

National Occupational Standards

Sector: Building and Construction

Occupation: Assistant Marine Civil Works Supervisor

MQF Level: 3

Units:

- AMCWS301: Identification of marine civil engineering projects
- AMCWS302: Tasks in marine civil engineering projects
- AMCWS303: Materials and technical requirements in marine civil engineering projects
- AMCWS304: Health and safety, and security during work practices
- AMCWS305: The role of the Assistant Marine Civil Works Supervisor

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AMCWS 301: Identification of different marine civil engineering projects

This unit is about distinguishing between different types of marine civil engineering works, based on their use, function, and structural typology. Different functional requirements bring different challenges, based on the location and environmental context of the project.

Upon completion of this unit the candidate should have enough knowledge to assist in recognizing between project characteristics, challenges, and requirements that are affected by the scope of the project, size, and its location.

Performance Criteria

The candidate must have the necessary knowledge and skills to:

1. Assist in identifying characteristics particular to land-sea environment locations where marine civil engineering projects are carried out.
2. Assist and understand characteristics of different marine projects in terms of function, structural typology, size, location, topography, and bathymetry.
3. Assist in understanding what constitutes different structural typologies in terms of structural components.
4. Understand difference between short term maintenance works, repair and restoration projects, additions to existing infrastructure, and new projects.
5. Identify the weather conditions, and how this could affect progress, and having basic knowledge of direct operations and related risks.

Required Knowledge

The Level 3 Assistant Marine Civil Works Supervisor must know and explain:

1. Climatic, and coastal geographical aspects that characterize and influence projects in land-sea environments.
2. General differences of marine engineering projects in terms of scope, location, and structures.
3. Transport mechanisms to and around the site location, and associated limitations characterized by land-sea environment.
4. Characteristics of maintenance works in marine civil engineering projects.
5. Characteristics of restoration and repair works of different structural typologies.
6. Characteristics of existing structures for which additions are to be made.
7. Characteristics of new constructions in marine civil engineering projects.

Required Skills

The Level 3 Assistant Marine Civil Works Supervisor must be able to:

1. Understand challenges that are particular to land-sea environment for a project.
2. Understand general requirements on how to protect the environment.
3. Understand general challenges arising from the geography of the site for different projects.
4. Understand the relevance of a structural and infrastructural system and their components for different types of marine engineering projects.

5. Identify what materials are used in different components.

AMCWS 302: Tasks in marine civil engineering projects

This unit is about knowledge and skills required to identify tasks involved in different types of marine civil engineering projects and carry out complimentary requirements and activities. This also includes civil engineering tasks for utility service infrastructure found in land-sea environments.

Performance Criteria

The candidate must have the necessary knowledge and skills to:

1. Understand the tasks and carry out corresponding activities.
2. Understand instructions, carry out and assist supervision according to method statements, giving relevant feedback.
3. Understand the sequence of events and carry out tasks accordingly.
4. Understand requirements to carry out tasks on land, from sea, and underwater.
5. Assist in allocating resources to carry out the tasks.
6. Carry out and assist in supervision and monitoring of works to determine the position of services, substructures, and works to lay new services.
7. Assist in geomatics works requirements and preparations and assist in carrying out secondary surveying work.
8. Carry out work in terms of rules and laws relevant with the conduction of the tasks other than health and safety, including police, civil, environmental protection, and planning rules.
9. Assist in containing and securing the site.

Required Knowledge

The Level 3 Assistant Marine Civil Works Supervisor must know and explain:

1. Organizational information, method statements, procedures, technical drawings, sketches, and risk assessment described to him or her, work schedules and additional information required.
2. The tasks and associated activities that need to be carried out.
3. The effects and limitations on the procedures by a land-sea environment.
4. Protocols of repair and maintenance works.
5. Permission of works required to carry out tasks.
6. The skills and knowledge of personnel carrying out the activities.
7. The knowledge and requirements of personnel carrying complimentary tasks.
8. The procedure and reporting required to determine the position of utility services.
9. The procedure and reporting required in laying utility services.
10. Methods to calculate, determine or obtain information on heights dips, angles, lengths, areas, and bathymetry.
11. Calibration requirements of equipment and machinery.
12. The polluting effects on the marine and coastal ecosystem due to activities, tasks, and procedures.
13. Laws and rules on works, tasks and activities that effect the coastal environment and its ecosystem.

