



U.S. Department of Transportation  
**Federal Highway  
Administration**

**AASHTO**  
THE VOICE OF TRANSPORTATION

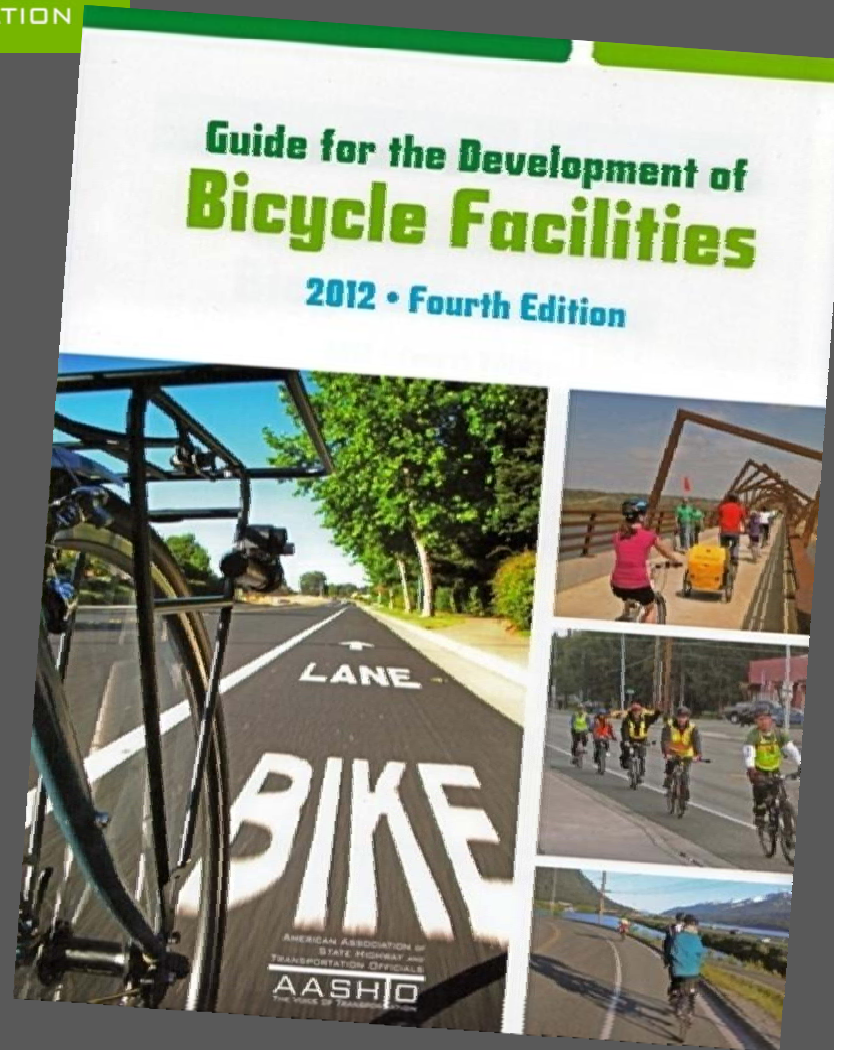
# The 2012 AASHTO Bike Guide: An Overview

Presentation by:

Jennifer Toole, AICP, ASLA

Peter Lagerwey

August 10, 2012



# WEBINAR #1: OVERVIEW OF 2012 AASHTO BIKE GUIDE

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## Today's Webinar

- ➔ Some Background
- ➔ Major Content Changes
- ➔ Chapter by Chapter  
Intro to Content Changes



# FUTURE WEBINARS

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➔ August 22: Planning Chapter

➔ September 4: On-Road  
Bikeways

➔ Bike Lanes (including  
Intersections)

