



Government of the People's Republic of Bangladesh  
Skills Development Project



# National Competency Standards For Tile work

Qualification Title: **National Skills Certificate-II in Tile work  
(Construction Sector)**

Qualification Code: **CONTW0502**



Bangladesh Technical Education Board

FEBRUARY 2014

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## Approval Sheet

The National Competency Standards for **National Skills Certificate-II Tile work (Construction Sector)** Qualification is a document developed by the Technical sub Committee for Tile work under the Skills Development Project ADB Loan 2425 – BAN (SF).

It was approved by the Bangladesh Technical Education Board (BTEB) upon the endorsement of the Sector Working Committee at a meeting held on 10 April 2012 at the office of the Industry Skills Council.

The Standard was also approved by Standard and Curriculum Development Committee (SCDC) on 17 April 2014 on BTEB CBT Cell.

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## Preface

The TVET system has a large role to play in economic growth and social development as workforce provider to the labor market and as provider of skills to those who are looking for employment. In the case of Bangladesh, the TVET sector needs major reforms to ensure that issues of quality and capacity, relevance, and access are properly addressed.

The Directorate of Technical Education (DTE) with funding from the Asian Development Bank (ADB), Swiss Agency Development for Cooperation SDC and the Government of Bangladesh (GoB) is implementing a project known as Skills Development Project (SDP). The main target of the Skills Development Project (SDP) is to improve the relevance of TVET in labor market by introducing competency-based training system: a system that proceeds from the development of a qualifications framework, competency standards, curriculum, training delivery, assessment, and quality assurance mechanisms in order to develop a competitive workforce.

The development of competency standards is regarded as the heart of a competency-based training regime. Each standard defines sets of knowledge, skills and attitudes (KSAs) that a Bangladeshi trainee should be able to demonstrate at a recognized level of competence. It provides a common framework of outcomes between the labor and education sectors, as well as among workers, trainers and trainees.

In the process of development, Industry Skills Council (ISC) were organized to determine competencies expected of an occupation in Bangladesh. The ISC, whose membership come from “top performers” in the industry, performed occupational, competency and unit analyses based on their rich experiences in the field, existing documents, and on the advice of national and international experts. Competency standards of Sri Lanka, Philippines, Australia, Korea, Malaysia, Maldives and other countries were examined.

A series of workshops – development, review and finalization - were conducted to ensure a workable National Competency Standards for the occupation. Further, a validation instrument was developed and administered to other top industry performers to verify and confirm the draft being developed.

It is hoped that this document reflects the real needs of the industry thereby providing a concrete basis for the curriculum development and assessment. In such a way, the development of relevant and competent workforce is not farfetched.

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**Bangladesh Technical Education Board Contents**

Copyright.....	1
Approval Sheet .....	<b>Error! Bookmark not defined.</b>
Preface.....	4
Contents.....	4
Acronyms .....	7
Section 1 .....	<b>Error! Bookmark not defined.</b>
The Qualification .....	8
Section -2 .....	9
National Competency Standards.....	9
Sector Specific Competencies.....	9
Occupation Specific Competencies.....	10
National Competency Standards.....	11
For 11	
Tile work: NTVQF 2.....	11
Structure of Competency .....	11
Sector Specific Competencies.....	11
Occupation Specific Competencies.....	11
Section 3 .....	12
The Sector Specific Competencies.....	12
National Technical and Vocational Qualifications Frame work for Bangladesh... <b>Error!</b>	
<b>Bookmark not defined.</b>	
Tile work: NTVQ 2.....	<b>Error! Bookmark not defined.</b>
Unit of Competency .....	<b>Error! Bookmark not defined.</b>
Communicate in the Workplace .....	12
National Technical and Vocational Qualifications Frame work for Bangladesh... <b>Error!</b>	
<b>Bookmark not defined.</b>	
Tile work: NTVQ 2.....	<b>Error! Bookmark not defined.</b>
Unit of Competency .....	15
Work in a Team Environment .....	16
quality assurance requirements set by BTEB.....	<b>Error! Bookmark not defined.</b>
National Technical and Vocational Qualifications Frame work for Bangladesh... <b>Error!</b>	
<b>Bookmark not defined.</b>	
Tile work: NTVQ 2.....	<b>Error! Bookmark not defined.</b>
Unit of Competency .....	<b>Error! Bookmark not defined.</b>
Interpret Drawings and Specifications in .....	18
Construction Manuals .....	18
National Technical and Vocational Qualifications Frame work for Bangladesh... <b>Error!</b>	
<b>Bookmark not defined.</b>	
Tile work: NTVQ 2.....	<b>Error! Bookmark not defined.</b>
Unit of Competency .....	<b>Error! Bookmark not defined.</b>

Perform Measurement and Calculations in .....	21
Construction Sector .....	21
National Technical and Vocational Qualifications Frame work for Bangladesh.....	26
Tile work: NTVQ 2.....	<b>Error! Bookmark not defined.</b>
Unit of Competency .....	34
<b>Perform Corner Tiling</b> .....	35
National Technical and Vocational Qualifications Frame work for Bangladesh... <b>Error!</b>	<b>Bookmark not defined.</b>
Tile work: NTVQ 2.....	<b>Error! Bookmark not defined.</b>
Unit of Competency .....	<b>Error! Bookmark not defined.</b>
Repair wall and floor tiles .....	<b>Error! Bookmark not defined.</b>
National Technical and Vocational Qualifications Frame work for Bangladesh... <b>Error!</b>	<b>Bookmark not defined.</b>
Tile work: NTVQ 2.....	<b>Error! Bookmark not defined.</b>
Unit of Competency .....	<b>Error! Bookmark not defined.</b>
Fix mosaic tiling .....	39
National Technical and Vocational Qualifications Frame work for Bangladesh... <b>Error!</b>	<b>Bookmark not defined.</b>
Tile work: NTVQ 2.....	<b>Error! Bookmark not defined.</b>
Unit of Competency .....	<b>Error! Bookmark not defined.</b>
Perform Mosaic Work.....	45
Annexes .....	49
Annex 1. Competency Map for Tile work .....	49
Annex 2. Bangladesh National Qualifications Frame work .....	52
Annex 3. Qualification Level Descriptors.....	53
Annex 4. Key for Coding.....	55
Acknowledgments .....	56
Industry Skills Council ( ISC ).....	57

## Acronyms

MoE	Ministry of Education
DG	Director General
DTE	Directorate of Technical Education
SDP	Skills Development Project
PD	Project Director
PIU	Project Implementation Unit
GOB	Government of Bangladesh
ADB	Asian Development Bank
SC	Swiss contact
ANTA	Australian National Training Authority
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
BMET	Bureau of Manpower Employment and Training
NTVQ	National Technical Vocational Qualification
NTVQF	National Technical Vocational Qualification Framework
BTEB	Bangladesh Technical Education Board
CBT	Competency Based Training
CS	Competency Standard
HSC (Voc)	Higher Secondary Certificate (Vocational)
KSA	Knowledge, Skills, Attitude
MoLE	Ministry of Labor and Employment
NTVQF	National Technical Vocational Qualification Framework
NTVQ	National Technical Vocational Qualification
OHS	Occupational Health and Safety
PSC	Project Steering Committee
RMG	Ready Made Garments
RPL	Recognition of Prior Learning
SSC (Voc)	Secondary School Certificate (Vocational)
STEP	Skills and Training Enhancement project (WB)
ISC	Industry Skills Council
TESDA	Technical Education and Skills Development Authority
TL	Team Leader
TSC	Technical Sub Committee
TVET	Technical and Vocational Education and Training
WB	World Bank
DACUM	Development of a Curriculum
CBLM	Competency based learning Materials



## Section -1

### The Qualification

1. Title of Qualification: National Skills Certificate-II in Tile work (Construction Sector)	
2. Qualification code:	3. Endorsement date:
CONTW0502	6 June 2012
4. Purpose of the qualification	<p>The NSC II in Tile work qualification consists of a set of competencies that a person must achieve in order to work competently in the Construction Sector as a tile worker.</p> <p>In particular, he/she should be able to:</p> <ol style="list-style-type: none"> <li>1. Repair wall and floor tile work</li> <li>2. Perform Corner tile work</li> <li>3. Fix mosaic tile</li> <li>4. Perform Mosaic Work</li> </ol>
5. Regulatory Arrangements	The holder of this qualification should have been assessed by a BTEB certified assessor and found to be competent in the units listed in Section 2.
6. Accreditation requirements	The qualifications shall be offered in compliance with the accreditation requirements set by BTEB.
7. Transition arrangements	In the absence of certified assessors, the BTEB shall appoint trainers who have undergone assessment trainings.
8. Contact for comments	Chairperson Bangladesh Technical Education Board (BTEB) Agargoan, Sher-E-Bangla Nagar, Dhaka.

