

**REPUBLIC OF INDONESIA**

**MINISTRY OF COMMUNICATIONS  
DIRECTORATE GENERAL OF LAND TRANSPORT  
AND INLAND WATERWAYS**

**TENDER DOCUMENTS  
FOR  
NEW RAILWAY LINE FOR GENGKARENG AIRPORT  
CONSTRUCTION PROJECT**

**STRUCTURAL CALCULATION SHEETS**

**PACKAGE 1 CIVIL AND ARCHITECTURAL WORK**

**7 of 11**

**AUGUST 1984**

**JAPAN INTERNATIONAL COOPERATION AGENCY  
(JICA)**



国際協力事業団

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STRUCTURAL CALCULATION SHEETS  
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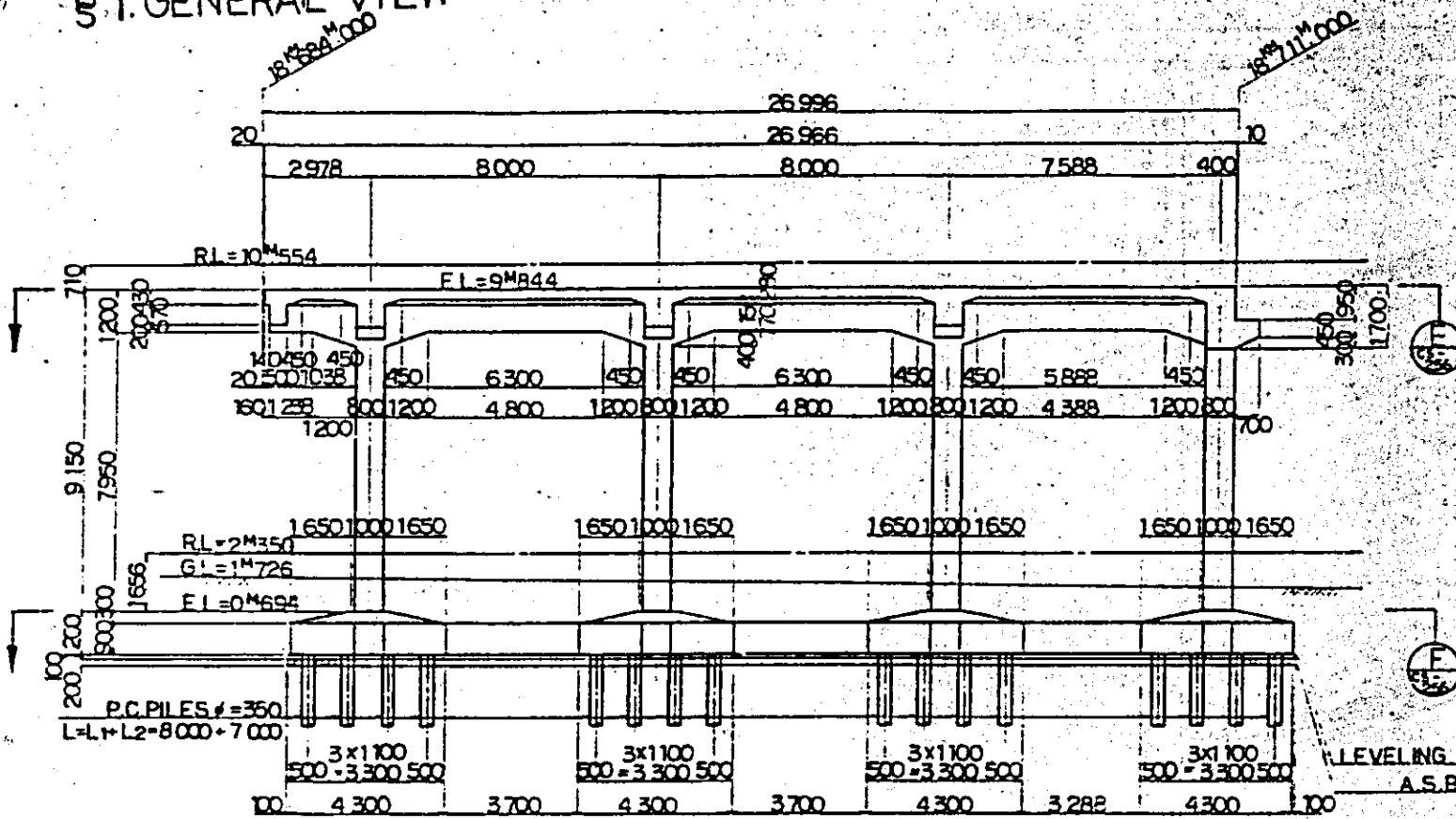


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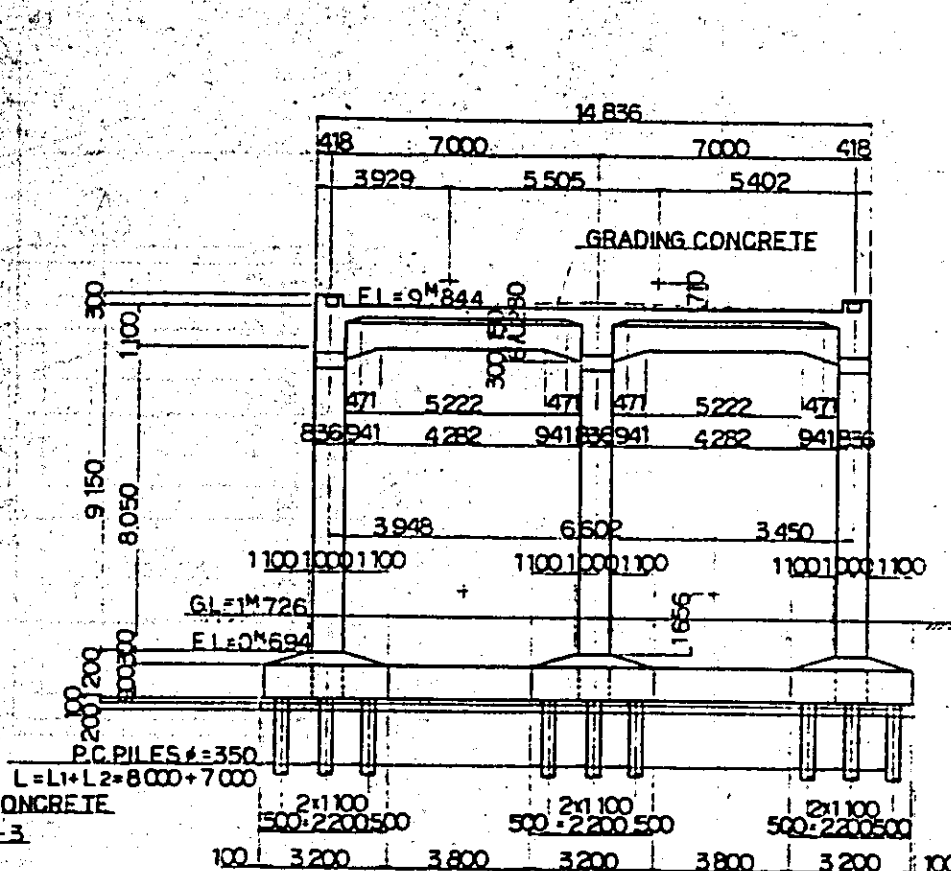
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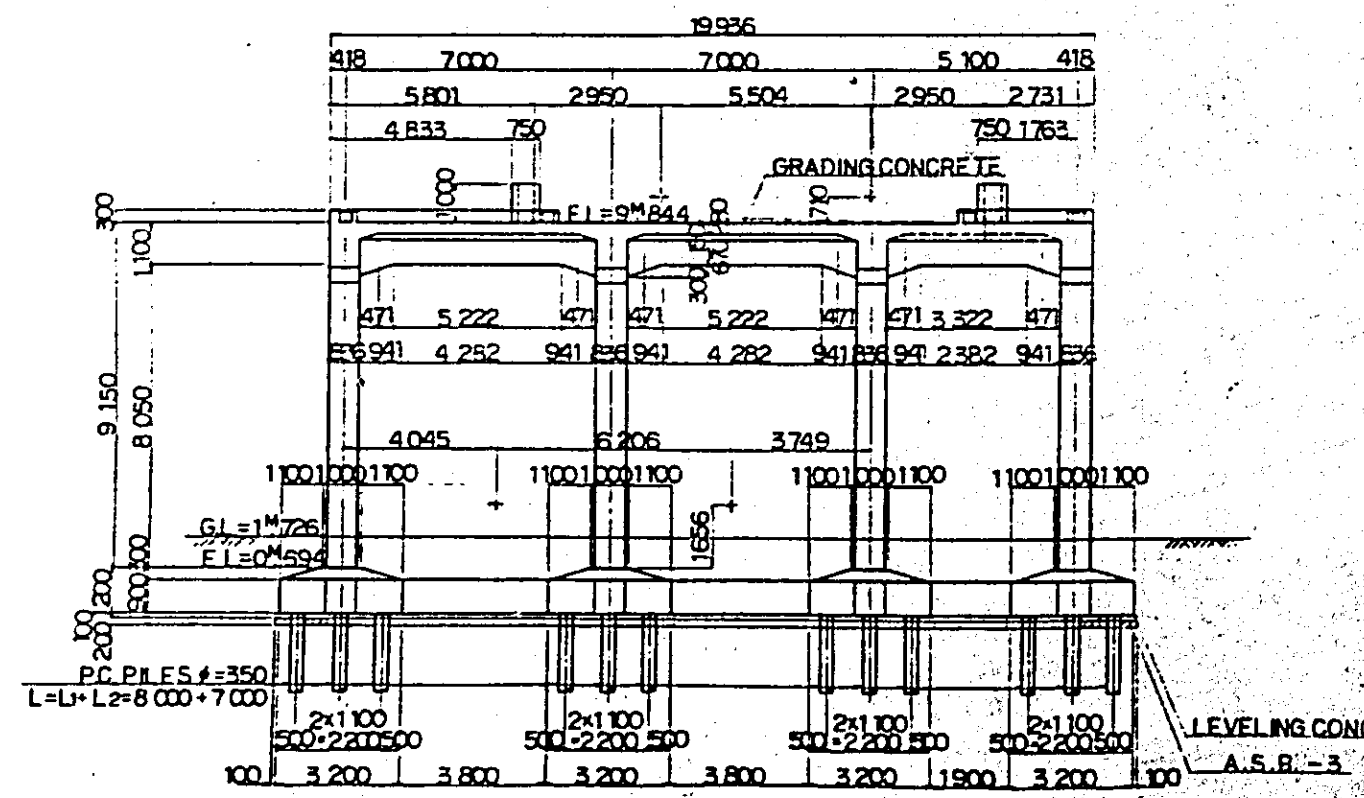
# § 1. GENERAL VIEW



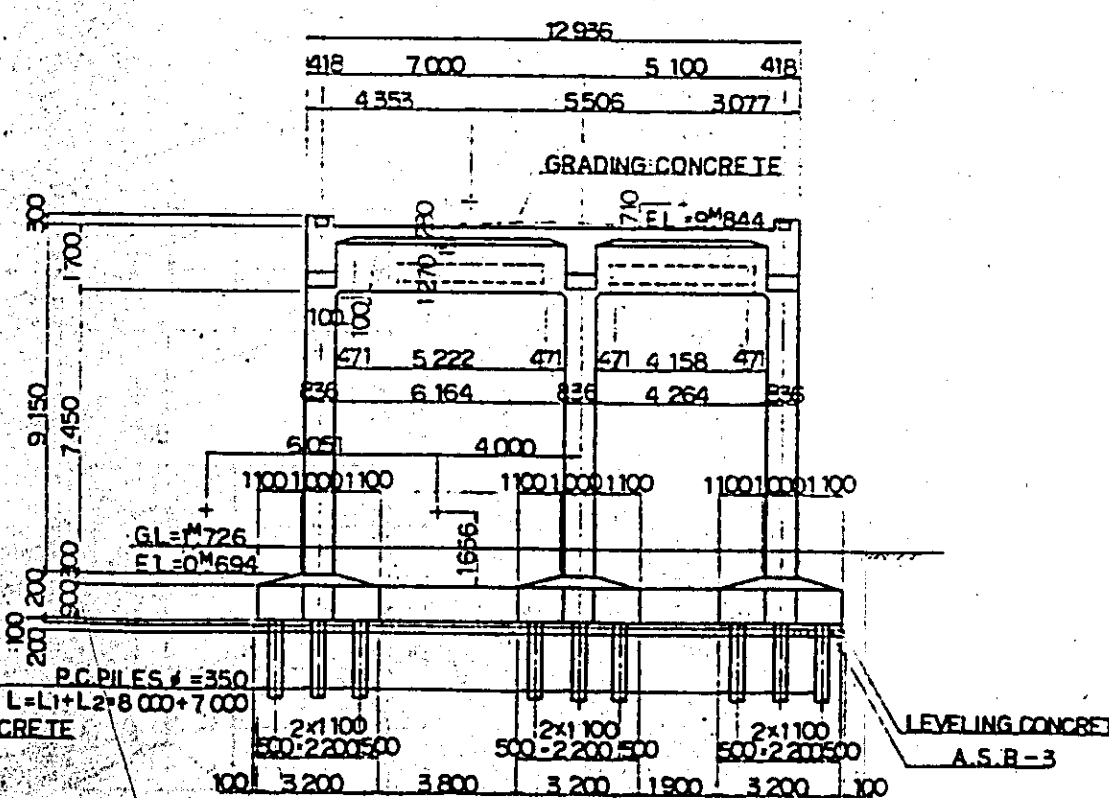
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SECTION B



SECTION C



SECTION D

- NOTES:
- 1 ALL DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS OTHERWISE INDICATED
  - 2 REFERENCE DRAWING FOR BAR ARRANGEMENT:
- |        |        |        |
|--------|--------|--------|
| CS-258 | CS-263 | CS-268 |
| CS-259 | CS-264 | CS-269 |
| CS-260 | CS-265 | CS-270 |
| CS-261 | CS-266 | CS-271 |
| CS-262 | CS-267 |        |
- 3 TYPES OF RC. PILE
- 
- 4 GRADING CONCRETE SHALL BE SIMULTANEOUSLY PLACED WITH SLAB CONCRETE

REPUBLIC OF INDONESIA  
DEPARTMENT OF TRANSPORT  
DIRECTORATE GENERAL OF LAND TRANSPORT  
AND ISLAND WATERWAYS

NEW RAILWAY LINE FOR CEMBAKUREN AIRPORT  
CONSTRUCTION PROJECT

JAPAN INTERNATIONAL COOPERATION AGENCY  
(JICA)

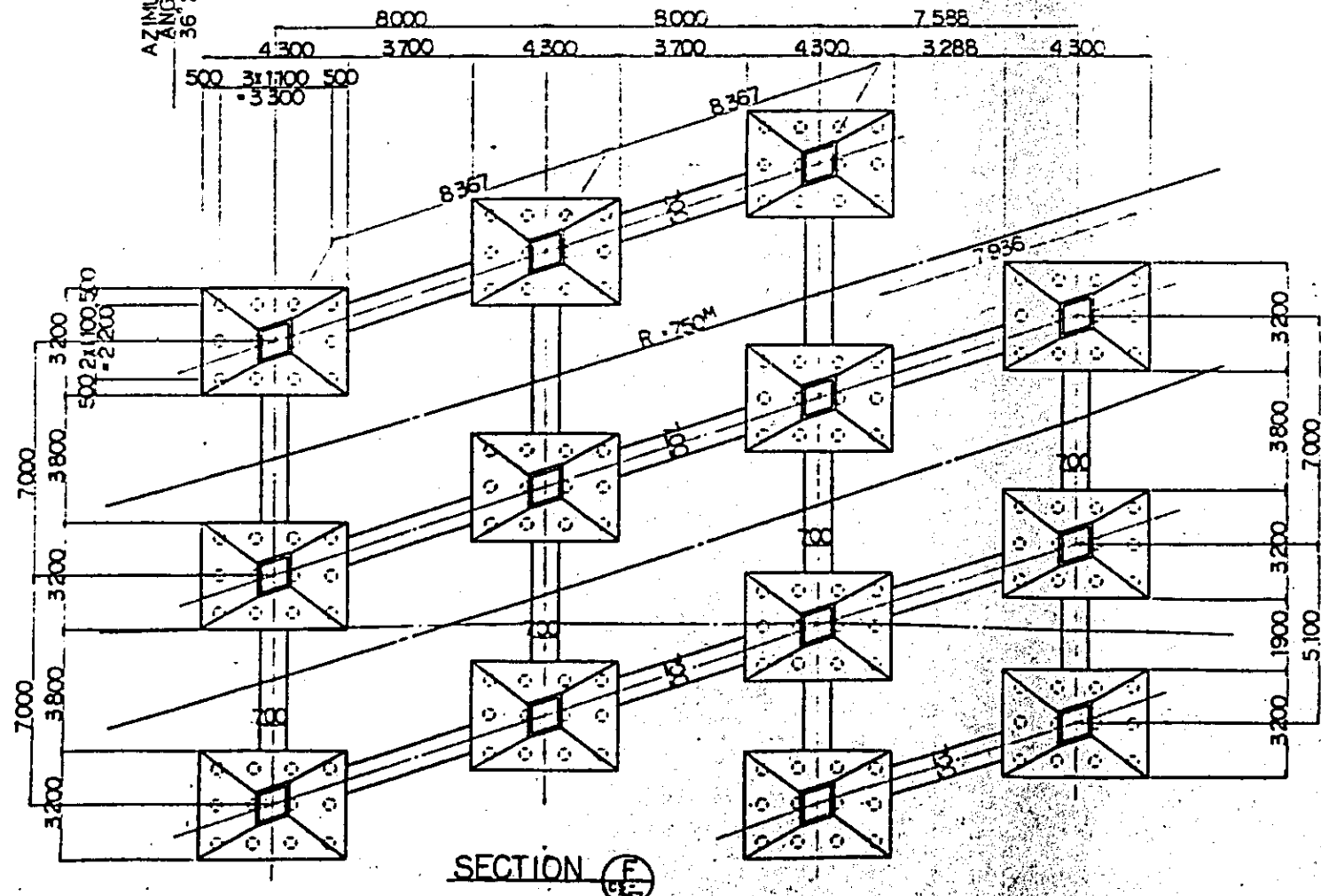
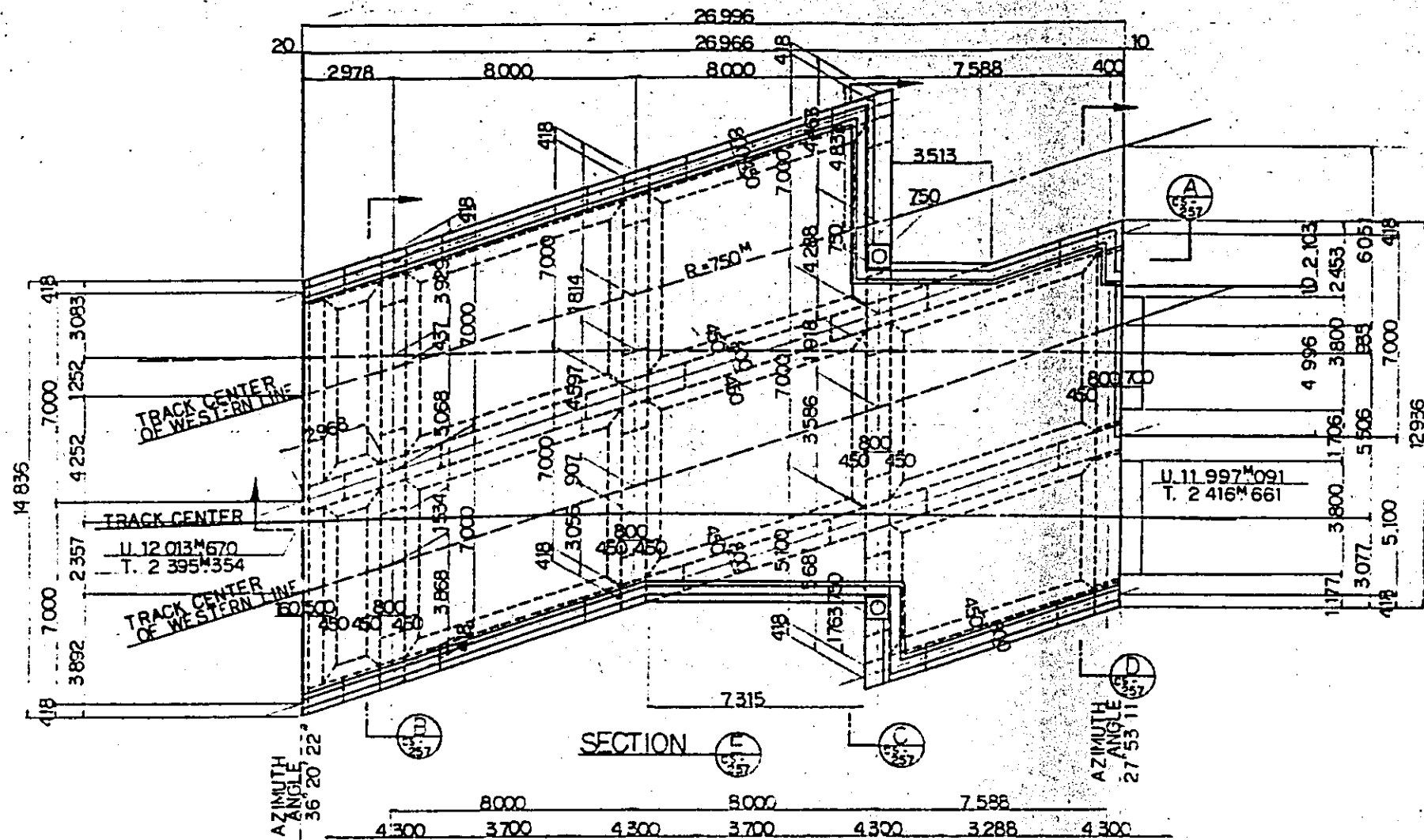
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A	14FEB/84	TK	AD	KM	AK
REVISION	INT				

VIADUCT VI29  
GENERAL VIEW  
(SHEET 2 OF 2)

PACKAGE: I CIVIL AND ARCHITECTURAL WORK

SCALE: 1:100

NUMBER: CS-257

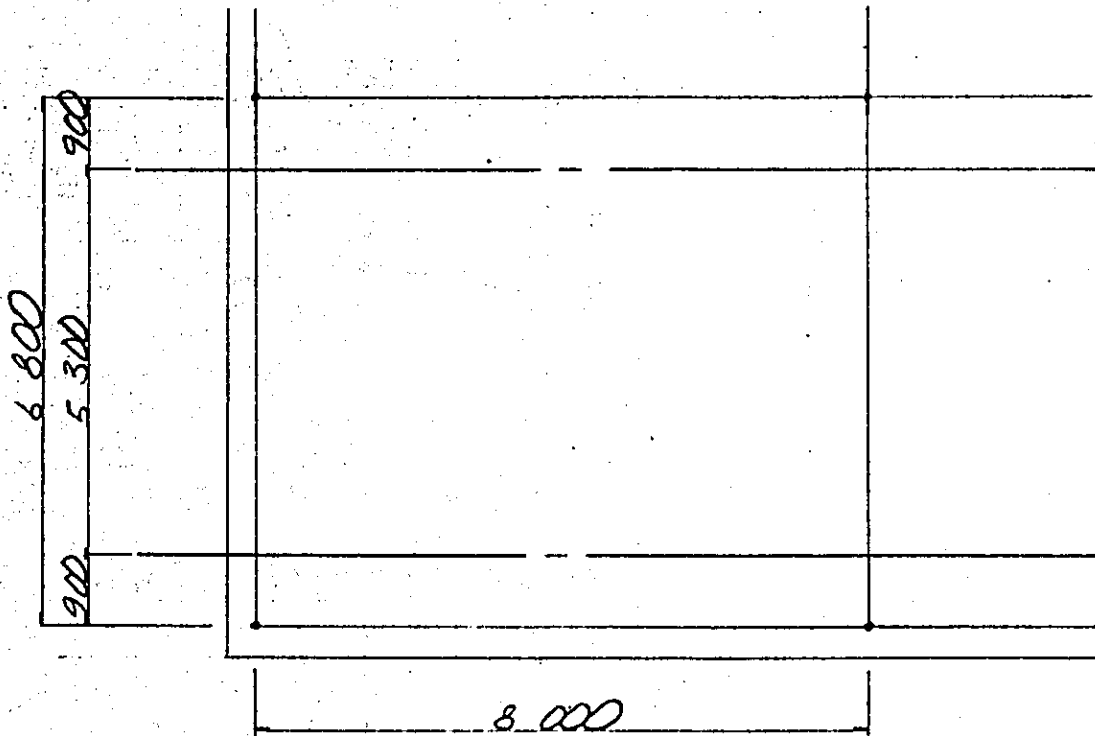


- NOTES:
1. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS OTHERWISE INDICATED
  2. REFERENCE DRAWING FOR BAR ARRANGEMENT:

CS - 258	CS - 265
CS - 259	CS - 266
CS - 260	CS - 267
CS - 261	CS - 268
CS - 262	CS - 269
CS - 263	CS - 270
CS - 264	CS - 271

REPUBLIC OF INDONESIA DEPARTMENT OF TRANSPORT DIRECTORATE GENERAL OF LAND TRANSPORT AND INLAND WATERWAYS					
NEW RAILWAY LINE FOR CENKARANG AIRPORT CONSTRUCTION PROJECT					
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)					
B	1 AUG '84				
A	15 FEB '84	T.K.	A.D.	K.M.	M.K.
REVISIONS	DATE	DESIGNED	CHECKED	APPROVED	SUBMITTED
VIADUCT V129 GENERAL VIEW (SHEET 1 OF 2)					
PACKAGE: I CIVIL AND ARCHITECTURAL WORK					
SCALE: 1:100		DRAWING NO: CS-256			

## 2. Calculation of Slab



(1) Slab for calculation

Slab (A) ----- Two-way Slab

Slab (B) ----- cantilever Slab

(2) Calculation of slab (A)

Four sides fixed span

$$l_x = 8.00 - 0.80 = 7.20^m$$

$$l_y = 6.80 - 0.80 = 6.00''$$

Four sides semi - fixed span

$$l_{ex} = 8.00 - 0.800 + 0.280 = 7.48^m$$

$$l_{ey} = 6.80 - 0.800 + 0.280 = 6.28''$$



Span ratio

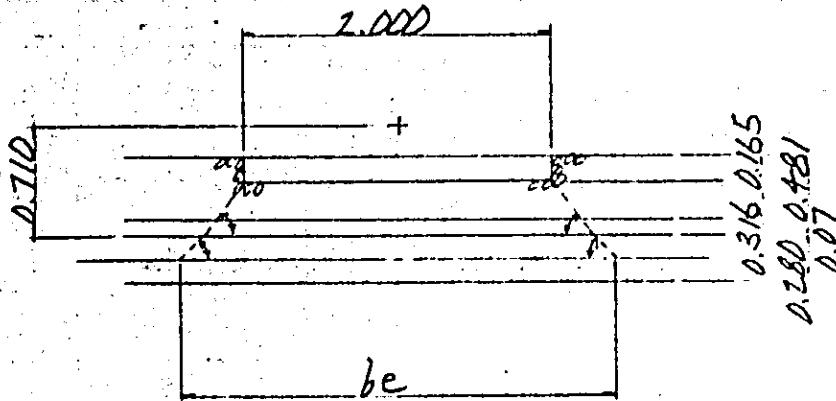
$$m_d = \frac{l_{dx}}{l_{dy}} = \frac{6.22}{7.20} = 0.83 > 0.40$$

$$m_e = \frac{l_{ex}}{l_{ey}} = \frac{6.28}{7.48} = 0.84 > 0.40$$

From the above, the slab is considered as a two-way slab for calculation

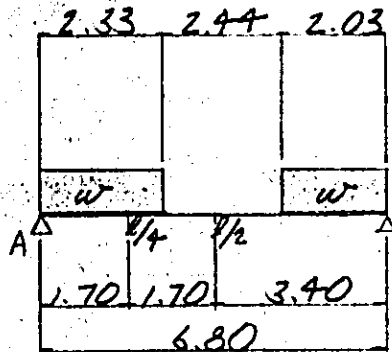
1. Load Calculations

Effective width



$$\begin{aligned}
 b_e &= b + 1.5 \cdot (d + g) + h \\
 &= 2.000 + 1.5 \cdot (0.316 + 0.07) + 0.280 \\
 &= 2.86 \text{ m}
 \end{aligned}$$

(a) weight of track assembly



$$w = \frac{0.45}{2.86} = 0.16 \text{ t/m}$$

$$\begin{aligned}
 R_A &= \frac{0.16}{6.80} \times (2.33 \times 5.635 + 2.03 \times 1.015) \\
 &= 0.36 \text{ t}
 \end{aligned}$$

i) At the  $l/2$  point

$$M^{l/2} = 0.36 \times 3.40 - 0.16 \times 2.33 \times 2.235$$

$$= 0.39 \text{ t.m}$$

$$W^{l/2} = \frac{8 \cdot M^{l/2}}{l^2} = \frac{8 \times 0.39}{6.80^2} = 0.07 \text{ t/m}$$

ii) At the  $l/4$  point

$$M^{l/4} = 0.36 \times 1.70 - 0.16 \times 1.70 \times 0.85$$

$$= 0.38 \text{ t.m}$$

$$W^{l/4} = \frac{32 \cdot M^{l/4}}{3 \cdot l^2} = \frac{32 \times 0.38}{3 \times 6.80^2} = 0.09 \text{ t/m}$$

$$M^{l/4} = 0.09 \text{ t/m} > M^{l/2} = 0.07 \text{ t/m}$$

Dead load

weight of track assembly = 0.09 t/m<sup>2</sup>

Ballast 0.481 × 1.9 = 0.91 "

Sloping concrete 0.07 × 2.35 = 0.16 "

Slab 0.280 × 2.5 = 0.70 "

---

WD = 1.86 t/m<sup>2</sup>

(2) Train load (Single track) + Impact coefficient

$$W_e = \frac{16}{1.5 \times 2.86} = 3.73 \text{ t/m}^2$$

Reduction of impact coefficient

$$l = 6.80 \text{ m} \rightarrow i = 0.462 \times \left(1 - \frac{6.80}{200}\right) = 0.446$$

$$\therefore W_e + i = 3.73 \times (1 + 0.446) = 5.39 \text{ t/m}^2$$

(i) At the  $\frac{1}{4}$  point

$$R_A = 5.39/6.80 \times (2.33 \times 5.635 + 2.03 \times 1.015) = 12.04 \text{ t}$$

$$M_{\frac{1}{4}} = 12.04 \times 1.70 - 5.39 \times 1.70 \times 0.85 \\ = 12.68 \text{ t.m}$$

$$\therefore W_e + i = \frac{32 \times 12.68}{3 \times 6.80^2} = 2.93 \text{ t/m}^2$$



## 2. Bending moment

(1) Dead load

(a) Sharing of load

$$l_{dx} = 7.20 \text{ m} \quad l_{dy} = 6.00 \text{ m} \quad w_d = 1.86 \text{ t/m}^2$$

coefficient of load sharing in the direction of x or y

$$C_x = \frac{6.00^4}{7.20^4 + 6.00^4} = 0.325$$

$$C_y = \frac{7.20^4}{7.20^4 + 6.00^4} = 0.675$$

(b) Shared load

$$w_{dx} = 1.86 \times 0.325 = 0.60 \text{ t/m}^2$$

$$w_{dy} = 1.86 \times 0.675 = 1.26 \text{ "}$$

(c) Torsional coefficient

$$\phi_x = \phi_y = \frac{5}{18} \cdot \frac{l_x^2 \cdot l_y^2}{l_x^4 + l_y^4}$$

$$= \frac{5}{18} \times \frac{7.20^2 \times 6.00^2}{7.20^4 + 6.00^4} = 0.130$$

(d) Bending moment

(i) At the support point

$$M_{dx} = -\frac{1}{12} \times 0.60 \times 7.20^2 = -2.59 \text{ t.m}$$

$$M_{dy} = -\frac{1}{12} \times 1.26 \times 6.00^2 = -3.78 \text{ "}$$

(ii) At the Span center point

$$M_{dx} = \frac{1}{24} \times 0.60 \times 7.20^2 \times (1 - 0.13) = 1.13 \text{ t.m}$$

$$M_{dy} = \frac{1}{24} \times 1.26 \times 6.00^2 \times (1 - 0.13) = 1.64 \text{ "}$$

(c) Shearing

$$S_x = \frac{1}{2} \times 0.60 \times 7.20 = 2.16 \text{ "}$$

$$S_y = \frac{1}{2} \times 1.26 \times 6.00 = 3.78 \text{ "}$$

(2) Train load (Single track) + Impact

1) Four sides fixed span

(a) Sharing of load

$$l_x = 7.48 \text{ m} \quad l_y = 6.28 \text{ m} \quad w_{x+i} = 2.93 \frac{\text{t}}{\text{m}^2}$$

Coefficient of load sharing in the direction of x or y

$$C_x = \frac{6.28^4}{7.48^4 + 6.28^4} = 0.332$$

$$C_y = \frac{7.48^4}{7.48^4 + 6.28^4} = 0.668$$

(b) Coefficient of load sharing

$$w_x = 2.93 \times 0.332 = 0.97 \frac{\text{t}}{\text{m}^2}$$

$$w_y = 2.93 \times 0.668 = 1.96 \text{ "}$$

(c) Torsional coefficient

$$I_x \cdot I_y = \frac{5}{18} \times \frac{7.48^2 \times 6.28^2}{7.48^4 \times 6.28^4} =$$

(d) Bending moment

Train load and Impact

(i) At the support point

$$M_x = -\frac{1}{12} \times 0.97 \times 7.48^2 = -4.52 \text{ t.m}$$

$$M_y = -\frac{1}{12} \times 1.96 \times 6.28^2 = -6.44 \text{ ''}$$

(ii) At the span center point

$$M_x = \frac{1}{24} \times 0.97 \times 7.48 \times (1 - 0.131) = 1.97 \text{ t.m}$$

$$M_y = \frac{1}{24} \times 1.96 \times 6.28 \times (1 - 0.131) = 2.80 \text{ ''}$$

(iii) Shearing

$$S_x = \frac{1}{2} \times 0.97 \times 7.48 = 3.63 \text{ t}$$

$$S_y = \frac{1}{2} \times 1.96 \times 6.28 = 6.15 \text{ ''}$$

2) Four sides simple beam

(a) Sharing of load

coefficient of load sharing in the direction of  $x$  or  $y$

$$C_x = 0.332$$

(from four side fixed span)

$$C_y = 0.668$$

(b) coefficient of load sharing

$$W_x = 0.97 \text{ t.m}^2 \quad (\text{from four side fixed span})$$

$$W_y = 1.96 "$$

(c) Torsional coefficient

$$\phi_x = \phi_y = \frac{5}{6} \times \frac{7.48^2 \times 6.28^2}{7.48^4 + 6.28^4} = 0.392$$

(e) Bending moment

(i) At the support point

$$M_x = \frac{1}{8} \times 0.97 \times 7.48^2 \times (1 - 0.392) = 4.12 \text{ t.m}$$

$$M_y = \frac{1}{8} \times 1.96 \times 6.28^2 \times (1 - 0.392) = 5.87 "$$



3) Four sides semi - fixed span

(a) Bending moment

(i) At the support point

$$M_x = - 4.52 \text{ tm}$$

$$M_y = - 6.44 "$$

(ii) At the span center point

$$M_x = \frac{1}{2} \times ( 1.97 + 4.12 ) = 3.05 \text{ tm}$$

$$M_y = \frac{1}{2} \times ( 2.80 + 5.87 ) = 4.34 "$$

(iii) Shearing

$$S_x = 3.63 \text{ t}$$

$$S_y = 6.15 "$$

## (3) Combined moment

		Dead load	Train load and Impact	Total load
Direction of railway profile	At the support point	-2.59	-4.52	-7.11
	At the span center point	1.13	3.05	4.18
	Sharing	2.16	3.63	5.79
Direction of railway cross section	At the support point	-3.78	-6.44	-10.22
	At the span center point	1.64	4.34	5.98
	Sharing	3.78	6.15	9.93

Allowable stress of Safe against cracking

(1) Direction of railway profile

$$\frac{T_r + I_m}{D + T_r + I_m} = \frac{4.52}{7.11} = 0.64 > 0.25$$

$$\therefore \sigma_{sa} = 800 \text{ kg/cm}^2$$

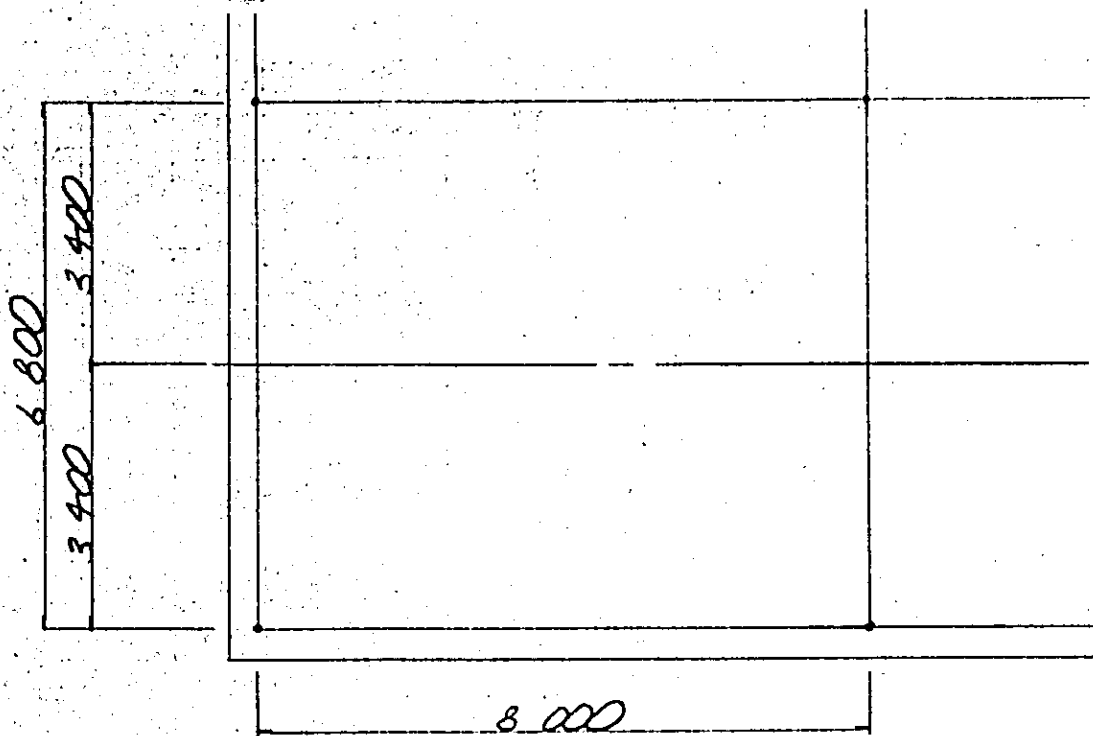
(2) Direction of railway cross section

$$\frac{T_r + I_m}{D + T_r + I_m} = \frac{6.44}{10.22} = 0.63 > 0.25$$

$$\therefore \sigma_{sa} = 800 \text{ kg/cm}^2$$

	Direction of railway cross section			Direction of railway profile		
	At support point	At support point	At span center point	At support point	At support point	At span center point
M (tm)	3.78	10.22	5.98	2.59	7.11	4.18
N (t)						
S (t)		9.93			5.79	
b (cm)	100	100	100	100	100	100
h (cm)	43	43	28	43	43	28
d (cm)	39.5	39.5	24.5	37.6	37.6	22.6
d' (cm)	3.5	3.5	3.5	5.4	5.4	5.4
As (cm <sup>2</sup> )	D19-6.67 (etc 150) = 19.11	D19-6.67 (etc 150) = 19.11	D19-6.67 (etc 150) = 19.11	D16-3.33 D19-3.33 = 16.15	D16-3.33 D19-3.33 = 16.15	D16-3.33 D19-3.33 = 16.15
p	0.00484	0.00484	0.00780	0.00430	0.00430	0.00715
As' (cm <sup>2</sup> )						
p'						
e = M/N (cm)						
e = M/N + u <sup>(cm)</sup>						
e = M/N - u <sup>(cm)</sup>						
e/h						
d/e						
d'/h						
d'/d						
Ne/bd <sup>3</sup> (kg/cm <sup>3</sup> )	2.92	6.55	9.96	1.83	5.03	8.18
k						
c						
j						
I/Lc	7.09	7.09	6.02	7.40	7.40	6.20
I/Ls	2.31	2.31	1.97	2.58	2.58	1.59
$\beta = \sigma_s / \sigma_c$						
$\sigma_c$ (kg/cm <sup>2</sup> )	17.2	46.9	60.0	13.5	37.2	50.7
$\sigma_s$ (kg/cm <sup>2</sup> )	559	1513	1464	1464	1298	1301
$\tau$ (kg/cm <sup>2</sup> )		2.51			1.54	
$\sigma_{sa}$ (kg/cm <sup>2</sup> )	90	90	90	90	90	90
$\sigma_{ca}$ (kg/cm <sup>2</sup> )	800	1800	1800	800	1800	1800
$\tau_a$ (kg/cm <sup>2</sup> )		3.9			3.9	
combination No. moqtaam number	D M-1	D+T+I "	D+T+I "	D "	D+T+I "	D+T+I "

## (3) Calculation of Slab



## (4) Slab for calculation

Slab (A) ----- single-way Slab

Slab (B) ----- cantilever Slab

## (5) Calculation of slab (A)

Four sides fixed span

$$l_x = 8.00 - 0.80 = 7.20^m$$

$$l_y = 6.80 - 0.80 = 6.00''$$

Four sides semi - fixed span

$$l_{ex} = 8.00 - 0.800 + 0.280 = 7.48^m$$

$$l_{ey} = 6.80 - 0.800 + 0.280 = 6.28''$$



Span ratio

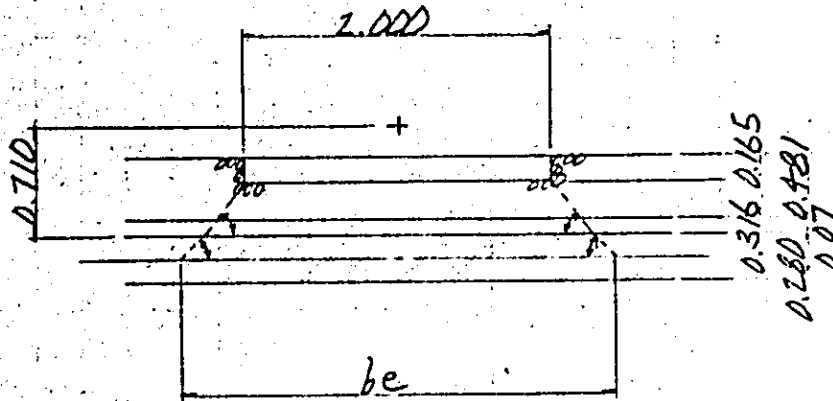
$$m_d = \frac{l_{dx}}{l_{dy}} = \frac{6.00}{7.20} = 0.83 > 0.40$$

$$m_e = \frac{l_{ex}}{l_{ey}} = \frac{6.28}{7.48} = 0.84 > 0.40$$

From the above, the slab is considered as a single-way slab for calculation.

1. Load Calculations

Effective width

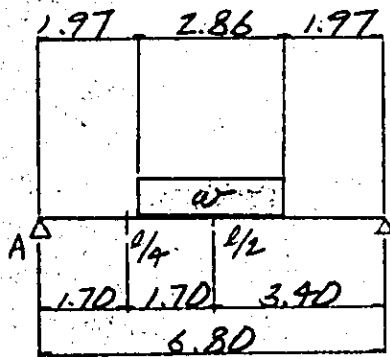


$$b_e = b + 1.5 \cdot (d + g) + h$$

$$= 2.000 + 1.5 \cdot (0.316 + 0.07) + 0.280$$

$$= 2.86 \text{ m}$$

(a) weight of track assembly



$$w = \frac{0.45}{2.86} = 0.16 \text{ t/m}$$

$$R_A = \frac{1}{2} \times 0.16 \times 2.86$$

$$= 0.23 \text{ t}$$

i) At the  $1/2$  point

$$M_{1/2} = 0.23 \times 3.40 - 0.16 \times 1.43 \times 0.715$$

$$= 0.62 \text{ t.m}$$

$$W_{1/2} = \frac{8 \cdot M_{1/2}}{l^2} = \frac{8 \times 0.62}{6.80^2} = 0.11 \text{ t/m}$$

ii) At the  $1/4$  point

$$M_{1/4} = 0.23 \times 1.70$$

$$= 0.39 \text{ t.m}$$

$$W_{1/4} = \frac{37 \cdot M_{1/4}}{3 \cdot l^2} = \frac{37 \times 0.39}{3 \times 6.80^2} = 0.09 \text{ t/m}$$

$$M_{1/4} = 0.09 \text{ t/m} < M_{1/2} = 0.11 \text{ t/m}$$

Dead load

weight of track assembly = 0.11 t/m<sup>2</sup>

Ballast 0.481 × 1.9 = 0.91 "

Sloping concrete 0.07 × 2.35 = 0.16 "

Slab 0.280 × 2.5 = 0.70 "

---


$$W_d = 1.88 \text{ t/m}^2$$

(2) Train load (single track) + Impact coefficient

$$W_e = \frac{16}{1.5 \times 2.86} = 3.73$$

Reduction of impact coefficient

$$l = 6.80^m \quad \rightarrow \quad i = 0.462$$

$$\therefore W_e + i = 3.73 \times (1 + 0.462) = 5.45 \text{ t/m}^2$$

(i) At the  $\frac{1}{2}$  Point

$$M_{\frac{1}{2}} = \frac{1}{2} \times 5.45 \times 2.86 \times 3.40 - 5.45 \times 1.43 \times 0.715$$

$$= 20.92 \text{ t.m}$$

$$\therefore W_e + i = \frac{8 \times 20.92}{6.80^2} = 3.62 \text{ t/m}^2$$

## 2. Bending moment

(1) Dead load

(a) Sharing of load

$$l_{dx} = 7.20 \text{ m} \quad l_{dy} = 6.00 \text{ m} \quad w_d = 1.88 \text{ t/m}^2$$

coefficient of load sharing in the direction of x or y

$$C_x = \frac{6.00^4}{7.20^4 + 6.00^4} = 0.325$$

$$C_y = \frac{7.20^4}{7.20^4 + 6.00^4} = 0.675$$

(b) Shared load

$$w_{dx} = 1.88 \times 0.325 = 0.61 \text{ t/m}^2$$

$$w_{dy} = 1.88 \times 0.675 = 1.27 \text{ t/m}^2$$

(c) Torsional coefficient

$$\begin{aligned} \phi_x = \phi_y &= \frac{5}{18} \cdot \frac{l_x^2 \cdot l_y^2}{l_x^4 + l_y^4} \\ &= \frac{5}{18} \times \frac{7.20^2 \times 6.00^2}{7.20^4 + 6.00^4} = 0.130 \end{aligned}$$

(d) Bending moment

(i) At the support point

$$M_{dx} = -\frac{1}{12} \times 0.61 \times 7.20^2 = -2.64 \text{ t.m}$$

$$M_{dy} = -\frac{1}{12} \times 1.27 \times 6.00^2 = -3.81 \text{ t.m}$$

(ii) At the Span center point

$$M_{dx} = \frac{1}{24} \times 0.61 \times 7.20^2 \times (1 - 0.130) = 1.15 \text{ t.m}$$

$$M_{dy} = \frac{1}{24} \times 1.27 \times 6.00^2 \times (1 - 0.130) = 1.66 \text{ ''}$$

(e) Shearing

$$S_x = \frac{1}{2} \times 0.61 \times 7.20 = 2.20 \text{ t}$$

$$S_y = \frac{1}{2} \times 1.27 \times 6.00 = 3.81 \text{ ''}$$

(2) Train load (Single track) + Impact

1) Four sides fixed span

(a) Sharing of load

$$l_x = 7.48 \text{ m} \quad l_y = 6.28 \text{ m} \quad w_{eti} = 3.62 \text{ t/m}^2$$

Coefficient of load sharing in the direction of x or y

$$C_x = \frac{6.28^4}{7.48^4 + 6.28^4} = 0.332$$

$$C_y = \frac{7.48^4}{7.48^4 + 6.28^4} = 0.668$$

(b) Coefficient of load sharing

$$w_x = 3.62 \times 0.332 = 1.20 \text{ t/m}^2$$

$$w_y = 3.62 \times 0.668 = 2.42$$

(c) Torsional coefficient

$$\phi_x \cdot \phi_y = \frac{5}{18} \times \frac{7.48^2 \times 6.28^2}{7.48^4 + 6.28^4} = 0.131$$

(d) Bending moment

Train load and Impact

(i) At the support point

$$M_x = -\frac{1}{12} \times 1.20 \times 7.48 = -5.60 \text{ t.m}$$

$$M_y = -\frac{1}{12} \times 1.20 \times 6.28 = -7.95 \text{ ''}$$

(ii) At the span center point

$$M_x = \frac{1}{24} \times 1.20 \times 7.48^2 \times (1 - 0.131) = 2.43 \text{ t.m}$$

$$M_y = \frac{1}{24} \times 2.42 \times 6.28^2 \times (1 - 0.131) = 3.46 \text{ ''}$$

(iii) Shearing

$$S_x = \frac{1}{2} \times 1.20 \times 7.48 = 4.49 \text{ t}$$

$$S_y = \frac{1}{2} \times 2.42 \times 6.28 = 7.60 \text{ ''}$$

2) Four sides simple beam

(a) Sharing of load

coefficient of load sharing in the direction of  $x$  or  $y$

$$C_x = 0.332$$

(from four side fixed span)

$$C_y = 0.668$$

(b) coefficient of load sharing

$$w_x = 1.20$$

(from four side fixed span)

$$w_y = 2.42$$

(c) Torsional coefficient

$$C_x = C_y = \frac{5}{6} \times \frac{7.48^2 \times 6.28^2}{7.48^4 + 6.28^4} = 0.392$$

(e) Bending moment

(i) At the support point

$$M_x = \frac{1}{8} \times 1.20 \times 7.48^2 \times (1 - 0.392) = 5.10 \text{ t.m}$$

$$M_y = \frac{1}{8} \times 2.42 \times 6.28^2 \times (1 - 0.392) = 7.25 "$$



3) Four sides semi-fixed span

(a) Bending moment

(i) At the support point

$$M_x = -5.60 \text{ tm}$$

$$M_y = -7.95 \text{ ''}$$

(ii) At the span center point

$$M_x = \frac{1}{2} \times (2.43 + 5.10) = 3.77 \text{ tm}$$

$$M_y = \frac{1}{2} \times (3.46 + 7.25) = 5.36 \text{ ''}$$

(iii) Shearing

$$S_x = 4.49 \text{ t}$$

$$S_y = 7.60 \text{ ''}$$

## (3) Combined moment

		Dead load	Train load and Impact	Total load
Direction of railway profile	At the support point	-2.64	-5.60	-8.24
	At the span center point	1.15	3.77	4.92
	Sharing	2.20	4.49	6.69
Direction of railway cross section	At the support point	-3.81	-7.95	-11.76
	At the span center point	1.66	5.36	7.02
	Sharing	3.81	7.60	11.41

Allowable stress of Safe against cracking

(1) Direction of railway profile

$$\frac{T_r + I_m}{D + T_r + I_m} = \frac{5.60}{8.24} = 0.68 > 0.25$$

$$\therefore \sigma_{sa} = 800 \text{ kg/cm}^2$$

(2) Direction of railway cross section

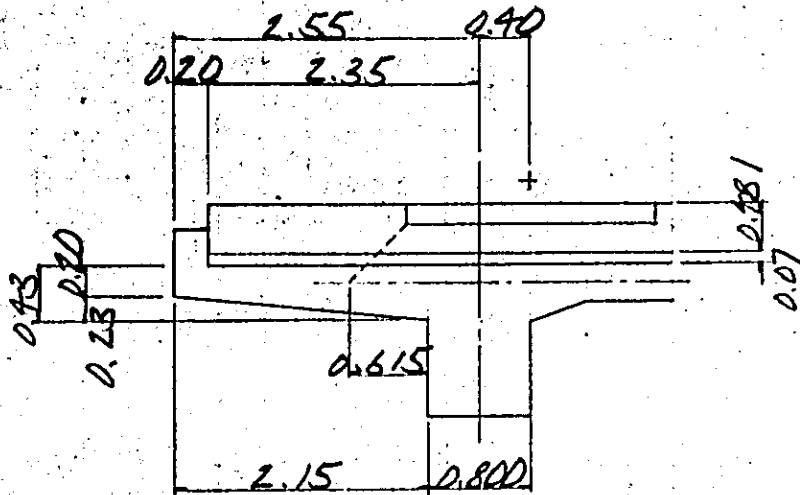
$$\frac{T_r + I_m}{D + T_r + I_m} = \frac{7.95}{11.76} = 0.68 > 0.25$$

$$\therefore \sigma_{sa} = 800 \text{ kg/cm}^2$$

	Direction of railway cross section			Direction of railway profile		
	At support point	At support point	At span center point	At support point	At support point	At span center point
M (tm)	3.81	11.76	7.02	2.64	8.24	4.92
N (t)						
S (t)		11.41			6.69	
b (cm)	100	100	100	100	100	100
h (cm)	43	43	28	43	43	28
d (cm)	39.5	39.5	24.5	37.6	37.6	22.6
d' (cm)	3.5	3.5	3.5	5.4	5.4	5.4
As (cm <sup>2</sup> )	D19-6.67 (dc 150) = 19.11	D19-6.67 = 19.11	D19-6.67 = 19.11	D16-3.33 D19-3.33 = 16.15	D16-3.33 D19-3.33 = 16.15	D16-3.33 D19-3.33 = 16.15
p	0.00484	0.00484	0.00780	0.00430	0.00430	0.00715
As' (cm <sup>2</sup> )						
p'						
e = M/N (cm)						
e = M/N + u <sup>(cm)</sup>						
e = M/N - u <sup>(cm)</sup>						
e/h						
d/e						
d'/h						
d'/d						
Ne/bd <sup>2</sup> (kg/cm <sup>2</sup> )	2.44	7.54	11.70	1.87	5.83	9.63
k						
c						
j						
l/Lc	7.09	7.09	6.02	7.40	7.40	6.20
l/Ls	231	231	147	258	258	159
$\beta = \sigma_s / \sigma_c$						
$\sigma_c$ (kg/cm <sup>2</sup> )	17.3	53.5	70.4	13.8	43.1	59.7
$\sigma_s$ (kg/cm <sup>2</sup> )	564	1742	1720	482	1504	1531
$\tau$ (kg/cm <sup>2</sup> )		2.89			1.78	
$\sigma_{sa}$ (kg/cm <sup>2</sup> )	90	90	90	90	90	90
$\sigma_{ca}$ (kg/cm <sup>2</sup> )	800	1800	1800	800	1800	1800
$\tau_a$ (kg/cm <sup>2</sup> )		3.9				
combination	D	D+T+I	D+T+I	D	D+T+I	D+T+I
Nomogram number	M-1	"	"	"	"	"

(6) Calculation of slab B

1. Calculation of cantilever slab



(1) Dead load

	calculation	$S = N^t$	$X^m$	$M = N \cdot X^{tm}$
hand rail	$2.0^{tm}$	2.00	2.45	0.49
curb	$0.200 \times 0.300 \times 2.5$	0.15	2.45	0.37
Distributed load by Track weight	$0.45 \times \frac{1}{2} \times 2.830 \times 0.615$	0.10	0.308	0.03
Ballast	$0.481 \times 1.95 \times 1.9$	1.78	0.975	1.74
sloping concrete	$0.07 \times 1.95 \times 2.35$	0.32	0.975	0.31
Slab	$0.20 \times 2.15 \times 2.5$	1.08	1.075	1.16
"	$\frac{1}{2} \times 2.15 \times 0.23 \times 2.5$	0.62	0.717	0.44
TOTAL.	—	4.25	—	4.54

$S_d = 4.25^t$

$M_d = 4.54^{tm}$

## (2) Train load and Impact

— Impact coefficient

$$l = 0.615 \text{ m} \longrightarrow i = 0.585$$

$$\therefore W_{d+i} = \frac{16}{1.5 \times 2.83} \times (1 + 0.585) = 5.97 \text{ t/m}$$

$$S_{d+i} = 5.97 \times 0.615 = 3.67 \text{ t}$$

$$M_{d+i} = 3.67 \times 0.308 = 1.13 \text{ t.m}$$

## 3) Dead load and Train load and Impact

$$S_{d+i} = 4.25 + 3.67 = 7.92 \text{ t}$$

$$M_{d+i} = 4.54 + 1.13 = 5.67 \text{ t.m}$$

## 4) Allowable stress, safe against Cracking

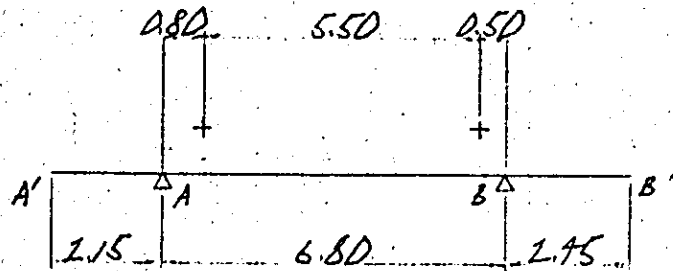
$$\frac{M_{d+i}}{M_{d+l+i}} = \frac{4.54}{5.67} = 0.80 > 0.25$$

$$\therefore \sigma_{sa} = 800 \text{ kg/cm}^2$$

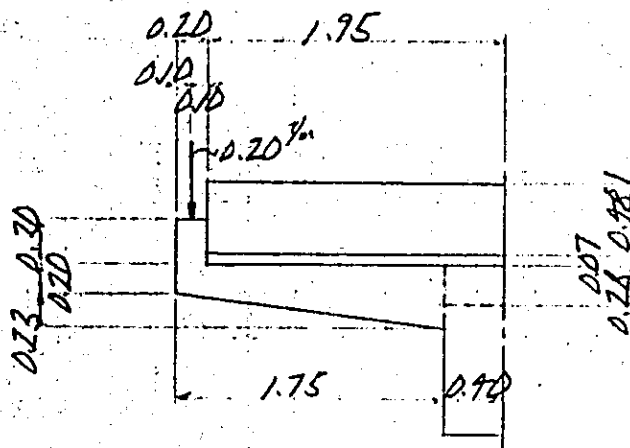
		cantilever slab	
		At Support point	At Support point
M	(tm)	4.54	5.67
N	(t)		
S	(t)		7.92
b	(cm)	100	100
h	(cm)	43	43
d	(cm)	39.5	39.5
d'	(cm)	3.5	3.5
As	(cm <sup>2</sup> )	D19-6.67 (etc 150) =19.11	D19-6.67 (etc 150) =19.11
p		0.00484	0.00484
As'	(cm <sup>2</sup> )		
p'			
e = M/N	(cm)		
e = M/N + u	(cm)		
e = M/N - u	(cm)		
e/h			
d/e			
d'/h			
d'/d			
Ne/bd <sup>2</sup>	(kg/cm <sup>2</sup> )	2.91	3.63
k			
c			
j			
1/Lc		7.09	7.09
1/Ls		231	231
$\beta = \sigma_s / \sigma_c$			
$\sigma_c$	(kg/cm <sup>2</sup> )	20.6	25.7
$\sigma_s$	(kg/cm <sup>2</sup> )	672	839
$\tau$	(kg/cm <sup>2</sup> )		2.01
$\sigma_{sa}$	(kg/cm <sup>2</sup> )	90	90
$\sigma_{ca}$	(kg/cm <sup>2</sup> )	800	1800
$\tau_a$	(kg/cm <sup>2</sup> )		3.9
ノモ番号			

§ 3. Calculation of torsional moment  
(1) Shingle span

1. Dead load



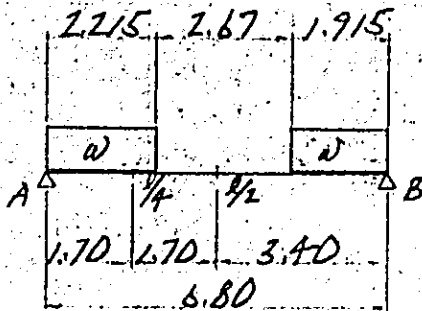
(1) Between A' and A



	Calculation	N <sup>+</sup>	x <sup>m</sup>	N · x <sup>m</sup>
Hand rail and curb	0.20 + 2.5 × 0.20 × 0.30	0.35	2.050	0.72
Ballast and sloping concrete	(1.9 × 0.481 + 2.35 × 0.07) × 1.95	2.10	0.975	2.05
Distributed load by track weight	0.45 × 1/2 × 2.83 × 0.615	0.10	0.308	0.03
cantilever slab	2.5 × 0.20 × 1.75	0.88	1.275	1.12
slab	2.5 × 1/2 × 1.75 × 0.23	0.50	0.983	0.49
slab	2.5 × 0.40 × 0.28	0.28	0.200	0.06
Total		4.21		4.47

$$M_{tAA'} = -4.47 \times 3.80 = -16.99 \text{ t.m}$$

(2) Between A and B



Distributed load by track weight

$$w = \frac{0.75}{2.83} = 0.16 \text{ t/m}^2$$

$$R_A = \frac{0.16}{6.80} \times (2.215 \times 5.693 + 1.915 \times 0.958)$$

$$= 0.34 \text{ t}$$

(i) At the  $1/4$  point

$$M_{1/4} = 0.34 \times 1.70 - 0.16 \times 1.70 \times 0.85 = 0.35 \text{ t.m}$$

$$w_{1/4} = \frac{32 \cdot M_{1/4}}{3 \cdot l^2} = \frac{32 \times 0.35}{3 \times 6.80^2} = 0.08 \text{ t/m}^2$$

(ii) At the  $1/2$  point

$$M_{1/2} = 0.34 \times 3.40 - 0.16 \times 2.215 \times 2.293 = 0.34 \text{ t.m}$$

$$w_{1/2} = \frac{8 \cdot M_{1/2}}{l^2} = \frac{8 \times 0.34}{6.80^2} = 0.06 \text{ t/m}^2$$

$$\therefore w_{1/4} = 0.08 \text{ t/m}^2$$



(a) Dead load

$$\text{Distributed load by track weight} = 0.08 \text{ t/m}^2$$

$$\text{ballast} \quad 1.90 \times 0.481 = 0.91 \text{ "}$$

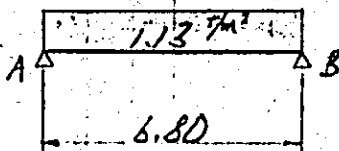
$$\text{Sloping concrete} \quad 2.35 \times 0.07 = 0.16 \text{ "}$$

$$\text{Slab} \quad 2.5 \times 0.28 = 0.70 \text{ "}$$

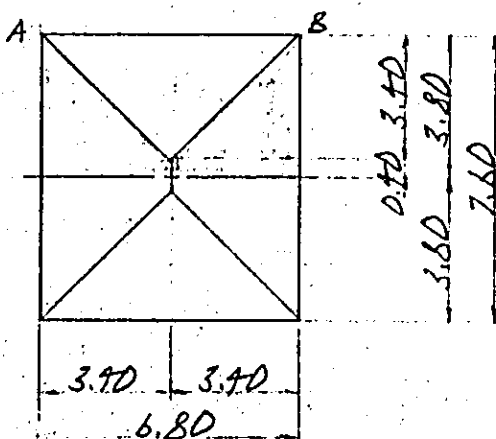
$$\text{WD} = 1.85 \text{ t/m}^2$$

$$Cx = \frac{7.60^{\dagger}}{7.60^{\dagger} + 6.80^{\dagger}} = 0.609$$

$$\therefore \text{WD} = 1.85 \times 0.609 = 1.13 \text{ t/m}^2$$



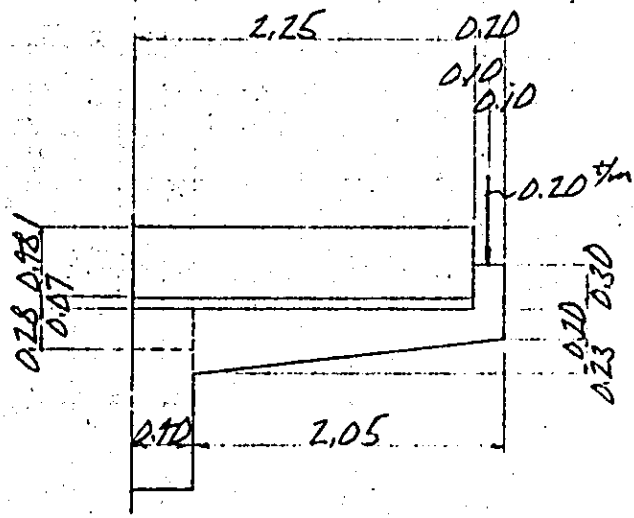
$$M_A = M_B = \frac{1}{2} \times 1.13 \times 6.80^2 = 4.35 \text{ t.m/m}$$



$$\therefore M_{A/B} = 4.35 \times (0.40 + 3.40 \times \frac{1}{2}) = 9.14 \text{ t.m}$$

$$M_{B/A} = -4.35 \times (0.40 + 3.40 \times \frac{1}{2}) = -9.14 \text{ "}$$

(3) Between B and B'



	Calculation	N <sup>+</sup>	x <sup>m</sup>	N.x <sup>m</sup>
Hand rail and curb	0.95 x 1/2 x 0.83 x 0.915	0.15	0.458	0.07
Ballast and sloping concrete	0.20 + 2.5 x 0.20 x 0.30	0.35	2.350	0.82
Distributed load by track weight	(1.9 x 0.981 + 2.35 x 0.07) x 2.25	2.43	1.125	2.73
cantilever slab	2.5 x 0.20 x 2.05	1.03	1.425	1.46
slab	2.5 x 1/2 x 2.05 x 0.23	0.59	1.083	0.64
slab	2.5 x 0.94 x 0.28	0.28	0.200	0.06
Total		4.83		5.78

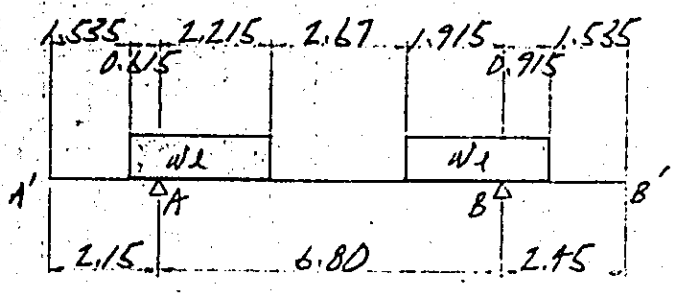
$$\therefore M_{tBB'} = 5.78 \times 3.80 = 21.96 \text{ t.m}$$

(4) torsional moment (1/2)

$$M_{tA} = -16.99 + 9.14 = -7.85 \text{ t.m}$$

$$M_{tB} = -9.14 + 21.96 = 12.82 \text{ ''}$$

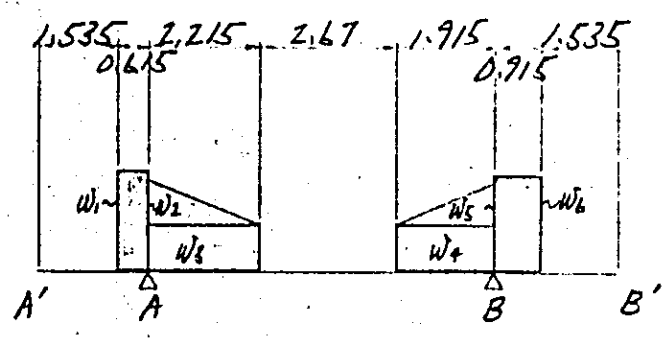
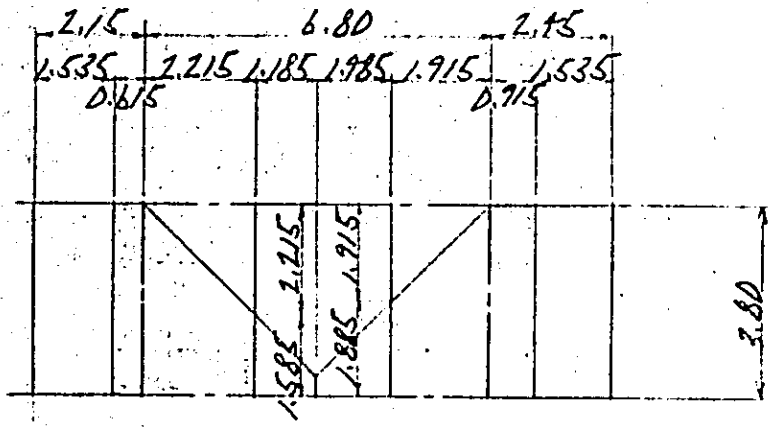
## 2. Train load and Impact



Distributed load  $W_{M2}$

$$W_1' = 4.60 \times 2 = 9.20 \text{ t/m (single track)}$$

$$W_2 = 9.20 \times 1/2.83 = 3.25 \text{ t/m}^2$$



## Reduction of impact coefficient

$$L = 0.615^m \longrightarrow i = 0.585 \times \left(1 - \frac{0.615}{2.00}\right) = 0.583$$

$$L = 6.80'' \longrightarrow i = 0.462 \times \left(1 - \frac{6.80}{2.00}\right) = 0.446$$

$$L = 0.915'' \longrightarrow i = 0.578 \times \left(1 - \frac{0.915}{2.00}\right) = 0.575$$

$$W_1 = 3.25 \times 3.80 \times (1 + 0.583) = 19.55 \text{ #m}$$

$$W_2 = 3.25 \times 2.215 \times (1 + 0.446) = 10.41''$$

$$W_3 = 3.25 \times 1.585 \times (1 + 0.446) = 7.45''$$

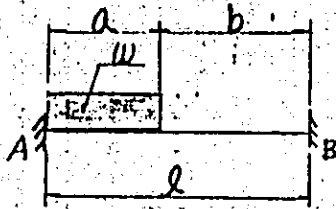
$$W_4 = 3.25 \times 1.885 \times (1 + 0.446) = 8.86''$$

$$W_5 = 3.25 \times 1.915 \times (1 + 0.446) = 9.00''$$

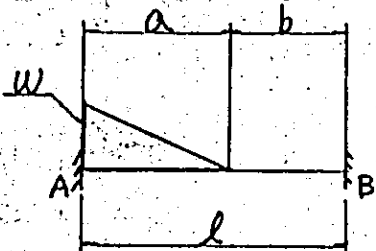
$$W_6 = 3.25 \times 3.80 \times (1 + 0.575) = 19.45''$$

## 3. Fixed-end moment of beam

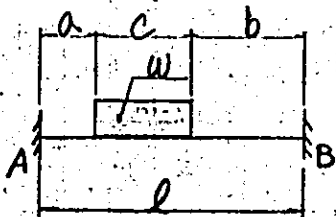
superimposed load



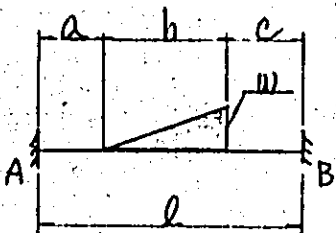
$$\begin{cases} M_A = \frac{W \cdot a^2}{12 \cdot l^2} (6 \cdot l^2 - 8 \cdot a \cdot l + 3 \cdot a^2) \\ M_B = \frac{W \cdot a^3}{12 \cdot l^2} (4 \cdot l - 3 \cdot a) \end{cases}$$



$$\begin{cases} M_A = \frac{W \cdot a^2}{60 \cdot l^2} (3a^2 - 10al + 10l^2) \\ M_B = \frac{W \cdot a^3}{60 \cdot l^2} (5l - 3a) \end{cases}$$



$$\begin{cases} M_A = \frac{W \cdot c}{12 \cdot l^2} \{ 12 \cdot a \cdot b \cdot (b+c) + 6 \cdot b^2 \cdot c \\ \quad + 4 \cdot c^2 \cdot (a+b) + c^3 \} \\ M_B = \frac{W \cdot c}{12 \cdot l^2} \{ 12 \cdot a \cdot b \cdot (a+c) + 6 \cdot a^2 \cdot c \\ \quad + 4 \cdot c^2 \cdot (a+b) + c^3 \} \end{cases}$$



$$\begin{cases} M_A = \frac{W \cdot c}{60 \cdot l^2} \{ 20 \cdot b \cdot c \cdot (a+b) + 5 \cdot c^2 \cdot (a+2b) \\ \quad + 30 \cdot a \cdot b^2 + 2 \cdot c^3 \} \\ M_B = \frac{W \cdot c}{60 \cdot l^2} \{ 10 \cdot a \cdot c \cdot (a+b) + 15 \cdot b \cdot (2a^2 + c^2) \\ \quad + 40 \cdot a \cdot b \cdot c + 3 \cdot c^3 \} \end{cases}$$

from an Electronic computer

$$M_{AA'} = -\frac{1}{2} \times 17.55 \times 0.615^2 = -3.70 \text{ t.m}$$

$$M_{AB} = 6.01 + 11.31 + 2.41 + 0.64 = 20.37 "$$

$$M_{BA} = -1.12 - 3.00 - 10.79 - 4.08 = -18.99 "$$

$$M_{BB'} = \frac{1}{2} \times 19.45 \times 0.915^2 = 8.14 "$$

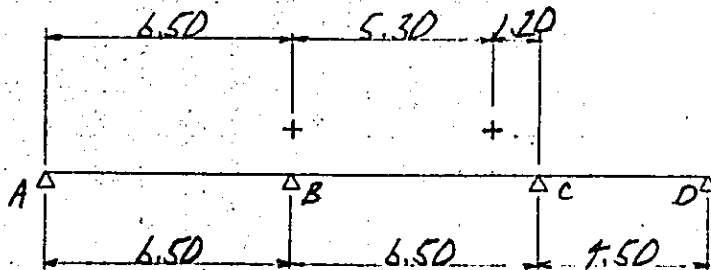
Torsional moment

$$M_{tA} = -3.70 + 20.37 = 16.67 \text{ t.m}$$

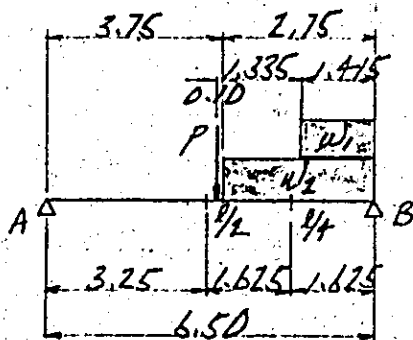
$$M_{tB} = -18.99 + 8.14 = -10.85 "$$

## [2] Three span

## 1. Dead load



## (1) Between A and B



Distributed load by track weight

$$w_1 = \frac{0.95}{2.83} = 0.16 \text{ t/m}^2$$

Ballast and sloping concrete

$$\begin{aligned} w_2 &= 1.7 \times 0.481 + 2.35 \times 0.07 \\ &= 1.08 \text{ t/m}^2 \end{aligned}$$

Hand rail and curb

$$\begin{aligned} P &= 0.20 + 0.20 \times 0.30 \times 2.5 \\ &= 0.35 \text{ t/m} \end{aligned}$$

$$\begin{aligned} R_B &= \frac{1}{6.50} \times (0.35 \times 3.85 + 1.08 \times 2.75 \times 5.125 \\ &\quad + 0.16 \times 1.415 \times 5.773) \\ &= 2.75 \text{ t} \end{aligned}$$

(i) At the  $1/4$  point

$$M_{1/4} = 2.75 \times 1.625 - 0.16 \times 1.415 \times 0.718 - 1.08 \times 1.625$$

$$\times 0.813$$

$$= 2.83 \text{ } ^{+m}$$

$$w_{1/4} = \frac{32 \cdot M_{1/4}}{3 \cdot L^2} = \frac{32 \times 2.83}{3 \times 6.50^2} = 0.71 \text{ } ^{+m}$$

(ii) At the  $1/2$  point

$$M_{1/2} = 2.75 \times 3.25 - 0.16 \times 1.415 \times 2.543$$

$$- 1.08 \times 2.75 \times 1.875 - 0.35 \times 0.40$$

$$= 2.65 \text{ } ^{+m}$$

$$w_{1/2} = \frac{8 \cdot M_{1/2}}{L^2} = \frac{8 \times 2.65}{6.50^2} = 0.50 \text{ } ^{+m}$$

$$\therefore w_{1/4} = 0.71 \text{ } ^{+m}$$

(a) Dead load

$$\text{Distributed load} = 0.71 \text{ } ^{+m^2}$$

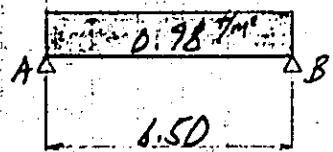
$$\text{Slab } 0.28 \times 2.5 = 0.70 \text{ } ^{+m^2}$$

$$w_d = 1.41 \text{ } ^{+m^2}$$

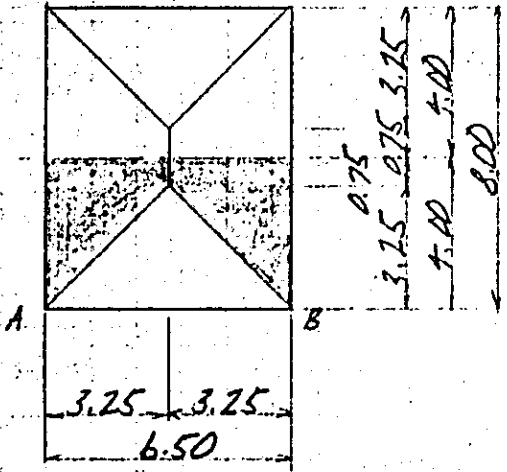
$$C_2 = \frac{8 \cdot DD^{\dagger}}{8 \cdot DD^{\dagger} + 6.50^{\dagger}} = 0.696$$

$$\therefore w_d = 1.41 \times 0.696 = 0.98 \text{ } ^{+m^2}$$





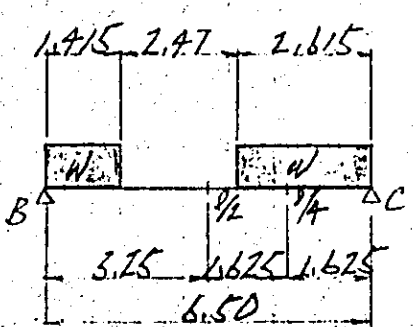
$$M_A = M_B = \frac{1}{12} \times 0.98 \times 6.50^2 = 3.95 \text{ t}\cdot\text{m/m}$$



$$M_{\pm AB} = 3.95 \times (0.75 + 3.25 \times \frac{1}{2}) = 8.19 \text{ t}\cdot\text{m}$$

$$M_{\mp BA} = -3.95 \times (0.75 + 3.25 \times \frac{1}{2}) = -8.19 \text{ t}\cdot\text{m}$$

(2) Between B and C



Distributed load by track weight  
 $w = 0.16 \text{ t/m}^2$

$$R_c = \frac{0.16}{6.50} \times (1.415 \times 0.708 + 2.115 \times 5.193)$$

$$= 0.36 \text{ t}$$

(i) At the  $1/4$  point.

$$M_{1/4} = 0.36 \times 1.625 - 0.16 \times 1.625 \times 0.813$$

$$= 0.37 \text{ t/m}$$

$$W_{1/4} = \frac{32 \cdot M_{1/4}}{3 \cdot l^2} = \frac{32 \times 0.37}{3 \times 6.50^2} = 0.09 \text{ t/m}^2$$

(ii) At the  $1/2$  point

$$M_{1/2} = 0.36 \times 3.25 - 0.16 \times 2.115 \times 1.943$$

$$= 0.36 \text{ t/m}$$

$$W_{1/2} = \frac{8 \cdot M_{1/2}}{l^2} = \frac{8 \times 0.36}{6.50^2} = 0.07 \text{ t/m}^2$$

故に  $W_{1/4} = 0.09 \text{ t/m}^2$  を考慮.

(a) Dead load

Distributed load by track weight =  $0.09 \text{ t/m}^2$

Ballast  $1.9 \times 0.481 = 0.91$  "

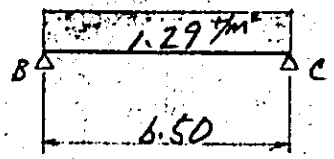
Sloping concrete  $2.35 \times 0.07 = 0.16$  "

Slab  $2.5 \times 0.28 = 0.70$  "

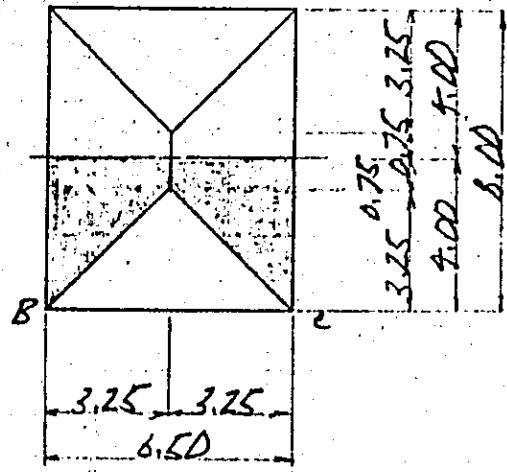
$$wd = 1.86 \text{ t/m}^2$$

$$Cz = \frac{8.00^{\dagger}}{8.00^{\dagger} + 6.50^{\dagger}} = 0.696$$

$$\therefore wd = 1.86 \times 0.696 = 1.29 \text{ t/m}^2$$



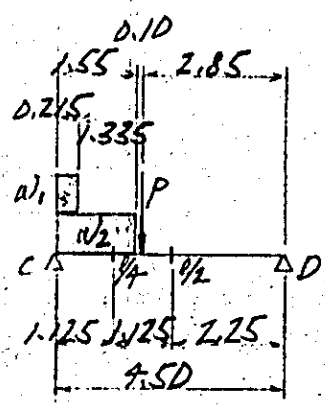
$$M_B = M_C = \frac{1}{2} \times 1.29 \times 6.50^2 = 4.54 \text{ t.m}$$



$$M_{BCL} = 4.54 \times (0.75 + 3.25 \times \frac{1}{2}) = 10.78 \text{ t.m}$$

$$M_{ECB} = -4.54 \times (0.75 + 3.25 \times \frac{1}{2}) = -10.78 \text{ t.m}$$

(3) between C and D



Distributed load by track weight

$$w_1 = 0.16 \text{ t/m}^2$$

Ballast and sloping concrete

$$w_2 = 1.08 \text{ t/m}^2$$

Hand rail and curb

$$P = 0.35 \text{ t/m}$$

$$R_c = \frac{1}{4.50} \times (0.16 \times 0.215 \times 4.393 + 1.08 \times 1.55 \times 3.725 + 0.35 \times 2.85)$$

$$= 1.64^+$$

(i) At the  $\frac{1}{4}$  point

$$M_{1/4} = 1.64 \times 1.125 - 0.16 \times 0.215 \times 1.018 - 1.08 \times 1.125 \times 0.563$$

$$= 1.13^{+m}$$

$$w_{1/4} = \frac{32 \cdot M_{1/4}}{3 \cdot l^2} = \frac{32 \times 1.13}{3 \times 4.50^2} = 0.60 \text{ } ^+m^2$$

(ii) At the  $\frac{1}{2}$  point

$$M_{1/2} = 1.64 \times 2.25 - 0.16 \times 0.215 \times 2.143 - 1.08 \times 1.55 \times 1.475 - 0.35 \times 0.60$$

$$= 0.94^{+m}$$

$$w_{1/2} = \frac{8 \cdot M_{1/2}}{l^2} = \frac{8 \times 0.94}{4.50^2} = 0.37 \text{ } ^+m^2$$

$$w_{1/2} = 0.37 \text{ } ^+m^2$$

(a) Dead load

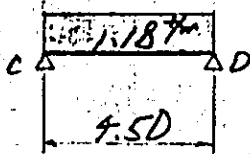
$$\text{Distributed load} = 0.60 \text{ } ^+m^2$$

$$S_{fab} \quad 2.5 \times 0.28 = 0.70 \text{ } "$$

$$w_d = 1.30 \text{ } ^+m^2$$

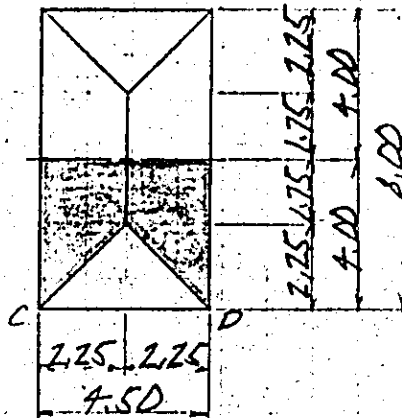
$$C_x = \frac{8.00^3}{8.00^3 + 4.50^3} = 0.909$$

$$\therefore wd = 1.30 \times 0.909 = 1.18 \text{ } \frac{\text{t.m}^2}{\text{m}}$$



$$M_C = M_D = \frac{1}{12} \times 1.18 \times 4.50^3$$

$$= 1.99 \text{ } \frac{\text{t.m}^2}{\text{m}}$$



$$\therefore M_{tCD} = 1.99 \times (1.75 + 2.25 \times \frac{1}{2}) = 5.72 \text{ } \frac{\text{t.m}^2}{\text{m}}$$

$$M_{tDC} = -1.99 \times (1.75 + 2.25 \times \frac{1}{2}) = -5.72 \text{ } \frac{\text{t.m}^2}{\text{m}}$$

(4) torsional moment (1/2)

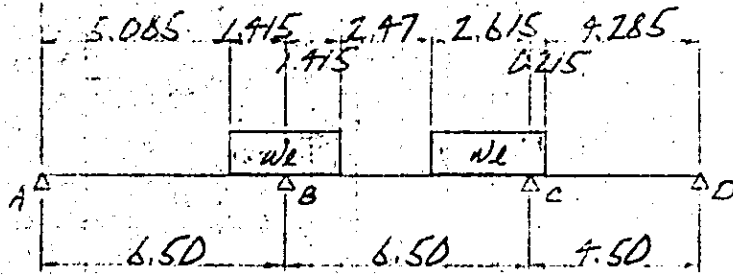
$$M_{tA} = 8.19 \text{ } \frac{\text{t.m}^2}{\text{m}}$$

$$M_{tB} = -8.19 + 10.78 = 2.59 \text{ } \frac{\text{t.m}^2}{\text{m}}$$

$$M_{tC} = -10.78 + 5.72 = -5.06 \text{ } \frac{\text{t.m}^2}{\text{m}}$$

$$M_{tD} = -5.72 \text{ } \frac{\text{t.m}^2}{\text{m}}$$

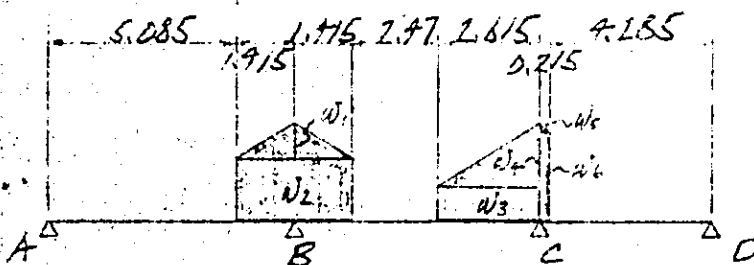
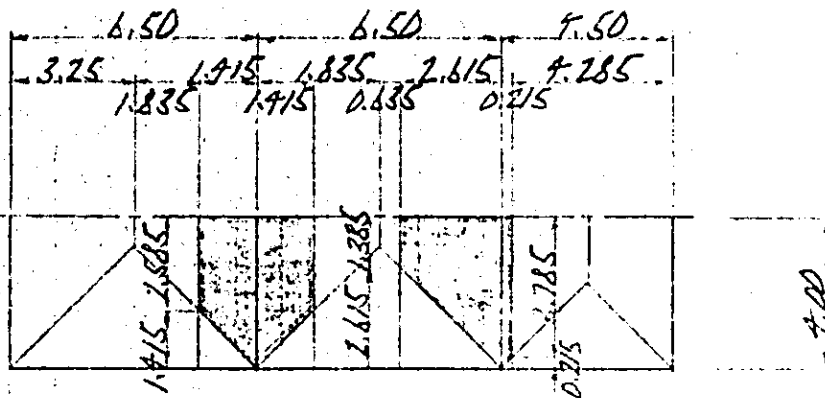
## 2 Train load and Impact



uniform load  $W_{M2}$

$$W_L' = 4.6 \times 2 = 9.20 \text{ t/m (single track)}$$

$$W_L = 9.20 \times 1/2.83 = 3.25 \text{ t/m}^2$$



## Reduction of impact coefficient

$$L = 6.50^m \rightarrow i' = 0.465 \times \left(1 - \frac{6.50}{200}\right) = 0.450$$

$$L = 4.50'' \rightarrow i' = 0.492 \times \left(1 - \frac{4.50}{200}\right) = 0.481$$

$$W_1 = 3.25 \times 1.415 \times (1 + 0.450) = 6.67 \frac{t}{m}$$

$$W_2 = 3.25 \times 2.585 \times (1 + 0.450) = 12.12''$$

$$W_3 = 3.25 \times 1.385 \times (1 + 0.450) = 6.53''$$

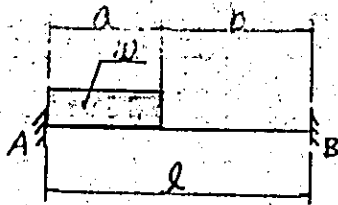
$$W_4 = 3.25 \times 2.615 \times (1 + 0.450) = 12.32''$$

$$W_5 = 3.25 \times 0.215 \times (1 + 0.481) = 1.03''$$

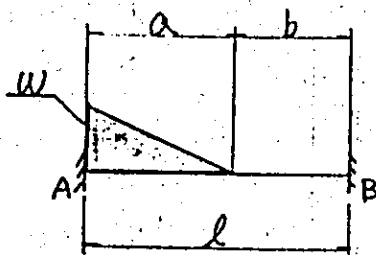
$$W_6 = 3.25 \times 3.785 \times (1 + 0.481) = 18.22''$$

## 3. Fixed-end moment of beam

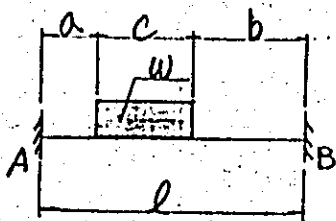
Superimposed load



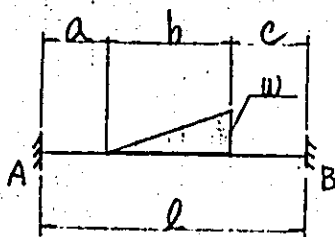
$$\begin{cases} M_A = \frac{w \cdot a^2}{12 \cdot l^2} (5l^2 - 8a \cdot l + 3a^2) \\ M_B = \frac{w \cdot a^3}{12 \cdot l^2} (7l - 3a) \end{cases}$$



$$\begin{cases} M_A = \frac{w \cdot a^2}{60 \cdot l^2} (3a^2 - 10al + 10l^2) \\ M_B = \frac{w \cdot a^3}{60 \cdot l^2} (5l - 3a) \end{cases}$$



$$\begin{cases} M_A = \frac{w \cdot c}{12 \cdot l^2} \{ 12a \cdot b \cdot (b+c) + 6b^2 \cdot c \\ \quad + 4c^2(a+b) + c^3 \} \\ M_B = \frac{w \cdot c}{12 \cdot l^2} \{ 12a \cdot b(a+c) + 6a^2 \cdot c \\ \quad + 4c^2(a+b) + c^3 \} \end{cases}$$



$$\begin{cases} M_A = \frac{w \cdot c}{60 \cdot l^2} \{ 20 \cdot b \cdot c(a+b) + 5c^2(a+2b) \\ \quad + 30 \cdot a \cdot b^2 + 2c^3 \} \\ M_B = \frac{w \cdot c}{60 \cdot l^2} \{ 10 \cdot a \cdot c(a+b) + 15b(2a^2+c^2) \\ \quad + 40 \cdot a \cdot b \cdot c + 3c^3 \} \end{cases}$$



from an Electronic computer

$$M_{AB} = 0.21 + 1.47 = 1.68 \text{ t.m}$$

$$M_{BA} = -1.77 - 8.90 = -10.67 \text{ "}$$

$$M_{BC} = 1.77 + 8.90 + 9.07 + 2.14 = 21.88 \text{ "}$$

$$M_{CB} = -0.21 - 1.47 - 12.16 - 9.07 = -22.91 \text{ "}$$

$$M_{CD} = 0.01 + 0.40 = 0.41 \text{ "}$$

$$M_{DC} = -0 - 0.01 = -0.01 \text{ "}$$

Torsional moment

$$M_{tA} = 1.68 \text{ t.m}$$

$$M_{tB} = -10.67 + 21.88 = 11.21 \text{ t.m}$$

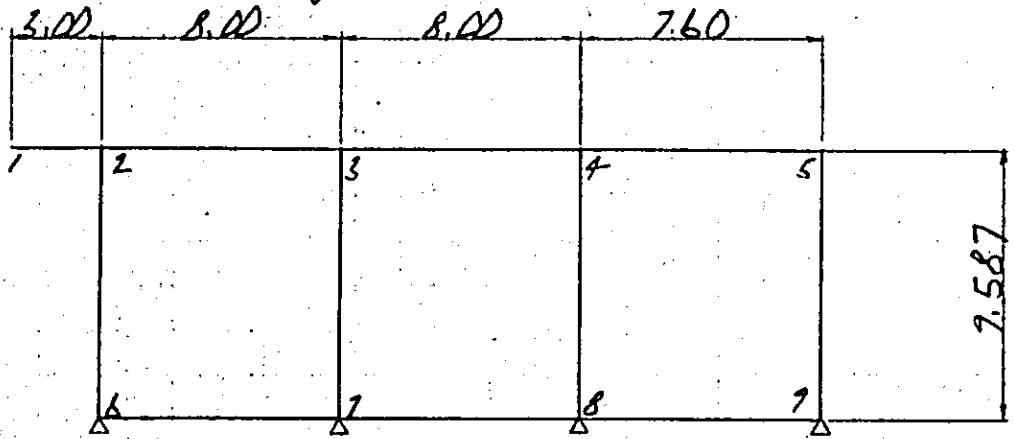
$$M_{tC} = -22.91 + 0.41 = -22.50 \text{ "}$$

$$M_{tD} = -0.01 \text{ t.m}$$

§ 4. Right frame analysis on longitudinal direction of elevated structure

(1) Elements for right frame analysis

1. Configuration and dimension

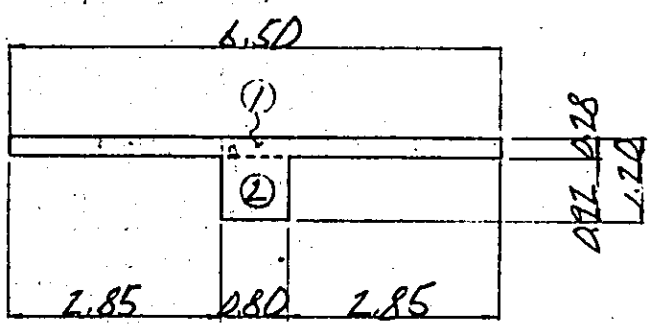


axial height

$$h = 9.15 - 0.313 + 0.30 + 0.45 = 9.587 \text{ m}$$

2. Cross-sectional area and moment of Inertia of the member

(1) Member (1~2, 2~3, 3~4)



	b <sup>m</sup>	h <sup>m</sup>	A <sup>m<sup>2</sup></sup>	y <sup>m</sup>	A·y <sup>m<sup>3</sup></sup>
①	6.500	0.280	1.820	0.140	0.25480
②	0.800	0.920	0.736	0.740	0.54464
Σ	—	—	2.556	—	0.79944

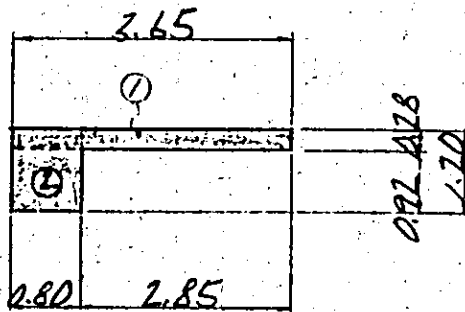
$$j_0 = \frac{0.79944}{2.556} = 0.313 \text{ m}$$

	$A \text{ m}^2$	$y_0 \text{ m}$	$A y_0^2 \text{ m}^4$	$I_0 \text{ m}^4$
①	1.820	0.173	0.05447	0.01189
②	0.736	0.427	0.13419	0.05191
$\Sigma$	2.556	—	0.18866	0.06380

$$A = 2.556 \text{ m}^2$$

$$I = 0.18866 + 0.06380 = 0.25246 \text{ m}^4$$

(2) Member (4~5)



	$b \text{ m}$	$h \text{ m}$	$A \text{ m}^2$	$y \text{ m}$	$A y^3 \text{ m}^3$
①	3.650	0.280	1.022	0.140	0.19308
②	0.800	0.920	0.720	0.940	0.54464
$\Sigma$	—	—	1.742	—	0.68772

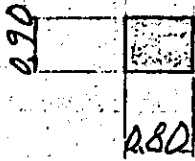
$$y_0 = \frac{0.68772}{1.742} = 0.395 \text{ m}$$

	$A \text{ m}^2$	$y_0 \text{ m}$	$A y_0^2 \text{ m}^4$	$I_0 \text{ m}^4$
①	1.022	0.255	0.06646	0.00668
②	0.720	0.345	0.08570	0.05191
$\Sigma$	1.742	—	0.15216	0.05859

$$A = 1.742 \text{ m}^2$$

$$I = 0.15216 + 0.05859 = 0.21075 \text{ m}^4$$

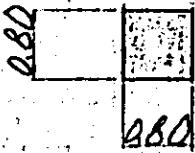
(3) Member (6~7, 8~9)



$$A = 0.80 \times 0.90 = 0.720 \text{ m}^2$$

$$I = \frac{1}{12} \times 0.80 \times 0.90^3 = 0.04860 \text{ m}^4$$

(4) Member (2~6, 3~7, 4~8, 5~9)



$$A = 0.80 \times 0.80 = 0.640 \text{ m}^2$$

$$I = \frac{1}{12} \times 0.80 \times 0.80^3 = 0.03413 \text{ m}^4$$

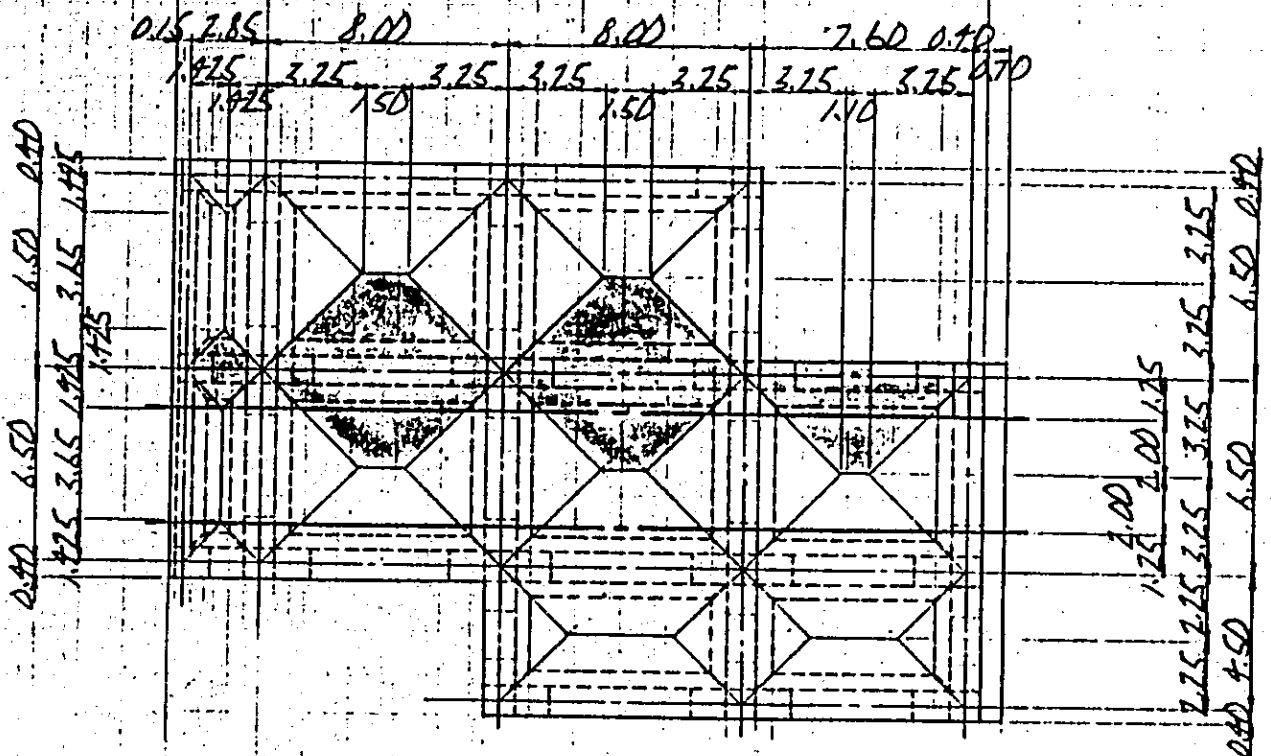
$$E_c = 2.7 \times 10^6 \text{ t/m}^2 \quad (f_{ck} = 240 \text{ kg/cm}^2)$$

$$\alpha = 1.0 \text{ E-5 } ^\circ\text{C}$$

## (2) Calculation of loads

## 1. Dead load

## (i) Member (1~2, 2~3, 3~4)



## (a) Distributed Load

$$\text{Ballast} \quad 1.9 \times 0.481 = 0.91 \text{ } \frac{\text{t}}{\text{m}^2}$$

$$\text{Sloping concrete} \quad 2.35 \times 0.07 = 0.16 \text{ } "$$

$$\text{Slab} \quad 2.5 \times 0.28 = 0.70 \text{ } "$$

$$w_d = 1.77 \text{ } \frac{\text{t}}{\text{m}^2}$$

$$w_d = 1.77 \times 0.40 = 0.71 \text{ } \frac{\text{t}}{\text{m}}$$

$$w_d = 1.77 \times 1.425 = 2.52 \text{ } "$$

$$w_d = 1.77 \times 3.25 \times 2 = 11.51 \text{ } "$$

$$w_d = 1.77 \times 3.25 = 5.75 \text{ } "$$

## (b) Distributed load

- |                       |                             |                                       |
|-----------------------|-----------------------------|---------------------------------------|
| (1) Track weight      |                             | = 0.95 <sup>7/m</sup>                 |
| (2) Hand rail         |                             | = 0.20 "                              |
| (3) Curb              | 2.5 × 0.30 × 0.20           | = 0.15 "                              |
| (4) Longitudinal beam | 2.5 × 0.80 × 0.92           | = 1.84 "                              |
| (5) Slab haunch       | 2.5 × 1/2 × 0.45 × 0.15 × 2 | = 0.17 "                              |
|                       |                             | <hr/>                                 |
|                       |                             | W <sub>d1</sub> = 2.81 <sup>7/m</sup> |

(c) Concentrated load of elements acting at joint, P<sub>1</sub> as shown below

- |                      |                                    |                                      |
|----------------------|------------------------------------|--------------------------------------|
| (1) Distributed load | 1.77 × 1/2 × (1.825 + 3.25)        |                                      |
|                      | × 1.425 × 2                        | = 12.80 <sup>t</sup>                 |
| (2) "                | 1.77 × 0.15 × 6.50                 | = 1.73 "                             |
| (3) Transverse beam  | 2.5 × 0.50 × 0.72 × 5.70           | = 5.13 "                             |
| (4) Slab haunch      | 2.5 × 1/2 × 0.45 × 0.15 × 2.70 × 2 | = 0.46 "                             |
|                      |                                    | <hr/>                                |
|                      |                                    | P <sub>d1</sub> = 20.12 <sup>t</sup> |

joint P<sub>2</sub>

- |                      |                              |                      |
|----------------------|------------------------------|----------------------|
| (1) Distributed load | 1.77 × 1/2 × (1.825 + 3.25)  |                      |
|                      | × 1.425 × 2                  | = 12.80 <sup>t</sup> |
| (2) "                | 1.77 × 1/2 × 3.25 × 3.25 × 2 | = 18.70 "            |

