

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Surface  
(Coal)

Fatal Machinery Accident  
August 23, 2022

El Segundo  
El Segundo Coal Company, LLC  
Grants, McKinley County, New Mexico  
ID No. 29-02257

Accident Investigators

Brady Huntsman  
Mine Safety and Health Inspector

Kendell Whitman  
Assistant District Manager

Ahmad MdAzmi, P.E.  
Staff Assistant

Originating Office  
Mine Safety and Health Administration  
Lakewood District  
Building 25, Denver Federal Center  
Denver, CO 80225  
Matthew Lemons, District Manager

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## OVERVIEW

On August 23, 2022, at 1:57 a.m., David Warren III, a 24 year-old mechanic with three years of mining experience, died from injuries he sustained when the 13-ton steel dipper door he was working on closed, crushing him between the dipper door and the edge of the dipper.

The accident occurred because the mine operator did not: 1) adequately block the dipper door from motion before miners performed repairs, and 2) task train miners to adequately block the door before performing repairs on the dipper.

## GENERAL INFORMATION

El Segundo Coal Company, LLC, a subsidiary of Peabody Energy, Inc., owns and operates the El Segundo mine, located near Grants, McKinley County, New Mexico. The mine is a surface coal mine that employs 228 miners and operates two 12-hour shifts, seven days per week. The mine uses a box-cut open pit mining method to extract coal. This method includes removing topsoil from the undisturbed terrain, followed by drilling and blasting the overburden. Draglines and shovels remove the loose overburden to expose the coal seams. Electric shovels extract and load the coal into haul trucks that transport the coal to the crusher. The mine stores the coal on the ground and ships it to consumers by train.

The principal management official at the El Segundo mine at the time of the accident was:

Seth Puls

General Manager

The Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection on December 22, 2021. A regular safety and health inspection was ongoing at the time of the accident. The 2021 non-fatal days lost incident rate for the El Segundo mine was 1.44 compared to the national average of 0.97 for mines of this type.

## DESCRIPTION OF THE ACCIDENT

On August 22, 2022, at 6:30 p.m., Warren arrived at the mine and started his shift by attending a crew meeting in the maintenance shop. Brandon Garcia, Step-up Foreman, provided the mechanics with their assignments for the day, which included repair work on the dipper latch bar of the Dutchman latch (a latching system that locks or releases the latch to open and close the dipper door during excavation) on the electric shovel in Pit #5. Garcia and Warren departed the maintenance shop and drove their maintenance truck to Pit #5, located ten minutes northeast of the shop.

Garcia and Warren arrived at Pit #5 to evaluate the dipper latch bar. One of the two bolts holding the latch bar in place was broken. Warren welded the latch bar into place as a temporary repair. According to interviews, Garcia instructed Matthew Chavez, Shovel Operator, to continue loading the haul trucks while regularly checking the integrity of the repair weld on the latch bar.

Garcia left Pit #5 to look for the new bolts while Chavez continued loading the haul trucks until 1:00 a.m. At that time, Chavez visually inspected the latch bar, noticed the repair weld had broken and called Garcia to inform him of the broken weld. Garcia told Chavez that he (Garcia) had found the new bolts and would get the crew together to repair the latch bar. Garcia, Warren, and Scott Morlang, Mechanic, arrived at the shovel at 1:37 a.m. to work on the bolt replacement. Garcia unloaded a plastic block and placed it into the dipper.

To conduct repairs, the crew needed to access the Dutchman latch mechanism with the dipper door open. To do this, the crew:

- 1) Staged the dipper on the ground with the shovel's brakes set.
- 2) Placed the plastic block inside the back of the dipper against the dipper door.
- 3) Tack welded the clevis linked to the end of the chain to the dipper door.
- 4) Released the brakes and moved the dipper approximately 12 feet forward and seven feet off the ground.
- 5) Tripped the Dutchman latch mechanism, allowing the dipper door to swing open and the plastic block to fall between the dipper door and the edge of the dipper (the tack-welded chain held the plastic block in position).
- 6) Lowered the dipper to the ground and positioned the dipper's teeth downward onto the floor with the rear raised off the floor by approximately three feet. The dipper door then moved downward to hold the plastic block in place and prop the dipper door open.
- 7) Set the shovel brakes and activated the emergency stop button.

