



COMPETENCY STANDARD

FOR

TILE AND MARBLE WORKS

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

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The Competency Standards for Tiles & Marble Works 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.

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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-TMW-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-TMW-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-TMW-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-TMW-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-TMW-1-S	Apply Green Practices in Construction Sector	1. Interpret green concepts 2. Minimize resource use in the workplace 3. Implement waste management practices	10
SICIP-CON-TMW-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-TMW-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-TMW-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	10
Total Hours			40

Occupation Specific Competencies (280 hrs.)

Code	Unit of Competency	Elements of Competency	Guided Learning Hours
SICIP-CON-TMW-1-O	Perform Tile and Marble Laying Preparation Works	1. Plan and prepare for tile and marble work laying 2. Prepare materials for tile and marble laying 3. Prepare subfloor/substrate surface	24
SICIP-CON-TMW-2-O	Install Tiles on Floors	1. Plan and prepare for tile installation on floors 2. Cut tiles as required 3. Lay tiles on floor 4. Grout floor tile joints 5. Clean/maintain work area	56
SICIP-CON-TMW-3-O	Install Tiles on Walls	1. Plan and prepare for tile installation on wall 2. Cut tiles as required 3. Lay tiles on wall 4. Grout wall tile joints 5. Clean/maintain work area	60
SICIP-CON-TMW-4-O	Perform Marble Installation on Floors	1. Plan and prepare for marble installation on floors 2. Cut marble slabs as required 3. Lay marble slabs on floor 4. Grout marble slab joints 5. Clean/maintain work area	60
SICIP-CON-TMW-5-O	Perform Rustic Stone Works	1. Plan and prepare for rustic stone panel installation on walls 2. Apply mortar material on wall 3. Lay rustic stone panels/veneers on wall 4. Apply grout on spaces of rustic stone panels 5. Clean/maintain work area	48
SICIP-CON-TMW-6-O	Perform Tile and Marble Repair Works	1. Plan and prepare for tile and marble repair works 2. Repair damaged tile work 3. Repair damaged marble work 4. Clean/maintain work area	32
Total Hours			280

COMPETENCY STANDARD: TILES AND MARBLE WORKS

The Generic Competencies

Unit of Competency: PERFORM COMPUTATIONS USING BASIC MATHEMATICAL CONCEPTS	Nominal Duration: 10 hrs.	Unit Code: SICIP-CON-TMW-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 perform calculations.		

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 <u>Calculation requirements</u> are identified from <u>workplace information</u> .
2. Select appropriate mathematical methods/concepts for the calculation.	2.1 <u>Appropriate method</u> is selected to carry out the calculation requirements.
3. Use tool/instrument to perform calculations	3.1 Calculations are completed using appropriate <u>tools and instruments</u> .

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 1.10 Speed 1.11 Costing

	1.12 Mass 1.13 Density
2. Workplace information	2.1 Mechanical Plan 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
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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-TMW-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 <u>OHS policies</u> 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 <u>Personal Protective Equipment (PPE)</u> is selected and used. 2.3 Personal hygiene is maintained.
3. Report hazards and risks	3.1 <u>Hazards and risks</u> 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 <u>Emergency response plans and procedures</u> are implemented. 4.3 <u>First aid procedure</u> 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-TMW-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 <u>routine workplace documents</u> are prepared using key words, phrases, simple sentences and <u>visual aids</u> 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
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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-TMW-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 <u>forms of communication</u> 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
5. 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
6. 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
7. 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: 10 hrs.	Unit Code: SICIP-CON-TMW-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 <u>Principles of green practices in construction</u> are explained. 1.2 Key terms and symbols related to environmental sustainability in construction drawings and specifications are identified. 1.3 <u>Sources of environmental impacts</u> 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 <u>Ways of mitigating environmental impacts</u> in construction are explained.
2. Minimize resource use in the workplace	2.1 Water, energy, and raw material consumption are documented. 2.2 <u>Recyclable and non-recyclable items</u> 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 <u>Different types of construction waste</u> 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 Waste 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-TMW-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 <u>manuals</u> 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 <u>drawings</u> and <u>specifications</u> are correctly recognized from manuals, designs and plans. 2.2 Terms and abbreviations are recognized. 2.3 <u>Signs and symbols</u> 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-TMW-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 <u>Hand tools</u> and <u>power tools</u> 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 <u>Safety precautions</u> 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 <u>Measuring tools</u> 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: 10 hrs.	Unit Code: SICIP-CON-TMW-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 <u>measuring device</u> 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 <u>Systems of measurements</u> are identified and converted where necessary. 2.3 Results are confirmed and recorded.
3. Execute simple construction work calculations	3.1 Simple calculations involving <u>four basic mathematical operations</u> 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
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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: PERFORM TILE AND MARBLE LAYING PREPARATION WORKS	Nominal Duration: 24 hrs.	Unit Code: SICIP-CON-TMW-1-O
Unit Descriptor: This unit covers the knowledge, skills and attitudes required for a worker to perform tile and marble laying preparation works in construction sector. It specifically includes the tasks of planning and preparing for tile and marble work laying, preparing materials for tile and marble laying and preparing subfloor/substrate surface.		

