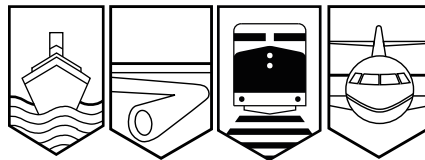


Transportation Safety Board
of Canada



Bureau de la sécurité des transports
du Canada

RAILWAY INVESTIGATION REPORT
R01T0129



PEDESTRIAN FATALITY

CANADIAN NATIONAL
TRAIN NO. Q-143-31-09
MILE 47.95, HALTON SUBDIVISION
BURLINGTON, ONTARIO
09 MAY 2001

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 National
Train No. Q-143-31-09
Mile 47.95, Halton Subdivision
Burlington, Ontario
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Report Number R01T0129

Summary

On 09 May 2001, at approximately 1904 eastern daylight time, Canadian National (CN) freight train Q-143-31-09, travelling westward on the CN Halton Subdivision, contacted and fatally injured an unaccompanied three-year-old child. The child was standing close to the south rail of the north main track, just west of a temporary private crossing in a light industrial area within the city of Burlington, Ontario.

Ce rapport est également disponible en français.

1.0 *Other Factual Information*

1.1 *The Accident*

On 09 May 2001, Canadian National (CN) train Q-143-31-09 (train 143) was travelling westward on the north main track at 51 mph. At approximately 1904 eastern daylight time (EDT),¹ approaching the overhead bridge at Guelph Line Road, the train crew members observed a small child standing on the south main track. The child was unaccompanied and was standing just beyond the overpass approximately three metres west of a temporary private crossing. The crew sounded the locomotive horn as a warning, then applied the train brakes in emergency. Upon hearing the horn, the child appeared to freeze momentarily, cover her ears, and then proceed towards the north track. The child was contacted by the front left side of the lead locomotive and fatally injured. The child had been attending a church service in a building approximately 150 metres north of the track and disappeared a few minutes before.

1.2 *Weather*

At the time of the accident, the weather was reported by Environment Canada as clear, with a visibility of 15 miles, a temperature of 24 degrees Celsius, and wind from the west at 30 km/h.

1.3 *Train Information*

Train 143, en route from the CN Brampton Intermodal Terminal to Chicago, Illinois, consisted of 2 locomotives hauling 60 loaded cars of intermodal freight. The train weighed a total of 3 190 tons and was 4 213 feet long.

1.4 *Personnel Information*

The operating crew of train 143, consisting of a locomotive engineer and a conductor, were qualified for their respective positions. They met company and regulatory fitness and rest standards established to ensure the safe operation of trains.

1.5 *Halton Subdivision*

In the area of Mile 47.95, the site of the accident, the CN Halton Subdivision is double main track and straight. The authorized timetable speed was 50 mph for all trains. Traffic is controlled by the Centralized Traffic Control System authorized by the Canadian Rail Operating Rules (CROR) and supervised by a rail traffic controller in Toronto. Approximately 24 freight trains traversed this location daily.

Examination of the right-of-way between the highway overpasses at Guelph Line Road (Mile 47.95) and the Queen Elizabeth Way (QEW) (Mile 48.66) revealed very little sign of trespassing activity, although prominent foot paths were noted at the south-west and north-east corners of the QEW overpass. Between the overpasses, to the south of the track, there was

¹ All times are EDT (Coordinated Universal Time [UTC] minus four hours) unless otherwise indicated.

vacant land and a storm water drainage/reservoir area. One sign warned of high-speed trains in the area. The north side was occupied by light industrial businesses. Some of these businesses were separated from the railway right-of-way by six-foot chain-link or six-foot watchman fencing. (Watchman fencing has two or three barbed wire strands along the top of the chain-link fence.) Other businesses were separated by broken chain-link fencing or by no fencing at all.

A temporary private crossing had been installed 71 feet west of the Guelph Line Road bridge around 09 April 2001. The 10-foot-wide plank crossing had been installed to facilitate the movement of construction material across the two railway tracks to the vacant land on the south side. The construction activity was related to the widening of the Guelph Line Road overpass. Swing gates had been installed on both sides of the track but did not provide a barrier to pedestrian traffic because there was no adjacent fence. Immediately west of the temporary crossing along the north side of the track, a ditch two feet deep gradually increased to six feet deep 100 feet farther west. Although water was not present, the wet and muddy ditch contained plants with burrs.

