



November 22, 2023

HIR-23-10

Grade Crossing Collision Between Commuter Train and Box Truck

Clarendon Hills, Illinois
May 11, 2022

On May 11, 2022, at 8:16 a.m. central daylight time, an eastbound Metra commuter train struck a 2004 International box truck that was blocking a highway-railroad grade crossing at Prospect Avenue in Clarendon Hills, DuPage County, Illinois.¹ The box truck had stalled as it was traversing the crossing, and while stopped, the grade crossing warning lights and gates activated for the oncoming commuter train (figure 1). The three truck occupants exited the vehicle before the train struck the left front of the truck. The collision and secondary impact resulted in exterior and interior damage to the lead cab car. The train did not derail. The box truck sustained heavy collision damage and was then engulfed in a postcrash fire. As a result of the collision, one train passenger was fatally injured; four train occupants sustained minor injuries, and the occupants of the box truck were not injured.

¹ (a) In this report, all times are central daylight time. (b) Visit [ntsb.gov](https://www.ntsb.gov) to find additional information in the [public docket](#) for this NTSB investigation (case no. HWY22MH009). Use the [CAROL Query](#) to search safety recommendations and investigations.

NOTE: This report was reissued on January 22, 2024, with a correction on page 7 related to the train's stopping location.



Figure 1. Synchronized images from the north-facing security camera at the Prospect Avenue grade crossing (Source: Village of Clarendon Hills, redacted by NTSB), and the forward camera from the eastbound commuter train on track #3 (Inset, Source: METRA, annotation by NTSB). At the time of these images, the box truck was stopped on the tracks with the occupants still inside the truck. The active crossing warning system was activated, and the gate arm struck the top of the box truck. As shown in the inset, traffic in front of the box truck was clear of the tracks.

Location	Prospect Avenue grade crossing, Clarendon Hills, Illinois (figure 2)
Date	May 11, 2022
Time	8:16 a.m. central daylight time
Involved vehicles	2
Involved people	8 (occupants in the lead cab car of the commuter train and the box truck)
Injuries	1 fatal (train passenger), 4 minor (2 train passengers, 2 train crew), 3 uninjured (truck driver and 2 passengers)
Weather	Dry, clear, and daylight
Railway information	Grade crossing over three railway tracks
Roadway information	Two northbound lanes (one through lane and one left-turn lane) and one southbound lane



Figure 2. Map showing the crash location in Clarendon Hills, Illinois. (Source: HERE, Esri)

1. Factual Information

1.1 Background

1.1.1 Roadway Configuration

At the grade crossing, Prospect Avenue consisted of one northbound dedicated left-turn lane, one northbound through lane, and one southbound travel lane. The grade crossing consisted of three BNSF Railway (BNSF) tracks and the three lanes of Prospect Avenue (Figure 3). The roadway grade leading up to the south end of the grade crossing was approximately a 6% upward grade.



Figure 3. Overhead view of the Prospect Avenue grade crossing with side streets and track numbers annotated. (Source: Google Maps [image from 2023], annotations by NTSB)

At the time of the crash, Village of Clarendon Hills streetscape and paving improvements were underway in the vicinity of the grade crossing. The project was approximately 95% complete. Items remaining to be completed included final paving, pavement markings, and manhole frame adjustments.² As shown in figure 4, at the south end of the grade crossing there was a 6% upward grade leading to a 1.5-2-inch vertical

² All streetscape paving and improvements were completed on June 26, 2022.

drop-off between the track envelope and the road surface.³ A temporary tapered joint was in the design plans but had not been installed at the time of the collision. However, the vertical drop-off was within recommended highway design guidance for road construction.⁴

