



Skills for Employment Investment Program (SEIP)

COMPETENCY STANDARD FOR ROAD ROLLER OPERATION (*CONSTRUCTION SECTOR*)

Finance Division, Ministry of Finance
Government of the People's Republic of Bangladesh

Table of Contents

Copyright	3
List of Abbreviations	4
Introduction	5
Overview	6
Approval Sheet	7
Course Structure	10
Competency Chart	11
Units and Elements Table	14
The Generic Units	17
Carry out workplace interaction	17
Operate in a team environment	20
Use basic mathematical concepts	23
The Sector-specific Units	26
Apply occupational health and safety (OHS) practice in the workplace	26
Use hand and power tools	29
The Occupation-specific Units	33
Plan and organise work	33
Prepare for road roller operations	37
Operate road roller	40
Carry out road roller operations	43
Perform surface finishing work	47
Repair and maintain road roller	50

Copyright

The Competency Standard for Road Roller Operation is a document for the development of curricula, teaching and learning materials, and assessment tools. It also serves as the document for providing training consistent with the requirements of industry in order for individuals who graduated through the established standard via competency-based assessment to be suitably qualified for a relevant job.

This document is owned by the Finance Division of the Ministry of Finance of the People's Republic of Bangladesh, developed under the Skills for Employment Investment Program (SEIP).

Public and private institutions may use the information contained in this standard for activities benefitting Bangladesh.

Other interested parties must obtain permission from the owner of this document for reproduction of information in any manner, in whole or in part, of this Competency Standard, in English or other language.

This document is available from:

*Skills for Employment Investment Program (SEIP) Project
Finance Division
Ministry of Finance
Probashi Kallyan Bhaban (Level – 16)
71-72 Old Elephant Road
Eskaton Garden, Dhaka 1000
Telephone: +8802 551 38598-9 (PABX), +8802 551 38753-5
Facsimile: +8802 551 38752
Website: www.seip-fd.gov.bd*

List of Abbreviations

General	
BMET	Bureau of Manpower Employment and Training
B-SEP	Bangladesh Skills for Employment and Productivity
BTEB	Bangladesh Technical Education Board
DTE	Directorate of Technical Education
ILO	International Labor Organization
ISC	Industry Skills Council
NPVC	National Pre-Vocation Certificate
NTVQF	National Technical and Vocational Qualifications Framework
PPP	Public Private Partnership
SCDC	Standards and Curriculum Development Committee
SEIP	Skills for Employment Investment Program
TVET	Technical Vocational Education and Training
UoC	Unit of Competency
Occupation Specific	
OHS	Occupational health and safety
PPE	Personal protective equipment
SOP	Standard operating procedure

Introduction

The Skills for Employment Investment Program (SEIP) Project of the Finance Division of the Ministry of Finance has embarked on a project which aims to qualitatively and quantitatively expand the skilling capacity of identified public and private training providers by establishing and operationalising a responsive skill ecosystem and delivery mechanism through a combination of well-defined set of funding triggers and targeted capacity support.

Among the many components of the project, one is to promote a Market Responsive Inclusive Skills Training Delivery programme. Key priority economic growth sectors identified by the government have been targeted by the project to improve current job skills along with up-skilling of the existing workforce to ensure 'required skills to industry standards'. Training providers are encouraged and supported to work with industry to address identified skills and knowledge to enable industry growth and increased employment through the provision of market responsive inclusive skills training programmes. Priority sectors were identified to adopt a demand driven approach to training with effective inputs from Industry Skills Councils (ISC's), employer associations and employers.

This document is developed to improve skills and knowledge in accordance with the job roles, duties and tasks of the occupation and ensure that the required skills and knowledge are aligned to industry requirements.

The document also details the format, sequencing, wording and layout of the Competency Standard for an occupation which is comprised of Units of Competence and its corresponding Elements.

Overview

A **competency standard** is a written specification of the knowledge, skills and attitudes required for the performance of an occupation, trade or job corresponding to the industry standard of performance required in the workplace.

The purpose of a competency standards is to:

- provide a consistent and reliable set of components for training, recognising and assessing people's skills, and may also have optional support materials
- enable industry recognised qualifications to be awarded through direct assessment of workplace competencies
- encourage the development and delivery of flexible training which suits individual and industry requirements
- encourage learning and assessment in a work-related environment which leads to verifiable workplace outcomes

Competency standards are developed by a working group comprised of national and international subject-matter experts, SEIP, BTEB, ISC, and industry experts to identify the competencies required of an occupation in a particular sector.

Competency standards describe the skills, knowledge and attitude needed to perform effectively in the workplace. Competency standards acknowledge that people can achieve technical and vocational competency in many ways by emphasising what the learner can do, not how or where they learned to do it.

With competency standards, training and assessment may be conducted at the workplace or at training institute or any combination of these.

Competency standards consist of a number of units of competency. A unit of competency describes a distinct work activity that would normally be undertaken by one person in accordance with industry standards.

Units of competency are documented in a standard format that comprises of:

- unit title
- nominal duration
- unit code
- unit descriptor
- elements and performance criteria
- variables and range statement
- curricular content guide
- assessment evidence guide

Together, all the parts of a unit of competency:

- describe a work activity
- guide the assessor to determine whether the candidate is competent or not yet competent

Approval Sheet

Identification and validation of units of competency and elements for this occupation were made by experts within this sector. A series of meetings were held to accurately capture industry and employer needs and expectations, and develop the competency framework that would help to enhance the employability of the youth trained. This process started on 12 September 2018 and concluded with a validation workshop with working group on 29 October 2018.

Experts Involved

Industry and subject-matter experts who provided their valuable inputs to develop this competency standard [September – October 2018]:

Name	Organisation	Designation
Md. Akkas Ali	Roads and Highways – Mechanical Division	Sub-Assistant Engineer
Engr. Nibir Kanti Sarker	Project Builders Limited	Senior Engineer
S.M. Jamal	Bangla CAT	Deputy Manager
Abdur Rob Khondoker	Roads and Highways – Mechanical Division	Engineer
Md. Mazibur Rahman	Monico Limited	Chief Engineer
Md. Moslem Uddin	Skills Development Institute	Trainer
Md. Sayedur Rahman	British Council - SD03	National Subject Matter Consultant - Construction Sector

Development and Validation Workshop

Working group formation and competency standard development and validation workshop participants [held on 29 October 2018]:

Name	Organisation	Designation
Fazlarabbi Sae	DNCC	Engineer
S.M. Jamal	Bangla CAT	Deputy Manager
Md. Moslem Uddin	Skills Development Institute	Trainer
Engr. B.M. Mofizur Rahman	CISC	Curriculum Development and Training Executive
Md. Mazibur Rahman	BACI	Industry Representative
Md. Abdur Razzaque	SEIP-BTEB	Specialist-1 (Competency Standards)
Syed Nasir Ershad	SEIP	AEPD (Public 1)
Rahima Begum	SEIP	AEPD (Public 2)

