

Preserving Existing Trees with Invisible Structures

When new construction is proposed on sites with major vegetation existing in locations needed for parking, porous paving can preserve important trees and shrub groupings.

Why?

Arboricultural heritage will be maintained; the new building(s) will visually blend more easily into neighborhoods and surrounding environments; mature trees will maintain their air cleansing and cooling capabilities; and the porous pavement will maintain historical stormwater infiltration to water tables below the ground surface.

Arborists can more closely provide a monetary value to existing trees, but establishing an economic value to emotional responses to large trees can be nearly impossible. Efforts made to retain large trees can be marginally more expensive than traditional clearing and grubbing actions, and offset by reduced time and expense to counter environmental opposition.

How?

In an ideal world, every new building site would have a properly sized treeless knoll to site the building, with relatively flat terraces below to place parking with 50 foot shade trees properly spaced to shade cars, and streams and ponds on the perimeter to accommodate increased flow and storage of stormwater. From experience, these sites are quite rare, and are more often the design objectives of new construction.

Porous paving (using our Grasspave² or Gravelpave²) works by directing initial rainfall straight down through the paving cross section for later (slower) infiltration into native soils below. Thus, there is less need for careful and shallow gradients with porous paving compared to asphalt and concrete, and less need for curbs, catch basins, inlets, manholes, and pipe to capture and control runoff. With less need to drastically change surface grades, existing trees can retain existing sources of surface and subsurface runoff, maintaining their horticultural conditions.

Before construction and user traffic move within the drip line (roughly equates to the root zone) of the tree, designers must plan to take care to prevent changes of air and water access to the root system during construction and following. Specifically, compaction of surface soils from foot and vehicular traffic must be avoided at all costs, while also preventing any excavation of the root zone for paving, curbs, or utilities. If any portion of the tree root system must be removed or damaged, then general guidelines require an equal amount of topgrowth removal by selective pruning.

When new paving surfaces, for walks or vehicles, are required to be placed within the drip line of a tree, we propose that all new surfaces be placed on top of existing grades

rather than disturb the root zone of the tree. General guidelines suggest that 80% of a tree root system is contained within the top 12” of soil within the drip line. To ensure that access to air and water remain unchanged by this fill, we propose use of our Draincore2 product, with its ring and grid structure covered by porous geotextile fabric, creating an air space of 1 inch, extending from the base of the tree outward to the drip line below all proposed fill. Please refer to the Tree Protection Detail on our web site for an illustration of this cross section.

If the pavement surface is porous, and less than 10” thick, then air and water will be able to access the roots normally. If the pavement is impervious, or the fill depth exceeds 10”, then we recommend the addition of loops of drip irrigation pipe to be placed between rows of rings to provide necessary moisture. Even trees that have shallow or surface roots exposed will not react adversely.

To protect the tree trunk from damage by vehicles, place bollards, or curbs, or tire stops at least 5 feet away from the face of the tree trunk.

Unless a tree is placed in the direct path of a building, or driveway or parking aisle that cannot be shifted, there is little reason for existing trees to be lost with new development. Keep our cities cooler and clean the air of pollutants by saving our existing trees.

Please contact us if you require assistance beyond the resources found on our Web site.