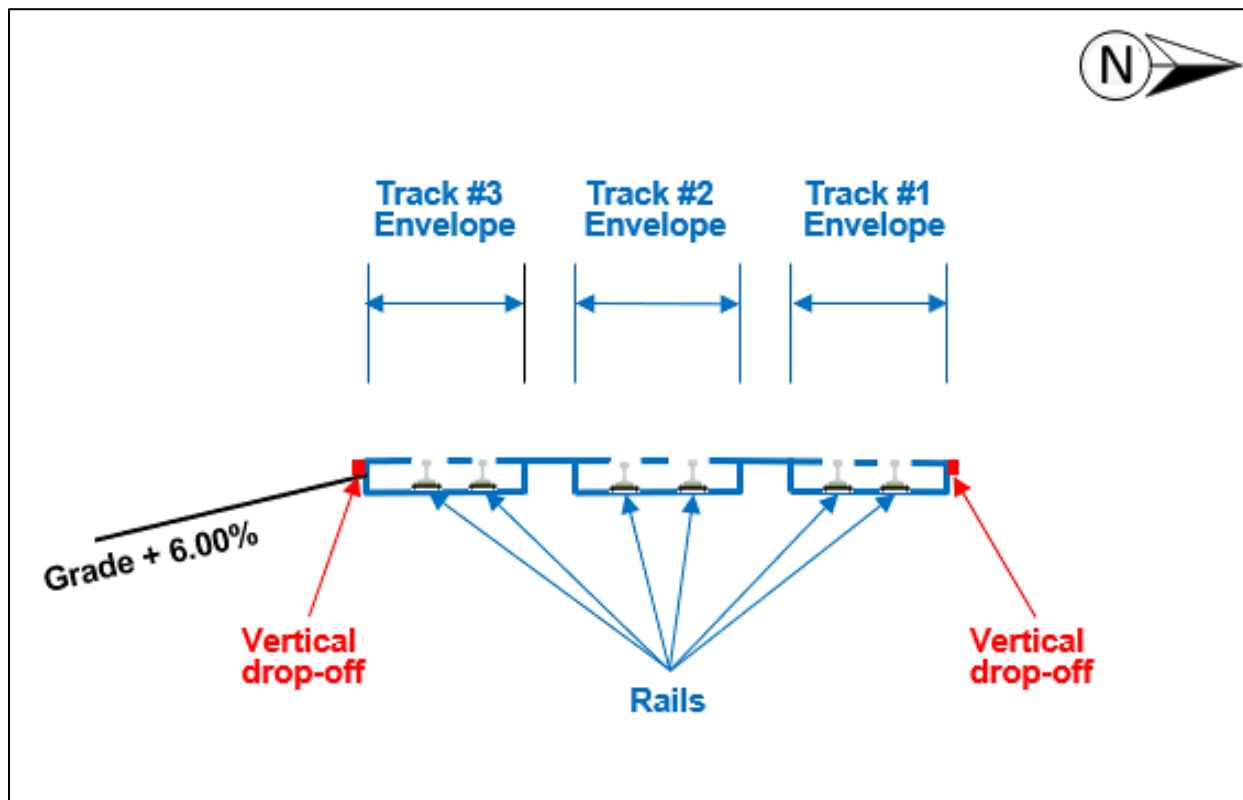


Figure 4. Diagram of the grade crossing with the location of vertical drop-offs on each side of the track envelope annotated along with the grade increase on the south side of the crossing. Track envelope and rail locations are also noted.

1.1.2 Traffic Control Devices

The highway-railroad grade crossing was equipped with an active grade crossing warning system that was operational at the time of the crash. The warning system consisted of nine 12-inch flashing light-emitting diode (LED) light units, four warning bells, and two fiberglass gate arms mounted on two signal masts and arranged to provide warning for all directions of highway traffic. Each gate arm was equipped with

³ The term *vertical drop-off* is used regardless of the direction of travel.

⁴ The vertical drop-off at the south and north ends of the grade crossing were within the tolerance of the Illinois Department of Transportation (IDOT) standard. All vertical drop-offs at the south and north ends of the grade crossing were less than the 2-inch IDOT standard. See *Standard Specifications for Road and Bridge Construction*, IDOT, adopted April 1, 2016, page 584.

three 4-inch LED lights and extended across incoming lanes of Prospect Avenue to the centerline of the travel lane for each direction of traffic. Two of the nine pairs of 12-inch flashing LED light units were mounted on a cantilever located over the northbound lanes in advance of the crossing. A pair of 12-inch flashing LED sidelights were also mounted on the upright portion of the cantilever aimed toward the west approach of Railroad Avenue. Railroad Avenue parallels the tracks just south of the crossing and extends to the west from Prospect Avenue. The warning system also consisted of four fiberglass pedestrian gate arms mounted on four signal masts arranged to provide warning for all directions of pedestrian traffic. The gate arms extended across each incoming sidewalk of Prospect Avenue for each direction of pedestrian traffic. The grade crossing warning system operated on commercial electric power and was equipped with a standby battery backup system.

