GREEN STREETS as a Community Revitalization Strategy

US EPA Region 5 and FHWA
Webinar
Tuesday, March 1
12:00-1:30 PM Central

Webinar Notes

- If you are unable to listen in via your computer speakers or headset, call the number located on your registration email to listen in.
- The speaker presentations will be collected and posted online in the next week. An email will be sent out to all meeting attendees that includes the web link.
- Please note that we are taking typed questions via the webinar service only. There will be one or two questions between each speaker, with time for lengthier Q&A at the end.
- Send your questions via the “Question” box in the GoToWebinar dock at the right of your screen.
Green Streets: Case Studies

1. Lansing, MI
   - Chad Gamble, City of Lansing
   - Dan Christian, Tetra Tech

2. Toledo, OH
   - Patekka Bannister, City of Toledo
   - Dan Christian, Tetra Tech

3. Chicago, IL
   - Janet Attarian, City of Chicago
   - David Leopold, City of Chicago

Funding Options

- Transportation
  - Surface Transportation Program (STP)
  - Congestion, Mitigation, Air Quality (CMAQ)
  - Transportation Enhancement (TE)
  - FTA Livable Communities Initiative
  - TIFIA or New Starts
**Funding Options**

- **Brownfields**
  - Assessment Grants
  - Area Wide Planning Grants
- **Water**
  - Combined Sewer Overflow (CSO) Control Plans
  - Section 319 Grants
  - Clean Water State Revolving Loan Fund

**Region 5 Contacts**

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Questions and Answers

- Send your questions via the “Question” box in the GoToWebinar dock at the right of your screen.
Lansing’s Green Streets!

A bold way to blend economic development, corridor improvements, and environmental projects

Chad A. Gamble, P.E. City of Lansing, MI
Dan Christian, P.E., D.WRE Tetra Tech

Planning and Designing the Approach to the State Capital

Planning via Engagement

- Business Owners
- Property Owners
- Planning Department
- Public Relations
- Public Service
- Residents
- City Council

Michigan Ave. Streetscape Sub-Committee Meeting
2020 Downtown Task Force Final Recommendations Meeting
July 13, 2004
7:30 a.m.
Lansing Center
Recommendations of the Michigan Ave. Sub-Committee

• Highlight the Riverwalk/Museum Drive entrances off from Michigan Avenue
• Place kiosks and benches where appropriate along Michigan Ave.
• Create gathering places where possible
• Highlight pedestrian crosswalks.
• Green Up / soften the Corridor
• Connect Hospital to Downtown Commerce

The Rocky Road to Construction

• First Public Meeting – Unanimous Support ??!!

• Formation of “The Green Team”
  – Engineers, Architects, Landscapers, Botanists, Horticulturalists, Contractors

• Partnering with Grant Division Staff
Selling the Project with Pretty Pictures!!!

- Accurate
- Understandable
- Functional
Convincing City Council to apply for Grants!? 

• What are we planting on Michigan Ave.??
  – Additions to the Green Team - Drain Commissioners, Local “grass roots” Environmental Groups

• Educate early and with no assumptions

Putting on our Economic Development Hat

• Setting the bar for the Jones’
• Business Retention
• Incorporate Project as educational extension of children’s museum
• Tourism!!??
• Adopt-a-Spot
Public Relations

• Website
• Newsletter
• Handouts
• Interpretive signage
• Neighborhood meetings
• Press releases
• Public opinion survey

Designing an ADA compliant project with the flexibility to change with the businesses
Oh yeah. . . Who paid for it?

