



Urban Tree Systems

Tree Bunkers/Sandwich Constructions

Application

- For urban trees
- For trees and green on roofs
- For trees in squares/plazas
- Water retention in the tree pit layout
- Root escape routes

Which tree planting method makes the most sense?

Many solutions have been designed for decades, with different costs (for the customer) and results (for the tree and the pavement). All solutions to first-ly combi-ne civil and plant technical requirements. First the Amsterdam structural soil was developed, but through experience, progressive insight, higher re-quirements and integration of other functions, these compromise solutions have been further developed into total solutions. Many different products for planting urban trees are offered on the market. In order to compare the products, a subdivision has been made. Gravel based structural soil cannot simply be compared to an urban tree system, but gravel based structural soil can be compared with each other. This has resulted in an internationally recognized classification according to the functionality of the various products.

See table below::

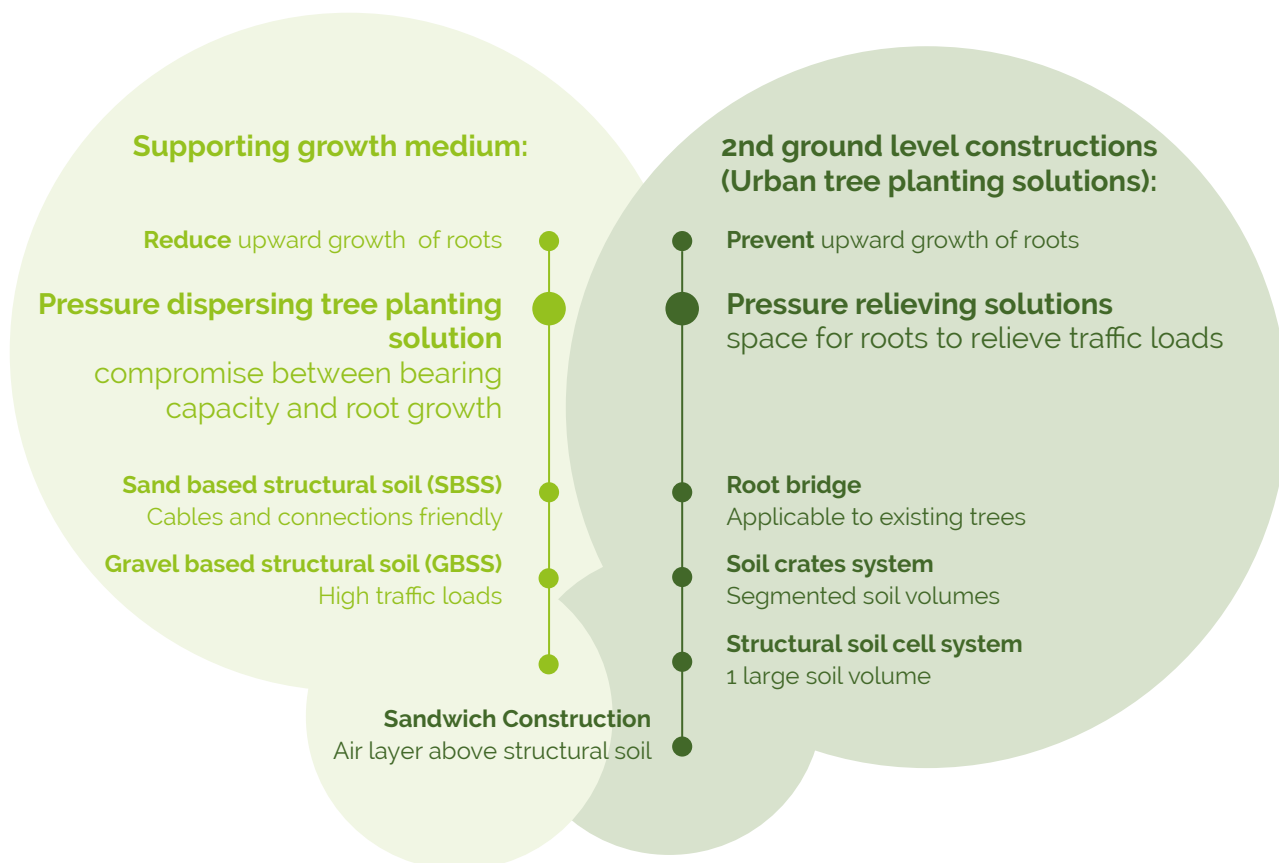
All products give roots room to develop under the pavement. Different solutions are possible depending on the project conditions and objectives. GreenMax offers you the most complete advice for underground urban tree systems in paved areas. For the sole pur- pose of tree growth, the structural soil system per-forms best. However, there are so many more factors that partly determine the choice of growth place improvement. Our expert staff will be happy to advise you. With our broad knowledge of the various systems, we will work with you to find the most suitable one for your project.

