



Workplace Health and Safety Queensland

SAFETY ALERT

Risks of short legging when using mobile plant

The purpose of this safety alert is to:

- highlight and discourage the activity of *short legging* of mobile concrete placement booms, mobile cranes and truck mounted elevating work platforms, and
- make persons aware of control measures to be applied if *short legging* is ever used.

Short legging refers to outrigger legs on the vehicle they are supporting only being partially extended.

Background

In Brisbane in 2009 a 36 metre mobile concrete placement boom overturned. The boom overturned in close proximity to overhead power lines and office blocks. One of the major causes of the incident was that the outriggers had been *short legged* on one side of the vehicle. When the boom was moved (slewed) towards the side of the vehicle with the short legged outriggers, the vehicle overturned.



Photograph 1: overturned mobile concrete placement boom

Previous overturning incidents due to short legging have occurred around Australia. These incidents include mobile concrete placement booms, mobile cranes and truck mounted elevating work platforms.

Outriggers normally telescope outwards from the vehicle, but on some mobile plant they may swing outwards. Diagrams below shows a plan view of how outriggers may extend. Although the way the outriggers are extended may vary, the potential hazard of not extending the outriggers correctly will be the same – the unit can fall over.

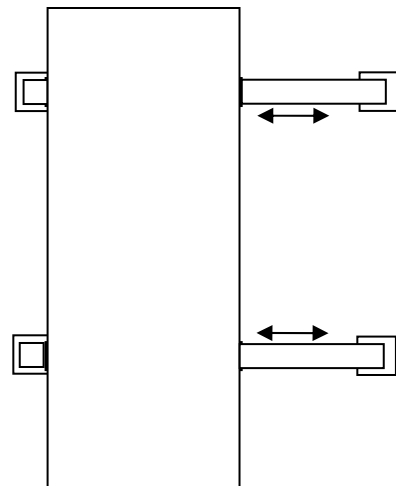


Diagram 1: Telescope outriggers

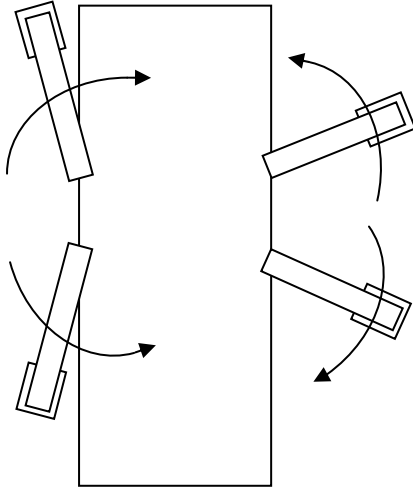


Diagram 2: Swing out outriggers

Short legging is a practice that is often carried out due to one or more of the following factors:

1. Restrictive set up areas for the mobile concrete placement boom, mobile crane or elevating work platform (i.e. lack of an adequate set up area, underground services and obstructions such as barriers, roads, and structures). This lack of a suitable set area could be caused by poor planning in the building or construction process or by unavoidable factors.
2. Unsuitable ground conditions for safe support of the outrigger feet (i.e. the ground is sloping, uneven or too soft).
3. A poor understanding of safe work practices on the part of the mobile plant operator.

It should be noted that points (1) and (2) may be outside of the operator's control and the operator may be pressured into setting the mobile plant up in a less than ideal way. The hirer and/or principal contractor therefore have a major role to play so that the mobile plant can be safely set up.

Recommended control measures

Short legging is a practice that should be avoided wherever possible, due to the increased risk of overturning the mobile plant.

At the design stage, building designers should consider that adequate space is available so that mobile plant required as part of the building process, can be safely set up.

Persons in control of workplaces and principal contractors should ensure that adequate room is

available to enable mobile plant to be set up safely. This includes, both operation of the mobile plant and ancillary activities such as cleaning out concrete lines or rigging a crane. It may also include obtaining road or footpath closures from the relevant authority. The company supplying the mobile plant should provide the hirer with the actual area required to set up the plant with outriggers fully extended, expressed as a length by width dimension in metres. The hirer should also request this information from the plant supplier.

