GOVERNMENT OF ORISSA

WORKS DEPARTMENT

ORISSA STATE ROAD PROJECT

FINAL DETAIL ENGINEERING REPORT FOR PHASE-I ROADS

DESIGN REPORT OF BRIDGES

BHADRAK TO CHANDBALI (0 - 45 km)
&
BHADRAK TO ANANDPUR (0 - 50 km)

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INTRODUCTION

This report presents the detailed design report for bridges from Bhadrak - Chandbali road on SH-9 from 0.0 km to 45.0 km and Bhadrak – Anandpur road on SH-53 from km.0.0 to 50.0 km.

In Bhadrak – Chandbali section, there are total 21 nos of existing bridges and surface causeway in which water has been reported to be overtopped. In general most of the bridges are in poor condition.

In Bhadrak – Anandpur section, there are total 11 nos of existing bridges.

The data has been analysed based on detailed inventory & condition assessment, NDT testing, horizontal alignment, hydrological study, geo-technical investigations, vertical alignment & decision taking during site visit with PIU officials. The Final recommendations after incorporating the above results are summarized in Tabular form in the subsequent pages.

Bridge inventory and condition assessment report ,Site visit report, Geo-technical report has already been submitted.

In Chandbali_Bhadrak stretch , All the Box type structure has been proposed in view of poor bearing capacity of soil . In some locations, surrounding soil has been replaced by sand to satisfy bearing capacity requirement of box type structure. In submergence zone, Additional Box type structures has been provided meeting hydrological requirement.

In Bhadrak_Anandpur stretch , Box type structures has been proposed for the new construction except bridge at proposed Ch. 37+573.

The overall width of new construction has been kept as 12.0 m with or without footpath with clear carriageway width of 11.0 m in case of bridge without footpath and 7.5 m in case of bridges with footpath.

As mentioned above, Box type structures has been proposed in above stretches. Single cell, Double cell (upto 3.0 m span) and Triple cell box type structure (Up to 3 m span) has been taken from MOST standard Plans for single, double and triple cell .Box culverts with and without earth cushion.

Double cell (2 x 8.0 m), Triple cell (3 x 8 m), triple cell (3 x 9.0) m box type structures has been designed by using STAAD-PRO.

The design of superstructure for Solid slab type bridge has been given as per “STANDARD DRAWINGS FOR ROAD BRIDGES (R.C.C. Solid slab superstructure span 4.0 m to 10.0 m (With and without footpath)”

The substructure has been design using in-house software in Standard excel sheet.

The following code of practice has been referred in the designs.

1. IRC : 21-2000
2. IRC : 6-2004
3. IRC : 78-2000
4. SP : 13-2004
5. IRC : 89-1997
6. Specification for Road and Bridges works (MOST Book)

BHADRAK - CHANDBALI

Sl No	Location+ Chainage	Proposed Chaiange	Existing Span Arrangement	Existing Carriage way width	Type of Bridge	Recommended for	Proposed Span Arrangement	Type of foundation	Type of substructure	Type of superstructure	Remarks
1	**0+0**	**-**	**2 x 6.5**	**9.2**	High Level	**Not required as per site condition**	-	-	**-**	**-**	Major junction has been proposed
2	1+005	1+015	2 x 3.45	7.4	High Level	Reconstruction	3 x 3 Triple Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition
3	1+800	1+755	2 x 3.4	7.4	High Level	Reconstruction	3 x 3 Triple Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition
4	3+200	3+241	5 x 3.7	6.6	High Level	Reconstruction	2 x 8.0 m	Raft foundation	RCC cell box type		Reconstruction due to poor condition
5	3+900	3+862	3 x 7.6	8.05	High Level	Reconstruction	2 x 8.0 m	Raft foundation	RCC cell box type		Reconstruction due to poor condition
6	6+050	6+096	4 x 6.7	6.8	High Level	Reconstruction	3 x 8.0 m	Raft foundation	RCC cell box type		Reconstruction due to poor condition
7	9+200	9+159	5 x 2.7	8.8	High Level	Reconstruction	3 x 3 Triple Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition
8	9+300	9+245	3 x 7.0	7.3	High Level	Retained	-	Open foundation	Brick masonry wall type	RCC Solid slab	Good, Rehabilitation required
9	13+600	13+646	2 x 4.5	8.7	High Level	Reconstruction	3 x 3 Triple Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition
10	**-**	**25+425**	**-**	**-**	**–**	**-**	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
11	**-**	**25+550**	**-**	**-**	**–**	**-**	**10 x 1.0 m dia pipe**	Series of pipe			**Additional Bridge**
12	**-**	**27+000**	**-**	**-**	**–**	**-**	**10 x 1.0 m dia pipe**	Series of pipe			**Additional Bridge**
13	**-**	**27+925**	**-**	**-**	**–**	**-**	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
14	28+100	28+168	3 x 4.35	6.4	Submersible	Reconstruction	2 x 6. 0 Double Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition
15	**-**	**28+500**	**-**	-	-	-	**3 x 8.0 Box**	Raft foundation	RCC cell box type		**Additional Bridge**
16	28+800	28+837	6 x 2.5	4.8	Submersible	Reconstruction	3 x 3 Triple Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition
17	**-**	**28+900**	**-**	-	-	-	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
18	**-**	**29+850**	**-**	-	-	-	**10 x 1.0 m dia pipe**	Series of pipe			**Additional Bridge**
19	**-**	**29+950**	**-**	-	-	-	**10 x 1.0 m dia pipe**	Series of pipe			**Additional Bridge**
20	30+050	30+154	10 x 2.0	4.8	Submersible	Reconstruction	3 x 3 Triple Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition
21	30+200	30+335	2 x 6.7	7.35	High Level	Retained	-	Raft foundation	RCC cell box type		Good, Rehabilitation required
22	**-**	**31+050**	**-**	-	-	-	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
23	**-**	**31+150**	**-**	-	-	-	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
24	**-**	**31+900**	**-**	-	-	-	**10 x 1.0 m dia pipe**	Series of pipe			**Additional Bridge**
25	32+100	32+100	4 x 1.75	4.8	Submersible	Reconstruction	1 x 6.0 Single Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition
26	**-**	**32+380**	**-**	-	-	-	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
27	33+500	33+543	5 x 2.0	4.8	Submersible	Reconstruction	3 x 3 Triple Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition
28	33+900	33+907	5 x 1.9	4.8	Submersible	Reconstruction	3 x 3 Triple Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition
29	**-**	**34+025**	**-**	-	-	-	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**

Sl No	Location+ Chainage	Proposed Chaiange	Existing Span Arrangement	Existing Carriage way width	Type of Bridge	Recommended for	Proposed Span Arrangement	Type of foundation	Type of substructure	Type of superstructure	Remarks
30	**-**	**34+375**	**-**	-	-	-	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
31	34+700	34+803	1 x 10.3	7.25	High Level	Retained	-	Open foundation	PCC wall type	RCC girder type	Good, Rehabilitation required
32	**-**	**35+000**	**-**	-	-	-	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
33	**-**	**35+090**	**-**	-	-	-	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
34	**-**	**35+280**	**-**	-	-	-	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
35	**-**	**35+340**	**-**	-	-	-	**3 x 8.0 Box**	Raft foundation	RCC cell box type		**Additional Bridge**
36	**-**	**35+425**	**-**	-	-	-	**3 x 8.0 Box**	Raft foundation	RCC cell box type		**Additional Bridge**
37	**-**	**35+510**	**-**	-	-	-	**3 x 8.0 Box**	Raft foundation	RCC cell box type		**Additional Bridge**
38	**-**	**35+600**	**-**	-	-	-	**3 x 8.0 Box**	Raft foundation	RCC cell box type		**Additional Bridge**
39	**-**	**35+680**	**-**	-	-	-	**3 x 8.0 Box**	Raft foundation	RCC cell box type		**Additional Bridge**
40	36+005	35+825	10 x 2.1	5.4	Submersible	Reconstruction	3 x 3 Triple Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition
41	**-**	**35+900**	**-**	-	-	-	**3 x 8.0 Box**	Raft foundation	RCC cell box type		**Additional Bridge**
42	**-**	**35+975**	**-**	-	-	-	**3 x 8.0 Box**	Raft foundation	RCC cell box type		**Additional Bridge**
43	**-**	**36+040**	**-**	-	-	-	**3 x 8.0 Box**	Raft foundation	RCC cell box type		**Additional Bridge**
44	**-**	**37+000**	**-**	-	-	-	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
45	**-**	**37+075**	**-**	-	-	-	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
46	38+100	38+005	5 x 10.45	7.6	High Level	Retained	**-**	Pipe foundation	PCC wall type	RCC girder type	Good, Rehabilitation required
47	**-**	**41+750**	**-**	-	-	-	**3 x 3 Triple Cell Box**	Raft foundation	RCC cell box type		**Additional Bridge**
48	42+400	42+487	2 x 3.65	7.65	High Level	Reconstruction	1 x 6.0 Single Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition
49	43+500	43+558	2 x 3.2	8.75	Submersible	Reconstruction	1 x 6.0 Single Cell Box	Raft foundation	RCC cell box type		Reconstruction due to poor condition

BHADRAK - ANANDPUR

Sl No	Location+ Chainage	Proposed Chaiange	Existing Span Arrangement	Existing Carriage way width	Type of Bridge	Recommended for	Proposed Span Arrangement	Type of foundation	Type of substructure	Type of superstructure	Remarks
1	9+800	10+016	(1 x 3.55) + (1 x 3.95)	6.0	High Level	Reconstruction	1 x 8.0 Box	Raft foundation	RCC Cell Box Type		Reconstruction due to poor condition
2	11+600	11+407	2 x 7.0	6.6	High Level	Realigned	2 x 8.0 Box	Raft foundation	RCC Cell Box Type		Reconstruction due to Realignment
3	17+700	17+275	2 x 7.0	7.1	High Level	Realigned	3 x 9.0 Box	Raft foundation	RCC Cell Box Type		Reconstruction due to Realignment
4	18+400	17+830	1 x 6.9	7.6	High Level	Reconstruction	3 x 3 Double Box	Raft foundation	RCC Cell Box Type		Reconstruction due to Submergence and poor condition
5	19+300	18+879	2 x 6.3	7.0	High Level	Retained	-	Open foundation	RR stone masonry wall type	RCC solid slab	Rehabilitation required
6	30+950	30+638	1 x 5.5	9.3	Syphon Aquadate	Retained	-	Open foundation	Syphone aquadate		Rehabilitation required
7	37+600	36+892	1 x 8.6	7.4	High Level	Retained	-	Open foundation	Course stone masonry wall type	RCC solid slab	Rehabilitation required
8	37+700	36+989	1 x 8.6	8.3	High Level	Retained	-	Open foundation	Course stone masonry wall type	RCC solid slab	Rehabilitation required
9	37+850	37+120	1 x 8.6	8.1	High Level	Retained	-	Open foundation	Course stone masonry wall type	RCC solid slab	Rehabilitation required
10	38+010	37+276	1 x 8.3	8.2	High Level	Retained	-	Open foundation	Course stone masonry wall type	RCC solid slab	Rehabilitation required
11	38+200	37+373	2 x 5.1	7.85	High Level	Reconstruction	1 x 10.8 Solid slab	Open foundation	RCC wall type	RCC solid slab	Reconstruction due to poor condition

DESIGN OF TWO CELL BOX (2 x 8.0 m)

BRIDGES AT CH : 3+241 & 3+862
(BHADRAK – CHANDBALI)
&
BRIDGE AT CH : 11+407
(BHADRAK – ANANDPUR)

INTRODUCTION

DESIGN OF TWO CELL BOX STRUCTURE

The minor bridge is meant for three lanes of traffic with carriageway width of 11.0m without footpath. The overall width of bridge is 12.0m. The bridge shall be made with two cell RCC box type structure with independent return wall. The clear height of opening of the box is 6.154m. Horizontal clear opening sizes are 8.0m+8.0m. The thickness of top slab, bottom slab and end web have been kept as 400mm while thickness of inner web is kept as 300mm. In the design of structure, clear cover is considered as 50mm for top slab & walls and in bottom slab clear cover is considered as 75mm. This design note deals with design of the two cell RCC box structure.

The analysis of box structure has been done considering a slice of unit width. The box has been analysed for its self weight, superimposed dead load (due to wearing coat and crash barrier) and earth pressures using STAAD-Pro. Base pressure due to downward loads are applied uniformly over the entire width of box structure. Two cases of earth pressure for Dry and HFL conditions are considered separately. In one case, earth pressure at rest with saturated density of earth is considered to produce maximum earth pressure. While in other case, a lower value of coefficient of earth pressure with dry density of earth is considered to produce minimum earth pressure. Hence follwing cases of earth pressure are considered:

a) Coefficient of Earth Pressure as 0.50 & Density of Earth as 2.0 t/m^3 for dry & HFL conditions and

b) Coefficient of Earth Pressure as 0.30 & Density of Earth as 1.8 t/m^3 for dry and HFL condition

Analysis for Live load for class 70R tracked & class 70R wheeled load have been done using STAAD-Pro. Live load positions are identified for maximum bending moments at different sections and corresponding load intensities per metre width are evaluated as per effective width method as explained in IRC:21-2000.

The box has also been checked for temperature differential as per clause 218.3 of IRC:6-2000. As per Table 1 of IRC:6-2000, for this combination, only 50% live load shall be considered.

The following load combinations are considered for the analysis:

(i) DL+ SIDL+ EP
(ii) DL+ SIDL+ EP+ LL
(iii) DL+ SIDL+ EP+ Temp.
(iv) DL+ SIDL+ EP+ Temp.+ 50%LL

DESIGN DATA:

Formation Level along c/l of carriageway (m)						=	27.160	m
Bed Level (m)						=	22.050	m
Founding Level (m)						=	20.550	m
Heighest Flood Level (m)						=	25.485	m
Overall width of bridge						=	12.000	m
width of carriageway						=	11.000	m
Thickness of top slab						=	0.400	m
Thickness of bottom slab						=	0.400	m
Thickness of Web						=	0.400	m
Thickness of Central Web						=	0.300	m
Tkickness of wearing coat						=	0.056	m
Eff. horizontal span end cell(upto c/l of web)	=	8.000	+	0.350		=	8.350	m
Eff. horizontal span inner cell(upto c/l of web)	=	8.000	+	0.350		=	8.350	m
Eff. vertical span (upto c/l of slab)	=	5.754	+	0.400		=	6.154	m
width of crash barrier						=	0.500	m
Size of haunches in outer webs			-	1.250	x	0.250		m
Size of haunches in inner web			-	1.250	x	0.250		m
Depth of water at HFL. from formation lvl						=	1.675	m
Unit wt of concrete						=	2.400	t/m^2
Submerged density of earth						=	1.000	t/m^2
Grade of Concrete						-	M 35	35
Permissible Compressive stress in Concrete						-	1190	t/m^2
Permissible Tensile stress in Steel						-	20400	t/m^2
Modular ratio, m						-	10	
k						-	0.368	
Lever arm factor, j						-	0.877	
Moment of Resistance, Q						-	192	t/m^2

Reference Code

IRC : 6-2000

IRC : 21-2000

CALCULATION OF LOADS AND CORRESPONDING BASE PRESSURE:

DEAD LOAD-(Per metre width):

Top slab	=			16.70	x	0.40	x	2.40	=	16.032	t/m
bottom slab	=			16.70	x	0.40	x	2.40	=	16.032	t/m
End Webs	=	2	x	6.154	x	0.40	x	2.40	=	11.816	t/m
Central Web	=	1	x	6.154	x	0.30	x	2.40	=	4.431	t/m
Haunches (16 nos.)	=	16	x	0.125	x	1.25	x	2.40	=	6.000	t/m
Total Weight	=									**54.31**	t/m
Equivalent upward Base pressure	=					54.31	/	16.70	=	3.25	t/m^2
									Say,	**3.30**	t/m^2

SUPERIMPOSED DEAD LOAD (Per metre width):

Wearing coat (@ 0.2 t/sqm)	=								=	0.200	t/m
Crash barrier (@ 0.70 t/m on each side)	=			2	x	0.70	/	12.0	=	0.117	t/m
Total	=									**0.317**	t/m
Equivalent upward Base pressure	=								=	**0.317**	t/m^2

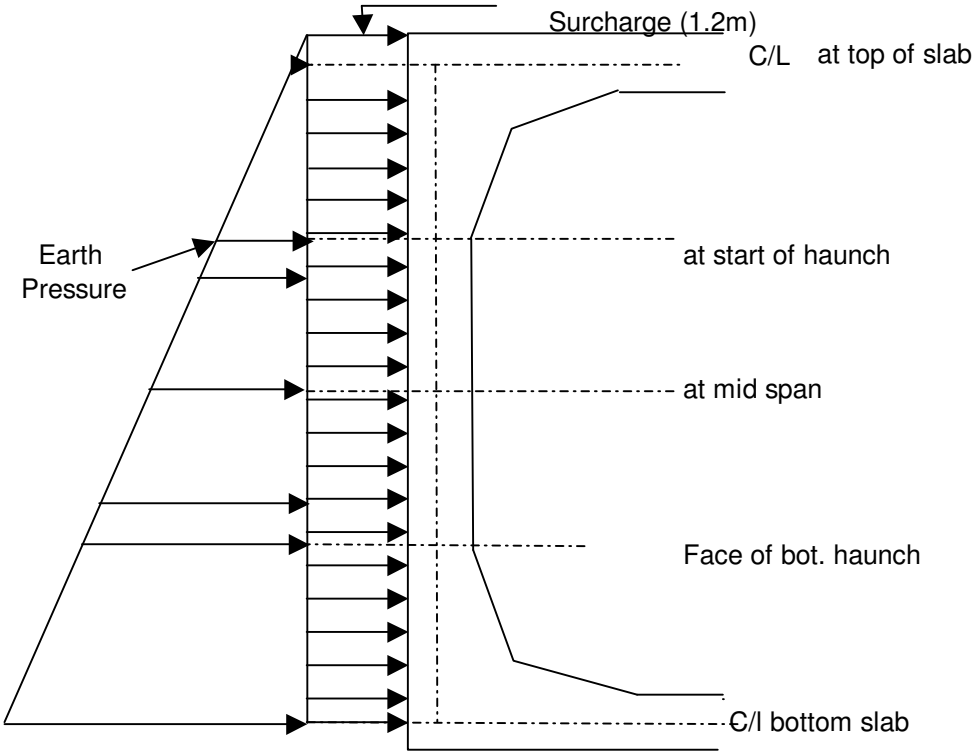
CHECK FOR BASE PRESSURE

DRY CONDITION

Due to DL of Box and SIDL			=	3.30	+	0.317	=	3.617	t/m^2
Due to LL-70R Wheeled Load	=	100	/ (	12.0	x	16.70	) =	0.499	t/m^2
Due to Earth inside the Box			=	1.10	x	2.00	=	2.200	t/m^2
Total Base Pressure							=	**6.316**	**t/m^2**

HFL CONDITION

Due to DL of Box, SIDL & LL	=	3.617	+	0.499	=	4.116	t/m^2
Due to Water inside the Box	=	4.423	x	1.00	=	4.423	t/m^2
Buoyancy	=	4.823	x	-1.00	=	-4.823	t/m^2
Total Base Pressure					=	**3.716**	**t/m^2**



Earth Pressure Diagram

EARTH PRESSURE

CASE - 1

Dry Density of Soil = 2.000 t/m^2

Cooefficient of Earth Pressure at rest = 0.500

CASE - 2

Dry Density of Soil = 1.800 t/m^2

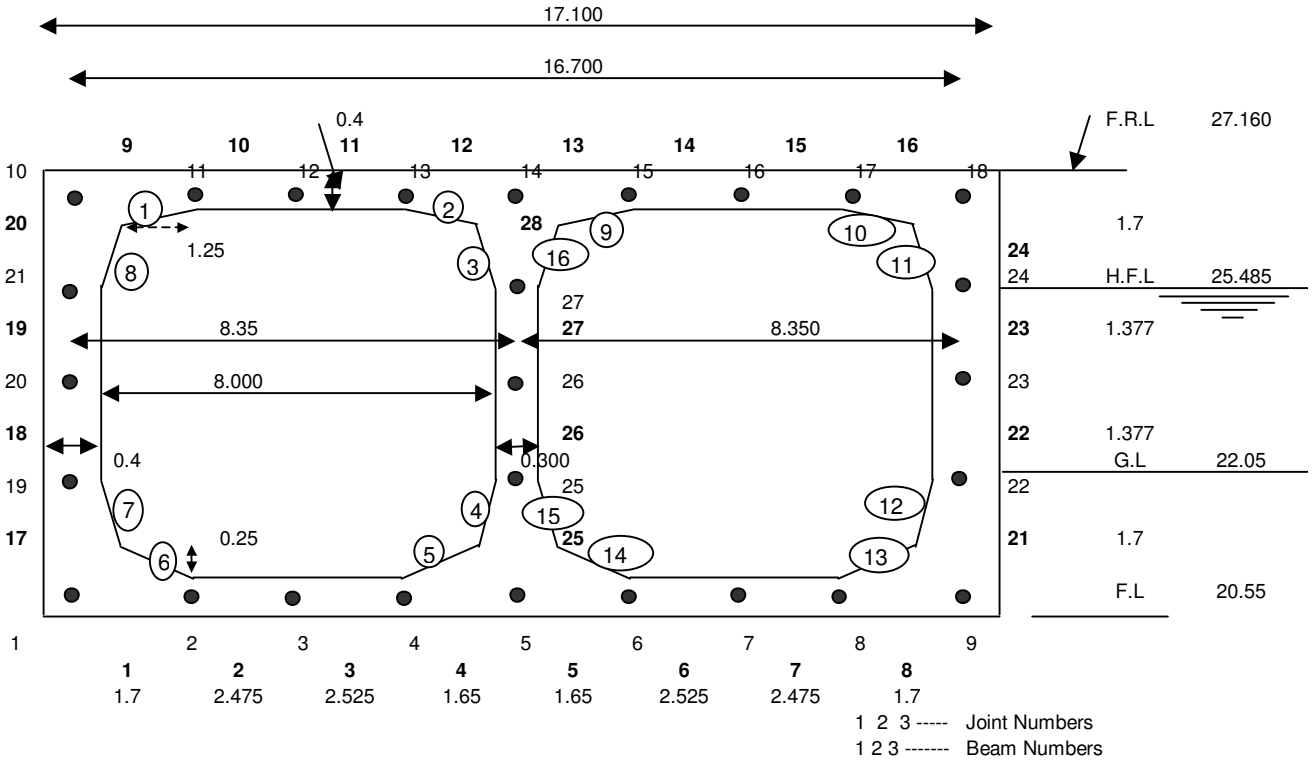
Cooefficient of Earth Pressure at rest = 0.300

For Dry Condition

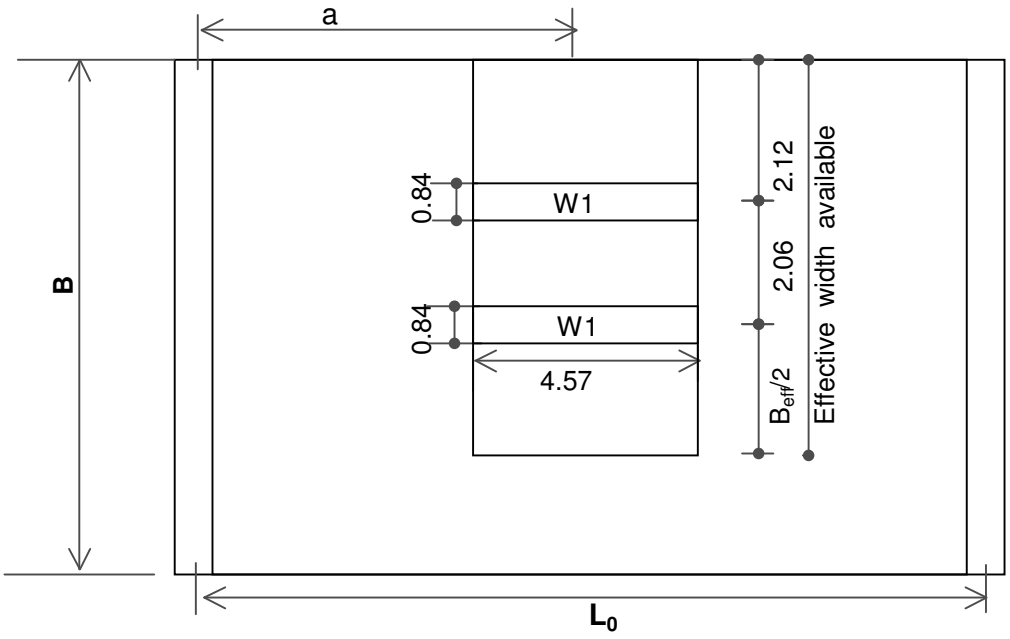
Height (m)	Location of Earth Pressure	Case - 1	Surcharge for 1.2m	Case - 2	Surcharge for 1.2m
0.256	C/l of top slab	0.256	1.2	0.138	0.648
1.956	Face of top haunch	1.956	1.2	1.056	0.648
3.333	Mid. of web	3.333	1.2	1.800	0.648
4.710	Face of bot. haunch	4.710	1.2	2.543	0.648
6.410	C/l bottom slab	6.410	1.2	3.461	0.648

H.F.L. Condition

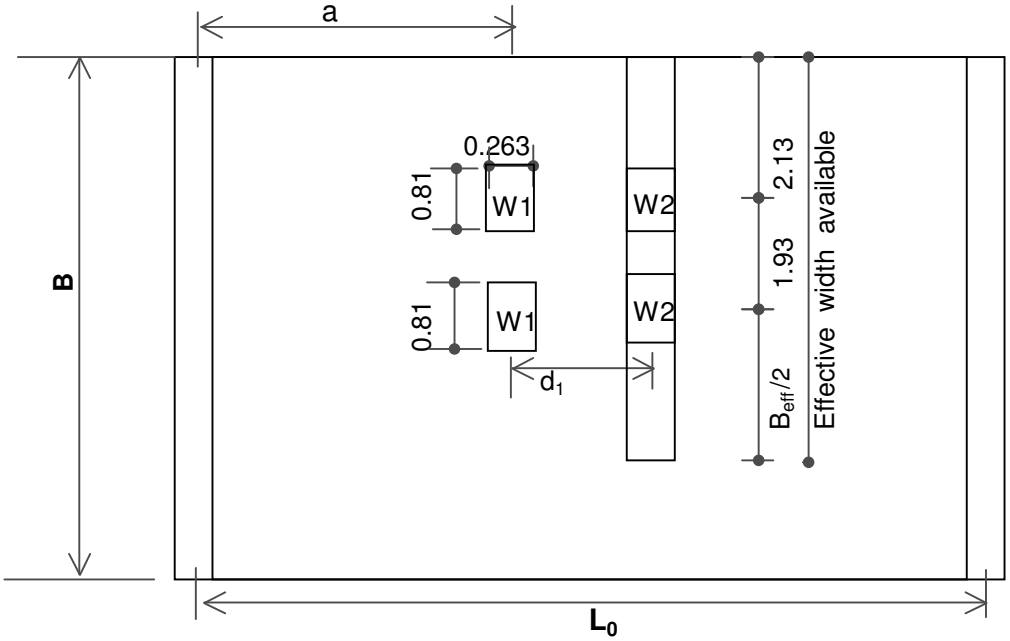
Height (m)	Location of Earth Pressure	Case - 1	Surcharge for 1.2m	Case - 2	Surcharge for 1.2m
0.256	C/l of top slab	0.256	1.2	0.138	0.648
1.675	H.F.L. Level	1.675	1.2	0.905	0.648
1.956	Face of top haunch	1.956	1.2	1.056	0.648
3.333	Mid. of web	3.333	1.2	1.800	0.648
4.710	Face of bot. haunch	4.022	1.2	2.488	0.648
6.410	C/l bottom slab	4.872	1.2	3.338	0.648


17.100
16.700
0.4
F.R.L 27.160
1.7
1.25
H.F.L 25.485
8.35
8.350
8.000
1.377
0.4
0.300
G.L 22.05
0.25
1.377
1.7
F.L 20.55
1 2 3 ----- Joint Numbers
1 2 3 ------- Beam Numbers

TRANSVERSE POSITION OF LIVE LOAD (CLASS 70 R TRACKED LOAD)

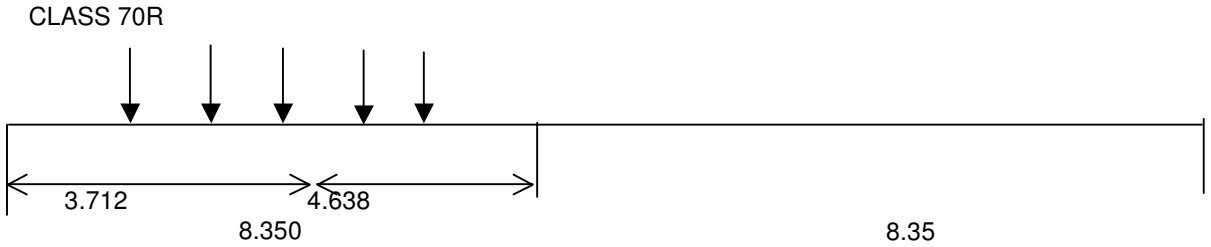


TRANSVERSE POSITION OF LIVE LOAD (CLASS 70 R WHEELED LOAD)



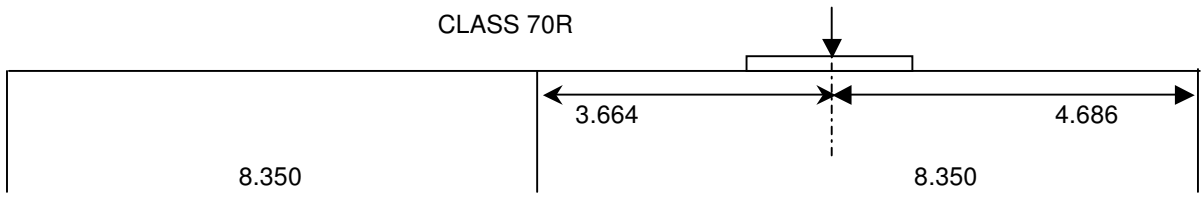
LIVE LOAD POSITION (TRACKED LOADING) :

FOR MAX. HOGGING BM AT END WEB



LOAD CASE NO 61

FOR MAX. HOGGING BM IN MID SAPN



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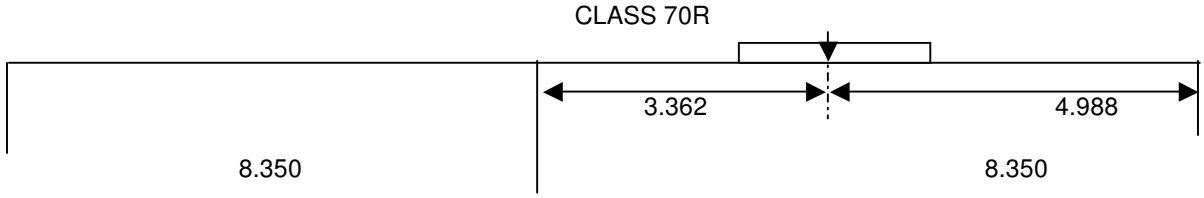
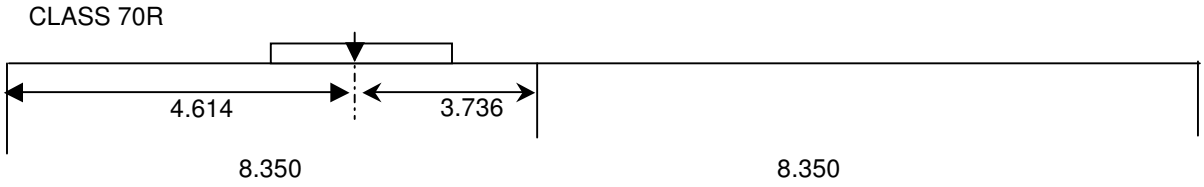
FOR MAX. BM.(HOGGING) AT START OF HAUNCH 2



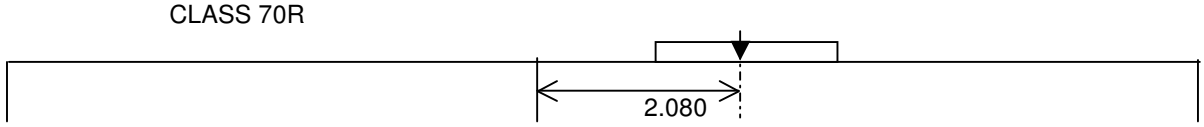
LOAD CASE NO 141

FOR MAX BM. (HOGGING) AT MIDDLE WEB



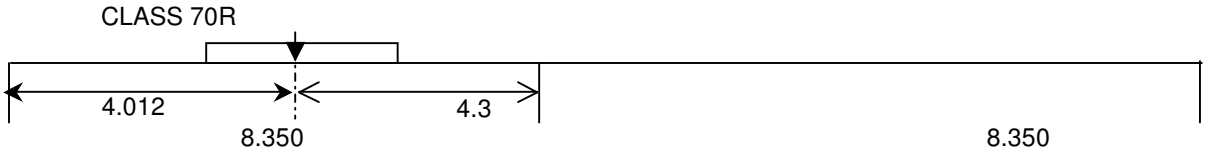
LOAD CASE NO 70

FOR MAX. BM.(SAGGING) AT END OF HAUNCH 9



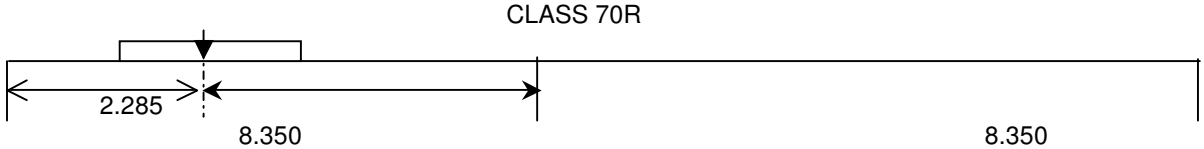
LOAD CASE NO 124

FOR MAX. BM (SAGGING) IN MID SPAN



LOAD CASE NO 64

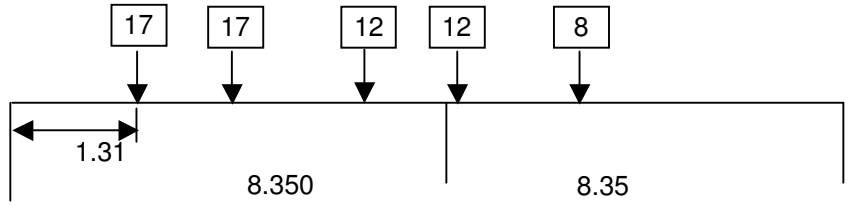
FOR MAX .BM.(SAGGING) AT END OF HAUNCH 1



LOAD CASE NO 41

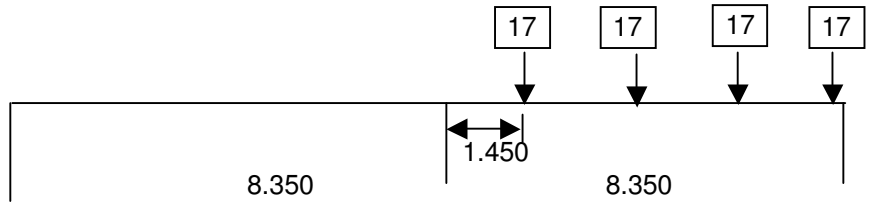
LIVE LOAD POSITION (WHEELED LOADING) :

FOR MAX. HOGGING BM AT END WEB



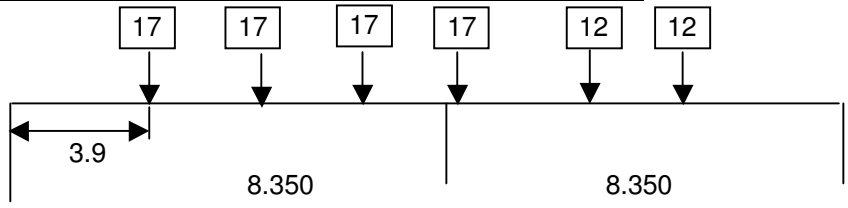
LOAD CASE NO 72

FOR MAX. HOGGING BM IN MID SAPN



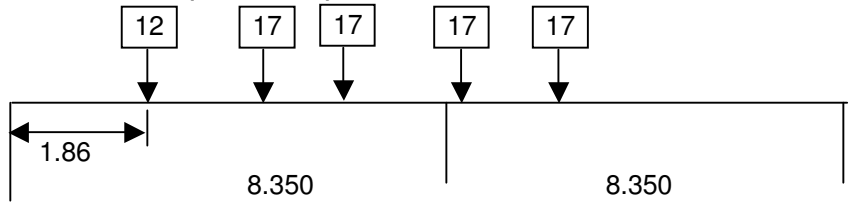
LOAD CASE NO 482

FOR MAX. BM.(HOGGING) AT START OF HAUNCH 2



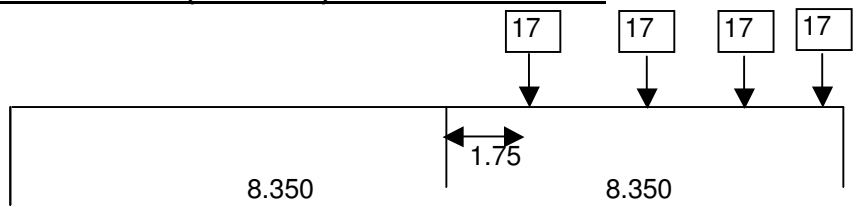
LOAD CASE NO 423

FOR MAX BM. (HOGGING) AT MIDDLE WEB



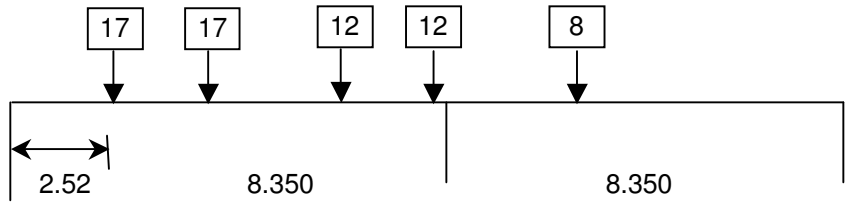
LOAD CASE NO 114

FOR MAX. BM.(SAGGING) AT END OF HAUNCH 9



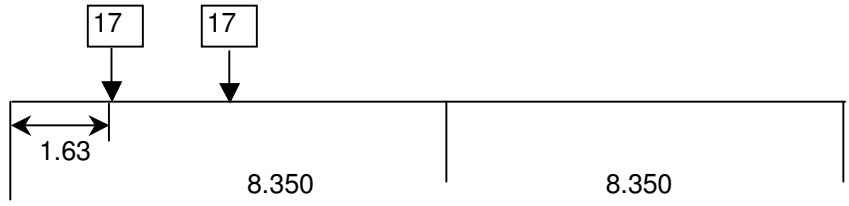
LOAD CASE NO 485

FOR MAX. BM (SAGGING) IN MID SPAN



LOAD CASE NO 365

FOR MAX .BM.(SAGGING) AT END OF HAUNCH 1



LOAD CASE NO 31

TEMPERATURE EFFECT: As per IRC:6-2000

Effect of temperature gradient

$F = E_c \alpha \Delta t A$

E_c = Modulus of Elasticity of Concrete = 3.11E+06 t/m^2

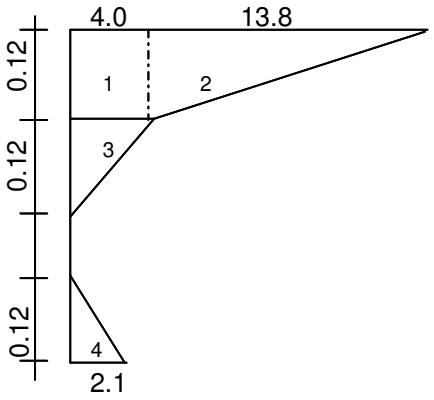
α = Coefficient of Thermal expansion = 1.17E-05 (as per IRC:6)

Δt = Temperature differential

A = X sectional Area of section where temperature differential is Δt

Average thickness of Deck slab = 400 mm

EFFECT OF TEMPERATURE RISE



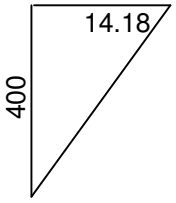
Sr. No.	Δt	b	t	A = b x t	F (force)	Acting at	Eccentricity e*
1	4.0	1.0	0.120	0.120	17.47	0.06 m from top	0.140
2	$\frac{13.8}{2}$	1.0	0.120	0.120	30.14	0.040 m from top	0.160
3	$\frac{4.0}{2}$	1.0	0.120	0.120	8.74	0.160 m from top	0.040
4	$\frac{2.1}{2}$	1.0	0.120	0.120	4.59	0.040 m from bottom	-0.160
					ΣF = 60.93	$\Sigma F.e$ =	6.88

e* Eccentricity of force F from centriodal axis of Section

$M = F.e = E_c \alpha \Delta t/2.A.e$

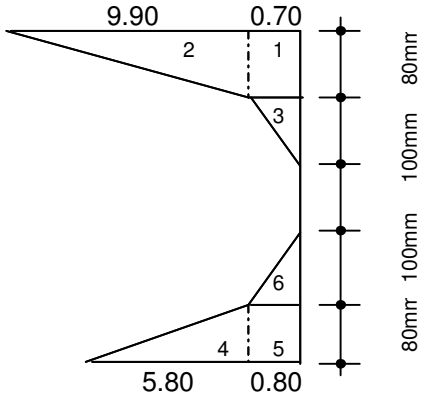
6.88 = 1.46E+01 x Δt / 2 x 0.0667

Hence, Δt = **14.18** ^{O}C



Idealised Temp Gradient (+ve)

EFFECT OF TEMPERATURE FALL

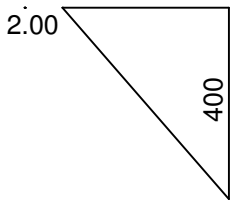


Sr. No.	Δt	b	t	A = b x t	F (force)	Acting at	Eccentricity e*
1	0.70	1.0	0.080	0.080	2.04	0.04 m from top	0.160
2	$\frac{9.90}{2}$	1.0	0.080	0.080	14.41	0.027 m from top	0.173
3	$\frac{0.70}{2}$	1.0	0.1000	0.1000	1.27	0.113 m from top	0.087
4	$\frac{5.80}{2}$	1.0	0.080	0.080	8.44	0.027 m from bottom	-0.173
5	0.80	1.0	0.080	0.080	2.33	0.040 m from bottom	-0.160
6	$\frac{0.80}{2}$	1.0	0.1000	0.1000	1.46	0.113 m from bottom	-0.087
					$\sum F$ = 29.96	$\sum M$ =	0.97

$M = F.e = E_c \alpha \Delta t/2.A.e$

0.97 = 1.46E+01 x Δt / 2 x 0.0667

Hence, Δt = **2.00** ^{O}C



Idealised Temp Gradient (-ve)

LIVE LOADS:

The box has been analysed for Class 70R tracked/Wheeled load using STAAD-Pro. Max. Bending moment at mid. Span (L/2), at face of haunches, at inner web & at end web are evaluated and corresponding positions of loads on the structure are identified. Live load intensity per metre width are evaluated for these load positions.

Bending moment at the various sections are evaluated for both Class 70R track and 70R wheel loading and the structure is designed for maximum bending moments.

EFFECTIVE WIDTH OF SLAB

According to IRC: 21-2000 cl. 305.16.2 (iii), if the effective width of slab for a load overlaps with the effective width of slab for an adjecent load, the resultant effective width for two loads equals to sum of respective effective width for each load minus the width of overlap.
Firstly effective width as per IRC:21 is evaluated then actual available width is compared with that value and corresponding load intensity per metre width is evaluated.

Effective width = $b_{eff.} = \alpha.a.(1-a/l_0) + b_1$

Where L_0 = the effective span

a = the distance of centre of gravity of the conc^n load from the nearer support

α = A constant depending upon the ratio b/l_0, where b is the width of the slab

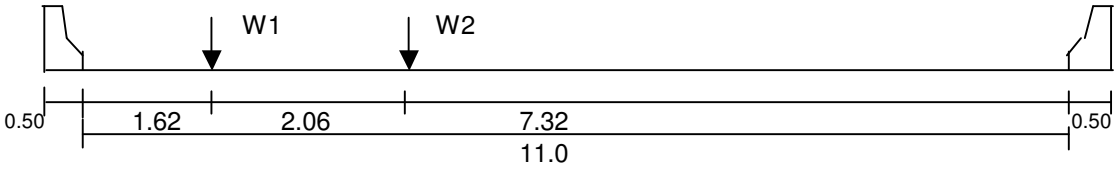
b/l_0 = 12.0 / 8.00 = 1.50

Hence as per cl. 305.16.2 of IRC:21, α = 2.480

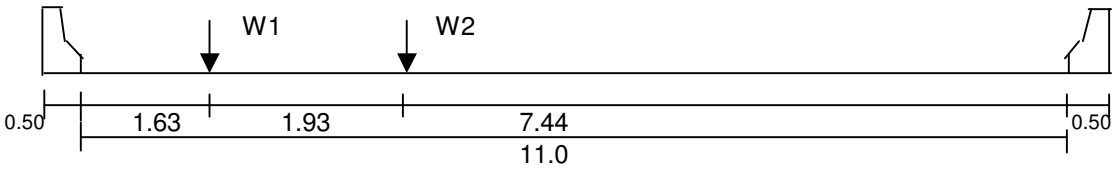
b_1 = breadth of loads over the deck slab after 45^0 dispersion through wearing coat

= 0.84 + 2 x 0.056 = 0.952 m (for 70R tracked)

= 0.81 + 2 x 0.056 = 0.922 m (for 70R wheeled)



TRANSVERSE POSITION OF LIVE LOAD (CLASS 70R TRACKED)



TRANSVERSE POSITION OF LIVE LOAD (CLASS 70R WHEELED)

CALCULATION OF EFFECTIVE WIDTH AND LOAD INTENSITY α = 2.480

LIVE LOAD	a (m)	b1 (m)	b_{eff} (m)	$b_{eff}/2$ (m)	Max. available width (m)	Load Intensity
Class 70R Tracked Load						
For Max BM (Hogging) at End web						
70.0	3.712	0.952	6.065	3.033	7.213	9.705
For Max BM (Hogging) in Mid span						
70.0	3.664	0.952	6.051	3.026	7.206	9.715
For Max BM (Hogging) at start of haunch 2						
70.0	3.362	0.952	5.933	2.966	7.146	9.795
For Max BM (hogging) at middle web						
70.0	3.736	0.952	6.072	3.036	7.216	9.701
For Max BM (Sagging) at end of haunch 9						
63.7	2.080	0.952	4.825	2.413	6.593	9.665
For Max BM (Sagging) at midspan						
70.0	4.012	0.952	6.121	3.061	7.241	9.668
For Max BM (Sagging) at end of haunch 1						
70.0	2.285	0.952	5.068	2.534	6.714	10.426
Class 70R Wheeled Load						
For Max BM (Hogging) at End web						
17.0	1.310	0.92	3.661	1.831	5.591	3.041
17.0	2.680	0.92	5.435	2.718	6.778	2.508
17.0	2.620	0.92	5.381	2.690	6.750	2.518
17.0	1.250	0.92	3.558	1.779	5.488	3.098
For Max BM (Hogging) in mid span						
17.0	1.45	0.92	3.894	1.947	5.824	2.919
17.0	2.820	0.92	5.554	2.777	6.837	2.487
17.0	2.480	0.92	5.246	2.623	6.683	2.544
17.0	1.110	0.92	3.309	1.654	5.239	3.245
For Max BM (Hogging) at Start of haunch2						
17.0	3.9	0.92	6.077	3.038	7.098	2.395
17.0	3.080	0.92	5.743	2.871	6.931	2.453
17.0	0.030	0.92	0.996	0.498	1.992	8.533
17.0	1.340	0.92	3.712	1.856	5.642	3.013
12.0	3.470	0.92	5.951	2.976	7.036	1.706
12.0	3.360	0.92	5.902	2.951	7.011	1.712
For Max BM (Hogging) at middle web						
12.0	1.860	0.92	4.507	2.254	6.314	1.901
12.0	3.380	0.92	5.911	2.956	7.016	1.710
17.0	2.840	0.92	5.570	2.785	6.845	2.484
17.0	1.470	0.92	3.926	1.963	5.856	2.903
17.0	1.580	0.92	4.099	2.049	6.029	2.820
17.0	2.950	0.92	5.653	2.827	6.887	2.469
For Max BM (Sagging) at end of huunch 9						
17.0	1.750	0.92	4.313	2.156	6.216	2.735
17.0	3.120	0.92	5.642	2.821	6.881	2.471
17.0	2.180	0.92	4.855	2.428	6.488	2.620
17.0	0.810	0.92	2.736	1.368	4.666	3.643
For Max BM (Sagging) in mid span						
17.0	2.520	0.92	5.203	2.601	6.661	2.552
17.0	3.890	0.92	5.878	2.939	6.999	2.429
12.0	2.330	0.92	5.017	2.509	6.569	1.827
12.0	0.810	0.92	2.736	1.368	4.666	2.572
8.0	3.150	0.92	5.787	2.893	6.953	1.151
For Max BM (Sagging) at end of haunch 1						
17.0	1.630	0.92	4.175	2.088	6.105	2.784
17.0	3.000	0.92	5.689	2.844	6.904	2.462

LOAD INTENSITY AND CORRESPONDING BASE PRESSURE FOR CLASS 70R TRACKED:

Dispersion width = Track length over the span after 45° dispersion through wearing coat and slab

For Max BM (Hogging) at End web

Dispersion width =	4.570	+	0.912	=	5.482	m
Live load intensity as udl =	9.705	/	5.482	=	1.770	t/m^2
Corresponding base pressure				=	0.581	t/m^2

For Max BM (Hogging) in Mid span

Dispersion width =	4.570	+	0.912	=	5.482	m
Live load intensity as udl =	9.715	/	5.482	=	1.772	t/m^2
Corresponding base pressure				=	0.582	t/m^2

For Max BM (Hogging) at start of haunch 2

Dispersion width =	4.570	+	0.912	=	5.482	m
Live load intensity as udl =	9.795	/	5.482	=	1.787	t/m^2
Corresponding base pressure				=	0.587	t/m^2

For Max BM (hogging) at middle web

Dispersion width =	4.570	+	0.912	=	5.482	m
Live load intensity as udl =	9.701	/	5.482	=	1.770	t/m^2
Corresponding base pressure				=	0.581	t/m^2

For Max BM (Sagging) at end of haunch 9

Dispersion width =	4.160	+	0.456	=	4.616	m
Live load intensity as udl =	9.665	/	4.616	=	2.094	t/m^2
Corresponding base pressure				=	0.579	t/m^2

For Max BM (Sagging) at midspan

Dispersion width =	4.160	+	0.456	=	4.616	m
Live load intensity as udl =	9.668	/	4.616	=	2.094	t/m^2
Corresponding base pressure				=	0.579	t/m^2

For Max BM (Sagging) at end of haunch 1

Dispersion width =	4.570	+	0.456	=	5.026	m
Live load intensity as udl =	10.426	/	5.026	=	2.074	t/m^2
Corresponding base pressure				=	0.624	t/m^2

LOAD INTENSITY AND CORRESPONDING BASE PRESSURE FOR CLASS 70R WHEELED:

Dispersion width = wheel length over the span after 45° dispersion through wearing coat and slab

For Max BM (Hogging) at End web

Disp. width of 12t load at start =	0.263	+	0.456	=	0.719	m
Disp. width of 12t & 17t Load =	0.263	+	0.912	=	1.175	m
Live load intensity as udl						
for 17 t wheel	3.041	/	1.175	=	2.588	t/m^2
for 17 t wheel	2.508	/	1.175	=	2.135	t/m^2
for 17 t wheel	2.518	/	1.175	=	2.143	t/m^2
for 17 t wheel	3.098	/	1.175	=	2.636	t/m^2
Corresponding base pressure				=	0.669	t/m^2

For Max BM (Hogging) in mid span

Disp. width of 17 t &12t wh. =	0.263	+	0.912	=	1.175	m
Disp. width of 12 t wh.at end =	0.263	+	0.456	=	0.719	m
Live load intensity as udl						
for 17 t wheel	2.919	/	1.175	=	2.484	t/m^2
for 17 t wheel	2.487	/	1.175	=	2.116	t/m^2
for 17 t wheel	2.544	/	1.175	=	2.165	t/m^2
for 17 t wheel	3.245	/	1.175	=	2.762	t/m^2
Corresponding base pressure				=	0.670	t/m^2

For Max BM (Hogging) at Start of haunch2

Disp. width of 17t & 12t load =	0.263	+	0.912	=	1.175	m
Disp. width of 12 t load at end =	0.263	+	0.912	=	1.175	m
Live load intensity as udl						
for 17 t wheel	2.395	/	1.175	=	2.038	t/m^2
for 17 t wheel	2.453	/	1.175	=	2.087	t/m^2
for 17 t wheel	8.533	/	1.175	=	7.262	t/m^2
for 17 t wheel	3.013	/	1.175	=	2.564	t/m^2
for 12 t wheel	1.706	/	1.175	=	1.452	t/m^2
for 12 t wheel	1.712	/	1.175	=	1.457	t/m^2
Corresponding base pressure				=	1.186	t/m^2

For Max BM (Hogging) at middle web

Disp. width of 17t load at start =	0.263	+	0.912	=	1.175	m
Disp. width of 17t,12t & 8t load =	0.263	+	0.912	=	1.175	m
Live load intensity as udl						
for 12 t wheel	1.901	/	1.175	=	1.618	t/m^2
for 12 t wheel	1.710	/	1.175	=	1.456	t/m^2
for 17 t wheel	2.484	/	1.175	=	2.114	t/m^2
for 17 t wheel	2.903	/	1.175	=	2.471	t/m^2
for 17 t wheel	2.820	/	1.175	=	2.400	t/m^2
for 17 t wheel	2.469	/	1.175	=	2.101	t/m^2
Corresponding base pressure				=	0.855	t/m^2

For Max BM (Sagging) at end of huunch 9

Disp. width of 17t load at start =	0.263	+	0.912	=	1.175	m
Disp. width of 17t,12t & 8t load =	0.263	+	0.456	=	0.719	m
Live load intensity as udl						
for 17 t wheel	2.735	/	1.175	=	2.327	t/m^2
for 17 t wheel	2.471	/	1.175	=	2.103	t/m^2
for 17 t wheel	2.620	/	1.175	=	2.230	t/m^2
for 17 t wheel	3.643	/	1.175	=	3.101	t/m^2
Corresponding base pressure				=	0.687	t/m^2

For Max BM (Sagging) in mid span

Disp. width of 17t load at start =	0.263	+	0.912	=	1.175	m
Disp. width of 17t,12t & 8t load =	0.263	+	0.912	=	1.175	m
Live load intensity as udl						
for 17 t wheel	2.552	/	1.175	=	2.172	t/m^2
for 17 t wheel	2.429	/	1.175	=	2.067	t/m^2
for 12 t wheel	1.827	/	1.175	=	1.555	t/m^2
for 12 t wheel	2.572	/	1.175	=	2.189	t/m^2
for 8 t wheel	1.151	/	1.175	=	0.979	t/m^2
Corresponding base pressure				=	0.631	t/m^2

For Max BM (Sagging) at end of haunch 1

Disp. width of 17t load at start =	0.263	+	0.912	=	1.175	m
Disp. width of 17t,12t & 8t load =	0.263	+	0.912	=	1.175	m
Live load intensity as udl						
for 17 t wheel	2.784	/	0.912	=	3.053	t/m^2
for 17 t wheel	2.462	/	0.912	=	2.700	t/m^2
Corresponding base pressure				=	0.314	t/m^2

SUMMARY OF BENDING MOMENT AT DIFFERENT LOCATION

(I) Due to LIVE LOAD

Impact factor (I.F.) for class 70R tracked = 1.10

Impact factor (I.F.) for class 70R wheeled = 1.25

LOCATION		CLASS 70R(Tracked)		CLASS 70R(Wheeled)		DESIGN BM (tm/m) LL	
		Max. sagging	Max. hogging	Max. sagging	Max. hogging	Max. sagging	Max. hogging
TOP SLAB	At the face of end web	-1.914	4.862	-1.788	3.750	-1.914	4.862
	At the end of haunch-1	-3.322	0.000	-3.175	0.000	-3.322	0.000
	mid span	-7.128	1.254	-5.950	1.265	-7.128	1.265
	At the start of haunch-2	0.000	3.322	-0.338	3.375	-0.338	3.375
	At the end of haunch-2	0.000	8.492	0.000	11.938	0.000	11.938
Bottom Slab	At the face of end web	0.000	1.310	0.000	1.490	0.000	1.490
	At the end of haunch	-1.820	0.000	-2.140	0.000	-2.140	0.000
	mid span	-2.670	0.000	-3.670	0.000	-3.670	0.000
	At the start of haunch 2	0.000	2.520	0.000	2.850	0.000	2.850
	At the end of haunch	0.000	5.715	0.000	8.240	0.000	8.240
END WEB	Top face of bottom slab	0.000	1.903	0.000	3.875	0.000	3.875
	At the end of haunch	0.000	2.706	0.000	3.750	0.000	3.750
	Mid span of web	-0.110	3.960	0.000	3.988	-0.110	3.988
	Start of haunch	-1.045	5.324	-0.863	5.025	-1.045	5.324
	Bottom face of deck slab	-1.936	6.600	-1.800	5.975	-1.936	6.600
Central Web	Top face of bottom slab	-2.673	2.354	-2.513	2.938	-2.673	2.938
	At the end of haunch	-0.715	0.517	-0.613	0.788	-0.715	0.788
	Mid span of web	-1.496	1.474	-1.450	1.550	-1.496	1.550
	Start of haunch	-3.663	3.465	-3.500	3.875	-3.663	3.875
	Bottom face of top slab	-5.665	5.302	-5.400	6.038	-5.665	6.038

(II) Due to TEMPERATURE

LOCATION		Due to Temp	
		Temp grad.(+ve	Temp grad.(-ve)
TOP SLAB	At the face of end web	-4.51	0.64
	At the end of haunch-1	-5.37	0.76
	mid span	-7.03	0.99
	At the start of haunch-2	-8.73	1.23
	At the end of haunch-2	-9.607	1.358
Bottom Slab	At the face of end web	-0.17	1.21
	At the end of haunch	-0.12	0.88
	mid span	-0.04	0.26
	At the start of haunch 2	-0.38	0.05
	At the end of haunch	-0.73	0.1
END WEB	Top face of bottom slab	-0.13	0.93
	At the end of haunch	-0.22	0.03
	Mid span of web	-1.45	0.21
	Start of haunch	-2.69	0.38
	Bottom face of deck slab	-3.84	0.54
Central Web	Top face of bottom slab	0	0
	At the end of haunch	0	0
	Mid span of web	0	0
	Start of haunch	0	0
	Bottom face of top slab	0	0

(III) Due to DL, SIDL & EARTH PRESSURE (EP)

LOCATION		Due to DL (tm/m)		Due to SIDL (tm/m)		Earth Pressure			
						Dry Condition(case1)		Dry Condition(case2)	
		sagging	hogging	sagging	hogging	sagging	hogging	sagging	hogging
TOP SLAB	At the face of end web	-0.2	0	0	0.37	0	8.89	0	4.8
	At the end of haunch-1	-2.85	0	-0.57	0	0	6.52	0	3.52
	mid span	-3.16	0	-0.93	0	0	1.92	0	1.03
	At the start of haunch-2	0	2.59	0	0.71	-2.78	0	-1.5	0
	At the end of haunch-2	0	8.51	0	2.45	-5.33	0	-2.804	0
Bottom Slab	At the face of end web	0	3.93	0	0.35	0	9.98	0	5.39
	At the end of haunch	-3.17	0	0.58	0	0	7.31	0	3.95
	mid span	-6.49	0	0.93	0	0	2.1	0	1.15
	At the start of haunch 2	0	4.9	0	0.73	-3.14	0	-1.7	0
	At the end of haunch	0	17.15	0	2.48	-6.02	0	-3.56	0
END WEB	Top face of bottom slab	0	6.65	0	0.78	0	4.19	0	2.26
	At the end of haunch	0	5.42	0	0.78	-8.36	0	-4.56	0
	Mid span of web	0	4.09	0	0.79	-11.19	0	-6.4	0
	Start of haunch	0	2.76	0	0.79	-5.42	0	-2.93	0
	Bottom face of deck slab	0	1.53	0	0.8	0	4.579	0	2.87
Central Web	Top face of bottom slab	0	0	0	0	0	0	0	0
	At the end of haunch	0	0	0	0	0	0	0	0
	Mid span of web	0	0	0	0	0	0	0	0
	Start of haunch	0	0	0	0	0	0	0	0
	Bottom face of top slab	0	0	0	0	0	0	0	0

LOCATION						Earth Pressure			
						HFLCondition(case1)		HFLCondition(case2)	
						sagging	hogging	sagging	hogging
TOP SLAB	At the face of end web					0	9.52	0	5.35
	At the end of haunch-1					0	6.87	0	3.86
	mid span					0	1.72	0	0.97
	At the start of haunch-2					-3.54	0	-1.98	0
	At the end of haunch-2					-6.246	0	-3.494	0
Bottom Slab	At the face of end web					0	8.19	0	4.75
	At the end of haunch					0	6.02	0	3.49
	mid span					0	1.83	0	1.06
	At the start of haunch 2					-2.46	0	-1.43	0
	At the end of haunch					-4.664	0	-2.711	0
END WEB	Top face of bottom slab					0	3.14	0	1.72
	At the end of haunch					-7.96	0	-4.69	0
	Mid span of web					-10.45	0	-5.91	0
	Start of haunch					-4.56	0	-2.51	0
	Bottom face of deck slab					0	6.11	0	3.46
Central Web	Top face of bottom slab					0	2.08	0	1.12
	At the end of haunch					0	1.16	0	0.62
	Mid span of web					0	0.15	0	0.08
	Start of haunch					-0.85	0	-0.46	0
	Bottom face of top slab					-1.77	0	-0.96	0

DESIGN MOMENT DUE TO DIFFERENT LOAD COMBINATIONS

LOCATION		Total BM (without temperature) (tm/m)				Total BM (with temperature) (tm/m)			
		Due to (DL+SIDL+EP)		Due to (DL+SIDL+EP +LL)		Due to (DL+SIDL+EP +TEMP)/1.15		Due to (DL+SIDL+EP+ 50%LL+TEMP)/1.15	
		Max. sagging	Max. hogging	Max. sagging	Max. hogging	Max. sagging	Max. hogging	Max. sagging	Max. hogging
TOP SLAB	At the face of end web	-0.200	9.890	-2.114	14.752	-4.096	9.157	-4.928	11.270
	At the end of haunch-1	-3.420	6.870	-6.742	6.870	-7.643	6.635	-9.088	6.635
	mid span	-4.090	1.920	-11.218	3.185	-9.670	2.530	-12.769	3.080
	At the start of haunch-2	-3.540	3.300	-3.878	6.675	-10.670	3.939	-10.816	5.407
	At the end of haunch-2	-6.246	10.960	-6.246	22.898	-13.785	10.711	-13.785	15.902
Bottom Slab	At the face of end web	0.000	14.260	0.000	15.750	-0.148	13.452	-0.148	14.100
	At the end of haunch	-2.590	7.310	-4.730	7.310	-2.357	7.122	-3.287	7.122
	mid span	-5.560	2.140	-9.230	2.140	-4.870	2.087	-6.465	2.087
	At the start of haunch 2	-3.140	5.630	-3.140	8.480	-3.061	4.939	-3.061	6.178
	At the end of haunch	-6.020	19.630	-6.020	27.870	-5.870	17.157	-5.870	20.739
END WEB	Top face of bottom slab	0.000	11.620	0.000	15.495	-0.113	10.913	-0.113	12.598
	At the end of haunch	-8.360	6.200	-8.360	9.950	-7.461	5.417	-7.461	7.048
	Mid span of web	-11.190	4.880	-11.300	8.868	-10.991	4.426	-11.039	6.160
	Start of haunch	-5.420	3.550	-6.465	8.874	-7.052	3.417	-7.507	5.732
	Bottom face of deck slab	0.000	8.440	-1.936	15.040	-3.339	7.809	-4.181	10.678
Central Web	Top face of bottom slab	0.000	2.080	-2.673	5.018	0.000	1.809	-1.162	3.086
	At the end of haunch	0.000	1.160	-0.715	1.948	0.000	1.009	-0.311	1.351
	Mid span of web	0.000	0.150	-1.496	1.700	0.000	0.130	-0.650	0.804
	Start of haunch	-0.850	0.000	-4.513	3.875	-0.739	0.000	-2.332	1.685
	Bottom face of top slab	-1.770	0.000	-7.435	6.038	-1.539	0.000	-4.002	2.625

MOMENT OF RESISTANCE OF THE SECTION (M_R):

modular ratio, m	=	10		
lever arm factor, j	=	0.877		
Moment of resistance coeff, Q	=	192	t/m^2	
effective cover in top slab & webs	=	50	mm	
effective cover in soffit slab	=	75	mm	

IN SPAN PORTION,	Eff. available depth	=	350	mm			
(top slab & webs)	M_R	=	**23.56**	tm/m	>	12.77	**tm/m, O.K.** (Max. Design BM)
IN SPAN PORTION,	Eff. available depth	=	325	mm			
(soffit slab)	M_R	=	**20.31**	tm/m	>	9.23	**tm/m, O.K.** (Max. Design BM)
END (CORNER) PORTION,	Eff. available depth	=	600	mm			
	M_R	=	**69.22**	tm/m	>	27.87	**tm/m, O.K.** (Max. Design BM)

CALCULATION OF REINFORCEMENT:

LOCATION		DESIGN BM (tm/m)		Eff. depth available (mm)	Reinft. reqd. (cm^2/m)	Reinft. reqd. (cm^2/m)
		Max. Sagg. BM	Max. Hogg. BM			
TOP SLAB	At the face of end web	4.928	14.752	600	4.59	13.74
	At the end of haunch-1	9.088	6.870	350	14.51	10.97
	mid span	12.769	3.185	350	20.39	5.09
	At the start of haunch-2	10.816	6.675	350	17.27	10.66
	At the end of haunch-2	13.785	22.898	600	12.84	21.33
Bottom Slab	At the face of end web	0.148	15.750	600	0.14	14.67
	At the end of haunch	4.730	7.310	325	8.13	12.57
	mid span	9.230	2.140	325	15.87	3.68
	At the start of haunch 2	3.140	8.480	325	5.40	14.58
	At the end of haunch	6.020	27.870	325	10.35	47.92
END WEB	Top face of bottom slab	0.113	15.495	600	0.11	14.43
	At the end of haunch-6	8.360	9.950	350	13.35	15.89
	Mid span of web	11.300	8.868	350	18.04	14.16
	Start of haunch-7	7.507	8.874	350	11.99	14.17
	Bottom face of deck slab	4.181	15.040	600	3.89	14.01
Central Web	Top face of bottom slab	2.673	5.018	600	2.49	4.67
	At the end of haunch-8	0.715	1.948	350	1.14	3.11
	Mid span of web	1.496	1.700	350	2.39	2.71
	Start of haunch-9	4.513	3.875	350	7.21	6.19
	Bottom face of deck slab	7.435	6.038	600	6.92	5.62

CHECK FOR SHEAR FORCE: (As per clause 304.7.1.3 of I.R.C. 2000)

(I) At distance equal to Eff. Depth from the face of Support

LOCATION		Due to DL (t/m)	Due to SIDL	Due to EP (t/m)	Due to LL (t/m)	TOTAL
BOTTOM SLAB	S.F.	6.274	0.838	2.0	3.24	12.37
	B.M.	1.922	0.08	9.341	0.449	11.79
WEBS	S.F.	0.966	0.0	12.009	0.59	13.57

Eff. depth available at the critical section = 0.6 + 0.20 x 0.65 = 0.73 m

Shear Force = 13.57 / 0.73 = 18.58 t/m^2

M/d.tanβ = 11.79 x 0.274 = 3.23 t/m^2

Net Shear Force = (S.F. -M/d.tanβ) = **15.35** t/m^2

Permissible Shear stress

100As/Bc = 0.20 , τc = 0.214 = 0.214 Mpa

= **21.83** **t/m2** **O.K.**

(I) At the face of Haunch

LOCATION	Due to DL (t/m)	Due to SIDL	Due to EP (t/m)	Due to LL (t/m)	TOTAL S.F. (t/m)
BOTTOM SLAB	6.547	0.879	2.091	3.394	12.91

Eff. depth available at the critical section = 0.6 m

Shear Force = 12.91 / 0.6 = 21.52 t/m^2

Permissible Shear stress

100As/Bc = 0.24 , τc = 0.227 = 0.227 Mpa

= **23.15** **t/m2** **O.K.**

```
INPUT FILE: disidl.STD
     1. STAAD PLANE ANALYSIS FOR DL,SIDL,EARTH PRESSURE & TEMP.
     2. INPUT WIDTH 79
     3. PAGE LENGTH 1000
     4. UNIT METER MTON
     5. JOINT COORDINATES
     6. 1       0.000       0.000       0.000
     7. 2       1.700       0.000       0.000
     8. 3       4.175       0.000       0.000
     9. 4       6.700       0.000       0.000
    10. 5       8.350       0.000       0.000
    11. 6       10.000      0.000       0.000
    12. 7       12.525       0.000       0.000
    13. 8       15.000       0.000       0.000
    14. 9       16.700       0.000       0.000
    15. 10       0.000       6.154       0.000
    16. 11       1.700       6.154       0.000
    17. 12       4.175       6.154       0.000
    18. 13       6.700       6.154       0.000
    19. 14       8.350       6.154       0.000
    20. 15       10.000       6.154       0.000
    21. 16       12.525       6.154       0.000
    22. 17       15.000       6.154       0.000
    23. 18       16.700       6.154       0.000
    24. 19       0.000       1.700       0.000
    25. 20       0.000       3.077       0.000
    26. 21       0.000       4.454       0.000
    27. 22       16.700       1.700       0.000
    28. 23       16.700       3.077       0.000
    29. 24       16.700       4.454       0.000
    30. 25       8.350       1.700       0.000
    31. 26       8.350       3.077       0.000
    32. 27       8.350       4.454       0.000
    34. MEMBER INCIDENCES
    35. 1         1         2
    36. 2         2         3
    37. 3         3         4
    38. 4         4         5
    39. 5         5         6
    40. 6         6         7
    41. 7         7         8
    42. 8         8         9
    43. 9        10        11
    44. 10        11        12
    45. 11        12        13
    46. 12        13        14
    47. 13        14        15
    48. 14        15        16
    49. 15        16        17
    50. 16        17        18
    51. 17         1        19
    52. 18        19        20
    53. 19        20        21
    54. 20        21        10
    55. 21         9        22
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 56. 22        22        23
 57. 23        23        24
 58. 24        24        18
 59. 25         5        25
 60. 26        25        26
 61. 27        26        27
 62. 28        27        14
 63. MEMBER PROPERTY INDIAN
 64. 1 4 5 8 9 12 13 16 17 20 21 24 PRI AX .499 IZ .0121  YD 0.525
 65. 2 3 6 7 10 11 14 15 18 19 22 23 PRI YD .4 ZD 1.
 66. 25 28 PRI AX .425 IZ .0354 YD 0.425
 67. 26 27 PRI YD .3 ZD 1.
 68. CONSTANT
 69. E 3E6 ALL
 70. DENSITY 2.4 ALL
 71. ALPHA 1.17E-05
 72. SUPPORT
 73. 5 PINNED
 74. 1 9 FIXED BUT FX MZ
 75. *
 76. LOAD 1 DEAD LOAD
 77. SELFWEIGHT Y -1
 78. MEMBER LOAD
 79. 1 TO 8 UNI GY 3.3
 80. LOAD 2 SIDL
 81. MEMBER LOAD
 82. 9 TO 16 UNI GY -0.317
 83. 1 TO 8 UNI GY 0.317
 84. LOAD 3 EARTH PRESSURE DRY C-1
 85. MEMBER LOAD
 86. 17 TRAP GX 6.41 4.71
 87. 18 TRAP GX 4.71 3.333
 88. 19 TRAP GX 3.333 1.956
 89. 20 TRAP GX 1.956 0.256
 90. 21 TRAP GX -6.41 -4.71
 91. 22 TRAP GX -4.71 -3.333
 92. 23 TRAP GX -3.333 -1.956
 93. 24 TRAP GX -1.956 -0.256
 94. 17 TO 20 UNI GX 1.2
 95. 21 TO 24 UNI GX -1.2
 96. LOAD 4 EARTH PRESSURE DRY C-2
 97. MEMBER LOAD
 98. 17 TRAP GX 3.461 2.543
 99. 18 TRAP GX 2.543 1.8
100. 19 TRAP GX 1.8 1.056
101. 20 TRAP GX 1.056 0.138
102. 21 TRAP GX -3.461 -2.543
103. 22 TRAP GX -2.543 -1.8
104. 23 TRAP GX -1.8 -1.056
105. 24 TRAP GX -1.056 -0.138
106. 17 TO 20 UNI GX 0.648
107. 21 TO 24 UNI GX -0.648
108. LOAD 5 EARTH PRESSURE HFL C-1
109. MEMBER LOAD
110. 17 TRAP GX 4.872 4.022
111. 18 TRAP GX 4.022 3.333
112. 19 TRAP GX 3.333 1.956
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113. 20 TRAP GX 1.956 1.675 1.675 1.7
114. 20 TRAP GX 1.675 0.256 0 1.675
115. 21 TRAP GX -4.872 -4.022
116. 22 TRAP GX -4.022 -3.333
117. 23 TRAP GX -3.333 -1.956
118. 23 TRAP GX -1.956 -1.675 1.675 1.7
119. 24 TRAP GX -1.675 -0.256 0 1.675
120. 17 TO 20 UNI GX 1.2
121. 21 TO 24 UNI GX -1.2
122. LOAD 6 EARTH PRESSURE HFL C-2
123. MEMBER LOAD
124. 17 TRAP GX 3.338 2.488
125. 18 TRAP GX 2.488 1.8
126. 19 TRAP GX 1.8 1.056
127. 20 TRAP GX 1.056 0.905 1.675 1.7
128. 20 TRAP GX 0.905 0.138 0 1.675
129. 21 TRAP GX -3.338 -2.488
130. 22 TRAP GX -2.488 -1.8
131. 23 TRAP GX -1.8 -1.056
132. 23 TRAP GX -1.056 -0.905 1.675 1.7
133. 24 TRAP GX -0.905 -0.138 0 1.675
134. 17 TO 20 UNI GX 0.648
135. 21 TO 24 UNI GX -0.648
136. LOAD 7 TEMP +VE GRADIANT
137. TEMPERATURE LOAD
138. 9 TO 16 TEMP 0. 14.18
139. LOAD 8 TEMP -VE GRADIANT
140. TEMPERATURE LOAD
141. 9 TO 16 TEMP 0. -2.
142. PERFORM ANALYSIS
143. LOAD LIST 1 TO 8
144. PRINT MEMBER FORCE LIST 2 3 6 7 10 11  18 19 26 27
     MEMBER   FORCE    LIST     2
```

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
2	1	2	0.97	-4.23	0.00	0.00	0.00	3.17
		3	-0.97	-1.56	0.00	0.00	0.00	-6.49
	2	2	0.00	-0.53	0.00	0.00	0.00	0.58
		3	0.00	-0.25	0.00	0.00	0.00	-0.93
	3	2	17.30	-2.09	0.00	0.00	0.00	-7.31
		3	-17.30	2.09	0.00	0.00	0.00	2.14
	4	2	9.34	-1.13	0.00	0.00	0.00	-3.95
		3	-9.34	1.13	0.00	0.00	0.00	1.15
	5	2	14.84	-1.70	0.00	0.00	0.00	-6.02
		3	-14.84	1.70	0.00	0.00	0.00	1.83
	6	2	8.94	-0.98	0.00	0.00	0.00	-3.49
		3	-8.94	0.98	0.00	0.00	0.00	1.06
	7	2	0.90	-0.25	0.00	0.00	0.00	-0.88
		3	-0.90	0.25	0.00	0.00	0.00	0.26
	8	2	-0.13	0.04	0.00	0.00	0.00	0.12
		3	0.13	-0.04	0.00	0.00	0.00	-0.04
3	1	3	0.97	1.56	0.00	0.00	0.00	6.49
		4	-0.97	-7.47	0.00	0.00	0.00	4.90
	2	3	0.00	0.25	0.00	0.00	0.00	0.93
		4	0.00	-1.05	0.00	0.00	0.00	0.73
	3	3	17.30	-2.09	0.00	0.00	0.00	-2.14

		4	-17.30	2.09	0.00	0.00	0.00	-3.14
	4	3	9.34	-1.13	0.00	0.00	0.00	-1.15
		4	-9.34	1.13	0.00	0.00	0.00	-1.70
	5	3	14.84	-1.70	0.00	0.00	0.00	-1.83
		4	-14.84	1.70	0.00	0.00	0.00	-2.46
	6	3	8.94	-0.98	0.00	0.00	0.00	-1.06
		4	-8.94	0.98	0.00	0.00	0.00	-1.43
	7	3	0.90	-0.25	0.00	0.00	0.00	-0.26
		4	-0.90	0.25	0.00	0.00	0.00	-0.38
	8	3	-0.13	0.04	0.00	0.00	0.00	0.04
		4	0.13	-0.04	0.00	0.00	0.00	0.05
6	1	6	0.97	-7.47	0.00	0.00	0.00	-4.90
		7	-0.97	1.56	0.00	0.00	0.00	-6.49
	2	6	0.00	-1.05	0.00	0.00	0.00	-0.73
		7	0.00	0.25	0.00	0.00	0.00	-0.93
	3	6	17.30	2.09	0.00	0.00	0.00	3.14
		7	-17.30	-2.09	0.00	0.00	0.00	2.14
	4	6	9.34	1.13	0.00	0.00	0.00	1.70
		7	-9.34	-1.13	0.00	0.00	0.00	1.15
	5	6	16.57	2.40	0.00	0.00	0.00	3.70
		7	-16.57	-2.40	0.00	0.00	0.00	2.35
	6	6	9.88	1.36	0.00	0.00	0.00	2.10
		7	-9.88	-1.36	0.00	0.00	0.00	1.34
	7	6	0.90	0.25	0.00	0.00	0.00	0.38
		7	-0.90	-0.25	0.00	0.00	0.00	0.26
	8	6	-0.13	-0.04	0.00	0.00	0.00	-0.05
		7	0.13	0.04	0.00	0.00	0.00	-0.04
7	1	7	0.97	-1.56	0.00	0.00	0.00	6.49
		8	-0.97	-4.23	0.00	0.00	0.00	-3.17
	2	7	0.00	-0.25	0.00	0.00	0.00	0.93
		8	0.00	-0.53	0.00	0.00	0.00	-0.58
	3	7	17.30	2.09	0.00	0.00	0.00	-2.14
		8	-17.30	-2.09	0.00	0.00	0.00	7.31
	4	7	9.34	1.13	0.00	0.00	0.00	-1.15
		8	-9.34	-1.13	0.00	0.00	0.00	3.95
	5	7	16.57	2.40	0.00	0.00	0.00	-2.35
		8	-16.57	-2.40	0.00	0.00	0.00	8.29
	6	7	9.88	1.36	0.00	0.00	0.00	-1.34
		8	-9.88	-1.36	0.00	0.00	0.00	4.71
	7	7	0.90	0.25	0.00	0.00	0.00	-0.26
		8	-0.90	-0.25	0.00	0.00	0.00	0.88
	8	7	-0.13	-0.04	0.00	0.00	0.00	0.04
		8	0.13	0.04	0.00	0.00	0.00	-0.12
10	1	11	-0.97	1.31	0.00	0.00	0.00	-2.85
		12	0.97	1.06	0.00	0.00	0.00	3.16
	2	11	0.00	0.54	0.00	0.00	0.00	-0.57
		12	0.00	0.25	0.00	0.00	0.00	0.93
	3	11	10.60	1.86	0.00	0.00	0.00	6.52
		12	-10.60	-1.86	0.00	0.00	0.00	-1.92
	4	11	5.72	1.00	0.00	0.00	0.00	3.52
		12	-5.72	-1.00	0.00	0.00	0.00	-1.03
	5	11	10.47	2.08	0.00	0.00	0.00	6.87
		12	-10.47	-2.08	0.00	0.00	0.00	-1.72
	6	11	5.81	1.17	0.00	0.00	0.00	3.86

		12	-5.81	-1.17	0.00	0.00	0.00	-0.97
	7	11	-0.90	0.67	0.00	0.00	0.00	-5.37
		12	0.90	-0.67	0.00	0.00	0.00	7.03
	8	11	0.13	-0.09	0.00	0.00	0.00	0.76
		12	-0.13	0.09	0.00	0.00	0.00	-0.99
11	1	12	-0.97	-1.06	0.00	0.00	0.00	-3.16
		13	0.97	3.49	0.00	0.00	0.00	-2.59
	2	12	0.00	-0.25	0.00	0.00	0.00	-0.93
		13	0.00	1.05	0.00	0.00	0.00	-0.71
	3	12	10.60	1.86	0.00	0.00	0.00	1.92
		13	-10.60	-1.86	0.00	0.00	0.00	2.78
	4	12	5.72	1.00	0.00	0.00	0.00	1.03
		13	-5.72	-1.00	0.00	0.00	0.00	1.50
	5	12	10.47	2.08	0.00	0.00	0.00	1.72
		13	-10.47	-2.08	0.00	0.00	0.00	3.54
	6	12	5.81	1.17	0.00	0.00	0.00	0.97
		13	-5.81	-1.17	0.00	0.00	0.00	1.98
	7	12	-0.90	0.67	0.00	0.00	0.00	-7.03
		13	0.90	-0.67	0.00	0.00	0.00	8.73
	8	12	0.13	-0.09	0.00	0.00	0.00	0.99
		13	-0.13	0.09	0.00	0.00	0.00	-1.23
18	1	19	8.03	0.97	0.00	0.00	0.00	5.42
		20	-6.71	-0.97	0.00	0.00	0.00	-4.09
	2	19	1.08	0.00	0.00	0.00	0.00	0.78
		20	-1.08	0.00	0.00	0.00	0.00	-0.79
	3	19	1.86	5.81	0.00	0.00	0.00	-8.36
		20	-1.86	1.38	0.00	0.00	0.00	11.19
	4	19	1.00	3.13	0.00	0.00	0.00	-4.51
		20	-1.00	0.75	0.00	0.00	0.00	6.04
	5	19	2.08	5.24	0.00	0.00	0.00	-7.96
		20	-2.08	1.47	0.00	0.00	0.00	10.45
	6	19	1.17	2.89	0.00	0.00	0.00	-4.69
		20	-1.17	0.96	0.00	0.00	0.00	5.91
	7	19	0.67	0.90	0.00	0.00	0.00	-0.22
		20	-0.67	-0.90	0.00	0.00	0.00	1.45
	8	19	-0.09	-0.13	0.00	0.00	0.00	0.03
		20	0.09	0.13	0.00	0.00	0.00	-0.21
19	1	20	6.71	0.97	0.00	0.00	0.00	4.09
		21	-5.39	-0.97	0.00	0.00	0.00	-2.76
	2	20	1.08	0.00	0.00	0.00	0.00	0.79
		21	-1.08	0.00	0.00	0.00	0.00	-0.79
	3	20	1.86	-1.38	0.00	0.00	0.00	-11.19
		21	-1.86	6.68	0.00	0.00	0.00	5.42
	4	20	1.00	-0.75	0.00	0.00	0.00	-6.04
		21	-1.00	3.61	0.00	0.00	0.00	2.93
	5	20	2.08	-1.47	0.00	0.00	0.00	-10.45
		21	-2.08	6.77	0.00	0.00	0.00	4.56
	6	20	1.17	-0.96	0.00	0.00	0.00	-5.91
		21	-1.17	3.81	0.00	0.00	0.00	2.51
	7	20	0.67	0.90	0.00	0.00	0.00	-1.45
		21	-0.67	-0.90	0.00	0.00	0.00	2.69
	8	20	-0.09	-0.13	0.00	0.00	0.00	0.21
		21	0.09	0.13	0.00	0.00	0.00	-0.38

26	1	25	14.64	0.00	0.00	0.00	0.00	0.00
		26	-13.65	0.00	0.00	0.00	0.00	0.00
	2	25	3.14	0.00	0.00	0.00	0.00	0.00
		26	-3.14	0.00	0.00	0.00	0.00	0.00
	3	25	-3.72	0.00	0.00	0.00	0.00	0.00
		26	3.72	0.00	0.00	0.00	0.00	0.00
	4	25	-2.01	0.00	0.00	0.00	0.00	0.00
		26	2.01	0.00	0.00	0.00	0.00	0.00
	5	25	-3.77	-0.73	0.00	0.00	0.00	-1.16
		26	3.77	0.73	0.00	0.00	0.00	0.15
	6	25	-2.12	-0.39	0.00	0.00	0.00	-0.62
		26	2.12	0.39	0.00	0.00	0.00	0.08
	7	25	-1.35	0.00	0.00	0.00	0.00	0.00
		26	1.35	0.00	0.00	0.00	0.00	0.00
	8	25	0.19	0.00	0.00	0.00	0.00	0.00
		26	-0.19	0.00	0.00	0.00	0.00	0.00
27	1	26	13.65	0.00	0.00	0.00	0.00	0.00
		27	-12.66	0.00	0.00	0.00	0.00	0.00
	2	26	3.14	0.00	0.00	0.00	0.00	0.00
		27	-3.14	0.00	0.00	0.00	0.00	0.00
	3	26	-3.72	0.00	0.00	0.00	0.00	0.00
		27	3.72	0.00	0.00	0.00	0.00	0.00
	4	26	-2.01	0.00	0.00	0.00	0.00	0.00
		27	2.01	0.00	0.00	0.00	0.00	0.00
	5	26	-3.77	-0.73	0.00	0.00	0.00	-0.15
		27	3.77	0.73	0.00	0.00	0.00	-0.85
	6	26	-2.12	-0.39	0.00	0.00	0.00	-0.08
		27	2.12	0.39	0.00	0.00	0.00	-0.46
	7	26	-1.35	0.00	0.00	0.00	0.00	0.00
		27	1.35	0.00	0.00	0.00	0.00	0.00
	8	26	0.19	0.00	0.00	0.00	0.00	0.00
		27	-0.19	0.00	0.00	0.00	0.00	0.00

145. LOAD LIST 1 TO 8
146. PRINT MEMBER FORCE LIST 1 9 17 25

MEMBER FORCE LIST 1

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
1	1	1	0.97	-7.81	0.00	0.00	0.00	-7.06
		2	-0.97	4.23	0.00	0.00	0.00	-3.17
	2	1	0.00	-1.07	0.00	0.00	0.00	-0.78
		2	0.00	0.53	0.00	0.00	0.00	-0.58
	3	1	17.30	-2.09	0.00	0.00	0.00	-10.87
		2	-17.30	2.09	0.00	0.00	0.00	7.31
	4	1	9.34	-1.13	0.00	0.00	0.00	-5.87
		2	-9.34	1.13	0.00	0.00	0.00	3.95
	5	1	14.84	-1.70	0.00	0.00	0.00	-8.91
		2	-14.84	1.70	0.00	0.00	0.00	6.02
	6	1	8.94	-0.98	0.00	0.00	0.00	-5.17
		2	-8.94	0.98	0.00	0.00	0.00	3.49
	7	1	0.90	-0.25	0.00	0.00	0.00	-1.31
		2	-0.90	0.25	0.00	0.00	0.00	0.88
	8	1	-0.13	0.04	0.00	0.00	0.00	0.19
		2	0.13	-0.04	0.00	0.00	0.00	-0.12

9	1	10	-0.97	3.35	0.00	0.00	0.00	1.12
		11	0.97	-1.31	0.00	0.00	0.00	2.85
	2	10	0.00	1.08	0.00	0.00	0.00	0.80
		11	0.00	-0.54	0.00	0.00	0.00	0.57
	3	10	10.60	1.86	0.00	0.00	0.00	9.68
		11	-10.60	-1.86	0.00	0.00	0.00	-6.52
	4	10	5.72	1.00	0.00	0.00	0.00	5.22
		11	-5.72	-1.00	0.00	0.00	0.00	-3.52
	5	10	10.47	2.08	0.00	0.00	0.00	10.41
		11	-10.47	-2.08	0.00	0.00	0.00	-6.87
	6	10	5.81	1.17	0.00	0.00	0.00	5.85
		11	-5.81	-1.17	0.00	0.00	0.00	-3.86
	7	10	-0.90	0.67	0.00	0.00	0.00	-4.22
		11	0.90	-0.67	0.00	0.00	0.00	5.37
	8	10	0.13	-0.09	0.00	0.00	0.00	0.60
		11	-0.13	0.09	0.00	0.00	0.00	-0.76
17	1	1	10.06	0.97	0.00	0.00	0.00	7.06
		19	-8.03	-0.97	0.00	0.00	0.00	-5.42
	2	1	1.08	0.00	0.00	0.00	0.00	0.78
		19	-1.08	0.00	0.00	0.00	0.00	-0.78
	3	1	1.86	17.30	0.00	0.00	0.00	10.87
		19	-1.86	-5.81	0.00	0.00	0.00	8.36
	4	1	1.00	9.34	0.00	0.00	0.00	5.87
		19	-1.00	-3.13	0.00	0.00	0.00	4.51
	5	1	2.08	14.84	0.00	0.00	0.00	8.91
		19	-2.08	-5.24	0.00	0.00	0.00	7.96
	6	1	1.17	8.94	0.00	0.00	0.00	5.17
		19	-1.17	-2.89	0.00	0.00	0.00	4.69
	7	1	0.67	0.90	0.00	0.00	0.00	1.31
		19	-0.67	-0.90	0.00	0.00	0.00	0.22
	8	1	-0.09	-0.13	0.00	0.00	0.00	-0.19
		19	0.09	0.13	0.00	0.00	0.00	-0.03
25	1	5	16.38	0.00	0.00	0.00	0.00	0.00
		25	-14.64	0.00	0.00	0.00	0.00	0.00
	2	5	3.14	0.00	0.00	0.00	0.00	0.00
		25	-3.14	0.00	0.00	0.00	0.00	0.00
	3	5	-3.72	0.00	0.00	0.00	0.00	0.00
		25	3.72	0.00	0.00	0.00	0.00	0.00
	4	5	-2.01	0.00	0.00	0.00	0.00	0.00
		25	2.01	0.00	0.00	0.00	0.00	0.00
	5	5	-3.77	-0.73	0.00	0.00	0.00	-2.39
		25	3.77	0.73	0.00	0.00	0.00	1.16
	6	5	-2.12	-0.39	0.00	0.00	0.00	-1.29
		25	2.12	0.39	0.00	0.00	0.00	0.62
	7	5	-1.35	0.00	0.00	0.00	0.00	0.00
		25	1.35	0.00	0.00	0.00	0.00	0.00
	8	5	0.19	0.00	0.00	0.00	0.00	0.00
		25	-0.19	0.00	0.00	0.00	0.00	0.00

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147. LOAD LIST 1 TO 8
148. PRINT MEMBER FORCE LIST 20  28
     MEMBER   FORCE    LIST     20
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MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
20	1	21	5.39	0.97	0.00	0.00	0.00	2.76
		10	-3.35	-0.97	0.00	0.00	0.00	-1.12
	2	21	1.08	0.00	0.00	0.00	0.00	0.79
		10	-1.08	0.00	0.00	0.00	0.00	-0.80
	3	21	1.86	-6.68	0.00	0.00	0.00	-5.42
		10	-1.86	10.60	0.00	0.00	0.00	-9.68
	4	21	1.00	-3.61	0.00	0.00	0.00	-2.93
		10	-1.00	5.72	0.00	0.00	0.00	-5.22
	5	21	2.08	-6.77	0.00	0.00	0.00	-4.56
		10	-2.08	10.47	0.00	0.00	0.00	-10.41
	6	21	1.17	-3.81	0.00	0.00	0.00	-2.51
		10	-1.17	5.81	0.00	0.00	0.00	-5.85
	7	21	0.67	0.90	0.00	0.00	0.00	-2.69
		10	-0.67	-0.90	0.00	0.00	0.00	4.22
	8	21	-0.09	-0.13	0.00	0.00	0.00	0.38
		10	0.09	0.13	0.00	0.00	0.00	-0.60
28	1	27	12.66	0.00	0.00	0.00	0.00	0.00
		14	-10.93	0.00	0.00	0.00	0.00	0.00
	2	27	3.14	0.00	0.00	0.00	0.00	0.00
		14	-3.14	0.00	0.00	0.00	0.00	0.00
	3	27	-3.72	0.00	0.00	0.00	0.00	0.00
		14	3.72	0.00	0.00	0.00	0.00	0.00
	4	27	-2.01	0.00	0.00	0.00	0.00	0.00
		14	2.01	0.00	0.00	0.00	0.00	0.00
	5	27	-3.77	-0.73	0.00	0.00	0.00	0.85
		14	3.77	0.73	0.00	0.00	0.00	-2.08
	6	27	-2.12	-0.39	0.00	0.00	0.00	0.46
		14	2.12	0.39	0.00	0.00	0.00	-1.12
	7	27	-1.35	0.00	0.00	0.00	0.00	0.00
		14	1.35	0.00	0.00	0.00	0.00	0.00
	8	27	0.19	0.00	0.00	0.00	0.00	0.00
		14	-0.19	0.00	0.00	0.00	0.00	0.00

149. LOAD LIST 1 TO 8
150. PRINT MEMBER FORCE LIST 4 12

MEMBER FORCE LIST 4

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
4	1	4	0.97	7.47	0.00	0.00	0.00	-4.90
		5	-0.97	-10.93	0.00	0.00	0.00	20.08
	2	4	0.00	1.05	0.00	0.00	0.00	-0.73
		5	0.00	-1.58	0.00	0.00	0.00	2.90
	3	4	17.30	-2.09	0.00	0.00	0.00	3.14
		5	-17.30	2.09	0.00	0.00	0.00	-6.60
	4	4	9.34	-1.13	0.00	0.00	0.00	1.70
		5	-9.34	1.13	0.00	0.00	0.00	-3.56
	5	4	14.84	-1.70	0.00	0.00	0.00	2.46
		5	-14.84	1.70	0.00	0.00	0.00	-5.26
	6	4	8.94	-0.98	0.00	0.00	0.00	1.43
		5	-8.94	0.98	0.00	0.00	0.00	-3.06
	7	4	0.90	-0.25	0.00	0.00	0.00	0.38
		5	-0.90	0.25	0.00	0.00	0.00	-0.80
	8	4	-0.13	0.04	0.00	0.00	0.00	-0.05

		5	0.13	-0.04	0.00	0.00	0.00	0.11
12	1	13	-0.97	-3.49	0.00	0.00	0.00	2.59
		14	0.97	5.46	0.00	0.00	0.00	-9.97
	2	13	0.00	-1.05	0.00	0.00	0.00	0.71
		14	0.00	1.57	0.00	0.00	0.00	-2.87
	3	13	10.60	1.86	0.00	0.00	0.00	-2.78
		14	-10.60	-1.86	0.00	0.00	0.00	5.84
	4	13	5.72	1.00	0.00	0.00	0.00	-1.50
		14	-5.72	-1.00	0.00	0.00	0.00	3.16
	5	13	10.47	2.08	0.00	0.00	0.00	-3.54
		14	-10.47	-2.08	0.00	0.00	0.00	6.97
	6	13	5.81	1.17	0.00	0.00	0.00	-1.98
		14	-5.81	-1.17	0.00	0.00	0.00	3.90
	7	13	-0.90	0.67	0.00	0.00	0.00	-8.73
		14	0.90	-0.67	0.00	0.00	0.00	9.84
	8	13	0.13	-0.09	0.00	0.00	0.00	1.23
		14	-0.13	0.09	0.00	0.00	0.00	-1.39

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151. FINISH

            ********** END OF THE STAAD.Pro RUN **********
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INPUT FILE: ll track.STD
     1. STAAD PLANE ANALYSIS FOR 70-R TRAKED
     2. ***LOAD FOR DEFINING WHEEL POSITION
     3. INPUT WIDTH 79
     4. UNIT METER MTON
     5. JOINT COORDINATES
     6. 1       0.000       0.000       0.000
     7. 2       1.700       0.000       0.000
     8. 3       4.175       0.000       0.000
     9. 4       6.700       0.000       0.000
    10. 5       8.350       0.000       0.000
    11. 6       10.000      0.000       0.000
    12. 7       12.525       0.000       0.000
    13. 8       15.000       0.000       0.000
    14. 9       16.700       0.000       0.000
    15. 10       0.000       6.154       0.000
    16. 11       1.700       6.154       0.000
    17. 12       4.175       6.154       0.000
    18. 13       6.700       6.154       0.000
    19. 14       8.350       6.154       0.000
    20. 15       10.000       6.154       0.000
    21. 16       12.525       6.154       0.000
    22. 17       15.000       6.154       0.000
    23. 18       16.700       6.154       0.000
    24. 19       0.000       1.700       0.000
    25. 20       0.000       3.077       0.000
    26. 21       0.000       4.454       0.000
    27. 22       16.700       1.700       0.000
    28. 23       16.700       3.077       0.000
    29. 24       16.700       4.454       0.000
    30. 25       8.350       1.700       0.000
    31. 26       8.350       3.077       0.000
    32. 27       8.350       4.454       0.000
    34. MEMBER INCIDENCES
    35. 1         1         2
    36. 2         2         3
    37. 3         3         4
    38. 4         4         5
    39. 5         5         6
    40. 6         6         7
    41. 7         7         8
    42. 8         8         9
    43. 9        10        11
    44. 10        11        12
    45. 11        12        13
    46. 12        13        14
    47. 13        14        15
    48. 14        15        16
    49. 15        16        17
    50. 16        17        18
    51. 17         1        19
    52. 18        19        20
    53. 19        20        21
    54. 20        21        10
    55. 21         9        22
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   56. 22        22        23
   57. 23        23        24
   58. 24        24        18
   59. 25         5        25
   60. 26        25        26
   61. 27        26        27
   62. 28        27        14
   63. MEMBER PROPERTY INDIAN
   64. 1 4 5 8 9 12 13 16 17 20 21 24 PRI AX .499 IZ .0121  YD 0.525
   65. 2 3 6 7 10 11 14 15 18 19 22 23 PRI YD .4 ZD 1.
   66. 25 28 PRI AX .425 IZ .0354 YD 0.425
   67. 26 27 PRI YD .3 ZD 1.
   68. CONSTANT
   69. E 3E6 ALL
   70. DENSITY 2.4 ALL
   71. SUPPORT
   72. 5 PINNED
   73. 1 9 FIXED BUT FX MZ
   74. DEFINE MOVING LOAD
   75. TYPE 1 LOA 5*15.4   DIS  4*1.1425
   76. LOAD GENERATION 170
   77. TYPE 1 -4.57 6.154 0 XINC 0.1
   78. PERFORM ANALYSIS
   79. PRINT MAX FORCE LIST 9 TO 13
       MAX      FORCE    LIST     9

  MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB          FY/    DIST  LD        MZ/    DIST  LD
              FZ     DIST  LD        MY     DIST  LD        FX     DIST  LD

   9 MAX     55.15   0.00   47      52.84   0.00   61
             0.00    0.00    1       0.00   0.00    1     10.11 C   0.00   61
     MIN     -4.83   1.70  140     -18.84   1.70   41
             0.00    1.70  170       0.00   1.70  170      1.47 T   1.70  133

  10 MAX     37.77   0.00   64       9.91   2.48  144
             0.00    0.00    1       0.00   0.00    1     10.11 C   0.00   61
     MIN    -17.66   2.48   42     -46.14   2.27   64
             0.00    2.48  170       0.00   2.48  170      1.47 T   2.48  133

  11 MAX     14.26   0.00   89      22.01   2.52  141
             0.00    0.00    1       0.00   0.00    1     10.11 C   0.00   61
     MIN    -43.31   2.52   68     -45.84   0.00   66
             0.00    2.52  170       0.00   2.52  170      1.47 T   2.52  133

  12 MAX     -0.01   0.00    1      72.66   1.65   70
             0.00    0.00    1       0.00   0.00    1     10.11 C   0.00   61
     MIN    -58.57   1.65   84      -6.91   0.00   91
             0.00    1.65  170       0.00   1.65  170      1.47 T   1.65  133

