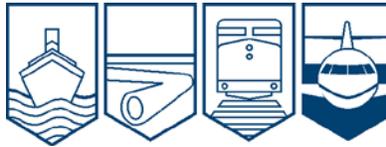


Transportation Safety Board
of Canada



Bureau de la sécurité des transports
du Canada

**RAILWAY INVESTIGATION REPORT
R12T0217**



PEDESTRIAN FATALITY

**CANADIAN PACIFIC RAILWAY
FREIGHT TRAIN 147-01
MILE 111.12, GALT SUBDIVISION
LONDON, ONTARIO
01 DECEMBER 2012**

Canada

The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability.

Railway Investigation Report

Pedestrian Fatality

Canadian Pacific Railway
Freight Train 147-01
Mile 111.12, Galt Subdivision
London, Ontario
01 December 2012

Report Number R12T0217

Summary

On 01 December 2012, at 1636 Eastern Standard Time, while proceeding westward on the Galt Subdivision, Canadian Pacific Railway freight train 147-01 struck an 11-year-old pedestrian on the Third Street public crossing (Mile 111.12) in London, Ontario. This crossing is equipped with flashing lights, a bell, and gates. The pedestrian sustained fatal injuries.

Ce rapport est également disponible en français.

Factual Information

On 01 December 2012, Canadian Pacific Railway (CP) freight train 147-01 (the train) was proceeding westward on the Galt Subdivision, en route from Toronto, Ontario, to London, Ontario (Figure 1). The train consisted of 2 head-end locomotives and 68 loaded intermodal flat cars. The train weighed 4894 tons and was 6573 feet long. The crew comprised a locomotive engineer and a conductor, who were both qualified for their respective positions and met established rest and fitness requirements.



Figure 1. Intended route of CP freight train 147-01 (Toronto, Ontario, to London, Ontario) (Source: Railway Association of Canada, *Canadian Railway Atlas*)

The Accident

At 1634,¹ while proceeding westward at 35 mph, the train approached the Third Street public crossing (the crossing), located at Mile 111.12 of the Galt Subdivision in London, Ontario. The crossing was protected by automatic warning devices (AWD), which included flashing lights, a bell, and gates extending halfway across the roadway on each side of the crossing. The train automatically activated the crossing AWD protection at 1635.

As the train neared the crossing, the train bell was activated, and the locomotive engineer noticed an elementary-school-aged pedestrian (pedestrian 1) just south of the track, on the east side of the road. Pedestrian 1 ran northward diagonally across the roadway to the west side of the crossing and attempted to cross the track before the train. The locomotive engineer activated the locomotive horn at 1636, just before the train struck pedestrian 1 on the crossing. The locomotive engineer immediately initiated an emergency brake application and brought the train to a stop while it was still occupying the crossing. Witnesses administered first aid until

¹ All times are Eastern Standard Time (Coordinated Universal Time minus 5 hours).

local emergency services arrived on site. The pedestrian was transported to hospital and later succumbed to injuries.

At the time of the accident, visibility was about 4 km, the sun was beginning to set, and there was light fog. The temperature was 3°C, and the wind was from the north at 17 km/h.

Pedestrian Actions

The day of the accident, pedestrian 1 accompanied a middle-school-aged neighbour and friend (pedestrian 2) to the Gibraltar Centre market, where pedestrian 1's family regularly worked. The crossing was located approximately halfway between the pedestrians' homes, north of the crossing, and the Gibraltar Centre (on the corner of Dundas and Third Street), about 300 m south of the crossing.

The pedestrians had gone to the Gibraltar Centre to have lunch and meet with pedestrian 1's parents. After making plans for the evening, the pedestrians departed the Gibraltar Centre en route to pedestrian 2's residence. As they left the Gibraltar Centre, they crossed through the parking lot and exited onto the north end of Third Street, about 250 feet south of the crossing. Upon exiting, they heard the crossing protection activate and they began to run. In the process, pedestrian 1 dropped a water bottle and stopped to pick it up. They then ran across to the east side of Third Street. As they neared the crossing, both pedestrians cut diagonally behind a car stopped at the crossing and ran back across to the west side of the road. Upon hearing the train, pedestrian 2 stopped on the road, while pedestrian 1 continued and ran into the path of the train (Figure 2).

