

Keith A. Cota, New Hampshire Department of Transportation

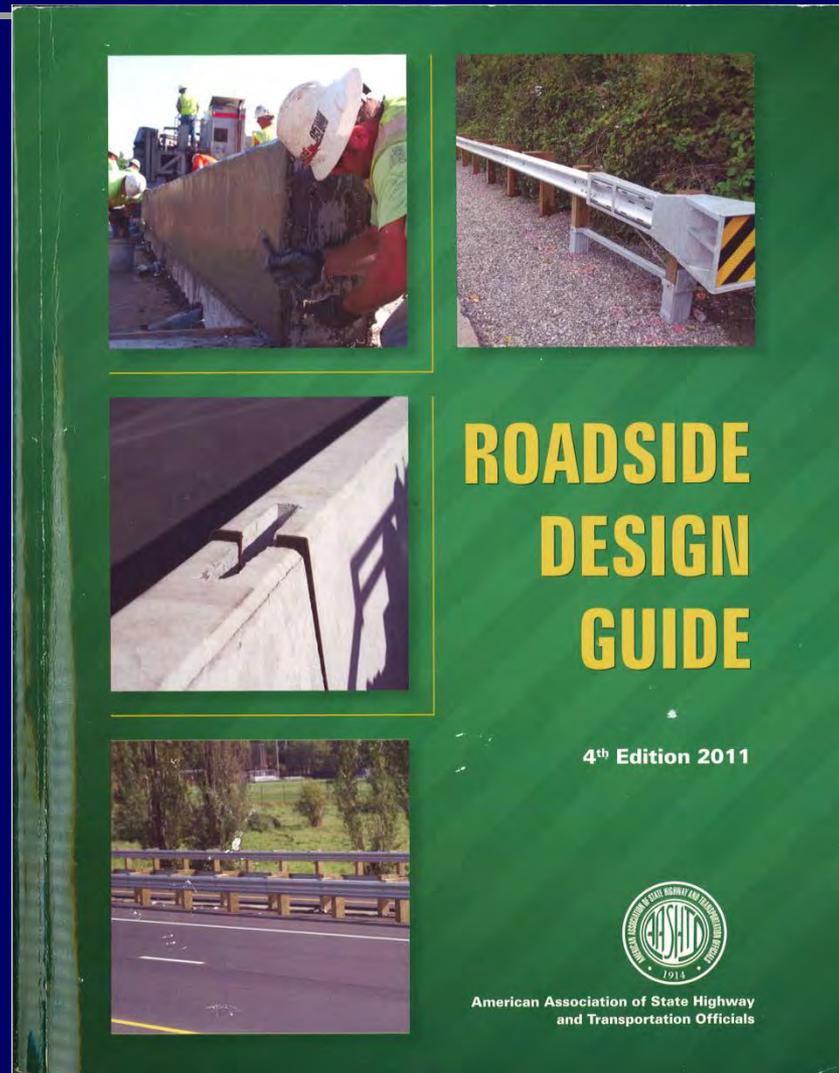
**ROADSIDE DESIGN GUIDE,
4th Edition 2011**

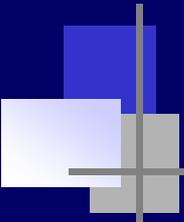
AASHTO - Subcommittee on Design

June 11, 2012

Portland, Maine

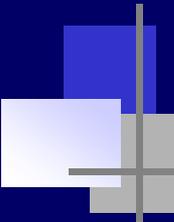
ROADSIDE DESIGN GUIDE, 2011





Presentation Overview

- **2011 RDG Update Objectives**
- **Summary of Some Notable Chapter Changes**
- **TCRS Research Objectives**



ROADSIDE DESIGN GUIDE, 2011 UPDATE OBJECTIVES

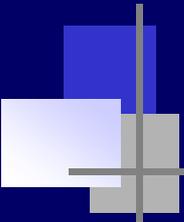
- **UPDATE STATISTICS**
- **INCORPORATE LATEST RESEARCH**
- **RESOLVE CONFLICTS RELATED TO CLEAR ZONE [NCHRP 20-7 (TASK 171)] WITHIN AASHTO DOCUMENTS”**
- **REFERENCE AASHTO-AGC-ARTBA, TASK FORCE 13 WEB SITE FOR STANDARDIZED HIGHWAY BARRIER HARDWARE**

ROADSIDE DESIGN GUIDE , 2011 CONFLICT ADJUSTMENTS

ESTABLISHED DEFINITION FOR USE ON BOTH PUBLICATIONS FOR :

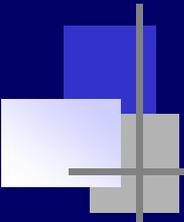
- Clear zone
- Clear Recovery Area
- Horizontal Clearance
- Lateral Offset





