



(Political?) Economics of Stormwater

Illinois Association of Floodplain and Stormwater Management

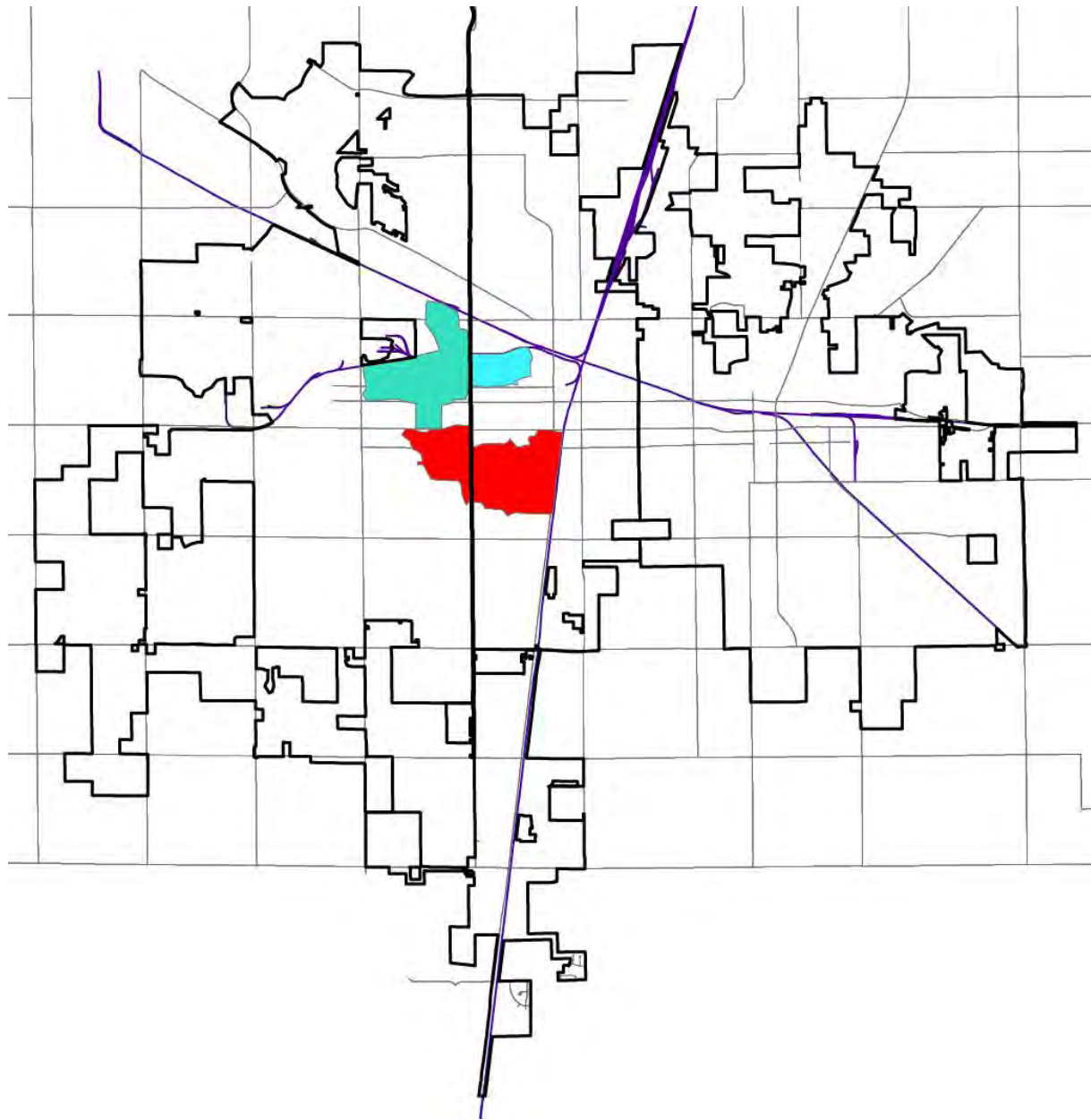
October 25, 2011

Gale Fulton, Assistant Professor of Landscape Architecture, University of Illinois at Urbana-Champaign

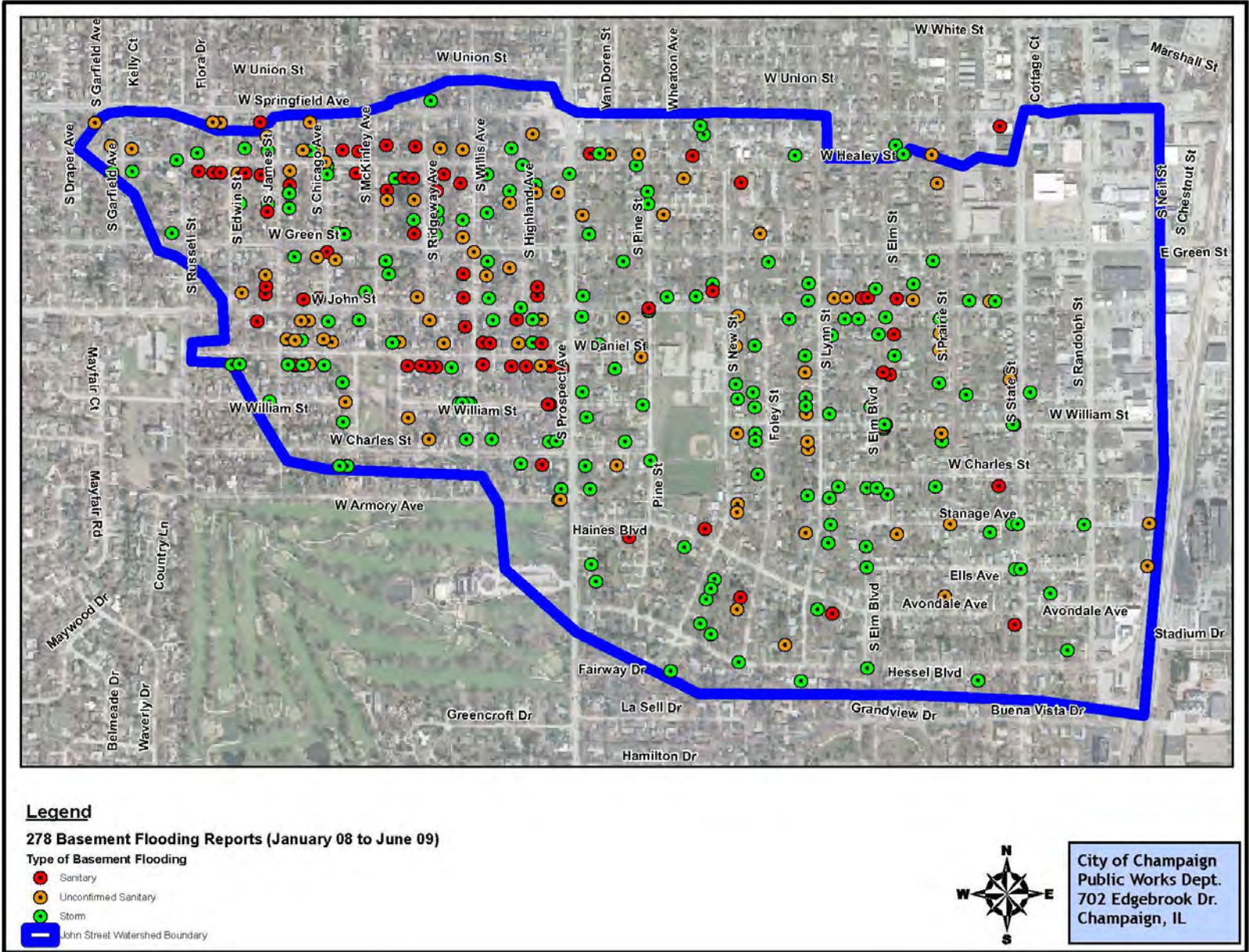


Lynn St. mid-block between
John St. & Green St.

