



# GOVT. POLYTECHNIC COLLEGE, BUDGAM (J&K)





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# Soil Mechanics Lab

DEPARTMENT OF CIVIL ENGINEERING

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S. No	Apparatus Image	Apparatus Name	Quantity
1		<p><b><u>OVEN – BIG</u></b></p> <p>An oven is a tool which is used to expose materials to a hot environment. Ovens contain a hollow chamber and provide a means of heating the chamber in a controlled way. In use since antiquity, they have been used to accomplish a wide variety of tasks requiring controlled heating.</p>	1
2		<p><b><u>STANDARD PENETRATION TEST</u></b></p> <p>Standard Penetration Test, SPT, involves driving a standard thick walled sample tube into the ground at the bottom of a borehole by blows from a slide hammer with standard weight and falling distance.</p>	1
3		<p><b><u>DIRECT SHEAR APPARATUS</u></b></p> <p>Direct Shear test machines are used in the simple soil mechanics test, the direct shear test. The test is performed to measure the force and horizontal displacement of a representative soil specimen sheared along a controlled horizontal plane at a constant deformation rate.</p>	1
4		<p><b><u>AUTO MATIC SAMPLE EJECTOR</u></b></p> <p>The Soil Sample Ejector is used for removing soil samples from 4" and 6" molds up to 7" long. Hand operated with 6000 lbs. of force. Adapters sold separately for 2" and 3" dia. samples.</p>	1

5		<p><b><u>VANE SHEAR APPARATUS</u></b></p> <p>The vane shear test apparatus consists of a four-blade stainless steel vane attached to a steel rod that will be pushed into the ground. The height of vane is usually twice its overall widths and is often equal to 10 cm or 15 cm. A typical vane shear test kit usually contains the following items: Torque wrench.</p>	2
6		<p><b><u>C B R TEST APPARATUS</u></b></p> <p>CBR Field Equipment consists of CBR Field Jacks, Load Rings, Surcharge Plates, and Penetration Pistons to provide penetration data from in-situ field tests. LBR Equipment is similar to CBR laboratory test equipment but uses unique Compaction Molds and Spacer Discs.</p>	1
7		<p><b><u>CONSOLIDATION TEST APPARATUS</u></b></p> <p>The consolidation apparatus is used to determine the consolidation characteristics of soils of low permeability. In addition, tests are carried out on specimens prepared from undisturbed samples. Data obtained from these tests together with classification data and knowledge of the soils loading history enables estimates to be made of the behavior of foundations under load.</p>	1

8	 <p>The image shows a Cassagandre Liquid Limit Apparatus, a black mechanical device with a brass cup on top and a hand crank on the side. A label on the front reads 'GEOTECHNICAL TESTING EQUIPMENT'.</p>	<p><b><u>CASSAGANDRE LIQUID LIMIT APPARATUS</u></b></p> <p>The UTEST Manual and Motorized Liquid Limit Apparatus (Casagrande) are used to determine the moisture content at which clay soils pass from plastic to liquid state. The devices consist of an adjustable crank and cam mechanism, a blow counter and a removable brass cup fitted on the base.</p>	2
9	 <p>The image shows a Plastic Limit Set, which includes a white plastic cup, a white plastic bottle, and a small metal tool, all arranged on a white surface. A logo is visible in the top left corner.</p> <p>Plastic Limit Set</p>	<p><b><u>PLASTIC LIMIT</u></b></p> <p>Plastic limit is defined as the water moisture content at which a thread of soil with 3.2mm diameter begins to crumble</p>	3
10	 <p>The image shows a Sieve Set, consisting of a stack of several stainless steel sieves of different mesh sizes, with one sieve placed to the side.</p>	<p><b><u>SIEVE SET</u></b></p> <p>The sieve analysis determines the gradation (the distribution of aggregate particles, by size, within a given sample) in order to determine compliance with design, production control requirements, and verification specifications.</p>	1
11	 <p>The image shows a Marshall Stability Test Apparatus, a blue mechanical device with a vertical frame and a central testing mechanism. A label on the front reads 'MARSHALL STABILITY TEST APPARATUS'.</p>	<p><b><u>MARSHAL STABILITY TEST</u></b></p> <p>The Marshall stability of the mix is defined as the maximum load carried by the specimen at a standard test temperature of 60°C. The flow value is the deformation that the test specimen undergoes during loading upto the maximum load. Flow is measured in 0.25 mm units.</p>	1



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### **UNIVERSAL AUTOMATIC COMPACTOR**

It is a motor driven mechanical compactor useful for soil compaction into 100mm or 150mm dia moulds. Two sets of rammers are provided, one of 2.6kg. And the other of 4.89 kg arranged for 310mm and 450mm fall respectively. For compaction soil into 150mm dia moulds, 100mm face dia rammers having weight of 4.89Kg is used. Whereas for 100mm dia moulds, they are of 50mm dia.

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### **HAND OPERATED SAMPLE EXTRACTOR**

Hand operated Extractor, for 38 mm dia specimens for extracting soil core specimens of 38 mm dia from sampling tube or from larger size samplers. It can be used in the field also, for taking out samples.

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