1,458	0.25L 0.665 0.904 1.003 1.052	0.261 0.665 0.904 1.003 1.052	0.261 0.565 0.904 1.003	8.066 6.227 4.399 2.206 1.052	-0.782 -1.579 -1.162 -1.289 -1.353

IF LOAD FROM OPPOSITE DERECTION:

AXIM, PORCES (N STRUTS (KN)

			C +CHCTS								
COLUMN NO.	DO COLUMNS	1		ν κα. 3	4	5	ő	7	9	. 9	10
(REAR 5.W.) 2 3 4 5 (RIDGE)	3.128 6.731 6.200 5.577 7.215	-0.782 -1.579 -1.162 -1.239 -1.353	8.066 6.227 4.199 2.266 1.052	0.251 0.555 0.904 1.003 1.052	0.251 0.465 0.904 1.003 1.052	9.109 5.471 6.446 4.498 3.458	1.303 2.909 2.971 3.295 3.458	1,303 2,909 2,971 3,295 3,458	1.303 2.909 2.971 3.295 3.498	10.152 12.715 8.532 6.790 5.863	2.346 5.153 5.037 5.588 5.863

WIND LOAD (KPA) . .

: 0.471

END ZONE INTERIOR ZONE -: 0.960 0.450 : -0.300 -0.150 MIND PRESSURE COST. WIND SUCTION COEF.

MEMBER OF BRACED BAYS RECO : 1 9RACED AT BAY # : 2 5 P

: 10,000 10,000 7,100

CORRESPOND. BAY SPAC. (NO

STRUT FURLIN SPACINGS (M) : 4.901 4.000 6.000 5.640

BRACED BAY # 1 AT BAY 2

ENDWALL COLUMN NO. STROT LINE!	AXIAL LOAD ON COLUMNS (XM)	LCAD FOR BRACE (KN)	TENSION (KO)	BRACE SIZE REQUIRED (MM)	LOAD TYPE
REAR 5.W.I		9.948	9.502	12 MM ROD	GRIM
1	3.128	7.805	8.551	12 MM ROD	MIND
2	5.731	5.562	6.380	L2 MM ROD	MIND
3	5.200	3.495	4.009	12 904 900	MEND
4	6.377	1.293	1.380	12 99 300	GRIN
5 (R:DGE)	7.216		1		

MESSE LEAD (KPA)

: 0.471

END SOME INTERIOR SOME 0.300 0.550 -0.300 -0.150 WIND PRESSURE COST-WIND SUCTION COEF.

MDMBER OF BRACED BAYS REQD : 3 BRACED AT BAY : 2 5 9 CORRESPOND, BAY SPAC. (N) : 10,000 10,000 7.500

STRUT PURLLY STACINGS .MI : 4.901 6.900 5.000 5.660

SRACED BAY # 2 AT BAY 5

ENCENALL AXIAL LOAD LOAD TEMSION BRACE SIZE CONTROLLING COLUMN NO. ON COLUMNS FOR BRACE REQUIRED LOAD TYPE

(STRUT LINE)	1886	(KM)	(100)	(NM)	
IREAR S.M.I		8.848	9.502	12 204 200	NEND.
1	1.128	7.806	8.551	L2 MM ROD	Actub
2	6.711	5.562	6.380	12 WM 20D	MIND
1 .	6.200	1.495	4.009	12 MM ROD	MIND
4	5.977	1.203	1.380	12 504 RGD	MIND
S IREDGE	7.216		1		ŧ

WEND LOAD (KPA)

: 0.421

WIND PRESSURE COEF. WIND SUCTION COEP.

END ZONE INTERIOR ZONE

0.550 : 0.900 -0.300

NUMBER OF BRACED BAYS REOD : 3 BRACED AT BAY # : 2 5 3 CORRESPOND. BAY SPAC. (N) : 10,000 10.000 7.300

STRUT PURLIN SPACINGS (M) : 4.901 5.000 5.000 5.660

BRACED SAY # 3 AT BAY 9

ENDWALL COLUMN NO. (STRUT LINE	AXIAL LOAD ON COLUMNS (304)	LDAD FOR BRACE (90/1	TENSION (KN)	BRACE SIZE REQUIRED (MMI	CONTROLLING LOAD TYPE
(REAR S.W.)		3.848	10.040	12 MM ROD	atso
1).128	7.396	9.155	12 MM R00	MIND
2	6.731	5.562	7.020	12 WM RG0	CICSW
3	5.200	1.495	4.411	12 004 900	MEND
4	6.877	1.203	1.518	12 694 800	GKIN
S :2:00E1	7,316		! -		1

COMBINED BENDING & WIND BRACING STRUT PORCES

DESEGN DATA

#IND COSE.

SEAD - MIND	1.500
1.500	1.500
1.500	1.000
1.500	1.000
1.500	1.000
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1.500	1.500
1.500	1.500
1.500	1. : SEAD - WIND

SPAN	SECTION	DESIGN MONEST (M-12X)	ACTUAL BENDING STRESS LMPA)	ALLOW. BENDING STRESS (MPA)	SENDING RATIG	MAX. AXEAL (XXI	MAX. AXIAL STRESS IMPAI	ALLOW, AXIAL STRESS (MPA)	MAX. AXIAL RATIO	COMBINE BENDING AXIAL RATIO	LOCATION
	20021.73	4.112	114.551	276.000	0.415	5.353	4.362	193.828	3.025	0.440	R
5	20022.00	4.947	121:298	276.000	0.419	10.715	7.757	157.356	0.047	0.485	R
-	20022.00	4.972	121.899	275.000	0.442	3.458	2.513	167.355	0.015	0.457	1.
4	20022.00	4.795	117.565	276.000	0.426	3.454	2.513	167,156	0.015	0.441	R
- 4	20022.00	4.795	117.542	275.000	0.426	9.471	6.156	167.156	0.037	0.463	L.
- 6	20022.33	5.363	124.253	276.000	0.450).453	2.513	167,156	0.015	0.465	8.
5	20022.00	5.031	123.345	276.000	0.447	1.458	2.513	167.356	0.915	0.462	L
9	20021.75	3.319	106.291	275.000	0.385	3.458	2.947	201.748	0.014	0.399	£
- 1	20021.75	2.313	\$6,075	174.000	0.203	10.715	17.769	221.743	0.088	0.291	7
1.0	20021.79	3.098	36.308	276,000	0.313	5.861	4.352	136,661	0.026	0.319	E .
25 .	LEFT SUPPORT		5 - 123	7 LAP	2 -	MICSPAN	3	- RIGHT	LAP	95 - 95	INT SUPPORT

NAMES OF 12 MM A-307 PURLIN BOLDS: 2
MAX. SHEAR (C): 7.41
ALLOWABLE SHEAR (KN): 29.73
ALLOWABLE BEARING (KN): 57.90

----- EAVE STRUT DESIGN -----

LOAD	CASE	1		43+30
LOAD	CASE	2	:	DL+WL
ROOF	LOAD	(KPA)	:	0.049
		(KPAI	:	0.570
		(X2A)	- 1	0.471
	COEF			-1,700

			0.000
201727-730	SPACING	(81 :	0.401

SPAN	SECTION	ETENSES (M)	BENDING MOMENT (307-M)	BENDENG STRESS (MPA)	BENDING ALLOW, IMPAI	AXIAL 20002 1930	AXIAL STRESS MPAI	AXIAL ALLOW. IMPAI	BENDING RATIO	AXIAL RATIO	BENDENG - AXEAL RATIO	DEFLECTION (MM)	CASE
,													
	20071 50	5.900	1.042	25.759	207.000	0.000	0.000	207,000	0.124	0.000	0.124	5.729	2
1.L	20051.50	10.000	2.189	54.105	207.000	0.000	9.000	207.000	0.261	0.000	0.261	25.273	1
24	200EL.S0			54.105	207,000	0.000	0.000	207.000	0.261	0.000	0.261	25.273	1
3 L	20081.50	10.000	2.189			0.000	0.000	207.000	0.261	0.000	0.251	25.273	1
44	20051.50	10.000	2.189	54.105	207.000					0.000	0.261	23.273	1
56	20021.50	10,000	2.199	54.105	207.000	0.000	0.000	207.000	0.251				
51	20021.50	10.000	2.199	54.105	207.009	0.000	0.000	207.000	0.251	0.000	0.261	25.273	
		10.000	2.189	54.105	207.000	0.000	0.000	207,000	0.26L	0.000	0.261	25.273	-
71.	200E1.50		-	28.833	207.000	0.000	0.000	207.000	0.139	0.000	0.139	7,177	1
97	20021.50	7.300	1.166			10.152	15,174	168.084	0.059	0.090	0.149	-4.031	2
9L	20051.58	7.300	-0.655	-15.195	276.000			207.000	0.139	0.000	0.139	7.177	1
10L	200E1.50	7.300	1.156	28.833	207.000	0.000	0.000	207.000	0.135				

