

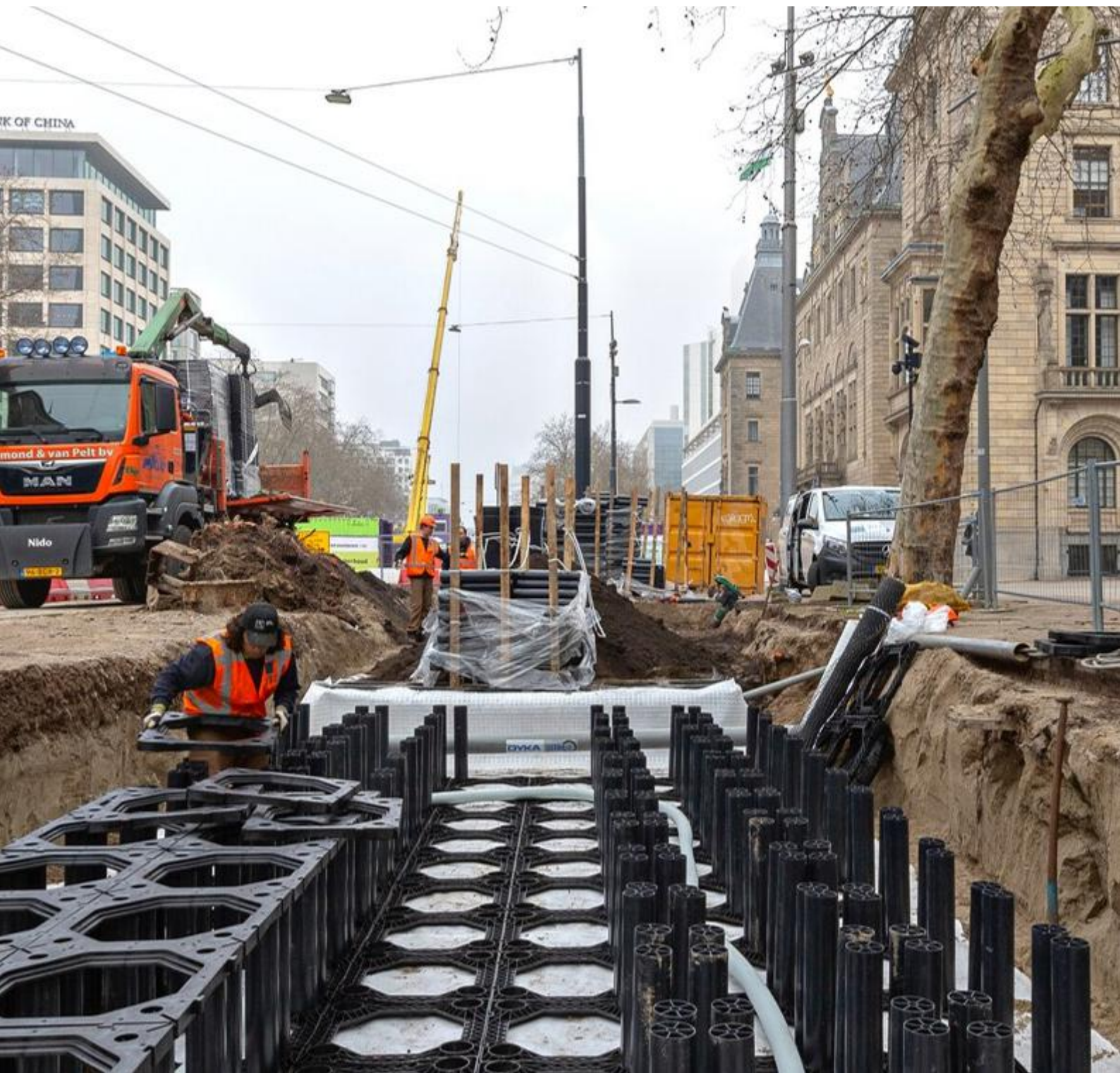
Installation Guide

TREEPARKER UNIT



Urban Tree Planting
& Tree Irrigation

Suspended pavement system





Attention

Important information

Must be read carefully before start

Keep this information as further reference

Forbidden to drive over before final pavement has been installed

Do not drive vehicles or operate equipment over the TreeParker units until the final surface material has been installed. The TreeParker system does not achieve its full weight bearing capacity until the final surface pavement has been placed.