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 for tile and marble work laying	1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied. 1.2 Different <u>types of tiles</u> are identified 1.3 <u>Safety requirements</u> are followed and <u>PPEs</u> are worn in accordance with OHS and workplace requirements. 1.4 Signage and barricade requirements are identified and implemented. 1.5 <u>Tools and equipment</u> to carry out tasks are gathered and checked for serviceability and any faults are rectified or reported prior to start of work. 1.6 <u>Material</u> requirements are identified and gathered in accordance with plan and/or specifications. 1.7 Environmental protection requirements are identified and observed following OHS regulations.
2. Prepare materials for tile and marble laying	2.1 Floor and wall tile materials are checked for product suitability, conformity to specification and compatibility with surface material, preparation and installation technique. 2.2 Marble installation materials are checked for product suitability, conformity to specification and compatibility with surface material, preparation and installation technique. 2.3 Activities for <u>material preparation</u> are identified from manufacturers or workplace instructions/specifications. 2.4 Material preparation is carried out to satisfy the requirements of the application process. 2.5 Tile and marble installation <u>design pattern</u> is identified in accordance to workplace/design requirements.

3. Prepare subfloor/substrate surface	3.1 Structures and attachments mounted above the designated surface are safely detached, removed or arranged for removal from area and stored. 3.2 <u>Subfloor structure</u> is identified and surfaces are cleaned to remove all <u>contaminants/foreign materials</u> and loose material in accordance with supervisor's instructions. 3.3 Subfloor is scratched, cleaned, cured and dried in accordance with tile application specifications. 3.4 <u>Underlay materials</u>, if specified, are proportioned and mixed according to instructions. 3.5 Underlay materials are laid on the subfloor in accordance with workplace and construction plan/design.
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Range of Variables

Variable	Range May include but not limited to:
1. Types of Tiles	1.1 Ceramic tiles 1.1.1 Glazed ceramic 1.1.2 Unglazed ceramic 1.2 Porcelain tiles 1.3 Glass tiles 1.4 Stone tiles 1.4.1 Marble 1.4.2 Granite 1.4.3 Slate 1.5 Vinyl 1.6 Terracotta 1.7 Cement tiles 1.8 Parking tile 1.9 Mosaic tiles 1.10 Pebble tiles
2. Safety requirements	2.1 Wearing of PPEs 2.2 Installing safety barrier lines/guards 2.3 Proper lighting 2.4 Using dust collector
3. PPEs	3.1 Apron 3.2 Gloves 3.3 Safety shoes 3.4 Helmet 3.5 Face mask 3.6 Goggles and safety glasses 3.7 Ear plugs
4. Tools and equipment	4.1 Tools

	4.1.1 Tile cutter (Manual) 4.1.2 Tile cutter machine (circular saw) 4.1.3 Mechanical pliers 4.1.4 Adjustable wrench 4.1.5 Screw drivers 4.1.6 Spatula 4.1.7 Notched trowel 4.1.8 Level 4.1.9 Measuring tape 4.1.10 Grout float 4.1.11 Wet saw 4.1.12 Tile spacers 4.1.13 Caulking guns 4.1.14 Hammers (plastic faced /rubber faced) 4.1.15 Mallet (plastic, rubber) 4.1.16 Grouting tool 4.2 Equipment 4.2.1 Portable drill 4.2.2 Portable grinder 4.2.3 Levelling equipment
5. Materials	5.1 Grout 5.2 Thinset mortar (Pre-mix adhesives) 5.3 Tile underlayment 5.4 Grout release agent 5.5 Tile and grout sealer 5.6 Tiles 5.7 Marbles 5.8 Sponge 5.9 Chalk line 5.10 Sand 5.11 Mortar
6. Material preparation	6.1 Checking for tile/marble damage, cracks and quality 6.2 Measuring 6.3 Cutting 6.4 Grinding 6.5 Fitting up 6.6 Washing 6.7 Shaping
7. Design pattern	7.1 Straight standard set 7.2 Standard brick 7.3 Picture frame 7.4 Standard diagonal 7.5 1-clip pattern 7.6 4-clip pattern

	7.7 Diagonal picture frame 7.8 Diagonal brick with mosaic 7.9 Diagonal offset dot 7.10 Rug pattern 7.11 Herringbone bond 7.12 Embossed tile design
8. Subfloor structure	8.1 Laminated flooring 8.2 Concrete/cement boards 8.3 Tiled flooring 8.4 Concrete slab 8.5 Mortar base 8.6 Plywood
9. Contaminants/foreign materials	9.1 Sand 9.2 Rubbish/garbage materials 9.3 Broken tiles 9.4 Water/moisture 9.5 Scattered spilled cement mortars
10. Underlay materials	10.1 Sand screed 10.2 Cement screed 10.3 Plywood 10.4 Mortar 10.5 Levelling compounds 10.6 Pre mixed adhesives (thinset)

Curricular Content Guide

1. Underpinning Knowledge	1.1 Types of Tiles and Marble 1.2 Types of tools and equipment used in tile and marble setting application 1.3 Means of checking serviceability of tools and equipment 1.4 Operation and maintenance instruction on the use of tools and equipment 1.5 Methods of Identifying material requirements and gathering 1.6 Checking procedure of tile and marble materials 1.7 Material preparation procedures 1.8 Types of tiles and marble installation design pattern 1.9 Types of subfloor structure and methods of cleaning for each type 1.10 Ways of cleaning and preparing subfloor prior to tile and marble installation 1.11 Types of underlay materials and their methods of preparation and application
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2. Underpinning Skills	2.1 Gathering of tools and equipment and checking for serviceability. 2.2 Rectifying faults found on tools and equipment and reporting to superiors. 2.3 Identifying material requirements and gathering 2.4 Checking tile and marble materials for product suitability, conformity and compatibility with installation requirements 2.5 Carrying out material preparation to satisfy the requirements of the application process 2.6 Identifying tile and marble installation design pattern 2.7 Identifying subfloor structure and cleaning of surfaces to remove all contaminants/foreign materials and loose material 2.8 Scratching, cleaning, curing and drying subfloor 2.9 Proportioning underlay materials and mixing as per instructions
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 Tiles and marble installation tools and equipment 4.3 Materials needed for tile and marble laying 4.4 Pens 4.5 Papers 4.6 Work books 4.7 Tile laying manual

