

National Occupational Standards

Sector: Building and Construction

Occupation: Quality Controller (Road Construction)

MQF Level: 3

Units:

- QCRC301: Apply Occupational Health and Safety during Work-Practices
- QCRC302: Quality Control and Testing
- QCRC303: Co-ordination and Reporting

QCRC301: Apply Occupational Health and Safety during Work-Practices

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. Carry out safe working practices to prevent hazards and to ensure the safety of oneself, workers, and members of the public.
2. Carry out safe working practices when using appropriate equipment and materials to prevent damages to work areas and injuries to oneself and 3rd parties.
3. Ensure that any equipment, plant, formwork and/or scaffolding is safe to use.
4. Ensure the correct setting up safety barriers around a work environment hazard to protect site workers and members of the public.
5. Ensure that all personnel use protective clothing and safety equipment according to specifications issued by manufacturers and know the whereabouts of first-aid equipment.
6. Ensure the usage, handling, and storage of materials hazardous to health is done in a safe manner.
7. Identify the potential risk to cover the job assigned and the working area.
8. Ensure that all fire safety systems are in place.
9. Ensure that any electrical systems have been secured/disabled.
10. Ensure that all detection has been carried out and marked by the service entities.
11. Inspect and assist in any overhead and underground barrier services and foundations during and after construction for structural quality, structural integrity, safety and conformity to specifications and safety practices.
12. Issue notices of safety violations and follows-up on remedial measures required in case of safety violations reported.
13. Evaluate sites for cleanliness including waste disposal and vermin control.

Required Knowledge

The Level 3 Quality Controller (Road Construction) 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, construction vehicles, materials and equipment used and working practices and procedures.
3. Good practice and integrity of bridges, roads, buildings, and foundations, overhead and underground services.
4. The environmental risks such as deficient air and water quality.
5. The fire safety system requirements and the risks associated with them.
6. The potential hazardous material commonly found at the workplace.
7. The procedures for dealing with potential hazardous material in the place of work.
8. The health concerns associated with the workplace and safe practices for different ongoing work practices on site.

Building and Construction: Quality Controller (Road Construction) – MQF
Level 3

9. 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 plant and equipment).
10. The importance of being alert to the presence of hazards in the place of work.
11. The responsible persons to whom to report health and safety matters or any other occurring hazards.
12. The emergency procedures in the place of work.
13. The first aid facilities that exist within the work area.
14. The correct procedure to make use of barricades, industrial hurdles, and warning signs including specific temporary traffic management arrangements to contain the work sites.
15. The safety procedures when using scaffold platforms.
16. The necessary safety precautions including the use of protective clothing and equipment for a range of applications including situations when helping other sector trade persons.
17. The methods used for protecting customers' property.
18. When it is required to close domestic water services from the main water supply; switch off electrical supply.
19. Any toxic effect from materials commonly used at construction sites.
20. The preventative and remedial actions to be taken in the case of exposure to materials hazardous to health.
21. Waste disposal and vermin control procedures.

Required Skills

The Level 3 Quality Controller (Road Construction) 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. Control health and safety hazards within the job responsibility.
6. Report any hazards which may present risk to relevant persons.
7. Follow correct procedures in the event of injuries to themselves or others.
8. Take remedial action where work methods are not in line with control measures noted and identified from risk assessment.
9. Ensure adherence to work production and installation processes as agreed with the employer.
10. Ensure that the necessary skills to erect, use and dismantle access equipment (at height less than 2m) are applied.
11. Read, interpret, and install warning signs and set up safety barriers around working areas.
12. Read, interpret, and inspect health and safety provisions in the Contract Specifications and Drawings.
13. Equip oneself with the appropriate protective clothing and safety equipment
14. Use and store materials hazardous to health in a safe manner.
15. Monitor the workplace and maintain good housekeeping whilst keeping it free from hazards.
16. Communicate complex information regarding unfamiliar and unpredictable situations to colleagues and supervisors.
17. Advocate appropriate health and safety procedures.
18. Have the skill to observe and monitor site situations and materials to determine compliance with safety standards.

