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General

The requirement for an Engineering Review applies to all provincial highways currently in service. It does not apply to major rehabilitation or construction projects that have undergone detailed engineering design.

The document is intended to provide a standardized and consistent approach for conducting an Engineering Review to support decisions regarding amendments to posted speed limits on provincial highways.

The standard maximum speed limits for provincial highways specified in the *Alberta Traffic Safety Act* are a default baseline for each type of highway where an evaluation for individual requirements has not yet been completed. By policy, speed limits are established in accordance with the department's Highway Geometric Design Guide and Recommended Practices.

An Engineering Review provides the following:

- Evidence based technical justification for whether a speed limit should be amended or remain unchanged.
- Ensures consistency with TEC's standards and guidelines.
- Identifies if a speed limit amendment alone would address the underlying safety and operational issue.

- Forms a mandatory component of the package submitted to Roadway Engineering for Ministerial Order preparation.

Roles and Responsibilities

Regional Office

- Leads the Engineering Review and consults Roadway Engineering if additional guidance is required.
- May conduct the review through their Regional staff or retain a qualified engineering consultant. Engineering reviews conducted by Regional staff must be signed by a qualified Professional Engineer from the Region.
- Report prepared by an engineering consultant must be authenticated by a qualified Professional Engineer.

Roadway Engineering

- Acts as a technical resource.
- Ensures provincial consistency and compliance with TEC's guidelines and recommended practices.
- Provides guidance on unique or non-standard cases.

Components of Engineering Review

An Engineering Review should include, but is not limited to, the following:

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Background Information

The Engineering Review must describe the following:

- Origin of the request (Regional Office, MLA, municipality, public concern, new development or safety review).
- Define the study location and limits of request, provide a detailed location map
- History of any previous speed zone changes or studies

Highway Classification

Following TEC's Highway Geometric Design Guide and Provincial Highway Service Classification Map, identify the highway classification, which provides context for expected roadside access and speed environment:

- Service Classification such as Level 1 (International and Interprovincial), Level 2 (Intra-provincial), Level 3 (Inter-regional/Inter-municipal), Level 4 (Intra-regional)
- Functional Classification such as freeway, expressway, arterial, collector or local along with the corresponding design designation (e.g. RFD-616.6-130, RAD-412.4-120, RAU-212.4-110, etc.).

Highway Geometry – Horizontal and Vertical Alignments

Evaluate whether the geometric design supports the existing and proposed posted speed limits:

- Horizontal and vertical alignments including radii, grades and K values for crest and sag curves following TEC's Highway Geometric Design Guide

Sight Distances

Assess sight distances of all intersections within the study limits:

- Stopping sight distance (SSD)
- Intersection sight distance (ISD)
- Check intersection sight triangles for vegetation or other structures that may limit driver visibility and could warrant a speed reduction.

Following TEC's Highway Geometric Design Guide, document any locations where sight distance doesn't meet the existing or proposed posted speed limit requirements.

Lane and Shoulder Widths

Conduct a field visit to observe and evaluate:

- Lane widths and shoulder widths
- Edge drop-offs or deficiencies

This information will be required for TAC's speed limit warrant analysis spreadsheet.

Adjacent Land Use, Accesses and Roadside Parking

www.alberta.ca/recommended-practices-guidelines

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Assess the roadside environment including the following:

- Commercial, industrial, residential, agricultural, recreation, or institutional land uses
- Frequency and type of accesses (public roads, private driveways/accesses)
- Roadside parking activity

Urban environments generally support lower posted speed limits due to increased conflict potential. This information will also be needed for TAC's speed limit warrant analysis spreadsheet.

Pedestrian and Bike Activities

Pedestrian and bike activities along the roadway play an important role in posted speed limits. Review and evaluate:

- Sidewalks and pedestrian crossings
- Pedestrian generators such as bus stops, parks and recreation centres
- Any trail connections or crossings
- Cyclist volume and facilities (shoulders, bike lanes)

Areas with significant pedestrian and bike activity along a roadway in urban settings may justify lower posted speed limits. When reviewing speed limits on highways with pedestrian crossings, refer to TAC's Pedestrian Crossing Control Guide to determine whether a pedestrian crossing is

warranted at the location.

Operating Speeds (Optional)

Operating speed is a good indication of drivers' behaviour as to how fast they choose to drive based on road condition and environment. Collection of speed data requires the use of traffic detection devices. Regional staff may request support from the Modelling and GIS group to collect this data, while engineering consultants are expected to use their own resources.

The following should be documented for the data collected:

- Mean and median operating speeds
- Peak/nonpeak and day/night variation
- 85th percentile speeds
- Speed compliance evaluation

Where 85th percentile speeds significantly exceed posted speed limits, evaluate whether the posted speed is unrealistically low, the operating environment encourages higher speeds, or there is a need for enforcement.

Collision History

Obtain and analyze collision data for the most recent 5-year period from TEC's Network Expansion Support System (NESS), including:

- Collision frequency, severity and rate (per million vehicle-kilometres)

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- Collision types relevant to speed limits (rear-end, loss-of-control, wildlife, angle crashes, etc.)
- Collision trends or recurring patterns

If collision rates exceed provincial average for similar roadways, assess whether posted speed limit contributes to safety issues.

