

Wavin TreeTank



How Urban Climate Resilience looks like

- 1 Smart Blue-Green Roofs
- 2 Roof drainage
- 3 Greenification solutions: RainGarden
- 4 Road drainage
- 5 Treatment
- 6 Attenuation tanks
- 7 Infiltration pipes
- 8 Shafts with pump function
- 9 Greenification solutions: TreeTank
- 10 Infiltration tanks



How urban areas
can benefit from
trees.





Wavin TreeTank

Design Handbook

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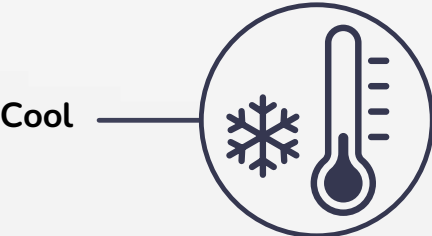
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1. Introduction

Urban Climate Resilience on the move

Cities are growing and the climate is changing; heavier precipitation, extreme heat and prolonged drought drive the need to redesign out cities. Trees play a vital role in improving microclimates by cooling the air and reducing pollution. Trees mitigate the urban heat island effect and help manage stormwater through evaporation.

Wavin TreeTank – Benefits of Urban Trees



Cool



Air quality

Mature trees regulate water flow and improve **water quality**.



shade



Biodiversity



A tree can **absorb** up to **150 kg of CO₂** per year, sequester carbon and consequently mitigate climate change.



Happiness: spending time near trees improves physical and mental health by increasing energy level and speed of recovery, while decreasing blood pressure and stress.



Landscaping, especially with trees, can **increase property values by 20%**.

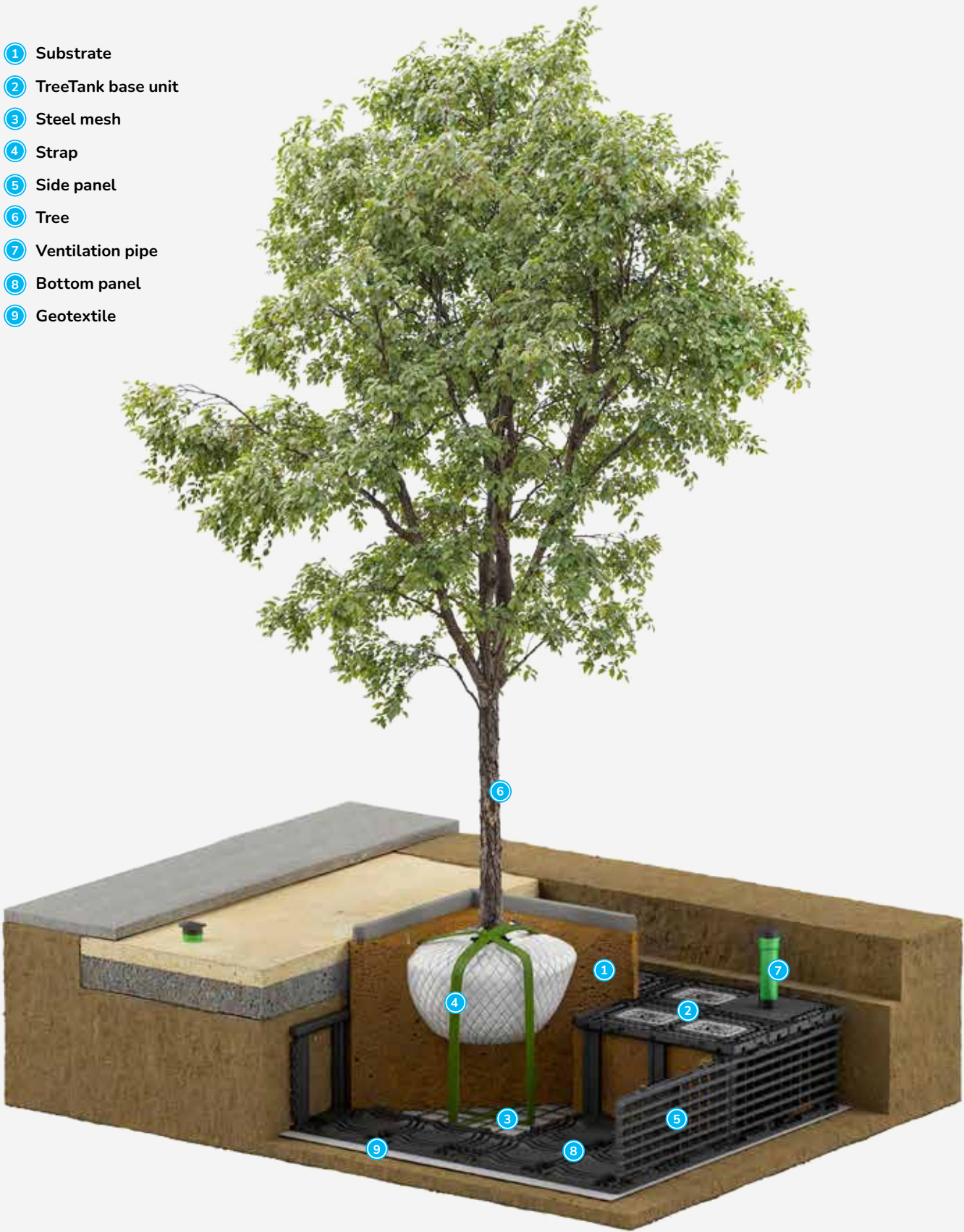
Trees properly placed around buildings can **reduce air conditioning** needs by **30%** and **save** energy used for **heating** by **20-50%**.

