



National Transportation Safety Board
Washington, D.C. 20594

Railroad Accident Brief

Accident No.: DCA-08-FR-004
Location: Providence, Rhode Island
Date: March 13, 2008
Time: 1:11 p.m., eastern daylight time¹
Railroad: Amtrak (National Railroad Passenger Corporation)
Property Damage: None
Fatalities: 1
Injuries: 2
Type of Accident: Employee fatality

The Accident

On March 13, 2008, about 1:11 p.m., eastbound Amtrak Acela train 2154 struck two roadway workers at milepost (MP) 186.1 on track 2 along Amtrak's Northeast Corridor in Providence, Rhode Island. The train was traveling about 50 mph at the time of impact. One worker was killed and the other was seriously injured. A third worker sustained minor injuries moving out of the train's path. The injured were transported to and treated at a local hospital.

The roadway work group involved in the accident consisted of three Amtrak employees and an HNTB² contract inspector. The Amtrak employees included a foreman and two trackmen, who had designated roles as watchman³ and vehicle driver for the day. The foreman, who was in charge of the work group, filled out the proper paperwork establishing the on-track safety protection to be used that day—foul time⁴ with extra flags at hot spots.⁵ Before beginning work, the foreman held a job briefing informing the work group of this information. Throughout the

¹ All times in this brief are eastern daylight time.

² The HNTB Corporation was contracted by Amtrak to inspect and inventory concrete tie conditions within the high-speed territory across the Northeast Corridor.

³ A *watchman* is an employee who has been annually trained and qualified to provide warning to roadway workers of approaching trains or on-track equipment. A watchman's sole duty is to look out for approaching trains/on-track equipment and provide at least 15 seconds advanced warning to employees before arrival of trains/on-track equipment. (*Amtrak Roadway Worker Protection Manual*, revised January 1, 2001, pp. 7-8.)

⁴ *Foul time* is a method of establishing working limits on controlled track in which a roadway worker is notified by the train dispatcher or control operator that no trains will operate within a specific segment of controlled track until the roadway worker reports clear of the track. (*Amtrak Roadway Worker Protection Manual*, p. 5.)

⁵ *Hot spots* are locations on the railroad where additional roadway worker protection is required. These physical locations include a variety of conditions, such as curves with limited visibility, tunnels with limited clearances, and locations with heavy outside noise. (*Amtrak Roadway Worker Protection Manual*, p. 61.)

day, the foreman changed the method of on-track protection from foul time protection to train approach warning⁶ three times. However, he did not hold subsequent job briefings to inform the work group of the changes or the heightened awareness required for train approach warning protection. Therefore, at the time of the accident, the other work group members did not know that they lacked the foul time protection that had been established at the start of the workday, and that as a result they were poorly positioned to safely perform their duties, especially in hot spots.

The accident occurred in a 4° 23' curve under a bridge—a hot spot, visually designated as such by orange decals on catenary poles (see figure 1) between MP 181.1 and MP 187. The HNTB inspector was walking in the gage of track 2 and the foreman was walking behind the inspector outside of the gage, but still on the ties, when Amtrak Acela train 2154 struck the inspector and the foreman. The watchman was on the field side of track 2, on the inside of the curve. During postaccident interviews, the watchman recalled looking up, seeing the Amtrak train right in front of him, and jumping. (See figure 2.) The train stopped 564 feet past the point of impact.

