



Reinventing Streets

In Support of Livable Communities

Presenters

Betsy Mastaglio, RLA

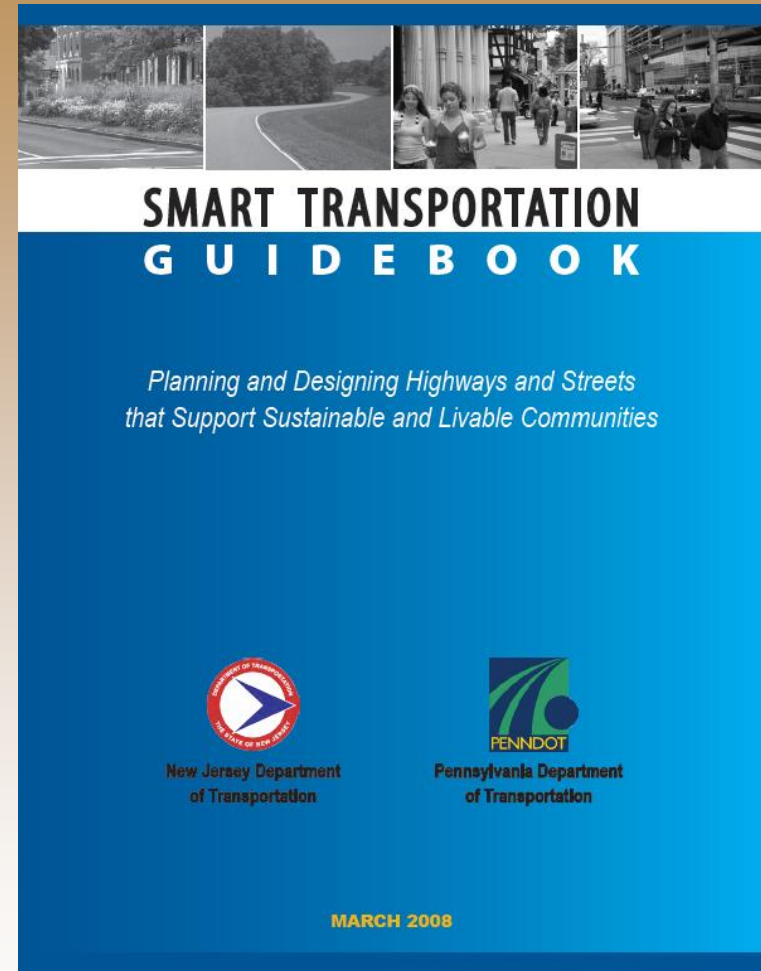
Steve Nieman, AICP



McCormick
Engineers & Planners
Since 1946 Taylor

Resources

- ▶ NHI 151043: Transportation and Land Use course
- ▶ Smart Transportation Guidebook (joint NJDOT-PennDOT manual)
- ▶ Corridor Planning Experience
- ▶ Case Studies



www.smart-transportation.com

What is a 'Complete Street'?

- ▶ A street designed and operated to enable safe, attractive and comfortable access and travel for all users



Source: www.pedbikeimages.org

Legislation for Complete Streets

- ▶ Complete Streets Act of 2009 (introduced in March 2009)

To ensure that all users of the transportation system, including pedestrians, bicyclists, transit users, children, older individuals, and individuals with disabilities, are able to travel safely and conveniently on and across federally funded streets and highways.

(Source: www.completestreets.org)

