Inv-2355

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

CHICAGO, MILWAUKEE, ST.PAUL & PACIFIC RAILROAD

ASTICO, WIS.

MAY 26, 1939

INVESTIGATION NO. 2355

SUMMARY

Inv-2355

Railroad:	Chicago, Milwaukee, St. Paul & Pacific
Date:	May 26, 1939
Location:	Astico, Wis.
Kind of accident:	Collision at highway grade crossing
Equipment involved:	Passenger train : Power road-grader
Train number:	Second 6
Engine number:	104
Consist:	5 cars
Speed:	90 m.p.h. : 2 p.m.h.
Operation:	Timetable, train orders, and automatic block-signal system; crossing protected by wig-wag signal and bell
Track:	Double; 1°37' right curve 1,140 feet to crossing and 2,030 feet beyond; grade 0.4 percent descending eastward
Highway:	Tangent: crosses tracks diagonally; level
Weather:	Clear
Time	5 p.m.
Casualties:	33 injured
Cause:	Power road-grader driven upon railroad crossing immediately in front of approaching train, in disregard of signals indicating approach of train

June 19, 1939.

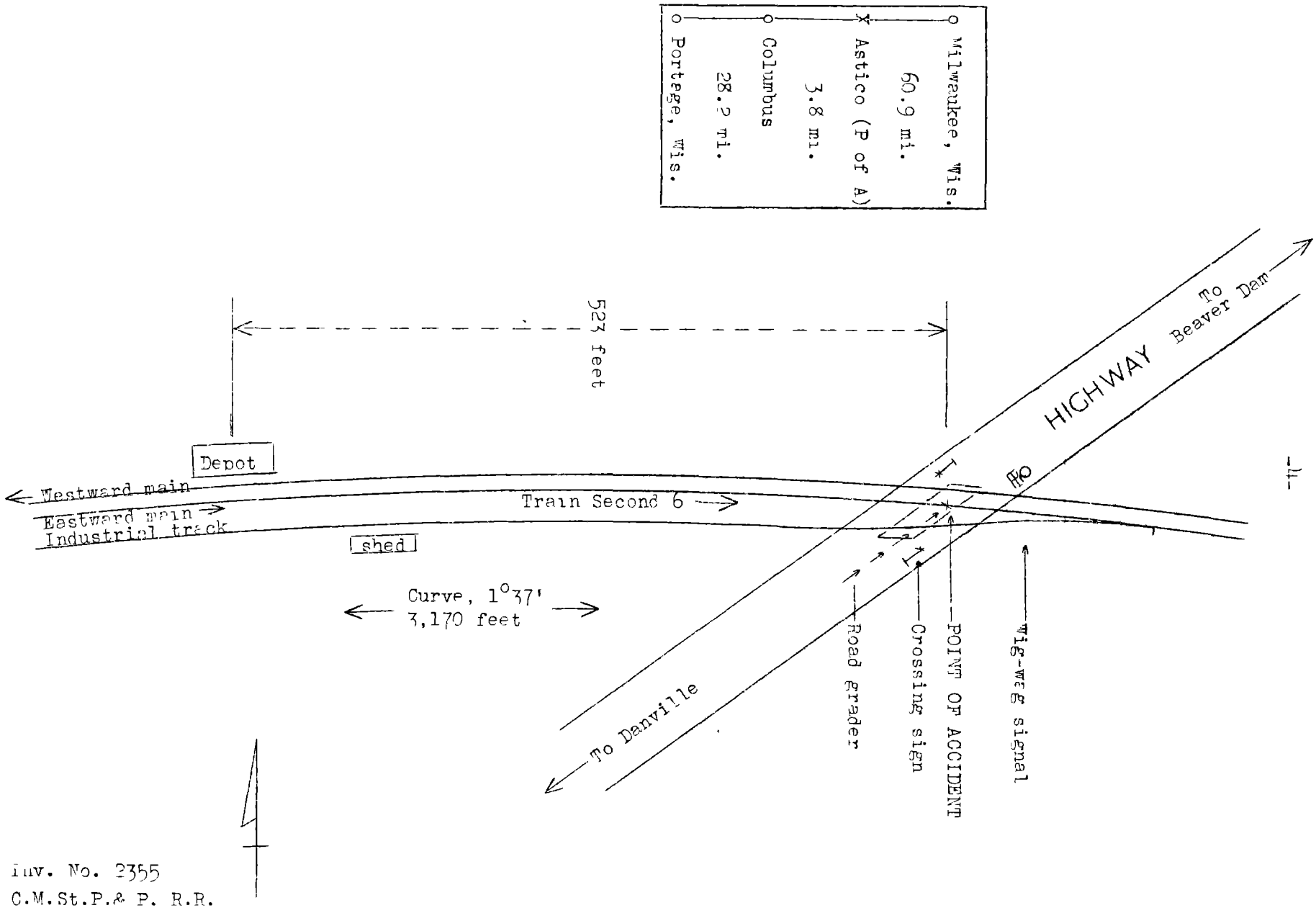
To the Commission:

On May 26, 1939, there was a derailment of a passenger train on the Chicago, Milwaukee, St. Paul & Pacific Railroad as a result of striking a power road-grader at a highway grade crossing at Astico, Wis., which resulted in the injury of 26 passengers, 3 train-service employees, 2 dining-car employees, and 2 porters.

