

# NOCC-A21 Electrician: Competence Package

Relevant Occupation/trade title: Electrician			SAQA ID: 91761		
Learning Area 8: <b>Install power supply (service entrance) and associated equipment to buildings and premises</b>			Total Hours:		88
Learning Project 1: <b>Lay and install supply cables (above and underground)</b>			Total Hours:		16
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		• Completion of Phase 1			
Learning project description: <b>Apprentices learn to lay and install supply cables to a building (both above and below incl. ground)</b>					
Activity phase	Practical Skills Modules Content	Underpinning Knowledge Module Content	Work Experience Module Content	Didactical-methodological advice	Learning materials/Tools and Equipment
Reference to QCTO Curriculum	PM-None	KM07-KT01, KM-07-KT04	WM-None		
Planning/Preparation	<p><b><u>Provide access to (Given):</u></b> Scenario to lay and install an underground and above ground supply cable to building, area in the training centre for digging a trench of 5meters and tools, 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> <p><b>Underground:</b></p> <ul style="list-style-type: none"><li>Read and interpret the plan</li><li>Perform a risk and environmental assessment on the task</li><li>Plan the trench layout from mains supply according to statutory requirements</li><li>Perform volt drop calculation</li><li>Identify the tools and</li></ul>	<p><b><u>Knowledge of:</u></b></p> <ul style="list-style-type: none"><li>Specific safety procedures related to the type of work and location (underground and working at heights)</li><li>Statutory requirements as per work conducted</li><li>Concepts, theories and principles of Supply Systems</li><li>Volt drop calculation against the conditions in which supply cable is installed</li><li>Bedding and taping of underground supply cables</li><li>Types of supply cables (size up to limited to 16mm squared 1000 V AC/DC) under specific conditions and their installation methods (incl.</li></ul>	<p><b><u>Under supervision:</u></b></p> <ul style="list-style-type: none"><li>Plan to install electrical supply cables</li><li>Check cable equipment needed for installing cables for functionality and safety</li><li>Install underground/above supply cables</li><li>Specific work experience for municipalities: Erecting poles for overhead lines</li></ul>	Lecture, presentations DVDs, audio-visual Group work Practical (trench digging and installation)	<p><b>Print materials, electronic files, software applications incl.:</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>SANS 10142-Part1</li><li>Municipal by-laws</li><li>Statutory requirements</li></ul> <p><b>Tools, equipment and materials incl.:</b> Range of materials and tools to be covered (minimum):</p> <ul style="list-style-type: none"><li>Turfer (Come-along)</li></ul>

## NOCC-A21 Electrician: Competence Package

	<ul style="list-style-type: none"> <li>materials required</li> <li>Identify obstacles and necessary precautions in accordance with local authority; wayleaves and servitudes and electrical regulations Water pipes; High Voltage cables; communication cables and conductors</li> </ul> <p><b>Above ground:</b></p> <ul style="list-style-type: none"> <li>Read and interpret the plan</li> <li>Perform a risk and environmental assessment on the task</li> <li>Plan the route on an existing cable tray/between two poles from mains supply according to statutory requirements</li> <li>Perform volt drop calculation</li> <li>Identify the tools and materials required</li> <li>Identify obstacles and necessary precautions in accordance with local authority; wayleaves and servitudes and electrical regulations Water pipes; High Voltage cables; communication cables and conductors</li> </ul>	<ul style="list-style-type: none"> <li>manufacturers specifications)</li> <li>Techniques and specifics of erecting poles for overhead conductors</li> <li>Regulations regarding digging of trenches</li> <li>Draw wires; Draw cables; pulling sock</li> <li>Identification of obstacles and necessary precautions surrounding supply cable installation: wayleaves and servitudes and electrical regulations Water pipes; High Voltage cables; communication cables and conductor</li> <li>Environmental requirements and considerations around area of installation of supply cables</li> </ul>			<ul style="list-style-type: none"> <li>Pulley and rope</li> <li>Draw wire</li> <li>Pulling sock</li> <li>Spade</li> <li>Shovel</li> <li>Pick</li> <li>Bandit tool</li> <li>Fibre glass extension ladder</li> <li>Cherry picker</li> <li>Electrical hand tools standard toolbox</li> <li>Associated Powertools</li> </ul> <p><b>Materials:</b></p> <ul style="list-style-type: none"> <li>Cables sizes up to 16mm squared 1000 V AC/DC</li> <li>Danger Tape</li> <li>Marker Poles</li> <li>Cones</li> <li>Cable trays</li> <li>Ducting and kick pipes</li> <li>Bandit straps</li> <li>Cable ties</li> <li></li> </ul> <p><b>PPE:</b></p> <ul style="list-style-type: none"> <li>Hard hat</li> <li>Safety boots</li> <li>Safety harness</li> <li>Safety gloves</li> <li>Safety glasses</li> </ul>
<b>Implementation/ Execution</b>	<p><b>Underground:</b></p> <ul style="list-style-type: none"> <li>Transport materials and tools safely to site</li> <li>Mark work area according to statutory requirements. Danger Tape; Marker Poles; Cones; Hazard Light</li> <li>Excavate trench according to work plan and statutory requirements</li> </ul>				

## NOCC-A21 Electrician: Competence Package

	<ul style="list-style-type: none"> <li>• Fill trench with thin layer of bedding</li> <li>• Install electrical cables and cable guards as per work plan and manufacturer spec</li> <li>• Test cable (power off test)</li> <li>• Fill up the trench as per statutory requirements</li> </ul> <p><b>Above ground:</b></p> <ul style="list-style-type: none"> <li>• Transport materials and tools safely to site</li> <li>• Mark work area according to statutory requirements. Danger Tape; Marker Poles; Cones; Hazard Light</li> <li>• Install electrical cable according to planned route</li> <li>• Test cable (power off test)</li> </ul>				
<b>Evaluation/ Documentation</b>	<ul style="list-style-type: none"> <li>• Return work area to its original state</li> <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: 16				
<b>Specialisation additions</b>	Putting up poles for municipal electricians in the work experience				
<b>Assessment guidance</b>					
<ul style="list-style-type: none"> <li>• Self assessment</li> <li>• Group assessment</li> <li>• Theory test</li> </ul>					

## NOCC-A21 Electrician: Competence Package

### Criteria for assessment:

- Planning for task
- Interpretation of worksite plans
- Environmental assessment
- Identification of risks (water pipes, HV cables, communication cables)
- Correct selection of PPE
- Digging of trench according to standards
- Electrical cables are installed, positioned and secured according to statutory requirements and worksite procedures.
- Use of appropriate equipment and tools
- Clean worksite after completion of task and equipment returned safely to store

Work in progress