  13 MAX     58.31   0.00  131      72.65   0.00  145
             0.00    0.00    1       0.00   0.00    1     10.11 C   0.00  154
     MIN      0.00   1.65    4      -6.90   1.65  124
             0.00    1.65  170       0.00   1.65  170      1.47 T   1.65   82
   80. FINISH
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INPUT FILE: tracked.STD
     1. STAAD PLANE ANALYSIS FOR 70-R TRAKED
     2. INPUT WIDTH 79
     3. UNIT METER MTON
     4. JOINT COORDINATES
     5. 1       0.000       0.000       0.000
     6. 2       1.700       0.000       0.000
     7. 3       4.175       0.000       0.000
     8. 4       6.700       0.000       0.000
     9. 5       8.350       0.000       0.000
    10. 6       10.000      0.000       0.000
    11. 7       12.525       0.000       0.000
    12. 8       15.000       0.000       0.000
    13. 9       16.700       0.000       0.000
    14. 10       0.000       6.154       0.000
    15. 11       1.700       6.154       0.000
    16. 12       4.175       6.154       0.000
    17. 13       6.700       6.154       0.000
    18. 14       8.350       6.154       0.000
    19. 15       10.000       6.154       0.000
    20. 16       12.525       6.154       0.000
    21. 17       15.000       6.154       0.000
    22. 18       16.700       6.154       0.000
    23. 19       0.000       1.700       0.000
    24. 20       0.000       3.077       0.000
    25. 21       0.000       4.454       0.000
    26. 22       16.700       1.700       0.000
    27. 23       16.700       3.077       0.000
    28. 24       16.700       4.454       0.000
    29. 25       8.350       1.700       0.000
    30. 26       8.350       3.077       0.000
    31. 27       8.350       4.454       0.000
    33. MEMBER INCIDENCES
    34. 1         1         2
    35. 2         2         3
    36. 3         3         4
    37. 4         4         5
    38. 5         5         6
    39. 6         6         7
    40. 7         7         8
    41. 8         8         9
    42. 9        10        11
    43. 10        11        12
    44. 11        12        13
    45. 12        13        14
    46. 13        14        15
    47. 14        15        16
    48. 15        16        17
    49. 16        17        18
    50. 17         1        19
    51. 18        19        20
    52. 19        20        21
    53. 20        21        10
    54. 21         9        22
    55. 22        22        23
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 56. 23        23        24
 57. 24        24        18
 58. 25         5        25
 59. 26        25        26
 60. 27        26        27
 61. 28        27        14
 62. MEMBER PROPERTY INDIAN
 63. 1 4 5 8 9 12 13 16 17 20 21 24 PRI AX .499 IZ .0121  YD 0.525
 64. 2 3 6 7 10 11 14 15 18 19 22 23 PRI YD .4 ZD 1.
 65. 25 28 PRI AX .425 IZ .0354 YD 0.425
 66. 26 27 PRI YD .3 ZD 1.
 67. CONSTANT
 68. E 3E6 ALL
 69. DENSITY 2.4 ALL
 70. SUPPORT
 71. 5 PINNED
 72. 1 9 FIXED BUT FX MZ
 73. *
 74. LOAD 1 FOR MAX HOGGING BM AT END WEB
 75. MEMBER LOAD
 76. 9 UNI GY -1.770 .971 1.7
 77. 10 UNI GY -1.770 0.0 2.475
 78. 11 UNI GY -1.770 0. 2.278
 79. 1 TO 8 UNI GY 0.581
 80. LOAD 2 FOR MAX HOGGING BM IN MID SPAN
 81. MEMBER LOAD
 82. 13 UNI GY -1.772 .923 1.65
 83. 14 UNI GY -1.772 0.0 2.252
 84. 15 UNI GY -1.772 0.0 2.230
 85. 1 TO 8 UNI GY .582
 86. LOAD 3 FOR MAX HOGGING BM AT START OF HAUNCH 2
 87. MEMBER LOAD
 88. 13 UNI GY -1.787 0.621 1.65
 89. 14 UNI GY -1.787 0.0 2.525
 90. 15 UNI GY -1.787 0.0 1.928
 91. 1 TO 8 UNI GY 0.587
 92. LOAD 4 FOR MAX HOGGING BM AT  MIDDLE WEB
 93. MEMBER LOAD
 94. 10 UNI GY -1.77 0.173 2.475
 95. 11 UNI GY -1.77 0. 2.525
 96. 12 UNI GY -1.77 0 0.655
 97. 1 TO 8 UNI GY 0.581
 98. LOAD 5 FOR MAX SAGGING BM AT END OF HAUNCH  9
 99. MEMBER LOAD
100. 12 UNI GY -2.094 1.422 1.65
101. 13 UNI GY -2.094 0. 1.65
102. 14 UNI GY -2.094 0.0 2.525
103. 15 UNI GY -2.094 0. .213
104. 1 TO 8 UNI GY 0.579
105. LOAD 6 FOR MAX SAGGING BM IN MID SPAN
106. MEMBER LOAD
107. 10 UNI GY -2.094 0.004 2.475
108. 11 UNI GY -2.094 0. 2.145
109. 1 TO 8 UNI GY 0.579
110. LOAD 7 FOR MAX SAGGING BM AT END OF HAUNCH   1
111. MEMBER LOAD
112. 9 UNI GY -2.074 0. 1.7
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113. 10 UNI GY -2.074 0.0 2.475
114. 11 UNI GY -2.074 0. .851
115. 1 TO 8 UNI GY 0.624
116. PERFORM ANALYSIS
117. PRINT MEMBER FORCE LIST 2 3 10 11 18 19 26 27
     MEMBER   FORCE    LIST     2
```

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
2	1	2	-0.84	-1.06	0.00	0.00	0.00	1.76
		3	0.84	-0.38	0.00	0.00	0.00	-2.61
	2	2	0.58	-0.85	0.00	0.00	0.00	0.57
		3	-0.58	-0.59	0.00	0.00	0.00	-0.88
	3	2	0.61	-0.86	0.00	0.00	0.00	0.53
		3	-0.61	-0.59	0.00	0.00	0.00	-0.85
	4	2	-0.77	-1.07	0.00	0.00	0.00	1.74
		3	0.77	-0.37	0.00	0.00	0.00	-2.61
	5	2	0.67	-0.95	0.00	0.00	0.00	0.37
		3	-0.67	-0.49	0.00	0.00	0.00	-0.94
	6	2	-0.90	-1.06	0.00	0.00	0.00	1.82
		3	0.90	-0.37	0.00	0.00	0.00	-2.67
	7	2	-0.80	-1.14	0.00	0.00	0.00	1.74
		3	0.80	-0.41	0.00	0.00	0.00	-2.64
3	1	3	-0.84	0.38	0.00	0.00	0.00	2.61
		4	0.84	-1.84	0.00	0.00	0.00	0.19
	2	3	0.58	0.59	0.00	0.00	0.00	0.88
		4	-0.58	-2.06	0.00	0.00	0.00	2.47
	3	3	0.61	0.59	0.00	0.00	0.00	0.85
		4	-0.61	-2.08	0.00	0.00	0.00	2.52
	4	3	-0.77	0.37	0.00	0.00	0.00	2.61
		4	0.77	-1.83	0.00	0.00	0.00	0.17
	5	3	0.67	0.49	0.00	0.00	0.00	0.94
		4	-0.67	-1.95	0.00	0.00	0.00	2.13
	6	3	-0.90	0.37	0.00	0.00	0.00	2.67
		4	0.90	-1.84	0.00	0.00	0.00	0.12
	7	3	-0.80	0.41	0.00	0.00	0.00	2.64
		4	0.80	-1.98	0.00	0.00	0.00	0.38
10	1	11	0.84	3.74	0.00	0.00	0.00	-2.00
		12	-0.84	0.64	0.00	0.00	0.00	5.84
	2	11	-0.58	-0.69	0.00	0.00	0.00	-0.66
		12	0.58	0.69	0.00	0.00	0.00	-1.06
	3	11	-0.61	-0.75	0.00	0.00	0.00	-0.71
		12	0.61	0.75	0.00	0.00	0.00	-1.14
	4	11	0.77	3.86	0.00	0.00	0.00	-0.93
		12	-0.77	0.21	0.00	0.00	0.00	5.80
	5	11	-0.67	-0.72	0.00	0.00	0.00	-0.83
		12	0.67	0.72	0.00	0.00	0.00	-0.95
	6	11	0.90	4.61	0.00	0.00	0.00	-1.46
		12	-0.90	0.56	0.00	0.00	0.00	6.48
	7	11	0.80	3.57	0.00	0.00	0.00	-3.02
		12	-0.80	1.56	0.00	0.00	0.00	5.52

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z

11	1	12	0.84	-0.64	0.00	0.00	0.00	-5.84
		13	-0.84	4.67	0.00	0.00	0.00	-1.37
	2	12	-0.58	-0.69	0.00	0.00	0.00	1.06
		13	0.58	0.69	0.00	0.00	0.00	-2.82
	3	12	-0.61	-0.75	0.00	0.00	0.00	1.14
		13	0.61	0.75	0.00	0.00	0.00	-3.02
	4	12	0.77	-0.21	0.00	0.00	0.00	-5.80
		13	-0.77	4.68	0.00	0.00	0.00	-0.38
	5	12	-0.67	-0.72	0.00	0.00	0.00	0.95
		13	0.67	0.72	0.00	0.00	0.00	-2.77
	6	12	0.90	-0.56	0.00	0.00	0.00	-6.48
		13	-0.90	5.05	0.00	0.00	0.00	-1.46
	7	12	0.80	-1.56	0.00	0.00	0.00	-5.52
		13	-0.80	3.32	0.00	0.00	0.00	-2.13
18	1	19	5.03	-0.84	0.00	0.00	0.00	2.32
		20	-5.03	0.84	0.00	0.00	0.00	-3.49
	2	19	-0.69	0.58	0.00	0.00	0.00	0.73
		20	0.69	-0.58	0.00	0.00	0.00	0.06
	3	19	-0.75	0.61	0.00	0.00	0.00	0.74
		20	0.75	-0.61	0.00	0.00	0.00	0.10
	4	19	3.86	-0.77	0.00	0.00	0.00	2.23
		20	-3.86	0.77	0.00	0.00	0.00	-3.28
	5	19	-0.72	0.67	0.00	0.00	0.00	0.94
		20	0.72	-0.67	0.00	0.00	0.00	-0.01
	6	19	4.61	-0.90	0.00	0.00	0.00	2.35
		20	-4.61	0.90	0.00	0.00	0.00	-3.60
	7	19	7.10	-0.80	0.00	0.00	0.00	2.46
		20	-7.10	0.80	0.00	0.00	0.00	-3.57
19	1	20	5.03	-0.84	0.00	0.00	0.00	3.49
		21	-5.03	0.84	0.00	0.00	0.00	-4.65
	2	20	-0.69	0.58	0.00	0.00	0.00	-0.06
		21	0.69	-0.58	0.00	0.00	0.00	0.86
	3	20	-0.75	0.61	0.00	0.00	0.00	-0.10
		21	0.75	-0.61	0.00	0.00	0.00	0.95
	4	20	3.86	-0.77	0.00	0.00	0.00	3.28
		21	-3.86	0.77	0.00	0.00	0.00	-4.34
	5	20	-0.72	0.67	0.00	0.00	0.00	0.01
		21	0.72	-0.67	0.00	0.00	0.00	0.91
	6	20	4.61	-0.90	0.00	0.00	0.00	3.60
		21	-4.61	0.90	0.00	0.00	0.00	-4.84
	7	20	7.10	-0.80	0.00	0.00	0.00	3.57
		21	-7.10	0.80	0.00	0.00	0.00	-4.68
26	1	25	5.30	1.34	0.00	0.00	0.00	0.59
		26	-5.30	-1.34	0.00	0.00	0.00	1.25
MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
	2	25	6.36	-1.26	0.00	0.00	0.00	-0.47
		26	-6.36	1.26	0.00	0.00	0.00	-1.26
	3	25	7.12	-1.31	0.00	0.00	0.00	-0.46
		26	-7.12	1.31	0.00	0.00	0.00	-1.34
	4	25	6.57	1.34	0.00	0.00	0.00	0.51
		26	-6.57	-1.34	0.00	0.00	0.00	1.34
	5	25	8.56	-1.02	0.00	0.00	0.00	-0.25

		26	-8.56	1.02	0.00	0.00	0.00	-1.15
	6	25	5.75	1.43	0.00	0.00	0.00	0.61
		26	-5.75	-1.43	0.00	0.00	0.00	1.36
	7	25	3.80	1.22	0.00	0.00	0.00	0.65
		26	-3.80	-1.22	0.00	0.00	0.00	1.03
27	1	26	5.30	1.34	0.00	0.00	0.00	-1.25
		27	-5.30	-1.34	0.00	0.00	0.00	3.10
	2	26	6.36	-1.26	0.00	0.00	0.00	1.26
		27	-6.36	1.26	0.00	0.00	0.00	-3.00
	3	26	7.12	-1.31	0.00	0.00	0.00	1.34
		27	-7.12	1.31	0.00	0.00	0.00	-3.15
	4	26	6.57	1.34	0.00	0.00	0.00	-1.34
		27	-6.57	-1.34	0.00	0.00	0.00	3.19
	5	26	8.56	-1.02	0.00	0.00	0.00	1.15
		27	-8.56	1.02	0.00	0.00	0.00	-2.54
	6	26	5.75	1.43	0.00	0.00	0.00	-1.36
		27	-5.75	-1.43	0.00	0.00	0.00	3.33
	7	26	3.80	1.22	0.00	0.00	0.00	-1.03
		27	-3.80	-1.22	0.00	0.00	0.00	2.72

118. PRINT FORCE ENVELOP LIST 1 4 9 17 20 25 28

FORCE ENVELOP LIST 1

MEMB	DISTANCE		FY	LD	MZ	LD	FZ	LD	MY	LD
1	0.00	MAX	-1.84	2	-0.82	6	0.00	7	0.00	7
		MIN	-2.20	7	-2.07	5	0.00	7	0.00	7
	0.14	MAX	-1.75	2	-0.53	6	0.00	7	0.00	7
		MIN	-2.11	7	-1.81	5	0.00	7	0.00	7
	0.28	MAX	-1.67	2	-0.26	6	0.00	7	0.00	7
		MIN	-2.02	7	-1.55	5	0.00	7	0.00	7
	0.43	MAX	-1.59	2	0.00	6	0.00	7	0.00	7
		MIN	-1.93	7	-1.31	5	0.00	7	0.00	7
	0.57	MAX	-1.51	2	0.25	6	0.00	7	0.00	7
		MIN	-1.84	7	-1.07	5	0.00	7	0.00	7
	0.71	MAX	-1.43	2	0.49	6	0.00	7	0.00	7
		MIN	-1.76	7	-0.85	5	0.00	7	0.00	7
	0.85	MAX	-1.34	2	0.71	6	0.00	7	0.00	7
		MIN	-1.67	7	-0.64	5	0.00	7	0.00	7
	0.99	MAX	-1.26	2	0.93	6	0.00	7	0.00	7
		MIN	-1.58	7	-0.44	5	0.00	7	0.00	7
	1.13	MAX	-1.18	2	1.13	6	0.00	7	0.00	7
		MIN	-1.49	7	-0.26	5	0.00	7	0.00	7
	1.28	MAX	-1.10	2	1.32	6	0.00	7	0.00	7
		MIN	-1.40	7	-0.08	5	0.00	7	0.00	7
	1.42	MAX	-1.01	2	1.50	6	0.00	7	0.00	7
		MIN	-1.31	7	0.08	5	0.00	7	0.00	7
	1.56	MAX	-0.93	2	1.67	6	0.00	7	0.00	7
		MIN	-1.23	7	0.23	5	0.00	7	0.00	7
	1.70	MAX	-0.85	2	1.82	6	0.00	7	0.00	7
		MIN	-1.14	7	0.37	5	0.00	7	0.00	7

MAX/MIN FORCE VALUES FOR MEMB 1, AMONGST ALL SECT LOCATIONS								
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST LD

MAX.		-0.85	1.70	2	1.82	1.70	6					
		0.00	0.00	1	0.00	0.00	1	0.67	C	0.00		5
MIN.		-2.20	0.00	7	-2.07	0.00	5					
		0.00	1.70	7	0.00	1.70	7	0.90	T	1.70		6
4	0.00	MAX	2.08	3	-0.12	6	0.00	7		0.00		7
		MIN	1.83	4	-2.52	3	0.00	7		0.00		7
	0.14	MAX	2.16	3	-0.38	6	0.00	7		0.00		7
		MIN	1.91	4	-2.81	3	0.00	7		0.00		7
	0.28	MAX	2.24	3	-0.65	6	0.00	7		0.00		7
		MIN	1.99	4	-3.11	3	0.00	7		0.00		7
	0.41	MAX	2.32	3	-0.93	6	0.00	7		0.00		7
		MIN	2.07	4	-3.43	3	0.00	7		0.00		7
	0.55	MAX	2.40	3	-1.22	6	0.00	7		0.00		7
		MIN	2.15	4	-3.75	3	0.00	7		0.00		7
	0.69	MAX	2.48	3	-1.52	6	0.00	7		0.00		7
		MIN	2.23	4	-4.09	3	0.00	7		0.00		7
	0.83	MAX	2.56	3	-1.83	6	0.00	7		0.00		7
		MIN	2.31	6	-4.43	3	0.00	7		0.00		7
	0.96	MAX	2.64	3	-2.15	6	0.00	7		0.00		7
		MIN	2.39	6	-4.79	3	0.00	7		0.00		7
	1.10	MAX	2.72	3	-2.49	6	0.00	7		0.00		7
		MIN	2.47	6	-5.16	3	0.00	7		0.00		7
	1.24	MAX	2.80	3	-2.83	6	0.00	7		0.00		7
		MIN	2.55	6	-5.54	3	0.00	7		0.00		7
	1.38	MAX	2.88	3	-3.19	6	0.00	7		0.00		7
		MIN	2.63	6	-5.93	3	0.00	7		0.00		7
	1.51	MAX	2.96	3	-3.56	6	0.00	7		0.00		7
		MIN	2.71	6	-6.33	3	0.00	7		0.00		7
	1.65	MAX	3.05	3	-3.94	6	0.00	7		0.00		7
		MIN	2.79	6	-6.75	3	0.00	7		0.00		7

MAX/MIN FORCE VALUES FOR MEMB 4, AMONGST ALL SECT LOCATIONS												
		FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST		LD
MAX.		3.05	1.65	3	-0.12	0.00	6					
		0.00	0.00	1	0.00	0.00	1	0.67	C	0.00		5
MIN.		1.83	0.00	4	-6.75	1.65	3					
		0.00	1.65	7	0.00	1.65	7	0.90	T	1.65		6
9	0.00	MAX	7.10	7	6.38	6	0.00	7		0.00		7
		MIN	-0.75	3	-2.05	5	0.00	7		0.00		7
	0.14	MAX	6.81	7	5.73	6	0.00	7		0.00		7
		MIN	-0.75	3	-1.94	5	0.00	7		0.00		7
	0.28	MAX	6.51	7	5.08	6	0.00	7		0.00		7
		MIN	-0.75	3	-1.84	5	0.00	7		0.00		7
	0.43	MAX	6.22	7	4.42	6	0.00	7		0.00		7
		MIN	-0.75	3	-1.74	5	0.00	7		0.00		7
	0.57	MAX	5.92	7	3.77	6	0.00	7		0.00		7
		MIN	-0.75	3	-1.64	5	0.00	7		0.00		7
	0.71	MAX	5.63	7	3.12	6	0.00	7		0.00		7
		MIN	-0.75	3	-1.54	5	0.00	7		0.00		7
	0.85	MAX	5.34	7	2.46	6	0.00	7		0.00		7
		MIN	-0.75	3	-1.44	5	0.00	7		0.00		7
	0.99	MAX	5.04	7	1.81	6	0.00	7		0.00		7
		MIN	-0.75	3	-1.33	5	0.00	7		0.00		7

	1.13	MAX	4.75	7	1.26	4	0.00	7	0.00	7
		MIN	-0.75	3	-1.23	5	0.00	7	0.00	7
	1.28	MAX	4.61	6	0.71	4	0.00	7	0.00	7
		MIN	-0.75	3	-1.32	7	0.00	7	0.00	7
	1.42	MAX	4.61	6	0.17	4	0.00	7	0.00	7
		MIN	-0.75	3	-1.93	7	0.00	7	0.00	7
	1.56	MAX	4.61	6	-0.38	4	0.00	7	0.00	7
		MIN	-0.75	3	-2.50	7	0.00	7	0.00	7
	1.70	MAX	4.61	6	-0.66	2	0.00	7	0.00	7
		MIN	-0.75	3	-3.02	7	0.00	7	0.00	7

MAX/MIN FORCE VALUES FOR MEMB 9, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.	7.10	0.00	7	6.38	0.00	6			
	0.00	0.00	1	0.00	0.00	1	0.90 C	0.00	6
MIN.	-0.75	1.70	3	-3.02	1.70	7			
	0.00	1.70	7	0.00	1.70	7	0.67 T	1.70	5

17	0.00	MAX	0.67	5	2.07	5	0.00	7	0.00	7
		MIN	-0.90	6	0.82	6	0.00	7	0.00	7
	0.14	MAX	0.67	5	1.98	5	0.00	7	0.00	7
		MIN	-0.90	6	0.94	6	0.00	7	0.00	7
	0.28	MAX	0.67	5	1.88	5	0.00	7	0.00	7
		MIN	-0.90	6	1.07	6	0.00	7	0.00	7
	0.43	MAX	0.67	5	1.79	5	0.00	7	0.00	7
		MIN	-0.90	6	1.20	6	0.00	7	0.00	7
	0.57	MAX	0.67	5	1.69	5	0.00	7	0.00	7
		MIN	-0.90	6	1.33	6	0.00	7	0.00	7
	0.71	MAX	0.67	5	1.67	7	0.00	7	0.00	7
		MIN	-0.90	6	1.31	2	0.00	7	0.00	7
	0.85	MAX	0.67	5	1.78	7	0.00	7	0.00	7
		MIN	-0.90	6	1.22	2	0.00	7	0.00	7
	0.99	MAX	0.67	5	1.89	7	0.00	7	0.00	7
		MIN	-0.90	6	1.14	2	0.00	7	0.00	7
	1.13	MAX	0.67	5	2.01	7	0.00	7	0.00	7
		MIN	-0.90	6	1.06	2	0.00	7	0.00	7
	1.28	MAX	0.67	5	2.12	7	0.00	7	0.00	7
		MIN	-0.90	6	0.98	2	0.00	7	0.00	7
	1.42	MAX	0.67	5	2.24	7	0.00	7	0.00	7
		MIN	-0.90	6	0.90	2	0.00	7	0.00	7
	1.56	MAX	0.67	5	2.35	7	0.00	7	0.00	7
		MIN	-0.90	6	0.82	2	0.00	7	0.00	7
	1.70	MAX	0.67	5	2.46	7	0.00	7	0.00	7
		MIN	-0.90	6	0.73	2	0.00	7	0.00	7

MAX/MIN FORCE VALUES FOR MEMB 17, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.	0.67	0.00	5	2.46	1.70	7			
	0.00	0.00	1	0.00	0.00	1	7.10 C	0.00	7
MIN.	-0.90	1.70	6	0.73	1.70	2			
	0.00	1.70	7	0.00	1.70	7	0.75 T	1.70	3

20	0.00	MAX	0.67	5	4.84	6	0.00	7	0.00	7
		MIN	-0.90	6	-0.95	3	0.00	7	0.00	7
	0.14	MAX	0.67	5	4.97	6	0.00	7	0.00	7
		MIN	-0.90	6	-1.03	3	0.00	7	0.00	7
	0.28	MAX	0.67	5	5.10	6	0.00	7	0.00	7
		MIN	-0.90	6	-1.12	3	0.00	7	0.00	7
	0.43	MAX	0.67	5	5.23	6	0.00	7	0.00	7
		MIN	-0.90	6	-1.21	3	0.00	7	0.00	7
	0.57	MAX	0.67	5	5.36	6	0.00	7	0.00	7
		MIN	-0.90	6	-1.29	3	0.00	7	0.00	7
	0.71	MAX	0.67	5	5.49	6	0.00	7	0.00	7
		MIN	-0.90	6	-1.38	5	0.00	7	0.00	7
	0.85	MAX	0.67	5	5.61	6	0.00	7	0.00	7
		MIN	-0.90	6	-1.48	5	0.00	7	0.00	7
	0.99	MAX	0.67	5	5.74	6	0.00	7	0.00	7
		MIN	-0.90	6	-1.57	5	0.00	7	0.00	7
	1.13	MAX	0.67	5	5.87	6	0.00	7	0.00	7
		MIN	-0.90	6	-1.67	5	0.00	7	0.00	7
	1.28	MAX	0.67	5	6.00	6	0.00	7	0.00	7
		MIN	-0.90	6	-1.76	5	0.00	7	0.00	7
	1.42	MAX	0.67	5	6.13	6	0.00	7	0.00	7
		MIN	-0.90	6	-1.86	5	0.00	7	0.00	7
	1.56	MAX	0.67	5	6.25	6	0.00	7	0.00	7
		MIN	-0.90	6	-1.95	5	0.00	7	0.00	7
	1.70	MAX	0.67	5	6.38	6	0.00	7	0.00	7
		MIN	-0.90	6	-2.05	5	0.00	7	0.00	7

MAX/MIN FORCE VALUES FOR MEMB 20, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.67	0.00	5	6.38	1.70	6			
	0.00	0.00	1	0.00	0.00	1	7.10 C	0.00	7
MIN.	-0.90	1.70	6	-2.05	1.70	5			
	0.00	1.70	7	0.00	1.70	7	0.75 T	1.70	3

25	0.00	MAX	1.43	6	3.03	6	0.00	7	0.00	7
		MIN	-1.31	3	-2.69	3	0.00	7	0.00	7
	0.14	MAX	1.43	6	2.83	6	0.00	7	0.00	7
		MIN	-1.31	3	-2.51	3	0.00	7	0.00	7
	0.28	MAX	1.43	6	2.63	6	0.00	7	0.00	7
		MIN	-1.31	3	-2.32	3	0.00	7	0.00	7
	0.43	MAX	1.43	6	2.43	6	0.00	7	0.00	7
		MIN	-1.31	3	-2.14	3	0.00	7	0.00	7
	0.57	MAX	1.43	6	2.22	6	0.00	7	0.00	7
		MIN	-1.31	3	-1.95	3	0.00	7	0.00	7
	0.71	MAX	1.43	6	2.02	6	0.00	7	0.00	7
		MIN	-1.31	3	-1.77	3	0.00	7	0.00	7
	0.85	MAX	1.43	6	1.82	6	0.00	7	0.00	7
		MIN	-1.31	3	-1.58	3	0.00	7	0.00	7
	0.99	MAX	1.43	6	1.62	6	0.00	7	0.00	7
		MIN	-1.31	3	-1.39	3	0.00	7	0.00	7
	1.13	MAX	1.43	6	1.42	6	0.00	7	0.00	7
		MIN	-1.31	3	-1.21	3	0.00	7	0.00	7
	1.28	MAX	1.43	6	1.21	6	0.00	7	0.00	7
		MIN	-1.31	3	-1.02	3	0.00	7	0.00	7

	1.42	MAX	1.43	6	1.01	6	0.00	7	0.00	7
		MIN	-1.31	3	-0.84	3	0.00	7	0.00	7
	1.56	MAX	1.43	6	0.82	7	0.00	7	0.00	7
		MIN	-1.31	3	-0.65	3	0.00	7	0.00	7
	1.70	MAX	1.43	6	0.65	7	0.00	7	0.00	7
		MIN	-1.31	3	-0.47	2	0.00	7	0.00	7

MAX/MIN FORCE VALUES FOR MEMB 25, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.43	0.00	6	3.03	0.00	6			
	0.00	0.00	1	0.00	0.00	1	8.56 C	0.00	5
MIN.	-1.31	1.70	3	-2.69	0.00	3			
	0.00	1.70	7	0.00	1.70	7	3.80 C	1.70	7

28	0.00	MAX	1.43	6	3.15	3	0.00	7	0.00	7
		MIN	-1.31	3	-3.33	6	0.00	7	0.00	7
	0.14	MAX	1.43	6	3.34	3	0.00	7	0.00	7
		MIN	-1.31	3	-3.53	6	0.00	7	0.00	7
	0.28	MAX	1.43	6	3.52	3	0.00	7	0.00	7
		MIN	-1.31	3	-3.73	6	0.00	7	0.00	7
	0.43	MAX	1.43	6	3.71	3	0.00	7	0.00	7
		MIN	-1.31	3	-3.94	6	0.00	7	0.00	7
	0.57	MAX	1.43	6	3.89	3	0.00	7	0.00	7
		MIN	-1.31	3	-4.14	6	0.00	7	0.00	7
	0.71	MAX	1.43	6	4.08	3	0.00	7	0.00	7
		MIN	-1.31	3	-4.34	6	0.00	7	0.00	7
	0.85	MAX	1.43	6	4.27	3	0.00	7	0.00	7
		MIN	-1.31	3	-4.54	6	0.00	7	0.00	7
	0.99	MAX	1.43	6	4.45	3	0.00	7	0.00	7
		MIN	-1.31	3	-4.74	6	0.00	7	0.00	7
	1.13	MAX	1.43	6	4.64	3	0.00	7	0.00	7
		MIN	-1.31	3	-4.95	6	0.00	7	0.00	7
	1.28	MAX	1.43	6	4.82	3	0.00	7	0.00	7
		MIN	-1.31	3	-5.15	6	0.00	7	0.00	7
	1.42	MAX	1.43	6	5.01	3	0.00	7	0.00	7
		MIN	-1.31	3	-5.35	6	0.00	7	0.00	7
	1.56	MAX	1.43	6	5.20	3	0.00	7	0.00	7
		MIN	-1.31	3	-5.55	6	0.00	7	0.00	7
	1.70	MAX	1.43	6	5.38	3	0.00	7	0.00	7
		MIN	-1.31	3	-5.76	6	0.00	7	0.00	7

MAX/MIN FORCE VALUES FOR MEMB 28, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.43	0.00	6	5.38	1.70	3			
	0.00	0.00	1	0.00	0.00	1	8.56 C	0.00	5
MIN.	-1.31	1.70	3	-5.76	1.70	6			
	0.00	1.70	7	0.00	1.70	7	3.80 C	1.70	7

119. FINISH

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INPUT FILE: ll wheeled.STD
     2. STAAD PLANE ANALYSIS FOR 70-R WHEELED
     3. *LOAD FOR DEFINING WHEEL PIOSITION
     4. INPUT WIDTH 79
     5. UNIT METER MTON
     6. JOINT COORDINATES
     7. 1       0.000       0.000       0.000
     8. 2       1.700       0.000       0.000
     9. 3       4.175       0.000       0.000
    10. 4       6.700       0.000       0.000
    11. 5       8.350       0.000       0.000
    12. 6       10.000      0.000       0.000
    13. 7       12.525       0.000       0.000
    14. 8       15.000       0.000       0.000
    15. 9       16.700       0.000       0.000
    16. 10       0.000       6.154       0.000
    17. 11       1.700       6.154       0.000
    18. 12       4.175       6.154       0.000
    19. 13       6.700       6.154       0.000
    20. 14       8.350       6.154       0.000
    21. 15       10.000       6.154       0.000
    22. 16       12.525       6.154       0.000
    23. 17       15.000       6.154       0.000
    24. 18       16.700       6.154       0.000
    25. 19       0.000       1.700       0.000
    26. 20       0.000       3.077       0.000
    27. 21       0.000       4.454       0.000
    28. 22       16.700       1.700       0.000
    29. 23       16.700       3.077       0.000
    30. 24       16.700       4.454       0.000
    31. 25       8.350       1.700       0.000
    32. 26       8.350       3.077       0.000
    33. 27       8.350       4.454       0.000
    35. MEMBER INCIDENCES
    36. 1         1         2
    37. 2         2         3
    38. 3         3         4
    39. 4         4         5
    40. 5         5         6
    41. 6         6         7
    42. 7         7         8
    43. 8         8         9
    44. 9        10        11
    45. 10        11        12
    46. 11        12        13
    47. 12        13        14
    48. 13        14        15
    49. 14        15        16
    50. 15        16        17
    51. 16        17        18
    52. 17         1        19
    53. 18        19        20
    54. 19        20        21
    55. 20        21        10
    56. 21         9        22
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    57. 22        22        23
    58. 23        23        24
    59. 24        24        18
    60. 25         5        25
    61. 26        25        26
    62. 27        26        27
    63. 28        27        14
    64. MEMBER PROPERTY INDIAN
    65. 1 4 5 8 9 12 13 16 17 20 21 24 PRI AX .499 IZ .0121  YD 0.525
    66. 2 3 6 7 10 11 14 15 18 19 22 23 PRI YD .4 ZD 1.
    67. 25 28 PRI AX .425 IZ .0354 YD 0.425
    68. 26 27 PRI YD .3 ZD 1.
    69. CONSTANT
    70. E 3E6 ALL
    71. DENSITY 2.4 ALL
    72. SUPPORT
    73. 5 PINNED
    74. 1 9 FIXED BUT FX MZ
    75. DEFINE MOVING LOAD
    76. TYPE 1 LOA 10 15 15 21.25 21.25 21.25 21.25 DIST 3.96 1.52 2.13 1.37
3.05 1.37
    77. TYPE 2 LOA 21.25 21.25 21.25 21.25 15 15 10 DIST 1.37 3.05 1.37 2.13
1.52 3.96
    78. LOAD GENERATION 250
    79. TYPE 1 -13.4 6.154 0 XINC 0.1
    80. LOAD GENERATION 249
    81. TYPE 2 -13.4 6.154 0 XINC 0.1
    82. PERFORM ANALYSIS
    83. LOAD LIST 1 TO 250
    84. PRINT MAX FORCE  LIST 9 TO 13
        MAX      FORCE    LIST     9

   MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

  MEMB          FY/    DIST  LD        MZ/    DIST  LD
                FZ     DIST  LD        MY     DIST  LD        FX     DIST  LD

     9 MAX     53.38   0.00   59      45.65   0.00   72
               0.00    0.00    1       0.00   0.00    1      8.76 C   0.00   72
       MIN     -4.61   1.70   18     -19.70   1.70   31
               0.00    1.70  250       0.00   1.70  250      0.04 T   1.70  247

    10 MAX     36.12   0.00   76       5.08   2.48  206
               0.00    0.00    1       0.00   0.00    1      8.76 C   0.00   72
       MIN    -18.01   2.48   42     -40.38   2.27   85
               0.00    2.48  250       0.00   2.48  250      0.04 T   2.48  247

    11 MAX     12.58   0.00   57      19.37   2.52  180
               0.00    0.00    1       0.00   0.00    1      8.76 C   0.00   72
       MIN    -44.97   2.52  112     -40.00   0.00   87
               0.00    2.52  250       0.00   2.52  250      0.04 T   2.52  247

    12 MAX     -0.02   0.00    1      83.43   1.65  114
               0.00    0.00    1       0.00   0.00    1      8.76 C   0.00   72
       MIN    -58.55   1.65  128      -4.79   0.00   68
               0.00    1.65  250       0.00   1.65  250      0.04 T   1.65  247
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   13 MAX     59.01   0.00  143      76.20   0.00  152
               0.00   0.00    1       0.00   0.00    1      8.56 C   0.00  194
      MIN      0.00   1.65    4       0.05   1.65    1
               0.00   1.65  250       0.00   1.65  250      0.74 T   1.65   59
    85. LOAD LIST 251 TO 499
   86. PRINT MAX FORCE  LIST 9 TO 13
       MAX      FORCE    LIST     9

  MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB          FY/    DIST  LD        MZ/    DIST  LD
              FZ     DIST  LD        MY     DIST  LD        FX     DIST  LD

    9 MAX     52.68   0.00  385      44.56   0.00  359
               0.00   0.00  251       0.00   0.00  251      8.56 C   0.00  359
      MIN     -3.90   1.70  483     -17.61   1.70  402
               0.00   1.70  499       0.00   1.70  499      0.74 T   1.70  494

   10 MAX     36.34   0.00  358       8.57   2.48  482
               0.00   0.00  251       0.00   0.00  251      8.56 C   0.00  359
      MIN    -19.29   2.48  413     -40.75   2.06  365
               0.00   2.48  499       0.00   2.48  499      0.74 T   2.48  494

   11 MAX     12.17   0.00  383      20.36   2.52  423
               0.00   0.00  251       0.00   0.00  251      8.56 C   0.00  359
      MIN    -42.55   2.52  394     -39.95   0.00  369
               0.00   2.52  499       0.00   2.52  499      0.74 T   2.52  494

   12 MAX     -0.01   0.00  251      76.20   1.65  401
               0.00   0.00  251       0.00   0.00  251      8.56 C   0.00  359
      MIN    -59.01   1.65  410       0.03   0.00  251
               0.00   1.65  499       0.00   1.65  499      0.74 T   1.65  494

   13 MAX     58.55   0.00  425      83.43   0.00  439
               0.00   0.00  251       0.00   0.00  251      8.76 C   0.00  481
      MIN      0.00   1.65  254      -4.79   1.65  485
               0.00   1.65  499       0.00   1.65  499      0.08 T   1.65  291


   87. FINISH
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INPUT FILE: wheeled.STD
     1. STAAD PLANE ANALYSIS FOR 70-R WHEELED
     2. *LOAD FOR DEFINING WHEEL PIOSITION
     3. INPUT WIDTH 79
     4. PAGE LENGTH 1000
     5. UNIT METER MTON
     6. JOINT COORDINATES
     7. 1       0.000       0.000       0.000
     8. 2       1.700       0.000       0.000
     9. 3       4.175       0.000       0.000
    10. 4       6.700       0.000       0.000
    11. 5       8.350       0.000       0.000
    12. 6       10.000      0.000       0.000
    13. 7       12.525       0.000       0.000
    14. 8       15.000       0.000       0.000
    15. 9       16.700       0.000       0.000
    16. 10       0.000       6.154       0.000
    17. 11       1.700       6.154       0.000
    18. 12       4.175       6.154       0.000
    19. 13       6.700       6.154       0.000
    20. 14       8.350       6.154       0.000
    21. 15       10.000       6.154       0.000
    22. 16       12.525       6.154       0.000
    23. 17       15.000       6.154       0.000
    24. 18       16.700       6.154       0.000
    25. 19       0.000       1.700       0.000
    26. 20       0.000       3.077       0.000
    27. 21       0.000       4.454       0.000
    28. 22       16.700       1.700       0.000
    29. 23       16.700       3.077       0.000
    30. 24       16.700       4.454       0.000
    31. 25       8.350       1.700       0.000
    32. 26       8.350       3.077       0.000
    33. 27       8.350       4.454       0.000
    35. MEMBER INCIDENCES
    36. 1         1         2
    37. 2         2         3
    38. 3         3         4
    39. 4         4         5
    40. 5         5         6
    41. 6         6         7
    42. 7         7         8
    43. 8         8         9
    44. 9        10        11
    45. 10        11        12
    46. 11        12        13
    47. 12        13        14
    48. 13        14        15
    49. 14        15        16
    50. 15        16        17
    51. 16        17        18
    52. 17         1        19
    53. 18        19        20
    54. 19        20        21
    55. 20        21        10
    56. 21         9        22
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 57. 22        22        23
 58. 23        23        24
 59. 24        24        18
 60. 25         5        25
 61. 26        25        26
 62. 27        26        27
 63. 28        27        14
 64. MEMBER PROPERTY INDIAN
 65. 1 4 5 8 9 12 13 16 17 20 21 24 PRI AX .499 IZ .0121  YD 0.525
 66. 2 3 6 7 10 11 14 15 18 19 22 23 PRI YD .4 ZD 1.
 67. 25 28 PRI AX .425 IZ .0354 YD 0.425
 68. 26 27 PRI YD .3 ZD 1.
 69. CONSTANT
 70. E 3E6 ALL
 71. DENSITY 2.4 ALL
 72. SUPPORT
 73. 5 PINNED
 74. 1 9 FIXED BUT FX MZ
 75. *
 76. LOAD 1 FOR MAX HOGGING BM AT END WEB
 77. MEMBER LOAD
 78. 9 UNI GY -2.588 .7225 1.7
 79. 10 UNI GY -2.588 0. .198
 80. 10 UNI GY -2.135 .3925 1.5675
 81. 11 UNI GY -2.143 0.9675 2.1425
 82. 11 UNI GY -2.636 2.3375 2.525
 83. 12 UNI GY -2.636 0. 0.987
 84. 1 TO 8 UNI GY 0.669
 85. LOAD 2 FOR MAX HOGGING BM IN MID SPAN
 86. MEMBER LOAD
 87. 13 UNI GY -2.484 .8625 1.65
 88. 14 UNI GY -2.484 0. .388
 89. 14 UNI GY -2.116 .5825 1.7575
 90. 15 UNI GY -2.165 1.1075 2.2825
 91. 16 UNI GY -2.762 .0025 1.1775
 92. 1 TO 8 UNI GY .670
 93. LOAD 3 FOR MAX HOGGING BM AT START OF HAUNCH 2
 94. MEMBER LOAD
 95. 10 UNI GY -2.038 1.6125 2.475
 96. 11 UNI GY -2.038 0. .313
 97. 11 UNI GY -2.087 .5075 1.6825
 98. 12 UNI GY -7.262 1.0325 1.65
 99. 12 UNI GY -7.262 0. .558
100. 13 UNI GY -2.564 0.7525 1.65
101. 14 UNI GY -2.564 0. .278
102. 14 UNI GY -1.452 1.2325 2.4075
103. 15 UNI GY -1.457 0.2275 1.4025
104. 1 TO 8 UNI GY 1.186
105. LOAD 4 FOR MAX HOGGING BM AT  CENTRAL WEB
106. MEMBER LOAD
107. 9 UNI GY  -1.618 1.2725 1.7
108. 10 UNI GY -1.618 0. .748
109. 10 UNI GY -1.456 1.0925 2.2675
110. 11 UNI GY -2.114 0.7475 1.9225
111. 11 UNI GY -2.471 2.1175 2.525
112. 12 UNI GY -2.471 0. .767
113. 13 UNI GY -2.4 .9925 1.65
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114. 14 UNI GY -2.4 0. .518
115. 14 UNI GY -2.101 0.7125 1.8875
116. 1 TO 8 UNI GY 0.855
117. LOAD 5 FOR MAX SAGGING BM AT END OF HAUNCH 9
118. MEMBER LOAD
119. 13 UNI GY -2.327 1.1625 1.65
120. 14 UNI GY -2.327 0. .688
121. 14 UNI GY -2.103 .8825 2.0575
122. 15 UNI GY -2.230 1.4075 2.475
123. 16 UNI GY -2.230 0.0 1.7
124. 16 UNI GY -3.101 0.3025 1.4775
125. 1 TO 8 UNI GY 0.687
126. LOAD 6 FOR MAX SAGGING BM IN MID SPAN
127. MEMBER LOAD
128. 10 UNI GY -2.172 0.2325 1.4075
129. 10 UNI GY -2.067 1.6025 2.475
130. 11 UNI GY -2.067 0.0 0.303
131. 11 UNI GY -1.555 1.2575 2.4325
132. 12 UNI GY -2.189 0.2525 1.4275
133. 14 UNI GY -0.979 0.9125 2.0875
134. 1 TO 8 UNI GY 0.631
135. LOAD 7 FOR MAX SAGGING BM AT END OF HAUNCH 1
136. MEMBER LOAD
137. 9 UNI GY -3.053 1.174 1.7
138. 10 UNI GY -3.053 0.0 0.386
139. 10 UNI GY -2.700 0.844 1.756
140. 1 TO 8 UNI GY 0.314
141. PERFORM ANALYSIS
142. PRINT MEMBER FORCE LIST 2 3 10 11 18 19 26 27
     MEMBER   FORCE    LIST     2
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MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
2	1	2	-0.60	-1.24	0.00	0.00	0.00	1.72
		3	0.60	-0.42	0.00	0.00	0.00	-2.73
	2	2	0.59	-1.01	0.00	0.00	0.00	0.74
		3	-0.59	-0.65	0.00	0.00	0.00	-1.18
	3	2	0.08	-2.09	0.00	0.00	0.00	2.14
		3	-0.08	-0.85	0.00	0.00	0.00	-3.67
	4	2	-0.15	-1.52	0.00	0.00	0.00	1.62
		3	0.15	-0.60	0.00	0.00	0.00	-2.76
	5	2	0.55	-0.97	0.00	0.00	0.00	0.87
		3	-0.55	-0.73	0.00	0.00	0.00	-1.18
	6	2	-0.51	-1.14	0.00	0.00	0.00	1.58
		3	0.51	-0.42	0.00	0.00	0.00	-2.46
	7	2	-0.49	-0.57	0.00	0.00	0.00	0.92
		3	0.49	-0.21	0.00	0.00	0.00	-1.35
3	1	3	-0.60	0.42	0.00	0.00	0.00	2.73
		4	0.60	-2.11	0.00	0.00	0.00	0.46
	2	3	0.59	0.65	0.00	0.00	0.00	1.18
		4	-0.59	-2.34	0.00	0.00	0.00	2.60
	3	3	0.08	0.85	0.00	0.00	0.00	3.67
		4	-0.08	-3.84	0.00	0.00	0.00	2.24
	4	3	-0.15	0.60	0.00	0.00	0.00	2.76
		4	0.15	-2.76	0.00	0.00	0.00	1.49
	5	3	0.55	0.73	0.00	0.00	0.00	1.18

		4	-0.55	-2.46	0.00	0.00	0.00	2.85
	6	3	-0.51	0.42	0.00	0.00	0.00	2.46
		4	0.51	-2.02	0.00	0.00	0.00	0.61
	7	3	-0.49	0.21	0.00	0.00	0.00	1.35
		4	0.49	-1.00	0.00	0.00	0.00	0.18
10	1	11	0.60	2.59	0.00	0.00	0.00	-2.43
		12	-0.60	0.44	0.00	0.00	0.00	3.86
	2	11	-0.59	-0.63	0.00	0.00	0.00	-0.63
		12	0.59	0.63	0.00	0.00	0.00	-0.93
	3	11	-0.08	1.84	0.00	0.00	0.00	-0.46
		12	0.08	-0.08	0.00	0.00	0.00	4.26
	4	11	0.15	2.25	0.00	0.00	0.00	-1.75
		12	-0.15	0.67	0.00	0.00	0.00	3.41
	5	11	-0.55	-0.63	0.00	0.00	0.00	-0.54
		12	0.55	0.63	0.00	0.00	0.00	-1.01
	6	11	0.51	3.34	0.00	0.00	0.00	-1.26
		12	-0.51	1.01	0.00	0.00	0.00	4.52
	7	11	0.49	2.19	0.00	0.00	0.00	-2.54
		12	-0.49	1.45	0.00	0.00	0.00	2.38
11	1	12	0.60	-0.44	0.00	0.00	0.00	-3.86
		13	-0.60	3.45	0.00	0.00	0.00	0.27
	2	12	-0.59	-0.63	0.00	0.00	0.00	0.93
		13	0.59	0.63	0.00	0.00	0.00	-2.52
	3	12	-0.08	0.08	0.00	0.00	0.00	-4.26
		13	0.08	3.01	0.00	0.00	0.00	-0.55
	4	12	0.15	-0.67	0.00	0.00	0.00	-3.41
		13	-0.15	4.16	0.00	0.00	0.00	-1.45
	5	12	-0.55	-0.63	0.00	0.00	0.00	1.01
		13	0.55	0.63	0.00	0.00	0.00	-2.60
	6	12	0.51	-1.01	0.00	0.00	0.00	-4.52
		13	-0.51	3.47	0.00	0.00	0.00	-0.77
	7	12	0.49	-1.45	0.00	0.00	0.00	-2.38
		13	-0.49	1.45	0.00	0.00	0.00	-1.28
18	1	19	5.12	-0.60	0.00	0.00	0.00	2.37
		20	-5.12	0.60	0.00	0.00	0.00	-3.19
	2	19	-0.63	0.59	0.00	0.00	0.00	0.93
		20	0.63	-0.59	0.00	0.00	0.00	-0.12
	3	19	1.84	0.08	0.00	0.00	0.00	3.00
		20	-1.84	-0.08	0.00	0.00	0.00	-2.90
	4	19	2.94	-0.15	0.00	0.00	0.00	2.44
		20	-2.94	0.15	0.00	0.00	0.00	-2.65
	5	19	-0.63	0.55	0.00	0.00	0.00	0.84
		20	0.63	-0.55	0.00	0.00	0.00	-0.08
	6	19	3.34	-0.51	0.00	0.00	0.00	2.14
		20	-3.34	0.51	0.00	0.00	0.00	-2.84
	7	19	3.80	-0.49	0.00	0.00	0.00	1.33
		20	-3.80	0.49	0.00	0.00	0.00	-2.00
19	1	20	5.12	-0.60	0.00	0.00	0.00	3.19
		21	-5.12	0.60	0.00	0.00	0.00	-4.02
	2	20	-0.63	0.59	0.00	0.00	0.00	0.12
		21	0.63	-0.59	0.00	0.00	0.00	0.69
	3	20	1.84	0.08	0.00	0.00	0.00	2.90
		21	-1.84	-0.08	0.00	0.00	0.00	-2.79

	4	20	2.94	-0.15	0.00	0.00	0.00	2.65
		21	-2.94	0.15	0.00	0.00	0.00	-2.85
	5	20	-0.63	0.55	0.00	0.00	0.00	0.08
		21	0.63	-0.55	0.00	0.00	0.00	0.68
	6	20	3.34	-0.51	0.00	0.00	0.00	2.84
		21	-3.34	0.51	0.00	0.00	0.00	-3.55
	7	20	3.80	-0.49	0.00	0.00	0.00	2.00
		21	-3.80	0.49	0.00	0.00	0.00	-2.67
26	1	25	6.69	1.19	0.00	0.00	0.00	0.49
		26	-6.69	-1.19	0.00	0.00	0.00	1.16
	2	25	6.27	-1.19	0.00	0.00	0.00	-0.49
		26	-6.27	1.19	0.00	0.00	0.00	-1.15
	3	25	16.97	0.41	0.00	0.00	0.00	0.06
		26	-16.97	-0.41	0.00	0.00	0.00	0.50
	4	25	10.97	0.46	0.00	0.00	0.00	0.27
		26	-10.97	-0.46	0.00	0.00	0.00	0.37
	5	25	6.06	-1.35	0.00	0.00	0.00	-0.63
		26	-6.06	1.35	0.00	0.00	0.00	-1.24
	6	25	7.44	0.94	0.00	0.00	0.00	0.39
		26	-7.44	-0.94	0.00	0.00	0.00	0.90
	7	25	1.64	0.65	0.00	0.00	0.00	0.40
		26	-1.64	-0.65	0.00	0.00	0.00	0.49
27	1	26	6.69	1.19	0.00	0.00	0.00	-1.16
		27	-6.69	-1.19	0.00	0.00	0.00	2.80
	2	26	6.27	-1.19	0.00	0.00	0.00	1.15
		27	-6.27	1.19	0.00	0.00	0.00	-2.79
	3	26	16.97	0.41	0.00	0.00	0.00	-0.50
		27	-16.97	-0.41	0.00	0.00	0.00	1.07
	4	26	10.97	0.46	0.00	0.00	0.00	-0.37
		27	-10.97	-0.46	0.00	0.00	0.00	1.01
	5	26	6.06	-1.35	0.00	0.00	0.00	1.24
		27	-6.06	1.35	0.00	0.00	0.00	-3.10
	6	26	7.44	0.94	0.00	0.00	0.00	-0.90
		27	-7.44	-0.94	0.00	0.00	0.00	2.20
	7	26	1.64	0.65	0.00	0.00	0.00	-0.49
		27	-1.64	-0.65	0.00	0.00	0.00	1.38

143. PRINT FORCE ENVELOP LIST 1 4 9 17 20 25 28

FORCE ENVELOP LIST 1

MEMB	DISTANCE		FY	LD	MZ	LD	FZ	LD	MY	LD
1	0.00	MAX	-1.10	7	-0.50	7	0.00	7	0.00	7
		MIN	-4.11	3	-3.13	3	0.00	7	0.00	7
	0.14	MAX	-1.06	7	-0.35	7	0.00	7	0.00	7
		MIN	-3.94	3	-2.56	3	0.00	7	0.00	7
	0.28	MAX	-1.01	7	-0.20	7	0.00	7	0.00	7
		MIN	-3.77	3	-2.01	3	0.00	7	0.00	7
	0.43	MAX	-0.97	7	-0.06	7	0.00	7	0.00	7
		MIN	-3.60	3	-1.49	3	0.00	7	0.00	7
	0.57	MAX	-0.92	7	0.07	7	0.00	7	0.00	7
		MIN	-3.43	3	-0.99	3	0.00	7	0.00	7
	0.71	MAX	-0.88	7	0.20	7	0.00	7	0.00	7
		MIN	-3.27	3	-0.58	2	0.00	7	0.00	7
	0.85	MAX	-0.83	7	0.43	1	0.00	7	0.00	7

		MIN	-3.10	3	-0.35	2	0.00	7	0.00	7
	0.99	MAX	-0.79	7	0.68	1	0.00	7	0.00	7
		MIN	-2.93	3	-0.14	2	0.00	7	0.00	7
	1.13	MAX	-0.74	7	0.91	1	0.00	7	0.00	7
		MIN	-2.76	3	0.07	2	0.00	7	0.00	7
	1.28	MAX	-0.70	7	1.14	3	0.00	7	0.00	7
		MIN	-2.59	3	0.26	2	0.00	7	0.00	7
	1.42	MAX	-0.65	7	1.50	3	0.00	7	0.00	7
		MIN	-2.43	3	0.43	2	0.00	7	0.00	7
	1.56	MAX	-0.61	7	1.83	3	0.00	7	0.00	7
		MIN	-2.26	3	0.60	2	0.00	7	0.00	7
	1.70	MAX	-0.57	7	2.14	3	0.00	7	0.00	7
		MIN	-2.09	3	0.74	2	0.00	7	0.00	7

MAX/MIN FORCE VALUES FOR MEMB 1, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	-0.57	1.70	7	2.14	1.70	3			
	0.00	0.00	1	0.00	0.00	1	0.59 C	0.00	2
MIN.	-4.11	0.00	3	-3.13	0.00	3			
	0.00	1.70	7	0.00	1.70	7	0.60 T	1.70	1

4	0.00	MAX	3.84	3	-0.18	7	0.00	7	0.00	7
		MIN	1.00	7	-2.85	5	0.00	7	0.00	7
	0.14	MAX	4.00	3	-0.32	7	0.00	7	0.00	7
		MIN	1.05	7	-3.20	5	0.00	7	0.00	7
	0.28	MAX	4.17	3	-0.47	7	0.00	7	0.00	7
		MIN	1.09	7	-3.55	5	0.00	7	0.00	7
	0.41	MAX	4.33	3	-0.62	7	0.00	7	0.00	7
		MIN	1.13	7	-3.93	3	0.00	7	0.00	7
	0.55	MAX	4.49	3	-0.78	7	0.00	7	0.00	7
		MIN	1.18	7	-4.54	3	0.00	7	0.00	7
	0.69	MAX	4.66	3	-0.95	7	0.00	7	0.00	7
		MIN	1.22	7	-5.17	3	0.00	7	0.00	7
	0.83	MAX	4.82	3	-1.12	7	0.00	7	0.00	7
		MIN	1.26	7	-5.82	3	0.00	7	0.00	7
	0.96	MAX	4.98	3	-1.29	7	0.00	7	0.00	7
		MIN	1.31	7	-6.49	3	0.00	7	0.00	7
	1.10	MAX	5.15	3	-1.48	7	0.00	7	0.00	7
		MIN	1.35	7	-7.19	3	0.00	7	0.00	7
	1.24	MAX	5.31	3	-1.66	7	0.00	7	0.00	7
		MIN	1.39	7	-7.91	3	0.00	7	0.00	7
	1.38	MAX	5.47	3	-1.86	7	0.00	7	0.00	7
		MIN	1.44	7	-8.65	3	0.00	7	0.00	7
	1.51	MAX	5.63	3	-2.06	7	0.00	7	0.00	7
		MIN	1.48	7	-9.41	3	0.00	7	0.00	7
	1.65	MAX	5.80	3	-2.27	7	0.00	7	0.00	7
		MIN	1.52	7	-10.20	3	0.00	7	0.00	7

MAX/MIN FORCE VALUES FOR MEMB 4, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	5.80	1.65	3	-0.18	0.00	7			
	0.00	0.00	1	0.00	0.00	1	0.59 C	0.00	2
MIN.	1.00	0.00	7	-10.20	1.65	3			

		0.00	1.65	7	0.00	1.65	7	0.60 T	1.65	1
9	0.00	MAX	5.12	1	5.03	1	0.00	7	0.00	7
		MIN	-0.63	2	-1.70	2	0.00	7	0.00	7
	0.14	MAX	5.12	1	4.31	1	0.00	7	0.00	7
		MIN	-0.63	2	-1.61	2	0.00	7	0.00	7
	0.28	MAX	5.12	1	3.58	1	0.00	7	0.00	7
		MIN	-0.63	2	-1.52	2	0.00	7	0.00	7
	0.43	MAX	5.12	1	3.00	6	0.00	7	0.00	7
		MIN	-0.63	2	-1.43	2	0.00	7	0.00	7
	0.57	MAX	5.12	1	2.53	6	0.00	7	0.00	7
		MIN	-0.63	2	-1.34	2	0.00	7	0.00	7
	0.71	MAX	5.12	1	2.05	6	0.00	7	0.00	7
		MIN	-0.63	2	-1.25	2	0.00	7	0.00	7
	0.85	MAX	4.79	1	1.58	6	0.00	7	0.00	7
		MIN	-0.63	2	-1.16	2	0.00	7	0.00	7
	0.99	MAX	4.42	1	1.11	6	0.00	7	0.00	7
		MIN	-0.63	2	-1.07	2	0.00	7	0.00	7
	1.13	MAX	4.05	1	0.63	6	0.00	7	0.00	7
		MIN	-0.63	2	-0.98	2	0.00	7	0.00	7
	1.28	MAX	3.69	1	0.32	3	0.00	7	0.00	7
		MIN	-0.63	2	-1.33	7	0.00	7	0.00	7
	1.42	MAX	3.34	6	0.06	3	0.00	7	0.00	7
		MIN	-0.63	2	-1.79	7	0.00	7	0.00	7
	1.56	MAX	3.34	6	-0.20	3	0.00	7	0.00	7
		MIN	-0.63	2	-2.20	7	0.00	7	0.00	7
	1.70	MAX	3.34	6	-0.46	3	0.00	7	0.00	7
		MIN	-0.63	2	-2.54	7	0.00	7	0.00	7

MAX/MIN FORCE VALUES FOR MEMB 9, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	5.12	0.00	1	5.03	0.00	1			
	0.00	0.00	1	0.00	0.00	1	0.60 C	0.00	1
MIN.	-0.63	1.70	2	-2.54	1.70	7			
	0.00	1.70	7	0.00	1.70	7	0.59 T	1.70	2

17	0.00	MAX	0.59	2	3.13	3	0.00	7	0.00	7
		MIN	-0.60	1	0.50	7	0.00	7	0.00	7
	0.14	MAX	0.59	2	3.12	3	0.00	7	0.00	7
		MIN	-0.60	1	0.57	7	0.00	7	0.00	7
	0.28	MAX	0.59	2	3.11	3	0.00	7	0.00	7
		MIN	-0.60	1	0.64	7	0.00	7	0.00	7
	0.43	MAX	0.59	2	3.10	3	0.00	7	0.00	7
		MIN	-0.60	1	0.71	7	0.00	7	0.00	7
	0.57	MAX	0.59	2	3.09	3	0.00	7	0.00	7
		MIN	-0.60	1	0.78	7	0.00	7	0.00	7
	0.71	MAX	0.59	2	3.08	3	0.00	7	0.00	7
		MIN	-0.60	1	0.85	7	0.00	7	0.00	7
	0.85	MAX	0.59	2	3.07	3	0.00	7	0.00	7
		MIN	-0.60	1	0.91	7	0.00	7	0.00	7
	0.99	MAX	0.59	2	3.06	3	0.00	7	0.00	7
		MIN	-0.60	1	0.98	7	0.00	7	0.00	7
	1.13	MAX	0.59	2	3.04	3	0.00	7	0.00	7
		MIN	-0.60	1	1.05	7	0.00	7	0.00	7
	1.28	MAX	0.59	2	3.03	3	0.00	7	0.00	7

		MIN	-0.60	1	1.07	5	0.00	7	0.00	7
	1.42	MAX	0.59	2	3.02	3	0.00	7	0.00	7
		MIN	-0.60	1	1.00	5	0.00	7	0.00	7
	1.56	MAX	0.59	2	3.01	3	0.00	7	0.00	7
		MIN	-0.60	1	0.92	5	0.00	7	0.00	7
	1.70	MAX	0.59	2	3.00	3	0.00	7	0.00	7
		MIN	-0.60	1	0.84	5	0.00	7	0.00	7

MAX/MIN FORCE VALUES FOR MEMB 17, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.59	0.00	2	3.13	0.00	3			
	0.00	0.00	1	0.00	0.00	1	5.12 C	0.00	1
MIN.	-0.60	1.70	1	0.50	0.00	7			
	0.00	1.70	7	0.00	1.70	7	0.63 T	1.70	2

20	0.00	MAX	0.59	2	4.02	1	0.00	7	0.00	7
		MIN	-0.60	1	-0.69	2	0.00	7	0.00	7
	0.14	MAX	0.59	2	4.10	1	0.00	7	0.00	7
		MIN	-0.60	1	-0.78	2	0.00	7	0.00	7
	0.28	MAX	0.59	2	4.19	1	0.00	7	0.00	7
		MIN	-0.60	1	-0.86	2	0.00	7	0.00	7
	0.43	MAX	0.59	2	4.27	1	0.00	7	0.00	7
		MIN	-0.60	1	-0.94	2	0.00	7	0.00	7
	0.57	MAX	0.59	2	4.36	1	0.00	7	0.00	7
		MIN	-0.60	1	-1.03	2	0.00	7	0.00	7
	0.71	MAX	0.59	2	4.44	1	0.00	7	0.00	7
		MIN	-0.60	1	-1.11	2	0.00	7	0.00	7
	0.85	MAX	0.59	2	4.52	1	0.00	7	0.00	7
		MIN	-0.60	1	-1.19	2	0.00	7	0.00	7
	0.99	MAX	0.59	2	4.61	1	0.00	7	0.00	7
		MIN	-0.60	1	-1.28	2	0.00	7	0.00	7
	1.13	MAX	0.59	2	4.69	1	0.00	7	0.00	7
		MIN	-0.60	1	-1.36	2	0.00	7	0.00	7
	1.28	MAX	0.59	2	4.78	1	0.00	7	0.00	7
		MIN	-0.60	1	-1.44	2	0.00	7	0.00	7
	1.42	MAX	0.59	2	4.86	1	0.00	7	0.00	7
		MIN	-0.60	1	-1.53	2	0.00	7	0.00	7
	1.56	MAX	0.59	2	4.95	1	0.00	7	0.00	7
		MIN	-0.60	1	-1.61	2	0.00	7	0.00	7
	1.70	MAX	0.59	2	5.03	1	0.00	7	0.00	7
		MIN	-0.60	1	-1.70	2	0.00	7	0.00	7

MAX/MIN FORCE VALUES FOR MEMB 20, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.59	0.00	2	5.03	1.70	1			
	0.00	0.00	1	0.00	0.00	1	5.12 C	0.00	1
MIN.	-0.60	1.70	1	-1.70	1.70	2			
	0.00	1.70	7	0.00	1.70	7	0.63 T	1.70	2

25	0.00	MAX	1.19	1	2.52	1	0.00	7	0.00	7
		MIN	-1.35	5	-2.93	5	0.00	7	0.00	7
	0.14	MAX	1.19	1	2.35	1	0.00	7	0.00	7
		MIN	-1.35	5	-2.74	5	0.00	7	0.00	7

	0.28	MAX	1.19	1	2.18	1	0.00	7	0.00	7
		MIN	-1.35	5	-2.54	5	0.00	7	0.00	7
	0.43	MAX	1.19	1	2.01	1	0.00	7	0.00	7
		MIN	-1.35	5	-2.35	5	0.00	7	0.00	7
	0.57	MAX	1.19	1	1.84	1	0.00	7	0.00	7
		MIN	-1.35	5	-2.16	5	0.00	7	0.00	7
	0.71	MAX	1.19	1	1.67	1	0.00	7	0.00	7
		MIN	-1.35	5	-1.97	5	0.00	7	0.00	7
	0.85	MAX	1.19	1	1.50	1	0.00	7	0.00	7
		MIN	-1.35	5	-1.78	5	0.00	7	0.00	7
	0.99	MAX	1.19	1	1.33	1	0.00	7	0.00	7
		MIN	-1.35	5	-1.59	5	0.00	7	0.00	7
	1.13	MAX	1.19	1	1.16	1	0.00	7	0.00	7
		MIN	-1.35	5	-1.39	5	0.00	7	0.00	7
	1.28	MAX	1.19	1	0.99	1	0.00	7	0.00	7
		MIN	-1.35	5	-1.20	5	0.00	7	0.00	7
	1.42	MAX	1.19	1	0.83	1	0.00	7	0.00	7
		MIN	-1.35	5	-1.01	5	0.00	7	0.00	7
	1.56	MAX	1.19	1	0.66	1	0.00	7	0.00	7
		MIN	-1.35	5	-0.82	5	0.00	7	0.00	7
	1.70	MAX	1.19	1	0.49	1	0.00	7	0.00	7
		MIN	-1.35	5	-0.63	5	0.00	7	0.00	7

MAX/MIN FORCE VALUES FOR MEMB 25, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.19	0.00	1	2.52	0.00	1			
	0.00	0.00	1	0.00	0.00	1	16.97 C	0.00	3
MIN.	-1.35	1.70	5	-2.93	0.00	5			
	0.00	1.70	7	0.00	1.70	7	1.64 C	1.70	7

28	0.00	MAX	1.19	1	3.10	5	0.00	7	0.00	7
		MIN	-1.35	5	-2.80	1	0.00	7	0.00	7
	0.14	MAX	1.19	1	3.30	5	0.00	7	0.00	7
		MIN	-1.35	5	-2.97	1	0.00	7	0.00	7
	0.28	MAX	1.19	1	3.49	5	0.00	7	0.00	7
		MIN	-1.35	5	-3.14	1	0.00	7	0.00	7
	0.43	MAX	1.19	1	3.68	5	0.00	7	0.00	7
		MIN	-1.35	5	-3.31	1	0.00	7	0.00	7
	0.57	MAX	1.19	1	3.87	5	0.00	7	0.00	7
		MIN	-1.35	5	-3.48	1	0.00	7	0.00	7
	0.71	MAX	1.19	1	4.06	5	0.00	7	0.00	7
		MIN	-1.35	5	-3.65	1	0.00	7	0.00	7
	0.85	MAX	1.19	1	4.26	5	0.00	7	0.00	7
		MIN	-1.35	5	-3.82	1	0.00	7	0.00	7
	0.99	MAX	1.19	1	4.45	5	0.00	7	0.00	7
		MIN	-1.35	5	-3.99	1	0.00	7	0.00	7
	1.13	MAX	1.19	1	4.64	5	0.00	7	0.00	7
		MIN	-1.35	5	-4.16	1	0.00	7	0.00	7
	1.28	MAX	1.19	1	4.83	5	0.00	7	0.00	7
		MIN	-1.35	5	-4.32	1	0.00	7	0.00	7
	1.42	MAX	1.19	1	5.02	5	0.00	7	0.00	7
		MIN	-1.35	5	-4.49	1	0.00	7	0.00	7
	1.56	MAX	1.19	1	5.22	5	0.00	7	0.00	7
		MIN	-1.35	5	-4.66	1	0.00	7	0.00	7
	1.70	MAX	1.19	1	5.41	5	0.00	7	0.00	7

```
              MIN    -1.35    5      -4.83    1       0.00    7       0.00    7
 |-------------------------------------------------------------------------------
 | MAX/MIN FORCE VALUES FOR MEMB     28, AMONGST ALL SECT LOCATIONS
 |              FY/   DIST   LD        MZ/   DIST   LD
 |              FZ    DIST   LD        MY    DIST   LD       FX      DIST   LD
 |
 | MAX.        1.19   0.00    1       5.41   1.70    5
 |             0.00   0.00    1       0.00   0.00    1     16.97 C   0.00    3
 | MIN.       -1.35   1.70    5      -4.83   1.70    1
 |             0.00   1.70    7       0.00   1.70    7      1.64 C   1.70    7
 |-------------------------------------------------------------------------------

 144. FINISH

            ************ END OF THE STAAD.Pro RUN ************
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DESIGN OF THREE CELL BOX (3 x 8.0 m)

BRIDGES AT CH : 6+096,28+500,35+340,35+425,35+510, 35+600,35+680,35+900, 35+975 & 36+040 (BHADRAK – CHANDBALI)

DESIGN OF THREE CELL BOX STRUCTURE

INTRODUCTION

The minor bridge is meant for three lanes of traffic with carriageway width of 11.0m without footpath. The overall width of bridge is 12.0m. The bridge shall be made with three cell RCC box type structure with independent return wall. The clear height of opening of the box is 4.897m. Horizontal clear opening sizes are 8.0m+8.0+8.0m. The thickness of top slab, bottom slab and end web have been kept as 450mm while thickness of inner web is kept as 300mm. In the design of structure, clear cover is considered as 60mm for top slab & walls and in bottom slab clear cover is considered as 75mm. This design note deals with design of the three cell RCC box structure. Median wall and return walls are designed in separate design notes.

The analysis of box structure has been done considering a slice of unit width. The box has been analysed for its self weight, superimposed dead load (due to wearing coat and crash barrier) and earth pressures using STAAD-Pro. Base pressure due to downward loads are applied uniformly over the entire width of box structure. Two cases of earth pressure for Dry and HFL conditions are considered separately. In one case, earth pressure at rest with saturated density of earth is considered to produce maximum earth pressure. While in other case, a lower value of coefficient of earth pressure with dry density of earth is considered to produce minimum earth pressure. Hence follwing cases of earth pressure are considered:

a) Coefficient of Earth Pressure as 0.50 & Density of Earth as 2.0 t/m^3 for dry & HFL conditions and

b) Coefficient of Earth Pressure as 0.30 & Density of Earth as 1.8 t/m^3 for dry and HFL condition

Analysis for Live load for class 70R tracked & class 70R wheeled load have been done using STAAD-Pro. Live load positions are identified for maximum bending moments at different sections and corresponding load intensities per metre width are evaluated as per effective width method as explained in IRC:21-2000.

The box has also been checked for temperature differential as per clause 218.3 of IRC:6-2000. As per Table 1 of IRC:6-2000, for this combination, only 50% live load shall be considered.

The following load combinations are considered for the analysis:

(i) DL+ SIDL+ EP
(ii) DL+ SIDL+ EP+ LL
(iii) DL+ SIDL+ EP+ Temp.
(iv) DL+ SIDL+ EP+ Temp.+ 50%LL

DESIGN DATA:

Formation Level along c/l of carriageway (m)					=	14.750	m
Bed Level (m)					=	10.453	m
Founding Level (m)					=	8.953	m
Heighest Flood Level (m)					=	12.570	m
Overall width of bridge					=	12.000	m
width of carriageway					=	11.000	m
Thickness of top slab					=	0.450	m
Thickness of bottom slab					=	0.450	m
Thickness of Web					=	0.450	m
Thickness of Central Web					=	0.300	m
Tkickness of wearing coat					=	0.056	m
Eff. horizontal span end cell(upto c/l of web)	=	8.000	+	0.375	=	8.375	m
Eff. horizontal span inner cell(upto c/l of web)	=	8.000	+	0.300	=	8.300	m
Eff. vertical span (upto c/l of slab)	=	4.841	+	0.450	=	5.291	m
width of crash barrier					=	0.500	m
Size of haunches in outer webs			-	1.250	x	0.250	m
Size of haunches in inner web			-	1.250	x	0.250	m
Depth of water at HFL. from formation lvl					=	2.180	m
Unit wt of concrete					=	2.400	t/m^2
Submerged density of earth					=	1.000	t/m^2
Grade of Concrete					-	M 35	35
Permissible Compressive stress in Concrete					-	1190	t/m^2
Permissible Tensile stress in Steel					-	20400	t/m^2
Modular ratio, m					-	10	
k					-	0.368	
Lever arm factor, j					-	0.877	
Moment of Resistance, Q					-	192	t/m^2

Reference Code

IRC : 6-2000

IRC : 21-2000

CALCULATION OF LOADS AND CORRESPONDING BASE PRESSURE:

DEAD LOAD-(Per metre width):

Top slab	=			25.05	x	0.45	x	2.40	=	27.054	t/m	
bottom slab	=			25.05	x	0.45	x	2.40	=	27.054	t/m	
End Webs	=	2	x	5.291	x	0.45	x	2.40	=	11.429	t/m	
Central Web	=	2	x	5.291	x	0.30	x	2.40	=	7.619	t/m	
Haunches (24 nos.)	=	24	x	0.125	x	1.25	x	2.40	=	9.000	t/m	
Total Weight	=									**82.16**	t/m	
Equivalent upward Base pressure	=					82.16	/	25.05	=	3.28	t/m^2	
									Say,	**3.30**	t/m^2	

SUPERIMPOSED DEAD LOAD (Per metre width):

Wearing coat (@ 0.2 t/sqm)	=								=	0.200	t/m	
Crash barrier (@ 0.70 t/m on each side)	=			2	x	0.70	/	12.0	=	0.117	t/m	
Total	=									**0.317**	t/m	
Equivalent upward Base pressure	=								=	**0.317**	t/m^2	

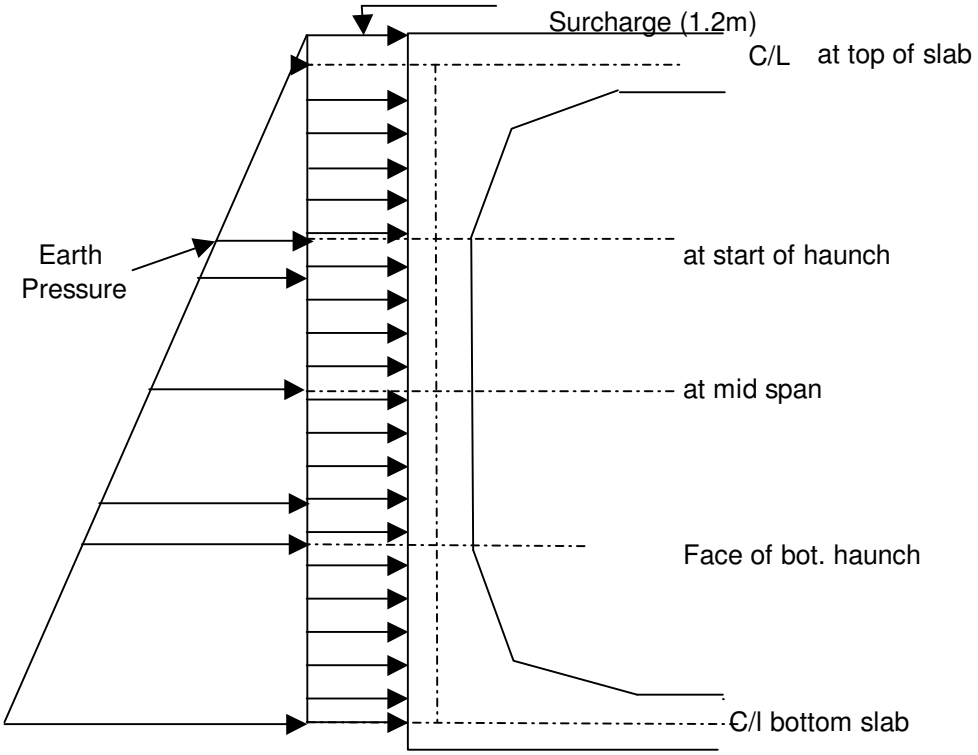
CHECK FOR BASE PRESSURE

DRY CONDITION

Due to DL of Box and SIDL			=	3.30	+	0.317	=	3.617	t/m^2	
Due to LL-70R Wheeled Load	=	100	/ (	12.0	x	25.05	) =	0.333	t/m^2	
Due to Earth inside the Box			=	1.05	x	2.00	=	2.100	t/m^2	
Total Base Pressure							=	**6.049**	**t/m^2**	

HFL CONDITION

Due to DL of Box, SIDL & LL	=	3.617	+	0.333	=	3.949	t/m^2	
Due to Water inside the Box	=	3.055	x	1.00	=	3.055	t/m^2	
Buoyancy	=	3.505	x	-1.00	=	-3.505	t/m^2	
Total Base Pressure					=	**3.499**	**t/m^2**	



Earth Pressure Diagram

EARTH PRESSURE

CASE - 1

Dry Density of Soil = 2.000 t/m^2

Cooefficient of Earth Pressure at rest = 0.500

CASE - 2

Dry Density of Soil = 1.800 t/m^2

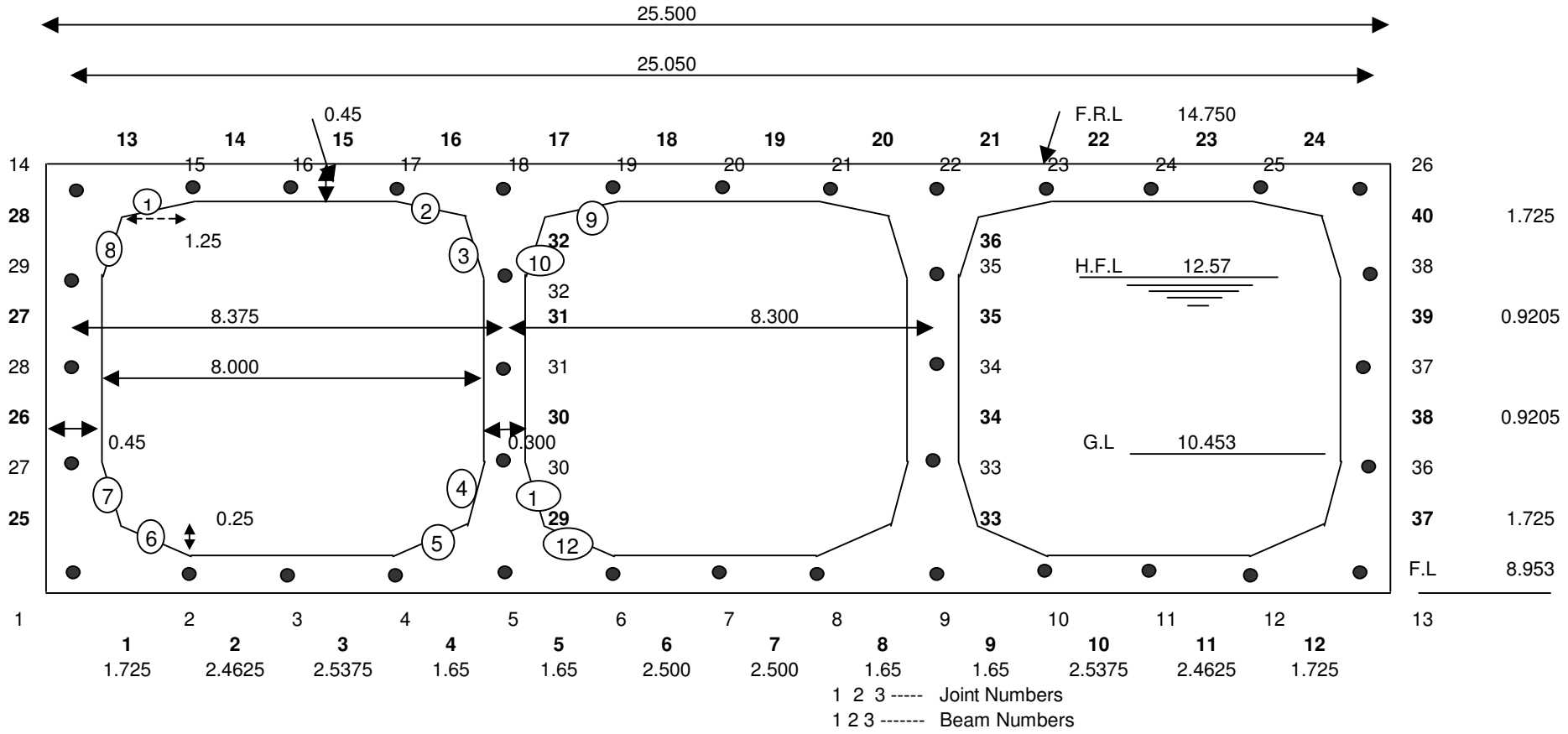
Cooefficient of Earth Pressure at rest = 0.300

For Dry Condition

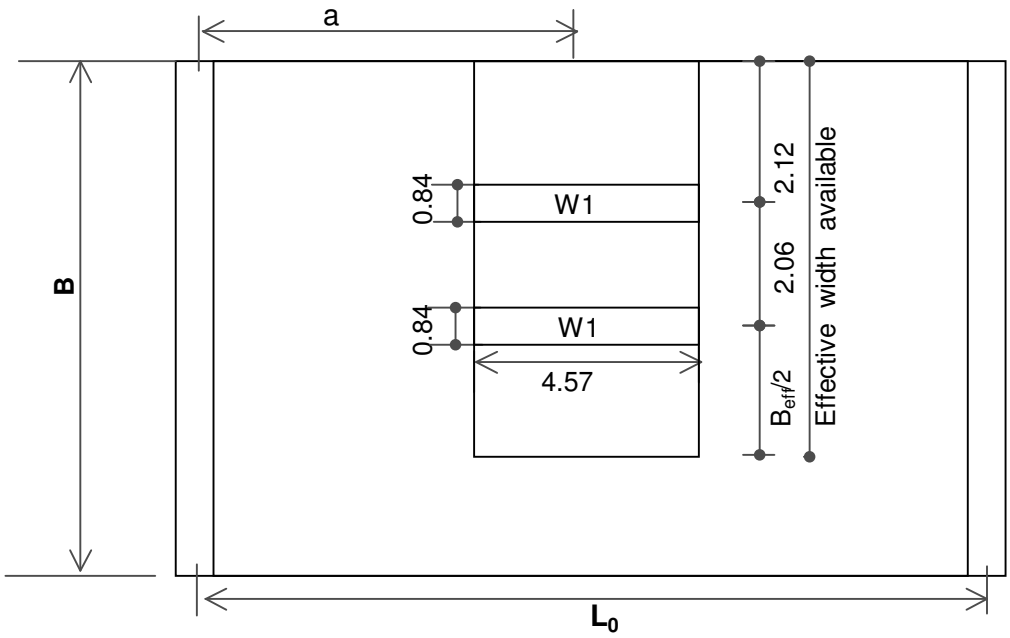
Height (m)	Location of Earth Pressure	Case - 1	Surcharge for 1.2m	Case - 2	Surcharge for 1.2m
0.281	C/l of top slab	0.281	1.2	0.152	0.648
2.006	Face of top haunch	2.006	1.2	1.083	0.648
2.927	Mid. of web	2.927	1.2	1.580	0.648
3.847	Face of bot. haunch	3.847	1.2	2.077	0.648
5.572	C/l bottom slab	5.572	1.2	3.009	0.648

H.F.L. Condition

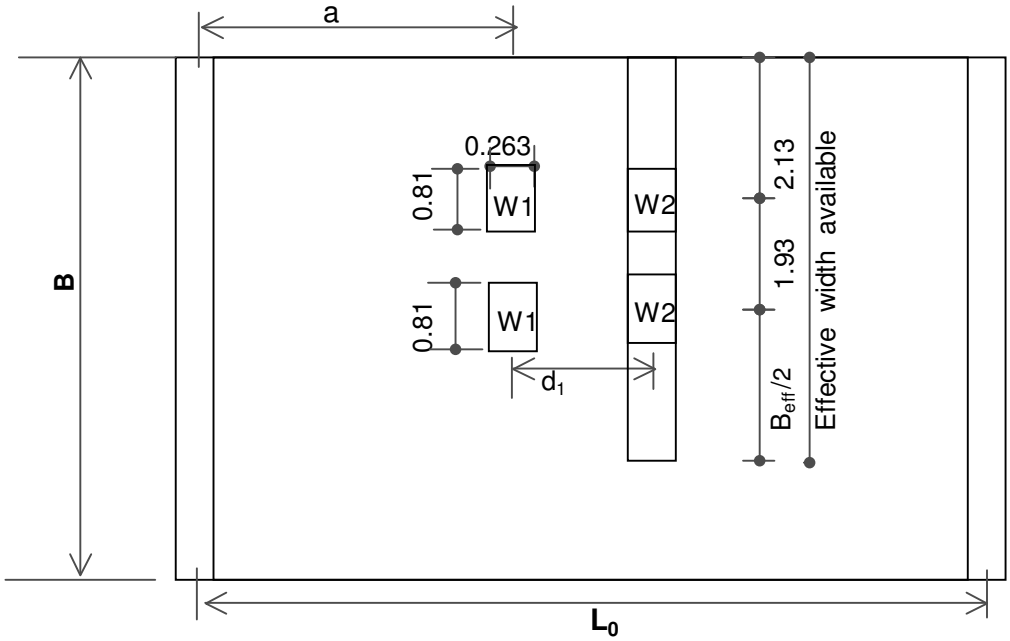
Height (m)	Location of Earth Pressure	Case - 1	Surcharge for 1.2m	Case - 2	Surcharge for 1.2m
0.281	C/l of top slab	0.281	1.2	0.152	0.648
2.006	Face of top haunch	2.006	1.2	1.083	0.648
2.180	H.F.L. Level	2.180	1.2	1.177	0.648
2.927	Mid. of web	2.553	1.2	1.401	0.648
3.847	Face of bot. haunch	3.014	1.2	2.011	0.648
5.572	C/l bottom slab	3.876	1.2	2.873	0.648


25.500
25.050
0.45
F.R.L 14.750
1.25
8.375
8.000
8.300
0.45
0.300
0.25
H.F.L 12.57
G.L 10.453
F.L 8.953
1.725
0.9205
0.9205
1.725
1.725 2.4625 2.5375 1.65 1.65 2.500 2.500 1.65 1.65 2.5375 2.4625 1.725
1 2 3 ----- Joint Numbers
1 2 3 ------- Beam Numbers

TRANSVERSE POSITION OF LIVE LOAD (CLASS 70 R TRACKED LOAD)



TRANSVERSE POSITION OF LIVE LOAD (CLASS 70 R WHEELED LOAD)



LIVE LOADS:

The box has been analysed for Class 70R tracked/Wheeled load using STAAD-Pro. Max. Bending moment at mid. Span (L/2), at face of haunches, at inner web & at end web are evaluated and corresponding positions of loads on the structure are identified. Live load intensity per metre width are evaluated for these load positions.

Bending moment at the various sections are evaluated for both Class 70R track and 70R wheel loading and the structure is designed for maximum bending moments.

EFFECTIVE WIDTH OF SLAB

According to IRC: 21-2000 cl. 305.16.2 (iii), if the effective width of slab for a load overlaps with the effective width of slab for an adjecent load, the resultant effective width for two loads equals to sum of respective effective width for each load minus the width of overlap.
Firstly effective width as per IRC:21 is evaluated then actual available width is compared with that value and corresponding load intensity per metre width is evaluated.

Effective width = $b_{eff.} = \alpha.a.(1-a/l_0) + b_1$

Where L_0 = the effective span

a = the distance of centre of gravity of the conc^n load from the nearer support

α = A constant depending upon the ratio b/l_0, where b is the width of the slab

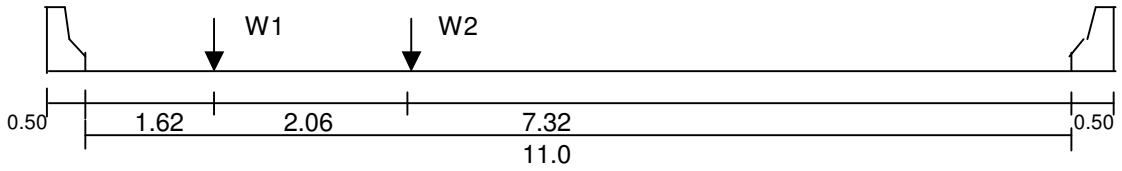
b/l_0 = 12.0 / 8.00 = 1.50

Hence as per cl. 305.16.2 of IRC:21, α = 2.480

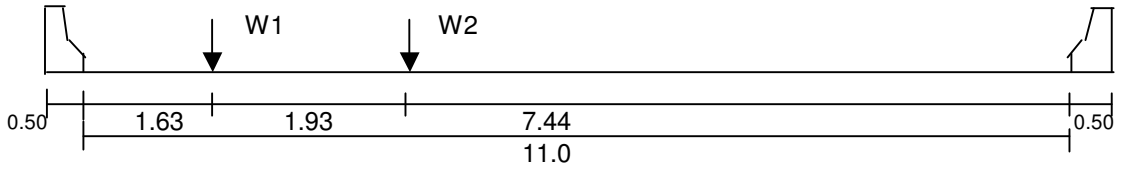
b_1 = breadth of loads over the deck slab after 45^0 dispersion through wearing coat

= 0.84 + 2 x 0.056 = 0.952 m (for 70R tracked)

= 0.81 + 2 x 0.056 = 0.922 m (for 70R wheeled)



TRANSVERSE POSITION OF LIVE LOAD (CLASS 70R TRACKED)



TRANSVERSE POSITION OF LIVE LOAD (CLASS 70R WHEELED)

CALCULATION OF EFFECTIVE WIDTH AND LOAD INTENSITY

LIVE LOAD	a (m)	b1 (m)	b_{eff} (m)	b_{eff}/2 (m)	Max. available width (m)	Load Intensity
Class 70R Tracked Load						
For Max BM (Hogging) at End web						
70.0	3.585	0.952	6.037	3.019	7.199	9.724
For Max BM (Hogging) in Mid span of outer cell						
70.0	3.610	0.952	6.046	3.023	7.203	9.718
For Max BM (Hogging) at end of haunch 2						
70.0	3.989	0.952	6.133	3.066	7.246	9.660
For Max BM (Hogging) at start of haunch 9						
70.0	4.012	0.952	6.135	3.068	7.248	9.658
For Max BM (Hogging) in Mid span of middle cell						
70.0	3.462	0.952	5.989	2.994	7.174	9.757
For Max BM (Sagging) at end of haunch 1						
53.0	1.730	0.952	4.356	2.178	6.358	8.336
For Max BM (Sagging) in mid span of outer cell						
70.0	4.166	0.952	6.144	3.072	7.252	9.652
For Max BM (Sagging) at start of haunch 2						
70.0	2.386	0.952	5.183	2.592	6.772	10.337
For Max BM (Sagging) at end of haunch 9						
60.7	1.983	0.952	4.705	2.352	6.532	9.297
For Max BM (Sagging) in mid span of middle cell						
70.0	4.112	0.952	6.143	3.071	7.251	9.653
Class 70R Wheeled Load						
For Max BM (Hogging) at End web						
17.0	1.360	0.92	3.747	1.874	5.677	2.994
17.0	2.730	0.92	5.485	2.743	6.803	2.499
17.0	2.595	0.92	5.364	2.682	6.742	2.522
17.0	1.225	0.92	3.516	1.758	5.446	3.122
For Max BM (Hogging) in Mid span of outer cell						
17.0	1.105	0.92	3.301	1.650	5.231	3.250
17.0	2.475	0.92	5.246	2.623	6.683	2.544
17.0	2.775	0.92	5.524	2.762	6.822	2.492
17.0	1.405	0.92	3.822	1.911	5.752	2.956
12.0	0.725	0.92	2.564	1.282	4.494	2.670
12.0	2.245	0.92	4.997	2.499	6.559	1.830
8.0	2.170	0.92	4.909	2.455	6.515	1.228
For Max BM (Hogging) at end of haunch 2						
12.0	1.740	0.92	4.341	2.170	6.230	1.926
12.0	3.260	0.92	5.860	2.930	6.990	1.717
17.0	2.985	0.92	5.686	2.843	6.903	2.463
17.0	1.615	0.92	4.155	2.077	6.085	2.794
17.0	1.435	0.92	3.871	1.936	5.801	2.931
17.0	2.805	0.92	5.549	2.774	6.834	2.487
For Max BM (Hogging) at start of haunch 9						
17.0	2.795	0.92	5.432	2.716	6.776	2.509
17.0	1.425	0.92	3.855	1.927	5.785	2.939
17.0	1.625	0.92	4.170	2.085	6.100	2.787
17.0	2.995	0.92	5.693	2.847	6.907	2.461
12.0	3.175	0.92	5.811	2.905	6.965	1.723
12.0	1.655	0.92	4.215	2.108	6.145	1.953
8.0	2.305	0.92	5.065	2.533	6.593	1.213

For Max BM (Hogging) in Mid span of middle cell						
17.0	0.190	0.92	1.382	0.691	2.764	6.150
17.0	3.240	0.92	5.703	2.851	6.911	2.460
17.0	3.765	0.92	6.062	3.031	7.091	2.397
12.0	1.635	0.92	4.185	2.093	6.115	1.962
12.0	0.115	0.92	1.203	0.602	2.407	4.986
8.0	3.845	0.92	6.080	3.040	7.100	1.127
For Max BM (Sagging) at end of haunch 1						
17.0	1.750	0.92	4.355	2.178	6.238	2.725
17.0	3.120	0.92	5.777	2.889	6.949	2.447
For Max BM (Sagging) in mid span of outer cell						
17.0	2.850	0.92	5.585	2.792	6.852	2.481
17.0	4.155	0.92	6.114	3.057	7.117	2.389
12.0	2.025	0.92	4.730	2.365	6.425	1.868
12.0	0.505	0.92	2.099	1.049	4.029	2.978
8.0	3.455	0.92	5.956	2.978	7.038	1.137
For Max BM (Sagging) at start of haunch 2						
17.0	0.970	0.92	3.049	1.524	4.979	3.414
17.0	2.340	0.92	5.104	2.552	6.612	2.571
17.0	2.985	0.92	5.686	2.843	6.903	2.463
17.0	1.615	0.92	4.155	2.077	6.085	2.794
For Max BM (Sagging) at end of haunch 9						
17.0	1.625	0.92	4.170	2.085	6.100	2.787
17.0	2.995	0.92	5.693	2.847	6.907	2.461
17.0	2.255	0.92	5.009	2.504	6.564	2.590
17.0	0.885	0.92	2.885	1.442	4.815	3.531
12.0	1.245	0.92	3.529	1.765	5.459	2.198
12.0	2.765	0.92	5.409	2.705	6.765	1.774
8.0	1.650	0.92	4.170	2.085	6.100	1.311
For Max BM (Sagging) in mid span of middle cell						
8.0	3.705	0.92	6.046	3.023	7.083	1.129
12.0	0.255	0.92	1.535	0.768	3.070	3.908
12.0	1.775	0.92	4.391	2.196	6.256	1.918
17.0	3.905	0.92	6.091	3.045	7.105	2.393
17.0	3.025	0.92	5.714	2.857	6.917	2.458
17.0	0.025	0.92	0.984	0.492	1.968	8.640
17.0	1.395	0.92	3.805	1.903	5.735	2.964

LOAD INTENSITY AND CORRESPONDING BASE PRESSURE FOR CLASS 70R TRACKED:

Dispersion width = Track length over the span after 45° dispersion through wearing coat and slab

FOR MAX. HOGGING BM AT END WEB

Dispersion width =	4.570	+	1.012	=	5.582	m
Live load intensity as udl =	9.724	/	5.582	=	1.742	t/m^2
Corresponding base pressure				=	0.388	t/m^2

FOR MAX. HOGGING BM IN MID SAPN OF OUTER CELL

Dispersion width =	4.570	+	1.012	=	5.582	m
Live load intensity as udl =	9.718	/	5.582	=	1.741	t/m^2
Corresponding base pressure				=	0.388	t/m^2

FOR MAX. HOGGING AT END OF HAUNCH 2

Dispersion width =	4.570	+	1.012	=	5.582	m
Live load intensity as udl =	9.660	/	5.582	=	1.731	t/m^2
Corresponding base pressure				=	0.386	t/m^2

FOR MAX. BM.(HOGGING) AT START OF HAUNCH 9

Dispersion width =	4.570	+	1.012	=	5.582	m
Live load intensity as udl =	9.658	/	5.582	=	1.730	t/m^2
Corresponding base pressure				=	0.386	t/m^2

FOR MAX BM. (HOGGING) AT MID SPAN OF MIDDLE CELL

Dispersion width =	4.570	+	1.012	=	5.582	m
Live load intensity as udl =	9.757	/	5.582	=	1.748	t/m^2
Corresponding base pressure				=	0.390	t/m^2

FOR MAX. BM.(SAGGING) AT END OF HAUNCH

Dispersion width =	4.570	+	1.012	=	5.582	m
Live load intensity as udl =	8.336	/	5.582	=	1.493	t/m^2
Corresponding base pressure				=	0.333	t/m^2

FOR MAX. BM (SAGGING) IN MID SPAN OF OUTER CELL

Dispersion width =	4.570	+	1.012	=	5.582	m
Live load intensity as udl =	9.652	/	5.582	=	1.729	t/m^2
Corresponding base pressure				=	0.385	t/m^2

FOR MAX .BM.(SAGGING) AT START OF HAUNCH

Dispersion width =	4.570	+	0.607	=	5.177	m
Live load intensity as udl =	10.337	/	5.177	=	1.997	t/m^2
Corresponding base pressure				=	0.413	t/m^2

FOR MAX .BM.(SAGGING) AT END OF HAUNCH

Dispersion width =	3.965	+	0.506	=	4.471	m
Live load intensity as udl =	9.297	/	4.471	=	2.079	t/m^2
Corresponding base pressure				=	0.371	t/m^2

FOR MAX .BM.(SAGGING) AT MID SPAN OF MIDDLE CELL

Dispersion width =	4.570	+	1.012	=	5.582	m
Live load intensity as udl =	9.653	/	5.582	=	1.729	t/m^2
Corresponding base pressure				=	0.385	t/m^2

LOAD INTENSITY AND CORRESPONDING BASE PRESSURE FOR CLASS 70R WHEELED:

Dispersion width = wheel length over the span after 45° dispersion through wearing coat and slab

For Max BM (Hogging) at End web

Disp. width of 12t load at start =	0.263	+	0.506	=	0.769	m
Disp. width of 12t & 17t Load =	0.263	+	1.012	=	1.275	m
Live load intensity as udl						
for 17 t wheel	2.994	/	1.275	=	2.349	t/m^2
for 17 t wheel	2.499	/	1.275	=	1.960	t/m^2
for 17 t wheel	2.522	/	1.275	=	1.978	t/m^2
for 17 t wheel	3.122	/	1.275	=	2.448	t/m^2
Corresponding base pressure				=	0.445	t/m^2

For Max BM (Hogging) in Mid span of outer cell

Disp. width of 17 t &12t wh. =	0.263	+	1.012	=	1.275	m
Disp. width of 12 t wh.at end =	0.263	+	1.012	=	1.275	m
Live load intensity as udl						
for 17 t wheel	3.250	/	1.275	=	2.549	t/m^2
for 17 t wheel	2.544	/	1.275	=	1.995	t/m^2
for 17 t wheel	2.492	/	1.275	=	1.955	t/m^2
for 17 t wheel	2.956	/	1.275	=	2.318	t/m^2
for 12 t wheel	2.670	/	1.275	=	2.094	t/m^2
for 12 t wheel	1.830	/	1.275	=	1.435	t/m^2
for 8 t wheel	1.228	/	1.275	=	0.963	t/m^2
Corresponding base pressure				=	0.677	t/m^2

For Max BM (Hogging) at end of haunch 2

Disp. width of 17t & 12t load =	0.263	+	0.506	=	0.769	m
Disp. width of 12 t load at end =	0.263	+	1.012	=	1.275	m
Live load intensity as udl						
for 0 t wheel	0.000	/	0.769	=	0.000	t/m^2
for 12 t wheel	1.926	/	1.275	=	1.511	t/m^2
for 12 t wheel	1.717	/	1.275	=	1.346	t/m^2
for 17 t wheel	2.463	/	0.769	=	3.202	t/m^2
for 17 t wheel	2.794	/	0.769	=	3.633	t/m^2
for 17 t wheel	2.931	/	0.769	=	3.811	t/m^2
for 17 t wheel	2.487	/	0.769	=	3.235	t/m^2
Corresponding base pressure				=	0.572	t/m^2

For Max BM (Hogging) at start of haunch 9

Disp. width of 17t load at start =	0.263	+	1.012	=	1.275	m
Disp. width of 17t,12t & 8t load =	0.263	+	1.012	=	1.275	m
Live load intensity as udl						
for 17 t wheel	2.939	/	1.275	=	2.305	t/m^2
for 17 t wheel	2.787	/	1.275	=	2.186	t/m^2
for 17 t wheel	2.461	/	1.275	=	1.930	t/m^2
for 12 t wheel	1.723	/	1.275	=	1.351	t/m^2
for 12 t wheel	1.953	/	1.275	=	1.532	t/m^2
for 8 t wheel	1.213	/	1.275	=	0.952	t/m^2
Corresponding base pressure				=	0.622	t/m^2

For Max BM (Hogging) in Mid span of middle cell

Disp. width of 17t load at start =	0.263	+	1.012	=	1.275	m
Disp. width of 17t,12t & 8t load =	0.263	+	0.506	=	0.769	m
Live load intensity as udl						
for 17 t wheel	2.397	/	0.769	=	3.118	t/m^2
for 12 t wheel	1.962	/	1.275	=	1.539	t/m^2
for 12 t wheel	4.986	/	0.769	=	6.484	t/m^2
for 8 t wheel	1.127	/	0.769	=	1.465	t/m^2
Corresponding base pressure				=	0.762	t/m^2

For Max BM (Sagging) at end of haunch 1

Disp. width of 17t load at start =	0.263	+	1.012	=	1.275	m
Disp. width of 17t,12t & 8t load =	0.263	+	1.012	=	1.275	m
Live load intensity as udl						
for 17 t wheel	2.725	/	1.275	=	2.138	t/m^2
for 17 t wheel	2.447	/	1.275	=	1.919	t/m^2
Corresponding base pressure				=	0.206	t/m^2

For Max BM (Sagging) in mid span of outer cell

Disp. width of 17t load at start =	0.263	+	1.012	=	1.275	m
Disp. width of 17t,12t & 8t load =	0.263	+	1.012	=	1.275	m
Live load intensity as udl						
for 17 t wheel	2.481	/	1.275	=	1.946	t/m^2
for 17 t wheel	2.389	/	1.275	=	1.873	t/m^2
for 12 t wheel	1.868	/	1.275	=	1.465	t/m^2
for 12 t wheel	2.978	/	1.275	=	2.336	t/m^2
for 8 t wheel	1.137	/	1.275	=	0.892	t/m^2
Corresponding base pressure				=	0.433	t/m^2

For Max BM (Sagging) at start of haunch 2

Disp. width of 17t load at start =	0.263	+	1.012	=	1.275	m
Disp. width of 17t,12t & 8t load =	0.263	+	1.012	=	1.275	m
Live load intensity as udl						
for 17 t wheel	3.414	/	1.275	=	2.678	t/m^2
for 17 t wheel	2.571	/	1.275	=	2.017	t/m^2
for 17 t wheel	2.463	/	1.275	=	1.931	t/m^2
for 17 t wheel	2.794	/	1.275	=	2.191	t/m^2
Corresponding base pressure				=	0.449	t/m^2

