

TUNNELING AND PILE DRIVE

TUNNELING

Process of making tunnels in order to reduce distance of travel or traffic congestion for highway and railway is called tunneling

Tunneling is important for the following purpose

- Time saving and reduction in fuel
- Avoid unwanted traffic congestion
- Maintain a proper speed
- Avoid tiredness of travel
- Avoid unwanted accidents
- To avoid deforestation and death of animal while crossing
- To avoid land slide in hilly region
- To avoid the long route around the mountain
- To reduce the length of highway and railway and it may be economical
- To have flatter gradient that is essential to maintain the speed of the vehicle

Tunneling types depending upon the shapes

Poly centric

Horse shoe

Size of the tunnel

It depends upon the number of track and the width and length of the mountain

Alignment of tunneling

- Identify the shortest route
- Height of mountain should be less
- Mark the points on the mountain
- Transfer the tunnel inside the mountain by making of required depth
- Checking the tunnel cross section whether equal every where

Methods of tunneling

Shaft tunneling

Pilot tunneling

Shaft tunnels

Vertical passages are created along the line of the tunnel then the tunnels can be excavated by the passage of having distance half of the distance between adjacent passage openings are available to take the excavated material ,shafts can also be used to pump out the water

Pilot tunneling

If the height of the mountain is more then we can exercise this method of tunneling but uf he horizontal length is more, shaft tunneling is done

PILE DRIVING

This is the process of inserting the pile inside the soil

It is a process by way of which a pile is forced in to the ground with out excavating the soil

Pile driving an be done by two methods

Using hammering

Using pile driver

Hammering

Heavy bl0w is given by means of a hammer

Variety of hammers available to perform some of the acion

- Drop hammer
- Single acting hammer
- Double acting hammer
- Diesel hammer and
- Vibrating hammer

Drop hammer

The hammer is lifted by a winch and dropped down

The hammer is connected to the rope by a hook

When it is lifted up after reaching a particular height it is dropped down

Single acting hammer

Hammer is lifted by stream and dropped then it will fell down in the top of the pile by gravitational force

Double acting hammer

It is the same as that of single acting but here both the lifting and dropping is done by steam engine

Diesel hammer

The process of lifting and dropping is done by diesel engine

Vibrators

If the soil condition is loose ,then using some vibrators the pile is inserted

Source : <http://www.nprcet.org/e%20content/Misc/e-Learning/CIVIL/VI%20SEMESTER/10111CE601%20-%20CONSTRUCTION%20TECHNIQUES%20EQUIPMENTS%20AND%20PRACTICE.pdf>