Evolving Roadway Design Policies for Walking and Bicycling

The 2016 Michigan Transportation Planning Conference
Kalamazoo, MI
July 13, 2016
Title 23 of the Code of Federal Regulations

• Title 23 was originally enacted in 1973.

• Title 23 of the Code of Federal Regulations, Part 652 (23 CFR 652) was enacted in 1984
  – Section 652.13 cites the American Association of State Highway and Transportation Officials (AASHTO) Guide for Development of New Bicycle Facilities, 1981 ("or equivalent" guides) as being acceptable standards
The Americans with Disabilities Act (ADA) of 1990

- Prohibits discrimination on the basis of disability in .... transportation, and ...

- Transportation facilities, including pedestrian facilities, are covered under the ADA

- The ADA did not amend Title 23, but it influenced subsequent legislation and policy development
Intermodal Surface Transportation Efficiency Act (ISTEA) 1991

• Established - the transportation planning processes called for accommodation of pedestrians and bicyclists. 23 U.S.C. 134 (metropolitan planning) and 23 U.S.C. 135 (statewide planning).

• Established new program with broad eligibility for bicycle and pedestrian facilities
  – Transportation Enhancement (TE)

• Section 1033 rewrote 23 U.S.C. 217
  – Authorized P/B facilities funding through: STP, CMAQ NHS and Federal Lands Highway Program
  – Required State DOT to fund a State bicycle and pedestrian coordinator.

Transportation Equity Act for the 21st Century (TEA-21) of 1998

• Amended:
  – the eligible projects under STP to comply with the Americans of Disabilities Act.
  – metropolitan and statewide planning processes, enhanced accommodation for P/B

• Section 1202 made several technical amendments to Section 217.
  – §217(g) - revise planning requirements to consider P/B in highway planning and design, and safety.
  – Required the USDOT to issue Design Guidance on approaches to accommodate bicycles and pedestrians (issued on February 2000)


Policy Statement

1. Bicycle and pedestrian ways shall be established in all urbanized areas unless one or more of three conditions are met:
   • Prohibited by law
   • Excessively disproportionate cost (>20% - advisory not absolute)
   • Sparsity of population or other factors indicate an absence of need.

2. Paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day (volume may vary from state to state)

3. Facilities shall be designed, constructed, operated and maintained so that all pedestrians can travel safely and independently.

Policy Statement (con’t)

4. Design and development of the transportation infrastructure shall improve conditions for bicycling and walking by:

• Planning projects for the long-term

• Addressing the need for crossing corridors as well as travel along them.

• Design of facilities should follow design guidelines and standards that are commonly used, such as the AASHTO Guides and the ITE Recommended Practice "Design and Safety of Pedestrian Facilities".

MDOT Context Sensitive Solutions (CSS) - 2003

- Incorporate CSS into transportation projects whenever possible.
- Under CSS, MDOT solicits dialogue with stakeholders early in a project's planning phase.
- Dialogue helps projects "fit" into their communities.
<table>
<thead>
<tr>
<th>Additional Guidance and Resources (under SAFETEA-LU)</th>
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<tbody>
<tr>
<td>• Flexible Funding for Highways and Transit and Funding Bicycle &amp; Pedestrian Programs - 2006</td>
</tr>
<tr>
<td>• FHWA's Oversight Role in Accessibility, to clarify FHWA’s role and responsibility to oversee compliance with the ADA – 2006</td>
</tr>
<tr>
<td>• Framework for Considering Motorized Use on Nonmotorized Trails and Pedestrian Walkways</td>
</tr>
<tr>
<td>• Equestrian and Other Nonmotorized Use on Bicycle and Pedestrian Facilities - 2008.</td>
</tr>
<tr>
<td>• Shared Use Paths Along or Near Freeways and Bicycles on Freeways</td>
</tr>
<tr>
<td>• Snow Removal on Sidewalks Constructed with Federal Funding – 2008</td>
</tr>
<tr>
<td>• FHWA Guidance - Bicycle and Pedestrian Provisions of Federal Transportation Legislation to implement the SAFETEA-LU amendments – 2008</td>
</tr>
<tr>
<td>• <strong>USDOT</strong> Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations - 2010</td>
</tr>
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MAP-21 changed very little from the B/Ped perspective

