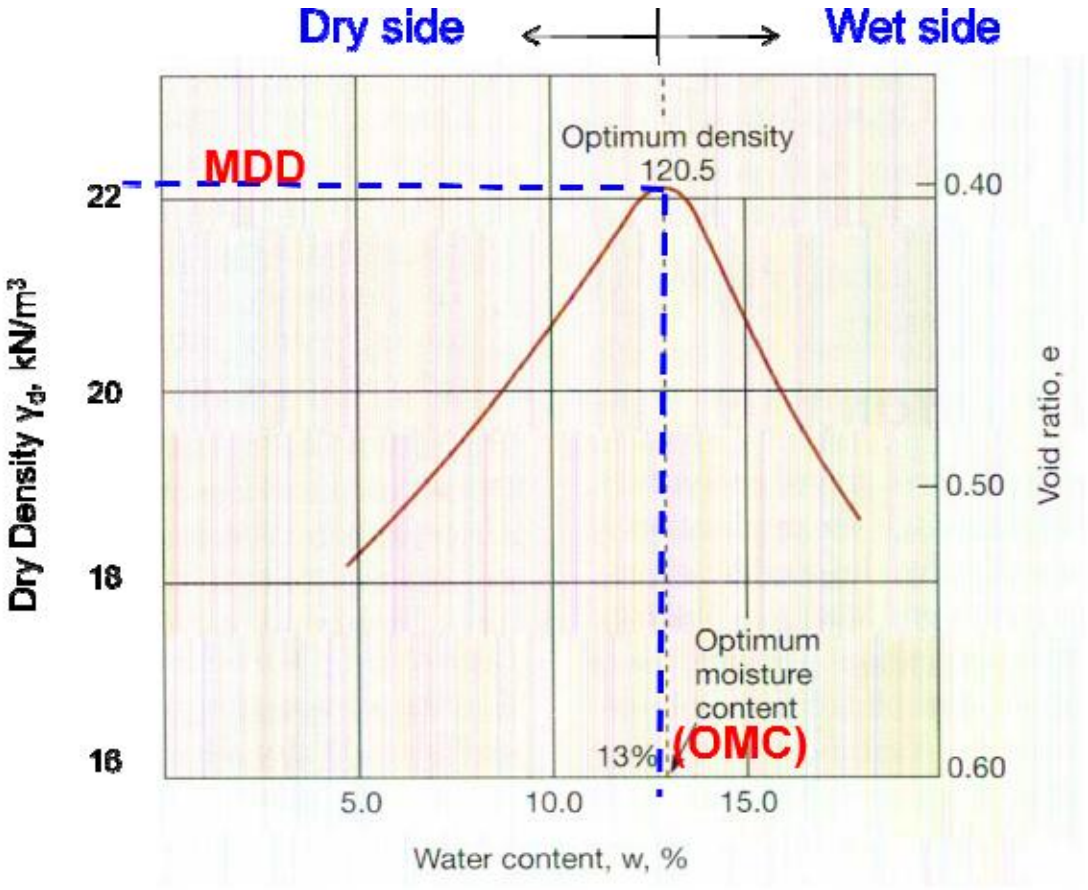
LECTURE 15

Factors affecting Compaction-

1. Water Content
2. Amount of Compaction
3. Method of Compaction
4. Type of Soil
5. Addition of Admixtures

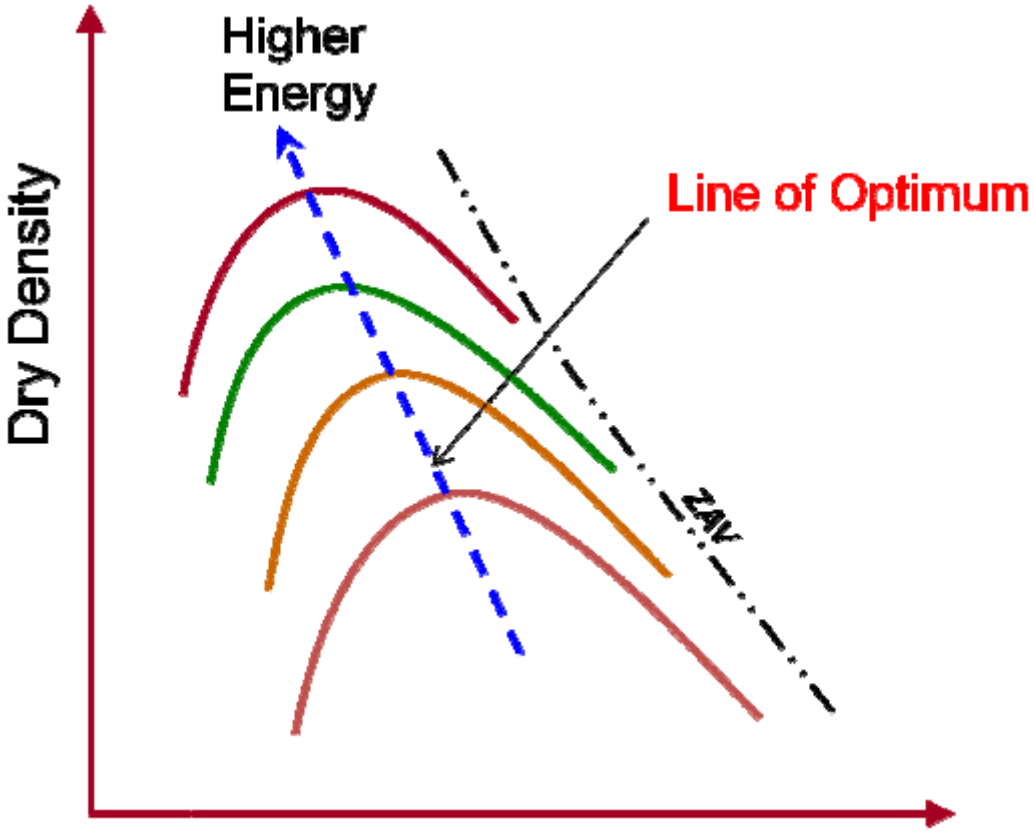
Effect of Water Content-

1. With increase in water content, compacted density increases up to a stage, beyond which compacted density decreases.
2. The maximum density achieved is called MDD and the corresponding water content is called OMC.
3. At lower water contents than OMC, soil particles are held by the force that prevents the development of diffused double layer leading to low inter-particle repulsion.
4. Increase in water results in expansion of double layer and reduction in net attractive force between particles. Water replaces air in void space
5. Particles slide over each other easily increasing lubrication, helping in dense packing.
6. After OMC is reached, air voids remain constant. Further increase in water, increases the void space, thereby decreasing dry density.



Effect of Amount of Compaction-

1. As discussed earlier, effect of increasing compactive effort is to increase MDD And reduce OMC (Evident from Standard & Modified Proctor's Tests).
2. However, there is no linear relationship between compactive effort and MDD.



Effect of Method of Compaction-

The dry density achieved by the soil depends on the following characteristics of compacting method.

1. Weight of compacting equipment
2. Type of compaction
3. Area of contact of
4. Time of exposure
5. Each of these approaches will yield different compactive effort.

Further, suitability of a particular method depends on type of soil.

Effect of Type of Soil

1. Maximum density achieved depends on type of
2. Coarse grained soil achieves higher density at lower water content and fine grained soil achieves lesser density, but at higher water content.

Typical Compaction Curve for Fat Clay