



National Transportation Safety Board

Washington, DC 20594

Highway Accident Brief

Fatal Pedestrian Collision with Transit Bus New York City, New York, October 21, 2016

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| Accident Number: | HWY17SH006 |
| Accident Type: | Fatal pedestrian collision with transit bus |
| Location: | Water/State Street and Whitehall Street, New York City, New York |
| Date and Time: | October 21, 2016, about 5:30 p.m. eastern daylight time |
| Vehicle: | 2006 Motor Coach Industries bus |
| Driver: | 63-year-old male |
| Pedestrian: | 58-year-old female |
| Fatalities: | 1 |

Crash Description

About 5:30 p.m. on Friday, October 21, 2016, a 2006 Motor Coach Industries transit bus operated by the New York City Metropolitan Transportation Authority (MTA) was traveling southwest on Water Street in Lower Manhattan, New York City. The bus, driven by a 63-year-old male, entered the intersection with Whitehall Street on a green traffic signal. (Water Street becomes State Street at this intersection.) The bus did not clear the intersection before the signal turned red. Instead, it stopped behind a line of vehicles waiting for the light to change one block west (at State Street and Peter Minuit Plaza). The bus blocked part of the crosswalk on Water/State Street.

A 58-year-old female pedestrian was waiting with a group of pedestrians on the southwest corner of the intersection. When the traffic light turned green on Whitehall Street, the pedestrian entered the marked crosswalk on the west side of the intersection, walking north. She was talking on her cell phone and walking slower than the rest of the group. The other pedestrians passed in front of the stopped bus and safely reached the sidewalk on the north side of Water/State Street. But as the pedestrian walked in front of the bus, the traffic signal one block west turned green, and the southwestbound vehicles on Water/State Street began to move, including the bus. (The light at Whitehall Street was still red, and the pedestrian was still crossing Water/State Street on a WALK signal.) The bus struck the pedestrian with the right side of its front bumper (figure 1). The impact knocked the pedestrian to the ground, and the bus ran over her. As the bus continued west, it dragged the pedestrian underneath.

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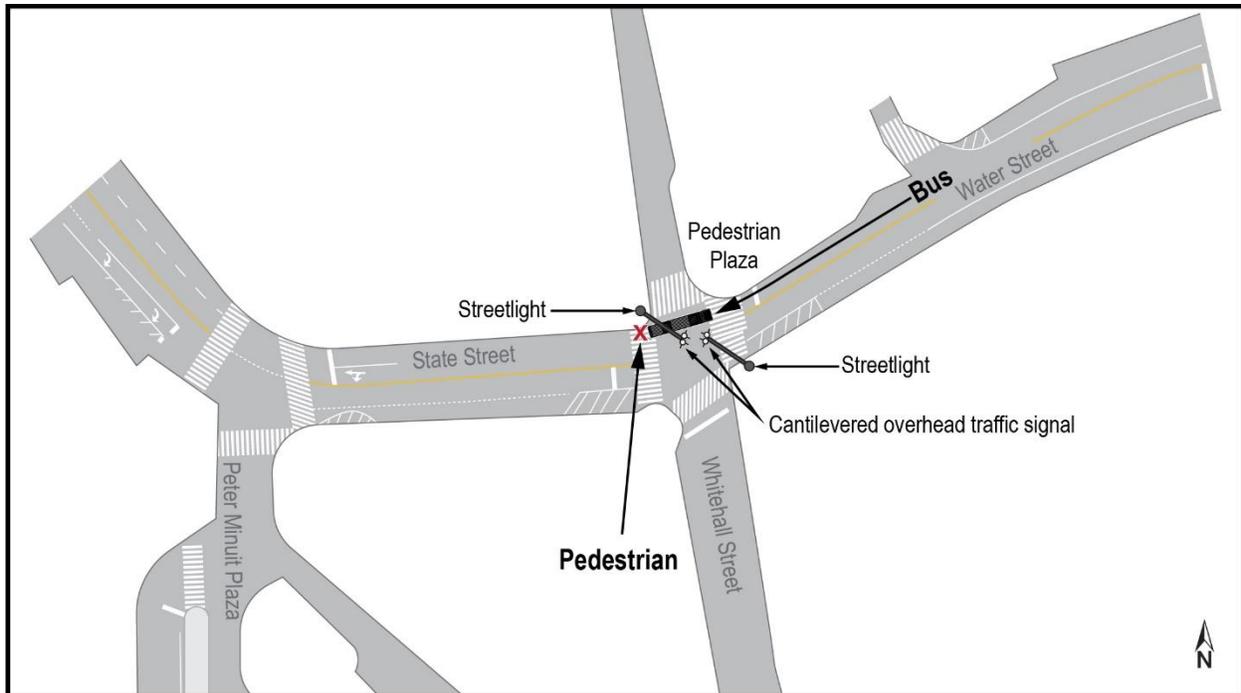


Figure 1. Diagram of crash scene showing crosswalk where transit bus struck pedestrian when it began moving west on Water/State Street.