➔ September 18: On-Road  
Bikeways

➔ Shared lanes

➔ Bicycle boulevards & signing

➔ Signals

➔ October 9: Shared Use Paths

➔ General design principles

➔ Pathway geometry

➔ October 23: Shared Use Paths

➔ Intersection Design

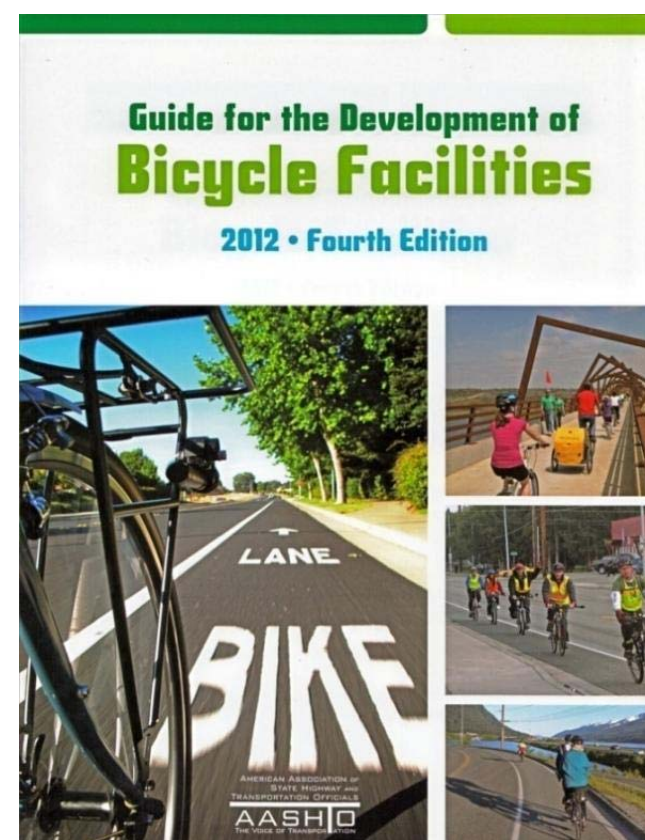
➔ Mid-block crossings

➔ November 6: Bikeway  
Maintenance and Operation

# DISCOUNT FOR WEBINAR PARTICIPANTS

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[http://www.walkinginfo.org/training/pbic/AASHTO\\_Promo\\_Flyer.pdf](http://www.walkinginfo.org/training/pbic/AASHTO_Promo_Flyer.pdf)



Overview of the 2012 AASHTO Guide

# BACKGROUND

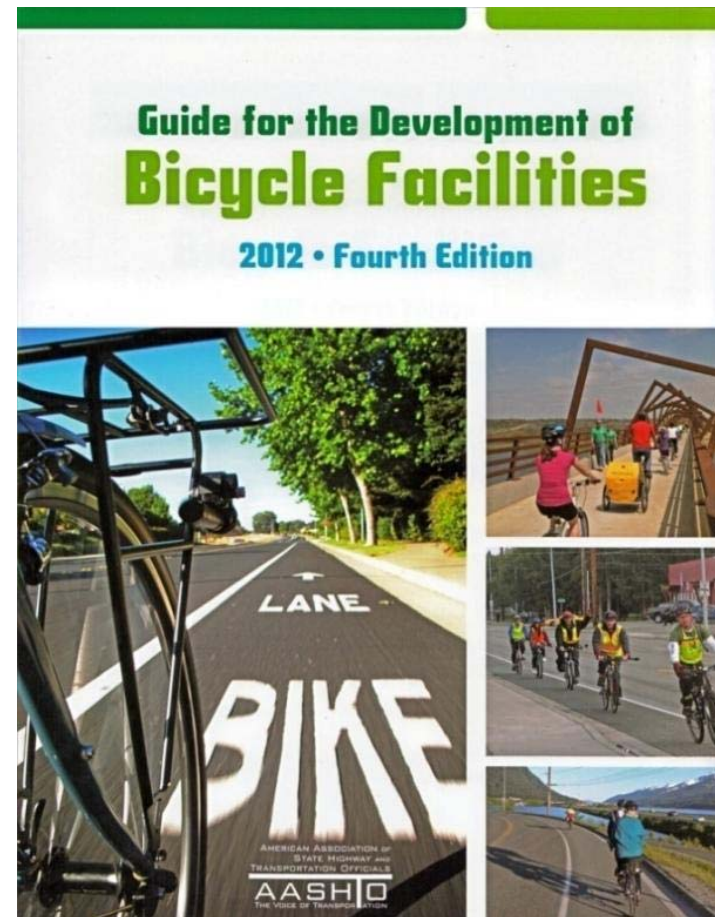
## ➔ What is AASHTO?

- ➔ Mission: “provides technical services to support states in their efforts to efficiently and safely move people and goods”

## ➔ Some history

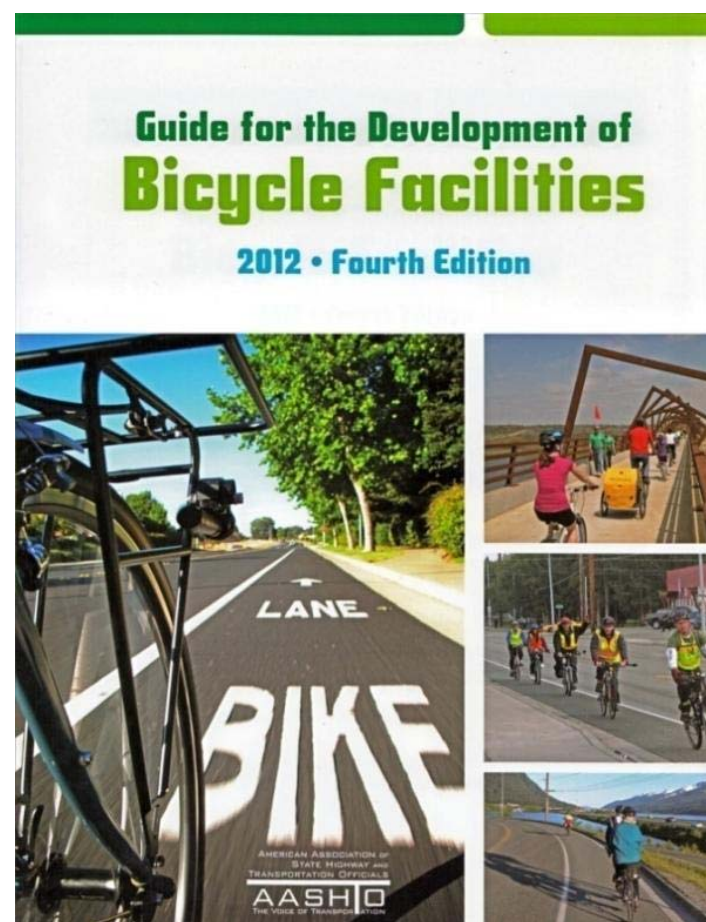
- ➔ 4<sup>th</sup> Edition of the Guide
- ➔ Last Guide – 1999, largely written in 96-98

