Modification Factors for General Bearing Capacity Equation (based on Vesic, 1975)

Factor	S_c	S_q	S_γ
Foundation shape, s	$S_{cs} = 1 + \frac{B'}{L'}\frac{N_q}{N_c}$	$S_{qs} = 1 + \frac{B'}{L'}\tan\phi$	$S_{\gamma s} = 1 - 0.4\frac{B'}{L'}$
Inclined loading, i [1]	$\phi = 0$, $S_{ci} = 1 - \frac{mH}{B'L'cN_c}$ $\phi > 0$, $S_{ci} = S_{qi} - \frac{1 - S_{qi}}{N_c \tan\phi}$	$S_{qi} = \left(1 - \frac{H}{V + B'L'c\cot\phi}\right)^m$	$S_{\gamma i} = \left(1 - \frac{H}{V + B'L'c\cot\phi}\right)^{m+1}$
Foundation depth, d [2]	$\phi = 0$, $S_{cd} = 1 + 0.4k$ $\phi > 0$, $S_{cd} = S_{qd} - \frac{1 - S_{qd}}{N_c \tan\phi}$	$S_{qd} = 1 + 2\tan\phi\,(1 - \sin\phi)^2 k$	$S_{\gamma d} = 1$
Surface slope, β [3]	$\phi = 0$, $S_{c\beta} = 1 - \frac{2\beta}{\pi + 2}$ $\phi > 0$, $S_{c\beta} = S_{q\beta} - \frac{1 - S_{q\beta}}{N_c \tan\phi}$	$S_{q\beta} = (1 - \tan\beta)^2$	$S_{\gamma\beta} = (1 - \tan\beta)^2$ [4]
Base inclination, δ [5]	$\phi = 0$, $S_{c\delta} = 1 - \frac{2\delta}{\pi + 2}$ $\phi > 0$, $S_{c\delta} = S_{q\delta} - \frac{1 - S_{q\delta}}{N_c \tan\phi}$	$S_{q\delta} = (1 - \delta\tan\phi)^2$	$S_{\gamma\delta} = (1 - \delta\tan\phi)^2$

[1] V = vertical force; H = horizontal force; m depends on direction of inclined loading θ relative to long si the foundation: If force inclined in B direction ($\theta = 90^o$) $m = m_B = (2+B/L)/(1+B/L)$, if inclined in L dire ($\theta = 0^o$) $m = m_L = (2+L/B)/(1+L/B)$, and if inclined at angle θ to L direction $m = m_\theta = m_L\cos^2\theta + m_B\sin^2\theta$.

[2] $k = D/B$ if $D/B \leq 1$; $k = \tan^{-1}(D/B)$ if $D/B > 1$.

[3] β = inclination below horizontal of the ground surface away from the edge of the foundation (see Figure 1 for $\beta < \pi/4$; β in radians.

[4] For sloping ground case where $\phi = 0$ $N_\gamma = -2\sin\beta$ must be used in bearing capacity equation.

[5] δ = inclination from the horizontal of the underside of the foundation (see Figure 10.4); for $\delta < \pi/4$; δ in rac