Required Skills

The Level 3 Assistant Marine Civil Works Supervisor must be able to:

1. Organize information, method statements, procedures, technical drawings, sketches, risk assessment and work schedule (programme of works) and additional information required described to him/her.
2. Know personnel, machinery, equipment, and materials allocated to carry out the tasks and activities.
3. Give feedback to improve method of works and improvements.
4. Carry out and assist supervision of work as described in technical drawings and data sheets.
5. Understand and carry out work according to technical specifications, and drawings and assist in passing on information and instructions to the relevant personnel.
6. Report and advice on changes requirements to different tasks.
7. Carry out and supervise work for site clearance.
8. Carry out work and assist in managing tasks such as to minimize wastage of materials.
9. Operate the specific tools and machinery to carry out the tasks; the sequence they should be used, and limits on how and when they should be used.
10. Assist supervision of tasks associated with the repair, replacement and laying of new utility services equipment in land-sea environment.
11. Maintain the security and safety of existing and new services, substructures and existing structures including third party property.
12. Assist in organizing tasks to determine and obtain geomatics information such as take offs and setting out.
13. Understand and assist in carrying out tasks such as to mitigate adverse effects on the marine and coastal ecological systems and mitigate pollution on land and at sea as required.
14. Assist in the organization of storage materials, separation, and disposal of waste in accordance with regulations.

AMCWS 303: Materials and technical requirements in marine civil engineering projects

This unit is about understanding the general properties of materials used in coastal marine environments and identifying the important and relevant specification requirements of materials and procedures that are required to carry out tasks.

A candidate should have enough knowledge and skills to understand information and technical specifications, and read, understand, and communicate knowledge about specific technical requirements to carry out tasks.

Performance Criteria

The candidate must have the necessary knowledge and skills to:

1. Understand the general properties of materials used in marine civil engineering projects.
2. Understand the general geotechnical properties of materials.
3. Understand and carry out work according to technical specifications about materials and tasks.
4. Understand and carry out work according to general specifications on the use of tools, machinery, and auxiliary components.
5. Understand techniques of geomatics and specifications when required.
6. Understand the direct and indirect impacts of the use of materials on the land-sea environment and the ecological system and carry out mitigation work.

Required Knowledge

The Level 3 Assistant Marine Civil Works Supervisor must know and explain:

1. Architectural and technical drawings described to him or her.
2. General properties of materials that are used in land-sea environment described to him or her.
3. General geotechnical properties of the coastal ground described to him or her.
4. The use and preparations required for the production or application of different materials and products.
5. Sampling and equipment requirements of materials for testing to determine properties and quality assurance.
6. Level of finishing required for different tasks, considering the size and function of a project.
7. The significance of surveying information such as datums, surveying control points and alignments.
8. Certification and maintenance requirements of tools, machinery, and Personal Protective Equipment (PPE) and PPR equipment.
9. The effect of materials on the land-sea environment.
10. Pollution and human interference effects on the ecological system.
11. Laws and rules on the use of materials that harm the environment.

