

TRAINING REGULATIONS



Tile-Setting NC II

CONSTRUCTION SECTOR

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY
East Service Road, South Superhighway, Taguig City, Metro Manila

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TRAINING REGULATIONS FOR TILE-SETTING NC II

SECTION 1 TILE SETTING NC II QUALIFICATION

The **Tile-Setting NC II** Qualification consists of competencies that a person must achieve to enable him / her to lay and repair floor and wall tiles, tile corners and curved surfaces.

This Qualification is packaged from the competency map of Construction sector as shown in Annex A.

The Units of Competency comprising this Qualification include the following:

CODE NO. BASIC COMPETENCIES

Units of Competency

500311105	Participate in workplace communication
500311106	Work in a team environment
500311107	Practice career professionalism
500311108	Practice occupational health and safety procedures

CODE NO. COMMON COMPETENCIES

Units of Competency

CON931201	Prepare construction materials and tools
CON311201	Observe procedures, specifications and manuals of instruction
CON311202	Interpret technical drawings and plans
CON311203	Perform mensurations and calculations
CON311204	Maintain tools and equipment

CODE NO. CORE COMPETENCIES

Units of Competency

CON713332	Lay and repair floor and wall tiles
CON713333	Tile corners
CON713334	Tile curved surfaces

A person who has achieved this Qualification is competent to be a:

- Tile-Setter

SECTION 2 COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common and core units of competency required in **TILE-SETTING NC II**.

BASIC COMPETENCIES

UNIT OF COMPETENCY:	PARTICIPATE IN WORKPLACE COMMUNICATION
UNIT CODE :	500311105
UNIT DESCRIPTOR :	This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements.

ELEMENT	PERFORMANCE CRITERIA <i>Bold and Italicized</i> terms are elaborated in the Range of Variables
1. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from <i>appropriate sources</i> 1.2 Effective questioning , active listening and speaking skills are used to gather and convey information 1.3 Appropriate <i>medium</i> is used to transfer information and ideas 1.4 Appropriate non- verbal communication is used 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed 1.6 Defined workplace procedures for the location and <i>storage</i> of information are used 1.7 Personal interaction is carried out clearly and concisely
2. Participate in workplace meetings and discussions	2.1 Team meetings are attended on time 2.2 Own opinions are clearly expressed and those of others are listened to without interruption 2.3 Meeting inputs are consistent with the meeting purpose and established <i>protocols</i> 2.4 <i>Workplace interactions</i> are conducted in a courteous manner 2.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are asked and responded to 2.6 Meetings outcomes are interpreted and implemented

<p>3. Complete relevant work related documents</p>	<p>3.1 Range of forms relating to conditions of employment are completed accurately and legibly</p> <p>3.2 Workplace data is recorded on standard workplace forms and documents</p> <p>3.3 Basic mathematical processes are used for routine calculations</p> <p>3.4 Errors in recording information on forms/ documents are identified and properly acted upon</p> <p>3.5 Reporting requirements to supervisor are completed according to organizational guidelines</p>
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RANGE OF VARIABLES

VARIABLE	RANGE
1. Appropriate sources	1.1 Team members 1.2 Suppliers 1.3 Trade personnel 1.4 Local government 1.5 Industry bodies
2. Medium	2.1 Memorandum 2.2 Circular 2.3 Notice 2.4 Information discussion 2.5 Follow-up or verbal instructions 2.6 Face to face communication
3. Storage	3.1 Manual filing system 3.2 Computer-based filing system
4. Forms	4.1 Personnel forms, telephone message forms, safety reports
5. Workplace interactions	5.1 Face to face 5.2 Telephone 5.3 Electronic and two way radio 5.4 Written including electronic, memos, instruction and forms, non-verbal including gestures, signals, signs and diagrams
6. Protocols	6.1 Observing meeting 6.2 Compliance with meeting decisions 6.3 Obeying meeting instructions

EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Demonstrates ability to prepare written communication following standard format of the organization 1.2 Demonstrates ability to access information using communication equipment 1.3 Made use of relevant terms as an aid to transfer information effectively 1.4 Conveyed information effectively adopting the formal or informal communication
<p>2. Underpinning Knowledge and Attitudes</p>	<ul style="list-style-type: none"> 2.1 Effective communication 2.2 Different modes of communication 2.3 Written communication 2.4 Organizational policies 2.5 Communication procedures and systems 2.6 Technology relevant to the enterprise and the individual's work responsibilities
<p>3. Underpinning Skills</p>	<ul style="list-style-type: none"> 3.1 Follow simple spoken language 3.2 Perform routine workplace duties following simple written notices 3.3 Participate in workplace meetings and discussions 3.4 Complete work related documents 3.5 Estimate, calculate and record routine workplace measures 3.6 Basic mathematical processes of addition, subtraction, division and multiplication 3.7 Ability to relate to people of social range in the workplace 3.8 Gather and provide information in response to workplace requirements
<p>4. Resource Implications</p>	<ul style="list-style-type: none"> 4.1 Fax machine 4.2 Telephone 4.3 Writing materials 4.4 Internet
<p>5. Methods of Assessment</p>	<ul style="list-style-type: none"> 5.1 Direct Observation 5.3 Oral interview and written test
<p>6. Context of Assessment</p>	<ul style="list-style-type: none"> 6.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY:	WORK IN TEAM ENVIRONMENT
UNIT CODE :	500311106
UNIT DESCRIPTOR :	This unit covers the skills, knowledge and attitudes to identify role and responsibility as a member of a team.

ELEMENT	PERFORMANCE CRITERIA <i>Bold and Italicized</i> terms are elaborated in the Range of Variables
1. Describe team role and scope	<p>1.1 The <i>role and objective of the team</i> is identified from available <i>sources of information</i></p> <p>1.2 Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources</p>
2. Identify own role and responsibility within team	<p>2.1 Individual role and responsibilities within the team environment are identified</p> <p>2.2 Roles and responsibility of other team members are identified and recognized</p> <p>2.3 Reporting relationships within team and external to team are identified</p>
3. Work as a team member	<p>3.1 Effective and appropriate forms of communications used and interactions undertaken with team members who contribute to known team activities and objectives</p> <p>3.2 Effective and appropriate contributions made to complement team activities and objectives, based on individual skills and competencies and <i>workplace context</i></p> <p>3.3 Observed protocols in reporting using standard operating procedures</p> <p>3.4 Contribute to the development of teamwork plans based on an understanding of team's role and objectives and individual competencies of the members.</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Role and objective of team	1.1 Work activities in a team environment with enterprise or specific sector 1.2 Limited discretion, initiative and judgement maybe demonstrated on the job, either individually or in a team environment
2. Sources of information	2.1 Standard operating and/or other workplace procedures 2.2 Job procedures 2.3 Machine/equipment manufacturer's specifications and instructions 2.4 Organizational or external personnel 2.5 Client/supplier instructions 2.6 Quality standards 2.7 OHS and environmental standards
3. Workplace context	3.1 Work procedures and practices 3.2 Conditions of work environments 3.3 Legislation and industrial agreements 3.4 Standard work practice including the storage, safe handling and disposal of chemicals 3.5 Safety, environmental, housekeeping and quality guidelines

EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Demonstrates ability to operate in a team to complete workplace activity 1.2 Demonstrates ability to work effectively with others 1.3 Demonstrates ability to convey information in written or oral form 1.4 Demonstrates ability to select and use appropriate workplace language 1.5 Demonstrates ability to follow designated work plan for the job 1.6 Demonstrates ability to report outcomes
<p>2. Underpinning Knowledge and Attitude</p>	<ul style="list-style-type: none"> 2.1 Communication process 2.2 Team structure 2.3 Team roles 2.4 Group planning and decision making
<p>3. Underpinning Skills</p>	<ul style="list-style-type: none"> 3.1 Communicate appropriately, consistent with the culture of the workplace
<p>4. Resource Implications</p>	<p>The following resources MUST be provided:</p> <ul style="list-style-type: none"> 4.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 4.2 Materials relevant to the proposed activity or tasks
<p>5. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 5.1 Observation of the individual member in relation to the work activities of the group 5.2 Observation of simulation and or role play involving the participation of individual member to the attainment of organizational goal 5.3 Case studies and scenarios as a basis for discussion of issues and strategies in teamwork
<p>6. Context for Assessment</p>	<ul style="list-style-type: none"> 6.1 Competency may be assessed in workplace or in a simulated workplace setting 6.2 Assessment shall be observed while task are being undertaken whether individually or in group

UNIT OF COMPETENCY:	PRACTICE CAREER PROFESSIONALISM
UNIT CODE :	500311107
UNIT DESCRIPTOR :	This unit covers the knowledge, skills and attitudes in promoting career growth and advancement.

