Implementing the CAREC road safety strategy

The CAREC Road Safety Engineering manuals

Phillip Jordan, Consultant Road Safety Engineer, “Enhancing Road Safety for CAREC Member Countries Program”
1. Why were these manuals prepared, and why were these three topics chosen?

2. Who are they intended for?

3. Examples of how the knowledge in the manuals may be applied in CAREC countries.

4. Next steps? How would you like to help?
1 Why were these manuals prepared?

• Roads are an element of the road safety system that highway agencies can control
• There is a need to raise awareness amongst CAREC highway engineers that they can reduce road trauma through their work
More can be done under Pillar Two to make CAREC highways “safer”.

There is a shortage of road safety engineers across the CAREC region.

Some present standards are “unsafe”.

These 3 topics came from suggestions from CAREC countries and were discussed as priority issues during the CAREC road safety workshops in 2016 (Bangkok and Kuala Lumpur)
Are these lighting columns “standard”? Are they safe?
Just around the curve!
Is this bridge cross section “standard”? Is it safe?
2 Who are the manuals intended for?

- Engineers in national road agencies
- Traffic Police
- Consultants
- Contractors
- PIU
- Academics and students
3 Examples of how the knowledge in the manuals may be applied in CAREC countries

- Manual 1 – Road safety audit – improving safety in road designs
- Manual 2 - Safer road works – protecting road users and workers
- Manual 3 - Roadside hazard management – safety of roadsides

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Manual 1 – Road Safety Audit

- The CAREC Road Safety Strategy endorses the road safety audit process as an integral part of the planning, design and construction of CAREC road projects.
- This new manual will be the focal point for the road safety audit process within the CAREC program.
- It supports the CAREC Road Safety Strategy.
The manuals details:
✓ the key steps in the audit process;
✓ how to write an audit report;
✓ how to select an effective audit team;
✓ an auditor accreditation scheme;
✓ key aspects for managing an audit;
✓ the costs and benefits of road safety audit;
✓ four audit case studies that emphasise commonly found road safety issues in the CAREC program;
✓ checklists for each audit stage.
A road safety audit is “a formal, systematic and detailed examination of a road project by an independent and qualified team of auditors that leads to a report listing the potential safety concerns in the project.”

(CAREC 2017)

Road safety audit – prevention is better than cure
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<th>Road safety audit step</th>
<th>Responsibility</th>
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<tr>
<td>1. Determine that an audit is needed</td>
<td>Project Manager</td>
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<td>2. Select an Audit Team Leader, who then engages the audit team</td>
<td>Project Manager and Road Safety Audit Team Leader</td>
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<td>3. Pre-audit communication – to provide information (drawings and design reports) about the project to the Team Leader. Outline the project and discuss the audit ahead</td>
<td>Designer (via Project Manager) and the Road Safety Audit Team Leader</td>
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<td>4. Assess the drawings for safety issues (the “desktop” audit)</td>
<td>The audit team</td>
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<td>5. Inspect the site – daytime and night time</td>
<td>The audit team</td>
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<td>6. Write the audit report. Send to the Project Manager</td>
<td>The Team Leader with assistance from the audit team</td>
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<td>7. Post audit communication – to discuss the key safety issues and to clarify outstanding matters</td>
<td>Project Manager (plus designer) and Road Safety Audit Team Leader</td>
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<td>8. Write a response report, referring to each audit recommendation</td>
<td>Project Manager</td>
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<tr>
<td>9. The way forward - following-up and implementing agreed changes</td>
<td>Project Manager (and designer)</td>
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<td>Шаги аудита безопасности дорожного движения</td>
<td>Ответственные</td>
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<td>---------------</td>
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<td>Менеджер проекта</td>
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<td>2. Выбор руководителя аудиторской группы, который затем привлекает команду аудиторов</td>
<td>Менеджер проекта и руководитель группы аудита безопасности дорожного движения</td>
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<tr>
<td>3. Информационный обмен до аудита – предоставление информации (чертежей и отчетов проектировщиков) о проекте руководителю группы. Общая характеристика проекта и обсуждение предстоящего аудита</td>
<td>Проектировщик (через менеджера проекта) и руководитель группы аудита безопасности дорожного движения</td>
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<td>4. Оценка чертежей на наличие проблем безопасности (камеральный аудит)</td>
<td>Аудиторская группа</td>
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<td>6. Написание аудиторского отчета и отправка менеджеру проекта</td>
<td>Руководитель группы с помощью аудиторской группы</td>
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<td>Менеджер проекта (плюс проектировщик) и руководитель группы аудита безопасности дорожного движения</td>
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<td>Менеджер проекта (и проектировщик)</td>
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Prevention is better than cure
A pre-opening audit uncovered many safety concerns – but many are “standard”

Unsafe drains close to new the road!

The 4 lane divided highway reverted to a 2 lane 2 way cross section at this point, but there are many roadside hazards where the lanes merge; the new line marking was already “worn”
This manual details good road safety practices for CAREC work sites.

It supports the CAREC Road Safety Strategy which encourages road authorities to include more road safety into the planning, design and operation of work sites under the CAREC program.
The CAREC Safer Road Works manual encourages the use of the six zone concept.
The CAREC Safer Road Works manual encourages the use of the six zone concept.
The CAREC manual encourages the use of multi-message signs.
The CAREC manual gives instructions for Traffic Controllers.
When you improve your highways, speeds go up. Often this increases “run-off-road” crashes. Increased attention to roadside hazard management is needed to minimise this risk.
A strategy for Roadside Hazard Management

1. Keep vehicles on the road
2. Provide a forgiving roadside
   - i. remove the hazard
   - ii. relocate the hazard
   - iii. alter to reduce severity
   - iv. protect with barriers
Clear Zone Chart

**EXAMPLE 1**
If the operating speed is 80 km/h and the one way AADT is 4000 vehicles/day, the clear zone width is 6.1 m.

**EXAMPLE 2**
If the operating speed is 100 km/h and the one way AADT is 20000 vehicles/day, the clear zone width is 11 m (adopt range 10000 - 30000 vehicles/day).

*One Way AADT (approach volume)*

*Operating Speed (km/h)*

*Clear Zone Width (metres)*

(measured from the edge of the traffic lane)

*One Way AADT (approach volume)*

(vehicles/day)
Manual 3 outlines the common groups of safety barriers.
Manual Three-Roadside Hazard Management

W Beam Safety Barrier
The CAREC Road Safety Engineering manuals:

- Are directly relevant to CAREC highways.
- Include CAREC examples.
- Provide practical, up-to-date road safety engineering information for use in CAREC road agencies.
- Can be used for university courses.
- Are intended to encourage highway engineers in the CAREC Region to do more in road safety.
4 Next steps?

How would you like to use these manuals? How can you help to disseminate them in your country? What additional support do you need from CAREC for doing this?

- Two languages - Russian and English.
- Country comments have been sought.
- A graphic designer will finalise when all comments received.
- Then printing and distribution.
- National and regional workshops.
- It will be vital to keep the momentum.
- Put them to good use.

These manuals are a start – they need to be widely used so that safer roads (Pillar Two) can expand across the CAREC network.
CAREC needs more road safety engineers.
I welcome your questions.