

# TRAINING REGULATIONS



## Screed Operation - NC I

### CONSTRUCTION SECTOR

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

# **TABLE OF CONTENTS**

## **CONSTRUCTION - HEAVY EQUIPMENT SUB-SECTOR HEAVY EQUIPMENT OPERATION - SCREED OPERATION NC I**

**SECTION 1      HEAVY EQUIPMENT OPERATION  
                         QUALIFICATION**

**SECTION 2      COMPETENCY STANDARDS**

**SECTION 3      TRAINING STANDARDS**

- 3.1 Curriculum Design
- 3.2 Training Delivery
- 3.3 Trainee Entry Requirements
- 3.4 List of Tools, Equipment and Materials
- 3.5 Training Facilities
- 3.6 Trainers' Qualifications

**SECTION 4      ASSESSMENT AND CERTIFICATION ARRANGEMENT**

**COMPETENCY MAP**

**DEFINITION OF TERMS**

**ACKNOWLEDGEMENTS**

# TRAINING REGULATIONS FOR

## HEAVY EQUIPMENT OPERATION - SCREED OPERATION NC I

### SECTION 1 HEAVY EQUIPMENT OPERATION - SCREED OPERATION NC I

The **HEAVY EQUIPMENT OPERATION - SCREED OPERATION NC I** qualification consists of competencies that workers must achieve to enable them to perform tasks such performing pre- and post-operation checking procedures for screed and other attachment of asphalt paver; and operating and monitoring screed of asphalt paver for constructing roads.

This qualification is packaged from the competency map of Construction - Heavy Equipment sub-sector as shown in Annex A.

The units of competency comprising this qualification include the following:

#### **CODE NO.                    BASIC COMPETENCIES**

##### **Units of Competency**

500311101	Receive and respond to workplace communication
500311102	Work with others
500311103	Demonstrate work values
500311104	Practice basic housekeeping procedures

#### **CODE NO.                    COMMON COMPETENCIES**

##### **Units of Competency**

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

#### **CODE NO.                    CORE COMPETENCIES**

CON833326	Perform pre- and post-checking procedures for screed
CON833327	Operate and monitor screed

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

- Screed operator

## SECTION 2 COMPETENCY STANDARDS

This section gives the details and contents of the core units of competency required in **HEAVY EQUIPMENT OPERATION - SCREED OPERATION NC I**. These units of competency are categorized into basic, common and core competencies.

### BASIC COMPETENCIES

<b>UNIT OF COMPETENCY:</b>	<b>RECEIVE AND RESPOND TO WORKPLACE COMMUNICATION</b>
<b>UNIT CODE</b> :	<b>500311101</b>
<b>UNIT DESCRIPTOR</b> :	This unit covers the knowledge, skills and attitudes required to receive, respond and act on verbal and written communication.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Bold and italicized</i> terms are elaborated in the Range of Variables
1. Follow routine spoken messages	1.1. Required information is gathered by listening attentively and correctly interpreting or understanding information/instructions 1.2. Instructions/information are properly recorded 1.3. Instructions are acted upon immediately in accordance with information received 1.4. Clarification is sought from workplace supervisor on all occasions when any instruction/information is not clear
2. Perform workplace duties following written notices	2.1 <b><i>Written notices and instructions</i></b> are read and interpreted correctly in accordance with <b>organizational guidelines</b> 2.2 Routine written instruction are followed in sequence 2.3 Feedback is given to workplace supervisor based on the instructions/information received

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Written notices and instructions	It refers to : 1.1. Handwritten and printed material 1.2. Internal memos 1.3. External communications 1.4. Electronic mail 1.5. Briefing notes 1.6. General correspondence 1.7. Marketing materials 1.8. Journal articles
2. Organizational Guidelines	It may include: 2.1. Information documentation procedures 2.2. Company policies and procedures 2.3. Organization manuals 2.4. Service manual

## EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Demonstrated knowledge of organizational procedures for handling verbal and written communications 1.2. Received and acted on verbal messages and
-----------------------------------	---

	<p>instructions</p> <p>1.3. Demonstrated competency in recording instructions/information</p>
2. Underpinning Knowledge and Attitudes	<p>2.1. Knowledge of organizational policies/guidelines in regard to processing internal/external information</p> <p>2.2. Ethical work practices in handling communications</p> <p>2.3. Communication process</p>
3. Underpinning Skills	<p>3.1. Conciseness in receiving and clarifying messages/information/communication</p> <p>3.2. Accuracy in recording messages/information</p>
4. Resource Implications	<p>The following resources MUST be provided:</p> <p>4.1. Pens</p> <p>4.2. Note pad</p>
5. Methods of Assessment	<p>Competency may be assessed through:</p> <p>5.1. Direct Observation</p> <p>5.2. Oral interview</p> <p>5.3. Written Evaluation</p> <p>5.4. Third Party Report</p>
6. Context of Assessment	<p>6.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions</p>

<b>UNIT OF COMPETENCY:</b>	<b>WORK WITH OTHERS</b>
<b>UNIT CODE</b> :	<b>500311102</b>
<b>UNIT DESCRIPTOR</b> :	This unit covers the skills, knowledge and attitudes required to develop workplace relationship and contribute in workplace activities