SECTION	A CHARLES AND A STREET OF THE PARTY OF THE P		200101	
20021.50	6.690	40.450	40.450	345.00

15. 20081.50 0.190 0.180 1 21. 20081.50 0.262 0.262 1	
15 20051-30 0.190 0.200	
36 6-00-30	
4D 20025130 0.000	
\$6, 200E1.50 0.252 0.262 1	
5L 20021.50 0.162 0.262 1	
7L 20021.50 0.262 0.262 1	
8L 200E1.50 0.191 0.19t 1	
9t, 100E1.50 0.191 0.491 1	
10L 20181.50 0.191 0.191 L	

NUMBER OF A-325 Mil N 43 MM BOLTS	-	2
MAX. SHEAR (XM)	1	8.85
ALLOWABLE SHEAR (XXI)	:	31.12
ALLOWADLE BEARING (SN)	:	24.32

```
Q 25431 -- REV. 1
BLDG.B : SUR_STORAGE VESSEL
  SHELL AMALYSIS AND DESIGN
  DATE OF ENTRY
  SND CLIENT NAME
  SUYER'S NAME
                         : SWR
                          36.0G.3
  PROJECT NAME
                          MARKETSIV :
  SELLING DISTRICT
  DQ. NO.
  DISTRICT CODS
                                             MEZZANINE SYSTEM : N
  CRANE SYSTEM
  STRUCTURAL PARTITION : N
   ---GEOMETRY---
                           : 20.00
: 15.00
                                             NUMBER OF BAYS
                                             RODE SLOPE (2:10)
  IN) BIDIN
  LENGTH (M)
                          : 3.99
: 2.9 7.50
  EAVE HEIGHT (M)
  BAY SPACING (M)
  UNSWMMETERICAL BLDG. : N
   ---LOADS---
   BUILDING CODE
                           : 86 MBMA
   ROOF LIVE LOAD (kpa) : 0.57
TRIBUTARY REDUCTION : N
                                              WIND LOADS (kga)
                                             MIND VELOCITY Im/st
                                 24
   COLLATERAL LOAD [kpal : 0.08
   LEFT ENDMALL : MAIN FR MO E PURLIN SPACING INI : I
RIGHT ENDMALL : MAIN FR MO E FLUSH STORMALL GIRTS : Y
FLUSH ENDMALL GIRTS : Y
                                                                          1.500
   --- OTHER OPTIONS---
   MIN. 4 MM PLATE THICK : M
GALVANIZED PURLINS : M
                                              MIN. WES PLATE TRICK : 5 MM
   GALVANIZED PURLINS : M
GALVANIZED ENDWALLS : N
                                              GALVANIZED GIRTS
   SAGRODS & PURLINS : 1 PER BAY - SIZE : 12 MM
SAGRODS & GIRTS : 0 PER BAY - SIZE : 12 MM
   SAGRODS & GIRTS
    --- ROOF PANEL---
                                              GAUGE
                            1 302
   PANEL TYPE
                            : GALVALUME
                                                                       : STANDARD
                                              FASTENERS
   color.
   PANEL TYPE
                           : 304
                                              GAUGE
                                                                       : CLR MATCH
                                              FASTENERS

    UNK200WW

    COLOR
    ... EAVE OFTIONS ---
                                                                       : GC-501
   TANE TRIM : 8
GUTTER END CAPS (paint: 2
RETURN FOR 1,0M CAMPOPY: 0
RETURN FOR 3,0M CAMPOPY: 0
                                               DOMNSPOUTS
                                              RETURN FOR LISH CANOPY : 0
    --- EXELTED SEAE---
    DASE ANGLE TYPE : ANGLE
BASE CLOSURES : N
                                             BASE FLASHINGS
                                               PAKE CLOSURES
                                              TOUCH UP PAINT PANEL : N
    TOUCH UP PAINT STRUCT .: M
                                ACCESSORIES
                                 .......
                               BUILDING OFFICKS
                               ......
    ---CANGPIES---
              BEGINNING DAY ENDING DAY ELEVATION

1 2 AT EAVE
    2222
                                              AT EAVE
                                    2
    2.0 %
                       78 BELOW SAVE
    SOFFIL FARE
     --- GABLE EXTENSIONS---
     COCATION SIZE CORNER CANOPY L CORNER CANOPY Z
                         ......
                2.0 5
     LEFT
                          2.0 m
2.0 m
                                                   2.0 5
              2.0 m
                                                   2.0 m
     REGHT
                        : NO SOFFIT
     SOFFET PANEL
END OF IMPUT ECHO.
```

7 - 2 - 168

the contract of the contract o

CONTENUOUS BY PASS

SIDEWALL GIRT TYPE

```
SIMPLE SPAN FLUSH
ENDWALL GIRT TYPE
PURLIN TYPE
                                                CONTINUOUS BY PASS
REAR SIDEWALL PANEL OPENING HEIGHT (m)
                                             4.00
PRESET SIDEWALL PANEL OPENING HEIGHT (m)
                                             4.00
S.M. GIRT SPACING OPTION (SOTTOM TO TOP):
4.00 0.90 0.00 0.00 0.00 0.00 0.00
5.W. GIRT. SPACING OPTION (BOTTOM TO TOP):
                                                0.00 0.00 0.00 0.00
                                                                       0.00
                                               0.00 0.00
                0.00 0.00 0.00 0.00
  4.00 0.00
 SECONDARY DESIGN OFFICES:
     STRESS RATIOS:
            PURLIN- 1.00
            GIRT - 1.00
        COL./RAFT. = 1.00
     DEFLECTION
         PURLEN-L/120
GIRT -L/ 90
EM COL. -L/ 60
         EW RAPT. -1/120
 DESIGN CRITERIA:
 SUILDING CODE : 1985 MOMA
VELOCITY PRESSURE (XPA) : 0.471
WIND VELOCITY (M/S) : 31.000
ROOF INCLINATION (DEGREE) : 5.711
  MAIN FRAME

END ZONE COEFF. 1,2,1,4 : 0.50 -1.40 -0.30 -0.70

ENTERIOR ZONE COEFF. : 0.25 -1.60 -0.55 -0.55

END ZONE IM | 5.10

2 STRIP WALLS AND ROOF (M ): 1.50
  MIMBER STRIPS ON ROOF PARALLEL TO LEMOTH: 1
   LOAD COMBINATIONS
   0.1X( M + 0 )
     D + W 1X1.0
   (0-S+.5W )X1.0
   10-.55-W 1X1.0
   D : DEAD LOAD
   M : MAXIMUM OF LIVE LOAD AND SNOW LOAD
          SNOW LOAD
        WIND LOAD
                                                        ***** ROOF PURLIN DESIGN *****
                                               ANALYSIS/DESIJN SUNMARY
                                                                              FYA
         SPAN LINGTH LAW LT SIDE LAP RT SIDE
                                                                                      (CM-3)
                                                                             CMPA)
                                                                    (928)
                                                        SECTION
                          (H)
                                         (8)
           420
                                                                    .....
                                                       .......
  SPAN
                                                                                      35.90
          7.147
                                                                    345.7
                                                       20021.75
                          0.000
                                       0.353
  4177
                                                                            345.0
                                                                    345.0
    :
                                                       20021.75
                                           0.500
                            0.353
                                                LOADING CRITERIA
                                                                              GROUP 4
                                                                 GROUP 3
                                                    GROUP 2
                                       gague :
                               PROB
                                                                .....
                                       1.000 BL 1.000 LL
       LOAD COMBINATION
                                                                            0.000
                                                               1.000 COL
1.000 COL
                               1.00
    .....
     SVIA - CARC . 1
                                                  L.000 WL
                                       1.000 DL
                               1,00
     2. DEAD - MIND
                                                                        EXD COAD
                                          SECIN LOAD
                  LOAD APPLIED DESTANCE AND INTENSITY
TYPE ON SPAN (M) (KN; N/N)
                                                                DISTANCE AND INTENSITY
                                                                             (30%; W/N)
                                                                 (8)
    CUDED GROUP
                                     (M)
                                                   .......
       NAME
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                  CNIT
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                                                  46.25
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                   UNIF
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                                        0.000
                   10417
     DESIGN DATA
                               DEAD . LIVE
                              1.500/10
     LOAD CASE
     DESIGN SPACING MY
     ROOF SLOPE
ROOF LOAD KPA:
LIVE LOAD (KPA)
                                  0.091
                               : 0.570
                                                                                                            5 3 2 A R | 1330
                                                     MOMENTS (325-M)
                                                                                                               LEFT
                                                                                                                                     20067
             DEFLECTION (MM)
                                                                                       RIGHT - LEFT LEFT
SUPPORT - SUPPORT LAP
                                                                            3.0GHT
                                                                                                                                   5097030
                                                                                                                          5.42
                                             1322
                                                        1.341 2.542
                               . 0.000
        1 15.034
```

