



نظام الشارقة للسلامة والصحة المهنية  
Occupational Safety & Health Sharjah

حكومة الشارقة  
هيئة الوقاية والسلامة  
Government of Sharjah  
Prevention And Safety Authority



# Guideline

## Mobile Plant

### OSHJ-GL-01

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## 1 Introduction

Mobile plant can be described as any equipment/machine that is self-propelled and controlled by an operator, including but not limited to:

- Excavators;
- Telescopic handlers;
- Bulldozers;
- Dump trucks;
- Mobile elevated work platforms (MEWPs).

These types of plant have additional risks due to their mobility which should be managed including but not limited to:

- The suitability of equipment used for carrying people;
- The rollover of the mobile plant;
- The provision of safety equipment to restrain or protect people in the event of rollover or overturning;
- The control of the equipment, including operator vision and lighting.

## 2 Purpose and Scope

This Guideline document has been developed to provide information to entities to assist them in complying with the requirements of the Occupational Safety and Health System in Sharjah.

To achieve compliance in the Emirate of Sharjah, all entities are required to demonstrate a standard of compliance which is equal to or higher than the minimum acceptable requirements outlined in this Guideline document.

These guidelines apply to all entities who operate mobile plant and is applicable to:

- Mobile plant owned and managed by the entity;
- Mobile plant owned by a third party and leased or rented by the entity.

The guidelines contained in this document shall apply to all mobile plant operations and associated work activities conducted in the Emirate of Sharjah.

Further information on MEWPs can be found in OSHJ-GL-02: Mobile Elevated Work Platform.

## 3 Definitions and Abbreviations

**Entities:** Government Entities: Government departments, authorities or establishments and the like in the Emirate.

Private Entities: Establishments, companies, enterprises and economic activities operating in the Emirate in general.

**Risk:** Is the combination of likelihood of the hazard causing the loss and the severity of that loss (consequences).

<b>Risk Assessment:</b>	The systematic identification of workplace hazards and evaluation of the risks associated. This process takes existing control measures into account and identifies and recommends further control measures where required.
<b>Hazard:</b>	Anything that has the potential to cause harm or loss (injury, disease, ill-health, property damage etc).
<b>Competence:</b>	The combination of training, skills, experience and knowledge that a person has and their ability to apply all of them to perform their work.
<b>Mobile Plant:</b>	Is any equipment/machine that is self-propelled and controlled by an operator.
<b>Operator:</b>	A person who operates equipment or machinery.
<b>Signaller:</b>	Any employee who is giving direction to the operator of equipment.
<b>FOPS:</b>	Falling Object Protective Structure.
<b>ROPS:</b>	Rollover Protective Structure.
<b>Manufacturer's Manual:</b>	The instructions, procedures and recommendations provided by the manufacturer to ensure the safe operation, maintenance and repair of the equipment.

## 4 Responsibilities

### 4.1 Entity Responsibilities

- Undertake risk assessments to identify all significant hazards, assess the risks to employees safety and provide adequate control measures to reduce risk;
- Provide information, instruction, supervision and training to operators specific to the mobile plant they operate;
- Ensure mobile plant is operated by competent employees;
- Ensure mobile plant is inspected and maintained in a safe condition to operate as per the manufacturer's manual;
- Ensure that emergency procedures are in place to deal with emergencies related to each specific mobile plant.

### 4.2 Employee Responsibilities

- Not endanger themselves or others;
- Follow precautionary control measures to ensure work activities associated with mobile plant are performed safely and without risk to health;
- Cooperate with the entity and receive safety information, instruction, supervision and training;
- Report any activity or defect relating to the use of mobile plant which they know is likely to endanger the safety of themselves or that of any other person.

## 5 Guidelines

The selection and operation of mobile plant involves risks for the operator, other employees, members of the public and other vehicle users. Manufacturer's manual specifications need to be considered when choosing mobile plant.

A safe workplace for all mobile plant operations should be established to prevent:

- People being struck by or run over by mobile plant;
- People being struck by something falling from mobile plant;
- People falling from mobile plant;
- Mobile plant overturning;
- Collisions between mobile plant and fixed objects;
- Collisions between mobile plant and other vehicles.

### 5.1 Risk Assessment

Activities which involve mobile plant should be identified. Work activities are likely to include the arrival and departure of mobile plant, their travel and use within the workplace, loading, unloading, securing loads and maintenance work.

The entity should consider the interaction of the following key areas:

- The operator;
- The mobile plant;
- The workplace environment.