State and Local Initiatives

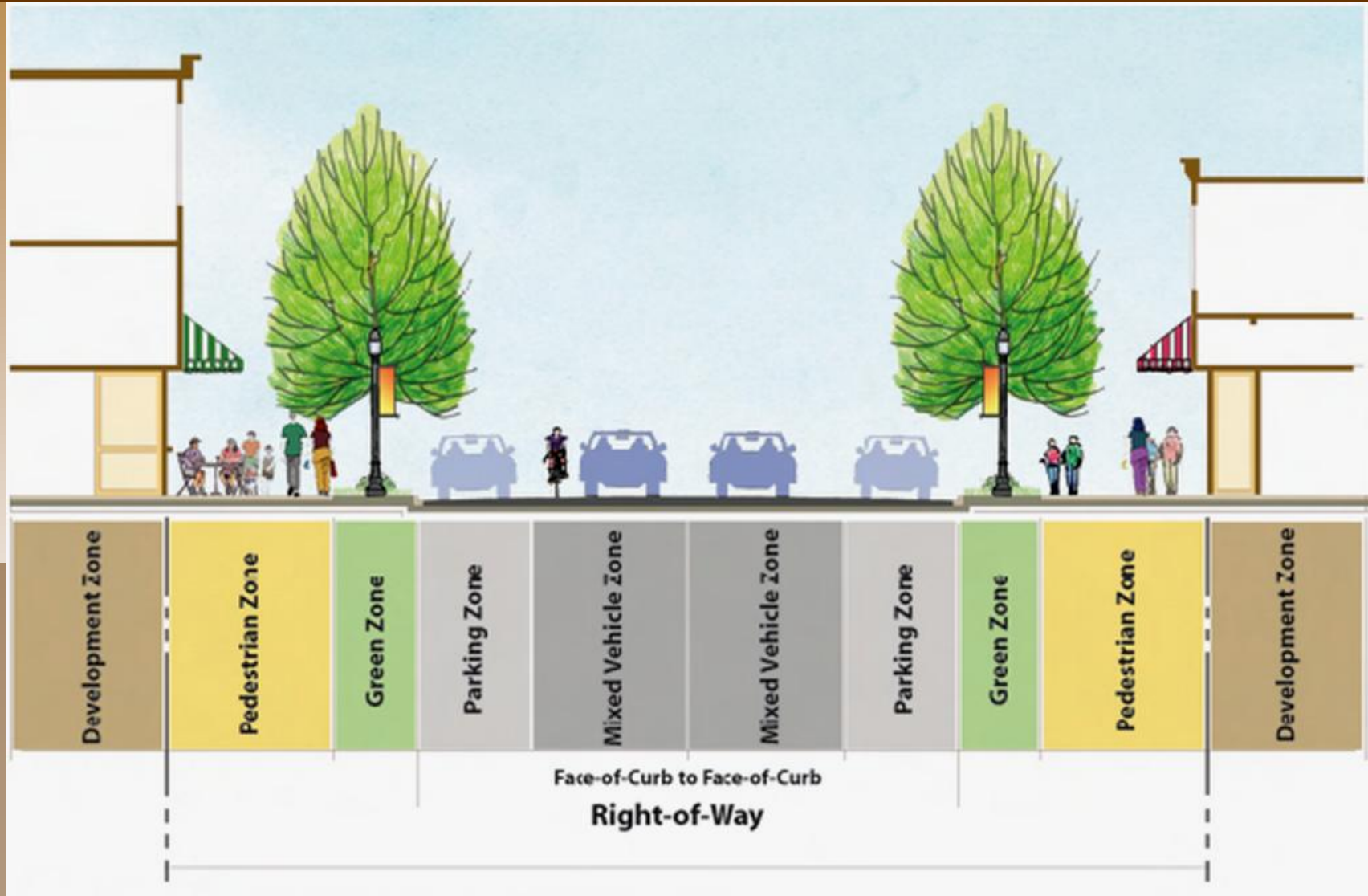
▶ States

- State of New Jersey: Complete Streets Policy
- State of Connecticut: “An Act Improving Bicycle and Pedestrian Access”
- State of Pennsylvania: Appendix J of Design Manual 1A, Bicycle and Pedestrian Checklist

