COMPETENCY STANDARD

FOR

MASONRY AND ROD BINDING

Skills for Industry Competitiveness and Innovation Program (SICIP)
Finance Division, Ministry of Finance

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The Competency Standards for Masonry and Rod Binding of 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 the industry for individuals who pass through the set standard via assessment. Subsequently, they would be qualified and settled for a relevant job.

The document was developed under the Skills for Employment Investment Program (SEIP) and subsequently reviewed and updated to use in training under the Skills for Industry Competitiveness and Innovation Program (SICIP) to meet the industry skills requirements. This document is owned by the Finance Division of the Ministry of Finance of the People's Republic of Bangladesh.

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INTRODUCTION:

The Skills for Industry Competitiveness and Innovation Program (SICIP) has the overall objective of developing a skilled workforce adept at handling new technologies, especially for emerging industries in Bangladesh. It will expand skills training and strengthen the development of the training ecosystem to address the skills requirements of the SICIP-selected industry sectors. The program aims to (i) increase the technology-oriented skilled workforce across emerging and priority sectors, (ii) promote inclusive skilling and upskilling opportunities for women and socially disadvantaged groups, (iii) incentivize industry-university partnerships to nurture innovation capacity and improve industry competitiveness, and (iv) foster skills for climate-resilient manufacturing processes and green technologies. The program is expected to benefit about 220,000 new and existing workers over a 6-year implementation period from 2024-2029.

The SICIP Program has, therefore, taken the initiative to enhance the employability and productivity of trainees by implementing market-responsive and job-focused training programs through public and private training providers. This will require the development of competency standards for each of the occupations/trades which will provide a structured framework in the learning process to guide training providers, ensure consistent training quality, and create an alignment between the skills provided by the training institutes and the needs of the industry.

The Competency Standard also suggests integration of YouTube or similar platforms or downloaded clips into classroom practice to ensure simulated creation of the contents so that learners are exposed to visual demonstrations before classroom instruction or practical session, which aligns with modern learning preference and supports flipped classroom models.

This competency standard is therefore developed to improve skills following the job roles and skill sets of the occupation and ensure that the required skills are aligned with industry requirements.

The document details the format, sequencing, wording, and layout of the Competency Standard for an occupation which comprises 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 a job or occupation or trade corresponding to the standard of performance required in the workplace.
Competency standard:

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

Competency Standard has been developed by a working group comprised of occupation-specific experts from the industry/institution and relevant consultants of SICIP.

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

With Competency Standards, assessment and training may be conducted at the workplace, at training organization, during regular work, or through work experience, work placement, work simulation or any combination of these.

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:

- Reference to Industry Sector, Occupational Title and Occupational Description
- Unit code
- Unit title
- Unit descriptor
- Unit of Competency
- Elements and performance criteria
- Variables and range statement
- Evidence guides

Together all the parts of a Unit of Competency:

- Describe a work activity.
- Guide the assessor in determining whether the candidate is competent.

Identification and validation of units of competency and elements for each occupation were made by experts from Construction industry in consultative workshop.

The ensuing sections of this document comprise a description of the respective occupation with all the key components of a Unit of Competence:

- An overview of all Units of Competence for the occupation and their corresponding duration required for completion of training.
- The Competency Standards that include the Unit of Competency, Unit Descriptor, Elements and Performance Criteria, Range of Variables, Curricular Content Guide, and Assessment Evidence Guide.

Units & Elements at Glance:

Generic Competencies (40 hrs.)

Code	Unit of Competency	Elements of Competency	Duration (Hours)
SICIP-CON-MSB-1-G	Perform Computations Using Basic Mathematical Concepts	1. Identify calculation requirements in the workplace 2. Select appropriate mathematical methods/concepts for the calculation. 3. Use tool/instrument to perform calculations	10
SICIP-CON-MSB-2-G	Apply Occupational Health and Safety (OHS) Practices in the Workplace	1. Identify OHS policies and procedures 2. Apply personal health and safety practices 3. Report hazards and risks 4. Respond to emergencies	10
SICIP-CON-MSB-3-G	Communicate in English in the Workplace	1. Read and understand workplace documents in English 2. Write simple workplace communications in English 3. Listen and comprehend to English conversations 4. Perform conversations in English language	10
SICIP-CON-MSB-4-G	Operate in a Self-Directed Team	1. Identify team goals and work processes 2. Communicate and cooperate with team members. 3. Work as a team member. 4. Solve problems as a team member	10
		Total Hour	**40**

Sector Specific Competencies (40 hrs.)

Code	Unit of Competency	Elements of Competency	Duration (Hours)
SICIP-CON-MSB-1-S	Apply Green Practices in Construction Sector	1. Interpret green concepts 2. Minimize resource use in the workplace 3. Implement waste management practices	08
SICIP-CON-MSB-2-S	Translate Drawings, Plans and Specifications	1. Access information from manuals, designs and plans 2. Interpret drawings and specifications from manuals, designs and plans 3. Store manuals, designs and plans	10
SICIP-CON-MSB-3-S	Work With Hand Tools and Power Tools	1. Inspect hand tools and power tools for usability 2. Use hand tools properly and safely 3. Operate power tools properly and safely 4. Clean/maintain hand tools and power tools after use	10
SICIP-CON-MSB-4-S	Carry Out Measurements and Calculations	1. Check usability of measuring devices 2. Carry out accurate construction work measurements 3. Execute simple construction work calculations 4. Clean and maintain measuring instruments	12
		Total Hour	**40**

Occupation Specific Competencies (280 hrs.)

Code	Unit of Competency	Elements of Competency	Duration (Hours)
SICIP-CON-MSB-1-O	Make Masonry Mortar/Stucco	1. Gather mortar making tools, equipment and materials in line with the work task 2. Prepare mortar mixing box/containment 3. Make mortar/stucco 4. Clean and maintain the work area	20
SICIP-CON-MSB-2-O	Perform Masonry Structure Installation	1. Organize masonry working tools, equipment and materials at site 2. Perform soling/ pavement work 3. Perform concrete work for base preparation 4. Carry out brick, block and stone works 5. Clean/maintain the workplace	72
SICIP-CON-MSB-3-O	Accomplish Masonry Surface Plastering	1. Clean the masonry surface area prior to plastering 2. Mix plaster materials 3. Apply plaster on plain surfaces 4. Apply plaster to corners 5. Clean/maintain the workplace	40
SICIP-CON-MSB-4-O	Apply Waterproofing Activities in Construction	1. Organize work area for waterproofing 2. Prepare concrete prior to waterproofing 3. Apply waterproofing material 4. Perform other waterproofing considerations 5. Clean/maintain the workplace	24
SICIP-CON-MSB-5-O	Perform Fabrication Works	1. Cut steel re-bars 2. Bend main bars using manual benders 3. Bend main bar using bending machine 4. Bend stirrups using manual bender 5. Bend stirrups using bending machine	32

		6. Clean/maintain the workplace	
SICIP-CON-MSB-6-O	Perform Assembly of Re-bar Works	1. Assemble re-bars for columns 2. Assemble re-bars for beams 3. Assemble re-bars for slabs 4. Assemble re-bars for board piles/pile caps	60
SICIP-CON-MSB-7-O	Perform Formworks Installation	1. Plan and prepare formwork installation 2. Set up level for scaffolding and formwork 3. Install scaffolding 5. Install formworks for building elements 6. Install formworks for catch basin and manhole 7. Repair and replace damaged formworks 8. Dismantle scaffoldings	32
		Total Hour	**280**

COMPETENCY STANDARD: MASONRY AND ROD BINDING

The Generic Competencies

Unit of Competency: **PERFORM COMPUTATIONS USING BASIC MATHEMATICAL CONCEPTS**	**Nominal Duration:** 10 hrs.	**Unit Code:** SICIP-CON-MSB-1-G
Unit Descriptor: This unit of competency requires the knowledge, skills and attitude to perform computations using basic mathematical concepts in the workplace. It specifically includes the tasks of identifying calculation requirements in the workplace; selecting appropriate mathematical method/concept for the calculation; and using appropriate instruments tools to carry out calculation.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	**Performance Criteria**
1. Identify calculation requirements in the workplace	1.1 **Calculation requirements** are identified from **workplace information.**
2. Select appropriate mathematical methods/concepts for the calculation.	2.1 **Appropriate method** is selected to carry out the calculation requirements.
3. Use tool/instrument to perform calculations	3.1 Calculations are completed using appropriate **tools and instruments.**

Range of variables:

Variable	**Range** May include but not limited to:
1. Calculation requirements.	1.1 Area 1.2 Height 1.3 Length/Breath/thickness 1.4 Diameter 1.5 Weight 1.6 Capacity 1.7 Time 1.8 Temperature. 1.9 Material usage
2. Workplace information	2.1 Civil Drawing 2.2 Design 2.3 Working drawing

	2.4 Verbal instructions 2.5 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/instruments	4.1 Calculator 4.2 Computer

Curricular Content Guide

1. Underpinning Knowledge	1.1 Numerical concept 1.2 Basic mathematical methods such as addition, subtraction, multiplication and division and percentage. 1.3 Mathematical language, symbols and terminology. 1.4 Measuring units 1.5 Knowledge of computer application
2. Underpinning Skills	2.1 Adding numbers 2.2 Subtracting numbers 2.3 Multiplying numbers. 2.4 Dividing numbers. 2.5 Measuring of linear 2.6 Using of mathematical language, symbols, terminology and technology. 2.7 Measuring of different physical parameter. 2.8 Calculating geometrical parameters: angle, parallelism, perpendicularity, area and volume
3. Underpinning Attitudes	3.1 Commitment to occupational health and safety practices 3.2 Promptness in carrying out activities 3.3 Tidiness and timeliness 3.4 Respect to peers, sub-ordinates and seniors in workplace 3.5 Environmental concern 3.6 Sincerity and honesty
4. Resource Implications	The following resources must be provided. 4.1 Stationeries 4.2 Consumables 4.3 Calculators 4.4 Computers 4.5 Measuring tape

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 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/instruments.
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Unit of Competency: **APPLY OCCUPATIONAL HEALTH AND SAFETY (OHS) PRACTICES IN THE WORKPLACE**	**Nominal Duration:** 10 hrs.	**Unit Code:** SICIP-CON-MSB-2-G
Unit Descriptor: This unit covers the knowledge, skills and attitudes required to apply Occupational Health and Safety (OH&S) practices in the workplace. It specifically includes the tasks of identifying OHS policies and procedures; applying personal health and safety practices; reporting hazards and risks; and responding to emergencies.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	Performance Criteria
1. Identify OHS policies and procedures	1.1 **OHS policies** and safe operating procedures are read and understood. 1.2 Safety signs and symbols are identified and followed. 1.3 Emergency response, evacuation procedures and other contingency measures are determined.
2. Apply personal health and safety practices	2.1 OHS policies and procedures are followed and practiced. 2.2 **Personal Protective Equipment (PPE)** is selected and used. 2.3 Personal hygiene is maintained.
3. Report hazards and risks	3.1 **Hazards and risks** are identified, assessed and controlled. 3.2 Incidents arising from hazards and risks are reported to authority. 3.3 Corrective actions are implemented to correct unsafe conditions in the workplace.
4. Respond to emergencies	4.1 Alarms and warning devices are responded. 4.2 **Emergency response plans and procedures** are implemented. 4.3 **First aid procedure** is applied during emergency situations.