ELEMENT	PERFORMANCE CRITERIA <i>Bold and italicized</i> terms are elaborated in the Range of Variables
1. Develop effective workplace relationship	1.1 <b><i>Duties and responsibilities</i></b> are done in a positive manner to promote cooperation and good relationship 1.2 Assistance is sought from <b><i>workgroup</i></b> when difficulties arise and addressed through discussions 1.3 <b><i>Feedback</i></b> provided by others in the team is encouraged, acknowledged and acted upon 1.4 Differences in personal values and beliefs are respected and acknowledged in the development
2. Contribute to work group activities	2.1 <b><i>Support is provided to team members</i></b> to ensure workgroup goals are met 2.2 Constructive contributions to workgroup goals and tasks are made according to <b><i>organizational requirements</i></b> 2.3 Information relevant to work is shared with team members to ensure designated goals are met

#### RANGE OF VARIABLES

VARIABLE	RANGE
1. Duties and responsibilities	1.1 Job description and employment arrangements 1.2 Organization's policy relevant to work role 1.3 Organizational structures 1.4 Supervision and accountability requirements including

	<p>OHS</p> <p>1.5 Code of conduct</p>
2. Work group	<p>2.1 Supervisor or manager</p> <p>2.2 Peers/work colleagues</p> <p>2.3 Other members of the organization</p>
3. Feedback on performance	<p>3.1 Formal/Informal performance appraisal</p> <p>3.2 Obtaining feedback from supervisors and colleagues and clients</p> <p>3.3 Personal, reflective behavior strategies</p> <p>3.4 Routine organizational methods for monitoring service delivery</p>
4. Providing support to team members	<p>4.1 Explaining/clarifying</p> <p>4.2 Helping colleagues</p> <p>4.3 Providing encouragement</p> <p>4.4 Providing feedback to another team member</p> <p>4.5 Undertaking extra tasks if necessary</p>
5. Organizational requirements	<p>5.1 Goals, objectives, plans, system and processes</p> <p>5.2 Legal and organization policy/guidelines</p> <p>5.3 OHS policies, procedures and programs</p> <p>5.4 Ethical standards</p> <p>5.5 Defined resources parameters</p> <p>5.6 Quality and continuous improvement processes and standards</p>

## EVIDENCE GUIDE

1. Critical aspects of competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1. Provided support to team members to ensure goals are met</p> <p>1.2. Acted on feedback from clients and colleagues</p> <p>1.3. Accessed learning opportunities to extend own personal work competencies to enhance team goals and outcomes</p>
-----------------------------------	--



<p>2. Underpinning Knowledge</p>	<p>2.1. The relevant legislation that affects operations, especially with regards to safety</p> <p>2.2. Reasons why cooperation and good relationships are important</p> <p>2.3. Knowledge of the organization's policies, plans and procedures</p> <p>2.4. Understanding how to elicit and interpret feedback</p> <p>2.5. Knowledge of workgroup member's responsibilities and duties</p> <p>2.6. Importance of demonstrating respect and empathy in dealings with colleagues</p> <p>2.7. Understanding of how to identify and prioritize personal development opportunities and options</p>
<p>3. Underpinning Skills</p>	<p>3.1. Ability to read and understand the organization's policies and work procedures</p> <p>3.2. Write simple instructions for particular routine tasks</p> <p>3.3. Interpret information gained from correspondence</p> <p>3.4. Communication skills to request advice, receive feedback and work with a team</p> <p>3.5. Planning skills to organized work priorities and arrangement</p> <p>3.6. Technology skills including the ability to select and use technology appropriate to a task</p> <p>3.7. Ability to relate to people from a range of social, cultural and ethnic backgrounds.</p>

4. Resource Implications	The following resources <b>MUST</b> be provided: 4.1. Access to relevant workplace or appropriately simulated environment where assessment can take place 4.2. Materials relevant to the proposed activity or task
5. Methods of Assessment	Competency may be assessed through: 5.1. Direct observations of work activities 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
6. Context for Assessment	6.1. Competency assessment may occur in workplace or any appropriately simulated environment 6.2. Assessment shall be observed while task are being undertaken whether individually or in group

<b>UNIT OF COMPETENCY:</b>	<b>DEMONSTRATE WORK VALUES</b>
<b>UNIT CODE</b> :	<b>50031103</b>
<b>UNIT DESCRIPTOR</b> :	This unit covers the knowledge, skills, and attitude in demonstrating proper work values.

ELEMENT	PERFORMANCE CRITERIA <i>Bold and italicized</i> terms are elaborated in the Range of Variables
1. Define the purpose of work	1.1 One's unique sense of purpose for working and the why's of work are identified, reflected on and clearly defined for one's development as a person and as a member of society. 1.2 Personal mission is in harmony with company's values
2. Apply work values/ethics	2.1 <b>Work values/ethics/concepts</b> are classified and reaffirmed in accordance with the transparent company ethical standards, policies and guidelines 2.2 <b>Work practices</b> are undertaken in compliance with industry work ethical standards, organizational policy and guidelines 2.3 Personal behavior and relationships with co-workers and/or clients are conducted in accordance with ethical standards, policy and guidelines 2.4 <b>Company resources</b> are used in accordance with transparent company ethical standard, policies and guidelines
3. Deal with ethical problems	3.1 Company ethical standards, organizational policy and guidelines on the prevention and reporting of unethical conduct are accessed and applied in accordance with transparent company ethical standard, policies and guidelines. 3.2 <b>Work incidents/situations</b> are reported and/or resolved in accordance with company protocol/guidelines. 3.3 Resolution and/or referral of ethical problems identified are used as learning opportunities.
4. Maintain integrity of conduct in the workplace	4.1 Personal work practices and values are demonstrated consistently with acceptable ethical conduct and company's core values 4.2 <b>Instructions</b> to co-workers are provided based on ethical, lawful and reasonable directives 4.3 Company values/practices are shared with co-workers using appropriate behavior and language

