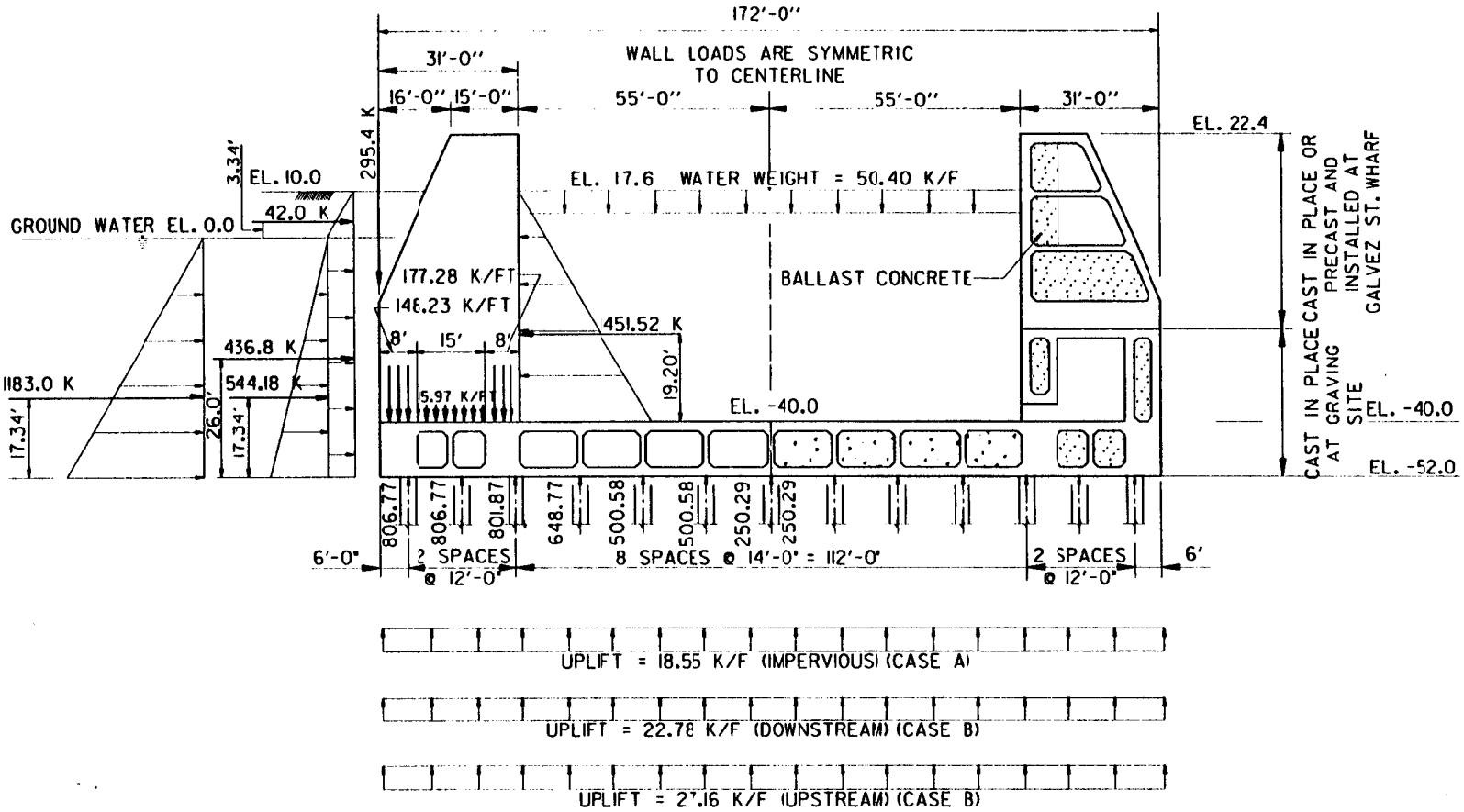
BASE ANALYSIS

CHAMBER BASE ANALYSIS

TRANSVERSE I-BEAM

LOAD CASE 2A



MAXIMUM OPERATIONS (A) - CHAMBER SECTION

IHNC Lock Replacement

Designed by: P.J.S.
Checked by:

Pile Determination - Maximum Operations, Load Case 2A * Governing Case *****
Chamber: EL. 17.60
Tailwater: EL. -2.00

Concrete Weight:											
Float-in segment:	1386.00 sf (CADD)	x	14.00 ' strip	x	0.15 =		2910.60	x 2 (other half) =		5821	kips
Grout:	4.00 ft	x	14.00 ' strip	x	172.00 ft	x	0.1600	-	=	1445	kips
Walls:	786.12 sf (CADD)	x	14.00 ' strip	x	0.15 =		1650.85	x 2 (other half) =		3302	kips
Water:											
Chamber @ EL. 17.6:	57.60 ft	x	14.00 ' strip	x	110.00 ft	x	0.0625	=	=	5544	kips
Water in culvert:	273.75 sf	x	14.00 ' strip	x	0.0625 =		239.53	x 2 (other half) =		479	kips
Soil:											
Soil with water:	124.83 sf (CADD)	x	14.00 ' strip	x	0.12 =		209.71	x 2 (other half) =		419	kips
Drag:	295.43 kips (from C. Balint)							x 2 (other half) =		591	kips
Uplift:											
Tailwater @ EL.-2.0:	54.00 ft	x	14.00 ' strip	x	172.00 ft	x	-0.0625	=	=	-8127	kips
								Total weight:		9474	kips

Distribute 9474 kips over 172.0 ft: 9474 / 172 = 55.08 kips/ft for a 14' strip

Distribute 125% of load at both ends of monolith and rest of load in middle:

44.00 ft on each end, load is: 55.08 kips/ft x 1.25 = 68.85 kips/ft

so, for 88' of monolith, load is: 88.00 ft x 68.85 = 6058.99 kips

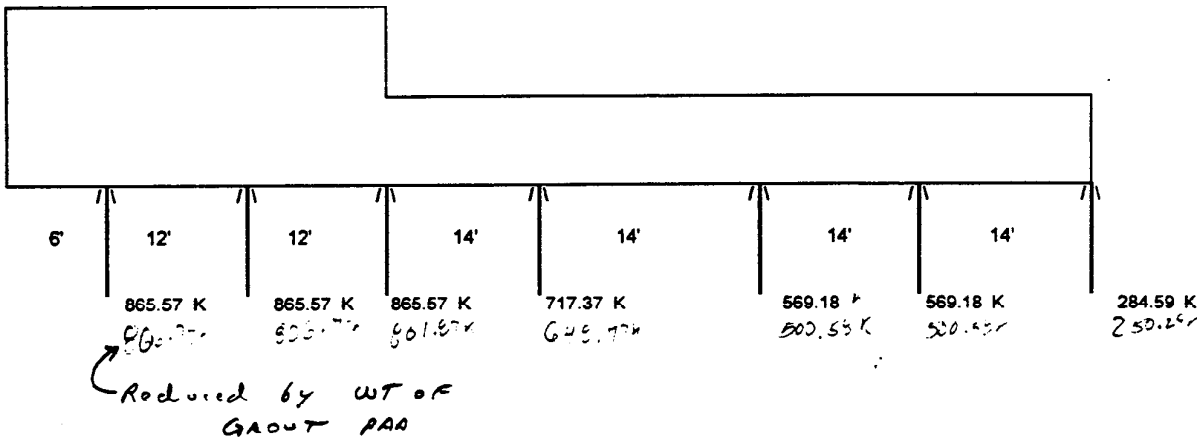
therefore, remaining 84' of monolith will have load of:[(55.08 x 172.00) 6058.99] / 84 = 40.66 kips/ft

