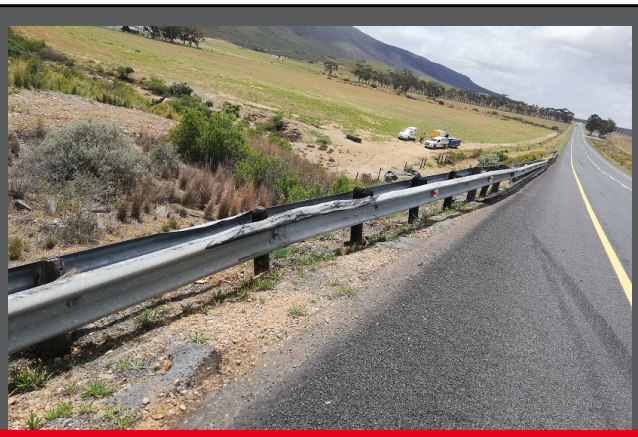

SESSION 4.3 ROAD SIDE PROTECTION

CONDUCTING ROAD SAFETY AUDITS & APPRAISALS

PRESENTED BY: RTS & AGTT

January 2022

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SANRAL GDG 2003 Chapter 8

A safe road should:

- Warn and inform road users of changes in the approaching road environment;
- Guide and control road users safely through the road environment;
- Provide a forgiving roadside environment;
- Provide a controlled release of information;
- Provide an aesthetically pleasing landscape;
- Maintain road user interest and concentration;
- Not surprise road users;
- Give consistent messages to road users; and
- Provide good visibility for all road users.

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SANRAL GDG 2003 Chapter 8

Safety Objectives: Broadly, there are three avenues of action possible for mitigating road crashes and their consequences;

- By reducing the possibility that run-off will occur;
- Once the run-off does occur, by providing opportunities for the driver of the
- vehicle to recover and return to the road without incident, and
- If a crash does occur, by providing design elements to reduce the severity of that collision.

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Safety objectives for roads design:

- Separate potential conflict points and reduce potential conflict areas;
- Control the relative speeds of the conflicting vehicles;
- Guide the driver through unusual sections;
- Ensure that the needs of pedestrians and cyclists (if relevant) are also considered;
- Provide a roadside environment that forgives a driver's errant or inappropriate
- behaviour, by attention to details such as the safe placement of roadside furniture and by the location and selection of types of traffic barrier.

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Forgiving roadside

The forgiving roadside concept,

coined in the 1960's,

relates to the approach of
making provision
for errant vehicles
leaving the roadway by
incorporating design elements
that reduce the consequences
of such departure.

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The effectiveness of road safety features depends greatly on five aspects;

- Knowledge of the safety characteristics and limitations of roadside features by
- the designer (and the maintenance personnel);
- The correct choice of appropriate treatment;
- The correct installation of the roadside safety features;
- The maintenance of the roadside safety features and roadside environment; and
- Regular monitoring of installations to ensure they perform adequately.

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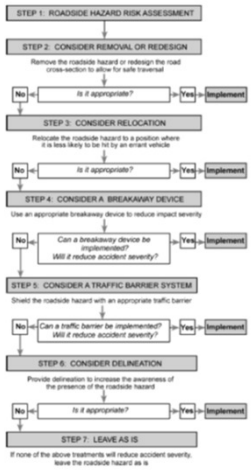

Figure 8.1: Roadside safety analysis

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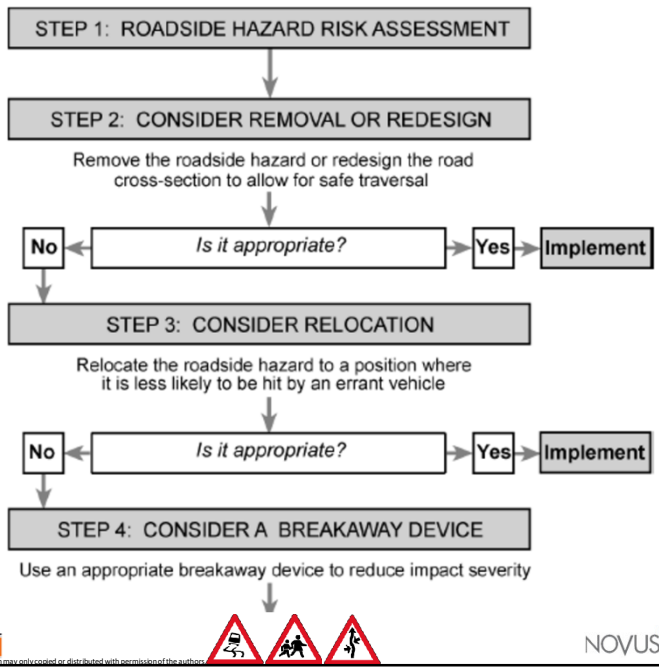

