236. PER ANA

P R O B L E M   S T A T I S T I C S

NUMBER OF JOINTS/MEMBER+ELEMENTS/SUPPORTS =   155/ 268/   31
ORIGINAL/FINAL BAND-WIDTH =   21/   9
TOTAL PRIMARY LOAD CASES   =   1, TOTAL DEGREES OF FREEDOM =   784
SIZE OF STIFFNESS MATRIX =   43904 DOUBLE PREC. WORDS
REQRD/AVAIL. DISK SPACE = 12.59/ 245.6 MB, EXMEM = 1964.5 MB

```
++ Processing Element Stiffness Matrix.              9:16:56
++ Processing Global Stiffness Matrix.               9:16:56
++ Processing Triangular Factorization.              9:16:56
++ Calculating Joint Displacements.                  9:16:56
++ Calculating Member  Forces.                       9:16:56
```

237. PRINT MEM FORCES

MEMBER END FORCES   STRUCTURE TYPE = SPACE

ALL UNITS ARE -- KNS   METE

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
1	1	1	.00	653.38	.00	.00	.00	2643.78
		2	.00	-653.38	.00	.00	.00	-2326.89
2	1	2	.00	629.12	.00	.00	.00	2326.89
		3	.00	-629.12	.00	.00	.00	-2021.76
3	1	3	.00	590.45	.00	.00	.00	2021.76
		4	.00	-590.45	.00	.00	.00	-1735.39
4	1	4	.00	544.01	.00	.00	.00	1735.39
		5	.00	-544.01	.00	.00	.00	-1471.54
5	1	5	.00	494.18	.00	.00	.00	1471.54
		6	.00	-494.18	.00	.00	.00	-1231.86
6	1	6	.00	443.51	.00	.00	.00	1231.86
		7	.00	-443.51	.00	.00	.00	-1016.75
7	1	7	.00	393.64	.00	.00	.00	1016.75
		8	.00	-393.64	.00	.00	.00	-825.84
8	1	8	.00	345.63	.00	.00	.00	825.83
		9	.00	-345.63	.00	.00	.00	-658.20
9	1	9	.00	299.99	.00	.00	.00	658.20
		10	.00	-299.99	.00	.00	.00	-512.71
10	1	10	.00	256.93	.00	.00	.00	512.71
		11	.00	-256.93	.00	.00	.00	-388.10
11	1	11	.00	216.47	.00	.00	.00	388.09
		12	.00	-216.47	.00	.00	.00	-283.11
12	1	12	.00	178.45	.00	.00	.00	283.11
		13	.00	-178.45	.00	.00	.00	-196.56
13	1	13	.00	142.72	.00	.00	.00	196.56
		14	.00	-142.72	.00	.00	.00	-127.34
14	1	14	.00	109.33	.00	.00	.00	127.34
		15	.00	-109.33	.00	.00	.00	-74.31

11-191

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
15	1	15	.00	78.29	.00	.00	.00	74.32
		16	.00	-78.29	.00	.00	.00	-36.35
16	1	16	.00	49.79	.00	.00	.00	36.35
		17	.00	-49.79	.00	.00	.00	-12.20
17	1	17	.00	24.39	.00	.00	.00	12.20
		18	.00	-24.39	.00	.00	.00	-.38
18	1	18	.00	3.60	.00	.00	.00	.37
		19	.00	-3.60	.00	.00	.00	1.37
19	1	19	.00	-.74	.00	.00	.00	-1.37
		20	.00	.74	.00	.00	.00	1.01
20	1	20	.00	-2.08	.00	.00	.00	-1.01
		21	.00	2.08	.00	.00	.00	-.01
21	1	22	.00	16.60	.00	.00	.00	12.90
		23	.00	-16.60	.00	.00	.00	-4.85
22	1	23	.00	4.06	.00	.00	.00	4.85
		24	.00	-4.06	.00	.00	.00	-2.88
23	1	24	.00	1.29	.00	.00	.00	2.88
		25	.00	-1.29	.00	.00	.00	-2.26
24	1	25	.00	.83	.00	.00	.00	2.26
		26	.00	-.83	.00	.00	.00	-1.85
25	1	26	.00	.67	.00	.00	.00	1.85
		27	.00	-.67	.00	.00	.00	-1.53
26	1	27	.00	.55	.00	.00	.00	1.53
		28	.00	-.55	.00	.00	.00	-1.26
27	1	28	.00	.45	.00	.00	.00	1.26
		29	.00	-.45	.00	.00	.00	-1.04
28	1	29	.00	.42	.00	.00	.00	1.05
		30	.00	-.42	.00	.00	.00	-.84
29	1	30	.00	.43	.00	.00	.00	.84
		31	.00	-.43	.00	.00	.00	-.64
30	1	31	.00	.40	.00	.00	.00	.64
		32	.00	-.40	.00	.00	.00	-.44
31	1	32	.00	.37	.00	.00	.00	.44
		33	.00	-.37	.00	.00	.00	-.26
32	1	33	.00	.33	.00	.00	.00	.27
		34	.00	-.33	.00	.00	.00	-.11
33	1	34	.00	.21	.00	.00	.00	.11
		35	.00	-.21	.00	.00	.00	-.01
34	1	35	.00	.16	.00	.00	.00	.01
		36	.00	-.16	.00	.00	.00	.07
35	1	36	.00	.16	.00	.00	.00	-.07
		37	.00	-.16	.00	.00	.00	.15
36	1	37	.00	.17	.00	.00	.00	-.15
		38	.00	-.17	.00	.00	.00	.23
37	1	38	.00	.04	.00	.00	.00	-.23
		39	.00	-.04	.00	.00	.00	.25

II-192

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
38	1	39	.00	-1.24	.00	.00	.00	-.25
		40	.00	1.24	.00	.00	.00	-.35
39	1	40	.00	.46	.00	.00	.00	.35
		41	.00	-.46	.00	.00	.00	-.13
40	1	41	.00	.28	.00	.00	.00	.13
		42	.00	-.28	.00	.00	.00	.00
41	1	43	.00	18.54	.00	.00	.00	16.33
		44	.00	-18.54	.00	.00	.00	-7.33
42	1	44	.00	9.00	.00	.00	.00	7.33
		45	.00	-9.00	.00	.00	.00	-2.97
43	1	45	.00	3.31	.00	.00	.00	2.97
		46	.00	-3.31	.00	.00	.00	-1.36
44	1	46	.00	1.15	.00	.00	.00	1.36
		47	.00	-1.15	.00	.00	.00	-.80
45	1	47	.00	.44	.00	.00	.00	.80
		48	.00	-.44	.00	.00	.00	-.59
46	1	48	.00	.17	.00	.00	.00	.59
		49	.00	-.17	.00	.00	.00	-.51
47	1	49	.00	.03	.00	.00	.00	.51
		50	.00	-.03	.00	.00	.00	-.49
48	1	50	.00	.06	.00	.00	.00	.49
		51	.00	-.06	.00	.00	.00	-.46
49	1	51	.00	.27	.00	.00	.00	.46
		52	.00	-.27	.00	.00	.00	-.33
50	1	52	.00	.39	.00	.00	.00	.33
		53	.00	-.39	.00	.00	.00	-.14
51	1	53	.00	.37	.00	.00	.00	.14
		54	.00	-.37	.00	.00	.00	.04
52	1	54	.00	.31	.00	.00	.00	-.04
		55	.00	-.31	.00	.00	.00	.19
53	1	55	.00	.18	.00	.00	.00	-.19
		56	.00	-.18	.00	.00	.00	.28
54	1	56	.00	.02	.00	.00	.00	-.28
		57	.00	-.02	.00	.00	.00	.29
55	1	57	.00	.16	.00	.00	.00	-.29
		58	.00	-.16	.00	.00	.00	.36
56	1	58	.00	-.01	.00	.00	.00	-.36
		59	.00	.01	.00	.00	.00	.36
57	1	59	.00	-.29	.00	.00	.00	-.36
		60	.00	.29	.00	.00	.00	.22
58	1	60	.00	-1.60	.00	.00	.00	-.22
		61	.00	1.60	.00	.00	.00	-.56
59	1	61	.00	-.65	.00	.00	.00	.56
		62	.00	.65	.00	.00	.00	-.87
60	1	62	.00	1.80	.00	.00	.00	.87
		63	.00	-1.80	.00	.00	.00	.00

11-193

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
61	1	64	.00	20.24	.00	.00	.00	19.38
		65	.00	-20.24	.00	.00	.00	-9.57
62	1	65	.00	11.95	.00	.00	.00	9.57
		66	.00	-11.95	.00	.00	.00	-3.77
63	1	66	.00	5.79	.00	.00	.00	3.77
		67	.00	-5.79	.00	.00	.00	-.96
64	1	67	.00	2.20	.00	.00	.00	.96
		68	.00	-2.20	.00	.00	.00	.10
65	1	68	.00	.56	.00	.00	.00	-.10
		69	.00	-.56	.00	.00	.00	.37
66	1	69	.00	-.05	.00	.00	.00	-.37
		70	.00	.05	.00	.00	.00	.35
67	1	70	.00	-.20	.00	.00	.00	-.35
		71	.00	.20	.00	.00	.00	.25
68	1	71	.00	-.25	.00	.00	.00	-.25
		72	.00	.25	.00	.00	.00	.13
69	1	72	.00	.08	.00	.00	.00	-.13
		73	.00	-.08	.00	.00	.00	.17
70	1	73	.00	.54	.00	.00	.00	-.17
		74	.00	-.54	.00	.00	.00	.43
71	1	74	.00	.44	.00	.00	.00	-.43
		75	.00	-.44	.00	.00	.00	.64
72	1	75	.00	-.10	.00	.00	.00	-.64
		76	.00	.10	.00	.00	.00	.60
73	1	76	.00	.35	.00	.00	.00	-.60
		77	.00	-.35	.00	.00	.00	.77
74	1	77	.00	-.35	.00	.00	.00	-.77
		78	.00	.35	.00	.00	.00	.60
75	1	78	.00	-.09	.00	.00	.00	-.60
		79	.00	.09	.00	.00	.00	.56
76	1	79	.00	-.54	.00	.00	.00	-.56
		80	.00	.54	.00	.00	.00	.29
77	1	80	.00	-.79	.00	.00	.00	-.29
		81	.00	.79	.00	.00	.00	-.09
78	1	81	.00	-.76	.00	.00	.00	.09
		82	.00	.76	.00	.00	.00	-.46
79	1	82	.00	.93	.00	.00	.00	.45
		83	.00	-.93	.00	.00	.00	.00
81	1	85	.00	20.20	.00	.00	.00	21.13
		86	.00	-20.20	.00	.00	.00	-11.33
82	1	86	.00	13.25	.00	.00	.00	11.33
		87	.00	-13.25	.00	.00	.00	-4.90
83	1	87	.00	7.60	.00	.00	.00	4.90
		88	.00	-7.60	.00	.00	.00	-1.22
84	1	88	.00	3.45	.00	.00	.00	1.22
		89	.00	-3.45	.00	.00	.00	.45

11-194

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
85	1	89	.00	1.08	.00	.00	.00	-.45
		90	.00	-1.08	.00	.00	.00	.97
86	1	90	.00	.02	.00	.00	.00	-.97
		91	.00	-.02	.00	.00	.00	.99
87	1	91	.00	.04	.00	.00	.00	-.99
		92	.00	-.04	.00	.00	.00	1.00
88	1	92	.00	.03	.00	.00	.00	-1.01
		93	.00	-.03	.00	.00	.00	1.02
89	1	93	.00	-.31	.00	.00	.00	-1.02
		94	.00	.31	.00	.00	.00	.87
90	1	94	.00	.85	.00	.00	.00	-.87
		95	.00	-.85	.00	.00	.00	1.28
91	1	95	.00	.61	.00	.00	.00	-1.28
		96	.00	-.61	.00	.00	.00	1.58
92	1	96	.00	-.91	.00	.00	.00	-1.58
		97	.00	.91	.00	.00	.00	1.14
93	1	97	.00	.18	.00	.00	.00	-1.14
		98	.00	-.18	.00	.00	.00	1.22
94	1	98	.00	.14	.00	.00	.00	-1.22
		99	.00	-.14	.00	.00	.00	1.29
95	1	99	.00	-1.79	.00	.00	.00	-1.29
		100	.00	1.79	.00	.00	.00	.43
96	1	100	.00	-.69	.00	.00	.00	-.43
		101	.00	.69	.00	.00	.00	.09
97	1	101	.00	-.20	.00	.00	.00	-.10
		102	.00	.20	.00	.00	.00	.00
101	1	106	.00	18.63	.00	.00	.00	21.49
		107	.00	-18.63	.00	.00	.00	-12.45
102	1	107	.00	13.03	.00	.00	.00	12.45
		108	.00	-13.03	.00	.00	.00	-6.13
103	1	108	.00	8.42	.00	.00	.00	6.14
		109	.00	-8.42	.00	.00	.00	-2.05
104	1	109	.00	4.47	.00	.00	.00	2.05
		110	.00	-4.47	.00	.00	.00	.12
105	1	110	.00	1.77	.00	.00	.00	-.12
		111	.00	-1.77	.00	.00	.00	.97
106	1	111	.00	.51	.00	.00	.00	-.97
		112	.00	-.51	.00	.00	.00	1.22
107	1	112	.00	.57	.00	.00	.00	-1.22
		113	.00	-.57	.00	.00	.00	1.50
108	1	113	.00	1.58	.00	.00	.00	-1.50
		114	.00	-1.58	.00	.00	.00	2.27
109	1	114	.00	-.33	.00	.00	.00	-2.27
		115	.00	.33	.00	.00	.00	2.11
110	1	115	.00	.70	.00	.00	.00	-2.11
		116	.00	-.70	.00	.00	.00	2.45

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
111	1	116	.00	-.62	.00	.00	.00	-2.45
		117	.00	.62	.00	.00	.00	2.14
112	1	117	.00	1.33	.00	.00	.00	-2.14
		118	.00	-1.33	.00	.00	.00	2.79
113	1	118	.00	-3.62	.00	.00	.00	-2.79
		119	.00	3.62	.00	.00	.00	1.04
114	1	119	.00	-2.15	.00	.00	.00	-1.04
		120	.00	2.15	.00	.00	.00	.00
121	1	127	.00	16.24	.00	.00	.00	20.74
		128	.00	-16.24	.00	.00	.00	-12.86
122	1	128	.00	11.55	.00	.00	.00	12.86
		129	.00	-11.55	.00	.00	.00	-7.26
123	1	129	.00	7.81	.00	.00	.00	7.26
		130	.00	-7.81	.00	.00	.00	-3.48
124	1	130	.00	5.39	.00	.00	.00	3.48
		131	.00	-5.39	.00	.00	.00	-.86
125	1	131	.00	2.11	.00	.00	.00	.86
		132	.00	-2.11	.00	.00	.00	.16
126	1	132	.00	2.08	.00	.00	.00	-.16
		133	.00	-2.08	.00	.00	.00	1.17
127	1	133	.00	1.29	.00	.00	.00	-1.17
		134	.00	-1.29	.00	.00	.00	1.79
128	1	134	.00	2.35	.00	.00	.00	-1.79
		135	.00	-2.35	.00	.00	.00	2.93
129	1	135	.00	5.33	.00	.00	.00	-2.93
		136	.00	-5.33	.00	.00	.00	5.52
130	1	136	.00	-4.19	.00	.00	.00	-5.53
		137	.00	4.19	.00	.00	.00	3.49
131	1	137	.00	-3.45	.00	.00	.00	-3.49
		138	.00	3.45	.00	.00	.00	1.82
132	1	138	.00	-3.76	.00	.00	.00	-1.82
		139	.00	3.76	.00	.00	.00	.00
141	1	148	.00	12.70	.00	.00	.00	18.96
		149	.00	-12.70	.00	.00	.00	-12.80
142	1	149	.00	10.01	.00	.00	.00	12.80
		150	.00	-10.01	.00	.00	.00	-7.95
143	1	150	.00	4.77	.00	.00	.00	7.95
		151	.00	-4.77	.00	.00	.00	-5.63
144	1	151	.00	6.11	.00	.00	.00	5.63
		152	.00	-6.11	.00	.00	.00	-2.67
145	1	152	.00	2.57	.00	.00	.00	2.67
		153	.00	-2.57	.00	.00	.00	-1.42
146	1	153	.00	4.58	.00	.00	.00	1.42
		154	.00	-4.58	.00	.00	.00	.80
147	1	154	.00	4.72	.00	.00	.00	-.80
		155	.00	-4.72	.00	.00	.00	3.09