Compact road foundation with plate compactor



It's the contractor's responsibility to make sure that nobody is driving over the system before final pavement is installed.

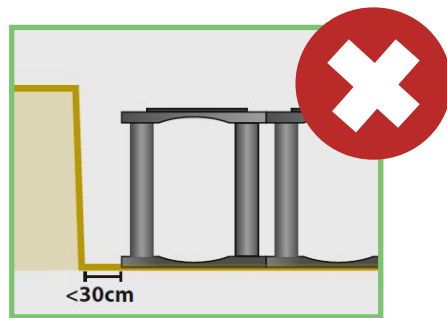
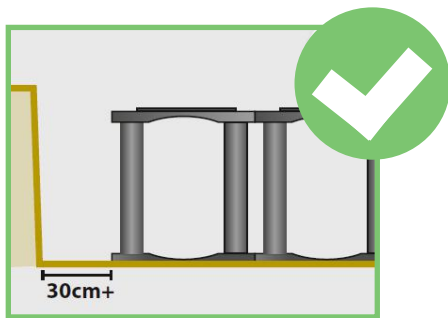
Installation of the TreeParker is only part of the whole process. It is therefore important that any subsequent (sub)contractor is aware of the TreeParker, which may or may not be visible. A poster to support the communication of this matter is available. It should be placed in a, for everyone, visible location.



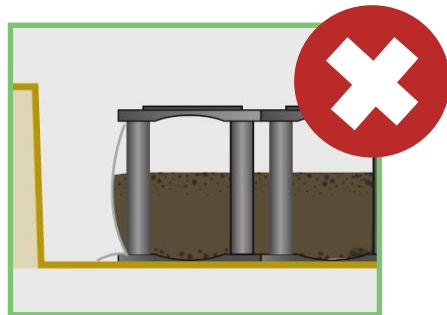
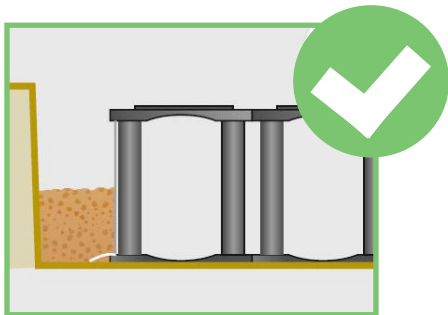
Warning

Extremely important information
Must be read carefully before start
Keep this information as further reference

Excavation dimensions



Install backfill first



Install under right weather conditions

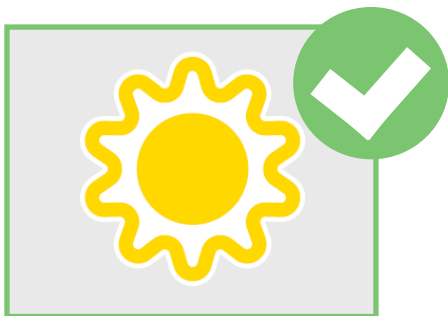


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Explanation of the icons



Reference to appendices



Warning



Pay attention

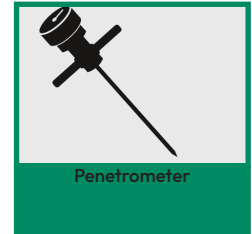
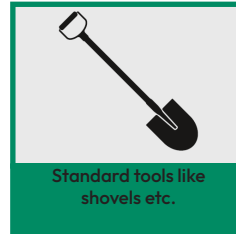
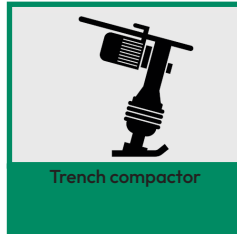


Important check: supervisor must assess before taking the next step

This manual is an essential part of the warranty, wherein the Dutch manual is leading. No rights can be derived from spelling and writing errors. Written text takes precedence over drawings if contradictions occur. Unless explicitly stated otherwise, both in this manual and for other documents in mutual comparison. No rights can be derived from standard drawings.

BEFORE YOU START

Tools provided by the contractor:



Materials provided by the contractor:

Subbase material - (below)

The subbase that the TreeParker system is seated on must be free draining 4/20mm or 10/20mm.

Backfill material - (outside)

Backfill around the TreeParker system to be in line with made ground requirements. CL803 Type 1 should be used to achieve required CBR rating.

