



## Crane Bridle Sheave Pin Results in Fatality

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### INCIDENT

In September 2003, a worker was killed when the boom of a crane fell and hit him.

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### CIRCUMSTANCES

The lifting crew were lifting two steel and timber stability swamp mats. When the chain sling was hooked up to the mats and the signal given by the dogman, the crane operator took up the slack on the chains. At this point, a loud bang was heard and the boom of the crane collapsed and fell to the ground, killing one of the workers.

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### INVESTIGATION

Investigation and testing of the crane showed that the primary cause of the accident was the failure of the sheave pin on the bridle of the crane, due to abnormal wear.

The bridle is a suspended framework, which contains sheaves to guide the luffing rope between the bridle and the A-frame, which enables the boom to be raised and lowered.

The sheave pin failure resulted in a sudden release of tension in the luffing rope, which caused the crane's boom to suddenly fall. The boom fell until the slack in the rope was taken up. The luffing rope could not sustain the

impulse load, and instantaneous failure occurred, causing the boom to fall to the ground.

The sheave pin failed due to a combination of high localised loading and insufficient or ineffective lubrication. This caused the bronze bush in the sheave to fail and disintegrate. As a result, the pin came into contact with the sheave, resulting in abnormal wear.

Lubrication is provided by grease nipples located on top of the bridle in the centre of each pin. Each pin has a drilled passage down the centre to enable grease to travel into the bush. Although staff were carrying out lubrication, it was ineffective in this case, because it did not reach the bush or pin.

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### DEPARTMENT OF LABOUR ADVICE

It is the Department's advice that:

- A complete record of checks made on a crane is kept to ensure that they are regularly and systematically carried out.
- Thorough inspections of sheaves are conducted – had this occurred in this case, the disintegration of the bush that ultimately led to the pin failure could have been identified earlier.



For further information on crane safety, including inspection checklists, view the Approved Code of Practice for Cranes at [www.osh.govt.nz](http://www.osh.govt.nz).

*Note: This material has been prepared using the best information available to the Department of Labour at the time of publication. Information may change over time and it may be necessary for you to obtain an update. This material is also only intended to provide general advice and does not constitute legal advice. You should make your own judgement about action you may need to take to ensure you have complied with your workplace health and safety obligations under the law.*

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**WHICH INDUSTRIES/SECTORS OR MATTERS WILL THIS INFORMATION BE RELEVANT TO?**

Construction industry