An effective risk assessment will take into account the following factors, including but not limited to:

- The type, size and weight of mobile plant selected for work activities;
- The nature and duration of the work activities;
- The location, size and distribution of the workplace;
- The interaction with people and other work activities;
- The maintenance, inspection and repair of mobile plant;
- Safety devices, such as a device for braking and stopping, roll-over protection structure and seatbelts;
- Emergency response.

The entity should consult with operators, as this can help to decide on the most effective way to control these risks. Once control measures have been decided, the entity must then communicate with operators and provide information, instruction, supervision and training, where necessary.

Monitoring and review of mobile plant safety should be regularly conducted to ensure procedures are implemented and effectively maintained.

Further information on risk assessment can be found in OSHJ-CoP-01: Risk Management and Control.

## 5.2 Mobile Plant Operators

Mobile plant operators use heavy machinery to dig, lift and move materials on sites. Mobile plant operators usually specialise in one type of equipment, such as an excavator, dump truck or telehandlers, and need good spatial awareness to move large mobile plant and machinery.

The entity should ensure operators competency by:

- Validating the operators training certification while recruiting, and periodically afterwards;
- Evaluating that operators have the specified levels of skill and expertise required to operate the mobile plant safely and perform their daily checks;
- Providing required training to enhance operator competency.

The entity should ensure operators are fit and healthy to operate mobile plant safely, including but not limited to:

- Providing operators with a medical examination, which includes eyesight and other health requirements;
- Arrangements are made for operators that require medication which could impair their operating ability, this could include; change in shifts, reduced work load, information on medication impacting on operating plant;
- Arrangements are made to avoid operator fatigue and that operators are aware of the risks from sleep deprivation or tiredness and what they should do if they start to feel tired;
- Providing operators with guidance on good posture and where appropriate, how to position the seat correctly;
- Operators know how to report any health concerns.

## 5.3 Mobile Plant

### 5.3.1 Mobile Plant Selection

The design of some mobile plant presents hazards, such as restricted visibility and lack of driver protection from the effects of overturning, noise and vibration. Choosing the right mobile plant for the job is an essential part of effective safety management.

The entity should ensure that mobile plant are safe for their intended use and purpose, including but not limited to:

- Research and study when procuring mobile plant, which ones are most suitable for the work activities and for the safety and health of operators, employees and people;
- The stability of mobile plant under all potential operating conditions;

- The safe working load and stability limits for the work terrain;
- Safe access to and from the cab and other working locations on the mobile plant;
- Effective braking systems;
- Adequate visibility for the operator all around the mobile plant;
- Headlights, a horn, windscreen wipers and warning devices;
- Guarding to protect hazardous parts such as power take-off shafts, chain drives, trapping points and exposed exhaust pipes;
- Protection for operators from hazards and the effects of the mobile plant overturning;
- Protection for operators from the weather, noise, vibration, noxious fumes and dusts.

The manufacturer's manual needs to be considered when choosing mobile plant. Load and stability limits need to be taken into account when choosing mobile plant for use on uneven and sloping ground.

Where the risk of vehicles overturning is significant, mobile plant should be fitted with roll-over protective structures (ROPS). Where there is a significant risk of falling materials endangering the driver, mobile plant should be fitted with falling object protective structures (FOPS).

Adequate visibility for operators is a key factor in the safe use of mobile plant on site. Adequate visibility from the operating position is important and can be achieved by the use of:

- Visibility aids such as camera systems;
- Convex mirrors to overcome significant blind spots along the sides and at the rear of large mobile plant, particularly where people are at risk.

### 5.3.2 Mobile Plant Maintenance and Inspection

Mobile plant operating in harsh environments requires effective maintenance regimes to avoid them developing defects. A programme of daily visual checks, regular inspections and servicing schedules should be established accordance to the manufacturer's manual and the risks associated with the use of each type of mobile plant.

Mobile plant hire/dealership companies need to provide information with all mobile plant and equipment they supply to enable it to be used, inspected and maintained safely. Contractual arrangements between user and hirer should set out who is responsible for maintenance and inspection during the hire period and these should be made clear to all parties.

All mobile plant should have a maintenance log to help manage and record maintenance operations. The entity should establish procedures designed to encourage operators to report defects or problems and ensure that problems with mobile plant are rectified. Planned inspection and maintenance shall follow recommendations contained in the manufacturer's manual.

The entity shall record and retain maintenance and inspection records.

