

**CONSTRUCTION SKILLS TRAINING INSTITUTE**

**SKILL STANDARDS**

**ELECTRICAL WIREMAN**



**LARSEN & TOUBRO LIMITED**

**ECC DIVISION**

# OCCUPATIONAL JOB DESCRIPTION

## ELECTRICAL WIREMAN

### GENERAL DESCRIPTION

A Electrical Wireman installs, maintains and repairs wiring systems and assembles equipments and accessories as detailed from drawings and specifications, to required safety standard as defined in the Regulations for the Electrical Equipment of Buildings.

### SPECIFIC DESCRIPTION

1. Examines sketches, drawings and specifications.
2. Install various types of installations, clipped cables, wood casing, P.V.C and steel conduit.
3. Erects and installs the equipment to cover, control, distribution and excess-current protection.
4. Installs various types of conductors and cables.
5. Instals, maintains, repairs, both apparatus and appliances.
6. Carries out testing and inspection.
7. Installs temporary installations and installations on construction sites.
8. Uses both hand and power tools to cut, bend, shape thread conduits plus cutting, chasing, fixing to walls, floors and ceilings.
9. Diagnoses faults and effects remedial action.
10. Work at heights, uses ladders and scaffold
11. Carries out simple design, planning and estimating work.
12. Works responsibly and safely without endangering self or others.

# SKILL STANDARDS -ELECTRICAL WIREMAN

## LEVEL III

### **1.0 KNOWLEDGE**

**A Electrical wireman level III must:**

- 1.1 Have ability to distinguish colours.
- 1.2 Be-aware of safety requirements and precautions necessary for the implementation of electrical installation work.
- 1.3 Have a basic awareness with regard to the electrical lay-out and wiring of buildings.
- 1.4 Appreciate, care and use of tools.
- 1.5 Understand types and sizes of cables lugs, glands, wire conduit and their application.
- 1.6 Name types of electrical conduits, materials and accessories used in installation systems.
- 1.7 Make simple calculations such as addition, subtraction, multiplication and division. Appreciate conversion units to metric.
- 1.8 Read simple sketches and identify symbols.
- 1.9 Appreciate safe working practice including materials storage, condition and inspection of tools, manual lifting, methods of artificial respiration simple first aid, site tidiness and safety precautions related to fire and electricity.

## **2.0 SKILLS**

### **A Electrical wireman level III must be able to:**

- 2.1 Use and maintain tools such as hacksaw, plumb-bob, hammer and chisel, rawlplug, stocks and dies, pliers, side-cutters, screwdrivers etc.
- 2.2. Use various types of files to remove burrs, rough or sharp metal edges.
- 2.3 Terminate conductors, cables and flexible cords to plug sockets, switch and lighting outlets.
- 2.4 Make and solder simple cable joints and terminate conductors into base lugs.
- 2.5 Install and clip P.V.C. cables, wiring circuits such as one way lighting and two way lighting systems, using both loop-in and junction box methods to given instructions.
- 2.6 Cut, shape, fit and secure wood casing and capping installations.
- 2.7 Adjust hacksaw, fit blades and saw materials to a given measurement to a tolerance of  $\pm 0.5\text{mm}$ .
- 2.8 Chase out and cut holes in building fabrics using hammer and chisel without causing undue damage.
- 2.9 Use various types of cold chisels including rawlplug, star chisel for fixing installations to brickwork, concrete and tiling.
- 2.10 Make good working procedure without any defects to building fabric following installation work.
- 2.11 Work at heights, use ladders, trestles and scaffold.
- 2.12 Installation of earth electrode as per IE Rule be aware of earthing system

## SKILL STANDARD-ELECTRICAL WIREMAN LEVEL II

### 1.0 KNOWLEDGE

In addition to knowledge items outlined above, a level II Electrical Wireman must:

- 1.1. Be aware of the requirements of safety in relation to installation work.
- 1.2 Be aware of and have a limited knowledge of the I.E.E Regulations for the electrical equipment of buildings..
- 1.3 Be able to state and transpose Ohm's law  $I = \frac{V}{R}$  or  $V/R$
- 1.4 Be able to sketch circuits and connections concerning voltmeters, ammeters and kilowatt-hour meters.
- 1.5 Be able to perform simple calculations involving power voltage and current.
- 1.6 Be able to define correct procedure and type of instruments for the Various tests including;  
  
Verification of polarity  
  
Effectiveness of earthing  
  
Insulation resistance  
  
Ring circuit continuity
- 1.7 Be conversant with the theory of overload/short circuit protection under various conditions plus earth continuity and earth leakage protection.
- 1.8 Be able to sketch, block, circuit and wiring diagrams.

- 1.9 Be able to interpret and decide the most appropriate runs for specific wiring systems and preparation of requisition of materials required according to the given load.
- 1.10 Be aware of Local Authority/Electricity Board rules, regulations, procedures and standards of products concerned with electrical trade.
- 1.11 Be able to appreciate safe working practice including working off ladders, step ladders, trestles and scaffolds.
- 1.12 Know distribution systems including single phase, 3 phase, 3 phase 4 wire.

## **2.0 SKILLS**

In addition to skilled items outlined above, a level II Electrical Wireman must be able to:

- 2.1 Apply the practice of I.E.E. Regulations for the electrical equipment of buildings.
- 2.2 Apply the practical application and significance of Ohm's Law.
- 2.3 Apply the practice of the relevant circuits such as intermediate, 3 heat series/ parallel, together with connections to various meters and instruments.
- 2.4 Install various types of lighting tungsten and discharge, including fluorescent and sodium/mercury.
- 2.5 Terminate cables into equipment and machines.
- 2.6 Install and wire circuits for cookers, power sockets and ring mains.
- 2.7 Instal ceiling fans and fan controls,
- 2.8 Apply the various tests as listed under KNOWLEDGE.

- 2.9 Install suitable overload and short circuit devices for given circuits operating in different conditions.
- 2.10 Install P.V.C. and steel conduit runs.
- 2.11 Correctly install wiring systems to ensure effective earth continuity and earth leakage protection.
- 2.12 Carry out simple fault finding on basic electric installations.

## **LEVEL - 1**

### **1.0 Knowledge**

In addition to knowledge items listed above, a level 1 Electrical Wireman must:

- 1.1. Be fully conversant with I.E.E Regulations in order to refer to, and comprehend particular regulations including use of Cable tables with appropriate rating factors and voltage drop conditions.
- 1.2 Be conversant with construction and operation of electrical equipment including specialized jobs such as Call Fire and Alarm systems.
- 1.3 Be conversant with reasons for and method of applying the sequence of tests plus the acceptable value for each
- 1.4 Be conversant with contents and purpose of completion and inspection certificates.
- 1.5 Be aware of methods with regard to any breakdown of circuits for fault finding.
- 1.6 Know simple estimating and costing techniques.
- 1.7 Know distribution systems including single phase, 3 phase, 3 phase 4 wire together with phase balancing.

- 1.8 Be aware of special requirements with regard to installations such as petrol stations, farm and agricultural premises, commercial and industrial premises.

## **2.0 SKILLS**

In addition to Skills items listed above, a level 1 Electrical Wireman must be able to:

- 2.1 Plan, control and link installation work with other trades and technical staff.
- 2.2 Estimate cost of electrical installation from given drawing and specification.
- 2.3 Interpret wiring diagrams, drawing and specifications to required instructions.
- 2.4 Use appropriate instruments to test completed or additional installations and equipment.
- 2.5 Diagnose, rectify faults and maintain electrical equipment.
- 2.6 Connect motors, motor control gear and transformers.