

Greetings all.

Today's Bulletin is about setting a crane up onto a sloping surface.

Previously in [CICA Safety Bulletin #287](#) we considered how crane manufacturers develop mobile crane rated capacity charts for when they are operating on a firm, level (max.1% slope / 0.6 °) and uniform surface. This is easy to achieve when the supporting surface itself is flat or levelled. But not all lifts are performed under ideal ground conditions, there are times when a lift needs to be performed on a ramp, driveway, or outdoor slope. This is an unavoidable aspect of lifting that requires careful planning and analysis.



Setting up a crane on a slope requires extra consideration on the use of crane mat and cribbing blocks. What we don't want to happen is for the crane operator to set up a crane on a slope with unreliable/unverified material that he/she randomly found on site to provide height or level under the crane's outriggers.

There are multiple solutions to this situation - if you are using timber cribbing to increase the height of the crane, [refer to the CICA safety bulletin #256](#) for more info on timber stacking.

In recent years, we have also [seen the market develop purpose made, interlocking cribbing blocks](#) and wedged cribbing blocks that are safer to use when setting up cranes on slopes. This maybe a

better solution, as crane outriggers take both vertical and lateral forces when in operation, the interlocking cribbing blocks may be more stable for this purpose.



We have covered setting up the crane on a slope, but have you ever thought about the hazards and risks of packing up a crane after performing lifting operations on a slope?

If you parked your car on a slope and forgot to put the hand brake on, your car could possibly roll and cause damage or accidents. The same thing could happen and there have been crane accidents caused, due to the same reason.

Whilst lowering a crane from its outriggers to its wheels, if the crane is in neutral and the parking brake isn't engaged, the crane could start to roll down the slope. The mass of a crane is much higher compared to cars, so if an accident like this occurs it will cause considerably more damage.



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When a crane operates with its wheels off the ground and outriggers extended, as mentioned above, the crane outriggers are designed to take the vertical and the lateral forces in this configuration without any assistance from the crane wheels.

This differs from the design and function of the crane stabilizers seen on the vehicle loading cranes. The vehicle loading crane wheels provide a braking force through the brake system to assist with crane longitudinal stabilisation.

In AS1418.11:2014 Cranes Hoists and Winches, Part 11 Vehicle Loading Cranes, section 6.2.5.4 Stability test approval criteria specifies “The test shall be considered to be successful if the test load is held static. During the test loading, one or more stabilizer legs or wheels may lift from the ground. However, at least one wheel braked by the parking brake shall remain in contact with the ground”.

If using a crane with stabilisers, ensure the wheels stay on the ground to assist with crane stability.

Don't forget the presence of moisture, oil or sand on the ground can also influence the surface and pose a risk.

Always remember that your lifting operation doesn't start at lifting up a load on the hook, you need to plan your lift from getting your crane to site all the way to getting your crane back to your yard.

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AS 1418.11:2014

AS 1418.11:2014
(Incorporating Amendment Nos 1, 2 and 3)



Cranes, hoists and winches

**Part 11: Vehicle-loading cranes
(EN 12999:2011, MOD)**

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When the crane is to be operated on a slope, put the parking brake on while setting up the crane on outriggers. If a dogger is available, have them sit in the lower cabin driver's seat, to be able to apply the service brakes as a further safety precaution. Lowering the rear outriggers first, will engage the 'parking braked' wheels while the front wheels are still supported by the outriggers.