Name	Organisation	Designation
Mr. Md. Ahsan Habib	SEIP	TVET Specialist
Mr. Mohiuzzaman	SEIP	Course Specialist
David King	British Council - SD03	Team Leader
Mr. Sayedur Rahman	British Council - SD03	National Subject Matter Consultant - Construction Sector

The ensuing sections of this document comprise of a description of the relevant occupation, trade or job with all the key components of a unit of competency, including:

- a chart with an overview of all Units of Competency for the relevant occupation, trade or job including the Unit Codes and the Unit of Competency titles and corresponding Elements
- the Competency Standard that includes the Unit of Competency, Unit Descriptor, Elements and Performance Criteria, Range of Variables, Curricular Content Guide and Assessment Evidence Guide

Committee Workshop

The National competency standards for National Skills Certificate in Road Roller Operation, **NTVQF Level [INSERT LEVEL]** qualification is a document developed by the Skill for Employment Investment Programme (SEIP), Finance Division, Ministry of Finance. This standard has been developed by an industry expert group under guidance of SEIP. The standard was approved by the SCDC [BTEB to insert date] at NTVQF Cell, BTEB.

Respectable members of the SCDC:

Road Roller Operation - Level [INSERT LEVEL]		

Course Structure

SL	Unit Code and Title		Level	Nominal Duration (Hours)
Generic Competencies (3 units of competency required)				
1	SEIP-CON-RRO-01-G	Carry out workplace interaction		14
2	SEIP-CON-RRO-02-G	Operate in a team environment		14
3	SEIP-CON-RRO-03-G	Use basic mathematical concepts		14
Sub-Total				42
Sector-specific Competencies (2 units of competency required)				
1	SEIP-CON-RRO-01-S	Apply occupational health and safety (OHS) practice in the workplace		16
2	SEIP-CON-RRO-02-S	Use hand and power tools		16
Sub-Total				32
Occupation-specific Competencies (6 units of competency required)				
1	SEIP-CON-RRO-01-O	Plan and organise work		20
2	SEIP-CON-RRO-02-O	Prepare for road roller operations		30
3	SEIP-CON-RRO-03-O	Operate road roller		70
4	SEIP-CON-RRO-04-O	Carry out road roller operations		90
5	SEIP-CON-RRO-05-O	Perform surface finishing work		50
6	SEIP-CON-RRO-06-O	Repair and maintain road roller		20
Sub-Total				280
Total Nominal Learning Hours				360

Competency Chart

Units of Competency	Elements		
---------------------	----------	--	--

Generic Specific (Basic) Competencies

Carry out workplace interaction SEIP-CON-RRO-01-G	Interpret workplace communication and etiquette	Read and understand workplace documents	Participate in workplace meetings and discussions
	Apply professional ethics at work		
Operate in a team environment SEIP-CON-RRO-02-G	Identify team goals and work processes	Identify own role and responsibilities within team	Communicate and co-operate with team members
	Perform problem solving within the team		
Use basic mathematical concepts SEIP-CON-RRO-03-G	Identify calculation requirements	Select appropriate mathematical methods/concepts for the calculation	Use tools and instruments to perform calculations

Sector-specific (Common) Competencies

Apply occupational health and safety (OHS) practice in the workplace SEIP-CON-RRO-01-S	Identify OHS policies and procedures	Apply personal health and safety practices	Report hazards and risks
	Respond to emergencies		
Use hand and power tools SEIP-CON-RRO-02-S	Identify and inspect hand and power tools	Use hand tools properly and safely	Operate power tools properly and safely
	Clean and maintain hand and power tools		

Occupation-specific (Core) Competencies

Plan and organise work SEIP-CON-RRO-01-O	Plan and prepare for work	Sequence work safely	Resolve problems
	Clean and maintain work area		
Prepare for road roller operations SEIP-CON-RRO-02-O	Identify work requirements	Prepare for operations	Collect tools and equipment
Operate road roller SEIP-CON-RRO-03-O	Plan and prepare for operations	Operate road roller	Clean and maintain machinery
Carry out road roller operations SEIP-CON-RRO-04-O	Identify work requirements	Perform road roller operations	Clean and maintain machinery
Perform surface finishing work SEIP-CON-RRO-05-O	Identify task requirements	Perform surface finishing work	Clean and maintain machinery
Repair and maintain road roller SEIP-CON-RRO-06-O	Diagnose problems	Perform troubleshooting	Carry out routine maintenance

Units and Elements Table

Generic – Compulsory (3 units of competency required)

Code	Unit of Competency	Elements of Competency	Duration (hours)
SEIP-CON-RRO-01-G	Carry out workplace interaction	<ol style="list-style-type: none"> 1. Interpret workplace communication and etiquette. 2. Read and understand workplace documents. 3. Participate in workplace meetings and discussions. 4. Apply professional ethics at work. 	14
SEIP-CON-RRO-02-G	Operate in a team environment	<ol style="list-style-type: none"> 1. Identify team goals and work processes. 2. Identify own role and responsibilities within team. 3. Communicate and co-operate with team members. 4. Perform problem solving within the team. 	14
SEIP-CON-RRO-03-G	Use basic mathematical concepts	<ol style="list-style-type: none"> 1. Identify calculation requirements in the workplace. 2. Select appropriate mathematical methods/concepts for the calculation. 3. Use tools and instruments to perform calculations. 	14
Total Hours			42

Sector-specific – Compulsory (2 units of competency required)

Code	Unit of Competency	Elements of Competency	Duration (hours)
SEIP-CON-RRO-01-S	Apply occupational health and safety (OHS) practice in the workplace	<ol style="list-style-type: none"> 1. Identify OHS policies and procedures. 2. Apply personal health and safety Practices. 3. Report hazards and risks. 4. Respond to emergencies. 	16
SEIP-CON-RRO-02-S	Use hand and power tools	<ol style="list-style-type: none"> 1. Identify and inspect hand and power tools. 2. Use hand tools properly and safely. 3. Operate power tools properly and safely. 4. Clean and maintain hand and power tools. 	16
Total Hours			32

Occupation-specific – Compulsory (6 units of competency required)

Code	Unit of Competency	Elements of Competency	Duration (hours)
SEIP-CON-RRO-01-O	Plan and organise work	<ol style="list-style-type: none"> 1. Plan and prepare for work. 2. Sequence work safely. 3. Resolve problems. 4. Clean and maintain work. 	20
SEIP-CON-RRO-02-O	Prepare for road roller operations	<ol style="list-style-type: none"> 1. Identify work requirements. 2. Prepare for operations. 3. Collect tools and equipment. 	30
SEIP-CON-RRO-03-O	Operate road roller	<ol style="list-style-type: none"> 1. Plan and prepare for operations. 2. Operate road roller. 3. Clean and maintain machinery. 	70
SEIP-CON-RRO-04-O	Carry out road roller operations	<ol style="list-style-type: none"> 1. Identify work requirements. 2. Perform road roller operations. 3. Clean and maintain machinery. 	90
SEIP-CON-RRO-05-O	Perform surface finishing work	<ol style="list-style-type: none"> 1. Identify work requirements. 2. Perform surface finishing work. 1. Clean and maintain machinery. 	50
SEIP-CON-RRO-06-O	Repair and maintain road roller	<ol style="list-style-type: none"> 1. Diagnose problems. 2. Perform troubleshooting. 3. Carry out routine maintenance. 	20
Total Hours			280

