Complete Streets to Complete Neighborhoods

Janet L. Attarian
Deputy Director
City of Detroit Planning and Development Department
The urban form, with its density, public transit and walkable neighborhoods, is a sustainable way for humans to live. Its enhancement and maintenance for the safety and convenience of all users, is fundamental to creating a world where all humans can anticipate a good quality of life without depleting the world’s natural resources.
Public Right of Way = Public Space

Chicago’s public way represents 23% of the City’s land area.

In Detroit it represents 30% of the Land Area.

Over 70% of the City’s total Public Open Space.

Almost 60% in Detroit.
Economic Development

Cars don’t shop, people do. – Janette Sadik-Kahn

– Vehicles don’t make a community, people do.
– Transportation drives jobs and the economy.
Making great Cities

• Making great streets is an important part of making great neighborhoods, and making great neighborhoods is an important part of making great cities.

• Complete streets...
  – create sustainable, place based systems.
  – must be intuitive.
  – Create beauty.
    • A heightened perception of our relationship with place, a sense of pattern.
    • Provide human centered design.
Getting to sustainable streets

• Interdisciplinary Teams and Stakeholder coordination and outreach

• Data

• Good Design & Best Practices:
  – Guidelines, Policies & Plans

• Public/Private Partnerships
  – Community Organizations
  – Business Community
  – Industry

• Innovation and Pilots
  – Advance New Technologies
  – Drive New Material Development
  – Digital Public Way
Data Driven Approach

- **Health**: support active transportation, address obesity and improve health.
- **Economy**: draw people to shop, live, and work in walkable, livable communities.
- **Safety**: design to protect all users, reduce speeding and decrease crashes.

- **Changing Needs**: Americans are driving less and using other modes
- **Environment**: support quality of life without depleting natural resources.
- **Cost**: ensure greatest return on investment.
- **Benchmarking**: Against best practices and other cities.
Data Driven Approach

What makes a great city?

Source: Governing; CDC Behavioral Risk Survey; Local and county health departments asthma prevalence reports
Data Driven Approach

What makes a great city?

MOBILITY | options

Source: American Community Survey, 2014
What makes a great city?

Walkability | Walk Score

Note: WalkScore is a pedestrian-oriented rating system. For each address, Walk Score analyzes hundreds of walking routes to nearby amenities. Points are awarded based on the distance to amenities in each category. Walk Score also measures pedestrian friendliness by analyzing population density and road metrics such as block length and intersection density. Royal Oak includes only 2 zip codes that span both downtown and residential areas.

Source: Walkscore
What makes a great city?

Data Driven Approach

Acres of parkland per 1000 residents in city

- Atlanta: 12
- Detroit: 8
- Grand Rapids: 6
- Portland: 24
- Royal Oak: Not available
- Southfield: Not available
- Washington, DC: 13

% Residents within 0.5mi. of a park

- Atlanta: 66
- Detroit: 78
- Grand Rapids: Not available
- Portland: 85
- Royal Oak: Not available
- Southfield: Not available
- Washington, DC: 96

Note: No data for Grand Rapids, Royal Oak, Southfield for % residents within 0.5mi of public park
Source: Trust for Public Land, Center for City Park Excellence; City of Grand Rapids; City of Royal Oak
Fact: In a high-emissions scenario, 2040 springs could have 20% more precipitation events and summers could have 10% fewer.
Data Driven - Environment

• Increases in days with Temperatures over 100 degrees
What makes a great city?

**DETOUR**: Greenhouse gas emissions per HH

Source: Center for Neighborhood Technology

GHG emissions lowest in Downtown, Midtown, riverfront areas
Basement Flooding Risk Reduction

10% Removal of Impervious Area

25% Removal of Impervious Area
Urban Heat Island

Elevated Surface Temperature and Tree Canopy Cover
Data Driven Approach

What makes a great city?

DETROIT: Presence of concentrated poverty in metro, 2010

Source: City Observatory
Data Driver – Energy

Artificial Night Sky Brightness due to Light Pollution in North America
A preliminary picture of the growth from 1950 to 2025

© 2001 Cinzano P., Falchi, F., Elvidge, C.D.
Housing and Transportation Costs

Percent of Average, Median Household Income Spent on Transportation by Neighborhood

Source: CNT.org

Housing only (% income)

Housing + transportation

Source: CNT.org
DETROIT: Housing costs as % of income

Most of Detroit’s households see low housing costs as a share of income

Source: Center for Neighborhood Technology
What makes a great city?

**DETROIT**: Transportation costs as a share of income, 2015

Source: Center for Neighborhood Technologies, 2016
Data Driven Approach

What makes a great city?

Cars per adult in city, 2016

Source: Center for Neighborhood Technologies, 2016
What makes a great city?

