

ROOTBOX



SUSTAINABLE ROOT MANAGEMENT SYSTEM



ADVANTAGES



Trees make cities more beautiful, but their pleasant sight is the result of a finely tuned invisible underground structure. Rootbox makes sure that many functions are delivered together with healthier trees.



HEAVY TRAFFIC LOADS

Rootbox is designed for loads of the SLW60 class (HGVs), resisting to 40 tonnes per square meter. The system is rigorously tested under laboratory conditions for strength and lifetime assessments.

The outstanding mechanical performance of Rootbox add flexibility to the installation, making it possible to go deeper into the ground, or get closer to the surface.

The civil engineers at Geoplast are available for special case assessments and calculations.



LESS CARBON FOOTPRINT

Rootbox is made by recycled material and designed to maximize shipping and on-site storage volume. Thanks to all these features, Rootbox reduce the carbon footprint.



SUPER-EFFICIENT LOGISTICS

The Rootbox elements are designed to be stackable, achieving a volume of 9.4 m³ of useful volume per pallet.

This logistics off- and on-site are very efficient thanks to very compact packaging and a simple and straightforward assembly of the modules.

THE SOLUTION

Trees planted in urban areas often don't have the right conditions to thrive: often over time the soil around the tree ends up getting compacted by the traffic of vehicles and people. This will cause stress to the root system as the soil will be less permeable to water and oxygen, both necessary for the tree to grow strong and healthy.

The roots will react by growing upward, lifting and cracking the paved surfaces above.

This situation is not ideal for the trees, causes damage to walkways and road surfaces and can create a potential safety risks for pedestrians and cyclists.

Rootbox provides an excellent solution to both issues: it provides plenty of space for the roots to develop in a healthy way, while protecting the surface from root intrusion, paving deformation or failure.

BOULEVARDS

URBAN TREES

BIKE LANES

WALKWAYS



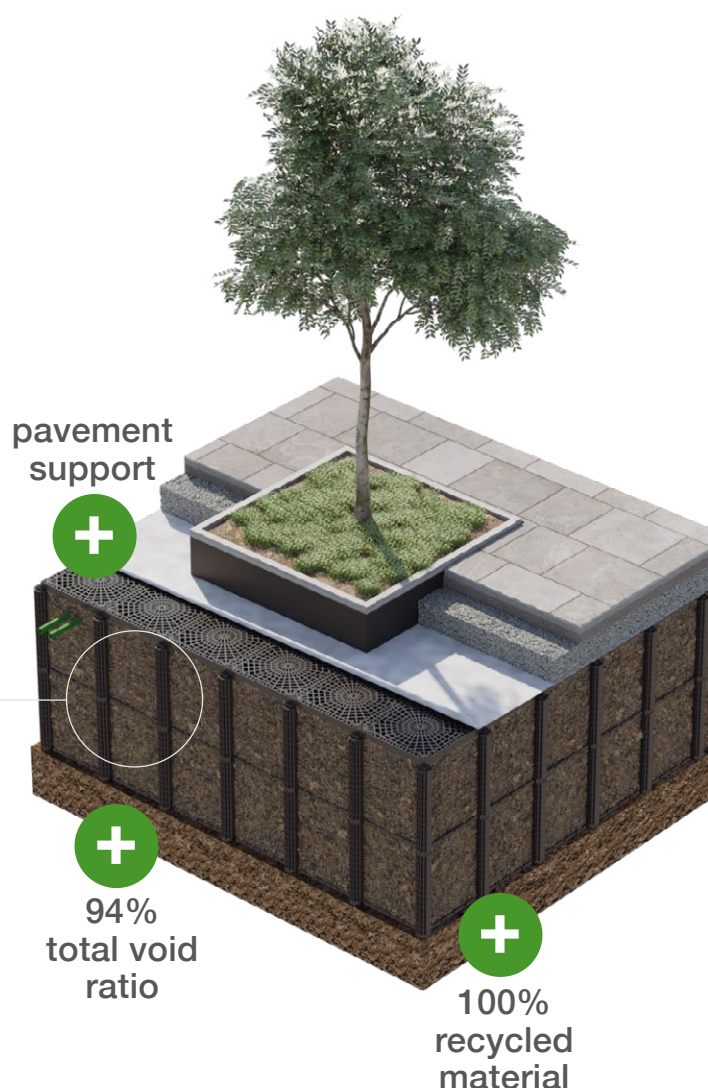
The connectors allows a simple and easy connection of the Rootbox modules to each other.

TOUGH CONNECTORS

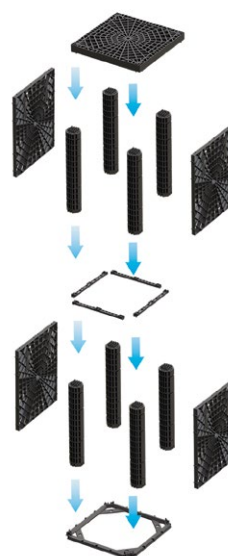


Rootbox is used to house the substrate and the roots of trees growing alongside paved surfaces. It has three main functions:

- Provide space for roots to grow freely, while avoiding any intrusion in the paving. This is done quite simply by leaving a gap between the substrate and the roof of the system, so that the roots encounter air as they rise, stopping any further upward growth.
- Contain pipes that bring water and nutrients to the tree.
- Act as stormwater attenuation tank and a slow-release water reservoir for the tree, increasing the resilience of the area in case of heavy rainfall.



