



RPL

RECOGNITION OF PRIOR LEARNING

indiaⁱⁿvision

TRAINING PARTNER

INDIAVISION REALTY AND INFRASTRUCTURE PVT LTD

In consortium with

PK Entreprises

Approved Curriculum 120 Hours

Assistant Electrician

(NSQF Level – 3)

SECTOR: CONSTRUCTION

**SUB-SECTOR: REAL ESTATE AND INFRASTRUCTURE
CONSTRUCTION**

OCCUPATION: CONSTRUCTION ELECTRICAL WORKS

REF. ID: CON/Q0602

NSQF LEVEL: 3

Arunachal Pradesh Building & Other's Construction workers welfare board

(APB&OCWWB)

ESS Sector, Itanagar-791110



RPL

RECOGNITION OF PRIOR LEARNING

Assistant Electrician

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Assistant Electrician”, in the “construction” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Assistant Electrician		
Qualification Pack Name & Reference ID.			
Version No.	1.0	Version Update Date	01 st Aug 2022
Pre-requisites to Training	Minimum qualification – 10th Class		
Training Outcomes	<p>After completing this program, participants will be able to:</p> <ul style="list-style-type: none"> • Select and use hand, power tools and electrical devices relevant to construction electrical works: - Recognizing, differentiating and using electrical tools and devices appropriately in basic electrical operations • Install temporary lighting arrangement at construction sites: - Selection and use of light units, accessories, fixtures and tools for installing and maintaining lighting arrangements used for construction work • Install LV electrical wiring at permanent structures: -Identification, selection and handling of electrical fixtures, tools and materials and use them in house wiring activity. Basic electrical tests which are performed to inspect wiring • Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site: - Selection and use of electrical fixtures, components and tools to assemble and maintain temporary electrical panels required for construction works • Work effectively in a team to deliver desired results at the workplace: - Organized working procedure within a team at site • Plan and organize work to meet expected outcomes: - Prioritizing activities and organizing resources to meet desired outcome • Work according to personal health, safety and environment protocol at construction site: - Importance of Health & Safety aspects & measures to be followed while working 		



RPL

RECOGNITION OF PRIOR LEARNING



This course encompasses 7 out of 7 National Occupational Standards (NOS) of “Assistant Electrician” Qualification Pack issued by “Construction Skill Development Council of India”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Introduction to the job role - (Lecture/ description by concerned trainer)</p> <p>Theory Duration (hh:mm) 01:00</p> <p>Practical Duration (hh:mm) 00:00</p> <p>Corresponding NOS Code</p>	<ul style="list-style-type: none"> • Role description/ functions of the job role • Expected personal attributes from the job role • Brief description about course content, mode of learning and duration of course • Future possible progression and career development provisions on completion of the course • principle of electrical current flow, fundamental terms like resistance, temperature, c/s of conductor and their relations • basic concept LV of single phase and three phase connections and their uses as per electrical voltage load • basic concept of AC and DC current generation • introduction to series, parallel and combination circuits • How to read and interpret wiring diagrams with basic symbols, manufacturer’s guidelines, electrical specifications to determine use of power tools, electrical devices, measuring devices etc. 	<p><u>Infrastructural requirements</u></p> <ol style="list-style-type: none"> 1. Classroom having sitting capacity of 30 trainees 2. Blackboard
2	<p>Select and use hand, power tools and electrical devices relevant to construction electrical works</p> <p>Theory Duration (hh:mm) 02:00</p> <p>Practical Duration (hh:mm) 10:00</p> <p>Corresponding NOS Code CON/N0602</p>	<p><u>Theory: -</u></p> <ul style="list-style-type: none"> • Type of electrical hand and power tools pliers, crimping tools, electrical drill machines, cutting machines etc. and their applications such as cutting, drilling, stripping and splicing wires etc. • Type of electrical measuring tools and devices such as voltage tester, earth tester, mutimeter, digital ammeter etc. and their respective use to trace out malfunctions in electrical circuits/ connections like power interruption/ continuity, power leakage, earth leakage • Type of electrical devices like starters, relays and circuit breakers, their power ratings, working principles and use in circuits • How to read and interpret wiring symbols, SLDs, manufacturer’s guidelines, electrical specifications to determine use of power tools, electrical devices, measuring devices etc. 	<p><u>Hand Tools</u></p> <ol style="list-style-type: none"> 5. Pliers 6. Screw Drivers (set) 7. Crimping tools 8. Wire strippers 9. Neon tester <p><u>Measuring devices</u></p> <ol style="list-style-type: none"> 10. Ammeter 11. Voltmeter 12. Wattmeter 13. Ohmmeter 14. Digital Multimeter 15. Megger 16. Tong tester <p><u>Measuring Instruments</u></p> <ol style="list-style-type: none"> 17. Measuring tape 18. Spirit level 19. Marking tools <p><u>Power tools</u></p> <ol style="list-style-type: none"> 20. Drilling machine 21. Cutting machine 22. Chasing machine

