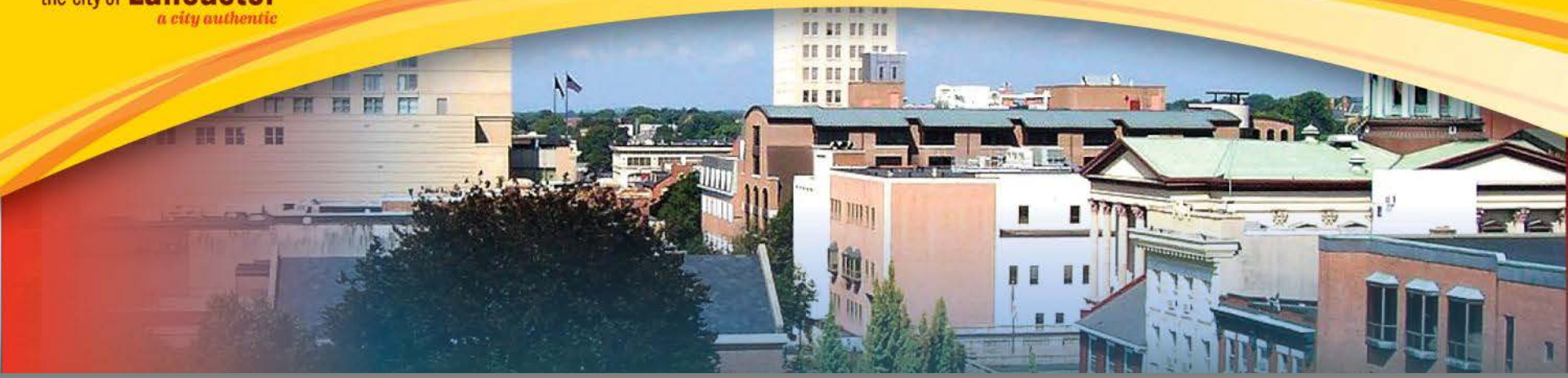
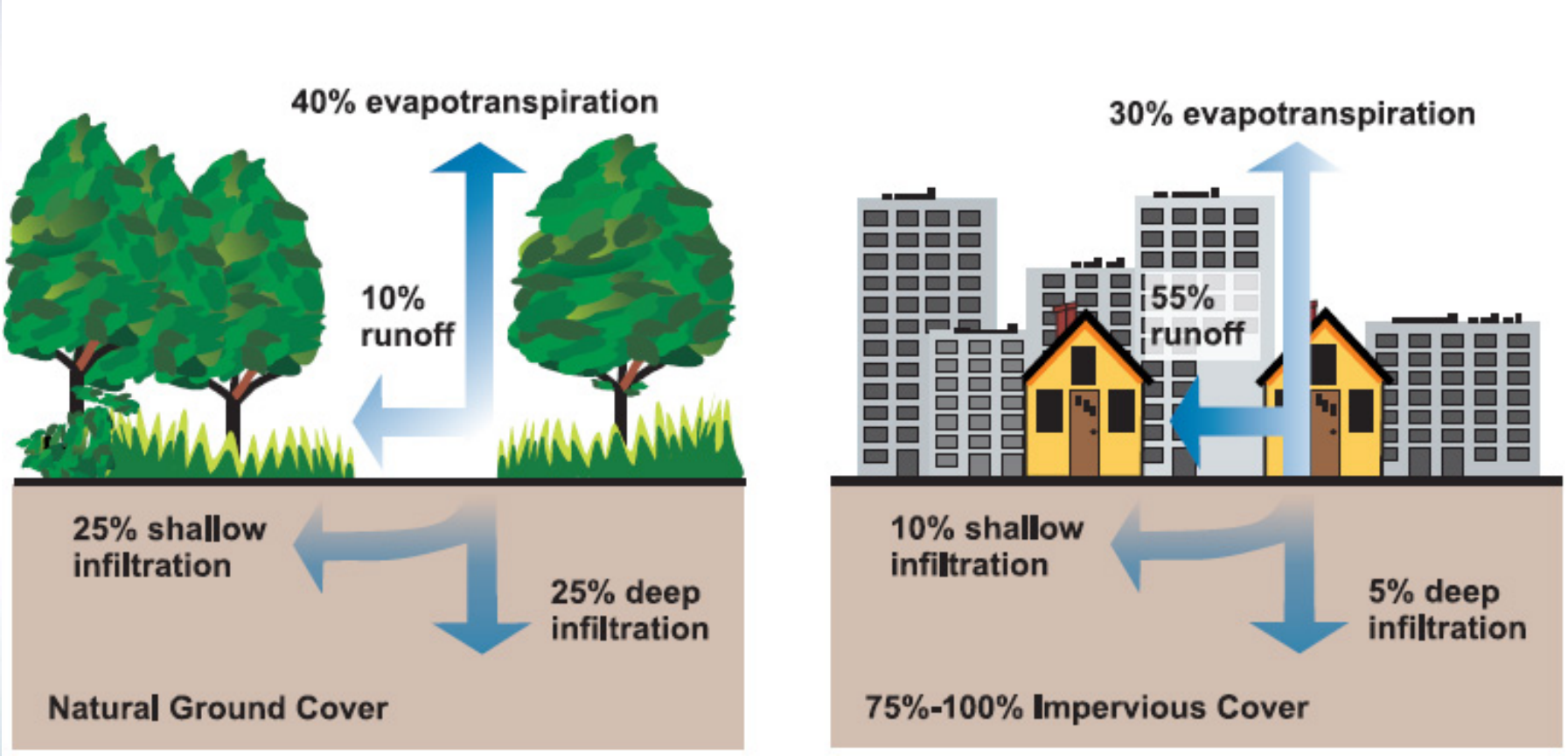
the city of Lancaster
a city authentic



