Piles

Steel

Advantages:

- Easy to handle
- High driving stress resistance
- Penetrate hard layers

Disadvantages:

- Expensive
- Noisy to install
- Corrosion

Concrete (Precast/driven)

Advantages

- Resistance to chemical and biological attacks
- Hard driving force resistance
- No corrosion

Disadvantages

- Design stress limited to 0.4*F'c
- Difficult to transport
- Expensive equipment to install
- 10-15m in length

Concrete (In Situ)

Large pile cross sectional area. Can be rock socketed. Suitable for large loads. 30 – 50m in length

Advantages

- Economical
- Easy to extend
- Inspection can be done before pouring concrete
- Can place steel reinforcement past 30m depth

Disadvantages

- Thin casings can be damaged
- Confined design stress 0.33*F'c, unconfined is 027*F'c

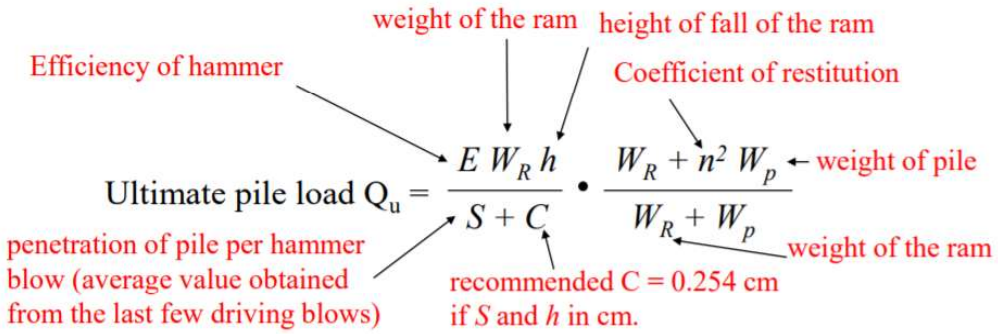
Timber

Advantages

- Economical
- Easy to handle
- Easy extraction

Disadvantages

- Decay
- Low load bearing capacity
- Treatment may be required



Capacity calculated here must be reduced using AS 2159

Wp=weight of pile + weight of pile cap

Qall=Qu/FOS

$$Driving\ stress\ \sigma_u = Q_u/A_p$$

- The driving stress on wooden pile

$\sigma_u < 0.9 f_u$ f_u = timber compressive strength parallel to grain

- The driving stress on concrete pile

$\sigma_u < 0.8 f'_{cm}$ f'_{cm} = concrete compressive strength at time of driving

- The driving stress on steel pile

$\sigma_u < 0.9 f_{sy}$ f_{sy} = steel yield stress