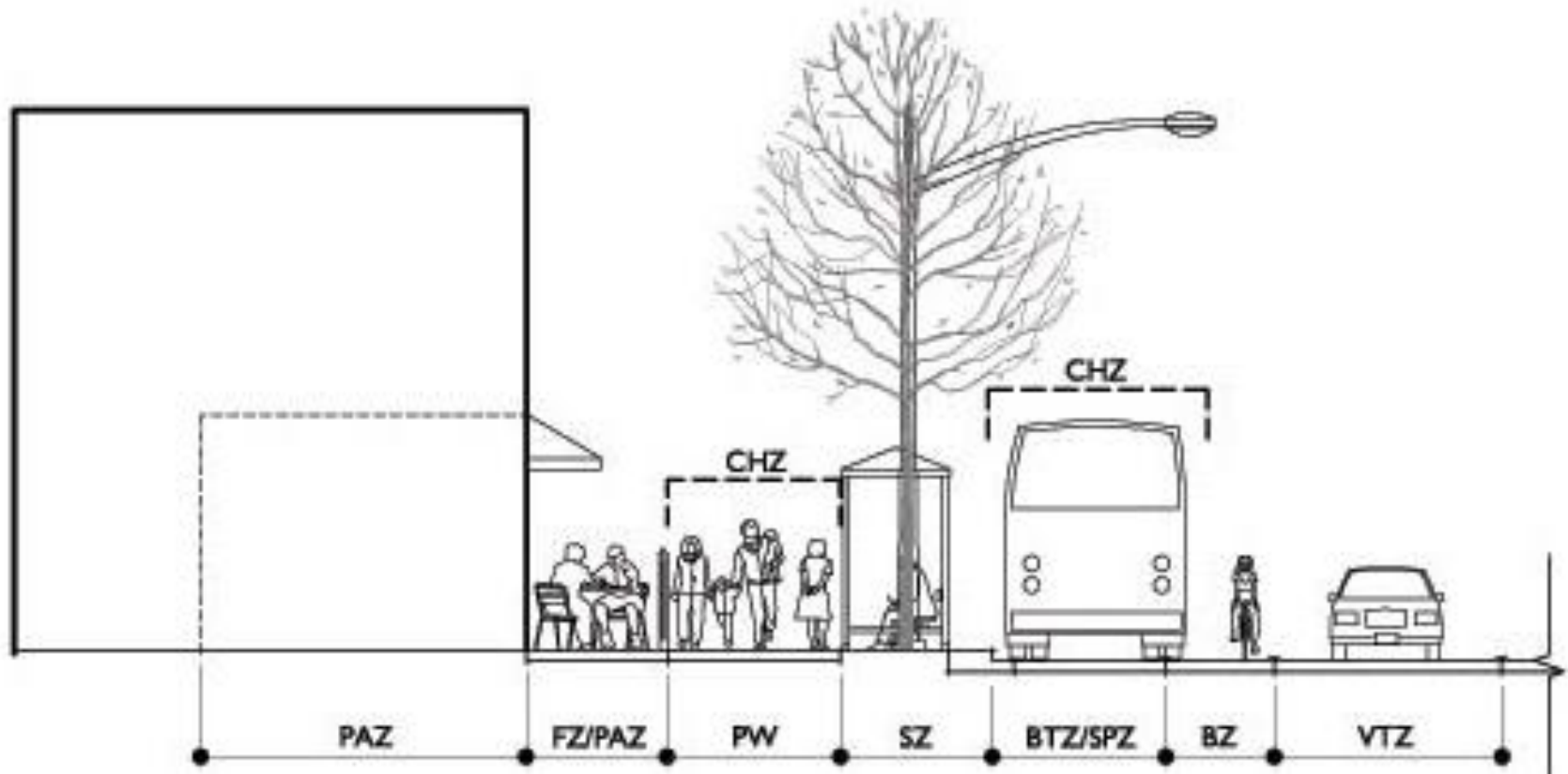
▶ Locals

- Franklin, Pennsylvania
- Philadelphia: “Complete Streets Executive Order”

Integrating Transportation & Land Use



Component Zones



BTZ - Bus Transit Zone

BZ - Bicycle Zone

FZ - Frontage Zone

PAZ - Pedestrian Activity Zone

PW - Pedestrian Way

SZ - Separation Zone

SPZ - Street Parking Zone

VTZ - Vehicle Travel Zone

Source: Indianapolis Regional Center & Metropolitan Planning Area, *Multi-Modal Corridor and Public Space Design Guidelines*

Traditional Complete Street

- ▶ Historically, cars did not dominate city streets



Seven Lanes, yet not 'Complete'



Spartanburg, SC

Why do we Need Complete Streets?

- ▶ Economic
- ▶ Environmental
- ▶ Health

- ▶ Safety
- ▶ Quality of Life



Source: streetfilms.org

Source: Mobility.tamu.edu

Source: ralphygeogers.files.wordpress.com

Economic Benefits

- ▶ Two-person household saves \$6,251 annually using public transportation
- ▶ Increase in property value and retail sales near transit
- ▶ Increased transportation options increases pool of potential buyers and employers
- ▶ Integrating facilities for multiple modes into the initial design of roadways avoids retrofits



Environmental Benefits

- ▶ Carbon emissions from transportation expected to be 41% higher than today in 2030
- ▶ 28% of all metro trips are a walkable/bikable 1 mile or less
- ▶ If 1 in 100,000 residents replaced 1 car trip with 1 bike trip per month, it would cut CO₂ emissions by 3,764 tons/year

Source: treehugger.com



Source: Mobility.tamu.edu



Health Benefits

- ▶ Reduced auto emissions improves air quality, reducing cases of asthma & other illnesses
- ▶ National Institute of Medicine recommends encouraging sidewalks & bikeways to fight childhood obesity



Source: [pedbikeimages.org/Dan Burden](http://pedbikeimages.org/Dan_Burden)



Source: ralphygeogers.files.wordpress.com

Quality of Life Benefits

- ▶ 1/3 of all Americans do not drive
- ▶ All ages feel safe, welcome & gain independence
- ▶ Provides options to avoiding traffic jams and increase overall capacity



Source: streetfilms.org



Source: farm4.static.flickr.com

Safety Benefits

- ▶ Installing raised medians, redesigning intersections and sidewalks reduced pedestrian risk by 28%
- ▶ Pedestrian crashes are twice as likely on streets without sidewalks