- MDOT Enhancement Grant, $2.0M
- MDEQ CMI Grant, $0.595M
- Other, $0.255M
More Green Streets in Lansing, MI

Boulevard Bioswale
Linden Grove Ave
Boulevard Bioswale
Linden Grove Ave

- Minimum soil amendments
- Turf grass and trees
- Surface storage
- Improved infiltration
- Drains complete ROW section

Bioretention Swale
Riley St

- Moderate traffic volume residential road
- Swale cells (driveway obstructions)
- Avoid mature healthy street trees
- 35,000 gal storage (0.6-in runoff depth from impervious areas)
- Grass plantings
- Overflow back up into street
Bioretention Cells
Bank St

- Cascading cell system
- Significantly narrow low volume residential road
- Native plantings
- Significant capacity
- 51,000 gal (3.45-in runoff depth from impervious area)

Bioretention Curb
Extensions Residential
Barnes Ave

- Moderate volume residential road
- Traffic calming
- Existing bump-outs will be converted to bioretention
- 1,000 gal (0.58-in runoff depth from impervious area)
• Low volume residential street
• In-line with parallel parking
• One-side
• CB overflow
• Sediment forebay
• Natural low point in road
• 800-gal (0.14-in runoff depth from impervious area)
• Native plantings

Bioretention Curb Extension Residential Ray St

• Moderate volume residential road
• Permeable paver strip in parking lane
• 153,000 gal (2.64-in runoff depth from impervious area)
• Residents excited

Permeable Pavers Parking Lane Barnes Ave
Bioretention Curb Extensions CBD
Washington Square

- Central business district
- Intersections and mid-block
- Shortened pedestrian x-ing
- 90 deg parking
- 2 sided fence and retaining wall
- Deep surface storage
- Significant storage capacity

City of Lansing
design by DC Engineering

Bioretention Curb Extensions CBD
Washington Square
Summary and Lesson’s Learned

• Lots of opportunities exist
• Only limited by imagination and ingenuity
• Field walk through with other competing interests
• Careful construction observations – opportunity to educate the contractors and the construction observer
• Try lots of ideas and see what works best
• Communicate . . . communicate . . . communicate

Questions?
Maywood Ave, Toledo
Green Streets Revitalization

Green Streets Webinar
March 1, 2011
Patekka Bannister, City of Toledo
Dan Christian, PE, Tetra Tech

Project Goals

• Revitalize the neighborhood
• Community involvement
• Reduce stormwater runoff entering the CSO
• Improve water quality using green infrastructure
Location

Demographics

- Single family residential
- Median home income $25,384 (average income in Toledo $32,546)
- 1/12 acre lots (30 by 120-ft)
- 66 lots (46 with houses)
- 25% Homeowners*

*Based on Lucas County Auditor AREIS Information
Green Streets

- Identify criteria for location of projects
- Review codes and make changes if necessary
- Empower the residents
- Removal of vacant properties
- Coordinate with other neighborhood services

Community Involvement

- **Goal**
  - full cooperation from the property owners
  - Connect people in urban areas to their water resources
  - Teach residents to be better stewards
  - Promote environmental education and awareness

- **Methodology**
  - City official presentations
  - Project factsheets and other literature
  - Website [www.raingardeninitiative.org](http://www.raingardeninitiative.org)
  - Public Meetings
  - Coordinate with “Toledo Grows” Green Jobs Corps
Funding Source

- Approached various government agencies
- Received 100% principle forgiveness subsidy
  Water Pollution Control Loan Fund (WPCLF) Green Reserve (20% Set Aside) American Recovery and Reinvestment Act (ARRA) Stimulus Funds
- Green Jobs Corps Youth Program-U.S. Dept. of Agriculture, NRCS and Lucas County funds

Site Characteristics

Approximate dimensions, some variation along project site

Some healthy mature trees

Curb and gutter

On street parking allowed on south side only

1,300 ft long street
Some dirt/gravel driveway and alleys

Some driveways off Maywood others accessed from alley behind the houses

Oil stained pavement

Community Garden

Roof drains discharge on lawns

Design

• Bioswales
  – Curb cuts
  – Underdrain
• Pervious Concrete Pavement
  – Sidewalks
  – Driveway apron
  – Alley apron

Bioswale cells typ.