Range of Variables

Variable	Range May include but not limited to:
1. OHS policies	1.1 International OHS requirements 1.2 Bangladesh standards for OHS 1.3 Building Code 1.4 Fire Safety Rules and Regulations

	1.5 Industry Guidelines
2. Personal Protective Equipment (PPE)	2.1 Apron 2.2 Gas Mask 2.3 Gloves 2.4 Safety shoes 2.5 Helmet 2.6 Face mask 2.7 Overalls 2.8 Goggles and safety glasses 2.9 Ear plugs 2.10 Sun block 2.11 Chemical/Gas masks
3. Hazards and risks	3.1 Chemical hazards. 3.2 Biological hazards. 3.3 Physical Hazards. 3.3.1 Machine hazards. 3.3.2 Materials hazards. 3.3.3 Tools and Equipment hazards.
4. Emergency response plans and procedures	4.1 Firefighting procedures 4.2 Earthquake response procedures 4.3 Evacuation procedures 4.4 Medical and first aid
5. First aid procedure	5.1 Washing of open wound 5.2 Washing chemically infected area 5.3 Applying bandage 5.4 Tourniquet 5.5 Applying CPR (Cardiopulmonary Resuscitation) 5.6 Taking appropriate medicine

Curricular Evidence Guide:

1. Underpinning Knowledge	1.1 OHS workplace policies and procedures. 1.2 Work safety procedures. 1.3 Emergency procedures. 1.3.1 Firefighting. 1.3.2 Earthquake response. 1.3.3 Explosion response. 1.3.4 Accident response. 1.4 Types of (biological, chemical and physical) and their effects. 1.5 PPE types and uses. 1.6 Personal hygiene practices. 1.7 OHS awareness.
2. Underpinning Skills	2.1 Identifying OHS policies and procedures

	2.2 Following personal work safety practices 2.3 Reporting hazards and risks 2.4 Responding to emergency procedures 2.5 Maintaining physical well-being in the workplace 2.6 Performing first aid. 2.7 Performing basic firefighting accessories using fire extinguishers 2.8 Applying basic first aid procedures
3. Underpinning Attitudes	3.1 Commitment to occupational health and safety practices 3.2 Communication with peers, sub-ordinates and seniors in workplace. 3.3 Promptness in carrying out activities 3.4 Tidiness and timeliness 3.5 Respect of peers, sub-ordinates and seniors in workplace 3.6 Environmental concern 3.7 Sincere and honest to duties
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 PPEs 4.3 Firefighting equipment 4.4 Emergency response manual 4.5 First aid kits

Assessment Evidence Guide:

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Followed OHS policies and procedures. 1.2 Selected and used personal protective equipment (PPE). 1.3 Reported incidents arising from hazards and risks to authority. 1.4 Emergency response plans and procedures are implemented. 1.5 Applied basic first aid procedure.
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Unit of Competency: **COMMUNICATE IN ENGLISH IN THE WORKPLACE**	**Nominal Duration:** 10 hrs.	**Unit Code:** SICIP-CON-MSB-3-G
Unit Descriptor: This unit covers the knowledge, skills and attitudes required to communicate in English in the workplace. It specifically includes tasks of reading and understanding workplace documents in English; writing simple workplace written communications in English; listening and comprehending to English conversations; and performing conversations in English.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	Performance Criteria
1. Read and understand workplace documents in English	1.1 Workplace documents are read and understood. 1.2 Visual information is interpreted.
2. Write simple workplace communications in English	2.1 Simple **routine workplace documents** are prepared using key words, phrases, simple sentences and **visual aids** are prepared. 2.2 Key information is written in the appropriate places in standard forms.
3. Listen and comprehend to English conversations	3.1 Active listening is demonstrated.
4. Perform conversations in English language	4.1 Conversation is performed in English with peers, customers and management to the required workplace standard.

Range of Variables

Variable	Range May Include but not limited to:
1. Routine workplace documents	1.1 Agenda 1.2 Simple reports such as progress and incident reports 1.3 Job sheets 1.4 Operational manuals 1.5 Brochures and promotional material 1.6 Visual and graphic materials 1.7 Standards 1.8 OHS information 1.9 Signs
2. Visual aids	2.1 Maps

	2.2 Diagrams 2.3 Forms 2.4 Labels 2.5 Graphs 2.6 Charts

Curricular Evidence Guide:

1. Underpinning Knowledge	1.1 Read workplace documents in English 1.2 Write simple routine workplace documents in English 1.3 Listen to conversation in English 1.4 Perform conversation in English 1.5 Interaction skills (i.e., teamwork, interpersonal skills, etc.) 1.6 Job roles, responsibilities and compliances
2. Underpinning Skills	2.1 Ability to read and understand workplace documents in English by using appropriate vocabulary and grammar, standard spelling and punctuation 2.2 Ability to write simple routine workplace documents in English such as: Schedules and agenda, job sheets, operational manuals and brochures and promotional material 2.3 Ability of listening in English and interpreting 2.4 Ability to perform conversation in English with peers, customers and management to the required workplace standard 2.5 Work effectively with others 2.5.1 Listening and questioning skills 2.5.2 Ability to follow simple directions
3. Underpinning Attitudes	3.1 Commitment to occupational health and safety practices 3.2 Promptness in carrying out activities 3.3 Tidiness and timeliness 3.4 Respect to peers, sub-ordinates and seniors in workplace 3.5 Environmental concern 3.6 Sincere and honest to duties
4. Resource Implications	The following resources must be provided: 4.1 Work place Procedure 4.2 Materials relevant to the proposed activity 4.3 All tools, equipment, material and documentation required 4.4 Relevant specifications or work instructions

Assessment Evidence Guide:

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Converse in English with peers and customers 1.2 Made reports of workplace documents in English
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Unit of Competency: **OPERATE IN A SELF-DIRECTED TEAM**	**Nominal Duration:** 10 hrs.	**Unit Code:** SICIP-CON-MSB-4-G
Unit Descriptor: This unit covers the knowledge, skills and attitudes required to operate in a self-directed team. It specifically includes tasks of identifying team goals and work processes; communicating and cooperating with team members; working and solving problems as a team member.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	Performance Criteria
1. Identify team goals and work processes	1.1 Team goals and collaborative decision-making processes are identified. 1.2 Roles and responsibilities of team members are identified. 1.3 Relationships within team and with other workers are identified.
2. Communicate and cooperate with team members	2.1 Effective interpersonal skills are used to interact with team members and to contribute to activities and objectives. 2.2 Formal and informal **forms of communication** are used effectively to support team achievement. 2.3 Diversity in character is respected and valued in team functioning. 2.4 Views and opinions of other team members are understood and valued. 2.5 Workplace terminology is used correctly to assist communication
3. Work as a team member	3.1 Duties, responsibilities, authorities, objectives and task requirements are identified and clarified with team. 3.2 Tasks are performed in accordance with organizational and team requirements, specifications and workplace procedures. 3.3 Team member's support with other members are made to ensure team achieves goals, awareness and requirements. 3.4 Agreed reporting lines are followed using standard operating procedure.
4. Solve problems as a team member	4.1 Current and potential problems faced by team are identified. 4.2 A solution to the problem is identified. 4.3 Problems are solved effectively and the outcome of the implemented solution is evaluated.

Range of Variables

Variable	Range May Include but not limited to:
1. Forms of communication	1.1 Agenda 1.2 Simple reports such as progress and incident reports. 1.3 Job sheets. 1.4 Operational manuals. 1.5 Brochures and promotional material. 1.6 Visual and graphic materials. 1.7 Standards. 1.8 OHS information. 1.9 Signs.

Curricular Evidence Guide:

1. Underpinning Knowledge	1.1 Team goals and collaborative decision-making processes 1.2 Roles and responsibilities of team members 1.3 Relationships within team and with other workers 1.4 Effective interpersonal skills to interact with team members 1.5 Effective formal and informal forms of communication 1.6 Value of diversity in team functioning. 1.7 Correct use of workplace terminology 1.8 Team's duties, responsibilities, authorities, objectives and task requirements 1.9 Support mechanism to other members of team to ensure achievements of goals. 1.10 Methods of identifying current and potential problems faced by a team 1.11 Effectively problems solving methods and evaluation of outcomes
2. Underpinning Skills	2.1 Identifying team goals and collaborative decision-making processes 2.2 Identifying roles and responsibilities of team members 2.3 Identifying relationships within team and with other workers 2.4 Using effective interpersonal skills to interact with team members and to contribute to activities and objectives 2.5 Using formal and informal forms of communication 2.6 Understanding and valuing views and opinions of other team members 2.7 Performing tasks in accordance with organizational and team requirements, specifications and workplace procedures. 2.8 Supporting other members of the team to ensure team achieves goals, awareness and requirements. 2.9 Identifying current and potential problems faced by the team

	2.10 Identifying solutions to the problem 2.11 Solving problems effectively and evaluating the outcome of the implemented solution
3. Underpinning Attitudes	3.1 Teamwork 3.2 Promptness in carrying out activities. 3.3 Tidiness and timeliness. 3.4 Respect to peers, sub-ordinates and seniors in workplace. 3.5 Sincere and honest to duties
4. Resource Implications	The following resources must be provided: 4.1 Workplace (simulated or actual) 4.2 Pens 4.3 Papers 4.4 Work books 4.5 Learning manuals

Assessment Evidence Guide:

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Identified team goals and work processes. 1.2 Communicated and cooperated with team members. 1.3 Worked as a team member. 1.4 Solved problems as a team member.
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

The Sector Specific Competencies

Unit of Competency: **APPLY GREEN PRACTICES IN CONSTRUCTION SECTOR**	**Nominal Duration:** 08 hrs.	**Unit Code:** SICIP-CON-MSB-1-S
Unit Descriptor: This unit covers the knowledge, skills and attitudes required for a worker to apply green practices in construction sector. It specifically includes the tasks of interpreting green concepts; minimizing resource use in the workplace; and implementing waste management practices.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	**Performance Criteria**
1. Interpret green concepts	1.1 **Principles of green practices in construction** are explained. 1.2 Key terms and symbols related to environmental sustainability in construction drawings and specifications are identified. 1.3 **Sources of environmental impacts** during construction activities are identified. 1.4 Construction activities contributing to environmental degradation, improper disposal of materials and excessive energy use are explained. 1.5 **Ways of mitigating environmental impacts** in construction are explained.
2. Minimize resource use in the workplace	2.1 Water, energy, and raw material consumption are documented. 2.2 **Recyclable and non-recyclable items** are identified. 2.3 Procedures to reduce resource consumption are implemented. 2.4 Sustainable alternatives to fossil-based energy resources are explored and applied.
3. Implement waste management practices	3.1 **Different types of construction waste** are identified. 3.2 Hazardous waste is disposed of according to environmental regulations. 3.3 Green habits to reduce waste in personal and professional life are practiced.

