



DEPARTMENT OF CIVIL ENGINEERING
GEOTECHNICAL ENGINEERING LABORATORY

The dedicated lab was established in 2005 in an area of 139 m², various advancements took place by the time. The lab is relevant to determine the index properties and engineering properties of soil not only through laboratory experiments but also through in-situ test such as SPT, auger boring, DCPT also to assess the bearing capacity of soil. Highly experienced technical consulting team having more than 15 years of experience is responsible for executing the research work. The detail of a few instruments is as follow:

1. Electric Oven

Oven is designed, calibrated & tested to suitable various applications in growing fields. Electric oven is used in geotechnical engineering laboratory for the determination of water content or moisture content of the soil sample. Electric oven, maintain the temperature between 105 0C to 110 0C for the determination of moisture content of the soil sample.



Electric Oven

2. Pycnometer For Specific Gravity of Soil IS: 2720-3

Pycnometer is glass bottle with brass cone. Cone placed at the top of bottle which is nicely fitted with aluminum cap. It comes in 900ml capacity. The Pycnometer is used for determination of the specific gravity of solid particles of both fine grained and coarse grained soils. The determination of specific gravity of soil will help in the calculation of void ratio, degree of saturation and other different soil properties.



Pycnometer

3. Density Bottle IS: 2720 - 3 - 1

Density bottle is glass bottle of 50 ml with stopper having capillary hole. Density bottle is used to determine the specific gravity of soil fraction passing 4.75 mm I.S sieve. This method is used for every type of soil and it is the most accurate one.



Density Bottle

4. Proctor Test Mould IS: 2720-7

The Proctor test Mould apparatus is a laboratory geotechnical testing method used to determine the soil compaction properties specifically the optimal water content at which soil can reach its maximum dry density.



Proctor Test Mould

5. Core Cutter Apparatus IS:2720-29

Dry density of compacted soil is a measure of the amount of the compaction achieved during the construction. Cylindrical core cutters of 130mm long and 100mm diameter are used for testing the in-situ compaction of cohesive and clay soils placed as fill. By using core cutter, bulk density of soil is quickly calculated and by determining the moisture content of the soil the dry density of the fill can be calculated and hence the voids percentage. A high percentage of voids indicate poor compaction of soil.



Core Cutter Apparatus

6. Sand Cone Apparatus IS:2720-28

Sand cone apparatus is used to determine in-situ density of soil. The sand cone method is one of the most common methods that are used for field density test in highway construction. The dry density test is carried out in the field to check the compaction of the layers.



Sand Cone Apparatus

7. Consolidation Test Apparatus (Falling Head Method) IS: 2720-17

Soil permeability, or hydraulic conductivity, is the rate of the flow of water through soil materials, and it is an essential characteristic across a broad spectrum of engineering and earth science disciplines. The apparatus is used to determine the permeability of the sample by falling head method in laboratory. Geotechnical and civil engineers, hydrogeologists, soil, and environmental scientists all use this information for projects such as structural foundations, embankments, earthen dams, flood management, effluent infiltration, and more.



Consolidation Test Apparatus

8. Triaxial Test Apparatus IS: 2720-11

The apparatus is used to determine the shear strength and angle of repose of a soil sample.



Triaxial Test Apparatus

9. Casagrande Apparatus For P.I of Cohesive Soil IS: 2720-5

The apparatus is use to determine the index properties of the soil sample.



Casagrande Apparatus

10. Vibratory Table (For R.D. of Cohesionless Soil) IS:2792

The apparatus is used to determine the maximum and minimum relative density of given soil sample.



Vibratory Table

11. Direct Shear Testing Machine IS: 2720 -13

The direct shear test is an experimental procedure conducted in geotechnical engineering practice and research that aims to determine the shear strength of soil materials.



Direct Shear Testing Machine

12. Standard Penetration Test (SPT): IS 2131 (1981) (Reaffirmed 2002)

The standard penetration test is an in-situ test that is coming under the category of penetrometer tests. The standard penetration tests 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 resistance. The test is extremely useful for determining the relative density and the angle of shearing resistance of cohesionless soils. It can also be used to determine the unconfined compressive strength of cohesive soils



Standard Penetration Test