

**MATHEMATICAL ANALYSIS**

$B.M. = Mc + Hcy + VcX - \Sigma(PL)$

Section	$\Sigma(PL)$	
0		
15.33	$43 \times 7.67 = 329.8$	
30.67	$43 \times (7.67 + 23.00) = 1318.8$	
46.00	$43 \times (23.00 + 30.67) + 21.5 \times 7.67 = 2472.7$	
61.33	$43 \times (30.67 + 46.00) + 21.5 \times 23.00 = 4121.3$	
76.67	$43 \times (46.00 + 61.33) + 21.5 \times 38.33 = 5769.9$	
92.00	$43 \times (61.33 + 76.67) + 21.5 \times 53.67 = 7418.5$	
107.33	$43 \times (76.67 + 92.00) + 21.5 \times 69.00 = 9067.1$	
115.00		

Section	Y	Mc	HcY	VcX	$\Sigma(PL)$	M <sub>L</sub>	F <sub>c</sub>
0							
15.33	7.818	+704.8	187.9	0	329.8	+562.9	+184
30.67	31.29	"	+87.4	"	1318.8	+138.2	+45
46.00	70.40	"	752.2	"	2472.7	-75.5	-25
61.33	12.51	"	1692.4	"	4121.3	-409.1	-134
76.67	19.56	"	3007.4	"	5769.9	-362.9	-119
92.00	28.16	"	4702.2	"	7418.5	+56.0	+18
107.33	38.33	"	6769.7	"	9067.1	+852.2	+279
115.00			9214.5	"			

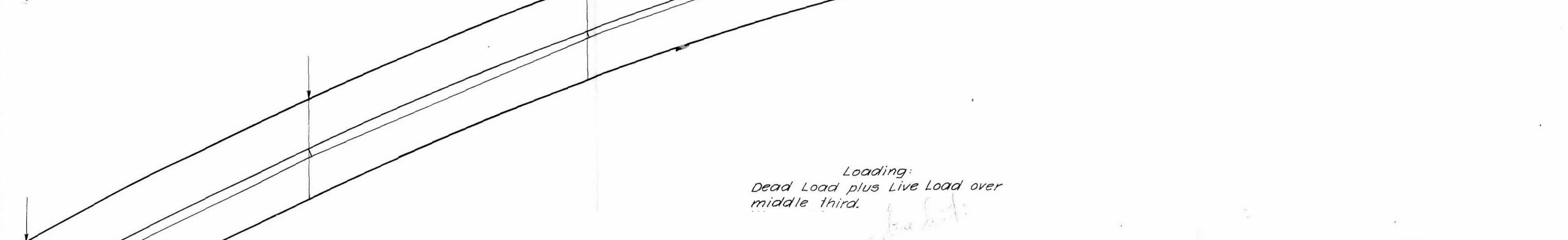
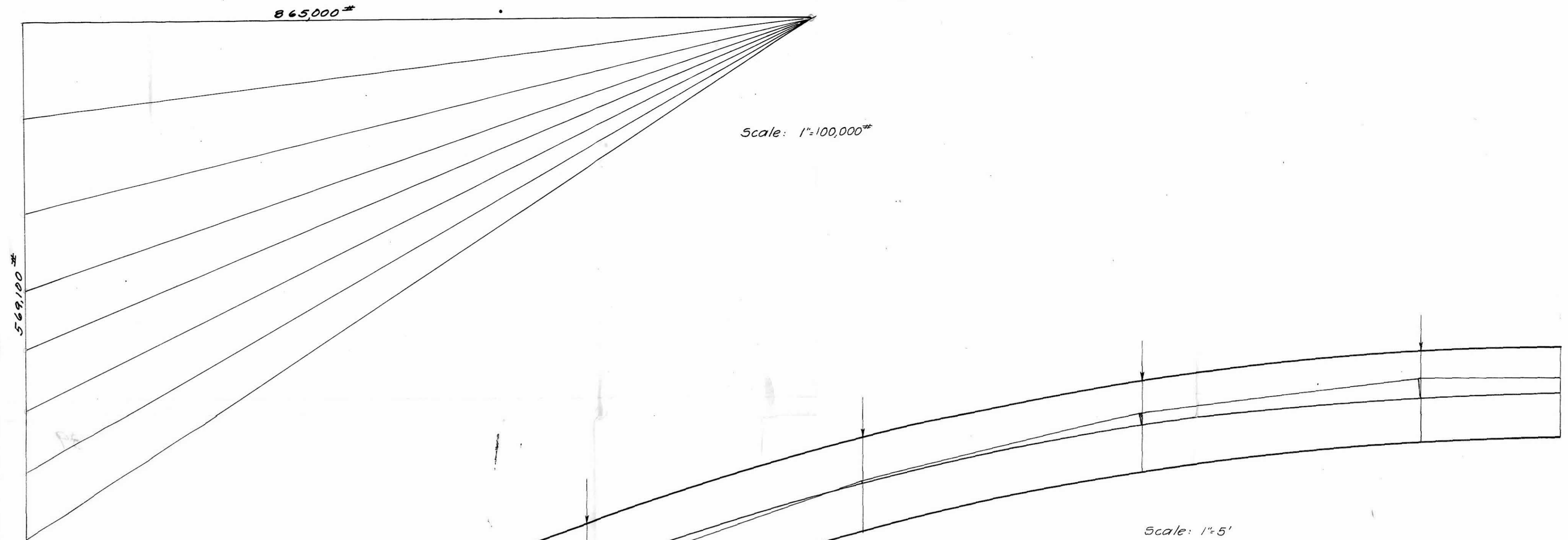
  