Construction activity at the site was scheduled between 0800 and 1800 on weekdays. At other times, the swing gates were closed and locked and no workers or security guards remained on site. While work was going on, the track maintenance foreman overseeing the project had CROR Rule 42 protection, which meant that all trains had to receive clearance from him before entering his work limits. Once trains received that clearance, they would proceed and, when approaching closer to the work limits, sound their horns to alert the workers of their imminent arrival. Outside of these working hours, locomotive horns were not normally sounded at this location.

Although this area was not considered a high-trespass area, track workers had observed people traversing this area with their dogs to access the empty field on the south side. Some children in the church congregation had been there a few days before. Those children attended a nearby church school during normal weekday school hours. Figure 1 shows a view of the area.

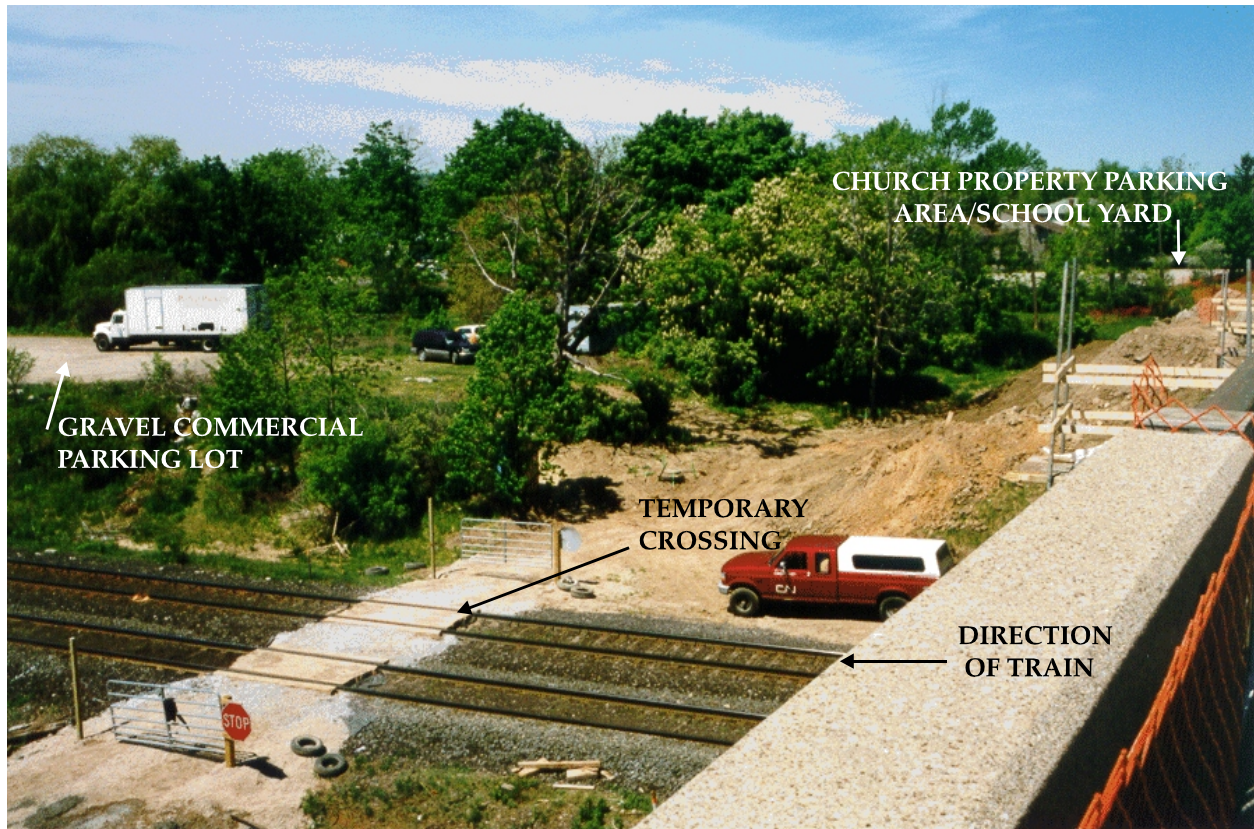


Figure 1 - View of the accident site

To prepare the site for construction activity and to provide access to the tracks, the embankment along the west side of Guelph Line Road had been modified by adding earth fill. The fence at the rear of the church property, parallel to the overpass and north of the tracks, was replaced by a 1.3-metre-high orange plastic snow/security fence that extended alongside the property, southward to within 61 metres of the track. A construction access road ran between this fence and the overpass embankment. The plastic fence was partially pushed down in some areas, including immediately adjacent to the school yard.