2. Starting Guidelines

TreeTank installed



- 1 Substrate
- 2 TreeTank base unit
- 3 Steel mesh
- 4 Strap
- 5 Side panel
- 6 Tree
- 7 Ventilation pipe
- 8 Bottom panel
- 9 Geotextile



2. Starting Guidelines

1. General

The TreeTank is composed of 100% post-consumer recycled polypropylene units, which have proven themselves being extensively used in heavy infrastructure markets for many years. The structure is made up of water-permeable outer walls on all sides, which provide a protective structure for the soil volume of the tree. The structure ensures a complete relief of the traffic and pavement pressure on this volume of soil.

The inner structure of the composite units consists of 6 columns. The units are equipped with integrated handles, horizontal and vertical fixation. The volume is surrounded by vertical walls. These walls have a double function: on the one hand, they ensure that there is no contact between the surrounding soil and the substrate, on the other hand, they serve as a retaining wall between the compacted and uncompacted zones (no subsidence).

2. Material, fabrication, composition

Units

- Consist of injection-molded elements in 100% post-consumer recycled polypropylene.
- TreeTank Base element 47.24 x 23.62 x 23.62 in including 2 lids for tree ground filling (30.86 lbs)
- Base plate (10.36 lbs)
- Side plate with integrated click connection 46.65 x 21.38 x 1.97 in

Geotextile (suggestions)

- Material: PE/PP - weight: 0.75 oz/ft² (± 10%)
- Tensile strength: min. 2,003.4 lbs/ft in both directions
- Elongation at break: min. 25% in chain sense, 15% in transverse direction
- CBR: min. 1,011.64 lbs - cone drop: max. 0.51 in
- Sand permeability (base O90): max. 0.0091 in
- Water permeability: min. 1.24 gal/ft².s

The elements are designed in such a way that they can be easily assembled into a tree growth place. The perimeter of the structure consists of self-supporting side panels. Inside the basin, there are no walls between the crates.

This allows:

- to simply fill the structure with the provided material (substrate)
- integrate cables and pipes
- to supplement the outside without filling the tree bunker with granules or topsoil

The design principle corresponds to the general lifetime calculations of at least 50 years, for plastic pipe systems. To meet this requirement of service life and also to guarantee sufficient stability resistance, the unit elements must be injection moulded in pure polypropylene ("virgin material" with max. 5% internal recycle). The manufacturer of the basin must submit a stability report.



3. System performance:

- A layer of air of 2.76 in between the cover plate (2nd ground level) and substrate ensures the aeration of the roots (will be achieved via natural settling of the substrate after installation).
- Tree bunkers are suitable for heavy traffic with axle loads of up to 11.02 US tons per wheel. Ensure sufficient coverage on the units, depending on the expected load capacity requirements:
 - 13,227 lbs/wheel load** wheel load (truck) ≥ **19.69 in** top deck
 - 3,307 lbs/wheel load** wheel load (cars) ≥ **11.81 in** top deck
 - 22,046 lbs/wheel load** wheel load need for ≥ **25.59 in** load distribution
- The system is height-adjustable to bypass any underground obstacles,
- In the event of calamities or work, the tree bunker can be opened (dismantled and reassembled) at any location without causing damage to the system.
- Different installation depths are feasible – via a 1 layer (23.62 in) or two layers (47.24 in)

- The ground coverage on top of the TreeTank must not consist of any compacted soil.