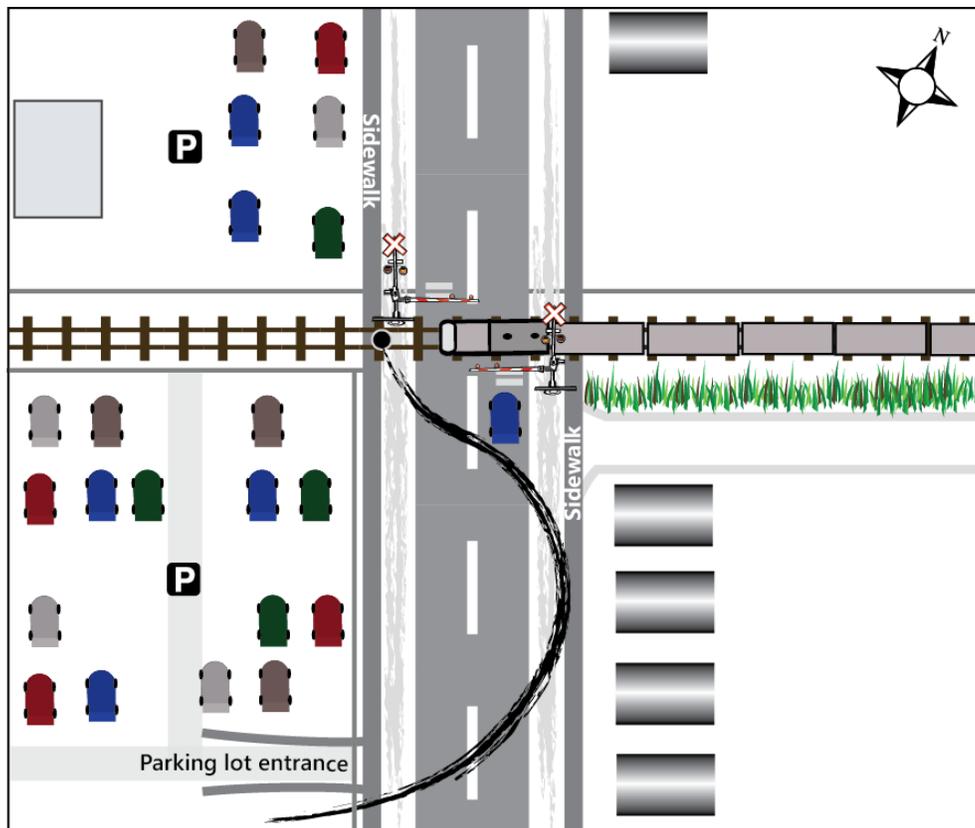


Figure 2. Site diagram of Third Street crossing, CP rail line, and the route taken by the pedestrian

Subdivision Information

The Galt Subdivision extends from Mile 0.0 (Toronto) to Mile 114.6 (London). Trains operating in the vicinity of the accident site on the Galt Subdivision are governed by the Centralized Traffic Control System (CTC), authorized by the *Canadian Rail Operating Rules* (CROR) and supervised by a CP rail traffic controller (RTC) located in Montréal, Quebec. The subdivision mainly consists of single main track with speed limits varying from 35 to 65 mph. There are no scheduled trains departing London or arriving into London on the Galt Subdivision; therefore, train times vary day to day.

At Mile 111.0, just east of the Third Street crossing, the posted speed for trains decreases from 60 to 35 mph. Westward trains enter London Yard from the east yard switch, located at Mile 112.0, just less than 1 mile west of the crossing. The CP London terminal station is on the main line, about 2 miles west of the crossing. There is a slight ascending grade extending eastward from the terminal.

