

Vehicular-related Workplace Fatal Injuries in 2H2023

The movement of heavy vehicles/equipment at worksites must be carefully managed to prevent serious injury or fatality. Blind spots around heavy vehicles/equipment can pose significant risks to workers on site. When working next to a heavy vehicle/equipment, crushing hazards may be present due to vehicular movement.

The WSH Council calls on all companies operating heavy vehicles/equipment to review their operations and introduce necessary risk controls to ensure the safety and health of workers.

Worker pinned by reversing wheel loader

On 10 July 2023, a worker was at the rear of a tipper truck when a wheel loader reversed and pinned him against the truck. The worker was pronounced dead at the scene.

The wheel loader was equipped with rear-view mirrors, side mirrors, and an operational reversing alarm with warning lights.



Figure 1: Scene of the accident.

Worker struck by motorcycle during road works

On 15 September 2023, a group of workers was carrying out road surfacing works on the two rightmost lanes of an expressway. A worker was performing traffic control duties when a motorcyclist lost control of his vehicle, crashed into the work zone and struck the worker. The worker died at the scene.



Figure 2: Scene of the accident.

Worker caught in-between truck chassis and outrigger

On 2 December 2023, a truck driver was retracting the rear outrigger of a concrete pump truck. A worker, who was then standing beside the truck, was pinned against the truck's chassis by the retracting swivel-type outrigger. He was sent to the hospital where he died.

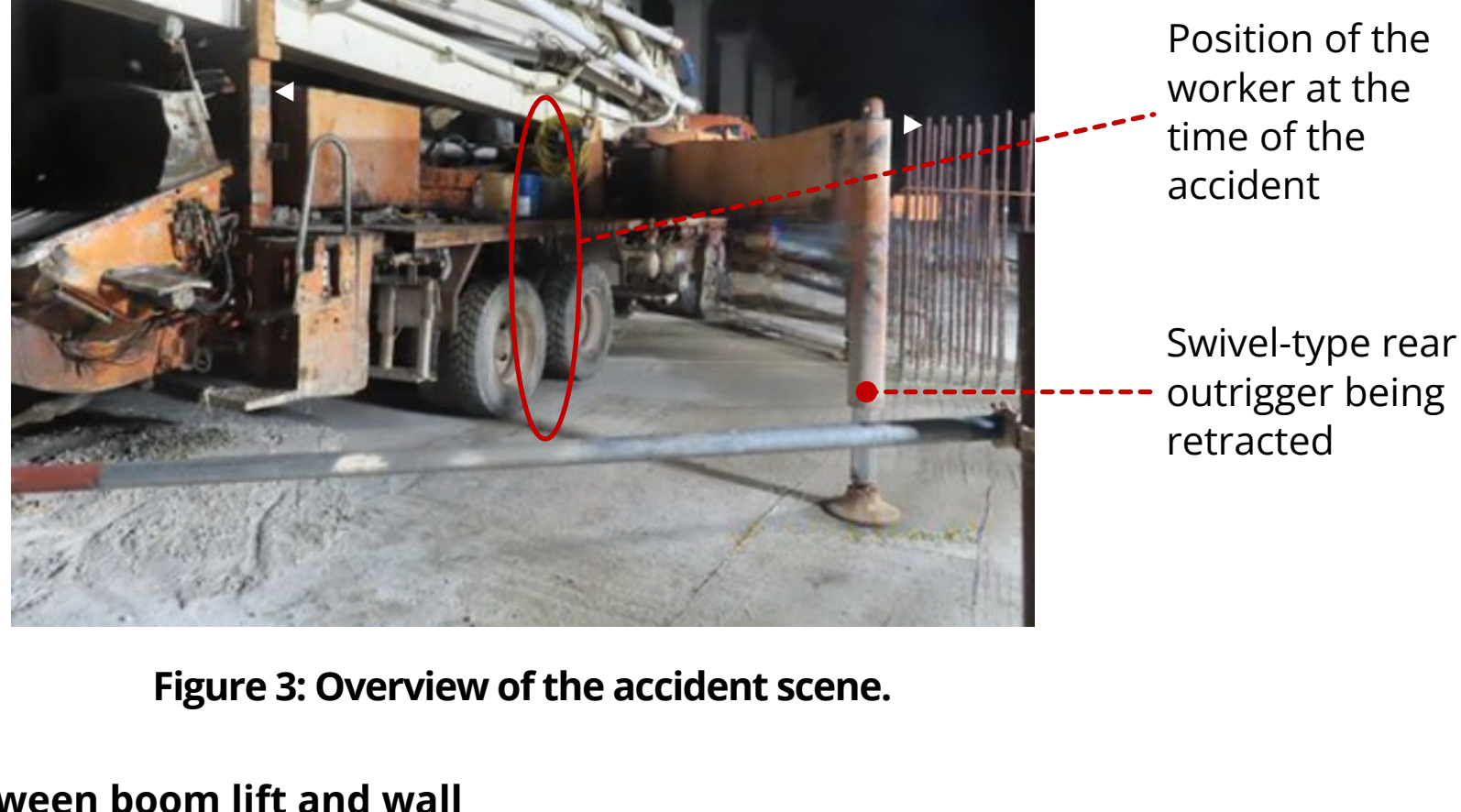


Figure 3: Overview of the accident scene.

