

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Surface Nonmetal Mine  
(Kaolin Clay)

Fatal Sliding Material Accident  
June 2, 2003

M. Taylor Construction Company, Incorporated (P3R)  
Sandersville, Washington County, Georgia

at

Sandersville Huber Mine  
J. M. Huber Corporation  
Sandersville, Washington County, Georgia  
Mine I.D. No. 09-01127

Investigators

Merle E. Slaton  
Supervisory Mine Safety and Health Inspector

Kelly W. Fultz  
Mine Safety and Health Inspector

Christopher J. Kelly  
Civil Engineer

Wayne Maxwell  
Mine Safety and Health Specialist

Originating Office  
Mine Safety and Health Administration  
Southeast District  
135 Gemini Circle, Suite 212; Birmingham, AL 35209  
Michael A. Davis, District Manager

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Surface Nonmetal Mine  
(Kaolin Clay)

Fatal Sliding Material Accident  
June 2, 2003

M. Taylor Construction Company, Incorporated (P3R)  
Sandersville, Washington County, Georgia

at

Sandersville Huber Mine  
J. M. Huber Corporation  
Sandersville, Washington County, Georgia  
Mine I.D. No. 09-01127

Investigators

Merle E. Slaton  
Supervisory Mine Safety and Health Inspector

Kelly W. Fultz  
Mine Safety and Health Inspector

Christopher J. Kelly  
Civil Engineer

Wayne Maxwell  
Mine Safety and Health Specialist

Originating Office  
Mine Safety and Health Administration  
Southeast District  
135 Gemini Circle, Suite 212; Birmingham, AL 35209  
Michael A. Davis, District Manager

## **OVERVIEW**

Allen T. Lord, project supervisor, age 52, was fatally injured when he was partially engulfed by material that collapsed into the trench where he was working.

The accident occurred because the procedures used to install the drain pipe were inadequate. When the trench was excavated, the walls had not been sloped to a safe angle or supported prior to persons entering the trench. The vertical angle of the sides of the trench allowed shear stresses to develop within the soil that exceeded the internal strength of the soil and created a failure plane. Examinations had not been made to identify and correct hazardous ground conditions that developed as work progressed.

Lord had a total of 25 years experience as a project supervisor with 16 years at this operation.

## GENERAL INFORMATION

The Sandersville Huber Mine, an open pit, kaolin clay operation owned by J. M. Huber Corporation (J. M. Huber), was located adjacent to State Route 24, about 12 miles west of Sandersville, Georgia. The principal operating official for the company responsible to coordinate mining activity was Bobby E. Hall, mine manager. The mine normally operated one, 10-hour shift per day, five days a week. The company contracted all work at the mine site.

J. M. Huber had entered into a contract with Graham Brothers Construction Company, Incorporated (Graham Brothers) located at 1103 Highway 29 South, Dublin, Georgia, to perform all necessary work at the mine site. The principal operating official was Claude Graham, president. Nine persons were employed by this company at the mine.

M. Taylor Construction Company, Incorporated (M. Taylor), located at 387 Waco Drive, Sandersville, Georgia, was hired by Graham Brothers to assist with the extraction of the material and to oversee and supervise work conducted at the mine site. The principal operating official was Clifton Flanders, director of operations. Eight persons, including the victim, were employed by this company at the mine.

Howard Sheppard, Incorporated, located along Tennville Road, Sandersville, Georgia, was contracted by J. M. Huber to haul material from the mine site to the plant. The principal operating official was Andy Gay, safety director.

The mine was accessed by a haul road that entered the mining area from the northwest. Overburden was stripped with equipment provided by Graham Brothers. The equipment was operated by employees of both Graham Brothers and M. Taylor. Excavators, owned and operated by Graham Brothers, were used to extract the kaolin. The material was then transported to the plant for processing by over-the-road trucks, owned and operated by Howard Sheppard, Incorporated.

The clay was processed by milling, drying, and calcining. The processed material was stored in bulk bins for bagging or bulk shipment to customers in the paper industry.

The last regular inspection at this operation was conducted on March 27, 2003.

