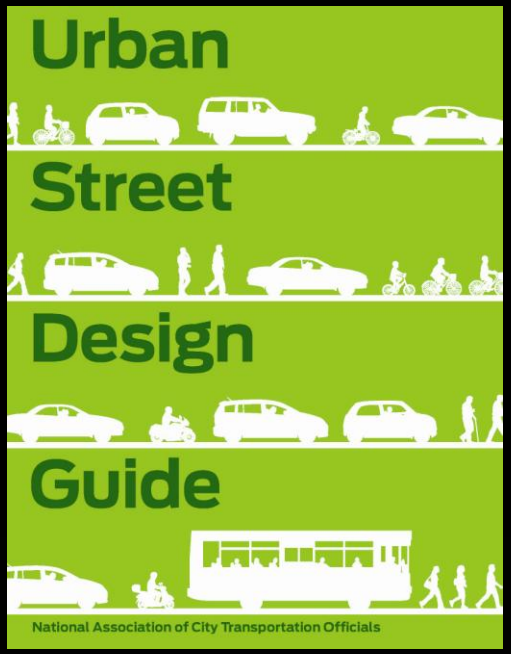
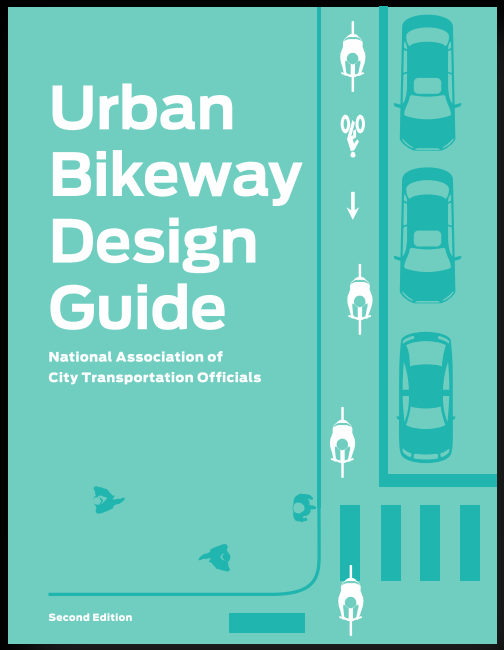
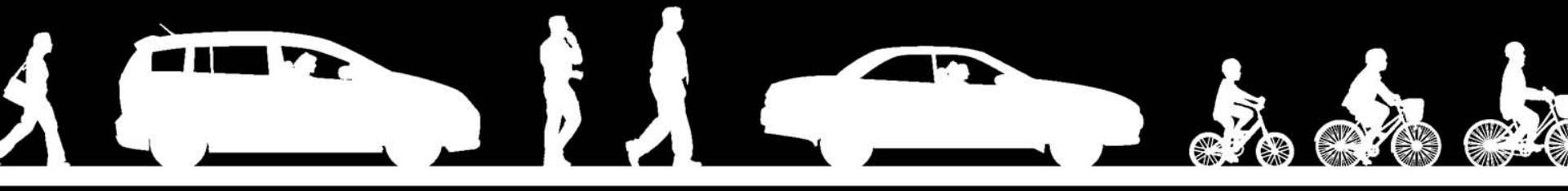
Introducing the NACTO Urban Design Guidelines







What Is NACTO?

- Founded 1996
- Peer Network of Large Central Cities (32)
- Advancing Sustainable Transportation and Street Design
- Focus on Local Innovation and Expertise
- City Counterpart to AASHTO

San Mateo Training Overview

MAY 13	Training for local policymakers and elected officials
MAY 14	Training for Public Works and Engineering
MAY 20	On-site street design charrette at Middlefield Road

May 14 Agenda Overview

9:00 – 9:15	Opening Remarks
9:15 – 10:30	*Presentations*
10:30 - 10:40	Break
10:40 – 11:45	*Presentations*
11:45 – 12:45	Lunch
12:45 – 2:00	*Presentations & Discussion*

When Pedestrians Get Mixed Signals

SAM ISLAND

By TOM VANDERBILT
February 1, 2014

A FEW years ago, I was waiting to cross the street in Los Angeles.

And kept waiting.

I watched several cycles of traffic go through the intersection. I checked my iPhone. I admired the distant Hollywood Hills.

Good Design Breeds Good Behavior

"…when you shorten the wait to cross a street, fewer people will cross against the light. When you tell people how long they must wait to cross, fewer people will cross against the signal."

