

National Occupational Standards

Sector: Building and Construction

Occupation: Formwork and Falsework Erector

MQF Level: 4

Units:

- FFE401: Apply Occupational Health and Safety during Work-Practices
- FFE402: Identify systems, equipment and components
- FFE403: Reading of drawings and calculations
- FFE404: Setting Out, Formwork and Falsework Erecting and Dismantling

FFE401: 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 supervise and ensure that:

1. Safe working practices are being carried out to prevent hazards and to ensure the safety of oneself, workers and members of the public.
2. Safe working practices are being carried out when using appropriate equipment and materials to prevent damages to work areas and injuries to oneself and 3rd parties.
3. Erection and use and dismantling of system access platforms less than 2m high are being carried out safely.
4. Safety barriers around a work environment hazard to protect colleagues and members of the public are being set up.
5. Protective clothing and safety equipment according to specifications issued by manufacturers is being used and know the whereabouts of first-aid equipment.
6. The use, handle and store materials hazardous to health are used in a safe manner.
7. Risk assessment to cover the job assigned and the working area and being carried out.
8. Temporary or fixed electrical switch gears are being located and switched off and systems isolating valves are being dealt with as instructed in the health and safety procedures.
9. Supervision and advice on health and safety precautions are being done on a day-to-day basis.

Required Knowledge

The Level 4 Formwork and Falsework Erector must know, demonstrate 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 responsible persons to whom to report health and safety matters or any other occurring hazards.
9. The emergency procedures in the place of work.
10. The first aid facilities that exist within the work area.
11. The best way to make use of barricades, industrial hurdles, and warning signs to make areas clearly marked out of bounds.
12. The safety procedures when using scaffold platforms. (not erecting and dismantling scaffold platforms).
13. The necessary safety precautions including the use of protective clothing and equipment for a range of applications.
14. The methods used for protecting customers' property.
15. When it is required to isolate domestic water services from the main water supply.
16. Any toxic effect from materials commonly used at construction sites.

17. The preventative and remedial actions to be taken in the case of exposure to materials hazardous to health.

Required Skills

The Level 4 Formwork and Falsework Erector 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 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. Adhere to work production and installation processes as agreed with the employer.
10. Apply the necessary skills to erect, use and dismantle access equipment less than 2m in height and use appropriately all access equipment provided.
11. Read, interpret and install warning signs and set up safety barriers, around working areas.
12. Equip oneself with the appropriate protective clothing and safety equipment for erecting and dismantling falsework and formwork.
13. Use and store materials hazardous to health in a safe manner.
14. Monitor the workplace and maintain good housekeeping whilst keeping it free from hazards.
15. Communicate complex information regarding unfamiliar and unpredictable situations to colleagues and supervisors.
16. Advocate appropriate health and safety procedures.

FFE402: Identify 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.

Performance Criteria:

The candidate must have the necessary knowledge and skills to supervise and ensure that:

1. There is a difference between the types of 'system formwork' and 'pipe and clamp systems' used as falsework.
2. Records of the quantity of materials used in day to day work are being kept.
3. Environment protection requirements from the project environment management plan and apply to the allocated task and are being identified.
4. A job is being broken down into different operations and that an estimate of the duration and production hours is being established.

Required Knowledge

The Level 4 Formwork and Falsework Erector must know, demonstrate and explain:

1. The environmental legislation.
2. The appropriate software to keep production records.
3. What defines an operation or a workstation at the place of work.
4. How to congruent between duration in days, production hours, handling and transport hours and production operations and workforce required.
5. How to preserve timber and metal formwork and fittings.
6. The cutting of blades/ tools to trim timber and metalformwork.

Required Skills

The Level 4 Formwork and Falsework Erector must be able to:

1. Distinguish between different systems formwork from data sheets and other instructions published by the designer
2. Keep digital and hard copies of production records.
3. Draw and monitor production schedules.
4. Calculate the production hours required for a job based on the number of operations required at defined stages.
5. Read and interpret environment legislation and recycling policies and procedures.

FFE403: Reading of drawings and calculations

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

Performance Criteria:

The candidate must have the necessary knowledge and skills to supervise and ensure that:

1. Formwork and falsework drawings are being read and interpreted.
2. Site and building drawings regarding construction and civil engineering projects are being read and interpreted.
3. There is familiarity with sections and views as used in construction and building engineering drawings.
4. Scales, levels and misalignment reports are being read and interpreted.
5. There is familiarity with the relationship between force, pressure, area and hydraulic pressure.
6. Assembly drawings of shutters and formwork are being read and interpreted.
7. Codes and standards the true length, the weights involved in pre-assembled formwork and falsework modules are being calculated.

