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A SMALL TOWN THINKS BIG (TREES)

Silva Cells help earn LEED-ND certification

Illinois ASLA “President’s Award - Urban Category,” 2010
U.S. EPA National Award for “Smart Growth Achievement,” 2011
U.S. FTA/FHA “Transportation Planning Excellence Award,” 2012

Landscaping codes that emphasize tree growth, shade, and the minimization of heat-island effect are increasingly taking hold around the twin cities region of Bloomington and Normal, Illinois. The area, which has a strong educational culture due to neighboring universities like Illinois State University and Illinois Wesleyan University, is passionate about ensuring that their community prioritizes green infrastructure. Support sustainable, healthy tree growth was front of mind for Uptown Development Director Wayne Aldrich, P.E. after he learned that he would be involved in a major downtown streetscape redevelopment seeking LEED certification.

The Silva Cell system was the “most reasonable method to achieve the desired results” of satisfying the site’s loading requirements while providing adequate soil volumes to the trees, Aldrich said. He worked closely with Peter Schaudt and Geoff Valentino of Hoerr Schaudt Landscape Architects during the design and construction phases of the redevelopment. They decided that the Silva Cells would be installed to support Boulevard, East Beaufort, and West Beaufort and in a central roundabout at the intersection of the four streets. The Silva Cells in the roundabout, which is in front of the Uptown Normal Children’s Discovery Museum, contain a beautiful circular plaza and water feature whose large trees and soil quantities will help manage the rate, quality and volume of stormwater through evapotranspiration and detention.

After working together to finalize the plans and details, the construction team completed a mock-up Silva Cell installation, an exercise that enabled them to learn how to use the system and proved to be a valuable time saver throughout the rest of the project. The street design utilizes pervious paving and curb cuts to redirect stormwater into the tree wells and the soil volumes contained by the Silva Cell.

In 2011, Aldrich worked with a team of researchers from the University of Michigan (Christopher D. Ellis, Byoung-Suk Kweon, Sarah Alward, and Robin L. Burke) to complete a thorough case study for the site through a grant from the Landscape Architecture Foundation's Landscape Performance Series. Using both exact project data and modeling techniques, the team estimated the social, economic, and environmental impacts of the Uptown Normal site to the community. Among other benefits, they found that the green infrastructure features contribute in the following ways:

- Prevent an additional 1.4 million gallons of stormwater from entering the municipal storm sewer by directing runoff from sidewalks into tree wells and planter areas augmented by underground structural cells. This also recharges groundwater.
- Improve water quality in the fountain by removing an estimated 91% of total suspended solids, 79% of total phosphorous, and 64% of total nitrogen from stormwater with each pass through the sand, UV, and bog filter system.
- Sequester at least 10,790 pounds of carbon annually in 104 new trees.
- Save $61,000 in tree purchase and installation costs over 50 years by more than tripling the expected lifespan of street trees from 13 to 50+ years through the use of underground structural cells.

Wayne Aldrich's ultimate goal is to have a beautiful downtown with long lived trees. "We've invested a lot in them, and we plan for them to become a long-term part of the streetscape," Aldrich said. "Our uptown streetscape improvements have included new street furniture and site amenities, but it's the trees that provide the 'wow' factor, and people have commented on them quite a bit."

Hoerr Schaudt was described this project in Landscape Architects Network by saying, "As communities across the country search for ways to articulate their commitment to sustainability while creating great civic spaces, the central Illinois town of Normal has set an example in its central business district." The Town of Normal was been awarded LEED-ND certification for the overall uptown redevelopment. They also won an Illinois ASLA "President's Award" (2010), a U.S. EPA "Smart Growth Achievement" award (2011), and a U.S. FTA/FHA "Transportation Planning Excellence Award" (2012).

Installation Summary:
Average soil volume per tree: 600 ft^3 (17 m^3)
Number of trees: 67
Total Silva Cells: 2,400 frames, 1,180 decks
Installation date: August 2009
Installation type: Trees
Project site: Streetscape
Project designer: Hoerr Schaudt
Contractor: Stark Excavating

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