Rail traffic is comprised of about 5 westward and 5 eastward freight trains per day. In addition, local yard and road switcher assignments periodically operate over the crossing. With regards to rail traffic at the crossing, the following observations were made:

- Approaching the crossing from the east, 2 of the westward trains remain on the main line and continue at track speed (35 mph) up to the terminal, while the 3 remaining westward trains slow down to about 10 mph as they prepare to enter the yard.
- Two of the eastward trains remain on the main track and stop at the terminal. When approaching the crossing, these 2 trains are travelling at slow speed as they depart from the terminal. The remaining 3 eastward trains depart from the yard and travel at a speed of about 10 mph until the tail-end car has entered the main track.
- In general, local yard and road switcher assignments operate over the crossing at slow speeds as they enter or depart the yard.

Third Street Crossing Data

Third Street is a two-lane paved roadway with a north/south orientation and a posted vehicle speed limit of 50 km/h. The street intersects with the CP single main track at a 90° angle. There are pedestrian sidewalks on each side of the road. The crossing is located in a semi-industrial area, which also includes a significant amount of municipal housing north of the crossing. The roadway crossing is protected by AWD, which include flashing lights, a bell and gates (FLBG).

However, unlike other locations in London equipped with pedestrian crossing arms that lower to block sidewalk access when a train approaches, there are no gates protecting the sidewalks at this location. The crossing is also equipped with constant warning time (CWT) circuits, which activate the AWD based on the speed of the train. Since 1963, local municipal by-laws have prohibited the use of train horns within city limits. Consequently, trains only sound the bell when approaching the crossing.

The crossing conforms to Transport Canada (TC) regulatory requirements, and the AWD are clearly visible to both vehicular and pedestrian traffic approaching on the roadway. Vegetation grows along the railway right-of-way (ROW) on the southeast side of the crossing. The

vegetation obscures visibility of the westward train traffic for drivers and pedestrians as they approach the crossing from the south. However, clear sightlines extending along the ROW are not required by regulation because the crossing is protected by AWD.

TC's crossing data from 2006 indicates that vehicular traffic at the crossing consists of approximately 5500 vehicles per day. There is no information on pedestrian traffic. Following the accident, the Transportation Safety Board of Canada (TSB) observed vehicular and pedestrian traffic in the vicinity of the crossing. The following observations were made:

- On Saturdays, the same day of the week as the accident, vehicular traffic consisted of about 6400 vehicles per day.
- On Saturdays, approximately 70 pedestrians and cyclists used the crossing sidewalks per hour throughout the day.
- During a three-day period, a total of 11 trains were observed operating over the crossing. In each case, the crossing AWD activated about 33 seconds before the arrival of the train in accordance with TC requirements.
- Trespassers were observed from the crossing, and there were indications of a high volume of trespassing in the vicinity.
- There were a number of openings cut into the railway fence along the ROW, and well-worn paths were observed extending from the openings to the track.

Pedestrian Judgment Concerning the Ability to Cross in Front of a Train

The decision to cross in front of an approaching train requires a pedestrian to make a judgment on the time available to cross and his or her ability to cross in that time. Visual cues, auditory cues, and the perception of risks associated with trying to cross in front of a train also play a role.

Visual Cues

The estimation of the time available to cross requires an estimation of the speed of the train, which is a difficult task given the lack of good visual cues. For a pedestrian at a crossing, an approaching train is viewed more or less head on. As such, there is little angular motion of the train against background objects to provide an indication of relative motion or across the visual field to create an angular rate of change in the image across the retina. The most salient visual cue of the rate of approach of an object when there is little angular motion is the rate of expansion of the image on the retina of the viewer. Unfortunately, this rate of expansion is only sufficiently rapid to provide a sense of speed (looming) when the object is quite close to the viewer.²

² M.W. Matlin and H.J. Foley, *Sensation and Perception*, 4th Ed. (Boston: Ally and Bacon, 1997), pp. 251-252.

In response to these limitations, research has shown that individuals tend to rely on distance to judge the time available to cross in front of approaching traffic.³ In other words, in the absence of cues to effectively judge the speed of approach, individuals will fall back on their experience in similar situations and use distance as an indicator of the available time. In cases where the speed of the approaching vehicle differs from their previous experience, their estimation of the available time will be inaccurate.