QCRC302: Quality Control and Testing

This unit is about identifying and understanding project standards that comply with project specifications, coordination, performance, regulations, industry standards, product instructions and ensuring that all materials and works methods used in the project meet the standards required and project contractual requirements.

Performance Criteria

The candidate must have the necessary knowledge and skills to:

1. Read and interpret plans, construction methods and specifications and check for discrepancies.
2. Read and interpret road design and construction drawings and written instructions.
3. Verify alignments, levels, measurement of dimensions and elevation of roads, structures, and fixtures.
4. Review layout plans to ensure that they meet regulations and contract specifications.
5. Review of cost estimates, scheduling, and materials listing.
6. Develop a good knowledge of project scope and requirements.
7. Prepare a plan for project quality controls.
8. Assist in internal audits of materials and processes.
9. Implement and manage all phases of quality control.
10. Ensure that the quality control plan is followed including time limits for inspections, sampling and testing of works and materials.
11. Implement multiple levels of quality control for various and concurrent trades.
12. Monitor progress of activities.
13. Manage project inspection and quality control activities.
14. Distinguish between the different types of materials and equipment used in the road construction process and the scope for each.
15. Know the different types of testing required to be carried out on all the materials being used on site.
16. Coordinate with the contractor and testing bodies and make arrangements for sampling and testing of work, quality assurance testing of materials.
17. Ensure that all testing methods and materials meet the required quality standards.
18. Ensure that all recording, sampling, and testing has been carried out before they are covered by contractor.
19. Ensure all materials brought to the site are stacked and stored to prevent deterioration or intrusion by foreign matter and ensure the preservation of their quality and fitness for work.
20. Re-test materials which have not been stored properly or were stored for long periods of time if their suitability for work is doubtful.
21. Ensure that materials and work procedures comply with specifications and contract documents.
22. Be present during material testing and sampling including testing of soil, aggregates, bituminous products, concrete and services and pipework laid.
23. Lead and conduct field investigation to assess the quality of works and structural integrity of road pavements and structures.
24. Assist and carry out laboratory and field tests for different construction materials.
25. Analyse quality control test results and provide feedback and interpretation.

Building and Construction: Quality Controller (Road Construction) – MQF
Level 3

26. Identify critical points in the manufacturing process and specify sampling procedures to be used.
27. Review, comment and make recommendations on the testing procedures and methodologies.
28. Identify any specific fault in plant and ensure that machinery gets sent to the garage for maintenance.
29. Manage corrective actions.
30. Assist in the calibration of equipment.
31. Identify, report and coordinate for closure of coordinate nonconformance.
32. Prepare punch lists and coordinate punch list completion.
33. Verify documentation and certificates for materials purchased/supplied.

Required Knowledge

The Level 3 Quality Controller (Road Construction) must know and explain:

1. Project quality controls.
2. The different phases of quality control.
3. The range of materials, products, testing required, sampling procedures and work procedures applicable to the road construction process.
4. The methods and techniques to minimise wastage and to protect the environment.
5. How to safeguard the quality of work.
6. The awareness in relation to legislation of road construction in Chapter 499.
7. How to test and sample equipment used.
8. The regulations, standards, and systems for safety requirement of electrical, water, drainage and mechanical installations, equipment, and systems.
9. Road and civil building construction, civil engineering principles, techniques and practices and the standard specifications used in construction projects, materials, and methods.
10. Basic statistical process control methods.
11. Design of quality plans.
12. How to co-ordinate laboratory sampling and testing.
13. The calibration of equipment and adherence to maintenance schedules.
14. Scale working drawings from plans.
15. Basic surveying methods.

