A New Champion for Safety – The Road Safety Audit

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Introduction

In the past few years, transportation safety professionals in North America have focused attention on the application of Road Safety Audit (RSA) concepts. This interest developed as a result of the successful use of RSAs globally, particularly in Australia and New Zealand, and the documented findings, which demonstrated how the use of road safety audits can identify a broad spectrum of issues that may be addressed to improve safety performance. In the United States, RSAs are continuing to be evaluated for two applications: (1) to identify potential safety issues that may occur in roadway projects that are being planned and designed, and (2) to be used as a tool in analyzing safety issues on existing roadways. These two applications are identified as an RSA and as a road safety audit review (RSAR), respectively.

Initial efforts to implement Road Safety Audits in the United States have raised several issues relating to the adaptability of the RSA methodology to US practices. Pilot studies conducted by state departments of transportation and local governments indicated that differences exist in US practices and responsibilities for agencies at various levels of government. In addition, concerns about liability and apprehension regarding acceptance of a new technique may create roadblocks to the use of road safety audits.

The objective of this presentation is to describe an approach to tailor and modify road safety audits to enhance their usefulness as a component of proactive safety programs at all levels of government. The approach that follows considers resources and safety improvement issues for the different types of roadway networks. The development of training programs to assist agencies in implementing the RSA practice into their overall safety programs is highlighted.

Training – The Key to Successful Implementation

As with any new approach, the key to successful integration of RSA concepts into an agency's safety program is through education and training. While the general concepts of the road safety audit process have been widely publicized, only a limited number of road safety audits have been conducted and changes implemented as a result of the audit findings. A report prepared for the Federal Highway Administration, Office of Highway Safety, documented the road safety audit experiences of several state departments of transportation. From this report and the experiences of other agencies, it is evident that advancing the state of knowledge of road safety audits is important and that two avenues of training are needed. These are:

1. Awareness workshops. The importance of achieving "buy-in" from management and decision-makers is key to integrating road safety audits into agency safety programs. The objective of these workshops would be to demonstrate the benefits of RSAs and to illustrate how the programs could be part of a comprehensive safety program. Issues such as resource requirements and liability concerns would be highlighted.

2. Applications workshops. The road safety audit process is highly structured, requiring a formalized approach involving a team of professionals with expertise in many areas such as design, enforcement and human factors. These workshops would focus on the process – what it is, how the team works together, how the findings are reported, etc. It would not be designed to teach the skills required of auditors.

Agency Training Needs

At all levels of government—state, urban, and rural—there are varying degrees of safety programs and responsibilities. Training programs must be tailored to fit the needs of each agency to assist in implementing RSA practice within safety programs.

At the state level of government, departments of transportation (DOTs) have the resources to use RSAs to complement their existing crash analysis programs by creating a proactive component to safety. The value in the RSA for DOTs lies in combining analysis of safety at different levels of project design and implementation. In particular, implementation during the stages of design and construction appears to provide benefits beyond traditional approaches. Neither all projects nor all stages of a project are suggested for evaluation using the RSA approach. However, special issues need to be assessed for the RSA practice to become commonplace in safety analysis. These include issues centered on how to overcome the inherent fear associated with tort liability. This is discussed in the paper and is addressed in the training workshops.

Urban areas have a different set of safety analysis needs. RSAs are proposed for the larger cities where there are new facilities being constructed and the need is to evaluate the accident potential of different design alternatives. In these cities there is also a need to examine the safety issues in the earlier stages when facilities are being planned. To develop the value of using RSAs in urban areas, a two-tiered training program is suggested in the section entitled Urban Road Safety Audits.

The greatest need of rural governments is to improve the safety of their existing road network. These units of government have many miles of existing roadways that are in need of safety improvements. The use of crash data to help identify the locations in need of safety improvements is marginal at best. This is primarily due to two factors. The first is that while crash rates are often the highest based upon the functional classification, the identification of potential spot improvement locations is difficult. These crashes occur randomly and are generally not clustered as is typically the case with urban intersection data. The second factor is that many local crashes are not reported in rural areas. Given these facts, an analysis focusing on the safety issues of improvement is more appropriate. Another issue of importance in the low volume rural road environment is that improving so many miles of roadway to current standards would not be economical or practical. For these rural local governments, a proactive program involving a functional classification of their rural roadway system and then using an independent peer group of auditors is proposed. This is presented in the section entitled Rural Local Area RSAR Workshops.