#### RANGE OF VARIABLES

VARIABLE	RANGE
----------	-------

<p>1. Work values / ethics / concepts</p>	<p>May include but are not limited to:</p> <ul style="list-style-type: none"> <li>1.1 Commitment/ Dedication</li> <li>1.2 Sense of urgency</li> <li>1.3 Sense of purpose</li> <li>1.4 Love for work</li> <li>1.5 High motivation</li> <li>1.6 Orderliness</li> <li>1.7 Reliability</li> <li>1.8 Competence</li> <li>1.9 Dependability</li> <li>1.10 Goal-oriented</li> <li>1.11 Sense of responsibility</li> <li>1.12 Being knowledgeable</li> <li>1.13 Loyalty to work/company</li> <li>1.14 Sensitivity to others</li> <li>1.15 Compassion/Caring attitude</li> <li>1.16 Balancing between family and work</li> <li>1.17 Pakikisama</li> <li>1.18 Bayanihan spirit/teamwork</li> <li>1.19 Sense of nationalism</li> </ul>
<p>2. Work practices</p>	<ul style="list-style-type: none"> <li>2.1 Quality of work</li> <li>2.2 Punctuality</li> <li>2.3 Efficiency</li> <li>2.4 Effectiveness</li> <li>2.5 Productivity</li> <li>2.6 Resourcefulness</li> <li>2.7 Innovativeness/Creativity</li> <li>2.8 Cost conciousness</li> <li>2.9 5S</li> <li>2.10 Attention to details</li> </ul>
<p>3. Incidents/situations</p>	<ul style="list-style-type: none"> <li>3.1 Violent/intensed dispute or argument</li> <li>3.2 Gambling</li> <li>3.3 Use of prohibited substances</li> <li>3.4 Pilferages</li> <li>3.5 Damage to person or property</li> <li>3.6 Vandalism</li> <li>3.7 Falsification</li> <li>3.8 Bribery</li> <li>3.9 Sexual Harassment</li> <li>3.10 Blackmail</li> </ul>

4. Company resources	4.1 Consumable materials 4.2 Equipment/Machineries 4.3 Human 4.4 Time 4.5 Financial resources
5. Instructions	5.1 Verbal 5.2 Written

## EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Defined one's unique sense of purpose for working</li> <li>1.2 Clarified and affirmed work values/ethics/concepts consistently in the workplace</li> <li>1.3 Demonstrated work practices satisfactorily and consistently in compliance with industry work ethical standards, organizational policy and guidelines</li> <li>1.4 Demonstrated personal behavior and relationships with co-workers and/or clients consistent with ethical standards, policy and guidelines</li> <li>1.5 Used company resources in accordance with company ethical standard, policies and guidelines.</li> <li>1.6 Followed company ethical standards, organizational policy and guidelines on the prevention and reporting of unethical conduct/behavior</li> </ul>
<p>2. Underpinning Knowledge</p>	<ul style="list-style-type: none"> <li>2.1 Occupational health and safety</li> <li>2.2 Work values and ethics</li> <li>2.3 Company performance and ethical standards</li> <li>2.4 Company policies and guidelines</li> <li>2.5 Fundamental rights at work including gender sensitivity</li> <li>2.6 Work responsibilities/job functions</li> <li>2.7 Corporate social responsibilities</li> <li>2.8 Company code of conduct/values</li> <li>2.9 Balancing work and family responsibilities</li> </ul>
<p>3. Underpinning Skills</p>	<ul style="list-style-type: none"> <li>3.1 Interpersonal skills</li> <li>3.2 Communication skills</li> <li>3.3 Self awareness, understanding and acceptance</li> <li>3.4 Application of good manners and right conduct</li> </ul>
<p>4. Resource Implications</p>	<p>The following resources <b>MUST</b> be provided:</p> <ul style="list-style-type: none"> <li>4.1 Workplace or assessment location</li> <li>4.2 Case studies/Scenarios</li> </ul>
<p>5. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Portfolio Assessment</li> <li>5.2 Interview</li> <li>5.3 Third Party Reports</li> </ul>
<p>6. Context of Assessment</p>	<ul style="list-style-type: none"> <li>6.1 Competency may be assessed in the work place or in a simulated work place setting</li> </ul>