Generic Competencies

Unit Title:	Carry out workplace interaction
Unit Code:	SEIP-CON-RRO-01-G
Nominal Hours:	14 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to carry out workplace interaction. It specifically includes workplace communication, etiquette, understanding workplace documents, workplace meetings and discussions, and professional ethics at work.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Interpret workplace communication and etiquette	<p>1.1. Workplace codes of conduct are interpreted as per organisational guidelines.</p> <p>1.2. Appropriate lines of communication are maintained with supervisors and colleagues.</p> <p>1.3. Workplace interactions are conducted in a <u>courteous manner</u> to gather and convey information.</p> <p>1.4. <u>Workplace procedures and matters</u> are comprehended.</p>
2. Read and understand workplace documents	<p>2.1. Workplace documents are interpreted correctly.</p> <p>2.2. Visual information/symbols/signage are understood correctly and followed.</p> <p>2.3. Specific and relevant information are accessed from <u>appropriate sources</u>.</p> <p>2.4. Appropriate medium is used to transfer information and ideas.</p>
3. Participate in workplace meetings and discussions	<p>3.1. Team meetings are attended on time.</p> <p>3.2. Meeting procedures and etiquette are followed.</p> <p>3.3. Active participation is ensured, opinions are expressed and heard.</p> <p>3.4. Inputs are provided and interpreted in line with the meeting purpose.</p>
4. Practice professional ethics at work	<p>4.1. Responsibilities as a team member are performed.</p> <p>4.2. Tasks are performed in accordance with workplace procedures.</p> <p>4.3. Confidentiality is maintained.</p> <p>4.4. Inappropriate and conflicting situations are avoided.</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. Courteous manner	1.1. Effective questioning 1.2. Active listening 1.3. Speaking skills 1.4. Writing skill 1.5. Email etiquette
2. Workplace procedures and matters	2.1. Notes 2.2. Arranging a meeting 2.3. Agenda 2.4. Simple reports such as progress and incident reports 2.5. Job sheets 2.6. Operational manuals 2.7. Brochures and promotional material 2.8. Visual and graphic materials 2.9. Standards 2.10. OHS information 2.11. Signs
3. Appropriate sources	3.1. Human Resources (HR) Department 3.2. Managers 3.3. Supervisors 3.4. Management Information System (MIS)

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: <ol style="list-style-type: none"> 1.1. Interpreted workplace communication and etiquette 1.2. Interpreted workplace instructions and symbols 1.3. Performed active participation in workplace meetings
2. Underpinning knowledge	<ol style="list-style-type: none"> 2.1. Workplace communication and etiquette 2.2. Workplace documents, signs and symbols 2.3. Meeting procedure and etiquette 2.4. Professional ethics
3. Underpinning skills	<ol style="list-style-type: none"> 3.1. Demonstrating workplace communication and etiquette 3.2. Interpreting workplace instructions and symbols 3.3. Demonstrating active participation in workplace meeting 3.4. Applying professional ethics at work

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

4. Underpinning attitudes

- 4.1. Prompt in carrying out activities
- 4.2. Tidy and punctual
- 4.3. Respectful of peers, subordinates and seniors in the workplace
- 4.4. Concerned about the work environment
- 4.5. Sincere and honest concerning duties

5. Resource implications

- The following resources must be provided:
- 5.1. Workplace (simulated or actual)
 - 5.2. Workplace procedures
 - 5.3. Standard operating procedure
 - 5.4. Workplace documents, signs and symbols
 - 5.5. Codes of conduct
 - 5.6. Projector
 - 5.7. Stationary
 - 5.8. Learning manual

6. Methods of assessment

- Methods of assessment may include but is not limited to:
- 6.1. Written test
 - 6.2. Demonstration
 - 6.3. Oral test
 - 6.4. Observation
 - 6.5. Portfolio

7. Context of assessment

- 7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Operate in a team environment
Unit Code:	SEIP-CON-RRO-02-G
Nominal Hours:	14 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to operate in a team environment. It specifically includes team goals and work processes, roles and responsibilities, team communication and problem solving within the team.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Identify team goals and work processes	<p>1.1. Roles and objectives of the team are identified and interpreted.</p> <p>1.2. Roles and responsibilities of team members are identified and interpreted.</p>
2. Identify own role and responsibilities within team	<p>2.1. Personal role and responsibilities are identified within the team environment.</p> <p>2.2. Reporting relationships are interpreted within team and external to team.</p>
3. Communicate and co-operate with team members	<p>3.1. Other teammates' tasks are identified and support provided when requested.</p> <p>3.2. The team is encouraged through <u>sharing information</u> or expertise, working together to solve problems, and putting team success first.</p> <p>3.3. Views and opinions of other team members are interpreted and respected.</p>
4. Practice problem solving within the team	<p>4.1. Problems faced at the individual and team level are identified and showed insight into the root-causes of the problems.</p> <p>4.2. A range of solutions and courses of action are identified together with benefits, costs, and risks associated with each.</p> <p>4.3. The good ideas of others to help develop solutions are recognised and advice sought from those who have solved similar problems.</p> <p>4.4. It is looked beyond the obvious and not stopped at the first answers.</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. Sharing information	1.1. Agenda 1.2. Minutes 1.3. Progress and incident reports 1.4. Operational manuals 1.5. Visual and graphic materials 1.6. Emails and SMS 1.7. Phone directory 1.8. Policy, procedure and standards 1.9. OHS information

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Underpinning knowledge	1.1. Team goals and work processes 1.2. Roles and responsibilities 1.3. Finding problems and solving them
2. Underpinning skills	2.1. Identifying own role and responsibilities within team 2.2. Communicating and co-operating with team members 2.3. Demonstrating problem solving within the team
3. Underpinning attitudes	3.1. Active on teamwork 3.2. Prompt in carrying out activities 3.3. Tidy and punctual 3.4. Respectful of peers, subordinates and seniors in the workplace 3.5. Sincere and honest concerning duties
4. Underpinning knowledge	4.1. Team goals and work processes 4.2. Roles and responsibilities 4.3. Finding problems and solving them
5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Projector 5.3. Stationary 5.4. Learning manual

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

6. Methods of assessment

Methods of assessment may include but is not limited to:

- 6.1. Written test
- 6.2. Demonstration
- 6.3. Oral test
- 6.4. Observation
- 6.5. Portfolio

7. Context of assessment

- 7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Use basic mathematical concepts
Unit Code:	SEIP-CON-RRO-03-G
Nominal Hours:	14 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to perform computations using basic mathematical concepts in the workplace. It specifically includes identifying general calculation requirements, selecting appropriate mathematical method/concept, and forming and solving mathematical problems in the workplace using appropriate tools and instruments.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Identify calculation requirements in the workplace	1.1. <u>Calculation requirements</u> are identified from <u>workplace information</u> . 1.2. Mathematical problems are constructed from workplace information.
2. Select appropriate mathematical methods/concepts for the calculation	2.1. <u>Appropriate method</u> is selected to carry out calculation requirements. 2.2. Constructed mathematical problems are solved with appropriate method.
3. Use tools and instruments to perform calculations	3.1. Tools and instruments required for computation are identified. 3.2. Calculation is performed using appropriate tools and instruments accurately.

