

33kV Wood Pole Transmission Line

Pole Design

$$P1 \geq (0.0025 * N * d * L) + (2 * H * N * \sin D/2)$$

$$P2 \geq \text{SQRT}((0.00025 * N * d * S + (P2 - P1))^2 + (N * H)^2)$$

Where

N = number of conductors supported

d = diameter of conductor (mm)

L = distance between adjacent poles (m)

D = angle of line deviation

H = horizontal component of tension of one conductor under wind load (kN)

S = Distance to next pole (m)

P2 - P1 is obtained from the Table 1

For High Security Lines Wind Pressure on conductors = 1.3 kPa
at an ambient temperature of 16°C

$$N = 11$$

$$d = 11.3$$

$$L = 220$$

$$D = 30$$

$$S = 100$$

$$P2 - P1 = 1.5$$

$$\text{Area} = \text{Conductor diameter} * \text{conductor length} = 2.486 \text{ m}^2$$

$$\text{Force} = \text{Pressure} * \text{Area} = 3.232 \text{ kN}$$

$$H = 3.232$$

$$\sin D/2 = 0.259$$

$$P1 \geq 25.238 \text{ kN}$$

$$P2 \geq 35.847 \text{ kN}$$