<b>UNIT OF COMPETENCY:</b>	<b>PRACTICE HOUSEKEEPING PROCEDURES</b>
<b>UNIT CODE</b> :	<b>500311104</b>
<b>UNIT DESCRIPTOR</b> :	This unit covers the knowledge, skills and attitudes required to apply the basic housekeeping procedures.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Bold and italicized</i> terms are elaborated in the Range of Variables
1. Sort and remove unnecessary items	1.1 Reusable, recyclable materials are sorted in accordance with company/office procedures 1.2 <b>Unnecessary items</b> are removed and disposed of in accordance with company or office procedures
2. Arrange items	2.1 Items are arranged in accordance with company/office housekeeping procedures 2.2 Work area is arranged according to job requirements 2.3 Activities are prioritized based on instructions. 2.4 Items are provided with clear and visible <b>identification marks</b> based on procedure 2.4 Safety equipment and evacuation passages are kept clear and accessible based on instructions
3. Maintain work area, tools and equipment	3.1 Cleanliness and orderliness of work area is maintained in accordance with company/office procedures 3.2 Tools and equipment are cleaned in accordance with manufacturer's instructions/manual 3.3 <b>Minor repairs</b> are performed on tools and equipment in accordance with manufacturer's instruction/manual 3.4 Defective tools and equipment are reported to immediate supervisor
4. Follow standardized work process and procedures	4.1 Materials for common use are maintained in designated area based on procedures 4.2 Work is performed according to standard work procedures 4.3 Abnormal incidents are reported to immediate supervisor
5. Perform work spontaneously	5.1 Work is performed as per instruction 5.2 Company and office <b>decorum</b> are followed and complied with 5.3 Work is performed in accordance with occupational health and safety (OHS) requirements

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Unnecessary items	May include but are not limited to: 1.1 Non-recyclable materials 1.2 Unserviceable tools and equipment 1.3 Pictures, posters and other materials not related to work activity 1.4 Waste materials
2. Identification marks	2.1 Labels 2.2 Tags 2.3 Color coding
3. Decorum	3.1 Company/ office rules and regulations 3.2 Company/ office uniform 3.3 Behavior
4. Minor repair	Minor repair include but not limited to: 4.1 Replacement of parts 4.2 Application of lubricants 4.3 Sharpening of tools 4.4 Tightening of nuts, bolts and screws



## EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Practiced the basic procedures of 5S
2. Underpinning Knowledge and Attitudes	2.1 Principles of 5S 2.2 Work process and procedures 2.3 Safety signs and symbols 2.4 General OH&S principles and legislation 2.5 Environmental requirements relative to work safety 2.6 Accident/Hazard reporting procedures
3. Underpinning Skills	3.1 Basic communication skills 3.2 Interpersonal skills 3.3 Reading skills required to interpret instructions 3.4 Reporting/recording accidents and potential hazards
4. Resource Implications	The following resources <b>MUST</b> be provided: 4.1 Facilities, materials tools and equipment necessary for the activity
5. Methods of Assessment	Competency must be assessed through: 5.1 Third party report 5.2 Interview 5.3 Demonstration with questioning
6. Context for Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

## COMMON COMPETENCIES

<b>UNIT OF COMPETENCY:</b>	<b>PREPARE CONSTRUCTION MATERIALS AND TOOLS</b>
<b>UNIT CODE</b> :	<b>CON931201</b>
<b>UNIT DESCRIPTOR</b> :	This unit covers the knowledge, skills and attitudes on identifying, requesting and receiving construction materials and tools based on the required performance standards.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Bold and italicized</i> terms are elaborated in the Range of Variable
1. Identify materials	1.1 <b>Materials</b> are listed as per job requirements 1.2 Quantity and <b>description of materials</b> 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 <b>company standard operating procedures (SOP)</b> 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

1. Critical aspects of competency	Assessment requires evidence that the candidate: 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
2. Underpinning knowledge	2.1 Types and uses of construction materials and tools 2.2 Different forms 2.3 Requisition procedures
3. Underpinning skills	3.1 Preparing materials and tools 3.2 Proper handling of tools and equipment 3.3 Following instructions
4. Resource implications	The following resources should be provided: 4.1 Workplace location 4.2 Materials relevant to the unit of competency 4.3 Technical plans, drawings and specifications relevant to the activities
5. Methods of assessment	Competency in this unit must be assessed through: 5.1 Direct observation and oral questioning
6. Context of assessment	6.1 Competency may be assessed in the workplace or in a simulated workplace 6.2 Competency assessment must be undertaken in accordance with the endorsed TESDA assessment guidelines

<b>UNIT OF COMPETENCY:</b>	<b>OBSERVE PROCEDURES, SPECIFICATIONS AND MANUALS OF INSTRUCTIONS</b>
<b>UNIT CODE</b> :	<b>CON311201</b>
<b>UNIT DESCRIPTOR</b> :	This unit covers the knowledge, skills and attitudes on identifying, interpreting, applying services to specifications and manuals and storing manuals.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Bold and 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 <b>Manual</b> 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

1. Critical aspects of competency	Assessment requires that the candidate: 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
2. Underpinning knowledge	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
3. Underpinning skills	3.1 Reading and comprehension skills required to identify and interpret construction manuals and specifications 3.2 Accessing information and data
4. Resource implications	The following resources should be provided: 4.1 All manuals/catalogues relative to construction sector
5. Methods of assessment	Competency should be assessed through: 5.1 Direct observation 5.2 Questions/interview  Assessment of underpinning knowledge and practical skills may be combined
6. Context of assessment	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