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
148	1	155	.00	-1.30	.00	.00	.00	-3.10
		156	.00	1.30	.00	.00	.00	2.46
149	1	156	.00	-5.06	.00	.00	.00	-2.46
		157	.00	5.06	.00	.00	.00	.01
161	1	169	.00	6.56	.00	.00	.00	15.88
		170	.00	-6.56	.00	.00	.00	-12.69
162	1	170	.00	8.73	.00	.00	.00	12.70
		171	.00	-8.73	.00	.00	.00	-8.46
163	1	171	.00	2.65	.00	.00	.00	8.46
		172	.00	-2.65	.00	.00	.00	-7.18
164	1	172	.00	-.83	.00	.00	.00	7.18
		173	.00	.83	.00	.00	.00	-7.58
165	1	173	.00	11.68	.00	.00	.00	7.59
		174	.00	-11.68	.00	.00	.00	-1.92
166	1	174	.00	4.34	.00	.00	.00	1.92
		175	.00	-4.34	.00	.00	.00	.18
167	1	175	.00	-.35	.00	-.01	.00	-.18
		176	.00	.35	.00	.01	.00	.01
181	1	190	.00	2.98	.00	.00	.00	12.26
		191	.00	-2.98	.00	.00	.00	-10.81
182	1	191	.00	-4.02	.00	.00	.00	10.81
		192	.00	4.02	.00	.00	.00	-12.76
183	1	192	.00	14.44	.00	.00	.00	12.77
		193	.00	-14.44	.00	.00	.00	-5.77
184	1	193	.00	11.88	.00	.00	.00	5.77
		194	.00	-11.88	.00	.00	.00	.00
191	1	211	.00	9.95	.00	.00	.00	10.77
		212	.00	-9.95	.00	.00	.00	-5.94
192	1	212	.00	12.23	.00	.01	.00	5.94
		213	.00	-12.23	.00	-.01	.00	-.01
201	1	2	.00	4.17	.00	.00	.00	2.84
		23	.00	-4.17	.00	.00	.00	-1.05
202	1	23	.00	3.22	.00	.00	.00	1.05
		44	.00	-3.22	.00	.00	.00	.33
203	1	44	.00	1.27	.00	.00	.00	-.33
		65	.00	-1.27	.00	.00	.00	.87
204	1	65	.00	.09	.00	.00	.00	-.87
		86	.00	-.09	.00	.00	.00	.91
205	1	86	.00	-.41	.00	.00	.00	-.91
		107	.00	.41	.00	.00	.00	.74
206	1	107	.00	-.24	.00	.00	.00	-.74
		128	.00	.24	.00	.00	.00	.63
207	1	128	.00	.30	.00	.00	.00	-.63
		149	.00	-.30	.00	.00	.00	.76
208	1	149	.00	-.01	.00	.00	.00	-.76
		170	.00	.01	.00	.00	.00	.76

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
209	1	170	.00	-4.03	.00	.00	.00	-.76
		191	.00	4.03	.00	.00	.00	-.97
210	1	191	.00	2.28	.00	.00	.00	.97
		212	.00	-2.28	.00	.00	.00	.00
211	1	3	.00	19.17	.00	.00	.00	11.09
		24	.00	-19.17	.00	.00	.00	-2.88
212	1	24	.00	8.90	.00	.00	.00	2.88
		45	.00	-8.90	.00	.00	.00	.93
213	1	45	.00	3.57	.00	.00	.00	-.93
		66	.00	-3.57	.00	.00	.00	2.46
214	1	66	.00	.72	.00	.00	.00	-2.46
		87	.00	-.72	.00	.00	.00	2.77
215	1	87	.00	-.62	.00	.00	.00	-2.77
		108	.00	.62	.00	.00	.00	2.50
216	1	108	.00	-.98	.00	.00	.00	-2.50
		129	.00	.98	.00	.00	.00	2.08
217	1	129	.00	-.93	.00	.00	.00	-2.09
		150	.00	.93	.00	.00	.00	1.69
218	1	150	.00	1.77	.00	.00	.00	-1.69
		171	.00	-1.77	.00	.00	.00	2.44
219	1	171	.00	6.47	.00	.00	.00	-2.44
		192	.00	-6.47	.00	.00	.00	5.21
220	1	192	.00	-12.23	.00	-.01	.00	-5.22
		213	.00	12.23	.00	.01	.00	-.01
221	1	4	.00	27.52	.00	.00	.00	17.70
		25	.00	-27.52	.00	.00	.00	-5.92
222	1	25	.00	15.40	.00	.00	.00	5.92
		46	.00	-15.40	.00	.00	.00	.67
223	1	46	.00	7.00	.00	.00	.00	-.67
		67	.00	-7.00	.00	.00	.00	3.66
224	1	67	.00	2.04	.00	.00	.00	-3.66
		88	.00	-2.04	.00	.00	.00	4.53
225	1	88	.00	-.33	.00	.00	.00	-4.53
		109	.00	.33	.00	.00	.00	4.39
226	1	109	.00	-.89	.00	.00	.00	-4.39
		130	.00	.89	.00	.00	.00	4.01
227	1	130	.00	-1.70	.00	.00	.00	-4.01
		151	.00	1.70	.00	.00	.00	3.29
228	1	151	.00	-5.12	.00	.00	.00	-3.29
		172	.00	5.12	.00	.00	.00	1.10
229	1	172	.00	-2.56	.00	.00	.00	-1.10
		193	.00	2.56	.00	.00	.00	.00
231	1	5	.00	31.49	.00	.00	.00	22.21
		26	.00	-31.49	.00	.00	.00	-8.74
232	1	26	.00	19.53	.00	.00	.00	8.74
		47	.00	-19.53	.00	.00	.00	-.38

11-198

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
233	1	47	.00	10.15	.00	.00	.00	.38
		68	.00	-10.15	.00	.00	.00	3.95
234	1	68	.00	3.70	.00	.00	.00	-3.95
		89	.00	-3.70	.00	.00	.00	5.54
235	1	89	.00	.01	.00	.00	.00	-5.54
		110	.00	-.01	.00	.00	.00	5.54
236	1	110	.00	-1.34	.00	.00	.00	-5.54
		131	.00	1.34	.00	.00	.00	4.97
237	1	131	.00	-.83	.00	.00	.00	-4.97
		152	.00	.83	.00	.00	.00	4.61
238	1	152	.00	1.09	.00	.00	.00	-4.61
		173	.00	-1.09	.00	.00	.00	5.08
239	1	173	.00	-11.88	.00	.00	.00	-5.08
		194	.00	11.88	.00	.00	.00	.00
241	1	6	.00	32.92	.00	.00	.00	24.95
		27	.00	-32.92	.00	.00	.00	-10.86
242	1	27	.00	21.38	.00	.00	.00	10.86
		48	.00	-21.38	.00	.00	.00	-1.71
243	1	48	.00	12.01	.00	.00	.00	1.71
		69	.00	-12.01	.00	.00	.00	3.42
244	1	69	.00	4.99	.00	.00	.00	-3.42
		90	.00	-4.99	.00	.00	.00	5.55
245	1	90	.00	.43	.00	.00	.00	-5.55
		111	.00	-.43	.00	.00	.00	5.73
246	1	111	.00	-1.90	.00	.00	.00	-5.73
		132	.00	1.90	.00	.00	.00	4.92
247	1	132	.00	-4.18	.00	.00	.00	-4.92
		153	.00	4.18	.00	.00	.00	3.13
248	1	153	.00	-7.34	.00	.00	.00	-3.13
		174	.00	7.34	.00	.00	.00	.00
251	1	7	.00	32.70	.00	.00	.00	26.27
		28	.00	-32.70	.00	.00	.00	-12.28
252	1	28	.00	21.59	.00	.00	.00	12.28
		49	.00	-21.59	.00	.00	.00	-3.04
253	1	49	.00	12.55	.00	.00	.00	3.04
		70	.00	-12.55	.00	.00	.00	2.32
254	1	70	.00	5.54	.00	.00	.00	-2.32
		91	.00	-5.54	.00	.00	.00	4.69
255	1	91	.00	.39	.00	.00	.00	-4.69
		112	.00	-.39	.00	.00	.00	4.85
256	1	112	.00	-2.80	.00	.00	.00	-4.85
		133	.00	2.80	.00	.00	.00	3.66
257	1	133	.00	-3.86	.00	.00	.00	-3.66
		154	.00	3.86	.00	.00	.00	2.00
258	1	154	.00	-4.69	.00	.00	.00	-2.00
		175	.00	4.69	.00	.00	.00	.00

11-199

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
261	1	8	.00	31.43	.00	.00	.00	26.53
		29	.00	-31.43	.00	.00	.00	-13.08
262	1	29	.00	20.73	.00	.00	.00	13.08
		50	.00	-20.73	.00	.00	.00	-4.21
263	1	50	.00	11.98	.00	.00	.00	4.21
		71	.00	-11.98	.00	.00	.00	.91
264	1	71	.00	5.33	.00	.00	.00	-.90
		92	.00	-5.33	.00	.00	.00	3.18
265	1	92	.00	.66	.00	.00	.00	-3.18
		113	.00	-.66	.00	.00	.00	3.47
266	1	113	.00	-3.00	.00	.00	.00	-3.47
		134	.00	3.00	.00	.00	.00	2.19
267	1	134	.00	-5.44	.00	.00	.00	-2.18
		155	.00	5.44	.00	.00	.00	-.14
268	1	155	.00	.35	.00	.01	.00	.14
		176	.00	-.35	.00	-.01	.00	.01
271	1	9	.00	29.63	.00	.00	.00	26.09
		30	.00	-29.63	.00	.00	.00	-13.40
272	1	30	.00	19.36	.00	.00	.00	13.40
		51	.00	-19.36	.00	.00	.00	-5.12
273	1	51	.00	10.88	.00	.00	.00	5.12
		72	.00	-10.88	.00	.00	.00	-.47
274	1	72	.00	4.31	.00	.00	.00	.47
		93	.00	-4.31	.00	.00	.00	1.37
275	1	93	.00	.43	.00	.00	.00	-1.37
		114	.00	-.43	.00	.00	.00	1.55
276	1	114	.00	.14	.00	.00	.00	-1.55
		135	.00	-.14	.00	.00	.00	1.61
277	1	135	.00	-3.76	.00	.00	.00	-1.61
		156	.00	3.76	.00	.00	.00	.00
281	1	10	.00	27.62	.00	.00	.00	25.19
		31	.00	-27.62	.00	.00	.00	-13.37
282	1	31	.00	17.84	.00	.00	.00	13.37
		52	.00	-17.84	.00	.00	.00	-5.74
283	1	52	.00	9.93	.00	.00	.00	5.74
		73	.00	-9.93	.00	.00	.00	-1.50
284	1	73	.00	3.69	.00	.00	.00	1.50
		94	.00	-3.69	.00	.00	.00	.08
285	1	94	.00	-1.23	.00	.00	.00	-.08
		115	.00	1.23	.00	.00	.00	-.45
286	1	115	.00	-4.00	.00	.00	.00	.45
		136	.00	4.00	.00	.00	.00	-2.16
287	1	136	.00	5.06	.00	.01	.00	2.16
		157	.00	-5.06	.00	-.01	.00	.00
291	1	11	.00	25.61	.00	.00	.00	24.00
		32	.00	-25.61	.00	.00	.00	-13.03

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
292	1	32	.00	16.29	.00	.00	.00	13.03
		53	.00	-16.29	.00	.00	.00	-6.06
293	1	53	.00	8.99	.00	.00	.00	6.06
		74	.00	-8.99	.00	.00	.00	-2.22
294	1	74	.00	3.76	.00	.00	.00	2.22
		95	.00	-3.76	.00	.00	.00	-.62
295	1	95	.00	.70	.00	.00	.00	.62
		116	.00	-.70	.00	.00	.00	-.32
296	1	116	.00	.74	.00	.00	.00	.32
		137	.00	-.74	.00	.00	.00	.00
301	1	12	.00	23.77	.00	.00	.00	22.55
		33	.00	-23.77	.00	.00	.00	-12.38
302	1	33	.00	14.91	.00	.00	.00	12.38
		54	.00	-14.91	.00	.00	.00	-6.00
303	1	54	.00	8.10	.00	.00	.00	6.00
		75	.00	-8.10	.00	.00	.00	-2.54
304	1	75	.00	3.79	.00	.00	.00	2.54
		96	.00	-3.79	.00	.00	.00	-.92
305	1	96	.00	2.46	.00	.00	.00	.92
		117	.00	-2.46	.00	.00	.00	.13
306	1	117	.00	-.31	.00	.00	.00	-.13
		138	.00	.31	.00	.00	.00	.00
311	1	13	.00	22.04	.00	.00	.00	20.85
		34	.00	-22.04	.00	.00	.00	-11.42
312	1	34	.00	13.73	.00	.00	.00	11.42
		55	.00	-13.73	.00	.00	.00	-5.54
313	1	55	.00	7.45	.00	.00	.00	5.54
		76	.00	-7.45	.00	.00	.00	-2.36
314	1	76	.00	2.61	.00	.00	.00	2.36
		97	.00	-2.61	.00	.00	.00	-1.24
315	1	97	.00	-.84	.00	.00	.00	1.24
		118	.00	.84	.00	.00	.00	-1.60
316	1	118	.00	3.76	.00	.00	.00	1.60
		139	.00	-3.76	.00	.00	.00	.00
321	1	14	.00	20.29	.00	.00	.00	18.86
		35	.00	-20.29	.00	.00	.00	-10.17
322	1	35	.00	12.37	.00	.00	.00	10.17
		56	.00	-12.37	.00	.00	.00	-4.88
323	1	56	.00	6.59	.00	.00	.00	4.88
		77	.00	-6.59	.00	.00	.00	-2.06
324	1	77	.00	3.35	.00	.00	.00	2.06
		98	.00	-3.35	.00	.00	.00	-.63
325	1	98	.00	1.48	.00	.00	.00	.63
		119	.00	-1.48	.00	.00	.00	.00
331	1	15	.00	18.52	.00	.00	.00	16.58
		36	.00	-18.52	.00	.00	.00	-8.65

MEMBER	LOAD	JT	AXIAL	SHEAR-Y	SHEAR-Z	TORSION	MOM-Y	MOM-Z
332	1	36	.00	11.03	.00	.00	.00	8.65
		57	.00	-11.03	.00	.00	.00	-3.93
333	1	57	.00	5.39	.00	.00	.00	3.93
		78	.00	-5.39	.00	.00	.00	-1.63
334	1	78	.00	1.66	.00	.00	.00	1.63
		99	.00	-1.66	.00	.00	.00	-.92
335	1	99	.00	2.15	.00	.00	.00	.92
		120	.00	-2.15	.00	.00	.00	.00
341	1	16	.00	16.56	.00	.00	.00	14.03
		37	.00	-16.56	.00	.00	.00	-6.94
342	1	37	.00	9.51	.00	.00	.00	6.94
		58	.00	-9.51	.00	.00	.00	-2.88
343	1	58	.00	4.65	.00	.00	.00	2.88
		79	.00	-4.65	.00	.00	.00	-.89
344	1	79	.00	2.08	.00	.00	.00	.89
		100	.00	-2.08	.00	.00	.00	.00
351	1	17	.00	14.05	.00	.00	.00	11.12
		38	.00	-14.05	.00	.00	.00	-5.10
352	1	38	.00	7.60	.00	.00	.00	5.10
		59	.00	-7.60	.00	.00	.00	-1.85
353	1	59	.00	3.32	.00	.00	.00	1.85
		80	.00	-3.32	.00	.00	.00	-.44
354	1	80	.00	1.02	.00	.00	.00	.44
		101	.00	-1.02	.00	.00	.00	.00
361	1	18	.00	10.01	.00	.00	.00	7.63
		39	.00	-10.01	.00	.00	.00	-3.35
362	1	39	.00	5.17	.00	.00	.00	3.35
		60	.00	-5.17	.00	.00	.00	-1.13
363	1	60	.00	2.38	.00	.00	.00	1.13
		81	.00	-2.38	.00	.00	.00	-.12
371	1	19	.00	4.34	.00	.00	.00	3.71
		40	.00	-4.34	.00	.00	.00	-1.85
372	1	40	.00	2.64	.00	.00	.00	1.85
		61	.00	-2.64	.00	.00	.00	-.72
373	1	61	.00	1.69	.00	.00	.00	.72
		82	.00	-1.69	.00	.00	.00	.00
381	1	20	.00	1.33	.00	.00	.00	.83
		41	.00	-1.33	.00	.00	.00	-.25
382	1	41	.00	1.52	.00	.00	.00	.25
		62	.00	-1.52	.00	.00	.00	.39
391	1	21	.00	-2.07	.00	.00	.00	-1.66
		42	.00	2.07	.00	.00	.00	.77
392	1	42	.00	-1.80	.00	.00	.00	-.77
		63	.00	1.80	.00	.00	.00	.00