For Max BM (Sagging) at end of haunch 9

Disp. width of 17t load at start =	0.263	+	1.012	=	1.275	m
Disp. width of 17t,12t & 8t load =	0.263	+	1.012	=	1.275	m
Live load intensity as udl						
for 17 t wheel	2.787	/	1.275	=	2.186	t/m^2
for 17 t wheel	2.461	/	1.275	=	1.930	t/m^2
for 17 t wheel	2.590	/	1.275	=	2.031	t/m^2
for 17 t wheel	3.531	/	1.275	=	2.769	t/m^2
for 12 t wheel	2.198	/	1.275	=	1.724	t/m^2
for 12 t wheel	1.774	/	1.275	=	1.391	t/m^2
for 8 t wheel	1.311	/	1.275	=	1.029	t/m^2
Corresponding base pressure				=	0.665	t/m^2

For Max BM (Sagging) in mid span of middle cell

Disp. width of 17t load at start =	0.263	+	1.012	=	1.275	m
Disp. width of 17t,12t & 8t load =	0.263	+	1.012	=	1.275	m
Live load intensity as udl						
for 8 t wheel	1.129	/	1.275	=	0.886	t/m^2
for 12 t wheel	3.908	/	1.275	=	3.065	t/m^2
for 12 t wheel	1.918	/	1.275	=	1.505	t/m^2
for 17 t wheel	2.393	/	1.275	=	1.876	t/m^2
for 17 t wheel	2.458	/	1.275	=	1.928	t/m^2
for 17 t wheel	8.640	/	1.275	=	6.776	t/m^2
for 17 t wheel	2.964	/	1.275	=	2.325	t/m^2
Corresponding base pressure				=	0.935	t/m^2

TEMPERATURE EFFECT: As per IRC:6-2000

Effect of temperature gradient

$F = E_c \alpha \Delta t A$

E_c = Modulus of Elasticity of Concrete = 3.11E+06 t/m^2

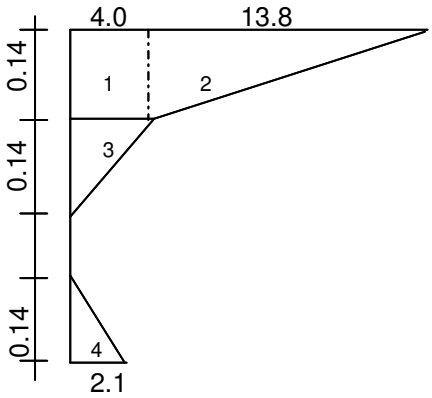
α = Coefficient of Thermal expansion = 1.17E-05 (as per IRC:6)

Δt = Temperature differential

A = X sectional Area of section where temperature differential is Δt

Average thickness of Deck slab = 450 mm

EFFECT OF TEMPERATURE RISE



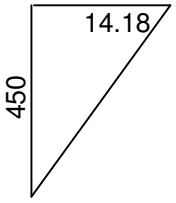
Sr. No.	Δt	b	t	A = b x t	F (force)	Acting at	Eccentricity e*
1	4.0	1.0	0.135	0.135	19.66	0.0675 m from top	0.158
2	$\frac{13.8}{2}$	1.0	0.135	0.135	33.91	0.045 m from top	0.180
3	$\frac{4.0}{2}$	1.0	0.135	0.135	9.83	0.180 m from top	0.045
4	$\frac{2.1}{2}$	1.0	0.135	0.135	5.16	0.045 m from bottom	-0.180
					ΣF = 68.55	$\Sigma F.e$ =	8.71

e* Eccentricity of force F from centriodal axis of Section

$M = F.e = E_c \alpha \Delta t/2.A.e$

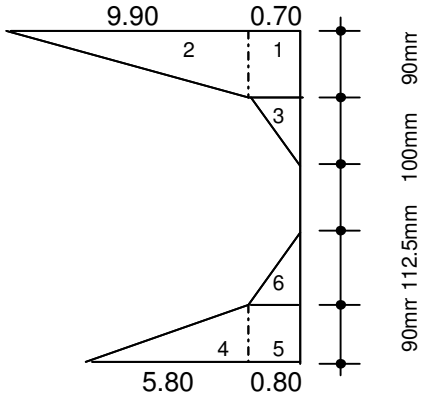
8.71 = 1.64E+01 x Δt / 2 x 0.0750

Hence, Δt = **14.18** ^{O}C



Idealised Temp Gradient (+ve)

EFFECT OF TEMPERATURE FALL

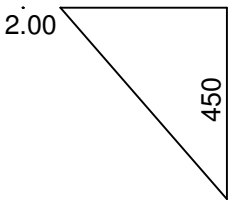


Sr. No.	Δt	b	t	A = b x t	F (force)	Acting at	Eccentricity e*
1	0.70	1.0	0.090	0.090	2.29	0.045 m from top	0.180
2	$\frac{9.90}{2}$	1.0	0.090	0.090	16.22	0.030 m from top	0.195
3	$\frac{0.70}{2}$	1.0	0.1125	0.1125	1.43	0.128 m from top	0.098
4	$\frac{5.80}{2}$	1.0	0.090	0.090	9.50	0.030 m from bottom	-0.195
5	0.80	1.0	0.090	0.090	2.62	0.045 m from bottom	-0.180
6	$\frac{0.80}{2}$	1.0	0.1125	0.1125	1.64	0.128 m from bottom	-0.098
					$\sum F$ = 33.70		$\sum M$ = 1.23

$M = F.e = E_c \alpha \Delta t/2.A.e$

1.23 = 1.64E+01 x Δt / 2 x 0.0750

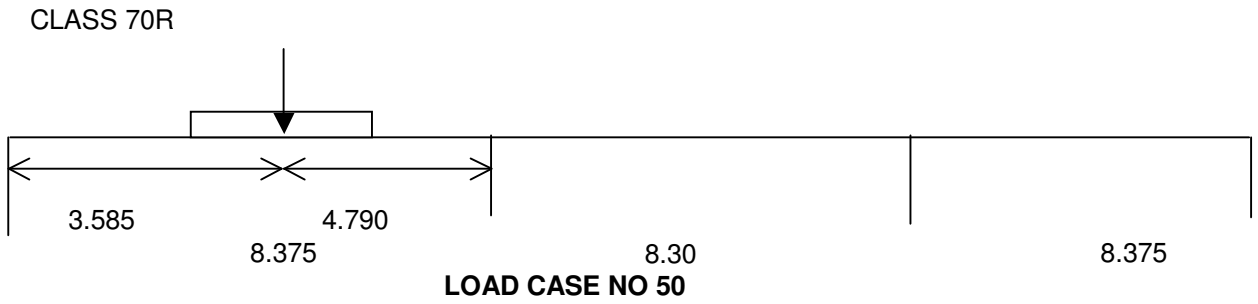
Hence, Δt = **2.00** ^{O}C



Idealised Temp Gradient (-ve)

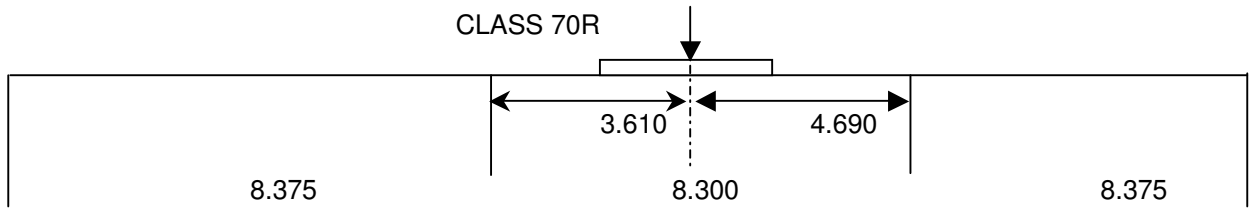
LIVE LOAD POSITION (TRACKED LOADING) :

FOR MAX. HOGGING BM AT END WEB



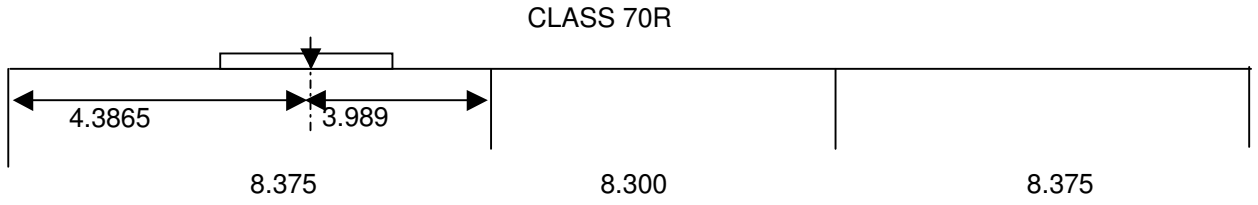
LOAD CASE NO 50

FOR MAX. HOGGING BM IN MID SAPN OF OUTER CELL



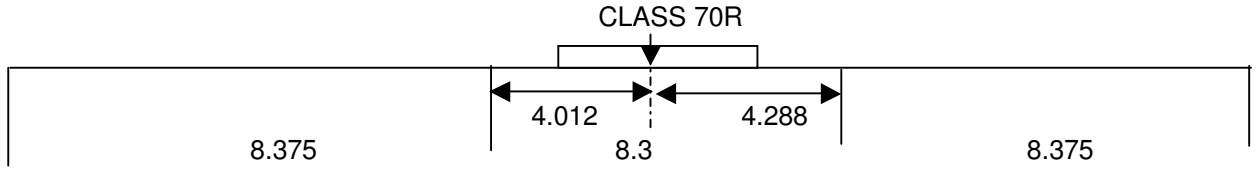
LOAD CASE NO 134

FOR MAX. HOGGING AT END OF HAUNCH 2



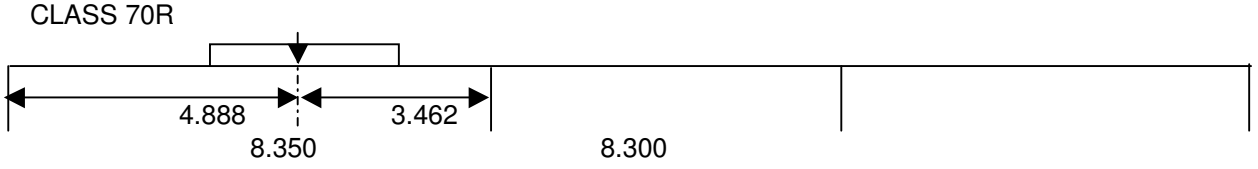
LOAD CASE NO 58

FOR MAX. BM.(HOGGING) AT START OF HAUNCH 9



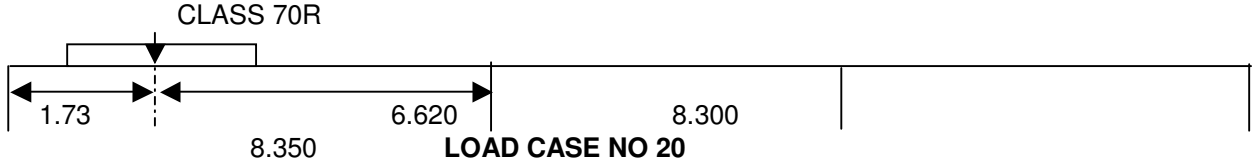
LOAD CASE NO 138

FOR MAX BM. (HOGGING) AT MID SPAN OF MIDDLE CELL



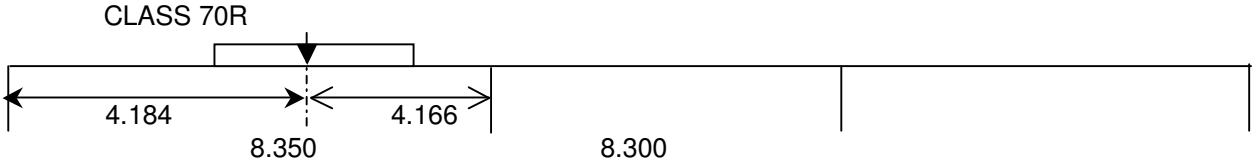
LOAD CASE NO 63

FOR MAX. BM.(SAGGING) AT END OF HAUNCH 1



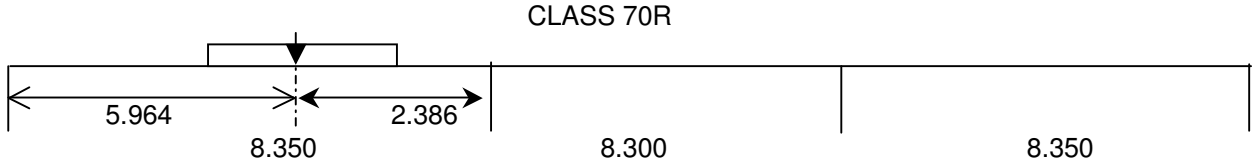
LOAD CASE NO 20

FOR MAX. BM (SAGGING) IN MID SPAN OF OUTER CELL



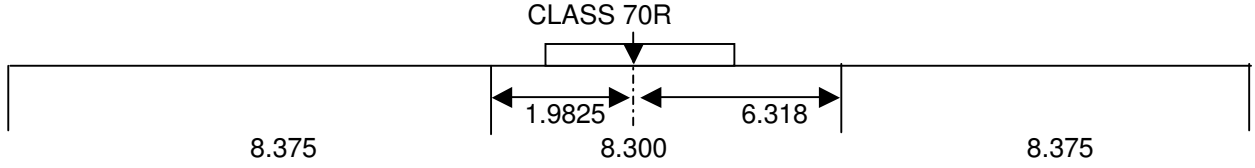
LOAD CASE NO 56

FOR MAX .BM.(SAGGING) AT START OF HAUNCH 2



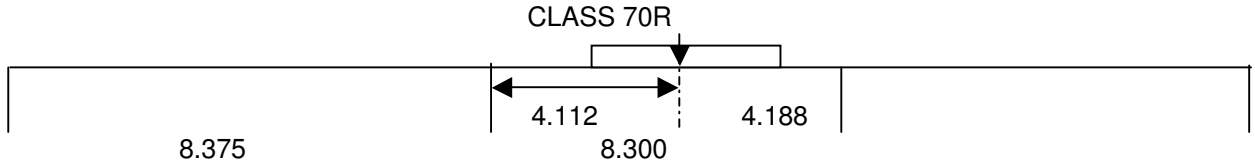
LOAD CASE NO 81

FOR MAX .BM.(SAGGING) AT END OF HAUNCH 9



LOAD CASE NO 114

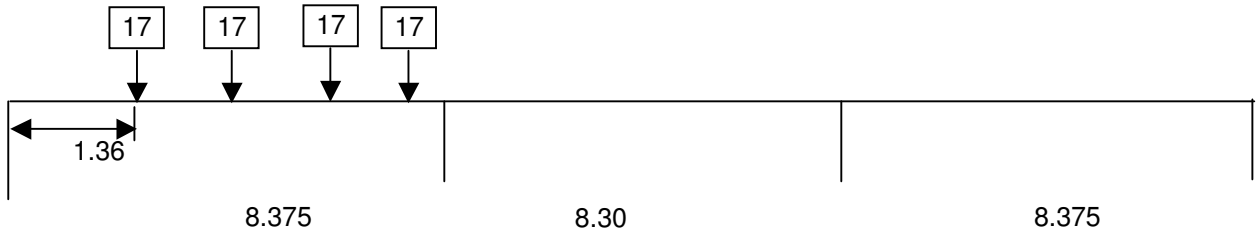
FOR MAX .BM.(SAGGING) AT MID SPAN OF MIDDLE CELL



LOAD CASE NO 139

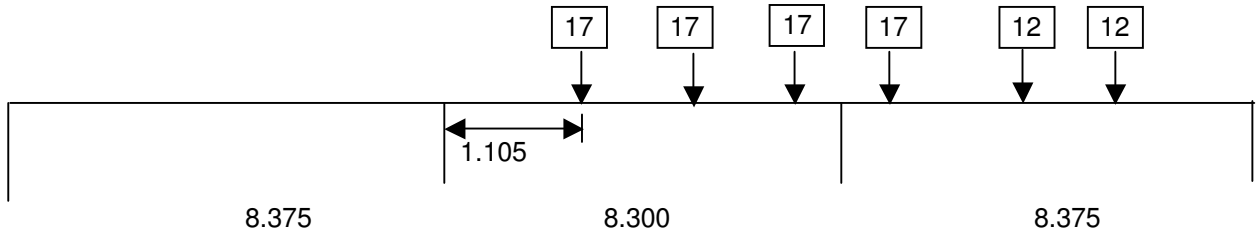
LIVE LOAD POSITION (WHEELED LOADING) :

FOR MAX. HOGGING BM AT END WEB



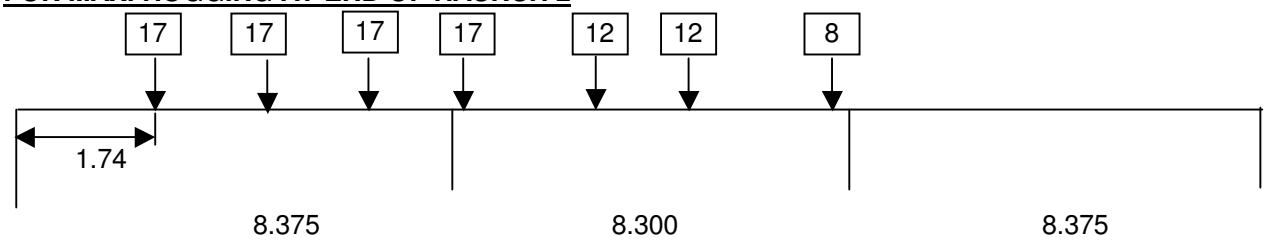
LOAD CASE NO 56

FOR MAX. HOGGING BM IN MID SAPN OF OUTER CELL



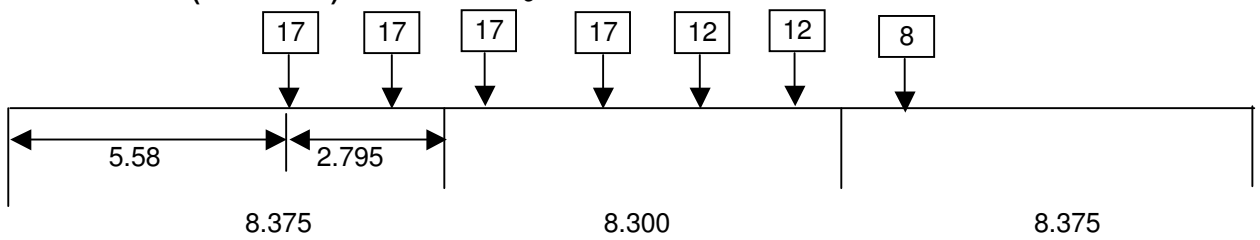
LOAD CASE NO 426

FOR MAX. HOGGING AT END OF HAUNCH 2



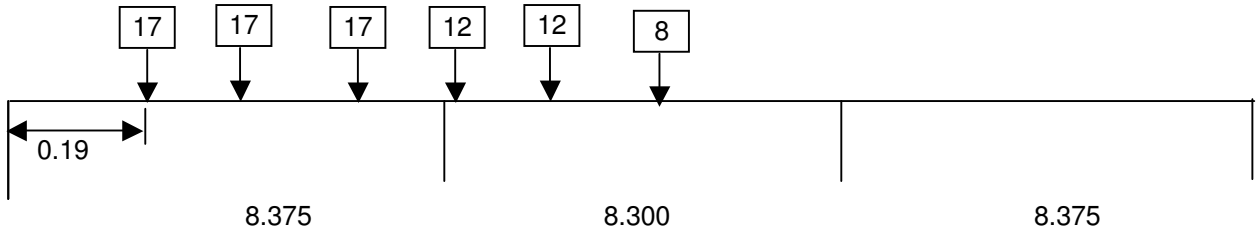
LOAD CASE NO 87

FOR MAX. BM.(HOGGING) AT START 9



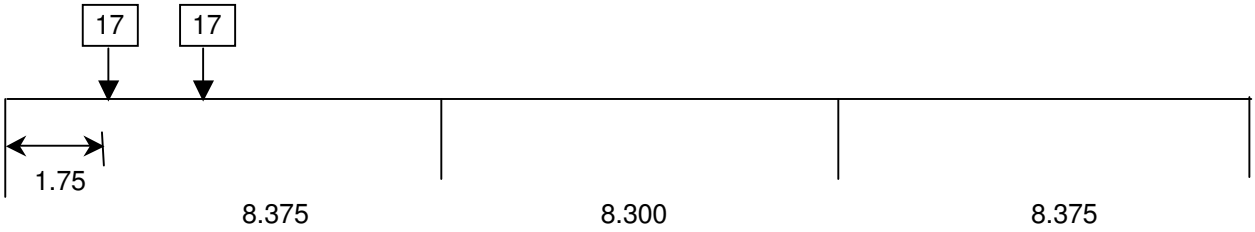
LOAD CASE NO 396

FOR MAX. HOGGING BM IN MID SPAN OF INNER CELL



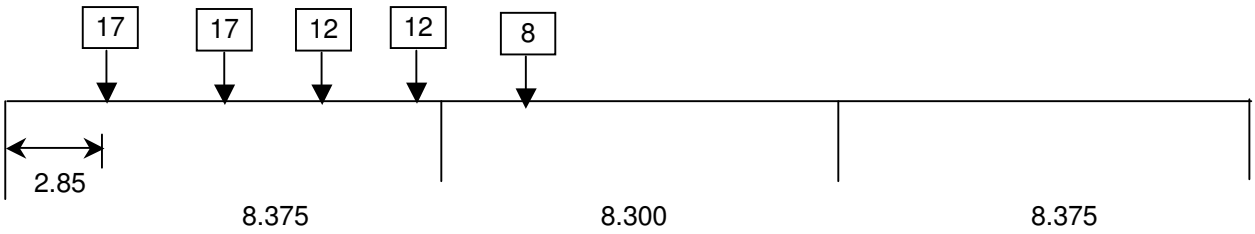
LOAD CASE NO 344

FOR MAX SAGGING BM AT END OF HAUNCH 1



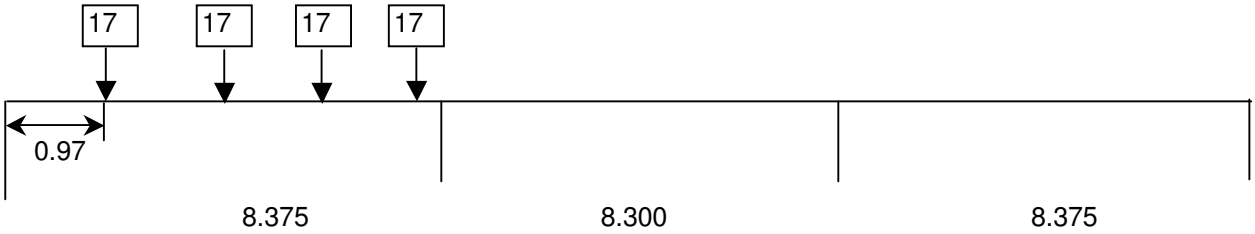
LOAD CASE NO 25

FOR MAX. BM (SAGGING) IN MID SPAN OF OUTER CELL



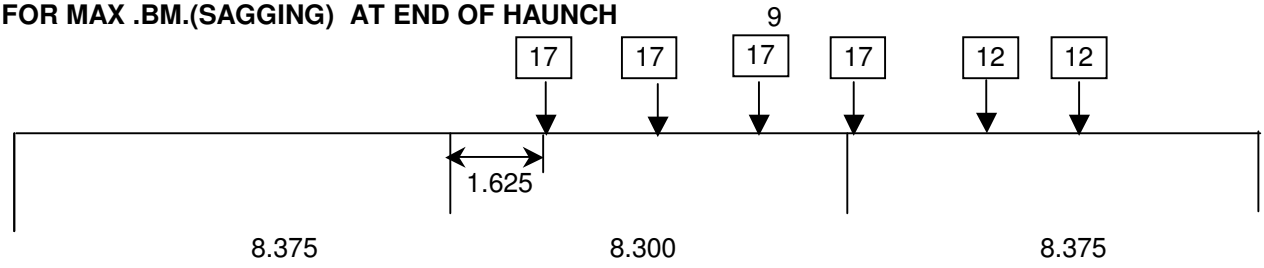
LOAD CASE NO 341

FOR MAX. SAGGING BM AT START OF HAUNCH 2



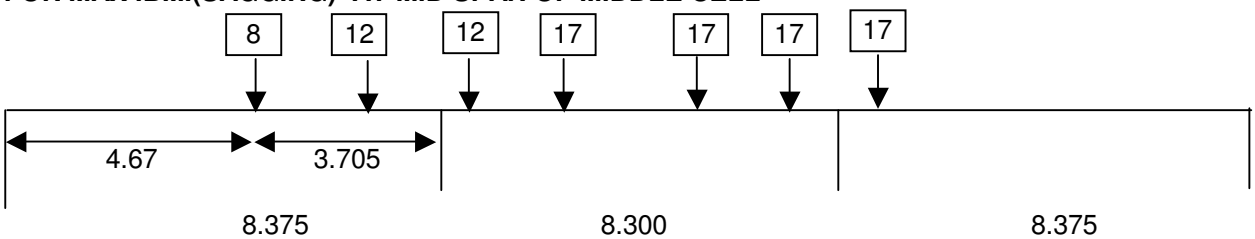
LOAD CASE NO 53

FOR MAX .BM.(SAGGING) AT END OF HAUNCH



LOAD CASE NO 430

FOR MAX .BM.(SAGGING) AT MID SPAN OF MIDDLE CELL



LOAD CASE NO 140

SUMMARY OF BENDING MOMENT AT DIFFERENT LOCATION

(I) Due to LIVE LOAD

Impact factor (I.F.) for class 70R tracked = 1.10

Impact factor (I.F.) for class 70R wheeled = 1.25

LOCATION		CLASS 70R(Tracked)		CLASS 70R(Wheeled)		DESIGN BM (tm/m) LL	
		Max. sagging	Max. hogging	Max. sagging	Max. hogging	Max. sagging	Max. hogging
TOP SLAB	At the face of end web	-1.481	4.904	-1.689	4.138	-1.689	4.904
	At the end of haunch-1	-1.924	0.469	-2.578	0.000	-2.578	0.469
	In the mid span of end cell	0.000	1.018	-6.521	0.716	-6.521	1.018
	At the start of haunch-2	-6.344	0.000	-1.160	2.359	-6.344	2.359
	At the face of inner web (end cell)	0.000	7.777	0.000	9.865	0.000	9.865
	At the face of inner web(inner cell)	0.000	7.131	0.000	9.030	0.000	9.030
	At the end of haunch-9	-0.216	3.058	-1.104	3.179	-1.104	3.179
	In the mid span of middle cell	-5.662	1.297	-3.509	1.326	-5.662	1.326
Bottom Slab	At the face of end web	-0.120	0.916	0.000	2.239	-0.120	2.239
	At the end of haunch-6	-1.367	0.000	-1.664	0.000	-1.664	0.000
	In the mid span of end cell	-2.090	0.000	-3.065	0.000	-3.065	0.000
	At the start of haunch-5	-0.421	1.701	-0.234	1.743	-0.421	1.743
	At the face of inner web(end cell)	0.000	3.808	0.000	5.948	0.000	5.948
	At the face of inner web(inner cell)	0.000	3.884	0.000	5.701	0.000	5.701
	At the end of haunch-12	-0.378	1.904	0.000	2.192	-0.378	2.192
	In the mid span of middle cell	-1.561	0.000	-1.878	0.000	-1.878	0.000
END WEB	Top face of bottom slab	0.000	1.526	0.000	4.218	0.000	4.218
	At the end of haunch-7	0.000	2.860	0.000	4.188	0.000	4.188
	Mid span of web	-0.196	4.070	0.000	5.035	-0.196	5.035
	Start of haunch-8	-0.748	5.269	-0.300	5.888	-0.748	5.888
	Bottom face of deck slab	-1.804	7.535	-1.541	7.044	-1.804	7.535
Central Web	Top face of bottom slab	-2.009	2.261	-1.943	2.476	-2.009	2.476
	At the end of haunch-4	-0.031	0.281	-0.070	0.538	-0.070	0.538
	Mid span of web	-1.205	1.496	-0.911	1.530	-1.205	1.530
	Start of haunch-3	-2.673	2.982	-2.348	3.003	-2.673	3.003
	Bottom face of deck slab	-4.667	5.000	-4.348	5.028	-4.667	5.028

(II) Due to TEMPERATURE

LOCATION		Temparature (rise)		Temparature (fall)		TEMPATATURE	
		sagging	hogging	sagging	hogging	SAGGING	HOGGING
TOP SLAB	At the face of end web	-6.317	0	0	0.891	-6.317	0.891
	At the end of haunch-1	-7.073	0	0	0.998	-7.073	0.998
	In the mid span of end cell	-8.561	0	0	1.207	-8.561	1.207
	At the start of haunch-2	-10.094	0	0	1.424	-10.094	1.424
	At the face of inner web (end cell)	-10.88	0	0	1.535	-10.88	1.535
	At the face of inner web(inner cell)	-10.137	0	0	1.43	-10.137	1.43
	At the end of haunch-9	-10.137	0	0	1.43	-10.137	1.43
	In the mid span of middle cell	-10.137	0	0	1.43	-10.137	1.43
Bottom Slab	At the face of end web	0	1.2	-0.169	0	-0.169	1.2
	At the end of haunch-6	0	0.981	-0.138	0	-0.138	0.981
	In the mid span of end cell	0	0.549	-0.077	0	-0.077	0.549
	At the start of haunch-5	0	0.104	0	0.015	0	0.104
	At the face of inner web(end cell)	-0.125	0	0	0.018	-0.125	0.018
	At the face of inner web(inner cell)	-0.365	0	0	0.052	-0.365	0.052
	At the end of haunch-12	-0.365	0	0	0.052	-0.365	0.052
	In the mid span of middle cell	-0.365	0	0	0.052	-0.365	0.052
END WEB	Top face of bottom slab	0	0.627	-0.088	0	-0.088	0.627
	At the end of haunch-7	-1.101	0	0	0.155	-1.101	0.155
	Mid span of web	-2.374	0	0	0.335	-2.374	0.335
	Start of haunch-8	-3.646	0	0	0.514	-3.646	0.514
	Bottom face of deck slab	-5.374	0	0	0.758	-5.374	0.758
Central Web	Top face of bottom slab	0	-0.078	-0.011	0	-0.011	0
	At the end of haunch-4	-0.19	0	0	0.027	-0.19	0.027
	Mid span of web	-0.388	0	0	0.055	-0.388	0.055
	Start of haunch-3	-0.585	0	0	0.082	-0.585	0.082
	Bottom face of deck slab	-0.853	0	0	0.12	-0.853	0.12

(III) Due to DL, SIDL & EARTH PRESSURE (EP)

LOCATION		Due to DL (tm/m)		Due to SIDL (tm/m)		Earth Pressure (Dry)			
						Case-1		Case-2	
		sagging	hogging	sagging	hogging	sagging	hogging	sagging	hogging
TOP SLAB	At the face of end web	0	0.947	0	0.52	0	4.924	0	2.658
	At the end of haunch-1	-2.552	0	-0.5	0	0	3.873	0	2.091
	In the mid span of end cell	-4.097	0	-1.1	0	0	1.803	0	0.973
	At the start of haunch-2	0	1.161	0	0.374	-0.33	0	-0.178	0
	At the face of inner web (end cell)	0	6.774	0	1.899	-1.423	0	-0.768	0
	At the face of inner web(inner cell)	0	6.609	0	1.795	-0.912	0	-0.492	0
	At the end of haunch-9	0	1.962	0	0.496	-0.912	0	-0.492	0
	In the mid span of middle cell	-1.413	0	-0.494	0	-0.912	0	-0.492	0
Bottom Slab	At the face of end web	0	4.356	0	0.502	0	5.321	0	2.873
	At the end of haunch-6	-2.725	0	-0.512	0	0	4.178	0	2.256
	In the mid span of end cell	-7.17	0	-1.06	0	0	1.925	0	1.04
	At the start of haunch-5	0	2.806	0	0.387	-0.394	0	-0.213	0
	At the face of inner web(end cell)	0	13.109	0	1.918	-1.583	0	-0.855	0
	At the face of inner web(inner cell)	0	12.09	0	1.797	-0.962	0	-0.52	0
	At the end of haunch-12	0	3.224	0	0.498	-0.962	0	-0.52	0
	In the mid span of middle cell	-3.714	0	-0.492	0	-0.962	0	-0.52	0
END WEB	Top face of bottom slab	0	7.397	0	1.019	0	0.169	0	0.091
	At the end of haunch-7	0	6.211	0	1.023	-8.022	0	-4.331	0
	Mid span of web	0	5.337	0	1.027	-8.902	0	-4.806	0
	Start of haunch-8	0	4.465	0	1.03	-6.285	0	-3.393	0
	Bottom face of deck slab	0	3.279	0	1.035	0	1.469	0	0.793
Central Web	Top face of bottom slab	0	1.319	0	0.183	-0.929	0	-0.501	0
	At the end of haunch-4	0	1.086	0	0.179	-0.896	0	-0.484	0
	Mid span of web	0	0.915	0	0.175	-0.873	0	-0.471	0
	Start of haunch-3	0	0.744	0	0.172	-0.849	0	-0.458	0
	Bottom face of deck slab	0	0.512	0	0.168	-0.817	0	-0.441	0

LOCATION		Earth Pressure (H.F.L)				EARTH PRESSURE	
		Case-1		Case-2			
		sagging	hogging	sagging	hogging	SAGGING	HOGGING
TOP SLAB	At the face of end web	0	4.418	0	2.574	0	4.924
	At the end of haunch-1		3.474		2.024	0	3.873
	In the mid span of end cell	0	1.615	0	0.942	0	1.803
	At the start of haunch-2	-0.301	0	-0.173	0	-0.33	0
	At the face of inner web (end cell)	-1.282	0	-0.744	0	-1.423	0
	At the face of inner web(inner cell)	-0.815	0	-0.476	0	-0.912	0
	At the end of haunch-9	-0.815	0	-0.476	0	-0.912	0
	In the mid span of middle cell	-0.815	0	-0.476	0	-0.912	0
Bottom Slab	At the face of end web	0	4.664	0	2.775	0	5.321
	At the end of haunch-6	0	3.663	0	2.179	0	4.178
	In the mid span of end cell	0	1.69	0	1.004	0	1.925
	At the start of haunch-5	-0.341	0	-0.205	0	-0.394	0
	At the face of inner web(end cell)	-1.382	0	-0.825	0	-1.583	0
	At the face of inner web(inner cell)	-0.847	0	-0.502	0	-0.962	0
	At the end of haunch-12	-0.847	0	-0.502	0	-0.962	0
	In the mid span of middle cell	-0.847	0	-0.502	0	-0.962	0
END WEB	Top face of bottom slab	0	0.364	0	0.088	0	0.364
	At the end of haunch-7	-6.873	0	-4.179	0	-8.022	0
	Mid span of web	-7.939	0	-4.631	0	-8.902	0
	Start of haunch-8	-5.824	0	-3.301	0	-6.285	0
	Bottom face of deck slab	0	1.2	0	0.752	0	1.469
Central Web	Top face of bottom slab	-0.808	0	-0.484	0	-0.929	0
	At the end of haunch-4	-0.788	0	-0.468	0	-0.896	0
	Mid span of web	-0.774	0	-0.456	0	-0.873	0
	Start of haunch-3	-0.759	0	-0.444	0	-0.849	0
	Bottom face of deck slab	-0.739	0	-0.427	0	-0.817	0

DESIGN MOMENT DUE TO DIFFERENT LOAD COMBINATIONS

LOCATION		Total BM (without temperature) (tm/m)				Total BM (with temperature) (tm/m)			
		Due to (DL+SIDL+EP)		Due to (DL+SIDL+EP +LL)		Due to (DL+SIDL+EP +TEMP)/1.15		Due to (DL+SIDL+EP+ 50%LL+TEMP)/1.15	
		Max. sagging	Max. hogging	Max. sagging	Max. hogging	Max. sagging	Max. hogging	Max. sagging	Max. hogging
TOP SLAB	At the face of end web	0.000	6.391	-1.689	11.295	-5.493	6.332	-6.227	8.464
	At the end of haunch-1	-3.052	3.873	-5.630	4.342	-8.804	4.236	-9.925	4.439
	In the mid span of end cell	-5.197	1.803	-11.718	2.821	-11.963	2.617	-14.799	3.060
	At the start of haunch-2	-0.330	1.535	-6.674	3.894	-9.064	2.573	-11.822	3.599
	At the face of inner web (end cell)	-1.423	8.673	-1.423	18.538	-10.698	8.877	-10.698	13.166
	At the face of inner web(inner cell)	-0.912	8.404	-0.912	17.434	-9.608	8.551	-9.608	12.477
	At the end of haunch-9	-0.912	2.458	-2.016	5.637	-9.608	3.381	-10.088	4.763
	In the mid span of middle cell	-2.819	0.000	-8.481	1.326	-11.266	1.243	-13.728	1.820
Bottom Slab	At the face of end web	0.000	10.179	-0.120	12.418	-0.147	9.895	-0.199	10.868
	At the end of haunch-6	-3.237	4.178	-4.901	4.178	-2.935	4.486	-3.658	4.486
	In the mid span of end cell	-8.230	1.925	-11.295	1.925	-7.223	2.151	-8.556	2.151
	At the start of haunch-5	-0.394	3.193	-0.815	4.936	-0.343	2.867	-0.526	3.625
	At the face of inner web(end cell)	-1.583	15.027	-1.583	20.975	-1.485	13.083	-1.485	15.669
	At the face of inner web(inner cell)	-0.962	13.887	-0.962	19.588	-1.154	12.121	-1.154	14.600
	At the end of haunch-12	-0.962	3.722	-1.340	5.914	-1.154	3.282	-1.318	4.235
	In the mid span of middle cell	-5.168	0.000	-7.046	0.000	-4.811	0.045	-5.628	0.045
END WEB	Top face of bottom slab	0.000	8.780	0.000	12.998	-0.077	8.180	-0.077	10.014
	At the end of haunch-7	-8.022	7.234	-8.022	11.422	-7.933	6.425	-7.933	8.246
	Mid span of web	-8.902	6.364	-9.098	11.399	-9.805	5.825	-9.890	8.014
	Start of haunch-8	-6.285	5.495	-7.033	11.383	-8.636	5.225	-8.961	7.785
	Bottom face of deck slab	0.000	5.783	-1.804	13.318	-4.673	5.688	-5.457	8.964
Central Web	Top face of bottom slab	-0.929	1.502	-2.938	3.978	-0.817	1.306	-1.691	2.383
	At the end of haunch-4	-0.896	1.265	-0.966	1.803	-0.944	1.123	-0.975	1.357
	Mid span of web	-0.873	1.090	-2.078	2.620	-1.097	0.996	-1.620	1.661
	Start of haunch-3	-0.849	0.916	-3.522	3.919	-1.247	0.868	-2.409	2.173
	Bottom face of deck slab	-0.817	0.680	-5.484	5.708	-1.452	0.696	-3.481	2.882

MOMENT OF RESISTANCE OF THE SECTION (M_R):

modular ratio, m	=	10		
lever arm factor, j	=	0.877		
Moment of resistance coeff, Q	=	192	t/m^2	
effective cover in top slab & webs	=	60	mm	
effective cover in soffit slab	=	75	mm	

IN SPAN PORTION,	Eff. available depth	=	390	mm			
(top slab & webs)	M_R	=	**29.25**	tm/m	>	14.80	**tm/m, O.K.** (Max. Design BM)
IN SPAN PORTION,	Eff. available depth	=	375	mm			
(soffit slab)	M_R	=	**27.04**	tm/m	>	20.98	**tm/m, O.K.** (Max. Design BM)
END (CORNER) PORTION,	Eff. available depth	=	640	mm			
	M_R	=	**78.76**	tm/m	>	13.73	**tm/m, O.K.** (Max. Design BM)

CALCULATION OF REINFORCEMENT:

LOCATION		DESIGN BM (tm/m)		Eff. depth available (mm)	Reinft. reqd. at inner face (cm^2/m)	Reinft. reqd. at outer face (cm^2/m)
		Max. Sagg. BM	Max. Hogg. BM			
TOP SLAB	At the face of end web	6.227	11.295	640	5.44	9.86
	At the end of haunch-1	9.925	4.439	390	14.22	6.36
	In the mid span of end cell	14.799	3.060	390	21.20	4.38
	At the start of haunch-2	11.822	3.894	390	16.94	5.58
	At the face of inner web (end cell)	10.698	18.538	640	9.34	16.19
	At the face of inner web(inner cell)	9.608	17.434	640	8.39	15.22
	At the end of haunch-9	10.088	5.637	390	14.45	8.08
	In the mid span of middle cell	13.728	1.820	390	19.67	2.61
Bottom Slab	At the face of end web	0.199	12.418	640	0.17	10.84
	At the end of haunch-6	4.901	4.486	375	7.30	6.69
	In the mid span of end cell	11.295	2.151	375	16.83	3.21
	At the start of haunch-5	0.815	4.936	375	1.21	7.36
	At the face of inner web(end cell)	1.583	20.975	640	1.38	18.31
	At the face of inner web(inner cell)	1.154	19.588	640	1.01	17.10
	At the end of haunch-12	1.340	5.914	375	2.00	8.81
	In the mid span of middle cell	7.046	0.045	375	10.50	0.07
END WEB	Top face of bottom slab	0.077	12.998	640	0.07	11.35
	At the end of haunch-7	8.022	11.422	390	11.49	16.37
	Mid span of web	9.890	11.399	390	14.17	16.33
	Start of haunch-8	8.961	11.383	390	12.84	16.31
	Bottom face of deck slab	5.457	13.318	640	4.77	11.63
Central Web	Top face of bottom slab	2.938	3.978	640	2.57	3.47
	At the end of haunch-4	0.975	1.803	390	1.40	2.58
	Mid span of web	2.078	2.620	390	2.98	3.75
	Start of haunch-3	3.522	3.919	390	5.05	5.61
	Bottom face of deck slab	5.484	5.708	640	4.79	4.98

CHECK FOR SHEAR FORCE: (As per clause 304.7.1.3 of I.R.C. 2000)

(I) At distance equal to Eff. Depth from the face of Support

LOCATION		Due to DL (t/m)	Due to SIDL	Due to EP (t/m)	Due to LL (t/m)	TOTAL
BOTTOM SLAB	S.F.	6.325	0.918	0.9	2.77	10.93
	B.M.	2.46	0.225	5.058	1.405	9.15
WEBS	S.F.	0.949	0.0	8.462	0.87	10.28

Eff. depth available at the critical section = 0.64 + 0.20 x 0.61 = 0.762 m

Shear Force = 10.93 / 0.762 = 14.34 t/m^2

M/d.tanβ = 9.15 x 0.262 = 2.40 t/m^2

Net Shear Force = (S.F. -M/d.tanβ) = **11.94** t/m^2

Permissible Shear stress

100As/Bc = 0.21 , τc = 0.219 = 0.219 Mpa

= **22.38** **t/m2** **O.K.**

(I) At the face of Haunch

LOCATION	Due to DL (t/m)	Due to SIDL	Due to EP (t/m)	Due to LL (t/m)	TOTAL S.F. (t/m)
BOTTOM SLAB	6.6	0.957	0.9	2.884	11.32

Eff. depth available at the critical section = 0.64 m

Shear Force = 11.32 / 0.64 = 17.69 t/m^2

Permissible Shear stress

100As/Bc = 0.26 , τc = 0.231 = 0.231 Mpa

= **23.56** **t/m2** **O.K.**

```
INPUT FILE: DL.STD
     1. STAAD PLANE
     2. START JOB INFORMATION
     3. ENGINEER DATE 19-DEC-06
     4. END JOB INFORMATION
     5. INPUT WIDTH 79
     6. PAGE LENGTH 1000
     7. UNIT METER MTON
     8. JOINT COORDINATES
     9. 1   0.000     0.000     0.000
    10. 2   1.725     0.000     0.000
    11. 3   4.188     0.000     0.000
    12. 4   6.725     0.000     0.000
    13. 5   8.375     0.000     0.000
    14. 6  10.025     0.000     0.000
    15. 7  12.525     0.000     0.000
    16. 8  15.025     0.000     0.000
    17. 9  16.675     0.000     0.000
    18. 10 18.325     0.000     0.000
    19. 11 20.863     0.000     0.000
    20. 12 23.325     0.000     0.000
    21. 13 25.050     0.000     0.000
    22. 14 0.000      5.291     0.000
    23. 15 1.725      5.291     0.000
    24. 16 4.188      5.291     0.000
    25. 17 6.725      5.291     0.000
    26. 18 8.375      5.291     0.000
    27. 19 10.025     5.291     0.000
    28. 20 12.525     5.291     0.000
    29. 21 15.025     5.291     0.000
    30. 22 16.675     5.291     0.000
    31. 23 18.325     5.291     0.000
    32. 24 20.863     5.291     0.000
    33. 25 23.325     5.291     0.000
    34. 26 25.050     5.291     0.000
    35. 27 0.000      1.725     0.000
    36. 28 0.000      2.646     0.000
    37. 29 0.000      3.566     0.000
    38. 30 8.375      1.725     0.000
    39. 31 8.375      2.646     0.000
    40. 32 8.375      3.566     0.000
    41. 33 16.675     1.725     0.000
    42. 34 16.675     2.646     0.000
    43. 35 16.675     3.566     0.000
    44. 36 25.050     1.725     0.000
    45. 37 25.050     2.646     0.000
    46. 38 25.050     3.566     0.000
    47. MEMBER INCIDENCES
    48. 1         1         2
    49. 2         2         3
    50. 3         3         4
    51. 4         4         5
    52. 5         5         6
    53. 6         6         7
    54. 7         7         8
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 55. 8         8         9
 56. 9         9        10
 57. 10        10        11
 58. 11        11        12
 59. 12        12        13
 60. 13        14        15
 61. 14        15        16
 62. 15        16        17
 63. 16        17        18
 64. 17        18        19
 65. 18        19        20
 66. 19        20        21
 67. 20        21        22
 68. 21        22        23
 69. 22        23        24
 70. 23        24        25
 71. 24        25        26
 72. 25         1        27
 73. 26        27        28
 74. 27        28        29
 75. 28        29        14
 76. 29         5        30
 77. 30        30        31
 78. 31        31        32
 79. 32        32        18
 80. 33         9        33
 81. 34        33        34
 82. 35        34        35
 83. 36        35        22
 84. 37        13        36
 85. 38        36        37
 86. 39        37        38
 87. 40        38        26
 88. MEMBER PROPERTY INDIAN
 89. 2 3 6 7 10 11 14 15 18 19 22 23 26 27 38 39 PRI YD .45 ZD 1.
 90. 30 31 34 35 PRI YD .3 ZD 1.
 91. 1 4 5 8 9 12 13 16 17 20 21 24 25 28 37 40 PRI AX .561 IZ .0158 YD .575
 92. 29 32 33 36 PRI AX .425 IZ .03054 YD .425
 93. CONSTANT
 94. E 3E6 ALL
 95. DENSITY 2.4 ALL
 96. ALPHA .0000117 ALL
 97. SUPPORT
 98. 5 PINNED
 99. 1 9 13 FIXED BUT FX MZ
100. LOAD 1 DEAD LOAD
101. SELFWEIGHT Y -1.
102. MEMBER LOAD
103. 1 TO 12 UNI GY 3.3
104. LOAD 2 SIDL
105. MEMBER LOAD
106. 13 TO 24 UNI GY -.317
107. 1 TO 12 UNI GY .317
108. LOAD 3 EARTH PRESSURE C-I(DRY)
109. MEMBER LOAD
110. 25 TRAP GX 5.572 3.847
111. 26 TRAP GX 3.847 2.927
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112. 27 TRAP GX 2.927 2.006
113. 28 TRAP GX 2.006 0.281
114. 37 TRAP GX -5.572 -3.847
115. 38 TRAP GX -3.847 -2.927
116. 39 TRAP GX -2.927 -2.006
117. 40 TRAP GX -2.006 -0.281
118. 25 TO 28 UNI GX 1.2
119. 37 TO 40 UNI GX -1.2
120. LOAD 4 EARTH PRESSURE C-II(DRY)
121. MEMBER LOAD
122. 25 TRAP GX 3.009 2.077
123. 26 TRAP GX 2.077 1.580
124. 27 TRAP GX 1.580 1.083
125. 28 TRAP GX 1.083 .152
126. 37 TRAP GX -3.009 -2.077
127. 38 TRAP GX -2.077 -1.580
128. 39 TRAP GX -1.580 -1.083
129. 40 TRAP GX -1.083 -.152
130. 25 TO 28 UNI GX 0.648
131. 37 TO 40 UNI GX -0.648
132. LOAD 5 EARTH RESSURE C-I(HFL)
133. MEMBER LOAD
134. 25 TRAP GX 3.876 3.014
135. 26 TRAP GX 3.014 2.553
136. 27 TRAP GX 2.553 2.180 0.0 0.747
137. 27 TRAP GX 2.180 2.006 0.747 0.9205
138. 28 TRAP GX 2.006 0.281
139. 37 TRAP GX -3.876 -3.014
140. 38 TRAP GX -3.014 -2.553
141. 39 TRAP GX -2.553 -2.180 0.0 0.747
142. 39 TRAP GX -2.180 -2.006 0.747 0.9205
143. 40 TRAP GX -2.006 -0.281
144. 25 TO 28 UNI GX 1.2
145. 37 TO 40 UNI GX -1.2
146. LOAD 6 EARTH PRESSURE C-II(HFL)
147. MEMBER LOAD
148. 25 TRAP GX 2.873 2.011
149. 26 TRAP GX 2.011 1.401
150. 27 TRAP GX 1.401 1.177 0.0 0.747
151. 27 TRAP GX 1.177 1.083 0.747 0.9205
152. 28 TRAP GX 1.083 0.152
153. 37 TRAP GX -2.873 -2.011
154. 38 TRAP GX -2.011 -1.401
155. 39 TRAP GX -1.401 -1.177 0.0 0.747
156. 39 TRAP GX -1.177 -1.083 0.747 0.9205
157. 40 TRAP GX -1.083 -0.152
158. 25 TO 28 UNI GX .648
159. 37 TO 40 UNI GX -.648
160. LOAD 7 TEMP +VE GRADIANT
161. TEMPERATURE LOAD
162. 13 TO 24 TEMP 0. 14.18
163. LOAD 8 TEMP -VE GRADIANT
164. TEMPERATURE LOAD
165. 13 TO 24 TEMP 0. -2.0
166. PERFORM ANALYSIS
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167. PRINT FORCE ENVELOPE LIST 1 2 3 4 5 6 13 14 15 16 17 18 25 27 28 29 31 32

FORCE ENVELOPE LIST 1

MEMB	DISTANCE		FY	LD	MZ	LD	FZ	LD	MY	LD
1	0.00	MAX	0.02	8	0.18	8	0.00	8	0.00	8
		MIN	-7.81	1	-7.85	1	0.00	8	0.00	8
	0.14	MAX	0.02	8	0.18	8	0.00	8	0.00	8
		MIN	-7.53	1	-6.74	1	0.00	8	0.00	8
	0.29	MAX	0.02	8	0.17	8	0.00	8	0.00	8
		MIN	-7.25	1	-5.68	1	0.00	8	0.00	8
	0.43	MAX	0.02	8	0.17	8	0.00	8	0.00	8
		MIN	-6.97	1	-5.36	3	0.00	8	0.00	8
	0.57	MAX	0.02	8	0.17	8	0.00	8	0.00	8
		MIN	-6.69	1	-5.23	3	0.00	8	0.00	8
	0.72	MAX	0.02	8	0.16	8	0.00	8	0.00	8
		MIN	-6.41	1	-5.10	3	0.00	8	0.00	8
	0.86	MAX	0.02	8	0.16	8	0.00	8	0.00	8
		MIN	-6.13	1	-4.97	3	0.00	8	0.00	8
	1.01	MAX	0.02	8	0.16	8	0.00	8	0.00	8
		MIN	-5.85	1	-4.83	3	0.00	8	0.00	8
	1.15	MAX	0.02	8	0.15	8	0.00	8	0.00	8
		MIN	-5.57	1	-4.70	3	0.00	8	0.00	8
	1.29	MAX	0.02	8	0.63	1	0.00	8	0.00	8
		MIN	-5.29	1	-4.57	3	0.00	8	0.00	8
	1.44	MAX	0.02	8	1.37	1	0.00	8	0.00	8
		MIN	-5.01	1	-4.44	3	0.00	8	0.00	8
	1.58	MAX	0.02	8	2.07	1	0.00	8	0.00	8
		MIN	-4.72	1	-4.31	3	0.00	8	0.00	8
	1.72	MAX	0.02	8	2.73	1	0.00	8	0.00	8
		MIN	-4.44	1	-4.18	3	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 1, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.02	0.00	8	2.73	1.72	1			
	0.00	0.00	1	0.00	0.00	1	13.33 C	0.00	3
MIN.	-7.81	0.00	1	-7.85	0.00	1			
	0.00	1.72	8	0.00	1.72	8	0.19 T	1.72	8

2	0.00	MAX	0.02	8	2.73	1	0.00	8	0.00	8
		MIN	-4.44	1	-4.18	3	0.00	8	0.00	8
	0.21	MAX	0.02	8	3.59	1	0.00	8	0.00	8
		MIN	-3.99	1	-3.99	3	0.00	8	0.00	8
	0.41	MAX	0.02	8	4.36	1	0.00	8	0.00	8
		MIN	-3.53	1	-3.80	3	0.00	8	0.00	8
	0.62	MAX	0.02	8	5.04	1	0.00	8	0.00	8
		MIN	-3.08	1	-3.61	3	0.00	8	0.00	8
	0.82	MAX	0.02	8	5.63	1	0.00	8	0.00	8
		MIN	-2.62	1	-3.43	3	0.00	8	0.00	8
	1.03	MAX	0.02	8	6.12	1	0.00	8	0.00	8
		MIN	-2.17	1	-3.24	3	0.00	8	0.00	8
	1.23	MAX	0.02	8	6.51	1	0.00	8	0.00	8
		MIN	-1.71	1	-3.05	3	0.00	8	0.00	8

	1.44	MAX	0.02	8	6.82	1	0.00	8	0.00	8
		MIN	-1.25	1	-2.86	3	0.00	8	0.00	8
	1.64	MAX	0.02	8	7.03	1	0.00	8	0.00	8
		MIN	-0.91	3	-2.68	3	0.00	8	0.00	8
	1.85	MAX	0.02	8	7.15	1	0.00	8	0.00	8
		MIN	-0.91	3	-2.49	3	0.00	8	0.00	8
	2.05	MAX	0.11	1	7.17	1	0.00	8	0.00	8
		MIN	-0.91	3	-2.30	3	0.00	8	0.00	8
	2.26	MAX	0.57	1	7.10	1	0.00	8	0.00	8
		MIN	-0.91	3	-2.11	3	0.00	8	0.00	8
	2.46	MAX	1.02	1	6.94	1	0.00	8	0.00	8
		MIN	-0.91	3	-1.93	3	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 2, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.02	2.46	1	7.17	2.05	1			
	0.00	0.00	1	0.00	0.00	1	13.33 C	0.00	3
MIN.	-4.44	0.00	1	-4.18	0.00	3			
	0.00	2.46	8	0.00	2.46	8	0.19 T	2.46	8

3	0.00	MAX	1.02	1	6.94	1	0.00	8	0.00	8
		MIN	-0.91	3	-1.93	3	0.00	8	0.00	8
	0.21	MAX	1.49	1	6.67	1	0.00	8	0.00	8
		MIN	-0.91	3	-1.73	3	0.00	8	0.00	8
	0.42	MAX	1.96	1	6.31	1	0.00	8	0.00	8
		MIN	-0.91	3	-1.54	3	0.00	8	0.00	8
	0.63	MAX	2.43	1	5.84	1	0.00	8	0.00	8
		MIN	-0.91	3	-1.35	3	0.00	8	0.00	8
	0.85	MAX	2.90	1	5.28	1	0.00	8	0.00	8
		MIN	-0.91	3	-1.15	3	0.00	8	0.00	8
	1.06	MAX	3.37	1	4.61	1	0.00	8	0.00	8
		MIN	-0.91	3	-0.96	3	0.00	8	0.00	8
	1.27	MAX	3.84	1	3.85	1	0.00	8	0.00	8
		MIN	-0.91	3	-0.77	3	0.00	8	0.00	8
	1.48	MAX	4.31	1	2.99	1	0.00	8	0.00	8
		MIN	-0.91	3	-0.57	3	0.00	8	0.00	8
	1.69	MAX	4.78	1	2.03	1	0.00	8	0.00	8
		MIN	-0.91	3	-0.38	3	0.00	8	0.00	8
	1.90	MAX	5.25	1	0.97	1	0.00	8	0.00	8
		MIN	-0.91	3	-0.21	7	0.00	8	0.00	8
	2.11	MAX	5.72	1	0.03	8	0.00	8	0.00	8
		MIN	-0.91	3	-0.19	1	0.00	8	0.00	8
	2.33	MAX	6.19	1	0.20	3	0.00	8	0.00	8
		MIN	-0.91	3	-1.45	1	0.00	8	0.00	8
	2.54	MAX	6.66	1	0.39	3	0.00	8	0.00	8
		MIN	-0.91	3	-2.81	1	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 3, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	6.66	2.54	1	6.94	0.00	1			
	0.00	0.00	1	0.00	0.00	1	13.33 C	0.00	3
MIN.	-0.91	2.54	3	-2.81	2.54	1			
	0.00	2.54	8	0.00	2.54	8	0.19 T	2.54	8

4	0.00	MAX	6.66	1	0.39	3	0.00	8	0.00	8
		MIN	-0.91	3	-2.81	1	0.00	8	0.00	8
	0.14	MAX	6.92	1	0.52	3	0.00	8	0.00	8
		MIN	-0.91	3	-3.74	1	0.00	8	0.00	8
	0.28	MAX	7.19	1	0.65	3	0.00	8	0.00	8
		MIN	-0.91	3	-4.71	1	0.00	8	0.00	8
	0.41	MAX	7.46	1	0.77	3	0.00	8	0.00	8
		MIN	-0.91	3	-5.72	1	0.00	8	0.00	8
	0.55	MAX	7.73	1	0.90	3	0.00	8	0.00	8
		MIN	-0.91	3	-6.76	1	0.00	8	0.00	8
	0.69	MAX	8.00	1	1.02	3	0.00	8	0.00	8
		MIN	-0.91	3	-7.84	1	0.00	8	0.00	8
	0.83	MAX	8.27	1	1.15	3	0.00	8	0.00	8
		MIN	-0.91	3	-8.96	1	0.00	8	0.00	8
	0.96	MAX	8.54	1	1.27	3	0.00	8	0.00	8
		MIN	-0.91	3	-10.12	1	0.00	8	0.00	8
	1.10	MAX	8.81	1	1.40	3	0.00	8	0.00	8
		MIN	-0.91	3	-11.31	1	0.00	8	0.00	8
	1.24	MAX	9.07	1	1.53	3	0.00	8	0.00	8
		MIN	-0.91	3	-12.54	1	0.00	8	0.00	8
	1.38	MAX	9.34	1	1.65	3	0.00	8	0.00	8
		MIN	-0.91	3	-13.80	1	0.00	8	0.00	8
	1.51	MAX	9.61	1	1.78	3	0.00	8	0.00	8
		MIN	-0.91	3	-15.11	1	0.00	8	0.00	8
	1.65	MAX	9.88	1	1.90	3	0.00	8	0.00	8
		MIN	-0.91	3	-16.45	1	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 4, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	9.88	1.65	1	1.90	1.65	3			
	0.00	0.00	1	0.00	0.00	1	13.33 C	0.00	3
MIN.	-0.91	1.65	3	-16.45	1.65	1			
	0.00	1.65	8	0.00	1.65	8	0.19 T	1.65	8

5	0.00	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-8.77	1	-15.04	1	0.00	8	0.00	8
	0.14	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-8.50	1	-13.85	1	0.00	8	0.00	8
	0.27	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-8.24	1	-12.70	1	0.00	8	0.00	8
	0.41	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-7.97	1	-11.59	1	0.00	8	0.00	8
	0.55	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-7.70	1	-10.51	1	0.00	8	0.00	8
	0.69	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-7.43	1	-9.47	1	0.00	8	0.00	8
	0.82	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-7.16	1	-8.47	1	0.00	8	0.00	8
	0.96	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-6.89	1	-7.50	1	0.00	8	0.00	8
	1.10	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-6.62	1	-6.57	1	0.00	8	0.00	8
	1.24	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-6.36	1	-5.68	1	0.00	8	0.00	8

	1.37	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-6.09	1	-4.82	1	0.00	8	0.00	8
	1.51	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-5.82	1	-4.01	1	0.00	8	0.00	8
	1.65	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-5.55	1	-3.22	1	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 5, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.00	0.00	7	0.96	0.00	3			
	0.00	0.00	1	0.00	0.00	1	13.36 C	0.00	3
MIN.	-8.77	0.00	1	-15.04	0.00	1			
	0.00	1.65	8	0.00	1.65	8	0.16 T	1.65	8

6	0.00	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-5.55	1	-3.22	1	0.00	8	0.00	8
	0.21	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-5.09	1	-2.12	1	0.00	8	0.00	8
	0.42	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-4.62	1	-1.10	1	0.00	8	0.00	8
	0.62	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-4.16	1	-0.19	1	0.00	8	0.00	8
	0.83	MAX	0.00	7	0.96	3	0.00	8	0.00	8
		MIN	-3.70	1	-0.05	8	0.00	8	0.00	8
	1.04	MAX	0.00	7	1.35	1	0.00	8	0.00	8
		MIN	-3.24	1	-0.05	8	0.00	8	0.00	8
	1.25	MAX	0.00	7	1.98	1	0.00	8	0.00	8
		MIN	-2.78	1	-0.05	8	0.00	8	0.00	8
	1.46	MAX	0.00	7	2.51	1	0.00	8	0.00	8
		MIN	-2.31	1	-0.05	8	0.00	8	0.00	8
	1.67	MAX	0.00	7	2.94	1	0.00	8	0.00	8
		MIN	-1.85	1	-0.05	8	0.00	8	0.00	8
	1.88	MAX	0.00	7	3.28	1	0.00	8	0.00	8
		MIN	-1.39	1	-0.05	8	0.00	8	0.00	8
	2.08	MAX	0.00	7	3.52	1	0.00	8	0.00	8
		MIN	-0.93	1	-0.05	8	0.00	8	0.00	8
	2.29	MAX	0.00	7	3.67	1	0.00	8	0.00	8
		MIN	-0.46	1	-0.05	8	0.00	8	0.00	8
	2.50	MAX	0.00	1	3.71	1	0.00	8	0.00	8
		MIN	0.00	3	-0.05	8	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 6, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.00	2.50	1	3.71	2.50	1			
	0.00	0.00	1	0.00	0.00	1	13.36 C	0.00	3
MIN.	-5.55	0.00	1	-3.22	0.00	1			
	0.00	2.50	8	0.00	2.50	8	0.16 T	2.50	8

13	0.00	MAX	4.28	1	5.32	3	0.00	8	0.00	8
		MIN	-0.09	8	-6.03	7	0.00	8	0.00	8
	0.14	MAX	4.09	1	5.20	3	0.00	8	0.00	8
		MIN	-0.09	8	-6.12	7	0.00	8	0.00	8
	0.29	MAX	3.89	1	5.08	3	0.00	8	0.00	8

	MIN	-0.09	8	-6.20	7	0.00	8	0.00	8
0.43	MAX	3.70	1	4.96	3	0.00	8	0.00	8
	MIN	-0.09	8	-6.29	7	0.00	8	0.00	8
0.57	MAX	3.51	1	4.84	3	0.00	8	0.00	8
	MIN	-0.09	8	-6.38	7	0.00	8	0.00	8
0.72	MAX	3.31	1	4.72	3	0.00	8	0.00	8
	MIN	-0.09	8	-6.46	7	0.00	8	0.00	8
0.86	MAX	3.12	1	4.60	3	0.00	8	0.00	8
	MIN	-0.09	8	-6.55	7	0.00	8	0.00	8
1.01	MAX	2.93	1	4.48	3	0.00	8	0.00	8
	MIN	-0.09	8	-6.64	7	0.00	8	0.00	8
1.15	MAX	2.73	1	4.36	3	0.00	8	0.00	8
	MIN	-0.09	8	-6.73	7	0.00	8	0.00	8
1.29	MAX	2.54	1	4.24	3	0.00	8	0.00	8
	MIN	-0.09	8	-6.81	7	0.00	8	0.00	8
1.44	MAX	2.34	1	4.11	3	0.00	8	0.00	8
	MIN	-0.09	8	-6.90	7	0.00	8	0.00	8
1.58	MAX	2.15	1	3.99	3	0.00	8	0.00	8
	MIN	-0.09	8	-6.99	7	0.00	8	0.00	8
1.72	MAX	1.96	1	3.87	3	0.00	8	0.00	8
	MIN	-0.09	8	-7.07	7	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 13, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	4.28	0.00	1	5.32	0.00	3			
	0.00	0.00	1	0.00	0.00	1	8.50 C	0.00	3
MIN.	-0.09	1.72	8	-7.07	1.72	7			
	0.00	1.72	8	0.00	1.72	8	1.38 T	1.72	7

14	0.00	MAX	1.96	1	3.87	3	0.00	8	0.00	8
		MIN	-0.09	8	-7.07	7	0.00	8	0.00	8
	0.21	MAX	1.74	1	3.70	3	0.00	8	0.00	8
		MIN	-0.09	8	-7.20	7	0.00	8	0.00	8
	0.41	MAX	1.51	1	3.53	3	0.00	8	0.00	8
		MIN	-0.09	8	-7.32	7	0.00	8	0.00	8
	0.62	MAX	1.29	1	3.36	3	0.00	8	0.00	8
		MIN	-0.09	8	-7.44	7	0.00	8	0.00	8
	0.82	MAX	1.07	1	3.18	3	0.00	8	0.00	8
		MIN	-0.09	8	-7.57	7	0.00	8	0.00	8
	1.03	MAX	0.85	1	3.01	3	0.00	8	0.00	8
		MIN	-0.09	8	-7.69	7	0.00	8	0.00	8
	1.23	MAX	0.84	3	2.84	3	0.00	8	0.00	8
		MIN	-0.09	8	-7.82	7	0.00	8	0.00	8
	1.44	MAX	0.84	3	2.67	3	0.00	8	0.00	8
		MIN	-0.09	8	-7.94	7	0.00	8	0.00	8
	1.64	MAX	0.84	3	2.49	3	0.00	8	0.00	8
		MIN	-0.09	8	-8.07	7	0.00	8	0.00	8
	1.85	MAX	0.84	3	2.32	3	0.00	8	0.00	8
		MIN	-0.09	8	-8.19	7	0.00	8	0.00	8
	2.05	MAX	0.84	3	2.15	3	0.00	8	0.00	8
		MIN	-0.26	1	-8.31	7	0.00	8	0.00	8
	2.26	MAX	0.84	3	1.98	3	0.00	8	0.00	8
		MIN	-0.48	1	-8.44	7	0.00	8	0.00	8
	2.46	MAX	0.84	3	1.80	3	0.00	8	0.00	8
		MIN	-0.70	1	-8.56	7	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 14, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD		MZ/ MY	DIST DIST	LD LD	FX	DIST LD
MAX.		1.96	0.00	1		3.87	0.00	3		
		0.00	0.00	1		0.00	0.00	1	8.50 C	0.00 3
MIN.		-0.70	2.46	1		-8.56	2.46	7		
		0.00	2.46	8		0.00	2.46	8	1.38 T	2.46 7
15	0.00	MAX	0.84	3		1.80	3	0.00	8	0.00 8
		MIN	-0.70	1		-8.56	7	0.00	8	0.00 8
	0.21	MAX	0.84	3		1.62	3	0.00	8	0.00 8
		MIN	-0.93	1		-8.69	7	0.00	8	0.00 8
	0.42	MAX	0.84	3		1.45	3	0.00	8	0.00 8
		MIN	-1.16	1		-8.82	7	0.00	8	0.00 8
	0.63	MAX	0.84	3		1.27	3	0.00	8	0.00 8
		MIN	-1.39	1		-8.94	7	0.00	8	0.00 8
	0.85	MAX	0.84	3		1.28	8	0.00	8	0.00 8
		MIN	-1.62	1		-9.07	7	0.00	8	0.00 8
	1.06	MAX	0.84	3		1.30	8	0.00	8	0.00 8
		MIN	-1.84	1		-9.20	7	0.00	8	0.00 8
	1.27	MAX	0.84	3		1.32	8	0.00	8	0.00 8
		MIN	-2.07	1		-9.33	7	0.00	8	0.00 8
	1.48	MAX	0.84	3		1.33	8	0.00	8	0.00 8
		MIN	-2.30	1		-9.46	7	0.00	8	0.00 8
	1.69	MAX	0.84	3		1.35	8	0.00	8	0.00 8
		MIN	-2.53	1		-9.58	7	0.00	8	0.00 8
	1.90	MAX	0.84	3		1.37	8	0.00	8	0.00 8
		MIN	-2.76	1		-9.71	7	0.00	8	0.00 8
	2.11	MAX	0.84	3		1.39	8	0.00	8	0.00 8
		MIN	-2.99	1		-9.84	7	0.00	8	0.00 8
	2.33	MAX	0.84	3		1.41	8	0.00	8	0.00 8
		MIN	-3.21	1		-9.97	7	0.00	8	0.00 8
	2.54	MAX	0.84	3		1.42	8	0.00	8	0.00 8
		MIN	-3.44	1		-10.09	7	0.00	8	0.00 8

MAX/MIN FORCE VALUES FOR MEMB 15, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD		MZ/ MY	DIST DIST	LD LD	FX	DIST LD
MAX.		0.84	0.00	3		1.80	0.00	3		
		0.00	0.00	1		0.00	0.00	1	8.50 C	0.00 3
MIN.		-3.44	2.54	1		-10.09	2.54	7		
		0.00	2.54	8		0.00	2.54	8	1.38 T	2.54 7
16	0.00	MAX	0.84	3		1.42	8	0.00	8	0.00 8
		MIN	-3.44	1		-10.09	7	0.00	8	0.00 8
	0.14	MAX	0.84	3		1.65	1	0.00	8	0.00 8
		MIN	-3.63	1		-10.18	7	0.00	8	0.00 8
	0.28	MAX	0.84	3		2.16	1	0.00	8	0.00 8
		MIN	-3.81	1		-10.26	7	0.00	8	0.00 8
	0.41	MAX	0.84	3		2.70	1	0.00	8	0.00 8
		MIN	-4.00	1		-10.34	7	0.00	8	0.00 8
	0.55	MAX	0.84	3		3.26	1	0.00	8	0.00 8
		MIN	-4.18	1		-10.43	7	0.00	8	0.00 8
	0.69	MAX	0.84	3		3.85	1	0.00	8	0.00 8

		MIN	-4.37	1	-10.51	7	0.00	8	0.00	8
	0.83	MAX	0.84	3	4.46	1	0.00	8	0.00	8
		MIN	-4.55	1	-10.59	7	0.00	8	0.00	8
	0.96	MAX	0.84	3	5.10	1	0.00	8	0.00	8
		MIN	-4.74	1	-10.68	7	0.00	8	0.00	8
	1.10	MAX	0.84	3	5.76	1	0.00	8	0.00	8
		MIN	-4.92	1	-10.76	7	0.00	8	0.00	8
	1.24	MAX	0.84	3	6.45	1	0.00	8	0.00	8
		MIN	-5.11	1	-10.84	7	0.00	8	0.00	8
	1.38	MAX	0.84	3	7.17	1	0.00	8	0.00	8
		MIN	-5.29	1	-10.93	7	0.00	8	0.00	8
	1.51	MAX	0.84	3	7.91	1	0.00	8	0.00	8
		MIN	-5.48	1	-11.01	7	0.00	8	0.00	8
	1.65	MAX	0.84	3	8.67	1	0.00	8	0.00	8
		MIN	-5.66	1	-11.09	7	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 16, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.84	0.00	3	8.67	1.65	1				
	0.00	0.00	1	0.00	0.00	1	8.50	C	0.00	3
MIN.	-5.66	1.65	1	-11.09	1.65	7				
	0.00	1.65	8	0.00	1.65	8	1.38	T	1.65	7

17	0.00	MAX	4.92	1	8.25	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	0.14	MAX	4.74	1	7.59	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	0.27	MAX	4.55	1	6.95	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	0.41	MAX	4.37	1	6.33	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	0.55	MAX	4.18	1	5.75	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	0.69	MAX	4.00	1	5.18	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	0.82	MAX	3.81	1	4.65	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	0.96	MAX	3.63	1	4.14	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	1.10	MAX	3.44	1	3.65	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	1.24	MAX	3.26	1	3.19	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	1.37	MAX	3.07	1	2.76	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	1.51	MAX	2.89	1	2.35	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	1.65	MAX	2.70	1	1.96	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 17, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	4.92	0.00	1	8.25	0.00	1				

		0.00	0.00	1	0.00	0.00	1	8.48 C	0.00	3
MIN.		0.00	1.65	8	-10.14	1.65	7			
		0.00	1.65	8	0.00	1.65	8	1.17 T	1.65	7
18	0.00	MAX	2.70	1	1.96	1	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	0.21	MAX	2.48	1	1.43	8	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	0.42	MAX	2.25	1	1.43	8	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	0.62	MAX	2.03	1	1.43	8	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	0.83	MAX	1.80	1	1.43	8	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	1.04	MAX	1.58	1	1.43	8	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	1.25	MAX	1.35	1	1.43	8	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	1.46	MAX	1.13	1	1.43	8	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	1.67	MAX	0.90	1	1.43	8	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	1.88	MAX	0.68	1	1.43	8	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	2.08	MAX	0.45	1	1.43	8	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	2.29	MAX	0.22	1	1.43	8	0.00	8	0.00	8
		MIN	0.00	8	-10.14	7	0.00	8	0.00	8
	2.50	MAX	0.00	7	1.43	8	0.00	8	0.00	8
		MIN	0.00	1	-10.14	7	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 18, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.		2.70	0.00	1	1.96	0.00	1			
		0.00	0.00	1	0.00	0.00	1	8.48 C	0.00	3
MIN.		0.00	2.50	1	-10.14	2.50	7			
		0.00	2.50	8	0.00	2.50	8	1.17 T	2.50	7
25	0.00	MAX	13.33	3	7.85	1	0.00	8	0.00	8
		MIN	-0.19	8	-0.18	8	0.00	8	0.00	8
	0.14	MAX	12.37	3	7.71	1	0.00	8	0.00	8
		MIN	-0.19	8	-0.15	8	0.00	8	0.00	8
	0.29	MAX	11.43	3	7.57	1	0.00	8	0.00	8
		MIN	-0.19	8	-0.12	8	0.00	8	0.00	8
	0.43	MAX	10.50	3	7.44	1	0.00	8	0.00	8
		MIN	-0.19	8	-0.10	8	0.00	8	0.00	8
	0.57	MAX	9.60	3	7.30	1	0.00	8	0.00	8
		MIN	-0.19	8	-0.82	3	0.00	8	0.00	8
	0.72	MAX	8.72	3	7.17	1	0.00	8	0.00	8
		MIN	-0.19	8	-2.14	3	0.00	8	0.00	8
	0.86	MAX	7.86	3	7.03	1	0.00	8	0.00	8
		MIN	-0.19	8	-3.33	3	0.00	8	0.00	8
	1.01	MAX	7.02	3	6.89	1	0.00	8	0.00	8
		MIN	-0.19	8	-4.40	3	0.00	8	0.00	8
	1.15	MAX	6.21	3	6.76	1	0.00	8	0.00	8

		MIN	-0.19	8	-5.35	3	0.00	8	0.00	8
	1.29	MAX	5.41	3	6.62	1	0.00	8	0.00	8
		MIN	-0.19	8	-6.19	3	0.00	8	0.00	8
	1.44	MAX	4.63	3	6.48	1	0.00	8	0.00	8
		MIN	-0.19	8	-6.91	3	0.00	8	0.00	8
	1.58	MAX	3.87	3	6.35	1	0.00	8	0.00	8
		MIN	-0.19	8	-7.52	3	0.00	8	0.00	8
	1.72	MAX	3.14	3	6.21	1	0.00	8	0.00	8
		MIN	-0.19	8	-8.02	3	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 25, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	13.33	0.00	3	7.85	0.00	1			
	0.00	0.00	1	0.00	0.00	1	10.91 C	0.00	1
MIN.	-0.19	1.72	8	-8.02	1.72	3			
	0.00	1.72	8	0.00	1.72	8	0.09 T	1.72	8

27	0.00	MAX	1.38	7	5.34	1	0.00	8	0.00	8
		MIN	-1.09	3	-8.90	3	0.00	8	0.00	8
	0.08	MAX	1.38	7	5.26	1	0.00	8	0.00	8
		MIN	-1.40	3	-8.81	3	0.00	8	0.00	8
	0.15	MAX	1.38	7	5.19	1	0.00	8	0.00	8
		MIN	-1.71	3	-8.69	3	0.00	8	0.00	8
	0.23	MAX	1.38	7	5.12	1	0.00	8	0.00	8
		MIN	-2.01	3	-8.54	3	0.00	8	0.00	8
	0.31	MAX	1.38	7	5.05	1	0.00	8	0.00	8
		MIN	-2.31	3	-8.38	3	0.00	8	0.00	8
	0.38	MAX	1.38	7	4.97	1	0.00	8	0.00	8
		MIN	-2.60	3	-8.19	3	0.00	8	0.00	8
	0.46	MAX	1.38	7	4.90	1	0.00	8	0.00	8
		MIN	-2.88	3	-7.98	3	0.00	8	0.00	8
	0.54	MAX	1.38	7	4.83	1	0.00	8	0.00	8
		MIN	-3.16	3	-7.75	3	0.00	8	0.00	8
	0.61	MAX	1.38	7	4.76	1	0.00	8	0.00	8
		MIN	-3.43	3	-7.50	3	0.00	8	0.00	8
	0.69	MAX	1.38	7	4.68	1	0.00	8	0.00	8
		MIN	-3.70	3	-7.22	3	0.00	8	0.00	8
	0.77	MAX	1.38	7	4.61	1	0.00	8	0.00	8
		MIN	-3.96	3	-6.93	3	0.00	8	0.00	8
	0.84	MAX	1.38	7	4.54	1	0.00	8	0.00	8
		MIN	-4.21	3	-6.62	3	0.00	8	0.00	8
	0.92	MAX	1.38	7	4.46	1	0.00	8	0.00	8
		MIN	-4.46	3	-6.29	3	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 27, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.38	0.00	7	5.34	0.00	1			
	0.00	0.00	1	0.00	0.00	1	7.60 C	0.00	1
MIN.	-4.46	0.92	3	-8.90	0.00	3			
	0.00	0.92	8	0.00	0.92	8	0.09 T	0.92	8

28	0.00	MAX	1.38	7	4.46	1	0.00	8	0.00	8
		MIN	-4.46	3	-6.29	3	0.00	8	0.00	8
	0.14	MAX	1.38	7	4.33	1	0.00	8	0.00	8
		MIN	-4.91	3	-5.61	3	0.00	8	0.00	8
	0.29	MAX	1.38	7	4.19	1	0.00	8	0.00	8
		MIN	-5.34	3	-4.87	3	0.00	8	0.00	8
	0.43	MAX	1.38	7	4.06	1	0.00	8	0.00	8
		MIN	-5.75	3	-4.24	7	0.00	8	0.00	8
	0.57	MAX	1.38	7	3.92	1	0.00	8	0.00	8
		MIN	-6.14	3	-4.44	7	0.00	8	0.00	8
	0.72	MAX	1.38	7	3.78	1	0.00	8	0.00	8
		MIN	-6.51	3	-4.64	7	0.00	8	0.00	8
	0.86	MAX	1.38	7	3.65	1	0.00	8	0.00	8
		MIN	-6.85	3	-4.84	7	0.00	8	0.00	8
	1.01	MAX	1.38	7	3.51	1	0.00	8	0.00	8
		MIN	-7.18	3	-5.04	7	0.00	8	0.00	8
	1.15	MAX	1.38	7	3.37	1	0.00	8	0.00	8
		MIN	-7.49	3	-5.24	7	0.00	8	0.00	8
	1.29	MAX	1.38	7	3.24	1	0.00	8	0.00	8
		MIN	-7.77	3	-5.43	7	0.00	8	0.00	8
	1.44	MAX	1.38	7	3.10	1	0.00	8	0.00	8
		MIN	-8.04	3	-5.63	7	0.00	8	0.00	8
	1.58	MAX	1.38	7	4.12	3	0.00	8	0.00	8
		MIN	-8.28	3	-5.83	7	0.00	8	0.00	8
	1.72	MAX	1.38	7	5.32	3	0.00	8	0.00	8
		MIN	-8.50	3	-6.03	7	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 28, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.38	0.00	7	5.32	1.72	3			
	0.00	0.00	1	0.00	0.00	1	6.60 C	0.00	1
MIN.	-8.50	1.72	3	-6.29	0.00	3			
	0.00	1.72	8	0.00	1.72	8	0.09 T	1.72	8

29	0.00	MAX	0.03	8	0.94	3	0.00	8	0.00	8
		MIN	-0.21	7	-1.41	1	0.00	8	0.00	8
	0.14	MAX	0.03	8	0.94	3	0.00	8	0.00	8
		MIN	-0.21	7	-1.38	1	0.00	8	0.00	8
	0.29	MAX	0.03	8	0.93	3	0.00	8	0.00	8
		MIN	-0.21	7	-1.35	1	0.00	8	0.00	8
	0.43	MAX	0.03	8	0.93	3	0.00	8	0.00	8
		MIN	-0.21	7	-1.33	1	0.00	8	0.00	8
	0.57	MAX	0.03	8	0.93	3	0.00	8	0.00	8
		MIN	-0.21	7	-1.30	1	0.00	8	0.00	8
	0.72	MAX	0.03	8	0.92	3	0.00	8	0.00	8
		MIN	-0.21	7	-1.27	1	0.00	8	0.00	8
	0.86	MAX	0.03	8	0.92	3	0.00	8	0.00	8
		MIN	-0.21	7	-1.25	1	0.00	8	0.00	8
	1.01	MAX	0.03	8	0.91	3	0.00	8	0.00	8
		MIN	-0.21	7	-1.22	1	0.00	8	0.00	8
	1.15	MAX	0.03	8	0.91	3	0.00	8	0.00	8
		MIN	-0.21	7	-1.19	1	0.00	8	0.00	8
	1.29	MAX	0.03	8	0.91	3	0.00	8	0.00	8
		MIN	-0.21	7	-1.17	1	0.00	8	0.00	8
	1.44	MAX	0.03	8	0.90	3	0.00	8	0.00	8

		MIN	-0.21	7	-1.14	1	0.00	8	0.00	8
	1.58	MAX	0.03	8	0.90	3	0.00	8	0.00	8
		MIN	-0.21	7	-1.11	1	0.00	8	0.00	8
	1.72	MAX	0.03	8	0.90	3	0.00	8	0.00	8
		MIN	-0.21	7	-1.09	1	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 29, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.		0.03	0.00	8	0.94	0.00	3			
		0.00	0.00	1	0.00	0.00	1	15.43 C	0.00	1
MIN.		-0.21	1.72	7	-1.41	0.00	1			
		0.00	1.72	8	0.00	1.72	8	0.84 T	1.72	3
31	0.00	MAX	0.03	8	0.87	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.92	1	0.00	8	0.00	8
	0.08	MAX	0.03	8	0.87	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.90	1	0.00	8	0.00	8
	0.15	MAX	0.03	8	0.87	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.89	1	0.00	8	0.00	8
	0.23	MAX	0.03	8	0.87	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.87	1	0.00	8	0.00	8
	0.31	MAX	0.03	8	0.86	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.86	1	0.00	8	0.00	8
	0.38	MAX	0.03	8	0.86	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.84	1	0.00	8	0.00	8
	0.46	MAX	0.03	8	0.86	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.83	1	0.00	8	0.00	8
	0.54	MAX	0.03	8	0.86	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.82	1	0.00	8	0.00	8
	0.61	MAX	0.03	8	0.86	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.80	1	0.00	8	0.00	8
	0.69	MAX	0.03	8	0.86	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.79	1	0.00	8	0.00	8
	0.77	MAX	0.03	8	0.85	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.77	1	0.00	8	0.00	8
	0.84	MAX	0.03	8	0.85	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.76	1	0.00	8	0.00	8
	0.92	MAX	0.03	8	0.85	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.74	1	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 31, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.		0.03	0.00	8	0.87	0.00	3			
		0.00	0.00	1	0.00	0.00	1	13.01 C	0.00	1
MIN.		-0.21	0.92	7	-0.92	0.00	1			
		0.00	0.92	8	0.00	0.92	8	0.84 T	0.92	3
32	0.00	MAX	0.03	8	0.85	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.74	1	0.00	8	0.00	8
	0.14	MAX	0.03	8	0.85	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.72	1	0.00	8	0.00	8
	0.29	MAX	0.03	8	0.84	3	0.00	8	0.00	8
		MIN	-0.21	7	-0.69	1	0.00	8	0.00	8

0.43	MAX	0.03	8	0.84	3	0.00	8	0.00	8
	MIN	-0.21	7	-0.66	1	0.00	8	0.00	8
0.57	MAX	0.03	8	0.83	3	0.00	8	0.00	8
	MIN	-0.21	7	-0.64	1	0.00	8	0.00	8
0.72	MAX	0.03	8	0.83	3	0.00	8	0.00	8
	MIN	-0.21	7	-0.61	1	0.00	8	0.00	8
0.86	MAX	0.03	8	0.83	3	0.00	8	0.00	8
	MIN	-0.21	7	-0.58	1	0.00	8	0.00	8
1.01	MAX	0.03	8	0.82	3	0.00	8	0.00	8
	MIN	-0.21	7	-0.56	1	0.00	8	0.00	8
1.15	MAX	0.03	8	0.83	7	0.00	8	0.00	8
	MIN	-0.21	7	-0.53	1	0.00	8	0.00	8
1.29	MAX	0.03	8	0.86	7	0.00	8	0.00	8
	MIN	-0.21	7	-0.50	1	0.00	8	0.00	8
1.44	MAX	0.03	8	0.89	7	0.00	8	0.00	8
	MIN	-0.21	7	-0.48	1	0.00	8	0.00	8
1.58	MAX	0.03	8	0.92	7	0.00	8	0.00	8
	MIN	-0.21	7	-0.45	1	0.00	8	0.00	8
1.72	MAX	0.03	8	0.95	7	0.00	8	0.00	8
	MIN	-0.21	7	-0.42	1	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 32, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.03	0.00	8	0.95	1.72	7			
	0.00	0.00	1	0.00	0.00	1	12.35 C	0.00	1
MIN.	-0.21	1.72	7	-0.74	0.00	1			
	0.00	1.72	8	0.00	1.72	8	0.84 T	1.72	3

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

168. FINISH

********** END OF THE STAAD.Pro RUN **********