NEW YORK POST

Page Six

LATE CITY FINAL

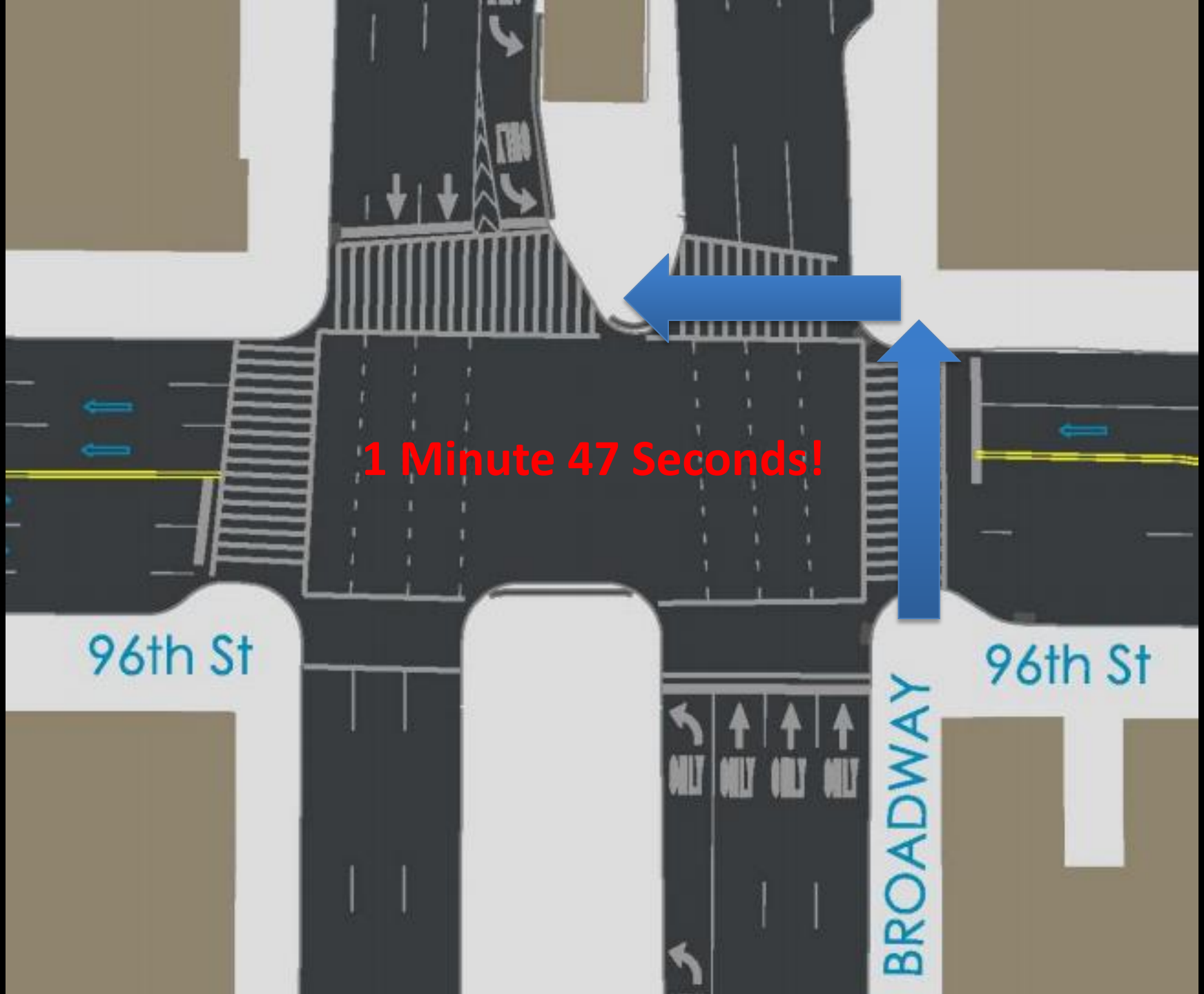
Super showdown

BRONCOS, SEAHAWKS PUNCH TIX FOR NY SPORTS

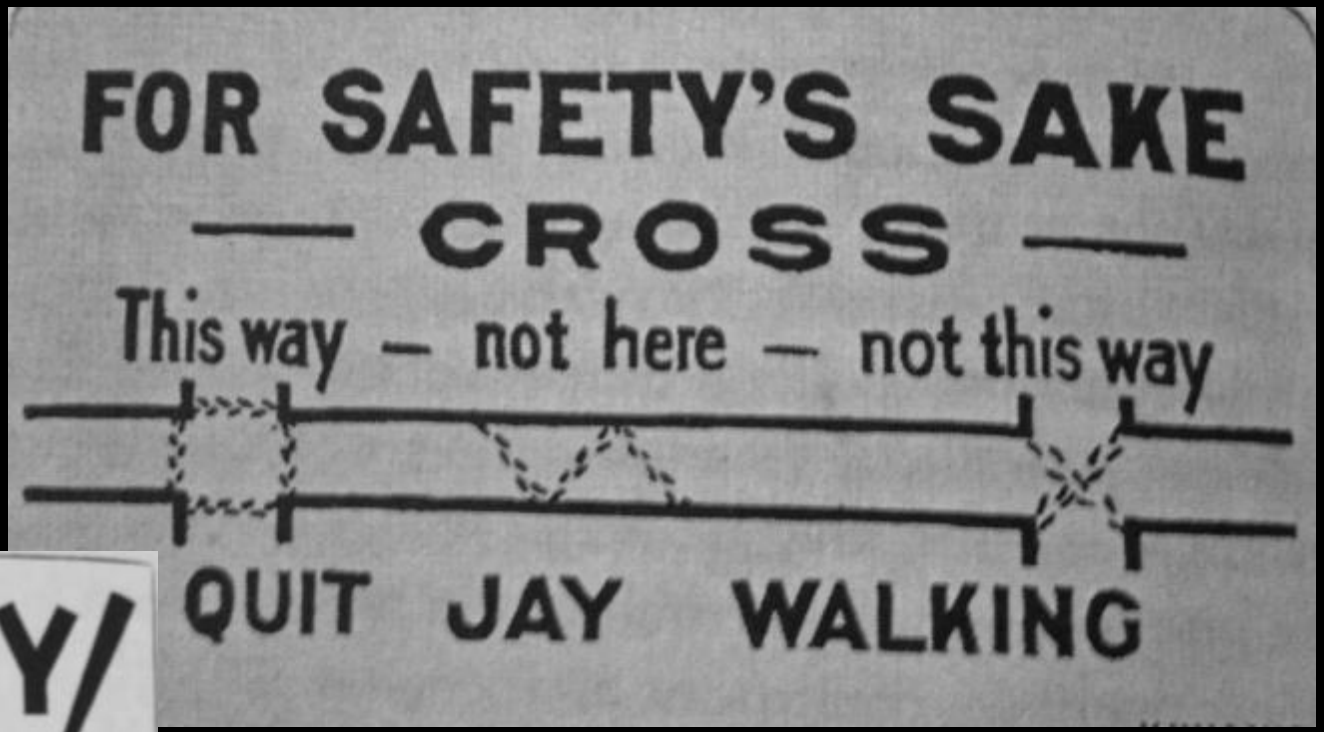
PUBLIC ENEMY #1

PAGES 6–7

Man, 84, bloodied by cops — for JAYWALKING!