Different steps (per layer):

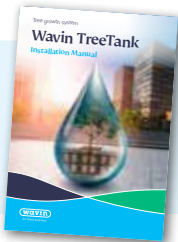
- A stability calculation is applied by the manufacturer of the TreeTank
- Geotextile is applied underneath the TreeTank, ensuring an overlap of at least 19.69 in on each side.
- When specified by landscaping architects, an anchor grate or steel reinforcement mesh should be installed on the geotextile where the tree is to be planted. This should be sized so that it is at least 11.81 in wider on all sides than the open area of the tree pit. The tree is stabilized with the help of anchoring straps.
- Always include an aeration tube with a diameter of 3.15 in to be placed within in the systems
- The entire system is wrapped into geotextile
- Backfilling is compacted. It is recommended to compact the soil to a minimum according to local guidelines.

4. Installation

- When designing the needed TreeTank space, always add ensuring 19.69 in on each side of the footprint of the tree tank.
- Needs to be installed on a flat base
- Material with a minimum depth of 3.94 in (max. 11.81 in).
- Remove protruding (sharp) objects (e.g. stones) that may damage the infiltration textile/membrane.
- The backfilling must be compacted layer by layer (at least 19.69 in wide)



For detailed installation instructions – see TreeTank Installation Manual.



3. Product Specifications

Wavin TreeTank Solution

The Wavin TreeTank system is composed of several integrated components, each engineered to support optimal growth conditions for trees while ensuring structural stability.

The system includes the following elements:

1. Bottom Plate

Manufactured from 100% recycled polypropylene, black in color, with dimensions of 47.24 x 23.62 x 2.76 in and a weight of 10.36 lbs. The bottom plate ensures that vertical forces are evenly distributed across the ground. It is designed to easily connect with the vertical pillars of the base unit.

2. Base Unit

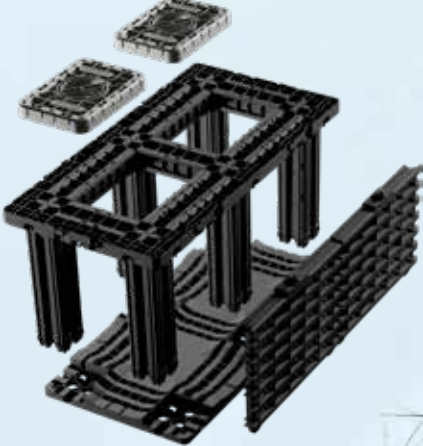
Also made from 100% recycled polypropylene and black in color, this unit measures 47.24 x 23.62 x 23.62 in and weighs 30.86 lbs. It comprises six vertical pillars connected by a top plate. Integrated connectors allow base units to be linked together, which is essential for overall system stability. The top plate includes two open slots (14.37 x 9.61 x 3.15 in) for substrate filling. For safety, the unit is delivered with pre-installed covers (see TreeTank Cover below).

3. TreeTank Cover

Produced from 100% recycled polypropylene and light grey in color, each cover measures 14.25 x 9.61 x 3.11 in. It includes a twist-lock mechanism that secures the cover in place to eliminate fall hazards, while allowing for easy removal during substrate filling. The structural stability calculation assumes the covers are reinstalled after filling.

4. Side Plates

Made from 100% recycled polypropylene and black in color, each side plate weighs 6.17 lbs. These plates are designed to absorb lateral pressure from compacted surrounding soil and are mounted onto the base unit. They help prevent structural deformation during installation and provide long-term stability, minimizing the risk of subsidence in both the structure and the pavement above.