- (3) Transverse Beam  $2.5 \times 0.80 \times 0.82 \times 5.70 = 9.35^t$
- (4) Transverse Beam haunch  $2.5 \times \frac{1}{2} \times 0.90 \times 0.30 \times 0.80 \times 2 = 0.54^t$
- (5) Longitudinal Beam haunch  $2.5 \times \frac{1}{2} \times 1.20 \times 0.40 \times 0.80 \times 2 = 0.96^t$
- (6) Slab haunch  $2.5 \times \frac{1}{2} \times 0.45 \times 0.15 \times 5.40 \times 2 = 0.91^t$
- (7) Deficit of column weight  $-2.5 \times 0.80 \times 0.80 \times (1.20 - 0.313) = -1.42^t$

---


$$P_{A2} = 41.84^t$$

joint P<sub>3</sub>

- (1) Distributed load  $1.77 \times \frac{1}{2} \times 3.25 \times 3.25 \times 4 = 37.39^t$
- (2) Transverse Beam  $2.5 \times 0.80 \times 0.82 \times 5.70 = 9.35^t$
- (3) Transverse Beam haunch  $2.5 \times \frac{1}{2} \times 0.90 \times 0.30 \times 0.80 \times 2 = 0.54^t$
- (4) Longitudinal beam haunch  $2.5 \times \frac{1}{2} \times 1.20 \times 0.40 \times 0.80 \times 2 = 0.96^t$
- (5) Slab haunch  $2.5 \times \frac{1}{2} \times 0.45 \times 0.15 \times 5.40 \times 2 = 0.91^t$
- (6) Deficit of column weight  $-2.5 \times 0.80 \times 0.80 \times (1.20 - 0.313) = -1.42^t$

---


$$P_{A3} = 47.73^t$$

joint P<sub>4</sub>

- (1) Distributed load  $1.77 \times \frac{1}{2} \times 3.25 \times 3.25 \times 3 = 28.04^t$
- "  $1.77 \times 0.40 \times 2.85 = 2.02^t$
- (2) Transverse Beam  $2.5 \times 0.80 \times 0.82 \times 5.70 = 9.35^t$

- (1) Transverse Beam haunch  $2.5 \times \frac{1}{2} \times 0.90 \times 0.30 \times 0.80 \times 2 = 0.54^t$
- (2) Longitudinal Beam haunch  $2.5 \times \frac{1}{2} \times 1.20 \times 0.40 \times 0.80 \times 2 = 0.96^t$
- (3) Slab haunch  $2.5 \times \frac{1}{2} \times 0.45 \times 0.15 \times 2.70 \times 3 = 0.68^t$
- (4) Deficit of column weight  $-2.5 \times 0.80 \times 0.80 \times (1.20 - 0.313) = -1.42^t$

$$Pd4 = 40.17^t$$

joint P5

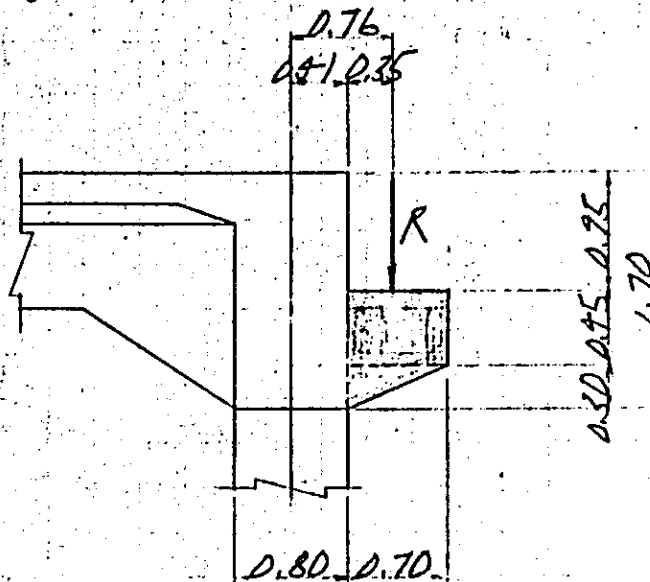
- (1) Distributed load  $1.77 \times \frac{1}{2} \times 3.25 \times 3.25 = 9.35^t$
- (2) "  $1.77 \times 0.40 \times 3.65 = 2.58^t$
- (3) Longitudinal Beam haunch  $2.5 \times \frac{1}{2} \times 1.20 \times 0.40 \times 0.80 = 0.48^t$
- (4) Slab haunch  $2.5 \times \frac{1}{2} \times 0.45 \times 0.15 \times 2.70 = 0.23^t$
- (5) Transverse Beam  $2.5 \times 0.80 \times 1.42 \times 3.65 = 10.37^t$
- (6) Beam for Bridge support  $2.5 \times \frac{1}{2} \times (0.45 + 0.75) \times 0.70 \times 3.65 = 3.83^t$
- (7) Deficit of column weight  $-2.5 \times 0.80 \times 0.80 \times (1.70 - 0.313) = -2.22^t$
- (8) Deficit of Longitudinal Beam weight  $-2.5 \times 0.80 \times 0.92 \times 0.40 = -0.74^t$

$$Pd5 = 23.88^t$$



d) Moment at joint caused by beam of Bridge  
Support and T-beam bridge

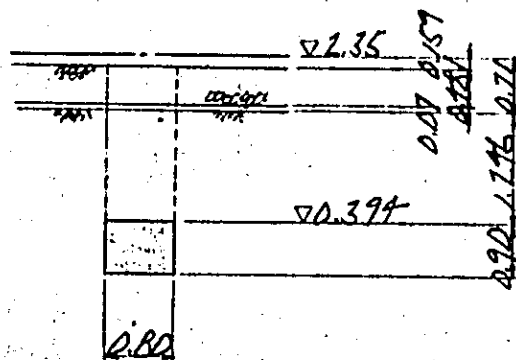
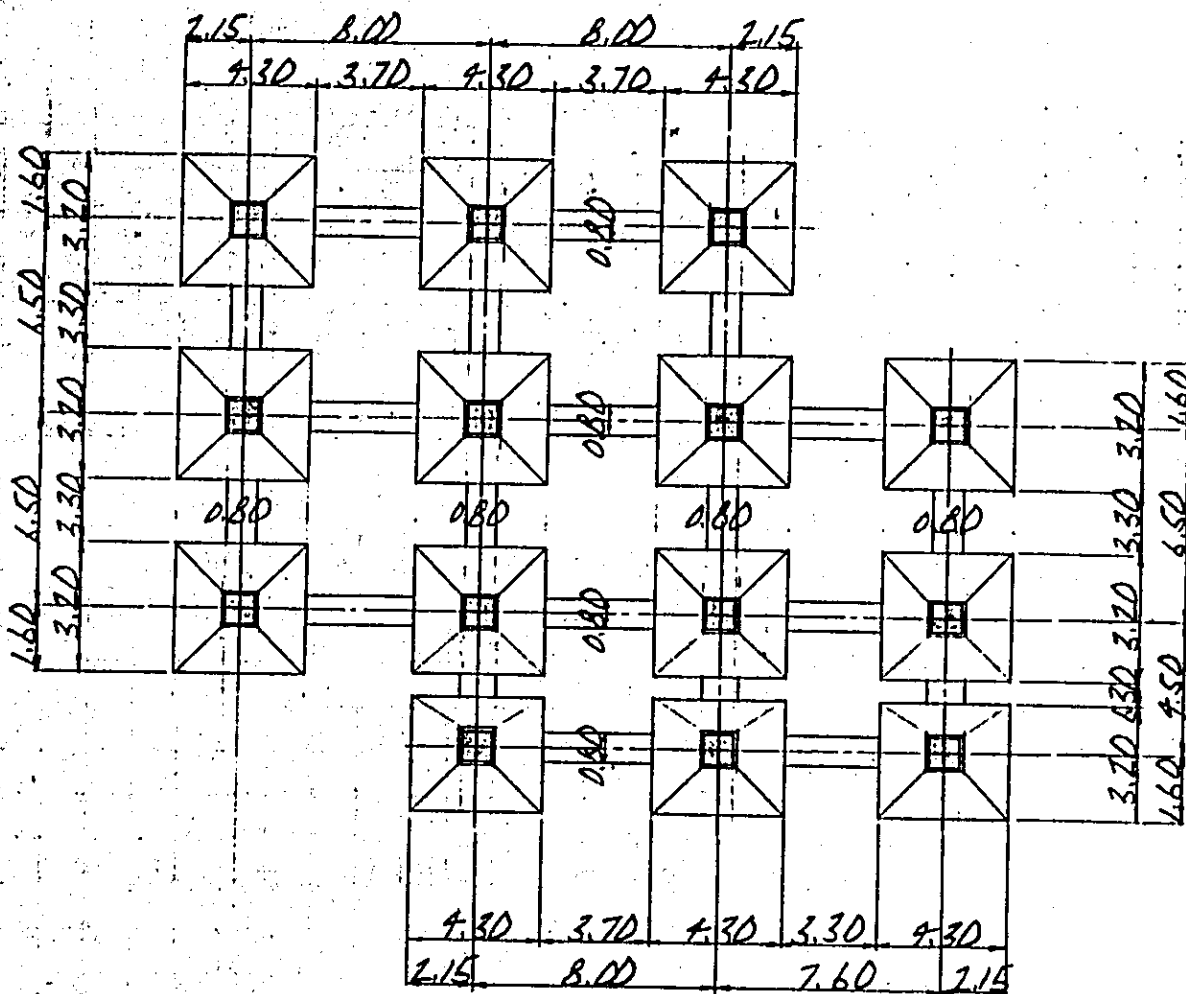
(joint 5)



$$R_d = 34.00 \times 2 = 68.00 \text{ t}$$

$$\begin{aligned} M_d &= 68.00 \times 0.76 + 2.5 \times 0.70 \times 0.45 \times 3.65 \times 0.76 \\ &\quad + 2.5 \times \frac{1}{2} \times 0.70 \times 0.30 \times 3.65 \times 0.643 \\ &= 59.48 \text{ tm} \end{aligned}$$

(2) Member (6~7, 7~8, 8~9)



## Distributed load (A)

$$\text{Ballast } 1.9 \times 0.481 = 0.91 \text{ } \frac{\text{t}}{\text{m}^2}$$

$$\text{Grading Concrete } 2.35 \times 0.07 = 0.16 \text{ "}$$

$$\underline{\hspace{10em}} \\ 1.07 \text{ } \frac{\text{t}}{\text{m}}$$

$$\text{Earth pressure } 1.8 \times 0.946 = 1.70 \text{ } \frac{\text{t}}{\text{m}^2}$$

$$\text{" } 1.8 \times 1.246 = 2.24 \text{ "}$$

## (a) Distributed load (B)

$$\begin{aligned} W_d &= (1.07 + 2.24) \times 0.80 + 2.5 \times 0.80 \times 0.90 \\ &= 4.45 \text{ } \frac{\text{t}}{\text{m}} \end{aligned}$$

(b) Concentrated load of elements acting at joint P<sub>6</sub> as Shain bellow

$$(1) \text{ Distributed load (B) } 4.45 \times 1.10 \times 2 = 14.69 \text{ } \frac{\text{t}}{\text{m}}$$

$$(2) \text{ Distributed load (A) } 1.07 \times (3.20 \times 4.30 - 0.80^2) = 14.04 \text{ "}$$

$$(3) \text{ Earth pressure } 1.7 \times (3.20 \times 4.30 - 0.80^2) \times 0.946 = 22.30 \text{ "}$$

$$\begin{aligned} (4) \text{ " } & 1.8 \times \left\{ 3.20 \times 4.30 - \frac{1}{6} \times (1.00^2 + 3.20 \times 4.30 \right. \\ & \left. + 4 \times 2.10 \times 2.65) \right\} \times 0.30 = 4.10 \text{ "} \end{aligned}$$

$$\begin{aligned} (5) \text{ Bracing beam } & 2.5 \times \left\{ 3.20 \times 4.30 \times 0.90 + \frac{1}{6} \times (1.00^2 + 3.20 \times 4.30 \right. \\ & \left. + 4 \times 2.10 \times 2.65) \times 0.30 \right\} = 35.59 \text{ "} \end{aligned}$$

$$(6) \text{ Deficit of column weight} - 2.5 \times 0.80^2 \times (0.30 + 0.45) = - 1.20^t$$

$$(7) \text{ Deficit of Distributed load (B)} - 4.45 \times 2.15 = - 9.57^t$$

---


$$P_{d6} = 79.95^t$$

joint 7.8

$$(1) \text{ Distributed load (from } P_{d6} \text{)}_{(B)} = 14.69^t$$

$$(2) \text{ Distributed load ( " )}_{(A)} = 14.04^t$$

$$(3) \text{ Earth pressure ( " )} = 22.30^t$$

$$(4) \text{ " ( " )} = 4.10^t$$

$$(4) \text{ Bracing beam ( " )} = 35.59^t$$

$$(5) \text{ Deficit of column weight ( " )} = - 1.20^t$$

$$(6) \text{ Deficit of Distributed load (B)} - 4.45 \times 4.30 = - 19.14^t$$

---


$$P_{d7.8} = 70.38^t$$

joint 9

$$(1) \text{ Distributed load}_{(B)} 4.45 \times 1.65 = 7.34^t$$

$$(2) \text{ Distributed load (from } P_{d6} \text{)}_{(A)} = 14.04^t$$

$$(3) \text{ Earth pressure ( " )} = 22.30^t$$

$$(4) \text{ " ( " )} = 4.10^t$$

$$(5) \text{ Bracing beam ( " )} = 35.59^t$$

$$(6) \text{ Deficit of column weight ( " )} = - 1.20^t$$

(7) Deficit of  
Distributed load (from P66)

$$= -9.57^t$$

---

$$P_{19} = 72.60^t$$

13) Column weight

$$g = 2.5 \times 0.80 \times 0.80 = 1.60 \text{ t/m}$$

## 2. Train load and Impact

(1) Train load (Single track) KS-16

(a) Distributed load acting on rigid-frame

Span  $l = 8.00 \text{ m}$

$$W_{M1} = 5.40 \times 2 = 10.80 \text{ t/m}$$

$$W_{M2} = 4.60 \times 2 = 9.20 \text{ t/m}$$

$$W_s = 6.00 \times 2 = 12.00 \text{ t/m}$$

(b) Reduction of impact coefficient

$$l = 8.00 \text{ m} \longrightarrow i = 0.950 \times \left(1 - \frac{8.00}{2.00}\right) = 0.432$$

$$\therefore W_{M1} = 10.80 \times (1 + 0.432) = 15.47 \text{ t/m}$$

$$W_{M2} = 9.20 \times ( \quad ) = 13.17 \text{ "}$$

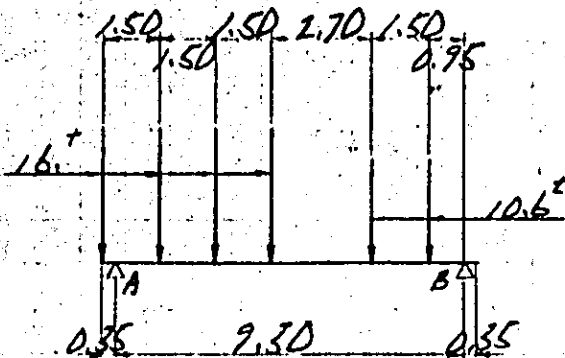
$$W_s = 12.00 \times ( \quad ) = 17.18 \text{ "}$$

(2) Concentration of cantilever slab

$$l = 3.00 \text{ m} \longrightarrow i = 0.528 \times \left(1 - \frac{3.00}{2.00}\right) = 0.520$$

$$\therefore P = 19.5 \times (1 + 0.520) = 29.64 \text{ t}$$

### (3) Reaction of T-beam Superstructure



$$R_{A2} = \frac{1}{9.30} \times \{ 10.6 \times (0.95 + 2.45) + 16 \times (5.15 + 6.65 + 8.15 + 9.65) \}$$

$$= 54.80 \text{ t}$$

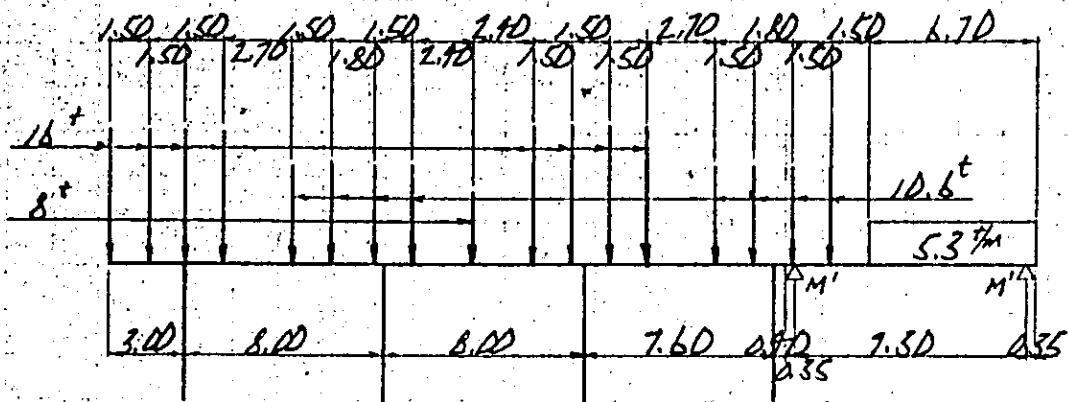
within right frame Section

$$l = 9.30 \text{ m} \quad \text{---} \quad i = 0.437$$

$$\therefore R_{A2+i} = 54.80 \times (1 + 0.437) = 78.75 \text{ t}$$

$$M_{A2+i} = 78.75 \times 0.760 = 59.85 \text{ t.m}$$

### 3. Breaking load and Traction load



#### (i) Breaking load

15% of the train load.

#### (a) Within elevated structure section

$$HB_1 = (16 \times 8 + 10.6 \times 6 + 8) \times 0.15$$

$$= 29.94^t$$

#### (b) Within T-beam bridge section at supporting point A

$$HB_2 = (10.6 \times 2 + 5.3 \times 6.70) \times 0.15 \times \frac{1}{2}$$

$$= 4.25^t$$

#### (c) Total brake load

$$\therefore HB = \frac{1}{2} \times (29.94 + 4.25) = 17.10^t$$



(2) Traction load

25% of the weight of the driving axle

(a) within elevated structure section

$$H_{s1} = 16 \times 8 \times 0.25 = 32.00^t$$

(b) within T-beam bridge section at supporting point A

$$H_{s2} = 0^t$$

(c) Total Traction load

$$\therefore H_s = 32.00 \times 1/2 = 16.00^t$$

compare Brake load with Traction load

$$H_B = 17.10^t > H_s = 16.00^t$$

## 4. Force of temperature change

Temperatural rise  $\pm 10^{\circ}\text{C}$ Dry shrinkage  $-15^{\circ}\text{C}$ 

Temperatural rise

 $+10^{\circ}\text{C}$ 

Temperatural drop + Drying contraction

 $-25^{\circ}\text{C}$

5. Dead load + Seismic force ( $k_h = 0.1$ )

## (1) Dead load

## (A) Member (1~2, 2~3, 3~4)

Distributed load curb	$0.45 \times 27.00$	= 12.15 <sup>t</sup>
curb	$0.20 \times 27.00$	= 5.40"
Dust cover	$2.5 \times 0.20 \times 0.30 \times 27.00$	= 4.05"
ballast	$1.9 \times 6.00 \times 0.481 \times 27.00$	= 148.05"
Sloping concrete	$2.35 \times 6.00 \times 0.07 \times 27.00$	= 26.65"
Slab	$2.5 \times 6.50 \times 0.28 \times 27.00$	= 122.85"
"	$2.5 \times 0.15 \times 0.40 \times 6.50$	= 0.98"
Slab haunch	$2.5 \times \frac{1}{2} \times 0.45 \times 0.15 \times 2.70 \times 14$	= 3.19"
Longitudinal beam	$2.5 \times 0.80 \times 0.92 \times 27.00$	= 49.68"
Longitudinal beam haunch	$2.5 \times \frac{1}{2} \times 1.20 \times 0.40 \times 0.80 \times 6$	= 2.88"
"	$2.5 \times \frac{1}{2} \times 1.20 \times 0.40 \times 0.80$	= 0.48"
Cross beam	$2.5 \times 0.80 \times 0.82 \times 2.85 \times 6$	= 28.04"
Cross beam haunch	$2.5 \times \frac{1}{2} \times 0.90 \times 0.30 \times 0.80 \times 6$	= 1.62"
"	$2.5 \times 0.90 \times 1.42 \times 3.65$	= 11.66"
beam seat	$2.5 \times \frac{1}{2} \times (0.45 + 0.75) \times 0.70 \times 3.65$	= 3.83"
Cross beam	$2.5 \times 0.50 \times 0.72 \times 2.85 \times 2$	= 5.13"

$$\text{Deficit of slab} = 2.5 \times 2.85 \times 0.28 \times 7.60 = -15.16^t$$

$$\text{Deficit of ballast} = 1.9 \times 2.75 \times 0.981 \times 7.60 = -19.10''$$

$$\text{Deficit of sloping concrete} = 2.35 \times 2.75 \times 0.07 \times 7.60 = -3.44''$$

$$\begin{aligned} \text{Column} & 2.5 \times 0.80 \times 0.80 \times \left(\frac{1}{2} \times 9.587\right. \\ & \left. + 0.313 - 1.20\right) \times 3 = 18.75'' \end{aligned}$$

$$\begin{aligned} \text{"} & 2.5 \times 0.80 \times 0.80 \times \left(\frac{1}{2} \times 9.587\right. \\ & \left. + 0.313 - 1.70\right) = 5.45'' \end{aligned}$$

---


$$W = 431.14^t$$

$$\therefore H_d = 431.14 \times 0.1 = 41.31^t$$

(b) Reaction of super structure

Single way beam

$$\Sigma R = 34.00 \times 2 = 68.00^t$$

$$\therefore H_R = 68.00 \times 0.1 \times \frac{1}{2} = 3.40^t$$

(c) horivy ontal load

$$\therefore H = 41.31 + 3.40 = 44.71^t$$

(2) Member (6~7, 7~8, 8~9)

$$\text{bracing beam } 2.5 \times 0.80 \times 0.90 \times (1.65 \times 7 + 3.70 \times 3) = 40.77^t$$

$$\text{footing } 2.5 \times 3.20 \times 4.30 \times 0.90 \times 4 = 123.84^t$$

$$\begin{aligned} & 2.5 \times \frac{1}{8} \times (1.00^2 + 3.20 \times 4.30 + 4 \\ & \times 2.10 \times 2.65 \times 0.30 \times 4 = 18.51^t \end{aligned}$$

$$\begin{aligned} \text{column } & 2.5 \times 0.80 \times 0.80 \times (\frac{1}{2} \times 9.587 \\ & - 0.45 - 0.30) \times 4 = 25.88^t \end{aligned}$$

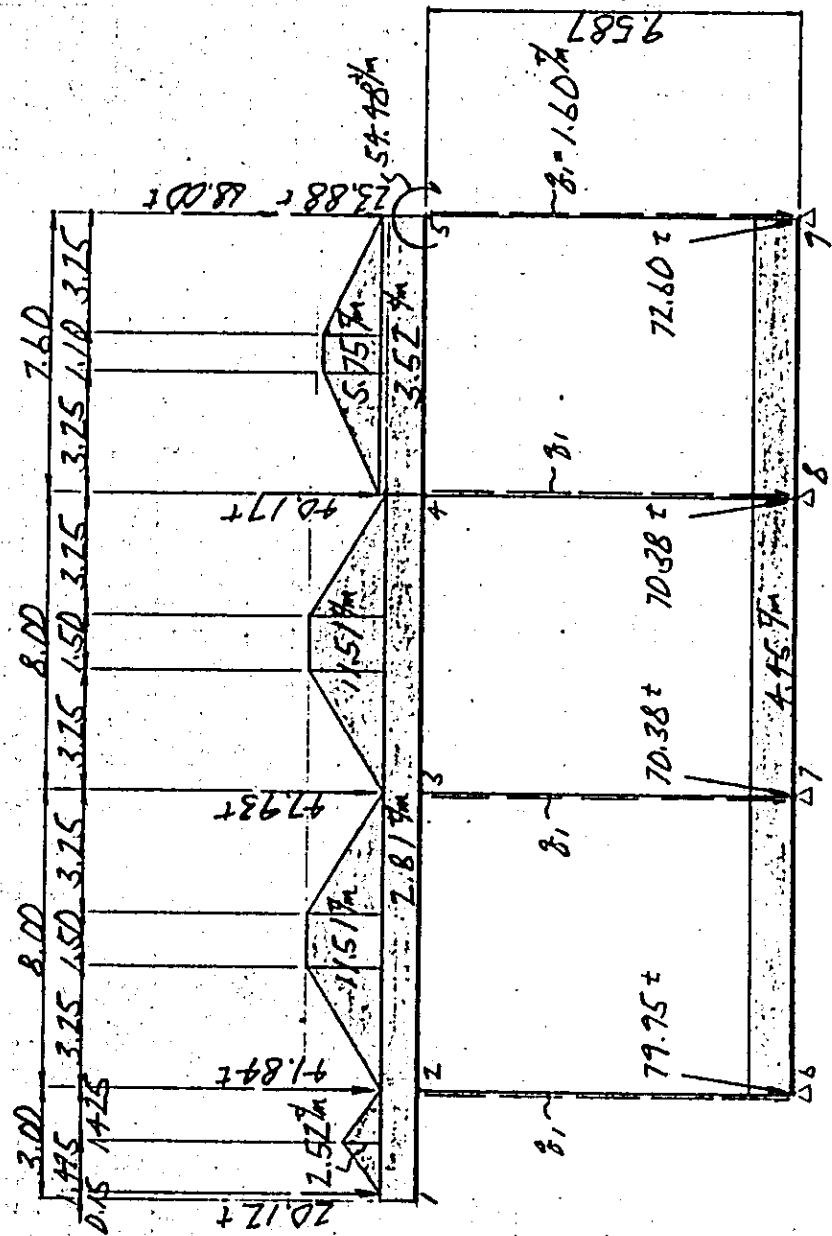
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$$W = 209.00^t$$

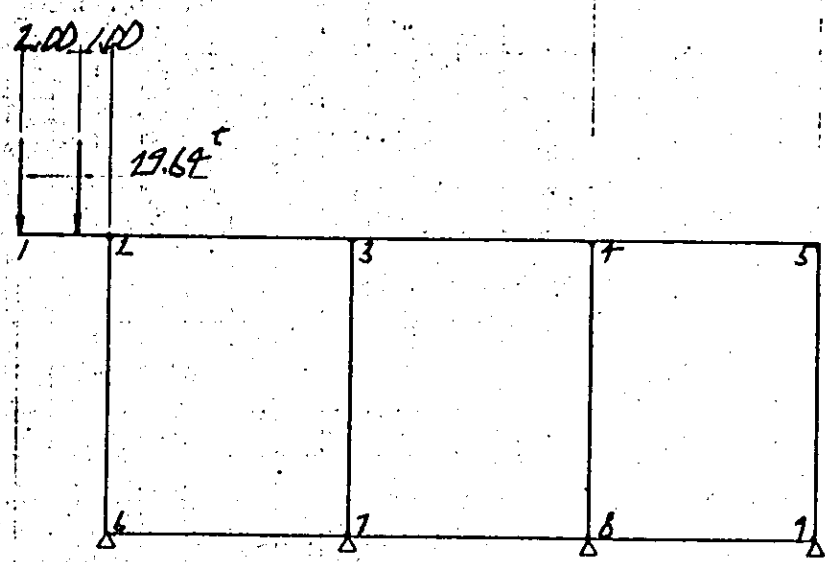
$$\therefore H = 209.00 \times 0.1 = 20.90^t$$

(3) Loading diagram

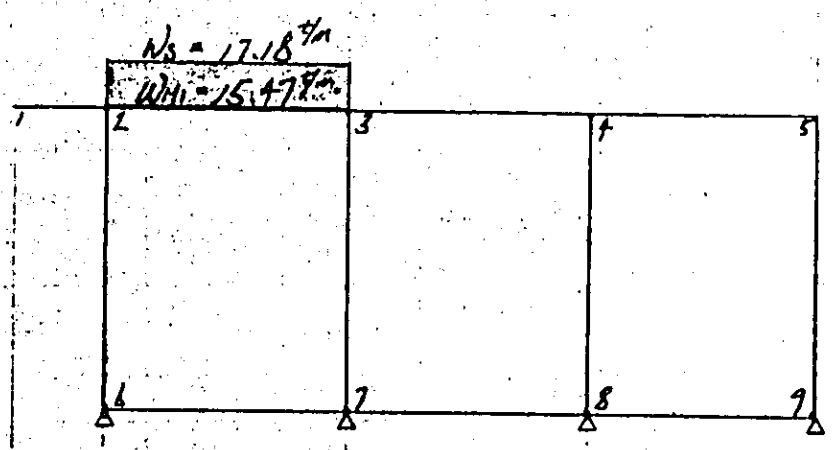
CASE 1 Dead load



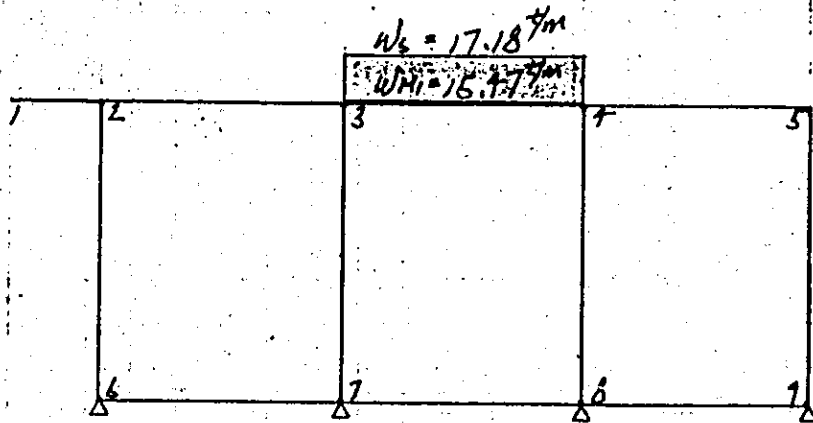
CASE 2. Train load + Impact (1)



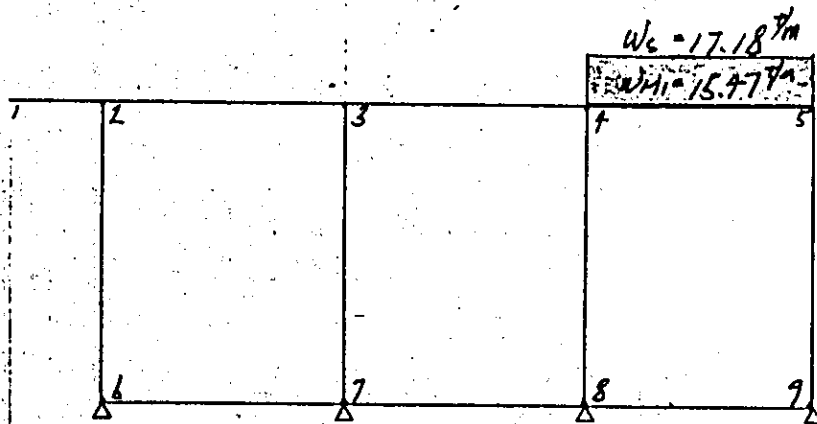
CASE 3. Train load + Impact (2)



CASE 4. Train load + Impact (3)

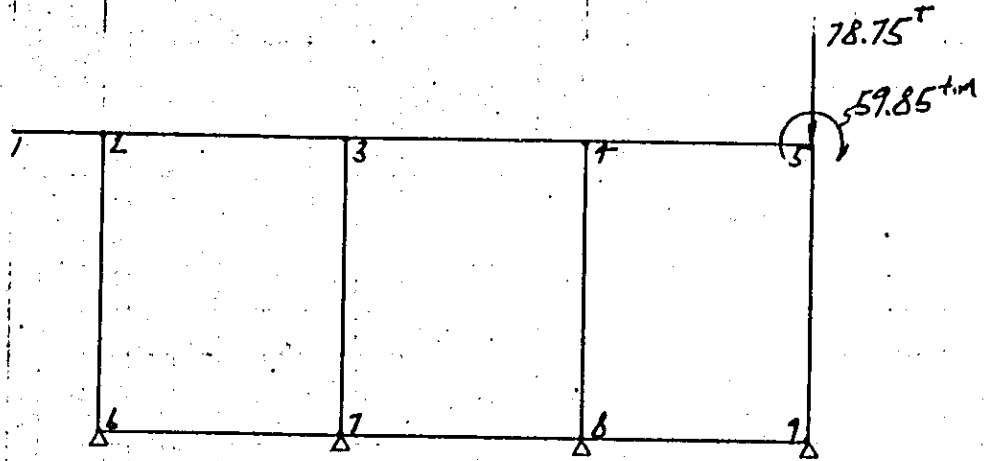


CASE 5. Train load + Impact (4)

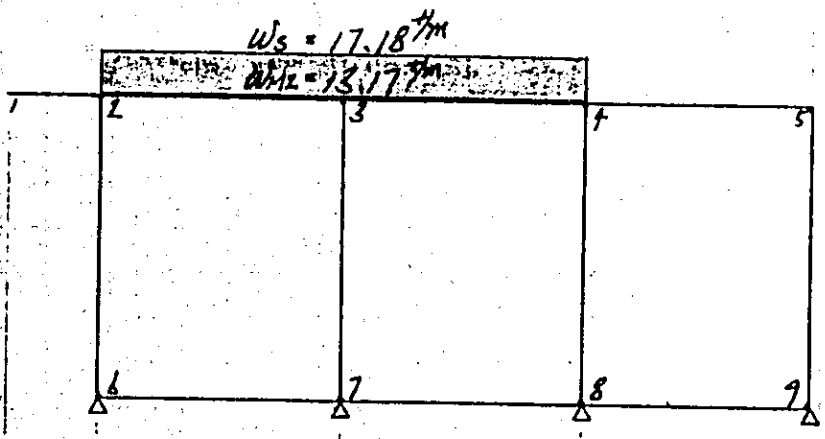




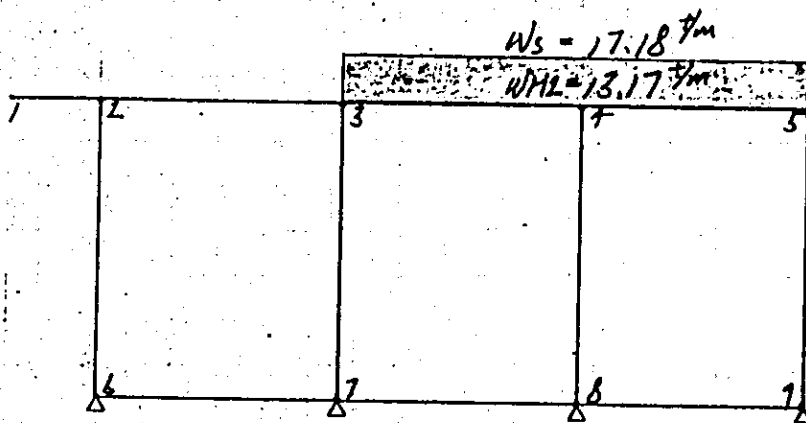
CASE 6. Train load + Impact (5)



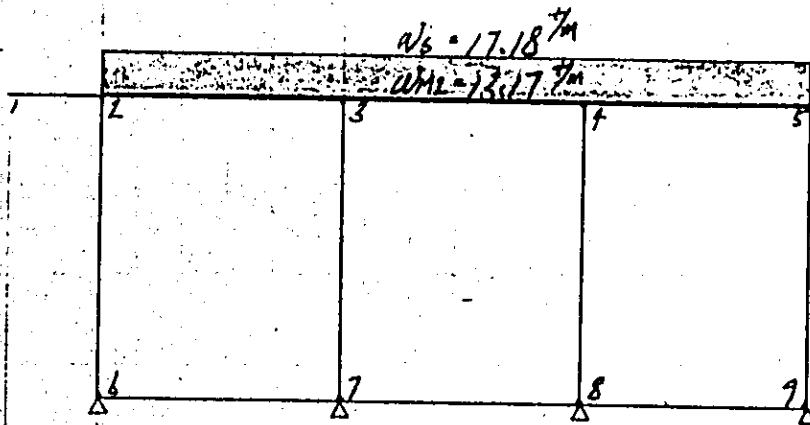
CASE 7. Train load + Impact (6)



CASE 8. Train load + Impact (7)

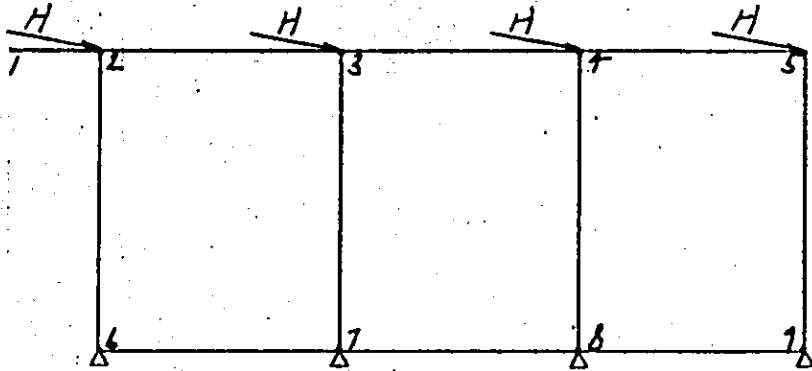


CASE 9. Train load + Impact (8)

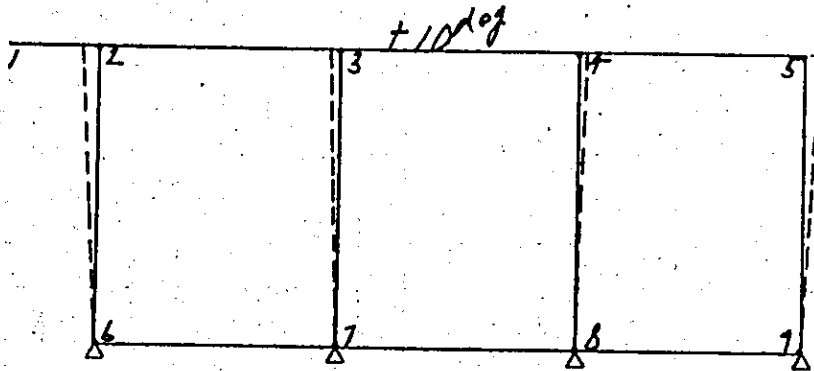


CASE 10. Brake load

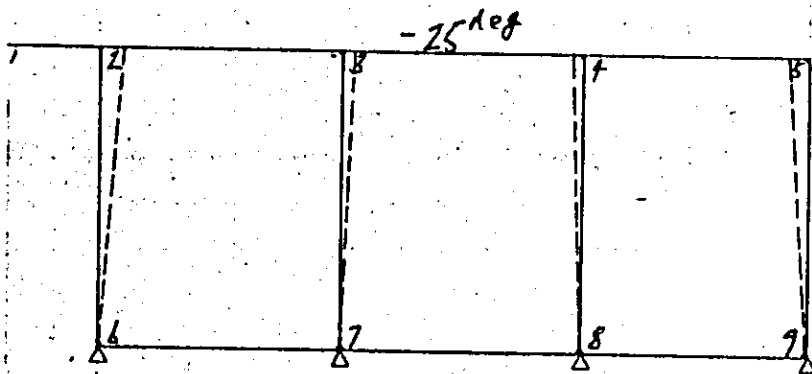
$$H = \frac{1}{4} \times 17.10 = 4.28^t$$



CASE 11. Temperature rise



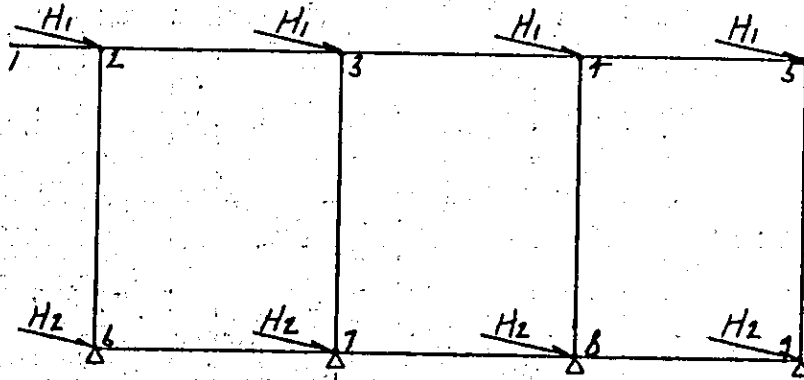
CASE 12. Temperature drop +  
drying contraction



## CASE 13. Seismic load

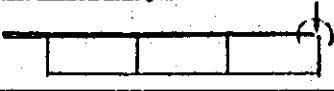
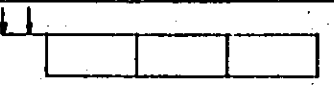

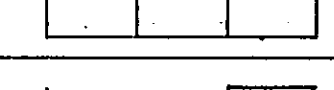
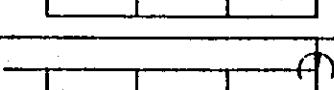
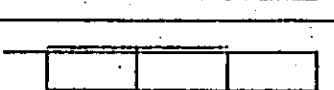
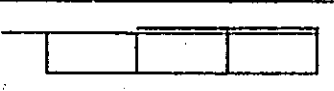

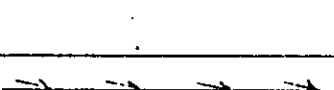
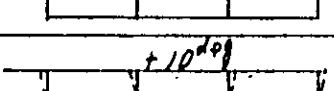
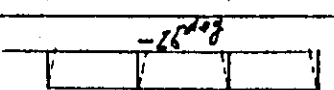
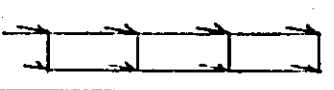
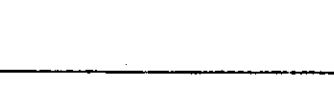
$$H_1 = \frac{1}{4} \times 44.71 = 11.18 \text{ t}$$

$$H_2 = \frac{1}{4} \times 20.90 = 5.23 \text{ t}$$



(4) Combination of loads

1. Basic load

Case NO.	Kind of load	Loading pattern
1	Dead load	
2	Train load + Impact (1)	
3	" (2)	
4	" (3)	
5	" (4)	
6	" (5)	
7	" (6)	
8	" (7)	
9	" (8)	
10	Brake load	
11	Temperature	
12	Temperature + Contraction	
13	Seismic load	

## 2. Combined loads

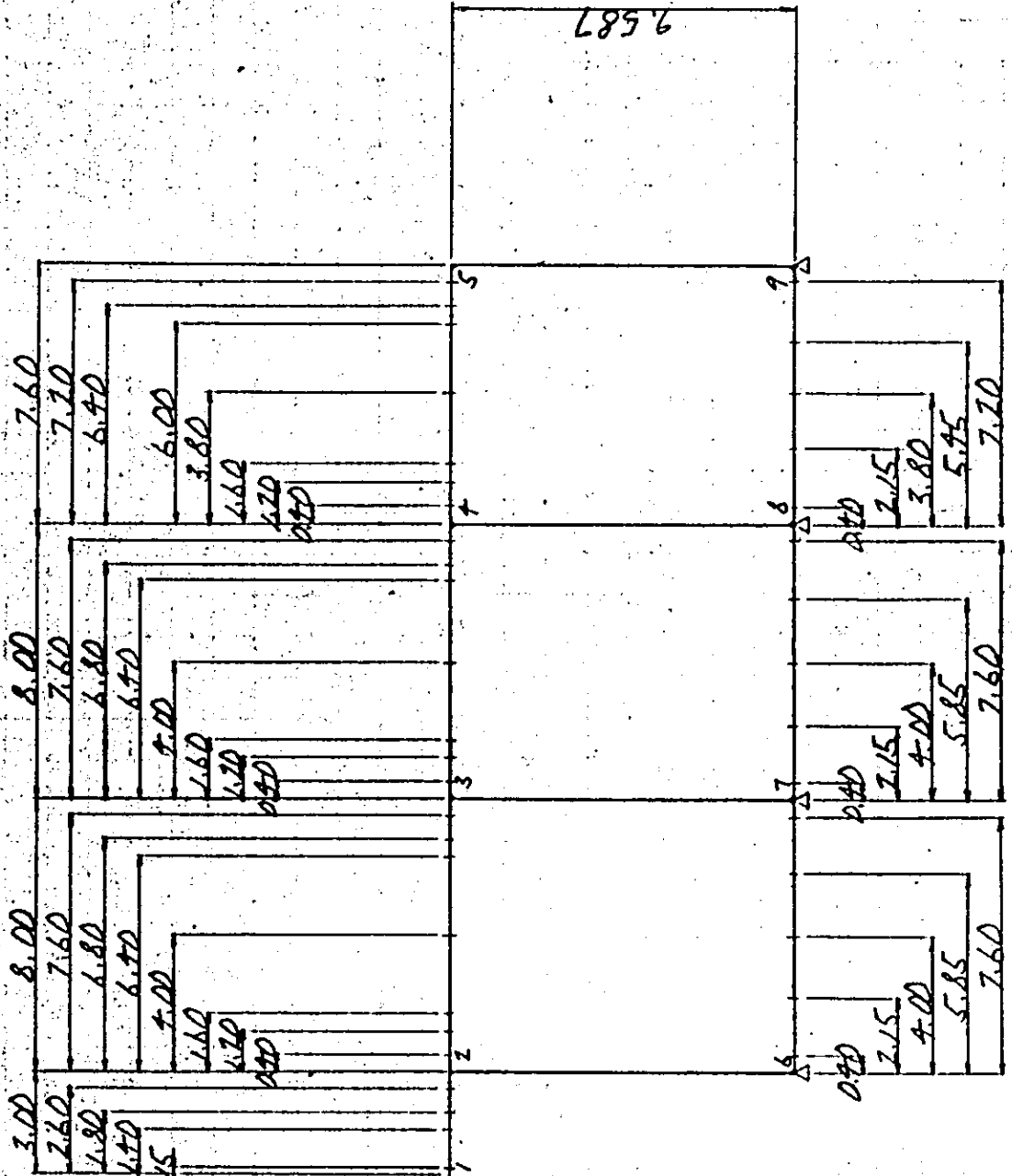
Case No.	$\alpha$	Combination of loads	Summary
14	1.0000	1	Dead load
15	1.0000	1 + 3	D + Tr + I
16	"	1 + 2 + 4	"
17	"	1 + 7	"
18	"	1 + 4	"
19	"	1 + 3 + 5	"
20	"	1 + 8	"
21	"	1 + 5	"
22	"	1 + 4 + 6	"
23	"	1 + 5 + 6	"
24	0.8696	1 + 11	D + Te
25	"	1 + 12	"
26	0.8696	1 + 2 + 6 + 9 + 10	D + Tr + I + Br
27	"	1 + 2 + 6 + 9 - 10	"
28	0.6667	1 + 13	D + Se
29	"	1 - 13	"
30	1.0000	1 + 2 + 6 + 9 + 10	D + Tr + Br
31	"	1 + 2 + 6 + 9 - 10	"
32	1.0000	1 + 11	D + Te
33	"	1 + 12	"
34	1.0000	1 + 13	D + Se
35	"	1 - 13	"

3 Critical cases

Case No.	A	Combination of loads	summary
		NO. 1 case 1	crack
		NO. 2 case 15 ~ 29	Synthetic
		NO. 3 case 30 ~ 31	booting
		NO. 4 case 32 ~ 33	"
		NO. 5 case 34 ~ 35	"



(5) Point of computing stresses

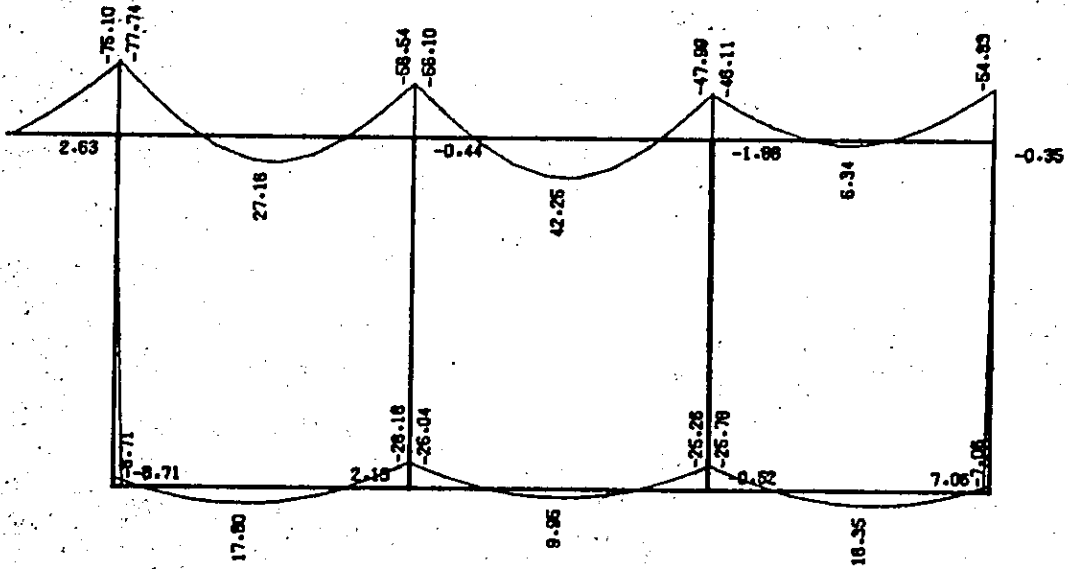


\* Point of concrete-treated load

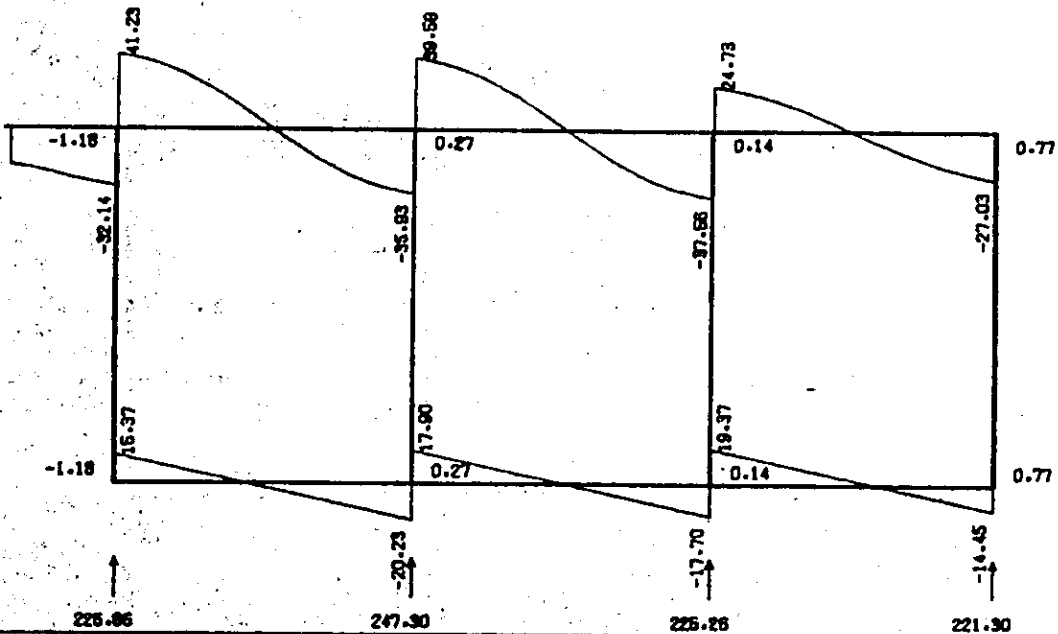
VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

CASE 1 (DEAD LOAD)

BENDING MOMENT



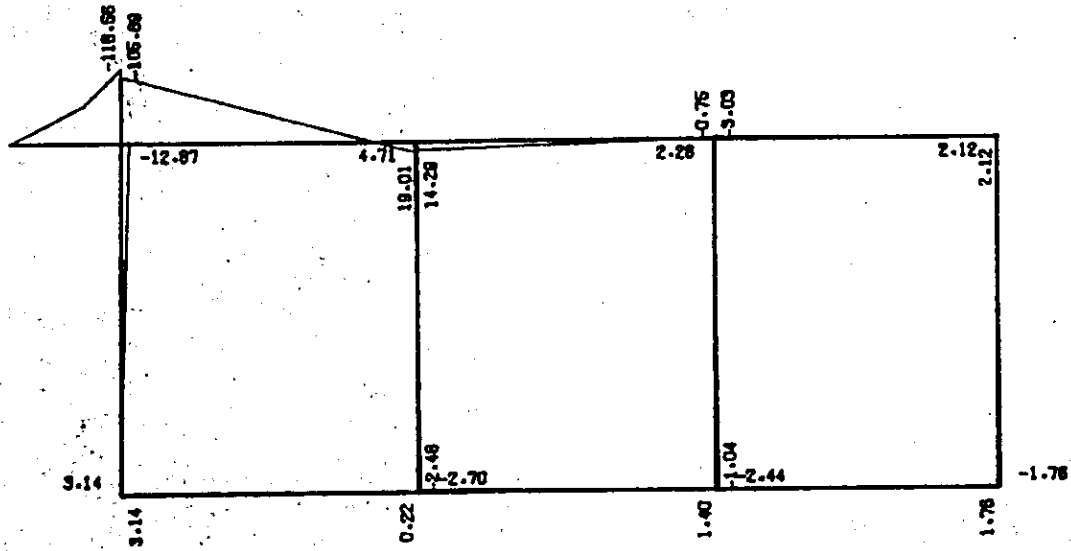
SHEARING FORCE



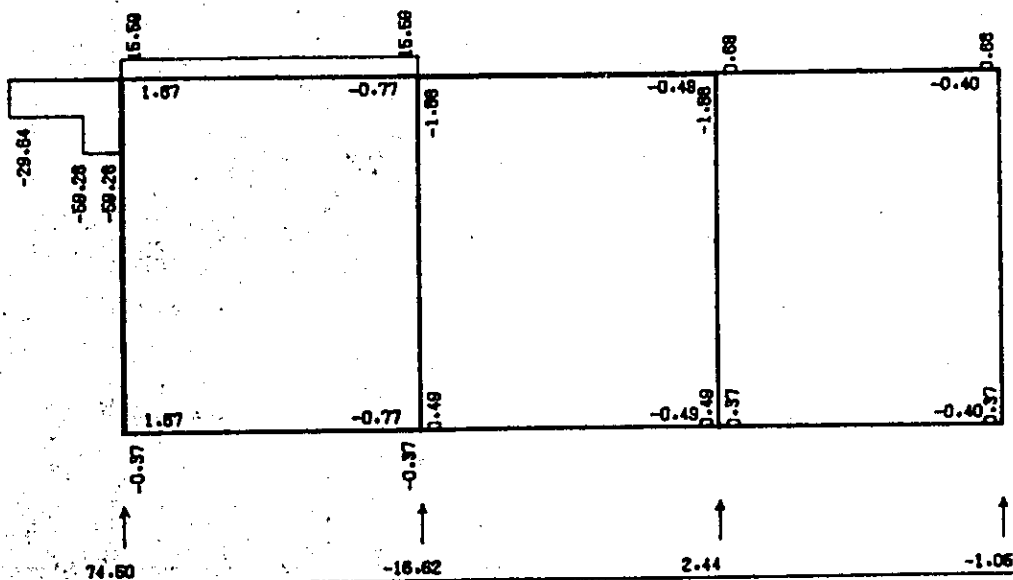
VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

CASE 2 (TRAIN LOAD + IMPACT LOAD 1)

BENDING MOMENT



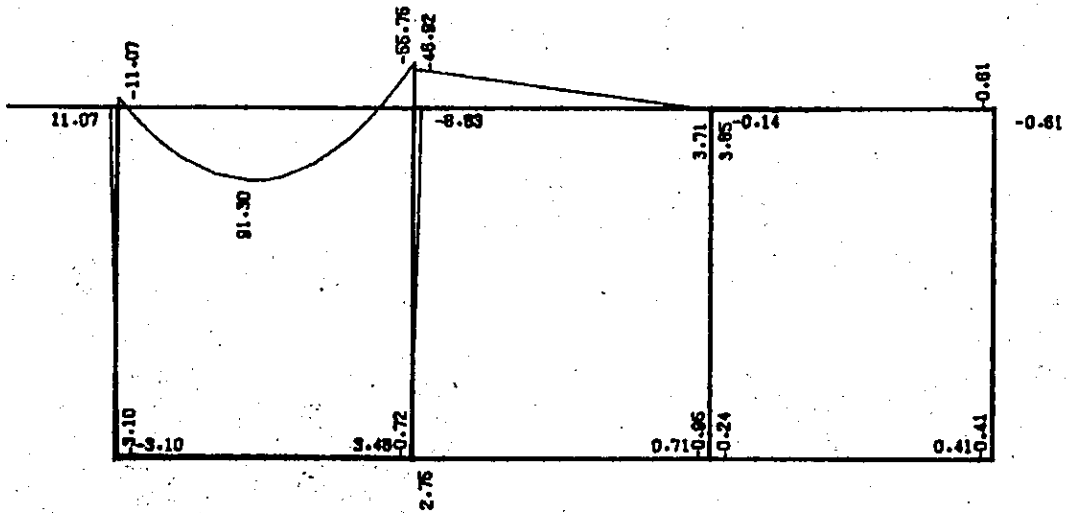
SHEARING FORCE



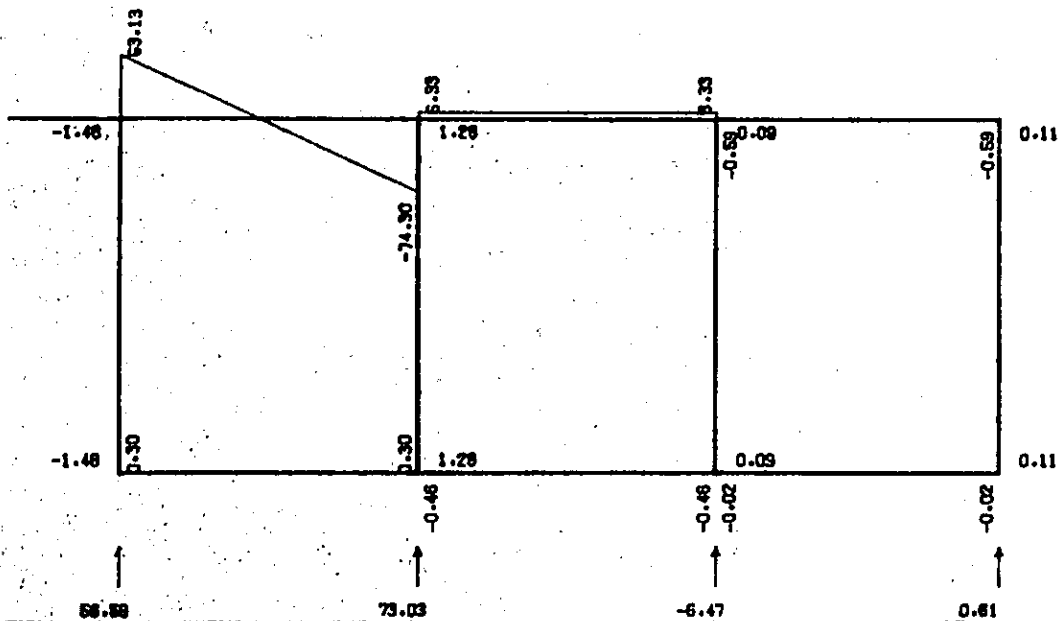
VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

CASE 3 (TRAIN LOAD + IMPACT LOAD 2)

BENDING MOMENT



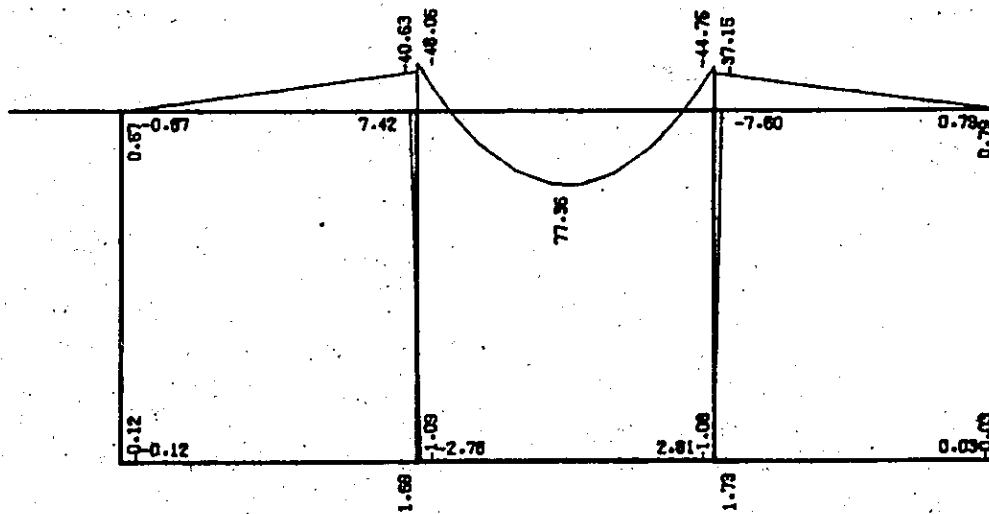
SHEARING FORCE



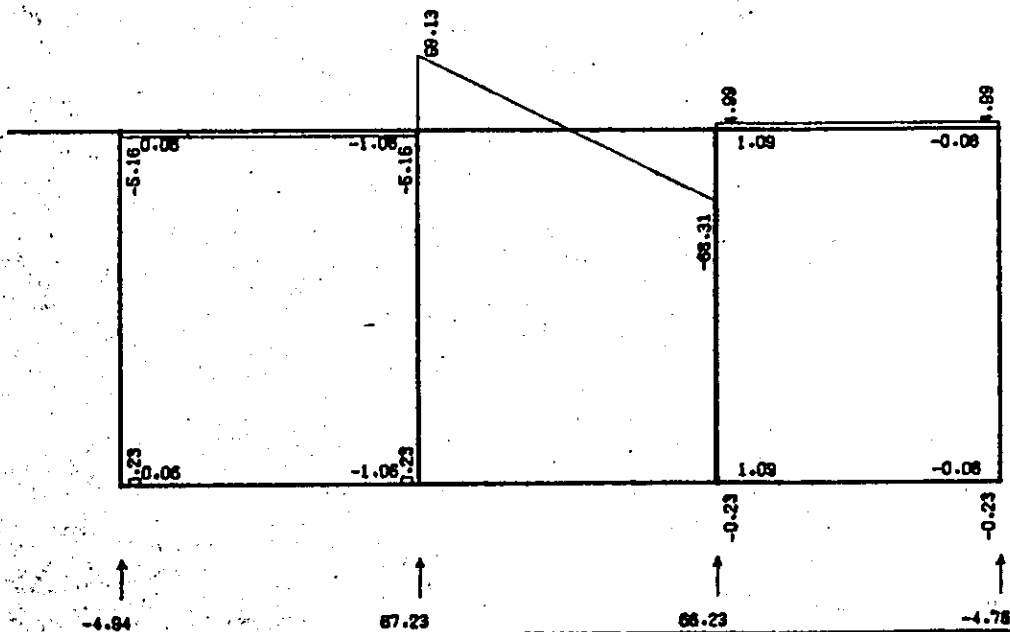
VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

CASE 4 (TRAIN LOAD +-IMPACT LOAD 3)

BENDING MOMENT



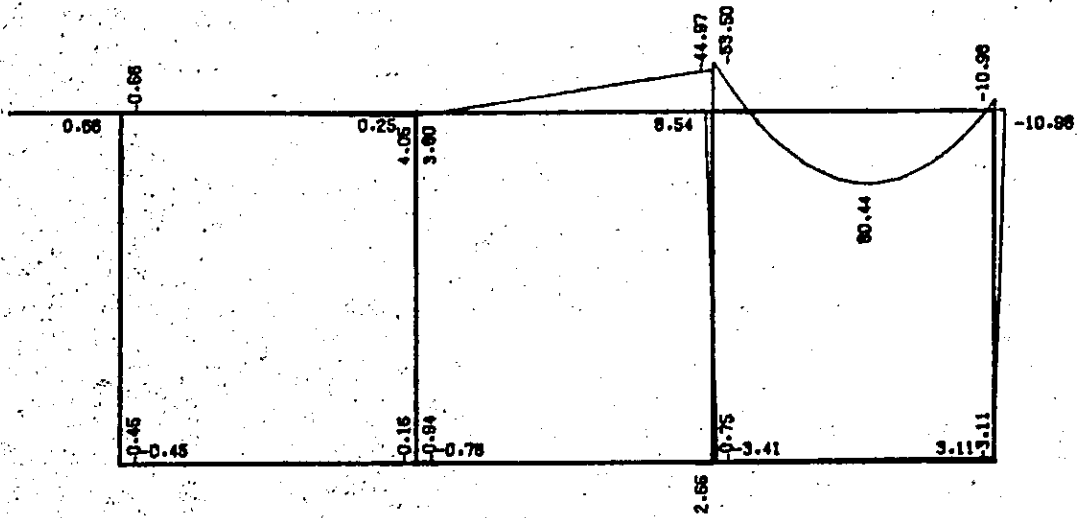
SHEARING FORCE



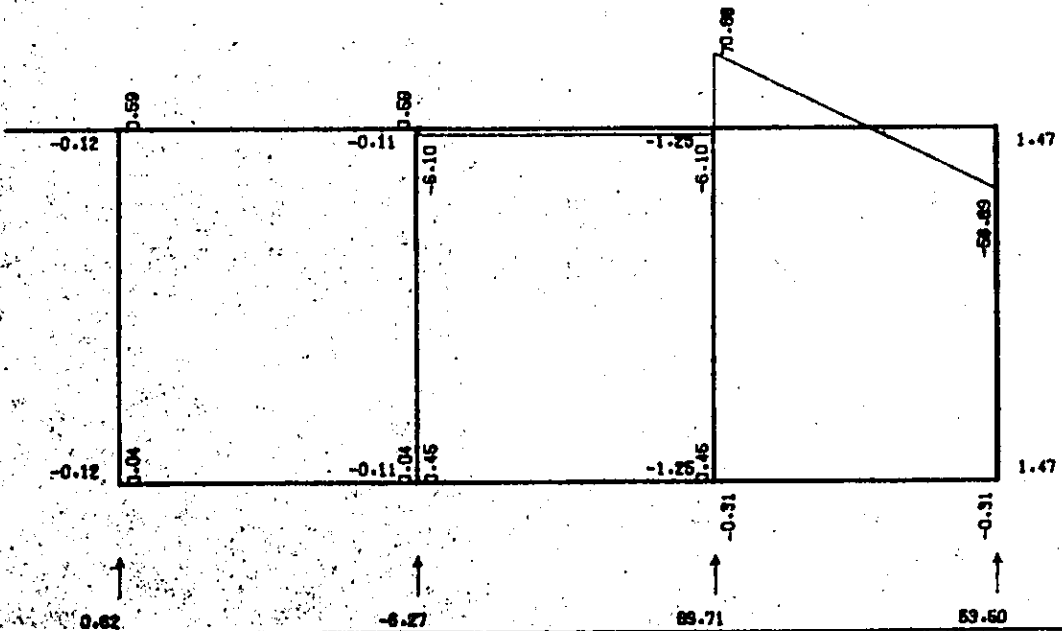
VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

CASE 5 (TRAIN LOAD + IMPACT LOAD 4)

BENDING MOMENT



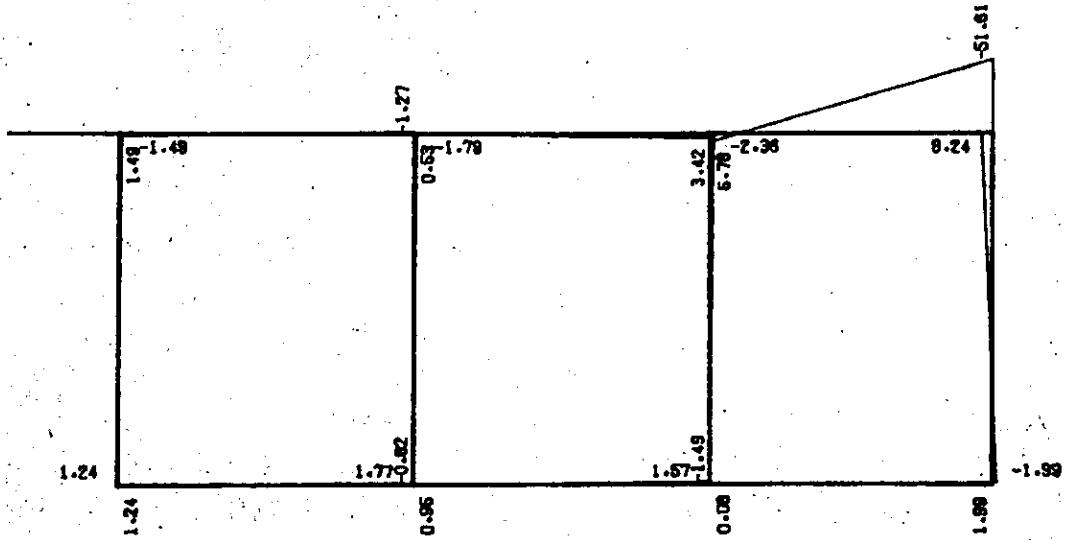
SHEARING FORCE



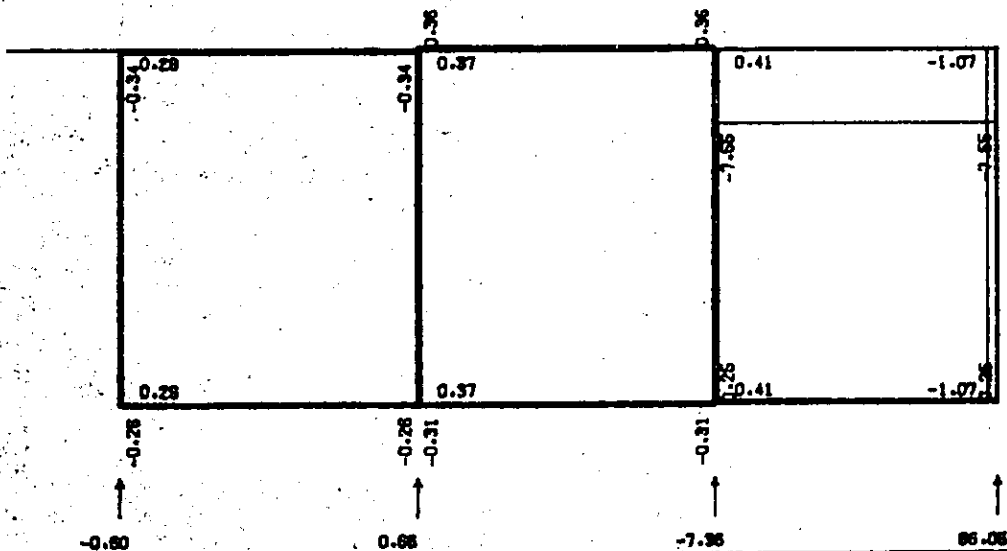
VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

CASE 6 (TRAIN LOAD + IMPACT LOAD 5)

BENDING MOMENT



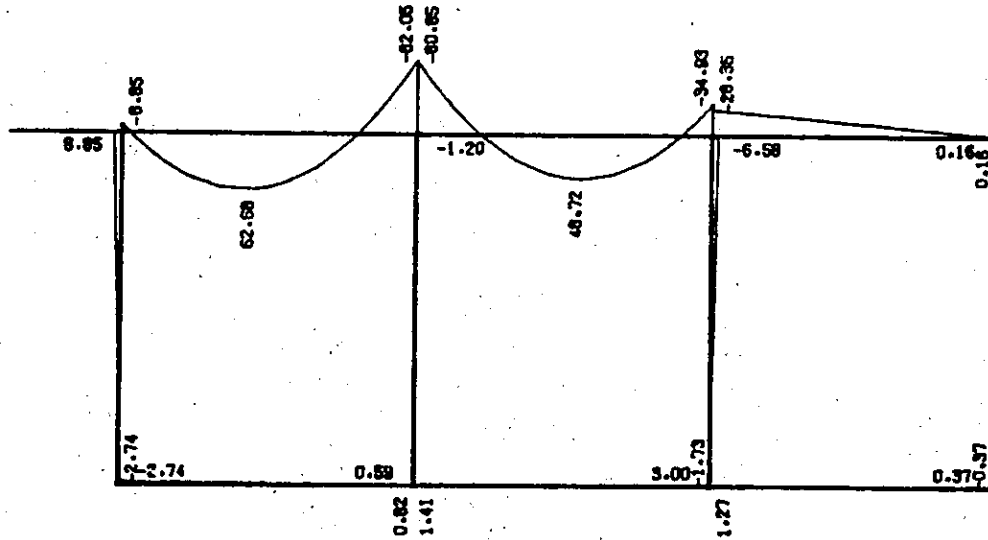
SHEARING FORCE



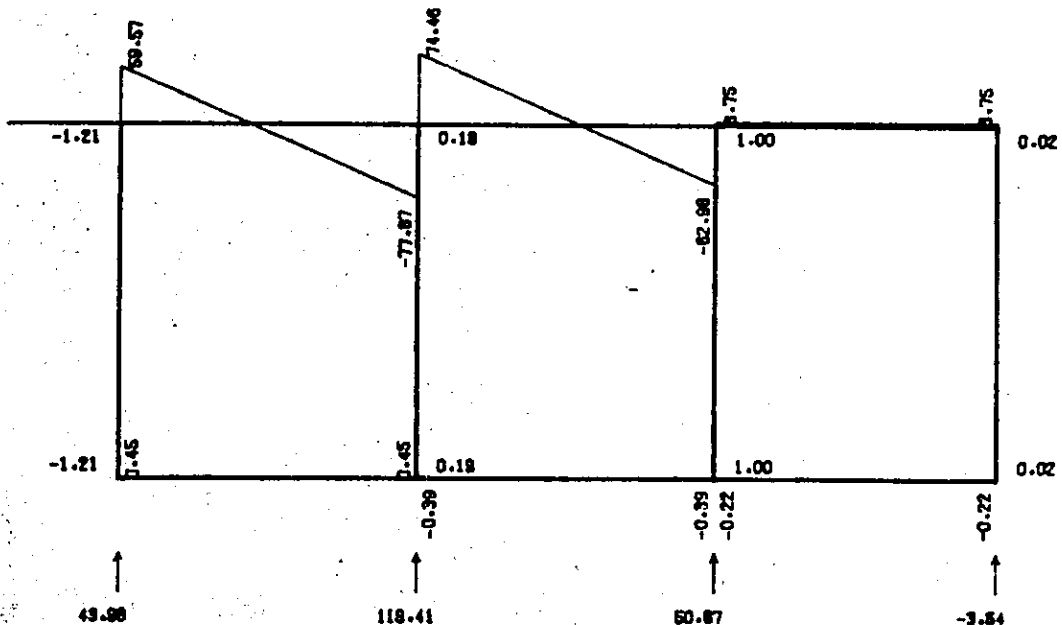
VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

CASE 7 (TRAIN LOAD + IMPACT LOAD 6)

BENDING MOMENT



SHEARING FORCE

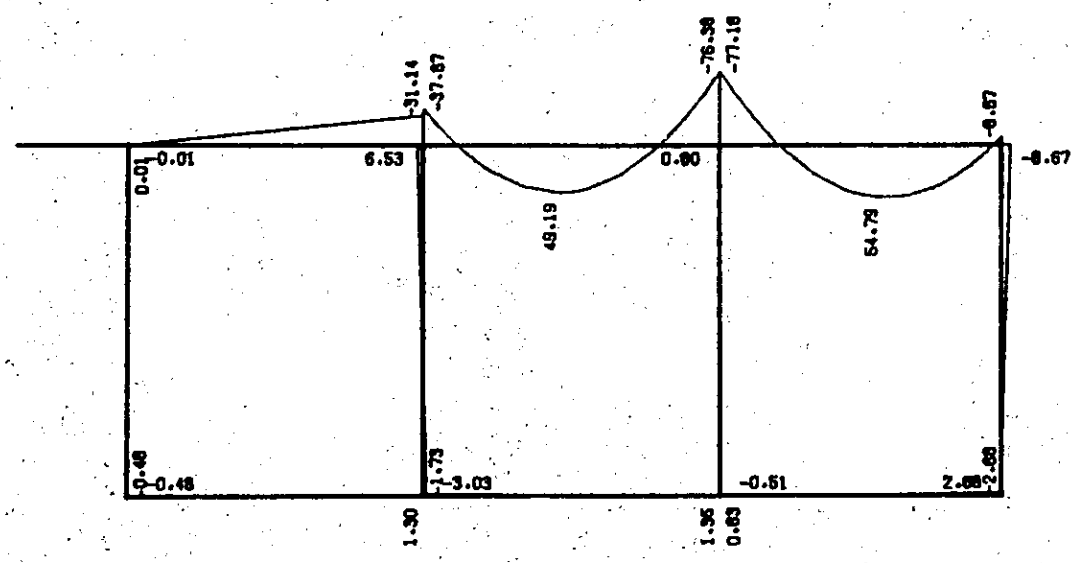




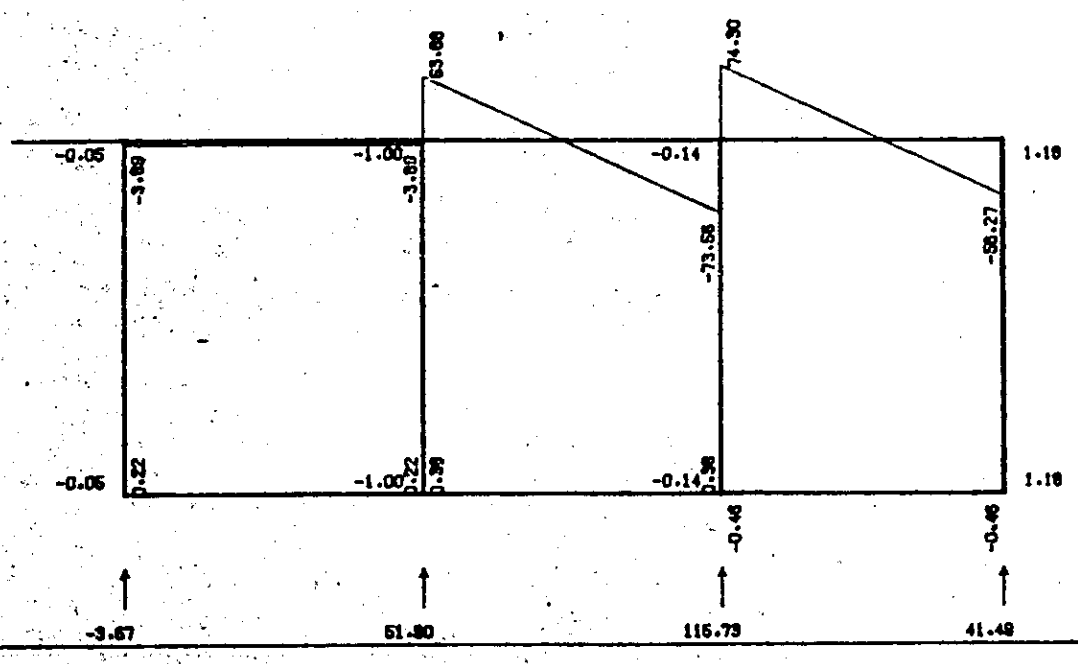
VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

CASE 8 (TRAIN-LOAD + IMPACT LOAD 7)

BENDING MOMENT



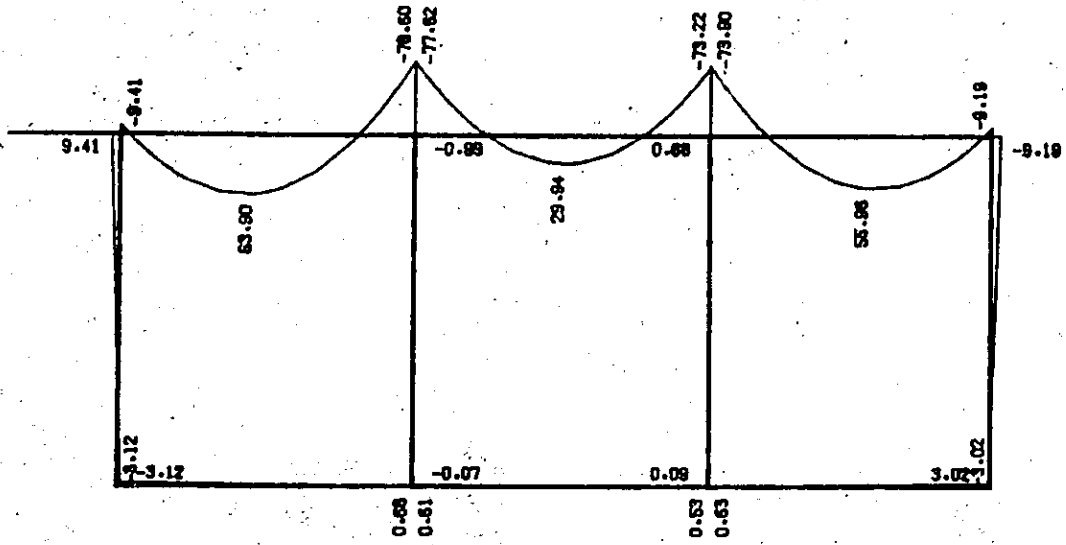
SHEARING FORCE



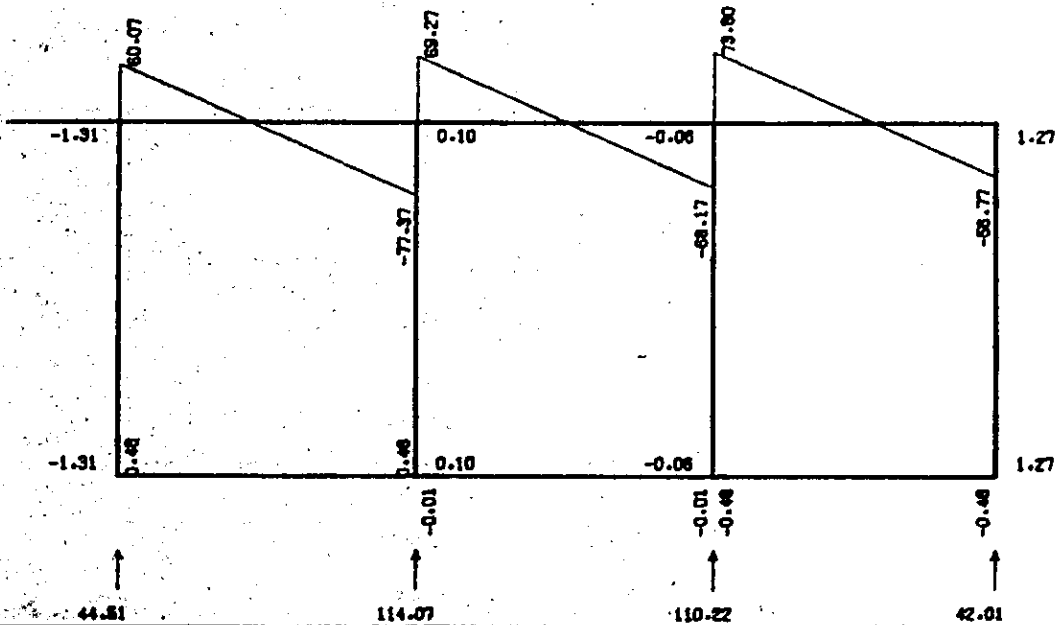
VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

CASE 9 (TRAIN LOAD + IMPACT LOAD 8)

BENDING MOMENT



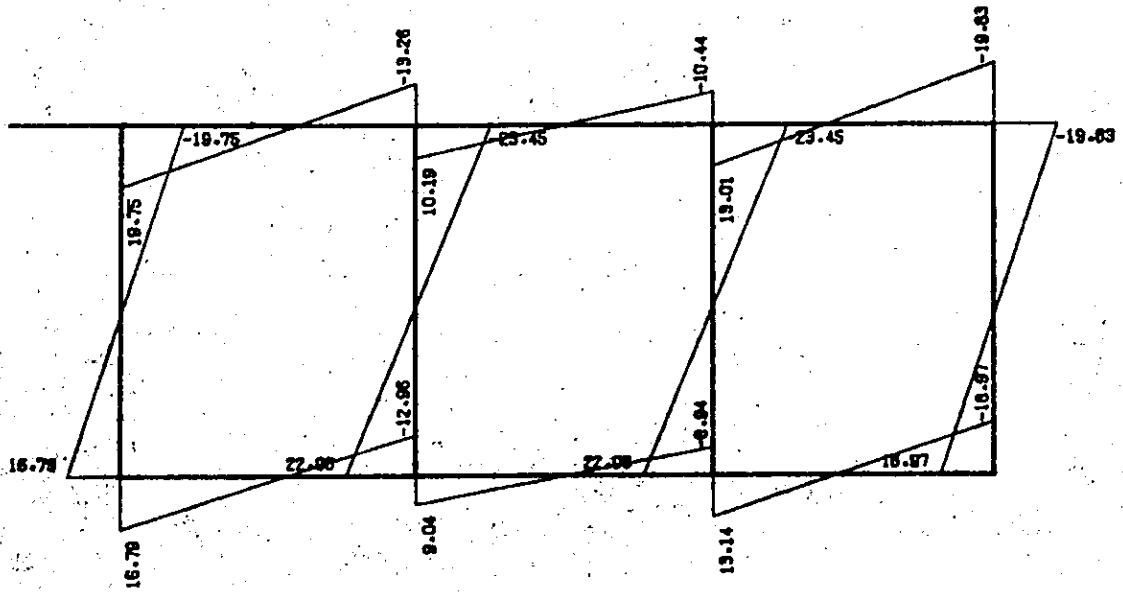
SHEARING FORCE



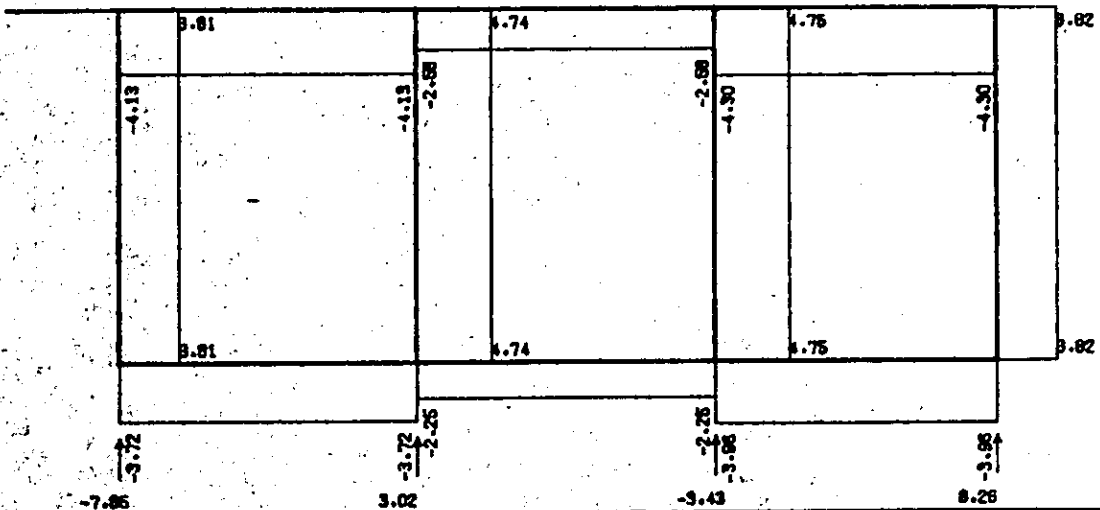
VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

CASE 10 (BRAKING LOAD)

BENDING MOMENT



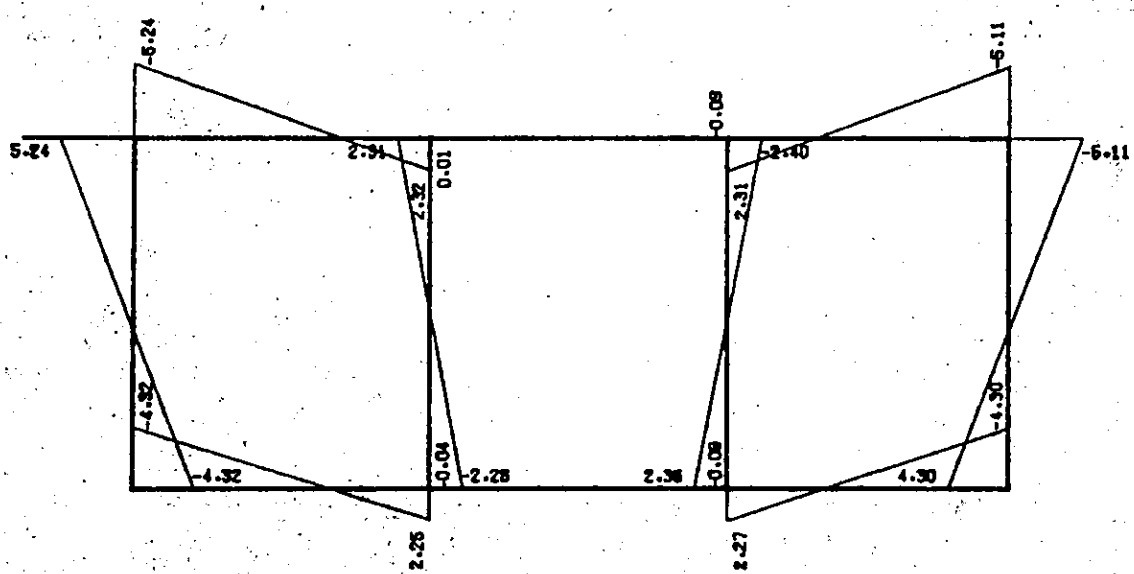
SHEARING FORCE



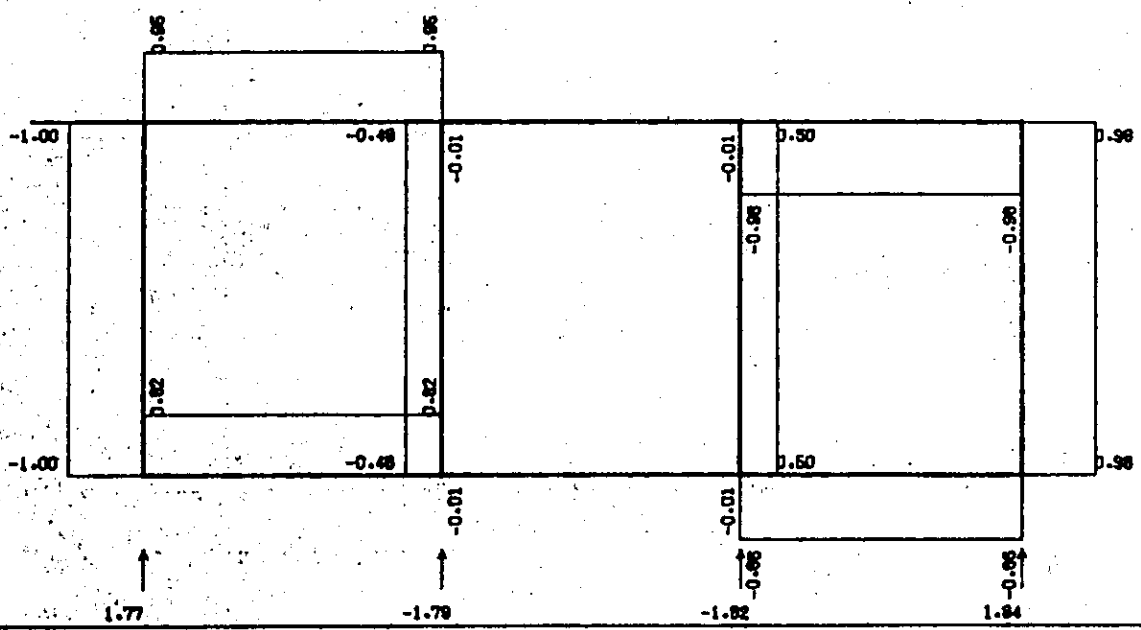
# VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

## CASE 11 (TEMPERATURE)

### BENDING MOMENT



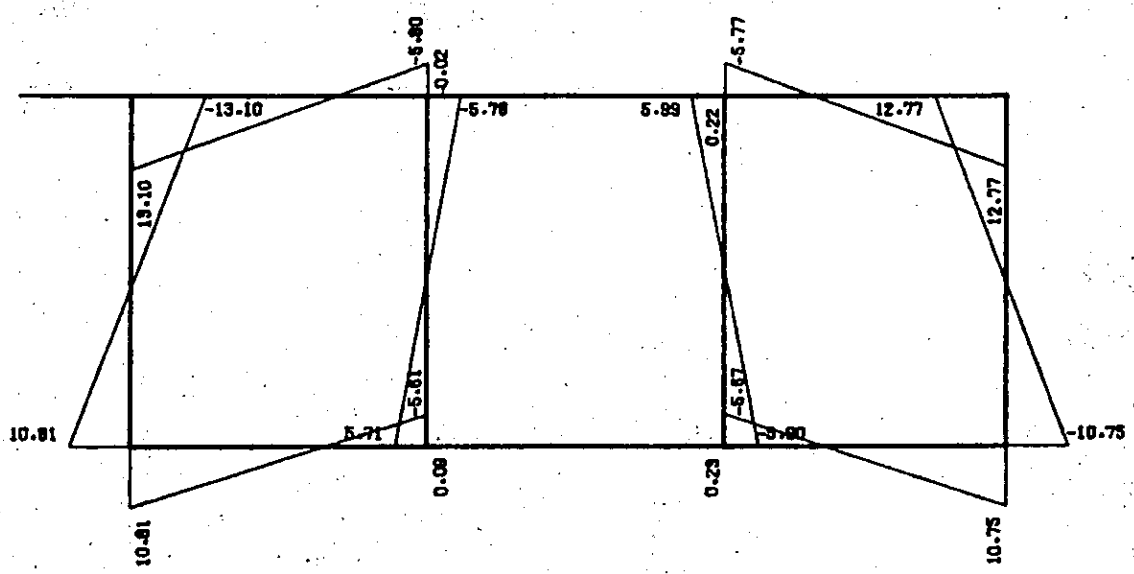
### SHEARING FORCE



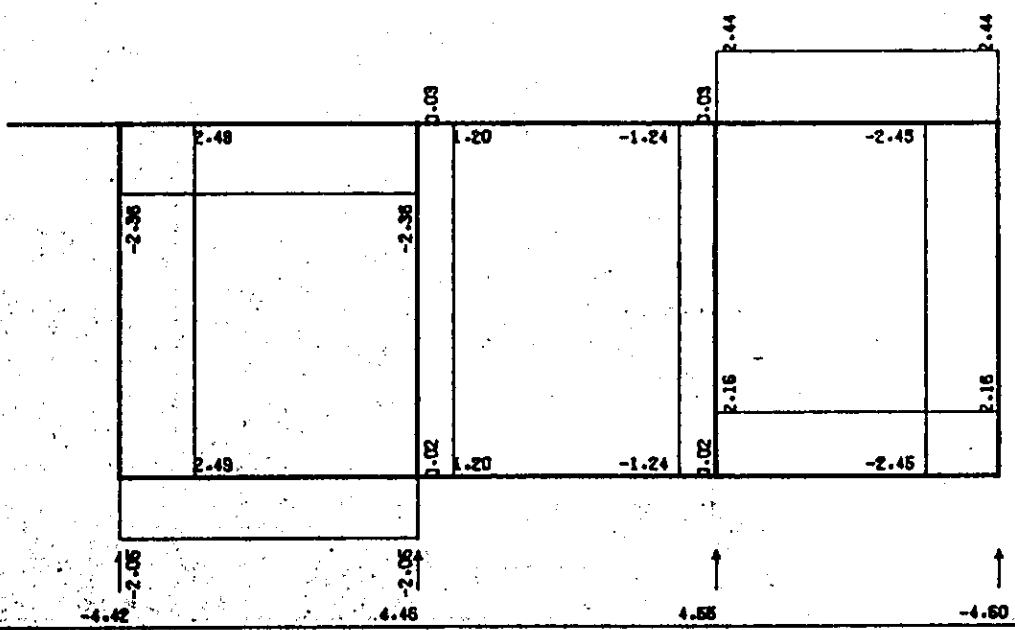
VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

CASE 12 (TEMPERATURE + SHRINKAGE)

BENDING MOMENT



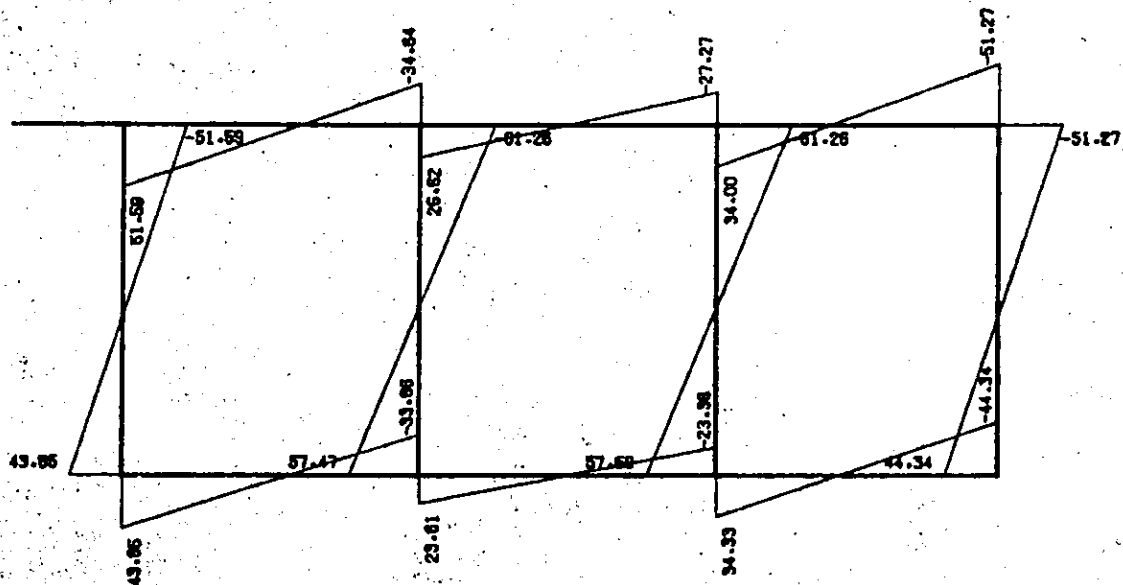
SHEARING FORCE



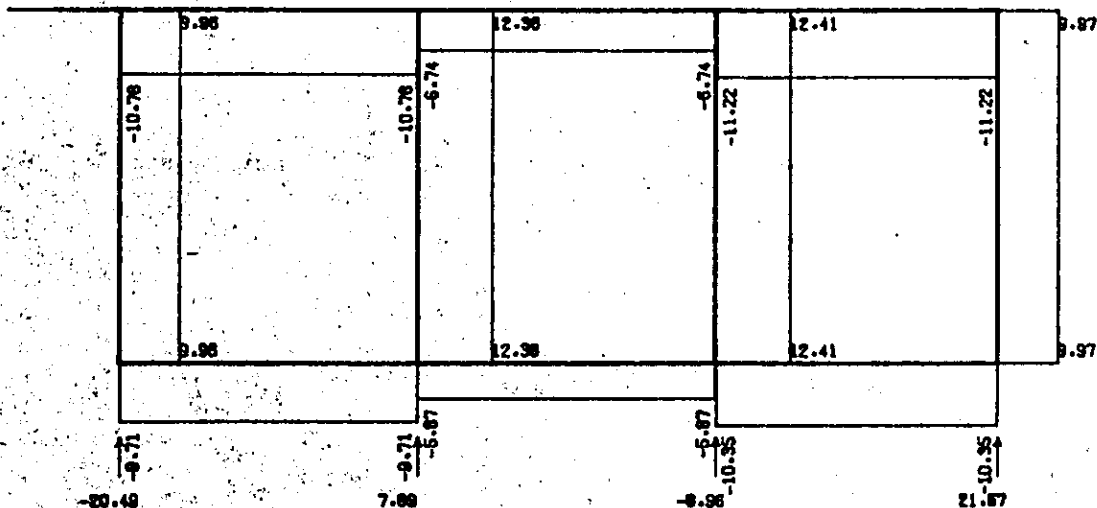
VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

CASE 13 (SEISMIC LOAD)

BENDING MOMENT



SHEARING FORCE



TITLE VIADUCT OF DOUBLE TRACK (3+3\*6=27) L-1

CONTROL 11  
SHEAR 1 3 2 3 4  
PLOT 1  
TYPE6-3-1  
M=9.587  
M1=32.556,0.252\*6  
M4=1.742,0.21075  
M5=7=0.72,0.0485  
M8=11=0.64,0.03413  
P=2.7E+6,1.0E-5  
S=1

POINT 1 0.15 1.4 1.8 2.6 \*2.0  
2 0.4 1.2 1.6 4.0 6.4 7.6  
3  
4 0.4 1.2 1.6 3.8 6.0 6.4 7.2  
5 0.4 2.15 4.0 5.85 7.6  
7 0.4 2.15 3.8 5.45 7.2

PICKUP 1 1 15 29  
2 1 30 31  
3 1 32 33  
4 1 34 35  
5 1 CASE 1 (DEAD LOAD)

LOAD 1  
J -41.84  
2 -47.93  
3 -40.17  
4 -68.0  
5 -23.88 -54.48  
6 -79.95  
7 -70.38  
9 -72.6

SC 1 2-20.12 0.15  
D 1 3 2 -2.52 1.425  
DL 2 -11.51 3.25  
4 -5.75 3.25

END LOAD 2  
LOAD 2 (TRAIN LOAD + IMPACT LOAD 1)  
J -29.64  
SC 1 2-29.64 2.0  
END LOAD 3  
LOAD 3 (TRAIN LOAD + IMPACT LOAD 2)  
DL 2 -15.47 1.1105

END LOAD 4  
LOAD 4 (TRAIN LOAD + IMPACT LOAD 3)  
DL 3 -15.47 1.1105  
END LOAD 5  
LOAD 5 (TRAIN LOAD + IMPACT LOAD 4)  
DL 4 -15.47 1.1105

END LOAD 6  
LOAD 6 (TRAIN LOAD + IMPACT LOAD 5)  
LCAO J -78.75 -59.85  
END LOAD 7  
LOAD 7 (TRAIN LOAD + IMPACT LOAD 6)  
DL 2 -13.17 1.3045  
END

5 10 20 30 40 50 60 70 80 CARD NUMBER

```

LOAD 8 CASE 8 (TRAIN LOAD + IMPACT LOAD 7) 1.3045 58
DL 3 2-13.17 4 59
END 60
LOAD 9 CASE 9 (TRAIN LOAD + IMPACT LOAD 8) 1.3045 61
DL 2 2-13.17 3 62
END 63
LOAD 10 CASE 10 (BRAKING LOAD) 64
J 2 4.28 3 65
END 66
LOAD 11 CASE 11 (TEMPERATURE) 67
T 4 10.0 68
END 69
LOAD 12 CASE 12 (TEMPERATURE + SHRINKAGE) 70
T 4-25.0 71
END 72
LOAD 13 CASE 13 (SEISMIC LOAD) 73
J 2 11.18 74
6 5.23 75
END 76
MT2 14 1 3 77
15 1 2 78
16 1 4 79
17 1 7 80
18 1 4 81
19 1 3 82
20 1 8 83
21 1 5 84
22 1 4 85
23 1 5 86
240.8696 1 11 87
250.8696 1 12 88
260.8696 1 2 89
270.3696 1 2 9 10 90
280.6667 1 13 91
290.6667 1 -13 92
30 1 2 6 9 10 93
31 1 2 6 9 -10 94
32 1 11 95
33 1 12 96
34 1 13 97
35 1 -13 98
FINISH 99

```





-----  
 JOINT DATA  
 -----

JOINT NUMBER	JOINT	X	Y
ZAHYO(M)			
1	9	0.0000	9.5870
2		3.0000	9.5870
3		11.0000	9.5870
4		19.0000	9.5870
5		26.6000	9.5870
6		3.0000	0.0000
7		11.0000	0.0000
8		19.0000	0.0000
9		26.6000	0.0000

-----  
 MEMBER DATA  
 -----

MEMBER NUMBER	ITAN	JIAN	CONNECT.	ITAN	JTAN	LENGTH	A	I	AES	KD(BANE)	PRO. NUM
1	1	2		FIX	FIX	3.0000	2.55600	.2524600			1
2	2	3		FIX	FIX	8.0000	2.55600	.2524600			1
3	3	4		FIX	FIX	8.0000	2.55600	.2524600			1
4	4	5		FIX	FIX	7.6000	1.74200	.2107500			1
5	5	6		FIX	FIX	8.0000	.72000	.0486000			1
6	6	7		FIX	FIX	8.0000	.72000	.0486000			1
7	7	8		FIX	FIX	7.6000	.72000	.0486000			1
8	8	9		FIX	FIX	9.5870	.64000	.0341300			1
9	9	7		FIX	FIX	9.5870	.64000	.0341300			1
10	4	8		FIX	FIX	9.5870	.64000	.0341300			1
11	5	9		FIX	FIX	9.5870	.64000	.0341300			1

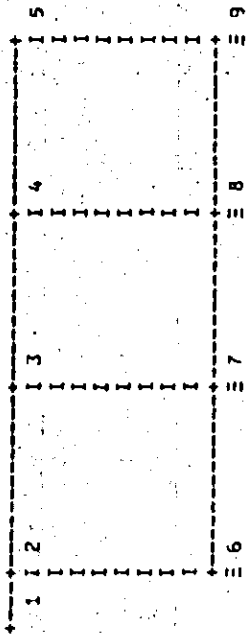
-----  
 PROPERTY DATA  
 -----

PROPERTY NUMBER	1	E	U	EPS
PROPERTY	1	2.700E+06	0.	1.000E-05

-----  
 SUPPORT DATA  
 -----

SUPPORT NUMBER	SUPPORT-JYOKEN	X	Y	THET Z	X(BANE)	Y(BANE)	THET Z(BANE)
6		FIX	FIX	FREE	0.0	0.0	0.0
7		FIX	FIX	FREE	0.0	0.0	0.0
8		FIX	FIX	FREE	0.0	0.0	0.0
9		FIX	FIX	FREE	0.0	0.0	0.0

-----  
STRUCTURAL FIGURE  
-----



MOVE DATA

MEMBER	GOIKI		POINT													
	ITAN	JTAN	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	.....	.....	.150	1.400	1.800	1.800	2.000	2.000	2.600							
2	.....	.....	.400	1.200	1.600	4.000	6.400	6.800	7.600							
3	.....	.....	.400	1.200	1.600	4.000	6.400	6.800	7.600							
4	.....	.....	.400	1.200	1.600	3.800	6.000	6.400	7.200							
5	.....	.....	.400	2.150	4.000	5.850	7.600									
6	.....	.....	.400	2.150	4.000	5.850	7.600									
7	.....	.....	.400	2.150	3.800	5.450	7.200									
8	.....	.....														
9	.....	.....														
10	.....	.....														
11	.....	.....														