**Section -2**  
**National Competency Standards**  
**For**  
**National Skills Certificates in Tile work**

**Generic Competencies**

<b>Code</b>	<b>Unit of Competency</b>	<b>Level</b>	<b>No. of hours</b>
GN0101A1	Use Basic Mathematical Concept	1	40
GN0102A1	Apply OHS Practices in the work place	1	20
GN0203A1	Communicate in the workplace	2	18
GN0204A1	Work in a team environment	2	18
GN0305A1	Demonstrate work values	3	18
GN0306A1	Lead small team	3	18
GN0307A1	Practice negotiation skills	3	24
<b>Total</b>			<b>156</b>

**Sector Specific Competencies**

<b>Code</b>	<b>Unit of Competency</b>	<b>Level</b>	<b>No. of hours</b>
CON0101A1	Work in the civil construction Sector	1	30
CON0102A1	Use hand, measuring and power tools	1	30
CON0203A1	Interpret Drawings and Specifications in Construction Manuals	2	36
CON0204A1	Perform Measurement and Calculations in Construction Sector	2	36
CON0205A1	Maintain tools and equipment	2	30
<b>Total</b>			<b>162</b>

**Occupation Specific Competencies**

<b>Code</b>	<b>Unit of Competency</b>	<b>Level</b>	<b>No. of hours</b>
CONTW0101A1	Prepare surface for tile work	1	40
CONTW0102A1	Perform floor tile work	1	50
CONTW0103A1	Perform wall tile work	1	50
CONTW0104A1	Perform marble work	1	50
CONTW0105A1	Perform pavement tile work	1	50
CONTW0206A1	Repair wall and floor tile work	2	30
CONTW0207A1	Perform corner tile work	2	30
CONTW0208A1	Fix mosaic tile	2	36
CONTW0209A1	Perform mosaic work	2	36
CONTW0310A1	Perform decorative tile work	3	48
CONTW0311A1	Lay tile for curved surfaces	3	48
CONTW0312A1	Fix tile for irregular roof	3	54
CONTW0313A1	Set tile for pools and spas	3	60
<b>Total</b>			<b>582</b>
<b>Grand Total</b>			<b>900</b>

**National Competency Standards**  
**For**  
**Tile works: NTVQF 2**

**Structure of Competency**

**Generic Competencies**

Code	Unit of Competency	Level	No. of hours
GN0203A1	Communicate in the workplace	2	18
GN0204A1	Work in a team environment	2	18
<b>Total</b>			<b>36</b>

**Sector Specific Competencies**

Code	Unit of Competency	Level	No. of hours
CON0203A1	Interpret Drawings and Specifications in Construction Manuals	2	36
CON0204A1	Perform Measurement and Calculations in Construction Sector	2	36
CON0205A1	Maintain tools and equipment	2	30
<b>Total</b>			<b>102</b>

**Occupation Specific Competencies**

Code	Unit of Competency	Level	No. of hours
CONTW0206A1	Repair wall and floor tile work	2	30
CONTW0207A1	Perform Corner tile work	2	30
CONTW0208A1	Fix mosaic tile	2	36
CONTW0209A1	Perform Mosaic Work	2	36
<b>Total</b>			<b>132</b>
<b>Grand Total</b>			<b>270</b>

### Section 3

#### The Generic Competencies

Unit of Competency	<b>Communicate in the Workplace</b>
Unit Code	GN0203A1
Unit Descriptor	This unit covers the knowledge, skills and attitudes (KSAs) required in communicating with others in the workplace environment. It includes the use of receiving verbal instructions, interpreting verbal and written information and conveying instructions using verbal and written forms of communication.
Nominal Hours	18 hours

Elements of Competency	Performance Criteria
	<b><i>Bold italicized</i></b> words are detailed in the Range of Variables
1. Receive verbal instructions.	1.1 Instructions are accessed and interpreted. 1.2 Questions are asked to clarify understanding or gain more information. 1.3 Information/instruction is properly recorded.
2. Interpret verbal and written information/instruction	2.1 <b><i>Written instructions</i></b> are interpreted correctly in accordance with <b><i>workplace guidelines</i></b> . 2.2 Work <b><i>signage</i></b> are properly responded to customer requirement 2.3 Routine written instructions are followed in sequence. 2.4 Feedback is given to workplace supervisor based on <b><i>workplace guidelines</i></b> .
3. Convey instructions using verbal and written forms of communication	3.1 Relevant <b><i>communication</i></b> methods are used to transmit instructions. 3.2 Appropriate non-verbal communication is used. 3.3 Channels of communication are identified and followed in accordance with legal requirement and workplace guidelines. 3.4 Communication <b><i>tools and equipment</i></b> are operated, faults are identified and reported. 3.5 Information is conveyed using appropriate <b><i>forms</i></b> .
4. Complete written documentation	4.1 All required <b><i>documentation</i></b> are completed accurately and on time. 4.2 Workplace data is recorded using approved formats or templates. 4.3 Written information/instruction is passed to appropriate personnel.
5. Participate in work place meetings and discussions	5.1 Meetings are arranged regularly and on time following well-disseminated agenda. 5.2 Meeting inputs are consistent with the meeting purpose and established protocols. 5.3 Opinions are expressed without interruption. 5.4 Meeting outputs are processed implemented.

**Range of Variables**

<b>Variable</b>	<b>Range</b> (Include but not limited to):
1. Written instructions	1.1 Supervisor's/Manager's Instructions 1.2 Memoranda 1.3 Rules and Regulations 1.4 Signage 1.5 Approved work plan 1.6 External communications
2. Workplace guidelines	2.1 Labor Policies and Guidelines 2.2 Written Instructions 2.3 Operations manual 2.4 Organizational manuals 2.5 Quality assurance handbook
3. Signage	3.1 Direction signs 3.2 Common site warnings signs 3.3 Location signs 3.4 Traffic signs
4. Communication	4.1 Verbal communication 4.2 Written communication 4.3 Online communication
5. Tools and equipment	5.1 Telephone 5.2 Mobile Phone 5.3 Fax machine 5.4 Two-way radio 5.5 Computers 5.6 Forms 5.7 Letter/Slip 5.8 Receipt/memo
6. Forms	6.1 Memorandum 6.2 Requisitioning form 6.3 Personnel form 6.4 Safety report form 6.5 Challan form
7. Documentation	7.1 Reports (Monthly, Quarterly, Half-Yearly, Annual) 7.2 Plans (Strategic Plan, Operational Plan, Monthly Schedule) 7.3 Monitoring and Evaluation Report 7.4 Minutes of Meetings

**Evidence Guide**

1. Critical Aspects of competency	A person who demonstrates competency in this unit should be able to provide evidence of the ability to: 1.1 Demonstrated knowledge of workplace procedures in receiving, interpreting and conveying verbal & written communication. 1.2 Satisfying the requirements mentioned in the Performance Criteria and Range of Variables
2. Underpinning knowledge	2.1 Workplace Communication Policies, Standards and Procedures 2.2 Verbal and Non-verbal communication 2.3 Modes of Communication 2.4 Communication Equipment: Types, Uses and Faults 2.5 Channels of Communication
3. Underpinning Skills	3.1 Receiving verbal instructions. 3.2 Interpreting verbal and written information/instruction 3.3 Conveying instructions using verbal and written forms of communication 3.4 Completing written documentation 3.5 Participating in work place meetings and discussions
4. Underpinning Attitudes	4.1 Commitment to occupational health and safety 4.2 Environmental concerns 4.3 Eagerness to learn 4.4 Tidiness and timeliness 4.5 Respect for rights of peers and seniors in workplace 4.6 Communication with peers and seniors in workplace
5. Resource Implications	The following resources must be provided 5.1 Written instructions and workplace guidelines. 5.2 Work signage. 5.3 Communication tools and equipment. 5.4 Appropriate forms and documents.
6. Methods of Assessment	Competency should be assessed through: 6.1 Direct observation 6.2 Demonstration 6.3 Oral Questioning 6.4 Portfolio
7. Context of Assessment	Competency must be assessed individually in the actual work place or simulated environment in the Institute.