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. Calculation requirements	1.1. Unit 1.2. Area 1.3. Height/ length/ breadth/ thickness 1.4. Diameter 1.5. Weight 1.6. Capacity 1.7. Time 1.8. Temperature 1.9. Material/data usage 1.10. Speed 1.11. Costing

Range of Variables	
Variable	Range (may include but not limited to)
2. Workplace information	2.1. Floor environment 2.2. Design sheet 2.3. Specification sheet 2.4. Working chart/drawing 2.5. Standard operating procedure (SOP) 2.6. Job order
3. Appropriate method	3.1. Addition 3.2. Subtraction 3.3. Division 3.4. Multiplication 3.5. Conversion 3.6. Percentage and ratio calculation 3.7. Simple equation
4. Tools and instruments	4.1. Calculator 4.2. Cell phone 4.3. Computer 4.4. Ruler

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: <ol style="list-style-type: none"> 1.1. Identified calculation requirements from workplace information 1.2. Selected appropriate method to carry out the calculation requirements 1.3. Completed calculations using appropriate tools and instruments
2. Underpinning knowledge	<ol style="list-style-type: none"> 2.1. Numerical concepts 2.2. Basic mathematical methods such as addition, subtraction, multiplication, division and percentage 2.3. Mathematical language, symbols and terminology 2.4. Measuring units
3. Underpinning skills	<ol style="list-style-type: none"> 3.1. Constructing simple problems from workplace information 3.2. Solving problems using appropriate method, tools and instruments 3.3. Using appropriate tools and instruments

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

4. Underpinning attitudes	4.1. Prompt in carrying out activities 4.2. Tidy and punctual 4.3. Respectful of peers, subordinates and seniors in the workplace 4.4. Safely use tools and equipment 4.5. Sincere and honest concerning duties
5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Calculator 5.3. Cell phone 5.4. Computer/laptop/notebook 5.5. Measuring tape 5.6. Ruler 5.7. Projector 5.8. Stationary 5.9. Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: 6.1. Written test 6.2. Oral test 6.3. Observation 6.4. Demonstration 6.5. Portfolio
7. Context of assessment	7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Sector-specific Competencies

Unit Title:	Apply occupational health and safety (OHS) practice in the workplace
Unit Code:	SEIP-CON-RRO-01-S
Nominal Hours:	16 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to apply occupational health and safety (OHS) practices in the workplace. It specifically includes identifying OHS policies and procedures, applying personal health and safety practices, reporting hazards and risks, and responding to emergencies.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Identify OHS policies and procedures	<p>1.1. <u>OHS policies</u> and safe operating procedures are interpreted.</p> <p>1.2. Safety signs and symbols are identified and followed.</p> <p>1.3. Response, evacuation procedures and other contingency measures are interpreted correctly.</p>
2. Apply personal health and safety practices	<p>2.1. OHS policies and procedures are applied in the workplace including <u>personal protective equipment (PPE)</u>.</p> <p>2.2. Common health issues are recognised.</p> <p>2.3. Common safety issues are identified.</p>
3. Report hazards and risks	<p>3.1. Hazards and risks are identified.</p> <p>3.2. Hazards and risks assessment and controls are interpreted.</p>
4. Respond to emergencies	<p>4.1. Respond to alarms and warning devices.</p> <p>4.2. <u>Emergency response plans and procedures</u> are responded to.</p> <p>4.3. <u>First aid procedures</u> during emergency situations are identified.</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. OHS policies	<p>1.1. Organisational OHS policies</p> <p>1.2. International OHS requirements</p> <p>1.3. Fire safety rules and regulations</p>
2. Emergency response plans and procedures	<p>2.1. Firefighting procedures</p> <p>2.2. Earthquake response procedures</p> <p>2.3. Emergency response plans and procedures</p> <p>2.4. Medical and first aid</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
3. First aid procedure	3.1. Washing of open wound 3.2. Washing chemically infected area 3.3. Applying bandage 3.4. Taking appropriate medicine
4. Personal protective equipment	4.1. Safety glasses 4.2. Ear plugs 4.3. Gloves 4.4. Apron 4.5. Helmet 4.6. Mask 4.7. Safety shoes

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: <ol style="list-style-type: none"> 1.1. Identified OHS policies and procedures 1.2. Applied personal health and safety practices (including PPE) 1.3. Reported hazards and risks 1.4. Responded to emergencies
2. Underpinning knowledge	<ol style="list-style-type: none"> 2.1. Workplace OHS policies and procedures 2.2. Work safety procedures 2.3. Emergency response procedures: <ol style="list-style-type: none"> 2.3.1. Firefighting 2.3.2. Earthquake response 2.3.3. Accident response 2.4. Types of hazards (biological, chemical and physical) and their effects 2.5. OHS awareness 2.6. Personal protective equipment (PPE)
3. Underpinning skills	<ol style="list-style-type: none"> 3.1. Identifying OHS policies and procedures 3.2. Applying personal health and safety practices 3.3. Reporting hazards and risks 3.4. Responding to emergencies