Range of Variables

Variable	Range May include but not limited to:
1. Principles of green practices in construction	1.1 Reducing energy consumption 1.2 6R for waste management 1.2.1 Refuse 1.2.2 Reduce 1.2.3 Reuse 1.2.4 Recycle 1.2.5 Recover 1.2.6 Repair 1.3 use of sustainable building materials with low environmental impact 1.4 Recycling materials 1.5 Sustainable transportation
2. Sources of environmental impacts	2.1 Air pollution 2.1.1 Dust generation 2.1.2 Emission from machinery and vehicles 2.2 Water pollution 2.2.1 Concrete washout 2.2.2 Debris and sediments 2.2.3 Chemicals leakage 2.3 Soil degradation 2.3.1 Erosion 2.3.2 Contamination from chemicals 2.4 Noise pollution 2.4.1 Construction machinery noise 2.4.2 Traffic noise 2.5 Waste generation 2.5.1 Construction waste 2.5.2 Non-recyclable and hazardous materials 2.6 Resource Depletion 2.6.1 Excessive use of raw materials 2.6.2 Non-renewable material use like use of fossil fuel, steel cement etc
3. Ways of mitigating environmental impacts	3.1 Utilizing Energy-Efficient Equipment 3.2 Adopting Renewable Energy Sources 3.3 Implementing Site Protection Measures 3.4 Using Reusable Materials 3.5 Choosing Sustainable Materials 3.6 Using Noise-Reducing Equipment and scheduling work appropriately 3.7 Optimizing Logistics and Delivery

4. Recyclable and non-recyclable items	4.1 Recyclable items 4.1.1 Metal 4.1.2 Wood 4.1.3 Brick 4.1.4 Concrete 4.2 Non-recyclable items 4.2.1 Paints and coatings 4.2.2 Contaminated materials like lead paint, asbestos 4.2.3 Treated wood
5. Different types of construction waste	5.1 Concrete waste 5.2 Wood waste 5.3 Metal waste 5.4 Brick and masonry waste 5.5 Plastic waste 5.6 Electrical system waste 5.7 Gypsum board waste 5.8 Soil and excavation waste 5.9 Packaging waste 5.10 Organic waste

Curricular Content Guide

1. Underpinning Knowledge	1.1 Principles of green practices in construction sector 1.2 Key terms and symbols related to environmental sustainability in construction drawings 1.3 Sources of environmental impacts in construction 1.4 Methods to minimize resource consumption (water, energy, raw materials) 1.5 Waste management practices 1.6 Sustainable alternatives to fossil-based energy resources 1.7 Personal and workplace habits for reducing environmental impact
2. Underpinning Skills	2.1 Identifying environmental impacts in construction activities 2.2 Applying methods to minimize resource use in the workplace 2.3 Implementing waste management practices 2.4 Following procedures to safely dispose of hazardous materials 2.5 Documenting water, energy, and material consumption in the workplace 2.6 Performing green practices in personal and professional activities
3. Underpinning Attitudes	3.1 Commitment to sustainable and eco-friendly construction practices

	3.2 Active participation in reducing resource use and waste generation 3.3 Eagerness to adopt green habits in professional life 3.4 Promptness in implementing sustainable practices in construction activities 3.5 Tidiness and concern for environmental cleanliness 3.6 Compliance with safety standards and environmental regulations
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 Different types of construction hand tools and power tools 4.3 Safety gear 4.4 Pens 4.5 Papers 4.6 Work books 4.7 Operation and maintenance manuals 4.8 Waster segregation bins

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Explained the principles of green practices in construction 1.2 Identified sources of environmental impacts during construction activities 1.3 Implemented procedures to minimize resource use (water, energy, raw materials) 1.4 Disposed of hazardous waste in compliance with safety and environmental standards 1.5 Practiced green habits to reduce waste in both personal and professional life
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Unit of Competency: **TRANSLATE DRAWINGS, PLANS AND SPECIFICATIONS**	**Nominal Duration:** 10 hrs.	**Unit Code:** SICIP-CON-MSB-2-S
Unit Descriptor: This unit covers the knowledge, skills and attitudes required for a worker to translate drawings, plans and specifications. It specifically includes the tasks of accessing information from manuals, designs and plans; interpreting drawings and specifications from manuals, designs and plans; and storing manuals, designs and plans.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	Performance Criteria
1. Access information from manuals, designs and plans	1.1 Appropriate **manuals** are identified and accessed. 1.2 Version and date of the manual are checked to ensure up-to-date specifications of tools, equipment, materials and procedures.
2. Interpret drawings and specifications from manuals, designs and plans	2.1 Relevant **drawings** and **specifications** are correctly recognized from manuals, designs and plans. 2.2 Terms and abbreviations are recognized. 2.3 **Signs and symbols** are interpreted.
3. Store manuals, designs and plans	3.1 Manuals, designs and plans are collected and packed. 3.2 Manuals, designs and plans are stored to prevent damage, and ready access and updating of information when required.

Range of Variables

Variable	Range May include but not limited to:
1. Manuals	1.1 Manufacturer's specification manual 1.2 Repair manual 1.3 Maintenance procedure manual 1.4 Periodic maintenance manual 1.5 Quality manual 1.6 Instruction manual
2. Drawings	2.1 Technical drawings 2.2 Sketches
3. Specifications	3.1 Product specifications 3.2 Performance specifications 3.3 Method specifications

4. Signs and symbols	4.1 Refers to all signs and symbols associated in the construction sector

Curricular Content Guide

1. Underpinning Knowledge	1.1 Types of construction manuals 1.2 Identification of signs and symbols 1.3 Identification of units of measurement 1.4 Identification of units of conversion 1.5 Drawings and specifications 1.6 Terms and abbreviations used
2. Underpinning Skills	2.1 Checking version and date of the manual to ensure up-to-date specifications of tools, equipment, materials and procedures 2.2 Identifying relevant drawings and specifications correctly 2.3 Identifying terms and abbreviations 2.4 Identifying signs and symbols 2.5 Interpreting drawings and specifications 2.6 Interpreting schedules, dimensions and specifications contained in the drawings 2.7 Storing manuals
3. Underpinning Attitudes	3.1 Eagerness to learn 3.2 Orderliness 3.3 Cleanliness
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 Different types of construction manuals and literatures 4.3 Pens 4.4 Papers 4.5 Work books

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Checked version and date of the manual to ensure up-to-date specifications of tools, equipment, materials and procedures. 1.2 Identified relevant drawings and specifications correctly. 1.3 Identified terms and abbreviations. 1.4 Identified signs and symbols. 1.5 Interpreted drawings and specifications. 1.6 Interpreted schedules, dimensions and specifications contained in the drawings.

2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Unit of Competency: **WORK WITH HAND TOOLS AND POWER TOOLS**	**Nominal Duration:** 10 hrs.	**Unit Code:** SICIP-CON-MSB-3-S
Unit Descriptor: This unit covers the knowledge, skills and attitudes required for a worker to work with hand tools and power tools properly and safely. It specifically includes the tasks of inspecting hand tools and power tools for usability; using hand tools properly and safely; operating power tools properly and safely; and cleaning/maintaining hand tools and power tools after use.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	Performance Criteria
1. Inspect hand tools and power tools for usability	1.1 Appropriate tools are selected. 1.2 Application of tools to job requirement is determined. 1.3 Usability of tools are checked and verified. 1.4 **Hand tools** and **power tools** are prepared. 1.5 Sources of power supply for power tools identified.
2. Use hand tools properly and safely	2.1 Appropriate hand tool for the job is used. 2.2 Proper and safe use/operation is applied in the different types of hand tools. 2.3 **Safety precautions** is observed when using hand tools. 2.4 Unsafe or faulty tools are identified and marked for repair.
3. Operate power tools properly and safely	3.1 Power supply outlet and electrical cord are inspected and confirmed safe for use in accordance with established workplace safety requirements. 3.2 Proper sequence of operation is applied in using power tools to produce results. 3.3 Power tools are used safely in accordance to manufacturer's operating specification.
4. Clean/maintain hand tools and power tools after use	4.1 Dust and foreign matters are removed from power tools in accordance to workplace standard. 4.2 Condition of tools is checked after use 4.3 Appropriate lubricant is applied after use and prior to storage 4.4 **Measuring tools** are checked and calibrated. 4.5 Defective tools, instruments, power tools and accessories are inspected and corrected or replaced.