Worker pinned between boom lift and wall

On 9 December 2023, a worker attempted to squeeze through the gap between a boom lift and a building wall. While doing so, he was pinned against the wall when the boom lift suddenly slewed to one side. The worker was sent to the hospital where he died.

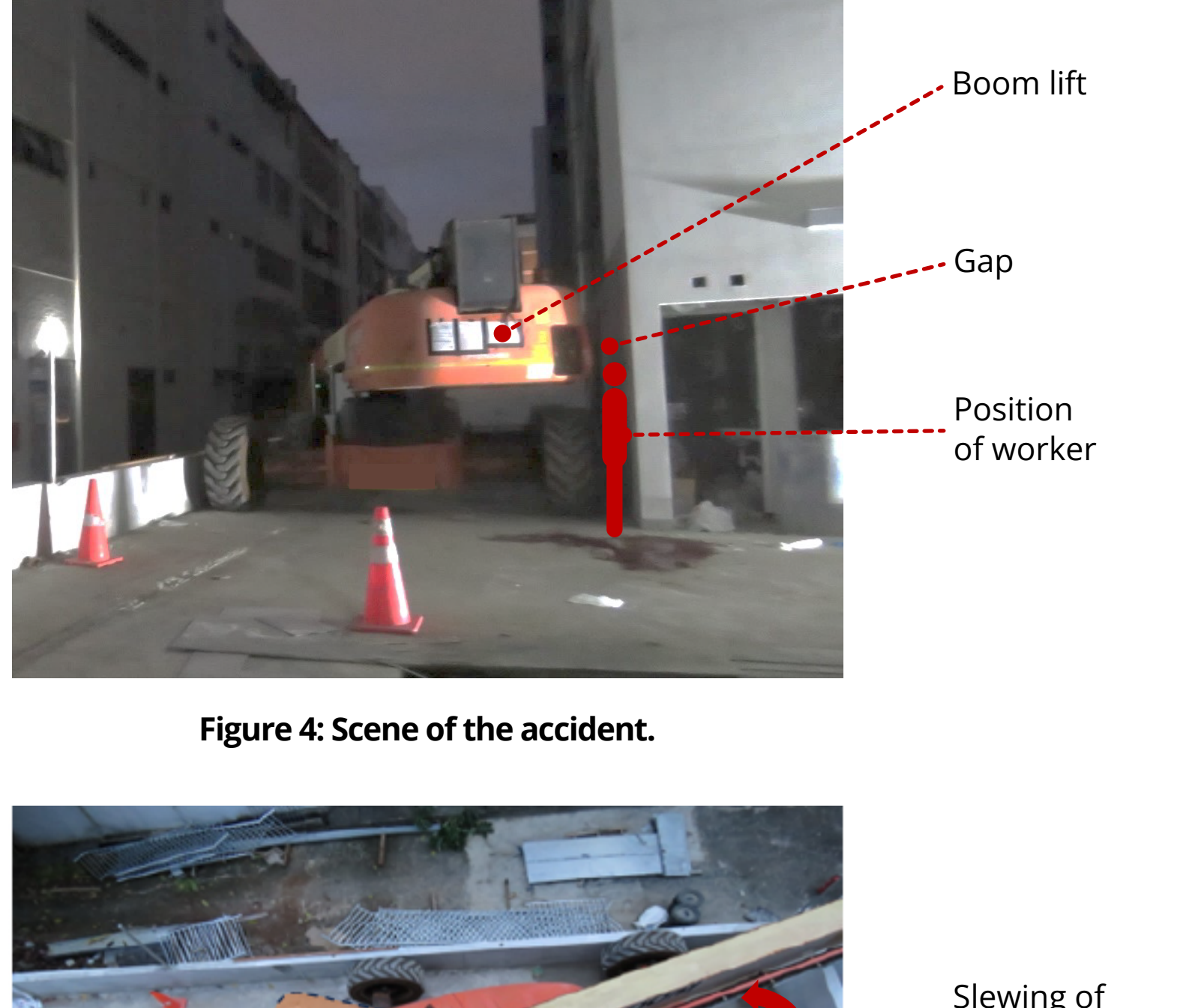


Figure 4: Scene of the accident.



Figure 5: Top view of accident scene.

