

## National Occupational Standards

**Sector:** Building and Construction

**Occupation:** Mobile Crane Operator

**MQF Level:** 3

**Units:**

- MCO301: Contribute to health and safety requirements in the workplace
- MCO302: Carry out the daily walk around checks prior to operating the mobile crane
- MCO303: Draw and prepare a lift plan
- MCO304: Setting up and demounting a mobile crane
- MCO305: Carry out a lifting operation using a mobile crane

### **MCO301: Contribute to health and safety requirements in the workplace**

This unit lists the knowledge and skills required by a person holding this position to contribute to carrying out safe work activities in compliance with health and safety activities.

Upon completion of this unit the persons carrying out this work will possess the necessary knowledge and skills to follow health and safety procedures which ensure that their actions do not create health and safety risks to self or to others.

#### **Performance Criteria**

The candidate must have the necessary knowledge and skills to:

1. Follow safe working practices in accordance with the workplace health and safety regulations.
2. Identify potential hazards associated with own work practices and the workplace and report them in accordance with organisational procedures.
3. Follow correct procedures in the event of hazards or injury or ill health.
4. Carry out work practices to comply with supplied information to contribute to a healthy, safe, and secure working environment.

#### **Required Knowledge**

The Level 3 Mobile Crane Operator must know and explain:

1. Their roles and responsibilities under the Health and Safety Act as amended by Act XXVII of 2000 or any subsequent current legislation.
2. Their health concerns associated with the workplace and safe practices when carrying out work activities.
3. The importance of co-operating with their employer on matters related to health and safety to safeguard their own wellbeing and that of others affected by their work activities.
4. The organisational policies regarding legislation and guidance which need to be complied with.
5. The potential hazards in the workplace such as electricity and other utility services, contaminants, hazardous and non-hazardous substances, waste materials, working at height, work equipment, access equipment, obstructions, fire risks, manual handling, proximity, third party hazards, and changing weather conditions.
6. The importance of awareness with regards to overhead electrical cables and the distance required when operating the mobile crane.
7. The effect of any toxic or hazardous substances detected on site and what precautions need to be taken.
8. The risks to health within a construction environment- substances hazardous to health, drugs, and alcohol.
9. The importance of correct storage of combustibles and chemicals on site.

10. The arrangements to follow regulations regarding security on site and in the workplace e.g., storage of materials, components, tools, plant, and equipment.
11. The importance of working around mobile plant and equipment on site- keeping safe distances away from working machinery.
12. The security arrangements and procedures that should be observed and followed when working on site.
13. The procedures for dealing with accidents and emergencies associated with the workplace and environment.
14. The importance of reporting accidents and near misses to superiors.
15. Personal responsibility for behaviour of health, safety and welfare on site and the consideration of others.

### Required Skills

The Level 3 Mobile Crane Operator must be able to:

1. Comply with their individual duties and legal obligations under the Health and Safety Act XXVII of 2000 or any subsequent current legislation.
2. Work according to health and safety regulations and other relevant regulations that apply to the work requirements.
3. Comply with safe working practices in accordance with organisational procedures.
4. Recognise any hazards and hazardous materials associated with workplace activities and how changing circumstances could increase those hazards.
5. Report any hazards and risks and changing circumstances to superiors in accordance with organisational procedures.
6. Report near misses and accidents to superiors.
7. Recognise emergency situations and report them in accordance with organisational requirements.
8. Identify and use the provided Personal Protective Equipment (PPE) and Respiratory Equipment (RPE) when necessary to carry out work duties.
9. Comply with organisational procedures for safely working around mobile plant and equipment.
10. Assist in carrying out work activities to protect work areas from damage.
11. Demonstrate good personal behaviour for workplace health safety and welfare.

### **MCO302: Carry out a daily walk around checks prior to operating the mobile crane**

This unit lists the knowledge and skills required by a person holding this position to contribute to the carrying out of the daily walk around check of the Mobile Crane.

Upon completion of this unit the persons carrying out this work will possess the necessary knowledge and skills to carry out the daily walk around check which will then ensure that the mobile crane to be operated in this lift is free from any visible defects.

