

MATHEMATICAL ANALYSIS

DATA TAKEN FROM ANALYSIS OF BRIDGE
WITH LEFT THIRD LOADED

Section	Load	fc M	fc N	fc upper	fc lower
15.33	Dead	+ 8	211		
	Live (Rt. end.)	-14	30		
	Live (L. end.)	-226	30	39	503
30.67	D	22	214		
	L (R)	162	30		
	L (L)	-261	30	197	351
46.00	D	39	219		
	L (R)	320	31		
	L (L)	-250	29	398	160
61.33	D	53	226		
	L (R)	384	37		
	L (L)	-192	28	536	46
76.67	D	64	236		
	L (R)	269	44		
	L (L)	-97	27	553	61
92.00	D	51	247		
	L (R)	15	53		
	L (L)	64	26	456	196
107.33	D	21	257		
	L (R)	-468	63		
	L (L)	262	25	160	530



Scale: 1"=100,000"

Scale: 1"=5'

Loading:
Dead Load plus Live Load over
both end thirds.

GRAPHICAL ANALYSIS

Loaded Columns	Thousand-Pounds			Ordinates		Ordinate x Cal. Live Load.	
	Dead Load	Live Load	Total	Mc	Hc	Mc	Hc
A	61.7	0	61.7	7.53	1.18	-	-
B	62.4	0	62.4	1.62	1.13	-	-
C	63.1	21.5	84.6	-1.91	0.97	-41.06	21.07
D	64.8	43	107.8	-3.22	0.76	-138.46	32.68
E	66.8	43	109.8	-3.35	0.53	-144.05	22.79
F	69.9	43	112.9	-2.00	0.27	-86.00	11.61
G	72.9	43	115.9	-0.67	0.08	-28.81	3.44
			655.1			-438.38	91.59
						For both ends	-876.76 183.18

Hc of Dead Load = 625, with no eccentricity
Hc of Live Load = 183.18. Total Hc = 625 + 183.18 = 808
Total Mc = -876.76
Eccentricity of total Hc = -876.76 ÷ 808 = -1.1, below the crown.

Section	Total Thrust	#sq.in.	Eccen.	Mom.	#sq.in	Fc	
						Upper edge	Lower edge.
0.0	807	271	-1.1	-876	-289	-18	560
7.67	810	272	-0.9	-730	-238	34	510
23.00	818	275	-0.6	-491	-161	114	436
38.33	835	281	+0.2	+167	+55	519	226
53.67	868	292	+0.8	+695	+227	605	65
69.00	913	307	+1.0	+913	+298	549	9
84.33	972	327	+0.7	+680	+222	384	105
99.67	1040	350	+0.1	+104	+34	313	316
115.00	1090	350	-1.1	-114	-37		387