## **DESCRIPTION OF ACCIDENT**

On the day of the accident, Allen Lord (victim) reported to work at 7:00 a.m., his normal starting time. Lord's responsibilities included coordinating and supervising employees of Graham Brothers and M. Taylor at the mine site.

Work progressed normally throughout the morning. After lunch, Lord informed Ricky Wynn, area superintendent for Graham Brothers, and Bruce Cauley, superintendent for Graham Brothers, that the drainpipe for the new storm drain was ready to be installed.

At about 2:00 p.m., Lord, Wynn, and Cauley met at the location where the drainpipe was to be installed. Wynn operated an excavator and dug a trench about 50 feet long and 9 feet deep. He used the excavator to transport and position sections of pipe in the trench. Lord and Cauley worked in the trench, guiding and connecting the sections of pipe. By 4:30 p.m., approximately 125 feet of trench had been opened and five sections of pipe had been laid without incident. Lord and Cauley stayed in the trench while Wynn prepared to retrieve the sixth section of pipe. As Wynn was backing the excavator, he saw the side of the trench start to collapse. He shouted and Cauley and Lord moved in opposite directions to escape from the trench. Cauley was able to get out unharmed. Lord was partially engulfed by the collapsing material as it sloughed into the trench.

Wynn used his cell phone to call Clifton Flanders. Flanders immediately called for emergency assistance and proceeded to the accident site with other employees to provide assistance. The material covered Lord from his left shoulder to his waist on his right side. The employees extricated the victim and administered CPR. Emergency medical personnel arrived and transported Lord to the hospital where he died as a result of traumatic asphyxia.

## INVESTIGATION OF THE ACCIDENT

MSHA was notified of the accident at 5:30 p.m., on June 2, 2003, by a telephone call from Gail Brown, safety and health manager for J. M. Huber Corporation, to Harry L. Verdier, assistant district manager. An investigation was started that 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 investigators traveled to the mine, made a physical inspection of the accident scene, interviewed employees, and reviewed conditions and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management and employees.

## DISCUSSION

### Location of the Accident

The accident occurred in the R. M. Brown Estates mining area of the mine property. There were three pits in this mining area, designated as P1, P2, and P3. The pits were located adjacent to each other and were accessed by a haul road that entered the area from the northwest. There was active mining in P1 and P3 but no mining was being done in P2. The P2 pit, located between P1 and P3, functioned as a settlement basin for the mining area and was divided into two parts by a dike. Both parts of the P2 pit were filled with water.

A storm drain was being constructed to provide drainage for a low-lying brushy part of the mining area, located immediately north of P3. The storm drain was to extend southeast to the P2 pit and was to be approximately 200 feet long when completed.

### Pipe

The drainpipe sections, constructed of corrugated plastic, measured 20 feet long and 24 inches in diameter.

### Equipment

A Komatsu PC400LC track excavator was used to dig the trench and to transport and lower the pipe sections into the trench. It was equipped with a 4.5 cubic-yard capacity bucket, that was approximately 6 feet wide. A 2-½ inch nylon choker strap, attached to the bucket, was used to lift and position the pipe sections.

### Trench

The trench was dug by the excavator before sections of the pipe were laid. The excavator operator dug approximately 40 to 50 feet of trench, then placed the pipe sections into that portion of the trench. Lord and Cauley worked in the trench to connect the sections of pipe as the excavator operator retrieved the next section of pipe. At the time of the accident, the trench was approximately 125 feet long and extended north in a straight line from the P2 pit. The trench had not been backfilled although some soil had been placed back into the south end of the trench to keep the pipe sections in place. The trench was approximately 9 feet wide from the upper edge and 9 feet deep. The sides of the trench were generally vertical with some incidental sloughing along the upper edge that made it slightly wider at the top than it was at the bottom.

### Excavated Soil Pile

Soil excavated from the trench had been piled along the length of the east side of the trench. The soil pile had an elongated triangular shape that was sloped on either side at an angle ranging from 22 to 36 degrees. The pile was approximately 7 feet high and approximately 20 feet wide at the base. From the south end of the trench, the base of the pile gradually diverged from the trench so that at the north end the base of the pile was set back approximately 3 feet from the upper edge. No sloughing or failure surfaces were observed in the pile.