```
INPUT FILE: track ll.STD
     1. STAAD PLANE
     2. START JOB INFORMATION
     3. ENGINEER DATE 29-NOV-06
     4. END JOB INFORMATION
     5. INPUT WIDTH 79
     6. PAGE LENGTH 1000
     7. UNIT METER MTON
     8. JOINT COORDINATES
     9. 1   0.000     0.000     0.000
    10. 2   1.725     0.000     0.000
    11. 3   4.188     0.000     0.000
    12. 4   6.725     0.000     0.000
    13. 5   8.375     0.000     0.000
    14. 6  10.025     0.000     0.000
    15. 7  12.525     0.000     0.000
    16. 8  15.025     0.000     0.000
    17. 9  16.675     0.000     0.000
    18. 10 18.325     0.000     0.000
    19. 11 20.863     0.000     0.000
    20. 12 23.325     0.000     0.000
    21. 13 25.050     0.000     0.000
    22. 14 0.000      5.291     0.000
    23. 15 1.725      5.291     0.000
    24. 16 4.188      5.291     0.000
    25. 17 6.725      5.291     0.000
    26. 18 8.375      5.291     0.000
    27. 19 10.025     5.291     0.000
    28. 20 12.525     5.291     0.000
    29. 21 15.025     5.291     0.000
    30. 22 16.675     5.291     0.000
    31. 23 18.325     5.291     0.000
    32. 24 20.863     5.291     0.000
    33. 25 23.325     5.291     0.000
    34. 26 25.050     5.291     0.000
    35. 27 0.000      1.725     0.000
    36. 28 0.000      2.646     0.000
    37. 29 0.000      3.566     0.000
    38. 30 8.375      1.725     0.000
    39. 31 8.375      2.646     0.000
    40. 32 8.375      3.566     0.000
    41. 33 16.675     1.725     0.000
    42. 34 16.675     2.646     0.000
    43. 35 16.675     3.566     0.000
    44. 36 25.050     1.725     0.000
    45. 37 25.050     2.646     0.000
    46. 38 25.050     3.566     0.000
    48. MEMBER INCIDENCES
    49. 1         1         2
    50. 2         2         3
    51. 3         3         4
    52. 4         4         5
    53. 5         5         6
    54. 6         6         7
    55. 7         7         8
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 56. 8         8         9
 57. 9         9        10
 58. 10        10        11
 59. 11        11        12
 60. 12        12        13
 61. 13        14        15
 62. 14        15        16
 63. 15        16        17
 64. 16        17        18
 65. 17        18        19
 66. 18        19        20
 67. 19        20        21
 68. 20        21        22
 69. 21        22        23
 70. 22        23        24
 71. 23        24        25
 72. 24        25        26
 73. 25         1        27
 74. 26        27        28
 75. 27        28        29
 76. 28        29        14
 77. 29         5        30
 78. 30        30        31
 79. 31        31        32
 80. 32        32        18
 81. 33         9        33
 82. 34        33        34
 83. 35        34        35
 84. 36        35        22
 85. 37        13        36
 86. 38        36        37
 87. 39        37        38
 88. 40        38        26
 89. MEMBER PROPERTY INDIAN
 90. 2 3 6 7 10 11 14 15 18 19 22 23 26 27 38 39 PRI YD .45 ZD 1.
 91. 30 31 34 35 PRI YD .3 ZD 1.
 92. 1 4 5 8 9 12 13 16 17 20 21 24 25 28 37 40 PRI AX .561 IZ .0158 YD .575
 93. 29 32 33 36 PRI AX .425 IZ .03054 YD .425
 94. CONSTANT
 95. E 3E6 ALL
 96. DENSITY 2.4 ALL
 97. ALPHA .0000117 ALL
 98. SUPPORT
 99. 5 PINNED
100. 1 9 13 FIXED BUT FX MZ
101. DEFINE MOVING LOAD
102. TYPE 1 LOA 15.4 15.4 15.4 15.4 15.4 DIS 1.1425 1.1425 1.1425 1.1425
103. LOAD GENERATION 230
104. TYPE 1 -3.6 5.291 0 XINC 0.1
105. PERFORM ANALYSIS
106. PRINT MAX FORCE LIST 13 TO 18
     MAX      FORCE    LIST     13
```

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
13	MAX	56.21	0.00	37	56.75	0.00	50			
		0.00	0.00	1	0.00	0.00	1	12.29 C	0.00	50
	MIN	-4.53	1.72	131	-17.52	1.72	20			
		0.00	1.72	230	0.00	1.72	230	1.69 T	1.72	126
14	MAX	37.82	0.00	55	8.47	2.46	134			
		0.00	0.00	1	0.00	0.00	1	12.29 C	0.00	50
	MIN	-17.48	2.46	33	-45.88	2.26	54			
		0.00	2.46	230	0.00	2.46	230	1.69 T	2.46	126
15	MAX	14.85	0.00	79	19.93	2.54	132			
		0.00	0.00	1	0.00	0.00	1	12.29 C	0.00	50
	MIN	-42.29	2.54	58	-45.69	0.00	56			
		0.00	2.54	230	0.00	2.54	230	1.69 T	2.54	126
16	MAX	1.28	0.00	230	71.34	1.65	61			
		0.00	0.00	1	0.00	0.00	1	12.29 C	0.00	50
	MIN	-58.77	1.65	75	-7.19	1.65	229			
		0.00	1.65	230	0.00	1.65	230	1.69 T	1.65	126
17	MAX	57.29	0.00	121	65.72	0.00	134			
		0.00	0.00	1	0.00	0.00	1	9.66 C	0.00	139
	MIN	-5.01	1.65	214	-12.20	0.00	213			
		0.00	1.65	230	0.00	1.65	230	1.92 T	1.65	204
18	MAX	39.99	0.00	138	21.14	0.00	63			
		0.00	0.00	1	0.00	0.00	1	9.66 C	0.00	139
	MIN	-15.25	2.50	116	-42.60	2.50	139			
		0.00	2.50	230	0.00	2.50	230	1.92 T	2.50	204

107. PRINT FORCE ENVELOPE LIST 13 TO 18
FORCE ENVELOPE LIST 13

MEMB	DISTANCE		FY	LD	MZ	LD	FZ	LD	MY	LD
13	0.00	MAX	56.21	37	56.75	50	0.00	230	0.00	230
		MIN	-4.53	131	-10.58	129	0.00	230	0.00	230
	0.14	MAX	54.27	39	50.74	52	0.00	230	0.00	230
		MIN	-4.53	131	-9.93	129	0.00	230	0.00	230
	0.29	MAX	53.28	40	45.02	54	0.00	230	0.00	230
		MIN	-4.53	131	-9.28	129	0.00	230	0.00	230
	0.43	MAX	51.29	42	39.57	56	0.00	230	0.00	230
		MIN	-4.53	131	-8.63	129	0.00	230	0.00	230
	0.57	MAX	50.28	43	34.39	58	0.00	230	0.00	230
		MIN	-4.53	131	-7.99	129	0.00	230	0.00	230
	0.72	MAX	48.24	45	29.49	60	0.00	230	0.00	230
		MIN	-4.53	131	-7.34	129	0.00	230	0.00	230
	0.86	MAX	47.21	46	24.90	62	0.00	230	0.00	230
		MIN	-4.53	131	-6.69	128	0.00	230	0.00	230
	1.01	MAX	45.13	48	20.62	64	0.00	230	0.00	230
		MIN	-4.53	131	-6.47	1	0.00	230	0.00	230

	1.15	MAX	44.09	49	16.68	67	0.00	230	0.00	230
		MIN	-4.53	131	-7.68	14	0.00	230	0.00	230
	1.29	MAX	43.05	50	13.12	69	0.00	230	0.00	230
		MIN	-4.53	131	-10.15	16	0.00	230	0.00	230
	1.44	MAX	40.95	52	9.94	72	0.00	230	0.00	230
		MIN	-4.53	131	-12.78	17	0.00	230	0.00	230
	1.58	MAX	39.91	53	7.16	75	0.00	230	0.00	230
		MIN	-4.53	131	-14.94	19	0.00	230	0.00	230
	1.72	MAX	37.82	55	4.82	79	0.00	230	0.00	230
		MIN	-4.53	131	-17.52	20	0.00	230	0.00	230

MAX/MIN FORCE VALUES FOR MEMB 13, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	56.21	0.00	37	56.75	0.00	50			
	0.00	0.00	1	0.00	0.00	1	12.29 C	0.00	50
MIN.	-4.53	1.72	131	-17.52	1.72	20			
	0.00	1.72	230	0.00	1.72	230	1.69 T	1.72	126

14	0.00	MAX	37.82	55	4.82	79	0.00	230	0.00	230
		MIN	-4.53	131	-17.52	20	0.00	230	0.00	230
	0.21	MAX	35.75	57	2.25	85	0.00	230	0.00	230
		MIN	-4.53	131	-21.10	33	0.00	230	0.00	230
	0.41	MAX	33.69	59	0.81	230	0.00	230	0.00	230
		MIN	-4.66	12	-24.88	35	0.00	230	0.00	230
	0.62	MAX	31.64	61	0.96	156	0.00	230	0.00	230
		MIN	-5.38	14	-28.95	49	0.00	230	0.00	230
	0.82	MAX	29.61	63	1.55	151	0.00	230	0.00	230
		MIN	-6.39	16	-32.55	40	0.00	230	0.00	230
	1.03	MAX	27.60	65	2.25	146	0.00	230	0.00	230
		MIN	-7.44	18	-35.95	42	0.00	230	0.00	230
	1.23	MAX	25.63	67	3.06	141	0.00	230	0.00	230
		MIN	-8.52	20	-38.86	44	0.00	230	0.00	230
	1.44	MAX	23.71	69	3.93	138	0.00	230	0.00	230
		MIN	-9.65	22	-41.28	46	0.00	230	0.00	230
	1.64	MAX	21.83	71	4.82	137	0.00	230	0.00	230
		MIN	-10.81	24	-43.21	48	0.00	230	0.00	230
	1.85	MAX	20.01	73	5.72	135	0.00	230	0.00	230
		MIN	-12.82	27	-44.63	50	0.00	230	0.00	230
	2.05	MAX	18.23	75	6.64	135	0.00	230	0.00	230
		MIN	-14.34	29	-45.52	52	0.00	230	0.00	230
	2.26	MAX	16.51	77	7.56	134	0.00	230	0.00	230
		MIN	-15.89	31	-45.88	54	0.00	230	0.00	230
	2.46	MAX	14.85	79	8.47	134	0.00	230	0.00	230
		MIN	-17.48	33	-45.69	56	0.00	230	0.00	230

MAX/MIN FORCE VALUES FOR MEMB 14, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	37.82	0.00	55	8.47	2.46	134			
	0.00	0.00	1	0.00	0.00	1	12.29 C	0.00	50
MIN.	-17.48	2.46	33	-45.88	2.26	54			
	0.00	2.46	230	0.00	2.46	230	1.69 T	2.46	126

15	0.00	MAX	14.85	79	8.47	134	0.00	230	0.00	230
		MIN	-17.48	33	-45.69	56	0.00	230	0.00	230
	0.21	MAX	13.26	81	9.43	133	0.00	230	0.00	230
		MIN	-19.11	35	-44.92	58	0.00	230	0.00	230
	0.42	MAX	10.99	84	10.38	133	0.00	230	0.00	230
		MIN	-20.79	37	-43.64	60	0.00	230	0.00	230
	0.63	MAX	9.56	86	11.33	133	0.00	230	0.00	230
		MIN	-22.73	39	-41.84	62	0.00	230	0.00	230
	0.85	MAX	8.19	88	12.28	133	0.00	230	0.00	230
		MIN	-24.71	41	-39.53	64	0.00	230	0.00	230
	1.06	MAX	6.90	90	13.24	132	0.00	230	0.00	230
		MIN	-26.72	43	-36.75	66	0.00	230	0.00	230
	1.27	MAX	5.67	92	14.19	132	0.00	230	0.00	230
		MIN	-28.76	45	-33.67	69	0.00	230	0.00	230
	1.48	MAX	4.52	94	15.15	132	0.00	230	0.00	230
		MIN	-30.83	47	-30.20	71	0.00	230	0.00	230
	1.69	MAX	3.45	96	16.10	132	0.00	230	0.00	230
		MIN	-33.95	50	-26.33	73	0.00	230	0.00	230
	1.90	MAX	2.46	98	17.06	132	0.00	230	0.00	230
		MIN	-36.05	52	-22.00	75	0.00	230	0.00	230
	2.11	MAX	1.28	230	18.01	132	0.00	230	0.00	230
		MIN	-38.14	54	-17.24	77	0.00	230	0.00	230
	2.33	MAX	1.28	230	18.97	132	0.00	230	0.00	230
		MIN	-40.22	56	-12.19	79	0.00	230	0.00	230
	2.54	MAX	1.28	230	19.93	132	0.00	230	0.00	230
		MIN	-42.29	58	-6.88	81	0.00	230	0.00	230

MAX/MIN FORCE VALUES FOR MEMB 15, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	14.85	0.00	79	19.93	2.54	132			
	0.00	0.00	1	0.00	0.00	1	12.29 C	0.00	50
MIN.	-42.29	2.54	58	-45.69	0.00	56			
	0.00	2.54	230	0.00	2.54	230	1.69 T	2.54	126

16	0.00	MAX	1.28	230	19.93	132	0.00	230	0.00	230
		MIN	-42.29	58	-6.88	81	0.00	230	0.00	230
	0.14	MAX	1.28	230	20.55	132	0.00	230	0.00	230
		MIN	-43.31	59	-5.27	228	0.00	230	0.00	230
	0.28	MAX	1.28	230	21.17	132	0.00	230	0.00	230
		MIN	-45.36	61	-5.45	228	0.00	230	0.00	230
	0.41	MAX	1.28	230	23.35	47	0.00	230	0.00	230
		MIN	-46.38	62	-5.62	228	0.00	230	0.00	230
	0.55	MAX	1.28	230	27.75	49	0.00	230	0.00	230
		MIN	-48.40	64	-5.79	228	0.00	230	0.00	230
	0.69	MAX	1.28	230	32.43	51	0.00	230	0.00	230
		MIN	-49.40	65	-5.97	228	0.00	230	0.00	230
	0.83	MAX	1.28	230	37.35	53	0.00	230	0.00	230
		MIN	-50.39	66	-6.14	229	0.00	230	0.00	230
	0.96	MAX	1.28	230	42.51	54	0.00	230	0.00	230
		MIN	-52.33	68	-6.32	229	0.00	230	0.00	230
	1.10	MAX	1.28	230	47.88	56	0.00	230	0.00	230
		MIN	-53.29	69	-6.49	229	0.00	230	0.00	230
	1.24	MAX	1.28	230	53.46	57	0.00	230	0.00	230
		MIN	-54.23	70	-6.67	229	0.00	230	0.00	230

	1.38	MAX	1.28	230	59.22	58	0.00	230	0.00	230
		MIN	-56.09	72	-6.84	229	0.00	230	0.00	230
	1.51	MAX	1.28	230	65.18	60	0.00	230	0.00	230
		MIN	-56.99	73	-7.02	229	0.00	230	0.00	230
	1.65	MAX	1.28	230	71.34	61	0.00	230	0.00	230
		MIN	-58.77	75	-7.19	229	0.00	230	0.00	230

MAX/MIN FORCE VALUES FOR MEMB 16, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.28	0.00	230	71.34	1.65	61			
	0.00	0.00	1	0.00	0.00	1	12.29 C	0.00	50
MIN.	-58.77	1.65	75	-7.19	1.65	229			
	0.00	1.65	230	0.00	1.65	230	1.69 T	1.65	126

17	0.00	MAX	57.29	121	65.72	134	0.00	230	0.00	230
		MIN	-5.01	214	-12.20	213	0.00	230	0.00	230
	0.14	MAX	55.40	123	59.69	135	0.00	230	0.00	230
		MIN	-5.01	214	-11.51	213	0.00	230	0.00	230
	0.27	MAX	54.44	124	53.87	137	0.00	230	0.00	230
		MIN	-5.01	214	-10.83	213	0.00	230	0.00	230
	0.41	MAX	53.46	125	48.29	138	0.00	230	0.00	230
		MIN	-5.01	214	-10.14	213	0.00	230	0.00	230
	0.55	MAX	51.48	127	42.91	140	0.00	230	0.00	230
		MIN	-5.01	214	-9.45	213	0.00	230	0.00	230
	0.69	MAX	50.47	128	37.77	141	0.00	230	0.00	230
		MIN	-5.01	214	-8.77	212	0.00	230	0.00	230
	0.82	MAX	49.45	129	32.85	143	0.00	230	0.00	230
		MIN	-5.01	214	-8.08	212	0.00	230	0.00	230
	0.96	MAX	47.38	131	28.19	145	0.00	230	0.00	230
		MIN	-5.01	214	-7.40	212	0.00	230	0.00	230
	1.10	MAX	46.34	132	23.89	64	0.00	230	0.00	230
		MIN	-5.01	214	-6.71	212	0.00	230	0.00	230
	1.24	MAX	44.23	134	23.21	64	0.00	230	0.00	230
		MIN	-5.01	214	-6.03	212	0.00	230	0.00	230
	1.37	MAX	43.17	135	22.52	63	0.00	230	0.00	230
		MIN	-5.01	214	-5.34	212	0.00	230	0.00	230
	1.51	MAX	42.11	136	21.83	63	0.00	230	0.00	230
		MIN	-5.01	214	-4.92	113	0.00	230	0.00	230
	1.65	MAX	39.99	138	21.14	63	0.00	230	0.00	230
		MIN	-5.01	214	-8.09	114	0.00	230	0.00	230

MAX/MIN FORCE VALUES FOR MEMB 17, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	57.29	0.00	121	65.72	0.00	134			
	0.00	0.00	1	0.00	0.00	1	9.66 C	0.00	139
MIN.	-5.01	1.65	214	-12.20	0.00	213			
	0.00	1.65	230	0.00	1.65	230	1.92 T	1.65	204

18	0.00	MAX	39.99	138	21.14	63	0.00	230	0.00	230
		MIN	-5.01	214	-8.09	114	0.00	230	0.00	230
	0.21	MAX	37.86	140	20.10	63	0.00	230	0.00	230
		MIN	-5.01	214	-13.09	117	0.00	230	0.00	230
	0.42	MAX	35.74	142	19.06	63	0.00	230	0.00	230

	MIN	-5.01	214	-17.92	119	0.00	230	0.00	230
0.62	MAX	33.62	144	18.02	63	0.00	230	0.00	230
	MIN	-5.01	214	-22.42	121	0.00	230	0.00	230
0.83	MAX	31.50	146	16.98	63	0.00	230	0.00	230
	MIN	-5.01	214	-26.54	123	0.00	230	0.00	230
1.04	MAX	29.41	148	15.94	63	0.00	230	0.00	230
	MIN	-5.01	214	-30.26	125	0.00	230	0.00	230
1.25	MAX	27.35	150	14.90	63	0.00	230	0.00	230
	MIN	-6.24	104	-33.55	127	0.00	230	0.00	230
1.46	MAX	25.32	152	13.86	63	0.00	230	0.00	230
	MIN	-7.57	106	-36.40	129	0.00	230	0.00	230
1.67	MAX	23.34	154	12.81	63	0.00	230	0.00	230
	MIN	-8.96	108	-38.68	131	0.00	230	0.00	230
1.88	MAX	21.41	156	11.77	62	0.00	230	0.00	230
	MIN	-10.43	110	-40.44	133	0.00	230	0.00	230
2.08	MAX	18.61	159	10.74	62	0.00	230	0.00	230
	MIN	-11.97	112	-41.69	135	0.00	230	0.00	230
2.29	MAX	16.81	161	9.70	62	0.00	230	0.00	230
	MIN	-13.58	114	-42.41	137	0.00	230	0.00	230
2.50	MAX	15.08	163	8.66	217	0.00	230	0.00	230
	MIN	-15.25	116	-42.60	139	0.00	230	0.00	230

MAX/MIN FORCE VALUES FOR MEMB 18, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	39.99	0.00	138	21.14	0.00	63			
	0.00	0.00	1	0.00	0.00	1	9.66 C	0.00	139
MIN.	-15.25	2.50	116	-42.60	2.50	139			
	0.00	2.50	230	0.00	2.50	230	1.92 T	2.50	204

108. FINISH

********** END OF THE STAAD.Pro RUN **********

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   102. DEFINE MOVING LOAD
   103. TYPE 1 LOA 10 15 15 21.25 21.25 21.25 21.25 DIST 3.96 1.52 2.13 1.37
3.05 1.37
   104. TYPE 2 LOA 21.25 21.25 21.25 21.25 15 15 10 DIST 1.37 3.05 1.37 2.13
1.52 3.96
   105. LOAD GENERATION 249
   106. TYPE 1 -13.4 5.291 0 XINC 0.13
   107. LOAD GENERATION 249
   108. TYPE 2 -13.4 5.291 0 XINC 0.13
   109. PERFORM ANALYSIS
   110. LOAD LIST 1 TO 249
   111. PRINT  MAX FORCE LIST 13 TO 18
        MAX      FORCE    LIST     13

   MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

  MEMB          FY/    DIST  LD        MZ/    DIST  LD
                FZ     DIST  LD        MY     DIST  LD        FX     DIST  LD
    13 MAX     53.44   0.00   46      48.89   0.00   56
               0.00    0.00    1       0.00   0.00    1     10.59 C   0.00   56
       MIN     -4.21   1.72   14     -18.10   1.72   25
               0.00    1.72  249       0.00   1.72  249      0.25 T   1.72  153
    14 MAX     36.38   0.00   59       2.55   2.46  161
               0.00    0.00    1       0.00   0.00    1     10.59 C   0.00   56
       MIN    -17.80   2.46   33     -39.65   2.26   66
               0.00    2.46  249       0.00   2.46  249      0.25 T   2.46  153
    15 MAX     13.25   0.00   44      17.08   2.54  138
               0.00    0.00    1       0.00   0.00    1     10.59 C   0.00   56
       MIN    -43.61   2.54   86     -39.25   0.00   67
               0.00    2.54  249       0.00   2.54  249      0.25 T   2.54  153
    16 MAX      0.98   0.00  221      80.65   1.65   88
               0.00    0.00    1       0.00   0.00    1     10.59 C   0.00   56
       MIN    -58.24   1.65   99      -5.13   1.65  221
               0.00    1.65  249       0.00   1.65  249      0.25 T   1.65  153
    17 MAX     57.47   0.00  110      69.12   0.00  118
               0.00    0.00    1       0.00   0.00    1      7.70 C   0.00  124
       MIN     -1.99   1.65  226      -4.10   0.00  227
               0.00    1.65  249       0.00   1.65  249      0.35 T   1.65   46
    18 MAX     39.89   0.00  123      17.84   0.00   55
               0.00    0.00    1       0.00   0.00    1      7.70 C   0.00  124
       MIN    -14.12   2.50  131     -34.94   2.29  140
               0.00    2.50  249       0.00   2.50  249      0.35 T   2.50   46

   112. LOAD LIST 250 TO 498
   113. PRINT MAX FORCE  LIST 13 TO 18
        MAX      FORCE    LIST     13

   MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

  MEMB          FY/    DIST  LD        MZ/    DIST  LD
                FZ     DIST  LD        MY     DIST  LD        FX     DIST  LD

    13 MAX     52.17   0.00  320      48.14   0.00  332
               0.00    0.00  250       0.00   0.00  250     10.47 C   0.00  333
       MIN     -3.39   1.72  427     -15.93   1.72  366
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		0.00	1.72	498	0.00	1.72	498	1.20 T	1.72	431
14	MAX	36.30	0.00	333	6.41	2.46	426			
		0.00	0.00	250	0.00	0.00	250	10.47 C	0.00	333
	MIN	-17.75	2.46	374	-40.18	2.26	339			
		0.00	2.46	498	0.00	2.46	498	1.20 T	2.46	431
15	MAX	12.24	0.00	352	18.46	2.54	382			
		0.00	0.00	250	0.00	0.00	250	10.47 C	0.00	333
	MIN	-41.74	2.54	360	-39.66	0.00	341			
		0.00	2.54	498	0.00	2.54	498	1.20 T	2.54	431
16	MAX	1.03	0.00	491	73.77	1.65	365			
		0.00	0.00	250	0.00	0.00	250	10.47 C	0.00	333
	MIN	-57.81	1.65	372	-6.10	1.65	492			
		0.00	1.65	498	0.00	1.65	498	1.20 T	1.65	431
17	MAX	56.96	0.00	384	74.76	0.00	394			
		0.00	0.00	250	0.00	0.00	250	7.70 C	0.00	423
	MIN	-4.15	1.65	492	-9.75	0.00	492			
		0.00	1.65	498	0.00	1.65	498	0.24 T	1.65	498
18	MAX	41.12	0.00	397	18.26	0.00	344			
		0.00	0.00	250	0.00	0.00	250	7.70 C	0.00	423
	MIN	-16.51	2.50	438	-34.81	2.50	405			
		0.00	2.50	498	0.00	2.50	498	0.24 T	2.50	498

114. LOAD LIST 1 TO 249

115. PRINT FORCE ENVELOPE LIST 13 TO 18

FORCE ENVELOPE LIST 13

MEMB	DISTANCE		FY	LD	MZ	LD	FZ	LD	MY	LD
13	0.00	MAX	53.44	46	48.89	56	0.00	249	0.00	249
		MIN	-1.19	156	-2.71	153	0.00	249	0.00	249
	0.14	MAX	52.13	47	43.20	57	0.00	249	0.00	249
		MIN	-1.19	156	-2.54	153	0.00	249	0.00	249
	0.29	MAX	50.82	48	37.87	59	0.00	249	0.00	249
		MIN	-1.19	156	-2.54	3	0.00	249	0.00	249
	0.43	MAX	49.50	49	32.82	61	0.00	249	0.00	249
		MIN	-1.19	156	-3.74	4	0.00	249	0.00	249
	0.57	MAX	48.18	50	27.96	61	0.00	249	0.00	249
		MIN	-1.19	156	-4.92	5	0.00	249	0.00	249
	0.72	MAX	45.54	52	23.26	62	0.00	249	0.00	249
		MIN	-1.24	6	-6.13	7	0.00	249	0.00	249
	0.86	MAX	44.23	53	18.58	62	0.00	249	0.00	249
		MIN	-1.51	7	-7.56	8	0.00	249	0.00	249
	1.01	MAX	42.91	54	14.08	35	0.00	249	0.00	249
		MIN	-1.79	8	-8.95	9	0.00	249	0.00	249
	1.15	MAX	41.60	55	10.77	35	0.00	249	0.00	249
		MIN	-2.08	9	-10.31	10	0.00	249	0.00	249
	1.29	MAX	40.29	56	7.47	35	0.00	249	0.00	249
		MIN	-2.37	10	-11.61	11	0.00	249	0.00	249
	1.44	MAX	38.98	57	4.27	103	0.00	249	0.00	249
		MIN	-3.11	12	-13.73	22	0.00	249	0.00	249
	1.58	MAX	37.68	58	2.82	104	0.00	249	0.00	249
		MIN	-3.65	13	-15.95	23	0.00	249	0.00	249
	1.72	MAX	36.38	59	1.40	221	0.00	249	0.00	249
		MIN	-4.21	14	-18.10	25	0.00	249	0.00	249

MAX/MIN FORCE VALUES FOR MEMB 13, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD

MAX.		53.44	0.00	46	48.89	0.00	56				
		0.00	0.00	1	0.00	0.00	1	10.59 C	0.00	56	
MIN.		-4.21	1.72	14	-18.10	1.72	25				
		0.00	1.72	249	0.00	1.72	249	0.25 T	1.72	153	
14	0.00	MAX	36.38	59	1.40	221	0.00	249	0.00	249	
		MIN	-4.21	14	-18.10	25	0.00	249	0.00	249	
	0.21	MAX	33.82	61	1.20	221	0.00	249	0.00	249	
		MIN	-4.78	15	-21.17	26	0.00	249	0.00	249	
	0.41	MAX	32.52	62	1.00	221	0.00	249	0.00	249	
		MIN	-5.99	17	-24.04	28	0.00	249	0.00	249	
	0.62	MAX	29.69	64	0.80	221	0.00	249	0.00	249	
		MIN	-7.28	19	-26.30	63	0.00	249	0.00	249	
	0.82	MAX	26.88	66	0.86	170	0.00	249	0.00	249	
		MIN	-7.95	20	-30.35	65	0.00	249	0.00	249	
	1.03	MAX	25.48	67	1.03	167	0.00	249	0.00	249	
		MIN	-9.32	22	-32.94	67	0.00	249	0.00	249	
	1.23	MAX	23.02	35	1.22	165	0.00	249	0.00	249	
		MIN	-10.03	23	-35.53	68	0.00	249	0.00	249	
	1.44	MAX	21.96	36	1.43	163	0.00	249	0.00	249	
		MIN	-11.49	25	-37.30	70	0.00	249	0.00	249	
	1.64	MAX	19.81	38	1.65	163	0.00	249	0.00	249	
		MIN	-12.24	26	-38.39	71	0.00	249	0.00	249	
	1.85	MAX	17.63	40	1.87	162	0.00	249	0.00	249	
		MIN	-13.77	28	-39.31	73	0.00	249	0.00	249	
	2.05	MAX	16.54	41	2.09	161	0.00	249	0.00	249	
		MIN	-15.36	30	-39.51	64	0.00	249	0.00	249	
	2.26	MAX	14.35	43	2.32	161	0.00	249	0.00	249	
		MIN	-16.17	31	-39.65	66	0.00	249	0.00	249	
	2.46	MAX	13.25	44	2.55	161	0.00	249	0.00	249	
		MIN	-17.80	33	-39.25	67	0.00	249	0.00	249	

MAX/MIN FORCE VALUES FOR MEMB 14, AMONGST ALL SECT LOCATIONS											
		FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.		36.38	0.00	59	2.55	2.46	161				
		0.00	0.00	1	0.00	0.00	1	10.59 C		0.00	56
MIN.		-17.80	2.46	33	-39.65	2.26	66				
		0.00	2.46	249	0.00	2.46	249	0.25 T		2.46	153
15	0.00	MAX	13.25	44	2.55	161	0.00	249	0.00	249	
		MIN	-17.80	33	-39.25	67	0.00	249	0.00	249	
	0.21	MAX	10.94	46	2.79	160	0.00	249	0.00	249	
		MIN	-18.63	34	-38.62	69	0.00	249	0.00	249	
	0.42	MAX	8.32	48	3.03	160	0.00	249	0.00	249	
		MIN	-21.19	70	-37.71	47	0.00	249	0.00	249	
	0.63	MAX	7.00	49	3.27	159	0.00	249	0.00	249	
		MIN	-23.93	72	-36.06	48	0.00	249	0.00	249	
	0.85	MAX	4.36	51	3.51	159	0.00	249	0.00	249	
		MIN	-25.28	73	-34.81	50	0.00	249	0.00	249	
	1.06	MAX	3.04	52	4.68	132	0.00	249	0.00	249	
		MIN	-28.18	75	-32.71	52	0.00	249	0.00	249	
	1.27	MAX	0.98	221	6.29	133	0.00	249	0.00	249	
		MIN	-29.65	76	-29.89	53	0.00	249	0.00	249	
	1.48	MAX	0.98	221	7.97	134	0.00	249	0.00	249	

		MIN	-32.57	78	-27.03	55	0.00	249	0.00	249
	1.69	MAX	0.98	221	9.70	135	0.00	249	0.00	249
		MIN	-35.45	80	-23.05	46	0.00	249	0.00	249
	1.90	MAX	0.98	221	11.48	136	0.00	249	0.00	249
		MIN	-36.86	81	-19.66	48	0.00	249	0.00	249
	2.11	MAX	0.98	221	13.30	137	0.00	249	0.00	249
		MIN	-39.63	83	-15.06	50	0.00	249	0.00	249
	2.33	MAX	0.98	221	15.17	137	0.00	249	0.00	249
		MIN	-42.31	85	-10.49	51	0.00	249	0.00	249
	2.54	MAX	0.98	221	17.08	138	0.00	249	0.00	249
		MIN	-43.61	86	-5.13	53	0.00	249	0.00	249

MAX/MIN FORCE VALUES FOR MEMB 15, AMONGST ALL SECT LOCATIONS										
	FY/	DIST	LD	MZ/	DIST	LD				
	FZ	DIST	LD	MY	DIST	LD	FX		DIST	LD
MAX.	13.25	0.00	44	17.08	2.54	138				
	0.00	0.00	1	0.00	0.00	1	10.59	C	0.00	56
MIN.	-43.61	2.54	86	-39.25	0.00	67				
	0.00	2.54	249	0.00	2.54	249	0.25	T	2.54	153

16	0.00	MAX	0.98	221	17.08	138	0.00	249	0.00	249
		MIN	-43.61	86	-5.13	53	0.00	249	0.00	249
	0.14	MAX	0.98	221	18.46	79	0.00	249	0.00	249
		MIN	-44.88	87	-3.65	221	0.00	249	0.00	249
	0.28	MAX	0.98	221	23.33	80	0.00	249	0.00	249
		MIN	-46.14	88	-3.78	221	0.00	249	0.00	249
	0.41	MAX	0.98	221	28.38	81	0.00	249	0.00	249
		MIN	-47.38	89	-3.92	221	0.00	249	0.00	249
	0.55	MAX	0.98	221	33.61	82	0.00	249	0.00	249
		MIN	-48.59	90	-4.05	221	0.00	249	0.00	249
	0.69	MAX	0.98	221	39.00	83	0.00	249	0.00	249
		MIN	-50.95	92	-4.19	221	0.00	249	0.00	249
	0.83	MAX	0.98	221	44.55	84	0.00	249	0.00	249
		MIN	-52.08	93	-4.32	221	0.00	249	0.00	249
	0.96	MAX	0.98	221	50.23	85	0.00	249	0.00	249
		MIN	-53.19	94	-4.46	221	0.00	249	0.00	249
	1.10	MAX	0.98	221	56.04	85	0.00	249	0.00	249
		MIN	-54.26	95	-4.59	221	0.00	249	0.00	249
	1.24	MAX	0.98	221	62.02	86	0.00	249	0.00	249
		MIN	-55.30	96	-4.73	221	0.00	249	0.00	249
	1.38	MAX	0.98	221	68.10	87	0.00	249	0.00	249
		MIN	-56.31	97	-4.86	221	0.00	249	0.00	249
	1.51	MAX	0.98	221	74.31	88	0.00	249	0.00	249
		MIN	-57.29	98	-5.00	221	0.00	249	0.00	249
	1.65	MAX	0.98	221	80.65	88	0.00	249	0.00	249
		MIN	-58.24	99	-5.13	221	0.00	249	0.00	249

MAX/MIN FORCE VALUES FOR MEMB 16, AMONGST ALL SECT LOCATIONS										
	FY/	DIST	LD	MZ/	DIST	LD				
	FZ	DIST	LD	MY	DIST	LD	FX		DIST	LD
MAX.	0.98	0.00	221	80.65	1.65	88				
	0.00	0.00	1	0.00	0.00	1	10.59	C	0.00	56
MIN.	-58.24	1.65	99	-5.13	1.65	221				
	0.00	1.65	249	0.00	1.65	249	0.25	T	1.65	153

17	0.00	MAX	57.47	110	69.12	118	0.00	249	0.00	249
		MIN	-1.99	226	-4.10	227	0.00	249	0.00	249
	0.14	MAX	54.92	112	63.93	93	0.00	249	0.00	249
		MIN	-1.99	226	-3.83	227	0.00	249	0.00	249
	0.27	MAX	53.62	113	59.32	94	0.00	249	0.00	249
		MIN	-1.99	226	-3.56	227	0.00	249	0.00	249
	0.41	MAX	52.30	114	54.83	94	0.00	249	0.00	249
		MIN	-1.99	226	-3.29	227	0.00	249	0.00	249
	0.55	MAX	50.96	115	50.36	95	0.00	249	0.00	249
		MIN	-1.99	226	-3.01	227	0.00	249	0.00	249
	0.69	MAX	49.61	116	45.99	95	0.00	249	0.00	249
		MIN	-1.99	226	-2.74	227	0.00	249	0.00	249
	0.82	MAX	48.26	117	41.68	96	0.00	249	0.00	249
		MIN	-1.99	226	-2.47	228	0.00	249	0.00	249
	0.96	MAX	46.89	118	37.45	96	0.00	249	0.00	249
		MIN	-1.99	226	-2.20	228	0.00	249	0.00	249
	1.10	MAX	45.50	119	33.31	97	0.00	249	0.00	249
		MIN	-1.99	226	-1.93	228	0.00	249	0.00	249
	1.24	MAX	44.11	120	29.25	98	0.00	249	0.00	249
		MIN	-1.99	226	-1.66	228	0.00	249	0.00	249
	1.37	MAX	42.71	121	25.28	98	0.00	249	0.00	249
		MIN	-1.99	226	-1.95	179	0.00	249	0.00	249
	1.51	MAX	41.30	122	21.46	99	0.00	249	0.00	249
		MIN	-1.99	226	-3.06	180	0.00	249	0.00	249
	1.65	MAX	39.89	123	17.84	55	0.00	249	0.00	249
		MIN	-1.99	226	-4.01	181	0.00	249	0.00	249

MAX/MIN FORCE VALUES FOR MEMB 17, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	57.47	0.00	110	69.12	0.00	118				
	0.00	0.00	1	0.00	0.00	1	7.70	C	0.00	124
MIN.	-1.99	1.65	226	-4.10	0.00	227				
	0.00	1.65	249	0.00	1.65	249	0.35	T	1.65	46

18	0.00	MAX	39.89	123	17.84	55	0.00	249	0.00	249
		MIN	-1.99	226	-4.01	181	0.00	249	0.00	249
	0.21	MAX	37.04	125	16.98	55	0.00	249	0.00	249
		MIN	-1.99	226	-5.42	124	0.00	249	0.00	249
	0.42	MAX	35.61	126	16.11	55	0.00	249	0.00	249
		MIN	-1.99	226	-11.03	126	0.00	249	0.00	249
	0.62	MAX	32.73	128	15.25	55	0.00	249	0.00	249
		MIN	-2.29	185	-15.57	127	0.00	249	0.00	249
	0.83	MAX	30.79	96	14.39	55	0.00	249	0.00	249
		MIN	-3.38	187	-20.52	129	0.00	249	0.00	249
	1.04	MAX	29.82	97	13.52	55	0.00	249	0.00	249
		MIN	-4.39	189	-23.98	131	0.00	249	0.00	249
	1.25	MAX	27.78	99	12.66	55	0.00	249	0.00	249
		MIN	-4.86	190	-27.46	132	0.00	249	0.00	249
	1.46	MAX	26.72	100	11.79	55	0.00	249	0.00	249
		MIN	-5.75	89	-30.26	134	0.00	249	0.00	249
	1.67	MAX	24.54	102	10.93	55	0.00	249	0.00	249
		MIN	-6.56	194	-32.08	135	0.00	249	0.00	249
	1.88	MAX	22.25	104	10.06	55	0.00	249	0.00	249
		MIN	-8.11	92	-33.95	137	0.00	249	0.00	249
	2.08	MAX	21.08	105	9.20	55	0.00	249	0.00	249

		MIN	-9.84	94	-34.32	138	0.00	249	0.00	249
	2.29	MAX	18.68	107	8.34	55	0.00	249	0.00	249
		MIN	-11.22	129	-34.94	140	0.00	249	0.00	249
	2.50	MAX	17.46	108	7.47	55	0.00	249	0.00	249
		MIN	-14.12	131	-34.67	142	0.00	249	0.00	249

MAX/MIN FORCE VALUES FOR MEMB 18, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	39.89	0.00	123	17.84	0.00	55			
	0.00	0.00	1	0.00	0.00	1	7.70 C	0.00	124
MIN.	-14.12	2.50	131	-34.94	2.29	140			
	0.00	2.50	249	0.00	2.50	249	0.35 T	2.50	46

116. LOAD LIST 250 TO 498
117. PRINT FORCE ENVELOPE LIST 13 TO 18

FORCE ENVELOPE LIST 13

MEMB	DISTANCE		FY	LD	MZ	LD	FZ	LD	MY	LD
13	0.00	MAX	52.17	320	48.14	332	0.00	498	0.00	498
		MIN	-3.39	427	-7.81	428	0.00	498	0.00	498
	0.14	MAX	50.99	321	42.93	334	0.00	498	0.00	498
		MIN	-3.39	427	-7.32	428	0.00	498	0.00	498
	0.29	MAX	49.79	322	37.94	335	0.00	498	0.00	498
		MIN	-3.39	427	-6.84	428	0.00	498	0.00	498
	0.43	MAX	48.59	323	33.18	336	0.00	498	0.00	498
		MIN	-3.39	427	-6.35	428	0.00	498	0.00	498
	0.57	MAX	47.38	324	28.70	338	0.00	498	0.00	498
		MIN	-3.39	427	-5.86	428	0.00	498	0.00	498
	0.72	MAX	46.15	325	24.47	340	0.00	498	0.00	498
		MIN	-3.39	427	-5.38	428	0.00	498	0.00	498
	0.86	MAX	44.92	326	20.55	341	0.00	498	0.00	498
		MIN	-3.39	427	-4.89	428	0.00	498	0.00	498
	1.01	MAX	43.69	327	16.88	342	0.00	498	0.00	498
		MIN	-3.39	427	-4.40	429	0.00	498	0.00	498
	1.15	MAX	42.45	328	13.21	342	0.00	498	0.00	498
		MIN	-3.39	427	-4.85	259	0.00	498	0.00	498
	1.29	MAX	39.97	330	9.55	342	0.00	498	0.00	498
		MIN	-3.39	427	-6.18	363	0.00	498	0.00	498
	1.44	MAX	38.74	331	5.96	343	0.00	498	0.00	498
		MIN	-3.39	427	-9.72	364	0.00	498	0.00	498
	1.58	MAX	37.52	332	3.47	389	0.00	498	0.00	498
		MIN	-3.39	427	-12.97	365	0.00	498	0.00	498
	1.72	MAX	36.30	333	2.30	392	0.00	498	0.00	498
		MIN	-3.39	427	-15.93	366	0.00	498	0.00	498

MAX/MIN FORCE VALUES FOR MEMB 13, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	52.17	0.00	320	48.14	0.00	332			
	0.00	0.00	250	0.00	0.00	250	10.47 C	0.00	333
MIN.	-3.39	1.72	427	-15.93	1.72	366			
	0.00	1.72	498	0.00	1.72	498	1.20 T	1.72	431

14	0.00	MAX	36.30	333	2.30	392	0.00	498	0.00	498

		MIN	-3.39	427	-15.93	366	0.00	498	0.00	498
	0.21	MAX	35.08	334	1.26	397	0.00	498	0.00	498
		MIN	-3.39	427	-20.00	324	0.00	498	0.00	498
	0.41	MAX	32.64	336	1.02	467	0.00	498	0.00	498
		MIN	-3.39	427	-24.51	325	0.00	498	0.00	498
	0.62	MAX	30.22	338	0.89	466	0.00	498	0.00	498
		MIN	-3.39	427	-27.84	327	0.00	498	0.00	498
	0.82	MAX	29.02	339	1.19	413	0.00	498	0.00	498
		MIN	-4.07	300	-31.15	328	0.00	498	0.00	498
	1.03	MAX	26.66	341	1.72	417	0.00	498	0.00	498
		MIN	-4.69	301	-33.83	330	0.00	498	0.00	498
	1.23	MAX	25.49	342	2.31	420	0.00	498	0.00	498
		MIN	-6.19	365	-35.82	331	0.00	498	0.00	498
	1.44	MAX	22.86	344	2.96	422	0.00	498	0.00	498
		MIN	-7.55	366	-37.91	333	0.00	498	0.00	498
	1.64	MAX	21.51	345	3.65	424	0.00	498	0.00	498
		MIN	-10.20	368	-38.76	335	0.00	498	0.00	498
	1.85	MAX	18.81	347	4.33	425	0.00	498	0.00	498
		MIN	-12.80	370	-40.13	336	0.00	498	0.00	498
	2.05	MAX	16.15	349	5.02	425	0.00	498	0.00	498
		MIN	-14.06	371	-40.08	338	0.00	498	0.00	498
	2.26	MAX	14.83	350	5.72	425	0.00	498	0.00	498
		MIN	-16.54	373	-40.18	339	0.00	498	0.00	498
	2.46	MAX	12.24	352	6.41	426	0.00	498	0.00	498
		MIN	-17.75	374	-39.66	341	0.00	498	0.00	498

MAX/MIN FORCE VALUES FOR MEMB 14, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	36.30	0.00	333	6.41	2.46	426				
	0.00	0.00	250	0.00	0.00	250	10.47	C	0.00	333
MIN.	-17.75	2.46	374	-40.18	2.26	339				
	0.00	2.46	498	0.00	2.46	498	1.20	T	2.46	431

15	0.00	MAX	12.24	352	6.41	426	0.00	498	0.00	498
		MIN	-17.75	374	-39.66	341	0.00	498	0.00	498
	0.21	MAX	10.96	353	7.13	426	0.00	498	0.00	498
		MIN	-20.12	376	-38.41	342	0.00	498	0.00	498
	0.42	MAX	9.21	389	7.84	426	0.00	498	0.00	498
		MIN	-22.41	378	-37.92	344	0.00	498	0.00	498
	0.63	MAX	7.61	391	8.56	426	0.00	498	0.00	498
		MIN	-23.53	379	-36.01	346	0.00	498	0.00	498
	0.85	MAX	6.85	392	9.27	426	0.00	498	0.00	498
		MIN	-25.70	381	-33.85	347	0.00	498	0.00	498
	1.06	MAX	5.45	394	9.99	426	0.00	498	0.00	498
		MIN	-26.74	382	-31.47	349	0.00	498	0.00	498
	1.27	MAX	4.16	396	10.70	426	0.00	498	0.00	498
		MIN	-28.75	384	-27.83	351	0.00	498	0.00	498
	1.48	MAX	3.56	397	11.42	426	0.00	498	0.00	498
		MIN	-30.65	386	-24.49	352	0.00	498	0.00	498
	1.69	MAX	2.44	399	12.14	426	0.00	498	0.00	498
		MIN	-31.56	387	-20.13	354	0.00	498	0.00	498
	1.90	MAX	1.94	400	12.85	426	0.00	498	0.00	498
		MIN	-34.50	355	-15.06	355	0.00	498	0.00	498
	2.11	MAX	1.03	491	13.57	426	0.00	498	0.00	498
		MIN	-37.42	357	-10.20	357	0.00	498	0.00	498

	2.33	MAX	1.03	491	14.28	426	0.00	498	0.00	498
		MIN	-38.87	358	-4.18	492	0.00	498	0.00	498
	2.54	MAX	1.03	491	18.46	382	0.00	498	0.00	498
		MIN	-41.74	360	-4.40	492	0.00	498	0.00	498

MAX/MIN FORCE VALUES FOR MEMB 15, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	12.24	0.00	352	18.46	2.54	382			
	0.00	0.00	250	0.00	0.00	250	10.47 C	0.00	333
MIN.	-41.74	2.54	360	-39.66	0.00	341			
	0.00	2.54	498	0.00	2.54	498	1.20 T	2.54	431

16	0.00	MAX	1.03	491	18.46	382	0.00	498	0.00	498
		MIN	-41.74	360	-4.40	492	0.00	498	0.00	498
	0.14	MAX	1.03	491	22.25	383	0.00	498	0.00	498
		MIN	-43.15	361	-4.54	492	0.00	498	0.00	498
	0.28	MAX	1.03	491	26.11	384	0.00	498	0.00	498
		MIN	-44.55	362	-4.68	492	0.00	498	0.00	498
	0.41	MAX	1.03	491	30.06	384	0.00	498	0.00	498
		MIN	-45.95	363	-4.82	492	0.00	498	0.00	498
	0.55	MAX	1.03	491	34.14	385	0.00	498	0.00	498
		MIN	-47.33	364	-4.97	492	0.00	498	0.00	498
	0.69	MAX	1.03	491	38.29	386	0.00	498	0.00	498
		MIN	-48.69	365	-5.11	492	0.00	498	0.00	498
	0.83	MAX	1.03	491	42.50	386	0.00	498	0.00	498
		MIN	-50.05	366	-5.25	492	0.00	498	0.00	498
	0.96	MAX	1.03	491	46.82	387	0.00	498	0.00	498
		MIN	-51.38	367	-5.39	492	0.00	498	0.00	498
	1.10	MAX	1.03	491	51.17	388	0.00	498	0.00	498
		MIN	-52.70	368	-5.53	492	0.00	498	0.00	498
	1.24	MAX	1.03	491	55.63	388	0.00	498	0.00	498
		MIN	-54.01	369	-5.68	492	0.00	498	0.00	498
	1.38	MAX	1.03	491	60.72	363	0.00	498	0.00	498
		MIN	-55.30	370	-5.82	492	0.00	498	0.00	498
	1.51	MAX	1.03	491	67.15	364	0.00	498	0.00	498
		MIN	-56.56	371	-5.96	492	0.00	498	0.00	498
	1.65	MAX	1.03	491	73.77	365	0.00	498	0.00	498
		MIN	-57.81	372	-6.10	492	0.00	498	0.00	498

MAX/MIN FORCE VALUES FOR MEMB 16, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.03	0.00	491	73.77	1.65	365			
	0.00	0.00	250	0.00	0.00	250	10.47 C	0.00	333
MIN.	-57.81	1.65	372	-6.10	1.65	492			
	0.00	1.65	498	0.00	1.65	498	1.20 T	1.65	431

17	0.00	MAX	56.96	384	74.76	394	0.00	498	0.00	498
		MIN	-4.15	492	-9.75	492	0.00	498	0.00	498
	0.14	MAX	55.89	385	68.56	394	0.00	498	0.00	498
		MIN	-4.15	492	-9.18	492	0.00	498	0.00	498
	0.27	MAX	54.80	386	62.52	395	0.00	498	0.00	498

		MIN	-4.15	492	-8.61	492	0.00	498	0.00	498
	0.41	MAX	53.68	387	56.64	396	0.00	498	0.00	498
		MIN	-4.15	492	-8.04	492	0.00	498	0.00	498
	0.55	MAX	52.53	388	50.92	397	0.00	498	0.00	498
		MIN	-4.15	492	-7.46	492	0.00	498	0.00	498
	0.69	MAX	51.35	389	45.33	398	0.00	498	0.00	498
		MIN	-4.15	492	-6.89	492	0.00	498	0.00	498
	0.82	MAX	50.14	390	39.90	399	0.00	498	0.00	498
		MIN	-4.15	492	-6.32	492	0.00	498	0.00	498
	0.96	MAX	48.91	391	34.62	400	0.00	498	0.00	498
		MIN	-4.15	492	-5.75	493	0.00	498	0.00	498
	1.10	MAX	47.65	392	29.53	400	0.00	498	0.00	498
		MIN	-4.15	492	-5.18	493	0.00	498	0.00	498
	1.24	MAX	45.08	394	24.62	401	0.00	498	0.00	498
		MIN	-4.15	492	-4.61	493	0.00	498	0.00	498
	1.37	MAX	43.77	395	20.90	343	0.00	498	0.00	498
		MIN	-4.15	492	-4.04	493	0.00	498	0.00	498
	1.51	MAX	42.45	396	19.56	343	0.00	498	0.00	498
		MIN	-4.15	492	-6.30	429	0.00	498	0.00	498
	1.65	MAX	41.12	397	18.26	344	0.00	498	0.00	498
		MIN	-4.15	492	-9.46	430	0.00	498	0.00	498

MAX/MIN FORCE VALUES FOR MEMB 17, AMONGST ALL SECT LOCATIONS										
	FY/	DIST	LD	MZ/	DIST	LD				
	FZ	DIST	LD	MY	DIST	LD	FX		DIST	LD
MAX.	56.96	0.00	384	74.76	0.00	394				
	0.00	0.00	250	0.00	0.00	250	7.70	C	0.00	423
MIN.	-4.15	1.65	492	-9.75	0.00	492				
	0.00	1.65	498	0.00	1.65	498	0.24	T	1.65	498

18	0.00	MAX	41.12	397	18.26	344	0.00	498	0.00	498
		MIN	-4.15	492	-9.46	430	0.00	498	0.00	498
	0.21	MAX	39.77	398	16.30	345	0.00	498	0.00	498
		MIN	-4.15	492	-13.63	432	0.00	498	0.00	498
	0.42	MAX	37.00	400	14.39	345	0.00	498	0.00	498
		MIN	-4.15	492	-17.52	433	0.00	498	0.00	498
	0.62	MAX	35.60	401	12.53	346	0.00	498	0.00	498
		MIN	-4.15	492	-21.16	435	0.00	498	0.00	498
	0.83	MAX	32.75	403	10.71	347	0.00	498	0.00	498
		MIN	-4.15	492	-23.75	426	0.00	498	0.00	498
	1.04	MAX	29.86	405	8.94	348	0.00	498	0.00	498
		MIN	-4.15	492	-26.49	428	0.00	498	0.00	498
	1.25	MAX	28.41	406	7.23	349	0.00	498	0.00	498
		MIN	-4.70	429	-28.52	429	0.00	498	0.00	498
	1.46	MAX	25.51	408	6.29	323	0.00	498	0.00	498
		MIN	-6.07	430	-30.62	431	0.00	498	0.00	498
	1.67	MAX	22.59	410	5.88	323	0.00	498	0.00	498
		MIN	-8.77	432	-31.46	433	0.00	498	0.00	498
	1.88	MAX	21.12	411	5.47	323	0.00	498	0.00	498
		MIN	-11.42	434	-32.51	434	0.00	498	0.00	498
	2.08	MAX	18.18	413	5.74	491	0.00	498	0.00	498
		MIN	-12.72	435	-33.85	412	0.00	498	0.00	498
	2.29	MAX	16.72	414	6.61	491	0.00	498	0.00	498
		MIN	-15.26	437	-34.50	414	0.00	498	0.00	498
	2.50	MAX	13.79	416	7.47	492	0.00	498	0.00	498
		MIN	-16.51	438	-34.81	405	0.00	498	0.00	498

MAX/MIN FORCE VALUES FOR MEMB 18, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	41.12	0.00	397	18.26	0.00	344			
	0.00	0.00	250	0.00	0.00	250	7.70 C	0.00	423
MIN.	-16.51	2.50	438	-34.81	2.50	405			
	0.00	2.50	498	0.00	2.50	498	0.24 T	2.50	498

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   118. FINISH

         ********** END OF THE STAAD.Pro RUN **********
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INPUT FILE: track.STD
     1. STAAD PLANE
     2. START JOB INFORMATION
     3. ENGINEER DATE 29-NOV-06
     4. END JOB INFORMATION
     5. INPUT WIDTH 79
     6. PAGE LENGTH 1000
     7. UNIT METER MTON
     8. JOINT COORDINATES
     9. 1   0.000     0.000     0.000
    10. 2   1.725     0.000     0.000
    11. 3   4.188     0.000     0.000
    12. 4   6.725     0.000     0.000
    13. 5   8.375     0.000     0.000
    14. 6  10.025     0.000     0.000
    15. 7  12.525     0.000     0.000
    16. 8  15.025     0.000     0.000
    17. 9  16.675     0.000     0.000
    18. 10 18.325     0.000     0.000
    19. 11 20.863     0.000     0.000
    20. 12 23.325     0.000     0.000
    21. 13 25.050     0.000     0.000
    22. 14 0.000      5.291     0.000
    23. 15 1.725      5.291     0.000
    24. 16 4.188      5.291     0.000
    25. 17 6.725      5.291     0.000
    26. 18 8.375      5.291     0.000
    27. 19 10.025     5.291     0.000
    28. 20 12.525     5.291     0.000
    29. 21 15.025     5.291     0.000
    30. 22 16.675     5.291     0.000
    31. 23 18.325     5.291     0.000
    32. 24 20.863     5.291     0.000
    33. 25 23.325     5.291     0.000
    34. 26 25.050     5.291     0.000
    35. 27 0.000      1.725     0.000
    36. 28 0.000      2.646     0.000
    37. 29 0.000      3.566     0.000
    38. 30 8.375      1.725     0.000
    39. 31 8.375      2.646     0.000
    40. 32 8.375      3.566     0.000
    41. 33 16.675     1.725     0.000
    42. 34 16.675     2.646     0.000
    43. 35 16.675     3.566     0.000
    44. 36 25.050     1.725     0.000
    45. 37 25.050     2.646     0.000
    46. 38 25.050     3.566     0.000
    47. MEMBER INCIDENCES
    48. 1         1         2
    49. 2         2         3
    50. 3         3         4
    51. 4         4         5
    52. 5         5         6
    53. 6         6         7
    54. 7         7         8
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 55. 8         8         9
 56. 9         9        10
 57. 10        10        11
 58. 11        11        12
 59. 12        12        13
 60. 13        14        15
 61. 14        15        16
 62. 15        16        17
 63. 16        17        18
 64. 17        18        19
 65. 18        19        20
 66. 19        20        21
 67. 20        21        22
 68. 21        22        23
 69. 22        23        24
 70. 23        24        25
 71. 24        25        26
 72. 25         1        27
 73. 26        27        28
 74. 27        28        29
 75. 28        29        14
 76. 29         5        30
 77. 30        30        31
 78. 31        31        32
 79. 32        32        18
 80. 33         9        33
 81. 34        33        34
 82. 35        34        35
 83. 36        35        22
 84. 37        13        36
 85. 38        36        37
 86. 39        37        38
 87. 40        38        26
 88. MEMBER PROPERTY INDIAN
 89. 2 3 6 7 10 11 14 15 18 19 22 23 26 27 38 39 PRI YD .45 ZD 1.
 90. 30 31 34 35 PRI YD .3 ZD 1.
 91. 1 4 5 8 9 12 13 16 17 20 21 24 25 28 37 40 PRI AX .561 IZ .0158 YD .575
 92. 29 32 33 36 PRI AX .425 IZ .03054 YD .425
 93. CONSTANT
 94. E 3E6 ALL
 95. DENSITY 2.4 ALL
 96. ALPHA .0000117 ALL
 97. SUPPORT
 98. 5 PINNED
 99. 1 9 13 FIXED BUT FX MZ
100. ******************************************************
101. LOAD 1 FOR MAX BM (HOGGING) AT END WEB
102. MEMBER LOAD
103. 13 UNI GY -1.742 0.794 1.725
104. 14 UNI GY -1.742
105. 15 UNI GY -1.742 0.0   2.188
106. *UPWARD BASE PRESSURE
107. 1 TO 12 UNI GY 0.388
108. LOAD 2 FOR MAX BM (HOGGING) IN MID SAPN OF OUTER CELL
109. MEMBER LOAD
110. 17 UNI GY -1.741 0.819 1.65
111. 18 UNI GY -1.741
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112. 19 UNI GY -1.741 0.0 2.251
113. *UPWARD BASE PRESSURE
114. 1 TO 12 UNI GY 0.388
115. LOAD 3 FOR MAX BM (HOGGING) AT END OF HAUNCH 2
116. MEMBER LOAD
117. 13 UNI GY -1.731 1.596 1.725
118. 14 15 UNI GY -1.731
119. 16 UNI GY -1.731 0.0 0.453
120. *UPWARD BASE PRESSURE
121. 1 TO 12 UNI GY 0.386
122. LOAD 4 FOR MAX BM (HOGGING) AT START OF HAUNCH 9
123. MEMBER LOAD
124. 17 UNI GY -1.730 1.221 1.65
125. 18 19 UNI GY -1.730
126. 20 UNI GY -1.73 0.0 0.153
127. *UPWARD BASE PRESSURE
128. 1 TO 12 UNI GY 0.386
129. LOAD 5 FOR MAX BM (HOGGING) AT MID SPAN OF MIDDLE CELL
130. MEMBER LOAD
131. 14 UNI GY -1.748 0.372 1.725
132. 15 UNI GY -1.748
133. 16 UNI GY -1.748 0.0 0.954
134. *UPWARD BASE PRESSURE
135. 1 TO 12 UNI GY 0.390
136. ************************************************************
137. LOAD 6 FOR MAX BM (SAGGING) AT END OF HAUNCH 1
138. MEMBER LOAD
139. 13 UNI GY -1.493
140. 14 UNI GY -1.493
141. 15 UNI GY -1.493 0.0 1.394
142. *UPWARD BASE PRESSURE
143. 1 TO 12 UNI GY 0.333
144. LOAD 7 FOR MAX BM (SAGGING) IN MID SAPN OF OUTER CELL
145. MEMBER LOAD
146. 13 UNI GY -1.729 1.393 1.725
147. 14 15 UNI GY -1.729
148. 16 UNI GY -1.729 0.0 0.250
149. *UPWARD BASE PRESSURE
150. 1 TO 12 UNI GY 0.385
151. LOAD 8 FOR MAX BM (SAGGING) AT START OF HAUNCH 2
152. MEMBER LOAD
153. 14 UNI GY -1.997 1.651 2.4625
154. 15 16 UNI GY -1.997
155. 17 UNI GY -1.997 0.0 0.178
156. *UPWARD BASE PRESSURE
157. 1 TO 12 UNI GY 0.413
158. LOAD 9 FOR MAX BM (SAGGING) AT END OF HAUNCH 9
159. MEMBER LOAD
160. 18 UNI GY -1.240 0.233 0.433
161. *UPWARD BASE PRESSURE
162. 1 TO 12 UNI GY 0.371
163. LOAD 10 FOR MAX BM (SAGGING) IN MID SAPN OF INNER CELL
164. MEMBER LOAD
165. 18 UNI GY -1.240 2.362 2.5
166. 19 UNI GY -1.24  0.0 0.062
167. *UPWARD BASE PRESSURE
168. 1 TO 12 UNI GY 0.385
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169. PERFORM ANALYSIS
170. PRINT FORCE ENVELOPE LIST 1 2 3 4 5 6 13 14 15 16 17 18 25 27 28 29 31 32

FORCE ENVELOPE LIST 1

MEMB	DISTANCE		FY	LD	MZ	LD	FZ	LD	MY	LD
1	0.00	MAX	-1.23	4	-0.52	6	0.00	10	0.00	10
		MIN	-1.58	8	-1.56	10	0.00	10	0.00	10
	0.14	MAX	-1.17	4	-0.33	1	0.00	10	0.00	10
		MIN	-1.52	8	-1.36	10	0.00	10	0.00	10
	0.29	MAX	-1.12	4	-0.14	1	0.00	10	0.00	10
		MIN	-1.46	8	-1.16	10	0.00	10	0.00	10
	0.43	MAX	-1.06	4	0.05	1	0.00	10	0.00	10
		MIN	-1.40	8	-0.97	10	0.00	10	0.00	10
	0.57	MAX	-1.00	4	0.23	1	0.00	10	0.00	10
		MIN	-1.34	8	-0.79	10	0.00	10	0.00	10
	0.72	MAX	-0.95	4	0.40	1	0.00	10	0.00	10
		MIN	-1.28	8	-0.62	10	0.00	10	0.00	10
	0.86	MAX	-0.89	4	0.56	1	0.00	10	0.00	10
		MIN	-1.22	8	-0.46	10	0.00	10	0.00	10
	1.01	MAX	-0.84	4	0.71	1	0.00	10	0.00	10
		MIN	-1.16	8	-0.30	10	0.00	10	0.00	10
	1.15	MAX	-0.78	4	0.86	1	0.00	10	0.00	10
		MIN	-1.10	8	-0.15	9	0.00	10	0.00	10
	1.29	MAX	-0.73	4	1.00	1	0.00	10	0.00	10
		MIN	-1.04	8	-0.02	9	0.00	10	0.00	10
	1.44	MAX	-0.67	4	1.13	1	0.00	10	0.00	10
		MIN	-0.98	8	0.10	2	0.00	10	0.00	10
	1.58	MAX	-0.62	4	1.25	1	0.00	10	0.00	10
		MIN	-0.92	8	0.20	2	0.00	10	0.00	10
	1.72	MAX	-0.56	4	1.37	1	0.00	10	0.00	10
		MIN	-0.86	8	0.29	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 1, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	-0.56	1.72	4	1.37	1.72	1			
	0.00	0.00	1	0.00	0.00	1	0.55 C	0.00	2
MIN.	-1.58	0.00	8	-1.56	0.00	10			
	0.00	1.72	10	0.00	1.72	10	1.19 T	1.72	1

2	0.00	MAX	-0.56	4	1.37	1	0.00	10	0.00	10
		MIN	-0.86	8	0.29	2	0.00	10	0.00	10
	0.21	MAX	-0.48	4	1.52	1	0.00	10	0.00	10
		MIN	-0.78	8	0.40	2	0.00	10	0.00	10
	0.41	MAX	-0.40	4	1.65	1	0.00	10	0.00	10
		MIN	-0.70	8	0.49	2	0.00	10	0.00	10
	0.62	MAX	-0.32	4	1.77	1	0.00	10	0.00	10
		MIN	-0.61	8	0.57	2	0.00	10	0.00	10
	0.82	MAX	-0.24	4	1.87	1	0.00	10	0.00	10
		MIN	-0.53	8	0.63	2	0.00	10	0.00	10
	1.03	MAX	-0.16	4	1.95	1	0.00	10	0.00	10
		MIN	-0.44	8	0.67	2	0.00	10	0.00	10
	1.23	MAX	-0.09	4	2.02	1	0.00	10	0.00	10

		MIN	-0.36	8	0.70	2	0.00	10	0.00	10
	1.44	MAX	-0.01	4	2.07	1	0.00	10	0.00	10
		MIN	-0.27	8	0.71	2	0.00	10	0.00	10
	1.64	MAX	0.07	4	2.11	1	0.00	10	0.00	10
		MIN	-0.19	8	0.71	2	0.00	10	0.00	10
	1.85	MAX	0.15	4	2.13	7	0.00	10	0.00	10
		MIN	-0.10	8	0.69	2	0.00	10	0.00	10
	2.05	MAX	0.23	4	2.13	7	0.00	10	0.00	10
		MIN	-0.02	8	0.65	2	0.00	10	0.00	10
	2.26	MAX	0.31	4	2.12	3	0.00	10	0.00	10
		MIN	0.07	8	0.60	2	0.00	10	0.00	10
	2.46	MAX	0.39	4	2.09	3	0.00	10	0.00	10
		MIN	0.15	8	0.53	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 2, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.39	2.46	4	2.13	2.05	7			
	0.00	0.00	1	0.00	0.00	1	0.55 C	0.00	2
MIN.	-0.86	0.00	8	0.29	0.00	2			
	0.00	2.46	10	0.00	2.46	10	1.19 T	2.46	1

3	0.00	MAX	0.39	4	2.09	3	0.00	10	0.00	10
		MIN	0.15	8	0.53	2	0.00	10	0.00	10
	0.21	MAX	0.47	4	2.05	3	0.00	10	0.00	10
		MIN	0.23	9	0.44	2	0.00	10	0.00	10
	0.42	MAX	0.55	4	1.99	3	0.00	10	0.00	10
		MIN	0.31	6	0.33	2	0.00	10	0.00	10
	0.63	MAX	0.63	4	1.91	3	0.00	10	0.00	10
		MIN	0.38	6	0.21	4	0.00	10	0.00	10
	0.85	MAX	0.72	4	1.81	3	0.00	10	0.00	10
		MIN	0.45	6	0.06	4	0.00	10	0.00	10
	1.06	MAX	0.80	4	1.70	3	0.00	10	0.00	10
		MIN	0.52	6	-0.10	4	0.00	10	0.00	10
	1.27	MAX	0.88	4	1.57	3	0.00	10	0.00	10
		MIN	0.59	6	-0.28	4	0.00	10	0.00	10
	1.48	MAX	0.96	4	1.42	3	0.00	10	0.00	10
		MIN	0.66	6	-0.47	4	0.00	10	0.00	10
	1.69	MAX	1.04	4	1.25	3	0.00	10	0.00	10
		MIN	0.73	6	-0.68	4	0.00	10	0.00	10
	1.90	MAX	1.12	4	1.07	3	0.00	10	0.00	10
		MIN	0.80	6	-0.91	4	0.00	10	0.00	10
	2.11	MAX	1.21	4	0.87	3	0.00	10	0.00	10
		MIN	0.87	6	-1.16	4	0.00	10	0.00	10
	2.33	MAX	1.29	4	0.66	3	0.00	10	0.00	10
		MIN	0.94	6	-1.42	4	0.00	10	0.00	10
	2.54	MAX	1.37	4	0.42	3	0.00	10	0.00	10
		MIN	1.01	6	-1.70	4	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 3, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.37	2.54	4	2.09	0.00	3			
	0.00	0.00	1	0.00	0.00	1	0.55 C	0.00	2
MIN.	0.15	0.00	8	-1.70	2.54	4			

		0.00	2.54	10	0.00	2.54	10	1.19 T	2.54	1
4	0.00	MAX	1.37	4	0.42	3	0.00	10	0.00	10
		MIN	1.01	6	-1.70	4	0.00	10	0.00	10
	0.14	MAX	1.42	4	0.26	3	0.00	10	0.00	10
		MIN	1.06	6	-1.89	4	0.00	10	0.00	10
	0.28	MAX	1.48	4	0.09	3	0.00	10	0.00	10
		MIN	1.10	6	-2.09	4	0.00	10	0.00	10
	0.41	MAX	1.53	4	-0.09	3	0.00	10	0.00	10
		MIN	1.15	6	-2.30	4	0.00	10	0.00	10
	0.55	MAX	1.58	4	-0.27	3	0.00	10	0.00	10
		MIN	1.20	6	-2.51	4	0.00	10	0.00	10
	0.69	MAX	1.63	4	-0.46	3	0.00	10	0.00	10
		MIN	1.24	6	-2.73	4	0.00	10	0.00	10
	0.83	MAX	1.69	4	-0.66	3	0.00	10	0.00	10
		MIN	1.29	6	-2.96	4	0.00	10	0.00	10
	0.96	MAX	1.74	4	-0.86	3	0.00	10	0.00	10
		MIN	1.33	6	-3.20	4	0.00	10	0.00	10
	1.10	MAX	1.79	4	-1.08	3	0.00	10	0.00	10
		MIN	1.38	6	-3.44	4	0.00	10	0.00	10
	1.24	MAX	1.85	4	-1.30	3	0.00	10	0.00	10
		MIN	1.42	6	-3.69	4	0.00	10	0.00	10
	1.38	MAX	1.90	4	-1.50	6	0.00	10	0.00	10
		MIN	1.47	6	-3.95	4	0.00	10	0.00	10
	1.51	MAX	1.95	4	-1.71	6	0.00	10	0.00	10
		MIN	1.52	6	-4.21	4	0.00	10	0.00	10
	1.65	MAX	2.01	4	-1.92	6	0.00	10	0.00	10
		MIN	1.56	6	-4.49	4	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 4, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	2.01	1.65	4	0.42	0.00	3			
	0.00	0.00	1	0.00	0.00	1	0.55 C	0.00	2
MIN.	1.01	0.00	6	-4.49	1.65	4			
	0.00	1.65	10	0.00	1.65	10	1.19 T	1.65	1

5	0.00	MAX	-1.54	9	-1.73	2	0.00	10	0.00	10
		MIN	-1.95	8	-4.53	1	0.00	10	0.00	10
	0.14	MAX	-1.49	9	-1.51	2	0.00	10	0.00	10
		MIN	-1.90	8	-4.27	1	0.00	10	0.00	10
	0.27	MAX	-1.44	9	-1.30	2	0.00	10	0.00	10
		MIN	-1.84	8	-4.02	1	0.00	10	0.00	10
	0.41	MAX	-1.38	9	-1.10	2	0.00	10	0.00	10
		MIN	-1.78	8	-3.77	7	0.00	10	0.00	10
	0.55	MAX	-1.33	9	-0.91	2	0.00	10	0.00	10
		MIN	-1.73	8	-3.54	7	0.00	10	0.00	10
	0.69	MAX	-1.28	9	-0.72	2	0.00	10	0.00	10
		MIN	-1.67	8	-3.31	7	0.00	10	0.00	10
	0.82	MAX	-1.23	9	-0.54	2	0.00	10	0.00	10
		MIN	-1.61	8	-3.08	7	0.00	10	0.00	10
	0.96	MAX	-1.18	9	-0.37	2	0.00	10	0.00	10
		MIN	-1.56	8	-2.87	7	0.00	10	0.00	10
	1.10	MAX	-1.13	9	-0.21	2	0.00	10	0.00	10
		MIN	-1.50	8	-2.66	7	0.00	10	0.00	10
	1.24	MAX	-1.08	9	-0.05	2	0.00	10	0.00	10

		MIN	-1.45	1	-2.46	7	0.00	10	0.00	10
	1.37	MAX	-1.03	9	0.10	2	0.00	10	0.00	10
		MIN	-1.39	1	-2.27	7	0.00	10	0.00	10
	1.51	MAX	-0.98	9	0.24	2	0.00	10	0.00	10
		MIN	-1.34	1	-2.08	7	0.00	10	0.00	10
	1.65	MAX	-0.93	9	0.38	2	0.00	10	0.00	10
		MIN	-1.29	1	-1.90	7	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 5, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	-0.93	1.65	9	0.38	1.65	2				
	0.00	0.00	1	0.00	0.00	1	0.62	C	0.00	8
MIN.	-1.95	0.00	8	-4.53	0.00	1				
	0.00	1.65	10	0.00	1.65	10	0.92	T	1.65	4

6	0.00	MAX	-0.93	9	0.38	2	0.00	10	0.00	10
		MIN	-1.29	1	-1.90	7	0.00	10	0.00	10
	0.21	MAX	-0.85	9	0.57	2	0.00	10	0.00	10
		MIN	-1.20	1	-1.65	7	0.00	10	0.00	10
	0.42	MAX	-0.77	9	0.74	2	0.00	10	0.00	10
		MIN	-1.12	1	-1.41	7	0.00	10	0.00	10
	0.62	MAX	-0.69	9	0.90	2	0.00	10	0.00	10
		MIN	-1.04	1	-1.18	7	0.00	10	0.00	10
	0.83	MAX	-0.62	9	1.04	2	0.00	10	0.00	10
		MIN	-0.96	1	-0.98	7	0.00	10	0.00	10
	1.04	MAX	-0.54	9	1.16	2	0.00	10	0.00	10
		MIN	-0.88	1	-0.79	3	0.00	10	0.00	10
	1.25	MAX	-0.46	9	1.27	2	0.00	10	0.00	10
		MIN	-0.80	1	-0.61	3	0.00	10	0.00	10
	1.46	MAX	-0.38	9	1.36	2	0.00	10	0.00	10
		MIN	-0.72	1	-0.46	3	0.00	10	0.00	10
	1.67	MAX	-0.31	9	1.43	2	0.00	10	0.00	10
		MIN	-0.64	1	-0.32	3	0.00	10	0.00	10
	1.88	MAX	-0.23	2	1.49	4	0.00	10	0.00	10
		MIN	-0.56	1	-0.20	3	0.00	10	0.00	10
	2.08	MAX	-0.15	2	1.53	4	0.00	10	0.00	10
		MIN	-0.48	1	-0.09	3	0.00	10	0.00	10
	2.29	MAX	-0.07	2	1.55	4	0.00	10	0.00	10
		MIN	-0.40	1	0.00	3	0.00	10	0.00	10
	2.50	MAX	0.01	2	1.56	4	0.00	10	0.00	10
		MIN	-0.32	1	0.07	3	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 6, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.01	2.50	2	1.56	2.50	4				
	0.00	0.00	1	0.00	0.00	1	0.62	C	0.00	8
MIN.	-1.29	0.00	1	-1.90	0.00	7				
	0.00	2.50	10	0.00	2.50	10	0.92	T	2.50	4

13	0.00	MAX	5.51	6	6.85	1	0.00	10	0.00	10
		MIN	-0.61	2	-1.64	2	0.00	10	0.00	10
	0.14	MAX	5.39	1	6.08	1	0.00	10	0.00	10
		MIN	-0.61	2	-1.55	2	0.00	10	0.00	10

	0.29	MAX	5.39	1	5.31	7	0.00	10	0.00	10
		MIN	-0.61	2	-1.46	2	0.00	10	0.00	10
	0.43	MAX	5.39	1	4.66	7	0.00	10	0.00	10
		MIN	-0.61	2	-1.37	2	0.00	10	0.00	10
	0.57	MAX	5.39	1	4.02	3	0.00	10	0.00	10
		MIN	-0.61	2	-1.28	2	0.00	10	0.00	10
	0.72	MAX	5.39	1	3.40	3	0.00	10	0.00	10
		MIN	-0.61	2	-1.20	2	0.00	10	0.00	10
	0.86	MAX	5.27	1	2.78	3	0.00	10	0.00	10
		MIN	-0.61	2	-1.11	2	0.00	10	0.00	10
	1.01	MAX	5.02	1	2.21	8	0.00	10	0.00	10
		MIN	-0.61	2	-1.02	2	0.00	10	0.00	10
	1.15	MAX	4.77	1	1.85	8	0.00	10	0.00	10
		MIN	-0.61	2	-0.93	2	0.00	10	0.00	10
	1.29	MAX	4.57	7	1.49	8	0.00	10	0.00	10
		MIN	-0.61	2	-0.84	2	0.00	10	0.00	10
	1.44	MAX	4.49	7	1.13	8	0.00	10	0.00	10
		MIN	-0.61	2	-0.86	6	0.00	10	0.00	10
	1.58	MAX	4.31	3	0.77	8	0.00	10	0.00	10
		MIN	-0.61	2	-1.33	6	0.00	10	0.00	10
	1.72	MAX	4.09	3	0.41	8	0.00	10	0.00	10
		MIN	-0.61	2	-1.76	6	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 13, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	5.51	0.00	6	6.85	0.00	1			
	0.00	0.00	1	0.00	0.00	1	1.19 C	0.00	1
MIN.	-0.61	1.72	2	-1.76	1.72	6			
	0.00	1.72	10	0.00	1.72	10	0.55 T	1.72	2

14	0.00	MAX	4.09	3	0.41	8	0.00	10	0.00	10
		MIN	-0.61	2	-1.76	6	0.00	10	0.00	10
	0.21	MAX	3.73	3	-0.10	8	0.00	10	0.00	10
		MIN	-0.61	2	-2.43	1	0.00	10	0.00	10
	0.41	MAX	3.37	3	-0.24	9	0.00	10	0.00	10
		MIN	-0.61	2	-3.10	1	0.00	10	0.00	10
	0.62	MAX	3.02	3	-0.18	4	0.00	10	0.00	10
		MIN	-0.61	2	-3.69	1	0.00	10	0.00	10
	0.82	MAX	2.66	3	-0.06	4	0.00	10	0.00	10
		MIN	-0.61	2	-4.21	1	0.00	10	0.00	10
	1.03	MAX	2.50	8	0.06	4	0.00	10	0.00	10
		MIN	-0.61	2	-4.65	1	0.00	10	0.00	10
	1.23	MAX	2.50	8	0.18	4	0.00	10	0.00	10
		MIN	-0.61	2	-5.02	1	0.00	10	0.00	10
	1.44	MAX	2.50	8	0.30	4	0.00	10	0.00	10
		MIN	-0.61	2	-5.32	1	0.00	10	0.00	10
	1.64	MAX	2.50	8	0.42	2	0.00	10	0.00	10
		MIN	-0.61	2	-5.54	1	0.00	10	0.00	10
	1.85	MAX	2.11	8	0.55	2	0.00	10	0.00	10
		MIN	-0.61	2	-5.69	1	0.00	10	0.00	10
	2.05	MAX	1.70	8	0.67	2	0.00	10	0.00	10
		MIN	-0.61	2	-5.77	1	0.00	10	0.00	10
	2.26	MAX	1.29	8	0.80	2	0.00	10	0.00	10
		MIN	-0.61	2	-5.77	1	0.00	10	0.00	10
	2.46	MAX	0.88	8	0.93	2	0.00	10	0.00	10

		MIN	-0.74	6	-5.75	7	0.00	10	0.00	10
MAX/MIN FORCE VALUES FOR MEMB 14, AMONGST ALL SECT LOCATIONS											
			FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
		MAX.	4.09	0.00	3	0.93	2.46	2			
			0.00	0.00	1	0.00	0.00	1	1.19 C	0.00	1
		MIN.	-0.74	2.46	6	-5.77	2.26	1			
			0.00	2.46	10	0.00	2.46	10	0.55 T	2.46	2
15	0.00	MAX	0.88	8	0.93	2	0.00	10	0.00	10	
		MIN	-0.74	6	-5.75	7	0.00	10	0.00	10	
	0.21	MAX	0.46	8	1.05	2	0.00	10	0.00	10	
		MIN	-1.06	6	-5.66	3	0.00	10	0.00	10	
	0.42	MAX	0.03	8	1.18	2	0.00	10	0.00	10	
		MIN	-1.38	6	-5.51	3	0.00	10	0.00	10	
	0.63	MAX	-0.06	10	1.31	2	0.00	10	0.00	10	
		MIN	-1.69	6	-5.27	3	0.00	10	0.00	10	
	0.85	MAX	-0.06	10	1.44	2	0.00	10	0.00	10	
		MIN	-2.01	6	-5.11	8	0.00	10	0.00	10	
	1.06	MAX	-0.06	10	1.57	2	0.00	10	0.00	10	
		MIN	-2.36	1	-4.90	8	0.00	10	0.00	10	
	1.27	MAX	-0.06	10	1.70	2	0.00	10	0.00	10	
		MIN	-2.73	1	-4.59	8	0.00	10	0.00	10	
	1.48	MAX	-0.06	10	1.83	2	0.00	10	0.00	10	
		MIN	-3.10	1	-4.20	8	0.00	10	0.00	10	
	1.69	MAX	-0.06	10	1.96	2	0.00	10	0.00	10	
		MIN	-3.47	1	-3.71	8	0.00	10	0.00	10	
	1.90	MAX	-0.06	10	2.09	2	0.00	10	0.00	10	
		MIN	-3.83	1	-3.14	8	0.00	10	0.00	10	
	2.11	MAX	-0.06	10	2.22	2	0.00	10	0.00	10	
		MIN	-4.20	1	-2.48	8	0.00	10	0.00	10	
	2.33	MAX	-0.06	10	2.35	2	0.00	10	0.00	10	
		MIN	-4.33	1	-1.72	8	0.00	10	0.00	10	
	2.54	MAX	-0.06	10	2.48	2	0.00	10	0.00	10	
		MIN	-4.65	7	-0.88	8	0.00	10	0.00	10	
MAX/MIN FORCE VALUES FOR MEMB 15, AMONGST ALL SECT LOCATIONS											
			FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
		MAX.	0.88	0.00	8	2.48	2.54	2			
			0.00	0.00	1	0.00	0.00	1	1.19 C	0.00	1
		MIN.	-4.65	2.54	7	-5.75	0.00	7			
			0.00	2.54	10	0.00	2.54	10	0.55 T	2.54	2
16	0.00	MAX	-0.06	10	2.48	2	0.00	10	0.00	10	
		MIN	-4.65	7	-0.88	8	0.00	10	0.00	10	
	0.14	MAX	-0.06	10	2.56	2	0.00	10	0.00	10	
		MIN	-4.89	7	-0.29	8	0.00	10	0.00	10	
	0.28	MAX	-0.06	10	2.65	2	0.00	10	0.00	10	
		MIN	-5.08	7	0.06	10	0.00	10	0.00	10	
	0.41	MAX	-0.06	10	2.90	1	0.00	10	0.00	10	
		MIN	-5.28	3	0.06	10	0.00	10	0.00	10	
	0.55	MAX	-0.06	10	3.50	1	0.00	10	0.00	10	
		MIN	-5.35	3	0.07	10	0.00	10	0.00	10	

	0.69	MAX	-0.06	10	4.09	1	0.00	10	0.00	10
		MIN	-5.56	8	0.08	10	0.00	10	0.00	10
	0.83	MAX	-0.06	10	4.69	1	0.00	10	0.00	10
		MIN	-5.84	8	0.09	10	0.00	10	0.00	10
	0.96	MAX	-0.06	10	5.33	7	0.00	10	0.00	10
		MIN	-6.11	8	0.10	10	0.00	10	0.00	10
	1.10	MAX	-0.06	10	6.02	7	0.00	10	0.00	10
		MIN	-6.38	8	0.11	10	0.00	10	0.00	10
	1.24	MAX	-0.06	10	6.74	3	0.00	10	0.00	10
		MIN	-6.66	8	0.11	10	0.00	10	0.00	10
	1.38	MAX	-0.06	10	7.47	3	0.00	10	0.00	10
		MIN	-6.93	8	0.12	10	0.00	10	0.00	10
	1.51	MAX	-0.06	10	8.21	3	0.00	10	0.00	10
		MIN	-7.21	8	0.13	10	0.00	10	0.00	10
	1.65	MAX	-0.06	10	8.94	3	0.00	10	0.00	10
		MIN	-7.48	8	0.14	10	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 16, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	-0.06	0.00	10	8.94	1.65	3				
	0.00	0.00	1	0.00	0.00	1	1.19	C	0.00	1
MIN.	-7.48	1.65	8	-0.88	0.00	8				
	0.00	1.65	10	0.00	1.65	10	0.55	T	1.65	2

17	0.00	MAX	5.58	2	8.42	2	0.00	10	0.00	10
		MIN	0.13	10	0.33	9	0.00	10	0.00	10
	0.14	MAX	5.58	2	7.65	2	0.00	10	0.00	10
		MIN	0.13	10	0.30	9	0.00	10	0.00	10
	0.27	MAX	5.58	2	6.88	2	0.00	10	0.00	10
		MIN	0.13	10	0.27	9	0.00	10	0.00	10
	0.41	MAX	5.58	2	6.17	4	0.00	10	0.00	10
		MIN	0.13	10	0.25	9	0.00	10	0.00	10
	0.55	MAX	5.58	2	5.48	4	0.00	10	0.00	10
		MIN	0.13	10	0.22	9	0.00	10	0.00	10
	0.69	MAX	5.58	2	4.79	4	0.00	10	0.00	10
		MIN	0.13	10	0.19	9	0.00	10	0.00	10
	0.82	MAX	5.57	2	4.10	4	0.00	10	0.00	10
		MIN	0.13	10	0.16	9	0.00	10	0.00	10
	0.96	MAX	5.34	2	3.41	4	0.00	10	0.00	10
		MIN	0.13	10	0.13	9	0.00	10	0.00	10
	1.10	MAX	5.10	2	3.13	8	0.00	10	0.00	10
		MIN	0.13	10	0.11	9	0.00	10	0.00	10
	1.24	MAX	4.98	4	3.05	8	0.00	10	0.00	10
		MIN	0.13	10	0.08	9	0.00	10	0.00	10
	1.37	MAX	4.75	4	2.96	8	0.00	10	0.00	10
		MIN	0.13	10	0.05	9	0.00	10	0.00	10
	1.51	MAX	4.51	4	2.87	8	0.00	10	0.00	10
		MIN	0.13	10	0.02	9	0.00	10	0.00	10
	1.65	MAX	4.27	4	2.78	8	0.00	10	0.00	10
		MIN	0.13	10	-0.20	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 17, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD

MAX.		5.58	0.00	2	8.42	0.00	2					
		0.00	0.00	1	0.00	0.00	1	0.92	C	0.00		4
MIN.		0.13	1.65	10	-0.20	1.65	2					
		0.00	1.65	10	0.00	1.65	10	0.62	T	1.65		8
18	0.00	MAX	4.27	4	2.78	8	0.00	10		0.00		10
		MIN	0.13	10	-0.20	2	0.00	10		0.00		10
	0.21	MAX	3.91	4	2.65	8	0.00	10		0.00		10
		MIN	0.13	10	-1.02	2	0.00	10		0.00		10
	0.42	MAX	3.55	4	2.51	8	0.00	10		0.00		10
		MIN	-0.02	9	-1.77	2	0.00	10		0.00		10
	0.62	MAX	3.19	4	2.38	8	0.00	10		0.00		10
		MIN	-0.04	9	-2.44	2	0.00	10		0.00		10
	0.83	MAX	2.83	4	2.24	8	0.00	10		0.00		10
		MIN	-0.04	9	-3.04	2	0.00	10		0.00		10
	1.04	MAX	2.47	4	2.11	8	0.00	10		0.00		10
		MIN	-0.04	9	-3.56	2	0.00	10		0.00		10
	1.25	MAX	2.11	4	1.98	8	0.00	10		0.00		10
		MIN	-0.04	9	-4.01	2	0.00	10		0.00		10
	1.46	MAX	1.75	4	1.84	8	0.00	10		0.00		10
		MIN	-0.04	9	-4.38	2	0.00	10		0.00		10
	1.67	MAX	1.39	4	1.71	8	0.00	10		0.00		10
		MIN	-0.04	9	-4.67	2	0.00	10		0.00		10
	1.88	MAX	1.03	4	1.57	8	0.00	10		0.00		10
		MIN	-0.04	9	-4.89	2	0.00	10		0.00		10
	2.08	MAX	0.67	4	1.44	8	0.00	10		0.00		10
		MIN	-0.04	9	-5.04	2	0.00	10		0.00		10
	2.29	MAX	0.64	8	1.31	3	0.00	10		0.00		10
		MIN	-0.04	9	-5.12	4	0.00	10		0.00		10
	2.50	MAX	0.64	8	1.18	3	0.00	10		0.00		10
		MIN	-0.21	2	-5.15	4	0.00	10		0.00		10

MAX/MIN FORCE VALUES FOR MEMB 18, AMONGST ALL SECT LOCATIONS												
		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX		DIST		LD
MAX.		4.27	0.00	4	2.78	0.00	8					
		0.00	0.00	1	0.00	0.00	1	0.92	C	0.00		4
MIN.		-0.21	2.50	2	-5.15	2.50	4					
		0.00	2.50	10	0.00	2.50	10	0.62	T	2.50		8
25	0.00	MAX	0.55	2	1.56	10	0.00	10		0.00		10
		MIN	-1.19	1	0.52	6	0.00	10		0.00		10
	0.14	MAX	0.55	2	1.51	10	0.00	10		0.00		10
		MIN	-1.19	1	0.65	6	0.00	10		0.00		10
	0.29	MAX	0.55	2	1.46	10	0.00	10		0.00		10
		MIN	-1.19	1	0.79	6	0.00	10		0.00		10
	0.43	MAX	0.55	2	1.40	10	0.00	10		0.00		10
		MIN	-1.19	1	0.92	6	0.00	10		0.00		10
	0.57	MAX	0.55	2	1.35	10	0.00	10		0.00		10
		MIN	-1.19	1	0.92	4	0.00	10		0.00		10
	0.72	MAX	0.55	2	1.45	8	0.00	10		0.00		10
		MIN	-1.19	1	0.84	4	0.00	10		0.00		10
	0.86	MAX	0.55	2	1.57	1	0.00	10		0.00		10
		MIN	-1.19	1	0.77	4	0.00	10		0.00		10
	1.01	MAX	0.55	2	1.74	1	0.00	10		0.00		10
		MIN	-1.19	1	0.69	4	0.00	10		0.00		10

	1.15	MAX	0.55	2	1.91	1	0.00	10	0.00	10
		MIN	-1.19	1	0.62	4	0.00	10	0.00	10
	1.29	MAX	0.55	2	2.08	1	0.00	10	0.00	10
		MIN	-1.19	1	0.54	4	0.00	10	0.00	10
	1.44	MAX	0.55	2	2.25	1	0.00	10	0.00	10
		MIN	-1.19	1	0.47	4	0.00	10	0.00	10
	1.58	MAX	0.55	2	2.42	1	0.00	10	0.00	10
		MIN	-1.19	1	0.39	4	0.00	10	0.00	10
	1.72	MAX	0.55	2	2.60	1	0.00	10	0.00	10
		MIN	-1.19	1	0.32	4	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 25, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.55	0.00	2	2.60	1.72	1			
	0.00	0.00	1	0.00	0.00	1	5.51 C	0.00	6
MIN.	-1.19	1.72	1	0.32	1.72	4			
	0.00	1.72	10	0.00	1.72	10	0.61 T	1.72	2

27	0.00	MAX	0.55	2	3.70	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.18	2	0.00	10	0.00	10
	0.08	MAX	0.55	2	3.79	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.22	2	0.00	10	0.00	10
	0.15	MAX	0.55	2	3.88	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.26	2	0.00	10	0.00	10
	0.23	MAX	0.55	2	3.97	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.30	2	0.00	10	0.00	10
	0.31	MAX	0.55	2	4.06	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.35	2	0.00	10	0.00	10
	0.38	MAX	0.55	2	4.15	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.39	2	0.00	10	0.00	10
	0.46	MAX	0.55	2	4.24	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.43	2	0.00	10	0.00	10
	0.54	MAX	0.55	2	4.34	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.47	2	0.00	10	0.00	10
	0.61	MAX	0.55	2	4.43	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.52	2	0.00	10	0.00	10
	0.69	MAX	0.55	2	4.52	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.56	2	0.00	10	0.00	10
	0.77	MAX	0.55	2	4.61	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.60	2	0.00	10	0.00	10
	0.84	MAX	0.55	2	4.70	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.64	2	0.00	10	0.00	10
	0.92	MAX	0.55	2	4.79	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.68	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 27, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.55	0.00	2	4.79	0.92	1			
	0.00	0.00	1	0.00	0.00	1	5.51 C	0.00	6
MIN.	-1.19	0.92	1	-0.68	0.92	2			
	0.00	0.92	10	0.00	0.92	10	0.61 T	0.92	2

28	0.00	MAX	0.55	2	4.79	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.68	2	0.00	10	0.00	10
	0.14	MAX	0.55	2	4.97	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.76	2	0.00	10	0.00	10
	0.29	MAX	0.55	2	5.14	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.84	2	0.00	10	0.00	10
	0.43	MAX	0.55	2	5.31	1	0.00	10	0.00	10
		MIN	-1.19	1	-0.92	2	0.00	10	0.00	10
	0.57	MAX	0.55	2	5.48	1	0.00	10	0.00	10
		MIN	-1.19	1	-1.00	2	0.00	10	0.00	10
	0.72	MAX	0.55	2	5.65	1	0.00	10	0.00	10
		MIN	-1.19	1	-1.08	2	0.00	10	0.00	10
	0.86	MAX	0.55	2	5.82	1	0.00	10	0.00	10
		MIN	-1.19	1	-1.16	2	0.00	10	0.00	10
	1.01	MAX	0.55	2	5.99	1	0.00	10	0.00	10
		MIN	-1.19	1	-1.24	2	0.00	10	0.00	10
	1.15	MAX	0.55	2	6.17	1	0.00	10	0.00	10
		MIN	-1.19	1	-1.32	2	0.00	10	0.00	10
	1.29	MAX	0.55	2	6.34	1	0.00	10	0.00	10
		MIN	-1.19	1	-1.40	2	0.00	10	0.00	10
	1.44	MAX	0.55	2	6.51	1	0.00	10	0.00	10
		MIN	-1.19	1	-1.48	2	0.00	10	0.00	10
	1.58	MAX	0.55	2	6.68	1	0.00	10	0.00	10
		MIN	-1.19	1	-1.56	2	0.00	10	0.00	10
	1.72	MAX	0.55	2	6.85	1	0.00	10	0.00	10
		MIN	-1.19	1	-1.64	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 28, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.55	0.00	2	6.85	1.72	1			
	0.00	0.00	1	0.00	0.00	1	5.51 C	0.00	6
MIN.	-1.19	1.72	1	-1.64	1.72	2			
	0.00	1.72	10	0.00	1.72	10	0.61 T	1.72	2

29	0.00	MAX	1.47	3	2.52	3	0.00	10	0.00	10
		MIN	-1.45	2	-2.74	2	0.00	10	0.00	10
	0.14	MAX	1.47	3	2.31	3	0.00	10	0.00	10
		MIN	-1.45	2	-2.53	2	0.00	10	0.00	10
	0.29	MAX	1.47	3	2.10	3	0.00	10	0.00	10
		MIN	-1.45	2	-2.33	2	0.00	10	0.00	10
	0.43	MAX	1.47	3	1.89	3	0.00	10	0.00	10
		MIN	-1.45	2	-2.12	4	0.00	10	0.00	10
	0.57	MAX	1.47	3	1.68	7	0.00	10	0.00	10
		MIN	-1.45	2	-1.91	4	0.00	10	0.00	10
	0.72	MAX	1.47	3	1.47	7	0.00	10	0.00	10
		MIN	-1.45	2	-1.70	4	0.00	10	0.00	10
	0.86	MAX	1.47	3	1.26	7	0.00	10	0.00	10
		MIN	-1.45	2	-1.50	4	0.00	10	0.00	10
	1.01	MAX	1.47	3	1.05	7	0.00	10	0.00	10
		MIN	-1.45	2	-1.29	4	0.00	10	0.00	10
	1.15	MAX	1.47	3	0.84	7	0.00	10	0.00	10
		MIN	-1.45	2	-1.08	4	0.00	10	0.00	10
	1.29	MAX	1.47	3	0.63	7	0.00	10	0.00	10
		MIN	-1.45	2	-0.88	4	0.00	10	0.00	10

	1.44	MAX	1.47	3	0.43	1	0.00	10	0.00	10
		MIN	-1.45	2	-0.67	4	0.00	10	0.00	10
	1.58	MAX	1.47	3	0.23	1	0.00	10	0.00	10
		MIN	-1.45	2	-0.46	4	0.00	10	0.00	10
	1.72	MAX	1.47	3	0.03	6	0.00	10	0.00	10
		MIN	-1.45	2	-0.26	4	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 29, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.47	0.00	3	2.52	0.00	3			
	0.00	0.00	1	0.00	0.00	1	8.48 C	0.00	8
MIN.	-1.45	1.72	2	-2.74	0.00	2			
	0.00	1.72	10	0.00	1.72	10	0.19 C	1.72	10

31	0.00	MAX	1.47	3	1.10	2	0.00	10	0.00	10
		MIN	-1.45	2	-1.36	3	0.00	10	0.00	10
	0.08	MAX	1.47	3	1.21	2	0.00	10	0.00	10
		MIN	-1.45	2	-1.47	3	0.00	10	0.00	10
	0.15	MAX	1.47	3	1.32	2	0.00	10	0.00	10
		MIN	-1.45	2	-1.59	3	0.00	10	0.00	10
	0.23	MAX	1.47	3	1.43	2	0.00	10	0.00	10
		MIN	-1.45	2	-1.70	3	0.00	10	0.00	10
	0.31	MAX	1.47	3	1.54	2	0.00	10	0.00	10
		MIN	-1.45	2	-1.81	3	0.00	10	0.00	10
	0.38	MAX	1.47	3	1.65	2	0.00	10	0.00	10
		MIN	-1.45	2	-1.92	3	0.00	10	0.00	10
	0.46	MAX	1.47	3	1.76	2	0.00	10	0.00	10
		MIN	-1.45	2	-2.04	3	0.00	10	0.00	10
	0.54	MAX	1.47	3	1.87	2	0.00	10	0.00	10
		MIN	-1.45	2	-2.15	3	0.00	10	0.00	10
	0.61	MAX	1.47	3	1.98	2	0.00	10	0.00	10
		MIN	-1.45	2	-2.26	3	0.00	10	0.00	10
	0.69	MAX	1.47	3	2.10	2	0.00	10	0.00	10
		MIN	-1.45	2	-2.37	3	0.00	10	0.00	10
	0.77	MAX	1.47	3	2.21	2	0.00	10	0.00	10
		MIN	-1.45	2	-2.49	3	0.00	10	0.00	10
	0.84	MAX	1.47	3	2.32	2	0.00	10	0.00	10
		MIN	-1.45	2	-2.60	3	0.00	10	0.00	10
	0.92	MAX	1.47	3	2.43	2	0.00	10	0.00	10
		MIN	-1.45	2	-2.71	3	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 31, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.47	0.00	3	2.43	0.92	2			
	0.00	0.00	1	0.00	0.00	1	8.48 C	0.00	8
MIN.	-1.45	0.92	2	-2.71	0.92	3			
	0.00	0.92	10	0.00	0.92	10	0.19 C	0.92	10

32	0.00	MAX	1.47	3	2.43	2	0.00	10	0.00	10
		MIN	-1.45	2	-2.71	3	0.00	10	0.00	10
	0.14	MAX	1.47	3	2.64	2	0.00	10	0.00	10
		MIN	-1.45	2	-2.92	3	0.00	10	0.00	10
	0.29	MAX	1.47	3	2.85	2	0.00	10	0.00	10

	MIN	-1.45	2	-3.13	3	0.00	10	0.00	10
0.43	MAX	1.47	3	3.06	2	0.00	10	0.00	10
	MIN	-1.45	2	-3.34	3	0.00	10	0.00	10
0.57	MAX	1.47	3	3.26	2	0.00	10	0.00	10
	MIN	-1.45	2	-3.55	3	0.00	10	0.00	10
0.72	MAX	1.47	3	3.47	2	0.00	10	0.00	10
	MIN	-1.45	2	-3.77	3	0.00	10	0.00	10
0.86	MAX	1.47	3	3.68	2	0.00	10	0.00	10
	MIN	-1.45	2	-3.98	3	0.00	10	0.00	10
1.01	MAX	1.47	3	3.89	2	0.00	10	0.00	10
	MIN	-1.45	2	-4.19	3	0.00	10	0.00	10
1.15	MAX	1.47	3	4.10	2	0.00	10	0.00	10
	MIN	-1.45	2	-4.40	3	0.00	10	0.00	10
1.29	MAX	1.47	3	4.31	2	0.00	10	0.00	10
	MIN	-1.45	2	-4.61	3	0.00	10	0.00	10
1.44	MAX	1.47	3	4.52	2	0.00	10	0.00	10
	MIN	-1.45	2	-4.82	3	0.00	10	0.00	10
1.58	MAX	1.47	3	4.72	2	0.00	10	0.00	10
	MIN	-1.45	2	-5.03	3	0.00	10	0.00	10
1.72	MAX	1.47	3	4.93	2	0.00	10	0.00	10
	MIN	-1.45	2	-5.24	3	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 32, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.47	0.00	3	4.93	1.72	2			
	0.00	0.00	1	0.00	0.00	1	8.48 C	0.00	8
MIN.	-1.45	1.72	2	-5.24	1.72	3			
	0.00	1.72	10	0.00	1.72	10	0.19 C	1.72	10

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

171. FINISH

********** END OF THE STAAD.Pro RUN **********

```
INPUT FILE: wheel.STD
     1. STAAD PLANE
     2. START JOB INFORMATION
     3. ENGINEER DATE 29-NOV-06
     4. END JOB INFORMATION
     5. INPUT WIDTH 79
     6. PAGE LENGTH 1000
     7. UNIT METER MTON
     8. JOINT COORDINATES
     9. 1   0.000     0.000     0.000
    10. 2   1.725     0.000     0.000
    11. 3   4.188     0.000     0.000
    12. 4   6.725     0.000     0.000
    13. 5   8.375     0.000     0.000
    14. 6  10.025     0.000     0.000
    15. 7  12.525     0.000     0.000
    16. 8  15.025     0.000     0.000
    17. 9  16.675     0.000     0.000
    18. 10 18.325     0.000     0.000
    19. 11 20.863     0.000     0.000
    20. 12 23.325     0.000     0.000
    21. 13 25.050     0.000     0.000
    22. 14 0.000      5.291     0.000
    23. 15 1.725      5.291     0.000
    24. 16 4.188      5.291     0.000
    25. 17 6.725      5.291     0.000
    26. 18 8.375      5.291     0.000
    27. 19 10.025     5.291     0.000
    28. 20 12.525     5.291     0.000
    29. 21 15.025     5.291     0.000
    30. 22 16.675     5.291     0.000
    31. 23 18.325     5.291     0.000
    32. 24 20.863     5.291     0.000
    33. 25 23.325     5.291     0.000
    34. 26 25.050     5.291     0.000
    35. 27 0.000      1.725     0.000
    36. 28 0.000      2.646     0.000
    37. 29 0.000      3.566     0.000
    38. 30 8.375      1.725     0.000
    39. 31 8.375      2.646     0.000
    40. 32 8.375      3.566     0.000
    41. 33 16.675     1.725     0.000
    42. 34 16.675     2.646     0.000
    43. 35 16.675     3.566     0.000
    44. 36 25.050     1.725     0.000
    45. 37 25.050     2.646     0.000
    46. 38 25.050     3.566     0.000
    47. MEMBER INCIDENCES
    48. 1         1         2
    49. 2         2         3
    50. 3         3         4
    51. 4         4         5
    52. 5         5         6
    53. 6         6         7
    54. 7         7         8
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 55. 8         8         9
 56. 9         9        10
 57. 10        10        11
 58. 11        11        12
 59. 12        12        13
 60. 13        14        15
 61. 14        15        16
 62. 15        16        17
 63. 16        17        18
 64. 17        18        19
 65. 18        19        20
 66. 19        20        21
 67. 20        21        22
 68. 21        22        23
 69. 22        23        24
 70. 23        24        25
 71. 24        25        26
 72. 25         1        27
 73. 26        27        28
 74. 27        28        29
 75. 28        29        14
 76. 29         5        30
 77. 30        30        31
 78. 31        31        32
 79. 32        32        18
 80. 33         9        33
 81. 34        33        34
 82. 35        34        35
 83. 36        35        22
 84. 37        13        36
 85. 38        36        37
 86. 39        37        38
 87. 40        38        26
 88. MEMBER PROPERTY INDIAN
 89. 2 3 6 7 10 11 14 15 18 19 22 23 26 27 38 39 PRI YD .45 ZD 1.
 90. 30 31 34 35 PRI YD .3 ZD 1.
 91. 1 4 5 8 9 12 13 16 17 20 21 24 25 28 37 40 PRI AX .561 IZ .0158 YD .575
 92. 29 32 33 36 PRI AX .425 IZ .03054 YD .425
 93. CONSTANT
 94. E 3E6 ALL
 95. DENSITY 2.4 ALL
 96. ALPHA .0000117 ALL
 97. SUPPORT
 98. 5 PINNED
 99. 1 9 13 FIXED BUT FX MZ
100. ******************************************************
101. LOAD 1 FOR MAX BM (HOGGING) AT END WEB
102. MEMBER LOAD
103. 13 UNI GY -2.349 0.723 1.725
104. 14 UNI GY -2.349 0.0 0.273
105. 14 UNI GY -1.960 0.368 1.643
106. 15 UNI GY -1.978 0.955  2.23
107. 15 UNI GY -2.448 2.325 2.5375
108. 16 UNI GY -2.448 0.0   1.063
109. *UPWARD BASE PRESSURE
110. 1 TO 12 UNI GY 0.445
111. LOAD 2 FOR MAX BM (HOGGING) IN MID SAPN OF OUTER CELL
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112. MEMBER LOAD
113. 17 UNI GY -2.549 0.468 1.65
114. 18 UNI GY -2.549 0.0   0.093
115. 18 UNI GY -1.995 0.188 1.463
116. 19 UNI GY -1.995 0.738 2.103
117. 19 UNI GY -2.318 2.108 2.50
118. 20 UNI GY -2.318 0.0   0.883
119. 21 UNI GY -2.094 0.087 1.363
120. 21 UNI GY -1.435 1.608 1.65
121. 22 UNI GY -1.435 0.0   1.233
122. 23 UNI GY -0.963 1.38  2.4625
123. 24 UNI GY -0.963 0.0   0.192
124. *UPWARD BASE PRESSURE
125. 1 TO 12 UNI GY 0.677
126. LOAD 3 FOR MAX BM (HOGGING) AT END OF HAUNCH 2
127. MEMBER LOAD
128. 13 UNI GY -1.511 1.103 1.725
129. 14 UNI GY -1.511 0.0   0.653
130. 14 UNI GY -1.346 0.898 2.173
131. 15 UNI GY -3.202 0.818 1.587
132. 15 UNI GY -3.633 2.188 2.5375
133. 16 UNI GY -3.633 0.0   0.420
134. 17 UNI GY -3.811 1.051 1.65
135. 18 UNI GY -3.811 0.0   0.170
136. 18 UNI GY -3.235 0.771 1.54
137. *UPWARD BASE PRESSURE
138. 1 TO 12 UNI GY 0.572
139. LOAD 4 FOR MAX BM (HOGGING) AT START OF HAUNCH 9
140. MEMBER LOAD
141. 15 UNI GY -1.968 1.125 2.4
142. 15 UNI GY -2.305 2.125 2.4625
143. 16 UNI GY -2.305 0.0   0.863
144. 17 UNI GY -2.186 0.988 1.65
145. 18 UNI GY -2.186 0.0   0.613
146. 18 UNI GY -1.93 0.708  1.983
147. 19 UNI GY -1.351 0.338 1.613
148. 19 UNI GY -1.532 1.857 2.50
149. 20 UNI GY -1.532 0.0   0.633
150. 22 UNI GY -0.952 0.018 1.293
151. *UPWARD BASE PRESSURE
152. 1 TO 12 UNI GY 0.622
153. LOAD 5 FOR MAX BM (HOGGING) AT MID SPAN OF MIDDLE CELL
154. MEMBER LOAD
155. 13 UNI GY -4.824 0.0 1.275
156. 14 UNI GY -1.929 0.878 2.153
157. 15 UNI GY -3.118 0.038 0.807
158. 15 UNI GY -1.539 1.915 2.5375
159. 16 UNI GY -1.539 0.0   0.653
160. 16 UNI GY -6.484 1.151 1.65
161. 17 UNI GY -6.484 0.0   0.269
162. 18 UNI GY -1.465 1.811 2.5
163. 19 UNI GY -1.465 0.0   0.080
164. *UPWARD BASE PRESSURE
165. 1 TO 12 UNI GY 0.762
166. ************************************************************
167. LOAD 6 FOR MAX BM (SAGGING) AT END OF HAUNCH 1
168. MEMBER LOAD
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169. 13 UNI GY -2.138 1.113 1.725
170. 14 UNI GY -2.138 0.0   0.663
171. 14 UNI GY -1.919 0.758 2.033
172. *UPWARD BASE PRESSURE
173. 1 TO 12 UNI GY 0.206
174. LOAD 7 FOR MAX BM (SAGGING) IN MID SAPN OF OUTER CELL
175. MEMBER LOAD
176. 14 UNI GY -1.946 0.488 1.763
177. 14 UNI GY -1.873 1.858 2.4625
178. 15 UNI GY -1.873 0.0   0.670
179. 15 UNI GY -1.465 1.525 2.5375
180. 16 UNI GY -1.465 0.0   0.262
181. 16 UNI GY -2.336 0.508 1.65
182. 17 UNI GY -2.336 0.0   0.133
183. 18 UNI GY -0.892 1.168 2.443
184. *UPWARD BASE PRESSURE
185. 1 TO 12 UNI GY 0.433
186. LOAD 8 FOR MAX BM (SAGGING) AT START OF HAUNCH 2
187. MEMBER LOAD
188. 13 UNI GY -2.678 0.333 1.608
189. 13 UNI GY -2.017 1.703 1.725
190. 15 UNI GY -1.931 0.565 1.84
191. 15 UNI GY -2.191 1.935 2.5375
192. 16 UNI GY -2.191 0.0   0.672
193. *UPWARD BASE PRESSURE
194. 1 TO 12 UNI GY 0.449
195. LOAD 9 FOR MAX BM (SAGGING) AT END OF HAUNCH 9
196. MEMBER LOAD
197. 17 UNI GY -2.186 0.988 1.65
198. 18 UNI GY -2.186 0.0   0.613
199. 18 UNI GY -1.930 0.708 1.983
200. 19 UNI GY -2.031 1.258 2.5
201. 20 UNI GY -2.031 0.0   0.033
202. 20 UNI GY -2.769 0.128 1.403
203. 21 UNI GY -1.724 0.608 1.65
204. 22 UNI GY -1.724 0.0   0.233
205. 22 UNI GY -1.391 0.478 1.753
206. 23 UNI GY -1.029 1.9   2.4625
207. 24 UNI GY -1.029 0.0   0.712
208. *UPWARD BASE PRESSURE
209. 1 TO 12 UNI GY 0.665
210. LOAD 10 FOR MAX BM (SAGGING) IN MID SAPN OF INNER CELL
211. MEMBER LOAD
212. 14 UNI GY -0.886 2.308 2.4625
213. 15 UNI GY -0.866 0.000 1.120
214. 16 UNI GY -3.065 1.268 1.65
215. 17 UNI GY -3.065 0.000 0.893
216. 17 UNI GY -1.505 1.138 1.65
217. 18 UNI GY -1.505 0.0   0.763
218. 18 UNI GY -1.876 1.618 2.50
219. 19 UNI GY -1.876 0.000 0.393
220. 20 UNI GY -6.776 1.038 1.65
221. 21 UNI GY -6.776 0.000 0.662
222. 21 UNI GY -2.325 0.758 1.65
223. 22 UNI GY -2.325 0.0   0.383
224. *UPWARD BASE PRESSURE
225. 1 TO 12 UNI GY 0.935
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   226. PERFORM ANALYSIS
   227. PRINT FORCE ENVELOPE LIST 1 2 3 4 5 6 13 14 15 16 17 18 25 27 28 29 31
32
        FORCE    ENVELOPE LIST     1

   MEMB  DISTANCE          FY    LD       MZ    LD       FZ    LD       MY    LD

     1     0.00  MAX    -0.74    6     -0.23    6     0.00   10     0.00   10
                 MIN    -3.48   10     -3.79   10     0.00   10     0.00   10
           0.14  MAX    -0.71    6     -0.13    6     0.00   10     0.00   10
                 MIN    -3.35   10     -3.30   10     0.00   10     0.00   10
           0.29  MAX    -0.68    6     -0.03    6     0.00   10     0.00   10
                 MIN    -3.21   10     -2.82   10     0.00   10     0.00   10
           0.43  MAX    -0.66    6      0.07    6     0.00   10     0.00   10
                 MIN    -3.08   10     -2.37   10     0.00   10     0.00   10
           0.57  MAX    -0.63    6      0.16    6     0.00   10     0.00   10
                 MIN    -2.94   10     -1.94   10     0.00   10     0.00   10
           0.72  MAX    -0.60    6      0.25    6     0.00   10     0.00   10
                 MIN    -2.81   10     -1.53   10     0.00   10     0.00   10
           0.86  MAX    -0.57    6      0.36    1     0.00   10     0.00   10
                 MIN    -2.68   10     -1.13   10     0.00   10     0.00   10
           1.01  MAX    -0.54    6      0.54    1     0.00   10     0.00   10
                 MIN    -2.54   10     -0.76   10     0.00   10     0.00   10
           1.15  MAX    -0.51    6      0.71    1     0.00   10     0.00   10
                 MIN    -2.41   10     -0.40   10     0.00   10     0.00   10
           1.29  MAX    -0.48    6      0.94    5     0.00   10     0.00   10
                 MIN    -2.27   10     -0.06   10     0.00   10     0.00   10
           1.44  MAX    -0.45    6      1.20    5     0.00   10     0.00   10
                 MIN    -2.14   10      0.18    2     0.00   10     0.00   10
           1.58  MAX    -0.42    6      1.44    5     0.00   10     0.00   10
                 MIN    -2.00   10      0.38    2     0.00   10     0.00   10
           1.72  MAX    -0.39    6      1.66    5     0.00   10     0.00   10
                 MIN    -1.87   10      0.57    2     0.00   10     0.00   10
   |-------------------------------------------------------------------------
   | MAX/MIN FORCE VALUES FOR MEMB      1, AMONGST ALL SECT LOCATIONS
   |             FY/   DIST   LD        MZ/   DIST   LD
   |             FZ    DIST   LD        MY    DIST   LD       FX      DIST   LD
   |
   | MAX.      -0.39   1.72    6       1.66   1.72    5
   |            0.00   0.00    1       0.00   0.00    1      0.87 C   0.00   10
   | MIN.      -3.48   0.00   10      -3.79   0.00   10
   |            0.00   1.72   10       0.00   1.72   10      0.92 T   1.72    1
   |-------------------------------------------------------------------------
     2     0.00  MAX    -0.39    6      1.66    5     0.00   10     0.00   10
                 MIN    -1.87   10      0.57    2     0.00   10     0.00   10
           0.21  MAX    -0.35    6      1.96    5     0.00   10     0.00   10
                 MIN    -1.68   10      0.80    9     0.00   10     0.00   10
           0.41  MAX    -0.30    6      2.22    5     0.00   10     0.00   10
                 MIN    -1.49   10      0.89    6     0.00   10     0.00   10
           0.62  MAX    -0.26    6      2.45    5     0.00   10     0.00   10
                 MIN    -1.29   10      0.95    6     0.00   10     0.00   10
           0.82  MAX    -0.22    6      2.64    5     0.00   10     0.00   10
                 MIN    -1.10   10      0.99    6     0.00   10     0.00   10
           1.03  MAX    -0.18    6      2.81    5     0.00   10     0.00   10
                 MIN    -0.91   10      1.04    6     0.00   10     0.00   10
           1.23  MAX    -0.13    6      2.94    5     0.00   10     0.00   10
                 MIN    -0.72   10      1.07    6     0.00   10     0.00   10
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	1.44	MAX	-0.09	6	3.04	5	0.00	10	0.00	10
		MIN	-0.53	10	1.09	6	0.00	10	0.00	10
	1.64	MAX	-0.05	6	3.11	5	0.00	10	0.00	10
		MIN	-0.33	10	1.11	6	0.00	10	0.00	10
	1.85	MAX	0.02	2	3.15	5	0.00	10	0.00	10
		MIN	-0.14	10	1.11	6	0.00	10	0.00	10
	2.05	MAX	0.16	2	3.15	5	0.00	10	0.00	10
		MIN	0.00	8	1.11	6	0.00	10	0.00	10
	2.26	MAX	0.30	2	3.12	5	0.00	10	0.00	10
		MIN	0.08	6	1.10	6	0.00	10	0.00	10
	2.46	MAX	0.44	2	3.06	5	0.00	10	0.00	10
		MIN	0.12	6	1.08	6	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 2, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.44	2.46	2	3.15	2.05	5			
	0.00	0.00	1	0.00	0.00	1	0.87 C	0.00	10
MIN.	-1.87	0.00	10	0.57	0.00	2			
	0.00	2.46	10	0.00	2.46	10	0.92 T	2.46	1