In our range, we have, together with the various mar-ket parties, included the best products per category for you. For extensive information per category, please contact our subsidiary TreeBuilders b.v., which has taken on this specialization since 2017.



Urban tree solutions

Improvement of growth area for trees in hard surfaces





Material

- Very high carrying capacity, highest traffic load possible
- large soil volume, smallest opening is about >900 cm², suitable for thick tree roots
- Made from recycled material
- System provided with sustainability label
- Can be installed both linkably and as a standalone unit
- TreeParker® can be installed parallel to curves up to a radius of 5 m¹, without additional facilities
- Integrate cables and pipes without problems, partly due to the standalone installation and the large openings
- Low installation costs, user-friendly, quick installation and easy to fill with any type of soil
- Height of the system is variable between 40 and 150 cm
- Long lifespan (at least 100 years)
- Ideal to catch rainwater as well into the system, up to 25% of the volume available for water Infiltration



Urban tree solutions

Tree Bunker System

TreeParker®

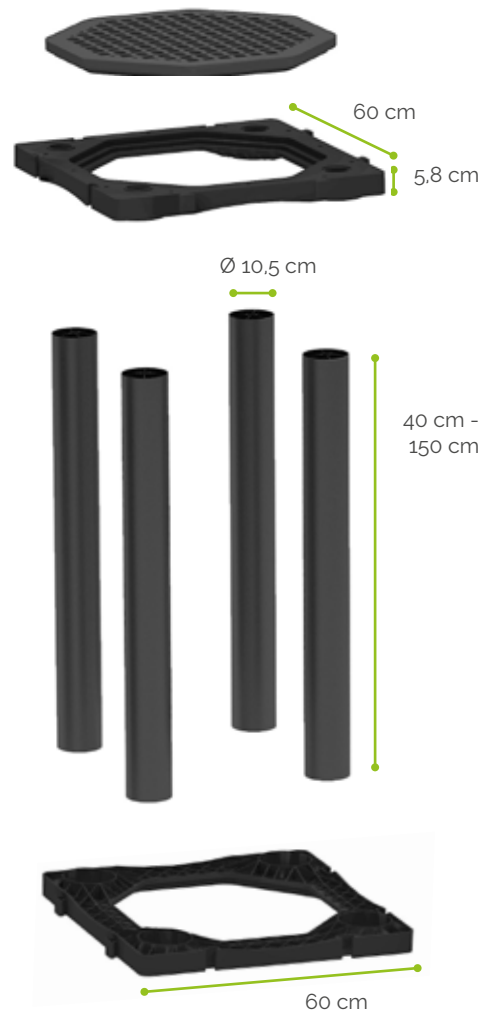
The TreeParker® system represents the most innovative product within the suspended pavement systems. The system is applicable in all situations and also provides secondary functions, such as rainwater collection, etc.

TreeParker® has been developed based on the experience gained through trials, projects and discussions with all actors. In addition to the primary functions, such as carrying heavy traffic loads and providing unhindered root growth, the secondary factors are of great importance. Some important secondary factors are: the need for simple design, fast installation, sustainability, integration of existing/new cables and pipes, variable installation depth and a high percentage of soil in the system. TreeParker® offers you all these benefits.

The strongest and most flexible system on the market



TreeParker Unit
Exploded view



Dimensions

TreeParker® Unit; (H) variable x (W) 60 x (L) 60 cm
Height variable between 40-150 cm Standard heights in stock: 40, 50, 60, 80, 100 and 120 cm



Royal Haskoning DHV developed a method for NL Greenlabel that gives information about the integral sustainability score of a product, material, plant or area. This score is translated into a label and displayed in a sustainability passport.