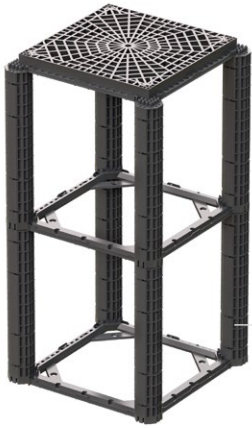
ROOTBOX



PAVEMENT PROTECTION

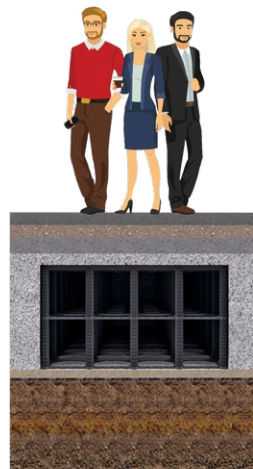
Installing Rootbox is a great opportunity to integrate urban tree root management and stormwater management in one system.

Rootbox has dedicated water storage volume which, combined with the natural water retention capacity of the vegetation soil (about 25% of its volume).



RESISTANCE TO ROAD LOADS

Rootbox is designed by Geoplast for sustainable urban drainage systems to be installed under loads up to HGV 60 (60 ton trucks).

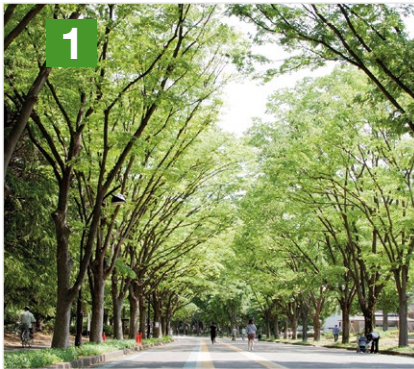


INSTALLATION GUIDELINES

- ① Excavate the surface as defined by the designer. Always excavate at least 30 cm beyond the perimeter of the Rootbox system, and allow for a pit slope consistent with the local soil type and conditions, and following all local safety regulations.
- ② Dig down to the correct depth, i.e. the designed depth of the system and its foundation. Dig down to not less than 50 cm from the average highest groundwater level. If the subsoil is waterlogged due to groundwater install well-point drainage.
- ③ Install a stable bedding layer constituted of aggregate. Make sure this layer is well compacted. The bedding layer must conform to the required design criteria. Make sure a geotechnical expert approves the quality of the excavation and the bedding layer.
- ④ Locate the tree-pit opening by marking them on the bedding layer, as per design criteria. No Rootbox modules shall be installed within the tree-pit area.
- ⑤ Install the Rootbox modules, one module at a time, following the layout plan provided. Fit the Rootbox Side Grids along the perimeter of the system. Fit the Rootbox Top Caps to close the water storage units.
- ⑥ Backfill all around the system up to the top layer.
- ⑦ Fill the system with vegetation soil, then slightly compact it watering if necessary, fill again until the desired level has been reached.
- ⑧ Plant the tree within the tree-pit. Anchor to the bottom of the pit if required.
- ⑨ If filling in multiple lifts repeat steps 5 to 7 as many times as necessary. Leave a gap between the top of the compacted vegetation soil and the roof of the Rootbox system.
- ⑩ Install all eventually required watering and aeration tubes within Rootbox system.
- ⑪ Close all the top Rootbox modules with Rootbox top gridcaps, then cover the system with geotextile.
- ⑫ Build kerbs (pre-cast or in-situ poured) around the tree pits as indicated by the design.
- ⑬ Install root-guide system within the tree pit.
- ⑭ Place the covering layers as designed. Compact as necessary. Do not use heavy-duty rollers, only plate compactors.
- ⑮ Install paving as designed.



APPLICATIONS



BOULEVARDS

The most common case is that of boulevards, where the outcrop of the roots can cause transit problems for vehicles and injuries to pedestrians.

Rootbox has a high compressive strength, which makes it suitable for installation below road surfaces, avoiding road damage by tree roots and the consequent maintenance and repair costs.



PLAZA AND WALKWAYS

City squares and industrial complexes are environments in which trees are growing in popularity for their attractiveness and the architectural added value they bring.

Including Rootbox in the project will keep the root system away from the walking surface and keep the trees healthier: these are both long-term cost savings by avoided maintenance and repair operations.



BIKE LANES

For bicycle users, bike lanes are a preferred route of travel, and it is essential to keep the transit surface, without surfacing roots and bumps, to ensure a safe and comfortable passage.

Bike lanes are a preferred route of travel for cyclists, and it is essential to keep the transit surface free of bumps and surfacing roots in order to ensure a safe and comfortable ride. Installing Rootbox is a smart way for Local authorities to reduce maintenance costs and avoid expensive liabilities.

DESIGN ASSISTANCE

We design and implement green infrastructure that positively impacts the lives of people and cities.

We want to bring landscape architects, urban designers and engineering firms together to design sustainably, focusing on the use of recycled materials and the implementation of urban green spaces.

Our solutions respond to the current challenges related to drainage and stormwater management issues, which are becoming increasingly frequent in cities.





Geoplast
Building beyond together

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