						. 5/			0.000	4.410	4.0	66		-2.551	
2					3.141 MAX. LOCA			мах.	ALLOW.	нах. с	OCATION	COMBINE	LOCATEO	N WE	B LIN
52AN 8	RETION	DESTON	ACTUAL BENDING	BENDING	BEMPING			SHEAR	SHEAR	RATIO		SKEAR		RAT	TIO.
		(301-91)	STRESS (MPA)		RATIO			STRESS (MPA)	LMSM1			,,,,,,,,,		LEST	
												n 228		0.510	n.4
	0071 75	.5 147	-141.357	207.000	0.693	2	-4.066	-11,824	45.555	0.260		0.723	L.	0.490	9.4
0										R - RIGH				RIGHT S	up 21
LS - LI	97 SUPPOR	т	1	ಓರ್ಜಿ ಚ	. P		P = MIDS	SYN		K = Kron	ii ini				
	: G N D														
COAD C	ASE	190	DEAD 4												
Secret C	I ODE		1,000												
	CAD (KPA)		0.471										20020		
MIND C	DEF.				момен	7.5	(324 -24)					EAR	(824)	252.50	
	prolect							REGRE	REGIST	• £25	T L	EFT CAP	REGRE	RECHT	T
SPAN			 SUPPOR 	t LEFT	MEDINA	X-	CORD	LYS	SUPPORT	- 30220			2 29:	1.115	
1 2	-12.21 -12.21	T	· 0.00	3 3.65	-2.375 -2.375	2	.602 .545	3,659	0.000						
	section		N ACTUA	L ALLOW.	MAX. D G SENTING	OCATIO	N MAX.	MAX		NAX.		BEND	Livis		
G		MOME	STRES	e st8558	RATIO		(329)	5795		SS RATIO		SHE	AR TO		RATI T R
		(K24 -	NI (ND)	d (MPA)			(3034)	ICIPA							
WT										00 0 11	ın a	0.3	88	g 0.00	a :
	20071 7	3.5	59 104.	922 275.30	00 0.359	3	2.39	9.4	07 90.7	40 0.2			una	2 2.00	0 :
30	20021.3	5 3.0	131		0.369										
				G - SEFT	LAP		9 - 90	IDSPAN		R . R	DON'T CAR	,	7.	• 3,0000	. 201
23 .	LEFT 512	SCEL		-											
							ROOF FUR E EDGE:	ISIN DEPT	354						
					ANALY	3 1			នបអ	макч					
		1000000		ioe cap	et SIOS		- 73		A SX						
523		LENGTH M)	1541		(9)	SECTIO									
		.147	0.000	0			246	5.0 345 5.0 345	5.0 15. 5.0 35.						
1		.142	0.353	o o											
					6040	t % G	C 7	ETER	EA						
							GROUS	1 G	ROUP 4						
	LOAD COM	GINATION							000						
	i. DRAD -	MIND	L.	00 1.000	25 2,40										
				8	SGIN LOAD			SNO LOAD CS ADD II	O NTEMSITY						
L	SAD GROUP	CASS	APPLIED	1361	KETKI GRAK BI KKI	24.543	1301		XX(: X/24)						
	SIMANE	2455	CN SPAN					7	44. 1.1						
	01	ONIF	-	0.000	64.5	.7	7,14	7 -3	27.91						
	ML	178 T.T	i	9.00	9 -327.5 0 -527.5		7.14	, ,,	21.3	MIMBER	WEIGHT				
	DF DF	CMIF	1	0.00	0 45.	2.5	7.14	7	46.25	NEMBER	MEIGHT				
	OL	UNIF	2	2.30											
7	1 5 5 5 5	N DA													
	SAC CASE			:EAD - WINT 1.250	,										
	besion FFA Roof SLIFE	acino		1.000/10											
	ROOF LOAD	KPA:	1	0.051											
	WIND COEF	. 25.01		-1.400											
							7-2-1	70							

		2 H 5 A R	13000
neer services (MM)	MOMENTS (KN-M)		

		19843			моме	St. P. C.	(21 - 124)								_
SPAN	DEFLECTION		LEFT	LEFT LAP	MIDSP	AN X-CC		REGIET LAP	TROUGHE	LEPT			AP	\$15H1	RT
1 2	+12+675	:	0.000	3.190	-2.45 -2.46		602 945	3.790		-1.879 -3.248	-2.99	94	.994	1.37	
5.2 A24	380715W	DESIGN MOMENT	ACTUAL BENDING	ALLOW. BENDING	MAX. BENDING	LOCATION	MAX. SHEAR	MAX. SHEAR	ALLOW. SHEAR	MAX. SHEAR	LOCATION	BENDING	LOCATI	CX	WEB EPPLE
5		(KN-8)	STRESS (MPA)	STRESS (MPA)	PATIO		(304)	STRESS (MPA)	STRESS	RATIO		SHEAR RATEO			RATIC IR T
HT			1												
			105.574	276.000	0.383	2	2.994	3,708	40.740	0.143	8	0,402	3.		00 0.
0.0	20021,75	3,790	105.574		0.383	c	-2.99	4 -8.708	60,740	0.143	ť.	0.402	L	0.00	
30	LEFT SUPPORT	r		. LEST L	λP		2 • MI	DSPAN	.,	A - REG	HET LAP		9.5	- RIGH	7 307
PURLI	M EBACTHGS		1 9 1.000	5 9 1	,500	1 9 1,16	a 1	9 0.340							

PROOF & SIDEWALLS!

