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Pedestrian Safety at At-Grade Crossings

Outline

1. **Pedestrian at-grade crossings and the new regulations**
2. **Common deficiencies at at-grade crossings**
3. **Factors to be considered to improve the level of safety of pedestrian at crossings**
4. **Potential treatments**

At-Grade Crossings

- A crossing is a where a railway corridor intersects a roadway or walkway
- The Railway Safety Act defines a road as “any way or course, whether public or not, available for vehicular or pedestrian use.”

At-Grade Crossings

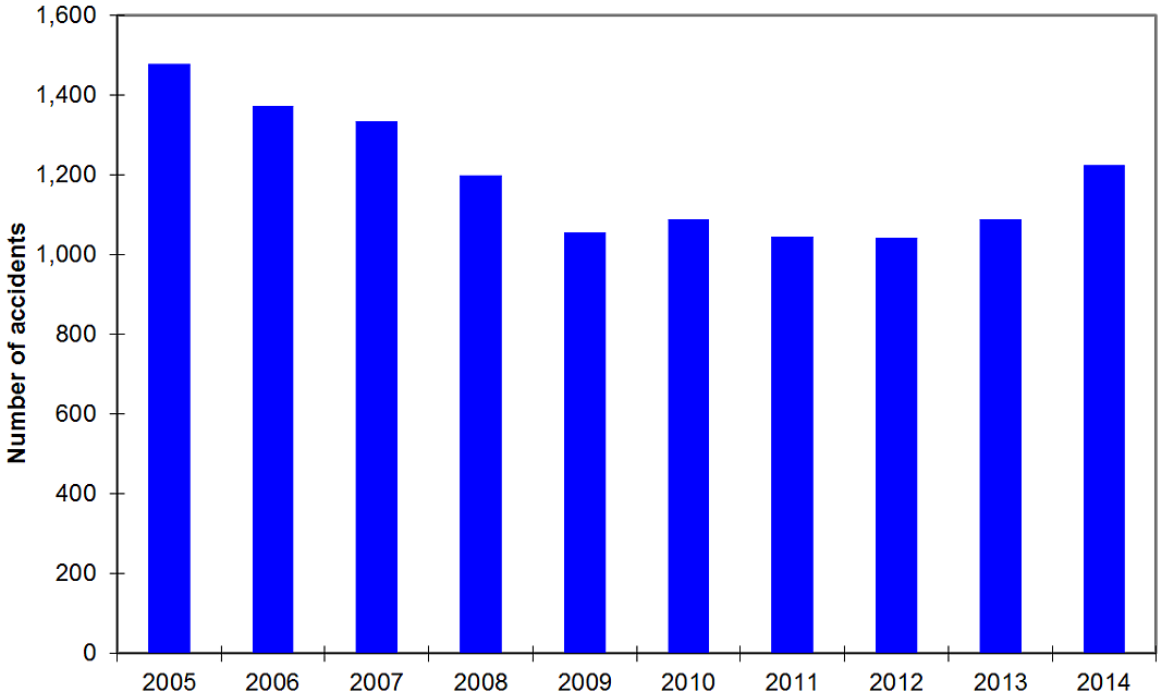
Crossing with a roadway that includes an offset sidewalk

Crossing with a walkway/path/trail

Although the requirements are not as stringent for crossings with a sidewalk/path/trail, any public facility intended to be used by pedestrians/cyclists is required to comply with the new regulations.

The New Grade Crossing Regulations

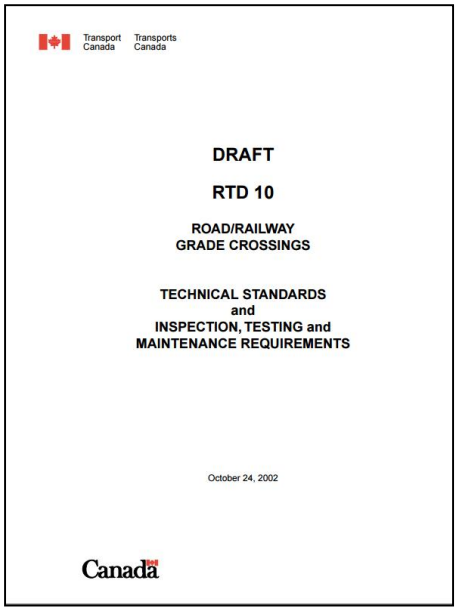
Although crossing accidents involving pedestrians accounted for 8% (14) of all crossing accidents in 2014, they accounted for 45% (9) of fatal crossing accidents.



