Issued: January 26, 2026 Railroad Investigation Report: RIR-26-02

Metropolitan Atlanta Rapid Transit Authority Employee Injury

Atlanta, Georgia
October 19, 2024

Location	Atlanta, Georgia
Date	October 19, 2024
Accident type	Employee injury
Train	Metropolitan Atlanta Rapid Transit Authority train 402 (north) Federal Transit Administration-regulated transit Six-railcar set One operator Unknown number of passengers
Track	Main track with direct train control
Hazardous materials	None
Fatalities	0
Injuries	1
Property Damage	$0

1 Factual Information

On October 19, 2024, about 11:14 a.m., northbound Metropolitan Atlanta Rapid Transit Authority (MARTA) train 402 struck an employee who was part of a team of technicians tasked with performing maintenance work on wayside train approach lights. The approach lights are located about 280 feet north of a tunnel and in between the Arts Center Station and Lindbergh Center Station in Atlanta, Georgia.[1] The employee (technician 1) sustained a below-the-knee amputation as a result of the strike. At the time

[1] (a) Visit ntsb.gov to find additional information in the public docket for this NTSB accident investigation (case number RRD25FR002), including detailed factual reports about the circumstances of the accident. (b) MARTA is under the authority of the Federal Transit Administration. (c) *Train approach lights* may also be referred to as *train alert lights*. (d) Event recorder data indicates that the train was operating at 42 mph at the time of the accident. (e) All times in this report are local.

of the accident, visibility conditions were clear; the temperature was 62˚F with no precipitation.

1.1 Before the Accident

Technician 1 was part of a team of four automatic train control (ATC) technicians who were tasked with repairing wayside train approach lights on the AB bridge at chain marker 191+00 of the east track.[2] (See figure 1.) MARTA has train approach lights installed on its right-of-way in any area where employees who would be working on their tracks do not have a direct line of sight to detect oncoming trains, such as at curves and tunnels. The lights provide an early-warning system for employees working along the right-of-way to alert them to approaching trains. The train approach lights are activated when an approaching train occupies a designated track circuit and they stay on until the train exits that track circuit.[3] However, on the day of the accident, the crew of technicians were to override this early-warning system and purposely cause the lights to flash to determine which bulbs needed to be replaced.

[2] (a) *ATC* is a trackside system working in conjunction with equipment installed on the locomotive that is arranged so that its operation will automatically result in the application of the air brakes to stop or control a train's speed at designated restrictions should the train operator not respond. (b) The train approach lights were about 50 feet apart. (c) *Chain markers* are indicators used by some rail agencies to identify distances. MARTA measures chain markers in feet.

[3] *Track circuits* are an electrical circuit of which the rails of a track form a part.

