General Changes
- Flipped the units (US Customary; metric)
- Generally increased the design speed range
  - 80 mph [130 km/h] in some situations,
  - 85 mph [140 km/h] in others
- Increased emphasis on multimodal
- New Context Classifications
- ADA / Section 504 requirements

Preface
- Rewritten... reorganized (Read)
- GB4 - GB6: For Resurfacing (3R)
  - Use TRB Special Report 214
- GB7: For Resurfacing (3R)
  - Use NCHRP Report 876 “Guidelines for Integrating Safety and Cost-Effectiveness into Resurfacing, Restoration, and Rehabilitation (3R) Projects”
Chapter 1 - New Framework for Geometric Design

Green Book should remain research based
AASHTO should provide guidance to state DOTs and other Green Book users regarding flexibility in design
Guidance should be provided in the next Green Book edition and in the longer term
Guidance should address designing in and for a multimodal transportation system
COD should coordinate with and possibly include other AASHTO publications in flexible design standards
COD should identify gaps in necessary research and develop a plan to fill those gaps

Chapter 1 - New Framework for Geometric Design

Flexibility and Performance Based Decisions

Chapter Rewrite

NCHRP Report 855: An Expanded Functional Classification System for Highways and Street
NCHRP Report 785: Performance Based Analysis of Geometric Design of Highways and Streets
NCHRP Report 839: A Performance-based Highway Geometric Design Process

Chapter 1 - New Framework for Geometric Design

Quotes from Chapter 1
Every dollar spent on a road that is performing well and anticipated to continue performing well is a dollar that is not available to be spent on a road that is performing poorly.

It is important to understand that noncompliance with geometric design criteria is not, by itself, a performance issue for a project on an existing road.

Chapter 1 - New Framework for Geometric Design

Quotes from Chapter 1
... such noncompliance with geometric design criteria only becomes an issue to be addressed in the project purpose and need if that noncompliance has resulted in (or is forecast to result in) poor performance that is correctable by a geometric design improvement and that the agency chooses to address.
### Project Purpose and Need

- Purpose and need statement is the method for agency management to tell planners and designers what will and what will not be included in the project scope.
- Purpose and need/project scope should be defined considering:
  - past performance
  - anticipated future performance if no project is implemented

### Objective Statement

- Established early - *Design begins before design*
- The agency decides the objective of the project before the designer gets it

### Functional Classification

Retained current four functional classifications:
- Local Roads and Streets
- Collectors
- Arterials
- Freeways

### “Rural” Context Classes

- Rural Context
- Rural Town Context

### “Suburban” Context Class

- Suburban Context

### Two Rural:

Rural and Rural Town

### Three Urban:

Urban, Urban Core and Suburban

### Chapter 1 - New Context Classifications

(based on NCHRP 855)
“Urban” Context Classes

Urban Context

Urban Core Context

1.7 Design Process for Project Types

1.7.1 NEW CONSTRUCTION PROJECTS
- New alignment where no existing roadway is present
- Chapters 2 through 10 are primarily intended for new construction projects

1.7.2 RECONSTRUCTION PROJECTS
- Projects that utilize an existing roadway alignment (or make only a minor change in alignment), but involve a change in the basic roadway type - such as a 2 to 5 lane
- Projects on existing alignment that do not change the basic roadway type but replace the existing pavement structure down to the subgrade are no longer classified as reconstruction
- Design guidance in Chapters 2 through 10 is desirable, but may be impractical due to project constraints and may not be relevant to project purpose and need

1.7.3 PROJECTS ON EXISTING ROADS
- Projects that utilize an existing roadway alignment (or make only a minor change in alignment) and do not involve a change in the basic roadway type
- Projects on existing roads are classified by the primary reason the project is being undertaken:
  -- repair infrastructure condition (PPP or NCHRP 876)
  -- reduce current or anticipated traffic operational congestion (HCM)
  -- reduce current or anticipated crash patterns (HSM)

Chapter 2 - Design Controls and Criteria
- 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 based on research
  - Was 2.5 - 6.0 ft/s (Now 3.0 - 3.5 ft/s)
- Emphasizes the Highway Safety Manual and encourages its use

Chapter 3 - Elements of Design
- 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] by providing the side friction factor to use
Chapter 3 - Elements of Design

Superelevation Transitions

- Finding of potential safety problem with ‘e’ oversupply
- Introduced an Equation 3-25 to check for that condition
  \[ e = \frac{2.15}{100} \frac{1}{x} \sqrt{gR} \]
  (if criteria not met, reduce Se prior to PC or use spiral)
- Our Drawing is based on STL and not runoff plus runout

Chapter 4 - Cross Section Elements

Design of Driveways (NCHRP 659)

- Expanded discussion of driveway width guidelines
- Expanded discussion of median geometry to reduce cross-median crashes

Chapter 5 - Local Roads and Streets

- 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

Chapters 5, 6 and 7

- 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, e.g., Table 7-3
  - Based on Highway Safety Manual data
- Added material presenting design speed ranges for specific contexts

Chapters 6 and 7

Deleted section on bridges to remain in place

(‘It’s no longer addressed in AASHTO bridge specifications)

Chapters 6 and 7

Added a section based on NCHRP Report 737 high to low speed transition zones
Chapter 7 - Arterial Roads and Streets

- 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

Chapter 8 - Freeways

- 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

Chapter 9 - Intersections

- Cleaned house a bit
- Removed material on:
  - edge of traveled way designs
  - median design layout
  - 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 and Loons

- Added table on characteristics of non-motorized users
- Intersection sight distance discussion for roundabouts
- Revised criteria for turn lane length

Chapter 10 - Grade Separations and Interchanges

- A new section on the diverging diamond interchange (DDI)
Chapter 10 - Grade Separations and Interchanges

- A new table for maximum ramp grade (replacing confusing paragraph text)

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

What does this mean for ALDOT?

- When will we adopt the new Green Book?
  - Not quite ready.

  -- Needs
  - Highway Safety Manual Training and Application
  - Highway Safety Engineers in each Region
  - Performance Based Design Guidance (NCHRP 785 and 839)

What does this mean for ALDOT?

- Design begins before “design”
  -- need a clear project object statement
  -- need a good project scope

- Design flexibility does not mean that designers can use arbitrary discretion in the design of projects.

What does this mean for ALDOT?

- The documentation is as important as the decision
  - we need to document what will be included and those items chosen not to be included
  - Documentation of how flexibility was exercised to meet competing needs is needed to show:
    -- why proposed design is an appropriate solution
    -- how it meets the needs of each transportation mode
    -- how it is expected to perform in the future
    -- how it fits within available funding

What does this mean for ALDOT?

- FHWA Head Quarters has said:
  On Monday, September 24, 2018, AASHTO released the publication of “A Policy on Geometric Design of Highways and Streets, AASHTO 2018 (Green Book).” Please note that until FHWA formally adopts the 2018 Green Book through formal rulemaking, the 2011 Green Book is the adopted standard (as specified in 23 CFR 625) for projects on the National Highway System. Until the 2018 Green Book is formally adopted, it should only be considered guidance.

GB8 Vision

The next book is already in the planning stage and will be focused even more toward a Performance-based Highway Geometric Design Process.
Questions... ?

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