Note: Motor vehicle crash and pedestrian deaths measured per 100,000 residents; No data available for Royal Oak and Southfield

Source: CDC; National Highway Traffic Administration; SmartGrowth America
Implementation: Crash Data in Planning
What makes a great city?

PUBLIC SAFETY | crime

Note: *Latest available is 2014
Source: Police Departments for Atlanta, Detroit, Grand Rapids, Portland, Royal Oak, Southfield, and Washington, DC
Crime and Pedestrian Crashes

- Incidences of crime by Chicago Community Area (CCA).
- Years 2005 through 2009 were averaged and compared to the average number of fatal and serious injury pedestrian crashes over the same time period in each CCA.
- Crime was the only variable including income, race, language spoken at home, and Walk Scores® that correlated to pedestrian crashes.
- There may be many variables responsible for this correlation.

-City of Chicago 2011 Pedestrian Crash Analysis Technical Report

Figure 1: Crime vs. Fatal and Serious Injury Pedestrian Crashes by Chicago Community Area

\[ R^2 = 0.8544 \]
Complete Streets Chicago – Policies & Goals

“The safety and convenience of all users of the transportation system including pedestrians, bicyclists, transit users, freight, and motor vehicle drivers shall be accommodated and balanced in all types of transportation and development projects and through all phases of a project so that even the most vulnerable - children, elderly, and persons with disabilities - can operate safely within the public right of way.”
Implementation: Process

1. **Selection**: Prioritize projects for complete streets

2. **Scoping**: Consider all modes; i.d. building and roadway form and function & project goals

3. **Design**: Address goals and opportunities defined in scoping

4. **Construction**: Ensure project built as designed, for complete streets

5. **Measurement**: Evaluate effectiveness of complete streets

6. **Maintenance**: Ensure all users continue to be accommodated
Process: Research before Scoping

**Consider:**

Crash history – each mode

Planning documents
  - Neighborhood plans, transportation plans, developments

Environmental conditions
  - Soil type, flooding, heat island, public space opportunities

Who uses road and how?
  - Site visit
  - Observe all modes
Typology & Data

Consider:

Building Form & Function
- Land use, structures, regulatory framework, businesses

Roadway Form & Function
- Character of roadway, speeds, number of lanes, users, parking demand, traffic operations

Intersections & Crossings
- Common conflict points

Special Designations
- Statutory, operational, and planning categories such as snow routes, Pedestrian Streets, bicycling spoke routes, jurisdiction
Placemaking in the Public right of way

Cultural Programming and activation

Tactical Urbanism

Small scale capitol and full scale prototyping

Large scale capitol and programming implementation
• There is broad public support for public space improvements and placemaking.
• Placemaking goes beyond aesthetic improvements, people believe it supports local culture and business.
• Natural features are very important to people’s perception of a place
• Public markets are a popular form of public space programming.
• Older people preferred the online survey, and younger people the Textizen survey.
  Of 15-25 year olds, 84 responded to the online survey and 632 did via Textizen. Conversely, only 34 people aged 56 and above responded to the Textizen survey, while 456 responded online.
• Active spaces are important to placemaking.
• Local culture should be an important consideration when programming public spaces.
• There is an interest in community managed spaces and programs. Two of the top three CHIdeas were community green space expansion and an “adopt-a-block” program, where resident provide the resources to manage space on their own.
Do you believe a well-designed street can create public open space?

(1=strongly disagree, 5=strongly agree)

80% Agree

Answers and Age

Spanish only Answers

n = 3,433

n = 3,269

n = 144
I would like to see more _____ for Chicago's Streets!

- Trees & Landscaping
- Bike Amenities
- Public Gathering Spaces
- Seating
- Wider Sidewalks

Age and Answer

- 56 +
- 26-55
- 15-25

Spanish only answers
People Spots
Build parklets and pop-up cafes on platforms in the parking lane of streets with narrow sidewalks or high pedestrian volumes.

People Streets
Convert “excess” asphalt into hardscape parks, creating safer intersections and more public open space.

People Plazas
Activate existing CDOT Malls, Plazas and Triangles with new programming and retail opportunities.

People Alleys
Enable use of alleys for artwalks, seating and events to support placemaking and economic development.
Sustainable Urban Infrastructure Guidelines and Policies (SUIG)

**Mission and Purpose:** Create and maintain a city where all benefit from a high quality of life without depleting our natural resources.