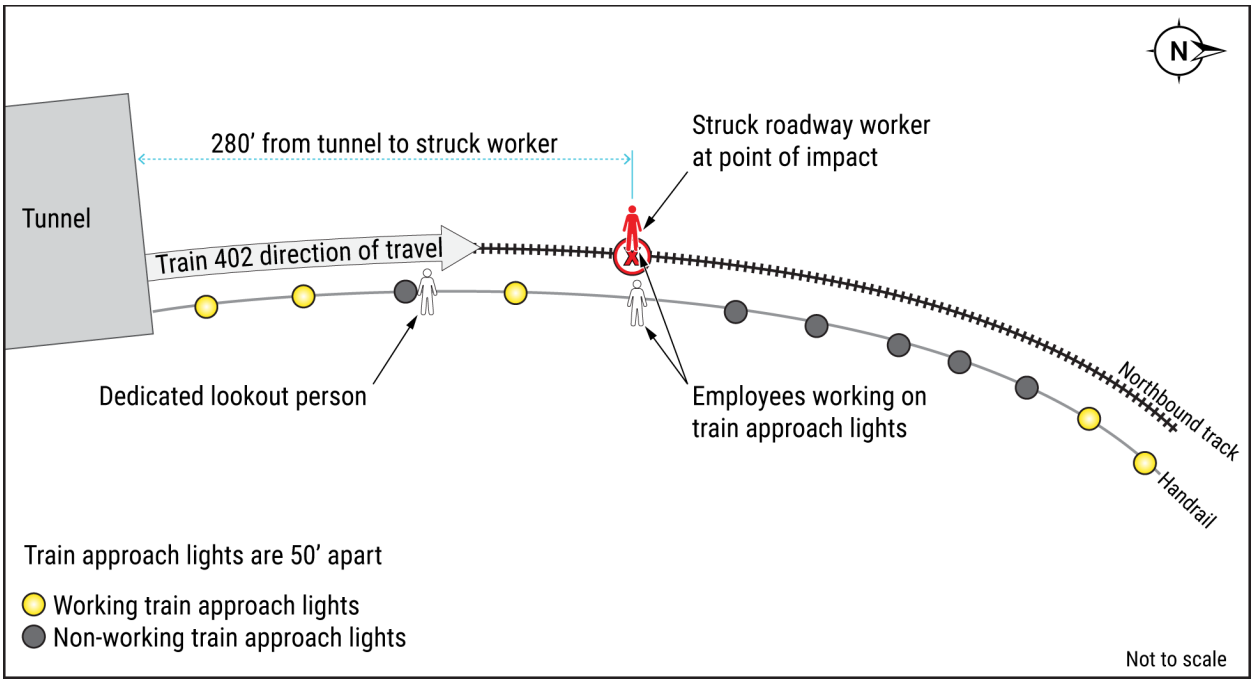

Figure 1. Diagram depicting the accident scene.

On the day of the accident, the technician designated to serve as the maintenance team's dedicated lookout person (technician 2) conducted a job briefing and discussed the track protections to be used to keep the maintenance technicians safe from passing trains.

The technicians were using two forms of protection at the time of the accident, wayside-inspection clearance and a dedicated lookout person:

- **Wayside-inspection clearance.** According to MARTA's wayside access procedures at the time of the accident, wayside-inspection clearance is the process by which a team of authorized personnel may gain access to the track for routine inspection and minor correction work. Wayside-inspection clearance notifies train operators of the presence of maintenance technicians on the right-of-way but does not restrict trains from passing the work crews' location; trains are allowed to enter the work area at maximum authorized speed.[4] Wayside-inspection clearance does not restrict any train movements and the contact rail remains energized, further it did not provide adequate protection due to train movement for employees working on the track.
- **Dedicated lookout person**. This form of protection requires a trained railroad employee to warn the wayside work group of approaching trains. According to

[4] *MARTA OP-SOP-1351*, issued December 11, 2023.

MARTA procedures, the dedicated lookout person is only tasked to watch for trains and should not be performing any other task. Further, MARTA requires the dedicated lookout person to achieve and sustain an ample line of sight of the tracks to identify approaching trains and use a whistle or air horn to alert technicians in the work area of an approaching train.

During the briefing, the tasks of each technician were discussed. Technician 3 was assigned to go to the train control room (TCR), which was located inside the tunnel. While in the TCR, technician 3 was to monitor train movements and provide warning via radio if a train was approaching their work area and to activate the train approach lights, causing them to flash so the nonfunctioning train approach lights could be identified by the other technicians of the work crew and then repaired. These other two technicians (technicians 1 and 4) were assigned to repair the train approach lights outside of the track envelope.[5] Figure 2 is an exemplar train approach light.

[5] The *track envelope* is any space on the track where something occupying the space would be subject to being struck by a passing train. The Federal Railroad Administration specifies that anything within 4 feet of a rail is within the track envelope. However, MARTA is a rail transit agency and is not subject to that guideline. MARTA's wayside procedures require a mainline maintenance restriction be in effect when there is work being performed within the track envelope. A *mainline maintenance restriction* is track protection that prevents a train from traveling on the same track where an employee is working. See *MARTA OP-SOP-1351*, issued December 11, 2023.

Figure 2. Example of a train approach light.

In addition to the track protection noted above, the technicians opted to use an additional method of protection; specifically, that technician 3 would watch for approaching trains on a computer monitor in the TCR and then alert the other technicians via radio when a train was approaching. Shortly after the job briefing, the crew began their work. Technician 3 departed immediately after the job briefing with the assignment to perform a radio check to notify his work team members that he had reached the TCR and had de-energized the train alert relay, which would cause the lights within this array to come on—thus allowing the work team to identify burned-out lights. However, on the day of the accident, technician 3 had not yet reached the TCR to perform his track protection function when the accident occurred. In an interview with National Transportation Safety Board (NTSB) investigators, technician 3 said that he decided to do an intermediate radio check when he was about halfway to the TCR to check radio reception with the other technicians were located outside of the tunnel while he was in the tunnel and. He made three attempts via radio to communicate with the work group from the tunnel, about halfway to the TCR, but did not get a reply until the third radio check, at 11:11 a.m.