**Accreditation Requirements**

Training providers must be accredited by Bangladesh Technical Education Board (BTEB) , the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification.

Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.



Unit of Competency	<b>Work in a Team Environment</b>
Unit Code	GN0204A1
Unit Descriptor	This unit covers the knowledge, skills and attitudes (KSAs) required to working in a team environment. It includes the following: identify OHS policies and procedures, follow personal safety measures, report hazards and risks, respond to emergencies, and maintain personal well-being.
Nominal Hours	18 hours

<b>Elements of Competency</b>	<b>Performance Criteria</b> <i>Bold italicized</i> words are detailed in the Range of Variables
1. Define team role and scope	1.1 Role and objectives of the team are defined from available <b><i>sources of information</i></b> . 1.2 Team structure, responsibilities and reporting relations are identified from team discussions and other external sources.
2. Identify individual role and responsibility	2.1 Individual roles and responsibilities of <b><i>team members</i></b> are identified. 2.2 Reporting relationships among team members are defined and clarified. 2.3 Reporting relationships external to the team are defined and clarified.
3. Participate in team discussions	3.1 Ideas related to team plans are contributed. 3.2 Recommendations for improving team work are forwarded.
4. Work as a team member	4.1 Effective forms of communication are used to interact with team members in discussing team activities and Objectives based on <b><i>workplace context</i></b> . 4.2 Communication channels are followed. 4.3 OHS practices are followed

### Range of Variables

<b>Variable</b>	<b>Range</b> (Include but not limited to):
1. Sources of information	1.1 Standard Operating Procedures 1.2 Job Description 1.3 Operations Manual 1.4 Organizational Structure
2. Team Members	2.1 Coach/mentor 2.2 Supervisor/Manager 2.3 Peers/Colleagues 2.4 Employee representative
3. Workplace context	3.1 National Laws and Statutes 3.2 Standard Operating Procedures 3.3 Workplace Rules and Regulations

**Evidence Guide**

1. Critical Aspects of competency	A person who demonstrates competency in this unit should be able to provide evidence of the ability to: 1.1 Relationships, roles and responsibilities of team members. 1.2 Contribution of sharing ideas related to the role and objectives of the team.
2. Underpinning knowledge	2.1 Workplace Communication Policies, Standards and Procedures. 2.2 Verbal and Non-verbal communication 2.3 Modes of Communication. 2.4 Communication Equipment: Types, Uses and Faults 2.5 Channels of Communication.
3. Underpinning Skills	3.1 Receiving verbal instructions. 3.2 Interpreting verbal and written information/instruction. 3.3 Conveying instructions using verbal and written forms of communication. 3.4 Completing written documentation. 3.5 Participating in work place meetings and discussions.
4. Underpinning Attitudes	4.1 Commitment to occupational health and safety. 4.2 Environmental concerns. 4.3 Eagerness to learn. 4.4 Tidiness and timeliness. 4.6 Respect for rights of peers and seniors in workplace. 4.6 Communication with peers and seniors in workplace.
5. Resource Implications	The following resources must be provided 5.1 Role and objectives of the team. 5.2 Individual roles and responsibilities of team members.
6. Methods of Assessment	Competency should be assessed through: 6.1 Direct observation 6.2 Demonstration 6.3 Oral questioning 6.4 Portfolio
7. Context of Assessment	Competency must be assessed individually in the actual work place or simulated environment in the Institute.

**Accreditation Requirements**

Training providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification.

Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

### Section - 3

#### Sector Specific Competencies

Unit of Competency	<b>Interpret Drawings and Specifications in Construction Manuals</b>
Unit Code	CON0203A1
Unit Descriptor	This unit covers the knowledge, skill and attitude required in interpreting drawings and specifications in construction documents. It includes the following steps: identify information, identify drawings and specifications, interpret drawings and specifications, and apply occupational health and safety procedures.
Nominal Hours	36 hours.

<b>Element</b>	<b>Performance Criteria</b>
	<b><i>Bold italicized</i></b> words are detailed in the Range of Variables
1. Identify information from manuals	1.1. Appropriate <b><i>manuals</i></b> are identified and accessed as per job requirements. 1.2. Version and date of manual are checked to ensure up-to-date specifications of tools, equipment, materials and procedures.
2. Identify drawings and specifications	2.1. Relevant <b><i>drawings</i></b> and <b><i>specifications</i></b> are correctly identified as <b><i>instructions</i></b> . 2.2. <b><i>Terms and abbreviations</i></b> are identified. 2.3. <b><i>Signs and symbols</i></b> are identified
3. Interpret drawings and specifications	3.1. Drawings and specifications are interpreted in accordance with job requirements and industry practices. 3.2. Schedules, dimensions and specifications contained in drawings are interpreted.
4. Store manuals	4.1. Documents are stored appropriately to prevent damage, ready access and updating of information when required in accordance with company requirements.

**Ranges of Variables**

<b>Variable</b>	<b>Range</b> (Include but are not limited to):
1. Manual	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 Manual of Instruction
2. Drawing	2.1 Technical Drawings 2.2 Sketch
3 Specification	3.1 Product specifications 3.2 Performance specifications 3.3 Method specifications
4 Instruction	4.1 Orders 4.2 Special Orders
5 Terms and abbreviation	Refers to all terms and abbreviations associated with the construction sector
6 Signs and symbol	Include all signs and symbols associated with the construction sector

**Evidence Guide**

1. Critical aspects of competency	A person who demonstrates competency in this unit should be able to provide evidence of the ability to:  1.1 Interpret drawings and specifications in construction documents  1.2. Satisfying the requirements mentioned in the Performance Criteria and Range of Variables
2. Underpinning knowledge	2.1 Types of Construction Manuals 2.2 Identification of Signs and Symbols 2.3 Identification of Units of Measurement 2.4 Identification of Units of Conversion 2.5. Drawings and Specifications 2.6. Terms and Abbreviations Used
3. Underpinning skills	3.1. Identifying appropriate manuals 3.2. Identifying drawings and specifications

	3.3. Interpreting drawings and specifications 3.4. Storing manuals
4. Underpinning Attitudes	4.1 Interpreting drawings and specifications 4.2 Accessibility of work
5. Resource Implications	The following resources must be provided 5.1 Appropriate manuals. 5.2 Relevant drawings and specifications. 5.3 Signs and symbols.
6. Methods of assessment	Competency must be assessed by 6.1 Direct observation 6.2 Demonstration. 6.3 Oral questioning.
7. Context of assessment	Competency must be assessed in the actual workplace individually by direct observation.

### **Accreditation Requirements**

Training providers must be accredited by Bangladesh Technical Education Board (BTEB) , the national quality assurance body, or a body with delegated authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification.

Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit of Competency	<b>Perform Measurement and Calculations in Construction Sector</b>
Unit Code	CON0204A1
Unit Descriptor	This unit covers the knowledge skills and attitude required in performing measurements and calculations relating to activities in the construction sector. It includes the following steps: select measuring devices, obtain measurements, perform calculations, and clean-up.
Nominal Hours	36 hours.

<b>Element</b>	<b>Performance Criteria</b> Bold italicized words are detailed in the Range of Variables
1. Select measuring devices.	1.1. Work instructions are confirmed and applied. 1.2. <b>Place</b> to be measured are identified and classified. 1.3. Appropriate <b>measuring devices</b> are selected based on materials to be measured or job requirements. 1.4. Specifications are obtained from relevant <b>documents</b> . 1.5. Tolerance and clearance limits are identified and adjusted according to job requirements. 1.6. <b>PPE</b> (Personal Protective Equipment) and other safety devices are selected and used as per safety regulations.
2. Obtain measurements	2.1. Accurate <b>measurements</b> are obtained using measuring devices and in accordance with job requirements. 2.2. Systems of measurements are identified and converted according to ISO standards. 2.3. Results are confirmed and recorded.
3. Perform simple calculations	3.1. Simple calculations involving <b>four basic operations</b> are carried out. 3.2. <b>Other operations</b> are used to complete tasks. 3.3. Appropriate formulas for calculating quantities of materials are selected. 3.4. <b>Calculations</b> are performed and verified for accuracy. 3.5. Material quantities are accurately calculated. 3.6. Results are interpreted and communicated to

	authority.
4. Clean the work place	4.1 Tools and equipment are cleaned. 4.2 Work place is cleaned. 4.3 Waste materials are disposed in proper place.

