

Ineffective location of back-up alarms on road construction vehicles

Employers: Vehicle back-up alarms may not provide adequate audible warning to employees and the public in the backing zone when these alarms are mounted in poor locations. A recent fatality highlights the importance of this issue:

- A traffic control laborer working on a road construction site died after being backed over by a road sweeper equipped with a functioning back-up alarm. The alarm was mounted in a compartment on the side of the vehicle, rather than the rear of the vehicle. While the sound projected out the side of the vehicle was loud, the signal at the rear within the 15-foot backing zone was substantially weakened and could not provide adequate warning.

Where's the right location for a back-up alarm?

These alarms need to be mounted **externally** on the **rear** of the vehicle at a **height** that aims the warning signal toward the worker's general hearing zone. The warning signal should not have to travel through doors, covers, and other obstructions since these can muffle the signal or deflect it away from the backing zone. *Please see the photos on the following page.*

Take a moment before using construction vehicles to **visually** locate back-up alarms. When you spot vehicles that need to have their back-up alarms moved, notify your maintenance crew or other individual for follow-up and give them a copy of this Hazard Alert.

Always follow the manufacturer's specifications when maintaining or replacing back-up alarms.

Should I use a louder back-up alarm?

Switching to a louder alarm may not make up for poor alarm location. This is because signals projected from back-up alarms are highly directional. This means even the loudest signals can be deflected away from the backing zone.

Make sure you regularly check the loudness of the alarm signal within the **entire 15-foot backing zone**. This is necessary whenever intense noise from nearby heavy-equipment such as grinders, scrapers, or concrete saws is present while your vehicle is in use. If you find it hard to distinguish the alarm signal above background noise at a distance of 15 feet from the rear of the vehicle, you may need a better back-up alarm.

An alternative to a louder alarm might be a "smarter" alarm, such as a multi-frequency "broadband" back-up alarm or an alarm that self-adjusts up or down to provide a signal that is 5-10 dB(A) above the background noise level.

What if back-up alarms can't provide adequate warning in the backing zone?

At some job sites, background noise may be loud enough to render even the loudest or "smartest" back-up alarm ineffective. When you encounter ineffective back-up alarms, use other methods to keep employees safe from backing vehicles. For example:

- When applicable, follow requirements in WAC 296-155-610 to designate and use a trained spotter to let drivers know when it's safe to back up. In other cases, you may need to move workers to a different area on site as a way to prevent employees from being in the backing zone.
- Work with people from other employers who share the job site to bring more attention to back-up hazards. For example, pass on this Hazard Alert and hold joint safety meetings to clarify each other's roles in preventing back-up accidents.

Other resources

- Construction industry rules, [Chapter 296-155 WAC](#)
- Other Division of Occupational [Safety and Health \(DOSH\) rules](#) may apply.
- [Dump Trucks in the Construction Zone](#), Hazard Alert (2007)
- [L&I Video Library](#).

How can I get help from Labor & Industries?

L&I provides consultations, training, and technical assistance at no cost to employers. Call today to schedule a free, confidential consultation or visit [L&I's Safety & Health Consultation page](#) for more information. You may also call 1-800-423-7233 or visit a local L&I office and ask for the consultation supervisor.

Photo below shows **ineffective** back-up alarm location inside the vehicle's side compartment.



Photo below shows **better** back-up alarm location; external and facing the backing zone.

