TERMS OF REFERENCE FOR ROAD SAFETY AUDIT

Objectives of Road Safety Audit

The objective of Road Safety Auditing is to identify road safety deficiencies at various stages in the development of road projects/network so that they can be eliminated or mitigated at the most opportune time to reduce costs and minimize disruption to planning, design, construction and operation, and ultimately to enhance the safety of the road environment.

1.0 Scope of Work

Road Safety Audit shall be carried out in accordance with the Guideline For The Safety Audit Or Roads And Road Projects In Malaysia prepared by JKR and shall include audits at the following stages of the project:

Stage 1 Audit - Planning and Feasibility Stage of the Project Development.

The Stage 1 Audit will be carried out during the Planning phase, where a number of alternative proposals are being considered for the project. Audit is to be made of each alternative, the results of which (to the extent relevant) should be included in the evaluation process.

Stage 2 Audit - Preliminary Design Stage

The Stage 2 Audit will be carried out at the end of the preliminary design phase where the Functional Layout has been prepared and land acquisition requirements are being determined.

Stage 3 Audit - Detailed Design Stage.

This audit must be done at an appropriate stage towards the end (but not at the end) of the detailed design, or as soon as it is possible to determine the safety implications of the design and when changes can be made at the most opportune time to avoid costly redesign. This may necessitate separate audit checks as various elements of the project reach the desired stage of design.

The audit work at this stage includes auditing the suitability and workability of the proposed traffic management that will be carried out during the construction. The Guidelines on the Estimation Procedures for Traffic Management prepared by JKR will be used as a basis for the traffic management procedures.
Stage 4 Audit - At the Construction/Pre-Opening Stage.

Road Safety Audit Stage 4 shall include two distinct aspects as follows:

- Audit of the compliance of the works to the Stage 3 Audit (Detail Design) to ensure that the decisions of Empowered Officer with regards to the Stage 3 Audit are ‘carried through’ in the construction. In particular the audit shall include a final detailed check of the project just prior to it being ‘opened to traffic’.

- Audit of Traffic Management through and in the vicinity of the project during the construction phase. This includes the observation of the effectiveness of the Traffic Management Plans (TMPs) prepared by the contractor/consultant and the devices employed during the night. The scope of work shall include:
  
i) Auditing the TMPs during the Design Phase

  ii) Auditing the changes to the TMPs and Work Zones during the Construction Phase. This is to be carried out at every Stage 4 audit and additional if required by the Supervision Officer. The audit shall be carried out based on the latest Traffic Management Safety Reports prepared by the Traffic Safety Officer from the contractor’s counterpart.

The audit at this stage will be carried out three (3) times during the construction duration:

- RSA Stage 4 (Part 1) or Verification Audit to be carried out after the issuance of construction and traffic management drawings
- RSA Stage 4 (Part 2) to be carried out when the construction work’s progress is about 50%
- RSA Stage 4 (Part 3) to be carried out during the pre-opening of the project. Both day and night audit will be required.

Should the Supervision Officer requires additional audit, he shall ask the Road Safety Auditor to carry out the additional audit and the additional fees shall be agreed upon by the Supervision Officer and the Road Safety Auditor.
Stage 5 Audit - Operational stage

There are two types of stage 5 audit:

i) On new road projects
ii) On existing road

The audit at this stage is to ensure that the roads are safe for public use.

The Stage 5 audit for new projects shall be carried out within three (3) to six (6) months after the opening of the project to the public.

The project development shall not proceed into the next stage of audit before resolution of each of the road safety items identified from the previous audit.

Empowered Officer reserved the right to commence the audit at the appropriate stages in the development of the projects.

3.0 Use of Road Safety Audit Check Lists.

It is the auditor's responsibility to critically examine all aspects of the project which may have adverse safety implications, considering carefully the need of all road user groups.

4.0 Management of Road Safety Audit

The process flowchart in Appendix 1, 2, 3, 4, 5, 6 and 7 shall be used as a guide in the management of road safety audit.