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Gathered tools and equipment and checked for serviceability. 1.2 Rectified or reported faults prior to start of work. 1.3 Identified material requirements and gathered in accordance with plans and/or specifications. 1.4 Checked tile and marble materials for product suitability, conformity and compatibility with installation requirements. 1.5 Carried out material preparation procedures. 1.6 Identified tile and marble installation design pattern in accordance to workplace/design requirements.
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	1.7 Identified subfloor structure and cleaned surfaces to remove all contaminants/foreign materials and loose material. 1.8 Laid underlay materials on the subfloor in accordance with workplace and construction plan/design.
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: INSTALL TILES ON FLOORS	Nominal Duration: 56 hrs.	Unit Code: SICIP-CON-TMW-2-O
Unit Descriptor: This unit covers the knowledge, skills and attitudes required for a worker to install tiles and marble on floors in construction. It specifically includes the tasks of planning and preparing tile installation, cutting tiles as required, laying tiles on floor, grouting floor tile joints, cleaning/maintaining 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. Plan and prepare for tiles installation on floors	1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied. 1.2 <u>Safety and environmental requirements</u> are followed in accordance with workplace and OHS policies. 1.3 Signage/barricade requirements are identified and implemented. 1.4 <u>Tools and equipment</u> are gathered and checked for serviceability and any faults are rectified or reported prior to start of work. 1.5 <u>Materials</u> appropriate to the work application are identified, and prepared at work site. 1.6 Tiles are checked in accordance with workplace plan and specifications. 1.7 Tile grid patterns and lay out design are determined and set out in accordance with workplace specifications and requirements.
2. Cut tiles as required	2.1 Tiles are cut without jagged, rough edges, breaks or damage on tile surfaces. 2.2 Recess hole or curve is cut by hand or machine in accordance with specified shape and size. 2.3 Tile edges are grounded to form a miter at the joint in accordance with workplace procedures and manufacturers' recommendations.
3. Lay tiles on floor	3.1 Subfloor is re-checked to ensure surface preparations are in order and leveled. 3.2 Tiles are positioned on the identified grid in accordance with specified pattern for sampling purposes. 3.3 <u>Bonding material</u> /adhesive is applied on the floor surface using a notched trowel. 3.4 Tiles are laid on the floor grid with minimum voids maintaining fully bedded alignment to specifications.

	3.5 The tiles are positioned in place using required spacers. 3.6 Tile level and perpendicularity is regularly checked to be within specified measurements and tolerance. 3.7 Curved bead angle tile trim are fixed in accordance with specified measurements and shapes. 3.8 Partial tiles are set out and cut using appropriate cutting tool/equipment. 3.9 Corners are kept according to specified design and finished in accordance with specifications.
4. Grout floor tile joints	4.1 All joints are cleaned and prepared to receive grout according to manufacturers' specifications. 4.2 Grout is mixed and applied in accordance with workplace and manufacturers' specifications/requirements. 4.3 Excess grout/adhesives are removed between tile/marble. 4.4 Surfaces of tiles are cleaned and polished with cloth/sponge removing all dust and dirt from surface and joints. 4.5 Tiles are left undisturbed for curing within the specified time in accordance with workplace requirements and specification. 4.6 Tiles are cured with water using spraying or wet covering techniques.
5. Clean/maintain work area	5.1 Work area is cleared and materials disposed of, reused or recycled in accordance with workplace requirements. 5.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with workplace /manufacturer's requirements.

Range of Variables

Variable	Range
	May include but not limited to:
1. Safety and environmental requirements	1.1 Wearing of PPEs 1.2 Installing safety barrier lines/guards 1.3 Proper lighting 1.4 Using dust collector 1.5 Proper disposal of garbage and excess materials 1.6 Availability of first aid kit 1.7 Guarding rotating parts of power tools
2. Tools and equipment	2.1 Tools 2.1 Tile cutter (Manual) 2.2 Tile cutter machine (circular saw) 2.3 Mechanical pliers 2.4 Adjustable wrench

	2.5 Screw drivers 2.6 Spatula 2.7 Notched trowel 2.8 Level 2.9 Tape measure 2.10 Grout float 2.11 Wet saw 2.12 Tile spacers 2.13 Caulking guns 2.14 Hammers (plastic faced /rubber faced 2.15 Mallet (plastic, rubber) 2.16 Grouting tool 2.2 Equipment 2.2.1 Portable drill 2.2.2 Portable grinder 2.2.3 Levelling equipment 2.2.4 Tile cutting machine
3. Materials	3.1 Cement 3.2 Sand 3.3 Thinset 3.4 Tile underlayment 3.5 Grout release agent 3.6 Tile and grout sealer 3.7 Tiles 3.8 Sponge 3.9 Chalk/marker
4. Bonding material	4.1 Grout 4.2 Tile adhesive 4.3 Mortar 4.4 Thinset