1.2 The Accident

About the same time of the third radio check, the approach lights flashed outside the tunnel. In an interview with NTSB investigators, technician 2 said that he saw the approach lights begin to flash and since he had heard a radio transmission from technician 3, he assumed technician 3 had de-energized the relay at the TCR to cause the lights to flash. Technician 2 (dedicated lookout person), who was the technician closest to the tunnel, began unscrewing the third train approach light bulb about 150 feet from the tunnel, which was not part of his assigned tasks as the dedicated lookout. At the same time, technicians 1 and 4 were preparing to repair nonfunctional lights 100 feet farther north from the tunnel.[6] Technician 2 saw the train exiting the tunnel. He called out "train, train" and moved against a nearby fence to avoid getting struck. Later, in an interview with NTSB investigators, technician 4 said that he did not hear the train, nor did he hear technician 2's verbal warning; however, he did spot the train and also moved to a nearby fence in time to avoid the passing train. At 11:14 a.m., on the day of the accident, MARTA train 402, traveling northbound, struck technician 1, who was in the track envelope about 280 feet past the tunnel exit, about 3.8 seconds after leaving the tunnel.[7] The NTSB was unable to determine if technician 1 was standing still within the track envelope or if he was moving through from one location to another. Figure 3 shows the tunnel from the location where technician 1 was struck.

[6] As noted in figure 1, approach lights are spaced 50 feet apart.

[7] The train operator told NTSB investigators in an interview that she did not see the technicians until the train rounded the curve at the tunnel exit.

Figure 3. View of the tunnel from the location of the accident.

1.3 Postaccident Actions

In response to this accident, MARTA surveyed their system to identify locations where the sight distance is limited due to curves, tunnels, or other obstructions, and where maintenance teams would be at a similar risk as the technicians involved in this accident (blind zones). MARTA identified 32 locations on its system as blind zones and established requirements for work crews operating in those areas. MARTA revised its wayside access procedures to include a mandate that ATC protection be used by crews in blind zones so that trains can be stopped or their speed limited by work crews before entering the work area.[8] Before this accident, MARTA had no formal requirements for working in blind zones.

To further mitigate the risk for technicians working on the tracks, MARTA revised its wayside access procedures to limit its use to only wayside inspections (removing the

[8] *MARTA OP-SOP-1351*, issued May 7, 2025.

option of technicians executing small maintenance tasks while in the track envelope). MARTA also established two new types of safety clearances[9]:

- **Wayside urgent repair clearance** reroutes trains from the areas in which technicians are working only in emergencies.
- **Minor maintenance repair clearance** also restricts rail traffic and is a controlled-clearance process by which a team of technicians may gain access to the right-of-way for planned maintenance repair work. This safety clearance will be used in circumstances similar to those of this accident. If the work area is in a blind zone, ATC is required. ATC as it relates to the maintenance clearance allows MARTA maintenance workers to either restrict the speed of the trains or stop the train before it enters the work zone. The controller, who is a technician assigned to the train crew who could control train movements, would communicate with the employee in charge of the work group, and together they would determine what is needed before the train enters the block.

Additionally, MARTA formalized guidelines requiring speed restrictions when technicians are working on tracks based on the sight distance.[10] This requires a speed restriction of 25 mph when the minimum sight distance is 750 feet and 15 mph when the minimum sight distance is 450 feet. If the minimum sight distance cannot be established because of curves or other obstructions, train approach restrictions will no longer be allowed to be used.

2 Analysis

A technician working on a crew to replace burned-out train approach lights was struck by a MARTA train that had just exited a tunnel. The accident occurred despite the track protections that were in place.

[9] A *safety clearance* is the safe distance workers must maintain from moving trains or equipment to ensure that they have adequate time to reach a designated safe location.

