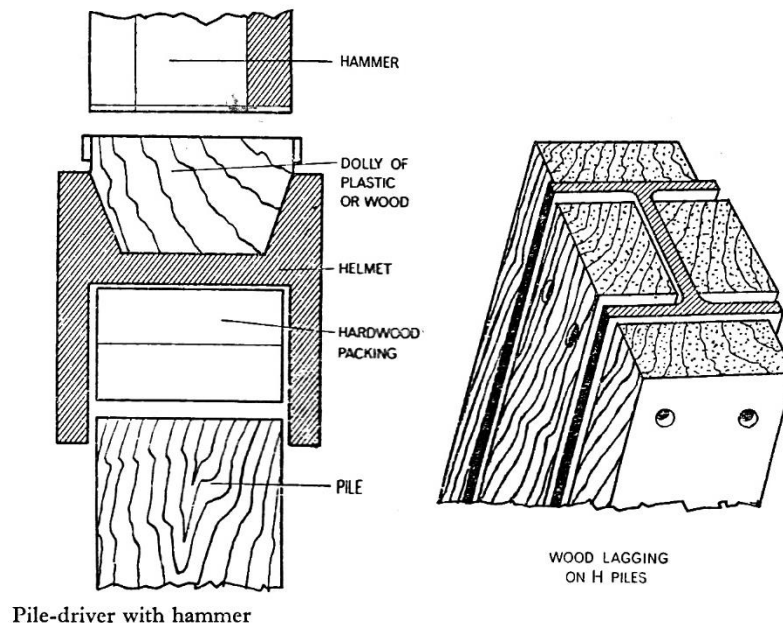


# PILES FOR FOUNDATIONS

When the foundations of a building have to be carried to a considerable depth to provide adequate support for it and to ensure that no undue settlement will occur, it is normal practice to use piles of concrete or steel. Piled foundations are particularly applicable to structures which are to be built over water or on mud, such as wharves and jetties, but also to large concrete structures which impose a very heavy load on their foundations, thereby rendering them liable to total or differential settlement. The carrying capacity of the piles may be due to the frictional resistance of the ground against the sides of the piles, in cases where the strength of the ground does not materially increase with depth; or to the strong bearing layer to which the point of the piles reach, in which case they transmit the load from the soft strata above to the bearing stratum.

The majority of piles are installed by being driven into the ground and displacing the soil through which they pass. Certain soils, however, are difficult to displace by this method, clay being one example, and for this and other reasons an alternative method is adopted, in which the soil is cored out and the hole is then filled with compacted concrete. Such piles are known as *in situ* piles, since they are actually cast in the position in which they are required.

In the case of driven piles, a mechanical pile-driver is required, to hold the pile firmly while it is being driven into the ground by blows from a hammer moving up and down the frame. The frame in some machines can be adjusted so that the pile is driven either vertically downwards or at the required rake. The amount of penetration with each blow will vary with the force of the impact and the resistance of the ground. The piles are liable to be damaged by the repeated blows of a hammer which may weigh as much as eight tons, and the heads must therefore be protected by a helmet of cast steel, packed with hardwood or some similar material.



Steel piles, commonly in the form of H-beams, have a greater strength-weight ratio than concrete piles, and are capable of being driven through hard material with less risk of damage. Extra lengths may be butt-welded on to the driven sections to increase their length. Where concrete piles are used, they are pre-

cast except for those cast *in situ*, and this involves difficult handling and transportation problems, since they are very heavy and may be as much as 100 feet in length. Partly for this reason, driven concrete piles usually require reinforcement, whereas for the *in situ* piles this is not normally essential, as they are subject to no handling stresses and are not hammered into the ground. When the pile has been driven to the required depth, the reinforcement bars must be exposed at the top by breaking out the concrete, and they are then tied in to the rest of the foundations.

**1. Comprehension**

- A. What do you mean by piles?
- B. Where and why are they used?
- C. How do driven piles and situ piles differ from each other.
- D. Suggest a suitable topic for the second paragraph.
- E. Name different piles the writer has mentioned in this passage.
- F. What topic is dealt under the fourth paragraph?
- G. What are the advantages of steel piles over concrete piles?
- H. From which specific this passage might have been extracted?

**2. Short questions**

- A. Compare and contrast different types of piles.
- B. Prepare a note from this passage.

**3. Long/ Discussion question**

- A. In recent years, we Nepalese have seen, if not seen, need colorful advertisements in Newspapers about multistage apartments from difficult housing companies. In relation to this, talk about suitable of this text.
- B. Write an essay on importance of different kind of foundation in your life.