

BUCKLING STRESS COEFFICIENTS FOR FLAT PARALLELOGRAM PLATES UNDER UNIFORM COMPRESSION (All Edges Fixed Against Rotation)

1. NOTATION

a	length of plate	m	in
b	plate width measured perpendicular to a (see Figure 1)	m	in
E	Young's modulus of plate material	N/m ²	lbf/in ²
f_b	critical compressive stress	N/m ²	lbf/in ²
K	buckling coefficient defined by $f_b = KE \left(\frac{t}{b} \right)^2$	m	in
t	plate thickness	m	in
α	angle of sweep of plate	degree	degree
ν	Poisson's ratio		

Both SI and British units are quoted but any coherent system of units may be used.

2. NOTES

In Figure 1 the buckling coefficient K is plotted in Figure 1 against a/b for various values of α . The curve for $\alpha = 0$, that is, a rectangular panel, is included. Curves given as full lines are as the derivation and the dotted portions have been obtained by extrapolation.

The curves are applicable only to plates of isotropic material and have been calculated for a value of $\nu = 0.3$.

3. DERIVATION

1. WITTRICK, W.H. Buckling of oblique plates with clamped edges under uniform compression. A.R.L. SM. 182, 1951.
2. GUEST, J. The buckling of uniformly compressed parallelogram plates having all edges clamped. A.R.L. S.M. 172, 1951.
3. LEVY, S. Buckling of rectangular plates with built-in edges. *Jl appl. Mech.*, pp. 171-174, December 1942.

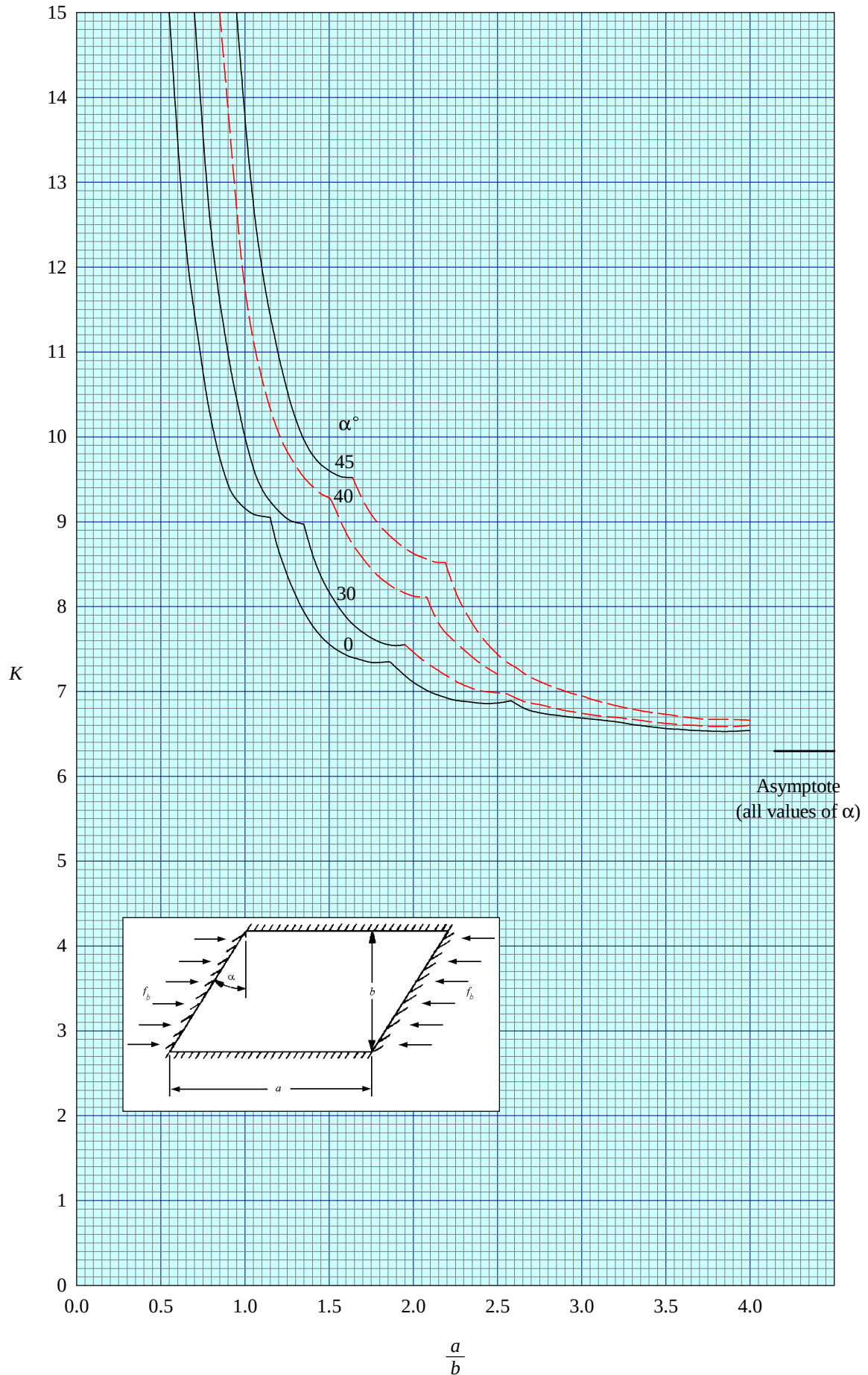


FIGURE 1