LOAD DATA

M/J	NAME	D	W1	W2	L1	L2
LOAD - 1 (DEAD LOAD)						
MEMBER 1	LINEAR	Y	0.000	-2.520	0.150	1.425
	LINEAR	Y	-2.520	0.000	1.575	0.000
	LINEAR	Y	-2.810	-2.810	0.000	0.000
	CONCENT	Y	-20.120		0.150	
MEMBER 2	LINEAR	Y	0.000	-11.510	0.000	4.750
	LINEAR	Y	-11.510	-11.510	3.250	3.250
	LINEAR	Y	-11.510	0.000	4.750	0.000
	LINEAR	Y	-2.810	-2.810	0.000	0.000
MEMBER 3	LINEAR	Y	0.000	-11.510	0.000	4.750
	LINEAR	Y	-11.510	-11.510	3.250	3.250
	LINEAR	Y	-11.510	0.000	4.750	0.000
	LINEAR	Y	-2.810	-2.810	0.000	0.000
MEMBER 4	LINEAR	Y	0.000	-5.750	0.000	4.350
	LINEAR	Y	-5.750	-5.750	3.250	3.250
	LINEAR	Y	-5.750	0.000	4.350	0.000
	LINEAR	Y	-3.520	-3.520	0.000	0.000
MEMBER 5	LINEAR	Y	-4.450	-4.450	0.000	0.000
	LINEAR	Y	-4.450	-4.450	0.000	0.000
	LINEAR	Y	-4.450	-4.450	0.000	0.000
	LINEAR	Y	-1.600	-1.600	0.000	0.000
	LINEAR	Y	-1.600	-1.600	0.000	0.000
	LINEAR	Y	-1.600	-1.600	0.000	0.000
MEMBER 6	LINEAR	Y	-1.600	-1.600	0.000	0.000
MEMBER 7	LINEAR	Y	-1.600	-1.600	0.000	0.000
MEMBER 8	LINEAR	Y	-1.600	-1.600	0.000	0.000
MEMBER 9	LINEAR	Y	-1.600	-1.600	0.000	0.000
MEMBER 10	LINEAR	Y	-1.600	-1.600	0.000	0.000
MEMBER 11	LINEAR	Y	-1.600	-1.600	0.000	0.000
MEMBER 12	JOINTLOAD	Y	-41.840			
MEMBER 13	JOINTLOAD	Y	-47.930			
MEMBER 14	JOINTLOAD	Y	-40.170			
MEMBER 15	JOINTLOAD	Y	-68.000			
MEMBER 16	JOINTLOAD	Y	-23.880			
MEMBER 17	JOINTLOAD	Z	-54.480			
MEMBER 18	JOINTLOAD	Y	-73.950			
MEMBER 19	JOINTLOAD	Y	-70.380			
MEMBER 20	JOINTLOAD	Y	-70.380			
MEMBER 21	JOINTLOAD	Y	-72.600			
LOAD - 2 (TRAIN LOAD + IMPACT LOAD 1)						
MEMBER 1	CONCENT	Y	-29.640		2.000	
MEMBER 2	JOINTLOAD	Y	-29.640			
LOAD - 3 (TRAIN LOAD + IMPACT LOAD 2)						
MEMBER 1	SHEAR		1.11050(S/M)			
MEMBER 2	SHEAR		1.11050(S/M)			
MEMBER 3	SHEAR		1.11050(S/M)			
MEMBER 4	LINEAR	Y	-15.470	-15.470	0.000	0.000
LOAD - 4 (TRAIN LCAC + IMPACT LOAD 3)						
MEMBER 1	SHEAR		1.11050(S/M)			
MEMBER 2	SHEAR		1.11050(S/M)			
MEMBER 3	SHEAR		1.11050(S/M)			

LOAD DATA

	M/J	NAME	0	W1	W2	L1	L2
MEMBER	3	LINEAR	Y	-15.470	-15.470	0.000	0.000
LOAD -	5	CASE 5 (TRAIN LOAD + IMPACT LOAD 4)					
MEMBER	2	SHEAR		1.11050(S/M)			
	3	SHEAR		1.11050(S/M)			
	4	SHEAR		1.11050(S/M)			
MEMBER	4	LINEAR	Y	-15.470	-15.470	0.000	0.000
LOAD -	6	CASE 6 (TRAIN LOAD + IMPACT LOAD 5)					
JOINT	5	JOINTLOAD	Y	-78.750			
		JOINTLOAD	Z	-59.850			
LOAD -	7	CASE 7 (TRAIN LOAD + IMPACT LOAD 6)					
MEMBER	2	SHEAR		1.30450(S/M)			
	3	SHEAR		1.30450(S/M)			
	4	SHEAR		1.30450(S/M)			
MEMBER	2	LINEAR	Y	-13.170	-13.170	0.000	0.000
	3	LINEAR	Y	-13.170	-13.170	0.000	0.000
LOAD -	8	CASE 8 (TRAIN LOAD + IMPACT LOAD 7)					
MEMBER	2	SHEAR		1.30450(S/M)			
	3	SHEAR		1.30450(S/M)			
	4	SHEAR		1.30450(S/M)			
MEMBER	3	LINEAR	Y	-13.170	-13.170	0.000	0.000
	4	LINEAR	Y	-13.170	-13.170	0.000	0.000
LOAD -	9	CASE 9 (TRAIN LOAD + IMPACT LOAD 8)					
MEMBER	2	SHEAR		1.30450(S/M)			
	3	SHEAR		1.30450(S/M)			
	4	SHEAR		1.30450(S/M)			
MEMBER	2	LINEAR	Y	-13.170	-13.170	0.000	0.000
	3	LINEAR	Y	-13.170	-13.170	0.000	0.000
	4	LINEAR	Y	-13.170	-13.170	0.000	0.000
LOAD -	10	CASE 10 (BRAKING LOAD)					
JOINT	2	JOINTLOAD	X	4.280			
	3	JOINTLOAD	X	4.280			
	4	JOINTLOAD	X	4.280			
	5	JOINTLOAD	X	4.280			
LOAD -	11	CASE 11 (TEMPERATURE)					
MEMBER	1	TEMP		10.0(00)			
	2	TEMP		10.0(00)			
	3	TEMP		10.0(00)			
	4	TEMP		10.0(00)			
LOAD -	12	CASE 12 (TEMPERATURE + SHRINKAGE)					

LOAD DATA

MEMBER	M/J	NAME	D	W1	W2	L1	L2
1		TEMP		-25.0(00)			
2		TEMP		-25.0(00)			
3		TEMP		-25.0(00)			
4		TEMP		-25.0(00)			
LOAD - 13 CASE 13 (SEISMIC LOAD)							
2		JOINTLOAD	X	11.180			
3		JOINTLOAD	X	11.180			
4		JOINTLOAD	X	11.180			
5		JOINTLOAD	X	11.180			
6		JOINTLOAD	X	5.230			
7		JOINTLOAD	X	5.230			
8		JOINTLOAD	X	5.230			
9		JOINTLOAD	X	5.230			





REACTION

SUPPORT	X (TON)	Y (TON)	Z (TON.M)	SUPPORT	X (TON)	Y (TON)	Z (TON.M)
LOAD - 1	CASE 1 (DEAD LOAD)			LOAD - 2	CASE 2 (TRAIN LOAD + IMPACT LOAD 1)		
6	1.183	225.863	0.000	6	-1.670	74.502	0.000
7	-0.268	247.297	0.000	7	.773	-16.617	0.000
8	-0.142	225.262	0.000	8	.493	2.441	0.000
9	-0.773	221.296	0.000	9	.404	-1.045	0.000
LOAD - 3	CASE 3 (TRAIN LOAD + IMPACT LOAD 2)			LOAD - 4	CASE 4 (TRAIN LOAD + IMPACT LOAD 3)		
6	1.478	56.592	0.000	6	-0.058	-4.936	0.000
7	-1.284	73.034	0.000	7	1.064	57.230	0.000
8	-0.088	-6.474	0.000	8	-1.085	66.228	0.000
9	-0.106	.608	0.000	9	.079	-4.761	0.000
LOAD - 5	CASE 5 (TRAIN LOAD + IMPACT LOAD 4)			LOAD - 6	CASE 6 (TRAIN LOAD + IMPACT LOAD 5)		
6	.115	.624	0.000	6	-.285	-.603	0.000
7	.108	-6.269	0.000	7	-.371	.659	0.000
8	1.247	69.715	0.000	8	-.411	-7.356	0.000
9	-1.470	53.502	0.000	9	1.067	86.050	0.000
LOAD - 7	CASE 7 (TRAIN LOAD + IMPACT LOAD 6)			LOAD - 8	CASE 8 (TRAIN LOAD + IMPACT LOAD 7)		
6	1.209	43.975	0.000	6	.049	-3.671	0.000
7	-.187	119.410	0.000	7	.998	51.898	0.000
8	-.999	50.870	0.000	8	.137	115.732	0.000
9	-.022	-3.536	0.000	9	-1.184	41.494	0.000
LOAD - 9	CASE 9 (TRAIN LOAD + IMPACT LOAD 8)			LOAD - 10	CASE 10 (BRAKING LOAD)		
6	1.307	44.507	0.000	6	-3.811	-7.845	0.000
7	-.095	114.074	0.000	7	-4.741	3.019	0.000
8	.362	110.220	0.000	8	-4.750	-3.431	0.000
9	-1.274	42.012	0.000	9	-3.818	8.258	0.000
LOAD - 11	CASE 11 (TEMPERATURE)			LOAD - 12	CASE 12 (TEMPERATURE + SHRINKAGE)		
6	.998	1.766	0.000	6	-2.494	-4.416	0.000
7	.479	-1.785	0.000	7	-1.198	4.463	0.000
8	-.496	-1.821	0.000	8	1.240	4.552	0.000
9	-.981	1.840	0.000	9	2.453	-4.599	0.000
LOAD - 13	CASE 13 (SEISMIC LOAD)			MIX - 14	CASE 14 ( 1.0000 * 1)		
6	-15.185	-20.492	0.000	6	1.183	225.863	0.000
7	-17.614	7.885	0.000	7	-.268	247.297	0.000
8	-17.638	-8.963	0.000	8	-.142	225.262	0.000
9	-15.203	21.570	0.000	9	-.773	221.296	0.000
MIX - 15	CASE 15 (1+3)			MIX - 16	CASE 16 (1+2+4)		
6	2.661	282.455	0.000	6	-.545	295.428	0.000
7	-1.952	320.331	0.000	7	1.569	297.909	0.000
8	-.230	218.787	0.000	8	-.735	293.931	0.000
9	-.879	221.904	0.000	9	-.289	215.489	0.000
MIX - 17	CASE 17 (1+7)			MIX - 18	CASE 18 (1+4)		
6	2.392	269.838	0.000	6	1.125	220.926	0.000
7	-.456	366.707	0.000	7	.796	314.527	0.000
8	-1.141	279.132	0.000	8	-1.227	291.490	0.000
9	-.795	217.760	0.000	9	-.693	216.534	0.000

REACTION

SUPPORT		X (TON)	Y (TON)	Z (TON-M)	SUPPORT		X (TON)	Y (TON)	Z (TON-M)
MIX - 19	CASE 19 (1+3+5)				MIX - 20	CASE 20 (1+8)			
	6	2.777	283.079	0.000		6	1.232	222.192	0.000
	7	-1.444	314.063	0.000		7	.729	299.195	0.000
	8	1.016	288.502	0.000		8	-0.005	340.993	0.000
	9	-2.348	275.405	0.000		9	-1.957	262.790	0.000
MIX - 21	CASE 21 (1+5)				MIX - 22	CASE 22 (1+4+6)			
	6	1.298	226.487	0.000		6	.840	220.324	0.000
	7	-0.160	241.028	0.000		7	.424	315.186	0.000
	8	1.105	294.976	0.000		8	-1.638	284.134	0.000
	9	-2.243	274.797	0.000		9	.374	302.584	0.000
MIX - 23	CASE 23 (1+5+6)				MIX - 24	CASE 24 (1+11)			
	6	1.013	225.884	0.000		6	1.896	197.946	0.000
	7	-0.532	241.687	0.000		7	.183	213.497	0.000
	8	.694	287.620	0.000		8	-0.554	194.304	0.000
	9	-1.175	360.847	0.000		9	-1.525	194.039	0.000
MIX - 25	CASE 25 (1+12)				MIX - 26	CASE 26 (1+2+6+9+10)			
	6	-1.140	192.570	0.000		6	-2.849	292.954	0.000
	7	-1.275	218.930	0.000		7	-4.090	302.996	0.000
	8	.955	199.846	0.000		8	-4.129	284.477	0.000
	9	1.461	188.440	0.000		9	-3.820	310.072	0.000
MIX - 27	CASE 27 (1+2+6+9-10)				MIX - 28	CASE 28 (1+13)			
	6	3.780	306.198	0.000		6	-9.335	136.920	0.000
	7	4.156	297.745	0.000		7	-11.922	170.130	0.000
	8	4.132	290.445	0.000		8	-11.854	144.206	0.000
	9	2.820	295.711	0.000		9	-10.651	161.919	0.000
MIX - 29	CASE 29 (1-13)				MIX - 30	CASE 30 (1+2+6+9+10)			
	6	10.913	164.245	0.000		6	-3.276	336.424	0.000
	7	11.565	159.616	0.000		7	-4.703	348.431	0.000
	8	11.665	156.158	0.000		8	-4.748	327.135	0.000
	9	9.620	133.157	0.000		9	-4.393	356.569	0.000
MIX - 31	CASE 31 (1+2+6+9-10)				MIX - 32	CASE 32 (1+11)			
	6	4.347	352.114	0.000		6	2.181	227.029	0.000
	7	4.779	342.394	0.000		7	.211	245.512	0.000
	8	4.752	333.998	0.000		8	-0.638	223.441	0.000
	9	3.263	340.054	0.000		9	-1.754	223.135	0.000
MIX - 33	CASE 33 (1+12)				MIX - 34	CASE 34 (1+13)			
	6	-1.311	221.447	0.000		6	-14.002	205.370	0.000
	7	-1.467	251.760	0.000		7	-17.883	255.182	0.000
	8	1.098	229.813	0.000		8	-17.779	216.298	0.000
	9	1.680	216.697	0.000		9	-15.976	242.866	0.000
MIX - 35	CASE 35 (1-13)								
	6	16.368	246.355	0.000					
	7	17.346	239.412	0.000					
	8	17.496	234.225	0.000					
	9	14.430	199.725	0.000					

DEFLECTION

JOINT	X (MM)	Y (MM)	Z (MMRAD)	JOINT	X (MM)	Y (MM)	Z (MMRAD)
LOAD - 1				LOAD - 2			
CASE 1 (DEAD LOAD)				CASE 2 (TRAIN LOAD + IMPACT LOAD 1)			
1	-1.151	.200		1	-2.186	.653	
2	-.682	-.056		2	-.464	-.440	
3	-.727	-.037		3	-.415	-.068	
4	-.611	-.036		4	-.462	-.011	
5	-.702	-.035		5	-.461	-.011	
6	0.000	-.260		6	0.000	-.066	
7	0.000	-.062		7	0.000	-.036	
8	0.000	-.054		8	0.000	-.003	
9	0.000	-.235		9	0.000	-.024	
LOAD - 3				LOAD - 4			
CASE 3 (TRAIN LOAD + IMPACT LOAD 2)				CASE 4 (TRAIN LOAD + IMPACT LOAD 3)			
1	.133	-.720		1	-.051	-.026	
2	-.133	-.344		2	-.010	-.026	
3	-.132	-.409		3	-.010	-.208	
4	-.131	-.038		4	-.011	-.216	
5	-.131	-.003		5	-.011	-.027	
6	0.000	0.000		6	0.000	-.015	
7	0.000	0.000		7	0.000	-.033	
8	0.000	0.000		8	0.000	-.033	
9	0.000	0.000		9	0.000	-.016	
LOAD - 5				LOAD - 6			
CASE 5 (TRAIN LOAD + IMPACT LOAD 4)				CASE 6 (TRAIN LOAD + IMPACT LOAD 5)			
1	-.142	-.002		1	-.014	-.004	
2	-.142	-.003		2	-.028	-.004	
3	-.142	-.037		3	-.004	-.020	
4	-.143	-.391		4	-.044	-.020	
5	-.145	-.295		5	-.331	-.286	
6	0.000	0.000		6	0.000	-.017	
7	0.000	0.000		7	0.000	-.004	
8	0.000	0.000		8	0.000	-.021	
9	0.000	0.000		9	0.000	-.039	
LOAD - 7				LOAD - 8			
CASE 7 (TRAIN LOAD + IMPACT LOAD 6)				CASE 8 (TRAIN LOAD + IMPACT LOAD 7)			
1	-.105	-.569		1	-.045	-.022	
2	-.105	-.242		2	-.129	-.022	
3	-.104	-.667		3	-.022	-.160	
4	-.102	-.281		4	-.129	-.005	
5	-.102	-.021		5	-.131	-.005	
6	0.000	0.000		6	-.133	-.268	
7	0.000	0.000		7	0.000	-.003	
8	0.000	0.000		8	0.000	-.022	
9	0.000	0.000		9	0.000	-.010	
LOAD - 9				LOAD - 10			
CASE 9 (TRAIN LOAD + IMPACT LOAD 8)				CASE 10 (BRAKING LOAD)			
1	-.015	-.567		1	-.189	-.055	
2	-.016	-.244		2	-.023	-.055	
3	-.018	-.636		3	-.009	-.017	
4	-.019	-.614		4	-.010	-.019	
5	-.021	-.230		5	-.024	-.063	
6	0.000	0.000		6	0.000	-.209	
7	0.000	0.000		7	0.000	-.093	
8	0.000	0.000		8	0.000	-.090	
9	0.000	0.000		9	0.000	-.201	

DEFLECTION

JOINT	X (MM)	Y (MM)	Z (MMRAD)	LOAD - 12	JOINT	X (MP)	Y (MM)	Z (MMRAD)
LOAD - 11 (TEMPERATURE)								
1	-1.490	-.057	.017	1	3.724	.143		-.043
2	-1.190	-.005	.017	2	2.974	.013		-.043
3	-.391	.005	.000	3	.977	-.013		-.000
4	.407	-.005	-.019	4	-1.019	-.014		.001
5	1.166	-.005	-.019	5	-2.915	0.000		.048
6	0.000	0.000	.065	6	0.000	0.000		-.163
7	0.000	0.000	.002	7	0.000	0.000		-.004
8	0.000	0.000	-.002	8	0.000	0.000		.006
9	0.000	0.000	-.061	9	0.000	0.000		.153
LOAD - 13 (SEISMIC LOAD)								
1	11.247	.493	-.144	MIX - 14 ( 1.0000 * 1)				
2	11.247	.060	-.144	1	-.038	-1.151		.200
3	11.246	-.022	-.045	2	.038	-.682		.050
4	11.246	.025	-.049	3	.037	-.727		-.025
5	11.248	-.062	-.164	4	.036	-.611		.070
6	0.000	0.000	-.547	5	0.000	-.702		-.114
7	0.000	0.000	-.242	6	0.000	0.000		-.260
8	0.000	0.000	-.235	7	0.000	0.000		.062
9	0.000	0.000	-.525	8	0.000	0.000		-.054
				9	0.000	0.000		.235
MIX - 15 (1+3)								
1	.172	-.431	-.144	MIX - 16 (1+2+4)				
2	.172	-.994	-.288	1	-.436	-3.387		.884
3	.169	-1.137	-.049	2	-.436	-1.068		.522
4	.167	-.573	.049	3	-.435	-.302		-.302
5	.166	-.706	-.114	4	-.436	-.994		.297
6	0.000	0.000	-.190	5	-.437	-.671		-.136
7	0.000	0.000	-.016	6	0.000	0.000		-.341
8	0.000	0.000	-.046	7	0.000	0.000		.132
9	0.000	0.000	-.225	8	0.000	0.000		-.084
				9	0.000	0.000		.275
MIX - 17 (1+7)								
1	.143	-.582	-.070	MIX - 18 (1+4)				
2	.143	-.923	-.215	1	.029	-1.202		.227
3	.141	-1.395	-.005	2	.029	-.653		.082
4	.138	-.892	.236	3	.027	-1.102		1.234
5	.137	-.681	-.137	4	.025	-.980		.286
6	0.000	0.000	-.213	5	.024	-.675		-.141
7	0.000	0.000	.051	6	0.000	0.000		-.275
8	0.000	0.000	-.075	7	0.000	0.000		.095
9	0.000	0.000	-.240	8	0.000	0.000		-.088
				9	0.000	0.000		.251
MIX - 19 (1+3+5)								
1	.030	-.434	-.144	MIX - 20 (1+3)				
2	.030	-.997	-.289	1	-.091	-1.196		.223
3	.026	-1.100	.226	2	-.091	-.660		.078
4	.025	-.964	-.173	3	-.092	-1.014		-.186
5	.021	-1.901	.228	4	-.095	-1.258		.065
6	0.000	0.000	-.179	5	-.098	-.930		-.154
7	0.000	0.000	.008	6	0.000	0.000		-.254
8	0.000	0.000	-.001	7	0.000	0.000		.084
9	0.000	0.000	.158	8	0.000	0.000		-.045
				9	0.000	0.000		.191



DEFLECTION

MIX - 31		MIX - 32		MIX - 34		MIX - 35	
JOINT	X (MM)	Y (MM)	Z (MMRAD)	JOINT	X (MM)	Y (MM)	Z (MMRAD)
CASE 31 (1+2+6+9-10)				CASE 32 (1+11)			
1	-4.419	-2.944	.639	1	-1.451	-1.298	.218
2	-4.419	-1.362	.277	2	-1.151	-.687	.073
3	-4.419	-1.281	-.042	3	-.354	-.722	-.025
4	-4.420	-1.205	.097	4	.443	-.606	.070
5	-4.422	-1.384	-.063	5	1.201	-.706	-.133
6	0.000	0.000	-.077	6	0.000	0.000	-.195
7	0.000	0.000	.170	7	0.000	0.000	0.064
8	0.000	0.000	.035	8	0.000	0.000	-.057
9	0.000	0.000	.447	9	0.000	0.000	.174
CASE 33 (1+12)				CASE 34 (1+13)			
1	3.763	-1.008	.157	1	11.286	-.658	.056
2	3.013	-.669	.012	2	11.286	-.622	-.089
3	1.014	-.741	-.025	3	11.283	-.750	-.070
4	-.983	-.624	.071	4	11.282	-.586	.022
5	-2.880	-.689	-.066	5	11.282	-.765	-.278
6	0.000	0.000	-.423	6	0.000	0.000	-.307
7	0.000	0.000	.058	7	0.000	0.000	-.180
8	0.000	0.000	-.049	8	0.000	0.000	-.289
9	0.000	0.000	.388	9	0.000	0.000	-.289
CASE 35 (1-13)							
1	-11.209	-1.644	.345				
2	-11.209	-.742	.200				
3	-11.209	-.705	.019				
4	-11.210	-.636	.119				
5	-11.213	-.640	.050				
6	0.000	0.300	.287				
7	0.000	0.300	.305				
8	0.000	0.000	.180				
9	0.000	0.000	.760				

PICK UP 1

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		CASE		MEMBER		CASE	
1	2	1	2	1	2	1	2
MEMBER 1							
ITAN	0.000	( 1 )		ITAN	0.000	( 1 )	
1	.150	( 1 )		1	.150	( 1 )	
2	-.032	( 1 )		2	-.032	( 1 )	
3	-20.542	( 1 )		3	-20.542	( 1 )	
4	-25.436	( 1 )		4	-25.436	( 1 )	
5	-27.496	( 1 )		5	-27.496	( 1 )	
6	-39.067	( 1 )		6	-39.067	( 1 )	
7	-44.663	( 1 )		7	-44.663	( 1 )	
JTAN	2.000	( 1 )		JTAN	2.000	( 1 )	
	2.600	( 1 )			2.600	( 1 )	
	3.000	( 1 )			3.000	( 1 )	
MEMBER 2							
ITAN	0.000	( 1 )		ITAN	0.000	( 1 )	
1	.400	( 1 )		1	.400	( 1 )	
2	-1.200	( 1 )		2	-1.200	( 1 )	
3	-17.791	( 1 )		3	-17.791	( 1 )	
4	-27.159	( 1 )		4	-27.159	( 1 )	
5	-5.071	( 1 )		5	-5.071	( 1 )	
6	-16.471	( 1 )		6	-16.471	( 1 )	
7	-42.431	( 1 )		7	-42.431	( 1 )	
JTAN	4.000	( 1 )		JTAN	4.000	( 1 )	
	4.000	( 1 )			4.000	( 1 )	
	27.159	( 1 )			27.159	( 1 )	
MEMBER 3							
ITAN	0.000	( 1 )		ITAN	0.000	( 1 )	
1	.400	( 1 )		1	.400	( 1 )	
2	-11.633	( 1 )		2	-11.633	( 1 )	
3	-30.561	( 1 )		3	-30.561	( 1 )	
4	-42.254	( 1 )		4	-42.254	( 1 )	
5	-6.097	( 1 )		5	-6.097	( 1 )	
6	-5.957	( 1 )		6	-5.957	( 1 )	
7	-33.227	( 1 )		7	-33.227	( 1 )	
JTAN	8.000	( 1 )		JTAN	8.000	( 1 )	
	8.000	( 1 )			8.000	( 1 )	
	42.254	( 1 )			42.254	( 1 )	
MEMBER 4							
ITAN	0.000	( 1 )		ITAN	0.000	( 1 )	
1	.400	( 1 )		1	.400	( 1 )	
2	-40.925	( 1 )		2	-40.925	( 1 )	
3	-33.668	( 1 )		3	-33.668	( 1 )	
4	-1.014	( 1 )		4	-1.014	( 1 )	
5	-28.534	( 1 )		5	-28.534	( 1 )	
6	-31.641	( 1 )		6	-31.641	( 1 )	
7	-36.155	( 1 )		7	-36.155	( 1 )	
JTAN	4.000	( 1 )		JTAN	4.000	( 1 )	
	4.000	( 1 )			4.000	( 1 )	
	1.014	( 1 )			1.014	( 1 )	

PICK UP 1

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		4	(	4	-	5	)	G	=	MEMBER		4	(	4	-	5	)	G	=										
ITAN		0.000	(	1	)	-46.109		24.735		-773	ITAN		0.000	(	1	)	-46.109		24.735		-773								
		.400	(	1	)	-36.515		23.185		-773			.400	(	1	)	-36.515		23.185		-773								
		1.200	(	1	)	-19.471		15.237		-773			1.200	(	1	)	-19.471		15.237		-773								
		1.600	(	1	)	-12.247		16.838		-773			1.600	(	1	)	-12.247		16.838		-773								
		3.800	(	1	)	6.338		-1.147		-773			3.800	(	1	)	6.338		-1.147		-773								
		6.000	(	1	)	-17.295		-19.133		-773			6.000	(	1	)	-17.295		-19.133		-773								
		6.400	(	1	)	-25.438		-21.532		-773			6.400	(	1	)	-25.438		-21.532		-773								
		7.200	(	1	)	-44.318		-25.480		-773			7.200	(	1	)	-44.318		-25.480		-773								
JTAN		7.600	(	1	)	-54.829		-27.030		-773	JTAN		7.600	(	1	)	-54.829		-27.030		-773								
MAX		3.300	(	1	)	6.338		-1.147		-773	MAX		3.800	(	1	)	6.338		-1.147		-773								
MEMBER		5	(	6	-	7	)	G	=	MEMBER		5	(	6	-	7	)	G	=	MEMBER		5	(	6	-	7	)	G	=
ITAN		0.000	(	1	)	-8.706		15.366		0.000	ITAN		0.000	(	1	)	-8.706		15.366		0.000								
		.400	(	1	)	-2.916		13.586		0.000			.400	(	1	)	-2.916		13.586		0.000								
		2.150	(	1	)	14.046		5.799		0.000			2.150	(	1	)	14.046		5.799		0.000								
		4.000	(	1	)	17.159		-2.434		0.000			4.000	(	1	)	17.159		-2.434		0.000								
		5.950	(	1	)	5.042		-10.666		0.000			5.950	(	1	)	5.042		-10.666		0.000								
		7.600	(	1	)	-20.438		-18.454		0.000			7.600	(	1	)	-20.438		-18.454		0.000								
JTAN		8.000	(	1	)	-28.175		-20.234		0.000	JTAN		8.000	(	1	)	-28.175		-20.234		0.000								
MAX		3.556	(	1	)	17.801		-4.556		0.000	MAX		3.556	(	1	)	17.801		-4.556		0.000								
MEMBER		6	(	7	-	8	)	G	=	MEMBER		6	(	7	-	8	)	G	=	MEMBER		6	(	7	-	8	)	G	=
ITAN		0.000	(	1	)	-26.043		17.898		0.000	ITAN		0.000	(	1	)	-26.043		17.898		0.000								
		.400	(	1	)	-19.240		16.118		0.000			.400	(	1	)	-19.240		16.118		0.000								
		2.150	(	1	)	2.153		8.331		0.000			2.150	(	1	)	2.153		8.331		0.000								
		4.000	(	1	)	9.950		.098		0.000			4.000	(	1	)	9.950		.098		0.000								
		5.950	(	1	)	2.516		-8.134		0.000			5.950	(	1	)	2.516		-8.134		0.000								
		7.600	(	1	)	-18.533		-15.922		0.000			7.600	(	1	)	-18.533		-15.922		0.000								
JTAN		8.000	(	1	)	-25.258		-17.702		0.000	JTAN		8.000	(	1	)	-25.258		-17.702		0.000								
MAX		4.000	(	1	)	9.950		.098		0.000	MAX		4.000	(	1	)	9.950		.098		0.000								
MEMBER		7	(	8	-	9	)	G	=	MEMBER		7	(	8	-	9	)	G	=	MEMBER		7	(	8	-	9	)	G	=
ITAN		0.000	(	1	)	-25.779		19.373		0.000	ITAN		0.000	(	1	)	-25.779		19.373		0.000								
		.400	(	1	)	-18.386		17.593		0.000			.400	(	1	)	-18.386		17.593		0.000								
		2.150	(	1	)	5.588		9.806		0.000			2.150	(	1	)	5.588		9.806		0.000								
		3.300	(	1	)	15.710		2.463		0.000			3.300	(	1	)	15.710		2.463		0.000								
		5.450	(	1	)	13.716		-4.379		0.000			5.450	(	1	)	13.716		-4.379		0.000								
		7.200	(	1	)	-1.637		-12.667		0.000			7.200	(	1	)	-1.637		-12.667		0.000								
JTAN		7.600	(	1	)	-7.060		-14.447		0.000	JTAN		7.600	(	1	)	-7.060		-14.447		0.000								
MAX		4.222	(	1	)	16.353		.584		0.000	MAX		4.222	(	1	)	16.353		.584		0.000								



PICK UP 1

MOMENT MAXIMUM

MOMENT MINIMUM

		-CASE-		-M-		-Q-		-N-	
		L	8 ( 2 - 6 ) C	M	8 ( 2 - 6 ) C	Q	8 ( 2 - 6 ) C	N	8 ( 2 - 6 ) C
= = MEMBER									
ITAN	0.000 ( 1 )	2.635	-1.183	-1.183	-115.207				
JTAN	9.587 ( 1 )	-8.706	-1.183	-1.183	-130.546				
= = MEMBER									
ITAN	0.000 ( 1 )	-4.41	.268	.268	-123.446				
JTAN	9.587 ( 1 )	2.132	.268	.268	-138.785				
= = MEMBER									
ITAN	0.000 ( 1 )	-1.890	.142	.142	-102.467				
JTAN	9.587 ( 1 )	-5.21	.142	.142	-117.807				
= = MEMBER									
ITAN	0.000 ( 1 )	-3.49	.773	.773	-118.910				
JTAN	9.587 ( 1 )	7.060	.773	.773	-134.249				

PICK UP 1

SHEAR MAXIMUM

SHEAR MINIMUM

L		M		N		L		M		N	
MEMBER	1 ( 1 - 2 ) G =	MEMBER	2 ( 2 - 3 ) G =	MEMBER	3 ( 3 - 4 ) G =	MEMBER	4 ( 4 - 5 ) G =	MEMBER	1 ( 1 - 2 ) G =	MEMBER	2 ( 2 - 3 ) G =
ITAN	0.000 ( 1 )	-0.000	0.000	0.000 ( 1 )	-0.000	0.000	0.000 ( 1 )	-0.000	0.000	0.000 ( 1 )	-0.000
1	.150 ( 1 )	-.032	.000	.150 ( 1 )	-.032	.000	.150 ( 1 )	-.032	.000	.150 ( 1 )	-.032
2	.150 ( 1 )	-.032	.000	.150 ( 1 )	-.032	.000	.150 ( 1 )	-.032	.000	.150 ( 1 )	-.032
3	1.400 ( 1 )	-28.479	.000	1.400 ( 1 )	-28.479	.000	1.400 ( 1 )	-28.479	.000	1.400 ( 1 )	-28.479
4	1.800 ( 1 )	-39.067	.000	1.800 ( 1 )	-39.067	.000	1.800 ( 1 )	-39.067	.000	1.800 ( 1 )	-39.067
5	2.000 ( 1 )	-44.663	.000	2.000 ( 1 )	-44.663	.000	2.000 ( 1 )	-44.663	.000	2.000 ( 1 )	-44.663
6	2.000 ( 1 )	-44.663	.000	2.000 ( 1 )	-44.663	.000	2.000 ( 1 )	-44.663	.000	2.000 ( 1 )	-44.663
7	2.600 ( 1 )	-62.491	.000	2.600 ( 1 )	-62.491	.000	2.600 ( 1 )	-62.491	.000	2.600 ( 1 )	-62.491
JTAN	3.000 ( 1 )	-75.104	.000	3.000 ( 1 )	-75.104	.000	3.000 ( 1 )	-75.104	.000	3.000 ( 1 )	-75.104
= MEMBER 2 ( 2 - 3 ) G =											
ITAN	0.000 ( 1 )	-77.739	41.226	0.000 ( 1 )	-77.739	41.226	0.000 ( 1 )	-77.739	41.226	0.000 ( 1 )	-77.739
1	.400 ( 1 )	-61.511	39.819	.400 ( 1 )	-61.511	39.819	.400 ( 1 )	-61.511	39.819	.400 ( 1 )	-61.511
2	1.200 ( 1 )	-31.311	35.304	1.200 ( 1 )	-31.311	35.304	1.200 ( 1 )	-31.311	35.304	1.200 ( 1 )	-31.311
3	1.600 ( 1 )	-17.791	32.197	1.600 ( 1 )	-17.791	32.197	1.600 ( 1 )	-17.791	32.197	1.600 ( 1 )	-17.791
4	4.000 ( 1 )	27.159	2.650	4.000 ( 1 )	27.159	2.650	4.000 ( 1 )	27.159	2.650	4.000 ( 1 )	27.159
5	6.400 ( 1 )	-5.071	-26.897	6.400 ( 1 )	-5.071	-26.897	6.400 ( 1 )	-5.071	-26.897	6.400 ( 1 )	-5.071
6	6.800 ( 1 )	-16.471	-30.304	6.800 ( 1 )	-16.471	-30.304	6.800 ( 1 )	-16.471	-30.304	6.800 ( 1 )	-16.471
7	7.600 ( 1 )	-42.431	-34.519	7.600 ( 1 )	-42.431	-34.519	7.600 ( 1 )	-42.431	-34.519	7.600 ( 1 )	-42.431
JTAN	8.000 ( 1 )	-56.539	-35.926	8.000 ( 1 )	-56.539	-35.926	8.000 ( 1 )	-56.539	-35.926	8.000 ( 1 )	-56.539
= MEMBER 3 ( 3 - 4 ) G =											
ITAN	0.000 ( 1 )	-55.098	39.590	0.000 ( 1 )	-55.098	39.590	0.000 ( 1 )	-55.098	39.590	0.000 ( 1 )	-55.098
1	.400 ( 1 )	-40.525	38.182	.400 ( 1 )	-40.525	38.182	.400 ( 1 )	-40.525	38.182	.400 ( 1 )	-40.525
2	1.200 ( 1 )	-11.633	33.668	1.200 ( 1 )	-11.633	33.668	1.200 ( 1 )	-11.633	33.668	1.200 ( 1 )	-11.633
3	1.600 ( 1 )	1.231	30.561	1.600 ( 1 )	1.231	30.561	1.600 ( 1 )	1.231	30.561	1.600 ( 1 )	1.231
4	4.000 ( 1 )	42.254	1.014	4.000 ( 1 )	42.254	1.014	4.000 ( 1 )	42.254	1.014	4.000 ( 1 )	42.254
5	6.400 ( 1 )	-5.097	-28.534	6.400 ( 1 )	-5.097	-28.534	6.400 ( 1 )	-5.097	-28.534	6.400 ( 1 )	-5.097
6	6.800 ( 1 )	-5.957	-31.641	6.800 ( 1 )	-5.957	-31.641	6.800 ( 1 )	-5.957	-31.641	6.800 ( 1 )	-5.957
7	7.600 ( 1 )	-33.227	-36.155	7.600 ( 1 )	-33.227	-36.155	7.600 ( 1 )	-33.227	-36.155	7.600 ( 1 )	-33.227
JTAN	8.000 ( 1 )	-47.989	-37.563	8.000 ( 1 )	-47.989	-37.563	8.000 ( 1 )	-47.989	-37.563	8.000 ( 1 )	-47.989
= MEMBER 4 ( 4 - 5 ) G =											
ITAN	0.000 ( 1 )	-46.109	24.735	0.000 ( 1 )	-46.109	24.735	0.000 ( 1 )	-46.109	24.735	0.000 ( 1 )	-46.109
1	.400 ( 1 )	-36.515	23.185	.400 ( 1 )	-36.515	23.185	.400 ( 1 )	-36.515	23.185	.400 ( 1 )	-36.515
2	1.200 ( 1 )	-19.471	19.237	1.200 ( 1 )	-19.471	19.237	1.200 ( 1 )	-19.471	19.237	1.200 ( 1 )	-19.471
3	1.600 ( 1 )	-12.247	16.838	1.600 ( 1 )	-12.247	16.838	1.600 ( 1 )	-12.247	16.838	1.600 ( 1 )	-12.247
4	3.800 ( 1 )	6.338	-1.147	3.800 ( 1 )	6.338	-1.147	3.800 ( 1 )	6.338	-1.147	3.800 ( 1 )	6.338
5	5.000 ( 1 )	-17.295	-19.133	5.000 ( 1 )	-17.295	-19.133	5.000 ( 1 )	-17.295	-19.133	5.000 ( 1 )	-17.295
6	6.400 ( 1 )	-25.438	-21.532	6.400 ( 1 )	-25.438	-21.532	6.400 ( 1 )	-25.438	-21.532	6.400 ( 1 )	-25.438
7	7.200 ( 1 )	-44.318	-25.480	7.200 ( 1 )	-44.318	-25.480	7.200 ( 1 )	-44.318	-25.480	7.200 ( 1 )	-44.318
JTAN	7.600 ( 1 )	-54.829	-27.030	7.600 ( 1 )	-54.829	-27.030	7.600 ( 1 )	-54.829	-27.030	7.600 ( 1 )	-54.829

PICK UP 1

		SHEAR MAXIMUM					SHEAR MINIMUM				
		-----M-----					-----M-----				
		-CASE- ( 6 - 7 ) G = =					-CASE- ( 6 - 7 ) G = =				
		-----L-----					-----L-----				
		= MEMBER 5 ( 6 - 7 ) G = =					= MEMBER 5 ( 6 - 7 ) G = =				
ITAN	0.000	( 1 )	-8.706	15.366	0.000	ITAN	0.000	( 1 )	-8.706	15.366	0.000
1	.400	( 1 )	-2.915	13.586	0.000	1	.400	( 1 )	-2.916	13.586	0.000
2	2.150	( 1 )	14.046	5.799	0.000	2	2.150	( 1 )	14.046	5.799	0.000
3	4.000	( 1 )	17.159	-2.434	0.000	3	4.000	( 1 )	17.159	-2.434	0.000
4	5.850	( 1 )	5.042	-10.656	0.000	4	5.850	( 1 )	5.042	-10.656	0.000
5	7.600	( 1 )	-20.438	-18.454	0.000	5	7.600	( 1 )	-20.438	-18.454	0.000
JTAN	8.000	( 1 )	-28.175	-20.234	0.000	JTAN	8.000	( 1 )	-28.175	-20.234	0.000
= MEMBER 6 ( 7 - 8 ) G = =											
ITAN	0.000	( 1 )	-26.043	17.898	0.000	ITAN	0.000	( 1 )	-26.043	17.898	0.000
1	.400	( 1 )	-19.240	16.118	0.000	1	.400	( 1 )	-19.240	16.118	0.000
2	2.150	( 1 )	8.331	0.000	0.000	2	2.150	( 1 )	8.331	0.000	0.000
3	4.000	( 1 )	9.950	0.000	0.000	3	4.000	( 1 )	9.950	0.000	0.000
4	5.850	( 1 )	2.516	-8.134	0.000	4	5.850	( 1 )	2.516	-8.134	0.000
5	7.600	( 1 )	-18.533	-15.922	0.000	5	7.600	( 1 )	-18.533	-15.922	0.000
JTAN	8.000	( 1 )	-25.258	-17.702	0.000	JTAN	8.000	( 1 )	-25.258	-17.702	0.000
= MEMBER 7 ( 8 - 9 ) G = =											
ITAN	0.000	( 1 )	-25.779	19.173	0.000	ITAN	0.000	( 1 )	-25.779	19.173	0.000
1	.400	( 1 )	-18.386	17.593	0.000	1	.400	( 1 )	-18.386	17.593	0.000
2	2.150	( 1 )	5.588	9.806	0.000	2	2.150	( 1 )	5.588	9.806	0.000
3	3.800	( 1 )	15.710	2.463	0.000	3	3.800	( 1 )	15.710	2.463	0.000
4	5.450	( 1 )	13.716	-4.879	0.000	4	5.450	( 1 )	13.716	-4.879	0.000
5	7.200	( 1 )	-1.637	-12.667	0.000	5	7.200	( 1 )	-1.637	-12.667	0.000
JTAN	7.600	( 1 )	-7.360	-14.447	0.000	JTAN	7.600	( 1 )	-7.360	-14.447	0.000
= MEMBER 8 ( 2 - 6 ) C = =											
ITAN	0.000	( 1 )	2.635	-1.183	-115.207	ITAN	0.000	( 1 )	2.635	-1.183	-115.207
JTAN	9.587	( 1 )	-8.706	-1.183	-130.546	JTAN	9.587	( 1 )	-8.706	-1.183	-130.546
= MEMBER 9 ( 3 - 7 ) C = =											
ITAN	0.000	( 1 )	-4.41	.268	-123.446	ITAN	0.000	( 1 )	-4.41	.268	-123.446
JTAN	9.587	( 1 )	2.132	.268	-138.785	JTAN	9.587	( 1 )	2.132	.268	-138.785
= MEMBER 10 ( 4 - 8 ) C = =											
ITAN	0.000	( 1 )	-1.880	.142	-102.467	ITAN	0.000	( 1 )	-1.880	.142	-102.467
JTAN	9.587	( 1 )	-5.921	.142	-117.807	JTAN	9.587	( 1 )	-5.921	.142	-117.807
= MEMBER 11 ( 5 - 9 ) C = =											
ITAN	0.000	( 1 )	-3.49	.773	-118.910	ITAN	0.000	( 1 )	-3.49	.773	-118.910
JTAN	9.587	( 1 )	7.050	.773	-134.249	JTAN	9.587	( 1 )	7.050	.773	-134.249

PICK UP 1

AXIAL MAXIMUM

AXIAL MINIMUM

		-----L-----M-----N-----					-----L-----M-----N-----									
		-CASE- ( 1 - 2 ) G = =					-CASE- ( 1 - 2 ) G = =									
		= MEMBER 1 ( 1 - 2 ) G = =					= MEMBER 1 ( 1 - 2 ) G = =									
ITAN	0.000	( 1 )	-0.000	.000	.000	0.000	( 1 )	-0.000	.000	.000	0.000	( 1 )	-0.000	.000	.000	
1	.150	( 1 )	-.032	.000	.000	.150	( 1 )	-.032	.000	.000	.150	( 1 )	-.032	.000	.000	
2	.150	( 1 )	-.032	.000	.000	.150	( 1 )	-.032	.000	.000	.150	( 1 )	-.032	.000	.000	
3	1.400	( 1 )	-28.479	-25.436	-20.542	1.400	( 1 )	-28.479	-25.436	-20.542	1.400	( 1 )	-28.479	-25.436	-20.542	
4	1.800	( 1 )	-39.067	-27.496	-24.496	1.800	( 1 )	-39.067	-27.496	-24.496	1.800	( 1 )	-39.067	-27.496	-24.496	
5	2.000	( 1 )	-44.663	-28.447	-24.447	2.000	( 1 )	-44.663	-28.447	-24.447	2.000	( 1 )	-44.663	-28.447	-24.447	
6	2.900	( 1 )	-52.491	-30.876	-28.447	2.900	( 1 )	-52.491	-30.876	-28.447	2.900	( 1 )	-52.491	-30.876	-28.447	
7	2.600	( 1 )	-52.491	-30.876	-28.447	2.600	( 1 )	-52.491	-30.876	-28.447	2.600	( 1 )	-52.491	-30.876	-28.447	
JTAN	3.000	( 1 )	-75.104	-32.141	-30.876	3.000	( 1 )	-75.104	-32.141	-30.876	3.000	( 1 )	-75.104	-32.141	-30.876	
		= MEMBER 2 ( 2 - 3 ) G = =					= MEMBER 2 ( 2 - 3 ) G = =					= MEMBER 2 ( 2 - 3 ) G = =				
ITAN	0.000	( 1 )	-77.739	41.226	-1.183	0.000	( 1 )	-77.739	41.226	-1.183	0.000	( 1 )	-77.739	41.226	-1.183	
1	.400	( 1 )	-61.511	39.819	-1.183	.400	( 1 )	-61.511	39.819	-1.183	.400	( 1 )	-61.511	39.819	-1.183	
2	1.200	( 1 )	-31.311	35.304	-1.183	1.200	( 1 )	-31.311	35.304	-1.183	1.200	( 1 )	-31.311	35.304	-1.183	
3	1.900	( 1 )	-17.791	32.197	-1.183	1.600	( 1 )	-17.791	32.197	-1.183	1.600	( 1 )	-17.791	32.197	-1.183	
4	4.000	( 1 )	27.159	2.650	-1.183	4.000	( 1 )	27.159	2.650	-1.183	4.000	( 1 )	27.159	2.650	-1.183	
5	6.400	( 1 )	-5.071	-26.897	-1.183	6.400	( 1 )	-5.071	-26.897	-1.183	6.400	( 1 )	-5.071	-26.897	-1.183	
6	5.800	( 1 )	-16.471	-30.004	-1.183	6.800	( 1 )	-16.471	-30.004	-1.183	6.800	( 1 )	-16.471	-30.004	-1.183	
7	7.600	( 1 )	-42.431	-34.519	-1.183	7.000	( 1 )	-42.431	-34.519	-1.183	7.000	( 1 )	-42.431	-34.519	-1.183	
JTAN	8.000	( 1 )	-56.539	-35.926	-1.183	8.000	( 1 )	-56.539	-35.926	-1.183	8.000	( 1 )	-56.539	-35.926	-1.183	
		= MEMBER 3 ( 3 - 4 ) G = =					= MEMBER 3 ( 3 - 4 ) G = =					= MEMBER 3 ( 3 - 4 ) G = =				
ITAN	0.000	( 1 )	-56.098	39.590	-.915	0.000	( 1 )	-56.098	39.590	-.915	0.000	( 1 )	-56.098	39.590	-.915	
1	.400	( 1 )	-40.525	38.182	-.915	.400	( 1 )	-40.525	38.182	-.915	.400	( 1 )	-40.525	38.182	-.915	
2	1.200	( 1 )	-11.633	33.668	-.915	1.200	( 1 )	-11.633	33.668	-.915	1.200	( 1 )	-11.633	33.668	-.915	
3	1.900	( 1 )	1.231	30.561	-.915	1.600	( 1 )	1.231	30.561	-.915	1.600	( 1 )	1.231	30.561	-.915	
4	4.000	( 1 )	42.254	1.014	-.915	4.000	( 1 )	42.254	1.014	-.915	4.000	( 1 )	42.254	1.014	-.915	
5	6.400	( 1 )	6.097	-28.534	-.915	6.400	( 1 )	6.097	-28.534	-.915	6.400	( 1 )	6.097	-28.534	-.915	
6	6.300	( 1 )	-5.957	-31.641	-.915	6.800	( 1 )	-5.957	-31.641	-.915	6.800	( 1 )	-5.957	-31.641	-.915	
7	7.500	( 1 )	-33.227	-36.155	-.915	7.600	( 1 )	-33.227	-36.155	-.915	7.600	( 1 )	-33.227	-36.155	-.915	
JTAN	8.000	( 1 )	-47.989	-37.563	-.915	8.000	( 1 )	-47.989	-37.563	-.915	8.000	( 1 )	-47.989	-37.563	-.915	
		= MEMBER 4 ( 4 - 5 ) G = =					= MEMBER 4 ( 4 - 5 ) G = =					= MEMBER 4 ( 4 - 5 ) G = =				
ITAN	0.000	( 1 )	-46.109	24.735	-.773	0.000	( 1 )	-46.109	24.735	-.773	0.000	( 1 )	-46.109	24.735	-.773	
1	.400	( 1 )	-36.515	23.185	-.773	.400	( 1 )	-36.515	23.185	-.773	.400	( 1 )	-36.515	23.185	-.773	
2	1.200	( 1 )	-19.471	19.237	-.773	1.200	( 1 )	-19.471	19.237	-.773	1.200	( 1 )	-19.471	19.237	-.773	
3	1.600	( 1 )	-12.247	16.838	-.773	1.600	( 1 )	-12.247	16.838	-.773	1.600	( 1 )	-12.247	16.838	-.773	
4	3.800	( 1 )	6.338	-1.147	-.773	3.800	( 1 )	6.338	-1.147	-.773	3.800	( 1 )	6.338	-1.147	-.773	
5	6.000	( 1 )	-17.295	-19.133	-.773	6.000	( 1 )	-17.295	-19.133	-.773	6.000	( 1 )	-17.295	-19.133	-.773	
6	5.400	( 1 )	-25.438	-21.532	-.773	6.400	( 1 )	-25.438	-21.532	-.773	6.400	( 1 )	-25.438	-21.532	-.773	
7	7.200	( 1 )	-44.318	-25.480	-.773	7.200	( 1 )	-44.318	-25.480	-.773	7.200	( 1 )	-44.318	-25.480	-.773	
JTAN	7.600	( 1 )	-54.829	-27.030	-.773	7.600	( 1 )	-54.829	-27.030	-.773	7.600	( 1 )	-54.829	-27.030	-.773	

PICK UP 1

AXIAL MAXIMUM				AXIAL MINIMUM			
MEMBER	CASE	M	N	MEMBER	CASE	M	N
= MEMBER 5 ( 6 - 7 ) G = =							
ITAN	0.000	( 1 )	0.000	ITAN	0.000	( 1 )	0.000
1	.400	( 1 )	15.366	1	.400	( 1 )	15.366
2	2.150	( 1 )	13.586	2	2.150	( 1 )	13.586
3	4.000	( 1 )	5.799	3	4.000	( 1 )	5.799
4	5.850	( 1 )	-2.434	4	5.850	( 1 )	-2.434
5	7.600	( 1 )	-10.666	5	7.600	( 1 )	-10.666
JTAN	8.000	( 1 )	-18.454	JTAN	8.000	( 1 )	-18.454
			-20.234				-20.234
= MEMBER 6 ( 7 - 8 ) G = =							
ITAN	0.000	( 1 )	0.000	ITAN	0.000	( 1 )	0.000
1	.400	( 1 )	17.898	1	.400	( 1 )	17.898
2	2.150	( 1 )	16.118	2	2.150	( 1 )	16.118
3	4.000	( 1 )	8.331	3	4.000	( 1 )	8.331
4	5.850	( 1 )	.098	4	5.850	( 1 )	.098
5	7.600	( 1 )	-8.134	5	7.600	( 1 )	-8.134
JTAN	8.000	( 1 )	-15.922	JTAN	8.000	( 1 )	-15.922
			-17.702				-17.702
= MEMBER 7 ( 8 - 9 ) G = =							
ITAN	0.000	( 1 )	0.000	ITAN	0.000	( 1 )	0.000
1	.400	( 1 )	19.373	1	.400	( 1 )	19.373
2	2.150	( 1 )	17.593	2	2.150	( 1 )	17.593
3	3.800	( 1 )	9.806	3	3.800	( 1 )	9.806
4	5.450	( 1 )	2.463	4	5.450	( 1 )	2.463
5	7.200	( 1 )	-4.879	5	7.200	( 1 )	-4.879
JTAN	7.600	( 1 )	-12.667	JTAN	7.600	( 1 )	-12.667
			-14.447				-14.447
= MEMBER 8 ( 2 - 6 ) C = =							
ITAN	0.000	( 1 )	-115.207	ITAN	0.000	( 1 )	-115.207
JTAN	9.587	( 1 )	-130.546	JTAN	9.587	( 1 )	-130.546
= MEMBER 9 ( 3 - 7 ) C = =							
ITAN	0.000	( 1 )	.268	ITAN	0.000	( 1 )	.268
JTAN	9.587	( 1 )	.268	JTAN	9.587	( 1 )	.268
= MEMBER 10 ( 4 - 8 ) C = =							
ITAN	0.000	( 1 )	.142	ITAN	0.000	( 1 )	.142
JTAN	9.587	( 1 )	.142	JTAN	9.587	( 1 )	.142
= MEMBER 11 ( 5 - 9 ) C = =							
ITAN	0.000	( 1 )	.773	ITAN	0.000	( 1 )	.773
JTAN	9.587	( 1 )	.773	JTAN	9.587	( 1 )	.773

PICK UP 2

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =	
ITAN	Q	ITAN	Q	ITAN	Q
1	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 27 )	0.000 ( 16 )	-29.640
2	0.150 ( 28 )	-0.021 ( 28 )	0.400 ( 27 )	0.150 ( 16 )	-30.061
3	0.150 ( 28 )	-0.021 ( 28 )	1.200 ( 27 )	0.150 ( 16 )	-50.182
4	1.400 ( 29 )	-18.987 ( 29 )	1.600 ( 27 )	1.400 ( 16 )	-55.076
5	1.800 ( 29 )	-26.046 ( 29 )	4.000 ( 27 )	1.800 ( 16 )	-57.136
6	2.000 ( 29 )	-29.777 ( 29 )	6.400 ( 27 )	2.000 ( 16 )	-58.087
7	2.600 ( 29 )	-41.663 ( 29 )	7.600 ( 27 )	2.600 ( 16 )	-87.727
JTAN	3.000 ( 29 )	-50.072 ( 29 )	8.000 ( 27 )	3.000 ( 16 )	-90.156
JTAN		-21.428	JTAN		-91.421
MAX	4.000 ( 19 )	119.203	MAX	5.333 ( 16 )	-31.339
ITAN	0.000 ( 28 )	-17.432 ( 28 )	0.000 ( 27 )	0.000 ( 16 )	-183.572
1	0.400 ( 28 )	-9.488 ( 28 )	0.400 ( 27 )	0.400 ( 16 )	-162.357
2	1.200 ( 19 )	14.082 ( 19 )	1.200 ( 16 )	1.200 ( 16 )	-123.817
3	1.600 ( 19 )	41.692 ( 19 )	1.600 ( 16 )	1.600 ( 16 )	-106.128
4	4.000 ( 19 )	119.203 ( 19 )	4.000 ( 16 )	4.000 ( 16 )	-36.160
5	6.400 ( 19 )	30.427 ( 19 )	6.400 ( 16 )	6.400 ( 16 )	-43.372
6	6.800 ( 29 )	3.492 ( 29 )	6.800 ( 22 )	6.800 ( 22 )	-51.755
7	7.600 ( 29 )	-8.067 ( 29 )	7.600 ( 17 )	7.600 ( 17 )	-100.803
JTAN	8.000 ( 29 )	-14.598 ( 29 )	8.000 ( 17 )	8.000 ( 17 )	-138.590
JTAN		-16.765	JTAN		-109.518
MAX	4.000 ( 19 )	119.203	MAX	5.333 ( 16 )	-31.339
ITAN	0.000 ( 28 )	-19.653 ( 28 )	0.000 ( 17 )	0.000 ( 17 )	-136.545
1	0.400 ( 28 )	-11.066 ( 28 )	0.400 ( 17 )	0.400 ( 17 )	-99.058
2	1.200 ( 16 )	15.972 ( 16 )	1.200 ( 19 )	1.200 ( 19 )	-54.477
3	1.600 ( 16 )	44.338 ( 16 )	1.600 ( 19 )	1.600 ( 19 )	-41.519
4	4.000 ( 16 )	126.390 ( 16 )	4.000 ( 19 )	4.000 ( 19 )	-0.666
5	6.400 ( 22 )	42.732 ( 22 )	6.400 ( 19 )	6.400 ( 19 )	-35.530
6	6.800 ( 22 )	14.899 ( 22 )	6.800 ( 19 )	6.800 ( 19 )	-47.490
7	7.600 ( 29 )	-5.769 ( 29 )	7.600 ( 20 )	7.600 ( 20 )	-87.651
JTAN	8.000 ( 29 )	-13.615 ( 29 )	8.000 ( 20 )	8.000 ( 20 )	-124.368
JTAN		-20.552	JTAN		-102.843
MAX	4.000 ( 16 )	126.390	MAX	4.000 ( 19 )	0.066
ITAN	0.000 ( 28 )	20.299	0.000 ( 17 )	0.000 ( 17 )	114.050
1	0.400 ( 28 )	19.361	0.400 ( 17 )	0.400 ( 17 )	105.771
2	1.200 ( 19 )	78.410	1.200 ( 19 )	1.200 ( 19 )	33.902
3	1.600 ( 19 )	68.431	1.600 ( 19 )	1.600 ( 19 )	30.795
4	4.000 ( 19 )	-2.347	4.000 ( 19 )	4.000 ( 19 )	1.248
5	6.400 ( 19 )	-73.125	6.400 ( 16 )	6.400 ( 16 )	-28.299
6	6.800 ( 29 )	-12.817	6.800 ( 22 )	6.800 ( 22 )	-31.407
7	7.600 ( 29 )	-19.827	7.600 ( 17 )	7.600 ( 17 )	-102.843
JTAN	8.000 ( 29 )	-16.765	8.000 ( 17 )	8.000 ( 17 )	-111.122
JTAN		-2.347	JTAN		-113.798
MAX	4.000 ( 19 )	119.203	MAX	5.333 ( 16 )	-31.339
ITAN	0.000 ( 28 )	20.299	0.000 ( 27 )	0.000 ( 16 )	104.932
1	0.400 ( 28 )	19.361	0.400 ( 16 )	0.400 ( 16 )	50.243
2	1.200 ( 19 )	78.410	1.200 ( 16 )	1.200 ( 16 )	45.729
3	1.600 ( 19 )	68.431	1.600 ( 16 )	1.600 ( 16 )	42.621
4	4.000 ( 19 )	-2.347	4.000 ( 16 )	4.000 ( 16 )	13.074
5	6.400 ( 19 )	-73.125	6.400 ( 16 )	6.400 ( 16 )	-16.473
6	6.800 ( 29 )	-12.817	6.800 ( 22 )	6.800 ( 22 )	-35.512
7	7.600 ( 29 )	-19.827	7.600 ( 17 )	7.600 ( 17 )	-109.518
JTAN	8.000 ( 29 )	-16.765	8.000 ( 17 )	8.000 ( 17 )	-113.798
JTAN		-2.347	JTAN		-2.392
MAX	4.000 ( 19 )	119.203	MAX	5.333 ( 16 )	-31.339
ITAN	0.000 ( 28 )	20.299	0.000 ( 27 )	0.000 ( 16 )	104.932
1	0.400 ( 28 )	19.361	0.400 ( 16 )	0.400 ( 16 )	50.243
2	1.200 ( 19 )	78.410	1.200 ( 16 )	1.200 ( 16 )	45.729
3	1.600 ( 19 )	68.431	1.600 ( 16 )	1.600 ( 16 )	42.621
4	4.000 ( 19 )	-2.347	4.000 ( 16 )	4.000 ( 16 )	13.074
5	6.400 ( 19 )	-73.125	6.400 ( 16 )	6.400 ( 16 )	-16.473
6	6.800 ( 29 )	-12.817	6.800 ( 22 )	6.800 ( 22 )	-35.512
7	7.600 ( 29 )	-19.827	7.600 ( 17 )	7.600 ( 17 )	-109.518
JTAN	8.000 ( 29 )	-16.765	8.000 ( 17 )	8.000 ( 17 )	-113.798
JTAN		-2.347	JTAN		-2.392
MAX	4.000 ( 19 )	119.203	MAX	5.333 ( 16 )	-31.339

PICK UP 2

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		4	(	4 -	5	)	G	=	MEMBER		4	(	4 -	5	)	G	=
ITAN		0.000	(	28	)	-8.075	9.011	.290	ITAN		0.000	(	20	)	-123.289	99.034	-1.957
1	1	.400	(	28	)	-4.671	7.978	.290	1		.400	(	20	)	-91.125	90.613	-1.957
2	2	1.200	(	28	)	.709	5.345	.290	2		1.200	(	22	)	-53.914	16.879	.374
3	3	1.600	(	19	)	20.371	59.641	-2.348	3		1.600	(	22	)	-47.713	14.280	.374
4	4	3.800	(	19	)	87.411	3.861	-2.348	4		3.800	(	22	)	-34.757	-3.706	.374
5	5	6.900	(	19	)	37.359	-51.919	-2.348	5		6.900	(	22	)	-54.018	-21.691	.374
6	6	6.400	(	19	)	16.369	-61.190	-2.348	6		6.400	(	22	)	-73.184	-24.090	.374
7	7	7.200	(	29	)	1.643	-9.508	-1.320	7		7.200	(	22	)	-94.111	-28.038	.374
JTAN	JTAN	7.600	(	29	)	-2.373	-10.541	-1.320	JTAN		7.600	(	23	)	-117.420	-94.268	-1.175
MAX	MAX	3.800	(	19	)	87.411	3.861	-2.348	MAX		3.378	(	22	)	-34.018	.208	.374
MEMBER		5	(	6 -	7	)	G	=	MEMBER		5	(	6 -	7	)	G	=
ITAN	ITAN	0.000	(	28	)	23.430	3.769	0.000	ITAN		0.000	(	29	)	-35.039	16.721	0.000
1	1	.400	(	28	)	24.700	2.582	0.000	1		.400	(	29	)	-28.588	15.534	0.000
2	2	2.150	(	28	)	24.676	-2.610	0.000	2		2.150	(	29	)	-5.947	10.342	0.000
3	3	4.000	(	16	)	19.622	-2.572	0.000	3		4.000	(	29	)	8.109	4.853	0.000
4	4	5.850	(	29	)	12.010	-6.635	0.000	4		5.850	(	28	)	-5.287	-13.587	0.000
5	5	7.600	(	29	)	5.355	-5.827	0.000	5		7.600	(	28	)	-33.607	-18.779	0.000
JTAN	JTAN	8.000	(	29	)	3.787	-7.014	0.000	JTAN		8.000	(	28	)	-41.356	-19.965	0.000
MAX	MAX	.889	(	28	)	25.608	1.132	0.000	MAX		4.444	(	29	)	9.973	3.535	0.000
MEMBER		6	(	7 -	8	)	G	=	MEMBER		6	(	7 -	8	)	G	=
ITAN	ITAN	0.000	(	28	)	-1.622	8.019	0.000	ITAN		0.000	(	29	)	-33.104	15.847	0.000
1	1	.400	(	28	)	1.348	6.832	0.000	1		.400	(	29	)	-27.002	14.660	0.000
2	2	2.150	(	28	)	8.751	1.640	0.000	2		2.150	(	29	)	-5.890	9.468	0.000
3	3	4.000	(	19	)	11.709	.086	0.000	3		4.000	(	29	)	6.549	3.980	0.000
4	4	5.850	(	29	)	8.835	-1.509	0.000	4		5.850	(	28	)	-5.480	-9.337	0.000
5	5	7.500	(	29	)	1.651	-6.701	0.000	5		7.500	(	28	)	-26.363	-14.529	0.000
JTAN	JTAN	8.000	(	29	)	-1.257	-7.888	0.000	JTAN		8.000	(	28	)	-32.412	-15.716	0.000
MAX	MAX	4.000	(	19	)	11.709	.086	0.000	MAX		4.000	(	29	)	6.549	3.980	0.000
MEMBER		7	(	8 -	9	)	G	=	MEMBER		7	(	8 -	9	)	G	=
ITAN	ITAN	0.000	(	28	)	5.701	6.015	0.000	ITAN		0.000	(	29	)	-40.075	19.817	0.000
1	1	.400	(	28	)	7.870	-4.828	0.000	1		.400	(	29	)	-32.385	18.630	0.000
2	2	2.150	(	28	)	11.775	-3.64	0.000	2		2.150	(	29	)	-4.325	13.438	0.000
3	3	3.800	(	22	)	17.594	2.483	0.000	3		3.800	(	28	)	7.137	-5.259	0.000
4	4	5.450	(	29	)	23.868	3.648	0.000	4		5.450	(	28	)	-5.579	-10.154	0.000
5	5	7.200	(	29	)	25.709	-1.544	0.000	5		7.200	(	28	)	-27.891	-15.346	0.000
JTAN	JTAN	7.600	(	29	)	24.854	-2.731	0.000	JTAN		7.600	(	28	)	-34.257	-16.533	0.000
MAX	MAX	6.756	(	29	)	26.102	-2.25	0.000	MAX		3.378	(	28	)	9.093	-4.006	0.000

PICK UP 2

		MOMENT MAXIMUM			MOMENT MINIMUM				
		-CASE-	-M-	-Q-	-L-	-CASE-	-M-	-J-	-N-
		8 ( 2 - 6 ) C =			8 ( 2 - 6 ) C =				
ITAN	0.000 ( 29 )	36.153	-7.426	-83.995	0.000 ( 28 )	-32.640	5.848	-69.622	
JTAN	9.587 ( 28 )	23.430	5.848	-75.849	9.587 ( 29 )	-35.039	-7.426	-94.222	
= MEMBER 9 ( 3 - 7 ) C =					= MEMBER 9 ( 3 - 7 ) C =				
ITAN	0.000 ( 29 )	40.550	-8.078	-79.606	0.000 ( 28 )	-41.138	8.436	-84.997	
JTAN	9.587 ( 28 )	39.734	8.436	-95.224	9.587 ( 29 )	-36.891	-8.078	-89.832	
= MEMBER 10 ( 4 - 8 ) C =					= MEMBER 10 ( 4 - 8 ) C =				
ITAN	0.000 ( 29 )	39.592	-8.178	-71.304	0.000 ( 28 )	-42.099	8.367	-65.326	
JTAN	9.587 ( 28 )	38.113	8.367	-75.553	9.587 ( 29 )	-38.808	-8.178	-81.531	
= MEMBER 11 ( 5 - 9 ) C =					= MEMBER 11 ( 5 - 9 ) C =				
ITAN	0.000 ( 29 )	33.949	-5.134	-71.797	0.000 ( 28 )	-34.415	7.164	-86.757	
JTAN	9.587 ( 28 )	34.267	7.164	-96.584	9.587 ( 29 )	-24.854	-6.134	-82.024	



PICK UP 2

SHEAR MAXIMUM

SHEAR MINIMUM

MEMBER		CASE 1 ( 1 - 2 ) G =		CASE 2 ( 2 - 3 ) G =		CASE 3 ( 3 - 4 ) G =		CASE 4 ( 4 - 5 ) G =	
ITAN	0.000 ( 29 )	0.000 ( 29 )	0.000 ( 16 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )
1	.150 ( 29 )	-.021 ( 29 )	-.000 ( 16 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )
2	.150 ( 29 )	-.021 ( 29 )	-.000 ( 16 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )
3	1.400 ( 29 )	-18.987 ( 29 )	-.000 ( 16 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )
4	1.800 ( 29 )	-26.046 ( 29 )	-.000 ( 16 )	4.000 ( 28 )	4.000 ( 28 )	4.000 ( 28 )	4.000 ( 28 )	4.000 ( 28 )	4.000 ( 28 )
5	2.000 ( 29 )	-29.777 ( 29 )	-.000 ( 16 )	6.400 ( 28 )	6.400 ( 28 )	6.400 ( 28 )	6.400 ( 28 )	6.400 ( 28 )	6.400 ( 28 )
6	2.000 ( 29 )	-29.777 ( 29 )	-.000 ( 16 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )
7	2.600 ( 29 )	-41.663 ( 29 )	-.000 ( 16 )	8.000 ( 28 )	8.000 ( 28 )	8.000 ( 28 )	8.000 ( 28 )	8.000 ( 28 )	8.000 ( 28 )
JTAN	3.000 ( 29 )	-50.072 ( 29 )	-.000 ( 16 )						
ITAN	0.000 ( 19 )	0.000 ( 19 )	0.000 ( 17 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )
1	.400 ( 19 )	-89.467 ( 19 )	-2.777 ( 17 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )
2	1.200 ( 19 )	-85.295 ( 19 )	-.058 ( 17 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )
3	1.600 ( 19 )	-57.869 ( 19 )	-.058 ( 17 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )
4	4.000 ( 19 )	-36.160 ( 19 )	.545 ( 17 )	4.000 ( 28 )	4.000 ( 28 )	4.000 ( 28 )	4.000 ( 28 )	4.000 ( 28 )	4.000 ( 28 )
5	5.400 ( 19 )	8.217 ( 19 )	.028 ( 17 )	6.400 ( 28 )	6.400 ( 28 )	6.400 ( 28 )	6.400 ( 28 )	6.400 ( 28 )	6.400 ( 28 )
6	6.800 ( 19 )	3.492 ( 19 )	.028 ( 17 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )
7	7.600 ( 19 )	-8.067 ( 19 )	.028 ( 17 )	8.000 ( 28 )	8.000 ( 28 )	8.000 ( 28 )	8.000 ( 28 )	8.000 ( 28 )	8.000 ( 28 )
JTAN	8.000 ( 19 )	-14.598 ( 19 )	.028 ( 17 )						
ITAN	0.000 ( 17 )	0.000 ( 17 )	-1.936 ( 17 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )
1	.400 ( 17 )	-136.945 ( 17 )	-1.936 ( 17 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )
2	1.200 ( 17 )	-99.058 ( 17 )	-1.936 ( 17 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )
3	1.600 ( 17 )	-31.860 ( 17 )	-1.936 ( 17 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )
4	4.000 ( 17 )	-3.003 ( 17 )	-1.109 ( 17 )	4.000 ( 28 )	4.000 ( 28 )	4.000 ( 28 )	4.000 ( 28 )	4.000 ( 28 )	4.000 ( 28 )
5	6.400 ( 17 )	20.651 ( 17 )	-.596 ( 17 )	6.400 ( 28 )	6.400 ( 28 )	6.400 ( 28 )	6.400 ( 28 )	6.400 ( 28 )	6.400 ( 28 )
6	6.800 ( 17 )	15.059 ( 17 )	-.596 ( 17 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )
7	7.600 ( 17 )	8.319 ( 17 )	-.596 ( 17 )	8.000 ( 28 )	8.000 ( 28 )	8.000 ( 28 )	8.000 ( 28 )	8.000 ( 28 )	8.000 ( 28 )
JTAN	8.000 ( 17 )	-5.769 ( 17 )	-.596 ( 17 )						
ITAN	0.000 ( 20 )	0.000 ( 20 )	-1.957 ( 20 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )	0.000 ( 28 )
1	.400 ( 20 )	-123.289 ( 20 )	-1.957 ( 20 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )	.400 ( 28 )
2	1.200 ( 20 )	-91.125 ( 20 )	-1.957 ( 20 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )	1.200 ( 28 )
3	1.600 ( 20 )	-35.261 ( 20 )	-1.957 ( 20 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )	1.600 ( 28 )
4	3.800 ( 20 )	-11.797 ( 20 )	-1.320 ( 20 )	3.800 ( 28 )	3.800 ( 28 )	3.800 ( 28 )	3.800 ( 28 )	3.800 ( 28 )	3.800 ( 28 )
5	6.000 ( 20 )	58.500 ( 20 )	-1.320 ( 20 )	6.000 ( 28 )	6.000 ( 28 )	6.000 ( 28 )	6.000 ( 28 )	6.000 ( 28 )	6.000 ( 28 )
6	6.400 ( 20 )	10.683 ( 20 )	-1.320 ( 20 )	7.200 ( 28 )	7.200 ( 28 )	7.200 ( 28 )	7.200 ( 28 )	7.200 ( 28 )	7.200 ( 28 )
7	7.200 ( 20 )	8.246 ( 20 )	-1.320 ( 20 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )	7.600 ( 28 )
JTAN	7.500 ( 20 )	1.643 ( 20 )	-1.320 ( 20 )						

PICK UP 2

SHEAR MAXIMUM		SHEAR MINIMUM	
MEMBER	CASE ( 6 - 7 ) G	MEMBER	CASE ( 6 - 7 ) G
ITAN	0.000 ( 29 )	0.000 ( 29 )	0.000 ( 28 )
1	-35.039	16.721	3.769
2	-28.588	15.534	2.582
3	-5.947	10.342	-2.610
4	6.109	4.853	-8.098
5	12.010	-5.635	-13.987
JTAN	6.355	-5.827	-19.409
	3.787	-7.014	-20.957
MEMBER	6 ( 7 - 8 ) G	MEMBER	6 ( 7 - 8 ) G
ITAN	0.000 ( 16 )	0.000 ( 28 )	0.000 ( 28 )
1	-29.617	18.384	8.019
2	-22.620	16.504	6.832
3	-5.890	9.468	1.640
4	6.549	3.980	-3.849
5	8.835	-1.509	-9.337
JTAN	1.651	-6.701	-16.385
	-1.267	-7.888	-18.165
MEMBER	7 ( 8 - 9 ) G	MEMBER	7 ( 8 - 9 ) G
ITAN	0.000 ( 27 )	0.000 ( 28 )	0.000 ( 28 )
1	-34.138	20.414	6.015
2	-26.281	18.866	4.828
3	-4.325	13.438	-0.364
4	13.810	8.543	7.137
5	23.868	3.648	-5.259
JTAN	25.709	-1.544	-10.154
	24.854	-2.731	-15.346
MEMBER	8 ( 2 - 6 ) C	MEMBER	8 ( 2 - 6 ) C
ITAN	0.000 ( 28 )	0.000 ( 29 )	0.000 ( 29 )
1	-32.640	5.848	-7.425
JTAN	23.430	5.848	-7.425
MEMBER	9 ( 3 - 7 ) C	MEMBER	9 ( 3 - 7 ) C
ITAN	0.000 ( 28 )	0.000 ( 29 )	0.000 ( 29 )
JTAN	39.734	8.436	-8.078
MEMBER	10 ( 4 - 8 ) C	MEMBER	10 ( 4 - 8 ) C
ITAN	0.000 ( 28 )	0.000 ( 29 )	0.000 ( 29 )
JTAN	38.113	8.367	-8.178
MEMBER	11 ( 5 - 9 ) C	MEMBER	11 ( 5 - 9 ) C
ITAN	0.000 ( 28 )	0.000 ( 29 )	0.000 ( 29 )
JTAN	34.267	7.164	-6.134
		7.164	-6.134

PICK UP 2

AXIAL MAXIMUM

AXIAL MINIMUM

MEMBER 1 ( 1 - 2 ) G		MEMBER 2 ( 2 - 3 ) G		MEMBER 3 ( 3 - 4 ) G		MEMBER 4 ( 4 - 5 ) G	
ITAN	0.000 ( 28 )	0.000 ( 25 )	0.000 ( 25 )	0.000 ( 25 )	0.000 ( 25 )	0.000 ( 25 )	0.000 ( 25 )
1	-.021	-56.207	-42.917	-35.247	-45.114	-.281	-.000
2	-.021	-18.299	-7.354	-10.102	-19.404	-13.695	-.000
3	1.400 ( 28 )	25.792	25.944	1.095	-12.273	-16.987	-.000
4	1.800 ( 28 )	25.792	25.792	36.831	8.555	-18.331	-.000
5	2.000 ( 28 )	-6.167	-6.167	5.450	-7.330	-18.965	-.000
6	2.000 ( 28 )	-16.902	-16.902	-5.021	-13.562	-18.965	-.000
7	2.600 ( 28 )	-41.121	-41.121	-28.714	-28.283	-20.585	-.000
JTAN	3.000 ( 28 )	-50.072	-54.211	-41.541	-36.576	-21.428	-.000
= MEMBER 1 ( 1 - 2 ) G =							
ITAN	0.000 ( 19 )	0.000 ( 19 )	0.000 ( 19 )	0.000 ( 19 )	0.000 ( 19 )	0.000 ( 19 )	0.000 ( 19 )
1	.400	33.795	32.572	34.453	23.631	-.281	-.000
2	1.200 ( 19 )	28.646	28.646	33.229	22.283	-.021	-.000
3	1.600 ( 19 )	25.944	25.944	29.304	18.850	-.021	-.000
4	4.000 ( 19 )	25.445	25.445	26.601	19.754	-13.695	-.000
5	6.400 ( 19 )	-29.147	-29.147	907	1.124	-16.987	-.000
6	6.800 ( 19 )	-32.073	-32.073	-24.787	-14.517	-18.331	-.000
7	7.600 ( 19 )	-33.296	-33.296	-27.489	-15.603	-18.965	-.000
JTAN	8.000 ( 19 )	-89.467	-91.724	-41.541	-28.283	-20.585	-.000
= MEMBER 2 ( 2 - 3 ) G =							
ITAN	0.000 ( 24 )	0.000 ( 24 )	0.000 ( 24 )	0.000 ( 24 )	0.000 ( 24 )	0.000 ( 24 )	0.000 ( 24 )
1	.400	104.947	96.668	104.947	95.025	-.281	-.000
2	1.200 ( 24 )	78.410	78.410	83.104	86.604	-.021	-.000
3	1.600 ( 24 )	68.431	68.431	73.125	68.912	-.021	-.000
4	4.000 ( 24 )	2.347	2.347	101.362	59.641	-13.695	-.000
5	6.400 ( 24 )	-73.125	-73.125	-109.641	3.861	-16.987	-.000
6	6.800 ( 24 )	-83.104	-83.104	-101.362	3.861	-18.331	-.000
7	7.600 ( 24 )	-101.362	-101.362	-109.641	3.861	-18.965	-.000
JTAN	8.000 ( 24 )	-109.641	-109.641	-109.641	3.861	-20.585	-.000
= MEMBER 3 ( 3 - 4 ) G =							
ITAN	0.000 ( 24 )	0.000 ( 24 )	0.000 ( 24 )	0.000 ( 24 )	0.000 ( 24 )	0.000 ( 24 )	0.000 ( 24 )
1	.400	34.417	33.193	34.417	29.267	-.281	-.000
2	1.200 ( 24 )	29.267	29.267	33.193	26.565	-.021	-.000
3	1.600 ( 24 )	26.565	26.565	29.267	26.565	-.021	-.000
4	4.000 ( 24 )	.871	.871	26.565	1.061	-13.695	-.000
5	6.400 ( 24 )	-24.823	-24.823	1.061	36.710	-16.987	-.000
6	6.800 ( 24 )	-27.525	-27.525	36.710	5.242	-18.331	-.000
7	7.600 ( 24 )	-31.451	-31.451	5.242	-5.244	-18.965	-.000
JTAN	8.000 ( 24 )	-32.675	-32.675	-41.808	-28.966	-20.585	-.000
= MEMBER 4 ( 4 - 5 ) G =							
ITAN	0.000 ( 19 )	0.000 ( 19 )	0.000 ( 19 )	0.000 ( 19 )	0.000 ( 19 )	0.000 ( 19 )	0.000 ( 19 )
1	.400	95.025	86.604	95.025	86.604	-.281	-.000
2	1.200 ( 19 )	86.604	86.604	86.604	86.604	-.021	-.000
3	1.600 ( 19 )	68.912	68.912	86.604	68.912	-.021	-.000
4	3.800 ( 19 )	59.641	59.641	68.912	59.641	-13.695	-.000
5	6.000 ( 19 )	3.861	3.861	59.641	3.861	-16.987	-.000
6	6.400 ( 19 )	3.861	3.861	59.641	3.861	-18.331	-.000
7	7.200 ( 19 )	16.190	16.190	61.190	16.190	-18.965	-.000
JTAN	7.600 ( 19 )	-66.417	-66.417	79.982	-66.417	-20.585	-.000

PICK UP: 2

AXIAL MAXIMUM

AXIAL MINIMUM

MEMBER		CASE ( 6 - 7 ) G		MEMBER		CASE ( 6 - 7 ) G		
ITAN	0.000	( 15 )	-11.809	0.000	ITAN	0.000	( 15 )	-11.809
1	.400	( 15 )	15.664	0.000	1	.400	( 15 )	15.664
2	2.150	( 15 )	13.884	0.000	2	2.150	( 15 )	13.884
3	4.000	( 15 )	6.096	0.000	3	4.000	( 15 )	6.096
4	5.850	( 15 )	-2.136	0.000	4	5.850	( 15 )	-2.136
5	7.600	( 15 )	-10.369	0.000	5	7.600	( 15 )	-10.369
JTAN	8.000	( 15 )	-21.281	0.000	JTAN	8.000	( 15 )	-21.281
JTAN	8.000	( 15 )	-18.156	0.000	JTAN	8.000	( 15 )	-18.156
JTAN	8.000	( 15 )	-19.936	0.000	JTAN	8.000	( 15 )	-19.936
ITAN	0.000	( 15 )	-23.290	0.000	ITAN	0.000	( 15 )	-23.290
1	.400	( 15 )	17.435	0.000	1	.400	( 15 )	17.435
2	2.150	( 15 )	15.655	0.000	2	2.150	( 15 )	15.655
3	4.000	( 15 )	7.867	0.000	3	4.000	( 15 )	7.867
4	5.850	( 15 )	-3.365	0.000	4	5.850	( 15 )	-3.365
5	7.600	( 15 )	-10.849	0.000	5	7.600	( 15 )	-10.849
JTAN	8.000	( 15 )	-2.559	0.000	JTAN	8.000	( 15 )	-2.559
JTAN	8.000	( 15 )	-19.301	0.000	JTAN	8.000	( 15 )	-19.301
JTAN	8.000	( 15 )	-18.165	0.000	JTAN	8.000	( 15 )	-18.165
ITAN	0.000	( 15 )	-26.021	0.000	ITAN	0.000	( 15 )	-26.021
1	.400	( 15 )	19.352	0.000	1	.400	( 15 )	19.352
2	2.150	( 15 )	17.572	0.000	2	2.150	( 15 )	17.572
3	3.800	( 15 )	9.784	0.000	3	3.800	( 15 )	9.784
4	5.450	( 15 )	2.442	0.000	4	5.450	( 15 )	2.442
5	7.200	( 15 )	-4.901	0.000	5	7.200	( 15 )	-4.901
JTAN	7.500	( 15 )	-12.688	0.000	JTAN	7.500	( 15 )	-12.688
JTAN	7.500	( 15 )	-14.468	0.000	JTAN	7.500	( 15 )	-14.468
JTAN	7.500	( 15 )	-7.465	0.000	JTAN	7.500	( 15 )	-7.465
ITAN	0.000	( 28 )	-32.640	0.000	ITAN	0.000	( 27 )	15.162
1	.400	( 28 )	5.848	-69.622	1	.400	( 27 )	-3.780
2	2.150	( 28 )	5.848	-75.849	2	2.150	( 27 )	-3.780
3	3.800	( 28 )	23.430		3	3.800	( 27 )	-21.075
4	5.450	( 28 )			4	5.450	( 27 )	
5	7.200	( 28 )			5	7.200	( 27 )	
JTAN	9.587	( 28 )			JTAN	9.587	( 27 )	
ITAN	0.000	( 29 )	40.550	-79.606	ITAN	0.000	( 17 )	-1.645
1	.400	( 29 )	-8.078	-89.832	1	.400	( 17 )	2.724
2	2.150	( 29 )	-8.078		2	2.150	( 17 )	
3	3.800	( 29 )			3	3.800	( 17 )	
4	5.450	( 29 )			4	5.450	( 17 )	
5	7.200	( 29 )			5	7.200	( 17 )	
JTAN	9.587	( 29 )			JTAN	9.587	( 17 )	
ITAN	0.000	( 29 )	-42.099	8.367	ITAN	0.000	( 20 )	-1.079
1	.400	( 29 )	8.367	-75.553	1	.400	( 20 )	-1.034
2	2.150	( 29 )	8.367		2	2.150	( 20 )	
3	3.800	( 29 )			3	3.800	( 20 )	
4	5.450	( 29 )			4	5.450	( 20 )	
5	7.200	( 29 )			5	7.200	( 20 )	
JTAN	9.587	( 29 )			JTAN	9.587	( 20 )	
ITAN	0.000	( 29 )	33.949	-71.797	ITAN	0.000	( 23 )	-3.090
1	.400	( 29 )	-6.134	-92.024	1	.400	( 23 )	1.175
2	2.150	( 29 )	-6.134		2	2.150	( 23 )	1.175
3	3.800	( 29 )			3	3.800	( 23 )	
4	5.450	( 29 )			4	5.450	( 23 )	
5	7.200	( 29 )			5	7.200	( 23 )	
JTAN	9.587	( 29 )			JTAN	9.587	( 23 )	

TITLE-VIA DUCT OF DOUBLE TRACK (3+3\*8=27) L-1

PICK UP 3

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		1 ( 1 - 2 ) G	2 ( 2 - 3 ) G	3 ( 3 - 4 ) G	4 ( 4 - 5 ) G	5 ( 5 - 6 ) G	6 ( 6 - 7 ) G	7 ( 7 - 8 ) G	8 ( 8 - 9 ) G	9 ( 9 - 10 ) G	10 ( 10 - 11 ) G
MEMBER		1 ( 1 - 2 ) G	2 ( 2 - 3 ) G	3 ( 3 - 4 ) G	4 ( 4 - 5 ) G	5 ( 5 - 6 ) G	6 ( 6 - 7 ) G	7 ( 7 - 8 ) G	8 ( 8 - 9 ) G	9 ( 9 - 10 ) G	10 ( 10 - 11 ) G
ITAN	0.000 ( 30 )	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
1	0.150 ( 30 )	-4.478	-29.640	0.000 ( 31 )	-0.000	-29.640	0.000 ( 31 )	-0.000	-29.640	0.000 ( 31 )	-0.000
2	0.150 ( 30 )	-4.478	-30.061	0.150 ( 31 )	-4.478	-30.061	0.150 ( 31 )	-4.478	-30.061	0.150 ( 31 )	-4.478
3	1.400 ( 31 )	-69.975	-50.182	1.400 ( 31 )	-69.975	-50.182	1.400 ( 31 )	-69.975	-50.182	1.400 ( 31 )	-69.975
4	1.800 ( 31 )	-92.419	-55.076	1.800 ( 30 )	-92.419	-55.076	1.800 ( 30 )	-92.419	-55.076	1.800 ( 30 )	-92.419
5	2.000 ( 31 )	-103.943	-57.136	2.000 ( 30 )	-103.943	-57.136	2.000 ( 30 )	-103.943	-57.136	2.000 ( 30 )	-103.943
6	2.000 ( 31 )	-103.943	-58.087	2.000 ( 30 )	-103.943	-58.087	2.000 ( 30 )	-103.943	-58.087	2.000 ( 30 )	-103.943
7	2.600 ( 31 )	-157.339	-87.727	2.600 ( 30 )	-157.339	-87.727	2.600 ( 30 )	-157.339	-87.727	2.600 ( 30 )	-157.339
JTAN	3.000 ( 31 )	-193.664	-91.421	3.000 ( 30 )	-193.664	-91.421	3.000 ( 30 )	-193.664	-91.421	3.000 ( 30 )	-193.664
MEMBER		2 ( 2 - 3 ) G	3 ( 3 - 4 ) G	4 ( 4 - 5 ) G	5 ( 5 - 6 ) G	6 ( 6 - 7 ) G	7 ( 7 - 8 ) G	8 ( 8 - 9 ) G	9 ( 9 - 10 ) G	10 ( 10 - 11 ) G	11 ( 11 - 12 ) G
ITAN	0.000 ( 30 )	-171.598	112.414	0.000 ( 31 )	-211.099	120.667	0.000 ( 31 )	-211.099	120.667	0.000 ( 31 )	-211.099
1	0.400 ( 30 )	-134.365	104.135	0.400 ( 31 )	-170.565	112.388	0.400 ( 31 )	-170.565	112.388	0.400 ( 31 )	-170.565
2	1.200 ( 30 )	-68.476	85.876	1.200 ( 31 )	-98.073	94.129	1.200 ( 31 )	-98.073	94.129	1.200 ( 31 )	-98.073
3	1.600 ( 30 )	-40.273	75.896	1.600 ( 31 )	-66.569	84.150	1.600 ( 31 )	-66.569	84.150	1.600 ( 31 )	-66.569
4	4.000 ( 30 )	48.526	5.117	4.000 ( 31 )	42.038	13.370	4.000 ( 31 )	42.038	13.370	4.000 ( 31 )	42.038
5	6.400 ( 31 )	-2.394	-57.410	6.400 ( 30 )	-15.713	-65.603	6.400 ( 30 )	-15.713	-65.603	6.400 ( 30 )	-15.713
6	6.800 ( 31 )	-23.202	-67.389	6.800 ( 30 )	-39.822	-75.642	6.800 ( 30 )	-39.822	-75.642	6.800 ( 30 )	-39.822
7	7.600 ( 31 )	-74.201	-85.648	7.600 ( 30 )	-97.525	-93.901	7.600 ( 30 )	-97.525	-93.901	7.600 ( 30 )	-97.525
JTAN	8.000 ( 31 )	-104.140	-93.927	8.000 ( 30 )	-130.664	-102.181	8.000 ( 30 )	-130.664	-102.181	8.000 ( 30 )	-130.664
MAX	4.000 ( 30 )	48.526	5.117	4.444 ( 31 )	45.265	-6.630	4.444 ( 31 )	45.265	-6.630	4.444 ( 31 )	45.265
MEMBER		3 ( 3 - 4 ) G	4 ( 4 - 5 ) G	5 ( 5 - 6 ) G	6 ( 6 - 7 ) G	7 ( 7 - 8 ) G	8 ( 8 - 9 ) G	9 ( 9 - 10 ) G	10 ( 10 - 11 ) G	11 ( 11 - 12 ) G	12 ( 12 - 13 ) G
ITAN	0.000 ( 30 )	-108.701	104.763	0.000 ( 31 )	-129.083	109.921	0.000 ( 31 )	-129.083	109.921	0.000 ( 31 )	-129.083
1	0.400 ( 30 )	-74.529	96.484	0.400 ( 31 )	-92.848	101.641	0.400 ( 31 )	-92.848	101.641	0.400 ( 31 )	-92.848
2	1.200 ( 30 )	-14.760	78.225	1.200 ( 31 )	-28.953	83.382	1.200 ( 31 )	-28.953	83.382	1.200 ( 31 )	-28.953
3	1.600 ( 30 )	10.382	68.245	1.600 ( 31 )	-1.748	73.403	1.600 ( 31 )	-1.748	73.403	1.600 ( 31 )	-1.748
4	4.000 ( 31 )	81.067	2.623	4.000 ( 30 )	80.819	-2.534	4.000 ( 30 )	80.819	-2.534	4.000 ( 30 )	80.819
5	6.400 ( 31 )	10.843	-68.156	6.400 ( 30 )	-1.782	-73.314	6.400 ( 30 )	-1.782	-73.314	6.400 ( 30 )	-1.782
6	6.800 ( 31 )	-14.263	-78.136	6.800 ( 30 )	-28.952	-83.293	6.800 ( 30 )	-28.952	-83.293	6.800 ( 30 )	-28.952
7	7.600 ( 31 )	-73.950	-96.395	7.600 ( 30 )	-92.775	-101.552	7.600 ( 30 )	-92.775	-101.552	7.600 ( 30 )	-92.775
JTAN	8.000 ( 31 )	-108.097	-104.674	8.000 ( 30 )	-128.975	-109.832	8.000 ( 30 )	-128.975	-109.832	8.000 ( 30 )	-128.975
MAX	4.000 ( 31 )	81.067	2.623	4.000 ( 30 )	80.819	-2.534	4.000 ( 30 )	80.819	-2.534	4.000 ( 30 )	80.819

PICK UP 3

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		CASE ( 4 - 5 ) G =		CASE ( 4 - 5 ) G =		MEMBER		CASE ( 4 - 5 ) G =		CASE ( 4 - 5 ) G =	
ITAN	0.000	( 30 )	-104.246	87.366	-1.113	0.000	( 31 )	-130.276	95.956	-1.037	0.000
1	4.00	( 30 )	-76.749	78.944	-1.113	4.00	( 31 )	-99.343	87.534	-1.037	4.00
2	1.200	( 30 )	-30.220	61.251	-1.113	1.200	( 31 )	-45.942	69.842	-1.037	1.200
3	1.600	( 30 )	-11.414	51.981	-1.037	1.600	( 30 )	23.700	60.571	-1.037	1.600
4	3.800	( 31 )	39.815	4.788	-1.037	3.800	( 30 )	33.202	-3.802	-1.113	3.800
5	6.000	( 31 )	-2.631	-50.994	-1.037	6.000	( 30 )	-28.141	-59.584	-1.113	6.000
6	6.400	( 31 )	-21.042	-60.265	-1.037	6.400	( 30 )	-49.989	-68.855	-1.113	6.400
7	7.200	( 31 )	-66.782	-77.957	-1.037	7.200	( 30 )	-102.600	-86.547	-1.113	7.200
JTAN	7.600	( 31 )	-93.883	-86.379	-1.037	7.600	( 30 )	-133.138	-94.969	-1.113	7.600
MAX	4.222	( 31 )	39.836	-6.379	-1.037	3.800	( 30 )	33.202	-3.802	-1.113	3.800
= MEMBER 5 ( 6 - 7 ) G =											
ITAN	0.000	( 30 )	9.338	11.501	0.000	0.000	( 31 )	-24.235	18.938	0.000	0.000
1	4.00	( 30 )	13.582	9.721	0.000	4.00	( 31 )	-17.016	17.158	0.000	4.00
2	2.150	( 30 )	23.779	1.933	0.000	2.150	( 31 )	6.195	9.370	0.000	2.150
3	4.000	( 30 )	19.741	-6.299	0.000	4.000	( 31 )	15.915	1.138	0.000	4.000
4	5.550	( 31 )	10.404	-7.095	0.000	5.550	( 30 )	4.72	-14.532	0.000	5.550
5	7.600	( 31 )	-8.826	-14.882	0.000	7.600	( 30 )	-31.773	-22.319	0.000	7.600
JTAN	8.000	( 31 )	-15.135	-16.662	0.000	8.000	( 30 )	-41.057	-24.099	0.000	8.000
MAX	2.567	( 30 )	24.184	-3.566	0.000	4.444	( 31 )	15.981	-0.840	0.000	4.444
= MEMBER 6 ( 7 - 8 ) G =											
ITAN	0.000	( 30 )	-17.931	15.821	0.000	0.000	( 31 )	-36.008	20.316	0.000	0.000
1	4.00	( 30 )	-11.959	14.041	0.000	4.00	( 31 )	-28.237	18.536	0.000	4.00
2	2.150	( 30 )	5.799	6.254	0.000	2.150	( 31 )	-2.613	10.749	0.000	2.150
3	4.000	( 30 )	9.753	-1.979	0.000	4.000	( 31 )	9.657	2.516	0.000	4.000
4	5.850	( 31 )	5.696	-5.716	0.000	5.850	( 30 )	-1.523	-10.211	0.000	5.850
5	7.600	( 31 )	-10.121	-13.504	0.000	7.600	( 30 )	-25.207	-17.999	0.000	7.600
JTAN	8.000	( 31 )	-15.879	-15.284	0.000	8.000	( 30 )	-33.763	-19.779	0.000	8.000
MAX	4.444	( 31 )	10.335	5.338	0.000	4.000	( 31 )	9.657	2.516	0.000	4.000
= MEMBER 7 ( 8 - 9 ) G =											
ITAN	0.000	( 30 )	-12.972	15.550	0.000	0.000	( 31 )	-39.257	23.475	0.000	0.000
1	4.00	( 30 )	-7.108	13.770	0.000	4.00	( 31 )	-30.222	21.695	0.000	4.00
2	2.150	( 30 )	10.176	5.983	0.000	2.150	( 31 )	9.930	13.908	0.000	2.150
3	3.800	( 31 )	17.821	6.565	0.000	3.800	( 30 )	13.989	-1.360	0.000	3.800
4	5.450	( 31 )	22.596	-7.77	0.000	5.450	( 30 )	5.688	-8.702	0.000	5.450
5	7.200	( 31 )	14.422	-8.565	0.000	7.200	( 30 )	-16.356	-16.490	0.000	7.200
JTAN	7.600	( 31 )	10.640	-10.345	0.000	7.600	( 30 )	-23.308	-18.270	0.000	7.600
MAX	5.450	( 31 )	22.596	-7.77	0.000	3.378	( 30 )	14.167	5.19	0.000	3.378

PICK UP 13

MOMENT MAXIMUM

MOMENT MINIMUM

		L ( 2 - 6 ) C = =		M		Q		N	
		-CASE-		-CASE-		-CASE-		-CASE-	
		8 ( 2 - 6 ) C = =		8 ( 2 - 6 ) C = =		8 ( 2 - 6 ) C = =		8 ( 2 - 6 ) C = =	
=	MEMBER	0.000 ( 31 )	17.435	-4.347	-237.887	0.000 ( 30 )	-22.066	3.276	-229.634
	ITAN	9.587 ( 30 )	9.338	3.276	-244.973	9.587 ( 31 )	-24.235	-4.347	-253.226
	JTAN								
=	MEMBER	9 ( 3 - 7 ) C = =				9 ( 3 - 7 ) C = =			
	ITAN	0.000 ( 31 )	24.943	-4.779	-219.696	0.000 ( 30 )	-21.963	4.703	-222.792
	JTAN	9.587 ( 30 )	23.126	4.703	-238.131	9.587 ( 31 )	-20.873	-4.779	-235.035
=	MEMBER	10 ( 4 - 8 ) C = =				10 ( 4 - 8 ) C = =			
	ITAN	0.000 ( 31 )	22.178	-4.752	-209.520	0.000 ( 30 )	-24.729	4.748	-206.087
	JTAN	9.587 ( 30 )	20.791	4.748	-221.426	9.587 ( 31 )	-23.378	-4.752	-224.859
=	MEMBER	11 ( 5 - 9 ) C = =				11 ( 5 - 9 ) C = =			
	ITAN	0.000 ( 31 )	20.447	-3.243	-241.770	0.000 ( 30 )	-18.808	4.393	-250.360
	JTAN	9.587 ( 30 )	23.308	4.393	-265.699	9.587 ( 31 )	-10.640	-3.243	-257.109

