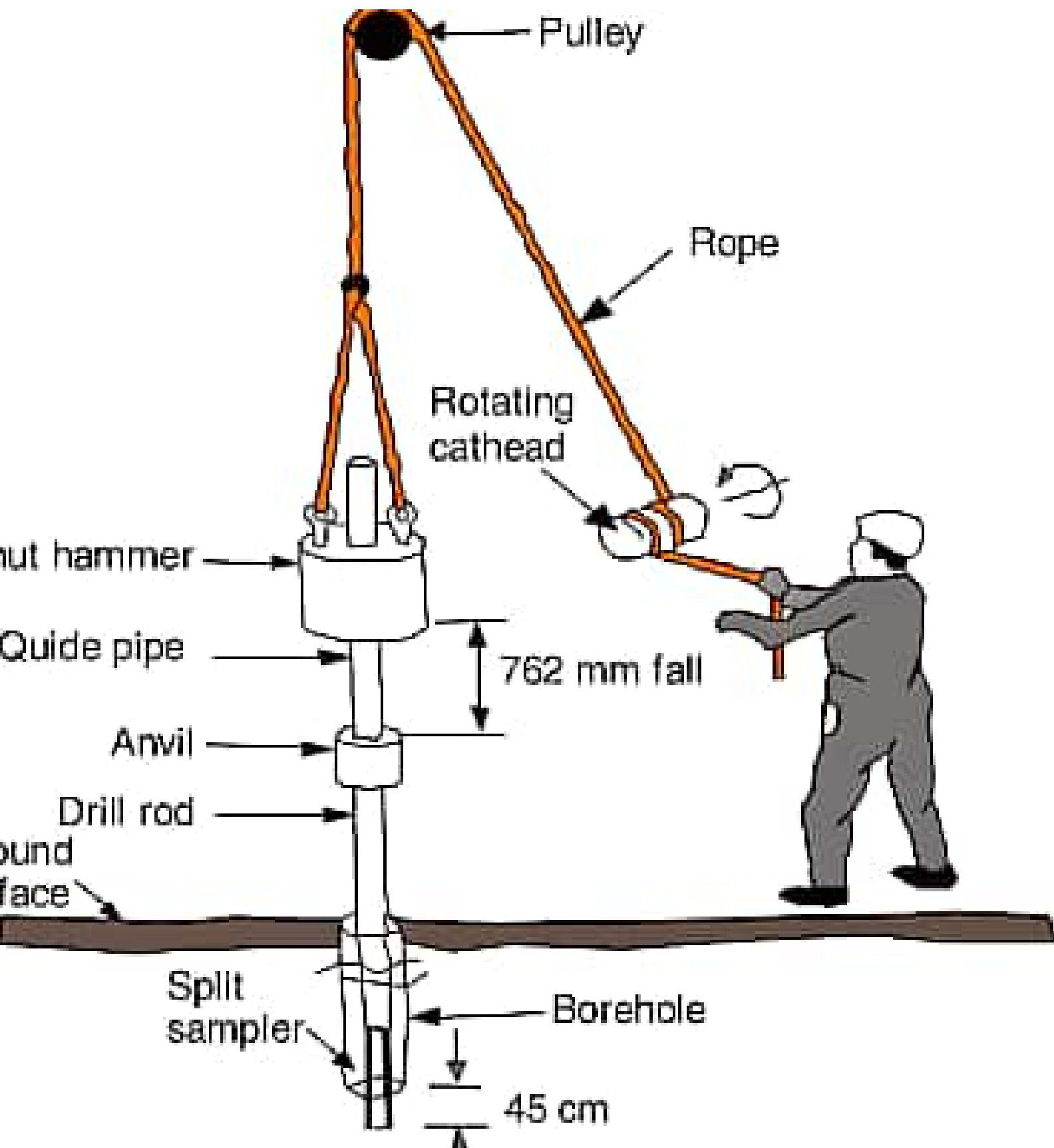


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What is the difference between Standard Proctor Test and Standard Penetration test?

Standard proctor test::

- Standard proctor test is the basically a compaction of soil that is carried out using proctor's test to understand compaction characteristics of different soil with change in moisture content
- Compaction is the process of densification of soil by reducing air voids, compaction of soil is the optimal moisture content at which a given soil type becomes most dense and achieve its maximum dry density by removal of air voids.
- The degree of compaction of a given soil is measured in terms of its dry density is maximum at the optimum water content.
- The standard proctor test a sample of silty sand was compacted in a mold whose volume is $1/30 \text{ ft}^3$ the moist weight of the sample was 4.0 lb. when dried the soil weighted 3.52 lb if the specific gravity of solid (G_s) for the soil is 2.69 compute.