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

4. Underpinning attitudes	4.1. Committed to occupational health and safety practices 4.2. Communicates well with peers, subordinates and seniors in workplace 4.3. Prompt in carrying out activities 4.4. Tidy and punctual 4.5. Sincere and honest concerning duties 4.6. Responsible during emergencies
5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Personal protective equipment (PPE) 5.3. Firefighting equipment 5.4. Emergency response manual 5.5. First aid kits 5.6. Stationary 5.7. Learning manual
6. Methods of assessment	Methods of assessment may include but is not limited to: 6.1. Written test 6.2. Demonstration 6.3. Oral test 6.4. Observation 6.5. Portfolio
7. Context of assessment	7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency. 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Use hand and power tools
Unit Code:	SEIP-CON-RRO-02-S
Nominal Hours:	16 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to use hand and power tools in the workplace. It specifically includes identifying and inspecting hand and power tools for usability, using and operating tools properly and safely, and cleaning and maintaining hand and power tools after use.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Identify and inspect hand and power tools	<p>1.1. Appropriate hand and power tools are identified.</p> <p>1.2. Application of hand and power tools is recognised.</p> <p>1.3. Usability of hand and power tools is checked and verified.</p>
2. Use hand tools properly and safely	<p>2.1. Appropriate <u>hand tools</u> are selected.</p> <p>2.2. Safety precautions are ensured before using hand tools.</p> <p>2.3. Unsafe or faulty hand tools are identified and marked for repair.</p> <p>2.4. <u>Measuring tools</u> are checked and calibrated before use.</p> <p>2.5. Use hand tools properly and safely to perform work activity.</p>
3. Operate power tools properly and safely	<p>3.1. Appropriate <u>power tools</u> are selected.</p> <p>3.2. Power supply outlet and electrical cord are inspected and confirmed safe for use in accordance with established workplace safety requirements.</p> <p>3.3. Safety precautions are ensured before using power tools in accordance with manufacturer's operating specification.</p> <p>3.4. Proper sequence of operation applied for using power tools.</p> <p>3.5. Unsafe or faulty power tools are identified and marked for repair.</p> <p>3.6. Operate power tools properly and safely to perform work activity.</p>
4. Clean and maintain hand and power tools	<p>4.1. Dust and foreign matter is removed from hand and power tools in accordance to workplace standards.</p> <p>4.2. Condition of hand and power tools is checked after use and reported.</p> <p>4.3. Appropriate lubricant is applied after use and prior to storage.</p> <p>4.4. Measuring tools are checked and calibrated after use.</p> <p>4.5. Defective hand and power tools are inspected and repaired or replaced.</p> <p>4.6. Hand and power tools are stored and secured in accordance with workplace requirements.</p>

Range of Variables	
Variable	Range <i>(may include but not limited to)</i>
1. Hand tools	<ul style="list-style-type: none"> 1.1. Hacksaw 1.2. Hammer 1.3. Files 1.4. Pliers 1.5. Punches 1.6. Screwdrivers 1.7. Wrench box 1.8. Hand tap 1.9. Wire cutters 1.10. Hand hacksaw 1.11. Drill 1.12. Grinder 1.13. Dial gauge 1.14. Spanner comb 1.15. Spanner ring 1.16. Socket ratchet set 1.17. Easy opener 1.18. Top roller adjust gauge 1.19. Allen key 1.20. Top roller adjust gauge
2. Power tools	<ul style="list-style-type: none"> 2.1. Portable drilling machine 2.2. Threading machine 2.3. Saws 2.4. Glue gun 2.5. Soldering iron 2.6. Grinders
3. Measuring tools	<ul style="list-style-type: none"> 3.1. Measuring tape 3.2. Steel tape 3.3. Techo Meter 3.4. Slide callipers

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	Assessment must evidence that the candidate: 1.1. Identified and selected appropriate hand and power tools for work to be performed 1.2. Identified and used measuring and testing tools appropriate to work activity 1.3. Followed safety precautions when using hand and power tools 1.4. Operated power tools safely and pursuant to manufacturer's operating specification 1.5. Performed cleaning and maintenance of hand and power tools after use and prior to storing
2. Underpinning knowledge	2.1. Information on types of hand and power tools, their functions and use 2.2. Procedures for safely using hand and power tools
3. Underpinning skills	3.1. Identifying hand, power and measuring tools 3.2. Following safety precautions when using hand, power and measuring tools 3.3. Using hand and measuring tools correctly and safely in accordance with manufacturer's operating specification 3.4. Operating power tools correctly and safely in accordance with manufacturer's operating specification 3.5. Cleaning and maintaining hand and power tools after use 3.6. Applying appropriate lubricant on hand and power tools after use and prior to storing
4. Underpinning attitudes	4.1. Commitment to occupational health and safety 4.2. Promptness in carrying out activities 4.3. Sincere and honest to duties 4.4. Environmental concerns 4.5. Tidiness and timeliness 4.6. Concerned for proper use of tools
5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Hand tools 5.3. Power tools 5.4. Measuring tools 5.5. Projector 5.6. Stationary 5.7. Learning manual

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

6. Methods of assessment

Methods of assessment may include but is not limited to:

- 6.1. Written test
- 6.2. Oral test
- 6.3. Observation
- 6.4. Demonstration
- 6.5. Portfolio

7. Context of assessment

- 7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Occupation-specific Competencies

Unit Title:	Plan and organise work
Unit Code:	SEIP-CON-RRO-01-O
Nominal Hours:	20 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes related to plan and organise work. It specifically includes planning and preparing for work, sequencing work safely, resolving problems, and cleaning and maintaining work area.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Plan and prepare for work	<p>1.1. Work requirements are identified and correctly interpreted ensuring <u>quality requirements</u> are met.</p> <p>1.2. Job instructions are read and clarified where needed.</p> <p>1.3. Work area is inspected and prepared as per job requirement.</p> <p>1.4. Appropriate personal protective equipment (PPE) is identified and selected.</p> <p>1.5. Tools and equipment are identified and selected.</p> <p>1.6. <u>Types of road roller</u> are identified and selected appropriate to job requirement.</p>
2. Sequence work safely	<p>2.1. Job requirement is reviewed to ensure that tasks are performed timely, safe and efficient manner.</p> <p>2.2. Compliance documentation is completed and submitted to appropriate authority.</p>
3. Resolve problems	<p>3.1. Problems with work processes are identified and improvements suggested.</p> <p>3.2. Work processes are modified to suit changing circumstances.</p> <p>3.3. Problems are reported in a timely manner to relevant personnel.</p>
4. Clean and maintain work area	<p>4.1. Tools, equipment and machinery are cleaned, maintained and stored.</p> <p>4.2. Work area is cleaned and maintained, and waste material disposed of.</p> <p>4.3. Defective or faulty tools, equipment and machinery is recorded and reported.</p>

Range of Variables	
Variable	Range (may include but not limited to)
1. Quality requirements	1.1. Local standards 1.2. Company quality policy 1.3. Manufacturer standards 1.4. International standards 1.5. Standard operating procedure
2. Types of road roller	2.1. Cylindrical 2.2. Sheepsfoot 2.3. Pneumatic 2.4. Smooth-wheeled 2.5. Vibratory 2.6. Grid

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: <ol style="list-style-type: none"> 1.1. Planned and prepared for work 1.2. Identified quality requirements 1.3. Identified tools and equipment 1.4. Identified types of road roller 1.5. Sequenced work safely 1.6. Identified problems with work processes and solutions 1.7. Cleaned and maintained tools and equipment 1.8. Cleaned and maintained work area
2. Underpinning knowledge	<ol style="list-style-type: none"> 2.1. Work planning and preparation 2.2. Quality requirements 2.3. Personal protective equipment (PPE) 2.4. Tools and equipment 2.5. Road rollers 2.6. Compliance documents 2.7. Work processes 2.8. Cleaning and maintenance procedures