Location and Method of Operation

This accident occurred on that part of the La Crosse & River Division designated as the First Subdivision which extends between Portage and Milwaukee, Wis., a distance of 92.9 miles. In the vicinity of the point of accident this is a double-track line over which trains are operated by timetable, train orders, and an automatic block-signal system. The accident occurred at a county road crossing, known as the County Trunk T crossing, located 523 feet east of the depot at Astico. Approaching on the railroad from the west there is a tangent a distance of more than 2 miles, followed by a compound curve to the right 3,170 feet long having a maximum curvature of 1°37'; the accident occurred on this curve at a point 1,140 feet from its western end, where the curvature is at its maximum. The grade for east-bound trains is 0.4 percent descending. An industrial track 2,181 feet in length parallels the main tracks on the south and its east switch is located 150 feet east of the center line of the crossing. Whistle boards are located 5,000 and 1,230 feet west of the crossing, the first board requiring that the engine whistle be sounded for the station and the second board for the crossing involved. The maximum authorized speed for the train involved is 90 miles per hour.

The highway extends southwest and northeast and the railroad extends almost east and west. The highway is graveled; the crossing is 16 feet wide and it is fully planked between the rails of each of the three tracks and there is one plank on the outside of each rail; the remainder of the surface of the crossing is graveled; the approach from the southwest is practically level. The crossing is protected by an automatic electric wig-wag crossing signal located north of the tracks and east of the highway, the center of the swinging electrically lighted banner being 12 feet above the road level. The control circuit for east-bound trains extends approximately 3,550 feet west of the crossing, and when the wig-wag is in motion an electric crossing bell rings continuously. There are also two



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standard cross-bar signs bearing the words "RAILROAD CROSSING," one located south of the tracks and east of the highway and the other north of the tracks and west of the highway. Vehicular traffic over this crossing is light.

The depot is north of the tracks. A coal shed 152 feet in length, located south of the industrial track and 292 feet west of the crossing, and other buildings farther west and track curvature restrict the view of an approaching east-bound train to be had by the driver of a vehicle approaching the crossing from the southwest on the highway. When 40 feet south of the eastward main track the view westward is restricted to 814 feet, and when between 30 and 20 feet from that track the view is limited to 940 feet. The engineman's view of the crossing from an east-bound engine is limited to about 940 feet.

Rule 14(1) of the operating rules provides that approaching public crossings at grade two long, one short and one long blasts of the whistle must be sounded and must be prolonged or repeated until the engine has passed over the crossing.

The weather was clear at the time of the accident, which occurred at 5 p.m.

Description

Second 6, an east-bound passenger train, known as the Morning Hiawatha, consisted of one tap car, three coaches, and one parlor car, in the order named, all of steel construction, hauled by engine 104, of the 4-6-4 type, and was in charge of Conductor Stowers and Engineman James. This train left Portage at 4:34 p.m., according to the train sheet, 4 hours 22 minutes late, and while passing through Astico, 32 miles beyond, it struck a power road-grader at County Trunk T crossing while traveling at a speed estimated to have been about 90 miles per hour.

The road grader, a Galion Power Patrol, with an overall length of 22 feet, was driven southward over the crossing and turned around in a driveway; it then proceeded northward and was moving over the crossing at a speed of about 2 miles per hour when it was struck by Second 6.

The grader was demolished and thrown 200 feet east of the crossing and upon the westward main track. Wreckage from it derailed the lead and the trailer trucks of the engine and both tender trucks, but the driving wheels were not derailed. All of the cars were derailed to the north and became separated; they remained upright and in line with the tracks. The engine

stopped about 3,550 feet east of the crossing, the first car stopped 2,050 feet behind the engine, the second car 260 feet behind the first car, the third car 300 feet behind the second, the fourth car 30 feet behind the third, and the fifth car 80 feet behind the fourth car, the rear end of the fifth car stopping 400 feet east of the crossing. The first indications of derailment were flange marks on the ties 200 feet east of the crossing, from which point eastward the eastward main track was damaged about 2,000 feet, and the westward main track also was damaged. The employees injured were the conductor and two brakemen.