Curricular Content Guide

1. Underpinning Knowledge	1.1 Types of floor tiles and their characteristics 1.2 Properties of different kinds of tiles 1.3 Types of tools and equipment use for cutting tiles and their application 1.4 Techniques for cutting of tiles 1.5 Procedure of tile cutting and edging 1.6 Mitering techniques on tiles 1.7 Types of tile bonding materials and their application 1.8 Application procedure and techniques of bonding materials/adhesive 1.9 Method of aligning and levelling of tiles
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	1.10 Types and use of spacers in aligning of tiles and marbles 1.11 Techniques of checking level and perpendicularity of tiles and grout mixing procedure 1.12 Surface cleaning and polishing of tiles 1.13 Techniques of tiles curing after installation
2. Underpinning Skills	2.1 Cutting tiles 2.2 Edging tile jolly to form miters 2.3 Applying bonding material/adhesive on the floor surface 2.4 Laying tiles on the floor grid with minimum voids and maintain fully bedded alignment to specifications 2.5 Positioning the tiles in place using required spacers 2.6 Checking tile level and perpendicularity to be within specified tolerance 2.7 Mixing appropriate grout and applied in accordance with workplace and manufacturers' specifications/requirement 2.8 Cleaning and polishing of surfaces of tiles 2.9 Curing tiles after installation
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 Tiles installation tools and equipment 4.3 Materials needed for tile laying 4.4 Pens 4.5 Papers 4.6 Work books 4.7 Tile setting manual

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Cut tiles without jagged, rough edges, breaks or damage to tile surfaces. 1.2 Used tile jolly to form a miter at the joint in accordance with workplace procedures and manufacturers' recommendations. 1.3 Applied bonding material/adhesive on the floor surface using a notched trowel.
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	1.4 Laid tiles on the floor grid with minimum voids and maintain fully bedded alignment in accordance with specifications. 1.5 Positioned the tiles in place using required spacers. 1.6 Checked tile level and perpendicularity to be within specified tolerance. 1.7 Mixed appropriate grout and applied in accordance with workplace and manufacturers' specifications/requirement. 1.8 Cleaned and polished surfaces of tiles with cloth/sponge removing all dust and dirt from surface and joints. 1.9 Cured tiles after installation using appropriate methods
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: INSTALL TILES ON WALLS	Nominal Duration: 60 hrs.	Unit Code: SICIP-CON-TMW-3-O
Unit Descriptor: This unit covers the knowledge, skills and attitudes required for a worker to install tiles on walls in construction. It specifically includes the tasks of planning and preparing tile for installation on wall, cutting tiles as required, laying tiles on wall, grouting wall tile joints, cleaning/maintaining 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. Plan and prepare for tile installation on wall	1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied. 1.2 <u>Safety and environmental requirements</u> are followed in accordance with Workplace and OHS policies. 1.3 Signage/barricade requirements are identified and implemented. 1.4 <u>Tools and equipment</u> are gathered and checked for serviceability and any faults are rectified or reported prior to start of work. 1.5 <u>Materials</u> appropriate to the work application are identified, and prepared at work site. 1.6 Tiles are checked in accordance with workplace plan and specifications. 1.7 Tile grid patterns and lay out design are determined and set out in accordance with workplace specifications and requirements.
2. Cut tiles as required	2.1 Tiles are cured before the installation work using specified method. 2.2 Tiles are cut without jagged, rough edges, breaks or damage to tile surfaces. 2.3 Recess hole or curve is cut by hand or machine to shape and size in accordance with specified tolerance. 2.4 Tile jolly is edged to form a miter at the joint in accordance with workplace procedures and manufacturers' recommendations.
3. Lay tiles on wall	3.1 <u>Wall items</u> are removed and stored in accordance with workplace procedure. 3.2 Wall base layer is checked for condition and for being structurally rigid. 5.3 Tiles are positioned on the identified grid in accordance with specified pattern for sampling purposes.

	3.3 Batten material is placed on the wall aligned with the lay out to help in the alignment and levelling of the tiles. 3.4 <u>Bonding material</u> or adhesive is applied on the wall surface using a tiling trowel in accordance with workplace techniques. 3.5 Tiles are laid on the wall observing the proper technique and maintaining fully bedded alignment to specifications. 3.6 Position the tiles in place using appropriate spacers. 3.7 Tile level and perpendicularity is regularly checked to be within specified tolerance. 3.8 Partial tiles needed in some areas are set out and cut using appropriate cutting tool/equipment. 3.9 Corners are kept square within specified tolerance and finish to specifications.
4. Grout wall tile joints	4.1 All tile joints are cleaned and prepared to receive grout in accordance with workplace specifications. 4.2 Grout is mixed and applied in accordance with workplace and manufacturers' specifications and requirements. 4.3 Excess grout/adhesives are removed between tiles. 4.4 Surfaces of tiles are cleaned and polished with cloth/sponge removing all dust and dirt from surface and joints. 4.5 Tiles are left undisturbed for curing within the specified time in accordance with workplace requirements and specification. 4.6 Tiles are cured with water using spraying.
5. Clean/maintain work area	5.1 Work area is cleared and materials disposed of, reused or recycled in accordance with workplace requirements. 5.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with workplace /manufacturer's requirements.

Range of Variables

Variable	Range
	May include but not limited to:
1. Safety and environmental requirements	1.1 Wearing of PPEs 1.2 Installing safety barrier lines/guards 1.3 Proper lighting 1.4 Using dust collector 1.5 Proper disposal of garbage and excess materials 1.6 Availability of first aid kit 1.7 Guarding rotating parts of power tools
2. Tools and equipment	2.1 Tools

	2.1.1 Tile cutter (Manual) 2.1.2 Tile cutter machine (circular saw) 2.1.3 Mechanical pliers 2.1.4 Adjustable wrench 2.1.5 Screw drivers 2.1.6 Spatula 2.1.7 Notched trowel 2.1.8 Level 2.1.9 Measuring tape 2.1.10 Grout float 2.1.11 Saw 2.1.12 Tile spacers 2.1.13 Caulking guns 2.1.14 Hammers (plastic faced /rubber faced) 2.1.15 Mallet (plastic, rubber) 2.1.16 Grouting tool 2.2 Equipment 2.2.1 Portable drill 2.2.2 Portable grinder 2.2.3 Levelling equipment 2.2.4 Tile/marble cutting machine
3. Materials	3.1 Tiles 3.2 Cement 3.3 Sand 3.4 Thinset 3.5 Tile underlayment 3.6 Grout release agent 3.7 Tile and grout sealer 3.8 Sponge 3.9 Chalk/marker
4. Wall items	4.1 Wall papers 4.2 Paints 4.3 Picture frames 4.4 Old wall paints 4.5 Light switch 4.6 Wall clocks 4.7 Built in cabinets
5. Bonding material	5.1 Grout 5.2 Tile adhesive 5.3 Marble adhesive 5.4 Mortar 5.5 Thinset