TITLE..VIADUCT OF DOUBLE TRACK (3+3\*8=27) L-1

PICK UP 3

		SHEAR MAXIMUM					SHEAR MINIMUM				
		-----L-----M-----N-----					-----L-----M-----N-----				
		-CASE- ( 1 - 2 ) G =					-CASE- ( 1 - 2 ) G =				
		= MEMBER 1 ( 1 - 2 ) G =					= MEMBER 1 ( 1 - 2 ) G =				
ITAN	0.000 ( 31 )	-29.640	-0.000	0.000 ( 30 )	-29.640	0.000 ( 30 )	-0.000	0.000 ( 30 )	-29.640	0.000 ( 30 )	-0.000
1	.150 ( 31 )	-30.061	-0.000	.150 ( 30 )	-30.061	.150 ( 30 )	-4.478	.150 ( 30 )	-30.061	.150 ( 30 )	-0.000
2	.150 ( 31 )	-50.182	-0.000	.150 ( 30 )	-50.182	.150 ( 30 )	-4.478	.150 ( 30 )	-50.182	.150 ( 30 )	-0.000
3	1.400 ( 31 )	-55.076	-0.000	1.400 ( 30 )	-55.076	1.400 ( 30 )	-69.975	1.400 ( 30 )	-55.076	1.400 ( 30 )	-0.000
4	1.800 ( 31 )	-57.136	-0.000	1.800 ( 30 )	-57.136	1.800 ( 30 )	-92.419	1.800 ( 30 )	-57.136	1.800 ( 30 )	-0.000
5	2.000 ( 31 )	-58.087	-0.000	2.000 ( 30 )	-58.087	2.000 ( 30 )	-103.943	2.000 ( 30 )	-58.087	2.000 ( 30 )	-0.000
6	2.000 ( 31 )	-67.727	-0.000	2.000 ( 30 )	-67.727	2.000 ( 30 )	-103.943	2.000 ( 30 )	-67.727	2.000 ( 30 )	-0.000
7	2.600 ( 31 )	-90.156	-0.000	2.600 ( 30 )	-90.156	2.600 ( 30 )	-157.339	2.600 ( 30 )	-90.156	2.600 ( 30 )	-0.000
JTAN	3.000 ( 31 )	-91.421	-0.000	3.000 ( 30 )	-91.421	3.000 ( 30 )	-193.664	3.000 ( 30 )	-91.421	3.000 ( 30 )	-0.000
= MEMBER 2 ( 2 - 3 ) G =											
ITAN	0.000 ( 31 )	120.667	-0.067	0.000 ( 30 )	120.667	0.000 ( 30 )	-171.598	0.000 ( 30 )	112.414	0.000 ( 30 )	-1.004
1	.400 ( 31 )	112.388	-0.067	.400 ( 30 )	112.388	.400 ( 30 )	-134.365	.400 ( 30 )	104.135	.400 ( 30 )	-1.004
2	1.200 ( 31 )	94.129	-0.067	1.200 ( 30 )	94.129	1.200 ( 30 )	-88.476	1.200 ( 30 )	85.876	1.200 ( 30 )	-1.004
3	1.600 ( 31 )	84.150	-0.067	1.600 ( 30 )	84.150	1.600 ( 30 )	-60.273	1.600 ( 30 )	75.896	1.600 ( 30 )	-1.004
4	4.000 ( 31 )	13.370	-0.067	4.000 ( 30 )	13.370	4.000 ( 30 )	48.526	4.000 ( 30 )	5.117	4.000 ( 30 )	-1.004
5	6.400 ( 31 )	-57.410	-0.067	6.400 ( 30 )	-57.410	6.400 ( 30 )	-15.713	6.400 ( 30 )	-65.663	6.400 ( 30 )	-1.004
6	6.800 ( 31 )	-67.389	-0.067	6.800 ( 30 )	-67.389	6.800 ( 30 )	-39.822	6.800 ( 30 )	-75.642	6.800 ( 30 )	-1.004
7	7.600 ( 31 )	-85.648	-0.067	7.600 ( 30 )	-85.648	7.600 ( 30 )	-97.525	7.600 ( 30 )	-93.901	7.600 ( 30 )	-1.004
JTAN	8.000 ( 31 )	-93.927	-0.067	8.000 ( 30 )	-93.927	8.000 ( 30 )	-130.664	8.000 ( 30 )	-102.181	8.000 ( 30 )	-1.004
= MEMBER 3 ( 3 - 4 ) G =											
ITAN	0.000 ( 31 )	109.921	-0.566	0.000 ( 30 )	109.921	0.000 ( 30 )	-108.701	0.000 ( 30 )	104.763	0.000 ( 30 )	-0.581
1	.400 ( 31 )	101.641	-0.566	.400 ( 30 )	101.641	.400 ( 30 )	-74.529	.400 ( 30 )	96.484	.400 ( 30 )	-0.581
2	1.200 ( 31 )	83.382	-0.566	1.200 ( 30 )	83.382	1.200 ( 30 )	-14.750	1.200 ( 30 )	78.225	1.200 ( 30 )	-0.581
3	1.600 ( 31 )	73.403	-0.566	1.600 ( 30 )	73.403	1.600 ( 30 )	10.382	1.600 ( 30 )	68.245	1.600 ( 30 )	-0.581
4	4.000 ( 31 )	2.623	-0.566	4.000 ( 30 )	2.623	4.000 ( 30 )	80.819	4.000 ( 30 )	-2.534	4.000 ( 30 )	-0.581
5	6.400 ( 31 )	-58.156	-0.566	6.400 ( 30 )	-58.156	6.400 ( 30 )	-1.792	6.400 ( 30 )	-73.314	6.400 ( 30 )	-0.581
6	6.800 ( 31 )	-78.136	-0.566	6.800 ( 30 )	-78.136	6.800 ( 30 )	-28.952	6.800 ( 30 )	-83.293	6.800 ( 30 )	-0.581
7	7.600 ( 31 )	-95.395	-0.566	7.600 ( 30 )	-95.395	7.600 ( 30 )	-92.775	7.600 ( 30 )	-101.952	7.600 ( 30 )	-0.581
JTAN	8.000 ( 31 )	-104.674	-0.566	8.000 ( 30 )	-104.674	8.000 ( 30 )	-128.975	8.000 ( 30 )	-109.832	8.000 ( 30 )	-0.581
= MEMBER 4 ( 4 - 5 ) G =											
ITAN	0.000 ( 31 )	95.956	-1.037	0.000 ( 30 )	95.956	0.000 ( 30 )	-104.246	0.000 ( 30 )	87.366	0.000 ( 30 )	-0.113
1	.400 ( 31 )	87.534	-1.037	.400 ( 30 )	87.534	.400 ( 30 )	-76.749	.400 ( 30 )	78.944	.400 ( 30 )	-0.113
2	1.200 ( 31 )	69.842	-1.037	1.200 ( 30 )	69.842	1.200 ( 30 )	-30.220	1.200 ( 30 )	61.251	1.200 ( 30 )	-0.113
3	1.600 ( 31 )	60.571	-1.037	1.600 ( 30 )	60.571	1.600 ( 30 )	-11.414	1.600 ( 30 )	51.981	1.600 ( 30 )	-0.113
4	3.300 ( 31 )	4.788	-1.037	3.300 ( 30 )	4.788	3.300 ( 30 )	33.202	3.300 ( 30 )	-3.802	3.300 ( 30 )	-0.113
5	6.000 ( 31 )	-50.994	-1.037	6.000 ( 30 )	-50.994	6.000 ( 30 )	-29.141	6.000 ( 30 )	-59.584	6.000 ( 30 )	-0.113
6	6.400 ( 31 )	-60.265	-1.037	6.400 ( 30 )	-60.265	6.400 ( 30 )	-49.989	6.400 ( 30 )	-68.855	6.400 ( 30 )	-0.113
7	7.200 ( 31 )	-77.957	-1.037	7.200 ( 30 )	-77.957	7.200 ( 30 )	-102.600	7.200 ( 30 )	-86.547	7.200 ( 30 )	-0.113
JTAN	7.600 ( 31 )	-86.379	-1.037	7.600 ( 30 )	-86.379	7.600 ( 30 )	-133.138	7.600 ( 30 )	-94.969	7.600 ( 30 )	-0.113



PICK UP 3

SHEAR MAXIMUM		SHEAR MINIMUM	
MEMBER	CASE	MEMBER	CASE
= MEMBER 5 ( 6 - 7 ) G = =			
ITAN	0.000 ( 31 )	0.000 ( 30 )	9.338
1	.400 ( 31 )	.400 ( 30 )	11.501
2	2.150 ( 31 )	2.150 ( 30 )	13.582
3	4.000 ( 31 )	4.000 ( 30 )	19.779
4	5.850 ( 31 )	5.850 ( 30 )	19.741
5	7.600 ( 31 )	7.600 ( 30 )	14.532
JTAN	8.000 ( 31 )	8.000 ( 30 )	-31.773
= MEMBER 5 ( 6 - 7 ) G = =			
= MEMBER 6 ( 7 - 8 ) G = =			
ITAN	0.000 ( 31 )	0.000 ( 30 )	-17.931
1	.400 ( 31 )	.400 ( 30 )	-11.959
2	2.150 ( 31 )	2.150 ( 30 )	5.799
3	4.000 ( 31 )	4.000 ( 30 )	9.753
4	5.850 ( 31 )	5.850 ( 30 )	-1.523
5	7.600 ( 31 )	7.600 ( 30 )	-26.207
JTAN	8.000 ( 31 )	8.000 ( 30 )	-33.753
= MEMBER 6 ( 7 - 8 ) G = =			
= MEMBER 7 ( 8 - 9 ) G = =			
ITAN	0.000 ( 31 )	0.000 ( 30 )	-12.972
1	.400 ( 31 )	.400 ( 30 )	-7.108
2	2.150 ( 31 )	2.150 ( 30 )	10.176
3	3.800 ( 31 )	3.800 ( 30 )	13.989
4	5.450 ( 31 )	5.450 ( 30 )	5.688
5	7.200 ( 31 )	7.200 ( 30 )	-16.356
JTAN	7.600 ( 31 )	7.600 ( 30 )	-23.308
= MEMBER 7 ( 8 - 9 ) G = =			
= MEMBER 8 ( 2 - 6 ) C = =			
ITAN	0.000 ( 30 )	0.000 ( 31 )	17.435
JTAN	9.587 ( 30 )	9.587 ( 31 )	-24.235
= MEMBER 8 ( 2 - 6 ) C = =			
= MEMBER 9 ( 3 - 7 ) C = =			
ITAN	0.000 ( 30 )	0.000 ( 31 )	24.943
JTAN	9.587 ( 30 )	9.587 ( 31 )	-20.873
= MEMBER 9 ( 3 - 7 ) C = =			
= MEMBER 10 ( 4 - 8 ) C = =			
ITAN	0.000 ( 30 )	0.000 ( 31 )	22.178
JTAN	9.587 ( 30 )	9.587 ( 31 )	-23.378
= MEMBER 10 ( 4 - 8 ) C = =			
= MEMBER 11 ( 5 - 9 ) C = =			
ITAN	0.000 ( 30 )	0.000 ( 31 )	20.447
JTAN	9.587 ( 30 )	9.587 ( 31 )	-10.640
= MEMBER 11 ( 5 - 9 ) C = =			

PICK UP 3

AXIAL MAXIMUM

AXIAL MINIMUM

MEMBER		CASE		MEMBER		CASE	
1	2	1	2	1	2	1	2
MEMBER 1							
ITAN	0.000	( 30 )	-29.640	0.000	( 31 )	-29.640	0.000
1	.150	( 30 )	-30.061	.000	( 31 )	-30.061	.000
2	.150	( 30 )	-50.182	.000	( 31 )	-50.182	.000
3	1.400	( 30 )	-55.076	.000	( 31 )	-55.076	.000
4	1.800	( 30 )	-57.136	.000	( 31 )	-57.136	.000
5	2.000	( 30 )	-58.087	.000	( 31 )	-58.087	.000
6	2.000	( 30 )	-87.727	.000	( 31 )	-87.727	.000
7	2.600	( 30 )	-90.156	.000	( 31 )	-90.156	.000
JTAN	3.000	( 30 )	-91.421	.000	( 31 )	-91.421	.000
MEMBER 2							
ITAN	0.000	( 31 )	120.667	-.067	( 30 )	112.414	-1.004
1	.400	( 31 )	112.388	-.067	( 30 )	104.135	-1.004
2	1.200	( 31 )	94.129	-.067	( 30 )	85.876	-1.004
3	1.600	( 31 )	84.150	-.067	( 30 )	75.895	-1.004
4	4.000	( 31 )	13.370	-.067	( 30 )	5.117	-1.004
5	6.400	( 31 )	-57.410	-.067	( 30 )	-65.663	-1.004
6	6.900	( 31 )	-23.202	-.067	( 30 )	-75.642	-1.004
7	7.600	( 31 )	-74.301	-.067	( 30 )	-93.901	-1.004
JTAN	8.000	( 31 )	-93.927	-.067	( 30 )	-102.281	-1.004
MEMBER 3							
ITAN	0.000	( 31 )	109.921	-.566	( 30 )	104.763	-.581
1	.400	( 31 )	101.641	-.566	( 30 )	96.484	-.581
2	1.200	( 31 )	83.382	-.566	( 30 )	78.225	-.581
3	1.500	( 31 )	73.403	-.566	( 30 )	68.245	-.581
4	4.000	( 31 )	2.623	-.566	( 30 )	-2.534	-.581
5	6.400	( 31 )	-58.156	-.566	( 30 )	-73.314	-.581
6	6.900	( 31 )	-14.263	-.566	( 30 )	-83.293	-.581
7	7.600	( 31 )	-95.395	-.566	( 30 )	-101.952	-.581
JTAN	8.000	( 31 )	-104.674	-.566	( 30 )	-109.832	-.581
MEMBER 4							
ITAN	0.000	( 30 )	37.366	-.113	( 31 )	95.956	-1.037
1	.400	( 30 )	78.344	-.113	( 31 )	87.534	-1.037
2	1.200	( 30 )	51.251	-.113	( 31 )	69.842	-1.037
3	1.500	( 30 )	51.981	-.113	( 31 )	60.571	-1.037
4	3.800	( 30 )	-3.402	-.113	( 31 )	4.788	-1.037
5	6.000	( 30 )	-59.594	-.113	( 31 )	-50.994	-1.037
6	6.400	( 30 )	-49.989	-.113	( 31 )	-60.255	-1.037
7	7.200	( 30 )	-86.547	-.113	( 31 )	-77.957	-1.037
JTAN	7.600	( 30 )	-94.969	-.113	( 31 )	-86.379	-1.037

PICK UP 3

AXIAL MAXIMUM

AXIAL MINIMUM

MEMBER	CASE	Q	M	N	L	S	6	7	G	M	M	N
ITAN	0.000 (30)	9.338	11.501	0.000	0.000	0.000	(30)	9.338	11.501	0.000	0.000	0.000
1	.400 (30)	13.582	9.721	0.000	.400	(30)	13.582	9.721	0.000	0.000	0.000	0.000
2	2.150 (30)	23.779	1.933	0.000	2.150	(30)	23.779	1.933	0.000	0.000	0.000	0.000
3	4.000 (30)	19.741	-6.299	0.000	4.000	(30)	19.741	-6.299	0.000	0.000	0.000	0.000
4	5.850 (30)	.472	-14.532	0.000	5.850	(30)	.472	-14.532	0.000	0.000	0.000	0.000
5	7.600 (30)	-31.773	-22.319	0.000	7.600	(30)	-31.773	-22.319	0.000	0.000	0.000	0.000
JTAN	8.000 (30)	-41.057	-24.099	0.000	8.000	(30)	-41.057	-24.099	0.000	0.000	0.000	0.000
= MEMBER 5 ( 6 - 7 ) G = =												
ITAN	0.000 (30)	-17.931	15.821	0.000	0.000	0.000	(30)	-17.931	15.821	0.000	0.000	0.000
1	.400 (30)	-11.959	14.041	0.000	.400	(30)	-11.959	14.041	0.000	0.000	0.000	0.000
2	2.150 (30)	5.799	6.254	0.000	2.150	(30)	5.799	6.254	0.000	0.000	0.000	0.000
3	4.000 (30)	9.753	-1.979	0.000	4.000	(30)	9.753	-1.979	0.000	0.000	0.000	0.000
4	5.850 (30)	-1.523	-10.211	0.000	5.850	(30)	-1.523	-10.211	0.000	0.000	0.000	0.000
5	7.600 (30)	-26.207	-17.999	0.000	7.600	(30)	-26.207	-17.999	0.000	0.000	0.000	0.000
JTAN	8.000 (30)	-33.763	-19.779	0.000	8.000	(30)	-33.763	-19.779	0.000	0.000	0.000	0.000
= MEMBER 5 ( 7 - 8 ) G = =												
ITAN	0.000 (30)	-12.972	15.550	0.000	0.000	0.000	(30)	-12.972	15.550	0.000	0.000	0.000
1	.400 (30)	-7.108	13.770	0.000	.400	(30)	-7.108	13.770	0.000	0.000	0.000	0.000
2	2.150 (30)	10.176	5.383	0.000	2.150	(30)	10.176	5.383	0.000	0.000	0.000	0.000
3	3.900 (30)	13.389	-1.360	0.000	3.900	(30)	13.389	-1.360	0.000	0.000	0.000	0.000
4	5.450 (30)	5.588	-8.702	0.000	5.450	(30)	5.588	-8.702	0.000	0.000	0.000	0.000
5	7.200 (30)	-16.356	-16.490	0.000	7.200	(30)	-16.356	-16.490	0.000	0.000	0.000	0.000
JTAN	7.600 (30)	-23.308	-18.270	0.000	7.600	(30)	-23.308	-18.270	0.000	0.000	0.000	0.000
= MEMBER 5 ( 8 - 9 ) G = =												
ITAN	0.000 (30)	-22.066	3.276	-229.634	0.000	0.000	(30)	-22.066	3.276	-229.634	0.000	0.000
JTAN	9.587 (30)	9.338	3.276	-244.973	9.587	(30)	9.338	3.276	-244.973	9.587	(30)	-24.235
= MEMBER 8 ( 2 - 6 ) C = =												
ITAN	0.000 (31)	24.943	-4.779	-219.696	0.000	0.000	(30)	24.943	-4.779	-219.696	0.000	0.000
JTAN	9.587 (31)	-20.873	-4.779	-235.035	9.587	(30)	-20.873	-4.779	-235.035	9.587	(30)	23.126
= MEMBER 9 ( 3 - 7 ) C = =												
ITAN	0.000 (30)	-24.729	4.748	-206.087	0.000	0.000	(30)	-24.729	4.748	-206.087	0.000	0.000
JTAN	9.587 (30)	20.791	4.748	-221.426	9.587	(30)	20.791	4.748	-221.426	9.587	(30)	-23.378
= MEMBER 10 ( 4 - 8 ) C = =												
ITAN	0.000 (31)	20.447	-3.243	-241.770	0.000	0.000	(30)	20.447	-3.243	-241.770	0.000	0.000
JTAN	9.587 (31)	-10.640	-3.243	-257.105	9.587	(30)	-10.640	-3.243	-257.105	9.587	(30)	23.306
= MEMBER 11 ( 5 - 9 ) C = =												

PICK UP 4

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		CASE 1 ( 1 - 2 ) G				CASE 2 ( 2 - 3 ) G				CASE 3 ( 3 - 4 ) G			
MEMBER	1 ( 1 - 2 ) G	MEMBER	2 ( 2 - 3 ) G	MEMBER	3 ( 3 - 4 ) G	MEMBER	1 ( 1 - 2 ) G	MEMBER	2 ( 2 - 3 ) G	MEMBER	3 ( 3 - 4 ) G	MEMBER	4 ( 4 - 5 ) G
ITAN	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )
1	-.032	-.421	-.032	-.421	-.032	-.421	-.032	-.421	-.032	-.421	-.032	-.421	-.032
2	-.032	-20.542	-.032	-20.542	-.032	-20.542	-.032	-20.542	-.032	-20.542	-.032	-20.542	-.032
3	-28.479	-25.436	-28.479	-25.436	-28.479	-25.436	-28.479	-25.436	-28.479	-25.436	-28.479	-25.436	-28.479
4	-39.067	-27.496	-39.067	-27.496	-39.067	-27.496	-39.067	-27.496	-39.067	-27.496	-39.067	-27.496	-39.067
5	-44.663	-28.447	-44.663	-28.447	-44.663	-28.447	-44.663	-28.447	-44.663	-28.447	-44.663	-28.447	-44.663
6	-62.491	-30.876	-62.491	-30.876	-62.491	-30.876	-62.491	-30.876	-62.491	-30.876	-62.491	-30.876	-62.491
7	-75.104	-32.141	-75.104	-32.141	-75.104	-32.141	-75.104	-32.141	-75.104	-32.141	-75.104	-32.141	-75.104
JIAN	3.000 ( 32 )	3.000 ( 33 )	3.000 ( 32 )	3.000 ( 33 )	3.000 ( 32 )	3.000 ( 33 )	3.000 ( 32 )	3.000 ( 33 )	3.000 ( 32 )	3.000 ( 33 )	3.000 ( 32 )	3.000 ( 33 )	3.000 ( 32 )
ITAN	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )
1	-.64.635	38.963	1.311	1.311	-.64.635	38.963	1.311	1.311	-.64.635	38.963	1.311	1.311	-.64.635
2	-49.353	37.456	1.311	1.311	-49.353	37.456	1.311	1.311	-49.353	37.456	1.311	1.311	-49.353
3	-21.043	32.941	1.311	1.311	-21.043	32.941	1.311	1.311	-21.043	32.941	1.311	1.311	-21.043
4	-8.569	29.834	1.311	1.311	-8.569	29.834	1.311	1.311	-8.569	29.834	1.311	1.311	-8.569
5	30.810	.287	1.311	1.311	30.810	.287	1.311	1.311	30.810	.287	1.311	1.311	30.810
6	-4.263	-25.952	1.311	1.311	-4.263	-25.952	1.311	1.311	-4.263	-25.952	1.311	1.311	-4.263
7	-15.234	-29.059	1.311	1.311	-15.234	-29.059	1.311	1.311	-15.234	-29.059	1.311	1.311	-15.234
JIAN	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )
ITAN	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )
1	30.810	.287	1.311	1.311	30.810	.287	1.311	1.311	30.810	.287	1.311	1.311	30.810
2	42.353	1.043	1.311	1.311	42.353	1.043	1.311	1.311	42.353	1.043	1.311	1.311	42.353
3	42.353	1.043	1.311	1.311	42.353	1.043	1.311	1.311	42.353	1.043	1.311	1.311	42.353
4	42.353	1.043	1.311	1.311	42.353	1.043	1.311	1.311	42.353	1.043	1.311	1.311	42.353
5	42.353	1.043	1.311	1.311	42.353	1.043	1.311	1.311	42.353	1.043	1.311	1.311	42.353
6	42.353	1.043	1.311	1.311	42.353	1.043	1.311	1.311	42.353	1.043	1.311	1.311	42.353
7	42.353	1.043	1.311	1.311	42.353	1.043	1.311	1.311	42.353	1.043	1.311	1.311	42.353
JIAN	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )
ITAN	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )
1	-56.090	39.578	-2.392	-2.392	-56.090	39.578	-2.392	-2.392	-56.090	39.578	-2.392	-2.392	-56.090
2	-40.521	36.171	-2.392	-2.392	-40.521	36.171	-2.392	-2.392	-40.521	36.171	-2.392	-2.392	-40.521
3	-11.617	33.698	2.778	2.778	-11.617	33.698	2.778	2.778	-11.617	33.698	2.778	2.778	-11.617
4	1.259	30.590	2.778	2.778	1.259	30.590	2.778	2.778	1.259	30.590	2.778	2.778	1.259
5	42.353	1.043	2.778	2.778	42.353	1.043	2.778	2.778	42.353	1.043	2.778	2.778	42.353
6	6.267	-28.504	2.778	2.778	6.267	-28.504	2.778	2.778	6.267	-28.504	2.778	2.778	6.267
7	-5.774	-31.611	2.778	2.778	-5.774	-31.611	2.778	2.778	-5.774	-31.611	2.778	2.778	-5.774
JIAN	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )
ITAN	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )
1	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
2	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
3	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
4	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
5	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
6	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
7	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
JIAN	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )
ITAN	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 33 )	0.000 ( 32 )
1	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
2	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
3	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
4	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
5	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
6	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
7	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353	1.002	42.353
JIAN	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 33 )	8.000 ( 32 )

PICK UP 4

MOMENT MAXIMUM

MOMENT MINIMUM

= MEMBER 4 ( 4 - 5 ) G =		-CASE- ( 4 - 5 ) G =		-CASE- ( 4 - 5 ) G =		-CASE- ( 4 - 5 ) G =	
ITAN	0.000 ( 32 )	23.759	-1.754	0.000 ( 33 )	-51.879	27.174	1.680
1	-34.598 ( 32 )	22.209	-1.754	.400 ( 33 )	-41.310	25.625	1.680
2	-18.334 ( 32 )	18.261	-1.754	1.200 ( 33 )	-22.314	21.676	1.680
3	-11.500 ( 32 )	15.862	-1.754	1.600 ( 33 )	-14.114	19.278	1.680
4	9.837 ( 33 )	1.292	1.680	3.800 ( 32 )	4.938	-2.123	-1.754
5	8.429 ( 33 )	-16.694	1.680	6.000 ( 32 )	-20.842	-20.109	-1.754
6	-15.596 ( 33 )	-19.092	1.680	6.400 ( 32 )	-29.375	-22.508	-1.754
7	-32.525 ( 33 )	-23.041	1.680	7.200 ( 32 )	-49.035	-26.456	-1.754
JTAN	-42.060 ( 33 )	-24.590	1.680	7.600 ( 32 )	-59.937	-28.005	-1.754
MAX	9.837 ( 33 )	1.292	1.680	3.378 ( 32 )	5.008	1.791	-1.754
= MEMBER 5 ( 6 - 7 ) G =							
ITAN	0.000 ( 33 )	13.314	0.000	0.000 ( 32 )	-13.030	16.187	0.000
1	7.071 ( 33 )	11.534	0.000	.400 ( 32 )	-6.911	14.407	0.000
2	20.441 ( 33 )	3.746	0.000	2.150 ( 32 )	11.488	6.620	0.000
3	19.757 ( 33 )	-4.486	0.000	4.000 ( 32 )	16.120	-1.613	0.000
4	5.522 ( 32 )	-9.845	0.000	5.850 ( 33 )	3.842	-12.719	0.000
5	-18.521 ( 32 )	-17.633	0.000	7.600 ( 33 )	-25.230	-20.506	0.000
JTAN	-25.930 ( 32 )	-19.413	0.000	8.000 ( 33 )	-33.788	-22.286	0.000
MAX	21.783 ( 33 )	1.447	0.000	3.556 ( 32 )	16.397	.365	0.000
= MEMBER 6 ( 7 - 8 ) G =							
ITAN	0.000 ( 33 )	17.915	0.000	0.000 ( 32 )	-26.080	17.891	0.000
1	-19.139 ( 33 )	16.135	0.000	.400 ( 32 )	-19.280	16.111	0.000
2	2.294 ( 33 )	8.348	0.000	2.150 ( 32 )	2.101	8.324	0.000
3	10.112 ( 33 )	.115	0.000	4.000 ( 32 )	9.885	.091	0.000
4	2.710 ( 33 )	-8.117	0.000	5.850 ( 32 )	2.439	-8.141	0.000
5	-18.309 ( 33 )	-15.905	0.000	7.600 ( 32 )	-18.622	-15.929	0.000
JTAN	-25.027 ( 33 )	-17.085	0.000	8.000 ( 32 )	-25.350	-17.709	0.000
MAX	10.112 ( 33 )	.115	0.000	4.000 ( 32 )	9.685	.091	0.000
= MEMBER 7 ( 8 - 9 ) G =							
ITAN	0.000 ( 32 )	18.509	0.000	0.000 ( 33 )	-31.444	21.532	0.000
1	-16.465 ( 32 )	16.729	0.000	.400 ( 33 )	-23.187	19.752	0.000
2	5.997 ( 32 )	8.942	0.000	2.150 ( 33 )	4.565	11.965	0.000
3	18.250 ( 33 )	4.622	0.000	3.800 ( 32 )	14.693	1.599	0.000
4	19.820 ( 33 )	-2.720	0.000	5.450 ( 32 )	11.275	-5.743	0.000
5	8.245 ( 33 )	-10.508	0.000	7.200 ( 32 )	-5.590	-13.531	0.000
JTAN	3.686 ( 33 )	-12.288	0.000	7.600 ( 32 )	-11.358	-15.311	0.000
MAX	20.535 ( 33 )	-1.014	0.000	4.222 ( 32 )	14.972	-.280	0.000



PICK-UP

		SHEAR MAXIMUM						SHEAR MINIMUM						
		-CASE- 1 ( 1 - 2 ) G =			-CASE- 2 ( 2 - 3 ) G =			-CASE- 3 ( 3 - 4 ) G =			-CASE- 4 ( 4 - 5 ) G =			
		MEMBER			MEMBER			MEMBER			MEMBER			
ITAN	1	0.000	( 32 )	-0.000	0.000	( 33 )	-0.000	0.000	( 32 )	-0.000	0.000	( 33 )	-0.000	0.000
	2	0.150	( 32 )	-0.032	-0.421	( 33 )	-0.000	0.150	( 32 )	-0.032	-0.421	( 33 )	-0.000	0.150
	3	1.400	( 32 )	-28.479	-20.542	( 33 )	-0.000	1.400	( 32 )	-28.479	-20.542	( 33 )	-0.000	1.400
	4	1.800	( 32 )	-39.067	-25.436	( 33 )	-0.000	1.800	( 32 )	-39.067	-25.436	( 33 )	-0.000	1.800
	5	2.000	( 32 )	-44.663	-27.496	( 33 )	-0.000	2.000	( 32 )	-44.663	-27.496	( 33 )	-0.000	2.000
	6	2.000	( 32 )	-44.663	-28.447	( 33 )	-0.000	2.000	( 32 )	-44.663	-28.447	( 33 )	-0.000	2.000
	7	2.600	( 32 )	-52.491	-30.876	( 33 )	-0.000	2.600	( 32 )	-52.491	-30.876	( 33 )	-0.000	2.600
JTAN		3.000	( 32 )	-75.104	-32.141	( 33 )	-0.000	3.000	( 32 )	-75.104	-32.141	( 33 )	-0.000	3.000
ITAN	1	0.000	( 32 )	-82.980	42.172	( 33 )	-2.181	0.000	( 33 )	-64.635	38.863	( 33 )	1.311	
	2	0.400	( 32 )	-56.374	40.764	( 33 )	-2.181	0.400	( 33 )	-49.353	37.456	( 33 )	1.311	
	3	1.200	( 32 )	-35.418	36.250	( 33 )	-2.181	1.200	( 33 )	-21.043	32.941	( 33 )	1.311	
	4	1.500	( 32 )	-21.521	33.142	( 33 )	-2.181	1.500	( 33 )	-8.469	29.834	( 33 )	1.311	
	5	6.400	( 32 )	25.698	3.595	( 33 )	-2.181	6.400	( 33 )	30.810	0.287	( 33 )	1.311	
	6	6.400	( 32 )	4.253	-25.952	( 33 )	-2.181	6.400	( 33 )	-7.092	-29.260	( 33 )	1.311	
	7	7.600	( 32 )	-15.284	-29.059	( 33 )	-2.181	7.600	( 33 )	-19.436	-32.367	( 33 )	1.311	
JTAN		8.000	( 32 )	-40.488	-33.574	( 33 )	-2.181	8.000	( 33 )	-47.287	-36.882	( 33 )	1.311	
				-54.218	-34.981					-62.340	-38.289			
ITAN	1	0.000	( 33 )	-56.118	39.620	( 32 )	2.778	0.000	( 32 )	-56.090	39.578	( 32 )	-2.392	
	2	1.200	( 33 )	-40.532	39.212	( 32 )	2.778	0.400	( 32 )	-40.521	38.171	( 32 )	-2.392	
	3	1.500	( 33 )	-11.617	33.698	( 32 )	2.778	1.200	( 32 )	-11.640	33.656	( 32 )	-2.392	
	4	4.000	( 33 )	42.353	30.590	( 32 )	2.778	1.600	( 32 )	1.220	30.549	( 32 )	-2.392	
	5	6.400	( 33 )	6.257	1.043	( 32 )	2.778	4.000	( 32 )	42.214	1.002	( 32 )	-2.392	
	6	6.800	( 33 )	-5.774	-28.504	( 32 )	2.778	6.400	( 32 )	6.028	-28.545	( 32 )	-2.392	
	7	7.600	( 33 )	-33.020	-31.611	( 32 )	2.778	6.800	( 32 )	-6.030	-31.653	( 32 )	-2.392	
JTAN		8.000	( 33 )	-47.771	-37.533	( 32 )	2.778	7.600	( 32 )	-33.309	-36.167	( 32 )	-2.392	
								8.000	( 32 )	-48.077	-37.575	( 32 )	-2.392	
ITAN	1	0.000	( 33 )	-51.879	27.174	( 32 )	1.680	0.000	( 32 )	-43.801	23.759	( 32 )	-1.754	
	2	1.200	( 33 )	-41.310	25.625	( 32 )	1.680	0.400	( 32 )	-34.598	22.209	( 32 )	-1.754	
	3	1.600	( 33 )	-22.314	21.876	( 32 )	1.680	1.200	( 32 )	-18.334	18.261	( 32 )	-1.754	
	4	3.800	( 33 )	9.337	19.278	( 32 )	1.680	1.600	( 32 )	-11.500	15.862	( 32 )	-1.754	
	5	6.000	( 33 )	-8.429	1.292	( 32 )	1.680	3.800	( 32 )	4.938	-2.123	( 32 )	-1.754	
	6	6.400	( 33 )	-15.596	-16.694	( 32 )	1.680	6.000	( 32 )	-20.842	-20.109	( 32 )	-1.754	
	7	7.200	( 33 )	-32.525	-19.392	( 32 )	1.680	6.400	( 32 )	-29.375	-22.508	( 32 )	-1.754	
JTAN		7.600	( 33 )	-42.060	-23.041	( 32 )	1.680	7.200	( 32 )	-49.035	-26.456	( 32 )	-1.754	
								7.600	( 32 )	-59.937	-28.035	( 32 )	-1.754	

PICK UP

SHEAR: MAXIMUM

SHEAR: MINIMUM

MEMBER		CASE		MEMBER		CASE	
5	6	7	8	5	6	7	8
ITAN	0.000	( 32 )	15.187	0.000	0.000	ITAN	0.000
1	.400	( 32 )	14.407	0.000	0.000	1	2.102
2	2.150	( 32 )	6.620	0.000	0.000	2	7.071
3	4.000	( 32 )	-1.613	0.000	0.000	3	20.441
4	5.950	( 32 )	-9.845	0.000	0.000	4	19.757
5	7.500	( 32 )	-17.633	0.000	0.000	5	3.842
JTAN	8.000	( 32 )	-19.413	0.000	0.000	JTAN	-25.230
= MEMBER 5 ( 6 - 7 ) G =						= MEMBER 5 ( 6 - 7 ) G =	
ITAN	0.000	( 33 )	17.915	0.000	0.000	ITAN	0.000
1	.400	( 33 )	16.135	0.000	0.000	1	.400
2	2.150	( 33 )	8.348	0.000	0.000	2	2.150
3	4.000	( 33 )	.115	0.000	0.000	3	4.000
4	5.950	( 33 )	-8.117	0.000	0.000	4	5.950
5	7.500	( 33 )	-15.309	0.000	0.000	5	7.500
JTAN	8.000	( 33 )	-17.685	0.000	0.000	JTAN	8.000
= MEMBER 5 ( 7 - 8 ) G =						= MEMBER 5 ( 7 - 8 ) G =	
ITAN	0.000	( 32 )	21.532	0.000	0.000	ITAN	0.000
1	.400	( 32 )	19.752	0.000	0.000	1	.400
2	2.150	( 32 )	11.965	0.000	0.000	2	2.150
3	3.800	( 32 )	4.622	0.000	0.000	3	3.800
4	5.450	( 32 )	-2.720	0.000	0.000	4	5.450
5	7.200	( 32 )	-10.508	0.000	0.000	5	7.200
JTAN	7.600	( 32 )	-12.288	0.000	0.000	JTAN	7.600
= MEMBER 7 ( 8 - 9 ) G =						= MEMBER 7 ( 8 - 9 ) G =	
ITAN	0.000	( 33 )	1.311	0.000	0.000	ITAN	0.000
1	.400	( 33 )	1.311	0.000	0.000	1	.400
2	2.150	( 33 )	-10.469	0.000	0.000	2	2.150
3	3.800	( 33 )	2.102	0.000	0.000	3	3.800
4	5.450	( 33 )	-125.939	0.000	0.000	4	5.450
5	7.200	( 33 )	-141.178	0.000	0.000	5	7.200
JTAN	7.600	( 33 )	-112.844	0.000	0.000	JTAN	7.600
= MEMBER 8 ( 2 - 6 ) C =						= MEMBER 8 ( 2 - 6 ) C =	
ITAN	0.000	( 33 )	1.467	0.000	0.000	ITAN	0.000
1	.400	( 33 )	1.467	0.000	0.000	1	.400
2	2.150	( 33 )	-4.276	0.000	0.000	2	2.150
3	3.800	( 33 )	1.837	0.000	0.000	3	3.800
4	5.450	( 33 )	-101.504	0.000	0.000	4	5.450
5	7.200	( 33 )	-116.843	0.000	0.000	5	7.200
JTAN	7.600	( 33 )	-119.885	0.000	0.000	JTAN	7.600
= MEMBER 9 ( 3 - 7 ) C =						= MEMBER 9 ( 3 - 7 ) C =	
ITAN	0.000	( 32 )	1.754	0.000	0.000	ITAN	0.000
1	.400	( 32 )	1.754	0.000	0.000	1	.400
2	2.150	( 32 )	-5.457	0.000	0.000	2	2.150
3	3.800	( 32 )	11.358	0.000	0.000	3	3.800
4	5.450	( 32 )	-116.225	0.000	0.000	4	5.450
5	7.200	( 32 )	-119.885	0.000	0.000	5	7.200
JTAN	7.600	( 32 )	-115.885	0.000	0.000	JTAN	7.600
= MEMBER 10 ( 4 - 8 ) C =						= MEMBER 10 ( 4 - 8 ) C =	
ITAN	0.000	( 32 )	1.754	0.000	0.000	ITAN	0.000
1	.400	( 32 )	1.754	0.000	0.000	1	.400
2	2.150	( 32 )	-5.457	0.000	0.000	2	2.150
3	3.800	( 32 )	11.358	0.000	0.000	3	3.800
4	5.450	( 32 )	-116.225	0.000	0.000	4	5.450
5	7.200	( 32 )	-119.885	0.000	0.000	5	7.200
JTAN	7.600	( 32 )	-115.885	0.000	0.000	JTAN	7.600
= MEMBER 11 ( 5 - 9 ) C =						= MEMBER 11 ( 5 - 9 ) C =	



PICK UP 4

AXIAL MAXIMUM

AXIAL MINIMUM

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =	
ITAN	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 32 )
1	.150 ( 33 )	.150 ( 32 )	.150 ( 32 )
2	.150 ( 33 )	.150 ( 32 )	.150 ( 32 )
3	1.400 ( 33 )	1.400 ( 32 )	1.400 ( 32 )
4	1.800 ( 33 )	1.800 ( 32 )	1.800 ( 32 )
5	2.000 ( 33 )	2.000 ( 32 )	2.000 ( 32 )
6	2.000 ( 33 )	2.000 ( 32 )	2.000 ( 32 )
7	2.600 ( 33 )	2.600 ( 32 )	2.600 ( 32 )
JTAN	3.000 ( 33 )	3.000 ( 32 )	3.000 ( 32 )

MEMBER 3 ( 3 - 4 ) G =		MEMBER 4 ( 4 - 5 ) G =	
ITAN	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 32 )
1	.400 ( 33 )	.400 ( 32 )	.400 ( 32 )
2	1.200 ( 33 )	1.200 ( 32 )	1.200 ( 32 )
3	1.600 ( 33 )	1.600 ( 32 )	1.600 ( 32 )
4	4.000 ( 33 )	4.000 ( 32 )	4.000 ( 32 )
5	6.400 ( 33 )	6.400 ( 32 )	6.400 ( 32 )
6	6.800 ( 33 )	6.800 ( 32 )	6.800 ( 32 )
7	7.600 ( 33 )	7.600 ( 32 )	7.600 ( 32 )
JTAN	8.000 ( 33 )	8.000 ( 32 )	8.000 ( 32 )

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =	
ITAN	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 32 )
1	.000	.000	.000
2	-.421	-.421	-.421
3	-20.542	-20.542	-20.542
4	-25.436	-25.436	-25.436
5	-27.496	-27.496	-27.496
6	-28.447	-28.447	-28.447
7	-30.876	-30.876	-30.876
JTAN	-32.141	-32.141	-32.141

MEMBER 3 ( 3 - 4 ) G =		MEMBER 4 ( 4 - 5 ) G =	
ITAN	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 32 )
1	.000	.000	.000
2	38.863	38.863	38.863
3	37.456	37.456	37.456
4	32.941	32.941	32.941
5	29.834	29.834	29.834
6	.287	.287	.287
7	-29.260	-29.260	-29.260
JTAN	-32.367	-32.367	-32.367

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =	
ITAN	0.000 ( 33 )	0.000 ( 32 )	0.000 ( 32 )
1	.000	.000	.000
2	-56.118	-56.118	-56.118
3	-40.532	-40.532	-40.532
4	-11.617	-11.617	-11.617
5	1.259	1.259	1.259
6	4.2353	4.2353	4.2353
7	6.267	6.267	6.267
JTAN	-5.774	-5.774	-5.774

PICK UP 4

AXIAL MAXIMUM

AXIAL MINIMUM

MEMBER		5 ( 6 - 7 ) G	6 ( 7 - 8 ) G	7 ( 8 - 9 ) G	8 ( 2 - 6 ) C	9 ( 3 - 7 ) C	10 ( 4 - 8 ) C	11 ( 5 - 9 ) C	
ITAN	0.000	( 32 )	-13.030	( 32 )	-13.030	( 32 )	16.187	( 32 )	0.000
1	.400	( 32 )	-6.911	( 32 )	-6.911	( 32 )	14.407	( 32 )	0.000
2	2.150	( 32 )	11.488	( 32 )	11.488	( 32 )	6.620	( 32 )	0.000
3	4.000	( 32 )	16.120	( 32 )	16.120	( 32 )	-1.613	( 32 )	0.000
4	5.850	( 32 )	5.522	( 32 )	5.522	( 32 )	-9.845	( 32 )	0.000
5	7.600	( 32 )	-18.521	( 32 )	-18.521	( 32 )	-17.633	( 32 )	0.000
JTAN	8.000	( 32 )	-25.930	( 32 )	-25.930	( 32 )	-19.413	( 32 )	0.000
ITAN	0.000	( 32 )	-26.080	( 32 )	-26.080	( 32 )	17.891	( 32 )	0.000
1	.400	( 32 )	-19.280	( 32 )	-19.280	( 32 )	16.111	( 32 )	0.000
2	2.150	( 32 )	2.101	( 32 )	2.101	( 32 )	8.324	( 32 )	0.000
3	4.000	( 32 )	9.885	( 32 )	9.885	( 32 )	.091	( 32 )	0.000
4	5.850	( 32 )	2.439	( 32 )	2.439	( 32 )	-8.141	( 32 )	0.000
5	7.600	( 32 )	-18.622	( 32 )	-18.622	( 32 )	-15.929	( 32 )	0.000
JTAN	8.000	( 32 )	-25.350	( 32 )	-25.350	( 32 )	-17.709	( 32 )	0.000
ITAN	0.000	( 32 )	-23.513	( 32 )	-23.513	( 32 )	18.509	( 32 )	0.000
1	.400	( 32 )	-16.465	( 32 )	-16.465	( 32 )	16.729	( 32 )	0.000
2	2.150	( 32 )	5.997	( 32 )	5.997	( 32 )	8.942	( 32 )	0.000
3	3.800	( 32 )	14.693	( 32 )	14.693	( 32 )	1.599	( 32 )	0.000
4	5.450	( 32 )	11.275	( 32 )	11.275	( 32 )	-5.743	( 32 )	0.000
5	7.200	( 32 )	-5.590	( 32 )	-5.590	( 32 )	-13.531	( 32 )	0.000
JTAN	7.500	( 32 )	-11.358	( 32 )	-11.358	( 32 )	-15.311	( 32 )	0.000
ITAN	0.000	( 33 )	-10.469	( 33 )	-10.469	( 33 )	1.311	( 33 )	-112.844
JTAN	9.587	( 33 )	2.102	( 33 )	2.102	( 33 )	1.311	( 33 )	-128.183
ITAN	0.000	( 32 )	1.872	( 32 )	1.872	( 32 )	-2.11	( 32 )	-122.489
JTAN	9.587	( 32 )	-0.151	( 32 )	-0.151	( 32 )	-2.11	( 32 )	-137.828
ITAN	0.000	( 32 )	-4.276	( 32 )	-4.276	( 32 )	.638	( 32 )	-101.504
JTAN	9.587	( 32 )	1.837	( 32 )	1.837	( 32 )	.638	( 32 )	-116.843
ITAN	0.000	( 33 )	12.420	( 33 )	12.420	( 33 )	-1.680	( 33 )	-116.470
JTAN	9.587	( 33 )	-3.626	( 33 )	-3.626	( 33 )	-1.680	( 33 )	-131.809

TITLE: VIADUCT OF DOUBLE TRACK (3\*3\*8=27) L-1

PICK UP 5

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =	
ITAN	Q	ITAN	Q	ITAN	Q
1	0.000 ( 34 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )
2	0.150 ( 34 )	0.150 ( 35 )	0.150 ( 35 )	0.150 ( 35 )	0.150 ( 35 )
3	1.400 ( 34 )	1.400 ( 35 )	1.400 ( 34 )	1.400 ( 34 )	1.400 ( 34 )
4	1.800 ( 35 )	1.800 ( 34 )	1.800 ( 34 )	1.800 ( 34 )	1.800 ( 34 )
5	2.000 ( 35 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )
6	2.000 ( 35 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )
7	2.600 ( 35 )	2.600 ( 34 )	2.600 ( 34 )	2.600 ( 34 )	2.600 ( 34 )
JTAN	3.000 ( 35 )	3.000 ( 34 )	3.000 ( 34 )	3.000 ( 34 )	3.000 ( 34 )

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =	
ITAN	Q	ITAN	Q	ITAN	Q
1	0.000 ( 34 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )
2	0.150 ( 34 )	0.150 ( 35 )	0.150 ( 35 )	0.150 ( 35 )	0.150 ( 35 )
3	1.400 ( 34 )	1.400 ( 35 )	1.400 ( 35 )	1.400 ( 35 )	1.400 ( 35 )
4	1.800 ( 35 )	1.800 ( 34 )	1.800 ( 34 )	1.800 ( 34 )	1.800 ( 34 )
5	2.000 ( 35 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )
6	2.000 ( 35 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )
7	2.600 ( 35 )	2.600 ( 34 )	2.600 ( 34 )	2.600 ( 34 )	2.600 ( 34 )
JTAN	3.000 ( 35 )	3.000 ( 34 )	3.000 ( 34 )	3.000 ( 34 )	3.000 ( 34 )

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =	
ITAN	Q	ITAN	Q	ITAN	Q
1	0.000 ( 34 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )
2	0.150 ( 34 )	0.150 ( 35 )	0.150 ( 35 )	0.150 ( 35 )	0.150 ( 35 )
3	1.400 ( 34 )	1.400 ( 35 )	1.400 ( 35 )	1.400 ( 35 )	1.400 ( 35 )
4	1.800 ( 35 )	1.800 ( 34 )	1.800 ( 34 )	1.800 ( 34 )	1.800 ( 34 )
5	2.000 ( 35 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )
6	2.000 ( 35 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )
7	2.600 ( 35 )	2.600 ( 34 )	2.600 ( 34 )	2.600 ( 34 )	2.600 ( 34 )
JTAN	3.000 ( 35 )	3.000 ( 34 )	3.000 ( 34 )	3.000 ( 34 )	3.000 ( 34 )

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =	
ITAN	Q	ITAN	Q	ITAN	Q
1	0.000 ( 34 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )
2	0.150 ( 34 )	0.150 ( 35 )	0.150 ( 35 )	0.150 ( 35 )	0.150 ( 35 )
3	1.400 ( 34 )	1.400 ( 35 )	1.400 ( 35 )	1.400 ( 35 )	1.400 ( 35 )
4	1.800 ( 35 )	1.800 ( 34 )	1.800 ( 34 )	1.800 ( 34 )	1.800 ( 34 )
5	2.000 ( 35 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )
6	2.000 ( 35 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )	2.000 ( 34 )
7	2.600 ( 35 )	2.600 ( 34 )	2.600 ( 34 )	2.600 ( 34 )	2.600 ( 34 )
JTAN	3.000 ( 35 )	3.000 ( 34 )	3.000 ( 34 )	3.000 ( 34 )	3.000 ( 34 )

PICK UP 5

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		4 ( 4 - 5 ) G	5 ( 6 - 7 ) G	6 ( 7 - 8 ) G	7 ( 8 - 9 ) G	8 ( 9 - 10 ) G	9 ( 10 - 11 ) G
MOMENT MAXIMUM							
ITAN	0.000	( 34 )	-12.112	13.515	0.000	( 35 )	-20.106
1	.400	( 34 )	-7.006	11.966	.400	( 35 )	-55.025
2	1.200	( 34 )	1.063	8.018	1.200	( 35 )	-40.005
3	1.600	( 34 )	3.800	5.619	1.600	( 35 )	-28.293
4	3.800	( 35 )	14.974	10.072	3.800	( 34 )	-2.299
5	6.000	( 35 )	16.024	-7.914	6.000	( 34 )	-50.614
6	6.400	( 35 )	12.359	-10.313	6.400	( 34 )	-53.244
7	7.200	( 35 )	2.454	-14.261	7.200	( 34 )	-91.100
JTAN	7.600	( 35 )	-3.560	-15.810	7.600	( 34 )	-106.099
MAX	5.067	( 35 )	20.404	-1.216	3.378	( 34 )	2.097
MOMENT MINIMUM							
ITAN	0.000	( 34 )	35.143	5.653	0.000	( 35 )	-52.556
1	.400	( 34 )	37.048	3.873	0.000	( 35 )	-42.880
2	2.150	( 34 )	37.012	-3.914	2.150	( 35 )	-8.320
3	4.000	( 34 )	22.156	-12.147	4.000	( 35 )	12.162
4	5.850	( 35 )	18.015	-9.953	5.850	( 34 )	-7.930
5	7.600	( 35 )	9.533	-8.740	7.600	( 34 )	-50.408
JTAN	8.000	( 35 )	5.681	-10.520	8.000	( 34 )	-62.031
MAX	.889	( 34 )	38.410	1.698	4.444	( 35 )	14.958
MOMENT MAXIMUM							
ITAN	0.000	( 34 )	-2.433	12.027	0.000	( 35 )	-49.653
1	.400	( 34 )	2.022	10.247	.400	( 35 )	-40.501
2	2.150	( 34 )	13.140	2.450	2.150	( 35 )	-8.834
3	4.000	( 34 )	10.076	-5.773	4.000	( 35 )	9.824
4	5.850	( 35 )	13.251	-2.263	5.850	( 34 )	-8.219
5	7.600	( 35 )	2.476	-10.051	7.600	( 34 )	-39.542
JTAN	8.000	( 35 )	-1.900	-11.831	8.000	( 34 )	-46.615
MAX	5.333	( 35 )	13.827	.036	4.000	( 35 )	9.824
MOMENT MINIMUM							
ITAN	0.000	( 34 )	8.551	9.022	0.000	( 35 )	-50.139
1	.400	( 34 )	11.804	7.242	.400	( 35 )	-48.575
2	2.150	( 34 )	17.563	-5.546	2.150	( 35 )	-6.487
3	3.800	( 35 )	20.714	12.814	3.800	( 34 )	10.795
4	5.450	( 35 )	35.800	5.472	5.450	( 34 )	-8.367
5	7.200	( 35 )	38.561	-2.316	7.200	( 34 )	-41.835
JTAN	7.500	( 35 )	37.279	-4.096	7.500	( 34 )	-51.398
MAX	6.756	( 35 )	39.151	-.338	3.378	( 34 )	13.639

PICK UP 5

MOMENT MAXIMUM

MOMENT MINIMUM

		-CASE- 8 ( 2 - 6 ) C = =		-CASE- 9 ( 3 - 7 ) C = =		-CASE- 10 ( 4 - 8 ) C = =		-CASE- 11 ( 5 - 9 ) C = =	
		M		M		M		M	
		Q		Q		Q		Q	
		N		N		N		N	
= = MEMBER		0.000	54.227	-11.138	-125.987	0.000	59.385	-12.266	-106.951
ITAN	( 35 )	9.587	35.143	8.772	-119.767	9.587	57.156	12.549	-113.323
JTAN	( 34 )								
= = MEMBER		0.000	60.823	-12.116	-119.403	0.000	50.920	-9.200	-107.690
ITAN	( 35 )	9.587	59.597	12.653	-142.829	9.587	51.398	10.746	-145.468
JTAN	( 34 )								
= = MEMBER		0.000	51.704	-12.116	-127.489	0.000	53.145	12.549	-97.984
ITAN	( 34 )	9.587	52.556	8.772	-111.326	9.587	58.209	-12.266	-122.290
JTAN	( 35 )								
= = MEMBER		0.000	10.746	-9.200	-130.129	0.000	51.619	10.746	-130.129
ITAN	( 34 )	9.587	37.279	8.772	-111.326	9.587	51.619	10.746	-130.129
JTAN	( 35 )								

PICK UP 5

SHEAR MAXIMUM

SHEAR MINIMUM

MEMBER		CASE		Q		N	
1	2	1	2	1	2	1	2
MEMBER 1							
ITAN	0.000	( 35 )	-0.000	0.000	-0.000	ITAN	0.000
1	.150	( 35 )	-.421	-.421	-0.000	1	.150
2	.150	( 35 )	-0.332	-0.332	-0.000	2	.150
3	1.400	( 35 )	-20.542	-20.542	-0.000	3	1.400
4	1.800	( 35 )	-25.436	-25.436	-0.000	4	1.800
5	2.000	( 35 )	-27.496	-27.496	-0.000	5	2.000
6	2.000	( 35 )	-28.447	-28.447	-0.000	6	2.000
7	2.600	( 35 )	-30.876	-30.876	-0.000	7	2.600
JTAN	3.000	( 35 )	-32.141	-32.141	-0.000	JTAN	3.000
MEMBER 2							
ITAN	0.000	( 35 )	-129.331	52.006	.042	ITAN	0.000
1	.400	( 35 )	-108.791	50.598	.042	1	.400
2	1.200	( 35 )	-69.967	46.084	.042	2	1.200
3	1.600	( 35 )	-52.136	42.976	.042	3	1.600
4	4.000	( 35 )	18.684	13.429	.042	4	4.000
5	6.400	( 35 )	12.325	-16.118	.042	5	6.400
6	6.800	( 35 )	5.237	-19.225	.042	6	6.800
7	7.600	( 35 )	-12.100	-23.740	.042	7	7.600
JTAN	8.000	( 35 )	-21.896	-25.147	.042	JTAN	8.000
MEMBER 3							
ITAN	0.000	( 35 )	-82.718	46.326	-.894	ITAN	0.000
1	.400	( 35 )	-64.450	44.319	-.894	1	.400
2	1.200	( 35 )	-30.170	40.404	-.894	2	1.200
3	1.600	( 35 )	-14.611	37.297	-.894	3	1.600
4	4.000	( 35 )	42.578	7.750	-.894	4	4.000
5	6.400	( 35 )	22.587	-21.797	-.894	5	6.400
6	6.800	( 35 )	13.227	-24.905	-.894	6	6.800
7	7.600	( 35 )	-8.653	-29.419	-.894	7	7.600
JTAN	8.000	( 35 )	-20.721	-30.327	-.894	JTAN	8.000
MEMBER 4							
ITAN	0.000	( 35 )	-80.106	35.954	-1.980	ITAN	0.000
1	.400	( 35 )	-66.025	34.405	-1.980	1	.400
2	1.200	( 35 )	-40.005	30.456	-1.980	2	1.200
3	1.500	( 35 )	-28.293	28.058	-1.980	3	1.500
4	3.800	( 35 )	14.974	10.072	-1.980	4	3.800
5	6.000	( 35 )	16.024	-7.914	-1.980	5	6.000
6	6.400	( 35 )	12.369	-10.313	-1.980	6	6.400
7	7.200	( 35 )	2.464	-14.261	-1.980	7	7.200
JTAN	7.500	( 35 )	-3.560	-15.810	-1.980	JTAN	7.500

PICK UP 5

SHEAR MAXIMUM

SHEAR MINIMUM

L		CASE		Q		M		N	
= MEMBER 5 ( 6 - 7 ) G =		= MEMBER 6 ( 7 - 8 ) G =		= MEMBER 7 ( 8 - 9 ) G =		= MEMBER 8 ( 2 - 6 ) C =		= MEMBER 9 ( 3 - 7 ) C =	
ITAN	0.000	( 35 )	-52.556	25.080	0.000	0.000	0.000	0.000	0.000
1	.400	( 35 )	-42.880	23.300	0.000	0.000	0.000	5.653	0.000
2	2.150	( 35 )	-8.920	15.512	0.000	0.000	0.000	3.873	0.000
3	4.000	( 35 )	12.162	7.280	0.000	0.000	0.000	-3.914	0.000
4	5.850	( 35 )	18.015	-5.953	0.000	0.000	0.000	-12.147	0.000
5	7.600	( 35 )	9.533	-8.740	0.000	0.000	0.000	-20.379	0.000
JTAN	8.000	( 35 )	5.681	-10.520	0.000	0.000	0.000	-28.167	0.000
= MEMBER 6 ( 7 - 8 ) G =									
ITAN	0.000	( 35 )	-49.653	23.769	0.000	0.000	0.000	12.027	0.000
1	.400	( 35 )	-40.501	21.989	0.000	0.000	0.000	10.247	0.000
2	2.150	( 35 )	-8.834	14.202	0.000	0.000	0.000	2.460	0.000
3	4.000	( 35 )	9.824	5.969	0.000	0.000	0.000	-5.773	0.000
4	5.850	( 35 )	13.251	-2.263	0.000	0.000	0.000	-14.005	0.000
5	7.600	( 35 )	2.476	-10.051	0.000	0.000	0.000	-21.793	0.000
JTAN	8.000	( 35 )	-1.900	-11.831	0.000	0.000	0.000	-23.573	0.000
= MEMBER 7 ( 8 - 9 ) G =									
ITAN	0.000	( 35 )	-50.109	29.724	0.000	0.000	0.000	9.022	0.000
1	.400	( 35 )	-48.575	27.944	0.000	0.000	0.000	7.242	0.000
2	2.150	( 35 )	-4.487	20.157	0.000	0.000	0.000	-5.546	0.000
3	3.800	( 35 )	20.714	12.814	0.000	0.000	0.000	-7.888	0.000
4	5.450	( 35 )	35.800	5.472	0.000	0.000	0.000	-15.231	0.000
5	7.200	( 35 )	38.561	-2.316	0.000	0.000	0.000	-23.018	0.000
JTAN	7.600	( 35 )	37.279	-4.096	0.000	0.000	0.000	-24.798	0.000
= MEMBER 8 ( 2 - 6 ) C =									
ITAN	0.000	( 34 )	-48.957	8.772	-104.428	8.772	-104.428	-11.138	-125.987
JTAN	9.587	( 34 )	35.143	8.772	-119.767	8.772	-119.767	-11.138	-141.326
= MEMBER 9 ( 3 - 7 ) C =									
ITAN	0.000	( 34 )	-61.704	12.653	-127.489	12.653	-127.489	-12.116	-119.403
JTAN	9.587	( 34 )	59.597	12.653	-142.829	12.653	-142.829	-12.116	-134.742
= MEMBER 10 ( 4 - 8 ) C =									
ITAN	0.000	( 34 )	-53.145	12.549	-97.984	12.549	-97.984	-12.266	-106.951
JTAN	9.587	( 34 )	57.166	12.549	-113.323	12.549	-113.323	-12.266	-122.290
= MEMBER 11 ( 5 - 9 ) C =									
ITAN	0.000	( 34 )	-51.619	10.746	-130.129	10.746	-130.129	-9.200	-107.690
JTAN	9.587	( 34 )	51.398	10.746	-145.468	10.746	-145.468	-9.200	-123.030

PICK UP 5

AXIAL MAXIMUM

AXIAL MINIMUM

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =		MEMBER 4 ( 4 - 5 ) G =	
ITAN	0.000 ( 34 )	0.000 ( 35 )	0.000 ( 34 )	0.000 ( 35 )	0.000 ( 34 )	0.000 ( 35 )	0.000 ( 34 )
1	-.150 ( 34 )	-.032	-.421	-.000	-.421	-.000	-.000
2	-.150 ( 34 )	-.032	-20.542	-.000	-20.542	-.000	-.000
3	1.800 ( 34 )	-28.479	-25.436	-.000	-25.436	-.000	-.000
4	1.800 ( 34 )	-39.067	-27.496	-.000	-27.496	-.000	-.000
5	2.000 ( 34 )	-44.663	-28.447	-.000	-28.447	-.000	-.000
6	2.000 ( 34 )	-44.663	-28.447	-.000	-28.447	-.000	-.000
7	2.600 ( 34 )	-62.491	-30.876	-.000	-30.876	-.000	-.000
JTAN	3.000 ( 34 )	-75.104	-32.141	-.000	-32.141	-.000	-.000

ITAN	0.000 ( 34 )	0.000 ( 34 )	0.000 ( 34 )	0.000 ( 34 )	0.000 ( 34 )	0.000 ( 34 )	0.000 ( 34 )
1	-.400 ( 35 )	-129.331	52.006	-.042	52.006	-.042	52.006
2	1.200 ( 35 )	-108.791	50.598	-.042	50.598	-.042	50.598
3	1.500 ( 35 )	-59.967	46.084	-.042	46.084	-.042	46.084
4	4.000 ( 35 )	-52.136	42.976	-.042	42.976	-.042	42.976
5	6.400 ( 35 )	18.684	13.429	-.042	13.429	-.042	13.429
6	6.900 ( 35 )	12.325	-16.118	-.042	-16.118	-.042	-16.118
7	7.500 ( 35 )	5.237	-19.225	-.042	-19.225	-.042	-19.225
JTAN	8.000 ( 35 )	-12.100	-23.740	-.042	-23.740	-.042	-23.740

ITAN	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )
1	-.400 ( 35 )	-82.718	46.326	-.894	46.326	-.894	46.326
2	1.200 ( 35 )	-64.450	44.919	-.894	44.919	-.894	44.919
3	1.500 ( 35 )	-30.170	40.404	-.894	40.404	-.894	40.404
4	4.000 ( 35 )	-14.611	37.297	-.894	37.297	-.894	37.297
5	6.400 ( 35 )	42.579	7.797	-.894	7.797	-.894	7.797
6	6.800 ( 35 )	22.587	-21.797	-.894	-21.797	-.894	-21.797
7	7.600 ( 35 )	13.227	-24.905	-.894	-24.905	-.894	-24.905
JTAN	8.000 ( 35 )	-8.653	-29.419	-.894	-29.419	-.894	-29.419

ITAN	0.000 ( 34 )	0.000 ( 34 )	0.000 ( 34 )	0.000 ( 34 )	0.000 ( 34 )	0.000 ( 34 )	0.000 ( 34 )
1	-.400 ( 34 )	-12.112	13.515	-.434	13.515	-.434	13.515
2	1.200 ( 34 )	-7.006	11.966	-.434	11.966	-.434	11.966
3	1.500 ( 34 )	1.053	8.018	-.434	8.018	-.434	8.018
4	3.800 ( 34 )	3.800	5.619	-.434	5.619	-.434	5.619
5	6.000 ( 34 )	-2.299	-12.367	-.434	-12.367	-.434	-12.367
6	6.400 ( 34 )	-50.614	-30.352	-.434	-30.352	-.434	-30.352
7	7.200 ( 34 )	-53.244	-32.751	-.434	-32.751	-.434	-32.751
JTAN	7.600 ( 34 )	-91.100	-36.699	-.434	-36.699	-.434	-36.699

ITAN	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )
1	-.400 ( 35 )	-26.147	30.447	-.935	30.447	-.935	30.447
2	1.200 ( 35 )	-14.231	29.040	-.935	29.040	-.935	29.040
3	1.600 ( 35 )	16.553	24.525	-.935	24.525	-.935	24.525
4	4.000 ( 35 )	35.633	21.419	-.935	21.419	-.935	21.419
5	6.400 ( 35 )	-22.467	-8.129	-.935	-8.129	-.935	-8.129
6	6.800 ( 35 )	-38.178	-37.676	-.935	-37.676	-.935	-37.676
7	7.600 ( 35 )	-72.762	-40.784	-.935	-40.784	-.935	-40.784
JTAN	8.000 ( 35 )	-91.192	-45.298	-.935	-45.298	-.935	-45.298

ITAN	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )	0.000 ( 35 )
1	-.400 ( 35 )	-29.477	32.854	-.935	32.854	-.935	32.854
2	1.200 ( 35 )	-16.599	31.446	-.935	31.446	-.935	31.446
3	1.600 ( 35 )	6.904	26.932	-.935	26.932	-.935	26.932
4	4.000 ( 35 )	17.074	23.825	-.935	23.825	-.935	23.825
5	6.400 ( 35 )	41.930	-5.722	-.935	-5.722	-.935	-5.722
6	6.800 ( 35 )	-10.394	-35.270	-.935	-35.270	-.935	-35.270
7	7.600 ( 35 )	-25.142	-38.377	-.935	-38.377	-.935	-38.377
JTAN	8.000 ( 35 )	-57.800	-42.891	-.935	-42.891	-.935	-42.891



PICK UP 5

AXIAL MAXIMUM

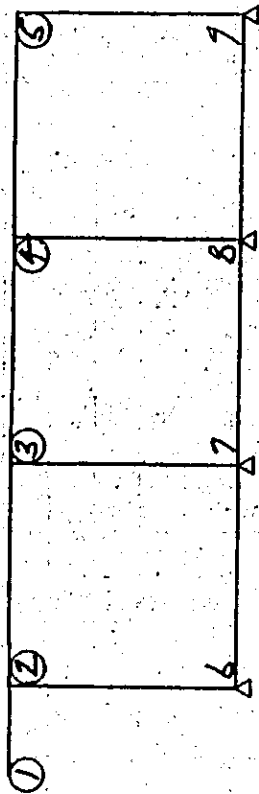
AXIAL MINIMUM

MEMBER 5 ( 6 - 7 ) G =		MEMBER 6 ( 7 - 8 ) G =		MEMBER 7 ( 8 - 9 ) G =		MEMBER 8 ( 2 - 6 ) C =		MEMBER 9 ( 3 - 7 ) C =		MEMBER 10 ( 4 - 8 ) C =		MEMBER 11 ( 5 - 9 ) C =	
ITAN	0.000 ( 34 )	35.143	5.653	0.000 ( 34 )	35.143	5.653	0.000 ( 34 )	8.551	9.022	0.000 ( 34 )	8.551	9.022	0.000 ( 34 )
1	.400 ( 34 )	37.048	3.873	0.000 ( 34 )	37.048	3.873	0.000 ( 34 )	11.804	7.242	0.000 ( 34 )	11.804	7.242	0.000 ( 34 )
2	2.150 ( 34 )	37.012	-3.934	0.000 ( 34 )	37.012	-3.934	0.000 ( 34 )	17.663	-5.546	0.000 ( 34 )	17.663	-5.546	0.000 ( 34 )
3	4.000 ( 34 )	22.156	-12.147	0.000 ( 34 )	22.156	-12.147	0.000 ( 34 )	10.705	-7.888	0.000 ( 34 )	10.705	-7.888	0.000 ( 34 )
4	5.850 ( 34 )	-7.930	-20.379	0.000 ( 34 )	-7.930	-20.379	0.000 ( 34 )	-8.367	-15.231	0.000 ( 34 )	-8.367	-15.231	0.000 ( 34 )
5	7.600 ( 34 )	-50.408	-28.167	0.000 ( 34 )	-50.408	-28.167	0.000 ( 34 )	-41.835	-23.018	0.000 ( 34 )	-41.835	-23.018	0.000 ( 34 )
JTAN	8.000 ( 34 )	-62.031	-29.347	0.000 ( 34 )	-62.031	-29.347	0.000 ( 34 )	-51.398	-24.798	0.000 ( 34 )	-51.398	-24.798	0.000 ( 34 )
ITAN	0.000 ( 34 )	-2.433	12.027	0.000 ( 34 )	-2.433	12.027	0.000 ( 34 )	8.551	9.022	0.000 ( 34 )	8.551	9.022	0.000 ( 34 )
1	.400 ( 34 )	2.022	10.247	0.000 ( 34 )	2.022	10.247	0.000 ( 34 )	11.804	7.242	0.000 ( 34 )	11.804	7.242	0.000 ( 34 )
2	2.150 ( 34 )	13.140	2.460	0.000 ( 34 )	13.140	2.460	0.000 ( 34 )	17.663	-5.546	0.000 ( 34 )	17.663	-5.546	0.000 ( 34 )
3	4.000 ( 34 )	10.076	-5.773	0.000 ( 34 )	10.076	-5.773	0.000 ( 34 )	10.705	-7.888	0.000 ( 34 )	10.705	-7.888	0.000 ( 34 )
4	5.850 ( 34 )	-8.219	-14.005	0.000 ( 34 )	-8.219	-14.005	0.000 ( 34 )	-8.367	-15.231	0.000 ( 34 )	-8.367	-15.231	0.000 ( 34 )
5	7.600 ( 34 )	-39.542	-21.793	0.000 ( 34 )	-39.542	-21.793	0.000 ( 34 )	-41.835	-23.018	0.000 ( 34 )	-41.835	-23.018	0.000 ( 34 )
JTAN	8.000 ( 34 )	-48.615	-23.573	0.000 ( 34 )	-48.615	-23.573	0.000 ( 34 )	-51.398	-24.798	0.000 ( 34 )	-51.398	-24.798	0.000 ( 34 )
ITAN	0.000 ( 34 )	60.823	8.772	0.000 ( 34 )	60.823	8.772	0.000 ( 34 )	60.823	8.772	0.000 ( 34 )	60.823	8.772	0.000 ( 34 )
1	.400 ( 34 )	-48.957	8.772	0.000 ( 34 )	-48.957	8.772	0.000 ( 34 )	-48.957	8.772	0.000 ( 34 )	-48.957	8.772	0.000 ( 34 )
2	2.150 ( 34 )	35.143	-119.767	0.000 ( 34 )	35.143	-119.767	0.000 ( 34 )	35.143	-119.767	0.000 ( 34 )	35.143	-119.767	0.000 ( 34 )
3	3.800 ( 34 )	10.705	-7.888	0.000 ( 34 )	10.705	-7.888	0.000 ( 34 )	10.705	-7.888	0.000 ( 34 )	10.705	-7.888	0.000 ( 34 )
4	5.450 ( 34 )	-8.367	-15.231	0.000 ( 34 )	-8.367	-15.231	0.000 ( 34 )	-8.367	-15.231	0.000 ( 34 )	-8.367	-15.231	0.000 ( 34 )
5	7.200 ( 34 )	-41.835	-23.018	0.000 ( 34 )	-41.835	-23.018	0.000 ( 34 )	-41.835	-23.018	0.000 ( 34 )	-41.835	-23.018	0.000 ( 34 )
JTAN	7.600 ( 34 )	-51.398	-24.798	0.000 ( 34 )	-51.398	-24.798	0.000 ( 34 )	-51.398	-24.798	0.000 ( 34 )	-51.398	-24.798	0.000 ( 34 )
ITAN	0.000 ( 34 )	50.920	-9.200	0.000 ( 34 )	50.920	-9.200	0.000 ( 34 )	50.920	-9.200	0.000 ( 34 )	50.920	-9.200	0.000 ( 34 )
1	.400 ( 34 )	-37.279	-9.200	0.000 ( 34 )	-37.279	-9.200	0.000 ( 34 )	-37.279	-9.200	0.000 ( 34 )	-37.279	-9.200	0.000 ( 34 )
2	2.150 ( 34 )	51.398	10.746	0.000 ( 34 )	51.398	10.746	0.000 ( 34 )	51.398	10.746	0.000 ( 34 )	51.398	10.746	0.000 ( 34 )
3	4.000 ( 34 )	59.385	-12.266	0.000 ( 34 )	59.385	-12.266	0.000 ( 34 )	59.385	-12.266	0.000 ( 34 )	59.385	-12.266	0.000 ( 34 )
4	5.850 ( 34 )	-58.209	-12.266	0.000 ( 34 )	-58.209	-12.266	0.000 ( 34 )	-58.209	-12.266	0.000 ( 34 )	-58.209	-12.266	0.000 ( 34 )
5	7.600 ( 34 )	-106.951	-12.266	0.000 ( 34 )	-106.951	-12.266	0.000 ( 34 )	-106.951	-12.266	0.000 ( 34 )	-106.951	-12.266	0.000 ( 34 )
JTAN	9.587 ( 35 )	-122.290	-122.290	0.000 ( 35 )	-122.290	-122.290	0.000 ( 35 )	-122.290	-122.290	0.000 ( 35 )	-122.290	-122.290	0.000 ( 35 )

[7] Calculation of upper beam

(1) Calculation of compressive stress caused by bending

(a) Summary of stressed



a) Bending moment

		①~②		②~③		③~④	
		② point	② Point	③ point	③ point	④ point	④ point
Pick up 1	TOP	-62.49	-77.74	-56.54	-56.10	-	-47.98
Pick up 2	TOP	-157.34	-183.57	-138.59	-136.95	-	-124.37
	BOTH END	-	-	-	-	126.39	16

		④~⑤	
		④ point	④ point
Pick up 1	TOP	-46.11	-54.83
Pick up 2	TOP	-123.29	-117.47
	BOTH END	-	87.9

(b) Allowable stress of upper beam safe against cracking

(i) At the support point 1

$$\text{Dead load} \quad M_d = -77.74 \text{ t.m} \quad (\text{Case 1})$$

$$\text{Train load + Impact ML} = -105.69 \text{ " } \quad (\text{Case 2})$$


---

$$\Sigma M = -183.43 \text{ t.m}$$

$$d = \frac{105.69}{183.43} = 0.58 > 0.25$$

$$\text{Therefore } \sigma_{sa} = 1,000 \text{ kg/cm}^2$$

(ii) At the support point 2

$$\text{Dead load} \quad M_d = -56.54 \text{ t.m} \quad (\text{Case 1})$$

$$\text{Train load + Impact ML} = -82.05 \text{ " } \quad (\text{Case 7})$$


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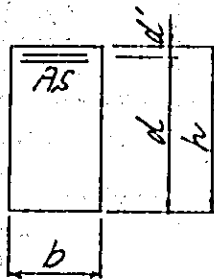
$$\Sigma M = -138.59 \text{ t.m}$$

$$d = \frac{82.05}{138.59} = 0.59 > 0.25$$

$$\text{Therefore } \sigma_{sa} = 1,000 \text{ kg/cm}^2$$

(C) Cross Section

(i) Cross Section at the support point



$$b = 80 \text{ cm}$$

$$h = 160 "$$

$$d' = 2.5 + 1.9 + 1.6 + 3.2 = 9.2 \text{ cm}$$

$$(2.5 + 1.9 + 1.6 = 6.0 \text{ cm})$$

$$d = 160 - 9.2 = 150.8 \text{ cm}$$

$$(160 - 6.0 = 154.0 \text{ cm})$$

(effective height used for shearing

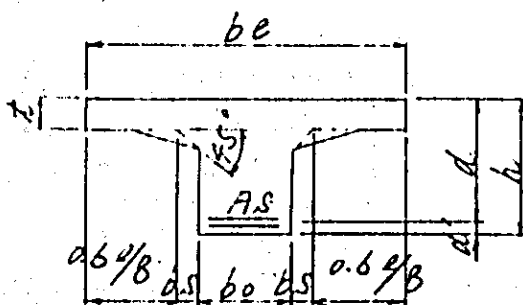
stress calculation)

(ii) Effective width of T-beam compression fibre

$$b_e = b_o + 2 \left( b_s + \frac{0.6}{8} \cdot l \right)$$

$$b_{e1} = 0.80 + 2 \times \left( 0.15 + \frac{0.60}{8} \times 8.00 \right) = 2.30 \text{ m}$$

$$b_{e2} = 0.80 + 2 \times \left( 0.15 + \frac{0.60}{8} \times 7.588 \right) = 2.24 \text{ m}$$



$$b_o = 80 \text{ cm}$$

$$h = 120 "$$

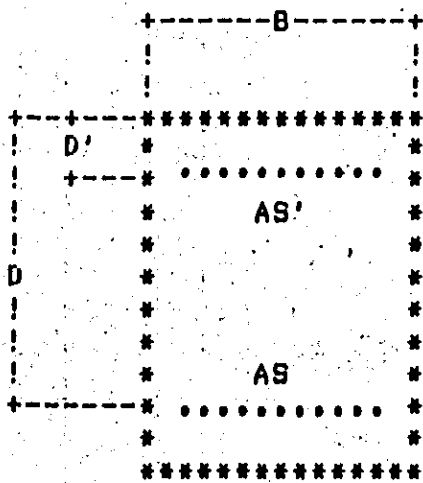
$$d' = 3.0 + 1.3 + 1.6 + 3.2 = 9.1 \text{ cm}$$

$$d = 120 - 9.1 = 110.9 \text{ cm}$$

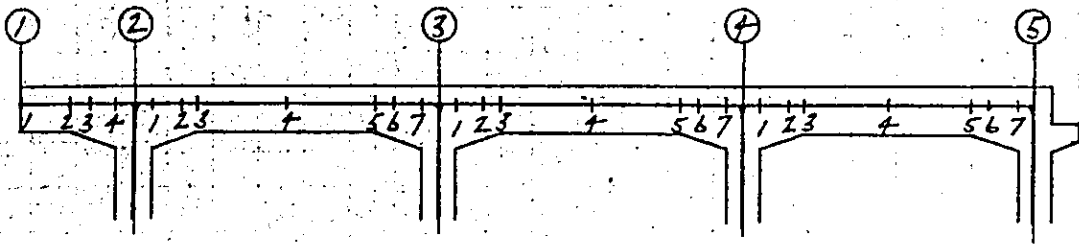
$$t = 28 \text{ cm}$$

(d) Bending stress Calculation

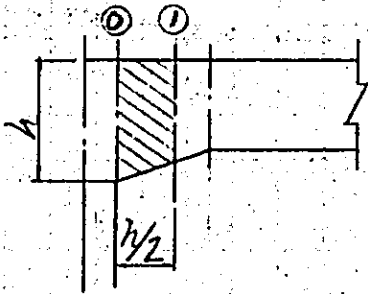
Calculation NO.	1	2	3	4
CASE	( )	( )	( )	( )
M [T*M]	77.74	183.57	138.59	126.39
S [T]				
B [CM]	80.00	80.00	80.00	80.00
H [CM]	160.00	160.00	160.00	120.00
D [CM]	150.80	150.80	150.80	110.90
D' [CM]	9.20	9.20	6.20	9.10
AS (DIA-HON)	D32-11.0	D32-11.0	D32- 9.0	D32-11.0
AS' [CM**2]	87.36	87.36	71.48	87.36
AS' (DIA-HON)				
AS' [CM**2]				
P	0.007242	0.007242	0.005925	0.009847
P'				
K	0.3700	0.3700	0.3420	0.4155
LC	0.1622	0.1622	0.1515	0.1790
SIG-C [KG/CM**2]	26.35	62.22	50.28	71.77
SIG-B [KG/CM**2]	673.10	1589.41	1451.19	1514.28
TAU [KG/CM**2]				
SIG-CA [KG/CM**2]	90.00	90.00	90.00	90.00
SIG-SA [KG/CM**2]	1000.00	1800.00	1800.00	1800.00
TAU-A [KG/CM**2]				



## (2) Calculation of shearing stress



### (a) Summary of shearing stresses



For examining section 0, shearing stress at section 1, is used.

Correction for shearing stress.

$$S = S_0 - \frac{M}{d} \cdot (\tan \alpha)$$

where

$S_0$ : shearing stress caused by bending ( $\tau$ )

$M$ : bending moment ( $t \cdot m$ )

$d$ : effective height ( $m$ )

$\alpha$ : an angle of elevation of the member.

(i) shearing stress

$$Z_b = \frac{S}{b \cdot d}$$

 $Z_b$ : shearing stress ( $\text{kg/cm}^2$ )

 $b$ : width of member (cm)

 $d$ : effective height of member (cm)

 $S$ : shearing force.

member	case	No.	$S^t$	$M^{tm}$	$\tan \alpha$	$S^t$	$b^{cm}$	$d^{cm}$	$Z_b^{kg/cm^2}$
① ②	16	2	55.08	—	—	55.08	80	110.8	6.21
		2'	55.08	-69.98	$\frac{0.40}{1.70}$	34.03	"	"	3.84
		3	57.14	-92.42	"	32.32	"	124.1	3.26
		4	90.16	-157.34	"	55.38	"	150.8	4.59
② ③	27	1	97.73	-148.32	$\frac{0.40}{1.70}$	64.94	"	150.8	5.38
		2	81.86	-85.29	"	58.95	"	124.1	5.94
		3	73.18	-57.89	"	55.76	"	110.8	6.29
		3'	73.18	—	—	73.18	"	"	8.26
		4	11.63	—	—	11.63	"	"	1.31
	17	4	6.50	—	—	6.50	"	"	0.73
		5	77.28	—	—	77.28	"	"	8.72
		5'	77.28	-5.05	$\frac{0.40}{1.70}$	75.76	"	"	8.55
		6	87.26	-33.81	"	78.18	"	124.1	7.87
		7	105.52	-100.80	"	83.24	"	150.8	6.90

mem ber	case	NO	$S_o^+$	$M^{im}$	$\tan \alpha$	$S^+$	$b^{cm}$	$d^{cm}$	$Z_b^{m^2/cm^2}$	
③   ④	17	1	105.77	-99.06	$\frac{0.40}{1.20}$	83.87	80	150.8	8.95	
		2	87.51	-31.86	"	78.95	"	124.1	7.95	
		3	77.53	-3.00	"	76.63	"	110.8	8.64	
		3'	77.53	—	—	77.53	"	"	8.75	
	20	4	6.75	—	—	6.75	"	"	0.76	
			3.83	—	—	3.83	"	"	0.43	
		5	74.61	—	—	74.61	"	"	8.42	
		5'	74.61	4.89	$\frac{0.40}{1.20}$	73.14	"	"	8.25	
		6	84.58	-22.80	"	78.46	"	124.1	7.90	
		7	102.84	-87.65	"	83.47	"	150.8	6.92	
		④   ⑤	20	1	90.61	-91.13	$\frac{0.40}{1.20}$	70.47	"	150.8
	2			72.92	-35.26	"	63.95	"	124.1	6.39
	3			63.65	-11.79	"	60.10	"	110.8	6.78
	3'			63.65	—	—	63.65	"	"	7.18
4	7.87			—	—	7.87	"	"	0.89	
23			3.10	—	—	3.10	"	"	0.35	
	5		58.88	—	—	58.88	"	"	6.64	
	5'		58.88	-2.50	$\frac{0.40}{1.20}$	58.13	"	"	6.56	
	6		68.16	-26.28	"	61.10	"	124.1	6.15	
	7		85.85	-83.84	"	67.32	"	150.8	5.58	

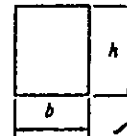


(ii) Shearing stress caused by torsional moment.

MEMBER NO.	NO.	$M_t$ <sup>t.m</sup>	$h$ <sup>cm</sup>	$b$ <sup>cm</sup>	$h/b$	$K_2$	$T_{t1}$ <sup>kg/cm<sup>2</sup></sup>	$K_3$	$T_{t2}$ <sup>kg/cm<sup>2</sup></sup>
①	1	11.50	120	80	1.500	0.231	6.48	0.858	5.56
	2	13.41	133.3	"	1.666	0.236	6.66	0.837	5.57
	3	17.24	160	"	2.000	0.246	6.84	0.796	5.45
②	1	22.99	160	"	2.000	0.246	9.13	0.796	7.26
	2	17.88	133.3	"	1.666	0.236	8.88	0.837	7.43
	3	15.33	120	"	1.500	0.231	8.64	0.858	7.41
	4	15.33	120	"	1.500	0.231	8.64	0.858	7.41
	5	17.88	133.3	"	1.666	0.236	8.88	0.837	7.43
	6	22.99	160	"	2.000	0.246	9.13	0.796	7.26
	7	22.99	160	"	2.000	0.246	9.13	0.796	7.26

$$\tau_{11} = \tau_{max} = \frac{M_t}{k_2 b^2 h} \dots \dots \dots (40.2)$$

$$\tau_{12} = k_3 \tau_{11}$$



$\tau_{11}$  : shearing stress of longlong side. (kg/cm<sup>2</sup>)

$\tau_{12}$  : shearing stress of shortlong side (kg/cm<sup>2</sup>)

$b$  : short long side (cm)

$h$  : length long side. (cm)

$M_t$  : torsional moment. (kg.cm)

$k_2, k_3$  : from list - 1.

list - 1, coefficient  $K_2, K_3$

$h/b$	1.0	1.2	1.5	2.0	2.5	3	4	5	7	10	20	$\infty$
$k_2$	0.208	0.219	0.231	0.246	0.258	0.267	0.282	0.292	0.303	0.313	0.323	0.333
$k_3$	1.000	0.930	0.859	0.795	0.766	0.753	0.745	0.743	0.742	0.742	0.742	0.742

## iii) Combined shearing stress.

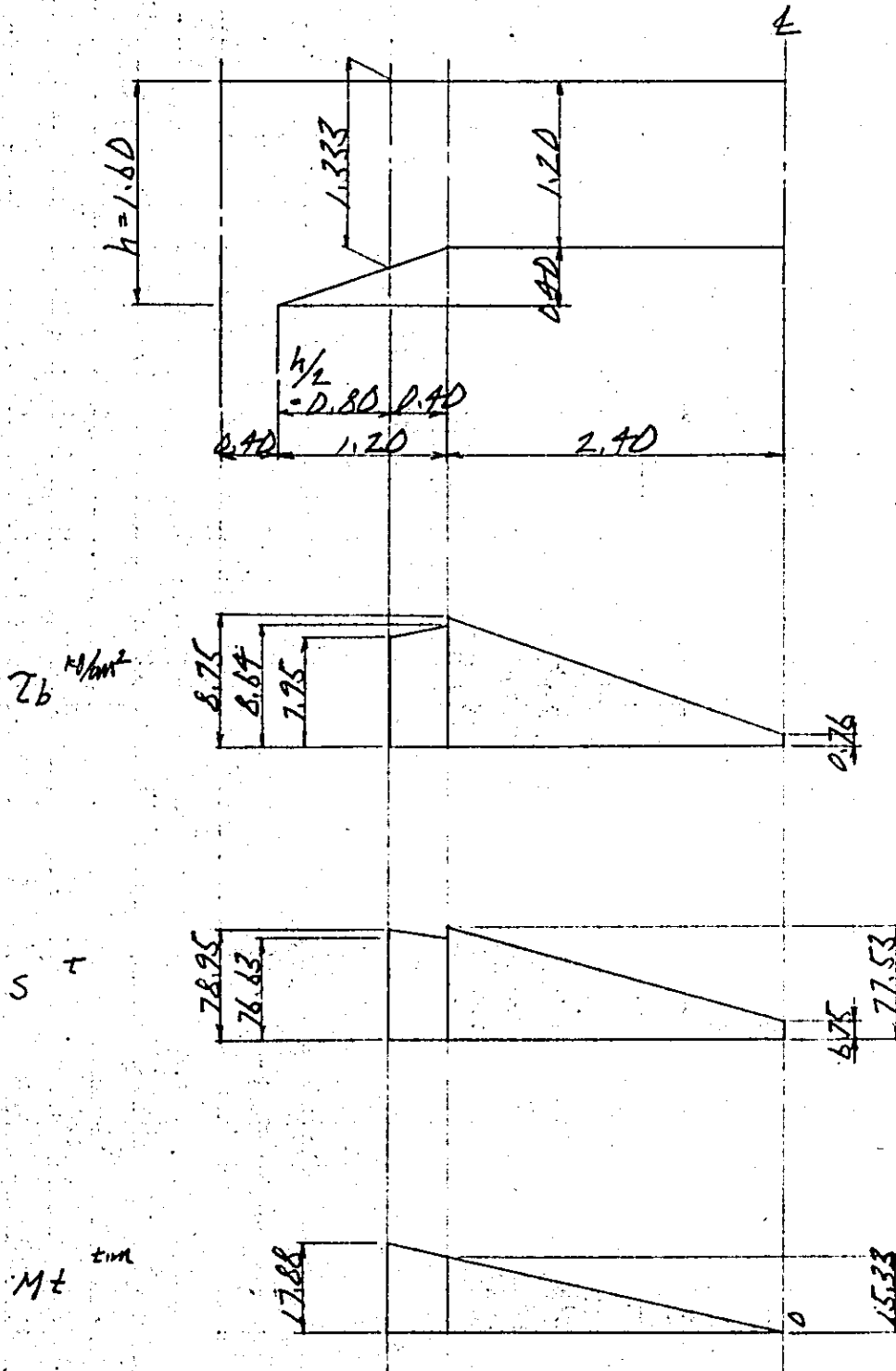
mem-ber	N.O.	$T_b$ $\frac{kg}{cm^2}$	$T_t$ $\frac{kg}{cm^2}$	$T_b + T_t$ $\frac{kg}{cm^2}$
①	2	6.21	6.48	12.69
	2'	3.84	6.48	10.32
②	3	3.26	6.66	9.92
	4	4.59	6.84	11.43
	1	6.95	9.13	16.08
③	2	7.95	8.88	16.83
	④	3	8.64	8.64
⑤	3'	8.75	8.64	17.39
	4	0.76	0	0.76
○				

$T_b < 3.9 \frac{kg}{cm^2}$  --- diagonal tension re-bars not are not required.

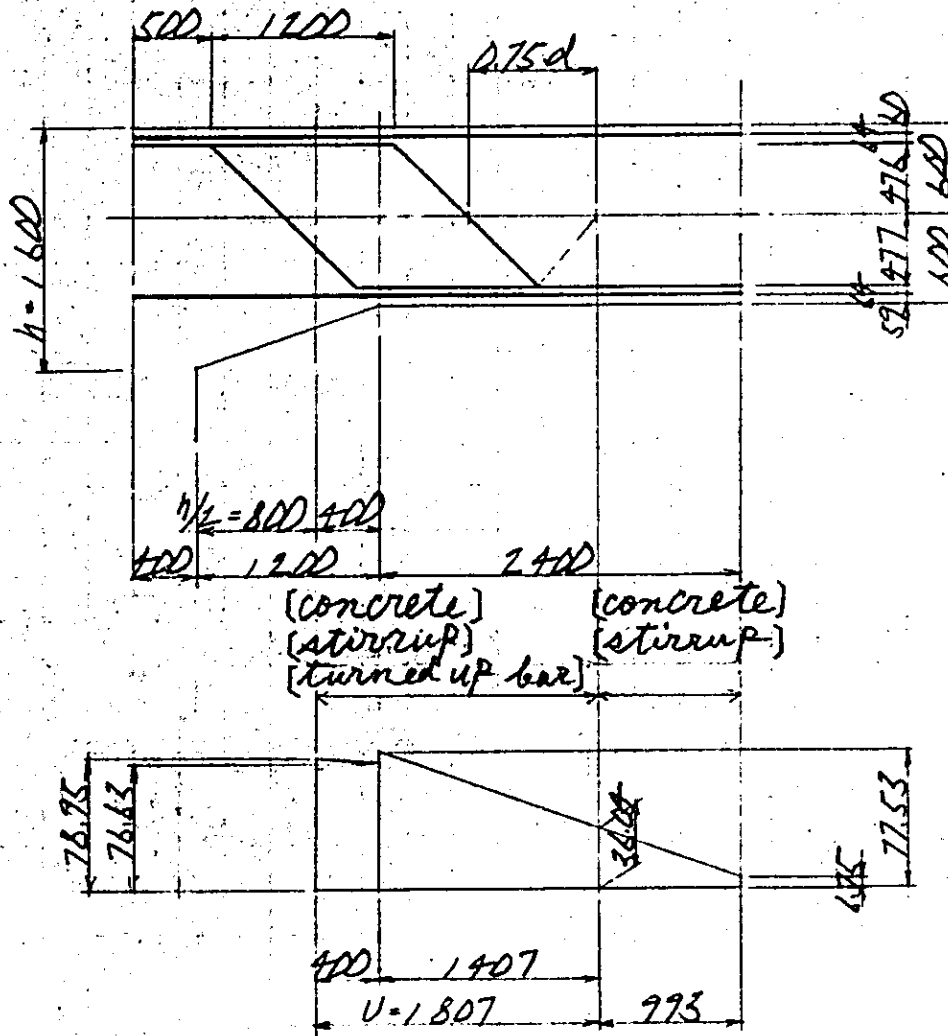
$T_b < 17$  " --- diagonal tension re-bars are

calulaion;  
 $T_b + T_t < 17 \times 1.3 = 22.1 \frac{kg}{cm^2}$  --- torsion is considered.

- (3) Calculation of diagonal tension re-bars  
 (a) shearing stress caused by bending.



(b) Share of shearing force



d: effective height

U: Distance from the neutral point of turned up bar to the point of  $0.75d$

$$U = (0.50 + 1.20 + 0.476 + 0.75 \times 1.108) - 0.40 - 0.80 = 1.807 \text{ m}$$

(i) Shearing force beared by concrete

(1) Area  $F$  subjected total shear within the range of  $V$ .

$$F = \frac{1}{2} \times (78.95 + 76.63) \times 0.40 + \frac{1}{2} \times (77.53 + 36.04) \\ \times 1.407 \\ = 111.01^t$$

(ii) Area  $F_c$  subjected shear beared by concrete.

$$S_c = \frac{1}{2} \cdot T_c \cdot b \cdot d$$

where

$S_c$ : Shearing force beared by concrete (t)

$T_c$ :  $f_{ck} = 240 \text{ N/cm}^2$ ,  $T_c = 3.9 \text{ N/cm}^2$

$b$ : Width of cross section of member.

$d$ : Effective height of member.

$$S_{c1} = \frac{1}{2} \times 3.9 \times 80 \times 110.8 \times 10^{-3} = 17.28^t$$

$$S_{c2} = \frac{1}{2} \times 3.9 \times 80 \times 124.1 \times 10^{-3} = 19.36^t$$

$$\therefore F_c = 17.28 \times 1.407 + (17.28 + 19.36) \times \frac{1}{2} \times 0.40$$

$$= 31.64^t$$

(d) Shearing force beared by strap  
 Arrange stirrups D13-2 set in 15.0 cm c.t.c

(i) Torsional shearing stress.

$$\sigma_{st} = \frac{M_t \cdot s}{0.8 \cdot A_v \cdot b_1 \cdot h_1} \cdot \frac{A_1}{b_1}$$

where

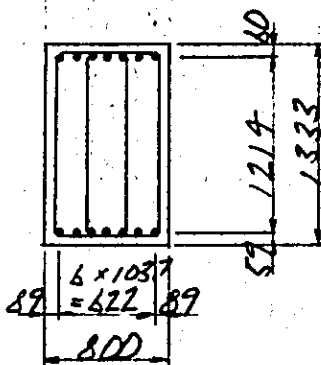
$M_t$  : Torsional moment. (t.m)

$s$  : etc distance of stirrup. (cm)

$A_v$  : Gross Cross section of coup lead stirrups. (cm<sup>2</sup>)

$b \cdot h$  : Length of short long side of stirrup (cm)

(i) At  $1/2$  point



$$M_t = 17.88 \text{ t.m}$$

$$s = 15 \text{ cm}$$

$$A_v = 1.267 \times 4 = 5.068 \text{ cm}^2$$

$$h_1 = 121.4 + 3.2 + 1.3 = 125.9 \text{ cm}$$

$$b_1 = \frac{25.2^2 + 66.7^2}{25.2 + 66.7} = 55.3 \text{ cm}$$

$$\sigma_{st} = \frac{17.88 \times 10^5 \times 15.0}{0.8 \times 5.068 \times 55.3 \times 125.9} \times \frac{66.7}{55.3}$$

$$= 1746 \text{ kg/cm}^2 < 1800 \text{ kg/cm}^2$$

(ii) At the transit point to launch.

$$M_t = 15.33 \text{ t/m}$$

$$d = 15.0 \text{ cm}$$

$$A_v = 5.068 \text{ cm}^2$$

$$b_1 = 55.3 \text{ cm}$$

$$h_1 = 120.0 - 6.0 - 5.9 + 3.2 + 1.3 = 112.6 \text{ cm}$$

$$f_{st2} = \frac{15.33 \times 10^5 \times 15.0}{0.8 \times 5.068 \times 55.3 \times 112.6} \times \frac{66.7}{55.3}$$

$$= 1099 \text{ kg/cm}^2 < 1800 \text{ kg/cm}^2$$

(iii) At U point.

$$M_t = 6.34 \text{ t/m}$$

$$h_1 = 112.6 \text{ cm}$$

$$f_{st3} = \frac{6.34 \times 10^5 \times 15.0}{0.8 \times 5.068 \times 55.3 \times 112.6} \times \frac{66.7}{55.3}$$

$$= 454 \text{ kg/cm}^2 < 1800 \text{ kg/cm}^2$$

(2) Bending shear beared - by stirrup.

In the case when combined with torsional moment, all allowable shearing stress is as 20 percent increased.

$$M_{sa} = 1800 \times 1.2 = 2160 \text{ kg/cm}^2$$

$$S_v = \frac{(M_{sa} - M_{st}) \cdot A_v \cdot d}{1.15 \cdot s}$$

(i) At  $1/2$  point.

$$2160 - 1146 = 1014 \text{ kg/cm}^2$$

$$d = 124.1 \text{ cm}$$

$$\therefore S_{v1} = \frac{1014 \times 5.07 \times 124.1}{1.15 \times 15.0} \times 10^{-3} = 36.99 \tau$$

(ii) At the point transit to haunch.

$$2160 - 1099 = 1061 \text{ kg/cm}^2$$

$$d = 110.8 \text{ cm}$$

$$\therefore S_{v2} = \frac{1061 \times 5.07 \times 110.8}{1.15 \times 15.0} \times 10^{-3} = 37.55 \tau$$

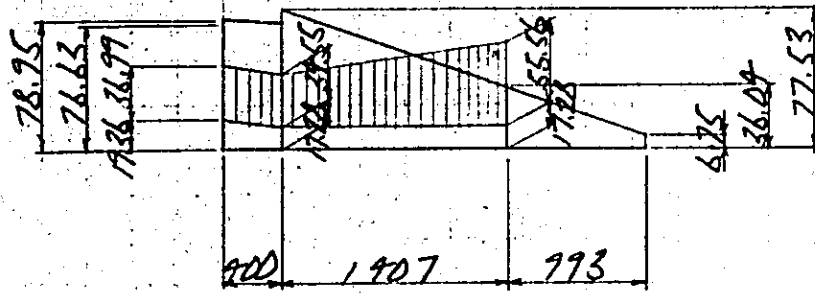
(iii) At U point.

$$2160 - 454 = 1706 \text{ kg/cm}^2$$

$$d = 110.8 \text{ cm}$$

$$\therefore S_v = \frac{1706 \times 5.07 \times 110.8}{1.15 \times 15.0} \times 10^{-3} = 55.56 \tau$$





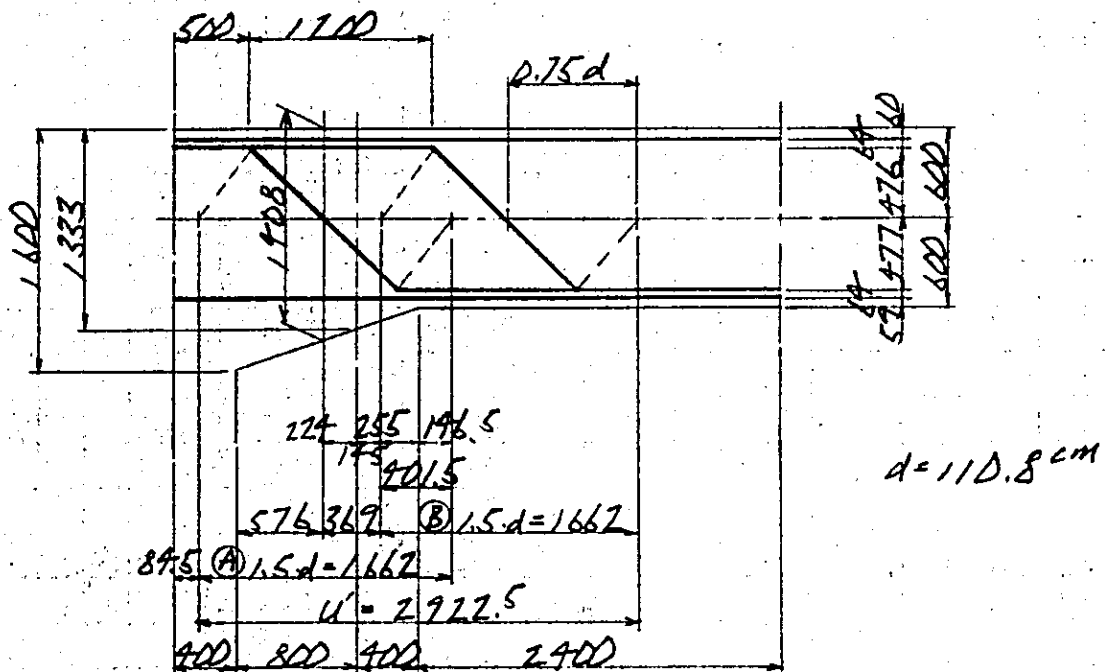
Area  $f_u$  for the shear beared by stirrup.

$$\begin{aligned}
 F_v &= (36.99 + 34.55) \times 0.40 \times \frac{1}{2} + (34.55 + 55.56) \\
 &\quad \times 1.407 \times \frac{1}{2} \\
 &= 46.00^t
 \end{aligned}$$

$$\begin{aligned}
 \frac{1}{2} \cdot (F - F_c) &= \frac{1}{2} \cdot (111.01 - 31.64) \\
 &= 39.69^t < F_v = 46.00^t
 \end{aligned}$$

(e) shear beared by turned up bar.

(i) Shear beared - by (A)



Effective range of turned up bars is also used as the distance of  $0.75d$  of each arrangement.

$$A_s = D32 - 2 = 15.88 \text{ cm}^2$$

$$d = 110.8 - 7.2 = 103.6 \text{ cm}$$

$$\sin \theta + \cos \theta = 1.414$$

$$F_{bA} = \frac{\sigma_{sa} \cdot A_s \cdot d \cdot (\sin \theta + \cos \theta)}{1.15}$$

Where

$\sigma_{sa}$ : Allowable tensile stress of bar. ( $\text{kg/cm}^2$ )

$A_s$ : Cross section of turned up bar. ( $\text{cm}^2$ )

$\theta$ : Elevation angle of turned up bar with the axis of member. ( $^\circ$ )

$$\theta = 45^\circ \sin 45^\circ + \cos 45^\circ = 1.414$$

$d$ : axial direction of member. (m)

$$F_{bA} = \frac{1800 \times 15.88 \times 131.6 \times 1.414}{1.15 \times 10^5}$$

$$= 46.25 \text{ t.m}$$

Therefore, the average resisting shear within 1.5d distance will be.

$$S_{bA} = \frac{F_{bA}}{1.5d} = \frac{46.25}{1.662} = 27.83 \text{ t}$$

(ii) Shear beared by (B)

$$A_s = D32 - 2 = 15.88 \text{ cm}^2$$

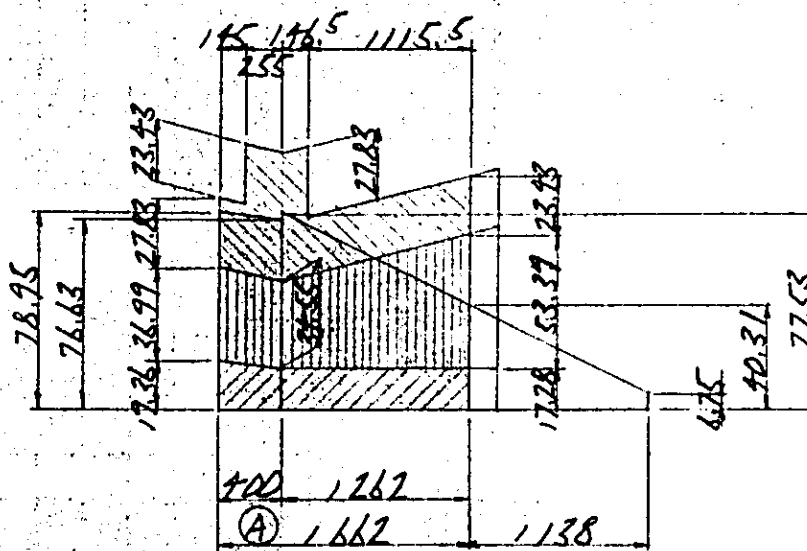
$$d = 110.8 \text{ cm}$$

$$F_{bB} = \frac{1800 \times 15.88 \times 110.8 \times 1.414}{1.15 \times 10^5} = 38.94 \text{ t}$$

$$S_{bB} = \frac{38.94}{1.662} = 23.43 \text{ t}$$

(f) Resultant resisting shear.