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

3. Underpinning skills	<ul style="list-style-type: none">3.1. Planning and preparing for work3.2. Identifying and interpreting quality requirements3.3. Sequencing work safely3.4. Identify work process problems and possible solutions3.5. Modifying work processes3.6. Cleaning, maintaining and storing tools and equipment3.7. Cleaning and maintaining work area3.8. Disposing of waste material
4. Underpinning attitudes	<ul style="list-style-type: none">4.1. Tidy and punctual4.2. Prompt in carrying out activities4.3. Sincere and honest concerning duties4.4. Active on teamwork4.5. Eager to learn4.6. Concerned for proper use of tools4.7. Committed to occupational health and safety practices4.8. Respectful of peers, subordinates and seniors in the workplace4.9. Communicate with peers and seniors in the workplace
5. Resource implications	<p>The following resources must be provided:</p> <ul style="list-style-type: none">5.1. Workplace (simulated or actual)5.2. Personal protective equipment (PPE)5.3. Tools and equipment5.4. Job specifications5.5. Manuals5.6. Projector5.7. Stationary5.8. Learning manual
6. Methods of assessment	<p>Methods of assessment may include but is not limited to:</p> <ul style="list-style-type: none">6.1. Written test6.2. Oral test6.3. Observation6.4. Demonstration6.5. Portfolio
7. Context of assessment	<ul style="list-style-type: none">7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.7.2. Assessment must be done by a suitably qualified/certified assessor.

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Prepare for road roller operations
Unit Code:	SEIP-CON-RRO-02-O
Nominal Hours:	30 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to prepare for road roller operations. It specifically includes identifying work requirements, preparing for operations, and collecting tools and equipment.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Identify work requirements	<p>1.1. Work requirements are interpreted and clarified if needed.</p> <p>1.2. <u>Compliance documentation</u> is accessed and completed.</p> <p>1.3. Road roller is selected as per job specification.</p> <p>1.4. Operating capacity and tolerances of road roller are identified and interpreted.</p>
2. Prepare for operations	<p>2.1. Work area is inspected and prepared as per job requirement</p> <p>2.2. Potential <u>hazards and risks</u> are identified.</p> <p>2.3. Control measures are implemented to eliminate or reduce hazard or risk.</p> <p>2.4. Roles and responsibilities of team are identified and employed prior to, during and after completion of road roller operations.</p>
3. Collect tools and equipment	<p>3.1. Tools and equipment as per job requirement are collected and checked for serviceability.</p> <p>3.2. Appropriate <u>personal protective equipment (PPE)</u> as per job requirement is collected.</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. Compliance documentation	<p>1.1. Legal</p> <p>1.2. Manufacturer (guidelines/specifications)</p> <p>1.3. Employer</p> <p>1.4. Work health and safety</p>
2. Hazards and risks	<p>2.1. Pit walls</p> <p>2.2. Weather</p> <p>2.3. Blind holes</p> <p>2.4. Potholes</p> <p>2.5. Overhanding rocks</p> <p>2.6. Unstable footing</p> <p>2.7. Debris</p> <p>2.8. Blind spots</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
3. Personal protective equipment (PPE)	3.1. Safety helmet 3.2. Safety goggles 3.3. Ear plugs 3.4. Gloves 3.5. High visibility vest 3.6. Shoes

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	Assessment must evidence that the candidate: <ol style="list-style-type: none"> 1.1. Interpreted work requirements 1.2. Completed compliance documentation 1.3. Prepared for operations 1.4. Identified potential hazards and risks 1.5. Implemented control measures 1.6. Collected tools and equipment (including PPE)
2. Underpinning knowledge	<ol style="list-style-type: none"> 2.1. Road rollers 2.2. Operating capacity and tolerances 2.3. Compliance documentation 2.4. Workplace hazards and risks 2.5. Control measures 2.6. Roles and responsibilities of team 2.7. Tools and equipment 2.8. Personal protective equipment (PPE)
3. Underpinning skills	<ol style="list-style-type: none"> 3.1. Identifying work requirements 3.2. Accessing and completing compliance documentation 3.3. Preparing for operations 3.4. Identifying hazards and risks 3.5. Implementing control measures 3.6. Collecting tools and equipment (including PPE) 3.7. Checking tools and equipment for serviceability

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

4. Underpinning attitudes

- 4.1. Tidy and punctual
- 4.2. Prompt in carrying out activities
- 4.3. Sincere and honest concerning duties
- 4.4. Active on teamwork
- 4.5. Eager to learn
- 4.6. Concerned for proper use of tools
- 4.7. Committed to occupational health and safety practices
- 4.8. Respectful of peers, subordinates and seniors in the workplace
- 4.9. Communicate with peers and seniors in the workplace

5. Resource implications

The following resources must be provided:

- 5.1. Workplace (simulated or actual)
- 5.2. Personal protective equipment (PPE)
- 5.3. Tools and equipment
- 5.4. Job specifications
- 5.5. Compliance documentation
- 5.6. Manuals
- 5.7. Projector
- 5.8. Stationary
- 5.9. Learning manual

6. Methods of assessment

Methods of assessment may include but is not limited to:

- 6.1. Written test
- 6.2. Oral test
- 6.3. Observation
- 6.4. Demonstration
- 6.5. Portfolio

7. Context of assessment

- 7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Operate road roller
Unit Code:	SEIP-CON-RRO-03-O
Nominal Hours:	70 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to operate road roller. It specifically includes planning and preparing for operations, operating road roller, and cleaning and maintaining machinery.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Plan and prepare for operations	<p>1.1. Work requirements are identified and correctly interpreted ensuring quality requirements are met.</p> <p>1.2. Job instructions are read and clarified where needed.</p> <p>1.3. Work area is inspected and prepared as per job requirement.</p> <p>1.4. Appropriate personal protective equipment (PPE) is identified and selected.</p> <p>1.5. Tools and equipment are identified, checked for serviceability and selected.</p> <p>1.6. Attachments for road roller operation are identified and collected as per job requirement.</p>
2. Operate road roller	<p>2.1. Unload road roller from trailer safely and securely.</p> <p>2.2. <u>Pre -start check</u> is carried out to ensure equipment is ready for operation.</p> <p>2.3. Drive and operate road roller and modify operating technique to meet changing work conditions.</p> <p>2.4. Adjust interchangeable drums, bars, brooms, and/or blades for operational effectiveness and efficiency.</p> <p>2.5. Load road roller onto trailer safely and securely.</p>
3. Clean and maintain machinery	<p>3.1. Road roller is cleaned and maintained as per standard operating procedure.</p> <p>3.2. Attachments are cleaned, maintained and stored as per standard operating procedure.</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. Pre-start check	<p>1.1. Air-filter restriction indicator</p> <p>1.2. Display instrumentation (indicators, gauges, laser levels)</p> <p>1.3. Engine and stop engine lights (orange and red)</p> <p>1.4. Fluid levels (windscreen, oil, water, coolant, fuel)</p> <p>1.5. Visual and audio warning lights and alarms</p>