3	0.00	MAX	0.44	2	3.06	5	0.00	10	0.00	10
		MIN	0.12	6	1.08	6	0.00	10	0.00	10
	0.21	MAX	0.63	10	2.97	5	0.00	10	0.00	10
		MIN	0.16	6	1.05	6	0.00	10	0.00	10
	0.42	MAX	0.83	10	2.84	5	0.00	10	0.00	10
		MIN	0.21	6	1.01	6	0.00	10	0.00	10
	0.63	MAX	1.03	10	2.68	5	0.00	10	0.00	10
		MIN	0.25	6	0.96	6	0.00	10	0.00	10
	0.85	MAX	1.22	10	2.48	5	0.00	10	0.00	10
		MIN	0.29	6	0.90	6	0.00	10	0.00	10
	1.06	MAX	1.42	10	2.25	5	0.00	10	0.00	10
		MIN	0.34	6	0.70	2	0.00	10	0.00	10
	1.27	MAX	1.62	10	1.98	5	0.00	10	0.00	10
		MIN	0.38	6	0.45	2	0.00	10	0.00	10
	1.48	MAX	1.82	10	1.68	5	0.00	10	0.00	10
		MIN	0.42	6	0.16	2	0.00	10	0.00	10
	1.69	MAX	2.01	10	1.35	5	0.00	10	0.00	10
		MIN	0.47	6	-0.16	2	0.00	10	0.00	10
	1.90	MAX	2.21	10	0.99	1	0.00	10	0.00	10
		MIN	0.51	6	-0.51	2	0.00	10	0.00	10
	2.11	MAX	2.41	10	0.75	1	0.00	10	0.00	10
		MIN	0.55	6	-0.89	2	0.00	10	0.00	10
	2.33	MAX	2.61	10	0.50	1	0.00	10	0.00	10
		MIN	0.60	6	-1.30	2	0.00	10	0.00	10
	2.54	MAX	2.81	10	0.23	1	0.00	10	0.00	10
		MIN	0.64	6	-1.74	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 3, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	2.81	2.54	10	3.06	0.00	5			
	0.00	0.00	1	0.00	0.00	1	0.87 C	0.00	10
MIN.	0.12	0.00	6	-1.74	2.54	2			
	0.00	2.54	10	0.00	2.54	10	0.92 T	2.54	1

4	0.00	MAX	2.81	10	0.23	1	0.00	10	0.00	10
		MIN	0.64	6	-1.74	2	0.00	10	0.00	10
	0.14	MAX	2.93	10	0.05	1	0.00	10	0.00	10
		MIN	0.67	6	-2.05	2	0.00	10	0.00	10
	0.28	MAX	3.06	10	-0.07	6	0.00	10	0.00	10
		MIN	0.70	6	-2.36	2	0.00	10	0.00	10
	0.41	MAX	3.19	10	-0.17	6	0.00	10	0.00	10
		MIN	0.73	6	-2.75	10	0.00	10	0.00	10
	0.55	MAX	3.32	10	-0.27	6	0.00	10	0.00	10
		MIN	0.75	6	-3.20	10	0.00	10	0.00	10
	0.69	MAX	3.45	10	-0.38	6	0.00	10	0.00	10
		MIN	0.78	6	-3.66	10	0.00	10	0.00	10
	0.83	MAX	3.58	10	-0.49	6	0.00	10	0.00	10
		MIN	0.81	6	-4.14	10	0.00	10	0.00	10
	0.96	MAX	3.71	10	-0.60	6	0.00	10	0.00	10
		MIN	0.84	6	-4.64	10	0.00	10	0.00	10
	1.10	MAX	3.83	10	-0.72	6	0.00	10	0.00	10
		MIN	0.87	6	-5.16	10	0.00	10	0.00	10
	1.24	MAX	3.96	10	-0.84	6	0.00	10	0.00	10
		MIN	0.90	6	-5.70	10	0.00	10	0.00	10
	1.38	MAX	4.09	10	-0.96	6	0.00	10	0.00	10
		MIN	0.92	6	-6.25	10	0.00	10	0.00	10
	1.51	MAX	4.22	10	-1.09	6	0.00	10	0.00	10
		MIN	0.95	6	-6.82	10	0.00	10	0.00	10
	1.65	MAX	4.35	10	-1.23	6	0.00	10	0.00	10
		MIN	0.98	6	-7.41	10	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 4, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	4.35	1.65	10	0.23	0.00	1				
	0.00	0.00	1	0.00	0.00	1	0.87	C	0.00	10
MIN.	0.64	0.00	6	-7.41	1.65	10				
	0.00	1.65	10	0.00	1.65	10	0.92	T	1.65	1

5	0.00	MAX	-1.03	6	-2.38	6	0.00	10	0.00	10
		MIN	-3.84	10	-6.87	5	0.00	10	0.00	10
	0.14	MAX	-1.00	6	-2.24	6	0.00	10	0.00	10
		MIN	-3.71	10	-6.40	5	0.00	10	0.00	10
	0.27	MAX	-0.97	6	-2.11	6	0.00	10	0.00	10
		MIN	-3.58	10	-5.94	5	0.00	10	0.00	10
	0.41	MAX	-0.95	6	-1.97	6	0.00	10	0.00	10
		MIN	-3.46	10	-5.50	5	0.00	10	0.00	10
	0.55	MAX	-0.92	6	-1.85	6	0.00	10	0.00	10
		MIN	-3.33	10	-5.08	5	0.00	10	0.00	10
	0.69	MAX	-0.89	6	-1.72	6	0.00	10	0.00	10
		MIN	-3.20	10	-4.67	5	0.00	10	0.00	10
	0.82	MAX	-0.86	6	-1.60	6	0.00	10	0.00	10
		MIN	-3.07	10	-4.27	5	0.00	10	0.00	10
	0.96	MAX	-0.83	6	-1.34	9	0.00	10	0.00	10
		MIN	-2.94	10	-3.89	5	0.00	10	0.00	10
	1.10	MAX	-0.80	6	-1.07	9	0.00	10	0.00	10
		MIN	-2.81	10	-3.52	5	0.00	10	0.00	10
	1.24	MAX	-0.78	6	-0.81	9	0.00	10	0.00	10
		MIN	-2.68	10	-3.17	5	0.00	10	0.00	10

	1.37	MAX	-0.75	6	-0.56	2	0.00	10	0.00	10
		MIN	-2.56	10	-2.83	5	0.00	10	0.00	10
	1.51	MAX	-0.72	6	-0.33	2	0.00	10	0.00	10
		MIN	-2.43	10	-2.50	5	0.00	10	0.00	10
	1.65	MAX	-0.69	6	-0.10	2	0.00	10	0.00	10
		MIN	-2.30	10	-2.19	5	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 5, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	-0.69	1.65	6	-0.10	1.65	2				
	0.00	0.00	1	0.00	0.00	1	0.47	C	0.00	8
MIN.	-3.84	0.00	10	-6.87	0.00	5				
	0.00	1.65	10	0.00	1.65	10	0.46	T	1.65	2

6	0.00	MAX	-0.69	6	-0.10	2	0.00	10	0.00	10
		MIN	-2.30	10	-2.19	5	0.00	10	0.00	10
	0.21	MAX	-0.65	6	0.21	2	0.00	10	0.00	10
		MIN	-2.10	10	-1.75	5	0.00	10	0.00	10
	0.42	MAX	-0.61	6	0.50	2	0.00	10	0.00	10
		MIN	-1.91	10	-1.34	5	0.00	10	0.00	10
	0.62	MAX	-0.56	6	0.76	2	0.00	10	0.00	10
		MIN	-1.73	5	-1.04	1	0.00	10	0.00	10
	0.83	MAX	-0.52	6	0.99	2	0.00	10	0.00	10
		MIN	-1.57	5	-0.82	1	0.00	10	0.00	10
	1.04	MAX	-0.48	6	1.18	2	0.00	10	0.00	10
		MIN	-1.41	5	-0.62	1	0.00	10	0.00	10
	1.25	MAX	-0.43	6	1.35	2	0.00	10	0.00	10
		MIN	-1.25	5	-0.44	1	0.00	10	0.00	10
	1.46	MAX	-0.39	6	1.49	2	0.00	10	0.00	10
		MIN	-1.09	5	-0.27	1	0.00	10	0.00	10
	1.67	MAX	-0.35	6	1.60	2	0.00	10	0.00	10
		MIN	-0.93	5	-0.13	1	0.00	10	0.00	10
	1.88	MAX	-0.30	9	1.72	10	0.00	10	0.00	10
		MIN	-0.78	5	-0.03	6	0.00	10	0.00	10
	2.08	MAX	-0.16	9	1.81	10	0.00	10	0.00	10
		MIN	-0.62	5	0.03	6	0.00	10	0.00	10
	2.29	MAX	-0.03	9	1.87	10	0.00	10	0.00	10
		MIN	-0.46	5	0.08	6	0.00	10	0.00	10
	2.50	MAX	0.11	9	1.88	10	0.00	10	0.00	10
		MIN	-0.30	5	0.12	6	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 6, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.11	2.50	9	1.88	2.50	10				
	0.00	0.00	1	0.00	0.00	1	0.47	C	0.00	8
MIN.	-2.30	0.00	10	-2.19	0.00	5				
	0.00	2.50	10	0.00	2.50	10	0.46	T	2.50	2

13	0.00	MAX	8.43	5	5.99	5	0.00	10	0.00	10
		MIN	-0.52	2	-1.60	2	0.00	10	0.00	10
	0.14	MAX	7.74	5	5.03	1	0.00	10	0.00	10
		MIN	-0.52	2	-1.52	2	0.00	10	0.00	10
	0.29	MAX	7.04	5	4.28	1	0.00	10	0.00	10

		MIN	-0.52	2	-1.45	2	0.00	10	0.00	10
	0.43	MAX	6.35	5	3.54	1	0.00	10	0.00	10
		MIN	-0.52	2	-1.37	2	0.00	10	0.00	10
	0.57	MAX	5.66	5	2.99	7	0.00	10	0.00	10
		MIN	-0.52	2	-1.30	2	0.00	10	0.00	10
	0.72	MAX	5.18	1	2.54	7	0.00	10	0.00	10
		MIN	-0.52	2	-1.22	2	0.00	10	0.00	10
	0.86	MAX	4.85	1	2.10	7	0.00	10	0.00	10
		MIN	-0.52	2	-1.15	2	0.00	10	0.00	10
	1.01	MAX	4.52	1	1.65	7	0.00	10	0.00	10
		MIN	-0.52	2	-1.08	2	0.00	10	0.00	10
	1.15	MAX	4.18	1	1.21	7	0.00	10	0.00	10
		MIN	-0.52	2	-1.00	2	0.00	10	0.00	10
	1.29	MAX	3.84	1	0.77	7	0.00	10	0.00	10
		MIN	-0.52	2	-0.93	2	0.00	10	0.00	10
	1.44	MAX	3.50	1	0.32	7	0.00	10	0.00	10
		MIN	-0.52	2	-1.27	6	0.00	10	0.00	10
	1.58	MAX	3.17	1	-0.12	4	0.00	10	0.00	10
		MIN	-0.52	2	-1.69	6	0.00	10	0.00	10
	1.72	MAX	3.09	7	-0.17	4	0.00	10	0.00	10
		MIN	-0.52	2	-2.06	6	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 13, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	8.43	0.00	5	5.99	0.00	5			
	0.00	0.00	1	0.00	0.00	1	0.92 C	0.00	1
MIN.	-0.52	1.72	2	-2.06	1.72	6			
	0.00	1.72	10	0.00	1.72	10	0.87 T	1.72	10

14	0.00	MAX	3.09	7	-0.17	4	0.00	10	0.00	10
		MIN	-0.52	2	-2.06	6	0.00	10	0.00	10
	0.21	MAX	3.09	7	-0.23	4	0.00	10	0.00	10
		MIN	-0.52	2	-2.52	6	0.00	10	0.00	10
	0.41	MAX	3.09	7	-0.30	4	0.00	10	0.00	10
		MIN	-0.52	2	-2.97	1	0.00	10	0.00	10
	0.62	MAX	2.84	7	-0.37	4	0.00	10	0.00	10
		MIN	-0.52	2	-3.36	1	0.00	10	0.00	10
	0.82	MAX	2.44	7	-0.27	9	0.00	10	0.00	10
		MIN	-0.52	2	-3.74	5	0.00	10	0.00	10
	1.03	MAX	2.04	7	-0.17	2	0.00	10	0.00	10
		MIN	-0.52	2	-4.19	5	0.00	10	0.00	10
	1.23	MAX	1.65	7	-0.07	2	0.00	10	0.00	10
		MIN	-0.52	2	-4.56	5	0.00	10	0.00	10
	1.44	MAX	1.25	7	0.04	2	0.00	10	0.00	10
		MIN	-0.52	2	-4.84	5	0.00	10	0.00	10
	1.64	MAX	0.85	7	0.15	2	0.00	10	0.00	10
		MIN	-0.65	6	-5.05	5	0.00	10	0.00	10
	1.85	MAX	0.72	8	0.25	2	0.00	10	0.00	10
		MIN	-1.05	6	-5.17	5	0.00	10	0.00	10
	2.05	MAX	0.72	8	0.36	2	0.00	10	0.00	10
		MIN	-1.40	6	-5.22	5	0.00	10	0.00	10
	2.26	MAX	0.72	8	0.47	2	0.00	10	0.00	10
		MIN	-1.40	6	-5.19	5	0.00	10	0.00	10
	2.46	MAX	0.72	8	0.57	2	0.00	10	0.00	10
		MIN	-1.40	6	-5.15	5	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 14, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.		3.09	0.00	7	0.57	2.46	2			
		0.00	0.00	1	0.00	0.00	1	0.92 C	0.00	1
MIN.		-1.40	2.26	6	-5.22	2.05	5			
		0.00	2.46	10	0.00	2.46	10	0.87 T	2.46	10
15	0.00	MAX	0.72	8	0.57	2	0.00	10	0.00	10
		MIN	-1.40	6	-5.15	5	0.00	10	0.00	10
	0.21	MAX	0.72	8	0.68	2	0.00	10	0.00	10
		MIN	-1.40	6	-5.07	5	0.00	10	0.00	10
	0.42	MAX	0.72	8	0.79	2	0.00	10	0.00	10
		MIN	-1.40	6	-4.85	5	0.00	10	0.00	10
	0.63	MAX	0.59	8	0.90	2	0.00	10	0.00	10
		MIN	-2.04	5	-4.49	5	0.00	10	0.00	10
	0.85	MAX	0.32	4	1.01	2	0.00	10	0.00	10
		MIN	-2.58	5	-3.99	5	0.00	10	0.00	10
	1.06	MAX	0.32	4	1.12	2	0.00	10	0.00	10
		MIN	-2.58	5	-3.48	1	0.00	10	0.00	10
	1.27	MAX	0.04	4	1.23	2	0.00	10	0.00	10
		MIN	-2.58	5	-3.33	1	0.00	10	0.00	10
	1.48	MAX	-0.37	4	1.34	2	0.00	10	0.00	10
		MIN	-2.58	5	-3.09	1	0.00	10	0.00	10
	1.69	MAX	-0.49	9	1.45	2	0.00	10	0.00	10
		MIN	-2.82	3	-2.78	8	0.00	10	0.00	10
	1.90	MAX	-0.49	9	1.56	2	0.00	10	0.00	10
		MIN	-2.82	3	-2.43	8	0.00	10	0.00	10
	2.11	MAX	-0.49	9	1.67	2	0.00	10	0.00	10
		MIN	-2.88	5	-2.03	8	0.00	10	0.00	10
	2.33	MAX	-0.49	9	1.78	2	0.00	10	0.00	10
		MIN	-3.31	3	-1.53	8	0.00	10	0.00	10
	2.54	MAX	-0.49	9	1.89	2	0.00	10	0.00	10
		MIN	-4.08	3	-0.93	8	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 15, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.		0.72	0.00	8	1.89	2.54	2			
		0.00	0.00	1	0.00	0.00	1	0.92 C	0.00	1
MIN.		-4.08	2.54	3	-5.15	0.00	5			
		0.00	2.54	10	0.00	2.54	10	0.87 T	2.54	10
16	0.00	MAX	-0.49	9	1.89	2	0.00	10	0.00	10
		MIN	-4.08	3	-0.93	8	0.00	10	0.00	10
	0.14	MAX	-0.49	9	1.96	2	0.00	10	0.00	10
		MIN	-4.58	3	-0.49	8	0.00	10	0.00	10
	0.28	MAX	-0.49	9	2.18	3	0.00	10	0.00	10
		MIN	-5.08	3	0.00	8	0.00	10	0.00	10
	0.41	MAX	-0.49	9	2.91	3	0.00	10	0.00	10
		MIN	-5.58	3	0.52	8	0.00	10	0.00	10
	0.55	MAX	-0.49	9	3.68	3	0.00	10	0.00	10

		MIN	-5.61	3	1.09	8	0.00	10	0.00	10
	0.69	MAX	-0.49	9	4.46	3	0.00	10	0.00	10
		MIN	-5.61	3	1.69	8	0.00	10	0.00	10
	0.83	MAX	-0.49	9	5.23	3	0.00	10	0.00	10
		MIN	-5.61	3	2.16	9	0.00	10	0.00	10
	0.96	MAX	-0.49	9	6.00	3	0.00	10	0.00	10
		MIN	-5.71	1	2.23	9	0.00	10	0.00	10
	1.10	MAX	-0.49	9	6.77	3	0.00	10	0.00	10
		MIN	-5.95	1	2.29	9	0.00	10	0.00	10
	1.24	MAX	-0.49	9	7.54	3	0.00	10	0.00	10
		MIN	-5.95	1	2.36	9	0.00	10	0.00	10
	1.38	MAX	-0.49	9	8.31	3	0.00	10	0.00	10
		MIN	-5.99	5	2.43	9	0.00	10	0.00	10
	1.51	MAX	-0.49	9	9.08	3	0.00	10	0.00	10
		MIN	-6.88	5	2.49	9	0.00	10	0.00	10
	1.65	MAX	-0.49	9	9.85	3	0.00	10	0.00	10
		MIN	-7.77	5	2.56	9	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 16, AMONGST ALL SECT LOCATIONS									
	FY/	DIST	LD	MZ/	DIST	LD			
	FZ	DIST	LD	MY	DIST	LD	FX	DIST	LD
MAX.	-0.49	0.00	9	9.85	1.65	3			
	0.00	0.00	1	0.00	0.00	1	0.92 C	0.00	1
MIN.	-7.77	1.65	5	-0.93	0.00	8			
	0.00	1.65	10	0.00	1.65	10	0.87 T	1.65	10

17	0.00	MAX	5.72	2	9.05	4	0.00	10	0.00	10
		MIN	0.17	6	1.16	6	0.00	10	0.00	10
	0.14	MAX	5.72	2	8.33	4	0.00	10	0.00	10
		MIN	0.17	6	1.14	6	0.00	10	0.00	10
	0.27	MAX	5.72	2	7.62	4	0.00	10	0.00	10
		MIN	0.17	6	1.11	6	0.00	10	0.00	10
	0.41	MAX	5.72	2	6.90	4	0.00	10	0.00	10
		MIN	0.17	6	1.09	6	0.00	10	0.00	10
	0.55	MAX	5.51	2	6.18	4	0.00	10	0.00	10
		MIN	0.17	6	1.07	6	0.00	10	0.00	10
	0.69	MAX	5.23	4	5.46	4	0.00	10	0.00	10
		MIN	0.17	6	1.04	6	0.00	10	0.00	10
	0.82	MAX	5.23	4	4.74	4	0.00	10	0.00	10
		MIN	0.17	6	1.02	6	0.00	10	0.00	10
	0.96	MAX	5.23	4	4.02	4	0.00	10	0.00	10
		MIN	0.17	6	1.00	6	0.00	10	0.00	10
	1.10	MAX	4.98	4	3.32	4	0.00	10	0.00	10
		MIN	0.17	6	0.97	6	0.00	10	0.00	10
	1.24	MAX	4.68	4	3.00	5	0.00	10	0.00	10
		MIN	0.17	6	0.45	2	0.00	10	0.00	10
	1.37	MAX	4.38	4	2.85	5	0.00	10	0.00	10
		MIN	0.17	6	-0.04	2	0.00	10	0.00	10
	1.51	MAX	4.08	4	2.70	5	0.00	10	0.00	10
		MIN	0.17	6	-0.49	2	0.00	10	0.00	10
	1.65	MAX	3.78	4	2.54	5	0.00	10	0.00	10
		MIN	0.17	6	-0.88	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 17, AMONGST ALL SECT LOCATIONS									
	FY/	DIST	LD	MZ/	DIST	LD			
	FZ	DIST	LD	MY	DIST	LD	FX	DIST	LD

	MAX.	5.72	0.00	2	9.05	0.00	4				
		0.00	0.00	1	0.00	0.00	1	0.46	C	0.00	2
	MIN.	0.17	1.65	6	-0.88	1.65	2				
		0.00	1.65	10	0.00	1.65	10	0.47	T	1.65	8
18	0.00	MAX	3.78	4	2.54	5	0.00	10		0.00	10
		MIN	0.17	6	-0.88	2	0.00	10		0.00	10
	0.21	MAX	3.32	4	2.31	5	0.00	10		0.00	10
		MIN	0.17	6	-1.41	2	0.00	10		0.00	10
	0.42	MAX	2.87	4	2.15	1	0.00	10		0.00	10
		MIN	0.17	6	-1.87	2	0.00	10		0.00	10
	0.62	MAX	2.44	4	2.04	1	0.00	10		0.00	10
		MIN	0.17	6	-2.25	2	0.00	10		0.00	10
	0.83	MAX	2.20	4	1.94	1	0.00	10		0.00	10
		MIN	0.17	6	-2.57	9	0.00	10		0.00	10
	1.04	MAX	1.80	4	1.83	1	0.00	10		0.00	10
		MIN	0.17	6	-2.85	9	0.00	10		0.00	10
	1.25	MAX	1.39	4	1.72	1	0.00	10		0.00	10
		MIN	0.17	6	-3.05	9	0.00	10		0.00	10
	1.46	MAX	1.12	5	1.61	1	0.00	10		0.00	10
		MIN	-0.28	3	-3.16	9	0.00	10		0.00	10
	1.67	MAX	1.12	5	1.50	1	0.00	10		0.00	10
		MIN	-0.55	3	-3.19	9	0.00	10		0.00	10
	1.88	MAX	1.02	5	1.39	1	0.00	10		0.00	10
		MIN	-0.55	3	-3.14	9	0.00	10		0.00	10
	2.08	MAX	0.72	5	1.28	1	0.00	10		0.00	10
		MIN	-0.67	9	-3.01	9	0.00	10		0.00	10
	2.29	MAX	0.52	1	1.17	1	0.00	10		0.00	10
		MIN	-0.67	9	-2.87	9	0.00	10		0.00	10
	2.50	MAX	0.52	1	1.06	1	0.00	10		0.00	10
		MIN	-0.82	10	-2.81	2	0.00	10		0.00	10

	MAX/MIN FORCE VALUES FOR MEMB				18, AMONGST ALL SECT LOCATIONS						
		FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
	MAX.	3.78	0.00	4	2.54	0.00	5				
		0.00	0.00	1	0.00	0.00	1	0.46	C	0.00	2
	MIN.	-0.82	2.50	10	-3.19	1.67	9				
		0.00	2.50	10	0.00	2.50	10	0.47	T	2.50	8
25	0.00	MAX	0.87	10	3.79	10	0.00	10		0.00	10
		MIN	-0.92	1	0.23	6	0.00	10		0.00	10
	0.14	MAX	0.87	10	3.66	10	0.00	10		0.00	10
		MIN	-0.92	1	0.34	6	0.00	10		0.00	10
	0.29	MAX	0.87	10	3.54	10	0.00	10		0.00	10
		MIN	-0.92	1	0.44	6	0.00	10		0.00	10
	0.43	MAX	0.87	10	3.41	10	0.00	10		0.00	10
		MIN	-0.92	1	0.54	6	0.00	10		0.00	10
	0.57	MAX	0.87	10	3.29	10	0.00	10		0.00	10
		MIN	-0.92	1	0.65	6	0.00	10		0.00	10
	0.72	MAX	0.87	10	3.16	10	0.00	10		0.00	10
		MIN	-0.92	1	0.75	6	0.00	10		0.00	10
	0.86	MAX	0.87	10	3.04	10	0.00	10		0.00	10
		MIN	-0.92	1	0.85	6	0.00	10		0.00	10
	1.01	MAX	0.87	10	2.91	10	0.00	10		0.00	10

		MIN	-0.92	1	0.96	6	0.00	10	0.00	10
	1.15	MAX	0.87	10	2.92	5	0.00	10	0.00	10
		MIN	-0.92	1	1.06	6	0.00	10	0.00	10
	1.29	MAX	0.87	10	3.03	5	0.00	10	0.00	10
		MIN	-0.92	1	1.16	6	0.00	10	0.00	10
	1.44	MAX	0.87	10	3.13	5	0.00	10	0.00	10
		MIN	-0.92	1	1.27	6	0.00	10	0.00	10
	1.58	MAX	0.87	10	3.24	5	0.00	10	0.00	10
		MIN	-0.92	1	1.31	9	0.00	10	0.00	10
	1.72	MAX	0.87	10	3.35	5	0.00	10	0.00	10
		MIN	-0.92	1	1.20	9	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 25, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.87	0.00	10	3.79	0.00	10				
	0.00	0.00	1	0.00	0.00	1	8.43	C	0.00	5
MIN.	-0.92	1.72	1	0.23	0.00	6				
	0.00	1.72	10	0.00	1.72	10	0.52	T	1.72	2

27	0.00	MAX	0.87	10	4.03	5	0.00	10	0.00	10
		MIN	-0.92	1	0.48	2	0.00	10	0.00	10
	0.08	MAX	0.87	10	4.09	5	0.00	10	0.00	10
		MIN	-0.92	1	0.42	2	0.00	10	0.00	10
	0.15	MAX	0.87	10	4.14	5	0.00	10	0.00	10
		MIN	-0.92	1	0.36	2	0.00	10	0.00	10
	0.23	MAX	0.87	10	4.20	5	0.00	10	0.00	10
		MIN	-0.92	1	0.30	2	0.00	10	0.00	10
	0.31	MAX	0.87	10	4.26	5	0.00	10	0.00	10
		MIN	-0.92	1	0.24	2	0.00	10	0.00	10
	0.38	MAX	0.87	10	4.31	5	0.00	10	0.00	10
		MIN	-0.92	1	0.18	2	0.00	10	0.00	10
	0.46	MAX	0.87	10	4.37	5	0.00	10	0.00	10
		MIN	-0.92	1	0.12	2	0.00	10	0.00	10
	0.54	MAX	0.87	10	4.43	5	0.00	10	0.00	10
		MIN	-0.92	1	0.06	2	0.00	10	0.00	10
	0.61	MAX	0.87	10	4.48	5	0.00	10	0.00	10
		MIN	-0.92	1	0.00	2	0.00	10	0.00	10
	0.69	MAX	0.87	10	4.54	5	0.00	10	0.00	10
		MIN	-0.92	1	-0.06	2	0.00	10	0.00	10
	0.77	MAX	0.87	10	4.60	5	0.00	10	0.00	10
		MIN	-0.92	1	-0.12	2	0.00	10	0.00	10
	0.84	MAX	0.87	10	4.65	5	0.00	10	0.00	10
		MIN	-0.92	1	-0.18	2	0.00	10	0.00	10
	0.92	MAX	0.87	10	4.71	5	0.00	10	0.00	10
		MIN	-0.92	1	-0.24	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 27, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.87	0.00	10	4.71	0.92	5				
	0.00	0.00	1	0.00	0.00	1	8.43	C	0.00	5
MIN.	-0.92	0.92	1	-0.24	0.92	2				
	0.00	0.92	10	0.00	0.92	10	0.52	T	0.92	2

28	0.00	MAX	0.87	10	4.71	5	0.00	10	0.00	10
		MIN	-0.92	1	-0.24	2	0.00	10	0.00	10
	0.14	MAX	0.87	10	4.82	5	0.00	10	0.00	10
		MIN	-0.92	1	-0.35	2	0.00	10	0.00	10
	0.29	MAX	0.87	10	4.92	5	0.00	10	0.00	10
		MIN	-0.92	1	-0.47	2	0.00	10	0.00	10
	0.43	MAX	0.87	10	5.03	5	0.00	10	0.00	10
		MIN	-0.92	1	-0.58	2	0.00	10	0.00	10
	0.57	MAX	0.87	10	5.14	5	0.00	10	0.00	10
		MIN	-0.92	1	-0.69	2	0.00	10	0.00	10
	0.72	MAX	0.87	10	5.24	5	0.00	10	0.00	10
		MIN	-0.92	1	-0.81	2	0.00	10	0.00	10
	0.86	MAX	0.87	10	5.35	5	0.00	10	0.00	10
		MIN	-0.92	1	-0.92	2	0.00	10	0.00	10
	1.01	MAX	0.87	10	5.45	5	0.00	10	0.00	10
		MIN	-0.92	1	-1.03	2	0.00	10	0.00	10
	1.15	MAX	0.87	10	5.56	5	0.00	10	0.00	10
		MIN	-0.92	1	-1.14	2	0.00	10	0.00	10
	1.29	MAX	0.87	10	5.67	5	0.00	10	0.00	10
		MIN	-0.92	1	-1.26	2	0.00	10	0.00	10
	1.44	MAX	0.87	10	5.77	5	0.00	10	0.00	10
		MIN	-0.92	1	-1.37	2	0.00	10	0.00	10
	1.58	MAX	0.87	10	5.88	5	0.00	10	0.00	10
		MIN	-0.92	1	-1.48	2	0.00	10	0.00	10
	1.72	MAX	0.87	10	5.99	5	0.00	10	0.00	10
		MIN	-0.92	1	-1.60	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 28, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.87	0.00	10	5.99	1.72	5			
	0.00	0.00	1	0.00	0.00	1	8.43 C	0.00	5
MIN.	-0.92	1.72	1	-1.60	1.72	2			
	0.00	1.72	10	0.00	1.72	10	0.52 T	1.72	2

29	0.00	MAX	1.28	1	2.16	1	0.00	10	0.00	10
		MIN	-1.25	2	-2.57	2	0.00	10	0.00	10
	0.14	MAX	1.28	1	1.98	1	0.00	10	0.00	10
		MIN	-1.25	2	-2.39	2	0.00	10	0.00	10
	0.29	MAX	1.28	1	1.79	1	0.00	10	0.00	10
		MIN	-1.25	2	-2.22	2	0.00	10	0.00	10
	0.43	MAX	1.28	1	1.61	1	0.00	10	0.00	10
		MIN	-1.25	2	-2.04	2	0.00	10	0.00	10
	0.57	MAX	1.28	1	1.43	1	0.00	10	0.00	10
		MIN	-1.25	2	-1.86	2	0.00	10	0.00	10
	0.72	MAX	1.28	1	1.24	1	0.00	10	0.00	10
		MIN	-1.25	2	-1.68	2	0.00	10	0.00	10
	0.86	MAX	1.28	1	1.06	1	0.00	10	0.00	10
		MIN	-1.25	2	-1.50	2	0.00	10	0.00	10
	1.01	MAX	1.28	1	0.87	1	0.00	10	0.00	10
		MIN	-1.25	2	-1.32	2	0.00	10	0.00	10
	1.15	MAX	1.28	1	0.69	1	0.00	10	0.00	10
		MIN	-1.25	2	-1.14	2	0.00	10	0.00	10
	1.29	MAX	1.28	1	0.51	1	0.00	10	0.00	10

		MIN	-1.25	2	-0.96	2	0.00	10	0.00	10
	1.44	MAX	1.28	1	0.32	1	0.00	10	0.00	10
		MIN	-1.25	2	-0.78	2	0.00	10	0.00	10
	1.58	MAX	1.28	1	0.15	6	0.00	10	0.00	10
		MIN	-1.25	2	-0.60	2	0.00	10	0.00	10
	1.72	MAX	1.28	1	0.06	6	0.00	10	0.00	10
		MIN	-1.25	2	-0.43	9	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 29, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.28	0.00	1	2.16	0.00	1			
	0.00	0.00	1	0.00	0.00	1	10.64 C	0.00	5
MIN.	-1.25	1.72	2	-2.57	0.00	2			
	0.00	1.72	10	0.00	1.72	10	1.57 C	1.72	6

31	0.00	MAX	1.28	1	0.73	2	0.00	10	0.00	10
		MIN	-1.25	2	-1.22	1	0.00	10	0.00	10
	0.08	MAX	1.28	1	0.83	2	0.00	10	0.00	10
		MIN	-1.25	2	-1.32	1	0.00	10	0.00	10
	0.15	MAX	1.28	1	0.92	2	0.00	10	0.00	10
		MIN	-1.25	2	-1.42	1	0.00	10	0.00	10
	0.23	MAX	1.28	1	1.02	2	0.00	10	0.00	10
		MIN	-1.25	2	-1.52	1	0.00	10	0.00	10
	0.31	MAX	1.28	1	1.11	2	0.00	10	0.00	10
		MIN	-1.25	2	-1.62	1	0.00	10	0.00	10
	0.38	MAX	1.28	1	1.21	2	0.00	10	0.00	10
		MIN	-1.25	2	-1.71	1	0.00	10	0.00	10
	0.46	MAX	1.28	1	1.30	2	0.00	10	0.00	10
		MIN	-1.25	2	-1.81	1	0.00	10	0.00	10
	0.54	MAX	1.28	1	1.40	2	0.00	10	0.00	10
		MIN	-1.25	2	-1.91	1	0.00	10	0.00	10
	0.61	MAX	1.28	1	1.50	2	0.00	10	0.00	10
		MIN	-1.25	2	-2.01	1	0.00	10	0.00	10
	0.69	MAX	1.28	1	1.59	2	0.00	10	0.00	10
		MIN	-1.25	2	-2.11	1	0.00	10	0.00	10
	0.77	MAX	1.28	1	1.69	2	0.00	10	0.00	10
		MIN	-1.25	2	-2.21	1	0.00	10	0.00	10
	0.84	MAX	1.28	1	1.78	2	0.00	10	0.00	10
		MIN	-1.25	2	-2.30	1	0.00	10	0.00	10
	0.92	MAX	1.28	1	1.88	2	0.00	10	0.00	10
		MIN	-1.25	2	-2.40	1	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 31, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.28	0.00	1	1.88	0.92	2			
	0.00	0.00	1	0.00	0.00	1	10.64 C	0.00	5
MIN.	-1.25	0.92	2	-2.40	0.92	1			
	0.00	0.92	10	0.00	0.92	10	1.57 C	0.92	6

32	0.00	MAX	1.28	1	1.88	2	0.00	10	0.00	10
		MIN	-1.25	2	-2.40	1	0.00	10	0.00	10
	0.14	MAX	1.28	1	2.06	2	0.00	10	0.00	10
		MIN	-1.25	2	-2.59	1	0.00	10	0.00	10

0.29	MAX	1.28	1	2.24	2	0.00	10	0.00	10
	MIN	-1.25	2	-2.77	1	0.00	10	0.00	10
0.43	MAX	1.28	1	2.42	2	0.00	10	0.00	10
	MIN	-1.25	2	-2.95	1	0.00	10	0.00	10
0.57	MAX	1.28	1	2.60	2	0.00	10	0.00	10
	MIN	-1.25	2	-3.14	1	0.00	10	0.00	10
0.72	MAX	1.28	1	2.78	2	0.00	10	0.00	10
	MIN	-1.25	2	-3.32	1	0.00	10	0.00	10
0.86	MAX	1.28	1	2.95	2	0.00	10	0.00	10
	MIN	-1.25	2	-3.51	1	0.00	10	0.00	10
1.01	MAX	1.28	1	3.13	2	0.00	10	0.00	10
	MIN	-1.25	2	-3.69	1	0.00	10	0.00	10
1.15	MAX	1.28	1	3.31	2	0.00	10	0.00	10
	MIN	-1.25	2	-3.87	1	0.00	10	0.00	10
1.29	MAX	1.28	1	3.49	2	0.00	10	0.00	10
	MIN	-1.25	2	-4.06	1	0.00	10	0.00	10
1.44	MAX	1.28	1	3.67	2	0.00	10	0.00	10
	MIN	-1.25	2	-4.24	1	0.00	10	0.00	10
1.58	MAX	1.28	1	3.85	2	0.00	10	0.00	10
	MIN	-1.25	2	-4.43	1	0.00	10	0.00	10
1.72	MAX	1.28	1	4.03	2	0.00	10	0.00	10
	MIN	-1.25	2	-4.61	1	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 32, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.28	0.00	1	4.03	1.72	2			
	0.00	0.00	1	0.00	0.00	1	10.64 C	0.00	5
MIN.	-1.25	1.72	2	-4.61	1.72	1			
	0.00	1.72	10	0.00	1.72	10	1.57 C	1.72	6

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

228. FINISH

********** END OF THE STAAD.Pro RUN **********

DESIGN OF THREE CELL BOX (3 x 9.0 m)

BRIDGE AT CH : 17+275
(BHADRAK – ANANDPUR)

DESIGN OF THREE CELL BOX STRUCTURE

INTRODUCTION

The minor bridge is meant for three lanes of traffic with carriageway width of 11.0m without footpath. The overall width of bridge is 12.0m. The bridge shall be made with three cell RCC box type structure with independent return wall. The clear height of opening of the box is 6.404m. Horizontal clear opening sizes are 8.0m+8.0+8.0m. The thickness of top slab, bottom slab and end web have been kept as 500mm while thickness of inner web is kept as 300mm. In the design of structure, clear cover is considered as 50mm for top slab & walls and in bottom slab clear cover is considered as 75mm. This design note deals with design of the three cell RCC box structure.

The analysis of box structure has been done considering a slice of unit width. The box has been analysed for its self weight, superimposed dead load (due to wearing coat and crash barrier) and earth pressures using STAAD-Pro. Base pressure due to downward loads are applied uniformly over the entire width of box structure. Two cases of earth pressure for Dry and HFL conditions are considered separately. In one case, earth pressure at rest with saturated density of earth is considered to produce maximum earth pressure. While in other case, a lower value of coefficient of earth pressure with dry density of earth is considered to produce minimum earth pressure. Hence follwing cases of earth pressure are considered:

a) Coefficient of Earth Pressure as 0.50 & Density of Earth as 2.0 t/m^3 for dry & HFL conditions and

b) Coefficient of Earth Pressure as 0.30 & Density of Earth as 1.8 t/m^3 for dry and HFL condition

Analysis for Live load for class 70R tracked & class 70R wheeled load have been done using STAAD-Pro. Live load positions are identified for maximum bending moments at different sections and corresponding load intensities per metre width are evaluated as per effective width method as explained in IRC:21-2000.

The box has also been checked for temperature differential as per clause 218.3 of IRC:6-2000. As per Table 1 of IRC:6-2000, for this combination, only 50% live load shall be considered.

The following load combinations are considered for the analysis:

(i) DL+ SIDL+ EP
(ii) DL+ SIDL+ EP+ LL
(iii) DL+ SIDL+ EP+ Temp.
(iv) DL+ SIDL+ EP+ Temp.+ 50%LL

DESIGN DATA:

Formation Level along c/l of carriageway (m)						=	32.190	m
Bed Level (m)						=	26.230	m
Founding Level (m)						=	24.730	m
Heighest Flood Level (m)						=	30.935	m
Overall width of bridge						=	12.000	m
width of carriageway						=	11.000	m
Thickness of top slab						=	0.500	m
Thickness of bottom slab						=	0.500	m
Thickness of Web						=	0.500	m
Thickness of Central Web						=	0.300	m
Tkickness of wearing coat						=	0.056	m
Eff. horizontal span end cell(upto c/l of web)	=	9.000	+	0.400	=		9.400	m
Eff. horizontal span inner cell(upto c/l of web)	=	9.000	+	0.300	=		9.300	m
Eff. vertical span (upto c/l of slab)	=	6.404	+	0.500	=		6.904	m
width of crash barrier						=	0.500	m
Size of haunches in outer webs			-	1.250	x		0.250	m
Size of haunches in inner web			-	1.250	x		0.250	m
Depth of water at HFL. from formation lvl						=	1.255	m
Unit wt of concrete						=	2.400	t/m^2
Submerged density of earth						=	1.000	t/m^2
Grade of Concrete						-	M 35	35
Permissible Compressive stress in Concrete						-	1190	t/m^2
Permissible Tensile stress in Steel						-	20400	t/m^2
Modular ratio, m						-	10	
k						-	0.368	
Lever arm factor, j						-	0.877	
Moment of Resistance, Q						-	192.290	t/m^2

Reference Code

IRC : 6-2000

IRC : 21-2000

CALCULATION OF LOADS AND CORRESPONDING BASE PRESSURE:

DEAD LOAD-(Per metre width):

Top slab	=			28.10	x	0.50	x	2.40	=	33.720	t/m	
bottom slab	=			28.10	x	0.50	x	2.40	=	33.720	t/m	
End Webs	=	2	x	6.904	x	0.50	x	2.40	=	16.570	t/m	
Central Web	=	2	x	6.904	x	0.30	x	2.40	=	9.942	t/m	
Haunches (24 nos.)	=	24	x	0.125	x	1.25	x	2.40	=	9.000	t/m	
Total Weight	=									**102.95**	t/m	
Equivalent upward Base pressure	=					102.95	/	28.10	=	3.66	t/m^2	
									Say,	**3.70**	t/m^2	

SUPERIMPOSED DEAD LOAD (Per metre width):

Wearing coat (@ 0.2 t/sqm)	=								=	0.200	t/m	
Crash barrier (@ 0.70 t/m on each side)	=			2	x	0.70	/	12.0	=	0.117	t/m	
Total	=									**0.317**	t/m	
Equivalent upward Base pressure	=								=	**0.317**	t/m^2	

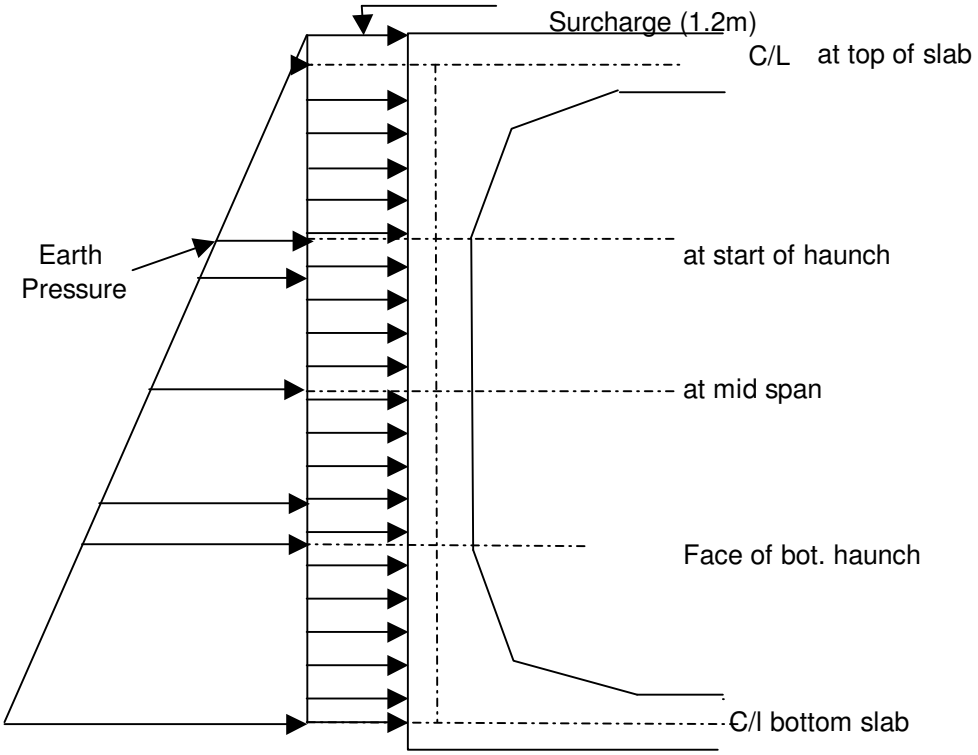
CHECK FOR BASE PRESSURE

DRY CONDITION

Due to DL of Box and SIDL					=	3.70	+	0.317	=	4.017	t/m^2	
Due to LL-70R Wheeled Load		=	100	/ (		12.0	x	28.10	) =	0.297	t/m^2	
Due to Earth inside the Box					=	1.00	x	2.00	=	2.000	t/m^2	
Total Base Pressure									=	**6.313**	**t/m^2**	

HFL CONDITION

Due to DL of Box, SIDL & LL					=	4.017	+	0.297	=	4.313	t/m^2	
Due to Water inside the Box					=	5.593	x	1.00	=	5.593	t/m^2	
Buoyancy					=	6.093	x	-1.00	=	-6.093	t/m^2	
Total Base Pressure									=	**3.813**	**t/m^2**	



Earth Pressure Diagram

EARTH PRESSURE

CASE - 1

Dry Density of Soil = 2.000 t/m^2

Cooefficient of Earth Pressure at rest = 0.500

CASE - 2

Dry Density of Soil = 1.800 t/m^2

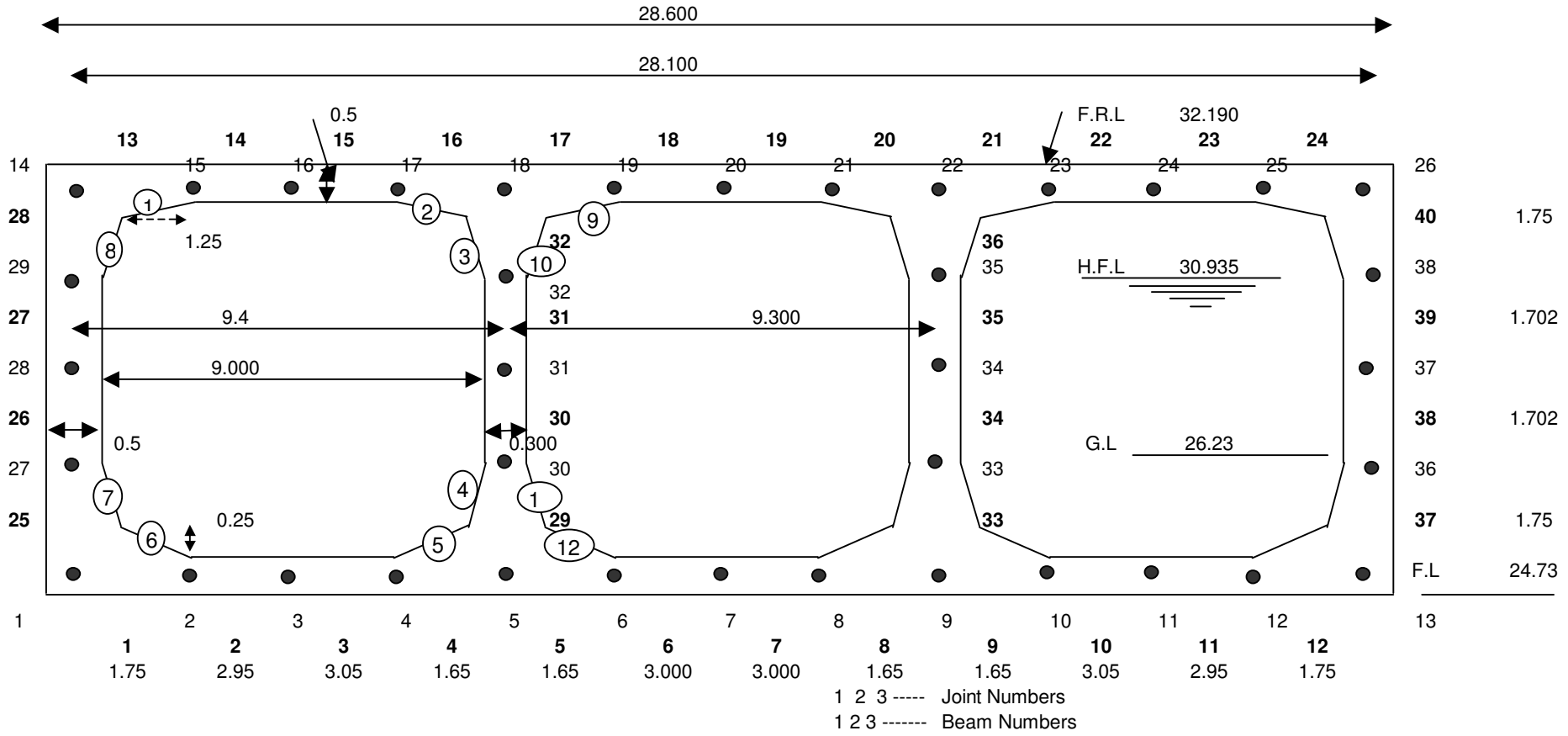
Cooefficient of Earth Pressure at rest = 0.300

For Dry Condition

Height (m)	Location of Earth Pressure	Case - 1	Surcharge for 1.2m	Case - 2	Surcharge for 1.2m
0.306	C/l of top slab	0.306	1.2	0.165	0.648
2.056	Face of top haunch	2.056	1.2	1.110	0.648
3.758	Mid. of web	3.758	1.2	2.029	0.648
5.460	Face of bot. haunch	5.460	1.2	2.948	0.648
7.210	C/l bottom slab	7.210	1.2	3.893	0.648

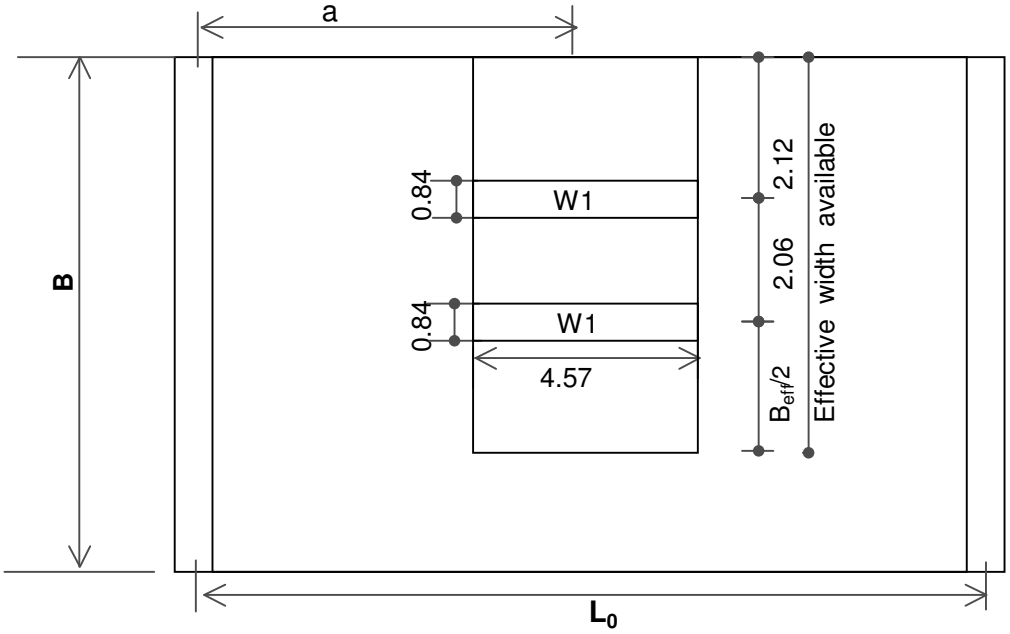
H.F.L. Condition

Height (m)	Location of Earth Pressure	Case - 1	Surcharge for 1.2m	Case - 2	Surcharge for 1.2m
0.306	C/l of top slab	0.306	1.2	0.165	0.648
1.255	H.F.L. Level	1.255	1.2	0.678	0.648
2.056	Face of top haunch	1.656	1.2	0.918	0.648
3.758	Mid. of web	2.507	1.2	1.429	0.648
5.460	Face of bot. haunch	3.358	1.2	2.780	0.648
7.210	C/l bottom slab	4.233	1.2	3.655	0.648

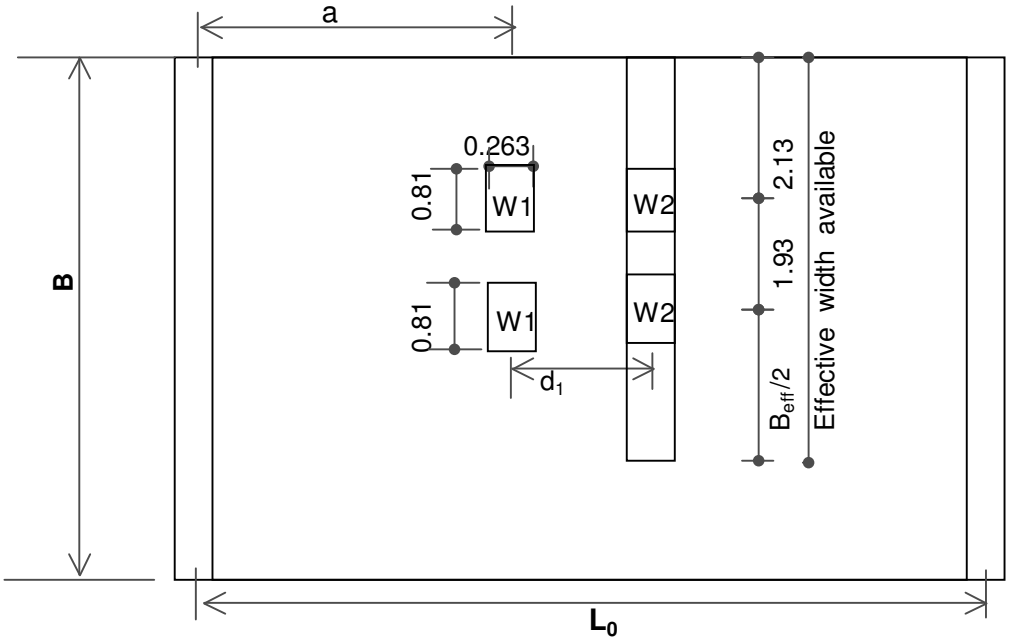


1	2	3	4	5	6	7	8	9	10	11	12
1.75	2.95	3.05	1.65	1.65	3.000	3.000	1.65	1.65	3.05	2.95	1.75

TRANSVERSE POSITION OF LIVE LOAD (CLASS 70 R TRACKED LOAD)



TRANSVERSE POSITION OF LIVE LOAD (CLASS 70 R WHEELED LOAD)

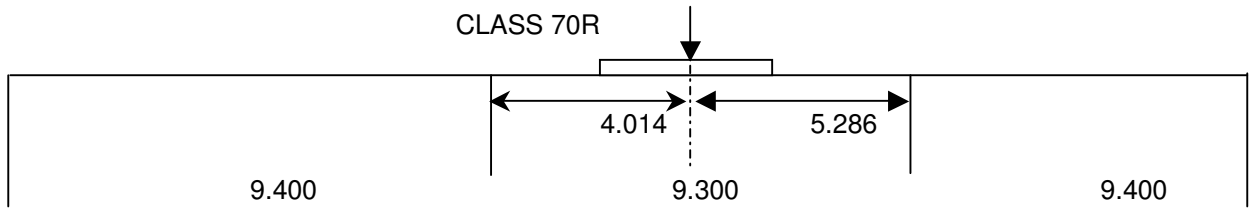


LIVE LOAD POSITION (TRACKED LOADING) :

FOR MAX. HOGGING BM AT END WEB

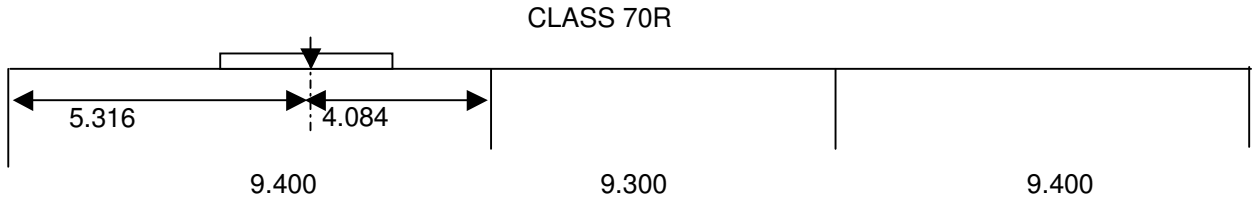
LOAD CASE NO 64

FOR MAX. HOGGING BM IN MID SAPN OF OUTER CELL



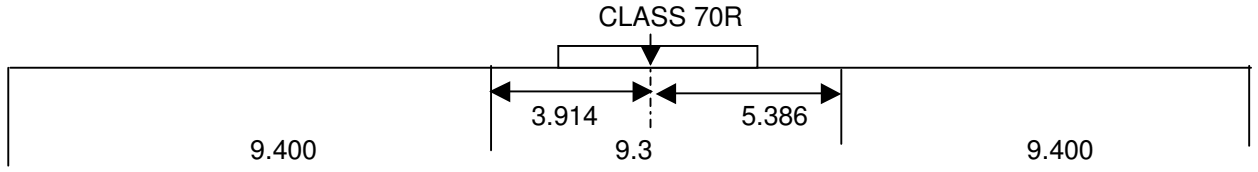
LOAD CASE NO 158

FOR MAX. HOGGING AT END OF HAUNCH 2



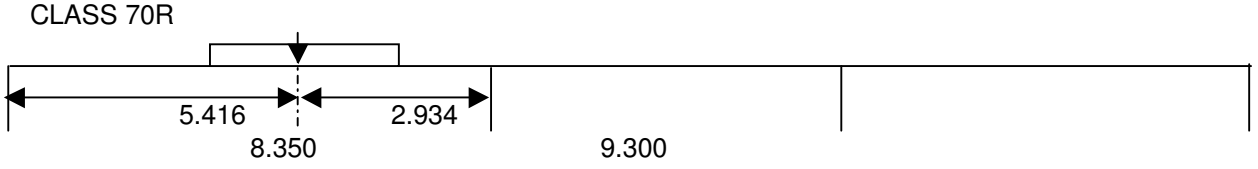
LOAD CASE NO 77

FOR MAX. BM.(HOGGING) AT START OF HAUNCH 9



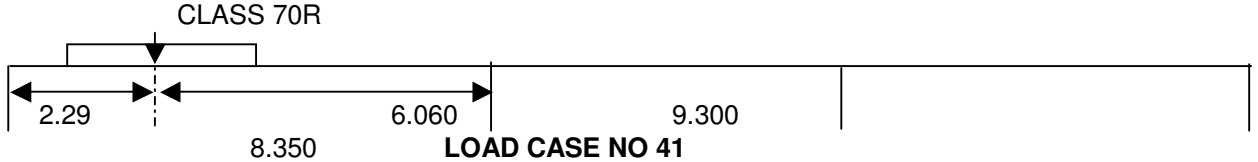
LOAD CASE NO 157

FOR MAX BM. (HOGGING) AT MID SPAN OF MIDDLE CELL



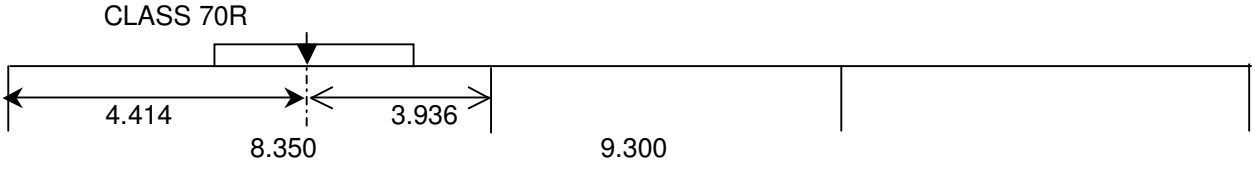
LOAD CASE NO 78

FOR MAX. BM.(SAGGING) AT END OF HAUNCH 1



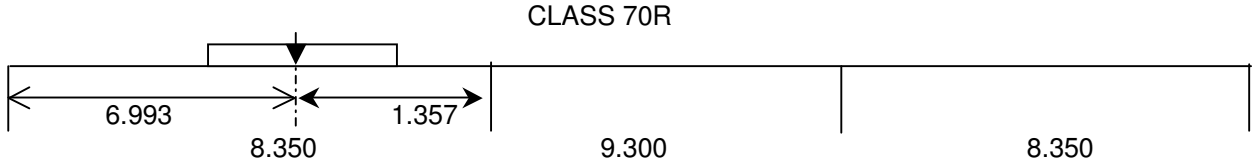
LOAD CASE NO 41

FOR MAX. BM (SAGGING) IN MID SPAN OF OUTER CELL



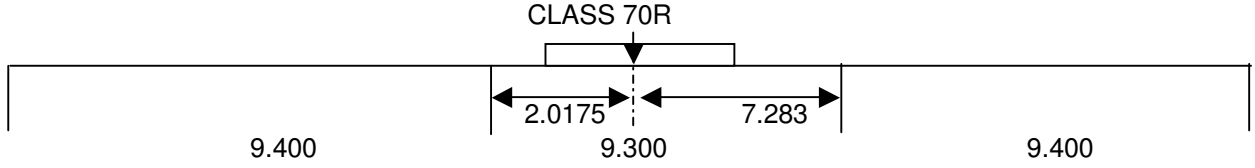
LOAD CASE NO 68

FOR MAX .BM.(SAGGING) AT START OF HAUNCH 2



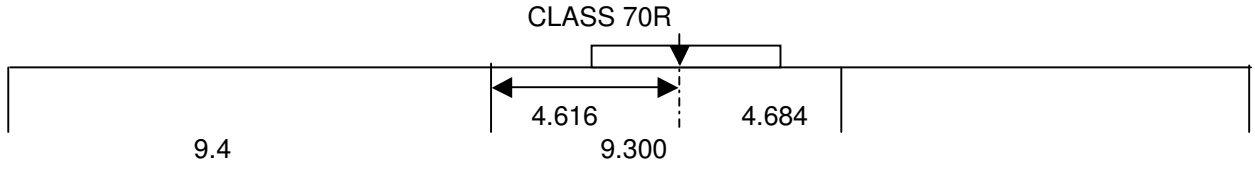
LOAD CASE NO 101

FOR MAX .BM.(SAGGING) AT END OF HAUNCH 9



LOAD CASE NO 134

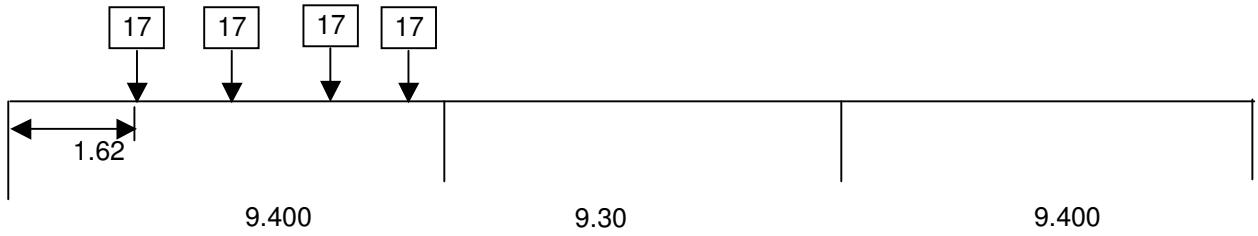
FOR MAX .BM.(SAGGING) AT MID SPAN OF MIDDLE CELL



LOAD CASE NO 164

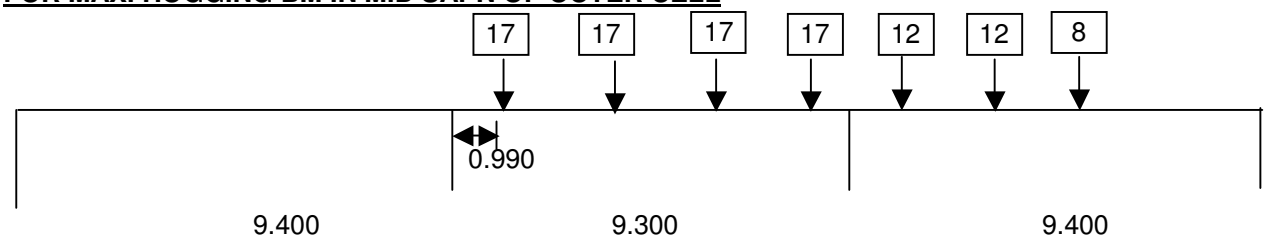
LIVE LOAD POSITION (WHEELED LOADING) :

FOR MAX. HOGGING BM AT END WEB



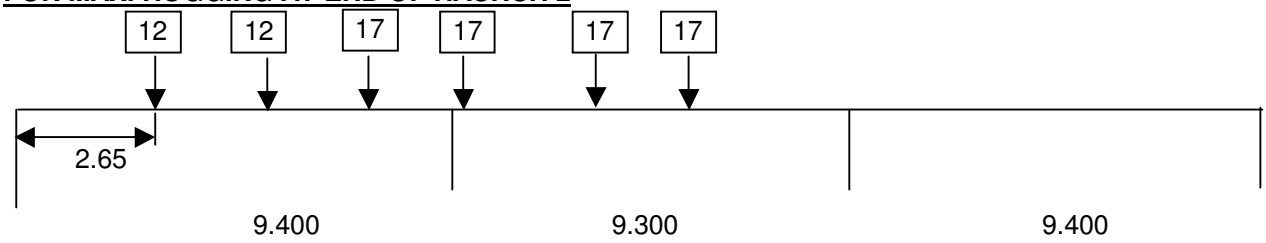
LOAD CASE NO 58

FOR MAX. HOGGING BM IN MID SAPN OF OUTER CELL



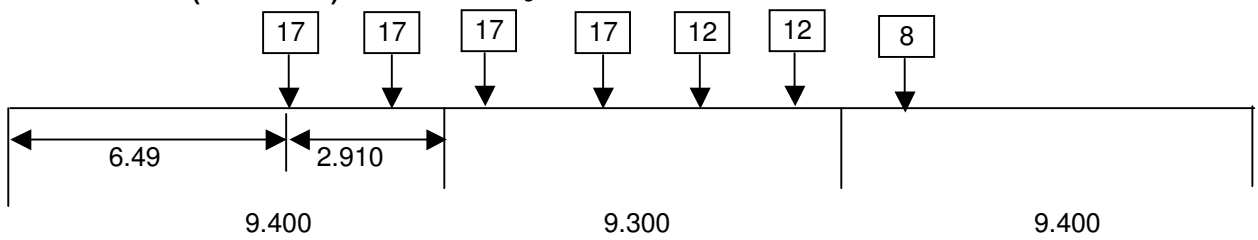
LOAD CASE NO 433

FOR MAX. HOGGING AT END OF HAUNCH 2



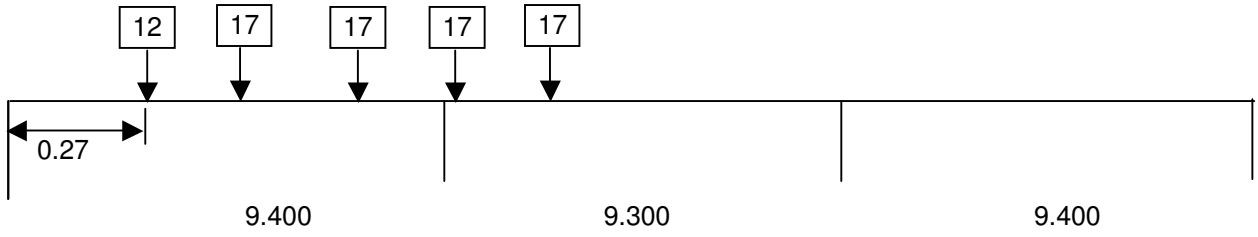
LOAD CASE NO 94

FOR MAX. BM.(HOGGING) AT START 9



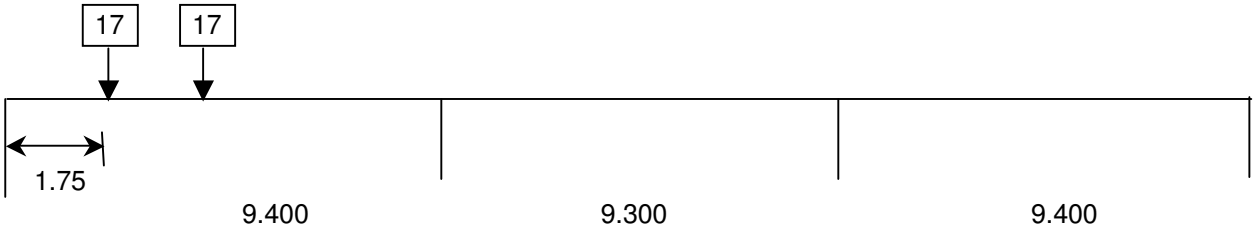
LOAD CASE NO 403

FOR MAX. HOGGING BM IN MID SPAN OF INNER CELL



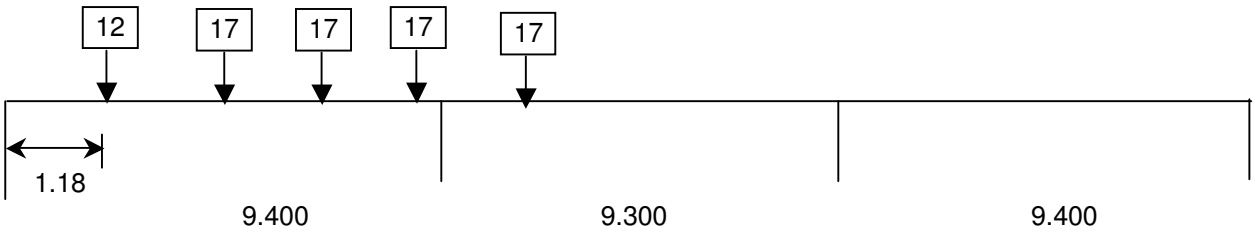
LOAD CASE NO 64

FOR MAX SAGGING BM AT END OF HAUNCH 1



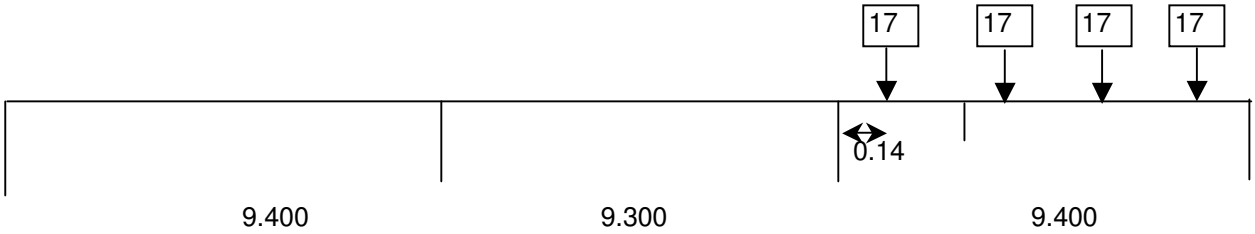
LOAD CASE NO 25

FOR MAX. BM (SAGGING) IN MID SPAN OF OUTER CELL



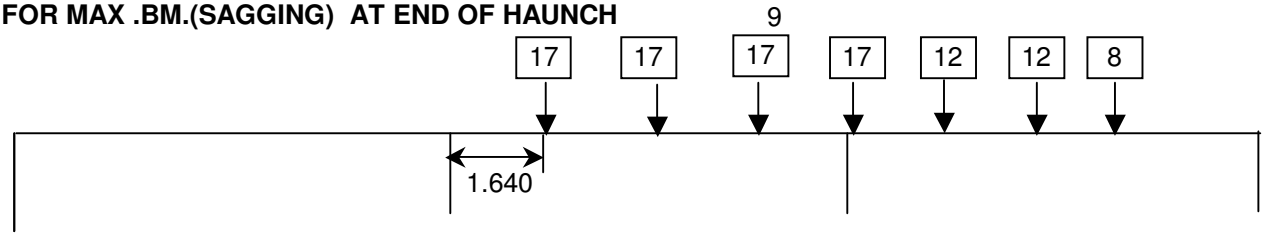
LOAD CASE NO 71

FOR MAX. SAGGING BM AT START OF HAUNCH 2



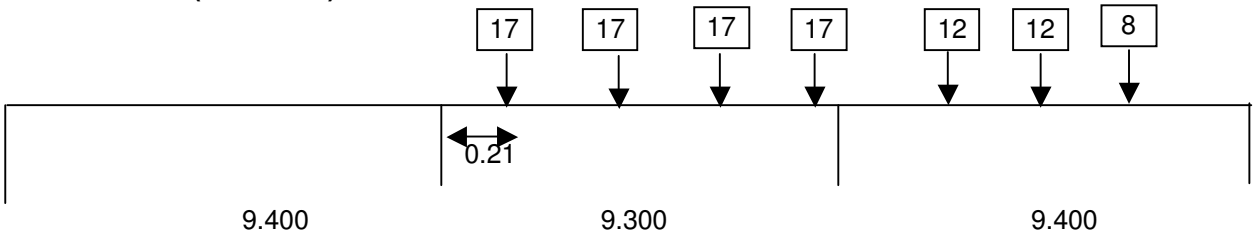
LOAD CASE NO 498

FOR MAX .BM.(SAGGING) AT END OF HAUNCH



LOAD CASE NO 438

FOR MAX .BM.(SAGGING) AT MID SPAN OF MIDDLE CELL



LOAD CASE NO 427

LIVE LOADS:

The box has been analysed for Class 70R tracked/Wheeled load using STAAD-Pro. Max. Bending moment at mid. Span (L/2), at face of haunches, at inner web & at end web are evaluated and corresponding positions of loads on the structure are identified. Live load intensity per metre width are evaluated for these load positions.
Bending moment at the various sections are evaluated for both Class 70R track and 70R wheel loading and the structure is designed for maximum bending moments.

EFFECTIVE WIDTH OF SLAB

According to IRC: 21-2000 cl. 305.16.2 (iii), if the effective width of slab for a load overlaps with the effective width of slab for an adjecent load, the resultant effective width for two loads equals to sum of respective effective width for each load minus the width of overlap.
Firstly effective width as per IRC:21 is evaluated then actual available width is compared with that value and corresponding load intensity per metre width is evaluated.

Effective width = $b_{eff.} = \alpha.a.(1-a/l_0) + b_1$

Where L_0 = the effective span

a = the distance of centre of gravity of the conc^n load from the nearer support

α = A constant depending upon the ratio b/l_0, where b is the width of the slab

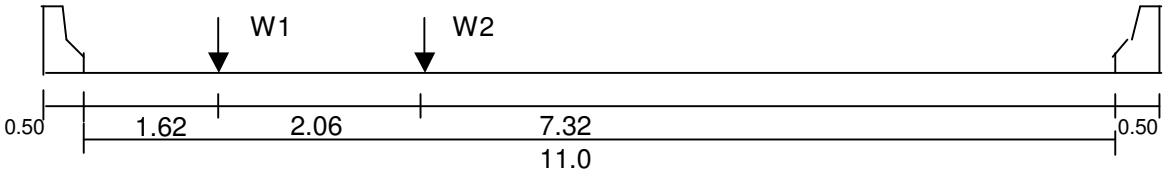
b/l_0 = 12.0 / 9.00 = 1.33

Hence as per cl. 305.16.2 of IRC:21, α = 2.424

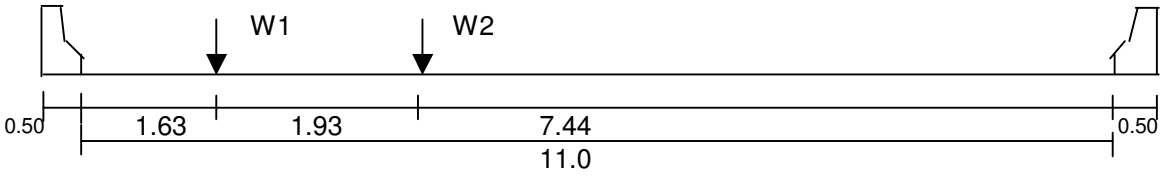
b_1 = breadth of loads over the deck slab after 45^0 dispersion through wearing coat

= 0.84 + 2 x 0.056 = 0.952 m (for 70R tracked)

= 0.81 + 2 x 0.056 = 0.922 m (for 70R wheeled)



TRANSVERSE POSITION OF LIVE LOAD (CLASS 70R TRACKED)



TRANSVERSE POSITION OF LIVE LOAD (CLASS 70R WHEELED)

CALCULATION OF EFFECTIVE WIDTH AND LOAD INTENSITY

LIVE LOAD	a (m)	b1 (m)	b_{eff} (m)	b_{eff}/2 (m)	Max. available width (m)	Load Intensity
Class 70R Tracked Load						
For Max BM (Hogging) at End web						
70.0	4.014	0.952	6.527	3.264	7.444	9.404
For Max BM (Hogging) in Mid span of outer cell						
70.0	4.014	0.952	6.527	3.264	7.444	9.404
For Max BM (Hogging) at end of haunch 2						
70.0	4.084	0.952	6.551	3.275	7.455	9.389
For Max BM (Hogging) at start of haunch 9						
70.0	3.914	0.952	6.489	3.245	7.425	9.428
For Max BM (Hogging) in Mid span of middle cell						
70.0	2.934	0.952	5.844	2.922	7.102	9.856
For Max BM (Sagging) at end of haunch 1						
70.0	2.290	0.952	5.151	2.575	6.755	10.362
For Max BM (Sagging) in mid span of outer cell						
70.0	3.936	0.952	6.498	3.249	7.429	9.423
For Max BM (Sagging) at start of haunch 2						
41.6	1.357	0.952	3.767	1.883	5.827	7.135
For Max BM (Sagging) at end of haunch 9						
61.8	2.018	0.952	4.793	2.396	6.576	9.398
For Max BM (Sagging) in mid span of middle cell						
70.0	4.616	0.952	6.647	3.323	7.503	9.329
Class 70R Wheeled Load						
For Max BM (Hogging) at End web						
17.0	1.620	0.92	4.172	2.086	6.102	2.786
17.0	2.990	0.92	5.864	2.932	6.992	2.431
17.0	3.360	0.92	6.155	3.078	7.138	2.382
17.0	1.990	0.92	4.725	2.362	6.422	2.647
For Max BM (Hogging) in Mid span of outer cell						
17.0	0.99	0.92	3.069	1.535	4.999	3.401
17.0	2.360	0.92	5.206	2.603	6.663	2.551
17.0	3.890	0.92	6.449	3.225	7.285	2.334
17.0	2.520	0.92	5.393	2.696	6.756	2.516
12.0	0.390	0.92	1.828	0.914	3.656	3.282
12.0	1.130	0.92	3.332	1.666	5.262	2.281
8.0	4.310	0.92	6.579	3.290	7.350	1.088
For Max BM (Hogging) at end of haunch 2						
12.0	2.650	0.92	5.535	2.767	6.827	1.758
12.0	4.170	0.92	6.546	3.273	7.333	1.636
17.0	3.100	0.92	5.958	2.979	7.039	2.415
17.0	1.730	0.92	4.344	2.172	6.232	2.728
17.0	1.320	0.92	3.672	1.836	5.602	3.034
17.0	2.690	0.92	5.577	2.788	6.848	2.482
For Max BM (Hogging) at start of haunch 9						
17.0	2.910	0.92	5.695	2.848	6.908	2.461
17.0	1.540	0.92	4.043	2.022	5.973	2.846
17.0	1.510	0.92	3.994	1.997	5.924	2.870
17.0	2.880	0.92	5.764	2.882	6.942	2.449
12.0	4.290	0.92	6.575	3.288	7.348	1.633
12.0	2.770	0.92	5.658	2.829	6.889	1.742
8.0	1.190	0.92	3.441	1.721	5.371	1.489

For Max BM (Hogging) in Mid span of middle cell						
12.0	0.270	0.92	1.557	0.778	3.114	3.854
17.0	2.400	0.92	5.254	2.627	6.687	2.542
17.0	3.770	0.92	6.395	3.198	7.258	2.342
17.0	2.580	0.92	5.459	2.730	6.790	2.504
17.0	1.210	0.92	3.477	1.739	5.407	3.144
For Max BM (Sagging) at end of haunch 1						
17.0	1.750	0.92	4.374	2.187	6.247	2.721
17.0	3.120	0.92	5.975	2.987	7.047	2.412
For Max BM (Sagging) in mid span of outer cell						
12.0	1.180	0.92	3.423	1.712	5.353	2.242
17.0	3.310	0.92	6.120	3.060	7.120	2.388
17.0	4.680	0.92	6.618	3.309	7.369	2.307
17.0	1.670	0.92	4.251	2.125	6.181	2.750
17.0	0.300	0.92	1.626	0.813	3.252	5.228
For Max BM (Sagging) at start of haunch 2						
17.0	0.140	0.92	1.256	0.628	2.512	6.767
17.0	1.510	0.92	3.968	1.984	5.898	2.882
17.0	4.560	0.92	6.613	3.307	7.367	2.308
17.0	3.470	0.92	6.228	3.114	7.174	2.370
12.0	1.340	0.92	3.707	1.854	5.637	2.129
For Max BM (Sagging) at end of haunch 9						
17.0	1.640	0.92	4.204	2.102	6.134	2.772
17.0	3.010	0.92	5.882	2.941	7.001	2.428
17.0	3.240	0.92	6.069	3.034	7.094	2.396
17.0	1.870	0.92	4.553	2.277	6.337	2.683
12.0	0.260	0.92	1.534	0.767	3.068	3.911
12.0	1.780	0.92	4.383	2.192	6.252	1.919
8.0	3.660	0.92	6.186	3.093	7.153	1.118
For Max BM (Sagging) in mid span of middle cell						
17.0	0.210	0.92	1.420	0.710	2.839	5.987
17.0	1.580	0.92	4.108	2.054	6.038	2.815
17.0	4.630	0.92	6.617	3.309	7.369	2.307
17.0	3.300	0.92	6.113	3.056	7.116	2.389
12.0	1.170	0.92	3.405	1.703	5.335	2.249
12.0	0.350	0.92	1.739	0.869	3.478	3.451
8.0	4.310	0.92	6.579	3.290	7.350	1.088

LOAD INTENSITY AND CORRESPONDING BASE PRESSURE FOR CLASS 70R TRACKED:

Dispersion width = Track length over the span after 45° dispersion through wearing coat and slab

FOR MAX. HOGGING BM AT END WEB

Dispersion width =	4.570	+	1.112	=	5.682	m
Live load intensity as udl =	9.404	/	5.682	=	1.655	t/m^2
Corresponding base pressure				=	0.335	t/m^2

FOR MAX. HOGGING BM IN MID SAPN OF OUTER CELL

Dispersion width =	4.570	+	1.112	=	5.682	m
Live load intensity as udl =	9.404	/	5.682	=	1.655	t/m^2
Corresponding base pressure				=	0.335	t/m^2

FOR MAX. HOGGING AT END OF HAUNCH 2

Dispersion width =	4.570	+	1.112	=	5.682	m
Live load intensity as udl =	9.389	/	5.682	=	1.652	t/m^2
Corresponding base pressure				=	0.334	t/m^2

FOR MAX. BM.(HOGGING) AT START OF HAUNCH 9

Dispersion width =	4.570	+	1.112	=	5.682	m
Live load intensity as udl =	9.428	/	5.682	=	1.659	t/m^2
Corresponding base pressure				=	0.336	t/m^2

FOR MAX BM. (HOGGING) AT MID SPAN OF MIDDLE CELL

Dispersion width =	4.570	+	1.112	=	5.682	m
Live load intensity as udl =	9.856	/	5.682	=	1.735	t/m^2
Corresponding base pressure				=	0.351	t/m^2

FOR MAX. BM.(SAGGING) AT END OF HAUNCH

Dispersion width =	4.570	+	1.112	=	5.682	m
Live load intensity as udl =	10.362	/	5.682	=	1.824	t/m^2
Corresponding base pressure				=	0.369	t/m^2

FOR MAX. BM (SAGGING) IN MID SPAN OF OUTER CELL

Dispersion width =	4.570	+	1.112	=	5.682	m
Live load intensity as udl =	9.423	/	5.682	=	1.658	t/m^2
Corresponding base pressure				=	0.335	t/m^2

FOR MAX .BM.(SAGGING) AT START OF HAUNCH

Dispersion width =	2.714	+	0.556	=	3.270	m
Live load intensity as udl =	7.135	/	3.270	=	2.182	t/m^2
Corresponding base pressure				=	0.254	t/m^2

FOR MAX .BM.(SAGGING) AT END OF HAUNCH

Dispersion width =	4.035	+	0.556	=	4.591	m
Live load intensity as udl =	9.398	/	4.591	=	2.047	t/m^2
Corresponding base pressure				=	0.334	t/m^2

FOR MAX .BM.(SAGGING) AT MID SPAN OF MIDDLE CELL

Dispersion width =	4.570	+	1.112	=	5.682	m

Live load intensity as udl	=	9.329	/	5.682	=	1.642	t/m^2
Corresponding base pressure					=	0.332	t/m^2

LOAD INTENSITY AND CORRESPONDING BASE PRESSURE FOR CLASS 70R WHEELED:

Dispersion width = wheel length over the span after 45° dispersion through wearing coat and slab

For Max BM (Hogging) at End web

Disp. width of 12t load at start =	0.263	+	0.556	=	0.819	m
Disp. width of 12t & 17t Load =	0.263	+	1.112	=	1.375	m
Live load intensity as udl						
for 17 t wheel	2.786	/	1.375	=	2.026	t/m^2
for 17 t wheel	2.431	/	1.375	=	1.768	t/m^2
for 17 t wheel	2.382	/	1.375	=	1.732	t/m^2
for 17 t wheel	2.647	/	1.375	=	1.925	t/m^2
Corresponding base pressure				=	0.365	t/m^2

For Max BM (Hogging) in Mid span of outer cell

Disp. width of 17 t &12t wh. =	0.263	+	1.112	=	1.375	m
Disp. width of 12 t wh.at end =	0.263	+	1.112	=	1.375	m
Live load intensity as udl						
for 17 t wheel	3.401	/	1.375	=	2.473	t/m^2
for 17 t wheel	2.551	/	1.375	=	1.856	t/m^2
for 17 t wheel	2.334	/	1.375	=	1.697	t/m^2
for 17 t wheel	2.516	/	1.375	=	1.830	t/m^2
for 12 t wheel	3.282	/	1.375	=	2.387	t/m^2
for 12 t wheel	2.281	/	1.375	=	1.659	t/m^2
for 8 t wheel	1.088	/	1.375	=	0.792	t/m^2
Corresponding base pressure				=	0.621	t/m^2

For Max BM (Hogging) at end of haunch 2

Disp. width of 17t & 12t load =	0.263	+	0.556	=	0.819	m
Disp. width of 12 t load at end =	0.263	+	1.112	=	1.375	m
Live load intensity as udl						
for 12 t wheel	1.758	/	1.375	=	1.278	t/m^2
for 12 t wheel	1.636	/	1.375	=	1.190	t/m^2
for 17 t wheel	2.415	/	0.819	=	2.949	t/m^2
for 17 t wheel	2.728	/	0.819	=	3.331	t/m^2
for 17 t wheel	3.034	/	0.819	=	3.705	t/m^2
for 17 t wheel	2.482	/	0.819	=	3.031	t/m^2
Corresponding base pressure				=	0.500	t/m^2

For Max BM (Hogging) at start of haunch 9

Disp. width of 17t load at start =	0.263	+	1.112	=	1.375	m
Disp. width of 17t,12t & 8t load =	0.263	+	1.112	=	1.375	m
Live load intensity as udl						
for 17 t wheel	2.846	/	1.375	=	2.070	t/m^2
for 17 t wheel	2.870	/	1.375	=	2.087	t/m^2
for 17 t wheel	2.449	/	1.375	=	1.781	t/m^2
for 12 t wheel	1.633	/	1.375	=	1.188	t/m^2
for 12 t wheel	1.742	/	1.375	=	1.267	t/m^2
for 8 t wheel	1.489	/	1.375	=	1.083	t/m^2
Corresponding base pressure				=	0.551	t/m^2

For Max BM (Hogging) in Mid span of middle cell

Disp. width of 17t load at start =	0.263	+	1.112	=	1.375	m
Disp. width of 17t,12t & 8t load =	0.263	+	1.112	=	1.375	m
Live load intensity as udl						
for 12 t wheel	3.854	/	1.375	=	2.803	t/m^2
for 17 t wheel	2.542	/	1.375	=	1.849	t/m^2
for 17 t wheel	2.342	/	1.375	=	1.704	t/m^2
for 17 t wheel	2.504	/	1.375	=	1.821	t/m^2
for 17 t wheel	3.144	/	1.375	=	2.286	t/m^2
Corresponding base pressure				=	0.512	t/m^2

For Max BM (Sagging) at end of haunch 1

Disp. width of 17t load at start =	0.263	+	1.112	=	1.375	m
Disp. width of 17t,12t & 8t load =	0.263	+	1.112	=	1.375	m
Live load intensity as udl						
for 17 t wheel	2.721	/	1.375	=	1.979	t/m^2
for 17 t wheel	2.412	/	1.375	=	1.754	t/m^2
Corresponding base pressure				=	0.183	t/m^2

For Max BM (Sagging) in mid span of outer cell

Disp. width of 17t load at start =	0.263	+	1.112	=	1.375	m
Disp. width of 17t,12t & 8t load =	0.263	+	0.725	=	0.988	m
Live load intensity as udl						
for 12 t wheel	2.242	/	1.375	=	1.630	t/m^2
for 17 t wheel	2.388	/	1.375	=	1.736	t/m^2
for 17 t wheel	2.307	/	1.375	=	1.678	t/m^2
for 17 t wheel	2.750	/	1.375	=	2.000	t/m^2
for 17 t wheel	5.228	/	1.375	=	3.802	t/m^2
Corresponding base pressure				=	0.531	t/m^2

For Max BM (Sagging) at start of haunch 2

Disp. width of 17t load at start =	0.263	+	1.112	=	1.375	m
Disp. width of 17t,12t & 8t load =	0.263	+	0.684	=	0.947	m
Live load intensity as udl						
for 17 t wheel	6.767	/	1.375	=	4.922	t/m^2
for 17 t wheel	2.882	/	1.375	=	2.096	t/m^2
for 17 t wheel	2.308	/	1.375	=	1.678	t/m^2
for 17 t wheel	2.370	/	1.375	=	1.723	t/m^2
for 12 t wheel	2.129	/	1.375	=	1.548	t/m^2
Corresponding base pressure				=	0.586	t/m^2

For Max BM (Sagging) at end of haunch 9

Disp. width of 17t load at start =	0.263	+	1.112	=	1.375	m
Disp. width of 17t,12t & 8t load =	0.263	+	1.112	=	1.375	m
Live load intensity as udl						
for 17 t wheel	2.772	/	1.375	=	2.016	t/m^2
for 17 t wheel	2.428	/	1.375	=	1.766	t/m^2
for 17 t wheel	2.396	/	1.375	=	1.743	t/m^2
for 17 t wheel	2.683	/	1.375	=	1.951	t/m^2
for 12 t wheel	3.911	/	1.375	=	2.845	t/m^2
for 12 t wheel	1.919	/	1.375	=	1.396	t/m^2
for 8 t wheel	1.118	/	1.375	=	0.813	t/m^2

Corresponding base pressure	=	0.613	t/m^2

For Max BM (Sagging) in mid span of middle cell

Disp. width of 17t load at start =	0.263	+	0.634	=	0.897	m
Disp. width of 17t,12t & 8t load =	0.263	+	0.634	=	0.897	m
Live load intensity as udl						
for 17 t wheel	5.987	/	1.375	=	4.354	t/m^2
for 17 t wheel	2.815	/	1.375	=	2.048	t/m^2
for 17 t wheel	2.307	/	1.375	=	1.678	t/m^2
for 17 t wheel	2.389	/	1.375	=	1.737	t/m^2
for 12 t wheel	2.249	/	1.375	=	1.636	t/m^2
for 12 t wheel	3.451	/	1.375	=	2.510	t/m^2
for 8 t wheel	1.088	/	1.375	=	0.792	t/m^2
Corresponding base pressure				=	0.722	t/m^2

TEMPERATURE EFFECT: As per IRC:6-2000

Effect of temperature gradient

$F = E_c \alpha \Delta t A$

E_c = Modulus of Elasticity of Concrete = 3.11E+06 t/m^2

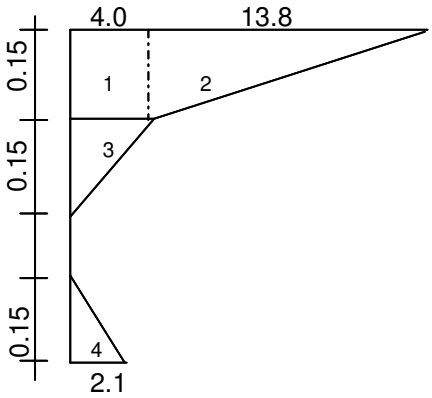
α = Coefficient of Thermal expansion = 1.17E-05 (as per IRC:6)

Δt = Temperature differential

A = X sectional Area of section where temperature differential is Δt

Average thickness of Deck slab = 500 mm

EFFECT OF TEMPERATURE RISE



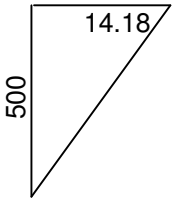
Sr. No.	Δt	b	t	A = b x t	F (force)	Acting at	Eccentricity e*
1	4.0	1.0	0.150	0.150	21.84	0.075 m from top	0.175
2	$\frac{13.8}{2}$	1.0	0.150	0.150	37.67	0.050 m from top	0.200
3	$\frac{4.0}{2}$	1.0	0.150	0.150	10.92	0.200 m from top	0.050
4	$\frac{2.1}{2}$	1.0	0.150	0.150	5.73	0.050 m from bottom	-0.200
					ΣF = 76.16	$\Sigma F.e$ =	10.76

e* Eccentricity of force F from centriodal axis of Section

$M = F.e = E_c \alpha \Delta t/2.A.e$

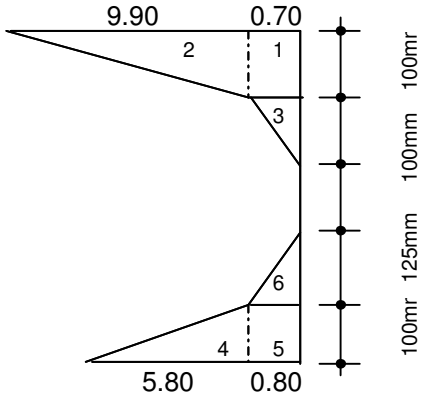
10.76 = 1.82E+01 x Δt / 2 x 0.0833

Hence, Δt = **14.18** ^{o}C



Idealised Temp Gradient (+ve)

EFFECT OF TEMPERATURE FALL

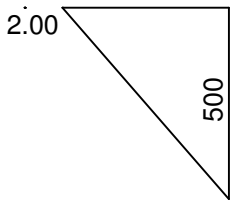


Sr. No.	Δt	b	t	A = b x t	F (force)	Acting at	Eccentricity e*
1	0.70	1.0	0.100	0.100	2.55	0.05 m from top	0.200
2	$\frac{9.90}{2}$	1.0	0.100	0.100	18.02	0.033 m from top	0.217
3	$\frac{0.70}{2}$	1.0	0.1250	0.1250	1.59	0.142 m from top	0.108
4	$\frac{5.80}{2}$	1.0	0.100	0.100	10.56	0.033 m from bottom	-0.217
5	0.80	1.0	0.100	0.100	2.91	0.050 m from bottom	-0.200
6	$\frac{0.80}{2}$	1.0	0.1250	0.1250	1.82	0.142 m from bottom	-0.108
					$\sum F$ = 37.45	$\sum M$ =	1.52

$M = F.e = E_c \alpha \Delta t/2.A.e$

1.52 = 1.82E+01 x Δt / 2 x 0.0833

Hence, Δt = **2.00** ^{O}C



Idealised Temp Gradient (-ve)

SUMMARY OF BENDING MOMENT AT DIFFERENT LOCATION

(I) Due to LIVE LOAD

Impact factor (I.F.) for class 70R tracked = 1.10

Impact factor (I.F.) for class 70R wheeled = 1.25

LOCATION		CLASS 70R(Tracked)		CLASS 70R(Wheeled)		DESIGN BM (tm/m) LL	
		Max. sagging	Max. hogging	Max. sagging	Max. hogging	Max. sagging	Max. hogging
TOP SLAB	At the face of end web	-1.888	5.079	-2.206	4.520	-2.206	5.079
	At the end of haunch-1	-1.976	0.644	-3.106	0.000	-3.106	0.644
	In the mid span of end cell	-8.236	1.529	-7.764	1.268	-8.236	1.529
	At the start of haunch-2	-1.810	3.812	-1.241	3.779	-1.810	3.812
	At the face of inner web (end cell)	0.000	8.606	1.443	10.918	0.000	10.918
	At the face of inner web(inner cell)	0.000	7.569	1.185	10.161	0.000	10.161
	At the end of haunch-9	-0.124	4.513	-1.075	4.305	-1.075	4.513
	In the mid span of middle cell	-7.197	1.988	-6.260	1.999	-7.197	1.999
Bottom Slab	At the face of end web	-0.970	0.279	-0.133	1.971	-0.970	1.971
	At the end of haunch-6	-1.525	0.000	-1.621	0.000	-1.621	0.000
	In the mid span of end cell	-2.480	0.000	-3.090	0.000	-3.090	0.000
	At the start of haunch-5	-0.263	1.836	-0.089	2.442	-0.263	2.442
	At the face of inner web(end cell)	0.000	3.855	0.000	6.540	0.000	6.540
	At the face of inner web(inner cell)	0.000	4.374	0.000	5.450	0.000	5.450
	At the end of haunch-12	-0.144	2.343	0.000	2.592	-0.144	2.592
	In the mid span of middle cell	-1.594	0.000	-2.256	0.000	-2.256	0.000
END WEB	Top face of bottom slab	0.000	1.602	0.000	3.681	0.000	3.681
	At the end of haunch-7	0.000	2.402	0.000	3.225	0.000	3.225
	Mid span of web	-0.288	4.161	0.000	4.619	-0.288	4.619
	Start of haunch-8	-1.277	5.920	-1.033	6.011	-1.277	6.011
	Bottom face of deck slab	-2.003	7.244	-2.154	7.236	-2.154	7.244
Central Web	Top face of bottom slab	-2.418	2.292	-2.374	2.654	-2.418	2.654
	At the end of haunch-4	-0.965	0.998	-0.951	1.256	-0.965	1.256
	Mid span of web	-0.768	1.015	-0.649	1.044	-0.768	1.044
	Start of haunch-3	-2.531	2.995	-2.553	2.950	-2.553	2.995
	Bottom face of deck slab	-3.826	4.450	-3.951	4.350	-3.951	4.450

(II) Due to TEMPERATURE

LOCATION		Temparature (rise)		Temparature (fall)		TEMPATATURE	
		sagging	hogging	sagging	hogging	SAGGING	HOGGING
TOP SLAB	At the face of end web	-7.174	0	0	1.012	-7.174	1.012
	At the end of haunch-1	-8.028	0	0	1.132	-8.028	1.132
	In the mid span of end cell	-10.043	0	0	1.417	-10.043	1.417
	At the start of haunch-2	-10.094	0	0	1.71	-10.094	1.71
	At the face of inner web (end cell)	-13.015	0	0	1.836	-13.015	1.836
	At the face of inner web(inner cell)	-12.401	0	0	1.749	-12.401	1.749
	At the end of haunch-9	-12.401	0	0	1.749	-12.401	1.749
	In the mid span of middle cell	-12.401	0	0	1.749	-12.401	1.749
Bottom Slab	At the face of end web	0	1.578	-0.223	0	-0.223	1.578
	At the end of haunch-6	0	1.327	-0.187	0	-0.187	1.327
	In the mid span of end cell	0	0.735	-0.104	0	-0.104	0.735
	At the start of haunch-5	0	0.122	-0.017	0	-0.017	0.122
	At the face of inner web(end cell)	-0.139	0	0	0.02	-0.139	0.02
	At the face of inner web(inner cell)	-0.491	0	0	0.069	-0.491	0.069
	At the end of haunch-12	-0.491	0	0	0.069	-0.491	0.069
	In the mid span of middle cell	-0.491	0	0	0.069	-0.491	0.069
END WEB	Top face of bottom slab	0	1.062	-0.15	0	-0.15	1.062
	At the end of haunch-7	-0.479	0	0	0.067	-0.479	0.067
	Mid span of web	-2.577	0	0	0.363	-2.577	0.363
	Start of haunch-8	-4.675	0	0	0.659	-4.675	0.659
	Bottom face of deck slab	-6.216	0	0	0.877	-6.216	0.877
Central Web	Top face of bottom slab	0	-0.199	-0.028	0	-0.028	0
	At the end of haunch-4	-0.006	0	0	-0.001	-0.006	0
	Mid span of web	-0.286	0	0	-0.04	-0.286	0
	Start of haunch-3	-0.565	0	0	-0.08	-0.565	0
	Bottom face of deck slab	-0.771	0	0	-0.109	-0.771	0

(III) Due to DL, SIDL & EARTH PRESSURE (EP)