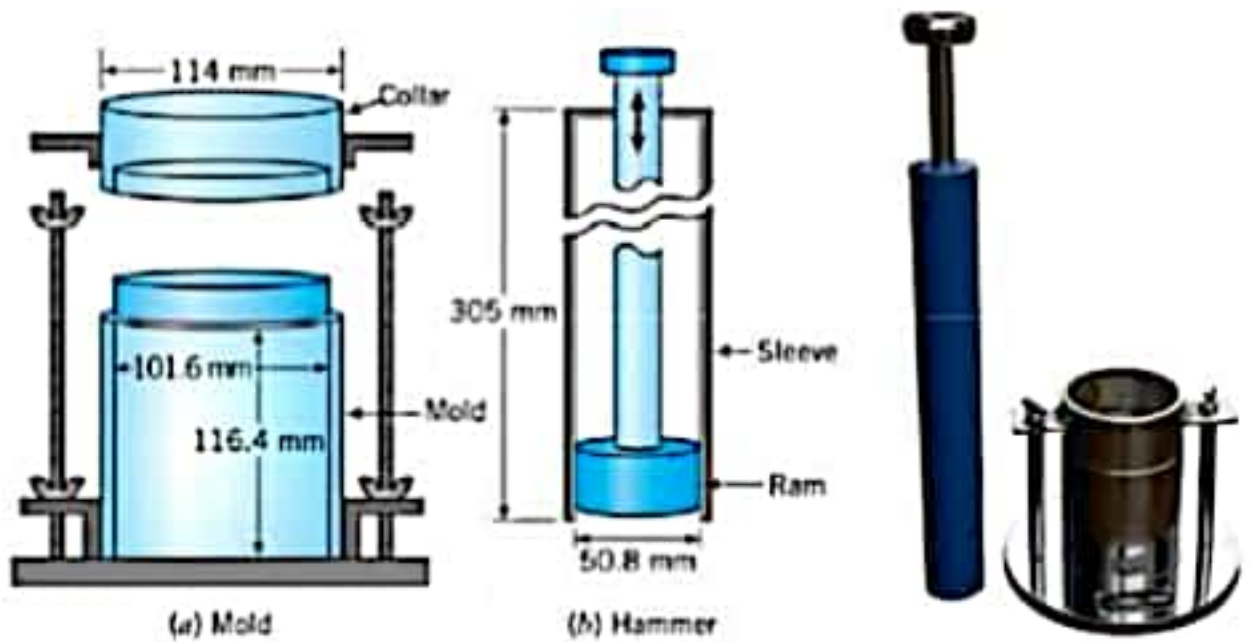


Standard Penetration Test (SPT):

- The Standard Penetration Test is an in-situ test that comes under the category of penetrometer test.
- The test is extremely useful for determining the relative density and the angle of shear resistance of cohesion-less soil. It can also be used to determine the unconfined compressive strength of cohesive soils.
- The Standard Penetration Test are carried out in borehole. The test will measure the resistance of the soil strata to the penetration undergone.
- A penetration empirical correlation is derived between the soil properties and the penetration. An empirical correlation is derived between the soil properties and the penetration resistance.
- The Standard Penetration Test is designed to provide information on the geotechnical engineering properties of soil.

Standard Proctor Test

Standard Proctor test equipment



Q2: What is the classification of soil based on free swell index.
 on the basis of Swell Index soil are classified as:

Free swell index	Degree of Expensiveness	Liquid limit	Plastic limit	Shrinkage limit	Degree of Severity.
< 20	low	0-50	0-35%	< 17%	Non critical
20-35	moderate	40-60%	25-50%	8-18%	marginal
35-50	High	50-75%	35-65%	6-12%	critical
> 50	very high	> 60%	> 45%	> 10%	Severe.

- Why is permeability test of soil important?
- Importance of soil permeability test.
 - Determination of permeability enables engineers and agriculturists to study fluid flow characteristics through a soil mass and thus help in improving workability of soil. The pumping test and percolation test can be used in the field to provide information about the permeability of soils.
 - Soil permeability test is a laboratory experiment conducted to determine the permeability of soil.
 - Following application illustrates the importance of soil permeability.
 - Permeability influences the rate of settlement of a saturated soil under load.
 - The design of earth dams is very much based upon the permeability of the soil used.
 - The stability of slopes and retaining structures can be greatly affected by the permeability of the soils involved.
 - Filters made of soil are designed based upon their permeability.