1 Minute 47 Seconds!
96th St
96th St
BROADWAY
ONLY
ONLY
ONLY
ONLY


HUDSON'S
Kelly-Springfield
TIRES
GOLDE
$15
CLOTHES
WATT & BOND
BLACKSTONE
MILD 10¢ CIGAR
SHORPY


FOR SAFETY'S SAKE
— CROSS —
This way – not here – not this way
QUIT JAY WALKING

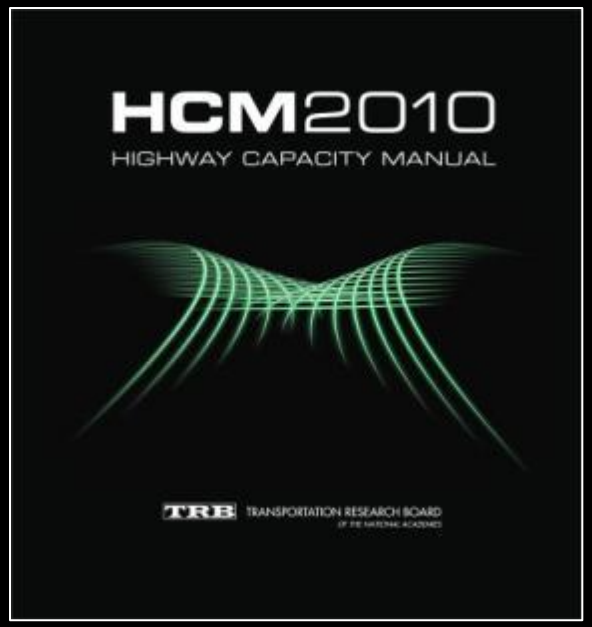

OBEY!
Obedience may save a life
Prepared by the
AMERICAN AUTOMOBILE ASSOCIATION

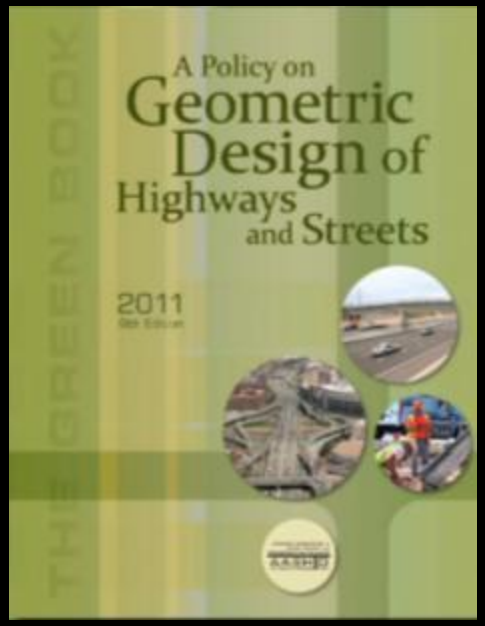

GM
PREVIEWS OF PRO

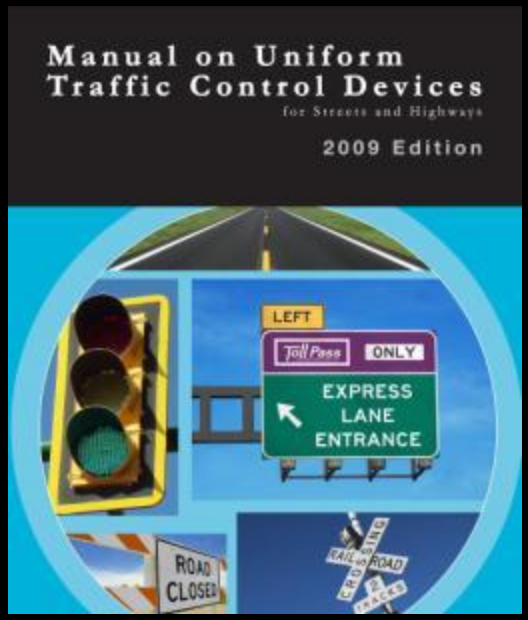

THE MALL — KALAMAZOO, MICHIGAN
Ice Cream Parlor
Gilmore Brothers


COMMERCE
GARAGE
COMPLETED

The Big Three







Mixed Messages

"Designers should recognize the implications of sharing transportation corridors and are encouraged to consider not only vehicular movement, but also movement of people, distribution of goods, and provision of essential services. A more comprehensive transportation program is thereby emphasized."

-AASHTO Green Book, Foreword, xlii

Mixed Messages

"The objective in design of any engineered facility used by public is to satisfy the public's demand for service in an economical manner with efficient traffic operations and with low crash frequency and severity. The facility should, therefore, accommodate nearly all demands with reasonable adequacy and also should not fail under severe or extreme traffic demands. Therefore, highways should be designed to operate at a speed that satisfies nearly all drivers." (2-53 (2.3.6))

-AASHTO Green Book, Foreword, xlii

WASHINGTON STREET IMPROVEMENT (BEFORE AND AFTER)

Fixed-object hazards vs. Community assets

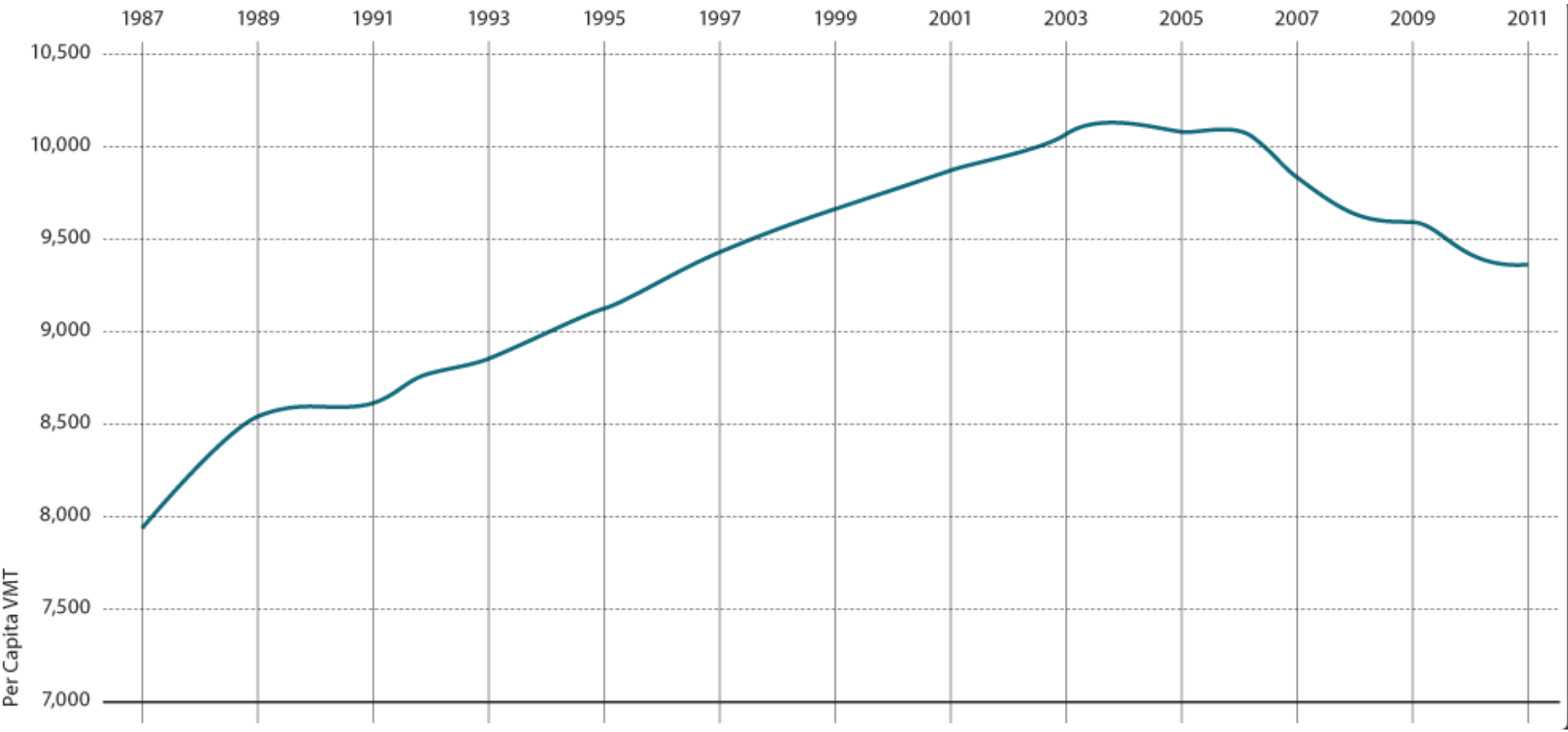
We must align our Engineering Guidelines
With our Policy Goals

What do we expect of our streets?