LOCATION		Due to DL (tm/m)		Due to SIDL (tm/m)		Earth Pressure (Dry)			
						Case-1		Case-2	
		sagging	hogging	sagging	hogging	sagging	hogging	sagging	hogging
TOP SLAB	At the face of end web	0	0.783	0	0.558	0	10.906	0	5.889
	At the end of haunch-1	-3.674	0	-0.622	0	0	8.927	0	4.82
	In the mid span of end cell	-6.207	0	-1.442	0	0	4.257	0	2.299
	At the start of haunch-2	0	2.155	0	0.61	-0.571	0	-0.309	0
	At the face of inner web (end cell)	0	9.366	0	2.381	-2.63	0	-1.42	0
	At the face of inner web(inner cell)	0	9.52	0	2.33	-2.304	0	-1.244	0
	At the end of haunch-9	0	3.572	0	0.826	-2.304	0	-1.244	0
	In the mid span of middle cell	-1.828	0	-0.6	0	-2.304	0	-1.244	0
Bottom Slab	At the face of end web	0	5.561	0	0.532	0	12.208	0	6.591
	At the end of haunch-6	-3.703	0	-0.64	0	0	9.963	0	5.38
	In the mid span of end cell	-10.629	0	-1.443	0	0	4.667	0	2.52
	At the start of haunch-5	0	5.084	0	0.628	-0.809	0	-0.437	0
	At the face of inner web(end cell)	0	18.597	0	2.407	-3.143	0	-1.697	0
	At the face of inner web(inner cell)	0	17.729	0	2.336	-2.466	0	-1.332	0
	At the end of haunch-12	0	6.12	0	0.832	-2.466	0	-1.332	0
	In the mid span of middle cell	-5.13	0	-0.595	0	-2.466	0	-1.332	0
END WEB	Top face of bottom slab	0	9.721	0	1.142	0	3.49	0	1.884
	At the end of haunch-7	0	8.452	0	1.147	-12.169	0	-6.571	0
	Mid span of web	0	6.725	0	1.154	-17.139	0	-9.254	0
	Start of haunch-8	0	4.998	0	1.162	-7.746	0	-4.182	0
	Bottom face of deck slab	0	3.73	0	1.167	0	5.437	0	2.936
Central Web	Top face of bottom slab	0	1.294	0	0.143	-1.275	0	-0.688	0
	At the end of haunch-4	0	1.078	0	0.139	-1.198	0	-0.647	0
	Mid span of web	0	0.784	0	0.134	-1.093	0	-0.59	0
	Start of haunch-3	0	0.489	0	0.128	-0.988	0	-0.533	0
	Bottom face of deck slab	0	0.273	0	0.124	-0.911	0	-0.492	0

LOCATION		Earth Pressure (H.F.L)				EARTH PRESSURE	
		Case-1		Case-2			
		sagging	hogging	sagging	hogging	SAGGING	HOGGING
TOP SLAB	At the face of end web	0	8.29	0	5.157	0	10.906
	At the end of haunch-1	0	6.782	0	4.222	0	8.927
	In the mid span of end cell	0	3.225	0	2.015	0	4.257
	At the start of haunch-2	-0.453	0	-0.266	0	-0.571	0
	At the face of inner web (end cell)	-2.02	0	-1.239	0	-2.63	0
	At the face of inner web(inner cell)	-1.737	0	-1.092	0	-2.304	0
	At the end of haunch-9	-1.737	0	-1.092	0	-2.304	0
	In the mid span of middle cell	-1.737	0	-1.092	0	-2.304	0
Bottom Slab	At the face of end web	0	8.956	0	5.837	0	12.208
	At the end of haunch-6	0	7.312	0	4.763	0	9.963
	In the mid span of end cell	0	3.433	0	2.229	0	4.667
	At the start of haunch-5	-0.577	0	-0.39	0	-0.809	0
	At the face of inner web(end cell)	-2.287	0	-1.507	0	-3.143	0
	At the face of inner web(inner cell)	-1.822	0	-1.177	0	-2.466	0
	At the end of haunch-12	-1.822	0	-1.177	0	-2.466	0
	In the mid span of middle cell	-1.822	0	-1.177	0	-2.466	0
END WEB	Top face of bottom slab	0	2.844	0	1.543	0	3.49
	At the end of haunch-7	-8.548	0	-5.971	0	-12.169	0
	Mid span of web	-12.798	0	-8.02	0	-17.139	0
	Start of haunch-8	-6.31	0	-3.647	0	-7.746	0
	Bottom face of deck slab	0	3.856	0	2.534	0	5.437
Central Web	Top face of bottom slab	-0.91	0	-0.615	0	-1.275	0
	At the end of haunch-4	-0.87	0	-0.575	0	-1.198	0
	Mid span of web	-0.815	0	-0.52	0	-1.093	0
	Start of haunch-3	-0.761	0	-0.465	0	-0.988	0
	Bottom face of deck slab	-0.721	0	-0.425	0	-0.911	0

DESIGN MOMENT DUE TO DIFFERENT LOAD COMBINATIONS

LOCATION		Total BM (without temperature) (tm/m)				Total BM (with temperature) (tm/m)			
		Due to (DL+SIDL+EP)		Due to (DL+SIDL+EP +LL)		Due to (DL+SIDL+EP +TEMP)/1.15		Due to (DL+SIDL+EP+ 50%LL+TEMP)/1.15	
		Max. sagging	Max. hogging	Max. sagging	Max. hogging	Max. sagging	Max. hogging	Max. sagging	Max. hogging
TOP SLAB	At the face of end web	0.000	12.247	-2.206	17.326	-6.238	11.530	-7.198	13.738
	At the end of haunch-1	-4.296	8.927	-7.402	9.571	-10.717	8.747	-12.067	9.027
	In the mid span of end cell	-7.649	4.257	-15.885	5.786	-15.384	4.934	-18.965	5.599
	At the start of haunch-2	-0.571	2.765	-2.381	6.577	-9.274	3.891	-10.061	5.548
	At the face of inner web (end cell)	-2.630	11.747	-2.630	22.665	-13.604	11.811	-13.604	16.558
	At the face of inner web(inner cell)	-2.304	11.850	-2.304	22.011	-12.787	11.825	-12.787	16.243
	At the end of haunch-9	-2.304	4.398	-3.379	8.911	-12.787	5.345	-13.254	7.308
	In the mid span of middle cell	-4.732	0.000	-11.929	1.999	-14.898	1.521	-18.028	2.390
Bottom Slab	At the face of end web	0.000	18.301	-0.970	20.272	-0.194	17.286	-0.616	18.143
	At the end of haunch-6	-4.343	9.963	-5.964	9.963	-3.939	9.817	-4.644	9.817
	In the mid span of end cell	-12.072	4.667	-15.162	4.667	-10.588	4.697	-11.931	4.697
	At the start of haunch-5	-0.809	5.712	-1.072	8.154	-0.718	5.073	-0.833	6.135
	At the face of inner web(end cell)	-3.143	21.004	-3.143	27.544	-2.854	18.282	-2.854	21.125
	At the face of inner web(inner cell)	-2.466	20.065	-2.466	25.515	-2.571	17.508	-2.571	19.877
	At the end of haunch-12	-2.466	6.952	-2.610	9.544	-2.571	6.105	-2.634	7.232
	In the mid span of middle cell	-8.191	0.000	-10.447	0.000	-7.550	0.060	-8.530	0.060
END WEB	Top face of bottom slab	0.000	14.353	0.000	18.034	-0.130	13.404	-0.130	15.005
	At the end of haunch-7	-12.169	9.599	-12.169	12.824	-10.998	8.405	-10.998	9.807
	Mid span of web	-17.139	7.879	-17.427	12.498	-17.144	7.167	-17.270	9.175
	Start of haunch-8	-7.746	6.160	-9.023	12.171	-10.801	5.930	-11.356	8.543
	Bottom face of deck slab	0.000	10.334	-2.154	17.578	-5.405	9.749	-6.342	12.898
Central Web	Top face of bottom slab	-1.275	1.437	-3.693	4.091	-1.133	1.250	-2.184	2.403
	At the end of haunch-4	-1.198	1.217	-2.163	2.473	-1.047	1.058	-1.466	1.604
	Mid span of web	-1.093	0.918	-1.861	1.962	-1.199	0.798	-1.533	1.252
	Start of haunch-3	-0.988	0.617	-3.541	3.612	-1.350	0.537	-2.460	1.839
	Bottom face of deck slab	-0.911	0.397	-4.862	4.847	-1.463	0.345	-3.181	2.280

MOMENT OF RESISTANCE OF THE SECTION (M_R):

modular ratio, m	=	10		
lever arm factor, j	=	0.877		
Moment of resistance coeff, Q	=	192	t/m^2	
effective cover in top slab & webs	=	50	mm	
effective cover in soffit slab	=	75	mm	

IN SPAN PORTION,	Eff. available depth	=	450	mm			
(top slab & webs)	M_R	=	**38.94**	tm/m	>	18.97 **tm/m, O.K.** (Max. Design BM)	
IN SPAN PORTION,	Eff. available depth	=	425	mm			
(soffit slab)	M_R	=	**34.73**	tm/m	>	27.54 **tm/m, O.K.** (Max. Design BM)	
END (CORNER) PORTION,	Eff. available depth	=	700	mm			
	M_R	=	**94.22**	tm/m	>	20.27 **tm/m, O.K.** (Max. Design BM)	

CALCULATION OF REINFORCEMENT:

LOCATION		DESIGN BM (tm/m)		Eff. depth available (mm)	Reinft. reqd. at inner face (cm^2/m)	Reinft. reqd. at outer face (cm^2/m)
		Max. Sagg. BM	Max. Hogg. BM			
TOP SLAB	At the face of end web	7.198	17.326	700	5.75	13.83
	At the end of haunch-1	12.067	9.571	450	14.99	11.88
	In the mid span of end cell	18.965	5.786	450	23.55	7.19
	At the start of haunch-2	10.061	6.577	450	12.49	8.17
	At the face of inner web (end cell)	13.604	22.665	700	10.86	18.09
	At the face of inner web(inner cell)	12.787	22.011	700	10.21	17.57
	At the end of haunch-9	13.254	8.911	450	16.46	11.07
	In the mid span of middle cell	18.028	2.390	450	22.39	2.97
Bottom Slab	At the face of end web	0.970	20.272	700	0.77	16.18
	At the end of haunch-6	5.964	9.963	425	7.84	13.10
	In the mid span of end cell	15.162	4.697	425	19.94	6.18
	At the start of haunch-5	1.072	8.154	425	1.41	10.72
	At the face of inner web(end cell)	3.143	27.544	700	2.51	21.99
	At the face of inner web(inner cell)	2.571	25.515	700	2.05	20.37
	At the end of haunch-12	2.634	9.544	425	3.46	12.55
	In the mid span of middle cell	10.447	0.060	425	13.74	0.08
END WEB	Top face of bottom slab	0.130	18.034	700	0.10	14.40
	At the end of haunch-7	12.169	12.824	450	15.11	15.93
	Mid span of web	17.427	12.498	450	21.64	15.52
	Start of haunch-8	11.356	12.171	450	14.10	15.11
	Bottom face of deck slab	6.342	17.578	700	5.06	14.03
Central Web	Top face of bottom slab	3.693	4.091	700	2.95	3.27
	At the end of haunch-4	2.163	2.473	450	2.69	3.07
	Mid span of web	1.861	1.962	450	2.31	2.44
	Start of haunch-3	3.541	3.612	450	4.40	4.49
	Bottom face of deck slab	4.862	4.847	700	3.88	3.87

CHECK FOR SHEAR FORCE: (As per clause 304.7.1.3 of I.R.C. 2000)

(I) At distance equal to Eff. Depth from the face of Support

LOCATION		Due to DL (t/m)	Due to SIDL	Due to EP (t/m)	Due to LL (t/m)	TOTAL
BOTTOM SLAB	S.F.	8.104	1.038	1.8	2.328	13.27
	B.M.	2.943	0.195	11.651	1.214	16.00
WEBS	S.F.	1.015	0.0	14.807	0.785	16.61

Eff. depth available at the critical section = 0.7 + 0.20 x 0.55 = 0.81 m

Shear Force = 16.61 / 0.81 = 20.50 t/m^2

M/d.tanβ = 16.00 x 0.247 = 3.95 t/m^2

Net Shear Force = (S.F. -M/d.tanβ) = **16.55** t/m^2

Permissible Shear stress

100As/Bc = 0.27 , τc = 0.235 = 0.235 Mpa

= **23.97** **t/m2** **O.K.**

(I) At the face of Haunch

LOCATION	Due to DL (t/m)	Due to SIDL	Due to EP (t/m)	Due to LL (t/m)	TOTAL S.F. (t/m)
BOTTOM SLAB	8.3	1.072	1.8	2.408	13.62

Eff. depth available at the critical section = 0.7 m

Shear Force = 13.62 / 0.7 = 19.46 t/m^2

Permissible Shear stress

100As/Bc = 0.31 , τc = 0.25 = 0.250 Mpa

= **25.50** **t/m2** **O.K.**

```
INPUT FILE: DL.STD
     1. STAAD PLANE
     2. START JOB INFORMATION
     3. ENGINEER DATE 25-DEC-06
     4. END JOB INFORMATION
     5. INPUT WIDTH 79
     6. PAGE LENGTH 1000
     7. UNIT METER MTON
     8. JOINT COORDINATES
     9. 1        0.000       0.000       0.000
    10. 2        1.750       0.000       0.000
    11. 3        4.700       0.000       0.000
    12. 4        7.750       0.000       0.000
    13. 5        9.400       0.000       0.000
    14. 6       11.050       0.000       0.000
    15. 7       14.050       0.000       0.000
    16. 8       17.050       0.000       0.000
    17. 9       18.700       0.000       0.000
    18. 10      20.350       0.000       0.000
    19. 11      23.400       0.000       0.000
    20. 12      26.350       0.000       0.000
    21. 13      28.100       0.000       0.000
    22. 14       0.000       6.904       0.000
    23. 15       1.750       6.904       0.000
    24. 16       4.700       6.904       0.000
    25. 17       7.750       6.904       0.000
    26. 18       9.400       6.904       0.000
    27. 19      11.050       6.904       0.000
    28. 20      14.050       6.904       0.000
    29. 21      17.050       6.904       0.000
    30. 22      18.700       6.904       0.000
    31. 23      20.350       6.904       0.000
    32. 24      23.400       6.904       0.000
    33. 25      26.350       6.904       0.000
    34. 26      28.100       6.904       0.000
    35. 27       0.000       1.750       0.000
    36. 28       0.000       3.452       0.000
    37. 29       0.000       5.154       0.000
    38. 30       9.400       1.750       0.000
    39. 31       9.400       3.452       0.000
    40. 32       9.400       5.154       0.000
    41. 33      18.700       1.750       0.000
    42. 34      18.700       3.452       0.000
    43. 35      18.700       5.154       0.000
    44. 36      28.100       1.750       0.000
    45. 37      28.100       3.452       0.000
    46. 38      28.100       5.154       0.000
    47. MEMBER INCIDENCES
    48. 1         1         2
    49. 2         2         3
    50. 3         3         4
    51. 4         4         5
    52. 5         5         6
    53. 6         6         7
    54. 7         7         8
    55. 8         8         9
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 56. 9         9        10
 57. 10        10        11
 58. 11        11        12
 59. 12        12        13
 60. 13        14        15
 61. 14        15        16
 62. 15        16        17
 63. 16        17        18
 64. 17        18        19
 65. 18        19        20
 66. 19        20        21
 67. 20        21        22
 68. 21        22        23
 69. 22        23        24
 70. 23        24        25
 71. 24        25        26
 72. 25         1        27
 73. 26        27        28
 74. 27        28        29
 75. 28        29        14
 76. 29         5        30
 77. 30        30        31
 78. 31        31        32
 79. 32        32        18
 80. 33         9        33
 81. 34        33        34
 82. 35        34        35
 83. 36        35        22
 84. 37        13        36
 85. 38        36        37
 86. 39        37        38
 87. 40        38        26
 88. MEMBER PROPERTY INDIAN
 89. 2 3 6 7 10 11 14 15 18 19 22 23 26 27 38 39 PRI YD .5 ZD 1.
 90. 30 31 34 35 PRI YD .3 ZD 1.
 91. 1 4 5 8 9 12 13 16 17 20 21 24 25 28 37 40 PRI AX .625 IZ .0203 YD .625
 92. 29 32 33 36 PRI AX .425 IZ .0354 YD .425
 93. CONSTANT
 94. E 3E6 ALL
 95. DENSITY 2.4 ALL
 96. ALPHA .0000117 ALL
 97. SUPPORT
 98. 5 PINNED
 99. 1 9 13 FIXED BUT FX MZ
100. LOAD 1 DEAD LOAD
101. SELFWEIGHT Y -1.
102. MEMBER LOAD
103. 1 TO 12 UNI GY 3.7
104. LOAD 2 SIDL
105. MEMBER LOAD
106. 13 TO 24 UNI GY -.317
107. 1 TO 12 UNI GY .317
108. LOAD 3 EARTH PRESSURE C-I(DRY)
109. MEMBER LOAD
110. 25 TRAP GX 7.21  5.46
111. 26 TRAP GX 5.46  3.758
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112. 27 TRAP GX 3.758 2.056
113. 28 TRAP GX 2.056 0.306
114. 37 TRAP GX -7.21 -5.46
115. 38 TRAP GX -5.46 -3.758
116. 39 TRAP GX -3.758 -2.056
117. 40 TRAP GX -2.056 -0.306
118. 25 TO 28 UNI GX 1.2
119. 37 TO 40 UNI GX -1.2
120. LOAD 4 EARTH PRESSURE C-II(DRY)
121. MEMBER LOAD
122. 25 TRAP GX 3.893 2.948
123. 26 TRAP GX 2.948 2.029
124. 27 TRAP GX 2.029 1.110
125. 28 TRAP GX 1.110 .165
126. 37 TRAP GX -3.893 -2.948
127. 38 TRAP GX -2.948 -2.029
128. 39 TRAP GX -2.029 -1.110
129. 40 TRAP GX -1.110 -.165
130. 25 TO 28 UNI GX 0.648
131. 37 TO 40 UNI GX -0.648
132. LOAD 5 EARTH RESSURE C-I(HFL)
133. MEMBER LOAD
134. 25 TRAP GX 4.233 3.358
135. 26 TRAP GX 3.358 2.507
136. 27 TRAP GX 2.507 1.656
137. 28 TRAP GX 1.656 1.255 0.0 0.801
138. 28 TRAP GX 1.255 0.306 0.801 1.75
139. 37 TRAP GX -4.233 -3.358
140. 38 TRAP GX -3.358 -2.507
141. 39 TRAP GX -2.507 -1.656
142. 40 TRAP GX -1.656 -1.255 0.0 0.801
143. 40 TRAP GX -1.255 -0.306 0.801 1.75
144. 25 TO 28 UNI GX 1.2
145. 37 TO 40 UNI GX -1.2
146. LOAD 6 EARTH PRESSURE C-II(HFL)
147. MEMBER LOAD
148. 25 TRAP GX 3.655 2.78
149. 26 TRAP GX 2.78  1.429
150. 27 TRAP GX 1.429 0.918
151. 28 TRAP GX 0.918 0.678 0.0 0.801
152. 28 TRAP GX 0.678 0.165 0.801 1.75
153. 37 TRAP GX -3.655 -2.78
154. 38 TRAP GX -2.78  -1.429
155. 39 TRAP GX -1.429 -0.918
156. 40 TRAP GX -0.918 -0.678 0.0 0.801
157. 40 TRAP GX -0.678 -0.165 0.801 1.75
158. 25 TO 28 UNI GX .648
159. 37 TO 40 UNI GX -.648
160. LOAD 7 TEMP +VE GRADIANT
161. TEMPERATURE LOAD
162. 13 TO 24 TEMP 0. 14.18
163. LOAD 8 TEMP -VE GRADIANT
164. TEMPERATURE LOAD
165. 13 TO 24 TEMP 0. -2.0
166. PERFORM ANALYSIS
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   167. PRINT FORCE ENVELOPE LIST 1 2 3 4 5 6 13 14 15 16 17 18 25 27 28 29 31
32
        FORCE    ENVELOPE LIST     1
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MEMB	DISTANCE		FY	LD	MZ	LD	FZ	LD	MY	LD
1	0.00	MAX	0.03	8	0.24	8	0.00	8	0.00	8
		MIN	-9.89	1	-13.11	3	0.00	8	0.00	8
	0.15	MAX	0.03	8	0.23	8	0.00	8	0.00	8
		MIN	-9.56	1	-12.84	3	0.00	8	0.00	8
	0.29	MAX	0.03	8	0.23	8	0.00	8	0.00	8
		MIN	-9.24	1	-12.58	3	0.00	8	0.00	8
	0.44	MAX	0.03	8	0.22	8	0.00	8	0.00	8
		MIN	-8.92	1	-12.32	3	0.00	8	0.00	8
	0.58	MAX	0.03	8	0.22	8	0.00	8	0.00	8
		MIN	-8.60	1	-12.06	3	0.00	8	0.00	8
	0.73	MAX	0.03	8	0.22	8	0.00	8	0.00	8
		MIN	-8.28	1	-11.80	3	0.00	8	0.00	8
	0.88	MAX	0.03	8	0.21	8	0.00	8	0.00	8
		MIN	-7.96	1	-11.53	3	0.00	8	0.00	8
	1.02	MAX	0.03	8	0.21	8	0.00	8	0.00	8
		MIN	-7.64	1	-11.27	3	0.00	8	0.00	8
	1.17	MAX	0.03	8	0.20	8	0.00	8	0.00	8
		MIN	-7.32	1	-11.01	3	0.00	8	0.00	8
	1.31	MAX	0.03	8	0.85	1	0.00	8	0.00	8
		MIN	-7.00	1	-10.75	3	0.00	8	0.00	8
	1.46	MAX	0.03	8	1.85	1	0.00	8	0.00	8
		MIN	-6.68	1	-10.49	3	0.00	8	0.00	8
	1.60	MAX	0.03	8	2.80	1	0.00	8	0.00	8
		MIN	-6.36	1	-10.23	3	0.00	8	0.00	8
	1.75	MAX	0.03	8	3.70	1	0.00	8	0.00	8
		MIN	-6.04	1	-9.96	3	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 1, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.03	0.00	8	3.70	1.75	1			
	0.00	0.00	1	0.00	0.00	1	21.29 C	0.00	3
MIN.	-9.89	0.00	1	-13.11	0.00	3			
	0.00	1.75	8	0.00	1.75	8	0.17 T	1.75	8

2	0.00	MAX	0.03	8	3.70	1	0.00	8	0.00	8
		MIN	-6.04	1	-9.96	3	0.00	8	0.00	8
	0.25	MAX	0.03	8	5.11	1	0.00	8	0.00	8
		MIN	-5.42	1	-9.52	3	0.00	8	0.00	8
	0.49	MAX	0.03	8	6.37	1	0.00	8	0.00	8
		MIN	-4.81	1	-9.08	3	0.00	8	0.00	8
	0.74	MAX	0.03	8	7.47	1	0.00	8	0.00	8
		MIN	-4.19	1	-8.64	3	0.00	8	0.00	8
	0.98	MAX	0.03	8	8.43	1	0.00	8	0.00	8
		MIN	-3.58	1	-8.20	3	0.00	8	0.00	8
	1.23	MAX	0.03	8	9.23	1	0.00	8	0.00	8
		MIN	-2.96	1	-7.76	3	0.00	8	0.00	8
	1.47	MAX	0.03	8	9.89	1	0.00	8	0.00	8
		MIN	-2.35	1	-7.32	3	0.00	8	0.00	8
	1.72	MAX	0.03	8	10.39	1	0.00	8	0.00	8
		MIN	-1.80	3	-6.87	3	0.00	8	0.00	8
	1.97	MAX	0.03	8	10.74	1	0.00	8	0.00	8

		MIN	-1.80	3	-6.43	3	0.00	8	0.00	8
	2.21	MAX	0.03	8	10.94	1	0.00	8	0.00	8
		MIN	-1.80	3	-5.99	3	0.00	8	0.00	8
	2.46	MAX	0.11	1	10.99	1	0.00	8	0.00	8
		MIN	-1.80	3	-5.55	3	0.00	8	0.00	8
	2.70	MAX	0.72	1	10.88	1	0.00	8	0.00	8
		MIN	-1.80	3	-5.11	3	0.00	8	0.00	8
	2.95	MAX	1.34	1	10.63	1	0.00	8	0.00	8
		MIN	-1.80	3	-4.67	3	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 2, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.34	2.95	1	10.99	2.46	1			
	0.00	0.00	1	0.00	0.00	1	21.29 C	0.00	3
MIN.	-6.04	0.00	1	-9.96	0.00	3			
	0.00	2.95	8	0.00	2.95	8	0.17 T	2.95	8

3	0.00	MAX	1.34	1	10.63	1	0.00	8	0.00	8
		MIN	-1.80	3	-4.67	3	0.00	8	0.00	8
	0.25	MAX	1.97	1	10.21	1	0.00	8	0.00	8
		MIN	-1.80	3	-4.21	3	0.00	8	0.00	8
	0.51	MAX	2.61	1	9.63	1	0.00	8	0.00	8
		MIN	-1.80	3	-3.75	3	0.00	8	0.00	8
	0.76	MAX	3.25	1	8.88	1	0.00	8	0.00	8
		MIN	-1.80	3	-3.30	3	0.00	8	0.00	8
	1.02	MAX	3.88	1	7.98	1	0.00	8	0.00	8
		MIN	-1.80	3	-2.84	3	0.00	8	0.00	8
	1.27	MAX	4.52	1	6.91	1	0.00	8	0.00	8
		MIN	-1.80	3	-2.39	3	0.00	8	0.00	8
	1.52	MAX	5.15	1	5.68	1	0.00	8	0.00	8
		MIN	-1.80	3	-1.93	3	0.00	8	0.00	8
	1.78	MAX	5.79	1	4.29	1	0.00	8	0.00	8
		MIN	-1.80	3	-1.47	3	0.00	8	0.00	8
	2.03	MAX	6.42	1	2.74	1	0.00	8	0.00	8
		MIN	-1.80	3	-1.02	3	0.00	8	0.00	8
	2.29	MAX	7.06	1	1.02	1	0.00	8	0.00	8
		MIN	-1.80	3	-0.56	3	0.00	8	0.00	8
	2.54	MAX	7.69	1	0.03	8	0.00	8	0.00	8
		MIN	-1.80	3	-0.85	1	0.00	8	0.00	8
	2.80	MAX	8.33	1	0.35	3	0.00	8	0.00	8
		MIN	-1.80	3	-2.89	1	0.00	8	0.00	8
	3.05	MAX	8.96	1	0.81	3	0.00	8	0.00	8
		MIN	-1.80	3	-5.08	1	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 3, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	8.96	3.05	1	10.63	0.00	1			
	0.00	0.00	1	0.00	0.00	1	21.29 C	0.00	3
MIN.	-1.80	3.05	3	-5.08	3.05	1			
	0.00	3.05	8	0.00	3.05	8	0.17 T	3.05	8

4	0.00	MAX	8.96	1	0.81	3	0.00	8	0.00	8

		MIN	-1.80	3	-5.08	1	0.00	8	0.00	8
	0.14	MAX	9.27	1	1.06	3	0.00	8	0.00	8
		MIN	-1.80	3	-6.34	1	0.00	8	0.00	8
	0.28	MAX	9.57	1	1.30	3	0.00	8	0.00	8
		MIN	-1.80	3	-7.63	1	0.00	8	0.00	8
	0.41	MAX	9.87	1	1.55	3	0.00	8	0.00	8
		MIN	-1.80	3	-8.97	1	0.00	8	0.00	8
	0.55	MAX	10.17	1	1.80	3	0.00	8	0.00	8
		MIN	-1.80	3	-10.35	1	0.00	8	0.00	8
	0.69	MAX	10.48	1	2.04	3	0.00	8	0.00	8
		MIN	-1.80	3	-11.77	1	0.00	8	0.00	8
	0.83	MAX	10.78	1	2.29	3	0.00	8	0.00	8
		MIN	-1.80	3	-13.23	1	0.00	8	0.00	8
	0.96	MAX	11.08	1	2.54	3	0.00	8	0.00	8
		MIN	-1.80	3	-14.73	1	0.00	8	0.00	8
	1.10	MAX	11.38	1	2.78	3	0.00	8	0.00	8
		MIN	-1.80	3	-16.28	1	0.00	8	0.00	8
	1.24	MAX	11.69	1	3.03	3	0.00	8	0.00	8
		MIN	-1.80	3	-17.86	1	0.00	8	0.00	8
	1.38	MAX	11.99	1	3.28	3	0.00	8	0.00	8
		MIN	-1.80	3	-19.49	1	0.00	8	0.00	8
	1.51	MAX	12.29	1	3.52	3	0.00	8	0.00	8
		MIN	-1.80	3	-21.16	1	0.00	8	0.00	8
	1.65	MAX	12.59	1	3.77	3	0.00	8	0.00	8
		MIN	-1.80	3	-22.87	1	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 4, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.	12.59	1.65	1	3.77	1.65	3			
	0.00	0.00	1	0.00	0.00	1	21.29 C	0.00	3
MIN.	-1.80	1.65	3	-22.87	1.65	1			
	0.00	1.65	8	0.00	1.65	8	0.17 T	1.65	8

5	0.00	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-11.13	1	-21.49	1	0.00	8	0.00	8
	0.14	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-10.83	1	-19.98	1	0.00	8	0.00	8
	0.28	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-10.53	1	-18.51	1	0.00	8	0.00	8
	0.41	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-10.22	1	-17.09	1	0.00	8	0.00	8
	0.55	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-9.92	1	-15.70	1	0.00	8	0.00	8
	0.69	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-9.62	1	-14.36	1	0.00	8	0.00	8
	0.83	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-9.32	1	-13.06	1	0.00	8	0.00	8
	0.96	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-9.01	1	-11.80	1	0.00	8	0.00	8
	1.10	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-8.71	1	-10.58	1	0.00	8	0.00	8
	1.24	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-8.41	1	-9.40	1	0.00	8	0.00	8
	1.38	MAX	0.00	7	2.47	3	0.00	8	0.00	8

		MIN	-8.11	1	-8.27	1	0.00	8	0.00	8
	1.51	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-7.80	1	-7.17	1	0.00	8	0.00	8
	1.65	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-7.50	1	-6.12	1	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 5, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.	0.00	0.00	7	2.47	0.00	3			
	0.00	0.00	1	0.00	0.00	1	21.35 C	0.00	3
MIN.	-11.13	0.00	1	-21.49	0.00	1			
	0.00	1.65	8	0.00	1.65	8	0.15 T	1.65	8

6	0.00	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-7.50	1	-6.12	1	0.00	8	0.00	8
	0.25	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-6.88	1	-4.32	1	0.00	8	0.00	8
	0.50	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-6.25	1	-2.68	1	0.00	8	0.00	8
	0.75	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-5.63	1	-1.20	1	0.00	8	0.00	8
	1.00	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-5.00	1	-0.07	8	0.00	8	0.00	8
	1.25	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-4.38	1	-0.07	8	0.00	8	0.00	8
	1.50	MAX	0.00	7	2.47	3	0.00	8	0.00	8
		MIN	-3.75	1	-0.07	8	0.00	8	0.00	8
	1.75	MAX	0.00	7	3.18	1	0.00	8	0.00	8
		MIN	-3.13	1	-0.07	8	0.00	8	0.00	8
	2.00	MAX	0.00	7	3.88	1	0.00	8	0.00	8
		MIN	-2.50	1	-0.07	8	0.00	8	0.00	8
	2.25	MAX	0.00	7	4.43	1	0.00	8	0.00	8
		MIN	-1.88	1	-0.07	8	0.00	8	0.00	8
	2.50	MAX	0.00	7	4.82	1	0.00	8	0.00	8
		MIN	-1.25	1	-0.07	8	0.00	8	0.00	8
	2.75	MAX	0.00	7	5.05	1	0.00	8	0.00	8
		MIN	-0.63	1	-0.07	8	0.00	8	0.00	8
	3.00	MAX	0.00	7	5.13	1	0.00	8	0.00	8
		MIN	0.00	1	-0.07	8	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 6, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.	0.00	0.00	7	5.13	3.00	1			
	0.00	0.00	1	0.00	0.00	1	21.35 C	0.00	3
MIN.	-7.50	0.00	1	-6.12	0.00	1			
	0.00	3.00	8	0.00	3.00	8	0.15 T	3.00	8

13	0.00	MAX	5.25	1	11.70	3	0.00	8	0.00	8
		MIN	-0.10	8	-6.83	7	0.00	8	0.00	8
	0.15	MAX	5.03	1	11.47	3	0.00	8	0.00	8
		MIN	-0.10	8	-6.93	7	0.00	8	0.00	8
	0.29	MAX	4.82	1	11.24	3	0.00	8	0.00	8

	MIN	-0.10	8	-7.03	7	0.00	8	0.00	8
0.44	MAX	4.60	1	11.01	3	0.00	8	0.00	8
	MIN	-0.10	8	-7.13	7	0.00	8	0.00	8
0.58	MAX	4.38	1	10.77	3	0.00	8	0.00	8
	MIN	-0.10	8	-7.23	7	0.00	8	0.00	8
0.73	MAX	4.16	1	10.54	3	0.00	8	0.00	8
	MIN	-0.10	8	-7.33	7	0.00	8	0.00	8
0.88	MAX	3.94	1	10.31	3	0.00	8	0.00	8
	MIN	-0.10	8	-7.43	7	0.00	8	0.00	8
1.02	MAX	3.72	1	10.08	3	0.00	8	0.00	8
	MIN	-0.10	8	-7.53	7	0.00	8	0.00	8
1.17	MAX	3.50	1	9.85	3	0.00	8	0.00	8
	MIN	-0.10	8	-7.63	7	0.00	8	0.00	8
1.31	MAX	3.28	1	9.62	3	0.00	8	0.00	8
	MIN	-0.10	8	-7.73	7	0.00	8	0.00	8
1.46	MAX	3.07	1	9.39	3	0.00	8	0.00	8
	MIN	-0.10	8	-7.83	7	0.00	8	0.00	8
1.60	MAX	2.85	1	9.16	3	0.00	8	0.00	8
	MIN	-0.10	8	-7.93	7	0.00	8	0.00	8
1.75	MAX	2.63	1	8.93	3	0.00	8	0.00	8
	MIN	-0.10	8	-8.03	7	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 13, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	5.25	0.00	1	11.70	0.00	3			
	0.00	0.00	1	0.00	0.00	1	12.94 C	0.00	3
MIN.	-0.10	1.75	8	-8.03	1.75	7			
	0.00	1.75	8	0.00	1.75	8	1.23 T	1.75	7

14	0.00	MAX	2.63	1	8.93	3	0.00	8	0.00	8
		MIN	-0.10	8	-8.03	7	0.00	8	0.00	8
	0.25	MAX	2.33	1	8.54	3	0.00	8	0.00	8
		MIN	-0.10	8	-8.20	7	0.00	8	0.00	8
	0.49	MAX	2.04	1	8.15	3	0.00	8	0.00	8
		MIN	-0.10	8	-8.36	7	0.00	8	0.00	8
	0.74	MAX	1.74	1	7.76	3	0.00	8	0.00	8
		MIN	-0.10	8	-8.53	7	0.00	8	0.00	8
	0.98	MAX	1.58	3	7.37	3	0.00	8	0.00	8
		MIN	-0.10	8	-8.70	7	0.00	8	0.00	8
	1.23	MAX	1.58	3	6.98	3	0.00	8	0.00	8
		MIN	-0.10	8	-8.87	7	0.00	8	0.00	8
	1.47	MAX	1.58	3	6.59	3	0.00	8	0.00	8
		MIN	-0.10	8	-9.04	7	0.00	8	0.00	8
	1.72	MAX	1.58	3	6.20	3	0.00	8	0.00	8
		MIN	-0.10	8	-9.20	7	0.00	8	0.00	8
	1.97	MAX	1.58	3	5.81	3	0.00	8	0.00	8
		MIN	-0.10	8	-9.37	7	0.00	8	0.00	8
	2.21	MAX	1.58	3	5.42	3	0.00	8	0.00	8
		MIN	-0.10	8	-9.54	7	0.00	8	0.00	8
	2.46	MAX	1.58	3	5.04	3	0.00	8	0.00	8
		MIN	-0.32	1	-9.71	7	0.00	8	0.00	8
	2.70	MAX	1.58	3	4.65	3	0.00	8	0.00	8
		MIN	-0.62	1	-9.88	7	0.00	8	0.00	8
	2.95	MAX	1.58	3	4.26	3	0.00	8	0.00	8

		MIN	-0.91	1	-10.04	7	0.00	8	0.00	8
MAX/MIN FORCE VALUES FOR MEMB 14, AMONGST ALL SECT LOCATIONS											
			FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
		MAX.	2.63	0.00	1	8.93	0.00	3			
			0.00	0.00	1	0.00	0.00	1	12.94 C	0.00	3
		MIN.	-0.91	2.95	1	-10.04	2.95	7			
			0.00	2.95	8	0.00	2.95	8	1.23 T	2.95	7
15	0.00	MAX	1.58	3		4.26	3	0.00	8	0.00	8
		MIN	-0.91	1		-10.04	7	0.00	8	0.00	8
	0.25	MAX	1.58	3		3.85	3	0.00	8	0.00	8
		MIN	-1.22	1		-10.22	7	0.00	8	0.00	8
	0.51	MAX	1.58	3		3.45	3	0.00	8	0.00	8
		MIN	-1.52	1		-10.39	7	0.00	8	0.00	8
	0.76	MAX	1.58	3		3.05	3	0.00	8	0.00	8
		MIN	-1.83	1		-10.56	7	0.00	8	0.00	8
	1.02	MAX	1.58	3		2.65	3	0.00	8	0.00	8
		MIN	-2.13	1		-10.74	7	0.00	8	0.00	8
	1.27	MAX	1.58	3		2.25	3	0.00	8	0.00	8
		MIN	-2.44	1		-10.91	7	0.00	8	0.00	8
	1.52	MAX	1.58	3		1.84	3	0.00	8	0.00	8
		MIN	-2.74	1		-11.09	7	0.00	8	0.00	8
	1.78	MAX	1.58	3		1.59	8	0.00	8	0.00	8
		MIN	-3.05	1		-11.26	7	0.00	8	0.00	8
	2.03	MAX	1.58	3		1.61	8	0.00	8	0.00	8
		MIN	-3.35	1		-11.43	7	0.00	8	0.00	8
	2.29	MAX	1.58	3		1.64	8	0.00	8	0.00	8
		MIN	-3.66	1		-11.61	7	0.00	8	0.00	8
	2.54	MAX	1.58	3		1.66	8	0.00	8	0.00	8
		MIN	-3.96	1		-11.78	7	0.00	8	0.00	8
	2.80	MAX	1.58	3		1.69	8	0.00	8	0.00	8
		MIN	-4.27	1		-11.95	7	0.00	8	0.00	8
	3.05	MAX	1.58	3		2.16	1	0.00	8	0.00	8
		MIN	-4.57	1		-12.13	7	0.00	8	0.00	8
MAX/MIN FORCE VALUES FOR MEMB 15, AMONGST ALL SECT LOCATIONS											
			FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
		MAX.	1.58	0.00	3	4.26	0.00	3			
			0.00	0.00	1	0.00	0.00	1	12.94 C	0.00	3
		MIN.	-4.57	3.05	1	-12.13	3.05	7			
			0.00	3.05	8	0.00	3.05	8	1.23 T	3.05	7
16	0.00	MAX	1.58	3		2.16	1	0.00	8	0.00	8
		MIN	-4.57	1		-12.13	7	0.00	8	0.00	8
	0.14	MAX	1.58	3		2.80	1	0.00	8	0.00	8
		MIN	-4.78	1		-12.22	7	0.00	8	0.00	8
	0.28	MAX	1.58	3		3.47	1	0.00	8	0.00	8
		MIN	-4.98	1		-12.31	7	0.00	8	0.00	8
	0.41	MAX	1.58	3		4.17	1	0.00	8	0.00	8
		MIN	-5.19	1		-12.41	7	0.00	8	0.00	8
	0.55	MAX	1.58	3		4.90	1	0.00	8	0.00	8

		MIN	-5.40	1	-12.50	7	0.00	8	0.00	8
	0.69	MAX	1.58	3	5.65	1	0.00	8	0.00	8
		MIN	-5.60	1	-12.60	7	0.00	8	0.00	8
	0.83	MAX	1.58	3	6.44	1	0.00	8	0.00	8
		MIN	-5.81	1	-12.69	7	0.00	8	0.00	8
	0.96	MAX	1.58	3	7.25	1	0.00	8	0.00	8
		MIN	-6.02	1	-12.78	7	0.00	8	0.00	8
	1.10	MAX	1.58	3	8.09	1	0.00	8	0.00	8
		MIN	-6.22	1	-12.88	7	0.00	8	0.00	8
	1.24	MAX	1.58	3	8.96	1	0.00	8	0.00	8
		MIN	-6.43	1	-12.97	7	0.00	8	0.00	8
	1.38	MAX	1.58	3	9.86	1	0.00	8	0.00	8
		MIN	-6.63	1	-13.07	7	0.00	8	0.00	8
	1.51	MAX	1.58	3	10.79	1	0.00	8	0.00	8
		MIN	-6.84	1	-13.16	7	0.00	8	0.00	8
	1.65	MAX	1.58	3	11.74	1	0.00	8	0.00	8
		MIN	-7.05	1	-13.25	7	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 16, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.58	0.00	3	11.74	1.65	1			
	0.00	0.00	1	0.00	0.00	1	12.94 C	0.00	3
MIN.	-7.05	1.65	1	-13.25	1.65	7			
	0.00	1.65	8	0.00	1.65	8	1.23 T	1.65	7

17	0.00	MAX	6.08	1	11.55	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	0.14	MAX	5.87	1	10.73	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	0.28	MAX	5.66	1	9.94	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	0.41	MAX	5.46	1	9.18	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	0.55	MAX	5.25	1	8.44	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	0.69	MAX	5.04	1	7.73	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	0.83	MAX	4.84	1	7.05	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	0.96	MAX	4.63	1	6.40	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	1.10	MAX	4.43	1	5.78	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	1.24	MAX	4.22	1	5.18	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	1.38	MAX	4.01	1	4.62	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	1.51	MAX	3.81	1	4.08	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	1.65	MAX	3.60	1	3.57	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 17, AMONGST ALL SECT LOCATIONS						
	FY/	DIST	LD	MZ/	DIST	LD

	FZ	DIST	LD	MY	DIST	LD	FX	DIST	LD
MAX.	6.08	0.00	1	11.55	0.00	1			
	0.00	0.00	1	0.00	0.00	1	12.88 C	0.00	3
MIN.	0.00	1.65	8	-12.40	1.65	7			
	0.00	1.65	8	0.00	1.65	8	1.07 T	1.65	7

18	0.00	MAX	3.60	1	3.57	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	0.25	MAX	3.30	1	2.71	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	0.50	MAX	3.00	1	1.92	1	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	0.75	MAX	2.70	1	1.75	8	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	1.00	MAX	2.40	1	1.75	8	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	1.25	MAX	2.10	1	1.75	8	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	1.50	MAX	1.80	1	1.75	8	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	1.75	MAX	1.50	1	1.75	8	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	2.00	MAX	1.20	1	1.75	8	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	2.25	MAX	0.90	1	1.75	8	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	2.50	MAX	0.60	1	1.75	8	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	2.75	MAX	0.30	1	1.75	8	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8
	3.00	MAX	0.00	1	1.75	8	0.00	8	0.00	8
		MIN	0.00	8	-12.40	7	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 18, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	3.60	0.00	1	3.57	0.00	1			
	0.00	0.00	1	0.00	0.00	1	12.88 C	0.00	3
MIN.	0.00	3.00	8	-12.40	3.00	7			
	0.00	3.00	8	0.00	3.00	8	1.07 T	3.00	7

25	0.00	MAX	21.29	3	13.11	3	0.00	8	0.00	8
		MIN	-0.17	8	-0.24	8	0.00	8	0.00	8
	0.15	MAX	20.08	3	10.09	3	0.00	8	0.00	8
		MIN	-0.17	8	-0.21	8	0.00	8	0.00	8
	0.29	MAX	18.88	3	9.93	1	0.00	8	0.00	8
		MIN	-0.17	8	-0.19	8	0.00	8	0.00	8
	0.44	MAX	17.71	3	9.78	1	0.00	8	0.00	8
		MIN	-0.17	8	-0.16	8	0.00	8	0.00	8
	0.58	MAX	16.56	3	9.64	1	0.00	8	0.00	8
		MIN	-0.17	8	-0.14	8	0.00	8	0.00	8
	0.73	MAX	15.42	3	9.49	1	0.00	8	0.00	8
		MIN	-0.17	8	-0.28	6	0.00	8	0.00	8

	0.88	MAX	14.32	3	9.34	1	0.00	8	0.00	8
		MIN	-0.17	8	-2.42	3	0.00	8	0.00	8
	1.02	MAX	13.23	3	9.19	1	0.00	8	0.00	8
		MIN	-0.17	8	-4.42	3	0.00	8	0.00	8
	1.17	MAX	12.16	3	9.04	1	0.00	8	0.00	8
		MIN	-0.17	8	-6.28	3	0.00	8	0.00	8
	1.31	MAX	11.11	3	8.90	1	0.00	8	0.00	8
		MIN	-0.17	8	-7.97	3	0.00	8	0.00	8
	1.46	MAX	10.09	3	8.75	1	0.00	8	0.00	8
		MIN	-0.17	8	-9.52	3	0.00	8	0.00	8
	1.60	MAX	9.09	3	8.60	1	0.00	8	0.00	8
		MIN	-0.17	8	-10.92	3	0.00	8	0.00	8
	1.75	MAX	8.10	3	8.45	1	0.00	8	0.00	8
		MIN	-0.17	8	-12.17	3	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 25, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	21.29	0.00	3	13.11	0.00	3			
	0.00	0.00	1	0.00	0.00	1	14.59 C	0.00	1
MIN.	-0.17	1.75	8	-12.17	1.75	3			
	0.00	1.75	8	0.00	1.75	8	0.10 T	1.75	8

27	0.00	MAX	1.23	7	6.73	1	0.00	8	0.00	8
		MIN	-1.78	3	-17.14	3	0.00	8	0.00	8
	0.14	MAX	1.23	7	6.58	1	0.00	8	0.00	8
		MIN	-2.48	3	-16.84	3	0.00	8	0.00	8
	0.28	MAX	1.23	7	6.44	1	0.00	8	0.00	8
		MIN	-3.15	3	-16.44	3	0.00	8	0.00	8
	0.43	MAX	1.23	7	6.29	1	0.00	8	0.00	8
		MIN	-3.80	3	-15.94	3	0.00	8	0.00	8
	0.57	MAX	1.23	7	6.15	1	0.00	8	0.00	8
		MIN	-4.43	3	-15.36	3	0.00	8	0.00	8
	0.71	MAX	1.23	7	6.01	1	0.00	8	0.00	8
		MIN	-5.05	3	-14.69	3	0.00	8	0.00	8
	0.85	MAX	1.23	7	5.86	1	0.00	8	0.00	8
		MIN	-5.64	3	-13.93	3	0.00	8	0.00	8
	0.99	MAX	1.23	7	5.72	1	0.00	8	0.00	8
		MIN	-6.21	3	-13.09	3	0.00	8	0.00	8
	1.13	MAX	1.23	7	5.57	1	0.00	8	0.00	8
		MIN	-6.76	3	-12.17	3	0.00	8	0.00	8
	1.28	MAX	1.23	7	5.43	1	0.00	8	0.00	8
		MIN	-7.30	3	-11.17	3	0.00	8	0.00	8
	1.42	MAX	1.23	7	5.29	1	0.00	8	0.00	8
		MIN	-7.81	3	-10.10	3	0.00	8	0.00	8
	1.56	MAX	1.23	7	5.14	1	0.00	8	0.00	8
		MIN	-8.30	3	-8.96	3	0.00	8	0.00	8
	1.70	MAX	1.23	7	5.00	1	0.00	8	0.00	8
		MIN	-8.77	3	-7.75	3	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 27, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.23	0.00	7	6.73	0.00	1			

		0.00	0.00	1	0.00	0.00	1	9.92 C	0.00	1
	MIN.	-8.77	1.70	3	-17.14	0.00	3			
		0.00	1.70	8	0.00	1.70	8	0.10 T	1.70	8
28	0.00	MAX	1.23	7	5.00	1	0.00	8	0.00	8
		MIN	-8.77	3	-7.75	3	0.00	8	0.00	8
	0.15	MAX	1.23	7	4.85	1	0.00	8	0.00	8
		MIN	-9.24	3	-6.43	3	0.00	8	0.00	8
	0.29	MAX	1.23	7	4.70	1	0.00	8	0.00	8
		MIN	-9.68	3	-5.05	3	0.00	8	0.00	8
	0.44	MAX	1.23	7	4.55	1	0.00	8	0.00	8
		MIN	-10.10	3	-5.21	7	0.00	8	0.00	8
	0.58	MAX	1.23	7	4.41	1	0.00	8	0.00	8
		MIN	-10.50	3	-5.39	7	0.00	8	0.00	8
	0.73	MAX	1.23	7	4.26	1	0.00	8	0.00	8
		MIN	-10.88	3	-5.57	7	0.00	8	0.00	8
	0.87	MAX	1.23	7	4.11	1	0.00	8	0.00	8
		MIN	-11.24	3	-5.75	7	0.00	8	0.00	8
	1.02	MAX	1.23	7	3.96	1	0.00	8	0.00	8
		MIN	-11.58	3	-5.93	7	0.00	8	0.00	8
	1.17	MAX	1.23	7	4.44	3	0.00	8	0.00	8
		MIN	-11.89	3	-6.11	7	0.00	8	0.00	8
	1.31	MAX	1.23	7	6.20	3	0.00	8	0.00	8
		MIN	-12.18	3	-6.29	7	0.00	8	0.00	8
	1.46	MAX	1.23	7	7.99	3	0.00	8	0.00	8
		MIN	-12.46	3	-6.47	7	0.00	8	0.00	8
	1.60	MAX	1.23	7	9.83	3	0.00	8	0.00	8
		MIN	-12.71	3	-6.65	7	0.00	8	0.00	8
	1.75	MAX	1.23	7	11.70	3	0.00	8	0.00	8
		MIN	-12.94	3	-6.83	7	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 28, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
	MAX.	1.23	0.00	7	11.70	1.75	3			
		0.00	0.00	1	0.00	0.00	1	7.88 C	0.00	1
	MIN.	-12.94	1.75	3	-7.75	0.00	3			
		0.00	1.75	8	0.00	1.75	8	0.10 T	1.75	8
29	0.00	MAX	0.06	3	1.31	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.38	1	0.00	8	0.00	8
	0.15	MAX	0.06	3	1.30	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.36	1	0.00	8	0.00	8
	0.29	MAX	0.06	3	1.29	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.33	1	0.00	8	0.00	8
	0.44	MAX	0.06	3	1.28	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.31	1	0.00	8	0.00	8
	0.58	MAX	0.06	3	1.27	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.28	1	0.00	8	0.00	8
	0.73	MAX	0.06	3	1.26	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.25	1	0.00	8	0.00	8
	0.88	MAX	0.06	3	1.25	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.23	1	0.00	8	0.00	8
	1.02	MAX	0.06	3	1.24	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.20	1	0.00	8	0.00	8

	1.17	MAX	0.06	3	1.23	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.18	1	0.00	8	0.00	8
	1.31	MAX	0.06	3	1.22	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.15	1	0.00	8	0.00	8
	1.46	MAX	0.06	3	1.22	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.13	1	0.00	8	0.00	8
	1.60	MAX	0.06	3	1.21	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.10	1	0.00	8	0.00	8
	1.75	MAX	0.06	3	1.20	3	0.00	8	0.00	8
		MIN	-0.17	1	-1.08	1	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 29, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.	0.06	0.00	3	1.31	0.00	3			
	0.00	0.00	1	0.00	0.00	1	19.14 C	0.00	1
MIN.	-0.17	1.75	1	-1.38	0.00	1			
	0.00	1.75	8	0.00	1.75	8	1.58 T	1.75	3

31	0.00	MAX	0.06	3	1.09	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.78	1	0.00	8	0.00	8
	0.14	MAX	0.06	3	1.08	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.76	1	0.00	8	0.00	8
	0.28	MAX	0.06	3	1.08	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.73	1	0.00	8	0.00	8
	0.43	MAX	0.06	3	1.07	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.71	1	0.00	8	0.00	8
	0.57	MAX	0.06	3	1.06	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.69	1	0.00	8	0.00	8
	0.71	MAX	0.06	3	1.05	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.66	1	0.00	8	0.00	8
	0.85	MAX	0.06	3	1.04	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.64	1	0.00	8	0.00	8
	0.99	MAX	0.06	3	1.03	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.61	1	0.00	8	0.00	8
	1.13	MAX	0.06	3	1.02	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.59	1	0.00	8	0.00	8
	1.28	MAX	0.06	3	1.01	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.56	1	0.00	8	0.00	8
	1.42	MAX	0.06	3	1.01	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.54	1	0.00	8	0.00	8
	1.56	MAX	0.06	3	1.00	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.51	1	0.00	8	0.00	8
	1.70	MAX	0.06	3	0.99	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.49	1	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 31, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.	0.06	0.00	3	1.09	0.00	3			
	0.00	0.00	1	0.00	0.00	1	16.13 C	0.00	1
MIN.	-0.17	1.70	1	-0.78	0.00	1			
	0.00	1.70	8	0.00	1.70	8	1.58 T	1.70	3

32	0.00	MAX	0.06	3	0.99	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.49	1	0.00	8	0.00	8
	0.15	MAX	0.06	3	0.98	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.46	1	0.00	8	0.00	8
	0.29	MAX	0.06	3	0.97	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.44	1	0.00	8	0.00	8
	0.44	MAX	0.06	3	0.96	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.41	1	0.00	8	0.00	8
	0.58	MAX	0.06	3	0.95	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.39	1	0.00	8	0.00	8
	0.73	MAX	0.06	3	0.94	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.36	1	0.00	8	0.00	8
	0.87	MAX	0.06	3	0.93	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.34	1	0.00	8	0.00	8
	1.02	MAX	0.06	3	0.93	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.31	1	0.00	8	0.00	8
	1.17	MAX	0.06	3	0.92	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.29	1	0.00	8	0.00	8
	1.31	MAX	0.06	3	0.91	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.26	1	0.00	8	0.00	8
	1.46	MAX	0.06	3	0.90	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.24	1	0.00	8	0.00	8
	1.60	MAX	0.06	3	0.89	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.21	1	0.00	8	0.00	8
	1.75	MAX	0.06	3	0.88	3	0.00	8	0.00	8
		MIN	-0.17	1	-0.19	1	0.00	8	0.00	8

MAX/MIN FORCE VALUES FOR MEMB 32, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.06	0.00	3	0.99	0.00	3			
	0.00	0.00	1	0.00	0.00	1	14.91 C	0.00	1
MIN.	-0.17	1.75	1	-0.49	0.00	1			
	0.00	1.75	8	0.00	1.75	8	1.58 T	1.75	3

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

168. FINISH

********** END OF THE STAAD.Pro RUN **********

```
INPUT FILE: track ll.STD
     1. STAAD PLANE
     2. START JOB INFORMATION
     3. ENGINEER DATE 25-DEC-06
     4. END JOB INFORMATION
     5. INPUT WIDTH 79
     6. PAGE LENGTH 1000
     7. UNIT METER MTON
     8. JOINT COORDINATES
     9. 1        0.000       0.000       0.000
    10. 2        1.750       0.000       0.000
    11. 3        4.700       0.000       0.000
    12. 4        7.750       0.000       0.000
    13. 5        9.400       0.000       0.000
    14. 6       11.050       0.000       0.000
    15. 7       14.050       0.000       0.000
    16. 8       17.050       0.000       0.000
    17. 9       18.700       0.000       0.000
    18. 10      20.350       0.000       0.000
    19. 11      23.400       0.000       0.000
    20. 12      26.350       0.000       0.000
    21. 13      28.100       0.000       0.000
    22. 14       0.000       6.904       0.000
    23. 15       1.750       6.904       0.000
    24. 16       4.700       6.904       0.000
    25. 17       7.750       6.904       0.000
    26. 18       9.400       6.904       0.000
    27. 19      11.050       6.904       0.000
    28. 20      14.050       6.904       0.000
    29. 21      17.050       6.904       0.000
    30. 22      18.700       6.904       0.000
    31. 23      20.350       6.904       0.000
    32. 24      23.400       6.904       0.000
    33. 25      26.350       6.904       0.000
    34. 26      28.100       6.904       0.000
    35. 27       0.000       1.750       0.000
    36. 28       0.000       3.452       0.000
    37. 29       0.000       5.154       0.000
    38. 30       9.400       1.750       0.000
    39. 31       9.400       3.452       0.000
    40. 32       9.400       5.154       0.000
    41. 33      18.700       1.750       0.000
    42. 34      18.700       3.452       0.000
    43. 35      18.700       5.154       0.000
    44. 36      28.100       1.750       0.000
    45. 37      28.100       3.452       0.000
    46. 38      28.100       5.154       0.000
    49. MEMBER INCIDENCES
    50. 1         1         2
    51. 2         2         3
    52. 3         3         4
    53. 4         4         5
    54. 5         5         6
    55. 6         6         7
    56. 7         7         8
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 57. 8          8          9
 58. 9          9         10
 59. 10         10         11
 60. 11         11         12
 61. 12         12         13
 62. 13         14         15
 63. 14         15         16
 64. 15         16         17
 65. 16         17         18
 66. 17         18         19
 67. 18         19         20
 68. 19         20         21
 69. 20         21         22
 70. 21         22         23
 71. 22         23         24
 72. 23         24         25
 73. 24         25         26
 74. 25          1         27
 75. 26         27         28
 76. 27         28         29
 77. 28         29         14
 78. 29          5         30
 79. 30         30         31
 80. 31         31         32
 81. 32         32         18
 82. 33          9         33
 83. 34         33         34
 84. 35         34         35
 85. 36         35         22
 86. 37         13         36
 87. 38         36         37
 88. 39         37         38
 89. 40         38         26
 90. MEMBER PROPERTY INDIAN
 91. 2 3 6 7 10 11 14 15 18 19 22 23 26 27 38 39 PRI YD .5 ZD 1.
 92. 30 31 34 35 PRI YD .3 ZD 1.
 93. 1 4 5 8 9 12 13 16 17 20 21 24 25 28 37 40 PRI AX .625 IZ .0203 YD .625
 94. 29 32 33 36 PRI AX .425 IZ .0354 YD .425
 95. CONSTANT
 96. E 3E6 ALL
 97. DENSITY 2.4 ALL
 98. ALPHA .0000117 ALL
 99. SUPPORT
100. 5 PINNED
101. 1 9 13 FIXED BUT FX MZ
102. DEFINE MOVING LOAD
103. TYPE 1 LOA 15.4 15.4 15.4 15.4 15.4 DIS 1.1425 1.1425 1.1425 1.1425
104. LOAD GENERATION 230
105. TYPE 1 -4.57 6.904 0 XINC 0.1
106. PERFORM ANALYSIS
107. PRINT MAX FORCE LIST 13 TO 18
     MAX      FORCE    LIST     13
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MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
13	MAX	58.51	0.00	47	61.39	0.00	64			
		0.00	0.00	1	0.00	0.00	1	10.37 C	0.00	64
	MIN	-5.71	1.75	155	-21.11	1.75	41			
		0.00	1.75	230	0.00	1.75	230	2.05 T	1.75	150
14	MAX	42.27	0.00	65	12.86	2.95	158			
		0.00	0.00	1	0.00	0.00	1	10.37 C	0.00	64
	MIN	-19.34	2.95	48	-60.36	2.70	68			
		0.00	2.95	230	0.00	2.95	230	2.05 T	2.95	150
15	MAX	16.63	0.00	94	30.25	3.05	156			
		0.00	0.00	1	0.00	0.00	1	10.37 C	0.00	64
	MIN	-46.84	3.05	78	-60.36	0.00	71			
		0.00	3.05	230	0.00	3.05	230	2.05 T	3.05	150
16	MAX	0.92	0.00	230	77.75	1.65	77			
		0.00	0.00	1	0.00	0.00	1	10.37 C	0.00	64
	MIN	-61.13	1.65	95	-9.19	0.00	101			
		0.00	1.65	230	0.00	1.65	230	2.05 T	1.65	150
17	MAX	59.79	0.00	141	71.38	0.00	157			
		0.00	0.00	1	0.00	0.00	1	5.57 C	0.00	164
	MIN	-4.27	1.65	230	-10.75	0.00	230			
		0.00	1.65	230	0.00	1.65	230	0.66 T	1.65	97
18	MAX	44.62	0.00	158	31.26	0.00	79			
		0.00	0.00	1	0.00	0.00	1	5.57 C	0.00	164
	MIN	-17.21	3.00	141	-57.07	3.00	164			
		0.00	3.00	230	0.00	3.00	230	0.66 T	3.00	97

108. PRINT FORCE ENVELOPE LIST 13 TO 18
FORCE ENVELOPE LIST 13

MEMB	DISTANCE		FY	LD	MZ	LD	FZ	LD	MY	LD
13	0.00	MAX	58.51	47	61.39	64	0.00	230	0.00	230
		MIN	-5.71	155	-14.06	153	0.00	230	0.00	230
	0.15	MAX	56.80	49	55.21	66	0.00	230	0.00	230
		MIN	-5.71	155	-13.23	153	0.00	230	0.00	230
	0.29	MAX	55.94	50	49.25	67	0.00	230	0.00	230
		MIN	-5.71	155	-12.40	153	0.00	230	0.00	230
	0.44	MAX	54.19	52	43.56	69	0.00	230	0.00	230
		MIN	-5.71	155	-11.57	153	0.00	230	0.00	230
	0.58	MAX	53.30	53	38.12	71	0.00	230	0.00	230
		MIN	-5.71	155	-10.74	153	0.00	230	0.00	230
	0.73	MAX	52.41	54	32.96	73	0.00	230	0.00	230
		MIN	-5.71	155	-9.91	153	0.00	230	0.00	230
	0.88	MAX	50.60	56	28.12	76	0.00	230	0.00	230
		MIN	-5.71	155	-9.08	153	0.00	230	0.00	230
	1.02	MAX	49.69	57	23.58	78	0.00	230	0.00	230
		MIN	-5.71	155	-8.26	152	0.00	230	0.00	230

	1.17	MAX	47.85	59	19.39	81	0.00	230	0.00	230
		MIN	-5.71	155	-9.76	24	0.00	230	0.00	230
	1.31	MAX	46.93	60	15.56	84	0.00	230	0.00	230
		MIN	-5.71	155	-12.41	26	0.00	230	0.00	230
	1.46	MAX	45.07	62	12.10	87	0.00	230	0.00	230
		MIN	-5.71	155	-15.42	27	0.00	230	0.00	230
	1.60	MAX	44.14	63	9.04	90	0.00	230	0.00	230
		MIN	-5.71	155	-17.80	40	0.00	230	0.00	230
	1.75	MAX	42.27	65	6.39	94	0.00	230	0.00	230
		MIN	-5.71	155	-21.11	41	0.00	230	0.00	230

MAX/MIN FORCE VALUES FOR MEMB 13, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	58.51	0.00	47	61.39	0.00	64			
	0.00	0.00	1	0.00	0.00	1	10.37 C	0.00	64
MIN.	-5.71	1.75	155	-21.11	1.75	41			
	0.00	1.75	230	0.00	1.75	230	2.05 T	1.75	150

14	0.00	MAX	42.27	65	6.39	94	0.00	230	0.00	230
		MIN	-5.71	155	-21.11	41	0.00	230	0.00	230
	0.25	MAX	40.39	67	2.91	101	0.00	230	0.00	230
		MIN	-5.71	155	-26.67	44	0.00	230	0.00	230
	0.49	MAX	37.57	70	0.73	110	0.00	230	0.00	230
		MIN	-5.71	155	-32.22	58	0.00	230	0.00	230
	0.74	MAX	35.70	72	1.09	183	0.00	230	0.00	230
		MIN	-5.71	155	-37.90	60	0.00	230	0.00	230
	0.98	MAX	32.91	75	2.04	175	0.00	230	0.00	230
		MIN	-6.79	28	-42.48	62	0.00	230	0.00	230
	1.23	MAX	31.07	77	3.23	167	0.00	230	0.00	230
		MIN	-7.74	30	-47.09	54	0.00	230	0.00	230
	1.47	MAX	29.26	79	4.54	163	0.00	230	0.00	230
		MIN	-9.22	33	-51.08	56	0.00	230	0.00	230
	1.72	MAX	26.58	82	5.90	161	0.00	230	0.00	230
		MIN	-10.25	35	-54.24	59	0.00	230	0.00	230
	1.97	MAX	24.83	84	7.28	159	0.00	230	0.00	230
		MIN	-12.18	38	-57.06	61	0.00	230	0.00	230
	2.21	MAX	22.26	87	8.67	159	0.00	230	0.00	230
		MIN	-13.52	40	-58.63	64	0.00	230	0.00	230
	2.46	MAX	20.60	89	10.06	158	0.00	230	0.00	230
		MIN	-15.58	43	-60.11	66	0.00	230	0.00	230
	2.70	MAX	18.19	92	11.46	158	0.00	230	0.00	230
		MIN	-17.00	45	-60.36	68	0.00	230	0.00	230
	2.95	MAX	16.63	94	12.86	158	0.00	230	0.00	230
		MIN	-19.34	48	-60.36	71	0.00	230	0.00	230

MAX/MIN FORCE VALUES FOR MEMB 14, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	42.27	0.00	65	12.86	2.95	158			
	0.00	0.00	1	0.00	0.00	1	10.37 C	0.00	64
MIN.	-19.34	2.95	48	-60.36	2.70	68			
	0.00	2.95	230	0.00	2.95	230	2.05 T	2.95	150

15	0.00	MAX	16.63	94	12.86	158	0.00	230	0.00	230
		MIN	-19.34	48	-60.36	71	0.00	230	0.00	230
	0.25	MAX	14.38	97	14.30	157	0.00	230	0.00	230
		MIN	-21.06	50	-59.32	73	0.00	230	0.00	230
	0.51	MAX	12.94	99	15.75	157	0.00	230	0.00	230
		MIN	-23.70	53	-57.91	76	0.00	230	0.00	230
	0.76	MAX	10.88	102	17.20	157	0.00	230	0.00	230
		MIN	-25.49	55	-55.40	78	0.00	230	0.00	230
	1.02	MAX	9.57	104	18.65	157	0.00	230	0.00	230
		MIN	-28.23	58	-52.72	81	0.00	230	0.00	230
	1.27	MAX	7.70	107	20.10	157	0.00	230	0.00	230
		MIN	-30.07	60	-48.81	83	0.00	230	0.00	230
	1.52	MAX	6.52	109	21.55	157	0.00	230	0.00	230
		MIN	-32.86	63	-44.82	86	0.00	230	0.00	230
	1.78	MAX	4.85	112	23.00	156	0.00	230	0.00	230
		MIN	-34.73	65	-39.76	88	0.00	230	0.00	230
	2.03	MAX	3.31	115	24.45	156	0.00	230	0.00	230
		MIN	-37.55	68	-34.71	91	0.00	230	0.00	230
	2.29	MAX	2.36	117	25.90	156	0.00	230	0.00	230
		MIN	-39.43	70	-28.79	94	0.00	230	0.00	230
	2.54	MAX	1.04	120	27.35	156	0.00	230	0.00	230
		MIN	-42.24	73	-22.70	96	0.00	230	0.00	230
	2.80	MAX	0.92	230	28.80	156	0.00	230	0.00	230
		MIN	-44.09	75	-16.14	99	0.00	230	0.00	230
	3.05	MAX	0.92	230	30.25	156	0.00	230	0.00	230
		MIN	-46.84	78	-9.19	101	0.00	230	0.00	230

MAX/MIN FORCE VALUES FOR MEMB 15, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	16.63	0.00	94	30.25	3.05	156			
	0.00	0.00	1	0.00	0.00	1	10.37 C	0.00	64
MIN.	-46.84	3.05	78	-60.36	0.00	71			
	0.00	3.05	230	0.00	3.05	230	2.05 T	3.05	150

16	0.00	MAX	0.92	230	30.25	156	0.00	230	0.00	230
		MIN	-46.84	78	-9.19	101	0.00	230	0.00	230
	0.14	MAX	0.92	230	31.04	156	0.00	230	0.00	230
		MIN	-47.74	79	-5.41	103	0.00	230	0.00	230
	0.28	MAX	0.92	230	31.82	156	0.00	230	0.00	230
		MIN	-49.53	81	-5.34	230	0.00	230	0.00	230
	0.41	MAX	0.92	230	32.61	156	0.00	230	0.00	230
		MIN	-50.42	82	-5.47	230	0.00	230	0.00	230
	0.55	MAX	0.92	230	33.39	156	0.00	230	0.00	230
		MIN	-51.30	83	-5.59	230	0.00	230	0.00	230
	0.69	MAX	0.92	230	37.68	67	0.00	230	0.00	230
		MIN	-53.04	85	-5.72	230	0.00	230	0.00	230
	0.83	MAX	0.92	230	42.81	69	0.00	230	0.00	230
		MIN	-53.89	86	-5.85	230	0.00	230	0.00	230
	0.96	MAX	0.92	230	48.16	70	0.00	230	0.00	230
		MIN	-55.57	88	-5.97	230	0.00	230	0.00	230
	1.10	MAX	0.92	230	53.71	72	0.00	230	0.00	230
		MIN	-56.40	89	-6.10	230	0.00	230	0.00	230
	1.24	MAX	0.92	230	59.46	73	0.00	230	0.00	230
		MIN	-57.21	90	-6.23	230	0.00	230	0.00	230
	1.38	MAX	0.92	230	65.38	75	0.00	230	0.00	230

		MIN	-58.81	92	-6.35	230	0.00	230	0.00	230
	1.51	MAX	0.92	230	71.49	76	0.00	230	0.00	230
		MIN	-59.59	93	-6.48	230	0.00	230	0.00	230
	1.65	MAX	0.92	230	77.75	77	0.00	230	0.00	230
		MIN	-61.13	95	-6.61	230	0.00	230	0.00	230

MAX/MIN FORCE VALUES FOR MEMB 16, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.92	0.00	230	77.75	1.65	77				
	0.00	0.00	1	0.00	0.00	1	10.37	C	0.00	64
MIN.	-61.13	1.65	95	-9.19	0.00	101				
	0.00	1.65	230	0.00	1.65	230	2.05	T	1.65	150

17	0.00	MAX	59.79	141	71.38	157	0.00	230	0.00	230
		MIN	-4.27	230	-10.75	230	0.00	230	0.00	230
	0.14	MAX	58.15	143	65.22	158	0.00	230	0.00	230
		MIN	-4.27	230	-10.17	230	0.00	230	0.00	230
	0.28	MAX	57.31	144	59.24	160	0.00	230	0.00	230
		MIN	-4.27	230	-9.58	230	0.00	230	0.00	230
	0.41	MAX	56.47	145	53.43	161	0.00	230	0.00	230
		MIN	-4.27	230	-8.99	230	0.00	230	0.00	230
	0.55	MAX	54.74	147	47.83	163	0.00	230	0.00	230
		MIN	-4.27	230	-8.41	230	0.00	230	0.00	230
	0.69	MAX	53.86	148	42.43	164	0.00	230	0.00	230
		MIN	-4.27	230	-7.82	230	0.00	230	0.00	230
	0.83	MAX	52.97	149	37.28	166	0.00	230	0.00	230
		MIN	-4.27	230	-7.23	230	0.00	230	0.00	230
	0.96	MAX	51.16	151	35.40	79	0.00	230	0.00	230
		MIN	-4.27	230	-6.65	230	0.00	230	0.00	230
	1.10	MAX	50.25	152	34.57	79	0.00	230	0.00	230
		MIN	-4.27	230	-6.06	230	0.00	230	0.00	230
	1.24	MAX	48.39	154	33.74	79	0.00	230	0.00	230
		MIN	-4.27	230	-5.47	230	0.00	230	0.00	230
	1.38	MAX	47.46	155	32.91	79	0.00	230	0.00	230
		MIN	-4.27	230	-4.88	230	0.00	230	0.00	230
	1.51	MAX	46.52	156	32.08	79	0.00	230	0.00	230
		MIN	-4.27	230	-6.92	133	0.00	230	0.00	230
	1.65	MAX	44.62	158	31.26	79	0.00	230	0.00	230
		MIN	-4.27	230	-10.46	134	0.00	230	0.00	230

MAX/MIN FORCE VALUES FOR MEMB 17, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	59.79	0.00	141	71.38	0.00	157				
	0.00	0.00	1	0.00	0.00	1	5.57	C	0.00	164
MIN.	-4.27	1.65	230	-10.75	0.00	230				
	0.00	1.65	230	0.00	1.65	230	0.66	T	1.65	97

18	0.00	MAX	44.62	158	31.26	79	0.00	230	0.00	230
		MIN	-4.27	230	-10.46	134	0.00	230	0.00	230
	0.25	MAX	42.71	160	29.75	79	0.00	230	0.00	230
		MIN	-4.27	230	-17.38	137	0.00	230	0.00	230
	0.50	MAX	39.81	163	28.24	79	0.00	230	0.00	230
		MIN	-4.27	230	-23.50	139	0.00	230	0.00	230

0.75	MAX	37.87	165	26.74	79	0.00	230	0.00	230
	MIN	-4.27	230	-29.71	142	0.00	230	0.00	230
1.00	MAX	34.97	168	25.23	79	0.00	230	0.00	230
	MIN	-4.27	230	-34.94	145	0.00	230	0.00	230
1.25	MAX	33.05	170	23.73	79	0.00	230	0.00	230
	MIN	-4.83	123	-40.15	147	0.00	230	0.00	230
1.50	MAX	30.20	173	22.22	79	0.00	230	0.00	230
	MIN	-6.57	126	-44.31	150	0.00	230	0.00	230
1.75	MAX	28.33	175	20.72	79	0.00	230	0.00	230
	MIN	-7.81	128	-48.38	152	0.00	230	0.00	230
2.00	MAX	25.56	178	19.21	79	0.00	230	0.00	230
	MIN	-9.78	131	-51.31	154	0.00	230	0.00	230
2.25	MAX	23.76	180	17.71	78	0.00	230	0.00	230
	MIN	-11.16	133	-54.02	157	0.00	230	0.00	230
2.50	MAX	21.13	183	16.20	78	0.00	230	0.00	230
	MIN	-13.33	136	-55.60	159	0.00	230	0.00	230
2.75	MAX	19.43	185	14.70	78	0.00	230	0.00	230
	MIN	-14.84	138	-56.86	162	0.00	230	0.00	230
3.00	MAX	16.97	188	13.20	78	0.00	230	0.00	230
	MIN	-17.21	141	-57.07	164	0.00	230	0.00	230

MAX/MIN FORCE VALUES FOR MEMB 18, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	44.62	0.00	158	31.26	0.00	79			
	0.00	0.00	1	0.00	0.00	1	5.57 C	0.00	164
MIN.	-17.21	3.00	141	-57.07	3.00	164			
	0.00	3.00	230	0.00	3.00	230	0.66 T	3.00	97