Summary of Evidence

Engineman James stated that at New Lisbon, 43.1 miles west of Portage, the air brakes were tested, and they functioned properly en route. The speed of his train was about 90 miles per hour and he sounded the proper engine air-whistle signal for Astico station. Because of bunk cars being on a track south of the main tracks and west of the depot, he began to sound the crossing signal sooner than usual, commencing it at a point about 500 feet west of the crossing whistle-board and continuing it until he saw the road grader. When the engine was about opposite the depot he applied the brakes in emergency. The road grader remained in gear and the driver jumped off just as its front end reached the track, and it was moving over the crossing unattended when the locomotive struck it. Engineman James did not go back to the crossing after the accident. He said that the driving wheels of the engine were not derailed, and the reason the engine traveled so far after the impact was because the brake rigging was torn off as a result of the accident; after the engine stopped he observed that the brake valve was in emergency position; however, because of damage resulting from the accident the brake shoes were not contacting the wheels.

Fireman Woodrow stated that the train handled normally en route, the brakes functioned properly and the speed was about 90 miles per hour. When more than one mile west of Astico the engineman started to sound the whistle for the station, then for the crossing involved, and it was sounded continuously. He was on the left side of the cab and the road grader approached from the opposite side. From his position around the outside of the curve he saw only the front end of the machine when the engineman released the whistle and applied the brakes, and as the grader was moving over the track it was struck squarely in the middle.

Traveling Engineer Roe stated that the brakes functioned properly at all times. Approaching Astico he was standing behind the engineman and observed that the speedometer registered

90 miles per hour. The engineman sounded the proper engine whistle signals and the automatic bell ringer was in operation. He stepped over to the center of the cab and then noticed the engineman apply the brakes in emergency, but the impact occurred before he had time to look out and see what was wrong. Shortly after the accident he went back to the crossing and at that time he observed that the wig-wag signal was operating.

Conductor Stowers was in the second car and was not aware of anything wrong until the air brakes became applied in emergency, when about opposite the depot, and immediately thereafter the impact occurred. About 1½ hours after the accident he talked with the driver of the road grader and at that time pointed out to him that the wig-wag signal and crossing bell were still working. The driver was quite nervous, but otherwise appeared normal. The only explanation he gave as to why his machine was struck was that he did not expect the train to arrive until 10 minutes later.

Brakeman Claflin and Flagman Birchler were in the fourth car and they were not aware of anything wrong prior to the accident. The flagman immediately went back to protect and as he passed the crossing he talked to the driver of the road grader, saw the wig-wag signal in motion and heard the bell ringing.

Supervisor Telegraph and Signals Bornitzke arrived at the scene of the accident about 7:10 p.m. At that time the crossing bell and wig-wag signal were still operating because the demolished road grader was lying across both rails of the westward track and east of the crossing, and an east-bound freight train was then standing on the control circuit west of the crossing. He tested the interlocking relays and signals and inspected the mechanism of the signal and bell and found everything in proper working order.

Julius Soldner, driver of the road grader involved in the accident, stated that he is 53 years old and has been an employee of the Dodge County Highway Department for 14 years. Before he drove southward over the crossing he looked at his watch and it was 4:55 p.m. He knew that the regular east-bound train was not due at Astico until about 5:15 p.m., consequently he estimated that he had 20 minutes at his disposal to make the return movement northward over the crossing before the train arrived. He operated the grader southward over the crossing to a driveway located just south of the tracks and west of the highway, then backed twice into the driveway and turned the machine around. After getting it headed northward he stopped the machine with the front wheels about 4 feet south of the south rail of

the industrial track, then got out and turned down a grease cup located just ahead of the cab on the right side of the grader. He did not walk ahead to the tracks to determine whether a train was approaching, but he said that he looked in both directions and neither saw nor heard a train approaching. At this time the wig-wag signal was not in motion and the crossing bell was not ringing; he then started to drive the grader northward over the crossing. When the grader reached the eastward main track, at which time it was moving at a speed of about 2 miles per hour, he happened to look toward the west and saw the train approaching about opposite the depot. He released the steering wheel, noticed that the wig-wag signal was in motion, then jumped and immediately thereafter the train struck the grader about in the middle. Owing to the noise made by the four-cylinder motor exhausting directly to the atmosphere he could neither hear the crossing bell ringing nor the engine whistle being sounded at any time. The road grader was equipped with mechanical brakes, it was in good condition, and steered easily; all of the windows and the windshield were open, and the blade and scarifier, which are manually controlled from the cab, were fully raised and they cleared the crossing. As the crossing intersects the tracks diagonally, he said it is necessary to exercise extreme care in operating the grader over the crossing to keep from getting the wheels off the ends of the planks and becoming stalled; he said he was engrossed in watching the grader. He had never previously been involved in similar trouble. No other automobile was using the highway in this vicinity, and there was no place north of the tracks where he could have turned the grader around. Since the accident he has received instructions not to pass over railroad crossings with grader machines.

