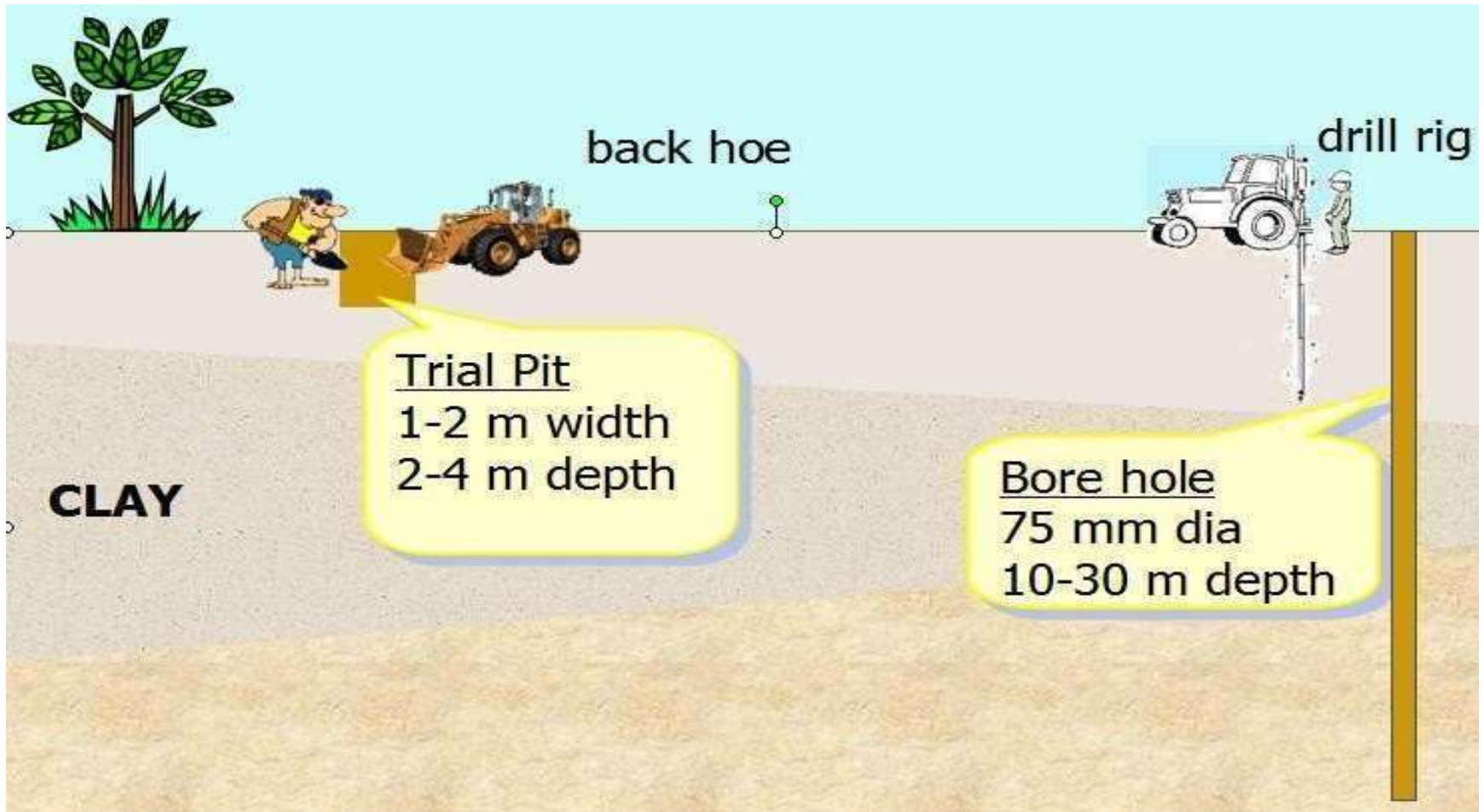# SOILBORING AND TYPES OF AUGERS
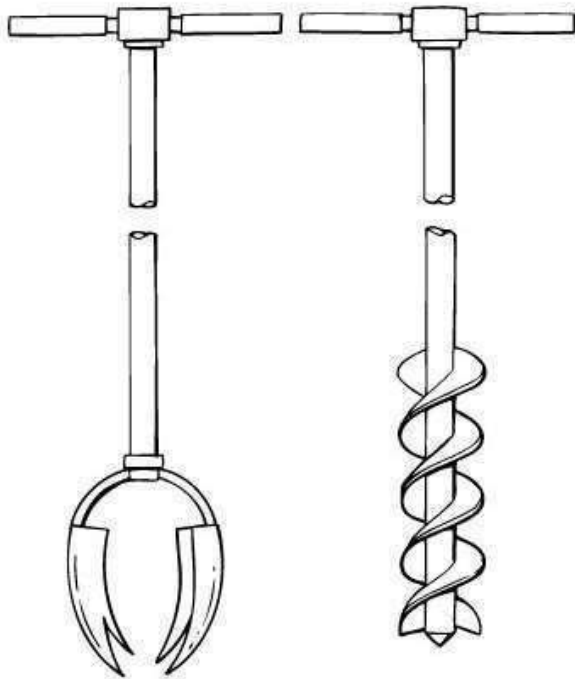
Boring Tools