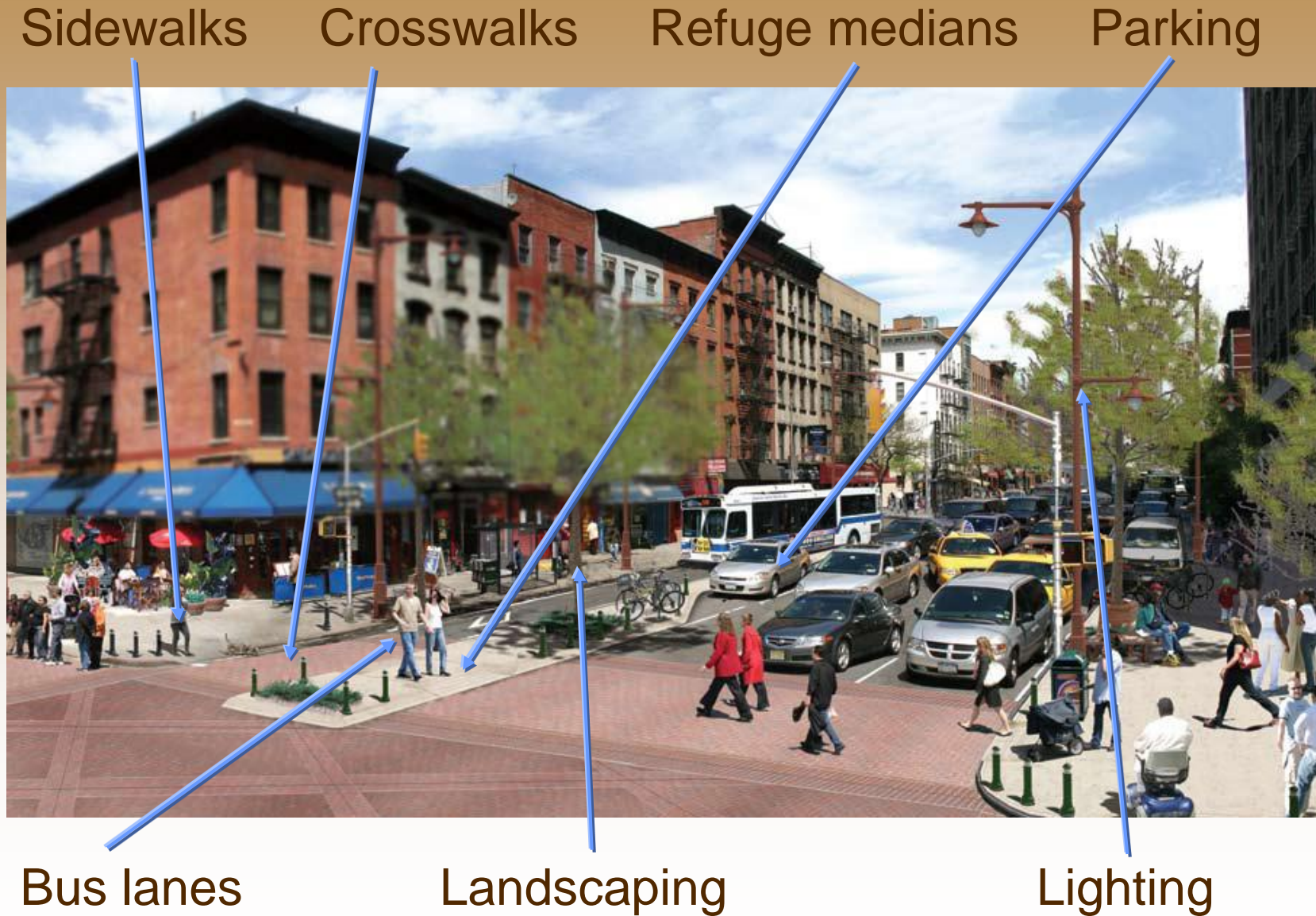


Elements of a Complete Street



Source: Project for Public Spaces

Elements of a Complete Street



Source: Project for Public Spaces

Complete Streets

A How-to-Guide



Three-Step Approach

1. Consider the context
2. Design the space
3. Implement the changes



Lewes, DE

1. Consider the Context



Source: www.pedbikeimages.org/Dan Burden

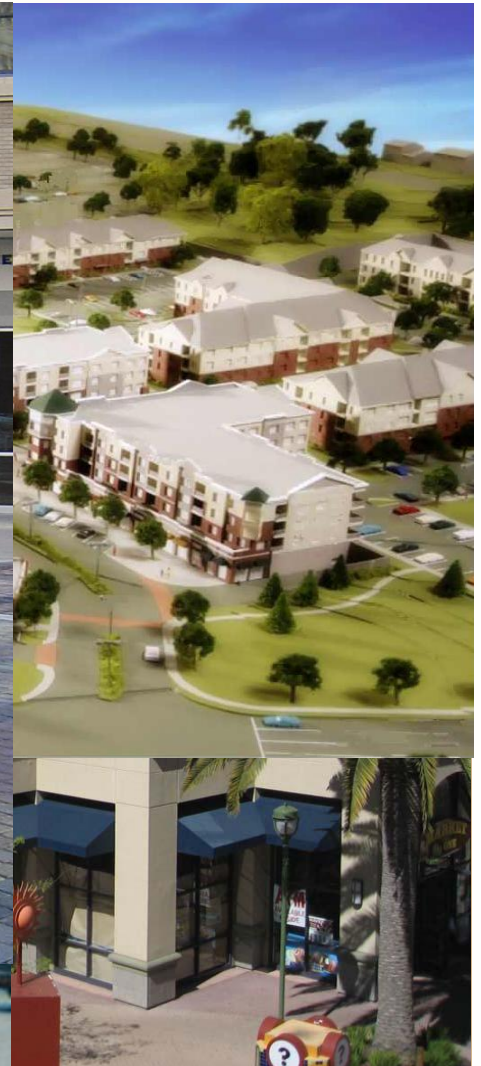
Appropriate Settings

Urban Areas



Small Towns

Mature Suburbs



Transit Villages

Consider the Context

Engage the Community

- ▶ Tailor solutions to the context
- ▶ Plan for all transportation modes
- ▶ Understand valued resources before starting engineering design
- ▶ Scale the solutions to the problem



Why Involve the Community?

“

Highway design is too important to be left to Highway Engineers.

Tom Larson

Former PennDOT Secretary & FHWA Administrator

”

Consider the Context

What is Community's Vision?