Required Skills

The Level 3 Assistant Marine Civil Works Supervisor must be able to:

1. Understand technical standards, for the preparation, handling and use of materials and products.
2. Understand specification requirements of different materials and products.
3. Understand testing requirements to determine properties of construction materials and geotechnical properties.
4. Understand the performance of materials under different and changing climatic and environmental conditions in the short and long term.
5. Understand specifications of finishes that are influenced or depend on marine civil engineering works and carry work accordingly.
6. Carry out work within tolerance, accuracy and level of detailing required.
7. Carry out quality assurance checks.
8. Assist in the sampling of materials for testing and quality assurance according to specifications and technical requirements.
9. Report identified defective components and materials giving suggestions for remedial works.
10. Report on requirements to upgrade quality assurance methodology and frequency on inspection depending on evolving situations on site.
11. Understand and assist in carrying out secondary dimensional measurements, including checks of levels and alignments.
12. Carry out conversion of units and carry the necessary computations in secondary dimensional measurements.
13. Carry out work within specification requirements and according to standard procedures.
14. Carry out work mitigating the adverse effects of materials and products on the environment and eco-system.

AMCWS 304: Health and safety, and security during work practices

This unit is about the knowledge and skills required by an assistant supervisor to carry out work which is compliant with health and safety requirements. Following this unit, the candidate should have the required knowledge about health and safety requirements and have skills to carry out tasks and assist supervising personnel to work on relevant tasks within these health and safety procedures, and without imposing additional risk on them and third parties.

Performance Criteria

The candidate must have the necessary knowledge and skills to:

1. Understand health and safety aspects and the specific risks associated with diving works.
2. Carry out work within a health and safety framework and following relevant regulations.
3. Identify potential hazards within tasks and simultaneous activities, understand vulnerability aspects, and make reports according to organizational procedures.
4. Report to take the necessary actions to mitigate the risks.
5. In case of accident, injury, or ill health, be able to take the necessary actions and follow procedures.
6. Carry out and assist in supervising health and safety welfare and security within the operational work environment.

Required Knowledge

The Level 3 Assistant Marine Civil Works Supervisor must know and explain:

1. The requirements, their roles and responsibilities under the Health and Safety Act XXXII of 2007 or as per current legislation.
2. Health concerns within the workplace and its immediate surrounding environment, when carrying work activities, and outside working hours.
3. Organizational policies and procedures regarding legislation, official guidance, instruction, and information which needs to be complied with.
4. Importance to liaise with employer on matters that relate with health and safety issues, to safeguard their own wellbeing, and that of all stakeholders which are in a way or other affected by the work tasks and activities.
5. Potential hazards in the workplace rising from: electricity and utility services, construction materials, chemicals and substances used in the workplace, waste materials, working at heights, work equipment and machinery, fire risks, occupational work activities, manual handling, proximity hazards, changing weather conditions and hazards from third parties and working in deep water.
6. Hazards particularly relevant to land-sea environment when working in and on the sea, working near the sea and working underwater and assisting in determining the risks.
7. Equipment and resources requirements relating to protective clothing and equipment, welfare facilities, storage and security of materials, tools, and equipment.
8. Personal responsibility for behaviour of health, safety and welfare on site and the consideration of others.
9. Importance in promoting a positive health and safety culture in the workplace.
10. Importance of working around heavy machinery and equipment, and keeping safe distances, exclusion zones, and following right of ways and preference for access.

Assistant Marine Civil Works Supervisor – MQF Level 3

11. The effect of toxic or hazardous materials detected on site, understand the precautions required.
12. Procedures to deal with accidents and emergencies associated with the workplace relevant to a land-sea environment.
13. Procedures to report accidents and near misses.
14. Personal and supervision responsibility to maintain the health, safety, and welfare on site, including consideration of others as necessary.
15. The arrangements to maintain security on site and in the workplace.
16. Methods and importance of correct storage of combustibles and chemicals on site, when leaving or entering the site, and when being handled on-site.
17. When health and safety checks should be carried out according to organizational requirements.
18. Methods to improve health and safety, and welfare measures in the workplace.
19. The different arrangements for checking security and operational arrangements for workers, visitors, relevant stakeholders, unauthorized personnel, and the public.