Hand tools

posthole auger   helical auger

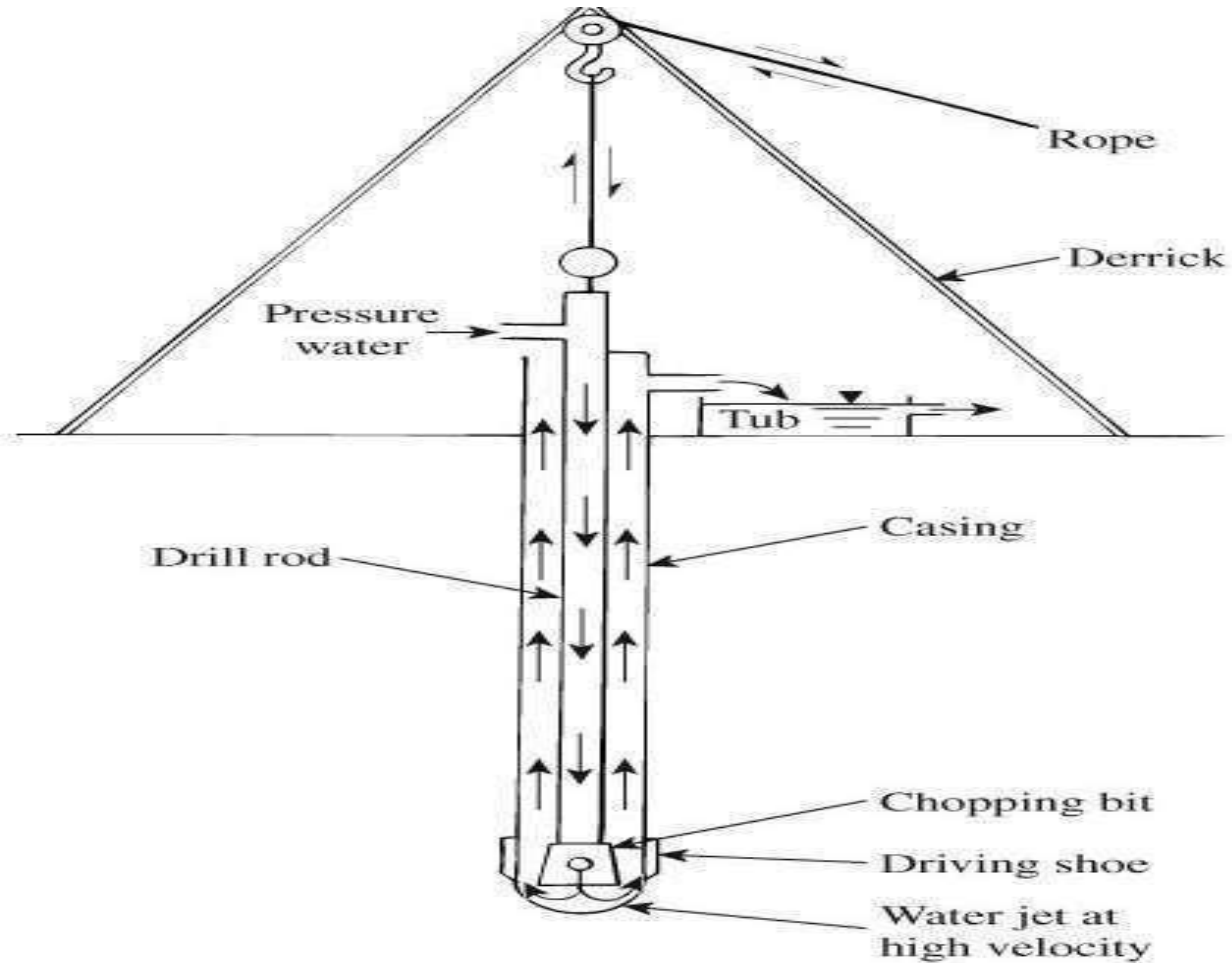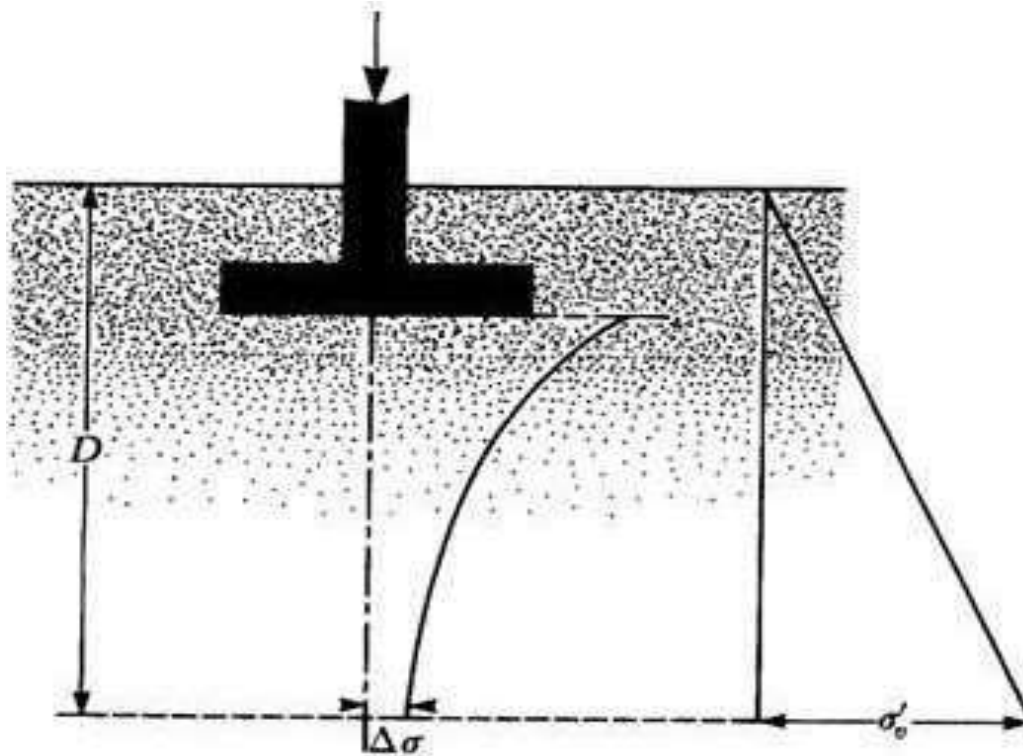Auger boring