Required Knowledge

The Level 4 Formwork and Falsework Erector must know, demonstrate and explain:

1. The understanding of scales, ratios and percentages.
2. The understanding of drawings annotations used for levels, gradients and bearings.
3. The understanding of scientific parameters used in digital calculators.
4. A wide range of hand tool specifications and their use.
5. The basic interpretation of common tolerances allowed in construction and civil engineering projects.
6. The techniques to produce manual simplified workshop drawings.
7. The metric units of linear measurements, areas, force and pressure.

Required Skills

The Level 4 Formwork and Falsework Erector must be able to:

1. Translate scaled dimension to full size dimensions just for rough checking.
2. Translate orientation bearings and level readings.
3. Use scientific calculators and digital measuring equipment to measure linear and angular parameters.
4. Use hand tools such as spanners, ratchets to assemble and adjust formwork and falsework.
5. Convert between units of measurements and weights.
6. Interpret tolerance specifications
7. Produce simplified workshop/ site drawings from design main drawings.

FFE404: Setting Out, Formwork and Falsework Erecting and Dismantling

This unit is about using tools and equipment to fabricate and assemble and set out reinforcement bars.

Performance Criteria:

The candidate must have the necessary knowledge and skills to supervise and ensure that:

1. The main key set out locations, datum, height levels and alignment tolerances from site drawings and design specifications is being set.
2. Work area and materials for the assembly of formwork and the erection of falsework are being prepared.
3. Hand and power tools and equipment are being operated and maintained.
4. Formwork shutters to design requirements and specified dimensions within tolerance given and are being assembled.
5. Erect falsework (formwork support system) according to set out, standards and data sheets are being sequenced.
6. Inspections of self and others work, to ensure that all supports, and bracings are according to design specifications and are being performed.
7. The site fabricates and position formwork for beams, drop panels (hanging panels) and cantilevers are appropriate.
8. Specified tolerances are being plumbed and checked.
9. Alignment boxing formwork is being assembled and plumbed.
10. Preparation and installation cast-openings and insert fittings are being done.
11. Scaffolding and possible hand railing requirements in accordance with specifications and standards are being organized and checked.
12. Supporting erected structures during concrete pouring for deflections and movements are being monitored.
13. Concrete curing time requirements and obtain permit to dismantle formwork and falsework are being checked and observed.
14. The work area is clean and that recycle/ reuse materials in accordance with project environment plan are being disposed of.
15. Store plant tools and equipment are being cleaned, checked and maintained.
16. The Estimate time required and job-hours (man-hours) requirements for a job and project are being established.
17. Material and labor are both programmed and maintained with regards to progress.
18. Production safety requirements, equipment and training requirements are being planned.
19. The quality of work and advice on the necessary adjustments to the work procedures and setting out of work to achieve the required accuracy is being supervised.
20. Production priorities and delegate with accurate instructions is set up.
21. Others are being coached to maintain and improve their commitment and performance.
22. The right logical approach to problem solving is taken.
23. The roles and responsibilities of others are recognized.
24. Interpersonal relationships to understand and develop others and to avoid conflict is maintained.

Required Knowledge

The Level 4 Formwork and Falsework Erector must know, demonstrate and explain:

1. The understanding of rigidity and stability structure equipment.
2. The routine maintenance requirements for all the tools and equipment.
3. The application of various methods of calculating weights of falsework modules and formwork panels and modules.
4. The understanding of regular and common terms used in the construction industry.
5. The understanding of the theoretical knowledge such as concentric columns, offset columns, cantilever beams.
6. The understanding of the technology behind aligning and levelling instruments used at construction sites.
7. How to contribute ideas to improve productivity.
8. How to monitor stock levels of the various formwork panels and fittings.
9. How to carry out scheduling and monitoring of work in progress.
10. How to identify and communicate technical instructions and managerial procedures.
11. How to advise on best practice to use power tools and equipment available.
12. The basic geometry that make up solid objects.

Required Skills

1. Level 4 Formwork and Falsework Erector must be able to:
2. Read and interpret drawings and schedules to set out formwork and falsework.
3. Use electronic digital instruments to set out work grids and Pitch circle diameters.
4. Communicate with builders, steel fixers and designers.
5. Plan the erecting sequence of falsework.
6. Carry out required maintenance to hand and power tools and equipment.
7. Fabricate on site shutters.
8. Discuss with designers and communicate solutions to specific problems.
9. Compute and keep detailed records of quantity of materials used in day-to-day work by project defined zones.
10. Programme and monitor progress of all resources required.
11. Plan workforce requirements by level and operation for the job.
12. Use lifting gear to handle formwork and falsework panels and modules in a safe manner.