ELEMENT	PERFORMANCE CRITERIA <i>Bold and Italicized</i> terms are elaborated in the Range of Variables
1. Integrate personal objectives with organizational goals	1.1 Personal growth and work plans are pursued towards improving the qualifications set for the profession 1.2 Intra- and interpersonal relationships is are maintained in the course of managing oneself based on performance <i>evaluation</i> 1.3 Commitment to the organization and its goal is demonstrated in the performance of duties
2. Set and meet work priorities	2.1 Competing demands are prioritized to achieve personal, team and organizational goals and objectives 2.2 <i>Resources</i> are utilized efficiently and effectively to manage work priorities and commitments 2.3 Practices along economic use and maintenance of equipment and facilities are followed as per established procedures
3. Maintain professional growth and development	3.1 <i>Training and career opportunities</i> are identified and availed of based on job requirements 3.2 <i>Recognition</i> is sought/received and demonstrated as proof of career advancement 3.3 <i>Licenses and/or certifications</i> relevant to job and career are obtained and renewed

RANGE OF VARIABLES

VARIABLE	RANGE
1. Evaluation	1.1 Performance Appraisal 1.2 Psychological Profile 1.3 Aptitude Tests
2. Resources	2.1 Human 2.2 Financial 2.3 Technology 2.3.1 Hardware 2.3.2 Software
3. Training and career opportunities	3.1 Participation in training programs 3.1.1 Technical 3.1.2 Supervisory 3.1.3 Managerial 3.1.4 Continuing Education 3.2 Serving as Resource Persons in conferences and workshops
4. Recognition	4.1 Recommendations 4.2 Citations 4.3 Certificate of Appreciation 4.4 Commendations 4.5 Awards 4.6 Tangible and Intangible Rewards
5. Licenses and/or certifications	5.1 National Certificates 5.2 Certificate of Competency 5.3 Support Level Licenses 5.4 Professional Licenses

EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Demonstrates ability to attain job targets within key result areas (KRAs)</p> <p>1.2 Demonstrates ability to maintain intra - and interpersonal relationship in the course of managing oneself based on performance evaluation</p> <p>1.3 Demonstrates ability to complete training and career opportunities which are based on the requirements of the industries</p> <p>1.4 Demonstrates ability to acquire and maintain licenses and/or certifications according to the requirement of the qualification</p>
<p>2. Underpinning Knowledge</p>	<p>2.1 Work values and ethics (Code of Conduct, Code of Ethics, etc.)</p> <p>2.2 Company policies</p> <p>2.3 Company-operations, procedures and standards</p> <p>2.4 Fundamental rights at work including gender sensitivity</p> <p>2.5 Personal hygiene practices</p>
<p>3. Underpinning Skills</p>	<p>3.1 Appropriate practice of personal hygiene</p> <p>3.2 Intra and Interpersonal skills</p> <p>3.3 Communication skills</p>
<p>4. Resource Implications</p>	<p>The following resources MUST be provided:</p> <p>Workplace or assessment location</p> <p>Case studies/scenarios</p>
<p>5. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <p>5.1 Portfolio Assessment</p> <p>5.2 Interview</p> <p>5.3 Simulation/Role-plays</p> <p>5.4 Observation</p> <p>5.5 Third Party Reports</p> <p>5.6 Exams and Tests</p>
<p>6. Context of Assessment</p>	<p>6.1 Competency may be assessed in the work place or in a simulated work place setting</p>

UNIT OF COMPETENCY:	PRACTICE OCCUPATIONAL HEALTH AND SAFETY PROCEDURES
UNIT CODE :	500311108
UNIT DESCRIPTOR :	This unit covers the outcomes required to comply with regulatory and organizational requirements for occupational health and safety.

ELEMENT	PERFORMANCE CRITERIA <i>Bold and Italicized</i> terms are elaborated in the Range of Variables
1. Identify hazards and risks	<p>1.1 Safety regulations and workplace safety and hazard control practices and procedures are clarified and explained based on organization procedures</p> <p>1.2 Hazards/risks in the workplace and their corresponding indicators are identified to minimize or eliminate risk to co-workers, workplace and environment in accordance with organization procedures</p> <p>1.3 Contingency measures during workplace accidents, fire and other emergencies are recognized and established in accordance with organization procedures</p>
2. Evaluate hazards and risks	<p>2.1 Terms of maximum tolerable limits which when exceeded will result in harm or damage are identified based on threshold limit values (TLV)</p> <p>2.2 Effects of the hazards are determined</p> <p>2.3 OHS issues and/or concerns and identified safety hazards are reported to designated personnel in accordance with workplace requirements and relevant workplace OHS legislation</p>
3. Control hazards and risks	<p>3.1 Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace are consistently followed</p> <p>3.2 Procedures for dealing with workplace accidents, fire and emergencies are followed in accordance with organization OHS policies</p> <p>3.3 Personal protective equipment (PPE) is correctly used in accordance with organization OHS procedures and practices</p> <p>3.4 Appropriate assistance is provided in the event of a workplace emergency in accordance with established organization protocol</p>

ELEMENT	PERFORMANCE CRITERIA <i>Bold and Italicized</i> terms are elaborated in the Range of Variables
4. Maintain OHS awareness	4.1 <i>Emergency-related drills and training</i> are participated in as per established organization guidelines and procedures 4.2 <i>OHS personal records</i> are completed and updated in accordance with workplace requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Safety regulations	May include but are not limited to: 1.1 Clean Air Act 1.2 Building code 1.3 National Electrical and Fire Safety Codes 1.4 Waste management statutes and rules 1.5 Philippine Occupational Safety and Health Standards 1.6 DOLE regulations on safety legal requirements 1.7 ECC regulations
2. Hazards/Risks	May include but are not limited to: 2.1 Physical hazards – impact, illumination, pressure, noise, vibration, temperature, radiation 2.2 Biological hazards- bacteria, viruses, plants, parasites, mites, molds, fungi, insects 2.3 Chemical hazards – dusts, fibers, mists, fumes, smoke, gasses, vapors 2.4 Ergonomics 2.4.1 Psychological factors – over exertion/ excessive force, awkward/static positions, fatigue, direct pressure, varying metabolic cycles 2.4.2 Physiological factors – monotony, personal relationship, work out cycle
3. Contingency measures	May include but are not limited to: 3.1 Evacuation 3.2 Isolation 3.3 Decontamination 3.4 (Calling designed) emergency personnel
4. PPE	May include but are not limited to: 4.1 Mask 4.2 Gloves 4.3 Goggles 4.4 Hair Net/cap/bonnet 4.5 Face mask/shield 4.6 Ear muffs 4.7 Apron/Gown/coverall/jump suit 4.8 Anti-static suits

VARIABLE	RANGE
5. Emergency-related drills and training	5.1 Fire drill 5.2 Earthquake drill 5.3 Basic life support/CPR 5.4 First aid 5.5 Spillage control 5.6 Decontamination of chemical and toxic 5.7 Disaster preparedness/management
6. OHS personal records	6.1 Medical/Health records 6.2 Incident reports 6.3 Accident reports 6.4 OHS-related training completed

EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Demonstrates ability to explain clearly established workplace safety and hazard control practices and procedures 1.2 Demonstrates ability to identify hazards/risks in the workplace and its corresponding indicators in accordance with company procedures 1.3 Demonstrates ability to recognize contingency measures during workplace accidents, fire and other emergencies 1.4 Demonstrates ability to identify terms of maximum tolerable limits based on threshold limit value- TLV 1.5 Demonstrates ability to follow Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace 1.6 Used Personal Protective Equipment (PPE) in accordance with company OHS procedures and practices 1.7 Completed and updated OHS personal records in accordance with workplace requirements
<p>2. Underpinning Knowledge and Attitude</p>	<ul style="list-style-type: none"> 2.1 OHS procedures and practices and regulations 2.2 PPE types and uses 2.3 Personal hygiene practices 2.4 Hazards/risks identification and control 2.5 Threshold Limit Value -TLV 2.6 OHS indicators 2.7 Organization safety and health protocol 2.8 Safety consciousness 2.9 Health consciousness
<p>3. Underpinning Skills</p>	<ul style="list-style-type: none"> 3.1 Practice of personal hygiene 3.2 Hazards/risks identification and control skills 3.3 Interpersonal skills 3.4 Communication skills
<p>4. Resource Implications</p>	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> 4.1 Workplace or assessment location 4.2 OHS personal records 4.3 PPE 4.4 Health records

