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Changing Skyline: Attacking asphalt

By greening its playground, Greenfield School is fighting back against the damage that gunk-laden storm water does in a paved city.



By Inga Saffron
Inquirer Architecture Critic

No matter how many times we've heard Philadelphia described as William Penn's "greene countrie towne," we know the reality is rather different. Cities are cities because once-verdant land is relentlessly paved and covered over time. That's how we civilize our world.

It's also how we mess it up.

Every time the skies let forth a deluge, as they did with particular intensity this week, the city's asphalt-sealed streets and parking lots become churning torrents. The rain cascades to the nearest sewer outlet, picking up salts and oils along the way and overwhelming the underground system. As in many of America's older cities, Philadelphia's treatment facilities are incapable of handling the watery rush hour, so the overflow is released into the Delaware River, sewage and all.

The Philadelphia Water Department has been struggling for years to solve what it delicately calls "the overflow problem." One approach is to get people to consume less water, so less goes down the drain. No wonder the agency cheered a few years ago when Comcast announced it was bucking the powerful plumbers union and installing waterless urinals in its new skyscraper.

But reducing runoff from storms may be even trickier than negotiating with the well-connected plumbers. You can't simply unpave a city.

You can only try.

On June 26, the appropriately named Greenfield School will take a leap into a green new world when it begins ripping out its asphalt schoolyard as part of a Water Department pilot project. The hot, noisy, hard-surfaced schoolyard has been a staple of urban childhood, the scene of countless rounds of Double Dutch and tag. Now, the Water Department believes, it's time for the asphalt to go.

In its place, Greenfield, a public elementary school at 22d and Chestnut Streets, will plant a wide border around the perimeter of its schoolyard, nearly equal to half the playground's total surface. The green areas are designed to let rain percolate gently into the ground, cutting the schoolyard's contribution to the city's overflow problem by more than 80 percent.

Don't worry. Greenfield won't have to ban recess to help save the environment. The new schoolyard design - a joint effort by SMP Architects, Viridian Landscape Studio, and Meliora Environmental Design - reserves an island of asphalt in the center so kids can play basketball and other games. The remaining play areas will be resurfaced with a rubbery, porous material that absorbs runoff.



APRIL SAUL / Staff Photographer

The schoolyard at Greenfield School will be replaced by a new design - shown in the next two illustrations - that features a green border. Most play areas will be resurfaced with a porous material that absorbs storm-water runoff.

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'Greening Greenfield'

The unpaving effort, which is called "Greening Greenfield," was launched by a group of parents led, not surprisingly, by two local architects, Lisa Armstrong and Brett Webber. Initially, they just wanted to soften the school's harsh schoolyard, typical of so many Philadelphia schools.

But as they explored the options, they realized that the asphalt playground wasn't just a problem for Greenfield; it was bad for the whole city.

Others in Philadelphia were coming to the same conclusion. During his campaign, Mayor Nutter vowed to make the city a greener, more energy-efficient place. With the release of the administration's Greenworks plan in April, his ideas were translated into a real strategy.

Among its goals, the plan calls for the city to convert 3,200 acres of asphalt into fully pervious (that's the favored term) land by 2015. It may sound like a big number, but not when you consider that 67 percent of pre-World War II Philadelphia is covered with buildings and pavement. Rain simply rolls across all that surface to the nearest drain.

There are other ways to prevent a storm-water rush from overwhelming the sewers and polluting the Delaware River. The Water Department could construct huge underground cisterns, or catch basins, that would temporarily hold the water generated by a big storm.

But not only are such underground cisterns expensive, they need to be "the size of ball fields" to make a difference, says Howard Neukrug at the department's Office of Watersheds. Tearing up asphalt lots can be done cheaper and faster, and the new green acres have the side benefit of helping to cool the city's air temperature.

So why doesn't the Water Department start with a really big expanse of asphalt, such as the city-owned South Philly sports complex, where fields of parking spread out virtually to the horizon? A half-acre schoolyard hardly seems like an obvious choice for such a groundbreaking effort.

"We're looking at every square foot of surface area in Philadelphia and asking, 'What if?'," explains Neukrug.

That includes streets and sidewalks, too. But he argues that schoolyards are a good place to start because the greening does double duty, providing kids with shadier, healthier play areas while capturing runoff.

Actually, the Water Department is about to add another big incentive: a storm-water tax. In 2010, the agency will charge its nonresidential customers for the runoff their sites generate. The tax will be based on the amount of impervious surface, using GIS satellite technology to determine what's paved and what's green.

So, for instance, the owner of a fully paved, one-acre parking lot could see monthly storm-water charges rise from almost nothing today to as much as \$400. Schools will be taxed like everyone else.

Although the Water Department gives schools a discount, the tax will be another burden, especially for public schools such as Greenfield. The new tax provided Armstrong and Webber with an argument to persuade the school that it was worth reducing its asphalt footprint.

It helped that their group was able to raise money for the project entirely from private sources. Greening Greenfield has collected \$300,000 so far, enough to complete the west side of the schoolyard. Next year, the group expects to finish the east side.

Salvaged materials

SMP's design incorporates materials salvaged from recent construction projects at the Philadelphia Zoo and the Art Museum. They're also sculpting the new landscape with mounds that can be used as an outdoor classroom.

Both Armstrong and Webber believe it's not enough just to transform the schoolyard environment. They also want to change school culture by incorporating ideas about sustainability into the curriculum. Students will help plant trees in the new borders when they return in the fall. Ultimately, Armstrong and Webber hope to tap into federal stimulus money to install a green roof on the school, complete with a greenhouse.

Neukrug believes the project will inspire other schools, not to mention private landowners, to turn paved surfaces green. But until then, it remains an asphalt jungle out there.

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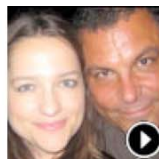
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