WIND LOAD (KPA) : 0.471

MIND PRESSURE COSF. : 0.908 0.650
WIND SUCTION COSF. : -0.100 -0.150

NUMBER OF BRACED BAYS REQD : 1 BRACED AT BAY # : 2

STRUT FURLIN SPACINGS (M) : 7,000

cottoni so.	COAD (XXI)	į	L	SAY NO.
REAR S.W.:	4.027 5.715	!	3.020 5.246	9.735 5.246

IF LINE FROM OPPOSITE DIRECTION:

ENDMALL LOAD ISSO COLUMNS NO. ON COLUMNS NO.	BAY NO.
(REAR 5.W.) 4.027 1 5.715 1 (REDGE)	-1.007 9.735 -1.459 5.245
WIND LOAD (KPA)	END ZONE ENTERIOR ZONE
WIND PRESSURE COEF. WIND SUCTION COEF.	0.900 0.650 -0.300 -0.150
MOMBER OF SEACED BAYS REQU SEACED AT SAY T CORRESPOND, SAY SPAC, EMI	: L : 2 : 7.500
STRUT FURLIS SPACINGS (MI	1 1.630

BRACED BAY # 1 AT BAY 2

ENTWALL collyps NO. (STELL LINE)	AXIAL LOAD ON COLUMNS (ES)	EDAD FOR BRACE (SN)	TENS (08)	GRACE SIZE REQUIRED (Not)	CONTROLLING LUAD TYPE
(SEAR 5.W.	,	10.741	11.904	12 804 RCD	MEND
;	4,327	m.715		12 MM 200	MEND
1.	6.715		1		1

The second of the second secon

----- EAVE STRUT DESIGN -----

	0 8 3	S. I G :	0 9	A.	TA
LOAD	CASE	1	- :	1	43+30
LOAD	CASS	2	1	:	OL-WL
ROOF	CAGG	13.241		:	0.051
TIME	LOAD	(3.2A)		1	0.570
MIND	LOAD	18591		:	0.471
MIND	COEF				-1.700
PURL	(N SPA	CING	(26)	:	1.000

SPAN	SECTION	LENGTH (M)	BENDING MOMENT (KN-M)	BENDING STRESS (NPA)	BENDING ALLOW. (MPA)	AXIAL PORCE (300)	AXIAL STRESS IMPAI	AXIAL ALLOW. IMPAI	BENDING RATIO	AKIAL Oltas	BENDING • AXIAL RATIO	DEPLECTION	LOAD CASE
1:.	20051.30	7.500	2.537	62 710	207.000								
2 L	20021.50	7.500	2.537	52.710	207.000	0.000	0.000	207.000 207.000	0.303	0.000	0.303	15.477	1

SECTION	AREA (CM-2)	SXU1CH-31	SXL(CM-1)	FY (MPA)
200EL.50	5.590	40.450	40.450	345.00

SPAN	SECTION	MED CRIPPI LEFT	LING RATIO RIGHT	LOAD
11.	20081.50	0.404	0.404	1
32	200E1.50	0.404	0.404	1
MAMBER	OF A-325 M	11.2 × 40 MM	aduts	2
29AX . SI	EAR (KN)		:	10.74
ALLOWAS	LE SHEAR (3000	;	11.19
ALLOWAS	LE BEARING	(ICM)		24 92

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FIRST FERMENTATION TANK
Q 25431 -- REV. 1 FREST PERMENTATION BLOG.A -- MAIN SYPICAL PRANE ADALYSIS AND DESIGN
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. 39.90. 0.00,11.1,2,Q.N.2

FRAME DESIGN DATA

							SUPERINDOSED	TOTAL DEAD	COLLATERAL	RCGF S1
SLDG	SPAN	NO. OF	EAVE HT.	BAY SPACING	5102 2010			LOAD (EPA)	LOAD IXPAI	MM/C/
	180	MODULES	(24)	(M)	(KPA)	(XPA)	DEAD LD (XPA)			
C.P	45.200))	4.400	10.000						

:1986 M9MA BUILDING CODE SUMBER OF CYCLE : 1950 ASM
SUMBER OF CYCLE : 1
SUMMER OF CYCLE : 1
SUMMER OF CYCLE : 1 PRINT OFFICE :

MODULE SPACING | 19.900 6.002 19.900

GIRT AND PURLIN DATA :

RICHT SIDE SEPT SIDE à. COL. TO STEEL LINE DISTANCE: (MM) GIRT SPACINGS (M) : 4.400 4.400

FLANCE BRACING AT GIRT NO. (ESST): DOUBLE F.B. AT FLANGE BRACING AT GIRT NO. (RIGHT):

accusts F.B. AT

200. 200. RAFTER TO STEEL LINE AT ROOF: (994)

PURLIN SPACINGS: (M) 1.9 1 2 0.401 1.500 24 @ 14 9 1,500 1.3 1.150 1.150 : 3 0.340 0.340 1 0

2 3 4 5 5 10 12 13 13 14 15 16 FLANGE BRACING AT PURLEY NO. (LEFT): SCORLE F.S. AT SCALIN NO. (RIGHT): 2 3 4 5 4 10 12 13 13 14 15 15 FLANGE BRAZING AT FURLIN NO. (RIGHT): 2 3 4 5 4 10 12 13 13 14 15 15

DOUBLE F.B. AT

WEND COEFFICIENTS: WIND FROM LEFT: C1= 0.2500 C2= -1.0000 C3= -0.6500 C4= -0.5500

MENBER FRODERTIES:

MEMBER TYPE END COND. DI

14054DTD	7477	END COMP.	1,0					
		3.9	250.	752.	2.	2-		273.00
SECT	LEMGTH	OUTER FLANGE	(HM) THK.	WEB THK-	INNER PLA WIDTH	MGE :MMI THX.	FL YERLD (MPA)	MED YIELD (ARM)
lA.	3.553	200	9.0	+.3	334.	13.1	344.79	
		and could						

72 23

	かけまして - リア	F-F						916.31
	LÉMOTE	OUTER FLANGE	(MM)	WEB THK	ENNER PLAN	NGE (MM) TICK.	FL YEELD (ASA)	(MPA)
IA ZA	\$1.491 4.508	150. 150.	6.0	6.0 5.0	180. 150.	8.0 8.0	344.70 344.70	344.70 344.70
	TV97	END COND.	D1	D2	D3	D-I	D5	WEIGHT (XG)
VEMBTY.			-700.	700.	g.	0.	0.	247,44
SECT	LENGTH	OUTER FLANC	E IMM)	WES TEX.	INNER FL	ANGE (MM) THK.	FL YIELD (MPA)	MES YEELS (ASA)
NAME	1 215	MIDTH 150.	6.0	5.0	150.	8.0	344.70	344.70
	7705	EMD COMD.	DI					MESCHT (XC
			154	169.	9.	9.	100	
SECT	CENGT:	RETEMBLE :	(MM)				3.2.13.73.1	
Lλ	5.47	14 169.0000	4.3000				344, 7379	

LOAD COMBINATION:

CASE 1--1.CDL - 1.ULL CASE 2--1.CDL - 1.UKL

ревіси вимнаху

SECTION SMEX	INTER	NAL FOR	HCHENT.	· 54273	ALLOWAY AXEAL (MPA)	OUTER (MPA)	ENG CARACT	SHEAR	axial	BEND GUTER	IDNES ING	BENDING - AXIAL - RATIO	LOAD CASE	(M)
811A 511A 111A 111A 111A 381A 821A 821A 111A 221A	1320	-72.98 -55.12 -67.45 -80.46 -72.80 -65.12	115.97 -137.59 -214.29 -213.34 -115.97 -137.58	- 181.45 - 150.44 - 254.60 - 180.44 - 131.45 - 180.44 - 254.60 - 180.44 - 341.44	100.72 93.35 109.28 113.73 100.72 98.95 109.28 113.73 110.44	206.32 206.32 206.34	206.32 206.32 266.32	0.18 0.27 0.28 0.36 0.36 0.05 0.05	0.10 0.11 0.12 0.09 0.10 0.11 0.12 0.09 0.30	0.51 0.90 0.77 2.73 0.63 0.90 0.77 0.79 0.00	0.54 0.72 0.59 0.72 0.54 0.72 0.59 0.72 0.00	- 0.74 - 0.61 - 0.83 - 0.81 - 0.74 - 0.93 - 0.89 - 0.35 - 0.30	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3.55 0.65 0.00 3.55 0.05 11.49 0.00 0.00 0.00