5. Methods of Assessment	Competency may be assessed through: 5.1 Portfolio Assessment 5.2 Interview 5.3 Case Study/Situation
6. Context for Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

COMMON COMPETENCIES

UNIT OF COMPETENCY: PREPARE CONSTRUCTION MATERIALS AND TOOLS

UNIT CODE : CON931201

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes on identifying, requesting and receiving construction materials and tools based on the required performance standards.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variable
1. Identify materials	1.1 Materials are listed as per job requirements 1.2 Quantity and description of materials conform with the job requirements 1.3 Tools and accessories are identified according to job requirements
2. Requisition materials	2.1 Materials and tools needed are requested according to the list prepared 2.2 Request is done as per company standard operating procedures (SOP) 2.3 Substitute materials and tools are provided without sacrificing cost and quality of work
3. Receive and inspect materials	3.1 Materials and tools issued are inspected as per quantity and specification 3.2 Tools, accessories and materials are checked for damages according to enterprise procedures 3.3 Materials and tools are set aside to appropriate location nearest to the workplace

RANGE OF VARIABLES

VARIABLE	RANGE
1. Materials and Tools	1.1 Electrical supplies 1.2 Structural 1.3 Plumbing 1.4 Welding/pipefitting 1.5 Carpentry 1.6 Masonry
2. Description of Materials and Tools	2.1 Brand name 2.2 Size 2.3 Capacity 2.4 Kind of application
3. Company standard procedures	3.1 Job order 3.2 Requisition slip 3.3 Borrower slip

EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Listed materials and tools according to quantity and job requirements 1.2 Requested materials and tools according to the list prepared and as per company SOP 1.3 Inspected issued materials and tools as per quantity and job specifications 1.4 Tools provided with appropriate safety devices
<p>2. Underpinning knowledge</p>	<ul style="list-style-type: none"> 2.1 Types and uses of construction materials and tools 2.2 Different forms 2.3 Requisition procedures
<p>3. Underpinning skills</p>	<ul style="list-style-type: none"> 3.1 Preparing materials and tools 3.2 Proper handling of tools and equipment 3.3 Following instructions
<p>4. Resource implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 4.1 Workplace location 4.2 Materials relevant to the unit of competency 4.3 Technical plans, drawings and specifications relevant to the activities
<p>5. Methods of assessment</p>	<p>Competency in this unit must be assessed through:</p> <ul style="list-style-type: none"> 5.1 Direct observation and oral questioning
<p>6. Context of assessment</p>	<ul style="list-style-type: none"> 6.1 Competency may be assessed in the workplace or in a simulated workplace <p>Competency assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines</p>

UNIT OF COMPETENCY: OBSERVE PROCEDURES, SPECIFICATIONS AND MANUALS OF INSTRUCTIONS

UNIT CODE : CON311201

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes on identifying, interpreting, applying services to specifications and manuals and storing manuals.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables
1. Identify and access specification/manuals	1.1 Appropriate manuals are identified and accessed as per job requirements 1.2 Version and date of manual are checked to ensure that correct specification and procedures are identified
2. Interpret manuals	2.1 Relevant sections, chapters of specifications/manuals are located in relation to the work to be conducted 2.2 Information and procedure in the manual are interpreted in accordance with industry practices
3. Apply information in manual	3.1 Manual is interpreted according to job requirements 3.2 Work steps are correctly identified in accordance with manufacturer's specification 3.3 Manual data are applied according to the given task 3.4 All correct sequencing and adjustments are interpreted in accordance with information contained on the manual or specifications
4. Store manuals	4.1 Manual or specification is stored appropriately to prevent damage, ready access and updating of information when required in accordance with company requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Procedures, Specifications and Manuals of Instructions	Kinds of Manuals: 1.1 Manufacturer's Specification Manual 1.2 Repair Manual 1.3 Maintenance Procedure Manual 1.4 Periodic Maintenance Manual

EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires that the candidate:</p> <ul style="list-style-type: none"> 1.1 Identified and accessed specification/manuals as per job requirements 1.2 Interpreted manuals in accordance with industry practices 1.3 Applied information in manuals according to the given task 1.4 Stored manuals in accordance with company requirements
<p>2. Underpinning knowledge</p>	<ul style="list-style-type: none"> 2.1 Types of manuals used in construction sector 2.2 Identification of symbols used in the manuals 2.3 Identification of units of measurements 2.4 Unit conversion
<p>3. Underpinning skills</p>	<ul style="list-style-type: none"> 3.1 Reading and comprehension skills required to identify and interpret construction manuals and specifications 3.2 Accessing information and data
<p>4. Resource implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 4.1 All manuals/catalogues relative to construction sector
<p>5. Methods of assessment</p>	<p>Competency should be assessed through:</p> <ul style="list-style-type: none"> 5.1 Direct observation 5.2 Questions/interview <p>Assessment of underpinning knowledge and practical skills may be combined</p>
<p>6. Context of assessment</p>	<ul style="list-style-type: none"> 6.1 Competency assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines 6.2 Assessment may be conducted in the workplace or a simulated environment

UNIT OF COMPETENCY: INTERPRET TECHNICAL DRAWINGS AND PLANS

UNIT CODE : CON311202

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes in analyzing and interpreting symbols, data and work plan based on the required performance standards.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables
1. Analyze signs, symbols and data	1.1 Technical plans are obtained according to job requirements 1.2 Signs, symbols and data are identified according to job specifications 1.3 Signs symbols and data are determined according to classification or as appropriate in drawing
2. Interpret technical drawings and plans	2.1 Necessary tools, materials and equipment are identified according to the plan 2.2 Supplies and materials are listed according to specifications 2.3 Components, assemblies or objects are recognized as required 2.4 Dimensions are identified as appropriate to the plan 2.5 Specification details are matched with existing/available resources and in line with job requirements 2.6 Work plan is drawn following the specifications
3. Apply freehand sketching	3.1 Where applicable, correct freehand sketching is produced in accordance with the job requirements

RANGE OF VARIABLES

VARIABLES	RANGE
1. Technical Plans	Including but not limited to: 1.1 Electrical plans 1.2 Structural plans 1.3 Architectural plans 1.4 Plumbing plans 1.5 Welding Procedures Specifications (WPS)
2. Work plan	2.1 Job requirements 2.2 Installation instructions 2.3 Components instruction
3. Classification	Including but not limited to: 3.1 Electrical 3.2 Mechanical 3.3 Plumbing
4. Drawing	4.1 Drawing symbols 4.2 Alphabet of lines 4.3 Orthographic views 4.4 Front view 4.5 Right side view/left side view 4.6 Top view 4.7 Pictorial 4.8 Schematic diagram 4.9 Electrical drawings 4.10 Structural drawings 4.11 Plumbing drawings 4.12 Water 4.13 Sewerage/Drainage 4.14 Ventilation 4.15 Welding symbols
5. Tools and materials	Including but not limited to: 5.1 Compass 5.2 Divider 5.3 Rulers 5.4 Triangles 5.5 Drawing tables 5.6 Computer

EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires that the candidate:</p> <ul style="list-style-type: none"> 1.1 Identified and determined signs, symbols and data according to work plan, job requirements and classifications 1.2 Identified tools and equipment in accordance with job requirements 1.3 Listed supplies and materials according to blueprint specifications 1.4 Drawn work plan following specifications 1.5 Demonstrated ability to determine job specifications based on working / technical drawing
<p>2. Underpinning Knowledge</p>	<ul style="list-style-type: none"> 2.1 TRADE MATHEMATICS <ul style="list-style-type: none"> 2.1.1 Linear measurement 2.1.2 Dimension 2.1.3 Unit conversion 2.2 BLUEPRINT READING AND PLAN SPECIFICATION <ul style="list-style-type: none"> 2.2.1 Electrical, mechanical plan, symbols and abbreviations 2.2.2 Drawing standard symbols 2.3 TRADE THEORY <ul style="list-style-type: none"> 2.3.1 Basic technical drawing 2.3.2 Types technical plans 2.3.3 Various types of drawings 2.3.4 Notes and specifications
<p>3. Underpinning Skills</p>	<ul style="list-style-type: none"> 3.1 Interpreting drawing/orthographic drawing 3.2 Interpreting technical plans 3.3 Matching specification details with existing resources 3.4 Following instructions 3.5 Handling of drawing instruments
<p>4. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 4.1 Workplace 4.2 Drawings and specification relevant to task 4.3 Materials and instrument relevant to proposed activity

<p>5. Methods of Assessment</p>	<p>Competency should be assessed through: 5.1 Direct Observation 5.2 Questions/Interview 5.3 Written test related to underpinning knowledge</p>
<p>6. Context of Assessment</p>	<p>6.1 Competency assessment may occur in the workplace or in any appropriate simulated environment Assessment shall be observed while task are being undertaken whether individually or in group 6.2 Competency assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines</p>

