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LANDSCAPE ARCHITECTURE MAGAZINE

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ANNE WHISTON SPIRN

A long arc in West Philadelphia

—

BIOHABITATS

Wonderfully soggy work

—

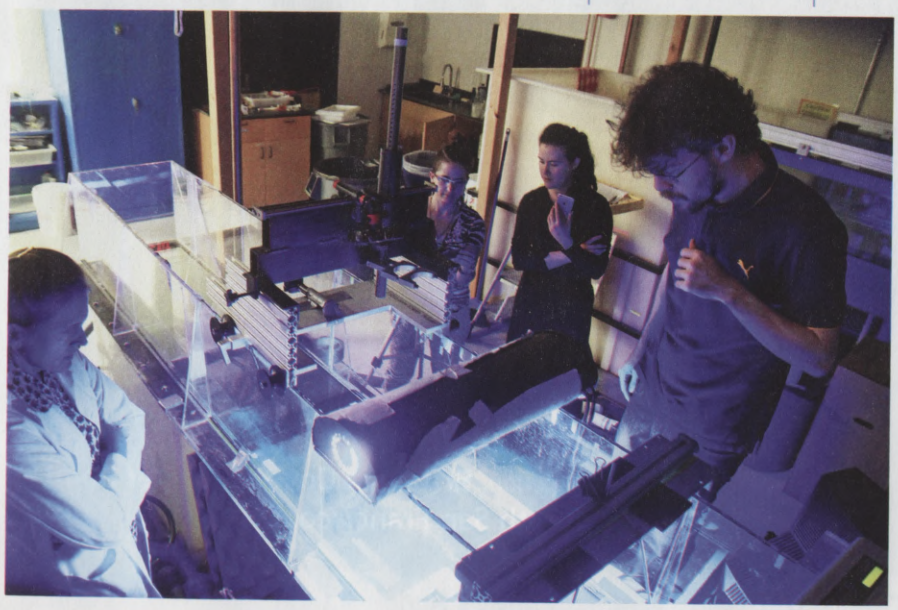
BURLE MARX'S BR

Advocacy under pressure

—

ERIK DHONT

Dreams really do come true



SHAPES OF WATER

NEW GUIDELINES FROM MIT CALL FOR MORE TOPOGRAPHICALLY RICH STORMWATER WETLANDS.