The pedestrian, who was entangled in the bus's third axle, was dragged about half a mile before the bus stopped at the intersection of Trinity Place and Edgar Street. Witnesses at the intersection saw the pedestrian underneath the bus and alerted the driver and law enforcement officers. Members of the New York City Fire Department removed her body from under the bus and transferred it to the office of the New York City medical examiner for an autopsy.

The temperature at the time of the crash was 66.9°F, winds were calm, and skies were cloudy. It was daylight, but within a half hour of sunset (which occurred at 6:06 p.m.).¹

Crash Location

The intersection of Water/State Street and Whitehall Street is an urban, heavily trafficked roadway in Manhattan's Financial District (figure 2). The area contains high-rise office buildings, public attractions and museums, local businesses, and the transportation terminal of the Staten Island Ferry. Thousands of pedestrians use the area daily (figure 3 illustrates the busy crash intersection). The posted speed limit in the area is 25 mph.

¹ Weather data from <https://www.wunderground.com/history/>.

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Figure 2. Aerial view of intersection of Water/State Street and Whitehall Street in Lower Manhattan. (Base photo from New York state global information system)



Figure 3. Intersection in Lower Manhattan where crash occurred. Pedestrians are standing at crosswalk on southwest corner of intersection. Taxi is turning left from Whitehall Street into Water Street where it becomes State Street.

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Pedestrian

The pedestrian lived on the Upper West Side of Manhattan. A security camera on the southeast corner of the Staten Island Ferry building captured images of her as she crossed Water/State Street before the collision.

According to the autopsy report of the New York City Office of Chief Medical Examiner, the pedestrian was 4 feet 10 inches tall and weighed 94 pounds.² The collision caused massive injuries to the pedestrian's head, torso, and upper and lower extremities. The medical examiner listed the cause of death as multiple blunt force trauma. Postcrash toxicological tests of the pedestrian by the medical examiner's office were negative for alcohol and other drugs.

Driver

The MTA hired the bus driver in 1977. He had a New York class B commercial driver's license with a passenger endorsement and had complied with the requirements of Article 19-A of the New York state vehicle and traffic laws.³ The Federal Motor Carrier Safety Administration exempts MTA transit drivers from its medical certificate requirement; however, drivers are required to undergo an annual physical examination for the New York City transit system. The driver underwent his last annual physical on September 6, 2016, and was deemed medically qualified to operate a transit bus. His eyesight was within normal range, and he did not require corrective lenses to operate a bus. The record of the driver's 2016 annual physical lists several prescription medications, but the driver did not report any medical conditions on the health history checklist he filled out as part of the examination. During a previous physical examination in 2014, the driver noted the same prescription medications and reported only that he suffered from high blood pressure.

The driver's last biannual behind-the-wheel road test was on October 2, 2015. During the MTA's annual review of employment, the driver failed to list an accident he had in the previous 12 months while driving his personal vehicle. The review was completed on October 7, 2016, and signed by an MTA representative. According to records of the MTA and the New York City Department of Motor Vehicles, since April 2014, the driver was involved in five transit bus crashes before the fatal crash. The driver was at fault in at least two of those crashes. The MTA deemed two other collisions unpreventable, and findings on the last crash had not been determined at the time of the fatal crash. During the same period, citizens filed four reckless driving complaints against the driver, and he was cited twice for speeding while driving an MTA bus. The driver also underwent three mandated observations by MTA supervisors because of his driving record.

² Pedestrian characteristics, such as height and weight, were documented to aid crash reconstruction and evaluate pedestrian injuries.

³ Under Article 19-A, employers of bus drivers must obtain from applicants a current physical exam, an employment background check, and a current abstract of their driving record.

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A postcrash toxicological test of the driver was negative for drugs. By MTA regulation, the driver was not required to undergo alcohol testing because 8 hours had elapsed between the crash and the toxicological test.⁴

Vehicle

The striking vehicle was a 2006 Motor Coach Industries model DL4500 transit bus that could hold a maximum of 61 passengers (an exemplar vehicle is shown in figure 4). It had undergone a scheduled comprehensive inspection 3 weeks earlier, on October 3. According to MTA records, all repairs were completed, and the bus returned to service on October 13.