TreeParker® Installation photos



1 Place the frames around the tree pit opening



2 Attach the posts and top frames



3 Fill the system with bioretention soil/tree bunker soil



4 Fill/compact around the system



5 Install (deep-) aeration/irrigation systems



6 Closing the system with decks



7 Apply geotextile and fill with mixed granulate



8 Vibrate, pave, ready!



One of the many TreeParker® references



TreeParker® is easy to install, even around cables and pipes.
For more information, see manual 'cables & pipes TreeParker® in the city'



Facts

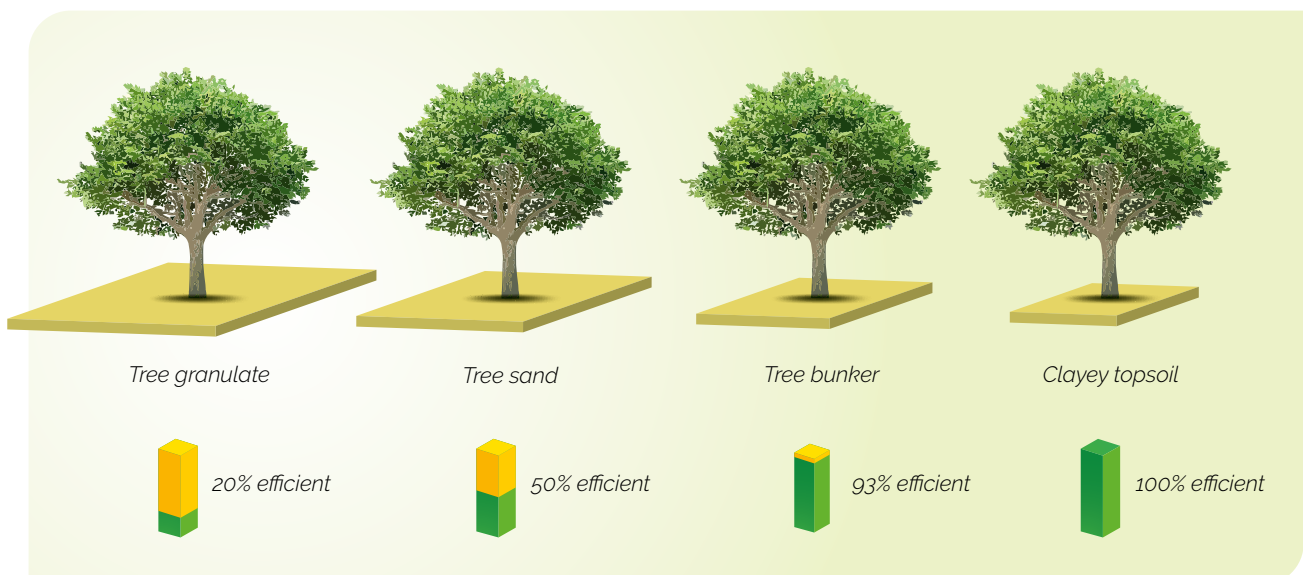
An oak tree can absorb more than 190,000 liters of water per year, relieving the strain on our sewage systems and preventing floods

One large functional mature tree provides us with more value than 400 small trees

A mature tree can absorb 150 kg of CO2 per year

Good growth conditions are necessary to allow newly planted urban trees to develop into functional trees

Strategically placing trees can cool the air in cities by 2 to 8 degrees, reducing the so-called heat island effect

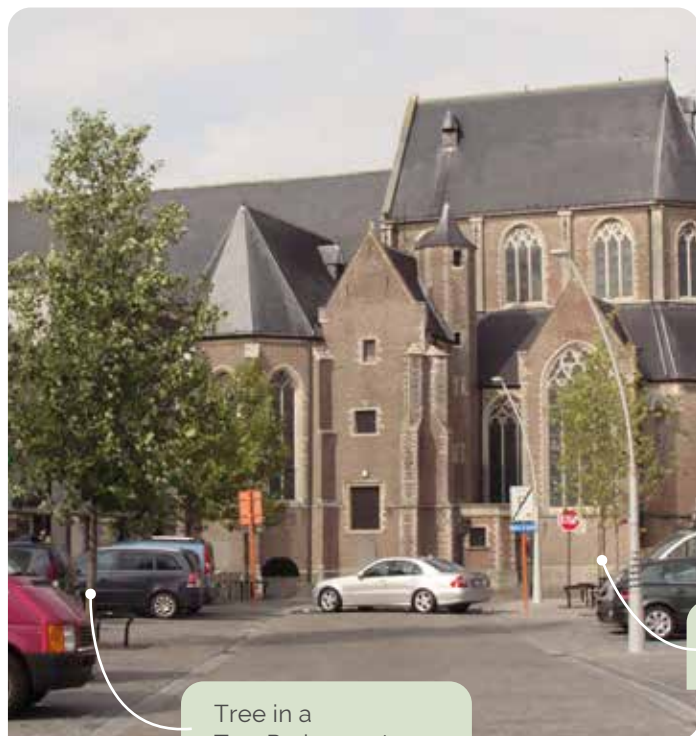


Following the construction of various tree planting solutions in an arbitrary arrangement, six Liriodendron trees were planted for each solution. The provisional results show that the trees in the most efficient solution perform best. From this it is possible to assume that soil volume calculations must always be based on soil efficiency (net available soil) instead of surface area or product volume alone.