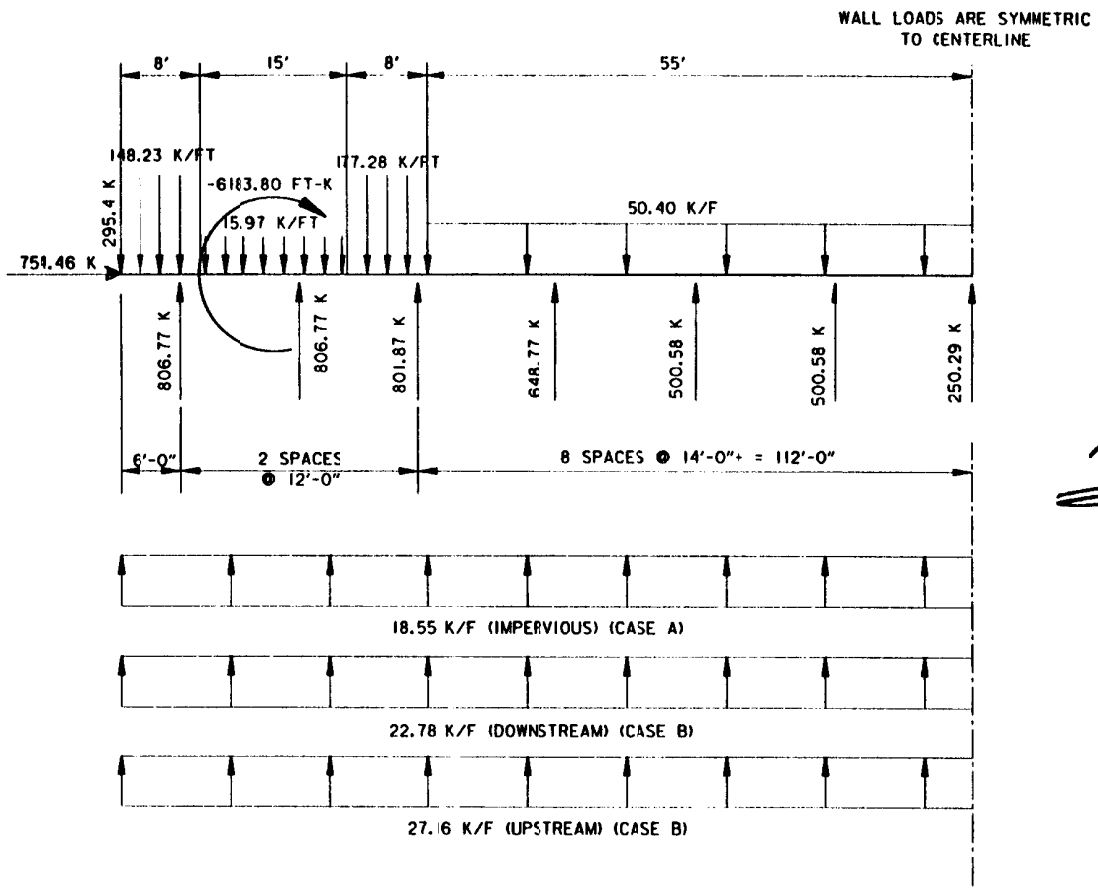
For 44.00 ft on each end: 88.00 ft x 68.85 / 7.0 piles = 865.57 kips/pile