Source: Statistical Summary Railway Occurrences 2014, Transportation Safety Board of Canada, 2015

The New Grade Crossing Regulations

The standards were guidance – not regulations.
Road authorities and railway companies applied the grade crossing guidelines and rules on a voluntary basis.



Transport Canada Transports Canada

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ROAD/RAILWAY GRADE CROSSINGS

TECHNICAL STANDARDS and INSPECTION, TESTING and MAINTENANCE REQUIREMENTS

October 24, 2002

Canada

Compliance rates at public crossings were only

30% to 50%

Implication of the Regulations

The new regulations are intended to improve crossing safety by:

- Providing comprehensive safety standards and references
- Establishing enforceable safety standards
- Outlining clear roles and responsibilities for railways and road authorities
- Ensuring the sharing of key traffic and safety information between the railway and road authorities
- Promote collaboration between responsible agencies/companies

Safety Reviews

- Since the new Regulations was adopted, safety reviews of more than 150 at-grade railway crossings were completed for road authorities across Ontario, Quebec and Alberta.
- The majority of these crossings included offset sidewalks and/or dedicated walkways/trails/bike paths.
- Most of the safety issues identified would not require significant investments to be addressed.

5

most common deficiencies at railway crossings

5

Excessive slope of the road approaches

4 Obstructed sight triangles

3

Absence of marking to guide and warn road users

2

Tripping hazard at the crossing

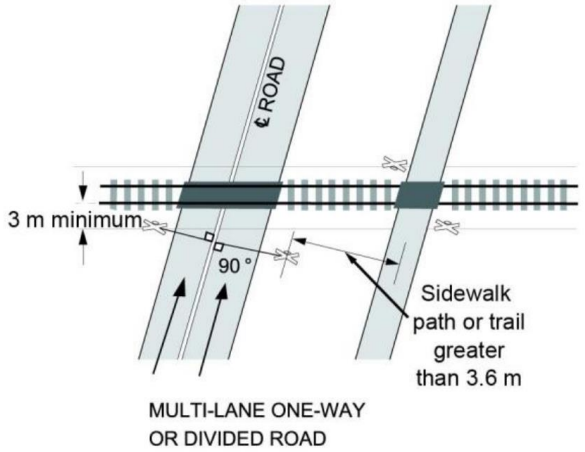
1 Discontinued pedestrian facilities and absence of pedestrian facility

1 Discontinued pedestrian facilities and absence of pedestrian facility

Grade Crossing Standards

Limited amount of information related to pedestrian crossings is included in the Grade Crossing Standards:

- Location of warning system
- Maximum slope within 5 m of the rail: 2%
- Type of warning system:
    - Active warning system if railway design speed is more than 81 km/h



Pedestrian Characteristics

- Pedestrians are sensitive to their surroundings
- Pedestrians may be inattentive
- Pedestrian choose convenience and take the shortest distance
- Pedestrian may be complacent at crossings as trains are non frequents
- Pedestrians may ignore warning signs

Factors to be Considered to Improve Pedestrian Facilities

- Implement treatments that raise pedestrians awareness of the potential hazards
- Reduce pedestrian exposure to railway right-of-way
- Guide pedestrians and ensure that they cross at the intended location
- Provide an adequate surface that minimizes slipping and tripping hazards

