Tech Note #41

Road Safety Audits/Road Safety Audit Reviews

Road safety audits (RSAs) are a proactive approach to improving transportation safety. An RSA in an examination of a future or existing roadway, in which an independent, qualified audit team reports on safety issues. It is a way for your agency to improve safety and communicate to the public how your agency is proactively working toward crash reduction. The step-by-step procedure of an RSA can be performed during any or all stages of a project, including planning, preliminary design, detailed design, traffic control planning, construction, pre-opening, and on existing roads. For an existing road the RSA is effectively a review and is discussed as a road safety audit review (RSAR).

RSAs have been used successfully worldwide for a number of years. In only the last couple of years, agencies in the United States have begun to focus on RSAs. Worldwide, the RSA concept has proven to be highly effective in identifying and reducing the crash potential of roadway projects. Globally it is estimated that one million fatalities result from motor vehicle crashes each year. The potential savings--in lives, serious injuries, and property damage--are incalculable.
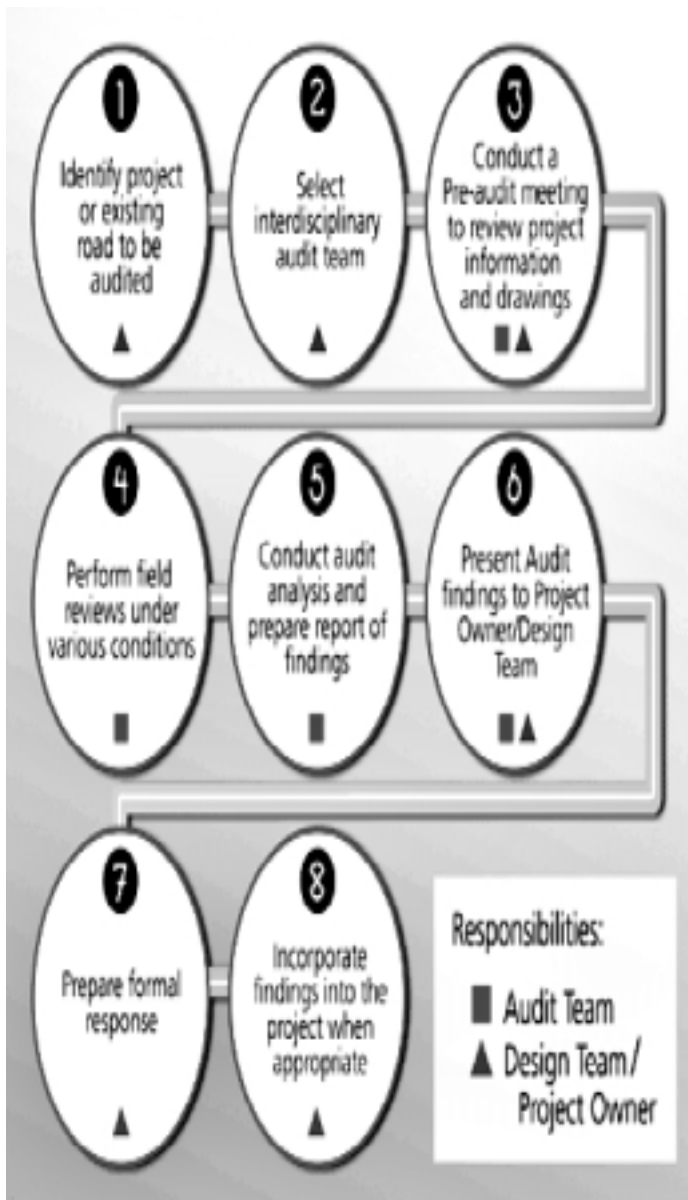
Although concerns have been raised that the use of road safety audits would increase an agency's liability, in fact, just the opposite is true. Implementing a plan to reduce the crash potential and improve the safety performance of a roadway is actually a proactive approach to safety and should be used in defense of tort liability. This is particularly true of RSAs performed in the early stages of a project. Identifying and documenting safety issues on an existing roadway is not an admission of guilt. Rather, it is the first step in a process designed to improve safety. Proper documentation, communication and logical prioritization of an agency's plan to address safety issues would be difficult to fault.

Road safety audits, adaptable to local needs and conditons, are a powerful tool for state and local agencies to enhance the state of safety practices. The value of the RSA process in identifying roadway safety issues makes it an important component of any agency's safety strategy. Most State DOTs have established traditional safety review processes through their high hazard identification and correction programs. However, an RSA and a traditional safety

ROAD SAFETY REVIEWS	RSAs
●A safety review uses a small (1-2 person) team with design expertise.	●A safety audit uses a larger (3-5 person) interdisciplinary team.
●Safety review team members are usually involved in the design.	●Safety audit team members are usually independent of the project.
●Field reviews are usually not part of safety reviews.	●The field review is a necessary component of the safety audit.
	●Checklists and field reviews help to examine all design features.
●Safety reviews concentrate on evaluating designs based on compliance with standards.	●Safety audits are comprehensive and attempt to consider all factors that may contribute to a crash.
●Safety reviews do not normally consider human factors issues, i.e. driver error, visibility issues, etc.	●Safety audits consider the needs of pedestrians, cyclists, large trucks as well as automobile drivers.
●Safety reviews focus on the needs of roadway users.	●Safety audits are proactive and look at locations prior to the development of crash patterns to correct hazards before they happen.
●Safety reviews are reactive. Hazardous locations are identified through analysis of crash statistics or observations.	

review are different processes. It is important to understand the difference between road safety reviews that are commonly performed and newer RSAs as described on page 1.