RPL

RECOGNITION OF PRIOR LEARNING

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> Knowledge about features of switches, fuses, resistors and various circuit protecting devices and their use in electrical circuits and connections Knowledge about basic principle of electrical current flow, fundamental terms like voltage, resistance, temperature, cross section of conductors their units, relations and method of measurement using relevant measuring tools and their influence electrical circuits Knowledge about ampere's law, Ohm's law, electromagnetic field and their factual relation with electrical tests How to maintain/ store electrical tools and devices <p><u>Demonstration/ Practical: -</u></p> <ul style="list-style-type: none"> Selection and use of hand and power tools for tightening electrical fixtures, electrical termination at power outlets Selection of PPEs for general and electrical safety Use of measuring instruments and hand/ power tools for measuring, cutting, bending, threading conduits/ cables Use of wire stripping and joining tools to strip, joining/ splicing tools Use of electrical devices to carry out basic inspections on electrical circuits like checking voltage, current flow, voltage drop, leakage through conductor etc. 	<p><u>Materials and fixtures</u></p> <ol style="list-style-type: none"> Electrical distribution board Electrical socket (set) Tungsten bulb/ CFL/FSL bulb Halogen lamp wall socket Simple switchboard Mains breaker switch Earth Leakage Circuit Breaker (ELCB) Miniature Circuit Breaker (MCB) <p><u>PPEs & Safety Equipment</u></p> <ol style="list-style-type: none"> Helmet Face shield Safety goggles Safety shoes Safety belt Insulated rubber gloves Ear plugs Particle masks Reflective jackets Safety message boards Fire extinguishers Sand buckets <p><u>infrastructural requirements</u></p> <ol style="list-style-type: none"> Classroom having sitting capacity of 30 trainees Blackboard
3	<p>Install temporary lighting arrangement at construction sites</p> <p>Theory Duration (hh:mm) 04:00</p> <p>Practical Duration (hh:mm) 20:00</p>	<p><u>Theory: -</u></p> <ul style="list-style-type: none"> Safety norms applicable in construction sites and electrical works and use of specific PPEs Types of cables based on insulation, phase and their use as per power rating Types of conduits and fixtures such as switches, sockets, their selection method and respective uses in electrical works Types of safety equipment commonly used for protection of LV wiring circuits and their area of application Standard/ safe practice of cable laying at construction sites such as through underground conduits, through poles 	<p><u>Consumables: -</u></p> <ol style="list-style-type: none"> Single phase electrical cables of standard wire gauges Conduits/ casings Electrical diagram (consisting only basic wiring symbols) PVC insulation tape <p><u>Measuring devices</u></p> <ol style="list-style-type: none"> Digital Multimeter Tong tester Megger <p><u>Hand tools: -</u></p> <ol style="list-style-type: none"> Pliers Screw Drivers (set) Crimping tools Wire strippers Neon tester