(i) Section (A)



Area of acting shear.

$$F = (78.95 + 76.63) \times 0.40 \times \frac{1}{2} + (77.53 + 40.31) \\ \times 1.262 \times \frac{1}{2} = 105.47 \text{ t.m}$$

Area of resisting shear.

$$F_c = (19.36 + 17.28) \times 0.40 \times \frac{1}{2} + 17.28 \times 1.262$$

$$= 29.13 \text{ t.m}$$

$$F_v = (36.99 + 34.55) \times 0.40 \times \frac{1}{2} + (34.55 + 53.39) \times 1.262 \times \frac{1}{2}$$

$$= 69.80 \text{ t.m}$$

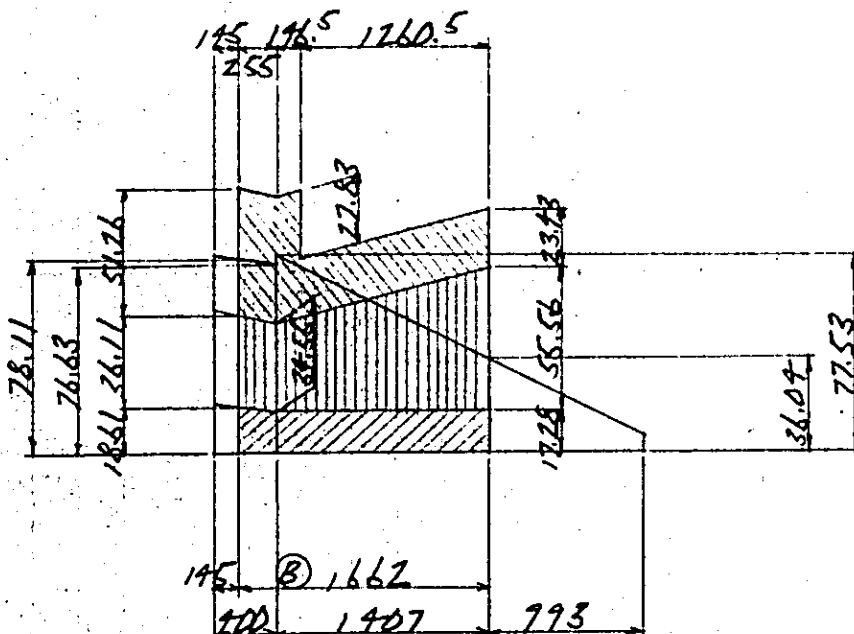
$$F_b = 27.83 \times (0.40 + 0.1485) + 23.43 \times (1.262 + 0.255)$$

$$= 50.75 \text{ t.m}$$

$$F_c + F_v + F_b = 29.13 + 69.80 + 50.75$$

$$= 149.68 \text{ t.m} > F = 105.47 \text{ t.m}$$

(ii) ③ Section



Area of factoring shear.

$$\begin{aligned}
 F &= (78.11 + 76.63) \times 0.255 \times \frac{1}{2} + (77.53 + 36.04) \\
 &\quad \times 1.407 \times \frac{1}{2} \\
 &= 99.63 \text{ t.m}
 \end{aligned}$$

Area of resisting shear.

$$\begin{aligned}
 F_c &= (18.16 + 17.28) \times 0.255 \times \frac{1}{2} + 17.28 \times 1.407 \\
 &= 28.83 \text{ t.m}
 \end{aligned}$$

$$\begin{aligned}
 F_v &= (36.11 + 34.55) \times 0.255 \times \frac{1}{2} + (34.55 + 55.56) \\
 &\quad \times 1.407 \times \frac{1}{2} \\
 &= 72.40 \text{ t.m}
 \end{aligned}$$

$$\begin{aligned}
 F_b &= 51.26 + (0.255 + 0.146^5) + 23.43 \times 1.260^5 \\
 &= 50.11 \text{ t.m}
 \end{aligned}$$

$$F_c + F_v + F_b = 28.83 + 72.40 + 50.11$$

$$= 151.34 \text{ t.m} > F = 99.63 \text{ t.m}$$

(4) Calculation of bars in axial direction

Required bars are calculated followed the equation.

$$A_s = \frac{M_t (b_1 + h_1)}{0.8 \cdot \sigma_{sa} \cdot b_1 \cdot h_1}$$

Where

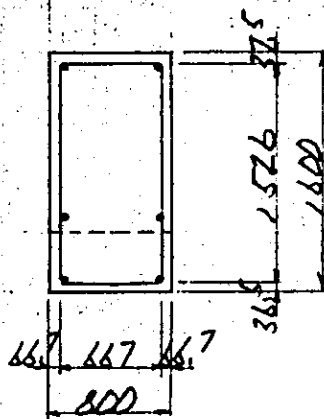
$A_s$ : Bars in axial direction.

$M_t$ : Torsional moment.

$\sigma_{sa}$ : Allowable stress of bar.

$b_1, h_1$ : Length of short/Long side of stirrup.

(A) At column front.



$$M_t = 22.99 \text{ tm}$$

$$\sigma_{sa} = 1800 \text{ kg/cm}^2$$

$$b_1 = 66.7 \text{ cm}$$

$$h_1 = 152.6 \text{ cm}$$

$$A_s = \frac{22.99 \times 10^5 \times (66.7 + 152.6)}{0.8 \times 1800 \times 66.7 \times 152.6}$$

$$= 37.40 \text{ cm}^2$$

Required bar arrangement for shorter side.

$$A_{sb1} = 34.40 \times \frac{66.7}{2 \times (66.7 + 152.6)} = 5.23 \text{ cm}^2$$

Required bar arrangement for longer side.

$$A_{sh1} = 34.40 \times \frac{152.6}{2 \times (66.7 + 152.6)} = 11.97 \text{ cm}^2$$

(i) Top side (refer the calculation of bending stress.) ---- Use main bars for this purpose as well.

$$A_s' = D32 - 7 = 55.59 \text{ cm}^2$$

$$A_s = \frac{1800 \times 1.2 - 1800}{1800} \times 55.59$$

$$= 11.12 \text{ cm}^2 > A_{sb1} = 5.23 \text{ cm}^2$$

(ii) Bottom side (refer the same) ----

Use haunch bar for this purpose as well.

$$A_s = D32 - 4 = 31.77 \text{ cm}^2 > A_{sb1} = 5.23 \text{ cm}^2$$

(iii) side (One side)

$$A_s = D32 - 1 = 7.942 \text{ cm}^2$$

$$D19 - 2 = 5.730 "$$

$$13.672 \text{ cm}^2 > A_{sh1} = 11.97 \text{ cm}^2$$



hunch

$$M_t = 15.33 \text{ t/m}$$

$$b_1 = 66.7 \text{ cm}$$

$$h_2 = 112.6 \text{ "}$$

$$A_s = \frac{15.33 \times 10^5 \times (66.7 + 112.6)}{0.8 \times 1800 \times 66.7 \times 112.6} = 25.42 \text{ cm}^2$$

Required bar arrangement for shorter side.

$$A_{sb1} = 25.42 \times \frac{66.7}{2 \times (66.7 + 112.6)}$$

$$= 4.73 \text{ cm}^2 < A_s = 11.12 \text{ cm}^2$$

Required bar arrangement for longer side.

$$A_{sh1} = 25.42 \times \frac{112.6}{2 \times (66.7 + 112.6)}$$

$$= 7.98 \text{ cm}^2 < D32-1 = 7.942 \text{ cm}^2$$

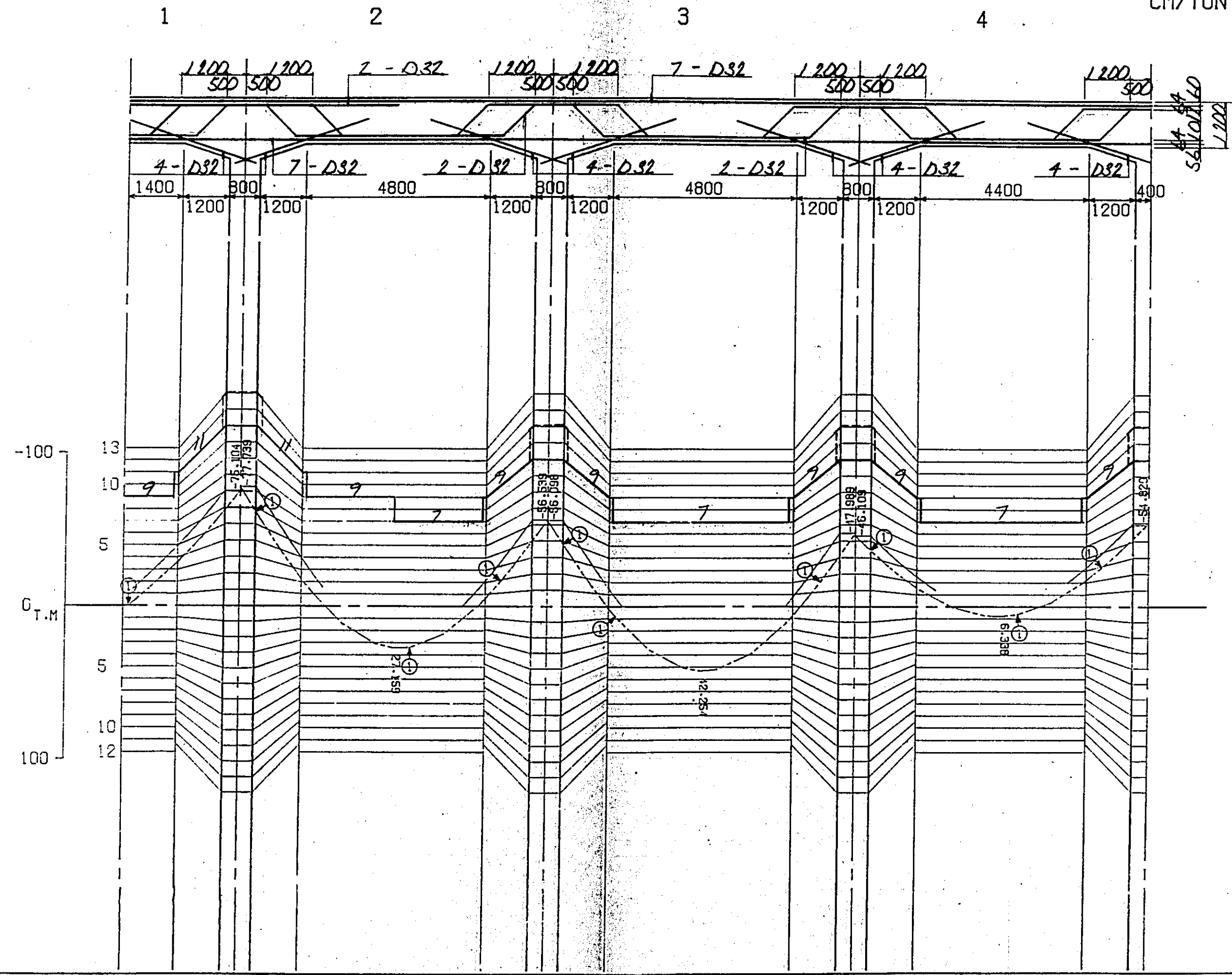
$$D19-2 = 5.730 \text{ "}$$

$$\underline{\hspace{1.5cm}} \\ 13.672 \text{ cm}^2$$

# VIADUCT OF DOUBLE TRACK L-1

PICK UP 1

1/100  
CM/TON 4.0/100

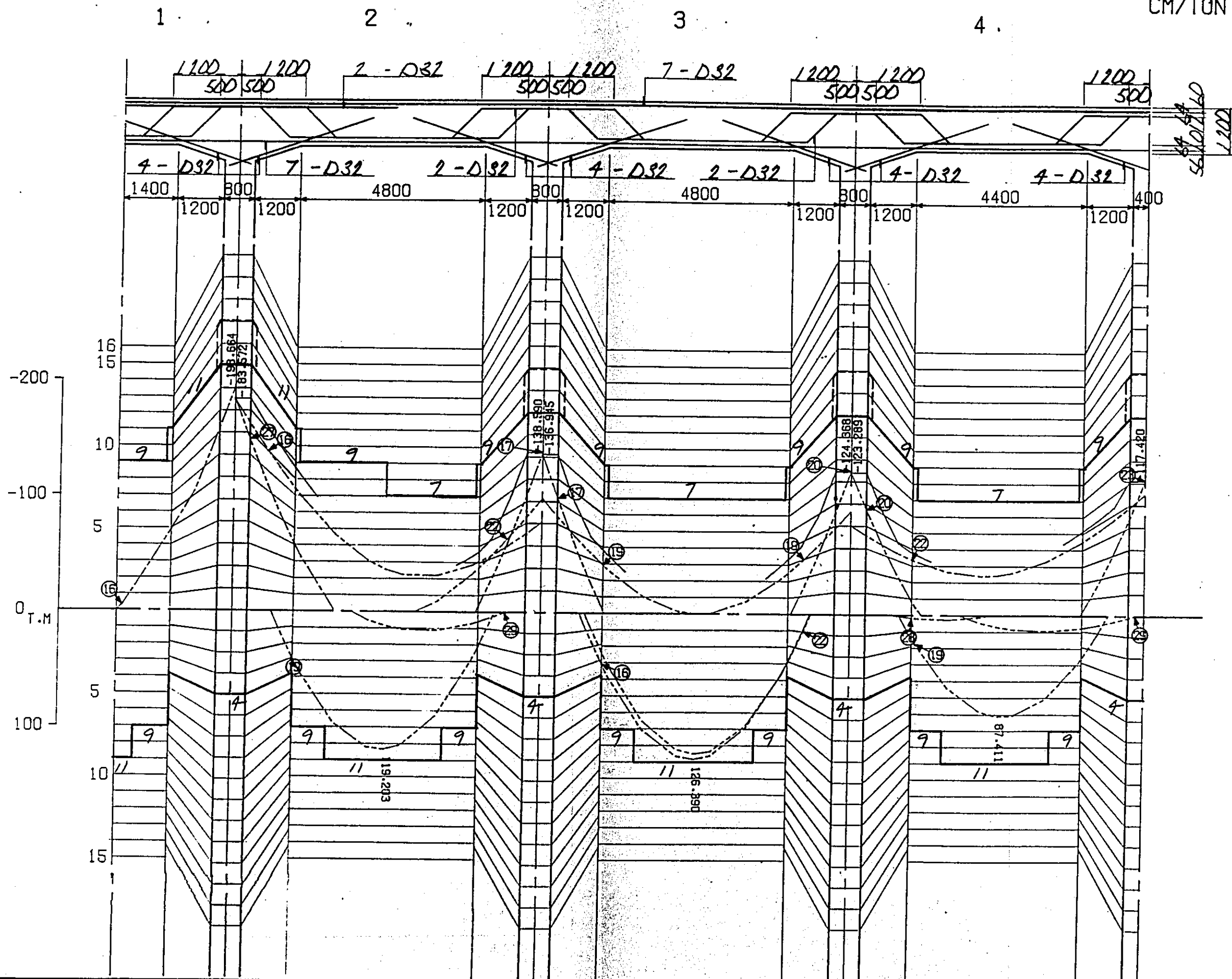


# VIADUCT OF DOUBLE TRACK L-1

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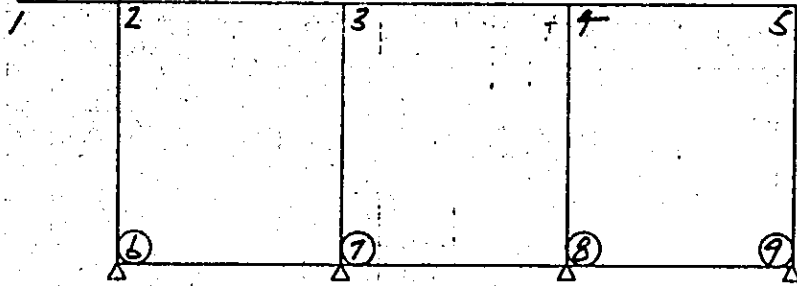
PICK UP 2

1/100  
CM/TON 3.0/100



(8) Calculation of buried beam (L-1)

(1) Summary of stresses.



(a) Bending moment and shearing force.

		⑥~⑦ member				⑦~⑧ member	
		⑥		⑦		⑦	
Dead load (pick up 1)	Top	-8.71	1	-28.18	1	-26.04	1
	Bottom	—	—	span 17.80	1	—	—
(pick up 2)	Top	-35.04	29	-41.36	28	-33.10	29
	Bottom	24.70	28	6.36	29	1.35	28
shearing force (pick up 2)		10.34	29	13.59	28	9.47	29

		⑦~⑧ member		⑧~⑨ member			
		⑧		⑧		⑨	
Dead load (pick up 1)	Top	-25.26	1	-25.78	1	-7.06	1
	Bottom	—	—	span 16.36	1	—	—
(pick up 2)	Top	-32.41	28	-40.08	29	-34.27	28
	Bottom	1.65	29	7.87	28	25.71	29
shearing force (pick up 2)		7.34	28	13.44	29	10.15	28

(b) Stress calculation.

(i) L-1 Top.

$$A_s = \frac{41.36 \times 10^5}{1800 \times 0.875 \times 82.2} \times \frac{4}{3} = 31.95 \times \frac{4}{3} = 42.60 \text{ cm}^2$$

$$A_s = 15 \times 70 \times 82.2 \times \frac{1}{3000} = 28.77 \text{ cm}^2$$

$$\therefore D29-5 = 32.12 \text{ cm}^2 > 28.77 \text{ cm}^2$$

(ii) L-1 Bottom.

$$A_s = \frac{25.71 \times 10^5}{1800 \times 0.875 \times 75} \times \frac{4}{3} = 21.77 \times \frac{4}{3} = 29.02 \text{ cm}^2$$

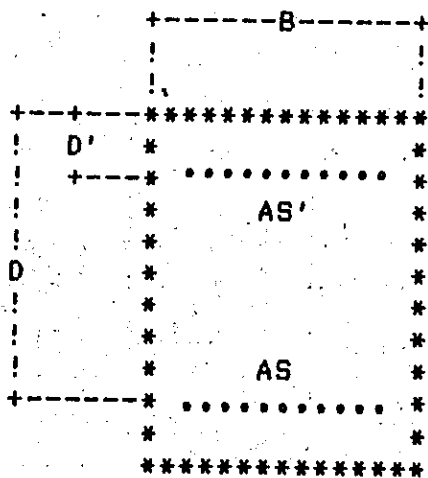
$$A_s = 15 \times 70 \times 75 \times \frac{1}{3000} = 26.25 \text{ cm}^2$$

$$\therefore D29-5 = 32.12 \text{ cm}^2 > 26.25 \text{ cm}^2$$

(C) Bending stress calculation

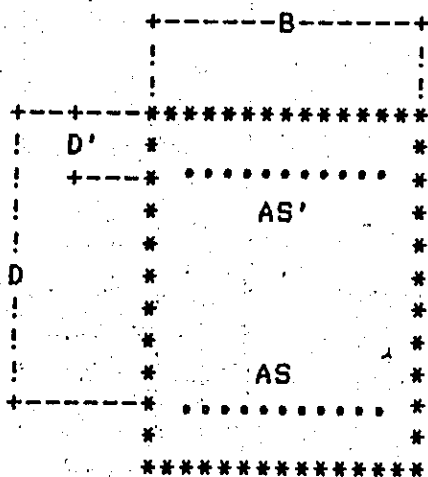
(i) TOP

calculation NO.	1	2	3
CABE	( 28 )	( 28 )	( )
M [T*M]	41.36	41.36	28.18
S [T]			
B [CM]	70.00	70.00	70.00
H [CM]	90.00	90.00	90.00
D [CM]	82.20	82.20	82.20
D' [CM]	7.80	7.80	7.80
AS (DIA-HON)	D29- 6.0	D29- 6.0	D29- 6.0
[CM**2]	38.54	38.54	38.54
AS' (DIA-HON)			
[CM**2]			
P	0.006699	0.006699	0.006699
P'			
K	0.3589	0.3589	0.3589
LC	0.1580	0.1580	0.1580
SIG-C [KG/CM**2]	55.35	55.35	37.71
SIG-S [KG/CM**2]	1482.84	1482.84	1010.31
TAU [KG/CM**2]			
SIG-CA [KG/CM**2]	90.00	90.00	90.00
SIG-SA [KG/CM**2]	1800.00	1800.00	1400.00
TAU-A [KG/CM**2]			



(ii) Bottom

Calculation No.	4	5
CASE	( 29 )	( 1 )
M [T*M]	25.71	17.80
S [T]		
B [CM]	70.00	70.00
H [CM]	90.00	90.00
D [CM]	75.00	75.00
D' [CM]	15.00	15.00
AS (DIA-HON)	D29- 6.0	D29- 6.0
[CM**2]	38.54	38.54
AS' (DIA-HON)		
[CM**2]		
P	0.007342	0.007342
P'		
K	0.3719	0.3719
LC	0.1629	0.1629
SIG-C [KG/CM**2]	40.08	27.75
SIG-S [KG/CM**2]	1015.24	702.89
TAU [KG/CM**2]		
SIG-CA [KG/CM**2]	90.00	90.00
SIG-SA [KG/CM**2]	1800.00	1400.00
TAU-A [KG/CM**2]		



# VIADUCT OF DOUBLE TRACK L-1

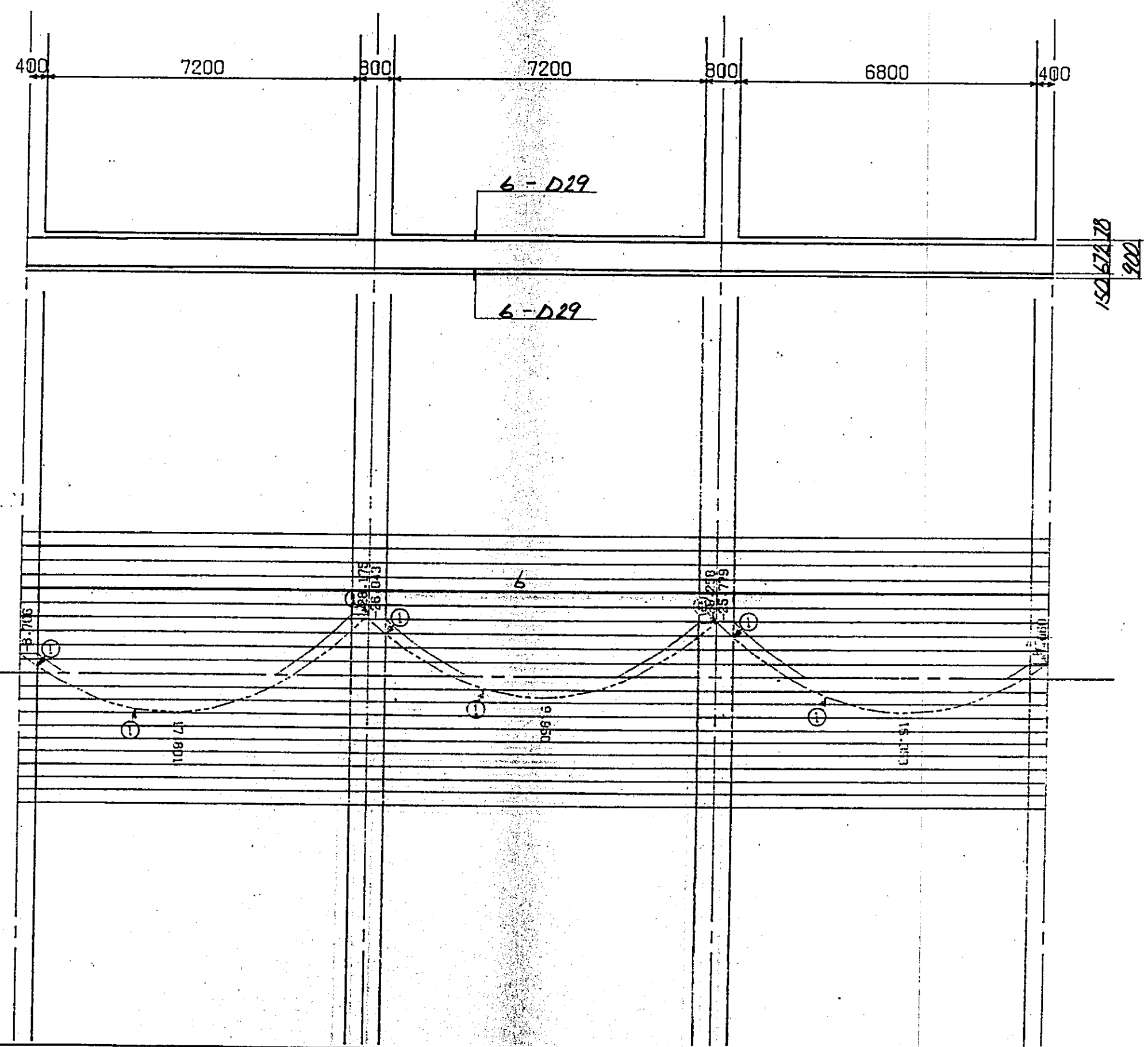
PICK UP 1

CM/TON 1/100  
5.0/100

5

6

7





# VIADUCT OF DOUBLE TRACK L-1

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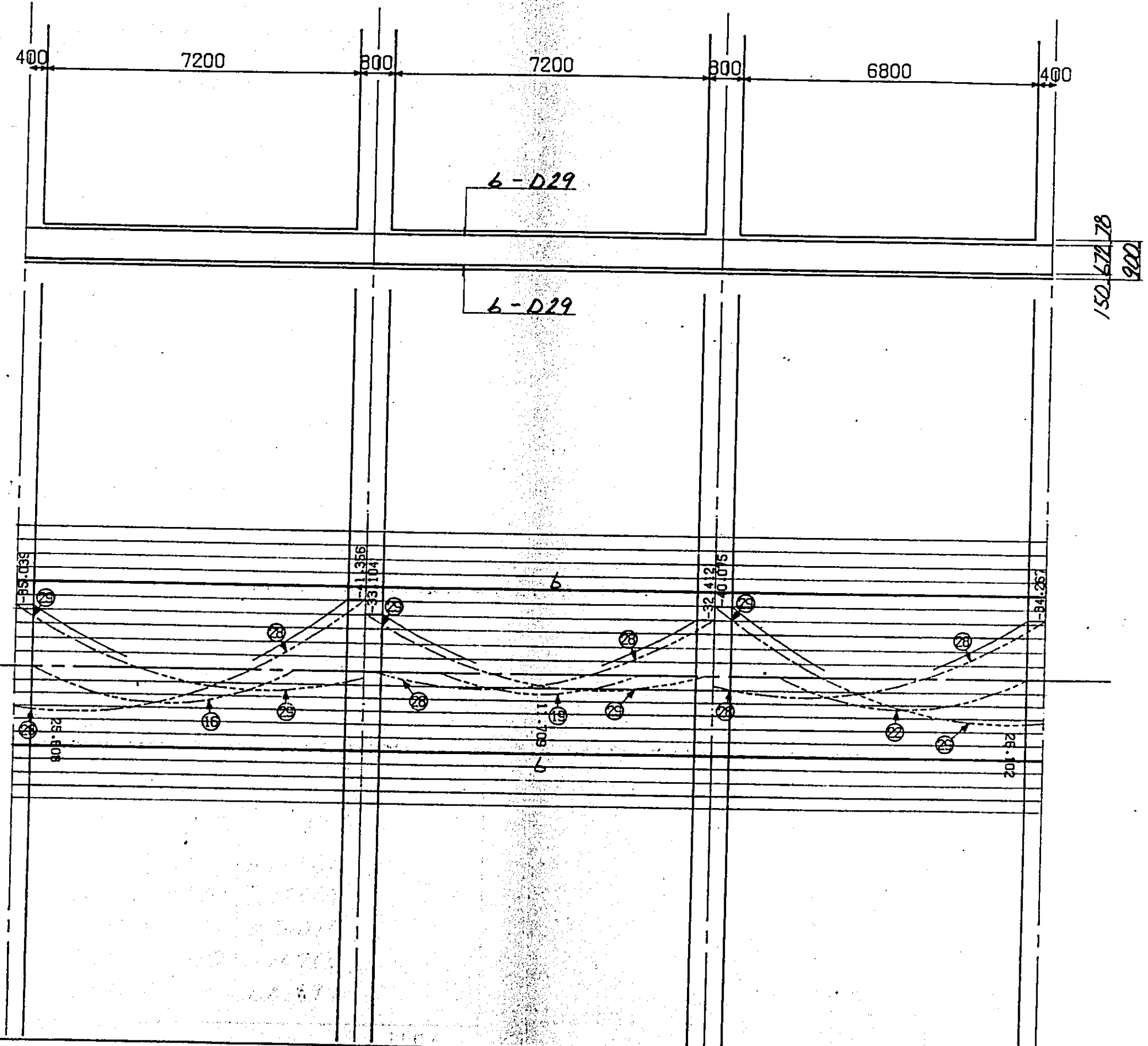
PICK UP 2

1/100  
CM/TON 4.0/100

5

6

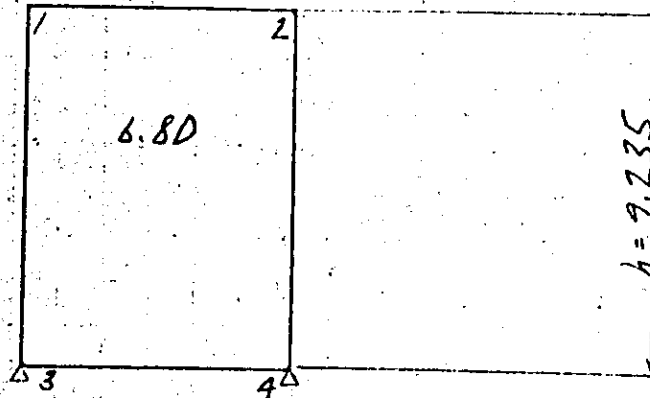
7



§ 5. Rigid frame analysis on transversal section (①-①) of elevated structure

[1] Elements for rigid frame analysis

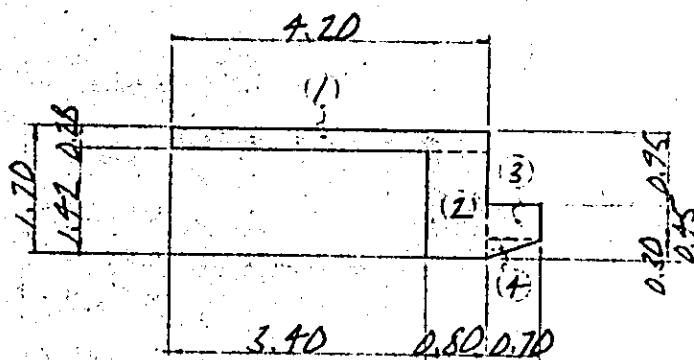
1. Configuration and dimension



$$h = 9.15 - 0.665 + 0.30 + 0.45 = 9.235 \text{ m}$$

2. Cross-sectional area and moment of inertia of the member.

(1) Member (1 ~ 2)



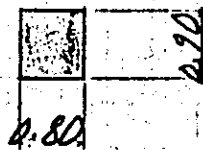
	$b \text{ m}$	$h \text{ m}$	$A \text{ m}^2$	$y \text{ m}$	$A \cdot y \text{ m}^3$
(1)	4.200	0.280	1.176	0.140	0.16464
(2)	0.800	1.420	1.136	0.990	1.12464
(3)	0.700	0.450	0.315	1.175	0.37013
(4)	0.700	0.300	0.105	1.500	0.15750
$\Sigma$	—	—	2.732	—	1.81691

$$y_0 = \frac{1.81691}{2.732} = 0.665 \text{ m}$$

	$A \text{ m}^2$	$y_0 \text{ m}$	$A \cdot y_0^2 \text{ m}^4$	$I_0 \text{ m}^4$	$A \cdot y_0^2 + I_0 \text{ m}^4$
①	1.176	0.525	0.32414	0.00768	0.33182
②	1.136	0.325	0.11999	0.19089	0.31088
③	0.315	0.510	0.08193	0.00512	0.08705
④	0.105	0.835	0.07321	0.00053	0.07374
$\Sigma$	2.732	—	0.59927	0.20422	0.80349

Cross-sectional area      Moment of inertia  
 $A = 2.732 \text{ m}^2$        $I = 0.80349 \text{ m}^4$

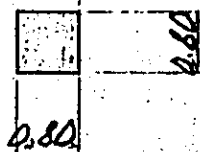
(2) Member (3 ~ 4)



$$A = 0.80 \times 0.90 = 0.720 \text{ m}^2$$

$$I = \frac{1}{12} \times 0.80 \times 0.90^3 = 0.04860 \text{ m}^4$$

(3) Member (1 ~ 3, 2 ~ 4)



$$A = 0.80 \times 0.80 = 0.640 \text{ m}^2$$

$$I = \frac{1}{12} \times 0.80 \times 0.80^3 = 0.03413 \text{ m}^4$$

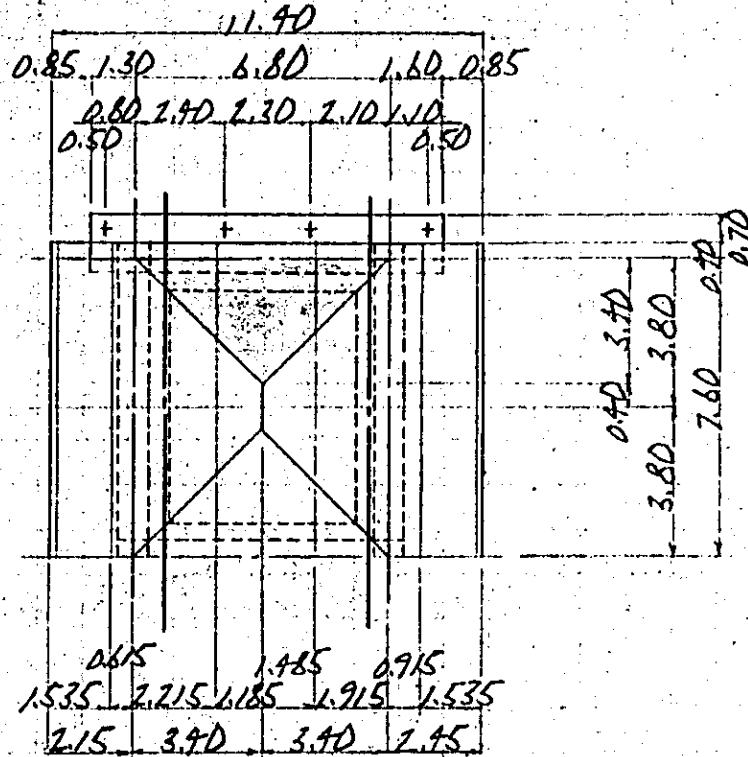
$$E_c = 2.7 \times 10^6 \text{ N/m}^2 \quad (f_{ck} = 240 \text{ N/cm}^2)$$

$$\alpha = 1.0 \text{ E}^{-5} \text{ } ^\circ\text{C}$$

(±) Calculation of loads.

1. Dead Load

(1) Member (1-2)



(a) Distributed load (A)

Ballast  $1.9 \times 0.481 = 0.91 \text{ } \frac{\text{t}}{\text{m}^2}$

grading concrete  $2.35 \times 0.07 = 0.16 \text{ } "$

slab  $2.5 \times 0.28 = 0.70 \text{ } "$

$w_d = 1.77 \text{ } \frac{\text{t}}{\text{m}^2}$

$w_{d1} = 1.77 \times 3.40 = 6.02 \text{ } \frac{\text{t}}{\text{m}}$

## (b) Distributed load (B)

$$\text{Track weight} \quad 0.45 \times \frac{1}{2} \times 2.83 = 0.16 \text{ } \frac{\text{t}}{\text{m}^2}$$

$$w_{d2} = 0.16 \times 0.40 = 0.06 \text{ } \frac{\text{t}}{\text{m}}$$

$$w_{d3} = 0.16 \times (0.40 + 2.215) = 0.42 \text{ } "$$

$$w_{d4} = 0.16 \times (0.40 + 1.915) = 0.37 \text{ } "$$

## (c) Distributed load (C)

$$\text{Distributed load} \quad 1.77 \times 0.40 = 0.71 \text{ } \frac{\text{t}}{\text{m}}$$

$$\text{Cross beam} \quad 2.5 \times 0.80 \times 1.42 = 2.84 \text{ } "$$

$$\text{Beam seat} \quad 2.5 \times (0.70 \times 0.40 + \frac{1}{2} \times 0.70 \times 0.30)$$

$$= 0.96 \text{ } "$$

$$\text{Slab haunch} \quad 2.5 \times \frac{1}{2} \times 0.45 \times 0.15 = 0.08 \text{ } "$$

$$w_{d5} = 4.59 \text{ } \frac{\text{t}}{\text{m}}$$

(d) Concentrated load of elements acting at joint P<sub>1</sub>, P<sub>2</sub> as shown beam(i) joint P<sub>1</sub>

$$\text{Hand rail} \quad 0.20 \times 4.20 = 0.84 \text{ } \tau$$

$$\text{curb} \quad 2.5 \times 0.20 \times 0.30 \times 4.20 = 0.63 \text{ } "$$

$$\text{Distributed load} \quad 1.77 \times \frac{1}{2} \times (0.40 + 3.80) \times 3.40 = 12.64 \text{ } "$$

$$\text{"} \quad 1.77 \times 0.40 \times 4.20 = 2.97 \text{ } "$$

$$\text{Track weight} \quad 0.16 \times \frac{1}{2} \times (1.585 + 3.80) \times 2.215 = 0.95 \text{ } "$$

$$\text{"} \quad 0.16 \times 0.615 \times 4.20 = 0.41 \text{ } "$$

Balast	$0.91 \times 1.95 \times 4.20$	$= 7.45^t$
Sloping concrete	$0.16 \times 1.95 \times 4.20$	$= 1.31''$
Slab	$2.5 \times \frac{1}{2} \times (0.20 + 0.43) \times 1.75$ $\times 4.20$	$= 5.79''$
Cross beam	$2.5 \times 0.80 \times 1.92 \times 1.30$	$= 3.69''$
Beam seat	$2.5 \times \frac{1}{2} \times (0.45 + 0.75) \times 0.70 \times 1.30$	$= 1.37''$
Slab haunch	$2.5 \times \frac{1}{2} \times 0.45 \times 0.15 \times 3.25$	$= 0.27''$
Cross beam haunch	$2.5 \times \frac{1}{2} \times 0.10 \times 0.10 \times 0.80 \times 2$	$= 0.02''$
Longitudinal beam	$2.5 \times 0.80 \times 0.92 \times 3.40$	$= 6.26''$
Longitudinal beam haunch	$2.5 \times \frac{1}{2} \times 1.20 \times 0.40 \times 0.80$	$= 0.48''$
Deficit of column weight	$-2.5 \times 0.80 \times 0.80 \times (1.70 - 0.665)$	$= -1.66''$
		$P_1 = 43.42^t$

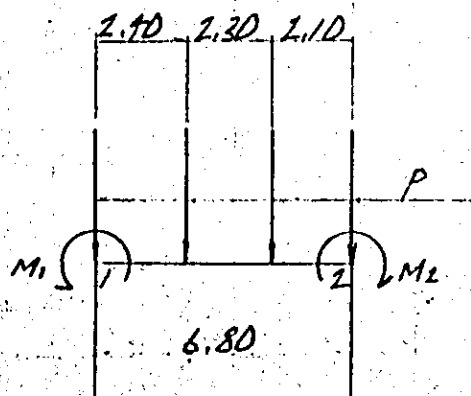
(ii) joint  $P_2$ 

Hand rail	$0.20 \times 4.20$	$= 0.84^t$
curb	$2.5 \times 0.20 \times 0.30 \times 4.20$	$= 0.63''$
Distributed load	$1.77 \times \frac{1}{2} \times (0.40 + 3.80) \times 3.40$	$= 12.64''$
"	$1.77 \times 0.40 \times 4.20$	$= 2.97''$
Track weight	$0.16 \times \frac{1}{2} \times (1.885 + 3.80) \times 1.915$	$= 0.87''$
"	$0.16 \times 0.915 \times 4.20$	$= 0.61''$

Ballast	$0.91 \times 2.25 \times 4.20$	$= 8.60^t$
sloping concrete	$0.16 \times 2.25 \times 4.20$	$= 1.51''$
slab	$2.5 \times \frac{1}{2} \times (0.20 + 0.43) \times 2.05 \times 4.20$	$= 6.78''$
Cross beam	$2.5 \times 0.80 \times 1.42 \times 1.60$	$= 4.54''$
Beam seat	$2.5 \times \frac{1}{2} \times (0.45 + 0.75) \times 0.70 \times 1.60$	$= 1.68''$
Slab haunch	$2.5 \times \frac{1}{2} \times 0.45 \times 0.15 \times 3.25$	$= 0.27''$
Cross beam haunch	$2.5 \times \frac{1}{2} \times 0.10 \times 0.10 \times 0.80 \times 2$	$= 0.02''$
Longitudinal beam haunch	$2.5 \times \frac{1}{2} \times 1.20 \times 0.40 \times 0.80$	$= 0.48''$
Longitudinal beam	$2.5 \times 0.80 \times 0.92 \times 3.40$	$= 6.26''$
	$-2.5 \times 0.80 \times 0.80 \times (1.70 - 0.665)$	$= -1.66''$

$$P_2 = 47.04^t$$

(d) Moment at joint caused by beam of bridge support and T-beam bridge

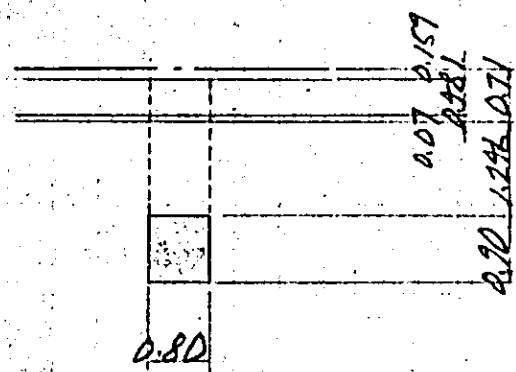
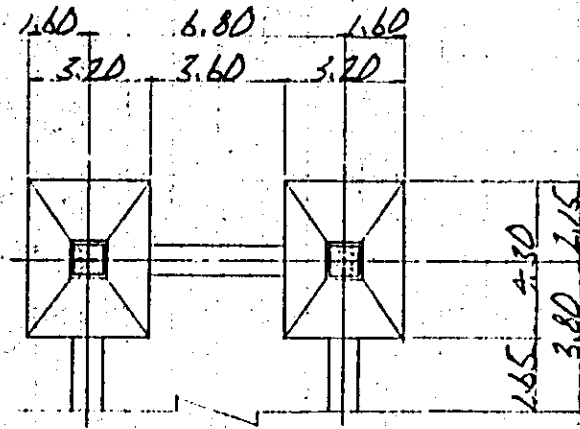


$$P = 34.00^t$$

$$M_1 = 34.00 \times 0.80 = 27.20^{tm}$$

$$M_2 = 34.00 \times 1.10 = 37.40''$$

(2) Member (3~4)



(a) Distributed load (A)

Ballast	$1.9 \times 0.481$	$= 0.91 \text{ t/m}^2$
Grading concrete	$2.35 \times 0.07$	$= 0.16 \text{ "}$
		$1.07 \text{ t/m}^2$
Earth weight	$1.8 \times 0.946$	$= 1.70 \text{ t/m}^2$
"	$1.8 \times 1.246$	$= 2.24 \text{ "}$



(b) Distributed load (B)

$$w_d = (1.07 + 2.24) \times 0.80 + 2.5 \times 0.80 \times 0.90$$

$$= 4.45 \text{ t/m}$$

(c) Concentrated load of elements acting at joint P<sub>3</sub>, P<sub>4</sub> as shown below(i) joint P<sub>3</sub>, P<sub>4</sub>

$$\text{Distributed load (B)} \quad 4.45 \times 1.65 = 7.34 \text{ t}$$

$$\text{Distributed load (A)} \quad 1.07 \times (3.20 \times 4.30 - 0.80^2) = 14.04 \text{ t}$$

$$\text{Earth weight} \quad 1.7 \times (3.20 \times 4.30 - 0.80^2) = 22.30 \text{ t}$$

$$\text{"} \quad 1.8 \times \{3.20 \times 4.30 - \frac{1}{6} \times (1.00^2 + 3.20 \times 4.30 + 4 \times 2.10 \times 2.65)\} \times 0.30 = 4.10 \text{ t}$$

$$\text{Footing} \quad 2.5 \times \{3.20 \times 4.30 \times 0.90 + \frac{1}{6} \times (1.00^2 + 3.20 \times 4.30 + 4 \times 2.10 \times 2.65)\} \times 0.30 = 35.59 \text{ t}$$

$$\text{Deficit of column weight} \quad -2.5 \times 0.80^2 \times (0.30 + 0.45) = -1.20 \text{ t}$$

$$\text{Deficit of distributed load} \quad -4.45 \times 1.60 = -7.12 \text{ t}$$

---

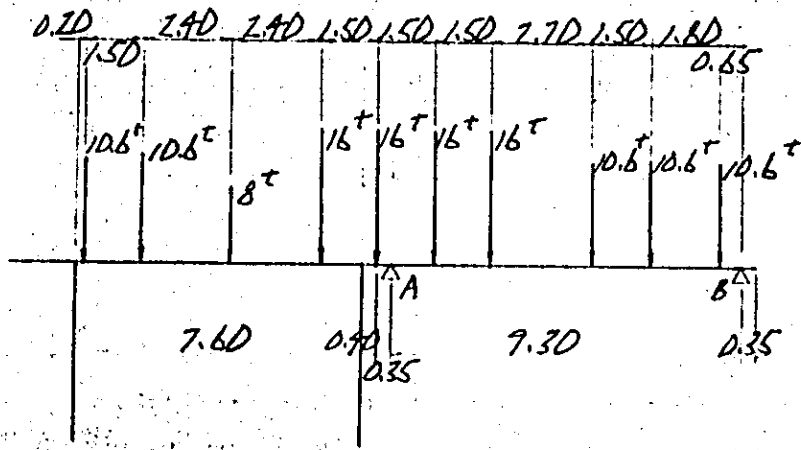
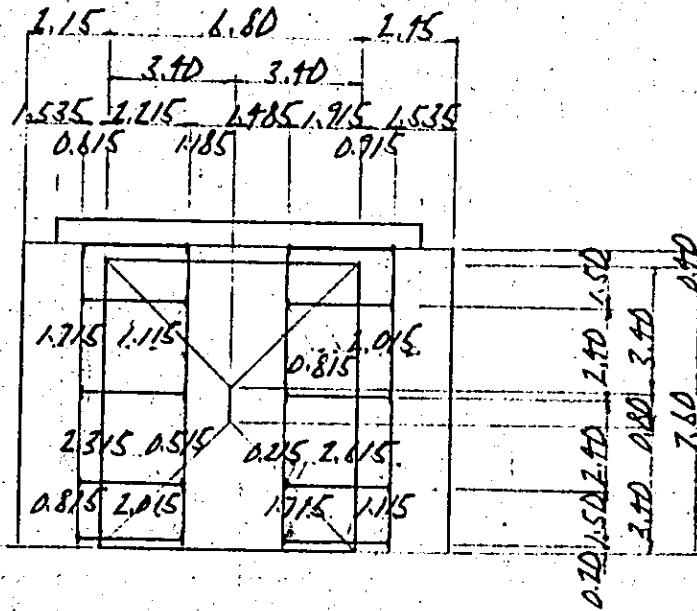

$$P_{3,4} = 75.05 \text{ t}$$

(3) Column weight

$$G = 2.5 \times 0.80 \times 0.80 = 1.60 \text{ t/m}$$

## 2. Train load + Impact (ks-16)

### (1) Train load



$$w_{l1} = \frac{16}{2.83} = 5.65 \text{ t/m}$$

$$w_{l2} = \frac{10.6}{2.83} = 3.75 \text{ ''}$$

$$w_{l3} = \frac{8}{2.83} = 2.83 \text{ ''}$$

## (2) Reduction of impact coefficient

$$l_1 = 6.80 \text{ m} \longrightarrow i = 0.462 \times \left(1 - \frac{6.80}{2.00}\right) = 0.446$$

$$l_2 = 7.60 \text{ m} \longrightarrow i = 0.454 \times \left(1 - \frac{7.60}{2.00}\right) = 0.437$$

$$l_3 = 9.30 \text{ m} \longrightarrow i = 0.437$$

## (3) Train load + Impact

## (A) Train load

## (i) Distributed load

$$w_{l+i1} = 5.65 \times (1 + 0.446) = 8.17 \text{ t/m}$$

$$w_{l+i2} = 5.65 \times (1 + 0.446) \times 2 = 16.34 \text{ t}$$

## (ii) Distributed load of longitudinal beam

1) joint P<sub>1</sub>

$$\begin{aligned} P_{l+i1} &= \frac{1}{7.60} \times \{ 3.75 \times (0.815 \times 7.40 + 2.315 \times 5.90) \\ &\quad + 8 \times 3.50 + 5.65 \times 1.715 \times 6.50 \} \times (1 + 0.437) \\ &\quad + 5.65 \times 0.815 \times (1 + 0.437) \\ &= 36.16 \text{ t} \end{aligned}$$

2) joint P<sub>2</sub>

$$\begin{aligned} P_{l+i2} &= \frac{1}{7.60} \times \{ 3.75 \times (1.115 \times 7.40 + 2.615 \times 5.90) \\ &\quad + 8 \times 3.50 + 5.65 \times 2.015 \times 6.50 \} \times (1 + 0.437) \\ &\quad + 5.65 \times 0.915 \times (1 + 0.437) \\ &= 43.51 \text{ t} \end{aligned}$$

(b) Reaction of T-beam superstructure

$$\begin{aligned}
 R_{Ai} &= 9.30 \times \{10.6 \times (0.65 + 2.45 + 3.95) \\
 &\quad + 16 \times (6.65 + 8.15)\} \\
 &= 33.50 \text{ t}
 \end{aligned}$$

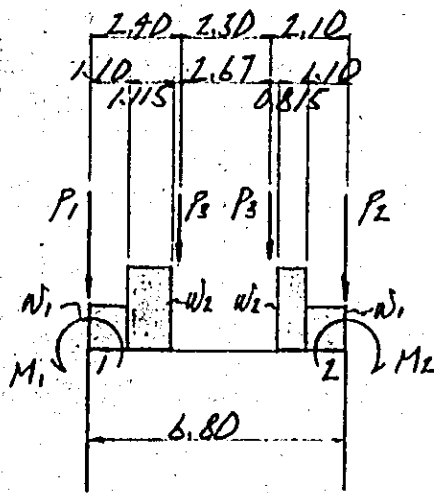
where

$$R_{Ai} = 33.50 \times (1 + 0.437) \times \frac{1}{2} = 24.07 \text{ t}$$

$$M_{Pi1} = 24.07 \times 0.80 = 19.26 \text{ t.m}$$

$$M_{Pi2} = 24.07 \times 1.10 = 26.48 \text{ ''}$$

(4) Composition of rigid frame and T-Beam



$$W_1 = 8.17 \text{ t/m}$$

$$N_2 = 16.34 \text{ ''}$$

$$P_1 = 36.16 + 24.07 = 60.23 \text{ t}$$

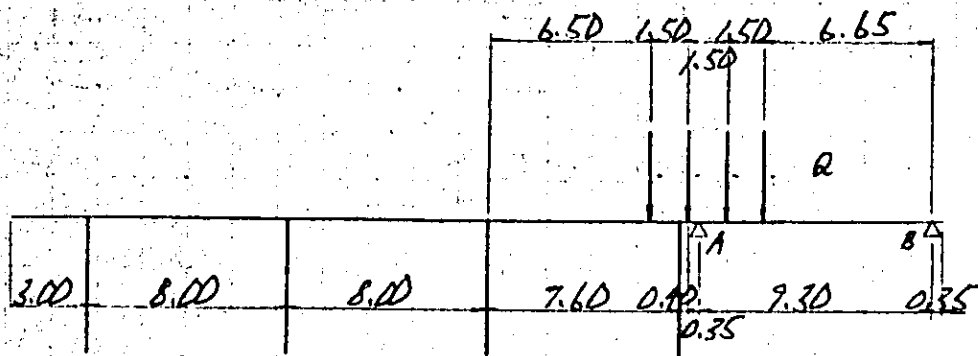
$$P_2 = 43.51 + 24.07 = 67.58 \text{ ''}$$

$$P_3 = 24.07 \text{ t}$$

$$M_1 = 19.26 \text{ t.m}$$

$$M_2 = 26.48 \text{ ''}$$

## 3. Train lateral Load



$$Q = 1.6 \times 0.15 = 2.40 \text{ t}$$

$$H = \frac{2.40}{7.60} \times 6.50 + \frac{2.40}{9.30} \times (6.65 + 8.15) + 2.40$$

$$= 8.27 \text{ t}$$

## 4. Force of temperature change and/or Drying contraction

Temperature rise + 10 deg

Temperature drop +  
Drying contraction - 25 deg

## 5. Dead load + Seismic force

(1)  $W_1$ 

Track weight	$0.45 \times 4.20 \times 2$	= 3.78 <sup>t</sup>
curb	$2.5 \times 0.20 \times 0.30 \times 4.20 \times 2$	= 1.26 <sup>"</sup>
Hand rail	$0.20 \times 4.20 \times 2$	= 1.68 <sup>"</sup>
Ballast	$1.9 \times 11.00 \times 0.481 \times 4.20$	= 42.22 <sup>"</sup>
Sloping concrete	$2.35 \times 11.00 \times 0.07 \times 4.20$	= 7.60 <sup>"</sup>
Slab	$2.5 \times 7.60 \times 0.28 \times 4.20$	= 22.34 <sup>"</sup>
"	$2.5 \times \frac{1}{2} \times (0.20 + 0.43) \times 1.75 \times 4.20$	= 5.79 <sup>"</sup>
"	$2.5 \times \frac{1}{2} \times (0.20 + 0.43) \times 2.05 \times 4.20$	= 6.78 <sup>"</sup>
Slab haunch	$2.5 \times \frac{1}{2} \times 0.45 \times 0.15 \times (3.25 \times 2$ $+ 5.70)$	= 1.03 <sup>"</sup>
Longitudinal beam	$2.5 \times 0.80 \times 0.92 \times 3.40 \times 2$	= 12.51 <sup>"</sup>
Longitudinal beam haunch	$2.5 \times \frac{1}{2} \times 1.20 \times 0.40 \times 0.80 \times 2$	= 0.96 <sup>"</sup>
Beam seat	$2.5 \times \frac{1}{2} \times (0.45 + 0.75) \times 0.70 \times 9.70$	= 10.19 <sup>"</sup>
Cross beam	$2.5 \times 0.80 \times 1.42 \times 9.70$	= 27.55 <sup>"</sup>
Cross beam haunch	$2.5 \times \frac{1}{2} \times 0.10 \times 0.10 \times 0.80 \times 4$	= 0.04 <sup>"</sup>
Column	$2.5 \times 0.80 \times 0.80 \times (\frac{1}{2} \times 9.235$ $+ 0.665 - 1.70) \times 2$	= 11.46 <sup>"</sup>
T-beam	$34.00 \times 2 \times 2$	= 136.00 <sup>"</sup>
		<hr/> $W_1 = 291.19^t$

$$\therefore Hd_1 = 291.19 \times 0.1 = 29.11^t$$

(2) W<sub>2</sub>

$$\text{Bracing beam } 2.5 \times 0.80 \times 0.90 \times (1.85 \times 2 + 3.60) = 13.14^t$$

$$\text{footing } 2.5 \times 3.20 \times 4.30 \times 0.90 \times 2 = 61.92^t$$

$$\begin{aligned} \text{" } & 2.5 \times \frac{1}{8} \times (1.00 \times 1.00 + 3.20 \times 4.30 \\ & + 4 \times 2.10 \times 2.65) \times 0.30 \times 2 = 9.26^t \end{aligned}$$

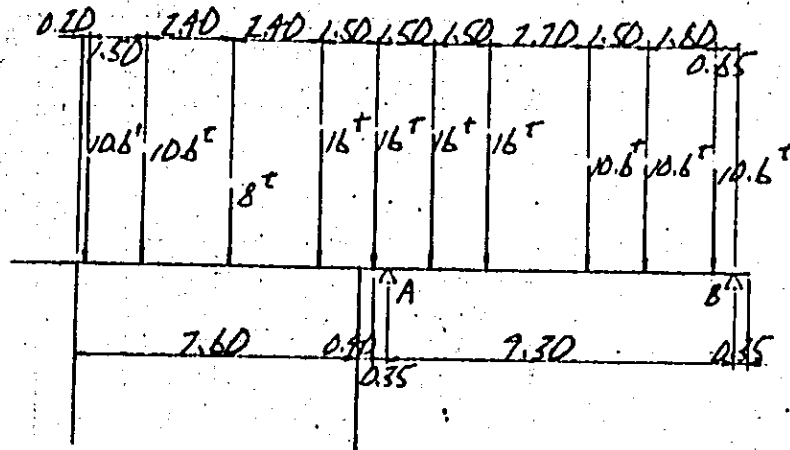
$$\begin{aligned} \text{column } & 2.5 \times 0.80 \times 0.80 \times (\frac{1}{2} \times 9.235 \\ & - 0.30 - 0.45) \times 2 = 12.38^t \end{aligned}$$

---


$$W_2 = 96.70^t$$

$$\therefore Hd_2 = 96.70 \times 0.1 = 9.67^t$$

b. Centrifugal load  
Train load



$$\begin{aligned}
 P_A &= \frac{1}{7.80} \times \{ 10.6 \times (0.20 + 1.70) + 8 \times 4.10 \\
 &\quad + 16 \times (6.50 + 8.00) \} \\
 &\quad + \frac{1}{7.30} \times \{ 10.6 \times (0.65 + 2.45 + 3.95) \\
 &\quad + 16 \times (6.65 + 8.15) \} \\
 &= 37.49 + 33.50 = 70.99 \text{ t}
 \end{aligned}$$

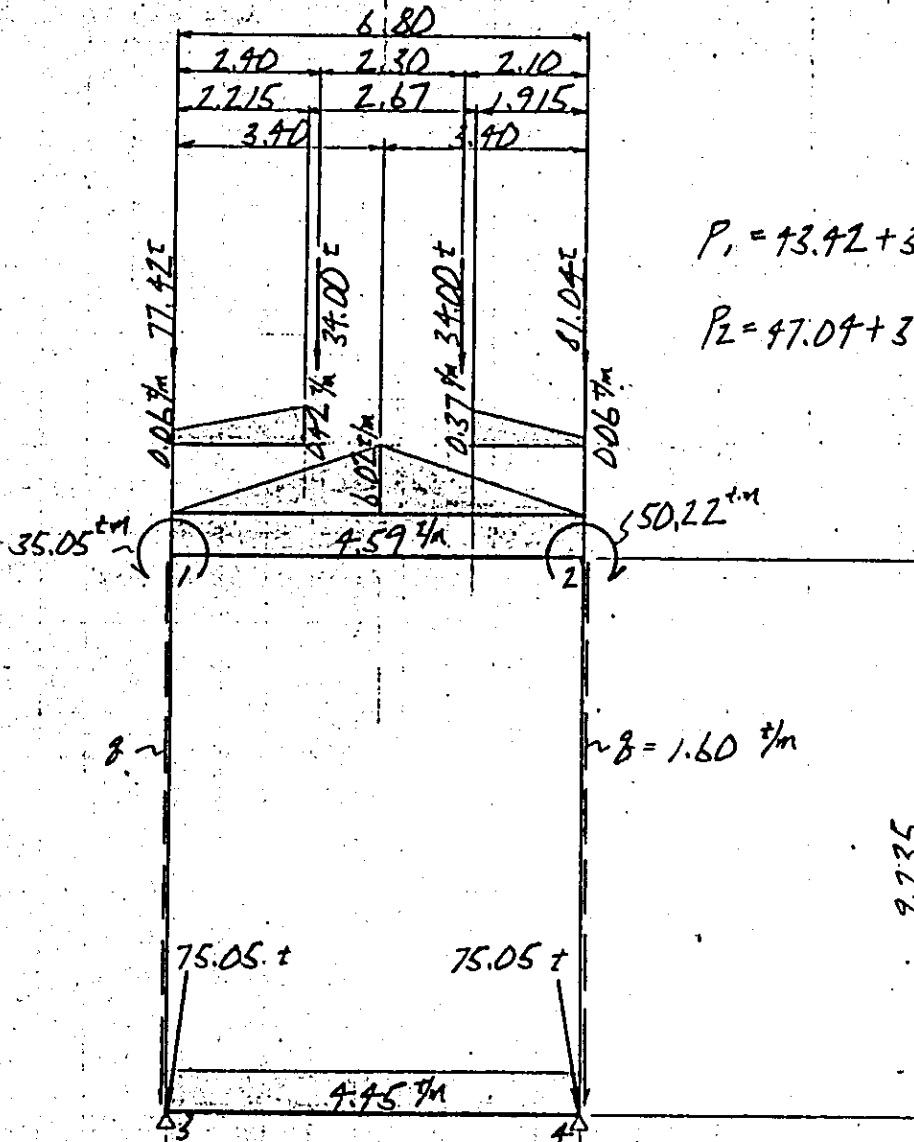
$$R = 500 \text{ m} \longrightarrow \alpha = 0.12$$

$$\therefore H = 70.99 \times 0.12 \times 2 = 17.04 \text{ t}$$



(3) Loading diagram

Case 1 Dead load



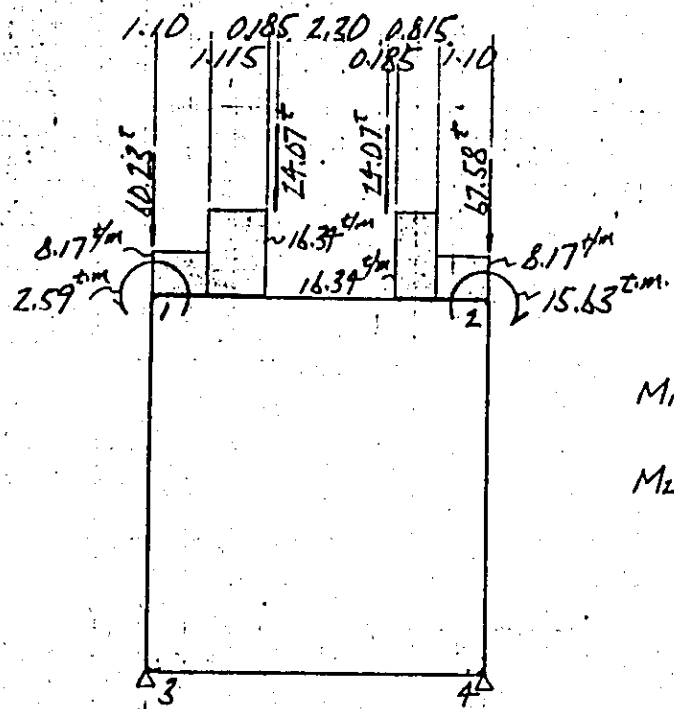
$$P_1 = 3.42 + 34.00 = 77.42^t$$

$$P_2 = 47.04 + 34.00 = 81.04^t$$

$$M_1 = -27.20 - 7.85 = -35.05 \text{ tm}$$

$$M_2 = 37.40 + 12.82 = 50.22 "$$

case 2. Train load + Impact

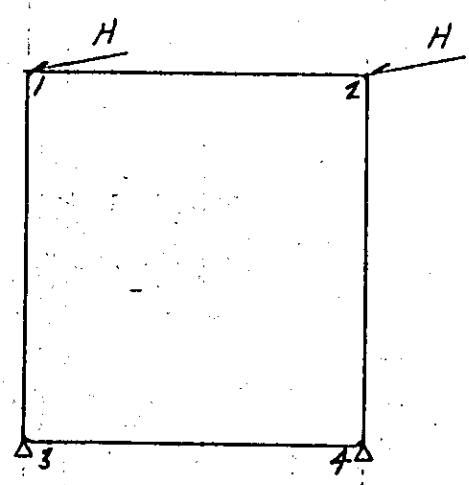


$$M_1 = -19.26 + 16.67 = -2.59$$

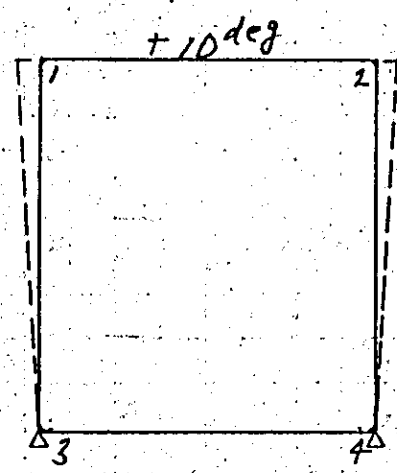
$$M_2 = 26.48 - 10.85 = 15.63$$

case 3. Train lateral load

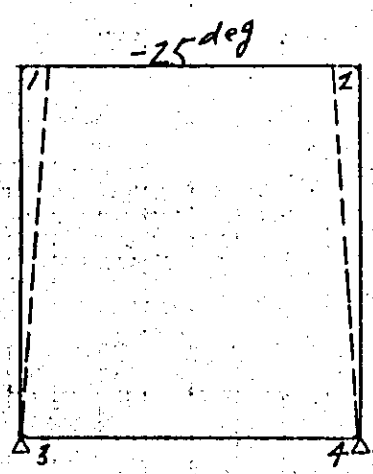
$$H = \frac{1}{2} \times 8.27 = 4.14$$



case 4. Temperature rise



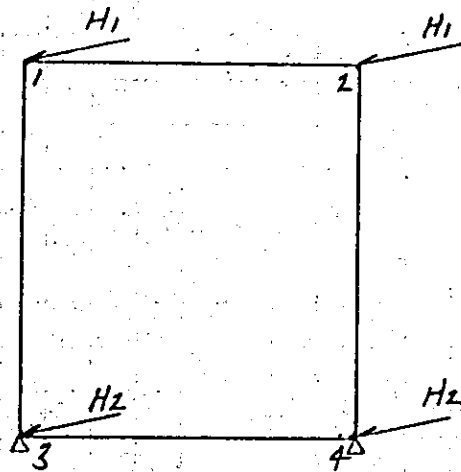
case 5. Temperature drop + drying contraction



case 6. Seismic load

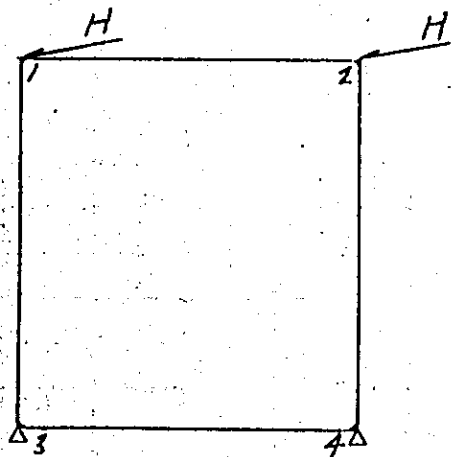
$$H_1 = \frac{1}{2} \times 29.12 = 14.56^t$$

$$H_2 = \frac{1}{2} \times 9.67 = 4.84^t$$










case 7. Centrifugal load

$$H = \frac{1}{2} \times 17.04 = 8.52^t$$



( 4 ) Combination of loads

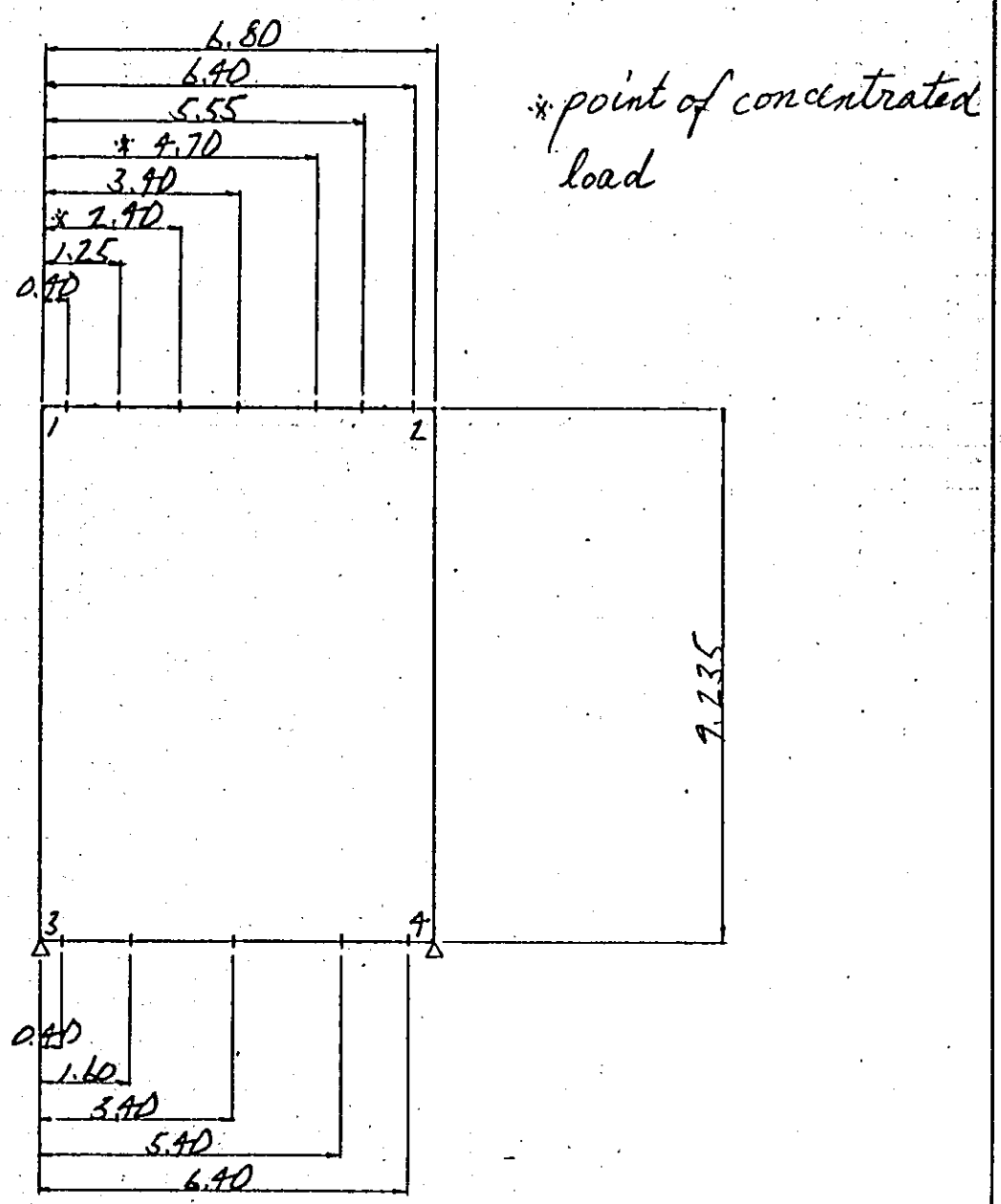
1. Basic load

Case No.	Kind of load	Loading pattern
1	Dead load	
2	Train load + Impact	
3	Train lateral load	
4	Temperature rise	
5	Temperature drop + drying contraction	
6	Seismic load	
7	Centrifugal load	

## 2. Critical cases

Case no.	$\alpha$	combination of loads	Summary
8	1.0000	1	D
9	1.0000	1 + 2 + 7	D + T + I + C
10	0.8696	1 + 2 + 3 + 7	D + T + I + C + Te
11	"	1 + 2 - 3 + 7	"
12	0.8696	1 + 4	D + Te
13	"	1 + 5	"
14	0.6667	1 + 6	D + Se
15	"	1 - 6	"
16	1.0000	1 + 2 + 3 + 7	D + Tr + I + C + Te
17	"	1 + 2 - 3 + 7	"
18	1.0000	1 + 4	D + Te
19	"	1 + 5	"
20	1.0000	1 + 6	D + Se
21	"	1 - 6	"
		NO.1 case 1	Crack
		NO.2 case 9 ~ 15	Synthetic
		NO.3 case 16 ~ 17	footing.
		NO.4 case 18 ~ 19	"
		NO.5 case 20 ~ 21	"

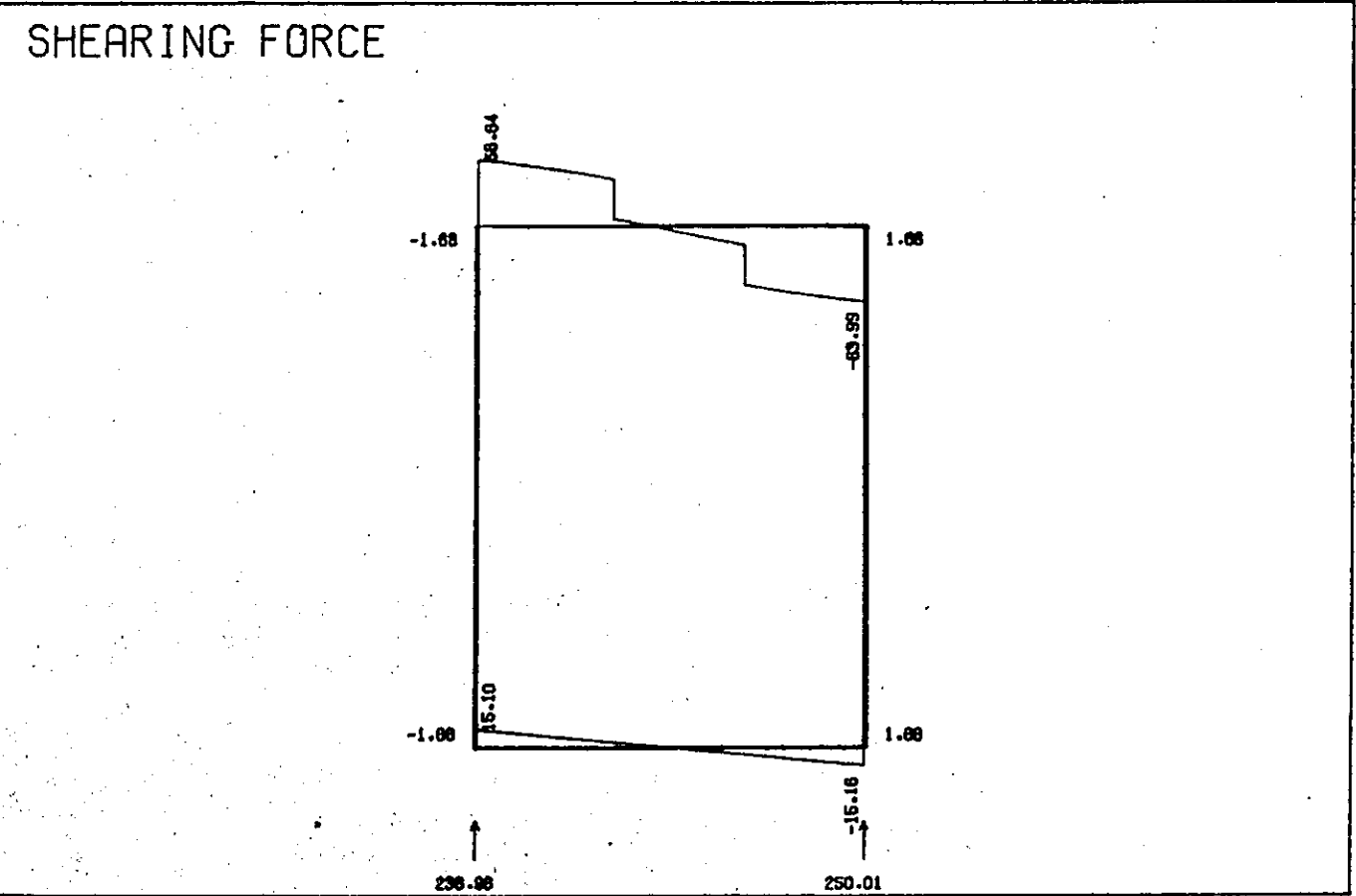
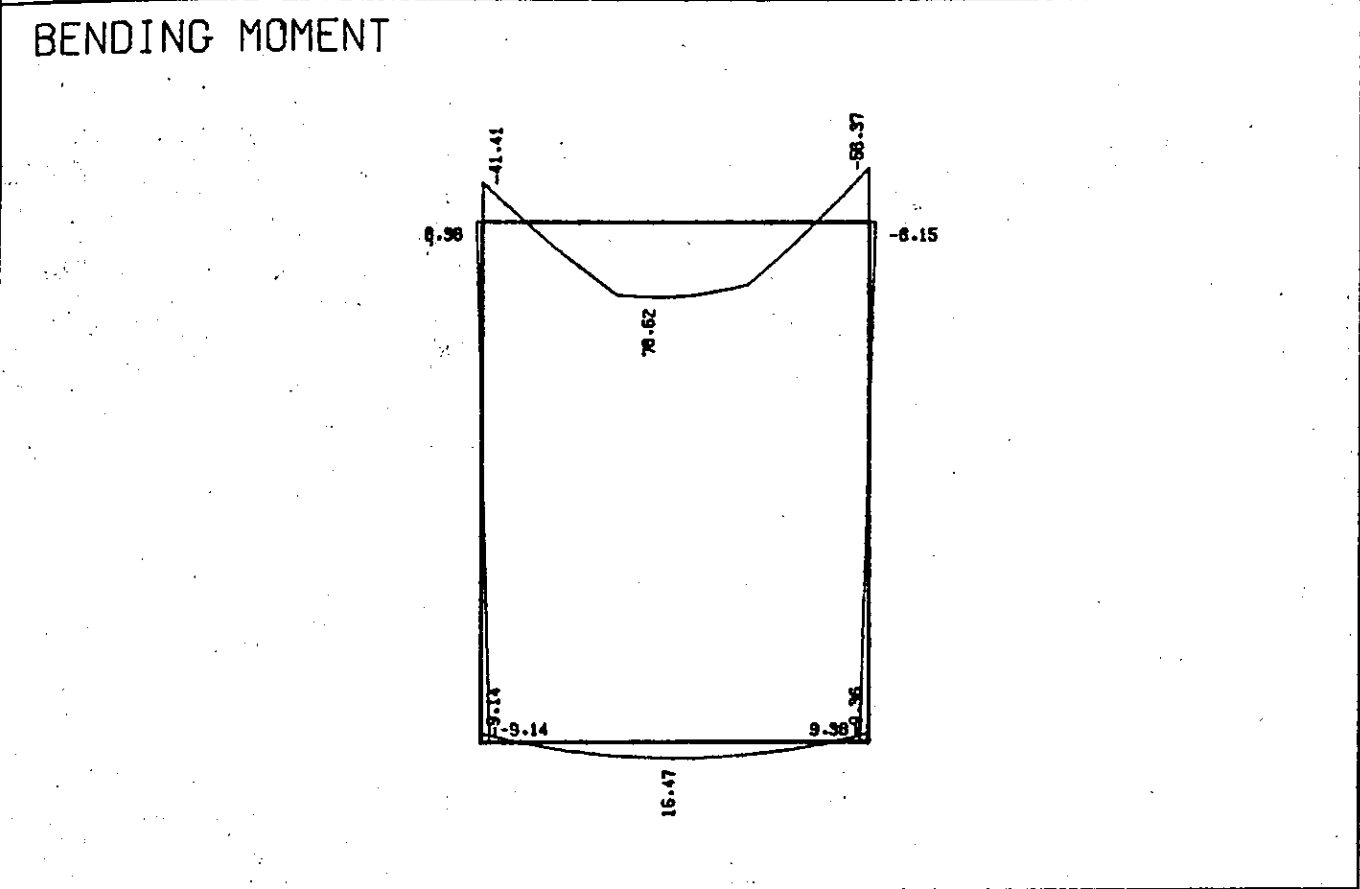
(5) Point of computing stresses



{6} stress diagram

VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-1

CASE 1 (DEAD LOAD)

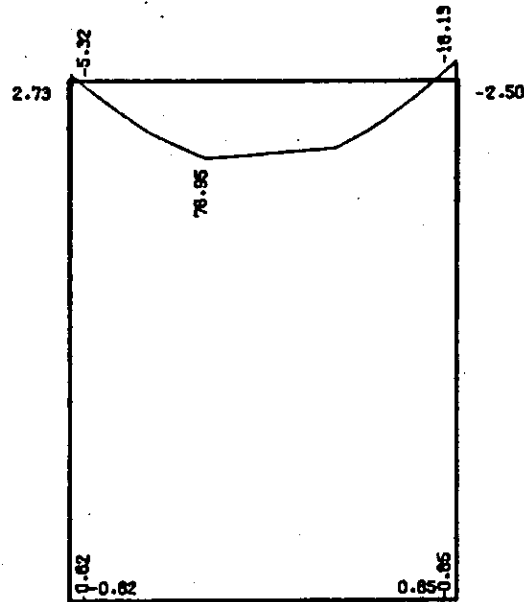




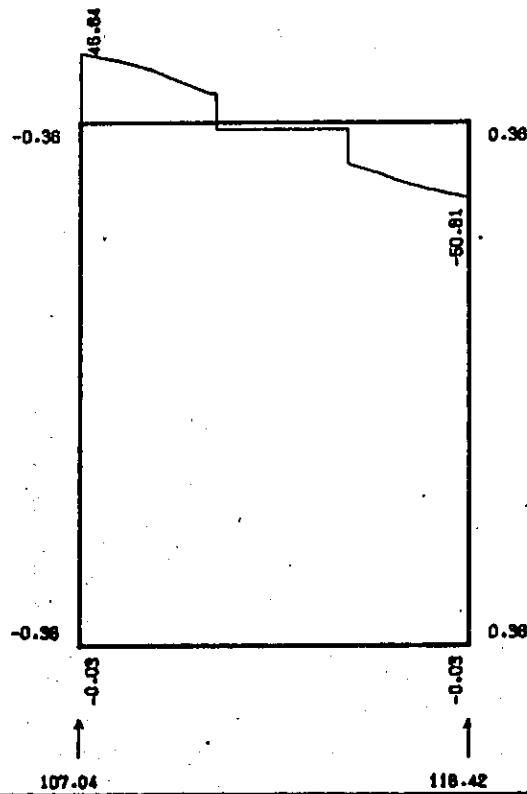
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-1

CASE 2 (TRAIN LOAD + IMPACT LOAD)

BENDING MOMENT



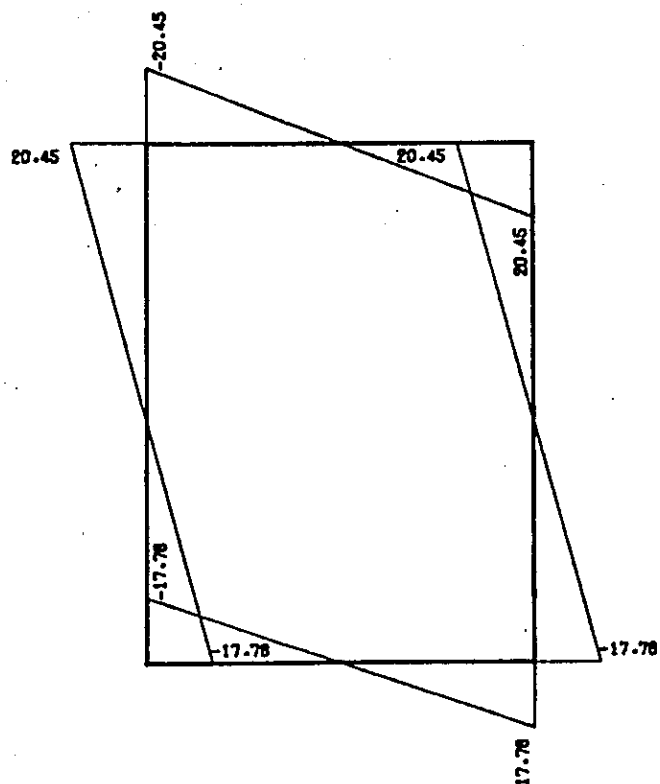
SHEARING FORCE



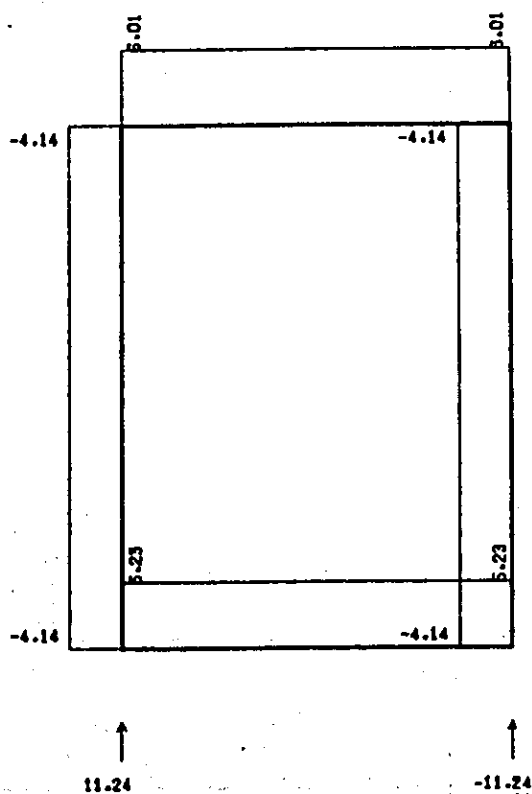
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-1

CASE 3 (TRAIN LATERAL LOAD)

BENDING MOMENT



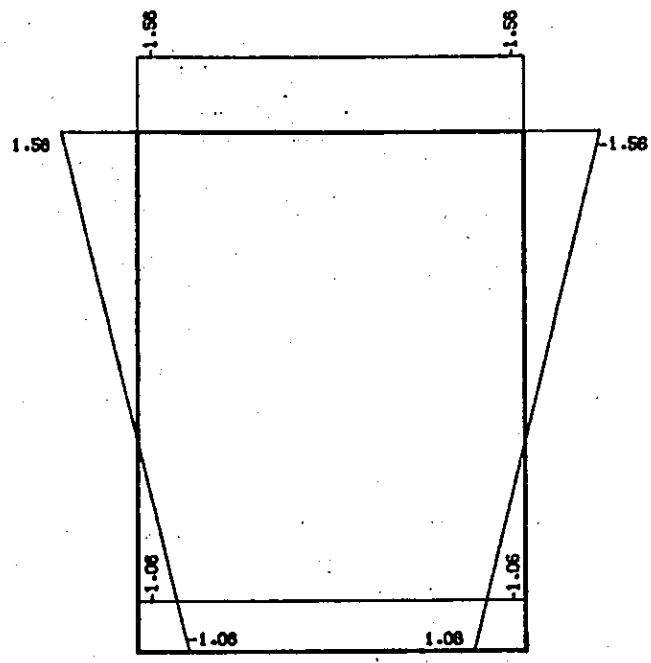
SHEARING FORCE



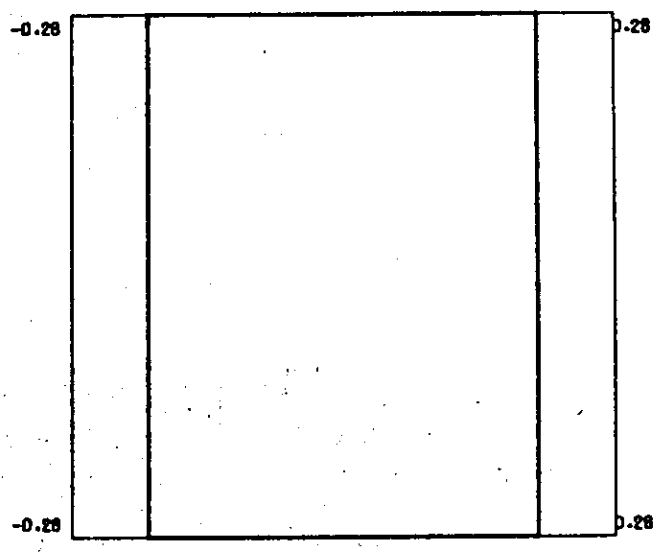
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-1

CASE 4 (TEMPERATURE)

BENDING MOMENT



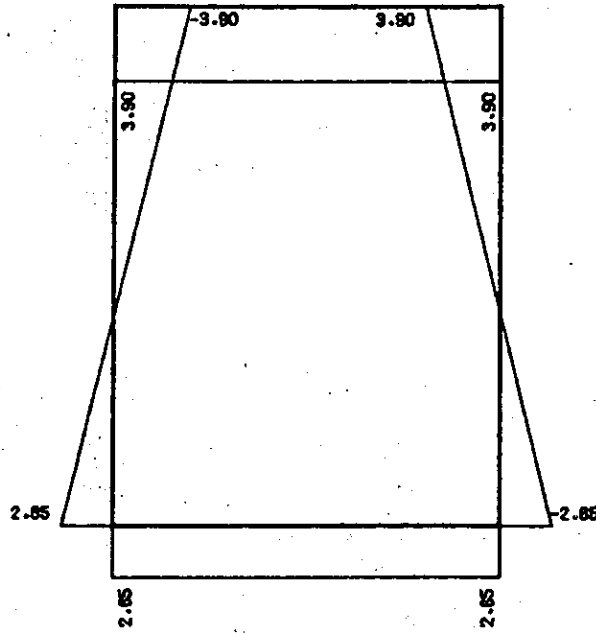
SHEARING FORCE



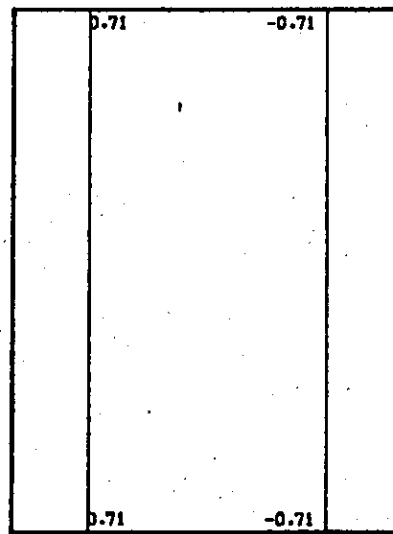
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-1

CASE 5 (TEMPERATURE + SHRINKAGE)

BENDING MOMENT



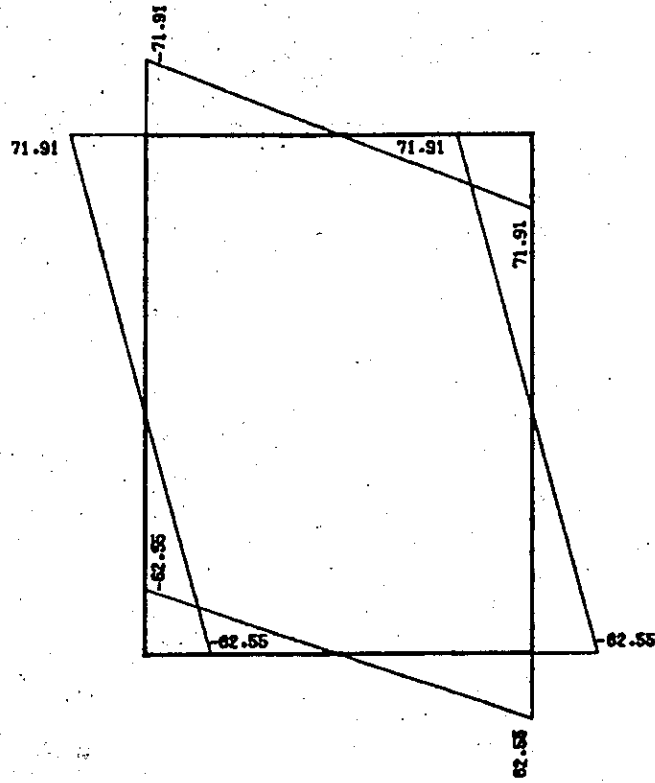
SHEARING FORCE



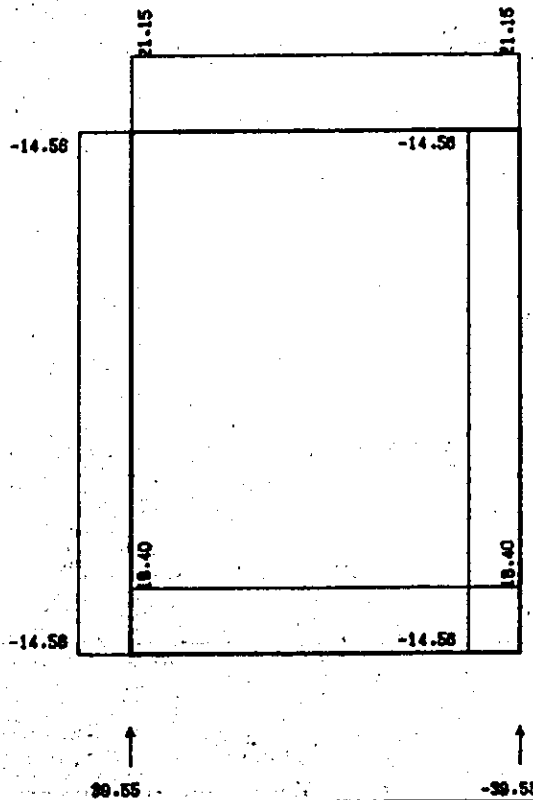
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-1

CASE 6 (SEISMIC LOAD)

BENDING MOMENT



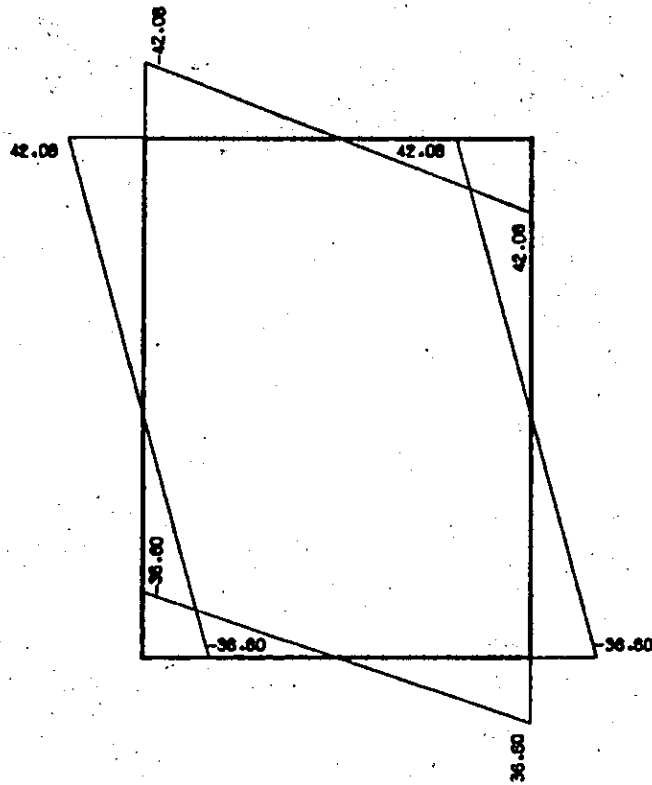
SHEARING FORCE



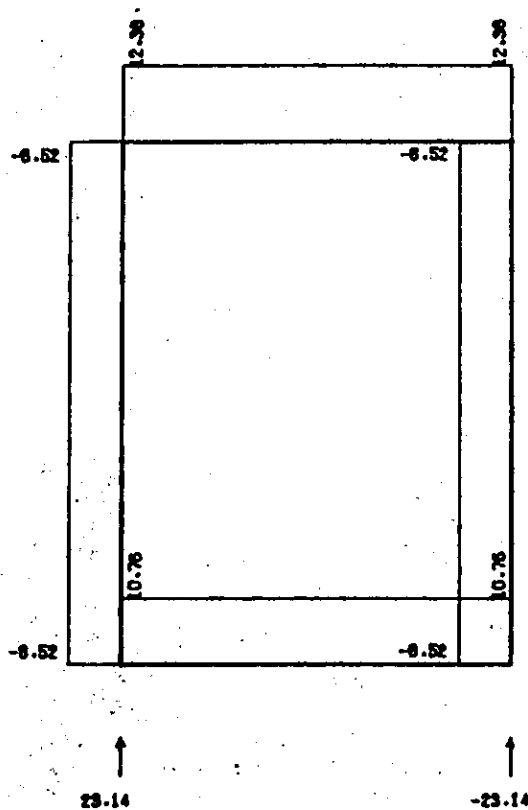
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-1

CASE 7 (CENTRIFUGAL LOAD)

BENDING MOMENT



SHEARING FORCE



# Input Data

	5	10	20	30	40	50	50	70	80	CARD NUMBER
TITLE	VIADUCT OF DOUBLE TRACK (3+3+0=27) C-1									
PLOT	1									
TYPE5-1-1	L=6.8	H=9.235	W1=2.732	0.80349	W2=0.72	0.0046				
M3-4=0.64	0.03413	P=2.7E+6	1.0E-5	S=1						
POINT	1	0.4	1.25	3.4	4.7	5.55	6.4			
PICKUP	2	0.4	1.6	3.4	5.4	6.4				
	1	1	1	1	1	1				
	2	1	9	15						
	3	1	16	17						
	4	1	1A	19						
	5	1	20	21						
LOAD	CASE 1 (DEAD LOAD)									
J	1	-77.42	35.05							
	2	-81.04	-50.22							
	3	-75.35								
SC	1	2-34.0	2.4	-34.0	2.3					
	1	3 2-0.06	-0.42	2.215	2.67					
	2	-0.37	-0.06	1.315						
OL	1	2-5.02	3.4	3.4						
	1	2-4.59								
	2	2-4.45								
	3	2-1.6								
END										
LOAD	CASE 2 (TRAIN LOAD + IMPACT LOAD)									
J	1	-50.23	2.59							
	2	-67.98	-15.63							
SC	1	2-24.07	2.4	-24.07	2.3					
	1	5 2-8.17	-8.17	2.67	-16.34	-15.34	-15.34	0.815		
	2	-8.17	-8.17	1.1						
END										
LOAD	CASE 3 (TRAIN LATERAL LOAD)									
J	1	-4.14								
END										
LOAD	CASE 4 (TEMPERATURE)									
T	1	10.0								
END										
LOAD	CASE 5 (TEMPERATURE + SHRINKAGE)									
T	1	-25.0								
END										
LOAD	CASE 6 (SEISMIC LOAD)									
J	1	-14.56								
	3	-4.84								
END										
LOAD	CASE 7 (CENTRIFUGAL LOAD)									
J	1	-8.52								
END										
WT2	8	1	2	7						
	9	1	2	3	7					
	10	1	2	-3	7					
	11	1	2	-3	7					
	12	1	5							
	13	1	5							
	14	1	5							
	15	1	5							
	16	1	5							
	17	1	5							
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	31	1	5							
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	33	1	5							
	34	1	5							
	35	1	5							
	36	1	5							
	37	1	5							
	38	1	5							
	39	1	5							
	40	1	5							
	41	1	5							
	42	1	5							
	43	1	5							
	44	1	5							
	45	1	5							
	46	1	5							
	47	1	5							
	48	1	5							
	49	1	5							
	50	1	5							
	51	1	5							
	52	1	5							
	53	1	5							
	54	1	5							
	55	1	5							
	56	1	5							
	57	1	5							

== INPUT DATA ==

	5	10	20	30	40	50	60	70	80	CARD NUMBER
.....										
18			1	4						90
19			1	5						59
20			1	6						60
21			1	-5						51
FINISH										92



CONTROL DATA

METHOD STRUCTURE J. RENUMBER M. RENUMBER S.F. DIS. UNI. SPRING STAN. STIF. 3ARA SKEN MEM.  
 \*DIS\* \*RAHMEN\* \*OFF\* \*OFF\* \*OFF\* \*OFF\* \*OFF\* \*OFF\*

LOAD TITLE

LOAD 1 CASE 1 (DEAD LOAD) LOAD 2 CASE 2 (RAIN LOAD + IMPACT LOAD)  
 LOAD 3 CASE 3 (TRAIN LATERAL LOAD) LOAD 4 CASE 4 (TEMPERATURE)  
 LOAD 5 CASE 5 (TEMPERATURE + SHRINKAGE) LOAD 6 CASE 5 (SEISMIC LOAD)  
 LOAD 7 CASE 7 (CENTRIFUGAL LOAD)  
 MIX 8 CASE 8 ( 1.0000 \* 1) MIX 9 CASE 9 (1+2+7)  
 MIX 10 CASE 10 (1+2+3+7) MIX 11 CASE 11 (1+2-3+7)  
 MIX 12 CASE 12 (1+6) MIX 13 CASE 13 (1+5)  
 MIX 14 CASE 14 (1+6) MIX 15 CASE 15 (1-5)  
 MIX 16 CASE 16 (1+2+3+7) MIX 17 CASE 17 (1+2-3+7)  
 MIX 18 CASE 18 (1+6) MIX 19 CASE 18 (1+5)  
 MIX 20 CASE 20 (1+6) MIX 21 CASE 21 (1-5)

PICK UP LOAD CASE

PICK 2 9 10 11 12 13 14 15  
 PICK 3 16 17  
 PICK 4 18 19  
 PICK 5 20 21

JOINT DATA

JOINT NUMBER	X	Y
1	0.0000	9.2350
2	6.8000	9.2350
3	0.0000	0.0000
4	6.8000	0.0000

MEMBER DATA

MEMBER NUMBER	ITAN	JTAN	CONNECT.	ITAN	JTAN	LENGTH	A	I	AE3	X(O(BANE))	PRO. NUM
1	1	2	FIX	FIX	6.8000	2.73200	.8035900				1
2	3	4	FIX	FIX	6.8000	.72000	.0466000				1
3	1	3	FIX	FIX	9.2350	.64000	.34330				
4	2	4	FIX	FIX	9.2350	.54000	.0341300				1

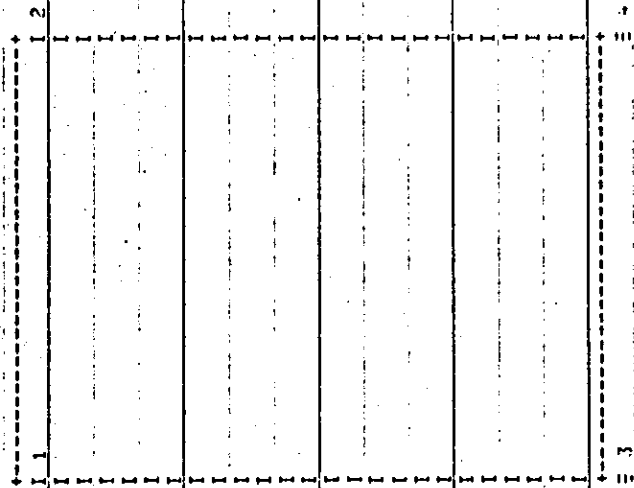
PROPERTY DATA

PROPERTY NUMBER	PROPERTY	E	G	EPS
1	2.700E+06	0.		1.000E-05

SUPPORT DATA

SUPPORT NUMBER	SUPPORT	JYOKEN	X	Y	THEI Z	X(BANE)	Y(BANE)	THEI Z(BANE)
1	FIX	FIX	FIX	FREE	0.0	0.0	0.0	0.0
2	FIX	FIX	FIX	FREE	0.0	0.0	0.0	0.0

STRUCTURAL FIGURE



MOVE DATA

MEMBER	ITAN	JAN	GOIKI	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	.....	.....	.....	.400	1.250	2.400	2.400	3.400	4.700	4.700	5.950	6.400					
2	.....	.....	.....	.400	1.600	3.400	5.400	5.400									
3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

LOAD DATA

M/J NAME 0 MI L1 L2

LOAD - 1 CASE 1 (DEAD LOAD)

MEMBER	1	LINEAR	Y	-0.060	-0.420	0.000	4.565
	1	LINEAR	Y	-0.370	-0.060	4.685	0.000
	2	LINEAR	Y	0.000	-6.420	3.600	3.400
	3	LINEAR	Y	-6.020	0.000	0.000	0.000
	4	LINEAR	Y	-4.590	-4.590	0.000	0.000
	5	CONCENT	Y	-34.000	2.400	4.700	4.700
	6	CONCENT	Y	-34.000	4.700	0.000	0.000
	7	LINEAR	Y	-4.450	-4.450	0.000	0.000
	8	LINEAR	Y	-1.600	-1.600	0.000	0.000
	9	LINEAR	Y	-1.600	-1.600	0.000	0.000

MEMBER	1	LINEAR	Y	-0.060	-0.420	0.000	4.565
	1	LINEAR	Y	-0.370	-0.060	4.685	0.000
	2	LINEAR	Y	0.000	-6.420	3.600	3.400
	3	LINEAR	Y	-6.020	0.000	0.000	0.000
	4	LINEAR	Y	-4.590	-4.590	0.000	0.000
	5	CONCENT	Y	-34.000	2.400	4.700	4.700
	6	CONCENT	Y	-34.000	4.700	0.000	0.000
	7	LINEAR	Y	-4.450	-4.450	0.000	0.000
	8	LINEAR	Y	-1.600	-1.600	0.000	0.000
	9	LINEAR	Y	-1.600	-1.600	0.000	0.000