Curricular Content Guide

1. Underpinning Knowledge	1.1 Workplace requirements on tile design and layout patterns 1.2 Method of tiles curing before and after installation 1.3 Method and purpose of installing batten material 1.4 Types of materials used for making tile battens 1.5 Types of bonding materials used for tile adhesion on walls 1.6 Methods and techniques of applying bonding/adhesive material when installing tiles on walls 1.7 Tile laying techniques on walls 1.8 Types of grouting materials 1.9 Procedure of mixing and preparing of grouting materials 1.10 Procedure of cleaning surfaces of tiles and polishing 1.11 Workplace cleaning, maintaining and storing procedures for tools and equipment
2. Underpinning Skills	2.1 Determining and setting out tile grid patterns and design in accordance with workplace specifications and requirements 2.2 Placing batten material on the wall aligned with the lay out to help in the alignment and levelling of the tiles 2.3 Applying bonding material/adhesive on the wall surface using a tiling trowel in accordance with workplace techniques 2.4 Laying tiles on the wall and observing the proper technique with minimum voids while maintaining alignment. 2.5 Mixing grout and applying in accordance with workplace and manufacturers' specifications/requirements 2.6 Cleaning surfaces of tiles and polishing using cloth/sponge. 2.7 Curing tiles within the specified time in accordance with workplace requirements and specification. 2.8 Cleaning, checking, maintaining and storing tools and equipment in accordance with workplace requirements.
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 Tiles and marble installation tools and equipment 4.3 Materials needed for tile and marble laying 4.4 Pens

	4.5 Papers 4.6 Work books 4.7 Tile and marble setting instruction manual
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Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Determined tile grid patterns and lay out design in accordance with workplace specifications. 1.2 Placed batten material on the wall to help in the alignment and levelling of the tiles. 1.3 Applied bonding material/adhesive on the wall surface using a tiling trowel in accordance with workplace techniques. 1.4 Laid tiles on the wall observing proper technique with minimum voids and maintaining alignment. 1.5 Mixed grout and applied in accordance with workplace specifications. 1.6 Cleaned surfaces of tiles and polished with cloth/sponge removing all dust and dirt from surface and joints. 1.7 Left tiles undisturbed for curing within the specified time in accordance with workplace requirements. 1.8 Cured tiles before and after installation using appropriate methods 1.9 Cleaned, checked, maintained and stored tools and equipment 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 MARBLE INSTALLATION ON FLOORS	Nominal Duration: 60 hrs.	Unit Code: SICIP-CON-TMW-4-O
Unit Descriptor: This unit covers the knowledge, skills and attitudes required for a worker to perform marble installation on floors in construction sector. It specifically includes the tasks of planning and preparing for marble installation on floors, cutting marble slabs as required, laying marble slabs on floor, grouting marble slab joints, cleaning/maintaining 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. Plan and prepare for marble installation on floors	1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied. 1.2 <u>Safety and environmental requirements</u> are followed in accordance with workplace and OHS policies. 1.3 Signage/barricade requirements are identified and implemented. 1.4 <u>Tools and equipment</u> are gathered and checked for serviceability and faults are rectified or reported prior to start of work. 1.5 <u>Materials</u> appropriate to the application are identified and prepared at work site. 1.6 Marble slabs are checked for conformity to size, patterns, color and characteristics in accordance with plans and specifications. 1.7 Marble slab grid patterns and lay out design are determined and set out in accordance with workplace specifications.
2. Cut marble slabs as required	2.1 Marble slabs are cut without jagged, rough edges, breaks or damage to surfaces. 2.2 Recess hole or curve is cut by hand or machine to shape and size in accordance with workplace specification. 2.3 Edges are grounded to form a miter at the joint in accordance with workplace procedures and specifications.
3. Lay marble slabs on floor	3.1 Subfloor is checked to ensure surface preparations are in order and leveled. 3.2 Marble slabs are placed on the identified grid following the specified pattern serving as dry run. 3.3 <u>Bonding material</u> /adhesive is applied on the floor surface using a trowel.

	3.4 Marble slabs are laid on the floor grid with minimum voids and maintain fully bedded alignment in accordance with specifications. 3.5 Position the marble slabs in place using required spacers. 3.6 Levelling and perpendicularity is regularly checked using appropriate tools and within specified tolerance. 3.7 Partial/irregular marble slab sizes are set out, cut and laid using appropriate cutting tool/equipment. 3.8 Corners are kept square within specified tolerance and finished to specifications.
4. Grout marble slab joints	4.1 All tile joints are cleaned and prepared in accordance with to workplace specification. 4.2 Grout is mixed and applied in accordance with workplace and manufacturers' specifications. 4.3 Excess grout/adhesives are removed between marble slabs. 4.4 Surfaces of marble slabs are cleaned and polished with cloth/sponge removing. 4.5 Laid marble slabs are left undisturbed for curing within the specified time in accordance with workplace specification.
5. Clean/maintain work area	5.1 Work area is cleared and materials disposed of, reused or recycled in accordance with workplace requirements. 5.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with workplace requirements.