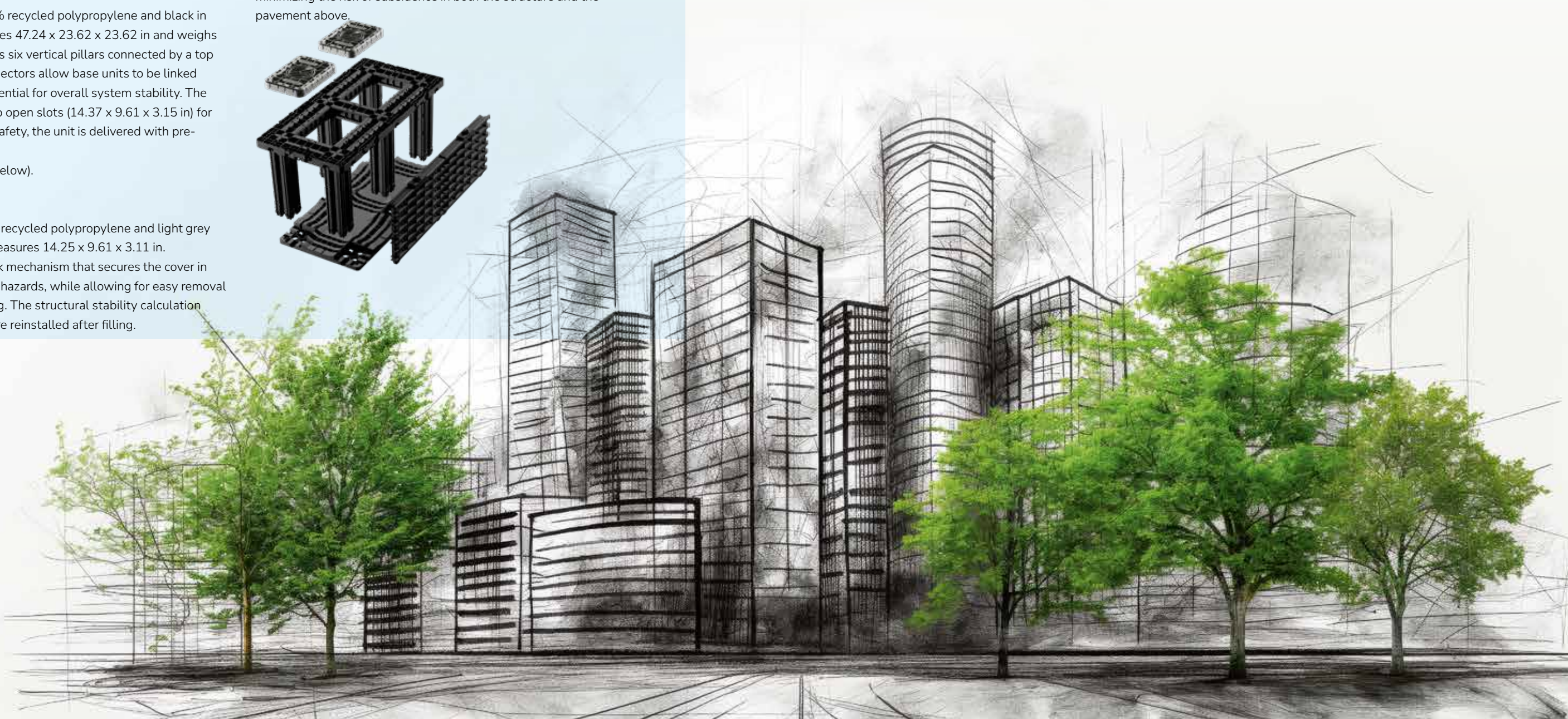
Installation Requirements

The TreeTank system must be installed according to a layout plan prepared by the contractor and approved during the site meeting. The plan must include a stability calculation for the underground structure, clearly detailing the expected vertical and lateral loads as well as the long-term resistance of the system.

Environmental Performance

To demonstrate the sustainability of the product, an Environmental Product Declaration (EPD) must be submitted. The EPD must be based on a Life Cycle Assessment (LCA) conducted in accordance with ISO 14040 and ISO 14044 standards.

EPDs must be developed in accordance with the applicable Product Category Rules (PCRs), which define the calculation methods and reporting formats. These rules ensure that EPDs within the same product category are consistent, comparable, and disclose the same types of environmental information.