Planting soil (gt Geo Cell Soil) - (inside)

The availability and quality of planting soil can vary geographically, therefore, gt Geo Cell Soil has been developed specifically for use with the TreeParker system. Alternative supplies will be considered but must be approved by Green-tech prior to installation.

MINIMUM REQUIREMENTS:

- BS3882 : 2015 – Certification max 3 months old.
- Sandy loam/loamy sand classification.

Road foundation

TreeParker has 400kN/m² - 520kN/m² load capacity, with evenly distributed weight. The load capacity is depending on the height of the TreeParker unit.

The maximum axle load is depending on the make up of the pavement finish above.

Axle load is depending on total weight of the truck and max. speed.

Standard solutions: Pavers and max. axle load of 12 tonnes.

- 300mm foundation material or engineers specification.
- Pavers (normally with ca 30mm sand base underneath).

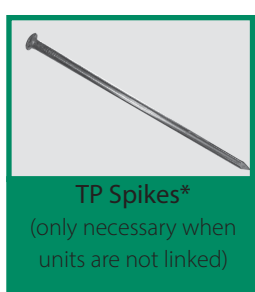
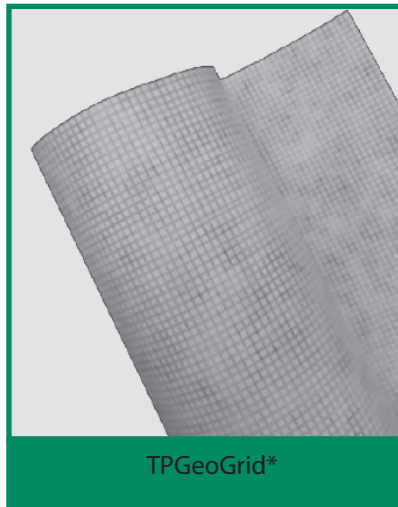
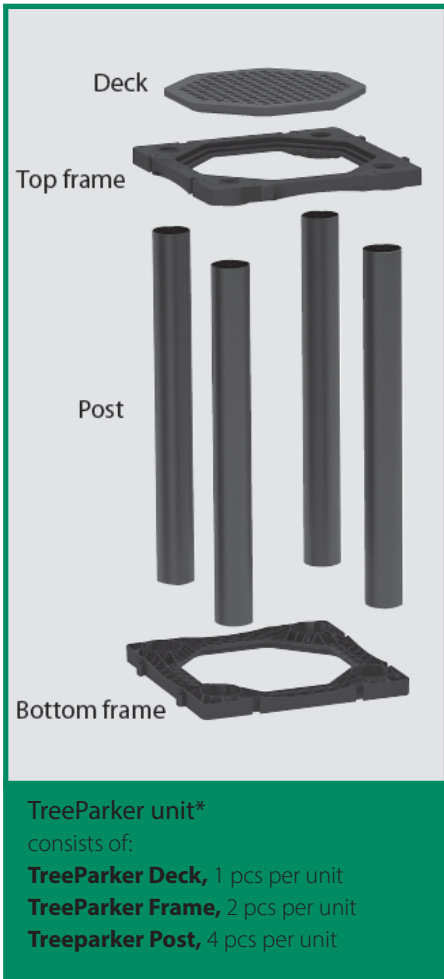
Standard solutions: Asphalt and max. axle load of 15 tonnes.

- 300mm foundation material or engineers specification.
- Asphalt layer.



Reduced size equipment may be required when installing asphalt over TreeParker to prevent damage from occurring- nothing heavier than a standard plate wacker.

Products supplied by Green-tech:



* System warranty expires if 1 of these products is not applied
** Products are part of the TreeParker system but not always necessary

PREPARATION BEFORE TREEPARKER SYSTEM

Excavation and preparing the tree pit is the responsibility of the contractor. Local construction regulations should be taken into account. If in doubt, contact local civil professional. Prior to installing TreeParker the stability of the subbase must be checked and communicated with the client. Step A-D not included in TreeBuilders' scope of work

Specifications:

- Excavation dimensions: there should be enough space for people to work around the installed TreeParker system
- The subbase should be stable enough to carry the TreeParker system minimum CBR 5%
- Subbase should be leveled in one plane



Over-excavate 30 cm beyond perimeter of the system

Excavate the trench at the installation site according to the necessary dimensions to accommodate the TreeParker system. Over-excavate a minimum of 30 cm beyond the perimeter of the TreeParker to allow for working room and easy and fast installation. You also need this space for proper compaction (trench compactor) to prevent pavement settlement around the TreeParker system.