GENERAL INFORMATIONS

									٠.
3.	EACTIO	SIS		DL	:	CL	:	WLL	
	324/325	-91)	٠.						٠.
				12.6		93.1		-41.6	'
1,277	CO5.	HOR.	•	12.4		55.1		-51.9	•
LEFT	COL-					-53.1		25.8	
SICT	COL.	SCR		-12.5		55.1		-38.0	
* 9.5GT	COL	ven.		17.4		0.0		0.0	
· CNT.	col.	1 908-		0.0		55.5		-56.0	
137		1 723.		56.7		0.0		0.0	
		2 SOR.		0.0	- 1	53.5		-21.3	
1287		2 VSR.		16.7					

SIGN CONVENTIONS

POSITVE HORIZ, REACTION : to the right POSITIVE VERT. REACTION : upward positive MCMENT : counter discharge

COLUMN BASE REACTIONS FOR LOAD COMBINATIONS

	1009.Z XXI	VERT 30	MOMT 924-M	CACU NOTTAKIEMOD	
LEFT EXT. COLUMN	65.66 -29.38	62.49 -14.51	0,00	CASE 21.30L CASE 21.30L	- 1.011 - 1.0MLG

RIGT EXT. COLU	DAN.	-65.66 16.29	92.49 -20.58	0.00	CASE 11.00L CASE 21.0DL	- 1.06L - 1.0WEL
DAT. COLUMN -	1	n.00 0.00	182.12 .49.36	0.00	CASE 11.00L CASE 21.00L	- 1.0Lb - L.OWLL
INT. COLUMN -	2	0.00	92.13 -5.17	a.00 a.00	CASE 11.00L CASE 21.00L	+ 1.00LL + 1.0NLL
JOINT '	в	·····	1		2 R	3 .
. x-M . 0	.14	0.38		11	· 25.90 · 45.4 · 5.81 · 3.8	

MAXIMUM BENDING PLUS AXIAL STRESS RATIO = 0.89 MAXIMUM SHEAR STRESS RATIO = 0.38

DEFLECTIONS (MM)

				HOR	206	TAL.	 VERTICAL	
•				10111			 AT	
	LOAD			LEST	,	RIGHT	22AK	
٠.	COMPL	TION				SMES		
٠.				SMES			 	
٠,						-0.4	 5.6	
		LOAD		0.4		-1.3	5.5	
	SVL	LOAD	'	1.7		-3.	-4. T	
	MEND	TES.		-5.3			 	

ALLOWED STRESS RATIO = 1.000

UPRTICAL CLEARANCE AT KNEE LEFT = 3.55 M

MEIGHT OF FRAME MEMBERS - 1735.24 83 WEIGHT OF MESC, ITEMS - 273.52 85 (10.0%)

MIDSPAN DEFLECTION FOR OLVEL

MEMBER 1.1 = 64,3654 MM

```
SUB_STORAGE VESSEL
BLDG.B .. MAIN TYPICAL FRAME ANALYSIS AND DESIGN
1.200, 5. 1.500, 1, 1.160, 1, 0.340, 0, 0.000, 0, 0.000,
......
                                                                  COLLATERAL ROOF SLO
      SPAN NO. OF EAVE HT. BAY SPACING LIVE LOAD WIND LOAD SUPERIMPOSED TOTAL DEAD
                                                                LOAD (KPA)
                                               DEAD LO (KPA) LOAD (KPA)
                                         18981
                                 1823.1
          MODULES (N)
                         (39)
 ......
                                                                    0.000
                                                0.083
                                          0.471
                                  0.570
 .....
                          7.500
 41.5
 SUILDING CODE :1986 MSMA
WITH VELOCITY M/S: 31.00
NUMBER OF CYCLE : L
SYMMETRICAL PROPERTY
 SYMMETRICAL PRAME?
 PRINT OPTION
 GIRT AND PURLIN DATA |
                                  REGRT SECT
                         LEFT SIDE
                         ......
  COL. TO STEEL LINE DISTANCE: (904)
  GIRT SPACTNOS 90:
                                    3.900
                          1,960
  FLANCE BRACING AT GIRT NO. (LEFT ):
DOUBLE F.B AT
  FLANGE BRACING AT GIRT NO. (RECHT):
    COUBLE 9.3. AT
  RAFTER TO STEEL LINE AT ROOF: (MN) 200.
                                     290.
  PURLIN SPACINGS: (M)
                                     1,000
                                 1.3
                        1. 0
                            1.000
                                  5 0
                                      1,500
                        5 3
                            1,500
                                 10
                                      1.150
                            1.160
                                      0.349
   FLANCE BRACING AT FURLES NO. (LEFT ): 1 2 4 5 7
   DOUBLE F.B. AT FURLIS NO. (REGREE) 1 2 4 5 7 FLANGE BRACING AT FURLIS NO.
     DOUBLE F.B. AT
   WIND COEFFICIENTS:
   WIND FROM LETT: Cl- 0.2500 C2- -1.0000 CJ- -0.4500 C4- -0.5500
    MIMBER PROPERTIES:
    550.
     BL 30017-09 2-5
    ......
        LEWISTH COTER FLANCE (MMI WES THE DONER FLANCE (MMO FL VIELD WES VIELD
    18 9 190 190 4.0 5.0 190, 10.0 144.70 144.72
    an 7 + 22 - 250 - 4.7 9.9 - 250 - 19.0 260 - 9.1
    MEMBER TUFS END CONT. D1 D2 D3 D4 D5 MEIGHT(NG)
                                 03 04 05 WEIGHT ( NG)
```

1.0330

300.

SECT LEGITH OUTER FLANGE (MM) MED THE SINER FLANGE MMH PL YIELD MED YIELD NAME P WIDTH THE MMH MEDTE THE MANNER PLANGE MANN MEDTER THE MANNER PLANGE MANN MEDTER THE MANNER PLANGE MANN MEDITER THE MANNER PLANGE MANN PLANTED MED WITH THE MANNER PLANTED MED WITH MEDITER THE MANNER PLANTED MED WITH THE MEDITER MEDITER THE MEDITER THE MEDITER ME

ad:11-07 F-7

IA 10.053 150. 6.0 5.0 150. 8.0 144.70 144.70

LOAD COMBINATION:

CASE 2--1.0DL + 1.0LL CASE 2--1.0DL + 1.0WLL

DESIGN SUMMARY

SECTION	SHEAR (KN)	AXIAL FOR	BENDING	SHEAR	- ALLOWA AXEAL (MPA)	BLES DEN OUTER IMPAI	DING ENNER (MPA)	SHEAR	STRESS R	ATIO BEND OUTER	ENG	BENDING - AXIAL - RATEO	LOAD CASE	DIS'
BLIA LPLA BRIA RPIA	44.70	-51;78 -52,62	-142.61	+ 134.03 - 133.61 - 134.08 - 133.61	146.77 L03.99	206.82	189.95	0.15 0.33 0.35 0.33	0.09 0.07 0.09 0.07	0.75 0.89 0.75 0.89	0.54 0.79 0.64 0.79	0.39	1, 1, 1, 1	3.: 0.: 3. 0.:

GENERAL INFORMATIONS

			 					٠.
. :	EXACTIO	NS	DL		LL		MILL	•
	2007200	261				•		•
CEFT	COL.	HOR.	4.8	-	30.1	•	-29.5	٠
LEFT	COL.	vea.	11.3		42.7		-33.L	•
RIGT		HOR.	-8-9		-38.1	-	19.9	•
RIGT	COL.	VER.	11.3		42.8		-25.2	

SIGN CONVENTIONS :

POSITIVE MORIE. REACTION : to the tight POSITIVE VERT. REACTION : upward

POSITIVE MOMENT : councer clockwise

COLUMN BASE REACTIONS FOR LOAD COMBINATIONS

	HORZ	VERT KM	MONT MONT	CASC MOITANIEMEE	
LEFT SXT. COLUMN		54.02 -21.78	0.00 0.00	CASE 21:31	- 1.411 - 1.7855
RIGT EXT. COLUMN		94.02 -13.91	3.03	CASE 21.102	- 1 311 - 1 3811

JOINT	=		?		2.		3	-
2222				-		•		٠
	 	 	 	• • •				٠.
V - M	0.15	0.32	10.00		19.53		19.35	•
10 10	0.00	1 43	4.55		3.43	•	3.30	
	 	 	 			• •		٠.

