TRAINING REGULATIONS

LINE CONSTRUCTION (ELECTRIC POWER DISTRIBUTION) NC II

UTILITIES SECTOR

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

TABLE OF CONTENTS

LINE CONSTRUCTION (ELECTRIC POWER DISTRIBUTION) - NATIONAL CERTIFICATE LEVEL II

			Page No.
SECTION 1	**LINE CONSTRUCTION (ELECTRIC POWER DISTRIBUTION) NC II QUALIFICATION**		**1**
SECTION 2	**COMPETENCY STANDARDS**		**2 - 47**
	• Basic Competencies	2 -13	
	• Common Competencies	14 - 26	
	• Core Competencies	27 - 41	
SECTION 3	**TRAINING STANDARDS**		**42 - 49**
SECTION 4	**ASSESSMENT AND CERTIFICATION ARRANGEMENTS**		**50**
DEFINITION OF TERMS			**51- 55**
COMPETENCY MAP			**56**
ACKNOWLEDGEMENT			**57**

TRAINING REGULATIONS FOR
LINE CONSTRUCTION (ELECTRIC POWER DISTRIBUTION) NC II

Section 1 LINE CONSTRUCTION (ELECTRIC POWER DISTRIBUTION) NC II QUALIFICATION

The **Line Construction (Electric Power Distribution) NC II** Qualification consists of competencies that a person must possess to erect distribution line poles, climb pole and install pole assembly, conductors, line equipment and devices as well as to install consumer service connection facility. Line construction involves work on non-energized lines, particularly construction/ extension of new electric power distribution lines.

This Qualification is packaged from the proposed competency map of the Utilities Industry (Service Sector) shown in Annex A.

The units of competency comprising this qualification include the following:

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

Code	COMMON COMPETENCIES
UTL311203	Apply quality standards
UTL311206	Comply with environmental protection procedures
UTL311201	Observe procedures, specifications and manuals of instruction
UTL311205	Operate and maintain hand/line tools and equipment

Code	CORE COMPETENCIES
UTL724603	Erect distribution line poles
UTL723220	Climb pole and install pole assembly/conductors
UTL724604	Install distribution line equipment and devices
UTL724605	Install consumer service connection facility

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

- Electric power distribution line workers

SECTION 2: COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common, and core units of competency required for **Line Construction (Electric Power Distribution) 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 ***Italicized*** terms are elaborated in the Range of Variables
1. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from ***appropriate sources*** 1.2 Effective questioning, active listening and speaking skills are used to gather and convey information 1.3 Appropriate ***medium*** 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 ***storage*** 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 ***protocols*** 2.4 ***Workplace interactions*** 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
3. Complete relevant work related documents	3.1 Range of ***forms*** relating to conditions of employment are completed accurately and legibly 3.2 Workplace data is recorded on standard workplace forms and documents 3.3 Basic mathematical processes are used for routine calculations 3.4 Errors in recording information on forms/ documents are identified and properly acted upon 3.5 Reporting requirements to supervisor are completed according to organizational guidelines

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

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Prepared written communication following standard format of the organization 1.2. Accessed 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
2. Underpinning Knowledge	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
3. Underpinning Skills	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
4. Resource Implications	4.1. Fax machine 4.2. Telephone 4.3. Writing materials 4.4. Internet
5. Methods of Assessment	5.1. Direct Observation 5.2. Oral interview 5.3. Written test
6. Context for Assessment	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 the participant's roles and responsibilities as a member of a team.

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

RANGE OF VARIABLES

VARIABLE	RANGE
1. Role and objective of the 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. Quality standards 2.4. 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

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Operated in a team to complete workplace activity 1.2. Worked effectively with others 1.3. Conveyed information in written or oral form 1.4. Selected and used appropriate workplace language 1.5. Followed designated work plan for the job 1.6. Reported outcomes
2. Underpinning Knowledge and Attitude	2.1. Communication process 2.2. Team structure 2.3. Team roles 2.4. Group planning and decision making
3. Underpinning Skills	3.1. Communicate appropriately, consistent with the culture of the workplace
4. Resource Implications	The following resources **MUST** 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 tasks
5. Methods of Assessment	Competency may be assessed through: 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 the individual member to the attainment of organizational goals
6. Context for Assessment	6.1. Competency may be assessed in the workplace or in a simulated workplace setting 6.2. Assessment shall be observed while tasks are being undertaken whether individually or in a 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 ***Italicized*** 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 are maintained in the course of managing oneself based on performance ***evaluation*** 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. ***Resources*** 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. ***Trainings and career opportunities*** are identified and availed of based on job requirements 3.2 ***Recognitions*** are -sought/received and demonstrated as proof of career advancement 3.3 ***Licenses and/or certifications*** 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. Trainings 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. Recognitions	4.1 Recommendations 4.2 Citations 4.3 Certificate of Appreciations 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

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Attained job targets within key result areas (KRAs) 1.2 Maintained intra - and interpersonal relationship in the course of managing oneself based on performance evaluation 1.3 Completed trainings and career opportunities which are based on the requirements of the industries 1.4 Acquired and maintained licenses and/or certifications according to the requirement of the qualification
2. Underpinning Knowledge	2.1 Work values and ethics (Code of Conduct, Code of Ethics, etc.) 2.2 Company policies 2.3 Company-operations, procedures and standards 2.4 Fundamental rights at work including gender sensitivity 2.5 Personal hygiene practices
3. Underpinning Skills	3.1 Appropriate practice of personal hygiene 3.2 Intra and Interpersonal skills 3.3 Communication skills
4. Resource Implications	The following resources **MUST** be provided: 4.1 Workplace or assessment location 4.2 Case studies/scenarios
5. Methods of Assessment	Competency may be assessed through: 5.1 Portfolio Assessment 5.2 Interview 5.3 Simulation/Role-plays 5.4 Observation 5.5 Third Party Reports 5.6 Exams and Tests
6. Context for Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY : **PRACTICE OCCUPATIONAL HEALTH AND SAFETY PROCEDURES**

UNIT CODE : **500311108**

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to comply with regulatory and organizational requirements for occupational health and safety.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Identify hazards and risks	1.1 ***Safety regulations*** and workplace safety and hazard control practices and procedures are clarified and explained based on organizational procedures 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 organizational procedures 1.3 ***Contingency measures*** during workplace accidents, fire and other emergencies are recognized and established in accordance with organization procedures
2. Evaluate hazards and risks	2.1 Terms of maximum tolerable limits which when exceeded will result in harm or damage are identified based on threshold limit values (TLV) 2.2 Effects of the hazards are determined 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
3. Control hazards and risks	3.1 Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace are consistently followed 3.2 Procedures for dealing with workplace accidents, fire and emergencies are followed in accordance with organization OHS policies 3.3 ***Personal protective equipment (PPE)*** is correctly used in accordance with organization OHS procedures and practices 3.4 Appropriate assistance is provided in the event of a workplace emergency in accordance with established organization protocol
4. Maintain OHS awareness	4.1 ***Emergency-related drills and trainings*** are participated in as per established organization guidelines and procedures 4.2 ***OHS personal records*** 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. Personal Protective Equipment	May include but are not limited to: 4.1 body belt & strap 4.2 safety hat/hard hat/ helmet 4.3 Working clothes 4.4 goggles 4.5 safety shoes/rubber boots 4.6 tool pouch 4.7 rain suits
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

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Explained clearly established workplace safety and hazard control practices and procedures 1.2 Identified hazards/risks in the workplace and its corresponding indicators in accordance with company procedures 1.3 Recognized contingency measures during workplace accidents, fire and other emergencies 1.4 Identified terms of maximum tolerable limits based on threshold limit value- TLV. 1.5 Followed 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
2. Underpinning Knowledge	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
3. Underpinning Skills	3.1 Practice of personal hygiene 3.1 Hazards/risks identification and control skills 3.2 Interpersonal skills 3.4 Communication skills
4. Resource Implications	The following resources must be provided: 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 TITLE : APPLY QUALITY STANDARDS

UNIT CODE : ICT315202

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes needed to apply quality standards in the workplace. The unit also includes the application of relevant safety procedures and regulations, organization procedures and customer requirements