THEN	NOW
Speed	Multi-Modal Options
Mobility	Public Health/Safety
Safety	Economic Development
	Environmental Quality
	Community Building/Livability
	Equity

Credit: Tom Maguire, NYC DOT

People are Driving Less, Biking and Walking More



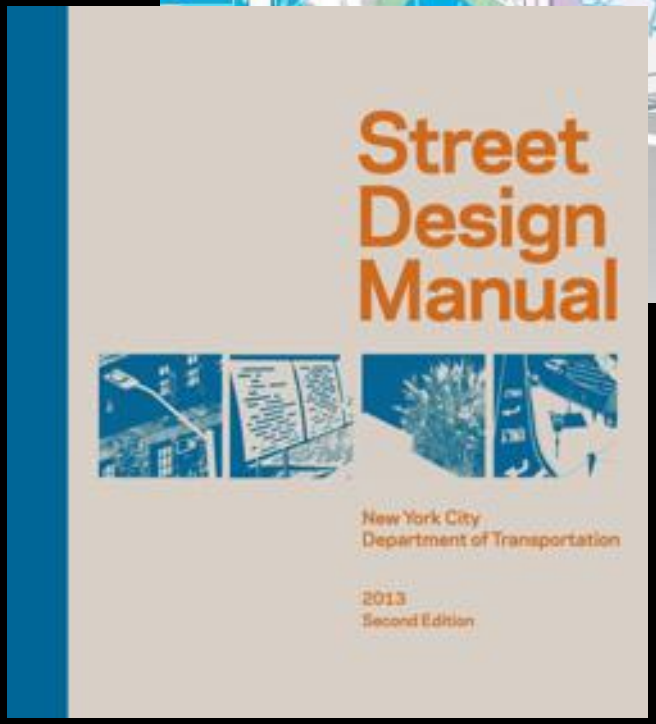
Ladders of Opportunity

"The challenge we face today is how to take a system that at one time codified bias and ensure that it now connects people, creates jobs, and allows people to grab a rung on what the President calls a "ladder of opportunity…Through transportation, we can help ensure that the rungs on the ladder of opportunity aren't so far apart—and that the American dream is still within reach for those who are willing to work for it."

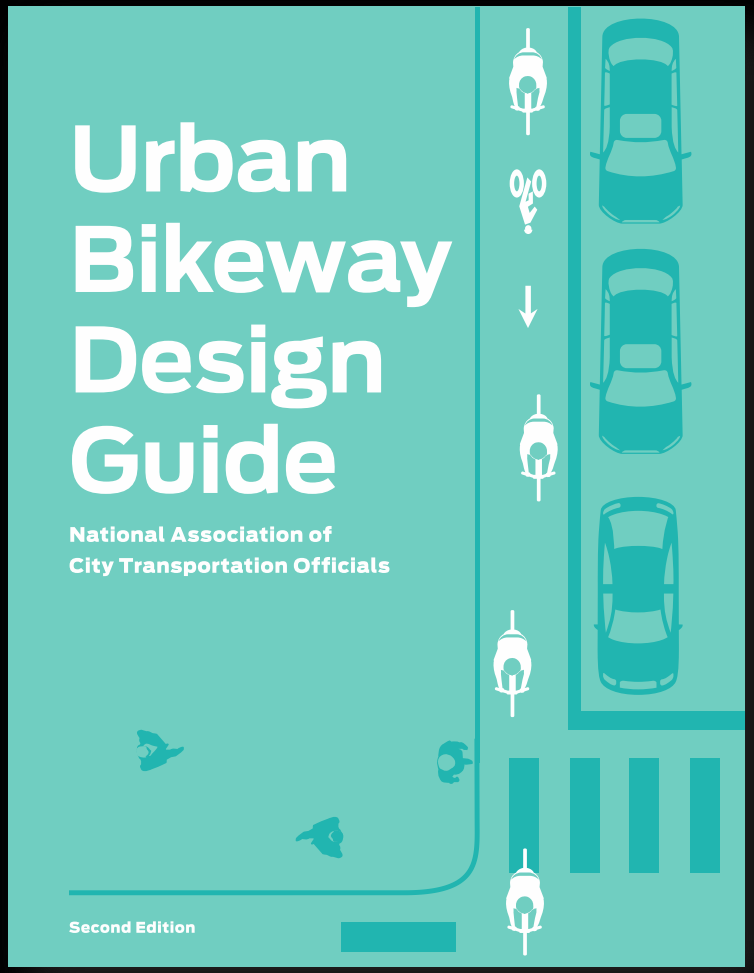
-US DOT Secretary Anthony Foxx

How do we get beyond the codified bias in our transportation systems?

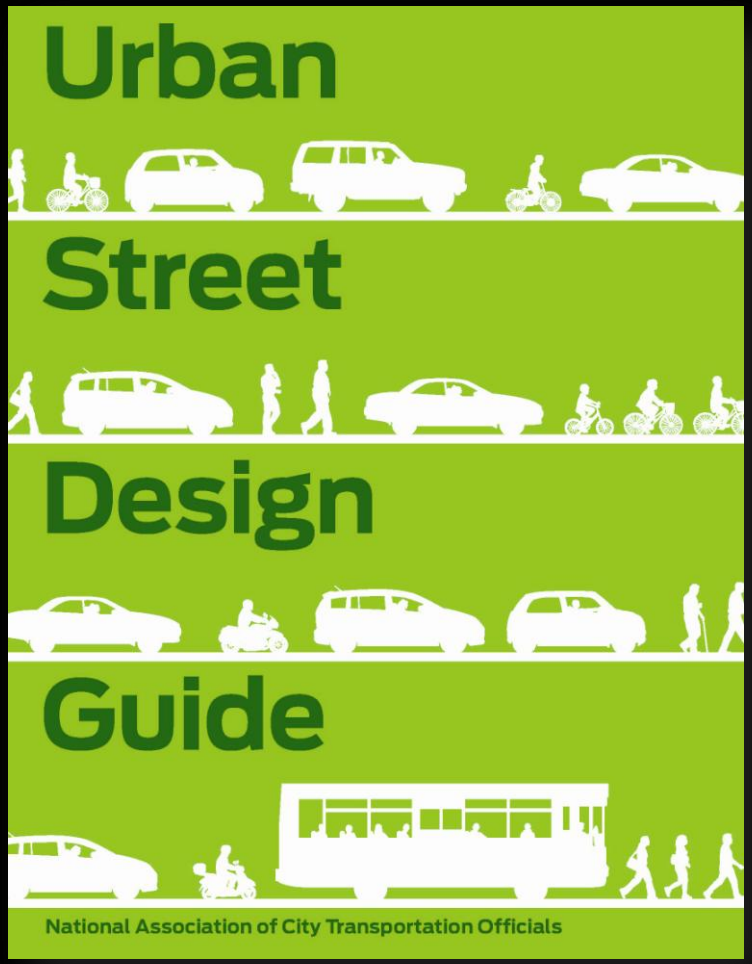
Boston Complete Streets Guidelines, 2012