MAXIMUM BENDING PLUS AXEM, STRESS RATIO = 0.39 MAXIMUM SHEAR STRESS RATIO = 0.35

DEFLECTIONS (MH)

					• •		•
		HORE	ZCNTAL			JAD1178EV	٠
· LOADING						AT	٠
* CONDITION		LEFT	210	HT		PEAK	٠
	-	33022	· 329	66	•		•
					• •		٠.
' DEAD LOAD		-1.3		1.3	٠	-12.4	•
. LIVE LOAD		-5.8		5.8		-54.0	•
· Wind LEFT		4.4		-1.1	•	35.7	•

ALLOWED STRESS RATIO - 1.000

VERTICAL CLEARANCE AT KNES LEFT = 3.19 M HORIZONTAL CLEARANCE AT KNEE = 18.87 M VERTICAL CLEARANCE AT RIDGE = 4.42 M NT OF FRAME MEMBERS = 911.05 MG NT OF MISC. ITEMS = 109.33 MG (12.0%) TOTAL 1020.37 KG

BLDG. A : FIRST FERMENTATION TANK MAIN FRAME CONNECTIONS DESIGN

EXTERIOR COLUMN BASE PLATE DESIGN:

MEMBER: BL COMM. ID= 1

INPUT ECHO:

DESIGN LOAD CASES 4 A
YIELD STRESS OF COL. HEB: 344.70 MPA
YIELD STRESS OF BASE PL : 344.70 MPA ACTUAL LOAD CASES: 2

COLUMN SECTION AT BASE:

250. X 5.0 200. X 8.0 WEB (2001):

OUTER FL (MH): 200. X INNER FL (MH): 200. X 10.0 INNER PL (MM):

0.00

SHR-XM AXIAL-KN LOAD CASE BM-KN M 65.66 0.00 28.94 -34.59 WIND 0.00 2 0.00 65.66 82.41 3

15.60

-20.58

WEND

BASE PLATE DETAILS:

BASE PLATE TYPE: PINNED BASE PLATE SIZE (MMI:

250. X 12.0 X 275.

DASE PL YEELD: 144.70 MPA

WELDS: SIZZ LENGTH 13941 19000

FULL L SIDE 250. 2 SIDES 5.0 BASE PL TO FLANGE WELD 5.0 BASE PL TO WES WELD

ANCHOR BOLT DETAILS:

DIAMETER: 24. MM NUMBER OF A-107 BOLTS 100. 204 GAGE

: 63. MH : 75. MM : 137.90 MPA ANCHOR BOLT TO STEEL ANCHOR BOLT PITCH BOLT TENSILE ALLOWABLE 68.95 MPA BOLT SHEAR ALLOWABLE 13.79 MPA CONCRETE TETRENGTH

: 174.18 824 WEB TENSILE ALLOWABLE

4 \$ 24/16 7 Base R. is used

HAUDEH CONNECTION DESIGN:

EMPUT ECHO:

DESIGN LOAD CASES- 4 ACTUAL LOAD CASES- 2 L.000

ROOF SLOPE (7/10): YIELD STRESS FOR FLANGE (MPA): YIELD STRESS FOR WEB (MPA): 144.70 344.73 YIELD STRESS FOR CONNECTION PL (MPA): 344.70

SECTION DATA: COLUMN 700. X 5.0 200. X 5.0 200. X 10.0 700. X 5.0 WEB IMM! 130. X 5.0 130. X 1.0 OUTER FL 700

SHEAR (KN) WHILEO # AXIAL(KN) LOAD CASE MOM. (30F-M) -214.29 97.09 65.66 -90.46 MIND 24.79 15.54 -40.46 -214.28 70.25 55.66 1 WIND 22.93 25.80

HAUNCH CONNECTION DESIGN:

	MIDTH TO (MM)	(MH)	LENGTH (MM)	(Mby) Alerd	
SEAT PLATE CAP PLATE BEARING STP LONG STF STIFFEDER HEEL PLATE	200. 200. 37. 75. 75. 200.	12.0 12.0 10.0 6.0 6.0 9.0	743. 713. 700. 648. 300.	344.70 344.79 344.70 344.70 344.70	
WELDS:		S125 1991	LENGTH (MM)		
CAP/SEAT PL T BEARING STIFF STIFFEMER TO STIFFEMER TO HEEL PL TO CA OTHERS	MEB METD CYN DF METD ENEW METD	5.0 5.0 5.0 5.0 5.0 MIN. REC	FULL 153-306 FULL 105. FULL PUISEMENT PO	L SIDE	GTH/STIFFENER
BOLTS:					HOLE SPACINGS

[890] : BOLTS

GUTSK HOLE TO OUTER FLANGE INNER HOLE TO INNER FLANGE TYPICAL HOLE SPACING 48. NO. OF A-325 BOLTS 50. : 16. : 41.50 : 61.01 BOLT DIAMETER 1990 ALLOWABLE BOLT SHEAR (KN) ALLOWABLE BOLT TENSION (KN) 90. 75. HOLE GAGE 50.0 90.0 170.0 90.0 90.0 90.0 SOLT SPACING (HM) -

ALLOWABLE WEB TENSION (KM) : 139.58

FORCE DISTRIBUTION ANALYSIS

				12FENER		AMATY	SIS DISTAL	ACES	PORCE	DISTRIBU	TEOM (324)
TROE	LEVER ARM 9-	(HM) M+	H- BOLT	FORCE M+	WXX (320)	L.STFAR	WEB	R.STFNR	L.STFNR	WE3	R.STING
outes a 1	660.	40.	55.50 48.85	3.16 5.88	51.04 55.50 48.90	40.)8. 39.	û. 45.	51.04 0.00	61.96 61.81	0.00 35.79
9 3 S 2 B 3 B 5 B 5 B 7	570. 480. 390. 300. 130. 40.	220. 310. 400. 570. 560.	41.09 13.39 25.68 11.13 3.42	3.59 11.10 14.01 19.14 21.95	- 69.92 41.09 13.39 25.63 19.14 21.45 19.74	45. 0. 0. 0.	38. 33. 38. 33.	0. 0. 0. 0. 40.	30.14 2.00 0.00 0.00 0.00	52.05 66.79 51.37 38.28 23.36	0.00 0.00 0.00 0.00 2.75

14M20/167 R. used. which is more than required.