Using a factor of safety = 2.0, this equates to **865.57 tons/pile**

For 84.00 ft in the middle: 84.00 ft x 40.66 / 6.0 piles = 569.18 kips/pile

Using a factor of safety = 2.0, this equates to **569.18 tons/pile**





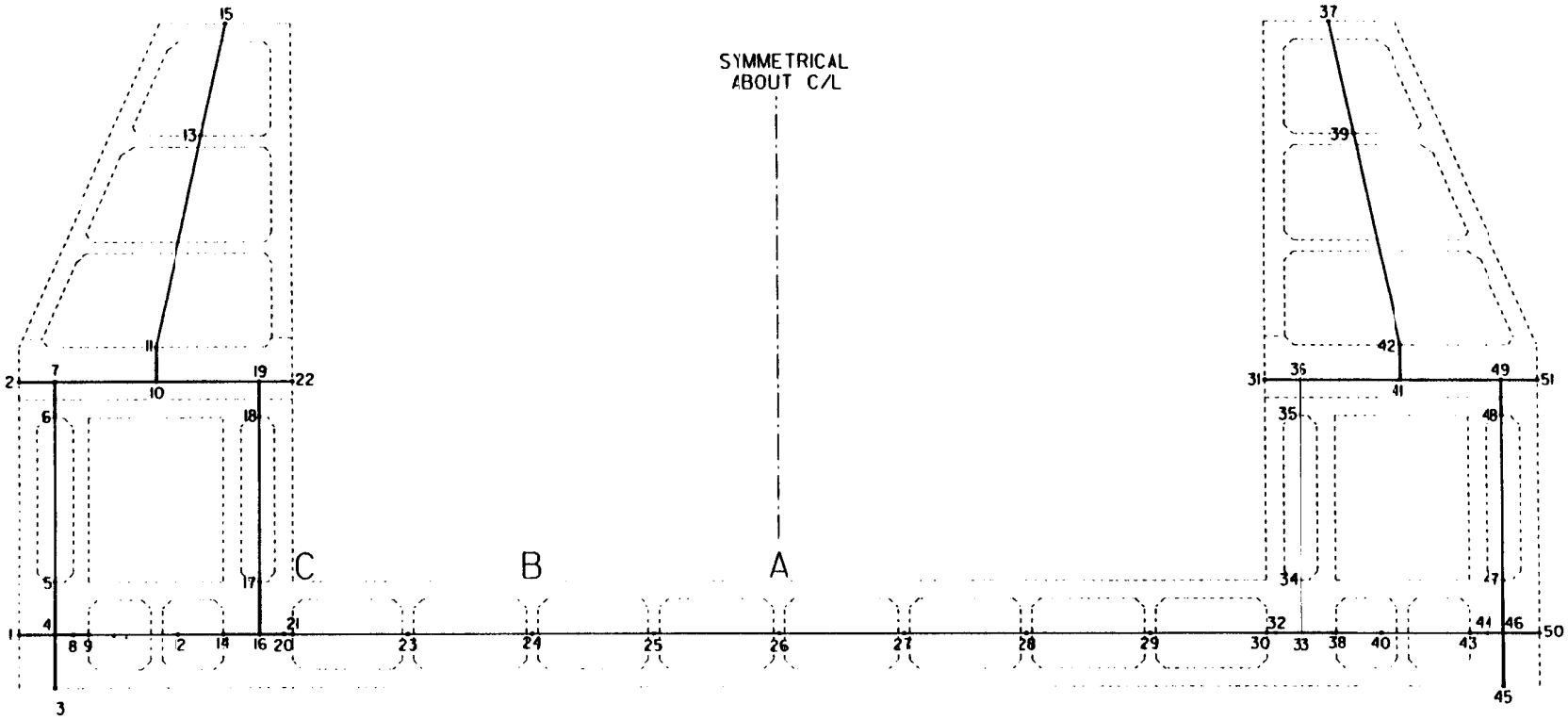
ANALYSIS 1

MAXIMUM OPERATIONS (A) - CHAMBER SECTION

```
1000    IHNC LOCK - MAX. OPERATING LOAD IIA, ANALYSIS 1
1100    KSI FT FT IN KIP
1200    51 52 1 3600 0.15
1300    1 -86.0 6.0 2 -86.0 34.25 3 -82.0 0.0 4 -82.0 6.0
1301    5 -82.0 12.0 6 -82.0 30.25 7 -82.0 34.25 8 -80.0 6.0
1302    9 -78.0 6.0 10 -70.5 34.25 11 -70.5 38.25 12 -68.0 6.0
1303    13 -65.3 62.0 14 -63.0 6.0 15 -62.5 74.4 16 -59.0 6.0
1304    17 -59.0 12.0 18 -59.0 30.25 19 -59.0 34.25
1305    20 -56.0 6.0 21 -55.0 6.0 22 -55.0 34.25 23 -42.0 6.0
1306    24 -28.0 6.0 25 -14.0 6.0 26 0.0 6.0 27 14.0 6.0
1307    28 28.0 6.0 29 42.0 6.0 30 55.0 6.0 31 55.0 34.25
1308    32 56.0 6.0 33 59.0 6.0 34 59.0 12.0 35 59.0 30.25
1309    36 59.0 34.25 37 62.5 74.4 38 63.0 6.0 39 65.3 62.0
1310    40 68.0 6.0 41 70.5 34.25 42 70.5 38.25 43 78.0 6.0
1311    44 80.0 6.0 45 82.0 0.0 46 82.0 6.0 47 82.0 12.0
1312    48 82.0 30.25 49 82.0 34.25 50 86.0 6.0 51 86.0 34.25
1400    FIX X 26 FIX Y 26 FIX R 26
1600    1 3 4 2 45 46 3 1 4 4 4 8 5 8 9 6 9 12 7 12 14
1601    8 14 16 9 16 20 10 20 21 11 21 23 12 23 24 13 24 25
1602    14 25 26 15 26 27 16 27 28 17 28 29 18 29 30
1603    19 30 32 20 32 33 21 33 38 22 38 40 23 40 43
1604    24 43 44 25 44 46 26 46 50 27 4 5 28 16 17
1605    29 33 34 30 46 47 31 5 6 32 17 18 33 34 35
1606    34 47 48 35 6 7 36 18 19 37 35 36 38 48 49
1607    39 2 7 40 7 10 41 10 19 42 19 22 43 31 36
1608    44 36 41 45 41 49 46 49 51 47 10 11 48 41 42
1609    49 11 13 50 42 39 51 13 15 52 39 37
1700    597.3 96.0 96.0 1 TO 5 8 9 10 19 20 21 24 TO 30
1701    1472.0 49.5 49.5 6 7 11 TO 18 22 23
1702    529.3 73.0 73.0 31 TO 34
1703    597.3 248.0 248.0 35 TO 48
1704    9788.7 44.63 44.63 49 50
1705    4170.5 45.63 45.63 51 52
1800    E 36000.0 0.15 1 TO 5 8 9 10 20 21 24 TO 30 35 TO 48
1900    LOAD CASE 1 0 51 0 4 0 MAX. OPERATING LOAD IIA, ANALYSIS 1
1901    0.0 31.85 14.0 31.85 0. 11 12 13 14 15 16 17 18
1902    0.0 -2.581 10.0 -2.581 0. 6 7 22 23
1903    0.0 19.775 4.0 19.775 0. 3 4 5 8 9 10 19 20 21 24 25 26
1904    0.0 90.605 4.0 90.605 0. 42 43
1905    8.5 90.605 11.5 90.605 0. 41
1906    0.0 90.605 3.0 90.605 0. 44
1907    0.0 48.05 11.5 48.05 0. 39 40 45 46
1908    0.0 48.05 8.5 48.05 0. 41
1909    3.0 48.05 11.5 48.05 0. 44
1910    0.0 15.086 4.0 15.086 0. 39 46
1911    0.0 15.086 6.5 15.086 0. 40
1912    5.0 15.086 11.5 15.086 0. 45
1913    0.0 9.865 4.0 9.865 0. 39 46
1914    0.0 9.865 1.2 9.865 0. 40
1915    10.3 9.865 11.5 9.865 0. 45
1916    0.0 -6.65 7.6 0.0 0. 51
1917    0.0 -27.43 24.31 -6.65 0. 49
1918    0.0 -30.93 4.0 -27.43 0. 47
1919    0.0 -34.43 4.0 -30.93 0. 36
1920    0.0 -50.4 18.25 -34.43 0. 32
1921    0.0 6.65 7.6 0.0 0. 52
1922    0.0 27.43 24.31 6.65 0. 50
1923    0.0 30.93 4.0 27.43 0. 48
1924    0.0 34.43 4.0 30.93 0. 37
1925    0.0 50.4 18.25 34.43 0. 33
```

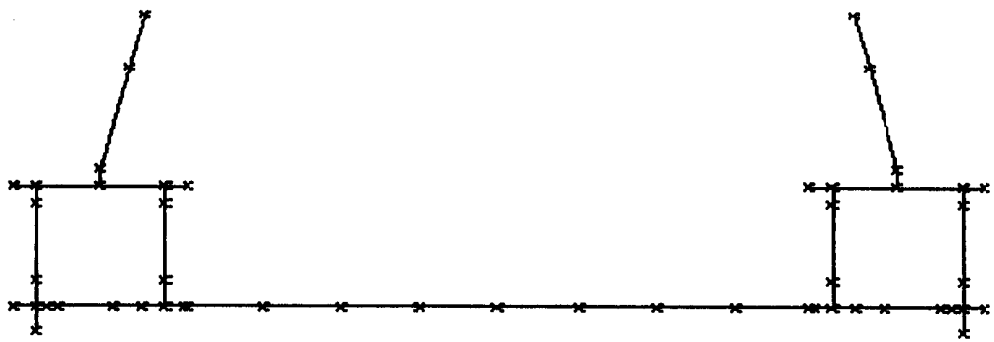
```
1926    0.0 10.28 12.03 0.0 0. 49
1927    0.0 13.78 4.0 10.28 0. 47
1928    0.0 17.28 4.0 13.78 0. 35
1929    0.0 33.25 18.25 17.28 0. 31
1930    0.0 38.5 6.0 33.25 0. 27
1931    0.0 43.75 6.0 38.5 0. 1
1932    0.0 -10.28 12.03 0.0 0. 50
1933    0.0 -13.78 4.0 -10.28 0. 48
1934    0.0 -17.28 4.0 -13.78 0. 38
1935    0.0 -33.25 18.25 -17.28 0. 34
1936    0.0 -38.5 6.0 -33.25 0. 27
1937    0.0 -43.75 6.0 -38.5 0. 2
1938    15.10 10.08 24.31 0.0 0. 49
1939    0.0 14.809 15.10 10.08 0. 49
1940    0.0 16.149 4.0 14.809 0. 47
1941    0.0 18.029 4.0 16.149 0. 35
1942    0.0 25.375 18.25 18.029 0. 31
1943    0.0 27.79 6.0 25.375 0. 27
1944    0.0 30.205 6.0 27.79 0. 1
1945    15.10 -10.08 24.31 0.0 0. 50
1946    0.0 -14.809 15.10 -10.08 0. 50
1947    0.0 -16.149 4.0 -14.809 0. 48
1948    0.0 -18.029 4.0 -16.149 0. 38
1949    0.0 -25.375 18.25 -18.029 0. 34
1950    0.0 -27.79 6.0 -25.375 0. 30
1951    0.0 -30.205 6.0 -27.79 0. 2
1952    0.0 806.77 0. 8 12 20 32 40 44
1953    0.0 648.77 0. 23 29
1954    0.0 500.58 0. 24 25 27 28
1955    0.0 -295.43 0. 1 50
```

CFRAME COMPUTER MODEL



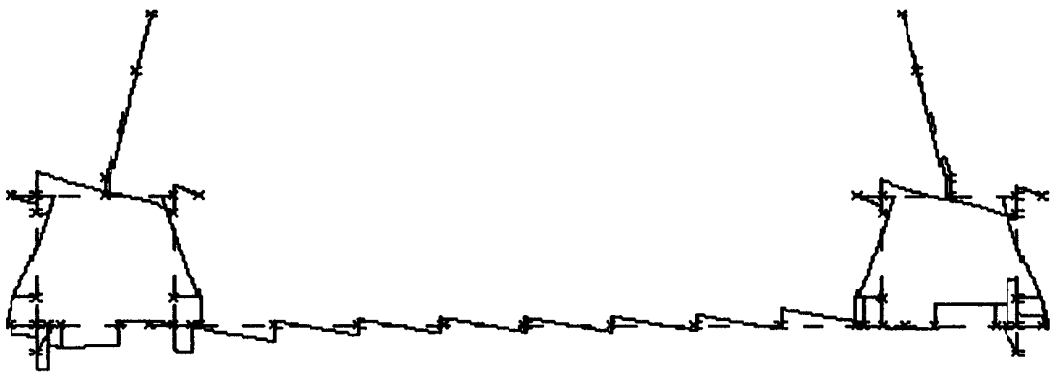
NOTE:
JOINT NUMBERS SHOWN

IHNC LOCK - MAX. OPERATING LOAD IIA, ANALYSIS 1



10-JUL-1996 12.45.09

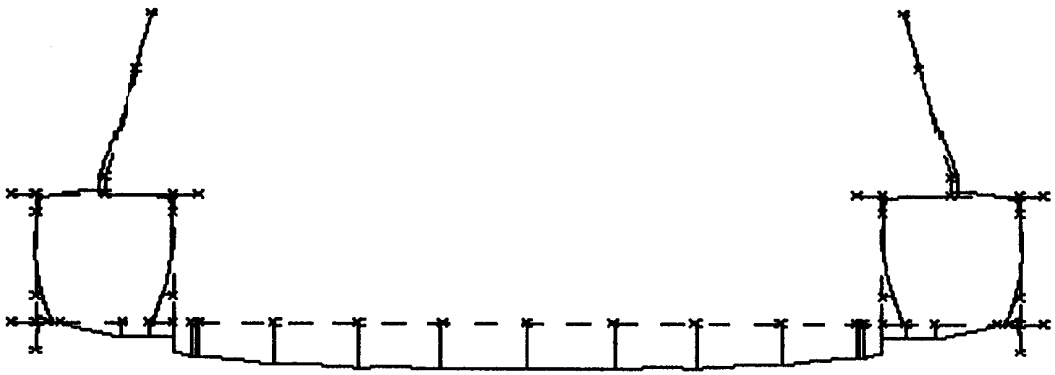
IHNC LOCK - MAX. OPERATING LOAD IIA, ANALYSIS 1