Find the clues to the future in:

- ▶ Municipal comprehensive plans
- ▶ Redevelopment plans and economic development plans
- ▶ Availability of infrastructure
- ▶ Visioning workshops/ design charrettes
- ▶ Discussions with municipal officials and the public

Consider the Context

Consider Land Use

- ▶ Balance mobility and accessibility
- ▶ Access to destinations
- ▶ Connecting land uses
- ▶ Support economic development/revitalization

This or this



Consider the Context

Consider User Needs



Consider the Context

- Include space for motorists, transit users, bicyclists, wheelchair users and pedestrians

2. Design the Space



Design the Space

Goals for Allocating Space

- ▶ Improve Mobility and Access for all Modes
- ▶ Improve Safety
- ▶ Improve Livability and Quality of Life
- ▶ Support Economic and Community Goals



Source: NYCDOT

Design the Space

This 3-Carriageway Street went from this



Design the Space

Pottstown, PA

Source: Michael Ronkin

Reduce Lane Widths

- ▶ Roadways with high truck volumes may need 12' lanes
- ▶ Consider 11' lanes for roads at 35 mph and higher
- ▶ Consider 10' lanes for low-speed urban roadways



Reduce Lane Widths

Reduce Travel Speed

Reduce Speeds



1. Lane & Shoulder Width



2. Street Trees



3. Curve Radius

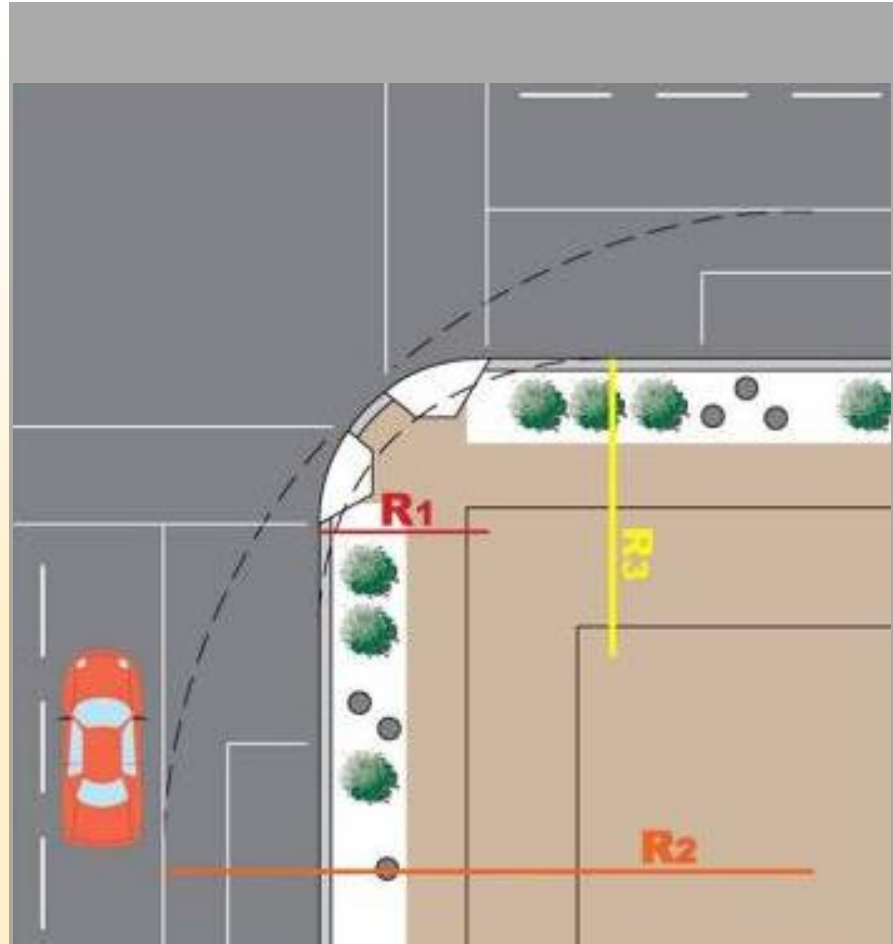


4. On-street Parking

Source: Smart Transportation Guidebook

Tighten Corner Curb Radii

- ▶ In urban contexts, choose smallest curb radius that can accommodate the design vehicle
- ▶ Balance need to accommodate truck turning movements with benefit of shorter crosswalks



Reduce Speeds

Source: Main Street... When a Highway Runs Through It. A Handbook for Oregon Communities

Provide On-Street Parking

- ▶ On-street parking is a desirable part of the urban fabric

- Slows passing cars
- Buffers pedestrians
- Convenient for shoppers



- ▶ Consider 7' and 8' wide parallel parking spaces

Reduce Speeds

Shoulder the Load

- ▶ Full-width (8-12') shoulders are critical on higher speed roadways
- ▶ In urban and suburban areas, shoulders of 4-6' are useful for retrofitting wide travel lanes for bicyclists
- ▶ Need to accommodate pedestrians on roads without sidewalks



Enhance Safety



Source: www.pedbikeimages.org/ Dan Burden

Access by Multiple Modes

- ▶ Economic activity is supported by providing means to arrive by car, transit, bicycle or foot



Transit Considerations

- ▶ Comfortable & accessible stop/station
- ▶ Dedicated lanes vs mixed in right-of-way
- ▶ Visibility of stop/station