ENFUT ECHO:

DESIGN LOAD CASES: 4 ACTUAL RCOF SLOPE (7/10) :
YISLD STRESS FOR PLANCE (MPA) :
YISLD STRESS FOR MEN (MPA) :
YISLD STRESS FOR CONNECTION PL (MPA) : ACTUAL LOAD CRSES- 2 1.000 = 344.70 144.70 344.70

SECTION DATA:	FSS4	RIGHT
WEB (MM) OUTER PL (MM) [NNER FL (MM)	580. X 5.0 180. X 5.0 180. X 8.0 17/10) 1.421	500, X 5.0 150, X 6.0 150, X 8.0 0.918

LOAD CASE	MCM. (KK-M)	SHEAR (XXX)	AXIAL(XX)	
1	115.97 -57.58	5.79	-55.32 23.96	GKIN
3	115.97 -26.45	3.09	-65.32 31.33	MIND

INTERMEDIATE BUTT CONNECTION DESIGN:

	WIDTH	THECKNESS (MM)	LEMOTH (MM)	(MPA)
BUTT PLATE	190.	16.0	694.	344,70

ELDS :	-	EZS LENG								
		6.0 FUL	L 2 SIDE	;						
N TO BUTT PL WELD TER FL. TO BUTT PE NER FL. TO BUTT PE		6.0 FUL 6.0 FUL	A. 2 SIDE:	5						
ORK ID.						(99) -				
				HOLE :	SPACINGS					
oLTS:							ee .	46.		
O. OF A-125 BOLTS OUT DIAMETER (MM)	e (200)	: 10 : 16: : 41:50		ENNER	MONTH TO	OUTER FLAN INNER FLAN SPACING	GE :			
CLOWABLE BOLT SHEM LLOWABLE BOLT TENS BOLT SPACING IMM)	40.0		0.0 90.0	98.0	+0.0					
ALLOWABLE MES TENS	108 (308)									
			FORCE DISTR	ISUTION A	WALYSTS					
			ENER OR RCE (KN)		ANALYSI	S DISTANCES	STFNR.	FORCE L.STFNR	DISTRIBUT WEB	(ON IKN) R.STFNR
BOLT LEVER ARM (N-	M- N	RCE (KN)	L.5	TYNR	MEB IC.				43 95
м-					0.	18.	50.	0.00	0.00	40.73
в 1 536.	-56.	24.48 0	67.5				0.	18.63	22.62	0.00
OUTER FL	1.7		.51 20.		40.	38.	0.	0.00	64.37	9.30
3 2 460.	370.	7,39 34	1.44 12.		0.	38.		0.00	44.22	35.43
3 1 130. 3 4 40.	460.	3.73 4	1.13 40.					97.83	0.00	0.00
THOSER FL		0.00 4	8 92 49.	92	50.	a_		97.03	4.00	
	558		which 1	mare	than	Require	d			
use 12 M	20/16 7	2 12.	- LLCA			/				
BUTT CONNECTION (1851091									
INPUT ECHO:										
DESIGN LOAD CASE	c. 4	ACTUAL	LOAD CASES	. 2						
YIELD STRESS FOR	FLANCE IN	PAI :	344.70							
YIELD STRESS FOR	CONNECTIO	36 AT 1925								
SECTION DATA:	LEF			CHT						
		0.000	700	x 6.0						
WEB (MM)	700 X	5.0	150.	3 5.0						
OUTER FL (MM) INNER FL (MM) INNER FL SLOPE		8.0	150.	X 8.0 1.200						
			AXIAL	13001						
LOAD CASE MOS	((SOX - M)	SHEAR (30)								
	-175-42	6.53	-65	.33 ×	END					
2	57,24	6.70		33						
	67,24	13,60			END					
	or prettyl	vr aidgs:								10. 1
BUTT COMMECTIC	3 355200						MEM	BER-1P	CONS.	[0
	HTGIK	THICSS/ESS (201)	LENGTH (204)	(MAY)						
BUTT PLATE		16.0	894.	344.70						
WELDS:		\$122 (294)	(524)							
MEB TO BUTT SUTER FL. 72	30.00 30	5.0 5.0	SOLT	2 51085						
DINER FL. TO	BUTT PE	5.0	2000		mad 7 . ct	ACINGS (MH)	:			
BOLTS:					******				45.	
NO. OF A-303 BOLT DIAMETS	ER (MM)	(KNI :	14. 41.50		TYPICA HOLE C	HOLE TO OUT HOLE TO INN L HOLE SPAC	EE FLANGE	:	40. 90. 75.	
ALLOWABLE BU ALLOWABLE BU BOLT SPACING	CLT TEMSIO	8 (XN) 40.0 96	51.01 .0 90.0	533.5	98.0	40.0				

FORCE DISTRIBUTION ANALYSIS

BOLT .	LEVER ARM	(204)	3007	TYPENER FORCE		MALY L.STENR	SIS DISTAL	R.STENR	FORCE L.STFNR	NE3 SZBV	PION (KD) R.STFNR
	М-	M-	49.43	0.00	49.43	۵.	38.	sa.	0.00	0.00	98.87
a l corea B 2 a l	759. FL 663. 571.	-56. 40. 130.	43.17	3.64 5.82	137.89 43.19 37.33 18.77	40 - 9 - 0 -	38. 38. 33.	0. 0. 40.	39.02 0.00 0.00	47.36 74.66 20.59	0.00 0.00 16.95
B 4 INNER	40. gt.	663. 761.	2.40 g.00	21.15	-59.26 21.15	50.	α.	0.	42.30	0.00	0.00

use 121120/167 the which more than Required.

INTERIOR PIPE COLUMN DESIGN:

EXPUT ECRO:

ACTUAL LOAD CASES : 2 CESIGN LOAD CASES : 4 A
YIELD STRESS OF BASE PL [MPA] : 344.70

INTERIOR COLUMN SECTION:

(MM): 169.0 PIPE COLUMN OUTSIDE DIA

LOAD CASE	FORC	ES AT BASS	2	200	CES AT CA		
	AXIAL	SHEAR	MOMENT KN-M	AXEAL SN	SHEAR	MOMEST	
<u> </u>	92.12 -19.34	0.00	0.00 5.00	92.12 -49.35	0.00	0.00	MIND
2	32.12	0.00	0.00	92.12	3.00	0.00	OKEN

INTERIOR COLUMN CONNECTEON DESIGN:

CONN. ID= 9 MEMBER-L1

LOAD CASE	FORC	ES AT BASE	:	FOR	CES AT CA		
	AXIAL	SHEAR 324	MONEOUT Moneout	AXIAL 304	SHEAR	HOMENT	
L	82.12	0.00	0.00	92.12 -49.36	0.00	0.00	MEND
3	-49.36 32.12 -5.17	0.00	0.00	92.12 -5.17	0.00	0.00	MIND

INTERIOR COLUMN BASE PLATE DETAILS:

300. X 12.0 X 300. BASE PLATE SIZE 344.70 5.0 BASE PL YIELD IMPA): HELD THICGGESS (MM): (MONI: 4 9 133. WELD LEMOTH

ANCHOR BOLT DETAILS:

STRENGTH (MPA): 13.0

4+20/16 y to. more than Required.

INTERIOR COLLYN TOP PLATE OCTAILS:

250. X 12.0 X 100. (9943) CAP PLATE SIZE

(200): 344.70 (200): 5.0 (200): 4 9 133 CAP PL YIELD NELD THICKNESS WELD LENGTH

TOP PL BOLT DETAILS:

MIMBER OF A-125 BOLTS : 4
DIAMSTER (MM): 20.
IAGE (MM): 75.
PITCH (MM): 230.
TENSILE ALLOWABLE IMPA: 101.4

use 4M20/162 电.

Q 25431 SUBS TORAGE VESSEL RSV. 1 MAIN FRAME CONNECTIONS DESIGN

EXTERIOR COLUMN BASE PLATE DESIGN:

COSM. ID- 1 MEMBER: BL

INPUT ECHO: *********

ACTUAL LOAD CASES: 2

DESIGN LOAD CASES 4 A
YIELD STRESS OF COL. WEB: 344.70 MPA
YIELD STRESS OF BASE PL: 344.70 MPA

COLUMN SECTION AT BASE:

WEB (MH): 250. X 5.0 OUTER FL (MH): 180. X 6.0 INNER FL (MH): 180. X 10.0

AXIAL-XX 9M = 324 - M SER-300 LOAD CASE 51.97 45.91 0.59 -21.33 53.97 -13.96 WIND 29.53 1 0.00 2 0.00 MIND 3 11.27 0.00

EXTERIOR COLUMN BASE PLATE DESIGN: -------

CORN. (0- 1 MEMBER: BL

AXIAL-KN SHR-KN gm. KN. M LOAD CASE ***** 53.97 46.91 0.00 WEND -21.83 20.58 0.00 2 53.97 0.00 46.91 WIND -13.96 3.00

BASE PLATE DETAILS:

BASE PLATE TYPE: PINNED BASE PLATE SIZE (MM): 250, X 12.0 X 275.

