



# Pedestrian Safety at Grade Crossing Guide (Final Draft)

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## **1. Introduction**

This guide is primarily a reference for improving pedestrian safety through assessments and the use of engineering countermeasures, as well as other safety-related treatments and programs that involve the community. It can be used by engineers, planners and decision-makers who have the responsibility to provide for a safe environment for pedestrians in a community crossed by a line of railway.

The procedures and equipment suggested here are provided solely as a guide and should not be quoted or considered as legal authority. This guide should not be considered to be a design document or minimum standards by which railway/road authorities are to be judged. It is not intended to be used as a basis for establishing civil liability.

This guide is intended to promote a joint railway/road authority assessment of pedestrian facilities across a line of railway as well as improve communication between all responsible authorities.

Transport Canada welcomes your comments and input for future revisions of this guidance document.

## **2. Railway Safety Act and You**

The *Railway Safety Act (RSA)* has requirements with respect to all engineering work relating to railway works, which includes crossing work.

Section 11 of the *RSA* states:

"All the engineering work relating to railway works, including design, construction, evaluation or alteration, shall be done in accordance with sound engineering principles. A professional engineer shall take responsibility for the engineering work."

Engineering work related to road crossings includes an assessment of the impact on safety at the road crossing. Rail and road authorities share the responsibility to ensure that crossings operate safely as a system — including the safety of pedestrians.

If you would like more information regarding Section 11 of the *RSA*, please refer to *Guideline to Engineering Work Relating to Railway Works*, TP13626, available from any Transport Canada Regional Office/Surface Group, or at:

[http://www.tc.gc.ca/railway/RSA/RSA\\_english.htm](http://www.tc.gc.ca/railway/RSA/RSA_english.htm)

## **3. Pedestrians and Grade Crossings**

The challenge of providing safe crossing control and warning for pedestrians is particularly complex, especially for children (who may be impulsive or unpredictable), persons with mobility impairments (who may require specific facility features) and senior citizens (who may require additional time for crossing). Traffic engineers have learned that, faced with a choice between convenience and safety, pedestrians will usually choose convenience and take the shortest distance between where they are and where they want to go, regardless of designated sidewalks or pathways. The problem of pedestrians ignoring the traditional warning devices at crossings may become greater where pedestrian crosswalk facilities are not directly aligned with the grade crossing warning signals.

Knowledge of pedestrian needs and characteristics can help address pedestrian safety at a grade crossing.

#### **4. Factors to be Considered to Improve Pedestrian Facilities**

A recommended approach to improving pedestrian facilities at grade crossings within a municipality, is to develop a prioritization process based on objective data about each location's proximity to pedestrian attractors and risks. The road authority needs to work with the railway company to get some of the train related data.

In determining the solution most suited to a particular crossing location, a number of factors should be considered, including:

##### **Pedestrian traffic — when the Grade Crossing:**

- Is close to pedestrian attractors (schools, seniors centre, transit stops & commuter stations, parks & places of interest, shopping centers, major employers, public parking lots, sports facilities or fairgrounds and residential area)
- Forms part of the safe walkway path to school
- Forms part of the access to a commuter station
- Is regularly used by persons using an assistive device
- Has a high level of pedestrian activity

##### **Site condition:**

- Number and type of railway tracks in the grade crossing: main tracks, sidings, service track, etc,
- Volume of train traffic and associated speed
- Use of train whistle at the grade crossing
- Type of grade crossing warning system
- Presence or absence of any sign, signal or marking dedicated to pedestrians
- Location of the sidewalks or pedestrian pathways in relation to the warning signal
- Discontinuity between the sidewalks or pedestrian pathways and the crosswalk across the rail line
- Visibility of the warning system and along the railway line, from the sidewalks or pedestrian pathways leading to the grade crossing

**Other factual information:**

- ❑ Accident history
- ❑ Frequent inclement weather

**5. Pedestrian-Focused Solutions**

It is important that the road authority and the railway company jointly assess and determine pedestrian-focused solutions. Solutions that reduce the risk of incidents may include a need for an engineering and/or education strategy to change specific behaviors. The system may range from a simple pavement marking to a hermetic pedestrian gate system. It is important that the solution causes as little deviation as practical from a direct pathway. Various possible solutions include:

**Marked pedestrian pathways:**

- ❑ Clearly mark where pedestrians are to stop. Stop lines are to be applied 5 m ahead of the nearest rail or, 2 m ahead of a crossing sign or signal. It may be required to apply the stop lines further from the set distances to ensure appropriate sightlines along the railway line. Using colored Detectable Tactile Tiles will increase the visibility of the stop bar and provide hazard warning to those who are visually impaired.
- ❑ Clearly mark where pedestrians are to cross. Delineate sidewalk, pedestrian path and crosswalk travelled surface within 8 m of the nearest rail with a continuous solid white line on both edges of the travelled surface.

**Treatment of the approaches to the crossing surface:**

- ❑ Improve the pattern or texture of the walking surface
- ❑ Consider contrasting materials to clearly mark crosswalk areas, while enhancing the continuity of walking routes for pedestrians
- ❑ Provide a noticeably different texture to pedestrian crosswalks with a smooth but slip-resistant walking surface. Materials can consist of impressed pavement, concrete pavers, brick, stone, decorative concrete or any combination. Provide a smooth and continuous crossing surface across the track(s).

**Adult Crossing Guard:**

A guard makes sure that children follow proper procedures before crossing the rail line (look on both sides, stop at the proper location, obey warning system) and promotes safety issues unique to grade crossings. Guards prevent children to cross the rail line when a train is approaching or occupying a grade crossing. Coordination with railway police is recommended to provide the proper safety message for a specific location.

Posting crossing guards is especially effective where:

- ❑ There is a school in the immediate vicinity, along a safe walkway path to school.
- ❑ The grade crossing has more than one track, high train speed and/or high level of train traffic.

- ❑ Special events occur from time to time, causing a surge in pedestrian traffic.

**Signs for pedestrians (route and information signing) that:**

- ❑ Indicate “Stop here when lights are flashing”
- ❑ Warn of the possibility of second train events
- ❑ Indicate “Look both ways for trains”

**Slow down devices:**

- ❑ Swing gates
- ❑ Maze barriers

**Pedestrian signals (additional warning lights and/or pedestrian gates) that indicate when pedestrians can cross should be considered:**

- ❑ At high pedestrian traffic locations
- ❑ At grade crossings with more than one track

**Guide fencing to:**

- ❑ Reduce pedestrian exposure to railway right-of-way
- ❑ Channel pedestrians along pathway/sidewalk
- ❑ Prevent short-cutting, or running around gates

**Pedestrian refuge, escape routes:**

- ❑ Provide a clearly marked comfort zone if trapped between existing pedestrian gates

**Other solutions (still to be assessed):**

- ❑ Second train warning system
- ❑ Walk/Don't walk pedestrian signals

While these pedestrian-focused solutions are introduced to promote uniformity, they do not take into consideration the specific local factors of particular situations. This means that variations in standards and their application will continue to exist, as will the distinction between ideal and actual conditions. In all cases, engineering judgment should be used in selecting a specific treatment for installation.

## **6. School Zones**

Grade crossings within school zones require additional safety programs. Since children (and adults) generally witness only a few trains each day, they may forget that the situation can represent a safety risk. In fact, they may use less caution when crossing the tracks than when crossing a road or street. It is important for children to learn safe crossing practices through education and by regular safety message reminders.

Research on children in traffic suggests that children perceive traffic differently than do adults. Young children typically:

- ❑ Have difficulty judging speed and distance and knowing the direction of sounds
- ❑ Concentrate on one thing at a time (i.e., focus on what is of interest to them at the moment)
- ❑ Have a limited sense of danger
- ❑ Fail to see or understand complicated traffic situations
- ❑ Overestimate their knowledge and physical strength

Incidents involving school children are reduced when members of the community are included in introducing safe walkway paths to school. Coordination and cooperation between parents, school officials, police (railway and local enforcement) and engineering officials are required to reach the common goal of protecting children's lives. The community should cooperate to:

- ❑ Identify safe walkway paths to school
- ❑ Appoint adult crossing guards for school crossing periods on safe walkway paths to school, at high train speed and/or high train traffic volume grade crossings, at grade crossings with more than one track where trains can meet or pass one another simultaneously
- ❑ Recommend safety improvements to highway intersections and grade crossings of a line of railway
- ❑ Develop training programs on pedestrian safety, including railway safety.
- ❑ Encourage parents to be involved in discussing hazards, obstacles and crossing behaviors
- ❑ Encourage teachers to help children to be aware of the train danger and practice the correct crossing behaviors as a school activity

Regular communications between school officials, traffic engineers, law enforcement, parents, and school transportation personnel are critical to promote safe operations within school zones.

## **7. Passenger Train Stations**

Many commuters use grade crossings adjacent to passenger train stations. Commuters entering or leaving train stations tend to hurry to catch a train, get to their vehicle or onto their destination and, may use less caution when crossing the tracks. It is important for them to learn safe crossing practices through clear direction, education and by regular safety message reminders.

While the railway companies and passenger train operators will play a big role in this regard, namely for any grade crossing located at the train station, coordination and cooperation between railway officials, police (railway and local enforcement) and the communities are required toward the common goal of protecting pedestrians' lives.

Communities and railway companies should cooperate by:

- ❑ Identifying safe pathways and recommend ways to guide pedestrians across the rail line to and from: the train station, public parking lots, other transit stops, major employers etc.
- ❑ Recommending safety improvements to nearby highway intersections, grade crossings and pedestrian facilities
- ❑ Developing pedestrian safety information material that includes railway safety

Regular communications between railway officials, passenger train operators, traffic engineers and law enforcement are critical to promote safe operations near passenger train stations.

## **8. Operation Lifesaver**

Communities should also contact Operation Lifesaver, a national public education program sponsored by the Railway Association of Canada and Transport Canada. Operation Lifesaver works with the Canada Safety Council, provincial safety councils/leagues, railway companies, unions, police, public and community groups. Its goal is to reduce the needless loss of life, injuries and damages caused by road/railway grade crossing collisions and train/pedestrian incidents.

Operation Lifesaver's success lies in educating people of all ages about the dangers of road/railway grade crossings and the seriousness of trespassing on railway property. To reach the public, it produces and distributes educational material, engage in early elementary and driver education curriculum activities, make civic presentations, as well as invite media coverage.

You can learn more at: <http://www.operationlifesaver.ca>

## **9. Funding**

Safety at grade crossings is a primary focus of Transport Canada. Contributions are available to help make safety improvements at public grade crossings that are under federal jurisdiction. The Grade Crossing Improvement Program, funded under section 12 of the *RSA* is designed to provide up to 80 per cent of the eligible cost of a crossing improvement project. Funding for construction costs covers the safety improvements only, and does not include future maintenance costs.

Work that will improve pedestrian safety is eligible for a contribution. Applications are ranked and available funds are allocated based upon the severity of the safety problem, and the project's potential for avoiding fatalities, injuries and damage.

Road authorities and railway companies are encouraged to contact a railway safety inspector at the appropriate Transport Canada regional office if they have any concerns about the safety of a crossing. A railway safety inspector will meet on-site with road and

railway officials and any other relevant responsible authorities to assist in assessing safety issues and to review the proposed work.

If you would like more information regarding the Grade Crossing Improvement Program, please read *Crossing Safety: Financial Assistance*, TP11918, available from any Transport Canada Regional Office/Surface Group, or at:

<http://www.tc.gc.ca/railway/pamphlet/financialassistance.htm>

## **10. Other Grade Crossing Safety Related Information**

Canadian Road/Railway Grade Crossing Detailed Safety Assessment Field Guide  
Guideline for Inspecting and Testing Preemption of Interconnected Traffic Control  
Signals & Railway Crossing Warning Systems  
Technical Standards and Inspection, Testing and Maintenance Requirements (RTD10)

Available on Transport Canada web site:

[http://www.tc.gc.ca/railway/grade\\_crossing.html](http://www.tc.gc.ca/railway/grade_crossing.html)

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