<b>UNIT OF COMPETENCY:</b>	<b>PERFORM MENSURATIONS AND CALCULATIONS</b>
<b>UNIT CODE</b> :	<b>CON311203</b>
<b>UNIT DESCRIPTOR</b> :	This unit covers the knowledge, skills and attitudes on identifying and measuring objects based on the required performance standards.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Bold and 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 <b><i>geometric shape</i></b> 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 1.5 Alternative measuring tools are used without sacrificing cost and quality of work
2. Carry out measurements and calculations	2.1 Accurate <b><i>measurements</i></b> are obtained according to job requirements 2.2 Alternative measuring tools are used without sacrificing cost and quality of work 2.3 <b><i>Calculation</i></b> 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 Calculations involving fractions, percentages and mixed numbers are used to complete workplace tasks 2.4 Numerical computation is self-checked and corrected for accuracy 2.5 Instruments are read to the limit of accuracy of the tool 2.6 Systems of measurement identified and converted according to job requirements/ISO 2.7 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-ohmmeter 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 3.13 Inside diameter 3.14 Circumference 3.15 Length 3.16 Thickness 3.17 Outside diameter 3.18 Taper 3.19 Out of roundness 3.20 Oil clearance 3.21 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><b>TRADE MATHEMATICS / MENSURATION</b></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>2.7 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>

<b>UNIT OF COMPETENCY:</b>	<b>MAINTAIN TOOLS AND EQUIPMENT</b>
<b>UNIT CODE</b> :	<b>CON311204</b>
<b>UNIT DESCRIPTOR</b> :	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.

<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Bold and italicized</i> terms are elaborated in the Range of Variables
1. Check condition of tools and equipment	1.1 <b>Materials, tools and 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 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 Tools are cleaned and lubricated according to standard procedures 2.5 Defective instruments, equipment and accessories are inspected and replaced according to manufacturer's specifications 2.6 Tools are inspected, repaired and replaced after use 2.7 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

## RANGE OF VARIABLES

VARIABLE	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	Maintenance schedule forms 4.1 Requisition slip 4.2 Inventory Form 4.3 Inspection Form 4.4 Procedures

## EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires that the candidate:</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 OHSA regulations</li> <li>1.8 Stored tools and equipment safely in appropriate locations and in accordance with company practices</li> </ul>
<p>2. Underpinning knowledge</p>	<ul style="list-style-type: none"> <li>2.1 <b>SAFETY PRACTICES</b> <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 <b>MATERIALS, TOOLS AND EQUIPMENT</b> <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> </ul> </li> <li>2.3 <b>PREVENTIVE MAINTENANCE</b> <ul style="list-style-type: none"> <li>2.3.1 Methods and techniques</li> <li>2.3.2 Procedures</li> </ul> </li> </ul>
<p>3. Underpinning skills</p>	<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>3.4 Following instructions</li> </ul>
<p>4. Resource implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>4.1 Workplace</li> <li>4.2 Maintenance schedule</li> <li>4.3 Maintenance materials, tools and equipment relevant to the proposed activity/task</li> </ul>
<p>5. Methods of assessment</p>	<p>Competency should be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Direct observation</li> <li>5.2 Written test/questioning relevant to underpinning knowledge</li> </ul>

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
--------------------------	---

## CORE COMPETENCIES

<b>UNIT OF COMPETENCY:</b>	<b>PERFORM PRE- AND POST-OPERATION CHECKING PROCEDURES FOR SCREED</b>
<b>UNIT CODE:</b>	<b>CON833326</b>
<b>UNIT DESCRIPTOR:</b>	This unit deals with the knowledge, skills and attitude in performing pre- and post-operation checking procedures for screed attachment.

<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Bold and italicized</i> terms are elaborated in the Range of Variables
1. Perform visual check	1.1 Work instruction is secured from appropriate personnel based on company standard operating procedures 1.2 PPE is selected and used in line with job requirements 1.3 <b>Walk around check</b> is performed with engine stopped / not running. 1.4 <b>Deformities</b> in screed are reported to operator
2. Perform operation checks	2.1 Communication with operator is established and maintained 2.2 Normal function of controls and screed are checked 2.3 Walk-around check is re-conducted while engine is running. 2.4 <b>Abnormal conditions</b> are noted in checklist and reported to operator
3. Perform post-operation checking procedure	3.1 Walk around inspection check is re-conducted while doing engine is cooling down 3.2 Daily equipment time report (DETR) is accomplished / submitted according to company rules and regulations.



## RANGE OF VARIABLES

VARIABLE	RANGE
1. Walk-around check	1.1 Hopper 1.2 Auger 1.3 Chain and sprocket 1.4 Tamper
2. Deformities	2.1 Misaligned hopper 2.2 Loose chain and bolts 2.3 Cracked and misaligned sprocket and chain
3. Abnormal conditions	3.1 Stuck-up hopper (mechanical) 3.2 Stuck-up auger 3.3 Loose drive chain tension