Range of Variables

Variable	**Range** May include but not limited to:	
1. Hand tools	1.1 Adjustable spanners 1.2 Auger bits 1.3 Bars (crow and pitch) 1.4 Bench vise 1.5 Bolt cutters 1.6 C-clamp 1.7 Chisels 1.8 Crosscut saws 1.9 Die and stock 1.10 Drill bits 1.11 Files of all cross-sectional shapes and types 1.12 Gouges 1.13 Grin let 1.14 Hacksaw 1.15 Hammer 1.16 Hand drill 1.17 Hand saw 1.18 Measuring Tapes 1.19 Nips 1.20 Paint Brushes/Rollers	1.21 Pliers 1.22 Plumb bob 1.23 Punches 1.24 Rip saw 1.25 Scrapers 1.26 Screwdrivers 1.27 Sealant Gun 3 1.28 Shovel/Spades 1.29 Sledge Hammers 1.30 Sockets 1.31 Spanners and Wrenches 1.32 Spatula/Putty Knives 1.33 String Lines 1.34 Taps 1.35 Trowels and Floats 1.36 Vice grip 1.37 Wire Cutters 1.38 Wood Planners 1.39 Picks/Mattocks
2. Power tools	2.1 Power drills 2.2 Nail guns 2.3 Angle grinders 2.4 Pneumatic wrenches 2.5 Grinders 2.6 Nibblers 2.7 Jack hammer	2.8 Threading machine 2.9 Sanders machine 2.10 Planers 2.11 Routers 2.12 Pedestal drills 2.13 Grinders
3. Safety precautions	3.1 Use of appropriate PPEs 3.2 Proper hand, feet and eye coordination 3.3 Safe condition of electrical outlets, cords and lamps 3.4 Working environment 3.5 Safe operating condition of hand tools and power tools 3.6 Awareness to OH&S requirements	
4. Measuring instruments	4.1 Measuring tape 4.2 Hose level 4.3 Water level 4.4 Caliper 4.5 Steel rule	

	4.6 Protractor 4.7 Tri-square

Curricular Content Guide

1. Underpinning Knowledge	1.1 Types of tools, functions and use 1.2 Types of Hand tools and their proper use and techniques 1.3 Types of Power tools, use and safe handling method 1.4 Technical application of tools 1.5 Procedures in the use of hand tools and power tools 1.6 Policies and procedures for occupational health and safety 1.7 Use of PPE 1.8 Handling of tools and equipment 1.9 Reporting and documentation 1.10 Preventive maintenance 1.11 Methods and techniques 1.12 Quality procedures 1.13 Storage procedures
2. Underpinning Skills	2.1 Using appropriate hand tool for the job 2.2 Observing safety precautions when using hand tools 2.3 Using power tools correctly and safely in accordance to manufacturer's operating specification. 2.4 Checking condition of tools after use 2.5 Applying appropriate lubricant on hand tools and power tools after use and prior to storage 2.6 Inspecting and correcting or replacing defective tools, instruments, power tools and accessories 2.7 Storing Tools and power tools safely in appropriate location
3. Underpinning Attitudes	3.1 Commitment to occupational health and safety practices 3.2 Environmental concerns 3.3 Eagerness to learn 3.4 Tidiness and timeliness 3.5 Concern to proper use of tools 3.6 Orderliness
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 Different types of construction hand tools and power tools 4.3 Pens 4.4 Papers 4.5 Work books 4.6 Tools and power tools operating and maintenance manuals

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Used appropriate hand tool for the job. 1.2 Observe safety precautions when using hand tools. 1.3 Used power tools safely in accordance to manufacturer's operating specification. 1.4 Cleaned and maintained hand tools and power tools after use and prior to storage. 1.5 Inspected and corrected or replaced defective tools, instruments, power tools and accessories. 1.6 Stored tools and power tools safely in appropriate location.
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Unit of Competency: **CARRY OUT MEASUREMENTS AND CALCULATIONS**	**Nominal Duration:** 12 hrs.	**Unit Code:** SICIP-CON-MSB-4-S
Unit Descriptor: This unit covers the knowledge, skills and attitudes required for a worker to carry-out measurements and calculations. It specifically includes the tasks of checking usability of measuring devices; carrying out accurate construction work measurements; executing simple construction work calculations; and cleaning and maintaining measuring instruments.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	Performance Criteria
1. Check usability of measuring devices	1.1 Appropriate **measuring device** is selected for the job. 1.2 Applications of measuring device is determined. 1.3 Usability of measuring device is checked and verified. 1.4 Measuring device is prepared.
2. Carry out accurate construction work measurements	2.1 Measurements are obtained using appropriate measuring device. 2.2 **Systems of measurements** are identified and converted where necessary. 2.3 Results are confirmed and recorded.
3. Execute simple construction work calculations	3.1 Simple calculations involving **four basic mathematical operations** are executed. 3.2 Other operations are used to complete tasks in construction works. 3.3 Appropriate formulas for calculating quantities of materials are selected. 3.4 Calculations are performed and verified. 3.5 Material quantities are calculated. 4.6 Results are interpreted and communicated to authority.
4. Clean and maintain measuring instruments	4.1 Dust and foreign matters are removed from measuring instrument. 4.2 Check condition of instrument. 4.3 Apply appropriate lubricant after use and prior to storage. 4.4 Measuring instruments are checked and calibrated. 4.5 Store instrument in accordance to workplace procedure.

Range of Variables

Variable	Range May include but not limited to:
1. Measuring device	1.1 Micrometers 1.2 Slide calipers 1.3 Steel tape (measuring tape) 1.4 Steel rule 1.5 Tri-square 1.6 Carpenter's square 1.7 Water level 1.8 Hose level 1.9 Thermometers 1.10 String
2. Systems of measurements	2.1 ISO standard 2.2 English system 2.3 Metric system
3. Four basic mathematical operations	3.1 Addition 3.2 Subtraction 3.3 Multiplication 3.4 Division

Curricular Content Guide

1. Underpinning Knowledge	1.1 Types and principles of operation of measuring devices 1.2 The ISO standard of measurements 1.3 Methods of measurement and calculation 1.4 Fraction and decimals 1.5 Linear measurement 1.6 Units of conversion and conversion factors in measurements 1.7 Dimensioning and fits and tolerances 1.8 Calculating ratio and proportion 1.9 Care in the use of measuring devices
2. Underpinning Skills	2.1 Selecting appropriate measuring device for the job 2.2 Checking and verifying usability of measuring device 2.3 Obtaining measurements using appropriate measuring device. 2.4 Confirming measurements and recording results 2.5 Carrying out simple calculations involving four basic mathematical operations 2.6 Calculating material quantities 2.7 Interpreting and communicating results to authority 2.8 Cleaning and storing measuring instruments

3. Underpinning Attitudes	3.1 Cleanliness/tidiness 3.2 Commitment to occupational health and safety practices 3.3 Environmental concerns 3.4 Eagerness to learn 3.5 Timeliness and orderliness 3.6 Respect for rights of peers and seniors in workplace.
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 Different types of measuring and checking tools/instruments 4.3 Pens 4.4 Papers 4.5 Work books 4.6 Measuring tools operating and maintenance manual

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Selected appropriate measuring device for the job 1.2 Checked and verified usability of measuring device 1.3 Obtained measurements using appropriate measuring device. 1.4 Confirmed measurements and recorded results 1.5 Carried out Simple calculations involving four basic mathematical operations 1.6 Calculated Material quantities 1.7 Interpreted and communicated Results to authority
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Occupation Specific Competencies

Unit of Competency: **MAKE MASONRY MORTAR/STUCCO**	**Nominal Duration:** 20 hrs.	**Unit Code:** SICIP-CON-MSB-1-O
Unit Descriptor: This unit covers the knowledge, skills and attitudes required for a worker to make masonry mortar/stucco. It specifically includes the tasks of gathering mortar making tools, equipment and materials; preparing mortar mixing box/containment; making mortar/stucco; and cleaning/safekeeping the work area.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	**Performance Criteria**
1. Gather mortar making tools, equipment and materials in line with the work task	1.1 **PPE** are selected and used. 1.2 **Tools, equipment & materials** are selected and gathered properly. 1.3 Tools, equipment & materials are checked for usability and quality.
2. Prepare mortar mixing box/containment	2.1 Mortar mixing box/containment is cleaned. 2.2 Mortar mixing box/containment is prepared.
3. Make mortar/stucco	3.1 Sand and cement ratio are maintained and measured. 3.2 Materials are laid on mortar mixing box/containment as per instruction. 3.3 Sand, cement and water are mixed in accordance with specification. 3.4 **Transport** is used to carry materials at the working place.
4. Clean and maintain the work area	4.1 Tools & equipment are cleaned and stored in its proper storage. 4.2 Mixing box/containment is cleaned. 4.3 Waste materials are disposed in proper place.

Range of Variables

Variable	**Range** May include but not limited to:
1. PPE	1.1 Safety helmet 1.2 Safety shoes 1.3 Hand gloves 1.4 Apron
2. Tools, equipment & materials	2.1 Tools; 2.1.1 Measuring box

	2.1.2 Sieve 2.1.3 Shovel 2.1.4 Pan 2.1.5 Bucket 2.1.6 Mug 2.2 Equipment 2.2.1 Mixer 2.2.2 Mixing box 2.3 Materials 2.3.1 Cement 2.3.2 Sand 2.3.3 Gravel 2.3.4 Water 2.3.5 Cotton rag
3. Transport	3.1 Pail: plastic/metal 3.2 Trolley 3.3 Wheel borrow 3.4 Rickshaw van 3.5 Low bed truck

Curricular Content Guide

1. Underpinning Knowledge	1.1 Mortar mixing tools and equipment and their function 1.2 Mortar mixing ratio 1.3 Mortar preparation procedure
2. Underpinning Skills	2.1 Selecting and using PPE 2.2 Selecting and gathering tools, equipment & materials 2.3 Preparing platform area as per workplace requirements 2.4 Maintaining sand and cement ratio measurement 2.5 Mixing sand, cement and water are maintained 2.6 Cleaning Tools & equipment 2.7 Cleaning platform area 2.8 Disposing waste materials in designated place
3. Underpinning Attitudes	3.1 Patience 3.2 Commitment to occupational health and safety practices 3.3 Environmental concerns 3.4 Eagerness to learn 3.5 Tidiness and timeliness 3.6 Respect for rights of peers and seniors in workplace
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 Mortar preparation equipment, tools and materials 4.3 Work instruction sheet

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Selected and gathered tools, equipment and materials. 1.2 Prepared platform area as per workplace requirements. 1.3 Maintained and measured sand and cement ratio. 1.4 Mixed sand, cement and water. 1.5 Cleaned tools and equipment. 1.6 Cleaned platform area. 1.7 Disposed waste materials in designated place.
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Unit of Competency: **PERFORM MASONRY STRUCTURE INSTALLATION**	**Nominal Duration:** 72 hrs.	**Unit Code:** SICIP-CON-MSB-2-O
Unit Descriptor: This unit covers the knowledge, skills and attitudes required for a worker to carry-out stone works and brick works. It specifically includes the tasks of organizing masonry working tools, equipment and materials at site; performing soling/ pavement works; performing concrete work for base preparation; carrying out brick, block and stone works; and cleaning/maintaining the workplace.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	Performance Criteria
1. Organize masonry working tools, equipment and materials at site	1.1 **PPE** is selected & used. 1.2 Masonry working **tools, equipment** and **materials** are gathered and checked for usability/quality. 1.3 Quality of bricks are checked and segregated. 1.4 Bricks/blocks are organized at work site in accordance to workplace requirements. 1.5 Transport is used for carrying materials. 1.6 Scaffolding is set for masonry works.
2. Perform soling/ pavement works	2.1 Base is selected, cleared, and prepared according to the building plan. 2.2 Forms for pavement are constructed as per workplace requirements. 2.3 Sand is placed and the base is leveled and compacted according to specifications. 2.4 Paving lines are set and aligned correctly at both ends following the specifications. 2.5 Bricks are positioned, leveled, and gaps are filled with suitable **fillers**. 2.6 Final checks are made, and corrections are carried out according to requirements. 2.7 Curing time is observed before use.
3. Perform concrete work for base preparation	3.1 Base is prepared and leveled in line with the construction plan and specifications. 3.2 Lumber and form boards are installed and leveled in accordance with **construction plan**. 3.3 Cement, sand, and aggregates are measured and mixed in accordance with specified ratios.