### Ranges of Variables

<b>Variables</b>	<b>Range</b> (Include but are not limited to):
1. Place	Refers to all construction materials included but not limited to the following: 1.1. Construction Site Support (Dogging, Rigging etc.) 1.2. Carpentry and Form Work 1.3. Masonry, Brick/Block Laying and Concreting 1.4. Surface Finishing, Tiling and Painting 1.5. Roofing 1.6. Plumbing work 1.7. Electrical Wiring, fittings and fixture
2. Measuring devices	2.1. Scale 2.2. Dial indicators 2.3. Micrometers 2.4. Calipers 2.5. Tape 2.6. Steel rule 2.7. Try / Mason square 2.8. Calculator 2.9. Verniers 2.10. Wire gauge 2.11. Thermometer 2.12. Protractors
3. Documents	3.1. Technical Manuals 3.2. Specifications 3.3. Sketches 3.4. Drawings 3.5. Model
4. PPE	4.1. Dust mask 4.2. Goggles

	<ul style="list-style-type: none"> <li>4.3. Hand Gloves</li> <li>4.4. Safety shoes</li> <li>4.5. Aprons</li> <li>4.6. Overalls</li> <li>4.7. Helmet</li> </ul>
5. Measurements	<ul style="list-style-type: none"> <li>5.1. Length</li> <li>5.2. Width</li> <li>5.3. Depth/Height</li> <li>5.4. Weight/ Mass</li> <li>5.5. Number</li> <li>5.6. Diameter</li> <li>5.7. Tolerance</li> <li>5.8. Roundness</li> <li>5.9. Angles</li> <li>5.10. Flatness angle</li> <li>5.11. Clearances</li> <li>5.12. Plumpness</li> </ul>
6. Four basic operations	<ul style="list-style-type: none"> <li>6.1. Addition</li> <li>6.2. Subtraction</li> <li>6.3. Multiplication</li> <li>6.4. Division</li> </ul>
7. Other operations	<ul style="list-style-type: none"> <li>7.1. Fractions</li> <li>7.2. Percentages</li> <li>7.3. Mixed numbers</li> <li>7.4. Conversions</li> <li>7.5. Scales</li> <li>7.6. Trigonometric functions</li> <li>7.7. Algebraic computations</li> </ul>
8. Calculations	<ul style="list-style-type: none"> <li>8.1. Area</li> <li>8.2. Volume</li> <li>8.3. Circumference</li> <li>8.4. Clearance</li> <li>8.5. Diameter</li> <li>8.6. Ratio</li> </ul>



**Evidence Guide**

1. Critical aspects of competency	<p>A person who demonstrates competency in this unit should be able to provide evidence of the ability to:</p> <p>1.1 Selection and uses of appropriate measuring devices.</p> <p>1.2 Appropriate formulas for calculating quantities.</p>
2. Underpinning knowledge	<p>2.1. Types of Measuring Devices</p> <p>2.2. Measurement and Calculation</p> <p>2.3. Recording</p> <p>2.4. Fraction and Decimals</p> <p>2.5. Linear Measurement</p> <p>2.6. Unit of Conversion and Conversion Factors</p> <p>2.7. Dimension</p> <p>2.8. Ratio and Proportion</p> <p>2.9. Trigonometric Function</p> <p>2.10. Algebraic Equation</p> <p>2.11. Allowances and Tolerances</p> <p>2.12. Presentation of Data and Information</p> <p>2.13. Tolerances</p> <p>2.14. Care in the Use of Measuring Devices</p>
3. Underpinning Skills	<p>3.1. Selecting measuring devices</p> <p>3.2. Obtaining measurements</p> <p>3.3. Performing calculations</p> <p>3.4. Recording measurement</p> <p>3.5. Cleaning up</p>
4. Underpinning Attitudes	<p>4.1 Select measuring devices and obtain measurement.</p> <p>4.2 Perform calculation</p>
5. Resource Implications	<p>The following resources must be provided</p> <p>5.1. Suitable work area/shop with facilities and accessories</p> <p>5.2. Easy access and scope of measurement</p> <p>5.3. Availability of quality measuring and calculating devices</p>

	5.4. Information on construction materials appropriate to the relevant construction field
6. Method of Assessment	Competency must be assessed by 6.1. Direct observation of processes and procedures 6.2. Oral or written questioning on required knowledge 6.3. Testimony from supervisors, colleagues or appropriate persons
7. Context of Assessment	Competency must be assessed in the actual workplace individually by direct observation.

### **Accreditation Requirements**

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Unit of Competency	<b>Maintain tools and equipment</b>
Unit Code	CON0205A1
Unit Descriptor	This unit covers the knowledge, skills and attitude required perform routine maintenance. It includes checking condition of tools and equipment, basic preventive maintenance and storing tools and equipment.
Nominal Hours	30 hours

<b>Element</b>	<b>Performance Criteria</b> <i><b>Bold italicized</b></i> words are detailed in the Range of Variables
1. Check the condition of tools and equipment	1.1 <b>Materials, tools</b> and <b>equipment</b> are identified according to classification and job requirements 1.2 Non-functional tools and equipment are segregated and labeled according to classification 1.3 Safety of tools and equipment are observed in accordance with manufacturer's instructions 1.4 Condition of <b>PPE</b> are checked in accordance with manufacturer's instructions
2. Perform basic preventive maintenance	2.1 Appropriate lubricants are identified according to types of equipment 2.2 Tools and equipment are cleaned and lubricated according to preventive maintenance schedule or manufacturer's specifications 2.3 Measuring instruments are checked and calibrated in accordance with manufacturer's instructions 2.4 Defective instruments, equipment and accessories are inspected and replaced according to manufacturer's specifications 2.5 Tools are inspected, repaired and replaced after use 2.6 Work place is cleaned and kept in safe state in line with OSHA regulations
3. Store tools and equipment	3.1 Inventory of tools, instruments and equipment are conducted and recorded as per company practices 3.2 Tools and equipment are stored safely in

	appropriate locations in accordance with manufacturer's specifications or company procedures
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**Range of Variables**

<b>Variable</b>	<b>Range</b> (Included but not limited to):
1. Materials	1.1 Lubricants 1.2 Cleaning materials 1.3 Rust remover 1.4 Rugs 1.5 Spare parts
2. Tools	2.1 Cutting tools 2.1.1 Hacksaw 2.1.2 Cross-cut saw 2.1.3 Rip saw 2.2 Boring tools 2.2.1 Auger 2.2.2 Brace 2.2.3 Grin let 2.2.4 Hand drill 2.3 Holding tools 2.3.1 Vice grip 2.3.2 C-clamp 2.3.3 Bench vice 2.4 Threading tools 2.4.1 Die and stock 2.4.2 Taps 2.5 Measuring instruments/equipment
3. PPE	3.1 Goggles 3.2 Hand Gloves 3.3 Safety shoes 3.4 Aprons/Coveralls 3.5 Helmet 3.6 Face mask 3.7 Ear plug
4. Equipment	4.1 Impact drill machine (concrete/stone) 4.2 Portable Electric drill machine 4.3 Pedestal Electric drill machine,

	<ul style="list-style-type: none"> <li>4.4 Drill bit (different sizes)</li> <li>4.5 Pipe vice with tripod stand</li> <li>4.6 Hand Grinding Machine</li> <li>4.7 Chain pulley</li> <li>4.8 Hydraulic Pipe Bender</li> <li>4.9 Automatic pipe Threading Machine</li> <li>4.10 Hydraulic Jack</li> <li>4.11 Mechanical Jack</li> <li>4.12 Electric brick cutter machine</li> <li>4.13 Electric brick cutter machine disc</li> <li>4.14 Hydraulic Pressure pump device</li> <li>4.15 Pressure gauge</li> <li>4.16 Centrifugal pump</li> <li>4.17 Fire extinguisher</li> <li>4.18 Concrete mixture machine</li> <li>4.19 Vibrator machine</li> </ul>
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### Evidence Guide