Guidance under MAP-21

- **Bicycle and Pedestrian Facility Design Flexibility** - August 20, 2013
  - Expresses support for a flexible approach to bicycle and pedestrian facility design.
  - Reasserts AASHTO bicycle and pedestrian design guides as the primary resources
  - Acknowledges NACTO *Urban Bikeway Design Guide* and the Institute of Transportation Engineers (ITE) *Designing Urban Walkable Thoroughfares* as guides that builds upon the flexibilities provided in AASHTO.
  - FHWA encourages agencies to appropriately use these guides and other resources…

- Memo includes two examples that demonstrate the use of treatments illustrated in the NACTO Guide
Attachment 1 – Example 1 & 2

Example 1: Michigan DOT’s Buffered Bike Lanes

One of the innovative bicycle facilities discussed in the NACTO Urban Bikeway Design Guide is buffered bike lanes. Buffered bike lanes create more space between motor vehicles and bicycles by delineating extra space between the bike lane and parked cars and/or a motor vehicle lane. Buffered bike lanes can be implemented if the pavement markings and channelizing devices are compliant with the MUTCD (see Bicycle Facilities and the Manual on Uniform Traffic Control Devices). Michigan DOT developed a video that describes their efforts to install buffered bike lanes in Oakland County (see Northwestern Highway Bicycle Lane: A Safer Place to Ride). Michigan DOT also developed a brochure that explains buffered bike lanes to the public (see What Every Michigan Driver Should Know About Bike Lanes).

Example 2: Missoula’s Colored Bike Lanes

MUTCD experimentation is a methodology that analyzes innovative traffic control devices through field deployment for the purpose of testing or evaluating its application or manner of use. An approved request to experiment numbered and titled as Official Ruling “3(09)-3(11) – Colored Bike Lanes – Missoula, MT” illustrates a successful experiment. The City of Missoula submitted a request to experiment in January 2010 in accordance with all items in Paragraph 11 of Section 1A.10 in the 2009 MUTCD.

The experiment was conducted for one year and revealed that approximately 70 percent of motorists noticed the color conspicuity enhancement to the bike lane. This was interpreted as an increased awareness by motorists of the potential presence of bicyclists at intersections where those motorists would be making a right turn.

The City also reported ancillary findings that were not anticipated in the original Evaluation Plan of the request to experiment. This included psychological discomfort of the cyclist with the lateral locations of the colored bicycle lane with respect to door zones in parallel parking corridors. In addition, the experiment revealed an unintended design weakness where colored bike lanes that achieve high compliance of little or no occupation of motorized vehicles can also be attractive to pedestrians who wish to use them to facilitate their travel in lieu of crowded sidewalks or to patronize parking meters. For these reasons, a successful experiment can reveal unanticipated findings, further demonstrating the value of official experimentation.

This particular experiment provided two conclusions that supported FHWA’s decision to issue Interim Approval for green colored pavement for bicycle lanes in April 2011.

For more information see http://mutcd.fhwa.dot.gov/reqdetails.asp?id=1135.
M-143 Buffered Bike Lane Installed 2013

M-43 Buffered Bike Lane Installed 2012

M-99 Buffered Contra Flow Bike Lane Installed 2013

M-143 Buffered Bike Lane Installed 2013
Separated Bicycle lane
Monroe Avenue, Grand Rapids - 2014
NACTO *Urban Street Design Guide*

- **FHWA's perspective on *Urban Street Design Guide***?
  - *Urban Street Guide* provides sample scenarios that build on flexibilities in the AASHTO Guides
  - *Urban Street Guide* can be used to inform the planning and design process
  - *Urban Street Design Guide* can serve as an additional resource as communities plan and design facilities
  - Supports the use of the *Urban Street Guide* in conjunction with the other resources...