Sometimes it may be impractical to set up the mobile plant with outriggers fully extended. This can be due to inadequate planning prior to the arrival of the plant on site, or extraordinary circumstances.

If short legging is ever used either option 1 or 2 should be implemented:

1. The mobile plant is fitted with a slew limiting device that prevents the boom slewing into the zone where there is risk of the plant overturning. Note: these devices may not totally prevent the risk of overturning and the operator should be trained in the operation and limitations of the device.
2. All of the following actions take place:
 - a) The manufacturer's operating manual for the mobile plant states that short legging (i.e. partial extension of outriggers) is permitted and states the operating conditions that must be complied with when this practice takes place. A copy of the manual is kept with the mobile plant. In the case of mobile cranes this information should be included on the load chart (i.e. rated capacity chart) for the crane.
 - b) The outriggers are marked with an indicator that shows the extent of the short legging (i.e. marks on the outriggers) or the operator's manual shows how far the outriggers are to be extended (i.e. by diagrams).
 - c) A work method statement has been prepared that shows the operating conditions under which short legging can be used. For concrete placement booms and truck mounted elevating work platforms, the work method statement is to include a diagram showing the permissible operating zone of the boom. For mobile cranes the load chart is to

show lifting capacities of the crane with outriggers partially extended. This load chart is to be complied with for all positions of the boom. The work method statement should be signed by both the plant operator and the principal contractor's representative (or the person in control if no principal contractor is required for the job).

A typical diagram for short legging of a concrete placement boom is shown below.

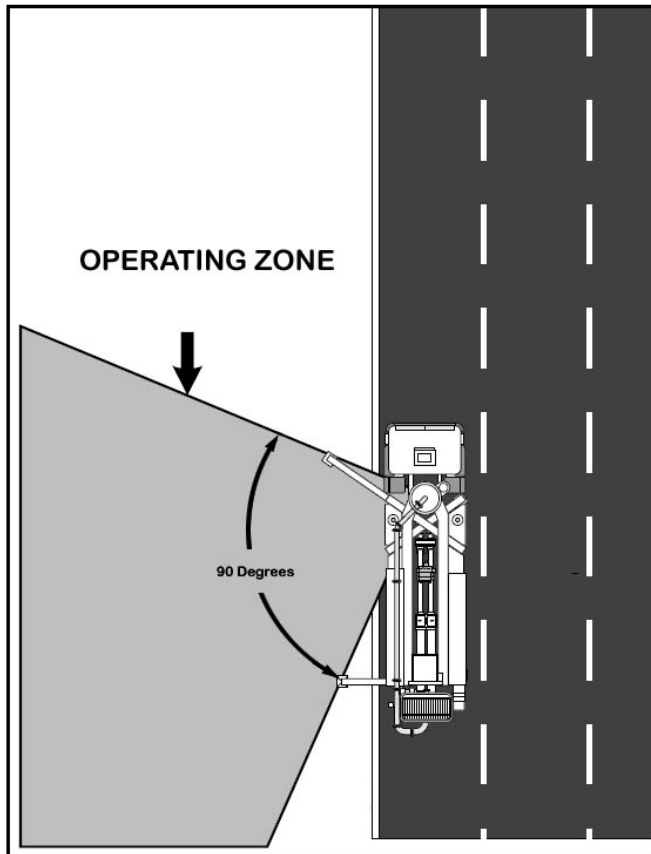


Diagram 3: An example of a diagram for short legging a mobile concrete placement boom. The diagram shows the permitted operating zone. **Note:** partial road closure obtained and traffic control procedures implemented.

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Further information

Further information on the safe support of mobile cranes and mobile concrete placement booms is provided in Section 11 of the *Mobile Crane Code of Practice 2006* and the *Concrete Pumping Code of Practice 2005*.

For more information visit www.worksafe.qld.gov.au or call the Workplace Health and Safety Infoline on 1300 369 915.