************** END OF LATEST ANALYSIS RESULT **************

```
238. PLOT BEN FILE
239. PLOT DISP FILE
240. START CON DESIGN
241. FC    25000
242. CLEAR  0.065
243. TRACK 1
244. MAXMAIN 25
245. DESIGN BEAM 141 TO 144 161 TO 164 251 TO 254 261 TO 264
```

```
===========================================================================

      B E A M   N O. 141   D E S I G N   R E S U L T S - FLEXURE

LEN -   485. MM  FY -  414.  FC -  25.  MPA, SIZE -  428. X  275. MMS

LEVEL      HEIGHT      BAR INFO      FROM           TO           ANCHOR
           (MM)                      (MM)          (MM)         STA  END
_____


  1        191.      3 - 12MM        0.           485.         YES  YES
|-----------------------------------------------------------------------|
|   CRITICAL NEG MOMENT=     18.96 KN-MET  AT     0.MM, LOAD   1 |
|   REQD STEEL=    275.MM2, ROW= .0034, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=    314./   37./  157. MMS          |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS           |
|-----------------------------------------------------------------------|


      B E A M   N O. 141   D E S I G N   R E S U L T S - SHEAR


AT START SUPPORT - Vu=  12.70 KNS  Vc=   65.60 KNS  Vs=     .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=  12.70 KNS  Vc=   65.60 KNS  Vs=     .00 KNS
                   STIRRUPS ARE NOT REQUIRED.

   148J_____  484X 427X  274_____ 149J
|                                                                        |
| |====================================================================| |
| 3No12 H 191.   0.TO  485                                               |
|                                                                        |
|                                                                        |
|                                                                        |

|--------------------|  |--------------------|  |--------------------|
|                    |  |                    |  |                    |
|        ooo         |  |        ooo         |  |        ooo         |
| 3#12               |  | 3#12               |  | 3#12               |
|                    |  |                    |  |                    |
|                    |  |                    |  |                    |
|--------------------|  |--------------------|  |--------------------|


      B E A M   N O. 142   D E S I G N   R E S U L T S - FLEXURE

LEN -   485. MM  FY -  414.  FC -  25.  MPA, SIZE -  428. X  275. MMS

LEVEL      HEIGHT      BAR INFO      FROM           TO           ANCHOR
           (MM)                      (MM)          (MM)         STA  END
_____


  1        191.      3 - 12MM        0.           485.         YES  YES
```

11-203

```
|---------------------------------------------------------------------|
|   CRITICAL NEG MOMENT=      12.80 KN-MET   AT      0.MM, LOAD    1 |
|   REQD STEEL=   273.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=     314./   37./  157. MMS          |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS            |
|---------------------------------------------------------------------|
```

B E A M   N O. 142   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   10.01 KNS Vc=   65.60 KNS Vs=   .00 KNS
                    STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   10.01 KNS Vc=   65.60 KNS Vs=   .00 KNS
                    STIRRUPS ARE NOT REQUIRED.

```
___149J_____  484X 427X  274_____150J___
|                                                                          |
|                                                                          |
||========================================================================||
| 3No12 H 191.   0.TO  485                                                 |
|                                                                          |
|                                                                          |
|                                                                          |
|                                                                          |
```

```
|-----------------------|  |-----------------------|  |-----------------------|
|                       |  |                       |  |                       |
|          ooo          |  |          ooo          |  |          ooo          |
| 3#12                  |  | 3#12                  |  | 3#12                  |
|                       |  |                       |  |                       |
|                       |  |                       |  |                       |
|-----------------------|  |-----------------------|  |-----------------------|
```

B E A M   N O. 143   D E S I G N   R E S U L T S - FLEXURE

LEN -   485. MM FY - 414. FC - 25. MPA, SIZE - 428. X 275. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END
1	191.	3 - 12MM	0.	485.	YES YES

```
|---------------------------------------------------------------------|
|   CRITICAL NEG MOMENT=       7.95 KN-MET   AT      0.MM, LOAD    1 |
|   REQD STEEL=   273.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=     314./   37./  157. MMS          |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS            |
|---------------------------------------------------------------------|
```

B E A M   N O. 143   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   4.77 KNS Vc=   65.60 KNS Vs=   .00 KNS
                    STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   4.77 KNS Vc=   65.60 KNS Vs=   .00 KNS
                    STIRRUPS ARE NOT REQUIRED.

```
___150J_____  484X 427X  274_____151J___
|                                                                          |
|                                                                          |
||========================================================================||
| 3No12 H 191.   0.TO  485                                                 |
|                                                                          |
|                                                                          |
|                                                                          |
```

11-204

```
|                            | |                            | |                            |
|                            | |                            | |                            |
|         ooo                | |         ooo                | |         ooo                |
| 3#12                       | | 3#12                       | | 3#12                       |
|                            | |                            | |                            |
|                            | |                            | |                            |
|                            | |                            | |                            |
```

B E A M   N O.   144   D E S I G N   R E S U L T S -   FLEXURE

LEN -   485. MM   FY -   414.   FC -   25.   MPA, SIZE -   428. X   275. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END

1   191.   3 - 12MM   0.   485.   YES   YES
```
|------------------------------------------------------------------|
|    CRITICAL NEG MOMENT=        5.63 KN-MET  AT      0.MM, LOAD   1 |
|    REQD STEEL=    273.MM2, ROW=  .0033, ROWMX=  .0194 ROWMN= .0033 |
|    MAX/MIN/ACTUAL BAR SPACING=    314./   37./  157. MMS          |
|    BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS            |
|------------------------------------------------------------------|
```

B E A M   N O.   144   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   6.11 KNS   Vc=   65.60 KNS   Vs=   .00 KNS
                    STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   6.11 KNS   Vc=   65.60 KNS   Vs=   .00 KNS
                    STIRRUPS ARE NOT REQUIRED.

```
___151J_____      484X 427X  274 _____152J____
|                                                                    |
||=================================================================||
| 3No12 H 191.   0.TO   485                                          |
|                                                                    |
|                                                                    |
|                                                                    |
```

```
|                            | |                            | |                            |
|                            | |                            | |                            |
|         ooo                | |         ooo                | |         ooo                |
| 3#12                       | | 3#12                       | | 3#12                       |
|                            | |                            | |                            |
|                            | |                            | |                            |
|                            | |                            | |                            |
```

B E A M   N O.   161   D E S I G N   R E S U L T S - FLEXURE

LEN -   485. MM   FY -   414.   FC -   25.   MPA, SIZE -   428. X   275. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END

1   191.   3 - 12MM   0.   485.   YES   YES

11-205

```
|-----------------------------------------------------------------|
|  CRITICAL NEG MOMENT=    15.88 KN-MET  AT      0.MM, LOAD   1 |
|  REQD STEEL=   273.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|  MAX/MIN/ACTUAL BAR SPACING=   314./   37./  157. MMS         |
|  BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS          |
|-----------------------------------------------------------------|
```

B E A M N O. 161 D E S I G N R E S U L T S - SHEAR

AT START SUPPORT - Vu=   6.56 KNS Vc=   65.60 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   6.56 KNS Vc=   65.60 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.

```
    169J                      484X 427X  274                    170J
  _____
 |                                                                |
 |                                                                |
 ||=============================================================|||
 | 3No12 H 191.   0.TO   485                                      |
 |                                                                |
 |                                                                |
 |                                                                |
 |_____|

  _____     _____     _____
 |               |   |               |   |               |
 |               |   |               |   |               |
 |        ooo    |   |        ooo    |   |        ooo    |
 |               |   |               |   |               |
 | 3#12          |   | 3#12          |   | 3#12          |
 |               |   |               |   |               |
 |               |   |               |   |               |
 |_____|   |_____|   |_____|
```

B E A M N O. 162 D E S I G N R E S U L T S - FLEXURE

LEN -   485. MM FY -   414. FC - 25. MPA, SIZE - 428. X 275. MMS

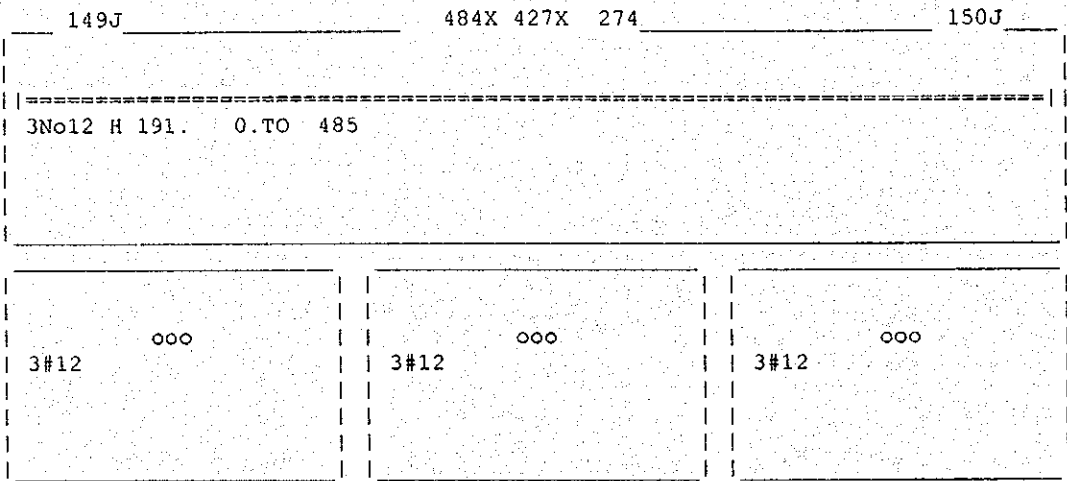| LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END
1	191.	3 - 12MM	0.	485.	YES YES

```
|-----------------------------------------------------------------|
|  CRITICAL NEG MOMENT=    12.70 KN-MET  AT      0.MM, LOAD   1 |
|  REQD STEEL=   273.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|  MAX/MIN/ACTUAL BAR SPACING=   314./   37./  157. MMS         |
|  BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS          |
|-----------------------------------------------------------------|
```

B E A M N O. 162 D E S I G N R E S U L T S - SHEAR

AT START SUPPORT - Vu=   8.73 KNS Vc=   65.60 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   8.73 KNS Vc=   65.60 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.

```
    170J                      484X 427X  274                    171J
  _____
 |                                                                |
 |                                                                |
 ||=============================================================|||
 | 3No12 H 191.   0.TO   485                                      |
 |                                                                |
 |                                                                |
 |                                                                |
 |_____|
```

11-206

```
|-----------------|  |  |-----------------|  |  |-----------------------|
|                 |  |  |                 |  |  |                       |
|     ooo         |  |  |     ooo         |  |  |      ooo              |
| 3#12            |  |  | 3#12            |  |  | 3#12                  |
|                 |  |  |                 |  |  |                       |
|                 |  |  |                 |  |  |                       |
|                 |  |  |                 |  |  |                       |
|-----------------|  |  |-----------------|  |  |-----------------------|
```

B E A M   N O. 163   D E S I G N   R E S U L T S - FLEXURE

LEN -   485. MM FY - 414.   FC - 25.   MPA, SIZE - 428. X 275. MMS

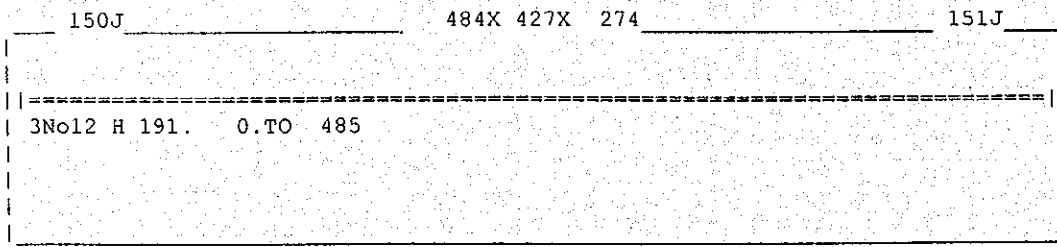| LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA	END
1	191.	3 - 12MM	0.	485.	YES	YES

```
|-------------------------------------------------------------------------|
|   CRITICAL NEG MOMENT=      8.46 KN-MET  AT     0.MM, LOAD   1 |
|   REQD STEEL=   273.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=   314./   37./  157. MMS         |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS          |
|-------------------------------------------------------------------------|
```

B E A M   N O. 163   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   2.65 KNS Vc=   65.60 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   2.65 KNS Vc=   65.60 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.

```
    171J                     484X 427X  274                  172J
|-----------------------------------------------------------------------|
|                                                                       |
| |===================================================================| |
| 3No12 H 191.   0.TO  485                                             |
|                                                                       |
|                                                                       |
|                                                                       |
|-----------------------------------------------------------------------|
```

```
|-----------------|  |  |-----------------|  |  |-----------------------|
|                 |  |  |                 |  |  |                       |
|     ooo         |  |  |     ooo         |  |  |      ooo              |
| 3#12            |  |  | 3#12            |  |  | 3#12                  |
|                 |  |  |                 |  |  |                       |
|                 |  |  |                 |  |  |                       |
|                 |  |  |                 |  |  |                       |
|-----------------|  |  |-----------------|  |  |-----------------------|
```

B E A M   N O. 164   D E S I G N   R E S U L T S - FLEXURE

LEN -   485. MM FY - 414.   FC - 25.   MPA, SIZE - 428. X 275. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA	END
1	191.	3 - 12MM	0.	485.	YES	YES

11-207

```
|---------------------------------------------------------------|
|   CRITICAL NEG MOMENT=      7.58 KN-MET  AT    485.MM, LOAD   1 |
|   REQD STEEL=   273.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=    314./   37./  157. MMS        |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS          |
|---------------------------------------------------------------|
```

B E A M   N O. 164   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   .83 KNS Vc=   65.60 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   .83 KNS Vc=   65.60 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.

```
___172J_____484X 427X 274_____173J_____
|                                                                   |
|                                                                   |
|| ================================================================ ||
| 3No12 H 191.   0.TO   485                                         |
|                                                                   |
|                                                                   |
|                                                                   |
|_____|

 _____      _____      _____
|            ooo      |    | |     ooo       |    | |     ooo        |
|                     |    | |               |    | |                |
| 3#12                |    | | 3#12          |    | | 3#12           |
|                     |    | |               |    | |                |
|                     |    | |               |    | |                |
|                     |    | |               |    | |                |
|_____|    |_|_____|    |_|_____|
```