ELEMENT	PERFORMANCE CRITERIA ***Italicized Bold*** terms are elaborated in the Range of Variables
1. Assess quality of received materials or components	1.1. Work instructions are obtained and work is carried out in accordance with standard operating procedures 1.2. Received ***materials or component parts*** are checked against workplace standards and specifications 1.3. Faulty material or components related to work are identified and isolated 1.4. ***Faults*** and any identified causes are recorded and/or reported to the supervisor concerned in accordance with workplace procedures 1.5. Faulty materials or components are replaced in accordance with workplace procedures
2. Assess own work	2.1. ***Documentation*** relative to quality within the company is identified and used 2.2. Completed work is checked against workplace standards relevant to the task undertaken 2.3. Faulty pieces are identified and isolated 2.4. Information on the quality and other indicators of production performance is recorded in accordance with workplace procedures 2.5. Deviations from specified ***quality standards***, causes are documented and reported in accordance with the workplace standards operating procedures
3. Engage in quality improvement	3.1. Process improvement procedures are participated in relation to workplace assignment 3.2. Work is carried out in accordance with process improvement procedures 3.3. Performance of operation or quality of product or service to ensure ***customer*** satisfaction is monitored

RANGE OF VARIABLES

VARIABLE	RANGE
1. Materials/components	1.1. Materials may include but not limited to: 1.1.1. conductors/cables 1.1.2. pole structures 1.1.3. pole line materials 1.2. Components may include but not limited to: 1.2.1. hardware 1.2.2. accessories
2. Faults	Faults may include but not limited to: 2.1. Components/materials not according to specification 2.2. Components/materials contain manufacturing defects 2.3. Components/materials do not conform with government regulation i.e., PEC, environmental code 2.4. Components/materials have safety defect
3. Documentation	3.1. Organization work procedures 3.2. Manufacturer's instruction manual 3.3. Customer requirements 3.4. Forms
4. Quality standards	4.1. Quality standards may relate but not limited to the following: 4.1.1. Materials 4.1.2. Component parts 4.1.3. Final product 4.1.4. Production processes
5. Customer	5.1. Co-worker 5.2. Suppliers 5.3. Client 5.4. Organization receiving the product or service

EVIDENCE GUIDE

1. Critical aspect of competency	Assessment requires evidence that the candidate: 1.1. Carried out work in accordance with the company's standard operating procedures 1.2. Performed task according to specifications 1.3. Reported defects detected in accordance with standard operating procedures 1.4. Carried out work in accordance with the process improvement procedures
2. Underpinning knowledge	2.1. Relevant production processes, materials and products 2.2. Characteristics of materials/component parts used in line construction processes 2.3. Quality checking procedures 2.4. Workplace procedures 2.5. Safety and environmental aspects of production processes 2.6. Fault identification and reporting 2.7. Quality improvement process
3. Underpinning skills	3.1. Reading skills required to interpret work instruction 3.2. Communication skills needed to interpret and apply defined work procedures 3.3. Carry out work in accordance with OHS policies and procedures
4. Method of assessment	4.1. The assessor may select at least two (2) of the following assessment methods to objectively assess the candidate: 4.1.1. Observation 4.1.2. Questioning 4.1.3. Practical demonstration
5. Resource implication	5.1. Materials and component parts and equipment to be used in a real or simulated line construction situation
6. Context of Assessment	6.1. Assessment may be conducted in the workplace or in a simulated work environment.

UNIT TITLE : **COMPLY WITH ENVIRONMENTAL PROTECTION PROCEDURES**

UNIT CODE : **UTL311206**

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to implement and monitor environmental protection policies and procedures including accessing relevant information concerning environmental protection regulations and procedures, and implementing and monitoring procedures concerning environmental hazards, related control procedures, environmental training arrangements, and required records and documentation.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Access information concerning environmental protection regulations and procedures	1.1 Relevant provisions of ***environmental*** legislation and codes of practice are accurately followed 1.2 Information on workplace environmental policies, procedures and programs is stored in a readily accessible location and manner 1.3 ***Information*** is accurately and clearly explained to the work team and updated according to change in workplace policy 1.4 Information about the outcomes of environmental risk identification and control procedures is provided to the ***appropriate personnel***
2. Implement and monitor procedures concerning environmental hazards	2.1 Existing and potential ***environmental hazards*** in the workplace are identified and reported 2.2 Identified hazards are assessed in relation to relevant environmental protection policies 2.3 ***Workplace procedures for dealing with hazardous events*** are implemented wherever necessary to ensure that prompt control action is taken 2.4 ***Personal protective equipment (PPE)*** are obtained and used in accordance with job requirements 2.5 Hazardous events are investigated to identify causes, and control measures are implemented to prevent recurrence and minimize risks of such events
3. Implement and monitor environmental control procedures	3.1 Existing environmental protection measures are implemented, monitored and reviewed 3.2 Work procedures to protect environment are implemented and adherence to them by the work group is monitored 3.3 Required improvements to existing control measures are identified, including required resources for implementation, and reported to appropriate personnel

RANGE OF VARIABLES

VARIABLE	RANGE
1 environment	Environment may include: 1.1 indoor 1.2 outdoor 1.3 marine 1.4 atmospheric
2 Information	Information/documents may include: 2.1 Workplace procedures and practices related to environmental protection, including all financial, operating and customer service policies and procedures 2.2 OHS and environmental protection regulations 2.3 Workplace housekeeping procedures and policies 2.4 Code of practice for environmental protection 2.5 Material safety data sheets 2.6 Policies and procedures for entry and work in confined spaces 2.7 Manufacturer's instructions concerning the use and servicing of equipment 2.8 Emergency procedures 2.9 Regulations and policies concerning noise, waste disposal/reprocessing, handling of dangerous goods/hazardous substances and other environmental protection issues 2.10 Standards and certification requirements 2.11 Quality assurance procedures
3 Appropriate personnel	Appropriate personnel may include: 3.1 Workplace personnel including supervisors and management 3.2 Site visitors 3.3 Contractors 3.4 Official representatives
4 Environmental hazards	4.1 Oils and lubricants 4.2 Exhaust fumes 4.3 Gas 4.4 Smoke 4.5 Chemicals and detergents 4.6 Rubbish 4.7 Noise 4.8 wastes

5 Workplace procedures for dealing with hazardous events	Procedures may include: 5.1 Inspection and housekeeping 5.2 Maintenance including plant and equipment 5.3 Purchasing 5.4 Evacuation 5.5 Hazardous substance containment 5.6 Operational instruction 5.7 Environmental information including incident and management practices 5.8 Specific hazardous materials policies and procedures 5.9 Risk assessment and control 5.10 First aid
6 Personal protective equipment (PPE)	PPE may include: 6.1 Safety hat 6.2 Rain suits 6.3 Rubber boots 6.4 Work gloves 6.5 Goggles/Eye protector 6.6 Lineman boots 6.7 Working clothes

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires that the candidate: 1.1 Identified and monitored environmental hazards in the workplace 1.2 Implemented effective procedures for dealing with hazardous events 1.3 Monitored workplace adherence to environmental practices 1.4 Communicated effectively with the team members
2. Underpinning knowledge and attitude	2.1 Relevant environmental protection regulations & codes of practice 2.2 Workplace procedures and guidelines for implementing and monitoring environmental protection 2.3 Environmental risks associated with workplace operations and related precautions to control the risk 2.4 Environmental protection standards required in the workplace 2.5 Workplace environmental hazards and related hazard control measures 2.6 Equipment and resources required when implementing and monitoring environmental protection procedures 2.7 Organizational structure and site layout
3. Underpinning skills	3.1 Workplace reporting and recording processes and procedures 3.2 Communication skills 3.3 Accessing information and data 3.4 Problem solving skills 3.5 Ability to: 3.5.1 recognize potential environmental risks and ways of minimizing them 3.5.2 modify activities depending on differing workplace contexts, risk situations and environments 3.5.3 counsel, advise and inform others on environmental protection matters 3.5.4 identify and correctly use equipment and vehicles in accordance with environmental protection regulations and guidelines
4. Resource implications	The following resources should be provided: 4.1 Environmental protection regulations and guidelines 4.2 OHS regulations and hazard prevention policies and procedures 4.3 workplace environmental protection policies, procedures and instructions 4.4 equipment/vehicle manufacturer's operating and servicing instructions
5. Methods of assessment	Competency should be assessed through: 5.1 Direct observation 5.2 Oral or written questioning 5.3 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

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

UNIT CODE : **UTL311201**

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 ***Italicized*** terms are elaborated in the Range of Variables
5. 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
6. 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
7. 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
8. 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 Construction Specification Standards

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 and attitude	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

UNIT OF COMPETENCY : OPERATE AND MAINTAIN HAND/LINE TOOLS AND EQUIPMENT

UNIT CODE : UTL311205

DESCRIPTOR : This unit covers the knowledge, skills and attitude to operate and maintain hand/line tools and equipment.

