

MINISTRY OF  
TRANSPORTATION  
ROAD SAFETY AUDIT  
GUIDELINES

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## 1.0 Road Safety Audit Policy

Road transportation projects shall be subject to the Road Safety Audit (RSA) process as prescribed by Technical Circular T-02/04, and carried out in accordance with these Guidelines.

## 2.0 The Purpose of the Guidelines

The purpose of these Guidelines is to:

- describe the subject of road safety audit
- introduce a set of formal procedures for carrying out road safety audits in the Ministry
- provide guidance regarding level of effort required based on a project's complexity and value.

Road Safety Audits are required to be carried out generally in accordance with the Transportation Association of Canada (TAC) publication, Canadian Road Safety Audit Guide. These Guidelines supplement the road safety audit process and procedures described in the Canadian Road Safety Audit Guide and will be updated as practice develops.

## 3.0 Road Safety Audit Objectives

The traditional approach to road safety engineering uses crash data to identify high risk locations and remedial measures required to reduce the number and severity of crashes. Projects are then identified to reduce the specific collisions occurring at a site, on a corridor, or throughout an area.

A complementary methodology is collision prevention. With new roads or improvements to existing roads, collision occurrence can be reduced by adopting a proactive approach during the design process. This system is the road safety audit and is described in more detail in Section 5.

A Road Safety Audit can best be described by both what it is and what it isn't. A road safety audit is a process for systematically assessing the safety of road transportation projects, based on sound road safety engineering principles and undertaken from the road users' perspectives. A road safety audit is an input to the design process that provides an independent assessment of the safety performance of a road transportation project, carried out at predetermined intervals by road safety specialists. A road safety audit is defined in the TAC Canadian Road Safety Audit Guide as follows:

*A road safety audit is a formal and independent safety performance review of a road transportation project by an experienced team of safety specialists, addressing the safety for all road users.*

A Road Safety Audit is not a check for compliance with design guidelines or domains, nor is it a method to ensure the project achieved its objectives.

The objectives of a road safety audit are to:

- minimise the frequency and severity of preventable collisions;
- consider the safety of all road users, including vulnerable road users;
- ensure that collision mitigation measures that may eliminate or reduce potential safety problems are considered fully;
- minimise potentially negative safety impacts both within and outside the project limits, i.e. to avoid introducing collisions elsewhere along the route or on the network.

## **4.0 Legal Issues**

It is important that a clear procedure for managing and organising road safety audit is established, and that the practice of undertaking and reporting road safety audit is clearly specified, and that the actions are fully and consistently documented.

As suggested in the TAC Canadian Road Safety Audit Guide, the Ministry has sought its own legal advice concerning liability issues with respect to road safety audits, and received the following recommendations.

The Ministry should:

- maintain and document a formal set of road safety audit procedures;
- ensure that each road safety audit has a clear terms of reference<sup>1</sup>;
- ensure that staff and consultants in charge of the project are aware of their responsibilities in a road safety audit.

In undertaking road safety audits, Road Safety Auditors should:

- document what information has been received by the road safety audit team and subsequently used as information to assist with the road safety audit;
- ensure that safety issues raised at earlier stages, which have not been addressed, are re-examined where appropriate;
- ensure that road safety audit team members are aware of their responsibilities in undertaking a road safety audit;
- maintain a record of the full documentation for each road safety audit undertaken.

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<sup>1</sup> Sample Terms of Reference may be obtained by accessing the Ministry's RSA Intranet site at:

<http://gww.th.gov.bc.ca/gwweng/Content/RSAPages/homepage.asp>

## 5.0 Road Safety Audit Procedures

### 5.1 Introduction

This section is set out to provide a clear series of road safety audit procedures for the Ministry.

The road safety audit procedures contain information on:

- Scope
- When to conduct road safety audits
- Value Analysis / Value Engineering
- Road safety audit Team
- Road safety audit Report and the Response Report
- Road safety audit for Alternate Delivery Projects (Design/Build, P3, External Agency)

### 5.2 Scope

The primary purpose of an RSA is to identify potential road safety issues within the design of a highway transportation project, or prior to opening the new facility, and should consider the safety of all road users, under all operating conditions. Road safety audit should not consider structural integrity, only those matters which have an adverse effect on road safety. Road safety audit is not a check of compliance with design standards or domains. A Road Safety Audit does not protect the designer or constructor of the project from non-compliance with design standards or domains.

Suggestions for dealing with identified safety issues should be consistent with the stage of the project. For example, strategic decisions on route choice and intersection type and spacings reflect a balance of factors including safety. Suggestions requiring major changes in these areas are therefore unlikely to be acceptable after the planning or preliminary design stage.