RPL

RECOGNITION OF PRIOR LEARNING

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p>Corresponding NOS Code CON/N0603</p>	<ul style="list-style-type: none"> • Types of lights units, their wattage and respective use in construction sites • Standard practices of fixing lights and their respective accessories such as ground clearance to be maintained, selection of location avoiding external damaging effects etc. • Joining of cable in 'straight through joint' method • Type of faults associated with lighting arrangements • Standard procedure of shifting and installing lights and its accessories among different work locations • Type of tests to be undertaken in lighting units and its accessories such as voltage test, leakage test, power interruption/ continuity test etc. • Methods of trace out short circuits, power interruptions/ continuity using appropriate electrical devices • standard conditions for storing and stacking electrical units, materials, fixtures, tools and devices • safe procedure of erection and dismantling of temporary scaffolding, ladders or working platforms <p><u>Demonstration/ Practical: -</u></p> <ul style="list-style-type: none"> • Demonstrate and understand the principles of resistance • Explain series and parallel circuits • Reading of electrical wiring symbols for single and three phase circuits, specifications to obtain required information for a given electrical circuit <ul style="list-style-type: none"> • Reading of electrical and general safety norms and guidelines and its implementation in electrical works • Assessment of risk involved in installation of lighting arrangements and its accessories at construction sites • Selection of cables, lights and electrical fixtures depending upon electrical load requirement 	<p>Equipment Required</p> <p><u>Materials and fixtures</u></p> <ol style="list-style-type: none"> 13. Lighting units (Bulbs, Halogen sets etc.) 14. Lighting fixtures (holders, buckets, clamps, brackets etc.) 15. Circuit Breakers (MCB) 16. Power source 17. Sockets 18. Switches <p><u>PPEs & safety equipment's</u></p> <ol style="list-style-type: none"> 19. Helmet 20. Safety shoes 21. Safety belt 22. Insulated rubber gloves 23. Ear plugs 24. Reflective jackets 25. Safety message boards 26. Fire extinguishers 27. Sand buckets <p><u>infrastructural requirements</u></p> <ol style="list-style-type: none"> 28. Classroom having sitting capacity of 30 trainees 29. Blackboard



RPL

RECOGNITION OF PRIOR LEARNING

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none">• Selection of PPEs for general and electrical safety• Use of hand and power tools to fix cables, light units and its accessories• Practice of cable laying using conduits, casings and its necessity at construction sites• Joining of cable in 'straight through joint' method and use of PVC insulation tapes at broken insulation, joints as per applicability• Determination of live/ dead electrical circuits by using appropriate tools and devices• Method of tagging electrical cables, underground electrical conduits by standard method• Determination of power rating of electrical fixtures to be used for repairing to the electrical arrangement• Repairing of electrical lighting arrangements by undertaking tests, replacement of electrical fixtures/ materials• Methods of trace out short circuits, power interruptions/ continuity using appropriate electrical devices• Electrical principles like ohm's law, ampere's law, electromagnetic field and its effects	