Excavate to the right depth

Make sure excavation is deep enough to accommodate subbase aggregate, TreeParker system and road foundation (see project specific technical drawings). Do not dig deeper than necessary and always stay 10 centimetres above average highest groundwater level. If the subsoil is not stable due to groundwater, well point drainage must be carried out. All urban tree pit systems should be linked to a positive drainage system.



If installing draining subbase aggregate

Compact the subbase according to the project specifications or local regulations, ensure it complies with CL803 type 3.

The subbase should be levelled perfectly in 1 plane. Maximum inclination 7%.



Quality control

It is the responsibility of the contractor through the Owner, Owner's Representative, Engineer, or Geotechnical Consultant to verify that the subbase is constructed to the specified requirements prior to placing any TreeParker, the results should be available on request.



If the minimum requirements mentioned above are not met, this will affect the further work to be carried out. There are several possibilities to continue the work, but these deviate from the standard mentioned in this manual. If the excavation dimensions do not comply with the above mentioned minimum requirements, the project manager should be contacted. In consultation, the situation will be assessed in order to determine the best follow-up method.

WHAT IF...



Encountering wet soil conditions. If subsoil is too wet well point drainage must be carried out



Encountering underground obstacles



See appendix 1



Dimensions for excavation are not feasible (depth and/or surface dimensions) please contact client

WARRANTY MANUAL

Specifications:

- Excavation dimensions: there should be enough space for people to work around the installed TreeParker system
- The subbase should be stable enough to carry the TreeParker system
- Subbase should be leveled in one plane
- Waterdrainage must be taken care of for the long term

1a

Quality control

It is the responsibility of the contractor through the Owner, Owner's Representative, Engineer, or Geotechnical Consultant to verify that the subbase is constructed to the specified requirements prior to placing any TreeParker, the results should be available on request.

b

Checking dimensions

Make sure to check if excavation dimensions are met, surface area but also depth? If there is an insufficient excavation, then first consult with the client or their responsible supervisor.



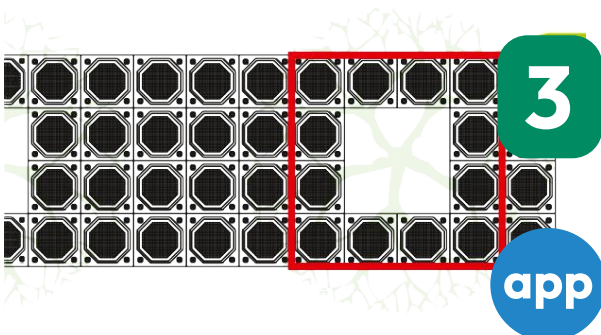
First check | before proceeding installation



Locate tree(s) and pit opening(s)

Establish the location of the tree pit openings as per projects specifications. Once trees are located, mark the inside dimensions of the tree opening on the prepared subbase. The open tree pit must be at least 20 cm wider than the rootball of the tree to be planted.

See appendix 2 Rootball anchoring



Lay down bottom frames according to layout drawing

Place the first frames starting around the tree opening(s) and expand outward. Spacing with a maximum of 75 mm can be used. Connecting the frames makes further installation faster.

See appendix 3 TreeParker layout



Manually push posts into bottom frames

Push the posts into the frame. Avoid damage, check for damage, do not install damaged items and do not throw with products.

Install aeration system according to the detailed drawing. This differs per project.



Install top frames

Place the top frame over the posts in the same direction as the bottom frames and carefully tap the frames in place.

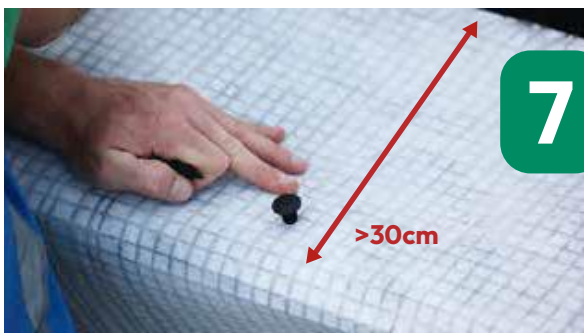
Spacers in your layout drawing?

If yes: connect both bottom frames and top frames at the assigned places.



Install TPGeoGrid

Cut the TPGeoGrid to ensure there is an extra 15 cm at the bottom of the frames and an extra 30 cm at the top layer frames.