**Performance Metrics** to quantify benefits.
### SUIG pavement related requirements

<table>
<thead>
<tr>
<th>CODE</th>
<th>EFFECTIVE JULY 2013</th>
<th>EFFECTIVE JANUARY 2015</th>
<th>EFFECTIVE JANUARY 2018</th>
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<td>MW1</td>
<td>Projects shall divert 50% construction and demolition waste, as calculated in Volume 2, from landfills.</td>
<td>Projects shall divert 65% construction and demolition waste, as calculated in Volume 2, from landfills.</td>
<td>Projects shall divert 75% construction and demolition waste, as calculated in Volume 2, from landfills.</td>
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<td>MW2a</td>
<td>20% of the total materials value, for projects over $5M, shall be from recycled materials, as calculated in Volume 2.</td>
<td>20% of the total materials value, for projects over $3M, shall be from recycled materials, as calculated in Volume 2.</td>
<td>20% of the total materials value, for projects over $1M, shall be from recycled materials, as calculated in Volume 2.</td>
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<td>MW2b</td>
<td>Projects under $5M shall specify materials so that 10% of the total materials value is from recycled content as calculated in Volume 2.</td>
<td>Projects under $3M shall specify materials so that 10% of the total materials value is from recycled content as calculated in Volume 2.</td>
<td>Projects under $1M shall specify materials so that 10% of the total materials value is from recycled content as calculated in Volume 2.</td>
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<td>MW3</td>
<td>When asphalt is used a minimum asphalt binder replacement of 20% is required.</td>
<td>When asphalt is used a minimum asphalt binder replacement of 30% is required.</td>
<td>When asphalt is used a minimum asphalt binder replacement of 40% is required.</td>
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<td>MW4</td>
<td>When concrete is used a minimum of 20% total recycled content by weight is required. A minimum of 10% of the cementitious materials by weight should be from recycled content and/or ground limestone.</td>
<td>When concrete is used a minimum of 30% total recycled content by weight is required. A minimum of 15% of the cementitious materials by weight should be from recycled content and/or ground limestone.</td>
<td>When concrete is used a minimum of 40% total recycled content by weight is required. A minimum of 30% of the cementitious materials by weight should be from recycled content and/or ground limestone.</td>
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<td>MW5</td>
<td>Develop a waste management plan that diverts waste from landfills.</td>
<td>Implement and maximize the use of at least one cool pavement strategy within project area.</td>
<td>Implement and maximize the use of at least two cool pavement strategies within project area.</td>
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<td>MW6</td>
<td>Maximize use of cool pavement strategies within project area.</td>
<td>Implement and maximize the use of at least one cool pavement strategy within project area.</td>
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Process - Project Specific Guidance

- Project Delivery Notebook
- Compliance Committee
- Expandable

### TABLE 1: WATER REQUIREMENT MATRIX

<table>
<thead>
<tr>
<th>CDOT Project Type</th>
<th>WRA 1</th>
<th>WRA 2</th>
<th>WRA 3</th>
<th>WRA 4</th>
<th>WRA 5</th>
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Chicago Department of Transportation  
July 2014  
Sustainable Urban Infrastructure Policies and Guidelines Vol 1

### CDOT COMPLETE STREETS & SUSTAINABILITY PROJECT DELIVERY Steps by Project Type

Select your project type here. This chart shows which steps are required (x), optional (o), or not required.

**Project Type:** Sustainability & Pavement Marking Improvements

1. **PROJECT SELECTION**
   - 1.1 Identify Project Initiation
   - 1.2 Identify Project Budget

2. **SCOPING**
   - 2.1 Establish Project Goals & Requirements
     - 2.1.1 Examine Crash Report Summaries
     - 2.1.2 Examine Relevant Planned/Programmed Roadway Projects
     - 2.1.3 Examine Neighborhood and Roadway Plans
     - 2.1.4 Examine Notable Developments Within or Near Project Area
     - 2.1.5 Review Prior Transportation & Traffic Studies
     - 2.1.6 Examine Existing Sustainability Data/Info
     - 2.1.7 Summarize Prior Public Engagement
     - 2.1.8 Update Budget

   - 2.2 Research
     - 2.2.1 Generate and Analyze Typology Maps
     - 2.2.2 Generate and Analyze Activity Maps
     - 2.2.3 Generate and Analyze Volume Maps
     - 2.2.4 Generate and Analyze Crash Maps
     - 2.2.5 Identify Preliminary Sustainability Strategies
     - 2.2.6 Create Outreach Plan

   - 2.3 Site Visits
     - 2.3.1 Initial Observation
     - 2.3.2 Observation Checklist
     - 2.3.3 Building Form and Function
     - 2.3.4 Roadway Form and Function
     - 2.3.5 Typical Sections
     - 2.3.6 Intersection and Mid-block Crossing Worksheets

3. **DESIGN**
   - 3.1 Create Design Alternatives
     - 3.1.1 Summarize Project Information from Scoping
     - 3.1.2 Cross Section Development
     - 3.1.3 Perform Sustainability Calculations
     - 3.1.4 Identify Sustainable Features
     - 3.1.5 Initial Public Engagement

