Green Streets Overview
What Color is Your Infrastructure
Kelly Karll, P.E.
Green Streets

A Design Guide for Implementers and Reviewers

Low Impact Development Manual for Michigan
What are Green Streets?

Green Streets transform impervious street surfaces into landscaped green spaces that capture stormwater runoff and let water soak into the ground as plants and soil filter pollutants.

Green Streets redirect stormwater from entering pipes to being utilized as a resource that replenishes groundwater supplies. They also create attractive streetscapes and urban green spaces, provide natural habitat, and help connect neighborhoods, schools, parks, and business districts.
The Stormwater Issue

- Impaired water quality
- Less groundwater recharge
- Increased flooding and property damage
- Decreased recreational opportunities
- Loss of fisheries and habitat
Multiple Outcomes

- Local Benefits
  - Site specific stormwater management
  - Attractive streetscapes
  - Urban green spaces
  - Greenways connections
  - Thermal pollution reduction
  - Enhanced property values
  - Energy savings

Source: Portland, Oregon
Multiple Outcomes

- Regional Benefits
  - Attractive Environmental Assets
  - Fiscal Sustainability
  - Quality Infrastructure
  - Desirable Communities
  - Economic Prosperity
Road Runoff & Green Streets

- SEMI Roads – Largest runoff contributor – over 1 billion gallons annually

- Existing & Future State & Federal Requirement (NPDES Phase II Program)

- Manage smaller, more frequent rain events

- Work with Complete Streets requirements

Source: Philadelphia, PA

Source: NRDC
Overarching Regional Plans

- **Direction2035**
  - Strategically improve the transportation infrastructure to enhance community and economic vitality.
  - Promote a safe and secure transportation system.
  - Protect the environment, both natural and built.

- **Watershed Management Plans**
  - Reduce stormwater runoff volume
  - Improve water quality
  - Enhance natural resources for habitat improvements
  - Increase recreational opportunities – connect residents to natural resources
What are green infrastructure practices?

- Low Impact Development (LID)
- Manage rainfall where it lands
- Techniques that infiltrate, store, evaporate, filter &/or detain stormwater runoff close to where it originates
- Remember your hydrologic cycle – let’s mimic nature!
- EXAMPLES....
Porous Pavement - Easy Street – Ann Arbor

Kresge Foundation - Cistern & Pavers
Parking Lot Rain Garden & Bioswale

Macomb County, Michigan
Green Streets – Before/After Concepts
Green Streets – Before/After Concepts
Challenges

- FUNDING!!!
- Integrate into Road Standards
- Limited space
- Extensive Impervious surfaces
- Potential for spills
- Deicers
Funding Possibilities

- Downtown Development Authority
- State Revolving Fund
- Great Lakes Restoration Initiative
- EPA Section 319

Portland, Oregon
Funding Strategies for Green Streets

- Early Planning Process
- Project List Next 2 – 5 Years
- Evaluate Opportunities / Outcomes for each Project
- Federal Aid Roads: Include Stormwater Management
- Coordination with Watershed Planning Groups
- Connect to other Outcomes
IDENTIFYING GREEN STREETS OPPORTUNITIES

Portland, Oregon
Current SEMCOG Grants for Green Infrastructure

- Detroit Combined Sewer Overflow Upper Rouge Tributary Area
  - $308k from MDNRE for planning green infrastructure in City
- GLRI Green Streets
  - $500k from EPA for design/construct GI along roadways
- GLRI Tree Planting
  - $360k from US Forest Service
- HUD Sustainability
  - Green Infrastructure Vision for Regional Land Cover & Vision Setting
DWSD CSO Green Infrastructure Program

Draft 2011 Major Road Projects
Combined Sewer Overflow Project Area

- 2011 Road Project
- DWSD CSO Boundary
Greening Roads

- Long Term
  - Integrate into reconstruction projects
• **Wayne County**: Multiple locations – grow zones in ROW area
• **Oakland County Campus**
• **Macomb County** - Metro Parkway bioswales/wetland plunge pool
• **Monroe County & City of Luna Pier** – Luna Pier Blvd bioswales/tree planting
• **Green Streets Design & Spec Manual**
Green Streets – GLRI Grant

Oakland County, Michigan
Green Streets – GLRI Grant

Oakland County, Michigan
Green Streets – GLRI Grant
Green Streets – GLRI Grant
Macomb County

Metro Parkway

Metro Parkway
Green Streets – GLRI Grant
Monroe County & City of Luna Pier
Green Streets – GLRI Grant
Monroe County & City of Luna Pier
Green Streets – GLRI Grant
Wayne County

Ann Arbor Road, Wayne County, Michigan
Source: Environmental Consulting & Technology, Inc.

Hines Drive, Wayne County, Michigan
Source: Environmental Consulting & Technology, Inc.
Green Streets – GLRI Grant
Wayne County

Inkster Road, Wayne County, Michigan
Source: Environmental Consulting & Technology, Inc.

Ecorse Road, Wayne County, Michigan
Source: Environmental Consulting & Technology, Inc.
Member Services

- Site Evaluation
- Plan Review
- Ordinance Development/Updates

Contact:
Kelly Karll, P.E.
313-324-3375
karll@semcog.org
Thank you!

Questions?

Kelly Karll, P.E.
Senior Civil Engineer
SEMCOG Plan Implementation
Karll@semcog.org
313.324.3375