Research: Comparative research for tree planting solutions in hardened areas, Bartlett Tree Laboratories, Dr. Tom Smiley 2015



Comparison of growth site construction with respect to tree granules



2 years after installation

Tree in a TreeParker system

Tree in Structural soil



4 years after installation

Tree in a TreeParker system

Tree in Structural soil



Application as a bioretention system

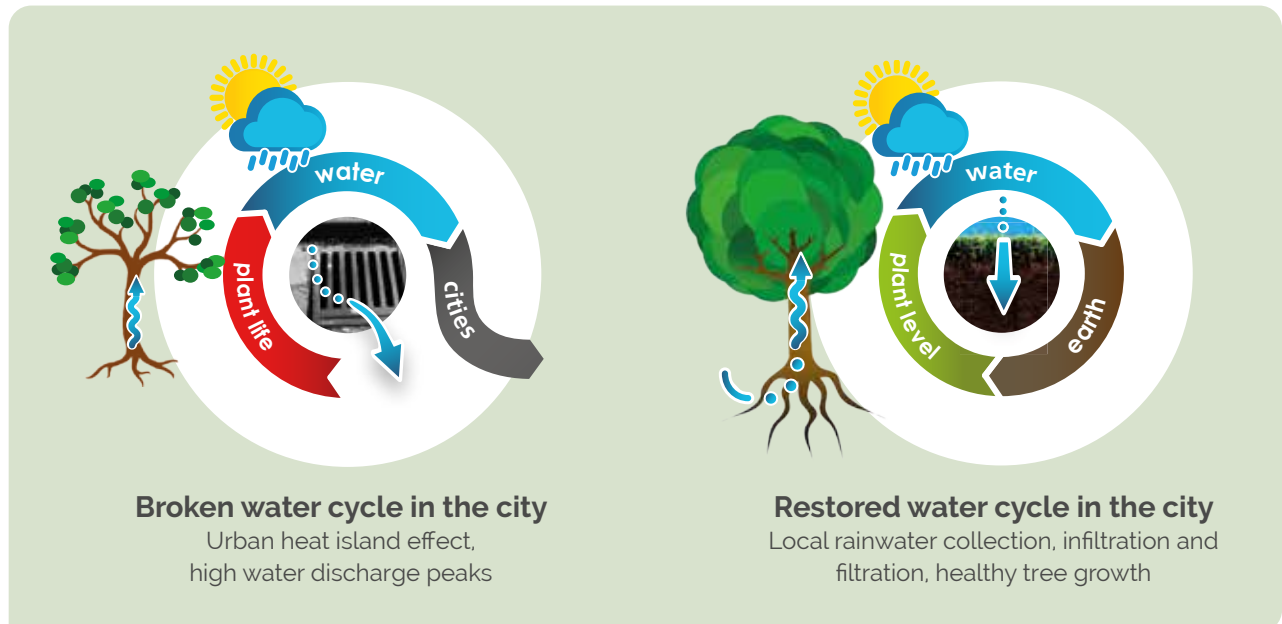
Trees are still often seen as a problem during the design phase in the vicinity of rainwater collection and infiltration facilities.

The growing place of the tree is increasingly being combined with rainwater collection and filtration. With little extra costs, the standard growing place can be changed into an underground bioretention system.

TreeParker® is designed to combine these two disciplines to create a healthy water cycle in the city. Water first goes to the growing site, where it infiltrates the non-compacted soil.

Pollution is broken down by nature - soil life - so only clean water can flow to the groundwater.