These Procedures do not cover road maintenance or temporary road projects unless a specific requirement to carry out a road safety audit has been specified in the project brief or contract. They likewise do not address resurfacing projects where the horizontal, vertical and cross sectional elements do not change, although the Ministry's RSA Committee is reviewing the potential for conducting RSA's on this type of project.

### 5.3 When to conduct Road Safety Audits

Road transportation projects may be subject to road safety audit at the following stages:

- Planning Stage
- Preliminary Design Stage
- Detailed Design Stage
- Pre-opening Stage

In some jurisdictions, RSA is conducted during construction; also in-service roads may be subject to the process. At this time, the Ministry does not intend to conduct RSA at these stages.

A Guide to the suggested level of effort is provided in Appendix B.

### **5.3.1 Project Selection Criteria**

As per Technical Circular T-02/04, every road transportation project in BC meeting the criteria established in this section shall be subject to a safety audit at the appropriate stages and with the appropriate level of resources.

The Project Manager should consult the Decision Guide in Appendix A to determine if Road Safety Audit of the project is required. If a project does not require a Road Safety Audit as determined by the Decision Guide, one may be conducted if the Project Manager feels the project would receive sufficient benefit (i.e, local public concerns, previous high collision rate, etc.) Projects with a value less than \$100,000 are not required to have an RSA.

## **5.4 Value Analysis / Value Engineering**

Road safety audits may be carried out coincident with the VAVE exercise. As the objective of Value Analysis / Value Engineering is to ensure the most appropriate solution to an identified deficiency at the lowest life cycle cost, the VAVE process may or may not make the same recommendations as a road safety audit.

Alternatively, the road safety audit should be carried out following the VAVE. This would ensure the road safety audit suggestions are based on the most appropriate solution with the best value.

### **5.4.1 Level of Benefit for Combined VAVE & RSA, by Stage and Nature**

The following table provides expected benefits of combining these design tools, which are similar in format, yet potentially contradictory in their intended goals.

<b>Stage / Nature</b>	<b>Rural</b>	<b>Urban</b>
<b>Value Analysis</b>	Least Benefit	Moderate Benefit
<b>Value Engineering</b>	Moderate Benefit	Most Benefit

The Project Manager should consider the expected benefit when contemplating combining the two practices, as an aid in deciding the level of resource and effort to apply.

### **5.4.2 Format for Combined VA/VE & RSA**

A format that may be followed to combine the two practices follows. It is important to note that while the VA and RSA are combined and run in parallel, they are not to be done by the same team. The RSA team must be separate and independent from any other part of the project.

Project Briefing	Project Team
Site Visit	All
Selection of Evaluation Criteria	VA/RSA Teams
Identify Options and Alternatives	VA/RSA Teams
Formulate Value Analysis Proposals	VA/RSA Teams
Provide Order of Magnitude Costing for Each VAP	VA Team
Road Safety Audit Report Preparation, Base Case	RSA Team
Presentation of Proposals (to Project Team)	VA Team
Final VA Report	VA Team
Final Road Safety Audit Report, incl. VA Proposals	RSA Team

Also refer to the TAC Guide for discussion and other alternatives.

### **5.5 Road Safety Audit Team**

For road safety audit team requirements, refer to the TAC [Canadian Road Safety Audit Guide](#). In addition, the following specific requirements apply.

The road safety audit team should normally consist of a minimum of two people.

For all projects requiring road safety audits, the road safety audit should be carried out by specialist consultants, or MoT staff trained in RSA practice. A category for Road Safety Audit has been established within the RISP system. Qualified Consultants may be engaged through RISP using standard contracting procedures. A list of trained road safety auditors within the Ministry is available at the Ministry's RSA Intranet site.

Where specialist sub-consultants are chosen to carry out the road safety audit, the road safety audit team should be retained by the Project, independent to the project's design team. It will be necessary for the project team to demonstrate that the road safety audit has been carried out in accordance with these Guidelines. In particular they should demonstrate that the entire road safety audit team is completely independent from the design team, and is comprised of members with appropriate road safety training and experience, and relevant road safety audit experience.

## 5.6 Road Safety Audit Report and the Response Report

### 5.6.1 Road Safety Audit Report

The road safety audit report should follow the procedures described in the TAC Canadian Road Safety Audit Guide. In addition, the following specific requirements apply:

The road safety audit team is responsible for providing the RSA report to the project team. In the case of external agency project delivery, a copy of the road safety audit report shall be made available to the Ministry contact person.

The timeline for producing the road safety audit report should be agreed between the project team and the road safety audit team. A timeline can range from 5 days for a simple report up to 15 days for a complex project, from the date of the audit.

A template is available on the Ministry's RSA Intranet site.

### 5.6.2 Response Report

The project team is responsible to prepare a detailed response to the road safety audit report<sup>2</sup>. The response report shall be placed in the project file, and a copy may be provided to the road safety audit team, if requested.