John Street Watershed



Context – Distributed Flooding

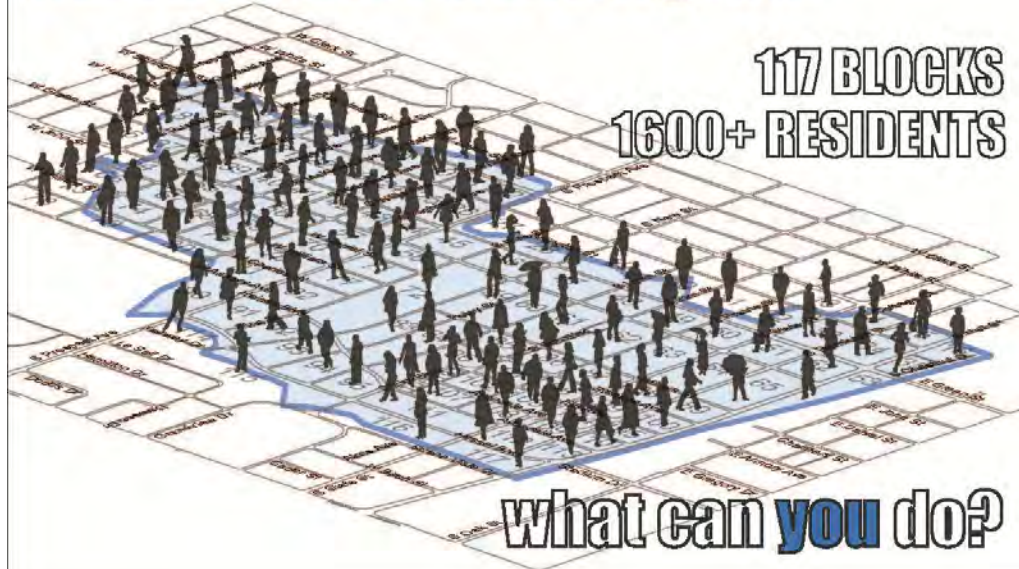


Public Workshops



What: John Street Watershed Public Meeting
When: 5:30-8:30pm March 16, 2010
Where: Champaign Public Library
Who: Neighborhood Residents, U of I faculty & students, City of Champaign Staff
Why: To develop strategies for addressing the area's stormwater problems

stormwater strategies



Context - Towards 'Infrastructure Lite' Burnsville, MN Study

Figure 2 Treatment Watershed Rainwater Garden Layout



Image: Burnsville Stormwater Retrofit Study, 2006

Pre-construction (2002-2004)

28 rainfall events = 23.77 inches total

Control (7.5 ac) = 153,313 cu. ft. runoff

Treatment (5.5 ac) = 111,120 cu. ft. runoff

Post-construction (2004-2005)

48 rainfall events = 18.97 inches total

Control (7.5 ac) = 151,897 cu. ft. runoff

Treatment (5.5 ac) = 7,861 cu. ft. runoff

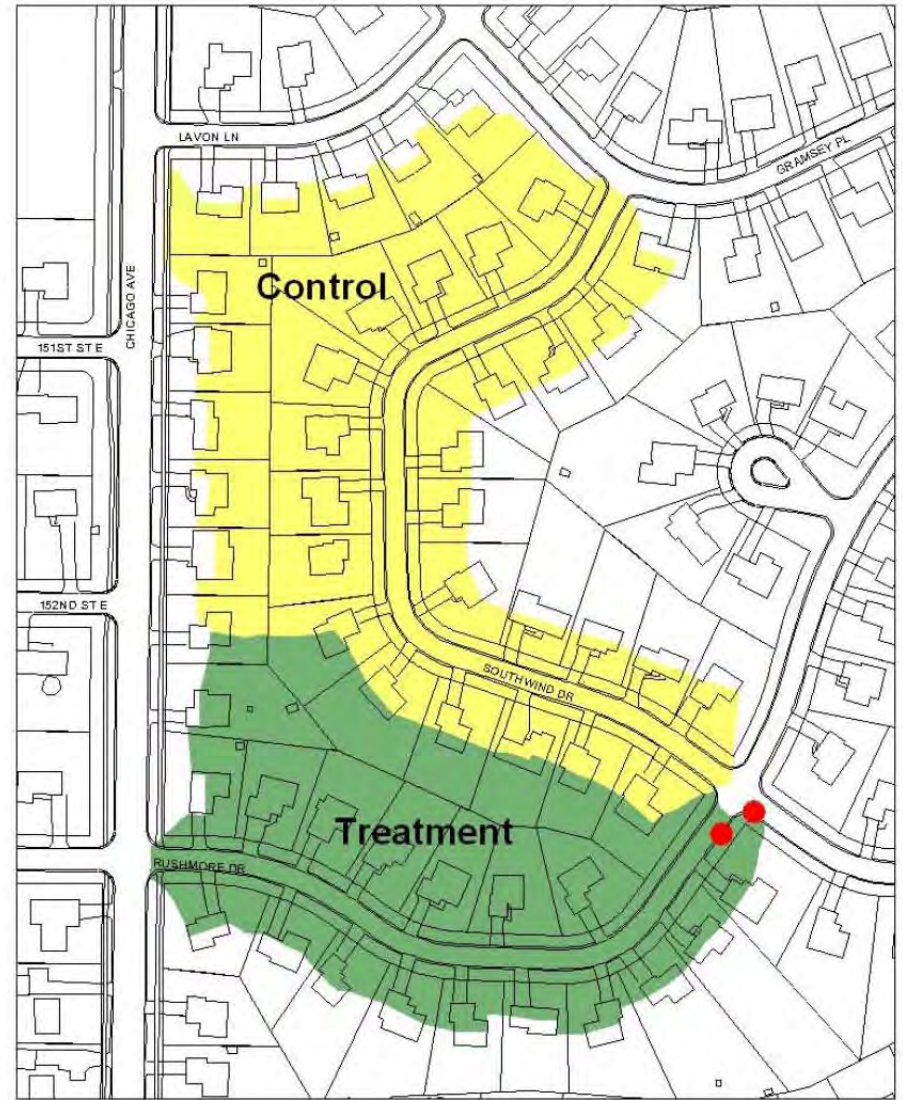
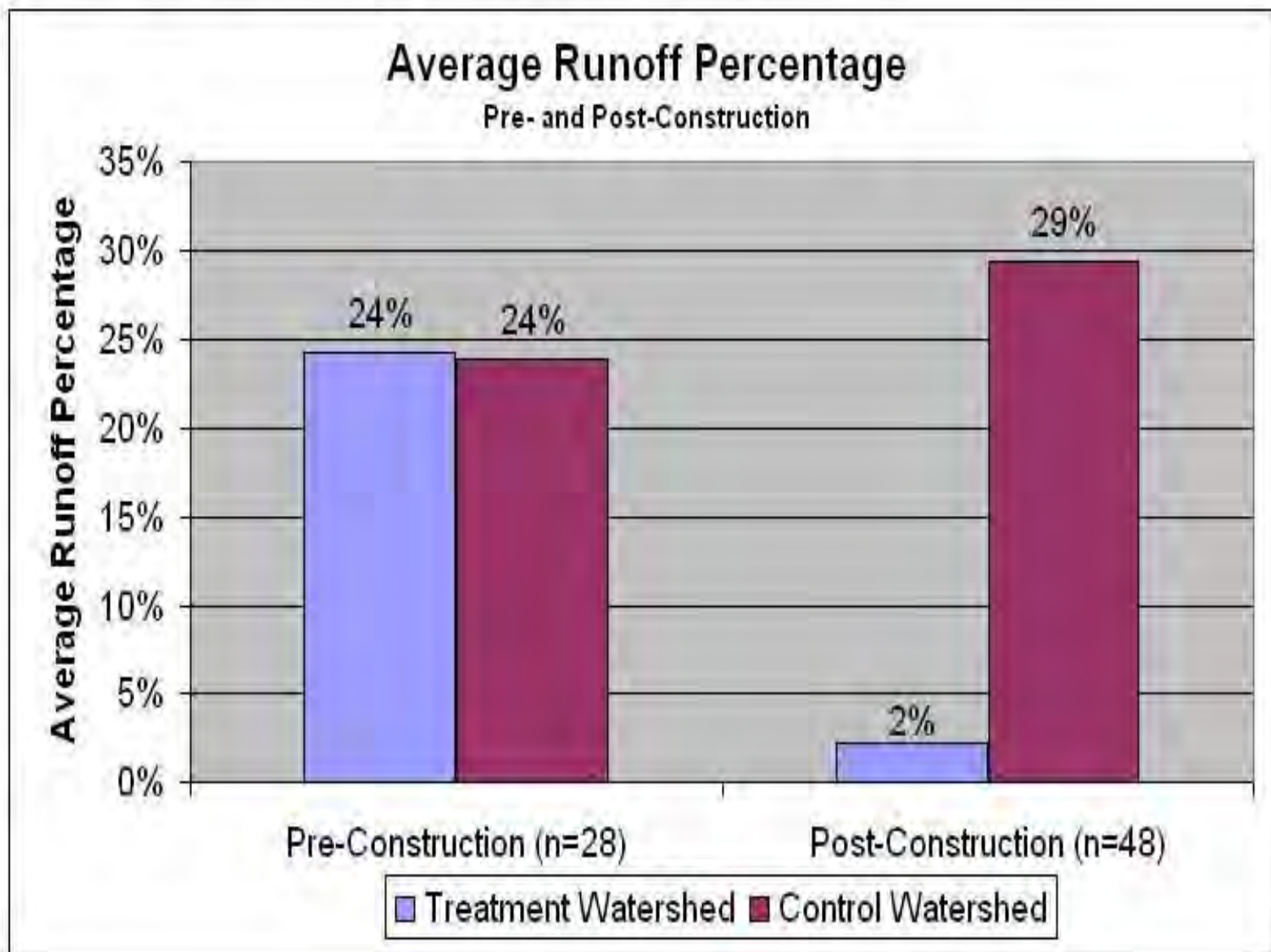