The property adjacent to the north side of the CN right-of-way at this location was an approximately 30-metre-wide gravelled parking lot used by patrons of a building to the west. Two pathways led from this parking lot eastward into the ditch between the parking lot and Guelph Line Road along the north side of the railway line. The path led through the ditch, southward towards the track. No barriers or fencing were present at the east end of this parking lot to prevent people from using these pathways to access railway tracks.

To the north of the parking lot was a treed lot, approximately 50 metres across, with dense shrubbery and weeds, then a grassy area measuring about 30 metres. Beyond this location was an industrial/commercial building used as a church and a private school. The only fencing, which small children could easily negotiate, was west of the grassy area.

1.6 *The Church Site*

A church school had been on the site for 14 years; the current school had been operating there since 1997. The congregation had approximately 45 persons. The chapel was accessed through two interior doors, where ushers were normally stationed before the start of services. An evening service took place every Wednesday at 1900, preceded by a short rehearsal. Children of all ages attended the service.

The school, for children of pre-school age to grade 8, operated weekdays from 0900 to 1600. The accident victim was too young to attend the school, but did attend evening church services in the building, including on May 09. Just before the service was about to start (with a time estimated at just before 1900), a person who had realized that the child was causing problems went to the child's father, who was assisting with the set-up for the service, to ask for some help. At approximately 1903, they realized she had left the chapel. The ushers had not noticed her leaving. A search was immediately started inside and outside the building, primarily focusing on the perimeter of the property, the adjacent streets and a nearby commercial establishment. A 911 call was made at 1910.

The body was found at approximately 1916 by a member of the congregation looking down from the Guelph Line Road bridge.

Police arrived on site at 1922.

The church was very concerned about child safety and had instructed all children in the congregation on the dangers of playing around the railway tracks.

1.7 *Recorded Information*

Data extracted from the event recorder of the lead locomotive indicated that train 143 was travelling at 51 mph approaching the accident site, in throttle position No. 1, and that the locomotive horn was sounded just before an emergency train brake application. The train stopped 63 seconds after the brake application, having travelled 0.45 mile. Based on information gathered during the investigation, there was no indication of weeds, burrs, or other plants on the child's clothing that the child might have contacted had she walked through the bush or the ditch.

1.8 *Requirements for Fencing*

1.8.1 *Federal Requirements*

Until 1995, section 217 of the *Railway Act* stated in part:

- (1) The company shall erect and maintain on the railway
 - (a) fences of a minimum height of four feet six inches on each side of the railway;

- (3) Fences, gates and cattle-guards shall be suitable and sufficient to prevent cattle and other animals from getting onto the railway lands.
- (4) The Commission may, on application made to it by the company, relieve the company, temporarily or otherwise, from erecting and maintaining fences, gates and cattle-guards where the railway passes through any locality in which, in the opinion of the Commission, those works and structures are unnecessary.

Section 217 of the *Railway Act* was repealed in October 1995. Railways under federal jurisdiction had agreed to abide by the principles of this statute and any exemptions that had been issued until new legislation became effective. There was no fencing where the child is believed to have entered the right-of-way. No fencing exemption existed for that location.

Over the last decade, Transport Canada (TC) has consulted stakeholders on proposed access control regulations; however, no regulations have been finalized. The latest draft of the regulations includes sections that will require that, for non-farmland adjoining the right-of-way, appropriate access control measures be put in place and maintained along the railway right-of-way where it has been determined that access by pedestrians or vehicles constitutes or is likely to constitute a threat to safe railway operation. Each railway company will also be required to identify those portions of its right-of-way where access by pedestrians or vehicles constitutes or is likely to constitute a threat to safe railway operations. The threat will be assessed based on

- the expected volume, source, and pattern of pedestrian and vehicle traffic near the railway right-of-way;
- the current use of the land adjoining and near the railway right-of-way and its anticipated use for the following five years; and
- the causes of any access problem or anticipated problem.