B E A M   N O. 251   D E S I G N   R E S U L T S - FLEXURE

LEN -   428. MM FY - 414. FC - 25. MPA, SIZE - 485. X 275. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA	END
1	189.	2 - 16MM	0.	428.	YES	YES

```
|---------------------------------------------------------------|
|   CRITICAL NEG MOMENT=     26.27 KN-MET  AT     0.MM, LOAD   1 |
|   REQD STEEL=   384.MM2, ROW= .0041, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=    367./   41./  367. MMS        |
|   BASIC/REQD. DEVELOPMENT LENGTH =   316./   478. MMS          |
|---------------------------------------------------------------|
```

B E A M   N O. 251   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   32.70 KNS Vc=   74.34 KNS Vs=   .00 KNS
                   PROVIDE 12 MM BARS AT 92. MM C/C FOR 428. MM
AT END   SUPPORT - Vu=   32.70 KNS Vc=   74.34 KNS Vs=   .00 KNS
                   PROVIDE 12 MM BARS AT 92. MM C/C FOR 428. MM

```
___7J_____427X 484X 274_____28J_____
|                                                                   |
|                                                                   |
|| ================================================================ ||
| 2No16cHc189.   0.TO   428                         6*12c/c 92      |
|                                                                   |
|                                                                   |
|                                                                   |
|_____|
```

11-208

```
| --------------------- | | | --------------------- | | | --------------------- |
|                       | | | |                     | | | |                     |
|          oo           | | | |         oo          | | | |         oo          |
|                       | | | |                     | | | |                     |
| 2#16                  | | | | 2#16                | | | | 2#16                |
|                       | | | |                     | | | |                     |
|                       | | | |                     | | | |                     |
|                       | | | |                     | | | |                     |
| --------------------- | | | --------------------- | | | --------------------- |
```

B E A M   N O. 252   D E S I G N   R E S U L T S - FLEXURE

LEN -   428. MM FY - 414. FC - 25. MPA, SIZE - 485. X 275. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END
1	191.	3 - 12MM	0.	428.	YES YES

```
|----------------------------------------------------------------------|
|   CRITICAL NEG MOMENT=     12.28 KN-MET  AT     0.MM, LOAD   1 |
|   REQD STEEL=   309.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=    371./   37./  186. MMS        |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS          |
|----------------------------------------------------------------------|
```

B E A M   N O. 252   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   21.59 KNS Vc=   74.34 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   21.59 KNS Vc=   74.34 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.

```
  28J                        427X 484X  274                      49J
| ---------------------------------------------------------------------- |
|                                                                        |
| |====================================================================| |
| 3No12 H 191.   0.TO   428                                              |
|                                                                        |
|                                                                        |
|                                                                        |
| ---------------------------------------------------------------------- |


| --------------------- | | | --------------------- | | | --------------------- |
|                       | | | |                     | | | |                     |
|         ooo           | | | |        ooo          | | | |        ooo          |
| 3#12                  | | | | 3#12                | | | | 3#12                |
|                       | | | |                     | | | |                     |
|                       | | | |                     | | | |                     |
|                       | | | |                     | | | |                     |
| --------------------- | | | --------------------- | | | --------------------- |
```

B E A M   N O. 253   D E S I G N   R E S U L T S - FLEXURE

LEN -   427. MM FY - 414. FC - 25. MPA, SIZE - 485. X 275. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END
1	84.	3 - 12MM	0.	427.	YES YES

```
|-----------------------------------------------------------------|
|   CRITICAL POS MOMENT=      2.32 KN-MET  AT     427.MM, LOAD   1 |
|   REQD STEEL=   309.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033   |
|   MAX/MIN/ACTUAL BAR SPACING=    371./    37./  186. MMS         |
|   BASIC/REQD. DEVELOPMENT LENGTH =    177./   327. MMS           |
|-----------------------------------------------------------------|


     2        191.    3 - 12MM        0.          427.      YES   YES
|-----------------------------------------------------------------|
|   CRITICAL NEG MOMENT=      3.04 KN-MET  AT      0.MM, LOAD   1  |
|   REQD STEEL=   309.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033   |
|   MAX/MIN/ACTUAL BAR SPACING=    371./    37./  186. MMS         |
|   BASIC/REQD. DEVELOPMENT LENGTH =    177./   359. MMS           |
|-----------------------------------------------------------------|
```
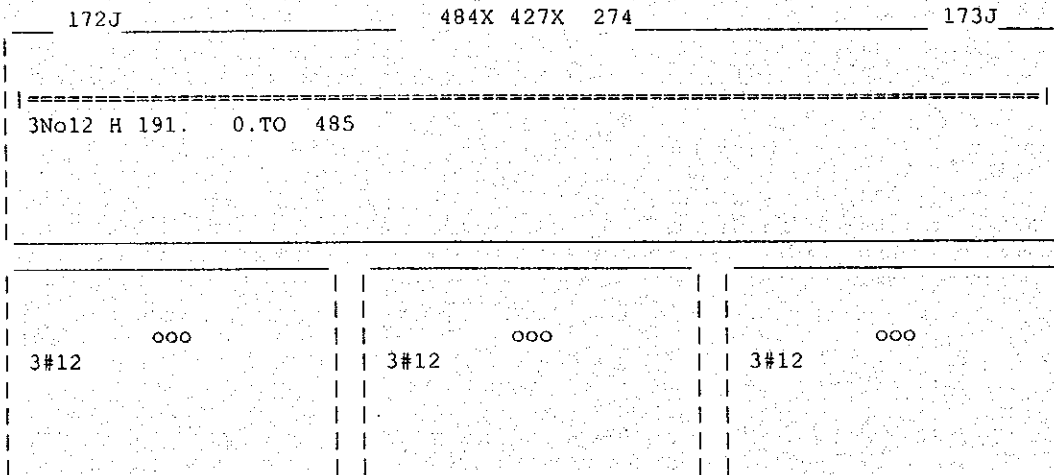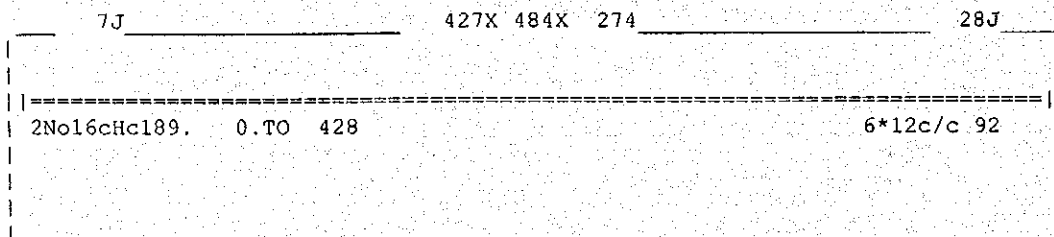
            B E A M   N O. 253   D E S I G N   R E S U L T S - SHEAR

       AT START SUPPORT - Vu=   12.55 KNS Vc=   74.34 KNS Vs=   .00 KNS
                          STIRRUPS ARE NOT REQUIRED.
       AT END   SUPPORT - Vu=   12.55 KNS Vc=   74.34 KNS Vs=   .00 KNS
                          STIRRUPS ARE NOT REQUIRED.

```
    49J                        426X 484X  274                       70J
 |---------------------------------------------------------------------|
 |                                                                     |
 |                                                                     |
 | |===================================================================| |
 | 3No12 H 184.   0.TO  427                                             |
 | |===================================================================| |
 |                                                                     |
 |                                                                     |
 |---------------------------------------------------------------------|

 |------------------|  |------------------|  |------------------|
 |                  |  | |              | |  | |              | |
 |        ooo       |  | |     ooo      | |  | |     ooo      | |
 | 3#12             |  | | 3#12         | |  | | 3#12         | |
 |        ooo       |  | |     ooo      | |  | |     ooo      | |
 |                  |  | |              | |  | |              | |
 |                  |  | |              | |  | |              | |
 |------------------|  |-|--------------|-|  |-|--------------|-|
```

            B E A M   N O. 254   D E S I G N   R E S U L T S - FLEXURE

   LEN -   427. MM FY - 414. FC - 25. MPA, SIZE -   485. X 275. MMS

   LEVEL   HEIGHT   BAR INFO   FROM   TO   ANCHOR
             (MM)   (MM)   (MM)   STA END
   ----

     1   84.   3 - 12MM   0.   427.   YES   YES
```
|-----------------------------------------------------------------|
|   CRITICAL POS MOMENT=      4.69 KN-MET  AT     427.MM, LOAD   1 |
|   REQD STEEL=   309.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033   |
|   MAX/MIN/ACTUAL BAR SPACING=    371./    37./  186. MMS         |
|   BASIC/REQD. DEVELOPMENT LENGTH =    177./   327. MMS           |
|-----------------------------------------------------------------|
```

            B E A M   N O. 254   D E S I G N   R E S U L T S - SHEAR

       AT START SUPPORT - Vu=   5.54 KNS Vc=   74.34 KNS Vs=   .00 KNS
                          STIRRUPS ARE NOT REQUIRED.
       AT END   SUPPORT - Vu=   5.54 KNS Vc=   74.34 KNS Vs=   .00 KNS
                          STIRRUPS ARE NOT REQUIRED.

```
___ 70J _____ 426X 484X  274 _____ 91J ___
|                                                                               |
| |                                                                           | |
| |                                                                           | |
| 3No12 H  84.   0.TO   427                                                     |
| |=========================================================================| |
| |                                                                           | |
| |                                                                           | |
| |                                                                           | |
| |                                                                           | |
```

```
|----------------------|   |-------------------------|   |-----------------------|
| |                  | |   | |                     | |   | |                   | |
| |                  | |   | |                     | |   | |                   | |
| 3#12               | |   | 3#12                  | |   | 3#12                | |
| |      ooo         | |   | |        ooo          | |   | |        ooo        | |
| |                  | |   | |                     | |   | |                   | |
| |                  | |   | |                     | |   | |                   | |
| |                  | |   | |                     | |   | |                   | |
|----------------------|   |-------------------------|   |-----------------------|
```

        B E A M   N O. 261   D E S I G N   R E S U L T S - FLEXURE

LEN -   428. MM FY - 414. FC - 25. MPA, SIZE - 485. X 275. MMS

LEVEL   HEIGHT   BAR INFO   FROM   TO   ANCHOR
          (MM)   (MM)   (MM)   STA END
_____

   1   189.   2 - 16MM   0.   428.   YES YES
|---|
| CRITICAL NEG MOMENT=   26.53 KN-MET AT   0.MM, LOAD   1 |
| REQD STEEL=   388.MM2, ROW= .0042, ROWMX= .0194 ROWMN= .0033 |
| MAX/MIN/ACTUAL BAR SPACING=   367./ 41./ 367. MMS |
BASIC/REQD. DEVELOPMENT LENGTH =   316./   478. MMS

        B E A M   N O. 261   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   31.43 KNS Vc= 74.34 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   31.43 KNS Vc= 74.34 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
```

```
___ 8J _____ 427X 484X  274 _____ 29J ___
|                                                                               |
| |=========================================================================| |
| 2No16 H 189.   0.TO   428                                                     |
| |                                                                           | |
| |                                                                           | |
| |                                                                           | |
| |                                                                           | |
```

```
|----------------------|   |-------------------------|   |-----------------------|
| |      oo          | |   | |        oo           | |   | |        oo         | |
| 2#16               | |   | 2#16                  | |   | 2#16                | |
| |                  | |   | |                     | |   | |                   | |
| |                  | |   | |                     | |   | |                   | |
| |                  | |   | |                     | |   | |                   | |
|----------------------|   |-------------------------|   |-----------------------|
```

B E A M N O. 262 D E S I G N R E S U L T S - FLEXURE

LEN - 428. MM FY - 414. FC - 25. MPA, SIZE - 485. X 275. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA	END
1	191.	3 - 12MM	0.	428.	YES	YES

```
|------------------------------------------------------------------------|
| CRITICAL NEG MOMENT=    13.08 KN-MET  AT     0.MM, LOAD   1 |
| REQD STEEL=   309.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
| MAX/MIN/ACTUAL BAR SPACING=   371./   37./  186. MMS          |
| BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS           |
|------------------------------------------------------------------------|
```

B E A M N O. 262 D E S I G N R E S U L T S - SHEAR

AT START SUPPORT - Vu= 20.73 KNS Vc= 74.34 KNS Vs= .00 KNS
               STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu= 20.73 KNS Vc= 74.34 KNS Vs= .00 KNS
               STIRRUPS ARE NOT REQUIRED.

```
   29J_____   427X 484X  274_____  50J
  |--------------------------------------------------------------------|
  | |================================================================| |
  | 3No12 H 191.  0.TO  428                                           |
  |                                                                    |
  |--------------------------------------------------------------------|

   _____    _____    _____
  |                |  |                |  |                |
  |      ooo       |  |      ooo       |  |      ooo       |
  | 3#12           |  | 3#12           |  | 3#12           |
  |                |  |                |  |                |
  |_____|  |_____|  |_____|
```

B E A M N O. 263 D E S I G N R E S U L T S - FLEXURE

LEN - 427. MM FY - 414. FC - 25. MPA, SIZE - 485. X 275. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA	END
1	84.	3 - 12MM	11.	427.	NO	YES

```
|------------------------------------------------------------------------|
| CRITICAL POS MOMENT=     .91 KN-MET  AT   427.MM, LOAD   1 |
| REQD STEEL=   309.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
| MAX/MIN/ACTUAL BAR SPACING=   371./   37./  186. MMS          |
| BASIC/REQD. DEVELOPMENT LENGTH =   177./   327. MMS           |
|------------------------------------------------------------------------|
```

| 2 | 191. | 3 - 12MM | 0. | 427. | YES | YES |

```
|------------------------------------------------------------------------|
| CRITICAL NEG MOMENT=    4.21 KN-MET  AT    0.MM, LOAD   1 |
| REQD STEEL=   309.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
| MAX/MIN/ACTUAL BAR SPACING=   371./   37./  186. MMS          |
| BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS           |
|------------------------------------------------------------------------|
```

B E A M   N O. 263   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   11.98 KNS Vc=   74.34 KNS Vs=   .00 KNS
                    STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   11.98 KNS Vc=   74.34 KNS Vs=   .00 KNS
                    STIRRUPS ARE NOT REQUIRED.

```
    50J_____ 426X 484X  274_____ 71J
   |                                                                  |
   |                                                                  |
   | |==========================================================| |
   | 3No12 H 184.  11.TO  427                                      |
   | |==========================================================| |
   |                                                                  |
   |                                                                  |
   |                                                                  |

   |                |  |                 |  |                 |
   |                |  |                 |  |                 |
   |        ooo     |  |        ooo      |  |        ooo      |
   | 3#12           |  | 3#12            |  | 3#12            |
   |                |  |        ooo      |  |        ooo      |
   |                |  |                 |  |                 |
   |_____|  |_____|  |_____|
```

B E A M   N O. 264   D E S I G N   R E S U L T S - FLEXURE

LEN -   427. MM FY - 414. FC - 25. MPA, SIZE - 485. X 275. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END
1	84.	3 - 12MM	0.	427.	YES YES

```
|------------------------------------------------------------------|
|   CRITICAL POS MOMENT=      3.18 KN-MET  AT   427.MM, LOAD   1 |
|   REQD STEEL=   309.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=   371./   37./  186. MMS         |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   327. MMS          |
|------------------------------------------------------------------|
```

B E A M   N O. 264   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   5.33 KNS Vc=   74.34 KNS Vs=   .00 KNS
                    STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   5.33 KNS Vc=   74.34 KNS Vs=   .00 KNS
                    STIRRUPS ARE NOT REQUIRED.