Image & Stats: *Burnsville Stormwater Retrofit Study, 2006*

Figure 7 Runoff Volume Reduction Associated with Rainwater Gardens



Minimal Interventions





Storm Sewer Improvements

Cost = \$6.1 million



Willis Ave.

Prospect Ave.

John Street

Prairie Street

Neil Street



New 60-inch Storm Sewer
Completed November 2010



New Storm Sewer
Construction Starts Spring 2011

John Street Improvements



John Street

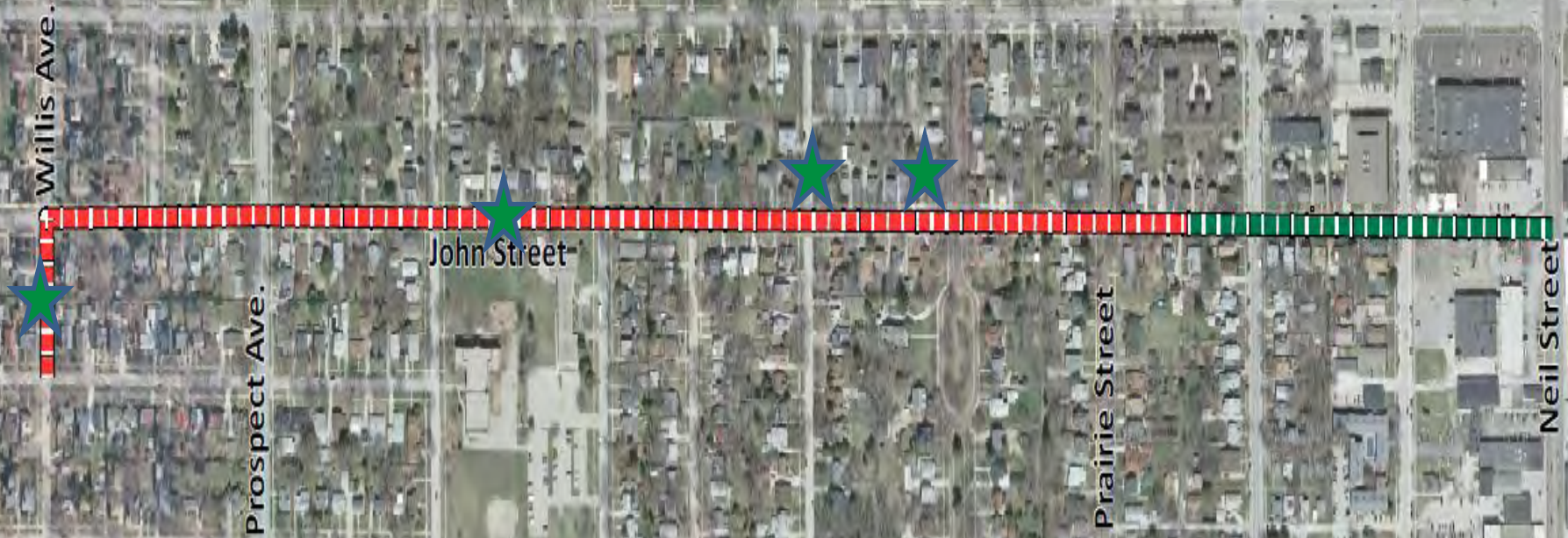


John Street



Green Improvements

Cost = \$498,437



 New 60-inch Storm Sewer Completed November 2010

 New Storm Sewer Construction Starts Spring 2011

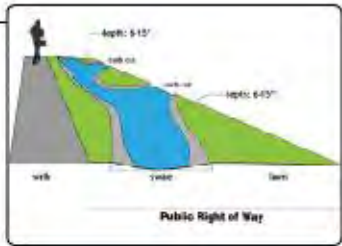
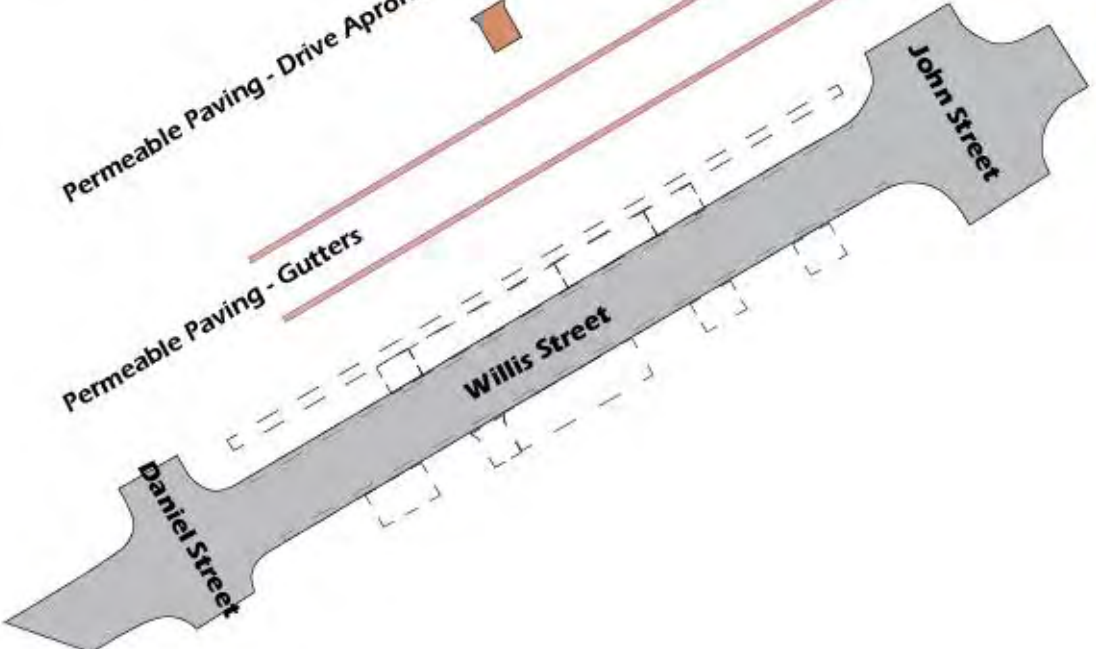
System Components

