Stormwater Management Manual 2.3.6: Tree Credit

Facility Description

Trees intercept precipitation and hold water on the leaves and branches and allow it to evaporate, Trees retain runoff and dissipate the energy of runoff. They also provide shade, providing two direct benefits. First, hard surfaces are protected from direct solar exposure, which reduces heat gain. The less heat gain there is in pavement, the less heat is absorbed by stormwater as it flows over the surface. Second, by shading pavement, the trees help reduce or minimize air temperature increases caused by the hot pavement. Cooler air may help prevent stream temperature increases associated with air temperatures.

These functions are most measurable for storms of less than 0.5 inches over 24 hours. While deciduous trees are not as effective during winter months, evergreen trees are effective year round for these smaller storms and portions of larger storms. Generally, large trees with small leaves are the most efficient rainfall interceptors. Trees also facilitate stormwater infiltration and groundwater recharge.

Trees meet the stormwater management standard for imperious area reduction techniques.

Design Requirements

New Evergreen and Deciduous Trees: New large trees planted within 25 feet of ground-level impervious surfaces, and new small trees, or slowly growing larger trees, planted within 10 feet, are eligible for impervious area reduction. Trees may be applied to ground-level surfaces only; roofs may not reduce impervious area. A reduction of 100 square feet is given for new deciduous trees, and 200 square feet of reduction is given for new evergreen trees (see minimum sizes below). Impervious area reductions also apply to existing trees kept on a site if the trees' canopies are within 25 feet of ground-level impervious surfaces. The reduction is the square-footage equal to one-half of the existing tree canopy within the 25 foot area. No more than 10% of a site's impervious surface can be mitigated through the use of trees.

Trees used for impervious area reduction shall be clearly labeled on permit drawings.

Trees shall be maintained and protected on the site after construction and for the life of the development (50-100 years or until any approved redevelopment occurs in the future). During the life of the development, trees approved for impervious area reduction shall not be removed without approval from the City. Trees that are removed or die shall be replaced within 6 months with like species. All trees should be pruned to ANSI standards.

The trees selected shall be suitable species for the site conditions and the design intent. Trees should be relatively self-sustaining and long-lived. Temporary irrigation should be provided for native plantings. Long-term irrigation is optional.

New deciduous trees shall be at least 2 caliper inches and new evergreen trees must be at least 6 feet tall to receive Simplified Approach credit. Trees planted to meet stormwater management facility planting requirements, except those located in Contained Planters, may not also receive Impervious Area Reduction Technique credits on the SIM Form.

Trees used to meet stormwater management requirements shall be kept on a site and maintained properly to ensure continued stormwater benefits. Trees should be inspected 2 times a year and within 48 hours of a major wind or storm event.

Existing Trees: Impervious area reduction applies to existing trees of 4-inch caliper or larger. Large trees which reduce impervious area must be located within 25' of proposed or existing ground-level impervious surfaces; small trees must be located within 10' of proposed or existing ground level impervious surfaces. Impervious area reduction is based on one-half of the square footage of the tree canopy, measured within the drip-line.

Protection during construction shall be in conformance with the City's tree preservation standards. The applicant will have to provide documentation required by the City to ensure the tree will remain healthy after construction and during the life of the project. During the life of the development, trees approved for stormwater credit shall not be removed without approval from the City. Stormwater management functions of any removed trees shall be replaced on the site with other trees or stormwater management approaches. Trees that die shall be replaced within 6 months.

4.5.4 Tree Credit Operations and Maintenance Plan

Trees intercept precipitation and hold water on the leaves and branches and allow it to evaporate, retain runoff and dissipate the energy of runoff. They also provide shade, providing two direct benefits. First, hard surfaces are protected from direct solar exposure, which reduces heat gain. The less heat gain there is in pavement, the less heat is absorbed by stormwater as it flows over the surface. Second, by shading pavement, the trees help reduce or minimize air temperature increases caused by the hot pavement. Cooler air may help prevent stream temperature increases associated with air temperatures.

These functions are most measurable for storms of less than 0.5 inches over 24 hours. While deciduous trees are not as effective during winter months, evergreen trees are effective year round for these smaller storms and portions of larger storms. Generally, large trees with small leaves are the most efficient rainfall interceptors. Trees also facilitate stormwater infiltration and groundwater recharge.

Trees used to meet stormwater management requirements shall be kept on a site and maintained properly to ensure continued stormwater benefits. Trees shall be inspected 2 times a year and within 48 hours of a major wind or storm event.

Inspection Logs shall be kept by the Tree owner demonstrating the following items have been inspected and are being maintained properly:

- **Dead Trees** shall be removed and replaced with a comparable. The replacement Tree shall be a minimum of 6' tall at planting.
- **Dead Vegetation** shall be pruned from the Tree on a regular basis.
- **Poisonous and Nuisance Vegetation** around the Tree shall be removed when discovered.
- **Protection** of the Tree trunk and roots shall ensure Tree survival. Care should be taken when digging near Tree roots.

Irrigation shall be implemented during the establishment period to ensure Tree survival. Hand watering is preferred, but a drip-irrigation system may be used.