## ➔ Standards vs. guidance



# HOW THE GUIDE WAS DEVELOPED

- ➔ NCHRP - National Academy of Sciences
- ➔ Pre-Study
- ➔ Preparation of the content of the 4<sup>th</sup> Edition
- ➔ Final edits/State DOT balloting process



# PREPARATION OF CONTENT

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## Project Team

- ➔ Toole Design Group  
Jennifer Toole – Principal Investigator
- ➔ Subconsultants:
  - ➔ John LaPlante, P.E., PTOE
  - ➔ Michael Moule, P.E.
  - ➔ Michael Ronkin
  - ➔ Mia Birk
  - ➔ Matthew Ridgeway
  - ➔ Shawn Turner, P.E.
  - ➔ Srinivasa Sunkari, P.E.
  - ➔ Bill Hunter

## NCHRP Panel

- ➔ Dwight Kingsbury, Chair
- ➔ Denise Chaplick
- ➔ David Church, P.E.
- ➔ Ann Do
- ➔ Eric Glick
- ➔ Thomas Huber
- ➔ Mary Meletiou
- ➔ Richard Moeur, P.E.
- ➔ William Prosser, P.E.
- ➔ William Riccio, Jr., P.E.
- ➔ Cara Seiderman
- ➔ Richard Pain

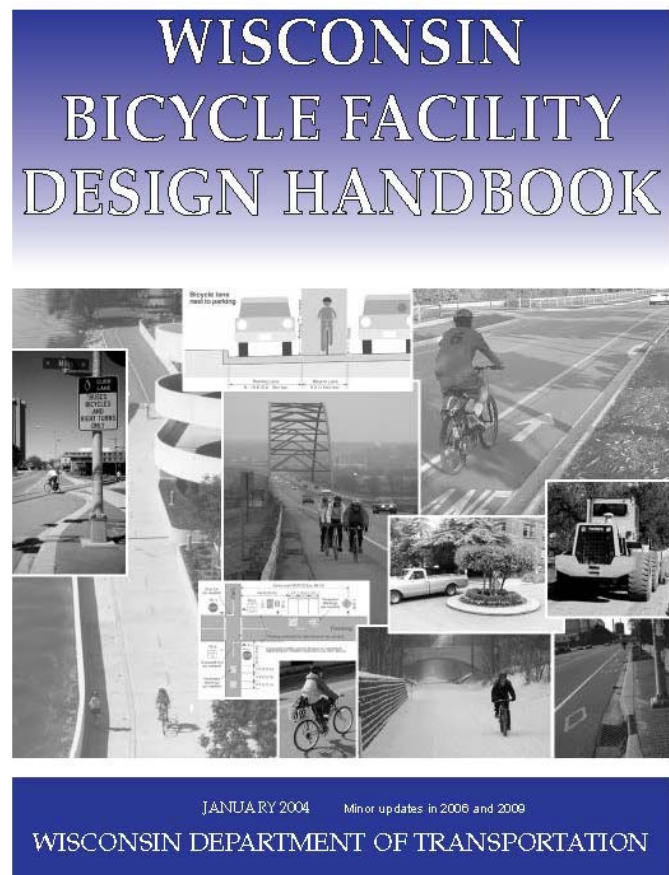
# HOW THE AASHTO BIKE GUIDE IS USED

## ➔ State DOTs

- ➔ Basis for State Guides or Standards

## ➔ Local Jurisdictions

- ➔ Use State version of the AASHTO Bike Guide, or
- ➔ Develop own version of the AASHTO Bike Guide