RPL

RECOGNITION OF PRIOR LEARNING

Sr. No.	Module	Key Learning Outcomes	Equipment Required
4	<p>Install LV electrical wiring at permanent structures</p> <p>Theory Duration (hh:mm) 04:00</p> <p>Practical Duration (hh:mm) 20:00</p> <p>Corresponding NOS Code CON/N0604</p>	<p><u>Theory:</u> -</p> <ul style="list-style-type: none"> Safety norms applicable in construction sites and electrical works and use of specific PPEs Types of safety equipment commonly used for protection of domestic wiring circuits and their area of application Standard conduit laying and fixing procedure through brick and concrete structures Standard practices of cable/ wire laying through conduits and tests to be done to ensure there is no breakage/ leakage from the wire Concept of electrical earthing procedure in domestic wiring and its importance Material, tools and equipment used for electrical earthing works Concept of test to be performed in domestic electrical wiring works using appropriate measuring devices <p><u>Demonstration/ Practical:</u> -</p> <ul style="list-style-type: none"> Visual checking to be carried out to electrical fixtures and materials related to domestic wiring such as conduits, raceways, wires to ascertain their usability as per specified acceptance criteria Use of measuring instruments and cutting tools such as measuring tapes, markers, cutters to cut and bend conduits Use of hand and power tools for cutting drilling works for proper fixing of conduits and raceways Laying electrical wires through conduits and raceways Selection and use general and electrical safety gears Practice electrical tests like voltage drop, continuity of current flow and resistance in insulations Practice handling and storing electrical fixtures and materials used for domestic wiring 	<p><u>Consumables:</u> -</p> <ol style="list-style-type: none"> Single phase electrical cables of standard wire gauges Conduits/ casings/ raceways Electrical diagram (consisting only basic wiring symbols) PVC insulation tape <p><u>Measuring devices</u></p> <ol style="list-style-type: none"> Digital Multimeter Tong tester Megger <p><u>Hand tools:</u> -</p> <ol style="list-style-type: none"> Pliers Screw Drivers (set) Crimping tools Wire strippers Neon tester Hacksaw <p><u>Power Tools:</u> -</p> <ol style="list-style-type: none"> Cutting machine Drill machine <p><u>Measuring Instruments:</u> -</p> <ol style="list-style-type: none"> Measuring tapes Markers <p><u>Materials and fixtures</u></p> <ol style="list-style-type: none"> Electrical earthing pole GI earthing wires <p><u>PPEs & safety equipment's</u></p> <ol style="list-style-type: none"> Helmet Safety shoes Safety belt Insulated rubber gloves Ear plugs Reflective jackets Safety message boards Fire extinguishers Sand buckets <p><u>infrastructural requirements</u></p> <ol style="list-style-type: none"> Classroom having sitting capacity of 30 trainees Blackboard



RPL

RECOGNITION OF PRIOR LEARNING

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> practice of placing electrical earthing pipes and plates in to the ground Select and use PPEs as per electrical work requirement 	
5	<p>Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site</p> <p>Theory Duration (hh:mm) 04:00</p> <p>Practical Duration (hh:mm) 20:00</p> <p>Corresponding NOS Code CON/N0605</p>	<p><u>Theory: -</u></p> <ul style="list-style-type: none"> Concept of safety norms applicable in construction sites and electrical works and use of specific PPEs Concept of electrical earthing procedure in temporary panels and its importance Safety norms applicable in construction sites and electrical works and use of specific PPEs Types of conduits and fixtures such as switches, sockets, MCBs, wire their selection method based upon power rating and respective uses in electrical works Method of connection temporary panel/ Distribution boards (DB) with main power outlet Selection and use of general and electrical PPEs Method of electrical termination at power outlets using appropriate fixtures Type of faults associated with temporary electrical panels/ DBs and its accessories Standard procedure of shifting and installing DBs among different work locations Type of tests to be undertaken in temporary panels/ DBs and its accessories such as voltage test, leakage test, power interruption/ continuity test etc. <ul style="list-style-type: none"> Methods of trace out short circuits, power interruptions/ continuity using appropriate electrical devices standard conditions for storing and stacking electrical units, materials, fixtures, tools and devices 	<p><u>Consumables: -</u></p> <ol style="list-style-type: none"> Single phase electrical cables of standard wire gauges (assorted) Temporary power switchboards (PVC/ Wooden) Electrical diagram (consisting only basic wiring symbols) PVC insulation tape <p><u>Measuring devices</u></p> <ol style="list-style-type: none"> Digital Multimeter Tong tester Megger <p><u>Hand tools: -</u></p> <ol style="list-style-type: none"> Pliers Screw Drivers (set) Crimping tools Wire strippers Neon tester Hacksaw <p><u>Power Tools: -</u></p> <ol style="list-style-type: none"> Cutting Machine Drill machine <p><u>Measuring Instruments: -</u></p> <ol style="list-style-type: none"> Measuring tapes Markers <p><u>Materials and fixtures</u></p> <ol style="list-style-type: none"> Power sockets Power switches MCBs Plugs & tops Fuses Screws and nuts Electrical earthing pole GI earthing wires