= 1490. KIP SHEAR 10-JUL-1996 12.50.14

LOAD CASE 1 MAX. OPERATING LOAD IIA ANALYSIS 1

IHNC LOCK - MAX. OPERATING LOAD IIA, ANALYSIS 1



= .2443E+5 FT-KIP MOMENT 10-JUL-1996 12.50.14

LOAD CASE 1 MAX. OPERATING LOAD IIA ANALYSIS 1

```
1*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*
 PROGRAM CFRAME
 *-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*

 RUN DATE = 10-JUL-1996
 RUN TIME = 12.50.14
```

IHNC LOCK - MAX. OPERATING LOAD IIA, ANALYSIS 1

*** JOINT DATA ***

JOINT	X	Y	FIXITY X	FIXITY Y	FIXITY R	KX	KY	KR
	--- FT ---					---KIP / IN---		IN-KIP/RAD
1	-86.00	6.00						
2	-86.00	34.25						
3	-82.00	.00						
4	-82.00	6.00						
5	-82.00	12.00						
6	-82.00	30.25						
7	-82.00	34.25						
8	-80.00	6.00						
9	-78.00	6.00						
10	-70.50	34.25						
11	-70.50	38.25						
12	-68.00	6.00						
13	-65.30	62.00						
14	-63.00	6.00						
15	-62.50	74.40						
16	-59.00	6.00						
17	-59.00	12.00						
18	-59.00	30.25						
19	-59.00	34.25						
20	-56.00	6.00						
21	-55.00	6.00						
22	-55.00	34.25						
23	-42.00	6.00						
24	-28.00	6.00						
25	-14.00	6.00						
26	.00	6.00	*	*	*			
27	14.00	6.00						
28	28.00	6.00						
29	42.00	6.00						
30	55.00	6.00						
31	55.00	34.25						
32	56.00	6.00						
33	59.00	6.00						
34	59.00	12.00						
35	59.00	30.25						
36	59.00	34.25						
7	62.50	74.40						
38	63.00	6.00						
39	65.30	62.00						
40	68.00	6.00						
41	70.50	34.25						

42	70.50	38.25
43	78.00	6.00
44	80.00	6.00
45	82.00	.00
46	82.00	6.00
47	82.00	12.00
48	82.00	30.25
49	82.00	34.25
50	86.00	6.00
51	86.00	34.25

*** MEMBER DATA ***

MEMBER	END A	END B	LENGTH FT	I FT**4	A FT**2	AS FT**2	E KSI	G KSI
1	3	4	6.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
2	45	46	6.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
3	1	4	4.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
4	4	8	2.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
5	8	9	2.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
6	9	12	10.00	.1472E+04	.4950E+02	.4950E+02	.3600E+04	.1565E+04
7	12	14	5.00	.1472E+04	.4950E+02	.4950E+02	.3600E+04	.1565E+04
8	14	16	4.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
9	16	20	3.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
10	20	21	1.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
11	21	23	13.00	.1472E+04	.4950E+02	.4950E+02	.3600E+04	.1565E+04
12	23	24	14.00	.1472E+04	.4950E+02	.4950E+02	.3600E+04	.1565E+04
13	24	25	14.00	.1472E+04	.4950E+02	.4950E+02	.3600E+04	.1565E+04
14	25	26	14.00	.1472E+04	.4950E+02	.4950E+02	.3600E+04	.1565E+04
15	26	27	14.00	.1472E+04	.4950E+02	.4950E+02	.3600E+04	.1565E+04
16	27	28	14.00	.1472E+04	.4950E+02	.4950E+02	.3600E+04	.1565E+04
17	28	29	14.00	.1472E+04	.4950E+02	.4950E+02	.3600E+04	.1565E+04
18	29	30	13.00	.1472E+04	.4950E+02	.4950E+02	.3600E+04	.1565E+04
19	30	32	1.00	.5973E+03	.9600E+02	.9600E+02	.3600E+04	.1565E+04
20	32	33	3.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
21	33	38	4.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
22	38	40	5.00	.1472E+04	.4950E+02	.4950E+02	.3600E+04	.1565E+04
23	40	43	10.00	.1472E+04	.4950E+02	.4950E+02	.3600E+04	.1565E+04
24	43	44	2.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
25	44	46	2.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
26	46	50	4.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
27	4	5	6.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
28	16	17	6.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
29	33	34	6.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
30	46	47	6.00	.5973E+03	.9600E+02	.9600E+02	.3600E+05	.1565E+05
31	5	6	18.25	.5293E+03	.7300E+02	.7300E+02	.3600E+04	.1565E+04
32	17	18	18.25	.5293E+03	.7300E+02	.7300E+02	.3600E+04	.1565E+04
33	34	35	18.25	.5293E+03	.7300E+02	.7300E+02	.3600E+04	.1565E+04
34	47	48	18.25	.5293E+03	.7300E+02	.7300E+02	.3600E+04	.1565E+04
35	6	7	4.00	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
36	18	19	4.00	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
37	35	36	4.00	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
38	48	49	4.00	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
39	2	7	4.00	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
40	7	10	11.50	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
41	10	19	11.50	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05

42	19	22	4.00	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
43	31	36	4.00	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
44	36	41	11.50	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
45	41	49	11.50	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
46	49	51	4.00	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
47	10	11	4.00	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
48	41	42	4.00	.5973E+03	.2480E+03	.2480E+03	.3600E+05	.1565E+05
49	11	13	24.31	.9789E+04	.4463E+02	.4463E+02	.3600E+04	.1565E+04
50	42	39	24.31	.9789E+04	.4463E+02	.4463E+02	.3600E+04	.1565E+04
51	13	15	12.71	.4171E+04	.4563E+02	.4563E+02	.3600E+04	.1565E+04
52	39	37	12.71	.4171E+04	.4563E+02	.4563E+02	.3600E+04	.1565E+04