1. Critical aspects of competency	<p>A person who demonstrates competency in this unit should be able to provide evidence of the ability to:</p> <ul style="list-style-type: none"> <li>1.1 Selected and used appropriate processes, tools and equipment to carry out task</li> <li>1.2 Identified functional and non-functional tools and equipment</li> <li>1.3 Checked, lubricated and calibrated tools, equipment and instruments according to manufacturer's specifications</li> <li>1.4 Replaced defective tools, equipment and their accessories</li> <li>1.5 Observed and applied safe handling of tools and equipment and safety work practices</li> <li>1.6 Prepared and submitted inventory report, where applicable</li> <li>1.7 Maintained workplace in accordance with OHS regulations</li> <li>1.8 Stored tools and equipment safely in appropriate locations and in accordance with company practices</li> </ul>
2. Underpinning knowledge	<ul style="list-style-type: none"> <li>2.1 Safety Practices <ul style="list-style-type: none"> <li>2.1.1 Use of PPE</li> <li>2.1.2 Handling of tools and equipment</li> <li>2.1.3 Good housekeeping</li> </ul> </li> <li>2.2 Materials, Tools and Equipment</li> </ul>

	<ul style="list-style-type: none"> <li>2.2.1 Types and uses of lubricants</li> <li>2.2.2 Types and uses of cleaning materials</li> <li>2.2.3 Types and uses of measuring instruments and equipment</li> <li>2.3 Preventive Maintenance <ul style="list-style-type: none"> <li>2.3.1 Methods and techniques</li> <li>2.3.2 Procedures</li> </ul> </li> </ul>
3. Underpinning Skills	<ul style="list-style-type: none"> <li>3.1 Preparing maintenance materials, tools and equipment</li> <li>3.2 Proper handling of tools and equipment</li> <li>3.3 Performing preventive maintenance</li> <li>3.1 Following instructions</li> </ul>
4. Underpinning Attitudes	<ul style="list-style-type: none"> <li>4.1 Commitment to occupational health and safety</li> <li>4.2 Environmental concerns</li> <li>4.3 Eagerness to learn</li> <li>4.4 Tidiness and timeliness</li> <li>4.5 Respect for rights of peers and seniors in workplace</li> <li>4.6 Communication with peers and seniors in workplace</li> </ul>
5. Resource implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>5.1 Workplace</li> <li>5.2 Maintenance schedule</li> <li>5.3 Maintenance materials, tools and equipment relevant to the proposed activity/task</li> </ul>
6. Methods of assessment	<p>Competency should be assessed through:</p> <ul style="list-style-type: none"> <li>6.1 Direct observation</li> <li>6.2 Written test/questioning relevant to underpinning knowledge</li> </ul>
7. Context of assessment	<p>Competency must be assessed in the actual workplace or in a simulated work place individually by direct observation.</p>

### Accreditation Requirements

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## Section - 4

### Occupation Specific Competencies

Unit of Competency	<b>Repair wall and floor tile work</b>
Unit Code	CONTW0206A1
Unit Descriptor	This unit of competency specifies the outcomes required to repair wall and floor tile, using mortar or adhesive.  It includes preparing, removing and replacing wall and floor tile.
Nominal Hours	30 hours

Element	Performance Criteria
	<b><i>Bold italicized</i></b> words are detailed in the Range of Variables
1. Plan and prepare for tile work	1.1 PPE is collected & used. 1.2 <b><i>OHS</i></b> requirements are followed. 1.3 Work instructions and operational details are obtained using relevant <b><i>information</i></b> for <b><i>planning and preparation</i></b> purposes as per requirement. 1.4 <b><i>Tools and equipment</i></b> are selected & collected. 1.5 <b><i>Material</i></b> are selected & collected as required. 1.6 Signage and barricade requirements are identified and implemented. 1.7 <b><i>Environmental requirements</i></b> are identified and applied.
2. Repair damaged tile work.	2.1. <b><i>Damaged or defective</i></b> tiles are removed. 2.2. Old bedding is cleaned and cleared. 2.3. Replacement <b><i>tiles</i></b> are selected and cut to match existing face, size, color and pattern. 2.4. Tile is fitted and <b><i>fixed</i></b> using mortar/adhesive as required. 2.5. Grouting is carried out and tile face cleaned to specified finish.
3. Clean the work place	3.1 Tools and equipment are cleaned 3.2 Work place is cleaned 3.3 Waste materials are disposed in proper place 3.4 Unused materials are stored

**Range of Variables**

<b>Variable</b>	<b>Range</b> (Include but are not limited to):
1. Information	1.1 Diagrams or sketches 1.2 Instructions issued by authorised personnel 1.3 Manufacturer specifications and instructions, where specified 1.4 Safe work procedures relating to fixing tile 1.5 Signage 1.6 Verbal, written and graphical instructions 1.7 Work bulletins 1.8 Work schedule, plan and specification
2. Planning and preparation	2.1 Assessment of conditions and hazards 2.2 Determination of work requirements and safety plans and policies 2.3 Equipment defect identification 2.4 Work site inspection.
3. Tools and equipment	3.1 Broom 3.2 Brush 3.3 Bucket 3.4 Mug 3.5 Caulking gun 3.6 Hammer 3.7 Levelling equipment 3.8 Measuring tape 3.9 Mason pan 3.10 Pointed grouter 3.11 Rubber mallet 3.12 Sanding block 3.13 Scraper 3.14 Shovel/Spade 3.15 Spacer and wedge 3.16 Sponge 3.17 Square 3.18 Straight edge 3.19 Tile cutter and scribe 3.20 Trowel 3.21 Wheelbarrow
4. Damages and defects	4.1 Chips or dents 4.2 Cracks and splits 4.3 Holes 4.4 Loose and flaked surface materials 4.5 Material drumming 4.6 Missing, cracked or damaged substrate or tile



	<p>4.7 Rough imperfect surfaces</p> <p>4.8 Surface depressions or dents.</p>
5. Tile	<p>5.1 Ceramic</p> <p>5.2 Glass</p> <p>5.3 Granite</p> <p>5.4 Marble</p> <p>5.5 Porcelain</p> <p>5.6 Stone</p> <p>5.7 Terracotta.</p>
6. Fixed	<p>6.1 Adhesives</p> <p>6.2 Cement mortar</p> <p>6.3 Cement mortar with admixture.</p>
7. Environmental requirements	<p>7.1 Clean up management</p> <p>7.2 Dust and noise</p> <p>7.3 Vibration</p> <p>7.4 Waste management</p>
8. Materials	<p>8.1 Adhesives</p> <p>8.2 Caulking compound</p> <p>8.3 Cement mortar</p> <p>8.4 Grout</p> <p>8.5 Tile.</p>
9. OHS	<p>9.1 Emergency procedures</p> <p>9.2 Hazard control</p> <p>9.3 Hazardous materials and substances</p> <p>9.4 First aid</p> <p>9.5 PPE</p> <p>9.6 Safe operating procedures</p> <p>9.7 Concealed services (water, power and gas)</p> <p>9.8 Lighting</p> <p>9.9 Traffic control</p> <p>9.10 Restricted access barriers</p> <p>9.11 Trip hazards</p> <p>9.12 Work site visitors and the public</p> <p>9.13 Working at heights</p> <p>9.14 Working in confined spaces</p> <p>9.15 Working in proximity to others</p> <p>9.16 Use of fire fighting equipment</p> <p>9.17 Use of tools and equipment</p> <p>9.18 Workplace environmental requirements and safety</p>

**Evidence Guide**

1. Critical Aspects of Competency	<p>1.1 Removal of damaged or defective tile.</p> <p>1.2 Select and cut replacement tile.</p> <p>1.3 Fitting and fixing tile where applicable to match existing face, size, colour and pattern.</p> <p>1.4 Selected and used of appropriate processes, tools and equipment</p>
2. Underpinning knowledge	<p>2.1 Techniques of removal and repairing damaged or defective wall.</p> <p>2.2 Tiling materials, including tile, adhesives, mortar, grouting and substrates, their qualities, characteristics, preparation, techniques, applications, limitations and finishing workplace and equipment safety requirements.</p> <p>2.3 Drawings and specifications.</p> <p>2.4 Tools and equipment types, uses and limitations.</p> <p>2.5 Processes for the calculation of material requirements.</p> <p>2.6 Materials storage and environmentally friendly waste management.</p> <p>2.7 Quality requirements</p> <p>2.8 Workplace and equipment safety requirements.</p>
3. Underpinning skills	<p>3.1 Interpret drawings and specifications.</p> <p>3.2 Recognizing procedures.</p> <p>3.3 Handling tools, equipment and materials</p> <p>3.4 Preparing appropriate pattern and materials for tiling</p> <p>3.5 Preparing substrate surface for fixing tile</p> <p>3.6 Techniques of removal and repairing damaged or defective wall and floor tile, including preparation of substrates.</p> <p>3.7 Fixing tiles with grouting.</p>
4. Underpinning Attitudes	<p>4.1 Commitment to occupational health and safety</p> <p>4.2 Environmental concerns</p> <p>4.3 Eagerness to learn</p> <p>4.4 Tidiness and timeliness</p> <p>4.5 Respect for rights of peers and seniors in workplace</p> <p>4.6 Communication with peers and seniors in</p>

	workplace
5. Resource Implications	5.1 Work place 5.2 Appropriate tools and equipment 5.3 Tiles 5.4 Mortar.
6. Methods of Assessment	6.1 Direct observation 6.2 Oral Questioning 6.3 Demonstration 6.4 Written test
7. Context of Assessment	Competency may be assessed individually in the actual work place or through institutions by direct observation.

