Introducing the NACTO Urban Design Guidelines

Urban Street Design Guide
National Association of City Transportation Officials

Urban Bikeway Design Guide
Second Edition
National Association of City Transportation Officials
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 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.”
PUBLIC ENEMY #1
Man, 84, bloodied by cops — for JAYWALKING!
1 Minute 47 Seconds!
FOR SAFETY'S SAKE
--- CROSS ---
This way — not here — not this way
QUIT JAY WALKING

Obedience may save a life
Prepared by the
AMERICAN AUTOMOBILE ASSOCIATION
The Big Three

- HCM 2010
- A Policy on Geometric Design of Highways and Streets
- Manual on Uniform Traffic Control Devices
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
Fixed-object hazards vs. Community assets
We must align our Engineering Guidelines With our Policy Goals
What do we expect of our streets?

THEN

Speed
Mobility
Safety

NOW

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

Credit: Tom Maguire, NYC DOT
People are Driving Less, Biking and Walking More
“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?
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 Diamond

<table>
<thead>
<tr>
<th>Required Features</th>
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<tbody>
<tr>
<td>The apron should be at least the width of the lane(s) that it is serving.</td>
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<tr>
<td>The apron should be at least 6 feet wide.</td>
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<tr>
<td>The apron should be located next to the turn lane(s).</td>
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<td>The apron should be made of permeable materials.</td>
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#### Design Guidance

<table>
<thead>
<tr>
<th>Median Refuge Island</th>
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<tr>
<td>The median refuge island should be located in the center of the intersection.</td>
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<tr>
<td>The median refuge island should be at least 6 feet wide.</td>
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<tr>
<td>The median refuge island should be made of permeable materials.</td>
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#### Optional Features

<table>
<thead>
<tr>
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<tr>
<td>The apron should be at least 12 feet wide.</td>
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### Diagrams

- [Diagram of Two-Stage Turn Diamond]
- [Diagram of Median Refuge Island]
- [Diagram of Optional Features]
Cycle Tracks
2014
Post-NACTO Guide

*NACTO Members only*
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
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
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
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
<table>
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<th>Design Controls</th>
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<tr>
<td>Design Speed</td>
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<td>Design Vehicle</td>
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<td>Design Hour</td>
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<td>Design Year</td>
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<td>Performance Measures</td>
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<tr>
<td>Functional Classification</td>
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</table>
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

3. 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.
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.
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.

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

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
Street Design in Context
Street Design in Context
Street Design in Context
Using the Guide: The Next Steps
## State DOT Methods of Adoption

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<thead>
<tr>
<th>Methods of Adoption</th>
<th>Examples</th>
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<tbody>
<tr>
<td>Reference</td>
<td>Washington State DOT</td>
</tr>
<tr>
<td><strong>Complete Streets Policy</strong></td>
<td>Georgia DOT (Bike Guide), New Jersey DOT</td>
</tr>
<tr>
<td><strong>Deputy Directive</strong></td>
<td>MassDOT Healthy Transportation Policy</td>
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<tr>
<td><strong>Design Memorandum</strong></td>
<td>FHWA, CalTrans</td>
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<tr>
<td><strong>Design Manual Development and/or Update</strong></td>
<td>Virginia DOT (Bike Guide), New York State DOT ATP Guidelines</td>
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<tr>
<td><strong>Endorsement</strong></td>
<td>Washington State DOT, MassDOT, Caltrans, Utah DOT, MNDOT</td>
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Endorsement Campaign: Ending May 31, 2014

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.
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

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