Warren positioned himself between the dipper door and the dipper, with the dipper door propped open approximately one and a half feet. Warren, Garcia, and Morlang began repairing the latch bar. Warren and Morlang air-arc'd and ground the temporary weld down, removed the two

bolts, removed the latch bar, and cleaned it. Warren and Morlang re-bolted the latch bar back into the Dutchman latch mechanism.

At 1:57 a.m., Warren, Garcia, and Morlang finished the repair work and gathered their equipment. Morlang had already gathered some of the equipment and was in his maintenance truck. Warren was between the dipper door and the dipper, with his back against the dipper door. Garcia was inside the dipper with his back facing Warren. As Garcia started walking towards the dipper opening, he heard a loud bang and a scream. Garcia turned and saw Warren caught between the dipper door and the edge of the dipper. The dipper door had swung shut, crushing Warren at his waist and pelvic area. Garcia ran out of the dipper and called a “Mayday” over the radio for help.

Garcia motioned to Chavez, who was inside the shovel’s control cab. According to interviews, Chavez stated that he saw the plastic block shoot out from beneath the dipper door, and the dipper door closed. From the control cab, Chavez immediately reset the emergency stop switch and activated the Dutchman latch several times. However, due to the dipper’s angle, the latch would not release, and the door would not open. Chavez knew he had to raise the dipper. Chavez slowly moved the dipper upward, high enough until he could activate the lever to release the latch to open the dipper door. Warren fell approximately seven feet to the ground. Garcia and Morlang immediately pulled Warren to the shovel operator’s side and started administering first aid.

At 2:08 a.m., the mine ambulance arrived. The mine’s first responders administered first aid and placed Warren in the mine ambulance. At 2:16 a.m., the mine ambulance departed the shovel and traveled towards the parking lot adjacent to the office building to stage for medical helicopter transport.

At 2:51 a.m., the mine ambulance arrived at the parking lot adjacent to the office building. Warren became unresponsive, stopped breathing, and had no pulse. The mine’s first responders started cardiopulmonary resuscitation (CPR) and attached an automated external defibrillator (AED) to Warren. The AED advised no shock. At 3:20 a.m., the mine’s first responders continued CPR on Warren until the medical helicopter arrived. The medical helicopter flight crew radioed Justin Hazen, MD, who pronounced Warren deceased at 3:23 a.m.

## INVESTIGATION OF THE ACCIDENT

On August 23, 2022, at 2:14 a.m., Daniel Hunsaker, Mine Foreman, called the Department of Labor National Contact Center (DOLNCC) to report a life-threatening injury at the El Segundo mine. At 3:51 a.m., Hunsaker called the DOLNCC a second time to report a fatality at the mine. The DOLNCC contacted Ahmad MdAzmi, P.E., Staff Assistant, both times. MdAzmi notified Matthew Lemons, District Manager; Kendell Whitman, Assistant District Manager; and Lois Duwenhoegger, Supervisory Mine Safety and Health Inspector. Duwenhoegger sent Gary Boyd, Mine Safety and Health Inspector, to the mine. At 4:14 a.m., Lemons sent Brady Huntsman, Mine Safety and Health Inspector, to the mine to lead the investigation.

At 6:15 a.m., Boyd arrived at the El Segundo mine office and issued an order under the provisions of Section 103(k) of the Mine Act to ensure the safety of the miners and preservation of evidence. Boyd traveled to Pit #5 to begin the investigation. Duwenhoegger arrived at the mine at 9:00 a.m., Huntsman arrived at 3:00 p.m., and Whitman arrived at 3:45 p.m. Whitman and Huntsman examined the accident scene, interviewed miners and mine management, conducted tests, and reviewed the evidence, conditions, and work procedures relevant to the accident. Christopher Hefner, State Mine Inspector for the New Mexico Bureau of Mine Safety, also participated in the investigation. See Appendix A for a list of persons who participated in the investigation.

## DISCUSSION

### Location of the Accident

The accident occurred at the southern end of Pit #5, where the electric shovel was located.

