DESIGNING IN CONTEXT
OF COMPLETE STREETS

DESIGN
Module 2

Design for Non-motorized Modes Along the Road
Flexibility existing to design safe, comfortable, and convenient Complete Streets for all users. From the AASHTO Green Book 2011, p.xii

“The intent of this policy is to provide guidance to the designer by referencing a recommended range of values for critical dimensions. Good highway design involves balancing safety, mobility, and preservation of scenic, aesthetic, historic, cultural, and environmental resources. This policy is therefore not intended to be a detailed design manual that could supersede the need for the application of sound principles by the knowledgeable design professional. Sufficient flexibility is permitted to encourage independent designs tailored to particular situations.”
Transect Zones, Smart Code

Source: Congress of New Urbanism

Design Flexibility:

Design in Context of the Land Use
Who are you accommodating? How will you accommodate them safely?

Design Flexibility:

Design in Context of the Modal Emphasis

Graphic Credit: FHWA Achieving Multimodal Network
2016
DESIGN FLEXIBILITY

MULTIMODAL ACCESS TO NEW TRANSIT STATIONS

COMMON USERS IN CONFLICT AND ACCESS HIERARCHY

SAFETY
Through site design at transit stations, the likelihood of crashes between transit vehicles, private vehicles, pedestrians, and bicyclists should be reduced.

ACCOMMODATION AND COMFORT
Station access should be comfortable and accommodate all travel modes.

COHERENCE
The station should have a clear path of travel to station entrances and exits.

PREDICTABILITY
Circulation facilities on the station site should have clear right-of-way assignments that create predictable behaviors for all users.

CONTEXT SENSITIVITY
The station should be consistent with and support adjacent land uses.

EXPERIMENTATION
Transit agencies should consider station access for all modes during the planning stages of new station.
Offical FHWA Guidance Memo - Flexible Design dated August 20, 2013

Expressed **support** for taking a flexible approach to bicycle and pedestrian facility design

Encourages agencies to go beyond the minimum requirements
PLANNING & DESIGN “STANDARDS”

- AASHTO “Green Book” 2011/Local State Highway Design Manual
- MUTCD 2009 Edition
- AASHTO Pedestrian Guide, 2004
- AASHTO Bike Guide 2012 Edition
“The Manual on Uniform Traffic Control Devices (MUTCD) is incorporated by reference in the 23 CFR 655 and shall be recognized as the national standard for all traffic control devices installed on any street, highway, bikeway or private road open to public travel...” 2009 MUTCD.
WHY NATIONAL STANDARD?

- Uniformity of design and placement of Traffic Control Devices is critical to safe operation for all roadway users.
- Consistency of TCD’s with traffic code/rules of the road.
- The US UVC has not been updated since 2001 (ish)
HOW IS THE MUTCD CHANGED?

- Technical Committees develop proposals
- Council approves (or not)
- Sponsors review and comment (AASHTO et al)
- Technical Committees resolve comments and revise proposals
- Council final approval
- Forward to FHWA for “rule making process” and incorporation into MUTCD
HOW IS THE MUTCD CHANGED?

- Changes require “rule change” process including public notice in the Federal Register and public comment period.
- Process handled through the Federal OMB. Executive Branch and OMB responsible for prioritization of rule changes. No schedule for new MUTCD. Not expected until 2020.
- FHWA considering Interim Approvals to fill the gap.
“Interim approval allows interim use, pending official rulemaking, of a new traffic control device, a revision to the application or manner of use of an existing traffic control device, or a provision not specifically described in this Manual.