Auditory Cues

In addition to alerting pedestrians and motorists to the presence of a train, the train horn appears to encourage drivers to respect crossing protection. In a comparison of accidents occurring at crossings with and without whistle bans, it was found that accidents where motorists drove around lowered gates were 128% more common at crossings where a whistle ban was in place.⁴

Perception of Risks Associated with Crossing in Front of the Train

In the vicinity of the crossing, there were many indications that trespassing on railway property was a common occurrence. Witnesses familiar with the crossing pointed out that it was common for individuals to cross the tracks shortly before the arrival of a train. The pedestrian involved in this accident lived in the area of the crossing, used this route frequently, and had significant opportunity to observe these behaviours.

Children may have more difficulty making decisions with respect to safety at rail crossings than adults. TC's *Pedestrian Safety at Grade Crossing Guide* indicates that this is due to the fact that children have difficulty judging speed and distance, tend to focus on one thing of interest at the moment, have a limited sense of danger, may have difficulty understanding complicated traffic situations, and tend to overestimate their knowledge and physical strength.⁵

Given these limitations, the guide describes steps that should be taken to increase pedestrian safety at grade crossings used by children. The limitations of children in this regard and the need for such measures have been highlighted in a previous TSB report (R05T0030), an investigation into the fatality of one school-aged pedestrian and the serious injuries to a second. The report identified that pedestrians were subject to an increased risk of injury in areas where anti-whistling by-laws had been implemented.

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- ³ J.M. Plumert, J.K. Kearney, and J.F. Cremer, "Children's Perceptions of Gap Affordances: Bicycling Across Traffic-Filled Intersections in an Immersive Virtual Environment," *Child Development*, 75, 4 (2004), pp. 1243-1253.
- ⁴ Study by the Federal Railroad Administration (2000). Cited by M. Yeh and J. Multer, *Driver Behavior at Highway-Railroad Grade Crossings: A Literature Review from 1990-2006*, DOT/FRA/ORD-08-03 (2008), p. 84.
- ⁵ Transport Canada, *Pedestrian Safety at Grade Crossing Guide* (Final Draft), (September 2007), p. 5. Available at: <http://www.tc.gc.ca/media/documents/railsafety/PedestrianSafety-publications.pdf> (last accessed on 7 January 2014).

Operation Lifesaver

Operation Lifesaver (OL) is a public-private partnership that promotes awareness to help save lives and reduce the suffering from injuries incurred at highway/railway crossings and from trespassing on railway property. The OL program was established in Canada in 1981 and is funded by TC and the Railway Association of Canada (RAC). It is guided by an advisory committee composed of the RAC and its members, TC, national and provincial safety organizations, unions, railway police, as well as public and community groups. Its goal is to create safety-conscious attitudes toward railways and to promote safe driving skills, as well as attention and adherence to signs and warnings, which will result in fewer collisions, fatalities, and injuries.

To achieve its goals, OL's main focus is education. OL develops and distributes an array of free public rail safety material for specific audiences. Each year, certified presenters give more than 500 presentations across Canada. OL works with the rail industry, government, police, unions, the media, community organizations, and the public to deliver its public rail safety messages. Many of these are provided in schools, where students view videos and receive activity books or guides. Education is also achieved through the use of public media, including television and radio public service announcements, billboards, and social media.

OL also supports engineering principles and enforcement; it urges railway, provincial, and municipal law enforcement agencies to deal with motorists, pedestrians, and trespassers who disregard existing laws.

Railway Crossing Education

The principles of street and road safety are taught to students throughout the Ontario education system, while the associated rules and laws are enforced by municipal and local police departments. In contrast, there is no curriculum in place to teach children about the risks associated with railway crossings. There are 40 primary and 7 high schools near the CP rail network alone in the London area.

Four railway companies, Canadian National (CN), CP, Goderich-Exeter Railway (GEXR), and VIA Rail, operate throughout the city of London, where there is a high number of railway crossings. To educate children on the risks associated with public crossings and trespassing on railway property, railway police have traditionally given OL presentations in schools located within 1 mile of their railway tracks. However, the decision to allow railway police to address school-age children is left to the discretion of school principals. The school attended by pedestrian 1 was situated about 1 km from the CP main line.

