



Mobile plant in construction information and checklist

Inspection campaign

In 2011 WorkSafe WA conducted a proactive inspection campaign focusing on mobile plant in the construction industry.

On average there are around 880 lost time injuries involving mobile plant each year in Western Australia. As a result, mobile plant safety is one of the department's priority areas.

The following newsletter and checklist deals with the five key items of plant inspectors focused on during their inspection campaign (many of the common problems relating to mobile plant that WorkSafe has found in workplaces relate to these items). Please note: the checklist does not cover all mandatory requirements under workplace safety and health laws, however, following the same checklist will assist you to identify any shortcomings in your procedures or training and to correct or update them, thus getting you started on meeting your safety and health responsibilities.

This newsletter has been developed to highlight mobile plant related risks in the construction industry and provide information on how to best manage those risks to minimise workplace injuries and comply with occupational safety and health legislation.

What issues are we looking at?

A checklist has been developed which may assist you assess your workplace for hazards related to manual tasks. This checklist is included in this publication. Issues covered by the checklist include:

- General regulatory requirements for the operation of mobile plant have been met.
- The operation of earthmoving plant meets regulatory requirements
- The operation of elevating work platforms (EWP) meets regulatory requirements.
- The operation of mobile cranes meets regulatory requirements
- The operation of forklifts meets regulatory requirements

Further information can be obtained by contacting WorkSafe on 9327 8777 or by visiting the website: www.worksafe.wa.gov.au

How can I confirm an operator's competency to operate mobile plant?

Competency can be confirmed by checking the following before the operator starts to operate the machinery:

- Appropriate certificate of competency/national licence (if required);
- Other operator qualifications and training;
- Information from referees;
- Operator's past experience; and
- An assessment of theoretical and practical knowledge.

What is mobile plant?

While there is no definition of powered mobile plant in the legislation it can be described as any machine that is self propelled and controlled by an operator.

It includes:

- industrial lift truck (forklifts);
- mobile cranes; and
- earthmoving machinery;

Mobile plant has been associated with a number of workplace fatalities and serious injuries, the most common being:

- falls from;
- crushing by;
- run-overs by;
- roll-overs of tractors and forklifts; and
- entanglement in and being trapped between moving parts.

What items of mobile plant need to be registered with WorkSafe?

Mobile cranes with a safe working load greater than 10 tonnes and truck-mounted concrete placing units with booms must be registered with WorkSafe.

If this mobile plant is altered or there is a change of ownership, then the plant should be re-registered.

FAQ's mobile plant

How close can mobile plant work to power lines?

People intending to work in the vicinity of overhead power lines should be aware of the "danger zone" for each type of power line:

- Within 0.5 metres of a live insulated overhead power line or aerial bundled conductor line of a voltage of not more than 1,000 volts;
- Within 1.0 metre of a live uninsulated overhead power line of a voltage of not more than 1,000 volts;
- Within 3.0 metres of a live overhead power line, whether insulated or not, of a voltage exceeding 1,000 volts but not more than 33,000 volts; or
- Within 6.0 metres of a live overhead power line, whether insulated or not, of a voltage exceeding 33,000 volts.

Working within these danger zones should only take place if the overhead power lines have been adequately insulated and effectively cordoned off or otherwise made safe, according to the requirements of Western Power or the local supply authority.

Do I have to use the seat belt when operating mobile plant?

The operator and any passengers need to wear seatbelts that are fitted to mobile plant. Any passengers must be in a seat and using a seatbelt within the coverage of the ROPS or FOPs as applicable.

Do we need to fit reversing alarms to mobile plant?

Reversing mobile plant is a dangerous activity, because there is a risk that people including other workers in the vicinity may be hit or run over. If there is a potential for a pedestrian to be injured, then a suitable control measure is fitting a warning device, such as a reversing alarm and/or flashing light that can effectively warn pedestrians of the vehicle's reversing movement.

Does mobile plant need to be fitted with a roll-over protective structure (ROPS)?

Mobile plant needs to be fitted with an appropriate combination of ROPS, operator restraining devices and seatbelts where there is any risk of the mobile plant overturning. Circumstances that increase the likelihood of overturning include:

- Sloping terrain
- Rough, slick or muddy surfaces
- Towing or pulling objects; and
- Operating near holes, ditches or embankments

When does mobile plant need to be fitted with a falling objects protective structure (FOPS)?

If mobile plant is used in situations which create a risk to the operator of falling objects, then the machine should be designed and fitted with a falling objects protective structure (FOPS) and a seatbelt.

How can I prevent mobile plant from running over pedestrians?

There are a number of methods that can be used to control the risk of pedestrian injuries:

- Separating pedestrians from mobile plant by preventing access to areas where mobile plant is operating
- Traffic management systems that control the movement of plant and pedestrians, for instance providing separate walkways for pedestrians and pedestrian barriers at building entrances
- Communication systems between plant operators and pedestrians
- Spotters may be useful for controlling traffic in localised areas; and
- Personal protective equipment such as high visibility vests.

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Incidents

An unloaded steel wire rope sling dislodged from the ramshorn hook on the main block of a 150 tonne crawler crane, falling approximately 30m and striking a worker, causing fatal injuries.

While the crane was being manoeuvred to a lay-down location, the crane operator spragged to change direction, causing the sling to swing erratically and causing a sling to pass over the spring-loaded safety latch on the ramshorn hook, releasing the sling from the ramshorn hook.

The crane operator was preoccupied operating the crane and did not see the rigger in front of the crane directly under the hook load.