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Unit of Competency	<b>Perform Corner Tile work</b>
Unit Code	CONTW0207A1
Unit Descriptor	This unit covers the knowledge, skills and attitude required to perform tile for corner. It includes preparing plan, tiles inter and external corner for tile and mosaic setter.
Nominal Hours	30 hours

<b>Element</b>	<b>Performance Criteria</b> <i><b>Bold italicized</b></i> words are detailed in the Range of Variables
1. Plan and prepare for corner tile work	1.1 PPE is collected & used 1.2 <b>OHS</b> requirements are followed. 1.3 Work instructions and operational details are obtained using relevant <b>information</b> for planning and preparation purposes. 1.4 <b>Tools and equipment</b> are selected & collected. 1.5 <b>Material</b> are selected & collected as required. 1.6 Signage and barricade requirements are identified and implemented. 1.7 Environmental requirements are identified and applied.
2. Set external corner tile	2.1 <b>External corners</b> are checked for flat of surfaces and straightness of intersections. 2.2 Trimmed tile is set to both corners. 2.3 <b>Tile</b> is installed without voids in tile bed and fully bedded to maintain alignment. 2.4 Corners are maintained square and finished. 2.5 Set tile is checked for specified tolerance of $\pm 2$ mm based on plumb & level. 2.6 Tiled surface is polished and cleaned.
3. Set internal corner tile	3.1 <b>Internal corners</b> are checked for flat of surfaces and straightness of intersections. 3.2 Trimmed tile is set to both corners. 3.3 Tile is installed without voids in tile bed and fully bedded to maintain alignment. 3.4 Corners are maintained square and finished. 3.5 Set tile is checked for specified tolerance of $\pm 2$ mm based on plumb & level. 3.6 Tiled surface is polished and cleaned.

4. Clean the work place	<p>4. 1 Tools and equipment are cleaned</p> <p>4.2 Work place is cleaned</p> <p>4.3 Waste materials are disposed in proper place</p> <p>4.4 Unused materials are stored</p>

### Range of Variables

Variable	Range (Include but not limited to):
1. Information	<p>1.1 Diagrams or sketches</p> <p>1.2 Instructions issued by authorised personnel</p> <p>1.3 Manufacturer specifications and instructions, where specified</p> <p>1.4 Safe work procedures relating to fixing tile</p> <p>1.5 Work bulletins</p> <p>1.6 Work schedule, plan and specification</p>
2. Internal corners	<p>2.1 Curved plastic bead / rim</p> <p>2.2 Curved internal corner</p> <p>2.3 Rectangular</p> <p>2.4 Angular</p>
3. OHS	<p>3.1 Workplace environment and safety</p> <p>3.2 Protective clothing and equipment</p> <p>3.4 Handling of materials</p> <p>3.5 Working platforms</p> <p>3.6 Hazardous materials</p>
4. Material	<p>4.1 Tile adhesive</p> <p>4.2 Tile grout</p> <p>4.3 Tile</p> <p>4.4 Cement</p> <p>4.5 Sand</p> <p>4.6 Water</p>
5. Tile	<p>5.1 Ceramic</p> <p>5.2 Glass</p> <p>5.3 Granite</p> <p>5.4 Marble</p> <p>5.5 Porcelain</p>

	<p>5.6 Stone</p> <p>5.7 Terracotta.</p> <p>5.8 Pavement Tile</p>
6. Tools and equipment	<p>6.1 Brooms</p> <p>6.2 Brushes</p> <p>6.3 Buckets</p> <p>6.4 Leveling equipment</p> <p>6.5 Measuring tapes and rules</p> <p>6.6 Pan</p> <p>6.7 Pointed grouters</p> <p>6.8 Rubber mallets</p> <p>6.9 Sanding blocks</p> <p>6.10 Scrapers</p> <p>6.11 Shovels</p> <p>6.12 Spacers and wedges</p> <p>6.13 Sponges</p> <p>6.14 Squares</p> <p>6.15 Straight edges</p> <p>6.16 Tile cutters and scribes</p> <p>6.17 Trowels</p> <p>6.18 Wheelbarrows</p> <p>6.19 Soft cloth</p>
7. External corners	<p>7.1 Curved plastic bead / rim</p> <p>7.2 Curved external corner</p>

### Evidence Guide

1. Critical Aspects of Competency	<p>1.1 Interpreted drawings</p> <p>1.2 Complied OHS requirements</p> <p>1.3 Performed tiling of external and internal corners</p> <p>1.4 Select and cut tile.</p> <p>1.5 Fitting and fixing tile to match face, size, color and pattern.</p> <p>1.6 Selected and used of appropriate processes, tools and equipment</p> <p>1.7 Checked quality of tile fitting work</p>
2. Underpinning knowledge	<p>2.62.1 Tools and equipment types, uses and limitations.</p> <p>2.2 Corner surface preparation process for tiling</p> <p>2.3 Installation process of tile in curve surfaces</p> <p>2.4 Drawings and specifications</p> <p>2.5 Procedures for tiling internal and external</p>

	corners 2.6 Quality of materials
3. Underpinning Skills	3.1 Interpreting drawings and specifications 3.2 Preparing corner surfaces for tiling 3.3 Performing procedures for internal and external corner tile work 3.4 Preparing materials 3.5 Using PPE
4. Underpinning Attitudes	4.1 Commitment to occupational health and safety 4.2 Environmental concerns 4.3 Eagerness to learn 4.4 Tidiness and timeliness 4.5 Respect for rights of peers and seniors in workplace 4.6 Communication with peers and seniors in workplace
5. Resource Implication	5.1 Work place 5.2 Appropriate tools and equipment 5.3 Tile 5.4 Proper materials 5.5 Drawings 5.6 Specifications
6. Methods of Assessment	6.1 Direct observation 6.2 Oral Questioning 6.3 Demonstration 6.4 Written Test
6. Context of Assessment	Competency may be assessed individually in the actual work place or through institutions by direct observation.

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Unit of Competency	<b>Fix mosaic tile</b>
Unit Code	CONTW0208A1
Unit Descriptor	This unit covers the knowledge, skills and attitude required to fix mosaic tiling.  It includes preparing plan, preparing materials and substrate, fix mosaic tiles for flat and curved surface for tiles and mosaic setter.
Nominal Hours	36 hours

<b>Element</b>	<b>Performance Criteria</b>
	<b><i>Bold italicized</i></b> words are detailed in the Range of Variables
1. Plan and prepare for work	<p>1.1 PPE is Collected &amp; used</p> <p>1.2 <b>OHS</b> requirements are followed.</p> <p>1.3 Work instructions and operational details are obtained using relevant <b>information</b> for <b>planning and preparation</b> purposes.</p> <p>1.4 <b>Tools and equipment</b> are selected &amp; collected.</p> <p>1.5 <b>Material</b> are selected &amp; collected as required.</p> <p>1.6 Signage and barricade requirements are identified and implemented.</p> <p>1.7 <b>Environmental requirements</b> are identified and applied.</p>
2. Prepare materials	<p>2.1. Work area for mosaic fixing is prepared as required.</p> <p>2.2. Mosaic sheets are checked for conformity to size, pattern, colour and characteristics in accordance with plans and specifications.</p> <p>2.3 Adhesive is selected, prepared and mixed in accordance with standard work practices.</p>
3. Prepare substrate	<p>3.1. <b>Substrate</b> surfaces are prepared for application of render.</p> <p>3.2. Render is mixed as per specification.</p> <p>3.3. Substrate surfaces are rendered to specified thickness, standard and finish.</p> <p>3.4. Surface is cleaned free of contaminants and loose material ready for tile application.</p>
4. Fix mosaic tile to flat surfaces	<p>4.1. Prepared mosaic sheets or tile are marked to identify the section of application.</p> <p>4.2. Appropriate fixing medium is selected</p> <p>4.3. <b>Fixing</b> medium is applied to substrate and mosaic sheets or tiles are laid by maintaining</p>