LOAD - 2 CASE 2 (TRAIN LOAD + IMPACT LOAD)

MEMBER	1	LINEAR	Y	-8.170	-8.170	0.000	5.700
	1	LINEAR	Y	-8.170	-8.170	0.000	5.700
	2	LINEAR	Y	-16.340	-16.340	4.885	4.585
	3	LINEAR	Y	-16.340	-16.340	4.885	1.100
	4	LINEAR	Y	-8.170	-8.170	5.700	0.000
	5	CONCENT	Y	-24.070	2.400	4.700	4.700
	6	CONCENT	Y	-24.070	4.700	0.000	0.000
	7	LINEAR	Y	-6.020	-6.020	0.000	0.000
	8	LINEAR	Y	-2.590	-2.590	0.000	0.000
	9	LINEAR	Y	-67.580	-67.580	0.000	0.000
	10	LINEAR	Y	-15.630	-15.630	0.000	0.000

LOAD - 3 CASE 3 (TRAIN LATERAL LOAD)

MEMBER	1	LINEAR	X	-4.140	-4.140	0.000	0.000
	1	LINEAR	X	-4.140	-4.140	0.000	0.000
	2	LINEAR	X	-4.140	-4.140	0.000	0.000

LOAD - 4 CASE 4 (TEMPERATURE)

MEMBER	1	TEMP	10.0(00)	10.0(00)	0.000	0.000	0.000
	1	TEMP	10.0(00)	10.0(00)	0.000	0.000	0.000

LOAD - 5 CASE 5 (TEMPERATURE + SHRINKAGE)

MEMBER	1	TEMP	-25.0(00)	-25.0(00)	0.000	0.000	0.000
	1	TEMP	-25.0(00)	-25.0(00)	0.000	0.000	0.000

LOAD - 6 CASE 6 (SEISMIC LOAD)

MEMBER	1	LINEAR	X	-14.560	-14.560	0.000	0.000
	1	LINEAR	X	-14.560	-14.560	0.000	0.000
	2	LINEAR	X	-14.560	-14.560	0.000	0.000
	3	LINEAR	X	-4.840	-4.840	0.000	0.000
	4	LINEAR	X	-4.840	-4.840	0.000	0.000

LOAD - 7 CASE 7 (CENTRIFUGAL LOAD)

MEMBER	1	LINEAR	X	-4.840	-4.840	0.000	0.000
	1	LINEAR	X	-4.840	-4.840	0.000	0.000
	2	LINEAR	X	-4.840	-4.840	0.000	0.000
	3	LINEAR	X	-4.840	-4.840	0.000	0.000
	4	LINEAR	X	-4.840	-4.840	0.000	0.000

LOAD DATA

W/J	NAME	0	W1	W2	L1	L2
1	JOINTLOAD	X	-8.520			
2	JOINTLOAD	X	-8.520			

MIX DATA

LOAD	MIX NUMBER	SS	N	S1	K1	S2	K2	S3	K3	S4	K4	S5	K5	S6	K6	S7	K7	S8	K8
8	1.0000	1	1.0000	1	1.0000	2	1.0000	7											
9	1.0000	3	1.0000	1	1.0000	2	1.0000	3	1.0000	7									
10	.8696	4	1.0000	1	1.0000	2	1.0000	3	1.0000	7									
11	.8696	4	1.0000	1	1.0000	2	-1.0000	3	1.0000	7									
12	.8696	2	1.0000	1	1.0000	4													
13	.8696	2	1.0000	1	1.0000	5													
14	.6667	2	1.0000	1	1.0000	6													
15	.6667	2	1.0000	1	-1.0000	5													
16	1.0000	4	1.0000	1	1.0000	2	1.0000	3	1.0000	7									
17	1.0000	4	1.0000	1	1.0000	2	-1.0000	3	1.0000	7									
18	1.0000	2	1.0000	1	1.0000	4													
19	1.0000	2	1.0000	1	1.0000	5													
20	1.0000	2	1.0000	1	1.0000	6													
21	1.0000	2	1.0000	1	-1.0000	6													

R E A C T I O N

SUPPORT		X (TON)	Y (TON)	Z (TON)	SUPPORT		X (TON)	Y (TON)	Z (TON)
LOAD - 1 CASE 1 (DEAD LOAD)					LOAD - 2 CASE 2 (TRAIN LOAD + IMPACT LOAD)				
3		238.980	0.000	0.000	3		363	107.035	0.000
4		250.015	0.000	0.000	4		-363	116.422	0.000
LOAD - 3 CASE 3 (TRAIN LATERAL LOAD)					LOAD - 4 CASE 4 (TEMPERATURE)				
3		0.000	0.000	0.000	3		0.000	0.000	0.000
4		0.000	0.000	0.000	4		0.000	0.000	0.000
LOAD - 5 CASE 5 (TEMPERATURE + SHRINKAGE)					LOAD - 6 CASE 6 (SEISMIC LOAD)				
3		0.000	0.000	0.000	3		39.588	0.000	0.000
4		0.000	0.000	0.000	4		-39.588	0.000	0.000
LOAD - 7 CASE 7 (CENTRIFUGAL LOAD)					MIX - 8 CASE 8 (				
3		23.142	0.000	0.000	3		238.980	0.000	0.000
4		-23.142	0.000	0.000	4		250.015	0.000	0.000
MIX - 9 CASE 9 (1+2+7)					MIX - 10 CASE 10 (1+2+3+7)				
3		10.562	0.000	0.000	3		12.785	330.800	0.000
4		6.478	0.000	0.000	4		9.333	296.49	0.000
MIX - 11 CASE 11 (1+2-3+7)					MIX - 12 CASE 12 (1+4)				
3		5.585	0.000	0.000	3		1.707	207.517	0.000
4		2.033	0.000	0.000	4		-1.707	217.513	0.000
MIX - 13 CASE 13 (1+5)					MIX - 14 CASE 14 (1+6)				
3		0.844	0.000	0.000	3		14.054	135.595	0.000
4		-0.844	0.000	0.000	4		13.514	140.319	0.000
MIX - 15 CASE 15 (1-6)					MIX - 16 CASE 16 (1+2+3+7)				
3		-11.814	0.000	0.000	3		14.702	380.405	0.000
4		-14.054	0.000	0.000	4		10.013	334.050	0.000
MIX - 17 CASE 17 (1+2-3+7)					MIX - 18 CASE 18 (1+4)				
3		6.422	0.000	0.000	3		1.563	238.990	0.000
4		2.338	0.000	0.000	4		-1.563	250.015	0.000
MIX - 19 CASE 19 (1+5)					MIX - 20 CASE 20 (1+6)				
3		0.972	0.000	0.000	3		21.079	276.525	0.000
4		-0.971	0.000	0.000	4		17.721	210.467	0.000
MIX - 21 CASE 21 (1-6)									
3		-17.721	0.000	0.000					
4		-21.079	0.000	0.000					



DEFLECTION

JOINT	X (MM)	Y (MM)	Z (MMRAD)	JOINT	X (MM)	Y (MM)	Z (MMRAD)
LOAD - 1 CASE 1 (DEAD LOAD)							
1	.059	-0.756	-0.066	1	0.062	-0.572	-0.087
2	.057	-0.815	-0.043	2	.061	-0.533	-0.063
3	0.000	0.000	-0.206	3	0.000	0.000	-0.018
4	0.000	0.000	-0.204	4	0.000	0.000	-0.020
LOAD - 3 CASE 3 (TRAIN LATERAL LOAD)							
1	-3.751	-0.032	-0.026	1	-0.340	-0.000	-0.002
2	-3.751	-0.032	-0.020	2	-0.340	-0.000	-0.002
3	0.000	0.000	-0.154	3	0.000	0.000	-0.027
4	0.000	0.000	-0.154	4	0.000	0.000	-0.027
LOAD - 5 CASE 5 (TEMPERATURE + SHRINKAGE)							
1	.850	-0.000	-0.006	1	-13.132	-0.113	-0.071
2	-0.850	-0.000	-0.006	2	-13.132	-0.113	-0.071
3	0.000	0.000	-0.069	3	0.000	0.000	-0.544
4	0.000	0.000	-0.069	4	0.000	0.000	-0.540
LOAD - 7 CASE 7 (CENTRIFUGAL LOAD)							
1	-7.719	-0.066	-0.041	1	0.059	-0.756	-0.066
2	-7.719	-0.066	-0.041	2	-0.57	-0.815	-0.043
3	0.000	0.000	-0.316	3	0.000	0.000	-0.206
4	0.000	0.000	-0.316	4	0.000	0.000	-0.204
MIX - 9 CASE 9 (1+2+7)							
1	-7.599	-1.394	-0.112	1	-9.870	-1.240	-0.080
2	-7.601	-1.381	-0.147	2	-9.871	-1.173	-0.145
3	0.000	0.000	-0.129	3	0.000	0.000	-0.245
4	0.000	0.000	-0.500	4	0.000	0.000	-0.568
MIX - 11 CASE 11 (1+2-3+7)							
1	-3.346	-1.185	-0.115	1	-0.244	-0.657	-0.056
2	-3.348	-1.229	-0.110	2	-0.345	-0.706	-0.035
3	0.000	0.000	-0.022	3	0.000	0.000	-0.555
4	0.000	0.000	-0.361	4	0.000	0.000	-0.153
MIX - 13 CASE 13 (1+5)							
1	.790	-0.557	-0.063	1	-0.756	-0.579	-0.003
2	-0.689	-0.708	-0.043	2	-0.757	-0.468	-0.076
3	0.000	0.000	-0.238	3	0.000	0.000	-0.223
4	0.000	0.000	-0.237	4	0.000	0.000	-0.496
MIX - 15 CASE 15 (1-6)							
1	8.834	-0.429	-0.091	1	-0.350	-1.426	-0.092
2	8.833	-0.618	-0.019	2	-11.351	-1.345	-0.167
3	0.000	0.000	-0.000	3	0.000	0.000	-0.262
4	0.000	0.000	-0.224	4	0.000	0.000	-0.653
MIX - 17 CASE 17 (1+2-3+7)							
1	-3.848	-1.362	-0.132	1	-0.291	-0.756	-0.064
2	-3.850	-1.413	-0.127	2	-0.397	-0.615	-0.040
3	0.000	0.000	-0.025	3	0.000	0.000	-0.779
4	0.000	0.000	-0.346	4	0.000	0.000	-0.176

DEFLECTION

MIX	- 19	CASE	19 (1+5)	X (MM)	Y (MM)	Z (MMRAD)	JOINT	MIX	- 20	CASE	20 (1+6)	X (MM)	Y (MM)	Z (MMRAD)
	1		.909		-.756	-.072	1		1		-13.133		-.869	.005
	2		-.792		-.815	.049	2		2		-13.134		-.702	.114
	3		0.000		0.000	-.274	3		3		0.000		0.000	.335
	4		0.000		0.000	.272	4		4		0.000		0.000	.744

MIX	- 21	CASE	21 (1-6)	X (MM)	Y (MM)	Z (MMRAD)
	1		13.251		-.643	-.137
	2		13.249		-.928	-.028
	3		0.000		0.000	-.746
	4		0.000		0.000	-.337

*pick up*

PICK UP 1

MOMENT MAXIMUM

MOMENT MINIMUM

-----[--- -CASE- -----]-----N-----

= MEMBER 1 ( 1 - 2 ) G =		= MEMBER 1 ( 1 - 2 ) G =	
ITAN	0.000 ( 1 )	56.636	-1.679
1	4.00 ( 1 )	54.621	-1.679
2	1.250 ( 1 )	49.313	-1.679
3	2.400 ( 1 )	39.989	-1.679
4	2.400 ( 1 )	5.685	-1.679
5	3.400 ( 1 )	77.947	-1.679
6	4.700 ( 1 )	-14.033	-1.679
7	4.700 ( 1 )	54.774	-1.679
8	5.550 ( 1 )	19.352	-1.679
9	6.400 ( 1 )	-31.158	-1.679
JTAN	6.800 ( 1 )	-53.987	-1.679
MAX	3.022 ( 1 )	.146	-1.679

= MEMBER 2 ( 3 - 4 ) G =		= MEMBER 2 ( 3 - 4 ) G =	
ITAN	0.000 ( 1 )	15.094	0.000
1	1.400 ( 1 )	13.318	0.000
2	1.600 ( 1 )	7.978	0.000
3	3.400 ( 1 )	-0.032	0.000
4	5.400 ( 1 )	-8.932	0.000
5	6.400 ( 1 )	-13.382	0.000
JTAN	6.800 ( 1 )	-15.162	0.000
MAX	3.400 ( 1 )	-0.032	0.000

= MEMBER 3 ( 1 - 3 ) G =		= MEMBER 3 ( 1 - 3 ) G =	
ITAN	0.000 ( 1 )	6.355	-134.056
JTAN	9.235 ( 1 )	-9.144	-148.832

= MEMBER 4 ( 2 - 4 ) G =		= MEMBER 4 ( 2 - 4 ) G =	
ITAN	0.000 ( 1 )	1.679	-145.027
JTAN	9.235 ( 1 )	1.679	-159.803

PICK UP 1

SHEAR MAXIMUM

SHEAR MINIMUM

-----L-----CASE-----M-----Q-----N-----

-----L-----CASE-----M-----Q-----N-----

= MEMBER 1 ( 2 - 2 ) G =		= MEMBER 1 ( 1 - 2 ) G =	
ITAN	0.000 ( 1 )	-41.415	56.636
1	400 ( 1 )	-19.153	54.621
2	1.250 ( 1 )	25.118	49.313
3	2.400 ( 1 )	76.673	39.989
4	2.400 ( 1 )	76.673	5.989
5	3.400 ( 1 )	77.947	-3.736
6	4.700 ( 1 )	64.774	-16.033
7	4.700 ( 1 )	64.774	-50.033
8	5.550 ( 1 )	19.352	-56.665
9	6.400 ( 1 )	-31.168	-61.973
JTAN	6.800 ( 1 )	-56.370	-63.987

= MEMBER 2 ( 3 - 4 ) G =		= MEMBER 2 ( 3 - 4 ) G =	
ITAN	0.000 ( 1 )	-9.144	15.098
1	400 ( 1 )	-3.462	3.318
2	1.600 ( 1 )	9.318	7.978
3	3.400 ( 1 )	16.470	-0.32
4	5.400 ( 1 )	7.507	-8.932
5	6.400 ( 1 )	-3.650	-13.382
JTAN	6.800 ( 1 )	-9.358	-15.162

= MEMBER 3 ( 1 - 3 ) C =		= MEMBER 3 ( 1 - 3 ) C =	
ITAN	0.000 ( 1 )	6.365	-134.056
JTAN	9.235 ( 1 )	-9.144	-148.832

= MEMBER 4 ( 2 - 4 ) C =		= MEMBER 4 ( 2 - 4 ) C =	
ITAN	0.000 ( 1 )	-6.150	-145.027
JTAN	9.235 ( 1 )	9.358	-159.803

PICK UP 1

AXIAL MAXIMUM

AXIAL MINIMUM

-----CASE-----0-----N-----

== MEMBER 1 ( 1 - 2 ) G ==

ITAN	0.000	( 1 )	-41.415	56.536	-1.679	0.000	( 1 )	-41.415	56.536	-1.679
1	4.00	( 1 )	-19.153	54.621	-1.679	4.00	( 1 )	-19.153	54.621	-1.679
2	1.250	( 1 )	25.116	49.313	-1.679	1.250	( 1 )	25.116	49.313	-1.679
3	2.400	( 1 )	76.673	39.989	-1.679	2.400	( 1 )	76.673	39.989	-1.679
4	2.400	( 1 )	76.673	5.989	-1.679	2.400	( 1 )	76.673	5.989	-1.679
5	3.400	( 1 )	77.947	-3.736	-1.679	3.400	( 1 )	77.947	-3.736	-1.679
6	4.700	( 1 )	64.774	-16.033	-1.679	4.700	( 1 )	64.774	-16.033	-1.679
7	4.700	( 1 )	54.774	-50.033	-1.679	4.700	( 1 )	54.774	-50.033	-1.679
8	5.550	( 1 )	19.352	-56.665	-1.679	5.550	( 1 )	19.352	-56.665	-1.679
9	6.400	( 1 )	-31.168	-61.973	-1.679	6.400	( 1 )	-31.168	-61.973	-1.679
JTAN	6.800	( 1 )	-56.370	-53.987	-1.679	6.800	( 1 )	-56.370	-53.987	-1.679

== MEMBER 2 ( 3 - 4 ) G ==

ITAN	0.000	( 1 )	-9.144	15.098	0.000	0.000	( 1 )	-9.144	15.098	0.000
1	4.00	( 1 )	-3.460	13.318	0.000	4.00	( 1 )	-3.460	13.318	0.000
2	1.600	( 1 )	9.318	7.978	0.000	1.600	( 1 )	9.318	7.978	0.000
3	3.400	( 1 )	16.470	-0.032	0.000	3.400	( 1 )	16.470	-0.032	0.000
4	5.400	( 1 )	7.567	-8.932	0.000	5.400	( 1 )	7.567	-8.932	0.000
5	6.400	( 1 )	-3.650	-13.382	0.000	6.400	( 1 )	-3.650	-13.382	0.000
JTAN	6.800	( 1 )	-9.358	-15.162	0.000	6.800	( 1 )	-9.358	-15.162	0.000

== MEMBER 3 ( 1 - 3 ) G ==

ITAN	0.000	( 1 )	6.365	-1.679	-134.056	0.000	( 1 )	6.365	-1.679	-134.056
JTAN	9.235	( 1 )	-9.144	-1.679	-148.632	9.235	( 1 )	-9.144	-1.679	-148.632

== MEMBER 4 ( 2 - 4 ) G ==

ITAN	0.000	( 1 )	-6.150	1.679	-145.027	0.000	( 1 )	-6.150	1.679	-145.027
JTAN	9.235	( 1 )	9.352	1.679	-159.603	9.235	( 1 )	9.352	1.679	-159.603

PICK UP 2

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 3 - 4 ) G =		MEMBER 3 ( 1 - 3 ) C =		MEMBER 4 ( 2 - 4 ) C =		
ITAN	0.000 ( 15 )	20.334	23.656	-1.120	0.000 ( 10 )	-95.014	105.977	-1.776
1	4.000 ( 15 )	29.535	22.314	-1.228	4.000 ( 14 )	-55.574	55.574	-1.120
2	1.250 ( 11 )	50.609	79.203	-1.776	1.250 ( 14 )	-13.572	46.373	-1.120
3	2.400 ( 9 )	141.244	72.001	-2.042	2.400 ( 14 )	37.016	40.762	-1.120
4	2.400 ( 9 )	141.244	13.531	-2.042	2.400 ( 14 )	37.016	18.095	-1.120
5	3.400 ( 9 )	150.461	4.207	-2.042	3.400 ( 14 )	51.967	11.611	-1.120
6	4.700 ( 9 )	147.612	-8.090	-2.042	4.700 ( 15 )	24.852	-24.790	-1.120
7	4.700 ( 9 )	147.612	-66.160	-2.042	4.700 ( 15 )	24.852	-47.458	-1.120
8	5.550 ( 10 )	35.046	-67.520	-1.776	5.550 ( 15 )	-17.417	-51.800	-1.120
9	6.400 ( 10 )	22.214	-79.260	-1.776	6.400 ( 15 )	-53.335	-35.419	-1.120
JTAN	6.800 ( 14 )	10.363	-28.559	-1.120	6.800 ( 15 )	-65.528	-56.762	-1.120
MAX	3.778 ( 9 )	151.308	.325	-2.042	3.400 ( 14 )	51.967	11.611	-1.120
MEMBER 2 ( 3 - 4 ) G =		MEMBER 3 ( 1 - 3 ) C =		MEMBER 4 ( 2 - 4 ) C =				
ITAN	0.000 ( 15 )	35.604	-2.199	0.000	0.000 ( 10 )	-55.786	27.010	0.000
1	4.000 ( 15 )	34.487	-3.385	0.000	4.000 ( 10 )	-45.231	25.463	0.000
2	1.600 ( 15 )	28.299	-6.965	0.000	1.600 ( 14 )	-7.922	21.819	0.000
3	3.400 ( 13 )	16.625	-.027	0.000	3.400 ( 14 )	10.481	12.244	0.000
4	5.400 ( 10 )	33.650	6.114	0.000	5.400 ( 15 )	-19.825	-13.219	0.000
5	6.400 ( 10 )	37.829	2.244	0.000	6.400 ( 15 )	-39.227	-21.185	0.000
JTAN	6.800 ( 10 )	38.417	.696	0.000	6.800 ( 15 )	-47.939	-22.373	0.000
MAX	3.022 ( 13 )	16.359	1.434	0.000	3.400 ( 14 )	10.581	12.244	0.000
MEMBER 3 ( 1 - 3 ) C =		MEMBER 4 ( 2 - 4 ) C =						
ITAN	0.000 ( 10 )	52.283	-12.785	-225.677	0.000 ( 15 )	-43.702	8.581	-75.273
JTAN	9.235 ( 15 )	35.604	4.588	-45.125	9.235 ( 10 )	-55.736	-12.785	-238.524
MEMBER 4 ( 2 - 4 ) C =								
ITAN	0.000 ( 10 )	46.554	-9.233	-213.074	0.000 ( 15 )	-52.040	10.927	-110.721
JTAN	9.235 ( 15 )	47.939	10.827	-120.643	9.235 ( 10 )	-36.417	-9.233	-215.923

PICK UP 2

SHEAR MAXIMUM

SHEAR MINIMUM

MEMBER	1 ( 1 - 2 ) 5 =	MEMBER	1 ( 1 - 2 ) 6 =
ITAN	0.000 ( 9 )	ITAN	0.000 ( 15 )
1	-88.814	1	20.334
2	-43.518	2	29.535
3	45.267	3	47.065
4	141.244	4	65.219
5	37.016	5	65.219
6	51.567	6	51.967
7	51.517	7	24.852
8	43.220	8	147.612
9	21.525	9	84.359
JTAN	10.363	JTAN	6.800 ( 9 )
			-32.419

MEMBER	2 ( 3 - 4 ) 6 =	MEMBER	2 ( 3 - 4 ) 6 =
ITAN	0.000 ( 10 )	ITAN	0.000 ( 15 )
1	-55.786	1	35.654
2	-45.291	2	34.437
3	-17.522	3	28.289
4	13.683	4	10.331
5	29.534	5	5.400 ( 15 )
JTAN	34.361	JTAN	6.800 ( 15 )
	35.461		-32.227
			-47.934

MEMBER	3 ( 1 - 3 ) 6 =	MEMBER	3 ( 1 - 3 ) 6 =
ITAN	0.000 ( 15 )	ITAN	0.000 ( 10 )
JTAN	9.235 ( 15 )	JTAN	9.235 ( 10 )

MEMBER	4 ( 2 - 4 ) 6 =	MEMBER	4 ( 2 - 4 ) 6 =
ITAN	0.000 ( 15 )	ITAN	0.000 ( 10 )
JTAN	9.235 ( 15 )	JTAN	9.235 ( 10 )

PICK UP 2

AXIAL MAXIMUM

AXIAL MINIMUM

-----L-----M-----N-----  
 -CASE- -CASE- -CASE- -CASE- -CASE- -CASE- -CASE- -CASE- -CASE- -CASE-  
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= MEMBER 1 ( 1 - 2 ) G = =

MEMBER	1	2	G	1	2	G	1	2	G	
ITAN	0.000	( 13 )	-32.627	49.251	-0.844	0.000	( 9 )	-62.814	115.856	-2.042
1	4.00	( 13 )	-13.258	47.499	-0.844	0.000	( 9 )	-43.518	115.856	-2.042
2	1.250	( 13 )	25.230	42.883	-0.844	1.250	( 9 )	45.267	97.074	-2.042
3	2.400	( 13 )	70.062	34.774	-0.844	2.400	( 9 )	141.244	72.001	-2.042
4	2.400	( 13 )	70.062	5.208	-0.844	2.400	( 9 )	141.244	3.231	-2.042
5	3.400	( 13 )	71.170	-3.249	-0.844	3.400	( 9 )	-5.462	4.217	-2.042
6	4.700	( 13 )	59.715	-13.942	-0.844	4.700	( 9 )	147.612	-6.090	-2.042
7	4.700	( 13 )	59.715	-43.508	-0.844	4.700	( 9 )	147.612	-66.160	-2.042
8	5.950	( 13 )	20.216	-49.276	-0.844	5.950	( 9 )	24.669	-63.659	-2.042
9	5.400	( 13 )	-23.716	-53.892	-0.844	5.400	( 9 )	7.513	-97.137	-2.042
JTAN	5.800	( 13 )	-45.632	-55.643	-0.844	5.800	( 9 )	-32.419	-102.419	-2.042

= MEMBER 2 ( 3 - 4 ) G = =

MEMBER	1	2	G	1	2	G	1	2	G	
ITAN	0.000	( 9 )	-46.366	25.830	0.000	0.000	( 9 )	-46.366	25.830	0.000
1	4.00	( 9 )	-36.390	24.050	0.000	4.00	( 9 )	-36.390	24.050	0.000
2	1.600	( 9 )	-10.735	18.710	0.000	1.600	( 9 )	-10.735	18.710	0.000
3	3.400	( 9 )	15.734	10.700	0.000	3.400	( 9 )	15.734	10.700	0.000
4	5.400	( 9 )	28.234	-1.800	0.000	5.400	( 9 )	28.234	1.500	0.000
5	5.400	( 9 )	27.809	-2.650	0.000	5.400	( 9 )	27.809	-2.650	0.000
JTAN	5.800	( 9 )	26.393	-4.430	0.000	5.800	( 9 )	26.393	-4.430	0.000

= MEMBER 3 ( 1 - 3 ) C = =

MEMBER	1	2	3	1	2	3	1	2	3	
ITAN	0.000	( 15 )	-43.702	6.588	-75.273	0.000	( 9 )	51.174	-10.562	-253.904
JTAN	9.235	( 15 )	35.604	6.588	-85.125	9.235	( 9 )	-46.366	-10.562	-253.250

= MEMBER 4 ( 2 - 4 ) C = =

MEMBER	1	2	4	1	2	4	1	2	4	
ITAN	0.000	( 14 )	43.845	-8.588	-92.588	0.000	( 9 )	33.431	-9.475	-251.039
JTAN	9.235	( 14 )	-35.461	-8.588	-92.439	9.235	( 9 )	-26.393	-9.475	-255.615



TITLE..VIADUCT OF DOUBLE TRACK (3+3+27) G-1

PICK UP 1

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER 1 ( 1 - 2 ) G =		MEMBER 1 ( 1 - 2 ) G =		MEMBER 1 ( 1 - 2 ) G =	
MEMBER	1	2	3	4	5
ITAN	0.000 ( 17 )	-28.366 ( 17 )	109.800 ( 17 )	-2.042 ( 16 )	-109.262 ( 16 )
1	4.000 ( 17 )	-25.476 ( 17 )	104.557 ( 17 )	-2.042 ( 16 )	-6.561 ( 16 )
2	1.250 ( 17 )	58.198 ( 17 )	91.079 ( 17 )	-2.042 ( 16 )	32.337 ( 16 )
3	2.400 ( 17 )	147.258 ( 17 )	65.987 ( 17 )	-2.042 ( 16 )	135.230 ( 16 )
4	2.400 ( 17 )	147.258 ( 17 )	7.517 ( 17 )	-2.042 ( 16 )	135.230 ( 16 )
5	3.400 ( 17 )	150.461 ( 17 )	-1.808 ( 17 )	-2.042 ( 16 )	151.461 ( 16 )
6	4.700 ( 16 )	155.430 ( 16 )	-2.074 ( 16 )	-2.042 ( 17 )	139.793 ( 17 )
7	4.700 ( 16 )	155.430 ( 16 )	-50.146 ( 16 )	-2.042 ( 17 )	139.793 ( 17 )
8	5.550 ( 16 )	37.789 ( 16 )	-77.645 ( 16 )	-2.042 ( 17 )	71.938 ( 17 )
9	6.400 ( 16 )	25.545 ( 16 )	-91.122 ( 16 )	-2.042 ( 17 )	-13.541 ( 17 )
JTAN	5.800 ( 16 )	-11.971 ( 16 )	-96.405 ( 16 )	-2.042 ( 17 )	-52.867 ( 17 )
MAX	4.533 ( 16 )	155.660 ( 16 )	-0.667 ( 16 )	-2.042 ( 17 )	150.461 ( 17 )

MEMBER 2 ( 3 - 4 ) G =		MEMBER 2 ( 3 - 4 ) G =		MEMBER 2 ( 3 - 4 ) G =	
MEMBER	1	2	3	4	5
ITAN	0.000 ( 17 )	-28.532 ( 17 )	20.599 ( 17 )	0.000 ( 16 )	-54.151 ( 16 )
1	4.000 ( 17 )	-20.698 ( 17 )	18.819 ( 17 )	0.000 ( 16 )	-52.863 ( 16 )
2	1.600 ( 17 )	-1.319 ( 17 )	13.479 ( 17 )	0.000 ( 16 )	-21.251 ( 16 )
3	3.400 ( 16 )	15.734 ( 16 )	15.931 ( 16 )	0.000 ( 17 )	15.734 ( 17 )
4	5.400 ( 16 )	38.686 ( 16 )	7.031 ( 16 )	0.000 ( 17 )	17.772 ( 17 )
5	6.400 ( 16 )	43.501 ( 16 )	2.581 ( 16 )	0.000 ( 17 )	12.117 ( 17 )
JTAN	5.800 ( 16 )	44.178 ( 16 )	0.801 ( 16 )	0.000 ( 17 )	8.618 ( 17 )
MAX	4.533 ( 17 )	19.075 ( 17 )	0.425 ( 17 )	0.000 ( 16 )	31.061 ( 16 )

MEMBER 3 ( 1 - 3 ) C =		MEMBER 3 ( 1 - 3 ) C =		MEMBER 3 ( 1 - 3 ) C =	
MEMBER	1	2	3	4	5
ITAN	0.000 ( 16 )	71.522 ( 16 )	-14.702 ( 16 )	-259.518 ( 17 )	30.726 ( 17 )
JTAN	9.235 ( 17 )	-28.582 ( 17 )	-6.422 ( 17 )	-262.266 ( 16 )	-64.151 ( 16 )

MEMBER 4 ( 2 - 4 ) C =		MEMBER 4 ( 2 - 4 ) C =		MEMBER 4 ( 2 - 4 ) C =	
MEMBER	1	2	3	4	5
ITAN	0.000 ( 16 )	53.879 ( 16 )	-10.618 ( 16 )	-245.025 ( 17 )	12.963 ( 17 )
JTAN	9.235 ( 17 )	-8.608 ( 17 )	-2.336 ( 17 )	-271.629 ( 16 )	-44.176 ( 16 )

TITLE..VIADUCT OF DOUBLE TRACK (3\*3\*4=27) C-1

PICK UP 3

SHEAR MAXIMUM

SHEAR MINIMUM

-----L-----M-----N-----  
 -CASE- -0- -CASE- -N- -N-

= MEMBER 1 ( 1 - 2 ) G =

MEMBER	1	2	G	MEMBER	1	2	G
ITAN	0.000	-109.262	-21.868	ITAN	0.000	( 17 )	-56.366
1	4.00	-116.586	-2.042	2	4.00	( 17 )	109.850
2	1.250	103.108	-2.042	3	1.250	( 17 )	-24.557
3	2.400	135.230	-2.042	4	2.400	( 17 )	51.075
4	2.400	135.230	-2.042	5	2.400	( 17 )	65.987
5	3.400	150.461	-2.042	6	3.400	( 17 )	7.317
6	4.700	155.430	-2.042	7	4.700	( 17 )	-1.328
7	4.700	155.430	-2.042	8	4.700	( 17 )	-14.104
8	5.550	97.799	-2.042	9	5.550	( 17 )	-72.174
9	5.400	25.545	-2.042	JTAN	5.400	( 17 )	-89.673
JTAN	5.800	-11.971	-2.042	JTAN	5.800	( 17 )	-103.251
							-108.433

= MEMBER 2 ( 3 - 4 ) G =

MEMBER	3	4	G	MEMBER	3	4	G
ITAN	0.000	-54.151	31.061	ITAN	0.000	( 17 )	-26.532
1	4.00	-52.083	29.281	2	4.00	( 17 )	20.535
2	1.600	-20.150	23.941	3	1.600	( 17 )	18.815
3	3.400	15.734	15.931	4	3.400	( 17 )	13.475
4	5.400	38.696	7.031	5	5.400	( 17 )	5.465
5	5.400	43.501	2.581	JTAN	5.400	( 17 )	-3.431
JTAN	6.800	44.178	.801	JTAN	6.800	( 17 )	12.117
							8.606

= MEMBER 3 ( 1 - 3 ) C =

MEMBER	1	3	C	MEMBER	1	3	C
ITAN	0.000	30.725	-6.422	ITAN	0.000	( 16 )	71.922
JTAN	9.235	-28.582	-6.422	JTAN	9.235	( 16 )	-64.151
							-16.702
							-259.518

= MEMBER 4 ( 2 - 4 ) C =

MEMBER	4	2	4	C	MEMBER	4	2	4	C
ITAN	0.000	12.983	-2.338	-257.053	ITAN	0.000	( 16 )	53.373	-25.025
JTAN	9.235	-8.606	-2.338	-271.825	JTAN	9.235	( 16 )	-42.178	-259.801
								-10.615	
								-10.612	

TITLE: VIADUCT OF DOUBLE TRACK (3+3+4=27) C-1

PICK UP 3

AXIAL MAXIMUM

AXIAL MINIMUM

-----CASE-----0-----N-----]-----N-----

= MEMBER 1 ( 1 - 2 ) G =

MEMBER	1	2	3	4	5	6	7	8	9	JTAN
ITAN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	109.640	-88.366	104.557	-25.476	104.557	-25.476	104.557	-25.476	104.557	-25.476
2	91.079	91.079	91.079	91.079	91.079	91.079	91.079	91.079	91.079	91.079
3	65.987	147.258	65.987	147.258	65.987	147.258	65.987	147.258	65.987	147.258
4	7.937	147.258	7.937	147.258	7.937	147.258	7.937	147.258	7.937	147.258
5	-1.808	150.461	-1.808	150.461	-1.808	150.461	-1.808	150.461	-1.808	150.461
6	-14.104	139.793	-14.104	139.793	-14.104	139.793	-14.104	139.793	-14.104	139.793
7	-72.174	139.793	-72.174	139.793	-72.174	139.793	-72.174	139.793	-72.174	139.793
8	-59.673	71.938	-59.673	71.938	-59.673	71.938	-59.673	71.938	-59.673	71.938
9	-93.251	-10.540	-93.251	-10.540	-93.251	-10.540	-93.251	-10.540	-93.251	-10.540
JTAN	6.800	6.800	6.800	6.800	6.800	6.800	6.800	6.800	6.800	6.800

= MEMBER 2 ( 3 - 4 ) G =

MEMBER	1	2	3	4	5	6	7	8	9	JTAN
ITAN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1	31.061	-54.151	29.281	-52.083	31.061	-54.151	29.281	-52.083	31.061	-54.151
2	23.941	23.941	23.941	23.941	23.941	23.941	23.941	23.941	23.941	23.941
3	15.931	-20.150	15.931	-20.150	15.931	-20.150	15.931	-20.150	15.931	-20.150
4	7.031	15.734	7.031	15.734	7.031	15.734	7.031	15.734	7.031	15.734
5	2.581	38.696	2.581	38.696	2.581	38.696	2.581	38.696	2.581	38.696
JTAN	6.800	6.800	6.800	6.800	6.800	6.800	6.800	6.800	6.800	6.800

= MEMBER 3 ( 1 - 3 ) C =

MEMBER	1	2	3	4	5	6	7	8	9	JTAN
ITAN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
JTAN	9.235	9.235	9.235	9.235	9.235	9.235	9.235	9.235	9.235	9.235

= MEMBER 4 ( 2 - 4 ) C =

MEMBER	1	2	3	4	5	6	7	8	9	JTAN
ITAN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
JTAN	9.235	9.235	9.235	9.235	9.235	9.235	9.235	9.235	9.235	9.235

TITLE..VIADUCT OF DOUBLE TRACK (3\*3\*A=27) C-1

PICK UP 4

MOMENT MAXIMUM

MOMENT MINIMUM

-----CASE-----M-----D-----N-----

= MEMBER 1 ( 1 - 2 ) G =		= MEMBER 1 ( 1 - 2 ) G =	
ITAN	0.000 ( 19 )	-37.519	56.636
1	4.000 ( 19 )	-15.258	54.621
2	1.250 ( 19 )	29.013	49.313
3	2.400 ( 19 )	39.989	33.289
4	2.400 ( 19 )	80.568	5.989
5	3.400 ( 19 )	81.843	-3.736
6	4.700 ( 19 )	68.669	-16.033
7	4.700 ( 19 )	68.669	-50.033
8	5.550 ( 19 )	23.247	-56.665
9	6.400 ( 19 )	-27.273	-51.973
JTAN	6.800 ( 19 )	-52.475	-63.987
MAX	3.022 ( 19 )	32.513	.146

= MEMBER 2 ( 3 - 4 ) G =		= MEMBER 2 ( 3 - 4 ) G =	
ITAN	0.000 ( 19 )	-6.496	15.098
1	4.000 ( 19 )	-8.812	13.318
2	1.600 ( 19 )	11.966	7.978
3	3.400 ( 19 )	19.116	-0.032
4	5.400 ( 19 )	10.155	-8.932
5	6.400 ( 19 )	-1.002	-13.382
JTAN	6.800 ( 19 )	-6.710	-15.162
MAX	3.400 ( 19 )	19.118	-0.032

= MEMBER 3 ( 1 - 3 ) C =		= MEMBER 3 ( 1 - 3 ) C =	
ITAN	0.000 ( 18 )	-10.203	15.098
1	4.000 ( 18 )	-4.322	13.318
2	1.600 ( 18 )	8.255	7.978
3	3.400 ( 18 )	15.411	-0.032
4	5.400 ( 18 )	6.444	-4.932
5	6.400 ( 18 )	-4.779	-3.382
JTAN	6.800 ( 18 )	-10.417	-15.152
MAX	3.400 ( 18 )	15.411	-0.032

= MEMBER 4 ( 2 - 4 ) C =		= MEMBER 4 ( 2 - 4 ) C =	
ITAN	0.000 ( 19 )	7.923	-134.056
JTAN	9.235 ( 19 )	-6.496	-9.71
MAX	9.235 ( 19 )	10.417	1.963

TITLE..VIADUCT OF DOUBLE TRACK (3+3+0=27) C-1

PICK UP 4

SHEAR MINIMUM

SHEAR MAXIMUM

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 3 - 4 ) G =	
MEMBER	1 ( 1 - 2 ) G =	MEMBER	2 ( 3 - 4 ) G =
ITAN	0.000 ( 18 )	0.000 ( 19 )	0.000 ( 19 )
1	-42.973	56.636	-37.519
2	-20.711	54.621	-15.558
3	23.560	49.313	25.013
4	75.115	39.989	80.568
5	75.115	5.989	80.568
6	75.389	-3.736	8.843
7	53.215	-15.033	58.659
8	53.215	-50.033	4.700 ( 19 )
9	17.794	-56.665	68.669
JTAN	-32.726	61.973	23.247
	-57.929	-53.987	-27.273
			-52.475

MEMBER 3 ( 1 - 3 ) C =		MEMBER 4 ( 2 - 4 ) C =	
MEMBER	3 ( 1 - 3 ) C =	MEMBER	4 ( 2 - 4 ) C =
ITAN	0.000 ( 18 )	0.000 ( 19 )	0.000 ( 19 )
1	-10.203	15.098	-6.496
2	-4.520	13.318	-4.512
3	8.259	7.978	11.966
4	15.411	-0.032	19.118
5	6.448	-8.932	10.155
JTAN	-4.709	-13.382	-1.002
	-10.417	-15.162	-6.710

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 3 - 4 ) G =	
MEMBER	1 ( 1 - 2 ) G =	MEMBER	2 ( 3 - 4 ) G =
ITAN	0.000 ( 18 )	0.000 ( 19 )	0.000 ( 19 )
1	-971	134.056	-1.963
2	-971	148.632	-1.963
3	1.963	-145.027	0.000 ( 19 )
4	1.963	-159.603	9.235 ( 19 )
JTAN	-7.709	10.417	-2.255
			6.710

MEMBER 3 ( 1 - 3 ) C =		MEMBER 4 ( 2 - 4 ) C =	
MEMBER	3 ( 1 - 3 ) C =	MEMBER	4 ( 2 - 4 ) C =
ITAN	0.000 ( 18 )	0.000 ( 19 )	0.000 ( 19 )
1	-971	134.056	-1.963
2	-971	148.632	-1.963
3	1.963	-145.027	0.000 ( 19 )
4	1.963	-159.603	9.235 ( 19 )
JTAN	-7.709	10.417	-2.255
			6.710

TITLE..VIADUCT OF DOUBLE TRACK (3-J-A=27) C-1

PICK UP %

AXIAL MAXIMUM

AXIAL MINIMUM

-----L-----CASE-----M-----N-----

= MEMBER 1 ( 1 - 2 ) G =

ITAN	0.000	( 19 )	-37.519	56.636	-.971	0.000	( 18 )	-42.973	56.636	-1.963
1	4.000	( 19 )	-15.258	54.621	-.971	4.000	( 18 )	-21.711	54.621	-1.963
2	1.250	( 19 )	29.013	49.313	-.971	1.250	( 18 )	23.560	49.313	-1.963
3	2.400	( 19 )	40.568	39.989	-.971	2.400	( 18 )	75.115	39.989	-1.963
4	2.400	( 19 )	80.568	5.385	-.971	2.400	( 18 )	75.115	5.989	-1.963
5	3.400	( 19 )	81.843	-3.736	-.971	3.400	( 18 )	76.389	-3.736	-1.963
6	4.700	( 19 )	58.669	-16.033	-.971	4.700	( 18 )	63.215	-16.033	-1.963
7	4.700	( 19 )	58.669	-50.033	-.971	4.700	( 18 )	63.215	-50.033	-1.963
8	5.550	( 19 )	23.247	-56.865	-.971	5.550	( 18 )	17.734	-56.865	-1.963
9	6.400	( 19 )	-27.273	-61.973	-.971	6.400	( 18 )	-32.729	-61.973	-1.963
JTAN	6.800	( 19 )	-52.475	-63.987	-.971	6.800	( 18 )	-57.529	-63.987	-1.963

= MEMBER 2 ( 3 - 4 ) G =

ITAN	0.000	( 18 )	-10.203	15.096	0.000	0.000	( 18 )	-10.203	15.096	0.000
1	4.000	( 18 )	-4.520	13.318	0.000	4.000	( 18 )	-4.520	13.318	0.000
2	1.600	( 18 )	8.259	7.978	0.000	1.600	( 18 )	8.259	7.978	0.000
3	3.400	( 18 )	15.411	-.032	0.000	3.400	( 18 )	15.411	-.032	0.000
4	5.400	( 18 )	6.448	-8.932	0.000	5.400	( 18 )	6.448	-8.932	0.000
5	6.400	( 18 )	-4.709	-13.382	0.000	6.400	( 18 )	-4.709	-13.382	0.000
JTAN	6.800	( 18 )	-10.417	-15.162	0.000	6.800	( 18 )	-10.417	-15.162	0.000

= MEMBER 3 ( 1 - 3 ) C =

ITAN	0.000	( 19 )	2.469	-.971	-134.056	0.000	( 18 )	7.223	-1.963	-134.056
JTAN	9.235	( 19 )	-6.496	-.971	-148.832	9.235	( 18 )	-10.203	-1.963	-148.832

= MEMBER 4 ( 2 - 4 ) C =

ITAN	0.000	( 18 )	-7.709	1.963	-145.027	0.000	( 19 )	-2.255	-.971	-145.027
JTAN	9.235	( 18 )	10.417	1.963	-159.803	9.235	( 19 )	6.710	-.971	-159.803

TITLE: VIADUCT OF DOUBLE TRACK (3+3+R=27) C-1

PICK UP 5

MOMENT MAXIMUM

MOMENT MINIMUM

-CASE-		-CASE-		-CASE-		-CASE-	
1 ( 1 - 2 ) G =	2 ( 3 - 4 ) G =	3 ( 1 - 3 ) C =	4 ( 2 - 4 ) C =	1 ( 1 - 2 ) G =	2 ( 3 - 4 ) G =	3 ( 1 - 3 ) C =	4 ( 2 - 4 ) C =
= MEMBER 1							
ITAN	0.000 ( 21 )	30.500	35.485	-1.679	0.000 ( 20 )	-113.330	77.737
1	4.000 ( 21 )	44.301	33.470	-1.679	4.000 ( 20 )	-42.637	75.773
2	1.250 ( 21 )	70.593	28.152	-1.679	1.250 ( 20 )	-20.337	70.465
3	2.400 ( 21 )	97.824	18.838	-1.679	2.400 ( 20 )	55.521	61.140
4	2.400 ( 21 )	97.824	-15.162	-1.679	2.400 ( 20 )	55.521	27.440
5	3.400 ( 21 )	77.947	-24.887	-1.679	3.400 ( 20 )	77.947	17.416
6	4.700 ( 20 )	92.270	5.119	-1.679	4.700 ( 21 )	37.277	-37.184
7	4.700 ( 20 )	92.270	-28.881	-1.679	4.700 ( 21 )	37.277	-71.184
8	5.550 ( 20 )	54.827	-35.514	-1.679	5.550 ( 21 )	-26.223	-77.517
9	6.400 ( 20 )	32.285	-40.821	-1.679	6.400 ( 21 )	-34.622	-83.124
JTAN	6.800 ( 20 )	15.564	-42.836	-1.679	6.800 ( 21 )	-122.255	-85.139
MAX	2.400 ( 21 )	97.824	-15.162	-1.679	3.400 ( 20 )	77.947	17.416
= MEMBER 2							
ITAN	0.000 ( 21 )	53.403	-3.298	0.000	0.000 ( 20 )	-71.691	33.495
1	4.000 ( 21 )	51.728	-5.078	0.000	4.000 ( 20 )	-58.649	31.725
2	1.600 ( 21 )	42.431	-10.418	0.000	1.600 ( 20 )	-23.795	26.375
3	3.400 ( 21 )	15.470	-18.428	0.000	3.400 ( 20 )	16.470	18.365
4	5.400 ( 20 )	44.299	9.465	0.000	5.400 ( 21 )	-29.285	-27.325
5	6.400 ( 20 )	51.539	5.015	0.000	6.400 ( 21 )	-52.835	-51.772
JTAN	6.800 ( 20 )	53.189	3.235	0.000	6.800 ( 21 )	-71.925	-53.556
MAX	3.400 ( 21 )	16.470	-18.428	0.000	3.400 ( 20 )	16.470	18.365
= MEMBER 3							
ITAN	0.000 ( 20 )	78.240	-16.239	-155.207	0.000 ( 21 )	-65.590	12.881
JTAN	9.235 ( 21 )	53.403	12.881	-127.681	9.235 ( 20 )	-71.691	-16.235
= MEMBER 4							
ITAN	0.000 ( 20 )	65.764	-12.881	-123.676	0.000 ( 21 )	-76.065	16.235
JTAN	9.235 ( 21 )	71.905	16.239	-180.955	9.235 ( 20 )	-53.129	-12.881

PICK UP 5

SHEAR MAXIMUM

SHEAR MINIMUM

-----CASE-----N-----

-----CASE-----N-----

= MEMBER 1 ( 1 - 2 ) G =		= MEMBER 1 ( 1 - 2 ) G =	
ITAN	0.000 ( 20 )	ITAN	0.000 ( 21 )
1	-113.330	77.787	-1.679
2	-12.607	75.773	-1.679
3	-20.357	70.465	-1.679
4	55.521	61.140	-1.679
5	55.521	27.140	-1.679
6	77.947	17.416	-1.679
7	92.270	5.119	-1.679
8	32.270	-28.881	-1.679
9	54.827	-35.514	-1.679
JTAN	32.286	-40.821	-1.679
	15.544	-42.836	-1.679

= MEMBER 2 ( 3 - 4 ) G =		= MEMBER 2 ( 3 - 4 ) G =	
ITAN	0.000 ( 20 )	ITAN	0.000 ( 21 )
1	-71.691	33.495	0.000
2	-58.649	31.715	0.000
3	-23.795	25.375	0.000
4	16.470	18.355	0.000
5	44.299	9.485	0.000
JTAN	51.539	5.035	0.000
	53.189	3.235	0.000

= MEMBER 3 ( 1 - 3 ) C =		= MEMBER 3 ( 1 - 3 ) C =	
ITAN	0.000 ( 21 )	ITAN	0.000 ( 20 )
JTAN	9.235 ( 21 )	12.881	-112.905
	53.403	12.881	-127.681

= MEMBER 4 ( 2 - 4 ) C =		= MEMBER 4 ( 2 - 4 ) C =	
ITAN	0.000 ( 21 )	ITAN	0.000 ( 20 )
JTAN	9.235 ( 21 )	16.239	-166.179
	71.905	16.239	-180.955

= MEMBER 1 ( 1 - 2 ) G =		= MEMBER 1 ( 1 - 2 ) G =	
ITAN	0.000 ( 21 )	ITAN	0.000 ( 20 )
JTAN	9.235 ( 21 )	35.685	-1.679
	70.593	33.470	-1.679
	97.824	28.162	-1.679
	97.824	18.338	-1.679
	77.947	-15.152	-1.679
	37.277	-24.887	-1.679
	37.277	-37.184	-1.679
	9.700 ( 21 )	-71.184	-1.679
	5.550 ( 21 )	-77.617	-1.679
	6.400 ( 21 )	-83.124	-1.679
JTAN	6.800 ( 21 )	-65.134	-1.679

= MEMBER 2 ( 3 - 4 ) G =		= MEMBER 2 ( 3 - 4 ) G =	
ITAN	0.000 ( 21 )	ITAN	0.000 ( 20 )
JTAN	9.235 ( 21 )	51.728	-3.298
	51.728	-5.074	0.000
	42.431	-10.418	0.000
	16.470	-16.425	0.000
	-29.635	-27.328	0.000
	-58.838	-31.775	0.000
JTAN	6.800 ( 21 )	-33.550	0.000

= MEMBER 3 ( 1 - 3 ) C =		= MEMBER 3 ( 1 - 3 ) C =	
ITAN	0.000 ( 20 )	ITAN	0.000 ( 20 )
JTAN	9.235 ( 20 )	78.290	-16.239
	-71.691	-16.239	-163.583

= MEMBER 4 ( 2 - 4 ) C =		= MEMBER 4 ( 2 - 4 ) C =	
ITAN	0.000 ( 20 )	ITAN	0.000 ( 20 )
JTAN	9.235 ( 20 )	85.764	-12.391
	-53.159	-12.391	-138.652



PICK UP 5

AXIAL MINIMUM

AXIAL MAXIMUM

-----L----- -CASE- -----M-----I-----N-----

= MEMBER 1 ( 1 - 2 ) G =		= MEMBER 1 ( 1 - 2 ) G =	
ITAN	0.000 ( 20 )	-113.330	77.787
1	0.400 ( 20 )	-82.607	75.773
2	1.250 ( 20 )	-20.357	70.465
3	2.400 ( 20 )	55.521	61.140
4	3.400 ( 20 )	77.947	27.140
5	4.700 ( 20 )	92.270	5.115
6	5.550 ( 20 )	64.827	-35.514
7	6.800 ( 20 )	-42.836	-1.679
JTAN	6.800 ( 20 )	15.564	-42.836

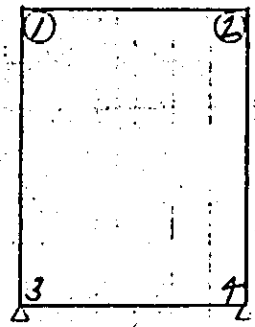
= MEMBER 2 ( 3 - 4 ) G =		= MEMBER 2 ( 3 - 4 ) G =	
ITAN	0.000 ( 20 )	-71.631	33.495
1	0.400 ( 20 )	-58.649	31.715
2	1.600 ( 20 )	-23.735	26.375
3	3.400 ( 20 )	16.470	18.365
4	5.400 ( 20 )	44.299	9.465
5	6.400 ( 20 )	51.539	5.015
JTAN	6.800 ( 20 )	53.159	3.235

= MEMBER 3 ( 1 - 3 ) C =		= MEMBER 3 ( 1 - 3 ) C =	
ITAN	0.000 ( 21 )	-65.550	12.881
JTAN	9.235 ( 21 )	53.403	12.881

= MEMBER 4 ( 2 - 4 ) C =		= MEMBER 4 ( 2 - 4 ) C =	
ITAN	0.000 ( 20 )	65.764	-12.881
JTAN	9.235 ( 20 )	-53.189	-12.881

[7] Calculation of upper beam

(i) stress calculation of upper beam



(a) Bending moment

		① point		② point	
		M <sup>time</sup>	Case	M <sup>time</sup>	Case
pick up 2	TOP	-95.01	10	-85.53	15
	BOTTOM	—	—	span 151.31	9
pick up 1	TOP	-41.42	1	-56.37	1

(b) Shearing stress

		①		②	
		S <sup>r</sup>	Case	S <sup>r</sup>	Case
pick up 2		97.09	9	83.66	9

2) Allowable stress for upper beam, safe against cracking

(a) At the support point

$$\text{Dead load } M_d = -56.37 \text{ t.m (case 1)}$$

$$\text{Train load + Impact } M_L = -18.13 \text{ " (case 1)}$$

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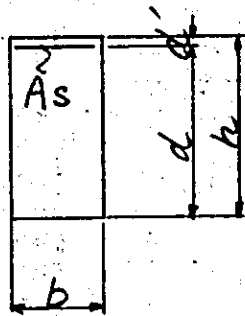
$$\Sigma M = -74.50 \text{ t.m}$$

$$\alpha = \frac{-18.13}{-74.50} = 0.24 < 0.25$$

Hence  $\sigma_{sa} = 1200 \text{ kg/cm}^2$

## 3) Cross section used for stress calculation

(a) Cross section at the support point



$$b = 80 \text{ cm}$$

$$h = 170 \text{ cm}$$

$$d_1 = 2.5 + 1.9 + 3.2 + 2.9 + 1.4 = 12.00 \text{ cm}$$

$$d = 170 - 12.00 = 158.00 \text{ cm}$$

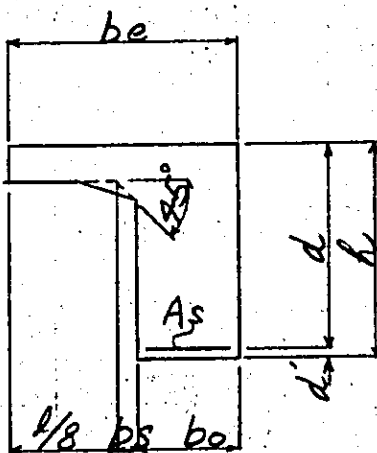
(b) Cross section at the span center point effective width of T-beam

$$b_e = b_o + b_s + \frac{0.6}{8} l$$

$$b_{ei} = 0.80 + 0.15 + \frac{0.6}{8} \times 7.00$$

$$= 1.475 \text{ m}$$

$$< \frac{7.60}{2} = 3.80 \text{ m}$$



$$b_o = 146 \text{ cm}$$

$$h = 170 \text{ cm}$$

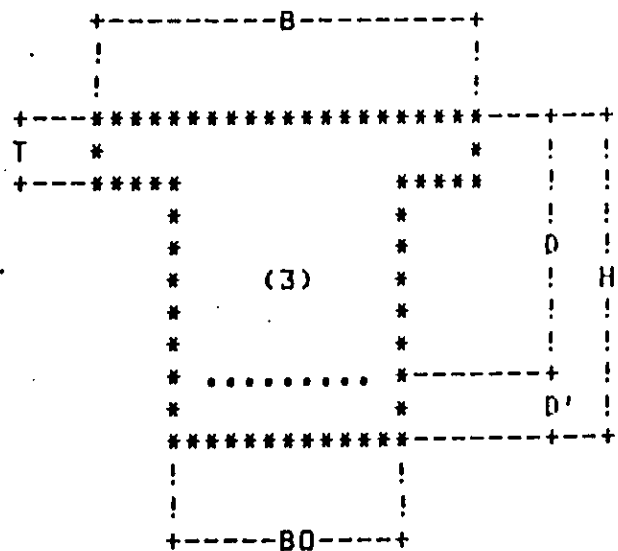
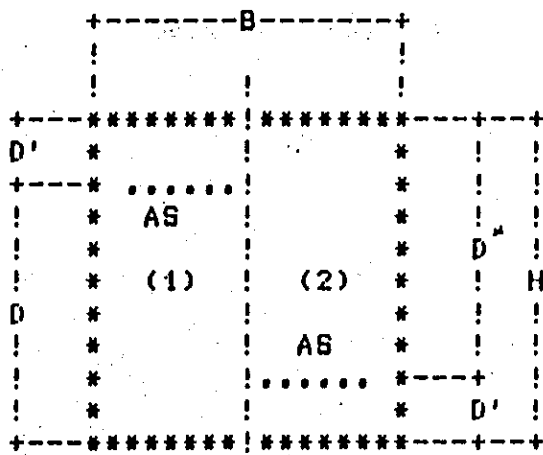
$$d' = 3.0 + 1.3 + 2.9 + 1.45 = 8.65 \text{ cm}$$

$$d = 170 - 8.65 = 161.35 \text{ cm}$$

$$t = 28 \text{ cm}$$

4) Calculation of bending stress

NO.	1 point (Top) 1 span (Bottom) 2 point (Top) 2 point (Top)				
	1	2	3	4	
	case 10	case 9	case 15	case 1	
M	[T*M]	95.01	151.31	85.53	56.37
S	[T]				
B	[CM]	80.00	147.50	80.00	80.00
H	[CM]	170.00	170.00	170.00	170.00
D'	[CM]	12.00	8.70	12.00	12.00
D	[CM]	158.00	161.30	158.00	158.00
T	[CM]		28.00		
BO	[CM]		80.00		
AS	[CM**2]	8.00-029	10.00-029	8.00-029	8.00-029
P		51.39	64.24	51.39	51.39
K		0.004066	0.002700	0.004066	0.004066
J		0.294	0.260	0.294	0.294
1/LC		0.902	0.928	0.902	0.902
1/LS		7.55		7.55	7.55
SIG-C	[KG/CM**2]	272.63		272.63	272.63
SIG-S	[KG/CM**2]	35.93	36.78	32.34	21.32
TAU	[KG/CM**2]	1296.99	1573.99	1167.58	769.51
SIG-CA	[KG/CM**2]	90.00	90.00	90.00	90.00
SIG-SA	[KG/CM**2]	1800.00	1800.00	1800.00	1200.00
TAU-A	[KG/CM**2]				
		(2)	(3)	(2)	(2)



(5) Required minimum cross section of re-bars

$$A_s = \frac{15 \cdot b \cdot d}{f_{sy}}$$

$$A_s = \frac{15 \times 80 \times \overset{(161.30)}{158.00}}{3000} = \overset{(64.15)}{63.20} \text{ cm}^2$$

(i) At the top of support point

$$A_s = \frac{M}{f_{saij} \cdot d} \times \frac{4}{3} = \frac{95.01 \times 10^5}{1800 \times 0.875 \times 158.0} \times \frac{4}{3}$$

$$= 50.89 \text{ cm}^2$$

$$\therefore D29-8 = 51.39 \text{ cm}^2 > 50.89 \text{ cm}^2$$

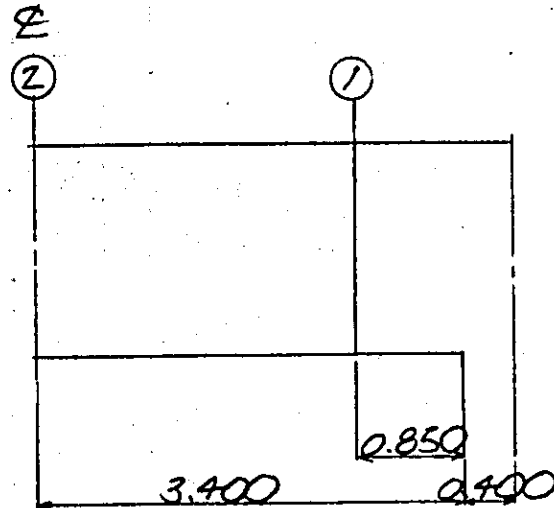
(ii) At the span center point

$$A_s = \frac{151.31 \times 10^5}{1800 \times 0.875 \times 161.30} \times \frac{4}{3} = 79.39 \text{ cm}^2$$

$$\text{Hence } D29-10 = 64.24 \text{ cm}^2 > 64.15 \text{ cm}^2$$

b) Shearing stress of upper beam

a) Shearing stress caused by bending



(i) Shearing stress of the member of uniform height

$$\tau = \frac{S}{b \cdot d}$$

$$\tau_1 = \frac{97.09 \times 10^3}{80 \times 158.05} = 7.68 \text{ kg/cm}^2 > 3.9 \text{ kg/cm}^2$$

$$\tau_2 = \frac{4.21 \times 10^3}{80 \times 158.05} = 0.33 \text{ " } < \text{ "}$$

b) Torsional moment

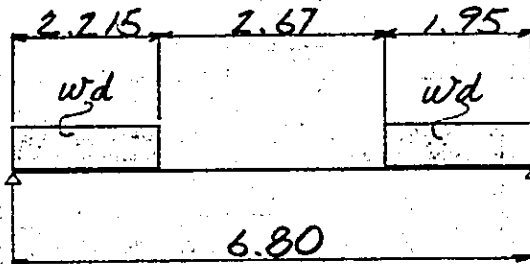
Torsional moment caused by the loads on Rahmen (rigid frame)

(1) Due to dead load

(i) Derived from slab calculation uniformly distributed load

Equivalent uniform load of track weight

$$w_d = 0.45 \text{ t/m} \times 1/2.83 = 0.16 \text{ t/m}^2$$



width of distribution  
 $B = 2.83 \text{ m}$

$$R_A = 0.16 \times 2.215 = 0.35 \text{ t}$$

At the  $l/4$  point

$$M_{l/4} = 0.35 \times 1.70 - 0.16 \times 1.70^2 \times 1/2 = 0.36 \text{ tm}$$

$$w_{l/4} = \frac{32 \cdot M_{l/4}}{3 \cdot l^2} = \frac{32 \times 0.36}{3 \times 6.80^2} = 0.08 \text{ t/m}^2$$

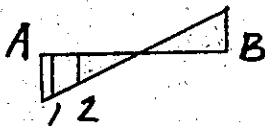
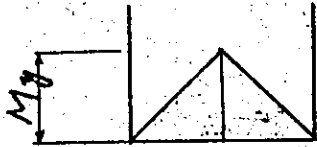
Total uniform load

$$\Sigma w_d = 1.85 + 0.08 = 1.93 \text{ t/m}^2$$



Fixed end moment at negative side

$$M_y = -\frac{1}{24} \times 1.85 \times 6.80^2 = -3.56 \text{ t.m}$$



$$M_{TA} = 3.56 \times 3.40 \times \frac{1}{2} = 6.05 \text{ t.m}$$

$$M_{T1} = 6.05 \times \frac{3.00}{3.40} = 5.34 "$$

$$M_{T2} = 6.05 \times \frac{2.15}{3.40} = 3.83 "$$

(ii) Caused by train load

From the slab calculation

Equivalent uniform load

$$w_e = \frac{16}{1.5 \times 2.83} = 3.77 \text{ t/m}^2$$

Refer the dead load diagram

$$R_A = 3.77 \times 2.215 = 8.35 \text{ t}$$

$$M_{l/4} = 8.35 \times 1.70 - 3.77 \times 1.70^2 \times \frac{1}{2} = 8.75 \text{ t.m}$$

$$w_{e/l} = \frac{32 \times 8.75}{3 \times 6.80^2} = 2.02 \text{ t/m}^2$$

Hence  $w_e = 2.02 \text{ t/m}^2$

Fixed end, moment, at negative site

$$M_y = -\frac{1}{24} \times 2.02 \times 6.80^2 = 3.89 \text{ t.m}$$

$$M_{TA} = 3.89 \times 3.40 \times \frac{1}{2} = 6.613 \text{ t.m}$$

$$M_{T1} = 6.613 \times \frac{3.00}{3.40} = 5.83 \text{ ''}$$

$$M_{T2} = 6.613 \times \frac{2.15}{3.40} = 4.18 \text{ ''}$$

Train load  $l = 6.80 \text{ m}$   $i = 0.446$   
+ Impact

$$M_{TA} = 6.613 \times 1.446 = 9.56 \text{ t.m}$$

$$M_{T1} = 5.83 \times \text{''} = 8.43 \text{ ''}$$

$$M_{T2} = 4.18 \times \text{''} = 6.04 \text{ ''}$$

(iii) Dead load + Train load + Impact

$$\Sigma M_A = 6.05 + 9.56 = 15.61 \text{ t.m}$$

$$\Sigma M_{T1} = 5.34 + 8.43 = 13.77 \text{ ''}$$

$$\Sigma M_{T2} = 3.83 + 6.04 = 9.87 \text{ ''}$$

(3) Torsional moment beared by cross beam

Effective width

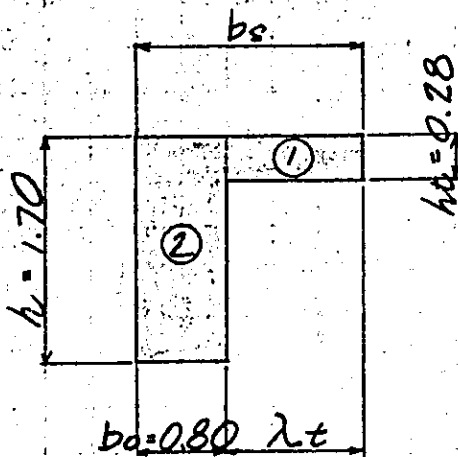
$$b_s = b_o + \lambda t$$

$$\lambda t = 3 \cdot h t$$

$$= 3 \times 0.28 = 0.84^m$$

$$b_s = 0.80 + 0.84 = 1.64^m$$

$$h = 1.70^m$$



(i) calculation of distribution ratio

	a	b	a/b	k	$I_t = k \cdot a \cdot b^3$ ( $m^4$ )
①	0.840	0.280	3.000	0.264	$0.264 \times 0.840 \times 0.280^3 = 0.00487$
②	1.700	0.800	2.125	0.234	$0.234 \times 1.700 \times 0.800^3 = 0.20367$
TOTAL					$\Sigma I_t = 0.20854$

(ii) Torsional moment beared by the beam

(for re-bar arrangement in axial direction)

Dead load + Train load + Impact

$$\text{Front face of column } M_{t1} = 13.77 \times \frac{0.20367}{0.20854} = 13.45^{\text{t.m}}$$

$$\text{At the } 1/2 \text{ point } M_{t2} = 9.87 \times \dots = 9.640^{\text{t.m}}$$

(4) Shearing stress caused by torsion

Shearing stress caused by torsion is calculated followed the equation.

$$\tau_t = \frac{M_t}{I_t} \cdot b \cdot k$$

(i) front face of column

$$M_{t1} = 13.45 \text{ t.m}$$

$$b = 80 \text{ cm}, \quad a = 170 \text{ cm}$$

$$\frac{a}{b} = \frac{170}{80} = 2.125$$

$$\eta = 0.940$$

$$\tau_{t1} = \frac{13.45 \times 10^5}{20.85 \times 10^6} \times 80 \times 0.940 = 4.85 \text{ kg/cm}^2$$

(ii) At the  $h/2$  point

$$M_{t2} = 9.64 \text{ t.m}$$

$$b = 80 \text{ cm}, \quad a = 170 \text{ cm}$$

$$\frac{a}{b} = \frac{170}{80} = 2.125$$

$$k = 0.940$$

$$\tau_{t2} = \frac{9.64 \times 10^5}{20.85 \times 10^6} \times 80 \times 0.940 = 3.477 \text{ kg/cm}^2$$

(5) Combined shearing stress

Combined allowable shearing stress

$$\tau_a = 17 \times 1.3 = 22.10 \text{ kg/cm}^2$$

Combined shearing stress

$$\tau_1 = 7.68 + 3.48 = 11.16 \text{ kg/cm}^2 < 22.10 \text{ kg/cm}^2$$

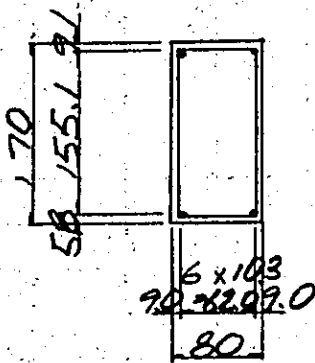
$$\tau_2 = 0.33 + 0 = 0.33 \text{ " } < \text{ "}$$

(b) calculation of axial re-bar arrangement resisting torsional moment

Required re-bar arrangement is calculated followed the equation

$$A_s = \frac{M_t (b_1 + h_1)}{0.8 \cdot \sigma_{sa} \cdot b_1 \cdot h_1}$$

(a) Front face of column



$$M_t = 13.45 \text{ t.m}$$

$$\sigma_{sa} = 1800 \text{ kg/cm}^2$$

$$b = 62.0 + 2.9 + 1.3 = 66.2 \text{ m}$$

$$h_1 = 155.1 + 2.9 + 1.3 = 159.3 \text{ m}$$

$$A_s = \frac{13.45 \times 10^5 \times (66.2 + 159.3)}{0.8 \times 1800 \times 66.2 \times 159.3} = 19.97 \text{ cm}^2$$

Required cross section of re-bars arranged at shorter side

$$A_{sb1} = 19.97 \times \frac{66.2}{2 \times (66.2 + 159.3)} = 2.93 \text{ cm}^2$$

Required cross section of re-bars arranged at longer side

$$A_{sh1} = 19.97 \times \frac{159.3}{2 \times (66.2 + 159.3)} = 7.05 \text{ cm}^2$$

(i) Minimum section of re-bar

$$\text{Top} \quad A_s = D29-8 = 51.39 \text{ cm}^2 > 2.93 \text{ cm}^2$$

$$\text{Bottom} \quad A_s = D29-11 = 70.66 \text{ cm}^2 > 2.93 \text{ cm}^2$$

(ii) Side (one side)

$$A_s = D16-4^* = 7.94 \text{ cm}^2 > 7.05 \text{ cm}^2$$

8% of main bar section (both sides)  
 $D29-11 = 70.66 \text{ cm}^2$

$$A_s = 70.66 \times 0.08 \times \frac{1}{2} = 2.82 \text{ cm}^2 < 7.94 \text{ cm}^2$$

(7) Calculation of diagonal tension bar

i) Calculation of total shear

Referr R.C. standard 39, (2). (a)

$$\Sigma S_R = S_c + S_u + S_b$$

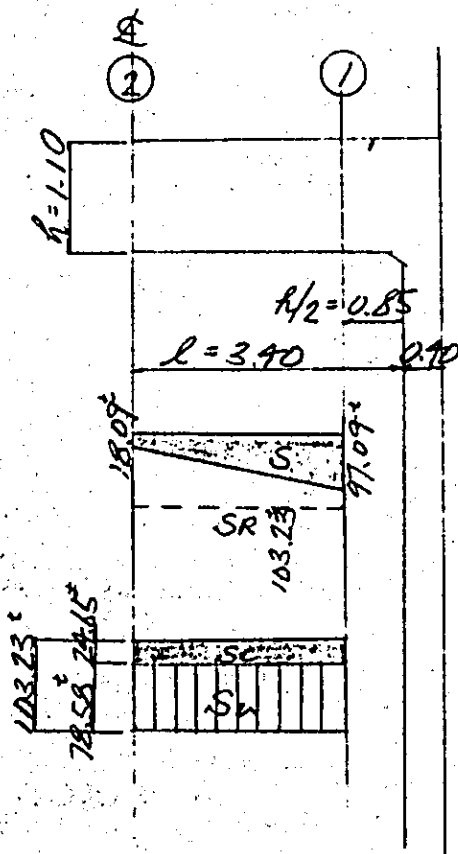
where

$S_c$ : Shearing stress beared by concrete ( $\tau_c$ )

$S_u$ : Shearing stress beared by stirrup ( $\tau_s$ )

$S_b$ : Shearing stress beared by turned up bars ( $\tau_b$ )

Assumed  $S_u \geq S_b$



Shearing force diagram

Resisting shearing force diagram



(i) Shearing stress beared by concrete

$$S_c = \frac{1}{2} \cdot \tau_c \cdot b \cdot d$$

where,  $\tau_c : 3.9 \text{ kg/cm}^2$

$b$  : width of member (cm)

$d$  : Effective height of member  
at the examining section.

$$S_{c1} = \frac{1}{2} \times 3.9 \times 80 \times 158.0 \times 10^{-3} = 24.65^t$$

(ii) Shearing force beared by stirrup

$$S_v = \frac{A_v \cdot \sigma_{sa} \cdot d}{1.15 \cdot S}$$

where,  $A_v$  : Total cross section ( $\text{cm}^2$ ) of stirrup  
with the section  $S$ .

$\sigma_{sa}$  : Allowable tensile stress of re-bar

$$\sigma_{sa} = 1800 \text{ kg/cm}^2$$

$S$  : Interval of stirrups measured  
along the member axis (cm)

Arranged stirrups  $\phi 16 - 2$  secs  $25 \text{ cm c/c}$ ,

$$A_v = 1.986 \times 4 = 7.944 \text{ cm}^2$$

$$S_{v1} = \frac{7.944 \times 1800 \times 158.0}{1.15 \times 25 \times 10^3} = 78.58^t$$

(iii) shearing stress bearing turned up bars disregarded the turned up bars for calculation

(iv) Total shear

$$\sum S_R = S_c + S_v + S_b$$

$$\sum S_R = 14.65 + 78.58 + 0$$

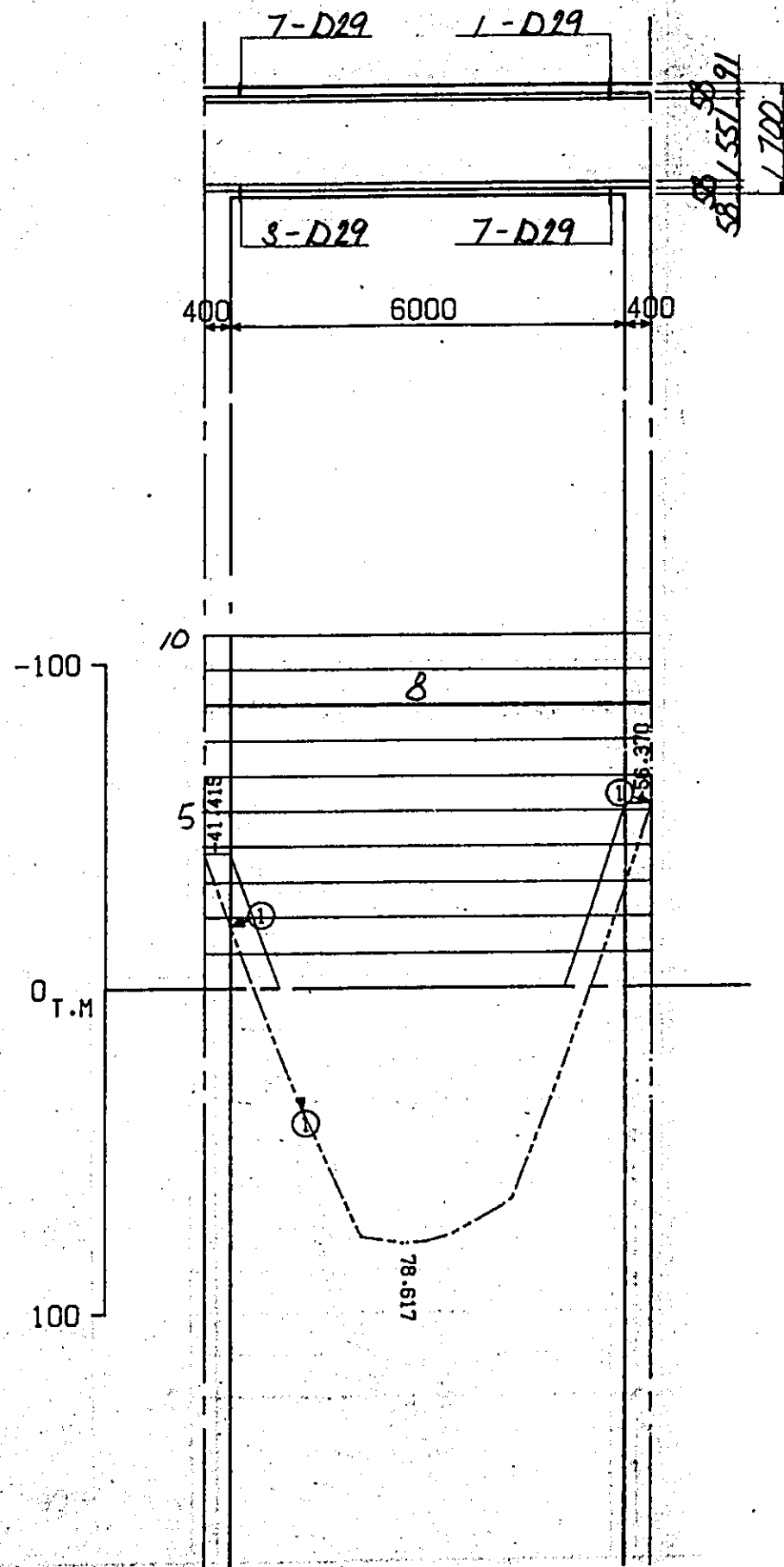
$$= 103.23^t > S_1 = 97.09^t$$

# VIADUCT OF DOUBLE TRACK C-1

PICK UP 1

1/100  
CM/TON 5.0/100

1

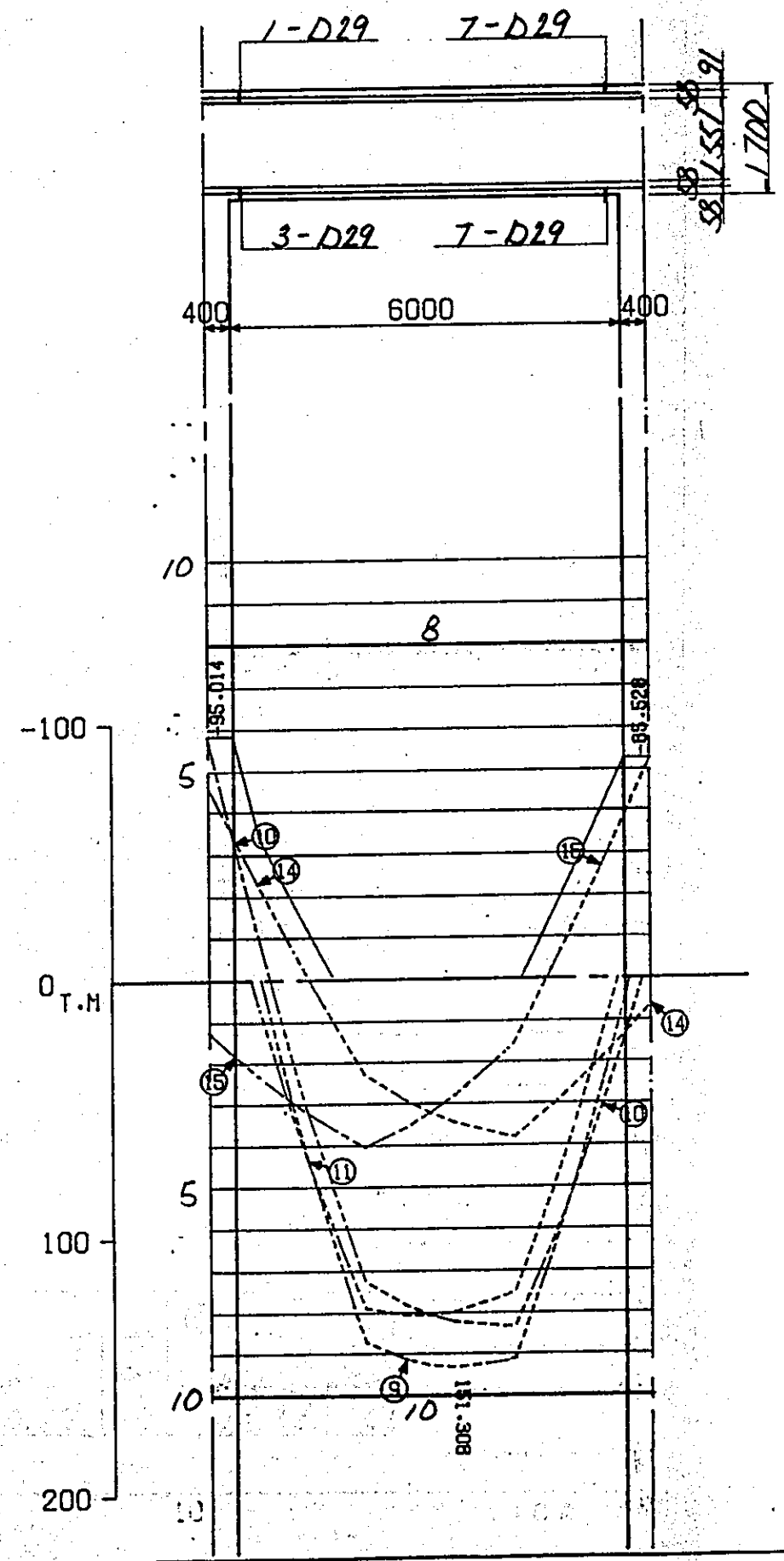


# VIADUCT OF DOUBLE TRACK C-1

PICK UP 2

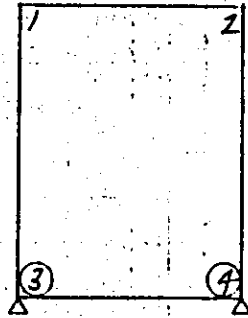
1/100  
CM/TON 4.0/100

1 1/2



(B) Calculation of buried beam (C-1)

(i) Summary of stresses



(a) Bending moment and shearing force

		③ point		④ point	
		M <sup>nm</sup>	case	M <sup>nm</sup>	case
pick up 2	TOP	-55.79	10	-47.94	15
	BOTTOM	35.60	15	38.42	10
pick up 1	TOP	-9.14	1	-9.36	1
	BOTTOM	-	-	span 16.47	1

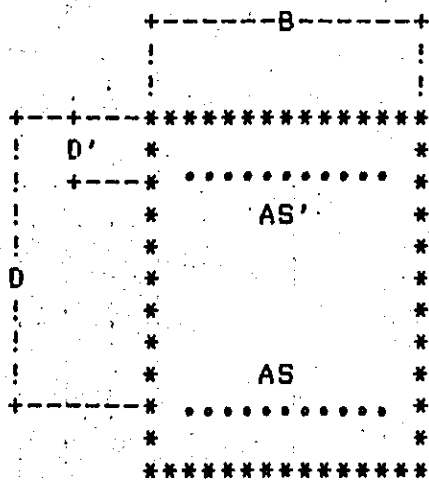
$$\sigma_{SA} = 1400 \text{ kg/cm}^2$$

(b) Shearing force

		③		④	
		S <sup>+</sup>	case	S <sup>+</sup>	case
pick up 2		20.82	10	18.22	15

b) Stress calculation

KEISANTEN NO.		(TOP) 1	(TOP) 1	(Bottom) 2	(Bottom) 2
CASE		( 10 )	( 1 )	( 10 )	( 1 )
M	[T*M]	55.79	9.36	38.42	16.47
S	[T]				
B	[CM]	70.00	70.00	70.00	70.00
H	[CM]	90.00	90.00	90.00	90.00
D	[CM]	76.40	76.40	72.10	72.10
D'	[CM]	13.60	13.60	17.90	17.90
AS	(DIA-HON)	029- 8.0	029- 8.0	029- 6.0	029- 6.0
	[CM**2]	51.39	51.39	38.54	38.54
AS'	(DIA-HON)				
	[CM**2]				
P		0.009610	0.009610	0.007637	0.007637
P'					
K		0.4118	0.4118	0.3776	0.3776
LC		0.1776	0.1776	0.1650	0.1650
SIG-C [KG/CM**2]		76.87	12.90	63.97	27.42
SIG-S [KG/CM**2]		1646.99	276.32	1581.58	677.99
TAU [KG/CM**2]					
SIG-CACKG/CM**2]		90.00	90.00	90.00	90.00
SIG-SACKG/CM**2]		1800.00	1400.00	1800.00	1400.00
TAU-A [KG/CM**2]					



(C) stress Calculation

(i) TOP

$$A_s = 15 \times 70 \times 76.4 \times \frac{1}{3000} = 26.74 \text{ cm}^2$$

$$\text{Hence } D29-8 = 51.39 \text{ cm}^2 > 26.74 \text{ cm}^2$$

(ii) Bottom

$$A_s = 15 \times 70 \times 72.1 \times \frac{1}{3000} = 25.24 \text{ cm}^2$$

$$\text{Hence } D29-6 = 38.54 \text{ cm}^2 > 25.24 \text{ cm}^2$$

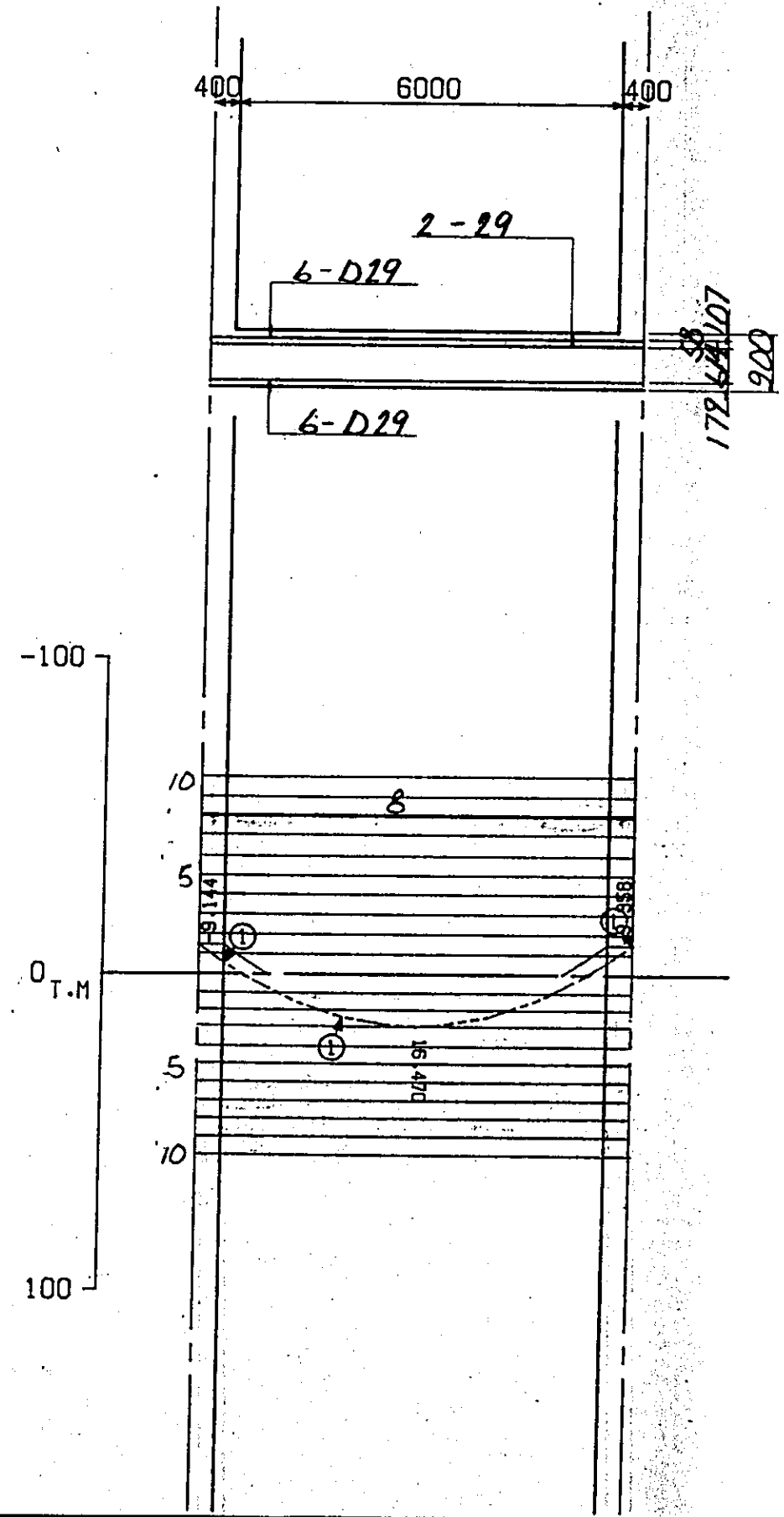
# VIADUCT OF DOUBLE TRACK C-1

257

PICK UP 1

1/100  
CM/TON 5.0/100

2



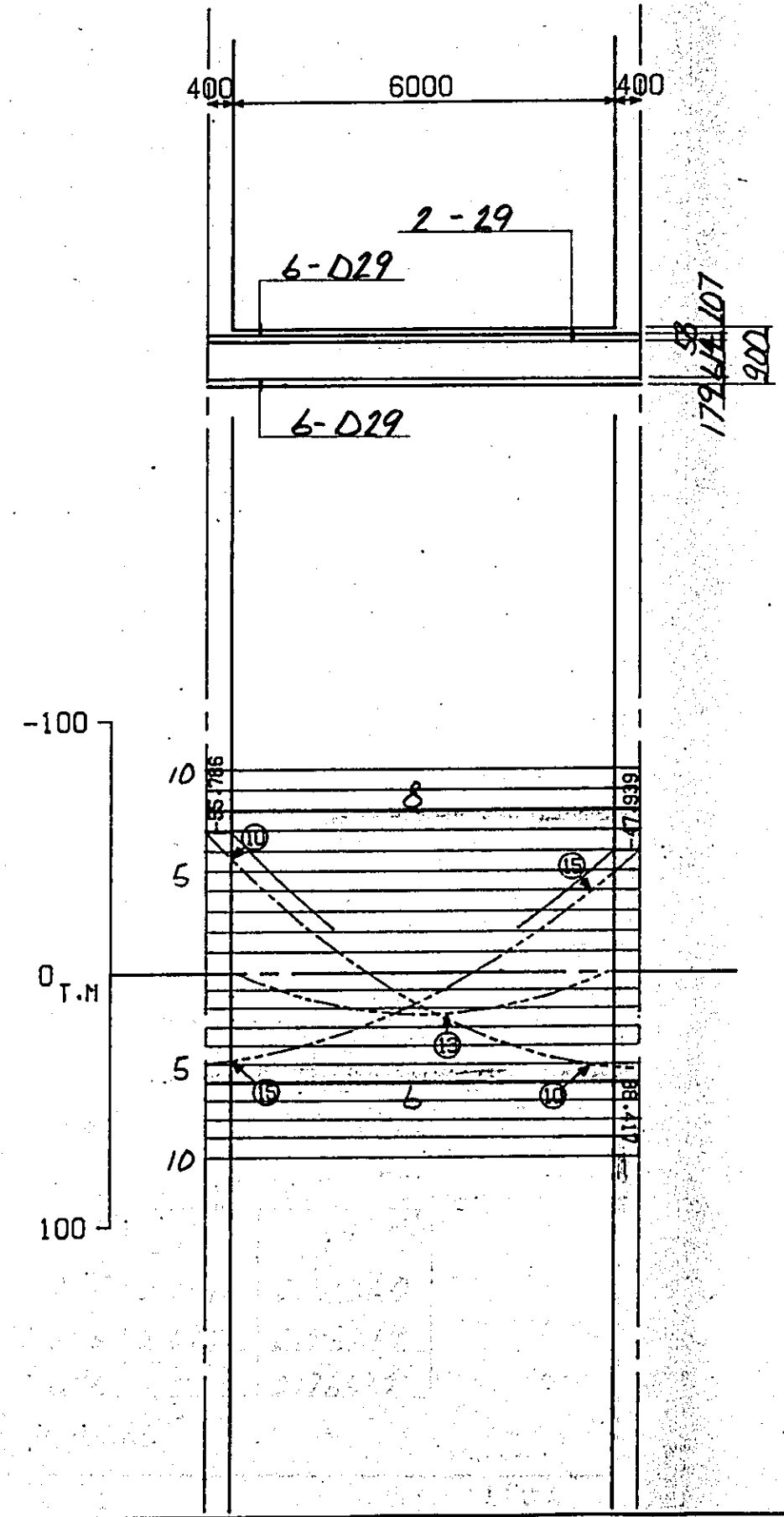


# VIADUCT OF DOUBLE TRACK C-1

PICK UP 2

1/100  
CM/TON 4.0/100

2

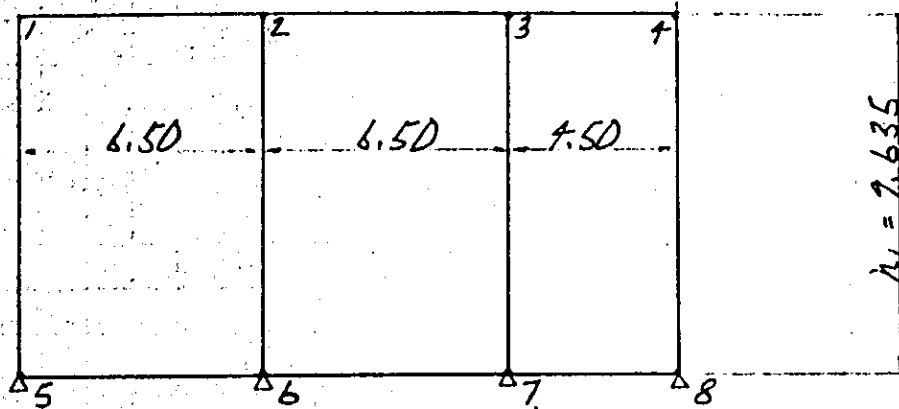


## § 6. Rigid frame analysis on transversal

Section (2-2) of elevated structure

(1) Elements for rigid frame analysis

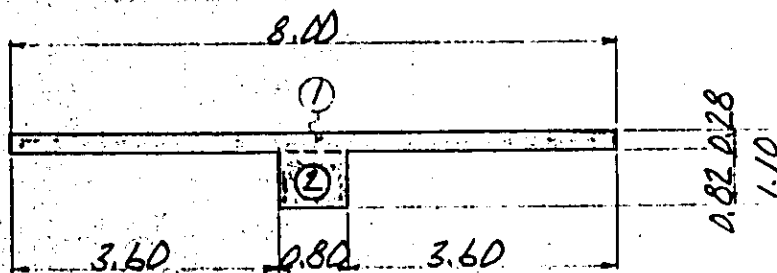
1. Configuration and dimension



$$h_1 = 9.15 - 0.265 + 0.30 + 0.45 = 9.635 \text{ m}$$

2. Cross-sectional area and moment of Inertia of the member.

(1) Member (1 ~ 2 ~ 3)



	$b$ m	$h$ m	$A$ m <sup>2</sup>	$y$ m	$Ay$ m <sup>3</sup>
①	8.000	0.280	2.240	0.140	0.31360
②	0.800	0.820	0.656	0.690	0.45264
$\Sigma$	—	—	2.896	—	0.76624

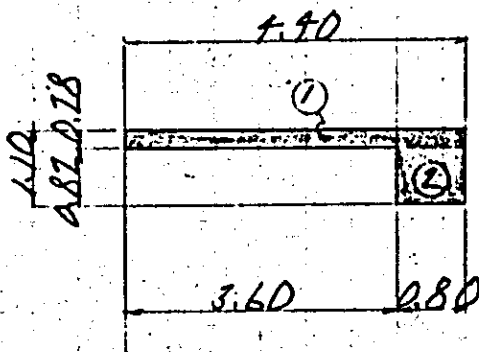
$$y_0 = \frac{0.76624}{2.896} = 0.265 \text{ m}$$

	$A \text{ m}^2$	$y_0 \text{ m}$	$A \cdot y_0^2 \text{ m}^3$	$I_0 \text{ m}^4$
①	2.240	0.125	0.03500	0.01463
②	0.656	0.425	0.11849	0.03676
$\Sigma$	2.896	—	0.15349	0.05139

$$A = 2.896 \text{ m}^2$$

$$I = 0.15349 + 0.05139 = 0.20488 \text{ m}^4$$

(2) Member (3~4)



	$b \text{ m}$	$h \text{ m}$	$A \text{ m}^2$	$y \text{ m}$	$A \cdot y \text{ m}^3$
①	4.400	0.280	1.232	0.140	0.17248
②	0.800	0.540	0.456	0.690	0.45764
$\Sigma$	—	—	1.888	—	0.62512

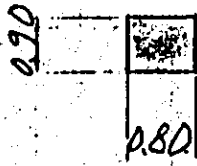
$$y_0 = \frac{0.62512}{1.888} = 0.331 \text{ m}$$

	$A \text{ m}^2$	$y_0 \text{ m}$	$A \cdot y_0^2 \text{ m}^3$	$I_0 \text{ m}^4$
①	1.232	0.191	0.04499	0.00805
②	0.656	0.359	0.08455	0.03676
$\Sigma$	1.888	—	0.12949	0.04481

$$A = 1.888 \text{ m}^2$$

$$I = 0.12949 + 0.04481 = 0.17430 \text{ m}^4$$

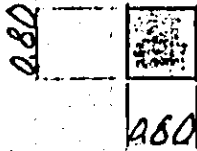
(3) Member (5~6, 6~7, 7~8)



$$A = 0.80 \times 0.70 = 0.720 \text{ m}^2$$

$$I = \frac{1}{12} \times 0.80 \times 0.70^3 = 0.04860 \text{ m}^4$$

(4) Member (1~5, 2~6, 3~7, 4~8)



$$A = 0.80 \times 0.80 = 0.640 \text{ m}^2$$

$$I = \frac{1}{12} \times 0.80 \times 0.80^3 = 0.03413 \text{ m}^4$$

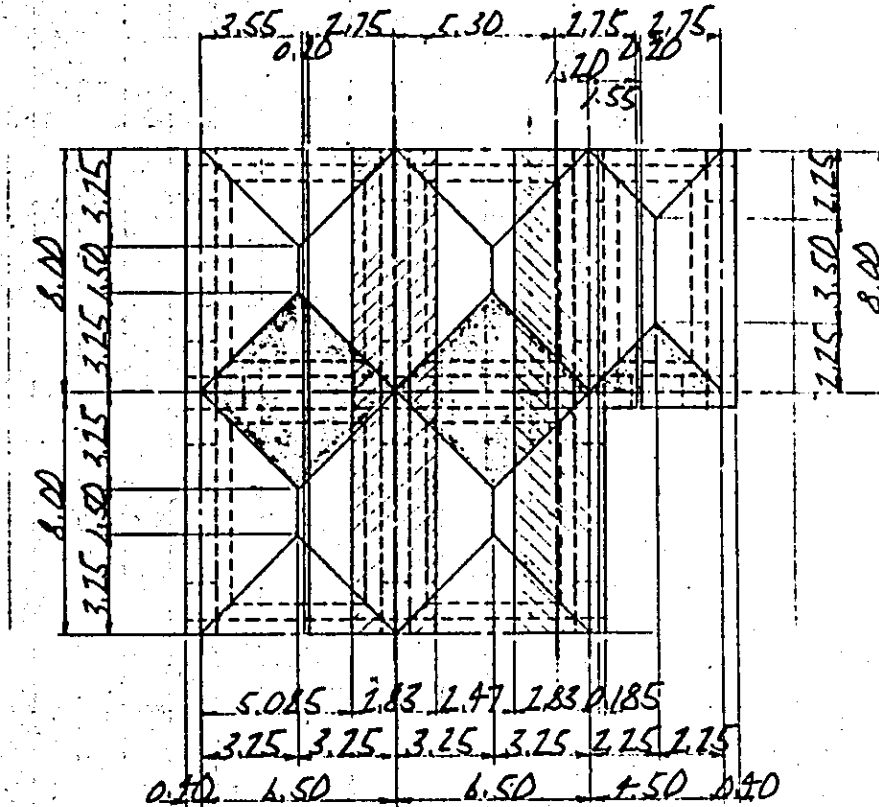
$$E_c = 2.7 \times 10^6 \text{ t/m}^2 \quad (f_{ck} = 240 \text{ kg/cm}^2)$$

$$\alpha = 1.0 \times 10^{-5} \text{ } ^\circ\text{C}$$

## (2) Calculation of loads

## 1. Dead load

## (i) Member (1~2, 2~3, 3~4)



## (a) Distributed load (A)

$$\text{Ballast} \quad 1.9 \times 0.481 = 0.91 \text{ } \frac{\text{t}}{\text{m}^2}$$

$$\text{Sloping concrete} \quad 2.35 \times 0.07 = 0.16 \text{ "}$$

$$\text{Slab} \quad 2.5 \times 0.28 = 0.70 \text{ "}$$

$$\text{Total } W_d = 1.77 \text{ } \frac{\text{t}}{\text{m}^2}$$

$$\therefore W_{d1} = 0.70 \times 3.25 \times 2 = 4.55 \text{ } \frac{\text{t}}{\text{m}}$$

$$W_{d2} = 0.70 \times 2.75 \times 2 = 3.85 \text{ "}$$

$$w_{d3} = 1.77 \times 2.75 \times 2 = 9.74 \text{ t/m}$$

$$w_{d4} = 1.77 \times 3.25 \times 2 = 11.51 \text{ "}$$

$$w_{d5} = 1.77 \times 0.40 = 0.71 \text{ "}$$

$$w_{d6} = 1.77 \times (0.40 + 1.55) = 3.45 \text{ "}$$

$$w_{d7} = 0.70 \times (0.40 + 1.55) = 1.37 \text{ "}$$

$$w_{d8} = 0.70 \times (0.40 + 2.25) = 1.86 \text{ "}$$

$$w_{d9} = 0.70 \times 0.4 = 0.28 \text{ "}$$

$$\text{Track weight } 0.45 \times \frac{1}{2} \times 2.83 = 0.16 \text{ t/m}^2$$

$$w_{d10} = 0.16 \times 1.415 \times 2 = 0.45 \text{ t/m}$$

$$w_{d11} = 0.16 \times 2.615 \times 2 = 0.84 \text{ "}$$

$$w_{d12} = 0.16 \times 0.215 = 0.03 \text{ "}$$

(b) Distributed load (B)

$$\text{Cross beam } 2.5 \times 0.80 \times 0.82 = 1.64 \text{ t/m}$$

$$\text{Slab haunch } 2.5 \times \frac{1}{2} \times 0.45 \times 0.15 \times 2 = 0.17 \text{ "}$$

$$w_{d13} = 1.81 \text{ t/m}$$

$$\text{Cross beam } 2.5 \times 0.80 \times 0.82 = 1.64 \text{ t/m}$$

$$\text{Slab haunch } 2.5 \times \frac{1}{2} \times 0.45 \times 0.15 = 0.08 \text{ "}$$

$$w_{d14} = 1.72 \text{ t/m}$$

(c) Distributed load (c)