Attach TP Caps

Attach the fabric every meter with TP Caps. Use a maximum of 1 cap per meter with the prefab holes in the frame. TP Caps have no constructive value, but help keep the canvas in place while replenishing soil.



TPGeoGrid start end overlap

Wrap the TPGeoGrid around the perimeter of the system. Allow an overlap of >60cm at the beginning and end.



Second check | before proceeding installation



Install backfill first

Install the first lift of backfill material around the perimeter of the TreeParker system to anchor down the tip of the TPGeoGrid prior to placing planting soil inside of the system. Do not backfill the system higher than the applicable slot replenishment guidelines.

Do not compact the backfill yet



Install planting soil to approximate same height as the backfill material

Ensure installed in layers to the filled height of the system.



Compact first lift of backfill

Compact the first lift of backfill material to the required compaction rate.

Compaction with the trench compactor.

Prevent compaction equipment from coming in direct contact with the TreeParker unit to avoid possible damage.



Filling up the system

After backfill has been placed and compacted to the height of the soil inside the units, the process of adding backfill material around the perimeter and planting soil in the units repeats itself (step 9, 10 and 11).



Compact soil

Level out and loosely compact soil by walking through the entire system. Leave at least a 5 cm open air layer underneath top frame or more if specified.



Aeration and irrigation

Install aeration/irrigation system as specified in project drawings.

Third check | before proceeding installation



Closing the system

Clean the frames and attach the decks.



Cover system with geotextile

Cover the TreeParker with the specified geotextile fabric. Make sure to extend the geotextile out past the units. Preferable extend 45 cm past the edges of the excavated area.



(If required) Install kerbing according to the drawings

No concrete inside the tree pit zone.



Install root directing panels

No concrete within tree pit.

See appendix 4 Root Directing Panel

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FINISH TO ENGINEERS SPECIFICATION



Fourth check | before proceeding installation



Do not drive vehicles or operate equipment over the TreeParker units until the final surface material has been installed. The TreeParker system does not achieve its full weight bearing capacity until the final surface pavement has been placed.

APPENDIX 1 UTILITIES

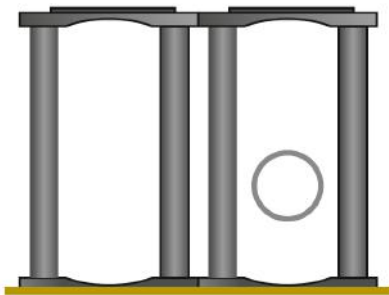


Integrating TreeParker and underground obstacles, such as utilities.

There are a number of different ways to integrate both new and existing utilities with the TreeParker system.

The layout of the TreeParker units can be adapted to the location of the utilities. **See appendix 3.** This way diagonal crossing utilities can be integrated too.

Option 1 Running utilities through unit

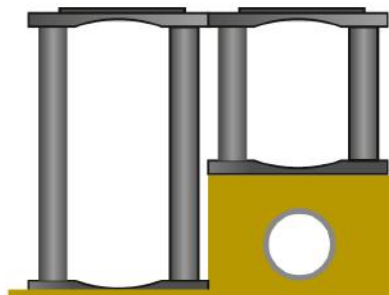


The most commonly used option is to run utilities through the TreeParker system. Due to the open design of the units, TreeParker can accommodate pipes, conduits, and other underground utilities up to 300 mm in diameter.



Make sure the utilities are not damaged. Damaged utilities must be repaired.

Option 2 Bridging utilities

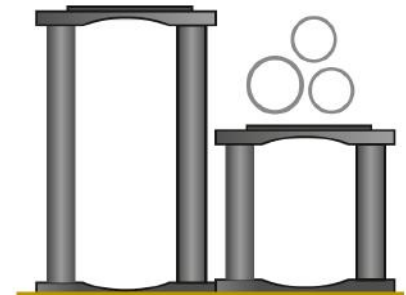


The most common used option for integrating underground obstacles. Due to the flexible height of the post, the TP unit can be adjusted in height on location.



Make sure the subsoil underneath all units is compacted according specifications.

Option 3 Tunneling utilities



The most common used option if it is not permitted to integrate the utilities inside the TreeParker system. Due to the flexible height of the post, the TP unit can be adjusted in height on location.



