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UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION
Metal and Nonmetal Mine Safety and Health

REPORT OF INVESTIGATION

Surface Nonmetal Mine
(Granite)

Fatal Falling Material Accident
June 12, 2007

Felton Quarry
Granite Construction Co.
Felton, Santa Cruz County, California
Mine ID No. 04-00107

Investigators

Bart T. Wrobel
Supervisory Mine Safety and Health Inspector

Bruce L. Allard
Supervisory Mine Safety and Health Inspector

Paul J. Donahue
Civil Engineer

Originating Office
Mine Safety and Health Administration
Western District
2060 Peabody Road, Suite 610
Vacaville, California, 95687
Arthur L. Ellis, District Manager

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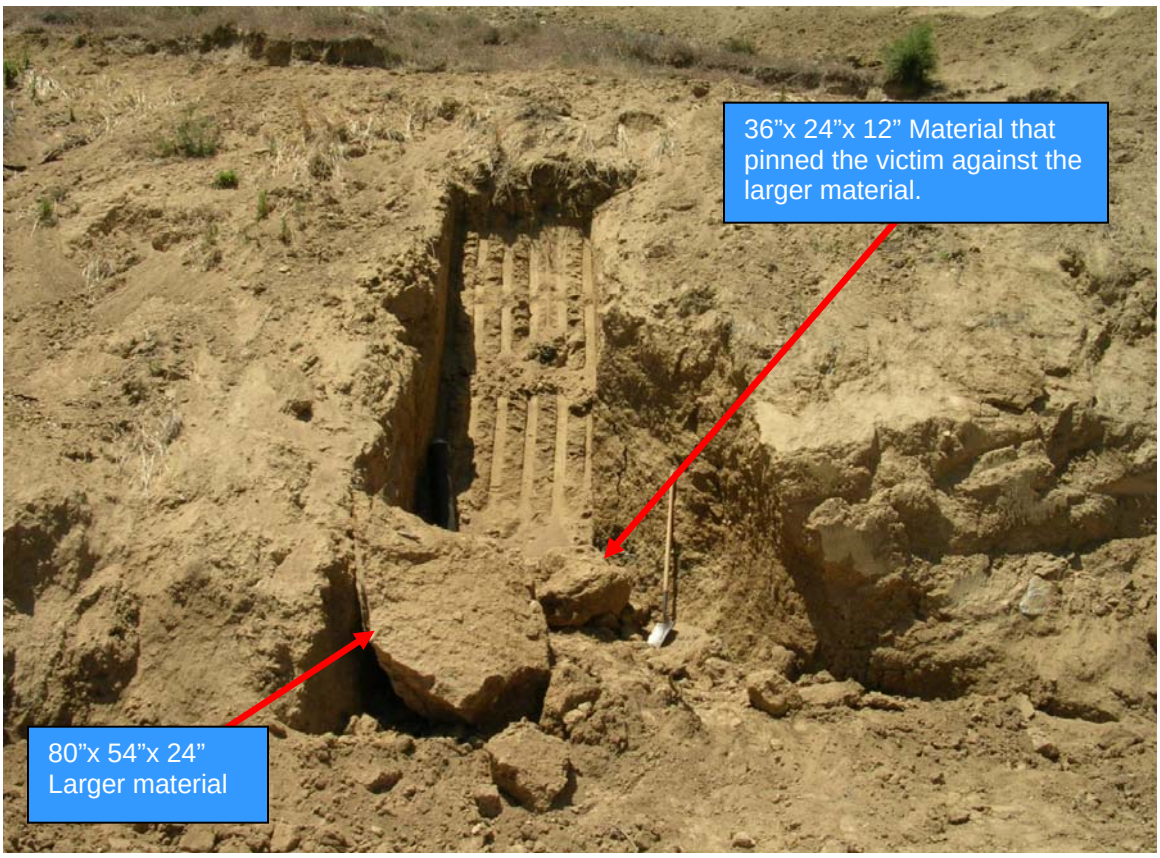
36”x 24”x 12” Material that pinned the victim against the larger material.
80”x 54”x 24” Larger material

OVERVIEW

Clark Gamble, grade setter, age 45, was fatally injured on June 12, 2007, while working on a reclamation project at a waste dump. Gamble had stepped into a trench excavated into the side of the slope when a vertical wall collapsed, pinning him between two large pieces of clay.

The accident occurred because procedures were not in place to ensure that persons could work safely at the reclamation site. Ground conditions that created a hazard were not taken down or supported before work or travel was permitted. The area was not posted or barricaded to prevent entry.

GENERAL INFORMATION

Felton Quarry, a surface crushed stone operation, owned by Granite Construction Co., was located in Felton, Santa Cruz County, California. The principal operating official was Eric W. Gaboury, plant superintendent. The mine normally operated one 8-hour shift per day, five days a week. Total employment was 13 persons.

Broken, partially decomposed granite was extracted from the quarry by ripping and pushing with a dozer. The material was crushed, washed, screened, and stockpiled. Finished products were sold for use in the construction industry.