1.2 Event Sequence

The truck driver's trip originated at about 7:00 a.m. at Del's Moving Inc., located in LaGrange, Illinois. The truck was to travel to Tuttle Lane in Clarendon Hills, load household goods, and then transport them to Hinsdale, Illinois. The planned trip was approximately 15 miles and was classified as an intrastate move.

The precrash and crash events were captured by the event data recorder onboard the commuter train and by a building security camera facing the grade crossing. The event sequence timestamps with seconds annotated are reported from the NTSB's review of both the train's data recorder (video and vehicle data) and the security camera video provided by the Village of Clarendon Hills. Both video recordings were recorded in central daylight time. Timestamps from the security camera video were synchronized with timestamps from the onboard video and are not correlated with police reports or other sources.

Prior to the crash, the box truck was facing northbound at the intersection of Ann Street and Prospect Avenue. The box truck was in the third position in a traffic queue at the crossing. The warning signals at the crossing were activated and the gate arms were extended across the travel lanes while a westbound train was passing through the intersection on track #1. At 8:14:54.34 a.m., the westbound train had cleared the crossing, at 8:15:00.20 the gate arms rose, and at 8:15:08.16 traffic began to cross the tracks through the grade crossing. At 8:15:20.80, the box truck slowly entered the crossing. Other northbound traffic was clear of the crossing at this time. At 8:15:22.47, the box truck shook slightly as the front axle traveled up the vertical drop-off between the road surface and track envelope at the grade crossing. At 8:15:24.50, the box truck lurched forward and its forward motion ceased. The brake lights on the box truck were not illuminated. The stopped box truck was then blocking the southernmost track (track #3). As a queue of traffic formed behind the truck, a black sedan stopped

immediately behind the box truck. The box truck then rolled back slightly, and the truck brake lights came on. In interviews with the NTSB, the truck driver and one of the passengers reported that when the driver tried turning the key to restart the truck, the ignition did not engage, and no noise was heard from the engine.

At 8:15:35.90, with the box truck still blocking the southernmost track, the grade crossing warning lights and gate arms activated for the oncoming eastbound commuter train on track #3. At 8:15:48.07, the black sedan immediately behind the box truck in the traffic queue began a series of escape maneuvers to leave the area. The truck was in view of the commuter train at 8:15:53, and the train was traveling at 69.8 mph.⁵ As the crossing gate arms lowered, the northbound gate arm lowered onto the cargo box portion of the truck. At 8:15:55, the engineer on the commuter train sounded the horn as the train approached the stopped truck and the train began braking. Full-service braking was applied at 08:16:03.3 and emergency braking began at 8:16:04. The three truck occupants exited the truck cab before the train arrived at the grade crossing. The engineer reported that he exited the train cab and entered the passenger car, where he warned the conductor that the train was about to strike the truck. The commuter train then struck the left front of the truck at 8:16:11 at a speed of 55 mph.

When the commuter train struck the box truck, the truck was pushed against the crossing arm supports, which broke away from the concrete support pedestals on the ground. The truck then rotated clockwise and struck the right side of the train's lead cab car, below the windows. The train did not derail and came to a full stop at 8:16:38, about 1,106 feet east of the crash location. As shown in figure 5, the secondary impact resulted in exterior gouging of the cab car, with intrusion damage to the lower-level seating compartment of the two-level commuter train passenger car, as well as window damage on the upper level.

⁵ The track speed limit was 70 mph.



Figure 5. Exterior damage to the lower-level seating area of the right side of the commuter train's lead cab car. The upper level also sustained window damage.

The truck came to rest in a parking area near the grade crossing and was then engulfed in a postcrash fire. The fire consumed the electrical system of the truck, including the engine control module (ECM). Figure 6 shows the box truck at final rest.



Figure 6. View, facing to the northeast, of the box truck at final rest.

At 8:17 a.m., the first emergency response units were observed arriving on scene near the intersection of South Prospect Avenue and Ann Street. Fire units were dispatched at 8:18 a.m. and the first fire truck was observed in security camera footage arriving at 8:20 a.m. One train passenger seated adjacent to the sidewall where the rear of the box truck struck the train car was fatally injured. This passenger was seated in the lead cab car on the lower level near the sidewall where the truck impacted the cab car. Physical evidence indicated that the truck impact on the cab car sidewall subsequently projected this passenger across the train car and the passenger was then ejected through a train window on the opposite side from the truck impact, coming to rest on the ground on the north side of the train car. Two other train passengers located on the upper level of the cab car and two crew members sustained minor injuries. The truck driver and two truck passengers were not injured.