	3.4 Reinforcement bars are placed as per the construction drawing and secured properly. 3.5 Concrete is poured into forms and surface is leveled to ensure even distribution and compaction. 3.6 Curing is carried out as per workplace requirements to ensure proper strength development. 3.7 Final inspection is conducted, and corrections are made to ensure the concrete meets required specifications.
4. Carry out brick, block and stone works	4.1 Centre lines and levels are marked, and string lines are set in line with the drawings. 4.2 Bricks/blocks/ stones are soaked and prepared for laying as per instructions. 4.3 Cement mortar is applied uniformly, and bricks/blocks are laid and aligned according to specified bond patterns. 4.4 Brick closers and bats are used to achieve required shapes and sizes during installation. 4.5 Mortar joints are filled, and brick courses are aligned vertically and horizontally as per the plan. 4.6 Racking out of brick joints is performed in accordance with instructions.
5. Clean/maintain the workplace	5.1 Tools and equipment are cleaned. 5.2 Work place is cleaned. 5.3 Waste materials are disposed in proper place.

Range of Variables

Variable	**Range** May include but not limited to:
1. PPE	1.1 Skull guard/helmet 1.2 Dust musk 1.3 Goggles 1.4 Safety shoes 1.5 Safety gloves 1.6 Proper working clothes 1.7 Body harness/Safety belt
2. Tools & equipment	2.1 Tools 2.1.1 Measuring Tape (30m) 2.1.2 Tri- square 2.1.3 Pocket tape (3m) 2.1.4 Claw hammer / crow bar 2.1.5 Shovel 2.1.6 Center pins 2.1.7 Water tube level 2.1.8 Water level (precision)

	2.1.9 Masonry Trowel 2.1.10 Point trowel 2.1.11 Concrete pans 2.2 Equipment 2.2.1 Truck 2.2.2 Trolley 2.1.1 Pick up 2.1.2 Van 2.1.3 Cement mixer 2.1.4 Cement mixing board
3. Materials	3.1 Cement 3.2 Sand 3.3 Gravel 3.4 Brick 3.5 Block 3.6 Stone 3.7 Clean Water 3.8 Cotton rags
4. Fillers	4.1 Sand 4.2 Cement grout 4.3 Polyurethane concrete crack sealant 4.4 Polymer based sealers
5. Construction plan	5.1 Civil Drawings 5.2 Architectural plans 5.3 Layout Plan 5.4 Masonry plan 5.5 Electrical plans 5.6 Plumbing plan 5.7 Ventilation plan 5.8 Fire safety plan

Curricular Content Guide

1. Underpinning Knowledge	1.1 Types of masonry materials used in construction. 1.2 Tools and equipment required for masonry, including trowels, levels, hammers, and scaffolding. 1.3 Quality standards for bricks, blocks, and other materials, including how to assess usability. 1.4 Methods of preparing the worksite, including base preparation for pavement and concrete works. 1.5 Correct mixing ratios for cement, sand, and aggregates in concrete work.

	1.6 Understanding of construction plans, including base preparation, brick laying patterns, and reinforcement placement. 1.7 Personal protective equipment (PPE) requirements and safety practices in masonry work. 1.8 Curing processes for concrete and brickwork, and inspection procedures for quality assurance. 1.9 Methods for cleaning tools, disposing of waste, and maintaining an organized worksite.
2. Underpinning Skills	2.1 Select appropriate PPE and use it effectively. 2.2 Gather and inspect tools and materials for usability. 2.3 Organize bricks, blocks, and other materials on-site according to requirements. 2.4 Set up scaffolding safely for masonry works. 2.5 Clear and prepare the base for soling and concrete in line with specifications. 2.6 Measure and mix concrete ingredients in specified ratios. 2.7 Position and level bricks, blocks, or stones according to bond patterns. 2.8 Install form boards and secure reinforcement bars. 2.9 Conduct inspections and make corrections to ensure the quality of work. 2.10 Clean tools and maintain the workspace while disposing of waste properly.
3. Underpinning Attitudes	3.1 Cleanliness/tidiness 3.2 Commitment to occupational health and safety practices 3.3 Environmental concerns 3.4 Eagerness to learn 3.5 Timeliness 3.6 Orderliness 3.7 Respect to peers and seniors in workplace
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 Different types of tools and equipment 4.3 Materials and consumables 4.4 Pens 4.5 Papers 4.6 Work books 4.7 Instruction manual

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Ensured PPE selection and proper use. 1.2 Organized materials and tools efficiently on-site. 1.3 Prepared base for soling and concrete according to construction plans. 1.4 Mixed and applied concrete following specified ratios and requirements. 1.5 Laid bricks, blocks, and stones according to bond patterns and design specifications. 1.6 Observed curing times to ensure proper strength development. 1.7 Conducted inspections thoroughly and made corrections to meet specifications. 1.8 Maintained a clean worksite with proper waste disposal procedures followed.
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Unit of Competency: **ACCOMPLISH MASONRY SURFACE PLASTERING**	**Nominal Duration:** 40 hrs.	**Unit Code:** SICIP-CON-MSB-3-O
Unit Descriptor: This unit covers the knowledge, skills and attitudes required for a worker to accomplish masonry surface plastering for construction. It specifically includes the tasks of cleaning the masonry surface area prior to plastering; mixing plaster materials; applying plaster on plain surfaces; applying plaster to corners; and cleaning/maintaining the workplace.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	Performance Criteria
1. Clean the masonry surface area prior to plastering	1.1 Appropriate **PPE** is gathered and used. 1.2 Scaffolding is prepared as required. 1.3 **Tools, equipment** and **materials** are selected and prepared. 1.4 Racking out of joints and chipping are performed as required. 1.5 Surface is cleaned and washed for plastering.
2. Mix plaster materials	2.1 **Foreign materials** and larger particles are separated from sand with the help of sieve/screen. 2.2 Required quantity of sand is measured and keep them in a dry and plane place. 2.3 Cement is spread on sand with the right quantity in accordance to specification. 2.4 Dry cement and sand is mixed the until the mixture is uniform. 2.5 Water is gradually added and mixed to form the specified consistency.
3. Apply plaster on plain surfaces	3.1 Mortar is applied on masonry surface. 3.2 Surface level is checked using appropriate leveling tools. 3.3 Uneven surface is scratched and repeat while plaster is still soft. 3.4 Wooden trowel and wetted foam is used to finish the surface. 3.5 Finished plastered surface is cured in accordance to workplace specification.
4. Apply plaster to corners	4.1 **Corner plastering tools** are gathered. 4.2 Enough amount of plaster is applied to a corner area. 4.3 Corner is initially set using a flat trowel. 4.4 Setting the corner is finished using a corner trowel.

	4.5 Check alignment, perpendicularity, angularity and adjusted where necessary. 4.6 Finished plastered corner is cured in accordance to workplace specification.
5. Clean/maintain the workplace	5.1 Tools and equipment are cleaned. 5.2 Work place is cleaned. 5.3 Waste materials are disposed in proper place.

Range of Variables

Variable	**Range** May include but not limited to:
1. PPE	1.1 Skull guard/helmet 1.2 Dust musk 1.3 Goggles 1.4 Safety shoes 1.5 Safety gloves 1.6 Proper working clothes 1.7 Body harness/Safety belt
2. Tools & equipment	2.1 Tools 2.1.1 Measuring Tape (30m) 2.1.2 Tri- square 2.1.3 Pocket tape (3m) 2.1.4 Claw hammer / crow bar 2.1.5 Shovel 2.1.6 Water tube level 2.1.7 Water level (precision) 2.1.8 Masonry Trowel 2.1.9 Point trowel 2.1.10 Concrete pans 2.2 Equipment 2.2.1 Truck 2.2.2 Trolley 2.2.3 Pick up 2.2.4 Van 2.2.5 Mixing platform
3. Materials	3.1 Cement 3.2 Sand 3.3 Water 3.4 Cotton rags 3.5 Concrete
4. Foreign materials	4.1 Plastic 4.2 Paper 4.3 Leaves

	4.4 Stone 4.5 Wood Scrap
5. Corner plastering tools	5.1 Plaster hawk 5.2 Wooden flat trowel 5.3 Metal flat trowel 5.4 Corner trowel 5.5 Pointed trowel

Curricular Content Guide

1. Underpinning Knowledge	1.1 Safe work practices and first aid regulations 1.2 Materials staging procedure 1.3 Chipping and racking methods/techniques 1.4 Surface sweeping and watering 1.5 Mortar preparation 1.6 Plastering procedure and techniques 1.7 Plastered surface leveling procedure and techniques
2. Underpinning Skills	2.1 Preparing scaffolding as required 2.2 Selecting and preparing tools, equipment and materials 2.3 Staging materials properly and must be free from any foreign matters 2.4 Performing racking out of joints and chipping as required. 2.5 Preparing surface for plastering 2.6 Screening sand and cement mixture before applying water 2.7 Preparing mortar as per specified ratio of sand, cement and clean water 2.8 Applying distribution of mortar on the surface evenly and leveled 2.9 Curing plastering surface as required 2.10 Setting jamb 2.11 Preparing sill and set 2.12 Checking and adjusting right angle, acute angle and obtuse angles
3. Underpinning Attitudes	3.1 Cleanliness/tidiness 3.2 Commitment to occupational health and safety practices 3.3 Environmental concerns 3.4 Eagerness to learn 3.5 Timeliness and orderliness 3.6 Respect for rights of peers and seniors in workplace
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 Different types of tools and equipment 4.3 Materials and consumables 4.4 Pens 4.5 Papers