CN presentations are coordinated by its local community services officer, who often targets schools located near crossings or areas where trespassing has been reported. CP had also regularly given OL presentations in the area up until about 2009, when the London CP police office was closed. Since early 2009, the London area has been covered by CP police from the Windsor and Hamilton detachments. Without local CP police presence, the frequency of OL presentations has been reduced, and since that time, CP's OL activities have been primarily focused on private companies within the transportation industry. The last documented OL presentation given to a London-area school by CP police was in 2008.

Given the reductions in size of the railway police force throughout Canada, CP police have entered into agreements with municipal police agencies in order to maintain or improve enforcement activities. These agreements permit municipal police agencies to act as agents of CP in the enforcement of crossing and trespassing laws on CP property. At the time of the accident, there was no such agreement between CP and the London municipal police.

Transportation Safety Board Accident Statistics

A review of TSB data between 2003 and 2012 revealed the following:

- A total of 2165 crossing accidents in Canada resulted in 267 crossing fatalities.
- 134 of the 2165 crossing accidents (6%) involved pedestrians.
- 79 of the 134 pedestrian accidents (59%) resulted in a fatality.
- Pedestrians struck at a crossing accounted for 30% (79/267) of all crossing fatalities.
- 114 of the 134 pedestrian crossing accidents (85%) occurred at crossings equipped with AWD.

Analysis

The train was operated in accordance with regulatory and company procedures, and the crossing automatic warning device (AWD) protection functioned as required. The analysis will focus on pedestrian behaviour, railway safety education, and railway crossing enforcement.

The Accident

As the pedestrians left the parking lot, the crossing lights and bell for the Third Street crossing activated. They decided to attempt to cross before the train arrived. With the crossing approximately 250 feet away, they were also aware that they would have to run in order to make it across in time. The pedestrians then ran across to the east side of the street.

However, as the pedestrians approached the crossing, they recognized what direction the train was approaching from and they decided to cross the street again in order to traverse the crossing on the west side. Pedestrian 2 was running about 20 feet behind pedestrian 1 and stopped prior to entering the crossing, realizing that there was not enough time to make it across the tracks in front of the train. Pedestrian 1 continued on and attempted to run across in front of the oncoming train. Subsequently, pedestrian 1 was struck by the train and sustained fatal injuries.

Crossing Familiarity

Rail traffic in the vicinity of the crossing is comprised of about 5 westward and 5 eastward freight trains per day, in addition to a number of local yard and road switching assignments. Two of the westward trains remain on the main line and proceed at track speed (35 mph) up to the terminal, while the 3 remaining westward trains slow to about 10 mph as they prepare to enter the yard. Two of the eastward trains remain on the main line. However, these trains approach the crossing at a slow speed because they are just departing the London terminal and are ascending a slight grade. The 3 remaining eastward trains depart from the yard and must therefore travel at a speed not exceeding 10 mph until the tail-end car has entered the main track.

The local yard and road switching assignments operate over the crossing at slow speeds as they enter or depart the yard. Therefore, only 2 of the 10 or more trains per day typically travel at the 35 mph speed limit over the Third Street crossing, while all the other trains proceed at a much slower speed. Since most trains travelled at a slow speed in the vicinity of the crossing, it is possible that the pedestrians had previously been delayed by trains and were motivated to traverse the crossing in order to avoid waiting.

Pedestrian 1 chose to cross in front of an oncoming train despite the presence of activated crossing protection (lights, bell, and gates) across the roadway. This suggests that the risks associated with this behaviour may not have been clearly understood. In the vicinity of the crossing, there was a high rate of trespassing and a high occurrence of individuals attempting to cross while the crossing protection was activated. Because the pedestrians lived in the area, they used this route frequently and had significant opportunity to observe these behaviours. Given their familiarity with the crossing, it is likely that previous observations of individuals traversing the crossing in front of a train further reduced the perception of the associated risks.