INTEGRATED COMPLETE STREETS TO REVITALIZE OUR COMMUNITIES

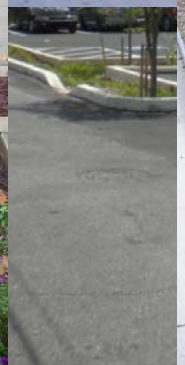
Impervious Cover and Runoff



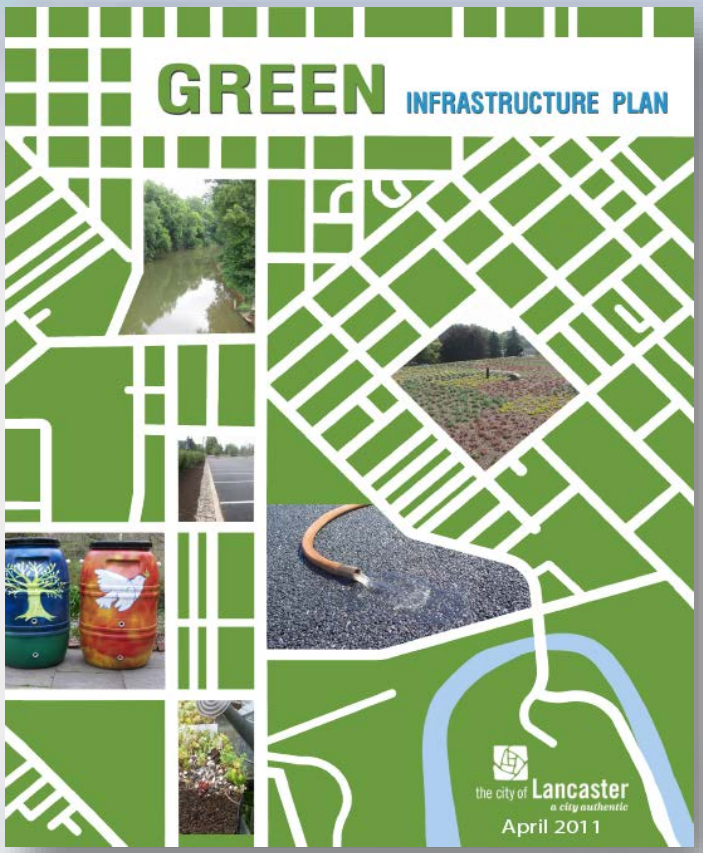
Green Infrastructure is . . .

. . . technologies that replicate and restore the natural hydrologic cycle and reduce the volume of stormwater entering the sewer system and ultimately local streams by:

- Infiltrate
- Evaporate
- Transpire
- Capture and reuse rainfall



2010 Green Infrastructure Plan



To provide more livable, sustainable neighborhoods for City residents and reduce combined sewer overflows and nutrient loads

Key Plan Recommendations

1. **Implement a comprehensive demonstration program**
   a) Review existing CIPs
   b) GI Funding for Private
2. **Implement policy actions**
   a) Revise details and specs
   b) Revise Stormwater Ordinance for Redevelopment
   c) Stormwater Utility
3. **Conduct extensive partnering and outreach**
4. **Develop technical tools/studies to support GI**
   a) Models / Project Tracking, etc.