New York City Street
Design Manual, 2nd Ed.
2013

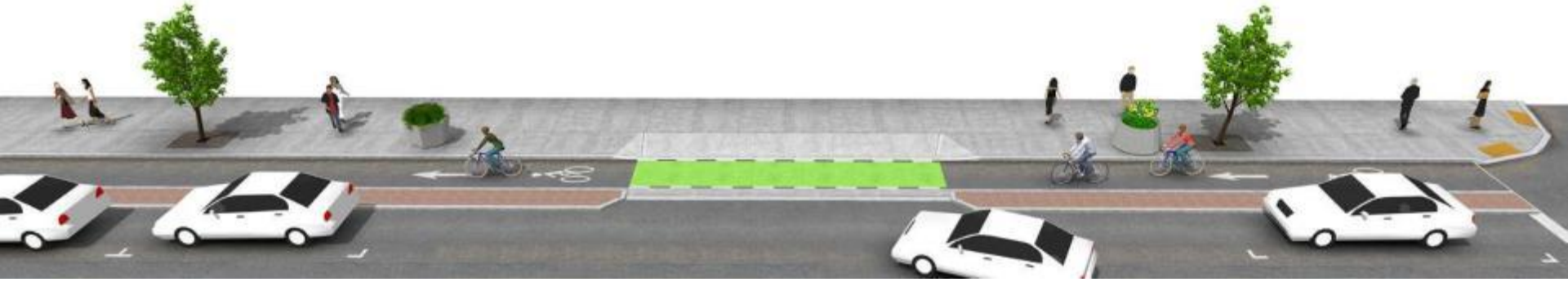


Published March 2011
Second Edition Fall 2012



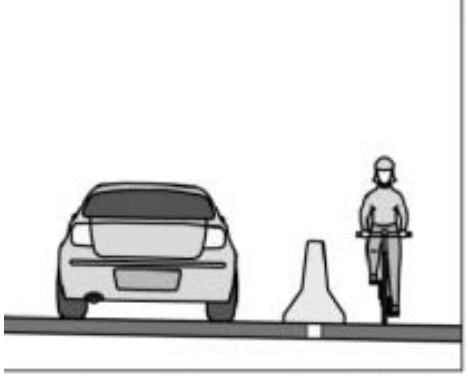
Published
September 2013

Urban Bikeway Design Guide 2011-12

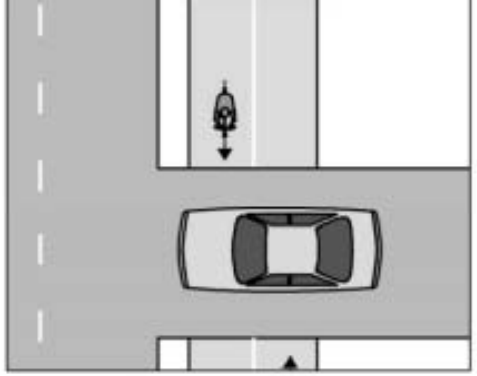



FONA
FONA

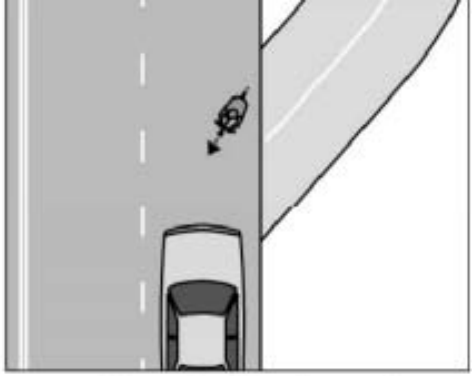

SPEED
LIMIT
45
KEMPTON
AUTO SALES



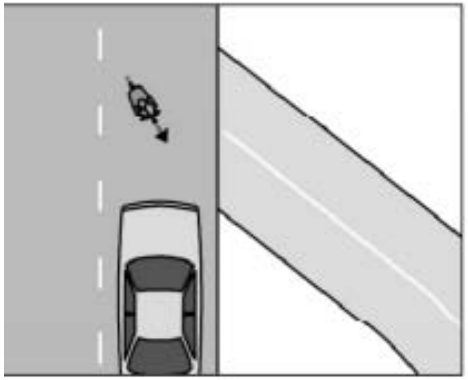
Barriers, while needed in tight spaces, can narrow both roadway and path and create hazards.



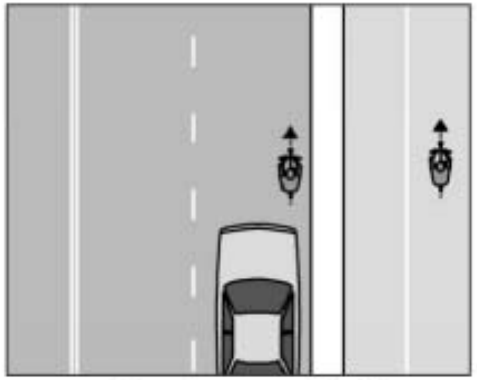
Stopped motor vehicles on side streets or driveways may block the path.



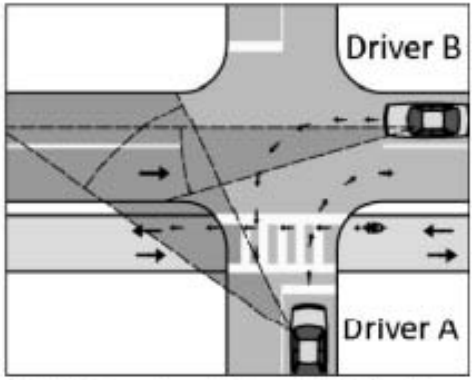
At path's end, bicyclists going against traffic may continue riding the wrong way.



To get to a path entrance, bicyclists may ride against traffic or make unanticipated crossings.



Some bicyclists may find the road cleaner, safer, and more convenient, frustrating some motorists.



Right turning Driver A is looking for traffic on the left; Left turning driver B is looking for traffic ahead; In both cases, a wrong-way bicyclist is not in the drivers' main field of vision.

Design Guidance

Two-Stage Turn Queue Box

Required Features

1. An area shall be designated to hold queuing bicyclists and formalize two-stage turn maneuvers.[1]
2. Pavement markings shall include a bicycle stencil and a turn arrow to clearly indicate proper bicycle direction and positioning.

SALT LAKE CITY (UT) SPOTTED SALT LAKE CITY PUBLIC SCHOOL

MANCHESTER, CONNECTICUT WILL MANAGED

3. The queue box shall be placed in a protected area. Typically this is within an on-street parking lane or between the bicycle lane and the pedestrian crossing.
4. In cities that permit right turns on red signal indications, a "No Turn on Red" sign shall be installed overhead to prevent vehicles from entering the queuing area. (MUTCD Section 2B.54)

Recommended Features

5. In cases where a constrained roadway geometry or right of way prevents the creation of a dedicated two-stage turn queue box in a protected location:
   - The pedestrian crosswalk may be adjusted or realigned to create space for a queue box.
   - A bike box may be provided both in the pedestrian crossing to serve the same purpose. This configuration should only be considered if pedestrian volumes are low, as bicyclists must yield to pedestrians in the crosswalk before entering the queue.
6. The queue box should be oriented parallel to the cross street, to promote visibility of bicyclists.
7. Closed passing areas of the queuing area should be used to further define the bicycle space.
8. Markings across intersections should be used to define through bicyclist positioning.

Cycle Track Buffer Configuration

Parking Lane Configuration

Crosswalk Setback Configuration
Wider curb radii, set back pedestrian crossing, and/or creative bikeway space, provides opportunity for queue box.

Bike Box Configuration
Bike box is valid for pedestrians like recommended for areas with high pedestrian volumes.

T-Intersection Parking Lane Configuration

T-Intersection "Yoghandle" Sidewalk Configuration

Optional Features

9. The queue box may be positioned laterally in the cross street parking lane rather than in front of the travel lane. This may require bicyclists to weave into the travel lane to resume through movement if no dedicated bicycle facility is present once the parking lane ahead will be occupied.
10. At multi-lane turning locations, the queue box may be integrated into the sidewalk space. This configuration is also known as a "yoghandle." Consider the use of some form of signal control at these locations.
11. Signage may be used to define proper positioning and improve visibility of the queue box.
12. A bicycle signal, with leading bicycle interval, may be installed in conjunction with the two-stage turn queue box.[1]
13. Bicycle lines, pavement symbols, and/or colored pavement may be used to lead bicyclists into the queue box.