- **Does the *Street Design Guide* supersede other existing national standards or guidelines?**
  No. … it does not supersede other existing national standards or guidelines.
Fixing America's Surface Transportation Act, or (FAST Act) December 4, 2015

- Continues all standards that were required in MAP 21
- Directs DOT to identify best practices to provide safe and adequate accommodation of all users of the surface transportation network in all phases of project planning, development, and operation.
- Localities may use a different roadway design publication than the State (with state approval) if...
  - Road is owned by locality
  - It is not on the interstate system
  - Locality is the direct recipient of federal funds
  - Publication is recognized by FHWA and adopted by the locality
  - Design complies with all other applicable federal laws
- Federal funded projects must comply with the design standards of AASHTO and the MUTCD
- FAST Act acknowledges AASHTO flexibility
NACTO Bike Guide Applicability to the MUTCD

- 22 Facilities/Devices in the NACTO Guide
  - Bicycle boulevards treated as one facility
  - Colored pavement material guidance - N/A
- 17 of the 22 are allowed or not precluded by the MUTCD
  - 3 of the remaining 5 treatments are experimental:
    - Bicycle signal indications
    - Bicycle boxes
    - Two-stage left turn queue boxes
- 2 are currently disallowed:
  - Combined bike lane/turn lane
  - HAWK beacon at intersections for bike crossings where bicycle signal indications are used for the cross/minor street.

Source: FHWA Presentation September 13, 2013
## Bicycle Facilities and the Manual on Uniform Traffic Control Devices

### Background

The Federal Highway Administration receives occasional inquiries about what bicycle facilities, signals, and markings are permitted in the Manual on Uniform Traffic Control Devices (MUTCD). The table below lists various bicycle-related signs, markings, signals, and other treatments and identifies their status (e.g., can be implemented, currently experimental) in the 2009 version of the MUTCD.

If you have MUTCD related questions, please contact: David Kirchner, MUTCD Team.

<table>
<thead>
<tr>
<th>Subject to Experimentation</th>
<th>Available through Manual</th>
<th>Interpretation</th>
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<tbody>
<tr>
<td>Two-Stage Turn Box</td>
<td>Green Colored Pavement</td>
<td>Use of Rd-11 Sign on Roads with Speed Limits Above 30 MPH</td>
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<tr>
<td>Bicycle Bar</td>
<td>Alternate Design for the U.S. Bicycle Route (PL-9) Sign</td>
<td>Modified Bicycle Destination Sign</td>
</tr>
<tr>
<td>Dashed Bicycle Lanes</td>
<td>Bicycle Signal Fixture</td>
<td>Installation of Advance Turn and Directional Assemblies for Bike Route Signs</td>
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<tr>
<td>Destination Guide Signs for Shared-Use Paths</td>
<td>Pavement Markings for Designated Bicycle Routes</td>
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<tr>
<td>Green Colored Pavement For Use with the Shared Lane Marking</td>
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</tbody>
</table>

**Updated:** 12/15/2015
### Green-Colored Pavement for Use with the Shared-Lane Marking

#### Additional Resources

<table>
<thead>
<tr>
<th>Allowable through the 2009 MUTCD</th>
<th>Disallowed</th>
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</thead>
<tbody>
<tr>
<td>- Continuation of Bicycle Lanes up to Intersections</td>
<td>- Combined bicycle lane/turn lane where the lane attempts to establish a bike lane</td>
</tr>
<tr>
<td>- Extensions of Bicycle Lanes through Intersections</td>
<td>- Green channelizing devices, delineators, posts, or retroreflective elements thereof</td>
</tr>
<tr>
<td>- Counter-flow Bicycle Lanes</td>
<td>- Yield bar pavement markings without a standard, regulatory yield sign</td>
</tr>
<tr>
<td>- Buffer-Separated Bicycle Lanes</td>
<td>- Alterations of the shared lane marking symbol, including its chevrons</td>
</tr>
<tr>
<td>- Bicycle Lanes on the Left-Hand Side of One-Way Streets</td>
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</tr>
<tr>
<td>- Two-stage turn box Jughandle movement at a T-Intersection</td>
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<tr>
<td>- Shared Lane Markings</td>
<td></td>
</tr>
<tr>
<td>- Shared-lane markings in exclusive turn lanes</td>
<td></td>
</tr>
<tr>
<td>- Rotated bicycle symbols in bicycle lanes or separated bikeways at intersections and driveways oriented towards turning or entering motorists</td>
<td></td>
</tr>
</tbody>
</table>