It is unknown when the regulations will actually come into effect and whether the current draft will change.

1.8.2 Municipal Requirements

The city of Burlington had no bylaws concerning fences for vacant or developed lots on industrial sites. The church property was part of an industrial subdivision approved in 1963. There were no conditions of that approval concerning fencing of the individual lots or lots adjacent to the railway right-of-way.

1.9 Regulatory Initiatives and Overview

TC's Rail Safety Directorate prepared a guideline entitled "Procedures for Prevention of Trespassing" on 07 December 1992. The guideline presents, through a number of preventive measures, a procedure to prevent trespassing before a problem exists and after a problem has been identified through accident history. These measures focus on education, enforcement,

fencing, access, signage, train operations, and urban planning, as well as working with municipalities, land developers, railways, and regulators. This initiative has since been supplemented by a program initiated by TC: Direction 2006.

Direction 2006 is a joint government/industry initiative aimed, among other things, at reducing the number of trespassing accidents on railway rights-of-way. The goal, by the year 2006, is a reduction by more than 50 per cent from 1996 figures. Considerable effort has been made across the country. One of the publications coming out of this ongoing effort is the *Community Trespass Prevention Guide*. This comprehensive guide helps communities determine the nature and extent of trespassing and provides them with remedial measures.

TC's regulatory overview approach is to let the railway companies manage their safety programs, but TC uses a monitoring approach to assess the safety of the system. One part of the monitoring program is to inspect the railway right-of-way to assess the trespassing situation. Trespassing inspections are focused firstly on areas where fatalities have occurred and secondly on areas identified as high-trespass areas where, even if no accidents have occurred, the risk of an accident is considered high. The section of the Halton Subdivision between Guelph Line Road and the QEW was not considered a high-trespass area.

1.10 Accident Records for Trespassers

For definition purposes, trespassers are considered to be those people who enter onto a railway right-of-way (excluding highway crossings) who are not authorized to be there. Between January 1990 and June 2001, TSB records indicate 23 trespassing accidents on railway rights-of-way involving children 10 years of age or younger across Canada. Ten of these children were 5 years of age or younger. Most were accompanied by older children or parents.

Trespasser activity was relatively low along this area of the Halton Subdivision, although there was some indication of older children having been in the Guelph Line Road overpass area, with graffiti having been sprayed on the bridge abutment. Since 1990, adult trespassers had been involved in one serious injury accident and one fatal accident (a suspected suicide).

2.0 Analysis

2.1 Introduction

Train operations leading up to the accident are quite straightforward. Although the train crew members had made an emergency brake application once they identified someone on the track, the train was unable to stop short of the child. The analysis will focus on how the child accessed the track, human factors as they apply to small children, fencing around the accident location, fencing in built-up areas, fencing at construction sites, the school operation, and regulatory overview.

The three-year-old child exited the church unnoticed, most probably just before 1900. She proceeded onto the unfenced railway right-of-way and onto the south track, most probably through the gravelled parking area adjacent to the railway line. She walked towards the north track after the warning whistle was sounded by train 143 and was subsequently struck and fatally injured at approximately 1904, a few minutes after leaving the church.

2.2 *Access to the Track*

There were at least two possible ways for the child to reach the tracks without encountering significant physical barriers: through the parking lot and through the bush. Because there was no fence along the track at that location, she could either have walked around the swing gates onto the crossing or walked down and across the ditch. There was no indication of plants on her clothing; thus, she likely proceeded directly towards the parking lot to the south, then eastward towards the construction area and onto the crossing.

A basic page wire farm fence or a continuation of the construction security fence along the right-of-way adjacent to the swing gates would have posed little difficulty for an older child to pass over or through. However, a three-year-old would likely not have been able to access the track over or through such a fence.

2.3 *Perception and Response to Danger*

The child's reaction to the approaching train could have been from fright or a reaction to a new situation. Most young children do not have the experience or the cognitive development necessary to assess danger in the same way that an older child or an adult would. Furthermore, although a child may respond to a fearful or dangerous situation, their response may not be sufficient to protect them. Common responses to stressful situations are seeking protection from an adult and crying.

