

NOCC-A21 Electrician: Competence Package

<b>Relevant Occupation/trade title:</b> Electrician				<b>SAQA ID:</b> 91761	
<b>Learning Area 10: Install, maintain and troubleshoot electrical transformers and associated controls</b>				<b>Total Hours:</b>	<b>72</b>
<b>Learning Project 1: Select and install low voltage (single phase) transformers</b>				<b>Total Hours:</b>	<b>8</b>
<b>Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):</b>		<ul style="list-style-type: none"> <li>• <b>Phase 1 completed</b></li> <li>• <b>LA8 LP3</b></li> </ul>			
<b>Learning project description: Apprentices learn to select and install low voltage (single phase) transformers.</b>					
Activity phase	Practical Skills Modules Content	Underpinning Knowledge Module Content	Work Experience Module Content (Exposure to be given)	Didactical-methodological advice	Learning materials/Tools and Equipment
<b>Reference to QCTO Curriculum</b>	PM05-PS04	KM07-KT03	WM-None		
<b>Planning/Preparation</b>	<p><b><u>Provide access to (Given):</u></b> Scenario with a load (VA rating and voltage), multiple single phase transformers, electrical wiring diagram, materials and equipment as identified in last column;</p> <p><b><u>Apprentices must be able to do/perform the following (hard and soft) skills:</u></b></p> <ul style="list-style-type: none"> <li>• Read and interpret the scenario given</li> <li>• Perform relevant calculations</li> <li>• Select correct transformer based on calculations</li> <li>• Read and interpret electrical diagram</li> <li>• Perform a risk assessment on the task</li> <li>• Plan positioning of transformer</li> <li>• Plan wiring as per diagram</li> <li>• Identify the tools and materials required</li> <li>• Identify obstacles and necessary precautions in relation to task</li> <li>• Plan sequence of tasks</li> </ul>	<p><b><u>Knowledge of:</u></b></p> <ul style="list-style-type: none"> <li>• Theory of transformers (function and operation, safety)</li> <li>• Transformer calculations</li> <li>• Types and application of single phase power transformers</li> <li>• Cooling systems for transformers</li> <li>• Specific safety procedures related to transformers</li> <li>• Statutory requirements as per work conducted</li> <li>• Labelling of transformers</li> </ul>	<p><b><u>Under supervision:</u></b></p> <ul style="list-style-type: none"> <li>• Select, install and wire single phase transformers (in a variety of contexts)</li> <li>• Have structured discussion on the selection of a transformer for specific scenarios</li> </ul>	Lecture, presentations DVDs, audio-visual Demonstrations Practical applications	<p><b><u>Print materials, electronic files, software applications incl.:</u></b></p> <ul style="list-style-type: none"> <li>• Training manuals for trainers and apprentices incl. multimedia software</li> <li>• Set of presentation aids (videos, slides) for overhead or LED/LCD projectors</li> <li>• Statutory requirements:</li> <li>• SANS 10142-Part1</li> <li>• Municipal by-laws</li> </ul> <p><b><u>Tools, equipment and materials incl.:</u></b> Range of materials and tools to be covered (minimum):</p> <ul style="list-style-type: none"> <li>• Electrical hand tools</li> <li>• standard toolbox</li> <li>• Associated Powertools</li> </ul>

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<b>Implementation/ Execution Repair</b>	<ul style="list-style-type: none"> <li>• Transport materials and tools safely to site</li> <li>• Fit transformer as per diagram</li> <li>• Insert slotted trunking where applicable</li> <li>• Complete wiring of transformer</li> <li>• Fit lugs where applicable</li> <li>• Label transformer according to drawing</li> <li>• Test installation (power on)</li> </ul>				<ul style="list-style-type: none"> <li>• Measuring instruments</li> </ul> <p><b>Materials:</b></p> <ul style="list-style-type: none"> <li>• Surface to mount transformer</li> <li>• Single phase transformers</li> <li>• Lugs</li> <li>• Cable ties</li> <li>• Conductors</li> <li>• Cables</li> <li>• Slotted trunking</li> <li>• Metering instruments (voltmeter, ammeter)</li> <li>• Labelling</li> </ul> <p><b>PPE:</b></p> <ul style="list-style-type: none"> <li>• Hard hat</li> <li>• Safety boots</li> <li>• Gloves</li> <li>• Safety glasses</li> </ul>
<b>Evaluation/ Documentation</b>	<ul style="list-style-type: none"> <li>• Clean work area after completion of task in accordance with work site procedures and housekeeping standards</li> <li>• Dispose of waste materials in accordance with safety standards and environmental requirements</li> <li>• Complete necessary documentation and submit to designated personnel.</li> </ul>				
<b>Total</b>	Hours: 8				
<b>Specialisation additions</b>					
<b>Assessment guidance</b>					
<ul style="list-style-type: none"> <li>• <b>Self assessment</b></li> <li>• <b>Group assessment</b></li> <li>• <b>Theory test</b></li> </ul> <p><b>Criteria for assessment:</b></p> <ul style="list-style-type: none"> <li>• Planning and calculations for task</li> <li>• Interpretation of electrical calculations and diagram</li> <li>• Identification of risks</li> <li>• Correct selection, positioning and operation of transformer</li> <li>• Transformer wired as per given diagram and labelled accordingly</li> <li>• Use of appropriate equipment and tools</li> <li>• Clean worksite after completion of task and equipment returned safely to store</li> </ul>					