ROADSIDE DESIGN GUIDE, 2011 UPDATE

- **APPENDIX WITH STANDARD DRAWINGS REMOVED**
- **REFERENCE AASHTO-AGC-ARTBA TASK FORCE 13 REPORT, “A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE”**
 - **WEB SITE – <http://aashtotf13.org>.**



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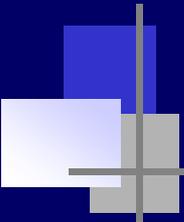
- **REFERENCE FHWA – OFFICE OF SAFETY FOR ACCEPTANCE LETTERS**

- WEB SITE –

- http://safety.fhwa.dot.gov/roadway_dept/road_hardware/index.htm

- **ADD REFERENCE FOR UPDATE CRASH TEST CRITERIA UNDER MASH & FHWA/AASHTO IMPLEMENTATION PLAN**

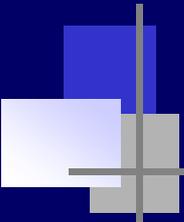
SUMMARY OF CHAPTER CHANGES



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CHAPTER 1 - Introduction

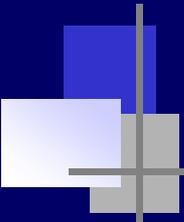
- **Update Statistical Data**
- **Reference New Crash Test Procedures for Manual For Assessing Safety Hardware, 2009**
- **Reference to AASHTO/FHWA Joint Implementation Plan For Continued Use of NCHRP 350 Accepted Hardware**



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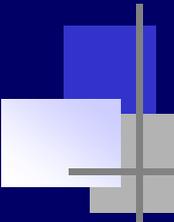
CHAPTER 2 – Economic Evaluation

- **Development of Update Benefit/Cost Analysis Program (RSAP) Beta Program in Testing Mode – Anticipated Availability 2012**
- **Reference New Crash Test Procedures for Manual For Assessing Safety Hardware, 2009**
- **Added Section 2.3 In-Service Evaluation**



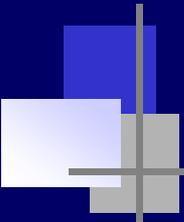
ROADSIDE DESIGN GUIDE, 2011
CHAPTER 3 – Roadside Topography

- **Update Definition on Clear Zone – includes shoulders, bike lanes, and auxiliary lanes**
- **Horizontal Curve Adjustment Factors (Table 3-1)**
- **Expanded Examples for Clear Zone Evaluation**



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CHAPTER 4 – Sign, Signal, Trees, Poles

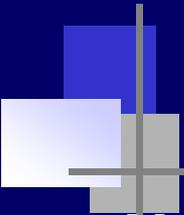
- **Broader Guidance for Protection of High Level Lighting Support (Section 4.5.2)**
- **Expanded Discussion on Utility Pole Site Awareness (Section 4.8)**
- **Expanded Tree Discussion on Treatment Approaches (Section 4.9)**



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CHAPTER 5 – Roadside Barriers

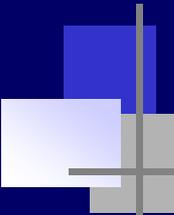
- **Reference to MASH Acceptance for Roadside Hardware**
- **Reference to Task Force 13 Web Site for Barrier Information**
- **New Table 5-4 for Listing of Roadside Barrier Hardware**
- **Strong Post W-Beam – Minimum Height of 26½ inches (replace at lower heights)**



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CHAPTER 5 – Roadside Barriers

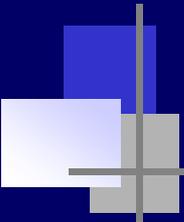
- **Update and Added New Roadside 31 in. Tall Hardware Systems (MGS, Gregory Mini Spacers, Trinity T -31, Nu-Guard , etc)**
- **Added Reference to Zone of Intrusion**
- **Enhanced Guidance for Placement of Curbs with Barrier Hardware**
- **Revision to Length of Need for Design Speed Ranges, ADT Ranges, and Runout Lengths**
- **New Section for Guidance for Addressing Guardrail on Radius**



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CHAPTER 6 – Median Barriers

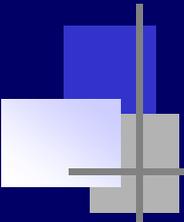
- **New Table 6.4.1 Listing of Crashworthy Median Barriers**
- **Update Summary of Median Barriers**
- **Introduces Zone of Intrusion**
- **Revision to Length of Need for Design Speed Ranges, ADT Ranges, and Runout Lengths**
- **New Section for Guidance for Addressing Guardrail on Radius**



