

National Occupational Standards

Sector: Building and Construction

Occupation: Concreter

MQF Level: 4

Units:

- CL401 - Occupational Health and Safety in the Work Place
- CL402 - Systems, Equipment and Components
- CL403 - Reading of Drawings and Calculations
- CL404 - Concrete Ordering and Casting

CL401 - Occupational Health and Safety in the Work Place

This unit is about being able to use safe procedures and safe work practices. The persons carrying out this work must possess the necessary knowledge and skills to ensure that their actions do not create health and safety risks to themselves and others, identify risks and hazards associated within the working environment, tools and equipment and materials and substances used.

Performance Criteria

The candidate must have the necessary knowledge and skills to:

1. Instruct and direct to ensure that safe working practices are carried out to prevent hazards and to ensure the safety of one self, workers and members of the public.
2. Ensure that safe working practices are carried out when using appropriate equipment and materials to prevent damages to work areas and injuries to oneself and 3rd parties.
3. Ensure that erection, use and dismantling of simple access platforms less than 2m high are carried out safely.
4. Instruct, direct and set up safety barriers around a work environment hazard to protect colleagues and members of the public.
5. Ensure that subordinates and team mates use protective clothing and safety equipment according to specifications issued by manufacturers and know the whereabouts of first-aid equipment.
6. Supervise the use, handling and storage of materials hazardous to health are carried out in a safe manner.
7. Carry out a risk assessment to cover the job assigned and the working area.
8. Ensure that temporary or fixed electrical switch gear, systems isolating valves are located and switched off as instructed in the health and safety procedures.
9. Supervise and advise on health and safety precautions being applied on day-to-day bases;

Required Knowledge

The MQF Level 4 concreter must know and explain:

1. The roles and responsibilities of themselves and others under the Health and Safety Act.
2. The health and safety risks associated with their role which includes tools, materials and equipment used and working practices and procedures.
3. The potential hazardous material commonly found at the workplace.
4. The procedures for dealing with potential hazardous material in the place of work.
5. The health concerns associated with the workplace and safe practices when carrying out work.
6. The hazards and potential hazards at the place of work (such as electricity, slippery and uneven surfaces, dust and fumes, handling and transporting, contaminants and irritants, fire, heights, improper use of tools and equipment).
7. The importance of being alert to the presence of hazards in the place of work.

8. The importance of an induction meeting conducted for any staff prior to commencement of work on a new site
9. The responsible persons to whom to report health and safety matters or any other occurring hazards.
10. The emergency procedures in the place of work.
11. The first aid facilities that exist within the work area.
12. The best way to make use of barricades, industrial hurdles, and warning signs to make areas clearly marked out of bounds.
13. The safety procedures when using scaffold platforms. (not erecting and dismantling scaffold platforms).
14. The necessary safety precautions including the use of protective clothing and equipment for a range of applications.
15. The methods used for protecting customers' property.
16. When it is required to isolate and shut down domestic water services from the main water supply.
17. Any toxic effect from materials commonly used at construction sites.
18. The preventative and remedial actions to be taken in the case of exposure to materials hazardous to health.

Required Skills

The MQF Level 4 concreter must be able to:

1. Identify which health and safety procedures are relevant to the working environment.
2. Seek expert assistance when help is needed.
3. Ensure compliance with duties and obligations as defined by the Occupational Health and Safety Act 2000 and recent amendments.
4. Follow workplace policies and employers instructions for the safe use and maintenance of tools and equipment.
5. Conduct induction meeting to staff prior to commencement of work on a new site.
6. Control health and safety hazards within the job responsibility.
7. Report any hazards which may present risk to relevant persons.
8. Follow correct procedures in the event of injuries to themselves or others.
9. Take remedial action where work methods are not in line with control measures noted and identified from risk assessment.
10. Adhere to work production and installation processes as agreed with the employer.

11. Apply the necessary skills to erect, use and dismantle access equipment less than 2m in height and use appropriately all access equipment provided;
12. Read, interpret and install warning signs and sets up safety barriers, around working areas;
13. Equip oneself with the appropriate protective clothing and safety equipment for bar bending and steel fixing;
14. Use and store materials hazardous to health in a safe manner;
15. Monitor the work place and maintain good housekeeping whilst keeping it free from hazards;
16. Communicate to colleagues and supervisors complex information regarding unfamiliar or in the case of unpredictable situations;
17. Advocate appropriate health and safety procedures.