ELEMENT	PERFORMANCE CRITERIA (***Italicized Bold*** terms are elaborated in the range of variables)
1. Plan and prepare for work	1.1 Work instruction is secured and interpreted according to ***job requirements*** 1.2 Relevant ***occupational health and safety requirements*** are identified following job specifications 1.3 Relevant distribution hand/line ***tools and equipment*** are identified and requested in accordance with job specifications
2. Prepare hand/line tools and equipment	2.1 Personal protective equipment (PPE) are obtained following job requirements 2.2 Hand/Line tools, equipment and hardware are acquired and secured in accordance with job requirements
3. Check condition of line tools and equipment	3.1 Hand/Line tools and equipment are identified according to classification and job requirements 3.2 Non-functional hand/line tools and equipment are segregated and labeled according to classification 3.3 Safety of hand/line tools and equipment are observed in accordance with manufacturer's instructions 3.4 Condition of PPE are checked in accordance with manufacturer's instructions
4. Operate hand/line tools and equipment	4.1 PPE are used in line with job requirements 4.2 Hand/Line tools and equipment are used in accordance with job requirements
5. Perform basic preventive maintenance	5.1 Appropriate lubricants are identified according to types of equipment 5.2 Equipment are lubricated according to preventive maintenance schedule or manufacturer's specifications 5.3 Hand/Line tools are cleaned and tested according to standard procedures 5.4 Hand/Line tools and equipment are inspected, and repaired and replaced, if necessary, after use 5.5 Work place is cleaned and kept in safe state in accordance with OHSA regulations
6. Store tools and equipment	6.1 Inventory of hand/line tools and equipment are conducted and recorded as per company practices 6.2 Hand/Line tools and equipment are stored safely in appropriate locations in accordance with manufacturer's specifications or company procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. Job requirements	May include but not limited to: 1.1 Erect pole 1.2 Perform overhead line work 1.3 Perform cold line construction work 1.4 Perform other basic works in distribution line construction
2. Occupational health and safety requirements	May include but not limited to: 2.1 Personal protective equipment (PPE) 2.1.1 Safety hat 2.1.2 Rain suits 2.1.3 Rubber boots 2.1.4 Working clothes 2.1.5 Goggles/Eye protector 2.1.6 Work gloves 2.1.7 Lineman boots
3. Hand/Line tools & equipment	May include but not limited to: 3.1 Hand tools 3.1.1 Lineman's Plier 3.1.2 Screwdrivers 3.1.3 Adjustable lineman wrench 3.1.4 Ball peen hammer 3.1.5 Wire skinning knife 3.1.6 Ruler (wood, folding) 3.2 Equipment 3.2.1 Motorized capstan 3.2.2 Pole climbing equipment 3.2.3 Line truck/Boom truck 3.3 Set of digging/line/stringing tools & ropes

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Demonstrates ability to identify and comply with occupational health and safety standards in operating and maintaining line tools and equipment 1.2 Demonstrates ability to identify and safely use of tools and equipment 1.3 Demonstrates ability to perform basic preventive maintenance servicing for line equipment
2. Underpinning knowledge and attitude	2.1 Relevant occupational health and safety standards 2.2 Proper procedure for the use of line tools and equipment 2.3 Basic preventive maintenance servicing for line equipment
3. Underpinning skills	3.1 Following and complying occupational health and safety standards 3.2 Following procedures for the safe use of line tools and equipment 3.3 Performing basic preventive maintenance servicing for line equipment
4. Resource Implications	The following resources must be available: 4.1 Line tools, equipment and PPE 4.2 Work area
5. Method of assessment	5.1 Observation and Oral questioning 5.2 Demonstration with oral questioning 5.3 Written test
6. Context of assessment	6.1 Competency may be assessed in the workplace or in a simulated workplace setting 6.2 Assessment shall be undertaken either individually or part of team under limited supervision

CORE COMPETENCIES

UNIT OF COMPETENCY : ERECT DISTRIBUTION LINE POLES

UNIT CODE : UTL724603

DESCRIPTOR : This unit covers the knowledge, skills and attitude required to erect distribution line poles. This unit includes competencies for installing new distribution line pole as well as transporting pole from stockyard to jobsite, performing pole spotting, digging, grounding and pole setting/erection. This involves working with a team.

ELEMENT	PERFORMANCE CRITERIA (***Italicized Bold*** terms are elaborated in the range of variables)
1. Plan and prepare for work	1.1 ***Work instructions*** are secured and interpreted according to job requirements 1.2 Relevant ***occupational health and safety requirements*** are identified following job specifications 1.3 Relevant distribution line ***tools, equipment and hardware/materials*** are identified, requested and acquired in accordance with construction specifications 1.4 Personal protective equipment (PPE) are obtained following job requirements
2. Perform pole loading, hauling and spotting	2.1 Distribution line equipment are used in line with ***job requirements*** 2.2 Personal protective equipment (PPE) are used following job requirements 2.3 Loading and unloading procedure for poles is performed following ***safety requirements*** 2.4 Poles hauling and pole spotting (unloading) is performed based on staking sheet.
3. Perform pole digging, grounding and setting/erection	3.1 Occupational and health safety (OHS) standards are complied with during erection/set-up of distribution poles. 3.2 Distribution line tools, equipment and hardware are used in line with ***construction specifications*** 3.3 Personal protective equipment (PPE) are used following job requirements 3.4 Pole digging is performed following established depth requirements 3.5 Where necessary, pole grounding is installed in accordance with line construction specifications. 3.6 ***Pole setting/erection procedure*** is performed in line with job requirements 3.7 Where necessary, guy wires are installed for corner, angle and dead-end poles. 3.8 Good housekeeping is performed following established procedure.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work instructions	May include but are not limited to: 1.1 job order 1.2 Staking sheets
2. Occupational health and safety requirements	May include but are not limited to: 2.1 Personal protective equipment (PPE) 2.1.1 Hard hat/safety hat 2.1.2 Goggles/eye protector 2.1.3 Work gloves 2.1.4 Lineman boots 2.1.5 Working clothes 2.1.6 Rain suits 2.1.7 Rubber boots 2.2 Pole climbing equipment 2.2.1. Safety strap/cord 2.2.2. Body belt 2.2.3. pair of climbers
3. Distribution line tools, equipment and hardware/materials	May include but are not limited to: 3.1 Tools 3.1.1. Ropes/Bull line/Sling 3.1.2. Cant hook 3.1.3. Digging bar/ Tamping bar 3.1.4. Pole pike 3.1.5. Pole jenny 3.1.6. Straight shovel (long and short) 3.1.7. Pole hole digger 3.1.8. Spoon shovel 3.1.9. Butting board 3.1.10. Ball peen hammer 3.1.11. Ruler (wood, folding) 3.1.12. Pliers 3.1.13. Auger bit 3.1.14. Working sign boards 3.1.15. Bolt cutter 3.2 Equipment 3.2.1. Trailer 3.2.2. Line truck 3.2.3. Boom truck or derrick truck/Auger truck 3.2.4. Wench 3.2.5. Binder 3.2.6. Ratchet 3.3 Hardware/materials 3.3.1. Ground wire 3.3.2. Ground wire staple 3.3.3. Butt plate/Ground rods 3.3.4. Pole 3.3.4.1. Wood pole (creosoted & tanalized) 3.3.4.2. Steel pole 3.3.4.3. Concrete pole

4. safety requirements	May include but are not limited to: 4.1 Length and class of the pole is established. 4.2 Poles are securely fastened. 4.3 Warning devices are installed. 4.4 Appropriate PPEs are used.
5. line construction specifications	5.1 specifications for 13.2 / 7.6 KV line construction 5.2 specifications for 34.5 / 20 KV line construction 5.3 specifications for other distribution utilities
6. Pole setting/ erection procedure	6.1 Determine depth of hole 6.2 Determine pole facing

