

Uptown Normal Circle and Streetscape



Landscape Performance Benefits

- Expected to reduce traffic accidents by 35% by replacing an awkward intersection with a roundabout containing 75% fewer points of conflict than a conventional 4-way intersection.
- Saves \$7,600 annually in potable water costs by capturing 1.4 million gallons of stormwater from a 58,800 sf area and reusing it in the water feature and for irrigation.
- Prevents 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.
- Improves 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.
- Saves \$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.
- Sequesters at least 10,790 pounds of carbon annually in 104 new trees.
- Increased property values in the Uptown tax increment financing district by \$1.5 million (or 9%) from 2009 to 2010, a 31% increase from 2004.
- Generated more than \$680,000 of revenue through conferences held in Normal that featured the Uptown Redevelopment.

Designer

Hoerr Schaudt Landscape Architects

Land Use

Retrofit
Transportation

Project Type

Transportation
Streetscape
Park

Location

W. Beaufort Street &
Constitution Trail
Normal, Illinois 61761

Size

4.87 acres

Budget

\$1.5 million - Uptown Circle;
\$15.5 million - Total Uptown
Normal Redevelopment

Completion Date

2010

Overview

At the heart of the Uptown Redevelopment Plan is a new roundabout and "town green" that incorporates stormwater management and public recreation into a vibrant gathering space. Runoff from two streets is captured, stored, and recycled through a water feature that makes stormwater management a visible public amenity. The roundabout further contributes to human health and safety by reducing traffic accidents. The streetscape features tree wells with uncompacted soils that add to stormwater storage and prolong tree life, increasing carbon sequestration. The circle and streetscape are a functional statement of the community's commitment to sustainable urban redevelopment.

Sustainable Features

- The roundabout improves safety for drivers and pedestrians, eliminates costs associated with traffic signals, reduces emissions from idling cars and reduces travel times.
- The park in the roundabout provides a community gathering space downtown and serves as a gateway for those arriving through Normal's new Multimodal Center.
- An underground 75,000-gallon cistern was created by capping and recycling an unused storm main. This cistern collects stormwater runoff from roads for reuse in the water feature.
- Stormwater is cleansed through underground sand and UV filters, then further treated by bog plants in filtration planters that ring the circle and allow visitors to interact with the water feature.
- The above-ground fountain system is gravity-fed, eliminating the need to use energy to pump

water through the park.

- The "reverse-shingle" fountain floor was designed to generate pleasant water sounds that mitigate traffic noise inside the park.
- Underground structural cells provide 67 street trees with generous space for root growth in uncompacted soil, which also absorbs and filters runoff from downtown sidewalks.
- Native plants in the streetscape require less irrigation than traditional ornamentals.
- Benches in the circle are constructed of sustainably-harvested ipe wood.

Challenge

The major challenge was how to redesign a poorly-aligned intersection that divided a declining downtown area in Normal. In addition to poor traffic circulation, the area had outdated stormwater management practices and lacked community gathering space. Despite these challenges, the community was committed to revitalizing its downtown through sustainable urban redevelopment.

Solution

A roundabout with a park at its center was used to improve traffic flow and create a public gathering space. The circle also serves as a gateway to Normal for those arriving through its new Multimodal Center. Sustainable stormwater management was implemented by collecting and reusing urban runoff from two of the radial streets in a bog and fountain feature. The sound of the flowing water also helps to make traffic noise less noticeable.

Cost Comparison

- No information available.

Lessons Learned

- The designers intended the fountain feature to run dry when the underground rainwater cistern couldn't supply it with enough water to flow. Despite community involvement in the design process, a temporarily dry fountain was not perceived by all as desirable, so potable water supplements rainwater to keep the fountain flowing.
- The large capacity of the underground cistern does not supply enough water for irrigation when the climate is abnormally dry. Several years of below-average rainfall during the establishment period of new plantings has led to irrigation with potable water.
- Drip irrigation was replaced with more conventional pop-up sprinkler heads across much of the site due to concern about maintenance issues. Buried drip irrigation lines often emerge from the ground and need to be reburied. Drip irrigation is more efficient than conventional methods, and the substitution of pop-up sprinkler heads may contribute to the water in the cistern being depleted faster than planned.
- Bog plants are intended to fill part of the water feature but have yet to establish dominance. Planted as plugs, the bog plants are easily disturbed by visitors who touch the plants, walk in the bog, or allow pets to walk in the bog. This vulnerability likely contributes to low plant success rates.
- The water feature engages the community in ways even beyond the expected. For example, goldfish were anonymously placed in the water feature and proved to be an aspect enjoyed and protected by the community. Crayfish have also been seen in the water feature.
- While the manufacturer does not specify a minimum size above which the benefits of using underground structural cells outweigh the costs, the benefits of the cells as reported by the manufacturer are based on studies which use a higher volume of soil than the Normal project used. The trade-off between investing money in underground structural cells and maximizing the benefit of installing such cells should be considered. It is possible that spending more money initially to install more cells might lead to realized benefits closer to those reported by the manufacturer, but the Normal project has not been installed long enough to determine this.
- Blending safety features with other design elements resulted in a lack of highly visible pedestrian crossings to access the park at the center of Uptown Circle. On the outside of the driving lane, pedestrian crossings are marked only by a break in the chain hung between bollards -- the color of which makes the break hard to see against the pavers. Marked pavement or the use of a different material at crosswalks into the Circle could make appropriate routes more visible to pedestrians and warn drivers of their presence.
- Litter and debris that collect in the park can quickly clog water filters. To keep it functioning properly, water filtration equipment must be maintained frequently. Local volunteers have extended their litter-cleanup service into the new park.

