

# NCHRP Project 7-29

## Development of an 8th Edition of the AASHTO Green Book (GB8)

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TRB Safety Analytical Methods Subcommittee  
ACS20(1)

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# Project Objective

- Develop a draft 8th Edition *Green Book* (GB8) suitable for balloting through AASHTO processes.

# GB8 Goals

- Increased design flexibility
- Performance-based approach (in situations where performance measures are available)
- Multimodal considerations
  - address all transportation modes for every project
- Based on context classifications
  - rural and natural context
  - rural town context
  - suburban context
  - urban context
  - urban core context
  - special contexts

# Research Approach

## **PHASE II**

- Task 8—Develop First Draft of GB8
- Task 9—Develop Second Draft of GB8
- Task 10—Prepare Other Final Deliverables



# Outline

# Top-Level GB8 Outline

- Part I—Introduction
- Part II—Performance-Based Design Process
- Part III—Design Controls and Criteria
- Part IV—Tailoring Geometric Design to Roadway Context

# Outline for Part I—Introduction

- Chapter 1—Overview
- Chapter 2—Key Concepts in Geometric Design
- Chapter 3—Overview of Performance-Based Design
- Chapter 4—Project Needs and Objectives Statement

# Outline for Part II—Performance-Based Design Process

- Chapter 5—Performance Analysis Tools
- Chapter 6—Steps in Performance-Based Design



# Outline for Part III—Design Controls and Criteria

- Chapter 7—Design Controls
- Chapter 8—Roadway Alignment
- Chapter 9—Cross-Section Elements
- Chapter 10—At-Grade Intersections
- Chapter 11—Freeways
- Chapter 12—Interchanges
- Chapter 13—Other Elements Affecting Geometric Design

# Outline for Part IV—Tailoring Geometric Design to Roadway Context

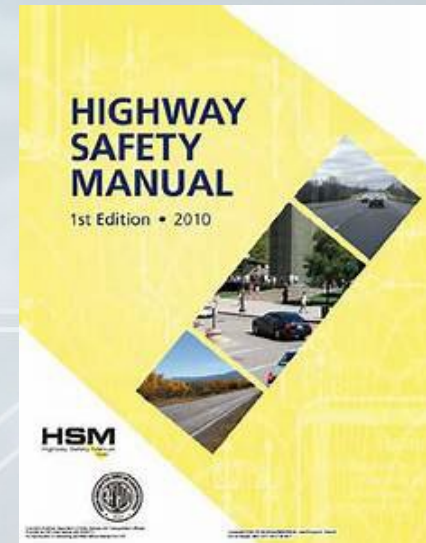
- Chapter 14—Rural and Natural Context
- Chapter 15—Rural Town Context
- Chapter 16—Suburban Context
- Chapter 17—Urban Context
- Chapter 18—Urban Core Context
- Chapter 19—Special Contexts



# Performance-Based Design

# Performance-Based Design

- Unstated concept in previous Green Book editions:  
*If a project is designed in accordance with GB criteria, the project will operate safely and efficiently.*
  - ‘Maybe’ appropriate when safety effects of design criteria were poorly understood.
  - However, HSM provides body of quantitative knowledge on safety effects of geometric elements
- Performance-based design has goal of meeting specific operational and/or safety targets established for each project.



# Performance-Based Design

## Quantitative Safety Knowledge in HSM

Geometric design elements in HSM1	To be added in HSM2
Lane width	Roundabouts
Shoulder width	Shoulder-use lanes
Horizontal curve length	Additional intersection configurations and traffic control types
Horizontal curve radius	HOT/HOV lanes
Superelevation and presence or absence of spiral transition	Six-lane and one-way arterials
Grades	Bicyclists and Pedestrians
Driveway density	
Passing lanes	
Two-way left-turn lanes	
Intersection skew angle	
Median width	
Right-turn lane	
Left-turn lane	

# Discussion

- GB8's primary source for CMFs is HSM2. Some HSM2 content is still up in the air.
- Areas where HSM2 team has some concerns:
  - Roundabouts – needs some calibration
  - Part-time shoulder use
  - HOV/HOT lanes – Unable to compare an existing freeway without HOV/HOT lanes to an improved freeway with HOV/HOT lanes.
- Research should be compatible with existing methodology.
- How best to design research projects so the results are most useful to future editions of the HSM and *Green Book*.

# Contact Info

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