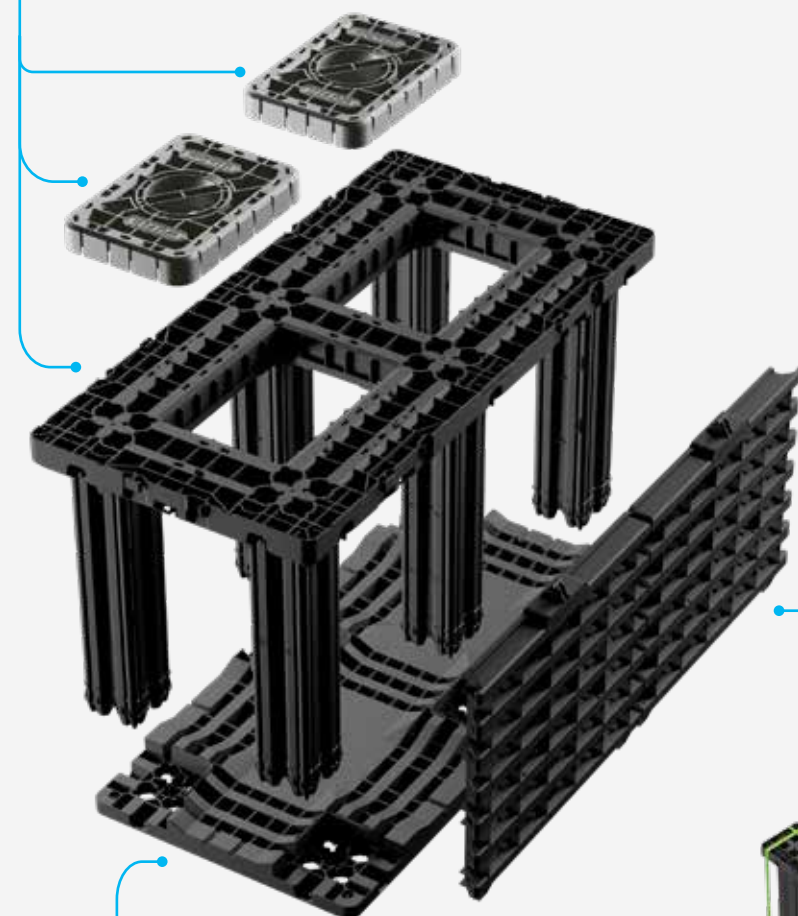


3. Product Specifications

TreeTank Components

TreeTank Base Unit (incl. 2 Lids)

- › Dimension: 47.24 x 23.62 x 23.62 in
- › Weight: 30.86 lbs



TreeTank Side Plate

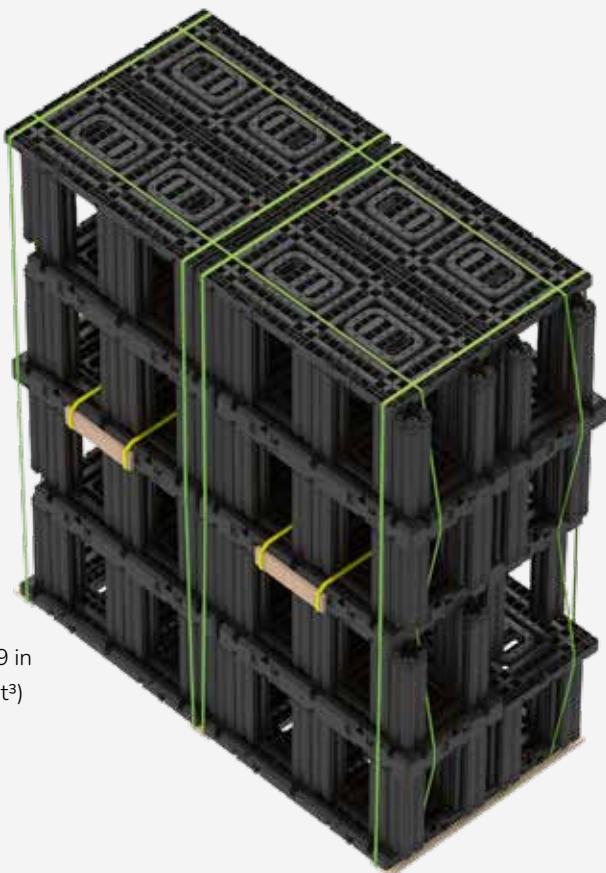
- › Dimension: 46.65 x 21.38 x 1.97 in
- › Weight: 6.17 lbs

TreeTank Base Plate

- › Dimension: 47.24 x 23.62 x 2.76 in
- › Weight: 10.36 lbs

TreeTank Package

- › Dimension: 47.24 x 94.49 x 94.49 in
- › 32 Units per package (~ 459.09 ft³)