	4.6 Work books 4.7 Instruction manual

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Prepared surface for plastering. 1.2 Screened sand and cement mixture before applying water. 1.3 Mixed dry cement and sand with water until the mixture is uniform and within specified consistency. 1.4 Applied cement plaster on masonry surface. 1.5 Checked surface level using appropriate leveling tools. 1.6 Finished setting the corner using a corner trowel 1.7 Checked alignment, perpendicularity, angularity. and adjusted where necessary. 1.8 Cured plastered surfaces and corner in accordance to workplace specification.
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Unit of Competency: **APPLY WATERPROOFING ACTIVITIES IN CONSTRUCTION**	**Nominal Duration:** 24 hrs.	**Unit Code:** SICIP-CON-MSB-4-O
Unit descriptor: This unit covers the knowledge, skills and attitudes required for a worker to apply waterproofing activities in construction. It specifically includes the tasks of organizing work area for waterproofing; preparing concrete prior to waterproofing; applying waterproofing material; performing other waterproofing considerations; and cleaning/maintaining the workplace.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	Performance Criteria
1. Organize work area for waterproofing	1.1 **PPE** is selected and used. 1.2 Work instructions and operational details are obtained for relevant information, planning and preparation. 1.3 Signage and barricade requirements are identified and removed. 1.4 **Tools and equipment** are selected. 1.5 **Materials** appropriate to the work application are identified, obtained & prepared. 1.6 Environmental requirements are identified and conformed.
2. Prepare concrete prior to waterproofing	2.1 Drawings are examined for performance requirements and design requirements. 2.2 Work site is visited and work requirements are confirmed. 2.3 Waterproofing work is determined in relation to structural elements. 2.4 Waterproofing materials are identified. 2.5 Repairs to damaged areas are made. 2.6 Application of bond-breaker and waterproofing installation is identified. 2.7 Potential faults, contingencies and techniques are identified.
3. Apply waterproofing material	3.1 Waterproofing material is checked for conformity and compatibility with substrate material. 3.2 Substrates to be waterproofed are prepared. 3.3 Substrates are prime coated with waterproofing material. 3.4 Flashings are prepared and ready for placement and fixing. 3.5 Reinforcing material is set out and cut for waterproofing junctions and surface requirements. 3.6 Waterproofing membrane is prepared for installation. 3.7 Waterproofing material is mixed or prepared. 3.8 Waterproofing materials are applied. 3.9 Quality of works is checked and defects are rectified.

4. Perform other waterproofing considerations	4.1 Finishing requirements are applied in accordance to waterproofing plan. 4.2 Suitable roof sealer is applied if cast is used in place of concrete. 4.3 Drainage is checked to be functional for proper flow of water.
5. Clean/maintain the workplace	4.1 Tools and equipment are cleaned and stored. 4.2 Work area is cleaned. 4.3 Waste materials are disposed in proper place

Range of Variables

Variable	**Range** May include but not limited to:
1. PPE	1.1 Skull guard/helmet 1.2 Dust musk. 1.3 Goggles. 1.4 Safety shoes. 1.5 Safety gloves 1.6 Proper working clothes 1.7 Body harness/Safety belt
2. Tools & equipment	2.1 Tools 2.1.1 Measuring Tape (30m) 2.1.2 Tri- square 2.1.3 Pocket tape (3m) 2.1.4 Hammer 2.1.5 Shovel 2.1.6 Cold chisel 2.1.7 Levelling hose 2.1.8 Spirit level 2.1.9 Masonry Trowel 2.1.10 Pointed trowel 2.1.11 Foam / Sponge 2.1.12 Concrete pans 2.1.13 Wooden float 2.1.14 Steel float 2.1.15 Brush 2.1.16 Nylon string 2.1.17 Plumb bob 2.2 Equipment 2.2.1 Sand blasting equipment 2.2.2 Mixing board 2.2.3 Edger / Grinder 2.2.4 Scaffolding / ladder

	2.2.5 Truck 2.2.6 Concrete mixer 2.2.7 Concrete pump 2.2.8 Trolley 2.2.9 Pick up
3. Materials	3.1 Cement 3.2 Concrete 3.3 Sand (screened) 3.4 Stone/brick chips 3.5 Waterproofing reagent 3.6 Water 3.7 Roof sealer

Curricular Content Guide

1. Underpinning Knowledge	1.1 Work instruction and operational detail 1.2 Signage and barricade identification 1.3 Drawings interpretation 1.4 Bond breaker application 1.5 Water proofing procedures and techniques 1.6 Potential faults identification techniques 1.7 Water proofing materials checking method and technique 1.8 Water proofing membrane preparation 1.9 Water proofing materials mixing
2. Underpinning Skills	2.1 Obtaining work instructions and operational details for relevant information, planning and preparation. 2.2 Selecting and gathering PPEs, waterproofing materials, tools and equipment 2.3 Identifying application of bond-breaker and waterproofing installation 2.4 Checking waterproofing material for conformity and compatibility with substrate material 2.5 Preparing substrates to be waterproofed 2.6 Prime coating substrates with waterproofing material. 2.7 Preparing flashings and ready for placement and fixing. 2.8 Preparing waterproofing membrane for installation. 2.9 Mixing or preparing waterproofing material 2.10 Applying waterproofing materials 2.11 Checking Quality of works and rectifying defects 2.12 Cleaning work area and storing tools and equipment
3. Underpinning Attitudes	3.1 Cleanliness/tidiness 3.2 Commitment to occupational health and safety practices 3.3 Environmental concerns

	3.4 Eagerness to learn 3.5 Timeliness and orderliness 3.6 Respect for rights of peers and seniors in workplace 3.7 Orderliness
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 Different types of waterproofing work tools and equipment 4.3 Waterproofing materials and consumables 4.4 Pens 4.5 Papers 4.6 Work books 4.7 Waterproofing work instruction manual

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Identified application of bond-breaker for waterproofing installation 1.2 Prepared substrates to be waterproofed 1.3 Prime coated substrates with waterproofing material. 1.4 Mixed or prepared waterproofing material 1.5 Applied waterproofing materials 1.6 Quality of works is checked and defects are rectified 1.7 Applied finishing requirements in accordance to waterproofing plan 1.8 Applied suitable roof sealer if cast is used in place of concrete for slabs
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Unit of Competency: **PERFORM FABRICATION WORKS**	**Nominal Duration:** 32 hrs.	**Unit Code:** SICIP-CON-MSB-5-O
Unit descriptor: This unit covers the knowledge, skills and attitudes required for a worker to perform fabrication works when performing steel binding and fabrication activities. It specifically includes the tasks of cutting steel re-bars; bending main bars using manual benders; bending main bar using bending machine; bending stirrups using manual bender, bending stirrups using bending machine; and cleaning/maintaining the workplace.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	Performance Criteria
1. Cut steel re-bars	1.1. Cutting tools/equipment are selected in accordance with steel **re-bar size and type.** 1.2. Steel re-bars are accurately measured and marked ready for cutting. 1.3. Steel re-bars are cut using appropriate cutting tools/ equipment based on cutting list. 1.4. Cut steel re-bars are arranged in designated area according to workplace requirements. 1.5. Excess steel re-bars are gathered and disposed in accordance with workplace procedures. 1.6. **Relevant OHS guidelines** are applied.
2. Bend main bars using manual benders	2.1 Appropriate bending tools and equipment are prepared in accordance with the work requirements. 2.2 Bending forms/jigs are installed according to cutting list specifications. 2.3 Main bars are manually bended according to required **bending pattern**. 2.4 Bended main bars are stocked pile at the designated storage area. 2.5 Relevant OHS guidelines are applied.
3. Bend main bar using bending machine	3.1 Bending machine components are checked and maintained in accordance with manufacturer's specifications. 3.2 Bending guides/forms are set based on re-bar size and shape. 3.3 Main steel bars are bended according to required shape and quantity.

	3.4 Bended main steel bars are stock-piled at the designated storage area. 3.5 Relevant OHS guidelines are applied.
4. Bend stirrups using manual bender	4.1 Appropriate bending tools and equipment are prepared in accordance with the work requirements. 4.2 Stirrup bending guides/forms are installed according to cutting list specifications. 4.3 Stirrups are manually bended according to required **stirrup shapes** and quantity. 4.4 All bended stirrups are grouped according to shapes or use. 4.5 Relevant OHS guidelines are applied.
5. Bend stirrups using bending machine	5.1 Bending machine components are checked and maintained in accordance with manufacturer's specifications. 5.2 **Bending guides/forms** are set based on re-bar size and shape. 5.3 Stirrups are bended according to required shapes and quantity. 5.4 Bended stirrups are stocked pile at the designated storage area. 5.5 Relevant OSH guidelines are applied.
6. Clean/maintain the workplace	6.1 Tools and equipment are cleaned and stored in accordance with workplace requirements. 6.2 Workplace is cleaned in accordance with workplace requirements. 6.3 Waste materials are disposed in designated and proper place.

Range of Variables

Variable	**Range** May include but not limited to:
1. Re-bar size and type	1.1. Re-bar type: 1.1.1 round bar, deformed bar 1.2. Re-bar size: 1.2.1 Round bar: RB6, RB8, RB9, RB10, RB12, RB14, RB16, RB18, RB20, RB22, RB25, RB28, RB32 1.2.2 Deformed bar: BD 8, DB10, DB12,DB14,DB16,DB18, DB20, DB22, DB25, DB28, DB32

2. Relevant OHS guidelines	2.1 Wearing of relevant PPEs; hand gloves, hard hat, safety shoes; safety glass/googles, appropriate working clothes 2.2 Workshop cleanliness 2.3 Steel bar piling standard 2.4 Safety requirements in steel cutting 2.5 Safety guards for rotating machine parts 2.6 Environmental requirements
3. Bending Pattern	3.1 Double hook 3.2 Chair bars 3.3 L-shape 3.4 C-shape
4. Stirrup shapes	4.1 Square 4.2 Rectangle 4.3 Double hook bars 4.4 L-shape 4.5 C-shape 4.6 U-shape 4.7 V-shape 4.8 Octagonal 4.9 Spirals
5. Bending guides/forms	5.1 Bending guides come in various sizes and shapes for bending main bars and stirrups as enumerated in variable no. 2 & 3 above

Curricular Evidence Guide

1. Underpinning Knowledge	1.1 Steel re-bar measurement and marking procedures 1.2 Steel cutting operations and techniques 1.3 Types of cutting tools/equipment used for steels 1.4 Safety requirements when performing steel cutting operations 1.5 Methods of steel bending 1.6 Techniques of manual method of bending steels 1.7 Purpose of the different bending shapes of main steel bars 1.8 Bending machines used for bending of steels used for construction re-bars 1.9 Purpose/functions of bended stirrups in construction 1.10 Bending methods and techniques for stirrups 1.11 Bending shapes of stirrups and their purpose 1.12 Workplace requirements foe tools and equipment maintenance and storing

