

Being struck by objects or equipment on the jobsite was the second most common cause of immediate worker hospitalizations in the Construction industry sector in Washington State from 2014 through 2018.

During grading and site preparation operations, moving equipment and vehicles pose a hazard to workers on the jobsite. **Training and planning for safety can prevent struck-by hospitalizations!**

Pipelayers Backed Over by Excavator While Clearing Lot

An excavator operator and a pipelayer were clearing logs and debris from a lot. The operator asked the pipelayer to get a chain to use to move a log. The pipelayer grabbed the chain and walked behind the excavator as it was moving forward, about 20 feet in front of him. He was looking down and around as he walked and didn't notice the excavator start to reverse. When he looked back up, the excavator was directly in front of him.

The pipelayer yelled as his left leg was crushed under the excavator's track. He was taken to the hospital by ambulance where he had surgery to repair two broken bones in his leg.



Excavator that struck pipelayer walking behind it.

Grade Checker Severely Injured when Struck by Grader

An operator was using a grader to level out a new parking lot. At the same time, a grade checker was cleaning gravel off a curb nearby when he noticed a hub in the grading area with its feathers torn off. He walked over to the hub while the grader was driving forward away from him. As he knelt down to fix the hub, the grader began backing up toward him. He was not looking up and didn't hear the grader's back-up alarm.

The grade checker was struck by the left two rear wheels of the grader and suffered multiple fractures, including his skull, jaw, rib, lower leg, and pelvis. He also sustained face lacerations and a collapsed lung.

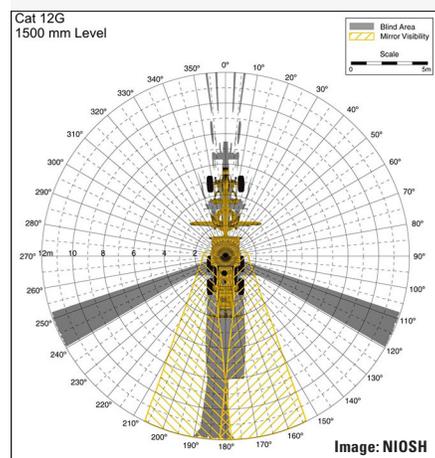


Grader that struck grade checker who was kneeling to fix hub feathers.

Grade Checker's Legs Run Over by Grader

Two grade checkers were checking the grade of a roadway; one setting hub stakes and the other checking the level and acting as a spotter. After the grader passed them moving forward, the hub setter walked to the center of the roadway and knelt to pound a stake while the other worker crossed to the other side. Neither worker noticed the grader reversing near them. When the hub setter looked up and saw the grader backing toward him, he tried to get out of the way but tripped.

The grader backed over his legs and then ran over him again as the operator moved forward to free him. Both of his lower legs were fractured, and he suffered foot and nerve injuries.



Blind Area Diagram representing operator visibility for an object at a height of 1500mm for a Cat 12G grader.

Recommendations

Safety Technology

- **Consider safer options.** Installing proximity alert systems that warn equipment operators when a worker is behind them can create safer worksites.

Communication

Employers should emphasize good communication between equipment operators and ground workers.

- **Plan for safety!** Equipment operators and ground crew should discuss each day's work activities and create a plan for communication.
- **Make contact.** Eye contact is not enough. Ground workers should wave or signal at the operator and wait for their acknowledgment before entering the work area—never assume the operator has seen you!
- **Use radio communication.** Ground workers can alert operators if people or vehicles enter the area where equipment is running.

Visibility

- **Know the blind spots.** Equipment operators and ground workers should be aware of the blind spots for equipment in use.
- **Maximize visibility.** Make sure ground workers properly wear clean high-visibility garments. Wearing dark clothes or a dirty vest blends in with surroundings.

Equipment

- Create a policy to **separate workers on foot from operating equipment.**
- **Train workers how to recognize struck-by and crush hazards** posed by the moving equipment they will work around.
- **Inspect equipment before operating:**
 - Check that back-up alarm is audible.
 - Adjust and clean mirrors.
 - Clean windows.
 - Check brakes.
 - Look under equipment and wheel wells for animals or people who may be taking cover.
- **Only operate equipment with all guards** in place.
- **Make sure that equipment operators use safe speeds and look in the direction of travel.**

Requirements

Equipment

- Operators must look in the direction of travel, and keep a clear view of the path when operating in reverse. See [WAC 296-155-615\(1\)\(h\)](#)
- You 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 you must use amber strobe lights. See [WAC 296-155-615\(1\)\(g\)](#)

PPE

- Employers must provide employees exposed to vehicular traffic with, and they must wear, high visibility garments meeting the requirements of [WAC 296-155-200](#). See [WAC 296-155-655\(4\)](#)

Reporting

- Employers are required to contact DOSH within 8 hours of a workplace fatality or in-patient hospitalization of any employee and within 24 hours of a non-hospitalized amputation or loss of an eye of any employee. See [WAC 296-27-031](#)

Resources

Safety Standards for Construction Work, Chapter 296-155 WAC: <https://app.leg.wa.gov/wac/default.aspx?cite=296-155>

Construction eTools—Struck-By (OSHA): <https://www.osha.gov/etools/construction/struck-by>

Construction Focus Four: Struck-By Hazards Instructor Guide: https://www.osha.gov/dte/outreach/construction/focus_four/struckby/struckby_ig.pdf

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