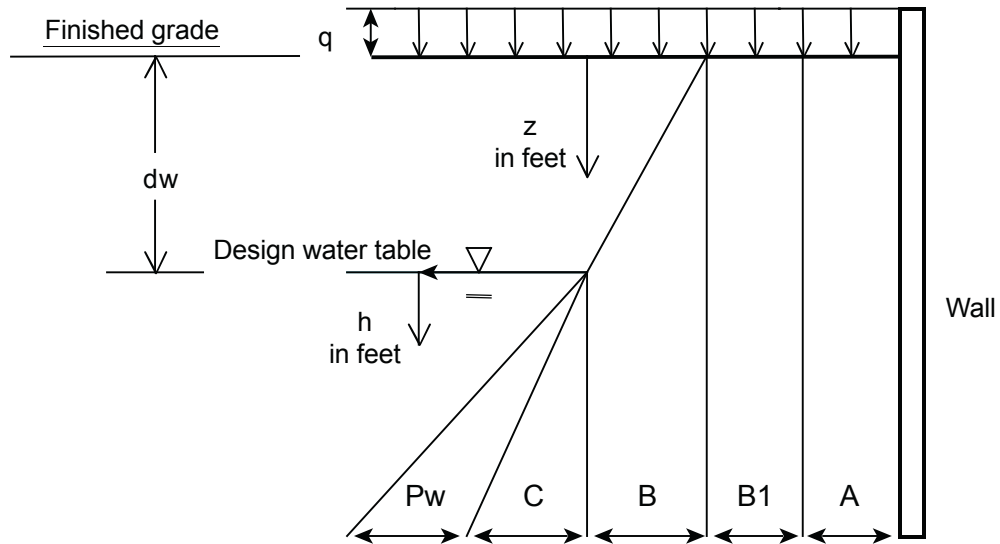


## Passive earth pressure on 1-foot wide vertical strip



$A = 1.58 (q)$  = Effect of uniform full coverage surface surcharge

$B1 = 2952 \text{ psf}$  = Passive earth pressure at ground surface due to soil cohesion

$B = 188 (z)$  = Passive earth pressure above water table

$C = 89.5 (h)$  = Passive earth pressure increment below water table

$P_w = 62.4 (h)$  = Hydrostatic pressure increment

$P_p = A + B1 + B$  = Passive lateral earth pressure above water table ( $z \leq dw$ )

$P_p = A + B1 + 188 dw + 89.5 (z - dw)$  = Passive lateral earth pressure below water table ( $z > dw$ ) ( $P_w$  not included)

Conditions on information:

- Units of pressure = lbs/ft<sup>2</sup>
- Backfill of sandy silt and silty sand native site soil compacted to 95% MDD by ASTM D698
- No factors included
- $\gamma_s = 119 \text{ lbs/ft}^3$  saturated unit weight of backfill above water table
- $\gamma = 56.6 \text{ lbs/ft}^3$  = submerged soil density
- $\phi_{cu} = 13 \text{ deg}$  = angle of internal friction of soil (CU test-freshly remolded saturated, total stress)
- $K_p = 1.58$  = Coefficient of passive earth pressure due to  $\phi_{cu}$  (Rankine equation)
- $C_{cu} = 1174 \text{ psf}$  = shear strength intercept of soil (total stress, saturated CU test)
- Plane strain conditions (corner adjustment factors not included)
- Dynamic soil pressure not included

WLS COL 2.5-13

WILLIAM STATES LEE III  
NUCLEAR STATION UNITS 1 & 2

Passive Lateral Pressure on  
Nuclear Island

FIGURE 2.5.4-256

Rev 0