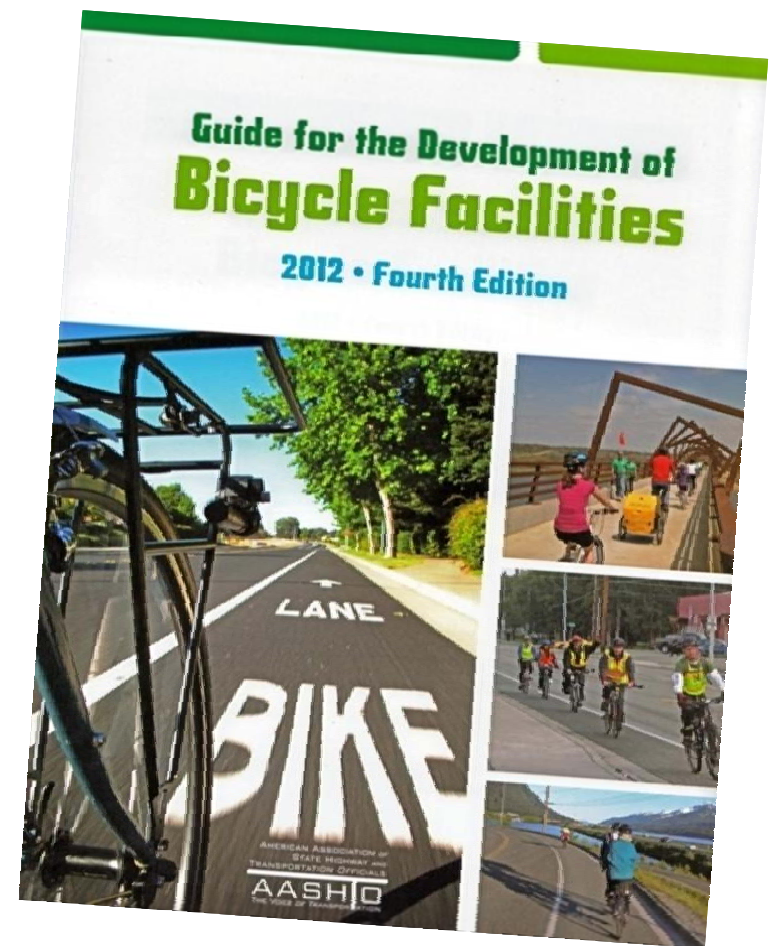




# RELEASE OF THE GUIDE – JUNE 2012

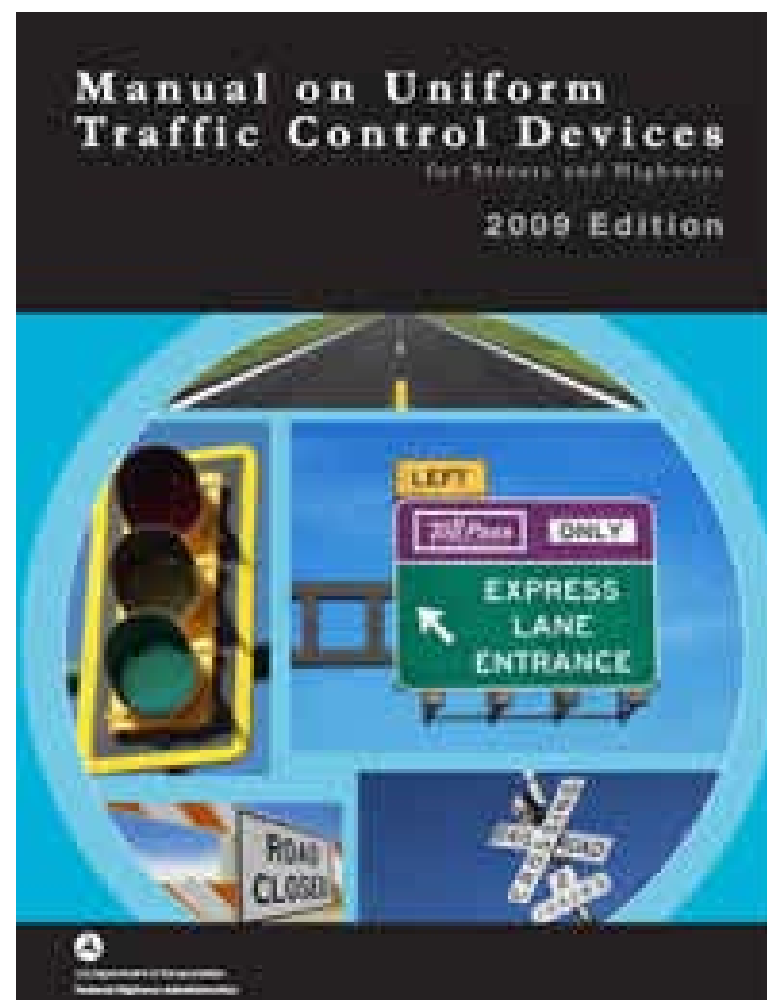
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- ➔ Sold 1200 copies in the first month
- ➔ Guide expanded from 75 pages to over 200 pages
- ➔ 3 chapters to 7 chapters