```
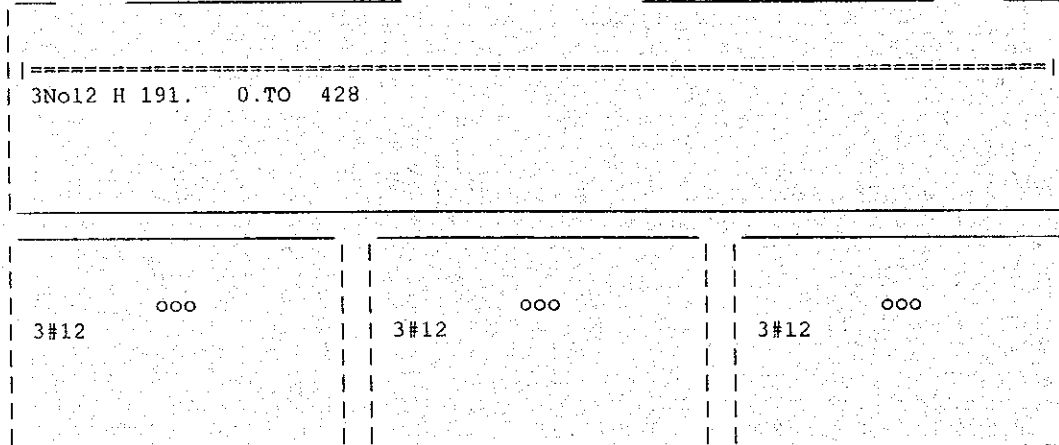    71J_____ 426X 484X  274_____ 92J
   |                                                                  |
   |                                                                  |
   | 3No12 H  84.   0.TO  427                                      |
   | |==========================================================| |
   |                                                                  |
   |                                                                  |
   |                                                                  |

   |                |  |                 |  |                 |
   |                |  |                 |  |                 |
   | 3#12           |  | 3#12            |  | 3#12            |
   |        ooo     |  |        ooo      |  |        ooo      |
   |                |  |                 |  |                 |
   |_____|  |_____|  |_____|
```

*********************END OF BEAM DESIGN*************************

246. END CON DESIGN
247. FINISH

*************** END OF STAAD-III ***************

**** DATE= JAN 30,2000   TIME= 9:16:57 ****

****
*   For questions on STAAD-III,   contact: *
*   Research Engineers, Inc at   *
* West Coast: Ph- (714) 974-2500 Fax- (714) 921-2543 *
* East Coast: Ph- (508) 688-3626 Fax- (508) 685-7230 *
****

11-214

2-1-5 BOX CULVERT AT CH.5+882

(1) BOX CULVERT

BOX CULVERT AT CH. 4+882

2 = JOINT NUMBER
4 = MEMBER NUMBER

11-215

```
              ********************************************************
              *                                                      *
              *              S T A A D - III                         *
              *              Revision 22.3a                          *
              *              Proprietary Program of                  *
              *              Research Engineers, Inc.                 *
              *              Date=    JAN 30, 2000                    *
              *              Time=    11:40:43                        *
              *                                                      *
              *       USER ID: Development Design Consultants L *     *
              ********************************************************
```

```
1.  STAAD PLANE DESIGN OF 3 X 4.5 X 4 BOX CULVERT AT CH. 4+882
2.  UNIT METER KNS
3.  JOINT COORD
4.   1  0.00  4.35  0.00
5.   2  4.71  4.35  0.00
6.   3  9.42  4.35  0.00
7.   4 14.13  4.35  0.00
8.   5  0.00  0.00  0.00    10    4.71  0.00  0.00
9.  11  5.65  0.00  0.00    15    9.42  0.00  0.00
10. 16 10.36  0.00  0.00    20   14.13  0.00  0.00
11. MEMBER INCI
12.  1      1     2      3
13.  4      1     5
14.  5      2    10
15.  6      3    15
16.  7      4    20
17.  8      5     6     22
18. MEMBER PROPERTY
19. 1 TO 3    PRIS    YD    0.350 ZD 1.0
20. 4  7      PRIS    YD    0.350 ZD 1.0
21. 5  6      PRIS    YD    0.275 ZD 1.0
22. 8 TO 22   PRIS    YD    0.350 ZD 1.0
23. CONSTANT
24. E 23.667E6 ALL
25. DENSITY 23.56 ALL
26. SUPPORT
27. *6 TO 19      FIXED BUT MZ    KFY    1883
28. *5    20      FIXED BUT MZ    KFY     942
29. 5 6 7 8       FIXED BUT MZ    KFY    2525
30. 9 TO 16       FIXED BUT MZ    KFY    2825
31. 17 18 19 20   FIXED BUT MZ    KFY    2525
32. *
33. LOAD   1   : SELFWEIGHT
34. SELFWEIGHT  Y  -1
35. LOAD   2   : FILL WEIGHT
36. MEMBER LOAD
37. 1  TO  3  UNI    GY     -21.28
38. LOAD  3   : BACK FILL (MINIMUM)
39. MEMBER LOAD
40.  4 TRAP     GX      6.16  26.72
41.  7 TRAP     GX     -6.16 -26.72
42. LOAD  4   : BACK FILL (MAXIMUM)
43. MEMBER LOAD
44.  4 TRAP     GX     16.15  34.82  0.00  1.98
45.  4 TRAP     GX     34.82  64.74  1.98  4.35
46.  7 TRAP     GX    -16.15 -34.82  0.00  1.98
47.  7 TRAP     GX    -34.82 -64.74  1.98  4.35
48. LOAD 5    : LL IN ADJACENT SPANS
49. MEMBER LOAD
50.  1 UNI      GY    -21.02   1.37  3.34
51.  2 UNI      GY    -21.02   1.37  3.34
52. LOAD 6    : LL IN ALTERNATE SPAN
53. MEMBER LOAD
54.  1 UNI      GY    -21.02   1.37  3.34
55.  3 UNI      GY    -21.02   1.09  3.07
56. LOAD 7    : LL IN SPAN 1
57. MEMBER LOAD
```

```
 58.   1 UNI      GY   -21.02    1.37   3.34
 59.  LOAD 8    : LL IN SPAN 2
 60.  MEMBER LOAD
 61.   2 UNI      GY   -21.02    1.37   3.34
 62.  LOAD 9    : MILITARY LOADING IN SPAN 1
 63.  MEMBER LOAD
 64.   1 UNI      GY   -17.56    0.76   2.35
 65.   1 UNI      GY   -17.56    2.35   3.95
 66.  LOAD 10   : MILITARY LOADING IN SPAN 2
 67.  MEMBER LOAD
 68.   2 UNI      GY   -17.56    0.76   2.35
 69.   2 UNI      GY   -17.56    2.35   3.95
 70.  LOAD 11   : LL IN SPAN 1 FOR MAX. SHEAR
 71.  MEMBER LOAD
 72.   1 UNI      GY   -21.02    0.00   1.98
 73.  LOAD 12   : MILITARY LOADING IN SPAN 1 FOR MAX. SHEAR
 74.  MEMBER LOAD
 75.   1 UNI      GY   -17.56    0.00   1.60
 76.   1 UNI      GY   -17.56    1.60   3.20
 77.  *
 78.  LOAD COMB 13
 79.  1  1.3  2  1.3  4  1.3  11  2.171
 80.  LOAD COMB 14
 81.  1  1.3  2  1.3  4  1.3  12  2.171
 82.  *
 83.  LOAD COMB 15
 84.  1  1.3  2  1.3  4  1.3  5  2.171
 85.  LOAD COMB 16
 86.  1  1.3  2  1.3  4  1.3  6  2.171
 87.  LOAD COMB 17
 88.  1  1.3  2  1.3  4  1.3  7  2.171
 89.  LOAD COMB 18
 90.  1  1.3  2  1.3  4  1.3  8  2.171
 91.  LOAD COMB 19
 92.  1  1.3  2  1.3  4  1.3  9  2.171
 93.  LOAD COMB 20
 94.  1  1.3  2  1.3  4  1.3  10  2.171
 95.  *
 96.  LOAD COMB 21
 97.  1  1.3  2  1.3  3  1.3  5  2.171
 98.  LOAD COMB 22
 99.  1  1.3  2  1.3  3  1.3  6  2.171
100.  LOAD COMB 23
101.  1  1.3  2  1.3  3  1.3  7  2.171
102.  LOAD COMB 24
103.  1  1.3  2  1.3  3  1.3  8  2.171
104.  LOAD COMB 25
105.  1  1.3  2  1.3  3  1.3  9  2.171
106.  LOAD COMB 26
107.  1  1.3  2  1.3  3  1.3  10  2.171
108.  LOAD COMB 27
109.  1  1.3  4  1.3
110.  *
```

11-217

111. PERFORM ANALYSIS

P R O B L E M   S T A T I S T I C S

NUMBER OF JOINTS/MEMBER+ELEMENTS/SUPPORTS =   20/   22/   16
ORIGINAL/FINAL BAND-WIDTH =   16/   4
TOTAL PRIMARY LOAD CASES =   12, TOTAL DEGREES OF FREEDOM =   44
SIZE OF STIFFNESS MATRIX =   440 DOUBLE PREC. WORDS
REQRD/AVAIL. DISK SPACE = 12.05/ 219.2 MB, EXMEM = 1956.5 MB

++ Processing Element Stiffness Matrix.   11:40:43
++ Processing Global Stiffness Matrix.   11:40:43
++ Processing Triangular Factorization.   11:40:43
++ Calculating Joint Displacements.   11:40:43
++ Calculating Member Forces.   11:40:43

112. LOAD LIST 13 TO 27
113. PRINT MAXFORCE ENVELOP LIST 1 2 4 5 8 TO 17

MEMBER FORCE ENVELOPE

ALL UNITS ARE KNS   METE

MAX AND MIN FORCE VALUES AMONGST ALL SECTION LOCATIONS

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
1	MAX	157.69	.00	14	137.62	4.71	25			
		.00	.00	13	.00	.00	13	88.60 C	.00	15
	MIN	-167.25	4.71	25	-101.74	1.96	25			
		.00	4.71	27	.00	4.71	27	31.03 C	4.71	22
2	MAX	151.20	.00	26	129.33	.00	21			
		.00	.00	13	.00	.00	13	97.06 C	.00	20
	MIN	-151.20	4.71	20	-93.10	2.36	20			
		.00	4.71	27	.00	4.71	27	20.64 C	4.71	22
4	MAX	146.93	4.35	13	58.58	2.17	27			
		.00	.00	13	.00	.00	13	204.33 C	4.35	14
	MIN	-88.60	.00	15	-123.88	4.35	13			
		.00	4.35	27	.00	4.35	27	28.85 C	3.99	27
5	MAX	11.17	.00	25	32.49	.00	25			
		.00	.00	13	.00	.00	13	325.38 C	4.35	21
	MIN	-8.59	4.35	20	-24.66	.00	20			
		.00	4.35	27	.00	4.35	27	46.89 C	3.99	27
8	MAX	-46.13	.00	27	36.16	.94	21			
		.00	.00	13	.00	.00	13	.00	.00	13
	MIN	-135.19	.94	14	-123.88	.00	13			
		.00	.94	27	.00	.94	27	.00	.94	27
9	MAX	-25.95	.00	26	75.77	.94	21			
		.00	.00	13	.00	.00	13	.00	.00	13
	MIN	-70.82	.94	14	-30.08	.00	27			
		.00	.94	27	.00	.94	27	.00	.94	27
10	MAX	19.67	.00	26	75.77	.00	21			
		.00	.00	13	.00	.00	13	.00	.00	13
	MIN	-18.06	.94	27	-.17	.00	27			
		.00	.94	27	.00	.94	27	.00	.94	27
11	MAX	75.09	.00	21	68.42	.00	25			
		.00	.00	13	.00	.00	13	.00	.00	13
	MIN	-.12	.94	27	-13.03	.94	20			
		.00	.94	27	.00	.94	27	.00	.94	27

11-218

MEMB		FY/ FZ	DIST DIST	LD LD	MZ/ MY	DIST DIST	LD LD	FX	DIST	LD
12	MAX	139.28	.00	21	23.75	.00	13			
		.00	.00	13	.00	.00	13	.00	.00	13
	MIN	20.53	.94	27	-130.21	.94	21			
		.00	.94	27	.00	.94	27	.00	.94	27
13	MAX	-32.75	.00	27	11.08	.94	13			
		.00	.00	13	.00	.00	13	.00	.00	13
	MIN	-131.66	.94	21	-129.58	.00	21			
		.00	.94	27	.00	.94	27	.00	.94	27
14	MAX	-13.49	.00	27	58.22	.94	16			
		.00	.00	13	.00	.00	13	.00	.00	13
	MIN	-69.65	.94	21	-10.55	.00	21			
		.00	.94	27	.00	.94	27	.00	.94	27
15	MAX	6.12	.00	16	58.84	.94	15			
		.00	.00	13	.00	.00	13	.00	.00	13
	MIN	-12.22	.94	25	26.15	.47	27			
		.00	.94	27	.00	.94	27	.00	.94	27
16	MAX	62.13	.00	22	58.84	.00	15			
		.00	.00	13	.00	.00	13	.00	.00	13
	MIN	13.46	.94	27	-3.28	.94	26			
		.00	.94	27	.00	.94	27	.00	.94	27
17	MAX	119.52	.00	22	17.53	.00	19			
		.00	.00	13	.00	.00	13	.00	.00	13
	MIN	32.69	.94	27	-108.69	.94	26			
		.00	.94	27	.00	.94	27	.00	.94	27

```
114. START CONC DESIGN
115. FC 25000.0
116. TRACK 2
117. MAXMAIN 20.
118. CLEAR 0.05
119. DESIGN BEAM 1 2
```

B E A M   N O.   1   D E S I G N   R E S U L T S - FLEXURE

LEN - 4710. MM FY - 414. FC - 25. MPA, SIZE - 1000. X 350. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END	
1	69.	9 - 12MM	234.	3887.	NO	NO

```
|----------------------------------------------------------------|
|  CRITICAL POS MOMENT=    101.74 KN-MET  AT  4710.MM, LOAD  25 |
|  REQD STEEL=  1006.MM2, ROW= .0036, ROWMX= .0194 ROWMN= .0033 |
|  MAX/MIN/ACTUAL BAR SPACING=   886./   37./  111. MMS         |
|  BASIC/REQD. DEVELOPMENT LENGTH =    177./   355. MMS         |
|----------------------------------------------------------------|
```

| 2 | 279. | 7 - 16MM | 0. | 4710. | YES | YES |

```
|----------------------------------------------------------------|
|  CRITICAL NEG MOMENT=    137.62 KN-MET  AT  4710.MM, LOAD  25 |
|  REQD STEEL=  1380.MM2, ROW= .0049, ROWMX= .0194 ROWMN= .0033 |
|  MAX/MIN/ACTUAL BAR SPACING=   882./   41./  147. MMS         |
|  BASIC/REQD. DEVELOPMENT LENGTH =    316./   478. MMS         |
|----------------------------------------------------------------|
```

11-29

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL (+VE/-VE) (SQ. MM)		MOMENTS (+VE/-VE) (KNS-MET)		LOAD (+VE/-VE)	
0.	0./	987.	0./	97.	0/	15
392.	0./	491.	0./	49.	0/	15
785.	321./	211.	32./	21.	25/	20
1177.	677./	126.	67./	13.	25/	27
1570.	919./	71.	90./	7.	25/	27
1962.	1039./	32.	102./	3.	25/	27
2355.	1035./	10.	101./	1.	25/	27
2747.	906./	4.	89./	0.	25/	27
3140.	656./	15.	65./	2.	25/	27
3532.	292./	51.	29./	5.	25/	13
3925.	0./	383.	0./	38.	0/	13
4317.	0./	837.	0./	83.	0/	14
4710.	0./	1426.	0./	138.	0/	25

B E A M   N O.   1   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu= 136.68 KNS Vc= 228.01 KNS Vs=   .00 KNS
          PROVIDE 12 MM BARS AT 137. MM C/C FOR 981. MM

AT END   SUPPORT - Vu= 156.71 KNS Vc= 228.01 KNS Vs=   .00 KNS
          PROVIDE 12 MM BARS AT 137. MM C/C FOR 1374. MM

```
   1J                          4709X 999X  349                              2J
 _____
|                                                                          |
| |========================================================================| |
| 7No16 H 279.|  0.TO 4710|          |   |   |   |   |   |   |   |          |
|  9*12c/c137 |  |  |   |  |         |   |   |   |   |   |   |   | 12*12c/c137  |
|   9No12 H| 69. 234.TO|3887         |   |   |   |   |   |   |   |          |
|  =====================================================================    |
|                                                                          |
|_____|