Raingardens/Bioswales

Permeable Paving - Walks

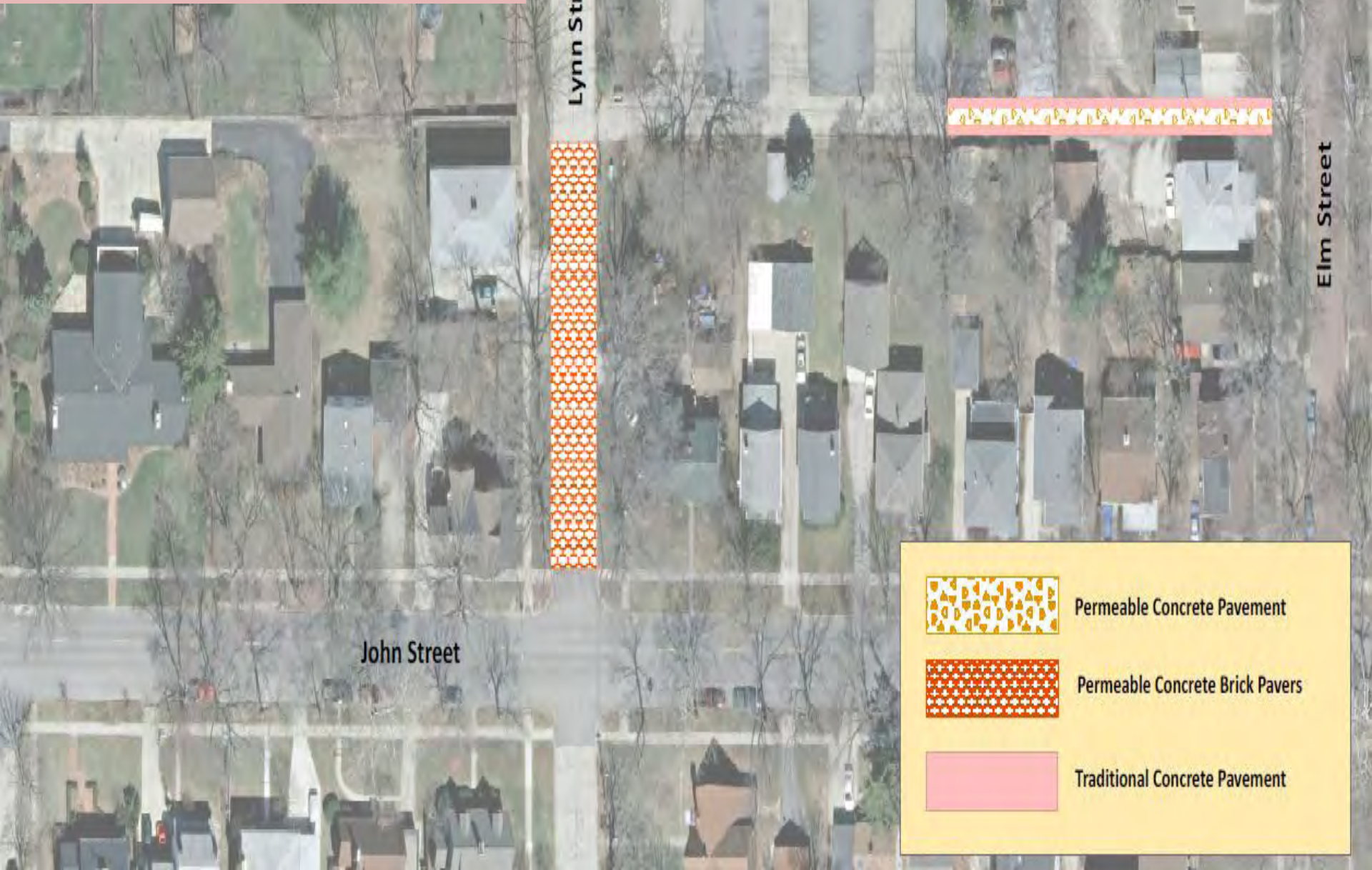
Permeable Paving - Drive Aprons

Permeable Paving - Gutters



Plan

Green Improvement
Permeable Pavements
(Cost - \$213,221)



Lynn Street

Elm Street

John Street

-  Permeable Concrete Pavement
-  Permeable Concrete Brick Pavers
-  Traditional Concrete Pavement

Permeable Paving Installation



Green Improvement

Rain Garden

Permeable Sidewalks

(Cost - \$101,545)



John Street



Pine Street

New Street

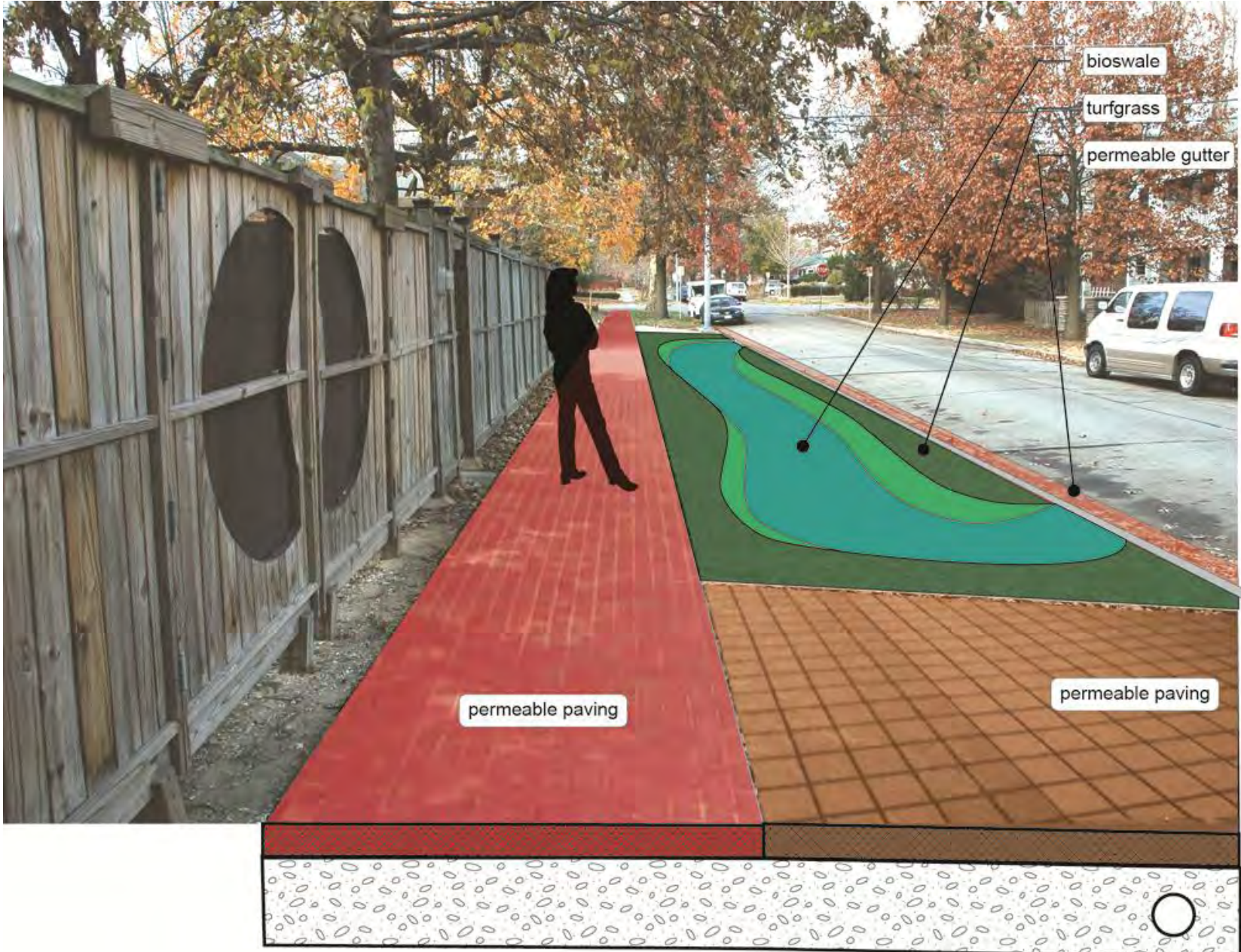


Rain Garden



Permeable Concrete Sidewalk

Bioswale-Raingarden Prototypes (for discussion)



Bioswale-Raingarden Prototypes (for discussion)

1. Ornamental Plantings



Green Improvement

Rain Gardens

Permeable Sidewalk & Gutters

(Cost - \$183,673)



John Street

Willis Avenue

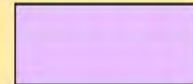
Daniel Street



Rain Garden (Continuous Approach)



Rain Garden (Island Approach)