TAC Speed Limit Warrant Spreadsheet

The Transportation Association of Canada (TAC)) speed limit warrant spreadsheet may be used as one of the several analytical tools to support the determination of an appropriate posted speed limit for a roadway segment; however, it should not be used as a standalone basis for decision-making. The outcome of the warrant spreadsheet should be presented with appropriate context, recognizing that it may not, on its own, be sufficient to justify a speed limit amendment.

The spreadsheet considers factors such as roadway classification, geometry, lane width, roadside environment and adjacent land use (e.g., urban or rural), roadside hazards, pedestrian and cyclist activity, crosswalks, on-street parking, intersection and driveway density, and at-grade railway crossings.

School and Playground Zones

Section 107 of the Alberta *Traffic Safety Act* prescribes a maximum speed limit of 30 kilometres per hour within School and Playground Zones, in both urban and rural environments. School and playground zones

are generally discouraged along high-speed roadways such as freeways, expressways and arterials.

TEC's Guidelines for School and Playground Zones and Areas should be referenced to assess whether a school or playground zone is warranted. Where a zone is warranted, a Ministerial Order would not be required for its implementation.

Speed Zones without Approved Ministerial Orders

Any existing unauthorized speed zones should be submitted for Ministerial approval. Following the requirement for an Engineering Review outlined in this document, the respective Region should prepare and submit the required documentation to Roadway Engineering for processing of the Ministerial Orders.

Speed Limit Transition Zones

A transition speed zone may be considered where a roadway speed reduction is greater than 40 km/h is contemplated. In such cases, a transition speed zone may be established with a minimum desirable length of 400 metres. However, a speed limit transition zone cannot be implemented without an approved Ministerial Order.

An Engineering Review is not required for the preparation of Ministerial Order packages for speed limit transition zones, provided the proposed zones meet TEC's Recommended

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Practice for the Use of Speed Limit Transition Zones.

Speed Limit Through Signalized Intersections

Introducing a traffic signal in a highway-speed environment presents challenges in meeting certain requirements, such as clear zone and breakaway post standards. Generally, traffic signal poles are not installed with breakaway bases due to safety concerns, and it is generally impractical to provide barrier protection around signal poles. TEC's Roadside Design Guide (Chapter H-8) recommends traffic signal poles on high-speed roadways (greater than 80 km/h) should be installed as far away from the high-speed travel lanes as practical. TEC's Highway Geometric Design Guide (Section D.4) suggests traffic signals should be only used where posted speed limit is 80 km/h or less.

The posted speed limit through a signalized intersection should not exceed 80 km/h. However, the reduced speed limit cannot be implemented without an approved Ministerial Order. The respective Region to submit the required documentation to Roadway Engineering in a timely manner for preparation and processing of the Ministerial Order package, ensuring that approval is obtained prior to opening the new signalized intersection to traffic.

Speed Limit at Railway Grade Crossings

Transport Canada Grade Crossing Regulations establish enforceable safety standards for railway grade crossings across Canada, including sightlines, signs, warning systems, and other safety requirements. Railway grade crossings that are not equipped with automatic warning devices must meet the minimum sightlines required by Transport Canada Grade Crossings Regulations and Grade Crossings Standards. The Grade Crossing Regulations provide flexibility in achieving the minimum required sightlines and can be adapted to the unique physical and operational attributes of each crossing. Minimum sightlines can be achieved through clearing obstructions or reducing train or vehicle speeds. The respective railway company must be consulted prior to amending the posted speed limit at a railway grade crossing.

A speed limit reduction at a railway grade crossing cannot be lawfully implemented without an approved Ministerial Order. The respective Region to submit the required documentation to Roadway Engineering for preparation of the Ministerial Order package and to obtain approval prior to implementation of the speed limit amendment.

Report Requirements

The final Engineering Review report must be signed by a qualified Professional Engineer. Report prepared by engineering consultant must be authenticated by a qualified

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Professional Engineer. Photos, raw data tables, any analysis sheets and other pertinent information can be included in appendices.

Consistency and Uniformity

Roadway Engineering (RE) will review the report to ensure the recommendations meet the applicable TEC's guidelines and recommended practices.

RE may request revisions where additional information, justification or analysis is needed.

<i>Posted Speed Limits</i>	
<i>TAC Speed Limit Warrant Spreadsheet</i>	Automated Speed Limit Guidelines
<i>TAC Pedestrian Crossing Control Guide</i>	Entire document
<i>Transport Canada Grade Crossings Regulations</i>	Entire document
<i>Transport Canada Grade Crossings Standards</i>	Entire document

References to Standards

<i>Alberta Transportation and Economic Corridors (TEC)</i> <i>Highway Geometric Design Guide</i>	Relevant Sections: Entire document
<i>TEC Guidelines for School and Playground Zones and Areas</i>	Entire document
<i>TEC Recommended Practices: Use of Speed Limit Transition Zones</i>	Entire document
<i>Transportation Association of Canada (TAC) Guide</i> <i>Canadian Guidelines for Establishing</i>	Entire document

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