#### Performance criteria

The candidate must have the necessary knowledge and skills to:

1. Operate the mobile crane.
2. Identify any faults in the mobile crane.
3. Follow the correct procedure to report any faults or defects.
4. Assist in rectifying any faults.
5. Certify that the mobile crane is in proper working order prior to using it.
6. Read and understand the mobile crane instructions manual.
7. Know the legal obligations about mobile crane certification and testing.
8. Check mobile crane maintenance schedule.

#### **Required Knowledge**

The Level 3 Mobile Crane Operator must know and explain:

1. How to identify defects that will affect the proper operations of the mobile crane.
2. How to follow organisational procedures in filling of the daily walk around check sheet.
3. How to coordinate with his assistant during the daily walkaround check.
4. The understanding of the proper function of the crane structure, booms, outriggers, slewing table, sheave and hook block, wire ropes, motors, and brakes.
5. The fluid level gauges, pressure gauges and labels attached to the mobile crane.
6. The crane sensors and about the function of load moment indicators and crane instrumentation.
7. How to report any defects in the mobile crane.
8. How to read and understand the mobile crane instruction manuals.
9. How to check the expiry date of mobile crane certification from the warranted mechanical engineer.
10. How to check mobile crane maintenance schedule and report for maintenance as required.

### Required Skills

The Level 3 Mobile Crane Operator must be able to:

1. Select and use the correct PPE during the walk around check.
2. Carry out a daily walk around check.
3. Access and open/close lids and caps to check fluid levels.
4. Open and close hatches to check for any faults.
5. Climb safely onto the crane structure.
6. Check the functionality of all levers and controls and report any malfunction.
7. Check the functionality of safety switches and sensory equipment.
8. Understand the control panel of the mobile crane.
9. Understand maintenance schedules.

### **MCO303: Draw and prepare a lift plan**

A lift plan is to be planned prior to every lift; the lift plan should include all the required details to carry out the lift safely.

Upon completion of this unit the mobile crane operator should be able to draw up a lift plan. The mobile crane operator should possess the required knowledge and skills to implement this lift plan.

#### **Performance criteria**

The candidate must have the necessary knowledge and skills to:

1. Identify potential hazards for this lift.
2. Draw a risk assessment and mitigate all the risks.
3. Brief and explain the lift plan to the assistant.
4. Preparing the right lifting tackle to be utilised for this lift.
5. Keep away the siting of the mobile crane from trenches.
6. Keep away the siting of the mobile crane from high voltage lines.

#### **Required Knowledge**

The Level 3 Mobile Crane Operator must know and explain:

1. That all risks should be mitigated in a risk assessment.
2. How to take mitigation measures how to reduce or eliminate the risk of an accident.
3. The range and the lift capacity of this mobile crane.
4. The load weight to be lifted, load height and operating radius.
5. The compression strength of the terrain where the crane outriggers are to be set and calculate the area of supporting blocks beneath them.
6. How to calculate the required reeving system.
7. How to calculate the requires counterweights.
8. How to calculate the distance to keep away the siting of the mobile crane from trenches.
9. How to calculate the distance to keep away the siting of the mobile crane from high voltage lines.
10. How to state at which wind speed the operation should be halted.
11. How to identify which areas require cordoning to keep public away.
12. How to apply for the necessary permits to set up a mobile crane on a public road.
13. How to draw and later implement lift plan, taking into consideration all the required factors.

### Required Skills

The Level 3 Mobile Crane Operator must be able to:

1. Look for hazards nearby the area where the mobile crane is to be set up.
2. Draw up a risk assessment.
3. Understand load capacity charts.
4. Calculate the load to be lifted and range and check where it fits in the mobile crane load capacity chart.
5. Prepare a lift plan for that load/situation.
6. Implement the lift plan.
7. Calculate the area of supporting blocks beneath the outrigger pads.

### **MCO304: Setting up and demounting a mobile crane**

This unit lists the knowledge and skills required by a person holding this position to contribute to setting out and demounting a mobile crane on site.

Upon completion of this unit the mobile crane operator carrying out this work will possess the necessary knowledge and skills to setting up and dismantling of the mobile crane on site, the mobile crane operator should be able to set up and demount the mobile crane in the appropriate way so as it can carry out the lift safely.