### Weather

At the time of the accident, the weather was clear, with a temperature of 60 degrees Fahrenheit. Investigators determined that the weather did not contribute to the accident.

### Equipment Involved

The electric shovel involved in the accident was a Bucyrus International 495B1 Electric Shovel with a 56 cubic yard dipper (see Appendix B). A shovel operator operates the shovel from an elevated control cab. The mine operator estimated that the weight of the dipper door involved in the accident was approximately 13 tons (26,000 lbs.). Investigators examined and tested the shovel and did not find any defects that contributed to the accident.

The mine operator submitted a video recording and the Argus computer data from the shovel. Mario Turner, Program Analyst, created a timeline of the accident using the video and computer data (see Appendix C). According to the timeline, the shovel was not in motion, and the controls were not in use when the door closed on Warren.

### Training and Experience

Warren had three years of mining experience as a mechanic and worked at the El Segundo mine for over a year and a half. As a mechanic, Warren's primary duty was performing routine welding, maintenance, and repair work on various pieces of mining equipment throughout the mine. According to interviews, Warren regularly conducted repair work on the dipper. Warren's training record shows that he received newly hired experienced miner training and annual refresher in accordance with MSHA Part 48 training regulations.

Morlang worked at the El Segundo mine for approximately three years. Morlang's primary duty is the same as Warren's. According to an interview with Morlang, Morlang saw the blocking procedure done in the past, but it was his first time participating in this task. Morlang received newly hired experienced miner training and annual refresher in accordance with MSHA Part 48 training regulations.

Garcia had approximately 11 years of mining experience and worked at the El Segundo mine for five years. Garcia received annual refresher training in accordance with MSHA Part 48 training regulations.

Warren, Morlang, and Garcia do not have documentation for task training related to the work conducted during the accident. According to interviews, Morlang stated he was not task trained to perform dipper door repair work, and there was no standard procedure for how this task was to be performed safely. Garcia stated he was not task trained and has not seen a standard operating procedure for this task. Warren, Morlang, and Garcia did not recognize that the plastic block was incorrectly positioned to ensure effective blocking. The mine operator allowed the repair crew to perform the repair on the dipper at least once per week without establishing a safe standard operating procedure. Investigators determined that the lack of task training contributed to the accident.

#### Blocking Procedure

The electric shovel's operator manual does not specify how to block the dipper door from motion when it is open. According to the mine operator, the blocking procedure used during the accident was implemented at the El Segundo mine after 2010. The blocking procedure came from North Antelope Rochelle Mine, another mine owned by Peabody Energy, Inc., and was developed during an effort to reduce exposure to hand injuries. The mine operator engineered and manufactured the plastic block used in the blocking procedure. The plastic block was made of Ultra High Molecular Weight Polyethylene plastic with a steel frame.

Investigators conducted tests to determine how the plastic block dislodged from the dipper. Investigators observed the mine operator perform the blocking procedure at a slow speed, and the plastic block fell correctly in place each time (see Appendix D). During one of the tests, the shovel operator moved the latch lever up and down several times (see Appendix E). The dipper door and the plastic block did not move. No action from the control cab could have dislodged the plastic block except by raising the dipper.

Investigators then observed the mine operator perform the blocking procedure at a typical speed, much faster than in the initial slow speed test. At a typical speed, the dipper door pinched the plastic block on its weakest side. The plastic block's orientation could vary with the speed of lifting and lowering the dipper, resulting in the plastic block not always being in the correct position.

#### Simulations of Block Placement

Investigators measured the dipper and the plastic block and used AutoCAD graphic design software to create a two-dimensional (2D) cross-sectional model (see Appendix F). The 2D model indicated there was enough length to the blocking system for the block to be caught under the wear plate of the dipper door. Investigators simulated their findings on the dipper by placing the block under the wear plate of the dipper door (see Appendix G). The rust marks on the metal frame show that the plastic block had undergone high tensional stress prior to the accident, as observed during this test. The mine operator removed the clevis by hitting it with a sledgehammer, which caused the plastic block to dislodge and drop quickly to the ground, and the dipper door to shut.