1.3 Additional Information

1.3.1 Commuter Train and Crew

The commuter train consisted of six passenger cars (including the cab car) and a locomotive. At the time of the crash, the train was being operated in a push-pull configuration with the engineer operating the train from the lead cab car and the locomotive (unoccupied) in the rear of the train. The lead cab car was a gallery type bi-level passenger car with an overall length of 85 feet, a width of 9.75 feet, a height of

10.83 feet, and a nominal weight of 121,000 pounds. The cab car was introduced into service in 1997, prior to regulations outlined in 49 *Code of Federal Regulations (CFR)* 238, Passenger Equipment Safety Standards.⁶

The crew of the commuter train consisted of four BNSF employees: a locomotive engineer, a conductor, a middle brakeman, and a rear brakeman.⁷ All crew members held current certifications for their respective roles, which also include hearing and vision evaluations. None of the crew members had any operating rules-related disciplinary actions in the last 5 years. No members of the train crew were using their cell phone at the time of the crash. Postcrash toxicology testing of the train crew was not conducted by BNSF and was not required by the Federal Railroad Administration.⁸

1.3.2 Box Truck

The box truck was a 26-foot 2004 International model 4400. The vehicle had a gross vehicle weight rating (GVWR) of 33,000 pounds and was equipped with air brakes and a manual transmission. Vehicles with a GVWR above 26,000 pounds require a Class B commercial driver's license (CDL) to be legally operated on public roadways.

1.3.2.1 Damage

The truck sustained significant damage from the crash and the resulting fire. All combustible material from the front bumper to the rear of the cab was consumed by the fire, including the vehicle batteries, wiring, and electrical system. Therefore, investigators were unable to evaluate the electrical system for shorts, blown fuses, or tripped circuit breakers. The ECM was also consumed by fire, and it was not possible to recover its data.

1.3.2.2 Manual Transmission Operation

The truck was equipped with a 6-speed manual transmission. When operating a manual transmission, the clutch pedal is used to engage or disengage the clutch assembly. When the clutch pedal is depressed, the clutch assembly is disengaged, allowing the driver to change gears in the transmission. When the clutch pedal is released, the clutch assembly re-engages with the engine to allow power to be provided

⁶ The cab car was designed to meet an earlier standard. Title 49 *CFR* 238 is applicable to passenger equipment ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002. Therefore, the cab car in question was not required to meet this regulation.

⁷ The middle and rear brakemen were not in the lead cab car at the time of the crash.

⁸ See 49 *CFR* Part 219(c).

to the drive axle via the propeller shaft. If the vehicle is on an incline and the clutch pedal is depressed, the vehicle will roll down the incline if the driver does not also press the brake pedal or apply the parking brake.

To start a vehicle with a manual transmission from a stop, the vehicle must be placed in the correct gear, which is typically first gear. To begin motion, the driver must apply throttle while releasing the clutch pedal while in the proper gear; this combination of throttle and clutch application is referred to as power management. The amount of power needed will increase if the vehicle is traversing an upward grade or traveling slowly up and over a vertical drop-off. If the clutch pedal is released too quickly or if insufficient throttle is applied as the clutch is released, the engine may stall. To restart a stalled engine, the clutch pedal must be fully depressed to activate the vehicle's ignition.⁹ Once the vehicle has begun moving from a stopped position and gained enough speed, the driver depresses the clutch pedal, selects the next gear via the gear shifter located in the cab, and then slowly releases the clutch pedal while applying the throttle. This action is repeated until the driver reaches the desired speed.

1.3.3 Driver Information

The truck driver was a 54-year-old male with an Illinois Class C noncommercial driver's license. The license was issued on November 15, 2017, with an expiration date after the crash date. The driver's Illinois driving history showed no traffic violations or license suspensions.¹⁰ The driver stated that he learned to drive a truck in 1985 while serving in the military in his home country of Yugoslavia, but no records were available of the training program. The driver had been working at the carrier since 2017 and driving continuously for them since 2018. The crash location was about 2 miles from the carrier's base location, and the driver stated that he had traversed the Prospect Avenue grade crossing previously. He said that when he started traversing the grade crossing on the day of the collision, the engine cut off and he was unable to restart the truck.