The issuance by FHWA of an interim approval will typically result in the traffic control device or application being placed into the next scheduled rulemaking process for revisions to this Manual.”
MUTCD-FHWA INTERIM APPROVALS (IA’S)

- IA-11 RRFB
- IA-2004 Use of Clearview font for Guide Signs
  - This IA has been discontinued
- IA-12 Traffic signal photo enforced sign 11/2010
- IA-13 Electric vehicle charging station sign 04/2011
- IA-14 Green colored pavement for bike lanes 04/2011
- IA-15 Alt Design for US Bike Route Sign M1-9 06/2012
- IA-16 Bicycle Signal Face 12/2013
- IA-17 3-Section Flashing Yellow Arrow Signal Face
- IA-18 Bicycle Box
- Last updated in 2004
- Update/revision currently in preparation
- More info available offered at www.bikepedinfo.org
- Updated in 2012
- Expanded from 75 to over 200 pages
- 3 chapters to 7 chapters
- Expanded information on intersection treatments
- PDF’S of webinars available offered at www.bikepedinfo.org
- Revisions underway
The NACTO Urban Bikeway Design Guide, 2011 builds upon the flexibilities provided in the AASHTO Guides.

The vast majority of NACTO Guide is either allowed or not precluded.

Non-compliant TCD’s may be piloted through the MUTCD experiment process.
The ITE and CNU Designing Urban Walkable Thoroughfares, 2010 builds upon the flexibilities provided in the AASHTO Guides.
OTHER GUIDES

- FHWA Separated Bike Lane Planning and Design Guide, 2015
- MassDOT, 2015 – Frequently referenced
- NACTO Urban Street Design Guide
Setting Design Criteria:

- The AASHTO Green Book allows for flexibility by providing a range of values.
- Functional classification alone may not take into account the local context and design impacts beyond traffic service.
- FHWA controlling criteria revised on May 5, 2016.
  - Only two criteria for “low speed” roadways.
Design Flexibility: Design Criteria and Lane Width:
- Range 9 – 12 feet depending on speed capacity, and context.
- Allow 10-foot lanes in low speed environments (<45 mph)

Source: FHWA Achieving Multimodal Networks, 2016
Speed Matters

Source: FHWA Achieving Multimodal Networks, 2016
Statistics are Clear!
We have to change the way we are designing and operating our transportation system.
ROAD DIETS

Photo Credit: VDOT

BEFORE

AFTER
Road Diets/Lane Elimination
Common Elements

- Utilize Existing Footprint
- Rebalance/reallocate street space to add features such as:
  - Two-way Left-turn Lane (TWLTL)
  - Bike Lanes
  - On-street Parking
  - Buffer Zones
  - Landscaping
  - Etc

Reference: Mark Doctor, PE, Road Diet Mythbusters, 2016
3 CRASH TYPES CAN BE REDUCED BY GOING FROM 4 TO 3 LANES: WHICH ONES?
3 CRASH TYPES CAN BE REDUCED BY GOING FROM 4 TO 3 LANES: 1 - REAR ENDERS
3 CRASH TYPES CAN BE REDUCED BY GOING FROM 4 TO 3 LANES: 2 – SIDE SWIPES
3 CRASH TYPES CAN BE REDUCED BY GOING FROM 4 TO 3 LANES: 3 – LEFT TURN/BROADSIDE
Before
Name 4 things that changed:

- Fewer travel lanes;
- Added bike lanes;
- Parallel to back-in angled parking on one side;
- New pavement.
Benefits of Road Diets for Pedestrians

- Reduce crossing distance
- Eliminate or reduce “multiple threat” crash types
- Install crossing island to cross in 2 simple steps
- Reduce top end travel speeds
- Buffer sidewalk from travel lanes (parking or bike lane)
- Reclaim street space for “higher and better use” than moving peak hour traffic
Advantages of On-street Parking

- Supports local economic activity
- Increases pedestrian comfort by buffering to sidewalk
- Slows traffic, making the roadway safer
- Provides short distance to building entrances
- Increases pedestrian activity of the street
- Makes storefronts more visible
- Reducing on-site parking demand
- Requires less land per parking space
- Provides space for freight and delivery service

Reference: ITE Designing Walkable Urban Thoroughfares
1. Design Flexibility

What are the standards?

1. Texas MUTCD
2. Texas Roadway Design Manual / AASHTO Green Book
1. What organizations have guides that can help you make decisions?

1. AASHTO
2. NACTO
3. ITE
4. FHWA