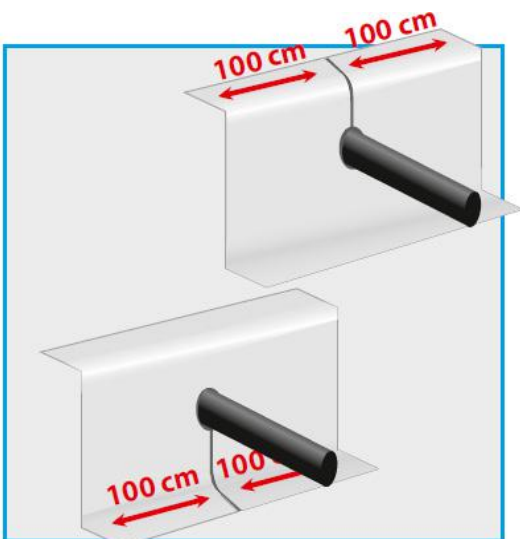
Preferable minimum 5 cm between top of the unit and utility.



Make a straight cut in the TPGeoGrid around the TreeParker system up to the height of the utility.



Use another piece of TPGeoGrid to make cover the cut. This cloth should overlap 1m left and 1m right of the utility.



Use the TPGeoGrid to bridge the height in subbase material.



If the height difference is less than 20 cm you can use the standard TP geotextile on top of the system.



Measure the needed height.



The TP posts can be cut with a hand tool or machine on top of the system.



The TP Post must be cut in a straight angle of 90 degrees. Height tolerance between the 4 TP posts per unit is 1 mm.

APPENDIX 2 ROOTBALL ANCHORING



There are a number of different ways for anchoring the tree. In this appendix the 2 ways how to anchor the rootball. Also called underground anchoring. The methods described are the only ways to ensure the tree stability. By securing the rootball underground, these systems allow quick root development resulting in very low mortality rates for newly planted trees.

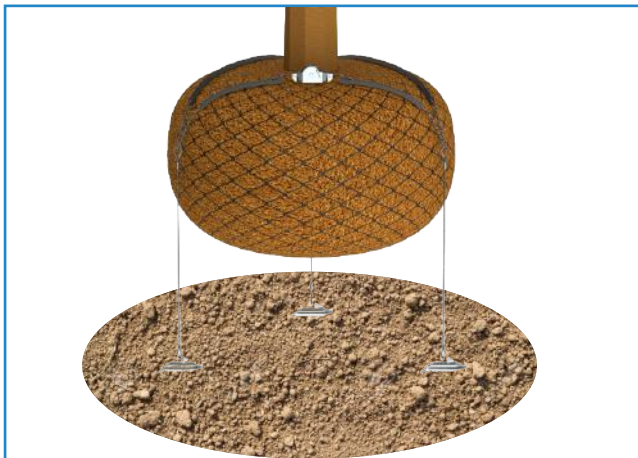
Notification:

Make sure you know the diameter of the rootball before you start installing the anchoring system. Always follow manufacturers guidelines for installing the system. Straps should be installed straight down or somewhat outward.



Never attach anchoring system directly to TreeParker system

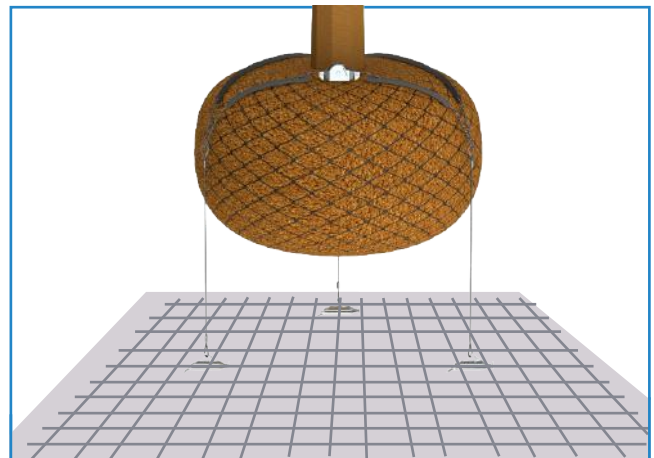
Option 1 Deadman anchoring system



Rule of thumb: The vertical distance between the Deadman anchors and the bottom of the rootball should be over 30cm.



Option 2 On-structure anchoring system



Make sure that the steel mesh does not affect the flatness of the subbase in order to install the TreeParker units correctly.



