

Mobile Crane Study Notes

- A hazard is a situation (*crushing*) or thing (*outrigger*) that has potential to cause harm.
- A risk is the chance death or injury may occur from a hazard.
- You have a duty of care to protect yourself and others from harm.
- If you work unsafely your licence will be suspended or cancelled.
- Some workplace safety information can be found from the
 - Safe work method statement **S**
 - Australian Standards **A**
 - Code of practice **C**
- An employer must provide
 - Safe systems of work **(SAFE)**
 - Safe plant & structures
 - Safe work environment
- When you are unfamiliar with the crane you are going to sit in & operate your employer must provide you with adequate
 - Supervision **S**
 - Instruction **I**
 - Training **T**
- You need to consult with others about hazards for example
 - Safety officer **S**
 - Other workers **O**
 - Supervisors **S**

You need to consult about site specific hazards, policies and procedures.

- Common hazards:
 - Looking Up are powerlines, weather, buildings.
 - In line of sight are plant, vehicles & pedestrians.
 - Looking Down & below are underground services, uneven ground, trenches.

- Planning considerations are:
 - Permits **P**
 - Location **L**
 - Access **A**
 - Communications **C**
 - Equipment **E**
- PPE & communications must be inspected before use.
- Hazard controls need to be in place before work and as they arise.
- You need to ensure you have the minimum area of packing under outriggers for stability by using hardwood packing or steel plate.
- An engineer can tell you ground bearing pressure.
- Pig stying needs to 90 degrees to the first layer.
- If crane starts to sink you need to Lower load, stop, repack or relocate.
- To ensure a crane remains stable consider (**WOS**)
 - **W**ind
 - **O**verload
 - **S**etup
- Setting up near trenches can cause the trench to collapse. Crane or outrigger packing edge should measure as far as it is as deep
- Where possible set the crane up on (**HSC**)
 - **H**ard rock
 - **S**hale
 - **C**ompacted gravel
- If setting up on slab you must make sure it can support crane & load consult with engineer.
- Safe minimum distance from power lines for QLD 3m, 6m, 8m. To work closer than that you need to isolate or insulate.
- Find out voltage contact electrical authority.
- Tiger tails & marker balls are some visual aids to highlight powerlines.
- If you hit powerlines you must stop, break contact, alert all, do not touch others receiving a shock, isolate crane if safe to do so, report.

- Working around power lines taglines must be a minimum 16mm DRY non-conductive rope.
- Dangers caused by wind are load swing & spin if affected lower load & make safe.
- The operator's manual, load chart, decals can inform the operator of max wind speeds, configurations e.g. mobilising a load, capability & counterweight configurations.
- Landing heavy loads touch load down then slowly boom down to minimise upward boom movement.
- For safety of pedestrians, workers, vehicles or plant you can use traffic controller, barricades & signage.
- Hazards working around a mobile slew crane is being trapped or crushed by crane or load. Use exclusion zones control the risk
- Do not lift over others as it could cause death or injury.
- Adequate lighting must be provided at night.
- Decide on right path of movement in the planning stages.
- Some path of movement considerations are
 - **S**ize of load
 - **O**bstructions
 - **P**revent access
 - **S**urface conditions
- Before taking the crane on the road you will to (DUC)
 - **D**isengage PTO
 - **U**nlock suspension
 - **C**heck tyre pressure
- Find out weights of loads by checking (DMC)
 - Delivery docket
 - Marked on it
 - Calculate
- Dogman is responsible for finding weight of load.
- Only use hand signals when in clear line of sight.
- Use whistles when within hearing range and out of sight.
- Use radios when out of sight as they are more effective and efficient.

- In an emergency you must communicate What & Where the emergency is & Who is involved. (WWW) Alert everyone.
- If signal is unclear you must stop and confirm.
- It is important to inspect crane & equipment to ensure it is safe to use.
- Pre start checks can include: Fluid levels, Boom, Rope, Logbook, Outriggers, Drum, Crane configuration.
- Boom inspection can include flaking paint, cracked welds, bent.
- The logbook checks include pre-start list, defects, repairs correct logbook.
- If the boom pawl engages the ratchet you could have brake failure.
- Out of service tags can be removed when a competent person says it's safe to use.
- Before setting up a crane you should have considered (ROS)
 - Radius
 - Obstructions
 - Slew clearance.
- 10% wear will condemn shackles, hook, chain etc
- Sheave groove depth & diameter of wire rope in the groove of a sheave should be in accordance with man specs.
- If the sheave groove is too large the rope will flatten. Too small it will pinch the rope. These could lead to rope failure.
- After starting crane, you need to check limits, slew radius, warning devices, compare load chart to computer read out, brakes.
- Load mass indicator (LMI) accuracy can be checked by lifting a known weight
- Crane must be tested to its full range to ensure safety.
- When setting up close to buildings or in restricted areas you need to consider (SWAB)
 - slew radius,
 - wind loadings.
 - Access
 - Back filled trenches
- Mobilizing up a slope you need to keep everything at a minimum. Angle, Radius, Swing, Speed, (ARSS)

- If a pin was missing, computer malfunctioning, safety devices faulty, abnormal noises, hit powerlines & not operating to its full range than you must Stop, Tag, Isolate, Record, Report (STIRR).
- You must watch the load movement to identify and control hazards.
- Keep hook above centre of gravity to stop load swing, dragging or snigging.
- Make sure crane is level by using a bubble level.
- If setting up on street you need to contact local authorities for permits required & traffic control.
- Dynamic forces are caused by movement of crane and load.
- Wind loads and forces caused by wind catching on crane or load.
- Dogman must in the workbox at all times.
- Use a tagline to control the load.
- If you go through the hoist limit you could damage crane or break wire.
- Correct tyre pressure is important to insure crane stability.
- Slewing from front to the back of the crane the capacity may reduce. Confer with load chart to ensure capability
- You can find all fly jib, rubber, short outrigger capacities from the manu specs.
- Facing crane into wind may force boom back causing structural damage or tipping backwards.
- Conducting test lift can ensure stability & security of crane and load if there is a problem lower and fix problem.
- Fly set at 15° has a lower lifting capacity than at 0°.
- On a load chart you can find hook block weight, line pull, capacities, wind ratings etc.
- If the precise operating radius is not on the chart use the longer radius to not overload crane.
- If leaving a crane overnight you must remove load, raise hook, retract boom, and secure crane.
- When shutting down crane you must use relevant motion locks and brakes.
- No load must remain on the hook when crane is unattended as there is a risk of load drop.
- Check the crane after using it to ensure its safe to use for the next operator