ROAD SAFETY AUDITS—A SHARED APPROACH TO IMPROVING ROADWAY SAFETY

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Overview of Presentation

1. Introduction and Background
2. What is a RSA?
3. Candidate Projects
4. Steps in the RSA Process
5. West Virginia Example
Local Road Safety
Continues to be a Concern

- Pedestrians
- Bicycles
- Intersections
- Roadway/Lane Departures
Entities Involved in Local Road Safety

• Public Works
  -- design
  -- construction
  -- maintenance
• Law Enforcement
• Emergency Responders
• Planners
• Community Advocates
The Situation

• Each entity may perceive safety concerns and solutions differently based on their backgrounds and experiences
The Challenge

• Bringing these different perspectives together in a formal fashion to help improve roadway safety.
ROAD SAFETY AUDIT
What is a Road Safety Audit?

A road safety audit is a formal safety performance examination of an existing or future roadway or intersection by an independent, multi-disciplinary audit team.
A Road Safety Audit Also…

- considers the safety of all road users
- considers interactions at the borders or limits of the project
- examines the interaction of project elements
- proactively considers mitigation measures
An RSA Aims to Answer the Following Questions

• What elements of the road may present a safety concern: to what extent, to which road users and under what circumstances?
• What opportunities exist to eliminate or mitigate identified safety concerns?
A Road Safety Audit is NOT....

• A simple standards check for adherence to design guidelines.
• A traffic impact or safety impact study
• A road safety inventory program
• An opportunity to redesign the project
Why Do We Need RSAs?

• Relatively few road-related safety issues are identified in collision reports.

• Road designs need to anticipate and accommodate common driver errors.

• Easier to design and build safer roads than to modify some entrenched driver behaviors.
Examples Of Where an RSA Could Help

In the following photos, what measures could improve the road environment or reduce the crash risk (frequency or severity) resulting from driver error?
Example 1
Example 2
Why Do We Need RSAs?

There are many competing interests at play during the planning and design process:
- cost
- right-of-way
- environment
- topographic and geotechnical conditions
- socio-economic issues
- capacity/efficiency
- politics
- safety
Why Do We Need RSAs?

• Compromises and constraints are a normal part of the planning and design process.

• RSAs demonstrate the safety implications of project decisions.

• RSAs ensure that safety is an explicit consideration, and that safety does not “fall through the cracks”.

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When Do We Conduct RSAs?

• **pre-construction:**
  – planning/feasibility
  – preliminary (draft) design
  – detailed design

• **construction:**
  – work zones
  – pre-opening

• **post-construction/operational:**
  – existing roads
8-Step Process

1. Identify project or existing road to be audited
2. Select interdisciplinary audit team
3. Conduct a Pre-audit meeting to review project information and drawings
4. Perform field reviews under various conditions
5. Conduct audit analysis and prepare report of findings
6. Present Audit findings to Project Owner/Design Team
7. Prepare formal response
8. Incorporate findings into the project when appropriate

Responsibilities:
- Audit Team
- Design Team / Project Owner
Good Candidate Projects for Pre-Construction RSAs

- complex design
- safety-oriented
- unusual or new features
- many interacting modes
- high-profile (political or public interest)
- high capital cost
- context-sensitive design
Good Candidate Projects for Post-Construction RSAs

- high-crash sites
- high-profile (political or public interest)
- sites at which traffic characteristics have changed
The RSA Team

- Independent
- Experienced
- Interdisciplinary
  -- road agency staff
  -- exchange staff with other agency
  -- consultants
  -- combination of above
Interdisciplinary RSA Team: Skills

Core skill set (every audit)
- traffic operations
- geometric design
- road safety
- maintenance

Supplementary skills (some audits)
- positive guidance/human factors
- special users (cyclists, pedestrians, trucks)
- enforcement
Pre-Audit Meeting: Exchange of Information

- drawings
- background reports
- design criteria
- collision history
- traffic volumes
- aerial photographs
Field Review

- Observe road user characteristics
- Observe surrounding land uses
- Observe link points to the adjacent transportation network
RSA Analysis: Conducting the RSA

• workshop setting
• review background reports and design criteria
• systematically review design drawings and/or other information
• identify, prioritize, and mitigate safety issues
Audit Analysis

• Focus on identifying:
  – safety benefits
  – safety issues

• Aim for consensus within the team.
Audit Analysis: Overall Rating

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<thead>
<tr>
<th>FREQUENCY RATING</th>
<th>SEVERITY RATING</th>
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<tbody>
<tr>
<td></td>
<td>Low</td>
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<tr>
<td>Frequent</td>
<td>C</td>
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<td>Occasional</td>
<td>B</td>
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<tr>
<td>Infrequent</td>
<td>A</td>
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<tr>
<td>Rare</td>
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Crash Risk Ratings:
- A: minimal risk level
- B: low risk level
- C: moderate risk level
- D: significant risk level
- E: high risk level
- F: extreme risk level
Presentation of Findings: Preliminary Findings Meeting

- RSA team, design team, owner
- discuss preliminary findings and possible solutions
- use results to write RSA report
Presentation of Findings: RSA Report

- documents the results of the RSA
- identifies and prioritizes safety issues
- may include suggestions for improvements
WV Example: Grapevine Road Berkeley County

ADT (2014) = 3827 vpd  
Post Speed Limit = 30 mph

Patterns of Roadway Departure and Wet Weather Crashes
Edge of Pavement on South Side, East of Curve
Roadway Surface in Curves
Westbound Side of Road, Upper Curve
Scars on Trees on South Side of Road
Westbound Shoulder
Safety Issues Identified Through RSA

- Edge of Pavement Drop-Offs and Shoulder Condition
- Drainage Concerns (erosion, high shoulders)
- Pavement Surface Condition in Reverse Curves (wet pavement)
How to Think of RSA’s

• Road Safety Audits represent an additional tool within the suite of tools currently making up a multi-disciplinary safety management system.
Thank You!

Questions?

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