Range of Variables

Variable	Range
	May include but not limited to:
1. Safety and environmental requirements	1.1 Wearing of PPEs 1.2 Installing safety barrier lines/guards 1.3 Proper lighting 1.4 Using dust collector 1.5 Proper disposal of garbage and excess materials 1.6 Availability of first aid kit 1.7 Guarding rotating parts of power tools
2. Tools and equipment	2.1 Tools 2.1.1 Marble cutter (Manual) 2.1.2 Mechanical pliers 2.1.3 Adjustable wrench 2.1.4 Screw drivers 2.1.5 Spatula 2.1.6 Notched trowel 2.1.7 Spirit Level

	2.1.8 Tri-square 2.1.9 Measuring tape 2.1.10 Grout float 2.1.11 Wet saw 2.1.12 Tile spacers 2.1.13 Caulking guns 2.1.14 Hammers (plastic faced /rubber faced) 2.1.15 Mallet (plastic, rubber) 2.1.16 Grouting tool 2.2 Equipment 2.2.1 Portable drill 2.2.2 Portable grinder 2.2.3 Levelling equipment 2.2.4 Tile/marble cutting machine
3. Materials	3.1 Marbles 3.2 Cement 3.3 Sand 3.4 Thinset 3.5 Tile underlayment 3.6 Grout release agent 3.7 Tile and grout sealer 3.8 Sponge 3.9 Chalk/marker
4. Bonding material	4.1 Grout 4.2 Tile adhesive 4.3 Marble adhesive 4.4 Mortar 4.5 Thin set

Curricular Content Guide

1. Underpinning Knowledge	1.1 Types of marble stones and their characteristics 1.2 Methods of determining marble slab grid pattern 1.3 Procedure and technique for laying of marble slabs 1.4 Method of applying uniformity in spacing of marble slab during laying out 1.5 Types of levelling tools and their application 1.6 Procedure and methods of checking levelness, flatness and perpendicularity of marble slabs 1.7 Grouting materials and method of mixing 1.8 Application procedure of grouting materials 1.9 Method of cleaning surfaces of marble slabs and polishing 1.10 Workplace standard requirements for using of marble slabs
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	1.11 Cleaning, checking, maintaining tools and equipment and Workplace procedures on storing
2. Underpinning Skills	2.1 Determining marble slab grid patterns and laying out the specified design 2.2 Laying marble slabs on the floor grid with minimum voids and maintaining fully bedded alignment to specifications 2.3 Positioning the marble slabs in place using required spacers 2.4 Checking the level and perpendicularity using appropriate tools and to be within specified tolerance 2.5 Mixing grout and applying in accordance with workplace requirements 2.6 Cleaning surfaces of marble slabs and polishing with cloth/sponge 2.7 Curing marble slabs within the specified time in accordance with workplace specification. 2.8 Cleaning, checking and maintaining and storing tools and equipment in accordance with workplace requirements.
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 Respect for rights of peers and seniors in workplace 3.7 Orderliness
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 Marble installation tools and equipment 4.3 Materials needed for marble laying 4.4 Pens 4.5 Papers 4.6 Work books 4.7 Marble installation manual

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Determined marble slab grid patterns in accordance with workplace specifications. 1.2 Laid marble slabs on the floor grid with minimum voids and maintain alignment to specifications. 1.3 Positioned the marble slabs in place using required spacers 1.4 Checked levelling and perpendicularity using appropriate checking tool in accordance with specified tolerance.
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	1.5 Mixed grout and applied in accordance with workplace/manufacturers' specifications. 1.6 Cleaned surfaces of marble slabs and polished with cloth/sponge. 1.7 Cured marble slabs within the specified time in accordance with workplace specification. 1.8 Cleaned, checked, maintained 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 RUSTIC STONE WORKS	Nominal Duration: 48 hrs.	Unit Code: SICIP-CON-TMW-5-O
Unit descriptor: This unit covers the knowledge, skills and attitudes required for a worker to perform rustic stone works in construction sector. It specifically includes the tasks of planning and preparing for rustic stone panel installation on walls, applying mortar material on wall, laying rustic stone panels/veneers on wall, applying grout on spaces of rustic stone panels and cleaning/maintaining 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. Plan and prepare for rustic stone panel installation on walls	1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied. 1.2 <u>Safety and environmental requirements</u> are followed in accordance with workplace and OHS policies. 1.3 Signage/barricade requirements are identified and implemented. 1.4 <u>Tools and equipment</u> are gathered and checked for serviceability and faults are rectified or reported prior to start of work. 1.5 <u>Materials</u> appropriate to the work application are identified, prepared and located at work site. 1.6 Stone panels/veneers are checked for conformity to size, pattern and color in accordance with plans and specifications. 1.7 Rustic stone installation patterns and lay out are determined and set out in accordance with workplace specifications.
2. Apply mortar material on wall	2.1 Wall panel is checked to ensure surface preparations are in order and leveled. 2.2 Galvanized wire or metal board is fixed to the wall in order to trap and hold the mortar. 2.3 Mortar is mixed and applied on the metal board. 2.4 Excess mortar is remove using appropriate tool and apply appropriate thickness and level in accordance with workplace specification. 2.5 Mortar on wall is allowed to dry in accordance with workplace specification.
3. Lay rustic stone panels/veneers on wall	3.1 Mortar components are mixed to specified consistency in accordance with workplace specification 3.2 Mixed mortar is applied on the back of the rustic stone panel and laid on the wall in accordance with workplace design specification. 3.3 Remove excess mortar from spaces/gaps in between rustic stone panels using appropriate tool.