Investigators determined that the mine operator did not adequately block the dipper door from motion before miners performed repairs, which contributed to the accident. Garcia observed the crew perform the blocking procedure before the accident. The mine operator did not ensure that the block was in the correct position and the door not effectively blocked from motion before Warren and Morlang positioned themselves between the dipper door and the dipper.

## ROOT CAUSE ANALYSIS

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

1. Root Cause: The mine operator did not adequately block the dipper door from motion before miners performed repairs.

Corrective Action: The mine operator replaced the dipper involved in the accident with one that does not require opening the dipper door to access the latch bar. All other dippers at the mine also do not require opening the dipper door to access the latch bar. If a maintenance task requires opening and blocking the door, the mine operator developed a new written standard operating procedure with a double-blocking system. The system uses two engineer-certified blocks, a primary block and a redundant secondary block. The primary block is aluminum, and the secondary block is red oak with metal framing, which rests on the ground. The primary and secondary blocks will be attached to a chain welded to the dipper door on each side of the door. A come-a-long (a wire rope hand ratchet puller) will be used to make sure the secondary block rests on the ground. The mine operator trained all miners who will perform and supervise this task on the new standard operating procedure.

2. Root Cause: The mine operator did not task train miners to adequately block the door before performing the repair on the dipper.

Corrective Action: The mine operator revised their training plan to ensure that miners who will perform or supervise maintenance tasks on an open dipper door will be task trained on the new written standard operating procedure.



## CONCLUSION

On August 23, 2022, at 1:57 a.m., David Warren III, a 24 year-old mechanic with three years of mining experience, died from injuries he sustained when the 13-ton steel dipper door he was working on closed, crushing him between the dipper door and the edge of the dipper.

The accident occurred because the mine operator did not: 1) adequately block the dipper door from motion before miners performed repairs, and 2) task train miners to adequately block the door before performing repairs on the dipper.

Approved By:

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Matthew Lemons  
District Manager

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Date

## ENFORCEMENT ACTIONS

1. A 103(k) order was issued to El Segundo Coal Company, LLC.

A fatal accident occurred on August 23, 2022, at approximately 1:30 a.m. This order is being issued under the authority of the Federal Mine Safety and Health Act of 1977, under Section 103(k), to insure the safety of all persons at the mine and requires the operator to obtain the approval of an authorized representative of MSHA of any plan to recover any person in the mine or to recover the mine or affected area. This order prohibits any activity in the affected area. The operator is reminded of the obligation to preserve all evidence that would aid in investigating the cause or causes of the accident in accordance with 30 CFR 50.12.

2. A 104(a) citation was issued to El Segundo Coal Company, LLC. for a violation of 30 CFR 77.404(c).

A fatal accident occurred on August 23, 2022, when a mechanic was crushed between an approximately 13-ton metal dipper door and the edge of the dipper of a Bucyrus International 495B1 Electric Shovel, serial number 141124. The mine operator did not ensure that the block was in the correct position before the mechanics conducted the repair between the dipper door and the edge of the dipper. The incorrectly positioned plastic block caused the weld on the clevis to fail, dislodging the plastic block, and fatally crushing a mechanic.

3. A 104(a) citation was issued to El Segundo Coal Company, LLC. for a violation of 30 CFR 48.27(c).

A fatal accident occurred on August 23, 2022, when a mechanic was crushed between an approximately 13-ton metal dipper door and the edge of the dipper of a Bucyrus International 495B1 Electric Shovel, serial number 141124. The mine operator did not provide task training to the crew members before performing the repairs. The crew members, which included the step-up foreman overseeing the repair, did not recognize that the plastic block was incorrectly positioned to ensure effective blocking. The incorrectly positioned plastic block caused the weld on the clevis to fail, dislodging the plastic block, and fatally crushing a mechanic.

APPENDIX A – Persons Participating in the Investigation

Peabody Energy, Inc.