The FHWA is working with State and local jurisdictions to integrate Road Safety Audits into the project development process for new roads and intersections, and also encourage RSAs be conducted on existing roads and intersection. The following chart outlines the basic steps involved in conducting an RSA.

Before

This is a photo of an intersection in Grand Rapids, Michigan, before a road safety audit was conducted. The two traffic signal heads are hung on a diagonal span of wire and only one head is over the travel lanes. There are two lanes approaching the intersection separated by a dashed white pavement marking.

Conducting an RSA

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

After

This is the same intersection after a road safety audit was conducted. The traffic signals are now hung on a box span of wire and they are now able to be hung directly over the travel lanes. Now there are three traffic signal heads, two for the through lane and one for the left turn lane. Pavement markings now show a separate left-turn lane at the intersection.

Photos courtesy of AAA Michigan.

KEYS TO SUCCESSFUL IMPLEMENTATION

From an agency's experience, the keys to success are:

* Agency support and willingness to incorporate audit findings
* Small multidisciplinary audit team of 3-5 people
* Audit conducted at the earliest possible stage.
* Willingness to investigate new ideas outside the traditional scope of work.

GOOD CANDIDATES FOR RSAs

For new construction, project characteristics that could benefit from an RSA include:

* A complex design with high cost
* New or unusual features
* Several interacting modes
* A high public or political profile
* A context sensitive design

For existing roads and streets, good candidates may include:

* A poor safety performance record
* High public or political interest
* Traffic conditions that have changed

AUDIT TEAM KNOWLEDGE BASE

* *MUTCD*
* *AASHTO "Green Book"*
* *AASHTO Roadside Design Guide*
* *AASHTO Highway Safety Design/Operations Guide*
* Road Safety Audit Skills
* Tort Liability Issues
* Pedestrian/Bicycle Design Issues

DESIRABLE AUDIT TEAM SKILLS

* Highway/Traffic Safety
* Traffic Engineering
* Geometric Design
* Human Factors
* Planning
* Ped/Bike Speciality
* Accident Reconstruciton
* Enforcement
* Maintenance

SITE VISIT

* Team must be prepared to focus on safety issues
* Team will already have reviewed plans and have some background on the project
* Team will use checklists
* Team should use videotape/digital cameras

CHECKLISTS

* Formulated to guide the process
* Can be modified to fit the state of the audit project
* Should be considered an aid, not the final product
* Should be considered a tool, not a rigid requirement

Checklists help the team to consider all factors and provide a reminder of potentially overlooked safety issues. A measure of continuity is provided from audit to audit with accompanying documentation. Various safety issues to be assessed during a field review include:

* Roadside features
* Road surface conditions
* Pavement markings
* Signing and delineation
* Intersections and approaches
* Bridge structures
* Road users (motorized and non-motorized)
* Consistency of design parameters

AGENCY CONCERNS ABOUT RSAs

Local agencies may have concerns about potential drawbacks of conducting RSAs.

Project Development Delay

Delay is minimal. The audit process can be worked into the regular development process. From start-up to submission of the final report, a standard road safety audit requires about 1-3 weeks to complete.

Increased Project Costs

RSA team proposals should be kept in context with the project scope and focus primarily on low cost improvements. Any significant cost changes can be discussed with project managers prior to issuance of the final report.

It is up to project managers to select or defer any changes. It is generally less costly to make needed changes in project plans than to modify a new improvement after construction is completed.

Potential Increased Liability Exposure

A properly conducted and documented RSA should not result in additional liability exposure for an agency. In fact RSAs may actually reduce potential tort claim exposure by demonstrating a proactive approach to safety. However, managers may want to discuss liability implications with agency attorneys before undertaking an RSA. Identifying and documenting safety issues on a road is not an admission of guilt. Rather, this initiative is part of a management process to improve safety within a jurisdiction. Priorities can be established and a time line developed to implement improvements. Using accepted risk management techniques, safety concerns can be prioritized and addressed as funding becomes available.

RESOURCES

For more detailed information on how to conduct an RSA, visit the FHWA website at:

http://www.roadwaysafetyaudits.org

This Road Safety Audits website was developed by the Institute of Transportation Engineers (ITE) in cooperation with the Federal Highway Administration (FHWA) in the interest of information exchange. The site provides an easy centralized way to access a variety of resources related to safety audits including an overview of road safety audits and road safety audit reviews, the benefits of conducting road safety audits and incorporating them into safety programs, the legal considerations and implications of RSAs, how to conduct road safety audits, and links to various RSA resources.

To assist your agency in preparing a questionnaire, a prompt list is available from Baystate Roads Program by faxing a request to:

413-545-6471   or   phoning 413-545-5403

This checklist is merely a guide to help the RSA team consider all factors particular to each community's needs and was prepared by FHWA's Office of Safety.

The National Cooperative Highway Research Program has published *NCHRP Synthesis 321* on "Roadway Safety Tools for Local Agencies" which is available from the Baystate Roads Program or through the Transportation Research Board at:

http://www.national-academies.org/trb/bookstore

The overriding message of this comprehensive report is that ***safety practices should be tailored to the problems and resources of an agency*** and that there is no one-size-fits-all safety solution. Emphasis is placed on the use of tools that will give local agencies a practical and affordable toolbox, with a stronger safety program as the result.

FHWA also offers a new Peer-to-Peer program for agencies either considering the use of or actually conducting RSAs. The RSA P2P program is provided at no cost to State and local tranportation agencies and allows easy access to the support of a knowledgeable peer. Contact the Road Safety Audit Peer-to-Peer Program at:

(866) P2P-FHWA or **email SafetyP2P@fhwa.dot.gov**

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