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Demonstrates knowledge of different pole erection methods 1.2. Demonstrates ability to identify and follow occupational health and safety standards for line workers 1.3 Demonstrates ability to identify and use of distribution line tools, equipment and hardware 1.4 Demonstrates ability to perform pole loading, pole hauling, pole spotting, pole digging, pole grounding and pole setting/erection 1.5 Demonstrates ability to communicate and work in a team environment
2. Underpinning knowledge	2.1 Basic works on distribution line construction 2.2 Occupational safety and health standards for line workers 2.3 Uses and specifications of distribution line tools, equipment and hardware 2.4 Safety procedures for pole hauling, pole hole digging and pole setting/erection 2.5 Different pole erection methods 2.6 Power distribution industry standards and specifications
3. Underpinning values and attitudes	Desirable work values and attitudes includes: 3.1 Integrity 3.2 Team player 3.3 Responsible 3.4 Customer service oriented 3.5 Quality and standard consciousness 3.6 Environment steward
4. Underpinning skills	4.1 Driving skills 4.2 Identifying and following occupational health and safety standards for line workers 4.3 Using distribution hand/line tools, equipment and hardware 4.4 Following safety procedures for pole hauling, pole hole digging and pole setting/erection 4.5 Communication skills 4.6 Working in a team environment 4.7 Interpreting and following power distribution industry standards
5. Resource implications	The following resources should be available: 5.1 Tools, equipment, hardware and PPE (see range of variables) 5.2 Site or work area 5.3 timber hardware 5.4 Line truck
6. Method of assessment	Competency may be assessed through: 6.1 Direct observation with oral questioning 6.2 Demonstration of skills with oral questioning 6.3 Portfolio 6.4 Written test 6.5 Third party report (Instructor/Trainor's report)
7. Context of assessment	7.1 Competency maybe assessed in the workplace or in a simulated workplace setting 7.2 Assessment shall be undertaken either individually or part of team under limited supervision

UNIT OF COMPETENCY : CLIMB POLE AND INSTALL POLE ASSEMBLY/ CONDUCTORS

UNIT CODE : UTL723220

DESCRIPTOR : This unit covers the outcomes required for climbing pole and installing pole top, anchor, guy, conductor (primary/ secondary), grounding assemblies. The scope of this unit covers climbing techniques, dressing/framing of pole, installing pole anchor and guy, conductor pay-out/stringing, tensioning, armoring and tying of conductors. This involves working with a team.

ELEMENT	PERFORMANCE CRITERIA (***Italicized Bold*** terms are elaborated in the range of variables)
1. Plan and prepare for work	1.1 Work instruction is secured and interpreted according to job requirements 1.2 Relevant ***occupational health and safety requirements*** are identified following job specifications 1.3 Relevant distribution line ***tools, equipment and hardware*** are identified, requested and acquired in accordance with construction specifications 1.4 Personal protective equipment (PPE) are obtained following job requirements
2. Dress/Frame pole	2.1 Pole climbing technique is demonstrated in line with occupational health and safety standards. 2.2 Installation of ***pole top (conductor) assembly*** is performed in accordance with construction specifications 2.3 Boring is performed, if necessary, in accordance with the construction specification 2.4 Housekeeping procedure is performed in line with established procedure
3. Install pole anchor and guy	3.1 Boring is performed in accordance with the construction specification 3.2 Guy wire is installed on the pole with other hardware based on construction specification 3.3 ***Anchor*** is installed based on type of construction.
4. Perform stringing and tensioning of conductor (primary/ secondary)	4.1 Conductor is prepared with pay-out stand. 4.2 Conductor is pulled out from the ***conductor rack (reel)*** to various electric poles. 4.3 Conductor is installed on the conductor support based on construction specification. 4.4 Tensioning is applied to attain the required sag of conductor.
5. Apply Conductor Armoring and Tying	5.1 Armoring is applied for protection of conductor. 5.2 ***Tying of conductors*** is applied to avoid detachment from the insulators.
6. Perform line grounding	6.1 Pole ground to neutral condition and guys jumpering are installed in conformity with line construction specifications. 6.2 Rigid grounding taps and connectors are installed to avoid loose connection.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Occupational health and safety requirements	May include but not limited to: 1.1 Personal protective equipment (PPE) 1.1.1. Hard hat/Safety hat 1.1.2. Goggles/Eye protector 1.1.3. Work gloves 1.1.4. Lineman boots/Rubber boots 1.1.5. Working clothes 1.1.6. Rain suits 1.2 Pole climbing equipment 1.2.1. Safety strap/cord 1.2.2. Body belt 1.2.3. pair of climbers
2. Distribution line tools, equipment and hardware	May include but not limited to: 2.1 Tools 2.1.1. Rope/Hand line 2.1.2. Adjustable wrench or lineman wrench 2.1.3. Pliers 2.1.4. Ball peen hammer 2.1.5. Measuring rule / steel tape 2.1.6. Screw driver 2.1.7. Auger bit 2.1.8. Ratchet 2.1.9. Cum-a-long 2.1.10. Bolt cutter 2.1.11. wire skinning knife 2.1.12. Bolo/Sickle 2.1.13. Bull line 2.1.14. Pulling line 2.1.15. Conductor rack 2.1.16. Compression tool 2.1.17. Pulley 2.2 Equipment 2.2.1 Boom truck or derrick truck 2.2.2 Chain saw 2.2.3 Pole climbing equipment 2.2.4 Wench 2.2.5 Ladder 2.3 Construction materials for pole top, anchor, guy, conductor, grounding assemblies 2.4 Conductors or wires (bare or insulated) 2.4.1. Aluminum Conductor Steel Reinforced (ACSR) 2.4.2. Copper wire
3. pole top/ conductor assembly	3.1 Primary 3.1.1. Single-phase 3.1.2. Vee-phase 3.1.3. Three-phase 3.2 Secondary 3.2.1. Open 3.2.2. Underbuilt

4. Anchor assembly	May include: 4.1 Anchor lag 4.2 Line anchors 4.2.1. expanding 4.2.2. screw or swamp type 4.2.3. plate 4.2.4. cone
5. Conductor rack (Reel)	5.1 Stationary or fixed reel 5.2 Mounted or moving reel
6. Tying of conductors	6.1 Top groove tie 6.2 Side groove tie
7. line construction specifications	7.1 specifications for 13.2 / 7.6 KV line construction 7.2 specifications for 34.5 / 20 KV line construction 7.3 specifications for other distribution utilities

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Demonstrates ability to interpret job requirements 1.2 Demonstrates ability to dress/frame Pole 1.3 Demonstrates ability to install pole anchor and guy 1.4 Demonstrates ability to string and tension conductor 1.5 Demonstrates ability to apply conductor armoring and tying
2. Underpinning knowledge and attitude	2.1 Basic electricity 2.2 Basic distribution line construction works 2.3 Occupational safety and health standards for line workers 2.4 Hand signal communication 2.5 Uses and specifications of distribution line tools, equipment and hardware 2.6 Safety procedures for installing pole hardware and conductors 2.7 Different pole type assembly 2.8 Power distribution industry standards and specifications 2.9 Desirable work values and attitudes (team player, cost conscious, quality man-hours, quality conscious, etc.)
3. Underpinning values and attitudes	Desirable work values and attitudes includes: 3.1 Integrity 3.2 Team player 3.3 Responsible 3.4 Customer service oriented 3.5 Quality and standard consciousness 3.6 Environment steward
4. Underpinning skills	4.1. Identifying and following occupational health and safety standards for line workers 4.2. Using distribution hand/line tools, equipment and hardware 4.3. Following safety procedures for pole hardware and conductors 4.4. Pole climbing skills 4.5. Knot tying skills 4.6. Using hand signal communication 4.7. Perform conductor riding technique 4.8. Communication skills 4.9. First aid skills 4.10. Working in a team environment 4.11. Interpreting and following power distribution industry standards 4.12. Proper care, handling and assembling DX materials and hardware
5. Resource implications	The following resources should be available: 5.1 Tools, equipment, hardware and PPE (see range of variables) 5.2 Site or work area 5.3 Boom or derrick truck (if necessary)
6. Method of assessment	Competency may be assessed through: 6.1 Direct observation with oral questioning 6.2 Demonstration of skills with oral questioning 6.3 Portfolio 6.4 Written test 6.5 Third party report (Instructor/Trainor's report)
7. Context of assessment	7.1 Competency maybe assessed in the workplace or in a simulated workplace setting 7.2 Assessment shall be undertaken either individually or part of team under limited supervision

UNIT OF COMPETENCY : INSTALL DISTRIBUTION LINE EQUIPMENT AND DEVICES

UNIT CODE : UTL724604

DESCRIPTOR : This unit covers the outcomes required for installing distribution line equipment and devices. The scope of this unit covers performing installation of distribution line equipment and devices as well as tapping/connecting line equipment and devices to distribution line. This involves working with a team.