Matthew Pederson-Howard Vice President of Health and Safety  
Max Haney Senior Safety Manager

El Segundo Coal Company LLC

Seth Puls General Manager  
William Jarrell Safety Manager  
Matthew Puderbaugh Superintendent  
Daniel Hunsaker Mine Foreman  
Brandon Garcia Step-up Foreman  
Matthew Chavez Shovel Operator  
Scott Morlang Mechanic  
Marcus Chavez Motor Grader Operator  
Christopher Ortiz Production Operator

New Mexico Bureau of Mine Safety

Christopher Hefner State Mine Inspector

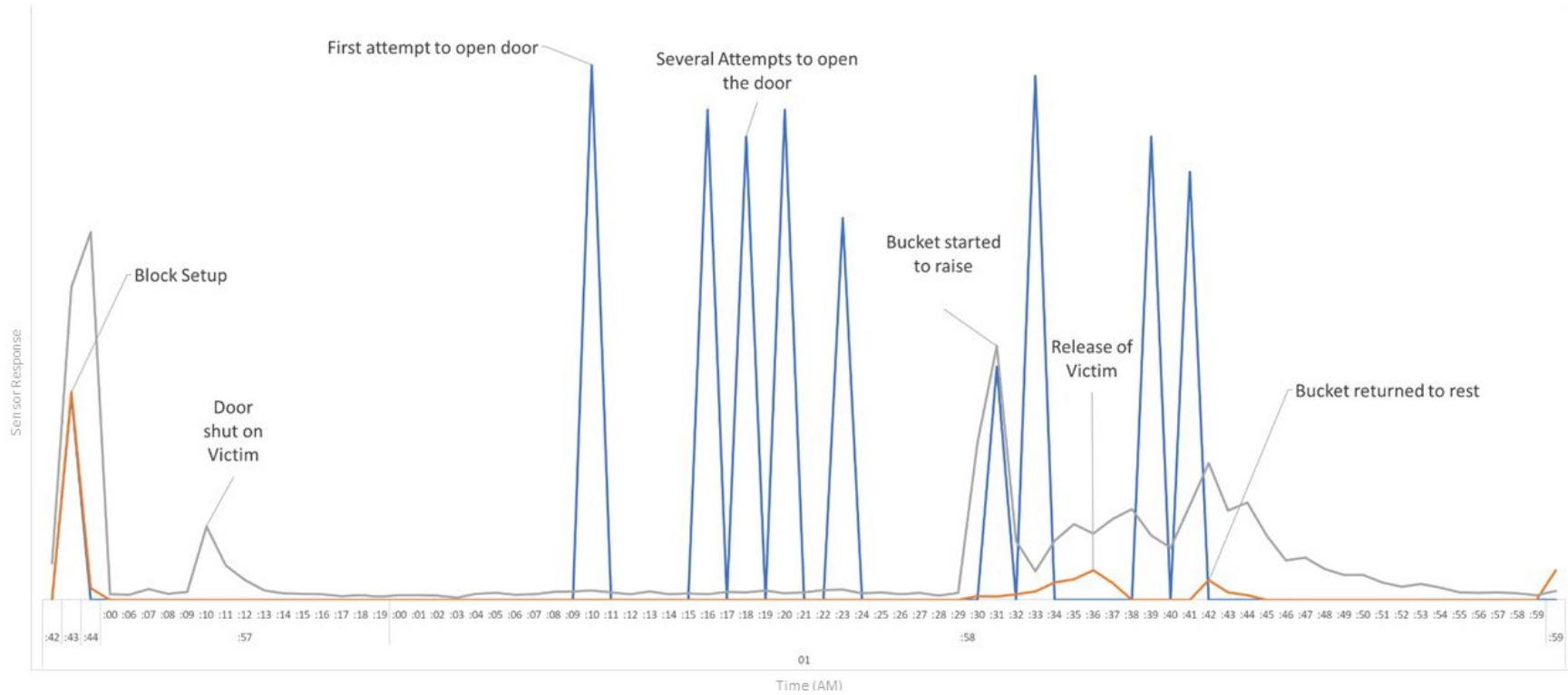
Mine Safety and Health Administration

Kendell Whitman Assistant District Manager  
Ahmad MdAzmi, P.E. Staff Assistant  
Lois Duwenhoegger Supervisory Mine Safety and Health Inspector  
Gary Boyd Mine Safety and Health Inspector  
Brady Huntsman Mine Safety and Health Inspector  
Mario Turner Program Analyst