2. Underpinning Skills	2.1 Measuring and marking of steel re-bars 2.2 Cutting steel re-bars 2.3 using right type of cutting tools/equipment in steel cutting operations 2.4 Applying relevant OHS guidelines when cutting steels 2.5 Installing bending forms/jigs in the worksite 2.6 Bending main steel bars manually 2.7 Bended main steel bars using bending machine 2.8 Bending stirrups manually according to required shapes and quantity 2.9 Bending stirrups using bending machine 2.10 Cleaning tools and equipment and storing in accordance with workplace requirements
3. Underpinning Attitudes	3.1 Patience 3.2 Commitment to occupational health and safety practices 3.3 Environmental concerns 3.4 Eagerness to learn 3.5 Tidiness and timeliness 3.6 Respect for rights of peers and seniors in workplace
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 Steel fabrication and tools, equipment and materials 4.3 Work instruction sheet

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Measured and marked steel re-bars precisely. 1.2 Cut steel re-bars using right type of cutting tools/equipment in accordance with cutting list. 1.3 Installed bending forms/jigs in accordance with specifications. 1.4 Bended main steel bars manually according to required bar shapes and quantity. 1.5 Bended main steel bars using bending machine in accordance with the required shape and quantity. 1.6 Bended stirrups manually according to required shapes and quantity. 1.7 Bended stirrups using bending machine in accordance with required shapes and quantity. 1.8 Cleaned tools and equipment and stored in accordance with workplace requirements.
2. Methods of Assessment	Competency should be assessed by:

	2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Unit of Competency: **PERFORM ASSEMBLY OF RE-BAR WORKS**	**Nominal Duration:** 60 hrs.	**Unit Code:** SICIP-CON-MSB-6-O
Unit descriptor: This unit covers the knowledge, skills and attitudes required for a worker to perform assembly of re-bar works when performing steel binding and fabrication activities in the construction sector. It specifically includes the tasks of assembling re-bars for columns; assembling re-bars for beams; assembling re-bars for slabs; and assembling re-bars for board piles/pile caps.		

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	Performance Criteria
1. Assemble re-bars for columns	1.1 Assembly of re-bars for columns is carried out in accordance with **OHS requirements**. 1.2 Metal/wooden supports for main/vertical bars are prepared and assembled according to work requirements. 1.3 **Size of main/vertical bars and lateral ties** are selected based on structural plan, **design specifications** and relevant local and international construction codes. 1.4 Main/vertical bars are held in position by lateral ties in accordance with the column design plan. 1.5 **Spacing of main/vertical bars and lateral ties** are determined in accordance with design specifications and relevant local and international construction codes. 1.6 Lateral ties are tied/welded in order to hold the main /vertical bars firmly to its designed position. 1.7 Completed column reinforcement assembly is hauled to designated storage area. 1.8 Excess materials and debris are properly disposed and work area is cleaned in compliance with OHS guidelines.
2. Assemble re-bars for beams	2.1. Assembly of re-bars for beams is carried out in accordance with OHS requirements. 2.2. Metal/wooden supports for main bars are prepared and assembled according to work requirements. 2.3. Size of main bars, extra/cut bars and closed stirrups are selected based on structural plan, design specifications and relevant local and international construction codes. 2.4. Main bars and extra/cut bars are held in position by closed stirrups in accordance with the beam design plan.

	2.5. Closed stirrups are properly spaced and tied/welded in order to hold the main bars firmly to its designed position. 2.6. Completed beam reinforcement assembly is hauled to designated storage area. 2.7. Personal protective equipment and hand tools are used in accordance with safety and work requirements. 2.8. Excess materials and debris are properly disposed and work area is cleaned in compliance with OHS guidelines.
3. Assemble re-bars for slabs	3.1. Assembly of re-bars for slabs is carried out in accordance with OHS requirements. 3.2. Metal bed for slab fabrication is prepared in accordance with work requirements. 3.3. Size of bars are selected based on structural plan, design specifications and relevant local and international construction codes. 3.4. Slab re-bars are properly spaced and tied/welded in accordance with design specifications and relevant local and international construction codes. 3.5. Completed slab reinforcement assembly is hauled to designated storage area. 3.6. Personal protective equipment and hand tools are used in accordance with safety and work requirements. 3.7. Excess materials and debris are properly disposed and work area is cleaned in compliance with OHS guidelines.
4. Assemble re-bars for bored piles/pile caps	4.1 Assembly of re-bars for bored piles/pile caps is carried out in accordance with OHS requirements. 4.2 Size of main bars are selected based on structural plan, design specifications and relevant local and international construction codes. 4.3 Bored pile re-bars are properly spaced and tied/welded in accordance with design specifications and relevant local and international construction codes. 4.4 Completed bored pile reinforcement assembly is hauled to designated storage area. 4.5 Personal protective equipment and hand tools are used in accordance with safety and work requirements. 4.6 Excess materials and debris are properly disposed and work area is cleaned in compliance with OHS.

Range of Variables

Variable	Range

	May include but not limited to:
1. OHS requirements	1.1 Wearing of appropriate PPEs 1.1.1 Hard hat/construction helmet 1.1.2 Safety shoes 1.1.3 Safety glasses 1.1.4 Hand gloves 1.1.5 Safety belts 1.1.6 Appropriate working clothes 1.2 Disposal of waste materials 1.3 Availability of first aid kit 1.4 Using of appropriate steel assembly tools and equipment
2. Size of main/vertical bars and lateral ties	2.1 Available sizes of deformed bar for main/vertical bars is from 16 mm to 36mm 2.2 Available sizes of round bar for lateral ties is from 6mm to 12mm
3. Design specifications	3.1 Local building code provisions related to bar cutting and bending specifications, bar spacing specifications 3.2 ASTM specifications related to types of materials, steel bars identification/marking system, size, diameter, area, length and weight of steel bars, types of steel bars 3.3 Other relevant local and international building codes
4. Spacing of main/vertical bars and lateral ties	Main/vertical bars and lateral ties spacing may include but not limited to rules and regulations of local and international building code for: 4.1 Short and long column 4.2 Tied column 4.3 Spiral column 4.4 Composite, combined and lally column Main bars and stirrups spacing may include but not limited to rules and regulations of local and international building code for: 4.5 Simple beam 4.6 Continuous beam 4.7 Simple-continuous beam 4.8 Cantilever beam 4.9 Girders 4.10 Joists Steel bars spacing may include but not limited to rules and regulations of local and international building code for: 4.11 One way slab

	4.12 Two-way slab 4.13 Ribbed slab 4.14 Flat Slab 4.15 Flat Plate

Curricular Evidence Guide

1. Underpinning Knowledge	1.1 OHS requirements when performing steel fabrication works in construction 1.2 Types of metal/wooden supports for main/vertical bars 1.3 Methods and techniques when assembling metal/wooden supports for main/vertical bars 1.4 Local and international building codes in relation to applicable sizes of main/vertical bars and lateral ties 1.5 Procedures and techniques of holding in position the main/vertical bars using lateral ties 1.6 Relevant local and international construction codes in relation to spacing of main/vertical bars and lateral ties 1.7 Procedure of holding the main /vertical bars using ties/weld method 1.8 Advantages and disadvantages with the use of ties and welds 1.9 Workplace and OHS requirements on disposal of excess materials and debris
2. Underpinning Skills	2.1 Carry out assembly of re-bars in accordance with OHS requirements. 2.2 Prepare metal/wooden supports for main/vertical bars and assembled according to work requirements. 2.3 Select size of main/vertical bars and lateral ties based on structural plan, design specifications and relevant local and international construction codes. 2.4 Hold main/vertical bars in position by lateral ties in accordance with the column design plan. 2.5 Maintain spacing of main/vertical bars and lateral ties in accordance with design specifications and relevant local and international construction codes. 2.6 Bind rods using ties in order to hold the main /vertical bars firmly in accordance with the plan. 2.7 Weld lateral ties in order to hold the main /vertical bars firmly in accordance with the plan. 2.8 Dispose excess materials and debris properly. 2.9 Clean work area in compliance with workplace and OHS requirements

3 Underpinning Attitudes	3.1 Patience 3.2 Commitment to occupational health and safety practices 3.3 Environmental concerns 3.4 Eagerness to learn 3.5 Tidiness and timeliness 3.6 Respect for rights of peers and seniors in workplace
4 Resource Implications	4.1 Workplace (simulated or actual) 4.2 Steel Assembly and tools, equipment and materials 4.3 Work instruction sheet

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Carried out assembly of re-bars in accordance with OHS requirements 1.2 prepared Metal/wooden supports for main/vertical bars and assembled according to work requirements 1.3 Selected size of main/vertical bars and lateral ties based on structural plan, design specifications and relevant local and international construction codes 1.4 Held main/vertical bars in position by lateral ties in accordance with the column design plan 1.5 Determined spacing of main/vertical bars and lateral ties in accordance with design specifications and relevant local and international construction codes 1.6 Tied/welded lateral ties in order to hold the main /vertical bars firmly to its designed position 1.7 Disposed Excess materials and debris properly and work area is cleaned in compliance with OHS requirements
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

Unit of Competency: **PERFORM FORMWORKS INSTALLATION**	**Nominal Duration:** 32 hrs.	**Unit Code:** SICIP-CON-MSB-7-O

Unit descriptor:

This unit covers the knowledge, skills and attitudes required for a worker to perform formwork installation in construction. It specifically includes the tasks of planning and preparing formwork installation; setting up level for scaffolding and formwork; installing scaffolding; installing formworks for building elements; installing formworks for catch basin and manhole; repairing and replacing damaged formworks; and dismantling scaffoldings.

Elements and Performance Criteria:
(Terms in the performance criteria that are written in **bold and underlined** are elaborated in the range of variables).