5.0 Road Safety Auditors.

5.1 Roles of Auditor

The principal role of the Auditor is to ensure that safety deficiencies/problems/hazard are identified before they are locked into the design and/or become a safety problem. The Auditor is expected to highlight all the safety deficiencies in a design/existing road.

The Auditor will look into:

a. Adoption of appropriate standards
b. Compliance and non compliance of standards that will have road safety implications

The Auditor’s primary role is to look into the safety repercussion of compliance to standard or otherwise and highlight the possible consequences wherever possible of major road safety deficiencies. The Auditor is expected to use his/her experience and wisdom in dealing with the design checkers in these overlapped areas.

The following flowchart indicates the position of the Auditor in relationship with other parties:
5.2 Independence of Auditors

The auditors must be independent of project planners, designers and construction companies involved in the project and have no business or other company associations with them.

6.0 Qualification of Road Safety Auditor

A qualified Road Safety Auditor shall be an engineer that have a good understanding of the Driver/Vehicle/Road Environment interaction and have experience in accident investigation and countermeasures. The auditor shall also fulfill the following requirements:

(a) Minimum ten (10) years working experience as Civil Engineer or eight (8) years working experience as Civil Engineer with Masters’ Degree qualification in road engineering areas or six (6) years working experience as Civil Engineer with Doctorate qualification in road engineering areas.

(b) Minimum six (6) years experience in roads area that is minimum three (3) years experience in road design and minimum three (3) years experience in road safety.

(c) Is a professional engineer registered with the Board of Engineers Malaysia for a minimum of two (2) years.

(d) Attended and obtained a certificate in Road Safety Audit course from Stage 1 to Stage 5 that is recognized by JKR Malaysia.

Notwithstanding the above, the auditor needs to be accredited with JKR Malaysia.
7.0 Reporting of the Road Safety Audit.

Each stage of the Road Safety Audit shall be reported, in writing, generally as set out in the JKR Guidelines and shall be submitted to the Client within 2 weeks of the audit being done or otherwise as agreed in writing.

The report should specifically describe the safety deficiencies, potential or real, which have been identified along with the relevant references to accepted standards, practices and road safety principles. The points should be illustrated wherever practicable by ‘marking-up’ on the plans or other relevant drawings and / or by colour photographs of the items concerned. The report may include the auditors’ suggestions for eliminating or otherwise treating the safety problem identified, but this is not an essential requirement.

The report should not be simply a copy of the ‘Check List’ annotated with ‘ticks’ or ‘crosses’ or ‘yes’ / ‘no’ answers, or in any other way submitted as the Safety Audit Report.

An summary of audit of the audited items shall be prepared by the Auditor together with the audit report.

8.0 Handling of Road Safety Audit Report

8.1 Response Report

A Response Report will be prepared by designer before any completion meeting at any stage of audit. This report is based on the Summary of Audit by the Road Safety Auditor. A Response Report is a document that allows the designer to respond the Road Safety Auditor’s comments or recommendations.

8.2 Completion Meeting

Within 2 weeks of receipt of the Road Safety Audit Report in every stage, Empowered Officer/ Client shall conduct a completion meeting. In this meeting, the findings are discussed and actions are agreed upon and formally documented.

8.3 Compliance Report

A compliance report will then be prepared by the designer based on the Summary of Audit from the Stage 3 Road Safety Audit Report. The Compliance Report is a document indicating designer’s declaration that matters agreed upon in the Road Safety Audit Stage 3 completion meeting has been incorporated in the revised detailed design engineering drawings.

8.4 Compliance Audit

Compliance Audit needs to be carried out by the Road Safety Auditor after receiving the Compliance Report from the designer. This audit produces the Compliance Audit Report which confirms all matters agreed upon in the Road Safety Audit Stage 3 completion meeting has been incorporated by the designer in their detailed design engineering drawings.
8.5 **Verification Audit**

A Verification Audit (Road Safety Audit Stage 4 Part 1) is to be carried out by the Road Safety Auditor to ensure that all decisions during design stage are implemented in the construction drawings. This audit produces the Verification Audit Report which verifies all matters agreed upon in the completion meeting of the previous Audits have been incorporated in the construction drawings.