Power drills

WASH BORING

Wash boring

DepthofBoring

The estimated depths can be changed during the drilling operation,   depending on the subsoil encountered. To determine   the approximate minimum depth of boring, engineers   may use the following rule:

Depth of Boring

Determination of the minimum depth of boring

DepthofBoring

1. Determine the net increase of stress, $\Delta\sigma$ under a foundation with depth as shown in the Figure.

2. Estimate the variation of the vertical effective stress, σ'_v, with depth.

3. Determine the depth, $D = D_1$, at which the stress increase $\Delta\sigma$ is equal to $(1/10)$ q (q = estimated net stress on the foundation).

4. Determine the depth, $D = D_2$, at which $\Delta\sigma/\sigma'_v = 0.05$.

5. Unless bedrock is encountered, the smaller of the two depths, D_1 and D_2, just determined is the approximate minimum depth of boring required. Table shows the minimum depths of borings for buildings based on the preceding rule.

Depth of Boring

Building width (m)	Number of Stories				
	1	2	4	8	16
	Boring Depth (m)				
30.5	3.4	6.1	10.1	16.2	24.1
61.0	3.7	6.7	12.5	20.7	32.9
122.0	3.7	7.0	13.7	24.7	41.5

Depth of Boring

For hospitals and office buildings, the following rule could be use to determine boring depth

$$D_b = 3S^{0.7} \quad \text{(for light steel or narrow concrete buildings)}$$

$$D_b = 6S^{0.7} \quad \text{(for heavy steel or wide concrete buildings)}$$

where:

D_b = depth of boring, in meters

S = number of stories

DepthofBoring

• When deep excavations are anticipated, the depth of boring should be at, least 1.5 times the depth of excavation.

• Sometimes subsoil conditions are such that the foundation load may have to be transmitted to the bedrock.

• The minimum depth of core boring into the bedrock is about 3m. If the bedrock is irregular or weathered, the core borings may have to be extended to greater depths.