Transit Design – Bus Stops



Bus Bay



Bus Bulb-Out

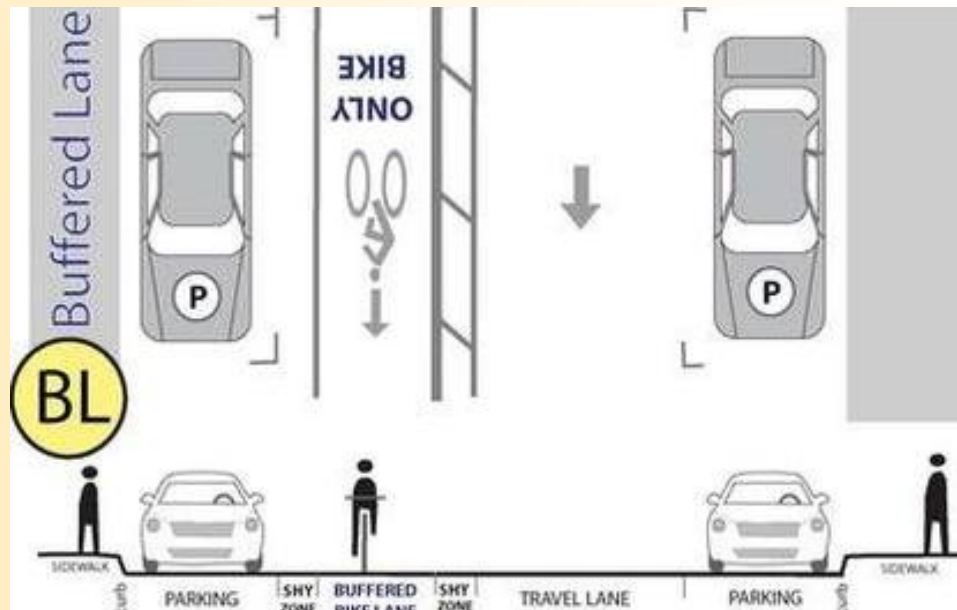


Design the Space

Source: www.pedbikeimages.org/ Dan Burden & Libby Thomas

Bicyclist Considerations

- ▶ On street vs. off street
- ▶ How to negotiate intersections
- ▶ Conflicts with driveways and on street parking
- ▶ Buffering the bike lane increases safety



Design the Space

Physical Separation from Traffic

- ▶ Contra-flow bike lanes provide for two-way bicycle travel on a one-way street
- ▶ Cycle tracks provide a separated path within roadway infrastructure



The Bike Box

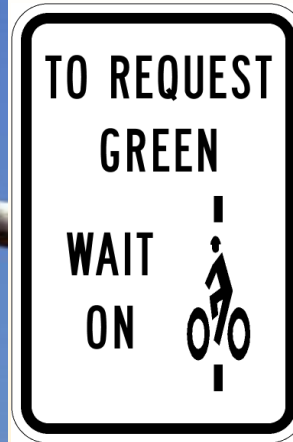


Source: www.bikeportland.org



Design the Space

Bicycle Signals



Design the Space

Bicycle Signage



Source: www.bikeportland.org



Design the Space

Pedestrian Considerations

- ▶ Continuous sidewalk, 5'-8' width, free from obstructions
- ▶ Visible crosswalk treatments on major roads
- ▶ Universal design (ADA)
 - Audible crossing signals
 - Accessible ramps at corners
 - Detectable warning surface



Source: [www.pedbikeimages.org/Dan Burden](http://www.pedbikeimages.org/Dan_Burden)

Pedestrian Design Treatments

- ▶ Crosswalks, signage and markings
- ▶ Curb extensions and radius reductions
- ▶ Raised medians



