What resources are needed?

RSAs require the assembly of a RSA team, and some resources from the design team and the owner to compile information, attend meetings and respond to the audit suggestions.

The cost of a RSA is often an insignificant amount compared to the overall project cost. Audits can be conducted by in-house transportation department staff or from a consulting organization.

The cost of implementing the acceptable suggestions from the RSA (including re-design) may be relatively low and manageable, since by definition RSA suggestions need to be compatible and cost-efficient relative to the phase of the project. Allowance should be made in the original design costing and time schedule of projects for both audit and possible redesign.

What are the Benefits of RSAs?

It is difficult to quantify the benefits of RSAs, since by definition audits are preventing crashes from occurring. Studies that have attempted to quantify the benefits of audits have yielded impressive results. In the United Kingdom, a local authority has estimated the benefit-cost ratio of an RSA to be 15:1, while TRANSIT New Zealand has estimated the benefit to cost ratio as 20:1. Cost-benefit analysis of safety audited projects in Denmark yielded an expected average first year rate of return of 146 percent.

HRC Traffic Tips

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With the low cost of conducting road safety audits, it is fair to say that audits need only to prevent a very low number of crashes, injuries and fatalities over the life of the project to provide a high benefit to cost ratio.

If you are interested in learning more, please contact Richard Beaubien at 248.454.6300 or dbeaubien@hrc-engr.com.

Road Safety Audits: An Effective Tool for Improved Safety has been brought to you courtesy of Hubbell, Roth & Clark, Inc. - *Consulting Engineers since 1915* and adapted from Intersection Safety Issue Briefs, Federal Highway Administration, April 2004.

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Road Safety Audits: An Effective Tool for Improved Safety

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What is a Road Safety Audit?

Every year, a large number of people are killed and injured on roads in developed and developing countries. Every year, states, counties, regions and municipalities spend considerable amount of resources on trying to reduce crashes by reconstructing and improving the roads. This work–crash reduction–is still necessary and should continue to be of high priority. However, these activities are reactive.

New roads must incorporate design and operational safety elements from the start. Roadway safety in new projects can be improved by having independent road safety specialists systematically examining and commenting on the projects, while they still only exist on paper. This is called a road safety audit (RSA).

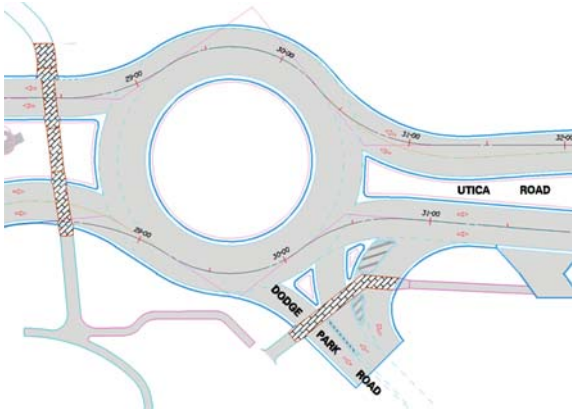
Engineering. Environment. Excellence.

RSAs are in essence, crash prevention. The purpose is to make new roads as safe as possible before the projects are implemented, and before any crashes happen. RSAs require an independent and systematic formal procedure for assessing or checking the crash potential and safety performance of a new road project or existing roads. Safety should be considered throughout the entire project from planning and development, to construction and operations and maintenance.

The basis for a RSA is the application of safety principles to new project design and improvements to the highway to prevent crashes from occurring or to reduce their severity. The outcome of the audit is the identification of any potential safety issues, together with suggestions on how to address the issues. Additionally, road safety audits are systematic; auditing takes place according to agreed upon procedures, in which the parties involved have designated roles in the process.

The central principle of an RSA is the independence of the auditors. The auditors exclusively evaluate the road safety of projects and not participants in the planning or design of the project itself. Furthermore, it is not the task of the auditors to weigh safety considerations against other considerations, e.g., economic criteria although they may be aware of them.

RSAs can be applied to both small as well as large projects, regardless of whether the project concerns new construction or the rebuilding of existing roads.



It will often be advantageous to carry out an audit several times during the course of a project, depending on its size, complexity and character. Therefore, the following five stages have been defined:

Stage 1: Planning

Stage 2: Preliminary Design

Stage 3: Detailed Design

Stage 4: Construction

Stage 5: Monitoring Existing Projects

It is essential that the suggestions of the RSA are consistent with the stage of the project. For example, audit suggestions related to design details are inappropriate at the planning phase, and audit suggestions that require major design alterations are inappropriate at the detailed design phase. Experienced auditors will limit the safety audit suggestions to items that can still be practically and cost-effectively addressed at the stage of the project.

The final design-related decisions are always the responsibility of the design team and the project owner. The auditors simply provide input, and the design team and owner have absolute flexibility to accept or reject any of the audit suggestions, with proper justification and documentation.

Who needs RSA guidelines?

RSAs should be an integral part of highway planning, design, construction and maintenance. Therefore, there needs to be an explicit commitment to safety amongst elected officials, management in any transportation organization, together with an awareness of the role and benefits of safety audits.

The RSA process requires an objective approach to the assessment of crash risk. The principal method of ensuring this objectivity is through the independent safety assessment of projects by persons not connected with the original design. Designers and planners need to be familiar with procedures and practices, and provide the necessary background information required for the audit to be undertaken. A designated audit team should undertake the audit with experience conducting road safety engineering techniques.

What should be Audited?

Projects eligible for audit cover a wide range of types and sizes, on different classes of roads, in urban and rural areas. The variety of design is broadly covered under the following categories: (I) major highway projects; (II) minor improvements (rehabilitation, retrofitting, upgrading) projects; (III) traffic management plans; (IV) development projects; and (V) maintenance.

Ideally, all projects should be subject to an independent safety audit. If this is not achievable within available resources, a clear procedure is required for prioritizing projects in terms of type of project and level of audit required. Projects that benefit from audits typically have the following characteristics:

- Complex, unusual, or new design characteristics;
- Significant budget or land constraints;
- A high public profile; and
- A history of high crash risk at the project location