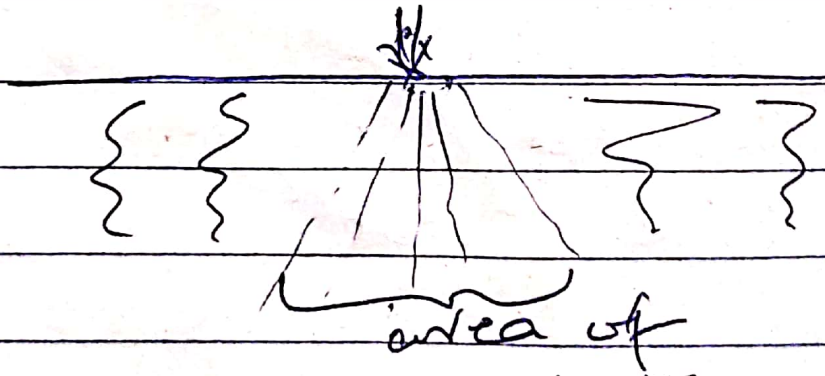
Ans (9) Principle/Phenomenon :-

It works/shows on the principle of vertical stress. The pavement directly under the load is under compression. while most of the surrounding area is under very little stress.



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(1) Typical flexible pavement with granular Base:

(1) Rutting compressive strains occur right below wearing layer.
(2) followed by Alligator cracking in asphalt layer.
(3) Compressive strains, rutting occurs in Granular base layer.
(4) Rutting and depression occur and projected to subgrade.

Typical flexible Pavement with ~~stabilized~~ Base. (Load applied).

(1) Rutting occurs in right below wearing layer in asphalt concrete.
(2) fatigue cracking in stabilized base.
(3) Rutting in stabilized layer.
(4) Rutting, depression in subgrade.

Ans:- 2

Geotechnical report is important because subsurface conditions can be entirely different from what is visible on surface.

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General Steps:-

(1) Collection of Preliminary Data;
- General geology of site.
- History of site.
- Pavement Details.

(2) Reconnaissance :-
- Sites visit.
- General topography.
- Row.
- Local problems.
- Soil stratification.
- Prospect material sources.
- Presence of water courses.

(3) Site works :-
- Test Pits.
- Boring / Drilling.
- Sampling.
- In-situ density / moisture.
- CPT & SPT.

(4) Laboratory :-
- (i) Classification tests.
- strength.
- Consolidation / settlement / Expansi
- Resilient Modulus.
- Permeability.
- Chemical testing.

(5) Report.

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Ans. 3: The given figure is of CBR testing procedure & load penetration curves for typical soils. Referring from 5% – 100% of different degrees of subgrade.

(*) On X-axis lies penetration in inches
(*) On Y axis lies Bearing values - lb/in².

In simple words, it shows the relation b/w % of subgrade, penetration and bearing value.

The more the %age of subgrade (soil) the more will be the load required for a given penetration.

It has been shown with increments in the given table i.e 2-1.7.

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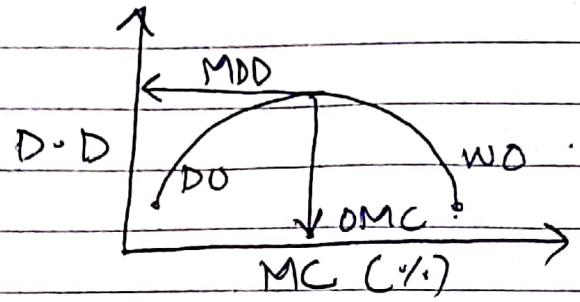
Date: Pavements.

Ans:- 4.



Proctor compaction test is a laboratory method of experimentaly determining the optimal moisture content at which a given soil type will become most dense & achieve its maximum dry density.

Properties & structure:-

Usualy the water content of compacted soils is referenced to optimum water content of a given soil and is type of compaction. depending on their position :-

(1) Dry of optimum-
(2) Near or at optimum.
(3) Wet of optimum.

In the provided Graph:-
Dry of optimum means soils are flocculated.
Wet of optimum means the fabric became more oriented.
Both shows The structure of soil.

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Ans 2:- Effects of compaction on Engg properties of soil? Explain.

Compaction usually effects the following properties of soil:- i.e.

(1) Strength.
(2) Compressibility.
(3) Stability (swelling & permeability).

It alters the CBR (California Bearing Ratio) of soils.

In dry optimum when compacted, zero air voids are assumed to be left.

Compressibility :-

⇒ Compressibility of compacted clays is a function of stress level imposed on soil mass. At relatively, low stress level, clays compacted wet of optimum are more compressible.

⇒ At high stress level, the void ratio decreases and soil compaction increases with applied pressure.

Swelling :-

Swelling of compacted clays is greater for those compacted dry of optimum. As they have greater tendency to absorb water and thus swell more. Soils compacted in dry of optimum are more sensitive to environmental changes

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