SLOPE STABILITY TABLE's

TABLE - I

TABLE FOR FORMULA (SLOPE STABILITY)

$$F = \frac{C + (\gamma - \gamma_w^{(m)}) h \cos^2\theta \tan\phi}{\gamma h \cos\theta \sin\theta}$$

— BY DIRECTION —

WHERE — IN THIS CASE I WILL USE

C = COHESION ——→ 18 KN/m²

γ = UNIT SPECIFIC WT. → 19 KN/m³

γ_w = ——→ 9.8 KN/m³

ϕ = ANGLE OF INTERNAL FRICTION → 22°

h = HEIGHT OF PLAUSIBLE SLIP → 5 METERS

m = ORIENTATION OF DISTANCE TO WATER TABLE

(BECAUSE AT 5 METERS WE CONTACT WATER TABLE WE WILL USE) → (1.)

FINALLY

θ = CRITICAL ANGLE OF SLOPE → (?)

STABLE SLOPE $\leq 22° \leq$ UNSTABLE SLOPE

— TEST POINT —

USING 15° WHICH SHOULD BE STABLE SLOPE (ABOVE THAN 22°)

$$F = \frac{(18) + ((19) - (9.8)(1))(5)\cos^2(15)\tan(\cancel{15}\ 22)}{(19)(5)\cos(15)\sin(15)}$$

$$= \frac{18 + (9.2)(5)(0.933)(0.404)}{(95)(0.965)(0.258)}$$

$$= \frac{18 + 17.338}{23.652}$$

$$= \frac{35.338}{23.652} = 1.494$$

IF LESS THAN ONE SLOPE FAILURE

STABLE SLOPE AT 15°

TABLE – II

A

$$F = \frac{(18) + ((19) - (9.6)(1))(5)\cos^2(32)\tan(22)}{(19)(5)\cos(32)\sin(32)}$$

$$= \frac{18 + 9.2(5)}{(95)} \quad \frac{(0.719)}{(0.848)} \quad \frac{(0.529)}{(0.529)}$$

32°

$$= \frac{(136)}{(95)} \quad \frac{0.220}{0.448}$$

$A_1 + A_2$

$$= \frac{395}{426} = 0.926$$

BOUNDARY LINE CONDITION

B

$$F = \frac{(18) + ((19) - (9.6)(1))(5)\cos^2(28)\tan(22)}{(19)(5)\cos(28)\sin(28)}$$

$$= \frac{18 + 9.2(5)}{(95)} \quad \frac{(0.729)}{(0.882)} \quad \frac{(0.404)}{(0.469)}$$

28°

$$= \frac{(136)}{(95)} \quad \frac{0.314}{0.413}$$

A_3

$$= \frac{420}{379} = 1.108$$

BOUNDARY LINE CONDITION STABLE

A

TABLE - 44

$$F = \frac{(14) + ((19) - (9.6)(1))(5)\cos^2(30)\tan(22)}{(19)(5)\cos(30)\sin(30)}$$

$$= \frac{14 + 9.2(5)}{(95)} \quad \frac{(9.25)\ (0.404)}{(0.866)\ (.5)}$$

30° 44 to 46° $= \frac{(136)}{(95)} \quad \frac{0.303}{0.433}$

$= \frac{4(1.204}{41.135} = 1.0017$ BORDERLINE STABLE

B

$$F = \frac{(14) + ((19) - (9.6)(1))(5)\cos^2(26)\tan(22)}{(19)(5)\cos(26)\sin(26)}$$

$$\frac{14 + 9.2(5)}{(95)} \quad \frac{(0.807)\ (0.404)}{(0.898)\ (0.438)}$$

26° 43 to 80 $\frac{(136)}{(95)} \quad \frac{0.326}{0.393}$

$\frac{44.33}{37.136} = 1.186$ STABLE

TABLE - IV

A

$$F = \frac{(18) + ((19) - (9.6)(1))(5)\cos^2(40)\tan(22)}{(19)(5)\cos(40)\sin(40)}$$

40° $\quad \frac{18 + 9.2(5)}{(95)} \quad \frac{(0.546)(0.404)}{(0.766)(0.642)}$

46 $\quad \frac{(136)}{(95)} \quad \frac{0.236}{0.491}$

$$\frac{32.19}{46.21} = 0.689 \quad \text{UNSTABLE}$$

B

$$F = \frac{(18) + ((19) - (9.6)(1))(5)\cos^2(23)\tan(22)}{(19)(5)\cos(23)\sin(23)}$$

23° $= \frac{18 + 9.2(5)}{(95)} \quad \frac{(0.842)(0.404)}{(0.920)(0.390)}$

47 $= \frac{(136)}{(95)} \quad \frac{0.342}{0.358}$

$$= \frac{46.53}{34.08} = 1.36 \quad \text{STABLE}$$

A

TABLE - IV

$$F = \frac{(14) + ((19) - (9.8)(1))(5)\cos^2(36)\tan(22)}{(19)(5)\cos(36)\sin(36)}$$

$$= \frac{14 + 9.2(5)}{(95)} \quad \frac{(0.654)\ (0.404)}{(0.809)(0.587)}$$

36° $$= \frac{(136)}{(95)} \quad \frac{0.1264}{0.4774}$$

Ag $$= \frac{35.90}{43.11} = \underline{0.795}$$ UNSTABLE

(3)

$$F = \frac{(14) + ((19) - (9.8)(1))(5)\cos^2(26)\tan(22)}{(19)(5)\cos(26)\sin(26)}$$

26° $$= \frac{14 + 9.2(5)}{(95)} \quad \frac{(0.807)\ (0.404)}{(0.894)(0.438)}$$

Ag $$= \frac{(136)}{(95)} \quad \frac{0.1326}{0.393}$$

$$= \frac{44.33}{37.36} = 1.186$$ STABLE

TABLE - VI

A

$$F_o = \frac{(14) + ((19) - (9.8)(1))(5)\cos^2(24)\tan(22)}{(19)(5)\cos(24)\sin(24)}$$

24°

$$\frac{14 + 9.2(5)}{(95)} \qquad \frac{(0.1434)(0.1604)}{(0.1913)(0.1406)}$$

44

$$\frac{(136)}{} \qquad \frac{43.42}{33.21}$$

$$= 1.30$$ TABLE