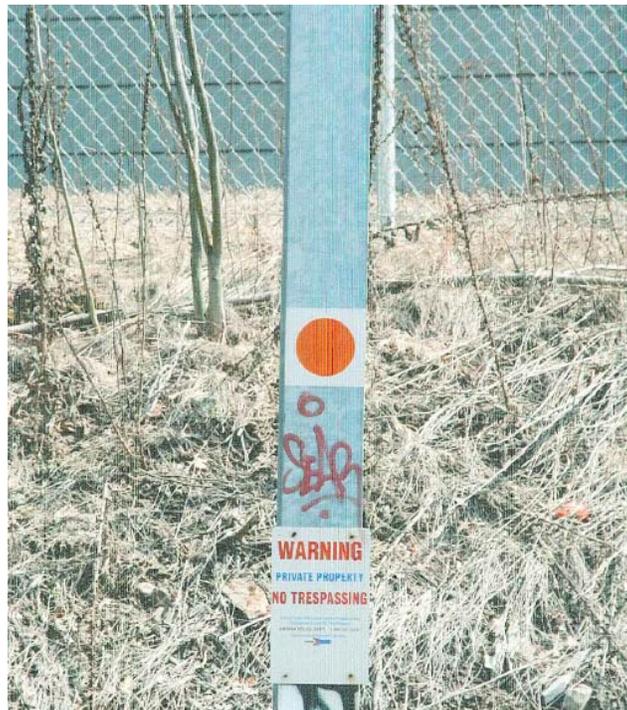


Figure 1. Orange decal posted on a catenary pole indicating a hot spot.

⁶ *Train approach warning* is a method of establishing on-track safety by warning roadway workers of the approach of trains in ample time for them to move to or remain in a place of safety. (*Amtrak Roadway Worker Protection Manual*, p. 7.)

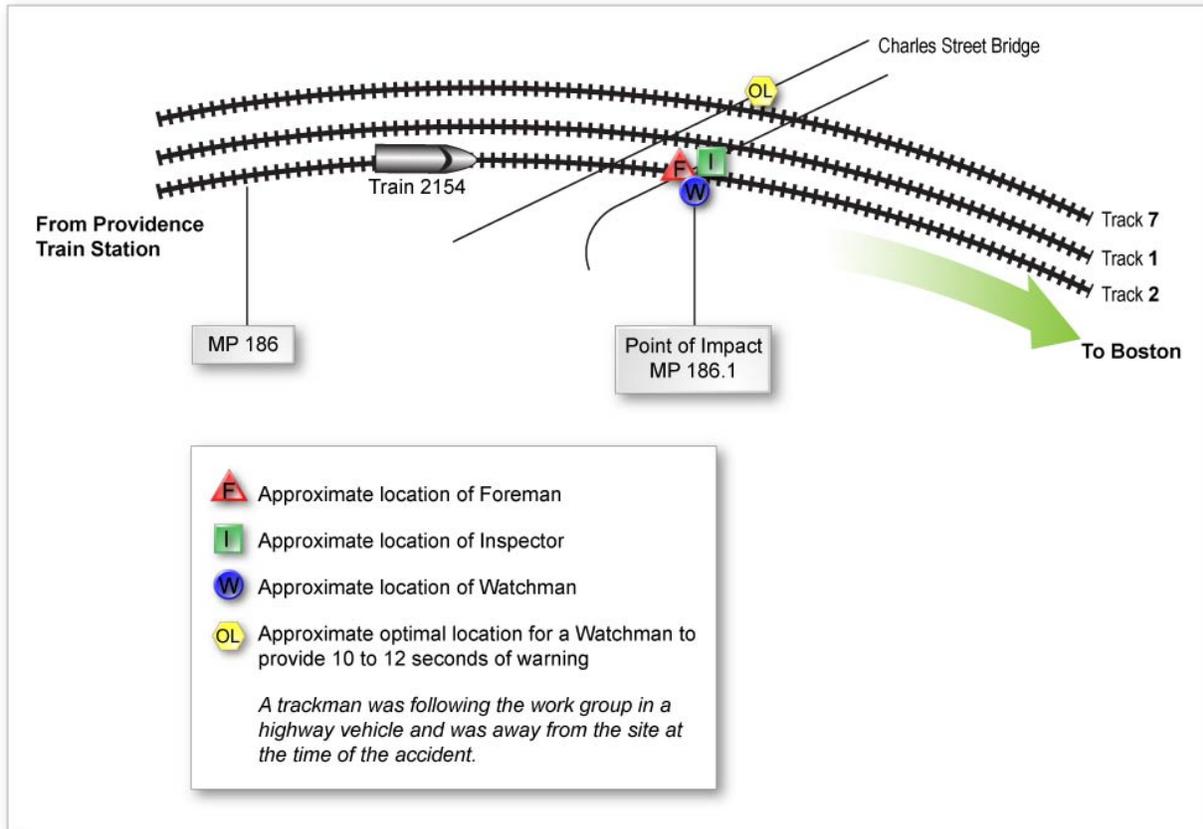


Figure 2. Accident site layout and locations of roadway workers.