UNIT OF COMPETENCY: PERFORM MENSURATIONS AND CALCULATIONS

UNIT CODE : CON311203

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes on identifying and measuring objects based on the required performance standards.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variable
1. Select measuring instruments	1.1 Object or component to be measured is identified, classified and interpreted according to the appropriate regular geometric shape 1.2 Measuring tools are selected/identified as per object to be measured or job requirements 1.3 Correct specifications are obtained from relevant sources 1.4 Appropriate measuring instruments are selected according to job requirements Alternative measuring tools are used without sacrificing cost and quality of work
2. Carry out measurements and calculations	2.1 Accurate measurements are obtained according to job requirements 2.2 Alternative measuring tools are used without sacrificing cost and quality of work 2.3 Calculation needed to complete work tasks are performed using the four basic process of addition (+), subtraction (-), multiplication (x) and division (/) including but not limited to: trigonometric functions, algebraic computations 2.4 Calculations involving fractions, percentages and mixed numbers are used to complete workplace tasks 2.5 Numerical computation is self-checked and corrected for accuracy 2.6 Instruments are read to the limit of accuracy of the tool 2.7 Systems of measurement identified and converted according to job requirements/ISO 2.8 Workpieces are measured according to job requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Geometric shape	Including but is not limited to: 1.1 Round 1.2 Square 1.3 Rectangular 1.4 Triangle 1.5 Sphere 1.6 Conical
2. Measuring instruments	Including but not limited to: 2.1 Micrometer (In-out, depth) 2.2 Vernier caliper (out, inside) 2.3 Dial gauge with mag, std. 2.4 Straight edge 2.5 Thickness gauge 2.6 Torque gauge 2.7 Small hole gauge 2.8 Telescopic gauge 2.9 Try-square 2.10 Protractor 2.11 Combination gauge 2.12 Steel rule 2.13 Voltmeter 2.14 Ammeter 2.15 Mega ohmeter 2.16 Kilowatt hour meter 2.17 Gauges 2.18 Thermometers
3. Measurements and calculations	3.1 Linear 3.2 Volume 3.3 Area 3.4 Wattage 3.5 Voltage 3.6 Resistance 3.7 Amperage 3.8 Frequency 3.9 Impedance

VARIABLE	RANGE
	3.10 Conductance 3.11 Capacitance 3.12 Displacement 3.16 Inside diameter 3.17 Circumference 3.18 Length 3.19 Thickness 3.20 Outside diameter 3.21 Taper 3.22 Out of roundness 3.23 Oil clearance 3.24 End play/Thrust clearance

EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires that the candidate:</p> <p>1.1 Selected and prepared appropriate measuring instruments in accordance with job requirements</p> <p>1.2 Performed measurements and calculations according to job requirements/ ISO</p>
<p>2. Underpinning knowledge</p>	<p>TRADE MATHEMATICS / MENSURATION</p> <p>2.1 Four fundamental operation</p> <p>2.2 Linear measurement</p> <p>2.3 Dimensions</p> <p>2.4 Unit conversion</p> <p>2.5 Ratio and proportion</p> <p>2.6 Trigonometric functions</p> <p>2.8 Algebraic equations</p>
<p>3. Underpinning skills</p>	<p>3.1 Performing calculation by addition, subtraction, multiplication and division; trigonometric functions and algebraic equations</p> <p>3.2 Visualizing objects and shapes</p> <p>3.3 Interpreting formulas for volume, areas, perimeters of plane and geometric figures</p> <p>3.4 Proper handling of measuring instruments</p>
<p>4. Resource implications</p>	<p>The following resources should be provided:</p> <p>4.1 Workplace location</p> <p>4.2 Problems to solve</p> <p>4.3 Measuring instrument appropriate to carry out tasks</p> <p>4.4 Instructional materials relevant to the propose activity</p> <p>Assessment of underpinning knowledge and practical skills may be combined</p>
<p>5. Methods of assessment</p>	<p>Competency should be assessed through:</p> <p>5.1 Actual demonstration</p> <p>5.2 Direct observation</p> <p>5.3 Written test/questioning related to underpinning knowledge</p>
<p>6. Context of assessment</p>	<p>6.1 Competency assessment may occur in workplace or any appropriate simulated environment</p> <p>6.2 Assessment shall be observed while task are being undertaken whether individually or in group</p> <p>6.3 Competency assessment must be undertaken in accordance with the TESDA assessment guidelines</p>

UNIT OF COMPETENCY: MAINTAIN TOOLS AND EQUIPMENT

UNIT CODE : CON311204

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes on checking condition, performing preventive maintenance and storing of tools and equipment based on the required performance standards.

<p style="text-align: center;">ELEMENTS</p>	<p style="text-align: center;">PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables</p>
<p>1. Check condition of tools and equipment</p>	<p>1.1 Materials, tools and equipment are identified according to classification and job requirements</p> <p>1.2 Non-functional tools and equipment are segregated and labeled according to classification</p> <p>1.3 Safety of tools and equipment are observed in accordance with manufacturer's instructions</p> <p>1.4 Condition of PPE are checked in accordance with manufacturer's instructions</p>
<p>2. Perform basic preventive maintenance</p>	<p>2.1 Appropriate lubricants are identified according to types of equipment</p> <p>2.2 Tools and equipment are lubricated according to preventive maintenance schedule or manufacturer's specifications</p> <p>2.3 Measuring instruments are checked and calibrated in accordance with manufacturer's instructions</p> <p>2.4 Tools are cleaned and lubricated according to standard procedures</p> <p>2.5 Defective instruments, equipment and accessories are inspected and replaced according to manufacturer's specifications</p> <p>2.6 Tools are inspected, repaired and replaced after use</p> <p>2.7 Work place is cleaned and kept in safe state in line with OHS regulations</p>

<p>3. Store tools and equipment</p>	<p>3.1 Inventory of tools, instruments and equipment are conducted and recorded as per company practices</p> <p>3.2 Tools and equipment are stored safely in appropriate locations in accordance with manufacturer's specifications or company procedures</p>
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RANGE OF VARIABLES

VARIABLES	RANGE
1. Materials	Including but not limited to: 1.1 Lubricants 1.2 Cleaning materials 1.3 Rust remover 1.4 Rugs 1.5 Spare parts
2. Tools and equipment	Including but not limited to: 2.1 Tools Cutting tools - hacksaw, crosscut saw, rip saw Boring tools - auger, brace, grinlet, hand drill Holding tools - vise grip, C-clamp, bench vise Threading tools - die and stock, taps 2.2 Measuring instruments/equipment
3. PPE	Including but not limited to: 3.1 Goggles 3.2 Gloves 3.3 Safety shoes 3.4 Aprons/Coveralls
4. Forms	4.1 Maintenance schedule forms 4.2 Requisition slip 4.3 Inventory Form 4.4 Inspection Form 4.5 Procedures

EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires that the candidate:</p> <ul style="list-style-type: none"> 1.1 Selected and used appropriate processes, tools and equipment to carry out task 1.2 Identified functional and non-functional tools and equipment 1.3 Checked, lubricated and calibrated tools, equipment and instruments according to manufacturer's specifications 1.4 Replaced defective tools, equipment and their accessories 1.5 Observed and applied safe handling of tools and equipment and safety work practices 1.6 Prepared and submitted inventory report, where applicable 1.7 Maintained workplace in accordance with OHSA regulations 1.8 Stored tools and equipment safely in appropriate locations and in accordance with company practices
<p>2. Underpinning knowledge</p>	<ul style="list-style-type: none"> 2.1 SAFETY PRACTICES <ul style="list-style-type: none"> 2.1.1 Use of PPE 2.1.2 Handling of tools and equipment 2.1.3 Good housekeeping 2.2 MATERIALS, TOOLS AND EQUIPMENT <ul style="list-style-type: none"> 2.2.1 Types and uses of lubricants 2.2.2 Types and uses of cleaning materials 2.2.3 Types and uses of measuring instruments and equipment 2.3 PREVENTIVE MAINTENANCE <ul style="list-style-type: none"> 2.3.1 Methods and techniques 2.3.2 Procedures
<p>3. Underpinning skills</p>	<ul style="list-style-type: none"> 3.1 Preparing maintenance materials, tools and equipment 3.2 Proper handling of tools and equipment 3.3 Performing preventive maintenance 3.4 Following instructions
<p>4. Resource implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 4.1 Workplace 4.2 Maintenance schedule <p>Maintenance materials, tools and equipment relevant to the proposed activity/task</p>
<p>5. Methods of assessment</p>	<p>Competency should be assessed through:</p> <ul style="list-style-type: none"> 5.1 Direct observation 5.2 Written test/questioning relevant to Underpinning knowledge