# RELATIONSHIP TO OTHER MANUALS

- ➔ 2009 MUTCD – FHWA
- ➔ 2011 AASHTO Green Book
- ➔ Public Right-of-Way Accessibility Guidelines (PROWAG)
- ➔ 2010 Highway Capacity Manual



# AASHTO VS. NACTO GUIDES: EITHER/OR?

- ➔ AASHTO covers paths + on-road bikeways
- ➔ AASHTO covers design comprehensively
- ➔ AASHTO covers many – but not all innovations
- ➔ NACTO is a source of information for solutions that are currently being tested



# MAJOR CHANGES IN 2012 GUIDE

- ➔ Guidance on how to choose bikeway type
- ➔ Affirms lane diets and road diets
- ➔ Expanded bike lane guidance
- ➔ Expanded signal guidance
- ➔ Expanded shared use path guidance (including paths adjacent to roads)



# CHOOSING BIKEWAY TYPE – 1999 GUIDE

- ➔ No differentiation of what type of bikeway was appropriate given roadway characteristics



# CHOOSING BIKEWAY TYPE – 2012 GUIDE

- ➔ Detailed guidance on facility selection.
- ➔ Support for bike lanes and shared use paths where volumes and speeds are higher.



# CHOOSING BIKEWAY TYPE – 2012 GUIDE

- ➔ Multiple warnings against using wide curb lanes as a standard solution for major roadways
- ➔ Discusses the appropriate use of shared lanes
- ➔ Wide curb lanes may have shared lane markings & signs



# CHOOSING BIKEWAY TYPE – 2012 GUIDE

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- ➔ Refers to Bicycle Level of Service as a tool
- ➔ Provides roadway characteristics to consider
- ➔ Also states that bike routes are not a “bikeway type”





# LANE DIETS AND ROAD DIETS

- ➔ Permission to narrow lane widths to create bike lanes
- ➔ 10' and 11' wide travel lanes are acceptable
- ➔ Provides guidelines for road diets



# BIKE LANES

- ➔ Nuanced guidance on widths (4 to 7 feet)
- ➔ Measures to reduce crashes with car doors
- ➔ Bike lanes adjacent to back-in angle parking
- ➔ Bike lanes at roundabouts



# BUFFERED BIKE LANES

- ➔ Between the bike lane and parking lane – or;
- ➔ Between the bike lane and the adjacent travel lane



# GREEN BIKE LANES

➔ “Based on Interim Approval issued by FHWA in April 2011, contrasting green color pavement may be used in marked bike lanes, and in extensions of bike lanes through intersections and other traffic conflict areas, such as merge areas where turning vehicles must cross a through bike lane.” (p. 4-20)



# BACK-IN ANGLED PARKING

- ➔ Bike lanes not recommended at front-in angle parking
- ➔ Provides design guidance for bike lanes at front of back-in angle parking



# SHARED USE PATHS

- ➔ New guidance –intersections, crossings and side paths
- ➔ Bollards are discouraged
- ➔ No single design speed
- ➔ 5% grade – no landings (refer to US Access Bd.)



# PATHS ADJACENT TO ROADWAYS

- ➔ Expands discussion of operational problems
- ➔ Acknowledges reasons for building paths adjacent to roadways
- ➔ Provides guidance on when and where these facilities are appropriate



# ONE-WAY SIDEPATHS

- ➔ “May be possible” to place one-way paths on both sides of a roadway (type of cycle track)
- ➔ Provides planning and design considerations





# SIGNALS

- ➔ Should accommodate bicyclists
- ➔ New guidance on minimum green, extension time when bicyclist is present
- ➔ New formulas
- ➔ New information on bicycle detection
- ➔ Allows bicycle specific signals



# BICYCLE BOULEVARDS

- ➔ New guidance explains what they are, and how they can be used to benefit bicyclists
- ➔ Guide provides design treatments for creating bicycle boulevards



# MAJOR CONTENT CHANGES

## Integrating Bikes with Transit

- ➔ Bike access to transit vehicles
- ➔ Bike parking at transit stations
- ➔ Bikeways to transit
- ➔ Promoting bikes on transit



# ISSUES NOT ADDRESSED BY THIS GUIDE

- ➔ Bike boxes
- ➔ Raised bike lanes
- ➔ Bicycle signal heads



# CHAPTER BY CHAPTER – INTRO TO CONTENT CHANGES

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## Table of Contents

- ➔ 1: Introduction
- ➔ 2: Bicycle Planning
- ➔ 3: Bicycle Operation & Safety
- ➔ 4: Design of On-Road Facilities
- ➔ 5: Design of Shared Use Paths

➔ 6: Bicycle Parking Facilities

➔ 7: Maintenance and Operations



# CHAPTER I INTRODUCTION

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➔ Similar to previous guides

➔ Retains strong statement:

“All roads, streets, and highways, except those where bicyclists are legally prohibited, should be designed and constructed under the assumption that they will be used by bicyclists.”