   - 3.2 Schematic Design
     - 3.2.1 Analyze Crashes and Design for Safer Streets
     - 3.2.2 Apply Street and Intersection Designs and Policies
     - 3.2.3 Create Geometric Layout
     - 3.2.4 Conduct Signal Timing Analysis
     - 3.2.5 Conduct Traffic Impact Studies
     - 3.2.6 Review Intersection Design
     - 3.2.7 Verify sustainable requirements or request variance

   - 3.3 Obtain Feedback and Approvals
     - 3.3.1 Engage Internal Partners
     - 3.3.2 Engage External Agencies
     - 3.3.3 Engage Public Stakeholders

   - 3.4 Design Impact Evaluation
     - 3.4.1 Calculate Protected MXLOS
     - 3.4.2 Conduct Stormwater Modeling
     - 3.4.3 Perform Sustainability Valuation

   - 3.5 Prepare Preferred Alternative

   - 3.6 Record Design Outputs
# Project Delivery Process and Tracking

**Project Delivery Summary Sheet - Notebook**

- **Project “snap shot” for CDOT management**
- Tracks chain of ownership as project develops
- Construction RE will receive from design PM along w/ documentation
- Hand back to PM for Maintenance & Commissioning

<table>
<thead>
<tr>
<th>CDOT Complete Streets &amp; Sustainability Project Delivery Summary</th>
<th></th>
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<tbody>
<tr>
<td>Project Name</td>
<td>Consultants</td>
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<td>Project Number</td>
<td>Consultants</td>
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<td>Project Budget</td>
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### Stage 1-2 Planning and Design

### Stage 3 Construction

### Stage 5 Measurement

### Stage 6 Maintenance

Instructor: Please refer to Appendix Project Types to see which steps below, from planning through maintenance, need to be completed for your project type. Then fill out the Notebook Stages 1-6 workbooks throughout project delivery. The “Summary” questions will automatically populate here. Check your work and provide the requested explanations on pages 8 and 9 on this page for management review. Project Managers are responsible for seeing projects through all stages.

### 1. Project Selection

- Identify project objectives
- Address all needs identified during scoping

### 2. Scoping

- Address all needs identified during scoping

### 3. Design

- Address all needs identified during scoping

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**Instructor:** Please refer to Appendix Project Types to see which steps below, from planning through maintenance, need to be completed for your project type. Then fill out the Notebook Stages 1-6 workbooks throughout project delivery. The “Summary” questions will automatically populate here. Check your work and provide the requested explanations on pages 8 and 9 on this page for management review. Project Managers are responsible for seeing projects through all stages.

**Tip:** Use the Notebook to track project progress and document key decisions and considerations throughout the project lifecycle.
Innovation
-Ending Business as Usual:

• Lead by Example
• Partner with the Private Sector
• Leverage Philanthropy
• Connect to the Community

“...green is not about cutting back. It’s about creating a new cornucopia of abundance for the next generation by inventing a whole new industry. It’s about getting our best brains out of hedge funds and into innovations that will not only give us the clean-power industrial assets to preserve our American dream but also give us the technologies that billions of others need to realize their own dreams without destroying the planet.”

—Thomas L. Friedman, The New York Times
Chicago Innovation: Green Alley Program

Development of Permeable Asphalt and Concrete:

• Best Practices
• Material Testing
• Trail Batches

The Ground Tire Rubber Solution:

• Approx 600 tires recycled per alley
• Solved cohesion problem
Streets for Cycling Plan 2020

Improvements targeted in high-crash areas
Bicycling in Chicago – Alternative Transportation
Safety and Places for all
Before
Berteau Neighborhood Greenway - Ashland to Greenview

**Bicycle Features**
- Contraflow bike lane
- Green pavement to improve visibility
- Bike Signal to improve crossing
- Bike symbols to guide cyclists out of the door zone

**Pedestrian Features**
- Infiltration curb extensions to improve pedestrian crosswalks and reduce stormwater runoff
- High visibility crosswalks
- Pedestrian refuge island
Woodard Plaza
Argyle Shared Street – Broadway to Sheridan

- CTA train station
- Asian marketplace
- Night market
- Community support
- Business support
Argyle Shared Street
Argyle Shared Street
Argyle Shared Street
Argyle Shared Street
Chicago established itself as the nation’s headquarters of the meatpacking industry during the Civil War and it retained that position until the 1920s.

The Fulton - Randolph Market district preceded other markets in the city’s history, and is the only one that continues to function as a place for the wholesale distribution of food.

Fulton Market district has functioned historically and currently as a meatpacking area, and conveys Chicago’s importance as a wholesale market into which flowed the agricultural bounty of the Midwest and West.

