

Greetings all. Today's Bulletin is about hardstand or working platform safety, for crane lifting works.

Hardstand or working platforms are used to provide support for when operating mobile cranes, piling rigs, MEWPs and other heavy plant machines on construction sites.



When lifting loads with cranes, concentrated outrigger pressures or track pressures can be imposed on the working platform. This in turn can lead to significant deformation of the working platform and subsequent overturning of crane. Crane accidents because of working platform failures have occurred in the past.

Working platforms can be designed with different design methods, some are more conservative than the others depending on the calculation formulas applied, design parameters selected, and the various design considerations included. If you are interested in working platform design, the resources below are publicly available and very helpful:

- Working Platforms - Design of granular working platforms for construction plant: A guide to good practice.
<https://www.twforum.org.uk/viewdocument/working-platforms-design-of-granu>
- EFFC/DFI Guide to Working Platforms.
<https://www.ffc.org/the-ffc-dfi-guide-to-working-platforms/>

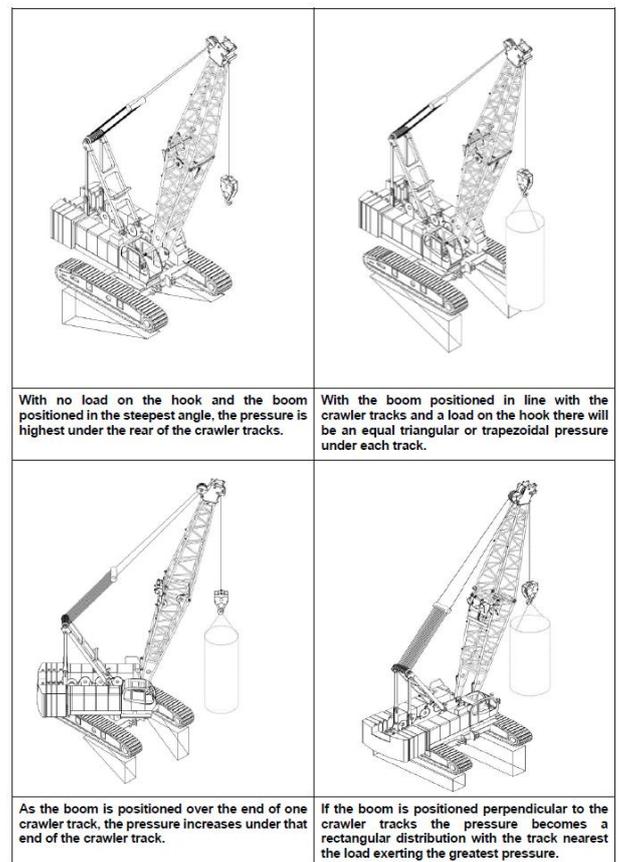
No matter what method is used for the overall design, appropriate load input parameters need to be carefully selected to obtain the correct load cases. The working platform designer will need to work with the crane company and/or the crane manufacturer to get information on:

- dimensional information

- mass – overall and for individual components including counterweights.
- outrigger loads imposed by the crane for different load cases.
- track pressures and bearing lengths.

It is important that the working platform designer understood the background or the meaning of these values before they were applied in the design ^[1], the designer should check:

- whether the values provided are simple static values or if they have an allowance for dynamic effects built in.
- whether the effects of wind have been allowed for.
- [what crane configurations created the outrigger or track pressure](#)
- have ancillary attachments been accounted for.
- whether the effects of an out of plumb condition have been considered.



[2]

Sometimes accidents happen when there are miscommunications between the crane company and the working platform designer. For example, ton/m² (a unit usually used by crane companies) and kPa (a

unit usually used by design engineers) has a 10 times difference in value, if the unit of measurements are not the same in the design and for the site application, the outcome can be disastrous.



Another common misunderstanding between the design and the application of the ground capabilities is the difference between the ultimate ground bearing pressure and the **allowable ground bearing** pressure. The ultimate ground bearing pressure is the value of the bearing pressure which will cause a sudden catastrophic settlement of the ground. The allowable ground bearing pressure is the maximum bearing pressure that can be applied to the ground such that it is safe against instability due to shear failure and the maximum tolerable settlement is not exceeded. In short terms, **the crane company should set up their crane for lifting jobs according to the allowable ground bearing pressure**, ask for this value from the working platform designer for your lift planning.

Other than the design of the working platforms, maintenance and repair of the platform are also important for site operations as the working platform can deteriorate due to use or weather over time.

The responsibility of the working platform design, installation, maintenance and repair lies in the hands of the of the organisation that has continuous control over ALL site activities, this usually is the principal contractor for the site. A Working Platform Certificate signed by the principal contractor confirms the awareness of the importance of providing an engineer-designed and certificated platform for heavy machinery to work on – and the importance of continuous maintenance of the platform whilst in use, with appropriate repairs if necessary, and the principal contractor’s commitment to adhere to the requirements.



The Piling and Foundation Specialist Federation (PFSF) has developed a Working Platform Certificate template, it’s available on their website:

<https://pilingfederation.org.au/safety/safe-platforms/>

Next time when you set up your crane on a working platform, remember to check if the platform comes with a certificate to make sure the platform is safe to work on.

Reference:

- [1] Working Platforms - Design of granular working platforms for construction plant: A guide to good practice. TWf2019:02
- [2] ICSA N004 – Mobile Crane Ground Preparation for Wind Farm Construction.

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