Design Guidance

Median Refuge Island

Required Features

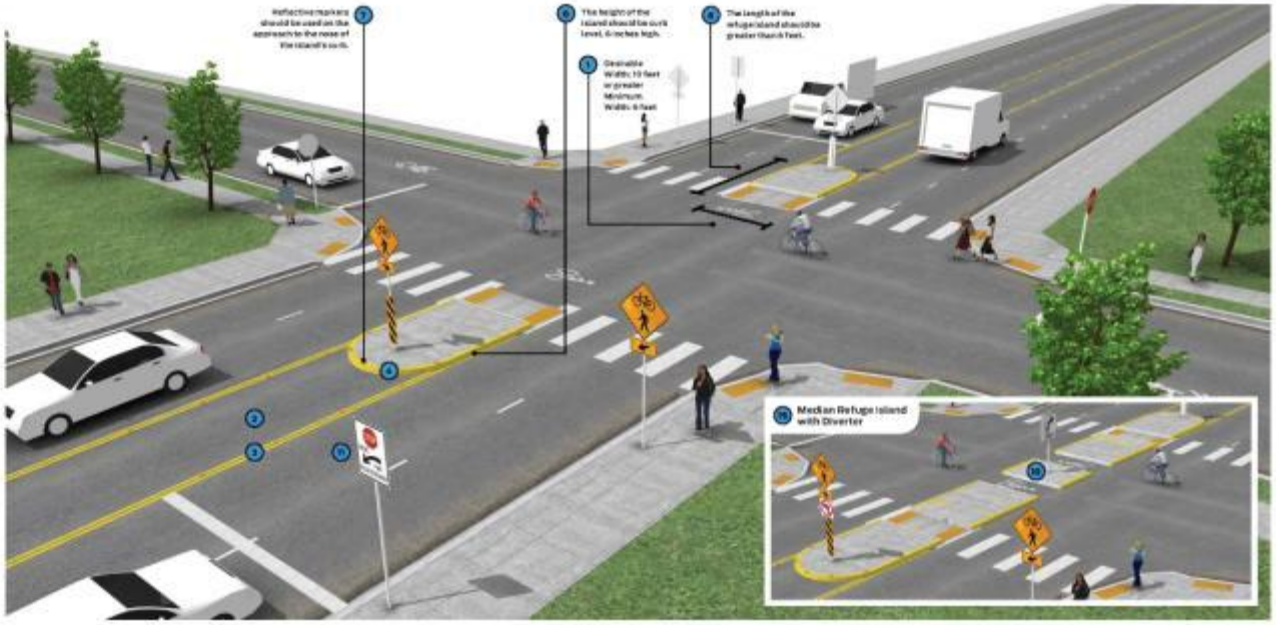
1. The desirable width of the median refuge is 10 feet or greater. The absolute minimum width is 6 feet.[1]
2. When applied on a two-way street, the median refuge shall be placed along the centerline of the roadway between the opposing directions of travel.
3. Pavement markings on the approach to the refuge island shall follow the guidance provided in Section 3B.02 of the MUTCD.[1]
4. The approach edge of the raised median shall be outlined in retroreflective white or yellow material.[1]
5. Bi-wires with yellow accumulation, reflective delineators shall be used to mark the island for increased visibility to snow plow crews.

Recommended Features

6. The length of the refuge island should be greater than 6 feet.[1]
7. Reflective markers should be used on the approach to the nose of the island's curb.[1]
8. The height of the island should be curb level, 6 inches high. Where used as an exclusive bicycle facility it may be desirable to keep the refuge area at street level.[1]
9. An angled cut-through (45 degrees) bicycle path provided to point bicyclists to face oncoming traffic. If the cut-through is to be shared with pedestrians, the 45-degree angle of the curb should transition back to being perpendicular to the street to provide proper directional cues for pedestrians.
10. The refuge area should be wide enough to accommodate two-way bicycle traffic.

Optional Features

11. "Advanced Stop" signs and markings for motorists may be included.[1]
12. Landscaping may be provided in the median, but it should not compromise visibility.[1]
13. Lighting may be installed for improving visibility of the facility at night.
14. All signalized bicycle lanes, push buttons or other detection methods may be provided to actuate the signal head.
15. The median refuge can be carried across the entire cross street approach to act as a diverter to prevent cut-through traffic on a bicycle route.