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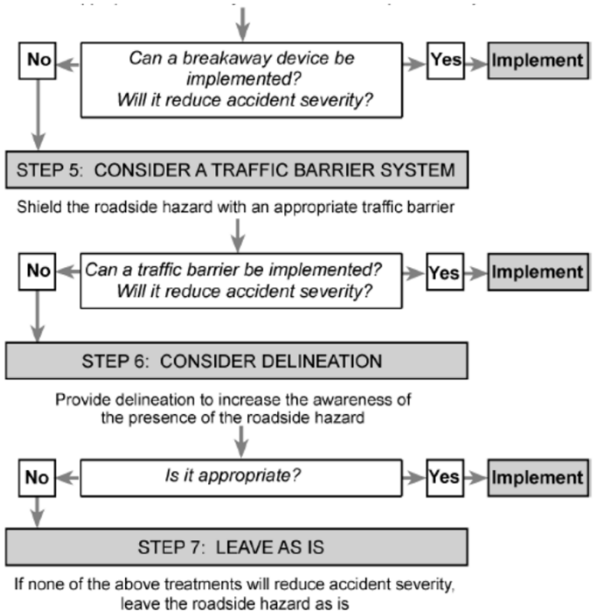

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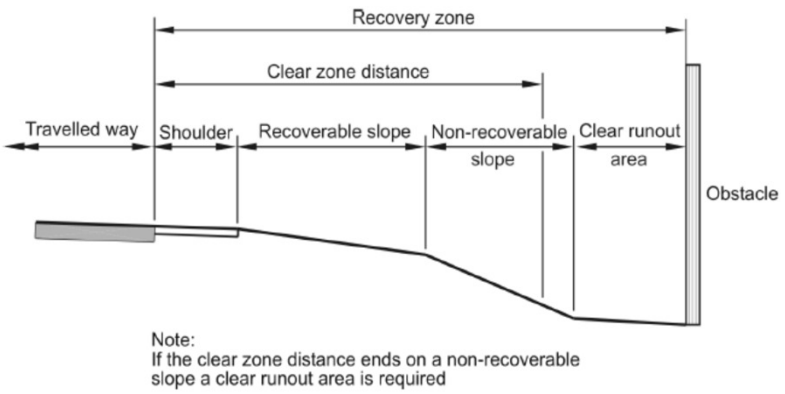

Figure 8.2: Roadside recovery zone

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Best practices in respect of roadside vegetation

Single-vehicle collisions with trees account for a sizeable proportion of all fixed object collisions.

Unlike typical roadside hardware, with the exception of landscaping, trees are not a design element over which the designers have direct control.

While policies and approaches vary by agency, a number of best practices are presented here to assist the designer in dealing with this complex and important issue.

Depending on their size, trees within the clear zone constitute a serious hazard. Generally, a tree with a trunk diameter greater than 150 mm is considered a fixed object.

When trees or shrubs with multiple trunks, or groups of small trees are close together, because of their combined cross-sectional area, they may be considered as having the effect of a single tree.

Typically, large trees should be removed from within the selected clear zone for new construction and reconstruction projects.

Segments of a highway can be analysed to identify groups of trees or individual trees that are candidates for removal or shielding.

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Poles made safer

:• By relocating them to a safer location (this can include moving a lighting pole to the inside of a horizontal curve rather than on the outside)

- Removal of some of the poles by:
- Increasing the pole spacing;
- The combining of a number of utilities or signs per pole; or
- Installing underground cables;

- Shielding the utility poles with an appropriate traffic barrier system and provision
of a proper end-treatment;

- If appropriate, installation of a break away device;

- Providing a high skid resistance surfacing on curves; and

- Attaching delineators to the device to increase its visibility if no other measure can be implemented.