The district is the oldest food marketing district in Chicago with an ensemble of historic mercantile buildings that continue to function to a substantial degree as wholesale produce and meatpacking outlets.

Poised for continued business growth, the Fulton Market area is an ideal location for Chicago’s self-proclaimed “innovation district,” a business center attractive to companies that leverage technology to produce real and virtual goods.

Fulton Market possesses traditional industrial and supportive services offering urban vibrancy and authenticity that attract new economy companies, such as with the arrival of Google in 2015.
Fulton Market Flex Street – Project Overview

• Existing land uses on Fulton are varied, from heavy industrial to retail/commercial to residential and are changing.

• The current conditions allow for a fair amount of flexibility in use and accommodate the way the right-of-way is used throughout the day and week, but public safety and accessibility issues are a concern and infrastructure needs upgrades.

• The goal of the project, therefore, has been to maintain this flexibility while improving public safety, upgrading infrastructure and providing enhancements that respect the historic character and significance of the area.

• In order to improve safety, a consistent narrowed single drive lane is proposed throughout the project and parking and loading is organized with a combination of diagonal and parallel parking spaces, defined with bump-outs to improve pedestrian safety at intersections, maximize parking opportunities, and accommodate loading.

• The proposed design takes advantage of existing conditions to create a flexstreet design in the three blocks between Green and Morgan which can be easily closed to traffic for market days.
Fulton Market Flex Street
Fulton Market Flex Street

Looking East at Green St.
Fulton Market Flex Street

Proposed Conditions – Looking East at Peoria St.

Looking West between Green St. & Peoria St.
Fulton Market Flex Street

Proposed Day (Trucks/Distribution)

Proposed Night
Fulton Market Flex Street

Proposed Conditions – Looking West at Sangamon St.
Fulton Market Flex Street

Proposed Conditions – Looking East between Sangamon St. and Morgan St.
Lincoln Square Neighborhood existing conditions
Lawrence Avenue – Existing Conditions
Lawrence Avenue – Post Construction
• 21,000 vehicles travel Lawrence Ave on average each day (about 10,500 each direction)
• Pedestrian Counts during peak morning and evening period
  o Western Ave – 250 am / 340 pm
  o Damen Ave - 200 am / 40 pm
  o Metra Stop (Ravenswood Ave) - 650 am / 460 pm
  o Ashland Ave - 50 am / 195 pm
• Bicycle Counts during peak morning and during evening period
  o Western Ave - 70
  o Damen Ave - 80
  o Ashland Ave - 70
• 517 traffic accidents (2005-2008): no fatalities, 3 incapacitating driver injuries, 27 minor injuries and 13 pedestrian injuries.
• Pedestrian and Bike Generators surrounding Road Diet Section:
  o 270 bus-runs (approx) via CTA Route 81 through the section.
  o CTA Routes #11, #49, #49B, #X49, #50 run across Lawrence Ave.
  o 330 train-runs (approx) via CTA Brown Line along this section (runs 2 blocks south of Lawrence with stops at Western, Damen, Montrose).
  o 60 train-runs (approx) via Metra UP North Line Station across this section.
• Neighborhood Residents and Guests
  o Bicyclist commuters
Lawrence Ave. Streetscape

Lane reduction: 4-lane to 3-lane Conversion
- Wider sidewalks
- Designated bike lane
- Benefits all modes of transportation
- AASHTO Design guidelines no longer recommend urban four-lane roadways without medians and turning pockets.

Why Lawrence Ave?
- Narrow sidewalks on both sides of the street
- High bicycle use that exceeds state recommendations for installation of a dedicated bike lane
- Strong public transit use via the CTA Brown Line, Metra North Line, and 6 bus routes on or intersecting Lawrence.
- Economic strength of Lincoln Square / Lincoln Ave Corridor
- Mid-scale commercial and institutional land uses
Proposed Cross Section East of Western Ave.
Lawrence Ave. Streetscape

• New Designated Bike Lane
  - Adding 1 mile of designated bike lane (in each direction).
  - Completing the 5 mile link from the Kennedy/Blue Line to east of Sheridan Rd (Elston to Central Park shared) and to Lakefront.
Impact of the Road Diet on the Lawrence Corridor

- Increased motorist delay while traveling the Lawrence Corridor
  
  - Depending on the time of day, travel times between Ashland Ave. and Western Ave. may increase by 3-9 mins.
  
  - Current travel times for westbound evening rush hour:
    
    - Western Ave. to Kedzie Ave. - 5:65
    - Ashland Ave. to Western Ave. - 3:52

- Increased motorist delay in turning off/onto Lawrence Ave and crossing Lawrence Ave.
  
  - Queue Lengths will increase at traffic signals, with the heaviest at PM westbound rush hour.
  