ELEMENT	PERFORMANCE CRITERIA (***Italicized Bold*** terms are elaborated in the range of variables)
1. Plan and prepare for work	1.1 ***Work instructions*** are secured and interpreted according to job requirements 1.2 Relevant ***occupational health and safety requirements*** are identified following job specifications 1.3 Relevant distribution line ***tools, equipment, materials and devices*** are identified, requested and acquired in accordance with ***construction specifications*** 1.4 Personal protective equipment (PPE) are obtained following job requirements
2. Install line equipment and devices	2.1 ***Lifting devices*** is installed securely to the top of the pole. 2.2 Boring is performed, if necessary, in accordance with the construction specification 2.3 ***Line equipment and devices*** are installed in accordance with construction specifications and standards 2.4 Housekeeping procedure is performed in line with established procedure
3. Tap/Connect line equipment and devices to distribution line	3.1 Connectors/jumpers are installed between line conductors for safety, conductivity and reliability purposes. 3.2 Line tapping and connection is performed in accordance with the construction specification 3.3 Grounding for equipment is installed in accordance with line construction specifications.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work instruction	May include but are not limited to: 1.1 job order form 1.2 work order form
2. Occupational health and safety requirements	May include but not limited to: 2.1 Personal protective equipment (PPE) 2.1.1. Hard hat/Safety hat 2.1.2. Goggles/Eye protector 2.1.3. Working gloves 2.1.4. Lineman boots 2.1.5. Working clothes 2.1.6. Rain suits 2.1.7. Rubber boots 2.2 Pole climbing equipment 2.2.1. Safety strap/cord 2.2.2. Body belt 2.2.3. pair of climbers
3. Distribution line tools, materials, equipment and devices	May include but not limited to: 3.1 Tools 3.1.1. Rope/Hand line/Bull line 3.1.2. Adjustable wrench or lineman wrench 3.1.3. Pliers 3.1.4. Ball peen hammer 3.1.5. Measuring rule / steel tape 3.1.6. Screw driver 3.1.7. Auger bit 3.1.8. Wire skinning knife 3.1.9. Compression tool 3.2 Materials/Hardware 3.2.1. conductors 3.2.2. insulators and pins 3.2.3. ground rod 3.2.4. ground lead 3.2.5. connectors 3.2.6. ground clip 3.2.7. bolts and accessories 3.2.8. wire staple 3.2.9. wedge clamps 3.2.10. hot line clamps 3.3 Equipment and devices 3.3.1. Transformer gin 3.3.2. Cut-out 3.3.3. Distribution transformer 3.3.4. Pulley or block and tackle 3.3.5. Ladder 3.3.6. Boom truck or derrick truck 3.3.7. Pole climbing equipment

4. Lifting devices	May include: 4.1 Transformer gin 4.2 Pulley or block and tackle 4.3 Handline / Rope / Bull line
5. construction specifications	5.1 specifications for 13.2 / 7.62 KV line construction 5.2 specifications for 34.5 / 20 KV line construction 5.3 specifications for other distribution utilities
6. line equipment and devices	May include: 6.1 distribution transformer 6.2 cut-out and lightning arrester

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Demonstrates ability to interpret job requirements 1.2. Demonstrates ability to install line equipment and devices 1.3. Demonstrates ability to connect line equipment and devices to distribution line
2. Underpinning knowledge and attitude	2.1 Basic electricity 2.2 Basic distribution line construction works 2.3 Occupational safety and health standards for line workers 2.4 Hand signal communication 2.5 Uses and specifications of distribution line tools, equipment and hardware 2.6 Safety procedures for installing line equipment and devices 2.7 Knowledge of different lifting devices 2.8 Power distribution system standards and specifications
3. Underpinning values and attitudes	Desirable work values and attitudes includes: 3.1 Integrity 3.2 Team player 3.3 Responsible 3.4 Customer service oriented 3.5 Quality and standard consciousness 3.6 Environment steward
4. Underpinning skills	4.1. Identifying and following occupational health and safety standards for line workers 4.2. Proper use of distribution hand/line tools, equipment and devices 4.3. Following safety procedures for line equipment and devices installation 4.4. Pole climbing skills 4.5. Knot tying skills 4.6. Using hand signal communication 4.7. Perform conductor riding technique 4.8. Communication skills 4.9. Working in a team environment 4.10. Interpreting and following power distribution industry standards 4.11. Proper care, handling and assembling of distribution materials and hardware.
5. Resource implications	The following resources should be available: 5.1 PPE, tools, equipment and devices (see range of variables) 5.2 Site or work area
6. Method of assessment	Competency may be assessed through: 6.1 Direct observation with oral questioning 6.2 Demonstration of skills with oral questioning 6.3 Portfolio 6.4 Written test 6.5 Third party report (Instructor/Trainor's report)
7. Context of assessment	7.1. Competency maybe assessed in the workplace or in a simulated workplace setting 7.2. Assessment shall be undertaken either individually or part of team under limited supervision

UNIT OF COMPETENCY : INSTALL CONSUMER SERVICE CONNECTION FACILITY

UNIT CODE : UTL724605

DESCRIPTOR : This unit covers the outcomes required for installing consumer service connection facility. The scope of this unit covers installing service drop and KWH meter. This involves working with a team.

ELEMENT	PERFORMANCE CRITERIA (***Italicized Bold*** terms are elaborated in the range of variables)
1. Plan and prepare for work	1.1 Work instruction is secured and interpreted according to job requirements 1.2 Relevant ***occupational health and safety requirements*** are identified following job specifications 1.3 Necessary ***tools, hardware, equipment and devices*** needed for the work are identified, requested and acquired in accordance with construction specifications 1.4 Personal protective equipment (PPE) are obtained following job requirements
2. Install Service Drop	2.1 Approved electrical/house wiring permit is secured. 2.2 ***Service drop accessories*** are installed according construction standards and requirements 2.3 ***Service drop cables*** are installed according construction standards and requirements 2.4 Service drop clearance is checked in conformity to road vertical clearance.
3. Install KWH meter	3.1 Meter base is installed, if necessary, according to construction standards and requirements 3.2 ***KWH meter*** is installed according to construction standards and requirements 3.3 Customer is advised for completion of work and verify availability of electric power 3.4 Housekeeping procedure is performed in line with established procedure

RANGE OF VARIABLES

VARIABLE	RANGE
1. Occupational health and safety requirements	May include but not limited to: 1.1 Personal protective equipment (PPE) 1.1.1. Hard hat/Safety hat 1.1.2. Goggles/Eye protector 1.1.3. Work gloves 1.1.4. Lineman boots 1.1.5. Working clothes 1.1.6. Rubber boots 1.1.7. Rain suits 1.2 Pole climbing equipment 1.2.1. Safety strap/cord 1.2.2. Body belt 1.2.3. pair of climbers
2. Tools, hardware, equipment and devices	May include but not limited to: 2.1 Tools 2.1.1. Rope/Hand line 2.1.2. Adjustable wrench or lineman wrench 2.1.3. Pliers 2.1.4. Ball peen hammer 2.1.5. Measuring rule (wood) 2.1.6. Screw driver 2.1.7. Auger bit 2.1.8. Electric tape 2.1.9. Wire skinning knife 2.1.10. Compression/crimping tool 2.2 Equipment and devices 2.2.1. Ladder 2.2.2. Pole climbing equipment 2.2.3. KWH meter 2.2.4. Multi-tester (amps-volt) 2.3 Hardware 2.3.1 Service drop cables 2.3.2 Service connection accessories
3. Service drop accessories	May include: 3.1 Oval eye bolt/nut 3.2 Service swinging clevis 3.3 Spool insulator 3.4 Service grip / Dead-end loop clamp 3.5 Service drop wire 3.6 Service wire grip 3.7 Strain/Screw insulators 3.8 Compression connector/ Clamps
4. Service drop cable	May include: 4.1 Triplex aluminum/copper cable 4.2 Duplex aluminum/copper cable
5. KWH meter	May include: 5.1 Single phase 5.2 Socket type or button connected