Link rainwater into the system



For more information about bioretention options, see the catalog: "TreeParker® Bioretention and Structural soil cell system"



Urban Tree Systems



Very easy to install

Material

- Infiltration plate for horizontal and vertical infiltration and drainage
- Three-dimensionally permeable/root-permeable
- Integrated coupling system on all sides to create large areas in one piece
- Recycled PP, extra reinforced against extreme pressure forces, 100% recyclable

TreeRaft SandwichPanel 50

- Dimensions: 786 (l) x 580 (w) x 50 (h) mm
- Weight: 2.02 kg/piece
- Pressure strength: 74 t/m²

TreeRaft SandwichPanel 100

- Dimensions: 786 (l) x 580 (w) x 100 (h) mm
- Weight: 4.05 kg/piece
- Pressure strength: 70 t/m²

TreeRaft SandwichPanel 150

- Dimensions: 786 (l) x 580 (w) x 150 (h) mm
- Weight: 6.10 kg/piece
- Pressure strength: 70 t/m²

Horizontal/vertical pressure-resistant and pressure-dispersing drainage system

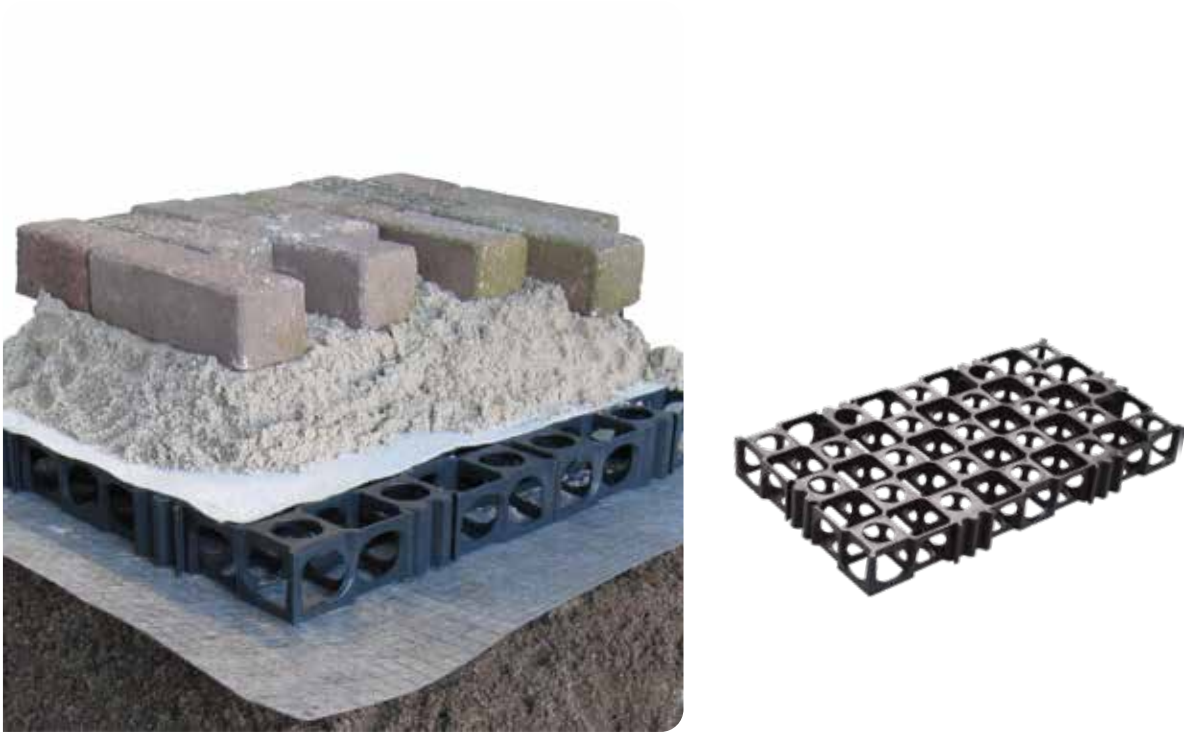
TreeRaft SandwichPanel 50/100/150

In areas with a high water table, it is more challenging to create sufficient space for tree roots. Tree sand provides a good solution for such locations. However, the load-bearing capacity of tree sand is often not high enough for the traffic in that area.

Sandwich Construction

With a pressure-distributing sandwich construction, the dynamic pressure loads are distributed over a larger surface area. The sandwich panel is not only applicable in heights of 50, 100, or 150 mm, but also consists of just one part. This makes the construction extra strong – up to 950 kN/m². With this strength, the panels are almost twice as strong as other sandwich constructions and thus suitable for locations with heavy traffic. The panels can be cut to any size without losing structural strength. The panels are connected to each other with an integrated tapered connection. No separate connectors are needed, making the installation extremely fast.

SandwichPanel 74 is the product with which it all began (1990)



Applications

In addition to the application as a root-resistant and pressure-distributing construction on top of a load-bearing substrate, the sandwich panels are also used as:

- Surface water storage under pavement
- Water reservoir under a growing place
- Horizontal and vertical drainage etc.