Figure 4. Exemplar transit bus of same make and model as one that fatally struck pedestrian. (Source: MTA)

A postcrash inspection found no mechanical defects in the bus. The Technical Services Division of the MTA, in the presence of an investigator from the New York Public Transportation Safety Board, tested the bus's service brake. The brake functioned within the guidelines of both the manufacturer and the MTA. A National Transportation Safety Board investigator boarded the crash bus in the MTA shop and confirmed that, because the seat is designed so the driver sits up

⁴ The driver was in emotional distress after the crash and was taken to a hospital. The hospital did not take toxicological samples. The driver was released from the hospital beyond the 8-hour limit for alcohol testing but within the 32-hour limit for drug testing. Thus, the drug test was the only test administered.

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and forward, the driver could have seen the pedestrian in front of the bus if he had scanned the crosswalk before accelerating.

Witnesses

According to interviews conducted by members of the New York Police Department and MTA investigators, none of the passengers on the bus at the time of the collision saw the pedestrian crossing in front of the bus. They became aware of her when the bus stopped for a traffic light and witnesses on the street alerted the bus driver and police officers to the body under the vehicle.

Roadway Design and Environmental Factors

Water/State Street is a four-lane roadway that runs northeast to southwest. It has two lanes in each direction, divided by a double yellow line. Whitehall Street is a one-way roadway that runs south to north. It has a designated parking lane on each side, one through lane down the center, and a left-turn lane at Water/State Street. The intersection is signal-controlled and contains large, well-marked crosswalks.

The area contains no obstructions to visibility during the day. In the vicinity of the crash intersection are the Staten Island Ferry terminal and Battery Park, major tourist attractions that have a high volume of both pedestrian and bicycle traffic.

Monday through Friday between 4:00 and 7:00 p.m., pedestrians walking north across Water/State Street are given a 7-second pedestrian WALK signal, followed by 12 seconds of flashing DON'T WALK. Five seconds of DON'T WALK follows, with a corresponding all-red phase for vehicular traffic. This sequence gives pedestrians a total of 24 seconds to cross the 46 feet of roadway. Under the city's Bureau of Traffic Operations light timing sequence plan, a pedestrian is assumed to have an average walking speed of 3.5 feet per second.

A traffic safety survey by the New York City Department of Transportation found that between 2011 and 2015, three pedestrian collisions occurred at the crash intersection. Only one involved a pedestrian walking in a crosswalk on a green signal. None of the collisions were fatal.

Metropolitan Transportation Authority

The MTA employs over 12,700 transit bus operators and has at least 5,600 buses on the road at any time. The MTA conducts an intensive 6-week training program for all potential bus drivers at its training center in the borough of the Bronx. The course offers classroom instruction, hands-on exercises, the use of simulators, and over-the-road training. The crash driver had completed the course. The MTA periodically tests its drivers' knowledge of company policy and New York state regulations and also provides them with regularly updated operational bulletins.

Members of the MTA training division respond to each crash and gather information to incorporate into the company's training curriculum. In an internal analysis of crashes involving its personnel, the MTA found that operators with 3 to 5 years of service were more likely to be involved in crashes than other drivers. That finding led to the institution of TOPS (Transitional

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Operators Program), which brings at-risk drivers (3- to 5-year veterans) back to the training center for retraining. The MTA mandates that all operators participate in yearly training that includes fatal accident studies and Vision Zero initiatives.⁵

MTA staff have also initiated a “ghost rider” program in which members of the training division and other staff take random bus rides to identify unsafe drivers, unsafe practices, and system deficiencies. Between November 2014 and the date of the fatal crash, MTA staff had taken over 16,000 random rides. The driver in the crash had been subjected to random rides, but all of them were before November 2014. The MTA also initiated a tracking program that alerts MTA divisions each time an operator and a transit bus are involved in a reportable event.

At the time of the subject crash, the MTA had been involved in 62 fatal pedestrian crashes since 2004. In 2015, it was involved in eight fatal pedestrian crashes. In 2016, the company had five fatal pedestrian crashes before the subject crash.