The road grader involved was a Galion Power Patrol, 1931 model, serial #108, and was equipped with Allis-Chalmers motor U7282, and bore 1938 Wisconsin license plate 3981-Star; the wheel base was 17 feet 4 inches long and the overall length was 22 feet; it was 9 feet 3 inches high, weighed 13,035 pounds, and was owned by Dodge County, Wis.; it was assigned to highway department work.

A record of trains passing Astico for the 30-day period prior to the accident showed that there was a total of 642 trains or an average daily movement of 21.4 trains.

Observations of the Commission's Inspectors

The Commission's inspectors made a traffic check at the crossing involved for the 24-hour period starting 6 p.m., May 29. During this period 121 vehicles and 19 trains passed. The

maximum hourly traffic for vehicles was between 6 and 7 p.m., when 13 passed, and for trains it was between 5 and 6 p.m., when 4 passed. It was observed that the wig-wag signal and crossing bell operated continuously upon the approach of trains, from a minimum of 26 seconds to a maximum of 50 seconds, depending on the speed of trains; as each train approached the crossing the engine whistle was sounded clearly and distinctly.

Discussion

The road grader involved was 22 feet long, 9 feet 3 inches high and weighed 13,035 pounds. There was no place north of the crossing at Astico where the machine could be turned around, therefore the driver decided to use the driveway south of the crossing to turn it. At 4:55 p.m. he started southward over the crossing. He knew that the regular east-bound train was not due until about 5:15 p.m. and therefore estimated that he had 20 minutes at his disposal to turn the grader and move it northward over the tracks before the train arrived. According to the timetable the regular train is due to leave Columbus, 3.8 miles west of Astico, at 5:08 p.m.; however, the train involved in this accident was being operated as Second 6 and it passed Columbus a few minutes before 5 p.m. After the grader was turned the driver stopped it just south of the industrial track and then he got off and turned down a grease cup. He looked in both directions but neither saw nor heard the train approaching and he said that at this time the wig-wag signal and crossing bell were not operating. He started northward over the crossing at a speed of about 2 miles per hour, then happened to look toward the west and saw the train approaching only a short distance away. He jumped off the machine and as he did so he saw the wig-wag signal in motion, and then the accident occurred.

No automobiles were in the vicinity at the time. The weather was clear and it was daylight, but the view was restricted because of buildings and track curvature. The engine whistle was sounded from a point more than one mile west of the crossing, but because of the noise made by the motor of the road grader the driver neither heard the whistle signals being sounded nor the crossing bell ringing. The speed of the train was about 90 miles per hour and as it rounded the curve the engineman saw the road grader moving slowly over the crossing. He immediately applied the air brakes in emergency, when about opposite the depot, but he was unable to avert the accident.

According to a blue print furnished by the railroad, the distance over the crossing from the clearance point of the south rail of the industrial track to the clearance point of the north

rail of the westward main track measured about 56 feet. The machine was 22 feet long, therefore, in order for it to pass over and to clear the crossing it would be necessary for it to travel at least 78 feet. Moving at a speed of 2 miles per hour, as estimated by the driver, the grader would travel 2.93 feet per second. At this rate it would require 26.6 seconds for the grader to clear the crossing. On the other hand, the wig-wag and crossing bell control circuit for east-bound trains extended approximately 3,550 feet west of the crossing and a train traveling at 90 miles per hour would require 26.9 seconds to cover this distance. Therefore, in this particular case, even though the grader had started over the crossing immediately before the wig-wag and the crossing bell began to operate, it is obvious that there was no margin of safety provided.

Excerpts from American Railway Signaling Principles and Practices in respect to highway crossing protection read as follows:

> "Automatic signal devices used to indicate the approach of trains shall so indicate for not less than 20 seconds* before the arrival of the fastest train operated over the crossing.
>
> "*Local conditions may require a longer operating time; however, too long an operation by slow trains is undesirable."

It is apparent that these principles are predicated upon the speed of trains only. The case under discussion furnishes an instance wherein a vehicle was proceeding across the tracks at a much lower rate of speed probably than that which was contemplated in formulating these principles. The drivers of slowly moving vehicles should use extra precautions in proceeding over railroad crossings.

Conclusion

This accident was caused by a power road-grader being driven upon a highway grade crossing immediately in front of an approaching train, in disregard of signals indicating the approach of a train.

Recommendation

It is recommended that special consideration be given to the matter of regulating slowly moving vehicles over railroad crossings.

Respectfully submitted,
W. J. PATTERSON,
Director.