The mine operator was performing work to remediate and reclaim an old overburdened spoil fill area on a hillside. The slope of the spoil fill was being flattened and underdrains were being installed, as recommended by an engineering firm.

The last regular inspection at this operation was completed on February 7, 2007.

DESCRIPTION OF ACCIDENT

On the day of the accident, Clark Gamble, (victim); Larry G. Kay, compactor operator; Don R. Brown, dozer operator; and Ronald G. Murphy, project superintendent, started work at 7:00 a.m. with a safety talk and a meeting to discuss the day's work.

The crew used a hydraulic excavator to excavate a large sloped hole in a 35-foot wide bench of compacted fill to expose the end of an 8-inch diameter perforated drain line. A 12-foot section of drain line was attached, with a coupling, to the exposed end of drain line and laid against the side of the hole. The hole was filled and compacted over the top of the pipe. Another hole was dug to expose the end of the 12-foot section of pipe and a 5 feet wide trench was excavated in the slope. An 8 to 9 feet long section was then coupled and laid into the trench.

Kay was using a mobile compactor to compact the fill on the bench when he saw some dust near the excavated trench and noticed Gamble pinned by falling material. He yelled to Murphy who had just returned from the mine office. They tried to move a piece of material pinning Gamble but were unsuccessful. Murphy called for emergency medical assistance. He also called David A. Locatelli, plant foreman, and then told Kay to call Brown to help. Murphy got a shovel and the men worked together to free Gamble. Brown and Murphy performed cardiopulmonary resuscitation until the paramedics arrived. Gamble

was pronounced dead at the scene by the Santa Cruz County coroner. The cause of death was attributed to blunt force trauma.

INVESTIGATION OF ACCIDENT

The Mine Safety and Health Administration was notified of the accident a 10:16 a.m. on June 12, 2007, by a telephone call from William R. Jackson, director of safety, to the National Call Center. Karonica Glover, assistant district manager, was called and an investigation was started the same day. An order was issued under the provisions of section 103(k) of the Mine Act to ensure the safety of the miners.

MSHA's accident investigation team traveled to the mine, conducted a physical inspection of the accident scene, interviewed employees, and reviewed documents and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management, employees, and the county coroner's office.

DISCUSSION

Location of the Accident

The accident occurred at the face of a bench cut into old overburden spoil fill on a hillside. The spoil fill had been placed at a slope of about 1½ feet horizontal to 1 foot vertical, with a total vertical height of approximately 150 feet, and had exhibited a prior history of instability. The ongoing remediation and reclamation of the slope consisted of placing compacted fill at a flatter, 2 feet horizontal to 1 foot vertical slope over the old fill slope and installing underdrains in the slope.

The new fill was keyed-in to the old fill by cutting benches into the underlying old fill slope as the fill was brought up. At the time of the accident, a near vertical soil face for the most recently cut bench rose about 4 to 10 feet above the elevation of the fill being placed. A short, notch-like trench had been excavated into the soil face.

The short trench excavation was used to install one of the two 8-inch flexible, corrugated, slotted underdrain pipes placed into the old fill, which were being installed to run straight down the slope. In order to place the pipe at a depth where it would effectively drain the fill, the notch-like trenches were excavated into the near vertical faces of the benches cut into the old fill slope. A specific

procedure was used to extend the drain pipes up-slope as the new fill was being placed.

Procedure

1. Unearthing the capped end of the buried pipe from within the "notch" trench cut into the previously filled bench face;

2. Adding additional length or lengths of pipe, with couplings; then,

3. Throwing the lengthened pipe into a new upslope "notch" trench excavated into the face of the bench currently being filled.

Weather

At the time of the accident, the weather was clear and dry with temperatures about 80 to 85 degrees Fahrenheit.

Trench

The accident occurred in the notch-like trench excavated into the cut in the old fill.

The trench was cut into a near-vertical (4 feet vertical to 1 foot horizontal) bench face. The vertical sides of the trench were about 4 feet high at the left side of the trench, 9 to 10 feet high on the right side, and the trench was 5 feet wide. The floor of the trench extended horizontally into the slope for about 5 to 6 feet, then sloped steeply for approximately 15 feet, and became vertical for about 2 feet where it intersected the slope above. Apparently Gamble was standing on the horizontal floor of the trench at the time of the collapse.

The accident occurred when a mass of material separated from the right trench wall and collapsed into the trench. The material fell into the trench predominantly by toppling and to a lesser degree by sliding.

The volume of collapsed material was estimated to weigh about 3 to 4 tons. A large portion of material collapsed in the form of cohesive boulder-sized soil pieces. The largest piece was 7 feet by 4 feet by 2 feet. It came to rest with the surface that separated from the trench wall facing upwards, suggesting predominantly toppling motion. The next largest piece reportedly came to rest against the lower back of the victim, pinning him against the large piece. This smaller piece was approximately 3 feet, by 2 feet by 1½ feet, weighing approximately 500 pounds.