Vehicle-Based Safety Countermeasures

The bus involved in the collision was not equipped with an S-1 Gard system, a danger-zone deflector that can be installed under a bus, immediately in front of the rear wheels, to deflect a fallen body away from them. The system can thus reduce the severity of injuries to a pedestrian who falls under a bus and could be run over by the wheels. The MTA had examined the S-1 Gard system as a possible countermeasure to fatal pedestrian crashes and decided that the best way to improve pedestrian safety was to prevent buses from running over pedestrians in the first place.

To that end, the MTA is installing and testing two types of pedestrian safety systems on its buses. The first is the Clever Devices company’s TurnWarning™ pedestrian warning system. The system has a built-in turn recognition component that senses a turn and, based on a preprogrammed turning angle, audibly warns pedestrians that a bus is turning. A system log maintains data showing the date, time, and locations at which announcements are made.

The second system, developed by Rosco/Mobileye, alerts a bus driver to the presence of pedestrians or bicyclists. Sensors scan the area around a bus and identify potential hazards. The system produces audible and visible warning signals to the driver. MTA plans to expand the system to include an automatic deceleration/collision detection system. The system will automatically slow a bus and apply low-pressure braking, helping operators avoid collisions or reduce their severity. The system will also warn of unintentional lane departures and imminent forward collisions.

Applicable Traffic Laws

Under Article 27, section 1150 of the New York state vehicle and traffic laws, pedestrians are subject to traffic-control signals. Article 24, section 1112 gives pedestrians the right-of-way when facing “a steady WALK signal or walking person”:

⁵ Vision Zero is a nationwide movement to eliminate all traffic fatalities and severe injuries.

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(a) Pedestrians facing such signal may proceed across the roadway in the direction of the signal and shall be given the right of way by other traffic.

Drivers are required by Article 26, section 1146 of the New York state vehicle and traffic law to exercise “due care”:

(a) Notwithstanding the provisions of any other law to the contrary, every driver of a vehicle shall exercise due care to avoid colliding with any bicyclist, pedestrian or domestic animal upon any roadway and shall give warning by sounding the horn when necessary.

Subdivisions 1146(b) and 1146(c) of Article 26 lay out fines and other punishments, including imprisonment, for injuring a pedestrian or bicyclist while failing to exercise due care under 1146(a).

New York City administrative code 19-190 (the “Right of Way Law”) states that it is unlawful (a misdemeanor) for a driver to kill or seriously injure a pedestrian or cyclist resulting from the driver’s failure to yield right-of-way or the driver’s failure to exercise due care (as required by Article 26, section 1146, of the state laws).⁶

Probable Cause

The National Transportation Safety Board determines that the probable cause of the crash in New York City, New York, was the failure of the bus driver to check for pedestrians in the crosswalk immediately in front of the bus before he accelerated from a stopped position.

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

ROBERT L. SUMWALT, III
Chairman

EARL F. WEENER
Member

T. BELLA DINH-ZARR
Member

Adopted: July 31, 2018

Board Member Statement

Member Earl F. Weener filed the following concurring statement on July 18, 2018.

I agree with the probable cause determination of this investigation. A pedestrian walking within a crosswalk as directed by a signal must be given right-of-way. However, I note that the fatally injured pedestrian was using a mobile phone while crossing the street. This is a potentially

⁶ The Right of Way Law was enacted in August 2014 as part of the mayor’s Vision Zero initiative.

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dangerous practice. The National Safety Council, citing a 2011 study of over 1,000 people hurt while texting and walking, recommends that pedestrians not “cross or walk in the street while using an electronic device.” Some jurisdictions, including New York State, have recognized this dangerous practice and are considering legal measures to prevent it. In 2017, Honolulu passed a law prohibiting pedestrians from crossing a street while viewing a cell phone. Citing a recent study showing unprecedented increases in multi-media messaging and data usage, a 2017 Governor’s Highway Safety Report looking at pedestrian fatalities opines that cell phone usage may be a factor in increasing pedestrian fatalities because both drivers *and* pedestrians are using devices which may distract them. In short, I think it is worth considering that the pedestrian who fell behind the group crossing safely ahead was using a cell phone. As states and local jurisdictions consider comprehensive measures to safeguard pedestrians, the safe use of cellular devices by pedestrians may be a factor to consider.

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For more details about this accident, visit the [NTSB public docket](#) and search for NTSB accident ID HWY17SH006. The accident dockets include such information as police reports, photographs, driver and witness statements, data on previous crashes, highway engineering reports, and timing of traffic signals.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties . . . and are not conducted for the purpose of determining the rights or liabilities of any person.” 49 *Code of Federal Regulations*, Section 831.4. Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report. 49 *United States Code*, Section 1154(b).