### Soil Composition

Soil in the area of the trench was stratified in two layers, a surface layer and a sub-surface layer. The surface layer was red in color and primarily consisted of fine-grained particles. Some coarse-grained particles were present; however, most samples of this soil were predominantly cohesive and could be molded without crumbling.

The sub-surface layer was yellow in color and primarily consisted of coarse-grained particles. Some fine-grained particles were also present and while moist samples of this soil could be molded into a ball, they would crumble easily. Consequently, the sub-surface soil appeared to be a predominantly non-cohesive or granular soil that could be described as yellow clayey sand.

Soil composition of the excavated trench was such that the upper 4 to 5 feet of the sides of the trench were composed of red sandy clay while the

lower 4 to 5 feet were composed of yellow clayey sand. The exposed soils on the sides of the trench appeared to be naturally moist. No seepage or pooled water was detected in the trench.

### Trench Collapse

The collapse occurred on the east side of the trench, approximately 16 feet from the north end. It extended approximately 35 feet south, forming a shallow arc between the upper edge of the trench and the base of the excavated soil pile. The material that collapsed measured about 1.5 feet thick at the upper edge and appeared to extend 9 feet to the bottom of the trench. The thickness of the collapsed material decreased toward the bottom of the trench. The general shape of the collapse was that of a wide, thin wedge. A soil mass of this type and volume was estimated to weigh approximately 15 tons.

The failure surface on the east side of the trench was well defined and very clean. No secondary sloughing or radical cracking was observed. The material pinned the victim against the north side of the trench, approximately 31 feet from the north end.

The sides of the trench had not been sloped or supported. The vertical angle of the sides of the trench allowed significant shear stresses to develop within the soil. These shear stresses exceeded the internal strength of the soil and created a failure plane along which the cave-in occurred. The pile of excavated soil located along the length of the trench may have added some lateral surcharge load to the east side of the trench. However, the absence of any failure surfaces in the soil pile in the vicinity of the cave-in indicated that the proximity of the soil pile to the trench did not significantly affect the stability of the east side of the trench.

### Weather

Weather on the day of the accident was clear, dry, and warm.



## ROOT CAUSE ANALYSIS

A root cause analysis was conducted and the following causal factors were identified:

Causal Factor: The composition of the soil had not been evaluated prior to excavating the trench.

Corrective Action: Ground conditions should be carefully examined to determine hazards prior to performing tasks and as conditions change.

Causal Factor: The trench walls had not been sloped to a safe angle or supported to prevent them from collapsing.

Corrective Action: Procedures should be established to ensure trenches are sloped to a safe angle or supported when persons are required to enter them to conduct work activities. Ensure that employees are trained regarding safe procedures for trenching, including sloping to a safe angle. Trench boxes or appropriate material to shore trenches should be provided.

Causal Factor: A risk assessment to determine possible hazards and establish safe work procedures was not conducted prior to excavating the trench and laying the drain pipe.

Corrective Action: Employees should be trained and knowledgeable of the procedures involved in conducting a task risk assessment. Management should implement procedures that require risk assessments to be conducted that identify potential hazardous conditions. Any potential hazards identified should be corrected prior to performing the task.

## CONCLUSION

The accident occurred because the procedures used to install the drain pipe were inadequate. When the trench was excavated, the walls had not been sloped to a safe angle or supported prior to persons entering the trench. The vertical angle of the sides of the trench allowed shear stresses to develop within the soil that exceeded the internal strength of the soil and created a

failure plane. Examinations had not been made to identify and correct hazardous ground conditions that developed as work progressed.

## **VIOLATIONS**

### M. Taylor Construction Company, Incorporated

Order No. 6076382 was issued on June 2, 2003, under the provisions of Section 103(k) of the Mine Act:

A fatal accident occurred at this operation on June 2, 2003, when a foreman was covered by material, which had sloughed off the trench wall where he was working. This order is issued to assure the safety of persons at this operation and prohibits any work in the affected area until MSHA determines that it is safe to resume normal operations. The mine operator shall obtain prior approval from an authorized representative for all actions to recover and/or restore operations in the affected area.