## EVIDENCE GUIDE

<p>1. Critical aspects of evidence to be considered</p>	<p>Assessment must confirm evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Demonstrates ability to select PPE in line with job requirements</li> <li>1.2 Demonstrates ability to perform walk-around inspection following equipment checklist and with engine stopped/not running</li> <li>1.3 Demonstrates ability to perform walk-around check while engine is running.</li> <li>1.4 Demonstrates ability to perform post-operation checking procedure.</li> <li>1.5 Demonstrates ability to accomplish and submit daily equipment time report/record (DETR)</li> </ul>
<p>2. Underpinning (related) knowledge and attitude</p>	<ul style="list-style-type: none"> <li>2.1 Types and uses of personal protective equipment (PPE)</li> <li>2.2 Attachments and controls and their usage</li> <li>2.3 Familiarity with manufacturer's operation manual</li> <li>2.4 Familiarity with pre- and post-operation checklist and checking procedure</li> <li>2.5 Positive work values (time and cost conscious, etc.)</li> </ul>
<p>3. Underpinning skills</p>	<ul style="list-style-type: none"> <li>3.1 Performing pre- and post-operation checking procedures of equipment using standard attachment</li> <li>3.2 Using personal protective equipment</li> <li>3.3 Maintaining equipment records</li> <li>3.4 Communicating with work operator</li> <li>3.5 Complying with the manufacturer's operation manual</li> <li>3.6 Accomplishing pre- and post-operation checklist</li> </ul>
<p>4. Resource implications</p>	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>4.1 Appropriate work area for paver</li> <li>4.2 Access to paver equipment and manuals</li> <li>4.3 PPE</li> </ul>
<p>5. Method of assessment</p>	<p>Competency in this unit must be assessed through</p> <ul style="list-style-type: none"> <li>5.1 Written/oral questioning</li> <li>5.2 Observation of practical demonstration</li> <li>5.3 Third party report</li> <li>5.4 Work record and documents</li> </ul>
<p>6. Context for assessment</p>	<ul style="list-style-type: none"> <li>6.1 Competency shall be assessed in a normal workplace environment and in accordance with safe work procedures</li> <li>6.2 Competency shall be assessed while work is being undertaken independently</li> </ul>

<b>UNIT OF COMPETENCY:</b>	<b>OPERATE AND MAINTAIN SCREED</b>
<b>UNIT CODE:</b>	<b>CON833327</b>
<b>UNIT DESCRIPTOR:</b>	This unit deals with the knowledge, skills and attitudes in monitoring asphalt overlaid by paver.

<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Bold and italicized</i> terms are elaborated in the Range of Variables
1. Monitor and support asphalt overlaying	1.1 PPE is selected and used in line with job requirements 1.2 <b><i>Communication signal</i></b> with the operator is established and maintained based on standard operating procedures 1.3 Asphalt overlaid is compared against <b><i>job specifications</i></b> 1.4 <b><i>Variance</i></b> in asphalt overlaying is noted and communicated with paver operator 1.5 Screed controls are manually adjusted based on variances, when required
2. Clean screed	2.1 Information to park the equipment is communicated with the operator 2.2 <b><i>Cleaning procedure</i></b> is performed following manufacturer's operation and maintenance manual

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Communication signal	1.1 Verbal 1.2 Hand
2. Job specifications	2.1 Dimension 2.1.1 Thickness 2.1.2 Width 2.1.3 Length
3. Variance	3.1 Time duration of asphalt spreading 3.2 Uniformity of asphalt 3.3 Tamping of asphalt
4. Cleaning procedure	4.1 Removal of asphalt residue for: 4.1.1 Conveyor belt 4.1.2 Auger 4.1.3 Tamper

## EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment must confirm evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Demonstrates ability to follow safe work procedures /practices</li> <li>1.2 Demonstrates ability to communicate with the operator</li> <li>1.3 Demonstrates ability to follow job specifications</li> <li>1.4 Demonstrates ability to manipulate emergency controls and movement of attachment</li> <li>1.4 Demonstrates ability to perform cleaning procedures</li> </ul>
<p>2. Underpinning knowledge, attitudes</p>	<ul style="list-style-type: none"> <li>2.1 Safe work procedures and practices</li> <li>2.2 Emergency controls and attachment and their usage</li> <li>2.3 Cleaning procedures</li> <li>2.4 Dimensions of asphalt overlay coverage</li> <li>2.5 Positive work values</li> </ul>
<p>3. Underpinning skills</p>	<ul style="list-style-type: none"> <li>3.1 Following safe work procedures and practices</li> <li>3.2 Using emergency controls and attachment</li> <li>3.3 Performing cleaning procedures</li> <li>3.4 Following dimensions of asphalt overlay instructions</li> <li>3.5 Following company rules and regulations relevant to paver operation</li> <li>3.6 Communicating with the operator</li> </ul>
<p>4. Resource implications</p>	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> <li>4.1 Access to paver and work site/terrain</li> <li>4.2 Attachment operation and maintenance manual</li> <li>4.3 Asphalt mix</li> <li>4.4 PPE</li> </ul>
<p>5. Method of assessment</p>	<p>Competency in this unit must be assessed through:</p> <ul style="list-style-type: none"> <li>5.1 Oral/written questioning</li> <li>5.2 Observation of practical demonstration</li> <li>5.3 Third Party report</li> <li>5.4 Work record and documents</li> </ul>
<p>6. Context for assessment</p>	<ul style="list-style-type: none"> <li>6.1 Assessment may be conducted in the work site in accordance with safe work practices.</li> <li>6.2 Competency shall be assessed while work is being undertaken</li> </ul>

## 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 **Heavy Equipment Operations (screed attachment of Asphalt Paver) NC I**.

