REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARDS

FOR

ELECTRICAL INSTALLATION ARTISAN

KNQF LEVEL 4

ISCED OCCUPATIONAL STANDARD CODE:07130454B

TVET CDACC
P.O BOX 15745-00100
NAIROBI

PERFORM ELECTRICAL INSTALLATION

UNIT CODE: ENG/OS/EI/CR/01/4/B

UNIT DESCRIPTION

This unit covers the competencies required to perform electrical installation. Installation work includes applying EHS standards, preparing drawings assembling tools equipment and materials and installing electrical systems.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	**PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements ***(Bold and italicised terms are elaborated in the Range)***
1. Apply health, safety and environmental standards	1.1 Appropriate ***safety regulations*** are applied as per OSHA 1.2 ***Good housekeeping*** practices are applied as per standard operating procedures 1.3 Accidents, incidents and near misses are reported as per standard operating procedures 1.4 First aid is applied as per standard operating procedures
2. Prepare working drawings	2.1 Design drawing is interpreted as per established standards 2.2 Symbols and nomenclatures are applied in accordance with British Standards [BS 3939] 2.3 Appropriate drawing tools are applied as per established standards 2.4 Components and their ratings are identified as per established procedure 2.5 Cable sizes and lengths are marked as per established procedures 2.6 Power supply and distribution circuits are drawn using line diagrams 2.7 Cable routes are indicated as per established procedures 2.8 Working drawing is prepared and any deviations from design drawing are shared with relevant parties as per the standard operating procedures
3. Assemble tools, equipment & materials	3.1 Tools, equipment and materials are checked for the proper specifications and functionality as per established standards

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	3.2 Tools, equipment and materials are used as per established procedure 3.3 Tools and equipment are calibrated as per established standards 3.4 Tools, equipment and materials are assembled and stored as per the established procedure
4. Install electrical system	4.1 Installation safety procedures are observed as per established standards 4.2 Working drawing is implemented as per established procedure 4.3 Installation is performed in line with IEE and other applicable standards 4.4 Cables, conductors, conduits, enclosures and support systems are installed to specifications using appropriate techniques, tools and equipment as per the working drawing 4.5 Labeling of the installation for identification is performed as per established standards 4.6 Disposal of waste materials is performed in line with environmental regulations

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance

Variable	Range
1. Safety regulations may include but not limited to:	• IEE regulations • Occupational Safety and Health Act (OSHA) • Work injury benefits Act (WIBA)
2. Good house keeping may include but not limited to	• Adequate ventilation • Adequate lighting • clean and dry surfaces in the workplace • Avoid oil spillage • Tools in the appropriate storage place

	• Proper waste disposal in the designated places
3. Working drawings may include but not limited to	• Lighting and power • Power distribution • Fire alarm and detection • Burglar alarm • CCTV • Access control • Electric fence
4. Power supply	• Single phase, 2 wire • Single phase 3 wire • Dc: 2 wire
5. Technical standards	• IEE standard • British Standard • KEBS standard
6. Service providers	• Plumbers • Air conditioning • Data networks • Security • Carpenters • Masons • Welders • Fitters
7. Services	• Laying conduits/trays • Trunking • Providing temporary power • Installing power points
8. Installation	• Domestic installation • Agriculture • Security

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Apply electrical tools and equipment
- Communication
- Interpretation

- Use proper PPE for safety during electrical installation
- Developing proper electrical earthing and lightening arrestors
- Logical thinking
- Problem solving

Required knowledge

The individual needs to demonstrate knowledge of:

- Electrical power calculations
- Various laws in Electrical engineering
- Electrical formulas
- Wiring systems
- Power triangle
- SI units of various electrical parameters
- Earthing testing
- Lightening arrestor testing
- Selecting the correct type of electrical machines for various uses
- Units of measurement and abbreviations

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and understanding and range.

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Applied and adhered to safety procedures 1.2 Interpreted layouts/ circuit diagrams correctly 1.3 Applied appropriate te1chnical standards 1.4 Used proper tools and equipment for a given task 1.5 Demonstrated safe selection, placing and wiring of cables/ wires, fixtures and fittings 1.6 Observed IEE regulations during installation 1.7 Installed functional electrical systems as per working drawings
2. Resource Implications	Resources the same as that of workplace are advised to be applied. 2. 1 Electrical installation tool kit, calculator, stationery 2. 2 Electrical installation materials 2. 3 Testing equipment 2. 4 Storage facility
3. Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Written tests 3.3 Oral questioning

	3.4 Third party reports 3.5 Portfolio
4. Context of Assessment	Competency may be assessed individually: 4.1 On-the-job, 4.2 Off-the-job or a combination of these. 4.3 During industrial attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.