The driver stated in an interview with the NTSB that he had never held a CDL. The driver's most recent medical certificate had expired on November 21, 2019. The driver had undergone a medical exam to renew his medical certification on July 23, 2020. During this exam, the driver reported a new history of coronary artery stenting for a heart attack in 2019. The examiner marked the certification determination as pending and requested additional documentation, but the truck driver did not follow up. The carrier

⁹ When the clutch pedal is fully depressed, a safety switch allows power to flow to the vehicle ignition.

¹⁰ The driver stated that he had received a speeding citation about 10 years prior to the crash, which was not within the 5-year window to remain on a driving record in Illinois. An insurance industry database indicated that the driver had been involved in a crash on March 19, 1997; due to record retention limits the crash report was unavailable.

did not have a program in place to subject the driver to postcrash testing for alcohol or other drugs as required by federal regulations.

1.3.4 Motor Carrier Information

The box truck was owned and operated by the carrier, Del's Moving Incorporated. Per the Federal Motor Carrier Safety Administration (FMCSA) Motor Carrier Management Information System, the carrier was issued US Department of Transportation number 3085466 and Motor Carrier (MC) number 70025. The state of Illinois issued the carrier Illinois MC number 64735. The carrier was registered as an interstate for-hire carrier of general freight, domiciled in LaGrange, Illinois. Per the carrier's latest MCS-150, the carrier had two trucks and employed two drivers.¹¹

The carrier did not have a written hiring policy and used a third-party vendor for background checks focused on criminal history. The carrier did not use a dedicated service for background checks. If an applicant passed the background check, the carrier would submit the driver's information to the insurance company to determine if the driver was insurable. If the applicant was insurable, the carrier president would accompany the driver on a 10- to-15-minute test drive "around the neighborhood" to evaluate performance.

The carrier did not have any written safety policies for safe operation of vehicles, seat belt use, cell phone use, or other policies relevant to transportation-related businesses. The carrier's president stated that he verbally explained that seat belts were mandatory and cell phone use was prohibited when driving.¹² The carrier did not have a training program or otherwise document personnel records, including medical certification or CDL requirements as required by FMCSA regulation.¹³ In addition to the CDL-required box truck, the carrier had multiple vehicles above 10,000 pounds GVWR but below 26,000 pounds GVWR, which required a valid medical certificate to operate.¹⁴ The carrier did not have a controlled substance and alcohol policy or testing program as required by FMCSA regulation.¹⁵ The carrier did not properly maintain records for

¹¹ (a) To register with the FMCSA, a carrier completes a motor carrier identification form (MCS-150); (b) During interviews with investigators, the carrier's president and treasurer stated they had nine trucks and one cargo van and employed nine drivers.

¹² Title 49 *CFR* 392.16(a) requires seat belts for all commercial vehicle drivers; 49 *CFR* 392.82 prohibits hand-held mobile telephone use for commercial vehicle drivers.

¹³ See 49 *CFR* 383, Commercial Driver's License Standards.

¹⁴ See 49 *CFR* 391.45(a), Persons who must be medically examined and certified.

¹⁵ See 49 *CFR* 382, Controlled Substances and Alcohol Use and Testing.

vehicle maintenance, as required by FMCSA regulation, and requested maintenance records were unavailable to the NTSB.¹⁶

The carrier operated under short-haul operational provisions that allowed the driver to operate within 150 air-miles of the place of business and did not require him to maintain a paper or electronic log of hours of service.¹⁷ In the event of a trip leaving the state of Illinois, the carrier would require the driver to keep a paper logbook.

1.3.4.1 Postcrash Compliance Review

The FMCSA initiated a comprehensive postcrash compliance review of the carrier on May 12, 2022, which was completed on June 3, 2022. The FMCSA noted the following violations:

- Failing to implement an alcohol and/or controlled substance testing program (49 *CFR* §392.115[a]) (Not the crash driver)
- Allowing a driver to operate a CMV without a CDL (49 *CFR* §383.37[a]) (The crash driver)
- Using a driver not medically certified (49 *CFR* §391.45[a]) (The crash driver and others)
- Failing to maintain driver qualifications file on each driver (49 *CFR* §391.15[a]) (The crash driver and others)
- Failing to keep minimum records of inspection and vehicle maintenance (49 *CFR* §396.3[b]) (Not the crash vehicle)
- Using a commercial vehicle not periodically inspected (49 *CFR* §396.17[a]) (Not the crash vehicle)
- Operating a motor vehicle not in accordance with the law (49 *CFR* §392.2) (Not the crash driver)
- Permitting a short-haul property-carrying commercial motor vehicle driver to drive after having been on duty 16 consecutive hours (49 *CFR* §395.1[o]) (The crash driver, not on the crash trip)

¹⁶ See 49 *CFR* 396.3(b), Inspection, repair, and maintenance.