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Demonstrates ability to interpret job requirements 1.2. Demonstrates ability to install service drop 1.3. Demonstrates ability to install KWH meter
2. Underpinning knowledge	2.1 Basic distribution line construction works 2.2 Basic electricity 2.3 Occupational safety and health standards for line workers 2.4 Uses and specifications of tools, equipment and hardware 2.5 Safety procedures for proper installation of service drop and KWH meter 2.6 Power distribution system standards and specifications
3. Underpinning values and attitudes	Desirable work values and attitudes includes: 3.1 Integrity 3.2 Team player 3.3 Responsible 3.4 Customer service oriented 3.5 Quality and standard consciousness 3.6 Environment steward
4. Underpinning skills	4.1. Identifying and following occupational health and safety standards for line workers 4.2. Using tools, equipment and devices 4.3. Following safety procedures for service drop and KWH meter installation 4.4. Pole climbing skills 4.5. Communication skills 4.6. Working in a team environment 4.7. Interpreting and following power distribution industry standards
5. Resource implications	The following resources should be available: 5.1. PPE, tools, equipment and devices (see range of variables) 5.2. Site or work area
6. Method of assessment	Competency may be assessed through: 6.1. Direct observation with oral questioning 6.2. Demonstration of skills with oral questioning 6.3. Portfolio 6.4. Written test 6.5. Third party report (Instructor/Trainor's report)
7. Context of assessment	7.1. Competency maybe assessed in the workplace or in a simulated workplace setting 7.2. Assessment shall be undertaken either individually or part of team under limited supervision

SECTION 3 TRAINING STANDARDS

3.1 CURRICULUM DESIGN

Course Title: LINE CONSTRUCTION (ELECTRIC POWER DISTRIBUTION) NC II

Nominal Training Duration:

18 hrs – Basic Competencies
48 hrs – Common Competencies
184 hrs – Core Competencies
+ **56** hrs (7 days OJT/Practicum)
---
306 hrs

Course Description:

This course is designed to develop & enhance the knowledge, skills, & attitudes of a distribution line lineman, in accordance with industry standards. It covers the basic and common competencies in addition to the core competencies such as to erect distribution line poles, install pole assembly, conductors, line equipment and devices as well as to install consumer service connection facility. Line construction involves work on non-energized lines, particularly construction/ extension of new electric power distribution lines.

.
.

BASIC COMPETENCIES
18 hrs

Unit of Competency	Learning Outcome	Methodology	Assessment Approach
1. Participate in Workplace Communication	1.1 Obtain and convey workplace information 1.2 Participate in workplace meetings and discussions 1.3 Complete relevant work related documents	• Group discussion • Interaction	• 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	• Discussion • Interaction	• Demonstration • Observation • Interviews/ questioning
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	• Discussion • Interaction	• Demonstration • Observation • Interviews/ questioning
4. Practice Occupational Health and Safety Procedures	4.1 Identify hazards and risks 4.2 Evaluate hazards and risks 4.3 Control hazards and risks 4.4 Maintain occupational health and safety awareness	• Discussion • Plant tour • Symposium	• Observation • Interview

COMMON COMPETENCIES
48 hrs

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Apply Quality Standards	1.1 Check materials and replace faulty ones in accordance with workplace standards and requirements 1.2 Carry out work assignments in accordance with standard operating procedures 1.3 Check completed work against standards and specifications 1.4 Document and prepare a report on deviations from specific quality standards	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Third Party Report
2. Comply with environmental protection procedures	2.1 Access information concerning environmental protection regulations and procedures 2.2 Implement and monitor procedures concerning environmental hazards 2.3 Implement and monitor environmental control procedures	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Third Party Report
3. Observe procedures, Specifications and Manuals of Instructions	3.1 Identify and access specification/ manuals 3.2 Interpret and apply information in manuals	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Third Party Report
4. Maintain and operate line tools and equipment	4.1 Plan and prepare for work to operate and maintain line tools and equipment 4.2 Prepare line hardware, tools and equipment for operation and maintenance 4.3 Operate line tools and equipment 4.4 Check condition of line tools and equipment 4.5 Perform basic preventive maintenance 4.6 Store tools and equipment	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Third Party Report

CORE COMPETENCIES

184 hrs + 56 hrs. (7 days On-the-job/Practicum)

*** Note:** Training providers must include separate modules or learning outcomes on Basic Electricity (including basic power generation, transmission and distribution), Industrial Safety and First Aid.

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Erect distribution line poles	1.1 Load/Haul and spot distribution poles 1.2 Perform pole digging and grounding 1.3 Set up/Erect distribution pole	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Written exam
2. Climb pole and install pole assembly/ conductors	2.1 Climb pole 2.2 Dress/Frame pole 2.3 Install pole anchor and guy 2.4 Perform conductor stringing, tensioning, armoring and tying 2.5 Install conductor/ground taps and jumper	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Written exam
3. Install distribution line equipment and devices	3.1 Install line equipment and devices 3.2 Tap/Connect line equipment and devices to distribution line 3.3 Install grounding to equipment	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Written exam
4. Install consumer service connection facility	4.1 Install service drop and Kilowatt-Hour meter	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Written exam

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 the competency-based Technical and Vocational Education and Training (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 only 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 a 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 instructors are not in the same place. Distance learning may employ correspondence study, or audio, video or computer technologies.

3.3 TRAINEE ENTRY REQUIREMENTS

The trainees who wish to enter the course should possess the following requirements:

- At least high school graduate
- Can communicate in oral and written language
- Must be physically and mentally fit to undergo training e.g. *no fear of working in height*
- At least 5'4" in height
- 18-25 years old

This list does not include **specific institutional requirements,** such as educational attainment, appropriate work experience and others that may be required from the trainees by the school or training center delivering the TVET program.

3.4 LIST OF TOOLS, EQUIPMENT AND MATERIALS (Institution-based)

Minimum list of tools, equipment and materials required for a group of **25 trainees** for LINE CONSTRUCTION (ELECTRIC POWER DISTRIBUTION) NC II:

TOOLS		EQUIPMENT		HARDWARE/ ACCESSORIES	
QTY	**ITEM**	**QTY**	**ITEM**	**QTY**	**ITEM**
2 units	Ordinary shovel	10 sets	Pole climbing equipment	6 pcs.	Cross arm, wood or steel, 10 ft. or 8 ft.
2 units	Spoon shovel, 7 ft	4 unit	Hole digger	12 pcs.	Pin insulator
2 units	Straight shovel, 7 ft.	1 unit	Telescopic ladder	12 pcs.	Steel pin
2 units	Digging/tamping bar, 8', forge steel	1 pc.	KWH meter, 1∅ 10 (30)A, bottom connection	12 sets	Armor rod for # 1/0 AWG, ACSR
4 units	Pole pike, assorted size	1 unit	DX transformer, 10 KVA, (busted) double bushing	30 meters	# 1/0 AWG, ACSR
2 sets	Pole Jenny (salagunting), 14 ft.	1 unit each	Boom truck and a line truck (only during actual line construction)	50 pcs.	Strand of # 1/0 ACSR two (2) meters length
2 sets	Pole Jenny (salagunting), 18 ft.	1 unit	Block and tackle, single, 5", 3/8" MSL 227 kg.	2 pcs.	Pole, wood (tanalized), 40 ft., cl 2
2 units	Butting board (1"x6"x7" wood or steel)	1 unit	Double block, 5", 3/8", MSL 338 kg.	1 pc.	Pole, wood (tanalized), 35 ft., cl 2
1 unit	Cant hook, 4", wooden handle	1 unit	Stringing roller & block, brass steel	2 pcs.	Pole, wood (tanalized), 30 ft., cl 3
2 units	Bolt cutter, 24" & 36", steel handle		**Personal Protective Equipment (PPE)**	1 pc.	Pole, wood (tanalized), 25 ft., cl 3
4 units	Auger bit, ¾" & 5/8"∅		Hard hat	8 pcs.	Cross-arm, 8 ft.
2 units	Rachet, ½ ton		Goggles/eye protector	3 pcs.	Pin insulator
2 units	Cum-a-long (wire group)		Working gloves	38 pcs.	Suspension insulator 6"
1 unit	Conductor rack		Maong jacket, long sleeve	18 pcs.	Dead end strain clamp, 1/0 ACSR
1 unit	Transformer gin		Rubber gloves	2 pcs.	Pole top pin
2 – 25 meters	Bull line (3/4"∅ manila or polypropylene rope)		Safety shoes, high cut with heels boots	12 pcs.	Double arming bolt 5/8x22"

