show that s_1 is a minimum (and hence P, the supporting power of the foundation, is a maximum) when $L = 2d$. The variations in s_1 and P for $d = 6$ and various values of L are shown in Table 1. It will be observed that the

Table 1.—Fixed Edge Distance of Load.

Showing variations in s_1 and P as L varies, the distance of the load from one end of the foundation being constant and equal to 6.

Values of L.	Values of s_1 when $P = 1$.	Values of P when $s_1 = 1$.
7	0.448	2.2
8	0.312	3.2
9	0.220	4.6
10	0.160	6.2
11	0.115	8.7
12	0.083	12.0
13	0.094	10.6
14	0.102	9.8
15	0.107	9.3
16	0.110	9.1
17	0.111	9.0
18	0.111	9.0
20	0.110	9.1
22	0.107	9.3
24	0.104	9.6
26	0.101	9.9
28	0.097	10.3
30	0.093	10.7

values of s_1 and P increase and decrease respectively as L increases from 12 ($= 2d$) to 18, at which point the order is reversed. For $L = 18$, $e = L/6$ and $s_2 = 0$; hence for values of L greater than 18, s_2 is negative, giving tension in the heel. The formula assumes that this tension is an actual force or stress, as the tension area of a section of a loaded beam. Consequently, in the case of foundations, unless an equivalent tensile force is provided, as by means of anchor bolts, the values given by the formula, or the charts, for values of e greater than $L/6$ are not true. If the conditions are such that tensile stresses are not provided for, the maximum length, L', over which P may be distributed, is $3d$. Hence, when d is less than $\frac{1}{3}L$ (e greater than $\frac{1}{6}L$), $s_1 = 2P/L'$, and

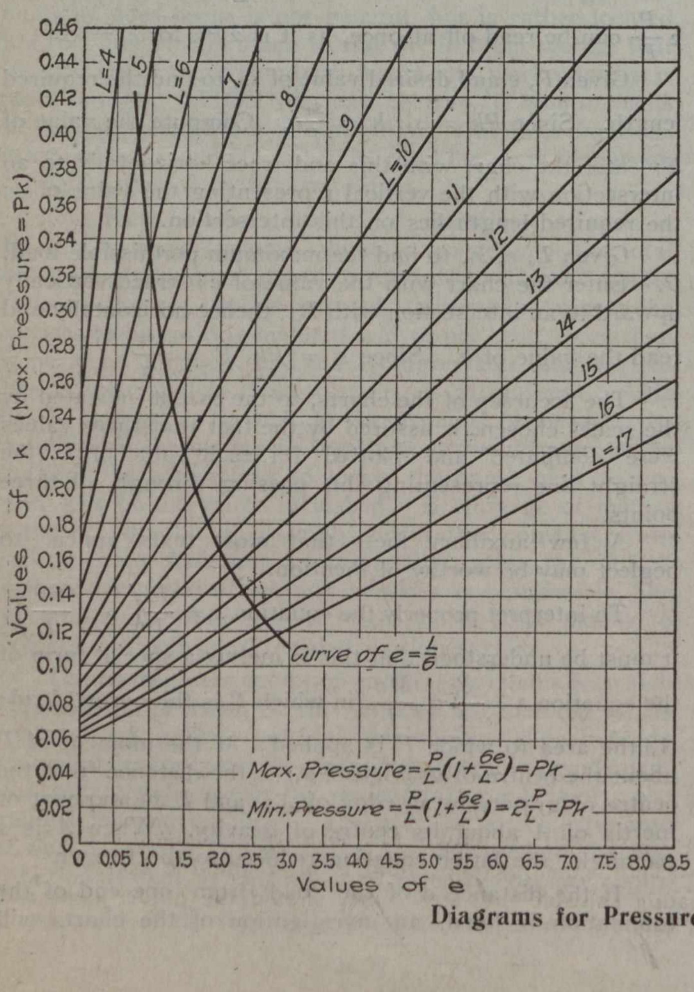
Table 2.—Variation of Proportions of the Footing.

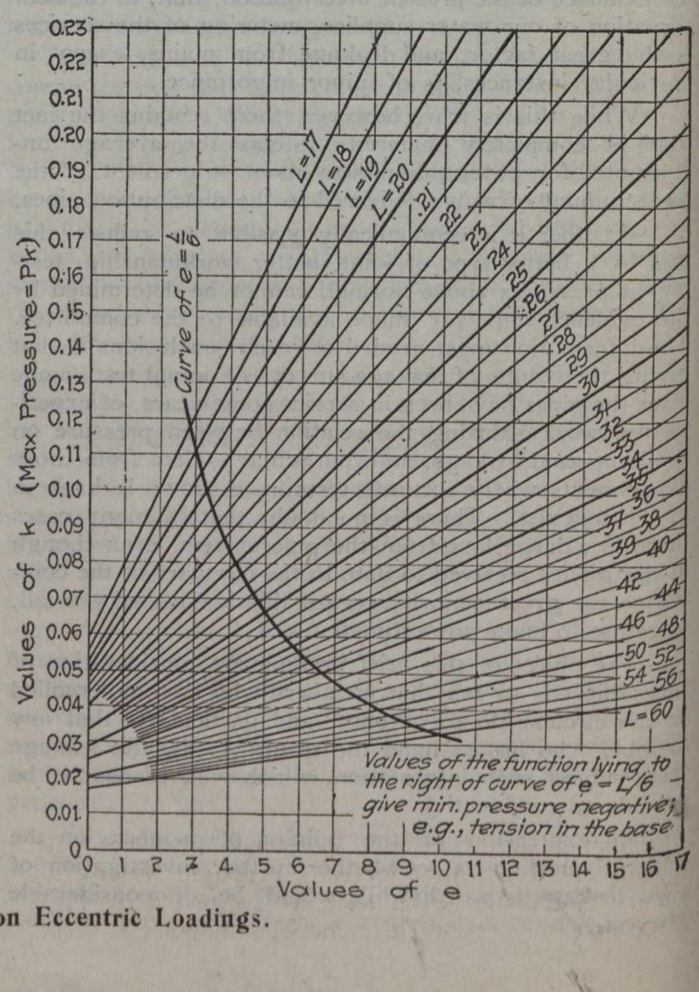
Showing proportional carrying power of an area of 24, Eccentricity of load of 3, as L and the width b vary.

Values of L	Values of k	Values of P when $s_1 = 1$	Values of b	Values of Pb
24	0.073	13.70	1.0	13.7
20	0.095	10.54	1.2	12.6
16	0.134	7.47	1.5	11.2
12	0.208	4.81	2.0	9.6
8	0.406	2.46	3.0	7.4

$s_2 = 0$. Of course, this consideration does not ordinarily enter into foundation design, it being an established principle that the resultant shall not cut the base outside the outer edge of the middle third.

A case that sometimes arises is: Given the vertical load and its eccentricity, to determine the most economical dimensions of the footing. The charts will show that the area required decreases as L increases. Table 2 shows a special case of the relative bearing power of the same area, for a fixed value of e, as L varies. Though a specific case, the conclusions therefrom are general; namely, that the minimum area to carry a given eccentric load will be given by making the length of footing as large as possible. —"Engineering News," New York.





Diagrams for Pressures on Eccentric Loadings.