¹⁷ Short-haul operators are those that operate within a 150 air-mile radius of the normal work reporting location, and the driver does not exceed a maximum duty period of 14 hours.

The result of the FMCSA review was a proposed Unsatisfactory rating for the carrier.¹⁸ Additional information about the carrier's response to this rating is included in the postcrash actions, section 1.3.5.2.

1.3.4.2 Roadside Inspections

Roadside inspections are the regular and often random inspections of commercial vehicles and their drivers. The purpose of these inspections is to ensure drivers and vehicles are following the Federal Motor Carrier Safety Regulations, hazardous materials regulations, and state and local laws. The level of inspection can vary depending on the training or certification level of the inspector. Once completed, the inspection results are sent to the FMCSA and are used in determining a carrier's safety fitness as described in 49 *CFR* 385.7.

The Commercial Vehicle Safety Alliance (CVSA) provides guidance and standards to ensure that roadside inspections are performed uniformly throughout North America.¹⁹ CVSA has established eight levels of inspection and formalized procedures and steps to accomplish a complete and thorough inspection. CVSA uses out-of-service criteria to identify critical violations. Out-of-service violations put the driver, vehicle, and/or cargo out of service until the condition(s) or defect(s) can be corrected or fixed.

According to roadside inspections uploaded to the FMCSA's systems, the carrier had four roadside inspections since June 12, 2020, prior to the crash:

- On June 12, 2020, one of the carrier's trucks was stopped and a Level 3 inspection was conducted by the Illinois State Police (ISP). This inspection resulted in violations of no inspection sticker and a defective light.
- On March 31, 2021, the Michigan State Police stopped the crash driver operating another vehicle and conducted a Level 2 inspection resulting in the vehicle being placed out of service. The violations discovered included the driver having an expired medical certificate and the vehicle having an

¹⁸ Safety rating or rating means a rating of "Satisfactory," "Conditional," or "Unsatisfactory" using the factors prescribed in 49 *CFR* 385.7 as computed under the Safety Fitness Methodology. Safety Ratings: (1) Satisfactory means a motor carrier has in place functioning safety management controls to meet the safety fitness standards prescribed in 49 *CFR* 385.5. (2) Conditional means a motor carrier does not have adequate safety management controls in place to ensure compliance with the safety fitness standards that could result in occurrences listed in §385.5 (a) through (k). (3) Unsatisfactory means a motor carrier does not have adequate safety management controls in place to ensure compliance with the safety fitness standards, which has resulted in occurrences listed in §385.5 (a) through (k). (4) Unrated means that the FMCSA has not assigned a safety rating to the motor carrier.

¹⁹ CVSA is a nonprofit association comprising local, state, provincial, and federal commercial vehicle safety professionals and industry safety representatives for the United States, Mexico, and Canada.

inoperative horn, inoperative windshield wipers, six inoperative lamps, and both tail lamps being out.

- On February 24, 2022, the ISP stopped the crash-involved box truck operated by a different driver. The subsequent Level 2 inspection resulted in the vehicle having violations of no inspection, two lamps being inoperative, and not having warning triangles on board as required.
- On May 10, 2022, the day before the crash, the crash-involved driver and crash-involved box truck were stopped and a Level 3 inspection was conducted by an ISP new trooper and training officer. The driver was found to have an expired medical certificate. This was the second time the driver had been identified with this violation (the first was on March 31, 2021, as detailed above). The inspection noted that the vehicle had a GVWR of 33,000 pounds. As such, the vehicle required a driver with at least a Class B CDL. This violation was not noted on the inspection form. ISP should have placed the driver out of service for having an improper license to drive the vehicle. Additional information on changes to inspection procedures is discussed in section 1.3.5.3 and section 1.3.5.4.

1.3.5 Postcrash Actions

1.3.5.1 Village of Clarendon Hills

On May 13, 2022, the Village of Clarendon Hills performed temporary repairs to the vertical drop-off at the grade crossing until the remainder of the streetscape repairs could be completed. Figure 7 shows an image of the drop-off before the crash (left) and a tapered joint installed along the south end of the grade crossing (right). The streetscape and paving improvements were completed on June 26, 2022, and provided a new asphalt surface flush with the grade crossing surface at the south and north ends.