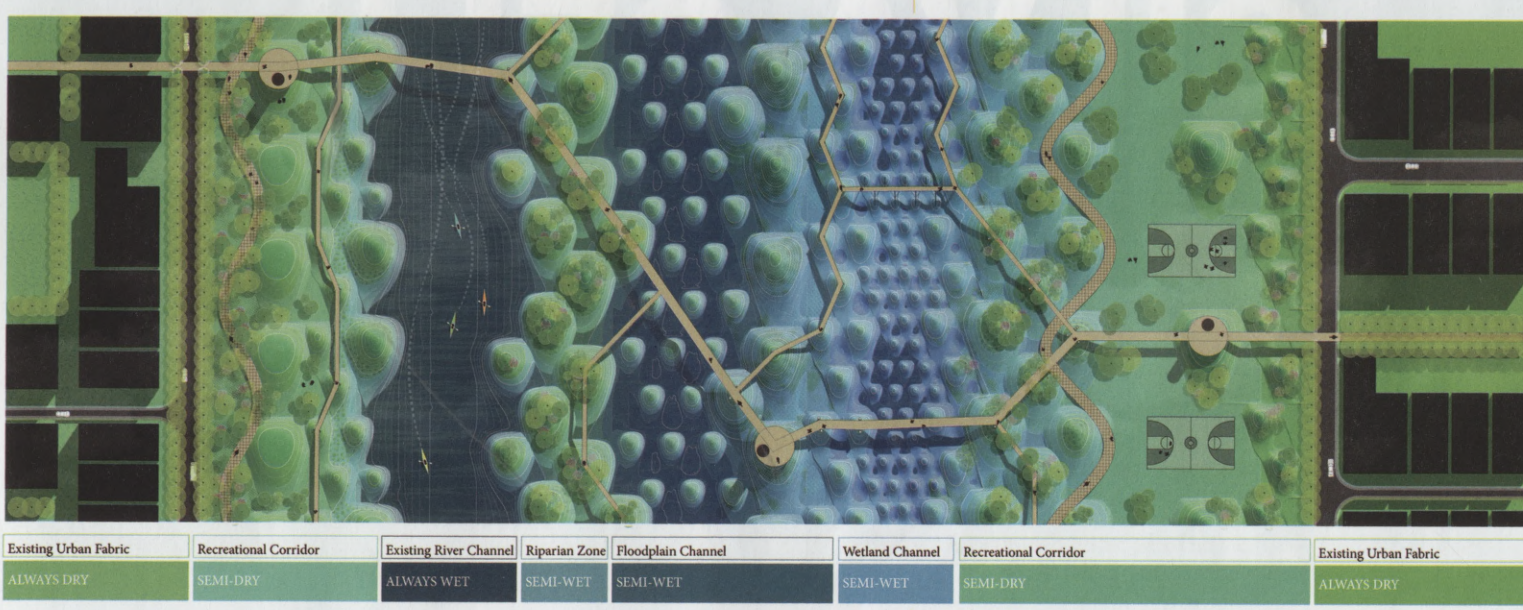
BY LESLEY PEREZ, ASSOCIATE ASLA

A rigorously tested set of new guidelines is taking aim at the overprevalence of plain stormwater basins in our urban landscapes. The result of more than two years of research at the Massachusetts Institute of Technology, *Design Guidelines for Urban Stormwater Wetlands* lays out a strategy intended to make the design of rich, multifunctional wetlands a much more accessible process for municipalities, public works departments, and the engineers and landscape architects with whom they collaborate.

The interdisciplinary team behind the guidelines hopes they "offer a different vision to what is commonly built," says Celina Balderas Guzman, the lead author of the study and a researcher focused on urban stormwater landscapes. "They work hydraulically, which is what engineers are interested in, but they also offer more ecological and recreational benefits on the landscape design side." Two 46-acre sites serve as case studies, but the guidelines are scalable to any location and can be adapted based on specific climatic requirements.

TOP
Islands tapered with the direction of incoming water (left) better distribute flow than those tapered in the opposite direction (right).

BOTTOM
CNC-milled topographies are hydraulically tested in the Nepf Environmental Fluid Mechanics Lab at MIT.



In place of familiar serpentine shapes, a series of sculptural island arrangements referred to as "topographies" are recommended. Heidi Nepf, a professor and lead engineer, explains: "The goal is basically to force the water to travel through the entire volume. The serpentine does that with lots of walls, but another way to do it is to dissipate the initial inflow energy so that the flow can then be redirected." Guzman says the ambition was to develop a type of constructed wetland that fits right into the urban fabric. The distinct island forms create opportunities for public amenities within the wetland itself rather than just circumscribed around it, and have the added benefit of setting up a range of ecological habitats.

Thirty-four of these topographies were tested in lab experiments, and two, featuring rows of short, streamlined, closely shaped islands, emerged as winners optimizing for hydraulic flow, holding capacity, and habitat diversity. Urban design frameworks were then overlaid, demonstrating how hydraulically efficient, richly programmed landscapes can be created by repeating or scaling the forms.

In Florida, where plain stormwater basins are a common feature along highways and in new developments, Jeff Caster, FASLA, says that new statewide policy documents would be key to making this type of multifunctional design thinking a reality. As the transportation landscape architect for the Florida Department of Transportation for the past 25 years, Caster knows that if specific goals aren't written into a project scope, they simply won't get addressed. But he says the rigorous hydraulic data sets included in the MIT guidelines should appeal to engineers and help get conversations started. "There's a learning curve for all of this," Caster says, "but we only have to make small incremental changes to have a big impact." ●

DISTINCT ISLAND FORMS CREATE OPPORTUNITIES FOR PUBLIC AMENITIES WITHIN THE WETLAND ITSELF.

ABOVE
The study shows ways that islands can be scaled or repeated to create diverse wetland corridors with a range of recreational opportunities.