What companies should do

Companies should review their WSH management system and consider the following risk control measures to prevent similar accidents:

Vehicular movement on company premises

- **Traffic Management Plan (TMP):** Establish and implement a TMP to ensure safe movement of vehicles and pedestrians within a workplace. The TMP should identify traffic hazards and include measures to reduce the potential for traffic-related accidents. Examples of suitable measures are traffic signs/markings to control traffic flow, road humps to reduce speeding, and strategically placed mirrors to facilitate driver blind spot checks. The traffic layout should include designated/demarcated area(s) for loading/unloading. Barriers may be put in place to physically separate different work zones.
- **Use of technology:** Equip heavy vehicles with safety devices that can enhance the operator's and/or the worker's situational awareness. Examples include the use of reversing cameras, and blind spot collision detectors.
- **Safe driver/operator:** Drivers should refrain from operating vehicles/equipment if they are fatigued or on medication that can cause drowsiness. For maximum alertness, avoid using handphones or earphones while operating heavy vehicles.
- **Ground situational awareness:** Instruct vehicle operators to always check their rear before reversing. When in doubt, the operator may dismount the vehicle to check or proceed with the assistance of a ground guide. Advise workers to be vigilant when working in the vicinity of a heavy vehicle and avoid entering a vehicle's blind spot.
- **Personal Protective Equipment (PPE):** Ensure workers wear the appropriate PPE (e.g. high-visibility safety vest/clothing).

Working next to a heavy vehicle/equipment

- **Competent workers:** Ensure all heavy equipment operators are trained and competent to operate the equipment safely. Familiarise operators, banksmen and supervisors with the signals and commands for operating heavy equipment.
- **Cordon off work area:** Cordon off the area where heavy equipment will be operating to prevent unauthorised entry. Display clear warning signs and barricade the work area to keep people away. Demarcate designated pedestrian pathways around the work area if necessary.
- **Use of technology:** Install an audio-visual warning alarm system to alert the operator or people in the work area where heavy equipment is operating.
- **Work instructions and supervision:** Brief all workers on the hazards and risks of working near heavy equipment and vehicles. Remind workers that they should not enter the danger zones where there are heavy equipment. Provide adequate supervision to ensure that safe work procedures are closely followed and all workers are in safe positions.

For work on public roads

- **Traffic Control Plan (TCP):** Establish the work zone and TCP for the activity. The work zone can be sub-divided into four zones:
 1. Advance warning zone – gives early warning to the oncoming traffic of the transition and activity zones ahead.
 2. Transition zone – redirects traffic from the normal path to a new path away from the activity zone.
 3. Activity zone – demarcates the work area and includes both the lateral and longitudinal safety buffer space.
 4. Termination zone – directs traffic back to its normal path.

More details on designing a TCP can be found in the Land Transport Authority's [Code of Practice for Traffic Control at Work Zone](#).

- **Traffic control devices:** Deploy traffic signs, traffic cones, reflective discs, and flashing lamps at or next to a work zone to warn road users of road works, guide them safely through the work zone, and regulate traffic flow. Always cordon off the area where heavy vehicles/equipment will be operating to prevent unauthorised entry.
- **Traffic mannequin:** Deploy traffic mannequins at selected locations within the work zone to perform traffic controller functions, where practicable.
- **Workplace lighting:** Provide lighting at night so that the work site is visible for the safety of both workers and road users.

For more information, refer to the WSH Council's [Code of Practice on WSH Risk Management](#), [WSH Guidelines on Workplace Traffic Safety Management](#), [Guide for Safe Use of Mobile Elevating Work Platforms](#) and [6 Basic WSH Rules for Traffic Management](#).

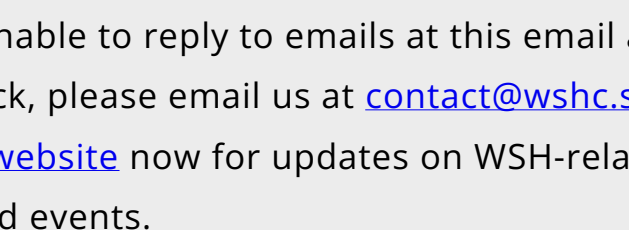
Other relevant resources include the Ministry of Manpower and Singapore Contractors Association Ltd's [Joint Circular on Training Requirements for Driving of Truck-Mounted Concrete Pumps on Non Public Areas](#), and British Standard BS 8476:2007 Code of Practice for the Safe Use of Concrete Pumps.

Under the WSH Act, first-time corporate offenders may be sentenced to the maximum fine of \$500,000 whilst individuals can either be sentenced to the maximum fine of \$200,000 and/or an imprisonment not exceeding 2 years. Read more on the [WSH Act penalties](#).

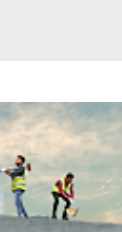
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