The Plan Proposes to Manage over 1,200 Acres of Impervious Area and Capture over 1 Billion Gallons of Stormwater through Long-Term Implementation

Park Improvements

Roads/Alleys/Sidewalks:
Green Streets,
Disconnection,
Porous Pavement
Enhanced Tree Planting

Roofs/Parking Lots:
Vegetated Roofs,
Disconnection,
Rain Gardens,
Porous Pavement,
Bioretention

Public Schools:
Green Schools

Specific GI Demonstration Sites

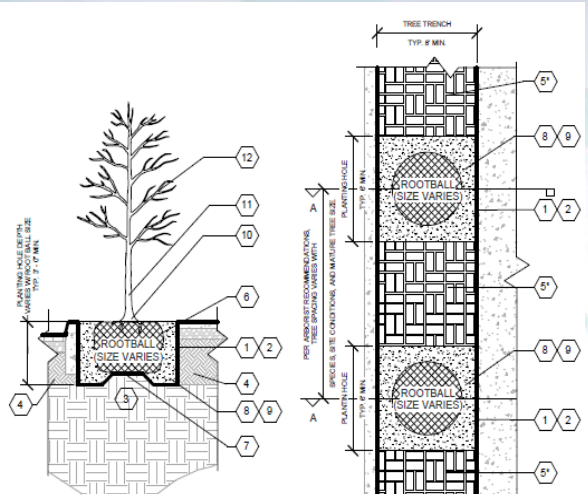
Integrated Infrastructure: Finding Cost-Effective Green Streets Opportunities

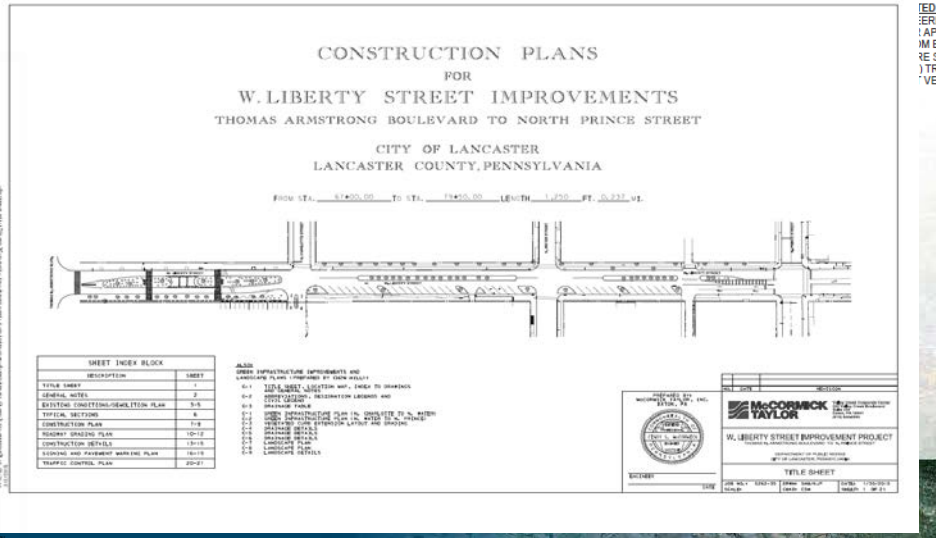
- Road Type
  - Width
  - Traffic
  - Ownership (City, State, private alleys)
- Tree Canopy
- Flooding locations
- Overhead Wires
- Sidewalk Condition
- Inlet Condition

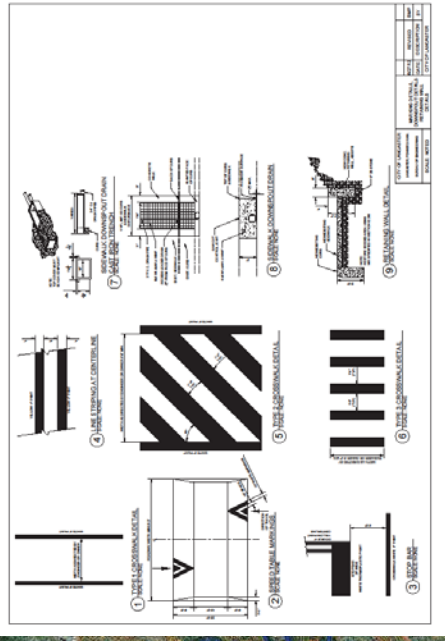
Lowest Overall Green Street Cost

Integrated Infrastructure: Finding Cost-Effective Green Streets Opportunities

- Incorporating Green Infrastructure and Complete Streets concepts into plans, ordinances and codes
- Implementing Projects that integrate GI and Complete Streets







Article VII. Design and Improvement Standards

§ 265-31. Public streets.

A. General street arrangement. The following design consideration shall be applied to all new stree subdivision and/or development plan.

(1) Classifications; widths.