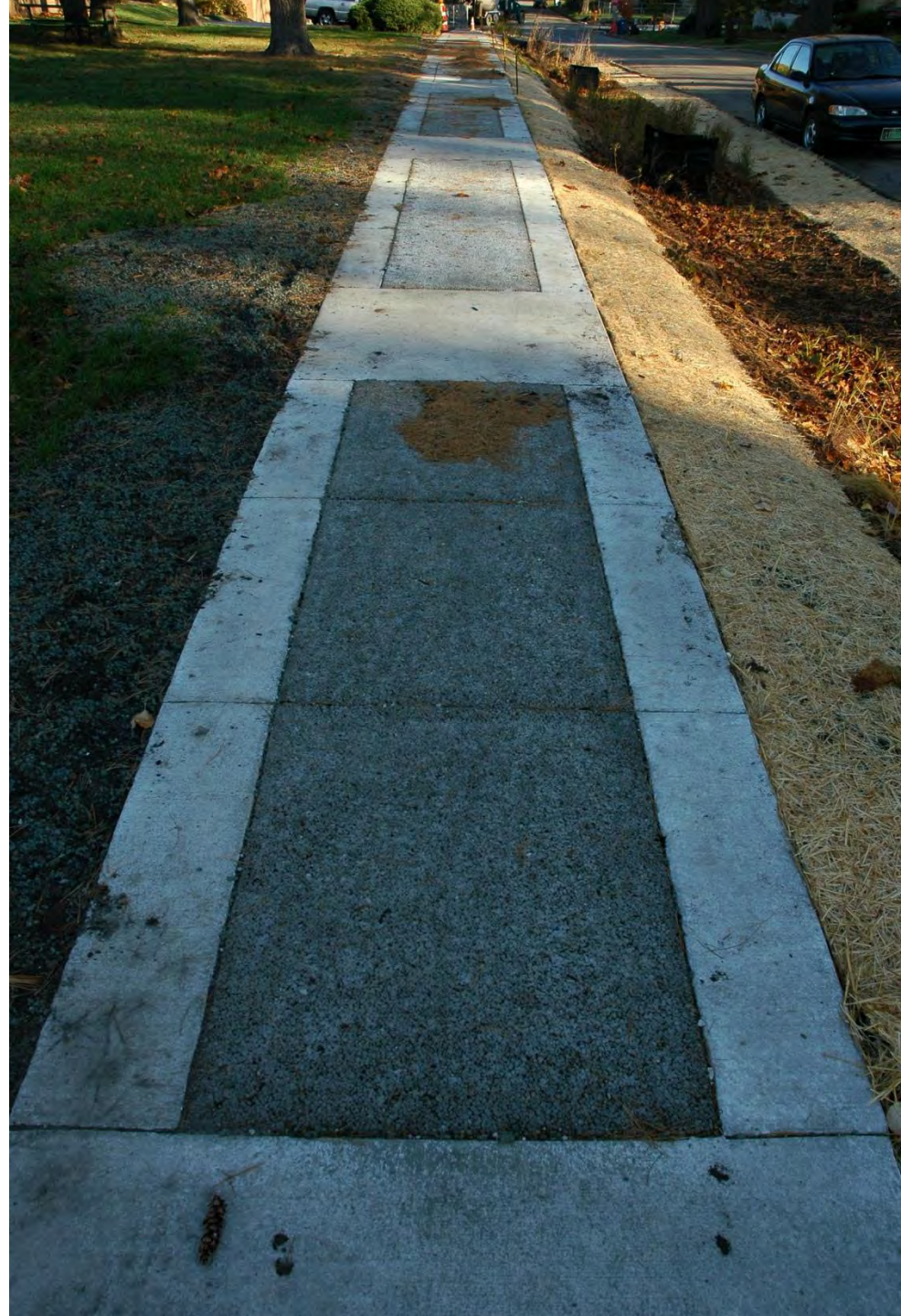


Permeable Concrete Sidewalk



Permeable Gutter

Permeable Concrete



Green Improvements (IEPA Loan)

ITEM	COST
Construction	\$926,095
Design Engineering	\$92,610
Construction Engineering	\$92,610
Contingency	\$92,610
Total Cost	\$1,203,925

- **1.25% Loan And 25 % Loan Forgiveness (\$300,981)**
- **Total Amount Borrowed At 1.25% (\$902,944)**

Recommended ROW for IEPA Grant Process

Selection Criteria (this group):

- Workable Slopes
- Minimal or No Tree Cover
- Aesthetic Potentials for Building
- Less foot traffic due to Admin program

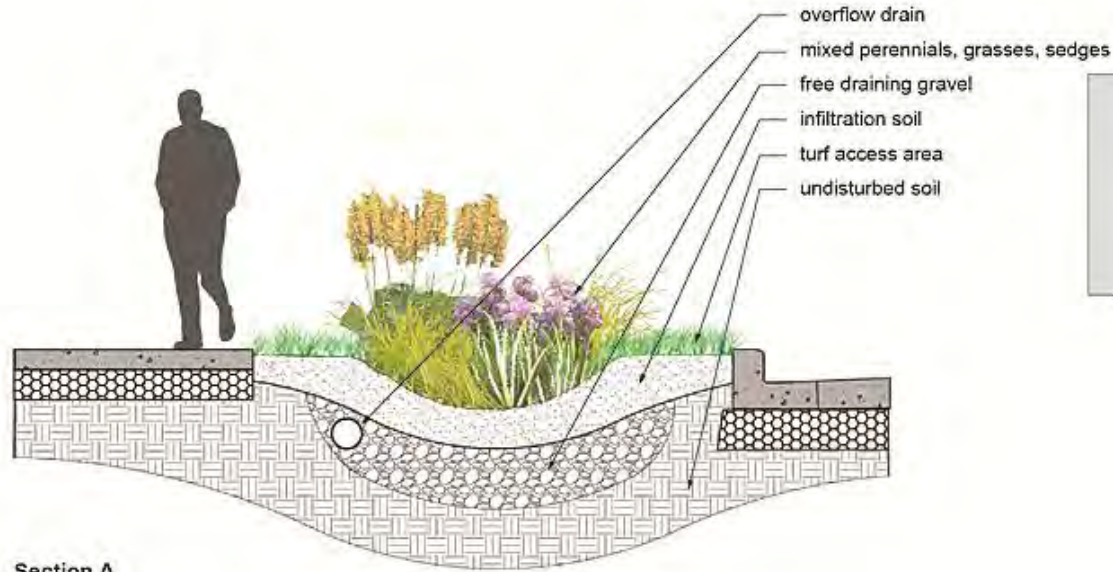


Site Analysis

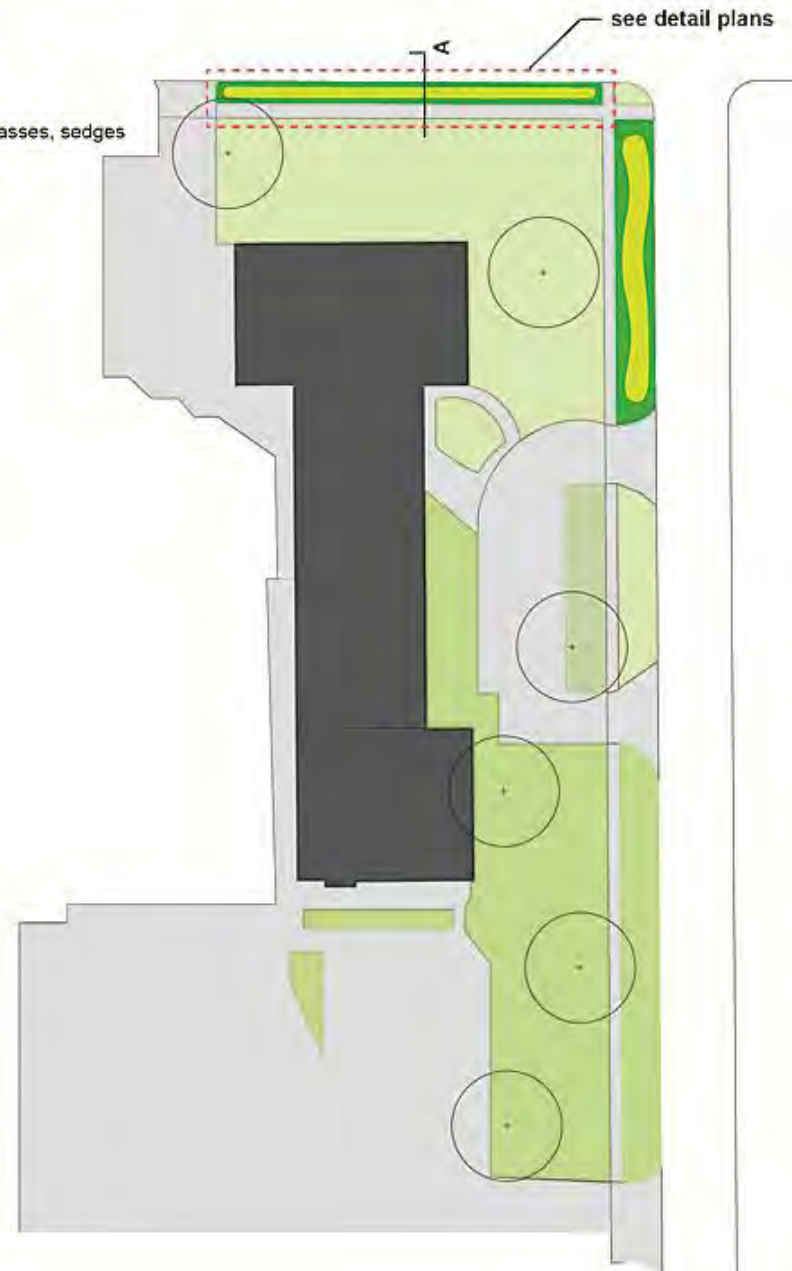
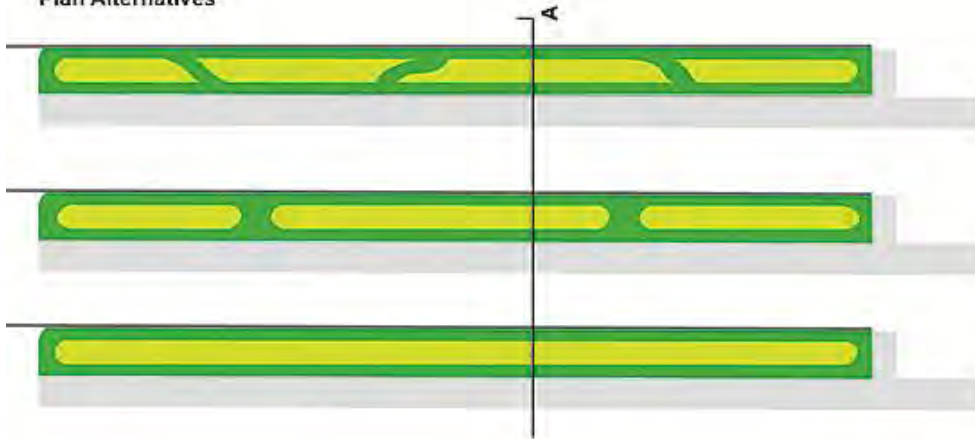