(i) 1 ~ 2 Member

$$2.5 \times 0.20 \times 0.30 \times 2.85 \times 2 = 0.86^t$$

$$0.20 \times 2.85 \times 2 = 1.14^t$$

$$P_{d1} = 2.00^t$$

(ii) 3 ~ 4 Member

$$2.5 \times 0.20 \times 0.30 \times (1.65 + 0.40) = 0.31^t$$

$$0.20 \times (1.65 + 0.40) = 0.41^t$$

$$P_{d2} = 0.72^t$$

(d) Concentrated load of elements acting at joint  $P_1, P_2$ (i) joint  $P_1$ 

$$\text{Slab } 2.5 \times \frac{1}{2} \times (0.75 + 4.00) \times 3.25 \times 0.28 \times 2 = 10.81^t$$

$$2.5 \times 0.40 \times 0.28 \times 8.00 = 2.24^t$$

$$\text{Slab haunch } 2.5 \times \frac{1}{2} \times 0.45 \times 0.15 \times 3.45 \times 2 = 0.58^t$$

$$\text{longitudinal beam } 2.5 \times 0.0 \times 0.80 \times 8.00 = 14.72^t$$

$$\text{longitudinal beam haunch } 2.5 \times \frac{1}{2} \times 1.20 \times 0.40 \times 0.80 \times 2 = 0.96^t$$

$$\text{Cross beam haunch } 2.5 \times \frac{1}{2} \times 0.90 \times 0.30 \times 0.80 = 0.27^t$$

$$\text{Deficit of distributed load } 1.81 \times 0.40 = -0.72^t$$

$$\text{Deficit of column weight } 2.5 \times 0.80 \times 0.80 \times (1.20 - 0.265) = -1.50^t$$

$$P_1 = 27.36^t$$

(ii) joint P<sub>2</sub>

Slab	$2.5 \times \frac{1}{2} \times (0.75 + 1.25) \times 0.50 \times 0.28 \times 2 =$	$0.70^t$
Distributed load	$1.77 \times \frac{1}{2} \times (1.25 + 4.00) \times 2.75 \times 2 =$	$25.55''$
	$1.77 \times \frac{1}{2} \times (0.75 + 4.00) \times 3.25 \times 2 =$	$27.32''$
Track weight	$0.16 \times \frac{1}{2} \times (2.585 + 4.00) \times 1.915 \times 4 =$	$2.98''$
Longitudinal beam	$2.5 \times 0.80 \times 0.92 \times 8.00 =$	$14.72''$
Slab haunch	$2.5 \times \frac{1}{2} \times 0.45 \times 0.15 \times 3.45 \times 4 =$	$1.16''$
Longitudinal haunch	$2.5 \times \frac{1}{2} \times 1.20 \times 0.40 \times 0.80 \times 2 =$	$0.96''$
Cross beam haunch	$2.5 \times \frac{1}{2} \times 0.70 \times 0.30 \times 0.80 \times 2 =$	$0.54''$
Deficit of distributed load	$1.81 \times 0.80 =$	$-1.45''$
Deficit of column weight	$2.5 \times 0.80 \times 0.80 \times (1.20 - 0.265) =$	$-1.50''$
		$P_2 = 70.98^t$

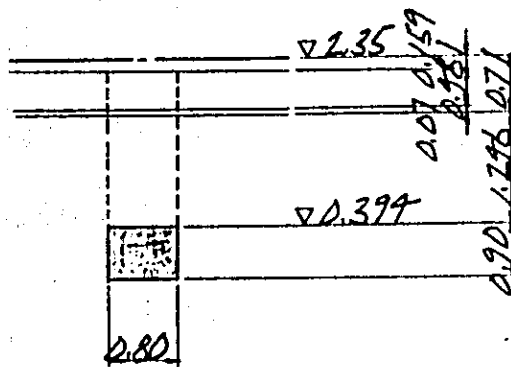
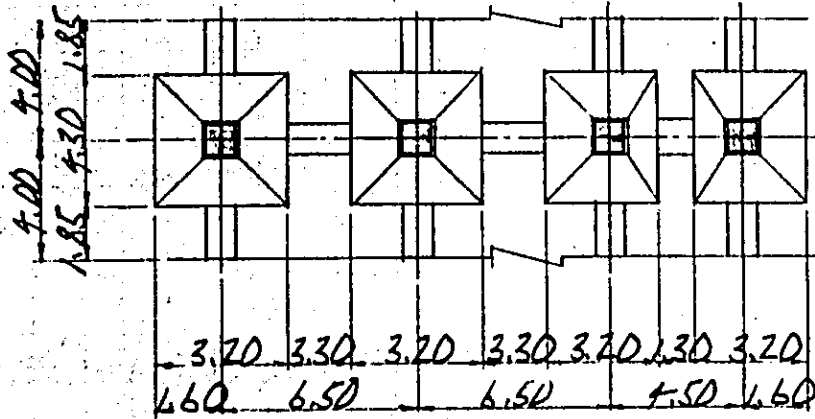
(iii) joint P<sub>3</sub>

Distributed	$1.77 \times \frac{1}{2} \times (0.75 + 4.00) \times 3.25 \times 2 =$	$27.32^t$
"	$1.77 \times \frac{1}{2} \times (2.45 + 4.00) \times 1.55 =$	$8.85''$
"	$1.77 \times 0.20 \times 3.60 =$	$1.27''$
Slab	$2.5 \times \frac{1}{2} \times (1.75 + 2.45) \times 0.70 \times 0.28 =$	$1.03''$
"	$2.5 \times 0.40 \times 0.28 \times 3.60 =$	$1.01''$
curb	$2.5 \times 0.20 \times 0.30 \times 3.60 =$	$0.54''$
Hand rail	$0.20 \times 3.60 =$	$0.72''$





(2) Member (5~6, 6~7, 7~8)



## (a) Distributed load (A)

$$\text{Ballast} \quad 1.9 \times 0.481 = 0.91 \text{ } \frac{\text{t}}{\text{m}^2}$$

$$\text{Sloping concrete} \quad 2.35 \times 0.07 = 0.16 \text{ "}$$


---


$$1.07 \text{ } \frac{\text{t}}{\text{m}}$$

$$\text{Earth weight} \quad 1.8 \times 0.946 = 1.70 \text{ } \frac{\text{t}}{\text{m}^2}$$

$$\text{"} \quad 1.8 \times 1.246 = 2.24 \text{ "}$$

## (b) Distributed load (B)

$$W_d = (1.07 + 2.24) \times 0.80 + 2.5 \times 0.80 \times 0.90$$

$$= 4.45 \text{ } \frac{\text{t}}{\text{m}}$$

(c) Concentrated load of elements acting at joint  
P<sub>5</sub>, P<sub>6</sub>, P<sub>7</sub>, P<sub>8</sub> shown bellone(i) joint P<sub>5</sub>, P<sub>8</sub>

$$\text{Distributed load (B)} \quad 4.45 \times 1.85 \times 2 = 16.47 \text{ } \frac{\text{t}}{\text{m}^2}$$

$$\text{Distributed load (A)} \quad 1.07 \times (3.20 \times 4.30 - 0.80^2) = 14.04 \text{ "}$$

$$\text{Earth weight} \quad 1.7 \times (3.20 \times 4.30 - 0.8^2) \times 0.946 = 22.30 \text{ "}$$

$$\text{"} \quad 1.8 \times \left\{ 3.20 \times 4.30 - \frac{1}{6} \times (1.00^2 + 3.20 \times 4.30 + 4 \times 2.10 \times 2.65) \right\} \times 0.30 = 4.10 \text{ "}$$

$$\text{footing} \quad 2.5 \times \left\{ 3.20 \times 4.30 \times 0.90 + \frac{1}{6} \times (1.00^2 + 3.20 \times 4.30 + 4 \times 2.10 \times 2.65) \right\} \times 0.30 = 35.59 \text{ "}$$

$$\text{Deficit of column weight} - 2.5 \times 0.80^2 \times (0.30 + 0.45) = - 1.20^t$$

$$\text{Deficit of Distributed load (B)} 4.45 \times -1.60 = - 7.12^t$$

---


$$P_{A5,8} = 84.18^t$$

(ii) Joint P<sub>B</sub>, P<sub>7</sub>

$$\text{Distributed load (B)} (P_{d5} \text{ \& } 1) = 16.47^t$$

$$\text{Distributed load (A)} ( \quad " \quad ) = 14.04^t$$

$$\text{Earth weight} ( \quad " \quad ) = 22.30^t$$

$$" ( \quad " \quad ) = 4.10^t$$

$$\text{Footing} ( \quad " \quad ) = 35.59^t$$

$$\text{Deficit of column weight} ( \quad " \quad ) = - 1.20^t$$

$$\text{Deficit of distributed load (B)} 4.45 \times 3.20 = - 14.24^t$$

---


$$P_{A8} = 77.06^t$$

(3) Column weight

$$W = 2.5 \times 0.80 \times 0.80 = 1.60^t/m$$



$$w_{11} = \frac{16}{2.83} = 5.65 \text{ t/m}$$

$$w_{12} = \frac{10.6}{2.83} = 3.75 \text{ "}$$

$$w_{13} = \frac{8}{2.83} = 2.83 \text{ "}$$

(2) Reduction of impact coefficient

$$l_1 = 4.50 \text{ " } \longrightarrow i_1 = 0.472 \times \left(1 - \frac{4.50}{2.00}\right) = 0.481$$

$$l_2 = 6.50 \text{ " } \longrightarrow i_2 = 0.465 \times \left(1 - \frac{6.50}{2.00}\right) = 0.450$$

$$l_3 = 8.00 \text{ " } \longrightarrow i_3 = 0.450 \times \left(1 - \frac{8.00}{2.00}\right) = 0.432$$

(3) Train load + Impact

(a) Distributed load

$$w_{2+11} = 5.65 \times (1 + 0.450) = 8.19 \text{ t/m}$$

$$w_{2+12} = 5.65 \times (1 + 0.450) \times 3 = 24.58 \text{ "}$$

$$w_{2+13} = 5.65 \times (1 + 0.481) = 8.37 \text{ "}$$

(b) Distributed load of longitudinal beam

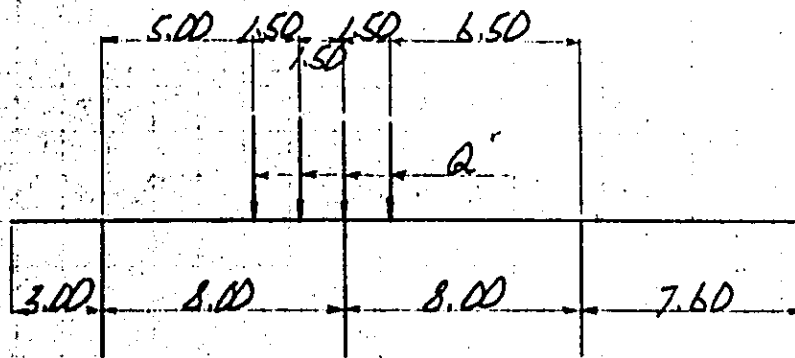
(i) joint  $P_2$

$$\begin{aligned} P_{2+1A} &= \frac{1}{8.00} \times \left\{ 3.75 \times 1.60 \times 0.80 + 10.6 \times 2.30 \right. \\ &\quad \left. + 16 \times (5.00 + 6.50 + 6.50) + 8 \times 4.10 \right. \\ &\quad \left. + 10.6 \times 1.70 + 3.75 \times 0.70 \times 0.20 \right\} \times (1 + 0.432) \\ &= 65.93 \text{ t} \end{aligned}$$

(ii) joint P<sub>3</sub>

$$\begin{aligned} P_{\text{tiA}} &= 8.00 \times \{ 3.75 \times 1.015 \times 0.80 + 3.75 \times 2.515 \\ &\quad \times 2.30 + 16 \times 5.00 + 5.65 \times 1.715 \times 6.50 \times 2 \\ &\quad + 8 \times 4.10 + 3.75 \times (1.915 \times 1.70 + 0.415 \\ &\quad \times 0.20) \} \times (1 + 0.432) \\ &= 49.41 \text{ t} \end{aligned}$$

## 3. Train lateral load



$$Q = 16.0 \times 0.15 = 2.40^t$$

$$H = \frac{2.40}{8.00} \times (6.50 + 5.00 + 6.50) = 5.40^t$$

## 4. Force of temperature change and/or Drying contraction

Temperature rise + 10 deg

Temperature drop +  
Drying contraction - 25 deg



## 5. Dead load + Seismic force

(1)  $W_1$ 

Track weight	$0.45 \times 8.00 \times 2$	$= 7.20^t$
Hand rail	$0.20 \times 8.00 \times 2$	$= 3.20''$
curb	$2.5 \times 0.20 \times 0.30 \times 8.00 \times 2$	$= 2.40''$
Ballast	$1.9 \times 10.80 \times 0.481 \times 8.00$	$= 78.96''$
Sloping concrete	$2.35 \times 10.80 \times 0.07 \times 8.00$	$= 14.21''$
Slab	$2.5 \times 13.80 \times 0.28 \times 8.00$	$= 77.28''$
"	$2.5 \times 4.50 \times 0.28 \times 4.40$	$= 13.86''$
Slab haunch	$2.5 \times \frac{1}{2} \times 0.45 \times 0.15 \times (5.40 \times 4$ $+ 3.45 \times 10 + 3.40)$	$= 5.02''$
Longitudinal beam	$2.5 \times 0.80 \times 0.92 \times (8.00 \times 3$ $+ 4.40)$	$= 52.26''$
Cross beam	$2.5 \times 0.80 \times 0.82 \times (5.70 \times 2$ $+ 3.70)$	$= 24.76''$
Longitudinal beam haunch	$2.5 \times \frac{1}{2} \times 1.20 \times 0.40 \times 0.80 \times 7$	$= 3.36''$
Cross beam haunch	$2.5 \times \frac{1}{2} \times 0.90 \times 0.30 \times 0.80 \times 6$	$= 1.62''$
column	$2.5 \times 0.80 \times 0.80 \times (\frac{1}{2} \times 9.635$ $+ 0.265 - 1.20) \times 4$	$= 24.85''$

$$W_1 = 308.98^t$$

$$\therefore H_d = 308.98 \times 0.1 = 30.90^t$$

(2)  $W_z$ 

$$\text{Bracing beam } 2.5 \times 0.80 \times 0.90 \times (1.85 \times 8 + 3.30 \\ \times 2 + 1.30) = 40.86^t$$

$$\text{Footling } 2.5 \times 3.20 \times 4.30 \times 0.90 \times 4 = 123.84''$$

$$" 2.5 \times \frac{1}{6} (1.00^2 + 3.20 \times 4.30 + 4 \\ \times 2.10 \times 2.65) \times 0.30 \times 4 = 18.51''$$

$$\text{Column } 2.5 \times 0.80 \times 0.80 \times (\frac{1}{2} \times 9.635 \\ - 0.45 - 0.30) \times 4 = 26.03''$$

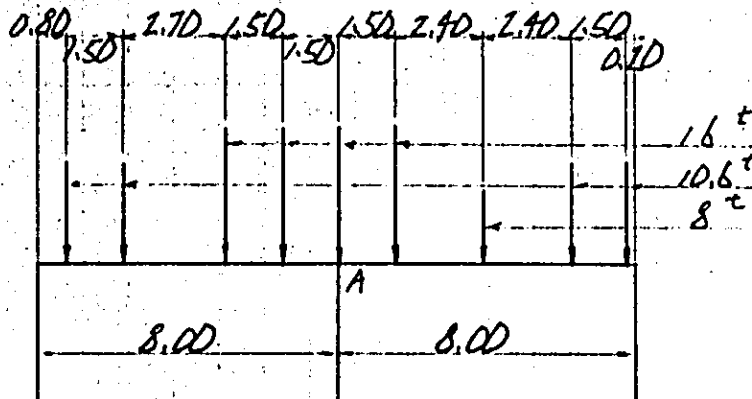
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$$W_z = 209.24^t$$

$$\therefore H = 209.24 \times 0.1 = 20.92^t$$

## b. Centrifugal load

### (a) Train load



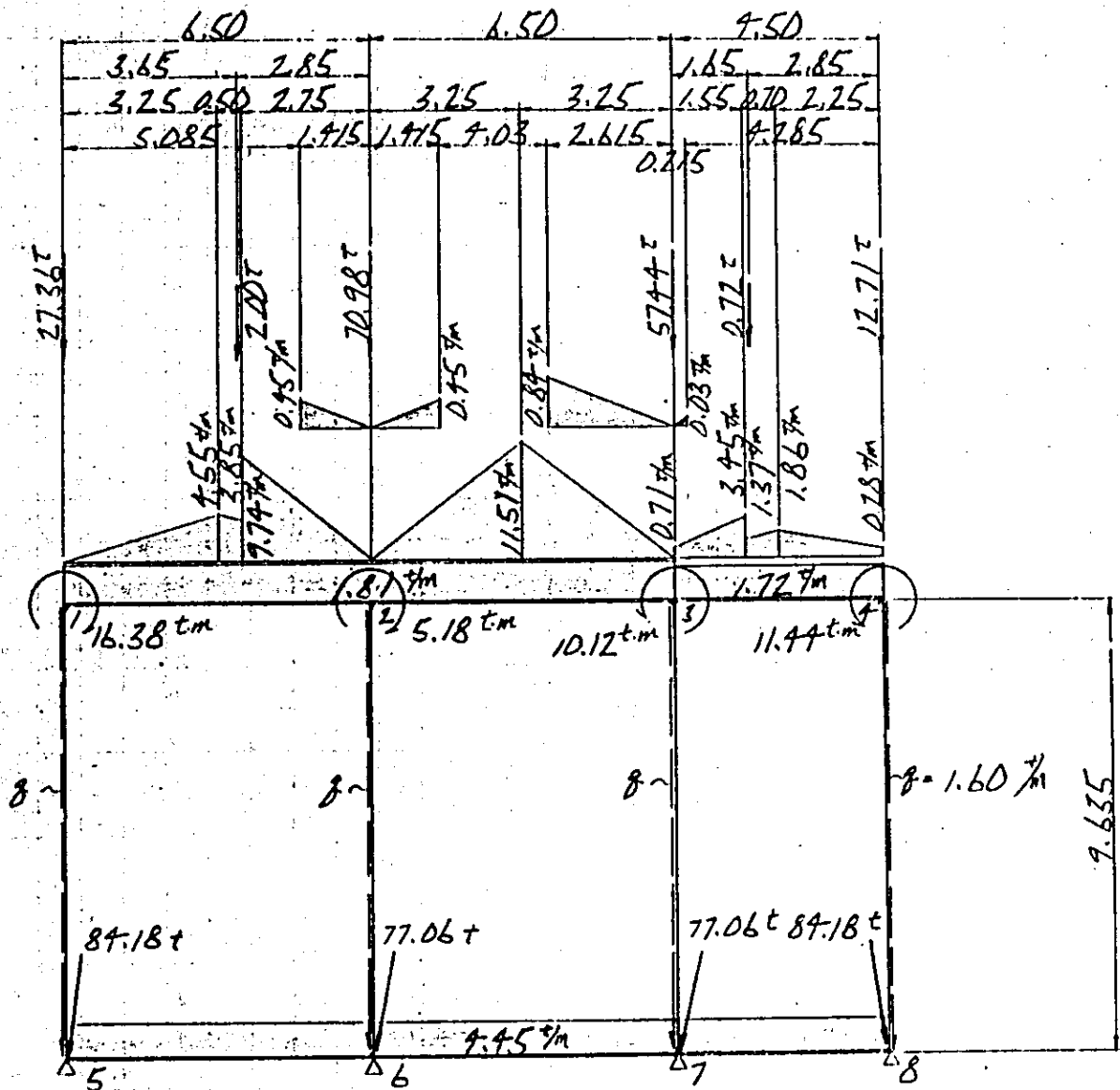
$$\begin{aligned}
 P_A &= \frac{1}{8.00} \times \{ 10.6 \times (0.80 + 2.30 + 0.20 + 1.70) \\
 &\quad + 16 \times (5.00 + 6.50 + 8.00 + 6.50) + 8 \times 4.10 \} \\
 &= 62.73 \text{ t}
 \end{aligned}$$

$$R = 500 \text{ m} \longrightarrow \alpha = 0.12$$

$$\text{Hence } H = 62.73 \times 0.12 \times 2 = 15.06 \text{ t}$$

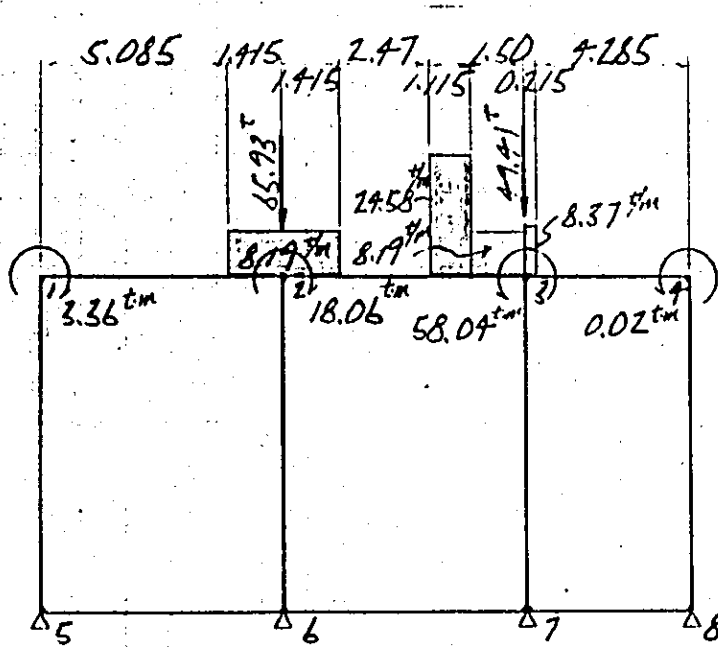
(3) Loading diagram

CASE 1 Dead load



$$\begin{aligned}
 M_1 &= 8.19 \times 2 = 16.38 \text{ t.m} \\
 M_2 &= 2.59 \times 2 = 5.18 \text{ " } \\
 M_3 &= -5.06 \times 2 = -10.12 \text{ " } \\
 M_4 &= -5.72 \times 2 = -11.44 \text{ " }
 \end{aligned}$$

CASE 2. Train load + Impact



$$M_1 = 1.68 \times 2 = 3.36 \text{ tm}$$

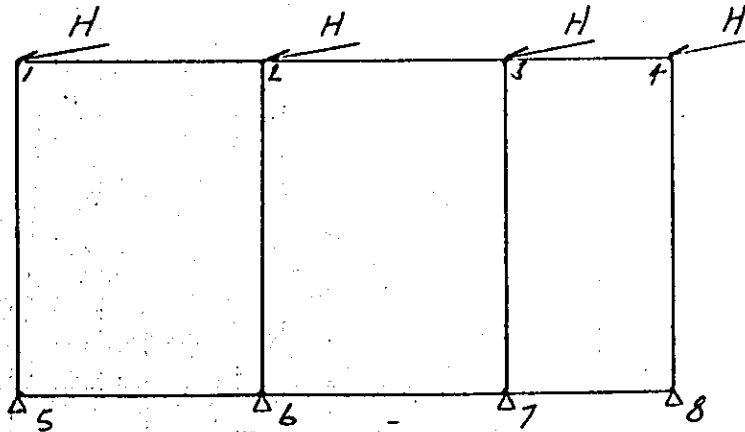
$$M_2 = 9.03 \times 2 = 18.06 \text{ tm}$$

$$M_3 = -29.02 \times 2 = -58.04 \text{ tm}$$

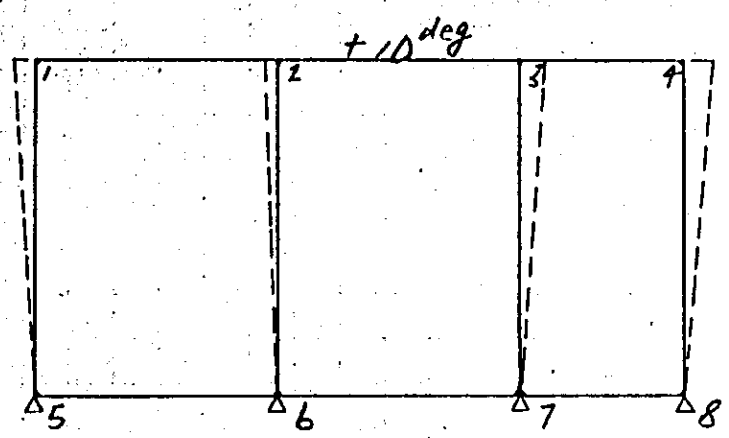
$$M_4 = -0.01 \times 2 = -0.02 \text{ tm}$$

CASE 3 Train lateral load

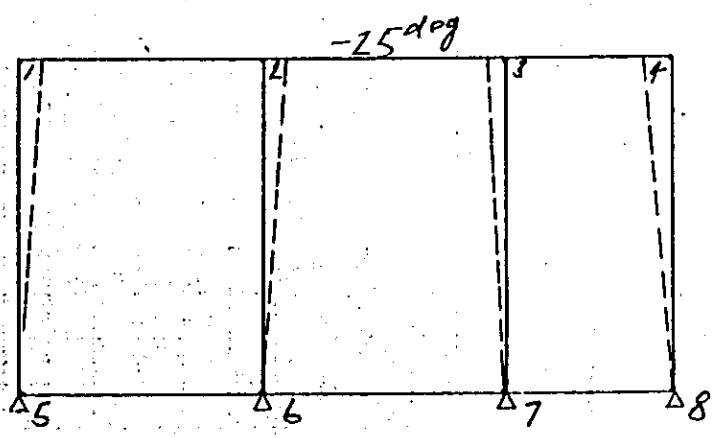
$$H = \frac{1}{4} \times 5.40 = 1.35 \text{ t}$$



CASE 4. Temperature rise



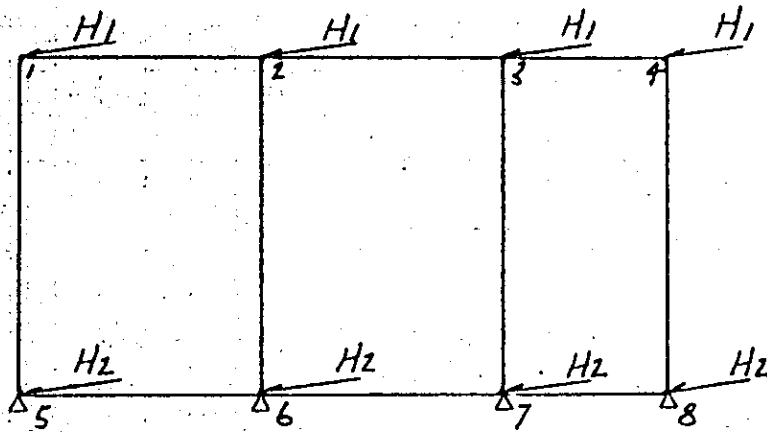
CASE 5. Temperature drop + Drying contraction



CASE 6. Seismic load

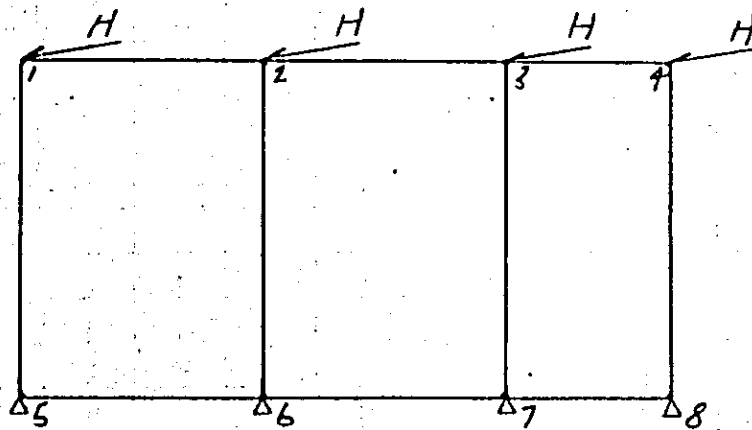
$$H_1 = 1/4 \times 30.90 = 7.78 \text{ t}$$

$$H_2 = 1/4 \times 20.92 = 5.23 \text{ t}$$



### CASE 7 Centrifugal load

$$H = \frac{1}{4} \times 15.06 = 3.77^+$$



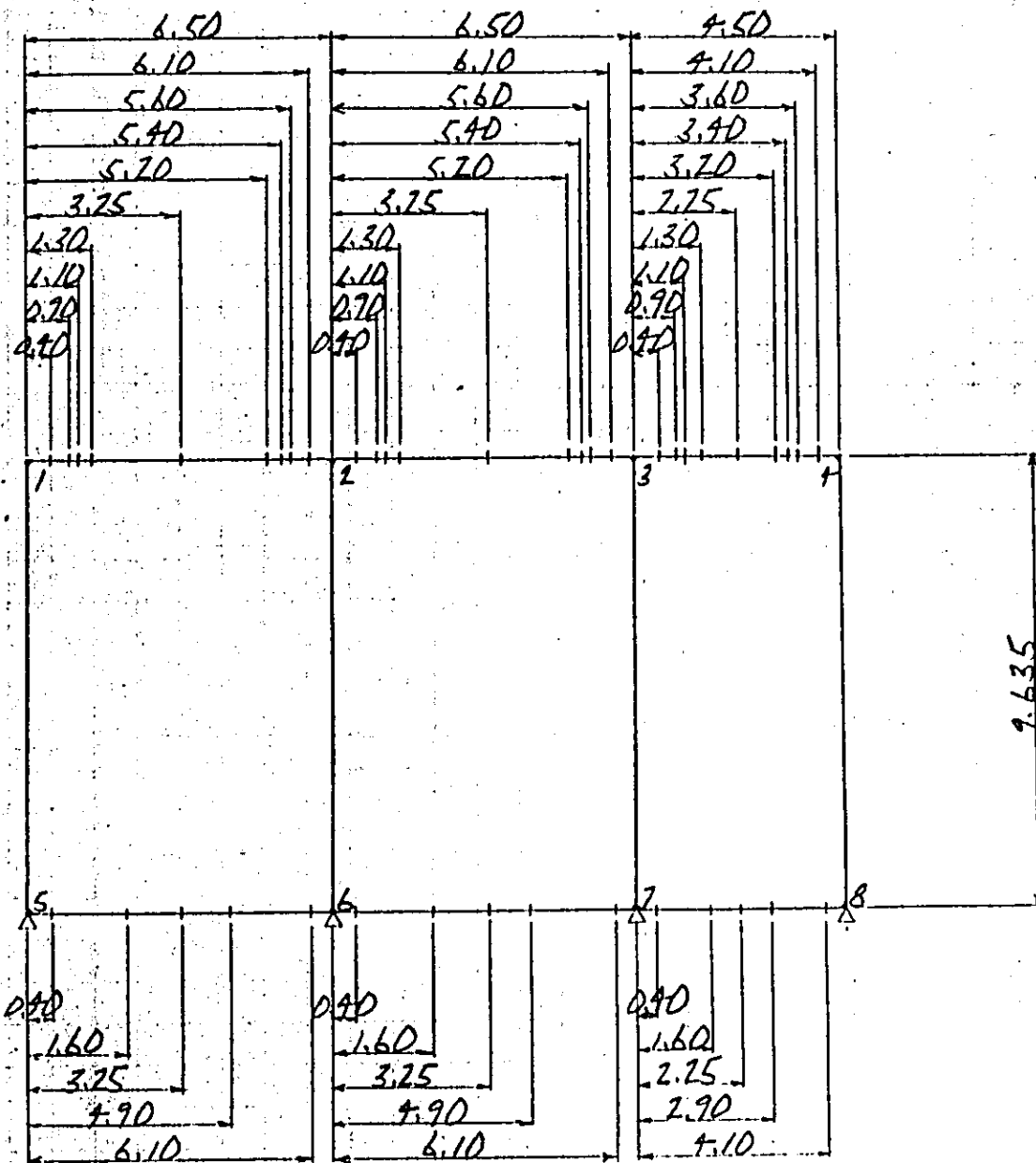




## 2. Critical cases

Case no.	$\alpha$	combination of loads	Summary
8	1.0000	1	D
9	1.0000	1 + 2 + 7	D + T + I + C
10	0.8696	1 + 2 + 3 + 7	D + T + I + C + T <sub>e</sub>
11	"	1 + 2 - 3 + 7	"
12	0.8696	1 + 4	D + T <sub>e</sub>
13	"	1 + 5	"
14	0.6667	1 + 6	D + S <sub>e</sub>
15	"	1 - 6	"
16	1.0000	1 + 2 + 3 + 7	D + T <sub>r</sub> + I + C + T <sub>e</sub>
17	"	1 + 2 - 3 + 7	"
18	1.0000	1 + 4	D + T <sub>e</sub>
19	"	1 + 5	"
20	1.0000	1 + 6	D + S <sub>e</sub>
21	"	1 - 6	"
		NO.1 case 1	Crack
		NO.2 case 9 ~ 15	Synthetic
		NO.3 case 16 ~ 17	footing
		NO.4 case 18 ~ 19	"
		NO.5 case 20 ~ 21	"

(5) Point of computing stresses

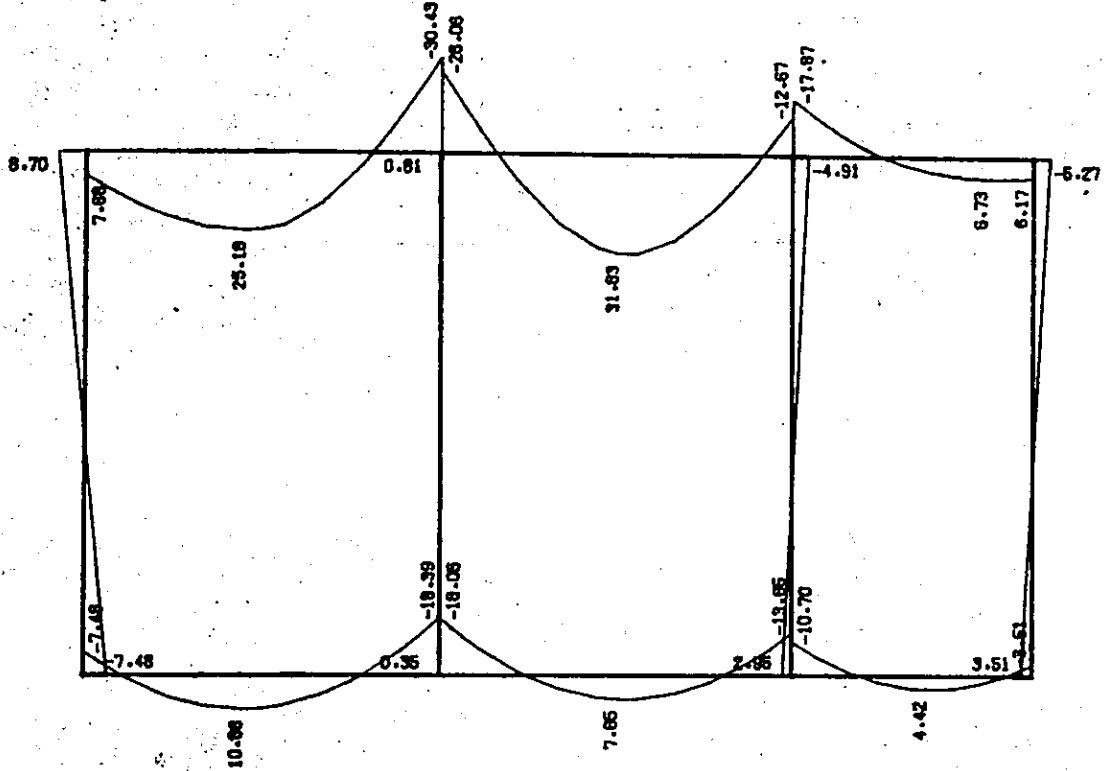


(b) stress diagram

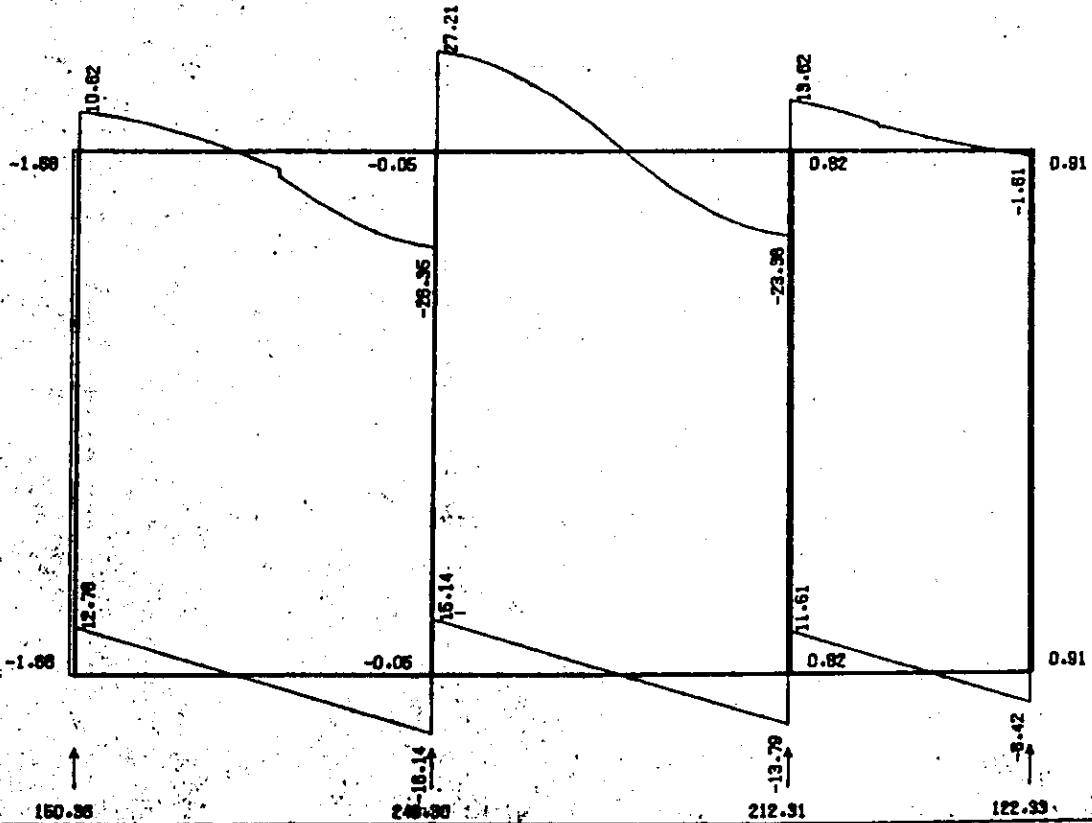
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-2

CASE 1 (DEAD LOAD)

BENDING MOMENT



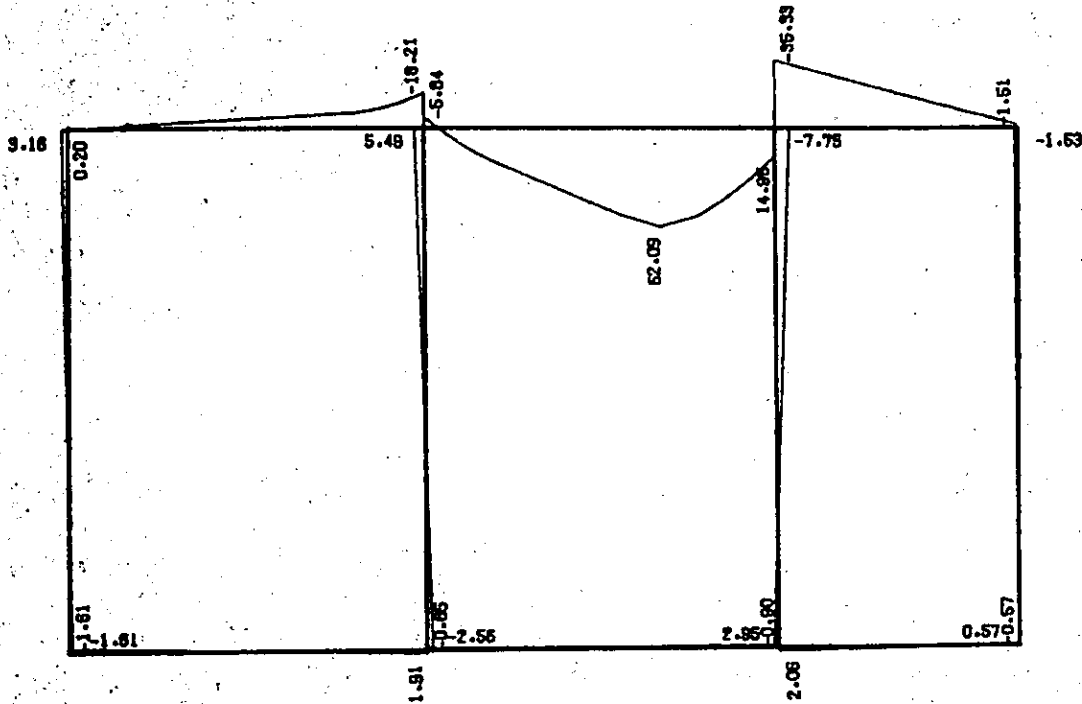
SHEARING FORCE



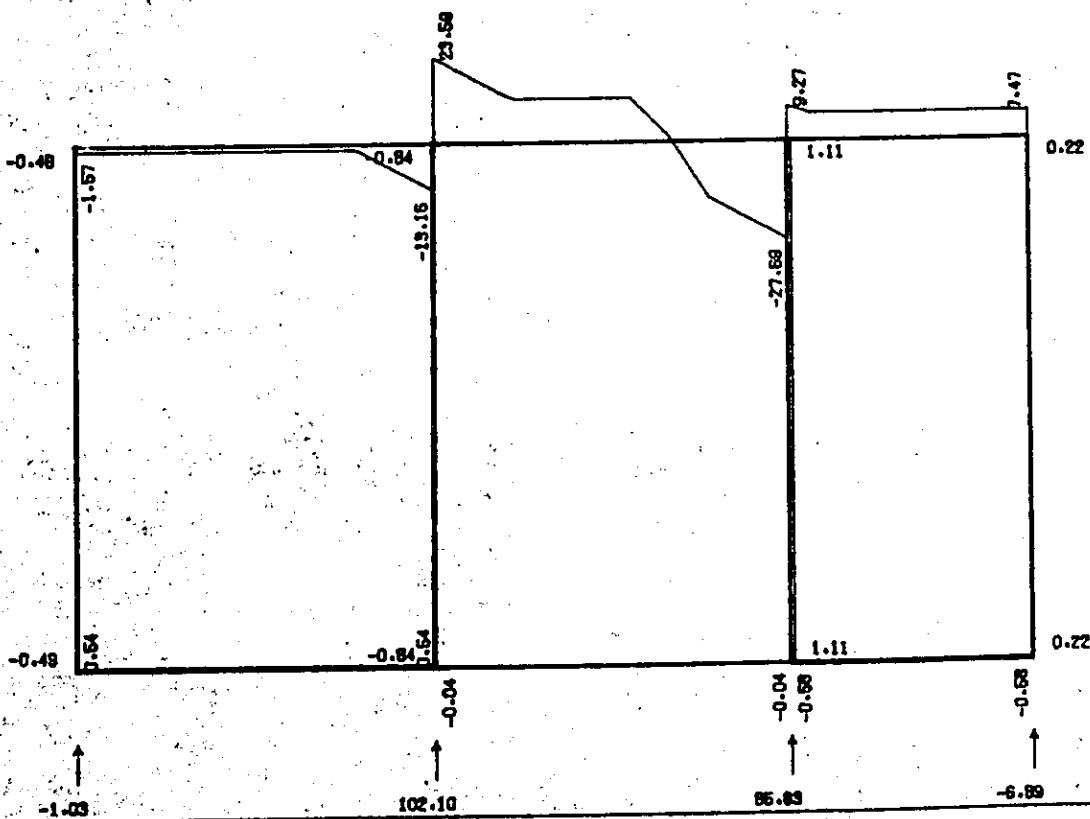
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-2

CASE 2 (TRAIN LOAD + IMPACT LOAD)

BENDING MOMENT



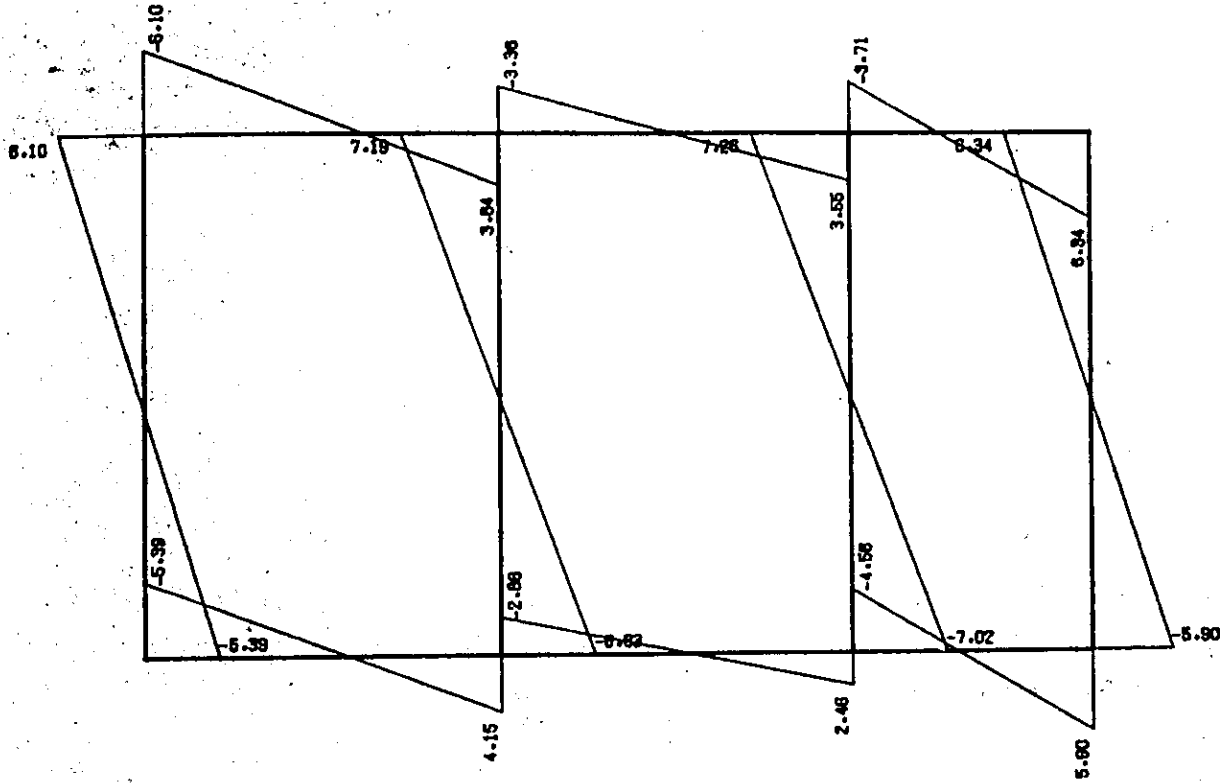
SHEARING FORCE



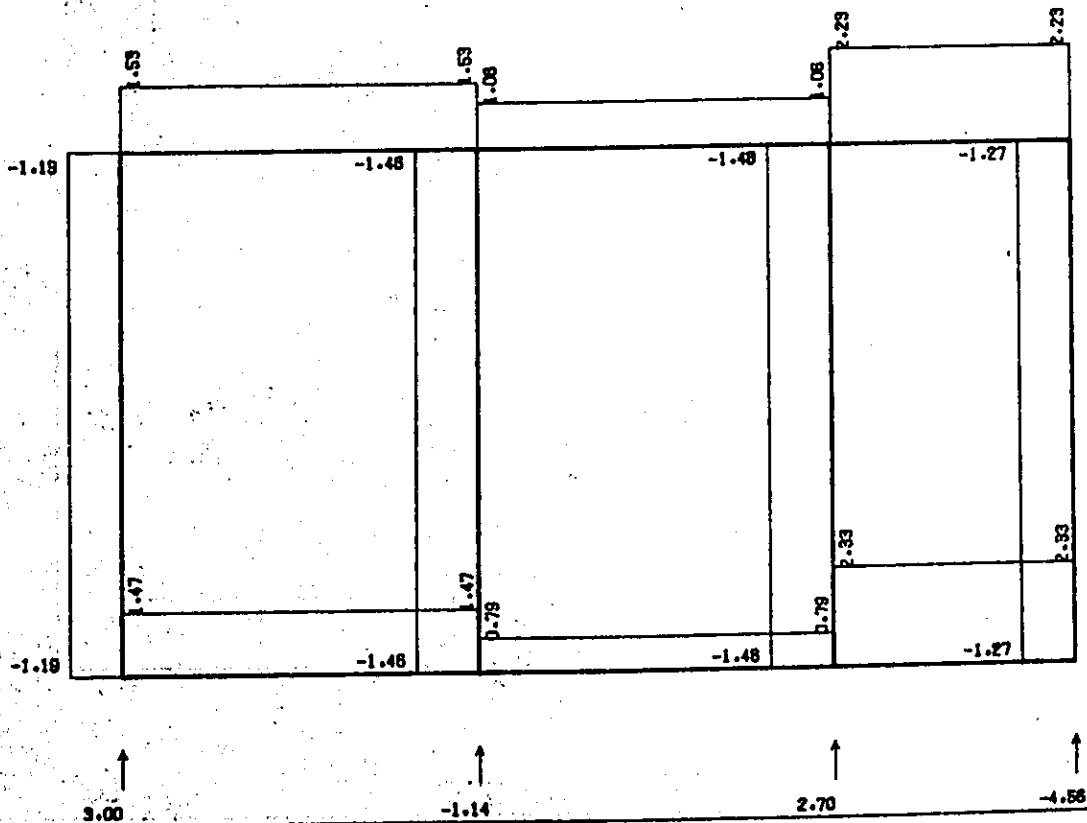
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-2

CASE 3 (TRAIN LATERAL LOAD)

BENDING MOMENT



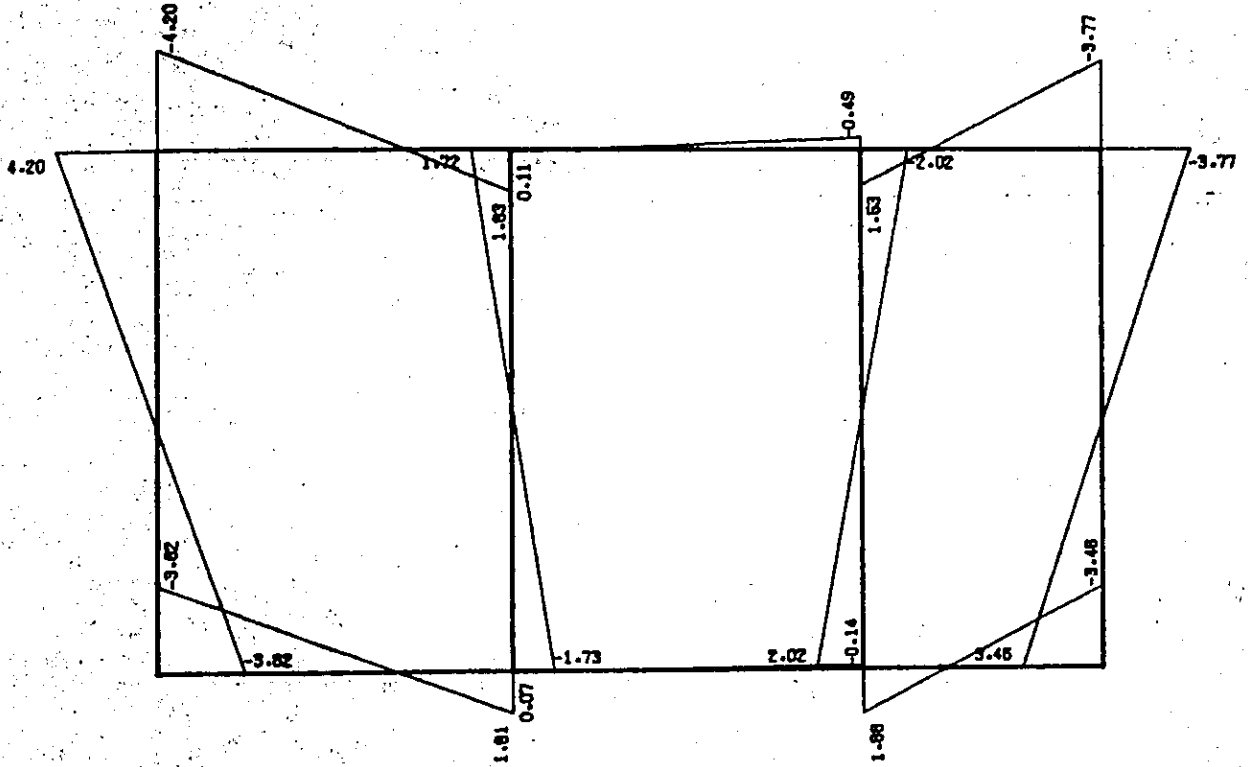
SHEARING FORCE



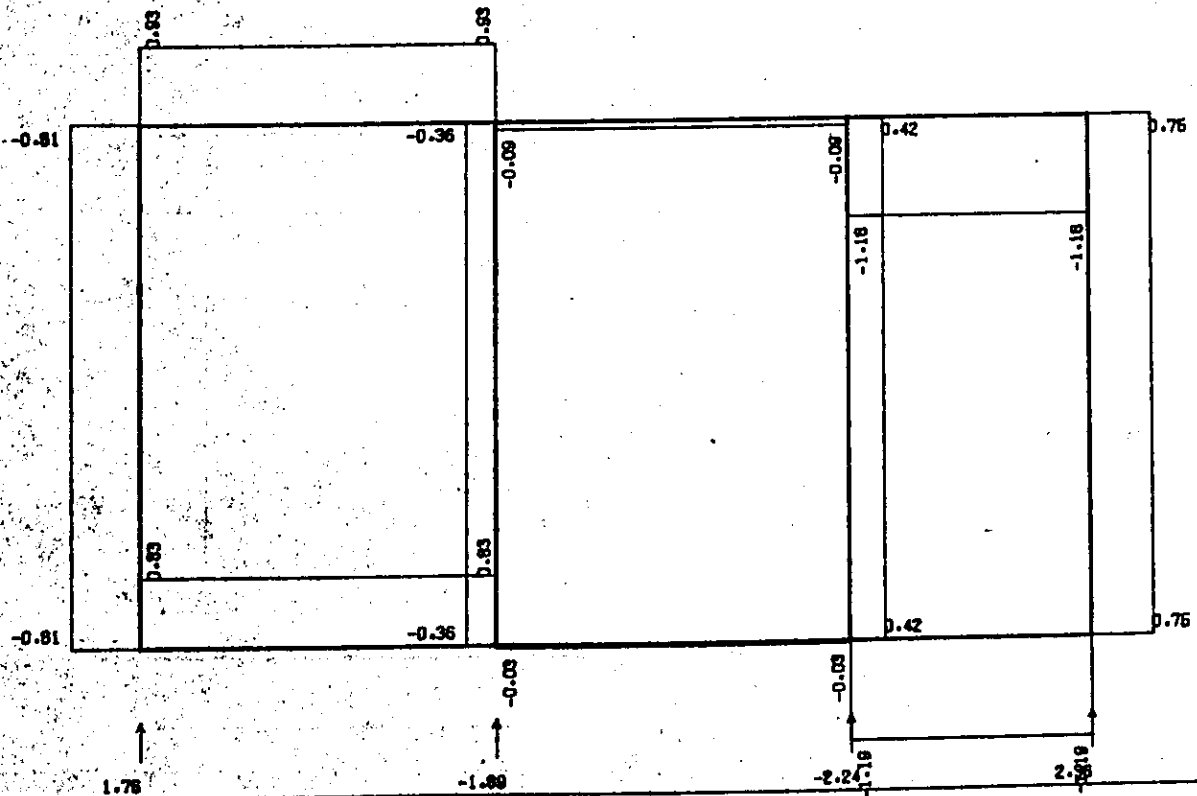
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-2

CASE 4 (TEMPERATURE)

BENDING MOMENT



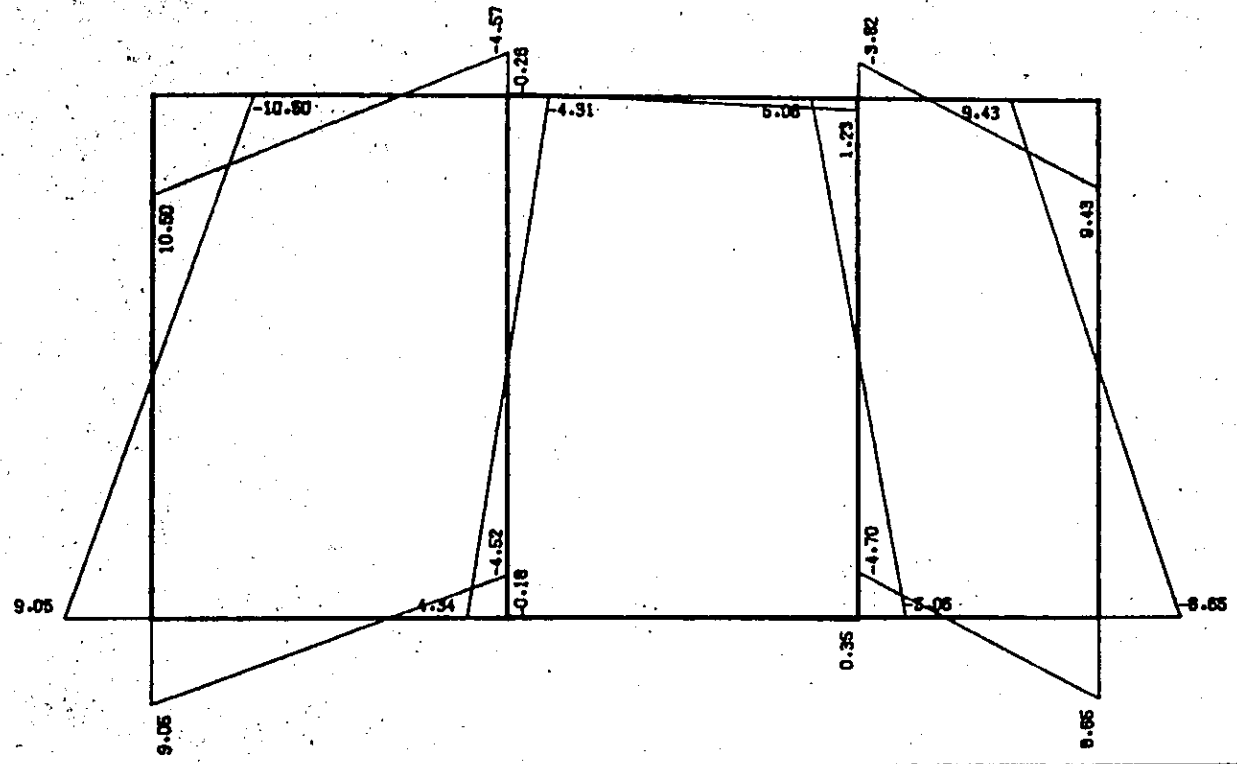
SHEARING FORCE



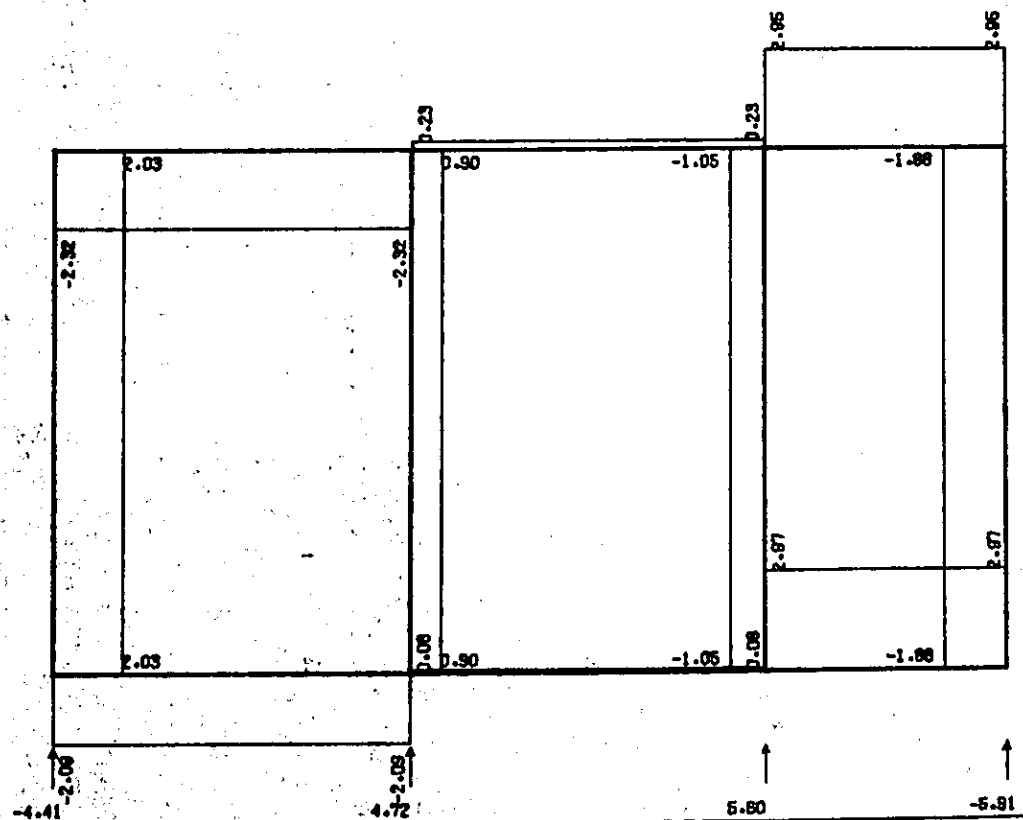
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-2

CASE 5 (TEMPERATURE + SHRINKAGE)

BENDING MOMENT



SHEARING FORCE

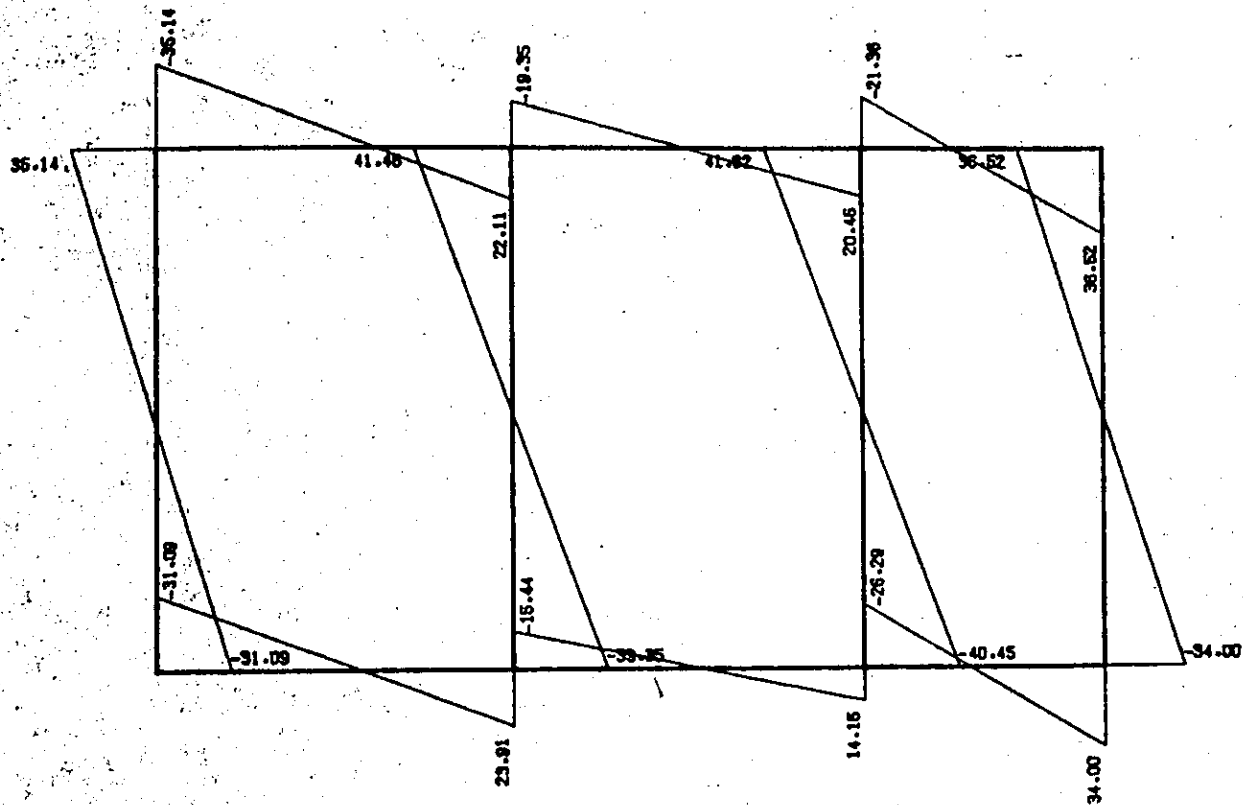




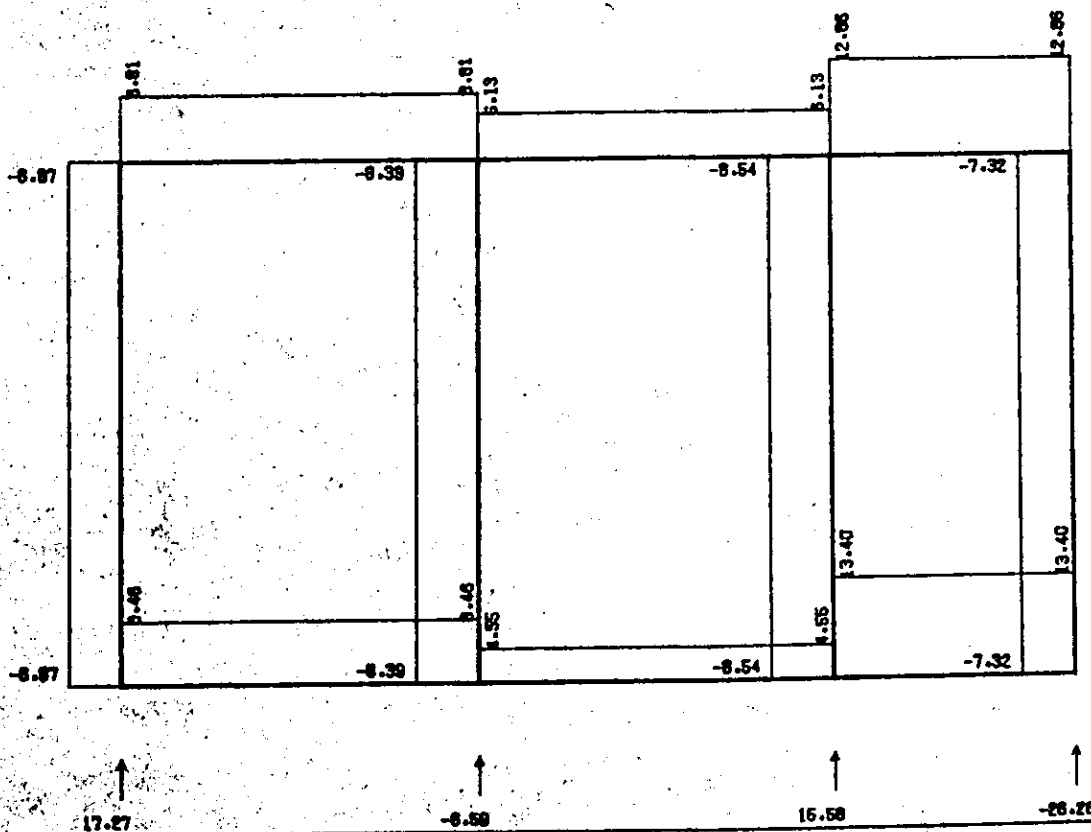
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-2

CASE 6 (SEISMIC LOAD)

BENDING MOMENT



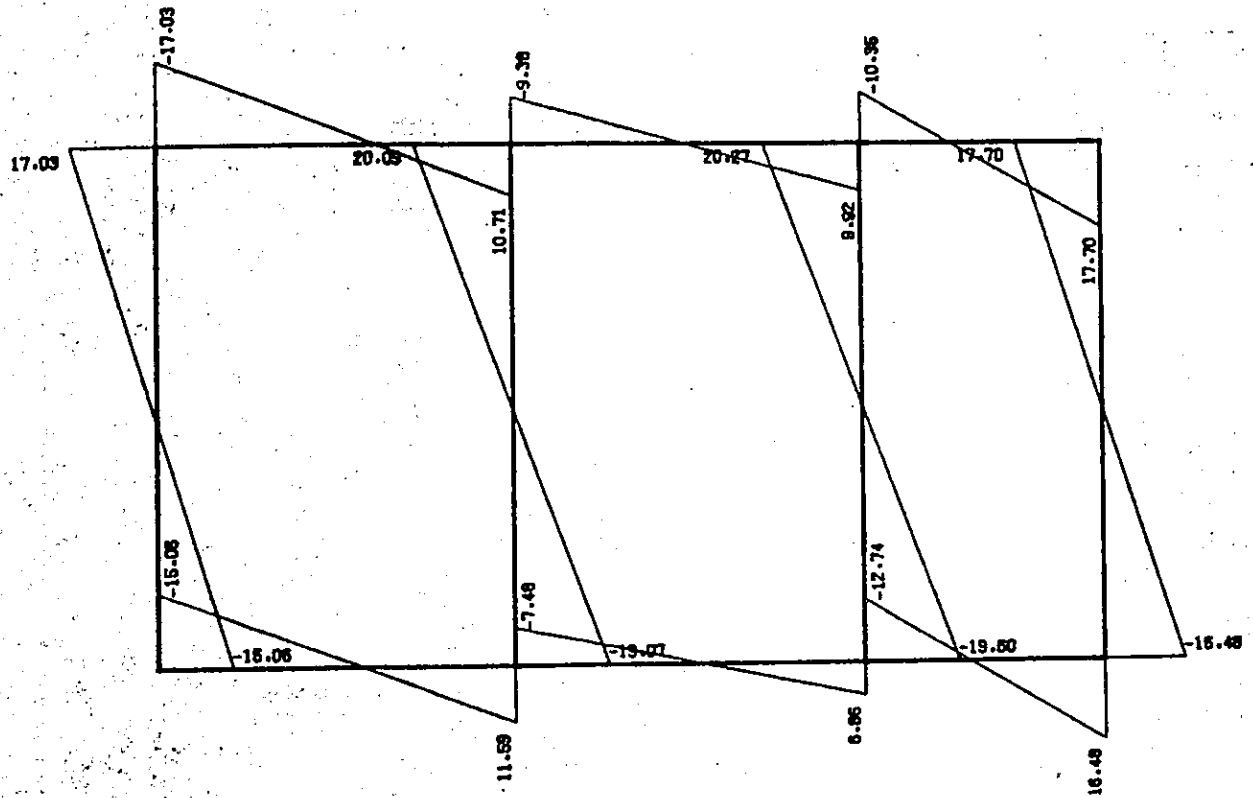
SHEARING FORCE



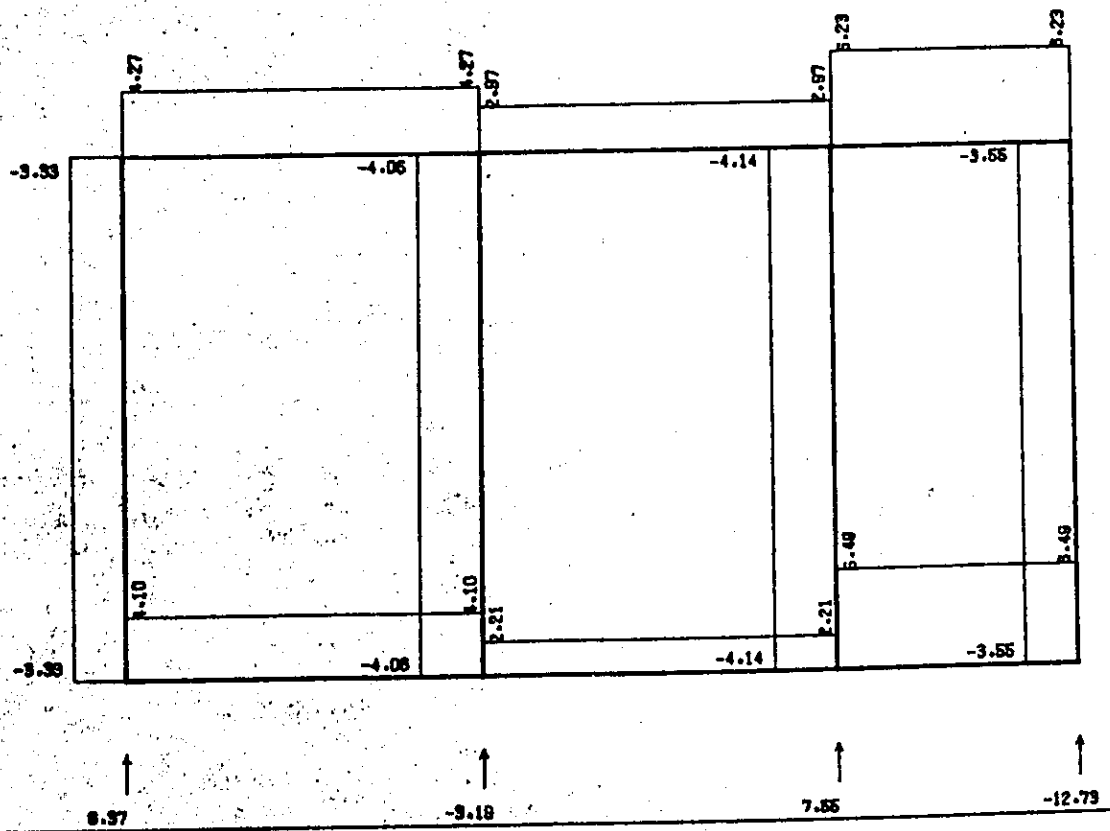
VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-2

CASE 7 (CENTRIFUGAL LOAD)

BENDING MOMENT



SHEARING FORCE







CONTROL DATA

METHOD STRUCTURE J.RENUMBER H.RENUMBER S.F. DIS. UNI.SPRING STAN-STIF. BARA SKEW MECH.  
 \*OIS\* \*RAHMEN\* \*OFF\* \*OFF\* \*OFF\* \*OFF\* \*OFF\* \*OFF\*

LOAD TITLE

LOAD 1 CASE 1 (DEAD LOAD)  
 LOAD 3 CASE 3 (TRAIN LATERAL LOAD)  
 LOAD 5 CASE 5 (TEMPERATURE + SHRINKAGE)  
 LOAD 7 CASE 7 (CENTRIFUGAL LOAD)  
 MIX 8 CASE 8 ( 1.0000 = 1)  
 MIX 10 CASE 10 (1+2+3+7)  
 MIX 12 CASE 12 (1+4)  
 MIX 14 CASE 14 (1+6)  
 MIX 16 CASE 16 (1+2+3+7)  
 MIX 18 CASE 18 (1+4)  
 MIX 20 CASE 20 (1+6)  
 LOAD 2 CASE 2 (TRAIN LOAD + IMPACT LOAD)  
 LOAD 4 CASE 4 (TEMPERATURE)  
 LOAD 5 CASE 6 (SEISMIC LOAD)  
 MIX 9 CASE 9 (1+2+7)  
 MIX 11 CASE 11 (1+2-3+7)  
 MIX 13 CASE 13 (1+5)  
 MIX 15 CASE 15 (1-6)  
 MIX 17 CASE 17 (1+2-3+7)  
 MIX 19 CASE 19 (1+5)  
 MIX 21 CASE 21 (1-6)

PICK UP LOAD CASE

PICK 1 1  
 PICK 2 9 10 11 12 13 14 15  
 PICK 3 16 17  
 PICK 4 18 19  
 PICK 5 20 21

JOINT DATA

JOINT NUMBER	8	X	Y
ZAHYO(H) JOINT			
1	0.0000	9.6350	
2	6.5000	9.6350	
3	13.0000	9.6350	
4	17.5000	9.6350	
5	0.0000	0.0000	
6	6.5000	0.0000	
7	13.0000	0.0000	
8	17.5000	0.0000	

MEMBER DATA

MEMBER NUMBER	10	ITAN	JTAN	CONNECT.	ITAN	JTAN	LENGTH	A	I	AES	KD(BANE)	PRO.NUM
1	1	1	2	FIX	FIX	FIX	6.5000	2.89600	.2048800			1
2	2	3	3	FIX	FIX	FIX	6.5000	2.89600	.2048800			1
3	3	4	4	FIX	FIX	FIX	4.5000	1.88800	.1743000			1
4	4	5	6	FIX	FIX	FIX	6.5000	.72000	.0486000			1
5	5	6	7	FIX	FIX	FIX	6.5000	.72000	.0486000			1
6	6	7	8	FIX	FIX	FIX	4.5000	.72000	.0486000			1
7	7	1	5	FIX	FIX	FIX	9.6350	.64000	.0341300			1
8	8	2	6	FIX	FIX	FIX	9.6350	.64000	.0341300			1
9	9	3	7	FIX	FIX	FIX	9.6350	.64000	.0341300			1
10	4	4	8	FIX	FIX	FIX	9.6350	.64000	.0341300			1

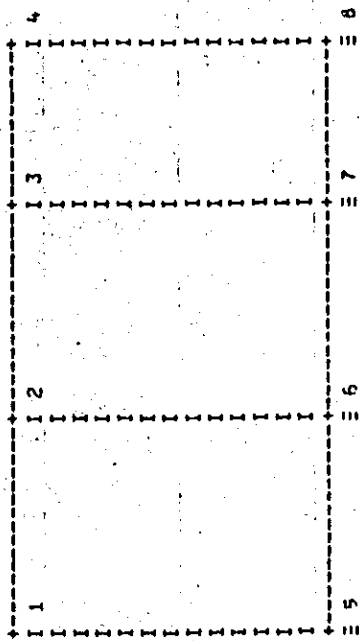
PROPERTY DATA

PROPERTY NUMBER	1	PROPERTY	1	E	0.	G	EPS
1	1	2.700E+06	0.	1.000E-05			

SUPPORT DATA

SUPPORT NUMBER	4	SUPPORT	JYOKEN	X	Y	THET Z	X(BANE)	Y(BANE)	THET Z(BANE)
5	5	FIX	FIX	FIX	FIX	FREE	0.0	0.0	0.0
6	6	FIX	FIX	FIX	FIX	FREE	0.0	0.0	0.0
7	7	FIX	FIX	FIX	FIX	FREE	0.0	0.0	0.0
8	8	FIX	FIX	FIX	FIX	FREE	0.0	0.0	0.0

STRUCTURAL FIGURE







LOAD DATA

M/J	NAME	0	W1	W2	L1	L2
LOAD - 1 CASE 1 (DEAD LOAD)						
MEMBER 1	LINEAR	Y	-650	0.000	5.085	0.000
	LINEAR	Y	0.000	-4.950	0.000	3.250
	LINEAR	Y	-4.550	-3.850	3.250	2.750
	LINEAR	Y	-9.740	0.000	3.750	0.000
	LINEAR	Y	-1.810	-1.810	0.000	0.000
	CONCENT	Y	-2.000		3.650	
MEMBER 2	LINEAR	Y	0.000	-4.450	0.000	5.085
	LINEAR	Y	-840	0.000	3.885	0.000
	LINEAR	Y	0.000	-11.510	0.000	3.250
	LINEAR	Y	-11.510	0.000	3.250	0.000
	LINEAR	Y	-1.810	-1.810	0.000	0.000
MEMBER 3	LINEAR	Y	0.000	-0.30	0.000	4.285
	LINEAR	Y	-710	-3.450	0.000	2.950
	LINEAR	Y	-1.370	-1.860	1.550	2.250
	LINEAR	Y	-1.860	-280	2.250	0.000
	LINEAR	Y	-1.720	-1.720	0.000	0.000
	CONCENT	Y	-720		1.650	
MEMBER 4	LINEAR	Y	-4.450	-4.450	0.000	0.000
MEMBER 5	LINEAR	Y	-4.450	-4.450	0.000	0.000
MEMBER 6	LINEAR	Y	-4.450	-4.450	0.000	0.000
MEMBER 7	LINEAR	Y	-1.600	-1.600	0.000	0.000
MEMBER 8	LINEAR	Y	-1.600	-1.600	0.000	0.000
MEMBER 9	LINEAR	Y	-1.600	-1.600	0.000	0.000
MEMBER 10	LINEAR	Y	-1.600	-1.600	0.000	0.000
MEMBER 11	JOINTLOAD	Y	-27.360			
MEMBER 12	JOINTLOAD	Z	-16.380			
MEMBER 13	JOINTLOAD	Y	-70.980			
MEMBER 14	JOINTLOAD	Z	-5.180			
MEMBER 15	JOINTLOAD	Y	-57.440			
MEMBER 16	JOINTLOAD	Z	10.120			
MEMBER 17	JOINTLOAD	Y	-12.710			
MEMBER 18	JOINTLOAD	Z	11.440			
MEMBER 19	JOINTLOAD	Y	-84.180			
MEMBER 20	JOINTLOAD	Z	-77.060			
MEMBER 21	JOINTLOAD	Y	-77.060			
MEMBER 22	JOINTLOAD	Z	-84.180			
LOAD - 2 CASE 2 (TRAIN LOAD + IMPACT LOAD)						
MEMBER 1	LINEAR	Y	-8.190	-8.190	5.085	0.000
MEMBER 2	LINEAR	Y	-3.190	-8.190	0.000	5.085
	LINEAR	Y	-24.580	-24.580	3.885	1.500
	LINEAR	Y	-3.190	-8.190	5.000	0.000
	LINEAR	Y	-8.370	-8.370	0.000	4.285
MEMBER 3	JOINTLOAD	Z	-3.360			
MEMBER 4	JOINTLOAD	Y	-55.930			
MEMBER 5	JOINTLOAD	Z	-18.060			
MEMBER 6	JOINTLOAD	Y	-49.410			
MEMBER 7	JOINTLOAD	Z	59.040			
MEMBER 8	JOINTLOAD	Z	.020			
LOAD - 3 CASE 3 (TRAIN LATERAL LOAD)						

LOAD DATA

	M/J	NAME	D	W1	W2	L1	L2
JOINT	1	JOINTLOAD	X	-1.350			
	2	JOINTLOAD	X	-1.350			
	3	JOINTLOAD	X	-1.350			
	4	JCINTLOAD	X	-1.350			
LOAD -	4	CASE 4 (TEMPERATURE)					
MEMBER	1	TEMP		10.0(00)			
	2	TEMP		10.0(00)			
	3	TEMP		10.0(00)			
LOAD -	5	CASE 5 (TEMPERATURE + SHRINKAGE)					
MEMBER	1	TEMP		-25.0(00)			
	2	TEMP		-25.0(00)			
	3	TEMP		-25.0(00)			
LOAD -	6	CASE 6 (SEISMIC LOAD)					
JOINT	1	JOINTLOAD	X	-7.780			
	2	JOINTLOAD	X	-7.780			
	3	JOINTLOAD	X	-7.780			
	4	JOINTLOAD	X	-7.780			
	5	JCINTLOAD	X	-5.230			
	6	JCINTLOAD	X	-5.230			
	7	JCINTLOAD	X	-5.230			
	8	JCINTLOAD	X	-5.230			
LOAD -	7	CASE 7 (CENTRIFUGAL LOAD)					
JOINT	1	JOINTLOAD	X	-3.770			
	2	JOINTLOAD	X	-3.770			
	3	JOINTLOAD	X	-3.770			
	4	JOINTLOAD	X	-3.770			

MIX DATA

LOAD	MIX NUMBER	SS	N	S1	K1	S2	K2	S3	K3	S4	K4	S5	K5	S6	K6	S7	K7	S8	K8	
8	1.0000	1	1.0000	1	1.0000	2	1.0000	7	1.0000	7	1.0000	7	1.0000	7	1.0000	7	1.0000	7	1.0000	7
9	1.0000	3	1.0000	1	1.0000	2	1.0000	3	1.0000	3	1.0000	7	1.0000	7	1.0000	7	1.0000	7	1.0000	7
10	.8696	4	1.0000	1	1.0000	2	1.0000	2	-1.0000	3	1.0000	7	1.0000	7	1.0000	7	1.0000	7	1.0000	7
11	.8696	4	1.0000	1	1.0000	2	1.0000	2	-1.0000	3	1.0000	7	1.0000	7	1.0000	7	1.0000	7	1.0000	7
12	.8696	2	1.0000	1	1.0000	4	1.0000	4	1.0000	4	1.0000	4	1.0000	4	1.0000	4	1.0000	4	1.0000	4
13	.8696	2	1.0000	1	1.0000	5	1.0000	5	1.0000	5	1.0000	5	1.0000	5	1.0000	5	1.0000	5	1.0000	5
14	.6667	2	1.0000	1	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6
15	.6667	2	1.0000	1	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6
16	1.0000	4	1.0000	1	1.0000	2	1.0000	3	1.0000	3	1.0000	7	1.0000	7	1.0000	7	1.0000	7	1.0000	7
17	1.0000	4	1.0000	1	1.0000	2	1.0000	2	-1.0000	3	1.0000	7	1.0000	7	1.0000	7	1.0000	7	1.0000	7
18	1.0000	2	1.0000	1	1.0000	4	1.0000	4	1.0000	4	1.0000	4	1.0000	4	1.0000	4	1.0000	4	1.0000	4
19	1.0000	2	1.0000	1	1.0000	5	1.0000	5	1.0000	5	1.0000	5	1.0000	5	1.0000	5	1.0000	5	1.0000	5
20	1.0000	2	1.0000	1	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6
21	1.0000	2	1.0000	1	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6	1.0000	6

REACTION

SUPPORT	X (TON)	Y (TON)	Z (TON.M)	SUPPORT	X (TON)	Y (TON)	Z (TON.M)
LOAD - 1	1 (DEAD LOAD)						
5	1.679	150.360	0.000	5	.495	-1.030	0.000
6	.048	248.299	0.000	6	.836	102.099	0.000
7	-.816	212.306	0.000	7	-1.111	85.828	0.000
8	-.911	122.320	0.000	8	-.219	-6.888	3.030
LOAD - 3	3 (TRAIN LATERAL LOAD)						
5	1.193	2.937	0.000	5	.811	1.762	0.000
6	1.455	-1.144	0.000	6	.359	-1.887	0.000
7	1.482	2.704	0.000	7	-.420	-2.239	0.000
8	1.270	-4.557	0.000	8	-.750	2.365	0.000
LOAD - 5	5 (TEMPERATURE + SHRINKAGE)						
5	-2.029	-4.405	0.000	5	12.104	17.269	0.000
6	-.897	4.718	0.000	6	13.618	-5.591	0.000
7	1.050	5.599	0.000	7	13.769	15.584	0.000
8	1.876	-5.911	0.000	8	12.550	-25.263	0.030
LOAD - 7	7 (CENTRIFUGAL LOAD)						
5	3.331	8.368	0.000	5	1.000 * 1)	150.360	0.000
6	4.064	-3.194	0.000	6	1.679	248.299	0.000
7	4.138	7.552	0.000	7	-.816	212.306	0.000
8	3.547	-12.726	0.000	8	-.911	122.320	0.000
MIX - 9	9 (1+2+7)						
5	5.504	157.698	0.000	5	5.824	139.740	0.000
6	4.548	347.205	0.000	6	5.569	300.935	0.000
7	2.210	305.686	0.000	7	3.211	258.176	0.000
8	2.417	102.713	0.000	8	3.206	85.357	0.000
MIX - 11	11 (1+2-3+7)						
5	3.749	134.529	0.000	5	2.166	132.285	0.000
6	3.037	302.924	0.000	6	.354	214.240	0.000
7	.634	263.473	0.000	7	-1.075	182.674	0.000
8	.997	93.282	0.000	8	-1.445	108.433	0.000
MIX - 13	13 (1+5)						
5	-.304	126.922	0.000	5	9.189	111.758	0.000
6	-.738	220.024	0.000	6	9.111	161.147	0.000
7	.203	189.490	0.000	7	8.636	191.934	0.000
8	.839	101.236	0.000	8	7.759	64.047	0.000
MIX - 15	15 (1-6)						
5	-6.950	88.732	0.000	5	6.697	160.694	0.000
6	-9.047	169.935	0.000	6	6.404	346.061	0.000
7	-9.723	131.155	0.000	7	3.692	308.390	0.000
8	-8.975	99.065	0.000	8	3.687	98.156	0.000
MIX - 17	17 (1+2-3+7)						
5	4.311	154.701	0.000	5	2.490	152.122	0.000
6	3.493	348.349	0.000	6	.407	246.412	0.000
7	.729	302.982	0.000	7	-1.236	210.067	0.000
8	1.147	107.270	0.000	8	-1.662	124.692	0.000

REACTION

SUPPORT		X (TON)	Y (TON)	Z (TON-M)	SUPPORT		X (TON)	Y (TON)	Z (TON-M)
MIX - 19	CASE 19 (1+5)				MIX - 20	CASE 20 (1+6)			
	5	-.350	145.954	0.000		5	13.783	167.629	0.000
	6	-.849	253.018	0.000		6	13.866	241.709	0.000
	7	.234	217.905	0.000		7	12.953	227.890	0.000
	8	.965	116.415	0.000		8	11.639	96.065	0.000
MIX - 21	CASE 21 (1-6)								
	5	-10.425	133.091	0.000					
	6	-13.569	254.890	0.000					
	7	-14.584	196.722	0.000					
	8	-13.461	148.590	0.000					

DEFLECTION

LOAD - 1	JOINT	X (MM)	Y (MM)	Z (MMRAD)	LOAD - 2	JOINT	X (MM)	Y (MM)	Z (MMRAD)
	CASE 1 (DEAD LOAD)					CASE 2 (TRAIN LOAD + IMPACT LOAD)			
	1	-.255	-.177	-.009		1	-.114	.009	-.070
	2	-.737	-.038	-.573		2	-.114	-.573	-.135
	3	-.033	-.116	-.482		3	-.115	-.482	.231
	4	-.123	-.119	-.042		4	-.115	-.042	-.055
	5	0.000	-.113	0.000		5	0.000	0.000	-.011
	6	0.000	-.023	0.000		6	0.000	0.000	-.019
	7	0.000	-.014	0.000		7	0.000	0.000	-.020
	8	0.000	-.027	0.000		8	0.000	0.000	-.005
	CASE 3 (TRAIN LATERAL LOAD)					CASE 4 (TEMPERATURE)			
	1	-1.316	-.009	-.942		1	-.942	-.005	-.015
	2	-1.316	-.003	-.293		2	-.293	-.006	-.001
	3	-1.316	-.007	-.356		3	-.356	-.006	-.002
	4	-1.316	-.012	-.805		4	-.805	-.007	-.012
	5	0.000	0.000	0.000		5	0.000	0.000	-.045
	6	0.000	0.000	0.024		6	0.000	0.000	-.000
	7	0.000	0.000	-.018		7	0.000	0.000	-.002
	8	0.000	0.000	-.041		8	0.000	0.000	-.029
	CASE 5 (TEMPERATURE + SHRINKAGE)					CASE 6 (SEISMIC LOAD)			
	1	2.356	-.013	-.584		1	-7.584	-.049	-.104
	2	.733	-.014	-.583		2	-7.583	-.015	-.028
	3	-.890	-.015	-.583		3	-7.583	-.038	-.034
	4	-2.013	-.016	-.583		4	-7.583	-.072	-.107
	5	0.000	0.000	0.000		5	0.000	0.000	-.316
	6	0.000	0.000	0.000		6	0.000	0.000	-.138
	7	0.000	0.000	0.004		7	0.000	0.000	-.106
	8	0.000	0.000	-.072		8	0.000	0.000	-.238
	CASE 7 (CENTRIFUGAL LOAD)					MIX 8 (1.0000 * 1)			
	1	-3.675	-.024	-.050		1	-.036	-.255	-.177
	2	-3.675	-.007	-.013		2	-.314	-.737	-.038
	3	-3.674	-.018	-.017		3	-.033	-.570	-.116
	4	-3.675	-.035	-.052		4	-.032	-.123	-.119
	5	0.000	0.000	-.153		5	0.000	0.000	-.113
	6	0.000	0.000	-.067		6	0.000	0.000	-.023
	7	0.000	0.000	-.051		7	0.000	0.000	-.014
	8	0.000	0.000	-.116		8	0.000	0.000	-.027
	CASE 9 (1+2+7)					MIX 10 (1+2+3+7)			
	1	-3.753	-.270	-.196		1	-4.408	-.242	-.155
	2	-3.754	-1.303	-.159		2	-4.409	-1.131	-.134
	3	-3.757	-1.069	-.364		3	-4.411	-.936	-.321
	4	-3.758	-.046	-.226		4	-4.412	-.030	-.213
	5	0.000	0.000	-.051		5	0.000	0.000	-.092
	6	0.000	0.000	-.108		6	0.000	0.000	-.115
	7	0.000	0.000	-.045		7	0.000	0.000	-.055
	8	0.000	0.000	-.148		8	0.000	0.000	-.155

DEFLECTION

JOINT		X (MM)	Y (MM)	Z (MMRAD)	MIX - 12		JOINT	X (MM)	Y (MM)	Z (MMRAD)
MIX - 11		CASE 11 (1+2-3+7)			CASE 12 (1+4)					
1		-2.119	-0.227	-0.186	1		-0.788	-0.226	-0.141	
2		-2.120	-1.135	-0.143	2		-0.225	-0.636	-0.032	
3		-2.123	-0.924	0.311	3		0.358	-0.490	0.100	
4		-2.124	-0.051	-0.181	4		0.728	-0.113	-0.093	
5		0.000	0.000	-0.003	5		0.000	0.000	-0.059	
6		0.000	0.000	0.073	6		0.000	0.000	0.020	
7		0.000	0.000	-0.023	7		0.000	0.000	-0.010	
8		0.000	0.000	-0.093	8		0.000	0.000	-0.001	
MIX - 13		CASE 13 (1+5)			CASE 14 (1+5)					
1		2.080	-0.210	-0.185	1		-5.032	-0.203	-0.048	
2		0.667	-0.654	-0.034	2		-5.033	-4.82	-0.007	
3		-0.745	-0.508	-0.105	3		-5.034	-4.05	-0.100	
4		-1.723	-0.093	-0.130	4		0.000	-0.034	-0.150	
5		0.000	0.000	-0.196	5		0.000	0.000	-0.135	
6		0.000	0.000	0.020	6		0.000	0.000	-0.107	
7		0.000	0.000	-0.016	7		0.000	0.000	-0.080	
8		0.000	0.000	-0.086	8		0.000	0.000	-0.177	
MIX - 15		CASE 15 (1-5)			CASE 16 (1+2+3+7)					
1		5.080	-0.137	-0.187	1		-5.069	-0.278	-0.178	
2		5.079	-0.502	-0.044	2		-5.070	-1.300	-0.154	
3		5.077	-0.355	-0.055	3		-5.073	-1.076	-0.370	
4		5.077	-0.130	0.008	4		-5.074	-0.834	-0.245	
5		0.000	0.000	-0.286	5		0.000	0.000	-0.106	
6		0.000	0.000	-0.077	6		0.000	0.000	-0.132	
7		0.000	0.000	-0.062	7		0.000	0.000	-0.063	
8		0.000	0.000	-0.141	8		0.000	0.000	-0.190	
MIX - 17		CASE 17 (1+2-3+7)			CASE 18 (1+4)					
1		-2.437	-0.261	-0.214	1		-0.907	-0.250	-0.162	
2		-2.438	-1.305	-0.164	2		-0.259	-0.732	-0.037	
3		-2.441	-0.059	0.358	3		0.389	-0.563	-0.115	
4		-2.442	0.000	-0.208	4		0.837	-0.129	-0.107	
5		0.000	0.000	-0.004	5		0.000	0.000	-0.068	
6		0.000	0.000	0.084	6		0.000	0.000	-0.023	
7		0.000	0.000	-0.026	7		0.000	0.000	-0.112	
8		0.000	0.000	-0.107	8		0.000	0.000	-0.001	
MIX - 19		CASE 19 (1+5)			CASE 20 (1+6)					
1		2.392	-0.242	-0.213	1		-7.548	-0.304	-0.072	
2		0.767	-0.752	-0.039	2		-7.549	-0.722	-0.010	
3		-0.857	-0.585	-0.121	3		-7.550	-0.607	-0.151	
4		-1.981	-0.106	-0.150	4		-7.551	-0.051	-0.226	
5		0.000	0.000	-0.225	5		0.000	0.000	-0.203	
6		0.000	0.000	-0.023	6		0.000	0.000	-0.161	
7		0.000	0.000	-0.018	7		0.000	0.000	-0.120	
8		0.000	0.000	-0.099	8		0.000	0.000	-0.256	

DEFLECTION

MIX	JOINT	X (MM)	Y (MM)	Z (MMRAD)
- 21	CASE 21 (1-5)			
	1	7.620	-0.206	-0.281
	2	7.617	-0.752	-0.065
	3	7.616	-0.532	0.082
	4	7.615	-0.195	0.012
	5	0.000	0.000	-0.429
	6	0.000	0.000	-0.115
	7	0.000	0.000	-0.093
	8	0.000	0.000	-0.211



PICK UP

PICK UP 1

MOMENT MINIMUM

MOMENT MAXIMUM

MEMBER	CASE 1 ( 1 - 2 ) G =			CASE 2 ( 1 - 2 ) G =			MEMBER
	ITAN	0.000	( 1 )	ITAN	0.000	( 1 )	
1	10.621	7.682	-1.679	10.621	7.682	-1.679	
2	9.785	11.770	-1.679	9.785	11.770	-1.679	
3	8.425	16.337	-1.679	8.425	16.337	-1.679	
4	7.783	17.959	-1.679	7.783	17.959	-1.679	
5	7.085	19.446	-1.679	7.085	19.446	-1.679	
6	-2.656	24.629	-1.679	-2.656	24.629	-1.679	
7	-5.088	23.073	-1.679	-5.088	23.073	-1.679	
8	-20.735	23.073	-1.679	-20.735	23.073	-1.679	
9	-22.023	.882	-1.679	-22.023	.882	-1.679	
10	-23.157	-3.396	-1.679	-23.157	-3.396	-1.679	
11	-25.316	-7.917	-1.679	-25.316	-7.917	-1.679	
JTAN	-26.349	-20.075	-1.679	-26.349	-20.075	-1.679	
MAX	-450	-30.429	-1.679	-450	-30.429	-1.679	

MEMBER	CASE 2 ( 2 - 3 ) G =			CASE 3 ( 2 - 3 ) G =			MEMBER
	ITAN	0.000	( 1 )	ITAN	0.000	( 1 )	
1	27.214	-26.059	-1.727	27.214	-26.059	-1.727	
2	26.181	-15.360	-1.727	26.181	-15.360	-1.727	
3	24.021	-2.769	-1.727	24.021	-2.769	-1.727	
4	22.888	1.924	-1.727	22.888	1.924	-1.727	
5	21.599	6.376	-1.727	21.599	6.376	-1.727	
6	2.309	31.829	-1.727	2.309	31.829	-1.727	
7	-17.759	14.779	-1.727	-17.759	14.779	-1.727	
8	-19.048	11.096	-1.727	-19.048	11.096	-1.727	
9	-20.182	7.170	-1.727	-20.182	7.170	-1.727	
JTAN	-22.343	-3.501	-1.727	-22.343	-3.501	-1.727	
MAX	-450	-12.666	-1.727	-450	-12.666	-1.727	

MEMBER	CASE 3 ( 3 - 4 ) G =			CASE 4 ( 3 - 4 ) G =			MEMBER
	ITAN	0.000	( 1 )	ITAN	0.000	( 1 )	
1	13.616	-17.373	-0.911	13.616	-17.373	-0.911	
2	12.502	-12.639	-0.911	12.502	-12.639	-0.911	
3	10.712	-6.817	-0.911	10.712	-6.817	-0.911	
4	9.873	-4.758	-0.911	9.873	-4.758	-0.911	
5	8.362	-2.873	-0.911	8.362	-2.873	-0.911	
6	7.413	-0.028	-0.911	7.413	-0.028	-0.911	
7	6.693	6.693	-0.911	6.693	6.693	-0.911	
8	4.671	3.394	-0.911	4.671	3.394	-0.911	
9	1.587	6.316	-0.911	1.587	6.316	-0.911	
10	1.018	6.576	-0.911	1.018	6.576	-0.911	
11	0.478	6.725	-0.911	0.478	6.725	-0.911	
JTAN	-0.751	6.650	-0.911	-0.751	6.650	-0.911	
MAX	-1.607	6.174	-0.911	-1.607	6.174	-0.911	

TITLE: VIADUCT OF DOUBLE TRACK (J+3=8=27) C-2

PICK UP 1

MOMENT: MAXIMUM

MOMENT: MINIMUM

MEMBER		CASE ( 5 - 6 )		CASE ( 5 - 6 )		CASE ( 5 - 6 )			
MEMBER	MEMBER	MEMBER	MEMBER	MEMBER	MEMBER	MEMBER	MEMBER		
ITAN	0.000	( 1 )	-7.478	12.783	0.000	( 1 )	-7.478	12.783	0.000
1	.400	( 1 )	-2.720	11.003	0.000	( 1 )	-2.720	11.003	0.000
2	1.600	( 1 )	7.280	5.663	0.000	( 1 )	7.280	5.663	0.000
3	3.250	( 1 )	10.566	-1.679	0.000	( 1 )	10.566	-1.679	0.000
4	4.900	( 1 )	1.738	-9.022	0.000	( 1 )	1.738	-9.022	0.000
5	6.100	( 1 )	-12.292	-14.362	0.000	( 1 )	-12.292	-14.362	0.000
JTAN	6.500	( 1 )	-18.393	-16.142	0.000	( 1 )	-18.393	-16.142	0.000
MAX	2.889	( 1 )	10.883	-.072	0.000	( 1 )	10.883	-.072	0.000
= MEMBER 5 ( 6 - 7 ) G =									
ITAN	0.000	( 1 )	-18.047	15.139	0.000	( 1 )	-18.047	15.139	0.000
1	.400	( 1 )	-12.347	13.359	0.000	( 1 )	-12.347	13.359	0.000
2	1.600	( 1 )	7.480	8.019	0.000	( 1 )	7.480	8.019	0.000
3	3.250	( 1 )	7.653	.676	0.000	( 1 )	7.653	.676	0.000
4	4.900	( 1 )	2.712	-6.666	0.000	( 1 )	2.712	-6.666	0.000
5	6.100	( 1 )	-8.492	-12.006	0.000	( 1 )	-8.492	-12.006	0.000
JTAN	6.500	( 1 )	-13.650	-13.786	0.000	( 1 )	-13.650	-13.786	0.000
MAX	3.250	( 1 )	7.653	.676	0.000	( 1 )	7.653	.676	0.000
= MEMBER 6 ( 7 - 8 ) G =									
ITAN	0.000	( 1 )	-10.703	11.610	0.000	( 1 )	-10.703	11.610	0.000
1	.400	( 1 )	-6.415	9.830	0.000	( 1 )	-6.415	9.830	0.000
2	1.600	( 1 )	2.177	4.490	0.000	( 1 )	2.177	4.490	0.000
3	2.250	( 1 )	4.155	1.597	0.000	( 1 )	4.155	1.597	0.000
4	2.900	( 1 )	4.253	-1.295	0.000	( 1 )	4.253	-1.295	0.000
5	4.100	( 1 )	-5.505	-6.635	0.000	( 1 )	-5.505	-6.635	0.000
JTAN	4.500	( 1 )	-3.515	-8.415	0.000	( 1 )	-3.515	-8.415	0.000
MAX	2.500	( 1 )	4.415	.485	0.000	( 1 )	4.415	.485	0.000
= MEMBER 7 ( 1 - 5 ) C =									
ITAN	0.000	( 1 )	8.698	-1.679	-37.981	( 1 )	8.698	-1.679	-37.981
JTAN	9.635	( 1 )	-7.478	-1.679	-53.397	( 1 )	-7.478	-1.679	-53.397
= MEMBER 8 ( 2 - 6 ) C =									
ITAN	0.000	( 1 )	.810	-.048	-124.543	( 1 )	.810	-.048	-124.543
JTAN	9.635	( 1 )	.346	-.048	-139.959	( 1 )	.346	-.048	-139.959

PICK UP 1

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER	9 ( 3 - 7 ) C	9 ( 3 - 7 ) C	Q	N
ITAN	0.000 ( 1 )	-4.913	.816	-94.434
JTAN	9.635 ( 1 )	2.947	.816	-109.850
MEMBER	10 ( 4 - 8 ) C	MEMBER	10 ( 4 - 8 ) C	
ITAN	0.000 ( 1 )	-5.266	.911	-14.317
JTAN	9.635 ( 1 )	3.515	.911	-29.733

