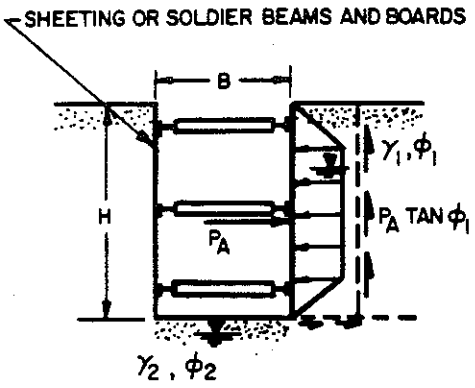
CUT IN COHESIONLESS SOIL



STABILITY IS INDEPENDENT OF H AND B, BUT VARIES WITH γ, ϕ AND SEEPAGE CONDITION.

SAFETY FACTOR, $F_S = 2N_{\gamma_2}\left(\frac{\gamma_2}{\gamma_1}\right)K_A \tan\phi$

N_{γ_2} = BEARING CAPACITY FACTOR, FIGURE 1, CHAPTER 4

IF GROUNDWATER IS AT A DEPTH OF (B) OR MORE BELOW BASE OF CUT:

γ_1 AND γ_2 ARE TAKEN AS MOIST UNIT WEIGHT

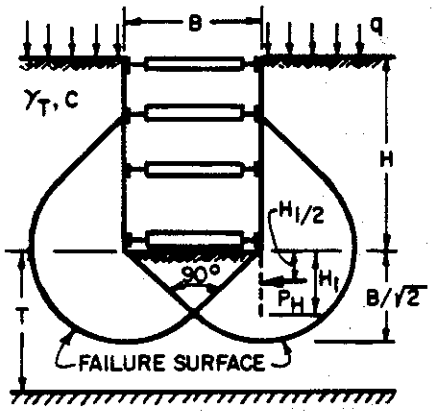
IF GROUNDWATER IS STATIC AT BASE OF CUT:

γ_1 = MOIST WEIGHT, γ_2 = SUBMERGED WEIGHT.

IF SEEPAGE IS MOVING UPWARD TO BASE OF CUT:

γ_2 = (SATURATED UNIT WEIGHT) − (UPLIFT PRESSURE)

CUT IN CLAY, DEPTH OF CLAY UNLIMITED (T > 0.7B)



IF SHEETING TERMINATES AT BASE OF CUT:

SAFETY FACTOR, $F_S = \frac{N_C C}{\gamma_T H + q}$

N_C = BEARING CAPACITY FACTOR, FIGURE 2, CHAPTER 5 WHICH DEPENDS ON DIMENSIONS OF THE EXCAVATION: B, L AND H (USE H = Z).

C = UNDRAINED SHEAR STRENGTH OF CLAY IN FAILURE ZONE BENEATH AND SURROUNDING BASE OF CUT.

q = SURFACE SURCHARGE.

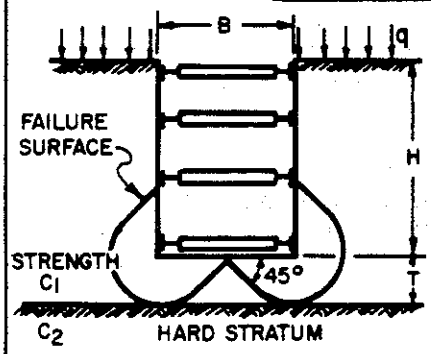
IF SAFETY FACTOR IS LESS THAN 1.5, SHEETING MUST BE CARRIED BELOW BASE OF CUT TO INSURE STABILITY.

FORCE ON BURIED LENGTH:

IF $H_1 > \frac{2}{3}\frac{B}{\sqrt{2}}$, $P_H = .7(\gamma_T HB - 1.4CH - \pi CB)$

IF $H_1 < \frac{2}{3}\frac{B}{\sqrt{2}}$, $P_H = 1.5H_1(\gamma_T H - \frac{1.4CH}{B} - \pi C)$

CUT IN CLAY, DEPTH OF CLAY LIMITED BY HARD STRATUM (T ≤ 0.7B)



SHEETING TERMINATES AT BASE OF CUT. SAFETY FACTOR:

CONTINUOUS EXCAVATION; $F_S = N_{CD}\frac{C_1}{\gamma_T H + q}$

RECTANGULAR EXCAVATION; $F_S = N_{CR}\frac{C_1}{\gamma_T H + q}$

N_{CD} AND N_{CR} = BEARING CAPACITY FACTORS.

FIGURE 5 CHAPTER 4, WHICH DEPEND ON DIMENSIONS OF THE EXCAVATION: B, L AND H, (USE H = Z)

NOTE: IN EACH CASE FRICTION AND ADHESION ON BACK OF SHEETING IS DISREGARDED. CLAY IS ASSUMED TO HAVE A UNIFORM SHEAR STRENGTH = C THROUGHOUT FAILURE ZONE.

FIGURE 28
Stability of Base for Braced Cut