

Guidelines on Transplantation of Trees Affected by Construction Works

Objective

The guidelines are to ensure that trees are suitably protected during transplantation of trees.

Scope of applicability

The guidelines are applicable to the public places managed by the Municipal Affairs Bureau (IAM).

Definitions

For the purposes of the guidelines, the following definitions shall apply:

1. Transplantation: Trees are transplanted from the original planting locations to other planting locations.
2. Biodegradable: It refers to any substance that can decompose through bacteria and microorganisms and return to nature in a short time.
3. Maintenance: After completion of transplantation or replacement of trees, the relevant work to ensure the survival of trees, or facilitate wound healing and restore growth of damaged branches and roots of trees.

Contents

1. **Preparation before transplantation**



- 1.1. If the transplantation process requires destruction of existing roads and green areas, it is necessary to make applications to the authorities concerned in advance and the works can only be carried out after approvals are obtained. The excavated road surfaces should be kept flat during the work period and reverted to their original state after transplantation.
- 1.2. Before transplantation, it is necessary to cut the roots of the trees to be transplanted. The cuts of the exposed roots must be smoothed.
- 1.3. Before transplantation, the tree crown should be pruned according to the following principles:
 - A. Trees with prominent trunks: maintain their original shape, prune unhealthy branches such as watersprouts, withered or infected twigs, overlapping and crossing branches, and cut away unwanted branches such as those growing from below 2 metres of the trunk. Prune the trees up to 1/3-1/2 of the original mass of deciduous trees, and up to 1/5-2/5 of that of evergreens. For trees with noticeable layers such as cotton tree (*Bombax ceiba*) and Madagascar almond (*Terminalia mantaly*), leave at least two layers of branches after pruning.
 - B. Trees without a prominent trunk: For broadleaved deciduous trees, thin the branches before heavy pruning, keep the growing and strong branches, and prune the trees up to 3/5-9/10 of the original mass. For broadleaved evergreens, prune the tree crown and inner branches up to 1/3-3/5 of the original mass. For coniferous evergreens, thin the

branches to moderately reduce the size of the tree crown by pruning 1/5-2/5 of the original mass.

- C. Cuts should be smooth without splitting. When pruning branches with a diameter of over 5 cm, avoid splitting of the tree due to improper pruning. The cuts must be smoothed, with preservatives applied.
- D. For single trunk plants of the family *Arecaceae*, transplant the whole tree and only prune withered leaves, e.g. royal palm (*Roystonea regia*), Mexican Fan palm (*Washingtonia robusta*).

2. Digging up trees

- 2.1. The diameter of the root ball excavated for tree transplantation must reach five times the ground diameter of the tree trunk, but not less than 40 cm, and the depth of the root ball should be approximately 2/3 of the diameter of the root ball, but not less than 25 cm. The depth of the root ball must include multiple roots. For weakly growing big trees, rare tree species, tree species with high wood density and withering easily after root cutting, or trees transplanted in the season not suitable for transplantation, the size of the root ball must be increased accordingly.
- 2.2. When encountering thick roots during excavation of root ball, cut them with a hand saw instead of digging through them directly, keep the cuts smooth and apply wound coating agent to prevent wound infection.
- 2.3. Wrap the root ball with biodegradable materials and then with large wire netting to maintain its stability.

3. Wrapping and transporting trees

- 3.1. After a tree is dug up, it is necessary to handle the tree properly to reduce injury during transportation to the new planting location. The part of tree trunk in contact with the trailer bed should be protected and secured with soft protective pad to avoid damage to the branches. The tree trunk must be wrapped with protective materials (e.g. sackcloth, canvas).
- 3.2. Be gentle while loading, unloading and handling, and avoid dragging during transportation. Ensure no damage to the root ball, and no scratching, splitting and injury of the root system. The tree should be kept intact without injuries to its root system, trunk and crown.
- 3.3. During transportation, keep the trees properly moistened, sheltered and protected from wind, strong sunlight, rain, cold weather and theft.
- 3.4. During transportation, loading and unloading, follow traffic safety guidelines and use noticeable warning signs to alert passing vehicles and pedestrians.