### 5.3.3 Risks Related to Inspection and Maintenance

Maintenance operations often present a greater risk than normal operations as operators need to approach or access hazardous parts of mobile plant during maintenance work and

the normal safeguards may not be effective. Therefore, the risk of maintenance activities must be assessed and controlled.

Controlling risks of mobile plant maintenance involves following safe working practices, including but not limited to:

- Ensuring competent employees or competent third parties undertake maintenance of mobile plant;
- Ensuring maintenance is conducted with the mobile plant is switched off, the brakes fully engaged, and the keys removed to prevent start up;
- Energy sources containing pressurised fluid, gas, steam or hazardous materials are de-energised;
- Prevention of crushing injuries under tilting bodies or by moving mobile plant;
- Prevention of mobile plant toppling off inspection ramps, test lanes or into inspection pits;
- Limiting exposure to fumes, dusts, extremes of temperatures.

## **5.4 Safe Workplace Environment**

### **5.4.1 Safe Movement of Mobile Plant**

A well designed and maintained workplace with suitable segregation of mobile plant and people will reduce the risks of mobile plant related incidents. The most effective way of ensuring people and mobile plant move safely in the workplace is to provide separate walkways for people and dedicated mobile plant travel routes.

If complete segregation is not possible, clearly marked walkways and mobile plant travel routes including barriers and signage should be provided. Where walkways and mobile plant travel routes cross, they should be clearly marked using measures such as; dropped kerbs, barriers, deterrent paving etc, to help direct people to the appropriate crossing points.

Wherever possible there should be a one way system for mobile plant, to reduce the need to reverse.

The general principles for safe travel routes include:

- Make sure they are wide enough for the safe movement of the largest type of mobile plant;
- Ensure surfaces are suitable for mobile plant and the people using them;
- Avoid steep slopes;
- Avoid sharp corners and blind bends;
- Keep routes clear of obstructions;
- Make sure routes are clearly marked and signposted;
- Keep routes properly maintained.



#### 5.4.2 Movement of Mobile Plant to and from the Workplace

A traffic management plan documents and helps explain how risks will be managed when transporting mobile plant to and from the workplace, including but not limited to:

- Designated entry and exit points and safe travel routes for mobile plant;
- The expected frequency of interaction between mobile plant and people;
- Designated delivery areas for loading and unloading;
- Traffic control measures for each expected interaction, including illustrations of the layout of barriers, walkways, signs and general arrangements to warn and guide traffic around, past, or through a workplace or temporary hazard;
- Requirements for large mobile plant;
- Requirements for loading or unloading mobile plant to/from the side of the road to/from a workplace;
- How short term, mobile plant work and complex traffic situations will be managed.

A traffic management plan should also contain the following, including but not limited to:

- Responsibilities of people managing the movement of mobile plant to and from the workplace on public roads;
- Responsibilities of people moving mobile plant to and from the workplace which is expected to interact with traffic on public roads;
- Procedures for controlling traffic including in an emergency;
- How to implement and monitor the effectiveness of the traffic management plan.

The traffic management plan should be monitored and reviewed regularly, including after an incident, to ensure it is effective and takes into account changes.

Employees should be aware of and understand the traffic management plan and receive information, instruction, supervision and training.

Mobile plant which is not designed, licensed and insured for public road use, shall not be used on public roads.

#### 5.4.3 Reversing

The most effective way of managing the risks from reversing is to avoid the need for reversing manoeuvres by providing one-way systems, turning areas and drive-through loading and unloading areas.

Mobile plant required to reverse on site or on public roads should provide adequate visibility for the operator to ensure safety. Safe systems of work need to be devised and followed for all reversing operations, particularly when signallers are used to control third-party risks or assist in the accurate positioning of the mobile plant. Warning systems offer the lowest level of protection in the hierarchy and, if they are the only precaution used, are only appropriate for low-risk situations.

When planning and controlling mobile plant operations, the hierarchy of control measures for reversing operations includes:

Eliminate - The need to reverse, by implementing one-way systems around the site and in loading and unloading bays, provide a designated turning circle;

Reduce - Reversing operations, by reducing the number of mobile plant movements, restricting reversing to only when absolutely necessary;

Segregate mobile – Mobile plant and people and design reversing areas that:

- Allow adequate space for plant to manoeuvre safely;
- Exclude pedestrians;
- Are clearly signed to have physical stops or buffers to warn operators that they have reached the limit of the safe reversing area.