APPENDIX B – Bucyrus International 495B1 Electric Shovel



## APPENDIX C – Timeline Depicting the Accident



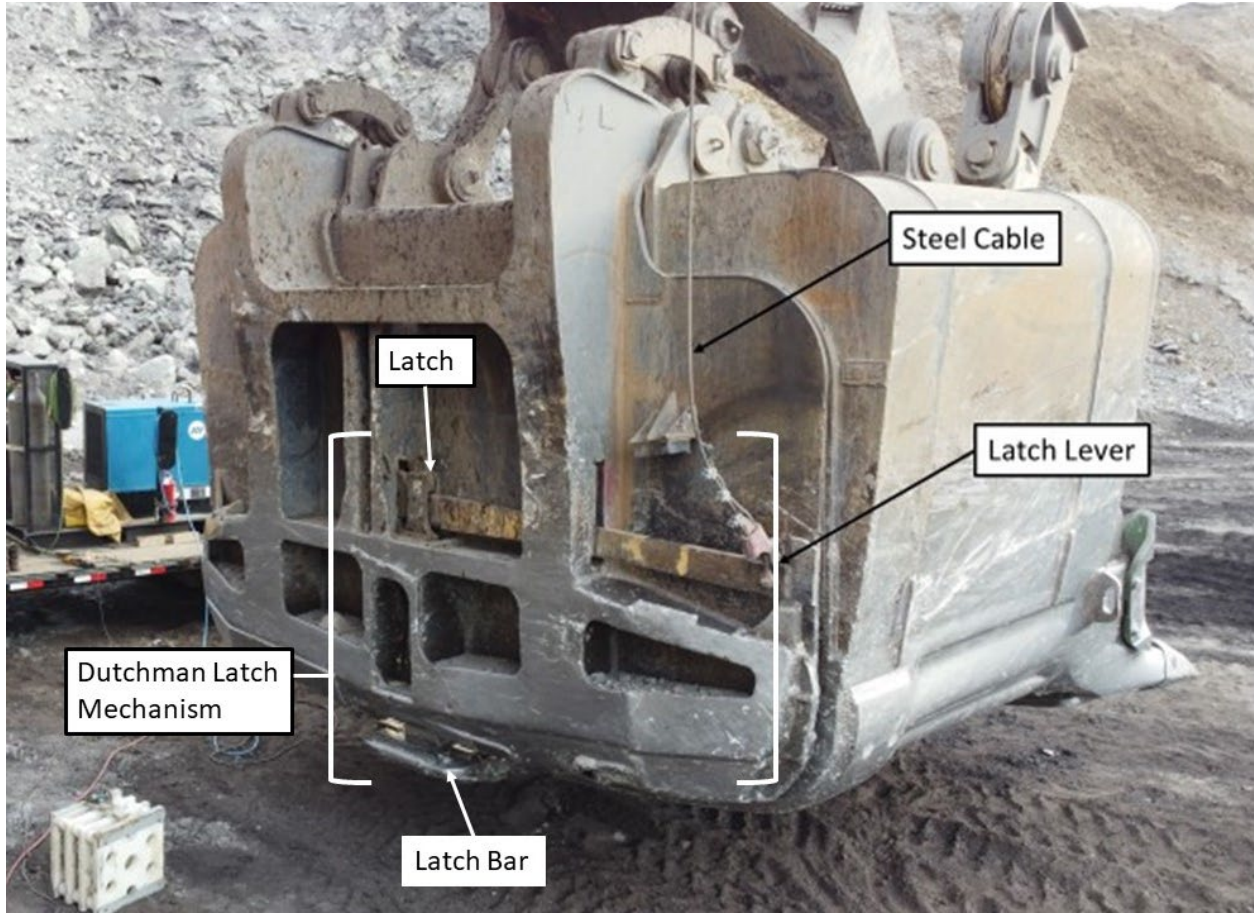
- Latch Mechanism
- Dipper Door Movement
- Bucket Movement