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

109. FINISH

********** END OF THE STAAD.Pro RUN **********

```
INPUT FILE: wheel II.STD
     1. STAAD PLANE
     2. START JOB INFORMATION
     3. ENGINEER DATE 25-DEC-06
     4. END JOB INFORMATION
     5. INPUT WIDTH 79
     6. PAGE LENGTH 1000
     7. UNIT METER MTON
     8. JOINT COORDINATES
     9. 1        0.000       0.000       0.000
    10. 2        1.750       0.000       0.000
    11. 3        4.700       0.000       0.000
    12. 4        7.750       0.000       0.000
    13. 5        9.400       0.000       0.000
    14. 6       11.050       0.000       0.000
    15. 7       14.050       0.000       0.000
    16. 8       17.050       0.000       0.000
    17. 9       18.700       0.000       0.000
    18. 10      20.350       0.000       0.000
    19. 11      23.400       0.000       0.000
    20. 12      26.350       0.000       0.000
    21. 13      28.100       0.000       0.000
    22. 14       0.000       6.904       0.000
    23. 15       1.750       6.904       0.000
    24. 16       4.700       6.904       0.000
    25. 17       7.750       6.904       0.000
    26. 18       9.400       6.904       0.000
    27. 19      11.050       6.904       0.000
    28. 20      14.050       6.904       0.000
    29. 21      17.050       6.904       0.000
    30. 22      18.700       6.904       0.000
    31. 23      20.350       6.904       0.000
    32. 24      23.400       6.904       0.000
    33. 25      26.350       6.904       0.000
    34. 26      28.100       6.904       0.000
    35. 27       0.000       1.750       0.000
    36. 28       0.000       3.452       0.000
    37. 29       0.000       5.154       0.000
    38. 30       9.400       1.750       0.000
    39. 31       9.400       3.452       0.000
    40. 32       9.400       5.154       0.000
    41. 33      18.700       1.750       0.000
    42. 34      18.700       3.452       0.000
    43. 35      18.700       5.154       0.000
    44. 36      28.100       1.750       0.000
    45. 37      28.100       3.452       0.000
    46. 38      28.100       5.154       0.000
    47. MEMBER INCIDENCES
    48. 1         1         2
    49. 2         2         3
    50. 3         3         4
    51. 4         4         5
    52. 5         5         6
    53. 6         6         7
    54. 7         7         8
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    55. 8         8         9
    56. 9         9        10
    57. 10        10        11
    58. 11        11        12
    59. 12        12        13
    60. 13        14        15
    61. 14        15        16
    62. 15        16        17
    63. 16        17        18
    64. 17        18        19
    65. 18        19        20
    66. 19        20        21
    67. 20        21        22
    68. 21        22        23
    69. 22        23        24
    70. 23        24        25
    71. 24        25        26
    72. 25         1        27
    73. 26        27        28
    74. 27        28        29
    75. 28        29        14
    76. 29         5        30
    77. 30        30        31
    78. 31        31        32
    79. 32        32        18
    80. 33         9        33
    81. 34        33        34
    82. 35        34        35
    83. 36        35        22
    84. 37        13        36
    85. 38        36        37
    86. 39        37        38
    87. 40        38        26
    88. MEMBER PROPERTY INDIAN
    89. 2 3 6 7 10 11 14 15 18 19 22 23 26 27 38 39 PRI YD .5 ZD 1.
    90. 30 31 34 35 PRI YD .3 ZD 1.
    91. 1 4 5 8 9 12 13 16 17 20 21 24 25 28 37 40 PRI AX .625 IZ .0203 YD .625
    92. 29 32 33 36 PRI AX .425 IZ .0354 YD .425
    93. CONSTANT
    94. E 3E6 ALL
    95. DENSITY 2.4 ALL
    96. ALPHA .0000117 ALL
    97. SUPPORT
    98. 5 PINNED
    99. 1 9 13 FIXED BUT FX MZ
   100. DEFINE MOVING LOAD
   101. TYPE 1 LOA 10 15 15 21.25 21.25 21.25 21.25 DIST 3.96 1.52 2.13 1.37
3.05 1.37
   102. TYPE 2 LOA 21.25 21.25 21.25 21.25 15 15 10 DIST 1.37 3.05 1.37 2.13
1.52 3.96
   103. LOAD GENERATION 249
   104. TYPE 1 -13.4 6.904 0 XINC 0.13
   105. LOAD GENERATION 249
   108. LOAD LIST 1 TO 249
   109. PRINT  MAX FORCE LIST 13 TO 18
        MAX      FORCE    LIST     13
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MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
13	MAX	57.29	0.00	46	55.89	0.00	58			
		0.00	0.00	1	0.00	0.00	1	9.45 C	0.00	58
	MIN	-3.82	1.75	14	-21.97	1.75	25			
		0.00	1.75	249	0.00	1.75	249	0.83 T	1.75	161
14	MAX	40.18	0.00	60	6.13	2.95	164			
		0.00	0.00	1	0.00	0.00	1	9.45 C	0.00	58
	MIN	-18.85	2.95	37	-53.88	2.46	78			
		0.00	2.95	249	0.00	2.95	249	0.83 T	2.95	161
15	MAX	12.39	0.00	48	26.94	3.05	146			
		0.00	0.00	1	0.00	0.00	1	9.45 C	0.00	58
	MIN	-47.89	3.05	94	-53.59	0.00	71			
		0.00	3.05	249	0.00	3.05	249	0.83 T	3.05	161
16	MAX	1.66	0.00	240	90.63	1.65	96			
		0.00	0.00	1	0.00	0.00	1	9.45 C	0.00	58
	MIN	-62.01	1.65	73	-9.59	1.65	239			
		0.00	1.65	249	0.00	1.65	249	0.83 T	1.65	161
17	MAX	61.60	0.00	118	81.05	0.00	126			
		0.00	0.00	1	0.00	0.00	1	5.19 C	0.00	136
	MIN	-3.36	1.65	238	-7.41	0.00	237			
		0.00	1.65	249	0.00	1.65	249	0.02 T	1.65	1
18	MAX	45.02	0.00	131	28.11	0.00	64			
		0.00	0.00	1	0.00	0.00	1	5.19 C	0.00	136
	MIN	-14.29	3.00	143	-48.16	3.00	143			
		0.00	3.00	249	0.00	3.00	249	0.02 T	3.00	1

110. LOAD LIST 250 TO 498
111. PRINT MAX FORCE LIST 13 TO 18
MAX FORCE LIST 13

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
13	MAX	57.23	0.00	354	53.14	0.00	334			
		0.00	0.00	250	0.00	0.00	250	8.98 C	0.00	334
	MIN	-4.60	1.75	434	-18.90	1.75	322			
		0.00	1.75	498	0.00	1.75	498	1.42 T	1.75	435
14	MAX	40.53	0.00	333	10.82	2.95	433			
		0.00	0.00	250	0.00	0.00	250	8.98 C	0.00	334
	MIN	-17.48	2.95	378	-52.99	2.46	341			
		0.00	2.95	498	0.00	2.95	498	1.42 T	2.95	435
15	MAX	12.46	0.00	390	24.86	3.05	434			
		0.00	0.00	250	0.00	0.00	250	8.98 C	0.00	334

	MIN	-47.41	3.05	368	-52.84	0.00	345			
		0.00	3.05	498	0.00	3.05	498	1.42 T	3.05	435
16	MAX	1.75	0.00	498	86.86	1.65	372			
		0.00	0.00	250	0.00	0.00	250	8.98 C	0.00	334
	MIN	-62.27	1.65	380	-10.78	1.65	498			
		0.00	1.65	498	0.00	1.65	498	1.42 T	1.65	435
17	MAX	60.37	0.00	392	84.88	0.00	401			
		0.00	0.00	250	0.00	0.00	250	5.19 C	0.00	434
	MIN	-4.86	1.65	498	-11.46	0.00	498			
		0.00	1.65	498	0.00	1.65	498	0.01 T	1.65	250
18	MAX	45.31	0.00	405	27.67	0.00	351			
		0.00	0.00	250	0.00	0.00	250	5.19 C	0.00	434
	MIN	-16.46	3.00	450	-48.20	3.00	427			
		0.00	3.00	498	0.00	3.00	498	0.01 T	3.00	250

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

112. FINISH

********** END OF THE STAAD.Pro RUN **********

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INPUT FILE: track.STD
     1. STAAD PLANE
     2. START JOB INFORMATION
     3. ENGINEER DATE 25-DEC-06
     4. END JOB INFORMATION
     5. INPUT WIDTH 79
     6. PAGE LENGTH 1000
     7. UNIT METER MTON
     8. JOINT COORDINATES
     9. 1        0.000       0.000       0.000
    10. 2        1.750       0.000       0.000
    11. 3        4.700       0.000       0.000
    12. 4        7.750       0.000       0.000
    13. 5        9.400       0.000       0.000
    14. 6       11.050       0.000       0.000
    15. 7       14.050       0.000       0.000
    16. 8       17.050       0.000       0.000
    17. 9       18.700       0.000       0.000
    18. 10      20.350       0.000       0.000
    19. 11      23.400       0.000       0.000
    20. 12      26.350       0.000       0.000
    21. 13      28.100       0.000       0.000
    22. 14       0.000       6.904       0.000
    23. 15       1.750       6.904       0.000
    24. 16       4.700       6.904       0.000
    25. 17       7.750       6.904       0.000
    26. 18       9.400       6.904       0.000
    27. 19      11.050       6.904       0.000
    28. 20      14.050       6.904       0.000
    29. 21      17.050       6.904       0.000
    30. 22      18.700       6.904       0.000
    31. 23      20.350       6.904       0.000
    32. 24      23.400       6.904       0.000
    33. 25      26.350       6.904       0.000
    34. 26      28.100       6.904       0.000
    35. 27       0.000       1.750       0.000
    36. 28       0.000       3.452       0.000
    37. 29       0.000       5.154       0.000
    38. 30       9.400       1.750       0.000
    39. 31       9.400       3.452       0.000
    40. 32       9.400       5.154       0.000
    41. 33      18.700       1.750       0.000
    42. 34      18.700       3.452       0.000
    43. 35      18.700       5.154       0.000
    44. 36      28.100       1.750       0.000
    45. 37      28.100       3.452       0.000
    46. 38      28.100       5.154       0.000
    49. MEMBER INCIDENCES
    50. 1         1         2
    51. 2         2         3
    52. 3         3         4
    53. 4         4         5
    54. 5         5         6
    55. 6         6         7
    56. 7         7         8
    57. 8         8         9
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 58. 9         9        10
 59. 10        10        11
 60. 11        11        12
 61. 12        12        13
 62. 13        14        15
 63. 14        15        16
 64. 15        16        17
 65. 16        17        18
 66. 17        18        19
 67. 18        19        20
 68. 19        20        21
 69. 20        21        22
 70. 21        22        23
 71. 22        23        24
 72. 23        24        25
 73. 24        25        26
 74. 25         1        27
 75. 26        27        28
 76. 27        28        29
 77. 28        29        14
 78. 29         5        30
 79. 30        30        31
 80. 31        31        32
 81. 32        32        18
 82. 33         9        33
 83. 34        33        34
 84. 35        34        35
 85. 36        35        22
 86. 37        13        36
 87. 38        36        37
 88. 39        37        38
 89. 40        38        26
 90. MEMBER PROPERTY INDIAN
 91. 2 3 6 7 10 11 14 15 18 19 22 23 26 27 38 39 PRI YD .5 ZD 1.
 92. 30 31 34 35 PRI YD .3 ZD 1.
 93. 1 4 5 8 9 12 13 16 17 20 21 24 25 28 37 40 PRI AX .625 IZ .0203 YD .625
 94. 29 32 33 36 PRI AX .425 IZ .0354 YD .425
 95. CONSTANT
 96. E 3E6 ALL
 97. DENSITY 2.4 ALL
 98. ALPHA .0000117 ALL
 99. SUPPORT
100. 5 PINNED
101. 1 9 13 FIXED BUT FX MZ
102. *******************************************************
103. LOAD 1 FOR MAX BM (HOGGING) AT END WEB
104. MEMBER LOAD
105. 13 UNI GY -1.655 1.173 1.75
106. 14 UNI GY -1.655
107. 15 UNI GY -1.655 0.0   2.155
108. *UPWARD BASE PRESSURE
109. 1 TO 12 UNI GY 0.335
110. LOAD 2 FOR MAX BM (HOGGING) IN MID SAPN OF OUTER CELL
111. MEMBER LOAD
112. 17 UNI GY -1.655 1.173 1.65
113. 18 UNI GY -1.655
114. 19 UNI GY -1.655 0.0 2.205
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115. *UPWARD BASE PRESSURE
116. 1 TO 12 UNI GY 0.335
117. LOAD 3 FOR MAX BM (HOGGING) AT END OF HAUNCH 2
118. MEMBER LOAD
119. 14 UNI GY -1.652 0.725 1.75
120. 15 UNI GY -1.652
121. 16 UNI GY -1.652 0.0 0.407
122. *UPWARD BASE PRESSURE
123. 1 TO 12 UNI GY 0.334
124. LOAD 4 FOR MAX BM (HOGGING) AT START OF HAUNCH 9
125. MEMBER LOAD
126. 17 UNI GY -1.659 1.073 1.65
127. 18 UNI GY -1.659
128. 19 UNI GY -1.659 0.0   2.105
129. *UPWARD BASE PRESSURE
130. 1 TO 12 UNI GY 0.336
131. LOAD 5 FOR MAX BM (HOGGING) AT MID SPAN OF MIDDLE CELL
132. MEMBER LOAD
133. 14 UNI GY -1.735 0.825 2.95
134. 15 UNI GY -1.735
135. 16 UNI GY -1.735 0.0 0.507
136. *UPWARD BASE PRESSURE
137. 1 TO 12 UNI GY 0.351
138. ************************************************************
139. LOAD 6 FOR MAX BM (SAGGING) AT END OF HAUNCH 1
140. MEMBER LOAD
141. 13 UNI GY -1.824
142. 14 UNI GY -1.824
143. 15 UNI GY -1.824 0.0 0.982
144. *UPWARD BASE PRESSURE
145. 1 TO 12 UNI GY 0.369
146. LOAD 7 FOR MAX BM (SAGGING) IN MID SAPN OF OUTER CELL
147. MEMBER LOAD
148. 13 UNI GY -1.658 1.573 1.75
149. 14 UNI GY -1.658
150. 15 UNI GY -1.658 0.0 2.555
151. *UPWARD BASE PRESSURE
152. 1 TO 12 UNI GY 0.335
153. LOAD 8 FOR MAX BM (SAGGING) AT START OF HAUNCH 2
154. MEMBER LOAD
155. 15 UNI GY -2.182 0.658 3.05
156. 16 UNI GY -2.182 0.000 0.878
157. *UPWARD BASE PRESSURE
158. 1 TO 12 UNI GY 0.254
159. LOAD 9 FOR MAX BM (SAGGING) AT END OF HAUNCH 9
160. MEMBER LOAD
161. 18 UNI GY -1.240 0.268 0.468
162. *UPWARD BASE PRESSURE
163. 1 TO 12 UNI GY 0.334
164. LOAD 10 FOR MAX BM (SAGGING) IN MID SAPN OF INNER CELL
165. MEMBER LOAD
166. 18 UNI GY -1.240 2.866 3.00
167. 19 UNI GY -1.24  0.0 0.066
168. *UPWARD BASE PRESSURE
169. 1 TO 12 UNI GY 0.332
170. PERFORM ANALYSIS
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171. PRINT FORCE ENVELOPE LIST 1 2 3 4 5 6 13 14 15 16 17 18 25 27 28 29 31 32

FORCE ENVELOPE LIST 1

MEMB	DISTANCE		FY	LD	MZ	LD	FZ	LD	MY	LD
1	0.00	MAX	-1.08	8	-0.36	1	0.00	10	0.00	10
		MIN	-1.50	6	-1.60	9	0.00	10	0.00	10
	0.15	MAX	-1.05	8	-0.17	1	0.00	10	0.00	10
		MIN	-1.45	6	-1.40	9	0.00	10	0.00	10
	0.29	MAX	-1.01	8	0.02	1	0.00	10	0.00	10
		MIN	-1.39	6	-1.21	9	0.00	10	0.00	10
	0.44	MAX	-0.97	8	0.20	1	0.00	10	0.00	10
		MIN	-1.34	6	-1.04	4	0.00	10	0.00	10
	0.58	MAX	-0.93	8	0.38	1	0.00	10	0.00	10
		MIN	-1.28	6	-0.88	4	0.00	10	0.00	10
	0.73	MAX	-0.90	8	0.55	1	0.00	10	0.00	10
		MIN	-1.23	6	-0.73	4	0.00	10	0.00	10
	0.88	MAX	-0.86	8	0.71	7	0.00	10	0.00	10
		MIN	-1.18	6	-0.58	4	0.00	10	0.00	10
	1.02	MAX	-0.82	8	0.86	7	0.00	10	0.00	10
		MIN	-1.12	6	-0.44	4	0.00	10	0.00	10
	1.17	MAX	-0.79	8	1.01	7	0.00	10	0.00	10
		MIN	-1.07	6	-0.31	4	0.00	10	0.00	10
	1.31	MAX	-0.75	8	1.15	7	0.00	10	0.00	10
		MIN	-1.02	6	-0.19	4	0.00	10	0.00	10
	1.46	MAX	-0.71	8	1.28	7	0.00	10	0.00	10
		MIN	-0.96	6	-0.07	4	0.00	10	0.00	10
	1.60	MAX	-0.68	8	1.41	7	0.00	10	0.00	10
		MIN	-0.91	6	0.04	4	0.00	10	0.00	10
	1.75	MAX	-0.64	8	1.52	7	0.00	10	0.00	10
		MIN	-0.85	6	0.14	4	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 1, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	-0.64	1.75	8	1.52	1.75	7			
	0.00	0.00	1	0.00	0.00	1	0.53 C	0.00	4
MIN.	-1.50	0.00	6	-1.60	0.00	9			
	0.00	1.75	10	0.00	1.75	10	0.97 T	1.75	1

2	0.00	MAX	-0.64	8	1.52	7	0.00	10	0.00	10
		MIN	-0.85	6	0.14	4	0.00	10	0.00	10
	0.25	MAX	-0.58	8	1.72	6	0.00	10	0.00	10
		MIN	-0.76	6	0.30	4	0.00	10	0.00	10
	0.49	MAX	-0.51	2	1.90	6	0.00	10	0.00	10
		MIN	-0.67	6	0.43	4	0.00	10	0.00	10
	0.74	MAX	-0.43	2	2.05	6	0.00	10	0.00	10
		MIN	-0.59	5	0.55	4	0.00	10	0.00	10
	0.98	MAX	-0.34	2	2.18	6	0.00	10	0.00	10
		MIN	-0.50	5	0.65	4	0.00	10	0.00	10
	1.23	MAX	-0.26	2	2.29	6	0.00	10	0.00	10
		MIN	-0.41	5	0.72	4	0.00	10	0.00	10
	1.47	MAX	-0.18	2	2.38	6	0.00	10	0.00	10
		MIN	-0.33	9	0.78	4	0.00	10	0.00	10
	1.72	MAX	-0.10	2	2.44	5	0.00	10	0.00	10
		MIN	-0.25	9	0.81	4	0.00	10	0.00	10
	1.97	MAX	-0.02	2	2.49	5	0.00	10	0.00	10

		MIN	-0.17	9	0.83	2	0.00	10	0.00	10
	2.21	MAX	0.07	2	2.52	5	0.00	10	0.00	10
		MIN	-0.09	9	0.82	2	0.00	10	0.00	10
	2.46	MAX	0.15	2	2.53	5	0.00	10	0.00	10
		MIN	-0.01	8	0.79	2	0.00	10	0.00	10
	2.70	MAX	0.23	2	2.51	5	0.00	10	0.00	10
		MIN	0.05	8	0.75	2	0.00	10	0.00	10
	2.95	MAX	0.31	2	2.48	5	0.00	10	0.00	10
		MIN	0.11	8	0.68	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 2, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.31	2.95	2	2.53	2.46	5			
	0.00	0.00	1	0.00	0.00	1	0.53 C	0.00	4
MIN.	-0.85	0.00	6	0.14	0.00	4			
	0.00	2.95	10	0.00	2.95	10	0.97 T	2.95	1

3	0.00	MAX	0.31	2	2.48	5	0.00	10	0.00	10
		MIN	0.11	8	0.68	2	0.00	10	0.00	10
	0.25	MAX	0.40	2	2.42	5	0.00	10	0.00	10
		MIN	0.18	8	0.59	2	0.00	10	0.00	10
	0.51	MAX	0.48	2	2.33	5	0.00	10	0.00	10
		MIN	0.24	8	0.48	2	0.00	10	0.00	10
	0.76	MAX	0.57	2	2.23	5	0.00	10	0.00	10
		MIN	0.30	8	0.34	2	0.00	10	0.00	10
	1.02	MAX	0.65	2	2.10	5	0.00	10	0.00	10
		MIN	0.37	8	0.19	2	0.00	10	0.00	10
	1.27	MAX	0.74	2	1.95	5	0.00	10	0.00	10
		MIN	0.43	8	0.01	2	0.00	10	0.00	10
	1.52	MAX	0.82	2	1.78	5	0.00	10	0.00	10
		MIN	0.50	8	-0.19	2	0.00	10	0.00	10
	1.78	MAX	0.91	4	1.58	5	0.00	10	0.00	10
		MIN	0.56	8	-0.41	2	0.00	10	0.00	10
	2.03	MAX	1.00	4	1.36	5	0.00	10	0.00	10
		MIN	0.63	8	-0.65	2	0.00	10	0.00	10
	2.29	MAX	1.08	4	1.12	5	0.00	10	0.00	10
		MIN	0.69	8	-0.91	2	0.00	10	0.00	10
	2.54	MAX	1.17	6	0.86	5	0.00	10	0.00	10
		MIN	0.76	8	-1.20	2	0.00	10	0.00	10
	2.80	MAX	1.27	6	0.57	5	0.00	10	0.00	10
		MIN	0.82	8	-1.51	2	0.00	10	0.00	10
	3.05	MAX	1.36	6	0.26	5	0.00	10	0.00	10
		MIN	0.89	8	-1.84	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 3, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.36	3.05	6	2.48	0.00	5			
	0.00	0.00	1	0.00	0.00	1	0.53 C	0.00	4
MIN.	0.11	0.00	8	-1.84	3.05	2			
	0.00	3.05	10	0.00	3.05	10	0.97 T	3.05	1

4	0.00	MAX	1.36	6	0.26	5	0.00	10	0.00	10
		MIN	0.89	8	-1.84	2	0.00	10	0.00	10
	0.14	MAX	1.41	6	0.09	5	0.00	10	0.00	10
		MIN	0.92	8	-2.02	2	0.00	10	0.00	10
	0.28	MAX	1.46	6	-0.10	5	0.00	10	0.00	10
		MIN	0.96	8	-2.22	2	0.00	10	0.00	10
	0.41	MAX	1.51	6	-0.25	8	0.00	10	0.00	10
		MIN	0.99	8	-2.42	2	0.00	10	0.00	10
	0.55	MAX	1.56	6	-0.39	8	0.00	10	0.00	10
		MIN	1.03	8	-2.62	2	0.00	10	0.00	10
	0.69	MAX	1.61	6	-0.53	8	0.00	10	0.00	10
		MIN	1.06	8	-2.83	2	0.00	10	0.00	10
	0.83	MAX	1.66	6	-0.68	8	0.00	10	0.00	10
		MIN	1.10	8	-3.05	2	0.00	10	0.00	10
	0.96	MAX	1.71	6	-0.83	8	0.00	10	0.00	10
		MIN	1.13	8	-3.28	2	0.00	10	0.00	10
	1.10	MAX	1.77	6	-0.99	8	0.00	10	0.00	10
		MIN	1.17	8	-3.51	2	0.00	10	0.00	10
	1.24	MAX	1.82	6	-1.15	8	0.00	10	0.00	10
		MIN	1.20	8	-3.75	2	0.00	10	0.00	10
	1.38	MAX	1.87	6	-1.32	8	0.00	10	0.00	10
		MIN	1.23	8	-3.99	2	0.00	10	0.00	10
	1.51	MAX	1.92	6	-1.49	8	0.00	10	0.00	10
		MIN	1.27	8	-4.24	4	0.00	10	0.00	10
	1.65	MAX	1.97	6	-1.67	8	0.00	10	0.00	10
		MIN	1.30	8	-4.50	4	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 4, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.97	1.65	6	0.26	0.00	5			
	0.00	0.00	1	0.00	0.00	1	0.53 C	0.00	4
MIN.	0.89	0.00	8	-4.50	1.65	4			
	0.00	1.65	10	0.00	1.65	10	0.97 T	1.65	1

5	0.00	MAX	-1.33	8	-1.94	2	0.00	10	0.00	10
		MIN	-1.99	6	-5.02	5	0.00	10	0.00	10
	0.14	MAX	-1.30	8	-1.73	2	0.00	10	0.00	10
		MIN	-1.94	6	-4.76	5	0.00	10	0.00	10
	0.28	MAX	-1.26	8	-1.53	2	0.00	10	0.00	10
		MIN	-1.89	6	-4.51	5	0.00	10	0.00	10
	0.41	MAX	-1.23	8	-1.33	4	0.00	10	0.00	10
		MIN	-1.84	6	-4.26	5	0.00	10	0.00	10
	0.55	MAX	-1.19	8	-1.15	4	0.00	10	0.00	10
		MIN	-1.79	6	-4.02	5	0.00	10	0.00	10
	0.69	MAX	-1.16	8	-0.96	4	0.00	10	0.00	10
		MIN	-1.74	6	-3.79	5	0.00	10	0.00	10
	0.83	MAX	-1.12	8	-0.78	4	0.00	10	0.00	10
		MIN	-1.69	6	-3.56	5	0.00	10	0.00	10
	0.96	MAX	-1.09	8	-0.61	4	0.00	10	0.00	10
		MIN	-1.64	6	-3.34	5	0.00	10	0.00	10
	1.10	MAX	-1.05	8	-0.45	4	0.00	10	0.00	10
		MIN	-1.59	6	-3.13	5	0.00	10	0.00	10
	1.24	MAX	-1.02	8	-0.29	4	0.00	10	0.00	10
		MIN	-1.54	6	-2.92	5	0.00	10	0.00	10
	1.38	MAX	-0.98	8	-0.14	4	0.00	10	0.00	10

		MIN	-1.49	6	-2.72	5	0.00	10	0.00	10
	1.51	MAX	-0.95	8	0.00	4	0.00	10	0.00	10
		MIN	-1.44	6	-2.53	5	0.00	10	0.00	10
	1.65	MAX	-0.91	8	0.14	4	0.00	10	0.00	10
		MIN	-1.38	6	-2.34	5	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 5, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	-0.91	1.65	8	0.14	1.65	4				
	0.00	0.00	1	0.00	0.00	1	0.32	C	0.00	8
MIN.	-1.99	0.00	6	-5.02	0.00	5				
	0.00	1.65	10	0.00	1.65	10	0.42	T	1.65	2

6	0.00	MAX	-0.91	8	0.14	4	0.00	10	0.00	10
		MIN	-1.38	6	-2.34	5	0.00	10	0.00	10
	0.25	MAX	-0.85	8	0.38	4	0.00	10	0.00	10
		MIN	-1.29	6	-2.02	5	0.00	10	0.00	10
	0.50	MAX	-0.79	8	0.60	4	0.00	10	0.00	10
		MIN	-1.20	6	-1.72	5	0.00	10	0.00	10
	0.75	MAX	-0.72	8	0.79	4	0.00	10	0.00	10
		MIN	-1.11	6	-1.44	5	0.00	10	0.00	10
	1.00	MAX	-0.65	4	0.96	4	0.00	10	0.00	10
		MIN	-1.02	6	-1.18	5	0.00	10	0.00	10
	1.25	MAX	-0.57	4	1.11	4	0.00	10	0.00	10
		MIN	-0.92	6	-0.95	5	0.00	10	0.00	10
	1.50	MAX	-0.48	4	1.25	4	0.00	10	0.00	10
		MIN	-0.83	6	-0.74	5	0.00	10	0.00	10
	1.75	MAX	-0.40	4	1.36	4	0.00	10	0.00	10
		MIN	-0.74	6	-0.55	5	0.00	10	0.00	10
	2.00	MAX	-0.31	4	1.45	2	0.00	10	0.00	10
		MIN	-0.65	6	-0.38	5	0.00	10	0.00	10
	2.25	MAX	-0.23	4	1.51	2	0.00	10	0.00	10
		MIN	-0.55	6	-0.23	5	0.00	10	0.00	10
	2.50	MAX	-0.15	4	1.56	2	0.00	10	0.00	10
		MIN	-0.46	6	-0.11	5	0.00	10	0.00	10
	2.75	MAX	-0.06	4	1.59	2	0.00	10	0.00	10
		MIN	-0.37	7	0.00	5	0.00	10	0.00	10
	3.00	MAX	0.02	4	1.59	2	0.00	10	0.00	10
		MIN	-0.29	7	0.08	5	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 6, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.02	3.00	4	1.59	3.00	2				
	0.00	0.00	1	0.00	0.00	1	0.32	C	0.00	8
MIN.	-1.38	0.00	6	-2.34	0.00	5				
	0.00	3.00	10	0.00	3.00	10	0.42	T	3.00	2

13	0.00	MAX	7.21	6	7.07	1	0.00	10	0.00	10
		MIN	-0.74	4	-2.09	4	0.00	10	0.00	10
	0.15	MAX	6.94	6	6.31	7	0.00	10	0.00	10
		MIN	-0.74	4	-1.98	4	0.00	10	0.00	10
	0.29	MAX	6.68	6	5.61	7	0.00	10	0.00	10
		MIN	-0.74	4	-1.87	4	0.00	10	0.00	10

	0.44	MAX	6.41	6	4.92	7	0.00	10	0.00	10
		MIN	-0.74	4	-1.76	4	0.00	10	0.00	10
	0.58	MAX	6.14	6	4.30	5	0.00	10	0.00	10
		MIN	-0.74	4	-1.65	4	0.00	10	0.00	10
	0.73	MAX	5.88	6	3.75	5	0.00	10	0.00	10
		MIN	-0.74	4	-1.55	4	0.00	10	0.00	10
	0.88	MAX	5.61	6	3.19	5	0.00	10	0.00	10
		MIN	-0.74	4	-1.44	4	0.00	10	0.00	10
	1.02	MAX	5.35	6	2.63	5	0.00	10	0.00	10
		MIN	-0.74	4	-1.33	4	0.00	10	0.00	10
	1.17	MAX	5.23	1	2.08	5	0.00	10	0.00	10
		MIN	-0.74	4	-1.22	4	0.00	10	0.00	10
	1.31	MAX	5.00	1	1.52	5	0.00	10	0.00	10
		MIN	-0.74	4	-1.11	4	0.00	10	0.00	10
	1.46	MAX	4.78	7	1.00	8	0.00	10	0.00	10
		MIN	-0.74	4	-1.55	6	0.00	10	0.00	10
	1.60	MAX	4.73	7	0.79	8	0.00	10	0.00	10
		MIN	-0.74	4	-2.19	6	0.00	10	0.00	10
	1.75	MAX	4.49	7	0.58	8	0.00	10	0.00	10
		MIN	-0.74	4	-2.80	6	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 13, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	7.21	0.00	6	7.07	0.00	1			
	0.00	0.00	1	0.00	0.00	1	0.97 C	0.00	1
MIN.	-0.74	1.75	4	-2.80	1.75	6			
	0.00	1.75	10	0.00	1.75	10	0.53 T	1.75	4

14	0.00	MAX	4.49	7	0.58	8	0.00	10	0.00	10
		MIN	-0.74	4	-2.80	6	0.00	10	0.00	10
	0.25	MAX	4.08	7	0.24	8	0.00	10	0.00	10
		MIN	-0.74	4	-3.73	6	0.00	10	0.00	10
	0.49	MAX	3.82	5	-0.11	8	0.00	10	0.00	10
		MIN	-0.74	4	-4.55	6	0.00	10	0.00	10
	0.74	MAX	3.82	5	-0.24	2	0.00	10	0.00	10
		MIN	-0.74	4	-5.26	6	0.00	10	0.00	10
	0.98	MAX	3.54	5	-0.06	2	0.00	10	0.00	10
		MIN	-0.74	4	-5.86	6	0.00	10	0.00	10
	1.23	MAX	3.11	5	0.12	2	0.00	10	0.00	10
		MIN	-0.74	4	-6.36	6	0.00	10	0.00	10
	1.47	MAX	2.69	5	0.30	2	0.00	10	0.00	10
		MIN	-0.74	4	-6.74	6	0.00	10	0.00	10
	1.72	MAX	2.26	5	0.48	2	0.00	10	0.00	10
		MIN	-0.74	4	-7.01	6	0.00	10	0.00	10
	1.97	MAX	1.83	5	0.66	2	0.00	10	0.00	10
		MIN	-0.74	4	-7.17	6	0.00	10	0.00	10
	2.21	MAX	1.41	8	0.84	4	0.00	10	0.00	10
		MIN	-0.74	4	-7.22	6	0.00	10	0.00	10
	2.46	MAX	1.41	8	1.03	4	0.00	10	0.00	10
		MIN	-0.74	4	-7.36	7	0.00	10	0.00	10
	2.70	MAX	1.41	8	1.21	4	0.00	10	0.00	10
		MIN	-0.92	6	-7.41	7	0.00	10	0.00	10
	2.95	MAX	1.41	8	1.39	4	0.00	10	0.00	10
		MIN	-1.36	6	-7.49	5	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 14, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD		MZ/ MY	DIST DIST	LD LD	FX	DIST LD
MAX.		4.49	0.00	7		1.39	2.95	4		
		0.00	0.00	1		0.00	0.00	1	0.97 C	0.00 1
MIN.		-1.36	2.95	6		-7.49	2.95	5		
		0.00	2.95	10		0.00	2.95	10	0.53 T	2.95 4
15	0.00	MAX	1.41	8		1.39	4	0.00	10	0.00 10
		MIN	-1.36	6		-7.49	5	0.00	10	0.00 10
	0.25	MAX	1.41	8		1.58	4	0.00	10	0.00 10
		MIN	-1.83	6		-7.46	5	0.00	10	0.00 10
	0.51	MAX	1.41	8		1.77	4	0.00	10	0.00 10
		MIN	-2.29	6		-7.33	5	0.00	10	0.00 10
	0.76	MAX	1.18	8		1.95	4	0.00	10	0.00 10
		MIN	-2.75	6		-7.08	5	0.00	10	0.00 10
	1.02	MAX	0.63	8		2.14	4	0.00	10	0.00 10
		MIN	-3.16	6		-6.72	5	0.00	10	0.00 10
	1.27	MAX	0.07	8		2.33	4	0.00	10	0.00 10
		MIN	-3.16	6		-6.25	5	0.00	10	0.00 10
	1.52	MAX	-0.06	9		2.52	4	0.00	10	0.00 10
		MIN	-3.16	6		-5.67	5	0.00	10	0.00 10
	1.78	MAX	-0.06	9		2.70	4	0.00	10	0.00 10
		MIN	-3.55	1		-4.97	5	0.00	10	0.00 10
	2.03	MAX	-0.06	9		2.89	4	0.00	10	0.00 10
		MIN	-3.97	1		-4.39	8	0.00	10	0.00 10
	2.29	MAX	-0.06	9		3.08	4	0.00	10	0.00 10
		MIN	-4.20	7		-3.91	8	0.00	10	0.00 10
	2.54	MAX	-0.06	9		3.27	4	0.00	10	0.00 10
		MIN	-4.62	7		-3.30	8	0.00	10	0.00 10
	2.80	MAX	-0.06	9		3.46	4	0.00	10	0.00 10
		MIN	-4.72	5		-2.54	8	0.00	10	0.00 10
	3.05	MAX	-0.06	9		3.64	4	0.00	10	0.00 10
		MIN	-5.16	5		-1.64	8	0.00	10	0.00 10

MAX/MIN FORCE VALUES FOR MEMB 15, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD		MZ/ MY	DIST DIST	LD LD	FX	DIST LD
MAX.		1.41	0.00	8		3.64	3.05	4		
		0.00	0.00	1		0.00	0.00	1	0.97 C	0.00 1
MIN.		-5.16	3.05	5		-7.49	0.00	5		
		0.00	3.05	10		0.00	3.05	10	0.53 T	3.05 4
16	0.00	MAX	-0.06	9		3.64	4	0.00	10	0.00 10
		MIN	-5.16	5		-1.64	8	0.00	10	0.00 10
	0.14	MAX	-0.06	9		3.75	4	0.00	10	0.00 10
		MIN	-5.40	5		-1.10	8	0.00	10	0.00 10
	0.28	MAX	-0.06	9		3.85	4	0.00	10	0.00 10
		MIN	-5.64	5		-0.52	8	0.00	10	0.00 10
	0.41	MAX	-0.06	9		3.95	4	0.00	10	0.00 10
		MIN	-5.88	5		0.09	9	0.00	10	0.00 10
	0.55	MAX	-0.06	9		4.05	4	0.00	10	0.00 10
		MIN	-6.04	5		0.10	9	0.00	10	0.00 10
	0.69	MAX	-0.06	9		4.56	7	0.00	10	0.00 10

		MIN	-6.04	5	0.11	9	0.00	10	0.00	10
	0.83	MAX	-0.06	9	5.20	7	0.00	10	0.00	10
		MIN	-6.04	5	0.12	9	0.00	10	0.00	10
	0.96	MAX	-0.06	9	5.84	7	0.00	10	0.00	10
		MIN	-6.04	5	0.13	9	0.00	10	0.00	10
	1.10	MAX	-0.06	9	6.62	5	0.00	10	0.00	10
		MIN	-6.04	5	0.13	9	0.00	10	0.00	10
	1.24	MAX	-0.06	9	7.45	5	0.00	10	0.00	10
		MIN	-6.04	5	0.14	9	0.00	10	0.00	10
	1.38	MAX	-0.06	9	8.28	5	0.00	10	0.00	10
		MIN	-6.04	5	0.15	9	0.00	10	0.00	10
	1.51	MAX	-0.06	9	9.11	5	0.00	10	0.00	10
		MIN	-6.04	5	0.16	9	0.00	10	0.00	10
	1.65	MAX	-0.06	9	9.94	5	0.00	10	0.00	10
		MIN	-6.04	5	0.17	9	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 16, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	-0.06	0.00	9	9.94	1.65	5				
	0.00	0.00	1	0.00	0.00	1	0.97	C	0.00	1
MIN.	-6.04	1.65	5	-1.64	0.00	8				
	0.00	1.65	10	0.00	1.65	10	0.53	T	1.65	4

17	0.00	MAX	5.58	4	8.81	4	0.00	10	0.00	10
		MIN	0.13	10	0.35	9	0.00	10	0.00	10
	0.14	MAX	5.58	4	8.05	4	0.00	10	0.00	10
		MIN	0.13	10	0.32	9	0.00	10	0.00	10
	0.28	MAX	5.58	4	7.29	2	0.00	10	0.00	10
		MIN	0.13	10	0.29	9	0.00	10	0.00	10
	0.41	MAX	5.58	4	6.54	2	0.00	10	0.00	10
		MIN	0.13	10	0.26	9	0.00	10	0.00	10
	0.55	MAX	5.58	4	5.79	2	0.00	10	0.00	10
		MIN	0.13	10	0.23	9	0.00	10	0.00	10
	0.69	MAX	5.58	4	5.04	2	0.00	10	0.00	10
		MIN	0.13	10	0.21	9	0.00	10	0.00	10
	0.83	MAX	5.58	4	4.73	5	0.00	10	0.00	10
		MIN	0.13	10	0.18	9	0.00	10	0.00	10
	0.96	MAX	5.58	4	4.63	5	0.00	10	0.00	10
		MIN	0.13	10	0.15	9	0.00	10	0.00	10
	1.10	MAX	5.53	4	4.52	5	0.00	10	0.00	10
		MIN	0.13	10	0.12	9	0.00	10	0.00	10
	1.24	MAX	5.34	2	4.42	5	0.00	10	0.00	10
		MIN	0.13	10	0.09	9	0.00	10	0.00	10
	1.38	MAX	5.11	2	4.31	5	0.00	10	0.00	10
		MIN	0.13	10	0.06	9	0.00	10	0.00	10
	1.51	MAX	4.89	2	4.21	5	0.00	10	0.00	10
		MIN	0.13	10	0.03	9	0.00	10	0.00	10
	1.65	MAX	4.66	2	4.10	5	0.00	10	0.00	10
		MIN	0.13	10	-0.11	4	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 17, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	5.58	0.00	4	8.81	0.00	4				

		0.00	0.00	1	0.00	0.00	1	0.42 C	0.00	2
MIN.		0.13	1.65	10	-0.11	1.65	4			
		0.00	1.65	10	0.00	1.65	10	0.32 T	1.65	8
18	0.00	MAX	4.66	2	4.10	5	0.00	10	0.00	10
		MIN	0.13	10	-0.11	4	0.00	10	0.00	10
	0.25	MAX	4.25	2	3.91	5	0.00	10	0.00	10
		MIN	0.13	10	-1.22	4	0.00	10	0.00	10
	0.50	MAX	3.83	2	3.72	5	0.00	10	0.00	10
		MIN	-0.04	9	-2.22	4	0.00	10	0.00	10
	0.75	MAX	3.42	2	3.53	5	0.00	10	0.00	10
		MIN	-0.04	9	-3.11	4	0.00	10	0.00	10
	1.00	MAX	3.00	2	3.34	5	0.00	10	0.00	10
		MIN	-0.04	9	-3.90	4	0.00	10	0.00	10
	1.25	MAX	2.59	2	3.15	5	0.00	10	0.00	10
		MIN	-0.04	9	-4.59	4	0.00	10	0.00	10
	1.50	MAX	2.18	2	2.95	5	0.00	10	0.00	10
		MIN	-0.04	9	-5.18	4	0.00	10	0.00	10
	1.75	MAX	1.76	2	2.76	5	0.00	10	0.00	10
		MIN	-0.04	9	-5.66	4	0.00	10	0.00	10
	2.00	MAX	1.35	2	2.57	5	0.00	10	0.00	10
		MIN	-0.04	9	-6.04	4	0.00	10	0.00	10
	2.25	MAX	0.94	2	2.38	5	0.00	10	0.00	10
		MIN	-0.04	9	-6.31	4	0.00	10	0.00	10
	2.50	MAX	0.77	5	2.19	5	0.00	10	0.00	10
		MIN	-0.04	9	-6.49	2	0.00	10	0.00	10
	2.75	MAX	0.77	5	2.00	5	0.00	10	0.00	10
		MIN	-0.04	9	-6.57	2	0.00	10	0.00	10
	3.00	MAX	0.77	5	1.81	5	0.00	10	0.00	10
		MIN	-0.36	4	-6.54	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 18, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.		4.66	0.00	2	4.10	0.00	5			
		0.00	0.00	1	0.00	0.00	1	0.42 C	0.00	2
MIN.		-0.36	3.00	4	-6.57	2.75	2			
		0.00	3.00	10	0.00	3.00	10	0.32 T	3.00	8
25	0.00	MAX	0.53	4	1.60	9	0.00	10	0.00	10
		MIN	-0.97	1	0.36	1	0.00	10	0.00	10
	0.15	MAX	0.53	4	1.56	9	0.00	10	0.00	10
		MIN	-0.97	1	0.51	1	0.00	10	0.00	10
	0.29	MAX	0.53	4	1.52	9	0.00	10	0.00	10
		MIN	-0.97	1	0.65	1	0.00	10	0.00	10
	0.44	MAX	0.53	4	1.47	9	0.00	10	0.00	10
		MIN	-0.97	1	0.78	8	0.00	10	0.00	10
	0.58	MAX	0.53	4	1.43	9	0.00	10	0.00	10
		MIN	-0.97	1	0.83	8	0.00	10	0.00	10
	0.73	MAX	0.53	4	1.39	9	0.00	10	0.00	10
		MIN	-0.97	1	0.88	8	0.00	10	0.00	10
	0.88	MAX	0.53	4	1.36	6	0.00	10	0.00	10
		MIN	-0.97	1	0.93	8	0.00	10	0.00	10
	1.02	MAX	0.53	4	1.50	6	0.00	10	0.00	10
		MIN	-0.97	1	0.99	8	0.00	10	0.00	10
	1.17	MAX	0.53	4	1.64	6	0.00	10	0.00	10

		MIN	-0.97	1	0.93	2	0.00	10	0.00	10
	1.31	MAX	0.53	4	1.77	6	0.00	10	0.00	10
		MIN	-0.97	1	0.86	2	0.00	10	0.00	10
	1.46	MAX	0.53	4	1.91	6	0.00	10	0.00	10
		MIN	-0.97	1	0.78	2	0.00	10	0.00	10
	1.60	MAX	0.53	4	2.05	6	0.00	10	0.00	10
		MIN	-0.97	1	0.71	2	0.00	10	0.00	10
	1.75	MAX	0.53	4	2.18	6	0.00	10	0.00	10
		MIN	-0.97	1	0.63	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 25, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.53	0.00	4	2.18	1.75	6				
	0.00	0.00	1	0.00	0.00	1	7.21	C	0.00	6
MIN.	-0.97	1.75	1	0.36	0.00	1				
	0.00	1.75	10	0.00	1.75	10	0.74	T	1.75	4

27	0.00	MAX	0.53	4	3.78	6	0.00	10	0.00	10
		MIN	-0.97	1	-0.26	2	0.00	10	0.00	10
	0.14	MAX	0.53	4	3.92	6	0.00	10	0.00	10
		MIN	-0.97	1	-0.34	4	0.00	10	0.00	10
	0.28	MAX	0.53	4	4.05	6	0.00	10	0.00	10
		MIN	-0.97	1	-0.41	4	0.00	10	0.00	10
	0.43	MAX	0.53	4	4.18	6	0.00	10	0.00	10
		MIN	-0.97	1	-0.49	4	0.00	10	0.00	10
	0.57	MAX	0.53	4	4.32	6	0.00	10	0.00	10
		MIN	-0.97	1	-0.56	4	0.00	10	0.00	10
	0.71	MAX	0.53	4	4.45	6	0.00	10	0.00	10
		MIN	-0.97	1	-0.64	4	0.00	10	0.00	10
	0.85	MAX	0.53	4	4.58	6	0.00	10	0.00	10
		MIN	-0.97	1	-0.71	4	0.00	10	0.00	10
	0.99	MAX	0.53	4	4.72	6	0.00	10	0.00	10
		MIN	-0.97	1	-0.79	4	0.00	10	0.00	10
	1.13	MAX	0.53	4	4.85	6	0.00	10	0.00	10
		MIN	-0.97	1	-0.86	4	0.00	10	0.00	10
	1.28	MAX	0.53	4	4.98	6	0.00	10	0.00	10
		MIN	-0.97	1	-0.94	4	0.00	10	0.00	10
	1.42	MAX	0.53	4	5.12	6	0.00	10	0.00	10
		MIN	-0.97	1	-1.01	4	0.00	10	0.00	10
	1.56	MAX	0.53	4	5.25	6	0.00	10	0.00	10
		MIN	-0.97	1	-1.09	4	0.00	10	0.00	10
	1.70	MAX	0.53	4	5.38	6	0.00	10	0.00	10
		MIN	-0.97	1	-1.16	4	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 27, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.53	0.00	4	5.38	1.70	6				
	0.00	0.00	1	0.00	0.00	1	7.21	C	0.00	6
MIN.	-0.97	1.70	1	-1.16	1.70	4				
	0.00	1.70	10	0.00	1.70	10	0.74	T	1.70	4

28	0.00	MAX	0.53	4	5.38	6	0.00	10	0.00	10
		MIN	-0.97	1	-1.16	4	0.00	10	0.00	10
	0.15	MAX	0.53	4	5.52	6	0.00	10	0.00	10
		MIN	-0.97	1	-1.24	4	0.00	10	0.00	10
	0.29	MAX	0.53	4	5.66	6	0.00	10	0.00	10
		MIN	-0.97	1	-1.31	4	0.00	10	0.00	10
	0.44	MAX	0.53	4	5.80	1	0.00	10	0.00	10
		MIN	-0.97	1	-1.39	4	0.00	10	0.00	10
	0.58	MAX	0.53	4	5.94	1	0.00	10	0.00	10
		MIN	-0.97	1	-1.47	4	0.00	10	0.00	10
	0.73	MAX	0.53	4	6.08	1	0.00	10	0.00	10
		MIN	-0.97	1	-1.55	4	0.00	10	0.00	10
	0.87	MAX	0.53	4	6.22	1	0.00	10	0.00	10
		MIN	-0.97	1	-1.62	4	0.00	10	0.00	10
	1.02	MAX	0.53	4	6.36	1	0.00	10	0.00	10
		MIN	-0.97	1	-1.70	4	0.00	10	0.00	10
	1.17	MAX	0.53	4	6.50	1	0.00	10	0.00	10
		MIN	-0.97	1	-1.78	4	0.00	10	0.00	10
	1.31	MAX	0.53	4	6.65	1	0.00	10	0.00	10
		MIN	-0.97	1	-1.85	4	0.00	10	0.00	10
	1.46	MAX	0.53	4	6.79	1	0.00	10	0.00	10
		MIN	-0.97	1	-1.93	4	0.00	10	0.00	10
	1.60	MAX	0.53	4	6.93	1	0.00	10	0.00	10
		MIN	-0.97	1	-2.01	4	0.00	10	0.00	10
	1.75	MAX	0.53	4	7.07	1	0.00	10	0.00	10
		MIN	-0.97	1	-2.09	4	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 28, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.53	0.00	4	7.07	1.75	1			
	0.00	0.00	1	0.00	0.00	1	7.21 C	0.00	6
MIN.	-0.97	1.75	1	-2.09	1.75	4			
	0.00	1.75	10	0.00	1.75	10	0.74 T	1.75	4

29	0.00	MAX	1.06	5	2.73	5	0.00	10	0.00	10
		MIN	-0.94	4	-2.55	2	0.00	10	0.00	10
	0.15	MAX	1.06	5	2.57	5	0.00	10	0.00	10
		MIN	-0.94	4	-2.42	2	0.00	10	0.00	10
	0.29	MAX	1.06	5	2.42	5	0.00	10	0.00	10
		MIN	-0.94	4	-2.28	2	0.00	10	0.00	10
	0.44	MAX	1.06	5	2.26	5	0.00	10	0.00	10
		MIN	-0.94	4	-2.14	2	0.00	10	0.00	10
	0.58	MAX	1.06	5	2.11	5	0.00	10	0.00	10
		MIN	-0.94	4	-2.01	2	0.00	10	0.00	10
	0.73	MAX	1.06	5	1.96	5	0.00	10	0.00	10
		MIN	-0.94	4	-1.87	2	0.00	10	0.00	10
	0.88	MAX	1.06	5	1.80	5	0.00	10	0.00	10
		MIN	-0.94	4	-1.73	2	0.00	10	0.00	10
	1.02	MAX	1.06	5	1.65	5	0.00	10	0.00	10
		MIN	-0.94	4	-1.59	2	0.00	10	0.00	10
	1.17	MAX	1.06	5	1.49	5	0.00	10	0.00	10
		MIN	-0.94	4	-1.46	2	0.00	10	0.00	10
	1.31	MAX	1.06	5	1.34	5	0.00	10	0.00	10
		MIN	-0.94	4	-1.32	2	0.00	10	0.00	10
	1.46	MAX	1.06	5	1.19	5	0.00	10	0.00	10

		MIN	-0.94	4	-1.18	2	0.00	10	0.00	10
	1.60	MAX	1.06	5	1.03	5	0.00	10	0.00	10
		MIN	-0.94	4	-1.04	2	0.00	10	0.00	10
	1.75	MAX	1.06	5	0.88	5	0.00	10	0.00	10
		MIN	-0.94	4	-0.91	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 29, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.		1.06	0.00	5	2.73	0.00	5			
		0.00	0.00	1	0.00	0.00	1	6.81 C	0.00	5
MIN.		-0.94	1.75	4	-2.55	0.00	2			
		0.00	1.75	10	0.00	1.75	10	0.19 C	1.75	10

31	0.00	MAX	1.06	5	0.70	4	0.00	10	0.00	10
		MIN	-0.94	4	-0.92	5	0.00	10	0.00	10
	0.14	MAX	1.06	5	0.83	4	0.00	10	0.00	10
		MIN	-0.94	4	-1.07	5	0.00	10	0.00	10
	0.28	MAX	1.06	5	0.96	4	0.00	10	0.00	10
		MIN	-0.94	4	-1.22	5	0.00	10	0.00	10
	0.43	MAX	1.06	5	1.10	4	0.00	10	0.00	10
		MIN	-0.94	4	-1.37	5	0.00	10	0.00	10
	0.57	MAX	1.06	5	1.23	4	0.00	10	0.00	10
		MIN	-0.94	4	-1.52	5	0.00	10	0.00	10
	0.71	MAX	1.06	5	1.37	4	0.00	10	0.00	10
		MIN	-0.94	4	-1.67	5	0.00	10	0.00	10
	0.85	MAX	1.06	5	1.50	4	0.00	10	0.00	10
		MIN	-0.94	4	-1.82	5	0.00	10	0.00	10
	0.99	MAX	1.06	5	1.63	4	0.00	10	0.00	10
		MIN	-0.94	4	-1.97	5	0.00	10	0.00	10
	1.13	MAX	1.06	5	1.77	4	0.00	10	0.00	10
		MIN	-0.94	4	-2.12	5	0.00	10	0.00	10
	1.28	MAX	1.06	5	1.90	4	0.00	10	0.00	10
		MIN	-0.94	4	-2.27	5	0.00	10	0.00	10
	1.42	MAX	1.06	5	2.03	4	0.00	10	0.00	10
		MIN	-0.94	4	-2.42	5	0.00	10	0.00	10
	1.56	MAX	1.06	5	2.17	4	0.00	10	0.00	10
		MIN	-0.94	4	-2.57	5	0.00	10	0.00	10
	1.70	MAX	1.06	5	2.30	4	0.00	10	0.00	10
		MIN	-0.94	4	-2.72	5	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 31, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.		1.06	0.00	5	2.30	1.70	4			
		0.00	0.00	1	0.00	0.00	1	6.81 C	0.00	5
MIN.		-0.94	1.70	4	-2.72	1.70	5			
		0.00	1.70	10	0.00	1.70	10	0.19 C	1.70	10

32	0.00	MAX	1.06	5	2.30	4	0.00	10	0.00	10
		MIN	-0.94	4	-2.72	5	0.00	10	0.00	10
	0.15	MAX	1.06	5	2.44	4	0.00	10	0.00	10
		MIN	-0.94	4	-2.88	5	0.00	10	0.00	10
	0.29	MAX	1.06	5	2.58	4	0.00	10	0.00	10
		MIN	-0.94	4	-3.03	5	0.00	10	0.00	10

0.44	MAX	1.06	5	2.71	4	0.00	10	0.00	10
	MIN	-0.94	4	-3.19	5	0.00	10	0.00	10
0.58	MAX	1.06	5	2.85	4	0.00	10	0.00	10
	MIN	-0.94	4	-3.34	5	0.00	10	0.00	10
0.73	MAX	1.06	5	2.99	4	0.00	10	0.00	10
	MIN	-0.94	4	-3.49	5	0.00	10	0.00	10
0.87	MAX	1.06	5	3.13	4	0.00	10	0.00	10
	MIN	-0.94	4	-3.65	5	0.00	10	0.00	10
1.02	MAX	1.06	5	3.26	4	0.00	10	0.00	10
	MIN	-0.94	4	-3.80	5	0.00	10	0.00	10
1.17	MAX	1.06	5	3.40	4	0.00	10	0.00	10
	MIN	-0.94	4	-3.96	5	0.00	10	0.00	10
1.31	MAX	1.06	5	3.54	4	0.00	10	0.00	10
	MIN	-0.94	4	-4.11	5	0.00	10	0.00	10
1.46	MAX	1.06	5	3.67	4	0.00	10	0.00	10
	MIN	-0.94	4	-4.26	5	0.00	10	0.00	10
1.60	MAX	1.06	5	3.81	4	0.00	10	0.00	10
	MIN	-0.94	4	-4.42	5	0.00	10	0.00	10
1.75	MAX	1.06	5	3.95	4	0.00	10	0.00	10
	MIN	-0.94	4	-4.57	5	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 32, AMONGST ALL SECT LOCATIONS

	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	1.06	0.00	5	3.95	1.75	4			
	0.00	0.00	1	0.00	0.00	1	6.81 C	0.00	5
MIN.	-0.94	1.75	4	-4.57	1.75	5			
	0.00	1.75	10	0.00	1.75	10	0.19 C	1.75	10

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

172. FINISH

********** END OF THE STAAD.Pro RUN **********

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INPUT FILE: wheel.STD
     1. STAAD PLANE
     2. START JOB INFORMATION
     3. ENGINEER DATE 25-DEC-06
     4. END JOB INFORMATION
     5. INPUT WIDTH 79
     6. PAGE LENGTH 1000
     7. UNIT METER MTON
     8. JOINT COORDINATES
     9. 1        0.000       0.000       0.000
    10. 2        1.750       0.000       0.000
    11. 3        4.700       0.000       0.000
    12. 4        7.750       0.000       0.000
    13. 5        9.400       0.000       0.000
    14. 6       11.050       0.000       0.000
    15. 7       14.050       0.000       0.000
    16. 8       17.050       0.000       0.000
    17. 9       18.700       0.000       0.000
    18. 10      20.350       0.000       0.000
    19. 11      23.400       0.000       0.000
    20. 12      26.350       0.000       0.000
    21. 13      28.100       0.000       0.000
    22. 14       0.000       6.904       0.000
    23. 15       1.750       6.904       0.000
    24. 16       4.700       6.904       0.000
    25. 17       7.750       6.904       0.000
    26. 18       9.400       6.904       0.000
    27. 19      11.050       6.904       0.000
    28. 20      14.050       6.904       0.000
    29. 21      17.050       6.904       0.000
    30. 22      18.700       6.904       0.000
    31. 23      20.350       6.904       0.000
    32. 24      23.400       6.904       0.000
    33. 25      26.350       6.904       0.000
    34. 26      28.100       6.904       0.000
    35. 27       0.000       1.750       0.000
    36. 28       0.000       3.452       0.000
    37. 29       0.000       5.154       0.000
    38. 30       9.400       1.750       0.000
    39. 31       9.400       3.452       0.000
    40. 32       9.400       5.154       0.000
    41. 33      18.700       1.750       0.000
    42. 34      18.700       3.452       0.000
    43. 35      18.700       5.154       0.000
    44. 36      28.100       1.750       0.000
    45. 37      28.100       3.452       0.000
    46. 38      28.100       5.154       0.000
    49. MEMBER INCIDENCES
    50. 1         1         2
    51. 2         2         3
    52. 3         3         4
    53. 4         4         5
    54. 5         5         6
    55. 6         6         7
    56. 7         7         8
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 57. 8         8         9
 58. 9         9        10
 59. 10        10        11
 60. 11        11        12
 61. 12        12        13
 62. 13        14        15
 63. 14        15        16
 64. 15        16        17
 65. 16        17        18
 66. 17        18        19
 67. 18        19        20
 68. 19        20        21
 69. 20        21        22
 70. 21        22        23
 71. 22        23        24
 72. 23        24        25
 73. 24        25        26
 74. 25         1        27
 75. 26        27        28
 76. 27        28        29
 77. 28        29        14
 78. 29         5        30
 79. 30        30        31
 80. 31        31        32
 81. 32        32        18
 82. 33         9        33
 83. 34        33        34
 84. 35        34        35
 85. 36        35        22
 86. 37        13        36
 87. 38        36        37
 88. 39        37        38
 89. 40        38        26
 90. MEMBER PROPERTY INDIAN
 91. 2 3 6 7 10 11 14 15 18 19 22 23 26 27 38 39 PRI YD .5 ZD 1.
 92. 30 31 34 35 PRI YD .3 ZD 1.
 93. 1 4 5 8 9 12 13 16 17 20 21 24 25 28 37 40 PRI AX .625 IZ .0203 YD .625
 94. 29 32 33 36 PRI AX .425 IZ .0354 YD .425
 95. CONSTANT
 96. E 3E6 ALL
 97. DENSITY 2.4 ALL
 98. ALPHA .0000117 ALL
 99. SUPPORT
100. 5 PINNED
101. 1 9 13 FIXED BUT FX MZ
102. *******************************************************
103. LOAD 1 FOR MAX BM (HOGGING) AT END WEB
104. MEMBER LOAD
105. 13 UNI GY -2.026 0.9325 1.75
106. 14 UNI GY -2.026 0.0 0.558
107. 14 UNI GY -1.768 0.5525 1.9275
108. 15 UNI GY -1.732 0.6525  2.0275
109. 15 UNI GY -1.925 2.0225  3.05
110. 16 UNI GY -1.925 0.0     0.348
111. *UPWARD BASE PRESSURE
112. 1 TO 12 UNI GY 0.365
113. LOAD 2 FOR MAX BM (HOGGING) IN MID SAPN OF OUTER CELL
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MEMBER LOAD
17 UNI GY -2.473 0.3025  1.65
18 UNI GY -2.473 0.0     0.027
18 UNI GY -1.856 0.0225  1.3975
19 UNI GY -1.697 0.0725  1.4475
19 UNI GY -1.830 1.4425  2.8175
20 UNI GY -2.387 0.5725  1.65
21 UNI GY -2.387 0.0000  0.297
21 UNI GY -1.659 0.4425  1.65
22 UNI GY -1.659 0.0     0.167
22 UNI GY -0.792 2.7525  3.05
23 UNI GY -0.792 0.0     1.078
*UPWARD BASE PRESSURE
1 TO 12 UNI GY 0.621
LOAD 3 FOR MAX BM (HOGGING) AT END OF HAUNCH 2
MEMBER LOAD
14 UNI GY -1.278 0.2125   1.5875
14 UNI GY -1.190 1.7325   2.95
15 UNI GY -1.190 0.0000   0.158
15 UNI GY -2.949 1.1905   2.0095
15 UNI GY -3.331 2.5605   3.050
16 UNI GY -3.331 0.0000   0.329
17 UNI GY -3.705 0.9105   1.65
18 UNI GY -3.705 0.0000   0.080
18 UNI GY -3.031 0.6305   1.4495
*UPWARD BASE PRESSURE
1 TO 12 UNI GY 0.500
LOAD 4 FOR MAX BM (HOGGING) AT START OF HAUNCH 9
MEMBER LOAD
15 UNI GY -1.790 1.1025  2.4775
15 UNI GY -2.070 2.4775  3.05
16 UNI GY -2.070 0.0     0.797
17 UNI GY -2.087 0.8225  1.65
18 UNI GY -2.087 0.0     0.547
18 UNI GY -1.781 0.5425  1.9175
18 UNI GY -1.188 2.6725  3.0000
19 UNI GY -1.188 0.0     1.048
19 UNI GY -1.267 1.1925  2.5675
21 UNI GY -1.083 0.5025  1.65
22 UNI GY -1.083 0.00    0.227
*UPWARD BASE PRESSURE
1 TO 12 UNI GY 0.551
LOAD 5 FOR MAX BM (HOGGING) AT MID SPAN OF MIDDLE CELL
MEMBER LOAD
13 UNI GY -2.803 0.0      1.375
13 UNI GY -1.849 1.7125   1.75
14 UNI GY -1.704 1.3325   2.7075
15 UNI GY -1.821 1.4325   2.8075
15 UNI GY -2.286 2.8025   3.05
16 UNI GY -2.286 0.0      1.128
*UPWARD BASE PRESSURE
1 TO 12 UNI GY 0.512
*****************************************************************
LOAD 6 FOR MAX BM (SAGGING) AT END OF HAUNCH 1
MEMBER LOAD
13 UNI GY -1.979 1.0625 1.75
14 UNI GY -1.979 0.0    0.688
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171. 14 UNI GY -1.754 0.6825 2.0575
172. *UPWARD BASE PRESSURE
173. 1 TO 12 UNI GY 0.183
174. LOAD 7 FOR MAX BM (SAGGING) IN MID SAPN OF OUTER CELL
175. MEMBER LOAD
176. 13 UNI GY -1.63 0.4925   1.75
177. 14 UNI GY -1.63 0.0      0.118
178. 14 UNI GY -1.736 0.8725  2.2475
179. 14 UNI GY -1.678 2.2425  2.95
180. 15 UNI GY -1.678 0.0000  0.668
181. 15 UNI GY -2.000 2.3425  3.05
182. 16 UNI GY -2.000 0.0000  0.668
183. 16 UNI GY -3.802 0.6625  1.65
184. 17 UNI GY -3.802 0.0000  0.387
185. *UPWARD BASE PRESSURE
186. 1 TO 12 UNI GY 0.531
187. LOAD 8 FOR MAX BM (SAGGING) AT START OF HAUNCH 2
188. MEMBER LOAD
189. 20 UNI GY -4.922 1.1025 1.65
190. 21 UNI GY -4.922 0.0000 0.828
191. 21 UNI GY -2.096 0.8225 1.65
192. 22 UNI GY -2.096 0.0000 0.547
193. 22 UNI GY -1.678 2.2225 3.05
194. 23 UNI GY -1.678 0.0000 0.548
195. 23 UNI GY -1.723 0.5425 1.9175
196. 23 UNI GY -1.548 2.6725 2.95
197. 24 UNI GY -1.548 0.0000 1.098
198. *UPWARD BASE PRESSURE
199. 1 TO 12 UNI GY 0.586
200. LOAD 9 FOR MAX BM (SAGGING) AT END OF HAUNCH 9
201. MEMBER LOAD
202. 17 UNI GY -2.016 0.9525 1.65
203. 18 UNI GY -2.016 0.0    0.677
204. 18 UNI GY -1.766 0.6725 2.0475
205. 19 UNI GY -1.743 0.7225 2.0975
206. 19 UNI GY -1.951 2.0925 3.000
207. 20 UNI GY -1.951 0.0000 0.467
208. 20 UNI GY -2.845 1.2225 1.65
209. 21 UNI GY -2.845 0.0    0.948
210. 21 UNI GY -1.396 1.0925 1.65
211. 22 UNI GY -1.396 0.0    0.817
212. 23 UNI GY -0.813 0.3525 1.7275
213. *UPWARD BASE PRESSURE
214. 1 TO 12 UNI GY 0.613
215. LOAD 10 FOR MAX BM (SAGGING) IN MID SAPN OF INNER CELL
216. MEMBER LOAD
217. 16 UNI GY -4.354 1.1725 1.65
218. 17 UNI GY -4.354 0.0    0.897
219. 17 UNI GY -2.048 0.8925 1.65
220. 18 UNI GY -2.048 0.0    0.618
221. 18 UNI GY -1.678 2.2925 3.000
222. 19 UNI GY -1.678 0.0    0.667
223. 19 UNI GY -1.737 0.6625 2.0375
224. 19 UNI GY -1.636 2.7925 3.0000
225. 20 UNI GY -1.636 0.0    1.168
226. 20 UNI GY -2.510 1.3125 1.65
227. 21 UNI GY -2.510 0.00   1.038
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   228. 22 UNI GY -0.792 1.9725 3.05
   229. 23 UNI GY -0.792 0.0000 0.298
   230. *UPWARD BASE PRESSURE
   231. 1 TO 12 UNI GY 0.722
   232. PERFORM ANALYSIS
   233. PRINT FORCE ENVELOPE LIST 1 2 3 4 5 6 13 14 15 16 17 18 25 27 28 29 31
32

        FORCE    ENVELOPE LIST     1

   MEMB  DISTANCE          FY    LD       MZ    LD       FZ    LD       MY    LD
     1      0.00  MAX     -0.73     6     -0.21     6     0.00    10     0.00    10
                  MIN     -2.91    10     -3.34    10     0.00    10     0.00    10
           0.15  MAX     -0.71     6     -0.11     6     0.00    10     0.00    10
                  MIN     -2.81    10     -2.92    10     0.00    10     0.00    10
           0.29  MAX     -0.68     6     -0.01     6     0.00    10     0.00    10
                  MIN     -2.70    10     -2.52    10     0.00    10     0.00    10
           0.44  MAX     -0.65     6      0.09     6     0.00    10     0.00    10
                  MIN     -2.60    10     -2.13    10     0.00    10     0.00    10
           0.58  MAX     -0.63     6      0.19     6     0.00    10     0.00    10
                  MIN     -2.49    10     -1.76    10     0.00    10     0.00    10
           0.73  MAX     -0.60     6      0.36     1     0.00    10     0.00    10
                  MIN     -2.39    10     -1.40    10     0.00    10     0.00    10
           0.88  MAX     -0.57     6      0.54     1     0.00    10     0.00    10
                  MIN     -2.28    10     -1.06    10     0.00    10     0.00    10
           1.02  MAX     -0.55     6      0.71     1     0.00    10     0.00    10
                  MIN     -2.18    10     -0.74    10     0.00    10     0.00    10
           1.17  MAX     -0.52     6      0.87     1     0.00    10     0.00    10
                  MIN     -2.07    10     -0.43    10     0.00    10     0.00    10
           1.31  MAX     -0.49     6      1.03     1     0.00    10     0.00    10
                  MIN     -1.97    10     -0.14     2     0.00    10     0.00    10
           1.46  MAX     -0.47     6      1.22     7     0.00    10     0.00    10
                  MIN     -1.86    10      0.09     2     0.00    10     0.00    10
           1.60  MAX     -0.44     6      1.43     7     0.00    10     0.00    10
                  MIN     -1.75    10      0.32     2     0.00    10     0.00    10
           1.75  MAX     -0.41     6      1.62     7     0.00    10     0.00    10
                  MIN     -1.65    10      0.53     2     0.00    10     0.00    10
   |-------------------------------------------------------------------------------
   | MAX/MIN FORCE VALUES FOR MEMB      1, AMONGST ALL SECT LOCATIONS
   |              FY/   DIST   LD        MZ/   DIST   LD
   |              FZ    DIST   LD        MY    DIST   LD       FX      DIST   LD
   |
   | MAX.       -0.41   1.75    6       1.62   1.75    7
   |             0.00   0.00    1       0.00   0.00    1      0.78 C   0.00   10
   | MIN.       -2.91   0.00   10      -3.34   0.00   10
   |             0.00   1.75   10       0.00   1.75   10      0.80 T   1.75    1
   |-------------------------------------------------------------------------------
     2      0.00  MAX     -0.41     6      1.62     7     0.00    10     0.00    10
                  MIN     -1.65    10      0.53     2     0.00    10     0.00    10
           0.25  MAX     -0.37     6      1.92     7     0.00    10     0.00    10
                  MIN     -1.47    10      0.85     9     0.00    10     0.00    10
           0.49  MAX     -0.32     6      2.19     7     0.00    10     0.00    10
                  MIN     -1.29    10      0.97     6     0.00    10     0.00    10
           0.74  MAX     -0.28     6      2.42     7     0.00    10     0.00    10
                  MIN     -1.12    10      1.05     6     0.00    10     0.00    10
           0.98  MAX     -0.23     6      2.62     7     0.00    10     0.00    10
                  MIN     -0.94    10      1.11     6     0.00    10     0.00    10
           1.23  MAX     -0.19     6      2.79     7     0.00    10     0.00    10
```

		MIN	-0.76	10	1.16	6	0.00	10	0.00	10
	1.47	MAX	-0.14	6	2.93	7	0.00	10	0.00	10
		MIN	-0.60	8	1.20	6	0.00	10	0.00	10
	1.72	MAX	-0.10	6	3.04	7	0.00	10	0.00	10
		MIN	-0.45	8	1.23	6	0.00	10	0.00	10
	1.97	MAX	-0.05	6	3.11	7	0.00	10	0.00	10
		MIN	-0.31	8	1.25	6	0.00	10	0.00	10
	2.21	MAX	-0.01	6	3.16	7	0.00	10	0.00	10
		MIN	-0.16	8	1.26	6	0.00	10	0.00	10
	2.46	MAX	0.13	2	3.17	7	0.00	10	0.00	10
		MIN	-0.02	8	1.25	6	0.00	10	0.00	10
	2.70	MAX	0.30	10	3.14	7	0.00	10	0.00	10
		MIN	0.08	6	1.24	6	0.00	10	0.00	10
	2.95	MAX	0.48	10	3.09	7	0.00	10	0.00	10
		MIN	0.13	6	1.21	6	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 2, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.48	2.95	10	3.17	2.46	7				
	0.00	0.00	1	0.00	0.00	1	0.78	C	0.00	10
MIN.	-1.65	0.00	10	0.53	0.00	2				
	0.00	2.95	10	0.00	2.95	10	0.80	T	2.95	1

3	0.00	MAX	0.48	10	3.09	7	0.00	10	0.00	10
		MIN	0.13	6	1.21	6	0.00	10	0.00	10
	0.25	MAX	0.66	10	3.00	7	0.00	10	0.00	10
		MIN	0.17	6	1.17	6	0.00	10	0.00	10
	0.51	MAX	0.85	10	2.88	7	0.00	10	0.00	10
		MIN	0.22	6	1.12	6	0.00	10	0.00	10
	0.76	MAX	1.03	10	2.72	7	0.00	10	0.00	10
		MIN	0.27	6	1.06	6	0.00	10	0.00	10
	1.02	MAX	1.21	10	2.53	7	0.00	10	0.00	10
		MIN	0.31	6	0.99	6	0.00	10	0.00	10
	1.27	MAX	1.40	10	2.30	7	0.00	10	0.00	10
		MIN	0.36	6	0.90	2	0.00	10	0.00	10
	1.52	MAX	1.58	10	2.04	7	0.00	10	0.00	10
		MIN	0.41	6	0.57	2	0.00	10	0.00	10
	1.78	MAX	1.76	10	1.74	7	0.00	10	0.00	10
		MIN	0.45	6	0.20	2	0.00	10	0.00	10
	2.03	MAX	1.95	10	1.41	7	0.00	10	0.00	10
		MIN	0.50	6	-0.21	2	0.00	10	0.00	10
	2.29	MAX	2.13	10	1.05	7	0.00	10	0.00	10
		MIN	0.55	6	-0.66	2	0.00	10	0.00	10
	2.54	MAX	2.32	10	0.71	1	0.00	10	0.00	10
		MIN	0.59	6	-1.17	10	0.00	10	0.00	10
	2.80	MAX	2.50	10	0.41	1	0.00	10	0.00	10
		MIN	0.64	6	-1.78	10	0.00	10	0.00	10
	3.05	MAX	2.68	10	0.09	1	0.00	10	0.00	10
		MIN	0.69	6	-2.44	10	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 3, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	2.68	3.05	10	3.09	0.00	7				

			0.00	0.00	1	0.00	0.00	1	0.78 C	0.00	10
		MIN.	0.13	0.00	6	-2.44	3.05	10			
			0.00	3.05	10	0.00	3.05	10	0.80 T	3.05	1
4	0.00	MAX	2.68	10	0.09	1	0.00	10	0.00	10	
		MIN	0.69	6	-2.44	10	0.00	10	0.00	10	
	0.14	MAX	2.78	10	-0.10	1	0.00	10	0.00	10	
		MIN	0.71	6	-2.82	10	0.00	10	0.00	10	
	0.28	MAX	2.88	10	-0.22	6	0.00	10	0.00	10	
		MIN	0.74	6	-3.21	10	0.00	10	0.00	10	
	0.41	MAX	2.98	10	-0.32	6	0.00	10	0.00	10	
		MIN	0.76	6	-3.61	10	0.00	10	0.00	10	
	0.55	MAX	3.08	10	-0.43	6	0.00	10	0.00	10	
		MIN	0.79	6	-4.03	10	0.00	10	0.00	10	
	0.69	MAX	3.18	10	-0.54	6	0.00	10	0.00	10	
		MIN	0.81	6	-4.46	10	0.00	10	0.00	10	
	0.83	MAX	3.28	10	-0.65	6	0.00	10	0.00	10	
		MIN	0.84	6	-4.90	10	0.00	10	0.00	10	
	0.96	MAX	3.38	10	-0.77	6	0.00	10	0.00	10	
		MIN	0.86	6	-5.36	10	0.00	10	0.00	10	
	1.10	MAX	3.48	10	-0.89	6	0.00	10	0.00	10	
		MIN	0.89	6	-5.83	10	0.00	10	0.00	10	
	1.24	MAX	3.58	10	-1.01	6	0.00	10	0.00	10	
		MIN	0.91	6	-6.31	10	0.00	10	0.00	10	
	1.38	MAX	3.68	10	-1.14	6	0.00	10	0.00	10	
		MIN	0.94	6	-6.81	10	0.00	10	0.00	10	
	1.51	MAX	3.77	10	-1.27	6	0.00	10	0.00	10	
		MIN	0.96	6	-7.33	10	0.00	10	0.00	10	
	1.65	MAX	3.87	10	-1.41	6	0.00	10	0.00	10	
		MIN	0.99	6	-7.85	10	0.00	10	0.00	10	

MAX/MIN FORCE VALUES FOR MEMB 4, AMONGST ALL SECT LOCATIONS											
			FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
		MAX.	3.87	1.65	10	0.09	0.00	1			
			0.00	0.00	1	0.00	0.00	1	0.78 C	0.00	10
		MIN.	0.69	0.00	6	-7.85	1.65	10			
			0.00	1.65	10	0.00	1.65	10	0.80 T	1.65	1
5	0.00	MAX	-1.00	6	-2.51	6	0.00	10	0.00	10	
		MIN	-3.31	10	-6.37	7	0.00	10	0.00	10	
	0.14	MAX	-0.97	6	-2.37	6	0.00	10	0.00	10	
		MIN	-3.21	10	-6.00	7	0.00	10	0.00	10	
	0.28	MAX	-0.95	6	-2.24	6	0.00	10	0.00	10	
		MIN	-3.11	10	-5.64	7	0.00	10	0.00	10	
	0.41	MAX	-0.92	6	-2.11	6	0.00	10	0.00	10	
		MIN	-3.01	10	-5.29	7	0.00	10	0.00	10	
	0.55	MAX	-0.90	6	-1.98	6	0.00	10	0.00	10	
		MIN	-2.91	10	-4.95	7	0.00	10	0.00	10	
	0.69	MAX	-0.87	6	-1.86	6	0.00	10	0.00	10	
		MIN	-2.81	10	-4.62	7	0.00	10	0.00	10	
	0.83	MAX	-0.85	6	-1.74	6	0.00	10	0.00	10	
		MIN	-2.71	10	-4.30	7	0.00	10	0.00	10	
	0.96	MAX	-0.82	6	-1.63	6	0.00	10	0.00	10	
		MIN	-2.62	10	-3.99	7	0.00	10	0.00	10	
	1.10	MAX	-0.80	6	-1.52	6	0.00	10	0.00	10	

		MIN	-2.52	10	-3.69	7	0.00	10	0.00	10
	1.24	MAX	-0.77	6	-1.35	9	0.00	10	0.00	10
		MIN	-2.42	10	-3.40	7	0.00	10	0.00	10
	1.38	MAX	-0.75	6	-1.08	2	0.00	10	0.00	10
		MIN	-2.32	10	-3.12	7	0.00	10	0.00	10
	1.51	MAX	-0.72	6	-0.82	2	0.00	10	0.00	10
		MIN	-2.22	10	-2.85	7	0.00	10	0.00	10
	1.65	MAX	-0.70	6	-0.56	2	0.00	10	0.00	10
		MIN	-2.12	10	-2.59	7	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 5, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	-0.70	1.65	6	-0.56	1.65	2				
	0.00	0.00	1	0.00	0.00	1	0.31	C	0.00	5
MIN.	-3.31	0.00	10	-6.37	0.00	7				
	0.00	1.65	10	0.00	1.65	10	0.18	T	1.65	2

6	0.00	MAX	-0.70	6	-0.56	2	0.00	10	0.00	10
		MIN	-2.12	10	-2.59	7	0.00	10	0.00	10
	0.25	MAX	-0.65	6	-0.13	2	0.00	10	0.00	10
		MIN	-1.94	10	-2.15	7	0.00	10	0.00	10
	0.50	MAX	-0.60	6	0.26	2	0.00	10	0.00	10
		MIN	-1.76	10	-1.73	7	0.00	10	0.00	10
	0.75	MAX	-0.56	6	0.61	2	0.00	10	0.00	10
		MIN	-1.58	10	-1.35	7	0.00	10	0.00	10
	1.00	MAX	-0.51	6	0.92	2	0.00	10	0.00	10
		MIN	-1.40	10	-1.04	1	0.00	10	0.00	10
	1.25	MAX	-0.47	6	1.23	10	0.00	10	0.00	10
		MIN	-1.22	10	-0.80	1	0.00	10	0.00	10
	1.50	MAX	-0.42	6	1.51	10	0.00	10	0.00	10
		MIN	-1.06	7	-0.59	1	0.00	10	0.00	10
	1.75	MAX	-0.38	6	1.75	10	0.00	10	0.00	10
		MIN	-0.92	7	-0.40	1	0.00	10	0.00	10
	2.00	MAX	-0.33	6	1.94	10	0.00	10	0.00	10
		MIN	-0.79	7	-0.23	1	0.00	10	0.00	10
	2.25	MAX	-0.18	8	2.09	10	0.00	10	0.00	10
		MIN	-0.66	7	-0.08	1	0.00	10	0.00	10
	2.50	MAX	-0.04	8	2.19	10	0.00	10	0.00	10
		MIN	-0.53	7	0.04	1	0.00	10	0.00	10
	2.75	MAX	0.11	8	2.25	10	0.00	10	0.00	10
		MIN	-0.39	7	0.11	6	0.00	10	0.00	10
	3.00	MAX	0.26	8	2.26	10	0.00	10	0.00	10
		MIN	-0.26	7	0.16	6	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 6, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.26	3.00	8	2.26	3.00	10				
	0.00	0.00	1	0.00	0.00	1	0.31	C	0.00	5
MIN.	-2.12	0.00	10	-2.59	0.00	7				
	0.00	3.00	10	0.00	3.00	10	0.18	T	3.00	2

13	0.00	MAX	5.82	5	6.19	1	0.00	10	0.00	10
		MIN	-0.66	2	-2.08	2	0.00	10	0.00	10
	0.15	MAX	5.41	5	5.44	1	0.00	10	0.00	10
		MIN	-0.66	2	-1.99	10	0.00	10	0.00	10
	0.29	MAX	5.15	1	4.69	1	0.00	10	0.00	10
		MIN	-0.66	2	-1.90	10	0.00	10	0.00	10
	0.44	MAX	5.15	1	3.94	1	0.00	10	0.00	10
		MIN	-0.66	2	-1.80	10	0.00	10	0.00	10
	0.58	MAX	5.15	1	3.19	1	0.00	10	0.00	10
		MIN	-0.66	2	-1.71	10	0.00	10	0.00	10
	0.73	MAX	5.15	1	2.44	1	0.00	10	0.00	10
		MIN	-0.66	2	-1.62	10	0.00	10	0.00	10
	0.88	MAX	5.15	1	1.69	1	0.00	10	0.00	10
		MIN	-0.66	2	-1.53	10	0.00	10	0.00	10
	1.02	MAX	4.97	1	1.04	3	0.00	10	0.00	10
		MIN	-0.66	2	-1.44	10	0.00	10	0.00	10
	1.17	MAX	4.67	1	0.64	3	0.00	10	0.00	10
		MIN	-0.66	2	-1.34	10	0.00	10	0.00	10
	1.31	MAX	4.38	1	0.24	3	0.00	10	0.00	10
		MIN	-0.66	2	-1.25	10	0.00	10	0.00	10
	1.46	MAX	4.08	1	-0.16	3	0.00	10	0.00	10
		MIN	-0.66	2	-1.66	6	0.00	10	0.00	10
	1.60	MAX	3.79	1	-0.23	8	0.00	10	0.00	10
		MIN	-0.66	2	-2.09	6	0.00	10	0.00	10
	1.75	MAX	3.49	1	-0.25	8	0.00	10	0.00	10
		MIN	-0.66	2	-2.48	6	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 13, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	5.82	0.00	5	6.19	0.00	1			
	0.00	0.00	1	0.00	0.00	1	0.80 C	0.00	1
MIN.	-0.66	1.75	2	-2.48	1.75	6			
	0.00	1.75	10	0.00	1.75	10	0.78 T	1.75	10

14	0.00	MAX	3.49	1	-0.25	8	0.00	10	0.00	10
		MIN	-0.66	2	-2.48	6	0.00	10	0.00	10
	0.25	MAX	3.00	1	-0.28	8	0.00	10	0.00	10
		MIN	-0.66	2	-3.05	6	0.00	10	0.00	10
	0.49	MAX	2.82	7	-0.31	8	0.00	10	0.00	10
		MIN	-0.66	2	-3.62	1	0.00	10	0.00	10
	0.74	MAX	2.82	7	-0.34	8	0.00	10	0.00	10
		MIN	-0.66	2	-4.17	1	0.00	10	0.00	10
	0.98	MAX	2.63	7	-0.28	2	0.00	10	0.00	10
		MIN	-0.66	2	-4.62	1	0.00	10	0.00	10
	1.23	MAX	2.20	7	-0.12	2	0.00	10	0.00	10
		MIN	-0.66	2	-4.98	7	0.00	10	0.00	10
	1.47	MAX	1.77	7	0.04	2	0.00	10	0.00	10
		MIN	-0.66	2	-5.47	7	0.00	10	0.00	10
	1.72	MAX	1.35	7	0.20	2	0.00	10	0.00	10
		MIN	-0.66	2	-5.86	7	0.00	10	0.00	10
	1.97	MAX	0.92	7	0.37	2	0.00	10	0.00	10
		MIN	-1.07	6	-6.14	7	0.00	10	0.00	10
	2.21	MAX	0.49	7	0.53	2	0.00	10	0.00	10
		MIN	-1.23	6	-6.31	7	0.00	10	0.00	10
	2.46	MAX	0.28	4	0.69	2	0.00	10	0.00	10

		MIN	-1.23	6	-6.38	7	0.00	10	0.00	10
	2.70	MAX	0.28	4	0.85	2	0.00	10	0.00	10
		MIN	-1.23	6	-6.35	7	0.00	10	0.00	10
	2.95	MAX	0.28	4	1.01	2	0.00	10	0.00	10
		MIN	-1.23	6	-6.21	7	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 14, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.		3.49	0.00	1	1.01	2.95	2			
		0.00	0.00	1	0.00	0.00	1	0.80 C	0.00	1
MIN.		-1.23	2.95	6	-6.38	2.46	7			
		0.00	2.95	10	0.00	2.95	10	0.78 T	2.95	10

15	0.00	MAX	0.28	4	1.01	2	0.00	10	0.00	10
		MIN	-1.23	6	-6.21	7	0.00	10	0.00	10
	0.25	MAX	0.28	4	1.18	2	0.00	10	0.00	10
		MIN	-1.23	6	-5.97	7	0.00	10	0.00	10
	0.51	MAX	0.28	4	1.35	2	0.00	10	0.00	10
		MIN	-1.61	7	-5.61	7	0.00	10	0.00	10
	0.76	MAX	0.28	4	1.52	2	0.00	10	0.00	10
		MIN	-1.87	7	-5.21	1	0.00	10	0.00	10
	1.02	MAX	0.28	4	1.68	2	0.00	10	0.00	10
		MIN	-1.87	7	-5.09	1	0.00	10	0.00	10
	1.27	MAX	0.12	8	1.85	2	0.00	10	0.00	10
		MIN	-1.87	7	-4.85	1	0.00	10	0.00	10
	1.52	MAX	0.12	8	2.02	2	0.00	10	0.00	10
		MIN	-1.87	7	-4.51	1	0.00	10	0.00	10
	1.78	MAX	0.12	8	2.19	2	0.00	10	0.00	10
		MIN	-2.40	3	-4.05	1	0.00	10	0.00	10
	2.03	MAX	0.12	8	2.35	2	0.00	10	0.00	10
		MIN	-3.08	3	-3.48	1	0.00	10	0.00	10
	2.29	MAX	0.12	8	2.52	2	0.00	10	0.00	10
		MIN	-3.08	3	-3.02	5	0.00	10	0.00	10
	2.54	MAX	0.12	8	2.69	2	0.00	10	0.00	10
		MIN	-3.45	1	-2.45	5	0.00	10	0.00	10
	2.80	MAX	0.12	8	2.86	2	0.00	10	0.00	10
		MIN	-3.94	1	-1.76	5	0.00	10	0.00	10
	3.05	MAX	0.12	8	3.02	2	0.00	10	0.00	10
		MIN	-4.71	3	-0.99	8	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 15, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.		0.28	0.00	4	3.02	3.05	2			
		0.00	0.00	1	0.00	0.00	1	0.80 C	0.00	1
MIN.		-4.71	3.05	3	-6.21	0.00	7			
		0.00	3.05	10	0.00	3.05	10	0.78 T	3.05	10

16	0.00	MAX	0.12	8	3.02	2	0.00	10	0.00	10
		MIN	-4.71	3	-0.99	8	0.00	10	0.00	10
	0.14	MAX	0.12	8	3.11	2	0.00	10	0.00	10
		MIN	-5.17	3	-1.01	8	0.00	10	0.00	10
	0.28	MAX	0.12	8	3.20	2	0.00	10	0.00	10
		MIN	-5.62	3	-1.03	8	0.00	10	0.00	10

	0.41	MAX	0.12	8	3.58	3	0.00	10	0.00	10
		MIN	-5.80	3	-1.04	8	0.00	10	0.00	10
	0.55	MAX	0.12	8	4.38	3	0.00	10	0.00	10
		MIN	-5.80	3	-1.06	8	0.00	10	0.00	10
	0.69	MAX	0.12	8	5.18	3	0.00	10	0.00	10
		MIN	-5.80	3	-1.08	8	0.00	10	0.00	10
	0.83	MAX	0.12	8	5.98	3	0.00	10	0.00	10
		MIN	-5.80	3	-1.10	8	0.00	10	0.00	10
	0.96	MAX	0.12	8	6.78	3	0.00	10	0.00	10
		MIN	-5.80	3	-1.11	8	0.00	10	0.00	10
	1.10	MAX	0.12	8	7.57	3	0.00	10	0.00	10
		MIN	-6.29	7	-1.13	8	0.00	10	0.00	10
	1.24	MAX	0.12	8	8.37	3	0.00	10	0.00	10
		MIN	-6.81	7	-1.15	8	0.00	10	0.00	10
	1.38	MAX	0.12	8	9.17	3	0.00	10	0.00	10
		MIN	-7.33	7	-1.16	8	0.00	10	0.00	10
	1.51	MAX	0.12	8	9.97	3	0.00	10	0.00	10
		MIN	-7.86	7	-1.18	8	0.00	10	0.00	10
	1.65	MAX	0.12	8	10.77	3	0.00	10	0.00	10
		MIN	-8.38	7	-1.20	8	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 16, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.12	0.00	8	10.77	1.65	3			
	0.00	0.00	1	0.00	0.00	1	0.80 C	0.00	1
MIN.	-8.38	1.65	7	-1.20	1.65	8			
	0.00	1.65	10	0.00	1.65	10	0.78 T	1.65	10

17	0.00	MAX	8.23	10	10.17	4	0.00	10	0.00	10
		MIN	-0.58	8	-1.15	8	0.00	10	0.00	10
	0.14	MAX	7.64	10	9.37	4	0.00	10	0.00	10
		MIN	-0.58	8	-1.07	8	0.00	10	0.00	10
	0.28	MAX	7.04	10	8.57	4	0.00	10	0.00	10
		MIN	-0.58	8	-0.99	8	0.00	10	0.00	10
	0.41	MAX	6.44	10	7.76	4	0.00	10	0.00	10
		MIN	-0.58	8	-0.91	8	0.00	10	0.00	10
	0.55	MAX	5.95	2	6.96	4	0.00	10	0.00	10
		MIN	-0.58	8	-0.83	8	0.00	10	0.00	10
	0.69	MAX	5.85	4	6.16	4	0.00	10	0.00	10
		MIN	-0.58	8	-0.75	8	0.00	10	0.00	10
	0.83	MAX	5.84	4	5.35	4	0.00	10	0.00	10
		MIN	-0.58	8	-0.67	8	0.00	10	0.00	10
	0.96	MAX	5.55	4	4.57	4	0.00	10	0.00	10
		MIN	-0.58	8	-0.59	8	0.00	10	0.00	10
	1.10	MAX	5.27	4	3.83	4	0.00	10	0.00	10
		MIN	-0.58	8	-0.51	8	0.00	10	0.00	10
	1.24	MAX	4.98	4	3.70	7	0.00	10	0.00	10
		MIN	-0.58	8	-0.43	8	0.00	10	0.00	10
	1.38	MAX	4.69	4	3.61	7	0.00	10	0.00	10
		MIN	-0.58	8	-0.35	8	0.00	10	0.00	10
	1.51	MAX	4.41	4	3.53	7	0.00	10	0.00	10
		MIN	-0.58	8	-0.39	2	0.00	10	0.00	10
	1.65	MAX	4.12	4	3.44	7	0.00	10	0.00	10
		MIN	-0.58	8	-0.86	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 17, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.		8.23	0.00	10	10.17	0.00	4			
		0.00	0.00	1	0.00	0.00	1	0.18 C	0.00	2
MIN.		-0.58	1.65	8	-1.15	0.00	8			
		0.00	1.65	10	0.00	1.65	10	0.31 T	1.65	5
18	0.00	MAX	4.12	4	3.44	7	0.00	10	0.00	10
		MIN	-0.58	8	-0.86	2	0.00	10	0.00	10
	0.25	MAX	3.60	4	3.29	7	0.00	10	0.00	10
		MIN	-0.58	8	-1.60	2	0.00	10	0.00	10
	0.50	MAX	3.08	4	3.14	7	0.00	10	0.00	10
		MIN	-0.58	8	-2.23	2	0.00	10	0.00	10
	0.75	MAX	2.61	4	2.98	7	0.00	10	0.00	10
		MIN	-0.58	8	-2.79	9	0.00	10	0.00	10
	1.00	MAX	2.16	4	2.83	7	0.00	10	0.00	10
		MIN	-0.58	8	-3.27	9	0.00	10	0.00	10
	1.25	MAX	1.72	4	2.68	7	0.00	10	0.00	10
		MIN	-0.58	8	-3.64	9	0.00	10	0.00	10
	1.50	MAX	1.51	10	2.52	7	0.00	10	0.00	10
		MIN	-0.58	8	-3.91	9	0.00	10	0.00	10
	1.75	MAX	1.51	10	2.37	7	0.00	10	0.00	10
		MIN	-0.58	8	-4.06	9	0.00	10	0.00	10
	2.00	MAX	1.51	10	2.21	7	0.00	10	0.00	10
		MIN	-0.58	8	-4.10	9	0.00	10	0.00	10
	2.25	MAX	1.51	10	2.06	7	0.00	10	0.00	10
		MIN	-0.58	8	-4.29	10	0.00	10	0.00	10
	2.50	MAX	1.16	10	1.91	7	0.00	10	0.00	10
		MIN	-0.58	8	-4.64	10	0.00	10	0.00	10
	2.75	MAX	0.74	10	1.75	7	0.00	10	0.00	10
		MIN	-0.58	8	-4.87	10	0.00	10	0.00	10
	3.00	MAX	0.62	1	1.60	7	0.00	10	0.00	10
		MIN	-0.58	8	-5.01	10	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 18, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
MAX.		4.12	0.00	4	3.44	0.00	7			
		0.00	0.00	1	0.00	0.00	1	0.18 C	0.00	2
MIN.		-0.58	3.00	8	-5.01	3.00	10			
		0.00	3.00	10	0.00	3.00	10	0.31 T	3.00	5
25	0.00	MAX	0.78	10	3.34	10	0.00	10	0.00	10
		MIN	-0.80	1	0.21	6	0.00	10	0.00	10
	0.15	MAX	0.78	10	3.22	10	0.00	10	0.00	10
		MIN	-0.80	1	0.29	6	0.00	10	0.00	10
	0.29	MAX	0.78	10	3.11	10	0.00	10	0.00	10
		MIN	-0.80	1	0.37	6	0.00	10	0.00	10
	0.44	MAX	0.78	10	2.99	10	0.00	10	0.00	10
		MIN	-0.80	1	0.44	6	0.00	10	0.00	10
	0.58	MAX	0.78	10	2.88	10	0.00	10	0.00	10
		MIN	-0.80	1	0.52	6	0.00	10	0.00	10
	0.73	MAX	0.78	10	2.76	10	0.00	10	0.00	10

		MIN	-0.80	1	0.60	6	0.00	10	0.00	10
	0.88	MAX	0.78	10	2.65	10	0.00	10	0.00	10
		MIN	-0.80	1	0.68	6	0.00	10	0.00	10
	1.02	MAX	0.78	10	2.54	10	0.00	10	0.00	10
		MIN	-0.80	1	0.75	6	0.00	10	0.00	10
	1.17	MAX	0.78	10	2.42	10	0.00	10	0.00	10
		MIN	-0.80	1	0.83	6	0.00	10	0.00	10
	1.31	MAX	0.78	10	2.31	10	0.00	10	0.00	10
		MIN	-0.80	1	0.91	6	0.00	10	0.00	10
	1.46	MAX	0.78	10	2.39	7	0.00	10	0.00	10
		MIN	-0.80	1	0.98	6	0.00	10	0.00	10
	1.60	MAX	0.78	10	2.48	7	0.00	10	0.00	10
		MIN	-0.80	1	1.06	6	0.00	10	0.00	10
	1.75	MAX	0.78	10	2.58	7	0.00	10	0.00	10
		MIN	-0.80	1	1.14	6	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 25, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.78	0.00	10	3.34	0.00	10				
	0.00	0.00	1	0.00	0.00	1	5.82	C	0.00	5
MIN.	-0.80	1.75	1	0.21	0.00	6				
	0.00	1.75	10	0.00	1.75	10	0.66	T	1.75	2

27	0.00	MAX	0.78	10	3.69	7	0.00	10	0.00	10
		MIN	-0.80	1	0.39	2	0.00	10	0.00	10
	0.14	MAX	0.78	10	3.79	7	0.00	10	0.00	10
		MIN	-0.80	1	0.29	2	0.00	10	0.00	10
	0.28	MAX	0.78	10	3.88	7	0.00	10	0.00	10
		MIN	-0.80	1	0.19	2	0.00	10	0.00	10
	0.43	MAX	0.78	10	3.97	7	0.00	10	0.00	10
		MIN	-0.80	1	0.09	2	0.00	10	0.00	10
	0.57	MAX	0.78	10	4.07	7	0.00	10	0.00	10
		MIN	-0.80	1	-0.01	2	0.00	10	0.00	10
	0.71	MAX	0.78	10	4.16	7	0.00	10	0.00	10
		MIN	-0.80	1	-0.11	2	0.00	10	0.00	10
	0.85	MAX	0.78	10	4.25	7	0.00	10	0.00	10
		MIN	-0.80	1	-0.22	2	0.00	10	0.00	10
	0.99	MAX	0.78	10	4.34	7	0.00	10	0.00	10
		MIN	-0.80	1	-0.32	2	0.00	10	0.00	10
	1.13	MAX	0.78	10	4.44	7	0.00	10	0.00	10
		MIN	-0.80	1	-0.42	2	0.00	10	0.00	10
	1.28	MAX	0.78	10	4.53	7	0.00	10	0.00	10
		MIN	-0.80	1	-0.52	2	0.00	10	0.00	10
	1.42	MAX	0.78	10	4.62	7	0.00	10	0.00	10
		MIN	-0.80	1	-0.62	2	0.00	10	0.00	10
	1.56	MAX	0.78	10	4.72	7	0.00	10	0.00	10
		MIN	-0.80	1	-0.72	2	0.00	10	0.00	10
	1.70	MAX	0.78	10	4.81	7	0.00	10	0.00	10
		MIN	-0.80	1	-0.83	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 27, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.78	0.00	10	4.81	1.70	7				

		0.00	0.00	1	0.00	0.00	1	5.82 C	0.00	5
	MIN.	-0.80	1.70	1	-0.83	1.70	2			
		0.00	1.70	10	0.00	1.70	10	0.66 T	1.70	2
28	0.00	MAX	0.78	10	4.81	7	0.00	10	0.00	10
		MIN	-0.80	1	-0.83	2	0.00	10	0.00	10
	0.15	MAX	0.78	10	4.90	7	0.00	10	0.00	10
		MIN	-0.80	1	-0.93	2	0.00	10	0.00	10
	0.29	MAX	0.78	10	5.02	1	0.00	10	0.00	10
		MIN	-0.80	1	-1.04	2	0.00	10	0.00	10
	0.44	MAX	0.78	10	5.14	1	0.00	10	0.00	10
		MIN	-0.80	1	-1.14	2	0.00	10	0.00	10
	0.58	MAX	0.78	10	5.25	1	0.00	10	0.00	10
		MIN	-0.80	1	-1.24	2	0.00	10	0.00	10
	0.73	MAX	0.78	10	5.37	1	0.00	10	0.00	10
		MIN	-0.80	1	-1.35	2	0.00	10	0.00	10
	0.87	MAX	0.78	10	5.49	1	0.00	10	0.00	10
		MIN	-0.80	1	-1.45	2	0.00	10	0.00	10
	1.02	MAX	0.78	10	5.60	1	0.00	10	0.00	10
		MIN	-0.80	1	-1.56	2	0.00	10	0.00	10
	1.17	MAX	0.78	10	5.72	1	0.00	10	0.00	10
		MIN	-0.80	1	-1.66	2	0.00	10	0.00	10
	1.31	MAX	0.78	10	5.84	1	0.00	10	0.00	10
		MIN	-0.80	1	-1.77	2	0.00	10	0.00	10
	1.46	MAX	0.78	10	5.96	1	0.00	10	0.00	10
		MIN	-0.80	1	-1.87	2	0.00	10	0.00	10
	1.60	MAX	0.78	10	6.07	1	0.00	10	0.00	10
		MIN	-0.80	1	-1.98	2	0.00	10	0.00	10
	1.75	MAX	0.78	10	6.19	1	0.00	10	0.00	10
		MIN	-0.80	1	-2.08	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 28, AMONGST ALL SECT LOCATIONS										
		FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
	MAX.	0.78	0.00	10	6.19	1.75	1			
		0.00	0.00	1	0.00	0.00	1	5.82 C	0.00	5
	MIN.	-0.80	1.75	1	-2.08	1.75	2			
		0.00	1.75	10	0.00	1.75	10	0.66 T	1.75	2
29	0.00	MAX	0.91	1	2.35	1	0.00	10	0.00	10
		MIN	-0.90	2	-2.57	2	0.00	10	0.00	10
	0.15	MAX	0.91	1	2.22	1	0.00	10	0.00	10
		MIN	-0.90	2	-2.44	2	0.00	10	0.00	10
	0.29	MAX	0.91	1	2.09	1	0.00	10	0.00	10
		MIN	-0.90	2	-2.31	2	0.00	10	0.00	10
	0.44	MAX	0.91	1	1.96	1	0.00	10	0.00	10
		MIN	-0.90	2	-2.18	2	0.00	10	0.00	10
	0.58	MAX	0.91	1	1.82	1	0.00	10	0.00	10
		MIN	-0.90	2	-2.05	2	0.00	10	0.00	10
	0.73	MAX	0.91	1	1.69	1	0.00	10	0.00	10
		MIN	-0.90	2	-1.92	2	0.00	10	0.00	10
	0.88	MAX	0.91	1	1.56	1	0.00	10	0.00	10
		MIN	-0.90	2	-1.79	2	0.00	10	0.00	10
	1.02	MAX	0.91	1	1.43	1	0.00	10	0.00	10
		MIN	-0.90	2	-1.66	2	0.00	10	0.00	10
	1.17	MAX	0.91	1	1.29	1	0.00	10	0.00	10

		MIN	-0.90	2	-1.53	2	0.00	10	0.00	10
	1.31	MAX	0.91	1	1.16	1	0.00	10	0.00	10
		MIN	-0.90	2	-1.40	2	0.00	10	0.00	10
	1.46	MAX	0.91	1	1.03	1	0.00	10	0.00	10
		MIN	-0.90	2	-1.27	2	0.00	10	0.00	10
	1.60	MAX	0.91	1	0.89	1	0.00	10	0.00	10
		MIN	-0.90	2	-1.14	2	0.00	10	0.00	10
	1.75	MAX	0.91	1	0.76	1	0.00	10	0.00	10
		MIN	-0.90	2	-1.00	2	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 29, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.91	0.00	1	2.35	0.00	1				
	0.00	0.00	1	0.00	0.00	1	11.05	C	0.00	3
MIN.	-0.90	1.75	2	-2.57	0.00	2				
	0.00	1.75	10	0.00	1.75	10	0.71	T	1.75	8

31	0.00	MAX	0.91	1	0.52	2	0.00	10	0.00	10
		MIN	-0.90	2	-0.83	7	0.00	10	0.00	10
	0.14	MAX	0.91	1	0.65	2	0.00	10	0.00	10
		MIN	-0.90	2	-0.96	7	0.00	10	0.00	10
	0.28	MAX	0.91	1	0.77	2	0.00	10	0.00	10
		MIN	-0.90	2	-1.09	7	0.00	10	0.00	10
	0.43	MAX	0.91	1	0.90	2	0.00	10	0.00	10
		MIN	-0.90	2	-1.22	7	0.00	10	0.00	10
	0.57	MAX	0.91	1	1.03	2	0.00	10	0.00	10
		MIN	-0.90	2	-1.34	7	0.00	10	0.00	10
	0.71	MAX	0.91	1	1.15	2	0.00	10	0.00	10
		MIN	-0.90	2	-1.47	7	0.00	10	0.00	10
	0.85	MAX	0.91	1	1.28	2	0.00	10	0.00	10
		MIN	-0.90	2	-1.60	7	0.00	10	0.00	10
	0.99	MAX	0.91	1	1.41	2	0.00	10	0.00	10
		MIN	-0.90	2	-1.72	7	0.00	10	0.00	10
	1.13	MAX	0.91	1	1.53	2	0.00	10	0.00	10
		MIN	-0.90	2	-1.85	7	0.00	10	0.00	10
	1.28	MAX	0.91	1	1.66	2	0.00	10	0.00	10
		MIN	-0.90	2	-1.98	7	0.00	10	0.00	10
	1.42	MAX	0.91	1	1.79	2	0.00	10	0.00	10
		MIN	-0.90	2	-2.11	7	0.00	10	0.00	10
	1.56	MAX	0.91	1	1.92	2	0.00	10	0.00	10
		MIN	-0.90	2	-2.23	7	0.00	10	0.00	10
	1.70	MAX	0.91	1	2.04	2	0.00	10	0.00	10
		MIN	-0.90	2	-2.36	7	0.00	10	0.00	10

MAX/MIN FORCE VALUES FOR MEMB 31, AMONGST ALL SECT LOCATIONS										
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX		DIST	LD
MAX.	0.91	0.00	1	2.04	1.70	2				
	0.00	0.00	1	0.00	0.00	1	11.05	C	0.00	3
MIN.	-0.90	1.70	2	-2.36	1.70	7				
	0.00	1.70	10	0.00	1.70	10	0.71	T	1.70	8

32	0.00	MAX	0.91	1	2.04	2	0.00	10	0.00	10
		MIN	-0.90	2	-2.36	7	0.00	10	0.00	10
	0.15	MAX	0.91	1	2.17	2	0.00	10	0.00	10
		MIN	-0.90	2	-2.49	7	0.00	10	0.00	10
	0.29	MAX	0.91	1	2.30	2	0.00	10	0.00	10
		MIN	-0.90	2	-2.62	7	0.00	10	0.00	10
	0.44	MAX	0.91	1	2.43	2	0.00	10	0.00	10
		MIN	-0.90	2	-2.75	7	0.00	10	0.00	10
	0.58	MAX	0.91	1	2.56	2	0.00	10	0.00	10
		MIN	-0.90	2	-2.88	7	0.00	10	0.00	10
	0.73	MAX	0.91	1	2.69	2	0.00	10	0.00	10
		MIN	-0.90	2	-3.01	7	0.00	10	0.00	10
	0.87	MAX	0.91	1	2.83	2	0.00	10	0.00	10
		MIN	-0.90	2	-3.14	7	0.00	10	0.00	10
	1.02	MAX	0.91	1	2.96	2	0.00	10	0.00	10
		MIN	-0.90	2	-3.28	7	0.00	10	0.00	10
	1.17	MAX	0.91	1	3.09	2	0.00	10	0.00	10
		MIN	-0.90	2	-3.41	7	0.00	10	0.00	10
	1.31	MAX	0.91	1	3.22	2	0.00	10	0.00	10
		MIN	-0.90	2	-3.54	7	0.00	10	0.00	10
	1.46	MAX	0.91	1	3.35	2	0.00	10	0.00	10
		MIN	-0.90	2	-3.67	7	0.00	10	0.00	10
	1.60	MAX	0.91	1	3.48	2	0.00	10	0.00	10
		MIN	-0.90	2	-3.80	1	0.00	10	0.00	10
	1.75	MAX	0.91	1	3.61	2	0.00	10	0.00	10
		MIN	-0.90	2	-3.93	1	0.00	10	0.00	10

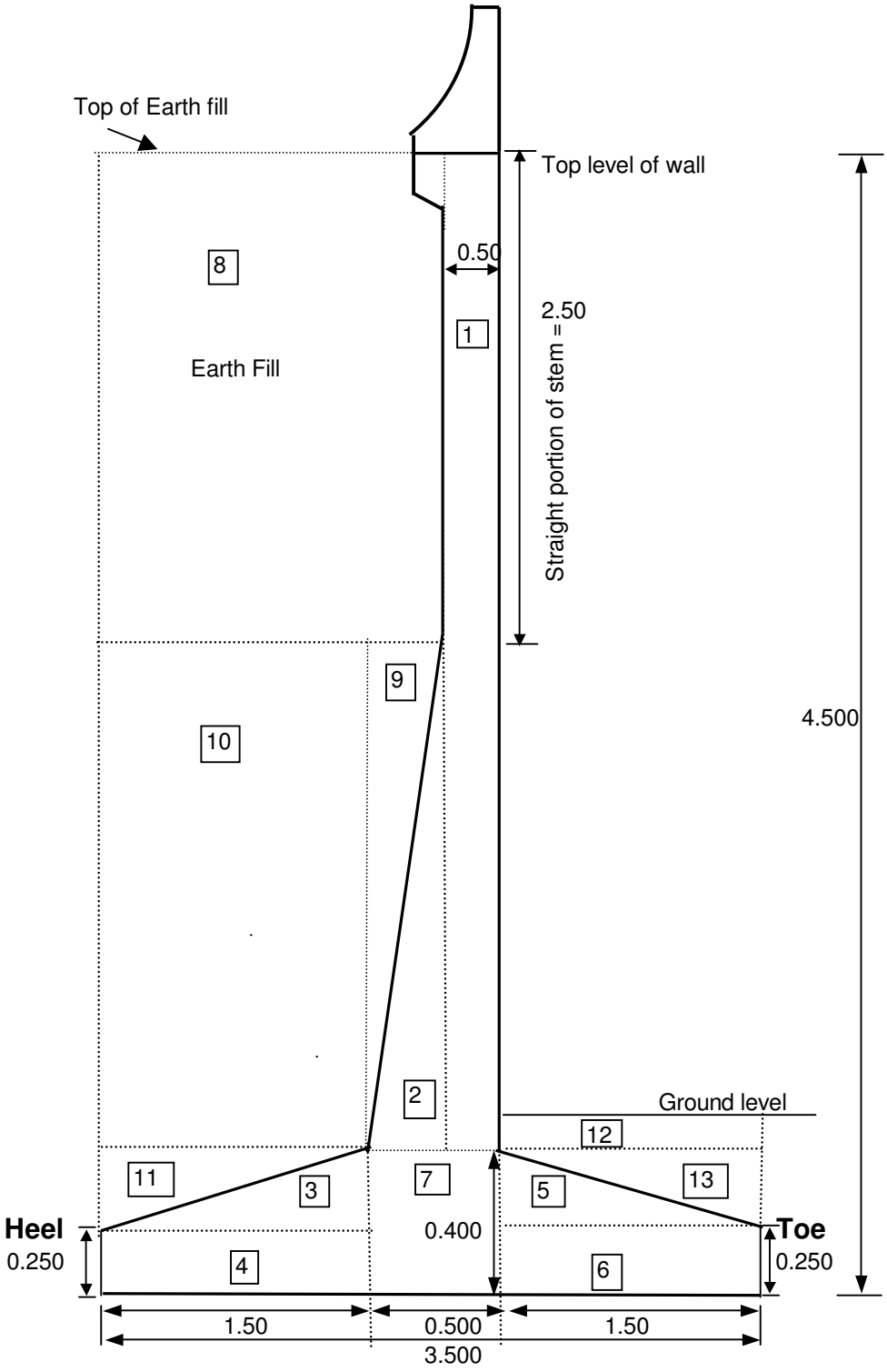
MAX/MIN FORCE VALUES FOR MEMB 32, AMONGST ALL SECT LOCATIONS									
	FY/ FZ	DIST	LD	MZ/ MY	DIST	LD	FX	DIST	LD
MAX.	0.91	0.00	1	3.61	1.75	2			
	0.00	0.00	1	0.00	0.00	1	11.05 C	0.00	3
MIN.	-0.90	1.75	2	-3.93	1.75	1			
	0.00	1.75	10	0.00	1.75	10	0.71 T	1.75	8

********** END OF FORCE ENVELOPE FROM INTERNAL STORAGE **********

234. FINISH

********** END OF THE STAAD.Pro RUN **********

DESIGN OF RETURN WALL


Top of Earth fill
Top level of wall
0.50
2.50
Straight portion of stem =
8
1
Earth Fill
9
10
4.500
2
Ground level
12
11
3
7
5
13
Heel
0.250
0.400
Toe
0.250
4
6
1.50
0.500
1.50
3.500

DESIGN OF WING WALL FOR 4.5 m HEIGHT

DESIGN DATA:

Top level of wing wall / construction joint	=	4.500	m
Ground level	=	1.500	m
Founding Level	=	0.000	m
Total Height from top of wall to founding level	=	**4.50**	m
Density of earth	=	2.0	t/m^3
Density of concrete	=	2.4	t/m^3
Clear cover to Reinforcement	=	0.05	m
Clear cover to Reinforcement for foundations	=	0.05	m
Grade of concrete	=	30	.
Allowable stress in steel	=	20380	
LL Surcharge on wing wall	=	2.4	t/m^2 (1.2 m height of earth)

DESIGN CONSTANTS:

For Grade of concrete	= M	30	& HYSD reinf. with Fe 415
Lever arm factor j	=	0.889	
Moment of resistance factor Q	=	151.062	

DIMENSIONS OF WING WALL:

Length of Base of Wing wall	=	3.500	m
Section modulus	=	2.042	m^3
Length of Toe	=	1.500	m
Length of Heel	=	1.500	m
Thickness of Stem at base	=	0.500	m
Thickness of straight portion of stem	=	0.500	m
	=	2.500	m
Minimum thickness of Toe slab	=	0.250	m
Thickness of Toe slab at junction with stem	=	0.400	m
Minimum thickness of heel slab	=	0.250	m
Thickness of heel slab at junction with stem	=	0.400	m
Ht.of inclined potion of stem to top of footing	=	1.600	m

Calculation of Earth pressure coefficients =

Angle of internal friction of soil ϕ	=	30	deg	=	0.5236 rad
Angle of wall friction δ	=	20	deg	=	0.3491 rad
Coefficient of active earth pressure k_a	=	0.297			
Coefficient of horz.active earth pressure K_{ah}	=	0.279			

Calculation of Forces & moments due to Vertical Forces

S.No.	Description	Area Factor	width	Depth	Density	Weight	C.G. from Toe	Moment about toe
1	Wt of stem	1.0	0.500	4.1	2.4	4.920	1.750	8.610
2		0.5	0.000	1.6	2.4	0.000	2.000	0.000
3	Wt of heel slab	0.5	1.500	0.15	2.4	0.270	2.500	0.675
4		1.0	1.500	0.25	2.4	0.900	2.750	2.475
5	Wt of toe slab	0.5	1.500	0.15	2.4	0.270	1.000	0.270
6		1.0	1.500	0.25	2.4	0.900	0.750	0.675
7	Wt.of intmdt.portion	1.0	0.500	0.4	2.4	0.480	1.750	0.840
8	Wt. of soil above heel slab	1.0	1.500	2.5	2	7.500	2.75	20.625
9		0.5	0.000	1.6	2	0.000	2.000	0.000
10		1.0	1.500	1.6	2	4.800	2.750	13.200
11		0.5	1.500	0.15	2	0.225	3.000	0.675
12	Wt. of soil above toe slab	1.0	1.5	1.1	2	3.300	0.750	2.475
13		0.5	1.5	0.15	2	0.225	0.500	0.112
14	wt.of crash barrier etc.					1.000	1.750	1.750
15	L.L. Sur. on heel	1.0	1.500	1	2.4	3.600	2.750	9.900
16	Cantilever portion of wing wall					1.260	1.750	2.205
				Total forces =		**29.650**		**64.49**
	Total Vertical load =	**29.65**			Total Restoring moment =			**64.49**

Horz. components of Earth Pressure

S.No.	Horz. Press due to	Area factor	Pressure $k_{ah}\gamma h$	Height	Horz. Force	C.G. from Toe	Moment about toe
1		1	0.671	4.5	3.017	2.25	6.79
2	ActiveEarthPressure	0.5	2.514	4.5	5.658	1.890	10.69
			Total forces =		8.675		17.48

Total overturning moment Mo = 17.48 tm Total vertical load V = 29.650 t
Total restoring moment Mr = 64.49 tm Total Horz. Force = 8.675 t

Factor of safety against overturning Mr/Mo = 3.69 **OK** > 2

Check for sliding :

Coefficient of base friction = 0.500
Total vertical force = 29.650 t
Resisting force = 14.83 t
F.O.S 1.71 **OK** > 1.5
C.G. of loads from toe = Mr/V = 2.175 m
Eccentricity of loads w.r.t. c/l raft = 0.425 m
Moment about c/l raft = 12.600 t-m
Net moment about base Mn = 4.882 t-m

Calculation of Base Pressure

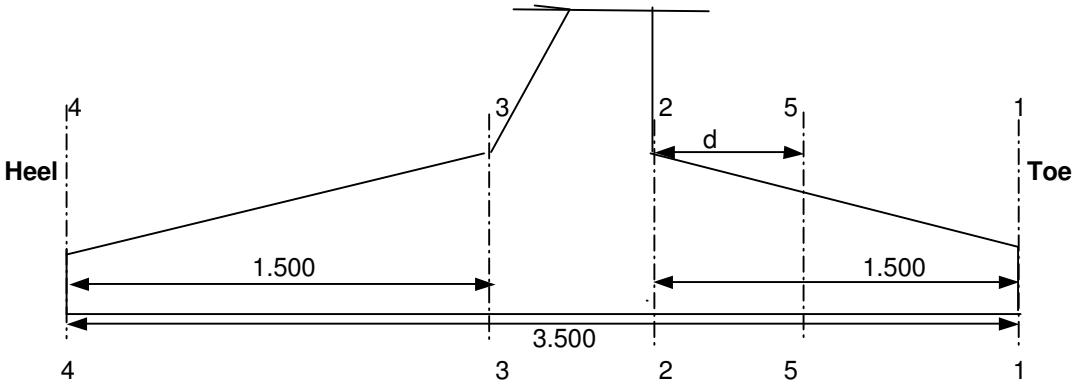
Base pressure due to vertical load V/A = 8.47 Pressure at toe = **10.862** t/m^2

Base pressure due to moment Mn/Z = 2.391 Pressure at heel= **6.080** t/m^2

CALCULATION OF DESIGN PRESSURES

Section	1-1	2-2	3-3	4-4	5-5
Upward pressure	10.862	8.813	8.130	6.080	10.398
Downward Pressure	3.100	3.160	11.560	11.500	3.146
Net pressure	7.762	5.653	-3.430	-5.420	7.252

** Positive net pressure means upward pressure & negative net pressure means downward pressure



DESIGN OF TOE SLAB

Reinforcement calculation

	=	7.94	t-m	
Effective depth required	=	0.229	m	
Effective depth provided at face of stem	=	0.340	> reqd	0.229
Area of Reinforcement reqd.at bottom	=	**12.89**	cm^2	**HENCE SAFE**

Shear check:

Shear force at distance d from stem	=	8.71	t	
Bending moment at sec 5-5 =		5.11	t-m	
Net shear force at sec 5-5=S-Ms*tanβ/d_1 =		7.04	t	
Depth of slab at section 5-5 =		0.366	Effective depth d_1 =	0.306 m

Nominal Shear stress = 23.00 t/m^2

Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000

100As/bd = 0.421 % k= 1.000

Therefore Permissible shear strsss = 29.05 t/m^2 **HENCE SAFE**

DESIGN OF HEEL SLAB

Bending Moment at face of stem =		5.35	t-m
Effective depth required	=	0.188	m
Effective depth of slab at face of stem =		0.340	m
Reinforcement reqd.at top =		**8.69**	cm^2

Shear check:

Shear force at face of stem S =		6.64	t
Bending moment at face Ms =		5.35	t-m
Net shear force =S-Ms*tanβ/d_1 =		5.06	t

Nominal Shear stress = 14.89 t/m^2

Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000

100As/bd = 0.255 % k= 1.00

Therefore Permissible shear strsss = 23.64 t/m^2 **HENCE SAFE**

DESIGN OF STEM BASE

Height of Base of stem from top of earth fill = 4.100 m
Height of Base of stem below straight portion = 1.600 m

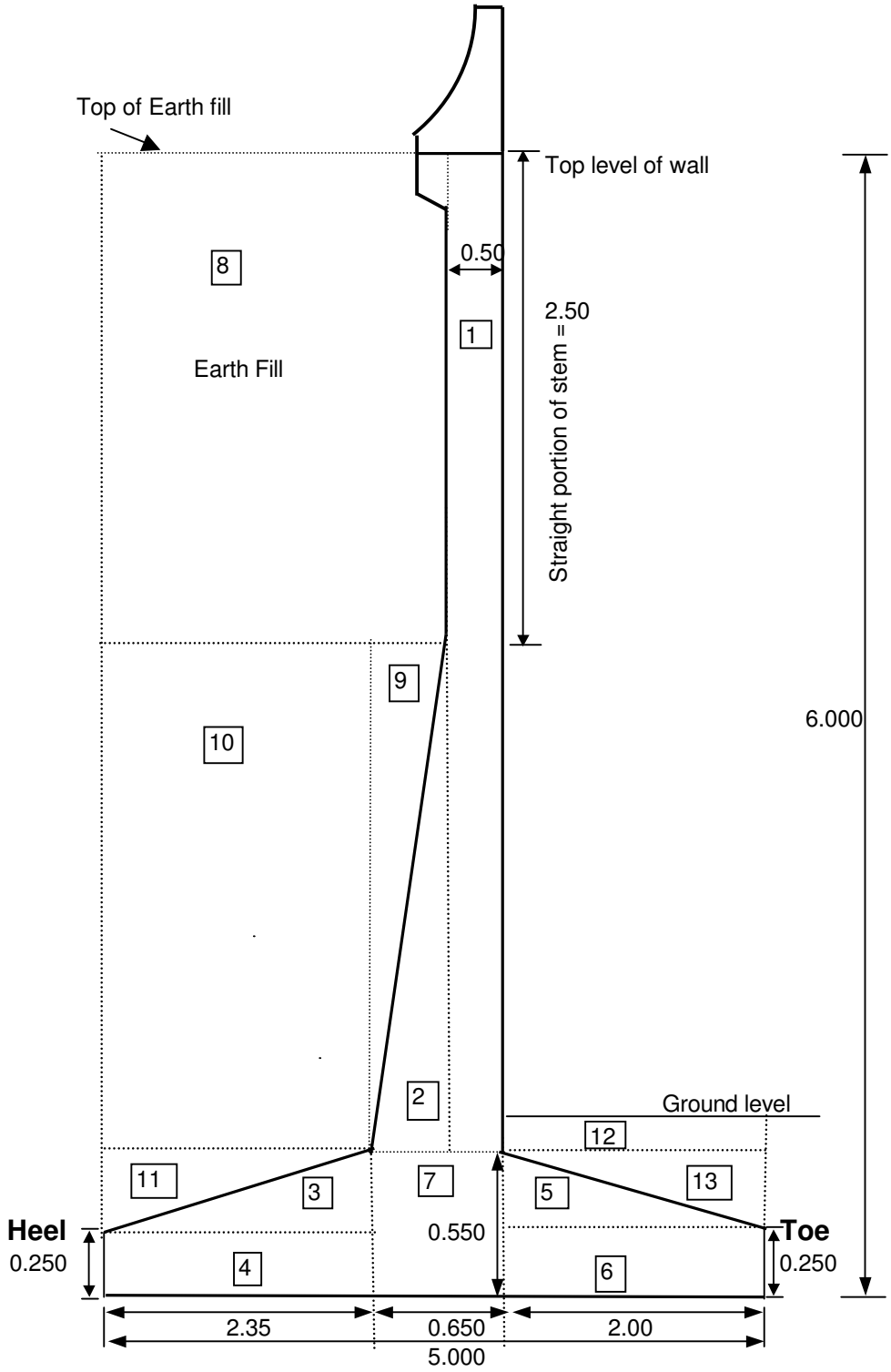
S.No.	Horz. Press due to	Area factor	Pressure $k_a.\gamma.h$	Height	Horz. Force	C.G. from base	Moment about base
1	L.L. surcharge	1	0.671	4.1	2.749	2.050	5.64
2	ActiveEarthPressure	0.5	2.291	4.1	4.696	1.722	8.09
3	ActiveEarthPressure (Cantilever portion)	0.5	0.000	0	0.000	4.100	0.00
4	L.L. surcharge (Cantilever portion)	1	0.671	0	0.000	4.100	0.00
			Total =		7.45		13.72

Total Horizontal Force = 7.45 t
Total Moment about base = 13.72 tm

Design bending moment = 13.72 t-m
Effective depth required = 0.301 m
Thickness of stem at base = 0.500 m
Effective depth provided = 0.440 > reqd 0.301 **HENCE SAFE**
Area of steel reqd. = **17.21** cm^2

Shear check:

Shear force at base of stem = 7.45 t
Bending moment at base = 13.72 t-m
Net shear force =S-Ms*tanβ/d= 7.45 t
Nominal Shear stress = 16.92 t/m^2
Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000
100As/bd = 0.39 % k= 1.00
Therefore Permissible shear strsss = 28.07 t/m^2 **HENCE SAFE**


Top of Earth fill
Top level of wall
0.50
8
1
2.50
Straight portion of stem =
Earth Fill
9
10
6.000
2
Ground level
12
11
3
7
5
13
Heel
0.250
0.550
Toe
0.250
4
6
2.35
0.650
2.00
5.000

DESIGN OF WING WALL FOR 6.00 m HEIGHT

DESIGN DATA:

Top level of wing wall / construction joint	=	6.000	m
Ground level	=	1.500	m
Founding Level	=	0.000	m
Total Height from top of wall to founding level	=	**6.00**	m
Density of earth	=	2.0	t/m^3
Density of concrete	=	2.4	t/m^3
Clear cover to Reinforcement	=	0.05	m
Clear cover to Reinforcement for foundations	=	0.05	m
Grade of concrete	=	30	
Allowable stress in steel	=	20380	
LL Surcharge on wing wall	=	2.4	t/m^2 (1.2 m height of earth)

DESIGN CONSTANTS:

For Grade of concrete	= M	30	& HYSD reinf. with Fe 415
Lever arm factor j	=	0.889	
Moment of resistance factor Q	=	151.062	

DIMENSIONS OF WING WALL:

Length of Base of Wing wall	=	5.000	m
Section modulus	=	4.167	m^3
Length of Toe	=	2.000	m
Length of Heel	=	2.350	m
Thickness of Stem at base	=	0.650	m
Thickness of straight portion of stem	=	0.500	m
Ht. of straight portion of stem	=	2.500	m
Minimum thickness of Toe slab	=	0.250	m
Thickness of Toe slab at junction with stem	=	0.550	m
Minimum thickness of heel slab	=	0.250	m
Thickness of heel slab at junction with stem	=	0.550	m
Ht.of inclined potion of stem to top of footing	=	2.950	m

Calculation of Earth pressure coefficients =

Angle of internal friction of soil ϕ	=	30	deg	=	0.5236 rad
Angle of wall friction δ	=	20	deg	=	0.3491 rad
Coefficient of active earth pressure k_a	=	0.297			
Coefficient of horz.active earth pressure K_{ah}	=	0.279			