RPL

RECOGNITION OF PRIOR LEARNING

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p><u>Demonstration/ Practical: -</u></p> <ul style="list-style-type: none"> • Selection and use of general and electrical safety gears • Determining power rating of fixtures to be used in panel/ DB • Installing electrical fixtures such as switches, sockets etc. to the panel/ DB as per their provision • Carry out connection electrical fixtures by wires within the panel/DB • Selection of cable- single/ three phase for connecting the panel to the main power source • Practice of electrical earthing of panel/DB • Connecting panel/ DB to main power source Method of termination at power source • Practice of electrical tests to be carried out to inspect proper function of panel/DB using appropriate devices • Repairing and replacement of faulty parts with respect to technical specification and power rating of the same • Preparation of reports, documents regarding repairing/ maintenance at specified formats 	<p><u>PPEs & safety equipment's</u></p> <ol style="list-style-type: none"> 26. Helmet 27. Safety shoes 28. Safety belt 29. Insulated rubber gloves 30. Ear plugs 31. Reflective jackets 32. Safety message boards 33. Fire extinguishers 34. Sand buckets <p><u>Infrastructural requirements</u></p> <ol style="list-style-type: none"> 35. Classroom having sitting capacity of 30 trainees 36. Blackboard
6	<p>Work effectively in a team to deliver desired results at the workplace</p> <p>Theory Duration (hh:mm) 01:00</p> <p>Practical Duration (hh:mm) 10:00</p> <p>Corresponding NOS Code CON/N8001</p>	<p><u>Theory: -</u></p> <ul style="list-style-type: none"> • Method of oral and written communication skills with co-workers, trade seniors while handling and carrying out visual checks on materials, electrical fixtures, lights, tools and devices <ul style="list-style-type: none"> • Reading and interpretation of electrical works formats, permits, protocols, checklists • How to interpret scope of electrical activities, material/ tools handling by adhering to instructions or consulting with seniors • Method of providing instruction to subordinates or reporting to seniors clearly and promptly 	<p><u>Infrastructural requirements</u></p> <ol style="list-style-type: none"> 1. Classroom having sitting capacity of 30 trainees 2. Blackboard



RPL

RECOGNITION OF PRIOR LEARNING

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> Seek necessary support and complete assigned tasks within stipulated time duration Keep good relation and maintain well behavior with co-workers <p><u>Demonstration/ Practical: -</u></p> <ul style="list-style-type: none"> The skills will be developed and practiced while carrying out following trade related activities in a predictable and familiar working condition Selection of materials, tools or devices for defined purpose under Handling electrical material, fixtures and device Carrying out conduit laying and cable laying Carrying out assembling of temporary panel/ distribution board Undertaking electrical tests by using measuring devices Selection and handing over of desired/ appropriate tools/ materials while assisting trade senior 	
7	<p>Plan and organize work to meet expected outcomes</p> <p>Theory Duration (hh:mm) 02:00</p> <p>Practical Duration (hh:mm) 10:00</p> <p>Corresponding NOS Code CON/N8002</p>	<p><u>Theory: -</u></p> <ul style="list-style-type: none"> To plan electrical activities within defined scope of work Basic concept of productivity, sequence of working and implementation of safety and organizational norms while working Upkeep, storing and stacking methods of tools, materials used for domain specific works Requisition of resources, reporting for requirement of resources orally and in written to concerned authority <p><u>Demonstration/ Practical: -</u></p> <ul style="list-style-type: none"> The skills will be developed and practiced while carrying out following trade related activities in a predictable and familiar working condition Selection of materials, tools or devices for defined purpose in an optimum manner Handling electrical tools, material, fixtures and device 	<p><u>Infrastructural requirements</u></p> <ol style="list-style-type: none"> Classroom having sitting capacity of 30 trainees Blackboard



