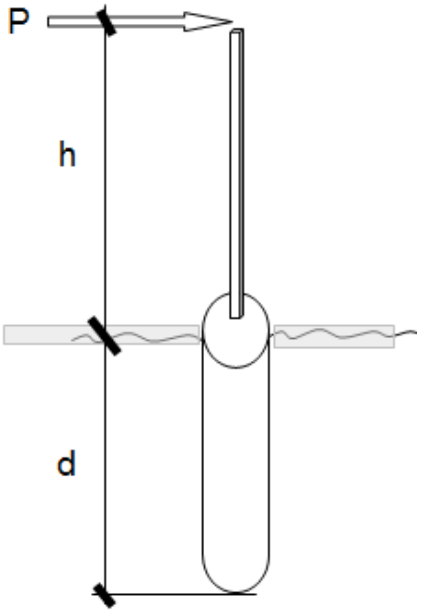
Lateral Force,
(due to wind pressure applied on the tributary ara of the juncton box)

$P := 0.21 \cdot kN$



height above the ground $h := 1800 \cdot mm$

pedestal diameter $b := 300 \cdot mm$

trial depth $d := 400 \cdot mm$

lateral soil bearing capacity $S_x := 0.2 \frac{ksf}{ft}$

Factor of SAFETY $F_x := 2$

From IBC 2009, Section 1807.3.2

LATERAL BEARING @ BOTTOM : $S_3 = FS \quad Min(d \ , \ 12')$

LATERAL BEARING @ d/3 : $S_1 = FS \quad Min\left(\frac{d}{3} \ , \ 12'\right)$

$$A = \frac{2.34P}{bS_1}$$

REQUIRD DEPTH :

$$d = \begin{cases} \frac{A}{2}\left[1+\sqrt{1+\frac{4.36h}{A}}\right] & \text{, FOR NONCONSTRAINED} \\ \sqrt{\frac{4.25Ph}{bS_3}} & \text{, FOR CONSTRAINED} \end{cases}$$

$S_3 := F_x \cdot S_x \cdot \min(d, 12ft)$

Given

$$S_3 = F_x \cdot S_x \cdot \min\left(\sqrt{\frac{4.25 \cdot P \cdot h}{b \cdot S_3}}\right)$$

$S_3 := \text{Find}(S_3) = 27.6516 \cdot kPa$

$d := \sqrt{\frac{4.25 \cdot P \cdot h}{b \cdot S_3}} = 440.0675 \cdot mm$ **say d=450 mm**