| Other treatments that are not traffic control devices, so no MUTCD restriction on their use | |
|---------------------------------| |
| - Separated bikeways | |
| - Convex mirrors at conflict points to improve visibility | |
| - Bicycle networks | |
| - Median or refuge island for bikeway crossings | |

**Updated:** 12/15/2015
• BTC takes Research – Drafts Design and Use Proposal

• Guidance for Numbered Bicycle Route Signs
• General Service Signs for Bikeways
• Bike Boxes
• Extension of Bike Lanes through Intersections
• Buffered Bike Lanes
• Contraflow Bike Lanes
• “Except Bicycles” Warning Plaque
• Non-numbered Bicycle Route Signs
• Lane Control Supplemental Plaque
• Lane Control Sign
• Turning Vehicles Yield to Bikes Sign
• Two-State Turn Que Box
• Wayfinding Signs for Shared-Use Path
Other Recent Documents or Policies

- FHWA Separated Bicycle Lane Planning and Design Guide – May 2015
- FHWA Guidebook for Developing Pedestrian and Bicycle Performance Measures – March 2016
- FHWA Memo on Pursuing Equity in Pedestrian and Bicycle Planning – April 2016
Multimodal Development & Delivery (M2D2)

The Purpose of M2D2

To support Michigan’s economic recovery by improving MDOT’s institutional capacity to plan, design, construct, operate & maintain Michigan’s transportation system for Complete Streets & multiple modes
Why?

- Weigh conflicting interests, standards & guidelines
- Accommodate public need vs. existing guidance
- Better respond to situational-related requests
- Balance needs & expectations for each transportation mode & identify ways MDOT can balance those needs collectively when multiple modes exist
Goals of M2D2

• Explore needs & expectations for each transportation mode - Underway

• Identify ways MDOT can balance those needs

• Understand barriers, gaps & opportunities that exist in current MDOT practices, standards & guidance - Underway
MDOT Project Stakeholder Group

- Held 6 workshops / reviewed gaps & opportunities in policy & standards 2014

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Subtopics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Transportation and Land Use</td>
<td>History and legal basis of planning and zoning, Planning, Zoning, Subdivision, Economic and Fiscal Health, Integrating land use and transportation</td>
</tr>
<tr>
<td>2</td>
<td>Active Transportation</td>
<td>History and trends, Walking, Bicycling, Complete Streets</td>
</tr>
<tr>
<td>3</td>
<td>Public Transportation</td>
<td>System Characteristics: Intercity, Regional, Trunk Line, Local, Special Needs, Bus-based systems and technology, Rail-based systems and technology, Mobility management</td>
</tr>
<tr>
<td>4</td>
<td>Intelligent Transportation Systems (ITS)</td>
<td>Overview of ITS, State of the ITS Practice in MDOT/Michigan, ITS strategies and applications for all modes, Integrated corridor management (ICM), Advancing multimodal ITS in MDOT programs, processes, and projects</td>
</tr>
<tr>
<td>5</td>
<td>Transportation Demand Management (TDM)</td>
<td>What is TDM and why do it?, Typical (and atypical) tools for TDM &amp; Implementation, Setting up Success in Michigan, State role in TDM, How much? Measuring and reporting, Developing a TDM program</td>
</tr>
<tr>
<td>6</td>
<td>Freight Logistics</td>
<td>System characteristics, Truck-based systems, Rail-based systems, Intermodal hubs: Ports, Airports, Distribution centers</td>
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<tr>
<td></td>
<td>Multimodal Integration and Trade-Offs</td>
<td>Summary of findings from past workshops, Planning considerations, Design considerations, Construction considerations, Operations and maintenance considerations</td>
</tr>
</tbody>
</table>
M2D2 Products