BASE PL YESLD: 344.70 MPA

LENGTH SIZE WELDS: (295) 5.0 FULL 1 SIDS 5.0 250. 2 SIDES BASE PL TO FLANGE WELD BASE PL TO WEB WELD

ANCHOR SOLT DETAILS:

DIAMETER: 24. MM MAMBER OF A-307 BOLTS 130, 204 GAGE: 53. MM 75. MM 117.90 MPA ANCHOR BOLT TO STEEL ANCHOR BOLT PITCH ANCHOR BOLT PITCH
BOLT TEMBILE ALLOWABLE : 58.95 MPA
BOLT SHEAR ALLOWABLE : 58.95 MPA
BOLT SHEAR ALLOWABLE : 13.79 MPA CONCRETS STRENGTH

WES TENSILE ALLOWABLE : 183.51 KM

USE 4024/167 电

HAUNCH CONNECTION DESIGN:

INPUT ECHO:

DESIGN LOAD CASES 4 ACTUAL LOAD CASES 2 ROOF SLOPE (7/10): YIELD STRESS FOR FLANGE (MPAI: YIELD STRESS FOR MEB (MPAI: YIELD STRESS FOR MEB (MPAI: 344.70 344.70 YIELD STRESS FOR CONNECTION PL (MPAI) 344,70

RAFTER COLUMN SECTION DATA:

550 X 5.0 (MM) 63H

550. X 5.0

OUTER	FF.	IMM	180.	х	6.0	150. X	6.0
						150. X	2.0
ENNER	FL	19951	180.	X.	10.0	150. A	910

LOAD CASE	MOM. (K21-M)	SHEAR (321)	- AXIAL(KN)	- & COLTMA
· 2	-140.94 57.48 -140.95 43.44	46.91 17.76 46.91 17.47	-52.62 23.10 -52.62 15.31	MEND

HAUNCH CONNECTION DESIGN:

	HTOTH (MM)	THICKNESS (HMI	LENGTH (MH)	(NPA)
SEAT FLATS	180.	14.0	591.	344.70
CAP PLATE	180.	14.0	566.	344.70
BEARING STF	50.	10.0	549.	344.70
LONG STF	75.	6.0	511.	344.70
STIFFENER	75.	6.0	300.	144.70
HEEL PLATE	180.	5.0	494.	144.70
WELDS:		StZE	LENGTH	
		(MM)	(994)	
CAP/SEAT PL	TO WER WELD	5.0	FULL	2 SIDES
BEARING STIF		5.0	153-306	2 SIDES
STIFFENER TO		0.6	FULL	1 51068
STIFFENER TO		5.0	305.	TOTAL LENGTH/STIFFENER
HEEL PL TO C	DISM JE PA	6.0 MIN. REC	FULL UTREMENT ?	1 SIDE ER AISC TABLE 1.17.2A

SOLTS: HOLE SPACINGS (MM):

NO. OF A-125 BOLTS : 12 CUTER HOLE TO OUTER FLANGE : 46.
BOLT DIAMSTER MAN : 15. INNER HOLE TO INNER FLANGE : 50.
ALLOMABLE BOLT SHEAR (XM) : 41.50 TYPICAL HOLE SPACING : 90.
ALLOMABLE BOLT TENSION (XM) : 41.01 HOLE GAGE : 75.
BOLT SPACING MAN = 46.0 90.0 90.0 90.0 110.0 90.0 50.0

ALLONABLE WES TENSION (MOT): 114,16

FORCE DISTRIBUTION ANALYSIS

	LEVER ARM	15001		FIFFENSA FORCE (ANALY	SIS DISTAL	MCES			LIOM (824)
SCLT	M-	M-	M-	м-	MAX	L.STFNR	WEB	2.STFMR	L.SIFNR	MES	R.STFN
CUTER	ET.				52.24		5003		** **		4.00
	510.	40.	57.33	2.39	57.93	40.	33.	0.	52.24	63.41	0.00
9 1		130.	47.52	6.12	47.62	0.	16.	45.	0.00	60.32	34.93
2 2	+20.	130.	41.32	0.44	62.37						
5 2				0.10	37.42	45.	39.	0.	27.44	67.40	0.00
3 1	330.	220.	37.42	9.36				0.	0.00	54.43	0.00
3 4	240.	310.	27.22	12.59	27.22	Q.	38.				0.00
		420.	14.74	15.55	15.55	0.	38.	0.	0.00	33.10	
3 5	730-			19.79	19.79	0.	38.	40.	0.00	21.70	17.87
a 6	40.	510.	4.54	20.10	17.97		-				

USE 12H20/16 m the which is more than Required

BUTT CONNECTION DESIGN:

INPUT ECHO:

DESIGN LOAD CASES: 4 ACTUAL LOAD CASES: 3
ROOF SLOPE : 7/10) : 1.031
YIELD STRESS FOR FLANGE (MPA) : 344.70
YIELD STRESS FOR WEB (MPA) : 344.70
YIELD STRESS FOR CONNECTION PL (MPA): 344.70

SECTION DATA:	LEFT	REGAT		
	300. X 5-9	300. X 5.0		
MEB (MM)	300. A 3-3			
CUTES FL IMM!	150 X 6.0	150 . X 5.0		
		150. X 8.0		
INNER FL (MM)	150 X 0.0			
	(2/10) 1.554	1.554		

LOAD CASE MOM. (KN-M) SHEAR (SN) AXEAL (KN)

1	41,22	4.87	-46.66	
2	-13.71	4.44	20.98	MIND
â	41.22	4.87	-46.66	
. 4	-13.68	0.02	21.44	MIND

BUTT CONNECTION DESIGN AT REDGE:

						MEMBER-LP	COME. ID-	3
	(MM)	(MH) TRICKNESS	LENGTH	YEELE (MPA)				
BUTT PLATE	150.	14.0	494.	344.70				
WELDS:		5525 (MM)	LEXGTH (HM)					
WEB TO BUTT OUTER FL. TO INNER PL. TO	BUTT PL	6.0 6.0 6.0	FULL FULL FULL	2 SIDES 2 SIDES 2 SIDES				700
90LTS:					HOLE SPACINGS (MM):			

BOLTS:

OUTER HOLD TO OUTER FLANGE INNER HOLE TO INNER FLANGE TYPICAL HOLE SPACING 46. NO. OF A-325 BOLTS BOLT DIAMETER (MPM) ALLOWABLE BOLT SHEAR (XM) ALLOWABLE BOLT TENSION (KN) BOLT SPACING (MM) = 40.0 : 3 : 15. : 41.50 : 61.01 99. 75. HOLE GAGE 40.0 98.0

ALLOWABLE WEB TENSION (RN) : 116.36

FORCE DISTRIBUTION ANALYSIS

BOST LEVER ARM IMMI		STIFFENER OR BOLT FORCE (KN)		ANALYSIS DISTANCES			FORCE DISTREBUTION (KDI)				
BOST	N-	M-	×-	м-	MAX	L.STFNR	MEB	R.STFMR	L.SIFNR	ues	R.STFER
3 1	355.	-96.	L1.25	0.00	11.25	e.	19-	50.	0.00	0.00	22.51
GUTER 3 2 8 1	FL 262. 40.	40. 262.	9.76 1.01	4.14 27.05	30.42 3.76 27.05	40. 0-	38. 38.	40.	0.90	9.51 29.56	0.00 24.44
EXMER 3 4	FL -38.	360.	0.30	37.18	98.30 37.13	50.	3 -	0.	74.37	0.30	0.00

- Use BMZO/16 72 which is more than required.