Required Skills

The Level 3 Assistant Marine Civil Works Supervisor must be able to:

1. Comply with their individual duties and legal obligations under the health and Safety Act XXXVII of 2007, or a per current legislation or other complimentary laws.
2. Work under supervision according to health and safety regulations, and other relevant regulations that apply to the work environment.
3. Comply with safe working practices in accordance with organizational procedures.
4. Comply with and assist in carrying out organizational procedures for safely working around mobile machinery and equipment.
5. Comply with and assist in carrying out organizational procedures for safely working on land near the sea, from or on the sea, and underwater.
6. Recognize hazards, hazardous materials and assist in determining risks and assist in applying mitigation measures associated with workplace activities.
7. Report in accordance with organizational procedures: hazards and risks related with changing circumstances, changing activities, activities done simultaneously and geographical aspects.
8. Report and address near misses and accidents in accordance with organizational and statutory requirements.
9. Recognize and report emergency situations, in accordance with organizational procedures.
10. Make use of Personal Protective equipment (PPE) and RPE (where necessary) to carry out work duties.
11. Refer to the relevant personnel and guidance where requirements for PPE, PPR role of personnel and location fall outside his or her remit.
12. Carry out work activities to protect work areas from damage.
13. Assist in reporting for upgrading risk mitigation measures required following accidents and near misses.
14. Demonstrate good personal behaviour for workplace health, safety, and welfare.
15. Carry out the security arrangements and procedures that should be observed and followed when working on site, and outside working hours.

AMCWS 305: The role of the Assistant Marine Civil Works Supervisor

This unit is about managerial aspects of the assistant marine civil works supervisor that define him in his or her role within a project.

Performance Criteria

The candidate must have the necessary knowledge and skills to:

1. Manage his or her role as an assistant supervisor in marine civil engineering projects.
2. Understand the work management plan.
3. Understand the roles of other personnel and stakeholders involved in the project and liaise with them.
4. Assist in managing the execution and sequence of tasks.
5. Understand aspects that affect the cost, time, and quality of the project.
6. Understand availability of resources, HR abilities and limitations.

Required Knowledge

The Level 3 Assistant Marine Civil Works Supervisor must know and explain:

1. The terms of reference as an assistant supervisor and those of his or her colleagues.
2. Organizational procedures and time frames to carry out tasks effectively and efficiently.
3. How to assist in monitoring and supervising the conduction of tasks efficiently according to organizational requirements prepared by others.
4. Communication tools and methods according to organizational requirements prepared by others.
5. The tools and skills of human resources required to carry out different activities.
6. How to carry out work and operations simultaneous with others.
7. How to assist in data collection, and the preparation of documents and reports.
8. How to report problems that affect the operation of works, and requirements to improve efficiency.

Required Skills

The Level 3 Assistant Marine Civil Works Supervisor must be able to:

1. Assist in carrying tasks and understand the limits in the role as an assistant supervisor of marine civil engineering works.
2. Understand the roles of other personnel on the projects: roles of other team members, roles he must report to, and relevant stakeholders.
3. Comply with organizational procedures and instructions on communication methods and tools, when communicating with work personnel or other stakeholders.
4. Understand work programmes and sequence of work activities.
5. Communicate the relevant procedures, data, instructions, alerts, warnings, procedures or other information with relevant stakeholders and work personnel.
6. Carry work activities within specified timeframes, complying with organizational procedures, policies and requirements described to him or her.
7. Carry work within budget, and quality standards described to him or her.

Assistant Marine Civil Works Supervisor – MQF Level 3

8. Give feedback on timeframes and cost limitations to carry out tasks.
9. Keep the site organized and tidy while carrying on work activities.
10. Give contribution on machinery and tools required.
11. Understand different human resources available depending on their knowledge and skill.
12. Record information related to work activities on resources, tools, machinery, and HR.
13. Give feedback on time, quality and resource management that are particularly affected by a land-sea environment, its climate, changing situations and operation period during the day or night.
14. Assist in the preparation of documents and management reports.