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	Assessment must evidence that the candidate: 1.1. Planned and prepared for operations 1.2. Unloaded road roller from trailer 1.3. Conducted pre-start checks 1.4. Operated road roller 1.5. Adjusted drums, bars, brooms and blades 1.6. Loaded road roller onto trailer 1.7. Cleaned and maintained road roller 1.8. Cleaned, maintained and stored attachments
2. Underpinning knowledge	2.1. Work planning and preparation 2.2. Personal protective equipment (PPE) 2.3. Tools and equipment 2.4. Road rollers 2.5. Road roller attachments 2.6. Pre-start check procedure 2.7. Load and unloading protocol 2.8. Cleaning and maintenance procedure 2.9. Standard operating procedure
3. Underpinning skills	3.1. Preparing for road roller operations 3.2. Loading and unloading road roller 3.3. Carrying out pre-start checks 3.4. Operating road roller 3.5. Adjusting road roller attachments 3.6. Cleaning and maintaining road roller 3.7. Cleaning, maintaining and storing road roller attachments
4. Underpinning attitudes	4.1. Tidy and punctual 4.2. Prompt in carrying out activities 4.3. Sincere and honest concerning duties 4.4. Active on teamwork 4.5. Eager to learn 4.6. Concerned for proper use of tools 4.7. Committed to occupational health and safety practices 4.8. Respectful of peers, subordinates and seniors in the workplace 4.9. Communicate with peers and seniors in the workplace

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

5. Resource implications

The following resources must be provided:

- 5.1. Workplace (simulated or actual)
- 5.2. Personal protective equipment (PPE)
- 5.3. Tools and equipment
- 5.4. Road roller
- 5.5. Attachments
- 5.6. Job specifications
- 5.7. Manufacturer's specifications
- 5.8. Operation manuals
- 5.9. Standard operating procedure
- 5.10. Projector
- 5.11. Stationary
- 5.12. Learning manual

6. Methods of assessment

Methods of assessment may include but is not limited to:

- 6.1. Written test
- 6.2. Oral test
- 6.3. Observation
- 6.4. Demonstration
- 6.5. Portfolio

7. Context of assessment

7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.

7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Carry out road roller operations
Unit Code:	SEIP-CON-RRO-04-O
Nominal Hours:	90 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to carry out road roller operations. It specifically includes identifying work requirements, performing road roller operations, and cleaning and maintaining machinery.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Identify work requirements	<p>1.1. Work requirements are interpreted and clarified if needed.</p> <p>1.2. Compliance documentation is accessed and completed.</p> <p>1.3. Road roller is selected as per job specification.</p> <p>1.4. Operating capacity and tolerances of road roller are identified and interpreted.</p>
2. Perform road roller operations	<p>2.1. Start-up, park and shutdown procedure is carried out.</p> <p>2.2. <u>Work area</u> and <u>conditions</u> are assessed to determine appropriate operating technique.</p> <p>2.3. <u>Contaminants</u> are identified and removed from work area.</p> <p>2.4. Road roller is operated safely and within operating capacity and tolerances.</p> <p>2.5. Work area is compacted as per job specification.</p> <p>2.6. <u>Instruments and gauges</u> are consistently checked to ensure smooth operation.</p>
3. Clean and maintain machinery	<p>3.1. Road roller is cleaned and maintained as per standard operating procedure.</p> <p>3.2. Attachments are cleaned, maintained and stored as per standard operating procedure.</p> <p>3.3. Maintenance records and other documentation are completed and submitted to relevant authority.</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. Work area	<p>1.1. Gravel</p> <p>1.2. Road base</p> <p>1.3. Asphalt</p> <p>1.4. Sand</p> <p>1.5. Topsoil</p>

Range of Variables	
Variable	Range (may include but not limited to)
2. Conditions	<ul style="list-style-type: none"> 2.1. Day/night 2.2. Compaction rate 2.3. Location of water table 2.4. Surface slope 2.5. Ground stability 2.6. Ground texture 2.7. Underground services
3. Contaminants	<ul style="list-style-type: none"> 3.1. Consumables 3.2. Metal 3.3. Old fencing/piping 3.4. Plastic 3.5. Timber 3.6. Carcasses 3.7. Debris
4. Instruments and gauges	<ul style="list-style-type: none"> 4.1. Brake air pressure 4.2. Brake oil pressure 4.3. Engine oil pressure 4.4. Fuel filter 4.5. Parking brake 4.6. Retarder 4.7. Speedometer 4.8. Odometer 4.9. Steering filters 4.10. Tachometer 4.11. Voltmeter 4.12. Water temperature 4.13. Fuel level

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	Assessment must evidence that the candidate: 1.1. Identified work requirements 1.2. Interpreted operating capacity and tolerances 1.3. Assessed work area and conditions 1.4. Removed contaminants 1.5. Carried out start-up, park and shutdown procedure 1.6. Performed road roller operations 1.7. Cleaned and maintained machinery 1.8. Completed maintenance records
2. Underpinning knowledge	2.1. Tools and equipment 2.2. Personal protective equipment (PPE) 2.3. Road rollers 2.4. Attachments 2.5. Operating capacity and tolerances 2.6. Compaction 2.7. Work conditions 2.8. Instruments and gauges 2.9. Cleaning and maintenance procedure 2.10. Standard operating procedure
3. Underpinning skills	3.1. Interpreting work requirements 3.2. Carrying out start-up, park and shutdown procedure 3.3. Assessing work area and conditions 3.4. Removing contaminants 3.5. Performing road roller operations 3.6. Cleaning and maintaining machinery 3.7. Completing maintenance records and other documentation
4. Underpinning attitudes	4.1. Tidy and punctual 4.2. Prompt in carrying out activities 4.3. Sincere and honest concerning duties 4.4. Active on teamwork 4.5. Eager to learn 4.6. Concerned for proper use of tools 4.7. Committed to occupational health and safety practices 4.8. Respectful of peers, subordinates and seniors in the workplace 4.9. Communicate with peers and seniors in the workplace

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

5. Resource implications

The following resources must be provided:

- 5.1. Workplace (simulated or actual)
- 5.2. Personal protective equipment (PPE)
- 5.3. Tools and equipment
- 5.4. Machinery (road roller and attachments)
- 5.5. Materials
- 5.6. Job specifications
- 5.7. Compliance documentation
- 5.8. Standard operating procedure
- 5.9. Operating manuals
- 5.10. Manufacturer's specifications
- 5.11. Projector
- 5.12. Stationary
- 5.13. Learning manual

6. Methods of assessment

Methods of assessment may include but is not limited to:

- 6.1. Written test
- 6.2. Oral test
- 6.3. Observation
- 6.4. Demonstration
- 6.5. Portfolio