South Side Prototypes (for discussion)

1. Ornamental Plantings

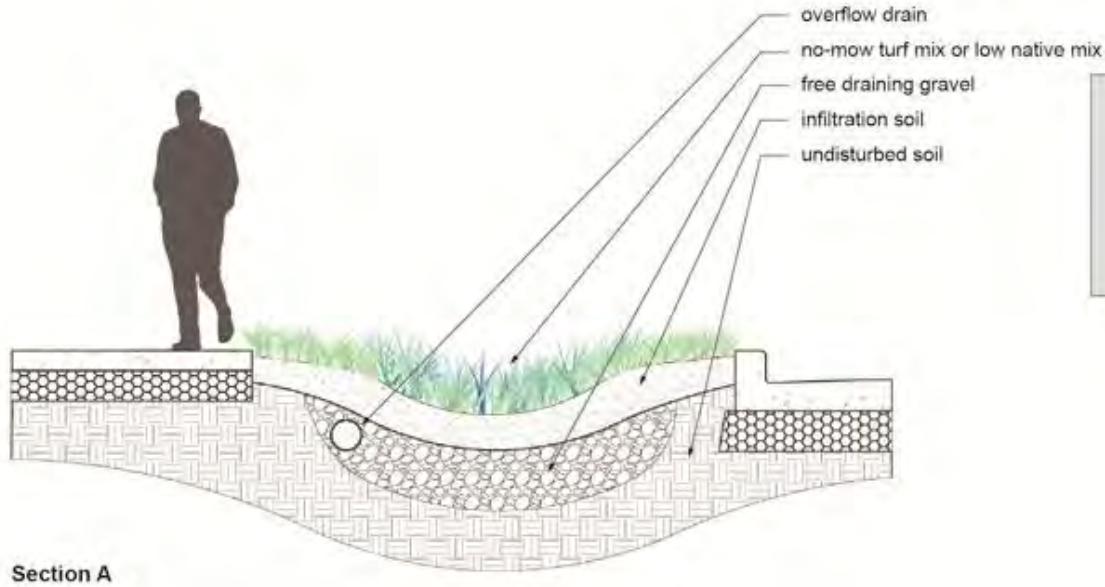


Plan Alternatives

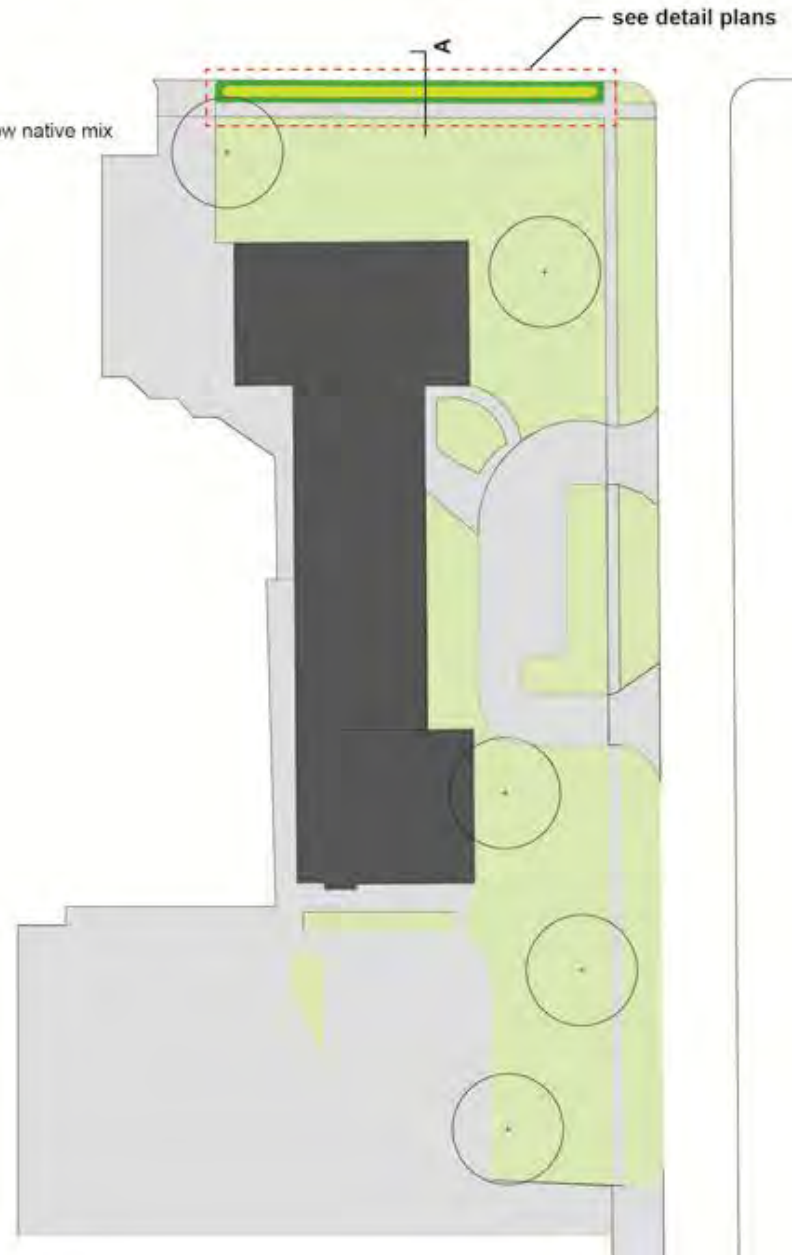
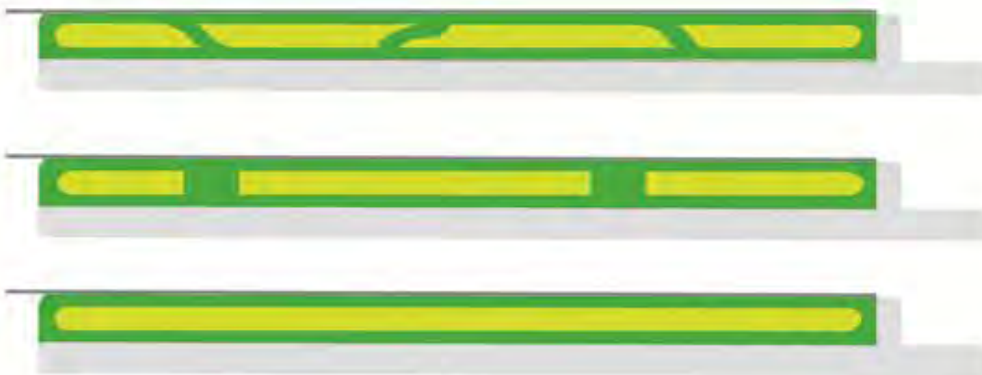


South Side Prototypes (for discussion)

2. No-Mow Mix

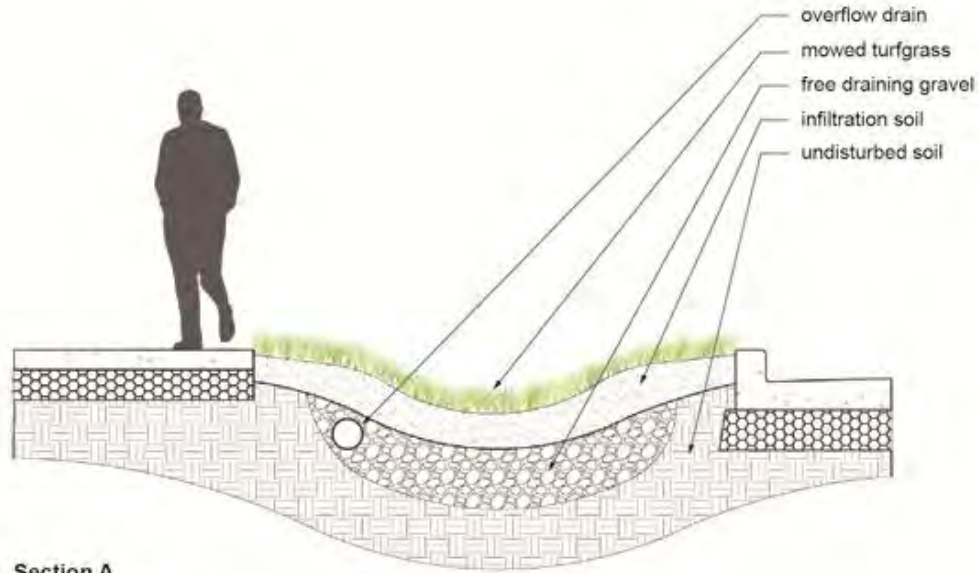


Plan Alternatives

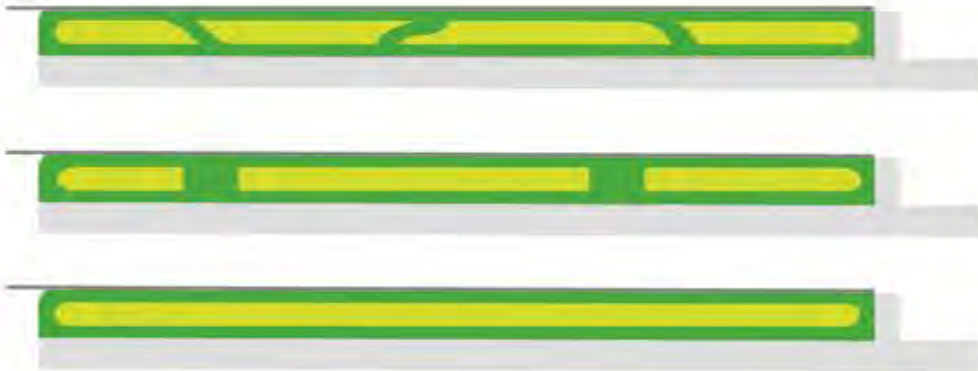


South Side Prototypes (for discussion)

3. Low-Maintenance Turf



Plan Alternatives





before



bioswale

permeable paving

permeable paving

permeable paving

infiltration gravel/sub-base



permeable paving

Entry Drive Area



Entry Drive Area



John Street Drainage Improvement (Green Stormwater Improvements)



City of Champaign
Public Works Dept.
702 Edgebrook Dr.
Champaign, IL 61820

-  Permeable Concrete Brick Pavement
-  Permeable Concrete Sidewalk
-  Rain Garden Areas
-  Permeable Concrete Alley Pavement
-  Permeable Concrete Curb/Gutter



Approximate Costs of “Green Items” (not including mobilization):

Sanitary Items: \$315,866

Permeable Pavements/Sidewalks, etc: \$112,183

Rain Gardens: \$113,346



W John St

S Pine St

Foley St



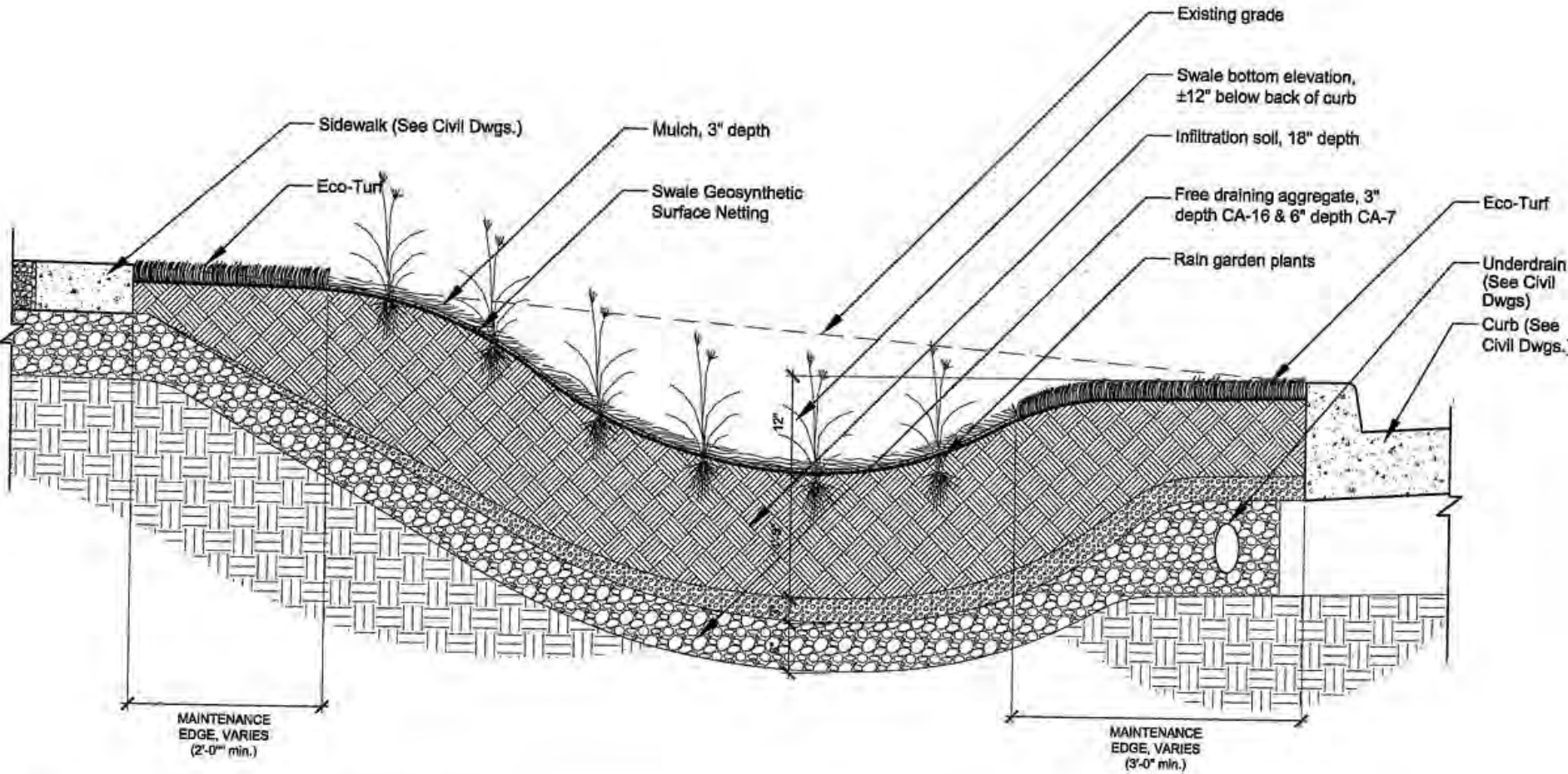
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City of Champaign
Public Works Dept.
702 Edgebrook Dr.
Champaign, IL 61820

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ROW - Bioswales



1

New Street Typical Section

Scale: 1" = 1'-0"