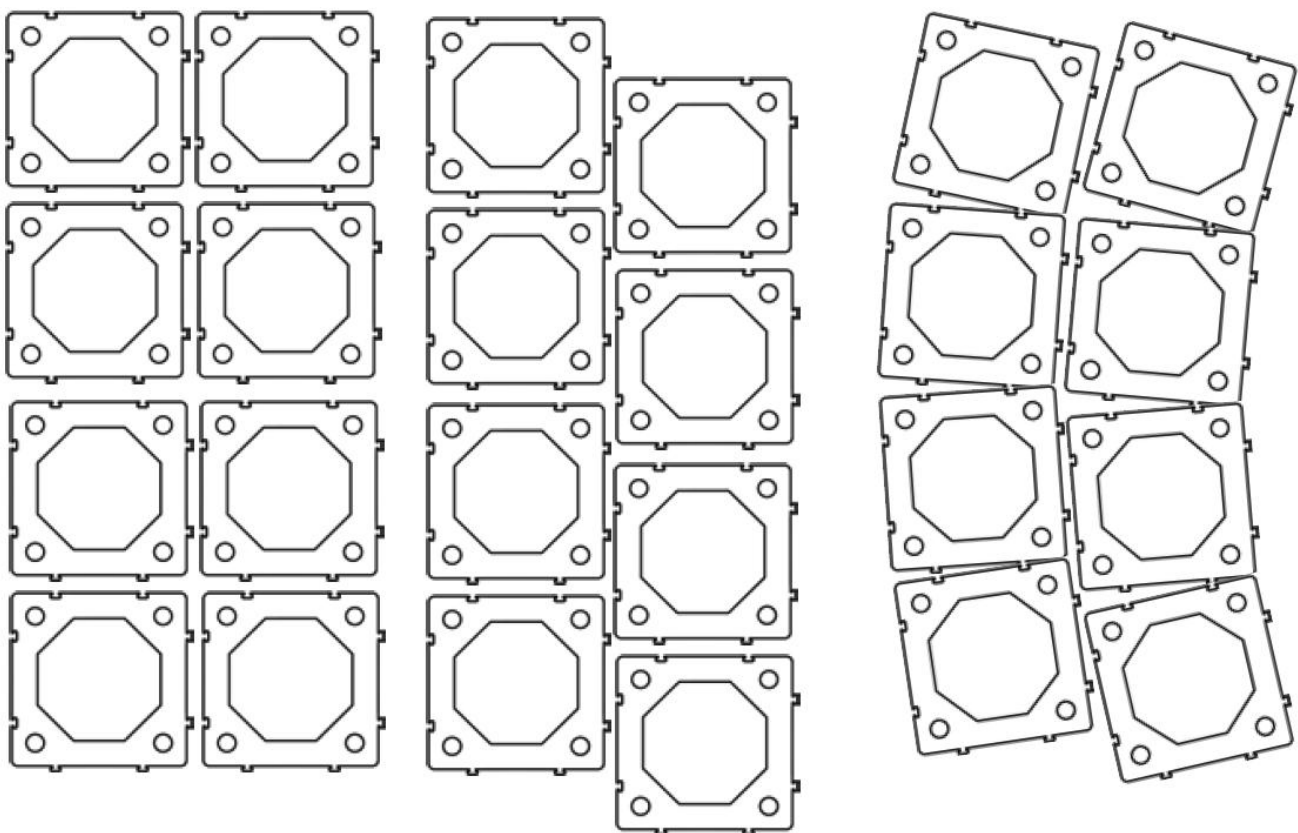
APPENDIX 3 TREEPARKER LAYOUT



Standalone System

TreeParker system is designed and tested as a standalone system. There are many layout possibilities, and all can be combined to make the best possible fit in your project.