CL402 - Systems, Equipment and Components

This unit is about identifying the different materials for specific applications based on their technical properties and to identify direct and indirect environmental impacts. Typical workplace systems and the importance that these have on quality assurance procedures are also discussed.

Performance Criteria

The candidate must have the necessary knowledge and skills to:

1. Distinguish between the types and grades of cements available on the market;
2. Keep records of the quantity of materials used in day to day work;
3. Organise stores and production facilities;
4. Organise plant, tools and equipment including routine maintenance and accuracy and functioning checks;
5. Break down a job into different phases and estimate the duration and production hours required;
6. Coordinate with others to ensure project plans include site, roads, neighbours and neighbourhoods concerns and environmental legislation;
7. Ensure the requirements regarding contraction, isolation and construction joints are according to drawings;
8. Distinguish between a range of admixtures and calculate quantities required for concrete batches.

Required Knowledge

The MQF Level 4 concreter must know and explain:

1. The concrete mix complexity based on site constrains;
2. The environmental management within the concrete industry;
3. Digital and hard copies systems used to keep records and control of materials and equipment;
4. Company procedures regarding final decisions and work permits;
5. Environmental Regulatory requirements and Project environmental plans including equipment specifications dedicated for such tasks;
6. Routine checking procedures for accuracy checks of levelling instruments;
7. Work place storage codes and methods;
8. High performance concrete specifications;
9. Procedures and materials regarding contraction, isolation and construction joints;

Required Skills

The MQF Level 4 concreter must be able to:

1. Estimate level of complexity and establish concrete pours phases and the job-hours required in each phase;

2. Interpret different types of cements and aggregates;
3. Interpret the project environmental plan and establish resources required for its implementation;
4. Use standard practices to apply for working permits and neighbours briefing;
5. Use drawings to categorise site areas by required detailing of concrete works;
6. Assess concrete properties to determine supply, handling and casting preferred method;
7. Identify procedure and materials for the preparation of contraction, isolation and construction joints;
8. Mix chemical to specified rations

CL403 - Reading of drawings and calculations

This unit is about understanding views, sections and general civil engineering drawings to extract measurements to calculate quantities in preparation of material orders and costings.

Performance Criteria

The candidate must have the necessary knowledge and skills to:

1. Select, check for accuracy and use leveling tools and equipment;
2. Read and interpret construction and civil engineering projects site and building drawing;
3. Read and interpret sections and views as used in construction and building engineering drawings;
4. Read and interpret scales, levels, misalignment reports and other measurements to make calculations including heights, areas, volumes and grades;
5. Understand the relationship between force, pressure, area and hydraulic pressure;
6. Read and interpret materials specifications;
7. Read and interpret assembly drawings of shutters and form work;
8. Calculate concrete weight using factors, area and volumes;
9. Interpret concrete mix ratios by weight and by volume;
10. Ensure that all form work is properly supported at its base taking into account ground conditions or supporting surface conditions.

Required Knowledge

The MQF Level 4 concreter must know and explain:

1. Concrete industry standards and good industry practice;
2. Scales, ratios and percentages;
3. Drawings annotations used for levels, gradients and bearings;
4. Relevant scientific parameters as used in digital calculators;
5. A wide range of hand tools specifications and their use;
6. The common tolerances accepted in construction and civil engineering projects especially concrete floor finish tolerances;
7. The techniques to produce manual simplified workshop drawings;
8. The metric units of linear measurements, areas, force, pressure and fluid measurements;
9. How the properties and conditions of supporting elements can vary

Required Skills

The MQF Level 4 concreter must be able to:

1. Interpret and calculate levelling readings and measurements;

2. Calculate areas and volumes to be concreted;
3. Record measurements of routine data associated with levelling procedures;
4. Convert between units of measurements: meters; centimetres and millimetres;
5. Use calculators and digital measuring instruments to measure linear and angular measurements;
6. Convert between tonnes to Kilograms and millilitres to litres;
7. Use established factors to convert volume of material to weight (specific density);
8. Assure the required loads are properly supported where necessary

CL404 - Concrete Ordering and Casting

This Unit is about using tools and equipment to cast concrete and the cross checking with design specifications required to confirm orders and concrete pouring procedures. It also emphasises the high level of skills and knowledge to perform work as an individual and to organise and manage construction site teams.