	<p>alignment to set out lines and face surface of tile.</p> <p>4.4. Mosaic tiles are positioned prior to final set and adjusted.</p> <p>4.5. <b>Surface</b> is finished as per requirement.</p>
5. Fix mosaic tile to curved surfaces	<p>5.1 Extent of curve &amp; DATUM line is set out from site inspection.</p> <p>5.2 <b>Tile</b> is set out to determine design balance and to identify any cutting requirement.</p> <p>5.3. Template is made to form the finished curve of the tiled surface</p> <p>5.4 Substrate surfaces are rendered to specified thickness and finished to prepare template.</p> <p>5.5 Mortar/adhesive is prepared.</p> <p>5.6 Tile are fixed level, plumb, flush and square in accordance with specifications.</p> <p>5.7 Horizontally laid tiles are set out to grid with perimeter tiles marked and cut to fit curve lines.</p>
6. Fix mosaic tile to a circular column	<p>6.1. Surface is prepared and cleaned for render application.</p> <p>6.2. Template is prepared for the diameter profile of column.</p> <p>6.3. Surface is rendered to specified thickness and finished to prepare template.</p> <p>6.4 Template is prepared for diameter profile of finished tiled face.</p> <p>6.5 Mosaic sheet or tile are fixed to column, maintaining an even spacing and plumb and level finish as per specification.</p>
7. Grout tile face	<p>7.1. Tile surface is cleaned free of dust and adhesive.</p> <p>7.2. Oxides are selected and grout is mixed and applied to mosaic surface.</p> <p>7.3 Mosaic surface is checked and defects are rectified.</p> <p>7.3. Finished mosaic surface is cleaned and polished with dry cloth</p>
8. Clean the work place	<p>8.1 Tools and equipment are cleaned</p> <p>8.2 Work place is cleaned</p> <p>8.3 Waste materials are disposed in proper place.</p> <p>8.4 Unused materials are stored</p>

**Range of Variables**

<b>Variables</b>	<b>Range</b> (Include but are not limited to):
1. Information	1.1 Diagrams or sketches 1.2 Instructions issued by authorised personnel 1.3 Manufacturer specifications and instructions, where specified 1.4 Safe work procedures relating to fixing wall tile 1.5 Signage 1.6 Verbal, written and graphical instructions 1.7 Work bulletins 1.8 Work schedules, plans and specifications
2. Planning and preparation	2.1 Assessment of conditions and hazards 2.2 Determination of work requirements and 2.3 safety plans and policies 2.4 Equipment defect identification Work site inspection.
3. Safety(OHS )	3.1 Emergency procedures. 3.2 Hazard control with hazardous materials and substances 3.3 First aid procedures. 3.4 PPE 3.5 Safe operating procedures 3.6 Fire fighting equipment 3.7 Tools and equipment 3.8 Workplace environmental requirements and safety.
4. Tools and equipment:	4.1 Brooms 4.2 Brushes 4.3 Buckets 4.4 Caulking guns 4.5 Leveling equipment 4.6 Measuring tapes and rules 4.7 Pan 4.8 Pointed grouters 4.9 Rubber mallets 4.10 Sanding blocks 4.11 Scrapers 4.12 Shovels 4.13 Spacers and wedges 4.14 Sponges 4.15 Squares 4.16 Straight edges 4.17 Tile cutters and scribes 4.18 Trowels

	4.19 Wheelbarrows
5. Materials	5.1 Adhesives 5.2 Caulking compound 5.3 Cement mortar. 5.4 Grout 5.5 Mosaic sheet 5.6 Paper 5.7 Paper-faced mosaic 5.8 Tile.
6. Environmental requirements	6.1 Clean-up management 6.2 Dust and noise 6.3 Vibration 6.4 Waste management.
7. Substrate	7.1 Block work 7.2 Brickwork 7.3 Concrete walls
8. Fixing	8.1 Adhesives 8.2 Cement mortar
9. Surface	9.1 Circular 9.2 Curved horizontal 9.3 Curved vertical 9.4 Flat horizontal 9.5 Flat vertical.
10. Tile	10.1 Ceramic 10.2 Glass 10.3 Granite 10.4 Marble 10.5 Porcelain 10.6 Stone 10.7 Terracotta.

**Evidence Guide**

1. Critical Aspects of Competency	<ul style="list-style-type: none"> <li>1.1 Interpreted drawings</li> <li>1.2 Complied OHS requirements in tile setting</li> <li>1.3 Performed tiling of external and internal corners</li> <li>1.4 Select and cut mosaic tile.</li> <li>1.5 Fitting and fixing mosaic tile to match face, size, color and pattern.</li> </ul>
2. Underpinning knowledge	<ul style="list-style-type: none"> <li>2.1 Materials storage and environmentally friendly waste management</li> <li>2.2 Mosaic tiling materials, including tile, adhesives, mortar, grouting and substrates, their characteristics, preparation, methods, application and finishing</li> <li>2.3 Mosaic tiling methods and set out procedures</li> <li>2.4 Drawings and specifications</li> <li>2.5 Tools and equipment uses and limitations</li> <li>2.6 Processes for the calculation of material requirements</li> <li>2.7 Quality requirements workplace and safety requirements.</li> </ul>
3. Underpinning skills	<ul style="list-style-type: none"> <li>3.1 Interpreting drawings and specifications</li> <li>3.2 Preparing surfaces for mosaic tiling</li> <li>3.3 Performing procedures for mosaic tile work</li> <li>3.4 Complying OHS requirements</li> <li>3.5 Preparing materials</li> <li>3.6 Using PPE</li> </ul>
4. Underpinning Attitudes	<ul style="list-style-type: none"> <li>4.1 Commitment to occupational health and safety</li> <li>4.2 Environmental concerns</li> <li>4.3 Eagerness to learn</li> <li>4.4 Tidiness and timeliness</li> <li>4.5 Respect for rights of peers and seniors in workplace</li> <li>4.6 Communication with peers and seniors in workplace</li> </ul>
5. Resource Implication	<ul style="list-style-type: none"> <li>5.1 Work place</li> <li>5.2 Appropriate tools and equipment</li> <li>5.3 Tile</li> <li>5.4 Proper materials</li> <li>5.5 Drawings and specifications</li> </ul>

6. Methods of Assessment	6.1 Direct observation 6.2 Oral Questioning 6.3 Demonstration 6.4 Written test
7. Context of Assessment	Competency may be assessed individually in the actual work place or through institutions by direct observation.

### **Accreditation Requirements**

Training providers must be accredited by Bangladesh Technical Education Board (BTEB), the national quality assurance body, or a body with delegated Authority for quality assurance to conduct training and assessment against this unit of competency for credit towards the award of any national qualification.

Accredited providers assessing against this unit of competency must meet the quality assurance requirements set by BTEB.

Unit of Competency	<b>Perform Mosaic Work</b>
Unit Code	CONTW0209A1
Unit Descriptor	This unit covers the knowledge, skills and attitude required to perform mosaic work. It includes: planning and preparing for mosaic works; preparing sub-base; and making mosaic surface for constructions of mosaic work.
Nominal Hours	36hours

<b>Element</b>	<b>Performance Criteria</b> <i><b>Bold italicized</b></i> words are detailed in the Range of Variables
1. Plan and prepare	1.1 <b>PPE</b> is collected & used. 1.3 Work instructions and operational details are obtained using relevant <b>information</b> for planning and preparation purposes. 1.2 OHS requirements are followed. 1.4 <b>Tools and equipment</b> are selected & collected. 1.5 <b>Material</b> are selected & collected as required. 1.6 Signage and barricade requirements are identified and implemented. 1.7 Environmental requirements are identified and applied.
2. Prepare base	2.1 Mosaic area is cleaned. 2.2 Glass strip is installed & level is checked. 2.3 Cement mortar is prepared. 2.4 Cement mortar is placed. 2.5 Cement mortar is leveled and slope is maintained. 2.6 Top surface of base is scratched/roughed. 2.7 Base is cured.
3. Prepare mosaic surface	3.1 Mosaic ingredients are mixed 3.2 Mixture of mosaic ingredients are placed in to the glass strip 3.3 Ingredients are leveled and slope is maintained 3.4 Mosaic surface is cured. 3.5 Mosaic surface are grinded. 3.6 Mosaic surface are polished. 3.7 Smooth mosaic surface is cleaned
4. Clean the work place	4.1 Tools and equipment are cleaned 4.2 Work place is cleaned 4.3 Waste materials are disposed in proper place.