#### **Performance criteria**

The candidate must have the necessary knowledge and skills to:

1. Identify potential hazards during setting up of the mobile crane.
2. Include those hazards in the risk assessment and take mitigation measures how to reduce the effect of those hazards.
3. Give instructions to the assistant mobile crane operator during the setting up and dismantling of the mobile crane.
4. Operate the mobile crane safely.
5. Attach and modify the counterweights configuration.
6. Change the reeving system.
7. Install or demount fly jib.
8. Prepare the correct lifting tackle according to the lift plan.
9. Prepare and place the required blocks to place underneath the crane outriggers.
10. Prepare the mobile crane according to the lift plan.

#### **Required Knowledge**

The Level 3 Mobile Crane Operator must know and explain:

1. How to place the required supports underneath the mobile crane outriggers, extend and set up the outriggers appropriately.
2. How to check that the mobile crane is away from any hazards.
3. How to attach and modify the counterweights configuration.
4. How to change the reeving system.
5. How to install or demount fly jib.
6. That no bystanders or pedestrians should be in the area where the mobile crane is to be set up.
7. That the area should be cordoned adequately.
8. The operating Instruction manuals, labels, and capacity charts.

#### **Required Skills**

The Level 3 Mobile Crane Operator must be able to:

1. Select the appropriate mobile crane siting and away from any hazards.



2. Set up of the outriggers correctly, with the required supports, depending on the terrain.
3. Identify and keep away from any services laid underground.
4. Keep a safe distance from trenches.
5. Identify and hazard that was not identified in the lift plan.
6. Understand the feedback given from the assistant.
7. Install the correct number of counterweights.
8. Alter the reeving system as required.
9. Install a fly gib correctly.
10. Understand hand signals and communicate with a spotter during manoeuvring.
11. Correctly level the mobile crane within 1% inclination.

### **MCO305: Carry out a lifting operation using a mobile crane**

This unit lists the knowledge and skills required by a person holding this position to carry out a safe lift using a mobile crane.

Upon completion of this unit, the mobile crane operator carrying out this work will possess the necessary knowledge and skills to operate a mobile crane.

#### Performance criteria

The candidate must have the necessary knowledge and skills to:

1. Identify potential hazards during the lifting operation.
2. Take mitigation measures how to deal with any hazards.
3. Take ownership and responsibility of the lifting operation.
4. Watch out for any changing parameters during the lifting operation.
5. Communicate effectively and give feedback to the assistant crane operator, during lifting.
6. Operate the mobile crane safely, understand the controls and alarms.
7. Communicate with the spotter using hand signals during the mobile crane manoeuvring.
8. Understand alarms issued by the onboard mobile crane limiting devices.
9. Carry out a safe lifting operation, without exceeding the designed parameters of the mobile crane.
10. Understand the legal requirements of crane certification when lifting goods.
11. Understand the legal requirements of certification of crane and cage when lifting persons.

#### **Required Knowledge**

The Level 3 Mobile Crane Operator must know and explain:

1. How to select the right crane for that lifting operation.
2. How to select the appropriate mobile crane siting.
3. The distance to be kept away from high voltage lines.
4. How to set the outriggers and their supports and taking into consideration the ground bearing capacity and making sure that no damage is made to the existing infrastructure.
5. How to level the mobile crane correctly.
6. How to identify and hazard that was not identified in the lift plan.
7. How to read instruction manuals.
8. That the correct counterweights are installed.
9. That the correct reeving system is being utilised.
10. The wind speed is below the recommended safe operational wind speed.
11. The lifting operation in accordance with the mobile crane lifting capability.

12. The functionality of load moment devices and sensory equipment on board the mobile crane.
13. That the suspended load should not be lifted above any person.
14. The procedure when lifting persons in a cage.

**Required Skills**

The Level 3 Mobile Crane Operator must be able to:

1. Place the correct supports underneath the mobile crane outriggers.
2. Identify and hazard that was not identified in the lift plan.
3. Identify any changes.
4. Operate the mobile crane safely and understand controls.
5. Understand alarms issued by the onboard mobile crane limiting devices.
6. Understand the effect of wind on the mobile crane operation.
7. Operate the mobile crane safely and understand the controls and alarms.
8. Understand hand signals of the spotter.
9. Lift persons in a cage.