Porous pavement sidewalks

Reclaimed limestone sidewalk pavers

Chip and seal dirt alleys

New curb and gutter with curb cuts at bioswales
Plants and Soil

- City Forester tree assessment
- Trees (2.5” caliper, 30-ft spacing)
  - Honeylocust
  - Black Cherry
  - Shingle Oak
- Ground Cover
  - Buffalo Grass

Planting Soil Mixture
- 50% sand
- 30% topsoil (<5% clay)
- 20% leaf compost

Residential rain gardens and rain barrels
Cost

- **Total Cost**
  - ~$500k total project (swales, sidewalks, driveway approaches, curb and gutter, plantings, etc.)
  - ~$278k green infrastructure

- **Highlights**
  - Bioswales ~ $150/lf
  - Pervious concrete sidewalk 6-inch ~ $5/sf
Summary

- Early neighborhood involvement
- Coordinate with other agencies and departments
- Low Maintenance (mostly mowing grass)
- 0.58-in storage (of runoff, not rainfall)

Contact

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Patekka.Bannister@toledo.oh.gov

Dan Christian
Dan.Christian@tetratech.com

For More Information:
www.raingardeninitiative.org
Old Fashioned and New Fashioned Sustainability

Accommodate the needs of ALL users in a limited amount of space

Minimize impact on land, air and water resources
Implementation

- Road Diet and Bioswale Planters
- Permeable Parking Lot/Swale
- Green Alleys
- Permeable Parking Lanes

Cermak / Blue Island Sustainable Streetscape
Cermak/Blue Island Sustainable Streetscape

**Stormwater Management**
Divert 80% of the typical average annual rainfall and at least 2/3 of rainwater falling within catchment area into stormwater best management practices.

**Water Efficiency**
Eliminate use of potable water for irrigation, specify native or climate adapted, drought tolerant plants for all landscape material.

**Transportation**
Improve bus stops with signage, shelters and lighting where possible, promote cycling with new bike lanes, improve pedestrian mobility with accessible sidewalks.

**Energy Efficiency**
Reduce energy use by min. 40% below a typical streetscape baseline, use reflective surfaces on roads/sidewalks, use dark sky-friendly fixtures. Min. 40% of total materials will be extracted, harvested, recovered, and/or manufactured within 500 miles of the project site.

**Recycling**
Recycle at least 90% of construction waste based on LEED NC criteria, Post/Pre-Consumer recycled content must be min. 10% of total materials value.

**Urban Heat Island, Air Quality**
Reduce ambient summer temperatures on streets and sidewalks through use of high albedo pavements, roadway coatings, landscaping, and permeable pavements. Require ultra low sulfur diesel and anti-idling.

**Education, Beauty & Community**
Provide public outreach materials/self-guided tour brochure to highlight innovative, sustainable design features of streetscape. Create places that celebrate community, provide gathering space, allow for interaction and observation of people and the natural world.

**Commissioning**
Model Stormwater BMP’s in Infoworks to analyze and refine design. Monitor stormwater BMP’s to ensure predicted performance and determine maintenance practices.

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**Integrated Infrastructure Design Example: Permeable Pavers**

- **High SRI for Lighting and UHI**
- **Bike/Parking Lane**
- **Photocatalytic for Air Quality**
- **Stormwater Management**
Integrating Infrastructure Design Example: Parkway Bioswale

- Stormwater Management
- Pedestrian Buffer
- Landscaped Beautification
- Urban Heat Island Reduction
- Water Quality
- Reduction in potable water use

*Integrated Infrastructure Design Example: Parkway Bioswale*

- Asclepias tuberosa: butterflyweed
- Andropogon scoparius: little bluestem
- Echinacea pallida: pale purple coneflower
- Spartina pectinata: rice cut grass
- Aster novae-angliae: New England aster
- Solidago rigida: stiff goldenrod
Integrated Infrastructure Design Example:
Side Street Bump-Outs