*** LOAD CASE 1 MAX. OPERATING LOAD IIA ANALYSIS 1

MEMBER	LA FT	PA KIP / FT	LB FT	PB KIP / FT	ANGLE DEG
1	.00	.4375E+02	6.00	.3850E+02	.00
1	.00	.3020E+02	6.00	.2779E+02	.00
2	.00	-.4375E+02	6.00	-.3850E+02	.00
2	.00	-.3020E+02	6.00	-.2779E+02	.00
3	.00	.1977E+02	4.00	.1977E+02	.00
4	.00	.1977E+02	2.00	.1977E+02	.00
5	.00	.1977E+02	2.00	.1977E+02	.00
6	.00	-.2581E+01	10.00	-.2581E+01	.00
7	.00	-.2581E+01	5.00	-.2581E+01	.00
8	.00	.1977E+02	4.00	.1977E+02	.00
9	.00	.1977E+02	3.00	.1977E+02	.00
10	.00	.1977E+02	1.00	.1977E+02	.00
11	.00	.3185E+02	13.00	.3185E+02	.00
12	.00	.3185E+02	14.00	.3185E+02	.00
13	.00	.3185E+02	14.00	.3185E+02	.00
14	.00	.3185E+02	14.00	.3185E+02	.00
15	.00	.3185E+02	14.00	.3185E+02	.00
16	.00	.3185E+02	14.00	.3185E+02	.00
17	.00	.3185E+02	14.00	.3185E+02	.00
18	.00	.3185E+02	13.00	.3185E+02	.00
19	.00	.1977E+02	1.00	.1977E+02	.00
20	.00	.1977E+02	3.00	.1977E+02	.00
21	.00	.1977E+02	4.00	.1977E+02	.00
22	.00	-.2581E+01	5.00	-.2581E+01	.00
23	.00	-.2581E+01	10.00	-.2581E+01	.00
24	.00	.1977E+02	2.00	.1977E+02	.00
25	.00	.1977E+02	2.00	.1977E+02	.00
26	.00	.1977E+02	4.00	.1977E+02	.00
27	.00	.3850E+02	6.00	.3325E+02	.00
27	.00	-.3850E+02	6.00	-.3325E+02	.00
27	.00	.2779E+02	6.00	.2538E+02	.00
30	.00	-.2779E+02	6.00	-.2538E+02	.00
31	.00	.3325E+02	18.25	.1728E+02	.00
31	.00	.2538E+02	18.25	.1803E+02	.00
2	.00	-.5040E+02	18.25	-.3443E+02	.00
33	.00	.5040E+02	18.25	.3443E+02	.00
34	.00	.3325E+02	18.25	-.1728E+02	.00
34	.00	-.2538E+02	18.25	-.1803E+02	.00
35	.00	.1728E+02	4.00	.1378E+02	.00

35	.00	.1803E+02	4.00	.1615E+02	.00
36	.00	-.3443E+02	4.00	-.3093E+02	.00
37	.00	.3443E+02	4.00	.3093E+02	.00
38	.00	-.1728E+02	4.00	-.1378E+02	.00
38	.00	-.1803E+02	4.00	-.1615E+02	.00
39	.00	.4805E+02	4.00	.4805E+02	.00
39	.00	.1509E+02	4.00	.1509E+02	.00
39	.00	.9865E+01	4.00	.9865E+01	.00
40	.00	.4805E+02	11.50	.4805E+02	.00
40	.00	.1509E+02	6.50	.1509E+02	.00
40	.00	.9865E+01	1.20	.9865E+01	.00
41	8.50	.9061E+02	11.50	.9061E+02	.00
41	.00	.4805E+02	8.50	.4805E+02	.00
42	.00	.9061E+02	4.00	.9061E+02	.00
43	.00	.9061E+02	4.00	.9061E+02	.00
44	.00	.9061E+02	3.00	.9061E+02	.00
44	3.00	.4805E+02	11.50	.4805E+02	.00
45	.00	.4805E+02	11.50	.4805E+02	.00
45	5.00	.1509E+02	11.50	.1509E+02	.00
45	10.30	.9865E+01	11.50	.9865E+01	.00
46	.00	.4805E+02	4.00	.4805E+02	.00
46	.00	.1509E+02	4.00	.1509E+02	.00
46	.00	.9865E+01	4.00	.9865E+01	.00
47	.00	-.3093E+02	4.00	-.2743E+02	.00
47	.00	.1378E+02	4.00	.1028E+02	.00
47	.00	.1615E+02	4.00	.1481E+02	.00
48	.00	.3093E+02	4.00	.2743E+02	.00
48	.00	-.1378E+02	4.00	-.1028E+02	.00
48	.00	-.1615E+02	4.00	-.1481E+02	.00
49	.00	-.2743E+02	24.31	-.6650E+01	.00
49	.00	.1028E+02	12.03	.0000E+00	.00
49	15.10	.1008E+02	24.31	.0000E+00	.00
49	.00	.1481E+02	15.10	.1008E+02	.00
50	.00	.2743E+02	24.31	.6650E+01	.00
50	.00	-.1028E+02	12.03	.0000E+00	.00
50	15.10	-.1008E+02	24.31	.0000E+00	.00
50	.00	-.1481E+02	15.10	-.1008E+02	.00
51	.00	-.6650E+01	7.60	.0000E+00	.00
52	.00	.6650E+01	7.60	.0000E+00	.00

JOINT	FORCE X KIP	FORCE Y KIP	MOMENT FT-KIP
1	.0000E+00	-.2954E+03	.0000E+00
8	.0000E+00	.8068E+03	.0000E+00
12	.0000E+00	.8068E+03	.0000E+00
20	.0000E+00	.8068E+03	.0000E+00
23	.0000E+00	.6488E+03	.0000E+00
24	.0000E+00	.5006E+03	.0000E+00
25	.0000E+00	.5006E+03	.0000E+00
27	.0000E+00	.5006E+03	.0000E+00
28	.0000E+00	.5006E+03	.0000E+00
29	.0000E+00	.6488E+03	.0000E+00
32	.0000E+00	.8068E+03	.0000E+00
40	.0000E+00	.8068E+03	.0000E+00
44	.0000E+00	.8068E+03	.0000E+00
50	.0000E+00	-.2954E+03	.0000E+00