At the time of the collapse, a non-vibratory self-propelled sheepsfoot roller was compacting soil on the bench at the same elevation, approximately 100 feet from the trench. No other equipment was nearby that could have produced significant vibration.

The trench wall collapse was precipitated by the development of tension cracks in the unstable, 9 to 10 feet high, vertical trench wall. The soil was moist, but not saturated at the time of the collapse. The ground surface at the top of the trench was covered with loose, dry soil that may have concealed evidence of instability in the form of tension cracking at the ground surface. Unsupported vertical trench faces in soil are not normally regarded as stable.

Training and Experience

Clark Gamble had ten years of experience all with this crew. He and the other crew members had received training on May 9, 2007, in accordance with 30 CFR, Part 46.

ROOT CAUSE ANALYSIS

A root cause analysis was conducted and the following root cause was identified:

Root Cause: Management policies and procedures were inadequate and failed to ensure that persons could work safely at the reclamation site. Ground conditions which created a hazard were not taken down or supported before work or travel was permitted.

Corrective Action: Management should establish procedures to ensure that persons can safely work in the area of excavations. Management should monitor persons working in these areas to ensure that the policies and procedures are effective to protect all persons.

CONCLUSION

The accident occurred because procedures were not in place to ensure that persons could work safely at the reclamation site. Ground conditions that created a hazard were not taken down or supported before work or travel was permitted. The area was not posted or barricaded to prevent entry.

ENFORCEMENT ACTION

Order No. 6370190 was issued on June 12, 2007, under the provisions of Section 103(k) of the Mine Act:

> A fatal accident occurred at this operation on June 12, 2007, when a miner was pinned between two large pieces of clay which caved off of the side of a slot excavated into the slope of a waste dump. This order is issued to assure the safety of all persons at this operation. It prohibits all activity at the waste dump until MSHA has determined that 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.

This order was terminated on June 14, 2007, after conditions that contributed to the accident no longer existed.

Citation No. 6370064 was issued on August 2, 2007, under the provisions of Section 104(a) of the Mine Act for a violation of 30 CFR 56.3200:

> A grade setter was fatally injured at this operation on June 12, 2007, when a trench wall collapsed and pinned him. The victim entered an excavation cut into a steep hillside. The sides of the trench were not taken down or supported prior to the victim entering the area. The area was not posted with a warning against entry.

This citation was terminated on August 2, 2007. Management established policies and procedures to ensure that persons can safely perform the task of working around excavations.

Approved By:

_____ _____

Arthur L. Ellis Date
District Manager

APPENDICES

A. **Persons Participating in the Investigation**
B. **Victim Information**

APENDIX A

Granite Construction Co., Inc

William R. E. Jackson.....director of safety
Randall R. Jacobsen.....branch safety manager
Jeff D. Sturgass .....safety manager
Eric W. Gaboury.....plant superintendent
David A. Locatelli .....plant foreman
Ronald G. Murphy.....project superintendent
Larry G. Kay.....compactor operator
Don R. Brown .....dozer operator

County Sheriff's Office

Allen Bart .....sheriff - coroner

Mine Safety and Health Administration

Bart T. Wrobel.....supervisory mine safety and health inspector
Bruce L. Allard .....supervisory mine safety and health inspector
Paul J. Donahue.....civil engineer

APPENDIX B

Accident Investigation Data - Victim Information
Event Number: 1 1 3 3 1 4 8

U.S. Department of Labor
Mine Safety and Health Administration

Victim Information: 1

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Last Four Digits of SSN:	5. Degree of Injury:
Clark Gamble	*M*	*45*		*01 Fatal*

6. Date(MM/DD/YY) and Time(24 Hr.) Of Death:	7. Date and Time Started:
a. Date: 06/12/2007 b.Time: 10:00	*a. Date: 06/12/2007 b.Time: 7:00*

8. Regular Job Title:	9. Work Activity when Injured:	10. Was this work activity part of regular job?
120 Grade Setter	*099 Setting Grade Stakes*	Yes | | No | X |

11. Experience	Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days
a. This Work Activity:	*10*	*0*	*0*	b. Regular Job Title:	*10*	*0*	*0*	c. This Mine:	*0*	*3*	*0*	d. Total Mining:	*0*	*3*	*0*

12. What Directly Inflicted Injury or Illness?	13. Nature of Injury or Illness:
090 Material caved from trench wall	*170 Blunt force trauma to torso*

14. Training Deficiencies:
Hazard: | | New/Newly-Employed Experienced Miner: | | Annual: | | Task: | |

15. Company of Employment:(If different from production operator)
Operator
Independent Contractor ID: (if applicable)

16. On-site Emergency Medical Treatment:
Not Applicable: | | First-Aid: | | CPR: | | EMT: | | Medical Professional: | | None: | |

17. Part 50 Document Control Number: (form 7000-1)
18. Union Affiliation of Victim: