

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Surface
(Sand and Gravel)

Fatal Handling Material Accident
February 27, 2020

Patterson Road Mine
Michigan Materials and Aggregates Company
Middleville, Allegan County, Michigan
Mine ID No. 20-02995

Investigator

Duane L. Hongisto
Mine Safety and Health Inspector

Originating Office
Mine Safety and Health Administration
North Central District
515 W. 1st Street, Suite 323
Duluth, Minnesota 55802-1303
Christopher A. Hensler, District Manager

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OVERVIEW

Ronald A. Baughman II, a 29-year-old equipment operator with two years of total mining experience, died on February 27, 2020. While working with other miners to set a steel plate vertically against the frame of a feed hopper, the plate fell on him.

The accident occurred because mine management did not follow their procedure for securing the steel plate prior to removing the rigging.

GENERAL INFORMATION

Michigan Materials and Aggregates Company owns and operates the Patterson Road Mine (Patterson Road) in Middleville, Allegan County, Michigan. Patterson Road employs seven miners and operates one seven-hour shift five days per week. Sand and gravel are excavated from a single-bench open pit and are then crushed and screened before being sold.

The principal officers for Patterson Road at the time of the accident were:

Rick BeckerPresident
Bill Brownell..... Chief Financial Officer

The Mine Safety and Health Administration (MSHA) completed the last regular inspection of the mine on April 4, 2019. The non-fatal days lost (NFDL) incident rate for Patterson Road for 2019 was 0, compared to the national average of 1.05.

DESCRIPTION OF ACCIDENT

On February 27, 2020, at 8:00 a.m., Ronald A. Baughman II, Equipment Operator (Baughman), started work with Equipment Operators Larry J. Green, Daniel V. Wenger, and Joshua W. Branham to set up a feed hopper.

The feed hopper had been moved into position that morning. At approximately 2:00 p.m., Baughman, and the three miners began working to place a steel plate vertically against the frame of the feed hopper. The miners had intended to build an earthen feed ramp against the steel plate so front-end loaders could travel up the feed ramp to dump sand and gravel in the feed hopper. The feed hopper would supply material to an overland conveyor, which conveyed material to the Patterson Road plant.

Miners used lift rigging to attach the steel plate to the bucket of the front-end loader. The lift rigging consisted of two double chain slings with grab hooks on each end and clevis anchor shackles. The miners installed the clevis anchor shackles through holes located in both sides of the front-end loader bucket (see Appendix A). Baughman and Branham inserted grab hooks through two three-inch diameter holes in the steel plate. The grab hooks were connected to chains that were shackled to clevis anchors.

Green, operating a Caterpillar 980K (Caterpillar) front-end loader, moved the steel plate into position against the frame of the feed hopper. Wenger was operating a John Deere 204L (John Deere) front-end loader equipped with a fork attachment. Wenger positioned the John Deere front-end loader on the north side of the feed hopper and used one of the fork tips to hold the steel plate against the frame of the feed hopper. The victim and Joshua W. Branham, Equipment Operator, removed the rigging from the bucket of the Caterpillar front-end loader.

After the rigging was removed, Green drove the Caterpillar front-end loader from the area to load a customer's truck. Branham removed the grab hook and chain from the south side of the steel plate. The victim attempted to remove the rigging from the north side of the steel plate; however, the grab hook was stuck in the lifting hole (see Appendix B). The victim motioned to Wenger to lower the forks. Wenger lowered the forks and the victim stepped up onto the forks so he could reach and dislodge the grab hook from the lifting hole. The steel plate tipped over onto the victim pinning him between the fork and the plate.

Green observed the accident and returned to the scene. Green lifted the steel plate off the victim with the bucket of the Caterpillar front-end loader. Wenger then backed the John Deere front-

end loader out from beneath the fallen steel plate and exited the loader. Jackie Mabee, Scale Clerk, heard about the incident over the company radio and called 911. Wayland Emergency Medical Services and the Michigan State Police responded to the scene of the accident. The victim was transported to Metro Health - University of Michigan Health Hospital where Dr. Andrew Michmerhuizen pronounced him dead at 3:46 p.m.

INVESTIGATION OF THE ACCIDENT

On February 27, 2020, at 2:48 p.m., William Young, Mine Safety Specialist, contacted the Department of Labor National Contact Center (DOLNCC). The DOLNCC contacted George Schorr, Staff Assistant, North Central District. On the same day, Christopher A. Hensler, District Manager, contacted Christopher G. Veenstra, Mine Safety and Health Inspector, and directed Veenstra to travel to the accident site and secure the accident scene. Upon arrival, Veenstra issued a 103(k) order to assure the safety of all persons involved in the operation.

On February 28, 2020, at 9:30 a.m., Duane L. Hongisto, Mine Safety and Health Inspector, arrived on scene to conduct the fatal accident investigation. MSHA's accident investigation team conducted a physical examination of the accident scene, and interviewed management and mine employees. See Appendix C for a list of persons who participated in the investigation.

DISCUSSION

Location of Accident

The accident occurred at the feed end (east side) of a Deister Machine Company feed hopper, which was located on the east side of the Patterson Road pit (see Appendix D). The steel plate measured 98 inches by 240 inches by 1-inch thick, and weighed approximately 6,800 pounds.

Weather

The weather at the time of the accident was 21 degrees with a 16 mph wind from the west. Cold, dry weather conditions created hard packed and frozen ground in the immediate area of the hopper at the time of the accident. Investigators believe that weather may have been one of the factors contributing to the accident as the wind was blowing in the same direction the steel plate tipped over.

Equipment Involved

Miners used a Caterpillar 980K front-end loader with bucket attachment and a John Deere 204L front-end loader with a fork attachment, to set the steel plate against the hopper. The functionality of the front-end loaders was not a contributing factor to the accident.

Procedure to Place the Steel Plate against the Feed Hopper

Investigators learned through interviews that a key step in the established procedure was omitted during this operation to secure a steel plate against the feed hopper. In the established procedure, miners place the steel plate against the feed hopper and hold it in place with the John Deere front-end loader's fork tip. Then they use the Caterpillar front-end loader to begin constructing the earthen feed ramp against the steel plate. When the feed ramp is sufficient in size to hold the steel plate against the feed hopper, they move the John Deere front-end loader equipped with the

fork attachment away from the steel plate. However, during this installation, the Caterpillar front-end loader had been taken away to load a customer's truck and the John Deere front-end loader operator lowered the forks prior to the construction of the earthen feed ramp, as previously explained.

Training and Experience

Baughman had two years of mining experience with Patterson Road. The company provided Baughman with training as required by 30 CFR Part 46.

ROOT CAUSE

The accident investigation team conducted a root cause analysis to identify the underlying cause of the accident and fatality. The team identified the following root cause, and the mine operator implemented the corresponding corrective actions to prevent a recurrence.

Root Cause: The mine operator's feed ramp construction procedure did not explicitly require that the steel plate be securely fastened to the frame of the feed hopper prior to persons removing rigging, or prevent miners from working near an unsecured load.

Corrective Action: The mine operator revised the procedure and put it in writing. The written procedure ensures that the steel plate is fastened to the frame of the feed hopper before unhooking the rigging from the loader and steel plate. The mine operator trained miners on the new procedure.

CONCLUSION

Ronald A. Baughman II, a 29-year-old equipment operator with two years of total mining experience, died on February 27, 2020. While working with other miners to set a steel plate vertically against the frame of a feed hopper, the plate fell on him.

The accident occurred because mine management did not follow the procedure for securing the steel plate prior to removing the rigging.

Approved By:

Christopher A. Hensler
North Central District Manager

Date

ENFORCEMENT ACTIONS

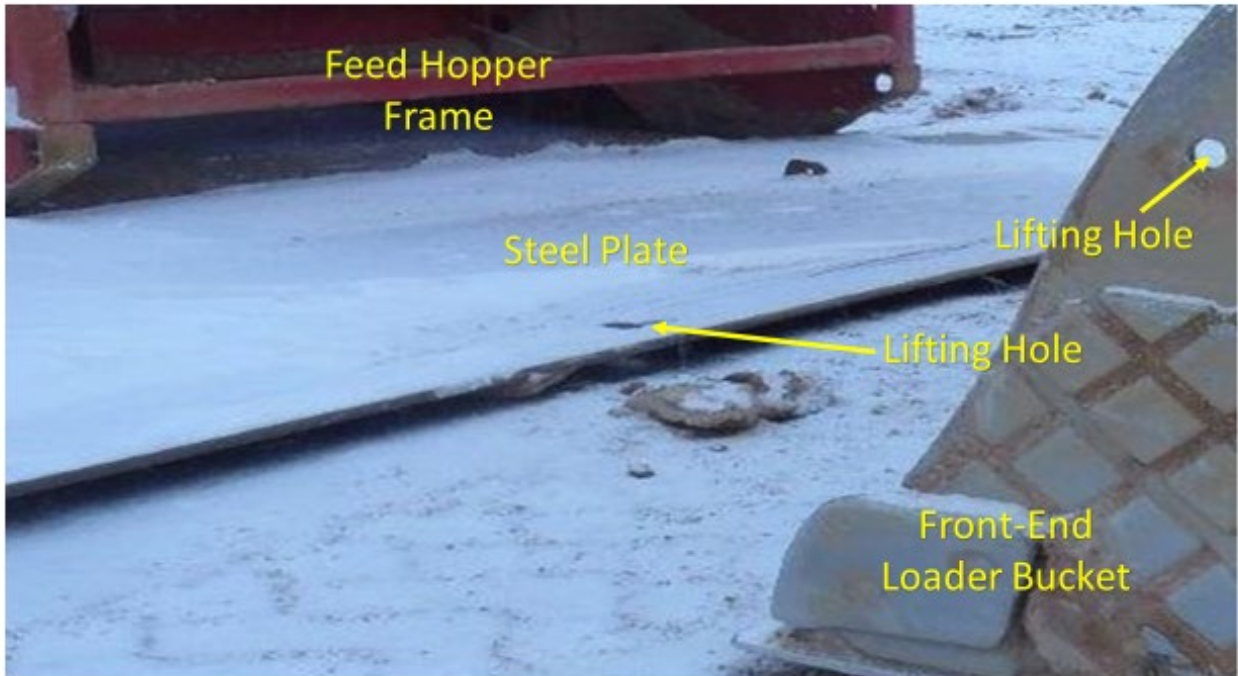
Order No. 9388984 – Issued on February 27, 2020, at 5:12 p.m., under section 103(k) of the Federal Mine Safety and Health Act of 1977:

