



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research



Equipment Operator Struck and Killed by Road Grader—Virginia

FACE 9240

SUMMARY

A 52-year-old male equipment operator (the victim) died after falling from, and being struck and run over by, a road grader. The victim and his son were preparing an 800-foot-long private residence driveway for paving. Two days before the incident, the two workers had graded the ground surface for the driveway. When this task was completed, the victim cut drainage ditches on both sides of the driveway, starting the cuts at the residence and ending just short of the county road. The left side of the driveway was relatively level, but the right side was very steep as it approached the county road, with a 3:1 uphill pitch (a 3-foot rise for every horizontal foot). Because of the rocky terrain, the victim was unable to make a smooth cut for the right side ditch. After the workers completed applying the gravel base of the driveway on the day of the incident, the victim decided to improve the cut of the right side ditch. The victim's son was out of sight of the victim during this time; he had walked around a curve which took him toward the residence and away from a direct line-of-sight relative to the grader. One-half hour later the son walked back toward the grader and noticed that the grader was idling in what seemed to be a stationary position. When the son arrived at the grader, he found the victim pinned under the left rear wheel of the grader. NIOSH investigators concluded that, to prevent future similar occurrences, employers should:

- **instruct workers to use the safety features incorporated into the design of equipment or provide alternative means of restraint to ensure their safety**
- **clearly communicate to workers the tasks that they are to perform**
- **develop, implement and enforce a written safety program.**

INTRODUCTION

On September 4, 1992, a 52-year-old male equipment operator died after falling from, and being struck and run over by, a road grader. On September 14, 1992, officials of the Virginia Occupational Safety and Health Administration (VAOSHA) notified the Division of Safety Research (DSR) of this fatality, and requested technical assistance. On September 24, 1992, a DSR safety specialist traveled to the incident site to conduct an investigation. The incident was reviewed with company officials, the VAOSHA compliance office, and personnel from the sheriff's office. Photographs of the incident site taken by VAOSHA immediately following the incident were reviewed during the investigation.

The employer in this incident was a grading and paving company that had been in operation for 3 years and employed six workers. The employer had no written safety program or safety policy. Worker training was accomplished on the job. The victim had 31 years experience as an equipment operator. The employer had no previous fatalities.

INVESTIGATION

The employer had been contracted to grade and pave an 800-foot-long driveway at a new private residence. A road grader was rented to prepare the ground surface of the driveway, to cut drainage ditches, and to spread gravel as a base for the asphalt surface.

An equipment operator (the victim) and a general laborer (the victim's son) were sent to the site to prepare the driveway. The victim graded the ground for the driveway surface from the residence toward a county road, then cut drainage ditches on both sides of the driveway. The ground on the left side of the driveway was relatively level and the victim had no trouble cutting the left-side ditch, even though the terrain was very rocky. The ground to the right of the driveway was level at the residence end, but more steeply inclined as the driveway approached the county road. A bank with a 3:1 uphill pitch (a 3-foot rise for each horizontal foot) abutted the driveway. The steep slope of the bank, coupled with the presence of rock, made it very difficult to cut the right-side ditch. The victim spent the remainder of the day working on this ditch, and although he finished cutting it, he was dissatisfied with the quality of the work.

During the following 22 days, the victim and his son worked at spreading and leveling the gravel base for the asphalt driveway. When work on the gravel base was complete, the victim decided to improve the cut of the right-side ditch. As the victim worked on the ditch, his son walked around a curve toward the residence and out of direct sight of the grader. After about 2 hour, the son noticed that the grader was idling and seemed to be in a stationary position. The son walked back toward the grader to see if there was a problem. When he arrived at the grader, he found his father pinned under the left rear wheel. The son immediately backed the grader off the victim and pulled him to the center of the driveway. He called the company office from the two-way radio in the company truck and told them to call the emergency rescue squad. When the rescue squad arrived they could not detect any vital signs and summoned the medical examiner, who pronounced the victim dead at the scene.

The victim had positioned the grader in such a manner that the left (or driver's side wheels) were located in the bottom of the ditch and the right wheels were located on the bank. Two locations were identified in the bottom of the ditch where the grader blade had dug deeply into the ground. The grader had stopped at the location nearest the county road. When the grader was backed up to the second dig area and the blade placed over the dig, the grader's cab was directly above the position where the victim was discovered. Although the incident was unwitnessed, it is assumed that when the blade dug into the ground the first time, the victim lost his balance and fell or was thrown from the cab and was pinned by the rear wheel of the grader. On various occasions, the company owner had observed the victim operating the grader in a standing position while looking out of the cab. Standing allowed a less obstructed view of the blade. The driver's seat was equipped with a functional safety belt.

CAUSE OF DEATH

The medical examiner listed the cause of death as crushing injuries to the chest.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should instruct workers to use the safety features incorporated into the design of equipment or provide alternative means of restraint to ensure their safety.

Discussion: It is understood that the victim's line of sight to the grader blade was obstructed; however, seat restraints should be worn when operating machinery. This is especially true when equipment is being operated on uneven terrain. If it is not feasible to use existing seat belts, then alternative means of restraint include the use of a body harness or safety belt and lanyard secured in the cab of the grader while operating the grader in a standing position. Employers should also consider using an observer to direct movements when operator sight is obstructed.

Recommendation #2: Employers should clearly communicate to workers the tasks that they are to perform.

Discussion: During interviews immediately follow the incident, the employer said that he did not know the reason why the victim restarted work on the right side ditch. The employer felt that under the circumstances (the rocky ground and the steep bank) the quality of the ditch was acceptable.

Recommendation #3: Employers should develop, implement and enforce a written safety program.

Discussion: Employers should emphasize safety to their employees by developing, implementing and enforcing a comprehensive written safety program. The safety program should include, but not be limited to, safe work procedures for all tasks performed by workers and training in the recognition and avoidance of hazards, the proper selection and use of personal protective equipment, and the proper operation of equipment.

[Return to In-house FACE reports](#)

Last Reviewed: November 18, 2015

Was this page helpful?