**Range of Variables**

<b>Variable</b>	<b>Range</b> (Include but are not limited to):
1. Information	1.1 Drawings 1.2 Sketch 1.3 Verbal, written and graphical instruction
2. Material	2.1 White cement 2.2 Grey cement 2.3 Sand (F.M 1.5 – 2.0 ) 2.4 Marble chips ( Various color) 2.5 Glass strip 2.6 Oxalic acid 2.7 Fresh water
3. Tools and equipments	3.1 Measuring tap 3.2 Trowel 3.3 Try square 3.4 Spirit level 3.5 Plumb bob 3.6 Water Tube 3.7 Hard broom 3.8 Pointing trowel 3.9 Spirit level 3.10 Spade 3.11 Shovel 3.12 Mason pan 3.13 Bucket 3.14 Wire brush 3.15 String 3.16 Pumic/Carborandum stone
4. PPE	4.1 Safety shoes 4.2 Safety Gloves 4.3 Safety helmet 4.4 Body harness/ Safety belt as required 4.5 Proper clothes

**Evidence Guide**

1. Critical Aspects of Competency	<ul style="list-style-type: none"> <li>1.1 Interpreted drawings</li> <li>1.2 Complied OHS requirements in mosaic setting</li> <li>1.3 Performed mosaic work</li> <li>1.4 Prepare mosaic materials</li> <li>1.5 Glass strip setting</li> <li>1.6 Leveling mosaic surface</li> <li>1.7 Grinding mosaic surface</li> </ul>
2. Underpinning knowledge	<ul style="list-style-type: none"> <li>2.1 Materials storage and environmentally friendly waste management</li> <li>2.2 Mosaic work materials, including marble, adhesives, mortar, grouting, substrates etc their characteristics, preparation, methods, application and finishing</li> <li>2.3 Mosaic work methods and set out procedures</li> <li>2.4 Plans, drawings and specifications</li> <li>2.5 Plant, tools and equipment types, characteristics, uses and limitations</li> <li>2.6 Glass strip setting process</li> <li>2.7 Levelling mosaic surface process</li> <li>2.8 Grinding mosaic surface process</li> <li>2.8 Quality requirements workplace and equipment safety requirements.</li> </ul>
3. Underpinning Skills	<ul style="list-style-type: none"> <li>3.1 Interpreting drawings and specifications</li> <li>3.2 Preparing surfaces for mosaic work</li> <li>3.3 Performing procedures for mosaic work</li> <li>3.4 Complying OHS requirements</li> <li>3.5 Following manufacturer's specifications and recommendations</li> <li>3.6 Preparing materials</li> <li>3.7 Using PPE</li> <li>3.8 Using tools &amp; machinery related to the mosaic work</li> <li>3.9 Glass strip setting process</li> <li>3.10 Levelling mosaic surface process</li> </ul>



	3.11 Grinding mosaic surface process
4. Underpinning Attitudes	4.1 Commitment to occupational health and safety 4.2 Environmental concerns 4.3 Eagerness to learn 4.4 Tidiness and timeliness 4.5 Respect for rights of peers and seniors in workplace 4.5 Communication with peers and seniors in workplace
5. Resource Implication	5.1 Work place 5.2 Appropriate tools and equipment 5.3 Proper materials 5.4 Drawings 5.5 Specifications
6. Methods of Assessment	6.1 Direct observation 6.2 Oral Questioning 6.3 Demonstration 6.4 Written test
7. Context of Assessment	Competency may be assessed individually in the actual work place or through institutions by direct observation.

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<b>Generic Specific Competencies</b>	Use Basic mathematical concept	Apply OHS practices in the work place				
	1	1				
	Communicate in the workplace	Work in a team environment				
	2	2				
	Demonstrate work values	Lead small team	Practice negotiation skills			
	3	3	3			

## Annex 2. Bangladesh National Qualifications Framework

TVQF Level	Education Type			Current Qualification Structure	Job Classification
	Pre-Voc	VE	TE		
<b>TVQF 6</b>			Diploma	4-year Diploma-in-Engineering	Supervisor/ Middle Manager/ Sub-Assistant Engineer
<b>TVQF 5</b>		**NSC-V		NSS Master	Highly-Skilled Worker/ Supervisor
<b>TVQF 4</b>		**NSC-IV		NSS 1/HSC (Voc) Year 11/12	Skilled Worker
<b>TVQF 3</b>		**NSC-III		NSS 2/SSC (Voc) Year 10	Semi-Skilled Worker
<b>TVQF 2</b>		**NSC-II		NSS 3/SSC (Voc) Year 9	Basic Skilled Worker
<b>TVQF 1</b>		**NSC-I		NSS Basic/ Basic Trade Course	Basic Worker
<b>Pre-Voc 2</b>	*NPVC-II			None	Pre-Vocational Trainee
<b>Pre-Voc 1</b>	*NPVC-I			None	Pre-Vocational Trainee

\*NPVC – National Pre-Vocational Certificate

\*\*NSC – National Skill Certificate

**Annex 3. Qualification Level Descriptors**

<b>BTVQF Level</b>	<b>Knowledge</b>	<b>Skill</b>	<b>Responsibility</b>	<b>Job Class</b>
6	Comprehensive actual and theoretical knowledge within a specific study area with an awareness of the limits of that knowledge.	Specialised and restricted range of cognitive and practical skills required to provide leadership in the development of creative solutions to defined problems	Manage a team or teams in workplace activities where there is unpredictable change Identify and design learning programs to develop performance of team members	Supervisor/ Middle-Level Manager/ Sub-Assistant Engineer
5	Very broad knowledge of the underlying, concepts, principles, and processes in a specific study area	Very broad range of cognitive and practical skills required to generate solutions to specific problems in one or more study areas.	Take overall responsibility for completion of tasks in work or study Apply past experiences in solving similar problems	Highly Skilled Worker/ Supervisor (NSC 4)
4	Broad knowledge of the underlying, concepts, principles, and processes in a specific study area	Range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying the full range of methods, tools, materials and information	Take responsibility, within reason, for completion of tasks in work or study Apply past experiences in solving similar problems	Skilled Worker
3	Moderately broad knowledge in a specific study area.	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools	Work or study under supervision with some autonomy	Semi- Skilled worker

<b>BTVQF Level</b>	<b>Knowledge</b>	<b>Skill</b>	<b>Responsibility</b>	<b>Job Class</b>
2	Basic underpinning knowledge in a specific study area.	Basic skills required to carry out simple tasks	Work or study under indirect supervision in a structured context	Medium Skilled Worker
1	Elementary understanding of the underpinning knowledge in a specific study area.	Limited range of skills required to carry out simple tasks	Work or study under direct supervision in a structured context	Basic Skilled Worker
Pre-Voc 2	Limited general knowledge	Very limited range of skills and use of tools required to carry out simple tasks	Work or study under direct supervision in a well-defined, structured context.	Pre-Vocational Trainee (NPVC 2)
Pre-Voc 1	Extremely limited general knowledge	Minimal range of skills required to carry out simple tasks	Simple work or study exercises, under direct supervision in a clear, well defined structured context	Pre-Vocational Trainee (NPVC 1)

## Annex 4. Key for Coding

<b>Code</b>	<b>Description</b>
<b>Occupational Sector</b>	
RMG	Ready-Made Garments
LEG	Light Engineering
CON	Construction
INF	Informal Sector
<b>Occupation</b>	
MAS	Mason
PLM	Plumbing
PNT	Painter
TW	Tile work
<b>Competencies</b>	
GN	Generic Competencies



## **Acknowledgments**

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