7. Context of assessment

- 7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Perform surface finishing work
Unit Code:	SEIP-CON-RRO-05-O
Nominal Hours:	50 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to perform surface finishing work. It specifically includes identifying work requirements, performing surface finishing work, and cleaning and maintaining machinery.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Identify work requirements	<p>1.1. Work requirements are interpreted and clarified if needed.</p> <p>1.2. Compliance documentation is accessed and completed.</p> <p>1.3. Road roller is selected as per job specification.</p> <p>1.4. Operating capacity and tolerances of road roller are identified and interpreted.</p>
2. Perform surface finishing work	<p>2.1. Number of passes required over surface is confirmed and completed.</p> <p>2.2. <u>Compaction process</u> is assessed to ensure uniform compaction across surface is achieved.</p> <p>2.3. Surface trimming is checked to ensure specified tolerances are reached.</p>
3. Clean and maintain machinery	<p>3.1. Road roller is cleaned and maintained as per standard operating procedure.</p> <p>3.2. Attachments are cleaned, maintained and stored as per standard operating procedure.</p> <p>3.3. Maintenance records and other documentation are completed and submitted to relevant authority.</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. Compaction process	<p>1.1. Density</p> <p>1.2. Height</p> <p>1.3. Length</p> <p>1.4. Depth</p> <p>1.5. Camber</p> <p>1.6. Material</p>

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

1. Critical aspects of competency	Assessment must evidence that the candidate: 1.1. Identified work requirements 1.2. Performed surface finishing work 1.3. Assessed compaction 1.4. Checked surface trimming 1.5. Cleaned and maintained machinery
2. Underpinning knowledge	2.1. Tools and equipment 2.2. Personal protective equipment (PPE) 2.3. Road rollers 2.4. Attachments 2.5. Compaction 2.6. Specified tolerances 2.7. Cleaning and maintenance procedure 2.8. Standard operating procedure
3. Underpinning skills	3.1. Planning and preparing for work 3.2. Performing surface finishing work 3.3. Assessing compaction 3.4. Identifying specified tolerances 3.5. Checking surface trimming 3.6. Cleaning and maintaining machinery
4. Underpinning attitudes	4.1. Tidy and punctual 4.2. Prompt in carrying out activities 4.3. Sincere and honest concerning duties 4.4. Active on teamwork 4.5. Eager to learn 4.6. Concerned for proper use of tools 4.7. Committed to occupational health and safety practices 4.8. Respectful of peers, subordinates and seniors in the workplace 4.9. Communicate with peers and seniors in the workplace

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

5. Resource implications

The following resources must be provided:

- 5.1. Workplace (simulated or actual)
- 5.2. Personal protective equipment (PPE)
- 5.3. Tools and equipment
- 5.4. Machinery (road roller and attachments)
- 5.5. Materials
- 5.6. Job specifications
- 5.7. Compliance documentation
- 5.8. Standard operating procedure
- 5.9. Operating manuals
- 5.10. Manufacturer's specifications
- 5.11. Projector
- 5.12. Stationary
- 5.13. Learning manual

6. Methods of assessment

Methods of assessment may include but is not limited to:

- 6.1. Written test
- 6.2. Oral test
- 6.3. Observation
- 6.4. Demonstration
- 6.5. Portfolio

7. Context of assessment

- 7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit Title:	Repair and maintain road roller
Unit Code:	SEIP-CON-RRO-06-O
Nominal Hours:	20 hours
Unit Descriptor:	This unit covers the skills, knowledge and attitudes required to repair and maintain road roller. It specifically includes diagnosing problems, performing troubleshooting, and carrying out routine maintenance.
Elements of Competency	Performance Criteria (<u>bold and underlined</u> terms are elaborated in the Range of Variables)
1. Diagnose problems	<p>1.1. Road roller and attachments are checked for faults and/or damage.</p> <p>1.2. Components are examined, tested and diagnosed as per manufacturer's guidelines.</p> <p>1.3. Maintenance requirements are identified and recorded as per standard operating procedure.</p>
2. Perform troubleshooting	<p>2.1. Interchangeable components are adjusted properly and safely.</p> <p>2.2. Compacting devices are engaged and disengaged.</p> <p>2.3. Contaminants are identified and removed.</p> <p>2.4. Operating limitations are modified to suit work conditions.</p> <p>2.5. Driving technique is changed to suit compaction material.</p>
3. Carry out routine maintenance	<p>3.1. <u>Machinery</u> is inspected and maintenance requirements determined.</p> <p>3.2. Machinery is prepared for routine servicing and maintenance work.</p> <p>3.3. Routine servicing and maintenance are carried out as per standard operating procedure.</p> <p>3.4. Service and maintenance records are completed.</p>

Range of Variables	
Variable	Range (<i>may include but not limited to</i>)
1. Machinery	<p>1.1. Road roller</p> <p>1.2. Attachments (bars, drums, blades, brooms)</p>

Evidence Guide	
The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.	
1. Critical aspects of competency	<p>Assessment must evidence that the candidate:</p> <p>1.1. Diagnosed problems</p> <p>1.2. Performed troubleshooting</p> <p>1.3. Carried out routine maintenance</p>

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

2. Underpinning knowledge	2.1. Tools and equipment 2.2. Components 2.3. Road rollers 2.4. Attachments 2.5. Troubleshooting techniques 2.6. Operating limitations 2.7. Manufacturer's specifications 2.8. Maintenance process 2.9. Standard operating procedure
3. Underpinning skills	3.1. Diagnosing problems 3.2. Examining and testing components 3.3. Performing troubleshooting 3.4. Carrying out routine maintenance 3.5. Completing maintenance records
4. Underpinning attitudes	4.1. Tidy and punctual 4.2. Prompt in carrying out activities 4.3. Sincere and honest concerning duties 4.4. Active on teamwork 4.5. Eager to learn 4.6. Concerned for proper use of tools 4.7. Committed to occupational health and safety practices 4.8. Respectful of peers, subordinates and seniors in the workplace 4.9. Communicate with peers and seniors in the workplace
5. Resource implications	The following resources must be provided: 5.1. Workplace (simulated or actual) 5.2. Personal protective equipment (PPE) 5.3. Tools and equipment 5.4. Road roller 5.5. Attachments 5.6. Manufacturer's specifications 5.7. Manufacturer's guidelines 5.8. Operating manuals 5.9. Standard operating procedure 5.10. Maintenance records 5.11. Projector 5.12. Stationary 5.13. Learning manual

Evidence Guide

The evidence must be authentic, valid, sufficient, reliable, consistent and recent and meet the requirements of the current version of the Unit of Competency.

6. Methods of assessment

Methods of assessment may include but is not limited to:

- 6.1. Written test
- 6.2. Oral test
- 6.3. Observation
- 6.4. Demonstration
- 6.5. Portfolio

7. Context of assessment

- 7.1. Competency assessment must be done in a training institute or an actual or simulated workplace after completion of this unit of competency.
- 7.2. Assessment must be done by a suitably qualified/certified assessor.

Accreditation Requirements

Training Providers must be accredited by Bangladesh Technical Education Board (BTEB), the National Quality Assurance Body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any NTVQF qualification. Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.