

Soil test services for road construction

CBR Testing bs1377 part 9a27

Soil classification is the grouping of soils that have the same properties in units that can be mapped and geo-referenced. Naturally, soils have chemical elements and all gaseous, liquid and solid states. These chemical, physical and biological properties together with their combinations are never-ending. This has led to the need for different ways of grouping various soils.



In any building or structural construction, the first step includes soil testing. This is done to determine whether the soil is suitable for the proposed construction. Soil should be tested well to give the desired performance. Failure to do proper soil testing could lead to damaged or collapsed structures. This is why it is always advisable to test the soil before proceeding with any construction.

When you know the soil characteristics like moisture content, strength, grain size distribution and strength before undertaking any construction, it will leave you assured that your structural foundation will stand the test of time.

You can find the soil to be granular or cohesive. Granular soils are coarser like sand, and the particles do not stick to themselves, unlike cohesive soils that tend to be made of fine bits. These contain more clay and are less likely to cave in when a structure is constructed on them. The less cohesive a soil is, the more measures are required to avoid a cave-in of a structure that has been constructed on it.

You can classify soils as type A, B and C. Type A is considered as the most stable for excavation. On the other hand, type C is the least stable type. However, you can cut a trench across different soil types. Here is a closer look at these soil types.

Type A

This is very cohesive and has a very high compressive power that stands at 1.5 tons for every square foot or even more. Such soils include clay, clay loam, silty clay and sandy clay. Any fissured soil cannot be classified as type A. Also, any soil that has been disturbed allows water to seep through or has suffered from vibration from any source including heavy traffic and pile drivers cannot be classified in this type either.

Type B

This type of soil has previously been disturbed or cracked, and its parts cannot stick together like in the case of type A soils. It also tends to have a medium unbound compressive strength, ranging between 0.5 and 1.5 tons every square foot. Some examples of type B soil include silt, angular gravel, silt loam and any soil that has undergone fissuring or exposed to vibrations. Otherwise, such soil could fall under type A.

Type C

As stated earlier, this is the least stable type. It comprises of granular soils whose particles fail to stick together and those cohesive types that come with a low compressive strength of not more than 0.5 tons per square foot. The most common examples are sand and gravel. Any soil that allows water to seep through it automatically falls into this category no matter what other characteristics it possesses.

Getting a proper soil sample for a test is important. Experts recommended that a large soil clump is taken from the excavated pile while it is still fresh because results can differ when the soil sample dries up. There are usually three major types of soil tests, and these include:

1. Plasticity test- here moist soil is rolled into a two inches long and 1/8-inch thick thread. If you can hold the thread on one end without it breaking, the soil is cohesive.
2. The thumb penetration test- if the thumb can go all the way, the soil isn't cohesive
3. The pocket penetrometer test- this assigns a numeric value to the soil comprehensive strength