Training Developments To Date

In the US the first workshop held to present the concepts of road safety audits occurred in 1997. The purpose, in addition to providing an overview of RSA concepts, was to encourage several state DOTs and local agencies to conduct pilot audits. Since then, several workshops sponsored by state DOTs have been conducted. These include Kansas, Kentucky, Missouri, and Maryland. A road safety audit workshop was conducted in conjunction with an international ITE meting. In addition, sessions devoted to the topic of RSAs have been held at ITE and TRB meetings. The following section describes the workshop that was developed for state DOTs.

US DOT Training Workshops

In 1999, the authors developed the DOT Road Safety Audit Workshop for the Institute of Transportation Engineers (ITE), which was under contract to FHWA. The final course materials were modified and submitted to the Federal Highway Administration (FHWA) after the first pilot DOT workshop was presented in Kentucky in August of 2000. The course is now under development as an NHI course, however the course is also available for presentation to state DOTs through ITE. The workshop is both an awareness and an applications workshop. Table 1 contains the workshop outline. The morning of the first day includes the essential effort to involve the CEOs of the DOT. The briefing for them on RSAs and their active participation in the initial hour is essential to achieving "buy-in" regarding the concepts of road safety audits. Ideally only one or two DOTs will participate in each workshop. The attendees for the remainder of the workshop would generally be DOT personnel and consultants that may be involved in conducting RSAs.

There is a need for diverse backgrounds when conducting audits. Typically a core team of auditors will be supplemented by special expertise as needed. The core team skills include traffic operations and safety, geometric design and human factors. Supplemental skills include special expertise that may benefit the audit depending on the type of project and its complexity. For example, adding construction management skills to the team may be of benefit on a complex project where staging decisions are being considered. Another issue would be to address the special needs of particular user groups that the project is being designed to accommodate such as pedestrians, bicyclists, or trucks. Essential to the proactive RSA process, as envisioned for DOTs, is the independence of the team from the project design or planning team that initiated the plans. The benefits of team input with a focus entirely upon safety is the purpose of the audit.

In the second day of the workshop, audit teams are formed and case study audits are undertaken. The design of the workshop is to have two teams working independently on the same project and then have each team present their results. A key feature of this case study is the team decisions concerning the presentation of audit results. The need here is to explore the options concerning oral and written presentations and the best way to proactively integrate the RSA results into the process. The purpose of the audit is to advance safety; it is not designed to be a critique of the design. The team has the expertise and charge to evaluate the project only on the merits of safety.

Table 1
DOT RSA Workshop

Schedule	Focus to Audience	Primary Topics
Day 1 Morning	DOT CEOs	**Course Overview, Course Goals & Executive Summary**
	DOT Personnel & Consultants (the "Class")	Historically Setting the Stage Current Safety Practices in Your State DOT Overview of RSAs and RSARs
Day 1 Afternoon	Class	Legal Considerations & Implications Planning Stage Audits Benefits & Issues of RSAs & RSARs Design Stage Audit Workshop Case Studies
Day 2 Morning	Class	RSAs & RSARs in Your State Detailed Design Audit Workshop
Day 2 Afternoon	Class	Case Study Presentations Comprehensive Discussion & Review Course Evaluations

One drawback of the RSA is simply in the word audit, which in the US, has negative connotations. Because of this, it is important that the RSA process not be tainted with misrepresentations and inappropriate applications. For this reason, DOTs need to best determine how to integrate the audits and reporting of the results into their practice. This topic is also addressed in the workshop. The fear of tort liability associated with identifying a safety issue and then using the audit finding against the agency raises several important questions. First, the audit issues may include a recommended course of action or ideas to consider. Over the course of time, issues will be accepted and implemented, or rejected and not implemented. A final possibility is to accept an issue but choose another course of action, which may be a partial improvement but not be in full compliance with the recommendations. There are a number of reasons each and every scenario will probably occur over time. These issues are stressed in the workshop. By documenting the actions taken the RSA should not only become a powerful tool to improve safety but also an enhancement to the defense of tort liability. Considering safety proactively is an excellent opportunity for each state DOT to expand their arsenal of safety analysis.

Urban Area RSAs Workshops

Major cities face the problem of incorporating safety into new projects to meet the growing travel demands of increasing local populations. For most of these cities, the analysis of safety issues is a reactive process. The majority of agencies generally do not have the resources to include a comprehensive safety evaluation for each new project. Reacting to crash data and including new design standards in projects does not assure, in itself, that safety is significantly advanced. Training focused on urban area issues is needed in the US.