Design the Space

NYC Herald Square

► Before



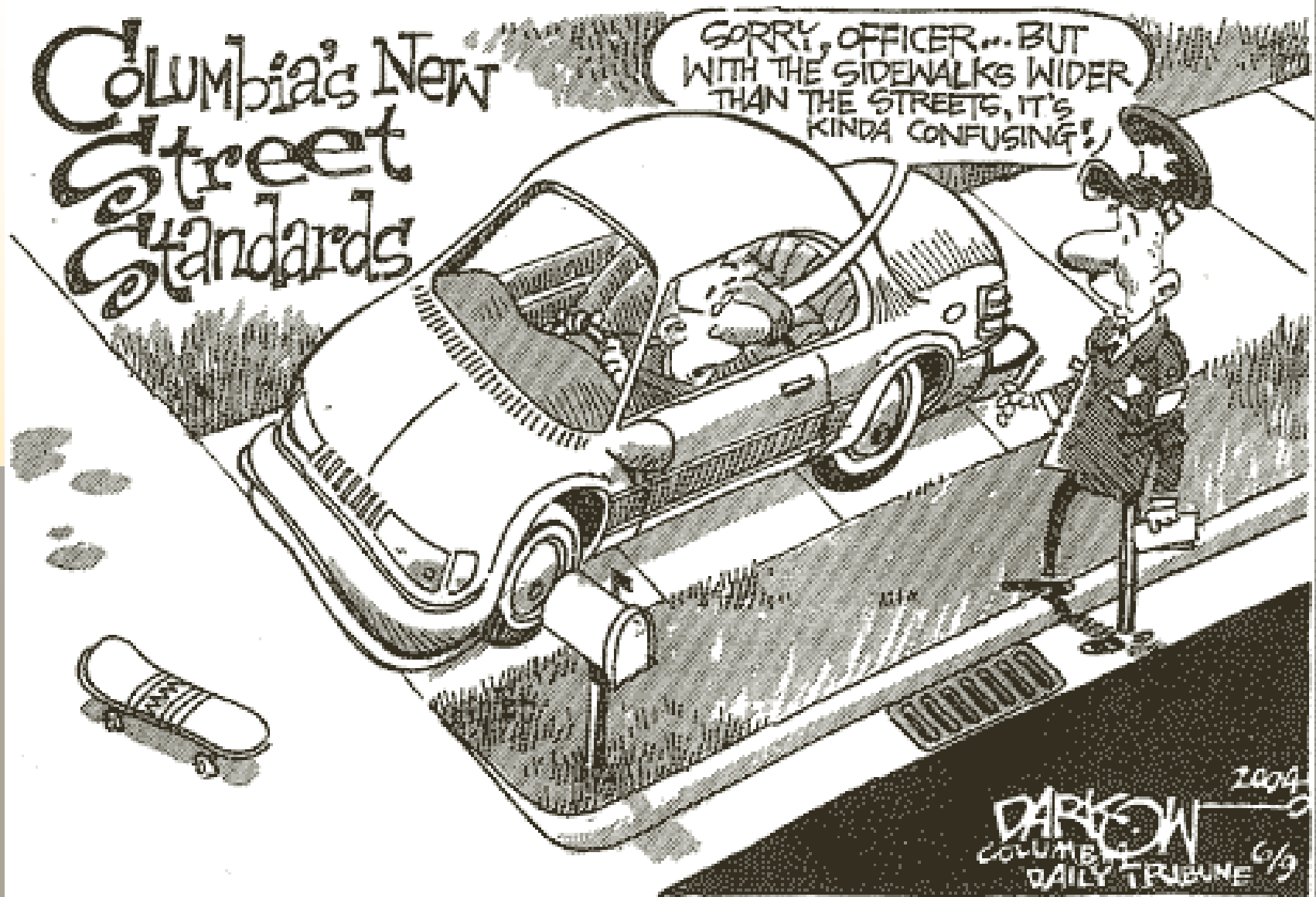
► After



Design the Space

Source: NYCDOT

A Shifting Paradigm



Design the Space

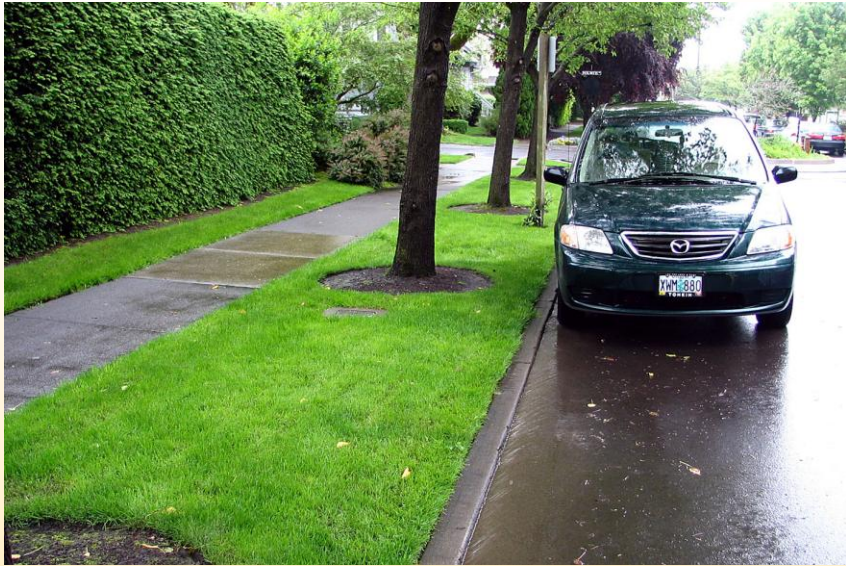
Continuous Sidewalks

Appropriately Scaled



Design the Space

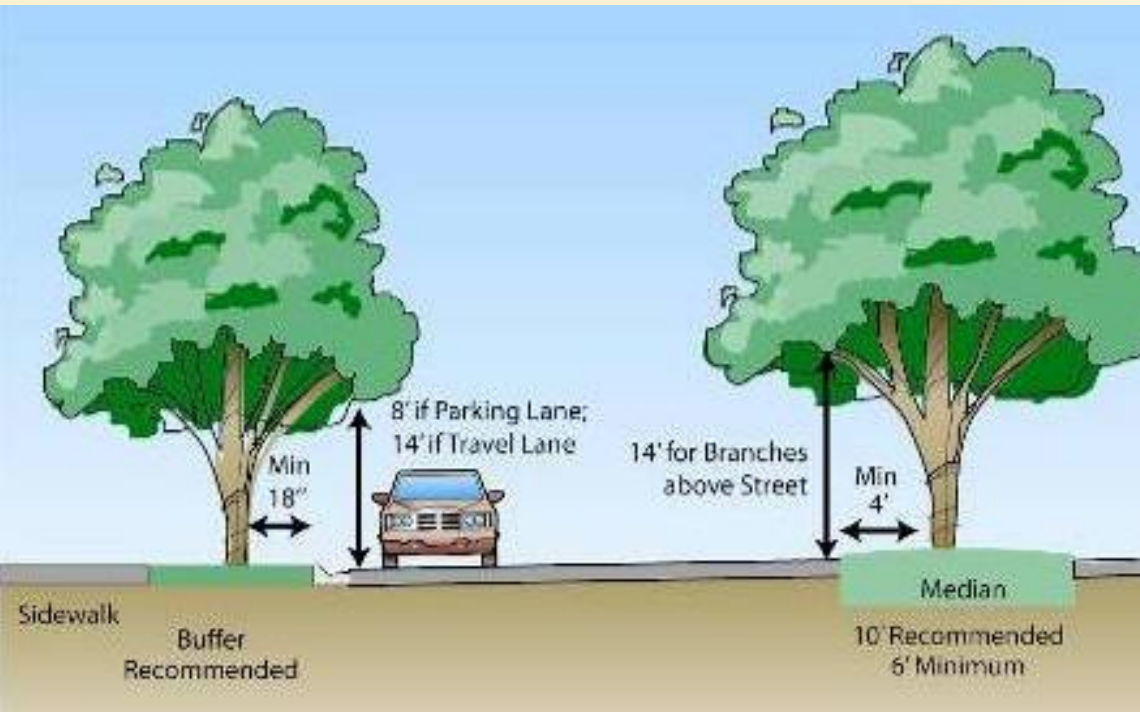
Appropriate Buffering from Traffic



Design the Space

Street Trees

- ▶ Reduce perceived width of street, and help calm traffic
- ▶ Provide buffer strips of 4 to 5 ft. between sidewalk and road
- ▶ Consider safety in clear zone



Medians

- ▶ Physical medians are best for pedestrians on multi-lane roads
- ▶ Width ranges from 4 to 18 ft., depending in part whether it houses a left turn lane



Diverse Mix of Uses



Human-Scale Buildings



Design the Space

Infrastructure & Green Design

- ▶ Ecologically sustainable infrastructure is low impact and incorporates best management practices to enhance environmental quality
- ▶ ‘Green’ elements can support safety, mobility and visual quality in a Smart Corridor



Benefits of Green Streets

- ▶ Reduces impervious surface
- ▶ Improves water quality
- ▶ Reduces urban heating
- ▶ Enhances pedestrian safety
- ▶ Beautifies neighborhoods



Other Considerations

Permeable Paving

- Suitable for parking lanes, sidewalks and alleys



Portland, OR

Other Considerations

Infiltration Basins

