boundary
$$\phi$$

$$\phi_{sq}(\bar{
ho}) = 1 - \left(\frac{1-\bar{
ho}}{1-
ho_{min}}\right)^2$$

 $\phi_{\ell}(\bar{\rho}) = \bar{\rho}_{ii}$

$$\phi_c(\bar{\rho}) = .99$$

$$\phi_q(\bar{\rho}) = 1 - (1 - \bar{\rho})^2$$