



Assumptions:

1. Post is adequate against bending
2. Concrete stress controls
3. Concrete stress block is $\frac{1}{3}E \times d$

Solve 'L' such that compressive stress on concrete $< f'_c$ (w/ factors)

Stress area, $A = \frac{1}{3}E(d)$ $E = 3L$

$$A = L(d)$$

$$\text{Max Load} = f'_c(A) = f'_c(L)(d) = \frac{M}{L}$$

$$M = f'_c(L^2)(d) \quad \text{solve for } L: \quad L = \sqrt{\frac{M}{f'_c(d)}}$$