Elements of Competency	Performance Criteria
1. Plan and prepare formwork installation	1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied according to **preparation plan.** 1.2 Appropriate **PPE** is selected and used according to job requirements and construction safety guidelines. 1.3 Signage/barricade requirements are identified and implemented according to safety and workplace regulations. 1.4 Tools and equipment selected to carry out tasks are checked for serviceability and any faults are rectified or reported to immediate superior prior to commencement. 1.5 **Hand and power tools** are selected and used in accordance with safe operating requirements of the workplace. 1.6 **Formwork components and materials** are selected and prepared consistent with job requirements. 1.7 Material quantity requirements are calculated in accordance with plans and/or specifications. 1.8 Materials appropriate to the task are identified, obtained, prepared, safely handled and located ready for use.
2. Set up level for scaffolding and formwork	2.1 Heights or levels to be transferred/established are identified from project plans or instructions. 2.2 **Leveling devices** and staffs are set-up, tested and correctly used in accordance with standard operating procedures and manufacturers' guidelines. 2.3 Levels are measured and heights transferred to required location and marked and/or recorded consistent with job requirements.

	2.4 Results of leveling procedure are documented according to organizational requirements.
3. Install scaffolding	3.1 Installation of scaffolding is carried out in accordance with **OHS requirements.** 3.2 **Types of scaffolding** required are confirmed and associated work tasks identified. 3.3 Projected loading on scaffolding and supporting structure is determined based on local and international building codes and project specifications. 3.4 Site/workplace access and egress routes are identified. 3.5 **Scaffolding components** are selected and inspected for damage; rejects are labeled and segregated. 3.6 Sole board/base plate is selected in accordance with relevant code rules and regulations, and work requirements. 3.7 Scaffolding is set up/erected in accordance with work requirements and workplace rules and regulations. 3.8 Static/safety lines are installed where specified in accordance with safety rules and regulations. 3.9 **Lifting device** is assembled and installed where specified.
4. Install formworks for building elements	4.1 Appropriate PPE is selected and used according to job requirements and OHS guidelines. 4.2 Formworks components are installed in accordance with **specified tolerance requirements**. 4.3 Form panel components are installed/fixed in accordance with specified tolerance requirements. 4.4 Connectors, braces, locks, bolts and nuts for plastic forms are properly secured according to job requirements. 4.5 Accomplishment report is made according to company rules and regulations. 4.6 Housekeeping is performed in accordance with workplace and OHS requirements.
5. Install formworks for catch basin and manhole	5.1 Appropriate PPE is selected and used according to job requirements and OHS guidelines. 5.2 Formwork components for catch basin and manhole are installed in accordance with specified dimensions and tolerance requirements. 5.3 Form panels components for catch basin and manhole are installed/fixed for in accordance with specified dimension and tolerance requirements.

	5.4 Accomplishment report is made according to company rules and regulations 5.5 Housekeeping is performed according to OHS site safety regulations
6. Repair and replace damaged formworks	6.1 Appropriate PPE is selected and used according to job requirements and OHS safety guidelines. 6.2 Formworks are checked for damage according to worksite guidelines and procedures. 6.3 **Damaged formworks** are repaired and replaced in accordance with work requirements. 6.4 Accomplishment report is made according to company requirement. 6.5 Housekeeping is performed according to worksite safety regulations.
7. Dismantle scaffoldings	7.1 Scaffolding is isolated and appropriately signed and barricaded to ensure safe dismantling. 7.2 Scaffolding is dismantled using reverse procedure as for erection in accordance with safety practices. 7.3 Scaffolding components are cleaned, inventoried and returned to storage area based on workplace rules and procedures.

Range of Variables

Variable	**Range** May include but not limited to:
1. Preparation plan	1.1 Worksite inspection 1.2 Equipment defect identification 1.3 Assessment of conditions and hazards 1.1 Determination of work requirements
2. PPE	2.1 Safety working uniform 2.2 Hard hat/safety helmet 2.3 Safety shoes 2.4 Safety hand gloves 2.5 Safety belt 2.6 Dust mask 2.7 Safety glass/receptacles 2.8 First aid kit
3. Hand and power tools	3.1 Hand tools 3.1.1 Hand saw 3.1.2 Hammer 3.1.3 Tool holster 3.1.4 Spanners

	3.1.5 Steel square/ wooden square 3.1.6 Push-pull tape 3.1.7 Spirit level 3.1.8 Plumb bob 3.1.9 Crow bar 3.2 Power tools 3.2.1 Electric drill 3.2.2 Impact gun 3.2.3 Portable grinder 3.2.4 Power (electric) wood saw
4. Formwork components and materials	4.1 Formworks components: 4.1.1 Wooden and plastic form panels 4.1.2 Stiffener/frame 4.1.3 Braces 4.1.4 Connectors 4.2 Fasteners: 4.2.1 Nails 4.2.2 Screws 4.2.3 Bolts and nuts 4.2.4 Lock washers 4.2.5 Lock pins 4.2.6 Tie wire 4.3 Materials: 4.3.1 steel 4.3.2 polyvinyl/plastic 4.3.3 Composite construction 4.3.4 plywood 4.3.5 lumbers 4.4 Scaffolds 4.4.1 Frames, 4.4.2 Tubular post, 4.4.3 Connectors, 4.4.4 Shoring 4.4.5 And planks
5. Leveling devices	5.1 Laser Levels 5.2 Optical levels 5.3 Automatic levels 5.4 Digital levels
6. OHS requirements	6.1 Wearing of appropriate PPEs 6.2 Disposal of waste materials 6.3 Availability of first aid kit

	6.4 Using of appropriate steel re-bar installation tools and equipment
7. Types of scaffolding	7.1 Steel scaffolding 7.2 Wooden/timber scaffolding 7.3 Bamboo scaffolding
8. Scaffolding components	8.1 Bracing 8.2 Fixed/rotating clamps 8.3 U –jack 8.4 Plate jack 8.5 Lock pins 8.6 Steel/wood platform 8.7 Steel/wood ladder 8.8 Bolts and nuts 8.9 Stand 8.10 Ledger 8.11 Putlog
9. Lifting device	9.1 Fork lift 9.2 Truck crane 9.3 Tower crane 9.4 Derrick 9.5 Pulleys 9.6 Hoist
10. specified tolerance requirements	Tolerances for: 10.1 Linear measurement 10.2 Alignment 10.3 Squareness 10.4 Levelness 10.5 Plumbness
11. Damaged formworks	11.1 Deformed wooden formworks 11.2 Cracked/broken plastic formworks 11.3 Deformed metal formworks

Curricular Evidence Guide

1. Underpinning Knowledge	1.1 Construction signage and their meanings 1.2 Implementation procedures for construction signage 1.3 Operation and maintenance of tools and equipment used in installing formworks 1.4 Preparation and selecting procedures for formwork components and materials 1.5 Methods and techniques of formwork components

	1.6 Methods and techniques form panels installation 1.7 Specified tolerance requirements for formwork components and form panel installation 1.8 Procedure of securing connectors, braces, locks, bolts and nuts for plastic forms 1.9 Identifying damaged formworks 1.10 Repair procedures and replacement techniques for damaged formworks 1.11 Workplace requirements in making of accomplishment report 1.12 Workplace and OHS housekeeping requirements
2. Underpinning Skills	2.1 Identify and implement signage/barricade requirements in accordance with workplace safety regulations. 2.2 Check tools and equipment for serviceability and rectify or report faults with immediate superior prior to commencement of work. 2.3 Select and prepare formwork components and materials in accordance with job requirements. 2.4 Install formwork components and form panels in accordance with specified dimensions and tolerance requirements. 2.5 Secure connectors, braces, locks, bolts and nuts for plastic forms. 2.6 Repair and replace damaged formworks in accordance with work requirements. 2.7 Make accomplishment report. 2.8 Perform housekeeping in accordance with OHS site safety regulations.
3. Underpinning Attitudes	3.1 Patience 3.2 Commitment to occupational health and safety practices 3.3 Environmental concerns 3.4 Eagerness to learn 3.5 Tidiness and timeliness 3.6 Respect for rights of peers and seniors in workplace
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 Steel Assembly and tools, equipment and materials 4.3 Work instruction sheet

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate:

	1.1 Identified signage/barricade requirements and implemented according to safety and workplace regulations 1.2 Checked tools and equipment for serviceability and faults are rectified or reported with immediate superior prior to commencement of work. 1.3 Selected and prepared formwork components and materials in accordance with job requirements. 1.4 Installed formwork components and form panels in accordance with specified dimension and tolerance requirements 1.5 Secured connectors, braces, locks, bolts and nuts for plastic forms properly in accordance with job requirements 1.6 Repaired and replaced damaged formworks in accordance with work requirements 1.7 Made accomplishment report in accordance with company requirement. 1.8 Performed housekeeping in accordance with OHS site safety regulations.
2. Methods of Assessment	Competency should be assessed by: 2.1 Written test 2.2 Practical Demonstration 2.3 Oral Questioning 2.4 Portfolio (Optional)
3. Context of Assessment	3.1 Competency assessment must be done in an assessment/training center or in an actual or simulated work place after completion of the training. 3.2 Assessment should be done by a nationally certified assessor or occupation-specific industry expert.

END OF COMPETENCY STANDARD

Workshop/Lab Facility Standard

Course Name:	Masonry and Rod Binding
Number of Trainees:	25

Course-wise Training Space (Theoretical Classroom, Workshop/ Lab/ Classroom cum Workshop):

- Classroom – 350 sft (33 sqm)
- Workshop/ lab (Masonry) – 800 sft (75 sqm) and Workshop/ lab (Steel Binding) – 800 sft (75 sqm)

  OR
- Classroom cum workshop – 1500 sft (140 sqm)

Major Training Equipment and Training Facilities:

Sl. No.	Major Equipment and Training facilities	Required facilities
1.	Computer/Laptops	1
2.	Multimedia projector & screen	1
3.	Vibrator Machine	2
4.	Trolley/ Van	1
5.	Concrete Mixture Machine	1
6.	Hammer Drill	1
7.	Angle Grinder	5
8.	Rod Bending Machine (Hydraulic)	1
9.	Rod Bending Station	25
10.	Rod Binding Machine	2
11.	Portable arc welding machine	1

The following conditions must be fulfilled –

- The institute shall not use the same facilities for any other projects/organizations offering a similar course.
- The institute must provide sufficient evidence to prove ownership of the proposed training equipment.

The list denotes the minimum training equipment and facility required to effectively conduct training for a specific course. Additionally, the institute must ensure that all other necessary training tools, equipment, and furniture are available to meet the requirement of competency standards (CS) provided by SICIP.

For the operation of training course on Masonry and Rod Binding, the institute must ensure the availability of at least 80% of the major training equipment and training facilities

(according to the CS) to be eligible for SICIP training delivery. If the score is below 80%, the remaining equipment and facilities need to be installed before the commencement of the training.

The institute will also provide all other hand tools and power tools as per CS for 25 trainees. Also, they will arrange adequate seating arrangement and classroom setup for the 25 trainees.