## CHAPTER 2

# BICYCLE PLANNING

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- ➔ Bicyclists need accommodation on ALL roadways
  - ➔ Prioritize most important improvements
- ➔ Explains:
  - ➔ The practical approach of network planning
  - ➔ Choosing an appropriate facility type
  - ➔ Multiple facilities on a single corridor
  - ➔ Wayfinding



## CHAPTER 2

# TECHNICAL ANALYSIS TOOLS

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- ➔ Data collection: bike counts
- ➔ Quality of service tools
- ➔ Safety analysis
- ➔ GIS-based network planning
- ➔ Bicycle travel demand analysis
- ➔ Cost benefit analysis
  - ➔ Key role of public input

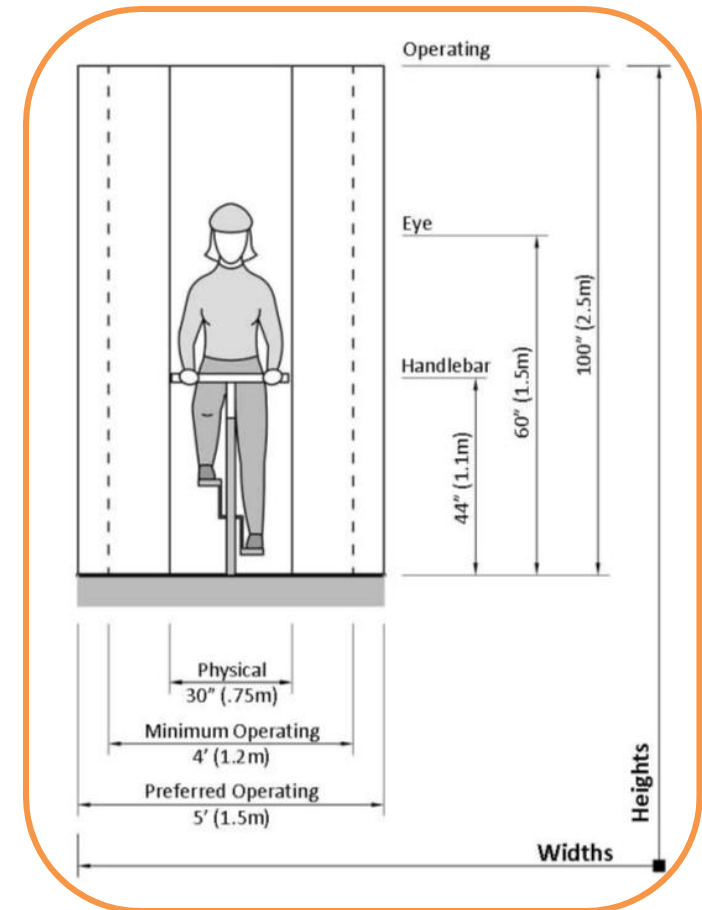




# CHAPTER 3

## BICYCLE OPERATION AND SAFETY

- ➔ Sets the stage for Design Chapters
- ➔ Organizes info on design vehicle
  - ➔ Characteristics of Emerging Road and Trail Users (FHWA Study)
- ➔ Overview of traffic principles for bicycles
  - ➔ Positioning on the roadway in different situations
- ➔ Causes of bicycle crashes
  - ➔ Urban vs. rural
  - ➔ Young vs. adult riders
  - ➔ Etc.



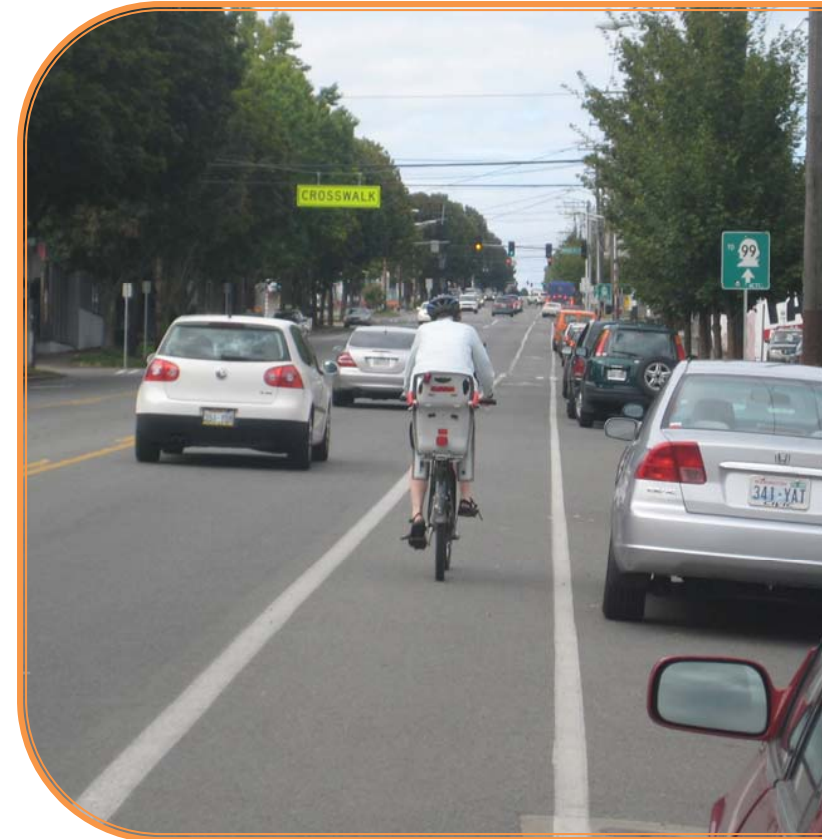
# CHAPTER 4

## DESIGN OF ON-STREET FACILITIES

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### Most expanded section in AASHTO Bike Guide

- ➔ New/more guidance on bike lanes
  - ➔ Buffered bike lanes
  - ➔ Green bike lanes
  - ➔ Nuance on width (4' to 7')
  - ➔ Designs to reduce 'dooring'
  - ➔ Climbing lanes
  - ➔ Complex intersections



# CHAPTER 4

## DESIGN OF ON-STREET FACILITIES

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### New sections

- ➔ Shared lane markings
  - ➔ Where to use
  - ➔ Placement
- ➔ Bicycle boulevards
  - ➔ When and where to use
  - ➔ Treatments
- ➔ Wayfinding signage
  - ➔ Guidance on design & placement
  - ➔ Deemphasizes bike routes (not a facility type)



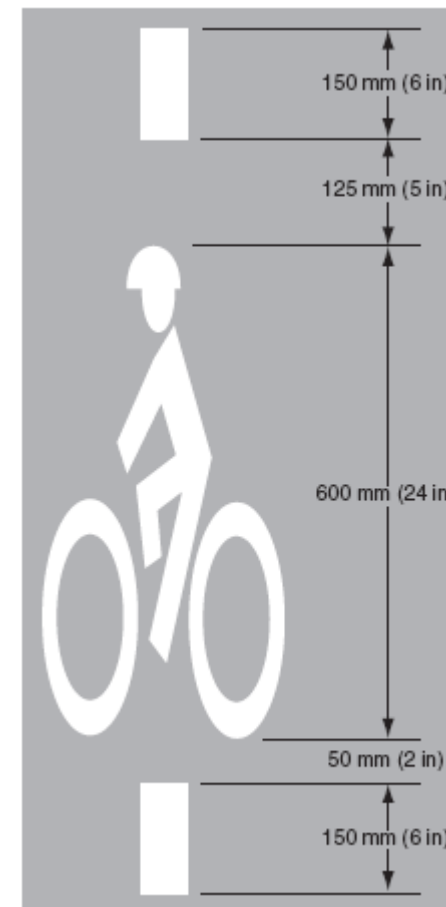
# CHAPTER 4

## DESIGN OF ON-STREET FACILITIES

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### New guidance on traffic signals

- ➔ Clearance intervals
- ➔ Minimum green time
- ➔ New “Bicycle Signal”
- ➔ Technical guidance on bike detection
- ➔ Special signal types



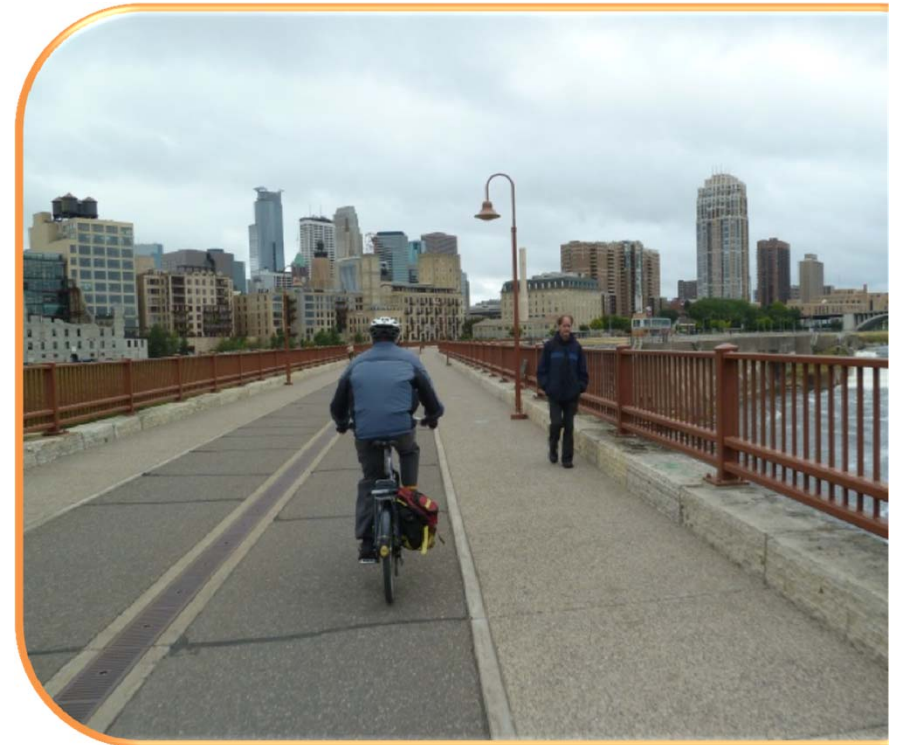
# CHAPTER 4

## DESIGN OF ON-STREET FACILITIES

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### New/revised guidance

- ➔ Paved Shoulders (including rumble strips)
- ➔ Roadway Bridges
- ➔ Bicycles and Traffic Calming
- ➔ Bicycles on Freeways
- ➔ Bicycles at Roundabouts



# CHAPTER 5

## DESIGN OF SHARED USE PATHS

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- ➔ New stand-alone chapter
- ➔ Reflects several significant studies:
  - ➔ Characteristics of Emerging Trail and Roadway Users
  - ➔ Shared Use Path Level of Service
  - ➔ Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations
- ➔ Fills missing gaps in the old Guide



# CHAPTER 5

## DESIGN OF SHARED USE PATHS

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- ➔ New Accessibility Requirements
- ➔ Width of Pathways
  - ➔ Nuanced guidance on widths
- ➔ Safety Rail Guidelines
  - ➔ Slopes/shoulders/railing heights



# CHAPTER 5

## DESIGN OF SHARED USE PATHS

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- ➔ Revised Guidance on Design Speed
  - ➔ “No single design speed” for paths
- ➔ Revised Guidance on Horizontal Alignment
  - ➔ Formula is now based on lean angle rather than super elevation
- ➔ New Guidance on Speed Control on Paths
  - ➔ Introduces geometric design and other ideas to reduce speed



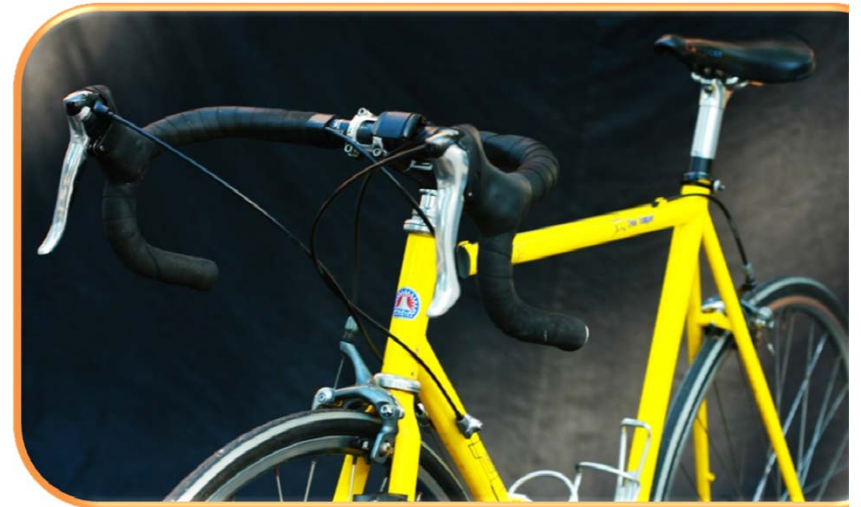


# CHAPTER 5

## DESIGN OF SHARED USE PATHS

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- ➔ Revised Running Grades
  - ➔ Options to mitigate excessive grades
- ➔ Stopping Sight Distance
  - ➔ New braking friction factor
  - ➔ Longer stopping distances



## CHAPTER 5

# DESIGN OF SHARED USE PATHS

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- ➔ Expanded guidance on bridges and underpasses
- ➔ Lighting
  - ➔ Nighttime lighting, intersections, security
- ➔ Path-roadway intersections
  - ➔ Design considerations
  - ➔ Midblock crossings
  - ➔ Assignment of ROW



# CHAPTER 6

## BICYCLE PARKING FACILITIES

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- ➔ Planning for bicycle parking
- ➔ Short-term bicycle parking
  - ➔ Location
  - ➔ Design
  - ➔ Special types of racks
- ➔ Long-term bicycle parking



# CHAPTER 7

## MAINTENANCE AND OPERATIONS

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- ➔ Sweeping
- ➔ Surface repairs
- ➔ Pavement overlays
- ➔ Vegetation
- ➔ Loop detectors
- ➔ Signs, stripes and legends
- ➔ Drainage facilities
- ➔ Chip sealing
- ➔ Patching activities
- ➔ Utility cuts
- ➔ Snow removal
- ➔ Spot improvement programs
- ➔ Operation during construction



# QUESTIONS?

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**Toole**DesignGroup



Overview of the 2012 AASHTO Guide

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