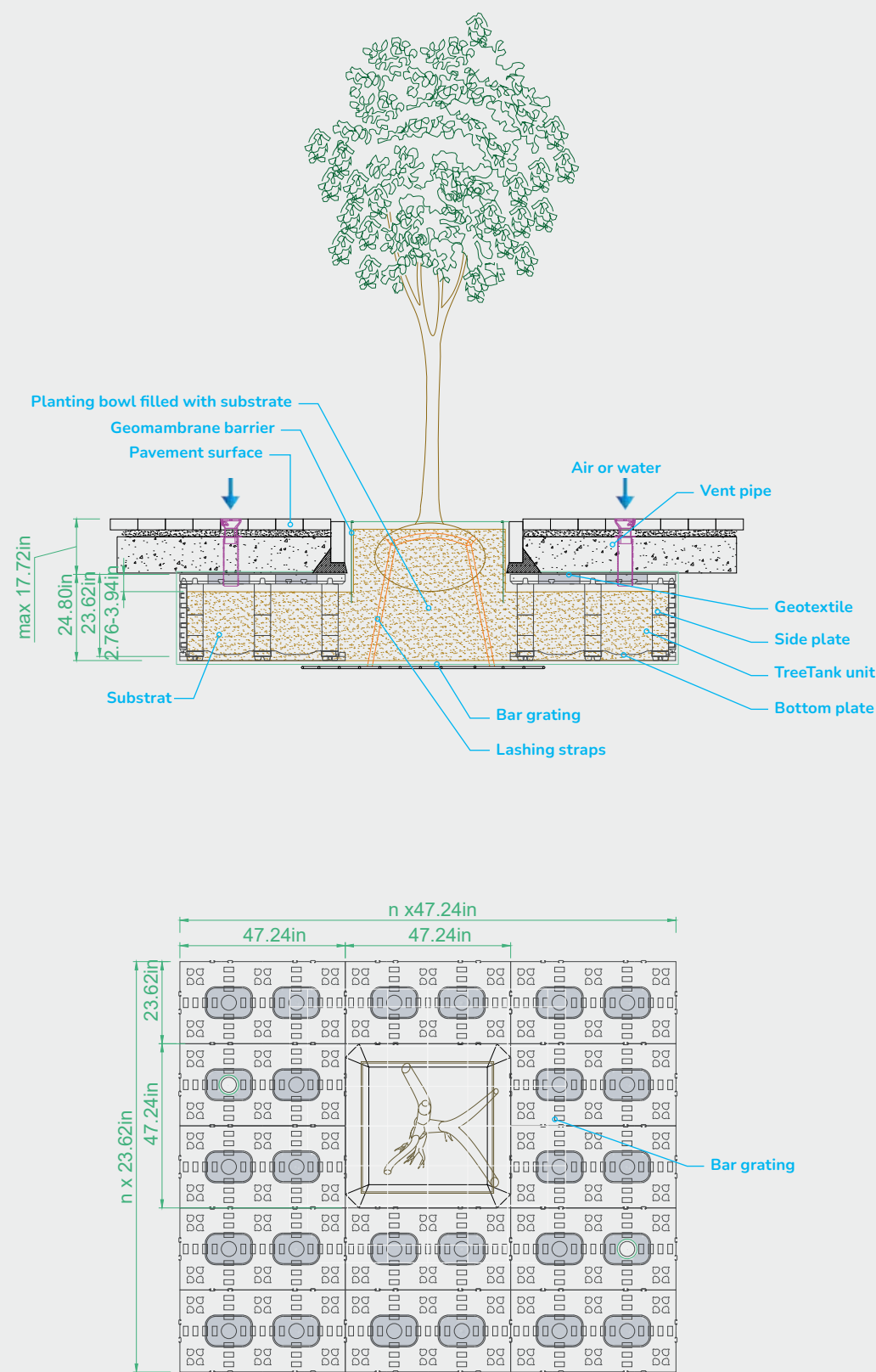


For detailed product information – see Wavin TreeTank Portfolio overview and Product Data Sheets.