Preaccident Events

On the day of the accident, Amtrak Acela train 2154 departed from Penn Station in New York City, New York, shortly after 10:00 a.m. and arrived at Providence train station about 1:05 p.m. It departed Providence train station about 1:09 p.m.; at that time, there were four people in the locomotive cab: the engineer, a Federal Railroad Administration (FRA) deputy regional administrator, an Amtrak assistant superintendent of road operations, and a Massachusetts Bay Commuter Railroad road foreman. The train was traveling between 20 and 25 mph through the first curve out of the station, and its speed increased to about 51 mph at MP 186 as it approached the Charles Street Bridge. (See figure 3.)

As the train neared the bridge, the locomotive occupants of train 2154 saw three individuals wearing hard hats and orange safety vests near a bridge abutment; they were all walking east, away from the approaching train. The occupants stated that one individual was in the gage of the track, another was walking on the ties, and the third was clear of the tracks. They further stated that the third individual had an orange disk tucked under his left arm, and he appeared to be putting on a pair of gloves. According to those in the cab of the locomotive, upon seeing the workers, someone inside the locomotive cab shouted a warning and within seconds the engineer placed the train into emergency braking. The Amtrak assistant superintendent estimated that the train was less than 100 feet from the roadway work group when the train was

put into emergency. About 1:15 p.m., the Amtrak assistant superintendent called out “emergency” three times over the radio. The train was traveling 50 mph when it struck two workers; maximum allowable speed was 60 mph at this location.



Figure 3. Engineer’s view eastbound on track 2, approaching the Charles Street Bridge. Point of impact was located under the bridge.

Investigation

The investigation determined that the wayside signal system and equipment were functioning properly at the time of the accident. Weather conditions did not limit visibility.

The two main tracks, 1 and 2, were owned, inspected, maintained, and operated by Amtrak. Track 7, a siding track, was owned, inspected, maintained, and operated by CSX Transportation, Inc. No track defects were identified after the accident.

The engineer of Acela train 2154 stated that the train had operated normally prior to the accident. Amtrak records indicated that the locomotives and cars had been inspected and tested within the required intervals. An initial terminal air brake test was performed on the train and an inspection of the equipment was completed on the morning of the day of the accident. No exceptions were noted.

The Amtrak engineer and train dispatcher were properly trained to perform their jobs. They were qualified and had been appropriately tested on carrier rules. Both had been rested in accordance with Federal requirements.

The three Amtrak employees in the roadway work group were trained and qualified to perform their duties. They all worked a regular schedule, Monday through Friday, with weekends off and were rested when the accident occurred.

The HNTB contract inspector in the work group had worked for Amtrak for 31 years.⁷ Amtrak records indicated he last attended a roadway worker protection course in March 2006. HNTB records indicated he was scheduled to attend Amtrak contractor training on March 24, 2008. The investigation determined that the inspector was not qualified for roadway worker protection under Amtrak's contractor training requirements on the day of the accident. The inspector worked the same schedule as the other work group members and was rested at the time of the accident.

Amtrak's on-track safety program for roadway workers had been determined by the FRA to be in accordance with the requirements of Title 49 *Code of Federal Regulations* (CFR) Part 214, Subpart C, "Roadway Worker Protection."

The emergency response to the accident site was prompt and appropriate.