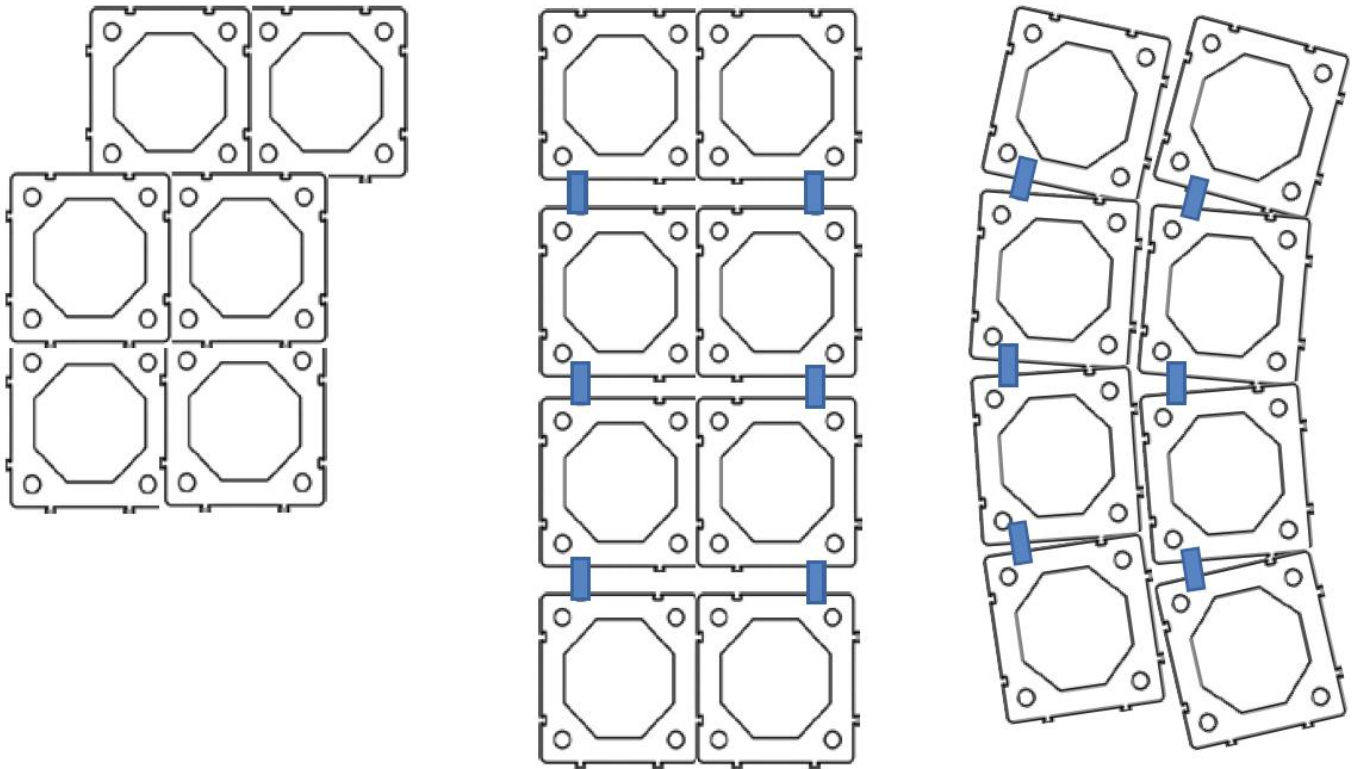
Standard spacing between the individual units is up to 75 mm. More is possible depending on the design. TreeParker systems parallel to curved roads are possible up to a diameter of 5mtr.



Connected System

The individual units can be connected directly to one and another. But the most common used system is a connected system with spacers. Spacers are available in 50 and 75 mm, making almost every dimension possible with a connected system.

Although the spacers are not necessary for the strength of the system, contractors use it because it is decreasing the installation time.



To prevent shifting of the units during backfilling, connect all units in the perimeter of the system with spacers.



APPENDIX 4 ROOT DIRECTING PANEL



This panel serves multiple functions within the entire system, and is an essential part of the installation and warranty.

The following functions:

- Prevent roots from growing in the road foundation- The panels ensure that roots cannot escape in the road foundation, it is also prevented that the roots escape through the geotextile lying on the system.
- Guide the roots into the TreeParker system- The ridges ensure that the roots are guided into the system. Roots escape through the geotextile lying on top of the TreeParker system.
- Prevent pavement heave underneath the kerbing- Roots are at least 10 cm below the bottom of the top frame.
- Prevent piping of soil in the air layer in the TP system- During rainfall wet soil (mud) cannot escape from the top into the systems air layer.



Orientation of the panel; 'this side to the tree' 'up' and 'down'



In a open tree pit, the panels should be placed as close as possible to the kerbing. This way you create the maximum space for the tree



The top of the panels should be above the soil surface around the tree.



The bottom should be at least 5cm deeper as the soil surface inside the system.



The panels can be folded in a straight angle without breaking.



There is no issue ensuring maximum space for the rootball if overlap is needed.