6. Context of assessment	6.1 Competency assessment may occur in workplace or any appropriate simulated environment 6.2 Competency assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines
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CORE COMPETENCIES

UNIT OF COMPETENCY :	LAY AND REPAIR WALL AND FLOOR TILES
UNIT CODE :	CON713332
UNIT DESCRIPTOR :	This unit covers the knowledge, skills and attitude required to lay and repair wall and floor tiles.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized and bold</i> terms are elaborated in the Range of Variables
1. Plan and prepare for work	1.1 Work instruction is secured and interpreted in line with job requirements 1.2 Safety and quality requirements are identified in line with Occupational Safety and Health Standards (OSHS) and company standard operating procedures 1.3 Material tiles, tools and equipment are identified in accordance with job requirements
2. Lay out tiling job	2.1 Area(s) to be tiled is checked in line with job requirements 2.2 Tiles are laid out in line with specifications
3. Install wall tiles	3.1 Cement or cement based adhesive is prepared according to manufacturer's instructions or recommendation then applied to tile / wall surface 3.2 Tiles are prepared and installed with guide / batterboard set to level alignment 3.3 Horizontal joint is checked for straightness and tile edges and surface alignment are checked 3.4 Tiles are fixed to alignment retaining designed pattern to specifications 3.5 Even margins are shown around openings, frames and fittings, where applicable 3.6 Special cut tile is installed to create a square corner in accordance with drawings and specifications, where applicable 3.7 Vertical tiles are finished according to plumbness and square corner requirements 3.8 All joints are maintained straight and uniform in width considering allowance for tolerance of tile 3.9 Expansion gaps are maintained following specifications 3.10 Tiled surface is polished and cleaned to specifications and manufacturer's recommendations.

<p>4. Cut tiles</p>	<p>4.1 Tiles are cut according to required specifications</p> <p>4.2 Recess hole or curve cut by hand or machine is in required tolerance</p> <p>4.3 Miter joints are prepared, retaining glazing on miter with no chips and uniform in size</p> <p>4.4 Special cut tile is prepared in accordance with drawings and specifications, where applicable</p> <p>4.5 Tile is jolly-edged to form a miter to prevent the tile body from being exposed at the joint</p> <p>4.6 Safety precautions are applied in line with Occupational Safety and Health Standards</p>
<p>5. Grout space between tiles</p>	<p>5.1 Joints are cleaned and prepared for grouting following manufacturer's specifications</p> <p>5.2 Grout is mixed and applied according to manufacturer's specifications</p> <p>5.3 Tiles are cleaned and polished to specifications, removing all dust from surface and joints</p>
<p>6. Install vertical mosaic sheets</p>	<p>6.1 Paper-faced or mesh-backed mosaics are fixed to background with tile adhesive</p> <p>6.2 Adjustments are made to ensure spacing is uniform and pattern and alignment are maintained</p> <p>6.3 Area is finished with mosaics level to line, if applicable, surface straight and flat and grout are finished to specifications</p>
<p>7. Lay floor tiles</p>	<p>7.1 Adhesive is selected based on specifications, tile type and climatic condition</p> <p>7.2 Surface is cleaned from residue and protrusions</p> <p>7.3 Adhesive is mixed following manufacturer's specifications</p> <p>7.4 Tiles are laid to manufacturer's specifications and expansion gaps maintained between walls and tiles</p> <p>7.5 Grout is mixed and applied to clean joints and surface according to manufacturer's specifications</p> <p>7.6 Finished tile work is polished and cleaned to specifications and manufacturer recommendations</p>

<p>8. Tile treads, risers, steps and thresholds</p>	<p>8.1 Risers and steps are calculated and determined from concrete steps / stairs</p> <p>8.2 Steps are laid out for uniform rise and take even cut on both sides</p> <p>8.3 Step riser packing or render support is placed, where necessary, and riser tiles are installed according to alignment</p> <p>8.4 Treads are installed in line with the top edge of risers within the required tolerance</p> <p>8.5 Grout is applied to wet joints and finished flush with tiles to a smooth finish.</p> <p>8.6 Finished tilework is cleaned and polished and free of pitted, chipped, cracked or scratched tile resulting from laying operation</p> <p>8.9 Tiled surface is polished and cleaned to specifications and manufacturer's recommendations.</p>
<p>9. Repair damaged tile work</p>	<p>9.1 Damaged tiles removal procedure is performed following established / recommended practices</p> <p>9.2 Old bedding is cleaned and cleared for placement of replacement tile</p> <p>9.3 Replacement tiles are selected and cut, if necessary, following existing pattern and face</p> <p>9.4 Tiles are fitted and installed to maintain alignment with joints for uniform spacing</p> <p>9.5 Grouting is performed and tile face is cleaned from dirt and other residues</p> <p>9.6 Tiled surface is polished and cleaned to specifications and manufacturer's recommendations.</p>
<p>10. Clean up</p>	<p>10.1 Work area is cleaned as per OSHS requirements</p> <p>10.2 Waste and unwanted materials are disposed of following company standard operating procedure and OSH and environmental requirements</p> <p>10.3 Unused materials are stored / stacked according to enterprise procedures</p> <p>10.4 Tools and equipment are cleaned and maintained following manufacturer's specifications</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Job requirements	1.1 Drawings 1.2 Specifications
2. Quality requirements	2.1 Condition of tile 2.2 Quality of prepared surface 2.3 Quality of materials 2.4 Setting out procedures 2.5 Application procedures 2.6 Specified finish 2.7 Attention given to specification of work 2.8 Workplace operations and procedures
3. Occupational Safety and Health Standards	3.1 Protective clothing and equipment 3.2 Use of tools and equipment 3.3 Handling of materials 3.4 hazardous materials 3.5 Working platforms
4. Tools and equipment	May include but not limited to: 4.1 Tile cutters and scribes 4.2 Masonry drill/bits 4.3 Measuring tape / ruler 4.4 Trowels 4.5 Straight edge 4.6 Level and plumb bob 4.7 Wet saw 4.8 Scrapers 4.9 Hole saw 4.10 Rubber mallet 4.11 Rubber float or squeegee
5. Materials	5.1 Ceramic tiles 5.2 Porcelain tiles 5.3 Mosaics 5.4 Tile adhesive 5.5 Tile grout 5.6 Tile trims 5.7 Stair nosing 5.8 End caps/bull nose

6. Required specifications	May include but not limited to: 6.1 Without jagged 6.2 Without flayed edges 6.3 Without broken/chipped corners
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EVIDENCE GUIDE

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Demonstrates ability to comply with OHS requirements 1.2 Demonstrates ability to identify and use tools, materials, and equipment 1.3 Demonstrates ability to perform installation and laying of tiles
2. Underpinning Knowledge and attitudes	<ul style="list-style-type: none"> 2.1 Shop mathematics 2.2 Technical drawing and specifications 2.3 Materials identifications and classifications 2.4 Manufacturer's product specifications and instructions 2.5 Compliance with quality requirements, company rules and regulations 2.6 Work ethics 2.7 Waste management
3. Underpinning Skills	<ul style="list-style-type: none"> 3.1 Communication skills 3.2 Installing and laying of tiles 3.3 Applying cutting techniques and procedures 3.4 Estimating materials and tools 3.5 Maintaining tools and equipment 3.6 Observing safe use of tools and equipment 3.7 Proper handling and storing of materials
4. Resource Implications	<p>The following resources MUST be provided:</p> <ul style="list-style-type: none"> 4.1 PPE 4.2 Relevant tools, equipment and materials 4.3 Work instructions and specifications 4.4 Workplace location
5. Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 5.1 Observation/demonstration 5.2 Oral questioning 5.3 Portfolio assessment 5.4 Third party report
6. Context for Assessment	<ul style="list-style-type: none"> 6.1 Competency will be assessed in the workplace or simulated workplace environment

UNIT OF COMPETENCY :	TILE CORNERS
UNIT CODE :	CON713333
UNIT DESCRIPTOR :	This unit covers the knowledge, skills and attitude required to tile corners.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized and bold</i> terms are elaborated in the Range of Variables
1. Plan and prepare for work	1.1 Work instruction is secured and interpreted in line with job requirements . 1.2 Safety and quality requirements are identified in line with Occupational Safety and Health Standards (OSHS) and company standard operating procedures 1.3 Material tiles, tools and equipment are identified in accordance with job requirements
2. Tile external corners	2.1 Set out tiles is checked for specified tolerance of + - 2 mm based on plumbness and levelness. 2.2 External corners are checked for flatness of surfaces and straightness of intersections. 2.3 Tile trim is installed to maintain external returns and tile trim is fitted to both corners. 2.4 Tiles are installed without voids in tile bed and fully bedded to maintain alignment to specifications 2.5 Corners are maintained square and finished to specifications. 2.6 Tiled surface is polished and cleaned to specifications and manufacturer's recommendations.

