FACE Washington Fatality Assessment & Control Evaluation

INJURY NARRATIVE

Grade Checker Severely Injured When Backed Over by Grader

Industry: Excavation and Grading Contractors

Task: Attempting to replace feathers on a hub

Occupation: Grade checker

Type of Incident: Run over by equipment

SHARP Safety & Health Assessment & Research for Prevention

SHARP Report No.: 71-142-2015s

Washington State Department of Labor & Industries

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In May 2015, a 38-year-old grade checker suffered multiple serious injuries when a motor grader backed over him. He had worked for the employer, a construction contractor that does excavation and grading work, for about 10 years.

The employer had been contracted to build a parking lot. On the day of the incident, the grade checker was working at the job site along with the operator of a Caterpillar motor grader 120G. The operator was using the grader to level gravel for the parking lot surface. The grade checker – wearing a high-visibility vest, hard hat and ear plugs – was performing his normal job duties. These duties included ensuring that the grade of the parking lot was correct.

As he was cleaning gravel off a curb, he noticed that a grade hub, a stake in the ground used as a visual marker for the grader operator after gravel has been poured, was missing it strips of plastic known as feathers. He started walking toward the hub, which was located behind the grader, to replace the feathers. The grader which had been moving forward stopped and then began backing up. He did not see the grade checker who was approaching the grader from its left rear.

As the grader and grade checker moved towards each other, the grade checker stopped at the hub and kneeled down. When he kneeled down, he was in a blind spot of the grader's mirrors; the operator was unable to see him. The grade checker was so focused on his task that he did not notice the grader. The grader's two left tires then ran over the left side of his body. He suffered multiple serious injuries.

An investigation found that the grader's back-up alarm was working. Before backing up, the operator had checked the grader's mirrors, but the grader does have operator blind spots to the rear. The employer was not cited for any safety violations.

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Photo 1: incident scene

Photo 1: Incident scene showing the grader in the parking lot under construction. The grader was moved after the incident.

Photo 2: incident scene closer view

Photo 2: Incident scene showing location of grader and grade checker at the time of incident. The red arrow indicates the direction in which the grader was backing up. The “X” shows the location of the grade checker, who was kneeling down, when he was backed over.

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Incident grader.

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Incident grader showing the two left rear tires that backed over the grade checker.

Requirements

- Employers must make sure that earthmoving or compacting equipment with an obstructed view to the rear in reverse is not operated unless:
  - A reverse signal alarm distinguishable from the surrounding noise level is used;
    or
  - An observer signals that it is safe to back up.

  If the surrounding noise level is of such amplitude that reverse signal alarms are not effective, then amber strobe lights must be used.

  See WAC 296-155-615(1)(g).

Recommendations

- Develop, implement, and enforce standard operating procedures that address worker safety and minimize work to be performed near vehicles and equipment.

- Develop, implement, and test methods of communication between equipment operators and workers on foot.

Recommendations

- Consider installation of collision avoidance or proximity warning systems (radar and sonar devices, or tag based systems that use personal electronic tags to detect a marker field generated by a transmitter on the vehicle) or monitoring technologies (video cameras and additional mirrors) on construction vehicles and equipment to increase the likelihood that equipment operators will detect workers on foot around their equipment.