ROW Bioswales - Installed

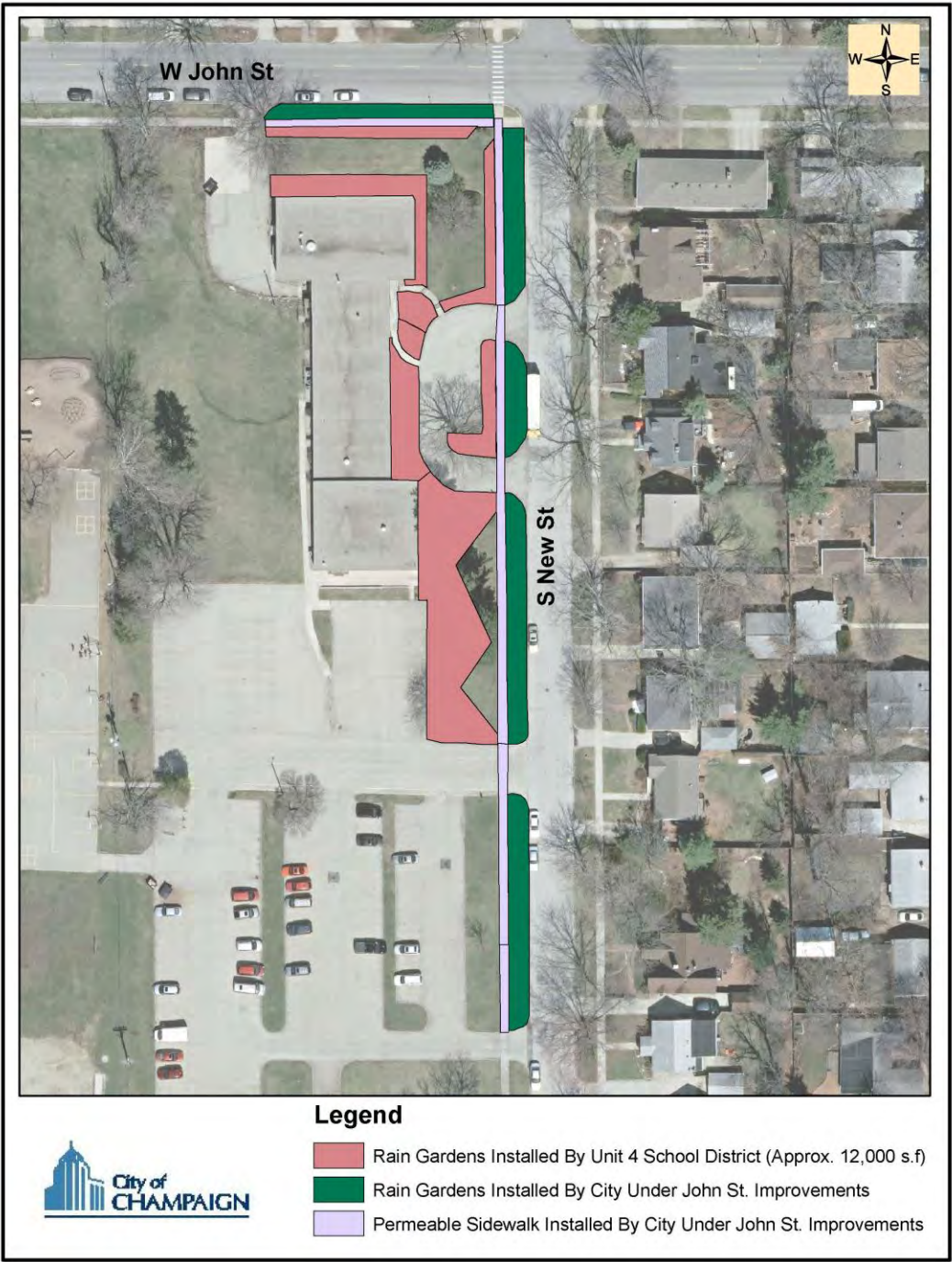


ROW Bioswales - Installed

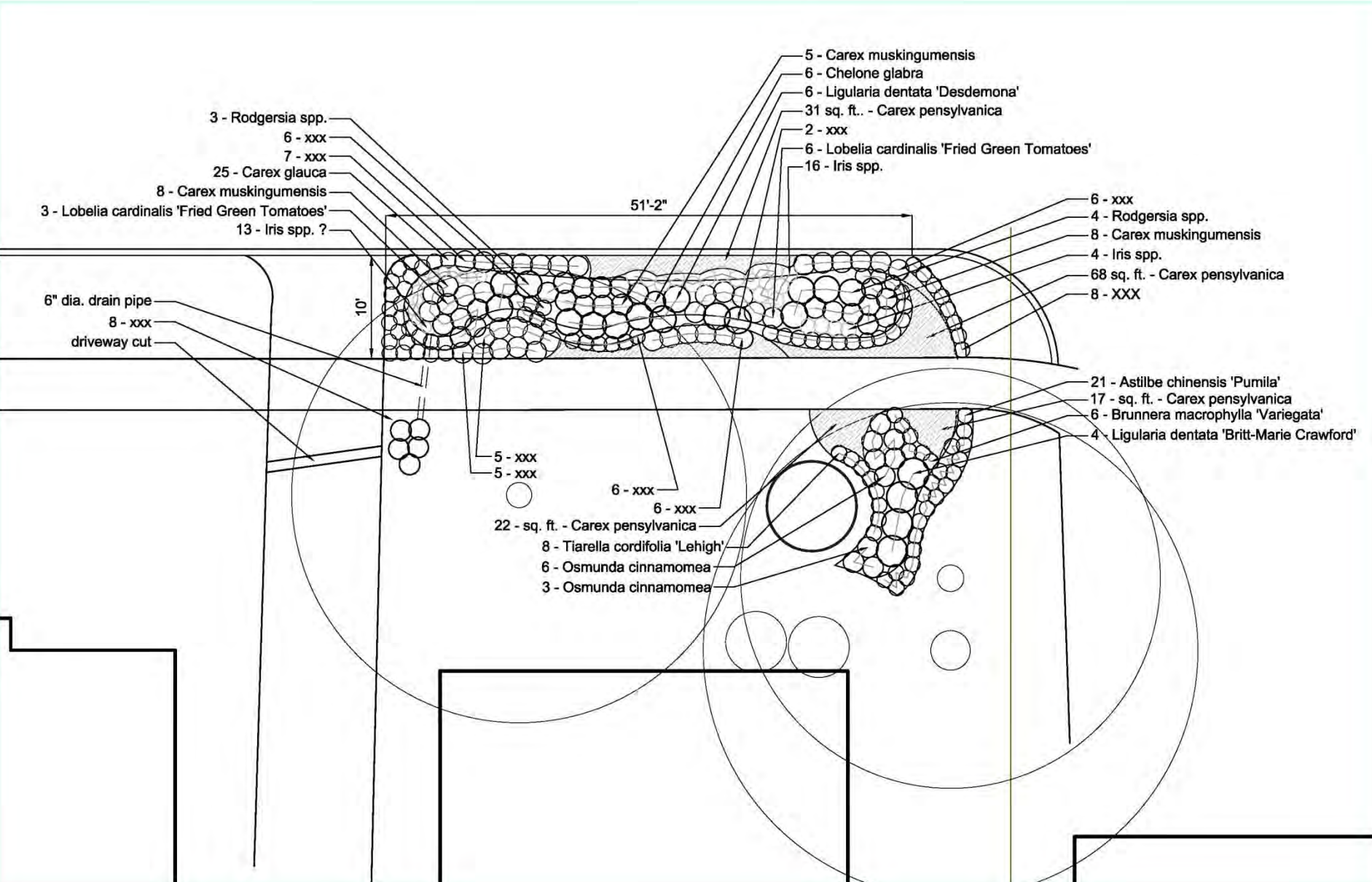


Bioswales & RainGardens at South Side School

**Approximate Cost:
\$104,010
(w/o mobilization)**



Bottom-Up Bioswales



Before



Site Work: \$400-500



Political Ecology



Political Economics



**Approximate Cost: \$2,000
(w mobilization)**

The City is proposing conventional improvements to stormwater and sanitary sewer piping systems. These improvements will cost in the range of \$3M to \$4M. Funding has not currently been secured for these large scale conventional solutions.

--John Street Watershed RFP

“The World Bank knows how to spend a billion dollars in one place, but it doesn’t know how to spend \$1,000 in 1,000,000 places.”

--Flow