Performance Criteria

The candidate must have the necessary knowledge and skills to:

1. Clean, check, maintain and store plant, tools and equipment according to manufacturer recommendations and work place practices;
2. Organise and lead teams to dispose unwanted materials according to project environmental policy and keep areas cleared from unwanted materials;
3. Mark levels and prepare to pour concrete in horizontal layers;
4. Take necessary measures to keep the vertical drop of concrete within recommended practices and to transport concrete by chute/ wheelbarrow appropriately;
5. Check that bar chairs and spacers are positioned;
6. Use the recommended compaction or vibration equipment as stipulated in the procedures;
7. Keep measurements to adjust orders as concrete is being poured;
8. Drain and de-water construction site;
9. Use levelling devices to confirm level of poured concrete;
10. Screed concrete according to drawings and specifications;
11. Take samples of delivered concrete to check against contract specifications and associated testing standards;
12. Carry out on site concrete curing procedures including protection from damage and pollution;
13. Keep records to document the curing process;
14. Remove screeding lines and surface inaccuracies with the use of bull floats;
15. Monitor the concrete surface during curing for bleed water to apply manual and mechanical trowelling;
16. Consult civil engineers to ensure correct interpretation of concrete specifications;
17. Estimate the time required, time interval between delivered concrete and the job-hours (man-hours) requirements;
18. Assemble and service moulds, and demould products of precast concrete;
19. Programme and maintain progress of material and labour;
20. Carry out remedial work on concrete;
21. Read and interpret concrete industry drawings and specifications;
22. Prepare joints, finish edges and trowel concrete
23. Plan, organise and review processes and safety requirements;

Required Knowledge

The MQF Level 4 concreter must know and explain:

1. Various procedures to calculate materials requirements;
2. Environmentally friendly waste management procedures;

3. Material storage work practices;
4. Various properties of concrete including quality requirements affected by method and environment ambient conditions when pouring;
5. The importance of the slump test specifications;
6. How to manage effectively cold joints;
7. Various compaction techniques;
8. Types and applications of concrete materials;
9. Safety data sheets of various products;
10. Various curing techniques;
11. Concrete additives and the effect on concrete curing, finishing and performance;
12. Various methods to maintain temperature and other parameters to specifications;
13. Various quality requirements and techniques to obtain required concrete finish and strength;
14. Site isolation and traffic control responsibilities and authorities;
15. Traffic signs appropriate for roads approaching construction sites;
16. Tools to assemble and dismantle moulds;
17. Equipment data sheets and routine maintenance manuals;
18. Knowledge of temporary installations equipment and auxiliaries used to de water construction sites;
19. Hand and power tools and equipment to lay and finish concrete to specifications;
20. Production hours estimating techniques;
21. Products to prepare concrete precast moulds surfaces, cleaning and preserving for re use;
22. Leadership and management methods and techniques;

Required Skills

The MQF Level 4 concreter must be able to:

1. Read and interpret drawings and schedules to re-place temporary removed steel reinforcement;
2. Calculate time required to pour concrete and frequency of truck supplies;
3. Recalculate required quantities at various intervals to confirm orders;
4. Identify, confirm and communicate technical information including hazards and breakdowns;
5. Interpret technical specifications from material schedules and data sheets;
6. Interpret concrete curing procedures from standards and specifications;
7. Use plant, tools and equipment for the finishing of concrete surfaces;
8. Follow procedures to manage storm-water and protect poured concrete;

9. Communicate with builders, steel fixers and designers;
10. Use planning tools consistently;
11. Carry out preventive maintenance to hand, power tools and equipment;
12. Carry out cleaning and servicing of precast concrete moulds;
13. Handle precast molds using the appropriate lifting gear;
14. Discuss with designers and communicate solutions to specific problems;
15. Compute and keep detailed records of quantity of materials used or delivered by project defined zones;
16. Programme and monitor progress of all resources required;
17. Plan workforce requirements by competence level and operation;
18. Use lifting gear appropriately to assist crane operator teams;
19. Contribute to improve work activities;
20. Plan ahead of production safety requirements, equipment and training requirements;
21. Supervise the quality of work and advice on the necessary adjustments to the work procedures and setting out of work to achieve the required accuracy;
22. Set production priorities and delegate with accurate instructions;
23. Instruct others to maintain and improve their commitment and performance;
24. Recognise the roles and responsibility of others;
25. Maintain interpersonal relationship to understand and develop others and to avoid conflict;