LECTURE 19

Impact Roller

1. Compaction by static pressure combined with impact of pentagonal roller.
2. Higher impact energy breaks soil lump and provides kneading action

Vibrating Drum

1. Roller drum fitted with vibratory motion.
2. Levels and smoothens ruts

Plate & Rammer Compactor:

It is used for backfilling trenches, smaller constructions and less accessible locations

Field Compaction Control-

It is extremely important to understand the factors affecting compaction in the field and to estimate the correlation between laboratory and field compaction. Field compaction control depends on

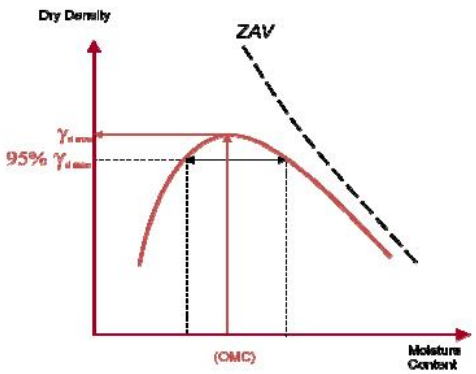
(i) Placement wate rcontent,

(ii) Type of equipment for compaction

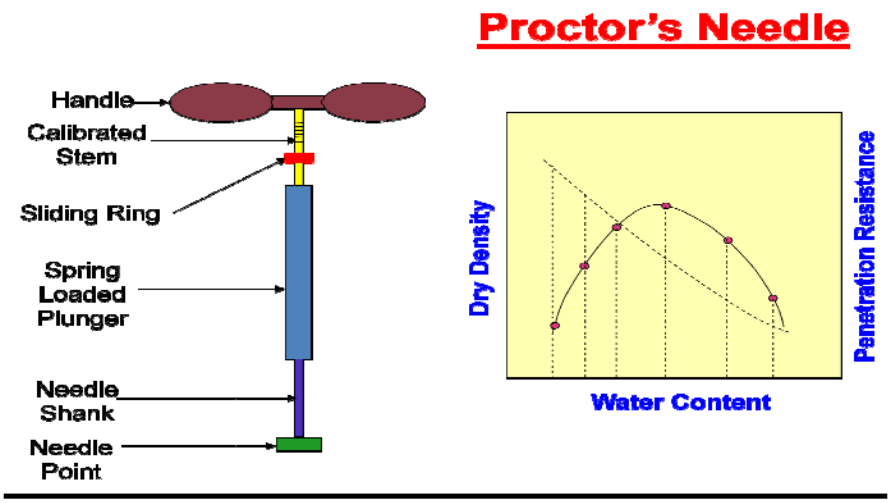
(iii) Lift thickness

(iv) Number of passes based on soil type & degree of c ompaction desired Placement water content is the water content at which the ground is compacted in the field. It is desirable to compact at or close to optimum moisture content achieved in laboratory so as to increase the efficiency of compaction. However, in certain jobs the compaction is done at lower than or higher than OMC (by about 1– 2 %) depending on the desired function as detailed .

Comparison between field & laboratory compaction methods



Proctor's Needle



1. Used for rapid determination of water content of soil in field.
2. Rapid moisture meter is used as an alternative.
3. Proctor's needle consists of a point, attached to graduated needle shank and spring loaded plunger.
4. Varying cross sections of needle points are available.
5. The penetration force is read on stem at top.
6. To use the needle in field Calibration in done on the specific soil in lab and calibration curve is prepared and the curve is used in the field to determine placement water content.

Compaction control in field

There are many variables which control the vibratory compaction or densification of soils.