1 LOAD CASE 1 MAX. OPERATING LOAD IIA ANALYSIS 1

STRUCTURE REACTIONS

JOINT	FORCE X KIP	FORCE Y KIP	MOMENT FT-KIP
26	.0000E+00	.4419E+03	-.8127E-04
TOTAL	.0000E+00	.4419E+03	

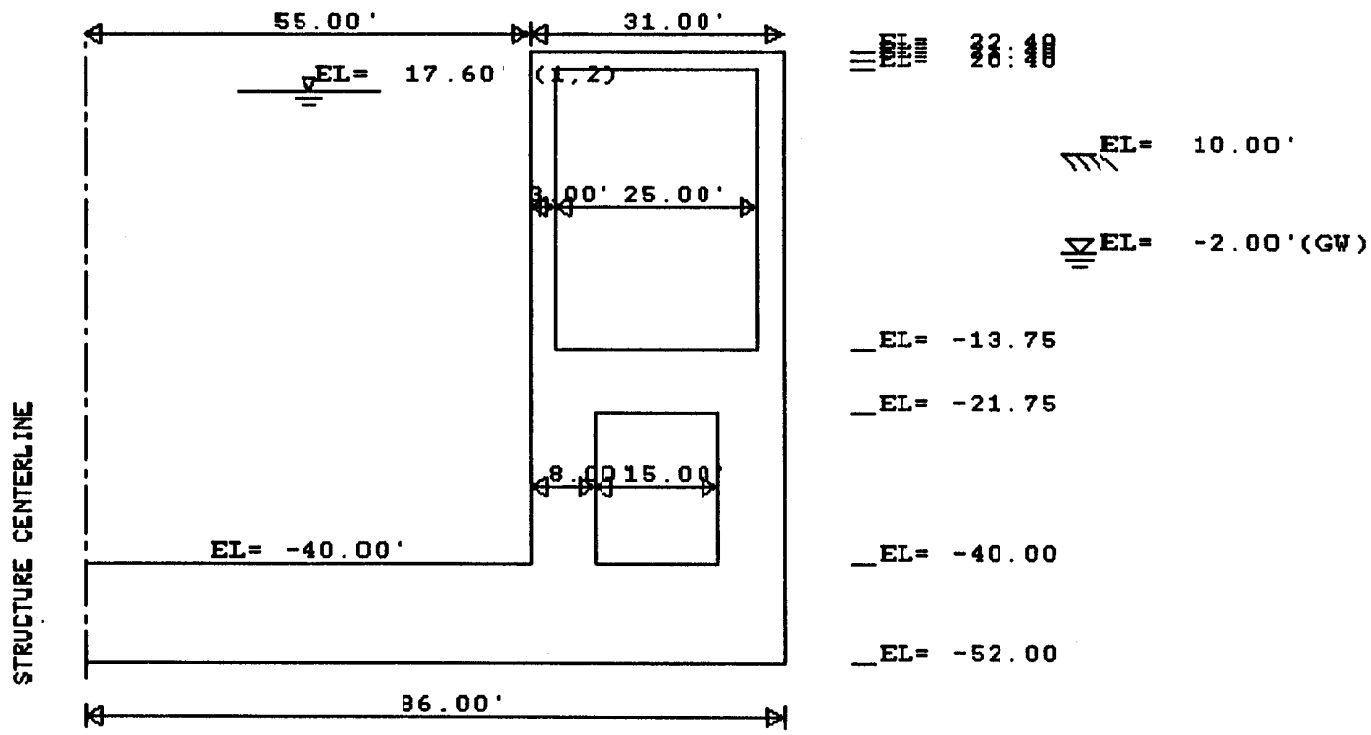
1 MEMBER END FORCES

MEMBER	LOAD CASE	JOINT	AXIAL KIP	SHEAR KIP	MOMENT FT-KIP	MOMENT EXTREMA FT-KIP	LOCATION FT
1	1	3	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.00
		4	.0000E+00	.4207E+03	-.1285E+04	-.1285E+04	6.00
2	1	45	.0000E+00	.0000E+00	.0000E+00	.1285E+04	6.00
		46	.0000E+00	-.4207E+03	.1285E+04	.0000E+00	.00
3	1	1	.0000E+00	-.2954E+03	.0000E+00	.0000E+00	.00
		4	.0000E+00	.3745E+03	-.1340E+04	-.1340E+04	4.00
4	1	4	-.1138E+04	-.1450E+04	.3445E+04	.3445E+04	.00
		8	-.1138E+04	.1490E+04	.5049E+03	.5049E+03	2.00
5	1	8	-.1138E+04	-.6829E+03	.5049E+03	.5049E+03	.00
		9	-.1138E+04	.7225E+03	-.9005E+03	-.9005E+03	2.00
6	1	9	-.1138E+04	-.7225E+03	-.9005E+03	-.9005E+03	.00
		12	-.1138E+04	.6967E+03	-.7996E+04	-.7996E+04	10.00
7	1	12	-.1138E+04	.1101E+03	-.7996E+04	-.7413E+04	5.00
		14	-.1138E+04	-.1230E+03	-.7413E+04	-.7996E+04	.00
8	1	14	-.1138E+04	.1230E+03	-.7413E+04	-.7080E+04	4.00
		16	-.1138E+04	-.4391E+02	-.7080E+04	-.7413E+04	.00
9	1	16	-.5164E+03	-.8468E+03	-.1521E+05	-.1521E+05	.00
		20	-.5164E+03	.9061E+03	-.1784E+05	-.1784E+05	3.00
10	1	20	-.5164E+03	-.9935E+02	-.1784E+05	-.1784E+05	.00
		21	-.5164E+03	.1191E+03	-.1795E+05	-.1795E+05	1.00
11	1	21	-.5164E+03	-.1191E+03	-.1795E+05	-.1795E+05	.00
		23	-.5164E+03	.5332E+03	-.2219E+05	-.2219E+05	13.00
12	1	23	-.5164E+03	.1156E+03	-.2219E+05	-.2198E+05	3.64
		24	-.5164E+03	.3303E+03	-.2369E+05	-.2369E+05	14.00
13	1	24	-.5164E+03	.1703E+03	-.2369E+05	-.2323E+05	5.32

		25	-.5164E+03	.2756E+03	-.2443E+05	-.2443E+05	14.00
14	1	25	-.5164E+03	.2250E+03	-.2443E+05	-.2363E+05	7.00
		26	-.5164E+03	.2209E+03	-.2440E+05	-.2443E+05	.00
15	1	26	-.5164E+03	.2209E+03	-.2440E+05	-.2363E+05	7.00
		27	-.5164E+03	.2250E+03	-.2443E+05	-.2443E+05	14.00
16	1	27	-.5164E+03	.2756E+03	-.2443E+05	-.2323E+05	8.68
		28	-.5164E+03	.1703E+03	-.2369E+05	-.2443E+05	.00
17	1	28	-.5164E+03	.3303E+03	-.2369E+05	-.2198E+05	10.36
		29	-.5164E+03	.1156E+03	-.2219E+05	-.2369E+05	.00
18	1	29	-.5164E+03	.5332E+03	-.2219E+05	-.1795E+05	13.00
		30	-.5164E+03	-.1191E+03	-.1795E+05	-.2219E+05	.00
19	1	30	-.5164E+03	.1191E+03	-.1795E+05	-.1784E+05	1.00
		32	-.5164E+03	-.9935E+02	-.1784E+05	-.1795E+05	.00
20	1	32	-.5164E+03	.9061E+03	-.1784E+05	-.1521E+05	3.00
		33	-.5164E+03	-.8468E+03	-.1521E+05	-.1784E+05	.00
21	1	33	-.1138E+04	-.4391E+02	-.7080E+04	-.7080E+04	.00
		38	-.1138E+04	.1230E+03	-.7413E+04	-.7413E+04	4.00
22	1	38	-.1138E+04	-.1230E+03	-.7413E+04	-.7413E+04	.00
		40	-.1138E+04	.1101E+03	-.7996E+04	-.7996E+04	5.00
23	1	40	-.1138E+04	.6967E+03	-.7996E+04	-.9005E+03	10.00
		43	-.1138E+04	-.7225E+03	-.9005E+03	-.7996E+04	.00
24	1	43	-.1138E+04	.7225E+03	-.9005E+03	.5049E+03	2.00
		44	-.1138E+04	-.6829E+03	.5049E+03	-.9005E+03	.00
25	1	44	-.1138E+04	.1490E+04	.5049E+03	.3445E+04	2.00
		46	-.1138E+04	-.1450E+04	.3445E+04	.5049E+03	.00
26	1	46	.0000E+00	.3745E+03	-.1340E+04	.0000E+00	4.00
		50	.0000E+00	-.2954E+03	.0000E+00	-.1340E+04	.00
27	1	4	-.1076E+04	.7170E+03	-.6070E+04	-.2254E+04	6.00
		5	-.1076E+04	-.5575E+03	-.2254E+04	-.6070E+04	.00
28	1	16	-.8907E+03	-.6213E+03	.8128E+04	.8128E+04	.00
		17	-.8907E+03	.6213E+03	.4400E+04	.4400E+04	6.00
29	1	33	-.8907E+03	.6213E+03	-.8128E+04	-.4400E+04	6.00
		34	-.8907E+03	-.6213E+03	-.4400E+04	-.8128E+04	.00
30	1	46	-.1076E+04	-.7170E+03	.6070E+04	.6070E+04	.00
		47	-.1076E+04	.5575E+03	.2254E+04	.2254E+04	6.00
31	1	5	-.1076E+04	.5575E+03	-.2254E+04	.6155E+03	10.95
		6	-.1076E+04	.2997E+03	-.5485E+03	-.2254E+04	.00
32	1	17	-.8907E+03	-.6213E+03	.4400E+04	.4400E+04	.00
		18	-.8907E+03	-.1527E+03	.5674E+03	.2408E+03	13.87
33	1	34	-.8907E+03	.6213E+03	-.4400E+04	-.2408E+03	13.87