- List of procedures, practices, standards, guidance documents & manuals that require revisions or modifications
- Work plan that identifies agency or department responsible for making revisions & expected completion date
- Recommendations for ongoing training & development for MDOT staff & other stakeholders to understand & utilize revised practices
Stakeholder Collaboration

- Internal department staff
- Other impacted/interested state agencies
- FHWA & FTA staff
- Regional governments (MPOs, RPAs)
- Local governments
- Other governmental/quasi-governmental agencies
- State chapters of associated professional organizations
- Planning & Engineering consultants
- Traveling public
## Internal & External Training

### Table 6. Levels, Attendees, Purpose, and Duration of Training

<table>
<thead>
<tr>
<th>Level</th>
<th>Attendees</th>
<th>Purpose</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 – Executive Overview</td>
<td>Upper management, region engineers, FHWA/FTA representatives, State Transportation Commission</td>
<td>Basic understanding of the new multimodal focus and the internal/external training to be conducted.</td>
<td>1 to 2 hours</td>
</tr>
<tr>
<td>Level 2 – Manager’s Overview</td>
<td>Bureau/Division managers, planners/design engineers, other key management staff</td>
<td>Understanding of the new multimodal focus and how it will impact staff responsibilities and activities.</td>
<td>2 to 3 hours</td>
</tr>
<tr>
<td>Level 3 – Division and Region Full Training</td>
<td>Frontline staff in affected bureaus/divisions/regions</td>
<td>Thorough understanding of the new documents and processes and how to integrate them into routine activities.</td>
<td>8 hours – possibly held in conjunction with other MDOT meetings</td>
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<tr>
<td>Level 4 – City, County, Urban/Rural Planning Organizations</td>
<td>Management and frontline staff in cities, counties, planning organizations</td>
<td>Understanding of the new documents and processes and how local agencies will coordinate with MDOT on plans, projects and issues within their jurisdictions.</td>
<td>3 to 4 hours – possibly held in conjunction with routine MPO meetings</td>
</tr>
</tbody>
</table>

*The complete curriculum for the 8-hour Level 3 training will cover all aspects of the revised documents and procedures in the document/process work plan.*
MDOT’s Goal

- Provide flexibility in standards / guidance
- Identify stakeholders & engage them early
- Facilitate conversations & decision-making, build partnerships
- Be a resource to communities
Where Are We Now?

• Formed implementation team

• Finalized work plan for implementation, 3 tiers of priority
  • Tier 1 — High level policies and processes
  • Tier 2 — Project Planning and Scoping documents
  • Tier 3 — Detailed design guidance

• Reached out to all owners of documents that need updating & created teams to work on each — (in process)

• Developing a statement on state’s design flexibility and NACTO — (in process)
MDOT’S MISSION

Providing the highest quality integrated transportation service for economic benefit and improved quality of life.

Josh DeBruyn, AICP
Bicycle and Pedestrian Coordinator
Michigan Department of Transportation
(517) 335-2918
debruynj@michigan.gov
## Workshop Results

### Poll: MDOT standards, guidance, policies, and documents to revise

<table>
<thead>
<tr>
<th>Documents</th>
<th>Active Transpo</th>
<th>Public Transpo</th>
<th>ITS</th>
<th>TDM</th>
<th>Freight</th>
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<td>MMUTCD</td>
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<td>Complete Streets Policy</td>
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<td>Gap: Bus stop design standard</td>
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<td>CSS Guideline for Stakeholder Engagement</td>
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<td>Local Agency Program (LAP) Guidelines for Geometrics</td>
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