

3. Check Against Piping -

→ due to removal of materials from foundation by flow of seepage water

$$C_w = \frac{\Sigma L_H + 2 \Sigma L_V}{3H}$$

C_w - safe weighted creep ratio

ΣL_H - sum of all horizontal / flat contact surfaces

ΣL_V - sum of all vertical / steep

H - Head betⁿ head & tail water depths

4. Check against Tension -

→ No tension should be developed at head wall

$$Z = \frac{\Sigma M}{\Sigma V} \left(\frac{\text{Sum of all horizontal forces}}{\text{Sum of all vertical forces}} \right)$$

where,

Z - position at which resultant force is acting

ΣM - sum of all horizontal forces

ΣV - sum of all vertical forces

5. Check for compression -

$$P = \frac{\Sigma V}{A} \left(1 \pm \frac{6e}{d} \right)$$

where,

P - contact pressure

ΣV - sum of all vertical forces including
• uplift force

A - base area of structure.

e - eccentricity

d - base length of structure