	3.4 Partial/irregular rustic stone sizes are cut using appropriate stone cutting tool. 3.5 Corners are kept square within specified tolerance and finished to specifications. 3.6 Newly laid out rustic stone panels on wall are allowed to be cured in accordance with workplace specification.
4. Apply grout on spaces of rustic stone panels	4.1 All rustic stone joints are cleaned and prepared for grouting in accordance with work place specifications. 4.2 Grout material is mixed and applied in accordance with workplace specifications. 4.3 Excess grout removed between rustic stone panels. 4.4 Surfaces of rustic stone panels are cleaned and polished with cloth/sponge removing all dust and dirt from surface and joints. 4.5 Newly laid rustic stone panels are left undisturbed for curing within the specified time in accordance with workplace requirements and specification.
5. Clean/maintain work area	5.1 Work area is cleared and materials disposed of, reused or recycled in accordance with workplace requirements. 5.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with workplace requirements.

Range of Variables

Variable	Range
	May include but not limited to:
1. Safety and environmental requirements	1.1 Wearing of PPEs 1.2 Installing safety barrier lines/guards 1.3 Proper lighting 1.4 Using dust collector 1.5 Proper disposal of garbage and excess materials 1.6 Availability of first aid kit 1.7 Guarding rotating parts of power tools
2. Tools and equipment	2.1 Tools 2.1.1 Mechanical pliers 2.1.2 Adjustable wrench 2.1.3 Screw drivers 2.1.4 Spatula 2.1.5 Notched trowel 2.1.6 Spirit Level 2.1.7 Tri-square 2.1.8 Tape measure 2.1.9 Grout float 2.1.10 Tile spacers 2.1.11 Hammers (claw, chipping) 2.1.12 Mallet (plastic, rubber) 2.1.13 Grouting tool

	2.1.14 Industrial Stapler 2.1.15 Whisk broom 2.2 Equipment 2.2.1 Portable drill 2.2.2 Portable grinder 2.2.3 Levelling equipment
3. Materials	3.1 Rustic stone 3.2 Mortar materials 3.3 Metal lath/screen 3.4 Sand 3.5 Grouting material 3.6 Sponge 3.7 Chalk/marker

Curricular Content Guide

1. Underpinning Knowledge	1.1 Procedure in fixing of galvanized metal wire or metal board on the wall 1.2 Mortar mixing procedure 1.3 Method and technique of applying mortar on metal board 1.4 Procedure of laying rustic stone on wall 1.5 Procedure of removing excess mortar materials in between the rustic stones 1.6 Grouting materials and their properties 1.7 Procedure of mixing grout materials 1.8 Grout application procedures 1.9 Curing specification requirements for rustic stone installation 1.10 OHS requirements for rustic stone works in construction 1.11 Workplace/manufacturer's requirements on tools and equipment maintenance and storing
2. Underpinning Skills	2.1 Fixing galvanized wire or metal board to the wall 2.2 Mixing mortar and applying on the metal board 2.3 Drying of mortar 2.4 Laying of rustic stone panels on the wall in accordance with design pattern 2.5 Applying mortar in between gaps of rustic stone panels 2.6 Removing excess mortar and leveling using appropriate levelling tool 2.7 Cutting partial/irregular rustic stone sizes using appropriate stone cutting tool. 2.8 Mixing grout and applying in accordance with workplace specification.

	2.9 Curing of newly laid rustic stone within specified time in accordance with workplace requirements and specification. 2.10 Cleaning, checking, maintaining tools and equipment and storing in accordance with workplace requirements.
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 Respect for rights of peers and seniors in workplace 3.7 Orderliness
4. Resource Implications	4.1 Workplace (simulated or actual) 4.2 Rustic stone installation tools and equipment 4.3 Materials needed for stone laying 4.4 Pens 4.5 Papers 4.6 Work books 4.7 Rustic stone installation manual

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Nailed/fixed galvanized wire or metal board to the wall in order to trap and hold the mortar mix. 1.2 Mixed mortar and applied on the metal lath and allow to dry in accordance with workplace specification. 1.3 Applied mortar on the back of the rustic stone panels and laid on the wall in accordance with design pattern. 1.4 Removed excess mortar in between stones for grouting application. 1.5 Cut partial/irregular rustic stone sizes using appropriate stone cutting tool. 1.6 Mixed grout and applied in accordance with workplace and manufacturers' specifications/requirements 1.7 Allowed curing of laid rustic stone within the specified time in accordance with workplace requirements and specification 1.8 Cleaned, checked, maintained tools and equipment and stored in accordance with workplace/manufacture's 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 TILE AND MARBLE REPAIR WORKS	Nominal Duration: 32 hrs.	Unit Code: SICIP-CON-TMW-6-O
Unit descriptor: This unit covers the knowledge, skills and attitudes required for a worker to perform tile and marble repair works in construction sector. It specifically includes the tasks of planning and preparing for tile and marble repair works, repairing damaged tile work, repairing damaged marble work and cleaning/maintaining 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. Plan and prepare for tile and marble repair works	1.1 Work instructions and operational details are obtained confirmed and applied. 1.2 <u>Safety and environmental requirements</u> are followed in accordance with workplace and OHS policies. 1.3 Signage/barricade requirements are identified and implemented. 1.4 <u>Tools and equipment</u> are gathered and checked for serviceability and any faults are rectified or reported prior to start of work. 1.5 <u>Materials</u> appropriate to the work application are identified, obtained and located at work site. 1.6 Tiles/marble slabs are checked for conformity to size, patterns, colors and characteristics in accordance with plans and specifications 1.7 Tiles/Marble slab is checked for presence of air vacuum using tapping method or coin/marble ball test 1.8 Installation patterns and lay out design are determined and set out in accordance with workplace specifications and requirements
2. Repair damaged tile work	2.1 Damaged tiles are removed carefully avoiding further harm to adjacent tiles. 2.2 Old sheathing/bedding is cleared and cleaned to allow proper adhesion of new tile 2.3 Replacement tiles are selected and cut where applicable to match existing face, size, color and design pattern 2.4 Tiles are fitted and fixed to maintain alignment and with uniform spacing on joints. 2.5 Grouting is carried out in accordance with workplace specification. 2.6 Tile face is cleaned to specified finish.