Required Skills

The Level 3 Quality Controller (Road Construction) must be able to:

1. Distinguish between and apply the different testing for the different types of materials, products, methods, and procedures applicable to the road construction practices and procedures.
2. Distinguish between and apply a range of road construction materials.
3. Distinguish between the different types of testing and sampling equipment, construction machinery and equipment.
4. Apply procedures to minimise construction material waste and dispose construction. waste as stipulated in the environmental protection act.
5. Coordinate between different parties and stakeholders.
6. Be versant with relevant engineering terminology.
7. Understand contract documents, project drawings and contractual obligations.
8. Be versant with legislation, construction methods and material specifications.
9. Understand construction laboratory functions and testing.
10. Have sound judgement and decision-making skills.

Building and Construction: Quality Controller (Road Construction) – MQF
Level 3

11. Have high analytical skills including mathematical and basic statistical techniques.
12. Analyse, document and report research results.
13. Operate within test scheduling and priorities.
14. Operate simple machinery and measuring equipment.
15. Be familiar with manufacturing and construction methods and processes.
16. Translate drawing details to setting out of work.
17. Check with specialised levelling equipment for accuracy.
18. Translate quality specifications on actual work.
19. Measure and comprehend calculations using metric units.
20. Read, analyze, and interpret plans and specifications and comparing them with construction in progress and for construction control purposes.
21. Read and interpret plans and specifications for construction control purposes.
22. Have the skill in making decisions in accordance with construction plans and specifications.
23. Have the skill in detecting discrepancies in layout plans, materials, construction methods and processes and implementing appropriate remedial actions.
24. Monitor the quality plans.

QCRC303: Co-ordination and Reporting

This unit is about understanding and applying dimensions and levels from drawings and calculating quantities in the preparation, costing, and estimation.

Performance Criteria

The candidate must have the necessary knowledge and skills to:

1. Monitor all procedures occurring on site.
2. Have effective communication and liaison with all parties involved.
3. Set up and maintain controls and documentation procedures.
4. Monitor performance by collecting the necessary data and compile statistical reports.
5. Measure performance and identify any weaknesses and implement improvements identified by the manager or supervisor.
6. Manage the documentation necessary to support testing procedures including data capture forms, equipment logbooks and inventories.
7. Report, compile and prepare basic reports for analysis and evaluation.
8. Maintain accurate and detailed filing.
9. Maintain test result records.
10. Implement upon instructions the method of disposal of discrepant material.
11. Assist with auditing, writing, revising, and verifying quality standards and developing forms and instructions for recording, evaluating, and reporting quality data.
12. Prepare reports regarding non-conformance of products, process, daily production quality, root cause analysis and quality trends.
13. Monitor the disposition and track non-conformance reports.
14. Ensure all quality management activities are incorporated with the programme of works and management systems and technology.
15. Manage and administer the inspection programme that include data accuracy, key performance indicators and physical inspections of preventive maintenance.
16. Report to senior management on quality-related performance and improvements required.
17. Assist in preparation for the approval of the project quality-related contract submissions.
18. Maintain test result record registers linked with assured quality of work.
19. Attend quality management meetings.

Required Knowledge

The Level 3 Quality Controller (Road Construction) must know and explain:

1. Regulations, legislation and works methods.
2. Work procedures and methodologies.
3. The functions and sequencing of a programme of works.
4. The types of testing and methodologies including European and National Standards related to civil engineering.
5. The use of computer databases for reporting and record keeping.
6. The non-conformance materials and methods.
7. How to improve operations, decrease turnaround times and streamline work processes.

Required Skills

Building and Construction: Quality Controller (Road Construction) – MQF Level 3

The Level 3 Quality Controller (Road Construction) must be able to:

1. Recognize and report any deficiencies on site.
2. Manage multiple priorities
3. Have good communication, problem-solving, time-management and leadership skills
4. Be proficient in the use of desktop applications and basic knowledge of project management software to visually inspect and raise defective material/work concerns to management.
5. Read schematics, drawings, data sheets and process sheets
6. Have mathematical skills.
7. Understand and explain regulations, legislation and works methods.
8. Compile reports.
9. Measure and quantify works carried out
10. Monitor and update a programme of works.
11. Have good communication and persuasive skills.
12. Have eye for details.
13. Have good organizational skills.
14. Have good project management skills.
15. Do report writing.
16. Know how to handle customers and third parties.