Calculation of Forces & moments due to Vertical Forces

S.No.	Description	Area Factor	width	Depth	Density	Weight	C.G. from Toe	Moment about toe
1	Wt of stem	1.0	0.500	5.45	2.4	6.540	2.250	14.715
2		0.5	0.150	2.95	2.4	0.531	2.550	1.354
3	Wt of heel slab	0.5	2.350	0.3	2.4	0.846	3.433	2.905
4		1.0	2.350	0.25	2.4	1.410	3.825	5.393
5	Wt of toe slab	0.5	2.000	0.3	2.4	0.720	1.333	0.960
6		1.0	2.000	0.25	2.4	1.200	1.000	1.200
7	Wt.of intmdt.portion	1.0	0.650	0.55	2.4	0.858	2.325	1.995
8	Wt. of soil above heel slab	1.0	2.500	2.5	2	12.500	3.75	46.875
9		0.5	0.150	2.95	2	0.443	2.600	1.151
10		1.0	2.350	2.95	2	13.865	3.825	53.034
11		0.5	2.350	0.3	2	0.705	4.217	2.973
12	Wt. of soil above toe slab	1.0	2	1.0	2	3.800	1.000	3.800
13		0.5	2	0.3	2	0.600	0.667	0.400
14	wt.of crash barrier etc.					1.000	2.250	2.250
15	L.L. Sur. on heel	1.0	2.500	1	2.4	6.000	3.750	22.500
16	Cantilever portion of wing wall					1.260	2.250	2.835
			Total forces =			**52.278**		**164.34**
	Total Vertical load =	**52.28**			Total Restoring moment =			**164.34**

Horz. components of Earth Pressure

S.No.	Horz. Press due to	Area factor	Pressure $k_{ah}\gamma h$	Height	Horz. Force	C.G. from Toe	Moment about toe
1	L.L. surcharge	1	0.671	6	4.023	3	12.07
2	ActiveEarthPressure	0.5	3.353	6	10.058	2.520	25.35
3	ActiveEarthPressure(Cantilever portion)	0.5	0.000	0	0.000	6.000	0.00
4	L.L. surcharge (Cantilever portion)	1	0.671	0	0.000	6	0.00
			Total forces =		14.081		37.42

Total overturning moment Mo = 37.42 tm
Total restoring moment Mr = 164.34 tm
Total vertical load V = 52.278 t
Total Horz. Force = 14.081 t

Factor of safety against overturning Mr/Mo = 4.39 **OK** > 2

Check for sliding :

Coefficient of base friction = 0.500
Total vertical force = 52.278 t
Resisting force = 26.14 t
F.O.S 1.86 **OK** > 1.5

C.G. of loads from toe = Mr/V = 3.144 m
Eccentricity of loads w.r.t. c/l raft = 0.644 m
Moment about c/l raft = 33.645 t-m
Net moment about base Mn = 3.770 t-m

Calculation of Base Pressure

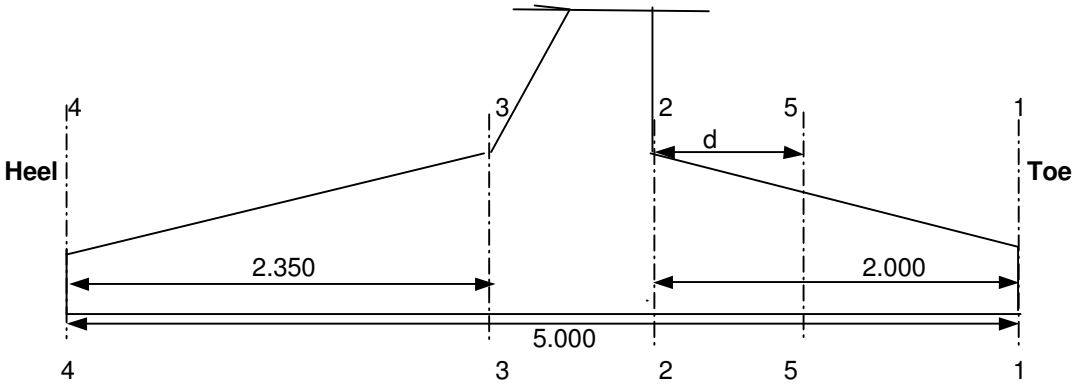
Base pressure due to vertical load V/A = 10.46
Pressure at toe = **11.360** t/m^2

Base pressure due to moment Mn/Z = 0.905
Pressure at heel= **9.551** t/m^2

CALCULATION OF DESIGN PRESSURES

Section	1-1	2-2	3-3	4-4	5-5
Upward pressure	11.360	10.636	10.401	9.551	11.183
Downward Pressure	3.100	3.220	14.620	14.500	3.191
Net pressure	8.260	7.416	-4.219	-4.949	7.992

** Positive net pressure means upward pressure & negative net pressure means downward pressure



DESIGN OF TOE SLAB

Reinforcement calculation

Bending Moment at face of stem	=	15.96	t-m	
Effective depth required	=	0.325	m	
Effective depth provided at face of stem	=	0.490	> reqd	0.325
Area of Reinforcement reqd.at bottom	=	**17.98**	cm^2	**HENCE SAFE**

Shear check:

Shear force at distance d from stem	=	12.27	t	
Bending moment at sec 5-5 =		9.32	t-m	
Net shear force at sec 5-5=S-Ms*tanβ/d_1 =		8.92	t	
Depth of slab at section 5-5 =		0.477	Effective depth d_1 =	0.417 m
Nominal Shear stress =	21.41	t/m^2		

Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000

100As/bd	=	0.432	%	k= 1.000
Therefore Permissible shear strsss	=	29.39	t/m^2	**HENCE SAFE**

DESIGN OF HEEL SLAB

Bending Moment at face of stem =		12.99	t-m	
Effective depth required	=	0.293	m	
Effective depth of slab at face of stem =		0.490	m	
Reinforcement reqd.at top =		**14.64**	cm^2	

Shear check:

Shear force at face of stem S =		10.77	t	
Bending moment at face Ms =		12.99	t-m	
Net shear force =S-Ms*tanβ/d_1 =		7.39	t	
Nominal Shear stress =	15.08	t/m^2		

Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000

100As/bd	=	0.299	%	k= 1.00
Therefore Permissible shear strsss	=	25.05	t/m^2	**HENCE SAFE**

DESIGN OF STEM BASE

Height of Base of stem from top of earth fill = 5.450 m
Height of Base of stem below straight portion = 2.950 m

S.No.	Horz. Press due to	Area factor	Pressure $k_a.\gamma.h$	Height	Horz. Force	C.G. from base	Moment about base
1	L.L. surcharge	1	0.671	5.45	3.654	2.725	9.96
2	ActiveEarthPressure	0.5	3.045	5.45	8.298	2.289	19.00
3	ActiveEarthPressure (Cantilever portion)	0.5	0.000	0	0.000	5.450	0.00
4	L.L. surcharge (Cantilever portion)	1	0.671	0	0.000	5.450	0.00
			Total =		11.95		28.95

Total Horizontal Force = 11.95 t
Total Moment about base = 28.95 tm

Design bending moment = 28.95 t-m
Effective depth required = 0.438 m
Thickness of stem at base = 0.650 m
Effective depth provided = 0.590 > reqd 0.438 **HENCE SAFE**
Area of steel reqd. = **27.09** cm^2

Shear check:

Shear force at base of stem = 11.95 t
Bending moment at base = 28.95 t-m
Net shear force =S-Ms*tanβ/d= 9.46 t
Nominal Shear stress = 16.03 t/m^2
Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000
100As/bd = 0.46 % k= 1.00
Therefore Permissible shear strsss = 30.28 t/m^2 **HENCE SAFE**

CHECK FOR CURTAILMENT OF REINFORCEMENT IN STEM

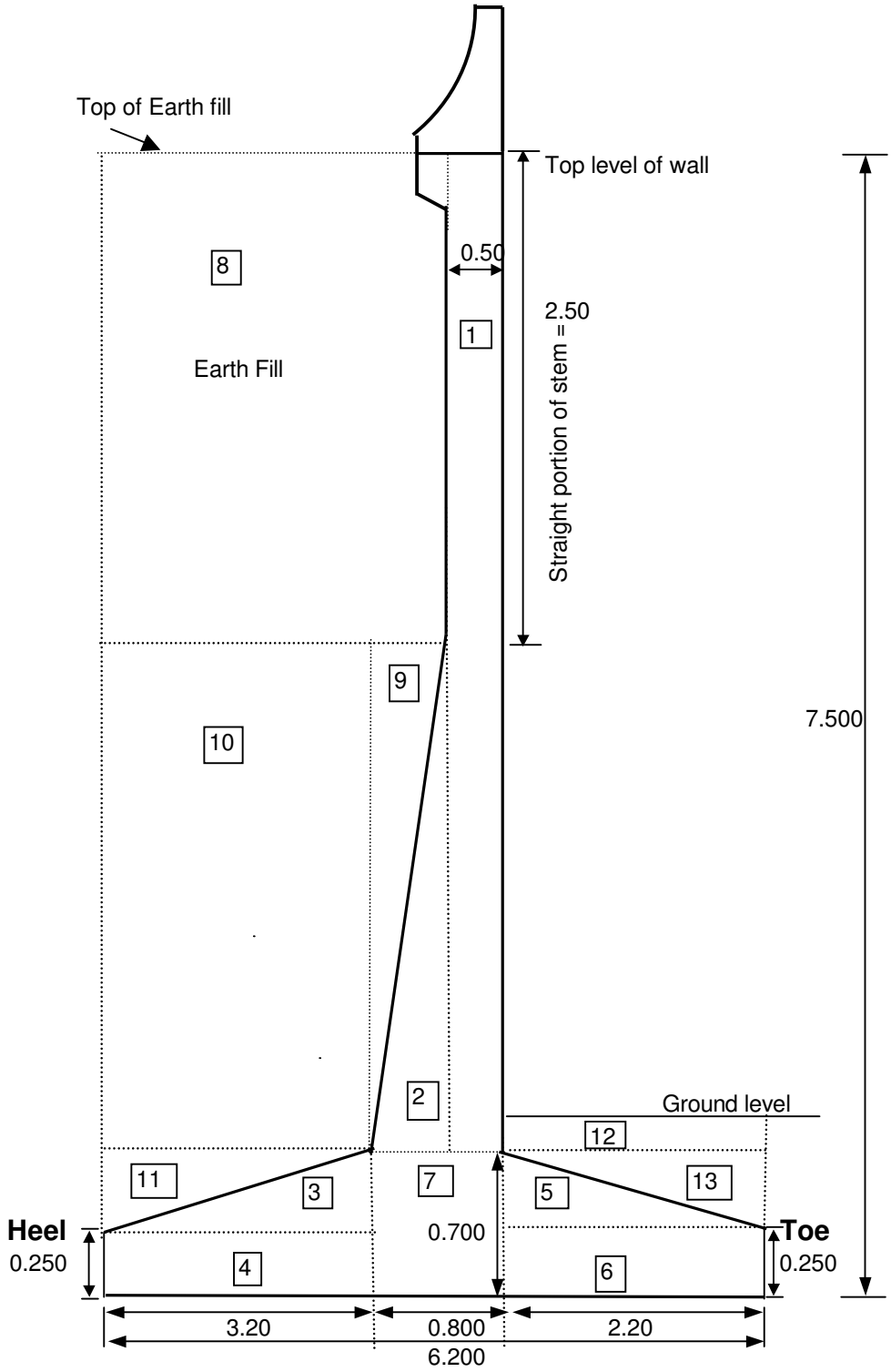
Depth of section below top of wall = 2.500 m
Depth of section below top of earth fill = 2.500 m
Depth of section below inclined portion = 0.00 m

S.No.	Horz. Press due to	Area factor	Pressure $k_a.\gamma.h$	Height	Horz. Force	L. A. from Section	Moment about section
1	L.L. surcharge	1	0.671	2.50	1.676	1.250	2.10
2	ActiveEarthPressure	0.5	1.397	2.50	1.746	1.050	1.83
3	ActiveEarthPressure (Cantilever portion)	0.5	0.000	0	0.000	2.500	0.00
4	L.L. surcharge (Cantilever portion)	1	0.671	0	0.000	2.500	0.00
			Total forces =		3.42		3.93

Total Horizontal Force = 3.42 t
Total Moment about base = 3.93 tm
Bending moment at section = 3.929 t-m
Effective depth required = 0.161 m
Depth of stem at section = 0.500 m
Effective depth provided = 0.440 > reqd. 0.161 **HENCE SAFE**
Area of steel reqd. = 4.928 cm^2

Shear Check :

Shear force at section = 3.42 t
Bending moment at section = 3.93 t-m
Net shear force =S-Ms*tanβ/d_1= 3.42 t
Nominal Shear stress = 7.78 t/m^2
Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000
100As/bd = 0.11 % k= 1.00
Therefore Permissible shear stress = 20.40 t/m^2 **HENCE SAFE**


Top of Earth fill
Top level of wall
0.50
8
1
2.50
Straight portion of stem =
Earth Fill
9
10
7.500
2
Ground level
12
11
3
7
5
13
Heel
0.250
0.700
Toe
0.250
4
6
3.20
0.800
2.20
6.200

DESIGN OF WING WALL FOR 7.5 m HEIGHT

DESIGN DATA:

Top level of wing wall / construction joint	=	7.500	m	
Ground level	=	1.500	m	
Founding Level	=	0.000	m	
Total Height from top of wall to founding level	=	**7.50**	m	
Density of earth	=	2.0	t/m^3	
Density of concrete	=	2.4	t/m^3	
Clear cover to Reinforcement	=	0.05	m	
Clear cover to Reinforcement for foundations	=	0.05	m	
Grade of concrete	=	30	.	
Allowable stress in steel	=	20380		
LL Surcharge on wing wall	=	2.4	t/m^2	(1.2 m height of earth)

DESIGN CONSTANTS:

For Grade of concrete	= M	30	& HYSD reinf. with Fe 415
Lever arm factor j	=	0.889	
Moment of resistance factor Q	=	151.062	

DIMENSIONS OF WING WALL:

Length of Base of Wing wall	=	6.200	m
Section modulus	=	6.407	m^3
Length of Toe	=	2.200	m
Length of Heel	=	3.200	m
Thickness of Stem at base	=	0.800	m
Thickness of straight portion of stem	=	0.500	m
Ht. of straight portion of stem	=	2.500	m
Minimum thickness of Toe slab	=	0.250	m
Thickness of Toe slab at junction with stem	=	0.700	m
Minimum thickness of heel slab	=	0.250	m
Thickness of heel slab at junction with stem	=	0.700	m
Ht.of inclined potion of stem to top of footing	=	4.300	m

Calculation of Earth pressure coefficients =

Angle of internal friction of soil ϕ	=	30	deg	=	0.5236 rad
Angle of wall friction δ	=	20	deg	=	0.3491 rad
Coefficient of active earth pressure k_a	=	0.297			
Coefficient of horz.active earth pressure K_{ah}	=	0.279			

Calculation of Forces & moments due to Vertical Forces

S.No.	Description	Area Factor	width	Depth	Density	Weight	C.G. from Toe	Moment about toe
1	Wt of stem	1.0	0.500	6.8	2.4	8.160	2.450	19.992
2		0.5	0.300	4.3	2.4	1.548	2.800	4.334
3	Wt of heel slab	0.5	3.200	0.45	2.4	1.728	4.067	7.027
4		1.0	3.200	0.25	2.4	1.920	4.600	8.832
5	Wt of toe slab	0.5	2.200	0.45	2.4	1.188	1.467	1.742
6		1.0	2.200	0.25	2.4	1.320	1.100	1.452
7	Wt.of intmdt.portion	1.0	0.800	0.7	2.4	1.344	2.600	3.494
8	Wt. of soil above heel slab	1.0	3.500	2.5	2	17.500	4.45	77.875
9		0.5	0.300	4.3	2	1.290	2.900	3.741
10		1.0	3.200	4.3	2	27.520	4.600	126.592
11		0.5	3.200	0.45	2	1.440	5.133	7.392
12	Wt. of soil above toe slab	1.0	2.2	0.8	2	3.520	1.100	3.872
13		0.5	2.2	0.45	2	0.990	0.733	0.726
14	wt.of crash barrier etc.					1.000	2.450	2.450
15	L.L. Sur. on heel	1.0	3.500	1	2.4	8.400	4.450	37.380
16	Cantilever portion of wing wall					0.394	2.450	0.965
			Total forces =			**79.262**		**307.87**

Total Vertical load = **79.26** Total Restoring moment = **307.87**

Horz. components of Earth Pressure

S.No.	Horz. Press due to	Area factor	Pressure $k_{ah}\gamma h$	Height	Horz. Force	C.G. from Toe	Moment about toe
1	L.L. surcharge	1	0.671	7.5	5.029	3.75	18.86
2	ActiveEarthPressure	0.5	4.191	7.5	15.715	3.150	49.50
3	ActiveEarthPressure(Cantilever portion)	0.5	0.000	0	0.000	7.500	0.00
4	L.L. surcharge (Cantilever portion)	1	0.671	0	0.000	7.5	0.00
			Total forces =		20.744		68.36

Total overturning moment Mo = 68.36 tm Total vertical load V = 79.262 t

Total restoring moment Mr = 307.87 tm Total Horz. Force = 20.744 t

Factor of safety against overturning Mr/Mo = 4.50 **OK** > 2

Check for sliding :

Coefficient of base friction = 0.500

Total vertical force = 79.262 t

Resisting force = 39.63 t

F.O.S 1.91 **OK** > 1.5

C.G. of loads from toe = Mr/V = 3.884 m

Eccentricity of loads w.r.t. c/l raft = 0.784 m

Moment about c/l raft = 62.156 t-m

Net moment about base Mn = 6.206 t-m

Calculation of Base Pressure

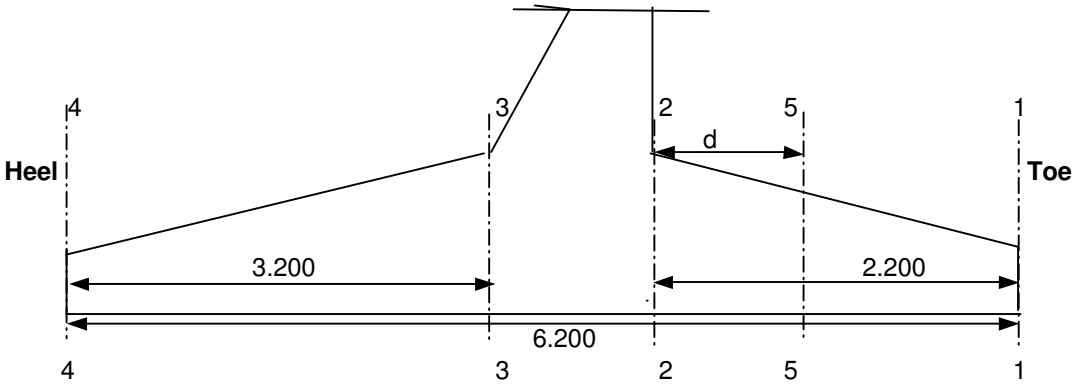
Base pressure due to vertical load V/A = 12.78 Pressure at toe = **13.753** t/m^2

Base pressure due to moment Mn/Z = 0.969 Pressure at heel= **11.816** t/m^2

CALCULATION OF DESIGN PRESSURES

Section	1-1	2-2	3-3	4-4	5-5
Upward pressure	13.753	13.065	12.815	11.816	13.553
Downward Pressure	3.100	3.280	17.680	17.500	3.228
Net pressure	10.653	9.785	-4.865	-5.684	10.325

** Positive net pressure means upward pressure & negative net pressure means downward pressure



DESIGN OF TOE SLAB

Reinforcement calculation

Bending Moment at face of stem	=	25.08	t-m	
Effective depth required	=	0.407	m	
Effective depth provided at face of stem	=	0.640	> reqd	0.407
Area of Reinforcement reqd.at bottom	=	**21.63**	cm^2	**HENCE SAFE**

Shear check:

Shear force at distance d from stem	=	16.36	t	
Bending moment at sec 5-5 =		12.83	t-m	
Net shear force at sec 5-5=S-Ms*tanβ/d_1 =		11.21	t	
Depth of slab at section 5-5 =		0.569	Effective depth d_1 =	0.509 m

Nominal Shear stress = 22.02 t/m^2

Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000

100As/bd = 0.425 % k= 1.000

Therefore Permissible shear strsss = 29.17 t/m^2 **HENCE SAFE**

DESIGN OF HEEL SLAB

Bending Moment at face of stem =		27.71	t-m	
Effective depth required	=	0.428	m	
Effective depth of slab at face of stem =		0.640	m	
Reinforcement reqd.at top =		**23.89**	cm^2	

Shear check:

Shear force at face of stem S =		16.88	t	
Bending moment at face Ms =		27.71	t-m	
Net shear force =S-Ms*tanβ/d_1 =		10.79	t	

Nominal Shear stress = 16.86 t/m^2

Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000

100As/bd = 0.373 % k= 1.00

Therefore Permissible shear strsss = 27.49 t/m^2 **HENCE SAFE**

DESIGN OF STEM BASE

Height of Base of stem from top of earth fill = 6.800 m
Height of Base of stem below straight portion = 4.300 m

S.No.	Horz. Press due to	Area factor	Pressure $k_a.\gamma.h$	Height	Horz. Force	C.G. from base	Moment about base
1	L.L. surcharge	1	0.671	6.8	4.560	3.400	15.50
2	ActiveEarthPressure	0.5	3.800	6.8	12.919	2.856	36.90
3	ActiveEarthPressure (Cantilever portion)	0.5	0.000	0	0.000	6.800	0.00
4	L.L. surcharge (Cantilever portion)	1	0.671	0	0.000	6.800	0.00
			Total =		17.48		52.40

Total Horizontal Force = 17.48 t
Total Moment about base = 52.40 tm

Design bending moment = 52.40 t-m
Effective depth required = 0.589 m
Thickness of stem at base = 0.800 m
Effective depth provided = 0.740 > reqd 0.589 **HENCE SAFE**
Area of steel reqd. = **39.08** cm^2

Shear check:

Shear force at base of stem = 17.48 t
Bending moment at base = 52.40 t-m
Net shear force =S-Ms*tanβ/d= 12.54 t
Nominal Shear stress = 16.94 t/m^2
Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000
100As/bd = 0.53 % k= 1.00
Therefore Permissible shear strsss = 32.31 t/m^2 **HENCE SAFE**

CHECK FOR CURTAILMENT OF REINFORCEMENT IN STEM

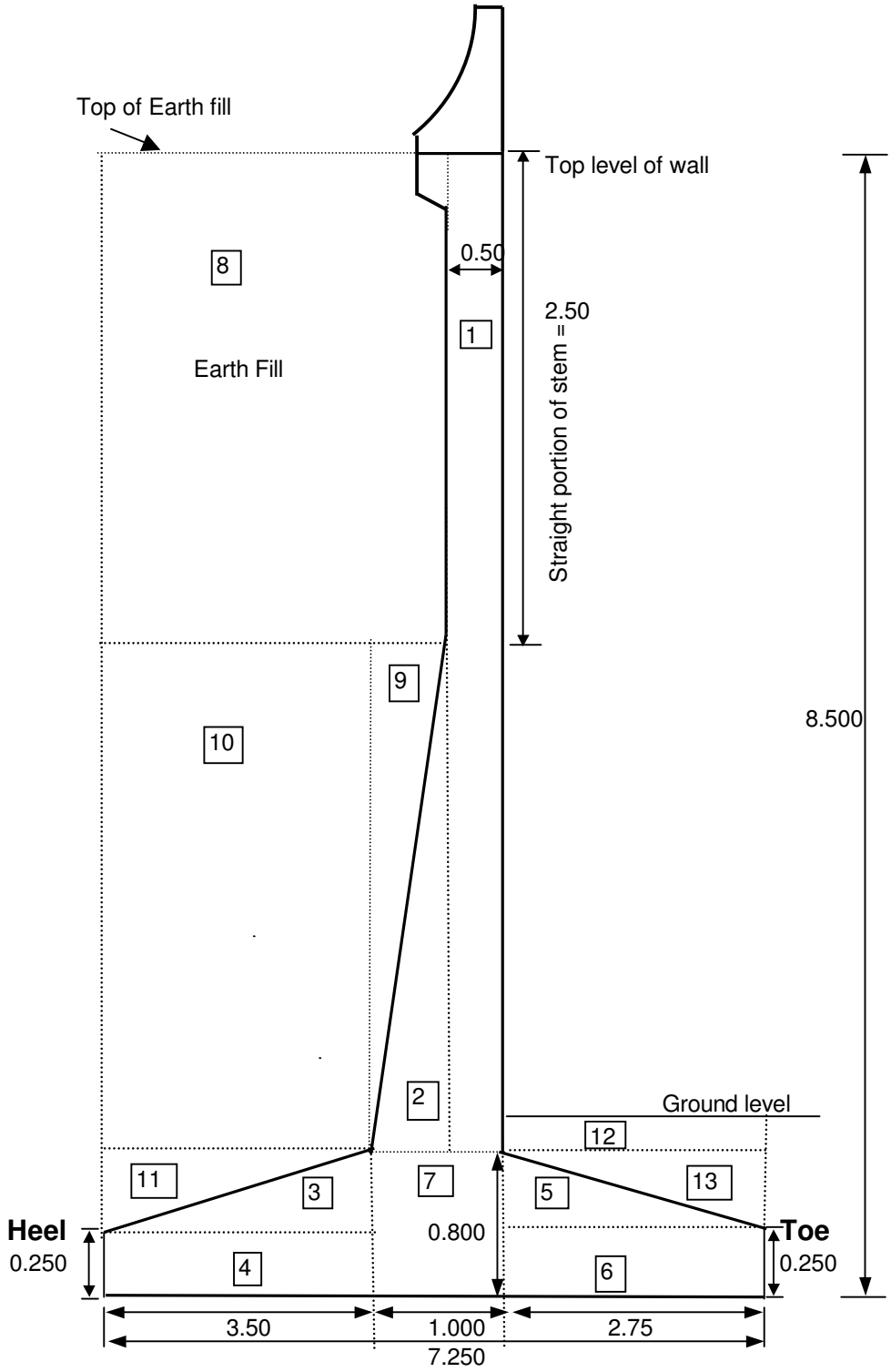
Depth of section below top of wall = 2.500 m
Depth of section below top of earth fill = 2.500 m
Depth of section below inclined portion = 0.00 m

S.No.	Horz. Press due to	Area factor	Pressure $k_a.\gamma.h$	Height	Horz. Force	L. A. from Section	Moment about section
1	L.L. surcharge	1	0.671	2.50	1.676	1.250	2.10
2	ActiveEarthPressure	0.5	1.397	2.50	1.746	1.050	1.83
3	ActiveEarthPressure (Cantilever portion)	0.5	0.000	0	0.000	2.500	0.00
4	L.L. surcharge (Cantilever portion)	1	0.671	0	0.000	2.500	0.00
			Total forces =		3.42		3.93

Total Horizontal Force = 3.42 t
Total Moment about base = 3.93 tm
Bending moment at section = 3.929 t-m
Effective depth required = 0.161 m
Depth of stem at section = 0.500 m
Effective depth provided = 0.440 > reqd. 0.161 **HENCE SAFE**
Area of steel reqd. = 4.928 cm^2

Shear Check :

Shear force at section = 3.42 t
Bending moment at section = 3.93 t-m
Net shear force =S-Ms*tanβ/d_1= 3.42 t
Nominal Shear stress = 7.78 t/m^2
Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000
100As/bd = 0.11 % k= 1.00
Therefore Permissible shear strsss = 20.40 t/m^2 **HENCE SAFE**


Top of Earth fill
Top level of wall
0.50
8
1
2.50
Straight portion of stem =
Earth Fill
9
10
8.500
2
Ground level
12
11
3
7
5
13
Heel
0.250
0.800
Toe
0.250
4
6
3.50
1.000
2.75
7.250

DESIGN OF WING WALL FOR 8.5 m HEIGHT

DESIGN DATA:

Top level of wing wall / construction joint	=	8.500	m
Ground level	=	1.500	m
Founding Level	=	0.000	m
Total Height from top of wall to founding level	=	**8.50**	m
Density of earth	=	2.0	t/m^3
Density of concrete	=	2.4	t/m^3
Clear cover to Reinforcement	=	0.05	m
Clear cover to Reinforcement for foundations	=	0.05	m
Grade of concrete	=	30	
Allowable stress in steel	=	20380	
LL Surcharge on wing wall	=	2.4	t/m^2 (1.2 m height of earth)

DESIGN CONSTANTS:

For Grade of concrete	= M	30	& HYSD reinf. with Fe 415
Lever arm factor j	=	0.889	
Moment of resistance factor Q	=	151.062	

DIMENSIONS OF WING WALL:

Length of Base of Wing wall	=	7.250	m
Section modulus	=	8.760	m^3
Length of Toe	=	2.750	m
Length of Heel	=	3.500	m
Thickness of Stem at base	=	1.000	m
Thickness of straight portion of stem	=	0.500	m
Ht. of straight portion of stem	=	2.500	m
Minimum thickness of Toe slab	=	0.250	m
Thickness of Toe slab at junction with stem	=	0.800	m
Minimum thickness of heel slab	=	0.250	m
Thickness of heel slab at junction with stem	=	0.800	m
Ht.of inclined potion of stem to top of footing	=	5.200	m

Calculation of Earth pressure coefficients =

Angle of internal friction of soil ϕ	=	30	deg	=	0.5236 rad
Angle of wall friction δ	=	20	deg	=	0.3491 rad
Coefficient of active earth pressure k_a	=	0.297			
Coefficient of horz.active earth pressure K_{ah}	=	0.279			

Calculation of Forces & moments due to Vertical Forces

S.No.	Description	Area Factor	width	Depth	Density	Weight	C.G. from Toe	Moment about toe
1	Wt of stem	1.0	0.500	7.7	2.4	9.240	3.000	27.720
2		0.5	0.500	5.2	2.4	3.120	3.417	10.660
3	Wt of heel slab	0.5	3.500	0.55	2.4	2.310	4.917	11.358
4		1.0	3.500	0.25	2.4	2.100	5.500	11.550
5	Wt of toe slab	0.5	2.750	0.55	2.4	1.815	1.833	3.328
6		1.0	2.750	0.25	2.4	1.650	1.375	2.269
7	Wt.of intmdt.portion	1.0	1.000	0.8	2.4	1.920	3.250	6.240
8	Wt. of soil above heel slab	1.0	4.000	2.5	2	20.000	5.25	105.000
9		0.5	0.500	5.2	2	2.600	3.583	9.317
10		1.0	3.500	5.2	2	36.400	5.500	200.200
11		0.5	3.500	0.55	2	1.925	6.083	11.711
12	Wt. of soil above toe slab	1.0	2.75	0.7	2	3.850	1.375	5.294
13		0.5	2.75	0.55	2	1.513	0.917	1.386
14	wt.of crash barrier etc.					1.000	3.000	3.000
15	L.L. Sur. on heel	1.0	4.000	1	2.4	9.600	5.250	50.400
16	Cantilever portion of wing wall					0.394	3.000	1.182
			Total forces =			**99.437**		**460.61**

Total Vertical load = **99.44** Total Restoring moment = **460.61**

Horz. components of Earth Pressure

S.No.	Horz. Press due to	Area factor	Pressure $k_{ah}\gamma h$	Height	Horz. Force	C.G. from Toe	Moment about toe
1	L.L. surcharge	1	0.671	8.5	5.699	4.25	24.22
2	ActiveEarthPressure	0.5	4.750	8.5	20.185	3.570	72.06
3	ActiveEarthPressure(Cantilever portion)	0.5	0.000	0	0.000	8.500	0.00
4	L.L. surcharge (Cantilever portion)	1	0.671	0	0.000	8.5	0.00
			Total forces =		25.885		96.28

Total overturning moment Mo = 96.28 tm Total vertical load V = 99.437 t

Total restoring moment Mr = 460.61 tm Total Horz. Force = 25.885 t

Factor of safety against overturning Mr/Mo = 4.78 **OK** > 2

Check for sliding :

Coefficient of base friction = 0.500

Total vertical force = 99.437 t

Resisting force = 49.72 t

F.O.S 1.92 **OK** > 1.5

C.G. of loads from toe = Mr/V = 4.632 m

Eccentricity of loads w.r.t. c/l raft = 1.007 m

Moment about c/l raft = 100.156 t-m

Net moment about base Mn = -3.871 t-m

Calculation of Base Pressure

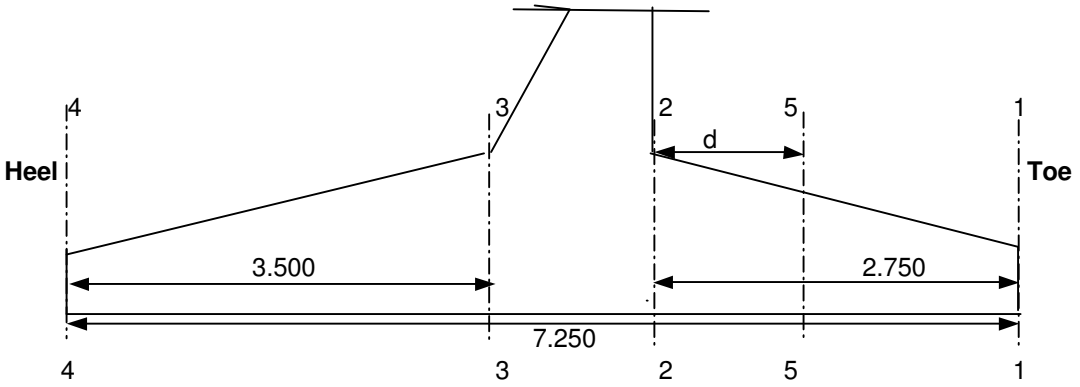
Base pressure due to vertical load V/A = 13.72 Pressure at toe = **13.273** t/m^2

Base pressure due to moment Mn/Z = -0.442 Pressure at heel= **14.157** t/m^2

CALCULATION OF DESIGN PRESSURES

Section	1-1	2-2	3-3	4-4	5-5
Upward pressure	13.273	13.609	13.731	14.157	13.364
Downward Pressure	3.100	3.320	19.720	19.500	3.261
Net pressure	10.173	10.289	-5.989	-5.343	10.103

** Positive net pressure means upward pressure & negative net pressure means downward pressure



DESIGN OF TOE SLAB

Reinforcement calculation

Bending Moment at face of stem	=	38.61	t-m	
Effective depth required	=	0.506	m	
Effective depth provided at face of stem	=	0.740	> reqd	0.506
Area of Reinforcement reqd.at bottom	=	**28.80**	cm^2	**HENCE SAFE**

Shear check:

Shear force at distance d from stem	=	20.38	t	
Bending moment at sec 5-5 =		20.50	t-m	
Net shear force at sec 5-5=S-Ms*tanβ/d_1 =		13.45	t	
Depth of slab at section 5-5 =		0.652	Effective depth d_1 =	0.592 m

Nominal Shear stress = 22.72 t/m^2

Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000

100As/bd = 0.486 % k= 1.000

Therefore Permissible shear strsss = 31.18 t/m^2 **HENCE SAFE**

DESIGN OF HEEL SLAB

Bending Moment at face of stem =		34.04	t-m	
Effective depth required	=	0.475	m	
Effective depth of slab at face of stem =		0.740	m	
Reinforcement reqd.at top =		**25.39**	cm^2	

Shear check:

Shear force at face of stem S =		19.83	t	
Bending moment at face Ms =		34.04	t-m	
Net shear force =S-Ms*tanβ/d_1 =		12.60	t	

Nominal Shear stress = 17.03 t/m^2

Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000

100As/bd = 0.343 % k= 1.00

Therefore Permissible shear strsss = 26.50 t/m^2 **HENCE SAFE**

DESIGN OF STEM BASE

Height of Base of stem from top of earth fill = 7.700 m
Height of Base of stem below straight portion = 5.200 m

S.No.	Horz. Press due to	Area factor	Pressure $k_a.\gamma.h$	Height	Horz. Force	C.G. from base	Moment about base
1	L.L. surcharge	1	0.671	7.7	5.163	3.850	19.88
2	ActiveEarthPressure	0.5	4.303	7.7	16.565	3.234	53.57
3	ActiveEarthPressure (Cantilever portion)	0.5	0.000	0	0.000	7.700	0.00
4	L.L. surcharge (Cantilever portion)	1	0.671	0	0.000	7.700	0.00
			Total =		21.73		73.45

Total Horizontal Force = 21.73 t
Total Moment about base = 73.45 tm

Design bending moment = 73.45 t-m
Effective depth required = 0.697 m
Thickness of stem at base = 1.000 m
Effective depth provided = 0.940 > reqd 0.697 **HENCE SAFE**
Area of steel reqd. = **43.13** cm^2

Shear check:

Shear force at base of stem = 21.73 t
Bending moment at base = 73.45 t-m
Net shear force =S-Ms*tanβ/d= 14.21 t
Nominal Shear stress = 15.12 t/m^2
Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000
100As/bd = 0.46 % k= 1.00
Therefore Permissible shear strsss = 30.27 t/m^2 **HENCE SAFE**

CHECK FOR CURTAILMENT OF REINFORCEMENT IN STEM

Depth of section below top of wall = 2.500 m
Depth of section below top of earth fill = 2.500 m
Depth of section below inclined portion = 0.00 m

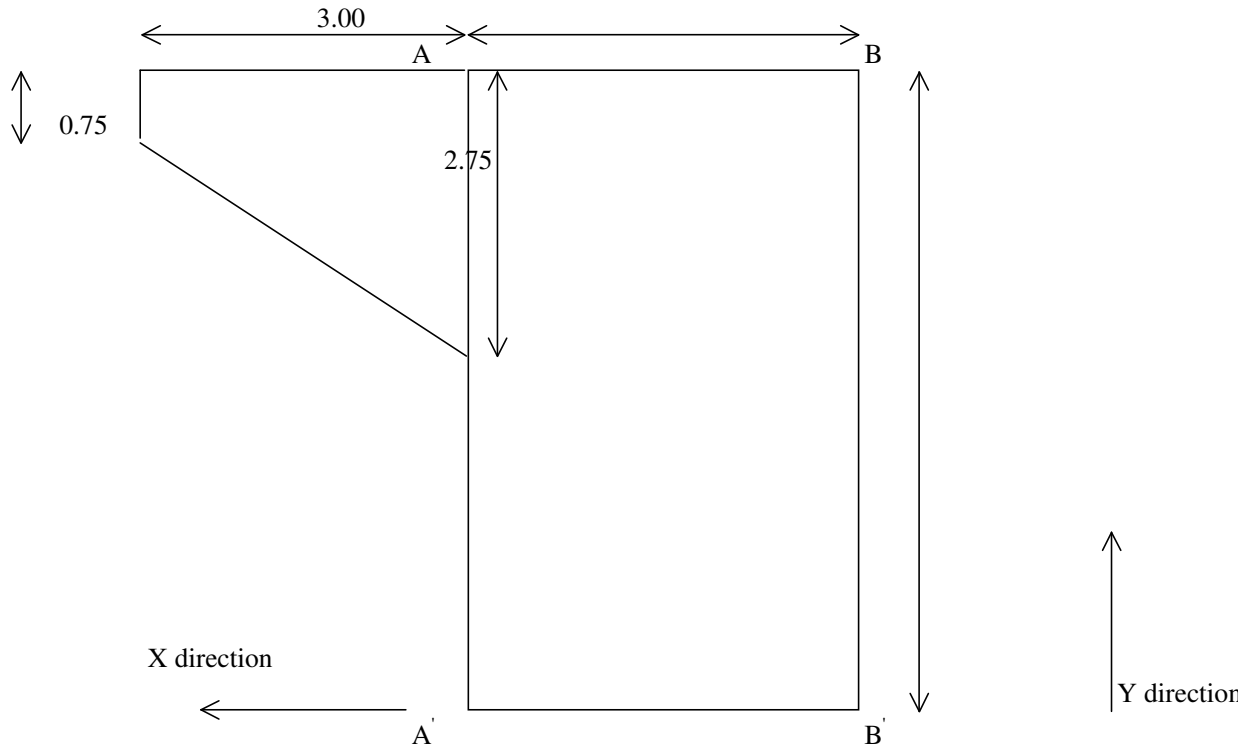
S.No.	Horz. Press due to	Area factor	Pressure $k_a.\gamma.h$	Height	Horz. Force	L. A. from Section	Moment about section
1	L.L. surcharge	1	0.671	2.50	1.676	1.250	2.10
2	ActiveEarthPressure	0.5	1.397	2.50	1.746	1.050	1.83
3	ActiveEarthPressure (Cantilever portion)	0.5	0.000	0	0.000	2.500	0.00
4	L.L. surcharge (Cantilever portion)	1	0.671	0	0.000	2.500	0.00
			Total forces =		3.42		3.93

Total Horizontal Force = 3.42 t
Total Moment about base = 3.93 tm
Bending moment at section = 3.929 t-m
Effective depth required = 0.161 m
Depth of stem at section = 0.500 m
Effective depth provided = 0.440 > reqd. 0.161 **HENCE SAFE**
Area of steel reqd. = 4.928 cm^2

Shear Check :

Shear force at section = 3.42 t
Bending moment at section = 3.93 t-m
Net shear force =S-Ms*tanβ/d_1= 3.42 t
Nominal Shear stress = 7.78 t/m^2
Permissible shear strsss is calculated as per cl.304.7.1.3 of IRC:21-2000
100As/bd = 0.11 % k= 1.00
Therefore Permissible shear strsss = 20.40 t/m^2 **HENCE SAFE**

Design of Cantilever portion of Return wall



Width of Cantilever return wall		=	3.00	
Height of Cantilever return at Tip		=	0.75	
Height of Cantilever return taper		=	2.00	
Height of Cantilever return at Root		=	2.75	
Thickness of Solid Return at farther end		=	0.5	
Thickness of Solid Return at Root		=	0.5	
Thickness of Solid Return at bottom		=	0.5	
Thickness of Solid Return at top		=	0.5	
Thickness of Cantilever return		=	0.5	
Unit wt of Soil		=	1.8	t/m^3
Coefficient of active earth pressure		=	0.2794	
Height of live load surcharge		=	1.2	m
Grade of concrete		=	M 30	
	σ_{cbc}	=	1020	t/m^2
	m	=	10	
	σ_{st}	=	20400	t/m^2
	k	=	0.333	
	j	=	0.889	
	R	=	151.1	t/m^2

Moment due to Cantilever Return:

Moment due to earth pressure at face A - A'

M = 0.2794 x 1.2 x 1.8 x 0.75 x 3.00 x 1.50

+ 1 x 0.2794 x 2 x 0.5625 x 3.00 x 1.50

+ 1 x 0.2794 x 2 x 0.444444 x X^2 x dx x [3.00 - X]

+ 0.2794 x 2 x 1.95 x 0.666667 x X x dx x [3.00 - X]

= 2.0368 + 0.6365081 + 0.11176 x 6.75 + 0.6538 x 4.5

= **6.3698** t-m

Design of cantilever Return:

Assuming 50 mm cover and 12 mm dia bars.

Effective depth available = 500 - 50 - 20 - 6 = 424 mm

$M = R \times b \times d^2$

= 151.1111 x 2.750 x 0.179776 = 74.706916 t-m

$$A_{st} = \frac{6.3698 \times 10^6}{20400 \times 0.88889 \times 0.424} = 828.48 \text{ mm}^2$$

A_{st}/m = 301.2655 mm^2/m

Provide 10 mm dia @ 200 mm c/c providing 392.699 mm^2 on earth face.

Provide 8 mm dia @ 200 mm c/c providing 251.327 mm^2 on other face.

Along Horizantal direction.

BRIDGE AT CH:37+573
(BHADRAK–ANANDPUR)

DESIGN OF SUBSTRUCTURE

DESIGN DATA

Formation Level	=	40.500	m
Ground Level	=	35.580	m
Lowest Water Level	=	32.080	m
Highest Flood Level	=	39.100	m
Founding Level	=	32.080	m
Thickness of bearing & pedestal	=	0.000	m
Width of abutment	=	12.000	m
Bouyancy factor	=	1.0	
Safe Bearing Capacity	=	23.300	t/sqm
Dry density of earth	=	1.800	t/cum
Submerged density of earth	=	1.0	t/cum
Saturated density of earth	=	2.000	t/cum
Coefficient of base friction	=	0.5	
Span (c/c of exp. joint)	=	10.800	m
Overall Width of deck slab	=	12.000	m
Width of carriageway	=	11.000	m
Width of crash barrier	=	0.500	m
Depth of Superstructure at mid	=	0.925	m
Depth of Superstructure at end	=	0.775	m
Tkickness of wearing coat	=	0.056	m
Unit wt of concrete	=	2.400	t/m^3
Grade of Concrete	-	M 25	25
Grade of Reinforcement	-	415 (HYSD)	
Live Load	-	One Lane of 70R Wheeled + Class A	
	-	3 lanes of Class A	
Permissible Compressive stress in Concrete	-	850	t/m^2
Permissible Tensile stress in Steel	-	20400	t/m^2
Modular ratio, m	-	8.33333	
factor, k	-	0.258	
Lever arm factor, j	-	0.914	
Moment of Resistance	-	100	t/m^2
Thickness of returnwall		0.5	m

COEFFICIENT OF ACTIVE EARTH PRESSURE

AS PER COULOMB'S THEORY, COEFFICIENT OF ACTIVE EARTH PRESSURE IS

$$Ka = \frac{SIN^2(\alpha+\phi)}{SIN^2\alpha \cdot SIN(\alpha-\delta)\left[1+\sqrt{\frac{SIN(\alpha+\varphi).SIN(\varphi-\iota)}{SIN(\alpha-\delta).SIN(\varphi+\iota)}}\right]^2}$$

WHERE

ϕ = ANGLE OF INTERNAL FRICTION OF EARTH

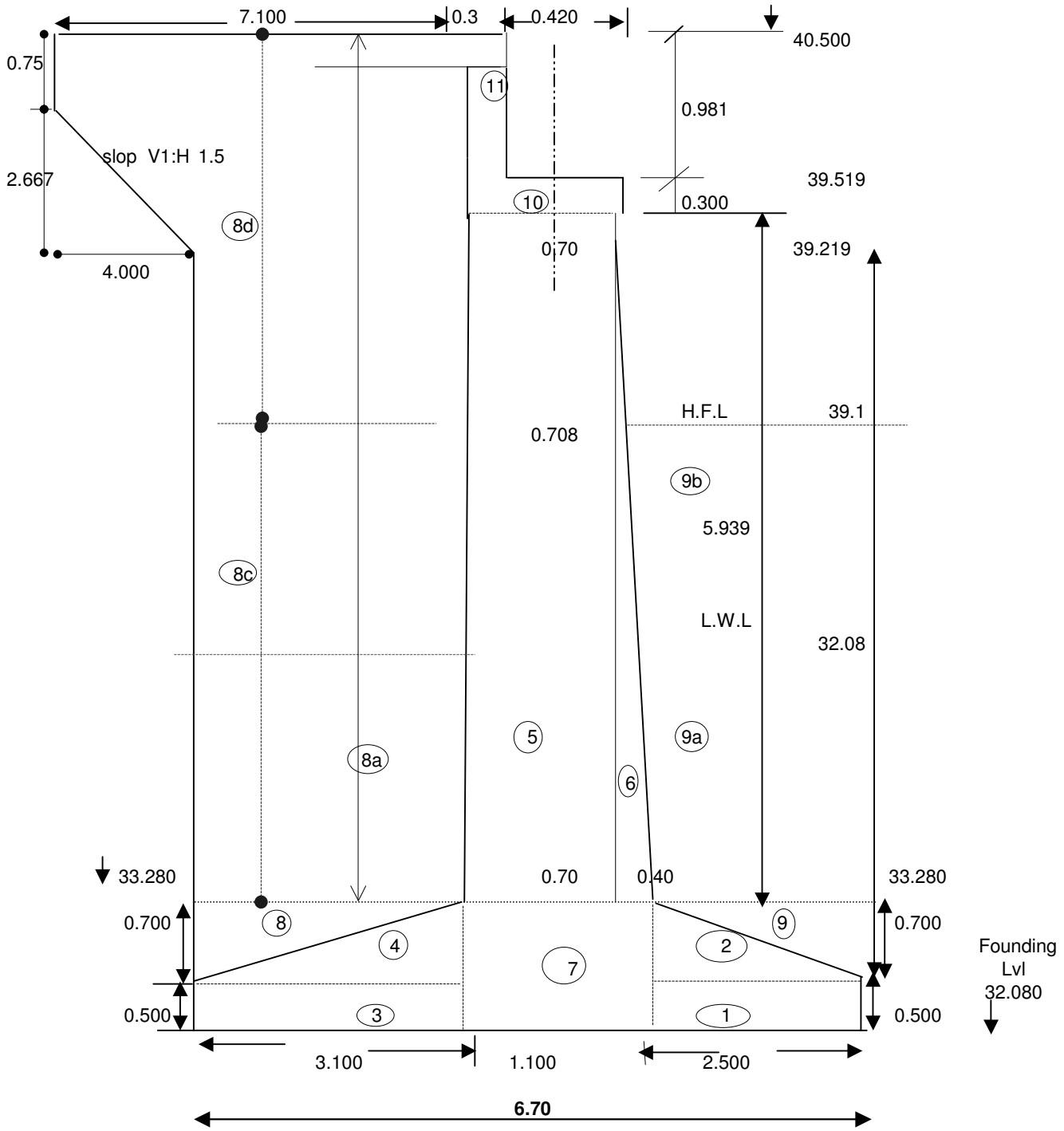
α = ANGLE OF INCLINATION OF BACK OF WALL

δ = ANGLE OF INTERNAL FRICTION BETWEEN WALL & EARTH

ι = ANGLE OF INCLINATION OF BACKFILL

HERE					
	ϕ =	30 °	=	0.524	Radian
	α =	90 °	=	1.571	Radian
	δ =	20 °	=	0.349	Radian
	ι =	0 °	=	0	Radian
			K_a =	0.2973	

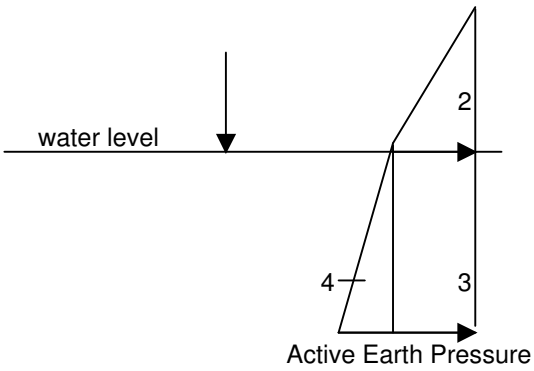
Therefore, Horizontal coefficient of Active earth pressure = **$K_a COS\phi$ = K_{ha} = 0.2794**


7.100
0.3
0.420
40.500
0.75
11
0.981
slop V1:H 1.5
2.667
39.519
10
0.300
8d
0.70
39.219
4.000
H.F.L
39.1
0.708
9b
5.939
8c
L.W.L
32.08
5
9a
8a
6
33.280
0.70
0.40
33.280
0.700
8
9
0.700
4
2
7
Founding
Lvl
32.080
0.500
3
1
0.500
3.100
1.100
2.500
6.70

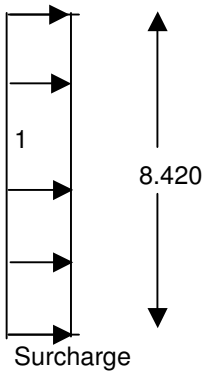
HEIGHT OF ABUTMENT

Total height of abutment = Formation Level - Founding Level = 8.420 m
For DESIGN purpose, the height of abutment is considered as, say, = **8.420 m**

CALCULATION OF ACTIVE EARTH PRESSURE



Active Earth Pressure



Surcharge

DRY. condition

a) Service Condition

Element No.	Component	Area factor	Height (m)	Pressure (t/m^2)	Force (t)	C.G. from base (m)	Moment (tm)
1	LL Surcharge	1.0	1.200	0.67	67.75	4.210	285.23
2	Dry Earth	0.5	8.420	4.23	213.92	3.536	756.50
3		1.0	0.000	4.23	0.00	0.000	0.00
4	SubmgEarth	0.5	0.000	0.00	0.00	0.000	0.00
TOTAL					**281.67**		**1041.73**

b) Span Dislodge Condition

Net force = 281.67 - 67.75 = **213.92** t
Net moment = 1041.73 - 285.23 = **756.50** tm

H.F.L. condition

a) Service Condition

Element no.	Component	Area factor	Height (m)	Pressure (t/m^2)	Force (t)	C.G. from base (m)	Moment (tm)
1	LL Surcharge	1.0	1.200	0.67	67.75	4.210	285.23
2	Dry Earth	0.5	1.400	0.78	6.57	7.608	49.99
3		1.0	7.020	0.78	65.90	3.510	231.30
4	SubmgEarth	0.5	7.020	1.96	82.61	2.340	193.30
TOTAL					**222.83**		**759.83**

b) Span Dislodge Condition

Net force = 222.83 - 67.75 = **155.08** t
Net moment= 759.83 - 285.23 = **474.60** tm

Forces & moments due to Abutment (Concrete) components

DRY Case :

Element No.	Component	Area Factor	Length (m)	Width (m)	Height (m)	Density (t/m^3)	Weight (t)	C.G.from toe (m)	Moment about toe
1	Toe Slab	1.0	2.500	12.00	0.500	2.40	36.00	1.250	45.00
2		0.5	2.500	12.00	0.700	2.40	25.20	1.667	42.00
3	Heel Slab	1.0	3.100	12.00	0.500	2.40	44.64	5.150	229.90
4		0.5	3.100	12.00	0.700	2.40	31.25	4.633	144.78
5	Stem Wall	1.0	0.700	12.00	5.939	2.40	119.73	3.250	389.12
6		0.5	0.400	12.00	5.939	2.40	34.21	2.767	94.64
7	stem rect	1.0	1.100	12.00	1.200	2.40	38.02	3.050	115.95
10	Cap	1.0	0.700	12.00	0.300	2.40	6.05	3.250	19.66
11	Dirt Wall	1.0	0.300	12.00	0.631	2.40	5.45	3.450	18.81
8	Retutnwall	0.5	3.100	1.00	0.700	2.40	2.60	5.667	14.76
8a		1.0	3.100	1.00	7.920	2.40	58.92	5.150	303.46
TOTAL							**402.07**		**1418.08**

H.F.L. Case :

Element No.	Component	Area Factor	Length (m)	Width (m)	Height (m)	Density (t/m^3)	Weight (t)	C.G.from toe (m)	Moment ,@ Toe
1	Toe Slab	1.0	2.500	12.00	0.500	1.40	21.00	1.250	26.25
2		0.5	2.500	12.00	0.700	1.40	14.70	1.667	24.50
3	Heel Slab	1.0	3.100	12.00	0.500	1.40	26.04	5.150	134.11
4		0.5	3.100	12.00	0.700	1.40	18.23	4.633	84.46
5	Stem Wall	1.0	0.700	12.00	5.820	1.40	68.44	3.250	222.44
6		0.5	0.400	12.00	5.820	1.40	19.56	2.767	54.10
5	Stem Wall	1.0	0.700	12.00	0.119	2.40	2.40	3.250	7.80
6		0.5	0.400	12.00	0.119	2.40	0.69	2.767	1.90
7	stem rect	1.0	1.100	12.00	1.100	1.40	20.33	3.050	62.00
10	Cap	1.0	0.700	12.00	0.30	2.40	6.05	3.250	19.66
11	Dirt Wall	1.0	0.300	12.00	0.63	2.40	5.45	3.450	18.81
8	Returnwall	0.5	3.100	1.00	0.70	1.40	1.52	5.667	8.61
8c		1.0	3.100	1.00	5.82	1.40	25.26	5.150	130.08
8d		1.0	3.100	1.00	1.40	2.40	10.42	5.150	53.64
TOTAL							**240.07**		**848.35**

As per clause 214.2 of IRC:6, horizontal braking force F_h, for each span is:

For Class A Single lane : F_h = ⎡0.2 x 26.3 ⎤ = 5.256 t

For class 70R Tracked : F_h = ⎡0.2 x 54.8 ⎤ = 10.962 t

For class A 3 lane F_h = 0.2 x 26.3 + 0.05 x 26.3 = 6.57 t

For class 70R Tracked +class A 1 lane

F_h = 0.2 x 54.8 + 0.05 x 26.3 = 12.276 t

μR_g = 7.5155 t

$F_h/2$ = 6.138

Summary of Longitudinal Forces :

Load Case	Longitudinal horizontal force (t)
70RW+class A single lane	**7.52**

Dead Load

dead load of slab	=	24.48 t/m		
Total reaction	=	132.19	=	132.19 t
wearing coat	=	1.36 t/m	=	7.3181 t
crashbarrier	=	1.00 t/m	=	10.8 t

Live Load

Live load Analysis has been done using Staad pro.Results shown in appendix.

Summary of Dead load & Live loads from Superstructure. (STAAD Pro)

	P		M_L	M_T
Dead Load Reaction:				
	132.19	t		
SIDL	18.12	t		
L.L Max Reaction Case				
70RW + Class A	81.09	t		137.68
Class A 3 Lane	78.84	t		55.19
	231.40			**137.68**

Forces & moments due to Earth and LL surcharge

DRY Case : Self weight of Earth

Element No	Component	Area Factor	Length (m)	Width (m)	Height (m)	Density (t/m^3)	Weight (t)	C.G.from toe (m)	Moment `@ Toe
8	DRY EARTH	0.5	3.100	11.00	0.700	1.8	21.48	5.667	121.74
8a		1.0	3.100	11.00	7.220	1.800	443.16	5.150	2282.29
TOTAL							**464.65**		**2404.03**

H.F.L Case :

Element No	Component	Area Factor	Length (m)	Width (m)	Height (m)	Density (t/m^3)	Weight (t)	C.G.from toe (m)	Moment `@Toe
8	SATURATED SOIL	0.5	3.100	11.000	0.7	1.000	11.94	5.667	67.63
8c		1.0	3.100	11.000	5.82	1.000	198.46	5.15	1022.08
8d	DRY	1.0	3.100	11.000	1.4	1.800	85.93	5.150	442.55
TOTAL							**296.33**		**1532.26**

L.L.SURCHARGE

SUMMARY OF FORCES AND MOMENTS:

LOAD CASE	Case. L.W.L.		Case. H.F.L.		
	Service Cond.	Span dislodged	Service Cond.	Span dislodged	
Vertical load from superstructure (a)	**231.40**	0.00	**231.40**	0.00	
Vertical load from substructure (b)	866.72	866.72	536.40	536.40	
Total Vertical Load V = (a) + (b)	1098.12	866.72	767.80	536.40	
Total Horizontal Force H =	**289.18**	213.92	**230.34**	155.08	
Moment @ toe due to (a)	**717.34**	0.00	**717.34**	0.00	
Moment @ toe due to (b)	3822.11	3822.11	2380.61	2380.61	
Total Moment @ toe (M)	4539.45	3822.11	3097.95	2380.61	
Dist. of C.G. of V from toe Z = M/V	4.134	4.41	4.03	4.44	
eccentricity (e = Z -b/2)	0.784	1.060	0.685	1.088	
Relieving Moment @ c/l base (M1)	**860.75**	**918.60**	**525.81**	**583.66**	
overturning moment due to					
Horz. braking force	**55.91**	0.00	**55.91**	0.00	
Earth Pressure	1041.73	756.50	759.83	474.60	
Total overturning Moment (M2)	**1097.64**	**756.50**	**815.74**	**474.60**	
Net moment (M2-M1) = M_L	**236.88**	**-162.10**	**289.92**	**-109.06**	
Factor of Safety					
Against overturning (M / M2)	**4.14**	**5.05**	**3.80**	**5.02**	Safe against overturning
Against sliding (μ x V / H)	**1.899**	**2.026**	**1.667**	**1.729**	Safe against sliding

I.R.C 78-2000:cl 706.3.4

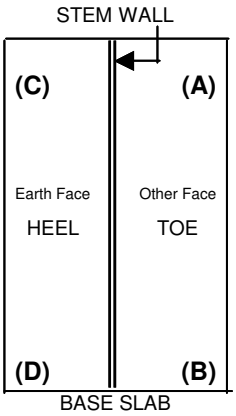
Area of base (A) = 6.700 x 12.00 = 75.60 m^2

Z_L = 89.78 m^3

Z_T = 160.80 m^3

CHECK FOR BASE PRESSURE:

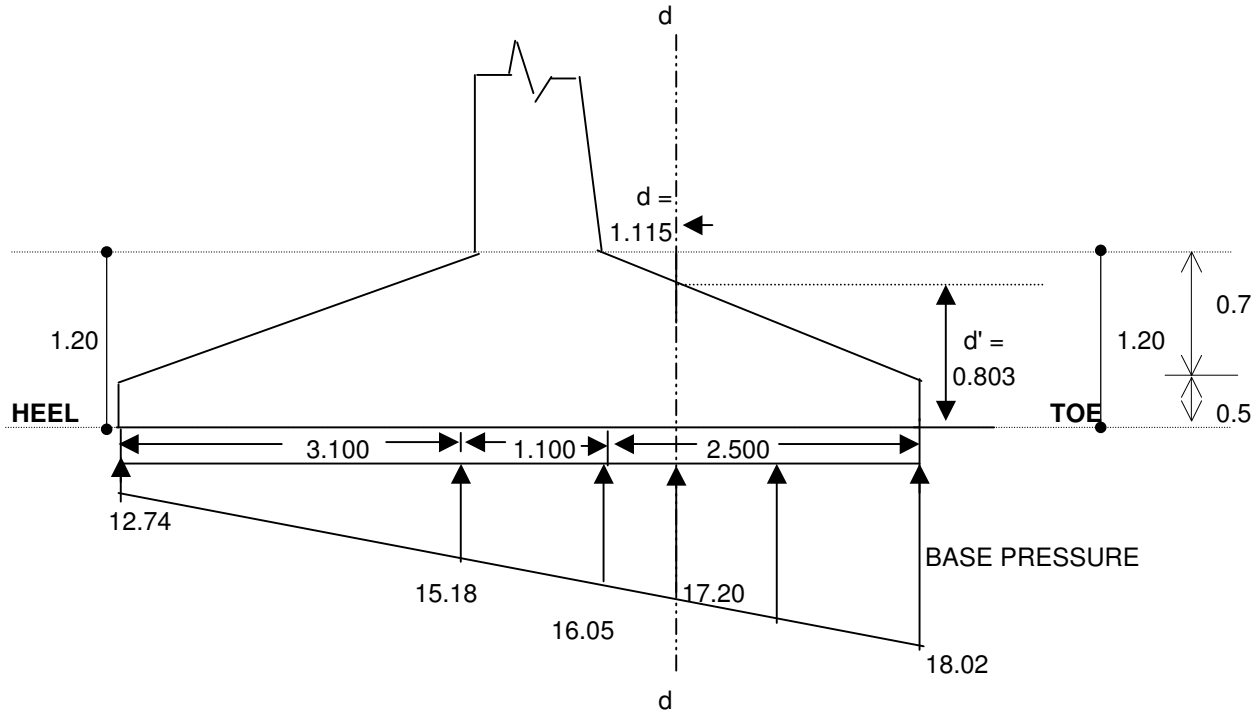
Base Pressure		LWL CASE		HFL CASE	
		Service Cond.	Span dislodged	Service Cond.	Span dislodged
P/A		14.53	11.46	10.16	7.10
M_L/Z_L		2.64	-1.81	3.23	-1.21
M_T/Z_T		0.86	0.00	0.86	0.00
(A)	$(P/A + M_L/Z_L + M_T/Z_T)$	**18.02**	**9.66**	**14.24**	**5.88**
(B)	$(P/A + M_L/Z_L - M_T/Z_T)$	16.31	9.66	12.53	5.88
(C)	$(P/A - M_L/Z_L + M_T/Z_T)$	12.74	13.27	7.78	8.31
(D)	$(P/A - M_L/Z_L - M_T/Z_T)$	**11.031**	**13.27**	**6.07**	**8.31**



Max.Base Pressure = **18.02** **t/m^2** **<** **23.30** **Hence O.K.**

Min. Base Pressure = **6.07** **t/m^2** **>** **0** **Hence O.K.**

DESIGN OF TOE SLAB



BENDING MOMENT AT FACE OF STEM

Loadings	Element	Area fact.	force	L.A.	Moment
Downward Loads	1	1.0	3.000	1.250	3.750
	2	0.5	2.100	0.833	1.750
Upward Base pressure	Rect.	1.0	-40.128	1.250	-50.160
	Trian.	0.5	-2.461	1.667	-4.102
TOTAL			-37.489		-48.762

Bending Moment at face of stem 48.762 tm/m

Effective depth required 0.698 m

Effective depth provided at face of stem 1.115 m

Area of Reinforcement required 2345 mm^2

Minimum steel required 0.15% 1673 mm^2 I.R.C 78-2000 Clause:707.2.7

Distribution steel 586 mm^2/m

12 ϕ , @ 150 C/C

mainsteel 2345 mm^2 753.9822

Hence provide , 25 ϕ , @ 160 C/C

0 ϕ , @ 160 C/C

at top. However in reference to clause 707.2.8 of IRC: 78-2000, the requirement of reinforcement at top is follows.

Minimum steel reinfocement as per above clause 669 mm^2/m

provide 12 ϕ , @ 160 C/C

706.8583

Check for Shear

SHEAR FORCE AT "d" FROM FACE OF STEM

Loadings	Element	Area fact.	force	L.A.	Moment
Downward loads	1	1.0	1.662	0.693	1.151
	2	0.5	1.163	0.462	0.537
Upward base pressure	Rect.	1.0	-23.815	0.693	-16.492
	Trian.	0.5	-0.571	0.923	-0.528
TOTAL			-21.561		-15.332

Effective depth (d') at distence d 0.803 m

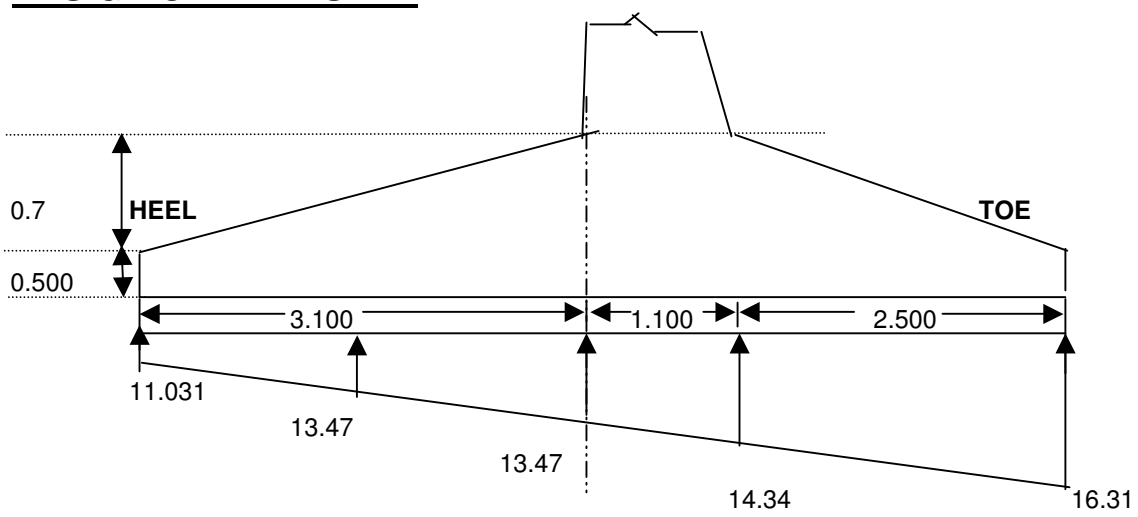
Shear force at critical section 21.6 t

Bending Moment at critical section 15.33 tm

$\tan \beta$ = 0.32

Net shear force S-M*tanβ/d'	**15.43** t	
Hence, Shear stress	19.22 t/m^2	
% of reinforcement	0.38	
Permissible shear stress	27.76 t/m^2	**Hence O.K.**

DESIGN OF HEEL SLAB



BENDING MOMENT AND SHEAR FORCE AT FACE OF STEM

Loadings	Element	Area fact.	force	L.A.	moment
Downward Loads.	3	1	3.720	1.550	5.766
	4	0.5	2.604	1.033	2.691
	8	0.5	3.906	2.067	8.072
	8a	1	40.288	1.550	62.446
		0.5	3.906	2.067	4.036
		1	5.127	1.550	7.947
Upward base pressure	Rect.	1	-34.195	1.550	-53.002
	Trian.	0.5	-3.784	1.033	-3.911
TOTAL			21.572		34.046

Bending Moment at face of stem		**34.046** tm	
Effective depth required		0.583 m	
Effective depth provided at face of stem		1.115 m	
Area of Reinforcement required		1660.51 mm^2	
Minimum steel	0.15%	1672.50 mm^2	I.R.C 78-2000 Clause:707.2.7

Distribution steel 415.13 mm^2/m
mainsteel 1672.50 mm^2

12 ϕ , @ 150 C/C

Hence provide , 20 ϕ , @ 150 C/C 753.9822
0 ϕ , @ 150 C/C

There is no tension below foundation, hence foundation will not have negative moment at top. However in reference to clause 707.2.8 of IRC: 78-2000, the requirement of reinforcement at top is follows.

Minimum steel reinfocement as per above clause 836 mm^2/m
provide 16 ϕ , @ 150 C/C
1340.413

Check for Shear

(Critical section at face of stem)

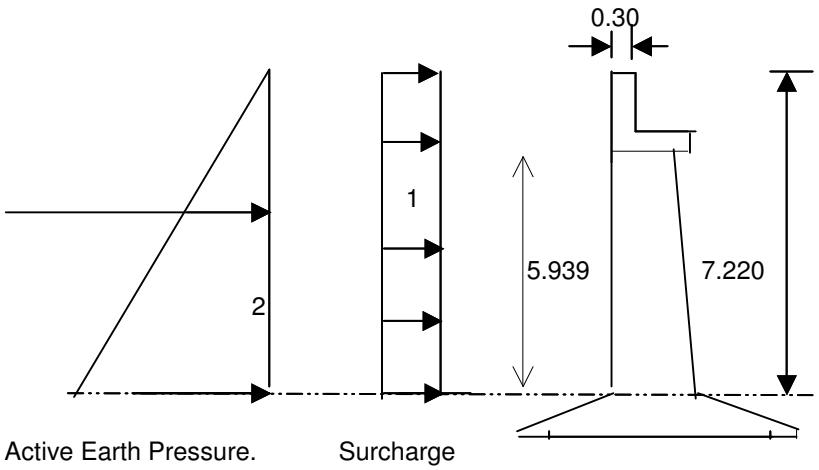
Shear force at face of stem 21.57 t

tan β 0.226
Bending moment at face of stem 34.046 tm
Net shear force S-M*tanβ /d 14.68 t

Hence, Shear stress 13.16 t/m^2
% of reinforcement 0.15

Permissible shear stress 20.39 t/m^2 **Hence O.K.**

DESIGN OF STEM WALL



Active Earth Pressure. Surcharge

R.L. OF SECTION = 33.280 m

Element No.	Area factor	Height of E.P. diagram	Earth Pressure	Force	L.A.	Moment tm
1	1	6.920	0.671	55.7	3.460	192.65
2	0.5	6.920	3.480	144.5	2.906	419.94
HORIZONTAL FORCE				7.52	6.239	46.89
TOTAL				207.69		**659.49**

Total Vertical Load = Stem + dirt wall + cap + Load from superstructure
= 153.939 + 5.45 + 6.05 + 231.40
= 396.839 t
Longitudinal Moment = 659.487 t-m
Transverse Moment = 137.685 t-m

b) Span Dislodge Condition

Total Vertical Load	=	Stem + dirt wall + cap + Load from superstructure				
	=	153.939	+	5.45	+	**6.05**
	=	165.439				
Longitudinal Moment	=	612.598				
Transverse Moment	=	0.000				

H.F.L. condition

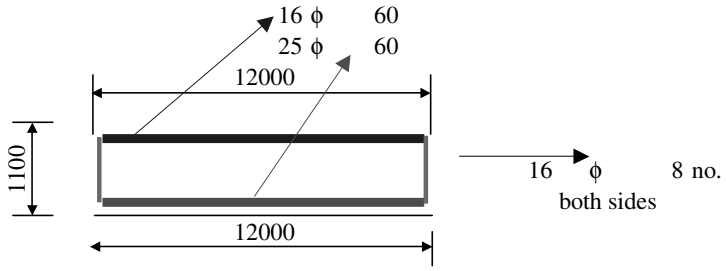
a) Service Condition

Element no.	Component	Area factor	Height (m)	Pressure (t/m^2)	Force (t)	C.G. from base (m)	Moment (tm)
1	LL Surcharge	1.0	1.200	0.67	55.68	3.460	192.65
2	Dry Earth	0.5	1.400	0.78	6.57	6.108	40.14
3		1.0	5.520	0.78	9.39	2.760	25.91
4	SubmgEarth	0.5	5.520	1.54	51.08	1.840	93.98
5					7.52	6.239	46.89
TOTAL					**130.23**		**399.57**

Total Vertical Load	=	Stem + dirt wall + cap + Load from superstructure						
	=	90.803	+	5.45	+	6.05	+	231.40
	=	333.703	t					
Longitudinal Moment	=	399.570	t-m					
Transverse Moment	=	137.685	t-m					

b) Span Dislodge Condition

Total Vertical Load	=	Stem + dirt wall + cap + Load from superstructure				
	=	90.803	+	5.45	+	**6.05**
	=	102.303				
Longitudinal Moment	=	352.681				
Transverse Moment	=	0.000				
Cross Sectional area			0.900	m^2	1125.000	
Providing **16**	,@	178.72	c/c	say,	**170**	C/C as horizontal reinforcement



PLAN : ABUTMENT SHAFT

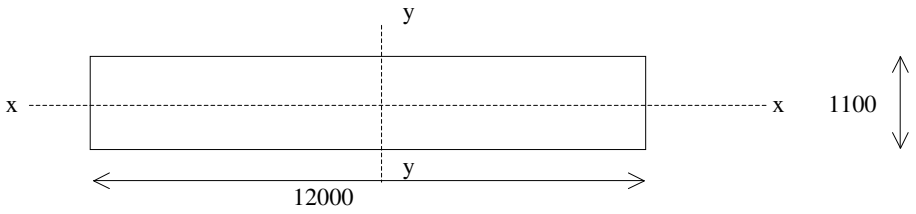
Reinforcement provided = 44733.13779 mm^2

Summary of Loads at Abutment Shaft bottom :

1 DRY condition	**P**	**M_L**	**M_T**
With L.L	396.84	659.49	137.68

Check for Cracked/Uncracked Section

Length of section		=	12000	mm
Width of section		=	1100	mm
Gross Area of section	A_g	=	13200000	mm^2
Gross M.O.I of section	I_{gxx}	=	1.331E+12	mm^4
Gross M.O.I of section	I_{gyy}	=	1.584E+14	mm^4

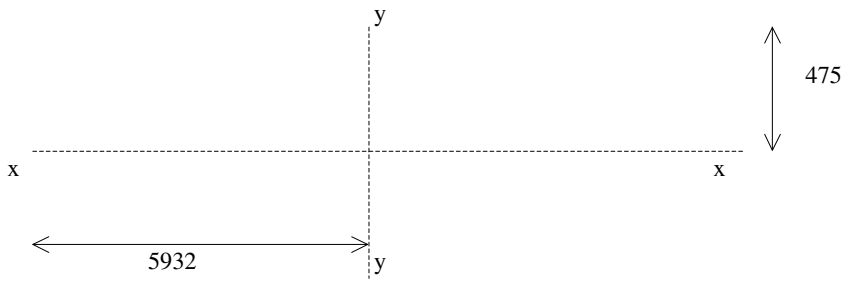


Abutment section

Transformed sectional properties of section:

Adopting

Modular ratio	m	=	10	
Cover			72.5	68
Dia of Bars		=	25	16
No of bars in tension face (longer)		=	60	
No of bars in compression face		=		60
No of bars in shorter direction		=		8
Total bars in section		=	136	
Steel Area	A_s	=	44733.1	mm^2
% of Steel		=	0.33889	%



	A_{sx}	=	29452.4	mm^2
	A_{sy}	=	1608.5	mm^2
Area of concrete	$A_c = A_g - A_s$	=	13155267	mm^2
C.G of Steel placed on longer face		=	477.5	mm
C.G of Steel placed on shorter face		=	5932	mm
Transformed Area of Section	A_{tfm}	=	13602598	mm^2

Transformed $M.I_{txx} = I_{gxx} + 2\{m - 1\} A_s ax^2$

$= 1.45188E+12 \ mm^4$

$Z_{xx} = \frac{M.Itxx}{d/2} = 2.64E+09 \ mm^3$

Transformed $M.I_{tyy} = I_{gyy} + 2\{m - 1\} A_s ay^2$

$= 1.59419E+14 \ mm^4$

$Z_{yy} = \frac{M.I_{tyy}}{d/2} = 2.657E+10 \ mm^3$

Permissible stresses

Minimum Gross Moment of inertia	I_{min}	=	1.331E+12	mm^4
Area of section		=	13200000	mm^2
	r	=	317.54265	mm

Effective length of Abutment shaft (IRC:21-2000 cl: 306.2.1)

Abutment shaft height	L	=	5.939	m	
Effective length	L_{eff}	=	7.1268	m	
Slenderness ratio		=	22.4436	<	**50**
Type of member		=	1		

1 Short Column
2 Long Column

Stress reduction coefficient (IRC:21-2000 cl: 306.4.2,3)

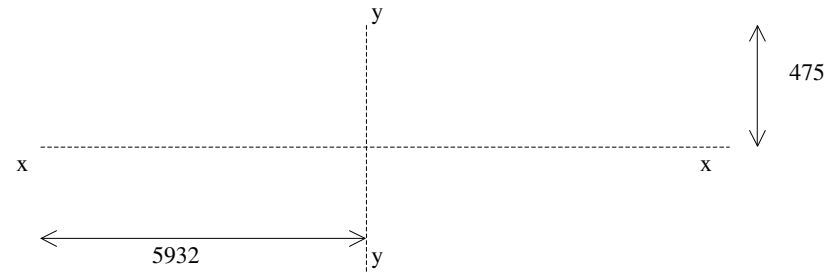
$\beta = 1$

Permissible stresses **:** *concrete*

	σ_{cbc}	=	8.33333	N/mm^2
	σ_{co}	=	6.25	N/mm^2
	Tensile stress	=	0.67	N/mm^2

Permissible stresses : *Steel*

	σ_{st}	=	200	N/mm^2



	A_{sx}	=	29452.4	mm^2
	A_{sy}	=	1608.5	mm^2
Area of concrete	$A_c = A_g - A_s$	=	13155267	mm^2
C.G of Steel placed on longer face		=	477.5	mm
C.G of Steel placed on shorter face		=	5932	mm
Transformed Area of Section	A_{tfm}	=	13602598	mm^2
Transformed $M.I_{txx}$	$= I_{gxx} + 2[m - 1]A_s ax^2$			
		=	1.45188E+12	mm^4

$$Z_{xx} = \frac{M.Itxx}{d/2} = 2.64E+09 \text{ mm}$$

Transformed $M.I_{tyy}$	$= I_{gyy} + 2[m - 1]A_s ay^2$			
		=	1.59419E+14	mm^4

$$Z_{yy} = \frac{M.I_{tyy}}{d/2} = 2.657E+10 \text{ mm}^3$$

Permissible stresses

Minimum Gross Moment of inertia	I_{min}	=	1.331E+12	mm^4
Area of section		=	13200000	mm^2
	r	=	317.54265	mm

Effective length of Abutment shaft (IRC:21-2000 cl: 306.2.1)

Abutment shaft height	L	=	5.939	m	
Effective length	L_{eff}	=	7.1268	m	
Slenderness ratio		=	22.4436	<	**50**
Type of member		=	1		

1 Short Column
2 Long Column

Stress reduction coefficient (IRC:21-2000 cl: 306.4.2,3)

	β	=	1

Permissible stresses **:** *concrete*

	σ_{cbc}	=	8.33333	N/mm^2

Abutment SHAFT ..DRY NORMAL

```
 Depth of Section             =     1.100 m
 Width of Section             =    12.000 m

 along width-compression face- no of bar:  60   tension face- no of bar:  60
 Dia (mm)                                  16                            25
 Cover (cm)                              7.50                          7.5
 along depth-compression face- no of bar:   8   tension face- no of bar:   8
 Dia (mm)                                  16                            16
 Cover  (cm)                             7.50                          7.5

 Modular Ratio : Compression  =      10.0
 Modular Ratio : Tension      =      10.0
 Allowable Concrete Stress    =     85.00 Kg/cm^2
 Allowable Steel Stress       =   2040.00 Kg/cm^2

 Axial Load                   =   396.840 T
 Mxx                          =   659.490 Tm
 Myy                          =   137.680 Tm


 Intercept of Neutral axis : X axis : = 181.173 m
                           : y axis : =    .266 m

             Steel Stress Governs Design

 Stress in Concrete due to Loads =   57.90 Kg/cm^2
 Stress in Steel    due to Loads = 1686.70 Kg/cm^2
 Percentage of Steel             =     .34 %
```

Abutment SHAFT ..DRY SPAN DISLODGED

```
 Depth of Section             =     1.100 m
 Width of Section             =    12.000 m

 Modular Ratio : Compression  =      10.0
 Modular Ratio : Tension      =      10.0
 Allowable Concrete Stress    =     85.00 Kg/cm^2
 Allowable Steel Stress       =   2040.00 Kg/cm^2

 Axial Load                   =   165.440 T
 Mxx                          =   612.600 Tm
 Myy                          =      .010 Tm


 Intercept of Neutral axis : X axis : = ******* m
                           : y axis : =    .224 m

             Steel Stress Governs Design

 Stress in Concrete due to Loads =   51.84 Kg/cm^2
 Stress in Steel    due to Loads = 1851.22 Kg/cm^2
 Percentage of Steel             =     .34 %
```

Abutment SHAFT ..HFL NORMAL

Depth of Section	=	1.100 m
Width of Section	=	12.000 m
Modular Ratio : Compression	=	10.0
Modular Ratio : Tension	=	10.0
Allowable Concrete Stress	=	85.00 Kg/cm^2
Allowable Steel Stress	=	2040.00 Kg/cm^2
Axial Load	=	333.700 T
Mxx	=	399.570 Tm
Myy	=	137.680 Tm

Intercept of Neutral axis : X axis : = 121.011 m
: y axis : = .300 m

Steel Stress Governs Design

Stress in Concrete due to Loads	=	35.30 Kg/cm^2
Stress in Steel due to Loads	=	889.17 Kg/cm^2
Percentage of Steel	=	.34 %

Abutment SHAFT ..HFL SPAN DISLODGED

Depth of Section	=	1.100 m
Width of Section	=	12.000 m
Modular Ratio : Compression	=	10.0
Modular Ratio : Tension	=	10.0
Allowable Concrete Stress	=	85.00 Kg/cm^2
Allowable Steel Stress	=	2040.00 Kg/cm^2
Axial Load	=	102.300 T
Mxx	=	352.680 Tm
Myy	=	.010 Tm

Intercept of Neutral axis : X axis : = ******* m
: y axis : = .226 m

Steel Stress Governs Design

Stress in Concrete due to Loads	=	29.86 Kg/cm^2
Stress in Steel due to Loads	=	1055.08 Kg/cm^2
Percentage of Steel	=	.34 %

Design of Abutment Cap:

As the cap is fully supported on the abutment.Minimum thickness of the cap required as per cl: 710.8.2 of IRC:78-2000 is 200 mm.

However the thickness of abutment cap is = 300 mm

Assuming a cap thickness of = 300 mm

Volume of Abutment cap = 0.3 x 0.70 x 12

= 2.52 m^3

Quantity of steel = 1 % of volume

$$= \frac{1}{100} \times 2.52$$

= 0.0252 m^3

Quantity of steel to be provided at top = 0.0126 m^3

Quantity of steel to be provided at bottom = 0.0126 m^3

Top & bottom face:

Quantity of steel to be provided in Longitudinal di = 0.0063 m^3

Assuming a clear cover of = 50 mm

Length of bar 12.00 - 0.100 = 11.9 m

Area of steel required in Longitudinal direction

$$\frac{0.0063}{11.9} = 529.412 \text{ mm}^2$$

Provide **8** nos of bars **12** mm dia at top & bottom face.

= 904.779 mm^2

Transverse steel:

Quantity of steel to be provided in Longitudinal di = 0.0063 m^3

Assuming a clear cover of = 50 mm

Assuming a dia of bar = 12 mm

Length of bar 0.70 - 0.100 = 0.6 m

Volume of each stirrup = 6.8E-05 m^3

no of stirrups required for m/length = 8 nos

Required Spacing

$$= \frac{1000}{8}$$

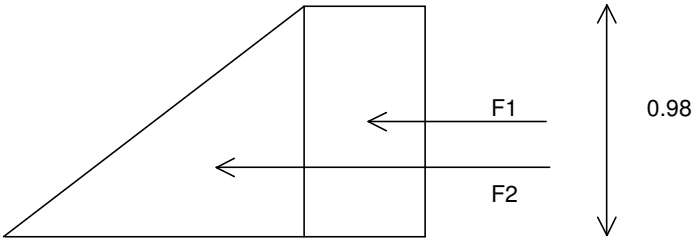
= 125 mm

Provide 12 mm dia bar 125 mm c/c stirrups throught in length of abutment cap.

904.779 mm^2

Design of Dirt wall:

Dirt wall designed as a vertical cantilever.



Intensity for rectangular portion	=	0.2794	x	2.00	x	1.2	=	0.67056	t/m^2
F1	=	0.67056	x	12.00	x	0.98	=	7.893832	t
Intensity for triangular portion	=	0.2794	x	2.00	x	0.98	=	0.548183	t/m^2
F2	=	0.548183	x	12.00	x	0.98	=	3.226604	t
M1	=	7.893832	x	0.49			=	3.871925	t-m
M2	=	3.226604	x	0.41202			=	1.329425	t-m
M1+ M2							=	**5.20135**	t-m
Total moment at base of dirt wall /m length							=	0.433446	t-m/m
Thickness of dirtwall							=	0.3	m
Assuming a clear cover on either face							=	50	mm

Vertical steel on earth face:

dia of steel bar							=	12	mm
Available effective depth	=	300	-	50	-	6	=	244	mm
effective depth req	=	$\frac{0.433446}{1.51 \times 1000}$					=	53.57707	mm
Ast req	=	$\frac{0.433446}{200 \times 0.889 \times 244}$					=	99.91099	mm^2/m
Minimum steel	=	$\frac{0.12}{100}$	x	300	x	1000	=	360	mm^2/m

Provide 12 mm dia bar 200 mm c/c as vertical steel at earth face.

565.4867 mm^2/m

Disrtibution steel on earth face:

dia of steel bar							=	12	mm
Available effective depth	=	300	-	50	-	12	=	238	mm
0.3M	=			0.3	x	0.433446	=	0.130034	t-m/m
Ast req	=	$\frac{0.130034}{200 \times 0.889 \times 238}$					=	30.72893	mm^2/m
Minimum steel as per IRC:21-200 cl:305.10							=	250	mm^2/m
Governing steel at earth face							=	250	mm^2/m

Provide 10 mm dia bar 200 mm c/c as vertical steel at earth face.

392.6991 mm^2/m

Vertical steel on earth face

As per IRC:21-200 cl:305.10	All faces provide minimum steel of						=	250	mm^2/m

Provide 10 mm dia bar 200 mm c/c as vertical steel at earth face.

392.6991 mm^2/m

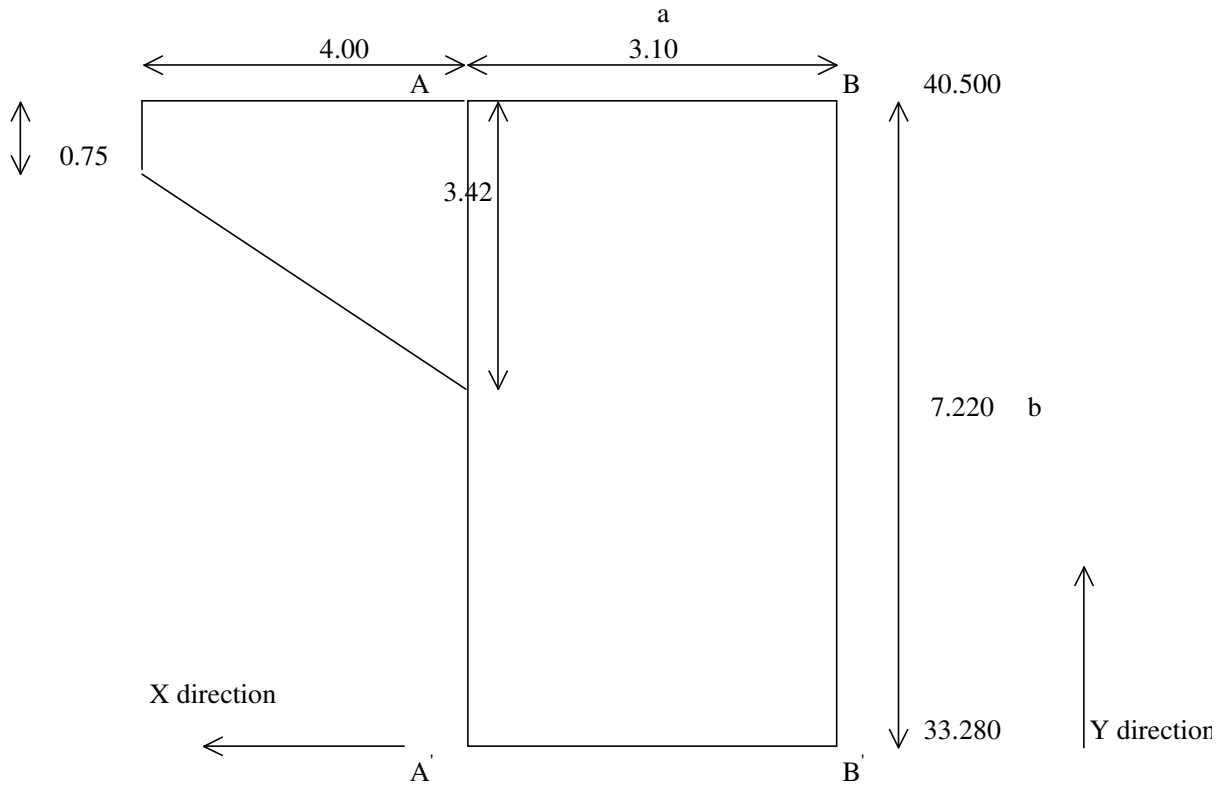
Distribution steel:

As per IRC:21-200 cl:305.10	All faces provide minimum steel of						=	250	mm^2/m

Provide 10 mm dia bar 200 mm c/c as vertical steel at earth face.

392.6991 mm^2/m

DESIGN OF RETURNWALL



Width of Solid return wall (a)	=	3.10	
Width of Cantilever return wall	=	4.00	
Avg Height of Solid return wall (b)	=	7.220	
Height of Cantilever return at Tip	=	0.75	
Height of Cantilever return taper	=	2.67	
Height of Cantilever return at Root	=	3.42	
Thickness of Solid Return at farther end	=	0.5	
Thickness of Solid Return at Root	=	0.5	
Thickness of Solid Return at bottom	=	0.5	
Thickness of Solid Return at top	=	0.5	
Thickness of Cantilever return	=	0.5	
Unit wt of Soil	=	1.8	t/m^3
Grade of concrete	=	M 30	
σ_{cbc}	=	1020	t/m^2
m	=	10	
σ_{st}	=	20400	t/m^2
k	=	0.333	
j	=	0.889	
R	=	151.1	t/m^2

Case (1) For uniformly distributed load over entire plate

a/b	=	0.4293629	For a/b	=	0.375	β_1	=	0.353	β_2	=	0.398
			For a/b	=	0.5	β_1	=	0.631	β_2	=	0.632

a/b	=	0.4293629	β_1	=	0.473903
			β_2	=	0.499767

Live Load Surcharge:

$q = 0.2794 \times 1.8 \times 1.2 = 0.603504\ t/m^2$

$\sigma_{bmax} = \beta_1 \times q \times b^2 / t^2$

$\sigma_{amax} = \beta_2 \times q \times b^2 / t^2$

$\sigma_{bmax} = 0.473903 \times 0.603504 \times 52.13 / 0.25 = 59.63539\ t/m^2$

For 1000 mm of width

$Z = 1000 \times 250000 / 6 = 41666667\ mm^3 = 0.041667\ m^3$

Hence Moment /m width along Y direction

M_Y /m width $= 59.635387 \times 0.041667 = 2.484808$ t-m/m

$\sigma_{amax} = 0.4997673 \times 0.603504 \times 52.13 / 0.25 = 62.89011\ t/m^2$

For 1000 mm of width

$Z = 1000 \times 250000 / 6 = 41666667\ mm^3 = 0.041667\ m^3$

Hence Moment /m width along X direction

M_X /m width $= 62.890115 \times 0.041667 = 2.620421$ t-m/m

Case (2) For Triangular loading due to earth pressure

a/b = 0.4293629 For a/b = 0.375 β_1 = 0.212 β_2 = 0.148

For a/b = 0.5 β_1 = 0.328 β_2 = 0.200

a/b = 0.4293629 β_1 = 0.262449

β_2 = 0.170615

Earth pressure:

$q = 0.2794 \times 1.8 \times 7.220 = 3.631082\ t/m^2$

$\sigma_{bmax} = \beta_1 \times q \times b^2 / t^2$

$\sigma_{amax} = \beta_2 \times q \times b^2 / t^2$

$\sigma_{bmax} = 0.2624488 \times 3.631082 \times 52.13 / 0.25 = 198.7078\ t/m^2$

For 1000 mm of width

$Z = 1000 \times 250000 / 6 = 41666667\ mm^3 = 0.041667\ m^3$

Hence Moment /m width along Y direction

M_Y /m width = 198.70784 x 0.041667 = **8.279493** t-m/m

σ_{amax} = $\frac{0.170615 \times 3.631082 \times 52.13}{0.25}$ = 129.1777 t/m^2

For 1000 mm of width

Z = $\frac{1000 \times 250000}{6}$ = 41666667 mm^3

= 0.041667 m^3

Hence Moment /m width along X direction

M_X /m width = 129.17771 x 0.041667 = **5.382405** t-m/m

Total Moment in Solid Return /m height = **8.003** t-m/m
Along X-direction

Total Moment in Solid Return /m width = **10.764** t-m/m
Along Y-direction

Moment due to Cantilever Return:

Moment due to earth pressure at face A - A'

M = 0.2794 x 1.2 x 1.8 x 0.75 x 4.00 x 2.00
+ 0.5 x 0.2794 x 1.8 x 0.5625 x 4.00 x 2.00
+ 0.5 x 0.2794 x 1.8 x 0.444444 x X^2 x dx x (4.00 - X)
+ 0.2794 x 1.8 x 1.95 x 0.666667 x X x dx x (4.00 - X)
= 3.621024 + 1.13157 + 0.11176 x 21.33333 + 0.653796 x 10.66667
= **14.11063** t-m

Design of cantilever Return:

Assuming 50 mm cover and 12 mm dia bars.

Effective depth available = 500 - 50 - 20 - 6 = 424 mm

M = R x b x d^2
= 151.1111 x 3.417 x 0.179776 = 92.81768 t-m

A_{st} = $\frac{14.11063 \times 10\text{^}6}{20400 \times 0.888889 \times 0.424}$ = 1835.283 mm^2

A_{st}/m = 537.1559 mm^2/m

Provide 12 mm dia @ 150 mm c/c providing 753.9822 mm^2 on earth face.

Provide 8 mm dia @ 150 mm c/c providing 335.1032 mm^2 on other face.

Along Horizantal direction.

Design of Solid Return:

Moment due to Cantilever Return:

Moment due to Earth pressure at face B-B'

$$M = 0.2794 \times 1.2 \times 1.8 \times 0.75 \times 4.00 \times 5.10$$
$$+ 0.5 \times 0.2794 \times 1.8 \times 0.5625 \times 4.00 \times 5.10$$
$$+ 0.5 \times 0.2794 \times 1.8 \times 0.444444 \times X^2 \times dx \times (7.10 - X)$$
$$+ 0.2794 \times 1.8 \times 1.95 \times 0.666667 \times X \times dx \times (7.10 - X)$$

$$= 9.233611 + 2.8855035 + 0.11176 \times 87.46667 + 0.653796 \times 35.46667$$

$$= \mathbf{45.08235} \text{ t-m}$$

Moment in Solid Return /m height $= 8.002826 + \frac{45.08235}{7.220} =$ 14.24692 t-m/m

Moment in Solid Return /m width $=$ 10.7643 t-m/m

Design of face B-B'

Moment in Solid Return /m height $=$ **14.24692** t-m/m

Assuming 50 mm cover and 20 mm dia bars.

Effective depth available $= 500 - 50 - 20 - 10 =$ 420 mm

$M = R \times b \times d^2$

$= 151.1111 \times 1.000 \times 0.1764 =$ 26.656 t-m

$$A_{st} = \frac{14.24692 \times 10^6}{20400 \times 0.888889 \times 0.42} =$$ 1870.656 mm^2

$A_{st}/m =$ 1870.656 mm^2/m

Provide 20 mm dia @ 150 mm c/c providing 2094.395 mm^2 on earth face.

Provide 12 mm dia @ 150 mm c/c providing 753.9822 mm^2 on other face.

Along Horizantal direction.

Design of face A'-B'

Moment in Solid Return /m width $=$ **10.7643** t-m/m

Assuming 50 mm cover and 20 mm dia bars.

Effective depth available $= 500 - 50 - 0 - 10 =$ 440 mm

$M = R \times b \times d^2$

$= 151.1111 \times 1.000 \times 0.1936 =$ 29.25511 t-m

$$A_{st} = \frac{10.7643 \times 10^6}{20400 \times 0.888889 \times 0.44} =$$ 1349.135 mm^2

$A_{st}/m =$ 1349.135 mm^2/m

Provide 20 mm dia @ 200 mm c/c providing 1570.796 mm^2 on earth face.

Provide 12 mm dia @ 200 mm c/c providing 565.4867 mm^2 on other face.

Along Vertical direction.

Abutment SHAFT ..case1 27-12-06

Depth of Section = 1.100 m
Width of Section = 12.000 m

along width-compression face- no of bar: 60 tension face- no of bar: 60
Dia (mm) 16 25
Cover (cm) 7.50 7.50
along depth-compression face- no of bar: 8 tension face- no of bar: 8
Dia (mm) 16 16
Cover (cm) 7.50 7.50

Modular Ratio : Compression = 10.0
Modular Ratio : Tension = 10.0
Allowable Concrete Stress = 102.00 Kg/cm^2
Allowable Steel Stress = 2040.00 Kg/cm^2

Axial Load = 431.050 T
Mxx = 628.690 Tm
Myy = 137.680 Tm

Intercept of Neutral axis : X axis : = 177.913 m
: y axis : = .276 m

Steel Stress Governs Design

Stress in Concrete due to Loads = 55.14 Kg/cm^2
Stress in Steel due to Loads = 1532.00 Kg/cm^2
Percentage of Steel = .34 %

```
INPUT FILE: 70RW.STD
     1. STAAD SPACE
     2. INPUT WIDTH 72
     3. UNIT METER MTON
     4. PAGE LENGTH 1000
     5. UNIT METER MTON
     6. JOINT COORDINATES
     7. 1 0.00 0 0;2 0.2 0 0;3 10.6 0 0;4 10.8 0 0
     8. MEMBER INCIDENCES
     9. 1 1 2 3
    10. MEMBER PROPERTY CANADIAN
    11. 1 TO 3 PRI YD 1.0 ZD 1.0
    12. CONSTANT
    13. E CONCRETE ALL
    14. DENSITY CONCRETE ALL
    15. POISSON CONCRETE ALL
    16. SUPPORT
    17. 2   3   PINNED
    18. DEFINE MOVING LOAD
    19. TYPE 1 LOAD 8.0 2*12 4*17.0  DIS 3.96 1.52 2.13 1.37 3.05 1.37
    20. LOAD GENERATION 175
    21. TYPE 1 -13.4 0. 0. XINC .2
    22. PERFORM ANALYSIS
    23. LOAD LIST 55
    24. PRINT SUPPORT REACTION
        SUPPORT  REACTION

 JOINT  LOAD   FORCE-X   FORCE-Y   FORCE-Z     MOM-X     MOM-Y     MOM Z

      2   55      0.00     37.19      0.00      0.00      0.00      0.00
      3   55      0.00     54.81      0.00      0.00      0.00      0.00

   ************** END OF LATEST ANALYSIS RESULT **************


    25. FINISH


            *********** END OF THE STAAD.Pro RUN ***********
```

```
INPUT FILE: CLASS A.STD
     1. STAAD SPACE
     2. INPUT WIDTH 72
     3. UNIT METER MTON
     4. PAGE LENGTH 1000
     5. UNIT METER MTON
     6. JOINT COORDINATES
     7. 1 0.00 0 0;2 0.2 0 0;3 10.6 0 0;4 10.8 0 0
     8. MEMBER INCIDENCES
     9. 1 1 2 3
    10. MEMBER PROPERTY CANADIAN
    11. 1 TO 3 PRI YD 1.0 ZD 1.0
    12. CONSTANT
    13. E CONCRETE ALL
    14. DENSITY CONCRETE ALL
    15. POISSON CONCRETE ALL
    16. SUPPORT
    17. 2   3   PINNED
    18. DEFINE MOVING LOAD
    19. TYPE 1 LOAD 2*2.7 2*11.4 4*6.8  DIS 1.1 3.2 1.2 4.3 3 3 3
    20. LOAD GENERATION 202
    21. TYPE 1 -18.8 0. 0. XINC .2
    22. PERFORM ANALYSIS
    23. LOAD LIST 74
    24. PRINT SUPPORT REACTION
        SUPPORT  REACTION

   SUPPORT REACTIONS -UNIT MTON METE    STRUCTURE TYPE = SPACE
   -----------------

 JOINT  LOAD   FORCE-X   FORCE-Y   FORCE-Z     MOM-X     MOM-Y     MOM Z

□
      2   74      0.00     26.28      0.00      0.00      0.00      0.00
      3   74      0.00     10.12      0.00      0.00      0.00      0.00


   ************** END OF LATEST ANALYSIS RESULT **************


    25. FINISH


            *********** END OF THE STAAD.Pro RUN ***********
```

DESIGN OF SUPERSTRUCTURE

For Design of superstructure of solid slab of 10.0 m refer MOST STANDARD Drawing titled “STANDARD PLANS FOR 3.0 m TO 10.0 M SPAN REINFORCED CEMENT CONCRETE (Solid slab superstructure With & without footpaths)) FOR HIGHWAYS” Drg. No. SD/114.