<p>3. Tile internal corners</p>	<p>3.1 Internal corners are checked for flatness of surfaces and straightness of intersections.</p> <p>3.2 Tiles are fitted and cut, where required and installed to one wall maintaining alignment to set out and specifications.</p> <p>3.3 Tiles are fitted and cut, where required and installed abutting adjacent wall tiles to line, set out and specifications.</p> <p>3.4 Joints for abutting tiles are made in accordance with designed margin for grouting or for expansion joint, where applicable to specifications.</p> <p>3.5 Tiles are installed to cove tiles or trim and finished to alignment and specifications.</p> <p>3.6 Tiled surface is polished and cleaned to specifications and manufacturer's recommendations.</p>
<p>4. Clean up</p>	<p>4.1 Work area is cleaned as per OSHS requirements</p> <p>4.2 Waste and unwanted materials are disposed of following company standard operating procedure and OSHS requirements</p> <p>4.3 Unused materials are stored / stacked according to enterprise procedures</p> <p>4.4 Tools and equipment are cleaned and maintained following manufacturer's specifications</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Job requirements	1.1 Drawings 1.2 Specifications
2. Quality requirements	2.1 Workplace operations and procedures 2.2 Quality of materials 2.3 Control of handling procedures 2.4 Use and maintenance of equipment 2.5 Attention to specification of work 2.6 Quality of prepared surface
3. Occupational Safety and Health Standards	3.1 Workplace environment and safety 3.2 Protective clothing and equipment 3.3 Use of tools and equipment 3.4 Handling of materials 3.5 Working platforms 3.6 Hazardous materials
4. Material tiles	May include but not limited to: 4.1 Ceramic tiles 4.2 Porcelain tiles 4.3 Mosaic 4.4 Tile adhesive 4.5 Tile grout 4.6 Tile trims 4.7 Stair nosing 4.8 End caps / bull nose
5. Tools and equipment	May include but not limited to: 5.1 Tile cutter and scribes 5.2 Masonry drill bits 5.3 Measuring tape rule 5.4 Trowels 5.5 Straight edge 5.6 Level and plumb bob 5.7 Wet saw 5.8 Knee pads
6. External corners	May include but not limited to: 6.1 Curved plastic bead / rim 6.2 Curved external corner tiles

7. Internal corners	May include but not limited to: 7.1 Plastic bead / trim 7.2 Butt joints
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EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Demonstrates ability to interpret job requirements 1.2 Demonstrates ability to comply OSHS requirements in tile setting 1.3 Demonstrates ability to perform tiling of external and internal corners 1.4 Demonstrates ability to follow company standard operating procedures
<p>2. Underpinning knowledge</p>	<ul style="list-style-type: none"> 2.1 Mensuration and trade Mathematics 2.2 Technical drawings and plans specifications 2.3 Procedures for tiling internal and external corners 2.4 Occupational Health and Safety Standards 2.5 Company rules and regulations 2.6 Quality of material tile 2.7 Manufacturer's recommendations and specifications
<p>3. Underpinning Skills</p>	<ul style="list-style-type: none"> 3.1 Applying mensuration and trade Mathematics 3.2 Interpreting technical drawings and plans specifications 3.3 Performing procedures for tiling internal and external corners 3.4 Complying OSHS requirements 3.5 Complying company rules and regulations 3.6 Following manufacturer's specifications and recommendations
<p>4. Resource Implications</p>	<p>The following resources MUST be provided:</p> <ul style="list-style-type: none"> 4.1 Workplace 4.2 Plans and specifications 4.3 Materials, tools and equipment relevant to work activity
<p>5. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 5.1 Observation thru practical demonstration of skills 5.2 Oral questioning 5.3 Portfolio 5.4 Third party report
<p>6. Context for Assessment</p>	<ul style="list-style-type: none"> 6.1 Competency may be assessed in the workplace

UNIT OF COMPETENCY :	TILE CURVED SURFACES
UNIT CODE :	CON713334
UNIT DESCRIPTOR :	This unit specifies the knowledge, skills and attitude required to tile curved surfaces

ELEMENT	PERFORMANCE CRITERIA <i>Italicized and bold</i> terms are elaborated in the Range of Variables
1. Plan and prepare for work	<p>1.1 Work instruction is secured and interpreted in line with job requirements.</p> <p>1.2 Safety and quality requirements are identified in line with Occupational Safety and Health Standards (OSHS) and company standard operating procedures</p> <p>1.3 Material tiles, tools and equipment are identified in accordance with job requirements.</p>
2. Tile curved wall and floor surfaces	<p>2.1 Level line is set out around the wall by intermediate marking using leveling equipment.</p> <p>2.2 Location of tiles is set out to determine balanced design and cutting requirements, if necessary.</p> <p>2.3 Template is made to form accurate curve line to tiled surface around the wall.</p> <p>2.4 Method for installing tiles is determined with identification of location of the first tile.</p> <p>2.5 Cement-based adhesive is prepared following manufacturer's specifications.</p> <p>2.6 Guide board is installed to level set out and template curve to specifications.</p> <p>2.7 Minimum voids are maintained in mortar tile beds and tiles are fixed, plumb (wall), and flush.</p> <p>2.8 Floor tiles are laid to set out grid with perimeter tiles marked and cut to fit curve wall.</p> <p>2.9 Tile grout is mixed with water and applied to joints according to specifications, to provide flush and smooth finish.</p> <p>2.10 Tiled surface is polished and cleaned to specifications and manufacturer's recommendations.</p>

<p>3. Tile circular volume, wall and arches</p>	<p>3.1 Template is set out, cut, positioned and checked to maintain conformity to tile surface for curve.</p> <p>3.2 Guide board is positioned and installed to line to maintain uniform spacing.</p> <p>3.3 Tiles are marked and cut, where applicable, installed into place to specifications.</p> <p>3.4 Tiles are installed on walls and plumb, maintaining levels and curvature of wall to specifications.</p> <p>3.5 Tiles are installed to archways, maintaining line and curvature to specifications.</p> <p>3.6 Tile grout is mixed with water and applied to joints of tiled surfaces and tiled surface is finished to specifications.</p> <p>3.7 Tiled surface is polished and cleaned to specifications and manufacturer's recommendations.</p>
<p>4. Install mosaic tiles on a circular column</p>	<p>4.1 Surface is checked from protrusions and from plastering imperfections.</p> <p>4.2 Template is prepared for column tiling diameter to specifications.</p> <p>4.3 Mortar is applied evenly to the required tiling diameter thickness and finished to curve based on prepared template specifications.</p> <p>4.4 Guide board is positioned and installed to maintain level line.</p> <p>4.5 Mosaic tiles are installed to column maintaining even spacing and level finish to specifications.</p> <p>4.6 Tile grout is mixed with water and applied to tiled surface and tile surface is finished to specifications.</p> <p>4.7 Tiled surface is polished and cleaned to specifications and manufacturer's recommendations</p>
<p>5. Clean up</p>	<p>5.1 Work area is cleaned as per OSHS requirements</p> <p>5.2 Waste and unwanted materials are disposed of following company standard operating procedure and OSHS requirements</p> <p>5.3 Unused materials are stored / stacked according to enterprise procedures</p> <p>5.4 Tools and equipment are cleaned and maintained following manufacturer's specifications</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Job requirements	1.1 Drawings 1.2 Specifications
2. Quality requirements	2.1 Workplace operations and procedures 2.2 Quality of materials 2.3 Control of handling procedures 2.4 Use and maintenance of equipment 2.5 Attention to specifications of work
3. OSHS requirements	3.1 Workplace environment and safety 3.2 Protective clothing and equipment 3.3 Use of tools and equipment 3.4 Handling of materials 3.5 Working platforms and scaffoldings 3.6 Hazardous materials
4. Material tiles	May include but not limited to: 4.1 Ceramic tiles 4.2 Porcelain tiles 4.3 Mosaic 4.4 Tile adhesive 4.5 Tile grout 4.6 Tile trims 4.7 End caps / bull nose
5. Tools and equipment	May include but not limited to: 5.1 Tile cutters and scribes 5.2 Masonry drill bits 5.3 Measuring tape / rule 5.4 Trowels 5.5 Straight edge 5.6 Spirit level 5.7 Light hand roller 5.9 Scrapers 5.10 Sand paper 5.11 Pencil 5.12 Scaffolding 5.13 Steel square 5.14 String or chalk line