This order was terminated on June 9, 2003. Conditions that contributed to the accident no longer exist and normal mining operations can resume.

Citation No. 6111665 was issued on June 17, 2003, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 56.3200:

A contractor foreman was fatally injured at this operation on June 2, 2003, when a trench wall collapsed and partially engulfed him. The victim and a co-worker were connecting drainpipe inside a trench that was about 9 feet deep. The sides of the trench had not been sloped or supported prior to the victim entering the trench.

This citation was terminated on June 23, 2003. The company has established procedures that require sloping and/or supporting the sides of trenches before employees enter the trench. Employees have been instructed in these procedures.

Citation No. 6111666 was issued on June 17, 2003, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 56.3401:

A contractor foreman was fatally injured at this operation on June 2, 2003, when a trench wall collapsed and partially engulfed him. The victim and a co-worker were connecting drainpipe inside a trench that was about 9 feet deep. Persons experienced in examining and testing for loose ground conditions had not examined the trench walls prior to work commencing or as conditions changed.

This citation was terminated on June 23, 2003. Training has been given to persons experienced in examining and testing for loose ground conditions prior to work commencing and as ground conditions change when trenching.

**Graham Brothers Construction Company, Incorporated**

Citation No. 6111663 was issued on June 17, 2003, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 56.3200:

A contractor foreman was fatally injured at this operation on June 2, 2003, when a trench wall collapsed and partially engulfed him. The victim and a co-worker were connecting drainpipe inside a trench that was about 9 feet deep. The sides of the trench had not been sloped or supported prior to the victim entering the trench.

This citation was terminated on June 23, 2003. The company has established procedures that require sloping and/or supporting the sides of trenches before employees enter the trench. Employees have been instructed in these procedures.

Citation No. 6111664 was issued on June 17, 2003, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 56.3401:

A contractor foreman was fatally injured at this operation on June 2, 2003, when a trench wall collapsed and partially engulfed him. The victim and a co-worker were connecting drainpipe inside a trench that was about 9 feet deep.

Persons experienced in examining and testing for loose ground conditions had not examined the trench walls prior to work commencing or as conditions changed.

This citation was terminated on June 23, 2003. Training has been given to persons experienced in examining and testing for loose ground conditions prior to work commencing and as ground conditions change when trenching.

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_

Michael A. Davis  
District Manager

## **APPENDIXES**

- A. Persons Participating in the Investigation
- B. Persons Interviewed

## APPENDIX A

### Persons Participating in the Investigation

#### **J. M. Huber Corporation**

Richard D. Shaw	corporate director environmental, health and safety
Michael Corrigan	Georgia mines manager
Harlan T. Archer	plant manager
Gail E. Brown	safety, health and environmental manager
Bobby E. Hall	mine manager

#### **Graham Brothers Construction Company, Incorporated**

Darrel Bolden	safety and health manager
James Deal	environmental health and safety
Ricky Wynn	area superintendent
Bruce Cauley	superintendent

#### **M. Taylor Construction Company, Incorporated**

Kelvin Cauley	purchasing manager
Clifton Flanders	director of operations

#### **Shapiro Fussell**

Wade H. Purcell	attorney at law
-----------------	-----------------

#### **Mine Safety and Health Administration**

Merle E. Slaton	supervisory mine safety and health inspector
Kelly W. Fultz	mine safety and health inspector
Christopher J. Kelly	civil engineer
Wayne Maxwell	mine safety and health specialist

## APPENDIX B

### Persons Interviewed

#### **J. M. Huber Corporation**

Bobby E. Hall                      mine manager  
Gail E. Brown                      safety, health and environmental manager

#### **Graham Brothers Construction Company, Incorporated**

Ricky Wynn                      area superintendent  
Bruce Cauley                      superintendent

#### **M. Taylor Construction Company, Incorporated**

Clifton Flanders                      director of operations