1. The drama

2. Chapter 1 rewrite

3. The rest of the book
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2. Chapter 1 rewrite

3. The rest of the book
WHEREAS, increases in bicycle and pedestrian volumes have been recorded nationwide in large cities, suburbs, and small towns, along with corresponding increases in collisions and fatalities; and

WHEREAS, additional, robustly-researched guidance is needed on how best to incorporate other modes of travel when designing safe and efficient roadways that serve all users; and

WHEREAS, other publications provide examples for multi-modal street design, but there does not exist research-based, peer-reviewed design guidance that fully addresses the technical design-related aspects of these issues; and now, therefore, be it

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WHEREAS, other publications provide examples for multi-modal street design, but there does not exist research-based, peer-reviewed design guidance that fully addresses the technical design-related aspects of these issues; and now, therefore, be it
RESOLVED, AASHTO should provide guidance to state DOTs and other users of the Green Book regarding flexibility in design; and be it further

RESOLVED, This guidance should address designing in and for a multi-modal transportation system; and be it further

RESOLVED, SCOD should coordinate with and possibly include other AASHTO publications in a future set of flexible design standards; and finally be it

RESOLVED, SCOD should identify gaps in necessary research and develop a plan to fill those gaps.
1. The drama

2. Chapter 1 rewrite

3. The rest of the book
• Performance-based design process oriented
  • Purpose and need-driven
  • Evidence and analysis based
• Project type dependent
• Multimodal
• Flexible
• Conforms to NCHRP Report 855 expanded classification system
  • Existing functional classes
  • New context classifications (5)
NCHRP Report 855 expanded classification system

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<th>Rural</th>
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<th>Suburban</th>
<th>Urban</th>
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<td>Freeway</td>
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</tbody>
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Multimodal considerations

• Consider needs of all transportation modes in every project
• Appropriate balance among modes may vary widely in specific circumstances
• Balance should be a conscious decision
  • Purpose and need provides a crucial perspective
Project type considerations

• Three project types addressed
  • New construction
  • Reconstruction
  • Projects on existing roads

• Definitions and guidance on design decision making are provided
Project types

- New construction
- Reconstruction
  - On existing alignment but involve a change in “the basic roadway type”
- Projects on existing roads
  - Do not involve a change in the basic roadway type
  - NCHRP Report 876 recommended for reference/guidance
Flexible and performance-based approach
1. The drama

2. Chapter 1 rewrite

3. The rest of the book
• First implementation of NCHRP Report 855 context and settings categories
• Flipped the units (US Customary first; metric second)

• Generally increased the top end of design speed range
  • 80 mph [130 km/h] in some situations, 85 mph [140 km/h] in others

• Increased emphasis on multimodal travel
  • Latest ADA/Section 504 requirements
• Emphasizes transportation of/for people (as opposed to exclusively vehicles)
  • Multimodal LOS
  • Greater emphasis on lower-speed, walkable, urban zones
• Update to pedestrian walking speed
• Emphasizes the *Highway Safety Manual* and encourages its use
• Added 85 mph [140 km/h] to SSD tables
• Explanation of how to compute $e$ and minimum $R$ for design speeds greater than 80 mph [130 km/h]
• Added speed-distance curves for 140-lb per horsepower heavy trucks on grades
  • Retained 200 lb/hp curves as well
• Superelevation transitions
  • More flexibility with distribution and rate of rotation
  • Increased awareness of oversupply through transition
DS = 70 mph; $D_c = 2^\circ 00''$; $e = 0.055$; $S = 1:400$; 67% on tangent
Findings

DS = 70 mph; $D_c = 2^\circ 00'$; $e = 0.055$; $S = 1:400$; 90% on tangent
• NCHRP Report 774
  • Finding of potential safety problem with ‘e’ oversupply
  • Introduced an equation to check for that condition
Cross Section Elements – Chapter 4

• NCHRP Report 659 (design of driveways)
  • Expanded discussion of driveway width guidelines
• NCHRP Report 790
  (median encroachments)

  • Median geometry to reduce cross-median crashes
• Updated noise abatement discussion per latest FHWA direction

• Update to pedestrian walking speed
• Revised urban street lane width discussion in Chapters 5 & 6 to align with that in Chapter 7 – i.e. right sizing

• Revised rural traveled way and shoulder widths to more right-sized values
  - Based on *Highway Safety Manual* data

• Added material presenting design speed ranges for specific contexts
• Deleted section on bridges to remain in place
  • It’s no longer addressed in AASHTO bridge specifications
• Added a section based on NCHRP Report 737 (high- to low-speed transition zones)
• New section on driveways in rural areas
• Recreational roads and special purpose roads reorganized into separate sections
• Updated minimum curve radii for unpaved roads
  • Based on U.S. Forest Service Guidance
• Title changed from “Rural and Urban Arterials” to “Arterial Roads and Streets”
  • Consistency with Chapters 5 and 6
  • Reduces potential confusion created by new context categories

• New section and other new material on design in the rural town context
Arterial Roads and Streets – Chapter 7

• Urban area design
  • Removed material on operational and control measures
    • Did not pertain to geometric design
  • Added a section on speed management in design
• Revised design speed guidance to encourage right sized and context sensitive designs in urban and suburban settings
  • Away from ‘the higher the better’
• Removed material targeting specific levels of service
• Cleaned some house

• Edge of traveled way designs
• Cleaned some house
• Edge of traveled way designs
• Median design layouts
• Cleaned some house
  • Edge of traveled way designs
  • Median design layouts
  • Intersection sight distance charts
• New or revised drawings and/or text for...
  • Channelized right-turn lanes
  • Offset left-turn lanes
  • Bypass lanes
  • Reduced-conflict intersections
    • U-turn roadways
    • Loons
• Added table on characteristics of non-motorized users
• Intersection sight distance discussion for roundabouts
• Revised criteria for turn lane length
• A new section on diverging diamond (aka double crossover) interchanges
A new table for maximum ramp grade (replacing paragraph text)

Acceleration and deceleration lane length table expanded to include 80 mph [130 km/h] mainline design speed
Questions...

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