  - During peak hours, traffic will backup through side streets.

- Increased potential of cut-through traffic by cars and delivery vans. Traffic calming elements (speed humps) exist on numerous side streets.
**Streetscape Changes to Mitigate Negative Impacts of the Road Diet**

- Traffic signal timings will be adjusted to provide greater efficiency for through-traffic on Lawrence Ave.
  - All signals 85 seconds
  - Ped crossings between 3.5-4 ft/second

- A center turn lane is being provided so that turning cars do not interrupt the flow through traffic and to facilitate cars turning onto Lawrence.

**Corridor Impacts**
**Lawrence Ave. Streetscape**

**Streetscape Changes to Mitigate Negative Impacts of the Road Diet**

- Bump-Outs on side streets will reduce cut-through traffic onto side streets.
- Pedestrian refuge islands will increase safety for pedestrians crossing at non-signalized intersections.
- Bump-OUTs on side streets will reduce cut-through traffic onto side streets.

**Corridor Impacts**
Lawrence Ave. Streetscape

**Streetscape Changes to Mitigate Negative Impacts of the Road Diet**

- Buses are still able to pull over at stops in order to allow through-traffic to pass

- The major intersections of Western Ave., Damen Ave., and Ashland Ave will maintain 4-lane cross sections

**Corridor Impacts**
Traffic flow expected to remain the same at the Western Ave., Damen Ave., and Ashland Ave. Intersections through:

• Making right turn bays into shared right-through lanes (parking stalls lost).

• Increased length of left turn storage bays on Lawrence as well as intersecting streets.

• Adjustment of signal timing

• The addition of left turn signals where applicable
Claremont Plaza
Roosevelt Road between State Street & Columbus Drive
Approximately 1,900 feet (0.4 mile)
Adjacent Neighborhood
• 2 lanes in each direction is adequate capacity

• 22,000 – 23,000 vehicles could be one lane in each direction with turn lanes
Pedestrian Movements

• Large volumes of east/west movements

• Primary pedestrian path of travel on north side

• Significant amount of pedestrian activity with special events

• CTA intermodal connections

Pedestrian Crossing Movements - Before
Typical PM Peak

Michigan Ave. Intersection

Wabash Intersection

Peak After Bears’ Game

Wabash PM Hours

Michigan PM Hours

Ped Counts
Roosevelt Station

• 5 Bus Routes on Roosevelt

• CTA Bus Stop – North Side: 3,200 Weekday boardings (2nd highest in bus system)

• CTA Bus Stop – South Side: 2,400 Weekday boardings (9th highest in bus system)

• CTA Rail Station – 12,000 Weekday Station Entries (8th highest in rail system)
Area Bike Counts
• Before – on street bike lanes on Roosevelt

• Roosevelt serves as a connector to the lakefront and the museum campus

• PM peak volumes on N-S streets feeding into Roosevelt are moderately high

• Along Wabash (N&S) 4-6PM: 142 bicyclists

• Along State (N&S) 4-6PM: 108 bicyclists
Divvy Bike Stations

• The Museum Campus Divvy station is one of the most popular start and end stations. This is especially true on weekends but also on weekdays during the summer.
• Enhance Pedestrian Environment
  • Larger Sidewalks for Better Capacity (Transit & Special Events)
  • Green Streets / Landscaping Improvements

• Safer Multimodal Connections
  • Reduce or Control Jaywalking at Station

• Improve Transit Waiting Environment
  • Provide Better Shelter / Waiting Area for Bus Stops at Station

• Accommodate Traffic and Bicycle Flows
  • Multimodal Solution that Accounts for All Users

• Improve Aesthetics and Wayfinding
  • Connection between CTA station and Museum Campus
  • Enhance Visual Aspects of Corridor
  • Provide Better Signage to Destinations

Project Objectives
State Street to Wabash Avenue - Before

Before

- Bus lanes, bike lanes, two through lanes and left turn lanes in each direction
State Street to Wabash Avenue - After

- Lane widths adjusted
- No capacity lost
- No change to cross section
- Sidewalks widened to accommodate transit users (from 10-11' to up to 16 ½')
Before

- Bus lanes, bike lanes, two through lanes and left turn lanes in each direction
Places for all users
• Sidewalks widened

• Bus lanes converted into pedestrian space on north side and right turn lane onto Michigan Ave. on south side

• Bike lanes relocated to north side at sidewalk level – provides extra pedestrian capacity during events and eliminates bike-vehicle conflict

• Narrow underutilized concrete median expanded to allow landscaped refuge island at Michigan Ave.
Michigan Avenue to Indiana Avenue - Before

- Westbound = right turn lane, 2 through lanes, left turn bay
- Eastbound = 3 lanes
Michigan Avenue to Indiana Avenue - After

- Capacity westbound unchanged, lengthened left turn lane and removed westbound nearside bus stop blocking right turn movement to northbound Michigan Ave.