### 3.1 CURRICULUM DESIGN

Course Title: **HEAVY EQUIPMENT OPERATION**

NC Level: **NC I**

Course Description:

This course is designed to equip individual with the basic, common and core competencies in Construction Sector particularly in **Heavy Equipment Operation (Screed attachment) NC I**.

To obtain this, all units prescribed for this qualification must be achieved:

### 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"><li>• Group discussion</li><li>• Interaction</li></ul>	<ul style="list-style-type: none"><li>• Demonstration</li><li>• Observation</li><li>• Interviews/questioning</li></ul>
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"><li>• Discussion</li><li>• Interaction</li></ul>	<ul style="list-style-type: none"><li>• Demonstration</li><li>• Observation</li><li>• Interviews/questioning</li></ul>
3. Practice career professionalism	3.1 Integrate personal objectives with organizational goals. 3.2 Set and meet work priorities. 3.3 Maintain professional growth and development.	<ul style="list-style-type: none"><li>• Discussion</li><li>• Interaction</li></ul>	<ul style="list-style-type: none"><li>• Demonstration</li><li>• Observation</li><li>• Interviews/questioning</li></ul>

<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"> <li>• Discussion</li> <li>• Plant tour</li> <li>• Symposium</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Interview</li> </ul>
---	--	---	--

## COMMON COMPETENCIES (18 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 mensurations 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



## CORE COMPETENCIES (64 hours)

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Perform pre and post-operation checking procedures for screed	1.1 Perform visual check 1.2 Perform operation checks 1.3 Perform post-operation checking procedure 1.4 Perform post-operation procedures	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Practical / Demonstration</li> </ul>	<ul style="list-style-type: none"> <li>• Observation/ Demonstration with interview</li> <li>• Written test</li> </ul>
2. Operate and maintain Screed	2.1 Monitor and support asphalt overlaying 2.2 Clean screed	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Practical / Demonstration</li> </ul>	<ul style="list-style-type: none"> <li>• Observation/ Demonstration with interview</li> <li>• Written test</li> </ul>

## 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 individualized and self-paced;
- 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;
- Allows for recognition of prior learning (RPL) or current competencies;
- Training allows for multiple entry and exit; and
- Approved training programs are nationally accredited.

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.

### **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.

- Can communicate both oral and written
- Physically and mentally fit
- With good moral character
- Can perform basic mathematical computation

### **3.4 LIST OF TOOLS, EQUIPMENT AND MATERIALS (MATERIALS HANDLING OPERATION)**

Below is the recommended list of tools, equipment and materials for the training of 25 trainees for the operation of screed attachment

TOOLS		EQUIPMENT		MATERIALS	
QTY.	ITEM	QTY.	ITEM	QTY.	ITEM
1 set	• Wrenches (box and open-end 8-24 mm-metric & 7/16 – 1” - English )	1 unit	• Paver (MOA / rental)	5 kilos	• Multi-purpose grease
1 set	• Hammer, ball peen (34 lbs)	1 unit	• Pressure washer	2 cans	• Penetrating oil (250 ml)
1 set	• Pliers (mechanical 10“)			2 kilos	• Cotton rugs
1 pc	• Adjustable wrench (18“)			5 liters	• Cleaning solvent
2 pcs	• Grease gun			1 pair	• Working Clothes
1 set	• Screw driver (10 “ flat & Philips)			10 pairs	• Safety shoes
25 pcs	• Putty knife			10 pairs	• Gloves
1 pc	• Pry bar (heavy duty)			10 pcs	• Goggles
1 pc	• Pipe wrench (12”)			10 pcs	• Dust Mask
1 pc	• Vise grip (12 “)			10 pcs	• Hard hats
1 pc.	• Pull push rule			1 pc	• Operator’s manual
5 pcs.	• Steel brush			25 packets	• Soap (hand cleaning)
1 pc	• Hydraulic jack (10 tons)				

*NOTE: Implementation of the training program can be made possible through a MOA between the training school and industry*

### **3.5 TRAINING FACILITIES HEAVY EQUIPMENT OPERATION (CONCRETING AND ASPHALTING)**

The screed attachment operation workshop must be made of reinforced concrete or steel structure. The size must be suited on the requirements of the competencies. The class size of 25 students/trainees is reserved for the lecture room and the practical demonstration area for carrying out minor screed attachment maintenance servicing. Most of the learning activities are performed individually in the students/trainees work area.

SPACE REQUIREMENT	SIZE IN METERS	AREA IN SQ. METERS	TOTAL AREA IN SQ. METERS
Student/Trainee's Working Space		4 sq.m per student	100.0 sq.m.
Lecture Room		48.00	48.0
Learning Resource Center		24.00	24.0
			172
Facilities/Equipment /Circulation Area	-	-	52
<b>TOTAL WORK AREA</b>	-		<b>224</b>
Working field	0.5 hectare (MOA/Rental)		

### 3.6 TRAINER'S QUALIFICATIONS HEAVY EQUIPMENT OPERATION (PAVER [SCREED ATTACHMENT]) NC I

- Must be a holder of **Heavy Equipment Operation (Paver) NC-II**
- Must have undergone training on Training Methodology II (TM II)
- Must be physically and mentally fit
- \*Must have at least 5 years job/industry experience\*
- Must be a civil service eligible (for government position or appropriate professional license
- issued by the Professional Regulatory Commission)

