

# City of Seven Hills Proposed Streetscape Project



## Green Infrastructure in Northeast Ohio

Presented by:  
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City Engineer

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### Topics

- Mayor David Bentkowski's Vision
- Council's vision
- General Scope of Work
- Obstacles
- Ideas and Concepts
- Design Considerations
- Final Design
- Costs

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Seven Hills needs Identity  
Attract New Tenants  
Better Utilize the existing Broadview Road Corridor  
Need to Compliment The New Street Signs  
Something Larger than the 90% Recycling Participation  
Something Even Better Than Whitetopping  
Increase Tax Base & Property values  
Attract New Developers  
Sell City Vacant Land

under  
**Construction**  
THE VISION

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**Mayor's Vision**



New City Streetscape along Broadview Road  
Business District

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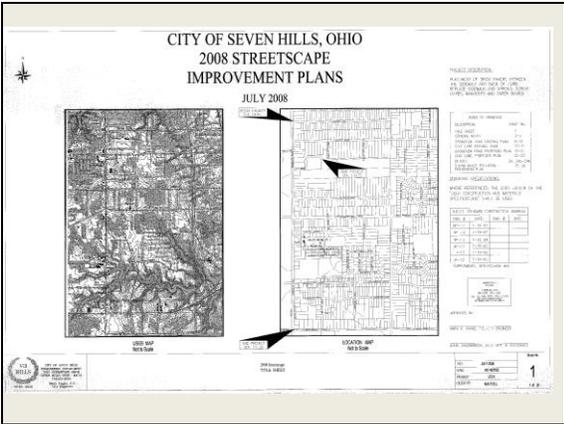
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**CITY OF SEVEN HILLS, OHIO  
2008 STREETScape  
IMPROVEMENT PLANS**



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**City Council's Vision**



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## Funding Tax Increment Financing (TIF)



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## Meeting at the Mayor's Office...



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## General Construction Scope of Work

- Remove existing tree lawn areas consisting of grass, stone, and asphalt.
- Install new brick in tree lawn areas.
- Plant new trees.
- Replace existing concrete sidewalks and apron.
- Repair damaged curbs and inlets.
- Install ADA compliant curb ramps.
- Create a new image for Civic Drive entrance.

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**Obstacles**

- Average tree lawn width 5'
- Low overhead wires.
- Find trees that can survive a harsh environment of snow plowing and salting.
- Provide tree lighting.
- Meet NPDES permit requirements.
- Not much Right-of-Way for detaining storm water or for SW BMPs.
- Trees must be spaced not obstruct vehicle traffic.

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**Idea**

- Use the tree planting areas as the detention area & SW BMP

**Concept**

- Make every tree planting area a small Bioretention cell
- Each cell will hold water for maximum 40 hours
- Treated water will be either used by the tree or it will drain via a 4" diameter perforated pipe placed in the cell to new 6" diameter curb drains
- Overflow will direct to CBs

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**Bio Retention Cell Cons**

- Providing electricity for tree lighting

**Solution**

- Utilize solar powered string lights
- The Engineering Department evaluated five (5) solar powered string lights suppliers.
  - ✓ Solar Light Store - Solar String Lights-102 LEDs

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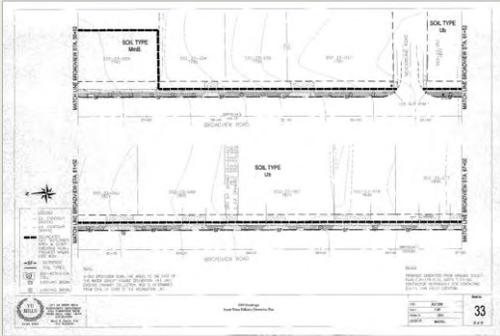
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### Design Considerations




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### Bioretention Area and Drawdown Calculation

- Taken from Ch.2 Post Construction Management Practices page 77 Ohio Rainwater and Land Development Guide 3<sup>rd</sup> Edition
  - $A = (WQV * ds) / [(k) * (hs + ds) * (ts)]$
  - A = surface area required (sf)
  - WQV (Water Quality Volume) = Area provided \* depth = 2900 \* (6/12) = 1450 cf
  - ds (planting soil depth) = 2.5 ft
  - k (soil permeability) = 0.5 ft/day (Sandy loam) ~include future clogging
  - Hs (half of ponding depth) = (6/12) / 2 = 0.25
  - ts (filter bed drain time) = 40 hrs required = 1.66 days
  - $A = (1450 * 2.5) / [(0.5) * (0.25 + 2.5) * (1.66)] = 1,588 \text{ sf}$
  - ✓ Area Provided = 2,900 sf > Area required 1,588 sf OK
  - 92 Bio Retention Cells

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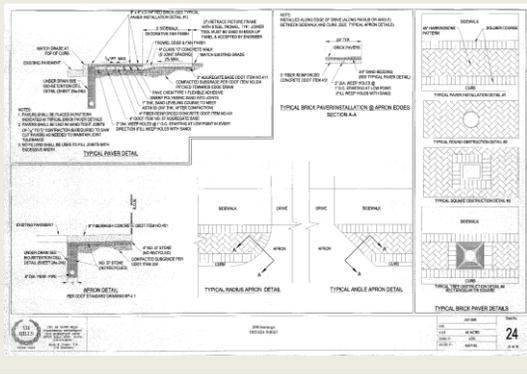
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### Typical Streetscape Sections




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**Tree Selection**



Skyline Honeylocust



Shademaster Honeylocust

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**Tree Selection**



Queen Elizabeth Hedge Maple

Landscape Tree Fact Sheets  
3<sup>rd</sup> Edition

Penn State

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**2008 Costs**

Bid Prices

Bio Retention Cell – Average \$543 per cell

Tree Structural Soil – Average \$119.75 per CY

Total Project Costs (1.56 miles of streetscape)

Engineer's Estimate \$1,894,000

Lowest Bid with 10% Contingency - \$1,485,915.00

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**Project Consultants**

- Alan Siewert, Urban Forester
  - Tree Selection
- Todd Houser, Cuyahoga Soil and Water Conservation District
  - Assistance with concepts and SW BMP selection
- Brian Uhlenbrock, ASLA - Neff & Associates
  - Final Plan Review and Finalize Arch concepts

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**Contact**



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