Decision to Cross

When deciding to cross before the train, the pedestrian likely overestimated the time available to cross and the ability to cross before the train. In the absence of good visual cues, it has been shown that distance is used as a substitute to determine the time available to cross. Given that this train was moving more quickly than most of the trains that travel through this crossing, any distance cue developed from previous experience at the crossing would have had a high probability of inaccuracy. Furthermore, the absence of the train whistle at this crossing removed an additional auditory cue that identifies the presence of a train, that can contribute to a sense of danger, and that has been shown to increase compliance with crossing protection. In the absence of sufficient visual and auditory cues, the pedestrian incorrectly decided that there was enough time to cross before the arrival of the train.

Railway Crossing Pedestrian Fatalities

The crossing is protected by AWD, which include flashing lights, a bell, and gates (FLBG). However, there are no gates protecting the sidewalks, and Transport Canada's (TC) crossing data contains no information on pedestrian traffic at this location.

Following the accident, the Transportation Safety Board of Canada (TSB) observed that approximately 70 pedestrians and cyclists per hour used the crossing sidewalks, which equates to about 560 people during an eight-hour period. Although pedestrians are involved in only 6% of all crossing accidents, they account for 30% of all crossing-related fatalities, 85% of which occur at crossings protected by AWD. While roadway AWD protection may reduce the risk of vehicle accidents, there is an increased risk to pedestrians at public crossings equipped solely with roadway AWD in locations where there is a high level of pedestrian traffic.

Education of Risks Associated with Crossing and Trespassing

Minimizing risky behaviour around trains requires a multi-faceted approach involving engineering, education, and enforcement. The absence of any one of these elements can result in an underestimation of the risks associated with trains and increases the probability of unsafe behaviours. Canadian National (CN) had committed to visit schools within 1 mile of its property to make Operation Lifesaver (OL) presentations. However, the police force and education programs at Canadian Pacific Railway (CP) had been reduced or eliminated. The last documented OL presentation given to a London area school by CP police was in 2008. While pedestrian 1's school was within 1 mile of a CP line, CP OL presentations to schools in the area had ceased before pedestrian 1 had attended that school. Consequently, pedestrian 1 had not received any formal education on the risks associated with railway crossings or trespassing on railway property. Without specific education, such as OL material delivered to schools near railway property, there is an increased likelihood that school-age children will remain uninformed of the dangers associated with railway crossings or trespassing on railway property and continue to take risks that can have fatal consequences.

Enforcement of Crossing and Trespassing Laws

In recent years, the number of railway police officers has been reduced, and cities such as London no longer have local railway police on site. Since local municipal police forces do not enforce crossing or trespassing laws on railway property, additional opportunities for enforcement are lost. Ineffective enforcement of crossing and trespassing laws increases the probability that the public will continue demonstrating unsafe behaviours that put them at risk.

Findings

Findings as to Causes and Contributing Factors

1. Pedestrian 1 was struck by the train and sustained fatal injuries while attempting to traverse the crossing ahead of the train.
2. It is likely that the pedestrians were motivated to traverse the crossing to avoid having to wait for the train.
3. Given the pedestrians' familiarity with the crossing, it is likely that previous observations of individuals traversing the crossing in front of a train further reduced the perception of the risks.
4. In the absence of sufficient visual and auditory cues, the pedestrian incorrectly decided that there was enough time to cross before the arrival of the train.

Findings as to Risk

1. While roadway automatic warning device (AWD) protection may reduce the risk of vehicle accidents, there is an increased risk to pedestrians at public crossings equipped solely with roadway AWD in locations where there is a high level of pedestrian traffic.
2. Without specific education, such as Operation Lifesaver material delivered to schools near railway property, there is an increased likelihood that school-age children will remain uninformed of the dangers associated with railway crossings or trespassing on railway property and continue to take risks that can have fatal consequences.
3. Ineffective enforcement of crossing and trespassing laws increases the probability that the public will continue demonstrating unsafe behaviours that put them at risk.

Safety Action

Safety Action Taken

On 23 January 2013, the Transportation Safety Board of Canada (TSB) issued Rail Safety Information letter (RSI) 01/13 entitled "Trespassing in the Vicinity of Third Street Public Crossing in London, Ontario." The RSI outlined that approximately 60 pedestrians and cyclists per hour traversed the crossing using the sidewalks. Several trespassers were also observed on the railway right of way east of Third Street. The trespassers likely accessed the right of way through openings cut into the railway fence in a number of locations. Pathways observed extending from the railway fence to the track suggest that a high frequency of trespassing occurred in this vicinity. The RSI suggested that since trespassing accidents usually result in serious injury or fatality, railway inspection, maintenance, and enforcement programs must be sufficiently robust to ensure that trespassing activity is identified and proactively deterred.

On 25 February 2013, Transport Canada (TC) responded that in areas where there are known access control issues, it conducts regular monitoring activities, informs the railways of any safety deficiencies and, if required, takes appropriate action. In this case, the TC Ontario Surface Regional Office followed up with Canadian Pacific Railway (CP). CP advised that the area was being monitored closely by their engineering officers, fencing was repaired, and signage was erected. TC will continue to work with the railway, the municipality, and other stakeholders to provide education and awareness about access control on railway properties in the City of London.

City of London

The City of London ordered the removal of brush along the right-of-way in the vicinity of crossings within city limits.

Transport Canada

TC is currently updating the *Pedestrian Safety at Grade Crossing Guide* in order to provide improved guidance to municipalities on pedestrian crossing safety.

Through its Rail Safety Education and Awareness (E&A) program, TC works with municipalities, railway, and provincial levels of government to promote, encourage, and facilitate discussions around railway safety. In conjunction with this program, TC has spearheaded railway crossing blitzes with the Ontario Provincial Police (OPP), local police forces, and railways in some towns to educate drivers and pedestrians on railway safety.

From 12-14 February 2013, TC Rail Safety attended the Federation of Canadian Municipalities (FCM) conference in Windsor, Ontario, to educate municipalities on railway safety roles and responsibilities.

In February 2013, TC Rail Safety officials contacted CP police and the City of London regarding their involvement with rail safety in London and the surrounding area. TC spoke to both parties to inquire if the municipality and railway had plans to mitigate the risks identified in the TSB information letter.

On 18-19 August 2013, TC Rail Safety attended the Association of Municipalities of Ontario (AMO) conference to educate municipalities on railway safety roles and responsibilities. On 05 September 2013, TC Rail Safety and various other stakeholders attended a meeting on railway emergency management hosted by the City of London to review and reinforce roles and responsibilities and brainstorm on proactive measures to promote railway safety. Similar meetings have been held in the City of Oshawa.

On 07 November 2013, TC hosted a railway crossing blitz in the City of London with local police and CP Rail to continue to educate drivers and pedestrians on railway safety.

Canadian Pacific Railway

CP has committed to give Operation Lifesaver (OL) presentations in all schools situated within 1 km of its property. Since this accident, CP police have delivered OL presentations in 13 schools within the London area, including the school attended by the victim in this accident. Additional presentations were planned during the fall of 2013.

Since 2011, CP police have entered into 27 agreements with municipal police agencies permitting these agencies to act as CP agents in the enforcement of crossing and trespassing laws on CP property. The agencies are briefed on railway safety and the procedures to be adopted when enforcing trespassing prohibitions on CP property. CP entered into such an agreement with the City of London Police in August 2013.

CP police have met with representatives of the City of London to review grade crossing safety and to raise awareness of the City's role in respect of rail safety in general.

As of 15 September 2013:

- CP police have laid 43 trespass charges in the City of London.
- Joint enforcement operations with the City of London Police at grade crossings have resulted in 52 charges being laid in 2013. Additional joint operations are planned for the future.

This report concludes the Transportation Safety Board's investigation into this occurrence. The Board authorized the release of this report on 21 November 2013. It was officially released on 27 January 2014.

Visit the Transportation Safety Board's website (www.bst-tsb.gc.ca) for information about the Transportation Safety Board and its products and services. You will also find the Watchlist, which identifies the transportation safety issues that pose the greatest risk to Canadians. In each case, the TSB has found that actions taken to date are inadequate, and that industry and regulators need to take additional concrete measures to eliminate the risks.