\* *Optional. Only when required by the hiring institution*

Reference: TESDA Board Resolution No. 2004 03

## **SECTION 4 NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS**

- 4.1 To attain the National Qualification of **HEAVY EQUIPMENT OPERATION - SCREED NC I**, the candidate must demonstrate competence through project-type assessment covering all the units listed in Section 1. The successful candidate shall be awarded a National Certificate signed by the TESDA Director General.
- 4.2 The qualification of **Screed Operation NC I** can be attained through demonstration of competence through project-type assessment covering all the units of qualification.
- 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:
  - 4.4.1 Graduates of formal, non-formal and/or informal training including enterprise-based training programs
  - 4.4.2 Experienced Workers (wage-employed or self-employed)

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

## CONSTRUCTION-HEAVY EQUIPMENT OPERATION - SUB- SECTOR

### CORE COMPETENCIES

Perform pre- and post-operation procedures for earth moving equipment	Perform basic preventive maintenance servicing for earth moving equipment	Perform productive operation for hydraulic excavator	Perform productive operation for wheel loader	Perform productive operation for motor grader	Perform productive operation for road roller
Perform productive operation for bulldozer	Perform productive operation for backhoe loader	Perform pre- and post-operation procedures for lifting equipment	Perform basic preventive maintenance servicing for lifting equipment	Perform productive operation for rough-terrain crane	Perform productive operation for crawler crane
Perform productive operation for truck-mounted crane	Perform productive operation for tower crane	Perform productive operation for forklift	Perform pre- and post-operation procedures for hauling equipment	Perform basic preventive maintenance servicing for hauling	Perform productive operation for off-high way dump truck (articulated)
Perform productive operation for off-highway dump truck (rigid)	Perform productive operation for on-highway dump truck (rigid)	Perform pre- and post-operation procedures for concreting and asphaltting equipment	Perform basic preventive maintenance servicing for concreting and asphaltting equipment	Perform productive operation for transit mixer	Perform productive operation for paver

### COMMON COMPETENCIES

Perform productive operation for concrete pump	Perform pre- and post operation checking procedures for screed	Operate and maintain screed	
Prepare construction materials and tools	Observe procedures, specifications and manual of instructions	Perform mensuration and calculations	Maintain tools and equipment

### BASIC COMPETENCIES

Receive and respond to workplace communication	Work with others	Demonstrate work values	Practice housekeeping procedure (5s)	Participate in workplace communication	Work in a team environment	Practice career professionalism
Practice occupational health and safety procedures	Lead workplace communication	Lead small team	Develop and practice negotiation skills	Solve problems related to work activities	Use mathematical concepts and techniques	Use relevant technologies
Utilize specialized communication skills	Develop teams and individuals	Apply problem-solving techniques in the workplace	Plan and organize work	Collect, analyze and organize information	Promote environmental protection	



## Definition of Terms

For the purpose of this Competency Standard, the words

For the purpose of this Competency Standard, the words

1. Tamper                      Refers to attachment that provides initial compaction of ready mixed concrete or asphalt materials as they are laid by concrete or asphalt Paver.
2. Screed                      Refers to the attachment that equally spreads and levels off asphalt mix. This attachment includes conveyor belt, auger and tamper.
3. Auger                        Refers to the attachment that distributes ready mixed concrete from the hopper to the left and right portion of the Paver.
4. Conveyor                    It is the attachment that carries ready mixed asphalt from feed hopper to the auger.

## ACKNOWLEDGEMENTS

The Technical Education and Skills Development Authority (TESDA) wishes to extend thanks and appreciation to the many representatives of business, industry, academe and government agencies and who contributed their time and expertise to the development and validation of this Training Regulations.

- **THE TECHNICAL EXPERT PANEL (TEP)**

**FLORELLO P. QUIANZON**

Consultant, Equipment Concrete Product  
Division (Equipment Management)  
Makati Development Corporation

**AUGUSTO S. BUYAO**

Training Manager  
Maxima Equipment Co. Inc.

**Tito C. Tadios**

Training Manager (Heavy Equipment  
Operation and Maintenance)  
Monark Equipment Co. Inc

**RUDOLFO D. ANCHETA**

Quality Controller Supervisor (Repair  
and Maintenance of Hydraulic  
Excavator/Basic Hydraulic)  
Civil Merchandising Inc.

**Eduardo C. Emas**

Trainor  
Construction Manpower Development  
Center

**CORNELIO D. PADUA**

Heavy Equipment Supervisor  
Makati Development Corp.

**AUGUST CONSEBIDO**

Sales supervisor  
Monark Equipment Co. Inc.

**ELIAS RODRIGUEZ**

Trainor  
Monark equipment Co. Inc.

**EUGENIO S. GUTIERREZ**

Operator  
Makati Development Corp.

**WILBERT INCHOCO**

Training Manager  
Monark Equipment co. Inc.

**VINCENT L. ORAIS**

Operator  
Makati Development Corp

**MANUELITO S. SEVERINO**

Operator  
Makati Development Corp.

**ERIC PEREZ**  
Sales Manager  
Wirtgen Philippines

**ALFREDO M. ABELA**  
Operator  
Makati Development Corporation

**The Management and Staff of the TESDA Secretariat**

**Qualifications and Standards Office**

**The Management and Staff of the ACEL Secretariat**