TOOLS		EQUIPMENT		HARDWARE/ ACCESSORIES	
QTY	ITEM	QTY	ITEM	QTY	ITEM
2 – 60 ft. length	Hand line (1/2"∅ rope)			14 pcs.	Eye nut, oval 5/8"
4 pcs.	Dead end loop clamp			1 pc.	Single upset bolt 5/8x10"
8 pcs.	Hot line clamp for 1/0 ACSR			1 pc.	Double upset bolt 5/8x10"
2 units	Impact tool, power actuated			2 pcs.	Pipe spacer 5/8"∅
2 units	Pruning saw, diff. sizes			12 pcs.	Ordinary brace, 28"
				13 pcs.	Log screw
	HANDTOOLS			5 pcs.	Malleable guy attachment
	Linemen's pliers, 9", insulated handle			2 pcs.	Guy hook
	Adjustable wrench, 12"			2 pcs.	Guy plate
	Ballpen hammer, 10 lbs; forge steel			10 pcs.	Three bolt clamp
	Screw driver, 12", flat			2 pcs.	Guy grip, 3/8∅guy wire
	Adjustable wrench, 12", forge steel			4 pcs.	Dead-end strain clamp, 4/0"
	Skinning knife, 2 ¼", insulated			2 pcs.	Anchor log, 4 ft.
	Canvas bag			2 pcs.	Anchor expanding
				2 pcs.	Anchor rod 5/8"∅, Twin eye
				2 pcs.	Anchor rod 5/8"∅, Single eye
				4 pcs.	Spool insulator, 1 ¾"
				2 pcs.	Spool insulator, 3"
				1 pc.	Ground rod 5/8x8'
				1 pc.	Ground rod clamp
				4 pcs.	Eye bolt 5/8x10"
				12 pcs.	Eye bolt 5/8x12"
				8 pcs.	Dead end loop clamp for 1/0 ACSR
				80 meters	Conductor ACSR, #1/0
				20 meters	Conductor ACSR, #4/0
				40 meters	Conductor ACSR, #2
				60 meters	Guy wire, 3/8"∅
				4 pcs.	Machine bolt, 5/8"x12
				2 pcs.	V-brace, 60" span
				4 pcs.	Machine bolt, ½ x 6"
				10 meters	Ground wire, 3 strand
				30 pcs.	Staple wire

TOOLS		EQUIPMENT		HARDWARE/ ACCESSORIES	
QTY	ITEM	QTY	ITEM	QTY	ITEM
				60 pcs.	Washer square, 1 3/16" hole, 2 ¼ x 2 ¼ x 3/16
				60 pcs.	Lock nut 5/8"
				4 pcs.	Lock nut ½"
				2 pcs.	Square washer 4"x4"
				4 pcs.	Anchor shackle
				15 meters	Duplex Wire, #6
				2 pcs.	Service Grip, secondary
				6 meters	Insulated copper, #2 connector
				1 pc.	Fuse cut-out with lighting arrester combination
				3 pcs.	Compression connector, #1/0 - #2 ACSR
				2 pc.	Compression connector, #1/0 - #6 ACSR

3.5 TRAINING FACILITIES

Recommended space requirements for the various teaching/learning areas are as follows:

TEACHING/LEARNING AREAS	SIZE IN METERS (M)	AREA IN SQ. M	QTY	TOTAL AREA IN SQ. M
Lecture Area	8 x 10	80	1	80
Laboratory Area (field-based – 6 poles minimum)				500
Learning Resource Area	5 x 6	30	1	30
Clinic/Multi-purpose Area	4 x 5	20	1	20
Wash ,Toilet & Locker Room	3 x 5	15	1	15
Total				645
Facilities / Equipment / Circulation				50
Total Area				**695**

3.6 TRAINERS QUALIFICATIONS

LINE CONSTRUCTION (ELECTRIC POWER DISTRIBUTION) NC II
Trainer's Qualification

- Must be a holder of Line Construction (Electric Power Distribution) NCII or equivalent
- Must have completed Training Methodology/Assessment Methodology (TM/AM) course or equivalent
- Must have reached supervisory level in distribution line works, e.g. Line Foreman/Leadman
- Must have at least 3-years relevant supervisory experience
- Must be physically & mentally fit

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 Line Construction (Electric Power Distribution) NC II, the candidate must demonstrate competency in all the units listed in Section 1. Successful candidates shall be awarded a **National Certificate II** signed by the TESDA Director General.

4.2 The qualification of Line Construction (Electric Power Distribution) NC II can be attained through:

4.2.1. Demonstration of competence through project-type assessment covering the core units of competency of the qualification:

4.2.1.1. Performing basic power distribution line construction works

- Erect distribution line poles
- Climb pole and install pole assembly/conductors
- Install distribution line equipment and devices
- Install consumer service connection facility

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. Graduate 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 and Certification System (PTQCS)".

DEFINITION OF TERMS

GENERAL

1) **Certification -** is the process of verifying and validating the competencies of a person through assessment

2) **Certificate of Competency (COC)** – is a certification issued to individuals who pass the assessment for a single unit or cluster of units of competency

3) **Common Competencies** - are the skills and knowledge needed by all people working in a particular industry

4) **Competency** - is the possession and application of knowledge, skills and attitudes to perform work activities to the standard expected in the workplace

5) **Competency Assessment -** is the process of collecting evidence and making judgments on whether competency has been achieved

6) **Competency Standard (CS)** - is the industry-determined specification of competencies required for effective work performance

7) **Context of Assessment** - refers to the place where assessment is to be conducted or carried out

8) **Core Competencies** - are the specific skills and knowledge needed in a particular area of work - industry sector/occupation/job role

9) **Critical aspects of competency** - refers to the evidence that is essential for successful performance of the unit of competency

10) **Elective Competencies** - are the additional skills and knowledge required by the individual or enterprise for work

11) **Elements** - are the building blocks of a unit of competency. They describe in outcome terms the functions that a person performs in the workplace.

12) **Evidence Guide** - is a component of the unit of competency that defines or identifies the evidences required to determine the competence of the individual. It provides information on critical aspects of competency, underpinning knowledge, underpinning skills, resource implications, assessment method and context of assessment

13) **Level -** refers to the category of skills and knowledge required to do a job

14) **Method of Assessment** - refers to the ways of collecting evidence and when, evidence should be collected

15) **National Certificate (NC)** – is a certification issued to individuals who achieve all the required units of competency for a national qualification defined under the Training Regulations. NCs are aligned to specific levels within the PTQF

16) **Performance Criteria** - are evaluative statements that specify what is to be assessed and the required level of performance

17) **Qualification** - is a cluster of units of competencies that meets job roles and is significant in the workplace. It is also a certification awarded to a person on successful completion of a course in recognition of having demonstrated competencies in an industry sector

18) **Range of Variables** - describes the circumstances or context in which the work is to be performed

19) **Recognition of Prior Learning (RPL)** – is the acknowledgement of an individual's skills, knowledge and attitudes gained from life and work experiences outside registered training programs

20) **Resource Implications -** refers to the resources needed for the successful performance of the work activity described in the unit of competency. It includes work environment and conditions, materials, tools and equipment

21) **Basic Competencies -** are the skills and knowledge that everyone needs for work

22) **Training Regulations (TR)** – refers to the document promulgated and issued by TESDA consisting of competency standards, national qualifications and training guidelines for specific sectors/occupations. The TR serves as basis for establishment of qualification and certification under the PTQF. It also serves as guide for development of competency-based curricula and instructional materials including registration of TVET programs offered by TVET providers

23) **Underpinning Knowledge -** refers to the competency that involves in applying knowledge to perform work activities. It includes specific knowledge that is essential to the performance of the competency

24) **Underpinning Skills** - refers to the list of the skills needed to achieve the elements and performance criteria in the unit of competency. It includes generic and industry specific skills

25) **Unit of Competency** – is a component of the competency standards stating a specific key function or role in a particular job or occupation; it is the smallest component of achievement that can be assessed and certified under the PTQF

SPECIFIC

1. **Anchor** - A device that supports and holds in place conductors when they are terminated at a pole or structure. The anchor is buried and attached to the pole by way of guy wire to counteract the mechanical forces of these conductors.

2. **Armor** - An outer metal layer applied to a cable for mechanical protection. Armor is comprised of factory formed wire, designed to be applied to a range of conductor sizes.

3. **Armor Rod** - An outer metal layer applied to a cable for mechanical protection. Armor Rods are comprised of factory formed wire, designed to be applied to a range of conductor sizes.

4. **Baker Board** - A platform used to work above the ground on a wood pole.

5. **Block and tackle** - an apparatus of pulley blocks and ropes or cables used for hauling and hoisting heavy objects.

6. **Cable** - A term generally applied to the larger sizes of bare or weatherproofed (covered) and insulated conductors. It is also applied to describe a number of insulated conductors twisted or grouped together.

7. **Cable Pulling Lubricant** - A chemical compound used to reduce pulling tension by lubricating a cable when pulled into a duct or conduit.

8. **Climbers** - Hooks for climbing poles that are attached to a lineman's boots.

9. **Cum-a-long** - A wire grip for holding a conductor or strand under tension.