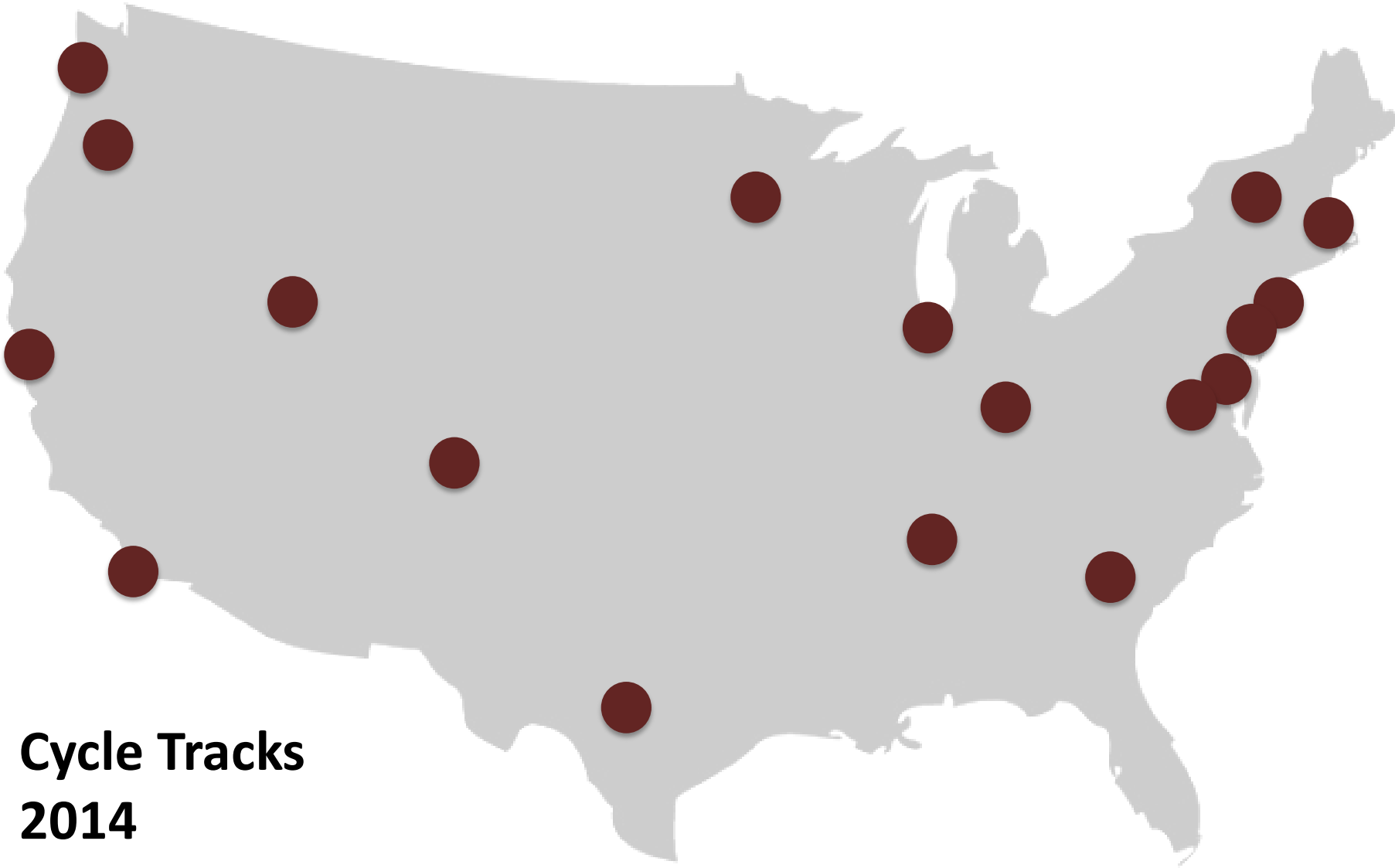



PLEASE
SLOW DOWN
CHILDREN
and PETS
CROSSING


WAIT HERE

Cycle Tracks
2009
Pre-NACTO Guide

*NACTO Members only



Cycle Tracks
2014
Post-NACTO Guide

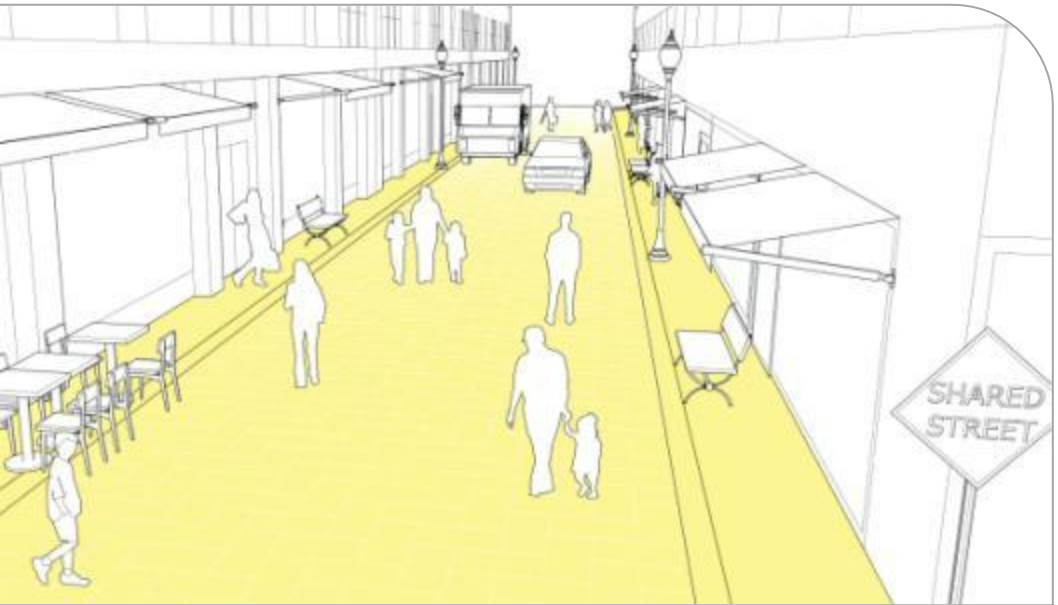
*NACTO Members only


Design
Guidance
NACTO
Urban
Bikeway
Design
Guide

FHWA Bicycle & Pedestrian Design Flexibility Memorandum
August 20, 2013

The National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide…builds upon the flexibilities provided in the AASHTO guides, which can help communities plan and design safe and convenient facilities for pedestrian and bicyclists. FHWA supports the use of these resources to further develop nonmotorized transportation networks, particularly in urban areas…The vast majority of treatments illustrated in the NACTO Guide are either allowed or not precluded by the Manual on Uniform Traffic Control Devices (MUTCD).

The Urban Street Design Guide




CULTURAL
DISTRICT

STREETS

Downtown 1-Way Street
Downtown 2-Way Street
Downtown Thoroughfare
Neighborhood Main Street
Neighborhood Street
Yield Street
Boulevard

Residential Boulevard
Transit Corridor
Green Alley
Commercial Alley
Residential Shared Street
Commercial Shared Street

STREET DESIGN ELEMENTS

- Lane Width
- Sidewalks
- Curb Extensions
  - Gateway
  - Pinchpoint
  - Chicane
  - Bus Bulbs
- Vertical Speed Control Elements
  - Speed Hump
  - Speed Table
  - Speed Cushion
- Transit Streets
  - Dedicated Curbside/Offset Bus Lanes
  - Dedicated Median Bus Lanes
  - Contra-Flow Bus Lanes
  - Bus Stops
- Stormwater Management
  - Bioswales
  - Flow-Through Planters
  - Pervious Strips
  - Pervious Pavement

INTERIM DESIGN STRATEGIES

Moving the curb
Parklets
Temporary Street Closures
Interim Public Plazas

INTERSECTIONS

Principles
Major Intersections
Intersections of Major and Minor Streets

Raised Intersections
Mini Roundabout
Complex Intersections

INTERSECTION DESIGN ELEMENTS

- Crosswalks and Crossings
  - Crosswalks
  - Conventional Crosswalks
  - Midblock Crosswalks
  - Pedestrian Safety Islands
- Corner Radii
- Visibility/Sight Distance

- Traffic Signals
  - Signalization Principles
  - Leading Pedestrian Interval
  - Split-Phasing
  - Signal Cycle Lengths
  - Fixed vs. Actuated Signalization
  - Coordinated Signal Timing

DESIGN CONTROLS

Design Speed
Design Vehicle
Design Hour

Design Year
Performance Measures
Functional Classification

Raised Intersections

Raised intersections create a safe, slow-speed crossing and public space at minor intersections. Similar to speed humps and other vertical speed control elements, they reinforce slow speeds and encourage motorists to yield to pedestrians at the crosswalk.

RECOMMENDATIONS

1 Raised intersections are flush with the sidewalk and ensure that drivers traverse the crossing slowly. Crosswalks do not need to be marked unless they are not at grade with the sidewalk. ADA-compliant ramps and

2 Raised intersections (and mini roundabouts) with yield control are preferred to signals on low-speed (<20 mph) and low-volume (<3,000 ADT) streets, as well as some moderate-volume streets in 30 mph zones. STOP signs should be used instead of YIELD signs if there are concerns that drivers might ignore the pedestrian's

4 Where two 1-way streets intersect, there will be two corners around which no drivers turn. This can be designed with the smallest constructible radius (approximately 2 feet) as long as a 40-foot fire truck can make the turn without encroaching upon the sidewalk.

NACTO.ORG/USDG

A commercial shared street environment should be considered in places where pedestrian activity is high and vehicle volumes are either low or discouraged.

EXISTING

The downtown street in the rendering above is a common sight in many older cities where downtown commercial streets may predate wider grid streets. In newer cities, a retail district with heavy parking utilization and narrow, congested sidewalks may have similar conditions or opportunities.