PICK UP 1

SHEAR MAXIMUM		SHEAR MINIMUM	
MEMBER	1 ( 1 - 2 ) G =	MEMBER	1 ( 1 - 2 ) G =
ITAN	0.000 ( 1 ) 7.682	ITAN	0.000 ( 1 ) 7.682
1	.400 ( 1 ) 11.770	1	.400 ( 1 ) 11.770
2	.900 ( 1 ) 16.337	2	.900 ( 1 ) 16.337
3	1.100 ( 1 ) 17.959	3	1.100 ( 1 ) 17.959
4	1.300 ( 1 ) 19.446	4	1.300 ( 1 ) 19.446
5	3.250 ( 1 ) 24.629	5	3.250 ( 1 ) 24.629
6	3.650 ( 1 ) 23.073	6	3.650 ( 1 ) 23.073
7	3.650 ( 1 ) 23.073	7	3.650 ( 1 ) 23.073
8	5.200 ( 1 ) .882	8	5.200 ( 1 ) .882
9	5.400 ( 1 ) -3.396	9	5.400 ( 1 ) -3.396
10	5.600 ( 1 ) -7.917	10	5.600 ( 1 ) -7.917
11	6.100 ( 1 ) -20.075	11	6.100 ( 1 ) -20.075
JTAN	6.500 ( 1 ) -30.429	JTAN	6.500 ( 1 ) -30.429
MEMBER	2 ( 2 - 3 ) G =	MEMBER	2 ( 2 - 3 ) G =
ITAN	0.000 ( 1 ) -26.059	ITAN	0.000 ( 1 ) -26.059
1	.400 ( 1 ) -15.360	1	.400 ( 1 ) -15.360
2	.900 ( 1 ) -2.769	2	.900 ( 1 ) -2.769
3	1.100 ( 1 ) 1.924	3	1.100 ( 1 ) 1.924
4	1.300 ( 1 ) 6.376	4	1.300 ( 1 ) 6.376
5	3.250 ( 1 ) 31.829	5	3.250 ( 1 ) 31.829
6	5.200 ( 1 ) 14.779	6	5.200 ( 1 ) 14.779
7	5.400 ( 1 ) 11.096	7	5.400 ( 1 ) 11.096
8	5.600 ( 1 ) 7.170	8	5.600 ( 1 ) 7.170
9	6.100 ( 1 ) -3.501	9	6.100 ( 1 ) -3.501
JTAN	6.500 ( 1 ) -12.666	JTAN	6.500 ( 1 ) -12.666
MEMBER	3 ( 3 - 4 ) G =	MEMBER	3 ( 3 - 4 ) G =
ITAN	0.000 ( 1 ) -17.873	ITAN	0.000 ( 1 ) -17.873
1	.400 ( 1 ) -12.639	1	.400 ( 1 ) -12.639
2	.900 ( 1 ) -6.817	2	.900 ( 1 ) -6.817
3	1.100 ( 1 ) -4.758	3	1.100 ( 1 ) -4.758
4	1.300 ( 1 ) -2.873	4	1.300 ( 1 ) -2.873
5	1.650 ( 1 ) -.028	5	1.650 ( 1 ) -.028
6	1.650 ( 1 ) -.028	6	1.650 ( 1 ) -.028
7	2.250 ( 1 ) 3.394	7	2.250 ( 1 ) 3.394
8	3.200 ( 1 ) 6.316	8	3.200 ( 1 ) 6.316
9	3.400 ( 1 ) 6.576	9	3.400 ( 1 ) 6.576
10	3.600 ( 1 ) 6.725	10	3.600 ( 1 ) 6.725
11	4.100 ( 1 ) 6.650	11	4.100 ( 1 ) 6.650
JTAN	4.500 ( 1 ) 6.174	JTAN	4.500 ( 1 ) 6.174

10.621 9.785 8.425 7.783 7.085 -2.656 -5.088 -7.088 -20.735 -22.023 -23.157 -25.316 -26.349

27.214 26.181 24.021 22.888 21.599 2.309 -17.759 -19.048 -20.182 -22.343 -23.376

13.618 12.502 10.712 9.873 8.962 7.413 6.693 4.671 1.587 1.018 .478 -.751 -1.607

-1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679

-1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727

-.911 -.911 -.911 -.911 -.911 -.911 -.911 -.911 -.911 -.911 -.911

7.682 11.770 16.337 17.959 19.446 24.629 23.073 .882 -3.396 -7.917 -20.075 -30.429

-26.059 -15.360 -2.769 1.924 6.376 31.829 14.779 11.096 7.170 -3.501 -12.666

-17.873 -12.639 -6.817 -4.758 -2.873 -.028 .028 3.394 6.316 6.576 6.725 6.650 6.174

ITAN 1 2 3 4 5 6 7 8 9 10 11 JTAN

ITAN 1 2 3 4 5 6 7 8 9 JTAN

ITAN 1 2 3 4 5 6 7 8 9 10 11 JTAN

10.621 9.785 8.425 7.783 7.085 -2.656 -5.088 -7.088 -20.735 -22.023 -23.157 -25.316 -26.349

27.214 26.181 24.021 22.888 21.599 2.309 -17.759 -19.048 -20.182 -22.343 -23.376

13.618 12.502 10.712 9.873 8.962 7.413 6.693 4.671 1.587 1.018 .478 -.751 -1.607

-1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679

-1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727

-.911 -.911 -.911 -.911 -.911 -.911 -.911 -.911 -.911 -.911

7.682 11.770 16.337 17.959 19.446 24.629 23.073 .882 -3.396 -7.917 -20.075 -30.429

-26.059 -15.360 -2.769 1.924 6.376 31.829 14.779 11.096 7.170 -3.501 -12.666

-17.873 -12.639 -6.817 -4.758 -2.873 -.028 .028 3.394 6.316 6.576 6.725 6.650 6.174

ITAN 1 2 3 4 5 6 7 8 9 10 11 JTAN

ITAN 1 2 3 4 5 6 7 8 9 JTAN

ITAN 1 2 3 4 5 6 7 8 9 10 11 JTAN

10.621 9.785 8.425 7.783 7.085 -2.656 -5.088 -7.088 -20.735 -22.023 -23.157 -25.316 -26.349

27.214 26.181 24.021 22.888 21.599 2.309 -17.759 -19.048 -20.182 -22.343 -23.376

13.618 12.502 10.712 9.873 8.962 7.413 6.693 4.671 1.587 1.018 .478 -.751 -1.607

-1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679 -1.679

-1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727 -1.727

-.911 -.911 -.911 -.911 -.911 -.911 -.911 -.911 -.911 -.911

7.682 11.770 16.337 17.959 19.446 24.629 23.073 .882 -3.396 -7.917 -20.075 -30.429

-26.059 -15.360 -2.769 1.924 6.376 31.829 14.779 11.096 7.170 -3.501 -12.666

-17.873 -12.639 -6.817 -4.758 -2.873 -.028 .028 3.394 6.316 6.576 6.725 6.650 6.174

ITAN 1 2 3 4 5 6 7 8 9 10 11 JTAN

ITAN 1 2 3 4 5 6 7 8 9 JTAN

ITAN 1 2 3 4 5 6 7 8 9 10 11 JTAN

PICK UP 1

		SHEAR MAXIMUM				SHEAR MINIMUM			
		CASE 5-6		CASE 6-7		CASE 5-6		CASE 6-7	
		MEMBER	G	MEMBER	G	MEMBER	G	MEMBER	G
= MEMBER 4 ( 5 - 6 ) G =									
ITAN	0.000	( 1 )	-7.478	0.000	12.783	0.000	12.783	0.000	0.000
1	.400	( 1 )	-2.720	0.000	11.003	0.000	11.003	0.000	0.000
2	1.600	( 1 )	7.280	0.000	5.663	0.000	5.663	0.000	0.000
3	3.250	( 1 )	10.566	0.000	-1.679	0.000	-1.679	0.000	0.000
4	4.900	( 1 )	1.738	0.000	-9.022	0.000	-9.022	0.000	0.000
5	6.100	( 1 )	-12.292	0.000	-14.362	0.000	-14.362	0.000	0.000
JTAN	6.500	( 1 )	-18.393	0.000	-16.142	0.000	-16.142	0.000	0.000
= MEMBER 5 ( 6 - 7 ) G =									
ITAN	0.000	( 1 )	-18.047	0.000	15.139	0.000	15.139	0.000	0.000
1	.400	( 1 )	-12.347	0.000	13.359	0.000	13.359	0.000	0.000
2	1.600	( 1 )	.480	0.000	8.019	0.000	8.019	0.000	0.000
3	3.250	( 1 )	7.653	0.000	.676	0.000	.676	0.000	0.000
4	4.900	( 1 )	2.712	0.000	-6.666	0.000	-6.666	0.000	0.000
5	6.100	( 1 )	-8.492	0.000	-12.006	0.000	-12.006	0.000	0.000
JTAN	6.500	( 1 )	-13.650	0.000	-13.786	0.000	-13.786	0.000	0.000
= MEMBER 6 ( 7 - 8 ) G =									
ITAN	0.000	( 1 )	-10.703	0.000	11.610	0.000	11.610	0.000	0.000
1	.400	( 1 )	-5.415	0.000	9.830	0.000	9.830	0.000	0.000
2	1.600	( 1 )	2.177	0.000	4.490	0.000	4.490	0.000	0.000
3	2.250	( 1 )	4.155	0.000	1.597	0.000	1.597	0.000	0.000
4	2.900	( 1 )	4.253	0.000	-1.295	0.000	-1.295	0.000	0.000
5	4.100	( 1 )	-5.505	0.000	-6.635	0.000	-6.635	0.000	0.000
JTAN	4.500	( 1 )	-3.515	0.000	-8.415	0.000	-8.415	0.000	0.000
= MEMBER 7 ( 1 - 5 ) C =									
ITAN	0.000	( 1 )	8.698	-1.679	-37.981	-1.679	-37.981	-1.679	-37.981
JTAN	9.635	( 1 )	-7.478	-53.397	-53.397	-7.478	-53.397	-7.478	-53.397
= MEMBER 8 ( 2 - 6 ) C =									
ITAN	0.000	( 1 )	.810	-124.543	-124.543	.810	-124.543	.810	-124.543
JTAN	9.635	( 1 )	.346	-139.959	-139.959	.346	-139.959	.346	-139.959
= MEMBER 9 ( 3 - 7 ) C =									
ITAN	0.000	( 1 )	-4.913	.816	-94.434	.816	-94.434	.816	-94.434
JTAN	9.635	( 1 )	2.947	-109.850	-109.850	2.947	-109.850	2.947	-109.850
= MEMBER 10 ( 4 - 8 ) C =									
ITAN	0.000	( 1 )	-5.266	.911	-14.317	.911	-14.317	.911	-14.317
JTAN	9.635	( 1 )	3.515	-29.733	-29.733	3.515	-29.733	3.515	-29.733

PICK UP 1

		AXIAL MAXIMUM		AXIAL MINIMUM	
		-CASE- M-----N-----		-CASE- M-----N-----	
= MEMBER 1 ( 1 - 2 ) G =		= MEMBER 2 ( 2 - 3 ) G =		= MEMBER 3 ( 3 - 4 ) G =	
ITAN	0.000 ( 1 )	7.682	10.621	-1.679	10.621
1	.400 ( 1 )	11.770	9.785	-1.679	9.785
2	.900 ( 1 )	16.337	8.425	-1.679	8.425
3	1.100 ( 1 )	17.959	7.783	-1.679	7.783
4	1.300 ( 1 )	19.446	7.085	-1.679	7.085
5	3.250 ( 1 )	24.629	-2.656	-1.679	-2.656
6	3.650 ( 1 )	23.073	-5.088	-1.679	-5.088
7	3.650 ( 1 )	23.073	-7.088	-1.679	-7.088
8	5.200 ( 1 )	.882	-20.735	-1.679	-20.735
9	5.400 ( 1 )	-3.396	-22.023	-1.679	-22.023
10	5.600 ( 1 )	-7.917	-23.157	-1.679	-23.157
11	6.100 ( 1 )	-20.075	-25.316	-1.679	-25.316
JTAN	6.500 ( 1 )	-30.429	-26.349	-1.679	-26.349
= MEMBER 1 ( 1 - 2 ) G =					
ITAN	0.000 ( 1 )	-26.059	27.214	-1.727	27.214
1	.400 ( 1 )	-15.360	26.181	-1.727	26.181
2	.900 ( 1 )	-2.769	24.021	-1.727	24.021
3	1.100 ( 1 )	1.924	22.888	-1.727	22.888
4	1.300 ( 1 )	6.376	21.599	-1.727	21.599
5	3.250 ( 1 )	31.829	2.309	-1.727	2.309
6	5.200 ( 1 )	14.779	-17.759	-1.727	-17.759
7	5.400 ( 1 )	11.096	-19.048	-1.727	-19.048
8	5.600 ( 1 )	7.170	-20.182	-1.727	-20.182
9	6.100 ( 1 )	-3.501	-22.343	-1.727	-22.343
JTAN	6.500 ( 1 )	-12.666	-23.376	-1.727	-23.376
= MEMBER 2 ( 2 - 3 ) G =					
ITAN	0.000 ( 1 )	-17.873	13.618	-0.911	13.618
1	.400 ( 1 )	-12.639	12.502	-0.911	12.502
2	.900 ( 1 )	-6.817	10.712	-0.911	10.712
3	1.100 ( 1 )	-4.758	9.873	-0.911	9.873
4	1.300 ( 1 )	-2.873	8.962	-0.911	8.962
5	1.650 ( 1 )	-.028	7.413	-0.911	7.413
6	1.650 ( 1 )	3.394	6.693	-0.911	6.693
7	2.250 ( 1 )	6.571	4.671	-0.911	4.671
8	3.200 ( 1 )	5.315	1.587	-0.911	1.587
9	3.400 ( 1 )	6.576	1.018	-0.911	1.018
10	3.600 ( 1 )	6.725	.478	-0.911	.478
11	4.100 ( 1 )	6.650	-.751	-0.911	-.751
JTAN	4.500 ( 1 )	6.174	-1.607	-0.911	-1.607
= MEMBER 3 ( 3 - 4 ) G =					

PICK UP 1

AXIAL MAXIMUM		AXIAL MINIMUM	
MEMBER	CASE ( 5 - 6 ) G	MEMBER	CASE ( 5 - 6 ) G
ITAN	0.000 ( 1 )	ITAN	0.000 ( 1 )
1	-7.478	1	-7.478
2	-2.720	2	-2.720
3	7.280	3	7.280
4	10.566	4	10.566
5	1.738	5	1.738
JTAN	6.500 ( 1 )	JTAN	6.500 ( 1 )
	-12.292		-12.292
	-16.142		-16.142
ITAN	0.000 ( 1 )	ITAN	0.000 ( 1 )
1	-18.047	1	-18.047
2	-12.347	2	-12.347
3	8.019	3	8.019
4	7.653	4	7.653
5	2.712	5	2.712
JTAN	6.500 ( 1 )	JTAN	6.500 ( 1 )
	-9.492		-9.492
	-13.650		-13.650
ITAN	0.000 ( 1 )	ITAN	0.000 ( 1 )
1	-10.703	1	-10.703
2	-6.415	2	-6.415
3	2.177	3	2.177
4	4.155	4	4.155
5	4.253	5	4.253
JTAN	4.500 ( 1 )	JTAN	4.500 ( 1 )
	-3.515		-3.515
ITAN	0.000 ( 1 )	ITAN	0.000 ( 1 )
1	8.698	1	8.698
2	-7.478	2	-7.478
3		3	
4		4	
5		5	
JTAN	9.635 ( 1 )	JTAN	9.635 ( 1 )
	-1.679		-1.679
	-53.397		-53.397
ITAN	0.000 ( 1 )	ITAN	0.000 ( 1 )
1	810	1	810
2	346	2	346
3		3	
4		4	
5		5	
JTAN	9.635 ( 1 )	JTAN	9.635 ( 1 )
	-124.543		-124.543
	-139.959		-139.959
ITAN	0.000 ( 1 )	ITAN	0.000 ( 1 )
1	816	1	816
2	947	2	947
3		3	
4		4	
5		5	
JTAN	9.635 ( 1 )	JTAN	9.635 ( 1 )
	-94.434		-94.434
	-109.850		-109.850
ITAN	0.000 ( 1 )	ITAN	0.000 ( 1 )
1	911	1	911
2	266	2	266
3	515	3	515
4		4	
5		5	
JTAN	9.635 ( 1 )	JTAN	9.635 ( 1 )
	-14.317		-14.317
	-29.733		-29.733

PICK UP 2

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		1	(	1	-	2	)	G	=	=	MEMBER	1	(	1	-	2	)	G	=	=	
ITAN		0.300	(	15	)						0.000	(	14	)							
1		.400	(	15	)						.400	(	14	)							
2		.900	(	15	)						.900	(	14	)							
3		1.100	(	15	)						1.100	(	14	)							
4		1.300	(	15	)						1.300	(	14	)							
5		3.250	(	13	)						3.250	(	14	)							
6		3.650	(	13	)						3.650	(	14	)							
7		5.200	(	14	)						5.200	(	15	)							
8		5.400	(	14	)						5.400	(	15	)							
9		5.600	(	14	)						5.600	(	15	)							
10		6.100	(	14	)						6.100	(	15	)							
11		6.500	(	14	)						6.500	(	15	)							
JTAN																					
MAX		.722	(	15	)						3.650	(	14	)							
MEMBER		2	(	2	-	3	)	G	=	=	MEMBER		2	(	2	-	3	)	G	=	=
ITAN		0.000	(	15	)						0.000	(	9	)							
1		.400	(	15	)						.400	(	14	)							
2		.900	(	15	)						.900	(	14	)							
3		1.100	(	11	)						1.100	(	14	)							
4		1.300	(	9	)						1.300	(	14	)							
5		3.250	(	9	)						3.250	(	15	)							
6		5.200	(	9	)						5.200	(	15	)							
7		5.400	(	9	)						5.400	(	15	)							
8		5.600	(	9	)						5.600	(	15	)							
9		6.100	(	9	)						6.100	(	15	)							
JTAN																					
MAX		4.333	(	9	)						3.250	(	15	)							
MEMBER		3	(	3	-	4	)	G	=	=	MEMBER		3	(	3	-	4	)	G	=	=
ITAN		0.000	(	15	)						0.000	(	9	)							
1		.400	(	15	)						.400	(	9	)							
2		.900	(	15	)						.900	(	9	)							
3		1.100	(	15	)						1.100	(	9	)							
4		1.300	(	15	)						1.300	(	9	)							
5		1.550	(	13	)						1.550	(	9	)							
6		1.650	(	13	)						1.650	(	9	)							
7		2.250	(	14	)						2.250	(	9	)							
8		3.200	(	14	)						3.200	(	15	)							
9		3.400	(	14	)						3.400	(	15	)							
10		3.600	(	14	)						3.600	(	15	)							
11		4.100	(	14	)						4.100	(	15	)							
JTAN																					
MAX		1.500	(	15	)						2.500	(	11	)							
MEMBER		4	(	3	-	4	)	G	=	=	MEMBER		4	(	3	-	4	)	G	=	=
ITAN		0.000	(	15	)						0.000	(	9	)							
1		.400	(	15	)						.400	(	9	)							
2		.900	(	15	)						.900	(	9	)							
3		1.100	(	15	)						1.100	(	9	)							
4		1.300	(	15	)						1.300	(	9	)							
5		1.550	(	13	)						1.550	(	9	)							
6		1.650	(	13	)						1.650	(	9	)							
7		2.250	(	14	)						2.250	(	9	)							
8		3.200	(	14	)						3.200	(	15	)							
9		3.400	(	14	)						3.400	(	15	)							
10		3.600	(	14	)						3.600	(	15	)							
11		4.100	(	14	)						4.100	(	15	)							
JTAN																					
MAX		82.756	(	9	)						3.250	(	15	)							



PICK UP 2

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		4 ( 5 - 6 )	G =	MEMBER		4 ( 5 - 6 )	G =
ITAN	0.000 ( 15 )	15.742	2.881	0.000 ( 14 )	-25.712	14.164	0.000
1	0.000 ( 15 )	16.057	1.695	0.400 ( 14 )	-20.284	12.977	0.000
2	1.600 ( 15 )	16.554	-1.865	1.600 ( 14 )	-6.848	9.417	0.000
3	3.250 ( 13 )	11.158	-3.275	3.250 ( 14 )	4.651	4.522	0.000
4	4.900 ( 10 )	8.353	-2.533	4.900 ( 15 )	-5.756	-11.656	0.000
5	6.100 ( 14 )	5.489	-3.934	6.100 ( 15 )	-21.879	-15.216	0.000
JTAN	6.500 ( 14 )	3.678	-5.121	6.500 ( 15 )	-28.203	-16.403	0.000
MAX	0.722 ( 15 )	17.049	0.739	3.611 ( 14 )	6.091	3.450	0.000
MEMBER		5 ( 6 - 7 )	G =	MEMBER		5 ( 6 - 7 )	G =
ITAN	0.000 ( 15 )	-1.737	7.058	0.000 ( 9 )	-26.184	17.308	0.000
1	0.400 ( 15 )	0.849	5.871	0.400 ( 9 )	-19.617	15.528	0.000
2	1.600 ( 15 )	5.758	2.311	1.600 ( 14 )	-5.118	8.382	0.000
3	3.250 ( 13 )	6.730	0.660	3.250 ( 14 )	4.673	3.486	0.000
4	4.900 ( 14 )	6.387	-1.409	4.900 ( 15 )	-2.771	-7.480	0.000
5	6.100 ( 14 )	2.560	-4.969	6.100 ( 15 )	-13.883	-11.040	0.000
JTAN	6.500 ( 14 )	0.335	-6.156	6.500 ( 15 )	-18.536	-12.227	0.000
MAX	3.611 ( 9 )	7.302	1.238	3.250 ( 14 )	4.673	3.486	0.000
MEMBER		6 ( 7 - 8 )	G =	MEMBER		6 ( 7 - 8 )	G =
ITAN	0.000 ( 15 )	10.394	-1.193	0.000 ( 14 )	-24.665	16.674	0.000
1	0.400 ( 15 )	9.679	-2.380	0.400 ( 14 )	-18.233	15.487	0.000
2	1.600 ( 15 )	4.687	-5.940	1.600 ( 14 )	-1.785	11.927	0.000
3	2.250 ( 9 )	6.765	7.506	2.250 ( 15 )	0.200	-7.868	0.000
4	2.900 ( 14 )	11.213	8.070	2.900 ( 15 )	-5.541	-9.797	0.000
5	4.100 ( 14 )	18.760	4.510	4.100 ( 15 )	-19.433	-13.357	0.000
JTAN	4.500 ( 14 )	20.327	3.323	4.500 ( 15 )	-25.013	-14.544	0.000
MAX	1.500 ( 15 )	4.687	-5.940	2.000 ( 15 )	2.074	-7.127	0.000
MEMBER		7 ( 1 - 5 )	C =	MEMBER		7 ( 1 - 5 )	C =
ITAN	0.000 ( 10 )	30.419	-5.824	0.000 ( 15 )	-17.628	3.463	-19.449
JTAN	9.635 ( 15 )	15.742	3.463	9.635 ( 14 )	-25.712	-5.702	-41.472
MEMBER		8 ( 2 - 6 )	C =	MEMBER		8 ( 2 - 6 )	C =
ITAN	0.000 ( 10 )	29.208	-5.569	0.000 ( 15 )	-27.104	5.560	-84.821
JTAN	9.635 ( 15 )	26.466	5.560	9.635 ( 14 )	-26.005	-5.624	-91.522

PICK UP 2

MOMENT MAXIMUM

MOMENT MINIMUM

	-CASE- 9 ( 3 - 7 ) C = =		-CASE- 10 ( 4 - 8 ) C = =	
	ITAN	JTAN	ITAN	JTAN
MEMBER 9	0.000	9.635	0.000	9.635
MEMBER 10	24.608	28.930	0.000	9.635
ITAN	-5.149	6.237	-57.451	-58.745
JTAN	6.237	-58.745	6.237	-5.149
ITAN	29.840	25.013	-4.273	5.488
JTAN	25.013	-4.273	-28.399	-9.969
ITAN	-31.160	-25.001	-27.861	-20.327
JTAN	-25.001	-31.160	-20.327	-27.861
ITAN	6.237	-5.149	5.488	-4.273
JTAN	-5.149	6.237	-4.273	5.488
ITAN	-58.467	-77.729	-18.121	-11.247
JTAN	-77.729	-58.467	-11.247	-18.121

PICK UP 2

SHEAR MAXIMUM

SHEAR MINIMUM

MEMBER 1 ( 1 - 2 ) G = =		CASE - L - - - - - M - - - - - Q - - - - - N - - - - -		MEMBER 1 ( 1 - 2 ) G = =		CASE - L - - - - - M - - - - - Q - - - - - N - - - - -	
ITAN	0.000 ( 9 )	-9.143	13.318	-1.734	0.000 ( 15 )	28.549	1.209
1	.400 ( 9 )	-3.976	12.482	-1.734	.400 ( 15 )	28.926	.651
2	.900 ( 14 )	-7.251	11.489	-.515	.900 ( 15 )	29.034	-.256
3	1.100 ( 14 )	-4.995	11.061	-.515	1.100 ( 15 )	28.941	-.684
4	1.300 ( 14 )	-2.829	10.595	-.515	1.300 ( 15 )	28.758	-1.149
5	3.250 ( 14 )	12.078	4.102	-.515	3.250 ( 15 )	20.763	-7.643
6	3.650 ( 14 )	13.389	2.480	-.515	3.650 ( 15 )	17.377	-9.264
7	3.889 ( 14 )	13.389	1.147	-.515	3.650 ( 15 )	17.377	-10.598
8	5.200 ( 14 )	7.696	-7.952	-.515	5.200 ( 13 )	-5.587	-20.047
9	5.400 ( 14 )	6.018	-8.810	-.515	5.400 ( 9 )	-6.063	-21.906
10	5.600 ( 14 )	4.179	-9.567	-.515	5.600 ( 9 )	-10.724	-24.678
11	6.100 ( 14 )	-.991	-11.006	-.515	6.100 ( 9 )	-24.666	-30.932
JTAN	6.500 ( 14 )	-5.545	-11.695	-.515	6.500 ( 9 )	-37.922	-35.241

MEMBER 2 ( 2 - 3 ) G = =		CASE - L - - - - - M - - - - - Q - - - - - N - - - - -		MEMBER 2 ( 2 - 3 ) G = =		CASE - L - - - - - M - - - - - Q - - - - - N - - - - -	
ITAN	0.000 ( 9 )	-41.074	53.769	-2.912	0.000 ( 15 )	-4.471	14.059
1	.400 ( 9 )	-20.407	49.461	-2.912	.400 ( 15 )	1.029	13.371
2	.900 ( 9 )	2.800	43.206	-2.912	.900 ( 15 )	7.381	11.931
3	1.100 ( 9 )	11.166	40.434	-2.912	1.100 ( 15 )	9.693	11.175
4	1.300 ( 9 )	18.963	37.508	-2.912	1.300 ( 15 )	11.844	10.316
5	3.250 ( 9 )	73.656	17.276	-2.912	3.250 ( 15 )	20.850	-2.544
6	5.200 ( 14 )	18.186	-7.756	-.952	5.200 ( 9 )	64.867	-31.836
7	5.400 ( 14 )	16.548	-8.615	-.952	5.400 ( 9 )	58.205	-34.763
8	5.600 ( 14 )	14.747	-9.372	-.952	5.600 ( 9 )	50.972	-37.536
9	5.100 ( 14 )	9.674	-10.812	-.952	6.100 ( 9 )	30.600	-43.791
JTAN	6.500 ( 14 )	5.198	-11.501	-.952	6.500 ( 9 )	12.231	-48.100

MEMBER 3 ( 3 - 4 ) G = =		CASE - L - - - - - M - - - - - Q - - - - - N - - - - -		MEMBER 3 ( 3 - 4 ) G = =		CASE - L - - - - - M - - - - - Q - - - - - N - - - - -	
ITAN	0.000 ( 9 )	-63.558	29.124	-1.353	0.000 ( 15 )	2.326	.503
1	.400 ( 9 )	-52.649	26.203	-1.353	.400 ( 15 )	2.385	-.241
2	.900 ( 9 )	-38.974	24.418	-1.353	.900 ( 15 )	1.978	-1.434
3	1.100 ( 9 )	-35.173	23.679	-1.353	1.100 ( 15 )	1.636	-1.994
4	1.300 ( 9 )	-30.547	22.668	-1.353	1.300 ( 15 )	1.177	-2.601
5	1.650 ( 9 )	-22.905	21.119	-1.353	1.650 ( 15 )	-.073	-3.634
6	1.650 ( 9 )	-22.905	20.399	-1.353	1.650 ( 15 )	-.073	-3.634
7	2.250 ( 9 )	-11.260	18.377	-1.353	2.250 ( 15 )	-2.792	-4.114
8	3.200 ( 9 )	4.493	15.292	-1.353	3.200 ( 15 )	-5.462	-4.114
9	3.400 ( 10 )	10.058	14.745	-1.246	3.400 ( 15 )	-7.518	-5.462
10	3.600 ( 10 )	12.960	14.275	-1.246	3.600 ( 15 )	-7.897	-7.518
11	4.100 ( 10 )	19.824	13.207	-1.246	4.100 ( 15 )	-12.148	-8.258
JTAN	4.500 ( 10 )	24.955	12.462	-1.246	4.500 ( 15 )	-16.587	-9.076

PICK UP 2

SHEAR MAXIMUM

SHEAR MINIMUM

L		CASE		M		Q		N			
MEMBER		( 5 - 6 )		G		C		C			
MEMBER 4 ( 5 - 6 ) G =											
ITAN	0.000	( 9 )	-24.150	17.424	0.000	ITAN	0.000	( 15 )	15.742	2.881	0.000
1	.400	( 9 )	-17.536	15.644	0.000	1	.400	( 15 )	16.657	1.695	0.000
2	1.600	( 9 )	-1.967	10.304	0.000	2	1.600	( 15 )	16.554	-1.865	0.000
3	3.250	( 14 )	4.651	4.522	0.000	3	3.250	( 15 )	9.438	-6.761	0.000
4	4.900	( 14 )	8.073	-3.374	0.000	4	4.900	( 15 )	-5.756	-11.656	0.000
5	6.100	( 14 )	5.489	-3.934	0.000	5	6.100	( 15 )	-21.879	-15.216	0.000
JTAN	6.500	( 14 )	3.678	-5.121	0.000	JTAN	6.500	( 15 )	-28.203	-16.403	0.000
MEMBER 5 ( 6 - 7 ) G =											
ITAN	0.000	( 9 )	-26.184	17.308	0.000	ITAN	0.000	( 15 )	-1.737	7.058	0.000
1	.400	( 9 )	-19.617	15.928	0.000	1	.400	( 15 )	.849	5.871	0.000
2	1.600	( 9 )	-4.187	10.188	0.000	2	1.600	( 15 )	5.756	2.311	0.000
3	3.250	( 14 )	4.673	3.486	0.000	3	3.250	( 15 )	5.532	-2.585	0.000
4	4.900	( 14 )	6.387	-1.409	0.000	4	4.900	( 15 )	-2.771	-7.480	0.000
5	6.100	( 14 )	2.560	-4.959	0.000	5	6.100	( 15 )	-13.883	-11.040	0.000
JTAN	6.500	( 14 )	.335	-6.156	0.000	JTAN	6.500	( 15 )	-18.536	-12.227	0.000
MEMBER 6 ( 7 - 8 ) G =											
ITAN	0.000	( 9 )	-21.188	17.519	0.000	ITAN	0.000	( 15 )	10.394	-1.193	0.000
1	.400	( 9 )	-14.736	15.737	0.000	1	.400	( 15 )	9.679	-2.380	0.000
2	1.600	( 14 )	-1.785	11.929	0.000	2	1.600	( 15 )	4.687	-5.940	0.000
3	3.250	( 14 )	5.341	9.998	0.000	3	3.250	( 15 )	.200	-7.868	0.000
4	4.900	( 14 )	11.213	8.070	0.000	4	4.900	( 15 )	-5.541	-9.797	0.000
5	6.100	( 14 )	18.760	4.510	0.000	5	6.100	( 15 )	-19.433	-13.357	0.000
JTAN	6.500	( 14 )	20.327	3.323	0.000	JTAN	6.500	( 15 )	-25.013	-14.544	0.000
MEMBER 7 ( 1 - 5 ) C =											
ITAN	0.000	( 15 )	-17.628	3.463	-19.449	ITAN	0.000	( 10 )	30.419	-5.824	-36.702
JTAN	9.635	( 15 )	15.742	3.463	-28.727	JTAN	9.635	( 10 )	-25.692	-5.824	-50.108
MEMBER 8 ( 2 - 6 ) C =											
ITAN	0.000	( 15 )	-27.104	5.560	-84.821	ITAN	0.000	( 14 )	28.185	-5.624	-81.244
JTAN	9.635	( 15 )	26.466	5.560	-95.099	JTAN	9.635	( 14 )	-26.005	-5.624	-91.522
MEMBER 9 ( 3 - 7 ) C =											
ITAN	0.000	( 15 )	-31.160	6.237	-58.467	ITAN	0.000	( 14 )	24.608	-5.149	-67.451
JTAN	9.635	( 15 )	28.930	6.237	-68.745	JTAN	9.635	( 14 )	-25.001	-5.149	-77.729
MEMBER 10 ( 4 - 8 ) C =											
ITAN	0.000	( 15 )	-27.861	5.488	-18.121	ITAN	0.000	( 14 )	20.840	-4.273	-36.9
JTAN	9.635	( 15 )	25.013	5.488	-28.399	JTAN	9.635	( 14 )	-20.327	-4.273	-11.247

PICK UP 2

AXIAL MAXIMUM

AXIAL MINIMUM

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =	
ITAN	AXIAL MAXIMUM	ITAN	AXIAL MAXIMUM	ITAN	AXIAL MAXIMUM
1	15.808	1	7.220	1	10.000
2	18.557	2	6.493	2	400 ( 12 )
3	21.521	3	5.310	3	900 ( 12 )
4	22.528	4	4.752	4	1100 ( 12 )
5	23.418	5	4.145	5	1300 ( 12 )
6	23.994	6	-4.325	6	3250 ( 12 )
7	21.835	7	-6.440	7	3650 ( 12 )
8	21.835	8	-8.179	8	3650 ( 12 )
9	-5.537	9	-20.047	9	5200 ( 12 )
10	-4.711	10	-21.167	10	5400 ( 12 )
11	-9.045	11	-22.153	11	5600 ( 12 )
JTAN	-20.626	JTAN	-24.031	JTAN	6100 ( 12 )
	-30.436		-24.929		6500 ( 12 )

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =	
ITAN	AXIAL MINIMUM	ITAN	AXIAL MINIMUM	ITAN	AXIAL MINIMUM
1	3.029	1	1.042	1	0.000
2	6.906	2	1.042	2	400 ( 12 )
3	11.281	3	1.042	3	900 ( 12 )
4	12.852	4	1.042	4	1100 ( 9 )
5	14.307	5	1.042	5	1300 ( 9 )
6	20.387	6	1.042	6	3250 ( 9 )
7	19.356	7	1.042	7	5200 ( 9 )
8	19.356	8	1.042	8	5400 ( 9 )
9	13.09	9	1.042	9	5600 ( 9 )
10	-2.250	10	1.042	10	6100 ( 9 )
11	-6.820	11	1.042	11	6500 ( 9 )
JTAN	-16.190	JTAN	1.042	JTAN	6500 ( 9 )
	-24.871				

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =	
ITAN	AXIAL MAXIMUM	ITAN	AXIAL MAXIMUM	ITAN	AXIAL MAXIMUM
1	15.808	1	23.855	1	10.818
2	18.557	2	22.967	2	9.847
3	21.521	3	21.090	3	8.291
4	22.528	4	20.104	4	7.561
5	23.418	5	18.983	5	6.769
6	23.994	6	2.208	6	5.422
7	21.835	7	-15.242	7	-3.384
8	21.835	8	-16.363	8	-3.884
9	-5.537	9	-17.350	9	1.976
10	-4.711	10	-19.229	10	3.037
11	-9.045	11	-20.127	11	3.544
JTAN	-20.626	JTAN	-20.127	JTAN	3.565
	-30.436				-1.339

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =	
ITAN	AXIAL MINIMUM	ITAN	AXIAL MINIMUM	ITAN	AXIAL MINIMUM
1	3.029	1	1.042	1	0.000
2	6.906	2	1.042	2	400 ( 12 )
3	11.281	3	1.042	3	900 ( 12 )
4	12.852	4	1.042	4	1100 ( 12 )
5	14.307	5	1.042	5	1300 ( 12 )
6	20.387	6	1.042	6	3250 ( 12 )
7	19.356	7	1.042	7	5200 ( 12 )
8	19.356	8	1.042	8	5400 ( 12 )
9	13.09	9	1.042	9	5600 ( 12 )
10	-2.250	10	1.042	10	6100 ( 12 )
11	-6.820	11	1.042	11	6500 ( 12 )
JTAN	-16.190	JTAN	1.042	JTAN	6500 ( 12 )
	-24.871				

PICK UP 2

AXIAL MAXIMUM

AXIAL MINIMUM

MEMBER		CASE ( 5 - 6 ) G		MEMBER		CASE ( 5 - 6 ) G	
ITAN	0.000 ( 9 )	-24.150	17.424	0.000	0.000	0.000	17.424
1	.400 ( 9 )	-17.536	15.644	0.000	0.000	0.000	15.644
2	1.600 ( 9 )	-1.967	10.304	0.000	0.000	0.000	10.304
3	3.250 ( 9 )	8.977	2.962	0.000	0.000	0.000	2.962
4	4.900 ( 9 )	7.806	-4.381	0.000	0.000	0.000	-4.381
5	6.100 ( 9 )	-6.655	-9.721	0.000	0.000	0.000	-9.721
JTAN	6.500 ( 9 )	-4.900	-11.501	0.000	0.000	0.000	-11.501
= = MEMBER 5 ( 6 - 7 ) G = =							
ITAN	0.000 ( 9 )	-26.184	17.308	0.000	0.000	0.000	17.308
1	.400 ( 9 )	-19.617	15.528	0.000	0.000	0.000	15.528
2	1.600 ( 9 )	-4.187	10.188	0.000	0.000	0.000	10.188
3	3.250 ( 9 )	6.555	2.845	0.000	0.000	0.000	2.845
4	4.900 ( 9 )	5.202	-4.497	0.000	0.000	0.000	-4.497
5	6.100 ( 9 )	-3.399	-9.837	0.000	0.000	0.000	-9.837
JTAN	6.500 ( 9 )	-7.690	-11.617	0.000	0.000	0.000	-11.617
= = MEMBER 6 ( 7 - 8 ) G = =							
ITAN	0.000 ( 9 )	-21.388	17.519	0.000	0.000	0.000	17.519
1	.400 ( 9 )	-14.736	15.739	0.000	0.000	0.000	15.739
2	1.600 ( 9 )	.946	10.399	0.000	0.000	0.000	10.399
3	2.250 ( 9 )	6.765	7.506	0.000	0.000	0.000	7.506
4	2.900 ( 9 )	10.704	4.614	0.000	0.000	0.000	4.614
5	4.100 ( 9 )	13.036	-7.26	0.000	0.000	0.000	-7.26
JTAN	4.500 ( 9 )	12.390	-2.506	0.000	0.000	0.000	-2.506
= = MEMBER 7 ( 1 - 5 ) C = =							
ITAN	0.000 ( 15 )	-17.628	3.463	-19.449	0.000	0.000	-5.504
JTAN	9.635 ( 15 )	15.742	3.463	-29.727	9.635 ( 9 )	-24.150	-5.504
= = MEMBER 8 ( 2 - 6 ) C = =							
ITAN	0.000 ( 14 )	28.185	-5.524	-81.244	0.000 ( 9 )	25.392	-4.948
JTAN	9.635 ( 14 )	-26.005	-5.524	-91.522	9.635 ( 9 )	-21.284	-4.948
= = MEMBER 9 ( 3 - 7 ) C = =							
ITAN	0.000 ( 15 )	-31.160	6.237	-58.467	0.000 ( 9 )	7.599	-2.210
JTAN	9.635 ( 15 )	28.930	6.237	-68.745	9.635 ( 9 )	-13.698	-2.210
= = MEMBER 10 ( 4 - 8 ) C = =							
ITAN	0.000 ( 10 )	14.989	-3.206	1.410	0.000 ( 15 )	-27.861	5.488
JTAN	9.635 ( 14 )	-20.327	-4.273	-11.247	9.635 ( 15 )	25.013	5.488

PICK UP 3

MOMENT MAXIMUM

MOMENT MINIMUM

-----L-----CASE-----M-----N-----

= MEMBER 1 ( 1 - 2 ) G =

MEMBER	1	2	G	MEMBER	1	2	G
ITAN	0.000	( 17 )	-3.046	11.789	0.000	( 16 )	-15.241
1	.400	( 17 )	1.510	10.953	.400	( 16 )	-9.462
2	.900	( 17 )	8.661	9.593	.900	( 16 )	-2.783
3	1.100	( 17 )	8.517	8.951	1.100	( 16 )	-3.16
4	1.300	( 17 )	10.238	8.253	1.300	( 16 )	2.017
5	3.250	( 17 )	17.700	-1.487	3.250	( 16 )	15.440
6	3.650	( 17 )	16.612	-3.319	3.650	( 16 )	15.574
7	3.650	( 17 )	16.612	-5.319	3.650	( 16 )	15.574
8	5.200	( 16 )	-1.22	-17.451	5.200	( 17 )	-3.822
9	5.400	( 16 )	-3.907	-20.377	5.400	( 17 )	-8.219
10	5.500	( 16 )	-8.262	-23.149	5.600	( 17 )	-13.185
11	6.100	( 16 )	-21.441	-29.404	6.100	( 17 )	-27.892
JTAN	6.500	( 16 )	-34.085	-33.712	6.500	( 17 )	-41.758
MAX	2.889	( 17 )	17.834	.718	3.611	( 16 )	15.603

= MEMBER 2 ( 2 - 3 ) G =

MEMBER	2	3	G	MEMBER	2	3	G
ITAN	0.000	( 17 )	-37.716	52.707	0.000	( 16 )	-44.432
1	.400	( 17 )	-17.474	48.398	.400	( 16 )	-23.340
2	.900	( 17 )	5.201	42.143	.900	( 16 )	.398
3	1.100	( 17 )	13.355	39.371	1.100	( 16 )	8.977
4	1.300	( 17 )	20.939	36.445	1.300	( 16 )	16.997
5	3.250	( 16 )	73.752	18.339	3.250	( 17 )	73.560
6	3.250	( 16 )	67.036	-30.773	5.200	( 17 )	62.698
7	5.400	( 16 )	60.586	-33.700	5.400	( 17 )	55.823
8	5.600	( 16 )	33.567	-36.473	5.600	( 17 )	48.378
9	6.100	( 16 )	33.726	-42.728	6.100	( 17 )	27.475
JTAN	6.500	( 16 )	15.752	-47.037	6.500	( 17 )	8.651
MAX	4.333	( 16 )	84.004	-5.377	4.333	( 17 )	81.508

= MEMBER 3 ( 3 - 4 ) G =

MEMBER	3	4	G	MEMBER	3	4	G
ITAN	0.000	( 17 )	-59.851	26.892	0.000	( 16 )	-67.255
1	.400	( 17 )	-49.835	23.976	.400	( 16 )	-55.453
2	.900	( 17 )	-38.276	22.186	.900	( 16 )	-41.672
3	1.100	( 17 )	-33.922	21.347	1.100	( 16 )	-36.424
4	1.300	( 17 )	-29.742	20.436	1.300	( 16 )	-31.352
5	1.650	( 17 )	-22.881	18.287	1.650	( 16 )	-22.929
6	1.650	( 17 )	-22.881	18.167	1.650	( 16 )	-22.929
7	2.250	( 16 )	-9.944	20.609	2.250	( 17 )	-12.575
8	3.200	( 16 )	8.119	17.525	3.200	( 17 )	1.247
9	3.400	( 16 )	11.566	16.956	3.400	( 17 )	3.802
10	3.600	( 16 )	14.903	16.416	3.600	( 17 )	6.246
11	4.100	( 16 )	22.797	15.187	4.100	( 17 )	11.907
JTAN	4.500	( 16 )	28.697	14.331	4.500	( 17 )	16.021

-----L-----CASE-----M-----N-----

= MEMBER 1 ( 1 - 2 ) G =

MEMBER	1	2	G	MEMBER	1	2	G
ITAN	0.000	( 17 )	14.846	-1.577	0.000	( 16 )	-1.577
1	.400	( 17 )	14.010	-1.577	.400	( 16 )	-1.577
2	.900	( 17 )	12.650	-1.577	.900	( 16 )	-1.577
3	1.100	( 17 )	12.008	-1.577	1.100	( 16 )	-1.577
4	1.300	( 17 )	11.310	-1.577	1.300	( 16 )	-1.577
5	3.250	( 17 )	1.570	-1.577	3.250	( 16 )	-1.577
6	3.650	( 17 )	-862	-1.577	3.650	( 16 )	-1.577
7	3.650	( 17 )	-2.862	-1.577	3.650	( 16 )	-1.577
8	5.200	( 17 )	-23.434	-1.891	5.200	( 17 )	-1.891
9	5.400	( 17 )	-26.206	-1.891	5.400	( 17 )	-1.891
10	5.600	( 17 )	-32.460	-1.891	5.600	( 17 )	-1.891
11	6.100	( 17 )	-36.769	-1.891	6.100	( 17 )	-1.891
JTAN	6.500	( 17 )	-636	-1.577	6.500	( 17 )	-1.577

= MEMBER 2 ( 2 - 3 ) G =

MEMBER	2	3	G	MEMBER	2	3	G
ITAN	0.000	( 16 )	54.832	-2.861	0.000	( 16 )	-2.861
1	.400	( 16 )	50.524	-2.861	.400	( 16 )	-2.861
2	.900	( 16 )	44.269	-2.861	.900	( 16 )	-2.861
3	1.100	( 16 )	41.497	-2.861	1.100	( 16 )	-2.861
4	1.300	( 16 )	38.571	-2.861	1.300	( 16 )	-2.861
5	3.250	( 17 )	16.213	-2.964	3.250	( 17 )	-2.964
6	3.250	( 17 )	-32.899	-2.964	3.250	( 17 )	-2.964
7	5.400	( 17 )	-35.826	-2.964	5.400	( 17 )	-2.964
8	5.600	( 17 )	-38.599	-2.964	5.600	( 17 )	-2.964
9	6.100	( 17 )	-44.854	-2.964	6.100	( 17 )	-2.964
JTAN	6.500	( 17 )	-49.163	-2.964	6.500	( 17 )	-2.964
MAX	4.333	( 17 )	-7.503	-2.964	4.333	( 17 )	-2.964

= MEMBER 3 ( 3 - 4 ) G =

MEMBER	3	4	G	MEMBER	3	4	G
ITAN	0.000	( 16 )	31.356	-1.433	0.000	( 16 )	-1.433
1	.400	( 16 )	28.440	-1.433	.400	( 16 )	-1.433
2	.900	( 16 )	26.650	-1.433	.900	( 16 )	-1.433
3	1.100	( 16 )	25.811	-1.433	1.100	( 16 )	-1.433
4	1.300	( 16 )	24.900	-1.433	1.300	( 16 )	-1.433
5	1.650	( 16 )	23.351	-1.433	1.650	( 16 )	-1.433
6	1.650	( 16 )	22.631	-1.433	1.650	( 16 )	-1.433
7	2.250	( 17 )	16.145	-1.273	2.250	( 17 )	-1.273
8	3.200	( 17 )	13.060	-1.273	3.200	( 17 )	-1.273
9	3.400	( 17 )	12.492	-1.273	3.400	( 17 )	-1.273
10	3.600	( 17 )	11.951	-1.273	3.600	( 17 )	-1.273
11	4.100	( 17 )	10.723	-1.273	4.100	( 17 )	-1.273
JTAN	4.500	( 17 )	9.867	-1.273	4.500	( 17 )	-1.273

PICK UP 3

MOMENT MAXIMUM				MOMENT MINIMUM			
MEMBER	CASE	MEMBER	CASE	MEMBER	CASE	MEMBER	CASE
4 ( 5 - 6 ) G	17	4 ( 5 - 6 ) G	16	4 ( 5 - 6 ) G	16	4 ( 5 - 6 ) G	16
ITAN	0.000 ( 17 )	15.956	0.000	ITAN	0.000 ( 16 )	18.892	0.000
1	4.00 ( 17 )	14.176	0.000	1	4.00 ( 16 )	17.112	0.000
2	1.600 ( 17 )	8.836	0.000	2	1.600 ( 16 )	11.772	0.000
3	3.250 ( 17 )	9.600	0.000	3	3.250 ( 16 )	4.430	0.000
4	4.900 ( 16 )	2.913	0.000	4	4.900 ( 17 )	-5.849	0.000
5	6.100 ( 16 )	-8.253	0.000	5	6.100 ( 17 )	-11.189	0.000
JTAN	6.500 ( 16 )	-10.033	0.000	JTAN	6.500 ( 17 )	-12.969	0.000
MAX	4.333 ( 16 )	10.542	0.000	MAX	3.611 ( 16 )	2.823	0.000
MEMBER 5 ( 6 - 7 ) G				MEMBER 5 ( 6 - 7 ) G			
ITAN	0.000 ( 17 )	16.518	0.000	ITAN	0.000 ( 16 )	18.098	0.000
1	4.00 ( 17 )	14.738	0.000	1	4.00 ( 16 )	16.318	0.000
2	1.600 ( 17 )	2.772	0.000	2	1.600 ( 16 )	10.978	0.000
3	3.250 ( 17 )	6.577	0.000	3	3.250 ( 16 )	3.635	0.000
4	4.900 ( 16 )	6.394	0.000	4	4.900 ( 17 )	-5.287	0.000
5	6.100 ( 16 )	-9.047	0.000	5	6.100 ( 17 )	-10.627	0.000
JTAN	6.500 ( 16 )	-10.827	0.000	JTAN	6.500 ( 17 )	-12.407	0.000
MAX	4.333 ( 16 )	7.790	0.000	MAX	3.611 ( 17 )	-4.48	0.000
MEMBER 6 ( 7 - 8 ) G				MEMBER 6 ( 7 - 8 ) G			
ITAN	0.000 ( 17 )	15.194	0.000	ITAN	0.000 ( 16 )	19.844	0.000
1	4.00 ( 17 )	13.414	0.000	1	4.00 ( 16 )	18.064	0.000
2	1.600 ( 17 )	1.788	0.000	2	1.600 ( 16 )	12.724	0.000
3	2.250 ( 16 )	7.434	0.000	3	2.250 ( 17 )	5.181	0.000
4	2.900 ( 16 )	12.884	0.000	4	2.900 ( 17 )	2.289	0.000
5	4.100 ( 16 )	18.007	0.000	5	4.100 ( 17 )	-3.051	0.000
JTAN	4.500 ( 16 )	18.290	0.000	JTAN	4.500 ( 17 )	-4.831	0.000
MEMBER 7 ( 1 - 5 ) C				MEMBER 7 ( 1 - 5 ) C			
ITAN	0.000 ( 16 )	34.981	-42.206	ITAN	0.000 ( 17 )	22.786	-39.149
JTAN	9.635 ( 17 )	-18.755	-54.565	JTAN	9.635 ( 16 )	-29.544	-57.622
MEMBER 8 ( 2 - 6 ) C				MEMBER 8 ( 2 - 6 ) C			
ITAN	0.000 ( 16 )	33.587	-225.455	ITAN	0.000 ( 17 )	19.197	-225.386
JTAN	9.635 ( 17 )	-14.456	-241.802	JTAN	9.635 ( 16 )	-28.112	-240.871





PICK UP 3

SHEAR MAXIMUM

SHEAR MINIMUM

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =	
ITAN	Q	ITAN	Q	ITAN	Q
1	14.846	14.846	14.846	11.789	11.789
2	14.010	14.010	14.010	10.953	10.953
3	12.650	12.650	12.650	9.593	9.593
4	11.310	11.310	11.310	8.951	8.951
5	1.570	1.570	1.570	8.253	8.253
6	-0.862	-0.862	-0.862	-1.487	-1.487
7	15.574	15.574	15.574	-3.919	-3.919
8	-17.451	-17.451	-17.451	-5.919	-5.919
9	-3.907	-3.907	-3.907	-20.508	-20.508
10	-8.262	-8.262	-8.262	-23.434	-23.434
11	-21.441	-21.441	-21.441	-26.206	-26.206
JTAN	-33.712	-33.712	-33.712	-32.460	-32.460
JTAN	-34.085	-34.085	-34.085	-36.769	-36.769

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =	
ITAN	Q	ITAN	Q	ITAN	Q
1	54.232	54.232	54.232	52.707	52.707
2	50.524	50.524	50.524	48.398	48.398
3	44.269	44.269	44.269	42.143	42.143
4	41.497	41.497	41.497	39.371	39.371
5	38.571	38.571	38.571	36.445	36.445
6	18.339	18.339	18.339	16.213	16.213
7	-30.773	-30.773	-30.773	-32.899	-32.899
8	60.586	60.586	60.586	-35.826	-35.826
9	53.567	53.567	53.567	-38.599	-38.599
JTAN	33.726	33.726	33.726	-44.854	-44.854
JTAN	15.752	15.752	15.752	-49.163	-49.163

MEMBER 1 ( 1 - 2 ) G =		MEMBER 2 ( 2 - 3 ) G =		MEMBER 3 ( 3 - 4 ) G =	
ITAN	Q	ITAN	Q	ITAN	Q
1	31.356	31.356	31.356	26.892	26.892
2	28.440	28.440	28.440	23.976	23.976
3	26.650	26.650	26.650	22.186	22.186
4	25.811	25.811	25.811	21.347	21.347
5	24.900	24.900	24.900	20.436	20.436
6	23.351	23.351	23.351	18.887	18.887
7	22.631	22.631	22.631	18.167	18.167
8	20.609	20.609	20.609	16.145	16.145
9	17.525	17.525	17.525	13.360	13.360
10	16.956	16.956	16.956	12.492	12.492
11	14.903	14.903	14.903	11.951	11.951
JTAN	22.797	22.797	22.797	10.723	10.723
JTAN	14.331	14.331	14.331	9.867	9.867

PICK UP 3

SHEAR MAXIMUM

SHEAR MINIMUM

		-CASE-					-CASE-				
		4 (	5 -	6 )	G =	4 (	5 -	6 )	G =		
= MEMBER 1		ITAN	0.000	( 16 )	-29.544	0.000	0.000	( 17 )	-18.755	0.000	0.000
		1	4.00	( 16 )	-22.343	0.000	17.112	( 17 )	-12.729	15.956	0.000
		2	1.600	( 16 )	-5.013	0.000	11.772	( 17 )	1.078	14.176	0.000
		3	3.250	( 16 )	8.354	0.000	4.430	( 17 )	9.600	8.836	0.000
		4	4.900	( 16 )	9.606	0.000	-2.913	( 17 )	6.006	1.493	0.000
		5	6.100	( 16 )	2.906	0.000	-8.253	( 17 )	-4.217	-5.849	0.000
		JTAN	6.500	( 16 )	-1.751	0.000	-10.033	( 17 )	-9.049	-11.189	0.000
= MEMBER 5		ITAN	0.000	( 16 )	-28.863	0.000	18.098	( 17 )	-23.504	16.518	0.000
		1	4.00	( 16 )	-21.980	0.000	16.318	( 17 )	-17.253	14.738	0.000
		2	1.600	( 16 )	-5.603	0.000	10.978	( 17 )	-2.772	9.398	0.000
		3	3.250	( 16 )	6.453	0.000	3.635	( 17 )	6.677	2.055	0.000
		4	4.900	( 16 )	6.394	0.000	-3.707	( 17 )	4.010	-5.287	0.000
		5	6.100	( 16 )	-1.259	0.000	-9.047	( 17 )	-5.539	-10.627	0.000
		JTAN	6.500	( 16 )	-9.234	0.000	-10.827	( 17 )	-10.145	-12.407	0.000
= MEMBER 6		ITAN	0.000	( 16 )	-25.950	0.000	19.844	( 17 )	-16.826	15.194	0.000
		1	4.00	( 16 )	-18.369	0.000	18.064	( 17 )	-11.104	13.414	0.000
		2	1.500	( 16 )	7.104	0.000	12.724	( 17 )	1.788	8.074	0.000
		3	2.250	( 16 )	7.434	0.000	9.831	( 17 )	6.096	5.181	0.000
		4	2.900	( 16 )	12.884	0.000	6.939	( 17 )	8.524	2.289	0.000
		5	4.100	( 16 )	18.007	0.000	1.599	( 17 )	8.066	-3.051	0.000
		JTAN	4.500	( 16 )	18.290	0.000	-1.181	( 17 )	6.489	-4.831	0.000
= MEMBER 7		ITAN	0.000	( 17 )	22.786	-39.149	-4.311	( 16 )	34.981	-6.697	-42.206
		JTAN	9.635	( 17 )	-18.755	-54.565	-4.311	( 16 )	-29.544	-6.697	-57.622
= MEMBER 8		ITAN	0.000	( 17 )	19.197	-226.386	-3.493	( 16 )	33.587	-6.404	-225.455
		JTAN	9.635	( 17 )	-14.456	-241.802	-3.493	( 16 )	-28.112	-6.404	-240.871
= MEMBER 9		ITAN	0.000	( 17 )	3.42	-182.905	-7.29	( 16 )	14.857	-3.692	-185.243
		JTAN	9.635	( 17 )	-6.680	-198.321	-7.29	( 16 )	-20.717	-3.692	-200.659
= MEMBER 10		ITAN	0.000	( 17 )	4.561	-1.147	-1.147	( 16 )	17.237	-3.687	1.621
		JTAN	9.635	( 17 )	-6.489	-18.259	-1.147	( 16 )	-18.290	-3.687	-13.795

TITLE - VIADUCT OF DOUBLE TRACK (3+3\*8=27) C-2

PICK UP J

		AXIAL MAXIMUM				AXIAL MINIMUM			
		L		M		L		M	
= MEMBER 1 ( 1 - 2 ) G =		CASE ( 16 )		CASE ( 16 )		CASE ( 17 )		CASE ( 17 )	
ITAN	0.000	-15.241	14.846	-1.577	0.000	( 17 )	-3.046	11.789	-1.891
1	.400	-9.462	14.810	-1.577	.400	( 17 )	1.510	10.953	-1.891
2	.900	-2.783	12.650	-1.577	.900	( 17 )	6.661	9.593	-1.891
3	1.100	-3.316	12.008	-1.577	1.100	( 17 )	8.517	8.951	-1.891
4	1.300	2.017	11.310	-1.577	1.300	( 17 )	10.238	8.253	-1.891
5	3.250	15.440	1.570	-1.577	3.250	( 17 )	17.700	-1.887	-1.891
6	3.650	15.574	-2.862	-1.577	3.650	( 17 )	16.612	-3.919	-1.891
7	5.200	12.222	-17.451	-1.577	5.200	( 17 )	16.612	-5.919	-1.891
8	5.400	-3.907	-20.377	-1.577	5.400	( 17 )	-3.822	-20.508	-1.891
9	5.600	-8.262	-23.149	-1.577	5.600	( 17 )	-8.219	-23.534	-1.891
10	6.100	-21.441	-29.404	-1.577	6.100	( 17 )	-13.185	-25.206	-1.891
11	6.500	-34.085	-33.712	-1.577	6.500	( 17 )	-27.892	-32.960	-1.891
JTAN					JTAN		-41.758	-36.769	-1.891

		AXIAL MAXIMUM				AXIAL MINIMUM			
		L		M		L		M	
= MEMBER 2 ( 2 - 3 ) G =		CASE ( 16 )		CASE ( 16 )		CASE ( 17 )		CASE ( 17 )	
ITAN	0.000	-44.432	54.332	-2.861	0.000	( 17 )	-37.716	52.707	-2.964
1	.400	-23.340	50.524	-2.861	.400	( 17 )	-17.474	48.398	-2.964
2	.900	.398	44.269	-2.861	.900	( 17 )	5.201	42.143	-2.964
3	1.100	8.977	41.497	-2.861	1.100	( 17 )	13.355	39.371	-2.964
4	1.300	16.987	38.571	-2.861	1.300	( 17 )	20.939	36.445	-2.964
5	3.250	73.752	18.339	-2.861	3.250	( 17 )	73.560	16.213	-2.964
6	5.200	67.036	-30.773	-2.861	5.200	( 17 )	52.698	-32.899	-2.964
7	5.400	60.586	-33.700	-2.861	5.400	( 17 )	55.823	-35.826	-2.964
8	5.600	53.557	-36.473	-2.861	5.600	( 17 )	48.378	-38.599	-2.964
9	6.100	33.726	-42.728	-2.861	6.100	( 17 )	27.475	-44.854	-2.964
JTAN	6.500	15.752	-47.037	-2.861	JTAN	6.500	8.651	-49.153	-2.964

		AXIAL MAXIMUM				AXIAL MINIMUM			
		L		M		L		M	
= MEMBER 3 ( 3 - 4 ) G =		CASE ( 16 )		CASE ( 16 )		CASE ( 16 )		CASE ( 16 )	
ITAN	0.000	-59.851	26.892	-1.273	0.000	( 16 )	-67.265	31.356	-1.433
1	.400	-49.835	23.376	-1.273	.400	( 16 )	-55.463	28.440	-1.433
2	.900	-38.276	22.186	-1.273	.900	( 16 )	-41.672	26.650	-1.433
3	1.100	-33.922	21.347	-1.273	1.100	( 16 )	-36.424	25.311	-1.433
4	1.300	-29.742	20.436	-1.273	1.300	( 16 )	-31.352	24.900	-1.433
5	1.650	18.887	18.167	-1.273	1.650	( 16 )	-22.929	23.351	-1.433
6	1.550	-22.881	18.167	-1.273	1.650	( 16 )	-22.929	22.631	-1.433
7	2.250	-12.575	16.145	-1.273	2.250	( 16 )	-9.944	20.609	-1.433
8	3.200	1.247	13.060	-1.273	3.200	( 16 )	8.119	17.525	-1.433
9	3.400	3.802	12.492	-1.273	3.400	( 16 )	11.566	16.956	-1.433
10	3.600	6.246	11.951	-1.273	3.600	( 16 )	14.903	15.416	-1.433
11	4.100	11.907	10.723	-1.273	4.100	( 16 )	22.797	15.187	-1.433
JTAN	4.500	16.021	9.867	-1.273	JTAN	4.500	28.697	14.333	-1.433

PICK UP 3

AXIAL MAXIMUM

AXIAL MINIMUM

MEMBER 4 ( 5 - 6 ) G		MEMBER 5 ( 6 - 7 ) G	
ITAN	0.000 ( 16 )	0.000 ( 16 )	0.000 ( 16 )
1	-29.544	18.892	18.892
2	-22.343	17.112	17.112
3	-5.013	11.772	11.772
4	8.354	4.430	4.430
5	9.606	-2.913	-2.913
JTAN	6.100 ( 16 )	2.906	-8.253
JTAN	6.500 ( 16 )	-7.751	-10.033

MEMBER 4 ( 5 - 6 ) G		MEMBER 5 ( 6 - 7 ) G	
ITAN	0.000 ( 16 )	0.000 ( 16 )	0.000 ( 16 )
1	-28.863	18.098	18.098
2	-21.980	16.318	16.318
3	-5.603	10.978	10.978
4	6.453	3.635	3.635
5	6.394	-3.707	-3.707
JTAN	6.100 ( 16 )	-1.259	-9.047
JTAN	6.500 ( 16 )	-5.234	-10.827

MEMBER 6 ( 7 - 8 ) G		MEMBER 7 ( 1 - 5 ) C	
ITAN	0.000 ( 16 )	0.000 ( 16 )	0.000 ( 16 )
1	-25.950	19.844	19.844
2	-18.369	18.064	18.064
3	-1.04	12.724	12.724
4	7.434	9.831	9.831
5	12.884	6.939	6.939
JTAN	4.100 ( 16 )	18.007	1.599
JTAN	4.500 ( 16 )	18.290	-1.181

MEMBER 6 ( 7 - 8 ) G		MEMBER 7 ( 1 - 5 ) C	
ITAN	0.000 ( 16 )	0.000 ( 16 )	0.000 ( 16 )
JTAN	9.635 ( 16 )	34.981	-6.697
JTAN	9.635 ( 16 )	-29.544	-6.697

MEMBER 8 ( 2 - 5 ) C		MEMBER 9 ( 3 - 7 ) C	
ITAN	0.000 ( 17 )	0.000 ( 17 )	0.000 ( 17 )
JTAN	9.635 ( 17 )	19.197	-3.693
JTAN	9.635 ( 17 )	-14.456	-3.693

MEMBER 9 ( 3 - 7 ) C		MEMBER 10 ( 4 - 8 ) C	
ITAN	0.000 ( 16 )	0.000 ( 16 )	0.000 ( 16 )
JTAN	9.635 ( 16 )	14.857	-3.692
JTAN	9.635 ( 16 )	-20.717	-3.692

MEMBER 10 ( 4 - 8 ) C		MEMBER 11 ( 5 - 9 ) C	
ITAN	0.000 ( 16 )	0.000 ( 16 )	0.000 ( 16 )
JTAN	9.635 ( 16 )	17.237	-1.147
JTAN	9.635 ( 16 )	-18.290	-1.147

PICK UP

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		CASE		MEMBER		CASE				
1	2	1	2	1	2	1	2			
ITAN	0.000	( 19 )	18.179	8.302	.350	0.000	( 18 )	3.483	11.548	-2.490
1	.400	( 19 )	21.340	7.466	.350	.400	( 18 )	7.942	10.712	-2.490
2	.900	( 19 )	24.748	6.106	.350	.900	( 18 )	12.973	9.352	-2.490
3	1.100	( 19 )	25.906	5.464	.350	1.100	( 18 )	14.780	8.710	-2.490
4	1.300	( 19 )	26.930	4.766	.350	1.300	( 18 )	16.453	8.012	-2.490
5	1.500	( 19 )	27.592	-4.974	.350	1.500	( 18 )	23.444	-1.728	-2.490
6	1.700	( 19 )	28.109	-7.405	.350	1.700	( 18 )	22.259	-4.160	-2.490
7	1.900	( 19 )	28.406	-9.406	.350	1.900	( 18 )	22.259	-6.160	-2.490
8	2.100	( 19 )	28.505	-11.505	.350	2.100	( 18 )	22.259	-8.160	-2.490
9	2.300	( 19 )	28.588	-13.588	.350	2.300	( 18 )	22.259	-10.160	-2.490
10	2.500	( 19 )	28.652	-15.652	.350	2.500	( 18 )	22.259	-12.160	-2.490
11	2.700	( 19 )	28.700	-17.700	.350	2.700	( 18 )	22.259	-14.160	-2.490
JTAN	6.500	( 18 )	-28.600	-25.422	-2.490	6.500	( 19 )	-35.800	-28.667	.350
MAX	2.167	( 19 )	29.545	1.095	.350	2.889	( 18 )	23.665	.477	-2.490
= MEMBER 2 ( 2 - 3 ) G =										
ITAN	0.000	( 18 )	-25.953	27.121	-2.897	0.000	( 19 )	-26.324	27.444	1.199
1	.400	( 18 )	-15.291	26.089	-2.897	.400	( 19 )	-15.532	26.411	1.199
2	.900	( 18 )	-2.746	23.929	-2.897	.900	( 19 )	-2.826	24.252	1.199
3	1.100	( 18 )	1.929	22.795	-2.897	1.100	( 19 )	1.913	23.118	1.199
4	1.300	( 19 )	6.411	21.830	1.199	1.300	( 18 )	6.362	21.507	-2.897
5	1.500	( 19 )	12.314	2.540	1.199	1.500	( 18 )	11.635	2.217	-2.897
6	1.700	( 19 )	15.713	-17.528	1.199	1.700	( 18 )	14.405	-17.851	-2.897
7	1.900	( 19 )	12.076	-18.817	1.199	1.900	( 18 )	10.703	-19.140	-2.897
8	2.100	( 19 )	8.197	-19.952	1.199	2.100	( 18 )	6.759	-20.274	-2.897
9	2.300	( 19 )	-2.360	-22.112	1.199	2.300	( 18 )	2.818	-22.435	-2.897
JTAN	6.500	( 19 )	-11.432	-23.145	1.199	6.500	( 18 )	-13.159	-23.468	-2.897
MAX	3.511	( 19 )	32.390	-2.040	1.199	3.250	( 18 )	31.635	2.217	-2.897
= MEMBER 3 ( 3 - 4 ) G =										
ITAN	0.000	( 18 )	-16.343	12.440	-1.662	0.000	( 19 )	-21.697	16.564	.965
1	.400	( 18 )	-11.581	11.324	-1.662	.400	( 19 )	-15.285	15.447	.965
2	.900	( 18 )	-6.348	9.534	-1.662	.900	( 19 )	-7.991	13.658	.965
3	1.100	( 18 )	-4.524	8.695	-1.662	1.100	( 19 )	-5.342	12.818	.965
4	1.300	( 19 )	-2.868	11.908	.965	1.300	( 18 )	-2.875	7.784	-1.662
5	1.500	( 19 )	1.018	10.358	.965	1.500	( 18 )	-4.42	6.235	-1.662
6	1.700	( 19 )	6.197	9.638	.965	1.700	( 18 )	-4.42	5.515	-1.662
7	1.900	( 19 )	11.917	7.616	.965	1.900	( 18 )	2.273	3.493	-1.662
8	2.100	( 19 )	11.917	4.532	.965	2.100	( 18 )	4.076	.408	-1.662
9	2.300	( 19 )	12.766	3.963	.965	2.300	( 18 )	4.100	-1.160	-1.662
10	2.500	( 19 )	13.504	3.423	.965	2.500	( 18 )	4.014	-1.700	-1.662
11	2.700	( 19 )	14.901	2.195	.965	2.700	( 18 )	3.349	-1.929	-1.662
JTAN	4.500	( 19 )	15.604	1.339	.965	4.500	( 18 )	2.402	-2.785	-1.662
MAX	3.400	( 18 )	4.100	-1.160	.965	3.400	( 18 )	4.100	-1.160	-1.662

PICK UP 4

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		CASE		MEMBER		CASE	
4 ( 5 - 6 ) G = =		L ( 5 - 6 ) G = =		MEMBER		M ( 5 - 6 ) G = =	
ITAN	0.000 ( 19 )	1.571	10.696	0.000	0.000 ( 18 )	-11.097	13.618
1	0.400 ( 19 )	5.493	8.916	0.000	0.400 ( 18 )	-5.006	11.838
2	1.600 ( 19 )	12.588	3.576	0.000	1.600 ( 18 )	4.996	6.498
3	3.250 ( 19 )	12.831	-3.766	0.000	3.250 ( 18 )	9.661	-0.844
4	4.900 ( 18 )	2.210	-8.187	0.000	4.900 ( 19 )	0.559	-11.109
5	6.100 ( 18 )	-10.818	-13.527	0.000	6.100 ( 19 )	-15.976	-16.449
JTAN	6.500 ( 18 )	-16.585	-15.307	0.000	6.500 ( 19 )	-22.912	-18.229
MAX	2.167 ( 19 )	14.300	1.954	0.000	2.889 ( 18 )	9.675	0.763
MEMBER 5 ( 6 - 7 ) G = =		MEMBER 5 ( 6 - 7 ) G = =		MEMBER 5 ( 6 - 7 ) G = =		MEMBER 5 ( 6 - 7 ) G = =	
ITAN	0.000 ( 18 )	-17.974	15.106	0.000	0.000 ( 19 )	-18.228	15.221
1	0.400 ( 18 )	-12.288	13.326	0.000	0.400 ( 19 )	-12.496	13.441
2	1.600 ( 18 )	-500	7.986	0.000	1.600 ( 19 )	0.430	8.101
3	3.250 ( 19 )	7.739	0.759	0.000	3.250 ( 18 )	7.619	0.643
4	4.900 ( 19 )	2.933	-6.584	0.000	4.900 ( 18 )	2.623	-6.699
5	6.100 ( 19 )	-8.171	-11.924	0.000	6.100 ( 18 )	-8.620	-12.039
JTAN	6.500 ( 19 )	-13.297	-13.704	0.000	6.500 ( 18 )	-13.791	-13.819
MAX	3.250 ( 19 )	7.739	0.759	0.000	3.250 ( 18 )	7.619	0.643
MEMBER 6 ( 7 - 8 ) G = =		MEMBER 6 ( 7 - 8 ) G = =		MEMBER 6 ( 7 - 8 ) G = =		MEMBER 6 ( 7 - 8 ) G = =	
ITAN	0.000 ( 18 )	-8.822	10.423	0.000	0.000 ( 19 )	-15.405	14.576
1	0.400 ( 18 )	-5.009	8.643	0.000	0.400 ( 19 )	-9.931	12.796
2	1.600 ( 19 )	2.221	7.456	0.000	1.600 ( 18 )	2.159	3.303
3	2.250 ( 19 )	6.127	4.564	0.000	2.250 ( 18 )	3.366	0.411
4	2.900 ( 19 )	8.153	1.671	0.000	2.900 ( 18 )	2.693	-2.482
5	4.100 ( 19 )	6.955	-3.669	0.000	4.100 ( 18 )	-3.488	-7.822
JTAN	4.500 ( 19 )	5.131	-5.449	0.000	4.500 ( 18 )	-6.973	-9.602
MAX	3.500 ( 19 )	8.355	-0.999	0.000	2.250 ( 18 )	3.366	0.411
MEMBER 7 ( 1 - 5 ) C = =		MEMBER 7 ( 1 - 5 ) C = =		MEMBER 7 ( 1 - 5 ) C = =		MEMBER 7 ( 1 - 5 ) C = =	
ITAN	0.000 ( 18 )	12.897	-2.490	-38.908	0.000 ( 19 )	-1.799	0.350
JTAN	9.535 ( 19 )	1.571	0.350	-51.078	9.635 ( 18 )	-11.097	-2.490
MEMBER 8 ( 2 - 6 ) C = =		MEMBER 8 ( 2 - 6 ) C = =		MEMBER 8 ( 2 - 6 ) C = =		MEMBER 8 ( 2 - 6 ) C = =	
ITAN	0.000 ( 18 )	2.533	-0.407	-123.523	0.000 ( 19 )	-3.496	0.849
JTAN	9.535 ( 19 )	4.683	0.849	-142.507	9.635 ( 18 )	-1.389	-0.407





PICK UP 4

SHEAR MAXIMUM

SHEAR MINIMUM

= MEMBER 1 ( 1 - 2 ) G =		-CASE- - - - -		-CASE- - - - -		= MEMBER 1 ( 1 - 2 ) G =			
L	M	N	H	J	N	H	N		
ITAN	0.000 ( 18 )	3.483	11.548	-2.490	ITAN	0.000 ( 19 )	18.179	8.302	.350
1	.400 ( 18 )	7.942	10.712	-2.490	1	.400 ( 19 )	21.340	7.466	.350
2	.900 ( 18 )	12.973	9.352	-2.490	2	.900 ( 19 )	24.748	6.105	.350
3	1.100 ( 18 )	14.780	8.710	-2.490	3	1.100 ( 19 )	25.906	5.464	.350
4	1.300 ( 18 )	16.453	8.012	-2.490	4	1.300 ( 19 )	26.930	4.766	.350
5	1.325 ( 18 )	17.444	-1.728	-2.490	5	1.325 ( 19 )	27.592	-4.974	.350
6	3.650 ( 18 )	22.259	-4.160	-2.490	6	3.650 ( 19 )	25.109	-7.406	.350
7	3.650 ( 18 )	22.259	-6.160	-2.490	7	3.650 ( 19 )	25.109	-9.406	.350
8	5.200 ( 18 )	1.505	-15.807	-2.490	8	5.200 ( 19 )	-6.675	-23.053	.350
9	5.400 ( 18 )	-2.588	-21.096	-2.490	9	5.400 ( 19 )	-5.417	-24.341	.350
10	5.600 ( 18 )	-6.923	-22.230	-2.490	10	5.600 ( 19 )	-10.401	-25.475	.350
11	6.100 ( 18 )	-18.618	-24.389	-2.490	11	6.100 ( 19 )	-23.719	-27.635	.350
JTAN	6.500 ( 18 )	-28.600	-25.422	-2.490	JTAN	6.500 ( 19 )	-35.000	-28.667	.350

= MEMBER 2 ( 2 - 3 ) G =		-CASE- - - - -		-CASE- - - - -		= MEMBER 2 ( 2 - 3 ) G =			
L	M	N	H	J	N	H	N		
ITAN	0.000 ( 19 )	-26.324	27.444	1.199	ITAN	0.000 ( 18 )	-25.953	27.121	-2.897
1	.400 ( 19 )	-15.532	26.411	1.199	1	.400 ( 18 )	-19.291	26.089	-2.897
2	.900 ( 19 )	-2.825	24.252	1.199	2	.900 ( 18 )	-2.746	23.929	-2.897
3	1.100 ( 19 )	1.913	23.118	1.199	3	1.100 ( 18 )	1.929	22.795	-2.897
4	1.300 ( 19 )	6.411	21.830	1.199	4	1.300 ( 18 )	6.362	21.507	-2.897
5	3.250 ( 19 )	32.314	2.540	1.199	5	3.250 ( 18 )	31.635	2.217	-2.897
6	5.200 ( 19 )	15.713	-17.528	1.199	6	5.200 ( 18 )	14.405	-17.851	-2.897
7	5.400 ( 19 )	12.076	-18.817	1.199	7	5.400 ( 18 )	10.703	-19.140	-2.897
8	5.600 ( 19 )	8.197	-19.952	1.199	8	5.600 ( 18 )	6.759	-20.274	-2.897
9	6.100 ( 19 )	-2.360	-22.112	1.199	9	6.100 ( 18 )	-3.958	-22.435	-2.897
JTAN	6.500 ( 19 )	-11.432	-23.145	1.199	JTAN	6.500 ( 18 )	-13.159	-23.468	-2.897

= MEMBER 3 ( 3 - 4 ) G =		-CASE- - - - -		-CASE- - - - -		= MEMBER 3 ( 3 - 4 ) G =			
L	M	N	H	J	N	H	N		
ITAN	0.000 ( 19 )	-21.697	16.564	.965	ITAN	0.000 ( 18 )	-16.343	12.440	-1.662
1	.400 ( 19 )	-15.285	15.447	.965	1	.400 ( 18 )	-11.581	11.324	-1.662
2	.900 ( 19 )	-7.991	13.658	.965	2	.900 ( 18 )	-6.348	9.534	-1.662
3	1.100 ( 19 )	-5.342	12.818	.965	3	1.100 ( 18 )	-4.524	8.695	-1.662
4	1.300 ( 19 )	-2.862	11.908	.965	4	1.300 ( 18 )	-2.875	7.784	-1.662
5	1.550 ( 19 )	1.008	10.358	.965	5	1.550 ( 18 )	-4.42	6.235	-1.662
6	1.650 ( 19 )	1.008	9.638	.965	6	1.650 ( 18 )	-4.42	5.515	-1.662
7	2.250 ( 19 )	6.197	7.616	.965	7	2.250 ( 18 )	2.273	3.493	-1.662
8	3.200 ( 19 )	11.917	4.532	.965	8	3.200 ( 18 )	4.075	.408	-1.662
9	3.400 ( 19 )	12.766	3.963	.965	9	3.400 ( 18 )	4.100	-1.150	-1.662
10	3.600 ( 19 )	13.504	3.423	.965	10	3.600 ( 18 )	4.014	-7.700	-1.662
11	4.100 ( 19 )	14.901	2.195	.965	11	4.100 ( 18 )	3.349	-1.929	-1.662
JTAN	4.500 ( 19 )	15.604	1.339	.965	JTAN	4.500 ( 18 )	2.402	-2.785	-1.662

PICK UP 4

SHEAR MAXIMUM

SHEAR MINIMUM

MEMBER		CASE		MEMBER		CASE		MEMBER		CASE	
4	( 5 - 6 )	5	( 6 - 7 )	4	( 5 - 6 )	5	( 6 - 7 )	4	( 5 - 6 )	5	( 6 - 7 )
ITAN	0.000 ( 18 )	-11.097	13.618	0.000	0.000 ( 19 )	1.571	10.696	0.000	0.000 ( 19 )	1.571	10.696
1	400 ( 18 )	-6.006	11.838	0.000	400 ( 19 )	5.493	8.916	0.000	400 ( 19 )	5.493	8.916
2	1.600 ( 18 )	4.996	6.498	0.000	1.600 ( 19 )	12.988	3.976	0.000	1.600 ( 19 )	12.988	3.976
3	3.250 ( 18 )	9.861	7.864	0.000	3.250 ( 19 )	12.831	-3.766	0.000	3.250 ( 19 )	12.831	-3.766
4	4.900 ( 18 )	2.210	-8.187	0.000	4.900 ( 19 )	.559	-11.109	0.000	4.900 ( 19 )	.559	-11.109
5	6.100 ( 18 )	-10.818	-13.927	0.000	6.100 ( 19 )	-15.976	-16.449	0.000	6.100 ( 19 )	-15.976	-16.449
JTAN	6.500 ( 18 )	-16.585	-15.307	0.000	6.500 ( 19 )	-22.912	-18.229	0.000	6.500 ( 19 )	-22.912	-18.229
ITAN	0.000 ( 19 )	-18.228	15.221	0.000	0.000 ( 18 )	-17.974	15.106	0.000	0.000 ( 18 )	-17.974	15.106
1	400 ( 19 )	-12.496	13.441	0.000	400 ( 18 )	-12.288	13.326	0.000	400 ( 18 )	-12.288	13.326
2	1.600 ( 19 )	.430	8.101	0.000	1.600 ( 18 )	.500	7.986	0.000	1.600 ( 18 )	.500	7.986
3	3.250 ( 19 )	7.739	7.759	0.000	3.250 ( 18 )	7.619	.643	0.000	3.250 ( 18 )	7.619	.643
4	4.900 ( 19 )	2.933	-6.584	0.000	4.900 ( 18 )	2.823	-6.699	0.000	4.900 ( 18 )	2.823	-6.699
5	6.100 ( 19 )	-8.171	-11.924	0.000	6.100 ( 18 )	-8.620	-12.039	0.000	6.100 ( 18 )	-8.620	-12.039
JTAN	6.500 ( 19 )	-13.297	-13.704	0.000	6.500 ( 18 )	-13.791	-13.819	0.000	6.500 ( 18 )	-13.791	-13.819
ITAN	0.000 ( 19 )	-15.405	14.576	0.000	0.000 ( 18 )	-8.422	10.423	0.000	0.000 ( 18 )	-8.422	10.423
1	400 ( 19 )	-9.931	12.796	0.000	400 ( 18 )	-5.009	8.643	0.000	400 ( 18 )	-5.009	8.643
2	1.600 ( 19 )	2.221	7.456	0.000	1.600 ( 18 )	2.159	3.303	0.000	1.600 ( 18 )	2.159	3.303
3	2.250 ( 19 )	6.127	4.564	0.000	2.250 ( 18 )	3.366	.411	0.000	2.250 ( 18 )	3.366	.411
4	2.900 ( 19 )	8.153	1.671	0.000	2.900 ( 18 )	2.693	-2.482	0.000	2.900 ( 18 )	2.693	-2.482
5	4.100 ( 19 )	6.355	-3.669	0.000	4.100 ( 18 )	-3.488	-7.822	0.000	4.100 ( 18 )	-3.488	-7.822
JTAN	4.500 ( 19 )	5.131	-5.449	0.000	4.500 ( 18 )	-6.973	-9.602	0.000	4.500 ( 18 )	-6.973	-9.602
ITAN	0.000 ( 19 )	-1.799	.350	-35.662	0.000 ( 18 )	12.897	-2.490	-38.908	0.000 ( 18 )	12.897	-2.490
JTAN	9.635 ( 19 )	1.571	.350	-51.078	9.635 ( 18 )	-11.097	-2.490	-54.324	9.635 ( 18 )	-11.097	-2.490
ITAN	0.000 ( 19 )	-3.496	.849	-127.091	0.000 ( 18 )	2.533	-.407	-123.923	0.000 ( 18 )	2.533	-.407
JTAN	9.635 ( 19 )	4.883	.849	-142.507	9.635 ( 18 )	-1.389	-.407	-138.939	9.635 ( 18 )	-1.389	-.407
ITAN	0.000 ( 18 )	-6.936	1.236	-93.348	0.000 ( 19 )	.145	-.234	-97.149	0.000 ( 19 )	.145	-.234
JTAN	9.635 ( 18 )	4.969	1.236	-108.764	9.635 ( 19 )	-2.108	-.234	-112.565	9.635 ( 19 )	-2.108	-.234
ITAN	0.000 ( 18 )	-9.038	1.682	-15.495	0.000 ( 19 )	4.164	-.965	-11.371	0.000 ( 19 )	4.164	-.965
JTAN	9.635 ( 18 )	6.973	1.682	-30.911	9.635 ( 19 )	-5.131	-.965	-26.787	9.635 ( 19 )	-5.131	-.965

TITLE--VIAUCT OF DOUBLE TRACK (J+J=8=27) C-2

PICK UP 4

AXIAL MAXIMUM

AXIAL MINIMUM

MEMBER	1 ( 1 - 2 ) G =	L	M	N	1 ( 1 - 2 ) G =	L	M	N
ITAN	0.000 ( 19 )	18.179	8.302	.350	0.000 ( 18 )	3.483	11.548	-2.490
1	.400 ( 19 )	21.340	7.466	.350	.400 ( 18 )	7.942	10.712	-2.490
2	.900 ( 19 )	24.748	6.106	.350	.900 ( 18 )	12.973	9.352	-2.490
3	1.100 ( 19 )	25.906	5.464	.350	1.100 ( 18 )	14.790	8.710	-2.490
4	1.300 ( 19 )	26.930	4.766	.350	1.300 ( 18 )	16.453	8.012	-2.490
5	3.250 ( 19 )	27.592	-4.974	.350	3.250 ( 18 )	23.444	-1.728	-2.490
6	3.650 ( 19 )	25.109	-7.406	.350	3.650 ( 18 )	22.259	-4.160	-2.490
7	5.200 ( 19 )	25.109	-6.675	.350	5.200 ( 18 )	22.259	-6.160	-2.490
8	5.600 ( 19 )	-9.417	-23.053	.350	5.600 ( 18 )	1.505	-19.807	-2.490
9	5.600 ( 19 )	-9.417	-24.341	.350	5.600 ( 18 )	-2.588	-21.096	-2.490
10	6.100 ( 19 )	-10.401	-25.475	.350	6.100 ( 18 )	-6.923	-22.230	-2.490
11	6.100 ( 19 )	-23.719	-27.635	.350	6.100 ( 18 )	-18.618	-24.389	-2.490
JTAN	6.500 ( 19 )	-35.000	-28.667	.350	6.500 ( 18 )	-28.600	-25.422	-2.490

MEMBER	2 ( 2 - 3 ) G =	L	M	N	2 ( 2 - 3 ) G =	L	M	N
ITAN	0.000 ( 19 )	26.324	27.444	1.199	0.000 ( 18 )	-25.953	27.121	-2.897
1	.400 ( 19 )	-15.532	26.411	1.199	.400 ( 18 )	-15.291	26.089	-2.897
2	.900 ( 19 )	-2.826	24.252	1.199	.900 ( 18 )	-2.746	23.929	-2.897
3	1.100 ( 19 )	1.913	23.118	1.199	1.100 ( 18 )	1.929	22.795	-2.897
4	1.300 ( 19 )	6.411	21.830	1.199	1.300 ( 18 )	5.362	21.507	-2.897
5	3.250 ( 19 )	32.314	2.540	1.199	3.250 ( 18 )	31.635	2.217	-2.897
6	5.200 ( 19 )	-15.713	-17.528	1.199	5.200 ( 18 )	14.405	-17.851	-2.897
7	5.400 ( 19 )	12.076	-18.817	1.199	5.400 ( 18 )	10.703	-19.140	-2.897
8	8.197	-19.952	-19.952	1.199	8.197	6.759	-20.274	-2.897
9	6.100 ( 19 )	-2.350	-22.112	1.199	6.100 ( 18 )	-3.958	-22.435	-2.897
JTAN	6.500 ( 19 )	-11.432	-23.145	1.199	6.500 ( 18 )	-13.159	-23.468	-2.897

MEMBER	3 ( 3 - 4 ) G =	L	M	N	3 ( 3 - 4 ) G =	L	M	N
ITAN	0.000 ( 19 )	-21.697	16.564	.965	0.000 ( 18 )	-16.343	12.440	-1.662
1	.400 ( 19 )	-15.295	15.447	.965	.400 ( 18 )	-11.581	11.324	-1.662
2	.900 ( 19 )	-7.991	13.658	.965	.900 ( 18 )	-6.348	9.534	-1.662
3	1.100 ( 19 )	-5.342	12.318	.965	1.100 ( 18 )	-4.524	8.695	-1.662
4	1.300 ( 19 )	-2.868	11.908	.965	1.300 ( 18 )	-2.875	7.784	-1.662
5	3.250 ( 19 )	1.008	10.358	.965	3.250 ( 18 )	-4.42	6.235	-1.662
6	1.650 ( 19 )	1.008	9.638	.965	1.650 ( 18 )	-4.42	5.515	-1.662
7	2.250 ( 19 )	4.197	7.516	.965	2.250 ( 18 )	2.273	3.493	-1.662
8	3.200 ( 19 )	11.917	4.532	.965	3.200 ( 18 )	4.076	4.08	-1.662
9	3.400 ( 19 )	12.765	3.863	.965	3.400 ( 18 )	4.100	-0.160	-1.662
10	3.500 ( 19 )	13.504	3.423	.965	3.500 ( 18 )	4.014	-0.700	-1.662
11	4.100 ( 19 )	14.901	2.195	.965	4.100 ( 18 )	3.349	-1.929	-1.662
JTAN	4.500 ( 19 )	15.604	1.339	.965	4.500 ( 18 )	2.402	-2.785	-1.662

PICK UP

AXIAL: MAXIMUM

AXIAL: MINIMUM

		-CASE-		-L-		-M-		-N-	
		( 5 - 6 )		( 5 - 6 )		( 5 - 6 )		( 5 - 6 )	
= MEMBER		4		4		4		4	
ITAN	0.000	( 18 )	-11.097	0.000	( 18 )	-11.097	0.000	( 18 )	13.618
1	.400	( 18 )	-6.006	0.000	( 18 )	-6.006	0.000	( 18 )	11.838
2	1.600	( 18 )	4.996	0.000	( 18 )	4.996	0.000	( 18 )	6.498
3	3.250	( 18 )	9.661	0.000	( 18 )	9.661	0.000	( 18 )	-.844
4	4.900	( 18 )	2.210	0.000	( 18 )	2.210	0.000	( 18 )	-8.187
5	6.100	( 18 )	-10.818	0.000	( 18 )	-10.818	0.000	( 18 )	-13.527
JTAN	6.500	( 18 )	-16.585	0.000	( 18 )	-16.585	0.000	( 18 )	-15.307
= MEMBER		5 ( 6 - 7 )		5 ( 6 - 7 )		5 ( 6 - 7 )		5 ( 6 - 7 )	
ITAN	0.000	( 18 )	-17.974	0.000	( 18 )	-17.974	0.000	( 18 )	15.106
1	.400	( 18 )	-12.288	0.000	( 18 )	-12.288	0.000	( 18 )	13.326
2	1.600	( 18 )	.500	0.000	( 18 )	.500	0.000	( 18 )	7.986
3	3.250	( 18 )	7.619	0.000	( 18 )	7.619	0.000	( 18 )	.643
4	4.900	( 18 )	2.623	0.000	( 18 )	2.623	0.000	( 18 )	-6.699
5	6.100	( 18 )	-8.620	0.000	( 18 )	-8.620	0.000	( 18 )	-12.039
JTAN	6.500	( 18 )	-13.791	0.000	( 18 )	-13.791	0.000	( 18 )	-13.819
= MEMBER		6 ( 7 - 8 )		6 ( 7 - 8 )		6 ( 7 - 8 )		6 ( 7 - 8 )	
ITAN	0.000	( 18 )	-8.822	0.000	( 18 )	-8.822	0.000	( 18 )	10.423
1	.400	( 18 )	-5.009	0.000	( 18 )	-5.009	0.000	( 18 )	8.643
2	1.600	( 18 )	2.159	0.000	( 18 )	2.159	0.000	( 18 )	3.303
3	2.250	( 18 )	3.366	0.000	( 18 )	3.366	0.000	( 18 )	.411
4	2.900	( 18 )	2.693	0.000	( 18 )	2.693	0.000	( 18 )	-2.482
5	4.100	( 18 )	-3.488	0.000	( 18 )	-3.488	0.000	( 18 )	-7.822
JTAN	4.500	( 18 )	-6.973	0.000	( 18 )	-6.973	0.000	( 18 )	-9.602
= MEMBER		7 ( 1 - 5 )		7 ( 1 - 5 )		7 ( 1 - 5 )		7 ( 1 - 5 )	
ITAN	0.000	( 19 )	-1.799	.350	( 18 )	-35.662	0.000	( 18 )	-2.490
JTAN	9.635	( 19 )	1.571	.350	( 18 )	-51.078	0.000	( 18 )	-2.490
= MEMBER		8 ( 2 - 6 )		8 ( 2 - 6 )		8 ( 2 - 6 )		8 ( 2 - 6 )	
ITAN	0.000	( 18 )	2.533	-.407	( 18 )	-123.523	0.000	( 19 )	.849
JTAN	9.635	( 18 )	-1.389	-.407	( 18 )	-138.939	0.000	( 19 )	.849
= MEMBER		9 ( 3 - 7 )		9 ( 3 - 7 )		9 ( 3 - 7 )		9 ( 3 - 7 )	
ITAN	0.000	( 18 )	-6.936	1.236	( 18 )	-93.348	0.000	( 19 )	-.234
JTAN	9.635	( 18 )	4.969	1.236	( 18 )	-108.764	0.000	( 19 )	-.234
= MEMBER		10 ( 4 - 8 )		10 ( 4 - 8 )		10 ( 4 - 8 )		10 ( 4 - 8 )	
ITAN	0.000	( 19 )	4.164	-.965	( 18 )	-14.371	0.000	( 18 )	1.662
JTAN	9.635	( 19 )	-5.131	-.965	( 18 )	-26.787	0.000	( 18 )	1.662

PICK UP 5

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		1	2	3	4	5	6	CASE		MEMBER		1	2	3	4	5	6	CASE		MEMBER			
MEMBER																							
ITAN	0.000	(21)	42.821	1.813	-2.585	0.000	(20)	-27.458	19.428	-0.773	ITAN	0.000	(20)	-27.458	19.428	-0.773							
1	.400	(21)	43.386	.977	-2.585	.400	(20)	-19.846	18.592	-0.773	1	.400	(20)	-19.846	18.592	-0.773							
2	.900	(21)	43.549	-.383	-2.585	.900	(20)	-10.875	17.232	-0.773	2	.900	(20)	-10.875	17.232	-0.773							
3	1.100	(21)	43.409	-1.025	-2.585	1.100	(20)	-7.492	16.590	-0.773	3	1.100	(20)	-7.492	16.590	-0.773							
4	1.300	(21)	43.135	-1.723	-2.585	1.300	(20)	-4.243	15.892	-0.773	4	1.300	(20)	-4.243	15.892	-0.773							
5	3.250	(21)	31.143	-11.464	-2.585	3.250	(20)	18.115	6.152	-0.773	5	3.250	(20)	18.115	6.152	-0.773							
6	3.650	(21)	26.064	-13.896	-2.585	3.650	(20)	20.082	3.720	-0.773	6	3.650	(20)	20.082	3.720	-0.773							
7	3.650	(21)	26.064	-15.896	-2.585	3.650	(20)	20.082	1.720	-0.773	7	3.650	(20)	20.082	1.720	-0.773							
8	5.200	(20)	11.544	-11.927	-0.773	5.200	(21)	-9.779	-29.542	-2.585	8	5.200	(21)	-9.779	-29.542	-2.585							
9	5.600	(20)	9.027	-13.215	-0.773	5.600	(21)	-15.819	-30.831	-2.585	9	5.600	(21)	-15.819	-30.831	-2.585							
10	5.600	(20)	6.268	-14.349	-0.773	5.600	(21)	-22.101	-31.965	-2.585	10	5.600	(21)	-22.101	-31.965	-2.585							
11	6.100	(20)	-1.487	-16.508	-0.773	6.100	(21)	-38.664	-34.124	-2.585	11	6.100	(21)	-38.664	-34.124	-2.585							
JTAN	6.500	(20)	-8.317	-17.541	-0.773	JTAN	6.500	(21)	-35.157	-2.585	JTAN	6.500	(21)	-35.157	-2.585								
MAX	.722	(21)	43.570	.140	-2.585	MAX	3.650	(20)	20.082	1.720	MAX	3.650	(20)	20.082	1.720	-0.773							
MEMBER																							
ITAN	0.000	(21)	-6.706	21.088	-2.026	0.000	(20)	-45.412	33.339	-1.429	ITAN	0.000	(20)	-45.412	33.339	-1.429							
1	.400	(21)	1.543	20.055	-2.026	.400	(20)	-32.262	32.306	-1.429	1	.400	(20)	-32.262	32.306	-1.429							
2	1.071	(21)	17.896	16.762	-2.026	1.071	(20)	-16.609	30.147	-1.429	2	1.071	(20)	-16.609	30.147	-1.429							
3	1.100	(21)	14.539	15.474	-2.026	1.100	(20)	-10.690	29.013	-1.429	3	1.100	(20)	-10.690	29.013	-1.429							
4	1.300	(21)	17.765	15.474	-2.026	1.300	(20)	-5.014	27.725	-1.429	4	1.300	(20)	-5.014	27.725	-1.429							
5	3.250	(20)	32.384	8.434	-1.429	3.250	(21)	31.274	-3.817	-2.026	5	3.250	(21)	31.274	-3.817	-2.026							
6	5.200	(20)	27.278	-11.633	-1.429	5.200	(21)	2.279	-23.884	-2.026	6	5.200	(21)	2.279	-23.884	-2.026							
7	5.400	(20)	24.820	-12.322	-1.429	5.400	(21)	-2.629	-25.173	-2.026	7	5.400	(21)	-2.629	-25.173	-2.026							
8	5.600	(20)	22.120	-14.057	-1.429	5.600	(21)	-7.780	-26.308	-2.026	8	5.600	(21)	-7.780	-26.308	-2.026							
9	6.100	(20)	14.511	-16.217	-1.429	6.100	(21)	-21.514	-28.468	-2.026	9	6.100	(21)	-21.514	-28.468	-2.026							
JTAN	6.500	(20)	7.797	-17.250	-1.429	JTAN	6.500	(21)	-33.128	-29.501	-2.026	JTAN	6.500	(21)	-33.128	-29.501	-2.026						
MAX	3.611	(20)	34.589	3.855	-1.429	MAX	3.250	(21)	31.274	-3.817	MAX	3.250	(21)	31.274	-3.817	-2.026							
MEMBER																							
ITAN	0.000	(21)	3.489	.755	-.451	0.000	(20)	-39.234	26.482	-1.371	ITAN	0.000	(20)	-39.234	26.482	-1.371							
1	.400	(21)	3.577	-.362	-.451	.400	(20)	-28.855	25.365	-1.371	1	.400	(20)	-28.855	25.365	-1.371							
2	.900	(21)	2.967	-.451	-.451	.900	(20)	-16.602	23.576	-1.371	2	.900	(20)	-16.602	23.576	-1.371							
3	1.100	(21)	2.454	-2.991	-.451	1.100	(20)	-11.969	22.736	-1.371	3	1.100	(20)	-11.969	22.736	-1.371							
4	1.300	(21)	1.766	-3.901	-.451	1.300	(20)	-7.512	21.826	-1.371	4	1.300	(20)	-7.512	21.826	-1.371							
5	1.550	(21)	-.109	-5.451	-.451	1.550	(20)	-.164	20.276	-1.371	5	1.550	(20)	-.164	20.276	-1.371							
6	1.550	(21)	-.109	-6.171	-.451	1.550	(20)	-4.187	19.556	-1.371	6	1.550	(20)	-4.187	19.556	-1.371							
7	2.250	(20)	10.975	17.534	-1.371	2.250	(21)	-13.486	-8.193	-.451	7	2.250	(21)	-13.486	-8.193	-.451							
8	3.200	(20)	26.118	14.450	-1.371	3.200	(21)	-15.798	-11.845	-.451	8	3.200	(21)	-15.798	-11.845	-.451							
9	3.400	(20)	29.950	13.881	-1.371	3.400	(21)	-18.222	-12.386	-.451	9	3.400	(21)	-18.222	-12.386	-.451							
10	3.600	(20)	31.672	13.341	-1.371	3.600	(21)	-24.729	-13.614	-.451	10	3.600	(21)	-24.729	-13.614	-.451							
11	4.100	(20)	38.029	12.113	-1.371	4.100	(21)	-30.350	-14.470	-.451	11	4.100	(21)	-30.350	-14.470	-.451							
JTAN	4.500	(20)	42.698	11.257	-1.371	JTAN	4.500	(21)	-30.350	-14.470	-.451	JTAN	4.500	(21)	-30.350	-14.470	-.451						
MAX	1.650	(21)	.109	-6.171	-.451	MAX	1.650	(20)	-.164	19.556	MAX	1.650	(20)	-.164	19.556	-1.371							

PICK UP 5

MOMENT MAXIMUM

MOMENT MINIMUM

MEMBER		CASE ( 5 - 6 ) G		MEMBER		CASE ( 5 - 5 ) G	
ITAN	0.000 ( 21 )	23.611	4.322	0.000 ( 20 )	-38.566	21.245	0.000
1	.400 ( 21 )	24.984	2.542	.400 ( 20 )	-30.425	19.465	0.000
2	1.600 ( 21 )	24.830	-2.798	1.600 ( 20 )	-10.271	14.125	0.000
3	3.250 ( 21 )	14.156	-10.141	3.250 ( 20 )	6.977	6.782	0.000
4	4.900 ( 20 )	12.110	-5.560	4.900 ( 21 )	-8.633	-17.483	0.000
5	6.100 ( 20 )	8.233	-5.900	6.100 ( 21 )	-32.817	-22.823	0.000
JTAN	6.500 ( 20 )	5.517	-7.680	JTAN	6.500 ( 21 )	-24.603	0.000
HAX	.722 ( 21 )	25.572	1.108	HAX	3.611 ( 20 )	9.136	5.175
= MEMBER 5 ( 6 - 7 ) G =							
ITAN	0.000 ( 21 )	-2.605	10.586	0.000 ( 20 )	-33.488	19.692	0.000
1	.400 ( 21 )	1.273	8.806	.400 ( 20 )	-25.968	17.912	0.000
2	1.600 ( 21 )	8.636	3.466	1.600 ( 20 )	-7.677	12.572	0.000
3	3.250 ( 21 )	6.298	-3.877	3.250 ( 20 )	7.009	5.229	0.000
4	4.900 ( 20 )	9.580	-2.113	4.900 ( 21 )	-4.156	-11.219	0.000
5	6.100 ( 20 )	3.840	-7.453	6.100 ( 21 )	-20.823	-16.559	0.000
JTAN	6.500 ( 20 )	.503	-9.233	JTAN	6.500 ( 21 )	-18.339	0.000
HAX	4.333 ( 20 )	10.063	.409	HAX	3.250 ( 20 )	7.009	5.229
= MEMBER 6 ( 7 - 8 ) G =							
ITAN	0.000 ( 21 )	15.590	-1.789	0.000 ( 20 )	-36.996	25.009	0.000
1	.400 ( 21 )	14.518	-3.569	.400 ( 20 )	-27.348	23.229	0.000
2	1.600 ( 21 )	7.031	-8.909	1.600 ( 20 )	-2.677	17.889	0.000
3	2.250 ( 20 )	8.011	14.997	2.250 ( 21 )	.300	-11.802	0.000
4	2.900 ( 20 )	16.819	12.104	2.900 ( 21 )	-8.311	-14.654	0.000
5	4.100 ( 20 )	28.139	6.754	4.100 ( 21 )	-29.149	-20.034	0.000
JTAN	4.500 ( 20 )	30.489	4.984	JTAN	4.500 ( 21 )	-37.518	0.000
HAX	2.000 ( 20 )	4.122	16.109	HAX	2.000 ( 21 )	3.111	-10.689
= MEMBER 7 ( 1 - 5 ) C =							
ITAN	0.000 ( 20 )	43.838	-8.553	0.000 ( 21 )	-25.441	5.195	-29.173
JTAN	9.635 ( 21 )	23.611	5.195	JTAN	9.635 ( 20 )	-38.566	-8.553
= MEMBER 8 ( 2 - 6 ) C =							
ITAN	0.000 ( 20 )	42.275	-8.436	0.000 ( 21 )	-40.654	8.339	-127.225
JTAN	9.635 ( 21 )	39.637	8.339	JTAN	9.635 ( 20 )	-39.005	-8.436