

National Occupational Standards

Sector: Building and Construction

Occupation: Bar Bending and Steel Fixer

MQF Level: 3

Units:

- SBL301: Apply Occupational Health and Safety during Work-Practices
- SBL302: Identify systems, equipment and components
- SBL303: Reading of drawings and calculations
- SBL304: Bar Bending and steel fixing production

SBL301: 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. Carry out the safe erection, use and dismantling of simple access platforms less than 2m high.
4. Set up safety barriers around a work environment hazard to protect colleagues and members of the public.
5. Use protective clothing and safety equipment according to specifications issued by manufacturers and know the whereabouts of first-aid equipment.
6. Use, handle and store materials hazardous to health in a safe manner.
7. Carry out a risk assessment to cover the job assigned and the working area.
8. Locate and switch-off temporary or fixed electrical switch gear, systems isolating valves as instructed in the health and safety procedures.

Required Knowledge

The Level 3 Bar Bending and Steel Fixer 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 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;
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 watersupply.
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 3 Bar Bending and Steel Fixer 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. 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 other access equipment provided.
11. Read, interpret and install warning signs and sets up safety barriers, around working areas.
12. Equip oneself with the appropriate protective clothing and safety equipment for bar bending and steel fixing tasks.
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.

SBL302: 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:

1. Identify tools and machines required to execute bar bending and steel fixing tasks.
2. Follow the most appropriate work processes.
3. Ensure that appropriate work practices are followed by all steel fixing team.
4. Follow procedures to label and store raw and bended profiles and assembled modules.

Required Knowledge

The Level 3 Bar Bending and Steel Fixer must know and explain:

1. The configuration of a range of ties.
2. The logic of the code structure used for labelling and storing material.
3. The standard codes of steel reinforcement (bars and mesh) used within the organisation.
4. The importance of keeping records.
5. The range of manual bar bending tools and bar bending machines within the organisation;
6. The common type of covers and spacers.
7. The safe disposal procedures of offcuts and the like.

Required Skills

The Level 3 Bar Bending and Steel Fixer must be able to:

1. Distinguish between different ties and their appropriate application.
2. Neatly label material for storage according to company procedures.
3. Read and interpret codes of reinforcement bars, covers and tying material from approved organisation working manuals.
4. Identify formers to match bars and bending equipment.
5. Keep records of all work done and pass them on.
6. Dispose of offcuts etc safely and as per workplace procedures.

SBL303: 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:

1. Interpret steel reinforcement drawings and bending schedules.
2. Calculate the cut length (true length) of steel reinforcement (bars and mesh).
3. Check the position of bends and the overall cut length of steel reinforcement for accuracy.

Required Knowledge

The Level 3 Bar Bending and Steel Fixer must know and explain:

1. General building and civil engineering drawings.
2. The metric system and conversion from Meters to cm to mm.
3. Basic drawing scales.
4. Linear dimensions such as running dimensions and spaced dimensions.
5. Angular dimensions such as the 90/ 30/ 60/ and 45 degrees.
6. grid marking techniques.
7. The 3:4:5 rule for right angle triangles.
8. Familiar with the terms such as: links, crank, knuckle, offset, maximum, minimum.

Required Skills

The Level 3 Bar Bending and Steel Fixer must be able to:

1. Translate metric units from meters to centimetres and millimetres and from Kilograms to metric ton.
2. Measure and mark from workshop drawings using one-by-one measures and running dimensions method.
3. Demonstrate the use of the 3:4:5 right angle rule.
4. Use digital measuring instruments and interpret recorded readings for further computations.

SBL304: Bar bending and steel fixing production

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:

1. Read and interpret steel reinforcement drawings and bending schedules.
2. Identify the types and grades of steel reinforcement available.
3. Measure, cut, bend and set out work.
4. Calculate from codes and standards the true length, the weights of bars and the weight involved in assembled modules.
5. Keep records of the quantity of materials used in day to day work.
6. Nest cutting schedules as to minimise scrap.
7. Operate and maintain hand and power tools and equipment.
8. Cut and bend reinforcement as per the requirements of the schedule within tolerance stipulated.
9. Organise bend bars by type and diameter for maximum traceability.
10. Perform sound and appropriate ties on assembled modules and cast-in-situ mesh.
11. Keep the spacing of bars uniform and according to specified tolerance, stagger laps and maintain the required cover.
12. Required overlapping necessary in accordance with specifications and drawings; Plan and execute the sequence of reinforcement placing.
13. Fabricate mesh and modular cages including additional bars for handling and liftingsafely.
14. Prepare steel bars and use mechanical connection systems for the extension of bars.
15. Assist in the protection of steel from corrosion.

Required Knowledge

The Level 3 Bar Bending and Steel Fixer must know and explain:

1. Steel fixing schedules including annotated codes and associated calculations.
2. The routine maintenance requirements for all the tools and equipment.
3. The methods of calculating weights of cut bars of interim cut of bars and total weight of assemble cage as a module.
4. The range of steel reinforcement drawings.
5. Regular and common terms used in the construction industry.
6. Criteria for selection of formers and rollers for different diameters of steel.
7. Methods and techniques to extend bars
8. The required overlapping in accordance with specifications and drawings.

Required Skills

The Level 3 Bar Bending and Steel Fixer must be able to:

1. Read and interpret drawings and schedules to set out fixing steel reinforcement.
2. Calculate using codes, the true length of bar to make a given shape of bend.
3. Mark and bend bars to meet specifications on different types of bending machines, including hooks links and hop bars.
4. Organize stores and production facilities including batches production to ensure correct utilization of bars and accessories.
5. Plan the sequence of reinforcement and carry out assembly of bars appropriately.
6. Draw and cut templates to assist in cutting, bending and assembly of complexstructures.

7. Fabricate mesh and cages and carry out handling stability checks.
8. Organize cutting and bending of bars to facilitate traceability of items.
9. Overlap as necessary in accordance with specifications and drawings.