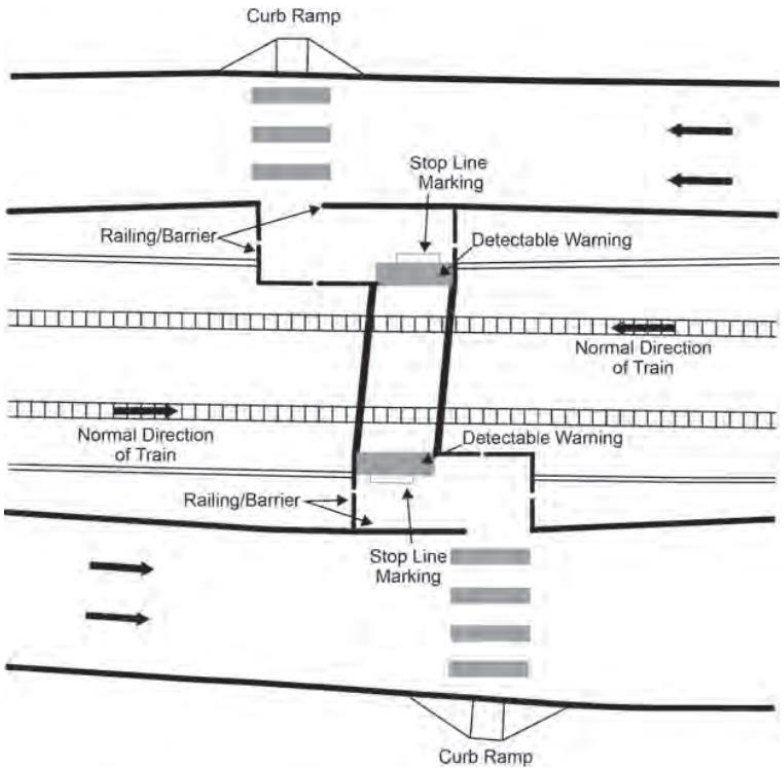
Marked Pedestrian Pathways

- Mark where pedestrian are to stop: stop lines are to be installed 5 m of the rail or 2 m ahead of crossing sign or warning system.
- Mark where pedestrian are to cross: delineate sidewalk, pedestrian path and crosswalk travelled surface within 8 m of the rail.
- Using colored detectable tactile tiles to increase visibility of the stop bar and provide hazard warning to those who are visually impaired

Channelization

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

Slow Down Devices



Offset Pedestrian Crossing

(TCRP 175, 2015)

Maze fencing

Signs for Pedestrians

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

Second Train Warning Sign

Flangeway Filer

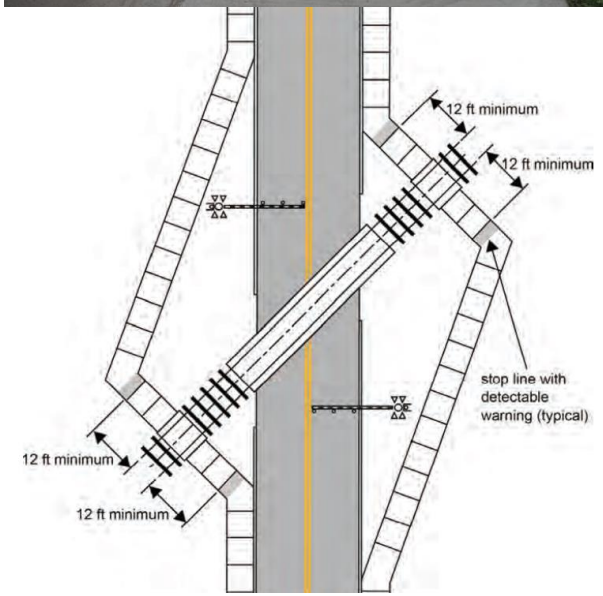
- Flangeway gaps pose a potential hazard to pedestrians who use wheelchairs, especially when the crossing is not at 90 degrees.
- Flangeway width:
  - Minimum: 65 mm
  - Maximum for when identified as an accessibility route: 75 mm
  - Typical width: 120 mm

Rubber flangeway filer used to minimize the gaps at a rail.

(TCRP 175, 2015)

Sidewalk Relocation

- May be required to install treatments
- Provide a better angle of crossing when the rail tracks are at a skew to the sidewalk
- Be conscious of the potential hazard that the gate arms may represent



(TCRP 175, 2015)

Pedestrian Warning System

Flashing lights and a gate

To be considered:

- At high pedestrian and train traffic
- At crossing with more than one track
- If the offset between the centre of the sidewalk/path or trail and the road warning system is greater than 3.6 m

Thanks

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