(a) Street classifications and maximum widths (in feet) for new and reconstructed streets:

Street Type	Cartway Width	Travel and turn Lanes	Parking Stall	Bike Lane(s)	Sidewalk	Planting Strip and Curb	To RC Wi
Alley	16	____	---	NA	NA	----	16
Local	33	2 – 9 foot lanes	7.5	Shared lane markings	4/side	4.5/side	50
Collector[1]	48	2- 10 foot lanes	8/side	6 feet; 1 per direction of travel	4/side	5/side	66
Arterial – minor[2]	Varies	2 – 11 foot lanes	8/side	6 feet; 1 per direction of travel; or 5 feet with minimum 1 foot painted or physical barrier buffer	4/side	5/side	68
		2 – 11 foot travel lanes, 1-10' center turn	8/side		4/side	5/side	80
Arterial	Determined by state and federal government						

Note: 1. Sidewalks on collector and minor arterial streets may be widened to a maximum of 8 feet to accommodat pedestrian traffic in the vicinity of shopping and service facilities, schools, recreation areas, community facilities, volume generators of pedestrian traffic. In the event sidewalks are widened to accommodate increased pedestrian ROW width may be increased accordingly.

(2) Right-of-way widths, determined by the combination of the components shown above, may by the Planning Commission in consideration of the following: anticipated average daily ve generated by and through the project area, truck traffic, municipal maintenance and public on-street parking demand, pedestrian safety, accessibility for persons with disabilities, mass needs, bicycle lanes, landscape areas, snow removal impacts, required utility easements or of adjacent development patterns.

(3) Streets shall be logically related to the topography so as to produce reasonable grades, satisfactory drainage and suitable building sites and shall have horizontal and vertical alignments in accordance with Subsections C and D below.


ONE WAY
NO TURN ON RED
Chestnut


ONE WAY
Chestnut

CITY OF LANCASTER
A City Authentic

Mulberry Street Two-Way Conversion

A Green & Complete Street

Stormwater Volume and Area Managed	
Impervious Area Contributing (ft^2)	167,000
GI Area (ft^2)	21,000
Calculated Storage Volume(ft^3)	14,000

Construction Costs	
Construction Cost / Stormwater Volume ($/gal)	$0.34
Construction Cost / Acre Managed ($/ac)	$289,000
Actual Cost	$1,107,434

Nutrients Removed	
Estimated TSS Removal (lb/yr)	1613
Estimated TP Removal (lb/yr)	12
Estimated TN Removal (lb/yr)	62

Traffic Calming & Safer Parking

A pre-construction travel study on Mulberry St. showed speeds up to 80mph. Now, narrowed travel lanes are reducing speeds while making room for traffic calming practices in the right-of-way. Midblock vegetated curb extensions shorten crossing distances for pedestrians and capture stormwater (above). Back-in angle parking also creates a safer street for everyone by limiting conflicts with opening doors and increasing visibility.

Pedestrian & Bicyclist Friendly

Intersections were upgraded to current ADA guidelines to improve acessibility. Traffic calming and pedestrian improvements include narrower travel lanes, a bike lane and sharrows, Accessible Pedestrian Signals at all signalized intersections (above), curb extensions, piano key crosswalks, ADA curb ramps (above). All stormwater inlets have bicycle safe grates. Fulton Elementary school children especially benefit from a safer route to school.

Tree Preservation & Landscaping

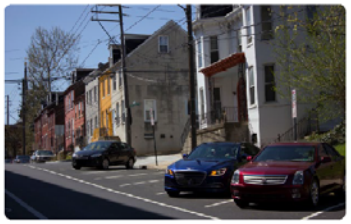
Protecting existing trees, replacing trees in poor condition, and planting new trees more appropriate for an urban corridor furthers the environmental benefits in addition to adding quality of life and economic value to the street. Over 100 trees along this 0.5 mile road creates a nearly continuous canopy over the street. Tree pits were expanded and connected (above) and large trees were preserved by constructing vegetated curb extensions (below).

Porous Pavers & Rain Gardens

This project includes over 21,000 ft^2 of green infrastructure in the form of vegetated curb extensions, rain gardens (above) and porous pavers (below), managing 167,000 ft^2 of impervious area. At an affordable cost of $0.34 per gallon of stormwater, Mulberry Street helps move the City of Lancaster closer to eliminating its Combined Sewer Overflows (CSO) that pollute local watersheds and ultimately the Chesapeake Bay.

Public Awareness & Safer Parks

Before becoming a fully two-way street, the most northern block of Mulberry was tested as a two-way street, proving the concept and building public awareness. Signage also draws attention to the two-way traffic (above & below). Mulberry also intersects James St (above), which is another green and complete street. This creates a network of safer streets around the Northwest Linear Corridor Park, which is used by the Boys & Girls Club and a local nursery.



SAVE IT! YOUR WATER. YOUR MONEY. YOUR CITY.
www.saveitlancaster.org

ch2m

McCORMICK TAYLOR

Mulberry Street Map Key

- Bioretention Area
- Porous Pavers
- Street Tree
- Property Lines
- Shared Bicycle Lanes

Questions?

Contact information

- Charlotte Katzenmoyer
  Director of Public Works
  ckatzenm@cityoflancasterpa.com
  717-291-4738

Visit: www.saveitlancaster.com