There is both a need to inform the larger cities of the concepts and advantages of the RSA process and to also help develop an approach to incorporating RSAs as a complement to their transportation safety program. The larger cities face unique challenges and RSAs will be able to provide valuable input in the decision process. The difficulty is how to readily advance awareness and implementation of RSAs. An initial awareness program series of half-day workshops is recommended to assist in rapid implementation. These workshops need to focus on the keys to successful implementation—what is the value added, how to integrate RSAs into existing practice, and why the implementation decisions will not always be universally applied for each and every safety issue. Tort liability is a concern of many local jurisdictions. The awareness workshop opens with the recognition of this fact. Therefore, emphasis is placed on the point that an RSA program will actually provide a defense in tort liability. This results from the fact that the agency has integrated a proactive tool into advancing the agency's approach to improving safety. The concern here is that if safety issues have been identified and no action has resulted, then the agency will incur increased liability. This "head in the sand" approach assumes that if the problem is not recognized then there will be no tort liability. The issue of the fear of tort liability is presented in the workshop with the recognition that an agency, which has a total program that is well documented to advance safety, will be better able to defend itself.

The follow-up workshop is designed specifically for metropolitan area(s) that decide to develop an RSA program. The suggested audience for these cities would be the core professionals that would either conduct audits or contract with consultants and the consultants themselves. The

need here is to make sure that the agency has considered how the program may be best incorporated within their organization. The awareness program will have developed the alternatives that needed to be considered. The follow-up workshop will address issues in developing a team approach for the very locally focused applications workshop. As with the DOT workshop, independence and reporting are integral components. Project selection for both design and planning stage projects are discussed in the case study applications.

Rural Local Area RSAR Workshops

Rural local governments are often faced with managing many miles of roadway that were built in the early 1900's and today clearly do not comply with existing standards. The need for these governmental agencies is to develop practical approaches to advancing safety. New projects to develop new routes are only selectively occurring in areas of rapid rural development near cities and their needs would be better met as part of the urban area workshop.

While rural safety problems may be easily identified, the resources and practicality of making improvements that fully comply with existing standards is often either not necessary or cost effective. Training for these units of government focus upon how the safety of the existing roadway may be enhanced. The workshop addresses the concept of RSAR or an audit review process for the existing network. The suggested approach is similar to the traditional safety improvement programs with two major exceptions. First, all roadways are not inventoried for safety deficiencies and the priority of improvements developed. Secondly, improvements are tailored for safety, however, considering the ultimate upgrade to existing standards is only one of the areas of consideration.

The workshop presents the full range of both RSAs and RSARs in a brief overview session. Issues of the traditional RSA approach are presented, but the focus is upon how the RSAR approach can be used to help a local agency enhance both safety considerations and the funding needed to accomplish safety improvements. The premise is developed that the local agency can best achieve the needed safety improvements by prioritizing and "chipping away" as resources allow. A functional classification is used to present the concepts of adapting the safety issue to fit the profile of the road section. This is an essential feature of the workshop. The second essential feature is how to best conduct RSARs. A sample approach is presented using the team concept of independent auditors. The significant difference from the previous workshops discussed is that this workshop can be presented to a larger audience and is ideally integrated into local LTAP/T^2 training. A one-day workshop includes a field review of a local route and is supplemented with a session pertaining to identifying the issues to look for during the audit.

The focus is not that each and every audit will result in the identification of every safety issue. The host agency has identified and classified the road system. A program approach of beginning to assess safety needs is initiated by the host local agency. As county meetings are rotated around the state, several of the host county's roadways are evaluated in the audit review process by independent teams of their peers. The peer audit teams identify safety issues and prioritize improvements based upon their decisions associated with the use of the road and the value added with the safety improvement. The audit review is a tool for local rural agencies to identify safety improvement issues and develop a program that meets needs within their economic reality. The

workshop focuses on such issues as how safety needs may be improved incrementally, or how projects that are in need of a major capital expenditure may be enhanced by using the audit results in project proposal requests for special funding such as 402 funds.

The most important part of the local workshop training is to assist these agencies in beginning a safety program using the modified RSAR approach.

Summary and Conclusions

The key to successful implementation of Road Safety Audit concepts in the United States is training. Without such training there is a potential for RSAs and RSARs to be mislabeled, misrepresented and misused. A multi-pronged training approach that addresses both awareness of RSA concepts and the applications of RSA techniques is needed. It must recognized that the environment in the United States is unique and that the needs are different at the various levels of government. RSAs within a state DOT must carefully consider the application of results and tort liability issues. Larger metropolitan areas need to look at the application of RSAs to effectively address safety issues early in the planning and design process. The use of RSARs by small governments should focus on the development of modified techniques that can advance local safety in an environment of scarce resources.

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