Figure 7. Image of the drop-off at the south end of the grade crossing before the crash with tape measure (left; source: Illinois Commerce Commission) and a temporary tapered joint installed on May 13, 2022 (right).

1.3.5.2 Motor Carrier

The carrier, Del's Moving Incorporated, paid a \$10,000 fine and submitted a corrective action plan (CAP) to the FMCSA to address its Unsatisfactory rating. In addition, the carrier implemented a drug and alcohol policy. The box truck was the carrier's only vehicle above 26,000 pounds GVWR and it was destroyed in the crash, and the carrier no longer has any vehicles exceeding this weight. The carrier compiled a complete driver profile for all drivers under its employment, including medical certifications for all drivers. The carrier implemented a plan for minimum records of inspection and vehicle maintenance for all vehicles. After evaluation of the CAP submitted by the carrier, the FMCSA changed the proposed safety rating from Unsatisfactory to Satisfactory.²⁰

²⁰ The carrier received a Satisfactory rating instead of Conditional because of an existing Satisfactory rating in a 2020 compliance review.

1.3.5.3 Commercial Vehicle Safety Alliance

Investigators also reviewed the policies and procedures of the CVSA and discovered a gap in the inspection procedures sequence that is provided to assist roadside inspectors. NTSB investigators suggested the CVSA amend the inspection procedures to ensure that roadside inspectors were properly comparing vehicle GVWRs with the driver's license to ensure compliance with regulations. On September 21, 2022, the CVSA voted to confirm the suggested changes to the inspection procedures. The amended procedures now require the inspector to verify the GVWR and compare it to the license to determine if the driver has the proper license class.

1.3.5.4 State of Illinois

NTSB investigators spoke with the ISP Commercial Vehicle management about the deficiencies in the roadside inspection found in this investigation. ISP had conducted an internal investigation resulting in disciplinary action for both the new trooper and his training officer for failing to place the driver as out of service for having the improper license for the vehicle. After the crash, the ISP reiterated their department-wide directive for proper inspection procedures and utilization of the CVSA inspection procedures.²¹ The ISP reiteration was accompanied by an awareness campaign of the facts and deficiencies from the inspection in this case.

2. Analysis

Weather and visibility were not factors in this crash. The truck driver was not using his cell phone during the crash. The truck driver was not medically certified to drive the truck after failing to provide information about his heart condition; however, it is unlikely that this condition contributed to the crash. Although postcrash toxicology testing was not conducted, there was no indication of impairment of the box truck driver reported by law enforcement on scene. The vertical drop-off at the grade crossing was within IDOT guidance; still, the Village of Clarendon Hills added a temporary repair after the crash. Evidence at the crash scene showed out-of-service violations for the box truck but these violations were not causal to this crash.

Traffic control devices at the grade crossing, including the active grade crossing warning system, were working properly and were not factors in the crash. The operation of the train and the actions of the train crew were not contributing or causal factors in the

²¹ See Motor Carrier Attachment - ILLINOIS STATE POLICE DIRECTIVE ENF-036, in the public docket for this collision ([Search Docket - Docket Management System \(ntsb.gov\)](#)).

crash. The emergency response from the train crew and other agencies was timely and adequate.

Window retention was not a factor in the fatal injury sustained by one commuter train passenger. The evidence indicates that the fatal injury was sustained by the impact force of the rear of the box truck with the cab car sidewall near the passenger's seating location, and not as a result of the ejection itself. The impact forces from the box truck likely exceeded the cab car side wall strength requirement in 49 *CFR* 238. The NTSB has previously recommended that the Federal Railroad Administration develop side-impact crashworthiness standards for passenger railcars and then update federal regulations to reflect these new standards. Safety Recommendations [R-12-39](#) and [-40](#) are currently classified Open–Acceptable Response.

2.1.1 Driver Licensing

At the time of the crash, the truck driver held an Illinois Class C noncommercial driver's license but was required to have a Class B CDL due to the GVWR of the box truck. Therefore, the driver did not have the proper license to operate the truck. At a roadside inspection the day before the crash, the driver should have been placed out of service until he had the proper license class to operate the truck. ISP has since updated its policies to address this issue. As noted in the postcrash actions section of this report, the CVSA has also updated its inspection checklist to require that inspectors verify the GVWR of the inspected vehicle and compare it to the driver's license to confirm that the driver has the proper license for the vehicle.

