Root Damage due to Containment of Roots in Hardscapes

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The problem to the plant is the confined root system. The effects will first appear on the roots and eventually the whole plant will suffer from confining or restricting the roots. This plant appears to be doing okay in the situation, however there are many serious problems that can arise from the roots being confined. These problems include root damage, tree loss, and the ability to manage the living root system (http://www.igin.com/Landscaping/rootbarriers.html). The purpose of the roots is to support the plant, absorb water and nutrients from the soil for photosynthesis and "breathe". It is important to note that 90% of a tree's small feeder roots are in the top 6 inches of soil and the root system often extends outward from the trunk much farther than the branches. So, physical barriers such as building foundations and paved roadways should be avoided as they will inhibit the root

system's expansion and therefore shorten a tree's life span (http://www.ca.uky.edu/agc/pubs/id/id71/id71.htm).

Another problem with this plant being grown in a confined area is the heaving of the sidewalk. As the tree grows, the roots grow, becoming larger and larger, exerting tremendous pressure on concrete and asphalt. It is these surface roots, strengthening and growing upward, that produce the damage to hardscapes (streets and sidewalks) in cities across America. These same roots can encroach on turf grasses in all landscape environments, including parks, golf courses, schools and green belts, and interfere with mowing equipment, as well as pedestrian traffic (http://www.igin.com/Landscaping/rootbarriers.html).

Early on, the most common solution to prevent tree root damage was to select specific species of trees that would grow within the constraints of our urban designs, and which have fewer surface roots. For years, city foresters avoided shallow-rooted species like maples, sweetgums, poplars, and American elms. They also stressed good design by not planting trees that grew taller than 30 feet in spaces that had only 3 to 4 feet between pavement and sidewalk, and never planted trees over 50 feet in 5- to 6-foot spaces. (http://www.igin.com/Landscaping/rootbarriers.html).

The only other solutions, beyond tree selection, were to root prune the tree regularly, and/or replace it, if necessary. Root pruning is costly in both man-hours and equipment, and it can seriously damage the tree. Some trees are more sensitive to root pruning than others. Elms, honeylocusts, maples, sycamores, and ginkgos don't tolerate root pruning well. Older trees don't like it,

though younger ones fare better. There is the danger of disease, especially when roots are not clean-sawed. There is also the risk of pruning too much, and not leaving enough anchor roots to stabilize the tree (http://www.igin.com/Landscaping/rootbarriers.html).