Safe Systems of Work include:

- Fit camera systems and/or convex mirrors to overcome restrictions to the operators visibility, particularly at the sides and rear of mobile plant;
- Fit radar proximity devices to mobile plant to indicate to operators when there are objects nearby;
- Ensure everyone on site understands site rules on mobile plant safety;
- Operators and signallers need to be in constant communication during reversing operations;
- Signallers should not be put at risk from mobile plant movements;
- Ensure all vehicles on site are fitted with appropriate warning devices.

Providing warnings when mobile plant are reversing, including reversing warning lights and alarms to alert people to keep clear of moving mobile plant.

#### 5.4.4 Loading and Unloading

Load and unload mobile plant on level ground, in areas away from passing traffic, people and overhead hazards.

Mobile plant on transporting vehicles should be:

- Of suitable height and width for the transporting vehicle and the road conditions;
- Secured to prevent movement;
- Evenly loaded and distributed to prevent stresses on vehicle structures and the risk of overturning;
- Positioned on vehicle and transported so that they do not adversely affect vehicle stability;
- Checked to ensure they will not fall uncontrollably when restraints are removed during unloading;
- Not loaded beyond its safe working capacity;

- Mobile plant which project out from the body of the transporting vehicle should be indicated by a warning flag or sign.

Where large mobile plant is transported with low-loaders, in addition to the measures above, they should be:

- Dismantled so far as possible to keep them within the dimensions of the carrying vehicle;
- Emptied of fuel, so far as possible;
- Relieved of hydraulic pressure by moving all control levers through all positions, twice, before transportation;
- Secured and restrained to prevent movement, with their parking brake applied and wheels and rollers chocked. Moveable assemblies, such as jibs, dismantled parts and ancillary equipment, need to be secured following the manufacturer's manual.

#### 5.4.5 Sheeting

Many falls from dump trucks occur during the sheeting and un-sheeting of loads. Gantries which fit closely to the vehicle can provide safe means of access for employees during the manual sheeting of loads. Falls may occur when:

- Trimming the load when the level is uneven or too high;
- Slipping or tripping on the material or strappings and ropes when climbing over the load;
- Spreading or unfolding the sheet over the load;
- Pulling the sheet tight;
- High winds create a 'sail-effect' of the sheeting.

#### 5.4.6 Signallers

Signallers used to direct operators, people and mobile plant movements need to be competent in the methods used to ensure their own and other people's safety. Safe systems of work need to be provided to prevent signallers being struck by mobile plant. The provision of refuges, observation positions, control rooms, radio communications and cameras systems can help remove signallers from areas of mobile plant movement.

Signallers should be authorised by management and easily distinguished on site and specially trained to provide:

- Hand signals; or
- Verbal communication.

When directing operations, the signaller should ensure that:

- The signals are precise, simple, easy to make and to understand;
- The signaller and the operator agree on the signals to be used before manoeuvres begin;

- The signaller shall be safely positioned to be able to see all the manoeuvres being made by the receiver of the signals;
- The signaller shall be dedicated to directing the manoeuvres and ensure the specific control measures in the area are implemented for employees safety working nearby;
- Where the operator is unable to see the signaller, the manoeuvres shall be stopped until further instructions are received from the signaller.

Further information on signalling can be found in OSHJ-GL-17: Safety Signs and Signals.

## 5.5 Safe Workplace for Specific Mobile Plant

Commonly used mobile plant detailed in the sections below, provides details of safe work practices for some, but not all types of mobile plant. Before using any mobile plant for the first time, operators should refer to the manufacturer's manual for safe use.

### 5.5.1 Dump Trucks

Dump trucks are equipped with open beds and allow for the transport of materials, including soil, rocks, sand and gravel. Overturning of dump trucks is the main hazard associated with tipping. To minimise the potential for injuries, dump truck operators should ensure the following, including but not limited to:

- That loads are evenly distributed and do not exceed the safe working load;
- Drive at an appropriate speed for the workplace conditions;
- That dump trucks do not operate on gradients that exceed safe working capacity;
- Tipping is performed on level and stable ground away from power lines and pipework;
- Bring the truck to a complete stop, engage neutral gear and apply the brake before loading or tipping loads;
- The tipping mechanism should be fully retracted before moving the dump truck;
- The dump truck is never driven in an endeavour to free a stuck load;
- Safe systems of work are implemented;
- The operator is seated within the cab and the cab door closed, when operating the dump truck.

### 5.5.2 Telescopic Handlers

A telescopic handler, also called a telehandler or teleporter, is a widely used machine. It is similar to a forklift truck but has a boom or telescopic cylinder, making it more a crane than a forklift, with the increased versatility of a single telescopic boom that can extend forwards and upwards from the vehicle. The boom can be fitted with different attachments, such as a bucket, pallet forks or winch.