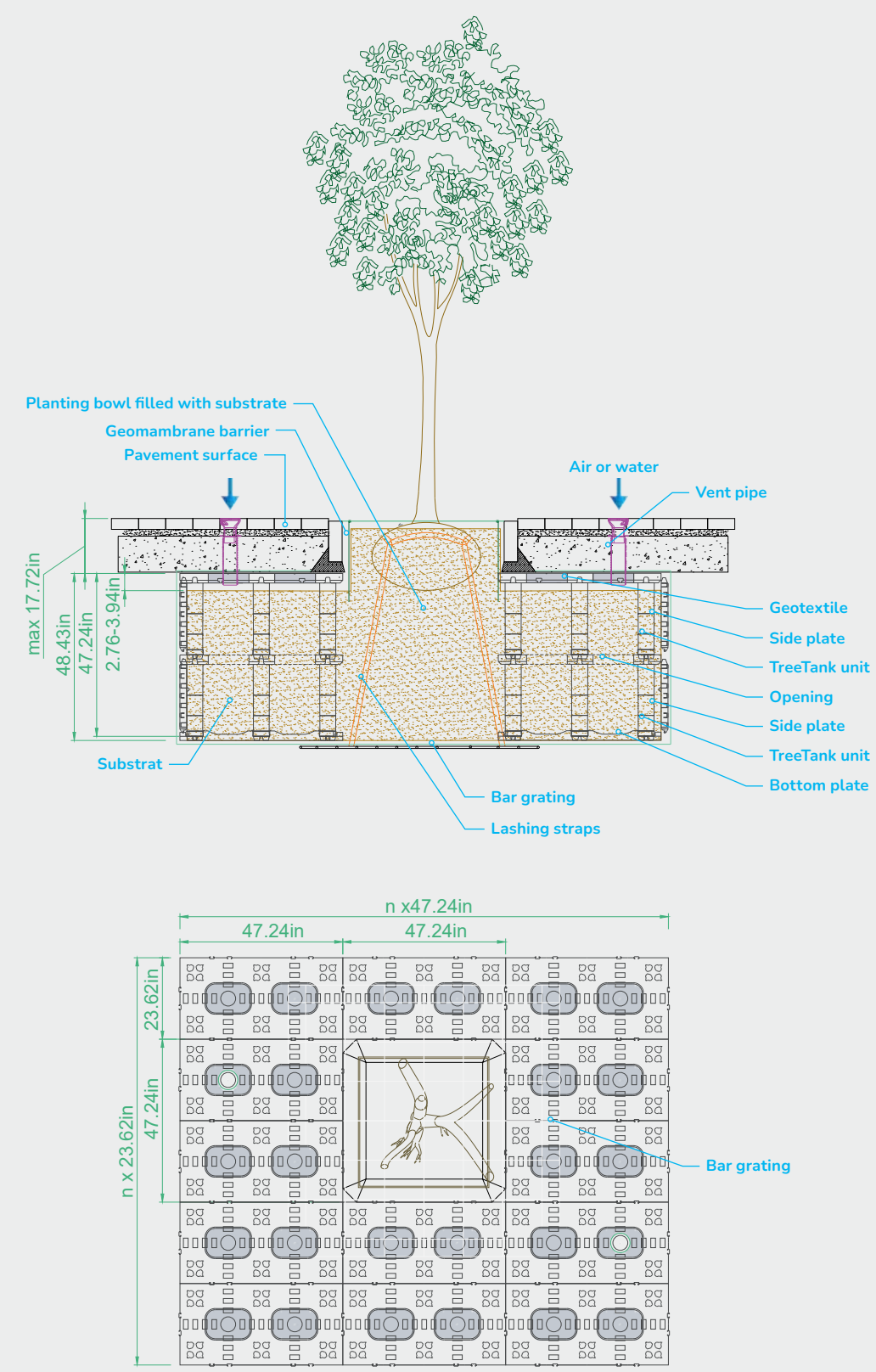


4. Drawings

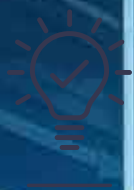
One layer TreeTank units



Two layers TreeTank



For information you can find more
information on our website:



Sustainably designed: the modular system for optimum tree growth.

Wavin TreeTank provides...

- ④ **A protection zone for the roots:**
enabling obstruction-free growth, corresponding to the size of the tree
- ④ **Loose, well-aerated soil:**
the elimination of soil compaction supports for nutrient transport
- ④ **Rich supply of nutrients:**
with 17.657 ft³ nutrient-rich soil per ft² tree crown projection
- ④ **Sufficient water supply:**
combined with Wavin's proven irrigation system, the soil remains moist even during dry spells
- ④ **Enough oxygen:**
a continuous and reliable soil aeration is ensured



Scan for more
insights on Wavin
TreeTank.



Discover our broad portfolio at wavin.us

- Urban climate resilience solutions
 - Waste water drainage
 - Indoor climate solutions
 - Drinking water distribution



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to tackle some of the world's most complex challenges.

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To Advance Life Around the World.

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