Contributing factors

- Operators of mobile plant often have severely restricted visibility of ground workers, particularly those close to the plant.
- The operator did not rely on the rigger to direct him while moving the crane.
- Severe crane side movements may cause slings to roll over the safety latch and be dislodged from the hook.

Recommendations

1. When chains or slings are not in use they should be removed from the hook to avoid accidental dislodgment.
2. Loads including slings are not to be suspended over or travel over a person.
3. Exclusion zones and/or spotters are to be used when manoeuvring a crane or jib with a load or slings on a hook over personnel.
4. Use a 'sling restraint device' if a sling or slings are to remain on the hook.

A worker was fatally injured on a construction site when a JLG800AJ elevated work platform he was working from collapsed due to mechanical failure of the slew assembly. He had been operating in good weather conditions and on level ground. The operator had been positioned in the basket of the elevated work and had been attempting to elevate to a height of 6 metres to tightened bolts on a structure when the turntable of the elevated work platform became detached from its base falling to the ground.

The operator had completed competency based training in the safe use of the elevated work platform.

The elevated work platform was supplied by a hire company to the construction site through a plant hire arrangement.

Factors to consider

- The operator had completed competency based training in the safe use of the elevated work platform.
- The elevated working platform collapsed due to mechanical failure of the slew assembly.
- The elevated work platform was supplied to the construction site through a plant hire arrangement.

Recommendations

1. Ensure that elevated work platforms have all tests and inspections necessary to reduce the risk of injury to operators of the plant.
2. Ensure that all inspection, repair, maintenance and alteration to elevated work platforms are carried out in accordance with designer or manufacturers recommendations.
3. In addition to normal maintenance and inspections of JLG 800AJ elevated work platforms it is strongly recommended that the slewing assembly of the plant, in particular its slewing bolts, be inspected by a competent person. Only those units passed by a competent person should be returned to service.

A mobile crane rolled over while lifting a fibreglass swimming pool into a residential backyard.

The crane company obtained a site report that did not indicate the location of any underground services in the area where the crane was to be set up.

The crane driver set up the crane on the roadside with two outriggers extended onto the verge. One of the outriggers was unknowingly positioned over a water main. The weight on the outrigger damaged the water main and made the surface soft and water logged. The outrigger sank during the lift and the crane overturned. The crane was not overloaded.

Factors to consider

- Nobody involved in planning the lift contacted the relevant authorities to determine the location of any underground services.
- The bearing capacity of the supporting surface can be reduced by damage to underground services.

Recommendations

1. Contact the relevant authorities or Dial Before You Dig to establish the location of underground services if work may interfere with any gas, water, sewerage or electrical service.
2. Document the location of services as required by Occupational Safety and Health Regulation 3.21(1).
3. Take precautions to ensure the stability of the crane and crane standing if underground services are located in the work area.

Checklists

General checklist			
Check	yes	no	comments
Operator training and instruction has been provided (instruction may include pre-start and or toolbox meetings)			
Operator's manual provided			
Access and egress is adequate			
Pedestrian movement is controlled (including a procedure for the interaction of personnel and mobile plant)			
Training is provided to personnel on the interaction procedure and blind spots on the mobile plant			
Traffic management is in place (including exclusion zones and turn around areas where applicable)			
Ground conditions are acceptable			
Hazards associated with the work area have been identified and assessed. Control measures are in place			
Machine controls are labelled for function and direction			
Articulation point is clearly labelled identifying crush hazards			
Seating is adequate			
Hot parts are guarded			
All relevant manuals, decals and control labels are provided with plant			
Two way communication between mobile plant operator and personnel (radio communication must be held on the person in the area)			
High visibility vest are worn by personnel in the area			
Routine servicing / maintenance is carried out			

Earthmoving plant checklist			
Check	yes	no	comments
ROPS is fitted (except track mounted excavators)			
Operator's manual provided			
Reverse alarm is functional if fitted			
Active revolving light is functional if fitted			
Side mirrors are fitted			
Seatbelt is fitted and functional			
Lifting point has SWL stated or load chart provided			
When parked has bucket placed on the ground			

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Elevating work platforms (EWP) checklist

Check	yes	no	comments
Operator of boom type EWP (greater than 11 metres) holds current Certificate of competency			
Design of boom type EWP is registered			
Log book is available and current			
Inspection and maintenance current			
Fall arrest harness is available and in good condition (except scissor lift)			
Manual emergency decent is clearly labeled			
Level indicator is fitted where outriggers are used			

Operation of mobile cranes checklist

Check	yes	no	comments
Operator holds current, appropriate Certificate of competency or licence			
Load charts are fitted and written in English			
Log book is available and current			
Inspection and maintenance current			
Evidence of plant registration is displayed (cranes greater than 10 Tonne)			
Applicable cranes at construction sites are fitted with lights and alarms			

Forklifts checklist

Check	yes	no	comments
Recorded evidence of maintenance (logbook)			
Capacity charts provided and legible			
Log book is available and current			
Forklift in good working order			
Falling Objects Protection (FOPS) fitted			
Seatbelts fitted and functional			
Active revolving flashing light is functional if fitted			



Further information

Codes of practice

- Excavation
- Safeguarding of machinery and plant

Guidance notes

- Powered Mobile Plant
- Safe movement of vehicles
- Working safely with forklifts

Guide

- SubbyPack

Copies of these publications and further information can be found by visiting www.worksafe.wa.gov.au

