

WORKING INSTRUCTION

for a substrate structure for small trees

Trees that are less than 10 m tall when fully grown, for example cherry tree, crab apple tree, hawthorn and rowan

The guidelines are based on the Stockholm City working instructions and drawings, practical experiences and discussions about the working instructions with experts in the field.

The manual is continuously developed on the basis of experience gained and feedback received.

1. The drainage structures of the structural soil are placed on the outer edge of the structural soil. The subsoil is tilted toward the drainage structure by 1 % tilt.
2. Any cable and pipe structures that are installed on the subsoil should be covered with a filter cloth. Backfilling is done according to the project-specific job description.
3. Loosen the subsoil to the depth of 200 mm.
4. Spread a 50 mm thick layer of unfertilized porous biochar (5/10 mm) onto the subsoil. This does not need to be firmed down.
5. Build a 600-800 mm thick structural soil structure of crushed rock (#32/64 mm) and porous biochar (5/10 mm) and of compost or a mixture of biochar and slow-soluble fertilizer (e.g. Osmocote). When using compost, the mixture ratio is 1:1. Slow-soluble fertilizer is used according to project-specific job description. The amount of biochar and compost in the substrate is 15-25 % by volume. When choosing the biochar, it is important to note that it must be porous (minimum surface area of 200 m² / gram, pyrolysis end temperature of at least 400 °C) in order to retain water and nutrients. For example, the porosity of the charcoal is low, and it retains water and nutrients poorly.
6. Mix the biochar, fertilizer / compost and crushed rock carefully, for example, by combining crushed rock, biochar and fertilizer / composting heaps with a digger or a bucket excavator. The mixing can be done on site or in advance.
7. Apply a 150 mm thick aeration layer of crushed rock (#32/63 mm) over the structural soil. Firm down the aeration layer.
8. Apply a fifty (50) mm thick levelling layer of crushed rock (#8/16 mm) over the aeration layer. Firm down the levelling layer.
9. Install a filter fabric (use category N3) on top of the substrate structure. The filter fabric prevents the runoff of fine-grained solid material, dissolved in stormwater, into the substrate.
10. Install the overlay structures top of the filter fabric according to project-specific job descriptions.
11. Prepare a planting hole, with a width three (3) times the width of the root ball and a depth three (3) times the height of the root ball, in the supporting soil.

12. Fill the planting hole with a pre-prepared substrate mixture containing crushed rock (#4/8 mm) and fertilized biochar (0/5 mm). Fertilization can be done either using compost or slow-soluble fertilizer. When using compost, the total amount of biochar and compost is 25 % by volume (mixture ratio 1:1). When using slow-soluble fertilizer, the amount of biochar is 25 % by volume and the dosage of the fertilizer is in accordance with the project-specific job description.
13. Gently remove soil from the root ball of tree saplings. Shape the bottom of the planting holes so that the roots can be placed towards the direction they grow and spread them evenly in the hole. The correct planting depth for large saplings (girth >18) is such that the root collar is 10 to 30 mm and for small saplings 10 to 20 mm above the surface of the substrate.
14. Stake the trees and mulch the root area according to the project-specific job description.
15. The sapling is carefully watered so that the root ball and the substrate surrounding the sapling stay steadily moist for two growing seasons after the planting, but not continuously wet.