PART-D

Construction & earth moving equipment:

Drag line :-

→ Drag line is used to excavated soft earth and to deposit in nearby banks or to load into wagons.

→ Drag lines may also be mounted or crawler.

→ It can operate natural ground while excavating from a pit with the bucket; thus it is not necessary for the drag line to go into the pit in order to excavate.

→ The bucket is thrown out from the drag line on the top of the earth to be excavated & then pulled back towards the base of the machine.

(ii) Bulldozer :-

→ It may be used for shallow excavation work & for hauling the earth for relatively short distance.

→ Bulldozer is considered to be a versatile machine for many construction project as it may be used for clearing site, opening up plot roads, moving earth for short haul distance of about 1 km. and also in several other jobs.

(vii) Power shovel :-

→ It is used primarily to excavate earth of all classes except rock to load it into wagons.

→ Power shovels may be mounted on crawle tracks and so they can move at low speed.

→ The different part of the Power shovels are mounting, cab, boom, dippes, stick, dipper shoist line etc.

→ The power shovel can effectively operate to excavate earth from a lower level

where it stands and when the depth of the face to be excavated is not too shallow.

* Planning & selection of the construction equipments :-

The excavation equipments is selected depending on the nature of the material. the distance, to be hauled & the method of disposal.

→ At times the selection may be made base on the availability also (363-404)

*. Compacting equipments :-

(i) Tamping rollers :-

→ The prencerple of rollers is the application of pressure which is slowly increased & then decreased.

→ The various type of rollers which are used for compaition.

Smooth wheel, pneumatic tyred & the sheep foot rollers.

→ Further the construction equipment such as trucks, tractors & bulldozers also help in compaction of the materials to some extent.

(ii) Smooth wheel rollers:-

→ There are two types of smooth wheel rollers one three-wheeled or macadam rollers and the other tandem rollers

→ The gross weight of the former type range between 4 to 18 tones where as that of the latter type with two axles varies between 1 to 14 tones

→ The compacting efficiency of the smooth wheeled roller depends on the weight, width & diameter of each roller

→ The smooth wheeled rollers are suitable to roll a wide range of soils, preferably granular soils & pavement materials for the various layers.

→ These are particularly found to be useful in compacting soils and other materials where a crushing action is advantageous

Pneumatic Tyred roller :-

→ In this type of number of pneumatic wheels are mounted on two or more axles under a loading platform.

→ These rollers are pulled by tractors

→ The pneumatic tyred rollers are considered to be most suitable to compact non-plastic silts & fine sands.

→ In addition to the direct due to rolling, there is also a

slight kneading action.

(iv) Vibrating compactors / Vibrators:

→ Vibrators are most suited for compacting dry cohesionless granular materials.

→ There are also vibrator mounted roller to give the combined effects of rolling & vibration.

→ Vibratory rollers are advantageously used in compacting a wide range of materials.

(1°) Tamping rollers :-

→ Tamping compactor are high speed, self-propelled, non vibratory rollers.

→ These rollers usually have four steel padded wheels & can be equipped with a small blade to help level the lift.

→ The pads are tapered with an overal or rectangular face. The pad face is smaller than the base of the pad at the drum.

→ As a tamping roller moves over the surface, the feet penetrate the soil to produce a kneading action and a pressure to mix & compact the soil from the bottom to the top of the layer.

→ With repeated passages of the roller over the surface, the penetration of the feet decreases until the roller is said to walk out of the fill.

→ Because, the pads tapered, a tamping foot roller can walk out of the lift without fluffing the soil. It if does not walk out; the roller is too wet & the roller is shearing the soil.

→ The working speed for these rollers is the 8-12 mph range. Generally 2-3 passes over an 8-12 in lift will achive density but this is dependent on the size of the roller.

→ Four passes may be necessary in poorly graded plastic silt or very fine clays.

→ A tamping foot roller is effective on all soils except puresand.

→ To realize their ture economical compaction potential they need long uninterrupted passes so the roller can build up speed which generates high production.

→ Like the sheep-foot roller, tamping foot compacters do not adequately compact the upper 2-3 in of a lift. Therefore, if a succeeding lift is not going to be placed, follow up with