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Greening trees with concrete

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Many cities and towns commonly plant trees up and down their main streets and through-out downtown parking lots to beautify the community and offer shade from the day's sun. In urban settings, trees provide a great deal more. They convert carbon dioxide into oxygen, help cleanse the air of pollutants, muffle street noise and produce a cooling effect by shading pavement. Trees act as natural air conditioner by reducing temperatures of "heat islands" caused by the storage of thermal energy in concrete, steel and asphalt that predominate in our inner cities. Trees provide us with color, flowers, shape, form and textures that soften the urban landscape and symbolize the presence of nature.

But have you ever wondered why trees never seem to fully flourish in downtown environments? The answer can be found not in the leaves, twigs and branches but in the root system hidden below. Roots grow when water, minerals and oxygen are found in the soil. Because the most plentiful source of these elements is located in the soil just below the surface, the largest concentration of feeder roots exists within this zone. Therein lies the problem.

Typically sidewalks are an impervious barrier comprised of concrete or asphalt that prevents water and air from feeding a tree's root system. Tree survival and robust growth require a large root zone nourished by free exchange of air, water and nutrients. While it is not uncommon to see metal grates surrounding the base of urban trees, the area of tree grates is not sufficient to ensure an adequate food supply for root zones that can extend well beyond its branches when healthy. Trees become stressed and fail to grow, or in worse case conditions, the roots fail to function and the tree dies.

The answer to achieving sustainable tree growth in downtown settings can be found with permeable pavers that allow water and air to pass through openings in the surface into the ground below. The pavers themselves are not porous. In fact, they are comprised of the same high strength concrete used for structural interlocking pavers. Permeable pavers achieve their infiltration ability by notches molded into the sides that create an open area across the pavement. This permits the exchange of air and moisture through the entire surface of the sidewalk feeding the root system below. Generally, a "structural soil" will also be used as a media to provide additional aeration.

Permeable pavers provide a concrete solution for greening our urban streetscapes while enhancing sidewalks with an attractive, firm, stable, and slip-resistant surface suitable for pedestrians and vehicles.

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