		35	-.8907E+03	.1527E+03	-.5674E+03	-.4400E+04	.00
34	1	47	-.1076E+04	-.5575E+03	.2254E+04	.2254E+04	.00
		48	-.1076E+04	-.2997E+03	.5485E+03	-.6155E+03	10.95
35	1	6	-.1076E+04	-.2997E+03	-.5485E+03	-.5485E+03	.00
		7	-.1076E+04	.4301E+03	-.2015E+04	-.2015E+04	4.00
36	1	18	-.8907E+03	.1527E+03	.5674E+03	.1444E+04	4.00
		19	-.8907E+03	-.2835E+03	.1444E+04	.5674E+03	.00
37	1	35	-.8907E+03	-.1527E+03	-.5674E+03	-.5674E+03	.00
		36	-.8907E+03	.2835E+03	-.1444E+04	-.1444E+04	4.00
38	1	48	-.1076E+04	.2997E+03	.5485E+03	.2015E+04	4.00
		49	-.1076E+04	-.4301E+03	.2015E+04	.5485E+03	.00
39	1	2	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.00
		7	.0000E+00	.2920E+03	-.5840E+03	-.5840E+03	4.00
40	1	7	-.4301E+03	.7836E+03	-.2599E+04	.2297E+04	11.50
		10	-.4301E+03	-.1211E+03	.2297E+04	-.2599E+04	.00
41	1	10	-.2835E+03	.1520E+03	-.5481E+03	-.3079E+03	3.22
		19	-.2835E+03	.5283E+03	-.2169E+04	-.2169E+04	11.50
42	1	19	.0000E+00	.3624E+03	-.7248E+03	.0000E+00	4.00
		22	.0000E+00	.0000E+00	.0000E+00	-.7248E+03	.00
43	1	31	.0000E+00	.0000E+00	.0000E+00	.0000E+00	.00
		36	.0000E+00	.3624E+03	-.7248E+03	-.7248E+03	4.00
44	1	36	-.2835E+03	.5283E+03	-.2169E+04	-.3079E+03	8.28
		41	-.2835E+03	.1520E+03	-.5481E+03	-.2169E+04	.00
45	1	41	-.4301E+03	-.1211E+03	.2297E+04	.2297E+04	.00
		49	-.4301E+03	.7836E+03	-.2599E+04	-.2599E+04	11.50
46	1	49	.0000E+00	.2920E+03	-.5840E+03	.0000E+00	4.00
		51	.0000E+00	.0000E+00	.0000E+00	-.5840E+03	.00
47	1	10	.3082E+02	-.1467E+03	.2845E+04	.2845E+04	.00
		11	.3082E+02	.1400E+03	.2270E+04	.2270E+04	4.00
48	1	41	.3082E+02	.1467E+03	-.2845E+04	-.2270E+04	4.00
		42	.3082E+02	-.1400E+03	-.2270E+04	-.2845E+04	.00
49	1	11	.1652E+00	-.1433E+03	.2270E+04	.2270E+04	.00
		13	.1652E+00	.2527E+02	.6402E+02	.6402E+02	24.31
50	1	42	.1652E+00	.1433E+03	-.2270E+04	-.6402E+02	24.31
		39	.1652E+00	-.2527E+02	-.6402E+02	-.2270E+04	.00
51	1	13	.0000E+00	-.2527E+02	.6402E+02	.6402E+02	.00
		15	.0000E+00	.0000E+00	.0000E+00	-.6264E-04	9.41
52	1	39	.0000E+00	.2527E+02	-.6402E+02	.6264E-04	9.41
		37	.0000E+00	.0000E+00	.0000E+00	-.6402E+02	.00

'IHNC LOCK LOAD CASE 2A - MAXIMUM OPERATION'

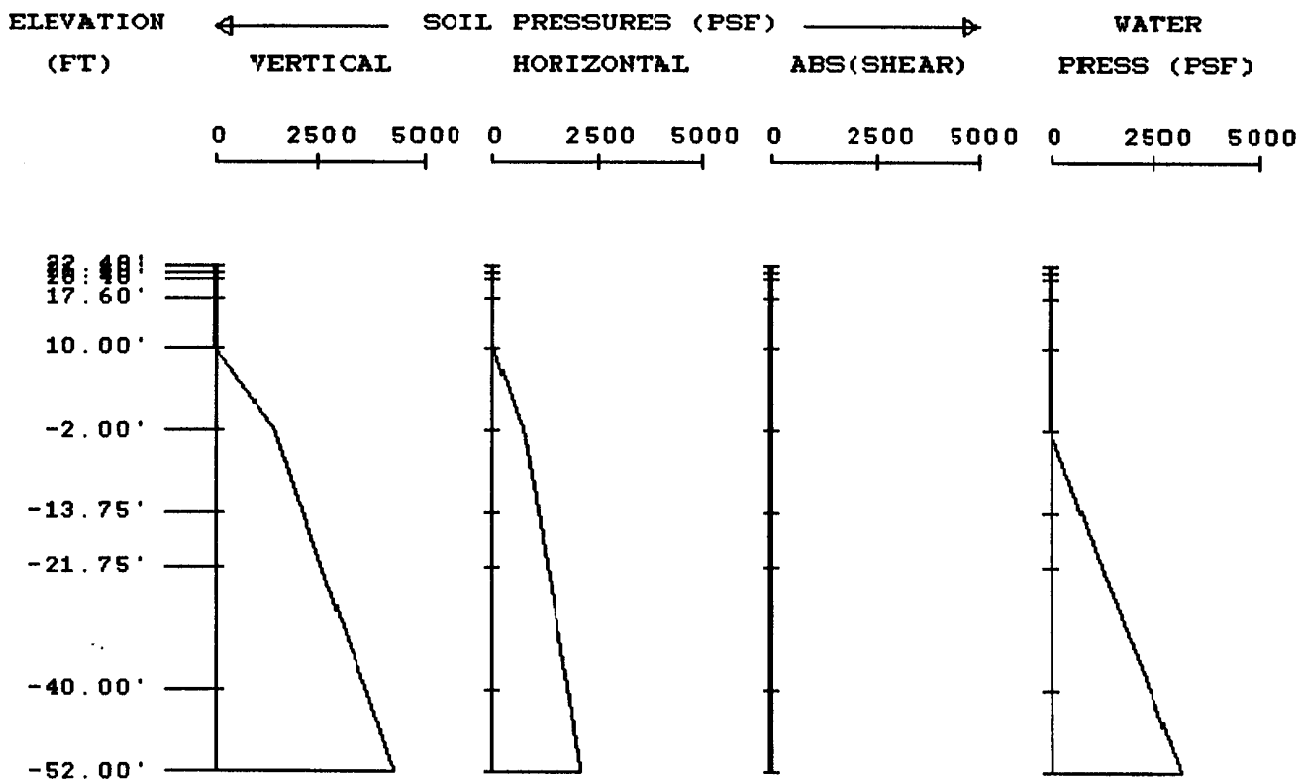


*** RIGHTSIDE ***

(1) CHAMBER (2) RIGHTSIDE CULVERT

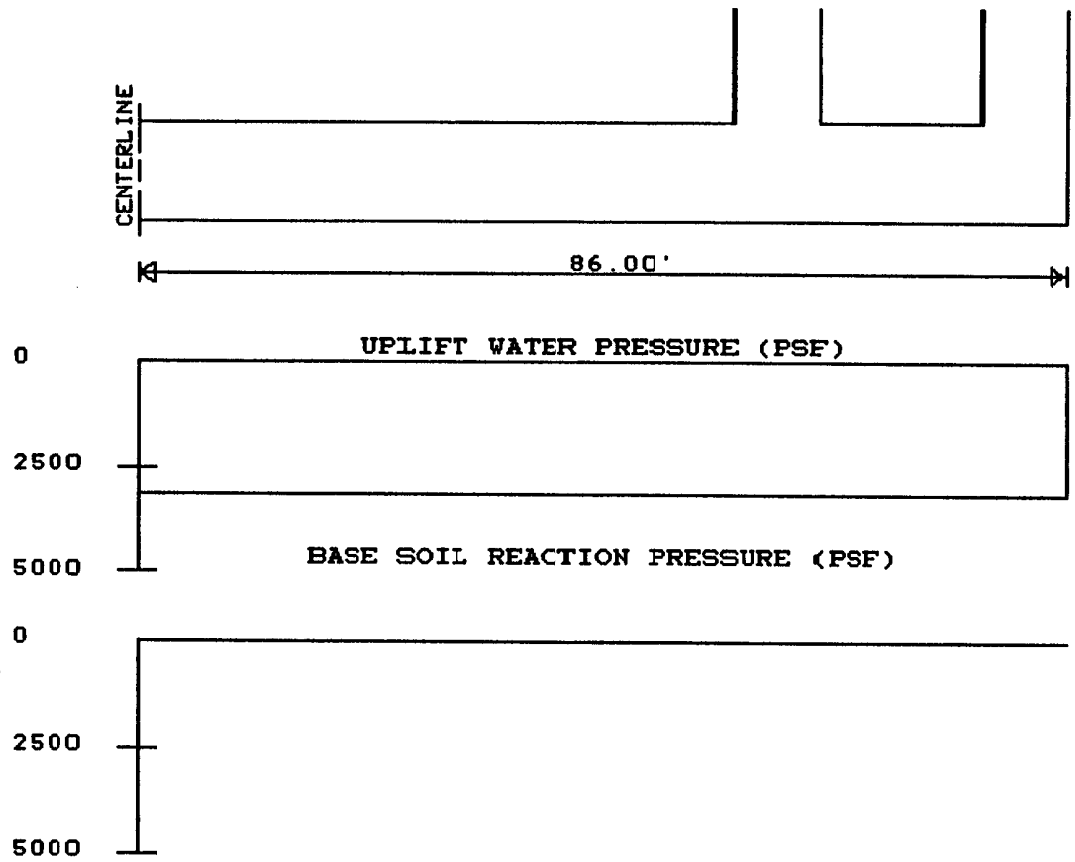
ANALYSIS 2

'IHNC LOCK LOAD CASE 2A - MAXIMUM OPERATION'