Project Team

Client: Town of Normal, Illinois
Project Manager: Wayne Aldrich, Town of Normal
Landscape Architect: Hoerr Schaudt Landscape Architects
Subsurface Infrastructure Engineers: Farnsworth Group
Civil and Traffic Engineer: Clark-Dietz
Fountain Consultant: CMS Collaborative
Ecological Consultant: Hey & Associates
Arboriculture Consultant: James Urban, FASLA
Lighting Consultant: Charter Sills
Turfgrass Consultant: Jeffery L. Bruce
Irrigation Consultant: Landtech

Role of the Landscape Architect

As design lead for this significant urban infrastructure project, the landscape architect directed a diverse team of professionals, including civil engineers, architects, ecologists, arboriculturists, lighting, irrigation and fountain consultants. The landscape architect was responsible for creation of the overall vision and structure of the urban system, coordinated the collective expertise of the team, and facilitated communication to achieve a fully integrated design solution.

Case Study Prepared by:

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References & Resources

Hoerr Schaudt Landscape Architects - Uptown Normal Circle

History of the Uptown Redevelopment Plan

DeepRoot - Structural cell photos

Illinois ASLA President's Award - Urban Category, 2010

Additional Images

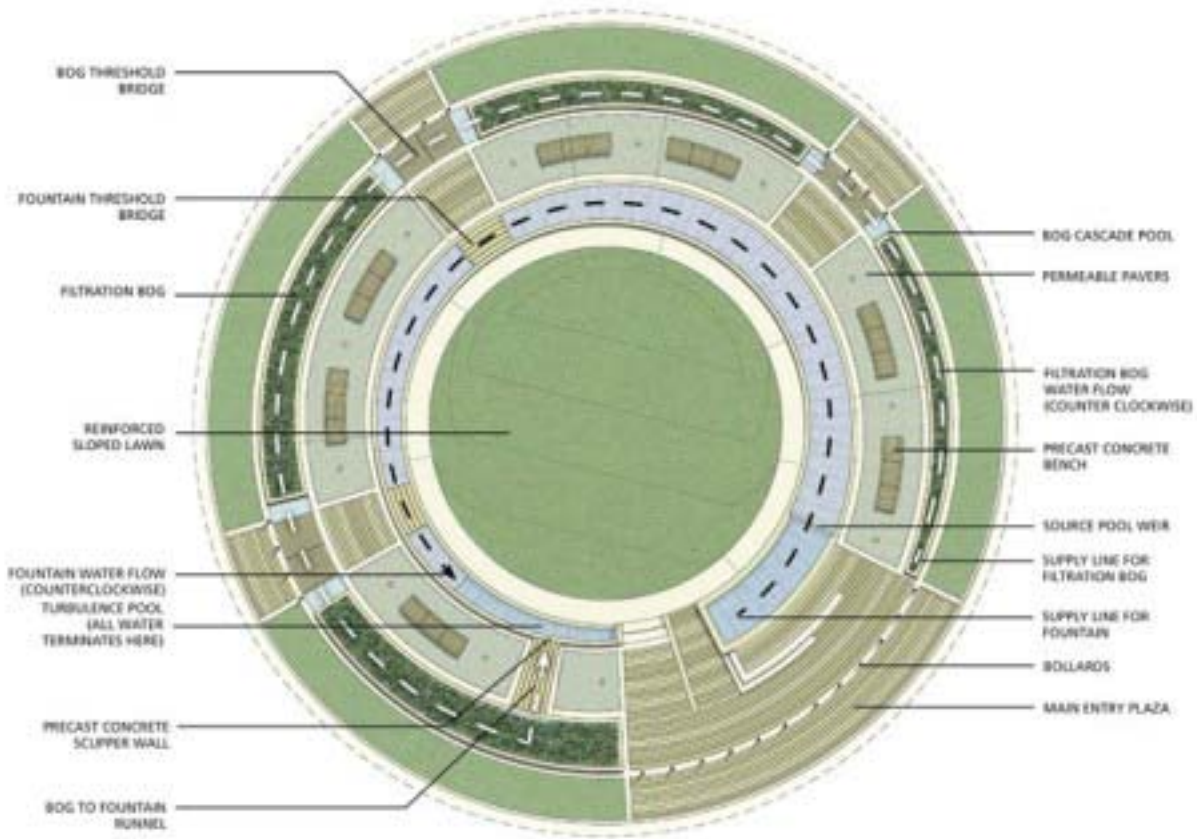














- DETENTION/CISTERN SUPPLY FROM STORAGE/TANK
- DISPLAY FOUNTAIN SUPPLY
- DISPLAY FOUNTAIN RETURN
- RETENTION SOIL SUPPLY
- IRRIGATION/SUPPLY



REINFORCED
FLAP
ARCH
|
FILTRATION
SOIL
|
TREE RING
|
FOUNTAIN
CIRCULAR
WELL
|
STERILE
AREA

REINFORCED TO FEEL
LAWN

INTERIOR
PATH
|
FOUNTAIN
TURBULENCE
POOL
|
FUNNEL
TO SCUMPS
WELL
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FILTRATION
SOIL
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ARCH