The response report should follow the procedures described in the TAC Canadian Road Safety Audit Guide. Possible responses are:

1. Accept in full and implement changes to project.
2. Conditionally accept with modifications. The response report should document the reasons for the modifications.
3. Reject with reasons.

A template is available on the Ministry's RSA Intranet site.

## 5.7 Alternate Delivery Projects (Design/Build, Public-Private Partnership, and Externally Delivered Projects)

### 5.7.1 Design/Build (not including Design/Build Lite projects)

The Ministry has included requirements for road safety audits of Design/Build projects as part of its standard practice for several years. A review of RSA's conducted on several of these projects found RSA to be an effective tool in raising the safety bar for

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<sup>2</sup> See Section 4 Legal Issues – The Response Report is a critical responsibility of the Project Team.



the projects, and did not create undue delays. Hence, a formal road safety audit shall be implemented for all projects in this category, regardless of the value of the project.

The following procedures are recommended:

- A road safety audit should be conducted, on the base case design, prior to requesting proposals from Proponents. The RSA and response reports should be made available to Proponents along with other relevant “Data Room” materials.
- Requests for Expression of Interest (RFEI’s) for D/B projects, or Terms of Reference for other Alternate Delivery projects, should include a requirement for the Proponents to identify their RSA Team and methodology.
- Request for Proposal (RFP) documents should include requirements for strict timelines for submission of RSA reports and responses, so as to not unduly impede the project’s schedule.
- The RSA Team should be retained by the D/B Contractor, or the design consultant.

The Ministry’s RSA Intranet site contains sample wording for consideration when preparing RFEI and RFP documents, or Terms of Reference for other Alternate Delivery projects, which is in addition to contract language currently in use.

### **5.7.2 Externally Delivered Projects**

A formal road safety audit shall be conducted at the appropriate stages of externally delivered projects which involve provincial highway right of way. The Ministry contact should consult the Decision Guide in Appendix A to determine if Road Safety Audit of the project is required.

**Appendix A Decision Guide**

<b>Decision Factor</b>		<b>Score</b>
<b>Complex design</b> <ul style="list-style-type: none"> <li>• unconventional features</li> <li>• high driver workload</li> <li>• frequent or complex signage</li> <li>• sight distance constraints</li> </ul>	Score as 0, 1, 2 or 4 points based upon the complexity <b>(maximum 4 points)</b> <b>(minimum 2 points if project involves exceptions to design criteria)</b>	
<b>New features</b> <ul style="list-style-type: none"> <li>• lanes</li> <li>• crosswalks</li> <li>• signals</li> <li>• sidewalks</li> <li>• CRB/CMB</li> <li>• Illumination</li> <li>• Pedestrian fencing</li> <li>• retaining walls</li> <li>• etc.</li> </ul>	Give 1 point for each new feature type (i.e., if there are two new signals, 1 point given, not two) <b>(maximum 4 points)</b>	
<b>Type of Facility</b> (what facilities are included within the project limits)	2 points = intersection (or access >30vph) 1 point = bridge 2 points = inconsistent horizontal alignment <b>(maximum 5 points)</b>	
<b>Many interacting transportation types</b> (railways, motorcycles, logging trucks, farm vehicles, horses, RV's, etc.)	1 point = Yes 0 points = No	
<b>Vulnerable Road Users</b> (pedestrians, cyclists, etc.)	1 point = < 10 users per peak hour 2 points = 10-50 users per peak hour 4 points = >50 users per peak hour	
<b>Design Traffic Volume</b>	1 point = < 3000 SADT <sup>3</sup> 2 points = 3000 to 8000 SADT 4 points = ≥ 8000 SADT	
<b>Total Score</b>		
<b>Total Score</b>	<b>Road Safety Audit Requirements</b>	
10 or more	Required	
less than 10	Not required, except as noted below <sup>4</sup>	

<sup>3</sup> Can be Winter Average Daily Traffic if facility is affected by Winter recreation, i.e., ski hill in proximity

<sup>4</sup> It is possible that a project of sufficient dollar value to warrant Value Analysis/Value Engineering may not require Road Safety Audit following the above Guide. In such circumstance, a qualified Road Safety Specialist should be added to the VAVE Team.

**Appendix B - Suggested Guide for Level of Effort**

Project Phase:	Planning & Evaluation	Design & Engineering		Property Acquisition & Construction
		Prelim Design Stage RSA	Detailed Design Stage RSA	
Type of Project	Planning Stage RSA	Prelim Design Stage RSA	Detailed Design Stage RSA	Pre-opening Stage RSA
Major New Road or Rehabilitation	New Road Only	✓	✓	✓
Minor New Road or Rehabilitation	New Road Only	✓		New Road Only
External Agency	✓	✓	✓	✓
Developments	<i>Large only</i>	<i>Large/ Medium</i>	<i>All that meet criteria</i>	<i>Large Only</i>