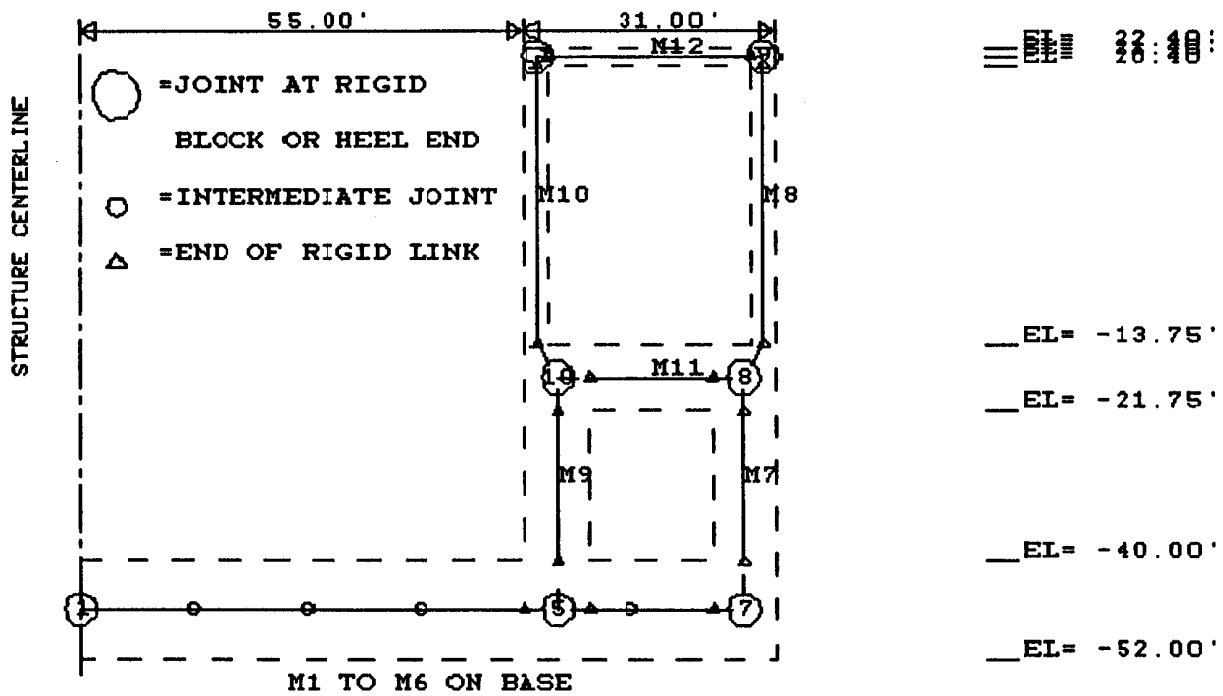
*** RIGHTSIDE ***

'IHNC LOCK LOAD CASE 2A - MAXIMUM OPERATION'



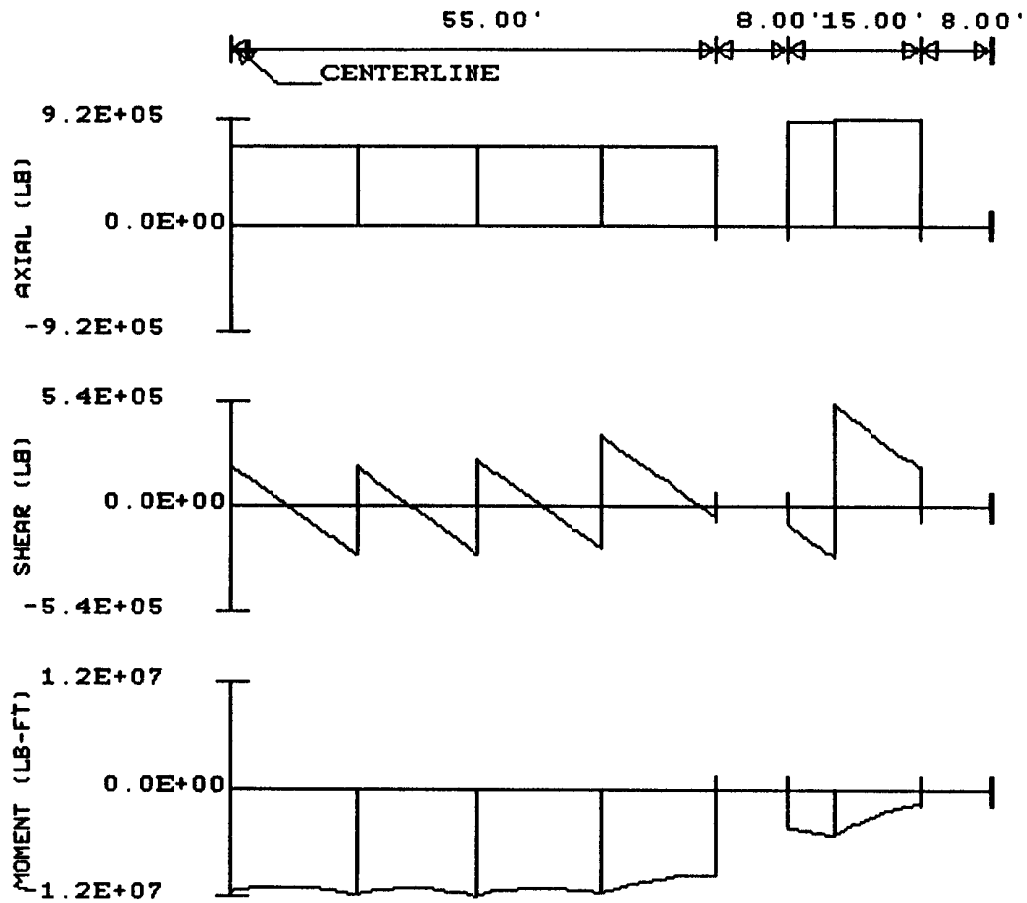
*** RIGHTSIDE ***

'IHNC LOCK LOAD CASE 2A - MAXIMUM OPERATION'



*** RIGHTSIDE MODEL ***

'IHNC LOCK LOAD CASE 2A - MAXIMUM OPERATION'



*** RIGHTSIDE BASE MEMBER FORCES ***

```
1000    'IHNC LOCK LOAD CASE 2A - MAXIMUM OPERATION'
1100    METHOD FR 1.00 1.00
1200    STRUCTURE 3600000.0 0.15 150.0 14.0
1300    FLOOR 55.0 -40.0
1400    BASE BOTH 86.0 -52.0
1500    STEM BOTH 7
1510            31.0 22.4 31.0 21.4 31.0 20.4 31.0 -13.75
1520            31.0 -21.75 31.0 -40.0 31.0 -40.0
1600    CULVERT BOTH 8.0 15.0 -40.0 18.25
1700    VOID BOTH 3.0 25.0 -13.75 34.15
1800    BACKFILL BOTH SOIL 1 0.0
1810            10.0 120.0 120.0 0.5 0.5
1900    REACTION PILE
1910    PILE BOTH
1920    LAYOUT 1 0.0
1930    LAYOUT 2 14.0
1940    LAYOUT 3 28.0
1950    LAYOUT 4 42.0
1960    LAYOUT 5 56.0
1970    LAYOUT 6 68.0
1980    LAYOUT 7 80.0
2000    PROPERTIES 1 29000000.0 74.61 21045.5 150.0 1.0 0.0 0.0 7.4 7 1
2100    WATER 62.5
2200    EXTERNAL BOTH ELEVATION -2.0
2300    UPLIFT ELEVATION -2.0
2400    INTERNAL 17.6 17.6 17.6
2500    LOAD BOTH STEM TOP
2600    DISTRIBUTED 2 0.0 0.0 2110.0
2610            31.0 0.0 2110.0
2700    OUTPUT MEMBERS BOTH ALL
2800    FINISH
```