6. Leveling equipment	6.1 Spirit level 6.2 Water level 6.3 Plumb bob
7. Surface	May include but not limited to: 7.1 Plasterboard 7.2 Fiber cement sheet 7.3 Brickwork 7.4 Block work 7.5 Concrete 7.6 Plastered face 7.7 Marine plywood 7.8 Gypsum board 7.9 Styropor board

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Demonstrates ability to interpret job requirements 1.2 Demonstrates ability to comply OSHS requirements 1.3 Demonstrates ability to perform procedures for tiling curved wall and floor surfaces 1.4 Demonstrates ability to perform procedures for tiling circular volume, wall and arches 1.5 Demonstrates ability to perform procedures to install mosaic tiles for a circular column 1.6 Demonstrates ability to follow company standard operating procedures
<p>2. Underpinning knowledge</p>	<ul style="list-style-type: none"> 2.1 Mensuration and trade Mathematics 2.2 Occupational Health and 'Safety Standards requirements 2.3 Procedures for tiling curved and floor surfaces 2.4 Procedures for tiling circular volume, wall and arches 2.5 Procedures for installing mosaic tiles on a circular column 2.6 Company standard operating procedures 2.7 Manufacturer's recommendations / specifications
<p>3. Underpinning Skills</p>	<ul style="list-style-type: none"> 3.1 Applying mensuration and trade Mathematics 3.2 Interpreting plans specifications and drawings 3.2 Complying OSHS requirements 3.3 Performing procedures for tiling curved and floor surface 3.4 Performing procedures for tiling circular volume, wall and arches 3.5 Performing procedures for installing mosaic tiles 3.6 Following company rules and regulations 3.7 Following manufacturer's specifications and recommendations
<p>4. Resource Implications</p>	<p>The following resources MUST be provided:</p> <ul style="list-style-type: none"> 4.1 Plans and specifications 4.2 Work area 4.3 Material, tools and equipment relevant to the activity
<p>5. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 5.1 Observation of practical skills 5.2 Oral questioning
<p>6. Context for Assessment</p>	<ul style="list-style-type: none"> 6.1 Competency may be assessed in the workplace

SECTION 3 TRAINING STANDARDS

These standards are set to provide technical and vocational education and training (TVET) providers with information and other important requirements to consider when designing training programs for **Tile Setting NC II**.

3.1 CURRICULUM DESIGN

Course Title: **Tile Setting**

Level: **NC II**

Nominal Training Duration: **82 Hours**

Course Description:

This course is designed to enhance the knowledge, skills and desirable work attitude of a **tile setter**. It covers the basic, common and core competencies i.e. lay and repair floor and wall tiles, tile corners and curved surfaces.

BASIC COMPETENCIES (18 Hours)

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Participate in workplace communication	1.1 Obtain and convey workplace information 1.2 Complete relevant work related documents 1.3 Participate in workplace meeting and discussion.	<ul style="list-style-type: none">• Group discussion• Interaction	<ul style="list-style-type: none">• Demonstration• Observation• Interviews/questioning
2. Work in a team environment	2.1 Describe and identify team role and responsibility in a team 2.2 Describe work as a team member	<ul style="list-style-type: none">• Discussion• Interaction	<ul style="list-style-type: none">• Demonstration• Observation• Interviews/questioning

<p>3. Practice career professionalism</p>	<p>3.1 Integrate personal objectives with organizational goals. 3.2 Set and meet work priorities. 3.3 Maintain professional growth and development</p>	<ul style="list-style-type: none"> • Discussion • Interaction 	<ul style="list-style-type: none"> • Demonstration • Observation • Interviews / questioning
<p>4. Practice occupational health and safety</p>	<p>4.1 Evaluate hazard and risks 4.2 Control hazards and risks 4.3 Maintain occupational health and safety awareness</p>	<ul style="list-style-type: none"> • Discussion • Plant tour • Symposium 	<ul style="list-style-type: none"> • Observation • Interview

COMMON COMPETENCIES
(24 Hours)

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach	
	1. Prepare construction materials and tools	1.1 Identify Materials 1.2 Requisition Materials 1.3 Receive and inspect materials	Audio Visual Simulation Discussion Practical Exercise Demonstration	Direct observation Questions or interview Portfolio (credentials) Written / Oral Test Demonstration
	2. Observe procedures, specifications and manuals of instructions	2.1 Identify and access specification/ manuals	Audio Visual Simulation Discussion Practical Lab Demonstration	Direct observation Oral questioning Written test or examination Third party report Demonstration (able to impart knowledge and skills)
	3. Perform mensuration and calculation	3.1 Select measuring instruments 3.2 Carry out measurements and calculations	Audio Visual Simulation Discussion Practical Lab Demonstration	Direct observation Oral questioning Written test or examination Third party report Demonstration (able to impart knowledge and skills)

4. Maintain tools and equipment	4.1 Check condition of tools and equipment 4.2 Perform basic preventive maintenance 4.3 Sharpen edge and tooth cutting tools 4.4 Store tools and equipment	Audio Visual Simulation Discussion Practical Lab Demonstration	Direct observation of application of tasks Oral questioning Written test or examination Third party report Demonstration
5. Interpret technical drawings and plans	5.1 Read / Interpret blueprints and plans 5.2 Perform freehand sketching	Lecture Demonstration Practical exercises	Demonstration and oral questioning Written test

CORE COMPETENCIES
(40 Hours)

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Lay and repair wall and floor tiles	1.1 Plan and prepare for tiling works 1.2 Lay floor tiles 1.3 Install wall tiles 1.4 Repair tile works	<ul style="list-style-type: none"> • Simulation • Self –paced instructions • Discussion • Practical exercises 	<ul style="list-style-type: none"> • Written test • Observation • Interview
2. Tile corners	2.1 Lay / install tile internal corners 2.2 Lay / install tile external corners	<ul style="list-style-type: none"> • Simulation • Self –paced instructions • Discussion • Practical exercises 	<ul style="list-style-type: none"> • Written test • Observation • Interview
3. Tile curved surfaces	3.1 Lay / install tiles on curved surfaces 3.2 Install mosaic tiles on curved surfaces	<ul style="list-style-type: none"> • Simulation • Self –paced instructions • Discussion • Practical exercises 	<ul style="list-style-type: none"> • Observation • Interview

3.2 TRAINING DELIVERY

The delivery of training should adhere to the design of the curriculum. Delivery should be guided by the 10 basic principles of competency-based TVET:

- The training is based on curriculum developed from the competency standards;
- Learning is modular in its structure;
- Training delivery is learner-centered and should accommodate individualized and self-paced learning strategies;
- Training is based on work that must be performed;
- Training materials are directly related to the competency standards and the curriculum modules;
- Assessment is based in the collection of evidence of the performance of work to the industry required standard;
- Training is based both on and off-the-job components;
- Training program allows for recognition of prior learning (RPL) or current competencies;
- Training allows for multiple entry and exit; and
- Training programs are registered with the UTPRAS.

The competency-based TVET system recognizes various types of delivery modes, both on and off-the-job as long as the learning is driven by the competency standards specified by the industry. The following training modalities may be adopted when designing training programs:

- The dualized mode of training delivery is preferred and recommended. Thus programs would contain both in-school and in-industry training or fieldwork components. Details can be referred to the Dual Training System (DTS) Implementing Rules and Regulations.
- Modular/self-paced learning is a competency-based training modality wherein the trainee is allowed to progress at his own pace. The trainer facilitates the training delivery
- Peer teaching/mentoring is a training modality wherein fast learners are given the opportunity to assist the slow learners.
- Supervised industry training or on-the-job training is an approach in training designed to enhance the knowledge and skills of the trainee through actual experience in the workplace to acquire specific competencies prescribed in the training regulations.

- Distance learning is a formal education process in which majority of the instruction occurs when the students and instructor are not in the same place. Distance learning may employ correspondence study, or audio, video or computer technologies.
- Project-Based Instruction is an authentic instructional model or strategy in which students plan, implement and evaluate projects that have real world applications.

3.3 TRAINEE ENTRY REQUIREMENTS

This section specifies the qualifications of trainees and educational experience. Other requirements like health and physical requirements are also stated. Passing entry written examinations may also be indicated if necessary.