10. **Conductor** - 1) a wire or combination of wires suitable for carrying an electrical current. Conductors may be insulated or bare. 2) any material that allows electrons to flow through it.

11. **Connector** - A conductive coupling device used to connect conductors together.

12. **Cross-arm -** A wooden/steel support attached to a pole that holds wire and insulators.

13. **Cut-out -** A transformer fuse so named because when the fuse is removed the circuit opens.

14. **Digger**-**derrick -** A type electric utility line truck that digs holes and sets poles.

15. **Distribution System** - A term used to describe that part of an electric power system that distributes the electricity to consumers from a bulk power location such as a substation. It includes distribution line, line equipment and power substation.

16. **Distribution Transformer** - A line equipment that reduces voltage from the supply lines for direct connection to operate consumer devices.

17. **Distribution Voltage** - A nominal operating voltage below 69 kV.

18. **Double Arming Bolt** - A special long bolt used to assemble two cross arms, one on each side of the pole.

19. **Electrical Hazard** - A dangerous condition such that contact or equipment failure can result in electric shock, arc flash burn, thermal burn, or blast.

20. **Electric meter** or **energy meter** is a device that measures the amount of electrical energy consumed by a residence, business, or an electrically-powered device. Electric meters are typically calibrated in billing units, the most common one being the kilowatt hour.

21. **Electrical Safety** - Recognizing hazards associated with the use of electrical energy and taking precautions so that hazards do not cause injury or death.

22. **Electrically Safe Work Condition** - A state in which the conductor or circuit part to be worked on or near has been disconnected from energized parts, locked/tagged in accordance with established standards, tested to ensure the absence of voltage, and grounded if determined necessary.

23. **Grip All Stick** - See Shotgun Stick.

24. **Groundman** - a person working at ground level in support of a lineman working above.

25. **Guy** - a rope, cord, or wire used to steady, guide, or secure something.

26. **Guy-wire** or **guy-rope** is a tensioned cable designed to add stability to structures (frequently ship masts, radio masts, wind turbines, utility poles, and tents). One end of the cable is attached to the structure, and the other is anchored to the ground at a distance from the structure's base. This allows the tension of each guy-wire to offset the others.

27. **Hotstick** - An insulated stick usually made of fiberglass that is used to work energized overhead conductors and operate electrical equipment that is overhead, underground and pad mounted.

28. **Insulator** - a device that is used to electrically isolate a conductor or electrical device from ground or a different electrical potential. Insulators are broadly classified as either pin-type, which support the conductor above the structure, or suspension type, where the conductor hangs below the structure. Insulators are usually made of wet-process porcelain or toughened glass, with increasing use of glass-reinforced polymer insulators.

29. **Jumper** - An electrical connection between two points.

30. **Kilowatt** - 1000 watts of real power. Expressed at kW.

31. **Kilowatt Hour** - The use of one thousand watts for one hour.

32. **Line** - refers to the conductor in an overhead or underground distribution or transmission line.

33. **Line worker** - a person whose duties include climbing wood poles or steel structures to perform work on electric power distribution line construction.

34. **Personal Protective Equipment (PPE)** - The term shall include, but is not limited to, devices designed to be worn by workers for eye, face, head, respiratory, hand, arm, body, leg, foot, and fall protection.

35. **Pole pike** - a device with a sharp metal point in one end that is used to hold utility poles upright while they are being erected.

36. **Right-of-way -** A strip of land owned by another party on which a utility places poles, wires, substations, and other facilities.

37. **Service Drop** - an electrical line running from a utility pole to a customer's building or other premises. It is the point where electric utilities provide power to their customers.

38. **Service Entrance Cable** - The conductors that connect the service conductors (drop or lateral) to the service equipment of the building.

39. **Shotgun Stick** - A specialized hot stick that allows the capture of certain types of clamps and devices in its hook. It is also called a "Grip All" stick.

40. **Stringing** - The act of installing overhead electrical wire or conductor.

41. **Tag Line** - A rope used to control the position of equipment being lifted. This is not to be confused with the rope used to actually lift the equipment.

42. **Tension** - The force in pounds of kilograms on a conductor installed overhead. Too much tension on an overhead line can contribute to mechanical failure.

ANNEX A

UTILITIES SECTOR COMPETENCY MAP

LINE CONSTRUCTION (ELECTRIC POWER DISTRIBUTION) NC II

BASIC COMPETENCIES

Receive and Respond to Workplace Communication	Work with Others	Demonstrate work values	Practice basic housekeeping procedures	**Participate in Workplace Communication**	**Work in a Team Environment**	**Practice career professionalism**
Practice occupational health and safety procedures	Lead Workplace Communication	Lead Small Working Teams	Develop and Practice Negotiating Skills With Team Members	Guide Effective Solutions to Problems Arising from Work Activities	Check and Develop the Use of Mathematical Concepts & Techniques	Use Relevant Technologies Applicable to Assigned Work
Lead in Utilizing Specialized Communication Skills	Assist in Developing Team and Individuals	Apply Problem Solving Techniques in the Workplace	Collect, analyze and organize information	Plan and Organize Work for Several Working Teams	Promote Environmental Protection	

COMMON COMPETENCIES

Apply quality standards	**Comply with environmental protection procedures**	**Observe procedures, specifications and manual of instruction**	**Operate and maintain tools and equipment**	Operate a personal computer

CORE COMPETENCIES

Tender Diesel Engine	Operate Diesel Power plant	Maintain and Repair Diesel Engine Systems and Alternator	Service Alternator/ Generator	Diagnose and Repair Diesel Engine	Diagnose and Repair Electrical System	Overhaul Diesel Engine
Perform transmission line pole erection	Perform overhead transmission line work	Perform cold-line maintenance work	Perform live-line maintenance work	Perform ground line maintenance work	Install emergency restoration structure (ERS)	Plan transmission line maintenance job
Implement transmission line maintenance works	Inspect/Assess transmission line components' conditions	**Erect distribution line poles**	**Climb pole and install pole assembly/ conductors**	**Install distribution line equipment and devices**	**Install consumer service connection facility**	Perform maintenance work on de-energized line
Perform maintenance work on live-line (energized)	Perform ground line maintenance work					

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 who donated their time and expertise to the development and validation of these Training Regulations.

The Technical Expert Panel (TEP)

ENGR. ROMULO U. GARDUQUE.
Distribution Line Supervisor (Retired)
National Electrification Administration
NIA Rd., Brgy. Piñahan, Gov't. Center, Diliman, Q.C.

MR. FREDELITO N. SUAREZ
Associate Director
MMLDC Foundation, Inc.
Km. 27, Sumulong Highway, Antipolo City

MS. ROSARIO B. GARCIA
Chief, Electric Coop Development
National Electrification Administration
NIA Rd., Brgy. Piñahan, Gov't. Center, Diliman, Q.C.

MS. RICHELLE LILLIAN C. REINOSO
Learning Specialist, TCD – Academic Services
MMLDC Foundation, Inc.
Km. 27, Sumulong Highway, Antipolo City

ENGR. NELSON A. LALAS
Principal Engineer
National Electrification Administration
NIA Rd., Brgy. Piñahan, Gov't. Center, Diliman, Q.C.

MS. NANCY R. GOTIDOC
Program Officer
MMLDC Foundation, Inc.
Km. 27, Sumulong Highway, Antipolo City.

MR. GREGORIO G. ARQUERO
Chief, Electric Coop. Organizational Services
National Electrification Administration
NIA Rd., Brgy. Piñahan, Gov't. Center, Diliman, Q.C.

MR. MAXIMO A. CAOC
Trainor
MMLDC Foundation, Inc.
Km. 27, Sumulong Highway, Antipolo City

MR. PAUL DINDO C. DELA CRUZ
Training Coordinator
National Electrification Administration
NIA Rd., Brgy. Piñahan, Gov't. Center, Diliman, Q.C.

MR. JIMMY O. NOCEJA
Trainor
MMLDC Foundation, Inc.
Km. 27, Sumulong Highway, Antipolo City

The Management and Staff of National Electrification Administration

The Management and Staff of MMLDC Foundation, Inc.

The Management and Staff of the TESDA Secretariat

- **Qualifications and Standards Office (QSO)**
  - Competency Standards Division
    - Zoilo C. Galang, Supervising TESD Specialist
    - Samuel E. Calado, Jr., Senior TESD Specialist
    - Stephen I. Cesar, Senior TESD Specialist
  - Curriculum and Training Aids Division
    - Famy Pepito, Senior TESD Specialist