 _____       _____       _____
|      ooooooo      |  |  |     ooooooo      |  |  |    ooooooo        |
|                   |  |  |                  |  |  |                   |
| 7#16              |  |  | 7#16             |  |  | 7#16              |
|                   |  |  |                  |  |  |                   |
|                   |  |  | 9#12             |  |  |                   |
|                   |  |  |     ooooooooo    |  |  |                   |
|                   |  |  |                  |  |  |                   |
|_____|  |__|_____|  |__|_____|
```

B E A M   N O.   2   D E S I G N   R E S U L T S - FLEXURE

LEN - 4710. MM FY - 414. FC - 25. MPA, SIZE - 1000. X 350. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA	END
1	73.	3 - 20MM	391.	4123.	NO	NO

```
|----------------------------------------------------------------------|
|  CRITICAL POS MOMENT=     93.10 KN-MET  AT  2355.MM, LOAD  20  |
|  REQD STEEL=    931.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033  |
|  MAX/MIN/ACTUAL BAR SPACING=    878./   45./  439. MMS  |
|  BASIC/REQD. DEVELOPMENT LENGTH =   493./   591. MMS  |
|----------------------------------------------------------------------|
```

| 2 | 281. | 12 - 12MM | 0. | 1929. | YES | NO |

```
|----------------------------------------------------------------------|
|  CRITICAL NEG MOMENT=    129.33 KN-MET  AT     0.MM, LOAD  21  |
|  REQD STEEL=   1293.MM2, ROW= .0046, ROWMX= .0194 ROWMN= .0033  |
|  MAX/MIN/ACTUAL BAR SPACING=    886./   37./   81. MMS  |
|  BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS  |
|----------------------------------------------------------------------|
```

11-220

```
    3          281.    10 - 12MM     2585.          4710.          NO   YES
|--------------------------------------------------------------------------|
|    CRITICAL NEG MOMENT=     112.91 KN-MET   AT   4710.MM, LOAD  26 |
|    REQD STEEL=  1130.MM2, ROW= .0040, ROWMX= .0194 ROWMN= .0033 |
|    MAX/MIN/ACTUAL BAR SPACING=    886./   37./   98. MMS          |
|    BASIC/REQD. DEVELOPMENT LENGTH =   177./  359. MMS             |
|--------------------------------------------------------------------------|
```

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL(+VE/-VE) (SQ. MM)	MOMENTS(+VE/-VE) (KNS-MET)	LOAD(+VE/-VE)
0.	0./ 1336.	0./ 129.	0/ 21
392.	0./ 783.	0./ 77.	0/ 21
785.	0./ 433.	0./ 43.	0/ 14
1177.	400./ 214.	40./ 22.	20/ 22
1570.	702./ 63.	70./ 6.	20/ 22
1962.	886./ 0.	87./ 0.	20/ 0
2355.	948./ 0.	93./ 0.	20/ 0
2747.	886./ 0.	87./ 0.	20/ 0
3140.	702./ 48.	70./ 5.	20/ 22
3532.	400./ 190.	40./ 19.	20/ 22
3925.	0./ 394.	0./ 40.	0/ 22
4317.	0./ 663.	0./ 66.	0/ 22
4710.	0./ 1159.	0./ 113.	0/ 26

B E A M N O.   2 D E S I G N R E S U L T S - SHEAR

```
AT START SUPPORT - Vu= 140.66 KNS  Vc=  228.01 KNS  Vs=    .00 KNS
                   PROVIDE 12 MM BARS AT 137. MM  C/C FOR  981. MM
AT END   SUPPORT - Vu= 140.65 KNS  Vc=  228.01 KNS  Vs=    .00 KNS
                   PROVIDE 12 MM BARS AT 137. MM  C/C FOR  981. MM
```

```
   2J_____ 4709X 999X  349_____3J____
|                                                                          |
| |==================================  ================================|  |
||12No12 H 281.|  0.TO 1929|        10No12 H 281.2585.TO 4710          |  |
|  9*12c/c137 |  |  |  |  |                |   |   |  | 9*12c/c137     |  |
|     3No20 H| 73. 391.TO|4123          |   |   |  |  |  |  |          |  |
|     ==================================  ==============================|  |
|                                                                          |
|                                                                          |
```

```
|                          |  |              |  |                          |
|   ooooooooooo            |  |              |  |   oooooooooo              |
|12#12                     |  |              |  |10#12                      |
|                          |  |              |  |                           |
|                          |  | 3#20         |  |                           |
|                          |  |      ooo     |  |                           |
|                          |  |              |  |                           |
|                          |  |              |  |                           |
```

```
120. CLEAR  0.065
121. DESIGN BEAM 4 5 8 TO 17
```

B E A M N O.   4 D E S I G N R E S U L T S - FLEXURE

LEN - 4350. MM FY - 414. FC - 25. MPA, SIZE - 1000. X 350. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END

11-221

```
    1         84.     12 - 12MM        0.          4350.        YES   YES
|-----------------------------------------------------------------------|
|   CRITICAL POS MOMENT=     123.88 KN-MET  AT  4350.MM, LOAD  13 |
|   REQD STEEL= 1323.MM2, ROW= .0050, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=     886./   37./   81. MMS        |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   350. MMS           |
|-----------------------------------------------------------------------|

    2        266.      8 - 12MM      185.          3984.         NO   NO
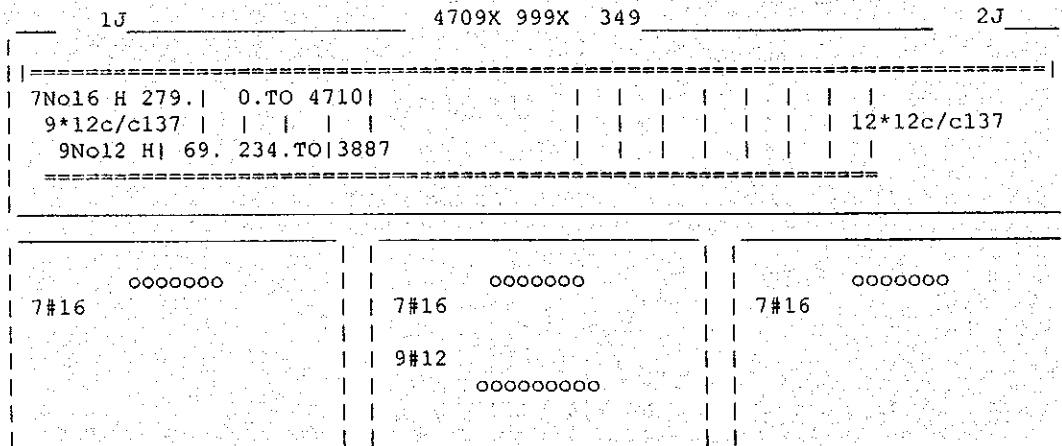|-----------------------------------------------------------------------|
|   CRITICAL NEG MOMENT=      58.58 KN-MET  AT  2175.MM, LOAD  27 |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=     886./   37./  127. MMS        |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS           |
|-----------------------------------------------------------------------|
```

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL (+VE/-VE) (SQ. MM)		MOMENTS (+VE/-VE) (KNS-MET)		LOAD (+VE/-VE)	
0.	1049./	0.	97./	0.	15/	0
362.	707./	0.	66./	0.	15/	0
725.	465./	111.	44./	11.	21/	27
1087.	351./	316.	33./	30.	21/	27
1450.	267./	475.	25./	45.	25/	27
1812.	222./	581.	21./	55.	25/	27
2175.	205./	624.	20./	59.	25/	27
2537.	213./	599.	20./	56.	25/	27
2900.	257./	496.	24./	47.	25/	27
3262.	340./	310.	32./	29.	25/	27
3625.	456./	36.	43./	3.	25/	27
3987.	816./	0.	76./	0.	13/	0
4350.	1359./	0.	124./	0.	13/	0

```
        B E A M   N O.   4   D E S I G N   R E S U L T S - SHEAR


AT START SUPPORT - Vu=   82.88 KNS  Vc=  215.56 KNS  Vs=     .00 KNS
                    STIRRUPS ARE NOT REQUIRED.

AT END    SUPPORT - Vu= 127.44 KNS  Vc=  215.56 KNS  Vs=     .00 KNS
                    PROVIDE 12 MM BARS AT 130. MM C/C FOR  906. MM
```

```
   1J_____    4349X 999X 349_____  5J____
|                                                                           |
|  ==================================================================       |
|   8No12 H 266. 185.TO 3984                  |  |  |  |  |  |               |
|                                             |  |  | 8*12c/c130            |
| 12No12 H 84.   0.TO 4350                    |  |  |  |  |  |               |
| |==================================================================| |    |
|                                                                           |
|                                                                           |

 _____   __ _____   __ _____
|                |  | |                |  | |                 |
|                |  | |   ooooooooo     |  | |                 |
|                |  | | 8#12            |  | |                 |
|                |  | |                |  | |                 |
| 12#12          |  | |12#12           |  | |12#12            |
|  oooooooooooo  |  | |   oooooooooooo  |  | |  oooooooooooo   |
|                |  | |                |  | |                 |
|_____|  |_|_____|  |_|_____|
```

B E A M N O. 5 D E S I G N R E S U L T S - FLEXURE

LEN - 4350. MM FY - 414. FC - 25. MPA, SIZE - 1000. X 275. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA	END
1	88.	2 - 20MM	0.	4350.	YES	YES

```
|-------------------------------------------------------------|
|   CRITICAL POS MOMENT=    24.66 KN-MET  AT     0.MM, LOAD  20 |
|   REQD STEEL=   624.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=   878./   45./  878. MMS        |
|   BASIC/REQD. DEVELOPMENT LENGTH =   493./   594. MMS         |
|-------------------------------------------------------------|
```

| 2 | 187. | 2 - 20MM | 0. | 4350. | YES | YES |

```
|-------------------------------------------------------------|
|   CRITICAL NEG MOMENT=    32.49 KN-MET  AT     0.MM, LOAD  25 |
|   REQD STEEL=   624.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=   878./   45./  878. MMS        |
|   BASIC/REQD. DEVELOPMENT LENGTH =   493./   598. MMS         |
|-------------------------------------------------------------|
```

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL (+VE/-VE) (SQ. MM)		MOMENTS (+VE/-VE) (KNS-MET)		LOAD (+VE/-VE)	
0.	369./	490.	25./	32.	20/	25
362.	322./	427.	22./	28.	20/	25
725.	275./	365.	18./	24.	20/	25
1087.	228./	303.	15./	20.	20/	25
1450.	181./	242.	12./	16.	20/	25
1812.	134./	181.	9./	12.	20/	25
2175.	88./	121.	6./	8.	20/	25
2537.	55./	61.	4./	4.	27/	25
2900.	71./	32.	5./	2.	27/	26
3262.	86./	76.	6./	5.	27/	26
3625.	143./	120.	10./	8.	19/	26
3987.	201./	164.	14./	11.	19/	26
4350.	260./	208.	17./	14.	19/	26

B E A M N O. 5 D E S I G N R E S U L T S - SHEAR

AT START SUPPORT - Vu= 11.17 KNS Vc= 153.28 KNS Vs=   .00 KNS
                     STIRRUPS ARE NOT REQUIRED.
AT END SUPPORT - Vu= 11.17 KNS Vc= 153.28 KNS Vs=   .00 KNS
                     STIRRUPS ARE NOT REQUIRED.

```
  2J                          4349X 999X  274                    10J
|                                                                     |
|                                                                     |
| |===================================================================| |
| 2No20 H 188.  0.TO 4350                                             |
| |===================================================================| |
|                                                                     |
|                                                                     |
|                                                                     |
```

```
|              oo     | |            oo      | |            oo      |
| 2#20                | | 2#20               | | 2#20               |
|              oo     | |            oo      | |            oo      |
```

11-223

```
        B E A M   N O.   8   D E S I G N   R E S U L T S -   FLEXURE

LEN -   942. MM  FY - 414.  FC -  25.  MPA, SIZE - 1000. X  350. MMS

LEVEL     HEIGHT     BAR INFO        FROM          TO          ANCHOR
           (MM)                      (MM)         (MM)        STA  END
```

```
   1       84.     12 - 12MM         0.          942.         YES  YES
|-----------------------------------------------------------------------|
|   CRITICAL POS MOMENT=    123.88 KN-MET  AT     0.MM, LOAD  13 |
|   REQD STEEL=  1323.MM2, ROW= .0050, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=   886./   37./   81. MMS         |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   350. MMS          |
|-----------------------------------------------------------------------|

   2      266.      8 - 12MM       230.          942.          NO  YES
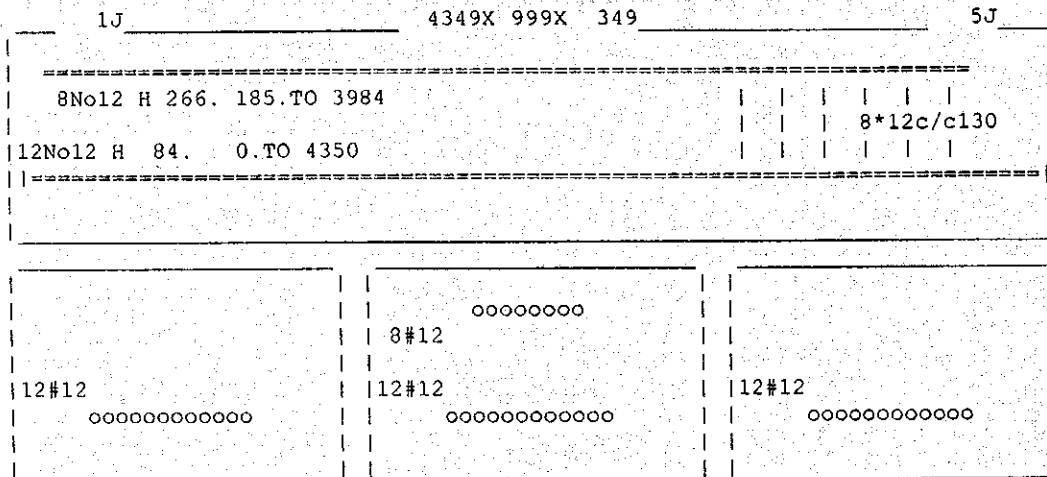|-----------------------------------------------------------------------|
|   CRITICAL NEG MOMENT=     36.16 KN-MET  AT   942.MM, LOAD  21 |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=   886./   37./  127. MMS         |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS          |
|-----------------------------------------------------------------------|
```

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL(+VE/-VE) (SQ. MM)		MOMENTS(+VE/-VE) (KNS-MET)		LOAD(+VE/-VE)	
0.	1359./	0.	124./	0.	13/	0
78.	1250./	0.	114./	0.	13/	0
157.	1140./	0.	105./	0.	13/	0
235.	1031./	0.	95./	0.	13/	0
314.	922./	0.	86./	0.	13/	0
392.	814./	0.	76./	0.	13/	0
471.	705./	0.	66./	0.	13/	0
549.	597./	0.	56./	0.	13/	0
628.	501./	48.	47./	5.	27/	26
706.	456./	120.	43./	11.	27/	21
785.	410./	206.	39./	20.	27/	21
863.	364./	293.	34./	28.	27/	21
942.	317./	382.	30./	36.	27/	21

```
        B E A M   N O.   8   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=  127.88 KNS   Vc=  215.56 KNS  Vs=      .00 KNS
                   PROVIDE 12 MM BARS AT 130. MM  C/C FOR   942. MM
AT END    SUPPORT - Vu=  132.41 KNS   Vc=  215.56 KNS  Vs=      .00 KNS
                   PROVIDE 12 MM BARS AT 130. MM  C/C FOR   942. MM
```

```
___5J_____941X 999X  349_____6J___
|                                                                             |
|   _____|  |
|   |====================================================================|| |
|   |     8No12|H  266.  230.TO   942   |          |          |          ||
| 9*12c/c130            |               |          |        9*12c/c130    |
|12No12 H  84.    0.TO   942            |          |          |          |
| |====================================================================== ||
|                                                                             |
|   _____|  |
```