A fatal accident occurred at this operation on February 27, 2020, when a miner was attempting to secure a steel plate at the feed hopper. This order is issued to assure the safety of all persons at this operation. It prohibits all activity within 50 feet of the hopper, including the Caterpillar 980K front-end loader (S/N CAT0980KCW7K01124) and the John Deere 204L front-end loader (PIN #1LU204LXAZB054458) until MSHA has determined it is safe to resume normal mining operations in the area. The mine operator shall obtain prior approval from an authorized representative for all actions to recover and/or restore operations to the affected area.

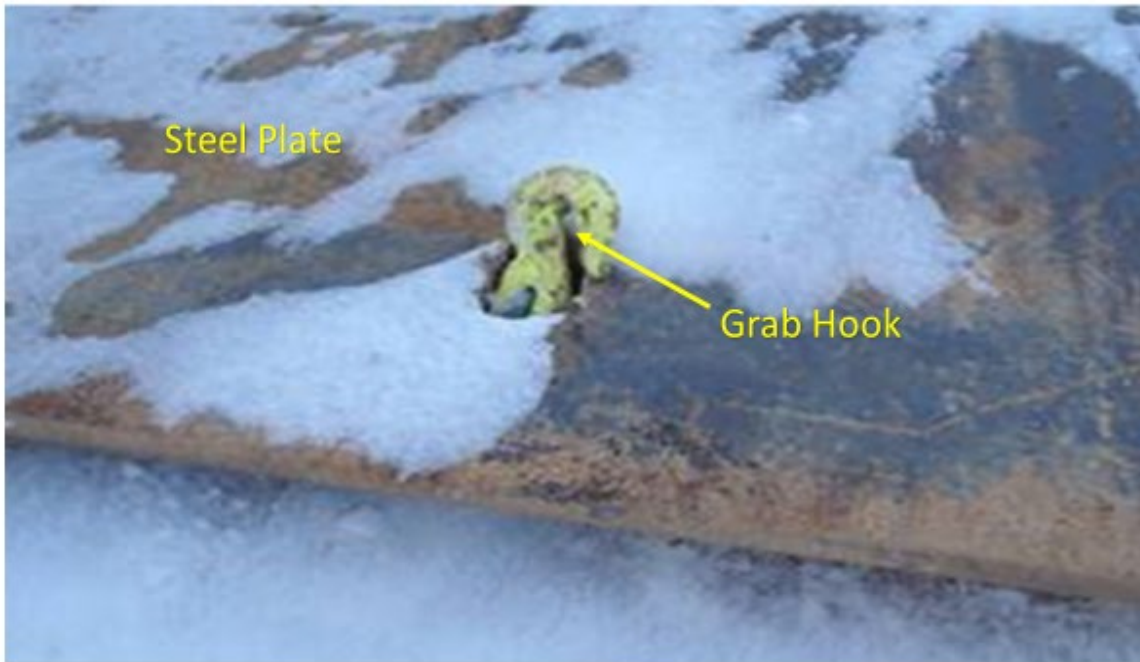
Citation No. 9441348 - Issued to Michigan Materials and Aggregates Company Patterson Road mine (20-02995), on April 22, 2020, under the provision of section 104(a) of the Mine Act for violation of 30 CFR § 56.9201.

A fatal accident occurred at the mine on February 27, 2020, when a miner sustained injuries while assisting with the placement of a steel plate against the end of a feed hopper. The victim had positioned himself between the steel plate and a front-end loader that was holding the steel plate in the vertical position before the feed ramp was constructed. While removing a rigging chain from the steel plate the steel plate fell over and pinned the victim between the steel plate and the forks of the front-end loader. The mine operator's feed ramp construction procedure did not ensure the steel plate was adequately secured against the feed hopper, before miners were permitted to work in the area and exposed them to the hazard of the steel plate falling.

Appendix A
Photograph of Feed Hopper Frame and Lifting Holes



Appendix B
Photograph of Steel Plate and Grab Hook in the Lifting Hole



Appendix C
Persons Participating in the Investigation

Michigan Materials and Aggregates Company
Patterson Road Mine

Ron C. Rutz Plant Manager
Joshua W. Branham.....Equipment Operator
Daniel V. Wenger.....Equipment Operator
Larry J. GreenEquipment Operator
Roger W. OhlrichEquipment Operator

Mine Safety and Health Administration

Duane L. HongistoMine Safety and Health Inspector
Christopher G. Veenstra.....Mine Safety and Health Inspector
Gerald D. Holeman..... Assistant District Manager
Terence M. Taylor, P.E.....Senior Civil Engineer, Technical Support

Appendix D
Photograph of Accident Scene