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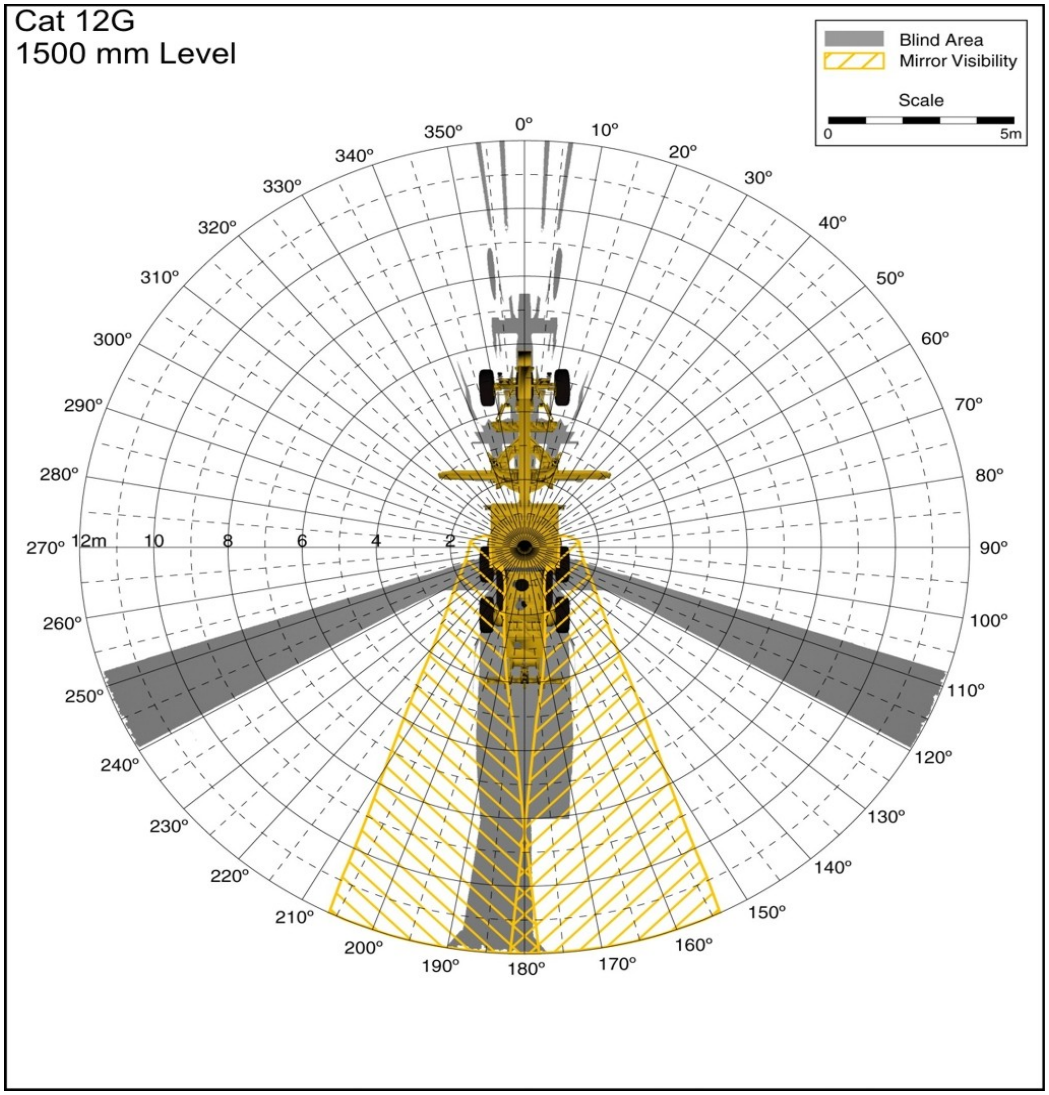

Diagram credit: NIOSH

Diagram shows the operator's visibility while seated at the controls of a Cat 12G grader. The gray shaded areas indicate operator blind spots on a level plane at the height of 1500 mm (4 foot 11 inch). The yellow diagonal lines represent the area the operator can see to the rear using the mirrors.

Resources

Preventing Backovers
https://www.osha.gov/doc/topics/backover/

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This bulletin was developed to alert employers and employees of a serious traumatic injury to a worker in Washington State and is based on preliminary data ONLY and does not represent final determinations regarding the nature of the incident or conclusions regarding the cause of the injury.

Developed by Washington State Fatality Assessment and Control Evaluation (FACE) Program and the Division of Occupational Safety and Health (DOSH), Washington State Dept. of Labor & Industries. The FACE Program is supported in part by a grant from the National Institute for Occupational Safety and Health (NIOSH grant# 2U60OH008487-11). For more information, contact the Safety and Health Assessment and Research for Prevention (SHARP) Program, 1-888-667-4277.