Although the child was probably aware of the noise, it is possible that she was too young to understand the warning intent of the train whistle and the impending danger. Instead of moving away, she moved towards the north track on which the train was travelling.

2.4 *Fencing in Built-up Areas and Related Regulatory Requirements*

Fencing in urban areas along railway rights-of-way is determined by the type of development. Fencing can be very mixed in quality, depending on who maintains it. Almost any fencing can be broken by determined juvenile and adult trespassers. For that reason, while a well-maintained page wire fence can deter very young children, it is of limited value for older persons wishing to trespass, although it does define a property boundary.

TC's proposed access control regulations are intended to address the issues of what to install and where, with consultation between the railways, local governments, and adjacent landowners. The draft regulations apply only to property adjoining railway rights-of-way and may not address fencing at temporary crossing locations.

2.5 *Fencing in the Accident Area*

The review of the track in the area indicated that, for the stretch of track between the QEW overpass and the Guelph Line Road overpass, there was little reason for anyone to trespass, since there was nothing significant or attractive to most people. The differences in quality of fencing on the north side were probably a function of the specific security need of the businesses in question. If there was a business need, a high-quality, well-maintained chain-link or watchman fence was installed. Otherwise, there was either a poorly maintained, broken fence or no fence at all.

It is probable that businesses in industrial areas that have a high standard of fencing adjacent to railway rights-of-way typically install that fencing to prevent people from intruding onto their property, rather than to prevent people from entering the railway right-of-way.

2.6 *Fencing at the Construction Site*

The fencing bordering the construction access road clearly defined the western boundary of that temporary access. The fact that it had been pushed down in a few areas indicates its lack of effectiveness in preventing juveniles or adults from crossing it. However, a young child would have had difficulty negotiating it because of its tendency not to tear apart and to spread as it was pushed down.

2.7 *Child Supervision*

In advance of this occurrence, the church school staff had taken precautions to alert the older children to the dangers of the railway right-of-way. However, these warnings would have been ineffective with a small child.

A person who had noticed the child was causing some problems inside the church went to the child's father for help, at which time the child left the church. As an added precaution, the church had ushers at the doors during church services, but they were ineffective in ensuring a small child remained in the church during the service. Once it was known that the child was missing, the almost immediate arrival of the train did not allow enough time to rescue her.

3.0 *Findings*

3.1 *Findings as to Causes and Contributing Factors*

1. Although the train crew made an emergency brake application once they identified someone on the track, the train was unable to stop short of the child.
2. The child was probably aware of the noise, but it is possible that she was too young to understand the warning intent of the train whistle and the impending danger. Instead of moving away, she moved towards the north track on which the train was travelling.

3. The church had ushers at the doors during church services, but they were ineffective in ensuring a small child remained in the church during the service. Once it was known that the child was missing, the almost immediate arrival of the train did not allow enough time to rescue her.

3.2 *Other Findings*

1. A basic railway farm fence between the vacant industrial land and the railway right-of-way would have prevented the young child from accessing the right-of-way. However, this type of fence would have been ineffective in preventing access by older children and adults.
2. The recent commencement of train whistling and the construction activity at and around the work site may have sensitized children at the school to the presence of trains.

4.0 *Safety Action*

4.1 *Action Taken*

TC is continuing to work on regulations to restrict access on railway property. The regulations will include requirements for controlling trespassing and definition of parties responsible for taking action when measures are needed to protect against that. The proposed regulations are expected to be published in 2002.

In the area in which the accident took place, the swing gate has been kept closed outside of working hours and a railway flag person has been present during working hours. Additionally, fencing was extended on both sides of the gate to prevent pedestrians from walking around it to access the right-of-way.

At the beginning of the 2001-2002 school year, an Operation Lifesaver presentation was planned for schools in Burlington to warn children of the dangers of trespassing. Direction 2006's *Community Trespass Prevention Guide* was sent to the city of Burlington for its information and use in addressing issues relating to trespassing on railway property. TC will be following up on the city's implementation of approaches suggested in the guide.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 03 October 2001.