



LANDTECH SOILS

Urban Greening Solutions

CU-Structural Soil – FAQ's

The development of this soil medium came about through a recognition that the single most important factor limiting the healthy growth of trees in urban areas was a lack of an adequate volume of soil.

There appeared to be plenty of soil under sidewalk pavement and gravel for tree roots to grow into. However, most of that soil was so highly compacted as to make it inaccessible to tree roots. The soil was too dense. Trees in pavement "containers" grew poorly and never attained the envisioned size for which they were planted, and tree roots that "broke out" under the sidewalk often caused a tripping hazard as the footpath was raised. Soil under pavements of any kind—concrete, asphalt, block, etc.—is required to be compacted to bear the weight of the pavement surface.

Engineering Specifications for pavement installation call for a high degree of compaction, usually specified as 95% Proctor or peak density, to ensure that pavements would not subside, crack, or fail. There are other structural soils, however, only CU-Structural Soil has over a decade of research and hundreds of installations. CU-Structural Soil is a proven, viable option to help green our cities.

Simply put, CU-Structural Soil is a mixture of crushed aggregate and soil with a small amount of binder to prevent the soil and stone from separating during the mixing and installation process. For load bearing - The keys to success is that the aggregate should consist of crushed stone approximately 20-40mm in diameter, with no finer particles, to provide the greatest porosity. This aggregate size ensures that each stone touched another stone, creating a rigid lattice or skeleton, while the soil almost fills the large pore spaces that were created. This way, when compacted, the load would be born from stone to stone, and the soil in between the stones would remain un-compacted. CU-Structural Soil is designed to be used where soil compaction is required, such as under pavements, parking areas, medians, plazas, and low-use access roads.

CU-Structural Soil – FAQ's

What volume of CU-Structural Soil is needed for a given tree?

The UHI at Cornell has found that - .6 cu mt. of soil is needed for every 1 sq metre of crown projection (the anticipated area under the drip line of the tree at expected maturity). Trees growing in CU-Structural Soil in areas that normally use seasonal irrigation to grow trees should also provide similar irrigation in CU-Structural Soil installations.

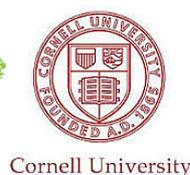
What is the recommended depth for CU-Structural Soil?

We suggest a minimum of 60cm, but 90cm is preferred. Roots will grow to utilise the the full depth of CU-Structural Soil. A base course of gravel is not needed on top of CU-Structural Soil below the pavement, because it was designed to be as strong as a base course. When properly compacted to 95-100% Proctor Density or Modified Proctor Density, it has a CBR (California Bearing Ratio) of 50 or greater.

Is CU-Structural Soil compatible with underground utilities?

If underground utilities are encountered within the proposed rooting zone, CU-Structural Soil can conform to the backfill needed around utilities and can be easily installed.

Find Out More At
www.landtechsoils.ie



20 Kenyon Street
Nenagh, Co. Tipperary
Tel: (+353) 067 32207
Tel: (+353) 01 5242191
Email: info@landtechsoils.ie



LANDTECH SOILS

Urban Greening Solutions

CU-Structural Soil – FAQ's

What happens when roots expand in CU-Structural Soil?

There will come a time when larger buttress roots will likely displace the stone, but if the roots were, as has been observed, deep down in the profile, the pressure they generate during expansion would be spread over a larger surface area. The tree roots have been observed to move around the stone aggregate and actually surround and encapsulate some stones in older installations, rather than displace the stones.

Can CU-Structural Soil be utilized around existing trees?

There are several instances where CU-Structural Soil was utilized adjacent to existing trees. It appears that if few tree roots are damaged during the installation, the trees continue to grow well.

CU-Soil for rain-fall attenuation. - SUDS

Has CU-Structural Soil been used to mitigate storm water runoff?

In trials at UHI, Cornell, a carpark was constructed using a combination of porous asphalt surfacing and CU-Structural Soil base. Results have shown that this structural combination reduces or eliminates surface run-off and allows healthy tree growth within it. The porosity of CU-Structural Soil after compaction is about 26%. Moreover, of that porosity, about 31% are large pores that determine water infiltration.

The infiltration rate of water through porous asphalt into CU-Structural Soil is greater than 600mm per hour. Conventional loamy soil compacted to engineers' specifications for pavement installation has only about 2% large pores and 0.5 inches water infiltration per hour. A 600mm base of CU-Structural Soil under a porous asphalt car park can accommodate 150mm of rainfall in 24 hours within its pores. The water will then seep back into the ground water over time.

SUDS obligations – in an Urban Development Project

CU-Soil now provides the opportunity to combine the needs to establish healthy trees, while meeting the regulatory obligations imposed under SUDS regulations to retain a proportion of rainfall within the boundaries of the development.

Full Reservoir sizing calculations are available on request.

Find Out More At
www.landtechsoils.ie



20 Kenyon Street
Nenagh, Co. Tipperary
Tel: (+353) 067 32207
Tel: (+353) 01 5242191
Email: info@landtechsoils.ie