RPL

RECOGNITION OF PRIOR LEARNING

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> • Prioritize all works/ activities • Planning conduit laying and cable laying as per scope • Carrying out assembling of temporary panel/ distribution board • Optimum use of resources while performing task • Adherence to stipulated timelines • for completion of electrical • activities/ tasks 	
8	<p>Work according to personal health, safety and environment protocol at construction site</p> <p>Theory Duration (hh:mm) 02:00</p> <p>Practical Duration (hh:mm) 10:00</p> <p>Corresponding NOS Code CON/N9001</p>	<p>Theory: -</p> <ul style="list-style-type: none"> • Types of hazards involved in construction sites • Types of hazards involved in electrical works • Emergency safety control measures and actions to be taken under emergency situation • Concept of: First Aid process Use of fire extinguisher Classification of fires and fire extinguisher Safety drills • Reporting procedure to the concerned authority in emergency situations • Standard procedure of handling, storing and stacking material, electrical fixtures and accessories • Type of electrical protective devices, their power ratings and area of application • basic ergonomic principles as per applicability <p>Demonstration/ Practical: -</p> <ul style="list-style-type: none"> • Selection of PPEs and use them appropriately as per working need of electrical operations, handling, storing, stacking and shifting of electrical fixtures, light units, tools and devices • Selection of PPEs and use them appropriately as per working need of cutting conduit, drilling in walls, termination at the main power source 	<p>PPEs & safety equipment's</p> <ol style="list-style-type: none"> 1. Helmet 2. Safety shoes 3. Safety belt 4. Insulated rubber gloves 5. Ear plugs 6. Reflective jackets 7. Safety message boards 8. Fire extinguishers 9. Sand buckets <p>Infrastructural requirements</p> <ol style="list-style-type: none"> 10. Classroom having sitting capacity of 30 trainees 11. Blackboard



RPL

RECOGNITION OF PRIOR LEARNING

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none">Selection of fire extinguisher based on classification of fire, standard practice of storing & stacking firefighting equipment/ materials at work locations	
	<p>Total Duration: 120:00</p> <p>Theory Duration 20:00</p> <p>Practical Duration 100:00</p>	<p>Unique Equipment Required:</p> <p>screw drivers (set), wire cutters, Crimping tools, wire strippers, pliers, neon tester, hammers, hacksaws, chisels, spanners (set), wrenches, measuring tape, spirit level, plumb-bob, mason's line, ammeter, voltmeter, wattmeter, ohmmeter, digital multimeter, megger, tong tester, drilling machine, hand cutting machine, power source, source of water, electrical diagram (consisting only basic wiring symbols), electrical distribution board, electrical socket (set), tungsten bulb/ cfl/fsl bulb, halogen lamp, simple switchboard, mains breaker switch, earth leakage circuit breaker (elcb), miniature circuit breaker (mcb), cables, wires, sockets, switches, conduits (flexible and rigid), raceways, screws, nuts & bolts, lighting fixtures (holders, buckets, clamps, brackets etc.), PVC insulation tape, helmet, safety shoes, safety belt, cotton hand gloves, insulated rubber gloves, goggles, reflective jackets, safety message boards, fire extinguishers, sand buckets, message board displaying do's and don'ts at construction sites, classroom having sitting capacity of 30 trainees, blackboard</p>	

Grand Total Course Duration: 120 Hours 00 Minutes

(This syllabus/ curriculum has been approved by Construction Skill Development Council of India)

**Arunachal Pradesh Building & Other's Construction workers welfare board
(APB&OCWWB)
ESS Sector, Itanagar-791110**