Amtrak Foreman's Actions

The Amtrak foreman for the roadway work group on the day of the accident had led the group for 3 days. Every day during the initial job briefing he was required to check the HNTB inspector's qualification card and verify that it was current, but he did not.^{8,9} During the day of the accident, the foreman changed the method of on-track protection that he had established during the initial job briefing from foul time to train approach warning three times. Although he was required to hold additional job briefings informing the work group of each change, he did not. Instead, he allowed the group to work a total of about 1 hour 27 minutes on the track without foul time protection; therefore, the work group intermittently performed its job duties in a less protected manner. The foreman stated that he assumed the other work group members overheard him as he called in the changes to the Amtrak dispatcher over the radio. The surviving work crewmembers said that they did not hear the foreman release the foul time protection, and as a result the work group was performing its duties in a hot spot without proper on-track protection, adequate distribution of pertinent information, or basic safety precautions.

The foreman was aware the group was working in a hot spot, and he released foul time 18 minutes before the accident. He did not hold a job briefing to inform the group that he had released foul time protection or that the work group then had to depend on train approach

⁷ He worked in the Amtrak Engineering Department from June 14, 1976, until June 29, 2007. He was hired by HNTB on March 3, 2008.

⁸ The HNTB contractor had worked with one other Amtrak foreman on the first day of the inspections. The foreman also failed to check whether the contractor had a current qualification card.

⁹ During postaccident interviews, the foreman stated that he was unaware the HNTB inspector was working as a contractor; it was his impression that the inspector was an Amtrak supervisor and that he was running the job.

warning protection. Although the foreman had two trackmen assigned to him the day of the accident, he only used one as a watchman. He instructed the second trackman to remain with the company vehicle, which was located about 1 mile from the group at the time of the accident. Per the foreman's instructions, the watchman at the accident site was working in close proximity to the other group members.

Postaccident sight-distance observations determined that the optimal location for positioning a watchman was on the outside of the curve on the field side of track 7, approximately 53 feet from the center of track 2. (See figure 2.) From the optimal location, a watchman could see about 765 feet looking west and about 862 feet looking east where he would have had between 10 and 12 seconds to provide a warning of an approaching train.¹⁰ The watchman's actual location allowed him about 1 second of time to warn the work group of a train approaching from either direction at 51 mph. Regardless of the type of on-track protection in place when the accident occurred, the watchman was positioned in a spot that afforded him the least amount of visibility of approaching trains in either direction. Although directed to stand close to the work group, the watchman did not recognize that he was poorly positioned to perform his duties and he did not exercise his right to challenge¹¹ the foreman's instructions.

Postaccident Actions

Since the March 13, 2008, accident in Providence, Rhode Island, Amtrak has enhanced the safety of its roadway worker protection program. Annual training now includes situational examples regarding placement of watchmen, hot spots, and the right to challenge the adequacy of on-site safety procedures. During field audits, Amtrak now focuses its attention on reviewing foul time logs and auditing both job briefings and on-track safety briefings. Amtrak has reinforced a requirement to visually inspect roadway worker protection qualification cards during job briefings and on-track safety briefings for its contractors and employees. In addition, three hot spot committees were created with participation of the Brotherhood of Maintenance of Way Employees to develop recommendations for proper on-track protection at known hot spots.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the March 13, 2008, accident involving a roadway work group that was struck by eastbound Amtrak Acela train 2154 in Providence, Rhode Island, was the foreman's failure to communicate critical changes made to on-track safety protection and to utilize all assigned trackmen as watchmen while working in a hot spot. Contributing to the accident was the watchman's failure to recognize that he was poorly positioned to perform his duties.

Adopted: December 15, 2009

¹⁰ Title 49 CFR 214.329 and Amtrak standards require that roadway workers be given warning in sufficient time to enable each roadway worker to move to and occupy a previously arranged place of safety not less than 15 seconds before a train moving at the maximum speed authorized on that track can pass the location of the workers.

¹¹ According to 49 CFR 214.311, the employee has the right to challenge in good faith whether the on-track safety procedures to be applied at the job location comply with the rules of the operating railroad. This is referred to as the *right to refuse*.