Demonstration Garden & Learning Center

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Making St. Louis a cleaner, greener, better place to live!
Tools to care for community garden
Fresh Starts Garden
Neighbors Naturescaping Workshop
Called in the Marines
Lots of Work to be Done
Built Bridge over Rain Garden
Brightside Demonstration Garden & Learning Center

A Low-Impact Development (LID)
LID: an approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible.
Goal: mimic the pre-development hydrology
Pre-development Hydrology

Diagram: Perry Eckhardt
Post-Development Hydrology

Diagram: Perry Eckhardt
BRIGHTSIDE’S LID PRACTICES

- Silva Cells
- Rain barrels
- Porous asphalt
- Porous concrete
- Permeable pavers
- Native plants
- Structural Soil
- Rain garden & bioswale

Conceptual plan by SWT Design
Pervious Pavements
Porous asphalt

Porous concrete

Permeable pavers
Rain garden & Bioswale

Brightside St. Louis

Wetland at Forest Park
Native Plants

Photo: Perry Eckhardt
Benefits of Native Plants:

- Adapted to local climate
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- DEEP ROOTS
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- Low maintenance
Traditional vs. Native Landscapes

Whitmire Wildflower Garden
Shaw Nature Reserve
Benefits of Native Plants:

- Adapted to local climate
- DEEP ROOTS
- Low maintenance
- Wildlife habitat
I love TREES!!!!!
Brightside
St. Louis
Demonstration
Garden – Community Forestry and Native Plant (Ecosystem) Demonstrations
Demonstration Concepts

- Trees and sustainable landscapes and their economic importance
- Creating proper growing conditions for plants (trees) to be successful in an urban environment
  - Right plant/right place concepts
  - Providing adequate space for urban trees
“Trees never knew complete removal of trunks, machine compaction of soils, sudden changes in water drainage patterns due to roads, pollution, and disruption of niches for soil organisms...These actions have come *suddenly*. They are being *repeated*.” – Alex Shigo, *A New Tree Biology*
Landscape Economics

- High resource inputs
- Low economic return
- Decaying ecosystem
- Typically encourages infrastructure problems (e.g. stormwater)
Get started with these easy steps:

Enter your tree's species:  
Ash, Green

Note: If you're looking for a Willow Oak, it's listed as "Oak, Willow". If your tree isn't listed, use the general "Other" listings.

Enter how wide (diameter) your tree is at 4.5 feet above the ground: _____ inches.

Note: This measurement is what foresters call "diameter at breast height".

Enter what type of condition best describes your tree: Fair

Check here if you would like to evaluate energy effects: ☐

Calculate Benefits
Your 6 inch Ash will intercept 697 gallons of stormwater this year.

Urban stormwater runoff (or "non-point source pollution") washes chemicals (oil, gasoline, salts, etc.) and litter from surfaces such as roadways and parking lots into streams, wetlands, rivers and oceans. The more impervious the surface (e.g., concrete, asphalt, rooftops), the more quickly pollutants are washed into our community waterways. Drinking water, aquatic life and the health of our entire ecosystem can be adversely affected by this process.

Trees act as mini-reservoirs, controlling runoff at the source. Trees reduce runoff by:

- Intercepting and holding rain on leaves, branches and bark
- Increasing infiltration and storage of rainwater through the tree's root system
- Reducing soil erosion by slowing rainfall before it strikes the soil

For more information see the USDA Forest Service's Community Tree Guide series.
Your 20 inch Ash will intercept 4,571 gallons of stormwater this year.

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if we know trees
(especially big ones)
are important,
then how do we
successfully
manage them?
elements that affect plant growth

- sunlight
- oxygen
- carbon dioxide
- soil texture (sand/silt/clay)
- temperature
- available water
- available nutrients
- soil structure (how a soil hangs together)
- available space
Leibig's Law of the Minimum

Amount of energy production (growth, etc.)

Minimum

rooting space, Oxygen, sunlight, nitrogen, water

Leibig's Law of the Minimum
Limiting Factors?
Soil/Rooting Space
ROOTS...the real picture
the effect of soil volume on tree growth

Willow oaks planted at the same time on Pennsylvania Avenue, Washington, D.C. Left, trees in tree pits, right trees in open grassed area.
Example: A 16 inch diameter tree requires 1000 cu ft of soil.
structural soil
Because of insufficient nutrients, oxygen, & water in the tree lawn, tree A will grow roots underneath the sidewalk to reach Area B. Unfortunately, that will likely damage the sidewalk.

To avoid this problem, Brightside invested in **STRUCTURAL SOIL** & placed it beneath the concrete.

Structural soil provides adequate engineering support AND allows tree roots to pass freely underneath the concrete, avoiding costly maintenance that will harm the tree's health.
suspended pavement
Silva Cells

- Height: 16" (400 mm)
- Width: 24" (600 mm)
- Length: 48" (1200 mm)
right tree (plant) / right place
species selection:
moisture
soil
aspect
space
light
species selection: NATIVES
Glades are open, rocky areas with thin, dry soils. Glade plants are suitable for sites with poor soil that receive sunlight and little moisture.

Missouri glade plants that are commonly used in landscaping projects include:

- Little bluestem: *Schizachyrium scoparium*
- Missouri coneflower: *Rudbeckia missouriensis*
- Fragrant sumac: *Rhus aromatica*
- Blue false indigo: *Baptisia australis*
- Missouri primrose: *Oenothera macrocarpa*
- Purple prairie clover: *Dalea purpurea*
- Yellow coneflower: *Echinacea paradoxa*
- Blazing star: *Liatris squarrosa*
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Questions?

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