- Reduced Pedestrian Crossing Distances
- Opportunities for Landscaped beautification
- Stormwater Management
- Discourage truck access to residential blocks to the North

Benito Juarez Community Academy Water Feature
Benito Juarez Community Academy Water Feature

Beauty and Community
Human Scale
Allow for interaction and observation of both people and the natural world
Celebrate culture, history, spirit and place

Western Avenue Plaza
Education: Lightpole Banners Corresponding with Sustainability Goals

- Two-sided banners (paired on each pole)
- Hybrid light fixture
- Hybrid light fixture with specific focus

Education: Informational kiosks with interpretive graphics

Spanish

English
Sustainable Streets are Cost Effective

Cost is 30% less than projected...

<table>
<thead>
<tr>
<th>Cermak total project cost ($)</th>
<th>Actual bid</th>
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</thead>
<tbody>
<tr>
<td>Cermak projected cost</td>
<td>-31%</td>
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</table>

... And is 20% less expensive than the average block in 2010

<table>
<thead>
<tr>
<th>Average per block cost ($)</th>
<th>Cermak cost per block</th>
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</thead>
<tbody>
<tr>
<td>Average construction cost per block in 2010</td>
<td>-21%</td>
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</table>

Primary Funding: Local/City of Chicago

Additional Funding: FWHA Ecological Grant (Education/Commissioning), 319 Grant (Water Feature), ComEd Grant (Blue Island Pavers)

Stimulating New Jobs with Green Infrastructure

For every 1.25 Billion spent...

<table>
<thead>
<tr>
<th>New Infrastructure</th>
<th>43,200 jobs</th>
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<tbody>
<tr>
<td>Infrastructure Rehabilitation</td>
<td>47,000 jobs</td>
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<tr>
<td>Green Infrastructure</td>
<td>51,200 jobs</td>
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</table>

Source: FHWA Jobs Decoder
### National and Local Rating Systems

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>Design Strategy</th>
<th>Rating System</th>
<th>Rating System</th>
<th>Rating System</th>
<th>LEED-ND</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>I-LAST Rating System (IDOT)</td>
<td>Green Roads Rating System</td>
<td>Sustainable Sites Initiative</td>
<td>LEED-ND</td>
<td></td>
</tr>
<tr>
<td>Planning</td>
<td>Identify Stakeholders and develop Stakeholders Involvement Plan</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Planning</td>
<td>Engage Stakeholders to conduct Context Audit and develop project purpose</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Planning</td>
<td>Involve Stakeholders to develop and evaluate alternatives</td>
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<td>4</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Planning</td>
<td>Employ Stakeholder involvement techniques to achieve consensus for Preferred Project Alternative</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Planning</td>
<td>Plan for Context Sensitive Solutions (CSS)</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>2</td>
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**TOTAL POINTS EARNED:**

<table>
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<tr>
<th>POINTS POSSIBLE:</th>
<th>I-LAST Rating System (IDOT)</th>
<th>Green Roads Rating System</th>
<th>Sustainable Sites Initiative</th>
<th>LEED-ND</th>
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</thead>
<tbody>
<tr>
<td>Points Possible</td>
<td>228</td>
<td>118</td>
<td>250</td>
<td>100</td>
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<tr>
<td>Percentage % of possible points:</td>
<td>57%</td>
<td>67%</td>
<td>40%</td>
<td>32%</td>
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<tr>
<td>Ranking:</td>
<td>N/A</td>
<td>Evergreen (&gt;60% of total)</td>
<td>One Star (Four Star possible)</td>
<td>(need 8 more Points to become “Certified”)</td>
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### Chicago Sustainable Infrastructure Design Standards

**Development and Implementation**

- Nationwide Best Practices
- Public/Private Task Force
- Integration of Standards with City Policy Initiatives
- Implementation Strategy

**Sustainable Infrastructure Design Manual**

- Design Guidelines and Implementation Matrix
- Engineering Details and Specifications
- Project Manager Checklist
- Maintenance Requirements