- Narrowed median and used Park District land to continue off-street bike lanes. Bike facility links directly to Park District path & Museum Campus

- Expand capacity of left turn lane onto southbound Michigan Ave.

- Eliminated eastbound lane to align with through lanes east and west, reducing weaving
The Cermak/ Blue Island Streetscape

Ecological Approach: A project-specific mitigation effort to demonstrate how sustainable infrastructure can support the urban ecosystem
# Project Sustainable Goals

<table>
<thead>
<tr>
<th><strong>Stormwater Management</strong></th>
<th>Divert 80% of the typical average annual rainfall and at least 2/3 of rainwater falling within catchment area into stormwater best management practices.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water Efficiency</strong></td>
<td>Eliminate use of potable water for irrigation, specify native or climate adapted, drought tolerant plants for all landscape material.</td>
</tr>
<tr>
<td><strong>Transportation</strong></td>
<td>Improve bus stops with signage, shelters and lighting where possible, promote cycling with new bike lanes, improve pedestrian mobility with accessible sidewalks.</td>
</tr>
<tr>
<td><strong>Energy Efficiency</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Recycling</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Urban Heat Island, Air Quality</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Education, Beauty &amp; Community</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Commissioning</strong></td>
<td>Model Stormwater BMP’s in Infoworks to analyze and refine design. Monitor stormwater BMP’s to ensure predicted performance and determine maintenance practices.</td>
</tr>
</tbody>
</table>
Integrated Design: Blue Island Cross Section

- Permeable Pavement for Stormwater Management
- Photocatalytic for Air Quality
- High SRI for Lighting and UHI
- Permeable pavers connect to infiltrating planters
- Bike/Parking Lane
Cermak Road

- High recycled, high SRI concrete
- Continuous bioswale – takes 50% $H_2O$
- Infiltrating planters – takes 50% $H_2O$
- High recycled WMA & microthin concrete overlay
- LED lighting

...
Cermak Road
Juarez Water Feature
Education: Informational Kiosks with Interpretive Graphics, Lightpole Identifiers, and Walking Tour
Chicago
June 2013 –
25 year event

Typical Chicago Street

Pilsen Sustainable Street
Sustainable Streets are Cost Effective

Cost is 30% less than projected...

- Cermak total project cost ($)
  - Cermak projected cost
  - Actual bid

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

- Average per block cost ($)
  - Average construction cost per block in 2010
  - Cermak cost per block

Preliminary Findings indicate a Benefit Cost Ratio of 19.7 for green build compared to only 6.3 for standard build.
Green and Business as Usual 30 Year Analysis Summary

- **Green Build**
  - Cost - $11.7 million (2012 $)
  - Benefits - $231.7 million (2012 $)
  - Net Present Value - $219.4 million (2012 $)
  - BCA - 19.7

- **Business as Usual Build**
  - Cost - $8.9 million (2012 $)
  - Benefits - $56.7 million (2012 $)
  - Net Present Value - $47.7 million (2012 $)
  - BCA - 6.3
RETURN ON INVESTMENT:
Create a resilient transportation infrastructure, where each dollar invested reaps the most benefits and controls long term costs.

Why Complete Streets?

Net Present Value (over 30 years)

<table>
<thead>
<tr>
<th>Category</th>
<th>Business as Usual</th>
<th>Green Build</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>6.3</td>
<td>19.7</td>
</tr>
<tr>
<td>Water</td>
<td>0</td>
<td>3.8</td>
</tr>
<tr>
<td>Materials and Waste</td>
<td>2.2</td>
<td>2.3</td>
</tr>
<tr>
<td>Local Placemaking</td>
<td>19.9</td>
<td>41.3</td>
</tr>
<tr>
<td>Alternative Transportation</td>
<td>0</td>
<td>5.9</td>
</tr>
<tr>
<td>Energy</td>
<td>0</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Dollars (Millions)
Outcomes

Access, mobility, Healthy lifestyles

Safe, Sustainable, Beautiful Streets

Beauty, Community, economic development

Healthy communities, clean environment
Making Detroit Walkable
A Neighborhood building strategy
Great Neighborhoods have......