[10] All flagpersons must establish a minimum sight distance of 750 feet for a 25 mph speed restriction and 450 feet for a 15 mph speed restriction, which equals the sight distance needed to provide the 20 seconds required for the crew to move to their place of safety (5 seconds to move + 15 seconds in the clear before arrival of the train = 20 seconds total). If the sight distance cannot be established because of curves, grades, etc., the train approach restriction will not be used (Section 2.3.3, Table 8). e. The means used by a flagperson to communicate a train approach warning shall be distinctive and clearly signify to all recipients that a train or other on-track equipment is approaching. Whistles or air horns are acceptable means of communication; however, the appropriate method will be determined by the flagperson. f. Every work team member shall maintain a position that will always enable him/her to receive a warning of an approaching train by the flagperson, or the train approach restriction will not be used.

At the time of the accident, the dedicated lookout person, whose primary role was to protect the on-site technicians, was working to unscrew an approach light and failed to devote his full attention to the detection of trains approaching the work area. Furthermore, he did not stand at the most advantageous location to watch for approaching trains and alert the technicians. His position limited his line of sight of trains exiting the tunnel and his ability to see other train approach lights.

Technician 3 unwittingly introduced confusion because technician 2 received a radio check from him earlier than expected, rather than when he reached the TCR. When technician 2 received the radio check earlier than expected, he perceived it as confirmation that the repair work of the lights could begin. Consequently, when technician 2 saw the train approach lights flash, he incorrectly assumed that technician 3 had activated them in support of the maintenance work, when the flashing lights actually indicated an approaching train.

The work being performed on the day of the accident was planned to be performed along the track right-of-way but outside of the track envelope. However, video footage from the train showed that the injured employee was positioned between the tracks. Members of the work group who were interviewed by NTSB investigators could not explain why the injured employee may have gone to that location, particularly since that action was prohibited under MARTA's standard operating procedures.

2.1 Track Protections

The accident occurred within a right-hand curve 280 feet north of a tunnel. The NTSB determined it would take about 3.8 seconds for a train to travel from the tunnel exit to where the technician was struck. Neither Federal Transit Administration regulations nor MARTA procedures required a minimum sight distance to use a dedicated lookout person as the primary method of protecting workers from being struck by passing trains and equipment. Rather, MARTA relied on the judgement of the dedicated lookout person to determine if there was enough time to alert the work group of an approaching train. The 3.8 seconds of travel time of the train from the tunnel exit to the point where the technician was struck were not enough time for the dedicated lookout person to recognize the danger, initiate a response, and have the technicians clear the track.

In comparison, railroads that are under the authority of the Federal Railroad Administration are required to have a specific amount of sight distance to use a dedicated lookout person as protection for roadway workers. The sight distance requires that the dedicated lookout person be able to alert a work group and allow them to clear the track to a designated place of safety 15 seconds before the arrival of a train, which would equate to a distance of 1,100 feet for a train traveling 50 mph. In this accident, the

sight distance was 280 feet, well below 1,100 feet, and was insufficient to allow a dedicated lookout person to alert a work group in time. Therefore, the wayside inspection clearance method of on-track protection was inadequate for the location. Since this accident, MARTA has revised its procedures and now requires that technicians be able to clear to a designated place of safety 20 seconds before a train's arrival if a designated lookout person is used.

3 Probable Cause

The probable cause of the employee injury was that the procedures for track protection afforded by the Metropolitan Atlanta Rapid Transit Authority at the time of the accident were insufficient for the location and type of work being performed and did not provide adequate warning time for the technicians to move to a place of safety before the train's arrival. Contributing to this accident was the designated lookout person performing tasks not consistent with his duties, thereby failing to detect the oncoming train.

4 Lessons Learned

This accident occurred in a location where the dedicated lookout person's line of sight was limited due to the work location's proximity to a tunnel and the curve of the track. As a result of this accident, MARTA identified areas where lines of sight are hampered, including the accident location. Furthermore, MARTA revised its processes and procedures to add redundant safety measures, particularly in "blind zones," to allow technicians to have sufficient time to move to a place of safety. To prevent a similar occurrence, transit agencies and their employees need to evaluate the on-track protections they currently have in place and ensure they align with the tasks that are to be performed. If they do not align properly, the transit agency and employees need to choose a more restrictive form of on-track protection to provide a safe work area for their employees. This may require that the transit agency work with its employees to adapt a current track protection to make it safer or design a new form of on-track protection.

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For more detailed background information on this report, visit the NTSB Case Analysis and Reporting Online (CAROL) website and search for NTSB accident ID RRD25FR002. Recent publications are available in their entirety on the NTSB website. Other information about available publications also may be obtained from the website or by contacting –

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