- Good moral character
- Ability to communicate
- Physically fit and mentally healthy
- Can perform basic mathematical computation and mensuration

3.4 LIST OF TOOLS, EQUIPMENT AND MATERIALS FOR TILE SETTING NC II

TOOLS		EQUIPMENT		MATERIALS	
QTY.	ITEM	QTY.	ITEM	QTY.	ITEM
5 pcs.	Notched trowel	5 pcs.	Angle grinder	25 boxes	Glazed wall tiles (20 cm x 20 cm)
5 pcs.	Tile cutter	25 sets	PPE	25 boxes	Vitrified floor tiles (20 cm x 20 cm)
25 pcs.	Metal tape			150 pcs.	Mosaic tiles (12" x 12")
5 pcs.	Nipper			30 kilos	Tile adhesive
5 pcs.	Plumb bob			1 bag	Tile plastic spacer
5 pcs.	Spirit level			5 pcs.	Carburandum
5 pcs.	Tri-square			25 pcs	Pencil
5 pcs.	Plier			5 kilos	Tile grout
5 pcs.	Rubber squeegee			25 pcs.	Foam
5 pcs.	Rubber mallet			10 pcs.	Tile trim
				5 rolls	Nylon string
				1 kilo	Cotton rags
				5 pcs.	Water pail

3.5 TRAINING FACILITIES

The training facility is based on the size of class of 25 students / trainees.

<u>Space Requirement</u>	<u>Size in Meters</u>	<u>Area in Sq. Meters</u>	<u>Total Area in Sq. Meters</u>
Contextual Learning Laboratory / Lecture Room		<u>40</u>	<u>40</u>
Learning Resource Center		<u>20</u>	<u>20</u>
Tool Room/Storage		<u>10</u>	<u>10</u>
Wash room		<u>20</u>	<u>20</u>
Circulation area		<u>50</u>	<u>50</u>
Shop room		<u>60</u>	<u>60</u>
<u>TOTAL AREA</u>			<u>200</u>

3.6 TRAINER'S QUALIFICATION FOR TILE SETTING NC II

- Must have undergone training on Training Methodology II (TM II)
- Must be a holder of National Certificate Level II or its equivalent
- Good moral character
- Must be computer literate
- Must be physically and mentally fit
- *Must have 1 year industry experience and/or teaching experience

*Optional. Only when required by the hiring institution

Reference: TESDA Board Resolution No. 2004-03

3.7 INSTITUTIONAL ASSESSMENT

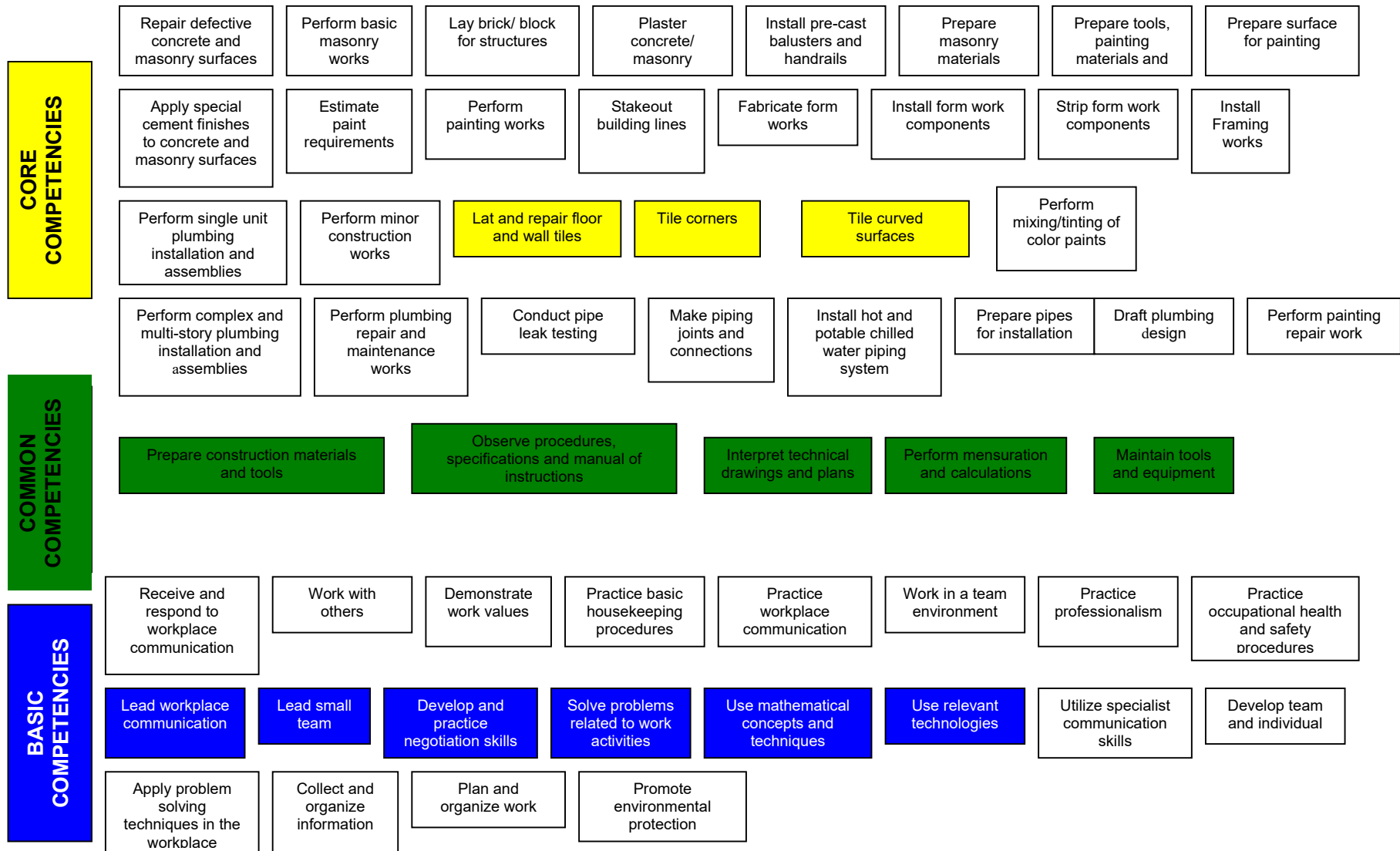
Institutional assessment is undertaken by trainees to determine their achievement of units of competency. A certificate of achievement is issued for each unit of competency.

SECTION 4 NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

- 4.1. To attain the National Qualification of **Tile Setting NC II**, the candidate must demonstrate competence through project-type assessment covering all the units listed in Section 1. Successful candidates shall be awarded a National Certificate signed by the TESDA Director General.
- 4.2 The qualification of **TILE SETTING NC II** can be attained through demonstration of competence in a project-type assessment covering the following core units.
 - 4.1.1 Lay and repair floor and wall tiles
 - 4.1.2 Tile corners
 - 4.1.3 Tile curved surfaces
- 4.3. Assessment shall focus on the core units of competency. The basic and common units shall be integrated or assessed concurrently with the core units.
- 4.4. The following are qualified to apply for assessment and certification:
 - 4.3.1 Graduates of formal, non-formal and informal including enterprise-based training programs
 - 4.4.2. Experienced Workers (wage employed or self-employed)
- 4.5. The guidelines on assessment and certification are discussed in detail in the Procedures Manual on Assessment and Certification and guidelines on the Implementation of the Philippine TVET Qualification and Certification System (PTQCS).

COMPETENCY MAP CIVIL WORKS SUB-SECTOR

TILE SETTING NC II



DEFINITION OF TERMS

1. Competency Is the application of knowledge, skills and attitudes to perform work activities to the standard expected in the workplace.
2. Certification Refers to the process of verifying and validating competencies of a person through assessment.
3. Element Refers to the building blocks of a unit of competency. It describes in outcome terms the functions that a person who works in a particular area of work is able to perform.
4. Evidence Guide It is a guide for assessment that provides information on critical aspects of competency, underpinning knowledge, underpinning skills, resource implications, context of assessment and assessment method.
5. Mosaic Refers to a texture in a crystalline sedimentary rock in which contact at grain boundaries are more or less regular.
6. Philippine TVET Qualification Framework Refers to a comprehensive, nationally consistent framework for qualifications in the TVET sector. It also provides the parameter for the integration of learning and assessment in the middle skills development.
7. Qualification Refers to the national certificate issued by the TESDA or its accredited industry organizations in recognition that a person has achieved competencies relevant to a trade or industry.
8. Range of Variable It describes the circumstances or context in which the work is to be performed.
9. Tile It is a piece of fired clay, stone, concrete or other material used ornamentally to cover roofs, floor or wall
10. Unit of Competency Refers to a discrete aspect of work, which would normally be performed by only one person.

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