```
 _____   __   _____   __   _____
|                    | |  | |            | |  | |            |
|                    | |  | |  oooooooo   | |  | |  oooooooo  |
|                    | |  | | 8#12        | |  | | 8#12       |
|                    | |  | |             | |  | |            |
|12#12               | |  | |12#12        | |  | |12#12       |
|    ooooooooooooo    | |  |    ooooooooooo | |  |    ooooooooooo |
|                    | |  | |             | |  | |            |
|_____| |__| |_____| |__| |_____|
```

```
      B E A M   N O.   9   D E S I G N   R E S U L T S -  FLEXURE

LEN -  942. MM  FY -  414.  FC -  25.  MPA, SIZE - 1000. X  350. MMS

LEVEL    HEIGHT     BAR INFO      FROM         TO         ANCHOR
          (MM)                    (MM)        (MM)        STA  END
```

```
   1       84.     8 - 12MM       0.          942.        YES  YES
|--------------------------------------------------------------|
|   CRITICAL POS MOMENT=     30.08 KN-MET  AT   942.MM, LOAD  27 |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=    886./   37./  127. MMS        |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   352. MMS          |
|--------------------------------------------------------------|

   2      266.     8 - 12MM       0.          942.        YES  YES
|--------------------------------------------------------------|
|   CRITICAL NEG MOMENT=     75.77 KN-MET  AT   942.MM, LOAD  21 |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=    886./   37./  127. MMS        |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS          |
|--------------------------------------------------------------|
```

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL(+VE/-VE) (SQ. MM)		MOMENTS(+VE/-VE) (KNS-MET)		LOAD(+VE/-VE)	
0.	317./	382.	30./	36.	27/	21
78.	294./	413.	28./	39.	27/	21
157.	271./	446.	26./	42.	27/	21
235.	247./	479.	23./	45.	27/	21
314.	222./	513.	21./	48.	27/	21
392.	197./	548.	19./	52.	27/	21
471.	171./	583.	16./	55.	27/	21
549.	144./	619.	14./	58.	27/	21
628.	117./	657.	11./	62.	27/	21
706.	89./	695.	9./	65.	27/	21
785.	61./	733.	6./	69.	27/	21
863.	32./	773.	3./	72.	27/	21
942.	2./	814.	0./	76.	27/	21

```
      B E A M   N O.   9   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   63.50 KNS  Vc=  215.56 KNS  Vs=     .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   68.03 KNS  Vc=  215.56 KNS  Vs=     .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
```

```
    6J                       941X 999X  349                    7J
|                                                                   |
||====================================================================||
| 8No12 H 266.   0.TO  942                                           |
|                                                                   |
| 8No12 H  84.   0.TO  942                                           |
||====================================================================||
|                                                                   |
|                                                                   |
|                                                                   |

|-------------------------|  |-------------------------|  |-------------------------|
|     00000000       | |      00000000      | |      00000000      |
| 8#12               | | 8#12               | | 8#12               |
|                    | |                    | |                    |
| 8#12               | | 8#12               | | 8#12               |
|     00000000       | |      00000000      | |      00000000      |
|-------------------------|  |-------------------------|  |-------------------------|
```

11-225

B E A M   N O.   10   D E S I G N   R E S U L T S - FLEXURE

LEN -   942. MM FY - 414. FC - 25. MPA, SIZE - 1000. X 350. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA	END
1	84.	8 - 12MM	0.	352.	YES	NO

```
|-------------------------------------------------------------|
|   CRITICAL POS MOMENT=        .17 KN-MET  AT     0.MM, LOAD  27 |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=   886./   37./  127. MMS         |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   352. MMS          |
|-------------------------------------------------------------|
```

| 2 | 266. | 8 - 12MM | 0. | 942. | YES | YES |

```
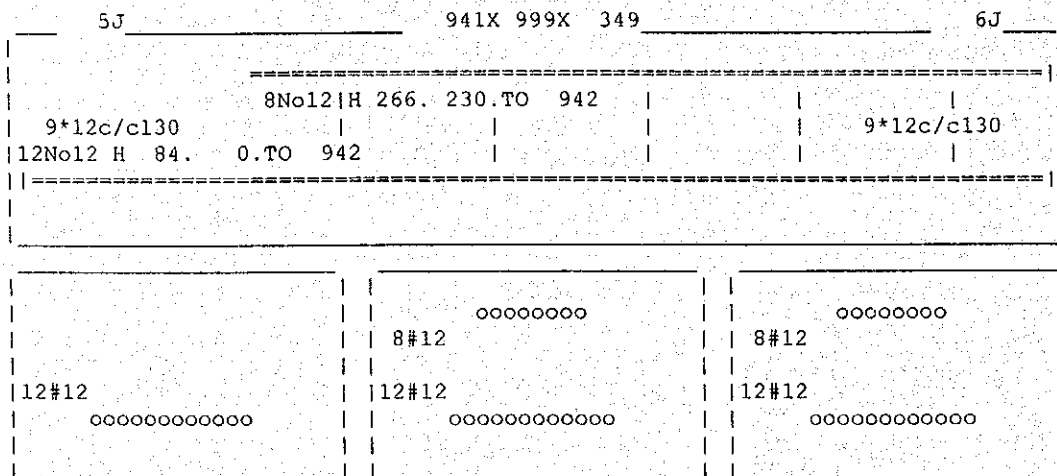|-------------------------------------------------------------|
|   CRITICAL NEG MOMENT=      75.77 KN-MET  AT     0.MM, LOAD  21 |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=   886./   37./  127. MMS         |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS          |
|-------------------------------------------------------------|
```

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL(+VE/-VE) (SQ. MM)		MOMENTS(+VE/-VE) (KNS-MET)		LOAD(+VE/-VE)	
0.	2./	814.	0./	76.	27/	21
78.	0./	797.	0./	74.	0/	21
157.	0./	781.	0./	73.	0/	21
235.	0./	771.	0./	72.	0/	25
314.	0./	764.	0./	71.	0/	25
392.	0./	757.	0./	71.	0/	25
471.	0./	752.	0./	70.	0/	25
549.	0./	747.	0./	70.	0/	25
628.	0./	742.	0./	69.	0/	25
706.	0./	739.	0./	69.	0/	25
785.	0./	736.	0./	69.	0/	25
863.	0./	734.	0./	69.	0/	25
942.	0./	733.	0./	68.	0/	25

B E A M   N O.   10   D E S I G N   R E S U L T S - SHEAR

```
AT START SUPPORT - Vu=   16.89 KNS  Vc=  215.56 KNS  Vs=     .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END    SUPPORT - Vu=   15.28 KNS  Vc=  215.56 KNS  Vs=     .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
```

```
    7J                          941X 999X  349                        8J
 |-------------------------------------------------------------------|
 | |===============================================================| |
 | 8No12 H 266.   0.TO  942                                         |
 |                                                                 |
 | 8No12 H  84.   0.TO  352                                        |
 | |=====================================|                         |
 |                                                                 |
 |-----------------------------------------------------------------|

 |----------------------|  |----------------------|  |----------------------|
 |     ooooooooo        |  |     ooooooooo        |  |     ooooooooo        |
 | 8#12                 |  | 8#12                 |  | 8#12                 |
 |                      |  |                      |  |                      |
 | 8#12                 |  |                      |  |                      |
 |     ooooooooo        |  |                      |  |                      |
 |----------------------|  |----------------------|  |----------------------|
```

B E A M   N O.   11   D E S I G N   R E S U L T S - FLEXURE

LEN - 942. MM   FY - 414. FC - 25. MPA, SIZE - 1000. X 350. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END
1	84.	8 - 12MM	315.	942.	NO YES

```
|-------------------------------------------------------------------|
|   CRITICAL POS MOMENT=     13.03 KN-MET   AT    942.MM, LOAD  20   |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033     |
|   MAX/MIN/ACTUAL BAR SPACING=    886./   37./  127. MMS            |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./  352. MMS               |
|-------------------------------------------------------------------|
```

2	266.	8 - 12MM	0.	942.	YES YES

```
|-------------------------------------------------------------------|
|   CRITICAL NEG MOMENT=     68.42 KN-MET   AT     0.MM, LOAD  25    |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033     |
|   MAX/MIN/ACTUAL BAR SPACING=    886./   37./  127. MMS            |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./  359. MMS               |
|-------------------------------------------------------------------|
```

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL(+VE/-VE) (SQ. MM)		MOMENTS(+VE/-VE) (KNS-MET)		LOAD(+VE/-VE)	
0.	0./	733.	0./	68.	0/	25
78.	0./	683.	0./	64.	0/	14
157.	0./	637.	0./	60.	0/	14
235.	0./	592.	0./	56.	0/	14
314.	0./	548.	0./	52.	0/	14
392.	0./	505.	0./	48.	0/	14
471.	0./	463.	0./	44.	0/	14
549.	0./	421.	0./	40.	0/	14
628.	0./	383.	0./	36.	0/	13
706.	11./	348.	1./	33.	20/	13
785.	53./	315.	5./	30.	20/	13
863.	95./	282.	9./	27.	20/	13
942.	136./	250.	13./	24.	20/	13

B E A M   N O.   11   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   72.31 KNS Vc= 215.56 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   67.78 KNS Vc= 215.56 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.

```
____8J_____941X 999X 349_____9J____
|                                                                          |
| |==========================================================================| |
| 8No12 H 266.  0.TO 942                                                    |
|                                                                          |
|              8No12 H  84. 315.TO  942                                    |
|              ==============================================================| |
|                                                                          |
|                                                                          |
|_____|

|          oooooooo  |  |      oooooooo  |  |      oooooooo  |
| 8#12               |  | 8#12           |  | 8#12           |
|                    |  |                |  |                |
|                    |  | 8#12           |  | 8#12           |
|                    |  |     oooooooo   |  |     oooooooo   |
```

11-227

B E A M N O. 12 D E S I G N R E S U L T S - FLEXURE

LEN - 942. MM FY - 414. FC - 25. MPA, SIZE - 1000. X 350. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END
1	86.	7 - 16MM	0.	942.	YES YES

```
|-----------------------------------------------------------------|
|   CRITICAL POS MOMENT=   130.21 KN-MET  AT   942.MM, LOAD  21 |
|   REQD STEEL=  1383.MM2, ROW= .0052, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=   882./   41./  147. MMS          |
|   BASIC/REQD. DEVELOPMENT LENGTH =   316./   470. MMS           |
|-----------------------------------------------------------------|
```

2	266.	8 - 12MM	0.	594.	YES NO

```
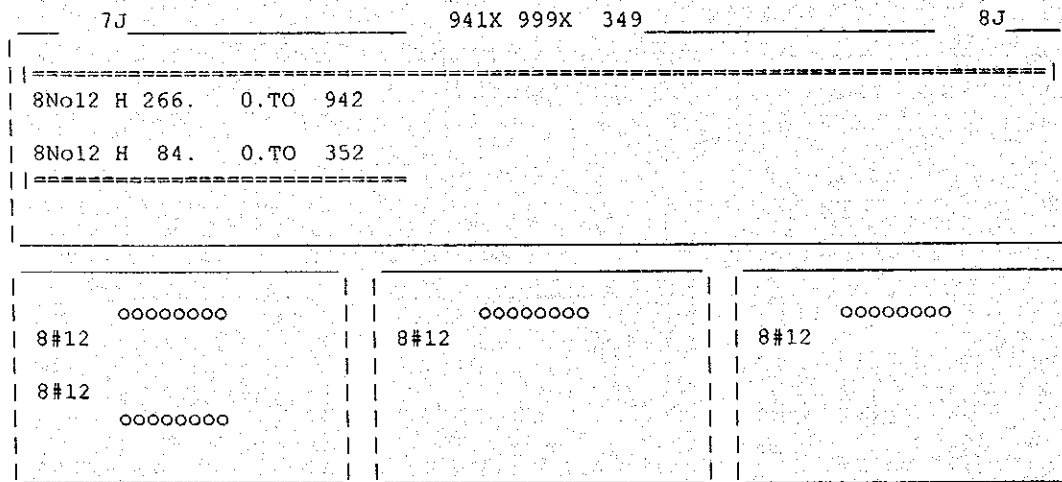|-----------------------------------------------------------------|
|   CRITICAL NEG MOMENT=   23.75 KN-MET  AT    0.MM, LOAD  13 |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=   886./   37./  127. MMS          |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS           |
|-----------------------------------------------------------------|
```

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL(+VE/-VE) (SQ. MM)		MOMENTS(+VE/-VE) (KNS-MET)		LOAD(+VE/-VE)	
0.	136./	250.	13./	24.	20/	13
78.	232./	162.	22./	15.	20/	13
157.	332./	76.	32./	7.	26/	13
235.	433./	6.	41./	1.	26/	27
314.	534./	0.	50./	0.	26/	0
392.	635./	0.	60./	0.	26/	0
471.	737./	0.	69./	0.	26/	0
549.	846./	0.	79./	0.	21/	0
628.	963./	0.	89./	0.	21/	0
706.	1080./	0.	99./	0.	21/	0
785.	1197./	0.	110./	0.	21/	0
863.	1315./	0.	120./	0.	21/	0
942.	1433./	0.	130./	0.	21/	0

B E A M N O. 12 D E S I G N R E S U L T S - SHEAR

```
AT START SUPPORT - Vu=, 136.50 KNS  Vc=  215.56 KNS  Vs=    .00 KNS
                   PROVIDE 12 MM BARS AT 130. MM  C/C FOR  942. MM
AT END   SUPPORT - Vu=  131.96 KNS  Vc=  215.56 KNS  Vs=    .00 KNS
                   PROVIDE 12 MM BARS AT 130. MM  C/C FOR  942. MM
```

```
     9J                      941X 999X  349                       10J
|                                                                       |
||=============================================                         |
| 8No12 H 266.   0.TO  594       |            |                         |
|  9*12c/c130|          |        |            |        9*12c/c130       |
| 7No16 H  86.   0.TO  942       |            |                         |
||==================================================================||  |
|                                                                    |  |
|                                                                    |  |


|                     |   |              |   |                      |
|     oooooooo        |   |   oooooooo   |   |                      |
| 8#12                |   | 8#12         |   |                      |
|                     |   |              |   |                      |
| 7#16                |   | 7#16         |   | 7#16                 |
|     ooooooo         |   |   ooooooo    |   |   ooooooo            |
|                     |   |              |   |                      |
```

11-228

B E A M   N O.   13   D E S I G N   R E S U L T S -   FLEXURE

LEN -   940. MM   FY - 414.   FC - 25. MPA, SIZE - 1000. X 350. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END

1   86.   7 - 16MM   0.   940.   YES YES
|---|
| CRITICAL POS MOMENT=   129.58 KN-MET AT   0.MM, LOAD 21 |
| REQD STEEL= 1376.MM2, ROW= .0052, ROWMX= .0194 ROWMN= .0033 |
| MAX/MIN/ACTUAL BAR SPACING=   882./   41./ 147. MMS |
BASIC/REQD. DEVELOPMENT LENGTH =   316./ 468. MMS

2   266.   8 - 12MM   307.   940.   NO   YES
|---|
| CRITICAL NEG MOMENT=   11.08 KN-MET AT   940.MM, LOAD 13 |
| REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
| MAX/MIN/ACTUAL BAR SPACING=   886./   37./ 127. MMS |
BASIC/REQD. DEVELOPMENT LENGTH =   177./ 359. MMS

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL(+VE/-VE) (SQ. MM)		MOMENTS(+VE/-VE) (KNS-MET)		LOAD(+VE/-VE)	
0.	1426./	0.	130./	0.	21/	0
78.	1315./	0.	120./	0.	21/	0
157.	1204./	0.	110./	0.	21/	0
235.	1094./	0.	101./	0.	21/	0
313.	983./	0.	91./	0.	21/	0
392.	873./	0.	81./	0.	21/	0
470.	764./	0.	71./	0.	21/	0
548.	654./	0.	61./	0.	21/	0
627.	545./	0.	51./	0.	21/	0
705.	436./	1.	41./	0.	21/	27
783.	327./	34.	31./	3.	21/	27
862.	219./	68.	21./	7.	21/	27
940.	110./	116.	11./	11.	21/	13

B E A M   N O.   13   D E S I G N   R E S U L T S -   SHEAR

AT START SUPPORT - Vu= 124.37 KNS Vc= 215.56 KNS Vs=   .00 KNS
                   PROVIDE 12 MM BARS AT 130. MM C/C FOR 940. MM
AT END   SUPPORT - Vu= 128.88 KNS Vc= 215.56 KNS Vs=   .00 KNS
                   PROVIDE 12 MM BARS AT 130. MM C/C FOR 940. MM