4. Tree planting

- 4.1. It is necessary to mark the planting location on site with the IAM staff in advance and digging the pit can only be started after confirmation. The size of the pit should be at least 30 cm or above greater than that of the root ball and the depth of the pit should be 15-20 cm plus the thickness of the root ball. If the space allows, a bigger and deeper pit should be dug. After digging the pit for planting, apply organic fertilisers or other types of fertilisers to the base of the pit to facilitate root growth after planting,



and replace the existing soil on site with new soil. The backfilled soil should comprise 40% yellow soil, 20% pond silt, 10% organic fertilisers, 10% peat soil/organic planting materials such as coconut coir, 20% pumice and extra 0.1% moisturiser. There should not be any stones or impurities larger than 1 cm in the soil.

- 4.2. The tree transplantation process including digging up, transportation and planting should be completed within the same day. Shorter time from digging up to planting can provide better conditions for the survival of seedlings and trees. When encountering adverse weather, adopt temporary measures to protect the root ball of the tree and the planting pit, install sheltering facilities and water the tree to prevent injury or withering.
- 4.3. Before moving a tree into a pit, place a ventilation bag on each of the four sides of the pit (Dimensions of ventilation bag: 12-15 cm in diameter, greater than or equal to 1 metre in length; fillings comprising grains with diameter at least 1cm which are porous and can store water such as perlite). While planting, remove the wrapping materials around the root ball, gently put the tree into the pit, and keep the trunk upright. Refill the soil surrounding the root ball, water the tree three times on different days, compact the soil evenly with a wooden stick to enhance contact with the root system.
- 4.4. Install supports immediately to prevent tree leaning after planting. For trees less than 20 cm in diameter at breast height, the supports should be at least 5 cm in diameter made up of metal or fibre materials; for trees greater than 20 cm in diameter at breast height, the supports should be



made up of metal of at least 10 cm in diameter and they should be firmly pressed at least 50 cm into the soil, which must not be loose. Alternatively, based on the size and height of the trees and their planting environment, suitable supports can be installed to ensure that the trees are secured, following the instructions of IAM. The part where the trunk is in contact with the support should be protected with thick soft materials (plastic materials or fabrics) to avoid damage to the bark and ropes should be used to secure it.

- 4.5. Immediately water the tree once after transplantation, and in sunny weather, water the tree again after 2-3 days, and then water the tree for the third time after one week. Keep it well watered each time to ensure sufficient water at the base of the root ball. Meanwhile, the main trunk and the first and second main branches must be wrapped with straw ropes or soft moist materials.

5. Management measures for maintenance after transplantation

- 5.1. After transplantation of trees, keep the trees well maintained by professional horticulturists for one year. Take the following technical measures according to different circumstances:
 - A. In summer, build a shelter to protect the tree, and spray the tree crown and trunk with water to keep them moist; in winter, protect the tree against cold weather by installing a wind screen and adopting other winter-proof measures.



- B. After transplantation of tree, take timely measures for supplying fertilisers and water such as using foliar fertilisers and transmitting fertilisers in liquid form to the tree trunk.
 - C. After transplantation of tree, always keep the soil moist, beware of water on the ground surface or accumulated in the tree pit, and drain excess water in time. During the maintenance period, avoid watering the tree at noon when the weather is hot.
 - D. Keep the transplanted tree free from pests. While refilling the soil, add pesticide if needed, and prune branches which are withered or infected by diseases and pests after transplantation.
 - E. During the maintenance period, timely check the supports of the transplanted tree and adjust them to avoid deformation or injury to the tree due to the press or abrasion by the supports.
6. IAM reserves the right to request compensation regarding weakening or death of trees due to failure to follow the guidelines which are required by IAM or inappropriate supports causing damage to tree trunks which are unable to restore growth. The trees shall be replaced with trees of the same species and specifications, or compensation shall be made in proportion to the different trees' diameter at breast height (DBH) so that the total of DBH of the replanted trees is not smaller than that of the original trees. The party responsible for replacing the trees shall also provide a one-year maintenance to ensure the trees' survival, and shall be liable for replacing dead or poorly grown replanted trees until they are accepted by IAM.