

# Considerations for Mobile Crane Ground Conditions



Planning

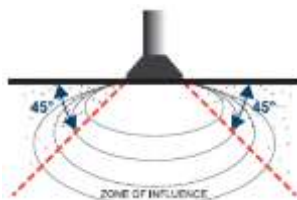
## Establish the load input to the ground

- Know your lift details:
  - What is the weight of the load and rigging equipment?
  - What is the crane's configuration to perform the lift?
- Use the OEM software or CICA Outrigger App estimate to calculate the pressure of each tyre/outrigger/track on the ground. If OEM software isn't available, use the simplified estimate.
  - Do this for the crane lift configuration and empty hook with high boom angle configuration to assess common maximum ground pressure conditions.

## Investigate the ground capacity

(Do this for the entire lift pad or travel route of the crane)

- Determine the type of ground the crane is operating on and its allowable ground pressure.
  - The ground pressure is usually estimated visually by the crane operator when lifting smaller capacity loads.
  - However, certification of the allowable ground pressure must be obtained from a geo-technical engineer.
  - Double check that weather doesn't change the ground capacity on the day of the lift.
- Does the maximum allowable ground pressure need to be reduced due to hazards in the area (e.g. pits/soft spots/excavations, underground services)?
  - Remember the 1:1 rule when operating near excavations.



### Maximum permissible ground pressure (P<sub>MAX</sub>) (tonnes per m<sup>2</sup>)

Ground type	Max. Pressure
Hard rock	200
Shale rock and sandstone	80
Compacted gravel (up to 20% sand)	40
Asphalt	20
Compacted sand	20
Stiff clay (dry)	20
Soft clay (dry)	10
Loose sand	10
Wet clay	Less than 10

**Remember the more complex the lift, the more detailed the consultation required!**

Setup

## Transfer the crane load into the ground

- Calculate the minimum area of the pad or mat using the formula:  $\text{Area} = \frac{\text{Load}}{\text{Pressure}}$
- Are timbers set-up level and do they feature a minimum cross section of 200mm x 75mm?
- Are Bog mats required? If so, who is certifying the bog mat design? Are they competent?



Timber Pad



Bog Mat

## Once the crane has been set up

- Monitor the ground for settling or compaction under load. Verify the crane is still level. This should be carried out throughout the day.
- Verify that the lift plan includes the correct details, including known load and rigging weights, and working radius.

Execute

## Following the above steps, and compliance with the lift plan

- Continue further inspection of ground conditions after significant weather events.
- Ensure records are available to verify that what was required to be completed has been completed in accordance with the documented process/system.