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CHAPTER 7 – Bridge Railings

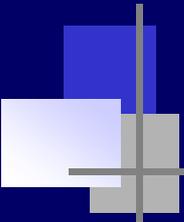
- **General Updates**
- **Reference for Complete Listing of Bridge Railings to Task Force 13 Web Site**
- **Reference to AASHTO –LRFD Bridge Design Specifications**



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CHAPTER 8 – End Treatments

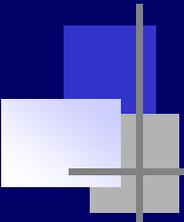
- **Rewrote Chapter with References to Anchorages, Terminals, and Crash Cushions**
- **Reference for Complete Listing of End Treatment Systems to Task Force 13 Web Site**
- **Discussion on Energy-Absorbing vs. Non-Energy-Absorbing**
- **Update of Terminals and Crash Cushions for Roadside and Median Applications**



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CHAPTER 9 – Work Zones

- **Application for Clear Zone Concept in Work Zones**
- **New Section 9.2.1.1 on Test Level Requirement for PCB's and Replacement of Damages Systems**
- **Crashworthy Truck-Mounted Attenuators (TMA) and Trailer-Mounted Attenuators**
- **New Reference to Pavement Edge Drop-Offs**



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CHAPTER 10 – Urban

- **Updated Chapter Based Upon NCHRP Report 612 (2008)**
- **New Definition for Minimum Lateral Offset**
- **Targeted Design Approach for High Risk Urban Corridors**
- **Recommended Lateral Offset to Obstructions (12 ft with minimum of 6 ft from face of curb)**

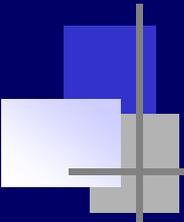
URBAN CHAPTER 10

Recognizes that Urban ROW are often extremely restricted, limiting the applicability of clear-zone practice – even in suburban to urban transitions.



URBAN CHAPTER 10 Landscape Buffer (Planting Strip) Configuration

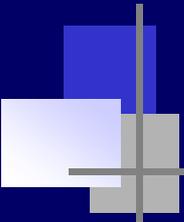




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CHAPTER 11 – Mailbox

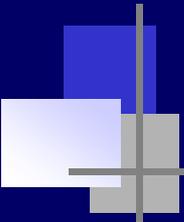
- **Suggested Lateral Offsets for Placement of Mailboxes**
- **Update on Mailbox Support and Attachments**
- **Considerations in Formulating Model Mailbox Regulations**



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CHAPTER 12 – Low Volume Roadways

- **Low Volume Roadways – 400 ADT or less**
- **Encourages clear zone application where practical**
- **Defines strategies to be considered: signage, pavement markings, traversable slopes, breakaway hardware**

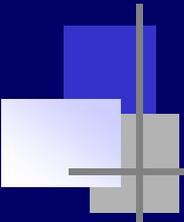


ROADSIDE DESIGN GUIDE UPDATE OBJECTIVES

- **ADD NEW CHAPTER FOR LOW VOLUME ROADS**
 - **Guidance on clear zone, drainage placement, slope and ditch cross-sections, barriers (TL2), sign supports, utility poles placement, etc.**

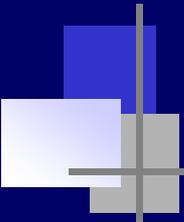
ONGOING RESEARCH NEEDS

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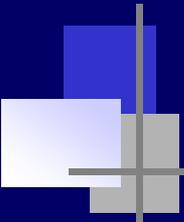
AASHTO - ROADSIDE DESIGN GUIDE RESEARCH NEEDS

- Long-Term Data Collection System
- Re-evaluation of Length of Need
- Roadside Barrier Placement on Slopes (Cable Median Applications)
- Development of Clear Zone Recovery Guidelines



AASHTO - ROADSIDE DESIGN GUIDE RESEARCH NEEDS

- Warranting Criteria for Roadside Barriers for Various Crash Test Levels
- Sign Post Impacts under MASH
- Work Zone Safety
- Motorcycle Crashworthy Considerations and Guidelines



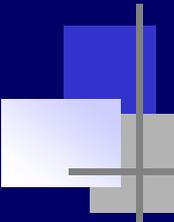
AASHTO – TCRS RESEARCH INITIATIVES

AASHTO – TCRS JOINT MEETING WITH TRB COMMITTEE AFB20

Date: July 29 to August 2, 2012

Location: TRB Center at Irvine, California

Objective - Strategic Directions on
Roadway Departure Crashes: Supporting
a Decade of Action



AASHTO – TECHNICAL COMMITTEE ON ROADSIDE SAFETY

CONTACT INFORMATION

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AASHTO - TCRS

QUESTIONS