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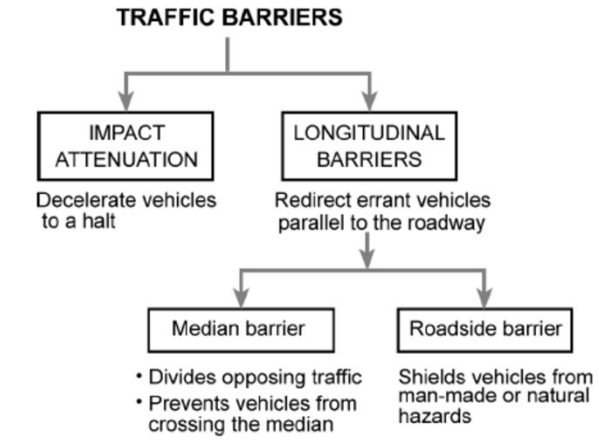

Figure 8.5: Classification of traffic barriers

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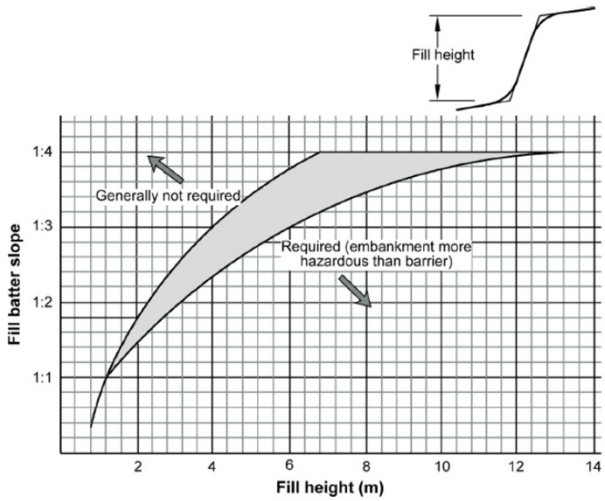

Figure 8.7: Warrants for use of roadside barriers

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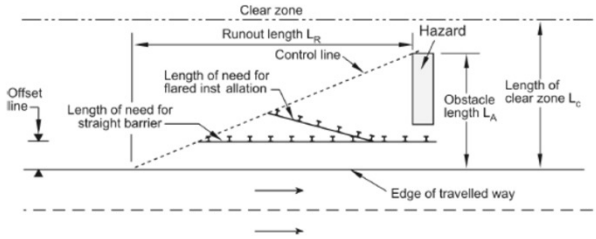

Figure 8.9: Length of need for adjacent traffic

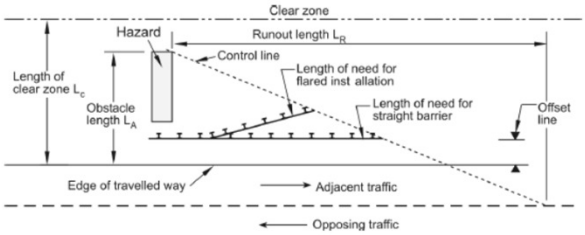

Figure 8.10: Length of need for opposing traffic

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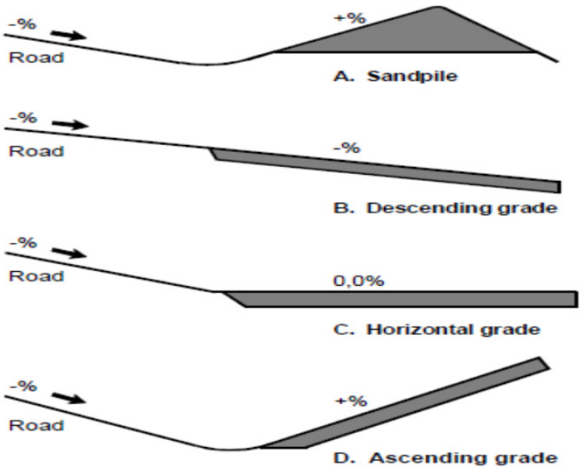

Figure 8.13: Typical arrestor beds

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Barriers

SOURCE: RSM

W steel barriers: semi-flexible
Cable barriers: flexible
Concrete barriers: rigid
End treatment
Crash cushions

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Illustration

What to we want to avoid?

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DISCUSSION AND END OF LECTURE

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