```
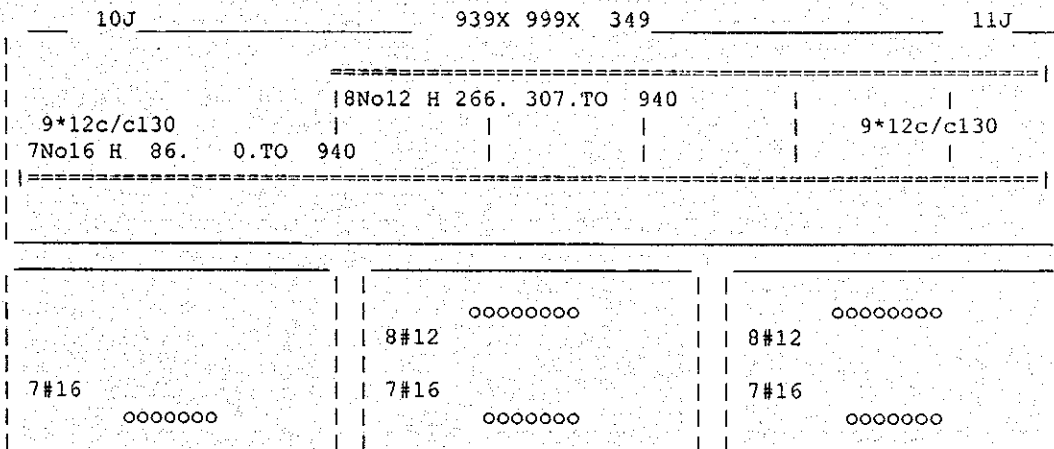     10J                        939X 999X  349                       11J
 |_____|
 |                                                                   |    |
 |                   |================================================| |
 |                   |8No12 H 266. 307.TO  940             |       | |
 | 9*12c/c130        |             |             |         |  9*12c/c130  |
 | 7No16 H  86.   0.TO  940        |             |         |       | |
 |_|================================================================|_| |
 |                                                                   |    |
 |                                                                   |    |
 |_____|____|


 |_____|   |_____|   |_____|
 |             | |   | |   0000000   | |   | |   0000000       |
 |             | |   | | 8#12        | |   | | 8#12            |
 |             | |   | |             | |   | |                 |
 | 7#16        | |   | | 7#16        | |   | | 7#16            |
 |   0000000     |   | |   0000000   | |   | |   0000000       |
 |_____|   |_|_____|_|   |_|_____|
```

B E A M   N O.   14   D E S I G N   R E S U L T S   -   FLEXURE

LEN -   942. MM   FY - 414.   FC - 25.   MPA, SIZE - 1000. X   350. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA	END
1	84.	8 - 12MM	0.	509.	YES	NO

```
|-------------------------------------------------------------------|
|   CRITICAL POS MOMENT=     10.55 KN-MET   AT   942.MM, LOAD   21  |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033    |
|   MAX/MIN/ACTUAL BAR SPACING=   886./   37./   127. MMS           |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   352. MMS             |
|-------------------------------------------------------------------|
```

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA	END
2	266.	8 - 12MM	0.	942.	YES	YES

```
|-------------------------------------------------------------------|
|   CRITICAL NEG MOMENT=     58.22 KN-MET   AT   942.MM, LOAD   16  |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033    |
|   MAX/MIN/ACTUAL BAR SPACING=   886./   37./   127. MMS           |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS             |
|-------------------------------------------------------------------|
```

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL(+VE/-VE) (SQ. MM)		MOMENTS(+VE/-VE) (KNS-MET)		LOAD(+VE/-VE)	
0.	110./	116.	11./	11.	21/	13
79.	61./	152.	6./	15.	21/	13
157.	11./	189.	1./	18.	21/	13
236.	0./	227.	0./	22.	0/	13
314.	0./	266.	0./	25.	0/	13
393.	0./	305.	0./	29.	0/	13
471.	0./	345.	0./	33.	0/	13
550.	0./	386.	0./	37.	0/	13
628.	0./	428.	0./	40.	0/	13
707.	0./	471.	0./	44.	0/	16
785.	0./	520.	0./	49.	0/	16
864.	0./	570.	0./	54.	0/	16
942.	0./	621.	0./	58.	0/	16

B E A M   N O.   14   D E S I G N   R E S U L T S   -   SHEAR

AT START SUPPORT - Vu=   62.33 KNS   Vc=   215.56 KNS   Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   66.87 KNS   Vc=   215.56 KNS   Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.

```
    11J                          942X 999X  349                          12J
|                                                                            |
| |============================================================================| |
| 8No12 H 266.   0.TO  942                                                    |
|                                                                            |
| 8No12 H  84.   0.TO  509                                                    |
| |====================================                                      |
|                                                                            |
|                                                                            |
```

```
|     ooooooooo     | |     ooooooooo     | |     ooooooooo     |
| 8#12              | | 8#12              | | 8#12              |
|                   | |                   | |                   |
| 8#12              | | 8#12              | |                   |
|     ooooooooo     | |     ooooooooo     | |                   |
```

11-230

B E A M   N O.   15   D E S I G N   R E S U L T S -   FLEXURE

LEN -   942. MM FY - 414. FC - 25. MPA, SIZE - 1000. X 350. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA	END
1	266.	8 - 12MM	0.	942.	YES	YES

```
|---------------------------------------------------------------|
| CRITICAL NEG MOMENT=      58.84 KN-MET  AT   942.MM, LOAD  15 |
| REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
| MAX/MIN/ACTUAL BAR SPACING=   886./   37./  127. MMS          |
| BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS           |
|---------------------------------------------------------------|
```

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL(+VE/-VE) (SQ. MM)		MOMENTS(+VE/-VE) (KNS-MET)		LOAD(+VE/-VE)	
0.	0./	621.	0./	58.	0/	16
79.	0./	616.	0./	58.	0/	16
157.	0./	612.	0./	57.	0/	16
236.	0./	608.	0./	57.	0/	16
314.	0./	605.	0./	57.	0/	16
393.	0./	603.	0./	57.	0/	16
471.	0./	602.	0./	57.	0/	16
550.	0./	602.	0./	56.	0/	16
628.	0./	604.	0./	57.	0/	14
707.	0./	608.	0./	57.	0/	14
785.	0./	613.	0./	58.	0/	14
864.	0./	619.	0./	58.	0/	14
942.	0./	627.	0./	59.	0/	15

B E A M   N O.   15   D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   3.33 KNS Vc= 215.56 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   9.43 KNS Vc= 215.56 KNS Vs=   .00 KNS
                   STIRRUPS ARE NOT REQUIRED.

```
___12J_____  942X 999X  349_____13J____
|                                                                    |
||==================================================================||
| 8No12 H 266.  0.TO  942                                            |
|                                                                    |
|                                                                    |
|                                                                    |
|                                                                    |
|_____|

 _____   _____   _____
|    oooooooo          |   |    oooooooo       |   |    oooooooo       |
| 8#12                 |   | 8#12              |   | 8#12              |
|                      |   |                   |   |                   |
|                      |   |                   |   |                   |
|                      |   |                   |   |                   |
|_____|   |_____|   |_____|
```

```
      B E A M   N O.  16  D E S I G N   R E S U L T S -  FLEXURE

LEN -   942. MM  FY - 414.  FC - 25.  MPA, SIZE - 1000. X  350. MMS

LEVEL    HEIGHT      BAR INFO        FROM            TO            ANCHOR
          (MM)                       (MM)           (MM)          STA  END
```
```
    1       84.      8 - 12MM        551.           942.          NO   YES
|-------------------------------------------------------------------|
|   CRITICAL POS MOMENT=      3.28 KN-MET  AT   942.MM, LOAD  26 |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=   886./   37./  127. MMS         |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   352. MMS          |
|-------------------------------------------------------------------|

    2      266.      8 - 12MM         0.            942.          YES  YES
|-------------------------------------------------------------------|
|   CRITICAL NEG MOMENT=     58.84 KN-MET  AT    0.MM, LOAD  15  |
|   REQD STEEL=   888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033 |
|   MAX/MIN/ACTUAL BAR SPACING=   886./   37./  127. MMS         |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./   359. MMS          |
|-------------------------------------------------------------------|
```

```
REQUIRED REINF. STEEL SUMMARY :
-----------------------------------

SECTION    REINF STEEL(+VE/-VE)    MOMENTS(+VE/-VE)    LOAD(+VE/-VE)
( MM )        (SQ.  MM )            (KNS-MET )
   0.        0./    627.            0./    59.          0/  15
  79.        0./    582.            0./    55.          0/  19
 157.        0./    542.            0./    51.          0/  19
 236.        0./    502.            0./    47.          0/  19
 314.        0./    464.            0./    44.          0/  19
 393.        0./    426.            0./    40.          0/  19
 471.        0./    389.            0./    37.          0/  19
 550.        0./    353.            0./    33.          0/  19
 628.        0./    317.            0./    30.          0/  19
 707.        0./    283.            0./    27.          0/  19
 785.        0./    249.            0./    24.          0/  19
 864.        0./    216.            0./    21.          0/  19
 942.       34./    184.            3./    18.         26/  19
```

```
      B E A M   N O.  16  D E S I G N   R E S U L T S - SHEAR

AT START SUPPORT - Vu=   59.34 KNS  Vc= 215.56 KNS  Vs=      .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
AT END   SUPPORT - Vu=   54.81 KNS  Vc= 215.56 KNS  Vs=      .00 KNS
                   STIRRUPS ARE NOT REQUIRED.
```

```
___13J_____942X 999X  349_____14J____
|                                                               |
||===========================================================|||
| 8No12 H 266.   0.TO  942                                       |
|                                                               |
|                         8No12 H  84.  551.TO  942             |
|                         ================================|||
|                                                               |
|                                                               |
```

```
| -------------- | | ----------- | | -------------- |
|   oooooooo     | |  oooooooo    | |   oooooooo     |
| 8#12           | | 8#12         | | 8#12           |
|                | |              | |                |
|                | |              | | 8#12           |
|                | |              | |   oooooooo     |
| -------------- | | ----------- | | -------------- |
```

11-232

B E A M   N O.   17   D E S I G N   R E S U L T S -   FLEXURE

LEN -   942. MM   FY -   414.   FC -   25.   MPA, SIZE - 1000. X   350. MMS

LEVEL	HEIGHT (MM)	BAR INFO	FROM (MM)	TO (MM)	ANCHOR STA END
1	86.	6 - 16MM	0.	942.	YES YES

```
|----------------------------------------------------------------|
|   CRITICAL POS MOMENT=    108.69 KN-MET  AT    942.MM, LOAD  26 |
|   REQD STEEL= 1154.MM2, ROW= .0044, ROWMX= .0194 ROWMN= .0033   |
|   MAX/MIN/ACTUAL BAR SPACING=  882./  41./  176. MMS            |
|   BASIC/REQD. DEVELOPMENT LENGTH =   316./  457. MMS            |
|----------------------------------------------------------------|
```

2	266.	8 - 12MM	0.	594.	YES NO

```
|----------------------------------------------------------------|
|   CRITICAL NEG MOMENT=     17.53 KN-MET  AT     0.MM, LOAD  19  |
|   REQD STEEL=  888.MM2, ROW= .0033, ROWMX= .0194 ROWMN= .0033   |
|   MAX/MIN/ACTUAL BAR SPACING=  886./  37./  127. MMS            |
|   BASIC/REQD. DEVELOPMENT LENGTH =   177./  359. MMS            |
|----------------------------------------------------------------|
```

REQUIRED REINF. STEEL SUMMARY :

SECTION (MM)	REINF STEEL(+VE/-VE) (SQ. MM)		MOMENTS(+VE/-VE) (KNS-MET)		LOAD(+VE/-VE)	
0.	34./	184.	3./	18.	26/	19
79.	130./	103.	12./	10.	26/	19
157.	226./	35.	22./	3.	26/	27
236.	322./	1.	31./	0.	26/	27
314.	418./	0.	39./	0.	26/	0
393.	513./	0.	48./	0.	26/	0
471.	609./	0.	57./	0.	26/	0
550.	705./	0.	66./	0.	26/	0
628.	801./	0.	75./	0.	26/	0
707.	897./	0.	83./	0.	26/	0
785.	993./	0.	92./	0.	26/	0
864.	1088./	0.	100./	0.	26/	0
942.	1184./	0.	109./	0.	26/	0

B E A M   N O.   17   D E S I G N   R E S U L T S - SHEAR

```
AT START SUPPORT - Vu=  116.74 KNS  Vc=  215.56 KNS  Vs=     .00 KNS
                   PROVIDE 12 MM BARS AT 130. MM  C/C FOR  942. MM
AT END   SUPPORT - Vu=  112.20 KNS  Vc=  215.56 KNS  Vs=     .00 KNS
                   PROVIDE 12 MM BARS AT 130. MM  C/C FOR  942. MM
```

```
___ 14J ____                942X 999X  349 _____  15J ____
| |                                                        |
| |====================================================    |
| 8No12 H 266.  0.TO  594            |        |            |
|  9*12c/c130|          |            |          9*12c/c130 |
| 6No16 H 86.  0.TO  942            |        |            |
| |====================================================   ||
| |                                                        |
|_____            |

|  oooooooo      | |   oooooooo      | |                  |
| 8#12           | | 8#12            | |                  |
|                | |                 | |                  |
| 6#16           | | 6#16            | | 6#16             |
|  oooooo        | |   oooooo        | |  oooooo          |
|                | |                 | |                  |
|_____| |_____| |_____|
```

11-233

```
122. END CONC DESIGN
123. FINISH
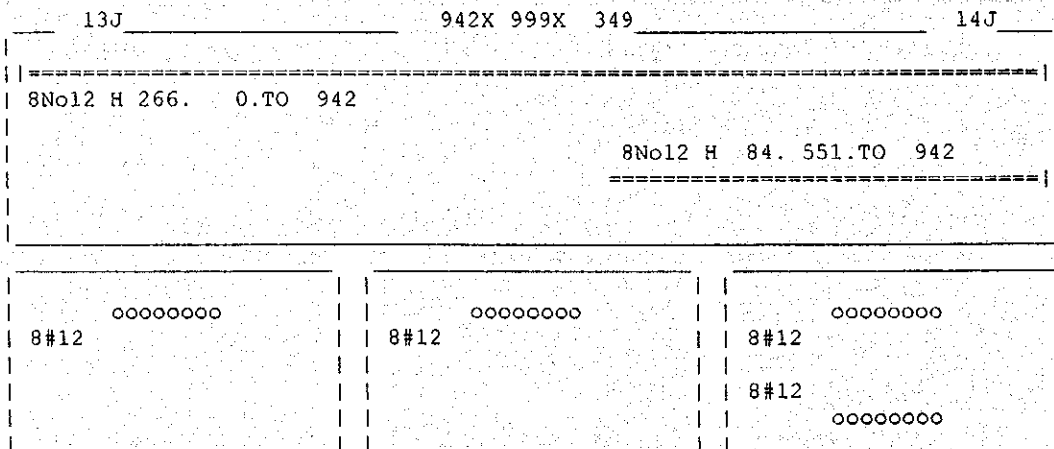

            *************** END OF STAAD-III ***************

            **** DATE= JAN 30,2000    TIME= 11:40:44 ****

        ***********************************************************
        *        For questions on  STAAD-III,   contact:         *
        *              Research Engineers, Inc at                *
        *  West Coast: Ph- (714) 974-2500  Fax- (714) 921-2543   *
        *  East Coast: Ph- (508) 688-3626  Fax- (508) 685-7230   *
        ***********************************************************
```

11-234