$Thrust = \Sigma P \sin \alpha + Hc \cos \alpha$

Section	$\Sigma P$	$\Sigma P \sin \alpha$	$Hc \cos \alpha$	N <sub>L</sub>	F <sub>c</sub>
0					
15.33	43	4.3	239.2	243.5	82
30.67	86	17.1	235.6	252.7	85
46.00	107.5	31.4	229.8	261.2	88
61.33	"	40.6	222.6	263.2	88
76.67	"	48.9	214.0	262.9	88
92.00	"	56.1	205.1	261.2	88
107.33	"	62.5	195.7	258.2	87
115.00	"				

Section	F <sub>c</sub>			
	N <sub>D</sub> + N <sub>L</sub>	N <sub>D</sub> + N <sub>L</sub>	Upper Edge	Lower Edge
0				
15.33	293	+192	485	101
30.67	299	+67	366	232
46.00	307	+14	321	293
61.33	314	-81	233	395
76.67	324	-55	269	379
92.00	335	+69	404	266
107.33	344	+300	644	44
115.00				



**GRAPHICAL ANALYSIS**

Loaded Columns	Thousand Pounds			Ordinates		Ordinate x Column Lead	
	Dead Load	Live Load	Total	M <sub>c</sub>	H <sub>c</sub>	M <sub>c</sub>	H <sub>c</sub>
A	61.7	4.3	104.7	7.53	1.18	+323.8	50.7
B	62.4	4.3	105.4	1.62	1.13	+69.7	48.6
C	63.1	21.5	84.6	-1.91	.97	-41.1	20.9
D	64.8	—	64.8	—	—	—	—
E	66.8	—	66.8	—	—	—	—
F	69.9	—	69.9	—	—	—	—
G	72.9	—	72.9	—	—	—	—
Totals			569.1			+352.4	120.2
						+704.8	240.4

H<sub>c</sub> of Dead Load = 625, with no eccentricity.  
 H<sub>c</sub> of Live Load = 240.4. Total H<sub>c</sub> = 625 + 240 = 865  
 Total M<sub>c</sub> = +704.8  
 Eccentricity of total H<sub>c</sub> = 704.8 ÷ 865 = .815' above the crown.

Section	Thrust				F <sub>c</sub>		
	Total	% in.	Eccen.	Mom.	#/sq.in	Upper Edge	Lower Edge
0.00	865	291	708.15	+705	230	621	61
7.67	870	292	+1.10	+956	312	604	-20
23.00	890	299	+0.70	+623	203	502	96
38.33	912	306	+0.15	+137	45	351	261
53.67	912	306	-0.35	-319	104	202	410
69.00	935	314	-0.45	-421	138	176	452
84.33	962	323	-0.25	-240	78	245	401
99.67	1033	347	+0.25	+258	84	431	263
115.00	1033	347	+0.95	+980	320	667	27