Telescopic handler visibility to the rear may present a significant hazard. This may be remedied by fitting additional visibility aids. When in operation with the boom raised and other similar configurations, there may be a significant blind spot to the front right-hand side of the telescopic handler. Both of these hazards should be identified within a risk assessment and suitable control measures put in place.

Telescopic handlers are at risk of overturning when:

- Overloaded;
- Operating on sloping, uneven or unstable ground;
- Operating with raised loads;
- Operating at excessive speed and turning.

These types of mobile plant normally require flat, graded surfaces to operate safely and have strict operational limits which need to be observed.

### 5.5.3 Excavators

Excavators are heavy construction equipment consisting of a boom, dipper (or stick), bucket and cab on a rotating platform known as the "house". The house sits atop an undercarriage with tracks or wheels. All movement and functions of a hydraulic excavator are accomplished through the use of hydraulic fluid, with hydraulic cylinders and hydraulic motors.

Due to the size, weight and power of excavators, they present a significant hazard to operators and any people in close proximity. Incidents with excavators can occur when excavators slew around, reverse and move around site.

Excavators must be operated with adequate control measures including, but not limited to:

- Excavators should be equipped with adequate visibility aids to ensure drivers can see areas where people may be at risk from the operation of the excavator;
- People should be kept away from the areas of excavator operation by the provision of suitable barricading;
- A signaller should be provided and in a safe position to direct the excavator's operation and any movement of people;
- Adequate clearance needs to be maintained between any part of the equipment, particularly the ballast weight, and the nearest obstruction.

Incidents can also occur during reversing and digging operations, these control measures include but are not limited to:

- Where people are liable to approach temporary work areas, barriers, fencing or other appropriate means need to be used to create and maintain an exclusion area;
- Plan work to include the appropriate use of competent signallers to control third-party risks and to help the operator to accurately position the excavator;
- Where space is limited, sufficient room and appropriate traffic management should be provided to allow excavators to operate safely;
- To prevent excavators overturning on sloping ground, create level work areas and carefully control the swing of the bucket downhill;
- All excavators should be parked with their buckets, blades and any other attachments lowered to the ground.

## 6 Training

The entity should provide information and training on mobile plant in languages and in a format that employees understand. Training should be provided for existing as well as new or inexperienced operators, who need to have adequate knowledge to use, inspect and maintain mobile plant safely.

The entity shall provide training for operators, including but not limited to;

- Specific information, instruction and training on how to operate mobile plant safely;
- Manufacturer's manual safety instructions and check they understand these instructions;
- Signallers and operators are trained on the use of hand signals and/or verbal communication;
- Hazards and control measures related to specific mobile plant;
- Pre-use check and inspection of mobile plants;
- Maintenance requirements of the mobile plant;
- How to avoid risks related to the mobile plant;
- Formal training for use on specific mobile plant.

Periodic refresher training should be conducted to ensure employees competency is maintained, including but not limited to:

- Where training certification has expired;
- Where identified as part of a training needs analysis;
- Where risk assessment findings identify training as a measure to control risks;
- Where there is a change in legal requirements;
- Where incident investigation findings recommend refresher training.

The entity must record and maintain accurate training records of OSH training provided to employees.

Further information on training can be found in OSHJ-GL-26: Training and Competence.

## 7 Emergency Preparedness and Response

The entity should have procedures for emergencies, this must include mobile plant breakdown, incident or medical emergency. The entity should ensure that operators know what to do in an emergency, they should ensure:

- Emergency response personnel are available, who can take charge and make decisions on behalf of the entity during an emergency and liaise with emergency services;
- Adequate firefighting and first aid equipment is available for the type of work activities and the mobile plant present in the workplace;

- Employees are trained in emergency response, including information of first aid arrangements and where first-aiders, first aid equipment and facilities are located;
- Employees are appointed as first-aiders and available at each location and during each working shift when work is being conducted.

Further information on first aid can be found in OSHJ-CoP-16: First Aid at Work.

Further information on first aid can be found in OSHJ-CoP-18: Emergency Preparedness and Response.

## **8 References**

OSHJ-CoP-01: Risk Management and Control.

OSHJ-CoP-18: Emergency Preparedness and Response.

OSHJ-GL-17: Safety Signs and Signals.

OSHJ-GL-26: Training and Competence.

## 9 Document Amendment Record

<b>TITLE</b>	Mobile Plant		
<b>DOCUMENT AMENDMENT RECORD</b>			
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