2.1.2 Driver Performance

With respect to the driver's reported experience driving trucks, and with the crash truck, investigators found no documented formal training. The carrier offered no documented training for this type of truck, nor was there a performance monitoring program in place. Any deficiencies in operation were therefore not discovered and could not be addressed. Given the security camera video that captured the entire crash sequence, investigators were able to observe what appears to be a failure of the driver to maintain adequate power management to navigate the grade crossing.

The approach to the rail-grade crossing was on an incline and required the driver to increase throttle to maintain power to the engine. Instead, as the truck reached the grade crossing, the driver slowed by pressing on the brake, as shown by the illuminated brake lights in the security video. Therefore, as the truck was entering the crossing and traversed the drop-off, the truck was moving slowly and was underpowered to traverse the grade crossing. When the truck reached the vertical drop-off, the engine was likely overcome by the increased power required to traverse the incline and subsequently

stalled due to the driver's improper power management. According to the driver and one of his passengers, the driver was unable to restart the box truck, and traffic immediately behind the truck prevented him from rolling off the grade crossing.²² Once the engine stalled, 14 seconds elapsed before the crossing lights began to flash and the crossing gates lowered. As such, there was very limited time to try to restart the truck or diagnose the reason it would not restart. As the train approached and the driver was unable to restart the truck, the driver and passengers exited the box truck before the collision.

2.1.3 Motor Carrier Factors

At the time of the crash, the carrier lacked safety policies and procedures—including adequate maintenance records—to ensure safe operation of its vehicles. The crash damage to the box truck, including the fire damage to the electrical system, destroyed the ECM. As such, the investigation was unable to conclude whether a mechanical issue was the reason the truck could not be restarted or if the driver made an error when trying to restart the truck.

The carrier also lacked a driver qualification file for each driver, leading to the situation in which the crash-involved driver lacked medical certification and was improperly licensed. The FMCSA compliance review conducted after the crash resulted in an Unsatisfactory rating, which was upgraded to Satisfactory after the carrier implemented policies for maintenance records, driver qualification, and drug and alcohol screenings via their CAP that addressed safety concerns from the compliance review.

3. Conclusions

3.1 Probable Cause

The National Transportation Safety Board determines that the probable cause of the Clarendon Hills, Illinois, collision was the improperly licensed truck driver's failure to manage the box truck's power, causing the box truck to stall on the railroad, and his subsequent inability to restart the engine, causing the vehicle to block the path of the commuter train. Contributing to the collision were the motor carrier's inadequate safety policies.

²² The car immediately behind the box truck did not move from behind the truck until after the warning lights at the crossing began flashing, just before the gate arms came down on the truck.

3.2 Lessons Learned

Roadside inspection of commercial vehicles is an important method of ensuring that motor carriers are operating safely and in accordance with required regulation. The Commercial Vehicle Safety Alliance (CVSA) plays a critical role in providing guidance to law enforcement agencies performing these roadside inspections across North America. This investigation uncovered a deficiency in the commercial vehicle inspection procedures used by the CVSA. As a result of the investigation, CVSA updated its inspection procedures to require confirmation that a driver's commercial driver's license matches the gross vehicle weight rating of the vehicle being driven. The Illinois State Police will follow the updated CVSA guidance and have emphasized to their workforce the importance of verifying that commercial drivers have the proper class of license for the vehicle they are driving. These changes improve safety for road users in the state of Illinois and across North America.

NTSB investigators worked with the **Federal Motor Carrier Safety Administration (FMCSA)**; the **Federal Railroad Administration (FRA)**; the **Sheet Metal, Air, Rail and Transportation (SMART) Workers**; the **Brotherhood of Railroad Signalmen (BRS)**; the **Brotherhood of Locomotive Engineers and Trainmen (BLET)**; **BNSF Railway**; the **Illinois Commerce Commission (ICC)**; **Metra**; **Metra Police Department**; and the **Village of Clarendon Hills** throughout this investigation.

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable cause of the accidents and events we investigate and issue safety recommendations aimed at preventing future occurrences. We also conduct safety research studies and offer information and other assistance to family members and survivors for any accident investigated by the agency. Additionally, we serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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For more detailed background information on this report, visit the NTSB investigations website and search for NTSB accident ID HWY22MH009. 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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