APPENDIX D – Block Placement

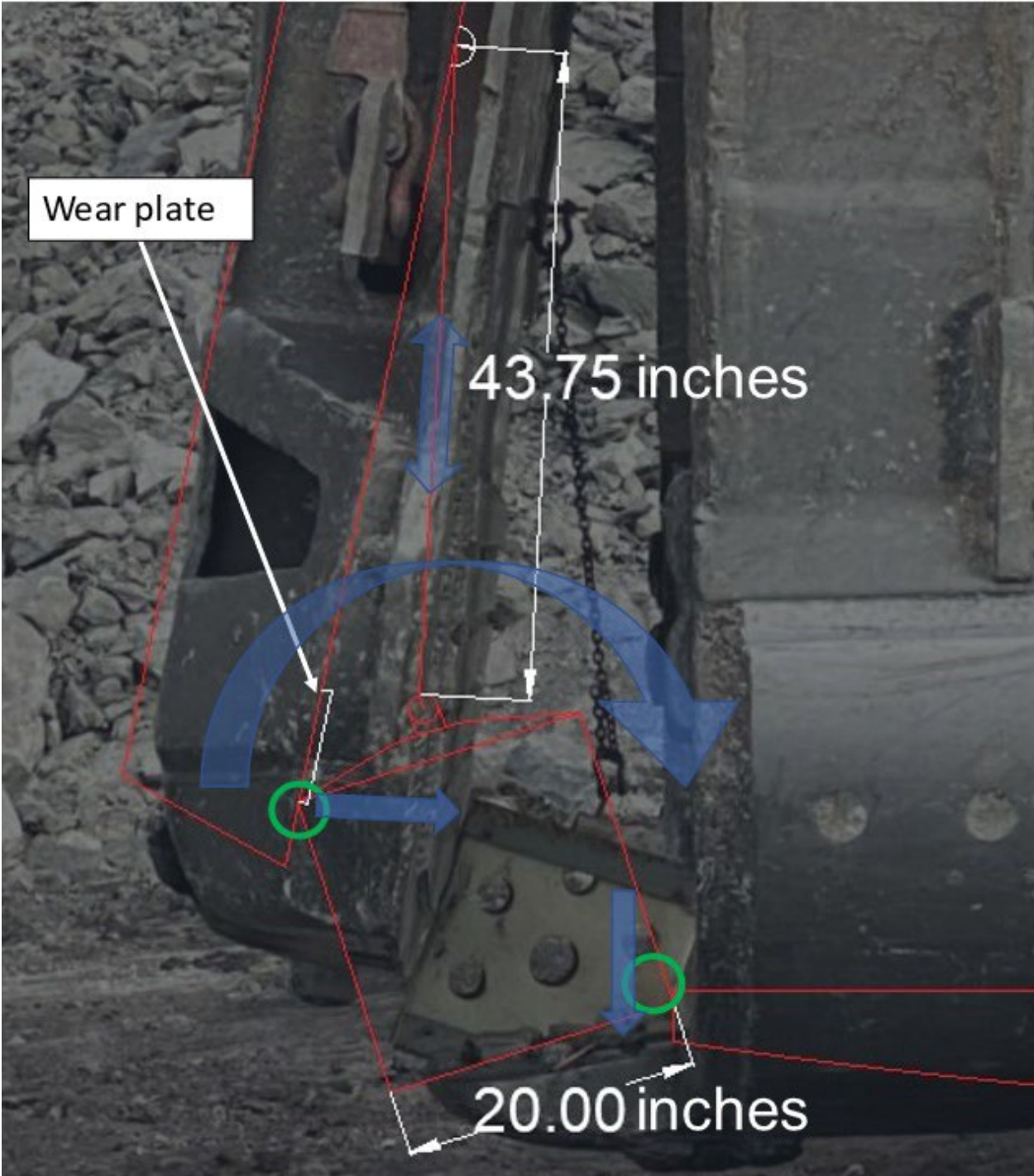


APPENDIX E – Motored Steel Cable Attached to the Latch Lever





APPENDIX F – AutoCAD 2D Model Showing the Block's Corners Under the Wear Plate





APPENDIX G – Block Placement Under the Wear Plate