**DENSITY** - sufficient numbers of residents and/or employees to support local businesses and public facilities.

**DESTINATIONS** - nearby businesses, parks, schools and institutions

**DIVERSITY** - a range of housing options that support different incomes, family structures, and times of life

**DISTANCE** - meaning how easy it is to travel by foot or bike
How do we get there

Build from our community’s existing assets

– Institutions
– Parks
– Commercial corridors
– Historic housing stock
– And their People

Building Blocks

Mobility
– Planning, Placemaking and Open Space
– Multi-family and mixed use development
– Small Business and Retail Development
– Rehab existing single family homes
– Safety
– Education and Services
• Almost 21 square miles of vacant land
• Does not include parks, open space or roads.
• With planned demolition it will be 24 sq. miles.
• This is one vacant lot for every 3 residents.
• Not contiguous, a quilt, average size of a vacant area is two residential lots side by side.

Land

• Another 7 square miles are parks.
• 2 square miles are cemeteries

• 30% of the City is roads, which is almost 42 square miles
What does People Centered Mobility Look Like

- Multi-modal Choices
- Safe for all users
- Connected
- Easy to understand and use
- Quickest way to get where I need to go
- Affordable
The Detroit Water and Sewerage Department invites you to participate in a

NONRESIDENTIAL PROPERTY OWNER
DRAINAGE CHARGE CREDIT WORKSHOP

Wednesday, November 9, 2016
SEMCOG (Woodward Room) - 1001 Woodward Avenue, Suite 1400

Please RSVP for the drainage charge credit workshop that's best for your schedule.
Register by November 8. Space is limited to 85 per workshop.
6.4.2 Bioretention

Bioretention storm water practices include a number of different configurations that temporarily store runoff in an engineered system that will later infiltrate into the soil. The type of bioretention systems most commonly constructed include:

<table>
<thead>
<tr>
<th>Table 4 - Bioretention Types and Application</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bioretention Type</strong></td>
</tr>
<tr>
<td>Rain garden</td>
</tr>
<tr>
<td>Bioretention</td>
</tr>
<tr>
<td>Parking lots</td>
</tr>
<tr>
<td>Curb extension</td>
</tr>
<tr>
<td>Planter boxes</td>
</tr>
<tr>
<td>Tree trenches</td>
</tr>
</tbody>
</table>

Other than rain gardens, bioretention systems are engineered storm water practices that include such elements as aggregate storage, filter layers, and special planting soils that are specifically designed to manage, treat and store storm water prior to infiltration into the soil.

**Figure 14: Bioretention Illustration**

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**PERMEABLE PAVEMENT VOLUME CREDIT CALCULATION EXAMPLE**

A commercial property is applying for a volume credit for permeable pavement. The site has the following characteristics:

- Drainage Area: 10,000 sf from parking lot plus 5,000 from roof runoff = 15,000 sf
- Total Impervious Area: 17,500 square feet
- Infiltration Rate: 0.1 in/hr
- Allowable Drain Time: 72 hr
- Permeable Pavement: > 25% of the parking lot (2,500 sf); Aggregate Storage Layer: 5,000 square feet of the parking lot. Therefore physical practice: 5,000 square feet.
- Aggregate (under the parking lot): 24 inches
- Usable Void Ratio in Aggregate: 35%
- Underdrain is located 12 inches off the bottom of the practice.

The calculation methodology selected is the Equivalent Rainfall Method.
Single Family Residential Stabilization

Stabilize neighborhoods, increase property values, and improve the quality of life of residents

• Develop a comprehensive strategy to address public-owned property at-scale rather than lot-by-lot
• Stabilize a neighborhood adjacent to two university anchors
• Arrest the spread of disinvestment
• Create catalytic change through public, private and philanthropic investment

New Initiatives

• Pilot: Fitzgerald Revitalization Project
Fitzgerald Revitalization Project

Create a blight-free quarter square mile in the Fitzgerald neighborhood

Project Goals:
• Transform every public-owned property
• Improve neighborhood perception
• Impact in 2016
• Pilot a replicable revitalization strategy to be applied across Detroit

Ownership:
• 1,133 Total Parcels
• 419 Total Public-owned parcels
  – 117 Structures
  – 302 Vacant lots
Implementing the Fitzgerald Revitalization Project through three primary initiatives:

- Housing Developer
- Productive Landscape Developer
- Parks and Recreation

All implementation strategies structured to create and encourage job and entrepreneurial opportunities for local residents.
Mobility + Open Space
Creating a great and inclusive riverfront:
World-class public space (parks + streets)
Greenway connections to the neighborhoods
Accessible (transportation + parking)
Authentic, diverse and local retail
EXISTING

PROPOSED – AN EXPANDED MILLIKEN STATE PARK
Complete Streets

PROPOSED – FRANKLIN STREET ACTIVATION

EXISTING
Jefferson Avenue Improvements (long term)
Bloody Run Creek Greenway Redevelopment Project

Detroit Collaborative Design Center, 2011

Part of a regional stormwater and ecological strategy
introduce wetland habitat, connect people with water
Stormwater Overlay District
THANK YOU.

My email address: attarianj@detroitmil.gov