3. Repair damaged marble work	3.1 Damaged marble slabs are removed carefully avoiding further harm to adjacent marble slabs. 3.2 Old sheathing/bedding is cleared and cleaned to allow proper adhesion of new marble slab. 3.3 Replacement marble slabs are selected and cut where applicable to match existing face, size, color and design pattern. 3.4 Marble slabs are fitted and fixed maintaining alignment and spacing on joints 3.5 Grouting is carried out in accordance with workplace specification. 3.6 Marble face is cleaned to specified finish.
4. Clean/maintain work area	4.1 Work area is cleared and materials disposed of, reused or recycled in accordance with workplace requirements. 4.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with workplace requirements.

Range of Variables

Variable	Range
	May include but not limited to:
1. Safety and environmental requirements	1.1 Wearing of PPEs 1.2 Installing safety barrier lines/guards 1.3 Proper lighting 1.4 Using dust collector 1.5 Proper disposal of garbage and excess materials 1.6 Availability of first aid kit 1.7 Guarding rotating parts of power tools
2. Tools and equipment	2.1 Tools 2.1.1 Mechanical pliers 2.1.2 Adjustable wrench 2.1.3 Screw drivers 2.1.4 Spatula 2.1.5 Notched trowel 2.1.6 Spirit Level 2.1.7 Tri-square 2.1.8 Tape measure 2.1.9 Grout float 2.1.10 Tile spacers 2.1.11 Hammers (claw, chipping) 2.1.12 Mallet (plastic, rubber) 2.1.13 Grouting tool 2.1.14 Industrial Stapler 2.1.15 Whisk broom

	2.2 Equipment 2.2.1 Portable drill 2.2.2 Portable grinder 2.2.3 Levelling equipment
3. Materials	3.1 Mortar materials 3.2 Water 3.3 Sand 3.4 Grouting material 3.5 Sponge 3.6 Rustic stone 3.7 Chalk/marker

Curricular Content Guide

1. Underpinning Knowledge	1.1 Workplace installation patterns and lay out design for tiles and marbles 1.2 Tile replacement and selection process 1.3 Tile cutting procedure and technique 1.4 Safety requirements when cutting of tiles and marble 1.5 Marble replacement and selection process 1.6 Procedures of fitting tiles on floors and walls 1.7 Procedure and techniques of fitting marble slab on floors and walls 1.8 Techniques in cutting marble slabs to size 1.9 Levelling and aligning methods 1.10 Types of grouting materials and their mixing procedure 1.11 Procedures and techniques of laying/fitting marble slabs and maintaining alignment and joint spacing 1.12 Carrying out grouting in accordance with workplace specification 1.13 Checking, maintaining and storing tools and equipment in accordance with workplace/manufacturer's requirements
2. Underpinning Skills	2.1 Determining installation patterns, laying out design and setting out in accordance with workplace specifications and requirements 2.2 Selecting replacement tiles and cutting where applicable to match existing face, size, color and design pattern 2.3 Fixing of tiles to maintain alignment and uniform spacing of joints 2.4 Carrying-out grouting in accordance with workplace specification 2.5 Selecting marble slabs for replacement and cutting to match existing face, size, color and design pattern

	2.6 Fitting marble slabs and fixing to maintain alignment with joints and maintain spacing 2.7 Applying grouting in accordance with workplace specification 2.8 Checking, maintaining and storing tool and equipment in accordance with workplace/manufacturer's requirements.
3. Underpinning Attitudes	3.1 Cleanliness/tidiness 3.2 Commitment to Occupational Health and Safety(OHS) practices 3.3 Environmental concerns 3.4 Eagerness to learn 3.5 Timeliness 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 Tile and marble installation tools and equipment 4.3 Materials needed for tile and marble laying 4.4 Pens 4.5 Papers 4.6 Work books 4.7 Tile and marble installation manual

Assessment Evidence Guide

1. Critical Aspects of Competency	Assessment required evidence that the candidate: 1.1 Determined tile installation lay out design and set out in accordance with workplace specifications and requirements. 1.2 Selected tiles for replacement and cut to match existing face, size, color and design pattern. 1.3 Tiles are fixed to maintain alignment with joints and uniform spacing. 1.4 Carried out grouting in accordance with workplace specification. 1.5 Selected marble slabs for replacement and cut to match existing face, size, color and design pattern. 1.6 Laid marble slabs are fixed to maintain alignment with joints and uniform spacing. 1.7 Carried out grouting in accordance with workplace specification. 1.8 Checked, maintained and stored tools and equipment 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.

End of Competency Standard

Workshop/Lab Facility Standard

Course Name:	Tile and Marble Works
Number of Trainees:	25

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

- Classroom – 350 sft (33 sqm)
- Workshop/ lab – 800 sft (75 sqm)
OR
- Classroom cum workshop – 1000 sft (93 sqm) Space for Plumbing booth not included

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.	Tiles Cutter Machine (Manual)	10
4.	Angle Grinder	10
5.	Work Station/ Booth (for tile installation across different positions: horizontal, vertical, inclined; suitable for floors, ceilings, drop walls, stairs, etc)	10

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 following 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 each course, the institute must ensure at least 80% of the major training equipment and training facilities (as decided by SICIP according to the CS) to be eligible for SICIP training with conditions. If the score is between 80% and 99%, 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.