1 Sidewalk congestion creates unsafe conditions, as crowding forces some pedestrians to walk in the street to avoid crowds.

Vehicles in search of on-street parking create traffic congestion.

2 Loading and unloading trucks obstruct pedestrian and vehicle traffic. Truck drivers park on the sidewalk to preserve vehicle flow while unloading, forcing pedestrians to mix with motorists.

RECOMMENDATIONS

3 Textured or pervious pavements that are flush with the curb reinforce the pedestrian-priority operation of the street and delineate a non-linear path of travel or narrow carriageway. Special pavements, especially

4 Commercial shared streets should be accessible by single-unit trucks making deliveries. Where commercial alleys are non-existent, it may be advantageous to design a shared street to accommodate large trucks

Provide tactile warning strips at the entrance to all shared spaces. Warning strips should span the entire intersection crossing.

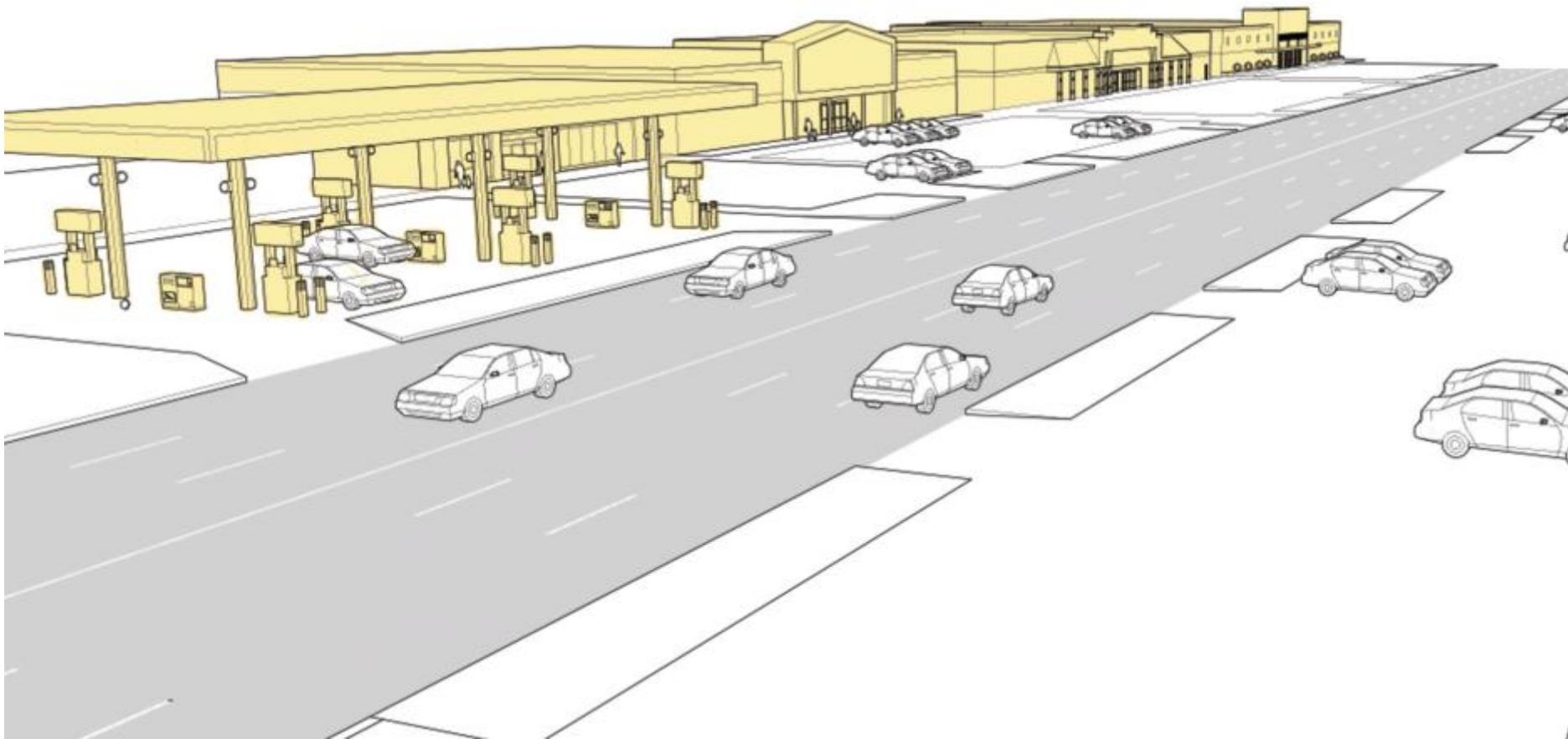
Prior to the application of a shared street

Existing

Interim

Reconstruction

Street Design in Context



Street Design in Context

Street Design in Context

Using the Guide: The Next Steps


DESIGNING
CITIES
Leading the World Class Streets
NACTO

State DOT Methods of Adoption

Methods of Adoption	Examples
Reference	Washington State DOT
Complete Streets Policy	Georgia DOT (Bike Guide), New Jersey DOT
Deputy Directive	MassDOT Healthy Transportation Policy
Design Memorandum	FHWA, CalTrans
Design Manual Development and/or Update	Virginia DOT (Bike Guide), New York State DOT ATP Guidelines
Endorsement	Washington State DOT, MassDOT, Caltrans, Utah DOT, MNDOT

Endorsement Campaign: Ending May 31, 2014

Washington State Department of Transportation

Lynn Peterson
Secretary of Transportation

Transportation Building
310 Maple Park Avenue S.E.
P.O. Box 47300
Olympia, WA 98504-7300
360-705-7000
TTY: 1-800-833-6388
www.wsdot.wa.gov

December 16, 2013

Mr. Ed Reiskin, President
NACTO
55 Water Street, 9th Floor
New York, NY 10041

Dear Mr. Reiskin;

Washington State Department of Transportation (WSDOT) would like to be the first State DOT to officially endorse the National Association of City Transportation Officials' (NACTO) *Urban Street Design Guide,* and are working toward adopting this guide into our policies and procedures. It provides a vision for a new generation of city street design that is consistent with the vision and mission I am developing for the Department. It will also continue to support WSDOT's strategic planning and practical design emphasis and move us toward Governor Inslee's visionary state goals; Results Washington.

We believe that the low-cost innovations, interim solutions, and improvements outlined in the *Guide* can bring many significant benefits to communities across Washington in a short period of time. This is true in even challenging locations where sections of state highway run through cities and must serve as both thoroughfares and local access, maintaining traffic flow and ensuring community livability and safety.

CalTrans Endorsement, April 10, 2014

Publications such as the National Association of City Transportation Officials (NACTO) **"Urban Street Design Guide" and "Urban Bikeway Design Guide,"** and the Institute of Transportation Engineers (ITE) "Designing Urban Walkable Thoroughfares," are resources that Caltrans and local entities can reference when making planning and design decisions on the State highway system and local streets and roads. Caltrans believes that such guidance, coupled with thorough documentation of engineering judgments made in the process, can be of assistance to communities, particularly in urban areas, to support the planning and design of safe and convenient facilities that they own and operate.

David Vega-Barachowitz

Director
Designing Cities Initiative
NACTO

david@nacto.org
646.628.3337