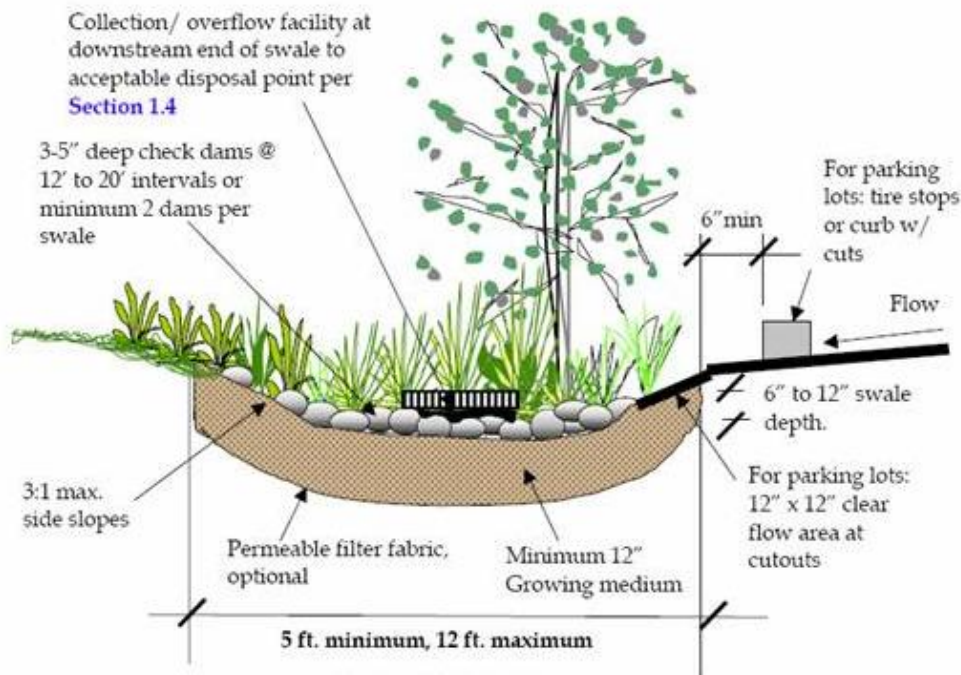
- ▶ Structured 'rain gardens' that use plants and soils to filter, absorb and slow stormwater flows into area waterways



Source: City of Portland Bureau of Environmental

Vegetated Swales

- ▶ Greening the edges of arterials and residential streets can provide natural and economical stormwater management



Other Considerations

3. Implement the Changes

Implement the Changes



Implementation Tools

Land Use

- ▶ Amend local comprehensive plans
- ▶ Rezoning
- ▶ Corridor zoning overlays
- ▶ Design guidelines/review
- ▶ Parking standards and management plans



Implement the Changes

State and Local Funding Sources for Implementation

- ▶ Home Town Streets
- ▶ Main Street Program
- ▶ Municipal budgets
- ▶ Developer fees, contributions and built roads
- ▶ Special assessment districts
- ▶ Tax-increment finance (TIF) revenues
- ▶ Parking fees

Implement the Changes

Implementation Tools

Transportation

- ▶ More detailed study
- ▶ Interim or phased improvements
- ▶ Change functional class or ownership
- ▶ Access management



Implement the Changes

Transportation Funding Sources for Implementation

- ▶ Transportation Enhancements Program
- ▶ Non-TE Surface Transportation Program
- ▶ CMAQ Funds
- ▶ Highway Safety Improvement Program
- ▶ Safe Routes to Schools

Implement the Changes



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